

TECHNICAL MANUAL
UNIT MAINTENANCE MANUAL
FOR
CARRIER, PERSONNEL, FULL TRACKED, ARMORED, M113A2
NSN 2350-01-068-4077
CARRIER, COMMAND POST, LIGHT TRACKED, M577A2
NSN 2350-01-068-4089
CARRIER, MORTAR, 120-MM, M121; SELF-PROPELLED, M1064
NSN 2350-01-338-3116
CARRIER, STANDARDIZED INTEGRATED COMMAND POST SYSTEM,
M1068
NSN 2350-01-354-5657
CARRIER, SMOKE GENERATOR, FULL TRACKED, M1059
NSN 2350-01-203-0188
COMBAT VEHICLE, ANTI-TANK, IMPROVED TOW VEHICLE, M901A1
NSN 2350-01-103-5641

SUPERSEDURE NOTICE — This manual supersedes TM 9-2350-261-20-1 dated 11 July 1990, including all changes.

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

HEADQUARTERS, DEPARTMENT OF THE ARMY
AUGUST 2005

WARNING SUMMARY

WARNING SUMMARY

This list summarizes critical WARNINGS in this manual. They are repeated here to let you know how important they are. Study these WARNINGS carefully; they can save your life and the lives of personnel you work with.

GENERAL WARNINGS NOT FOUND IN WP PROCEDURES

The following WARNINGS are general safety statements. They are not unique to any specific procedures and, therefore, do not appear elsewhere in this TM. All personnel operating this equipment or working near this equipment must understand and continually observe the precautions in these WARNINGS.

WARNING



Heater and engine exhaust fumes contain deadly poisonous gases. Severe exposure can cause death or permanent brain damage. Exhaust gases are most dangerous in places with poor air flow.

To protect yourself and your partners, always obey the following rules:

Do not run heater or engine indoors unless you have very good air flow.

Do not idle engine for a long time unless there is very good air flow.

Do not drive carrier with any power plant access covers open or removed.

Be alert at all times. Check for the smell of exhaust fumes. If you notice any fumes, OPEN HATCH COVERS, RAMP ACCESS DOOR, OR RAMP, RIGHT AWAY.

Exhaust gas poisoning causes dizziness, headache, loss of muscle control, sleepiness, coma, and death. If anyone shows signs of exhaust gas poisoning, get ALL PERSONNEL out of the carrier. Make sure they have lots of fresh air. KEEP THEM WARM, CALM, AND INACTIVE. GET MEDICAL HELP. If anyone stops breathing, give artificial respiration. See FM 4-25.11 for first aid.

WARNING



Noises from carrier or weapons can damage hearing of personnel in carrier. All personnel in carrier MUST WEAR DOUBLE HEARING PROTECTION when gun or carrier is operated. Hearing protection devices must be properly worn to provide effective protection.

If DOUBLE HEARING PROTECTION is not worn, the safe level of noise exposure will be exceeded in a short time. Hearing loss occurs gradually. Each noise exposure that exceeds the ear protection guidelines below will cause a temporary hearing loss. Over time, the loss in hearing will become permanent. Plan each day's operation, and be sure all crew and riders have the required ear protectors. Spare foam earplugs must be available.

WARNING SUMMARY (cont)

Definitions:

Table 1.

DH-132	The "tankers helmet," also called "CVC" helmet. Must be in good condition, with liner and earcups fitted tightly, and chin strap worn at all times.
Earplugs	Only standard issue earplugs are acceptable. All of the dismounted squad soldiers must be trained in how to use them. Since they may be removed and lost, spares must be carried.
Double Hearing Protection	Use of two hearing protection devices at the same time. For this carrier, use earplugs with the DH-132 helmet.

Ear Protection Guidelines:

Table 2.

Driver	<p>Must wear DH-132 helmet at all times.</p> <p>Must wear DH-132 helmet plus earplugs for operations exceeding 14 miles (23 km) in 24 hours.</p> <p>Must close hatch immediately if .50 caliber machine gun is fired over front part of carrier.</p> <p>Hatch may remain open and locked during carrier operation.</p>
Commander	<p>Must wear DH-132 helmet at all times.</p> <p>Must wear DH-132 helmet plus earplugs for operations exceeding 14 miles (23 km) in 24 hours.</p> <p>Hatch may be locked open at all times.</p>
Squad Members	Must wear helmet and ear plugs at all times.

Use of Radio with Earplugs

Wearing foam earplugs in addition to your DH-132 helmet can actually improve your ability to hear the radio in a high level noise area. DO NOT remove the earplugs to use the radio.

LIST OF WARNINGS IN WP PROCEDURES

This list includes all the critical WARNINGS in the WP procedures. Study these WARNINGS carefully. They can save your life and the lives of soldiers with whom you work.

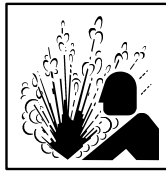
WARNING



Start up of equipment or moving parts can injure you. Stay clear of moving parts when power plant is running.

WARNING SUMMARY (cont)

WARNING



Hot coolant lines can burn you. Let power plant cool before you remove hose from auxiliary tank.

WARNING



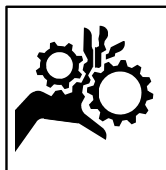
High voltage. Keep hands clear.

WARNING



Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

WARNING



Loose clothing is dangerous around moving belts and pulleys. You could get badly hurt if your clothes get caught in moving parts.

WARNING SUMMARY (cont)

WARNING



Lowering ramp could injure personnel. Make sure no one is in ramp zone before you lower ramp. If tactical situation permits, sound horn before dropping ramp.

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

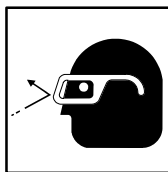
BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

WARNING



Make sure ALL AC external and internal power is OFF.

WARNING



Air pressure in excess of 30 psi (207 kPa) can injure personnel. Do not direct pressurized air at yourself or others. Always wear goggles.

WARNING SUMMARY (cont)

WARNING



Fuel can catch fire and burn you. Do not smoke. Disconnect battery ground cables before you work on fuel systems. Wipe up spilled fuel.

WARNING



You could be injured if cylinder discharges when it is out of its mounting brackets or is dropped. Handle with great care.

WARNING



Seat can spring up and hit you when vertical control handle is released. Make sure you are sitting in the seat before releasing vertical control handle.

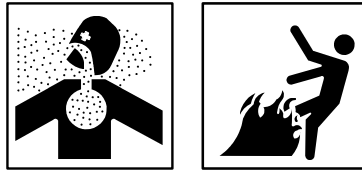
WARNING



Carbon monoxide is poisonous and can kill you. Do not idle engine with driver's power plant access panel off unless there is VERY GOOD AIR FLOW.

WARNING SUMMARY (cont)

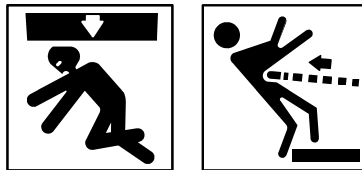
WARNING



Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

WARNING



Damaged slings can fail when loaded. Breaking slings can strike and injure personnel. Suspended load can fall and crush personnel.

Inspect all slings before use. Do not use damaged slings. Clearly mark all damaged slings as DAMAGED - DO NOT USE.

WARNING



Hanging loads can kill or injure you. Keep away from hanging loads and overhead equipment. Keep hands out of compartment while power plant is being lifted for removal or lowered for installation.

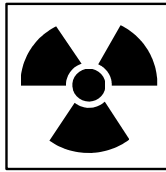
WARNING



Fuel fumes can explode and burn you. Do not smoke or allow open flame near carrier when removing and cleaning fuel cap(s).

WARNING SUMMARY (cont)

WARNING



After suspected NBC exposure of this carrier, all air cleaner media shall be handled only by personnel wearing full NBC protective equipment.

WARNING



Hot exhaust pipes can burn you. Let power unit cool before you start work.

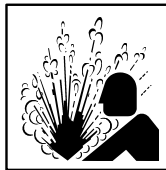
WARNING



Hot parts can burn you.

Allow parts to cool before working on or near them. If necessary, use heat protective gloves to work on hot parts.

WARNING



Hot radiator coolant can burn you. Remove cap only if cool to touch. Drain cocks may be hot. Turn cap slowly to release pressure. Replace cap by pressing down and turning until tight.

WARNING SUMMARY (cont)

WARNING



Radiator is heavy and can cause back injury if handled improperly. Be sure to use a hoist and helper to remove radiator.

WARNING



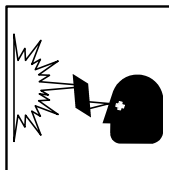
Cooling fan is heavy and can cause back injury if handled improperly. Be sure to use a hoist or helper to remove cooling fan.

WARNING



Avoid injury. Get an assistant to help you lift the starter or use a hoist. Starter weighs about 75 pounds (34 kg).

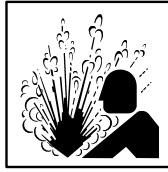
WARNING



Looking directly at infrared headlights may burn your eyes. Do not look directly into infrared headlight.

WARNING SUMMARY (cont)

WARNING



Gas from batteries can explode. Ventilate compartment before you disconnect or connect battery cables. Battery acid can burn or blind you. Do not get acid on your skin or eyes. ALWAYS disconnect ground lead (circuit 7) first and connect it last.

WARNING



Battery posts and cables touched by metal objects can short circuit and burn you. Do not wear jewelry, necklaces, or watches when working on the electrical system. Keep tools away from posts, wires, and terminals.

WARNING



Electrical current can burn you. Disconnect battery ground lead before you start task.

WARNING



Electrolyte and battery corrosion can cause injury to you. Wear safety goggles and gloves. If electrolyte or battery corrosion contacts the eyes, skin, or clothing, flush immediately with large amounts of cold water. In case of eye or skin contact, see a doctor immediately.

WARNING SUMMARY (cont)

WARNING



Battery is heavy and can cause back injury if handled improperly. Be sure to have helper assist you to remove and replace battery. Battery weighs about 75 lb (34 kg).

WARNING



Carbon monoxide is poisonous and can kill you. Do not idle engine with bottom access cover and power plant access panels off unless there is ADEQUATE VENTILATION.

WARNING



The final drive is heavy and can cause back injury if handled improperly. Be sure to use a hoist or a helper to remove final drive.

WARNING



Hanging loads, heavy parts, and overhead equipment can fall unexpectedly and kill or injure you.

Stay clear of hanging loads, heavy parts, and overhead equipment. Use correct lifting devices. Always have helper guide heavy parts and equipment.

WARNING SUMMARY (cont)

WARNING



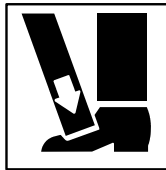
The differential is heavy. Have helper help you and use a lifting device.

WARNING



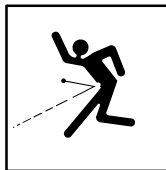
Failure to lock steering levers and block the road wheels can allow the carrier to move and could result in injury or death. Always lock steering levers and block road wheels before working on the carrier.

WARNING



If road wheel lifter slips while lowering road arm, it could injure you. Stand clear before you lower road arm.

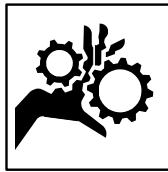
WARNING



Position retainer stops inside of end connectors to prevent the lifter from slipping off and causing injury and/or death to personnel.

WARNING SUMMARY (cont)

WARNING



Adjusting accelerator linkage while the engine is running can cause your arm to be badly injured. Do not adjust accelerator linkage with the engine running.

WARNING



If you work on a carrier that has been running, you could be burned. All tasks begin with a cooled down carrier. Allow carrier to cool or use care if you work on a hot carrier.

WARNING



Trim vane can fall and injure personnel. Make sure trim vane zone is clear when you lower or stow trim vane.

WARNING



Access cover is heavy and can fall and injure you when screws are removed. Keep body clear of cover.

WARNING SUMMARY (cont)

WARNING



Falling hatch could seriously injure you.

Keep head lower than closed hatch position when opening or closing hatch. Keep hands clear of hatch rim when closing. Make sure latch pin or mechanism is fully engaged when hatch is in any open position.

WARNING



Lifting or moving objects in excess of 70 pounds could injure you. Get an assistant or use a lifting device to move heavy objects.

WARNING



Driver's hatch cover could fall during vehicle operation because of worn or excessively soiled components and/or maladjustment, causing injury or death. Follow inspection procedures very carefully.

WARNING



The yoke support assembly could fail to operate if the hatch release handle gets caught on the ledge directly behind it. Watch for this any time the hatch release handle is operated.

WARNING SUMMARY (cont)

WARNING



Driver's hatch cover may spring up and injure you. Open and support hatch cover in vertical position.

WARNING



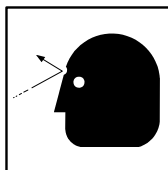
Hatch door may spring up and injure you. Open hatch door and support in vertical position.

WARNING



Mortar hatch sections must be in a vertical position to release torsion spring tension before removing torsion spring brackets.

WARNING



Apply pressure on tube to prevent spring from releasing when handle is pulled out. Injury to personnel can result from flying tube and spring.

WARNING SUMMARY (cont)

WARNING



Rear trays of ammo rack could collapse when removed. To prevent injury, move ammo rack from the front. Keep fingers away from spaces between trays on the back of ammo rack.

WARNING



Chemical agent resistant coating (CARC) paint contains isocyanate (HDI) which is highly irritating to skin and respiratory system. High concentrations of HDI can cause itching and reddening of skin, a burning sensation in throat and nose, and watering eyes. In extreme concentrations, HDI can cause coughing, shortness of breath, pain during breathing, increased sputum production, and chest tightness. The following precautions must be taken whenever using CARC paint:

ALWAYS use air line respirators when using CARC paint unless air sampling shows exposure to be below standards.

DO NOT let skin or eyes come in contact with CARC paint. Always wear protective equipment (gloves, ventilation mask, goggles, etc.)

DO NOT use CARC paint without adequate ventilation.

NEVER weld or cut CARC-painted materials.

DO NOT grind or sand CARC-painted equipment without high-efficiency air purifying respirators in use.

BE AWARE of CARC paint exposure symptoms, which can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.

WARNING



Falling ramp could cause severe injuries. Keep personnel clear of ramp area.

WARNING SUMMARY (cont)

WARNING



Fine particles of magnesium can catch fire and burn you. Be very careful when filing or grinding on magnesium. Use grinding equipment marked **FOR MAGNESIUM GRINDING ONLY**. Keep a Class D fire extinguisher nearby.

WARNING



Water and foam-type fire extinguishers will cause magnesium fires to flare up. Use a Class D fire extinguisher or a sodium chloride base dry powder to fight magnesium fires.

WARNING



Improper disposal of magnesium can cause a fire or explosion. Do not expose magnesium to high temperatures. Let magnesium dry before placing in sealed metal containers. Label containers and ship to a Class 1 hazardous waste disposal site.

WARNING



Fuel fumes can explode and burn you. Before welding:

- Drain all fuel.

- Disconnect and cap all fuel and vent lines.

- Purge fuel residue and fumes by steam cleaning.

- Purge air from fuel tank with CO₂.

WARNING SUMMARY (cont)

WARNING



Do not weld on plastic molding material. Welding on plastic molding creates toxic fumes. Fumes are hazardous to your health and can result in death.

WARNING



An inoperable/unsafe ramp can fall and kill soldiers. Follow these procedures and never get behind a raised, inoperable/unsafe ramp that is not secured.

WARNING



Fire Resistant Hydraulic fluid (FRH) is toxic if absorbed through skin or ingested.

Do not service hydraulic system when FRH is hot or pressurized.

Wear gloves and avoid contact with skin.

If FRH contacts skin, wash immediately with soap.

If FRH gets into eyes, wash with lots of water for 15 minutes and get medical attention.

If FRH is swallowed, get medical attention.

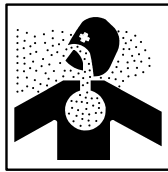
WARNING



Diesel fuel can catch fire and seriously injure or kill soldiers and damage or destroy vehicles. Wipe up fuel spills immediately. Do not smoke near fuel or when working on the fuel system.

WARNING SUMMARY (cont)

WARNING



The insulator blanket is made out of asbestos. Handle with care. Discard insulator blanket properly as a hazardous material per local standard operating procedure. The insulator washer takes the place of the blanket.

WARNING



Exhaust fumes can poison you if wrong heater is installed. Do not interchange a common air heater for a dual air heater.

WARNING



Older gaskets are made out of asbestos. Handle with care. Discard older gasket properly as a hazardous material per local standard operating procedure.

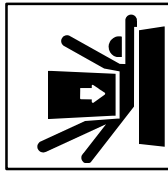
WARNING



Damaged wire rope can seriously injure you. Inspect wire rope before handling it. Wear heavy gloves to protect hands from sharp broken wires.

WARNING SUMMARY (cont)

WARNING



To prevent litter tilt, which could cause injury, be sure to install repair link at chain link No. 47.

WARNING



Contaminated filters are hazardous to personnel. Use precautions when handling filters. Dispose of filters using trained chemical environment personnel.

WARNING



Fog oil is slippery and can cause soldiers to fall and get injured. Clean up all spillage or leakage of fog oil as soon as possible by washing the area or absorbing the fog oil with sand or other absorbent material.

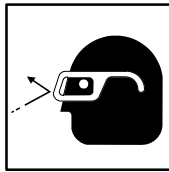
WARNING



Before you do any maintenance, discharge all capacitors to ground or electrical shock could injure personnel.

WARNING SUMMARY (cont)

WARNING



Compressed air pressure from smoke generator can cause serious injury or death. To avoid accidents, bleed air before working on air compressor assembly or disconnecting any air hose.

WARNING



Fog oil can catch fire and seriously injure or kill soldiers and damage or destroy vehicles. Wipe up spills immediately. Fog oil is slippery and can cause soldiers to fall and get injured.

WARNING



High voltage in the M19 periscope can cause serious injury or death. Voltage could exceed 16,000 volts. To avoid accidents, observe the following:

Always connect power cable to periscope before turning MASTER SWITCH and infrared (I.R.) POWER switch to ON.

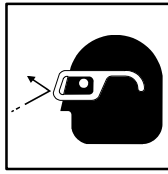
Before disconnecting power cable from M19 periscope, always wait at least two minutes after turning infrared (I.R.) POWER switch and MASTER SWITCH OFF.

Do not disconnect power cable until image disappears from periscope screen.

Never touch end of power cable, or allow it to contact metal surfaces.

WARNING SUMMARY (cont)

WARNING



Metal chips and grinding dust can cause eye injury. Wear goggles and gloves.

FIRST AID

For first aid information, see FM 4-25.11.

INSERT LATEST UPDATED PAGES/WORK PACKAGES. DESTROY SUPERSEDED DATA.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

Note: This manual supersedes TM 9-2350-261-20-1 dated 11 July 1990.

Date of issue for revision is:

Original 0 (26 August 2005)

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NUMBER OF WORK PACKAGES IS 782 CONSISTING OF THE FOLLOWING:

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REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028 (Recommended Changes to Equipment Technical Publications), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is <http://aeps.ria.army.mil>. If you need a password, scroll down and click on "ACCESS REQUEST FORM." The DA Form 2028 is located in the ONLINE FORMS PROCESSING section of the AEPS. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax, or email your letter or DA Form 2028 direct to: Technical Publications Office, TACOM-RI, Rock Island, IL 61299-7630. The email address is TACOM-TECH-PUBS@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

CURRENT AS OF 5 JANUARY 2004

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HOW TO USE THIS MANUAL

HOW TO USE THIS MANUAL

This manual tells you how to perform unit maintenance for the M113A2, M577A2, M1059, M1064, M1068, and M901A1 Carriers.

Before starting a task or procedure, make sure you have read this HOW TO USE section and the General Maintenance Procedures Work Package.

WHAT'S IN THE MANUAL — FRONT TO BACK

This TM is divided into chapters and front and rear matter. The chapters are further divided into Work Packages (WPs) for ease of use.

The WARNING SUMMARY section provides safety and first aid information. This section includes general warnings not found in the TM text and a list of the most important detailed warnings extracted from the WPs. All of these warnings cover hazards that could kill or injure personnel.

The TABLE OF CONTENTS lists the WPs in each chapter.

CHAPTER 1 covers General Information, Equipment Description and Data, Theory of Operation, and Repair Parts, Special Tools, TMDE, and Support Equipment. The Equipment Description WP gives a brief description of major parts and features of the vehicle. The Theory of Operation WP provides information that will help you understand how the vehicle components work.

CHAPTER 2 contains the troubleshooting WPs, which are used to find the cause of vehicle malfunctions.

CHAPTER 3–44 includes the Preventive Maintenance Checks and Services (PMCS) and other maintenance WPs. These WPs contain all the maintenance procedures authorized at the unit level.

CHAPTER 45 provides supporting information for the TM. It includes the following WPs:

The REFERENCES WP lists references to be used by personnel in operating and maintaining the carrier. These references include technical manuals and other publications.

The MAINTENANCE ALLOCATION CHART (MAC) WP contains a listing for the hull.

The COMMON TOOLS AND SUPPLEMENTS AND SPECIAL TOOLS/FIXTURES WP lists the common tools, supplements, and special tools used to maintain or repair the carrier.

The FABRICATED TOOLS WP lists fabricated tools used to maintain or repair the carrier.

The EXPENDABLE/DURABLE SUPPLIES AND MATERIALS WP lists expendable supplies and materials used to maintain or repair the carrier.

The INDEX is an alphabetical listing of all the major controls, procedures, indicators, systems, and subsystems covered in this manual. Each entry is cross-referenced to the WP number and page number.

ELECTRICAL WIRING DIAGRAMS for each carrier are at the end of the manual.

DA FORM 2028 is used to report errors and to recommend improvements for procedures in this manual. Three blank DA Forms 2028 are in the back of this manual. A sample is provided to show you how to fill out the DA Form 2028.

The back cover includes a METRIC CONVERSION CHART that can be used to convert U.S. customary measurements to their metric equivalents. Measurements in this manual are given in U.S. customary units with metric units in parentheses.

USING YOUR MANUAL ON THE JOB

The best way to learn about this manual is to practice using it. Knowing how to use this manual will save both time and energy.

HOW TO USE THE WORK PACKAGES

How to find the WP you need

Pick a key word from the vehicle part or system to be used. Look in the INDEX for this key word or the name of the action you will perform. Turn to the WP and page indicated.

The INDEX lists each WP under one or more headings. For example, the WP titled REPLACE TOWING PINTLE could be found under the two headings "Pintle," and "Towing."

HOW TO USE THIS MANUAL (cont)

How to read the WP

Pay attention to all **WARNINGS**, **CAUTIONS** and **NOTES**. These can appear in all types of procedures. They help you avoid harm to yourself, other personnel, and equipment. They also tell you things you should know about the procedure.

Before you start a procedure, get all the tools, supplies, and personnel you need to do the procedure. These items will be listed in the INITIAL SETUP of the WP.

Start with step 1 and do each step in the order given. Numbered primary steps tell you **WHAT** to do. Alpha substeps tell you **HOW** to do it.

Look at the illustrations. Locators show you where the equipment and parts are located on the vehicle. Closeup illustrations show the details you need to do the procedure.

Maintenance Procedures WPs

Maintenance Procedures WPs keep the carrier in shape to operate. Maintenance Procedures are used to present maintenance instructions. Each maintenance procedure details steps which you need to perform. If the vehicle and parts need maintenance that is not included in any procedure in the manual, notify your supervisor.

The first sample below shows the **THIS WORK PACKAGE COVERS** and **INITIAL SETUP** sections on the first page of a WP. The legend defines each item of information.

LEGEND

TITLE	The name of the procedure.
SUMMARY	A listing of the general actions to be performed, cross-referenced to the page where each action begins.
MAINTENANCE LEVEL	The level of maintenance authorized to perform the procedures in the WP.
TOOLS AND SPECIAL TOOLS	The tools and equipment needed to do the procedures in the WP.
MATERIALS/PARTS	The supplies and parts needed to do the procedures in the WP.
PERSONNEL REQUIRED	The personnel needed to do the procedures in the WP.
REFERENCES	Other WPs, TMs, and publications you will need to do the procedures in the WP.
EQUIPMENT CONDITION	Any special equipment conditions required before the procedure can be started.

Some WPs will include all of the above items. Other WPs will include only some of the above items.

Read the INITIAL SETUP section carefully before you start any procedure. Get the tools and supplies listed and the personnel needed. Be sure the equipment is in the condition required.

HOW TO USE THIS MANUAL (cont)

The second sample below shows you things to watch for when performing the procedures in a WP. Read all steps, substeps, warnings, cautions, and notes before starting the WP procedure. The legend defines each item of information.

LEGEND

STEP	This tells you WHAT to do.
SUBSTEP	This tells you HOW to do it.
WARNING	This describes some danger to yourself and other personnel.
CAUTION	This describes possible damage to equipment.
NOTE	This gives you additional information which may not be obvious the first time you do the procedure.
LOCATOR	An illustration that locates the equipment on the vehicle.
CLOSEUP	A detailed illustration of the equipment.

Some WPs will include all of the above items. Some will not.

Read all of the WP before starting. Follow the steps in the order given.

FOLLOW-THROUGH STEPS tell you what to do after the maintenance task is done. The words END OF TASK will tell you when you have finished the procedure.

Troubleshooting WPs

Troubleshooting WPs help you locate faulty parts. They direct you to the maintenance procedure to correct these faults. Chapter 2, Troubleshooting, contains detailed information on how to perform troubleshooting procedures. Read HOW TO USE TROUBLESHOOTING WP (WP 0005 00) before performing the troubleshooting procedures in the chapter.

HOW TO USE THIS MANUAL (cont)

Preventive Maintenance Checks and Services (PMCS) WP

Preventive maintenance is required to keep your carrier in good running condition. The PMCS procedures for unit maintenance are performed on a periodic basis.

There are two types of PMCS for the vehicle, as follows:

The SEMI-ANNUAL PMCS must be done every 6 months or every 1,500 miles.

The ANNUAL PMCS must be done annually.

If anything seems wrong with the vehicle systems and you cannot fix it yourself, notify unit maintenance. Common things to watch for are loose bolts or damaged welds. Watch for worn insulation, loose clamps, and loose connectors when checking wiring harnesses.

The following sample shows you what to look for when you read a PMCS procedure. For more information, see the PMCS WP (WP 0120 00).

LEGEND

ITEM NUMBER	This is the sequence for doing the PMCS.
INTERVAL	This tells you when to perform the PMCS check.
MAN-HOUR	When equipment must be lubricated, this tells you the man-hours that will be required for the lubrication procedure.
ITEM TO BE CHECKED OR SERVICED	The name of the system or component being checked.
CREWMEMBER	This tells you which crewmember must perform the check.
PROCEDURE	This tells you what needs to be done.
EQUIPMENT NOT READY/AVAILABLE IF:	This tells you what conditions make the vehicle <u>NOT READY/AVAILABLE</u> . These conditions will have to be corrected before you perform your mission.

DEFINITION OF WP TERMS

Warnings, Cautions, and Notes

Pay attention to all warnings and cautions within the WP. Ignoring a warning could cause death or injury to yourself or other personnel. Ignoring a caution could cause damage to equipment. Notes contain facts to make the procedure easier. Warnings, cautions, and notes always appear just above the step to which they apply.

WARNINGS	Call attention to things that could kill or injure personnel. Warnings are also listed in the Warning Summary section.
CAUTIONs	Call attention to actions or materials that could damage equipment.
NOTES	Contain important facts to make the procedure easier.

Helper

Helpers are needed in procedures that require more than one person. A helper may be needed to help lift objects or act as an outside observer.

If a helper is needed to perform a procedure, the INITIAL SETUP will list "Helper (H)" under the PERSONNEL REQUIRED heading.

If a helper assists with a step or substep, the step or substep will include: "Have helper assist."

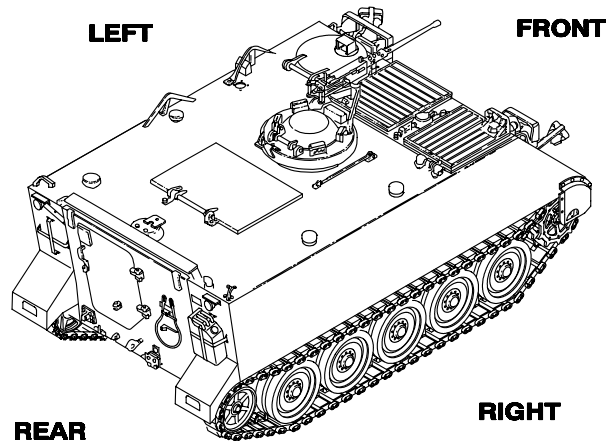
If a helper performs the action alone, the step will start with "(H):."

HOW TO USE THIS MANUAL (cont)

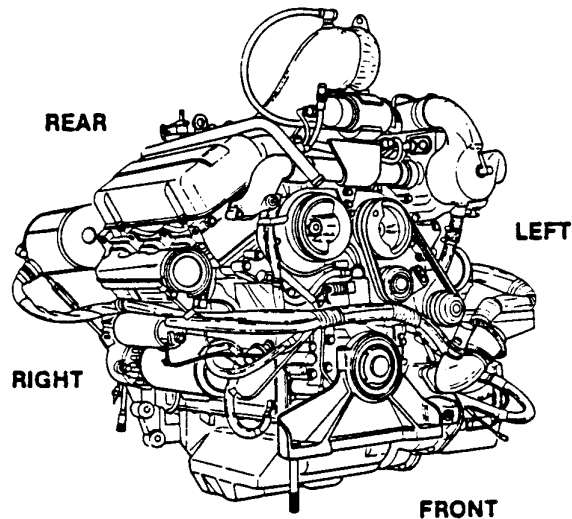
Locational Terms

The terms “front,” “rear,” “left,” and “right” are used to indicate where items are located on the vehicle. The point of reference for these terms is different for *Carrier* items and *Power Unit* items. (Carrier items are items which are not on the power unit. Power unit items are items on the engine or transmission.)

If you are working with carrier items, use this point of reference. Think of the location as if you were sitting in the driver’s seat looking forward.



If you are working with power unit items, use this point of reference. Think of the location as if you were standing at the transfer gearcase end of the power unit and facing the flywheel. This rule applies whether the power unit is IN or OUT of the carrier.



REFERENCES

References within a procedure refer to a different manual or to another procedure in the same manual. They are found in the INITIAL SETUP and in the FOLLOW-THROUGH steps. For example.

MASTER SWITCH OFF (see your -10)

Battery ground lead disconnected (WP 0294 00)

For all procedures, the following comments apply:

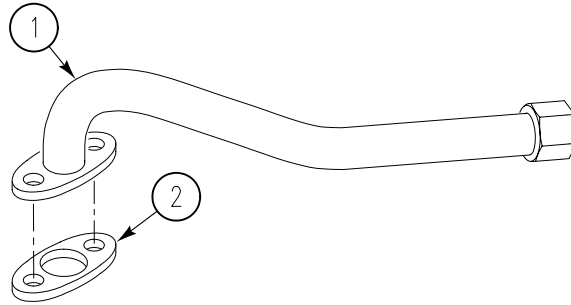
- Parts which are discarded when removed will be referred to as “new” in the procedure step when installed.
Examples are: gaskets, lockwashers, some preformed packings, and some retaining rings.
- These and other new parts are listed under MATERIALS/PARTS in the INITIAL SETUP.

HOW TO USE THIS MANUAL (cont)

GENERAL MAINTENANCE

Cleaning, inspecting, checking for leaks, and similar procedures which apply to most procedures are found in Chapter 3, GENERAL MAINTENANCE PROCEDURES. Use these steps to clean and inspect any part being removed, repaired, or installed. Special cleaning will be covered in the procedure step. Below is a step that would require general cleaning.

5. Remove gasket (2) from upper tube flange (1). Discard gasket.



After performing this step, you would clean the mating surface with cleaning compound and a wiping rag according to the general cleaning procedures. In other procedures, hoses or rubber hatch seals will need to be checked for leaks. Refer to Chapter 3 for general procedures.

HOW TO USE THE REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) WITH THIS MANUAL

The RPSTL (TM 9-2350-261-24P) gives the National Stock Number (NSN) required to order parts used in the maintenance procedure. To use the RPSTL to identify and order a part, do the following:

1. In this manual, turn to the first page of the procedure to be performed.
2. Find Materials/Parts under INITIAL SETUP and read the part(s) that need replacement. If required, find the illustrated part in the procedure steps.
3. Go to the RPSTL and find the same illustrated part. That part will have an item number assigned to it. Look this item number up in the listing for that figure. Use the figure and item number index to find the NSN.
4. If you inspect an item and find that it is damaged, go to the RPSTL and find the SMR code for the item. If the SMR code does not authorize you to repair the item, reassemble it and send it to the authorized level of maintenance.
5. The usable on code in the RPSTL 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 following the item description/nomenclature. Uncoded items are applicable to all models. Identification of the usable on codes in the RPSTL are:

Table 1. RPSTL Usable Codes

Code	Used on
V35	M113A2 Carrier, Personnel
V37	M577A2 Carrier, Command Post
V83	M981 Carrier, Personnel, Armored Fire Support
011	M901A1 Combat Vehicle, Anti-Tank Improved TOW Vehicle
056	M1059 Carrier, Personnel, Smoke
120	M1064 Carrier, 120 mm Mortar
ACP	M1068 Carrier, Standardized Integrated Command Post System

CHAPTER 1

UNIT INTRODUCTORY INFORMATION WITH THEORY OF OPERATION

<hr/> WORK PACKAGE INDEX <hr/>	
<u>Title</u>	<u>Sequence No.</u>
GENERAL INFORMATION.....	0001 00
EQUIPMENT DESCRIPTION.....	0002 00
THEORY OF OPERATION.....	0003 00
REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.....	0004 00

GENERAL INFORMATION

0001 00

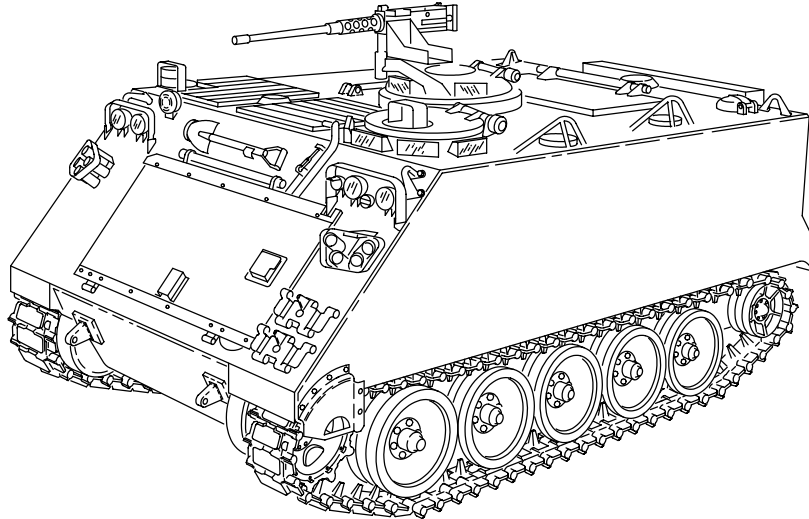
SCOPE

Type of Manual: Unit Maintenance

Model Number and Equipment Name:

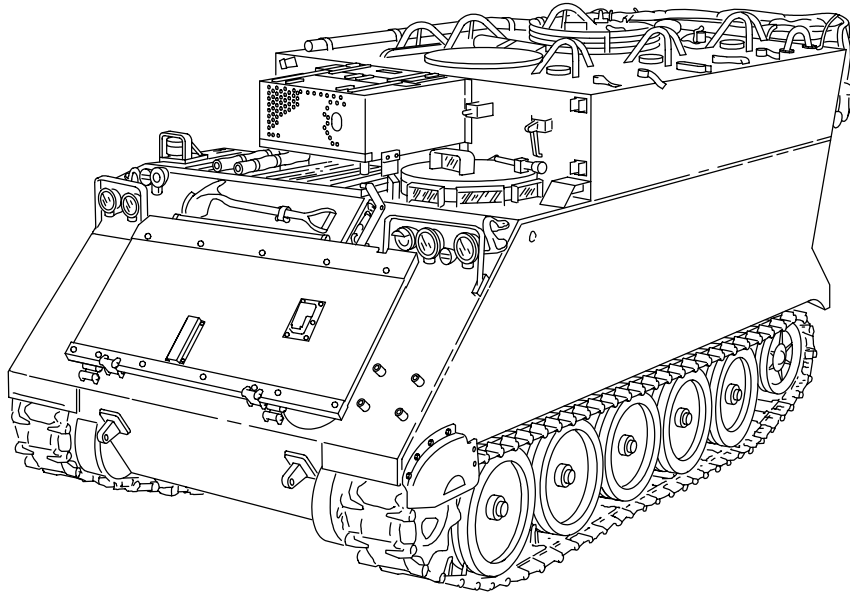
M113A2 – Armored Personnel Carrier, Full Tracked

Purpose of Equipment: Transporting and positioning combat troops and supplies.



M577A2 – Light Tracked Command Post Carrier

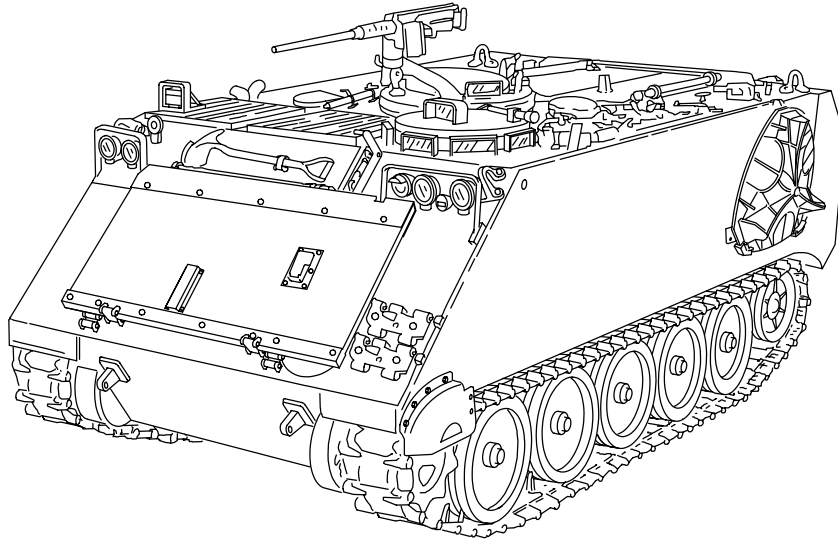
Purpose of Equipment: Provides protection and mobility for field commanders in a tactical environment.



M1064 – Self-propelled 120-mm Mortar Carrier

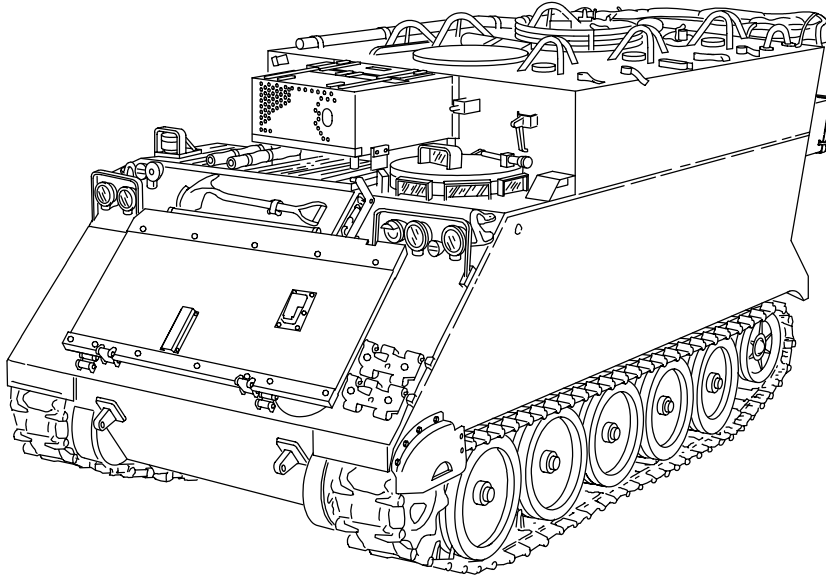
Purpose of Equipment: Provides mobility for the 4.7-inch (120-mm) mortar, M121 or M120. The M121 mortar can be fired from a turntable mounted in the carrier and the M120 mortar from a portable mount off the vehicle.

Other Applicable Manuals: See TM 9-1015-250-23&P for Unit and DS maintenance and repair parts for the 4.7-inch (120-mm) mortar, M121 or M120.



M1068 – Standardized Integrated Command Post System Carrier

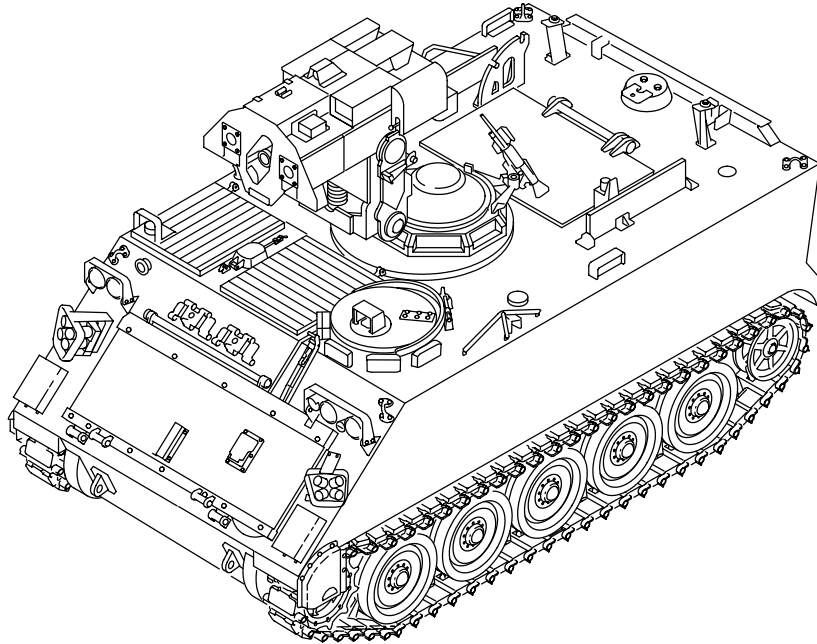
Purpose of Equipment: Designed as a command post and field office to support the various configurations and installation layouts of the ATCCS “Army Tactical Command and Control System” and provide protection for field commanders in a tactical environment.



M901A1— Combat Vehicle, Anti-Tank, Improved Tow Vehicle

Purpose of Equipment: Provides mobility for heavy anti-tank weapon designed and built to attack and defeat armored vehicles and other targets such as field fortifications.

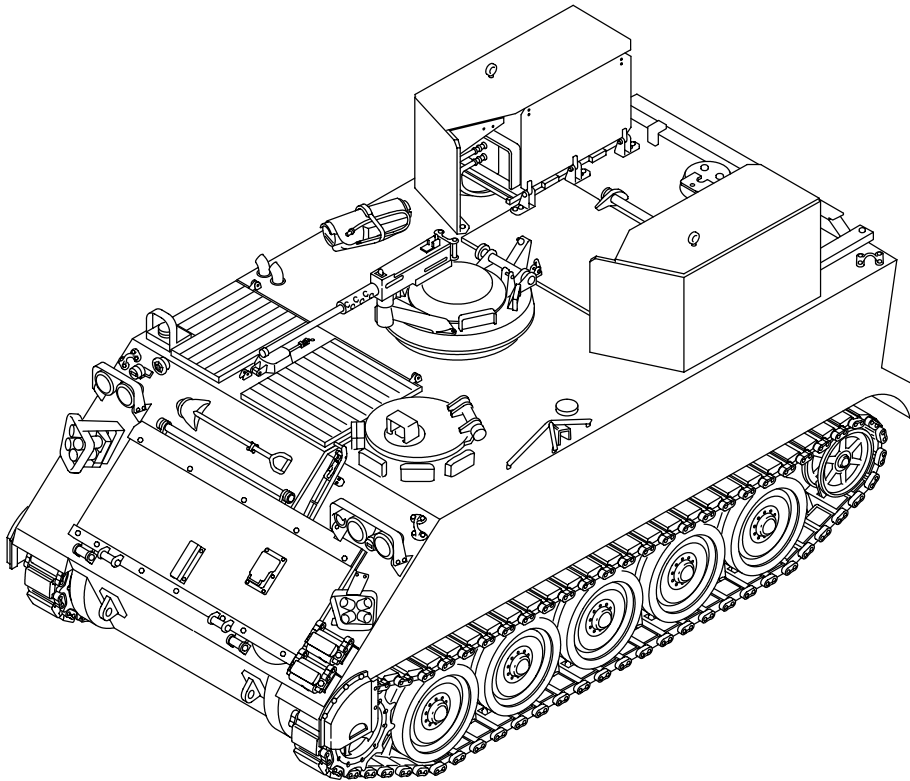
Other Applicable Manuals: See TM 9-2350-259-10, TM 9-2350-259-20, and TM 9-2350-259-24P for Operator's instructions, Unit maintenance, and repair parts for the turret and related parts.



M1059— Full Tracked Smoke Generator Carrier

Purpose of Equipment: Designed to generate a smoke screen in the battlefield environment.

Other Applicable Manuals: See TM 3-1040-283-10 and TM 3-1040-283-20&P for Operator's instructions, Unit maintenance, and repair parts for smoke generator set M157A2.



The M901A1 Combat Vehicle has its own Lubrication Order, LO 9-2350-259-12, and Operator's Manual, TM 9-2350-259-10.

The M113A2, M577A2, M1059, M1068, and M1064 have a common Operator's Manual (TM 9-2350-261-10) and Unit Maintenance Manual (TM 9-2350-261-20) that incorporate the lubrication order.

The 4.7-inch (120-mm) mortar has its own unit maintenance manual, TM 9-1015-250-23&P. However, the turntable and mount are covered in TM 9-1015-232-23&P.

Data for the M113A2 Personnel Carrier which is common to the M901A1 Anti-Tank Improved TOW Vehicle is contained in this manual. Data peculiar to the M901A1 is contained in TM 9-2350-259-20.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pamphlet 738-750, The Army Maintenance Management System (TAMMS). Forms needed by units maintaining this material are listed in WP 0778 00.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your carrier 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. Tell us why a procedure is hard to perform. Put your ideas on an SF 368 (Quality Deficiency Report). Mail it to: Commander, US Army Tank-automotive and Armaments Command, Attn: AMSTA-TR-QCL, Warren, MI 48397-5000. We will send you a reply.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

See the following technical manuals for information on destruction of Army materiel:

TM 750-244-2 Procedures for Destruction of Electronics Materiel to Prevent Enemy Use.

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

TM 750-244-7 Procedures for Destruction of Equipment in Federal Supply Classifications 1000, 1005, 1015, 1020, 1025, 1030, 1055, 1090, and 1095 to Prevent Enemy Use.

PREPARATION FOR STORAGE OR SHIPMENT

See MIL-DTL-45360H(AT) for information about administrative storage or shipment of the M113A2 Family of Vehicles (FOV) and their components. See the -10 for information about transportability of carriers.

NOMENCLATURE CROSS-REFERENCE

This listing includes nomenclature cross references used in this manual.

COMMON NAME	OFFICIAL NOMENCLATURE
Adapter	Nipple, pipe, union
Air vent, personnel	Register, metal: personnel air vent
APU	Auxiliary Power Unit
Arming device, remote	Remote control system: arming assembly
ATTCS/CHS	Army Tactical Command and Control System/Common Hardware System
Auxiliary reservoir	Auxiliary reservoir: below deck hydraulic
Battery, TOW	Battery assembly, storage
Bilge pump	Rotary pump
Breather	Air filter intake
Bulb	Incandescent lamp
Chassis assembly, gunner's level/night sight controls	Indicator, level, gunner's
Coolant gauge	Temp indicator
Detector	Liquid transmitter
Digital message device	Message device, digital, AN/PSG-50
Dipstick	Liquid level gauge rod
Dispenser, smoke grenade	Grenade launcher
Drain plug	Pipe plug
Driver's periscope	Periscope, M17
Engine head bolt wrench	Spanner wrench

GENERAL INFORMATION — Continued

0001 00

Engine oil filter	Fluid pressure filter
Engine oil gauge	Dial pressure gauge
Exhaust collector	Exhaust connection
Fastener	Toggle pin
Fiber optics	Fiber optic LAN/Thin LAN
Fire bottle	Compression gas cylinder
Fluid level detector	Liquid transmitter
Fuel control cable	Fuel control
Fuel filter	Fluid filter
Fuel gauge	Liquid quantity gauge
Fuel tank	Fuel compartment
Gear box	Mechanical housing
Grease fitting	Lubrication fitting
Ground/vehicular laser locator designator (G/VLLD or GLLD)	Target designator set, electro-optical AN/TVQ-2
Hand brake	Parking brake lever
Hatch	Hatch cover
Hatch, gunner's cupola, turret	Hatch, vehicular: gunner's cupola
Head assembly, upper	Head assembly: tank periscope
Hinge pin	Headless straight pin
Horn switch	Push switch
Hub	Support
Hydraulic power unit	Ramp power unit
Image transfer assembly	Periscope, tank
Indicator, level position, driver's	Level indicator assembly: driver's
Infrared (IR) periscope	Periscope, M19
Indicator light	Indicator lamp
Inlet grill	Intake grill
Jack	Receptacle
Jam nut	Hexagonal nut
Key washers	Locking plates
Laser designator/rangefinder (LD/R)	Rangefinder-target designator, laser MX-9759/TVQ-2
Link	Plain rod bearing
Locknut	Self-locking nut
Lock screw	Self-locking bolt

GENERAL INFORMATION — Continued

0001 00

Lockwasher	Self-locking washer
Lockwire	Non-electrical wire
M42 mask	Mask chemical-biological: tank M42
Machine gun, mounting assembly	Mount, secondary weapon
Nightsight (M901A1)	Sight, vision, night, AN/TAS-4A infrared
Nightsight mount	Adapter, transversing unit to AN/TAS-4
Periscope, squad leader's	Telescope, panoramic, tank vehicle
Assembly	Adapter assembly
Plug	Connector
Propeller shaft	Flexible drive shaft
Quick disconnect	Quick coupling half
Radio	Receiver-transmitter
Road wheel	Solid rubber wheel
Rod	Connecting link
Screen	Metal grill
Seat belt	Vehicular safety belt
Screw	Machine bolt
Shim	Spacer
Shim pack	Spacer assortment
SICPS	Standardized Integrated Command Post System (M1068)
Slave cable	Adapter cable assembly
Splined shaft	Output carrier
Starter switch	Interlock switch
Stoplight	Taillight
Stowage box	Vehicular accessory box
Strut assembly, hold open, gunner's hatch	Latch assembly, cupola: Gunner's hatch external
Switch	Circuit breaker
Throttle control cable	Throttle control
Tie strap	Electric tiedown strap
Towing pintle	Pintle hook latch
Turn signal assembly	Vehicle directional light
Universal joint	Universal joint spider
Vision block, cupola	Block, direct vision
Vehicle power cable	Cable, vehicle, W2

METRIC EQUIVALENTS

Metric equivalents are used throughout this manual. Metric symbols and units are:

Metric Equivalents

SYMBOL	UNIT
C	Celsius
cc	cubic centimeter
cm	centimeter
j	joule
kg	kilogram
kg/min	kilogram per minute
km	kilometer
km/h	kilometer per hour
kPa	kilopascal
kw hr	kilowatt hour
l	liter
m	meter
mm	millimeter
N·m	Newton-meters

SAFETY, CARE, AND HANDLING

Read warnings in WARNING SUMMARY.

EQUIPMENT DESCRIPTION

0002 00**CAPABILITIES AND FEATURES**

For equipment characteristics, capabilities, and features, see your -10.

LOCATION AND DESCRIPTIONS OF MAJOR COMPONENTS

The major components that are connected together to form the carrier's power train are:

Engine

A 6V53 diesel (1) provides source of power.

Transfer Gearcase

The transfer gearcase (2) transfers engine power to the transmission (3).

Transmission

Transmission (3) automatically selects (depending on range selected) correct gear based on road and load conditions.

Differential

Drive shaft (4) connects transmission (3) to differential (5).

Drive shaft (6) connects differential (5) to the left and right final drives (7).

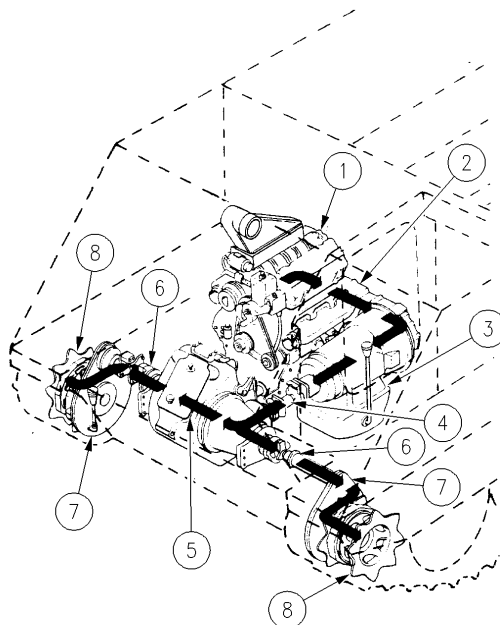
Differential (5) steers and brakes the carrier.

Final Drives

The final drives (7) drive the track sprockets (8).

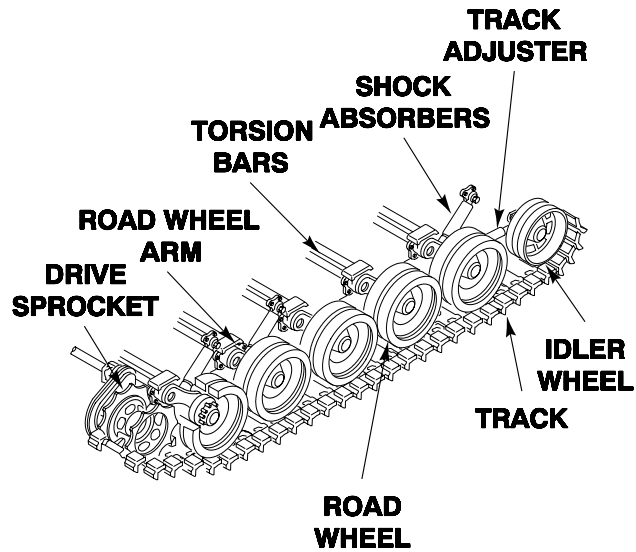
Sprockets

Sprockets (8) drive the tracks on which the carrier moves.



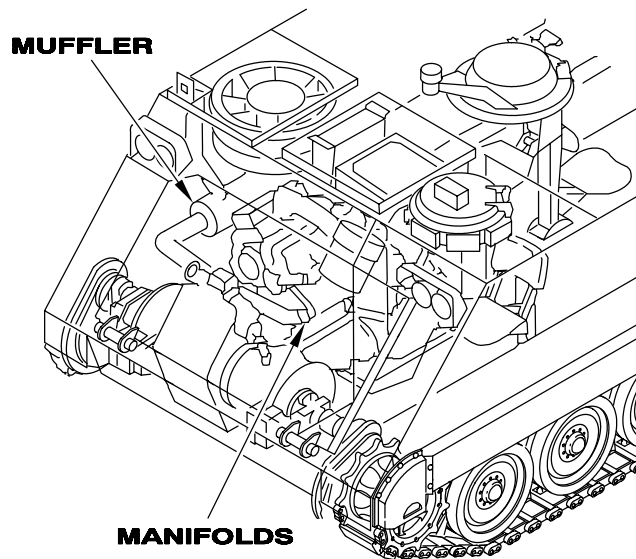
Tracks and Suspension

Drive sprockets at the front of the carrier drive the two tracks. Torsion bars and shock absorbers attach to road wheels and provide suspension.



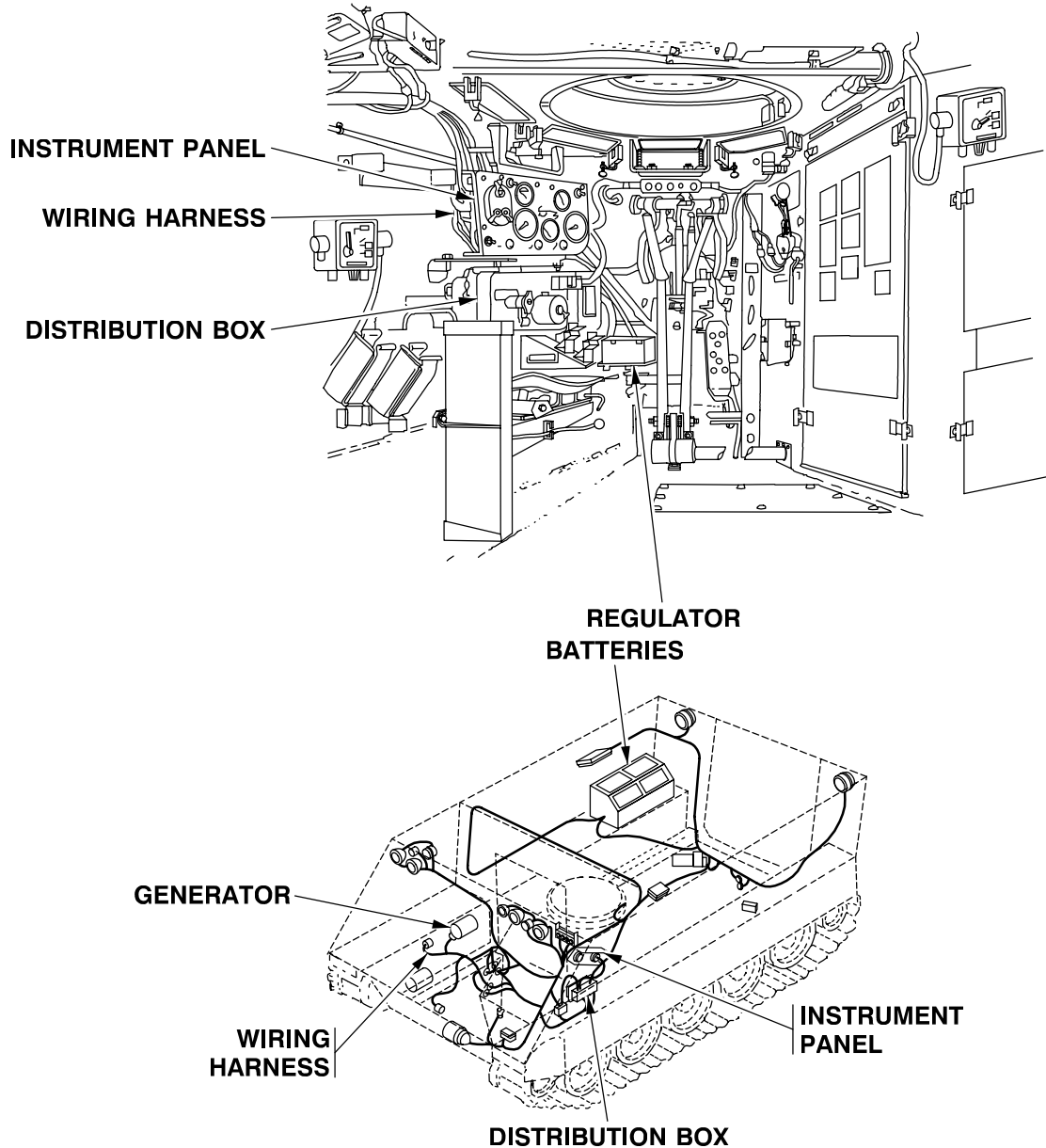
Exhaust System

The exhaust system carries exhaust gases through manifolds and the muffler.



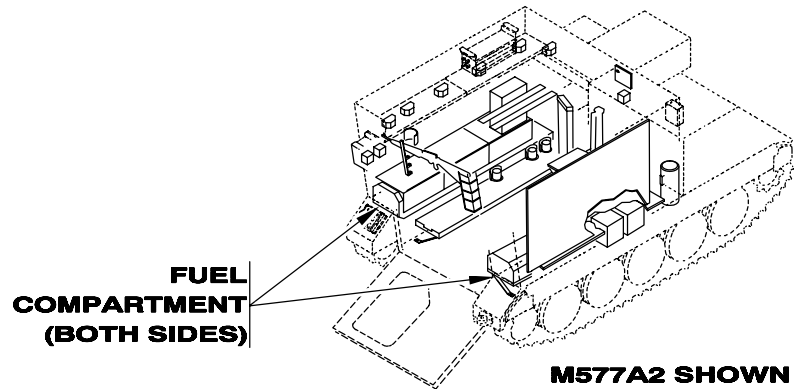
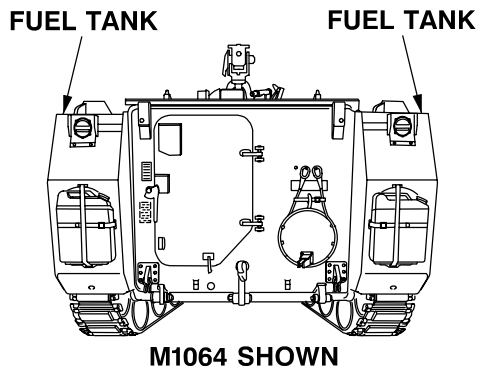
Electrical

Two 12-volt batteries supply electricity through the distribution box to the carrier. On the M113A2, M901A1, and M1059 carriers, the two batteries are located on the right sponson. On the M577A2 and M1068 carriers, the two batteries are located on the right sponson next to the personnel heater. On the M1064A2 carrier, two batteries are located in a drawer on the left sponson behind the driver. The M981 has four batteries located on the left sponson at the rear of the carrier.



Fuel System

The M113A2 and M1059 carriers have one internal fuel tank located on the left side sponson, rear of carrier. Total capacity is 95 gallons. The M981 and M1064 carriers have two external fuel tanks located at the rear of the carrier on each side of the ramp. M577A2 and M1068 have two internal fuel tanks located on the rear left and right sponsons. Total capacity is 120 gallons.



EQUIPMENT DESCRIPTION — Continued**0002 00****DIFFERENCES BETWEEN CARRIERS**

This manual covers six different carriers. The major differences can be determined from the chart below. Minor differences are described in each chapter or section as they apply.

Table 1. DIFFERENCES BETWEEN CARRIERS

Equipment	M113A2	M577A2	M1059	M901A1	M1064	M1068
Command Post	—	X	—	—	—	—
Mortar Carrier	—	—	—	—	X	—
Personnel/Cargo	X	—	—	—	—	—
Smoke Generator	—	—	X	—	—	—
Combat vehicle	—	—	—	X	—	—
Armament and Fire Control:						
Caliber .50 Machine Gun	X	—	X	—	X	—
Caliber 7.62 Machine Gun	—	—	—	X	—	—
120-mm Mortar	—	—	—	—	X	—
Periscope M17	X	X	X	X	X	X
Periscope, Squad Leader's	—	—	—	X	—	—
Nightsight AN/TAS-4	—	—	—	X	—	—
Guided Missile Launcher Sight	—	—	—	X	—	—
TOW 2 Missile Launcher	—	—	—	X	—	—
Auxiliary Equipment:						
Artillery Communication Kit	—	X	—	—	—	X
ATCCS Common Hardware	—	—	—	—	—	X
Capstan Kit	X	X	X	—	—	—
Chemical Agent Automatic Alarm Kit	X	—	—	X	—	—
Driver's Windshield Kit	X	X	X	X	X	X
Electronic Equipment Heater Kit	—	X	—	—	—	—
Engine Heater Coolant Kit	X	X	X	X	X	X
Fiber Optics	—	—	—	—	—	X
4.2 KW Generator and Cover	—	X	—	—	—	X
5.0 KW Auxiliary Power Unit	—	X	—	—	—	X
Litter Kit	X	—	—	—	—	—
Machine Gun Armor Shield Kit	X	—	X	—	X	—
Marine Recovery Kit	X	—	X	X	—	—
NBC Mounting Kit	X	X	—	—	X	X
Personnel Heater Kit	X	X	X	X	X	X
Smoke Grenade Launcher Kit	X	—	X	X	—	—
Tent (Covered Extension)	—	X	—	—	—	X

EQUIPMENT DATA

For equipment data, see your -10.

THEORY OF OPERATION

0003 00

SCOPE

This work package describes how major systems and components of the carrier operate. An understanding of how each part functions in a system and how components relate to each other will help solve possible maintenance problems with the carrier. Study this information and its illustrations closely. It will help you to know the major systems and components and their parts.

POWER PLANT

The power plant consists of the diesel engine, transfer gearcase, transmission, and differential. The fuel, exhaust, cooling, starter, generator, and engine air systems are support systems for the power plant.

Diesel Engine

The diesel engine is the primary source of power for the carrier. The engine converts air and diesel fuel into energy and delivers this power to the transfer gearcase.

Starter

The engine is equipped with a heavy duty starter. The starter, with built-in solenoid, is used to crank the engine for starting.

Generator

The generator is part of the carrier electrical system. It is driven by the transfer gearcase. The generator charges the batteries in the carrier when the engine is running. A regulator mounted in the driver's compartment keeps the voltage at correct levels.

Generator Field Switch

The generator field switch is mounted on the secondary fuel filter. When starting the engine, the generator field switch is open and the generator is not energized to allow the engine to start with less drag. When the secondary fuel filter is pressurized with fuel, the generator field switch closes and signals the regulator to energize the generator and start charging the batteries.

Oil System

The differential oil cooling system keeps the oil clean and within proper operating temperature range. The components of the system and their functions are:

The differential oil cooler unit is mounted on the engine. By circulating the hot oil through this unit, heat is given off to the surrounding engine coolant. Engine coolant is in turn cooled by the engine cooling system.

Oil cleanliness is maintained by circulating engine oil through the engine oil filter, and differential oil through the differential oil filter. Transmission oil is cleaned by the transmission oil filter, which is an integral part of the transmission.

Differential oil pump is mounted on the transfer gearcase. It pumps oil from the bottom of the differential housing and to the differential oil filter. Oil flows through the filter, cooler, and back to the top of the differential.

Fuel System

Diesel fuel is stored in the fuel tank located inside the carrier. Fuel is gravity-fed to the primary fuel filter. The engine-driven fuel pump draws fuel from the primary fuel filter and pumps fuel through the secondary fuel filter to the engine injectors. The injectors force fuel into combustion cylinders where it is mixed with air and changed into energy. The excess fuel is returned to the fuel tank.

External fuel tanks are mounted on the rear of the carrier and hold about 95 gallons of diesel fuel. Shutoff cocks are located inside of carrier at each connection. Turn fuel on and off for maintenance (M981 and M1064 only).

Transfer Gearcase

The transfer gearcase transfers power from the engine to the transmission. The transfer gearcase is a compact unit that transfers power from the engine flywheel to transmission torque converter. An engine disconnect allows the engine to run without transferring power to the transmission. A power takeoff drives the differential oil pump and a ramp pump. Another power takeoff drives the cooling fan, and a third drives the generator.

Transmission

The transmission is a three speed, constant mesh, planetary gear train with hydraulic torque converter and lockup clutch. It automatically selects the proper gear based on road and load conditions. The transmission delivers power from the transfer gearcase to the differential.

Exhaust System

Major exhaust system parts are the exhaust manifolds and muffler. The exhaust manifolds carry the exhaust gases to the muffler. The muffler cuts down engine noise and allows exhaust to escape outside the carrier.

Cooling System

The cooling system cools the engine and transmission. It consists of a fan, fan drive belts, radiator, coolant pump, auxiliary tank, transmission oil cooler, and thermostats. The cooling system contains approximately 14 gallons of liquid coolant. The liquid coolant is pumped by the coolant pump from the radiator and circulated through the engine and thermostat and back to the radiator where it loses heat to the atmosphere. This process keeps the engine, transmission, and differential temperature in a safe operating range.

As coolant flows through the engine, it absorbs heat from the engine and transmission. The heated coolant then flows to the radiator to remove coolant heat. The coolant fan pulls outside air in and through the radiator to remove heat. The fan is powered by the transfer gearcase.

The radiator auxiliary tank acts as an overflow tank to keep the cooling system from overpressurizing. It also removes air from the engine coolant.

Engine Air System

The engine air system allows air to enter the engine. The air cleaner filters air through a reusable filter element before delivery to the engine. An air filter indicator shows when the element is clogged and needs cleaning or replacing. After being filtered, the air moves through the air horn and into the engine cylinders.

Differential Components

The differential consists of three major assemblies, the right angle gearbox, steering unit with brake shoes, and two output shafts.

Power flow is from the transmission to the right angle gearbox to the steering unit.

When driving straight forward, the steering unit delivers equal power to both output shafts. Pressure on either right or left steering lever slows or stops the right or left brake drum, inside the center steering unit, and reduces the speed of the right or left output shaft. By slowing down on one side you increase the speed of the other and the carrier will turn in the direction of the applied brake.

Equal pressure on both steering levers applies both brakes and slows or stops the carrier.

The differential overheat switch is connected to a warning light in the driver's compartment. When warning light comes on it means oil temperature is too high.

AUXILIARY AUTOMOTIVE SYSTEM

The auxiliary automotive system includes driver controls, personnel heater, bilge pumps, crew ventilation system, and fire suppression system.

Driver Controls

The driver controls regulate the engine, transmission, and steering braking systems of the carrier.

The fuel shutoff control is used to stop the supply of fuel to the engine injectors. To start the engine, the driver must push in the fuel shutoff control. The throttle linkages are used to control the engine speed. The gear selector allows the driver to choose the proper gear for the carrier. The steering and braking levers control separate right and left steering brakes in the control differential. By pulling on the levers, you can slow or stop either track for steering, or both tracks at once for stopping. A lock button at the top of each lever lets you set and lock the brakes for parking.

Pivot Steering And Brakes

Pivot steer brakes are disk brakes and work like the differential brakes, but quicker.

Personnel Heater

NOTE

New style heater MODEL A-20 needs to have the power cable removed before any welding is performed on the hull. If left connected, a circuit card in the heater will be damaged by MIG or TIG welding.

The personnel heater system provides heat inside the carrier. Major parts are the combination combustion chamber/heat exchanger, blowers, a fuel pump, fuel filter, and an electrical control. The heater operates using diesel fuel pumped from the fuel tanks. Fuel goes through fuel filter and is then delivered to the combustion chamber from the fuel pump. Outside air is drawn into the combustion chamber by one of the blowers. A blower draws air from the crew compartment into the heater exchanger. The air is warmed by heat created by the combustion process and then returned to the crew compartment.

Bilge Pumps

Two electrically-driven bilge pumps remove water and other liquids from the hull. Water enters the pumps through a screened inlet. The pumps force water out of the carrier through outlet tubes. The bilge pumps are controlled by a switch on the driver's instrument panel.

Fire Extinguisher System

The fire extinguisher system consists of two CO₂ (carbon dioxide) cylinders, one fixed and one portable. Carbon dioxide puts out fires quickly and effectively. The fixed cylinder is located near the driver's compartment and is operated manually by pulling cables located on top of carrier next to driver's hatch. The fixed cylinder releases CO₂ in the power plant compartment only. The portable fire extinguisher is located in the crew compartment and is manually discharged.

HYDRAULIC SYSTEM

The ramp is raised or lowered by a hydraulic system which consists of a pump, a cylinder, a control valve, and a hydraulic tank. This system is controlled by a three-position valve located near the driver. Moving the valve to the RAISE position directs fluid to the ramp cylinder. Moving the valve to the LOWER position allows the gravity of the ramp to return hydraulic fluid to the reservoir. There is a breather hose on the ramp cylinder to allow the cylinder to breathe air. The hose is connected to the rear bilge pump tube outlet to prevent water in the lower hull from getting into the ramp cylinder and causing it to corrode.

SUSPENSION SYSTEM

The suspension system supports the carrier and delivers engine power to the road. It allows the carrier to maneuver and be stable. Suspension system parts are the drive sprockets, tracks, idler wheels, track tension adjuster, road wheels, support arms, torsion bars, and shock absorbers.

The drive sprockets drive the tracks. They are powered by left and right final drives from the differential. The tracks consist of two flexible chains of track shoes. The tracks ride on the drive sprockets and are guided by the road wheels and idler wheels. The idler wheels can be adjusted to maintain correct track tension.

There are five pairs of road wheels per side. Track centerguides fit between each pair of road wheels. Road wheels and torsion bars are connected to support arms. The torsion bars act as springs to keep the road wheels on the ground and from hitting the bottom of the carrier.

ELECTRICAL SYSTEM

The electrical system provides power for the carrier. The system operates on wet cell batteries and includes charging, regulating, and monitoring equipment. The batteries provide a normal operating 24 volts with an amperage capability of 100 or 200 amps per hour (depending on the system installed).

The batteries supply the carrier with electricity when the engine is off. All electrical power is delivered through the distribution box, except radio(s), personnel heater, and coolant heater. Electrical power flows from the batteries through the distribution box, cables, and wiring assemblies to the electrical equipment. The hull is a ground for the electrical system.

The generator recharges the batteries and supplies electricity while the engine is running. The generator has 100 or 200 amps per hour capability (depending on the system installed).

There are several electrical subsystems within the hull. Each subsystem contains at least one wiring assembly. Major electrical subsystems and assemblies are:

Interior and Exterior Lights. Exterior lights include blackout lights, stoplight, and headlights. Interior lights include dome lights and panel lights.

Starting and Charging. A generator with a regulator keeps the batteries charged to operating voltage. A starter with a built-in solenoid is used to crank the engine for starting.

Ventilation and Heating. Fresh air for the crew is provided by a vent aft of the cargo hatch. The M577A2 has a compartment blower to exhaust air from inside the M577A2 into the power plant compartment. Heating is provided by a forced air heater.

Bilge Pumps. Two pumps, one in the front and one in the rear of the carrier, remove any water that may have entered the carrier.

SPECIAL EQUIPMENT

Chemical Agent Automatic Alarm Kit. See Chapter 2, WP 0120 00 and WP 0773 00 through WP 0776 00.

Driver's Windshield Kit. See WP 0624 00.

Engine Coolant Heater Kit. See WP 0635 00 through WP 0652 00.

Litter Kit. See WP 0658 00 through WP 0661 00.

Machine Gun Armor Shield Kit. See WP 0663 00 through WP 0669 00.

NBC Kit. See WP 0670 00 through WP 0690 00.

NBC Mounting Kit. See WP 0672 00.

Personnel Heater Kit. See WP 0597 00 through WP 0623 00.

MAJOR COMPONENTS

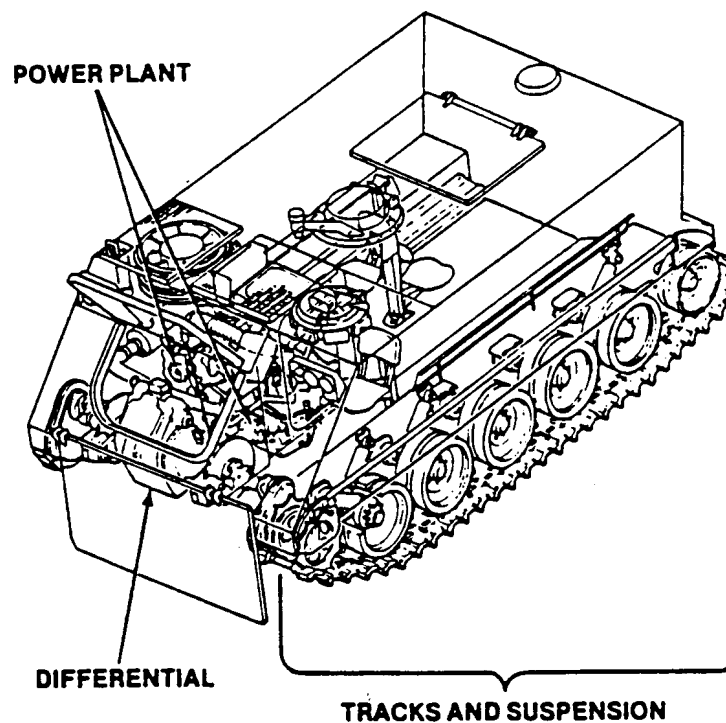
This section has important information on how the major components that make up a carrier operate. You'll be working on these components, and gaining an understanding of just how each relates to the other and how they will help you solve many maintenance problems.

Study this information and its illustrations closely. It will help you to know the major components and their parts.

There are three major integrated components used in all of the vehicles. These three major components are:

- Power plant components
- Differential
- Tracks and suspension

Special purpose kits, when installed, provide their own integrated components. Integration of these kits is described in their respective chapters.



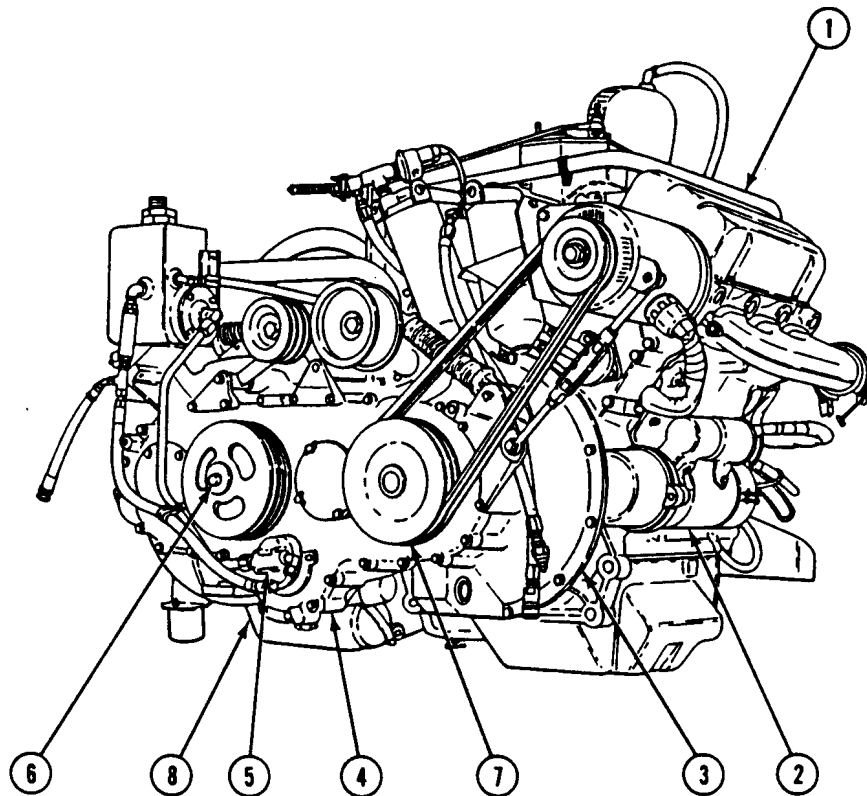
POWER PLANT COMPONENTS

The power plant consists of three main components:

Engine (1) is a liquid cooled, V-type, six cylinder, compression ignition (CI) unit. Starting is by a heavy duty 24 volt starter (2). Engine is protected from low oil pressures and high temperatures by switches in the oil and cooling systems which activate warning light circuits.

Transfer gearcase (3) is a compact unit that transfers power from engine flywheel to transmission torque converter. An engine disconnect allows the engine to run without transferring power to the transmission. A power takeoff drives the differential oil pump (4) and a ramp pump (5). Another power takeoff drives the cooling fan (6), and a third drives the generator (7).

Transmission (8) is a three speed, constant mesh, planetary gear train with hydraulic torque converter and lockup clutch. It automatically selects the proper gear based on road, load conditions, and range selected.



DIFFERENTIAL COMPONENTS

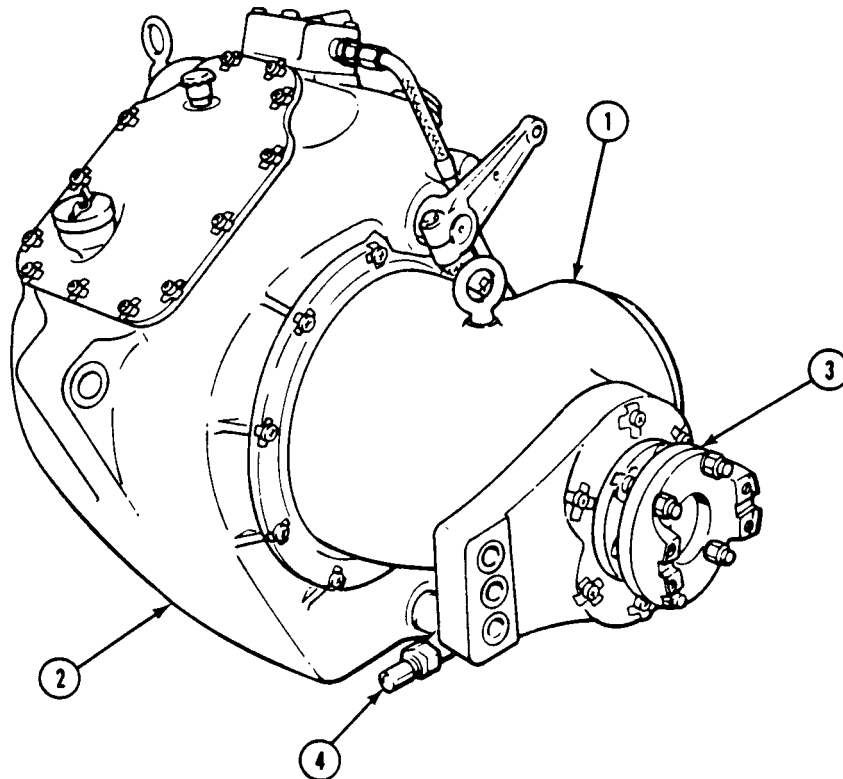
The differential consists of three major assemblies. These are the right angle gearbox (1), steering unit with brake shoes (2), and two output shafts (3).

Power flow is from the transmission to the right angle gearbox (1) to the steering unit (2).

When driving straight forward, the steering unit (2) delivers equal power to both output shafts (3). Pressure on either steering lever slows or stops the right or left brake drum, inside the center steering unit (2), and reduces the speed of the right or left output shaft (3). By slowing down one side you increase the speed of the other, and the carrier will turn in the direction of the applied brake.

Equal pressure on both steering levers applies both brakes and slows or stops the carrier.

The differential overheat switch (4) is connected to a warning light in driver's compartment. When warning light comes on, it means oil temperature is too high.



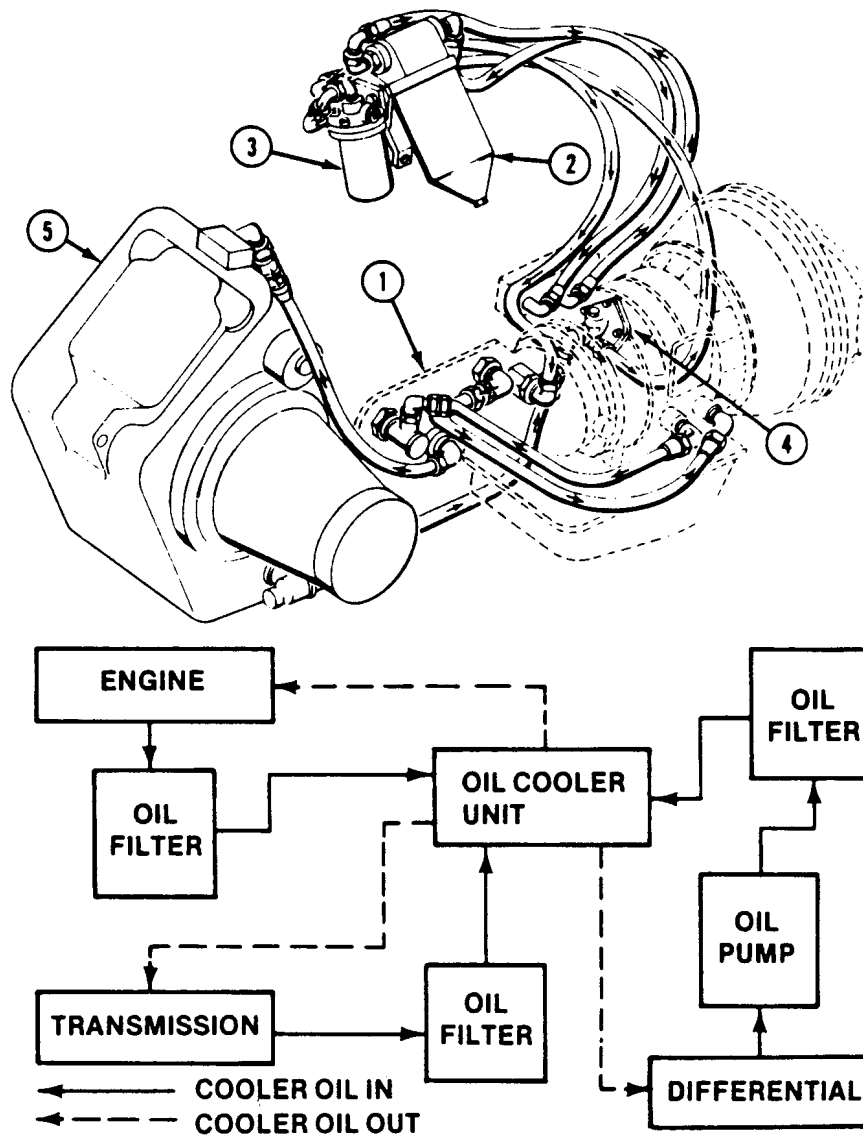
OIL COOLING SYSTEM COMPONENTS — ENGINE, TRANSMISSION, AND DIFFERENTIAL

The engine, transmission, and differential oil cooling system keeps the oil clean and within proper operating temperature range. The components of the system and their functions are:

Engine, transmission, and differential oil cooler unit (1) is mounted on the engine. By circulating the hot oil through this unit, heat is given off to the surrounding engine coolant. Engine coolant is in turn cooled by the engine cooling system.

Oil cleanliness is maintained by circulating engine oil through the engine oil filter (2), and differential oil through the differential oil filter (3). Transmission oil is cleaned by the transmission oil filter, which is an integral part of the transmission.

Differential oil pump (4) is mounted on the transfer gearcase. It pumps oil from the bottom of the differential housing and to the differential oil filter (3). Oil flows through filter (3), through cooler (1), and back to top of differential (5).



TRACKS AND SUSPENSION COMPONENTS

The carrier moves on its tracks and suspension system. The components and their function are:

Road wheels (1), 10 to each side, carry the weight of the carrier.

Road wheel arms (2), five to each side, are splined to individual torsion bars (3) to suspend the carrier.

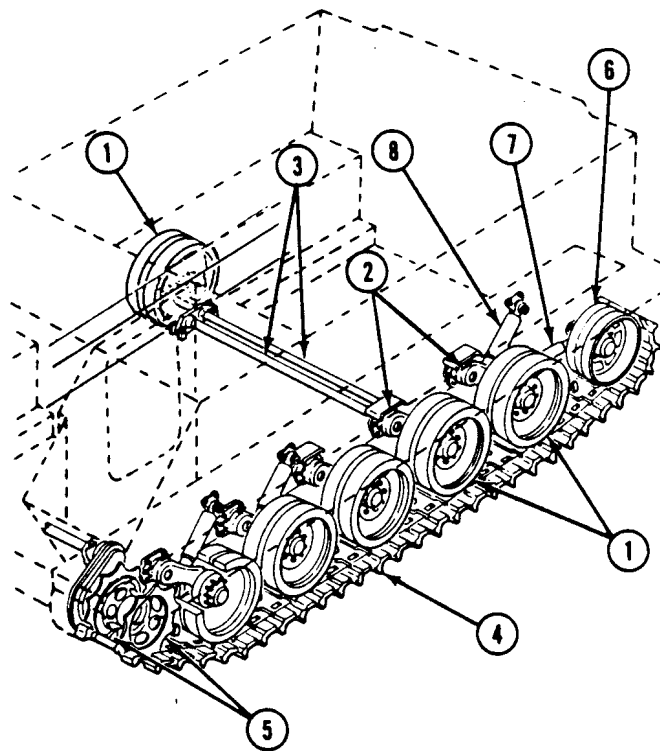
Torsion bars (3), one for each road wheel arm, extend the width of the carrier and are firmly anchored to the hull on the side opposite its road wheel arm.

Tracks (4), on each side, consist of track shoes with rubber pads. Shoes are linked together by pins to form a continuous rolling surface for the road wheels. Track guides keep track centered on the road wheels.

Sprockets (5), mounted on each final drive, power the tracks.

Idler wheels (6), pushed rearward by track adjusters (7), keep the track under tension.

Shock absorbers (8) at first, second, and fifth wheel positions, stabilize the carrier.



ELECTRICAL SYSTEM (M113A2 AND M1059 ONLY)**NOTE**

See foldouts FO-1 and FO-2 in the rear of TM for wiring diagram.

The electrical system is designed to sense pressures and temperatures, activate panel indicators, and generate and store electrical energy.

The components and their functions are:

Batteries (1) store a supply of 24 V dc power.

Generator (2) supplies 24 V dc power for the system.

Regulator (3) controls voltage output of the generator.

Starter (4) cranks the engine.

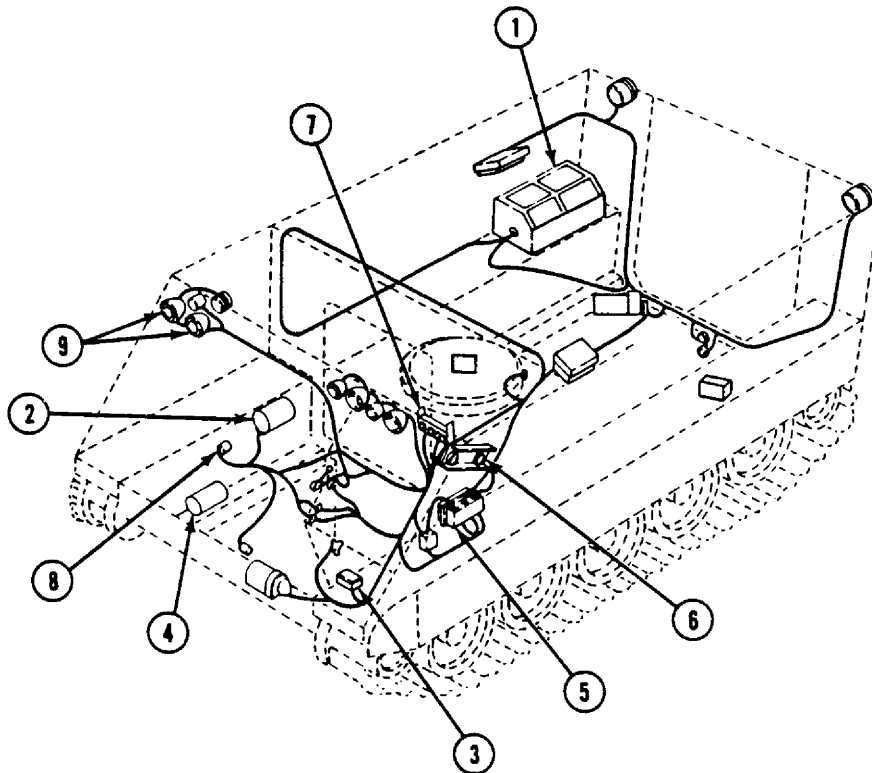
Master switch panel (5) connects electrical power from the batteries to the system. Panel is main junction point for the main harnesses and circuit breakers. Heaters and radios are wired direct to batteries.

Instrument panel (6) contains gauges and switches necessary to control carrier.

Warning light panel (7) indicates overheating or low oil pressure in major components of power plant.

Wiring harnesses (8) distribute power to engine, transmission, differential, and other components.

Headlights (9) are used for night vision.



THEORY OF OPERATION — Continued**0003 00**

Blackout marker lights (1) and blackout headlight (2) are used for driving in blackout conditions.

Horn (3) is used to alert traffic and personnel.

High beam selector switch (4) raises or lowers light beams.

Infrared power pack (5) powers M19 periscope.

Bilge pumps (6) keep bilge clear of water.

Fuel quantity sending unit (7) measures amount of fuel in tank.

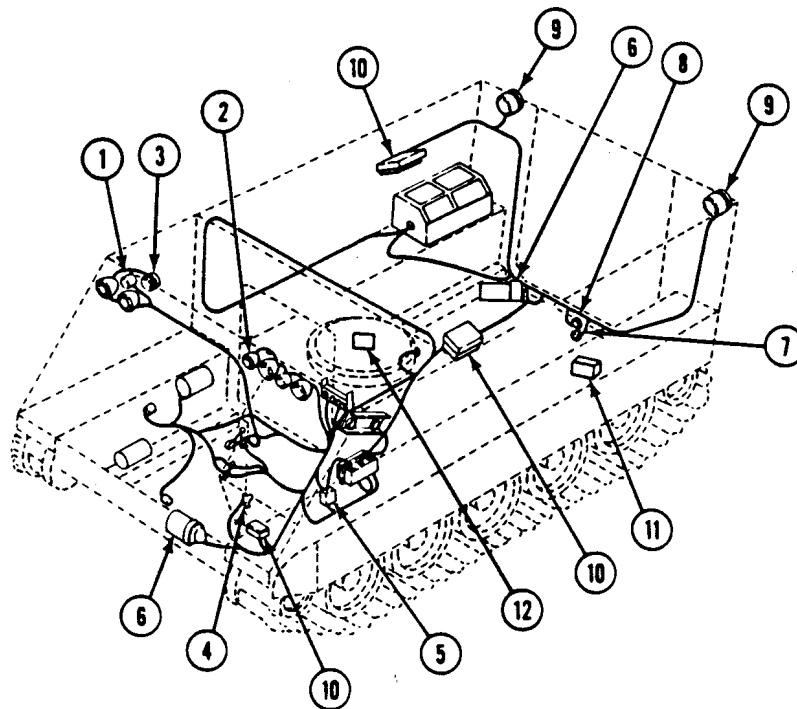
Trailer receptacle (8) supplies electrical power to a towed trailer.

Stoplights (9) indicate brake is on. Taillights (9) illuminate rear of carrier at night.

Dome lights (10) provide night vision inside carrier.

Electrical transient suppressor (11) protects communication system from transients induced by engine starter. The electrical transient suppressor also protects the system from accidental reversal of power leads.

Smoke grenade arming firing unit (12) contains controls for arming and firing smoke grenades.



ELECTRICAL SYSTEM (M901A1 ONLY)**NOTE**

See foldout FO-4 in the rear of TM for wiring diagram.

The electrical system is designed to sense pressures and temperatures, activate panel indicators, and generate and store electrical energy.

The components and their functions are:

Batteries (1) store a supply of 24 V dc power.

Generator (2) supplies 24 V dc power for the system.

Regulator (3) controls voltage output of the generator.

Starter (4) cranks the engine.

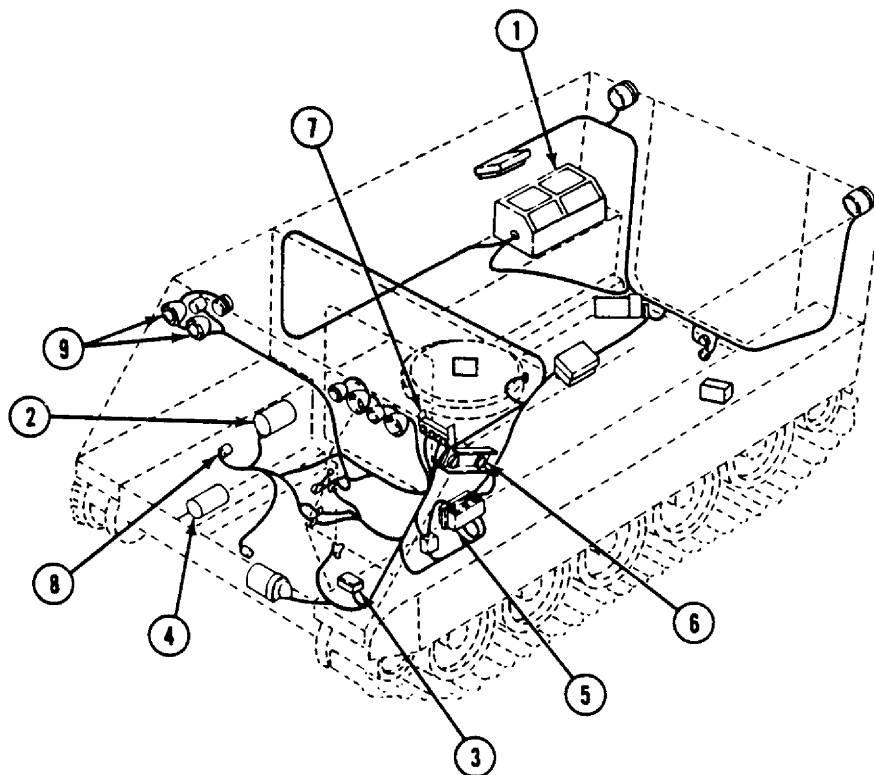
Master switch panel (5) connects electrical power from the batteries to the system. Panel is main junction point for the main harnesses and circuit breakers. Heaters and radios are wired direct to batteries.

Instrument panel (6) contains gauges and switches necessary to control carrier.

Warning light panel (7) indicates overheating or low oil pressure in major components of power plant.

Wiring harnesses (8) distribute power to engine, transmission, differential, and other components.

Headlights (9) are used for night vision.



THEORY OF OPERATION — Continued**0003 00**

Blackout marker lights (1) and blackout headlight (2) are used for driving in blackout conditions.

Horn (3) is used to alert traffic and personnel.

High beam selector switch (4) raises or lowers light beams.

Infrared power pack (5) powers periscope.

Bilge pumps (6) keep bilge clear of water.

Fuel quantity sending unit (7) measures amount of fuel in tank.

Trailer receptacle (8) supplies electrical power to a towed trailer.

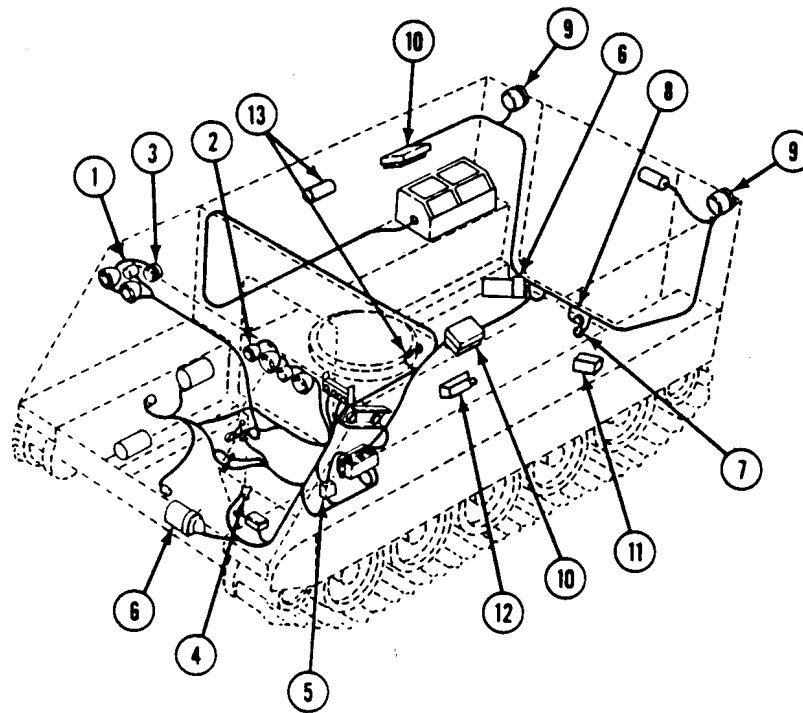
Stoplights (9) indicate brake is on. Taillights (9) illuminate rear of carrier at night.

Dome lights (10) provide night vision inside carrier.

Electrical transient suppressor (11) protects communication system from transients induced by engine starter. The electrical transient suppressor also protects the system from accidental reversal of power leads.

Smoke grenade arming firing unit (12) contains controls for arming and firing smoke grenades.

Proximity switch (13) indicator will identify open or closed hatches.



ELECTRICAL SYSTEM (M577A2 ONLY)**NOTE**

See foldout FO-3 in the rear of TM for wiring diagram.

The electrical system is designed to sense pressures and temperatures, activate panel indicators, and generate and store electrical energy.

The components and their functions are:

Batteries (1) store a supply of 24 V dc power.

Generator (2) supplies 24 V dc power for the system.

Regulator (3) controls voltage output of the generator.

Starter (4) cranks the engine.

Master switch panel (5) connects electrical power from batteries to the system. Panel is main junction point for the main harnesses and circuit breakers. Heaters and radios are wired direct to batteries.

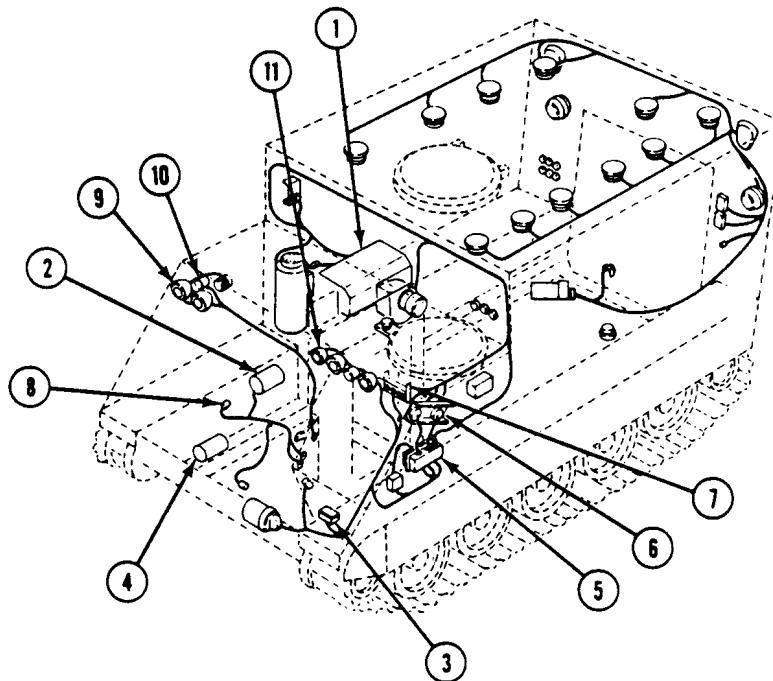
Instrument panel (6) contains gauges and switches necessary to control carrier.

Warning light panel (7) indicates overheating or low oil pressure in major components of power plant.

Wiring harnesses (8) distribute power to engine, transmission, differential, and other components.

Headlights (9) are used for night vision.

Blackout marker lights (10) and blackout headlight (11) are used for driving in blackout conditions.



THEORY OF OPERATION — Continued**0003 00**

Horn (1) is used to alert traffic and personnel.

High beam selector switch (2) raises or lowers light beams.

Infrared power pack (3) powers periscope.

Bilge pumps (4) keep bilge clear of water.

Fuel quantity sending unit (5) measures amount of fuel in tank.

Trailer receptacle (6) supplies electrical power to a towed trailer.

Stoplights (7) indicate brake is on. Taillights (7) illuminate rear of carrier at night.

Dome lights (8) provide night vision inside carrier.

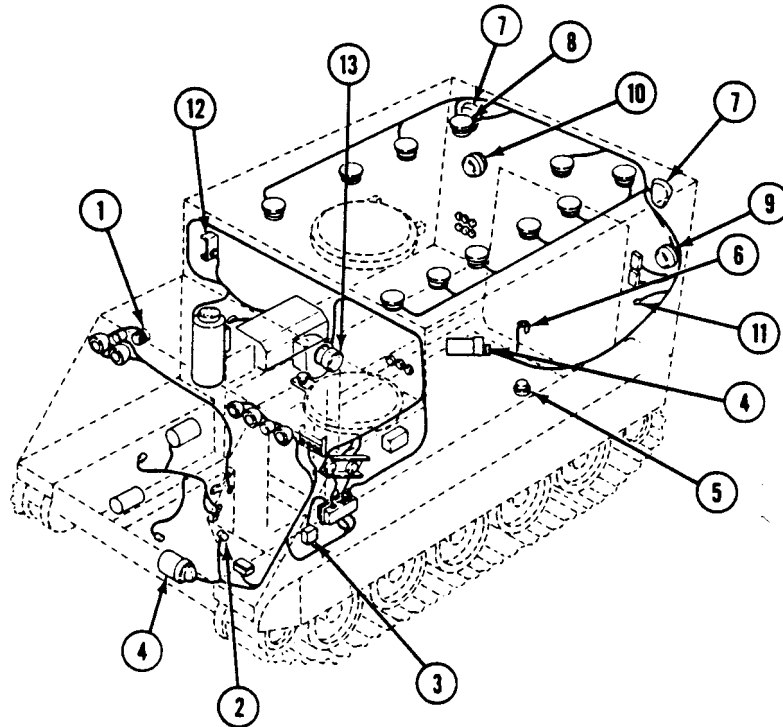
Utility outlet (9) provides 24 V dc power for accessories and the tent lighting.

Communication receptacles (10) provide power for radio and telephone lines.

Ramp door switch (11) automatically turns on blackout dome lights when ramp is down or ramp is open.

Generator set power receptacle (12) provides power outlet for lights and communication equipment.

Blower (13) provides forced air circulation to vent personnel compartment.



ELECTRICAL SYSTEM (M1068 ONLY)**NOTE**

See foldouts FO-9 thru FO-12 in the rear of TM for wiring diagrams.

The electrical system is designed to sense pressures and temperatures, activate panel indicators, and generate and store electrical energy.

The components and their functions are:

Batteries (1) store a supply of 24 V dc power.

Generator (2) supplies 24 V dc power for the system.

Regulator (3) controls voltage output of the generator.

Starter (4) cranks the engine.

Master switch panel (5) connects electrical power from batteries to the system. Panel is main junction point for the main harnesses and circuit breakers. Heaters and radios are wired direct to batteries.

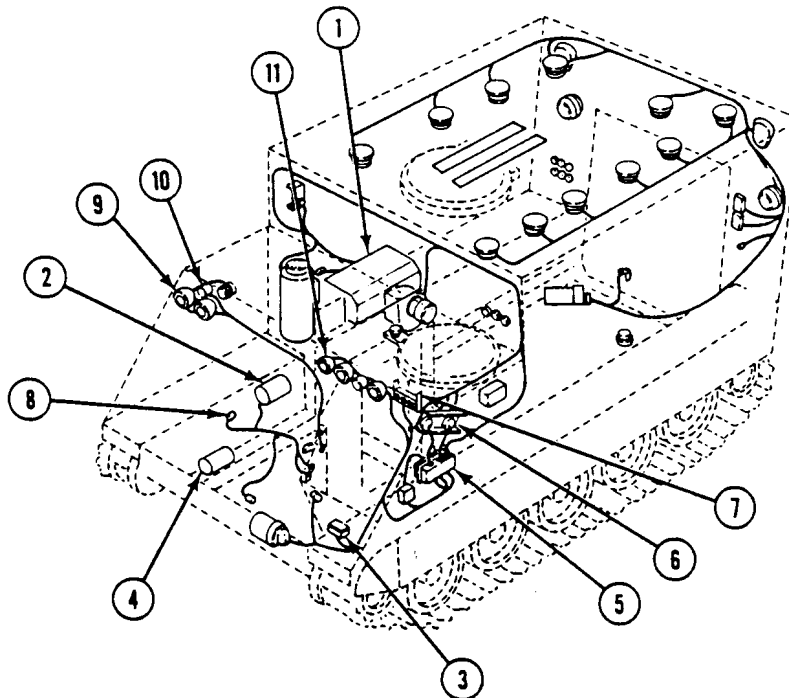
Instrument panel (6) contains gauges and switches necessary to control carrier.

Warning light panel (7) indicates overheating or low oil pressure in major components of power plant.

Wiring harnesses (8) distribute power to engine, transmission, differential, and other components.

Infrared headlights (9) are used for night vision.

Blackout marker lights (10) and blackout headlight (11) are used for driving in blackout conditions.



THEORY OF OPERATION — Continued

0003 00

Horn (1) is used to alert traffic and personnel.

High beam selector switch (2) raises or lowers light beams.

Infrared power pack (3) powers periscope.

Bilge pumps (4) keep bilge clear of water.

Fuel quantity sending unit (5) measures amount of fuel in tank.

Trailer receptacle (6) supplies electrical power to a towed trailer.

Stoplights (7) indicate brake is on. Taillights (7) illuminate rear of carrier at night.

Dome lights (8) provide night vision inside carrier.

Florescent lights (9) provide working light.

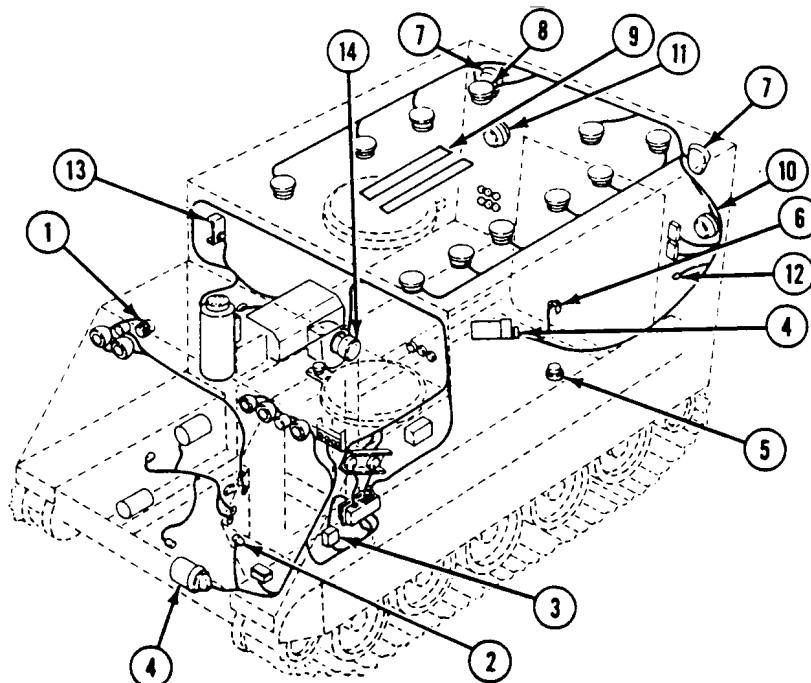
Utility outlet (10) provides 24 V dc power for accessories and tent lighting.

Communication receptacles (11) provide power for radio and telephone lines.

Ramp door switch (12) automatically turns on blackout dome lights when ramp is down or ramp is open.

Generator set power receptacle (13) provides power outlet for lights and communication equipment.

Blower (14) provides forced air circulation to vent personnel compartment.



ELECTRICAL SYSTEM (M1064 ONLY)**NOTE**

See foldout FO-5 through FO-8 in the rear of TM for wiring diagram.

The electrical system is designed to sense pressures and temperatures, activate panel indicators, and generate and store electrical energy.

The components and their functions are:

Batteries (1) store a supply of 24 V dc power.

Generator (2) supplies 24 V dc power for the system.

Regulator (3) controls voltage output of the generator.

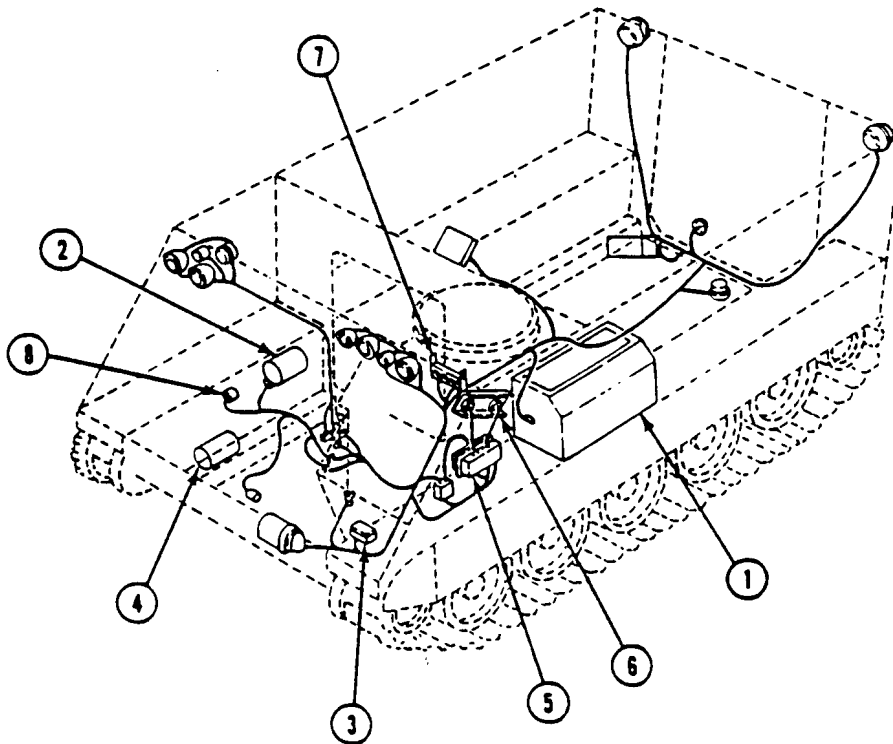
Starter (4) cranks the engine.

Master switch panel (5) connects electrical power from the batteries to the system. Panel is main junction point for the main harnesses and circuit breakers. Heaters and radios are wired direct to batteries.

Instrument panel (6) contains gauges and switches necessary to control carrier.

Warning light panel (7) indicates overheating or low oil pressure in major components of power plant.

Wiring harnesses (8) distribute power to engine, transmission, differential, and other components.



THEORY OF OPERATION — Continued**0003 00**

Headlights (1) are used for night vision.

Blackout marker lights (2) and blackout headlight (3) are used for driving in blackout conditions.

Horn (4) is used to alert traffic and personnel.

High beam selector switch (5) raises or lowers light beams.

Infrared power pack (6) powers periscope.

Bilge pumps (7) keep bilge clear of water.

NOTE

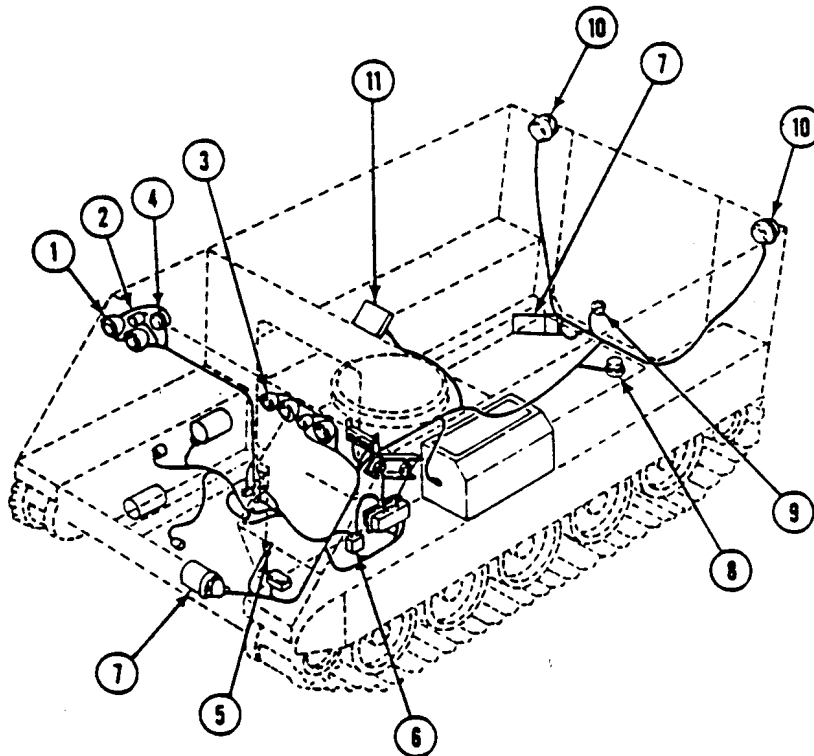
M1064 fuel quantity sending unit is in exterior fuel tanks.

Fuel quantity sending unit (8) measures amount of fuel in tank.

Trailer receptacle (9) supplies electrical power to a towed trailer.

Stoplights (10) indicate brake is on. Taillights (10) illuminate rear of carrier at night.

Dome lights (11) provide night vision inside carrier.



KIT INTEGRATED SYSTEMS

When special purposes kits are installed, their systems and components become integrated with the carrier's systems and components. For information on these kits, see:

Artillery Communication Kit (M577A2 Only) (Chapter 37).

Capstan Kit (M113A2 and M1059 Only) (Chapter 34).

Chemical Agent Automatic Alarm Kit (M113A2 Only) (Chapter 44).

Driver's Windshield Kit (all carriers) (Chapter 31).

Electronic Equipment Heater Kit (M577A2 Only) (Chapter 32).

Engine Coolant Heater Kit (all carriers) (Chapter 33).

Litter Kit (M113A2 Only) (Chapter 36).

Machine Gun Armor Shield Kit (Chapter 38).

Marine Recovery Kit (M113A2 and M1059 Only) (Chapter 35).

NBC Kit (Chapter 39).

NBC Mounting Hardware Kit (M113A2, M1068, and M577A2 Only) (Chapter 39).

Personnel Heater Kit (all carriers) (Chapter 30).

REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

0004 00**COMMON TOOLS AND EQUIPMENT**

For authorized common tools and equipment, see Modified Table of Organization and Equipment (MTOE) for your unit.

SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Special tools and support equipment are needed for unit maintenance. They are listed in Repair Parts and Special Tools List (RPSTL) TM 9-2350-261-24P. Common tools and supplements and special tools and fixtures are listed in WP 0780 00.

REPAIR PARTS

Repair parts can be ordered from and are listed and illustrated in the Repair Parts and Special Tools List (RPSTL) TM 9-2350-261-24P, covering unit maintenance for this equipment.

CHAPTER 2

UNIT TROUBLESHOOTING PROCEDURES

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ENGINE OVERCOOLS.....	0008 00
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CHAPTER 2

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CHAPTER 2

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CHAPTER 2

UNIT TROUBLESHOOTING PROCEDURES

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INTRODUCTION HOW TO USE TROUBLESHOOTING

0005 00**PURPOSE**

The purpose of unit troubleshooting is to diagnose carrier problems which are reported to unit maintenance. You should not begin unit troubleshooting until **ALL** operator troubleshooting procedures have been performed. You will perform four actions in unit troubleshooting:

- (1) Before starting a troubleshooting task, verify that the reported problem is present.
- (2) After verifying the symptom, find the part that is causing the problem.
- (3) Replace or adjust that part.
- (4) Check to make sure the problem no longer exists, and that there are no other problems.

DEFINITIONS AND DESCRIPTIONS OF TROUBLESHOOTING PROCEDURES

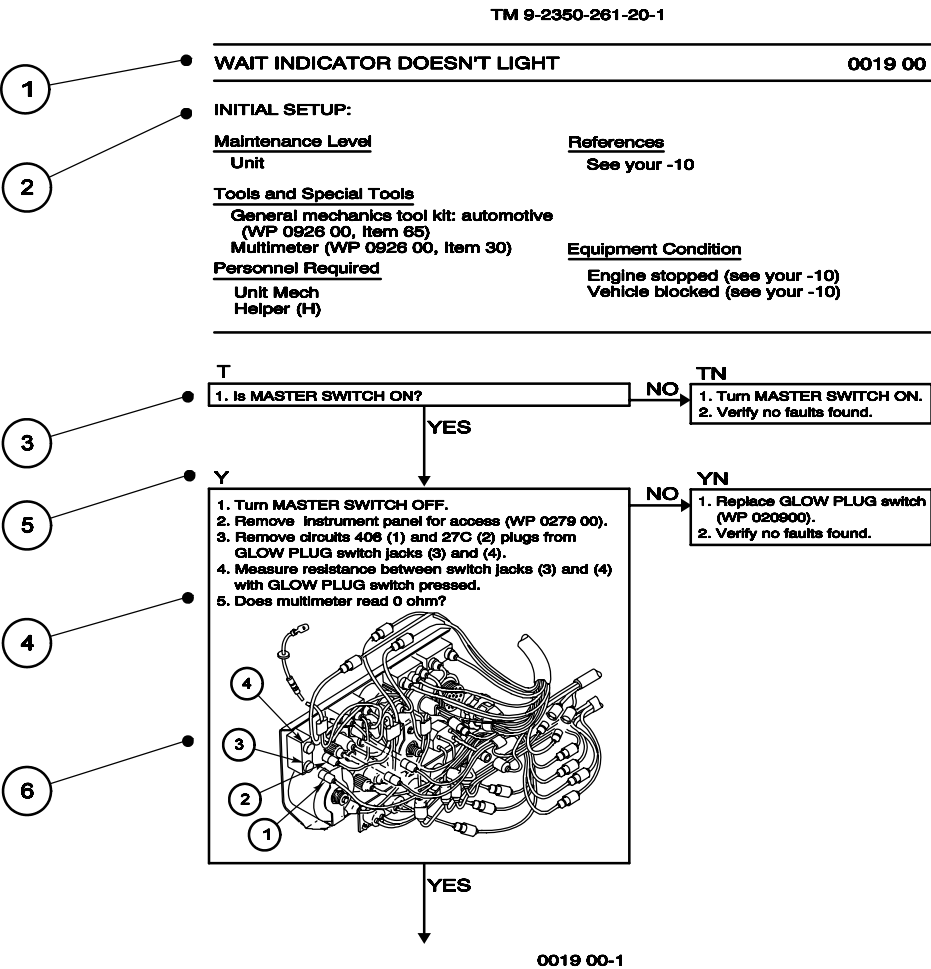
Troubleshooting tasks always have a beginning and an end. You will use task steps, test procedures, indexes, maintenance tasks, and other technical manuals to troubleshoot. Troubleshooting uses the following terms that are not used in other kinds of tasks:

- | | |
|-----------------------------------|--|
| 1. FAULT: | The part that is not operating correctly and is causing the problem. |
| 2. SYMPTOM: | The problem reported to unit maintenance. |
| 3. STE/ICE: | Diagnostic and test equipment used to troubleshoot at unit maintenance level. It is used to make measurements and find faulty parts in the carrier system. |
| 4. VERIFY NO FAULTS FOUND: | After you have completed the corrective action, you must verify that no faults exist. If the fault condition still exists, then the fault is not fixed or there is another fault. If this happens, start at the beginning of the troubleshooting procedure until you find and correct all faults. Always operate the system and/or carrier to make sure that you have corrected the reported problem. If troubleshooting does not identify a faulty part, the carrier is defective beyond the level of unit maintenance. |

TROUBLESHOOTING BASICS

Troubleshooting Procedure

A troubleshooting procedure serves as a starting point for your troubleshooting work. You will branch in and out of procedures as you work to find a fault. After correcting the fault, check that the problem has been corrected. The parts of a troubleshooting procedure are given below.



STE-ICE Test Procedure

A STE/ICE test procedure will tell you how to use the STE/ICE test equipment. You may be directed to go to a STE/ICE test procedure when performing the troubleshooting procedures. The parts of a STE/ICE test procedure are given below.

TM 9-2350-261-20-1

1

●

STE/ICE TEST 67 BATTERY VOLTAGE0114 00

2

●

THIS WORK PACKAGE COVERS:
Test (page 0114 00-1).

2

●

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mech

References

See your -10
TM 9-4910-571-12&P

Equipment Condition

Engine stopped (see your -10)
Vehicle blocked (see your -10)
STE/ICE hooked up to DCA 6 (WP 0117 00)

3

●

4

●

1. Select TEST 67.
2. Press and release TEST button.

CONDITIONS

Engine off/MASTER SWITCH OFF.
Cranking engine fuel off.
Charging 1100-1300 RPM/service lights on.

VOLTS

21 or more
17 or more
26 to 29.5

a. If display is erratic or shows 0 (volts), go to: STE/ICE DCA Battery Voltage Diagnostic Troubleshooting (WP 0142 00).

b. If error message appears, see TM 9-4910-571-12&P.

3.

Return to troubleshooting.

Legend to Sample Above

1. TITLE

Test number and procedure name.
2. INITIAL SETUP

This tells you the tools, materials/parts, personnel, references, and equipment conditions needed to do the procedure.
3. STE/ICE HOOK UP

Steps that tell you how to perform the HOOK UP/REMOVE STE/ICE test.
4. TASK STEPS

Steps that tell you how to set up and perform the test.

Before you begin, make sure you have all items in the INITIAL SETUP. Do all steps in the test procedure and then return to where you left off in troubleshooting task. Continue to follow troubleshooting task instructions to find and correct the fault.

Locating the Correct Troubleshooting Procedure

- (1)

Carrier arrives at shop.
- (2)

Read DA Form 2404.
- (3)

Verify that the problem on DA Form 2404 exists.
- (4)

Look up the carrier symptom in the Malfunction/Symptom Index (WP 0006 00) and go to that task.

Doing the Troubleshooting Procedure

- (1) Make sure you have all items in INITIAL SETUP.
- (2) Perform required action(s) in Equipment Conditions.
- (3) Complete the first block of task steps.
- (4) Refer to system schematics for system components, details, and configuration.
- (5) Answer the question at the bottom of the first block.
- (6) Follow YES or NO arrows to the next block.
- (7) Move from block to block. Answer questions and follow instructions. You may be directed to:
 - do further checks and tests on parts;
 - go to another manual and do tasks;
 - or go to another task in this manual.
- (8) After completing the actions called for on another page or manual, return to the point in the troubleshooting procedure where you left off.
- (9) Locate the fault in the carrier or part, and perform the corrective action.
- (10) Check to make sure the fault is corrected, and there are no new faults.
- (11) Button up by reinstalling items listed in Equipment Conditions after finishing the troubleshooting task.

TROUBLESHOOTING SAMPLE

The following sample takes you through a typical troubleshooting procedure.

Finding the Right Troubleshooting Procedure

A carrier arrives at the shop. The DA Form 2404 shows that the engine cranks slowly. Engine cranks slowly is part of the carrier Engine System. Therefore, you look up ENGINE CRANKS SLOWLY listed under Engine System in Malfunction/Symptom Index (WP 0006 00).

TM 9-2350-261-20-1

MALFUNCTION/SYMPOM INDEX WP	0006 00
-----------------------------	---------

ENGINE SYSTEM

ENGINE OVERHEATS	WP 0014 00
ENGINE OVERCOOLS	WP 0015 00
ENGINE DOESN'T CRANK	WP 0016 00
ENGINE DOESN'T START (COLD WEATHER ONLY)	WP 0017 00
WAIT INDICATOR FLASHES DURING START ATTEMPTS (PREGLOW OR AFTER GLOW)	WP 0018 00
WAIT INDICATOR DOESN'T LIGHT	WP 0019 00
ENGINE CRANKS SLOWLY	WP 0020 00
ENGINE CRANKS BUT WILL NOT START	WP 0021 00
ENGINE CRANKS BUT WON'T START BELOW 40 FAHRENHEIT (AIR BOX HEATER IS USED)	WP 0022 00
ENGINE CRANKS BUT WON'T START BELOW 40 FAHRENHEIT (GLOW PLUGS ARE USED)	WP 0023 00
ENGINE RUNS ROUGH, STALLS OR DOESN'T PUT OUT FULL POWER	WP 0024 00
GENERATOR MALFUNCTIONS AS INDICATED BY BATTERY/ GENERATOR INDICATOR	WP 0025 00
ENGINE OIL LOW PRESSURE INDICATOR COMES ON	WP 0026 00

INTRODUCTION HOW TO USE TROUBLESHOOTING — Continued**0005 00**

This is the procedure you want.

TM 9-2350-261-20-1

ENGINE CRANKS SLOWLY**0010 00****INITIAL SETUP:****Maintenance Level**

Unit

References

See your-10

Tools and Special Tools

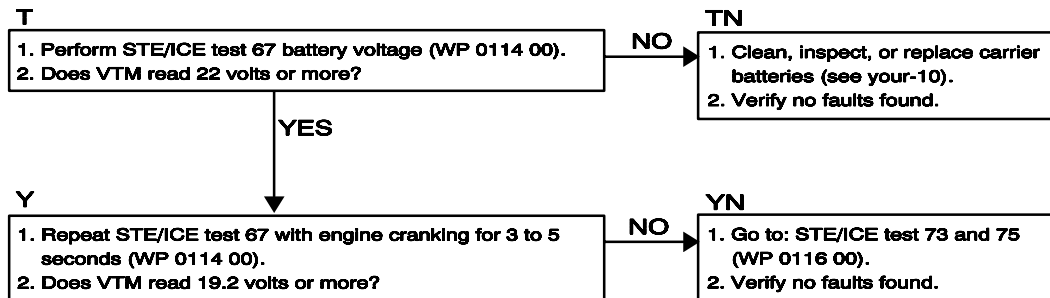
General mechanics tool kit: automotive
(WP 0780 00,Item 65)
STE/ICE-R test set (WP 0780 00,Item 61)

Equipment Condition

Engine stopped (see your-10)
Vehicle blocked (see your-10)

Personnel Required

Unit Mech 63T10
Helper (H)



Check the title to make sure you are troubleshooting the correct system for the problem. Read the INITIAL SETUP carefully and make sure you have all the items listed. Some access steps in Equipment Conditions may not need to be performed depending on the fault location. You decide which are necessary for your particular problem.

TM 9-2350-261-20-1

ENGINE CRANKS SLOWLY**0010 00****INITIAL SETUP:****Maintenance Level**

Unit

References

See your-10

Tools and Special Tools

General mechanics tool kit: automotive
(WP 0780 00,Item 65)
STE/ICE-R test set (WP 0780 00,Item 61)

Equipment Condition

Engine stopped (see your-10)
Vehicle blocked (see your-10)

Personnel Required

Unit Mech
Helper (H)

INTRODUCTION HOW TO USE TROUBLESHOOTING — Continued**0005 00**

This is the first block of the troubleshooting task. Step 1 has you performing a STE/ICE test. Go to the page shown. You will be using a STE/ICE test procedure for this step. Come back to this block when you complete the test.

1. Perform STE/ICE test 67 battery voltage (WP 0114 00).

NO

Here is the STE/ICE test procedure. It will give you more steps to find the fault. Before you begin, make sure you have all the items in the INITIAL SETUP. Do all the steps in the procedure. After you do the steps, go back to where you left off in the troubleshooting task.

TM 9-2350-261-20-1

STE/ICE TEST 67 BATTERY VOLTAGE**0114 00**

THIS WORK PACKAGE COVERS:
Test (page 0114 00-1).

INITIAL SETUP:Maintenance Level

Unit

Equipment Condition

Engine stopped (see your -10)

Vehicle blocked (see your -10)

STE/ICE hooked up to DCA 6 (WP 0117 00)

Personnel Required

Unit Mech

References

See your -10

TM 9-4910-571-12&P

1. Select TEST 67.

2. Press and release TEST button.

CONDITIONS**VOLTS**

Engine off/MASTER SWITCH OFF.

21 or more

Cranking engine fuel off.

17 or more

Charging 1100-1300 RPM/service lights on.

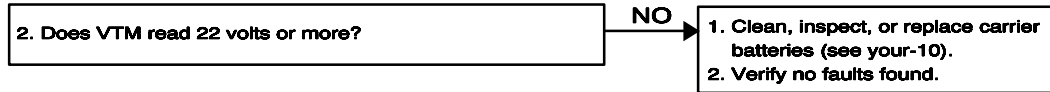
26 to 29.5

a. If display is erratic or shows 0 (volts), go to: STE/ICE DCA Battery Voltage Diagnostic Troubleshooting (WP 0142 00).

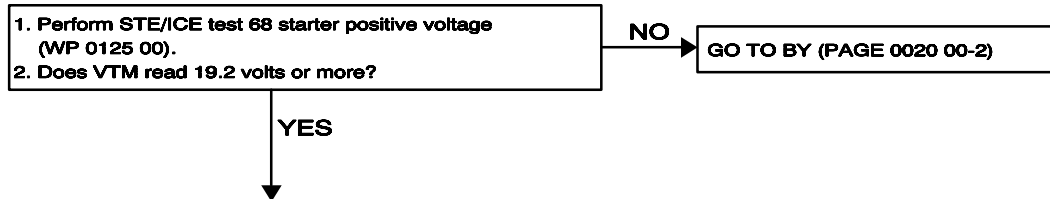
b. If error message appears, see TM 9-4910-571-12&P.

3. Return to troubleshooting.

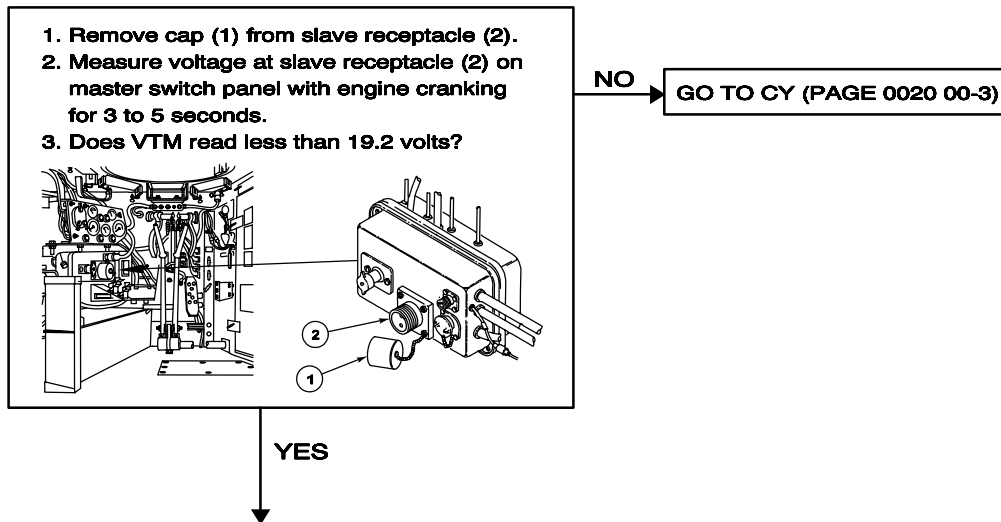
This is where you left off in the troubleshooting task. Answer the question in Step 2. The answer to the question depends on what you found when you did the STE/ICE test procedure. In this sample, let us say the test shows 22 volts. So the answer to the question, “Does test read 22 volts or more?” is YES. Follow the YES arrow to the next block.



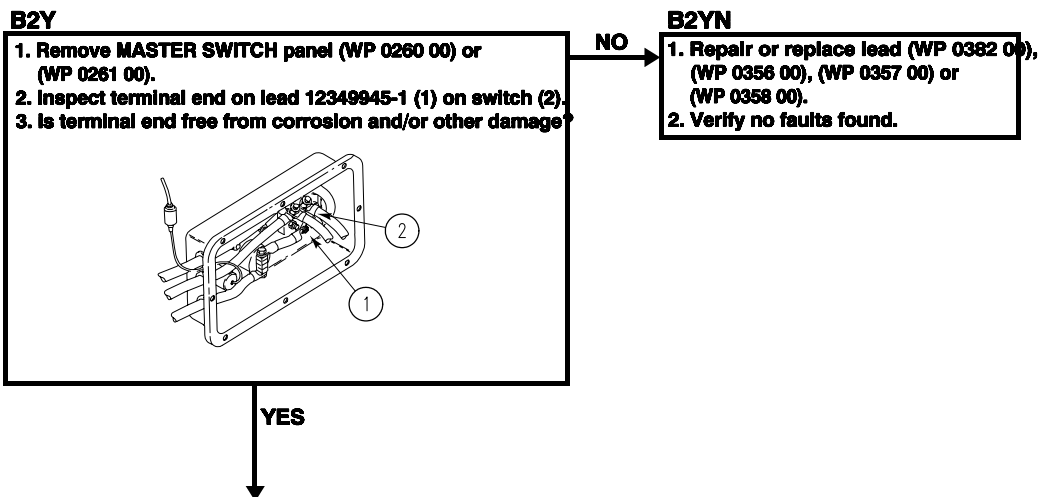
The YES arrow takes you to this block. Do Steps 1 and 2. In this sample, let us say the test shows 17 volts. So the answer to the question, “Does VTM read 19.2 volts or more?” is NO. Follow the NO arrow to the reference indicated.

2Y

This is how the reference appears once you locate it. Do Steps 1–3. Let us say the VTM reads less than 19.2 volts. So the answer to the question, “Does VTM read less than 19.2 volts?” is YES. Follow the YES arrow to the next block.

BY

The YES arrow takes you to this block. Do Steps 1–3. In this sample, let us say the terminal end is free from corrosion and/or other damage. So the answer to Step 3 is YES. Follow the YES arrow to the next block.



The YES arrow takes you to this block. You have found the fault in the MASTER SWITCH. This block gives you the step to correct the fault. Do Step 1. It tells you to go to another task in the manual. Go the the page shown and perform the task. Return to this block when you have completed the task.

B3Y

1. Replace MASTER SWITCH (WP 0262 00) or (WP 0273 00).
2. Verify no faults found.

Step 2 in this block is “Verify no faults found.” Check to make sure you have fixed the reported fault and there are no other problems. After no faults have been verified, return carrier to operation.

This section has given you information on how to use troubleshooting. By going through the troubleshooting sample, you have seen how parts of this chapter are used. This information will help you successfully troubleshoot at the unit maintenance level.

MALFUNCTION/SYMPTOM INDEX WP**0006 00****ENGINE SYSTEM**

ENGINE OVERHEATS.....	WP 0007 00
ENGINE OVERCOOLS.....	WP 0008 00
ENGINE DOES NOT CRANK.....	WP 0009 00
ENGINE CRANKS SLOWLY.....	WP 0010 00
ENGINE CRANKS BUT WILL NOT START.....	WP 0011 00
ENGINE CRANKS BUT WILL NOT START BELOW 40°F (AIR BOX HEATER IS USED).....	WP 0012 00
ENGINE RUNS ROUGH, STALLS, OR DOES NOT PUT OUT FULL POWER.....	WP 0013 00
ENGINE OIL LOW PRESSURE INDICATOR FAILS TO GO OFF AFTER ENGINE STARTS.....	WP 0014 00
ENGINE FUEL SYSTEM SCHEMATIC.....	WP 0015 00
STARTING SYSTEM SCHEMATIC.....	WP 0016 00
AIR BOX HEATER SYSTEM SCHEMATIC.....	WP 0017 00

CHARGING SYSTEM

CHARGING SYSTEM MALFUNCTIONS.....	WP 0018 00
CONNECT/DISCONNECT ALTERNATOR (GENERATOR) TEST KIT.....	WP 0019 00
200 AMP CHARGING SYSTEM OPERATIONAL CHECK.....	WP 0020 00
200 AMP CHARGE/REGULATION TROUBLESHOOTING.....	WP 0021 00
200 AMP FULL FIELD CHARGE TROUBLESHOOTING.....	WP 0022 00
200 AMP OVER VOLTAGE TROUBLESHOOTING.....	WP 0023 00
100 AMP ENGINE CHARGING SYSTEM SCHEMATIC.....	WP 0024 00
200 AMP ENGINE CHARGING SYSTEM SCHEMATIC.....	WP 0025 00
200 AMP ENGINE CHARGING SYSTEM SCHEMATIC (M981 ONLY).....	WP 0026 00

ELECTRICAL SYSTEM

DIFFERENTIAL HI OIL TEMP INDICATOR COMES ON.....	WP 0027 00
TRANSMISSION OIL HI TEMP INDICATOR COMES ON.....	WP 0028 00
NO EXTERIOR LIGHTS OPERATE.....	WP 0029 00
BLACKOUT DRIVE LIGHT DOES NOT WORK.....	WP 0030 00
SERVICE HEADLIGHTS DO NOT OPERATE.....	WP 0031 00
INFRARED HEADLIGHT(S) DOES NOT OPERATE.....	WP 0032 00
SERVICE AND/OR BLACKOUT STOPLIGHTS MALFUNCTION.....	WP 0033 00
BLACKOUT MARKER LIGHT(S) AND/OR TAILLIGHT(S) DO NOT OPERATE.....	WP 0034 00
SERVICE TAILLIGHT DOES NOT OPERATE.....	WP 0035 00
TRAILER LIGHTS DO NOT OPERATE.....	WP 0036 00
HORN DOES NOT OPERATE.....	WP 0037 00
INSTRUMENT PANEL ILLUMINATION LIGHTS MALFUNCTION.....	WP 0038 00
DOMELIGHT(S) WORKS IMPROPERLY.....	WP 0039 00
INFRARED PERISCOPE WORKS IMPROPERLY.....	WP 0040 00
RADIO(S) DOES NOT WORK.....	WP 0041 00
DOMELIGHTS MALFUNCTION (M577A2 ONLY).....	WP 0042 00
BLACKOUT DOMELIGHTS DO NOT WORK (M1068 ONLY).....	WP 0043 00
RIGHT REAR UTILITY OUTLET/ADMITTANCE BUZZER WORKS IMPROPERLY (M577A2 AND M1068 ONLY).....	WP 0044 00
LEFT REAR UTILITY OUTLET/BLOWER DOES NOT WORK (M577A2 AND M1068 ONLY).....	WP 0045 00
MASTER SWITCH ON INDICATOR DOES NOT LIGHT.....	WP 0046 00
FUEL LEVEL INDICATOR MALFUNCTIONS.....	WP 0047 00

MALFUNCTION/SYMPTOM INDEX WP — Continued**0006 00**

HIGH BEAM INDICATOR LIGHT MALFUNCTIONS.....	WP 0048 00
BATTERY/GENERATOR INDICATOR MALFUNCTIONS.....	WP 0049 00
COOLANT TEMPERATURE INDICATOR MALFUNCTIONS.....	WP 0050 00
ENGINE OIL LOW PRESSURE INDICATOR MALFUNCTIONS	WP 0051 00
TRANSMISSION OIL HI TEMP INDICATOR MALFUNCTIONS.....	WP 0052 00
DIFFERENTIAL OIL HI TEMP INDICATOR MALFUNCTIONS.....	WP 0053 00
INDICATORS SCHEMATIC (ALL CARRIERS).....	WP 0054 00
ELECTRICAL SYSTEM SCHEMATIC.....	WP 0055 00
ADDITIONAL ELECTRICAL SCHEMATIC (M577A2 ONLY).....	WP 0056 00
ADDITIONAL ELECTRICAL SCHEMATIC (M981 ONLY).....	WP 0057 00

STEERING SYSTEM

STEERING/BRAKES MALFUNCTION.....	WP 0058 00
CARRIER DOES NOT MOVE IN ANY SHIFT LEVER POSITION.....	WP 0059 00
CARRIER DOES NOT PIVOT.....	WP 0060 00
POWER TRAIN/STEERING/BRAKES/GEAR SELECTION/THROTTLE DIAGRAMS.....	WP 0061 00

RAMP SYSTEM

RAMP WILL NOT LOWER.....	WP 0062 00
RAMP OPERATION IS SLOW OR SLUGGISH.....	WP 0063 00
RAMP WILL NOT RAISE OR FREE FALLS.....	WP 0064 00
RAMP SCHEMATIC.....	WP 0065 00

SMOKE GRENADE SYSTEM

SMOKE GRENADE LAUNCHER(S) MALFUNCTION.....	WP 0066 00
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BILGE PUMPS

FRONT AND/OR REAR BILGE PUMP(S) AND/OR LIGHTS DO NOT OPERATE.....	WP 0067 00
BILGE PUMP SYSTEM SCHEMATIC.....	WP 0068 00

PERSONNEL HEATER

PERSONNEL HEATER MALFUNCTIONS.....	WP 0069 00
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WINTERIZATION SYSTEM

COOLANT HEATER MALFUNCTIONS.....	WP 0070 00
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ELECTRICAL POWER EQUIPMENT (M1068 ONLY)

POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT INOPERATIVE (M1068 ONLY).....	WP 0071 00
NO AC POWER FROM TENT INTERFACE PANEL A5.....	WP 0072 00
NO DC POWER FROM TENT INTERFACE PANEL A5.....	WP 0073 00
NO POWER FROM ROADSIDE AC POWER EXTENSION BOX A6.....	WP 0074 00
NO POWER FROM CURBSIDE AC POWER EXTENSION BOX A7.....	WP 0075 00
NO POWER FROM DC POWER EXTENSION BOX A9 (ALL EXCEPT JACK J23).....	WP 0076 00
NO POWER FROM DC POWER EXTENSION BOX A9, JACK J23 (JTIDS).....	WP 0077 00
NO DC POWER TO SINGLE POINT LAN GROUND BOX A15.....	WP 0078 00
NO POWER FROM UPS POWER EXTENSION BOX A16.....	WP 0079 00

MALFUNCTION/SYMPTOM INDEX WP — Continued**0006 00**

NO AC/DC INPUT TO ATCCS UPS POWER BOX (M1068 ONLY).....	WP 0080 00
IN BLACKOUT MODE, FLUORESCENT LIGHTS OPERATE INCORRECTLY (M1068 ONLY).....	WP 0081 00
FLUORESCENT LIGHTS DO NOT OPERATE (M1068 ONLY).....	WP 0082 00
VEHICLE BATTERIES DISCHARGE WITH EXTERNAL AC POWER APPLIED (M1068 ONLY).....	WP 0083 00
VEHICLE WILL NOT ACCEPT EXTERNAL AC POWER (M1068 ONLY).....	WP 0084 00
VEHICLE WILL NOT ACCEPT INVERTER AC POWER (M1068 ONLY).....	WP 0085 00
NO POWER TO DC CIRCUITS (M1068 ONLY).....	WP 0086 00
NO POWER TO AC CIRCUITS (M1068 ONLY).....	WP 0087 00
NO DC OUTPUT FROM DC POWER SUPPLY (M1068 ONLY).....	WP 0088 00
NO AC POWER FROM INVERTERS (M1068 ONLY).....	WP 0089 00

COMMUNICATION EQUIPMENT (M1068 ONLY)

NO DATA OUTPUT FROM DATA PANEL A12 (M1068 ONLY).....	WP 0090 00
NO LAN OUTPUT FROM DATA PANEL A12 (M1068 ONLY).....	WP 0091 00
NO DATA OUTPUT FROM DATA PANEL A13 (M1068 ONLY).....	WP 0092 00
NO LAN OUTPUT FROM DATA PANEL A13 (M1068 ONLY).....	WP 0093 00
PHONE EXTENSION BOX A14 POST(S) INOPERATIVE (M1068 ONLY).....	WP 0094 00

SPEEDOMETER/TACHOMETER

SPEEDOMETER MALFUNCTIONS.....	WP 0095 00
TACHOMETER MALFUNCTIONS.....	WP 0096 00

CHEMICAL AGENT AUTO ALARM SYSTEM

CHEMICAL AGENT AUTO ALARM MALFUNCTIONS.....	WP 0097 00
CHEMICAL AGENT AUTO ALARM SYSTEM SCHEMATIC.....	WP 0098 00

ENGINE OVERHEATS**0007 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Radiator Testing Kit (WP 0780 00, Item 52)

Tube-Pipe Fitting Kit (WP 0780 00, Item 24)

Materials/Parts

Suitable container

Personnel Required

Unit Mechanic

Helper (H)

Equipment Condition

Engine stopped (see your -10)

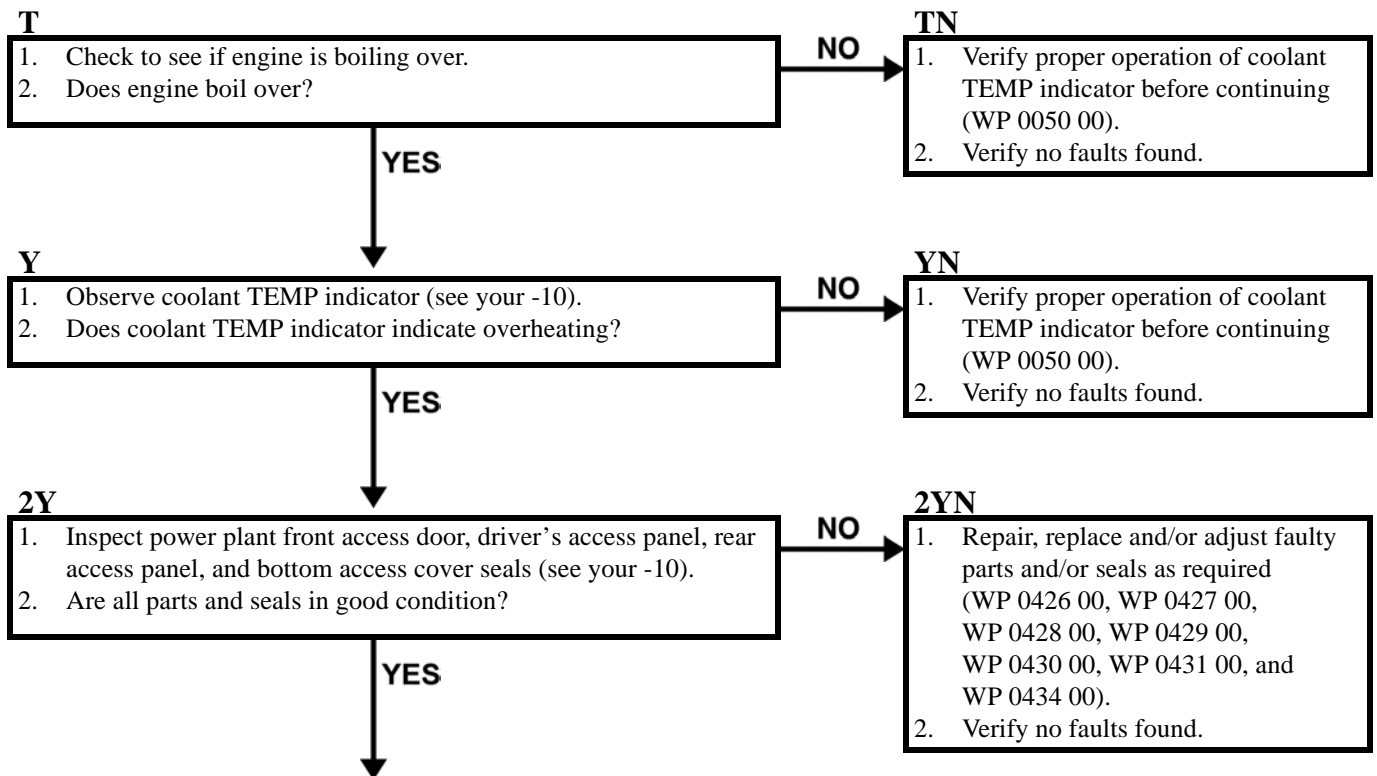
Carrier blocked (see your -10)

Trim vane lowered (see your -10)

Power plant front access door open (see your -10)

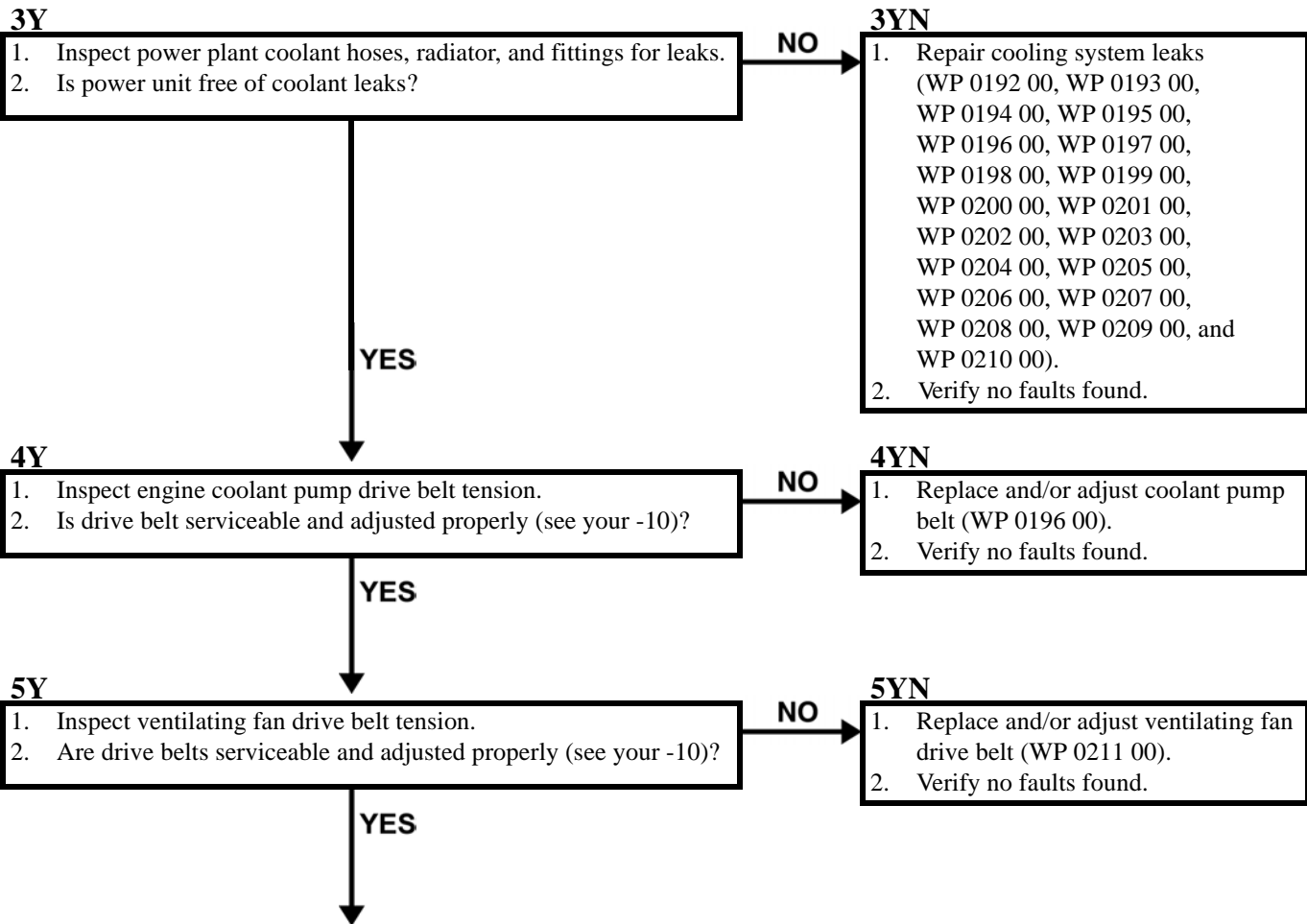
Driver's power plant access panels removed
(see your -10)

Power plant rear access panels removed (see your -10)

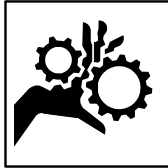


ENGINE OVERHEATS — Continued

0007 00

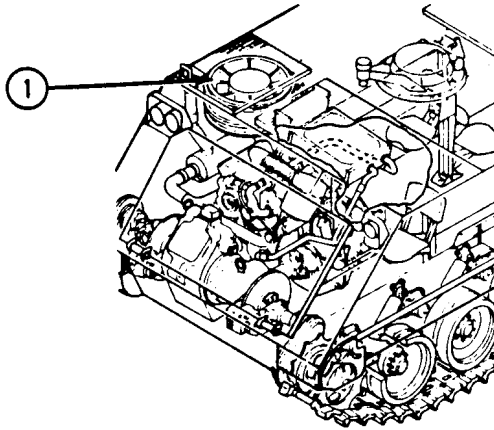


6Y

WARNING

Start up of equipment or moving parts can injure you. Stay clear of moving parts when power plant is running.

1. Start engine (see your -10).
2. Observe ventilating fan (1) operation.
3. Does ventilating fan rotate?



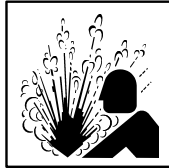
YES

NO

6YN

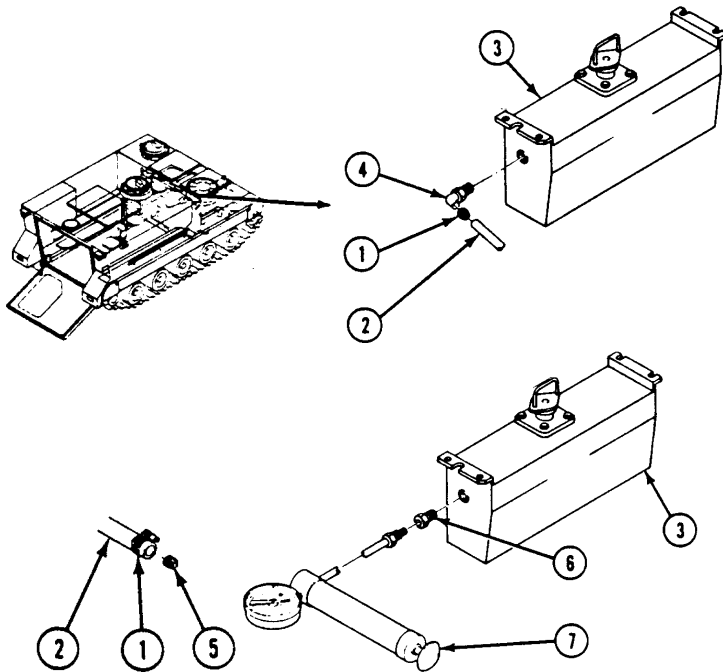
GO TO BY (PAGE 0007 00-5)

7Y

WARNING

Hot coolant lines can burn you. Let power plant cool before you remove hose from auxiliary tank.

1. Loosen hose clamp (1) on hose (2) at auxiliary tank (3).
2. Remove hose (2) from auxiliary tank (3).
3. Allow coolant to drain from elbow (4) on auxiliary tank (3).
Use clean suitable container to catch coolant.
4. Install pipe plug (5) in hose (2) using hose clamp (1).
5. Remove elbow (4) from auxiliary tank (3).
6. Install bushing (6) on auxiliary tank (3).
7. Install radiator pressure tester (7) to bushing (6).
8. Pump system no higher than 15 psi pressure.
9. Does auxiliary tank filler cap relieve between 13 and 15 psi pressure?



YES

NO

7YN

1. Replace auxiliary tank filler cap (WP 0206 00).
2. Verify no faults found.

ENGINE OVERHEATS — Continued

0007 00

8Y

1. Allow system to remain pressurized for 5 minutes.
2. Does pressure drop less than one psi?

NO

8YN

1. Internal coolant system leak.
2. Notify your supervisor.

YES

9Y

1. Check to see if thermostat has been replaced.
2. Has thermostat been replaced?

NO

9YN

1. Replace thermostat (WP 0200 00).
2. Verify no faults found.

YES

10Y

1. Replace coolant pump (WP 0197 00).
2. Verify no faults found.

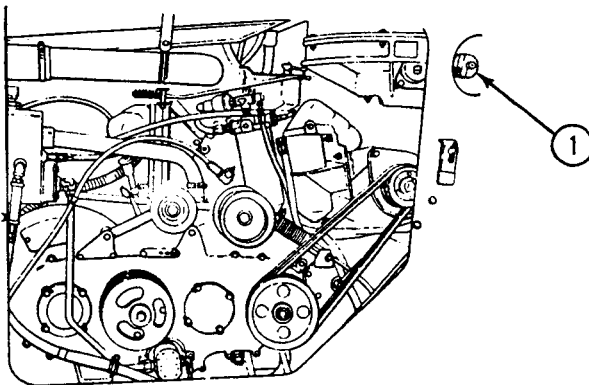
BY

1. Stop engine (see your -10).
2. Remove ventilating fan drive belt (WP 0211 00).
3. Manually rotate ventilating fan drive shaft pulley (1).
4. Does fan spin freely?

NO

BYN

1. Notify your supervisor.



YES

B2Y

1. Faulty transfer gear case.
2. Notify your supervisor.

ENGINE OVERCOOLS

0008 00

INITIAL SETUP:

Maintenance Level

Unit

References

See your -10

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

T

1. Run engine for 3 to 5 minutes at 800 RPM with steering levers locked and transmission in 2-3 range.
 2. Stop engine (see your -10).
 3. Did engine reach operating temperature?

NO

TN

1. Replace engine thermostat (WP 0200 00).
 2. Verify no faults found.

YES

Y

1. Go to Coolant TEMP Indicator Malfunctions (WP 0050 00).

ENGINE DOES NOT CRANK**0009 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

Tools and Special Tools

- Digital Multimeter (WP 0780 00, Item 43)
- General Mechanic's Tool Kit (WP 0780 00, Item 29)
- Socket Wrench Set (WP 0780 00, Item 96)

Equipment Condition

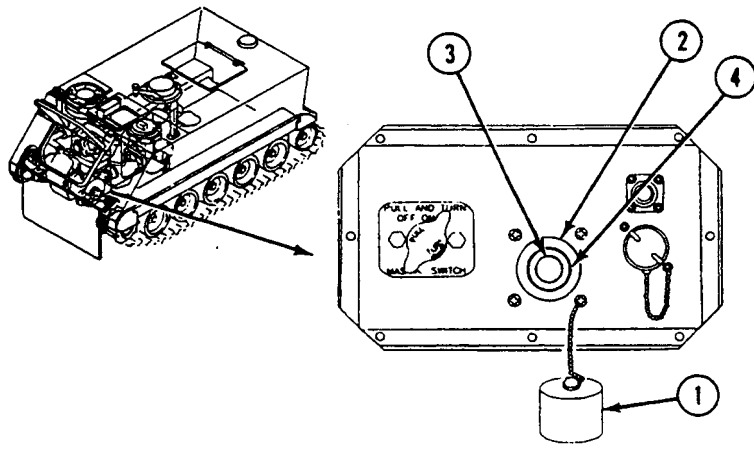
- Engine stopped/shutdown (see your -10)
- Carrier blocked (see your -10)
- Trim vane lowered (see your -10)
- Power plant access door open (see your -10)
- Driver's power plant access panel removed (see your -10)

Personnel Required

- Unit Mechanic
- Helper (H)

T

1. Turn MASTER SWITCH to ON (see your -10).
2. Remove cover (1) from auxiliary power receptacle (2).
3. Measure voltage between positive (+) terminal (3) and negative (-) terminal (4).
4. Does multimeter read more 17 volts?

**YES****NO****TN**

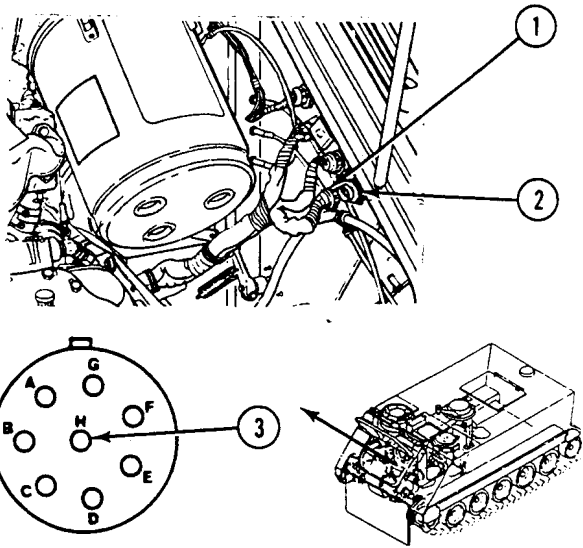
1. Clean, inspect, and repair carrier batteries (WP 0302 00 and WP 0303 00).
2. Verify no faults found.

ENGINE DOES NOT CRANK — Continued

0009 00

Y

1. Turn MASTER SWITCH OFF (see your -10).
2. Remove engine harness plug (1) from front main harness jack (2) at carrier bulkhead.
3. Turn MASTER SWITCH ON (see your -10).
4. Depress start switch and hold for test.
5. Measure voltage between front main harness jack (2) socket H (3) and ground.
6. Does multimeter read less than 17 volts?
7. Turn MASTER SWITCH OFF (see your -10).

**NO****YN**

GO TO AY (PAGE 0009 00-6)

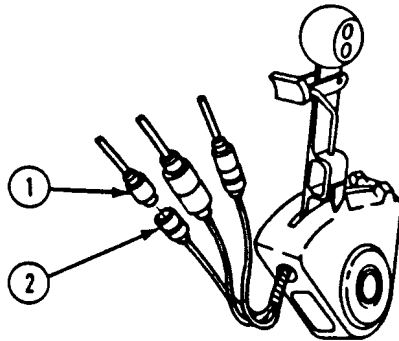
YES

ENGINE DOES NOT CRANK — Continued

0009 00

2Y

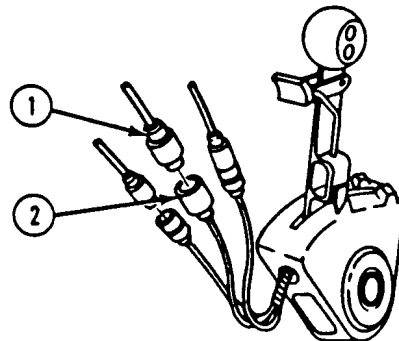
1. Remove front main harness circuit 74A plug (1) from neutral start switch jack (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Measure voltage between jack (2) and ground with start switch depressed.
4. Does multimeter read less than 17 volts?
5. Turn MASTER SWITCH to OFF (see your -10).



YES

**3Y**

1. Remove front main harness circuit 74 plug (1) from neutral start switch jack (2).
2. Measure voltage between circuit 74 plug (1) with start switch depressed.
3. Does multimeter read less than 17 volts?



YES



NO

2YN

1. Repair front main wiring harness circuit 74A (WP 0312 00).
2. Verify no faults found.

NO

3YN

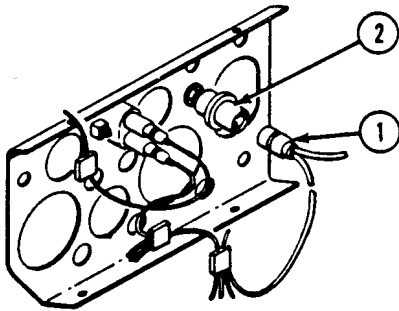
GO TO CY (PAGE 0009 00-9)

ENGINE DOES NOT CRANK — Continued

0009 00

4Y

1. Install circuit 14 and 74A plugs on neutral start switch.
2. Remove instrument panel for access (WP 0238 00).
3. Remove circuits 14/74 plug (1) from start switch (2).
4. Measure resistance between start switch (2) jack pins with start switch depressed.
5. Does multimeter read 0 ohms?



NO

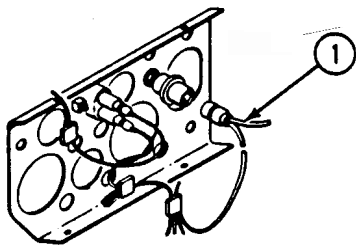
4YN

1. Replace start switch (WP 0243 00).
2. Verify no faults found.

YES

5Y

1. Turn MASTER SWITCH to ON (see your -10).
2. Measure voltage from panel power harness circuit 14 plug pin (1) and ground.
3. Turn MASTER SWITCH to OFF (see your -10).
4. Does multimeter read more than 17 volts?



NO

5YN

1. Repair panel wiring harness circuit 14 (WP 0312 00).
2. Verify no faults found.

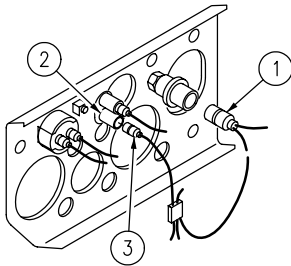
YES

ENGINE DOES NOT CRANK — Continued

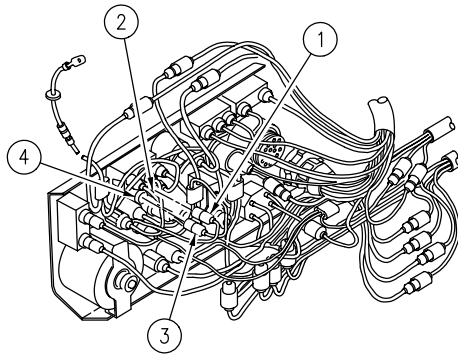
0009 00

6Y

1. Remove circuit 27 plug (3) from instrument panel circuit breaker jack (2).
2. Measure resistance between circuit 27 plug (3) and circuit 14 plug (1).
3. Does multimeter read 0 ohms?

**YES****7Y**

1. Remove circuit 10 plug (1) and circuit 27 plug (3) from instrument panel circuit breaker jacks (2) and (4).
2. Measure resistance between circuit breaker jacks (2) and (4).
3. Does multimeter read 0 ohms?

**YES****8Y**

1. Repair instrument panel cable assembly (WP 0314 00).
2. Verify no faults found.

NO**6YN**

1. Repair panel wiring harness circuit 14 (WP 0312 00).
2. Verify no faults found.

NO**7YN**

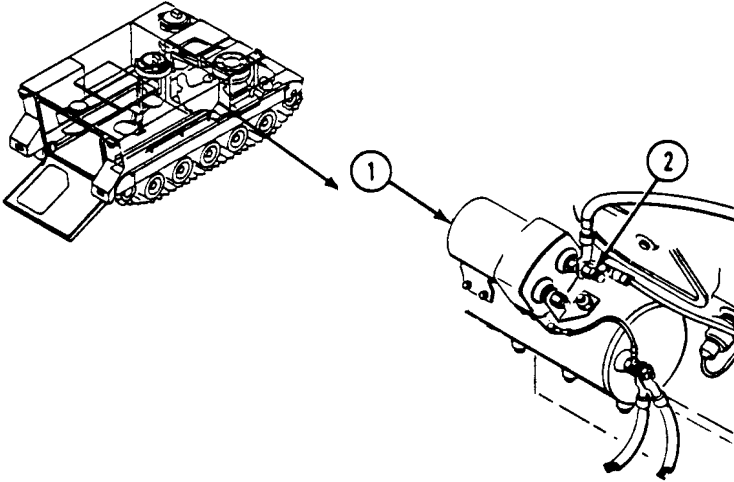
1. Replace instrument panel circuit breaker (WP 0239 00).
2. Verify no faults found.

ENGINE DOES NOT CRANK — Continued

0009 00

AY

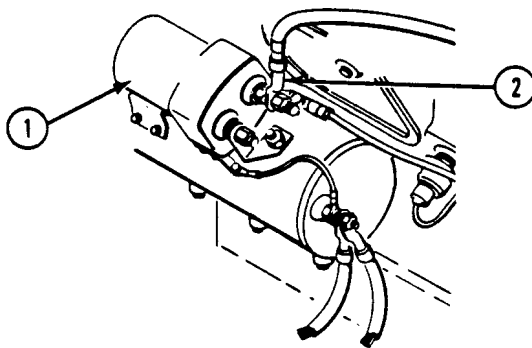
1. Install engine harness plug in front main harness bulkhead jack.
2. Turn MASTER SWITCH to ON (see your -10).
3. Depress start switch and hold for test.
4. Measure voltage between starter solenoid (1) circuit 74A terminal (2) and ground.
5. Does multimeter read more than 17 volts?

**NO****AYN**

1. Repair engine harness circuit 74A (WP 0312 00).
2. Verify no faults found.

YES**A2Y**

1. Measure voltage between starter solenoid (1) cable 6 terminal (2) and ground.
2. Does multimeter read less than 17 volts?

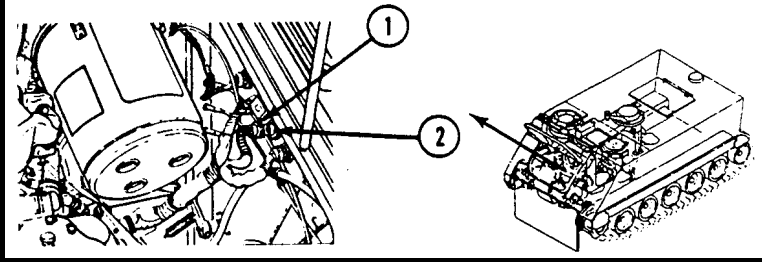
**NO****A2YN**GO TO **BY** (PAGE 0009 00-8)**YES**

ENGINE DOES NOT CRANK — Continued

0009 00

A3Y

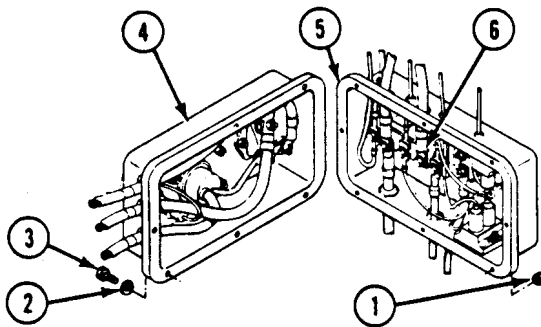
1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove engine harness circuit 6 plug (1) from front main harness circuit 6 jack (2) at carrier bulkhead.
3. Inspect plug and jack for corrosion and/or other damage.
4. Are parts in good condition?



YES

**A4Y**

1. Remove eight nuts (1), washers (2), and screws (3) from master switch panel (4). Pull panel away from distribution box (5).
2. Inspect cable 49 (6) from master switch to distribution box.
3. Are cable and cable ends free from corrosion and damage?



YES



NO

A3YN

1. Repair engine wiring harness or front main wiring harness circuit 6 (WP 0312 00).
2. Verify no faults found.

NO

A4YN

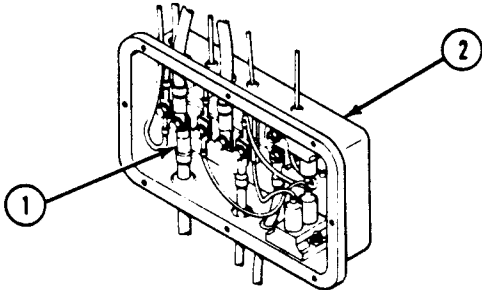
1. Repair master power to distribution box cable (WP 0314 00).
2. Install master switch panel on distribution box.
3. Verify no faults found.

ENGINE DOES NOT CRANK — Continued

0009 00

A5Y

1. Inspect engine harness circuit 6 (1) leads on distribution box (2).
2. Are leads and terminal free of corrosion and damage?



NO

A5YN

1. Repair engine harness circuit 6 (WP 0312 00)
2. Install master switch panel on distribution box.
3. Verify no faults found.

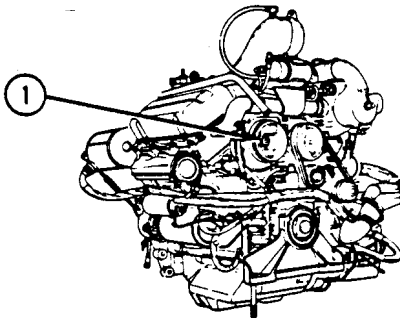
YES

A6Y

1. Install master switch panel on distribution box.
2. Verify no faults found.

BY

1. Manually rotate engine camshaft pulley (1) (use breaker bar, socket wrench set, and extension).
2. Does engine rotate?



NO

BYN

1. Engine or power train seized. Beyond unit maintenance repair.
2. Notify your supervisor.

YES

B2Y

1. Replace engine starter assembly (WP 0236 00).
2. Verify no faults found.

ENGINE DOES NOT CRANK — Continued

0009 00**CY**

1. Check if neutral start switch been adjusted.
2. Has neutral start switch been adjusted.

NO**CYN**

1. Adjust neutral start switch (WP 0406 00)
2. Verify no faults found.

YES**C2Y**

1. Replace neutral start switch (WP 0406 00)
2. Verify no faults found.

ENGINE CRANKS SLOWLY**0010 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

Power plant access door open (see your -10)

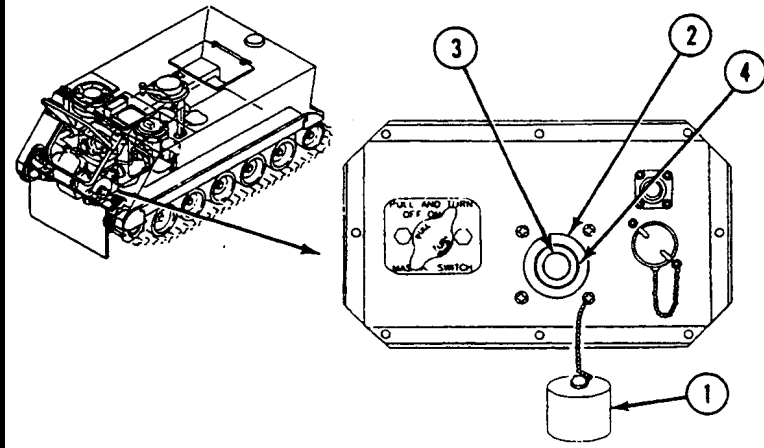
Personnel Required

Unit Mechanic

Helper (H)

T

1. Remove cover (1) from auxiliary power receptacle (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Measure voltage between positive (+) terminal (3) and negative (-) terminal (4) with engine cranking for 3 to 5 seconds.
4. Does multimeter read more than 19 volts?

**YES****NO****TN****GO TO BY (PAGE 0010 00-3)**

ENGINE CRANKS SLOWLY — Continued

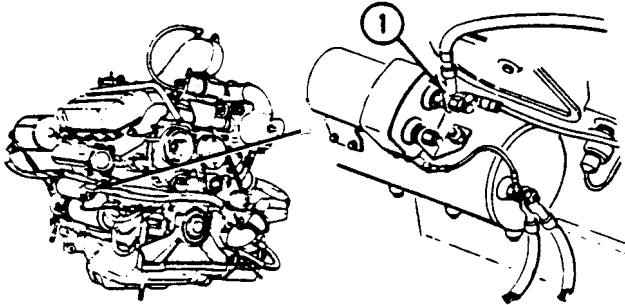
0010 00

Y

1. Measure voltage between starter positive (+) terminal (1) and ground with engine cranking for 3 to 5 seconds.
2. Does multimeter read more than 17 volts?

NO**YN**

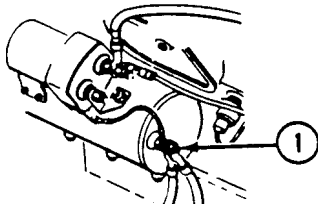
GO TO CY (PAGE 0010 00-3)

**YES****2Y**

1. Measure voltage between starter ground (1) and carrier ground with engine cranking for 3 to 5 seconds.
2. Does multimeter read less than 1/2 volt?

NO**2YN**

1. Replace/repair starter ground as necessary (WP 0237 00).
2. Verify no faults found.

**YES****3Y**

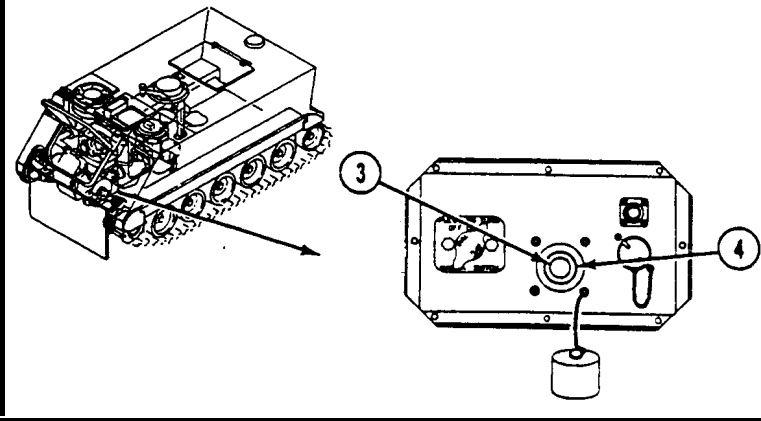
1. Replace starter (WP 0236 00).
2. Verify no faults found.

ENGINE CRANKS SLOWLY — Continued

0010 00

BY

1. Turn MASTER SWITCH to OFF (see your -10).
2. Clean, inspect, and repair carrier batteries (WP 0302 00 or WP 0303 00).
3. Turn MASTER SWITCH to ON (see your -10).
4. Measure voltage between positive (+) terminal (3) and negative (-) terminal (4) with engine cranking for 3 to 5 seconds.
5. Does multimeter read more than 19 volts?



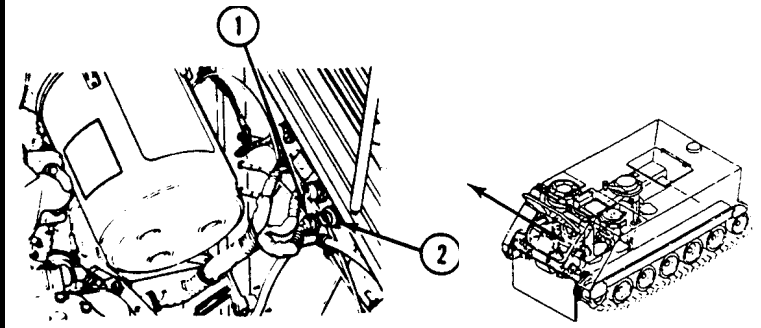
YES

B2Y

1. Verify no faults found.

BYNGO TO **DY** (PAGE 0010 00-6)**CY**

1. Remove engine harness circuit 6 plug (1) from main harness circuit 6 jack (2) at carrier bulkhead.
2. Inspect plug and jack for corrosion and/or other damage.
3. Are parts in good condition?



YES

CYN

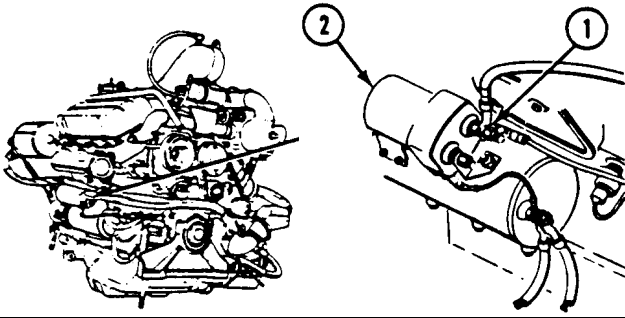
1. Front main and/or engine harness damaged. Beyond unit maintenance repair.
2. Notify supervisor.

ENGINE CRANKS SLOWLY — Continued

0010 00

C2Y

1. Install front engine harness circuit 6 plug on main harness circuit 6 jack at carrier bulkhead.
2. Inspect engine harness circuit 6 terminal end (1) on starter (2).
3. Is terminal end free from corrosion and/or other damage?



YES

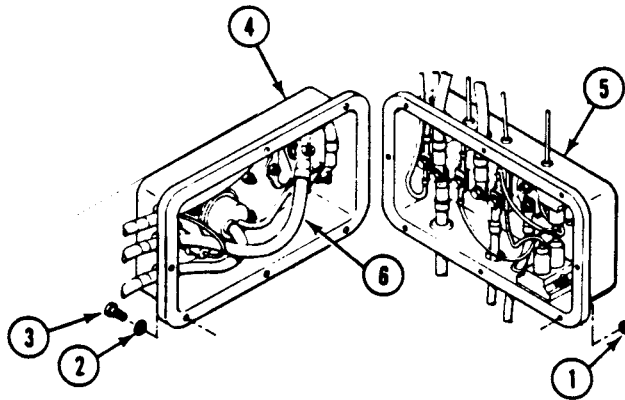
NO

C2YN

1. Repair engine harness circuit 6 (WP 0312 00).
2. Verify no faults found.

C3Y

1. Remove eight nuts (1), washers (2), and screws (3) from master switch panel (4). Pull panel away from distribution box (5).
2. Inspect cable 49 (6) from master switch to distribution box.
3. Are cable and cable ends free from corrosion and damage?



YES

NO

C3YN

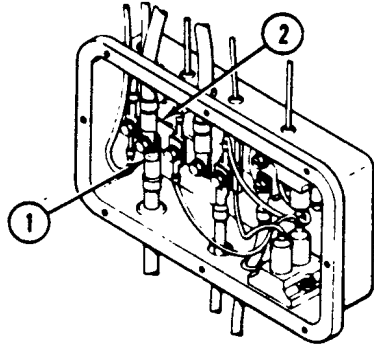
1. Repair master power to distribution box cable (WP 0314 00).
2. Verify no faults found.

ENGINE CRANKS SLOWLY — Continued

0010 00

C4Y

1. Inspect front main harness circuit 6 (1) leads on distribution box bus bar (2).
2. Is lead terminal free from corrosion and damage?

**YES****C5Y**

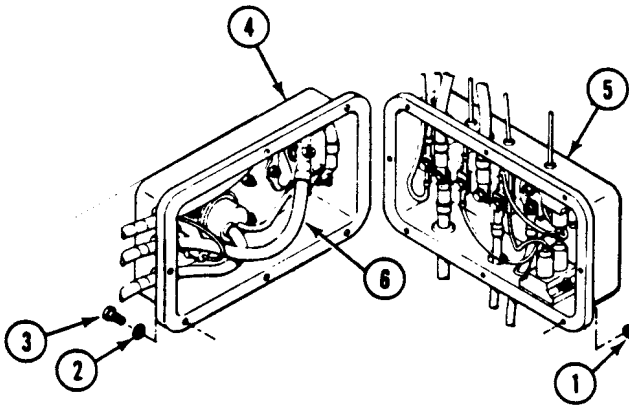
1. Install master switch panel (WP 0221 00).
2. Replace starter assembly (WP 0236 00).
3. Verify no faults found.

NO**C4YN**

1. Repair front main harness circuit 6 (WP 0312 00).
2. Verify no faults found.

DY

1. Remove eight nuts (1), washers (2), and screws (3) from master switch panel (4). Pull panel away from distribution box (5).
2. Inspect terminal end(s) on master switch (6).
3. Are terminal end(s) and master switch free from corrosion and/or other damage?

**YES****D2Y**

1. Verify no faults found.

NO**DYN**

1. Repair battery to master power cable (WP 0314 00) and/or master switch (WP 0221 00).
2. Verify no faults found.

ENGINE CRANKS BUT WILL NOT START**0011 00****INITIAL SETUP:**Maintenance Level

Unit

References

WP 0403 00

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

Power plant access door open (see your -10)

Driver's power plant access panels removed (see your -10)

Power plant rear access panels removed (see your -10)

Materials/Parts

Suitable container

Personnel Required

Unit Mechanic

Helper (H)

T

1. Inspect condition and operation of fuel cutoff cable assembly (WP 0403 00).
2. Is cable assembly in good condition and in proper adjustment?

NO**TN**

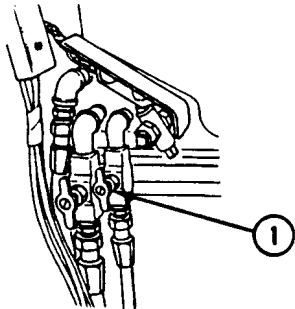
1. Replace and/or adjust fuel cutoff cable assembly (WP 0403 00).
2. Verify no faults found.

YES**Y**

1. Check manual fuel shutoff valve (1) at fuel tank.
2. Is fuel shutoff valve on (see your -10)?

NO**YN**

1. Turn manual fuel shutoff valve on (see your -10).

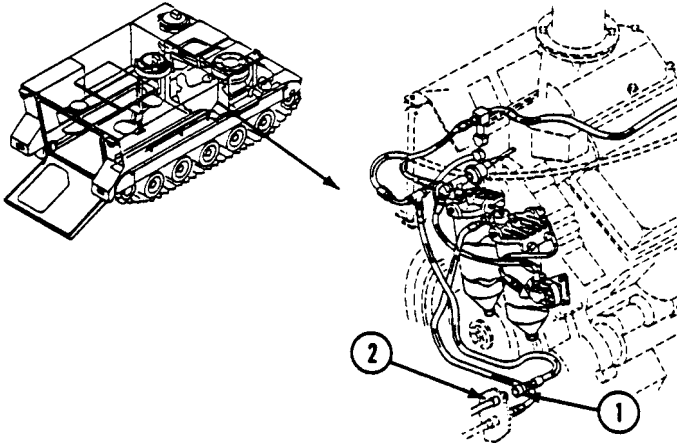
**YES**

ENGINE CRANKS BUT WILL NOT START — Continued

0011 00

2Y

1. Remove engine fuel return line (1) from bulkhead fitting (2).
2. Depress plunger on return line (1) quick disconnect coupling. Catch fuel in suitable container.
3. Crank engine with plunger depressed. Have helper assist.
4. Does fuel flow out while cranking engine?



NO

2YNGO TO **BY** (PAGE 0011 00-3)

YES

3Y

1. Drain fuel filters into suitable transparent container (see your -10).
2. Inspect fuel in container.
3. Is fuel clean and uncontaminated?

NO

3YN

1. Drain fuel tanks (WP 0135 00, WP 0142 00, or WP 0153 00). Make sure you follow correct procedure for your carrier configuration.
2. Replace primary and secondary fuel filters (WP 0172 00 and WP 0173 00).
3. Verify no faults found.

YES

4Y

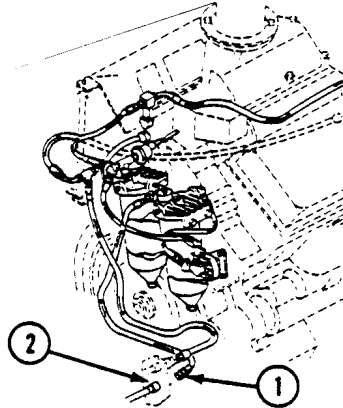
1. Non-starting engine. Beyond unit maintenance repair.
2. Notify your supervisor.

ENGINE CRANKS BUT WILL NOT START — Continued

0011 00

BY

1. Remove engine fuel supply line (1) from bulkhead fitting (2).
2. Manually depress plunger on bulkhead fitting (2) quick disconnect coupling.
3. Does fuel flow from coupling?



NO

BYN

GO TO CY (PAGE 0011 00-4)

YES

B2Y

1. Inspect fuel lines between bulkhead fitting and primary filter.
2. Inspect fuel lines between primary filter and fuel pump.
3. Inspect fuel lines between fuel pump and secondary filter.
4. Inspect fuel lines between secondary filter and engine.
5. Are all lines free of kinks and other damage?

NO

B2YN

1. Replace engine fuel line(s) as required (see Chapter 6).
2. Verify no faults found.

YES

B3Y

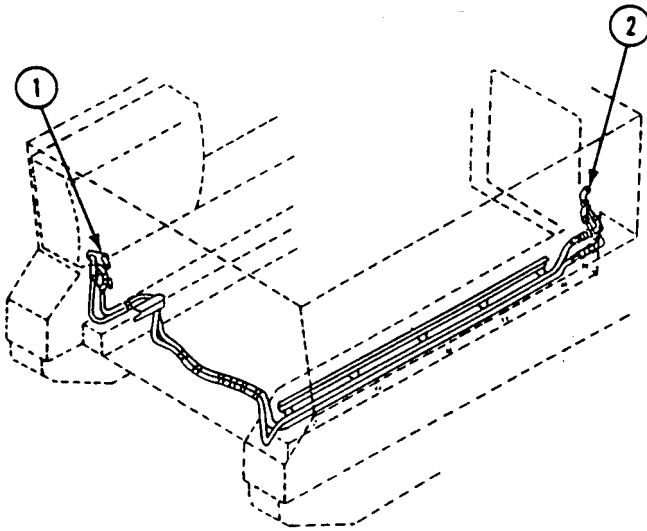
1. Replace fuel pump (WP 0171 00).
2. Verify no faults found.

CY

NOTE

There are additional fuel lines on the M577A2 carrier. Make sure to inspect all fuel lines.

1. Remove rear compartment floor plates (WP 0436 00, WP 0437 00, WP 0438 00, WP 0440 00, or WP 0441 00).
2. Inspect fuel lines between fuel tank(s) (1) and bulkhead fittings (2).
3. Are all line and fittings free from leaks and damage?



NO

CYN

1. Repair/replace fuel line(s) as required (see Chapter 6).
2. Verify no faults found.

YES

C2Y

1. Clear clogged fuel pick up inside fuel tank(s) (see Chapter 6).
2. Verify no faults found.

ENGINE CRANKS BUT WILL NOT START BELOW 40° (AIR BOX HEATER IS USED)**0012 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

Helper (H)

References

See your -10

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

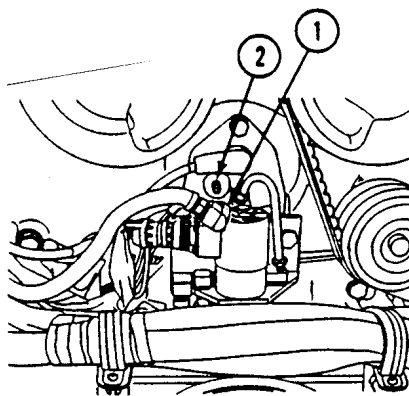
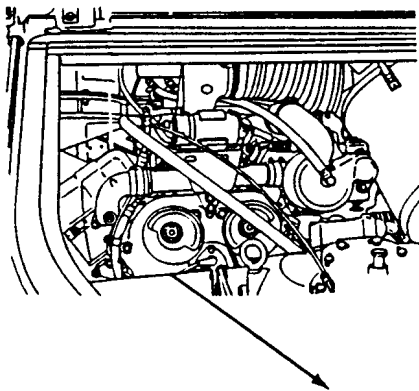
Power plant access door open (see your -10)

Driver's power plant access panel removed
(see your -10)

Power plant rear access panels removed (see your -10)

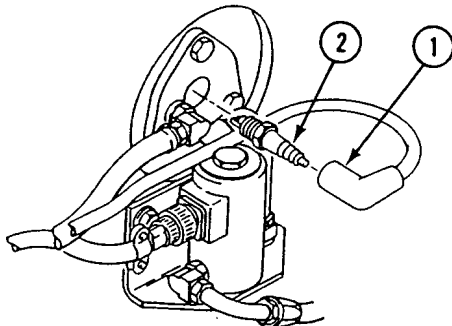
T

1. Remove air pump to air box heater hose (1) from air box heater (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Turn air box heater switch to ON.
4. Does air flow from end of hose?

**YES****NO****TN****GO TO BY (PAGE 0012 00-5)**

ENGINE CRANKS BUT WILL NOT START BELOW 40° (AIR BOX HEATER IS USED) — Continued**0012 00****Y****WARNING****High voltage. Keep hands clear.**

1. Release air box heater switch.
2. Turn MASTER SWITCH to OFF (see your -10).
3. Install air pump to air box heater hose onto air box heater (WP 0177 00 and WP 0183 00).
4. Remove air box igniter high voltage wire (1) and igniter (2).
5. Install high voltage wire (1) on igniter (2).
6. Ground touch hex portion of igniter (2) on idler pulley pivot.
7. Turn MASTER SWITCH to ON (see your -10).
8. Turn air box heater switch to ON (see your -10).
9. Does igniter produce a spark?

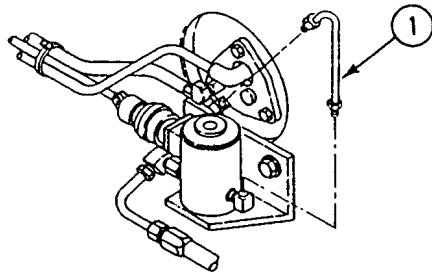
**YES****NO****YN****GO TO CY (PAGE 0012 00-7)**

ENGINE CRANKS BUT WILL NOT START BELOW 40° (AIR BOX HEATER IS USED) — Continued

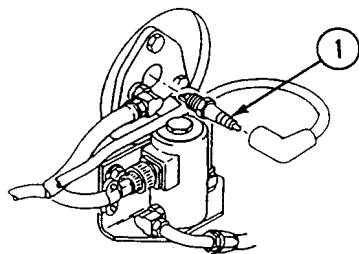
0012 00

2Y

1. Release air box heater switch.
2. Turn MASTER SWITCH to OFF (see your -10).
3. Install air box igniter.
4. Install air box heater harness plug wire on igniter coil.
5. Remove air box heater tube assembly (1) from solenoid.
6. Turn MASTER SWITCH to ON (see your -10).
7. Turn air box heater switch to ON with engine cranking. Do not allow engine to start. Have helper assist.
8. Does fuel fail to flow from solenoid with air box heater switch ON?

**YES****3Y**

1. Release air box heater switch.
2. Turn MASTER SWITCH to OFF (see your -10).
3. Remove air box heater assembly (WP 0180 00).
4. Are igniter electrode and spray nozzle free of contamination and damage?

**YES****NO****2YN**

1. Air box heater is working properly. Go to Engine Cranks But Will Not Start (WP 0011 00).
2. Install air box heater tube on solenoid.
3. Verify no faults found.

NO**3YN**

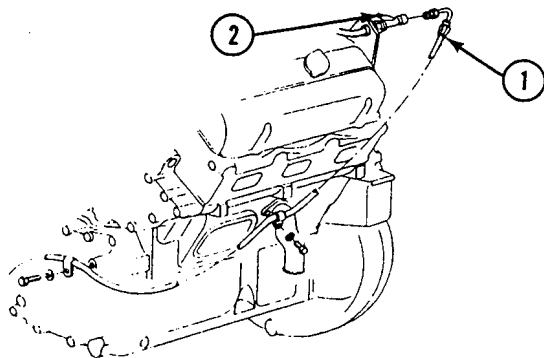
1. Clean and/or replace air box heater assembly (WP 0180 00).
2. Verify no faults found.

ENGINE CRANKS BUT WILL NOT START BELOW 40° (AIR BOX HEATER IS USED) — Continued

0012 00

4Y

1. Release air box heater switch.
2. Turn MASTER SWITCH to OFF (see your -10).
3. Remove fuel supply line to solenoid (1) at return tee (2).
4. Crank engine for 3-5 seconds.
5. Does fuel flow from return tee with engine cranking?



NO

4YN

1. Install solenoid fuel supply line on return tee.
2. Go to Engine Cranks But Will Not Start (WP 0011 00).

YES

5Y

1. Inspect fuel supply line to solenoid.
2. Is line free from kinks or clogs?

NO

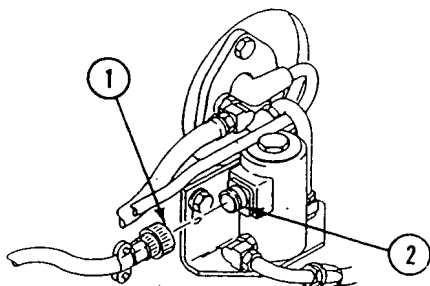
5YN

1. Clear or replace air box fuel supply line (WP 0179 00).
2. Verify no faults found.

YES

6Y

1. Install solenoid fuel supply line on return tee.
2. Remove air box heater harness plug (1) from solenoid (2).
3. Measure voltage between plug (1) sockets A (+) and B (-) with air box heater switch on.
4. Does multimeter read less than 17 volts?



NO

6YN

1. Replace air box heater fuel supply solenoid (WP 0179 00).
2. Verify no faults found.

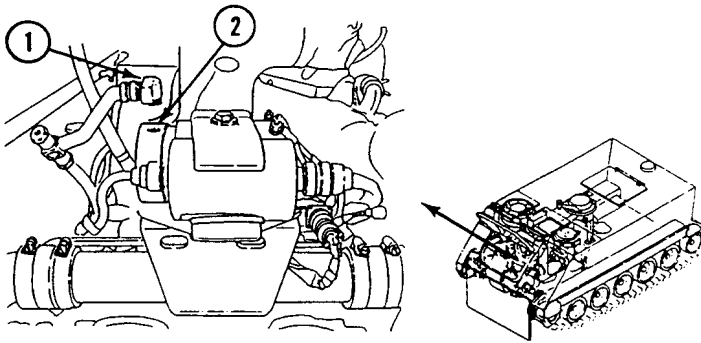
YES

ENGINE CRANKS BUT WILL NOT START BELOW 40° (AIR BOX HEATER IS USED) — Continued**0012 00****7Y**

1. Install solenoid to air box heater fuel line.
2. Install air box heater harness plug on fuel solenoid.

NO**7YN****GO TO DY (PAGE 0012 00-9)****BY**

1. Release air box heater switch.
2. Turn MASTER SWITCH to OFF (see your -10).
3. Remove air hose (1) from air pump (2).
4. Is hose free from restriction and damage?

**NO****BYN**

1. Replace air pump to air box heater hose (WP 0177 00).
2. Verify no faults found.

YES**B2Y**

1. Turn MASTER SWITCH to ON (see your -10).
2. Listen to air pump with air box heater switch ON.
3. Is air pump silent?

NO**B2YN**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Replace air pump vane set (WP 0178 00).

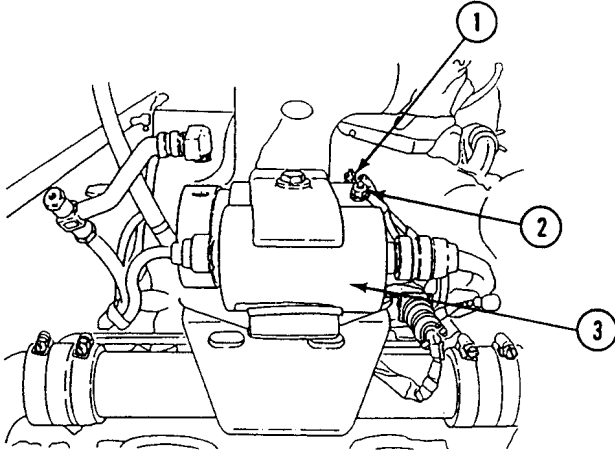
YES

ENGINE CRANKS BUT WILL NOT START BELOW 40° (AIR BOX HEATER IS USED) — Continued

0012 00

B3Y

1. Measure voltage between power lead terminals 1 (+) and 2 (-) on air pump (3) with air box heater switch depressed.
2. Turn MASTER SWITCH to OFF (see your -10).
3. Did multimeter read less than 17 volts?

**YES****NO****B3YN**

1. Install air pump to air box heater hose onto air box heater (WP 0177 00).
2. Replace air pump (WP 0177 00).
3. Verify no faults found.

B4Y

1. Install air pump to air box heater hose onto air box heater (WP 0177 00).

NO**B4YN**

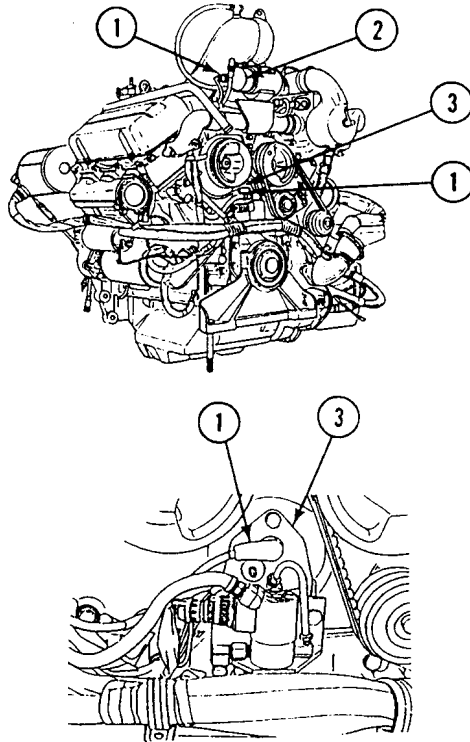
GO TO DY (PAGE 0012 00-9)

ENGINE CRANKS BUT WILL NOT START BELOW 40° (AIR BOX HEATER IS USED) — Continued

0012 00

CY

1. Release air box heater switch.
2. Install air box heater assembly.
3. Disconnect ends of ignition wire (1) from coil (2) and air box heater (3).
4. Measure resistance between wire ends (2) and (3).
5. Is ignition wire in good condition and measures 0 ohms?

**YES****NO****CYN**

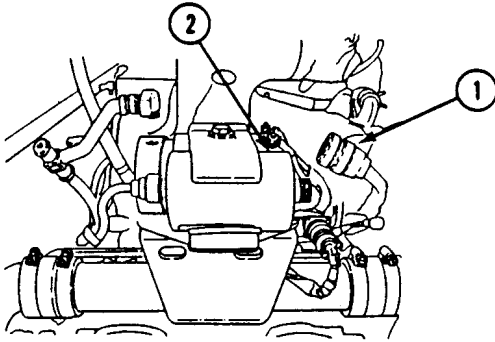
1. Replace ignition wire.
2. Verify no faults found.

ENGINE CRANKS BUT WILL NOT START BELOW 40° (AIR BOX HEATER IS USED) — Continued

0012 00

C2Y

1. Install igniter wire on igniter.
2. Remove air box heater harness plug (1) from igniter coil.
3. Turn MASTER SWITCH to ON (see your -10).
4. Turn air box heater switch ON.
5. Measure voltage between air box heater harness plug sockets A (+) and B (-).
6. Did multimeter read less than 17 volts?

**NO****C2YN**

1. Replace igniter coil (WP 0176 00).
2. Verify no faults found.

YES**C3Y**

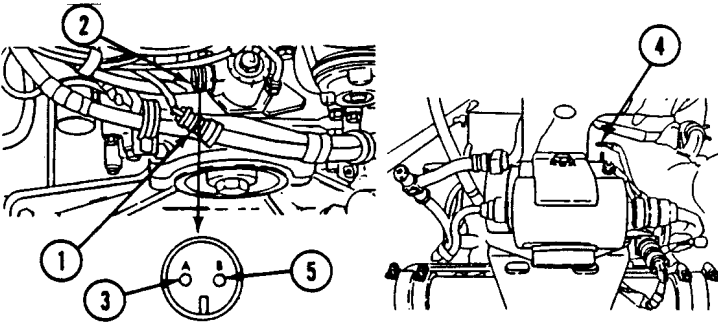
1. Release air box heater switch.
2. Turn MASTER SWITCH to OFF (see your -10).
3. Install ignition wire on coil.

ENGINE CRANKS BUT WILL NOT START BELOW 40° (AIR BOX HEATER IS USED) — Continued

0012 00

DY

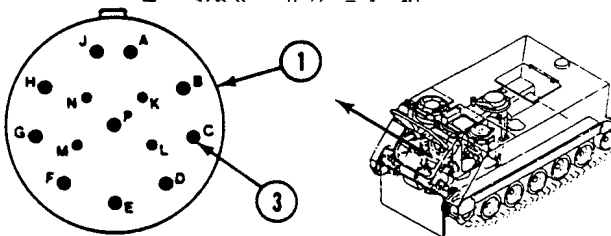
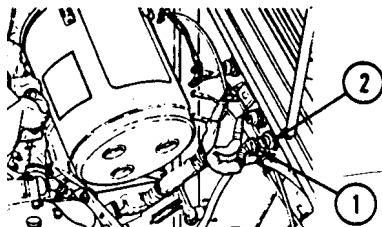
1. Remove engine harness plug (1) from air box heater harness jack (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Measure voltage between engine harness plug (1) pin A (3) to ground (4) and pin B (5) to ground (4) with air box heater switch depressed.
4. Turn MASTER SWITCH to OFF (see your -10).
5. Did multimeter read less than 17 volts with both readings?

**NO****DYN**

1. Replace air box heater wiring harness (WP 0181 00).
2. Verify no faults found.

YES**D2Y**

1. Remove engine harness plug (1) from front main harness jack (2) at carrier bulkhead.
2. Turn MASTER SWITCH to ON (see your -10).
3. Measure voltage from front main harness jack (2) pin C (3) and ground with air box heater switch on.
4. Turn MASTER SWITCH to OFF (see your -10).
5. Did multimeter read less than 17 volts?

**NO****D2YN**

1. Faulty engine harness. Beyond unit maintenance repair.
2. Notify your supervisor.

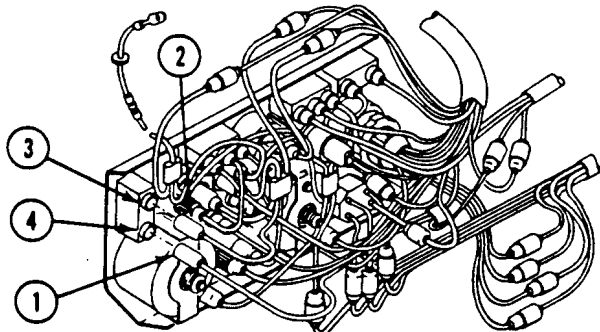
YES

ENGINE CRANKS BUT WILL NOT START BELOW 40° (AIR BOX HEATER IS USED) — Continued

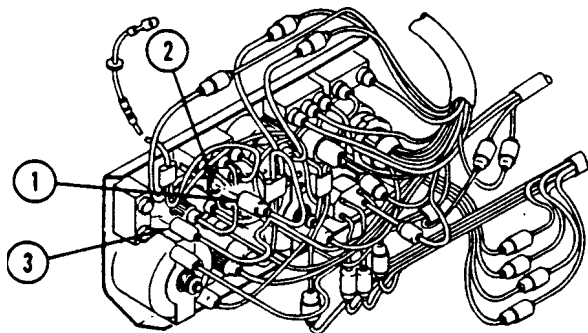
0012 00

D3Y

1. Remove air box heater switch (WP 0241 00).
2. Remove circuit 406 (1) and 27C (2) plugs from air box heater switch jacks (3) and (4).
3. Measure resistance between switch jacks (3) and (4) with air box heater ON.
4. Does multimeter read 0 ohms?

**YES****D4Y**

1. Remove circuit 27 plug (1) from instrument panel circuit breaker (2).
2. Measure resistance between instrument panel wiring harness circuit 27 (1) and 27C (3) plug pins.
3. Does multimeter read 0 ohms?

**YES****D5Y**

1. Repair front main harness circuit 406 (WP 0312 00).
2. Verify no faults found.

NO**D3YN**

1. Replace air box heater switch (WP 0241 00).
2. Verify no faults found.

NO**D4YN**

1. Repair instrument panel wiring harness circuit 27C/27 (WP 0312 00).
2. Verify no faults found.

ENGINE RUNS ROUGH, STALLS, OR DOES NOT PUT OUT FULL POWER**0013 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Wiping rag (WP 0782 00, Item 76)

Suitable container

Personnel Required

Unit Mechanic

Helper (H)

References

See your -10

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Air cleaner element cleaned (see your -10)

Primary and secondary fuel filters serviced
(see your -10)

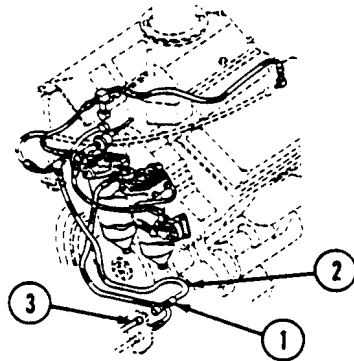
Trim vane lowered (see your -10)

Power plant access door open (see your -10)

Power plant rear access panels removed (see your -10)

Rear compartment floor plates removed (WP 0436 00,
WP 0437 00, WP 0438 00, WP 0440 00, or
WP 0441 00)**T****CAUTION****Keep return hose clear of generator drive belts.**

1. Ensure manual shutoff valve is open (see your -10).
2. Push forward on quick disconnect coupling (1) to disconnect return hose (2) from fuel return line (3).
3. Pull return hose (2) with quick disconnect coupling (1) out of power plant compartment. Remove half of quick disconnect coupling (1) from return hose (2), and retain.

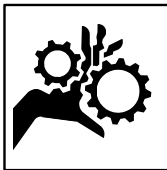


YES

Y

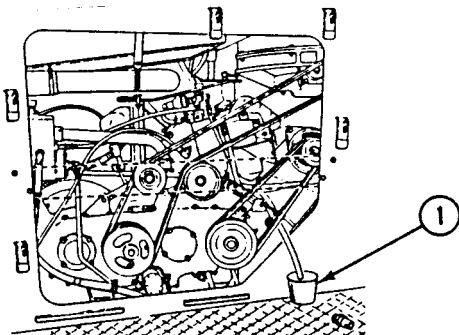
WARNING

Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

WARNING

Loose clothing is dangerous around moving belts and pulleys. You could get badly hurt if your clothes get caught in moving parts.

1. Insert hose into metal container (1) with at least 1 gallon (4 liter) capacity.
2. Make sure container (1) is making metal-to-metal contact with carrier floor so there is a good ground.
3. Start engine (see your -10). Run engine at 1200 RPM for 1 minute. Hold end of fuel return hose in fuel.
4. Install rear half of quick disconnect on hose.
5. Place fuel return hose inside power plant compartment and connect hose to return line. Make sure quick disconnect snaps firmly in place.
6. Did fuel flow at least 1/2 gallon (2 liter) per minute?

YES
↓

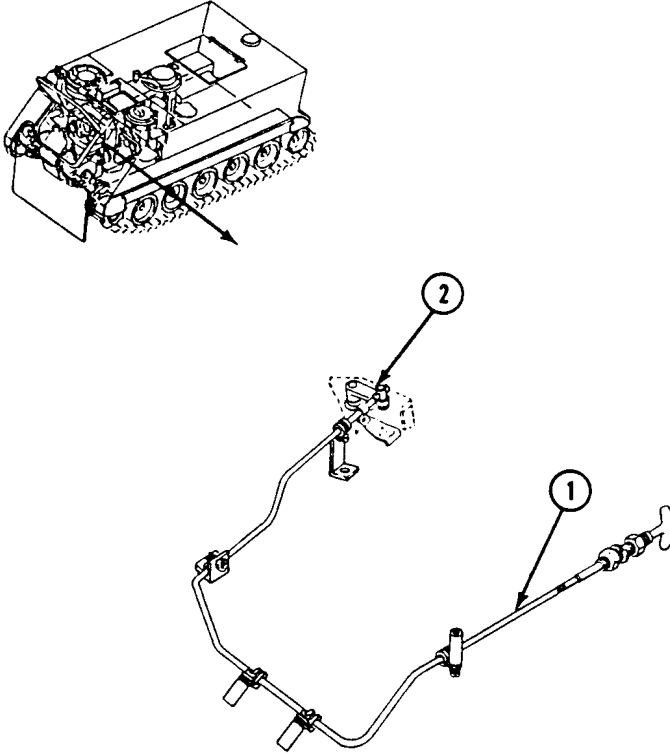
NO →

YN

GO TO **BY** (PAGE 0013 00-7)

2Y

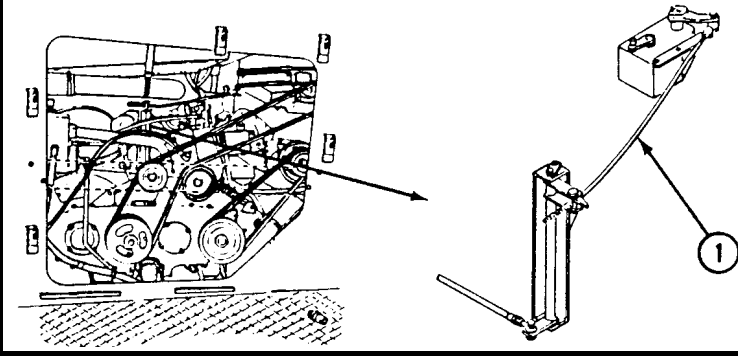
1. Inspect fuel cutoff control cable assembly (1) and fuel control arm (2).
2. Are fuel cutoff control cable assembly and fuel control arm parts in good condition and working properly?

**YES****NO****2YN**

1. Adjust/replace fuel cutoff cable (WP 0403 00).
2. Verify no faults found.

3Y

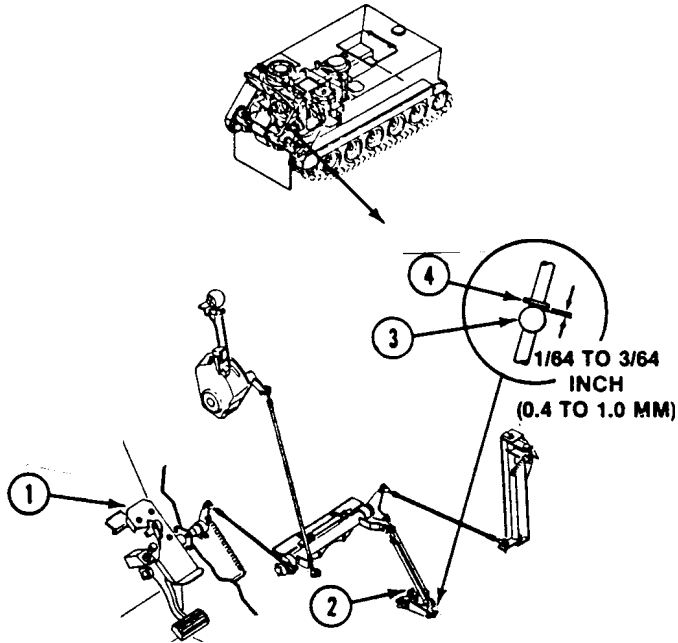
1. Inspect governor throttle linkage (1) for bent, loose, broken, or missing parts.
2. Are governor throttle linkage parts in good condition and working properly?

**YES****NO****3YN**

1. Repair/replace governor throttle linkage (WP 0399 00 and WP 0400 00).
2. Verify no faults found.

4Y

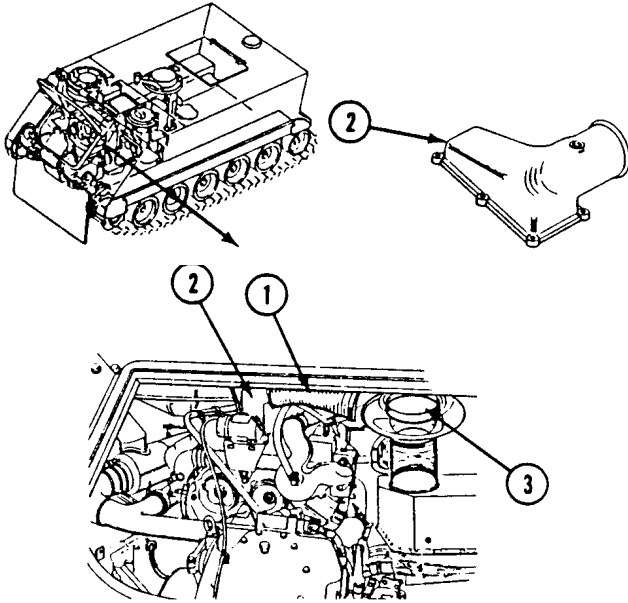
1. Inspect accelerator linkage for bent, loose, broken, or missing parts.
2. With pedal (1) in full throttle position, travel spring (2) should be compressed so that a gap of 1/64 to 3/64 inch (0.4 to 1.0 mm) exists between pivot pin (3) and rod stop (4).
3. Are accelerator linkage parts in good condition, correctly adjusted, and working properly?

**YES****NO****4YN**

1. Repair/adjust accelerator linkage parts (WP 0397 00).
2. Verify no faults found.

5Y

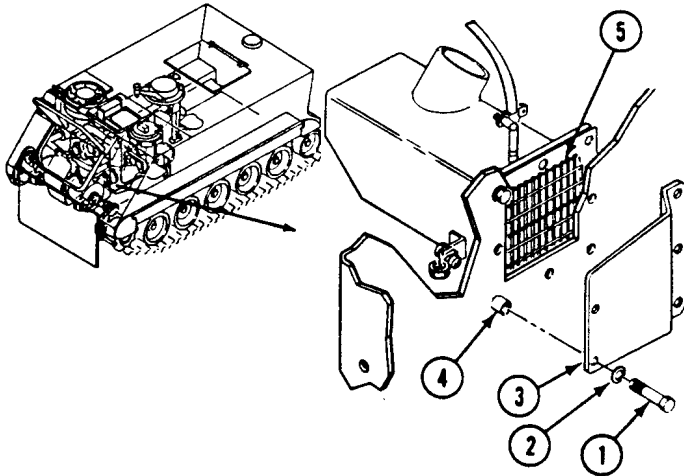
1. Remove air cleaner element (see your -10).
2. Remove air cleaner hose (WP 0183 00).
3. Inspect air cleaner hose (1), engine intake (2), and air cleaner cover (3) for signs of obstruction or collapse.
4. Are air cleaner hose, engine intake, and air cleaner cover serviceable?

**YES****NO****5YN**

1. Remove any obstructions.
2. Replace unserviceable air cleaner hose (WP 0183 00) or air cleaner cover (WP 0184 00).
3. Verify no faults found.

ENGINE RUNS ROUGH, STALLS, OR DOES NOT PUT OUT FULL POWER — Continued**0013 00****6Y**

1. Install air cleaner hose (WP 0183 00).
2. Remove five screws (1), washers (2), plate (3), and two spacers (4) from driver's compartment bulkhead.
3. Ensure that air control valve handle is pushed in (see your -10).
4. Inspect air control valve baffle (5) for operation.
5. Are air control valve parts in good condition and operating properly?

**NO****6YN**

1. Repair air control valve (WP 0187 00).
2. Report problem to supervisor.

YES**7Y**

1. Engine does not produce full power.
2. Install plate on driver's compartment bulkhead. Beyond unit maintenance repair.
3. Notify your supervisor.

BY

1. Check to see if fuel has no air bubbles as it comes out of return fuel hose.
2. Does fuel with no air bubbles come out of return fuel hose?

NO**BYN**

1. Air leak in suction side of fuel system.
2. Tighten all connections on valves, fuel hoses, filter, and pump from fuel tank to fuel pump.
3. Replace damaged hoses and/or fittings (see Chapter 6).
4. Verify no faults found.

YES

ENGINE RUNS ROUGH, STALLS, OR DOES NOT PUT OUT FULL POWER — Continued

0013 00

B2Y

1. Check and see if primary and secondary fuel filter elements have been replaced.
2. Have primary and secondary fuel filter elements been replaced?

NO

B2YN

1. Replace primary and secondary fuel filter elements (WP 0174 00).
2. Verify no faults found.

YES

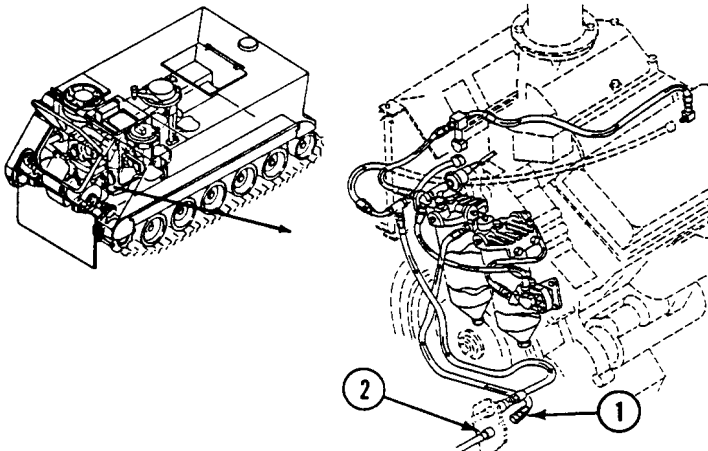
B3Y

1. Pull fuel supply hose (1) from quick disconnect coupling (2) in power plant compartment.
2. Place wiping rags under fuel supply hose quick disconnect coupling (2).
3. Depress plunger inside quick disconnect coupling (2) for 5 seconds.
4. Connect fuel supply hose (1) to quick disconnect coupling (2).
5. Did fuel flow freely from fuel supply hose?

NO

B3YN

1. Fuel supply hose or fuel tank pick-up tube obstructed.
2. Go to fuel system maintenance (see Chapter 6).
3. Verify no faults found.



YES

B4Y

1. Replace engine fuel pump (WP 0171 00).
2. Verify no faults found.

ENGINE OIL LOW PRESSURE INDICATOR FAILS TO GO OFF AFTER ENGINE STARTS

0014 00

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Oil Pressure Gauge Kit (WP 0780 00, Item 27)

Personnel Required

Unit Mechanic

References

WP 0316 00

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Engine warm

Engine oil level checked (see your -10)

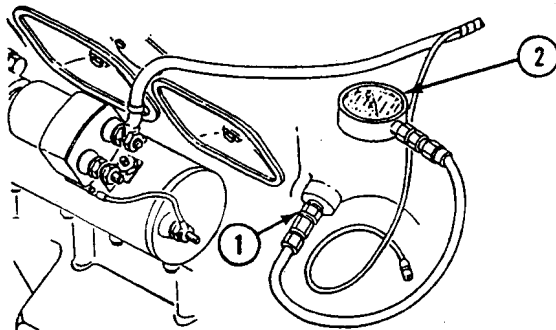
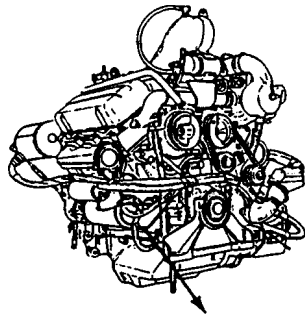
Engine idle speed checked (see your -10)

Trim vane lowered (see your -10)

Power plant front access door open (see your -10)

T

1. Remove engine oil low pressure switch (WP 0316 00).
2. Install adapter (1) and pressure tester (2).
3. Start engine and let idle (see your -10).
4. Does pressure tester read less than 13 psi?



YES

Y

1. Low engine oil pressure. Beyond unit maintenance repair.
2. Notify your supervisor.

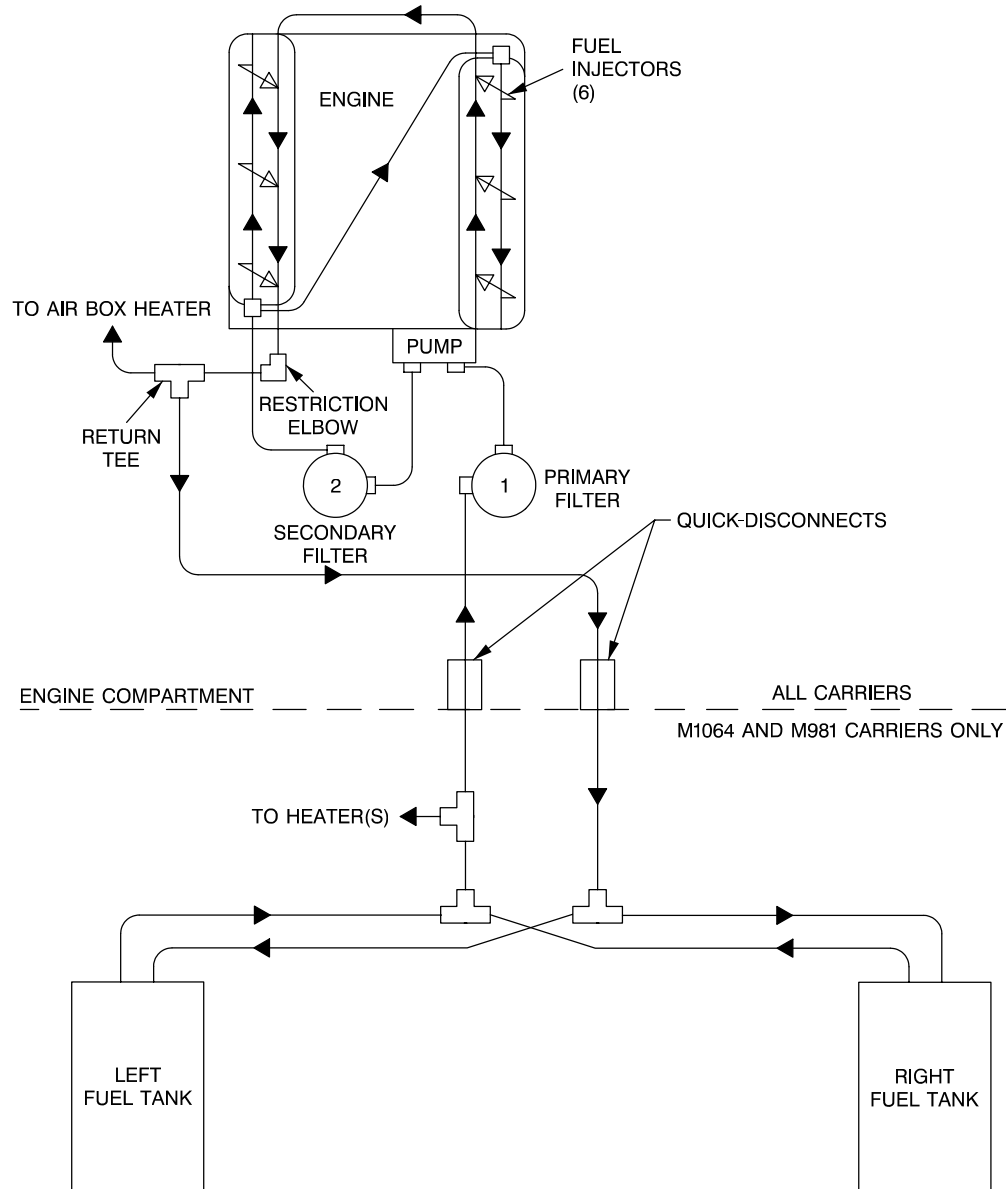
NO

TN

1. Go to Engine Oil Low Pressure Indicator Malfunctions (WP 0051 00).

ENGINE FUEL SYSTEM SCHEMATIC**0015 00****DESCRIPTION**

Use the schematic below as an aid for performing system troubleshooting procedures.



The diagram illustrates the electrical system for the engine compartment. It includes the following components and connections:

- ENGINE COMPARTMENT:**
 - STARTER SOLENOID:** Connected to the battery (6) and the starter motor.
 - STARTER:** Connected to the starter solenoid and the battery (6).
 - 74A:** A fuse or relay connected to the starter solenoid and the neutral start switch.
 - C7:** A fuse or relay connected to the starter solenoid and the instrument panel.
 - H:** A fuse or relay connected to the starter solenoid and the instrument panel.
- NEUTRAL START SWITCH:** Connected to the battery (6) and the instrument panel.
- INSTRUMENT PANEL:**
 - START SWITCH:** Connected to the battery (6) and the instrument panel.
 - INSTRUMENT PANEL CIRCUIT BREAKER:** Connected to the battery (6) and the instrument panel.
 - 10-15-27E:** A fuse or relay connected to the instrument panel and the distribution box.
- DISTRIBUTION BOX:** Connected to the battery (6) and the instrument panel.
- TO MASTER SWITCH:** A connection point for the master switch, connected to the battery (6) and the distribution box.

0017 00-1/2 blank

CHARGING SYSTEM MALFUNCTIONS**0018 00****INITIAL SETUP:**Maintenance Level

Unit

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

Power plant front access door open (see your -10)

Driver's power plant access panel removed (see your -10)

Power plant rear access panels removed (see your -10)

Engine disconnect lever IN (see your -10)

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Inspection Mirror (WP 0780 00, Item 42)

Jumper Wire

Personnel Required

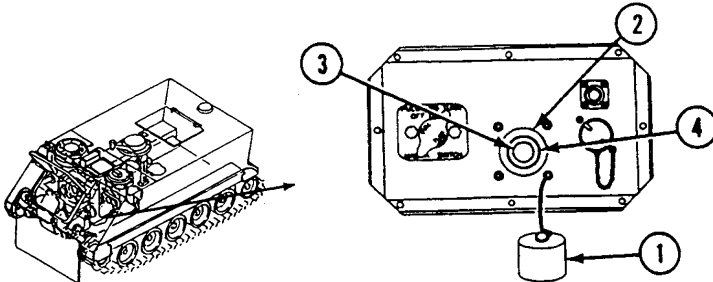
Unit Mechanic

References

See your -10

T

1. Start engine and run at 1200 RPM (see your -10).
2. Remove cap (1) from slave receptacle (2).
3. Measure voltage between contacts (+) (3) and (-) (4) on auxiliary power receptacle.
4. Does multimeter read less than 26 or more than 29 volts?

**YES****TN**

1. Stop engine (see your -10).
2. Go to Battery/Generator Indicator Malfunctions (WP 0049 00).

Y

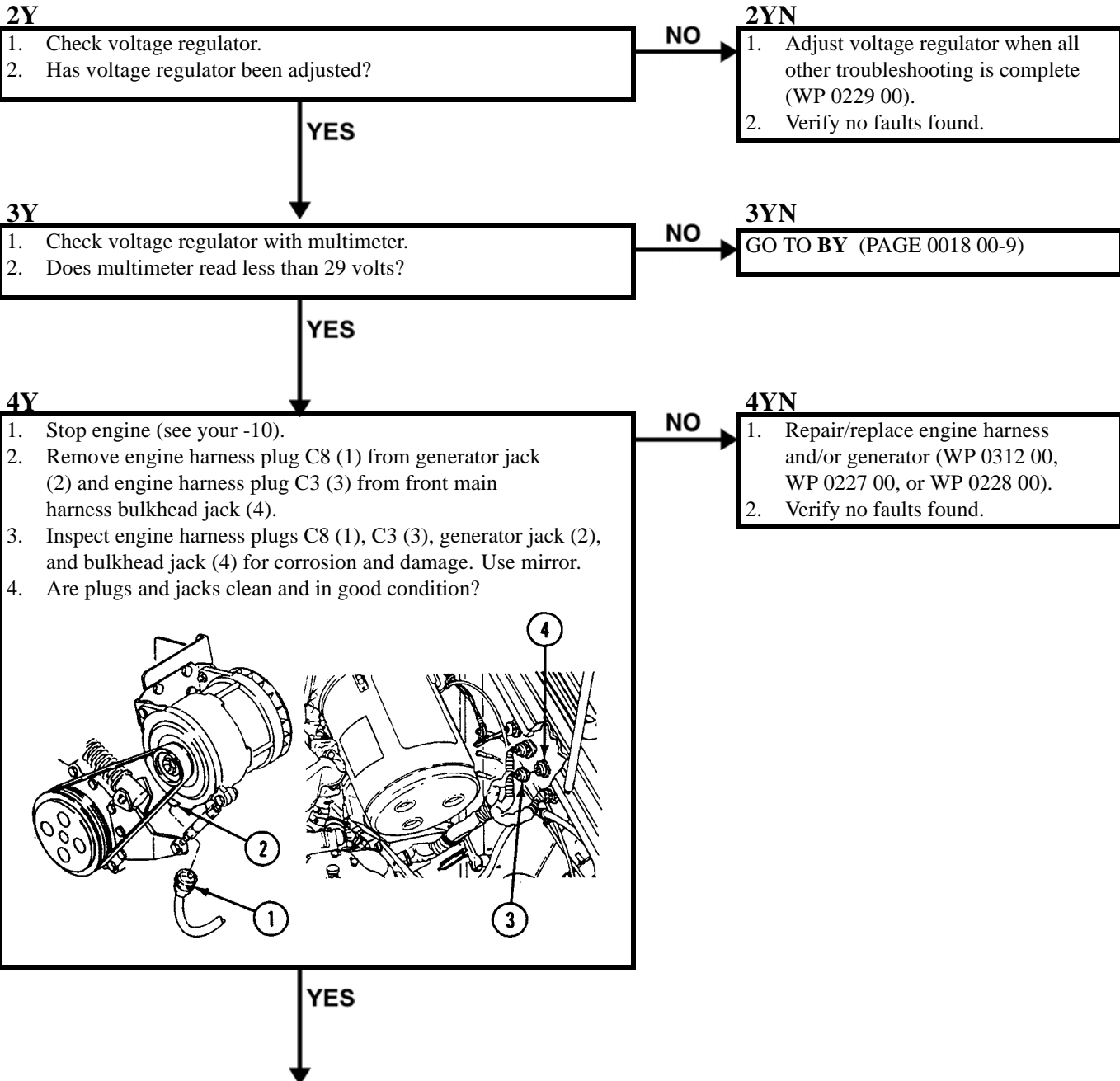
1. Check generator belt.
2. Is generator belt tight or in good condition?

YES**YN**

1. Belt needs adjustment or replacement 100 amp (WP 0227 00) or 200 amp (WP 0228 00).

CHARGING SYSTEM MALFUNCTIONS — Continued

0018 00

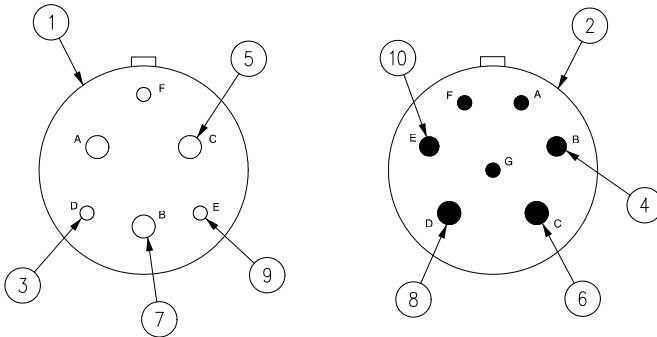


CHARGING SYSTEM MALFUNCTIONS — Continued

0018 00

5Y

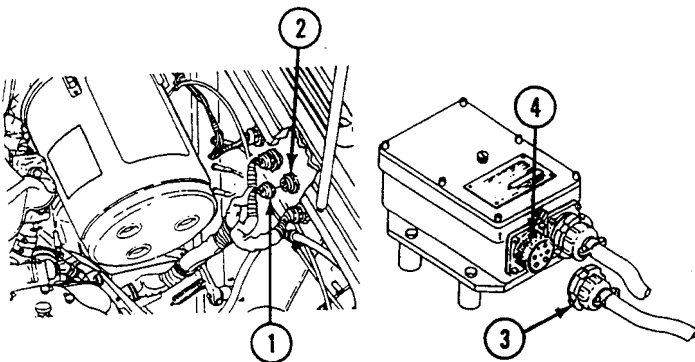
1. Measure resistance between engine harness plug C8 (1) and plug C3 (2), sockets D (3) to pins B (4), C (5) to C (6), B (7) to D (8), and E (9) to E (10).
2. Does multimeter read 0 ohms each time?

**NO****5YN**

1. Repair/replace engine harness (WP 0312 00).
2. Verify no faults found.

YES**6Y**

1. Install engine harness plug C8 on generator jack.
2. Remove engine wiring harness plug C3 (1) from bulkhead jack (2) and plug C4 (3) from regulator jack C4 (4).
3. Inspect engine harness plug C3 (1), bulkhead jack (2), front main plug C4 (3), and regulator jack C4 (4) for corrosion and damage.
4. Are plugs and jacks in clean and good condition?

**NO****6YN**

1. Repair/replace front main wiring harness and/or regulator (WP 0312 00 and WP 0230 00).
2. Verify no faults found.

YES

CHARGING SYSTEM MALFUNCTIONS — Continued

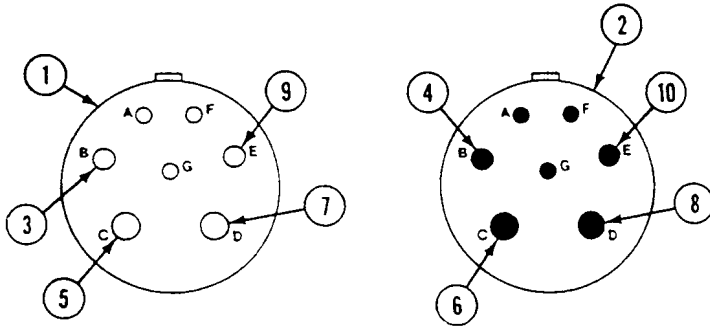
0018 00

7Y

1. Measure resistance between front main harness bulkhead jack (1) and front main plug C4 (2), sockets B (3) to pins B (4), C (5) to C (6), D (7) to D (8), and E (9) to E (10).
2. Does multimeter read 0 ohms each time?

NO**7YN**

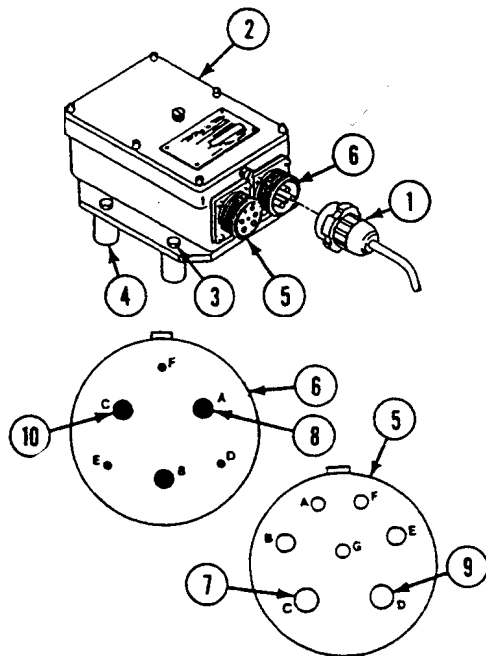
1. Repair/replace front main harness (WP 0312 00).
2. Verify no faults found.

**YES**

8Y

NOTE**If regulator is a 200 amp, reattach ground wire.**

1. Install engine wiring harness plug C3 on front main harness bulkhead jack.
2. Remove front main harness plug C5 (1) from regulator (2).
3. Remove four screws (3) and regulator (2) from regulator plate (4).
4. Measure resistance between regulator jacks (5), (6), socket C (7) to pin A (8), and socket D (9) to pin C (10).
5. Does multimeter read 0 ohms between socket D (9) and pin C (10), and infinity ohms between socket C (7) and pin A (8)?

**YES****NO**

8YN

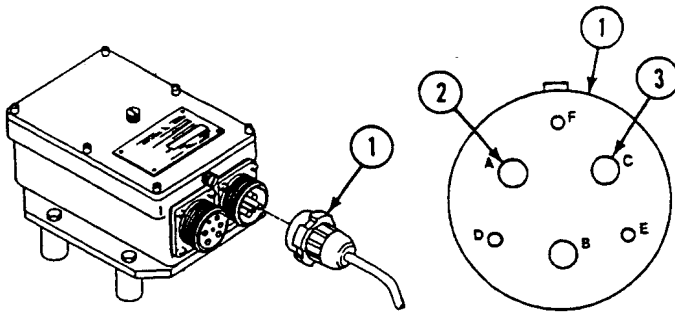
1. Replace regulator (WP 0230 00).
2. Verify no faults found.

CHARGING SYSTEM MALFUNCTIONS — Continued

0018 00

9Y

1. Measure voltage between front main wiring harness plug C5 (1), socket A (+) (2), and socket C (-) (3). (If your carrier is equipped with a 200 amp generator system, measure voltage between socket A and ground, then between pin C and ground).
2. Turn MASTER SWITCH to ON (see your -10).
3. Does multimeter read more than 17 volts?



NO

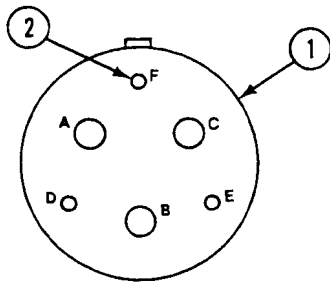
9YN

GO TO CY (PAGE 0018 00-10)

YES

10Y

1. Start engine and let idle (see your -10).
2. Measure voltage between front main harness plug C5 (1), socket F (2), leave in ground.
3. Does multimeter read less than 17 volts?



NO

10YN

1. Stop engine (see your -10).
2. Replace generator and regulator assemblies (WP 0227 00, WP 0228 00, and WP 0230 00).
3. Verify no faults found.

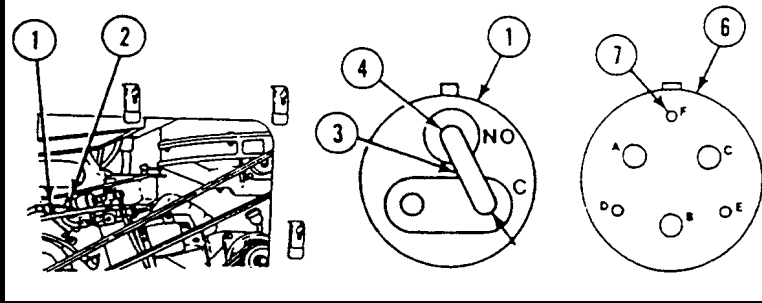
YES

CHARGING SYSTEM MALFUNCTIONS — Continued

0018 00

11Y

1. Stop engine (see your -10).
2. Install regulator on regulator plate.
3. Install front main wiring harness plug C4 on regulator.
4. Remove engine harness plug (1) from generator field switch jack (2).
5. Install jumper (3) on engine harness plug (1) between pins NO (4) and C (5).
6. Turn MASTER SWITCH to ON (see your -10).
7. Measure voltage between front main wiring harness plug C5 (6), socket F (7), and ground.
8. Does multimeter read less than 17 volts?



YES



11YN

1. Replace generator field switch (WP 0232 00).
2. Verify no faults found.

NO

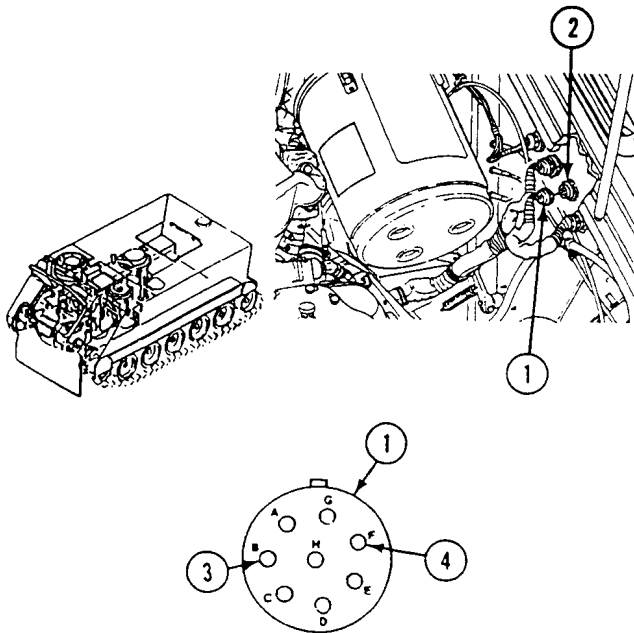


CHARGING SYSTEM MALFUNCTIONS — Continued

0018 00

12Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove engine wiring harness plug C7 (1) from front main wiring harness bulkhead jack C7 (2).
3. Measure resistance between C7 plug (1), pins B (3), and F (4).
4. Does multimeter read 0 ohms?



YES

NO

12YN

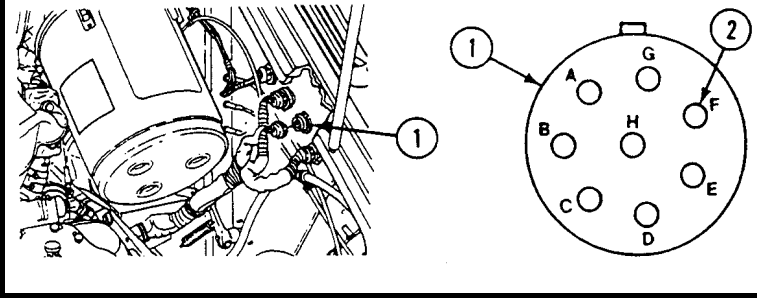
1. Remove jumper wire from generator field switch plug.
2. Measure resistance between plug C7, pin B, and engine harness plug pin NO. If multimeter reads 0 ohms, see Step 4.
3. Measure resistance between plug C7, pin F, and engine harness plug pin C. If multimeter reads 0 ohms, see Step 4.
4. Repair engine wiring harness circuit 1A or 1B (WP 0312 00).
5. Verify no faults found.

CHARGING SYSTEM MALFUNCTIONS — Continued

0018 00

13Y

1. Remove jumper wire from engine harness plug.
2. Install engine wiring harness on generator field switch.
3. Turn MASTER SWITCH to ON (see your -10).
4. Measure voltage between front main harness bulkhead jack C7 (1), pin F (2), to ground.
5. Turn MASTER SWITCH to OFF (see your -10).
6. Did multimeter read more than 17 volts?



YES

14Y

1. Repair front main wiring harness circuit 1B (WP 0312 00).
2. Verify no faults found.

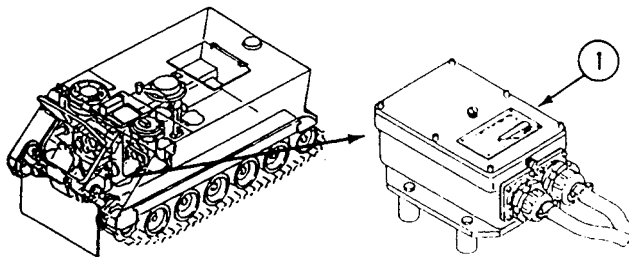
NO

13YN

1. Install front main harness plug C5 on regulator jack.
2. Repair front main wiring harness circuit 1A (WP 0312 00).
3. Verify no faults found.

BY

1. Engine stopped/shutdown (see your -10).
2. Measure resistance between voltage regulator housing (1) and ground.
3. Does multimeter read 0 ohms?



YES

NO

BYN

1. Remove voltage regulator (WP 0230 00) and clean ground contacts (bolted surface).
2. Install voltage regulator (WP 0230 00).
3. Verify no faults found.

CHARGING SYSTEM MALFUNCTIONS — Continued

0018 00

B2Y

1. Check voltage regulator.
2. Has voltage regulator been replaced?

NO

B2YN

1. Replace voltage regulator (WP 0230 00).
2. Verify no faults found.

YES

B3Y

1. Replace generator (WP 0227 00 or WP 0228 00).
2. Verify no faults found.

CY

1. Check vehicle charging system.
2. Does your carrier have a 100 amp charging system?

NO

CYN

1. Install plug C4 to regulator jack.
2. Front main wiring harness circuit 2 or 2A for 200 amp systems damaged.
3. Notify your supervisor.

YES

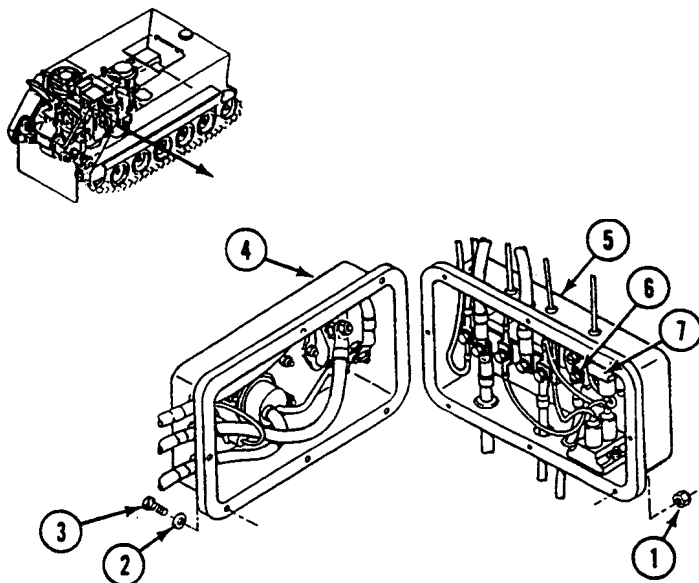
C2Y

1. Install regulator on regulator plate.
2. Remove eight nuts (1), washers (2), and screws (3) from master switch panel (4). Pull panel away from distribution box (5).
3. Measure resistance between front main harness circuit 3 terminal (6) on circuit breaker (7) and ground.
4. Does multimeter read 0 ohms?

NO

C2YN

1. Replace generator-regulator circuit breaker (WP 0231 00).
2. Verify no faults found.



YES

CHARGING SYSTEM MALFUNCTIONS — Continued

0018 00**C3Y**

- | |
|---|
| <ol style="list-style-type: none">1. Repair front main wiring harness circuit 2 or 3 (WP 0312 00).2. Verify no faults found. |
|---|

CONNECT/DISCONNECT ALTERNATOR (GENERATOR) TEST KIT

0019 00

THIS WORK PACKAGE COVERS:

- Connect (page 0019 00-1).
- Disconnect (page 0019 00-5).

INITIAL SETUP:

Maintenance Level

Unit

References

WP 0294 00

Tools and Special Tools

- Alternator Test Kit (WP 0780 00, Item 78)
- Electrical Connector Pliers (WP 0780 00, Item 44)
- General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Equipment Condition

- Engine stopped (see your -10)
- Ramp lowered (see your -10)
- All radios and heaters turned off (see your -10)
- Battery box cover removed (WP 0295 00)
- Battery drawer open (WP 0306 00)

Personnel Required

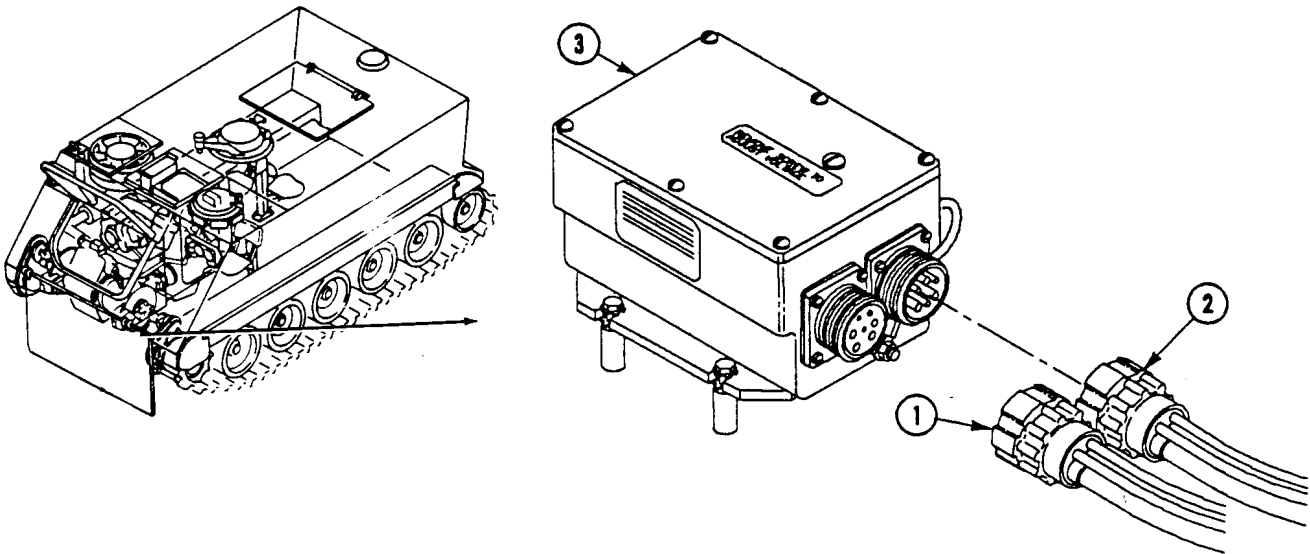
Unit Mechanic

CONNECT

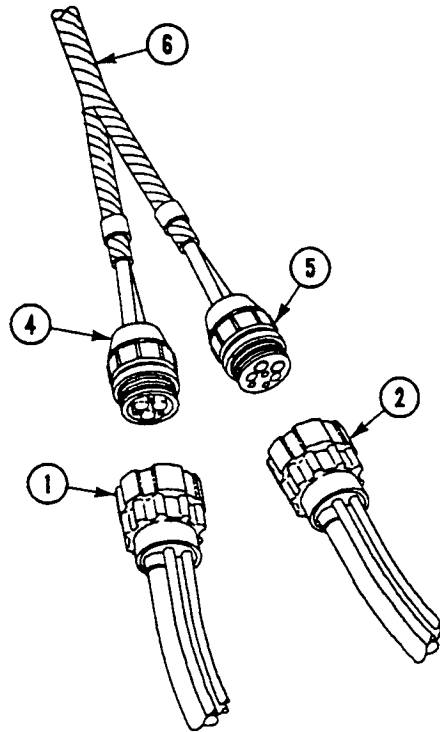
CAUTION

If you do not disconnect the battery ground lead, the regulator and alternator test kit may be damaged when disconnecting and connecting front main wiring harness cannon plugs.

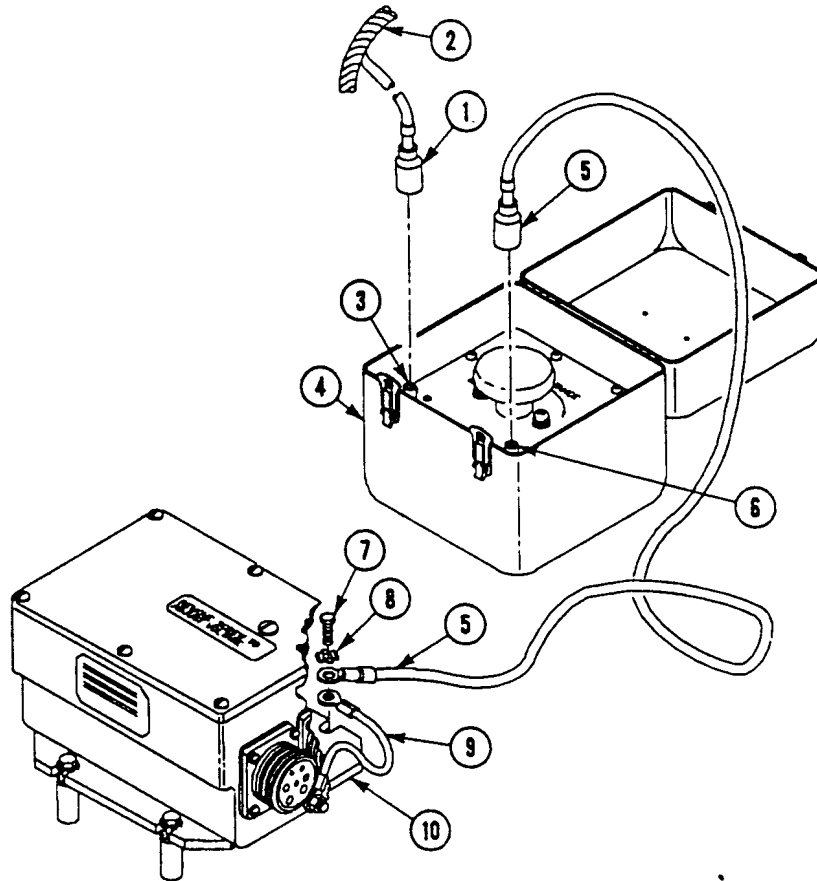
1. Disconnect battery ground lead (WP 0294 00).
2. Check all electrical connectors, cannon plugs, and wiring harnesses before connecting alternator test kit.
3. Remove two front main wiring harness cannon plugs (1) and (2) from voltage regulator (3).



4. Connect two cannon plugs (4) and (5) of diagnostic test wiring harness (6) to cannon plugs (1) and (2). Use electrical connector pliers.



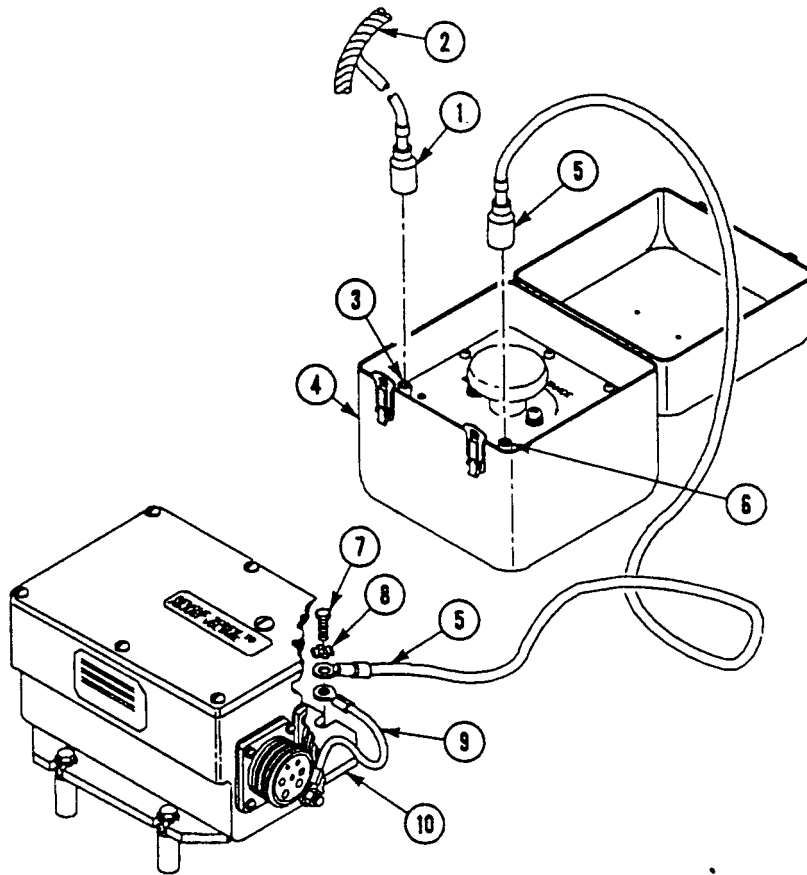
5. Connect lead 2 (1) of diagnostic test wiring harness (2) to terminal 5 (3) of alternator test kit (4).



CAUTION

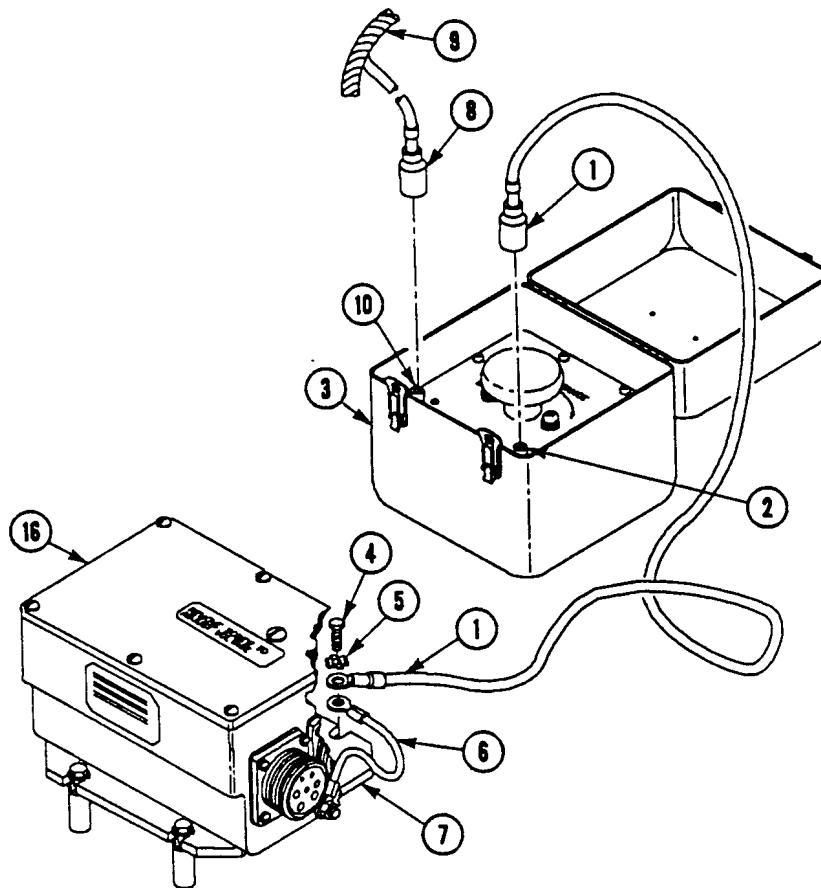
If ground lead (5) is not connected to chassis and test kit, the alternator could be damaged when engine is started.

6. Connect ground lead (5) to terminal 6 (6) of alternator test kit (4) and ground.
 - a. Remove screw (7), lockwasher (8), and ground lead (9) from voltage regulator mounting plate (10).
 - b. Secure ground lead (5) and ground lead (9) to mounting plate (10) with lockwasher (8) and screw (7).

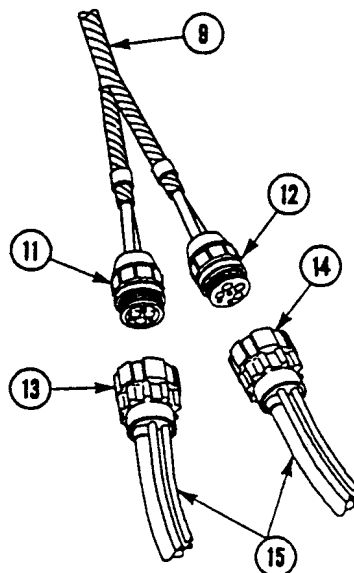


7. Connect battery ground lead (WP 0294 00).

3. Disconnect lead 2 (8) of diagnostic test wiring harness (9) from terminal (10) of alternator test kit (3).

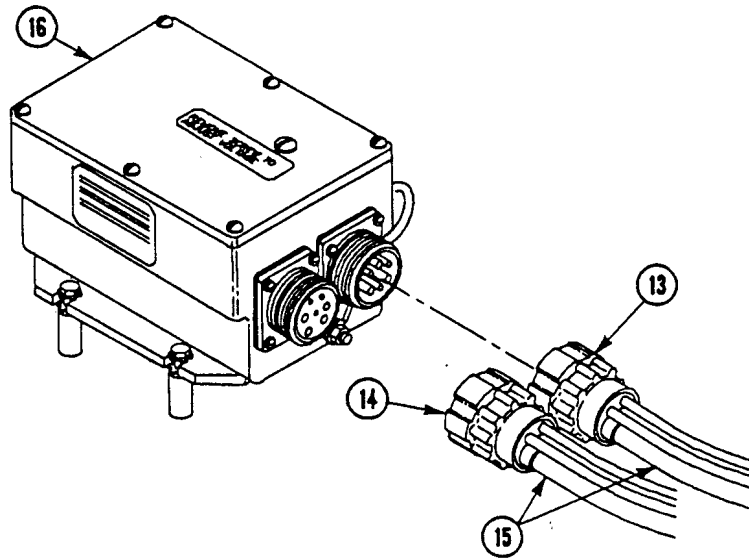


4. Disconnect two cannon plugs (11) and (12) of diagnostic test wiring harness (9) from two cannon plugs (13) and (14) of front main wiring harness (15). Use electrical connector pliers.



CONNECT/DISCONNECT ALTERNATOR (GENERATOR) TEST KIT — Continued**0019 00**

5. Connect two cannon plugs (13) and (14) of front main wiring harness (15) to voltage regulator (16). Use electrical connector pliers.



6. Connect battery ground lead (WP 0294 00).

200 AMP CHARGING SYSTEM OPERATIONAL CHECK

0020 00

INITIAL SETUP:

Maintenance Level

Unit

References

See your -10

Tools and Special Tools

- General Mechanic's Tool Kit (WP 0780 00, Item 29)
- Multimeter (WP 0780 00, Item 43)

Equipment Condition

- Engine stopped (see your -10)
- Carrier blocked (see your -10)

Personnel Required

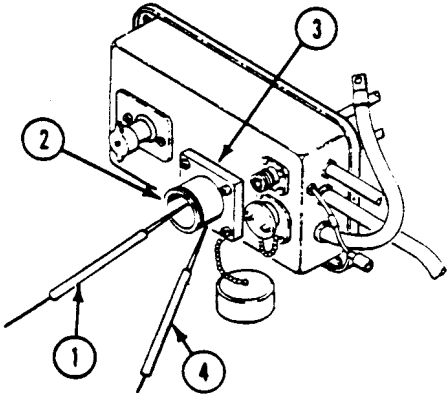
Unit Mechanic

T

NOTE

On carriers that have standard auxiliary power receptacles, touch red lead to positive and black lead to negative sockets in the receptacle.

1. Turn MASTER SWITCH to ON (see your -10).
2. Measure battery voltage by placing red lead (1) in positive socket of NATO plug (2) on auxiliary power (slave) receptacle (3). Touch negative lead (4) to outside of NATO plug on receptacle.
3. Is battery voltage more than 24.8 volts?



NO

TN

1. Replace or charge batteries. See TM 9-6140-200-14.
 2. Verify no faults found.

YES

Y

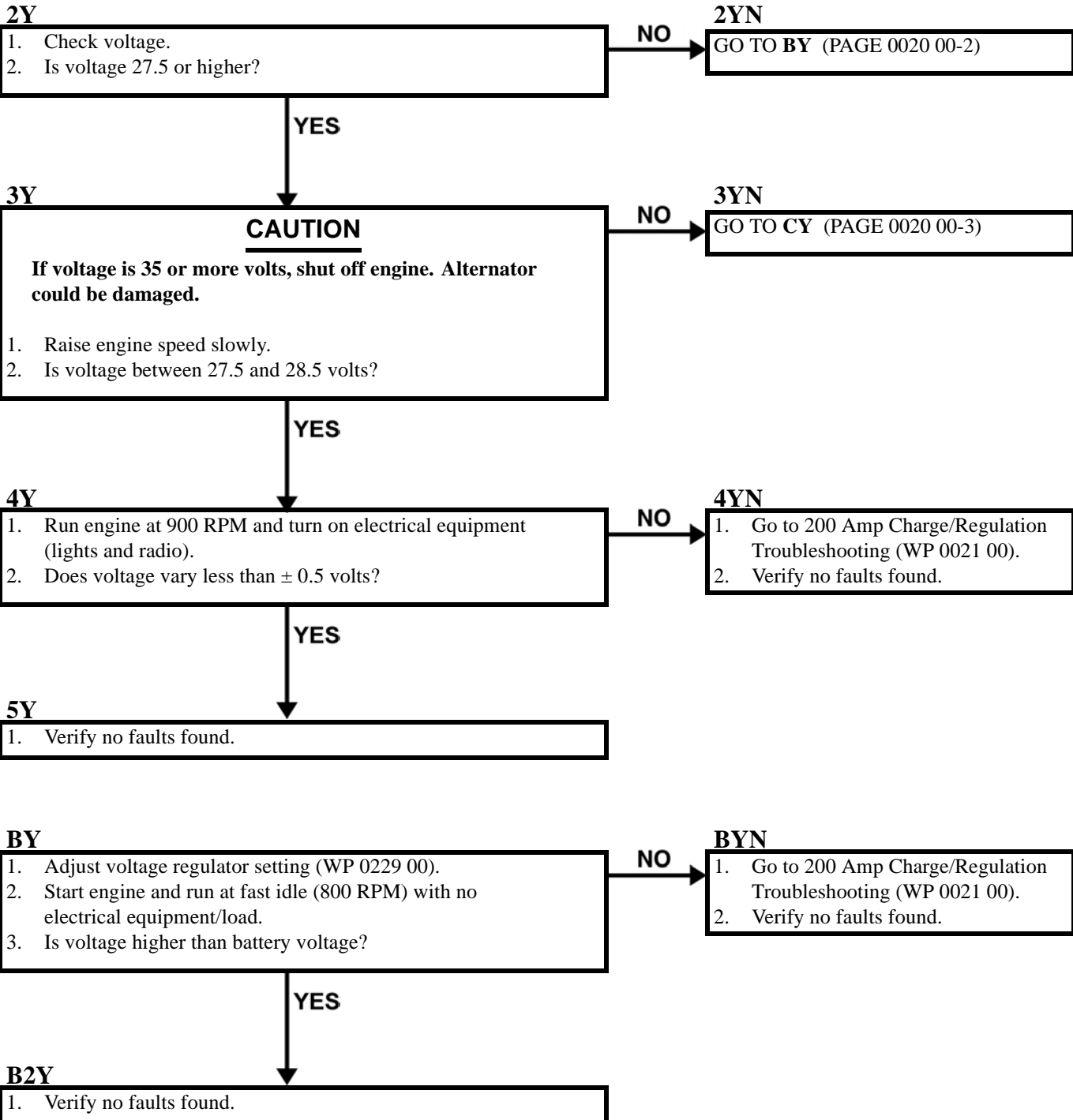
1. Start engine and run at fast idle (800 RPM) with no electrical equipment/load.
 2. Is voltage higher than battery voltage?

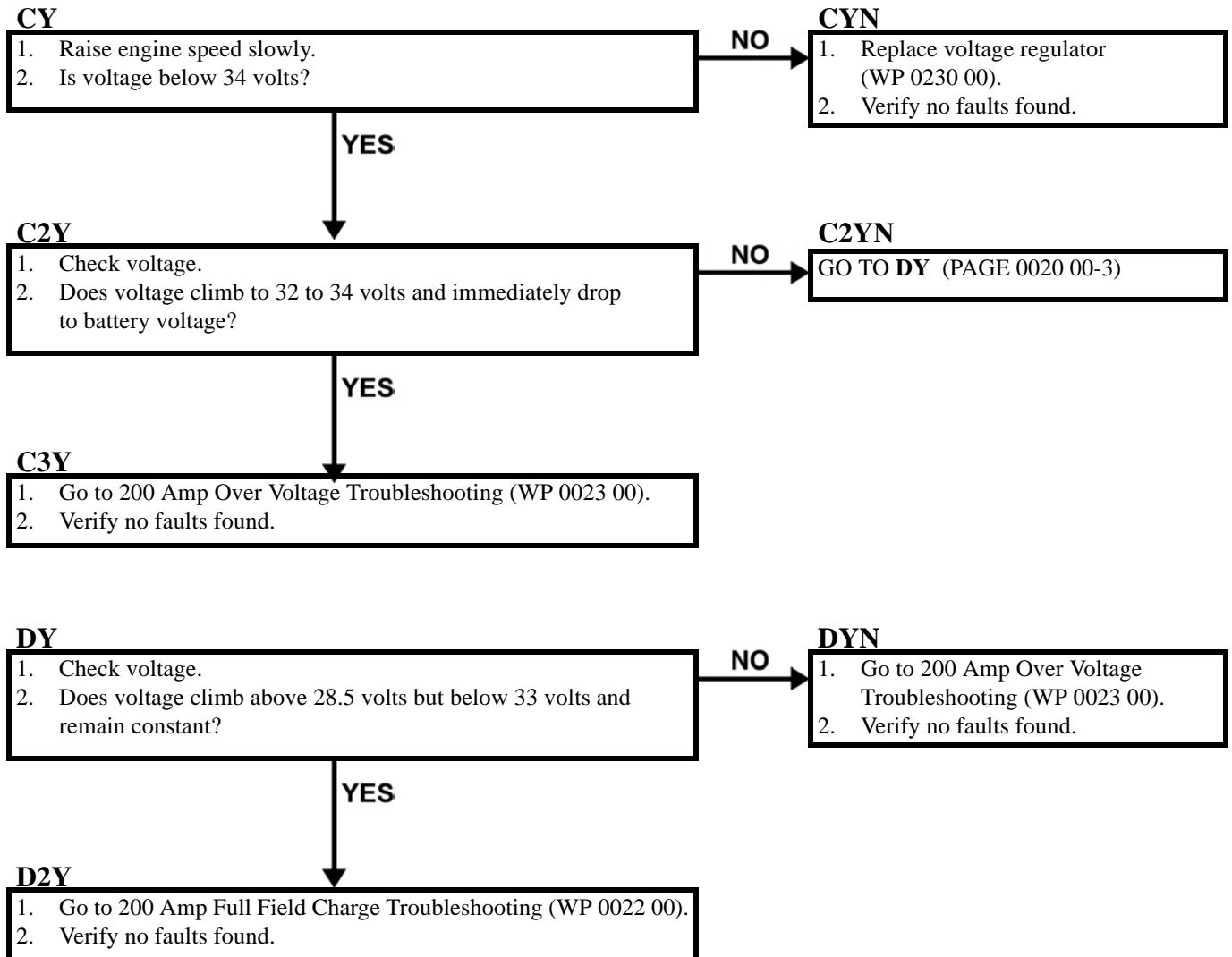
NO

YN

1. Go to 200 Amp Charge/Regulation Troubleshooting (WP 0021 00).
 2. Verify no faults found.

YES





200 AMP CHARGE/REGULATION TROUBLESHOOTING

0021 00

INITIAL SETUP:

Maintenance Level

Unit

References

WP 0294 00

Tools and Special Tools

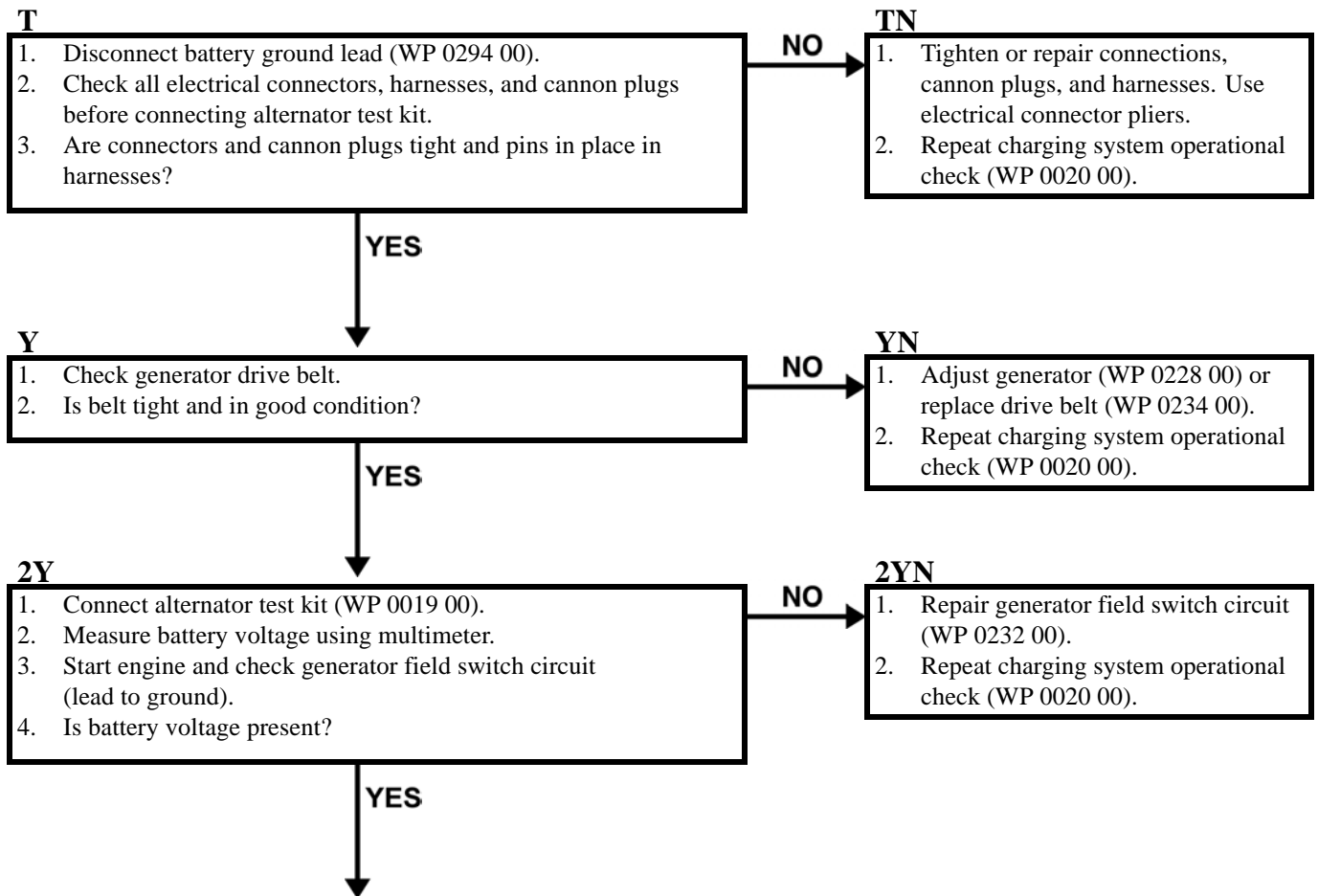
- Alternator Test Kit (WP 0780 00, Item 78)
- Electrical Connector Pliers (WP 0780 00, Item 44)
- General Mechanic's Tool Kit (WP 0780 00, Item 29)
- Multimeter (WP 0780 00, Item 43)

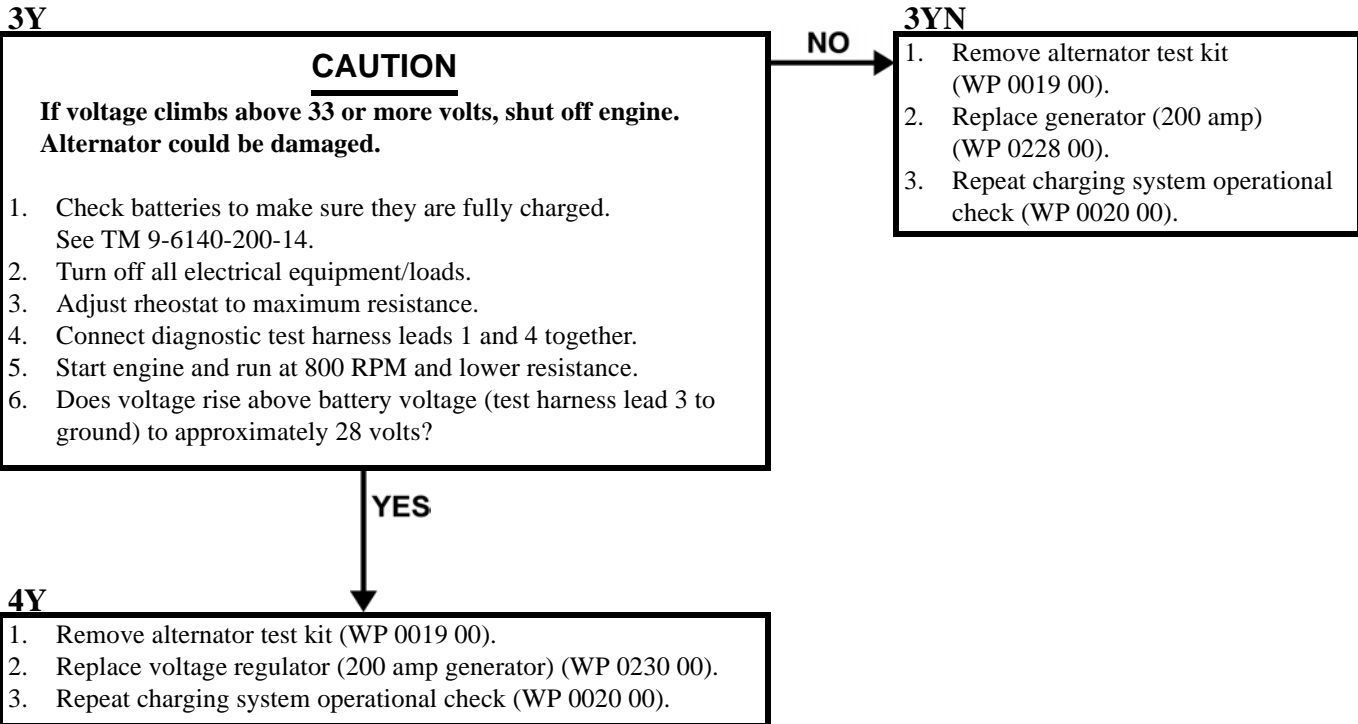
Equipment Condition

- Engine stopped (see your -10)
- Carrier blocked (see your -10)
- Ramp lowered (see your -10)
- All radios and heaters OFF (see your -10)
- Battery box cover removed (WP 0295 00 or WP 0306 00)

Personnel Required

Unit Mechanic





200 AMP FULL FIELD CHARGE TROUBLESHOOTING**0022 00****INITIAL SETUP:**Maintenance Level

Unit

References

WP 0294 00

Tools and Special Tools

- Alternator Test Kit (WP 0780 00, Item 78)
- Electrical Connector Pliers (WP 0780 00, Item 44)
- General Mechanic's Tool Kit (WP 0780 00, Item 29)
- Multimeter (WP 0780 00, Item 43)

Equipment Condition

- Engine stopped (see your -10)
- Carrier blocked (see your -10)
- Ramp lowered (see your -10)
- All radios and heaters OFF (see your -10)
- Battery box cover removed (WP 0295 00) or battery drawer open (WP 0306 00).

Personnel Required

Unit Mechanic

T

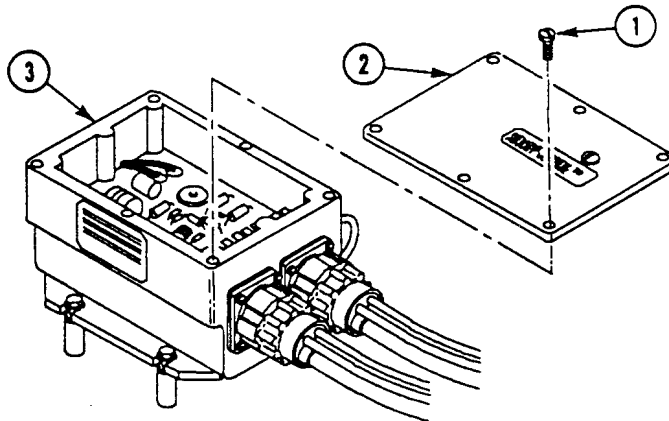
1. Disconnect battery ground lead (WP 0294 00).
2. Check all electrical connectors, harnesses, and cannon plugs before connecting alternator test kit.
3. Are connectors and cannon plugs tight and pins in place in harnesses?

NO**TN**

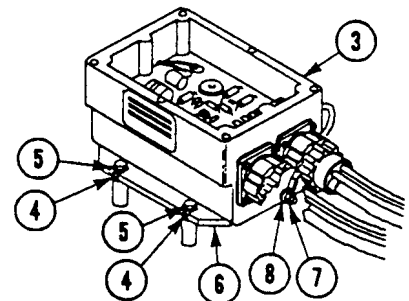
1. Tighten or repair connections, cannon plugs, and harnesses. Use electrical connector pliers.
2. Repeat charging system operational check (WP 0020 00).

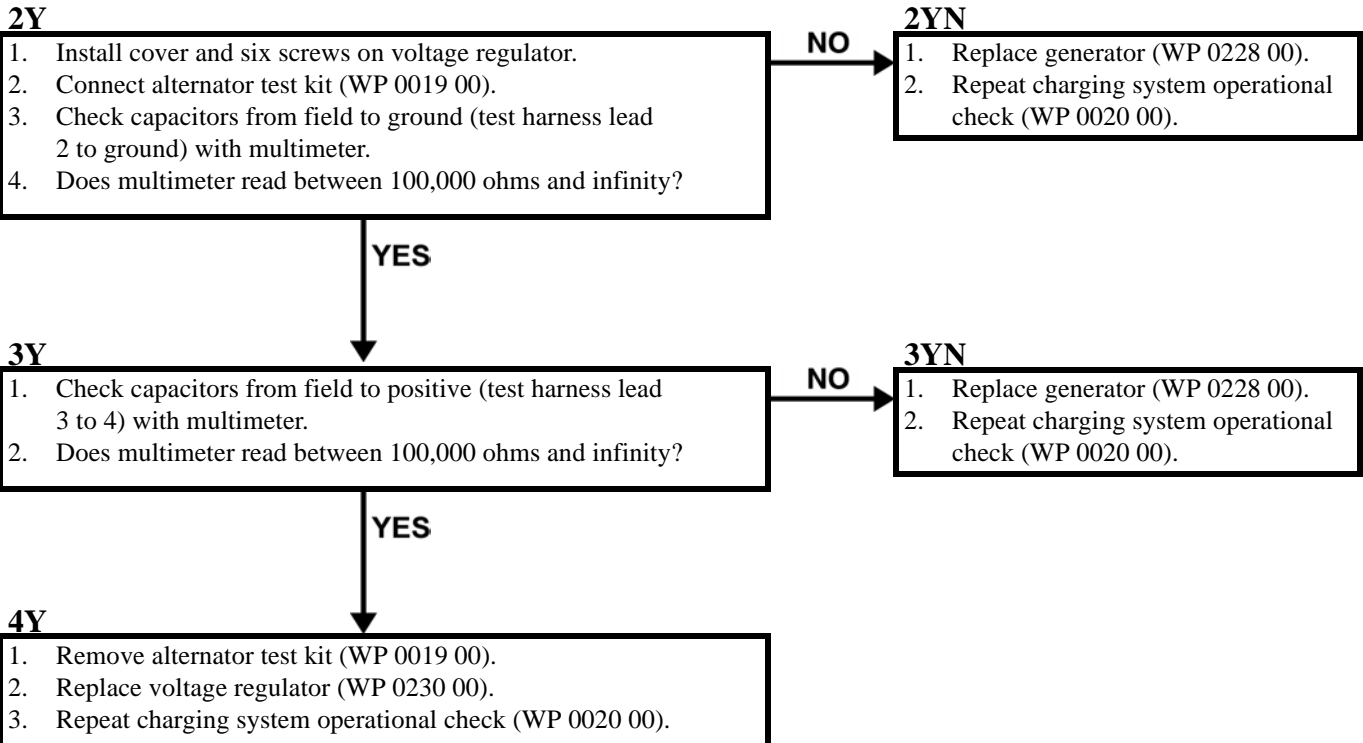
YES**Y**

1. Remove six screws (1) and cover (2) from voltage regulator (3).
2. Connect multimeter to clean unpainted surface and vehicle ground.
3. Does multimeter read 0.5 ohms or less?

**NO****YN**

1. Ensure lockwashers (4) and screws (5) are tight on plate (6).
2. Tighten nut (7) securing ground lead (8) to regulator (3).
3. Install cover and screws on voltage regulator.
4. Repeat charging system operational check (WP 0020 00).

**YES**



200 AMP OVER VOLTAGE TROUBLESHOOTING**0023 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

WP 0229 00

Tools and Special Tools

Alternator Test Kit (WP 0780 00, Item 78)

Electrical Connector Pliers (WP 0780 00, Item 44)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Multimeter (WP 0780 00, Item 43)

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

Personnel Required

Unit Mechanic

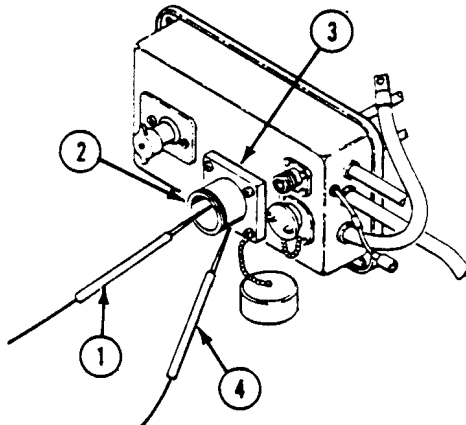
T

1. Turn MASTER SWITCH to ON (see your -10).
2. Measure battery voltage by placing red lead (1) in positive socket of NATO plug (2) on auxiliary power (slave) receptacle (3). Touch black negative lead (4) to outside of NATO plug on receptacle.

NOTE

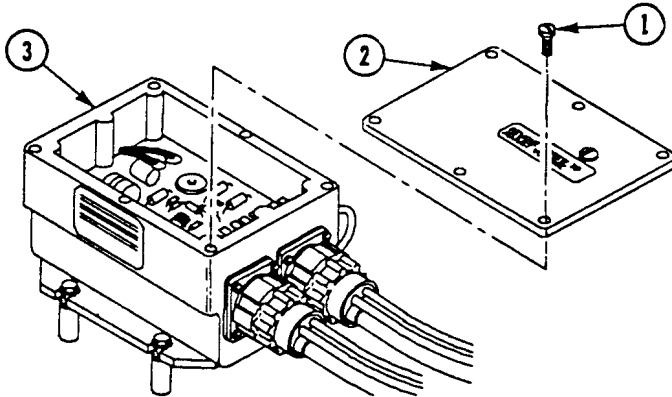
On carriers that have standard auxiliary power receptacles, touch red lead to positive and black lead to negative sockets in the receptacle.

3. Adjust voltage regulator (200 amp) to lowest setting (WP 0229 00).
4. Start engine and accelerate.
5. Does voltage climb to 32 to 34 volts and suddenly drop to battery voltage?

**YES****NO****TN****GO TO BY (PAGE 0023 00-3)**

Y

1. Remove six screws (1) and cover (2) from voltage regulator (3).
2. Connect multimeter to clean unpainted surface and vehicle ground.
3. Does multimeter read 0.5 ohms or less?

**YES****2Y**

1. Install cover and six screws on voltage regulator.
2. Connect alternator test kit (WP 0019 00).
3. Check batteries to make sure they are fully charged. See TM 9-6140-200-14.
4. Turn off all electrical equipment/loads.

CAUTION

**If voltage climbs above 33 or more volts, shut off engine.
Alternator could be damaged.**

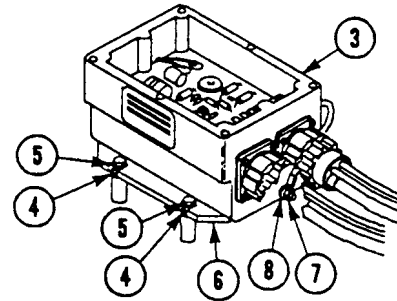
5. Adjust rheostat to maximum resistance.
6. Connect diagnostic test harness leads 1 and 4 together.
7. Start engine and run at 800 RPM and lower resistance.
8. Does voltage rise above battery voltage (test harness lead 3 to ground) to approximately 28 volts?

YES**3Y**

1. Remove alternator test kit (WP 0019 00).
2. Replace voltage regulator (200 amp) (WP 0230 00).
3. Repeat charging system operational check (WP 0020 00).

NO**YN**

1. Ensure lockwashers (4) and screws (5) are tight on plate (6).
2. Tighten nut (7) securing ground lead (8) to regulator (3).
3. Install cover and screws on voltage regulator.
4. Repeat charging system operational check (WP 0020 00).

**NO****2YN**

1. Remove alternator test kit (WP 0019 00).
2. Replace generator (200 amp) (WP 0228 00).
3. Repeat charging system operational check (WP 0020 00).

BY

1. Adjust voltage regulator to 27.9 to 28.1 volts (WP 0229 00).
2. Repeat charging system operational check (WP 0020 00).
3. After slowly raising engine RPMs in charge system operational check, does voltage climb to 32 to 34 volts and suddenly drop to battery voltage?

NO**BYN**

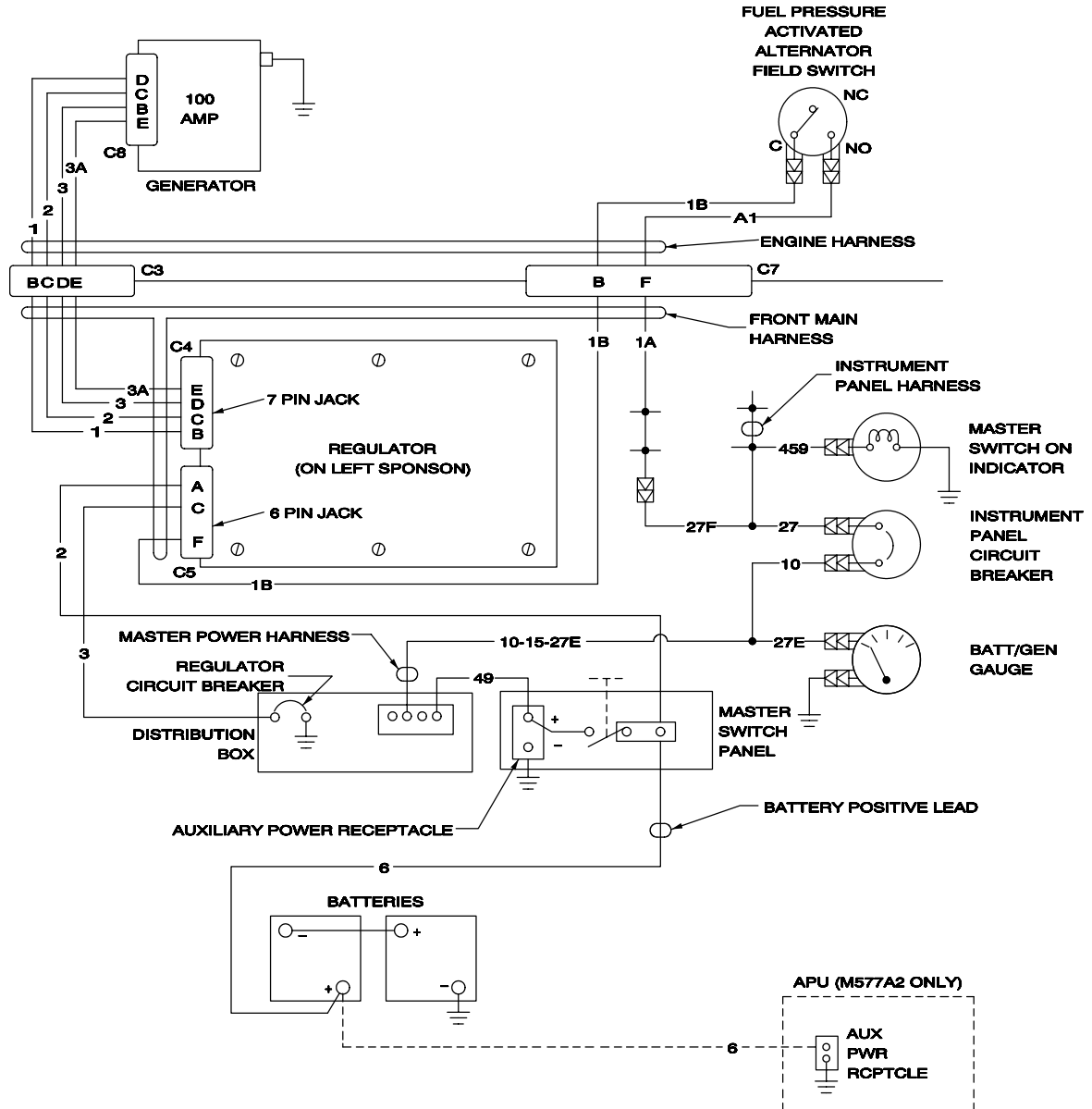
1. Verify no faults found.

YES**B2Y**

GO TO Y (PAGE 0023 00-2)

100 AMP ENGINE CHARGING SYSTEM SCHEMATIC**0024 00****DESCRIPTION**

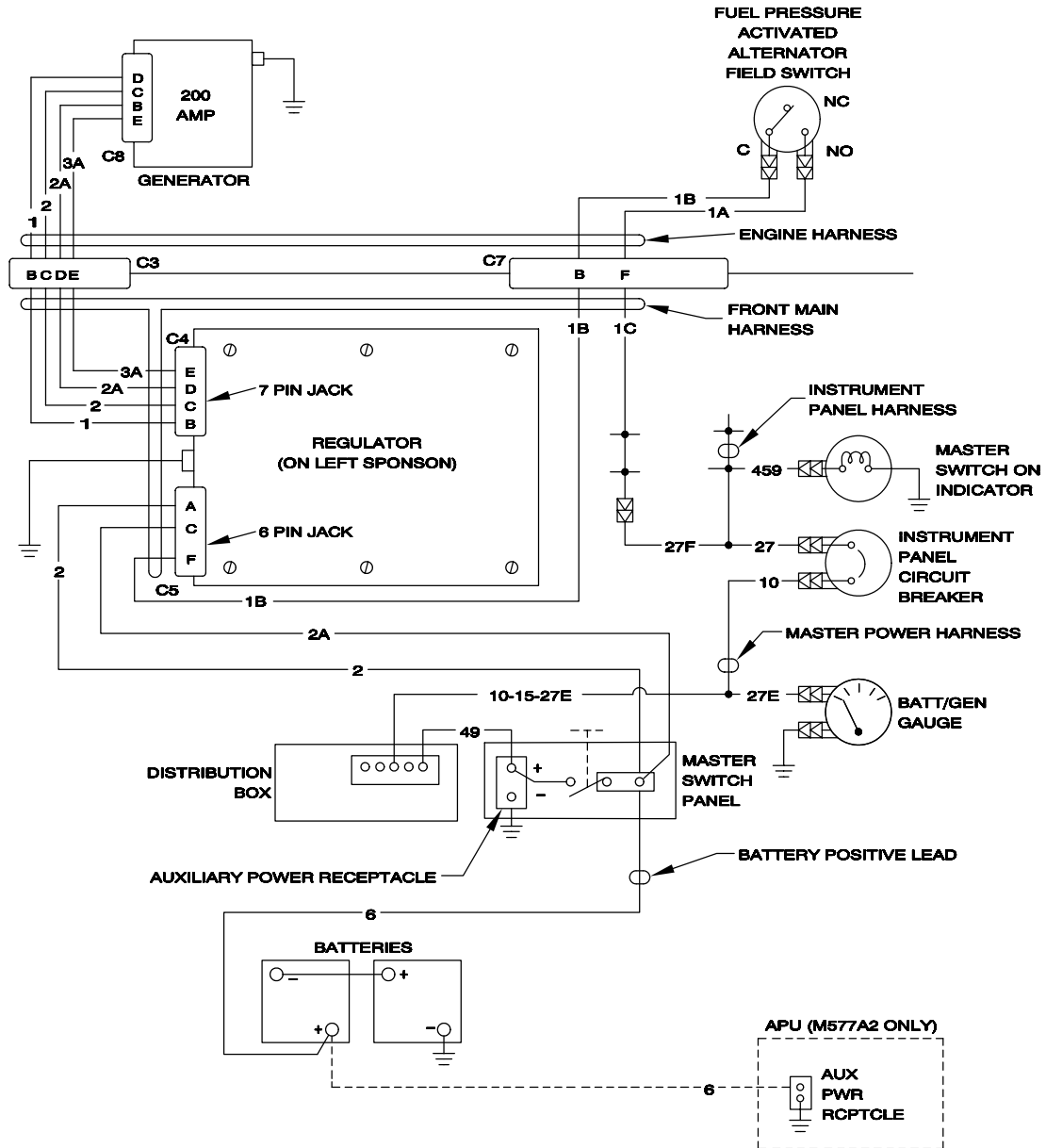
Use the schematic below as an aid while performing engine troubleshooting procedures.



100 AMP ENGINE CHARGING SYSTEM SCHEMATIC

200 AMP ENGINE CHARGING SYSTEM SCHEMATIC**0025 00****DESCRIPTION**

Use the schematic below as an aid while performing engine troubleshooting procedures.



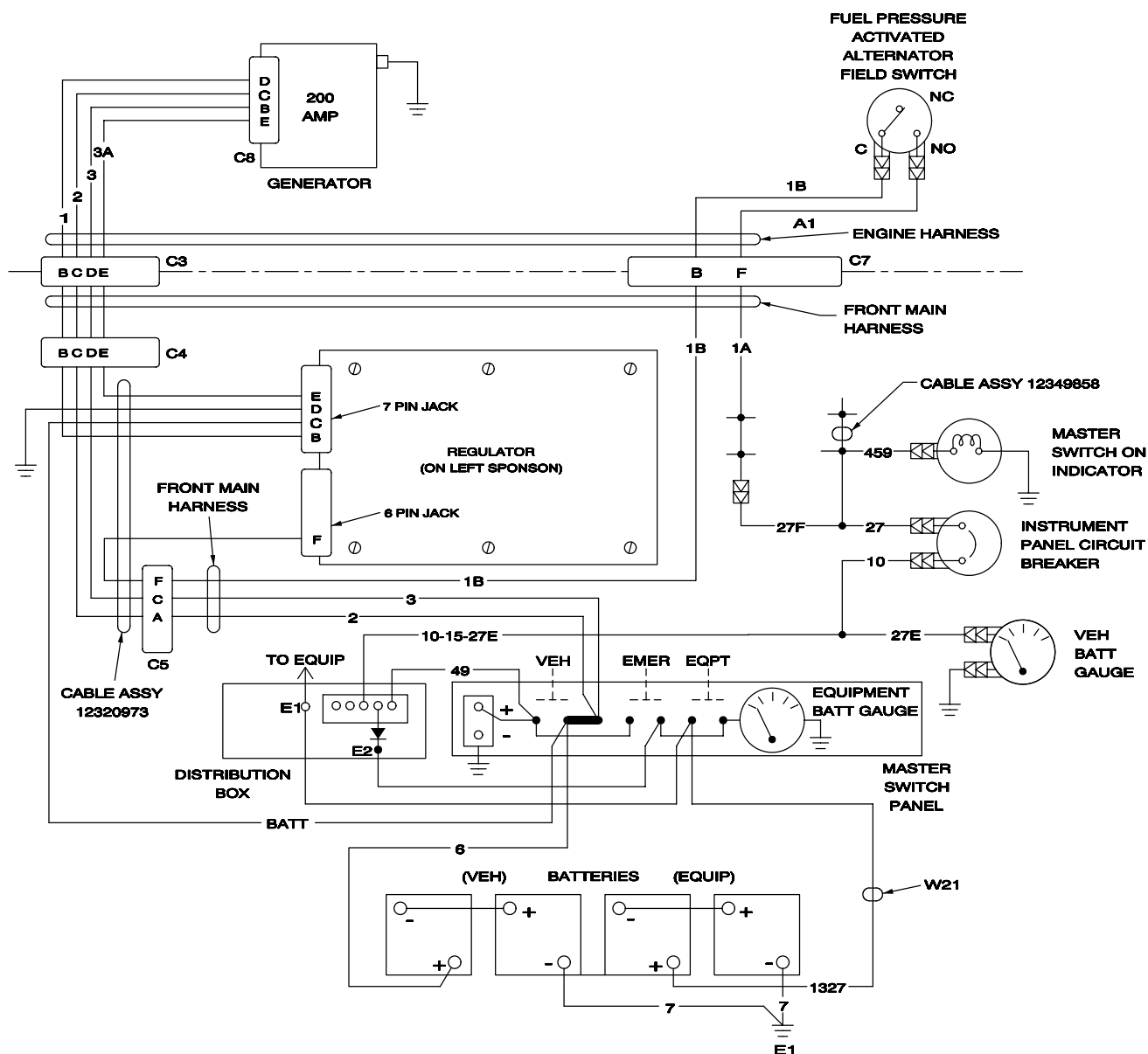
200 AMP ENGINE CHARGING SYSTEM SCHEMATIC

200 AMP ENGINE CHARGING SYSTEM SCHEMATIC (M981 ONLY)

0026 00

DESCRIPTION

Use the schematic below as an aid while performing engine troubleshooting procedures.



200 AMP ENGINE CHARGING SYSTEM SCHEMATIC (M981 ONLY)

DIFFERENTIAL HI OIL TEMP INDICATOR COMES ON**0027 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

Power plant access panels open (see your -10)

Differential cold

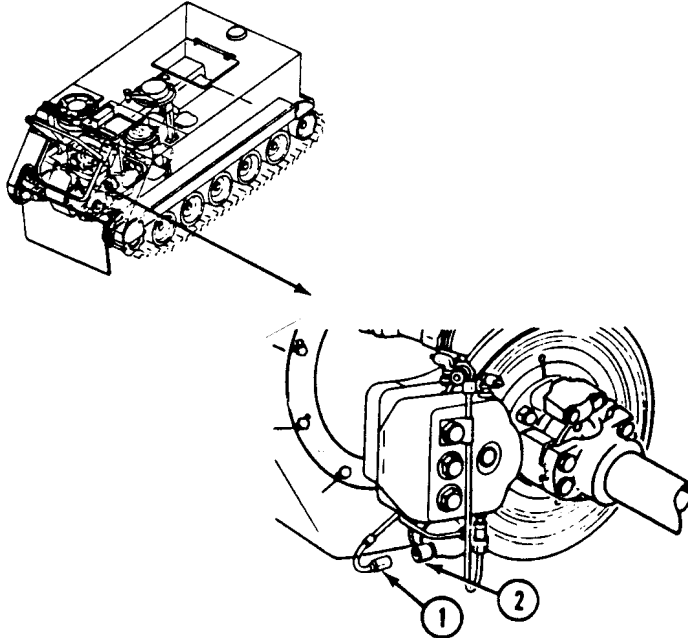
Personnel Required

Unit Mechanic

Helper (H)

T**CAUTION****Do not operate carrier with differential HI OIL TEMP indicator on. Serious damage may result.**

1. Disconnect engine harness circuit 328 (1) from differential hi oil temp switch (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Is differential HI OIL TEMP indicator off?

**YES****NO****TN**

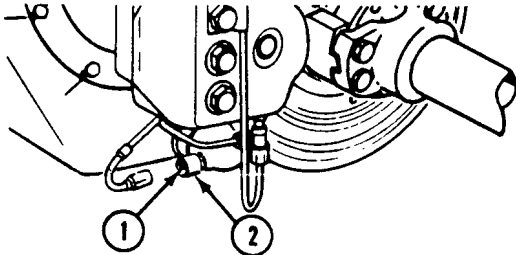
1. Go to Differential Oil Hi Temp Indicator Malfunctions (WP 0053 00).

DIFFERENTIAL HI OIL TEMP INDICATOR COMES ON — Continued

0027 00

Y

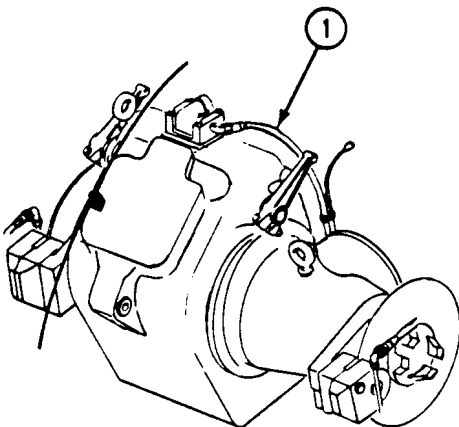
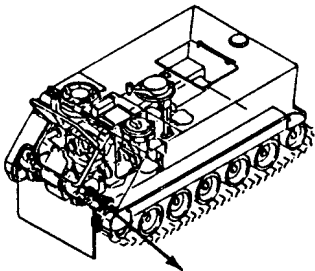
1. Turn MASTER SWITCH to OFF (see your -10).
2. Measure resistance between connector pin (1) and ground (2) of differential high oil temp switch.
3. Does multimeter read more than 5 ohms?

**NO****YN**

1. Replace differential high oil temp switch (WP 0318 00).
2. Verify no faults found.

YES**2Y**

1. Connect engine harness circuit 328 plug to differential HI OIL TEMP switch.
2. Inspect differential oil cooler hoses (1) for blockage and/or damage.
3. Are differential oil cooler hoses free from blockage and/or damage?

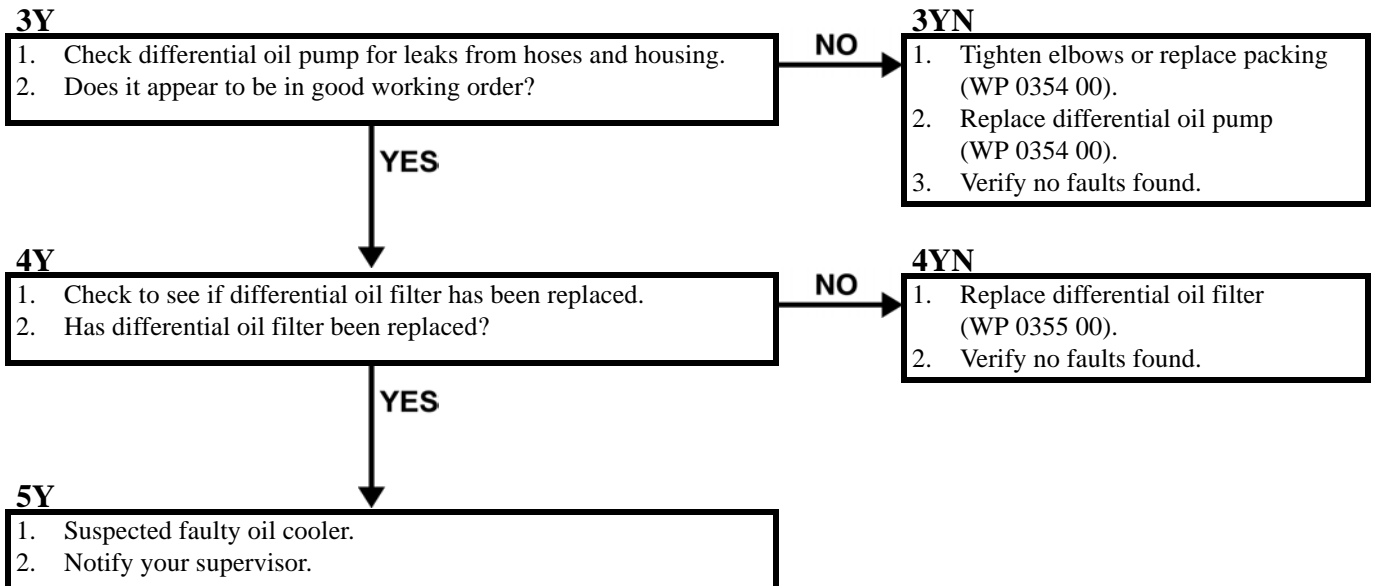
**NO****2YN**

1. Clear blockage or replace differential oil cooler hoses (WP 0360 00).
2. Verify no faults found.

YES

DIFFERENTIAL HI OIL TEMP INDICATOR COMES ON — Continued

0027 00



TRANSMISSION OIL HI TEMP INDICATOR COMES ON**0028 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

Power plant access door open (see your -10)

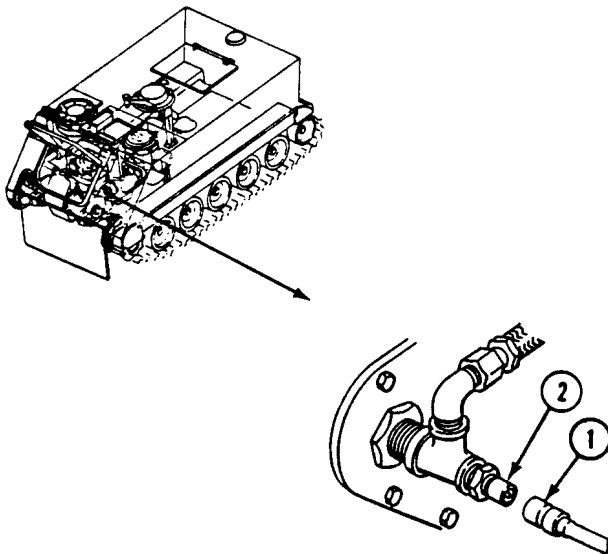
Personnel Required

Unit Mechanic

Helper (H)

T**CAUTION****Do not operate carrier with TRANS OIL HI TEMP indicator on. Serious damage may result.**

1. Disconnect engine harness circuit 327 (1) from transmission oil hi temp switch (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Is TRANS OIL HI TEMP indicator off?

**YES****NO****TN**

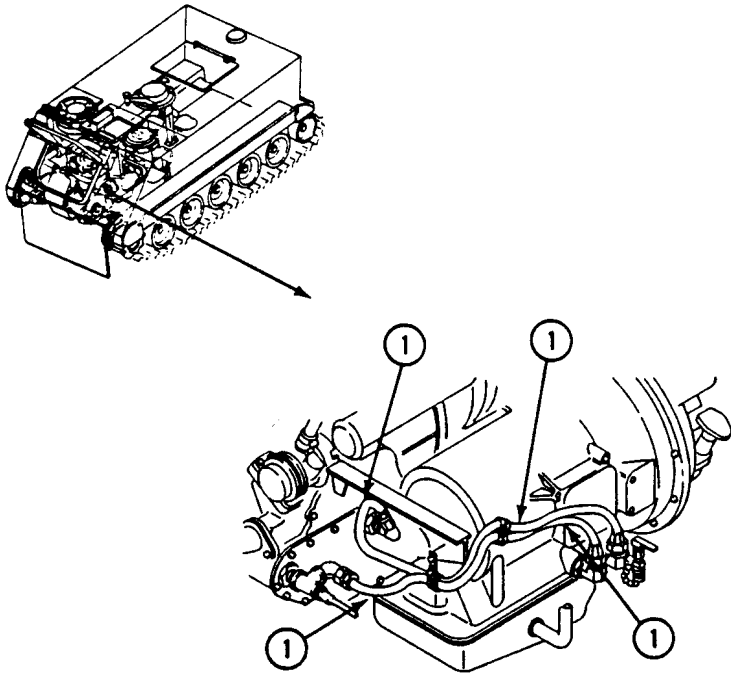
1. Turn MASTER SWITCH to OFF (see your -10).
2. Go to Trans Oil Hi Temp Indicator Malfunctions (WP 0052 00).

TRANSMISSION OIL HI TEMP INDICATOR COMES ON — Continued

0028 00

Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Inspect transmission oil cooler hoses (1) for blockage and/or damage.
3. Are transmission oil cooler hoses free from blockage and serviceable?

**NO****YN**

1. Clear blockage or replace transmission oil cooler hoses (WP 0338 00).
2. Verify no faults found.

YES**2Y**

1. Connect engine harness circuit 327 plug to transmission oil hi temp switch.
2. Has transmission oil filter been replaced?

NO**2YN**

1. Replace transmission oil filter (WP 0341 00).
2. Verify no faults found.

YES**3Y**

1. Suspected faulty oil cooler/oil pump. Beyond unit maintenance repair.
2. Notify your supervisor.

NO EXTERIOR LIGHTS OPERATE**0029 00****INITIAL SETUP:**Maintenance Level

Unit

References

WP 0238 00

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

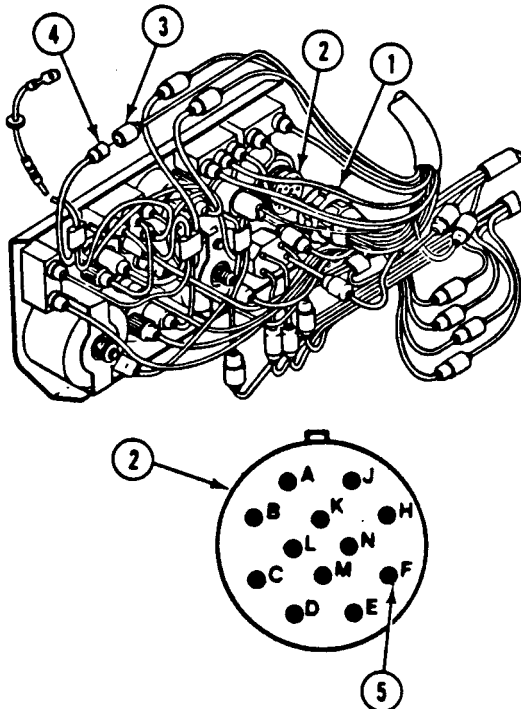
Carrier blocked (see your -10)

Personnel Required

Unit Mechanic

T

1. Remove instrument panel for access (WP 0238 00).
2. Remove front main harness plug (1) from lighting control switch jack (2).
3. Remove front main harness circuit 15 plug (3) from master power harness circuit 15 jack (4).
4. Measure resistance between front main harness circuit 15 plug (3) and lighting control switch plug (1) pin F (5).
5. Does multimeter read 0 ohms?

**YES****NO****TN**

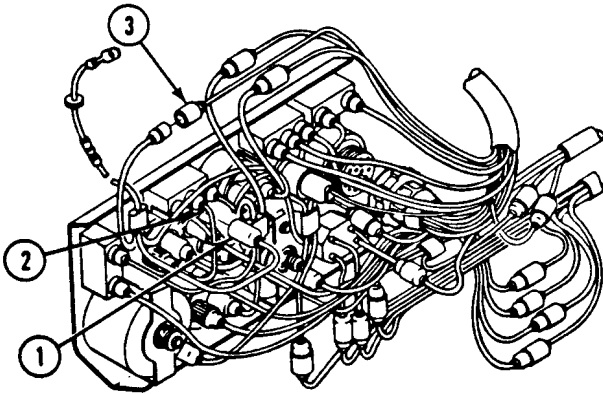
1. Repair front main harness circuit 15 (WP 0312 00).
2. Verify no faults found.

NO EXTERIOR LIGHTS OPERATE — Continued

0029 00

Y

1. Remove master power harness circuit 10 plug (1) from instrument panel circuit breaker (2).
2. Measure resistance between master power harness circuit 15 plug (3) and circuit 10 plug (1).
3. Does multimeter read 0 ohms?

**YES****2Y**

1. Install master power harness circuit 10 and 15 plugs.
2. Replace lighting control switch (WP 0242 00).
3. Verify no faults found.

NO**YN**

1. Install front main harness lighting control switch plug on switch.
2. Repair master power harness (WP 0312 00).
3. Verify no faults found.

BLACKOUT DRIVE LIGHT DOES NOT WORK**0030 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

IR/BO selector on BO (see your -10)

Personnel Required

Unit Mechanic

Helper (H)

T

1. Operate exterior lights in all positions (see your -10).
2. Do any exterior lights operate in any lighting control switch positions?

NO**TN**

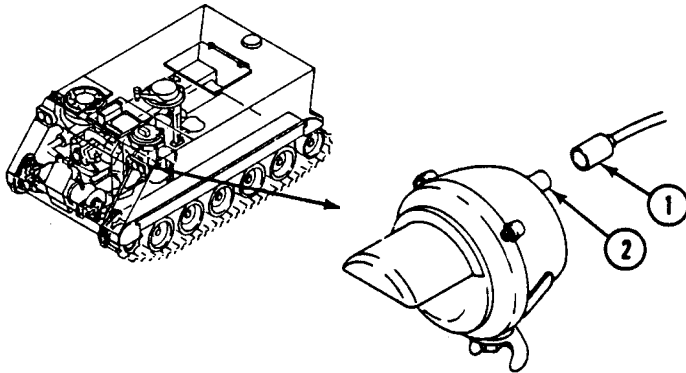
1. Go to No Exterior Lights Operate (WP 0029 00).

YES**Y**

1. Remove front main harness plug (1) from BO DRIVE light jack (2).
2. Measure resistance between BO DRIVE light jack (2) and ground.
3. Does multimeter read less than infinity?

NO**YN**

1. Install front main harness plug on BO DRIVE light.
2. Replace BO DRIVE lamp unit (WP 0259 00).
3. Verify no faults found.

**YES****2Y**

1. Check multimeter reading.
2. Does multimeter read more than 0 ohms?

NO**2YN**

1. Replace BO DRIVE light assembly (WP 0260 00).
2. Verify no faults found.

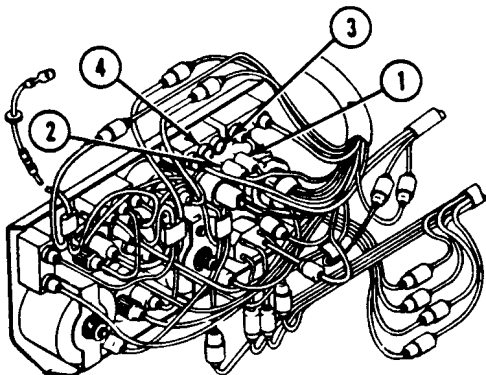
YES

BLACKOUT DRIVE LIGHT DOES NOT WORK — Continued

0030 00

3Y

1. Install front main harness plug on BO DRIVE light.
2. Remove instrument panel for access (WP 0238 00).
3. Remove front main harness circuit 19 (1) and 520 (2) from IR/BO selector jacks (3) and (4).
4. Measure resistance between IR/BO selector jacks (3) and (4) with selector on BO.
5. Does multimeter read 0 ohms?



YES

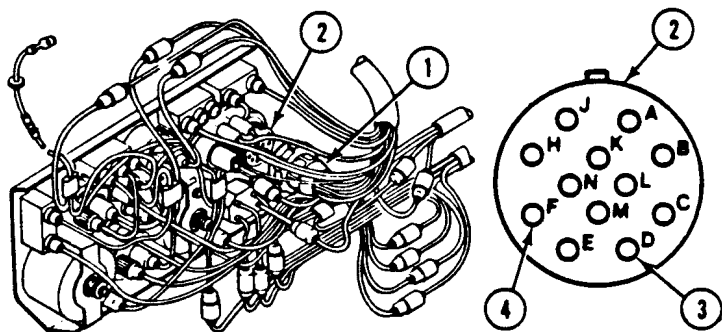
NO

3YN

1. Install harness front main harness plug on BO DRIVE light.
2. Replace IR/BO selector switch (WP 0241 00).
3. Verify no faults found.

4Y

1. Remove front main harness plug (1) from lighting control switch jack (2).
2. Turn lighting control switch to BO DRIVE.
3. Measure resistance between lighting control switch jack (2) pins D (3) and F (4).
4. Does multimeter read 0 ohms?



YES

NO

4YN

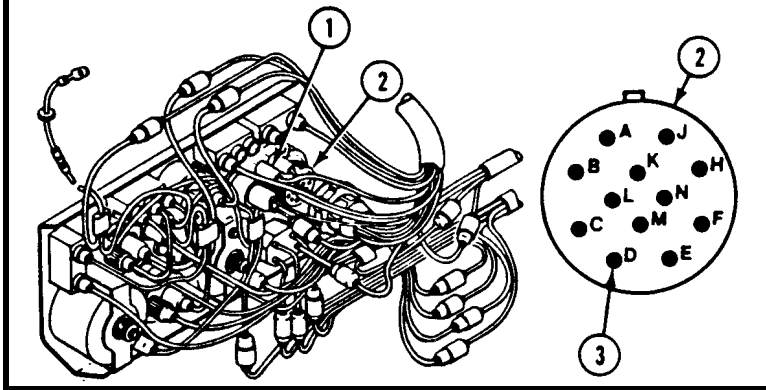
1. Install front main harness plug on IR/BO selector switch jacks.
2. Replace lighting control switch (WP 0242 00).
3. Verify no faults found.

BLACKOUT DRIVE LIGHT DOES NOT WORK — Continued

0030 00

5Y

1. Measure resistance between front main harness circuit 520 plug (1) and lighting control switch plug (2) pin D (3).
2. Does multimeter read 0 ohms?

**YES****6Y**

1. Install front main harness circuit 520 plug on IR/BO selector switch jack.
2. Install front main harness plug on light control switch jack.
3. Repair front main harness circuit 19 (WP 0312 00).
4. Verify no faults found.

NO**5YN**

1. Install front main harness circuit 19 plug on IR/BO selector switch jack.
2. Repair front main harness circuit 520 (WP 0312 00).
3. Verify no faults found.

SERVICE HEADLIGHTS DO NOT WORK**0031 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Personnel Required

Unit Mechanic

T

1. Operate lights in all lighting control positions (see your -10).
2. Do any exterior lights operate in any lighting control switch positions?

NO**TN**

1. Go to No Exterior Lights Operate (WP 0029 00).

YES**Y**

1. Turn main light switch to SER DRIVE.
2. Do both high beams and/or both low beams fail to come on?

NO**YN**

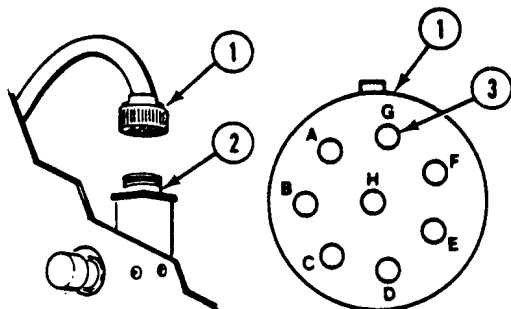
GO TO BY (PAGE 0031 00-2)

YES**2Y**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove hull front access cover (WP 0429 00).
3. Remove front main harness plug (1) from dimmer switch jack (2).
4. Turn MASTER SWITCH to ON (see your -10).
5. Measure voltage between front main harness plug (1) pin G (3) and ground.
6. Does multimeter read less than 17 volts?

NO**2YN**

GO TO CY (PAGE 0031 00-4)

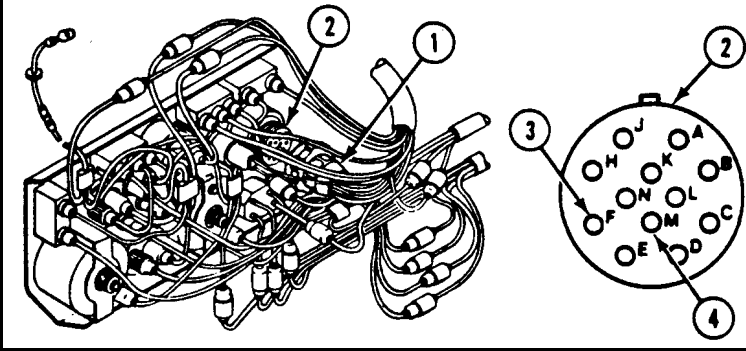
**YES**

SERVICE HEADLIGHTS DO NOT WORK — Continued

0031 00

3Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove instrument panel for access (WP 0238 00).
3. Remove front main harness plug (1) from lighting control switch jack (2).
4. Measure resistance between lighting control switch jack (2) pins F (3) and M (4).
5. Does multimeter read 0 ohms?



NO

3YN

1. Install dimmer switch and front main harness plug on dimmer switch jack.
2. Replace lighting control switch (WP 0242 00).
3. Verify no faults found.

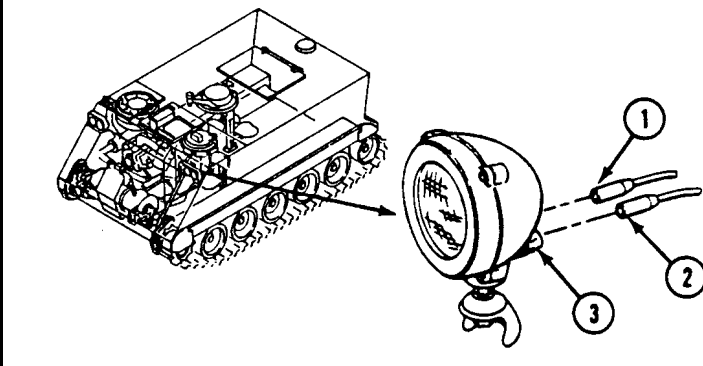
YES

4Y

1. Repair front main harness circuit 16 (WP 0312 00).
2. Verify no faults found.

BY

1. Remove circuit 17 (high beam) plug (1) or circuit 18 (low beam) plug (2) from failing service headlight jack (3).
2. Measure voltage on front main harness circuit 17 plug (1) or circuit 18 plug (2) and ground.
3. Does multimeter read less than 17 volts?



NO

BYN

1. Replace service headlight lamp unit (WP 0257 00) or service headlight assembly (WP 0256 00).
2. Verify no faults found.

YES

SERVICE HEADLIGHTS DO NOT WORK — Continued

0031 00

B2Y

1. Check to see if failing headlight is located on right side of carrier.
2. Is failing headlight located on right side of carrier?

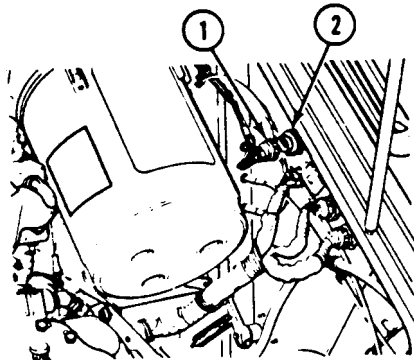
YES

**B2YN**

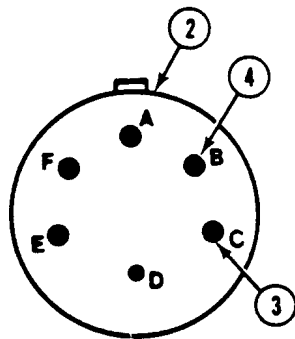
1. Repair front main harness circuit 517 or 518 between left headlight and dimmer switch.
2. Verify no faults found.

B3Y

1. Lower trim vane (see your -10).
2. Open power plant front access door (see your -10).
3. Remove right headlight wiring harness plug (1) from connector jack (2) at carrier bulkhead.



4. Measure voltage between front main wiring harness jack (2) pin C (low beam) (3) or pin B (high beam) (4) and ground.
5. Does multimeter read less than 17 volts?



YES



NO

B3YN

1. Replace faulty right headlight wiring harness (WP 0312 00).
2. Verify no faults found.

SERVICE HEADLIGHTS DO NOT WORK — Continued

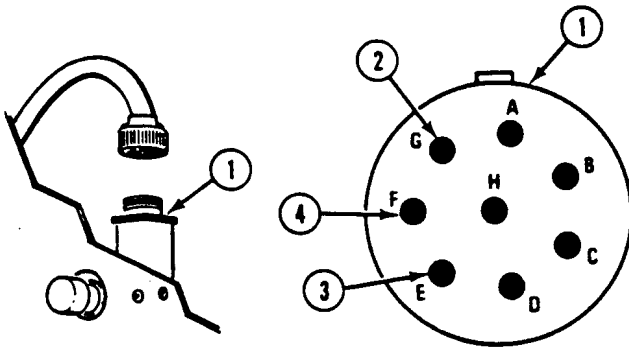
0031 00

B4Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Install right headlight wiring harness circuit 17 (high beam) or 18 (low beam) on service headlight.
3. Repair front main wiring harness circuit 17 or 18 between bulkhead and dimmer switch (WP 0312 00).
4. Verify no faults found.

CY

1. Measure resistance between dimmer switch jack (1) pins G (2) and E (3) and between pins G (2) and F (4). Multimeter should read 0 ohms once and infinity once.
2. Click dimmer switch and measure resistance between dimmer switch jack (1) pins G (2) and E (3) and between pins G (2) and F (4). Multimeter should read infinity once and 0 ohms once.
3. Is high beam selector switch operating properly?



NO

CYN

1. Replace dimmer switch (WP 0285 00).
2. Verify no faults found.

C2Y

1. Repair front main wiring harness circuit 18 (low beam) or circuit 17 (high beam) (WP 0312 00).
2. Verify no faults found.

INFRARED HEADLIGHT(S) DOES NOT OPERATE**0032 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

Electrical Connector Pliers (WP 0780 00, Item 44)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

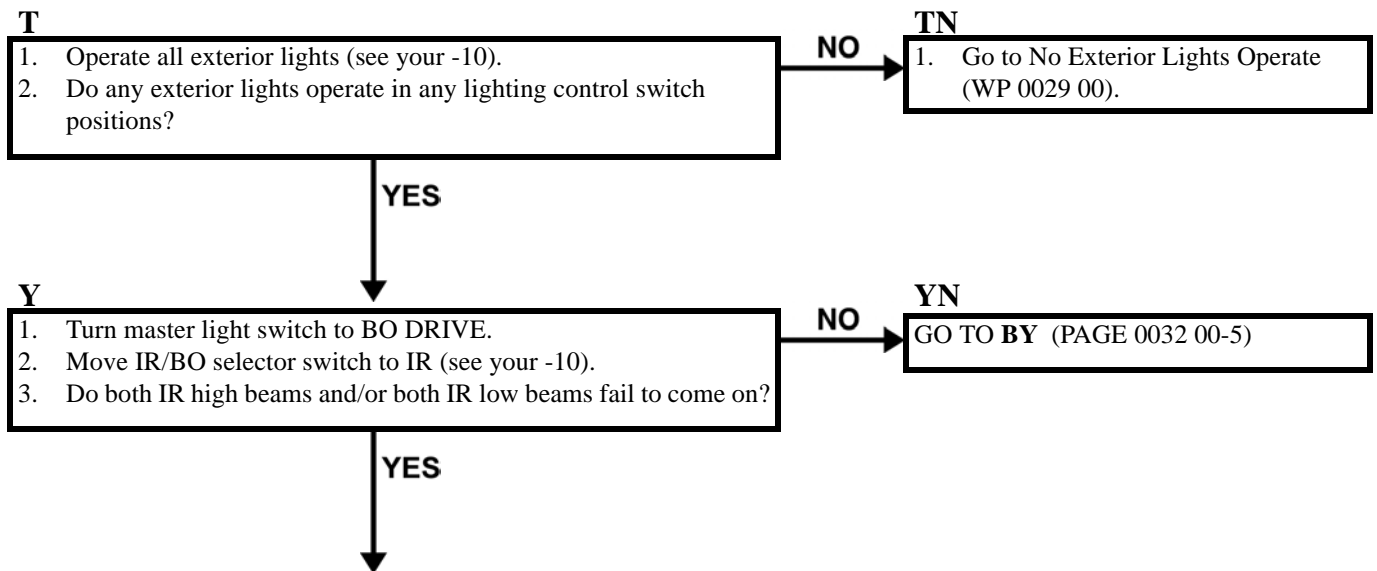
Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Personnel Required

Unit Mechanic

Helper (H)

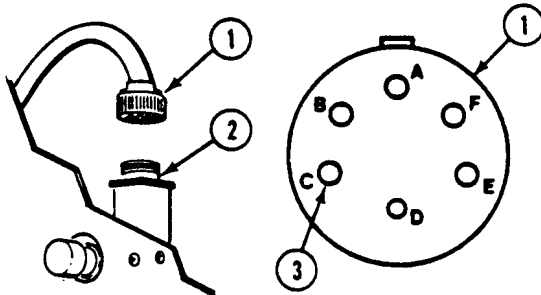


INFRARED HEADLIGHT(S) DOES NOT OPERATE — Continued

0032 00

2Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove hull front access cover (WP 0429 00).
3. Remove front main harness plug (1) from dimmer switch jack (2).
4. Turn MASTER SWITCH to ON (see your -10).
5. Measure voltage between front main harness plug (1) pin C (3) and ground.
6. Does multimeter read less than 17 volts?



NO

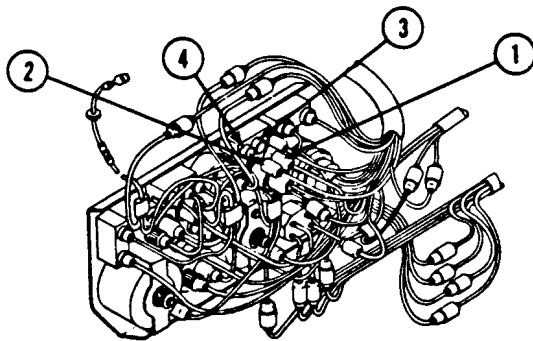
2YN

GO TO CY (PAGE 0032 00-7)

YES

3Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove instrument panel for access (WP 0238 00).
3. Remove front main harness circuit 514/515 (1) and 520 (2) from IR/BO selector switch jacks (3) and (4).
4. Measure resistance between IR/BO selector switch jacks (3) and (4).
5. Does multimeter read 0 ohms?



NO

3YN

1. Install dimmer switch and front main harness plug on dimmer switch.
2. Replace IR/BO selector switch (WP 0241 00).
3. Verify no faults found.

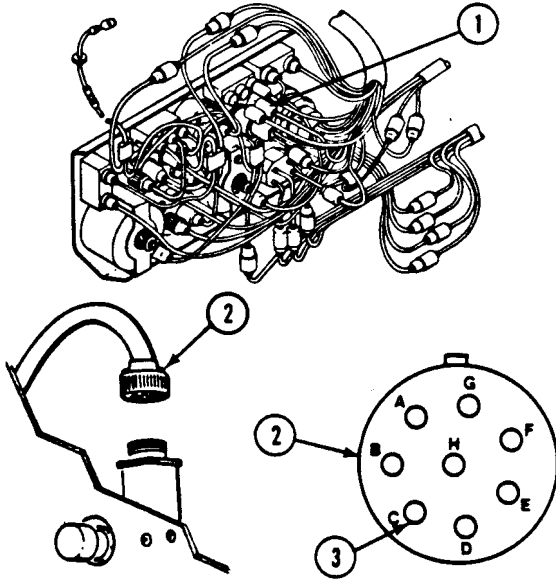
YES

INFRARED HEADLIGHT(S) DOES NOT OPERATE — Continued

0032 00

4Y

1. Measure resistance between front main harness circuit 514/515 selector switch plug (1) and dimmer switch plug (2) pin C (3).
2. Does multimeter read 0 ohms?



YES

NO

4YN

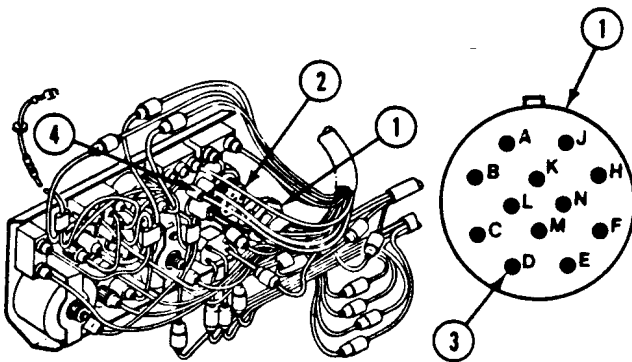
1. Install dimmer switch and front main harness plug on dimmer switch.
2. Repair front main harness circuit 514/515 (WP 0312 00).
3. Verify no faults found.

INFRARED HEADLIGHT(S) DOES NOT OPERATE — Continued

0032 00

5Y

1. Install dimmer switch and front main wiring harness plug on dimmer switch.
2. Install front main wiring harness circuit 514/515 plug on IR/BO selector switch jack.
3. Remove front main harness plug (1) from lighting control switch jack (2).
4. Measure resistance between front main wiring harness lighting control switch plug (1) pin D (3) and IR/BO selector circuit 520 plug (4).
5. Does multimeter read 0 ohms?

**NO****5YN**

1. Repair front main wiring harness circuit 520 (WP 0312 00).
2. Verify no faults found.

YES**6Y**

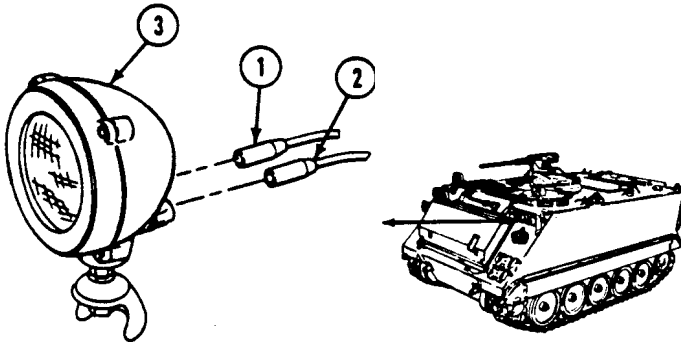
1. Install circuit 520 plug on IR/BO selector switch.
2. Replace lighting control switch (WP 0242 00).
3. Verify no faults found.

INFRARED HEADLIGHT(S) DOES NOT OPERATE — Continued

0032 00

BY

1. Remove circuit 514 (high beam) plug (1) or 515 (low beam) plug (2) from failing IR service headlight (3).
2. Measure voltage between front main harness circuit 514 plug (1) or 515 plug (2) and ground.
3. Does multimeter read less than 17 volts?

**YES****B2Y**

1. Check and see if failing IR headlight is located on right side of carrier.
2. Is failing IR headlight located on right side of carrier?

YES**NO****BYN**

1. Replace IR service headlight lamp unit (WP 0256 00).
2. Verify no faults found.

NO**B2YN**

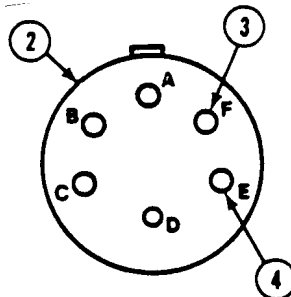
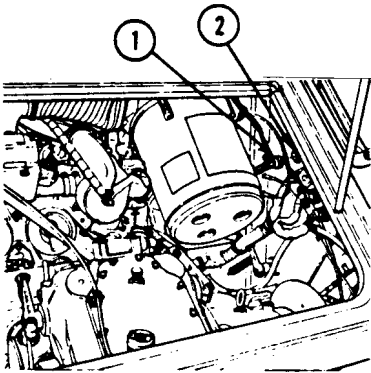
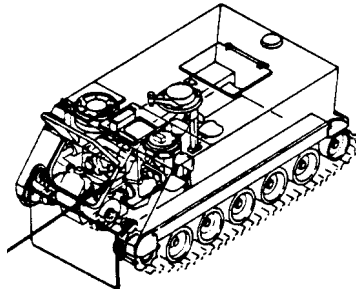
1. Repair front main harness circuit 514 or 515 between left IR head light and dimmer switch (WP 0312 00).
2. Verify no faults found.

INFRARED HEADLIGHT(S) DOES NOT OPERATE — Continued

0032 00

B3Y

1. Lower trim vane (see your -10).
2. Open power plant front access door (see your -10).
3. Remove right headlight wiring harness plug (1) from front main harness jack (2) at bulkhead.
4. Measure voltage between front main harness jack (2) pin F (low beam) (3) or pin E (high beam) (4) and ground.
5. Does multimeter read less than 17 volts?



NO

B3YN

1. Repair faulty right headlight wiring harness circuit 514/515 (WP 0312 00).
2. Verify no faults found.

YES

B4Y

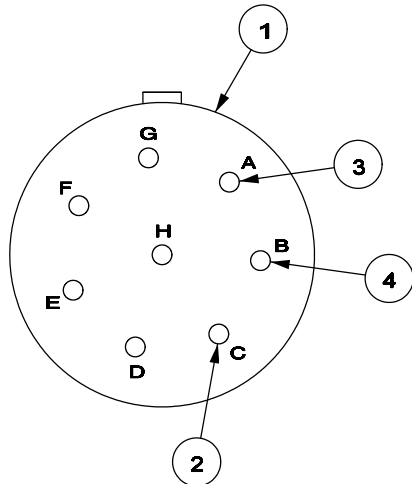
1. Install right headlight wiring harness circuit 514 or 515 plug on IR head light.
2. Faulty front main wiring harness. Beyond unit maintenance repair.
3. Notify your supervisor.

INFRARED HEADLIGHT(S) DOES NOT OPERATE — Continued

0032 00

CY

1. Measure resistance between dimmer switch jack (1) pins C (2) to A (3) and between pins C (2) to B (4). Multimeter should read 0 ohms once and infinity once.
2. Click dimmer switch and repeat above test. Multimeter should read infinity once and 0 ohms once.
3. Is dimmer switch working properly?

**YES****C2Y**

1. Faulty front main wiring harness circuit 514 or 515. Beyond unit maintenance repair.
2. Notify supervisor.

NO**CYN**

1. Replace dimmer switch (WP 0285 00).
2. Verify no faults found.

SERVICE AND/OR BLACKOUT STOPLIGHTS MALFUNCTION

0033 00

INITIAL SETUP:

Maintenance Level

Unit

References

See your -10

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

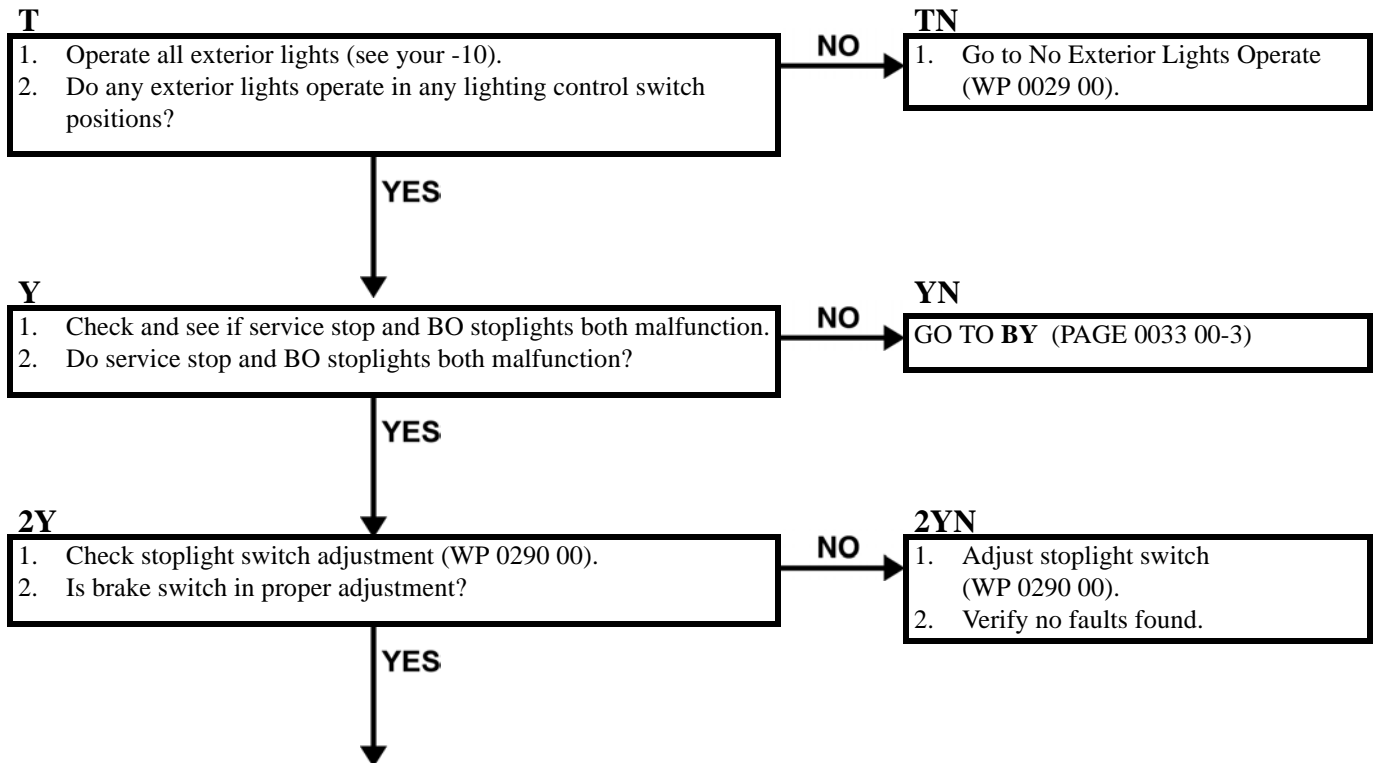
Carrier blocked (see your -10)

Ramp lowered (see your -10)

Personnel Required

Unit Mechanic

Helper (H)

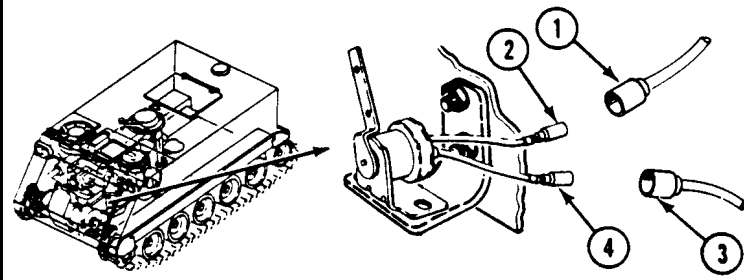


SERVICE AND/OR BLACKOUT STOPLIGHTS MALFUNCTION — Continued

0033 00

3Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove front main harness circuit 75A plug (1) from stoplight switch jack (2).
3. Remove front main harness circuit 75B plug (3) from stoplight switch jack (4).
4. Measure resistance between switch jacks (2) and (4) with switch depressed and with switch released.
5. Does multimeter read infinity with switch depressed and 0 ohm with switch released?



NO

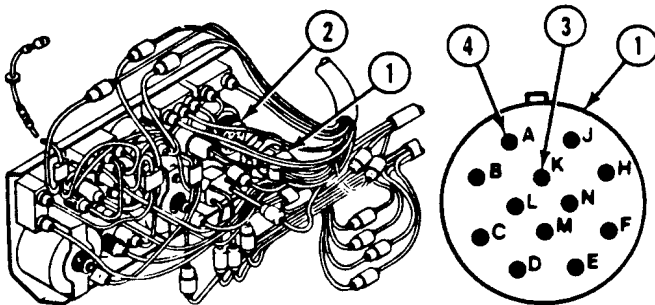
3YN

1. Replace stoplight switch (WP 0290 00).
2. Verify no faults found.

YES

4Y

1. Install front main harness circuit leads 75A and 75B on stoplight switch.
2. Remove instrument panel for access (WP 0238 00).
3. Remove front main harness plug (1) from lighting control switch jack (2).
4. Measure resistance between front main harness plug (1) pins K (3) and A (4) with both steering levers locked in parking brake position.
5. Does multimeter read less than 0 ohm?



NO

4YN

1. Faulty front main harness circuit 75A and/or 75B. Beyond unit maintenance repair.
2. Notify your supervisor.

YES

5Y

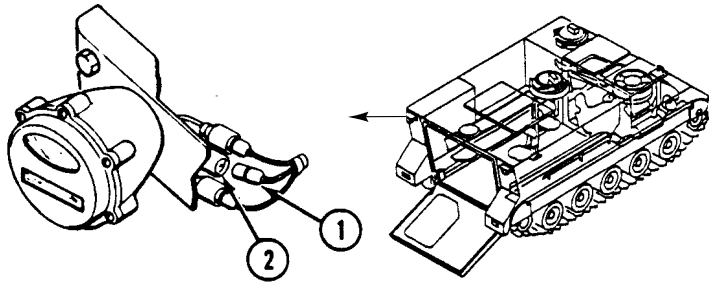
1. Replace main light switch (WP 0242 00).
2. Verify no faults found.

SERVICE AND/OR BLACKOUT STOPLIGHTS MALFUNCTION — Continued

0033 00

BY

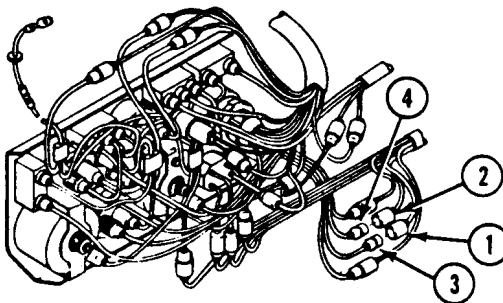
1. Remove rear harness circuit 22 plug (1) from jack (2) on malfunctioning left taillight, or circuit 23 plug from jack on malfunctioning right taillight.
2. Turn main light switch lever on lighting control switch to STOPLIGHT or to BO MARKER.
3. Measure voltage between circuit 22 (left) plug (1) or circuit 23 (right) plug and ground with both steering levers locked in parking brake position.
4. Does multimeter read less than 17 volts?



YES

**B2Y**

1. Remove rear main harness circuit 22 plug (left) (1) or circuit 23 plug (right) (2) from front main wiring harness circuit 22 jack (3) or circuit 23 jack (4).
2. Measure voltage between rear main harness circuit 22 jack (2) or circuit 23 jack (3) and ground.
3. Does multimeter read less than 17 volts?



YES



NO

BYN

1. Install rear main harness jack on taillight.
2. Replace service stop or BO stoplight bulb (WP 0256 00).
3. Verify no faults found.

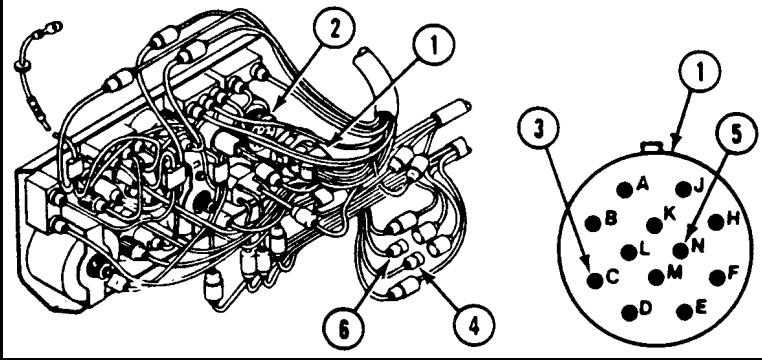
NO

B2YN

1. Repair rear main harness circuit 22 or circuit 23 (WP 0312 00).
2. Verify no faults found.

B3Y

1. Remove instrument panel for access (WP 0238 00).
2. Remove front main harness plug (1) from lighting control switch (2).
3. Measure resistance between lighting control switch plug (1) pin C (3) to circuit 22 jack (4) (service stop) or pin N (5) to circuit 23 jack (6) (BO stop).
4. Does multimeter read 0 ohm?



NO

B3YN

1. Install rear main harness on taillight.
2. Repair front main harness circuit 22 or 23 (WP 0312 00).
3. Verify no faults found.

YES

B4Y

1. Install rear main harness plugs on jack and taillight.
2. Replace main light switch (WP 0242 00).
3. Verify no faults found.

BLACKOUT MARKER LIGHT(S) AND/OR TAILLIGHT(S) DO NOT OPERATE

0034 00

INITIAL SETUP:

Maintenance Level

Unit

References

See your -10

Tools and Special Tools

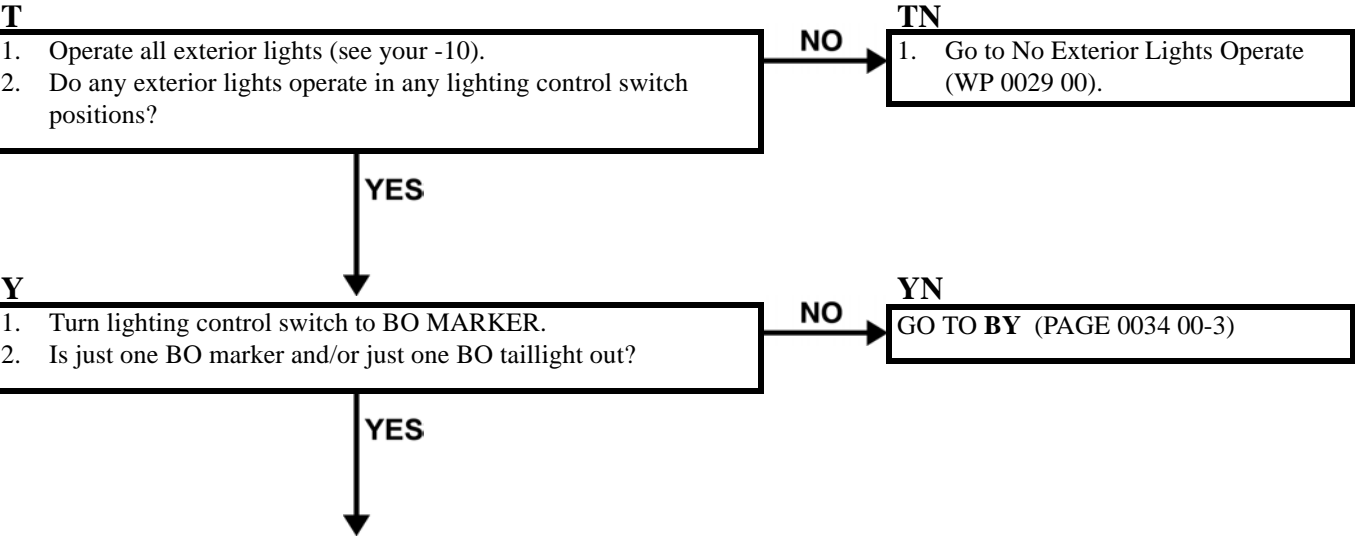
- Digital Multimeter (WP 0780 00, Item 43)
- General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Equipment Condition

- Engine stopped/shutdown (see your -10)
- Carrier blocked (see your -10)

Personnel Required

- Unit Mechanic
- Helper (H)

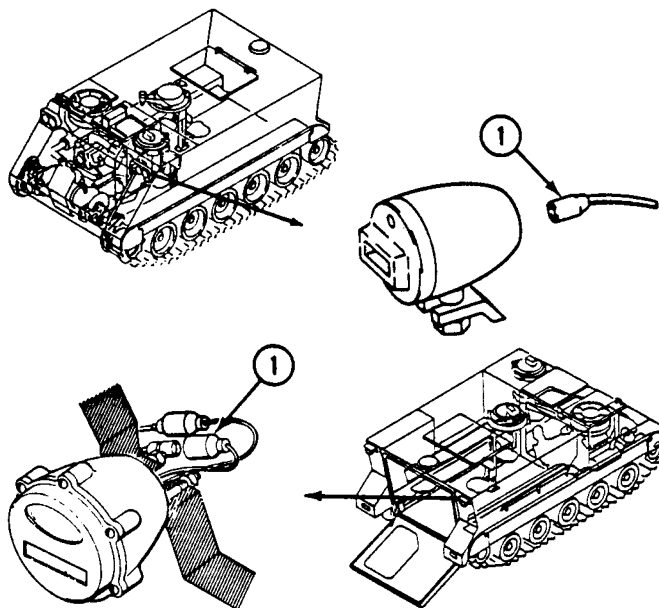


BLACKOUT MARKER LIGHT(S) AND/OR TAILLIGHT(S) DO NOT OPERATE — Continued

0034 00

2Y

1. Locate failing light(s).
2. Remove circuit 20 plug (1) (BO marker) and/or circuit 24 plug (2) (BO taillight) from failing light jack.
3. Measure voltage between plug pin and ground.
4. Does multimeter read less than 17 volts?



NO

2YN

1. Replace faulty light bulb. For BO marker light (WP 0258 00). For left/right taillight (WP 0264 00).
2. Verify no faults found.

YES

3Y

1. Check to see if one front BO marker light is not operating.
2. Is one front BO marker light not operating?

NO

3YN

1. Repair rear main wiring harness circuit 24 (WP 0312 00).
2. Verify no faults found.

YES

4Y

1. Check to see if right BO marker light is out.
2. Is right BO marker light out?

NO

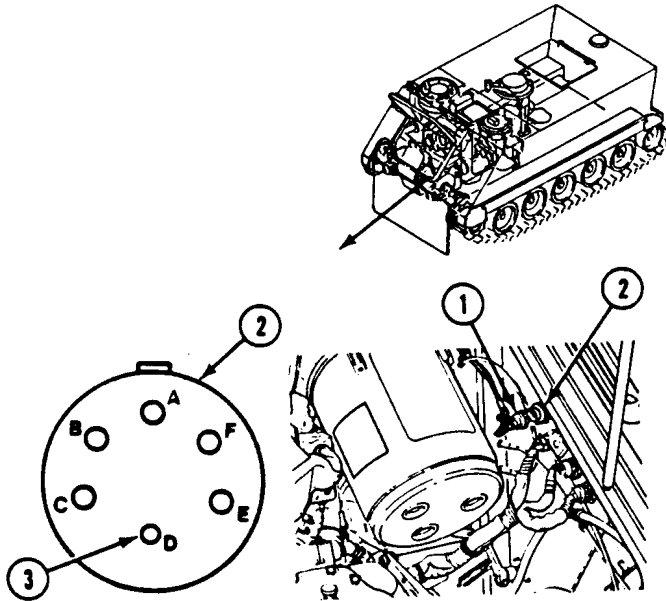
4YN

1. Repair front main wiring harness circuit 20 (WP 0312 00).
2. Verify no faults found.

YES

5Y

1. Lower trim vane (see your -10).
2. Open power plant front access door (see your -10).
3. Remove right headlight wiring harness plug (1) from front main harness jack (2) at carrier bulkhead.
4. Measure voltage between front main harness jack (2), pin D (3), and ground.
5. Does multimeter read less than 17 volts?

**NO****5YN**

1. Repair right headlight wiring harness (WP 0312 00).
2. Verify no faults found.

YES**6Y**

1. Install right headlight wiring harness circuit 20 jack on right BO marker light.
2. Repair front main harness circuit 20 (WP 0312 00).
3. Verify no faults found.

BY

1. Check and see if only both BO taillights are out or only both BO markers are out.
2. Are only both BO taillights out or only both BO markers out?

NO**BYN**

GO TO CY (PAGE 0034 00-5)

YES

BLACKOUT MARKER LIGHT(S) AND/OR TAILLIGHT(S) DO NOT OPERATE — Continued

0034 00

B2Y

1. Check and see if both BO taillights are out.
2. Are both BO taillights out?

NO

B2YN

1. Repair front main harness circuit 20 (WP 0312 00).
2. Verify no faults found.

YES

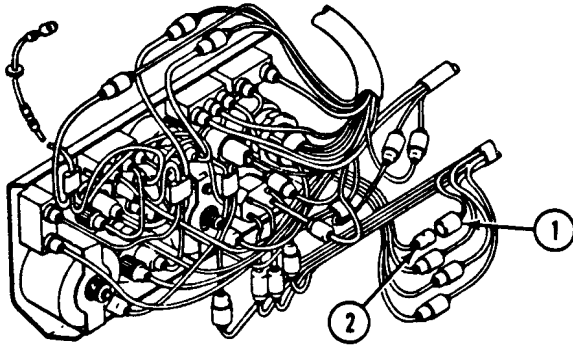
B3Y

1. Remove rear main harness circuit 24 plug (1) from main harness circuit 24 jack (2).
2. Measure voltage between front main harness jack pin (2) and ground.
3. Does multimeter read less than 17 volts?

NO

B3YN

1. Repair rear main harness circuit 24 (WP 0312 00).
2. Verify no faults found.



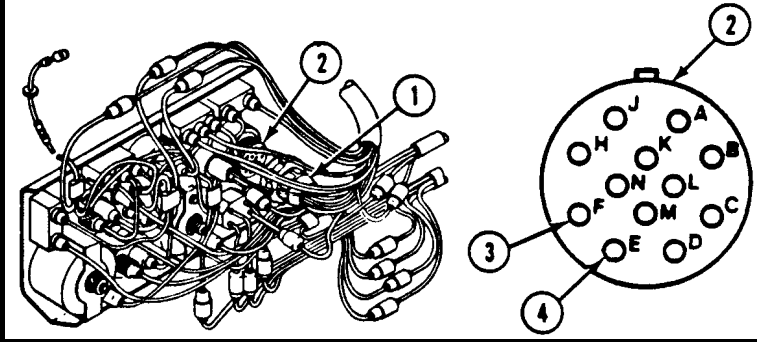
YES

B4Y

1. Repair front main harness circuit 24 (WP 0312 00).
2. Verify no faults found.

CY

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove instrument panel for access (WP 0238 00).
3. Remove front main harness plug (1) from lighting control switch jack (2).
4. Measure resistance between switch jack (2), pins F (3) and E (4).
5. Does multimeter read 0 ohms?

**YES****C2Y**

1. Repair front main harness circuit 20/24 (WP 0312 00).
2. Verify no faults found.

NO**CYN**

1. Replace main light switch (WP 0242 00).
2. Verify no faults found.

SERVICE TAILLIGHT DOES NOT OPERATE**0035 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Personnel Required

Unit Mechanic

T

1. Operate exterior lights in all positions (see your -10).
2. Do any exterior lights operate in any lighting control switch positions?

NO**TN**

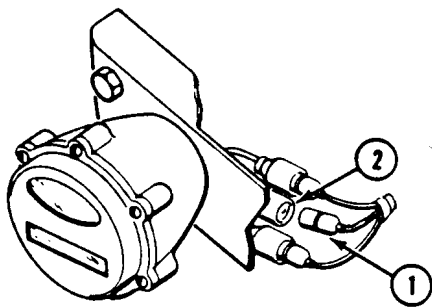
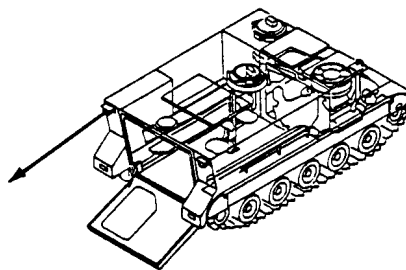
1. Go to No Exterior Lights Operate (WP 0029 00).

YES**Y**

1. Turn main light switch on lighting control switch to SER DRIVE.
2. Remove rear main harness circuit 21 plug (1) from left taillight jack (2).
3. Measure voltage between rear main harness circuit 21 plug (1) and ground.
4. Does multimeter read less than 17 volts?

NO**YN**

1. Replace service taillight light bulb (WP 0264 00).
2. Verify no faults found.

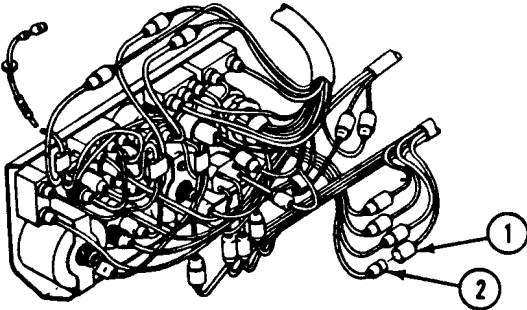
**YES**

SERVICE TAILLIGHT DOES NOT OPERATE — Continued

0035 00

2Y

1. Remove rear main harness circuit 21 plug (1) from front main harness circuit 21 jack (2) on instrument panel.
2. Measure voltage between front main harness jack (2) and ground.
3. Does multimeter read less than 17 volts?



NO

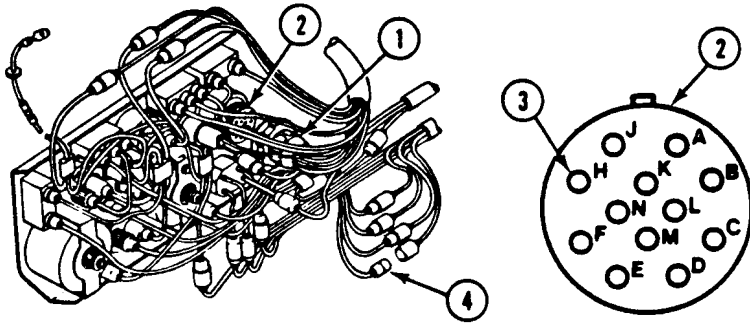
2YN

1. Repair rear main harness circuit 21 (WP 0312 00).
2. Verify no faults found.

YES

3Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove instrument panel for access (WP 0238 00).
3. Remove front main harness plug (1) from lighting control switch jack (2).
4. Measure resistance between lighting control switch jack (2), pin H (3), and circuit 21 jack (4).
5. Does multimeter read 0 ohms?



NO

3YN

1. Install rear main harness circuit 21 plug on left taillight jack.
2. Repair front main harness circuit 21 (WP 0312 00).
3. Verify no faults found.

YES

4Y

1. Install rear main harness circuit 21 plug on left taillight jack.
2. Replace main light switch (WP 0242 00).
3. Verify no faults found.

TRAILER LIGHTS DO NOT OPERATE

0036 00

INITIAL SETUP:

Maintenance Level

Unit

References

See your -10

Tools and Special Tools

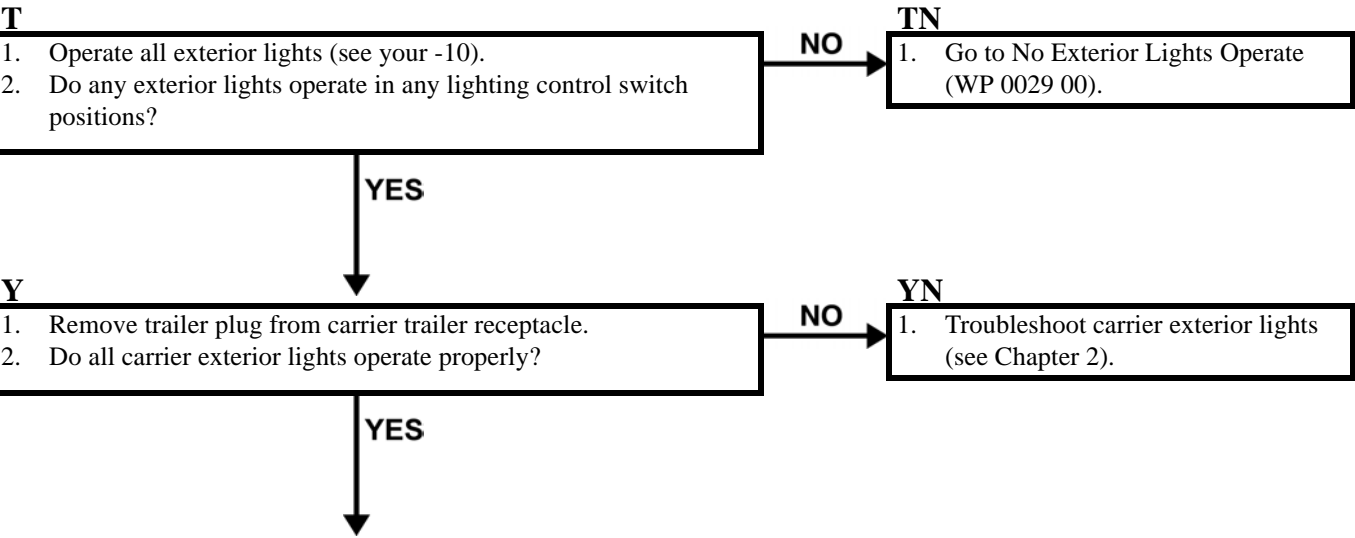
- Digital Multimeter (WP 0780 00, Item 43)
- General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Equipment Condition

- Engine stopped/shutdown (see your -10)
- Carrier blocked (see your -10)

Personnel Required

- Unit Mechanic
- Helper (H)

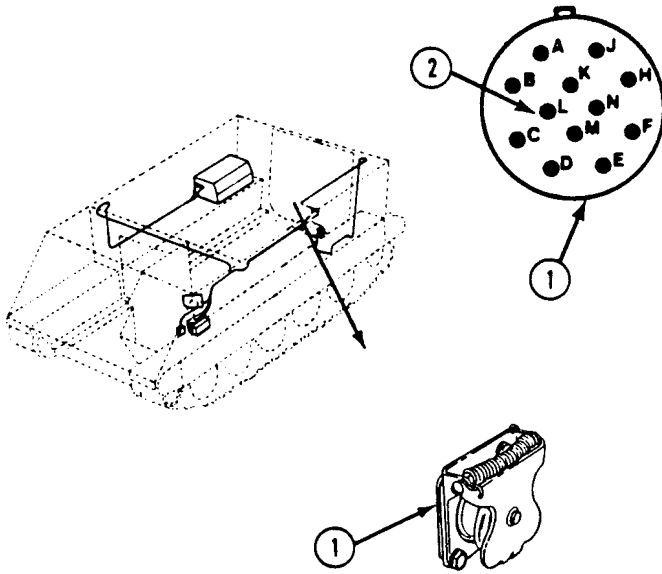


TRAILER LIGHTS DO NOT OPERATE — Continued

0036 00

2Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Measure resistance between vehicle trailer receptacle (1), pin L (2), and ground.
3. Does multimeter read 0 ohms?



NO

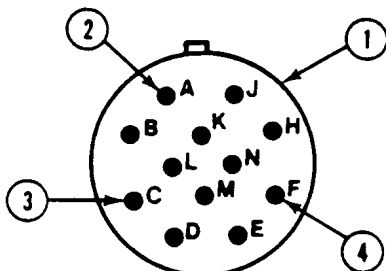
2YN

1. Replace trailer receptacle harness (WP 0328 00).
2. Verify no faults found.

YES

3Y

1. Turn MASTER SWITCH to ON (see your -10).
2. Turn lighting control switch to BO marker.
3. Measure voltage between trailer receptacle (1), pins A (2), C (3), and F (4) to ground with steering levers pulled back.
4. Does multimeter read 17 volts or more for all readings?



NO

3YN

1. Replace trailer receptacle harness (WP 0328 00).
2. Verify no faults found.

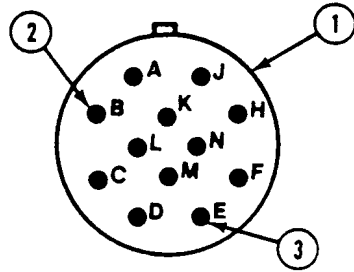
YES

TRAILER LIGHTS DO NOT OPERATE — Continued

0036 00

4Y

1. Turn lighting control switch to SER DRIVE.
2. Measure voltage between trailer receptacle (1), pins B (2), and E (3) to ground with steering levers pulled back.
3. Does multimeter read 17 volts or more?



YES

5Y

1. Faulty trailer harness(es) and/or lights. Beyond unit maintenance repair.
2. Notify your supervisor.

NO

4YN

1. Replace trailer receptacle harness (WP 0328 00).
2. Verify no faults found.

HORN DOES NOT OPERATE**0037 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)
 General Mechanic's Tool Kit (WP 0780 00, Item 29)
 Jumper Wire

Equipment Condition

Engine stopped/shutdown (see your -10)
 Carrier blocked (see your -10)
 Trim vane lowered (see your -10)
 Power plant front access door open (see your -10)

Personnel Required

Unit Mechanic
 Helper (H)

T

1. Turn MASTER SWITCH to ON (see your -10).
2. Is MASTER POWER indicator on?

NO**TN**

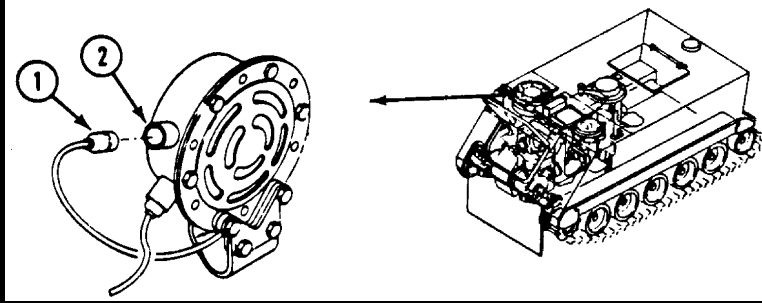
1. Go to Master Switch On Indicator Does Not Light (WP 0046 00).

YES**Y**

1. Remove horn ground lead plug (1) from horn jack (2).
2. Measure continuity between horn ground lead plug (1) and ground.
3. Does multimeter read 0 ohms?

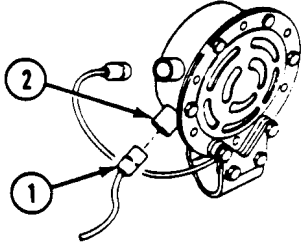
NO**YN**

1. Replace horn ground lead and/or connector (WP 0255 00).
2. Verify no faults found.

**YES**

HORN DOES NOT OPERATE — Continued**0037 00****2Y**

1. Remove right headlight wiring harness circuit 25 plug (1) from horn jack (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Measure voltage between right headlight wiring harness circuit 25 plug (1) and ground with horn button depressed.
4. Does multimeter read less than 17 volts?

**YES****NO****2YN**

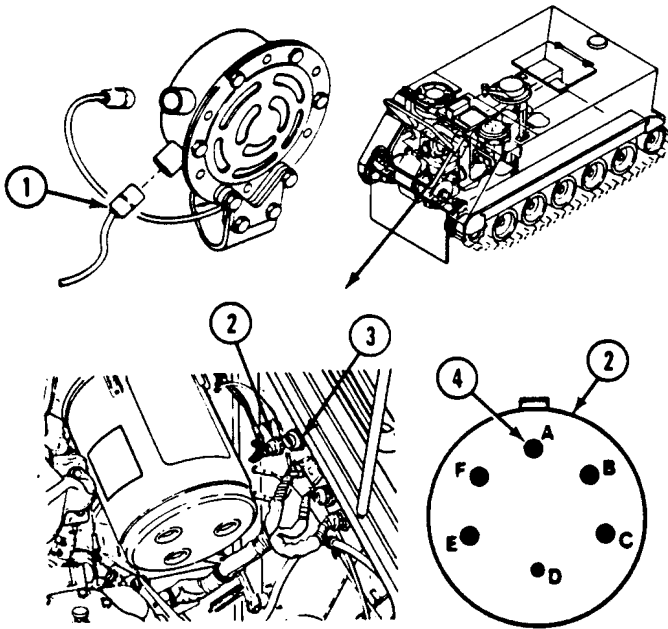
1. Replace horn (WP 0255 00).
2. Verify no faults found.

HORN DOES NOT OPERATE — Continued

0037 00

3Y

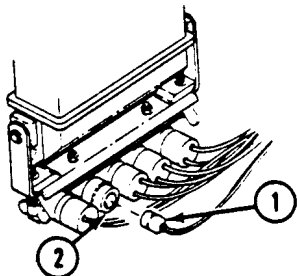
1. Turn MASTER SWITCH to OFF (see your -10).
2. Install jumper wire between right headlight wiring harness circuit 25 plug (1) and ground.
3. Remove right headlight wiring harness plug (2) from front main harness (3) at carrier bulkhead.
4. Measure resistance between right headlight wiring harness plug (2), pin A (4), and ground.
5. Does multimeter read 0 ohms?

**YES****NO****3YN**

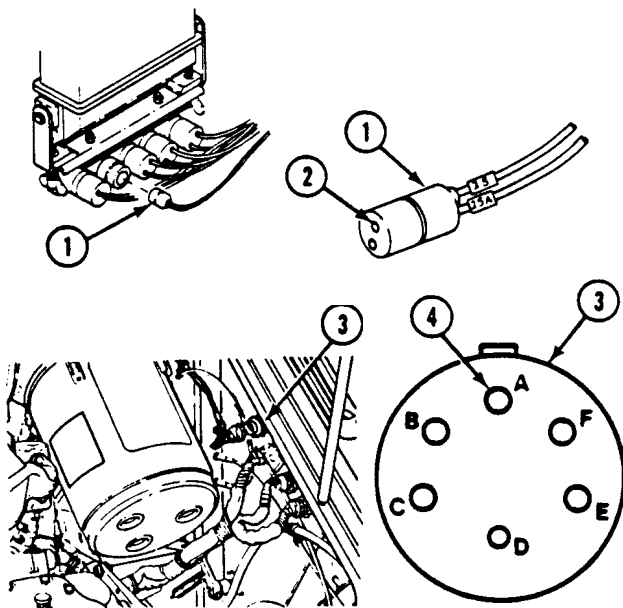
1. Remove jumper wire.
2. Repair right headlight wiring harness circuit 25 (WP 0312 00).
3. Verify no faults found.

HORN DOES NOT OPERATE — Continued**0037 00****4Y**

1. Remove circuit 25/25A plug (1) from horn switch jack (2).
2. Measure resistance between horn switch jack pins (2) with horn switch depressed.
3. Does multimeter read 0 ohms?

**YES****5Y**

1. Remove jumper wire from right headlight wiring harness circuit 25.
2. Install circuit 25 plug on horn jack.
3. Install a jumper wire between horn switch plug (1), circuit 25 pin (2), and ground.
4. Measure resistance between front main harness jack (3), pin A (4), and ground.
5. Does multimeter read 0 ohms?

**YES****NO****4YN**

1. Install right headlight wiring harness plug to front main harness jack at fire wall.
2. Install horn ground lead plug to horn jack.
3. Install right headlight wiring harness circuit 25 plug onto horn jack.
4. Replace horn switch (WP 0252 00).
5. Verify no faults found.

NO**5YN**

1. Remove jumper wire from horn switch plug.
2. Repair front main harness circuit 25 (WP 0312 00).
3. Verify no faults found.

HORN DOES NOT OPERATE — Continued

0037 00**6Y**

- | |
|--|
| <ol style="list-style-type: none">1. Remove jumper wire from instrument panel cable assembly circuit 25A.2. Repair instrument panel cable assembly circuit 25A (WP 0312 00).3. Verify no faults found. |
|--|

INSTRUMENT PANEL ILLUMINATION LIGHTS MALFUNCTION

0038 00

INITIAL SETUP:

Maintenance Level

Unit

References

See your -10

Tools and Special Tools

- Digital Multimeter (WP 0780 00, Item 43)
- General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

- Engine stopped/shutdown (see your -10)
- Carrier blocked (see your -10)

Personnel Required

- Unit Mechanic
- Helper (H)

T

- 1. Operate all exterior lights (see your -10).
- 2. Do any exterior lights operate in any lighting control switch position?

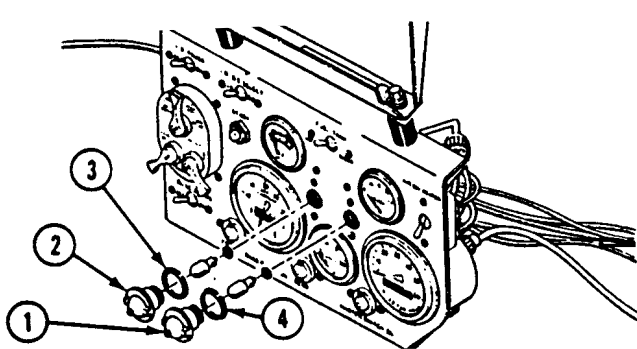
NO

TN

- 1. Go to No Exterior Lights Operate (WP 0029 00).

YES

Y

- 1. Remove instrument panel illumination light cover lenses (1) and (2) and gaskets (3) and (4).
 - 2. Operate lighting control switch to DIM and BRT positions (see your -10).
 - 3. Do both lights malfunction?
- 

NO

YN

- GO TO BY (PAGE 0038 00-4)

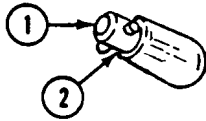
YES

INSTRUMENT PANEL ILLUMINATION LIGHTS MALFUNCTION — Continued

0038 00

2Y

1. Remove malfunctioning bulbs from instrument panel illumination light indicator assemblies.
2. Measure resistance between bulb center contact (1) and bulb base (2) of each bulb.
3. Does multimeter read 0-5 ohms?

**YES****NO****2YN**

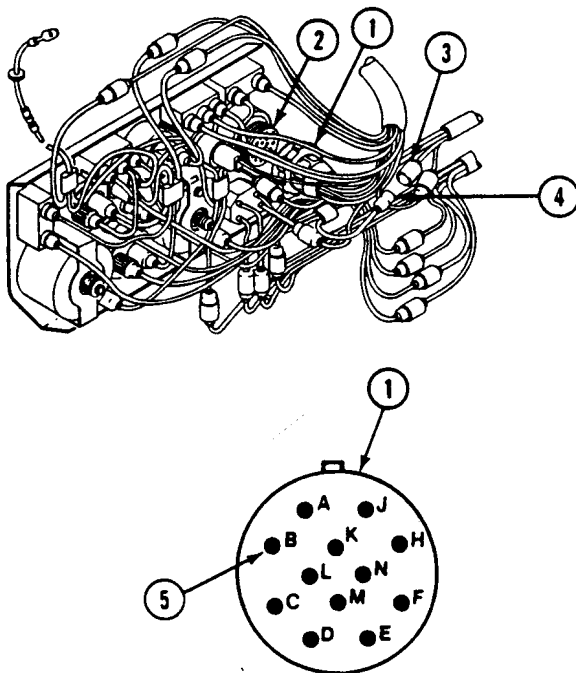
1. Replace light bulbs as required (WP 0240 00).
2. Verify no faults found.

INSTRUMENT PANEL ILLUMINATION LIGHTS MALFUNCTION — Continued

0038 00

3Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Install instrument panel light bulbs.
3. Install instrument panel illumination light cover, lenses, and gaskets.
4. Remove instrument panel for access (WP 0238 00).
5. Remove front main harness plug (1) from lighting control switch jack (2).
6. Remove front main harness circuit 40 plug (3) from either illumination light jack (4).
7. Measure resistance between front main harness lighting control switch plug (1), pin B (5), and illumination light plug circuit 40 (3).
8. Does multimeter read 0 ohms?

**NO****3YN**

1. Repair front main harness circuit 40 (WP 0312 00).
2. Verify no faults found.

YES**4Y**

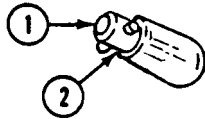
1. Replace main light switch (WP 0242 00).
2. Verify no faults found.

INSTRUMENT PANEL ILLUMINATION LIGHTS MALFUNCTION — Continued

0038 00

BY

1. Remove malfunctioning bulb from instrument panel illumination light indicator assembly.
2. Measure resistance between bulb center contact (1) and bulb base (2).
3. Does multimeter read 0–5 ohms?

**YES****NO****BYN**

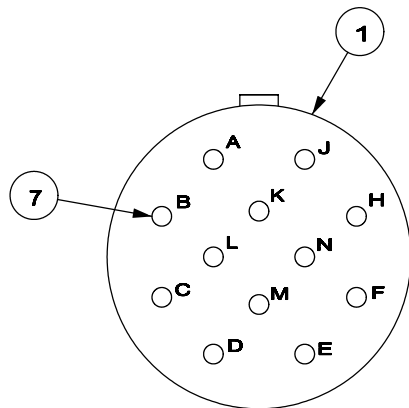
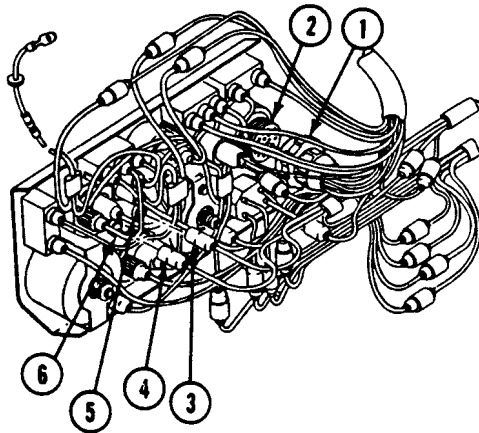
1. Replace light bulb as required (WP 0240 00).
2. Verify no faults found.

INSTRUMENT PANEL ILLUMINATION LIGHTS MALFUNCTION — Continued

0038 00

B2Y

1. Remove instrument panel for access (WP 0238 00).
2. Remove front main harness plug (1) from lighting control switch jack (2).
3. Remove front main harness circuit 40 plug (3) or (4) from failing instrument panel light (5) or (6).
4. Measure resistance between front main harness lighting control switch plug (1), pin B (7), and failing circuit 40 light plug (3) or (4).
5. Does multimeter read 0 ohms?



NO

B2YN

1. Install bulbs.
2. Repair front main harness circuit 40 (WP 0312 00).
3. Verify no faults found.

YES

B3Y

1. Install front main harness plug on lighting control switch jack.
2. Replace instrument panel light assembly (WP 0240 00).
3. Verify no faults found.

DOMELIGHT(S) WORK IMPROPERLY**0039 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Personnel Required

Unit Mechanic

Helper (H)

T

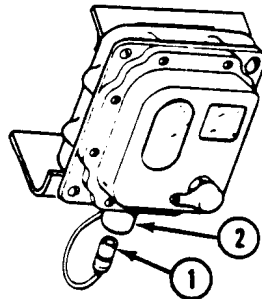
1. Turn MASTER SWITCH to ON (see your -10).
2. Is MASTER POWER indicator ON?

NO**TN**

1. Go to Master Switch On Indicator Does Not Light (WP 0046 00).

YES**Y**

1. Remove rear main harness plug (1) from jack (2) on failing dome light.
2. Turn MASTER SWITCH to ON (see your -10).
3. Measure voltage between rear main harness plug (1) and ground.
4. Does multimeter read 17 volts or more?

**NO****YN**

GO TO AY (PAGE 0039 00-2)

YES**2Y**

1. Install rear main harness plug on dome light.
2. Have dome light bulbs been replaced?

NO**2YN**

1. Replace dome light bulbs (WP 0274 00).
2. Verify no faults found.

YES

DOME LIGHT(S) WORK IMPROPERLY — Continued

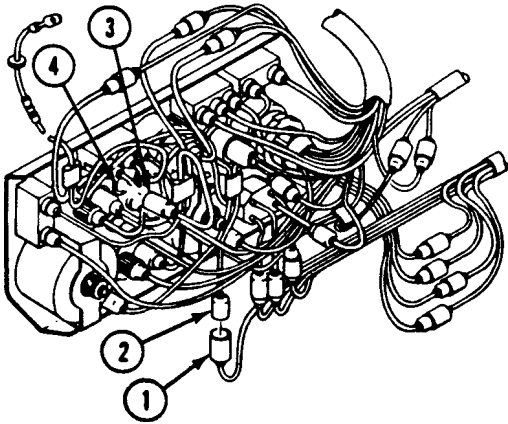
0039 00

3Y

1. Replace dome light assembly (WP 0274 00).
2. Verify no faults found.

AY

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove instrument panel for access (WP 0238 00).
3. Remove rear main harness circuit 38 plug (1) from instrument panel cable assembly circuit 38 jack (2).
4. Remove instrument panel cable assembly circuit 27 plug (3) from instrument panel circuit breaker jack (4).
5. Measure resistance between instrument panel cable assembly circuit 38 jack (2) and circuit 27 plug (3).
6. Does multimeter read 0 ohms?

**NO****AYN**

1. Install rear main harness plug on dome light jack.
2. Repair instrument panel cable assembly circuit 38 (WP 0312 00).
3. Verify no faults found.

YES**A2Y**

1. Repair rear main harness circuit 38 (WP 0312 00).
2. Verify no faults found.

INFRARED PERISCOPE WORKS IMPROPERLY

0040 00

INITIAL SETUP:

Maintenance Level

Unit

References

See your -10

Tools and Special Tools

- Digital Multimeter (WP 0780 00, Item 43)
- General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Equipment Condition

- Engine stopped/shutdown (see your -10)
- Carrier blocked (see your -10)
- Periscope stowed (see your -10)
- I.R. power switch OFF (see your -10)

Personnel Required

Unit Mechanic

T

1. Turn MASTER SWITCH to ON (see your -10).
2. Is MASTER SWITCH indicator light ON?

NO

TN

1. Go to Master Switch on Indicator Does Not Light (WP 0046 00).

YES

Y

WARNING

High voltage in the M19 periscope can cause serious injury or death. Voltage could exceed 16,000 volts. To avoid accidents, observe the following:

Always connect power cable to periscope before turning MASTER SWITCH and infrared (I.R.) POWER switch to ON.

Before disconnecting power cable from M19 periscope, always wait at least two minutes after turning infrared (I.R.) POWER switch and MASTER SWITCH OFF.

Do not disconnect power cable until image disappears from periscope screen.

Never touch end of power cable, or allow it to contact metal surfaces.

1. Replace I.R. power pack with known good power pack (WP 0291 00 or WP 0293 00).
2. Turn MASTER SWITCH to ON (see your -10).
3. Turn I.R. switch to ON (see your -10).
4. Does I.R. periscope work?

NO

YN

GO TO BY (PAGE 0040 00-3)

YES

2Y

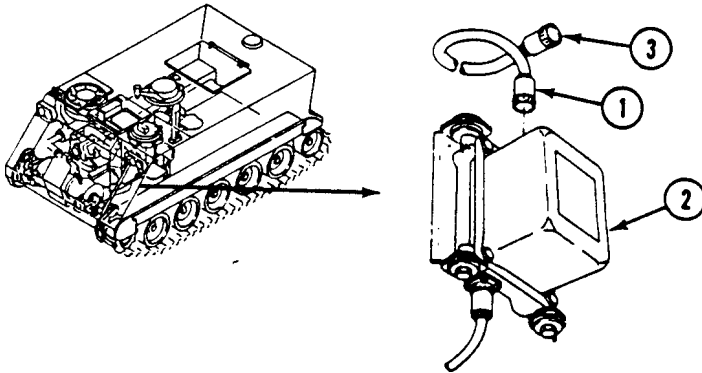
1. Replace original I.R. power pack (WP 0291 00 or WP 0293 00).
2. Verify no faults found.

INFRARED PERISCOPE WORKS IMPROPERLY — Continued

0040 00

BY

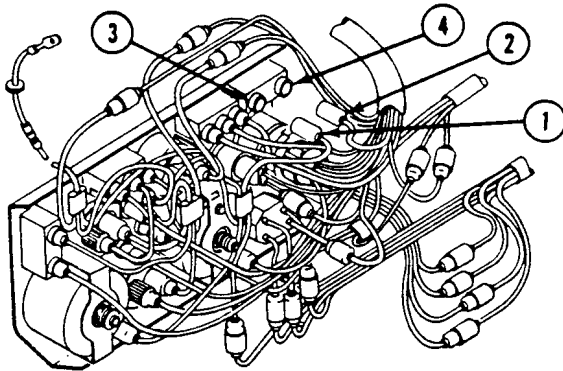
1. Remove periscope power pack 517 lead (1) from I.R. power pack (2).
2. Measure resistance between lead ends (1) and (3) (inner and outer).
3. Does multimeter read 0 ohms both times?



YES

B2Y

1. Remove circuit plug 516 (1) and 516 A (2) from I.R. POWER switch jacks (3) and (4).
2. Measure resistance between I.R. POWER switch jacks (3) and (4) with switch ON.
3. Does multimeter read 0 ohms?



YES

NO

BYN

1. Replace I.R. periscope power pack lead.
2. Install original I.R. power pack (WP 0291 00 or WP 0293 00).
3. Verify no faults found.

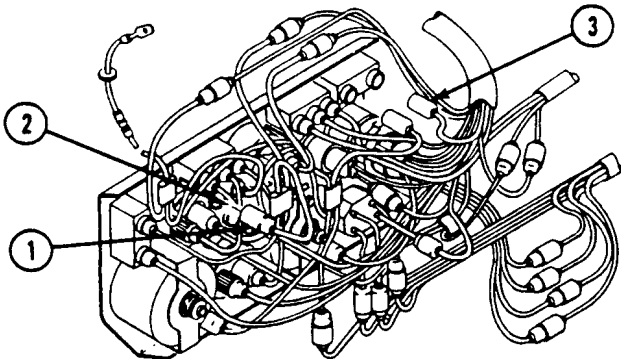
NO

B2YN

1. Replace I.R. POWER switch (WP 0241 00).
2. Install original I.R. power pack (WP 0291 00 or WP 0293 00).
3. Verify no faults found.

B3Y

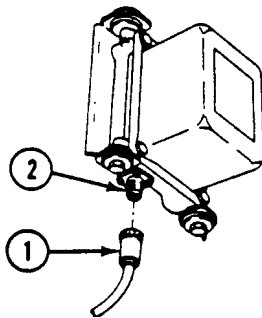
1. Remove instrument panel cable assembly circuit 27 plug (1) from instrument panel circuit breaker (2).
2. Measure resistance between circuit 516 plug (3) and circuit 27 plug (1).
3. Does multimeter read 0 ohms?



YES

B4Y

1. Remove cable assembly circuit 516A plug (1) from I.R. power pack (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Turn I.R. POWER switch to ON (see your -10).
4. Measure voltage between cable assembly circuit 516A plug (1) and ground.
5. Turn MASTER SWITCH to OFF (see your -10).
6. Did multimeter read less than 17 volts?



YES

NO

B3YN

1. Repair instrument panel cable assembly circuit 516 (WP 0312 00).
2. Install original I.R. power pack (WP 0291 00 or WP 0293 00).
3. Verify no faults found.

NO

B4YN

1. Repair front main harness circuit 516A (WP 0312 00).
2. Install original I.R. power pack (WP 0291 00 or WP 0293 00).
3. Verify no faults found.

B5Y

1. Faulty I.R. periscope.
2. Install original I.R. power pack (WP 0291 00 or WP 0293 00).
Beyond unit maintenance repair.
3. Notify your supervisor.

RADIO(S) DOES NOT WORK

0041 00

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic
Helper (H)

Tools and Special Tools

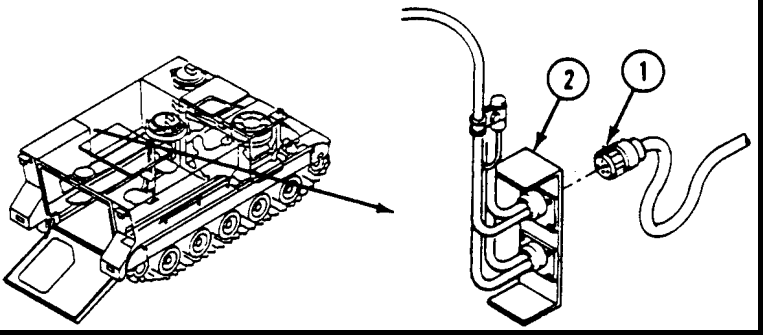
Digital Multimeter (WP 0780 00, Item 43)
General Mechanic's Tool Kit (WP 0780 00, Item 29)
Jumper Wire

Equipment Condition

Carrier blocked (see your -10)
Ramp lowered (see your -10)

T

1. Remove radio plug (1) from receptacle (2).
2. Measure voltage between receptacle jack (2) pins A and B.
3. Does multimeter read less than 17 volts?



NO

TN

1. Faulty radio or mount. Beyond unit maintenance repair.
2. Notify your supervisor.

YES

Y

1. Remove circuit 48 lead from battery positive terminal (WP 0294 00).
2. Install a jumper wire between circuit 48 lead and ground.
3. Measure resistance between receptacle jack pin A and ground.
4. Does multimeter read 0 ohms?

NO

YN

1. Remove jumper wire.
2. Repair wiring harness circuit 48 (WP 0312 00).
3. Verify no faults found.

YES

2Y

1. Remove jumper wire.
2. Service carrier batteries (see your -10).
3. Verify no faults found.

DOMES LIGHTS MALFUNCTION (M577A2 ONLY)**0042 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Ramp lowered (see your -10)

Personnel Required

Unit Mechanic

Helper (H)

T

1. Turn MASTER SWITCH to ON (see your -10).
2. Turn BLACKOUT BYPASS switch to ON.
3. Do white dome lights come on?

NO**TN**

GO TO BY (PAGE 0042 00-4)

YES**Y**

1. Turn BLACKOUT BYPASS switch to OFF.
2. Operate rear dome light switch.
3. Operate front dome light switch.
4. Do blackout lights malfunction?

NO**YN**

GO TO CY (PAGE 0042 00-4)

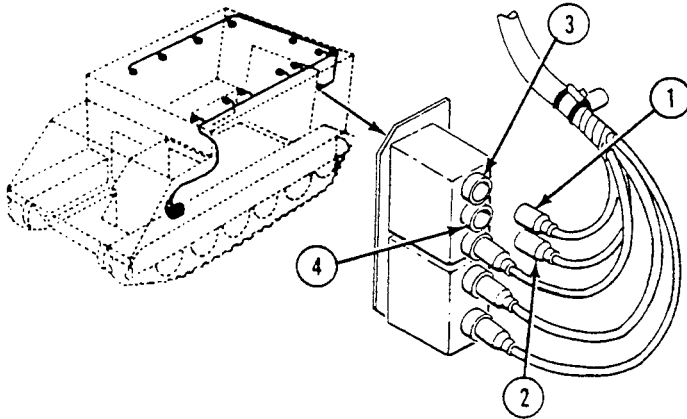
YES

DOME LIGHTS MALFUNCTION (M577A2 ONLY) — Continued

0042 00

2Y

1. Remove circuit 38E (1) and 38A (2) plugs from rear dome light switch jacks (3) and (4).
2. Install a jumper wire between circuit 38E and 38A plugs (1) and (2).
3. Operate front dome light switch.
4. Do blackout dome lights malfunction?

**NO****2YN**GO TO **DY** (PAGE 0042 00-5)**YES****3Y**

1. Remove jumper from circuit 38E and 38A plugs.
2. Measure voltage at circuit 38E plug.
3. Does multimeter read 17 volts or more?

NO**3YN**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Repair rear main harness circuit 38E (WP 0312 00).
3. Verify no faults found.

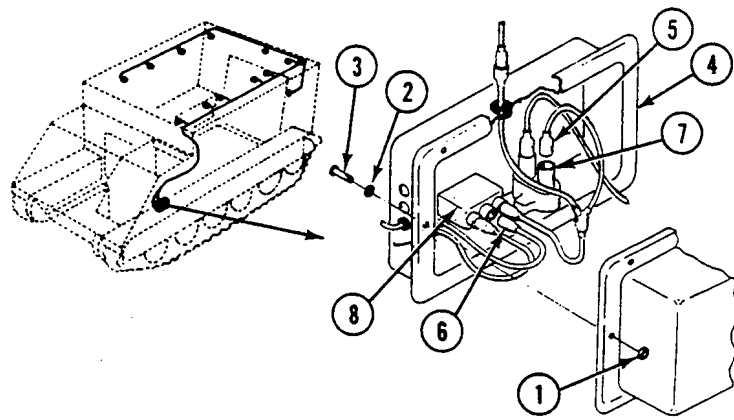
YES

DOME LIGHTS MALFUNCTION (M577A2 ONLY) — Continued

0042 00

4Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Install circuit 38E and 38A plugs on rear dome light switch.
3. Remove eight nuts (1), washers (2), and screws (3) from master switch panel (4). Pull panel away from distribution box.
4. Remove circuits 10 (5) and 38A (6) plugs from circuit breaker (7) and front dome light switch (8).
5. Install a jumper wire between circuit 10 and 38A plugs.
6. Turn MASTER SWITCH to ON (see your -10).
7. Operate rear dome light switch.
8. Do blackout dome lights still malfunction?



NO

4YN

GO TO EY (PAGE 0042 00-5)

YES

5Y

1. Remove jumper wire from circuits 10 and 38A plugs.
2. Measure voltage at circuit 10 plug.
3. Does multimeter read 17 volts or more?

NO

5YN

1. Turn MASTER SWITCH to OFF (see your -10).
2. Repair/replace wiring harness 10917788 (WP 0312 00).
3. Verify no faults found.

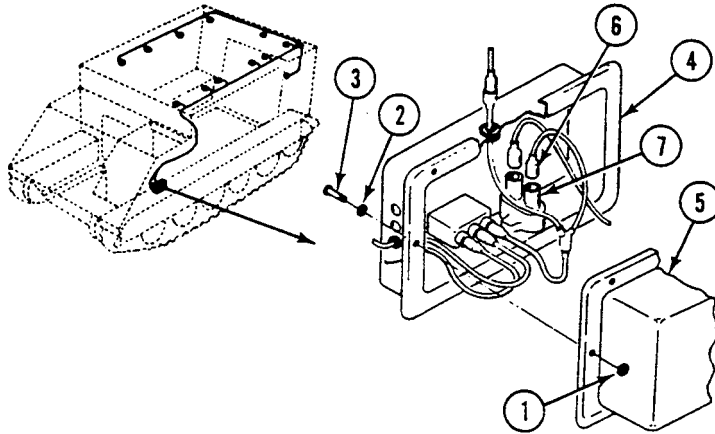
YES

6Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Repair wiring harness circuit 38A (WP 0312 00).
3. Verify no faults found.

DOME LIGHTS MALFUNCTION (M577A2 ONLY) — Continued**0042 00****BY**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove eight nuts (1), washers (2), and screws (3) from master switch panel (4). Pull panel away from distribution box (5).
3. Remove circuit 10 plugs (6) from circuit breaker jacks (7).
4. Measure resistance between circuit breaker jacks (7).
5. Does multimeter read 0 ohm?

**NO****BYN**

1. Replace circuit breaker (WP 0280 00).
2. Verify no faults found.

YES**B2Y**

1. Repair circuit 10 lead assembly from the circuit breaker to the front dome light switch (WP 0323 00).
2. Verify no faults found.

CY

1. Check to see if ramp door switch has been adjusted.
2. Has the ramp door switch been adjusted?

NO**CYN**

1. Adjust ramp door switch (WP 0283 00).
2. Verify no faults found.

YES**C2Y**

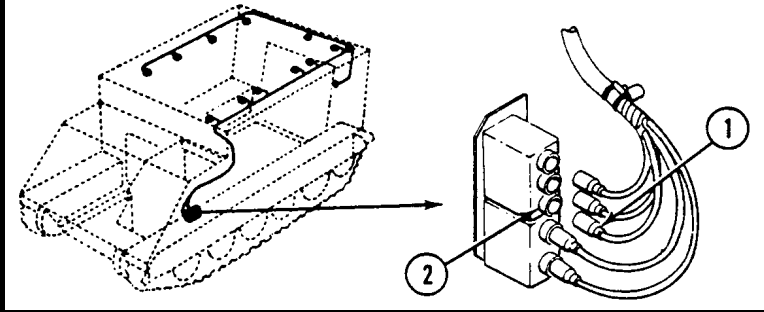
1. Replace ramp door switch (WP 0283 00).
2. Verify no faults found.

DOME LIGHTS MALFUNCTION (M577A2 ONLY) — Continued

0042 00

DY

1. Turn blackout dome lights on using front dome light switch.
2. Remove circuit 38 plug (1) from rear dome light switch jack (2).
3. Measure voltage between circuit 38 plug (1) and ground.
4. Does multimeter read 17 volts or more?



YES

D2Y

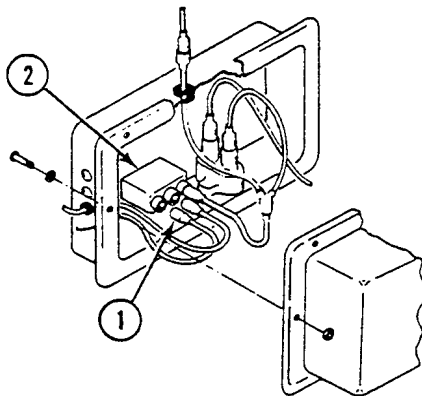
1. Turn MASTER SWITCH to OFF (see your -10).
2. Replace rear dome light switch (WP 0279 00).
3. Verify no faults found.

DYN

1. Turn MASTER SWITCH to OFF (see your -10).
2. Repair rear main harness circuit 38 (WP 0312 00).
3. Verify no faults found.

EY

1. Turn dome lights on using rear dome light switch.
2. Remove circuit 38 plug (1) from front dome light switch jack (2).
3. Measure voltage between circuit 38 plug (1) and ground.
4. Does multimeter read 17 volts or more?



YES

EYN

1. Turn MASTER SWITCH to OFF (see your -10).
2. Repair wiring harness circuit 38 (WP 0312 00).
3. Install master switch panel on distribution box.
4. Verify no faults found.

DOMES LIGHTS MALFUNCTION (M577A2 ONLY) — Continued

0042 00**E2Y**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove jumper wire from circuit 10 and 38 plugs.
3. Replace front dome light switch (WP 0278 00).
4. Verify no faults found.

BLACKOUT DOME LIGHTS DO NOT WORK (M1068 ONLY)**0043 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

M1068 Wiring Diagram (FO-9, FO-10)

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

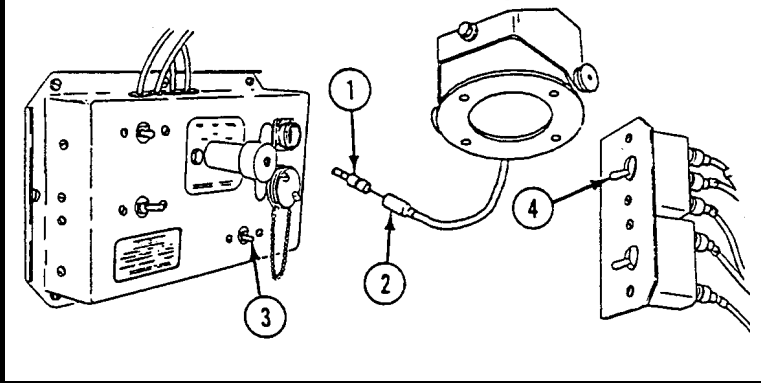
Carrier blocked (see your -10)

Personnel Required

Unit Mechanic

T

1. Disconnect W28 plug P2 (1) from dome light lead (2).
2. Ensure ramp door is open or ramp is down.
3. Turn MASTER SWITCH to ON (see your -10).
4. Turn on either front dome light switch (3) on master switch panel in driver's compartment or rear dome light switch (4) on switch panel next to ramp opening.
5. Measure voltage between plug P2 (1) and ground.
6. Does multimeter read 17 volts or more?

**NO****TN****GO TO AY (PAGE 0043 00-2)****YES****Y**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Have dome light bulbs been replaced?

NO**YN**

1. Replace dome light bulbs (WP 0275 00).
2. Verify no faults found.

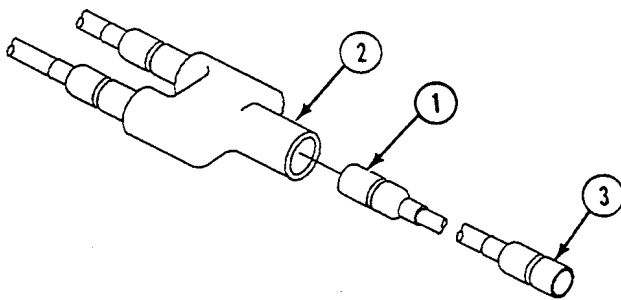
YES

BLACKOUT DOME LIGHTS DO NOT WORK (M1068 ONLY) — Continued**0043 00****2Y**

1. Repair dome light assembly (WP 0276 00).
2. Verify no faults found.

AY

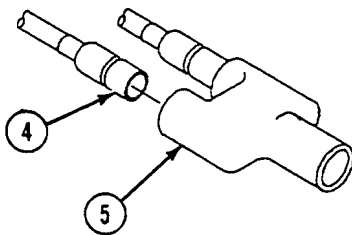
1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove cable W28 plug P1 (1) from adapter plug (2).
3. Measure resistance between cable W28 plugs P1 (1) and P2 (3).
4. Does multimeter read 0 ohms?

**NO****AYN**

1. Replace cable W28 (WP 0750 00).
2. Verify no faults found.

YES**A2Y**

1. Remove lead 38B (4) from adapter plug P3 (5).
2. Turn MASTER SWITCH to ON (see your -10).
3. Measure voltage between lead 38B (4) and ground.
4. Does multimeter read 17 volts or more?

**NO****A2YN**

1. Go to Dome Lights Malfunction (M577A2 Only) (WP 0042 00).

YES**A3Y**

1. Replace adapter (WP 0750 00).
2. Verify no faults found.

RIGHT REAR UTILITY OUTLET/ADMITTANCE BUZZER WORKS IMPROPERLY (M577A2 AND M1068 ONLY)

0044 00

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic

Helper (H)

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Jumper Wire

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

MASTER SWITCH turned to ON (see your -10)

T

1. Check to see if either the right rear utility outlet or the admittance buzzer operate.
2. Does either the right rear utility outlet or the admittance buzzer operate?

NO**TN**

GO TO AY (PAGE 0001 00-2)

YES**Y**

1. Check and see if the admittance buzzer is operating correctly.
2. Does the admittance buzzer operate correctly?

NO**YN**

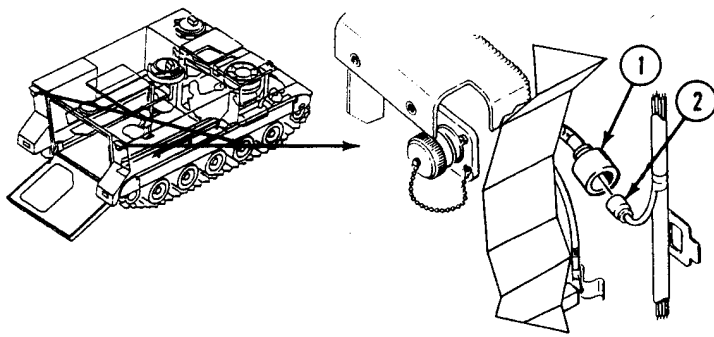
GO TO BY (PAGE 0001 00-3)

YES**2Y**

1. Remove circuit 37A plug (1) from utility outlet jack (2).
2. Measure voltage between circuit 37A plug (1) and ground.
3. Does multimeter read less than 17 volts?

NO**2YN**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Replace utility outlet receptacle (WP 0332 00).
3. Verify no faults found.

**YES**

RIGHT REAR UTILITY OUTLET/ADMITTANCE BUZZER WORKS IMPROPERLY (M577A2 AND M1068 ONLY) — Continued

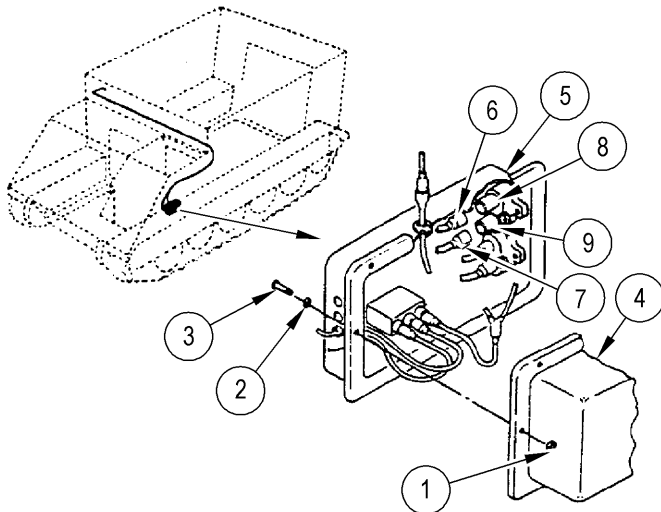
0044 00

3Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Repair rear main wiring harness (WP 0312 00).
3. Verify no faults found.

AY

1. Remove eight nuts (1), washers (2), and screws (3) from master switch panel (4). Pull panel away from distribution box (5).
2. Remove circuit 10 and 37A plugs (6) and (7) from circuit breaker jacks (8) and (9).
3. Measure resistance between circuit breaker jacks (8) and (9).
4. Does multimeter read 0 ohms?

**NO****AYN**

1. Replace circuit breaker (WP 0333 00).
2. Verify no faults found.

YES**A2Y**

1. Turn MASTER SWITCH to ON (see your -10).
2. Measure voltage at circuit 10 plug.
3. Does multimeter read less than 17 volts?

NO**A2YN**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Repair rear main wiring harness circuit 37A (WP 0312 00).
3. Verify no faults found.

YES

**RIGHT REAR UTILITY OUTLET/ADMITTANCE BUZZER WORKS IMPROPERLY
(M577A2 AND M1068 ONLY) — Continued**

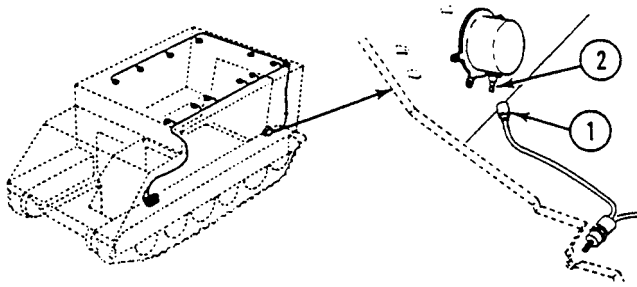
0044 00

A3Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Replace circuit 10 in master switch panel from the bus bar to the circuit breaker (WP 0312 00).
3. Verify no faults found.

BY

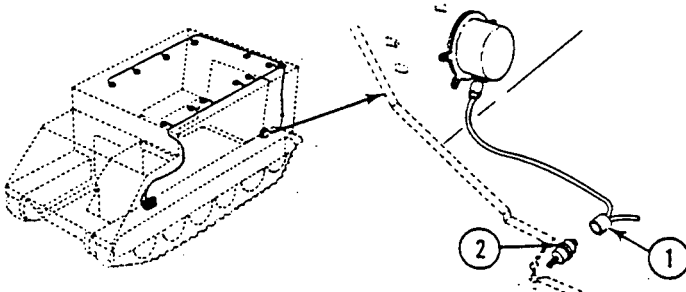
1. Remove circuit 509 plug (1) from admittance buzzer jack (2).
2. (H): Depress admittance buzzer switch.
3. Measure voltage between circuit 509 plug (1) and ground.
4. Does multimeter read less than 17 volts?



YES

B2Y

1. Remove rear main harness circuit 509 plug (1) from admittance buzzer switch (2).
2. Install a jumper wire between admittance buzzer circuit 509 plug (1) and ground.
3. Measure voltage across two pin contacts of circuit 509 plug (1) from admittance buzzer switch.
4. Does multimeter read less than 17 volts?



YES

NO

BYN

1. Turn MASTER SWITCH to OFF (see your -10).
2. Replace admittance buzzer (WP 0282 00).
3. Verify no faults found.

NO

B2YN

1. Turn MASTER SWITCH to OFF (see your -10).
2. Replace admittance buzzer switch (WP 0282 00).
3. Verify no faults found.

**RIGHT REAR UTILITY OUTLET/ADMITTANCE BUZZER WORKS IMPROPERLY
(M577A2 AND M1068 ONLY) — Continued**

0044 00

B3Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove jumper wire.
3. Repair rear main wiring harness circuit 509 (WP 0312 00).
4. Verify no faults found

LEFT REAR UTILITY OUTLET/BLOWER DOES NOT WORK (M577A2 AND M1068 ONLY)

0045 00

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic

Helper (H)

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

MASTER SWITCH turned to ON (see your -10)

T

1. Check to see if either the blower or the left rear utility outlet are working.
2. Does either the blower or the left rear utility outlet work?

NO**TN**

GO TO BY (PAGE 0045 00-3)

YES**Y**

1. Check to see if the blower is operating normally.
2. Does the blower operate normally?

NO**YN**

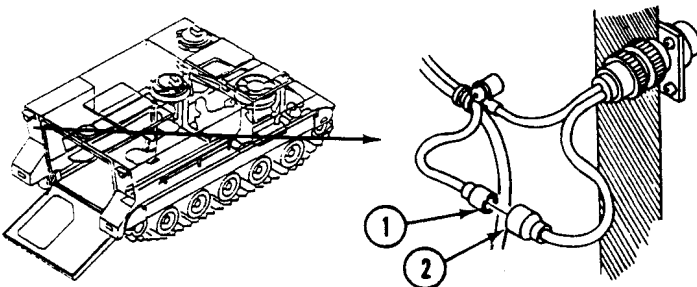
GO TO CY (PAGE 0045 00-4)

YES**2Y**

1. Remove rear main harness circuit 37B plug (1) from left rear utility outlet jack (2).
2. Measure voltage between circuit 37B plug (1) and ground.
3. Does multimeter read less than 17 volts?

NO**2YN**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Replace utility outlet receptacle (WP 0332 00).
3. Verify no faults found.

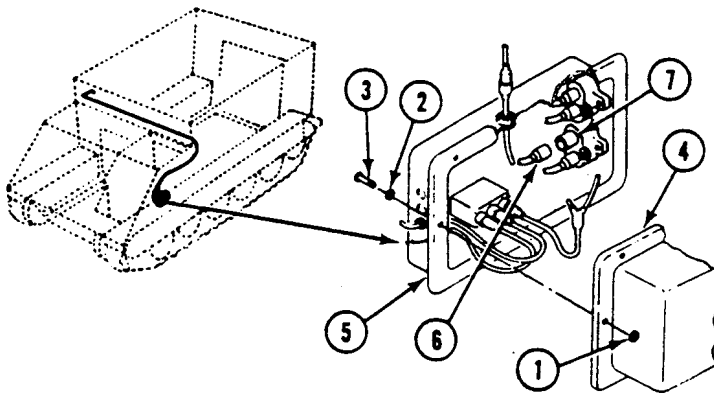
**YES**

**LEFT REAR UTILITY OUTLET/BLOWER DOES NOT WORK (M577A2
AND M1068 ONLY) — Continued**

0045 00

3Y

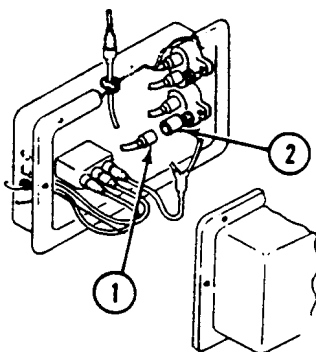
1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove eight nuts (1), washers (2), and screws (3) from master switch panel (4) and distribution box (5). Pull panel away from distribution box.
3. Remove circuit 37B plug (6) from circuit breaker jack (7).
4. Turn MASTER SWITCH to ON (see your -10).
5. Measure voltage between circuit breaker jack (7) and ground.
6. Does multimeter read less than 17 volts?



YES

4Y

1. Remove circuit 10 plug (1) from circuit breaker jack (2).
2. Measure voltage between circuit 10 plug (1) and ground.
3. Does multimeter read less than 17 volts?



YES

NO

3YN

1. Turn MASTER SWITCH to OFF (see your -10).
2. Repair rear main wiring harness circuit 37B (WP 0312 00).
3. Verify no faults found.

NO

4YN

1. Turn MASTER SWITCH to OFF (see your -10).
2. Replace circuit breaker (WP 0333 00).
3. Verify no faults found.

**LEFT REAR UTILITY OUTLET/BLOWER DOES NOT WORK (M577A2
AND M1068 ONLY) — Continued**

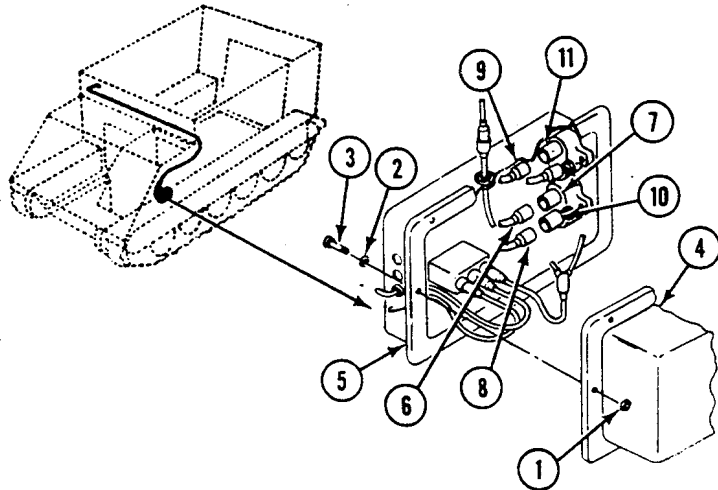
0045 00

5Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Repair circuit 10 lead from bus bar to circuit breaker (WP 0312 00).
3. Install master switch panel on distribution box.
4. Verify no faults found.

BY

1. Remove eight nuts (1), washers (2), and screws (3) from master switch panel (4) and distribution box (5). Pull panel away from distribution box.
2. Remove circuit 37B plug (6) from circuit breaker jack (7) and two circuit 10 plugs (8) and (9) from circuit breaker jacks (10) and (11).
3. Measure resistance between circuit breaker contacts.
4. Does multimeter read 0 ohms?

**NO****BYN**

1. Replace circuit breaker (WP 0333 00).
2. Verify no faults found.

YES**B2Y**

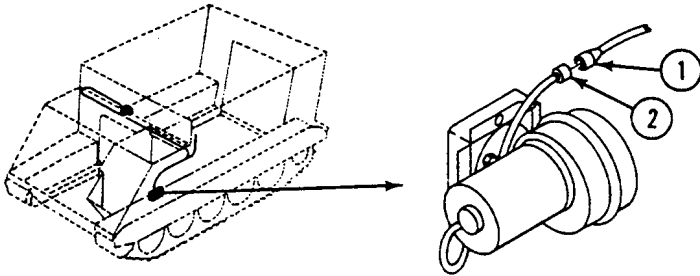
1. Repair circuit 10 from bus bar to circuit breaker (WP 0312 00).
2. Install master switch panel on distribution box.
3. Verify no faults found.

**LEFT REAR UTILITY OUTLET/BLOWER DOES NOT WORK (M577A2
AND M1068 ONLY) — Continued**

0045 00

CY

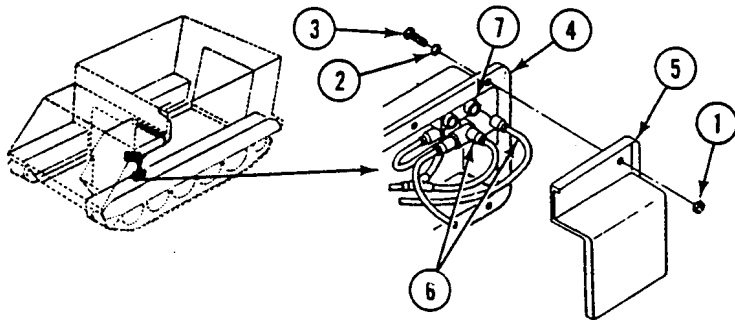
1. Remove circuit 59 plug (1) from blower motor jack (2).
2. Turn BLOWER SWITCH to ON (see your -10).
3. Measure voltage between circuit 59 plug (1) and ground.
4. Does multimeter read less than 17 volts?

**NO****CYN**

1. Replace blower motor (WP 0335 00).
2. Verify no faults found.

YES**C2Y**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Install a jumper wire between circuit 59 plug at blower motor and ground.
3. Remove eight nuts (1), washers (2), and screws (3) from master switch panel (4) and distribution box (5). Pull panel away from distribution box.
4. Remove circuit 59 plugs (6) from blower switch (7).
5. Check for continuity between circuit 59 plugs (6).
6. Does multimeter read 0 ohms?

**NO****C2YN**

1. Replace blower switch (WP 0336 00).
2. Install master switch panel on distribution box.
3. Verify no faults found.

YES

**LEFT REAR UTILITY OUTLET/BLOWER DOES NOT WORK (M577A2
AND M1068 ONLY) — Continued**

0045 00

C3Y

- | |
|--|
| <ol style="list-style-type: none">1. Repair wiring harness circuit 59 from circuit breaker to blower switch (WP 0312 00).2. Install master switch panel on distribution box.3. Verify no faults found. |
|--|

MASTER SWITCH ON INDICATOR DOES NOT LIGHT**0046 00****INITIAL SETUP:**Maintenance Level

Unit

Personnel Required

Unit Mechanic 63T10

Helper (H)

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

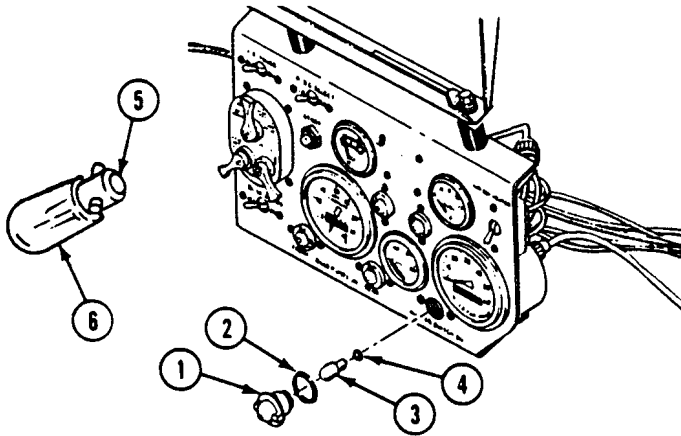
Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

T

1. Remove MASTER SWITCH ON indicator cover lens (1), gasket (2), bulb (3), and gasket (4).
2. Measure resistance between bulb center contact (5) and bulb base (6).
3. Does multimeter read less than infinity?

**YES****Y**

1. Turn MASTER SWITCH to ON (see your -10).
2. Is BATTERY/GENERATOR indicator in the green zone?

YES**NO****TN**

1. Replace MASTER SWITCH ON bulb (WP 0240 00).
2. Verify no faults found.

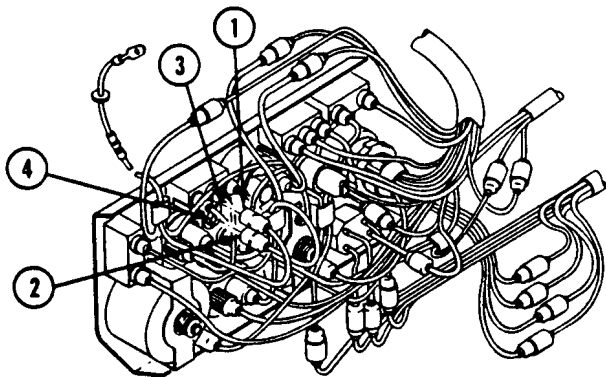
NO**YN****GO TO BY (PAGE 0046 00-3)**

MASTER SWITCH ON INDICATOR DOES NOT LIGHT — Continued

0046 00

2Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove instrument panel for access (WP 0238 00).
3. Remove circuit 10 plug (1) and cable assembly circuit 27 plug (2) from instrument panel circuit breaker jacks (3) and (4).
4. Measure resistance between circuit breaker jacks (3) and (4).
5. Does multimeter read 0 ohms?



NO

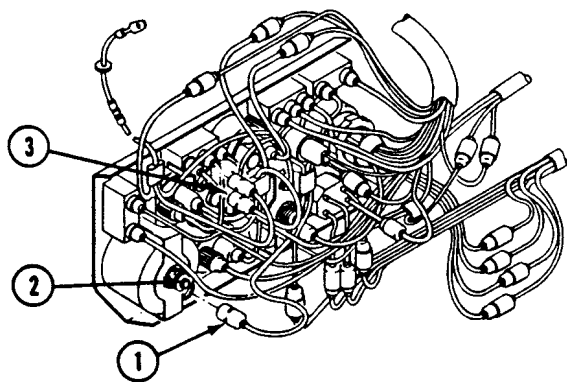
2YN

1. Replace instrument panel circuit breaker (WP 0239 00).
2. Verify no faults found.

YES

3Y

1. Remove circuit 459 (1) master switch on indicator jack (2).
2. Measure resistance between harness circuit 27 plug (3) and circuit 459 (1).
3. Does multimeter read 0 ohms?



NO

3YN

1. Replace instrument panel cable assembly (WP 0314 00).
2. Verify no faults found.

YES

4Y

1. Replace indicator light assembly (WP 0240 00).
2. Verify no faults found.

MASTER SWITCH ON INDICATOR DOES NOT LIGHT — Continued

0046 00

BY

1. Turn MASTER SWITCH to OFF (see your -10).
2. Inspect carrier batteries (WP 0295 00).
3. Are batteries in proper maintenance and well charged?

NO

BYN

1. Service carrier batteries (see your -10).
2. Verify no faults found.

YES

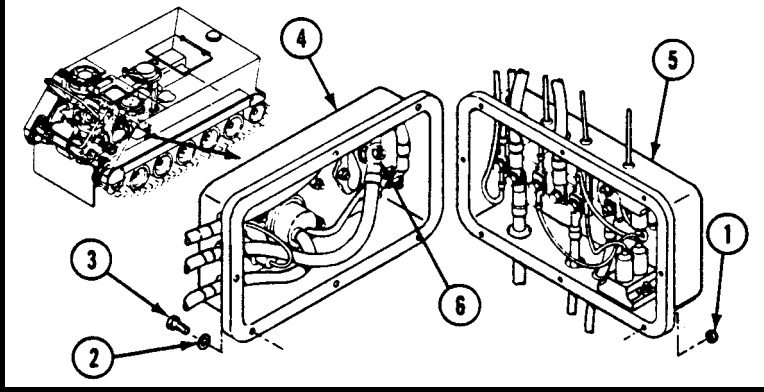
B2Y

1. Remove eight nuts (1), washers (2), and screws (3) from master switch panel (4). Pull panel away from distribution box (5).
2. Inspect circuit 6 terminal end on master switch (6).
3. Are terminal end and master switch free from corrosion and/or other damage?

NO

B2YN

1. Repair battery to master power cable (WP 0314 00).
2. Verify no faults found.



YES

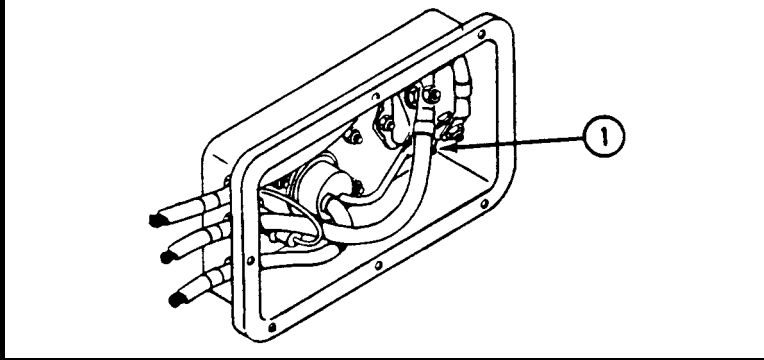
B3Y

1. Turn MASTER SWITCH to ON (see your -10).
2. Measure voltage between master switch terminals (1) and ground.
3. Does multimeter read more than 17 volts?

NO

B3YN

1. Replace master switch (WP 0221 00).
2. Verify no faults found.



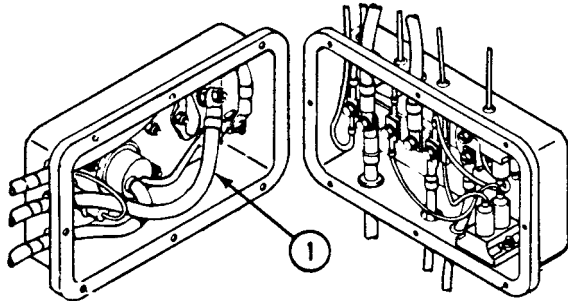
YES

MASTER SWITCH ON INDICATOR DOES NOT LIGHT — Continued

0046 00

B4Y

1. Inspect cable 49 (1) from master switch to distribution box.
2. Are cable and cable ends free from corrosion and damage?



YES

B5Y

1. Repair master power harness (WP 0312 00).
2. Verify no faults found.

NO

B4YN

1. Repair master power to distribution box cable (WP 0314 00).
2. Verify no faults found.

FUEL LEVEL INDICATOR MALFUNCTIONS**0047 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Jumper Wire

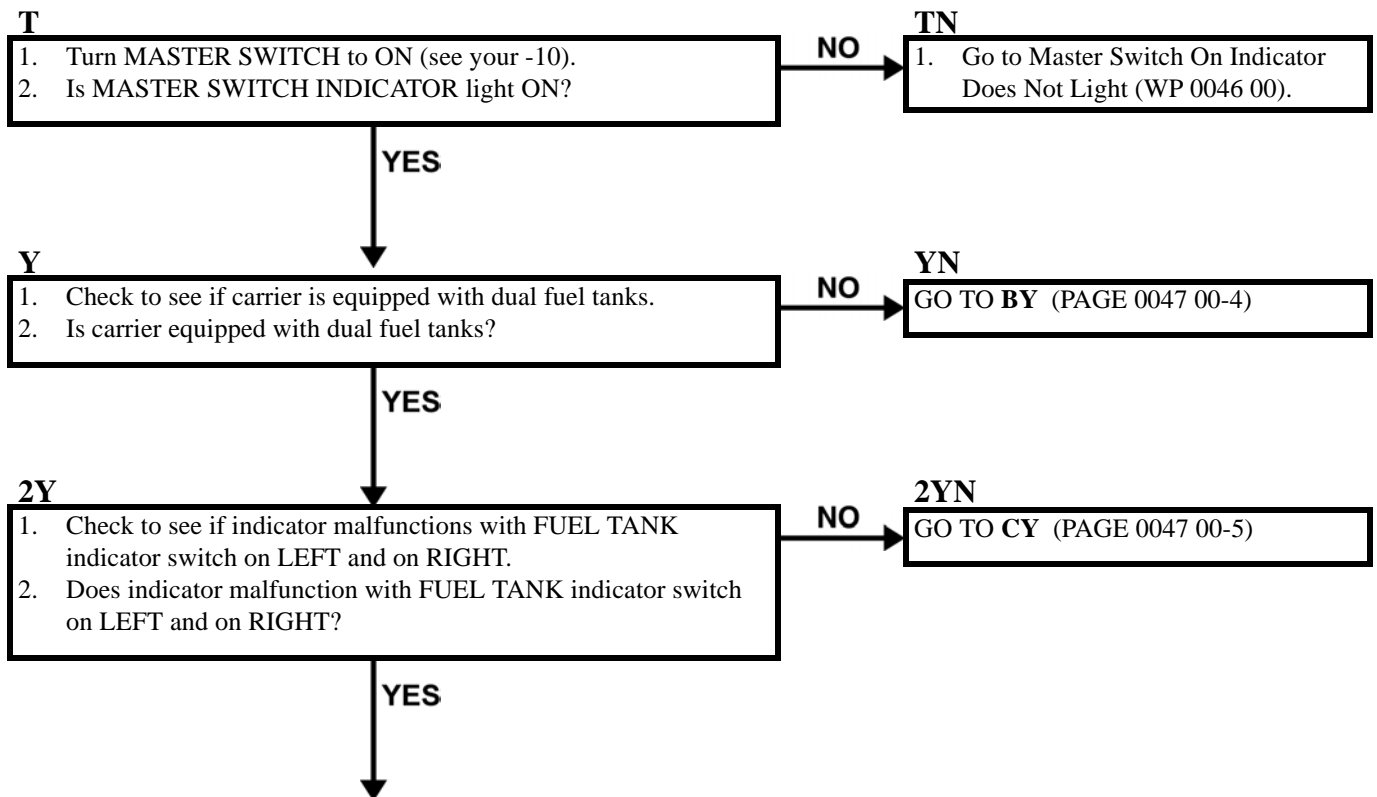
Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Personnel Required

Unit Mechanic

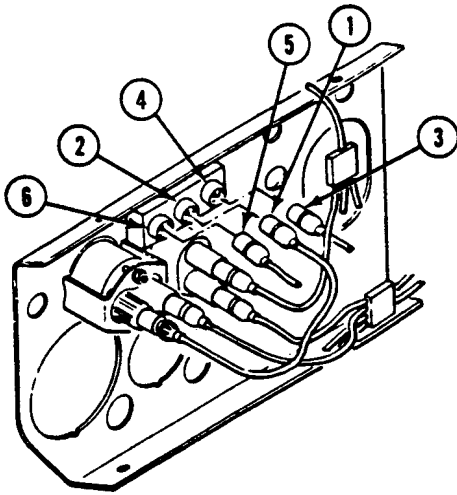


FUEL LEVEL INDICATOR MALFUNCTIONS — Continued

0047 00

3Y

1. Remove instrument panel for access (WP 0238 00).
2. Remove circuit 28 plug (1) from FUEL TANK switch jack (2).
3. Remove circuit 29 or 31A plug (3) from FUEL TANK switch jack (4).
4. Remove circuit 30 or 30A plug (5) from FUEL TANK switch jack (6).
5. Turn FUEL TANK switch to LEFT and measure resistance between FUEL TANK switch jack (2) and FUEL TANK switch jack (6).
6. Turn FUEL TANK switch to RIGHT and measure resistance between FUEL TANK switch jack (2) and FUEL TANK switch jack (4).
7. Does multimeter read 0 ohms?

**NO****3YN**

1. Replace FUEL TANK select switch (WP 0241 00).
2. Verify no faults found.

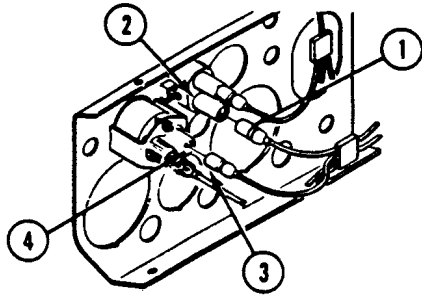
YES

FUEL LEVEL INDICATOR MALFUNCTIONS — Continued

0047 00

4Y

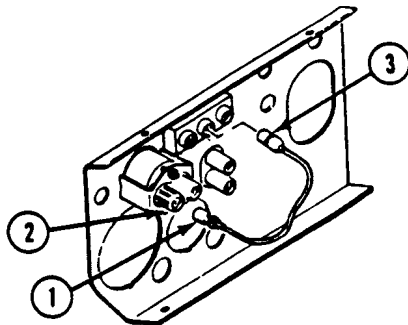
1. Remove circuit 27 plug (1) from instrument panel circuit breaker jack (2).
2. Remove circuit 27A plug (3) from fuel level indicator jack (4).
3. Measure resistance between circuit 27 plug (1) and circuit 27A plug (3).
4. Does multimeter read 0 ohms?



YES

5Y

1. Install circuit 29 or 31A plug and circuit 30 or 30A plug onto fuel level switch jacks.
2. Remove circuit 28 lead (1) from FUEL LEVEL indicator jack (2).
3. Measure resistance between circuit 28 lead ends (1) and (3).
4. Does multimeter read 0 ohms?



YES

6Y

1. Install circuit 28 lead on FUEL TANK switch jack.
2. Replace FUEL LEVEL indicator (WP 0244 00).
3. Verify no faults found.

NO

4YN

1. Install circuit 29 or 31A plug and 30 or 30A plug on FUEL TANK switch.
2. Repair instrument panel cable assembly circuit 27A (WP 0312 00).
3. Verify no faults found.

NO

5YN

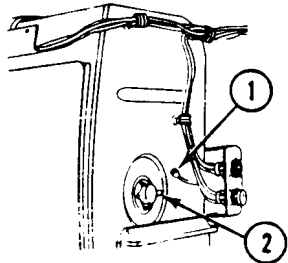
1. Replace circuit 28 lead (WP 0312 00).
2. Verify no faults found.

FUEL LEVEL INDICATOR MALFUNCTIONS — Continued

0047 00

BY

1. Remove circuit 28 plug (1) from fuel tank jack (2).
2. Turn MASTER POWER switch to ON (see your -10).
3. Does fuel indicator read full?



NO

BYN

1. Repair circuit 28 lead to fuel tank sender (WP 0312 00).
2. Verify no faults found.

YES

B2Y

1. Install jumper wire between 28 plug and ground.
2. Does fuel quantity gauge fail to read empty?

NO

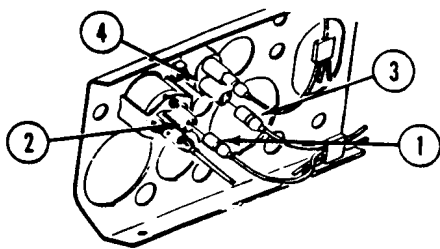
B2YN

1. Replace fuel quantity sending unit (WP 0138 00 or WP 0146 00).
2. Verify no faults found.

YES

B3Y

1. Turn MASTER POWER switch to OFF (see your -10).
2. Remove instrument panel for access (WP 0238 00).
3. Remove circuit 27A plug (1) from fuel quantity gauge jack (2).
4. Remove circuit 27 plug (3) from instrument panel circuit breaker jack (4).
5. Measure continuity between circuit 27 plug (3) and circuit 27A plug (1).
6. Does multimeter read 0 ohms?



NO

B3YN

1. Repair instrument panel cable assembly (WP 0314 00).
2. Verify no faults found.

YES

FUEL LEVEL INDICATOR MALFUNCTIONS — Continued

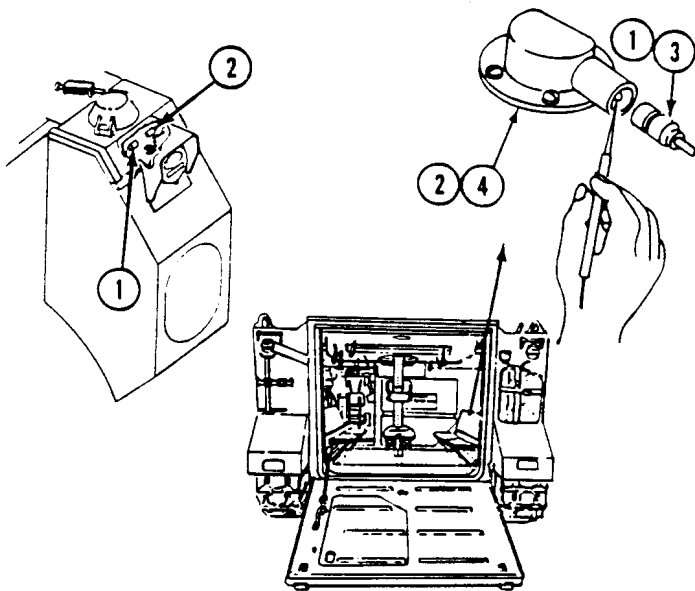
0047 00

B4Y

1. Replace fuel quantity gauge (WP 0244 00).
2. Verify no faults found.

CY

1. Remove circuit 29 (M577A2 only) or 31A (M981 and M1064 only) plug (1) from right tank (2) or circuit 30 or 30A (M981 and M1064 only) plug (3) from left tank (4).
2. Turn FUEL TANK switch to failing side.
3. Does indicator read full scale?



YES

C2Y

1. Install jumper wire between plug removed above and ground.
2. Does fuel indicator fail to read empty?

YES

NO

CYN

1. Repair main harness circuit 29 or 30 (M577A2 only), or 30 or 31A (M981 and M1064 only) (WP 0312 00).
2. Verify no faults found.

NO

C2YN

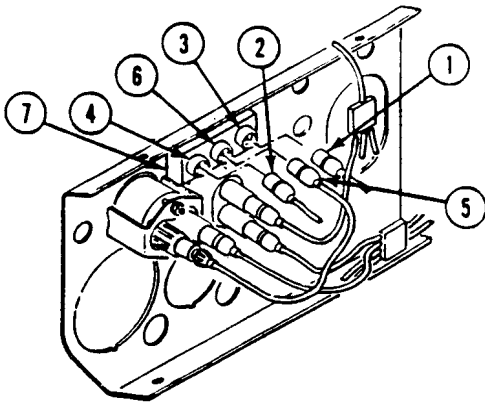
1. Replace FUEL LEVEL transmitter for M577A2 (WP 0155 00) or M981 and M1064 (WP 0146 00).
2. Verify no faults found.

FUEL LEVEL INDICATOR MALFUNCTIONS — Continued

0047 00

C3Y

1. Remove instrument panel for access (WP 0238 00).
2. Remove circuit 29 (M577A2 only) or 31A (M981 and M1064 only) plug (1) (right tank) or circuit 30A plug (2) (left tank) from FUEL TANK switch jack (3) or jack (4).
3. Remove circuit 28 plug (5) from FUEL TANK switch jack (6).
4. Measure resistance between exposed jack pins on FUEL TANK switch (7).
5. Does multimeter read 0 ohms?



NO

C3YN

1. Install plug on fuel tank transmitter.
2. Replace FUEL LEVEL switch (WP 0241 00).
3. Verify no faults found.

YES

C4Y

1. Repair rear main harness circuit 29, 30, 30A, or 31A (WP 0312 00).
2. Verify no faults found.

HIGH BEAM INDICATOR LIGHT MALFUNCTIONS**0048 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)
 General Mechanic's Tool Kit (WP 0780 00, Item 29)
 Jumper Wire

Equipment Condition

Engine stopped/shutdown (see your -10)
 Carrier blocked (see your -10)
 MASTER SWITCH OFF (see your -10)

Personnel Required

Unit Mechanic

T

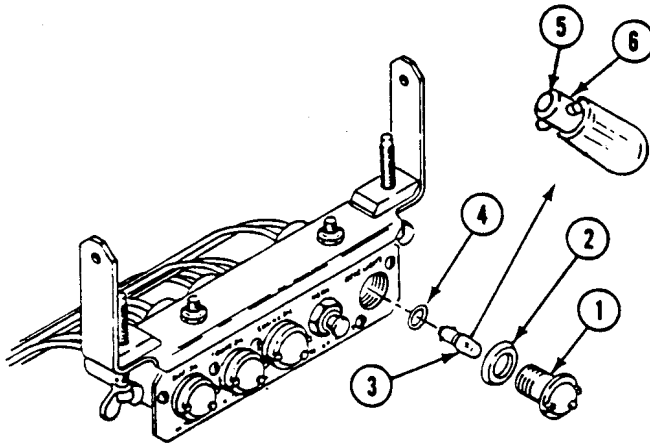
1. Check service and IR headlights (see your -10).
2. Do all lights work properly?

NO**TN**

1. Go to Service Headlights Do Not Operate (WP 0031 00), or Infrared Headlights Do Not Operate (WP 0032 00).
2. Verify no faults found.

YES**Y**

1. Remove headlight high beam indicator light cover lens (1) and gasket (2), bulb (3), and gasket (4).
2. Measure resistance between bulb center contact (5) and bulb base (6).
3. Does multimeter read 0-5 ohms?

NO**YN****GO TO AY (PAGE 0048 00-2)****YES****2Y**

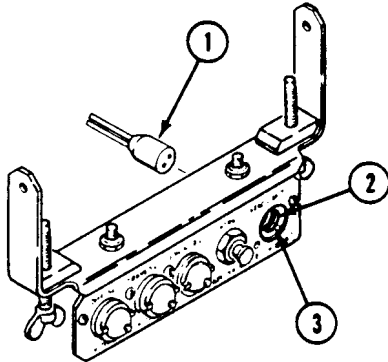
1. Replace headlight high beam indicator bulb (WP 0240 00).
2. Verify no faults found.

HIGH BEAM INDICATOR LIGHT MALFUNCTIONS — Continued

0048 00

AY

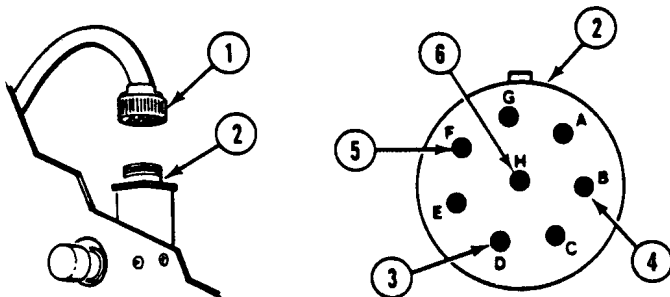
1. Remove circuit 519/519A lead (1) from high beam indicator light assembly.
2. Measure resistance between each terminal (2) and (3) and ground.
3. Does meter read less than infinity?

**NO****AYN**GO TO **BY** (PAGE 0048 00-2)**YES****A2Y**

1. Replace high beam indicator light assembly (WP 0240 00).
2. Verify no faults found.

BY

1. Remove power plant access cover (WP 0429 00).
2. Remove front main harness plug (1) from dimmer switch jack (2).
3. Measure resistance between dimmer switch jack (2) pins D (3) and B (4) and between pins F (5) and H (6).
4. Did multimeter read 0 ohms for both measurements?

**NO****BYN**

1. Replace dimmer switch (WP 0285 00).
2. Verify no faults found.

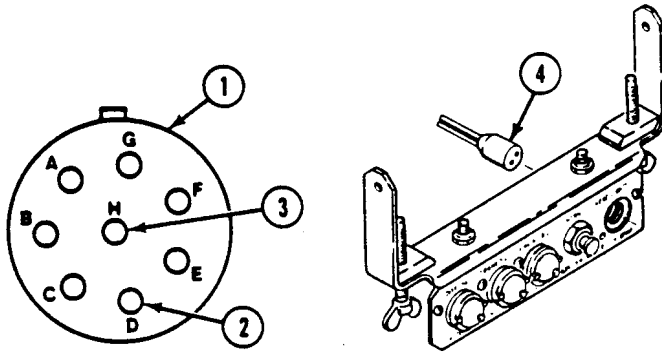
YES

HIGH BEAM INDICATOR LIGHT MALFUNCTIONS — Continued

0048 00

B2Y

1. Install jumper wire between front main harness dimmer switch plug (1) pins D (2) and H (3).
2. Measure resistance between pins on plug (4) pins.
3. Does multimeter read 0 ohms?



YES

B3Y

1. Replace high beam indicator light assembly (WP 0240 00).
2. Verify no faults found.

NO

B2YN

1. Repair front main harness circuits 519 or 519A (WP 0312 00).
2. Verify no faults found.

BATTERY/GENERATOR INDICATOR MALFUNCTIONS**0049 00****INITIAL SETUP:**Maintenance Level

Unit

References

WP 0238 00

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

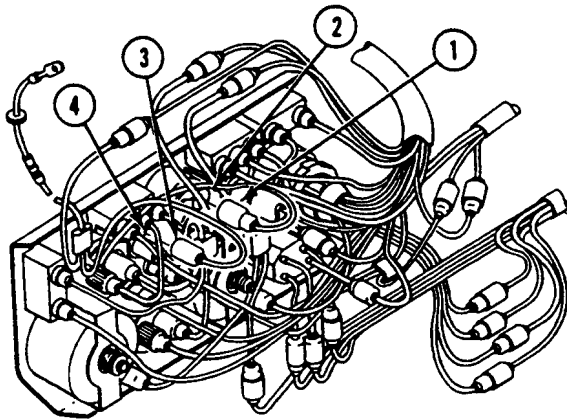
Carrier blocked (see your -10)

Personnel Required

Unit Mechanic

T

1. Remove instrument panel for access (WP 0238 00).
2. Remove circuit 27E plug (1) from battery generator indicator jack (2).
3. Remove circuit 10 plug (3) from instrument panel circuit breaker jack (4).
4. Measure resistance between circuit 27E plug (1) and circuit 10 plug (3).
5. Does multimeter read 0 ohms?

**YES****Y**

1. Replace BATTERY/GENERATOR indicator (WP 0240 00).
2. Verify no faults found.

NO**TN**

1. Repair master power harness circuit 27E (WP 0312 00).
2. Verify no faults found.

COOLANT TEMPERATURE INDICATOR MALFUNCTIONS**0050 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Jumper Wire

Personnel Required

Unit Mechanic

References

See your -10

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

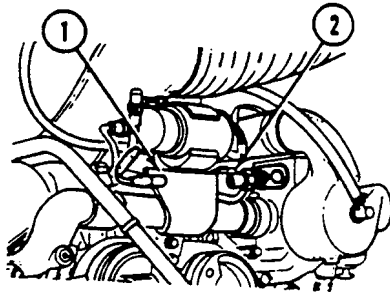
Power plant front access door open (see your -10)

Driver's power plant access panels removed
(see your -10)

Power plant rear access panel removed (see your -10)

T

1. Remove engine harness circuit 33 plug (1) from water temperature transmitter jack (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Is TEMP indicator needle in full left (cold) position?

**YES****Y**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Install jumper wire between engine harness circuit 33 plug and ground.
3. Observe TEMP indicator needle.
4. Turn MASTER SWITCH to ON for 2 seconds (see your -10).
5. Did TEMP indicator needle move to full right (hot) position?

YES**NO****TN****GO TO AY (PAGE 0050 00-2)****NO****YN****GO TO BY (PAGE 0050 00-3)**

COOLANT TEMPERATURE INDICATOR MALFUNCTIONS — Continued

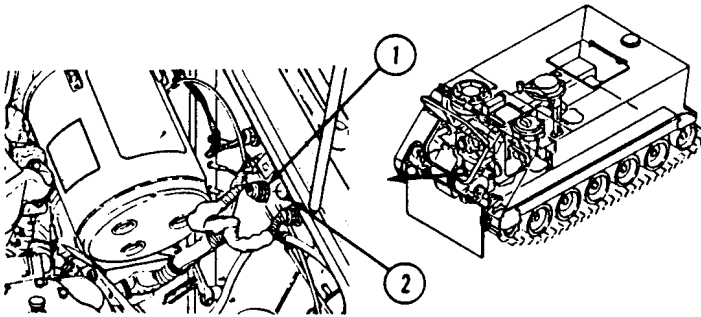
0050 00

2Y

1. Remove jumper wire.
2. Replace water temperature switch (WP 0317 00).
3. Verify no faults found.

AY

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove engine harness plug (1) from front main harness jack (2) at carrier bulkhead.
3. Turn MASTER SWITCH to ON (see your -10).
4. Is TEMP indicator still not in full left (cold) position?



NO

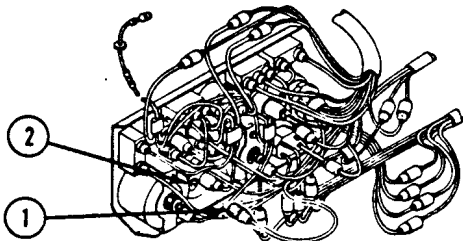
AYN

1. Repair engine harness circuit 33 (WP 0312 00).
2. Verify no faults found.

YES

A2Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove instrument panel for access (WP 0238 00).
3. Remove front main harness circuit 33 plug (1) from TEMP indicator jack (2).
4. Measure resistance between front main harness circuit 33 plug (1) and ground.
5. Does multimeter read infinity?



NO

A2YN

1. Repair front main harness circuit 33 (WP 0312 00).
2. Verify no faults found.

YES

COOLANT TEMPERATURE INDICATOR MALFUNCTIONS — Continued

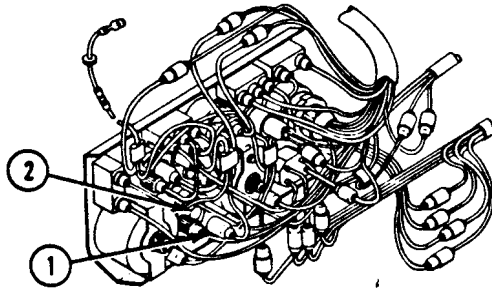
0050 00

A3Y

1. Install engine harness plug on front main harness jack at carrier bulkhead.
2. Install engine harness circuit 33 plug on TEMP transmitter jack.
3. Replace TEMP indicator (WP 0244 00).
4. Verify no faults found.

BY

1. Remove instrument panel for access (WP 0238 00).
2. Remove circuit 27B plug (1) from coolant temperature indicator (2).
3. Turn MASTER SWITCH to ON (see your -10).
4. Measure voltage between circuit 27B plug (1) pin and ground.
5. Does multimeter read at least 17 volts?

YES
↓

NO →

BYN

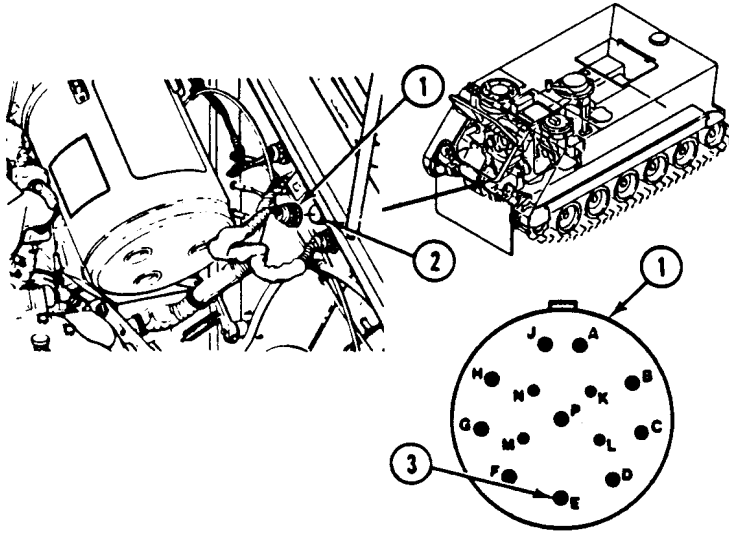
1. Repair faulty special purpose cable circuit 27B (WP 0314 00).
2. Verify no faults found.

COOLANT TEMPERATURE INDICATOR MALFUNCTIONS — Continued

0050 00

B2Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove engine harness plug (1) from front main harness jack (2) at carrier bulkhead.
3. Measure resistance between engine harness plug (1) pin E (3) and ground.
4. Does multimeter read 0 ohms?

YES
↓

NO →

B2YN

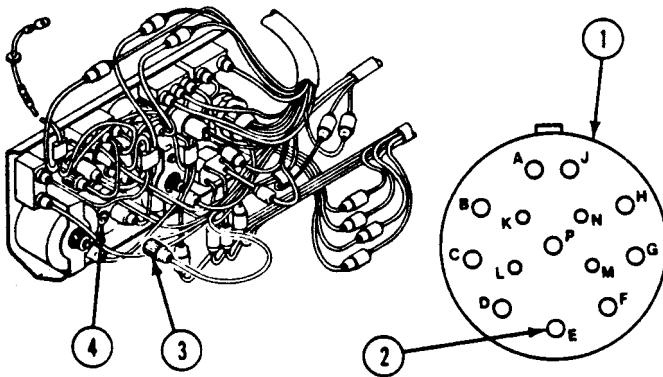
1. Repair engine harness circuit 33 (WP 0312 00).
2. Verify no faults found.

COOLANT TEMPERATURE INDICATOR MALFUNCTIONS — Continued

0050 00

B3Y

1. Remove jumper wire.
2. Install engine harness circuit 33 plug on water temperature transmitter.
3. Install jumper wire between front main harness jack (1) pin E (2) and ground (at bulkhead).
4. Remove instrument panel for access (WP 0238 00).
5. Remove front main harness circuit 33 plug (3) from TEMP indicator jack (4).
6. Measure resistance between front main harness circuit 33 (3) and ground.
7. Does multimeter read 0 ohms?



YES

B4Y

1. Remove jumper wire.
2. Install engine harness plug onto front main harness jack at carrier bulkhead.
3. Replace TEMP indicator (WP 0244 00).
4. Verify no faults found.

NO

B3YN

1. Remove jumper wire.
2. Repair front main harness circuit 33 (WP 0312 00).
3. Verify no faults found.

ENGINE OIL LOW PRESSURE INDICATOR MALFUNCTIONS**0051 00****INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Jumper Wire

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

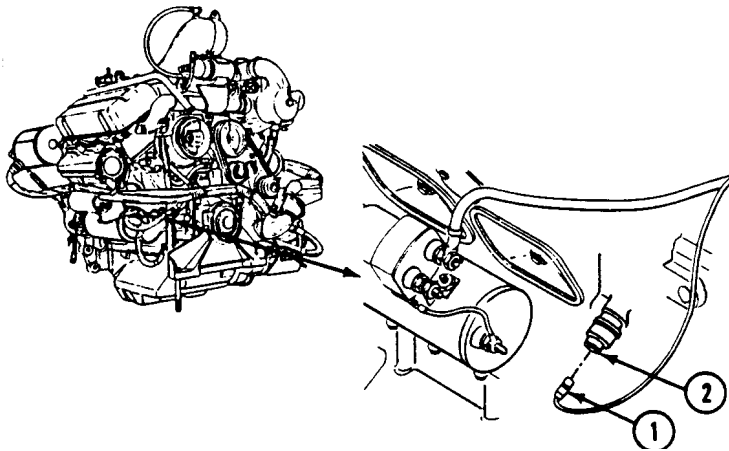
Power plant front access door open (see your -10)

Personnel Required

Unit Mechanic

T

1. Remove engine harness circuit 34 plug (1) from engine oil low pressure transmitter (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Is ENGINE OIL LOW PRESSURE indicator off?

**NO****TN****GO TO AY (PAGE 0051 00-2)****YES****Y**

1. Install jumper wire between engine harness circuit 34 plug pin and ground.
2. Is ENGINE OIL LOW PRESSURE indicator on?

NO**YN****GO TO BY (PAGE 0051 00-3)****YES****2Y**

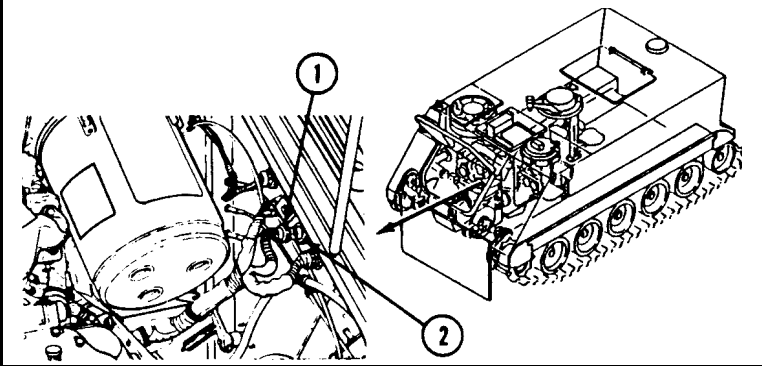
1. Replace engine oil low pressure switch (WP 0316 00).
2. Verify no faults found.

ENGINE OIL LOW PRESSURE INDICATOR MALFUNCTIONS — Continued

0051 00

AY

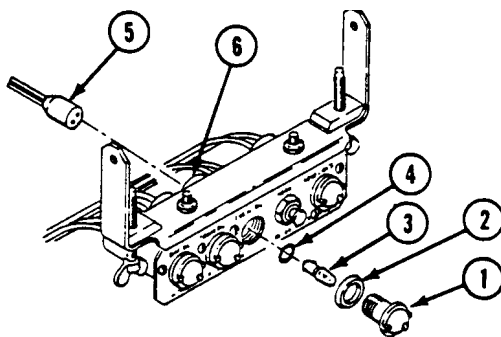
1. Remove engine harness plug (1) from front main harness jack (2) at carrier bulkhead.
2. Is ENGINE OIL LOW PRESSURE indicator still on?

**NO****AYN**

1. Repair engine harness circuit 34 (WP 0312 00).
2. Verify no faults found.

YES**A2Y**

1. Remove ENGINE OIL LOW PRESSURE indicator cover lens (1), gasket (2), bulb (3), and gasket (4).
2. Remove front main harness circuit 27J/34 plug (5) from ENGINE OIL LOW PRESSURE indicator jack (6).
3. Measure resistance between indicator jack (6) pins and ground, one at a time.
4. Did multimeter read less than infinity for either measurement?

**NO****A2YN**

1. Repair front main harness circuit 34 (WP 0312 00).
2. Notify supervisor.

YES**A3Y**

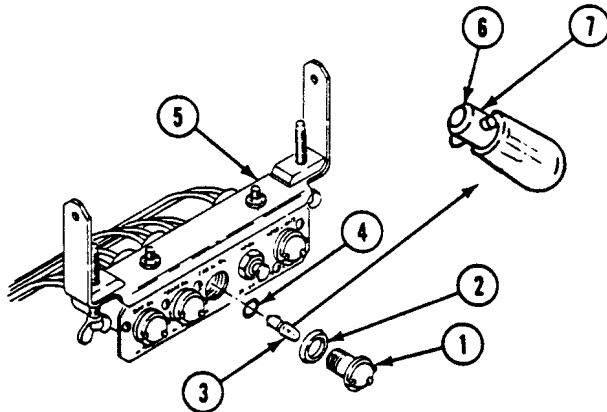
1. Replace ENGINE OIL LOW PRESSURE indicator light assembly (WP 0251 00).
2. Verify no faults found.

ENGINE OIL LOW PRESSURE INDICATOR MALFUNCTIONS — Continued

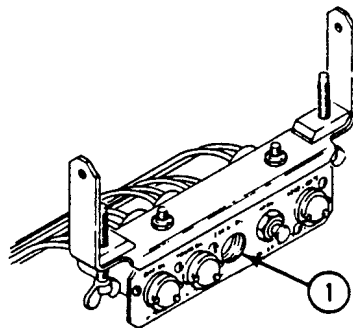
0051 00

BY

1. Remove ENGINE OIL LOW PRESSURE indicator cover lens (1), gasket (2), bulb (3), and gasket (4) from indicator assembly (5).
2. Measure resistance between bulb center contact (6) and bulb base (7).
3. Does multimeter read 0-5 ohms?

**YES****B2Y**

1. Measure voltage between indicator assembly (1) center contact and ground.
2. Does multimeter read less than 17 volts?

**YES****NO****BYN**

1. Replace ENGINE OIL LOW PRESSURE bulb (WP 0251 00).
2. Verify no faults found.

NO**B2YN**

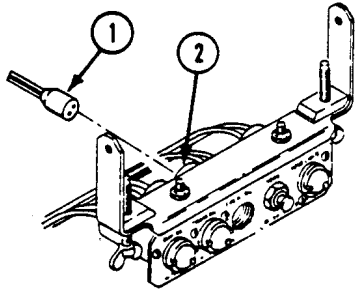
GO TO CY (PAGE 0051 00-5)

ENGINE OIL LOW PRESSURE INDICATOR MALFUNCTIONS — Continued

0051 00

B3Y

1. Remove front main harness circuit 27J/34 plug (1) from ENGINE OIL LOW PRESSURE indicator assembly jack (2).
2. Measure voltage between circuit 27J plug pin and ground.
3. Does multimeter read less than 17 volts?



NO

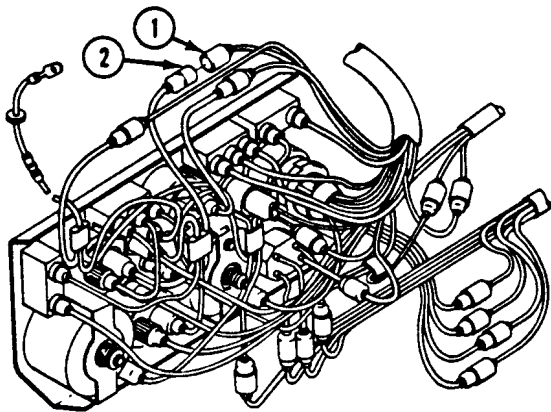
B3YN

1. Replace ENGINE OIL LOW PRESSURE indicator assembly (WP 0251 00).
2. Verify no faults found.

YES

B4Y

1. Remove instrument panel for access (WP 0238 00).
2. Remove front main harness circuit 27F plug (1) from instrument panel cable assembly circuit 27F jack (2).
3. Measure resistance between front main harness circuit 27J plug and circuit 27F plug (1).
4. Does multimeter read 0 ohms?



NO

B4YN

1. Repair front main harness circuit 27F/27J (WP 0312 00).
2. Verify no faults found.

YES

B5Y

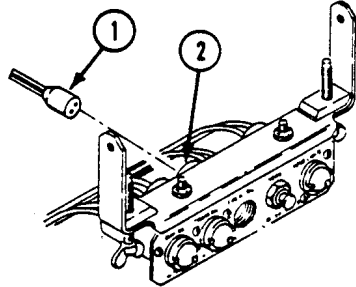
1. Repair instrument panel cable assembly circuit 27F (WP 0314 00).
2. Verify no faults found.

ENGINE OIL LOW PRESSURE INDICATOR MALFUNCTIONS — Continued

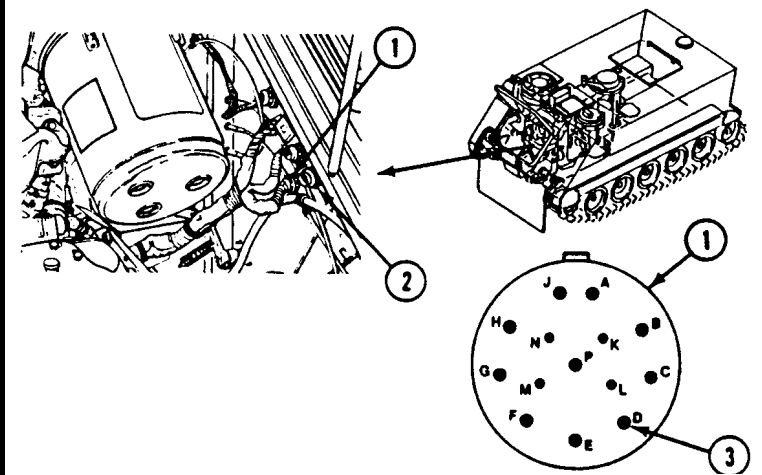
0051 00

CY

1. Remove front main harness circuit 27J/34 plug (1) from ENGINE OIL LOW PRESSURE indicator assembly jack (2).
2. Measure resistance between circuit 34 plug pin and ground.
3. Does multimeter read more than 0 ohms?

**YES****C2Y**

1. Remove engine harness plug (1) from front main harness jack (2) at carrier bulkhead.
2. Measure resistance between engine harness plug (1) pin D (3) and ground.
3. Does multimeter read 0 ohms?

**YES****NO****CYN**

1. Install front main harness plug on ENGINE OIL LOW PRESSURE indicator jack.
2. Remove jumper wire.
3. Replace engine oil low pressure switch (WP 0316 00).
4. Verify no faults found.

NO**C2YN**

1. Remove jumper wire.
2. Install front main harness plug on ENGINE OIL LOW PRESSURE indicator assembly jack.
3. Install indicator cover lens and bulb.
4. Repair engine harness circuit 34 (WP 0312 00).
5. Verify no faults found.

C3Y

1. Remove jumper wire.
2. Install engine harness onto ENGINE OIL LOW PRESSURE switch.
3. Repair front main harness circuit 34 (WP 0312 00).
4. Verify no faults found.

TRANSMISSION OIL HI TEMP INDICATOR MALFUNCTIONS**0052 00****INITIAL SETUP:**Maintenance Level

Unit

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Engine and transmission cooled down

Trim vane lowered (see your -10)

Power plant front access door open (see your -10)

Driver's power plant access panel removed
(see your -10)

Power plant rear access panels removed (see your -10)

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

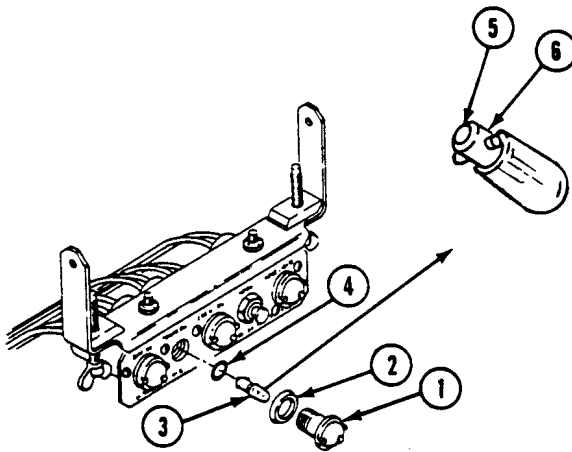
Jumper Wire

Personnel Required

Unit Mechanic

T

1. Remove TRANS OIL HI TEMP indicator cover lens (1), gasket (2), bulb (3), and gasket (4).
2. Measure resistance between bulb center contact (5) and bulb base (6).
3. Does multimeter read 0-5 ohms?

**YES****NO****TN**

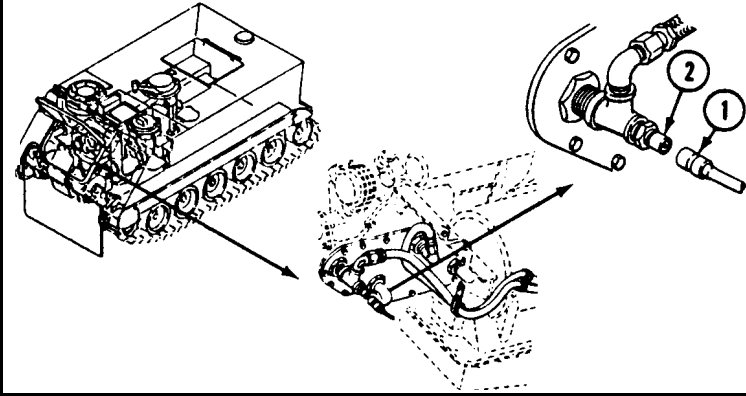
1. Replace TRANS OIL HI TEMP indicator bulb (WP 0253 00).
2. Verify no faults found.

TRANSMISSION OIL HI TEMP INDICATOR MALFUNCTIONS — Continued

0052 00

Y

1. Install TRANS OIL HI TEMP indicator cover lens bulb and gaskets.
2. Remove engine harness circuit 327 plug (1) from trans oil hi temp switch (2).
3. Turn MASTER SWITCH to ON (see your -10).
4. Is TRANS OIL HI TEMP indicator off?

**NO****YN**GO TO **BY** (PAGE 0052 00-3)**YES****2Y**

1. Install jumper wire between engine harness circuit 327 plug and ground.
2. Is TRANS OIL HI TEMP indicator on?

NO**2YN**GO TO **CY** (PAGE 0052 00-4)**YES****3Y**

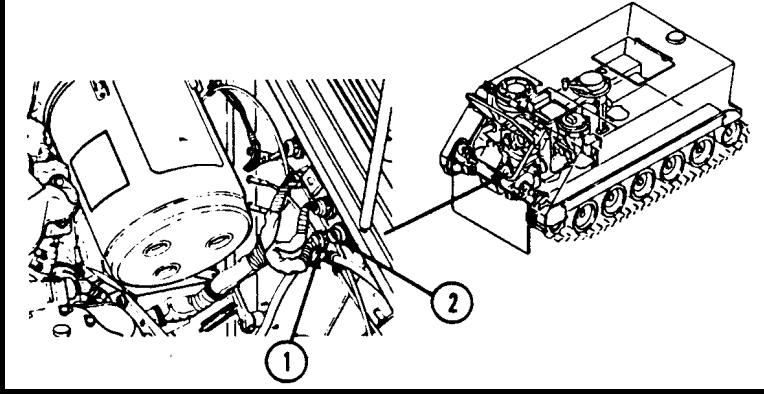
1. Remove jumper wire.
2. Replace trans oil hi temp switch (WP 0320 00).
3. Verify no faults found.

TRANSMISSION OIL HI TEMP INDICATOR MALFUNCTIONS — Continued

0052 00

BY

1. Remove engine harness plug (1) from front main harness jack (2) at carrier bulkhead.
2. Is TRANS OIL HI TEMP indicator still on?



NO

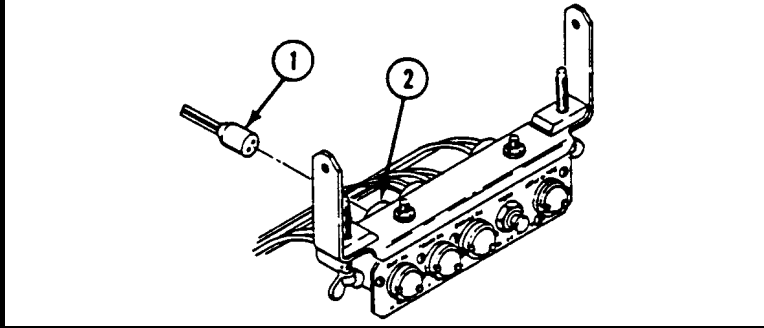
BYN

1. Repair engine harness (WP 0312 00).
2. Verify no faults found.

YES

B2Y

1. Remove front main harness circuit 327/27G plug (1) from TRANS OIL HI TEMP indicator (2).
2. Measure resistance between front main harness circuit 327/27G plug (1) circuit 327 pin and ground.
3. Does multimeter read 0 ohms?



NO

B2YN

1. Replace TRANS OIL HI TEMP indicator assembly (WP 0251 00).
2. Verify no faults found.

YES

B3Y

1. Shorted front main harness circuit 327. Beyond unit maintenance repair.
2. Notify supervisor.

TRANSMISSION OIL HI TEMP INDICATOR MALFUNCTIONS — Continued

0052 00

CY

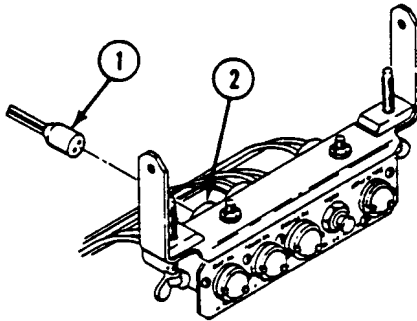
1. Remove TRANS OIL HI TEMP indicator cover lens, gasket, bulb, and gasket.
2. Measure voltage between indicator assembly center contact and ground.
3. Does multimeter read less than 17 volts?

NO**CYN**GO TO **DY** (PAGE 0052 00-6)**YES****C2Y**

1. Remove jumper wire and install engine harness circuit 327 plug on trans oil hi temp switch.
2. Remove front main harness circuit 327/27G plug (1) from TRANS OIL HI TEMP indicator assembly jack (2).
3. Measure voltage between front main harness circuit 327/27G plug (1) circuit 27G pin and ground.
4. Does multimeter read less than 17 volts?

NO**C2YN**

1. Replace TRANS OIL HI TEMP indicator assembly (WP 0251 00).
2. Verify no faults found.

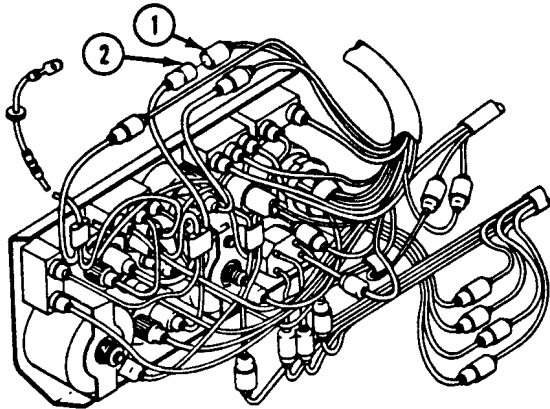
**YES**

TRANSMISSION OIL HI TEMP INDICATOR MALFUNCTIONS — Continued

0052 00

C3Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove instrument panel for access (WP 0238 00).
3. Remove front main harness circuit 27F plug (1) from instrument panel cable assembly circuit 27F jack (2).
4. Measure resistance between front main harness circuit 27F plug (1) and circuit 27G pin on circuit 327/27G plug.
5. Does multimeter read 0 ohms?



YES

C4Y

1. Install front main harness circuit 327/27G plug on TRANS OIL HI TEMP indicator jack.
2. Repair instrument panel cable assembly circuit 27F (WP 0314 00).
3. Verify no faults found.

NO

C3YN

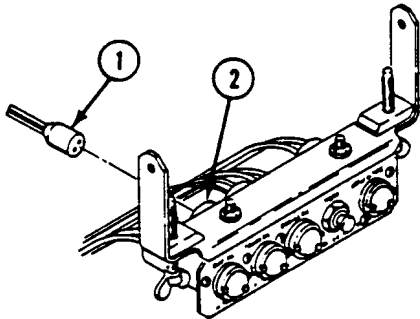
1. Repair front main harness circuit 27G/27F (WP 0312 00).
2. Verify no faults found.

TRANSMISSION OIL HI TEMP INDICATOR MALFUNCTIONS — Continued

0052 00

DY

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove front main harness circuit 327/27G plug (1) from TRANS OIL HI TEMP assembly jack (2).
3. Measure resistance between front main harness circuit 327/27G plug (1) circuit 327 pin and ground.
4. Does multimeter read more than 0 ohms?



NO

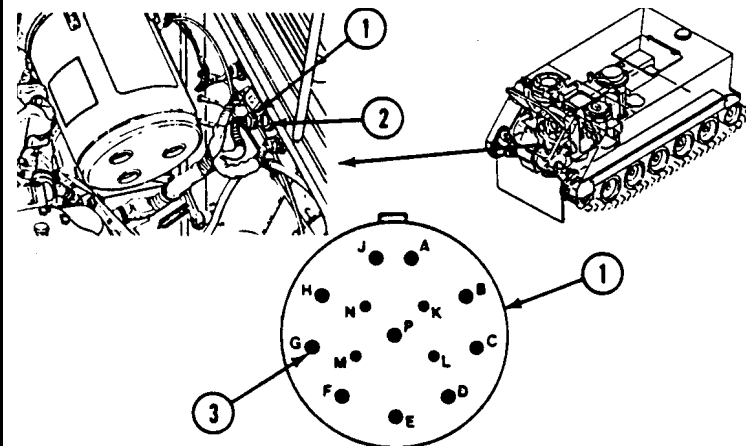
DYN

1. Remove jumper cable and install circuit plug on trans hi oil temp switch.
2. Replace TRANS OIL HI TEMP indicator assembly (WP 0251 00).
3. Verify no faults found.

YES

D2Y

1. Install TRANS OIL HI TEMP indicator cover lens, gasket, bulb, and gasket.
2. Remove engine harness plug (1) from front main harness jack (2) at carrier bulkhead.
3. Measure resistance between engine harness plug (1) pin G (3) and ground.
4. Does multimeter read more than 0 ohms?



NO

D2YN

1. Remove jumper wire and install engine harness circuit 327 plug on trans oil hi temp switch.
2. Repair front main harness circuit 327 (WP 0312 00).
3. Verify no faults found.

YES

D3Y

- | |
|--|
| <ol style="list-style-type: none">1. Install front main harness circuit 327/27G plug on TRANS OIL HI TEMP indicator.2. Repair engine harness circuit 327 (WP 0312 00).3. Verify no faults found. |
|--|

DIFFERENTIAL OIL HI TEMP INDICATOR MALFUNCTIONS**0053 00****INITIAL SETUP:**Maintenance Level

Unit

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

Power plant front access door open (see your -10)

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

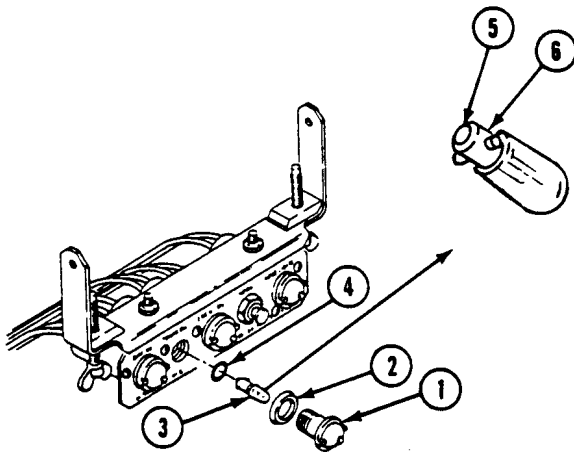
General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

T

1. Remove DIFF OIL HI TEMP indicator cover lens (1), gasket (2), bulb (3), and gasket (4).
2. Measure resistance between bulb center contact (5) and bulb base (6).
3. Does multimeter read 0-5 ohms?

**YES****NO****TN**

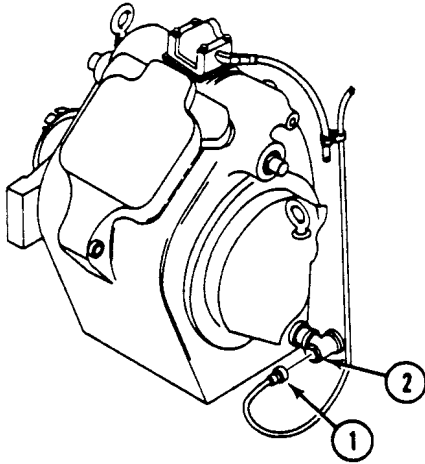
1. Replace DIFF OIL HI TEMP bulb (WP 0253 00).
2. Verify no faults found.

DIFFERENTIAL OIL HI TEMP INDICATOR MALFUNCTIONS — Continued

0053 00

Y

1. Install indicator bulb, gaskets, and lens.
2. Remove engine harness circuit 328 plug (1) from differential high oil temp switch (2).
3. Turn MASTER SWITCH to ON (see your -10).
4. Is DIFF OIL HI TEMP indicator off?

**NO****YN**GO TO **BY** (PAGE 0053 00-3)**YES****2Y**

1. Install a jumper wire between engine harness circuit 328 plug pin and ground.
2. Is DIFF OIL HI TEMP light on?

NO**2YN**GO TO **CY** (PAGE 0053 00-4)**YES****3Y**

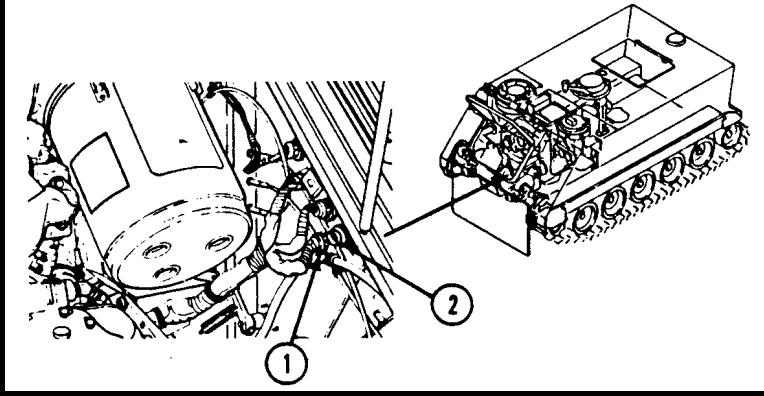
1. Replace differential high oil temp switch (WP 0318 00).
2. Verify no faults found.

DIFFERENTIAL OIL HI TEMP INDICATOR MALFUNCTIONS — Continued

0053 00

BY

1. Remove engine harness plug (1) from front main harness jack (2) at carrier bulkhead.
2. Is DIFF OIL HI TEMP indicator still ON?



NO

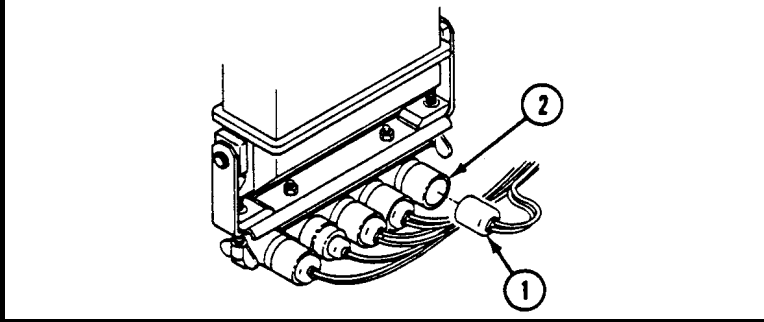
BYN

1. Repair engine harness circuit 328 (WP 0312 00).
2. Verify no faults found.

YES

B2Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove front main harness circuit 328/27K plug (1) from DIFF OIL HI TEMP jack (2).
3. Measure resistance between indicator jack (2) pins and ground one at a time.
4. Does multimeter read 0 ohms for either measurement?



NO

B2YN

1. Repair front main harness circuit 328/27K (WP 0312 00).
2. Verify no faults found.

YES

B3Y

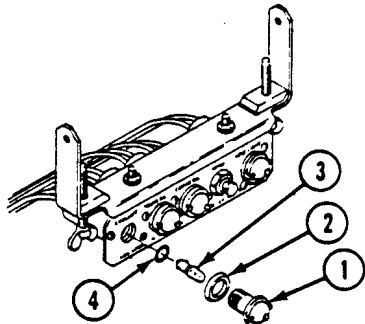
1. Install engine harness plug on front main harness jack at carrier bulkhead.
2. Replace DIFF OIL HI TEMP indicator light assembly (WP 0251 00).
3. Verify no faults found.

DIFFERENTIAL OIL HI TEMP INDICATOR MALFUNCTIONS — Continued

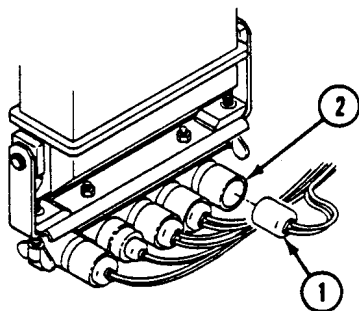
0053 00

CY

1. Remove DIFF OIL HI TEMP indicator cover lens (1), gasket (2), bulb (3), and gasket (4) from indicator assembly.
2. Measure voltage between indicator center contact and ground.
3. Does multimeter read less than 17 volts?

**NO****CYN**GO TO **DY** (PAGE 0053 00-5)**YES****C2Y**

1. Remove front main harness circuit 328/27K plug (1) from DIFF OIL HI TEMP indicator jack (2).
2. Measure voltage between circuit 27K pin and plug on ground.
3. Does multimeter read less than 17 volts?

**NO****C2YN**

1. Replace DIFF OIL HI TEMP indicator assembly (WP 0251 00).
2. Verify no faults found.

YES**C3Y**

1. Check to see if any of the other indicators on the warning light panel operate normally.
2. Do any of the other indicators on the warning light panel operate normally?

NO**C3YN**

1. Repair instrument panel harness circuit 27F (WP 0312 00).
2. Verify no faults found.

YES

DIFFERENTIAL OIL HI TEMP INDICATOR MALFUNCTIONS — Continued

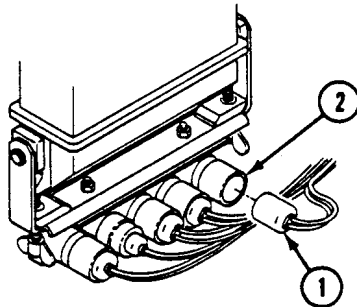
0053 00

C4Y

1. Repair front main harness 27K (WP 0312 00).
2. Verify no faults found.

DY

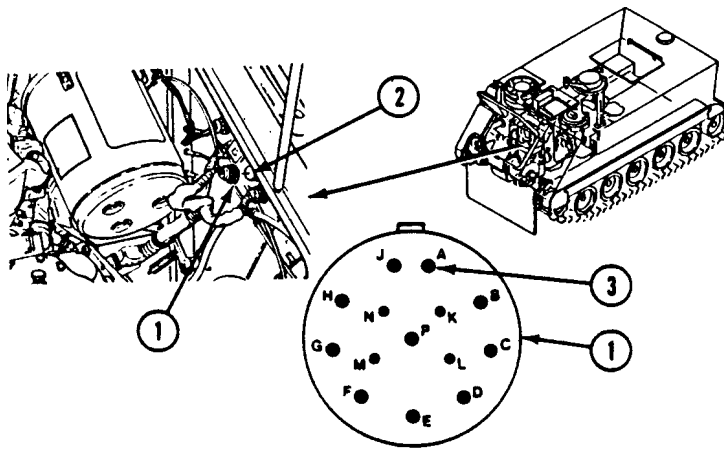
1. Turn MASTER POWER SWITCH to OFF (see your -10).
2. Remove circuit 328/27K plug (1) from DIFF OIL HI TEMP indicator (2).
3. Measure resistance between circuit 328 and ground.
4. Does multimeter read more than 0 ohms?



YES

D2Y

1. Remove engine harness plug (1) from front main harness jack (2) at bulkhead.
2. Measure resistance between engine harness plug (1) pin A (3) and ground.
3. Does multimeter read more than 0 ohms?



YES

DYN

1. Remove jumper cable.
2. Install plug on differential high oil temp switch in engine compartment.
3. Replace differential high oil temp indicator assembly (WP 0251 00).
4. Verify no faults found.

D2YN

1. Remove jumper wire.
2. Install plug on differential high oil temp switch in engine compartment.
3. Install indicator bulb, gaskets, and lens.
4. Repair engine harness circuit 328 (WP 0312 00).
5. Verify no faults found.

DIFFERENTIAL OIL HI TEMP INDICATOR MALFUNCTIONS — Continued

0053 00**D3Y**

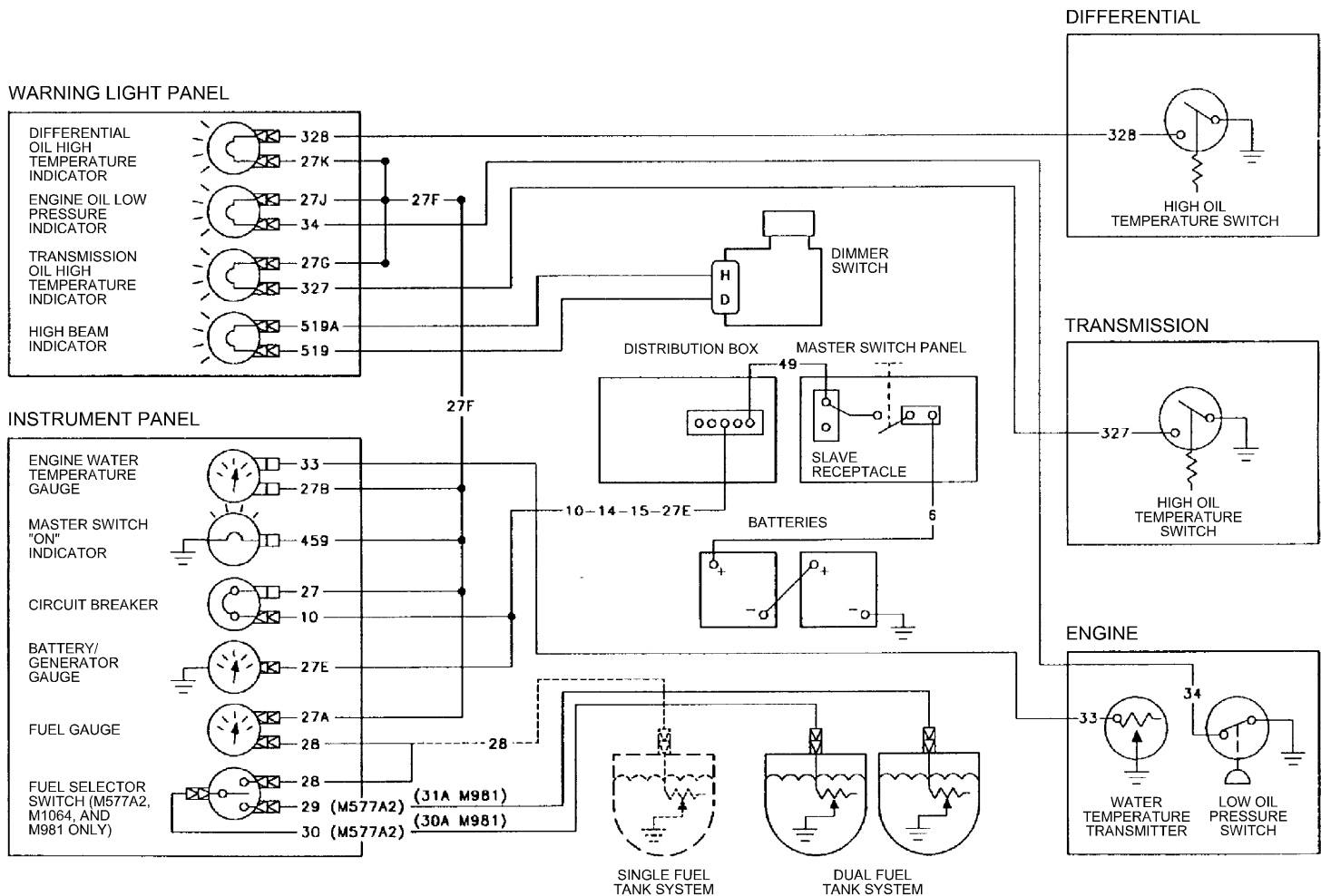
1. Remove jumper wire.
2. Install plug on DIFF OIL HI TEMP indicator assembly.
3. Repair front main harness circuit 328 (WP 0312 00).
4. Verify no faults found.

INDICATORS SCHEMATIC (ALL CARRIERS)

0054 00

DESCRIPTION

Use the diagrams as an aid for performing indicators troubleshooting.

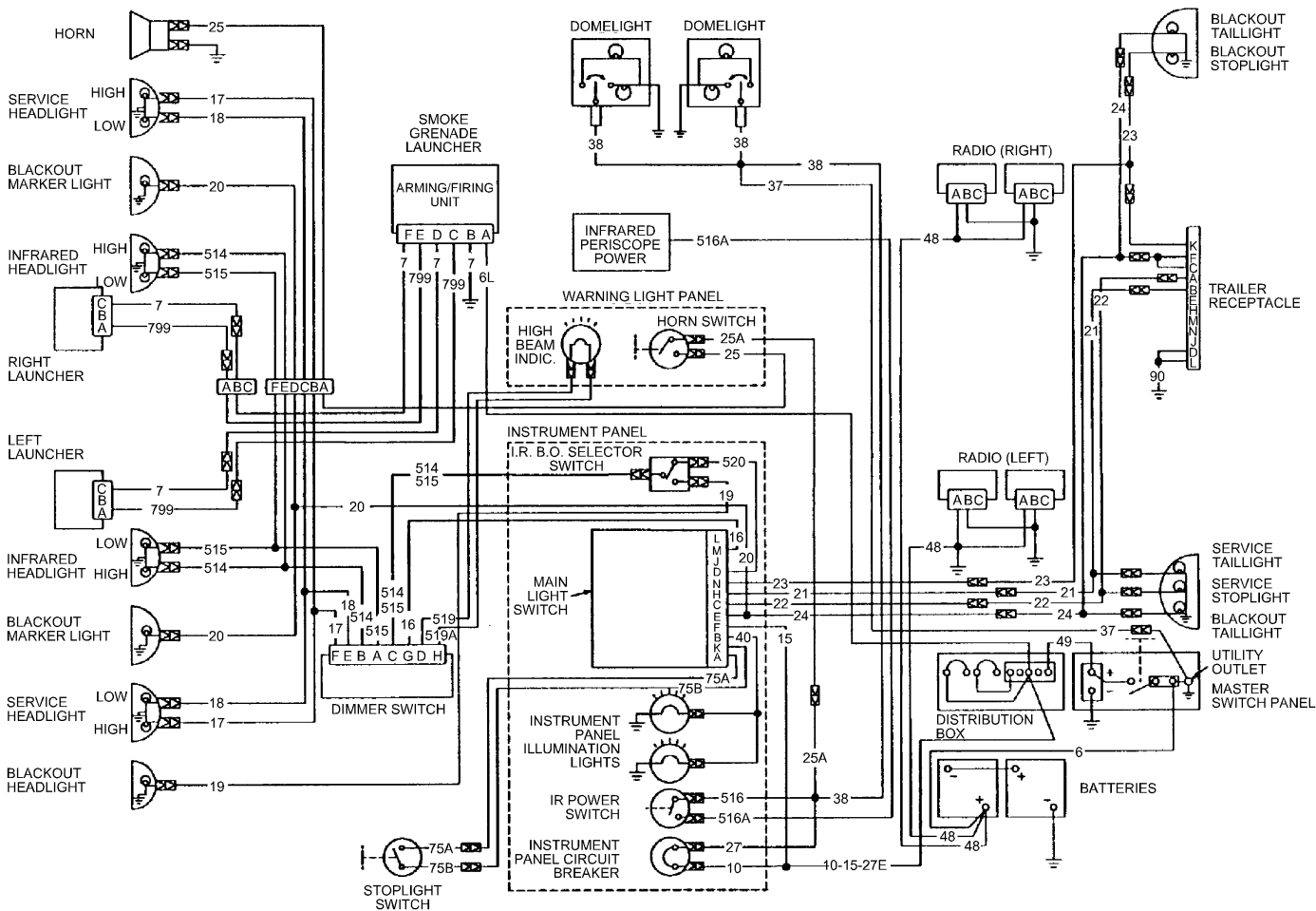


ELECTRICAL SYSTEM SCHEMATIC

0055 00

DESCRIPTION

Use the schematic below as an aid while performing electrical troubleshooting procedures.

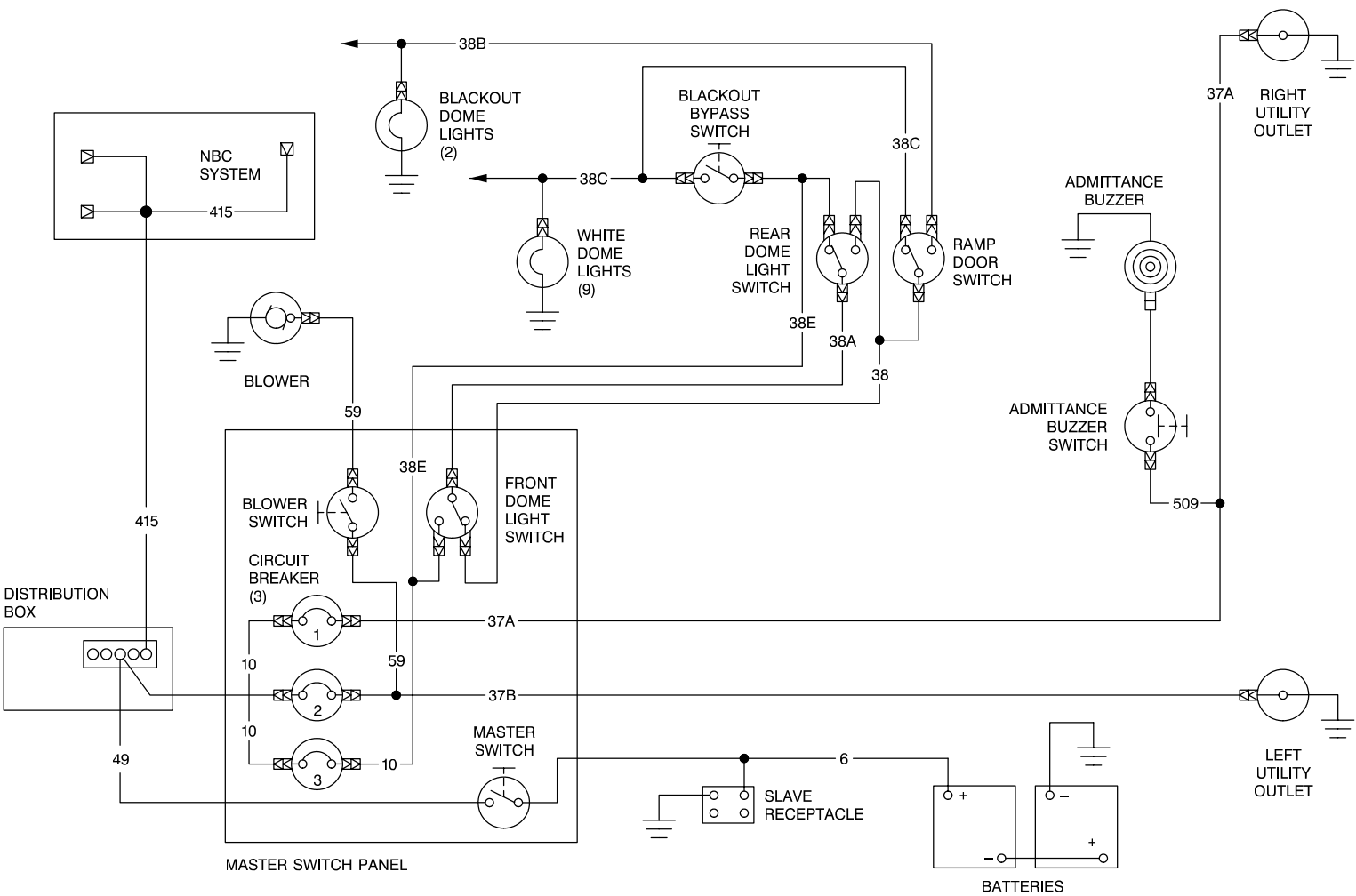


ADDITIONAL ELECTRICAL SCHEMATIC (M577A2 ONLY)

0056 00

DESCRIPTION

Use the schematic below as an aid while performing electrical troubleshooting procedures.

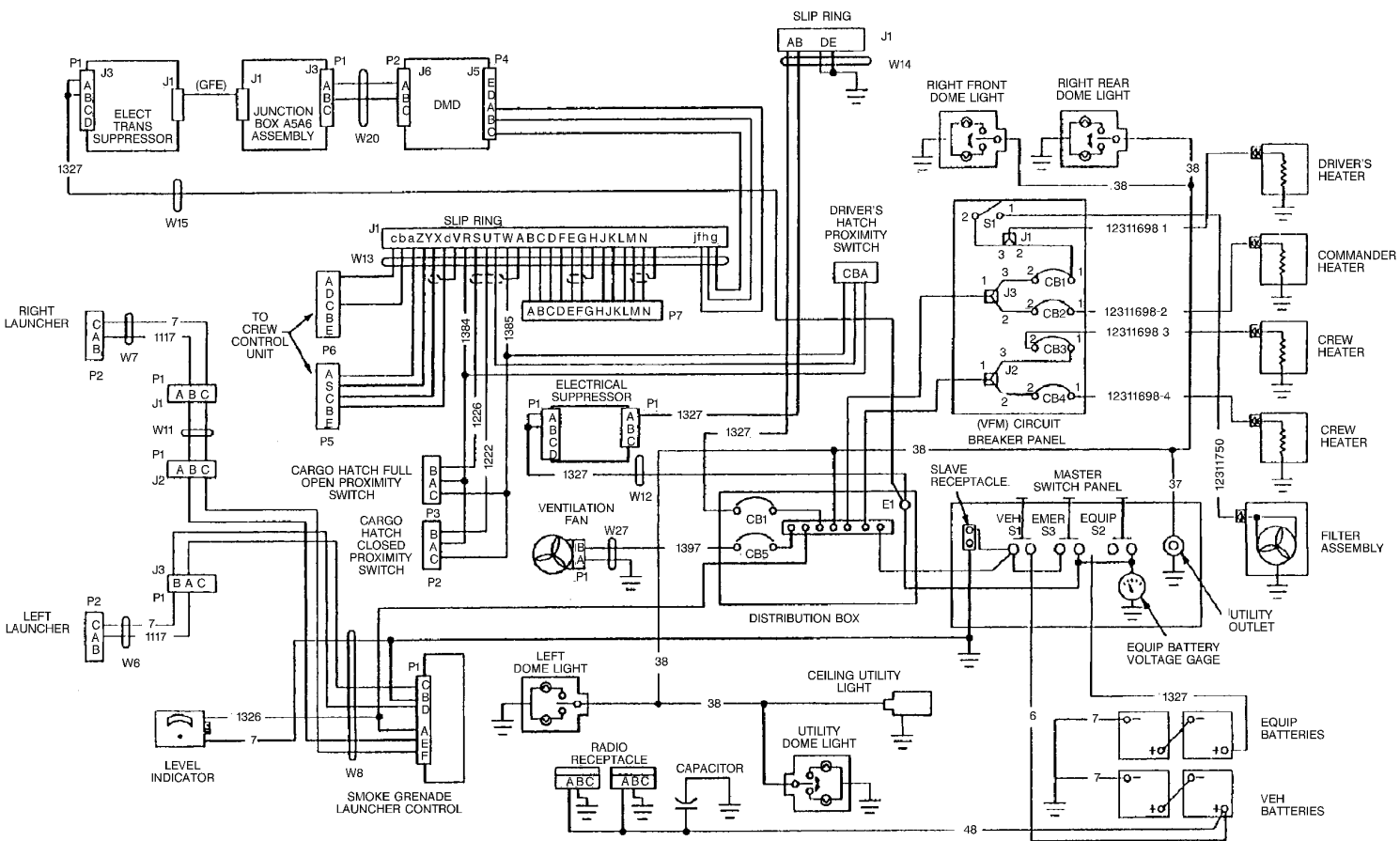


ADDITIONAL ELECTRICAL SCHEMATIC (M981 ONLY)

0057 00

DESCRIPTION

Use the schematic below as an aid for performing system troubleshooting procedures.



0057 00-1/2 blank

STEERING/BRAKES MALFUNCTION

0058 00

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

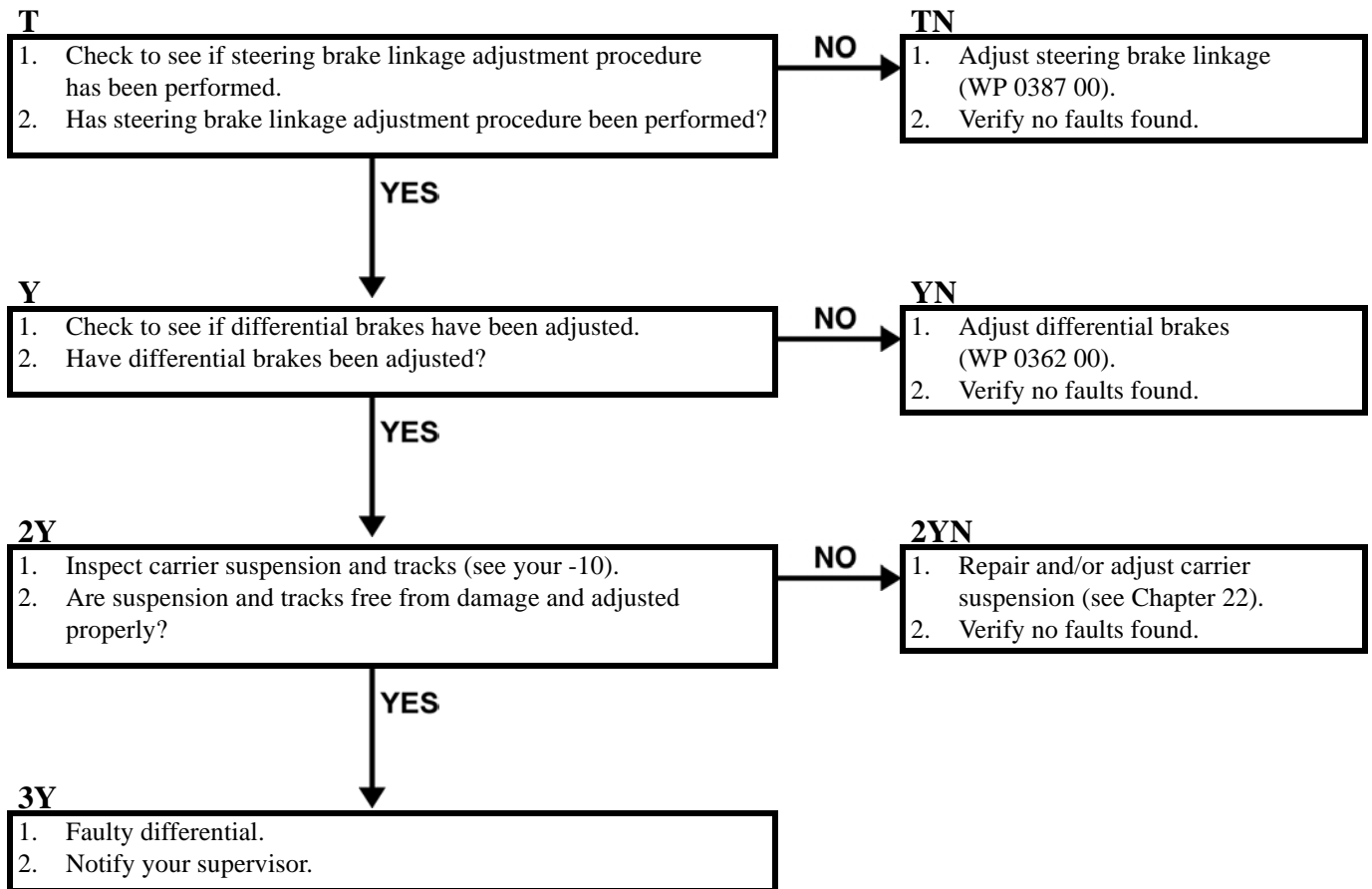
Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

Power plant access door open (see your -10)



CARRIER DOES NOT MOVE IN ANY SHIFT LEVER POSITION**0059 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

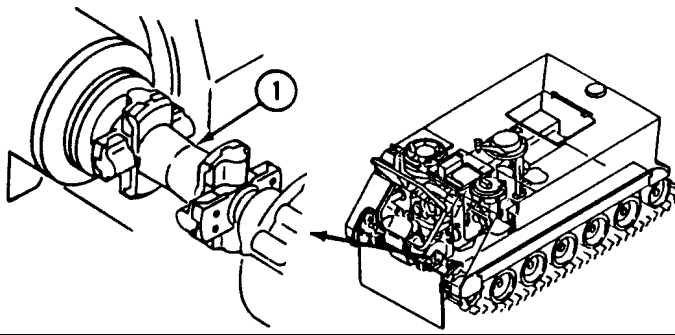
Power plant access door open (see your -10)

Engine disconnect lever IN (see your -10)

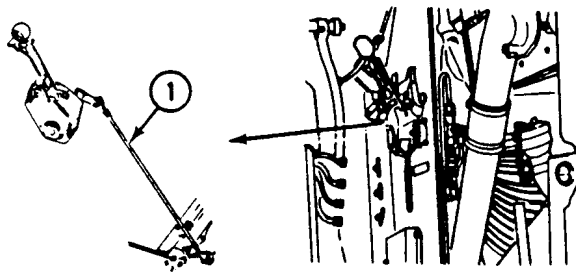
Driver's engine access panel removed (see your -10)

T

1. Inspect transmission to differential drive shaft (1).
2. Is drive shaft connected and serviceable?

**YES****Y**

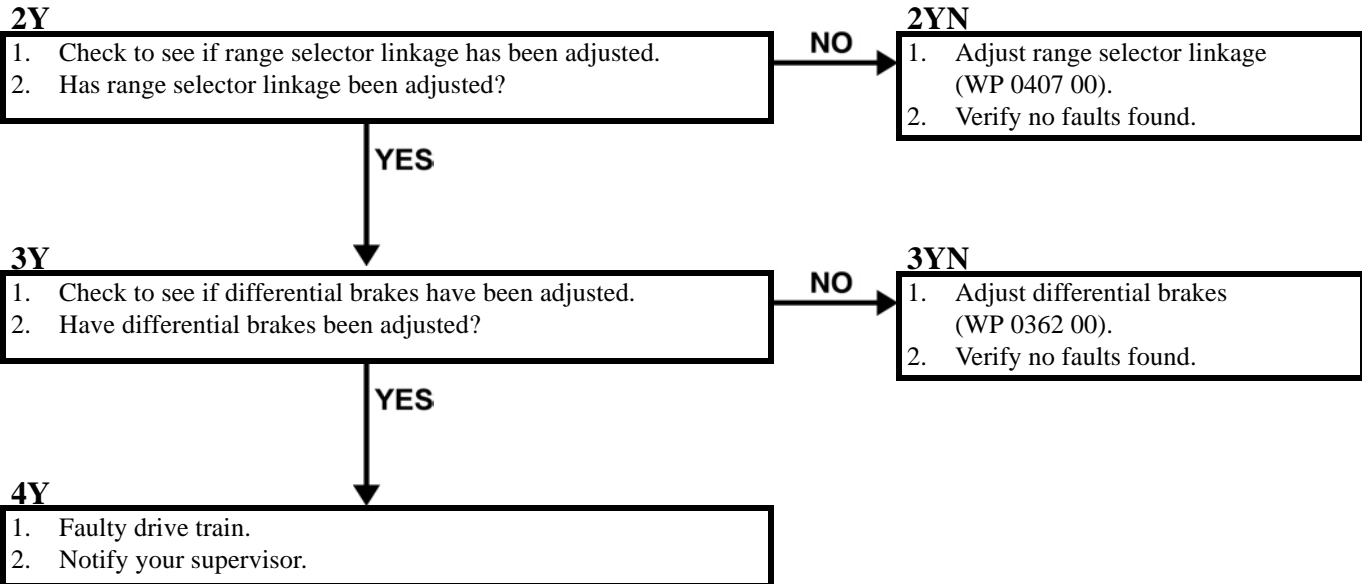
1. Inspect range selector linkage (1).
2. Is range selector linkage connected and serviceable?

**YES****NO****TN**

1. Connect or replace drive shaft (WP 0347 00).
2. Verify no faults found.

NO**YN**

1. Connect or replace range selector linkage (WP 0407 00).
2. Verify no faults found.



CARRIER DOES NOT PIVOT**0060 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

Helper (H)

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

Power plant access door open (see your -10)

T

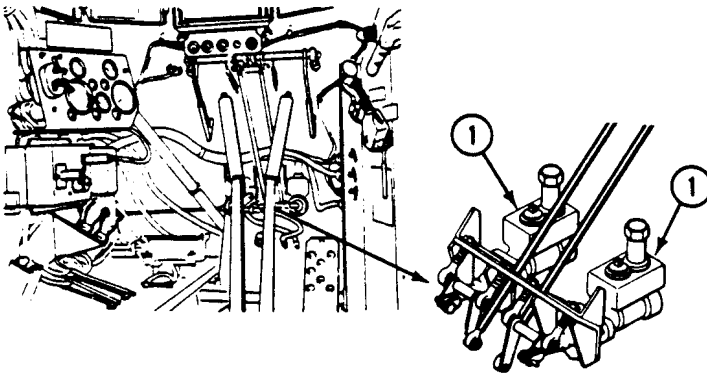
1. Inspect pivot steer brakes, hoses, tubes, brake discs, and fittings for leaks or serviceability (see Chapter 23).
2. Are all parts serviceable?

NO**TN**

1. Replace damaged parts as required (WP 0410 00).
2. Verify no faults found.

YES**Y**

1. Inspect master cylinder (1) for leaks.
2. Is master cylinder serviceable?

**NO****YN**

1. Replace master cylinder (WP 0412 00).
2. Verify no faults found.

YES**2Y**

1. Check hydraulic fluid level (WP 0120 00).
2. Is master cylinder full?

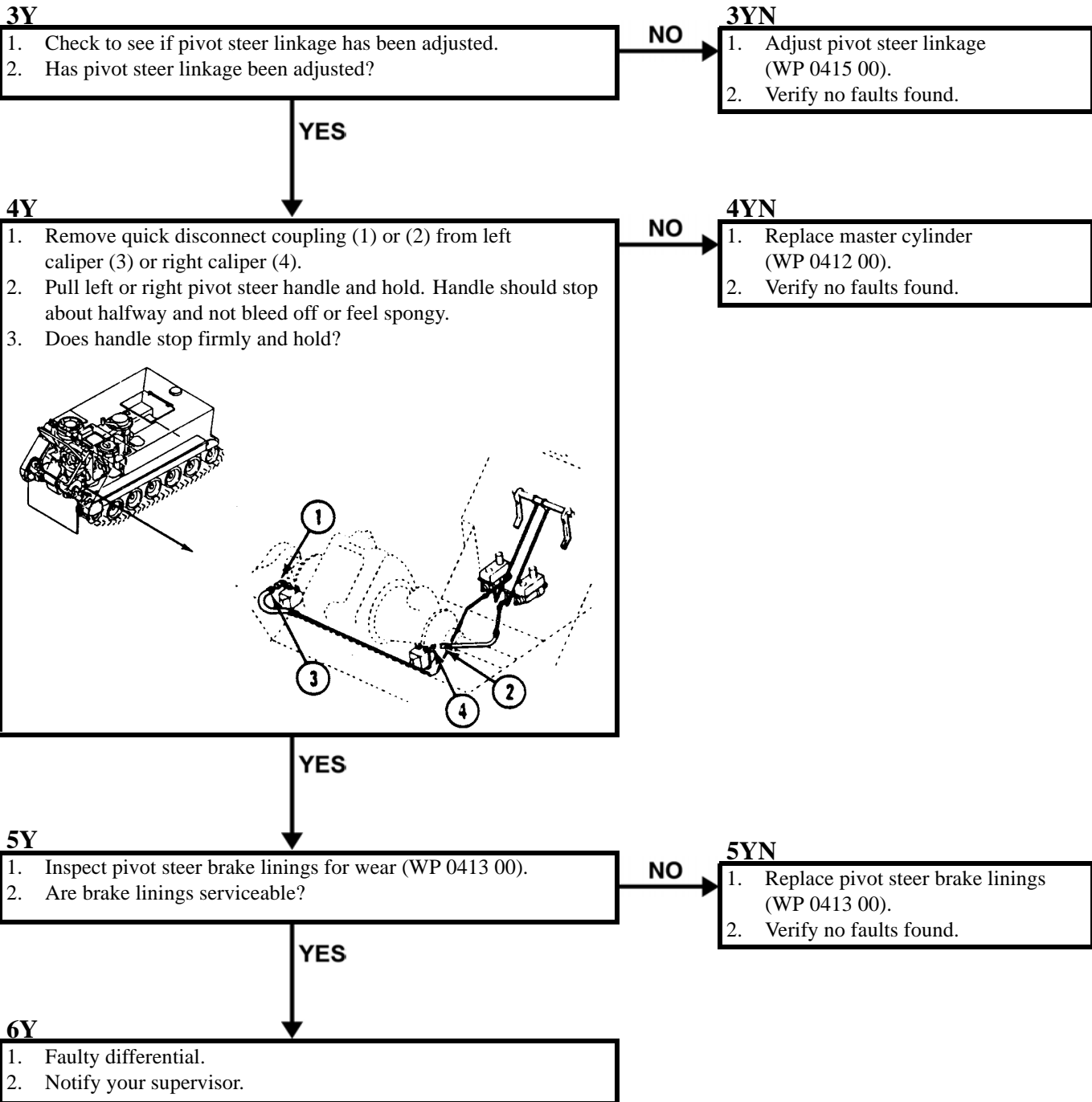
NO**2YN**

1. Bleed pivot steer system (WP 0409 00).
2. Verify no faults found.

YES

CARRIER DOES NOT PIVOT — Continued

0060 00

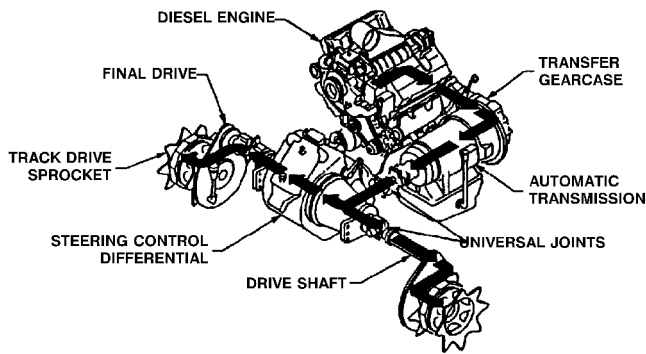


POWER TRAIN/STEERING/BRAKES/GEAR SELECTION/THROTTLE DIAGRAMS

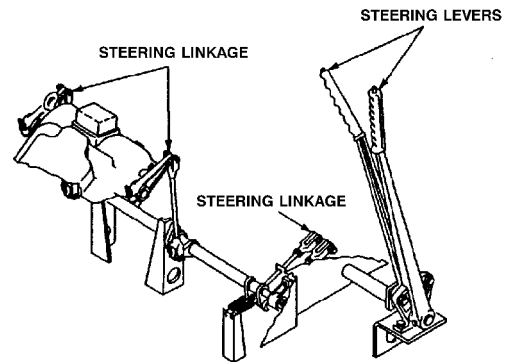
0061 00

DESCRIPTION

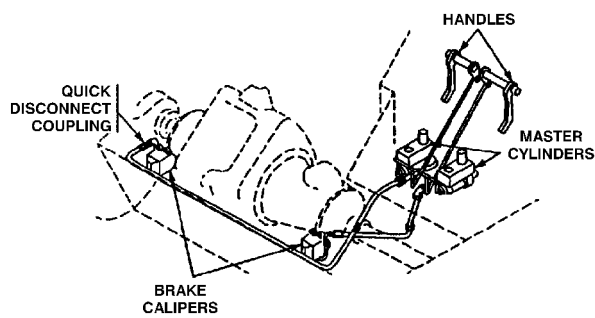
Use the diagrams below as an aid for performing system troubleshooting procedures.



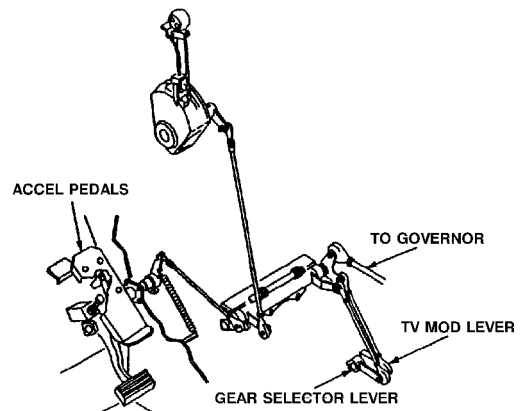
POWER TRAIN



STEERING / SERVICE BRAKES



PIVOT STEERING



GEAR SELECTION / THROTTLE LINKAGE

RAMP WILL NOT LOWER**0062 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

Helper (H)

References

See your -10

Equipment Condition

Engine stopped (see your -10)


Carrier blocked (see your -10)

Driver's power plant access panel removed
(see your -10)

Power plant rear access panels removed (see your -10)

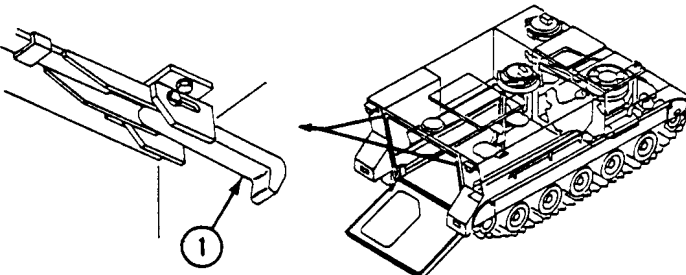
Rear compartment floor plates removed (WP 0436 00),
(WP 0437 00), (WP 0438 00), (WP 0439 00),
(WP 0440 00), or (WP 0441 00)**T**

WARNING



Lowering ramp could injure personnel. Make sure no one is in ramp zone before you lower ramp. If tactical situation permits, sound horn before dropping ramp.

1. Release ramp (see your -10).
2. Observe ramp latches (1).
3. Do ramp latches (1) release ramp?


YES**TN**

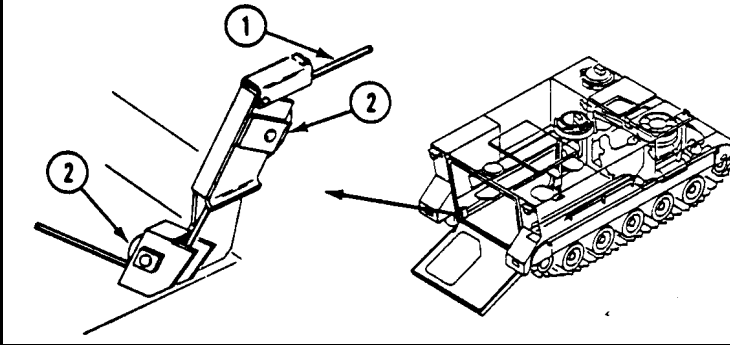
1. Repair, replace and/or adjust ramp latches and/or linkage (see Chapter 25).
2. Verify no faults found.

RAMP WILL NOT LOWER — Continued

0062 00

Y

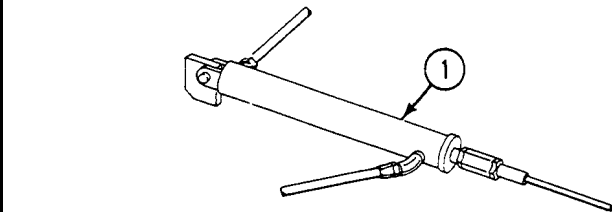
1. Inspect ramp hydraulic cylinder wire rope (1) and pulleys (2).
2. Are wire rope and pulleys in good condition?

**NO****YN**

1. Replace wire rope and/or pulleys (WP 0564 00 or WP 0565 00).
2. Verify no faults found.

YES**2Y**

1. Inspect hydraulic cylinder (1).
2. Is hydraulic cylinder free of bends and dents that could restrict its movement?

**NO****2YN**

1. Replace hydraulic cylinder (WP 0593 00).
2. Verify no faults found.

YES**3Y**

1. Inspect hydraulic lines and quick disconnect couplings between fluid tank and hydraulic cylinder.
2. Are any lines damaged? Are all quick disconnect couplings fully connected?

NO**3YN**

1. Replace control valve (WP 0589 00).
2. Verify no faults found.

YES**4Y**

1. Connect couplings.
2. Repair lines as necessary (see Chapter 28).
3. Verify no faults found.

RAMP OPERATION IS SLOW OR SLUGGISH**0063 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

References

WP 0584 00

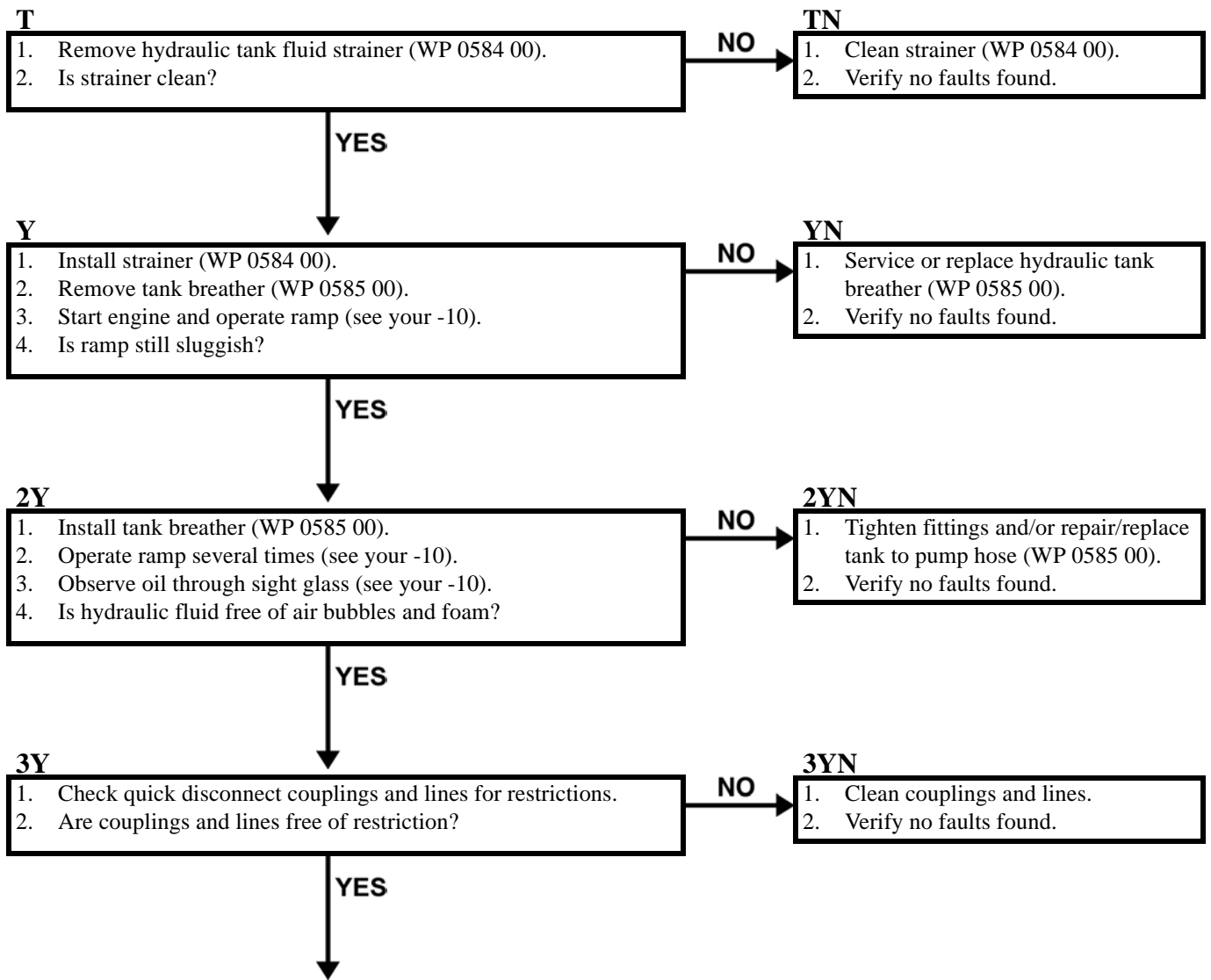
Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

Ramp lowered (see your -10)

Power plant rear access panels removed (see your -10)



RAMP OPERATION IS SLOW OR SLUGGISH — Continued

0063 00**4Y**

- | |
|--|
| <ol style="list-style-type: none">1. Replace worn ramp pump (WP 0588 00).2. Verify no faults found. |
|--|

RAMP WILL NOT RAISE OR FREE FALLS**0064 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

References

See your -10

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

Ramp lowered (see your -10)

Driver's power plant access panel removed
(see your -10)

Power plant access door opened (see your -10)

Power plant rear access panels removed (see your -10)

Rear compartment floor plates removed (WP 0436 00,
WP 0437 00, WP 0438 00, WP 0439 00, WP 0440 00,
or WP 0441 00)**T**

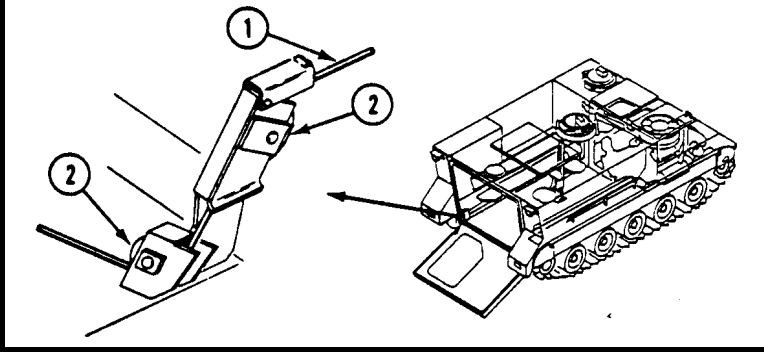
1. If ramp will not raise, check engine disconnect lever. Ensure lever is locked in the OUT (engage) position (see your -10).
2. Check ramp hydraulic fluid tank sight glass level (see your -10).
3. Is fluid level correct?

NO**TN****GO TO BY (PAGE 0064 00-3)****YES****Y**

1. Inspect ramp wire rope (1) and/or pulleys (2).
2. Are wire rope and pulleys in good condition?

NO**YN**

1. Replace wire rope and/or pulleys (WP 0564 00 or WP 0565 00).
2. Verify no faults found.

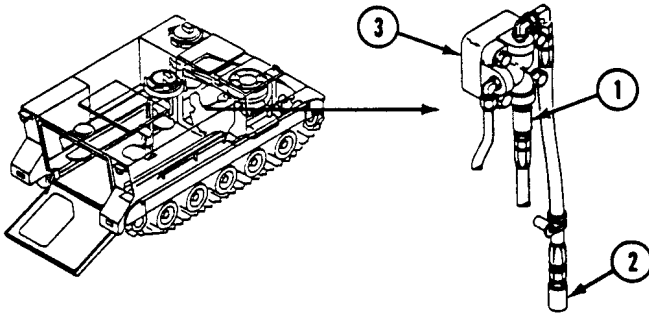
**YES**

RAMP WILL NOT RAISE OR FREE FALLS — Continued

0064 00

2Y

1. Inspect quick-disconnect fittings (1) and (2) on control valve (3).
2. Inspect control valve (3).
3. Are fittings hooked up to control valve, and are all parts free of damage and leaks?



NO

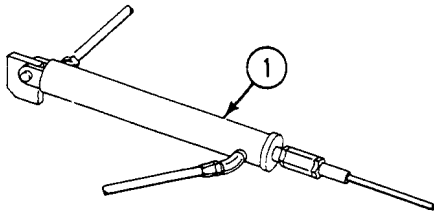
2YN

1. Replace parts as needed (WP 0587 00).
2. Verify no faults found.

YES

3Y

1. Inspect ramp hydraulic cylinder (1) for leaks.
2. Is hydraulic cylinder free of leaks?



NO

3YN

1. Replace ramp hydraulic cylinder (WP 0589 00 or WP 0593 00).
2. Verify no faults found.

YES

4Y

1. Check to see if pressure relief valve on fluid tank has been replaced.
2. Has pressure relief valve on fluid tank been replaced?

NO

4YN

1. Replace pressure relief valve (WP 0585 00).
2. Verify no faults found.

YES

5Y

1. Check to see if hydraulic pump has been replaced.
2. Has hydraulic pump been replaced?

NO**5YN**

1. Replace hydraulic pump (WP 0588 00).
2. Verify no faults found.

YES**6Y**

1. Replace ramp control valve (WP 0589 00).
2. Verify no faults found.

BY

1. Check all ramp hydraulic lines for damage or loose fittings.
2. Are all lines free of leaks?

NO**BYN**

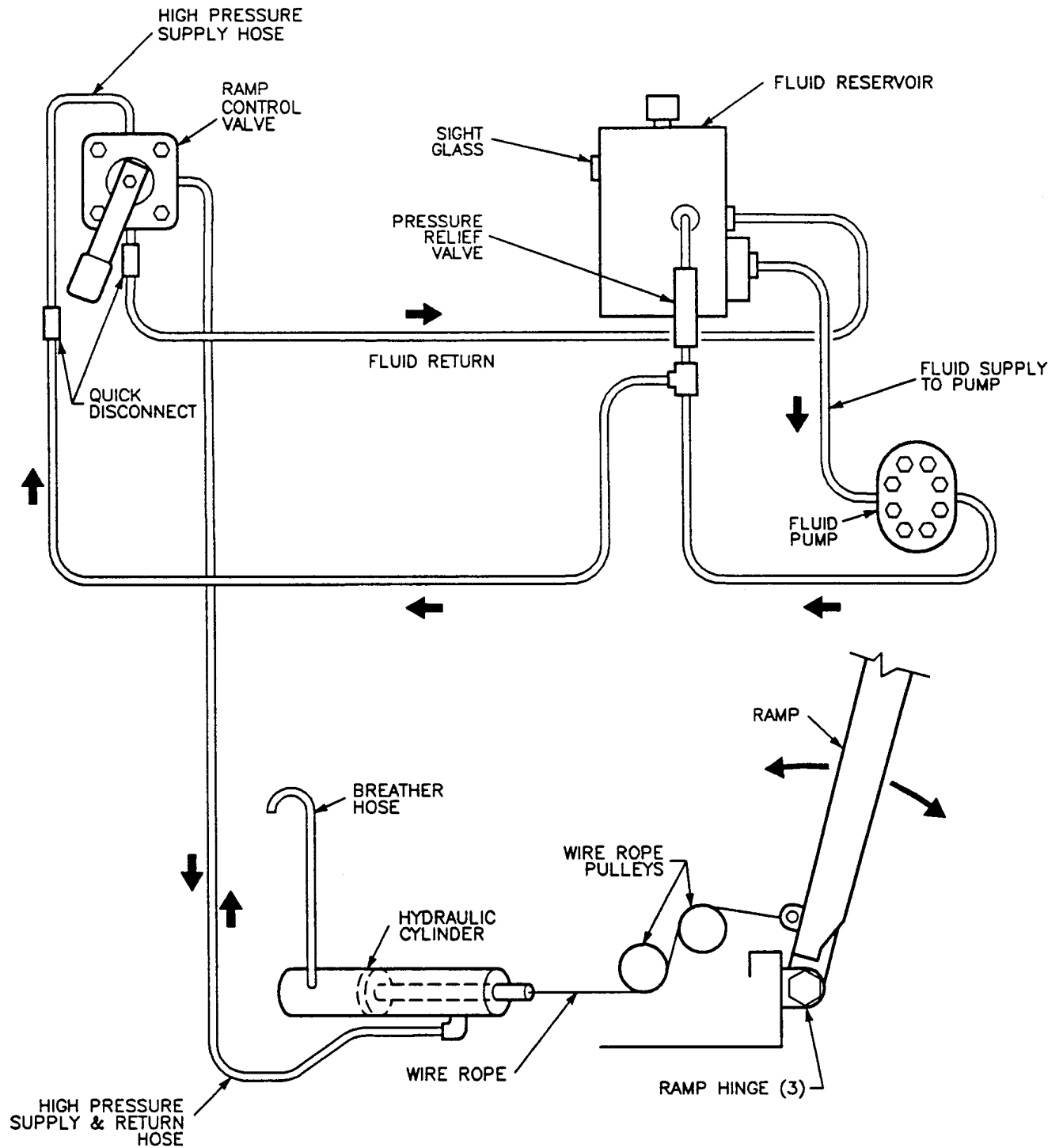
1. Tighten any loose fittings and/or replace any damaged fluid lines (see Chapter 28).
2. Verify no faults found.

YES**B2Y**

1. Refill hydraulic tank (WP 0120 00).
2. Verify no faults found.

RAMP SCHEMATIC**0065 00****DESCRIPTION**

Use the schematic below as an aid while performing ramp procedures.



RAMP SCHEMATIC

SMOKE GRENADE LAUNCHER(S) MALFUNCTION**0066 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

Helper (H)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

Power plant front access door open (see your -10)

Harness 12313235 removed from launcher arming/firing unit

T

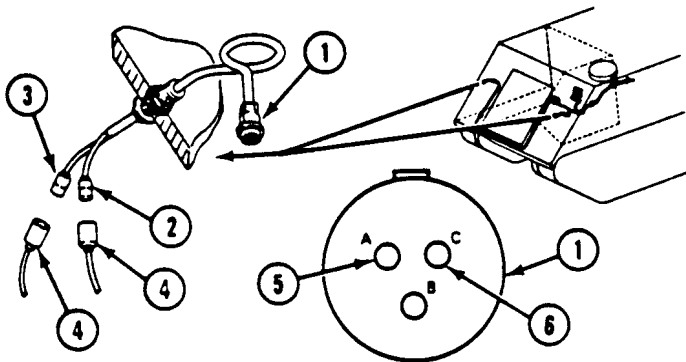
1. Check to see if either launcher operates properly.
2. Does either launcher operate properly?

NO**TN****GO TO BY (PAGE 0066 00-4)****YES****Y**

1. Remove harness launcher plug (1) from failing launcher.
2. Remove harness circuit 7 (2) and 799 (3) plugs from harness (right launcher) or harness (left launcher) jacks (4).
3. Measure resistance between harness launcher plug (1) pin A (5) and circuit 7 plug (2).
4. Measure resistance between harness launcher plug (1) pin C (6) and circuit 799 plug (3).
5. Does multimeter read 0 ohms for both measurements?

NO**YN**

1. Replace harness for left or right grenade launcher (WP 0577 00).
2. Verify no faults found.

**YES**

SMOKE GRENADE LAUNCHER(S) MALFUNCTION — Continued

0066 00

2Y

1. Check to see if failing launcher is on right side of carrier.
2. Is failing launcher on right side of carrier?

NO**2YN**

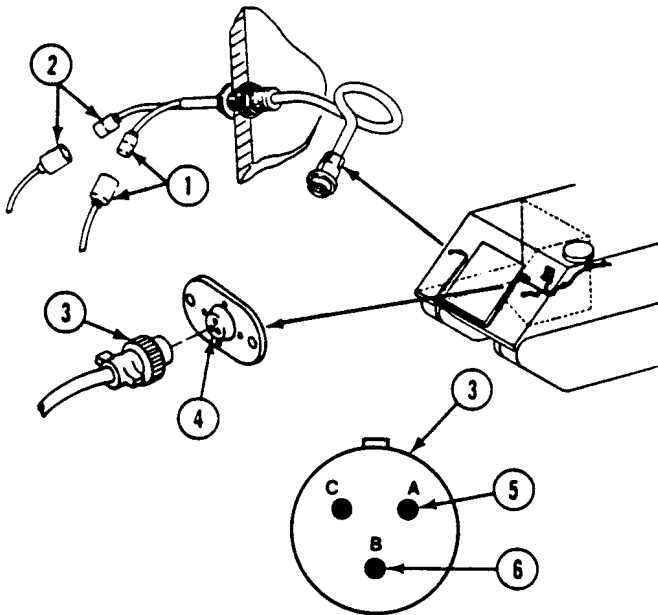
GO TO CY (PAGE 0066 00-5)

YES**3Y**

1. Install jumper wire between circuit 7 (1) and 799 jacks (2).
2. Remove harness plug (3) from harness jack (4) at carrier bulkhead.
3. Measure resistance between harness plug (3) pins A (5) and B (6).
4. Does multimeter read 0 ohms?

NO**3YN**

1. Replace harness (WP 0577 00).
2. Verify no faults found.

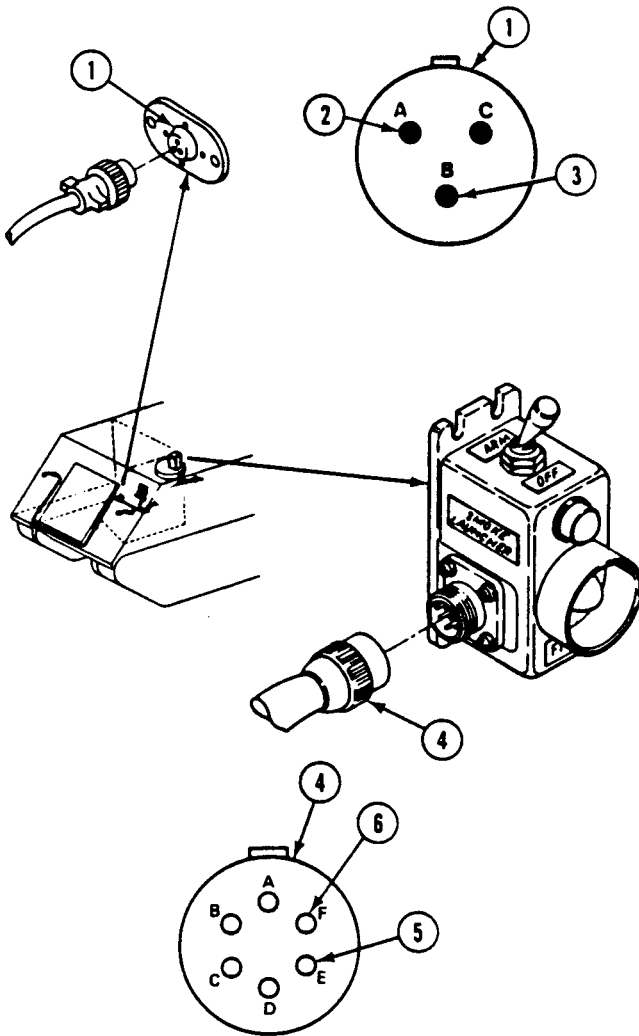
**YES**

SMOKE GRENADE LAUNCHER(S) MALFUNCTION — Continued

0066 00

4Y

1. Install jumper wire between harness jack (1), pins A (2) and B (3) at bulkhead.
2. Measure resistance between harness arming/firing unit plug (4), pins E (5) and F (6).
3. Does multimeter read 0 ohms?

**NO****4YN**

1. Replace harness (WP 0577 00).
2. Verify no faults found.

YES**5Y**

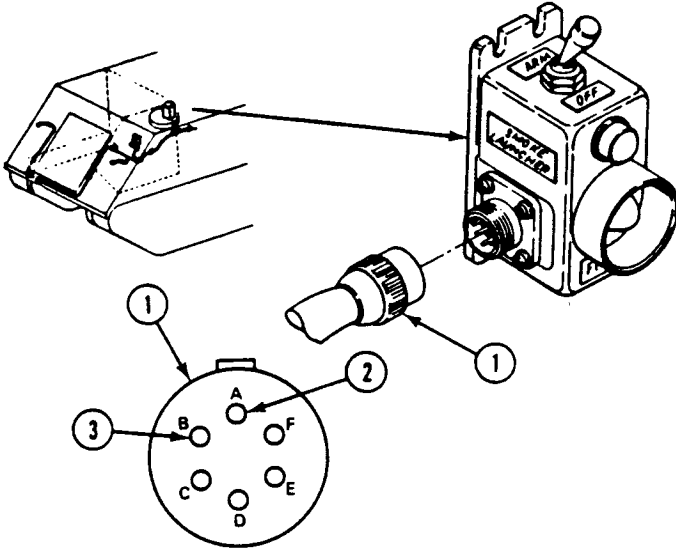
1. Faulty arming/firing unit.
2. Notify your supervisor.

SMOKE GRENADE LAUNCHER(S) MALFUNCTION — Continued

0066 00

BY

1. Turn MASTER SWITCH to ON (see your -10).
2. Measure voltage between harness firing/arming unit plug (1) pin A (2) and B (3).
3. Does multimeter read at least 17 volts?

**NO****BYN**

1. Replace harness (WP 0577 00).
2. Verify no faults found.

YES**B2Y**

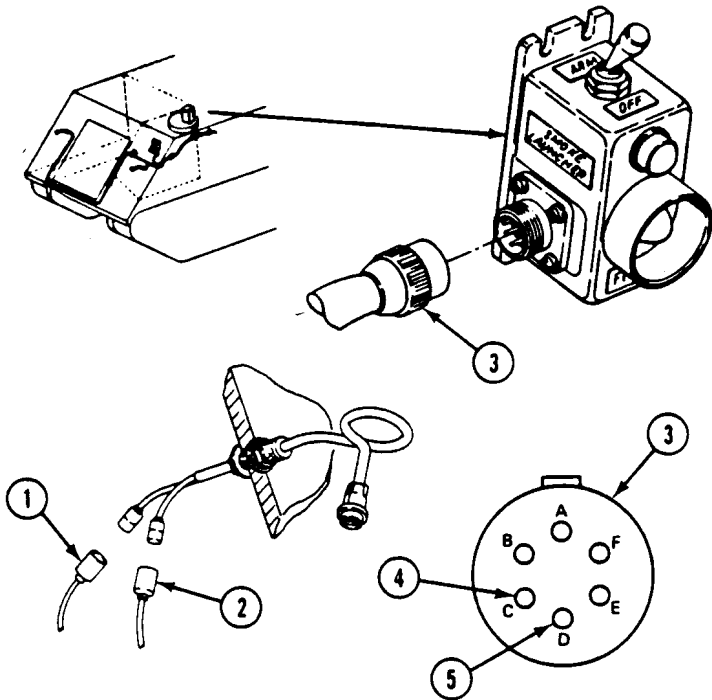
1. Faulty arming/firing unit.
2. Notify supervisor.

SMOKE GRENADE LAUNCHER(S) MALFUNCTION — Continued

0066 00

CY

1. Install jumper wire between harness jacks circuit 7 (1) and circuit 799 (2).
2. Measure resistance between harness arming/firing unit plug (3) pins C (4) and D (5).
3. Does multimeter read 0 ohms?

**NO****CYN**

1. Replace harness (WP 0577 00).
2. Verify no faults found.

YES**C2Y**

1. Faulty arming/firing unit.
2. Notify supervisor.

FRONT AND/OR REAR BILGE PUMP(S) AND/OR LIGHTS DO NOT OPERATE

0067 00

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

References

See your -10

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

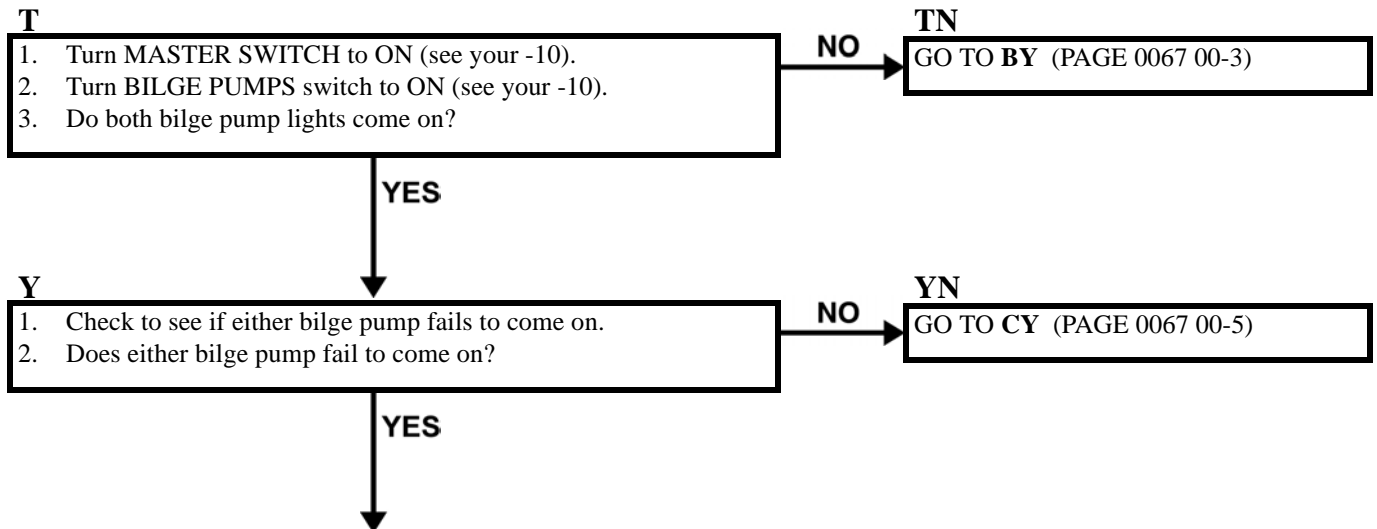
MASTER SWITCH to OFF (see your -10)

Power plant front access cover removed (front bilge pump) (WP 0429 00)

Trim vane lowered and power plant front access door open (see your -10)

Ramp lowered (rear bilge pump) (see your -10)

Rear floor plate removed (rear bilge pump) (WP 0436 00)

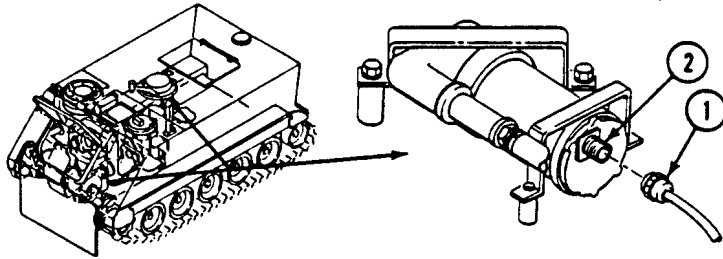


FRONT AND/OR REAR BILGE PUMP(S) AND/OR LIGHTS DO NOT OPERATE — Continued

0067 00

2Y

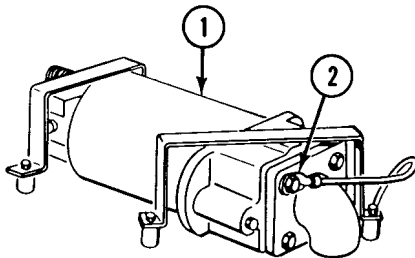
1. Locate bilge pump that is not operating (see your -10).
2. Remove circuit 451 (rear pump), or circuit 452 (front pump), plug (1) from pump jack (2).
3. Measure voltage between plug 451 or 452 (1) and ground.
4. Does multimeter read more than 17 volts?

**NO****2YN**

1. Repair front main wiring harness (front bilge pump) or rear main wiring harness (rear bilge pump) (WP 0312 00).
2. Verify no faults found.

YES**3Y**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Measure resistance between bilge pump body (1) and ground lead (2).
3. Does multimeter read 0 ohms?

**NO****3YN**

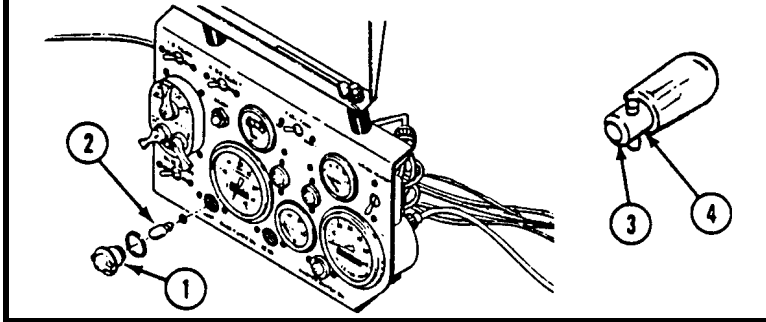
1. Replace ground lead to bilge pump (WP 0322 00) (front) or (WP 0325 00) (rear).
2. Verify no faults found.

YES**4Y**

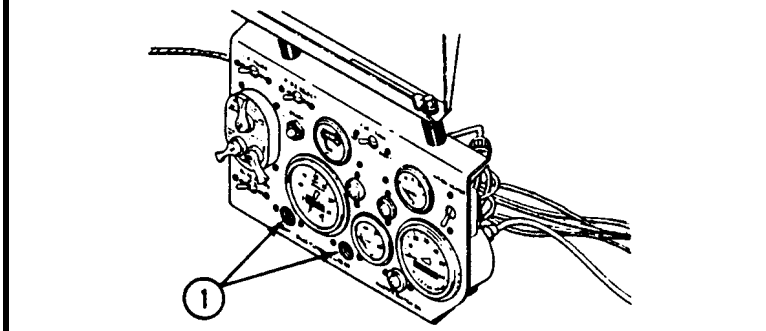
1. Replace bilge pump (WP 0322 00) (front) or (WP 0325 00) (rear).
2. Verify no faults found.

FRONT AND/OR REAR BILGE PUMP(S) AND/OR LIGHTS DO NOT OPERATE — Continued**0067 00****BY**

1. Remove BILGE PUMPS ON indicator lens (1) and bulb (2).
2. Measure resistance between bulb center contact (3) and bulb base (4).
3. Does multimeter read more than 5 ohms?

**YES****B2Y**

1. Measure voltage between bulb socket center contact (1) and ground.
2. Does multimeter read less than 17 volts?

**YES****NO****BYN**

1. Replace BILGE PUMPS ON indicator light bulb (WP 0240 00).
2. Verify no faults found.

NO**B2YN**

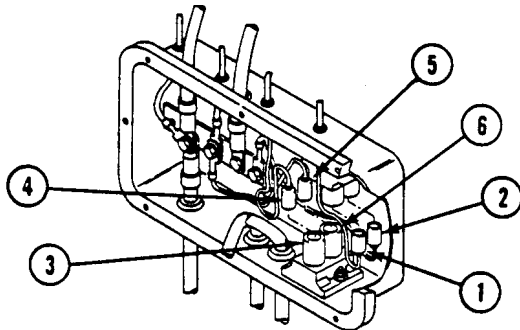
1. Replace BILGE PUMPS ON indicator light assembly (WP 0240 00).
2. Verify no faults found.

FRONT AND/OR REAR BILGE PUMP(S) AND/OR LIGHTS DO NOT OPERATE — Continued

0067 00

B3Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove master switch panel from distribution box (WP 0221 00). Do not disconnect battery negative lead.
3. Remove plug 450 B (1) and plug 450 C (2) from front bilge pump circuit breaker (3) or remove plug 450 (4) and plug 450 A (5) from rear bilge pump circuit breaker (6).
4. Measure resistance between circuit breaker jacks.
5. Does multimeter read 0 ohms?



NO

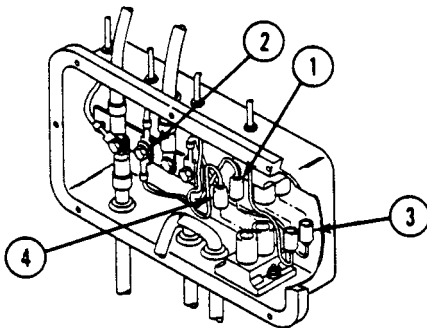
B3YN

1. Replace bilge pump circuit breaker (WP 0327 00).
2. Verify no faults found.

YES

B4Y

1. Measure resistance between plug 450 A (rear bilge pump) (1) to 450 A lead end at bus bar (2) or plug 450 C (front bilge pump) (3) to 450 C lead end at bus bar (4).
2. Does multimeter read 0 ohms?



NO

B4YN

1. Replace circuit 450A (rear bilge pump) or circuit 450C (front bilge pump) lead (WP 0312 00).
2. Verify no faults found.

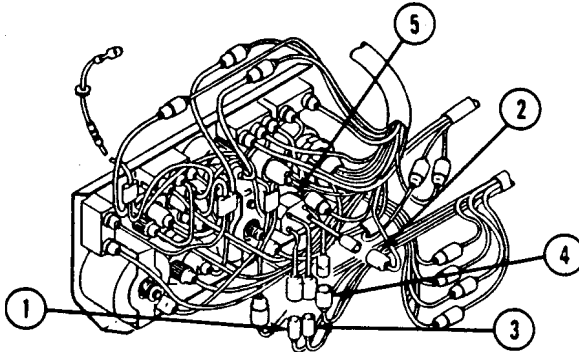
YES

FRONT AND/OR REAR BILGE PUMP(S) AND/OR LIGHTS DO NOT OPERATE — Continued

0067 00

B5Y

1. Remove instrument panel for access (WP 0238 00).
2. Remove plug 450 B (1) and plug 452 A (2) (front bilge pump) or plug 450 (3) and 451 A (4) (rear bilge pump) from bilge pump switch (5).
3. Measure resistance between bilge pump switch jacks with bilge pump switch on.
4. Does multimeter read 0 ohms?



YES

B6Y

1. Repair rear main harness circuit 450 or 451A, or front main harness circuit 450B or 452A (WP 0312 00).
2. Install master switch panel on distribution box (WP 0221 00).
3. Verify no faults found.

NO

B5YN

1. Install master switch panel on distribution box (WP 0221 00).
2. Replace bilge pump switch (WP 0241 00).
3. Verify no faults found.

CY

1. Check to see if bilge pumps have been serviced.
2. Have bilge pumps been serviced?

YES

NO

CYN

1. Service bilge pump assemblies (see your -10).
2. Verify no faults found.

C2Y

1. Inspect bilge pump pipes.
2. Are bilge pump pipes damaged?

YES

NO

C2YN

1. Replace bilge pump (WP 0325 00) (rear) or (WP 0322 00) (front).
2. Verify no faults found.

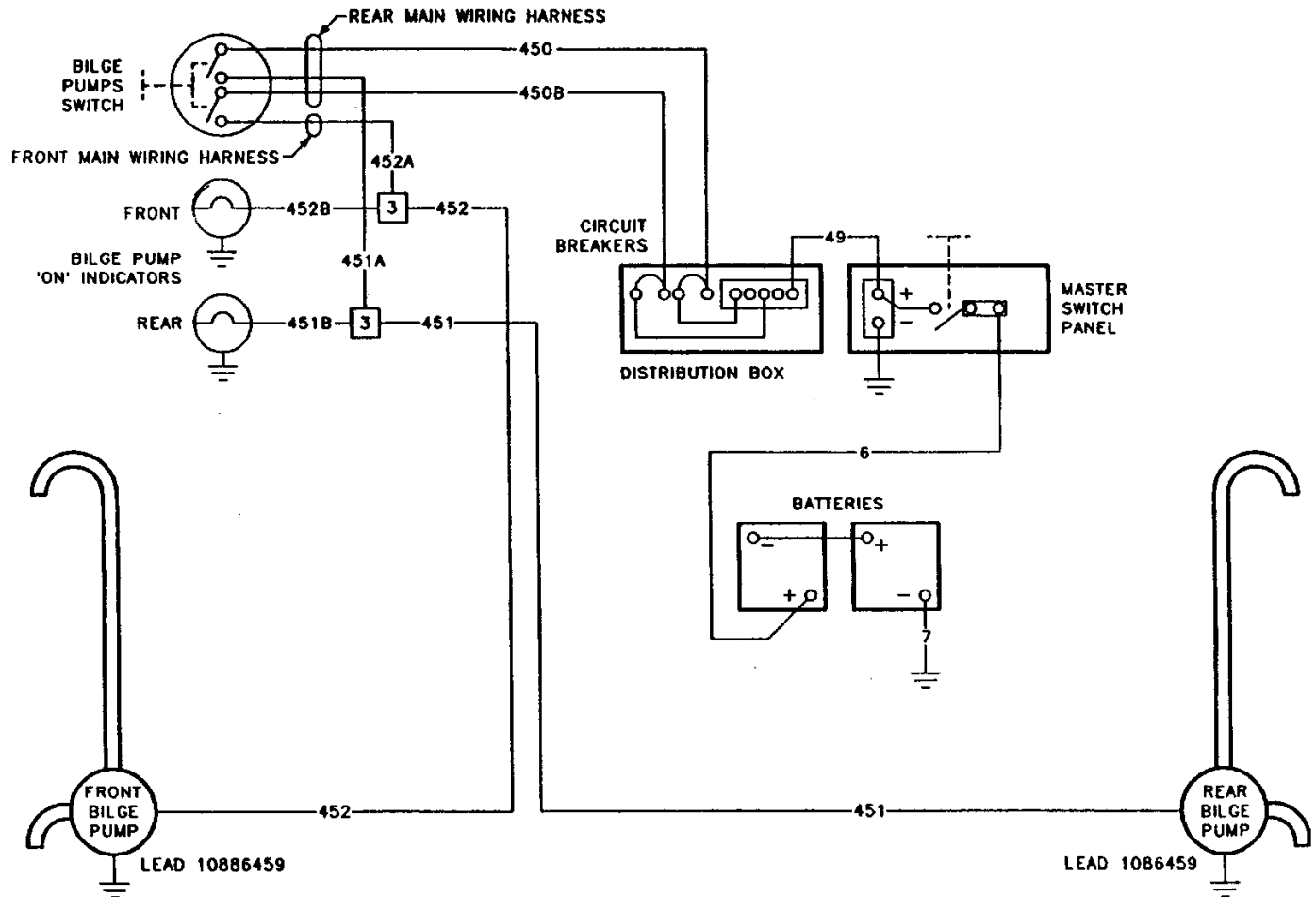
**FRONT AND/OR REAR BILGE PUMP(S) AND/OR LIGHTS DO NOT
OPERATE — Continued**

0067 00**C3Y**

- | |
|--|
| <ol style="list-style-type: none">1. Replace bilge pump pipes (WP 0323 00) (front)
(WP 0326 00) (rear).2. Verify no faults found. |
|--|

BILGE PUMP SYSTEM SCHEMATIC**0068 00****DESCRIPTION**

Use the diagrams as an aid for performing bilge pump troubleshooting.



BILGE PUMP SCHEMATIC

PERSONNEL HEATER MALFUNCTIONS**0069 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)
 Electrical Connector Pliers (WP 0780 00, Item 44)
 General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

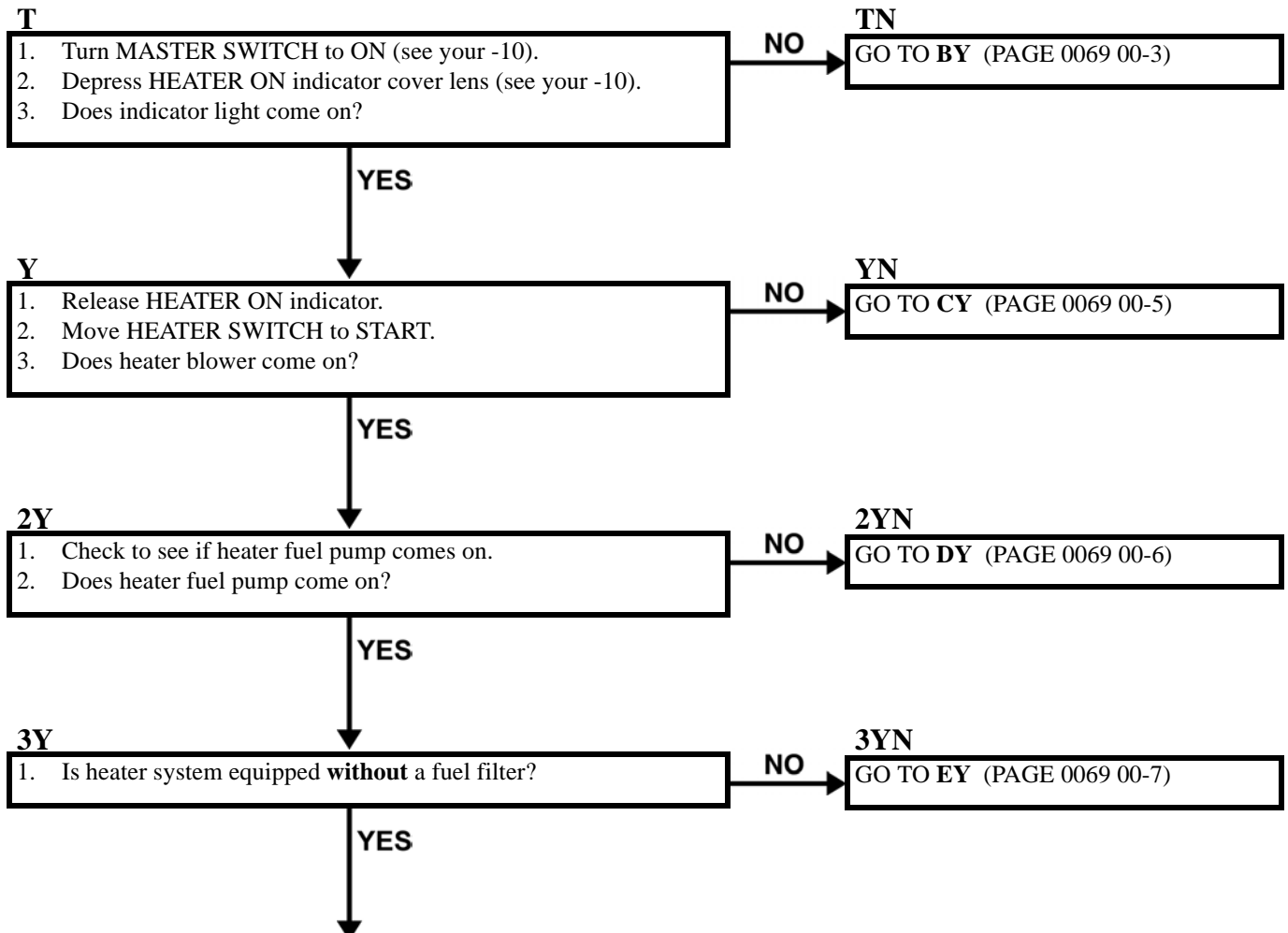
Unit Mechanic

References

See your -10

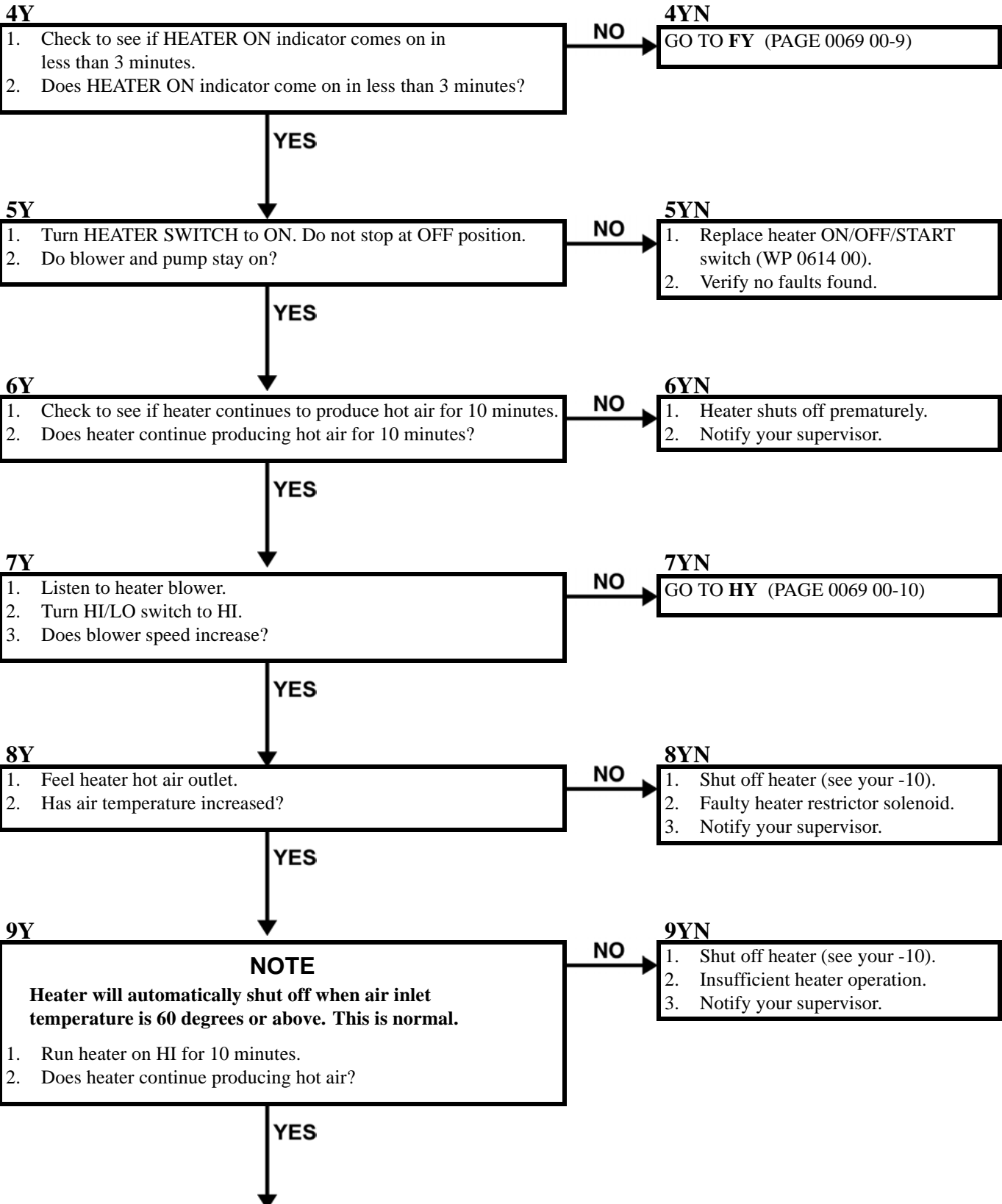
Equipment Condition

Engine stopped/shutdown (see your -10)
 Carrier blocked (see your -10)
 Rear access panel removed (WP 0431 00,
 WP 0432 00, or WP 0433 00)
 Rear floor plates removed (WP 0436 00, WP 0437 00,
 WP 0438 00, WP 0440 00, or WP 0441 00)
 Ramp lowered (see your -10)
 Heater on LOW (see your -10)

NOTE**For Model A-20 go to TM 9-2540-207-14&P for troubleshooting.**

PERSONNEL HEATER MALFUNCTIONS — Continued

0069 00



PERSONNEL HEATER MALFUNCTIONS — Continued

0069 00

10Y

1. Turn HEATER SWITCH to OFF (see your -10).
2. Does blower remain on?

NO

10YN

1. Heater does not purge.
2. Notify your supervisor.

YES

11Y

1. Listen to heater until blower shuts off.
2. Does blower shut off in less than 5 minutes?

NO

11YN

1. Faulty heater flame detector switch.
2. Notify your supervisor.

YES

12Y

1. Heater is operating properly.
2. No faults found.

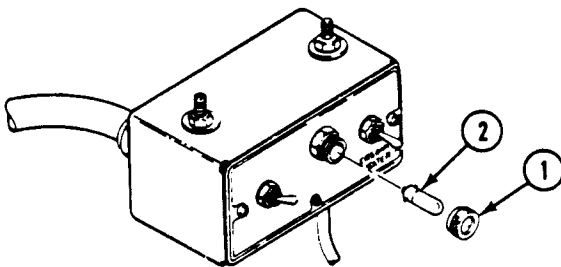
BY

1. Remove heater indicator cover lens (1) and bulb (2).
2. Measure resistance between bulb center contact and base.
3. Does multimeter read 0-5 ohms?

NO

BYN

1. Replace heater bulb (WP 0614 00).
2. Verify no faults found.



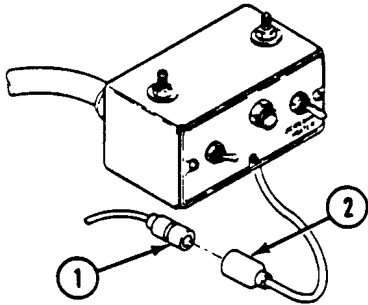
YES

PERSONNEL HEATER MALFUNCTIONS — Continued

0069 00

B2Y

1. Remove rear main harness circuit 400 plug (1) from control box jack (2).
2. Measure voltage between rear main harness circuit 400 plug (1) pin and ground.
3. Does multimeter read 17 volts or more?



YES

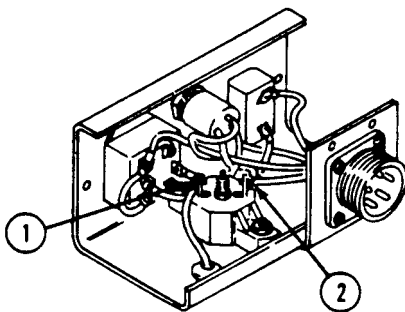
NO

B2YN

1. Repair rear main harness circuit 400 between master switch and heater control box (WP 0312 00).
2. Verify no faults found.

B3Y

1. Remove heater control box (WP 0613 00).
2. Measure resistance between circuit breaker terminals 16 (1) and 17 (2).
3. Does multimeter read 0 ohms?



YES

NO

B3YN

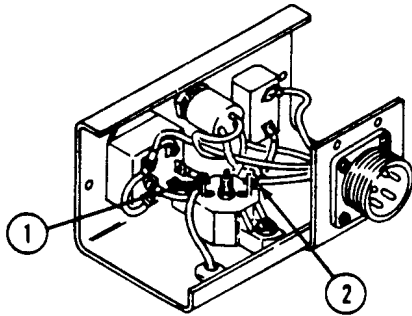
1. Replace heater circuit breaker (WP 0614 00).
2. Verify no faults found.

PERSONNEL HEATER MALFUNCTIONS — Continued

0069 00

B4Y

1. Measure resistance between lead ends from circuit breaker terminal 17 (1) to indicator light terminal 3 (2).
2. Does multimeter read 0 ohms?



YES

B5Y

1. Replace indicator light assembly (WP 0614 00).
2. Verify no faults found.

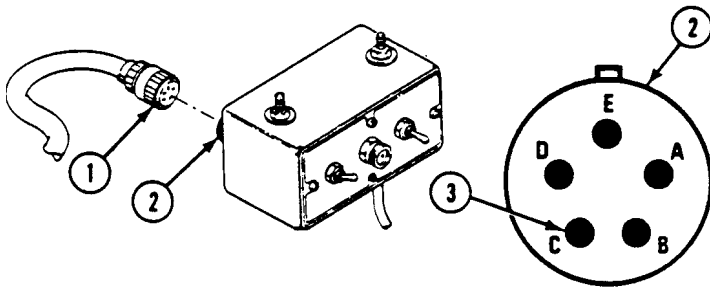
NO

B4YN

1. Repair/replace faulty lead (WP 0312 00).
2. Verify no faults found.

CY

1. Remove heater harness plug (1) from heater control box jack (2).
2. Measure voltage between heater control box jack (2) pin C (3) and ground, with HEATER SWITCH on START.
3. Does multimeter read 17 volts or more?



YES

NO

CYN

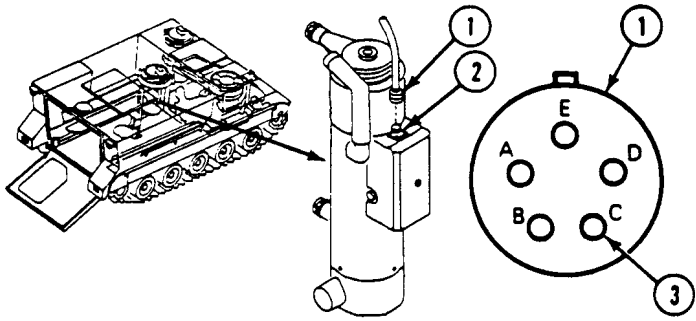
GO TO DY (PAGE 0069 00-6)

PERSONNEL HEATER MALFUNCTIONS — Continued

0069 00

C2Y

1. Install heater harness plug on heater control box jack.
2. Remove heater harness plug (1) from heater jack (2).
3. Measure voltage between heater harness (1) pin C (3) and ground, with HEATER SWITCH on START.
4. Does multimeter read 17 volts or more?



NO

C2YN

1. Faulty heater wiring harness.
2. Notify your supervisor.

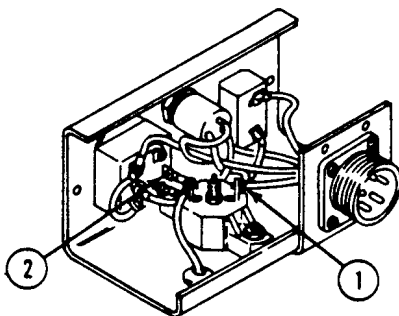
YES

C3Y

1. Faulty personnel heater.
2. Notify your supervisor.

DY

1. Remove heater control box (WP 0613 00).
2. Measure resistance between lead ends from circuit breaker terminal 17 (1) and ON/OFF/START switch terminal 15 (2).
3. Does multimeter read 0 ohms?



NO

DYN

1. Repair faulty lead (WP 0312 00).
2. Verify no faults found.

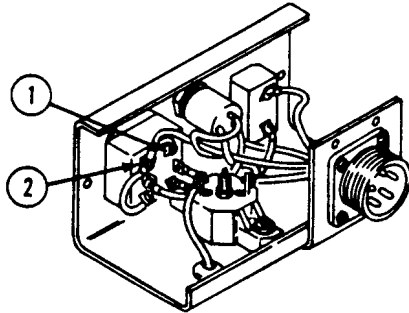
YES

PERSONNEL HEATER MALFUNCTIONS — Continued

0069 00

D2Y

1. Measure resistance between lead ends from ON/OFF/START switch terminals 21 (1) and 14 (2).
2. Does multimeter read 0 ohms?

**YES****D3Y**

1. Replace heater ON/OFF/START switch (WP 0614 00).
2. Verify no faults found.

NO**D2YN**

1. Repair heater switch jumper lead between terminal 21 and 14 (WP 0312 00).
2. Verify no faults found.

EY

1. Check to see if heater exhaust is cold.
2. Is heater exhaust cold?

YES**NO****EYN**

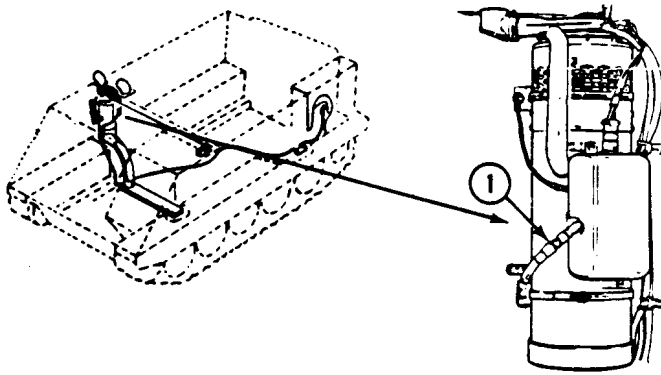
1. Defective flame detector switch.
2. Notify your supervisor.

PERSONNEL HEATER MALFUNCTIONS — Continued

0069 00

E2Y

1. Loosen fuel inlet line (1) to heater with HEATER SWITCH on START.
2. Does fuel fail to flow out of loosened fitting?



NO

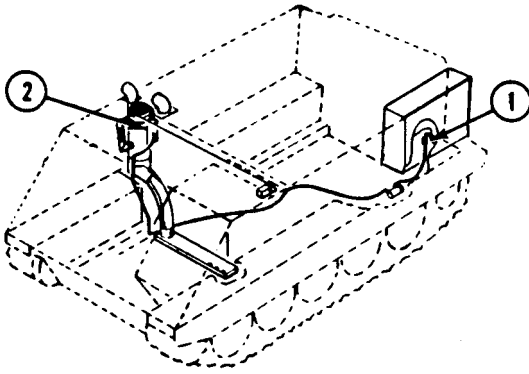
E2YN

1. Heater does not start.
2. Notify your supervisor.

YES

E3Y

1. Inspect fuel lines between fuel tank (1) and heater (2).
2. Are all lines free from kinks, restrictions, or other damage?



NO

E3YN

1. Replace heater fuel lines as required (see Chapter 29).
2. Verify no faults found.

YES

E4Y

1. Was personnel heater replaced?

NO

E4YN

1. Replace filter (WP 0616 00).
2. Verify no faults found.

YES

PERSONNEL HEATER MALFUNCTIONS — Continued

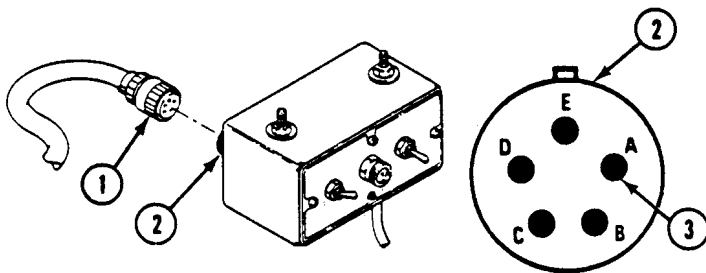
0069 00

E5Y

1. Replace personnel heater fuel pump (WP 0600 00, WP 0601 00, or WP 0602 00).
2. Verify no faults found.

FY

1. Remove heater harness plug (1) from heater control jack (2).
2. Measure voltage between heater control jack (2) pin A (3) and ground. With HEATER SWITCH on START.
3. Does multimeter read 17 volts or more?



NO

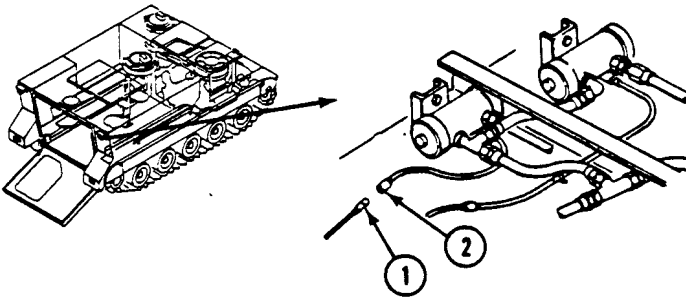
FYN

GO TO GY (PAGE 0069 00-10)

YES

F2Y

1. Install heater harness on heater control box jack.
2. Remove heater harness circuit 402 plug (1) from heater fuel pump jack (2).
3. Measure voltage between heater harness plug pin (1) and ground. With HEATER SWITCH on START.
4. Does multimeter read 17 volts or more?



NO

F2YN

1. Faulty control box to heater harness circuit 402.
2. Notify your supervisor.

YES

PERSONNEL HEATER MALFUNCTIONS — Continued

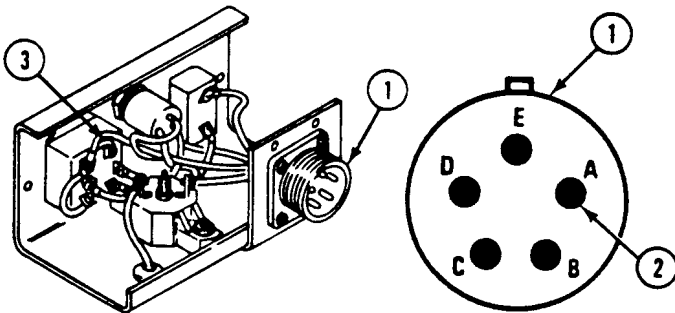
0069 00

F3Y

1. Replace personnel heater fuel pump (WP 0600 00, WP 0601 00, or WP 0602 00).
2. Verify no faults found.

GY

1. Remove heater control box (WP 0613 00).
2. Measure resistance between lead ends of heater output jack (1) pin A (2) and ON/OFF/START switch terminal 14 (3).
3. Does multimeter read 0 ohms?



YES

G2Y

1. Replace heater ON/OFF/START switch (WP 0614 00).
2. Verify no faults found.

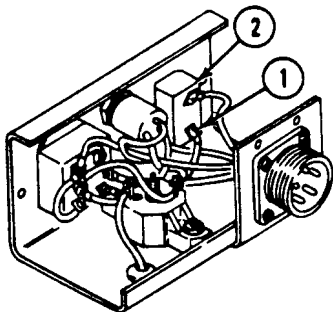
NO

GYN

1. Replace faulty lead (WP 0312 00).
2. Verify no faults found.

HY

1. Remove heater control box (WP 0613 00).
2. Measure resistance between HI/LO switch terminals 12 (1) and 13 (2).
3. Does multimeter read 0 ohms?



YES

NO

HYN

1. Replace heater HI/LO switch (WP 0614 00).
2. Verify no faults found.

PERSONNEL HEATER MALFUNCTIONS — Continued

0069 00**H2Y**

- | |
|---|
| <ol style="list-style-type: none">1. Repair lead between heater switch and jack or heater switch and ON/OFF/START switch (WP 0312 00).2. Verify no faults found. |
|---|

COOLANT HEATER MALFUNCTIONS**0070 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)
 Electrical Connector Pliers (WP 0780 00, Item 44)
 General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

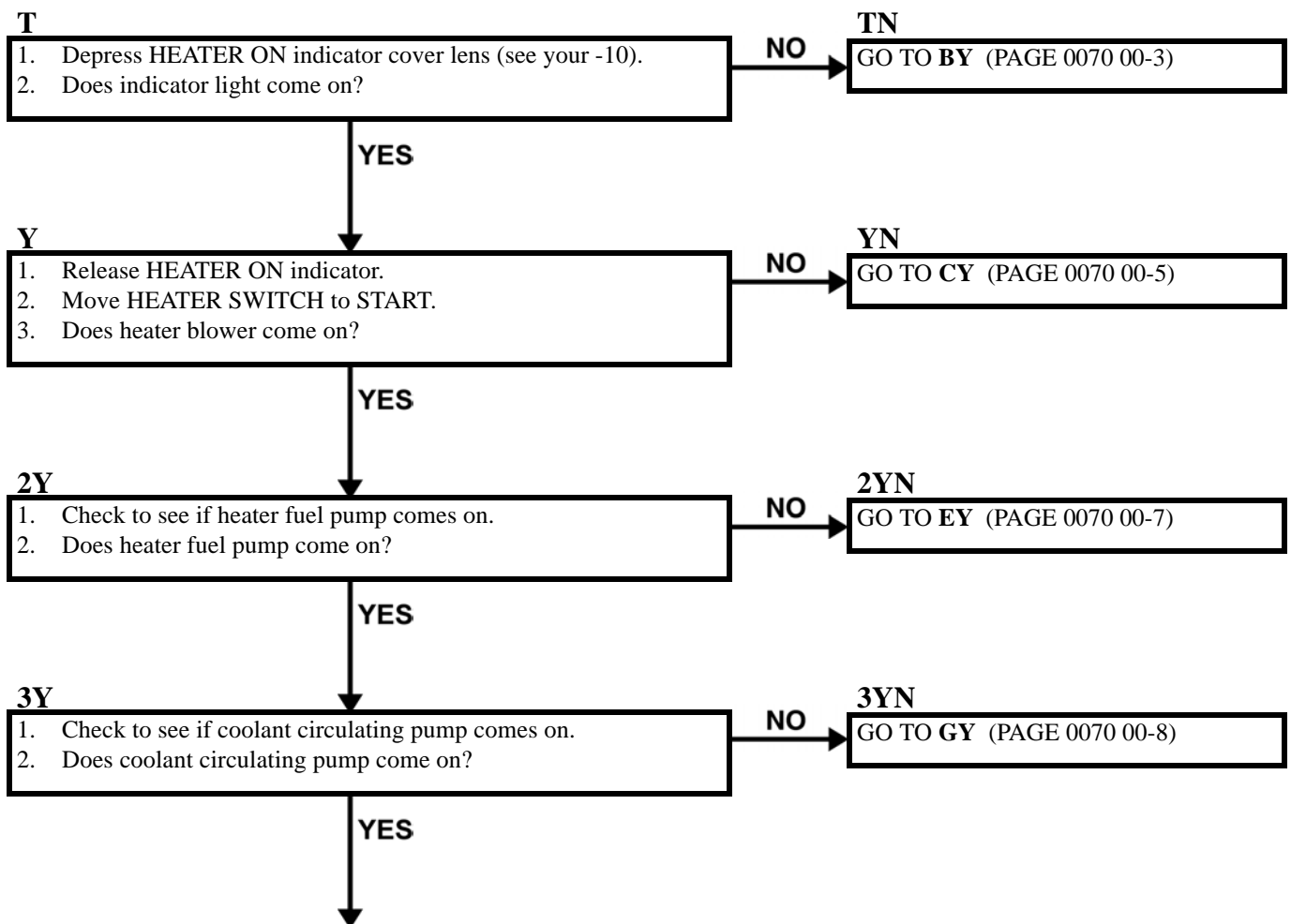
Unit Mechanic 63T10

References

See your -10

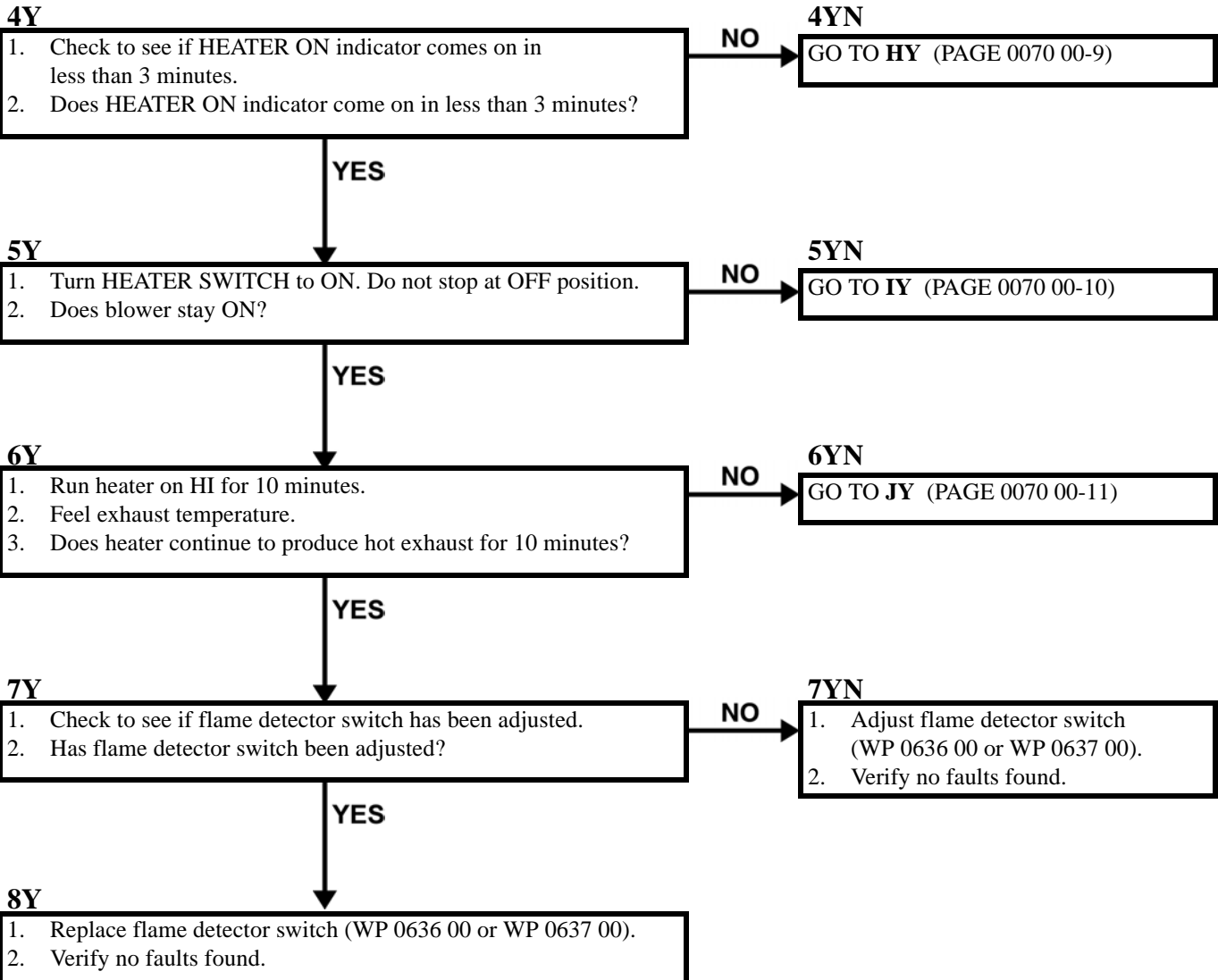
Equipment Condition

Engine stopped/shutdown (see your -10)
 Carrier blocked (see your -10)
 Trim vane lowered (see your -10)
 Power plant front access door open (see your -10)
 Ramp lowered (see your -10)
 Driver's power plant access panel removed
 (see your -10)
 Power plant rear access panels removed (see your -10)
 Heater on HI (see your -10)
 Rear floor plates removed (WP 0436 00, WP 0437 00,
 WP 0438 00, WP 0440 00, or WP 0441 00)
 Engine cold



COOLANT HEATER MALFUNCTIONS — Continued

0070 00

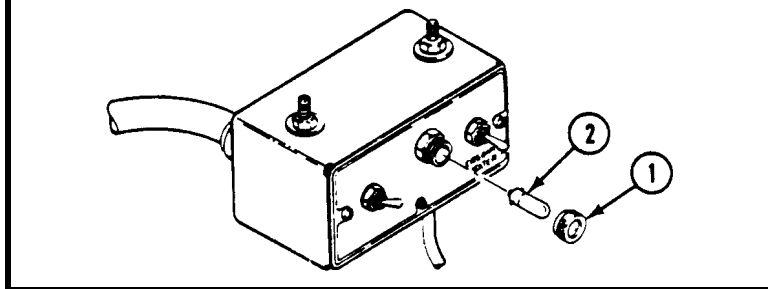


COOLANT HEATER MALFUNCTIONS — Continued

0070 00

BY

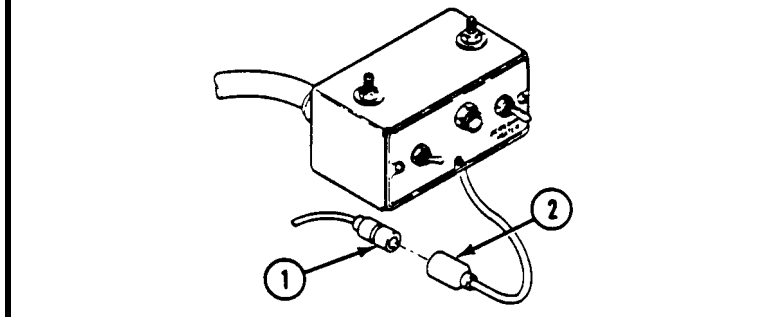
1. Remove indicator cover lens (1) and bulb (2).
2. Measure resistance between bulb center contact and base.
3. Does multimeter read less than 5 ohms?



YES

**B2Y**

1. Remove rear main harness circuit 400A plug (1) from control box jack (2).
2. Measure voltage between rear main harness circuit 400A plug (1) pin and ground.
3. Does multimeter read more than 17 volts?



YES



NO

**BYN**

1. Replace indicator bulb (WP 0648 00).
2. Verify no faults found.

NO

**B2YN**

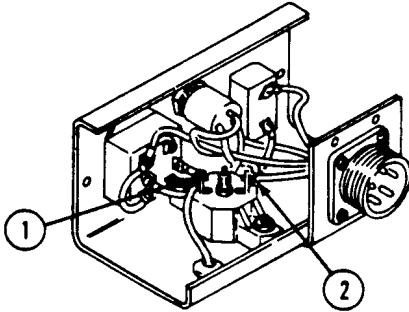
1. Repair rear main harness circuit 400 between master switch and heater control box (WP 0312 00).
2. Verify no faults found.

COOLANT HEATER MALFUNCTIONS — Continued

0070 00

B3Y

1. Remove heater control box (WP 0648 00).
2. Measure resistance between lead ends from circuit breaker terminals 16 (1) and 17 (2).
3. Does multimeter read 0 ohms?



NO

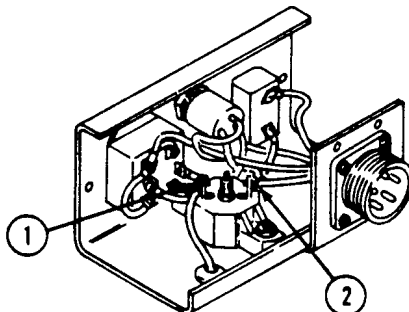
B3YN

1. Replace heater circuit breaker (WP 0648 00).
2. Verify no faults found.

YES

B4Y

1. Measure resistance between lead ends from circuit breaker terminal 17 (1) to indicator light terminal 3 (2).
2. Does multimeter read 0 ohms?



NO

B4YN

1. Repair/replace faulty lead (WP 0312 00).
2. Verify no faults found.

YES

B5Y

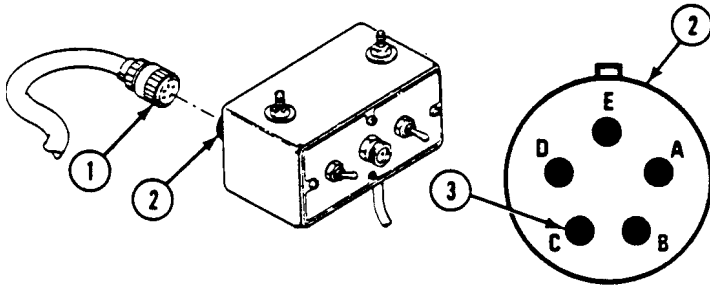
1. Replace indicator light assembly (WP 0648 00).
2. Verify no faults found.

COOLANT HEATER MALFUNCTIONS — Continued

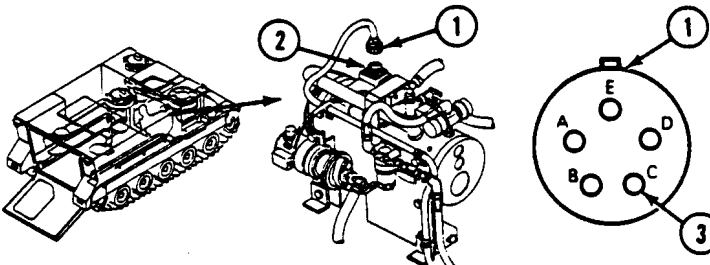
0070 00

CY

1. Remove heater harness plug (1) from heater control box jack (2).
2. Measure voltage between heater control box jack (2) pin C (3) and ground with HEATER SWITCH on START.
3. Does multimeter read at more than 17 volts?

**NO****CYN**GO TO **DY** (PAGE 0070 00-6)**YES****C2Y**

1. Install heater harness plug on heater control box jack.
2. Remove heater harness plug (1) from heater jack (2).
3. Measure voltage between plug (1) pin C (3) and ground with HEATER SWITCH on START.
4. Does multimeter read at least 17 volts?

**NO****C2YN**

1. Faulty coolant heater harness.
2. Notify your supervisor.

YES**C3Y**

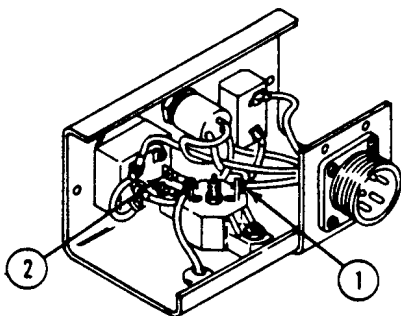
1. Replace coolant heater (WP 0651 00).
2. Verify no faults found.

COOLANT HEATER MALFUNCTIONS — Continued

0070 00

DY

1. Remove heater control box (WP 0648 00).
2. Measure resistance between lead ends from circuit breaker terminal 17 (1) and ON/OFF/START switch terminal 15 (2) lead ends.
3. Does multimeter read 0 ohms?



NO

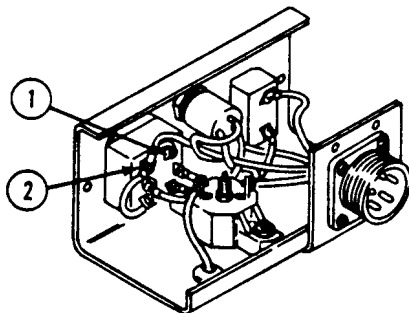
DYN

1. Repair faulty lead (WP 0312 00).
2. Verify no faults found.

YES

D2Y

1. Measure resistance between lead ends from ON/OFF/START switch terminals 21 (1) and 14 (2).
2. Does multimeter read 0 ohms?



NO

D2YN

1. Repair heater switch jumper lead between terminal 21 and 14 (WP 0312 00).
2. Verify no faults found.

YES

D3Y

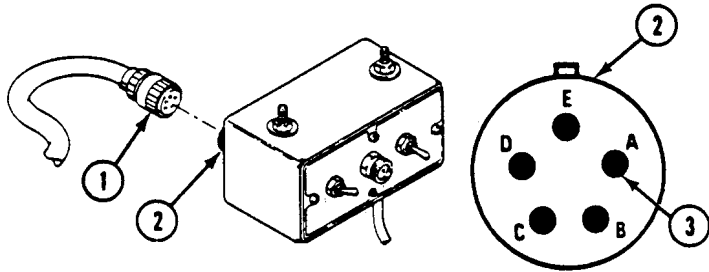
1. Replace heater ON/OFF/START switch (WP 0648 00).
2. Verify no faults found.

COOLANT HEATER MALFUNCTIONS — Continued

0070 00

EY

1. Remove heater harness plug (1) from heater control jack (2).
2. Measure voltage between heater control jack (2) pin A (3) and ground with HEATER SWITCH on START.
3. Does multimeter read more than 17 volts?



NO

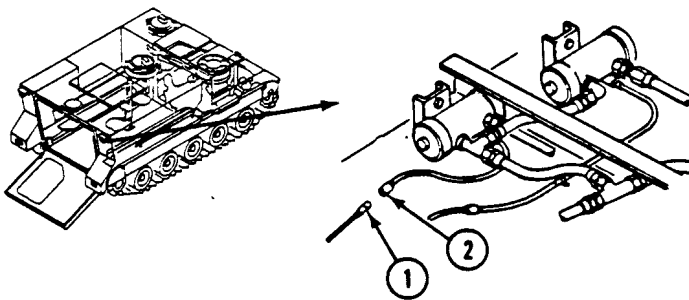
EYN

GO TO FY (PAGE 0070 00-8)

YES

E2Y

1. Install heater harness on heater control box jack.
2. Remove heater harness 402A plug (1) from heater fuel pump jack (2).
3. Measure voltage between plug (1) pin and ground with HEATER SWITCH on START.
4. Does multimeter read more than 17 volts?



NO

E2YN

1. Faulty heater harness circuit 402.
2. Notify your supervisor.

YES

E3Y

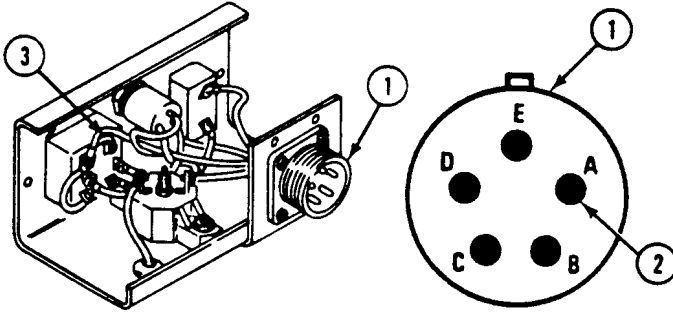
1. Replace coolant heater fuel pump (WP 0640 00 or WP 0641 00).
2. Verify no faults found.

COOLANT HEATER MALFUNCTIONS — Continued

0070 00

FY

1. Remove heater control box (WP 0648 00).
2. Measure resistance between lead ends of heater output jack (1) pin A (2) and ON/OFF/START switch terminal 14 (3).
3. Does multimeter read 0 ohms?

**NO****FYN**

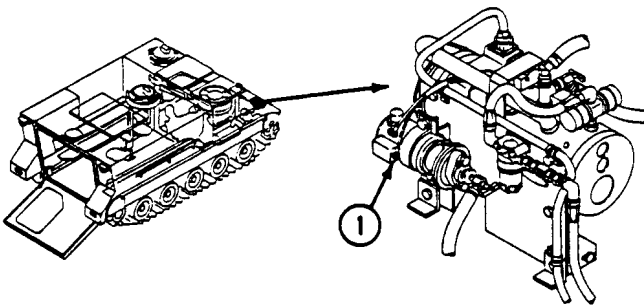
1. Repair/Replace faulty lead (WP 0312 00).
2. Verify no faults found.

YES**F2Y**

1. Replace heater ON/OFF/START switch (WP 0648 00).
2. Verify no faults found.

GY

1. Measure voltage between coolant pump to heater harness terminal circuit 402B (1) on coolant pump and ground with switch in start position.
2. Does multimeter read less than 17 volts?

**NO****GYN**

1. Replace coolant heater pump (WP 0652 00).
2. Verify no faults found.

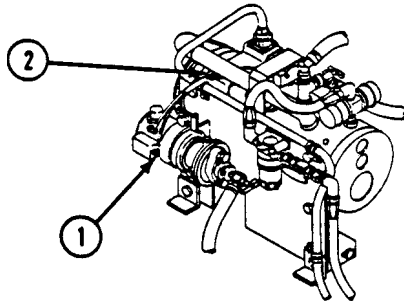
YES

COOLANT HEATER MALFUNCTIONS — Continued

0070 00

G2Y

1. Measure voltage between coolant pump to heater harness circuit 402B (1) on terminal strip (2) and ground with switch in start position.
2. Does multimeter read less than 17 volts?



YES

G3Y

1. Replace coolant heater (WP 0651 00).
2. Verify no faults found.

NO

G2YN

1. Replace coolant pump to heater harness (WP 0649 00).
2. Verify no faults found.

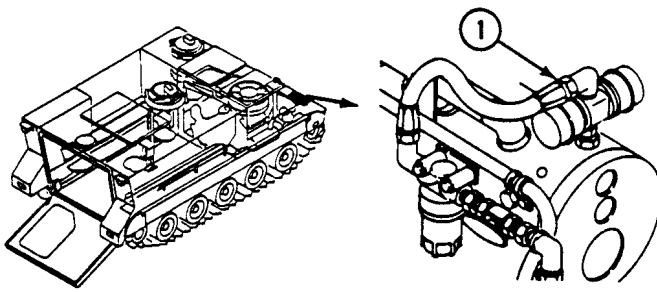
HY

1. Check to see if heater exhaust is cold.
2. Is heater exhaust cold?

YES

H2Y

1. Loosen fuel inlet line (1) to heater with HEATER SWITCH on START.
2. Does fuel fail to flow out of loosened fitting?



YES

NO

HYN

GO TO JY (PAGE 0070 00-11)

NO

H2YN

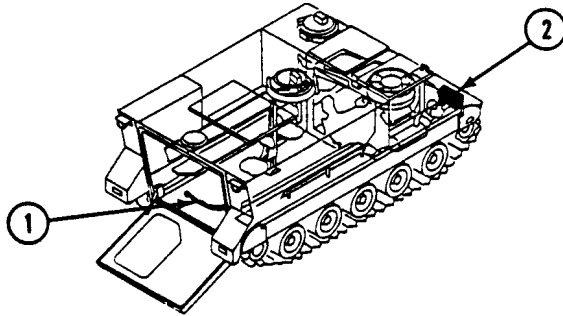
1. Replace igniter (WP 0638 00).
2. Verify no faults found.

COOLANT HEATER MALFUNCTIONS — Continued

0070 00

H3Y

1. Inspect fuel lines between tee valve (1) and heater (2).
2. Are all lines free from kinks, restrictions, or other damage?



NO

H3YN

1. Replace heater fuel lines as required (see Chapter 32).
2. Verify no faults found.

YES

H4Y

1. Replace coolant heater fuel pump (WP 0640 00 or WP 0641 00).
2. Verify no faults found.

IY

1. Check to see if fuel pump stays on.
2. Does fuel pump stay on?

NO

IYN

1. Replace heater ON/OFF/START switch (WP 0648 00).
2. Verify no faults found.

YES

I2Y

1. Check to see if flame detector switch has been adjusted.
2. Has flame detector switch been adjusted?

NO

I2YN

1. Adjust flame detector switch (WP 0636 00 or WP 0637 00).
2. Verify no faults found.

YES

I3Y

1. Replace flame detector switch (WP 0636 00 or WP 0637 00).
2. Verify no faults found.

COOLANT HEATER MALFUNCTIONS — Continued

0070 00

JY

1. Check fuel supply lines for clogged or unserviceable hoses or fittings.
2. Are fuel supply hoses and lines unclogged and serviceable?

NO**JYN**

1. Clear obstruction or replace fuel hoses/tubing as required (see Chapter 32).
2. Verify no faults found.

YES**J2Y**

1. Replace coolant heater (WP 0651 00).
2. Verify no faults found.

POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT
INOPERATIVE (M1068 ONLY)

0071 00

INITIAL SETUP:

<u>Maintenance Level</u>	<u>Personnel Required</u>
Unit	Power-Generation Equipment Repairer 52D10 Helper (H)
<u>Tools and Special Tools</u>	<u>Equipment Condition</u>
Digital Multimeter (WP 0780 00, Item 43)	Engine stopped (see your -10)
General Mechanic’s Tool Kit (WP 0780 00, Item 29)	Carrier blocked (see your -10)
<u>Materials/Parts</u>	Battery box cover removed (see your -10)
Lockwasher (10)	

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

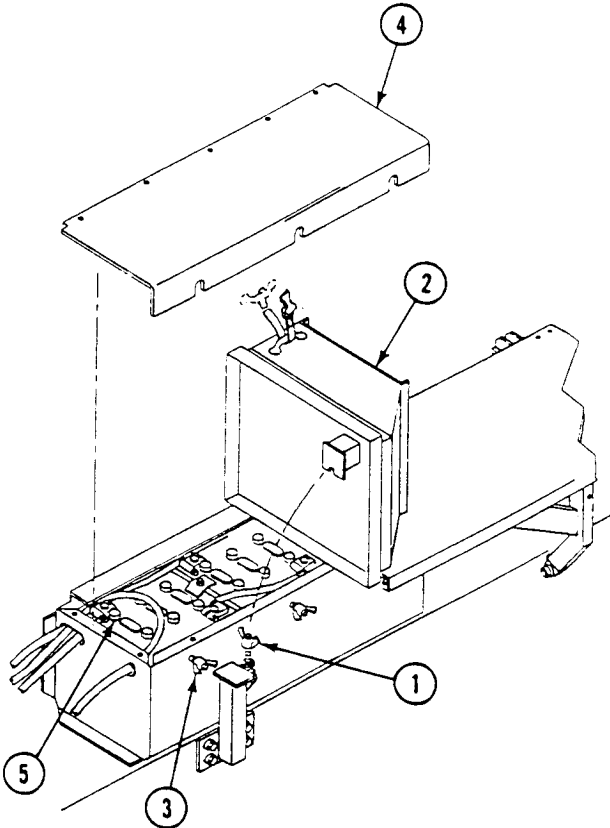
BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

**POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT INOPERATIVE
(M1068 ONLY) — Continued**

0071 00

T

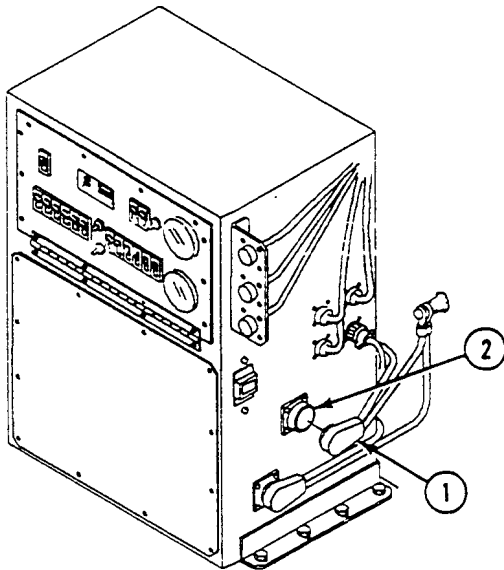
1. Loosen wing nut (1) and raise FAX hinged extension (2).
2. Loosen three wing nuts (3) and remove battery box cover (4).
3. Measure voltage between positive battery terminal (5) and ground.
4. Does multimeter read 22 volts DC or more?

**YES****NO****TN**

1. Service carrier batteries (see your -10).
2. Verify no faults found.

**POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT INOPERATIVE
(M1068 ONLY) — Continued****0071 00****Y**

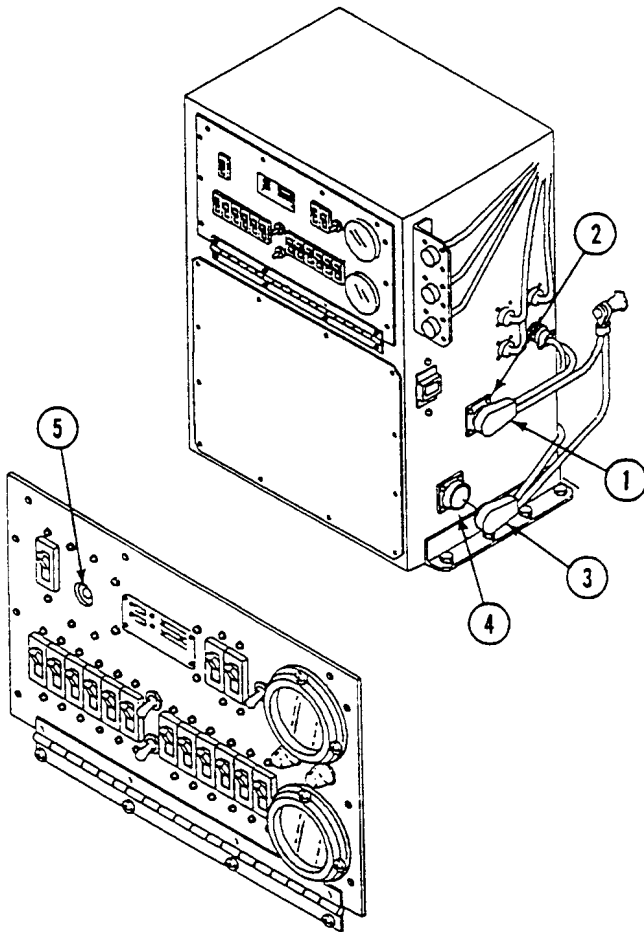
1. Remove cable W4 plug P1 (1) from power control enclosure jack J25 (2).
2. Measure voltage between center of P1 (1) and ground.
3. Does multimeter read 22 volts DC or more?

**YES****NO****YN**

1. Replace cable W4 (WP 0740 00).
2. Verify no faults found.

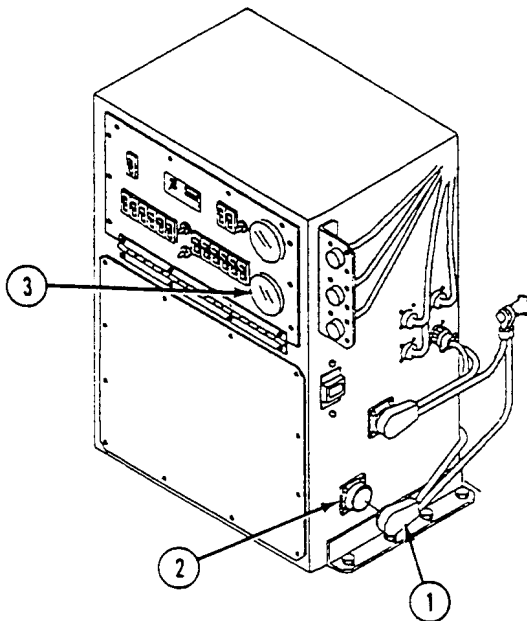
**POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT INOPERATIVE
(M1068 ONLY) — Continued****0071 00****2Y**

1. Install cable W4 plug P1 (1) on power control enclosure jack J25 (2).
2. Remove cable W6 plug P5 (3) from power control enclosure jack J26 (4).
3. Turn MASTER SWITCH to ON and have helper press DC TO INVERTERS button (5) on power control enclosure panel (see your -10 and TM 11-7010-256-12&P).
4. Measure voltage between center of J26 (4) and ground.
5. Does multimeter read 22 volts DC or more?

NO**2YN****GO TO BY (PAGE 0071 00-6)****YES**

**POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT INOPERATIVE
(M1068 ONLY) — Continued****0071 00****3Y**

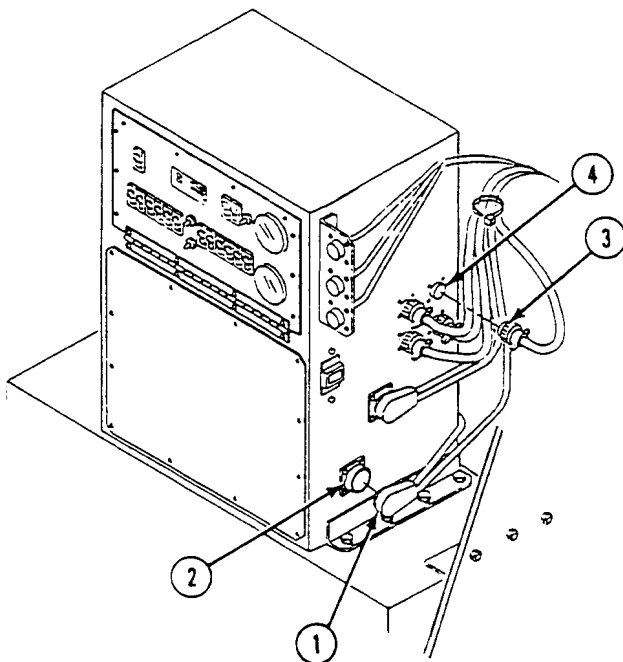
1. Set MASTER SWITCH to OFF (see your -10).
2. Install cable W6 plug P5 (1) on power control enclosure jack J26 (2).
3. Set MASTER SWITCH to ON (see your -10).
4. Does voltage on DC VOLTS meter (3) on power control enclosure panel read the same as voltage at carrier batteries?

**NO****3YN****GO TO CY (PAGE 0071 00-11)****YES****4Y**

1. Verify no faults found.

**POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT INOPERATIVE
(M1068 ONLY) — Continued****0071 00****BY**

1. Set MASTER SWITCH to OFF (see your -10).
2. Install cable W6 plug P5 (1) on power control enclosure jack J26 (2).
3. Remove cable W38 plug P7 (3) from power control enclosure jack J28 (4).
4. Set MASTER SWITCH to ON (see your -10).
5. Measure voltage between center of P7 (3) and ground.
6. Does multimeter read 22 volts DC or more?

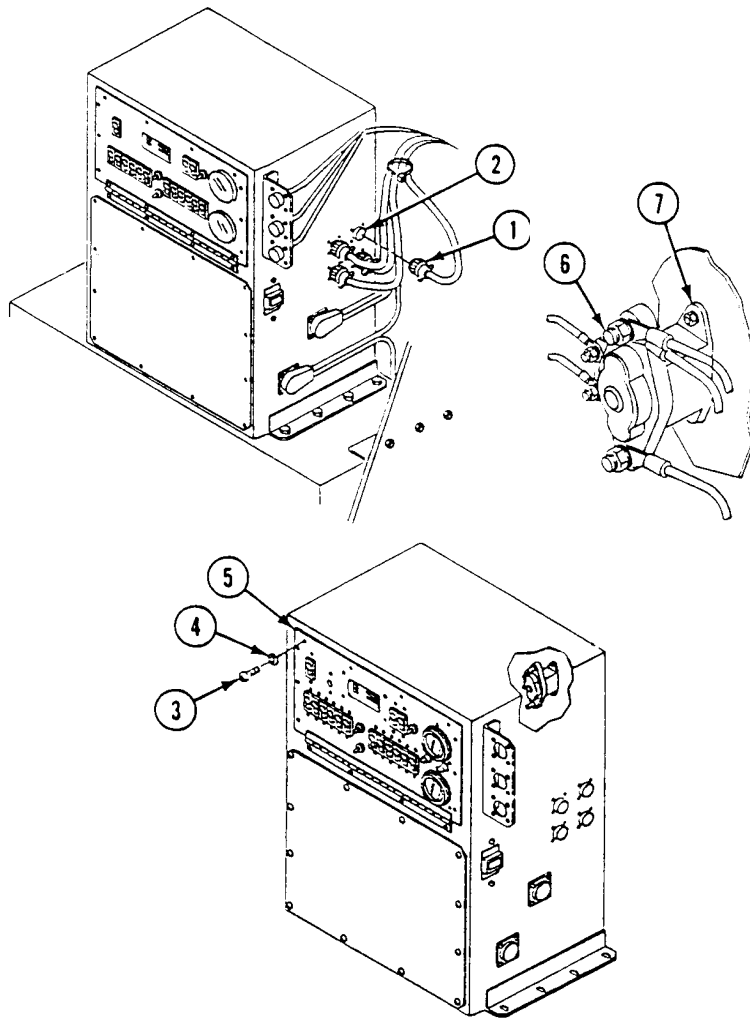
**YES**
↓**NO** →**BYN****GO TO DY (PAGE 0071 00-12)**

**POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT INOPERATIVE
(M1068 ONLY) — Continued**

0071 00

B2Y

1. Set MASTER SWITCH to OFF (see your -10).
2. Install cable W38 plug P7 (1) on power control enclosure jack J28 (2).
3. Remove ten screws (3) and lockwashers (4) and lower the faceplate (5). Discard lockwashers.
4. Set MASTER SWITCH to ON (see your -10).
5. Measure voltage between terminal X1 (6) of relay K6 (7) and ground.
6. Does multimeter read 22 volts DC or more?

**YES****B2YN**

1. Faulty circuit 44A in power control enclosure.
2. Notify your supervisor.

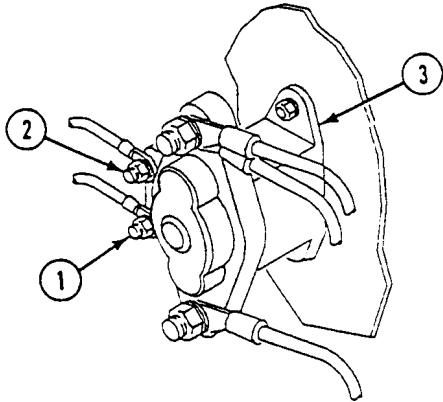
NO

**POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT INOPERATIVE
(M1068 ONLY) — Continued**

0071 00

B3Y

1. Measure voltage between terminals X1 (1) and X2 (2) of relay K6 (3).
2. Does multimeter read 22 volts DC or more?



NO

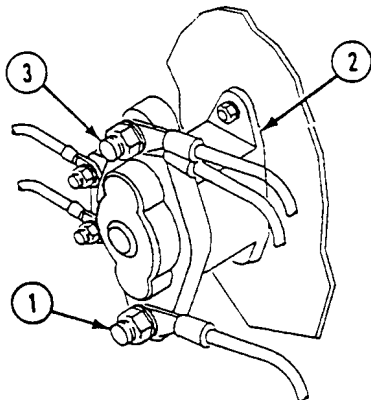
B3YN

1. Faulty relay K6 in power control enclosure. Beyond unit maintenance repair.
2. Notify supervisor.

YES

B4Y

1. Measure voltage between terminal A1 (1) of relay K6 (2) and ground.
2. Repeat measurement between terminal A2 (3) and ground.
3. Does multimeter read 22 volts DC or more for both measurements?



NO

B4YN

1. Faulty relay K6 in power control enclosure. Beyond unit maintenance repair.
2. Notify supervisor.

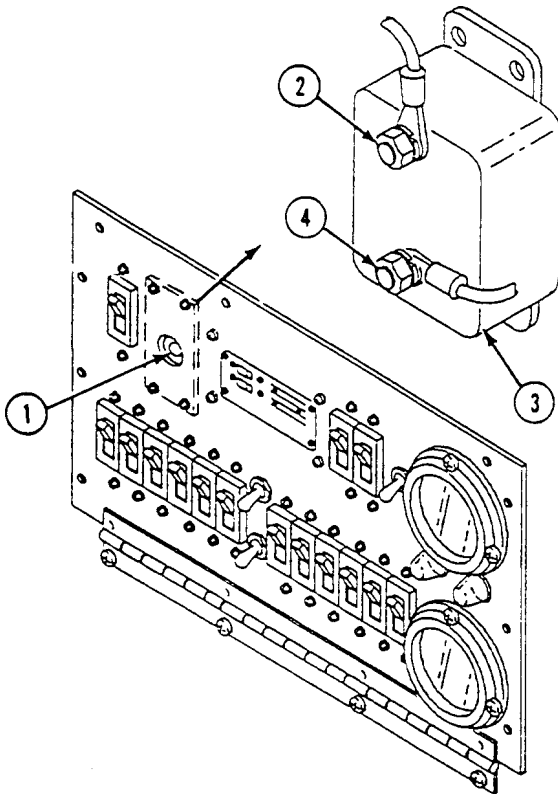
YES

**POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT INOPERATIVE
(M1068 ONLY) — Continued**

0071 00

B5Y

1. Have helper depress DC TO INVERTERS button (1) on power control enclosure panel.
2. Measure voltage between terminal 1 (2) of circuit breaker CB2 (3) and ground.
3. Repeat measurement between terminal 2 (4) and ground.
4. Does multimeter read 22 volts DC or more for both measurements?

**YES****NO****B5YN**

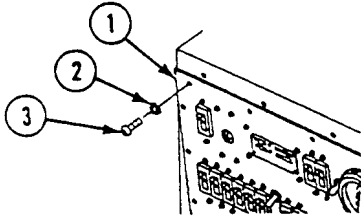
1. Replace circuit breaker CB2 (WP 0730 00).
2. Verify no faults found.

**POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT INOPERATIVE
(M1068 ONLY) — Continued**

0071 00

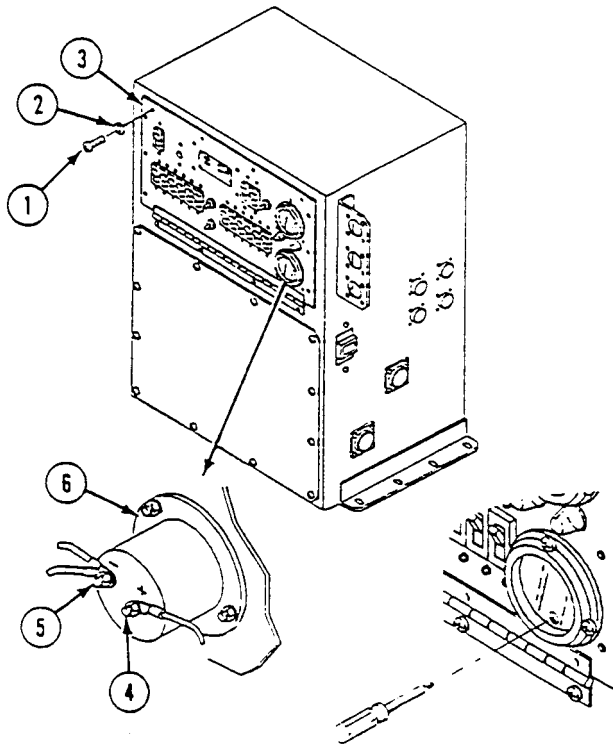
B6Y

1. Raise faceplate (1) and secure to power control enclosure with ten new lockwashers (2) and screws (3).
2. Verify no faults found.



**POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT INOPERATIVE
(M1068 ONLY) — Continued****0071 00****CY**

1. Turn all vehicle power OFF (see your -10 and TM 11-7010-256-12&P).
2. Remove ten screws (1) and lockwashers (2) and lower the faceplate (3). Discard lockwashers.
3. Set MASTER SWITCH to ON (see your -10).
4. Measure voltage between positive (4) and negative (5) terminals on meter M2 (6).
5. Does multimeter read 22 volts DC or more, and the same as meter M2?

**YES****NO****CYN**

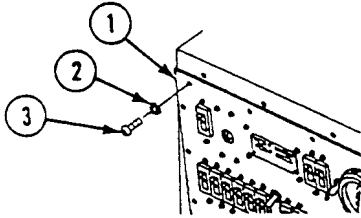
1. Adjust meter M2 needle to match multimeter reading.
2. If meter cannot be adjusted, replace DC meter M2 (WP 0729 00).
3. Verify no faults found.

**POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT INOPERATIVE
(M1068 ONLY) — Continued**

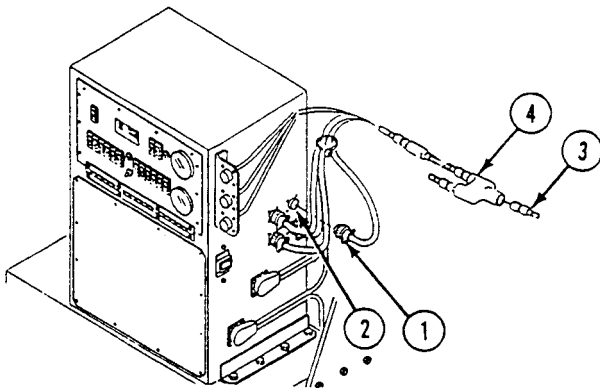
0071 00

C2Y

1. Raise faceplate (1) and secure to power control enclosure with ten new lockwashers (2) and screws (3).
2. Verify no faults found.

**DY**

1. Set MASTER SWITCH to OFF (see your -10).
2. Install cable W38 plug P7 (1) on power control enclosure jack J28 (2).
3. Remove circuit 415 plug P1 (3) from adapter T2 plug P1 (4).
4. Set MASTER SWITCH to ON (see your -10).
5. Measure voltage between circuit 415 plug P1 (3) and ground.
6. Does multimeter read 22 volts DC or more?



YES

↓

NO

→

DYN

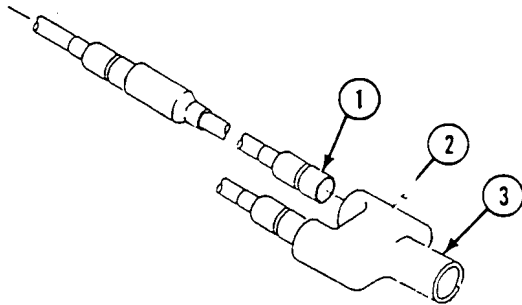
1. Go to Master Switch On Indicator Does Not Light (WP 0046 00).

**POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT INOPERATIVE
(M1068 ONLY) — Continued**

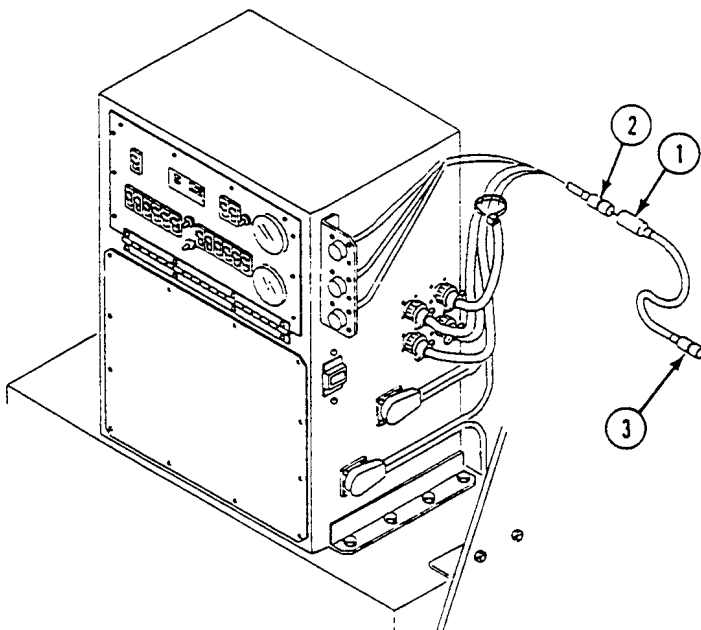
0071 00

D2Y

1. Set MASTER SWITCH to OFF (see your -10).
2. Remove cable W29 plug P1 (1) from adapter T2 plug P2 (2).
3. Measure resistance between adapter T2 plugs P2 (2) and P1 (3).
4. Does multimeter read 0 ohms?

**YES****D3Y**

1. Remove cable W29 plug P2 (1) from cable W38 plug P6 (2).
2. Measure resistance between plugs P2 (1) and P1 (3) of cable W29.
3. Does multimeter read 0 ohms?

**YES****NO****D2YN**

1. Replace adapter T2 (WP 0751 00).
2. Verify no faults found.

NO**D3YN**

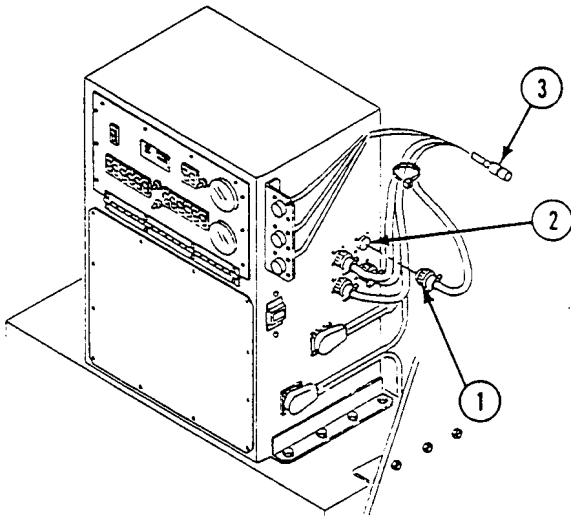
1. Replace cable W29 (WP 0751 00).
2. Verify no faults found.

**POWER CONTROL ENCLOSURE A1 DC INPUT/OUTPUT INOPERATIVE
(M1068 ONLY) — Continued**

0071 00

D4Y

1. Remove cable W38 plug P7 (1) from power control enclosure jack J28 (2).
2. Measure resistance between center of plugs P7 (1) and P6 (3) of cable W38.
3. Does multimeter read 0 ohms?



NO

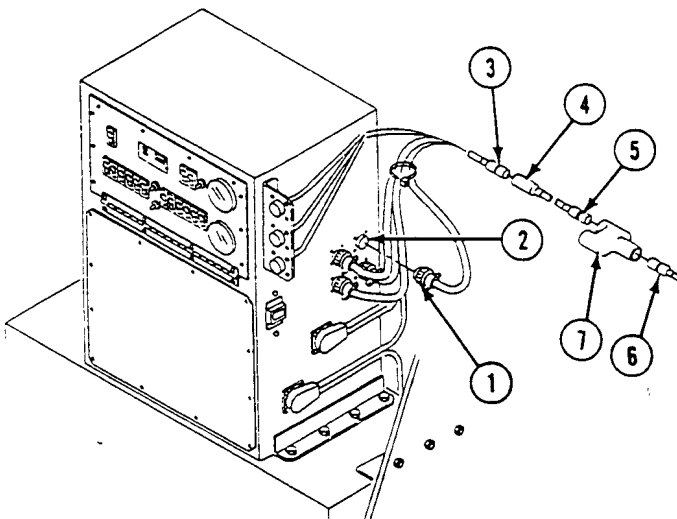
D4YN

1. Replace cable W38 (WP 0751 00).
2. Verify no faults found.

YES

D5Y

1. Install cable W38 plug P7 (1) on power control enclosure jack J28 (2).
2. Install cable W38 plug P6 (3) on cable W29 plug P2 (4).
3. Install cable W29 plug P1 (5) and circuit 415 plug P1 (6) on adapter T2 (7).
4. Verify no faults found.



NO AC POWER FROM TENT INTERFACE PANEL A5

0072 00

INITIAL SETUP:

Maintenance Level	Personnel Required
Unit	Power-Generation Equipment Repairer 52D10 Helper (H)
Tools and Special Tools	References
Digital Multimeter (WP 0780 00, Item 43) General Mechanic’s Tool Kit (WP 0780 00, Item 29)	TM 11-7010-256-12&P
Materials/Parts	Equipment Condition
Lockwasher (10)	Engine stopped (see your -10) Carrier blocked (see your -10)

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

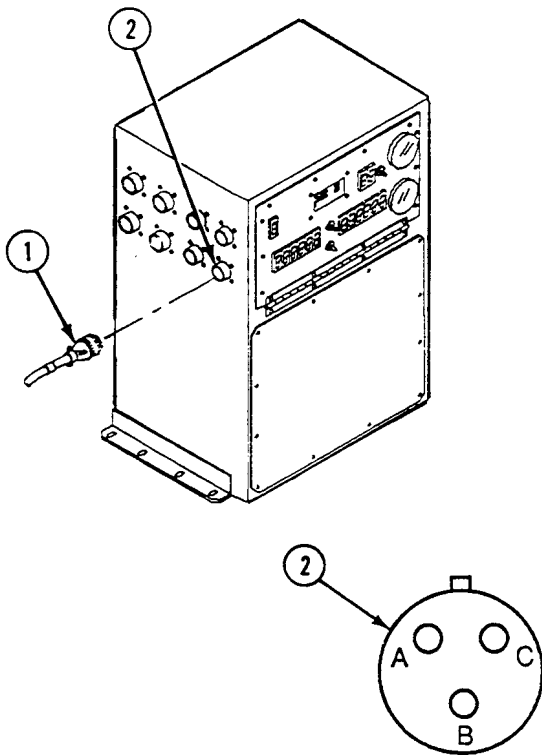
NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

T

1. Remove cable W32 plug P15 (1) from power control enclosure jack J32 (2).
2. Apply AC power to SICPS system. See TM 11-7010-256-12&P.
3. Measure voltage between socket A and socket B of jack J32 (2) and then between socket A and socket C.
4. Does multimeter read 110 volts AC or more for each measurement?

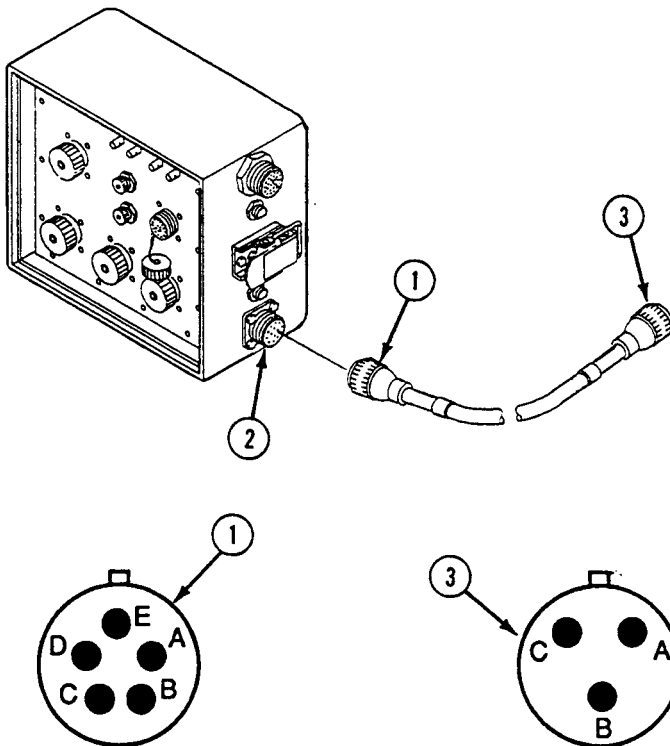
**NO****TN****GO TO BY (PAGE 0072 00-4)****YES**

NO AC POWER FROM TENT INTERFACE PANEL A5 — Continued

0072 00

Y

1. Turn all power OFF (see your -10 and TM 11-7010-256-12&P).
2. Remove cable W32 plug P6 (1) from tent interface panel jack J7 (2).
3. Measure resistance between pins on P6 (1) and P15 (3) of cable W32 as follows:
 - P6 pin C to P15 pin A
 - P6 pin D to P15 pin B
 - P6 pin E to P15 pin C
4. Does multimeter read 0 ohms for each set of measurements?

**YES****2Y**

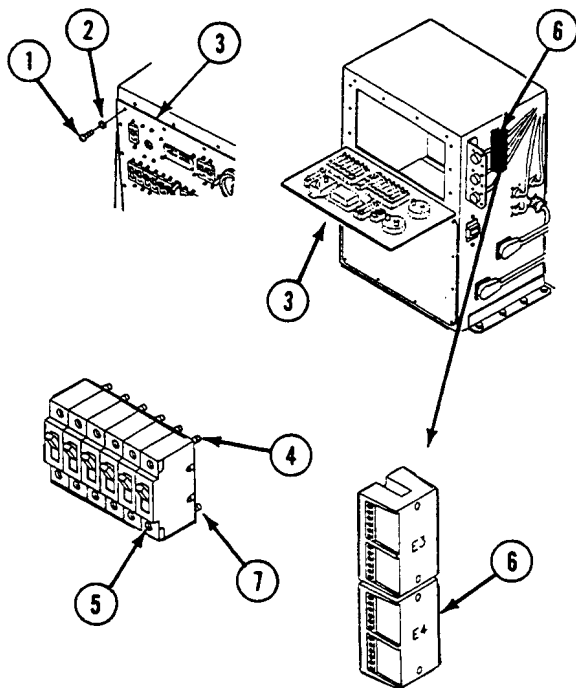
1. Faulty tent interface panel. Beyond unit maintenance repair.
2. Notify supervisor.

NO**YN**

1. Replace cable W32 (WP 0749 00).
2. Verify no faults found.

BY

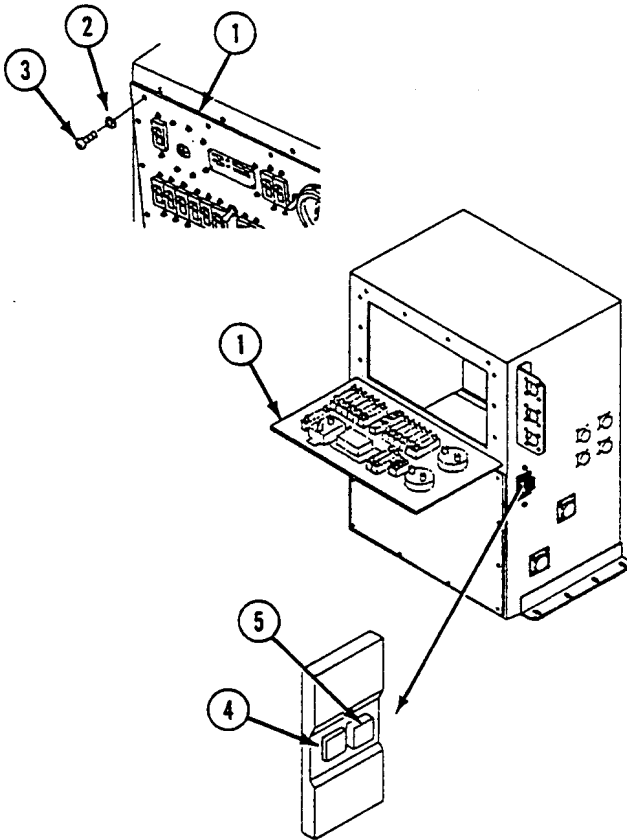
1. Remove ALL power from SICPS system (see your -10 and TM 11-7010-256-12&P).
2. Remove ten screws (1) and lockwashers (2) and lower the faceplate (3). Discard lockwashers.
3. Apply AC power to the SICPS system (see your -10 and TM 11-7010-256-12&P).
4. Set AC TENT INTERFACE PANEL circuit breaker to ON. See TM 11-7010-256-12&P.
5. Measure voltage between terminal 1 (4) of circuit breaker CB10 (5) to anywhere on bus bar E4 (6). Repeat measurement for terminal 2 (7) to bus bar E4.
6. Does multimeter read 110 volts AC for each measurement?

**YES****NO****BYN**

1. Replace circuit breaker CB10 (WP 0730 00).
2. Verify no faults found.

B2Y

1. Raise faceplate (1) and secure to power control enclosure with ten new lockwashers (2) and screws (3).
2. Press ground fault interrupter TEST button (4).
3. Does RESET button (5) pop out?



NO

B2YN

1. Faulty ground fault interrupter. Beyond unit maintenance repair.
2. Verify no faults found.

YES

B3Y

1. Go to No Power To AC Circuits (WP 0087 00).

NO DC POWER FROM TENT INTERFACE PANEL A5

0073 00

INITIAL SETUP:

<u>Maintenance Level</u>	<u>Personnel Required</u>
Unit	Power-Generation Equipment Repairer 52D10 Helper (H)
<u>Tools and Special Tools</u>	<u>References</u>
Digital Multimeter (WP 0780 00, Item 43)	See your -10
General Mechanic’s Tool Kit (WP 0780 00, Item 29)	TM 11-7010-256-12&P
<u>Materials/Parts</u>	<u>Equipment Condition</u>
Lockwasher (10)	Engine stopped (see your -10) Carrier blocked (see your -10)

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

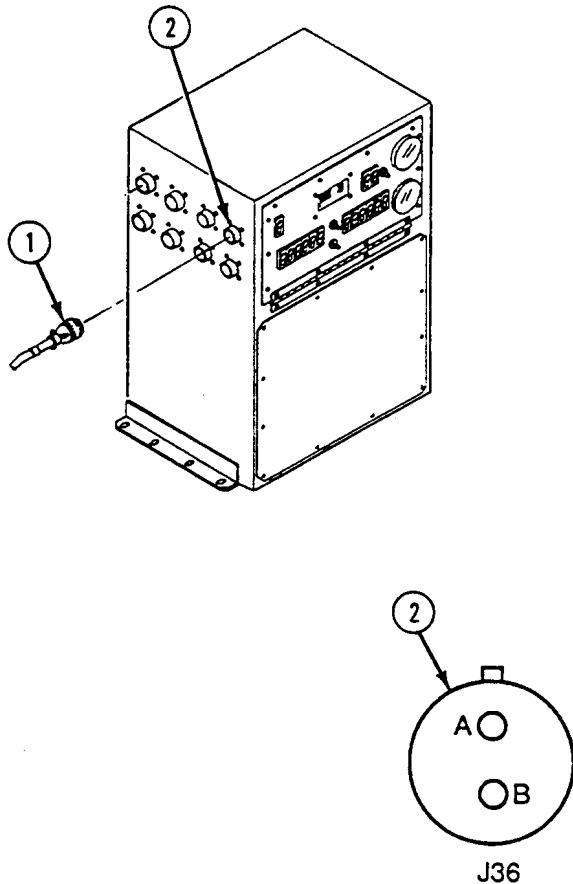
SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

DO NOT attempt power cable connections until grounding system and signal/data cabling have been completed.

T

1. Remove cable W32 plug P16 (1) from power control enclosure jack J36 (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Set DC TENT INTERFACE panel switch to ON. See TM 11-7010-256-12&P.
4. Measure voltage between jack J36 (2) socket A to socket B.
5. Does multimeter read 22 volts DC or more?

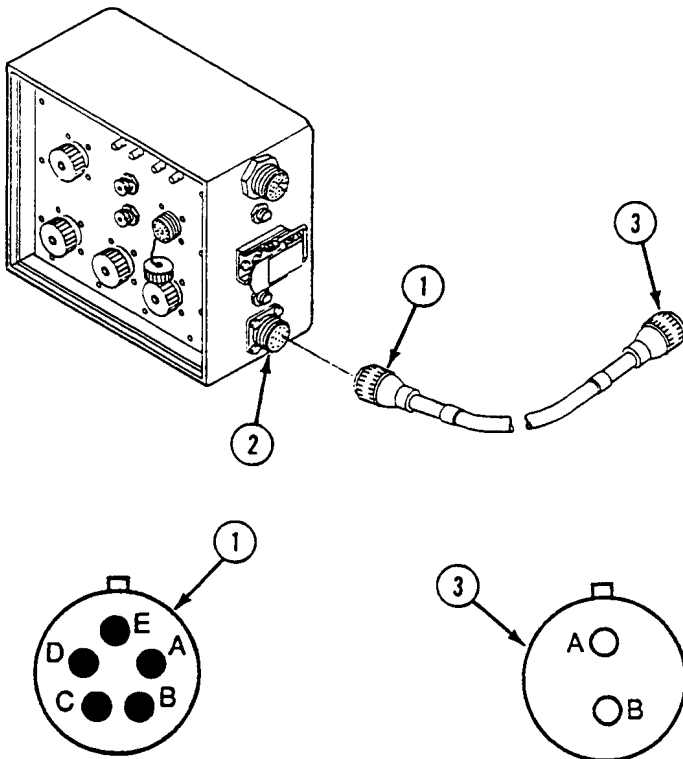
**NO****TN**GO TO **BY** (PAGE 0073 00-4)**YES**

NO DC POWER FROM TENT INTERFACE PANEL A5 — Continued

0073 00

Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove cable W32 plug P6 (1) from TENT INTERFACE panel jack J7 (2).
3. Measure resistance between pin A on plug P6 (1) and pin A on plug P16 (3) of cable W32.
3. Measure resistance between pin B on plug P6 (1) and pin B on plug P16 (3) of cable W32.
4. Does multimeter read 0 ohms for each set of measurements?

**YES****2Y**

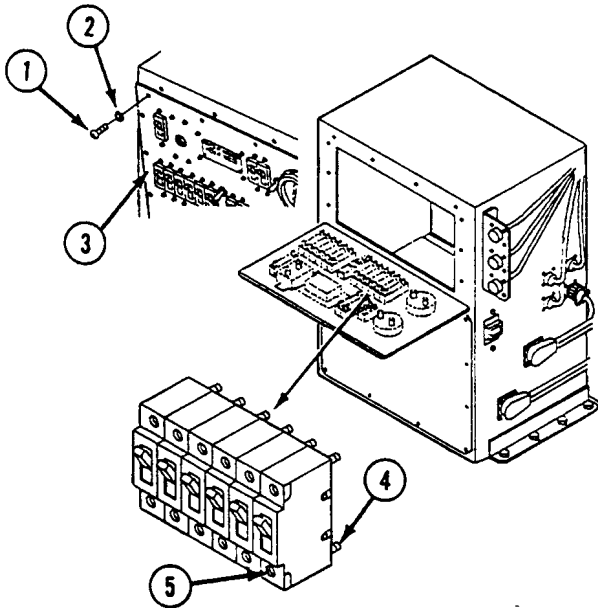
1. Faulty tent interface panel. Beyond unit maintenance repair.
2. Notify supervisor.

NO**YN**

1. Replace cable W32 (WP 0749 00).
2. Verify no faults found.

BY

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove ten screws (1) and lockwashers (2) and lower the faceplate (3). Discard lockwashers.
3. Set DC TENT INTERFACE panel circuit breaker to ON. See TM 11-7010-256-12&P.
4. Measure resistance between terminals (4) of circuit breaker CB16 (5).
5. Does multimeter read 0 ohms?

**NO****BYN**

1. Replace circuit breaker CB16 (WP 0730 00).
2. Verify no faults found.

YES**B2Y**

1. Raise faceplate and secure to power control enclosure with ten new lockwashers and screws.
2. Go to Power Control Enclosure DC Input/Output Inoperative (WP 0071 00).

NO POWER FROM ROADSIDE AC POWER EXTENSION BOX A6

0074 00

INITIAL SETUP:

Maintenance Level	Personnel Required
Unit	Power-Generation Equipment Repairer 52D10 Helper (H)
Tools and Special Tools	References
Digital Multimeter (WP 0780 00, Item 43)	TM 11-7010-256-12&P
General Mechanic’s Tool Kit (WP 0780 00, Item 29)	
Materials/Parts	Equipment Condition
Lockwasher (10)	Engine stopped (see your -10) Carrier blocked (see your -10)

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

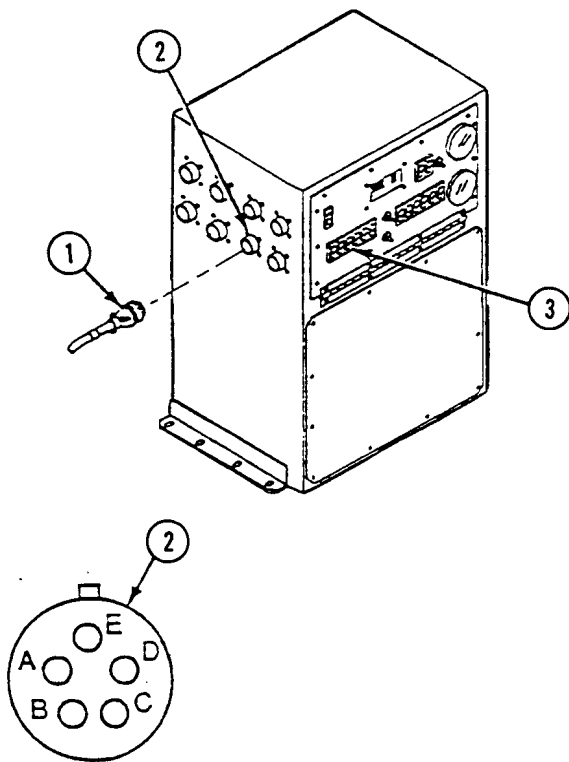
NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

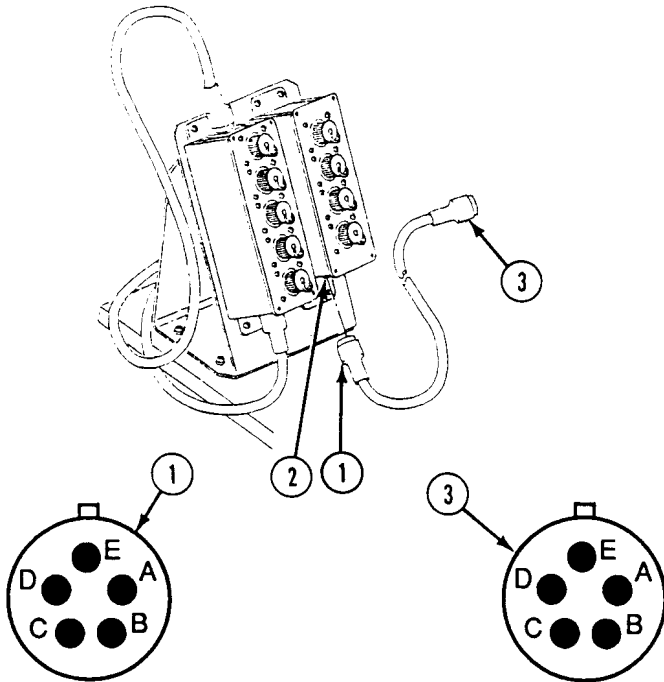
T

1. Remove cable W7 plug P10 (1) from power control enclosure jack J30 (2).
2. With AC power accepted, set AC LEFT OUTLETS switches (3) on power control enclosure panel to ON. See TM 11-7010-256-12&P.
3. Measure voltage between sockets A and B of jack J30 (2).
4. Measure voltage between sockets C and D of jack J30 (2).
5. Does multimeter read 110 volts AC or more for both measurements?

**NO****TN****GO TO BY (PAGE 0074 00-4)****YES**

Y

1. Set AC LEFT OUTLETS switches to OFF and remove all power from SICPS system (see your -10 and TM 11-7010-256-12&P).
2. Remove cable W7 plug P1 (1) from roadside AC power extension box jack J1 (2).
3. Measure resistance between pins of plugs P1 (1) and P10 (3) on cable W7 as follows:
 - P1 pin A to P10 pin A
 - P1 pin B to P10 pin B
 - P1 pin C to P10 pin C
 - P1 pin D to P10 pin D
 - P1 pin E to P10 pin E
4. Does multimeter read 0 ohms for each set of pins?

**YES****2Y**

1. Replace roadside AC power extension box A6 (WP 0735 00).
2. Verify no faults found.

NO**YN**

1. Replace cable W7 (WP 0743 00).
2. Verify no faults found.

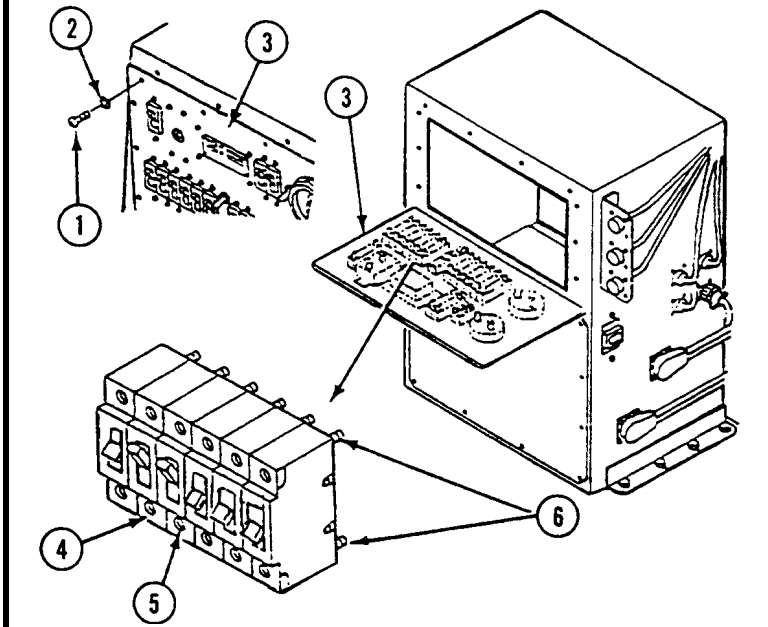
BY

1. Turn MASTER POWER switch to OFF (see your -10 and TM 11-7010-256-12&P).
2. Remove ten screws (1) and lockwashers (2) and lower the faceplate (3). Discard lockwashers.
3. Turn ON AC LEFT OUTLETS circuit breakers CB6 (4) and CB7 (5).
4. Measure resistance between terminals 1 and 2 (6) of circuit breakers CB6 (4) and CB7 (5).
5. Does multimeter read 0 ohms for each measurement?

NO**BYN****NOTE**

Resistance in CB6 and CB7 should be 0 ohms. If any resistance is present, replace that CB.

1. Replace circuit breaker CB6 and/or CB7 (WP 0730 00).
2. Verify no faults found.

**YES****B2Y**

1. Raise faceplate and secure to power control enclosure with ten new lockwashers and screws.
2. Go to No Power To AC Circuits (WP 0087 00).

NO POWER FROM CURBSIDE AC POWER EXTENSION BOX A7

0075 00

INITIAL SETUP:

Maintenance Level	Personnel Required
Unit	Power-Generation Equipment Repairer 52D10 Helper (H)
Tools and Special Tools	References
Digital Multimeter (WP 0780 00, Item 43) General Mechanic’s Tool Kit (WP 0780 00, Item 29)	TM 11-7010-256-12&P
Materials/Parts	Equipment Condition
Lockwasher (10)	Engine stopped (see your -10) Carrier blocked (see your -10)

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

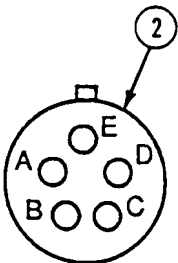
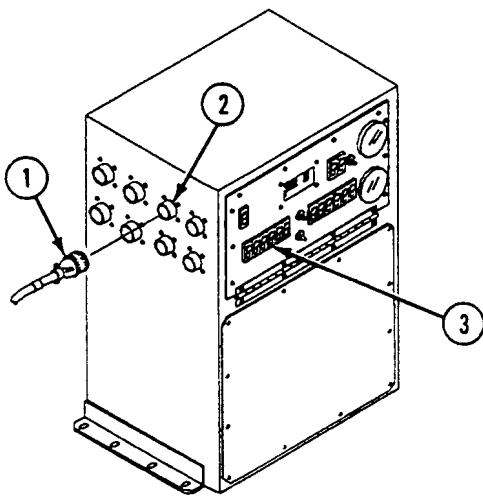
NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

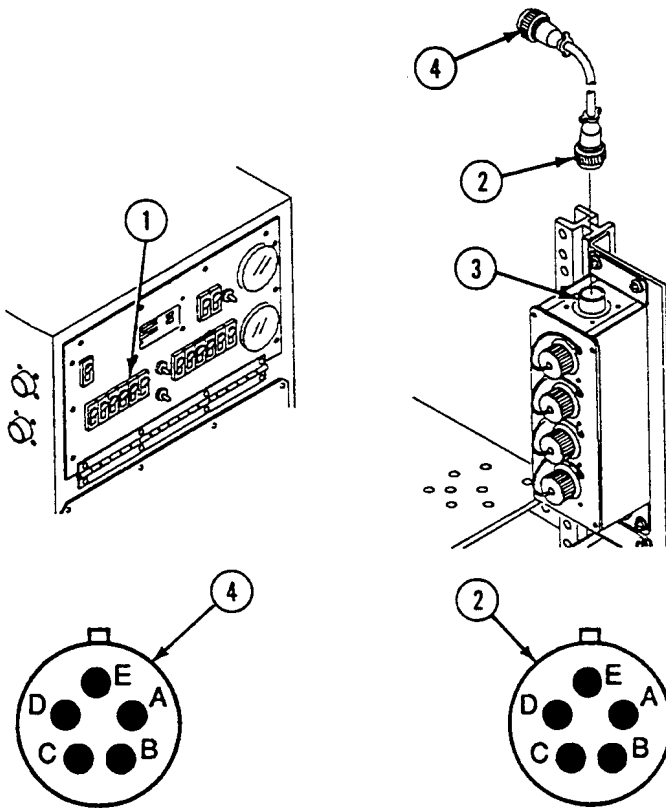
T

1. Remove cable W8 plug P11 (1) from power control enclosure jack J31 (2).
2. With AC power accepted, set AC RIGHT OUTLETS switches (3) on power control enclosure panel to ON. See TM 11-7010-256-12&P.
3. Measure voltage between sockets A and B of jack J31 (2).
4. Measure voltage between sockets C and D of jack J31 (2).
5. Does multimeter read 110 volts AC or more for both measurements?

**NO****TN****GO TO BY (PAGE 0075 00-4)****YES**

Y

1. Set AC RIGHT OUTLETS switches (1) to OFF and remove ALL power from SICPS system (see your -10 and TM 11-7010-256-12&P).
2. Remove cable W8 plug P1 (2) from curbside AC power extension box jack J1 (3).
3. Measure resistance between pins of plugs P1 (2) and P11 (4) on cable W8 as follows:
 - P1 pin A to P11 pin A
 - P1 pin B to P11 pin B
 - P1 pin C to P11 pin C
 - P1 pin D to P11 pin D
 - P1 pin E to P11 pin E
4. Does multimeter read 0 ohms for each set of pins?

**YES****2Y**

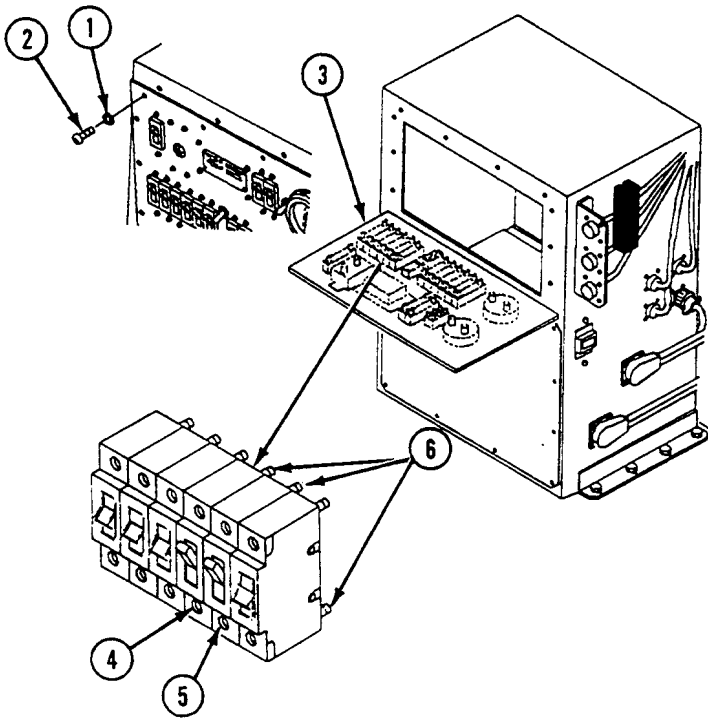
1. Replace curbside AC power extension box A7 (WP 0719 00).
2. Verify no faults found.

NO**YN**

1. Replace cable W8 (WP 0744 00).
2. Verify no faults found.

BY

1. Turn MASTER POWER switch to OFF (see your -10 and TM 11-7010-256-12&P).
2. Remove ten screws (2) and lockwashers (1). Lower faceplate (3). Discard lockwashers.
3. Turn ON AC RIGHT OUTLETS circuit breakers CB8 (4) and CB9 (5).
4. Measure resistance between terminal 1 and terminal 2 (6) of circuit breaker CB8 (4).
5. Measure resistance between terminal 1 and terminal 2 (6) of circuit breaker CB9 (5).
6. Does multimeter read 0 ohms for each measurement?

**NO****BYN****NOTE**

Resistance in CB8 and CB9 should be 0 ohms. If any resistance is present, replace that CB.

1. Replace circuit breaker CB8 and/or CB9 (WP 0730 00).
2. Verify no faults found.

YES**B2Y**

1. Raise faceplate and secure to power control enclosure with ten new lockwashers and screws.
2. Go to No Power To AC Circuits (WP 0087 00).

NO POWER FROM DC POWER EXTENSION BOX A9 (ALL EXCEPT JACK J23)

0076 00

INITIAL SETUP:

<u>Maintenance Level</u>	<u>Personnel Required</u>
Unit	Power-Generation Equipment Repairer 52D10 Helper (H)
<u>Tools and Special Tools</u>	<u>References</u>
Digital Multimeter (WP 0780 00, Item 43)	See your -10
General Mechanic’s Tool Kit (WP 0780 00, Item 29)	TM 11-7010-256-12&P
<u>Materials/Parts</u>	<u>Equipment Condition</u>
Lockwasher (10)	Engine stopped (see your -10) Carrier blocked (see your -10)

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

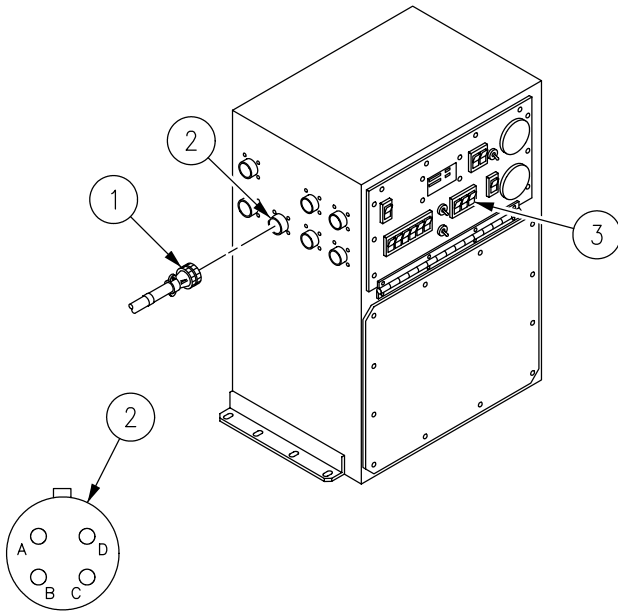
NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

NO POWER FROM DC POWER EXTENSION BOX A9 (ALL EXCEPT JACK J23) — Continued**0076 00****T**

1. Remove cable W10 plug P14 (1) from power control enclosure jack J34 (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Set DC LEFT OUTLETS switches (3) on power control enclosure panel to ON. See TM 11-7010-256-12&P.
4. Measure voltage between sockets A and B of jack J34 (2). Repeat measurement for sockets C and D.
5. Does multimeter read 22 volts DC or more for each measurement?

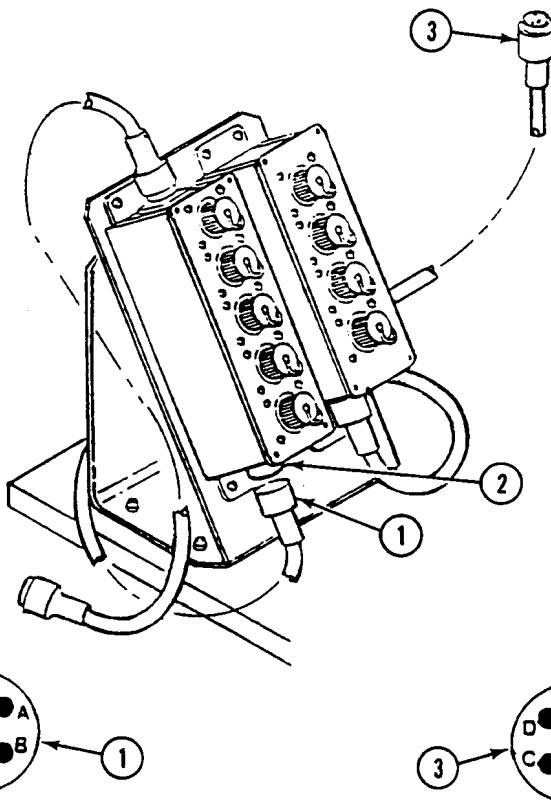
**NO****TN****GO TO BY (PAGE 0076 00-4)****YES**

NO POWER FROM DC POWER EXTENSION BOX A9 (ALL EXCEPT JACK J23) — Continued

0076 00

Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove cable W10 plug P1 (1) from DC power extension box A9 jack J1 (2).
3. Measure resistance between pins of plugs P1 (1) and P14 (3) on cable W10 as follows:
 - P1 pin A to P14 pin A
 - P1 pin B to P14 pin B
 - P1 pin C to P14 pin C
 - P1 pin D to P14 pin D
4. Does multimeter read 0 ohms for each set of pins?

**NO****YN**

1. Replace cable W10 (WP 0746 00).
2. Verify no faults found.

YES**2Y**

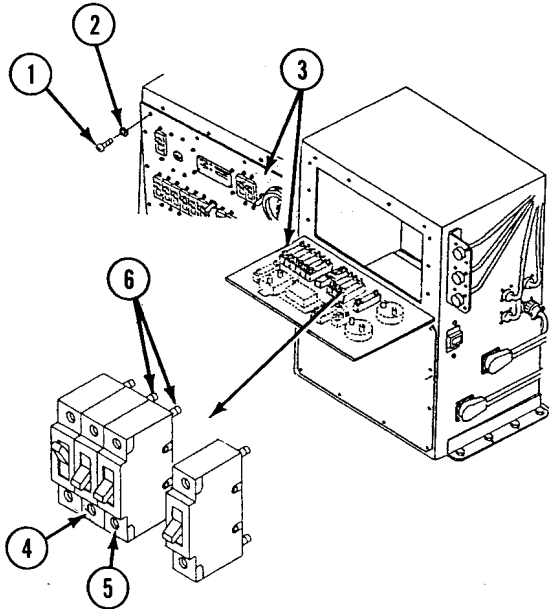
1. Replace DC power extension box A9 (WP 0735 00).
2. Verify no faults found.

NO POWER FROM DC POWER EXTENSION BOX A9 (ALL EXCEPT JACK J23) — Continued

0076 00

BY

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove ten screws (1) and lockwashers (2) and lower the faceplate (3). Discard lockwashers.
3. Turn ON DC LEFT OUTLETS circuit breakers CB12 (4) and CB13 (5).
4. Measure resistance between terminals 1 and 2 (6) of circuit breakers CB12 (4) and CB13 (5).
5. Does multimeter read 0 ohms for each measurement?

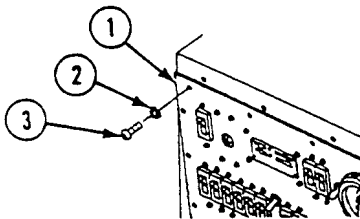
**NO****BYN****NOTE**

Resistance in CB12 and CB13 should be 0 ohms. If any resistance is present, replace that CB.

1. Replace circuit breakers CB12 and/or CB13 (WP 0730 00).
2. Verify no faults found.

YES**B2Y**

1. Raise faceplate (1) and secure to power control enclosure with ten new lockwashers (2) and screws (3).



2. Go to Power Control Enclosure A1 DC Input/Output Inoperative (WP 0071 00).

NO POWER FROM DC POWER EXTENSION BOX A9, JACK J23 (JTIDS)**0077 00****INITIAL SETUP:**Maintenance Level

Unit

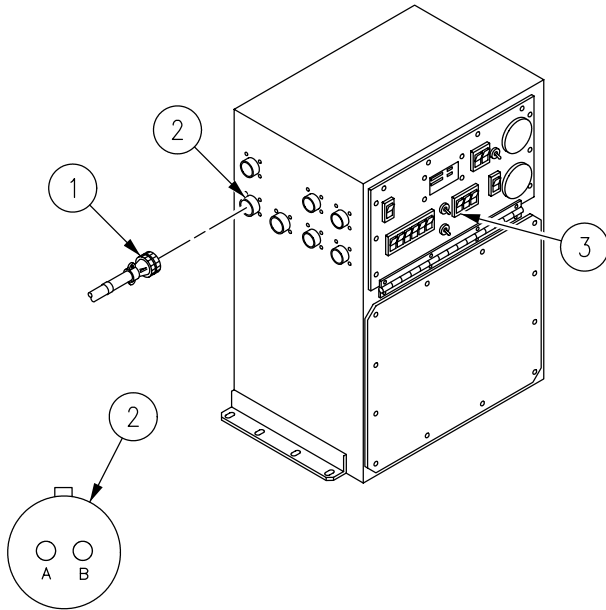
Personnel RequiredPower-Generation Equipment Repairer 52D10
Helper (H)Tools and Special ToolsDigital Multimeter (WP 0780 00, Item 43)
General Mechanic's Tool Kit (WP 0780 00, Item 29)ReferencesSee your -10
TM 11-7010-256-12&PMaterials/Parts

Lockwasher (10)

Equipment ConditionEngine stopped (see your -10)
Carrier blocked (see your -10)**WARNING****HIGH VOLTAGE** is used in the operation of this equipment.**DEATH ON CONTACT** may result if personnel fail to observe safety precautions.**NEVER** work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.**SHUT OFF POWER** supply to equipment before beginning work. Make sure all external power is off/disconnected.**BE CAREFUL** not to contact high-voltage connections when installing or operating this equipment.

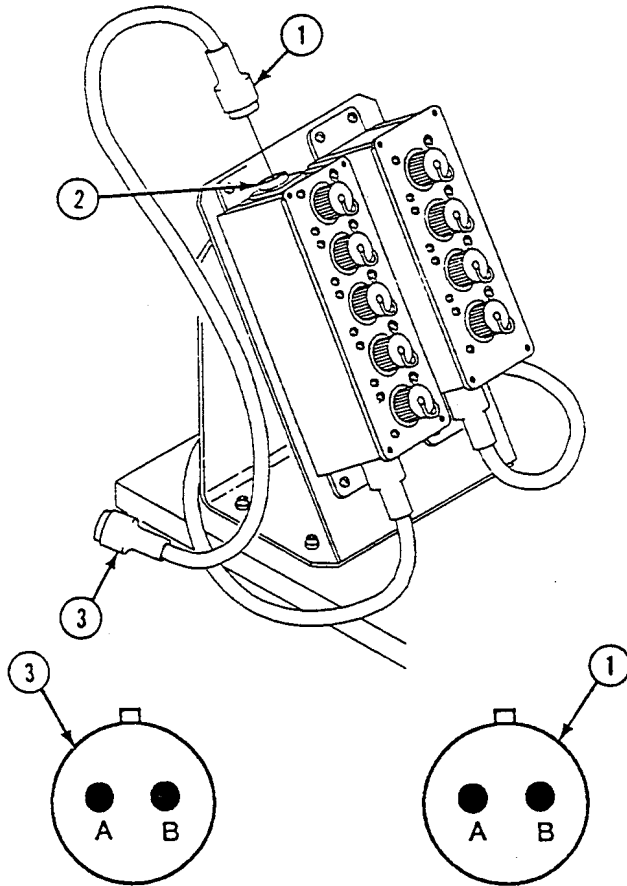
T

1. Remove cable W45 plug P13 (1) from power control enclosure jack J33 (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Set JTIDS switch (3) on power control enclosure panel to ON. See TM 11-7010-256-12&P.
4. Measure voltage between sockets A and B of J33 (2).
5. Does multimeter read 22 volts DC or more?

**NO****TN****GO TO BY (PAGE 0077 00-4)****YES**

NO POWER FROM DC POWER EXTENSION BOX A9, JACK J23 (JTIDS) — Continued**0077 00****Y**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove cable W45 plug P1 (1) from DC power extension box A9 jack J2 (2).
3. Measure resistance between plug P1 (1) pin A and P13 (3) pin A of cable W45. Repeat measurement for pins B.
4. Does multimeter read 0 ohms for each measurement?

**NO****YN**

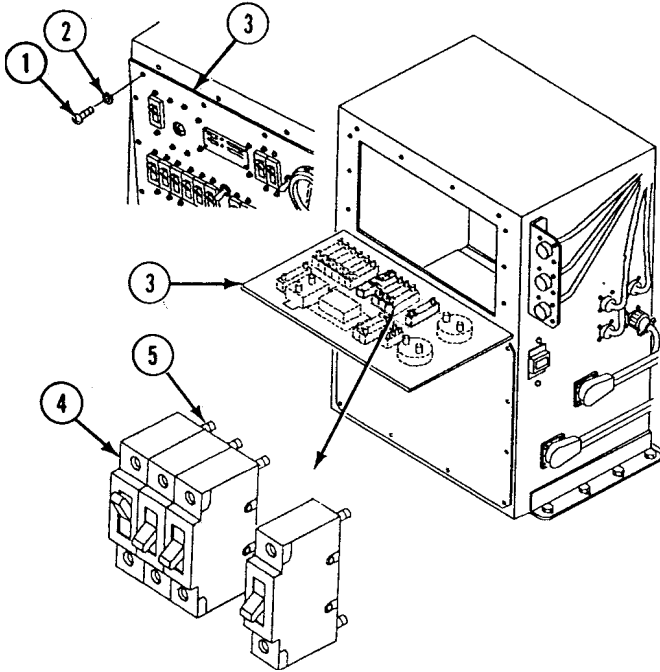
1. Replace cable W45 (WP 0754 00).
2. Verify no faults found.

YES**2Y**

1. Replace DC power extension box A9 (WP 0735 00).
2. Verify no faults found.

BY

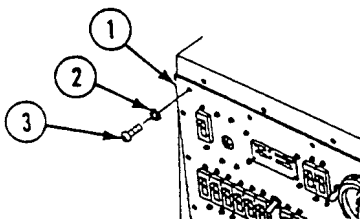
1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove ten screws (1) and lockwashers (2) and lower the faceplate (3). Discard lockwashers.
3. Turn ON JTIDS circuit breaker CB11 (4).
4. Measure resistance between terminals 1 and 2 (5) of circuit breaker CB11 (4).
5. Does multimeter read 0 ohms?

**NO****BYN**

1. Replace circuit breaker CB11 (WP 0730 00).
2. Verify no faults found.

YES**B2Y**

1. Raise faceplate (1) and secure to power control enclosure with ten new lockwashers (2) and screws (3).
2. Go to Power Control Enclosure A1 DC Input/Output Inoperative (WP 0071 00).



NO DC POWER TO SINGLE POINT LAN GROUND BOX A15

0078 00

INITIAL SETUP:

Maintenance Level

Unit

References

See your -10
TM 11-7010-256-12&P

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)
General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped (see your -10)
Carrier blocked (see your -10)

Personnel Required

Power-Generation Equipment Repairer 52D10
Helper (H)

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

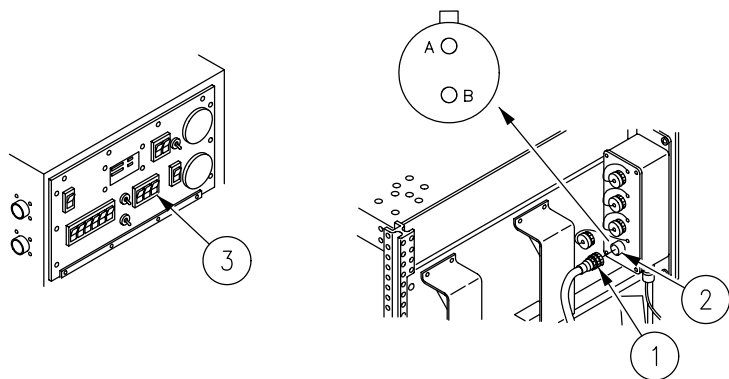
NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

T

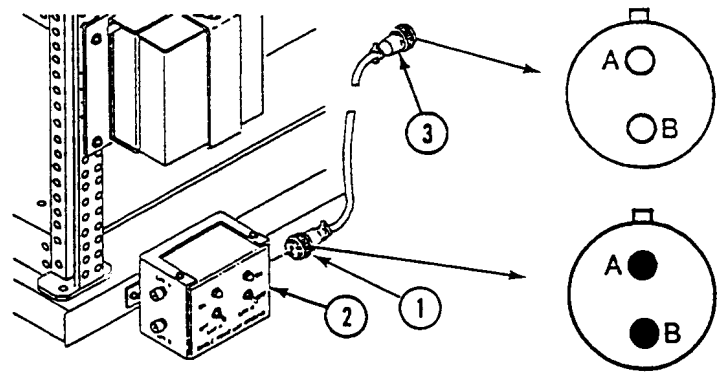
1. Remove cable W40 plug P1 (1) from DC power extension box A8 jack J17 (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Set DC RIGHT OUTLETS switches (3) on power control enclosure to ON. See TM 11-7010-256-12&P.
4. Measure voltage between sockets A and B of J17 (2).
5. Does multimeter read 22 volts DC or more?

**NO****TN**

1. Go To No Power From DC Power Extension Box A9 (WP 0076 00).
2. Verify no faults found.

YES**Y**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Disconnect cable W40 plug P2 (1) from single point LAN ground box A15 jack J1 (2).
3. Measure resistance between plug P1 (3) pin A and P2 (1) pin A of cable W40. Repeat measurement for pins B.
4. Does multimeter read 0 ohms for each measurement?

**NO****YN**

1. Replace cable W40 (WP 0752 00).
2. Verify no faults found.

YES

2Y

- | |
|---|
| <ol style="list-style-type: none">1. Repair LAN ground box A15 (WP 0722 00).2. Verify no faults found. |
|---|

NO POWER FROM UPS POWER EXTENSION BOX A16

0079 00

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Power-Generation Equipment Repairer 52D10
Helper (H)

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)
General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)
Carrier blocked (see your -10)

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

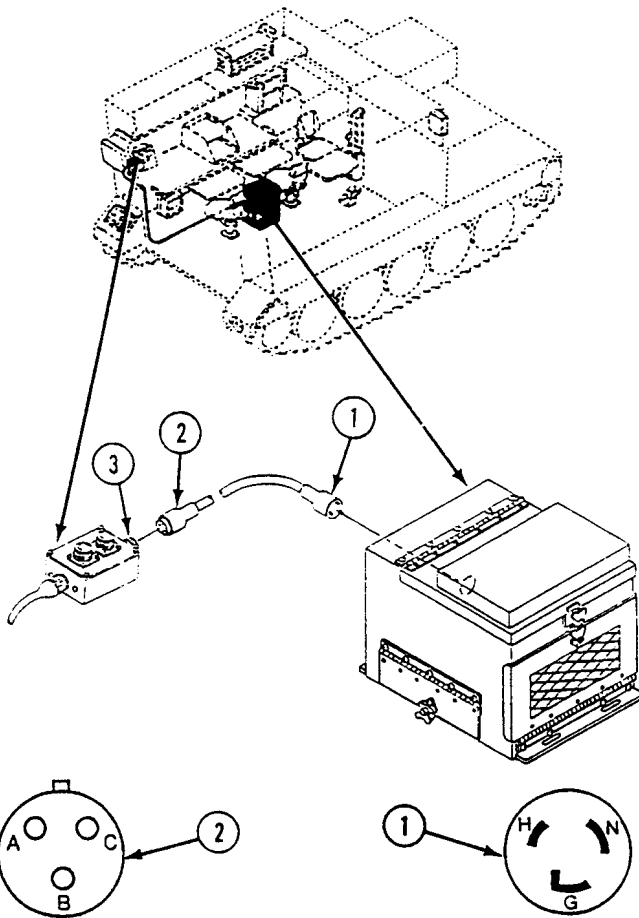
NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

T

1. Open front cover on ATCCS UPS storage box and remove cable W41 plug P1 (1) from UPS jack AC OUT.
2. Remove cable W41 plug P2 (2) from UPS power extension box A16 jack J4 (3).
3. Measure resistance between pins of plugs P1 (1) and P2 (2) of cable W41 as follows:
 - P1 pin H to P2 socket A
 - P1 pin N to P2 socket B
 - P1 pin G to P2 socket C
4. Does multimeter read 0 ohms for each measurement?

YES
↓

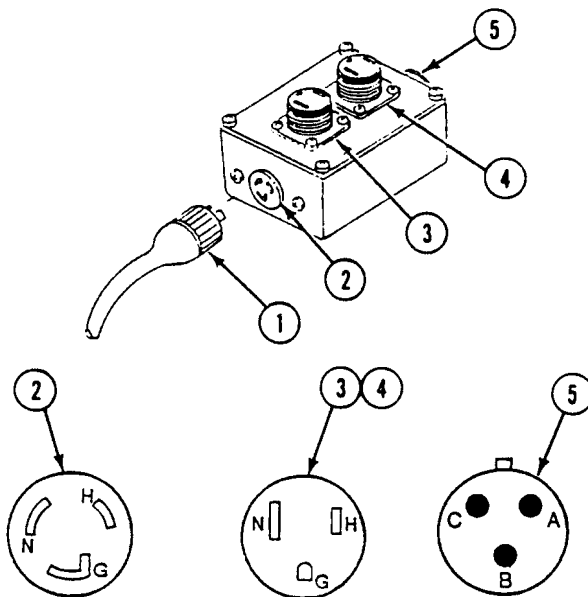
NO →

TN

1. Replace cable W41 (WP 0753 00).
2. Verify no faults found.

Y

1. Remove cable W50 plug P1 (1) from UPS power extension box A16 jack J1 (2).
2. Measure resistance between jacks J1 (2), J2 (3), J3 (4), and J4 (5) of UPS power extension box A16 as follows:
 - J1 socket H to J2 and J3 socket H
 - J1 socket N to J2 and J3 socket N
 - J1 socket G to J2 and J3 socket G
 - J1 socket H to J4 pin A
 - J1 socket N to J4 pin B
 - J1 socket G to J4 pin C
3. Does multimeter read 0 ohms for each measurement?

**YES****2Y**

1. Faulty ATCCS UPS power.
2. Notify your supervisor.

NO**YN**

1. Replace/repair UPS power extension box A18 (WP 0726 00).
2. Verify no faults found.

NO AC/DC INPUT TO ATCCS UPS POWER BOX (M1068 ONLY)**0080 00****INITIAL SETUP:**Maintenance Level

Unit

Personnel RequiredPower-Generation Equipment Repairer 52D10
Helper (H)Tools and Special ToolsDigital Multimeter (WP 0780 00, Item 43)
General Mechanic's Tool Kit (WP 0780 00, Item 29)References

TM 11-7010-256-12&P

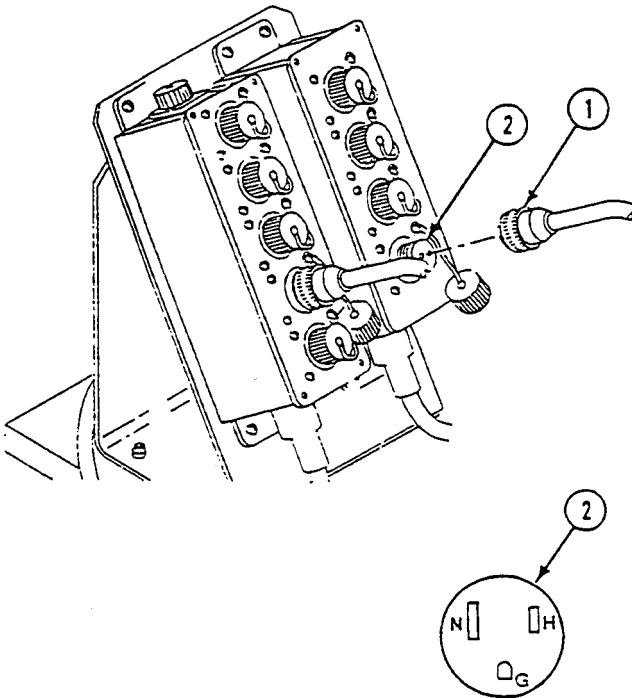
Materials/Parts

Lockwasher (2)

Equipment ConditionEngine stopped (see your -10)
Carrier blocked (see your -10)**WARNING****HIGH VOLTAGE** is used in the operation of this equipment.**DEATH ON CONTACT** may result if personnel fail to observe safety precautions.**NEVER** work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.**SHUT OFF POWER** supply to equipment before beginning work. Make sure all external power is off/disconnected.**BE CAREFUL** not to contact high-voltage connections when installing or operating this equipment.

T

1. Remove cable W43 plug P2 (1) from roadside AC power extension box A6 jack J6 (2).
2. Apply AC power to SICPS system. See TM 11-7010-256-12&P.
3. Set AC LEFT OUTLETS switches on power control enclosure panel to ON.
4. Measure voltage between sockets H and N of J6 (2).
5. Does multimeter read 110 volts AC or more?

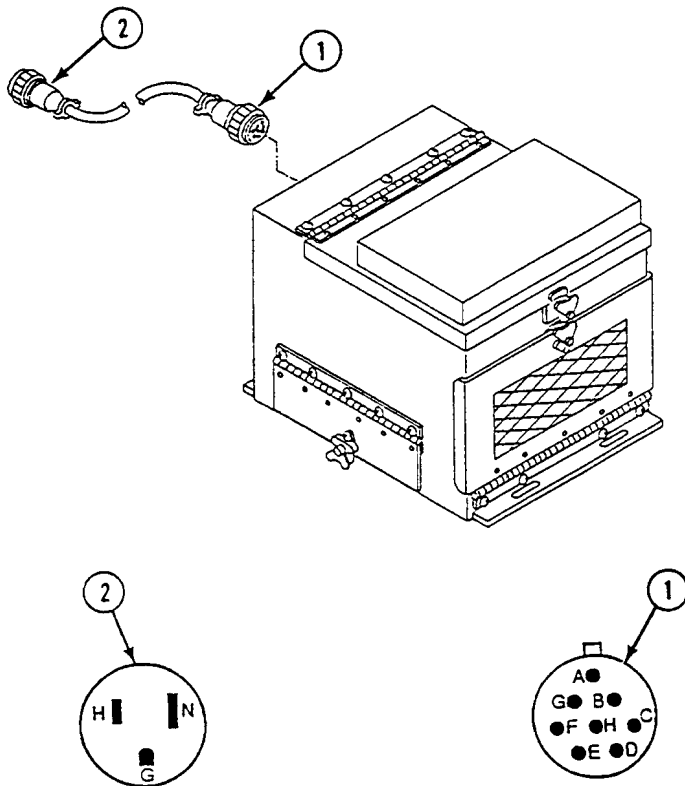
**NO****TN**

1. Go to No Power From Roadside AC Power Extension Box A6 (WP 0074 00).

YES

Y

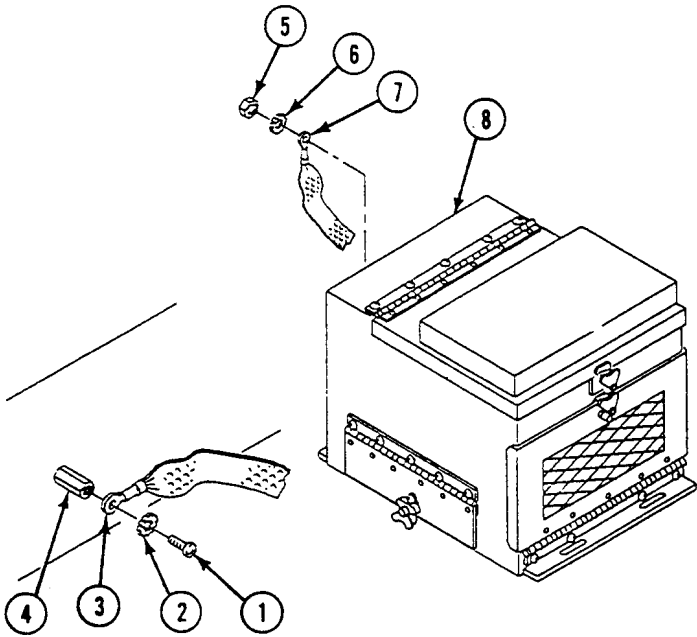
1. Turn all AC power OFF. See TM 11-7010-256-12&P.
2. Open front cover on ATCCS UPS storage box and remove cable W43 plug P1 (1) from UPS jack AC IN.
3. Measure resistance between pins of plugs P2 (2) and P1 (1) of cable W43 as follows:
 - P2 pin H to P1 pin B
 - P2 pin N to P1 pin A
 - P2 pin G to P1 pin D
 - P1 pin F to P1 pin G
4. Does multimeter read 0 ohms for each measurement?

**YES****NO****YN**

1. Replace cable W43 (WP 0753 00).
2. Verify no faults found.

2Y

1. Remove screw (1), lockwasher (2), and ground strap W12 terminal (3) from ground lug (4). Discard lockwasher.
2. Remove nut (5), lockwasher (6), and ground strap W12 terminal (7) from ATCCS UPS storage box (8). Discard lockwasher.
3. Measure resistance between terminals (3) and (7) of ground strap W12.
4. Does multimeter read 0 ohms?

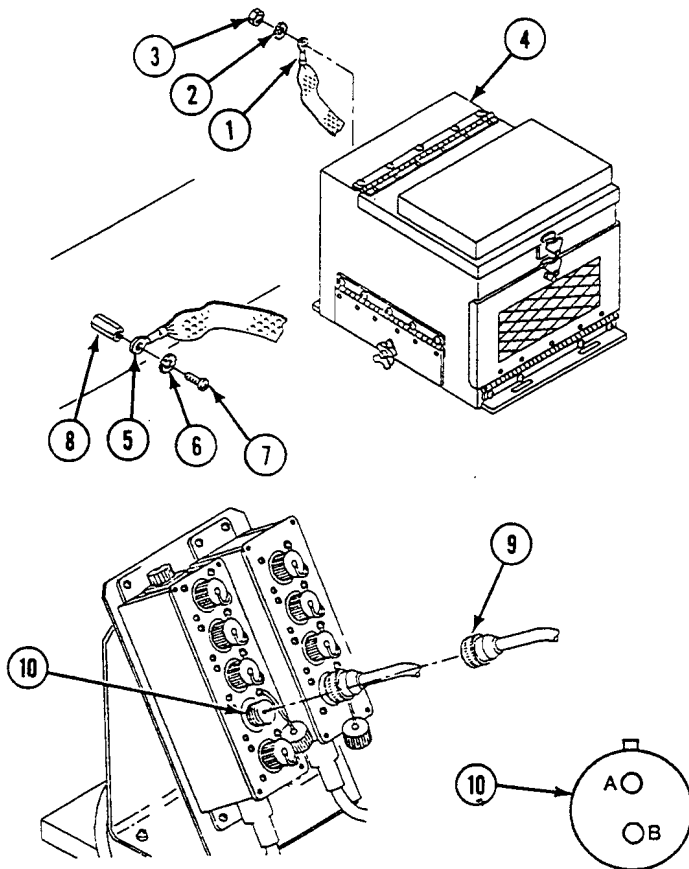
**NO****2YN**

1. Replace ground strap W12 (WP 0748 00).
2. Verify no faults found.

YES

3Y

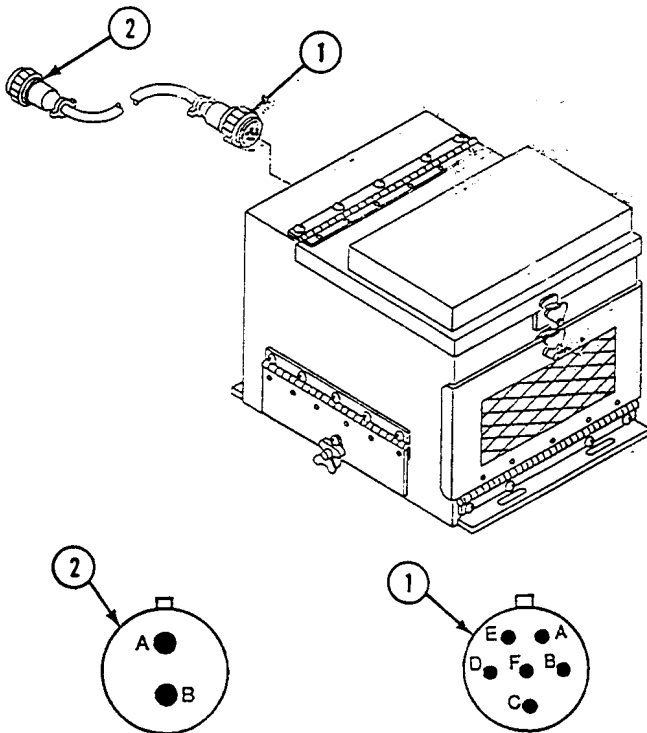
1. Install ground strap W12 terminal (1), new lockwasher (2), and nut (3) on ATCCS UPS storage box (4).
2. Install ground strap W12 terminal (5), new lockwasher (6), and screw (7) on ground lug (8).
3. Remove cable W42 plug P2 (9) from DC power extension box A9 jack J21 (10).
4. Set MASTER SWITCH to ON (see your -10).
5. Set DC LEFT OUTLETS switches on power control enclosure panel to ON. See TM 11-7010-256-12&P.
6. Measure voltage between sockets A and B of J21 (10).
7. Does multimeter read 22 volts DC or more?

**YES****3YN**

1. Go to No Power from DC Power Extension Box A9 (WP 0076 00).

4Y

1. Set MASTER SWITCH to OFF (see your -10).
2. Open front cover on ATCCS UPS storage box and remove cable W42 plug P1 (1) from UPS jack DC IN.
3. Measure resistance between pins of plugs P2 (2) and P1 (1) of cable W42 as follows:
P2 pin A to P1 pin A, E, and F
P2 pin B to P1 pin B, C, and D
4. Does multimeter read 0 ohms for each measurement?

**NO****4YN**

1. Replace cable W42 (WP 0753 00).
2. Verify no faults found.

YES**5Y**

1. Faulty ATCCS UPS power. Beyond unit maintenance repair.
2. Notify supervisor.

**IN BLACKOUT MODE, FLUORESCENT LIGHTS OPERATE
INCORRECTLY (M1068 ONLY)**

0081 00**INITIAL SETUP:**Maintenance Level

Unit

References

See your -10

TM 11-7010-256-12&P

Tools and Special Tools

Digital multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

All AC external and internal power is OFF
(TM 11-7010-256-12&P)Materials/Parts

Lockwasher (10)

Carrier blocked (see your -10)

Personnel Required

Power-Generation Equipment Repairer 52D10

Helper (H)

WARNING

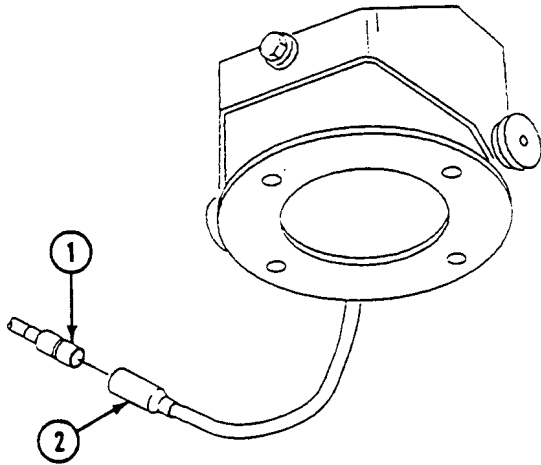
**HIGH VOLTAGE** is used in operation of this equipment.**DEATH ON CONTACT** may result if personnel fail to observe safety precautions.**NEVER** work on equipment unless at least one other person is near by and is familiar with its operations and hazards. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.**SHUT OFF POWER** supply to equipment before beginning work. Make sure all AC external power is off/disconnected.**BE CAREFUL** not to contact high-voltage connections when installing or operating this equipment.

**IN BLACKOUT MODE, FLUORESCENT LIGHTS OPERATE INCORRECTLY
(M1068 ONLY) — Continued**

0081 00

T

1. Disconnect cable W28 plug P2 (1) from light lead (2).
2. Ensure ramp door is open or down. Turn MASTER SWITCH to ON (see your -10 and TM 11-7010-256-12&P).
3. Turn on dome lights from either the front dome light switch (on master switch panel) or at the rear dome light switch near the ramp. To do this, the blackout-bypass switch must be OFF, the ramp up, and the rear door closed.
4. Measure voltage between plug P2 (1) and ground. Use multimeter.
5. Does multimeter read 22 volts DC or more?

**NO****TN****GO TO BY (PAGE 0081 00-3)****YES****Y**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Have light bulbs been replaced?

NO**YN**

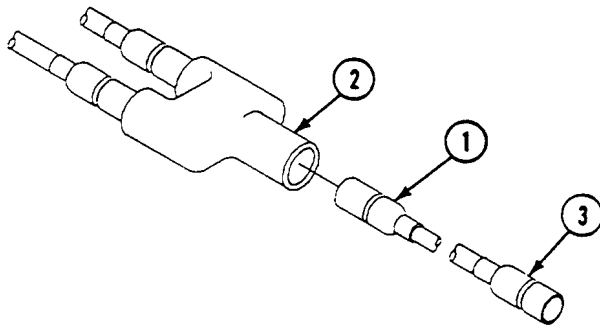
1. Replace light bulbs (WP 0276 00).
2. Verify no faults found.

YES**2Y**

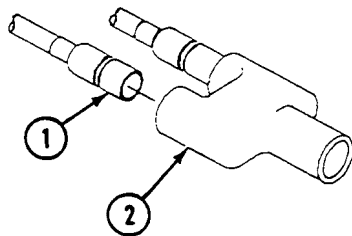
1. Repair light assembly (WP 0276 00).
2. Verify no faults found.

**IN BLACKOUT MODE, FLUORESCENT LIGHTS OPERATE INCORRECTLY
(M1068 ONLY) — Continued****0081 00****BY**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove cable W28 plug P1 (1) from adapter plug P1 (2).
3. Measure resistance between cable W28 plugs P1 (1) and P2 (3).
4. Does multimeter read 0 ohms?

**YES****B2Y**

1. Remove lead 38B (1) from adapter plug P3 (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. Measure voltage between lead 38B (1) and ground.
4. Does multimeter read 22 volts DC or more?

**YES****NO****BYN**

1. Replace cable W28 (WP 0750 00).
2. Verify no faults found.

NO**B2YN**

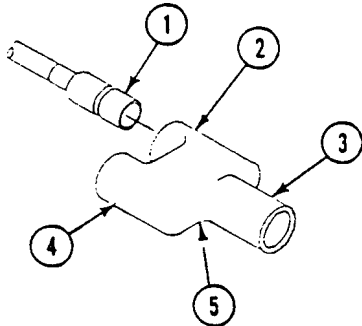
1. Go to Dome Lights Malfunction (M577A2 Only) (WP 0042 00).

**IN BLACKOUT MODE, FLUORESCENT LIGHTS OPERATE INCORRECTLY
(M1068 ONLY) — Continued**

0081 00

B3Y

1. Set MASTER SWITCH to OFF (see your -10).
2. Remove cable W35 plug P1 (1) from adapter plug P2 (2).
3. Measure resistance between plugs P1 (3), P2 (2), and P3 (4) of adapter (5).
4. Does multimeter read 0 ohms for each measurement?



NO

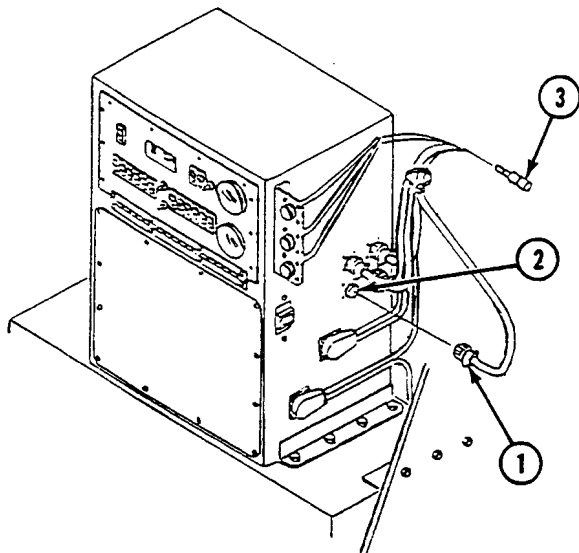
B3YN

1. Replace adapter (WP 0750 00).
2. Verify no faults found.

YES

B4Y

1. Remove cable W35 plug P9 (1) from jack J29 (2) of power control enclosure.
2. Measure resistance between plugs P1 (3) and P9 (1) of cable W35.
3. Does multimeter read 0 ohms?



NO

B4YN

1. Replace cable W35 (WP 0750 00).
2. Verify no faults found.

YES

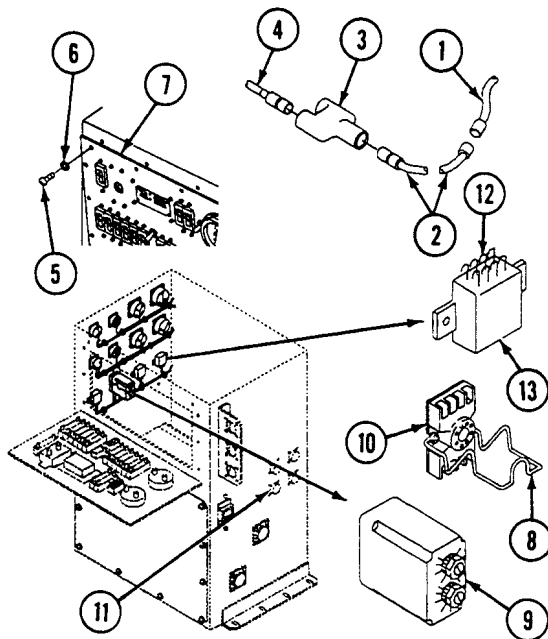
**IN BLACKOUT MODE, FLUORESCENT LIGHTS OPERATE INCORRECTLY
(M1068 ONLY) — Continued**

0081 00

B5Y**WARNING**

Make sure ALL AC external and internal power is OFF.

1. Install front light lead 38B (1) on cable W28 P2 (2) and cable to plug P1 of adapter (3).
2. Install rear domelight lead 38B (4) on plug P3 of adapter (3).
3. Remove ten screws (5) and lockwashers (6) and lower the faceplate (7). Discard lockwashers.
4. Lift relay bail (8) and remove XK2 relay (9) from relay socket (10).
5. Measure resistance between jack J29 center pin (11) and pin X1 (12) of relay XK5 (13).
6. Does multimeter read 0 ohms?



YES

NO

B5YN

1. Faulty inside lead 34A of power control enclosure.
2. Notify your supervisor.

**IN BLACKOUT MODE, FLUORESCENT LIGHTS OPERATE INCORRECTLY
(M1068 ONLY) — Continued**

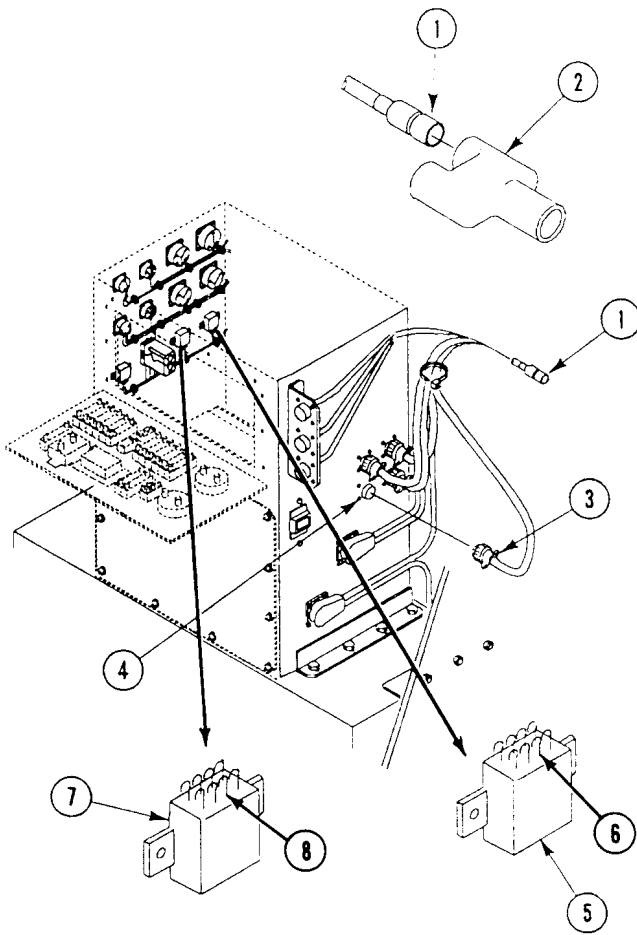
0081 00

B6Y

1. Install cable W35 plug P1 (1) on adapter plug P2 (2).
2. Install W35 plug P9 (3) on jack 29 (4) of power control enclosure.
3. Measure resistance between relay XK5 (5) pin X2 (6), and relay XK3 (7) pin X2 (8).
4. Does multimeter read 0 ohms?

NO**B6YN**

1. Faulty lead 3F of XK2.
2. Notify your supervisor.

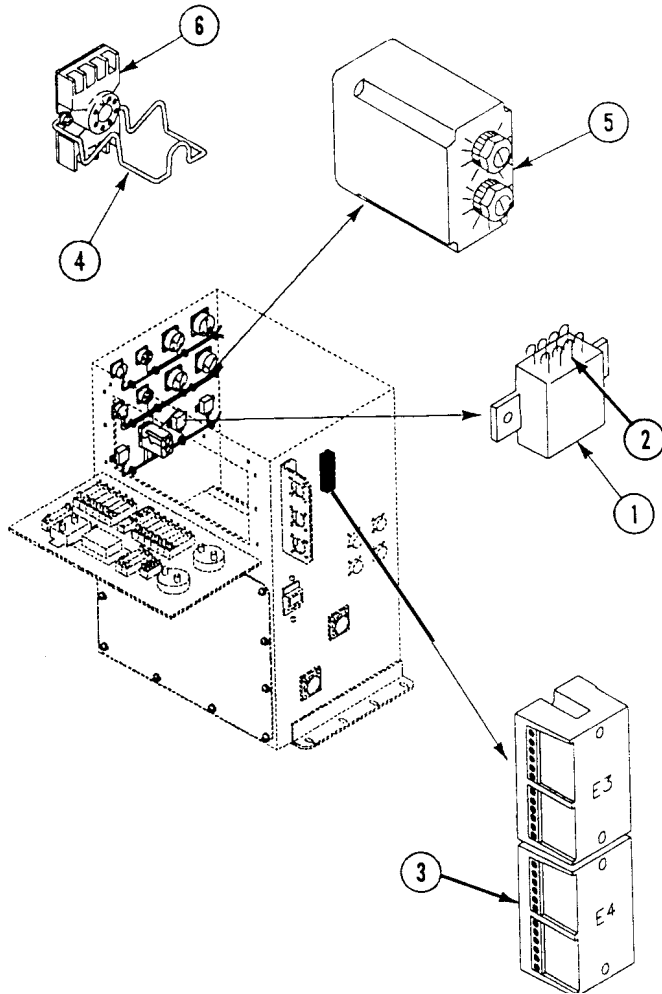
**YES**

**IN BLACKOUT MODE, FLUORESCENT LIGHTS OPERATE INCORRECTLY
(M1068 ONLY) — Continued**

0081 00

B7Y

1. Measure resistance between relay XK3 (1) pin X2 (2) and terminal block E4 (3).
2. Does multimeter read 0 ohms?
3. Lift relay bail (4) and install XK2 relay (5) on relay socket (6).

**YES****NO****B7YN**

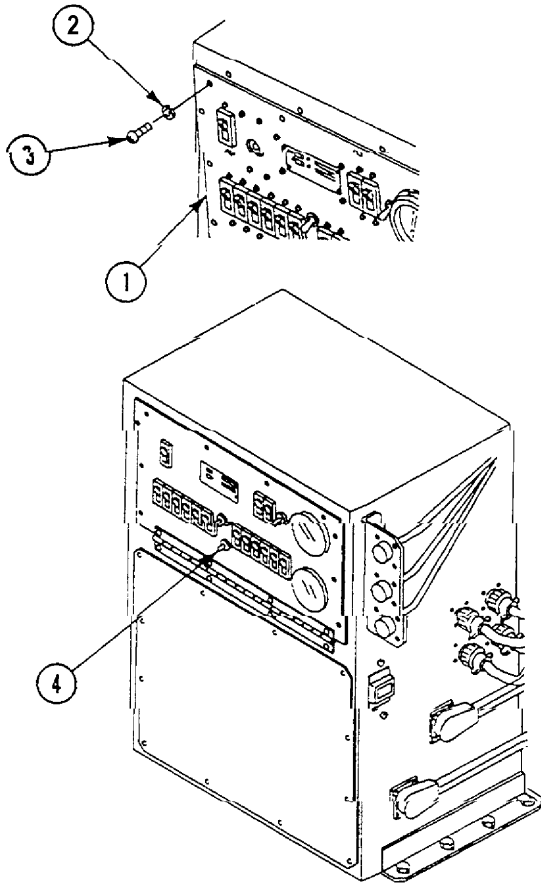
1. Faulty lead 3E of XK3.
2. Notify your supervisor.

**IN BLACKOUT MODE, FLUORESCENT LIGHTS OPERATE INCORRECTLY
(M1068 ONLY) — Continued**

0081 00

B8Y

1. Raise faceplate (1) and secure to enclosure with ten new lockwashers (2) and screws (3).
2. Turn MASTER SWITCH to ON. Set vehicle BLACKOUT LIGHT to ON. Be sure ramp door is open (see your -10).
3. Apply AC power to SICPS system. Set BLACKOUT ENABLE switch (4) on power control enclosure panel in upward position. See TM 11-7010-256-12&P.
4. Do fluorescent lights illuminate?

**NO****B8YN**

1. Faulty relay XK5.
2. Notify your supervisor.

YES**B9Y**

1. Verify no faults found.

FLUORESCENT LIGHTS DO NOT OPERATE (M1068 ONLY)

0082 00

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Power-Generation Equipment Repairer 52D10
Helper (H)

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)
General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)
Carrier blocked (see your -10)

WARNING



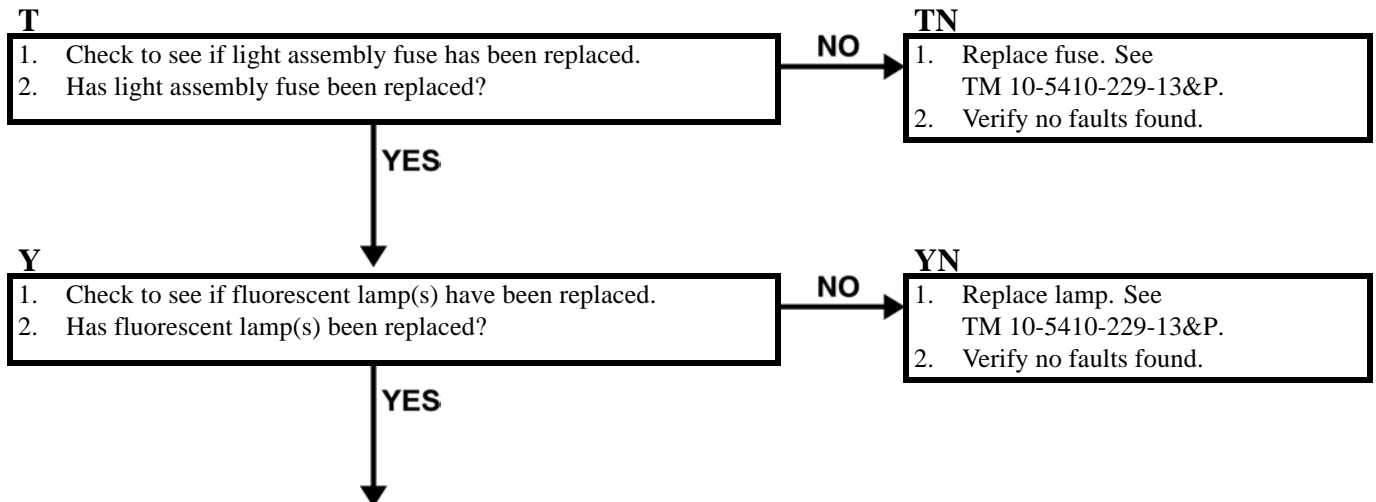
HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

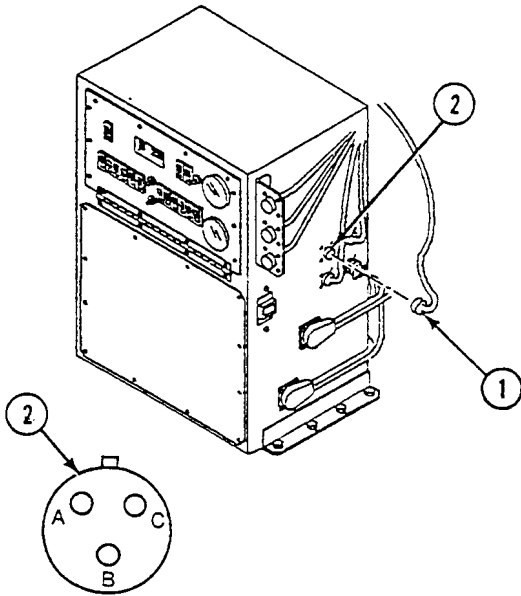
SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.



2Y

1. Remove all power (see your-10 and TM 11-7010-256-12&P).
2. Remove cable W11 plug P17 (1) from power control enclosure jack J37 (2).
3. Apply AC power and set AC LIGHTS and BLACKOUT ENABLE switches to upward position. See TM 11-7101-256-12&P.
4. Measure voltage between sockets A and B of jack J37 (2).
5. Does multimeter read 110 volts AC or more?

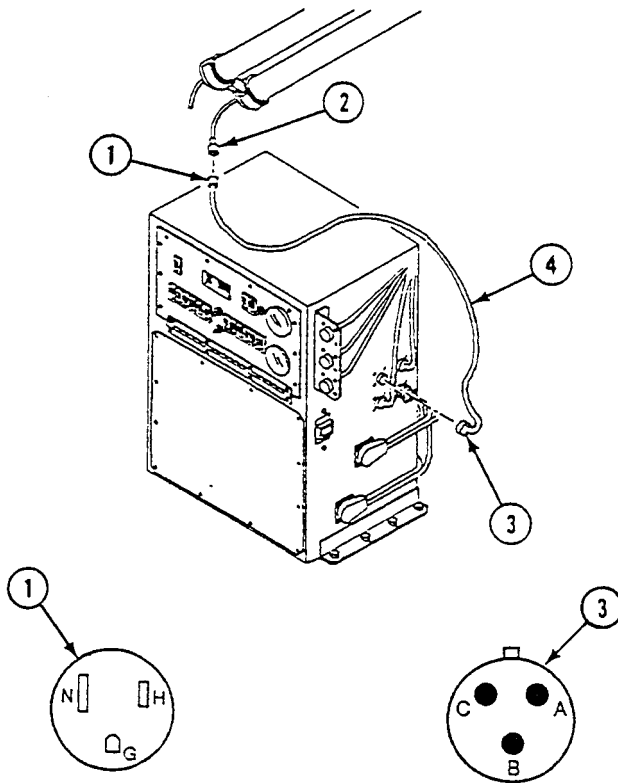
**NO****2YN**

1. Go to No Power to AC Circuits (WP 0087 00).

YES

3Y

1. Set power control enclosure AC MAIN switch to OFF. See TM 11-7010-256-12&P.
2. Remove cable W11 plug P2 (1) from light assembly plug P1 (2).
3. Measure resistance between sockets of P2 (1) and pins of plug P17 (3) on cable W11 (4) as follows:
 - P2 socket H to P17 pin A
 - P2 socket N to P17 pin B
 - P2 socket G to P17 pin C
4. Does multimeter read 0 ohms for each measurement?

**YES****4Y**

1. Replace/repair light set assembly. See TM 10-5410-229-13&P.

NO**3YN**

1. Replace cable W11 (WP 0747 00).
2. Verify no faults found.

VEHICLE BATTERIES DISCHARGE WITH EXTERNAL AC POWER APPLIED (M1068 ONLY)

0083 00

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Power-generation Equipment Repairer 52D10
Helper (H)

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)
General Mechanic's Tool Kit (WP 0780 00, Item 29)

References

See your -10

Materials/Parts

Lockwasher (10)
Lockwasher (12)

Equipment Condition

Engine stopped/shutdown (see your -10)
Carrier blocked (see your -10)

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

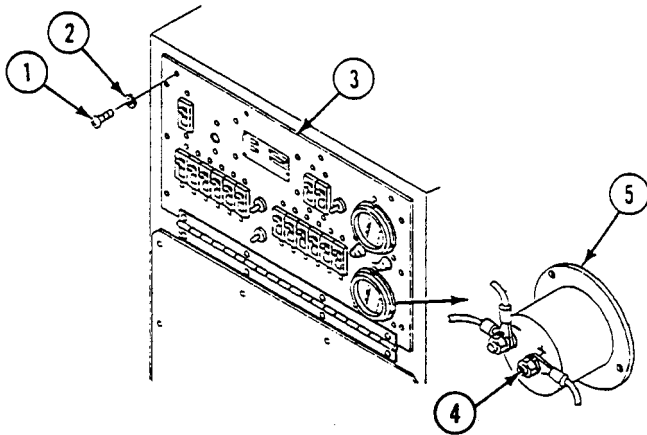
BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

VEHICLE BATTERIES DISCHARGE WITH EXTERNAL AC POWER APPLIED (M1068 ONLY) — Continued

0083 00

T

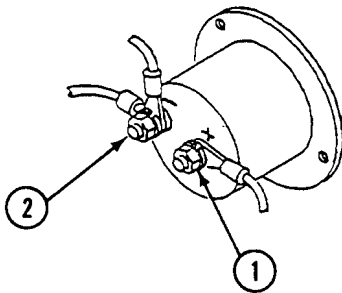
1. Remove ten screws (1) and lockwashers (2) and lower the faceplate (3) on power control enclosure. Discard lockwashers.
2. Turn MASTER SWITCH to ON (see your -10).
3. Measure voltage between positive (+) terminal (4) on meter M2 (5) and ground.
4. Does multimeter read 22 volts DC or more?

**NO****TN**

1. Go to Power Enclosure DC Input/Output Inoperative (WP 0071 00).

YES**Y**

1. Measure voltage between positive (+) terminal (1) and negative (-) terminal (2) of meter M2.
2. Does multimeter read 22 volts DC or more?

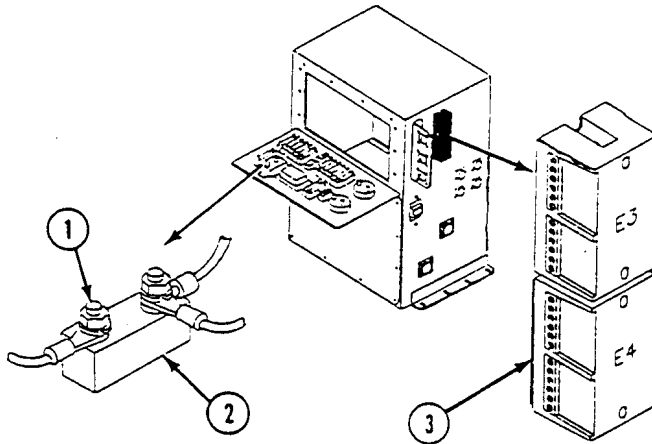
**NO****YN**

1. Replace meter M2 (WP 0729 00).
2. Verify no faults found.

YES

**VEHICLE BATTERIES DISCHARGE WITH EXTERNAL AC POWER APPLIED
(M1068 ONLY) — Continued****0083 00****2Y**

1. Turn MASTER SWITCH to OFF (see your -10).
2. Apply external AC power to SICPS vehicle. See TM 11-7010-256-12&P.
3. Measure voltage between terminal 1 (1) of circuit breaker CB1 (2) and terminal block E4 (3).
4. Does multimeter read 110 volts AC or more?

**YES****NO****2YN**

1. Go to Vehicle Will Not Accept External AC Power (WP 0085 00).

**VEHICLE BATTERIES DISCHARGE WITH EXTERNAL AC POWER APPLIED
(M1068 ONLY) — Continued**

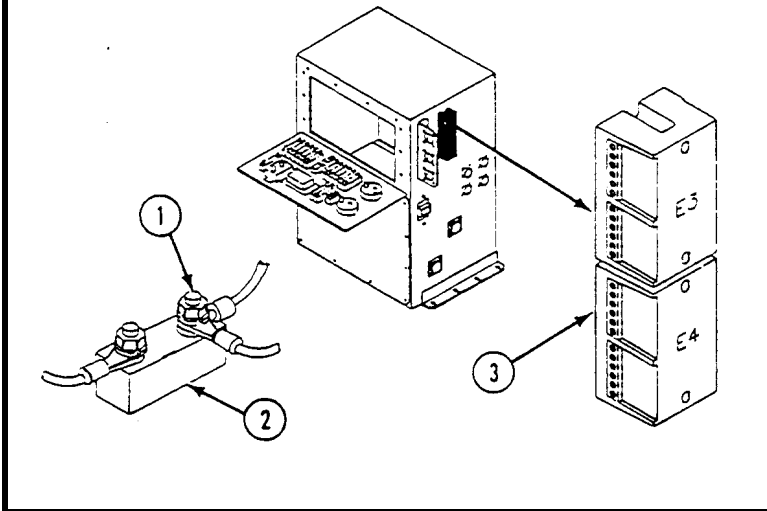
0083 00

3Y

1. Set AC MAIN SWITCH to ON. See TM 11-7010-256-12&P.
2. Measure voltage between terminal 2 (1) of circuit breaker CB1 (2) and anywhere on terminal block E4 (3).
3. Does multimeter read 110 volts AC or more?

NO**3YN**

1. Replace circuit breaker CB1 (WP 0730 00).
2. Verify no faults found.

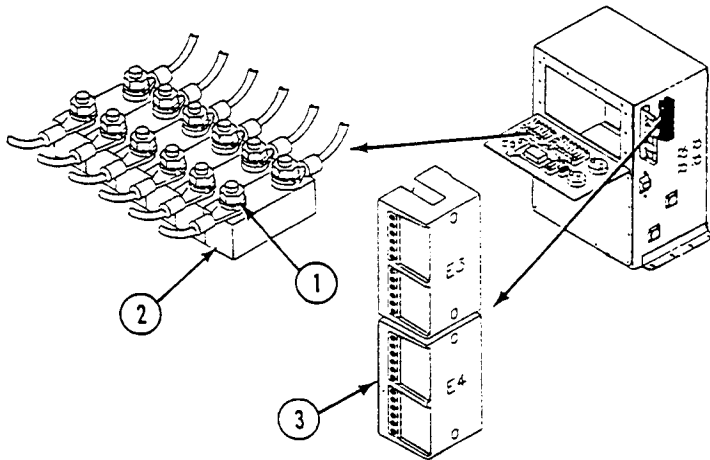
**YES**

VEHICLE BATTERIES DISCHARGE WITH EXTERNAL AC POWER APPLIED (M1068 ONLY) — Continued

0083 00

4Y

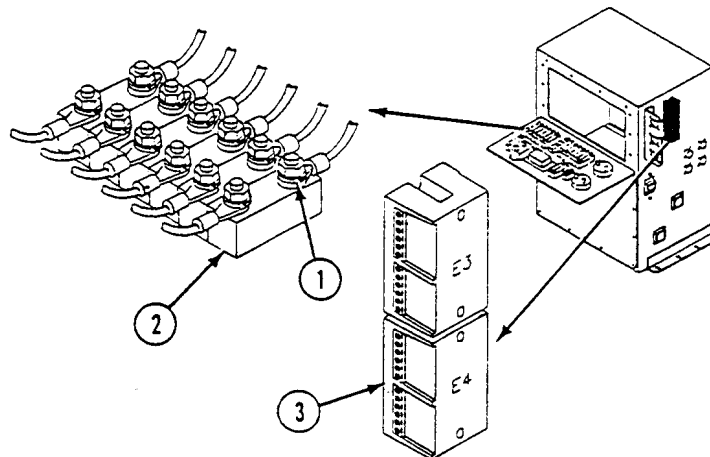
1. Set DC POWER SUPPLY SWITCH to ON. See TM 11-7010-256-12&P.
2. Measure voltage between terminal 1 (1) of circuit breaker CB5 (2) to terminal block E4 (3).
3. Does multimeter read 110 volts AC or more?

**NO****4YN**

1. Faulty circuit 9D.
2. Notify your supervisor.

YES**5Y**

1. Measure voltage between terminal 2 (1) of circuit breaker CB5 (2) and terminal block E4 (3).
2. Does multimeter read 110 volts AC or more?

**NO****5YN**

1. Replace circuit breaker CB5 (WP 0730 00).
2. Verify no faults found.

YES

**VEHICLE BATTERIES DISCHARGE WITH EXTERNAL AC POWER APPLIED
(M1068 ONLY) — Continued**

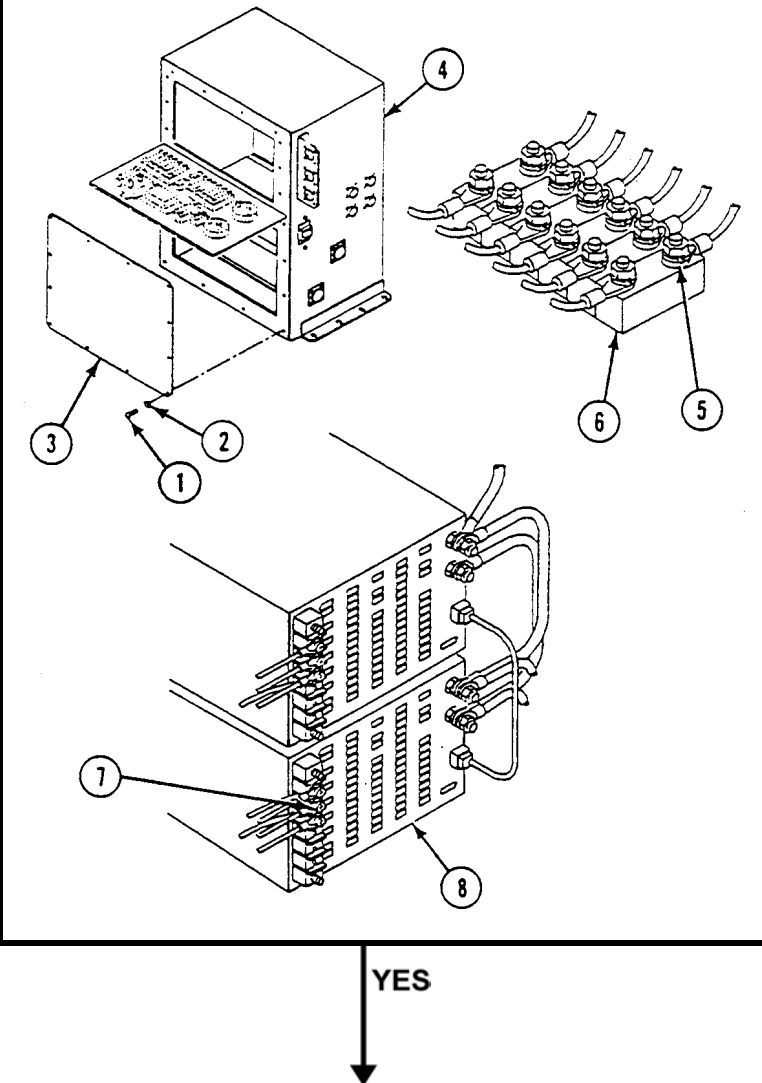
0083 00

6Y

1. Turn OFF AC/DC power.
2. Remove 12 screws (1), lockwashers (2), and cover (3) from power control enclosure (4). Discard lockwashers.
3. Measure resistance between terminal 2 (5) of circuit breaker CB5 (6) and AC HIGH terminal (7) of power supply PS2 (8).
4. Does multimeter read 0 ohms?

NO**6YN**

1. Faulty circuit 10A.
2. Notify your supervisor.

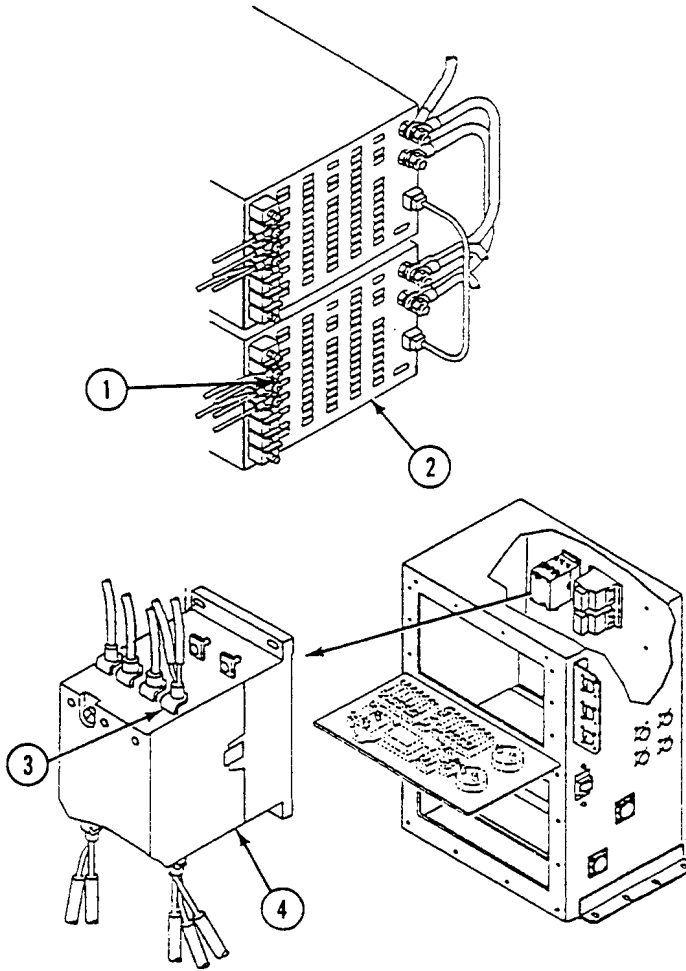


**VEHICLE BATTERIES DISCHARGE WITH EXTERNAL AC POWER APPLIED
(M1068 ONLY) — Continued**

0083 00

7Y

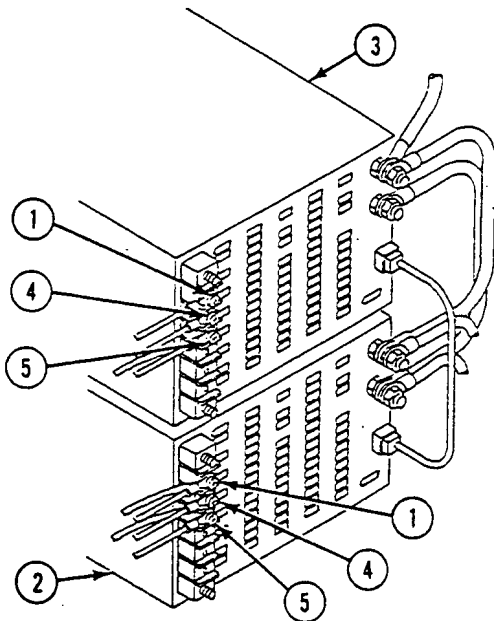
1. Measure resistance between terminal AC LOW (1) of power supply PS2 (2) and terminal L2 (3) of relay K1 (4).
2. Does multimeter read 0 ohms?

**YES****NO****7YN**

1. Faulty circuit 8B.
2. Notify your supervisor.

**VEHICLE BATTERIES DISCHARGE WITH EXTERNAL AC POWER APPLIED
(M1068 ONLY) — Continued****0083 00****8Y**

1. Measure resistance between circuit 10B terminals (1) on power supply PS2 (2) and power supply PS1 (3).
2. Measure resistance between circuit 8C terminals (4) on power supply PS2 (2) and power supply PS1 (3).
3. Measure resistance between circuit 3Z terminals (5) on power supply PS2 (2) and power supply PS1 (3).
4. Does multimeter read 0 ohms for each measurement?

**YES****NO****8YN**

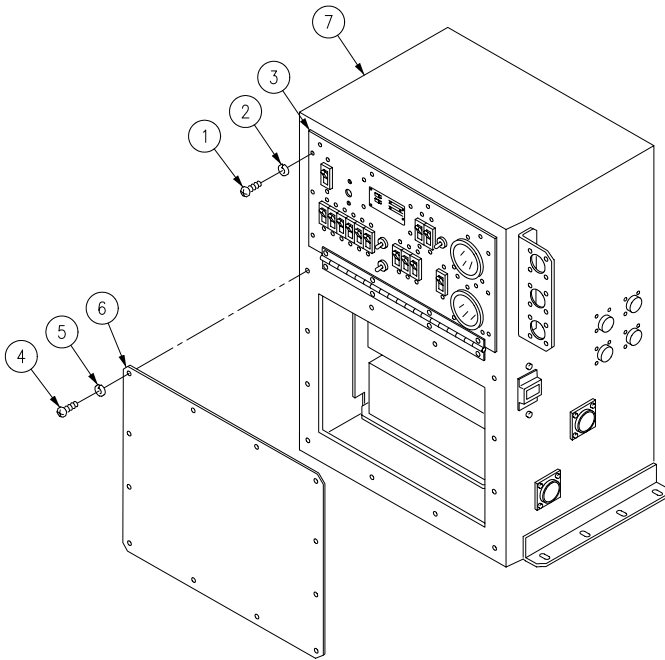
1. Faulty circuit 10B, 8C, and/or 3Z.
2. Notify your supervisor.

**VEHICLE BATTERIES DISCHARGE WITH EXTERNAL AC POWER APPLIED
(M1068 ONLY) — Continued**

0083 00

9Y

1. Install 12 screws (4), new lockwashers (5), and cover (6) on power control enclosure (7).
2. Raise faceplate (3) on power control enclosure (7) and secure with ten screws (1) and new lockwashers (2).
3. Faulty power supply(s).
4. Notify your supervisor.



VEHICLE WILL NOT ACCEPT EXTERNAL AC POWER (M1068 ONLY)**0084 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Vehicle grounded (see your -10 and
TM 11-7010-256-12&P)Personnel Required

Power-Generation Equipment Repairer 52D10

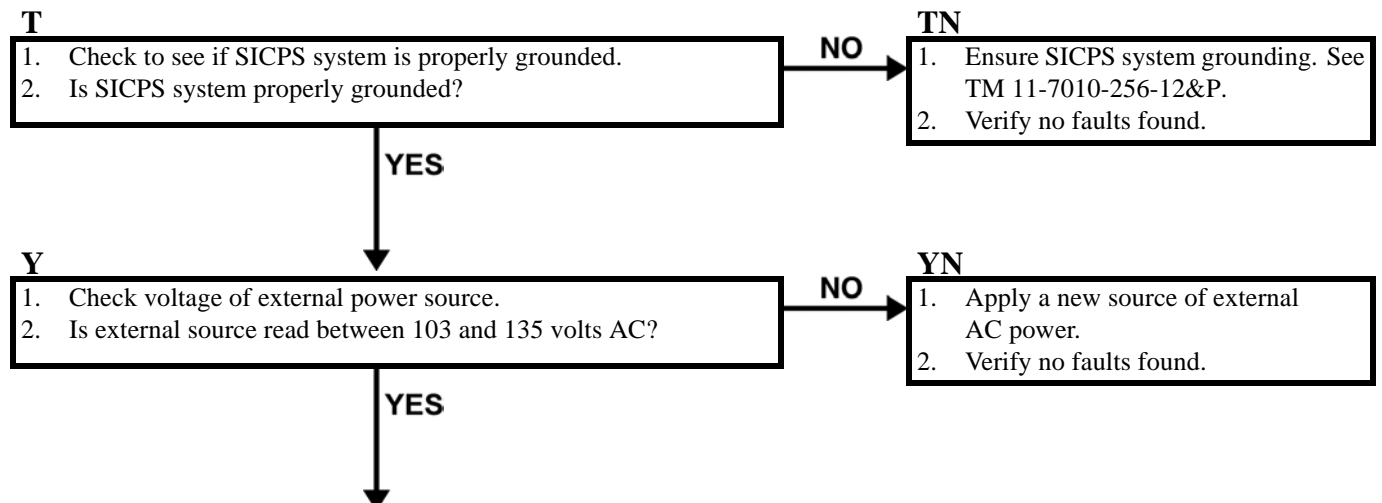
Helper (H)

WARNING**HIGH VOLTAGE** is used in the operation of this equipment.**DEATH ON CONTACT** may result if personnel fail to observe safety precautions.

NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

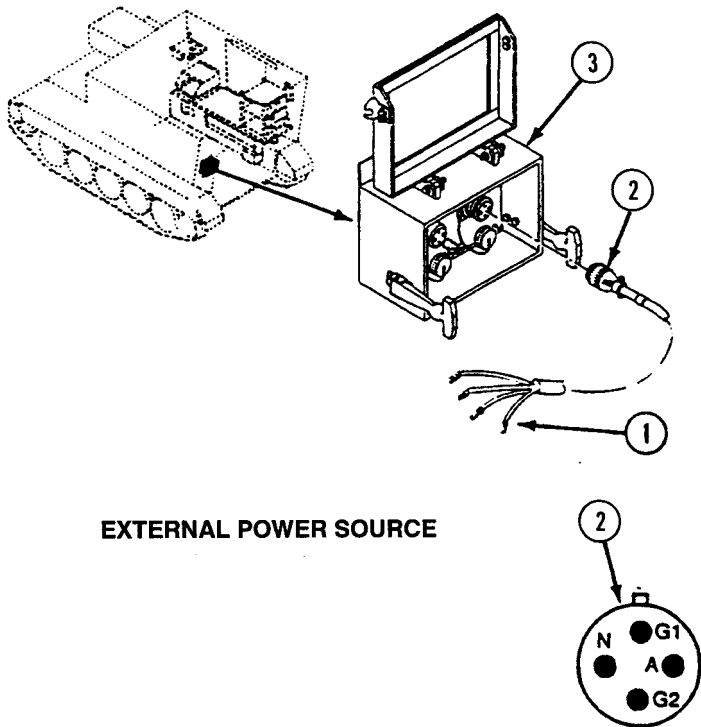


VEHICLE WILL NOT ACCEPT EXTERNAL AC POWER (M1068 ONLY) — Continued

0084 00

2Y

1. Apply external source of AC power to SICPS vehicle. See TM 11-7010-256-12&P.
2. Remove cable W1 leads (1) from generator, if applicable.
3. Remove cable W2 plug J1 (2) from power entry box (3).
4. Measure resistance between W1 leads (1) and W2 plug J1 (2) as follows:
 - W1 HOT to J1 pin A
 - W1 NEU to J1 pin N
 - W1 GND1 to J1 pin G1
 - W1 GND2 to J1 pin G2
5. Does multimeter read 0 ohms for all readings?

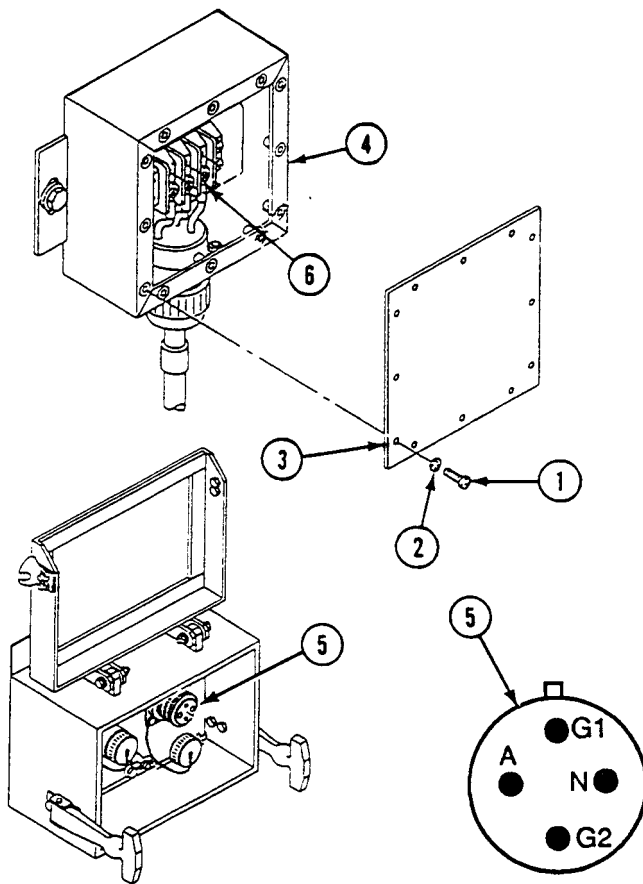
**NO****2YN**

1. Replace cable W1/2. See TM 11-7010-256-12&P.
2. Verify no faults found.

YES

3Y

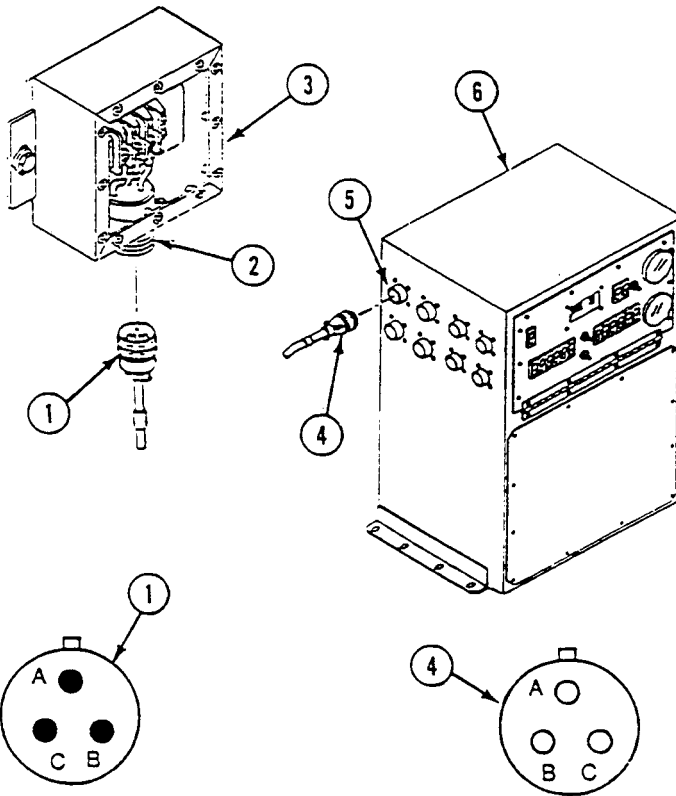
1. Remove 12 screws (1), lockwashers (2), and lid (3) from power distribution box (4).
2. Measure resistance between power entry box A4 plug P1 (5) and power distribution box A3 (4) terminal block (6) as follows:
 - P1 socket A to post E1
 - P1 socket N to post E2
 - P1 socket G1 to post E3
 - P1 socket G2 to post E3
3. Does multimeter read 0 ohms for each reading?

**YES****3YN**

1. Replace power entry box A4 (WP 0737 00).
2. Verify no faults found.

4Y

1. Remove cable W3 plug P1 (1) from jack J1 (2) on power distribution box (3) and plug P3 (4) from jack J24 (5) on power control enclosure (6).
2. Measure resistance between plug P1 (1) and plug P3 (4) as follows:
 - P1 pin A to P3 socket A
 - P1 pin B to P3 socket B
 - P1 pin C to P3 socket C
3. Does multimeter read 0 ohms for each reading?

**NO****4YN**

1. Replace cable W3 (WP 0739 00).
2. Verify no faults found.

YES**5Y**

1. Faulty power control enclosure. Beyond unit maintenance repair
2. Notify your supervisor.

VEHICLE WILL NOT ACCEPT INVERTER AC POWER (M1068 ONLY)

0085 00

INITIAL SETUP:

Maintenance Level

Unit

References

See your -10
TM 11-7010-256-12&P

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)
General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)
Carrier blocked (see your -10)
Carrier grounded (see your -10 and
TM 11-7010-256-12&P)

Materials/Parts

Lockwasher (10)

Personnel Required

Power-Generation Equipment Repairer 52D10
Helper (H)

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

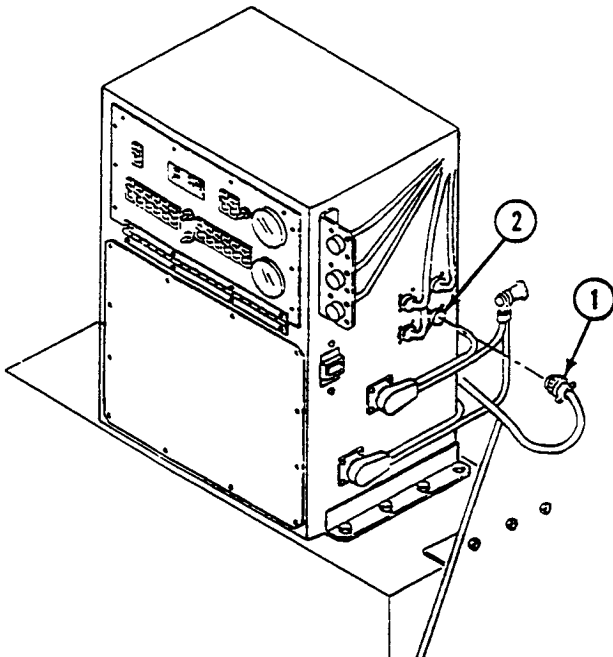
NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

T

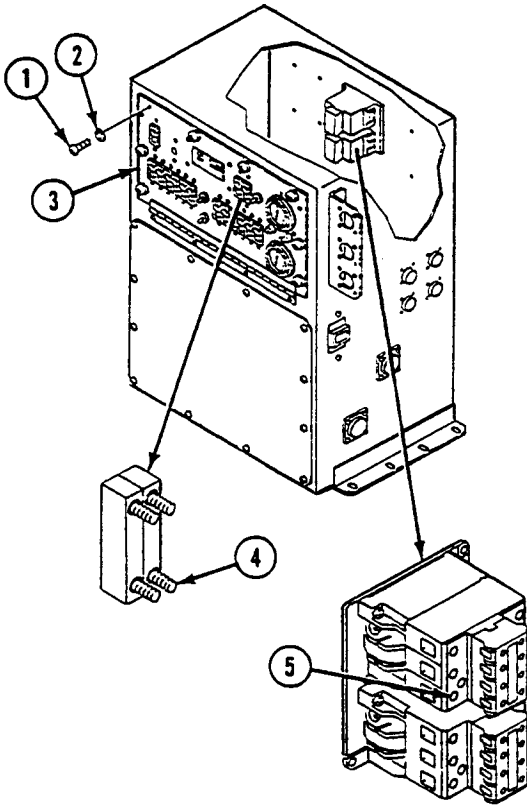
1. Remove all external power from SICPS system (see your -10 and TM 11-7010-256-12&P).
2. Remove cable W5 plug P6 (1) from power enclosure jack J27 (2).
3. Turn MASTER SWITCH to ON (see your -10).
4. Turn on inverters. See TM 11-7010-256-12&P.
5. Measure voltage between pins A and B of plug P6 (1). Repeat measure for pins C and D.
6. Does multimeter read 110 volts AC or more for both measurements?

**YES****NO****TN**

1. Go to No AC Power From Inverters (WP 0089 00).

Y

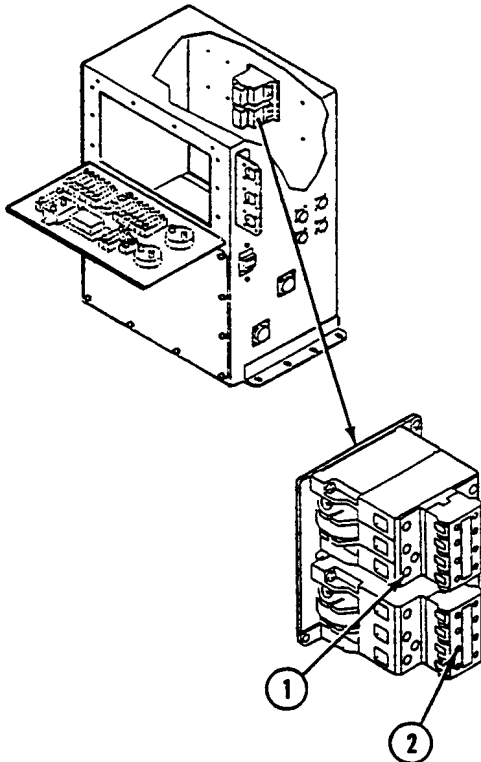
1. Turn MASTER SWITCH to OFF (see your -10).
2. Install cable W5 on power enclosure.
3. Remove ten screws (1) and lockwashers (2) and lower the faceplate (3). Discard lockwashers.
4. Measure resistance between circuit breaker CB3 pin 2 (4) and reversing contactor RC1-REV terminal L1 (5).
5. Does multimeter read 0 ohms?

**YES****NO****YN**

1. Faulty lead 13A.
2. Notify your supervisor.

2Y

1. Measure resistance between reversing contactor RC1-REV terminal L1 (1) and reversing contactor RC1-FWD terminal 51 (2).
2. Does multimeter read 0 ohms?

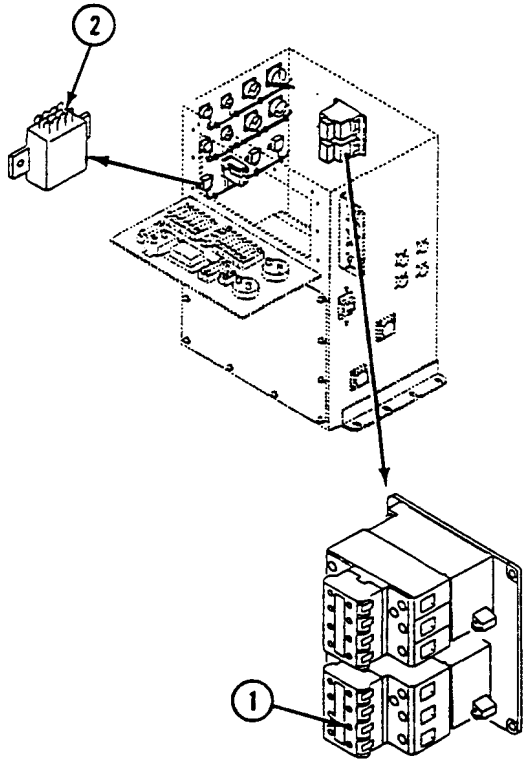
**NO****2YN**

1. Faulty lead 13D.
2. Notify your supervisor.

YES

3Y

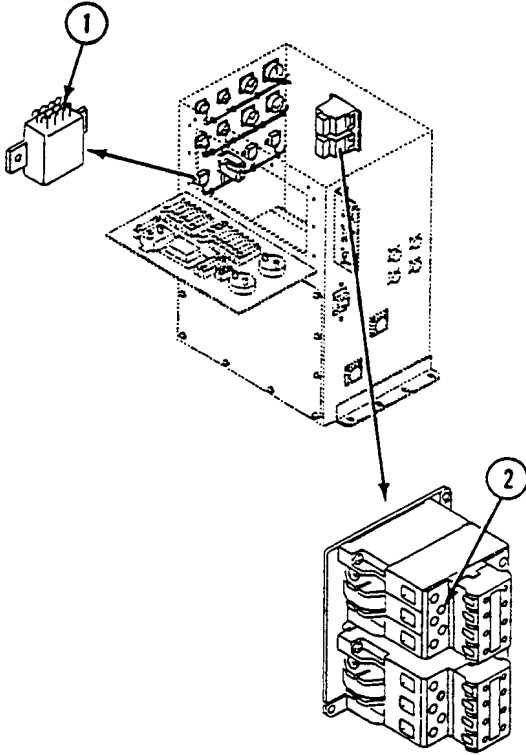
1. Measure resistance between reversing contactor RC1-FWD terminal 52 (1) and relay K4 terminal A3 (2).
2. Does multimeter read 0 ohms?

**YES****NO****3YN**

1. Faulty lead 14A.
2. Notify your supervisor.

4Y

1. Measure resistance between relay K4 terminal A2 (1) and reversing contactor RC1-REV terminal A2 (2).
2. Does multimeter read 0 ohms?

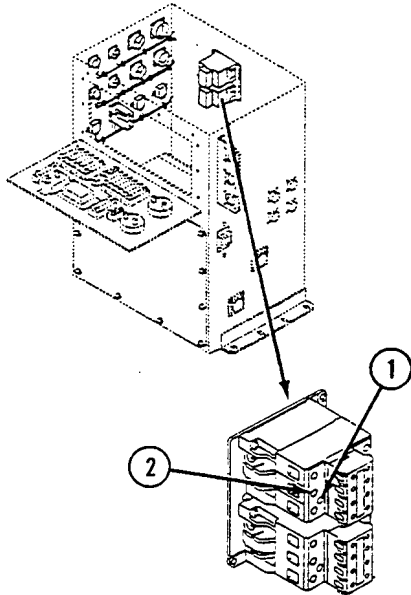
**NO****4YN**

1. Faulty lead 16A.
2. Notify your supervisor.

YES

5Y

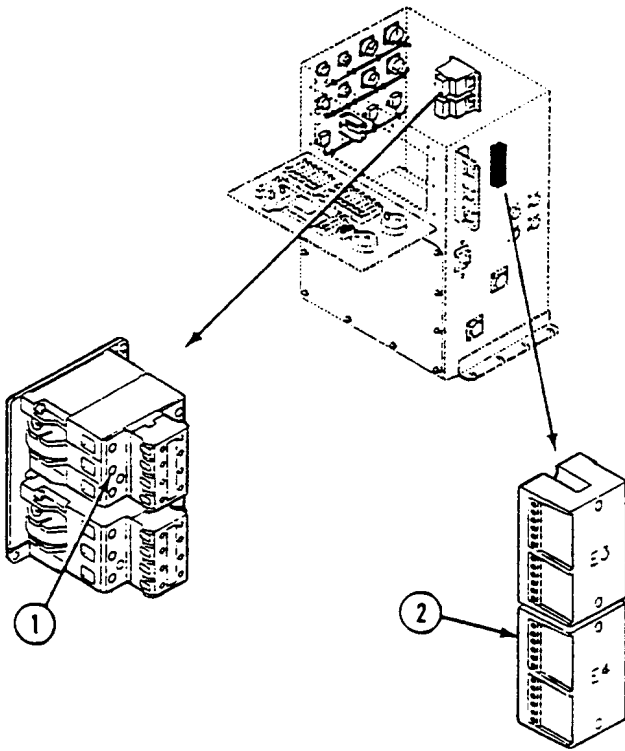
1. Measure resistance between reversing contactor RC1-REV terminal A1 (1) and terminal L2 (2).
2. Does multimeter read 0 ohms?

**YES****NO****5YN**

1. Faulty lead 28D.
2. Notify your supervisor.

6Y

1. Measure resistance between reversing contactor RC1-REV terminal L2 (1) and anywhere on terminal block E4 (2).
2. Does multimeter read 0 ohms?

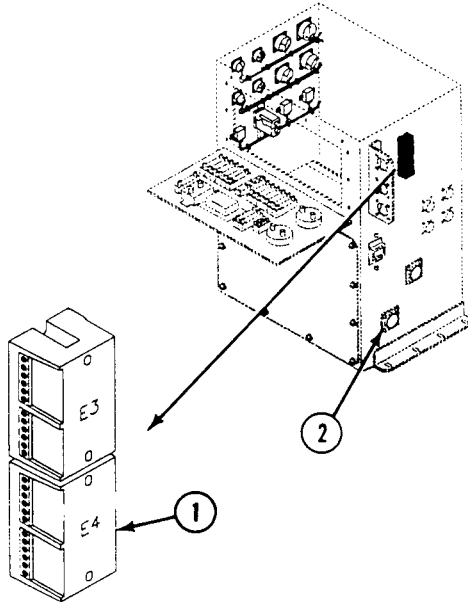
**NO****6YN**

1. Faulty lead 28G.
2. Notify your supervisor.

YES

7Y

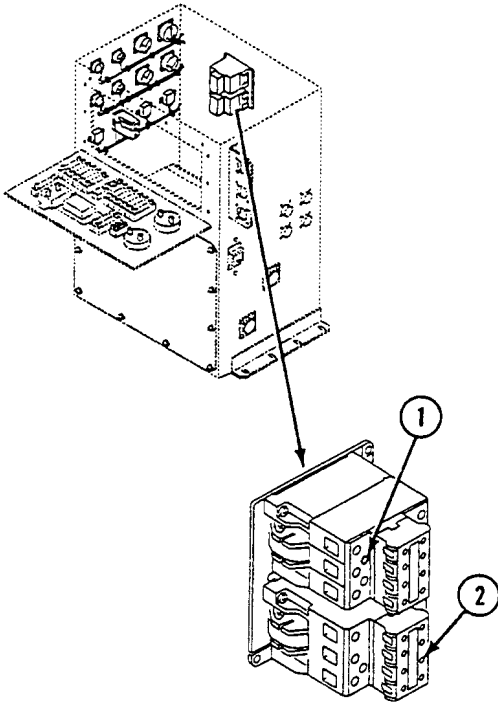
1. Measure resistance between anywhere on terminal block E4 (1) and power enclosure jack J26 outer shell (2).
2. Does multimeter read 0 ohms?

**YES****NO****7YN**

1. Faulty lead 32C.
2. Notify your supervisor.

8Y

1. Measure resistance between reversing contactor RC1-REV terminal A2 (1) and reversing contactor RC1-FWD terminal 52 (2).
2. Does multimeter read 0 ohms?

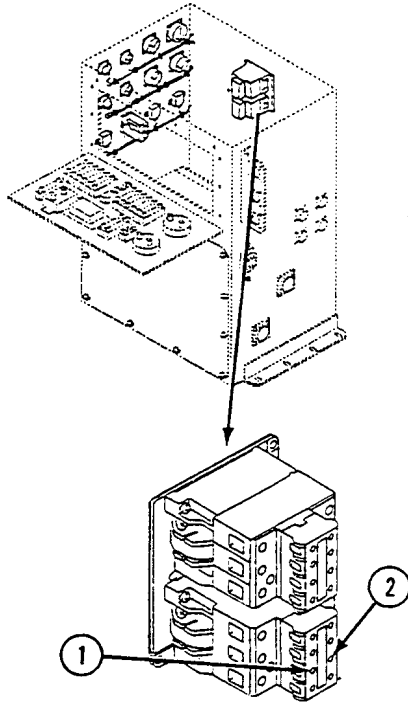
**NO****8YN**

1. Faulty relay K4.
2. Notify your supervisor.

YES

9Y

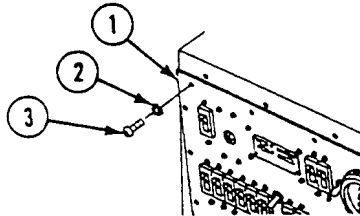
1. Measure resistance between reversing contactor RC1-FWD terminal 51 (1) and terminal 52 (2).
2. Does multimeter read 0 ohms?

**NO****9YN**

1. Faulty reversing contactor.
2. Notify your supervisor.

YES**10Y**

1. Raise faceplate (1) and secure with ten new lockwashers (2) and screws (3).
2. Verify no faults found.



NO POWER TO DC CIRCUITS (M1068 ONLY)

0086 00

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Power-Generation Equipment Repairer 52D10
Helper (H)

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)
General Mechanic's Tool Kit (WP 0780 00, Item 29)

References

See your -10
TM 11-7010-256-12&P

Materials/Parts

Lockwasher (10)

Equipment Condition

Engine stopped/shutdown (see your -10)
Carrier blocked (see your -10)

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

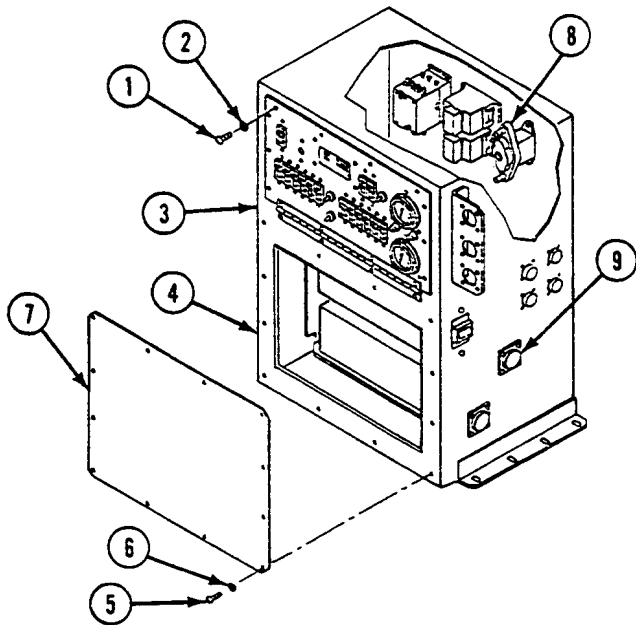
BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

NO POWER TO DC CIRCUITS (M1068 ONLY) — Continued

0086 00

T

1. Remove all external power from SICPS system (see your -10 and TM 11-7010-256-12&P).
2. Remove ten screws (1) and lockwashers (2) and lower the faceplate (3) of power control enclosure (4). Discard lockwashers.
3. Remove 12 screws (5), lockwashers (6), and cover (7) from front of power control enclosure (4). Discard lockwashers.
4. Set MASTER SWITCH to ON (see your -10).
5. Measure voltage between relay K6 (8) terminal 2 and power control enclosure jack J25 (9) negative terminal.
6. Does multimeter read 22 volts DC or more?

**YES****NO****TN**

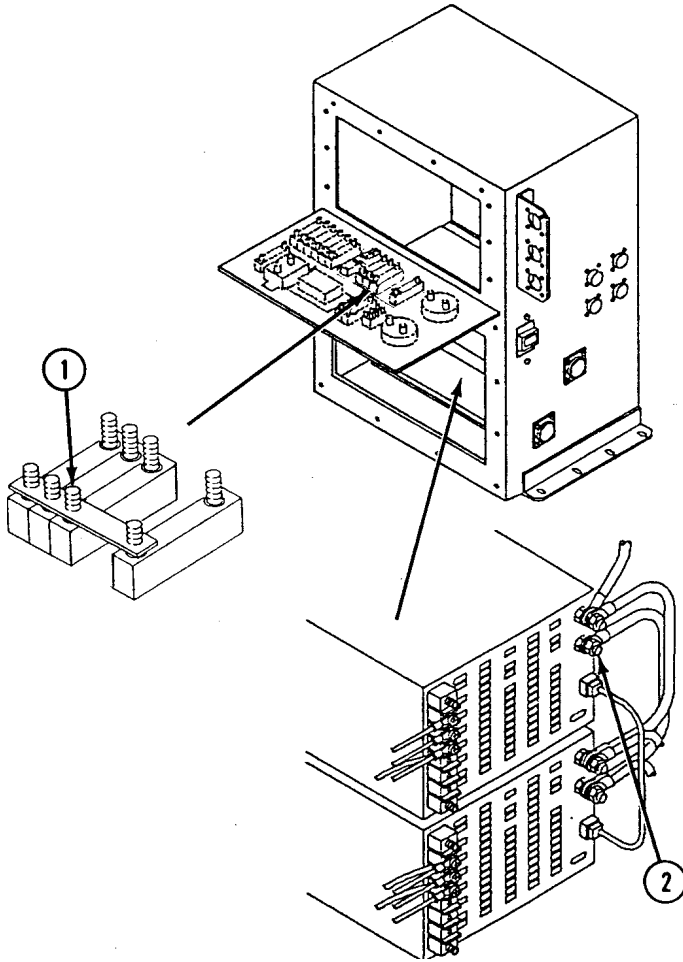
1. Go to Power Enclosure A1 DC Input/Output Inoperative (WP 0071 00).

NO POWER TO DC CIRCUITS (M1068 ONLY) — Continued

0086 00

Y

1. Measure voltage between circuit breaker CB15 (1) terminal 1 at DC bus bar and power supply PS1 output negative terminal (2).
2. Does multimeter read 22 volts DC or more?



YES



NO

YN

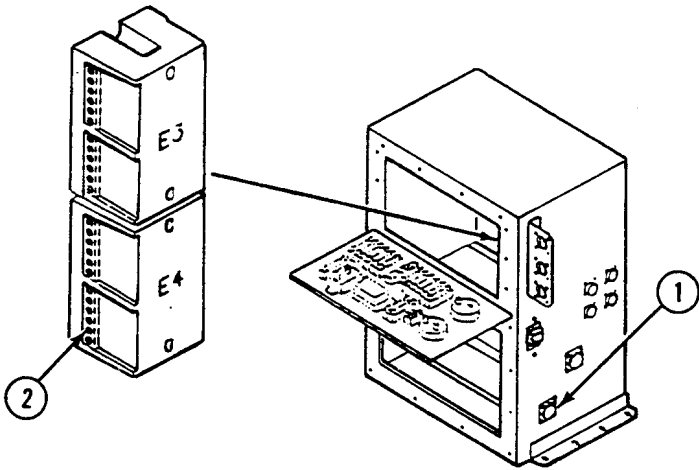
1. Go to Vehicle Batteries Discharge with External AC Power Applied (WP 0083 00).

NO POWER TO DC CIRCUITS (M1068 ONLY) — Continued

0086 00

2Y

1. Set MASTER SWITCH to OFF (see your -10).
2. Measure resistance of circuit 32C between power control enclosure jack J26 (1) and terminal block E4 terminal 2 (2).
3. Does multimeter read 0 ohms?

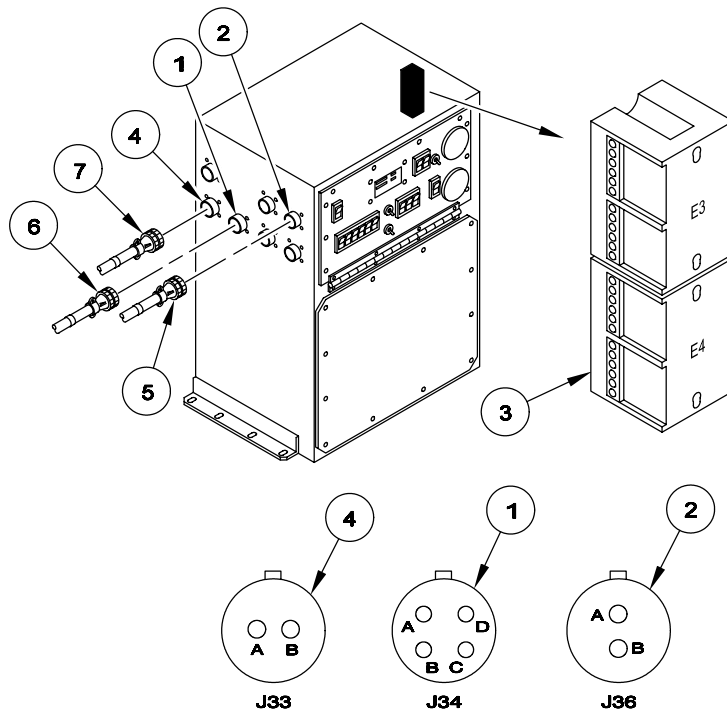
**NO****2YN**

1. Faulty lead 32C in power control enclosure.
2. Notify your supervisor.

YES

3Y

1. Remove the following cable plugs from jacks on power control enclosure:
 - W45 plug P13 (7) from jack J33 (4)
 - W10 plug P14 (6) from jack J34 (1)
 - W32 plug P16 (5) from jack J36 (2)
2. Measure resistance of the following leads between terminal block E4 (3) and the following jacks on power control enclosure:
 - Lead 32G to J33 (4) socket B
 - Lead 32H to J34 (1) socket B
 - Lead 32J to J34 (1) socket D
 - Lead 32P to J36 (2) socket B
3. Does multimeter read 0 ohms for all readings?

**YES****NO****3YN**

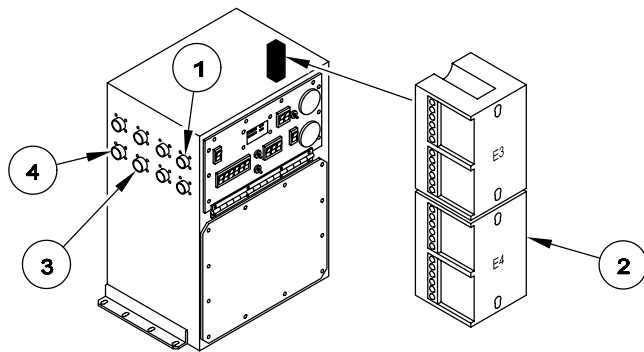
1. Faulty leads 32G, H, J, and P in power control enclosure.
2. Notify your supervisor.

NO POWER TO DC CIRCUITS (M1068 ONLY) — Continued

0086 00

4Y

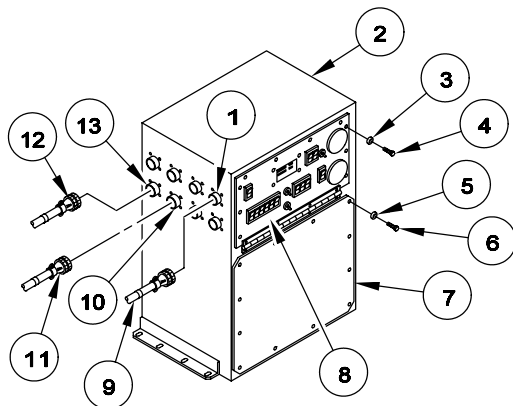
1. Set MASTER SWITCH to ON (see your -10).
2. Set all DC CIRCUITS circuit breakers on power control enclosure panel to ON.
3. Measure voltage between terminal block E4 (2) and the following jacks on power control enclosure:
 - J33 (4) socket A
 - J34 (3) socket A
 - J36 (1) socket A
4. Does multimeter read 22 volts DC or more for all readings?

**NO****4YN**

1. Go to Power Enclosure A1 DC Input/Output Inoperative (WP 0071 00).

YES**5Y**

1. Install cover (7) on power control enclosure (2) and secure with 12 new lockwashers (5) and screws (6).
2. Raise faceplate (8) and secure to power control enclosure (2) with ten new lockwashers (3) and screws (4).
3. Install the following cable plugs:
 - W45 plug P13 (12) on jack J33 (13)
 - W10 plug P14 (11) on jack J34 (10)
 - W32 plug P16 (9) on jack J36 (1)
4. Verify no faults found.



NO POWER TO AC CIRCUITS (M1068 ONLY)

0087 00

INITIAL SETUP:

<u>Maintenance Level</u>	<u>Personnel Required</u>
Unit	Power-Generation Equipment Repairer 52D10 Helper (H)
<u>Tools and Special Tools</u>	<u>References</u>
Digital Multimeter (WP 0780 00, Item 43)	See your -10
General Mechanic’s Tool Kit (WP 0780 00, Item 29)	TM 11-7010-256-12&P
<u>Materials/Parts</u>	<u>Equipment Condition</u>
Lockwasher (10)	Engine stopped/shutdown (see your -10) Carrier blocked (see your -10)

WARNING



HIGH VOLTAGE is used in operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

NEVER work on equipment unless at least one other person familiar with operation and hazards of equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is **OFF/disconnected**.

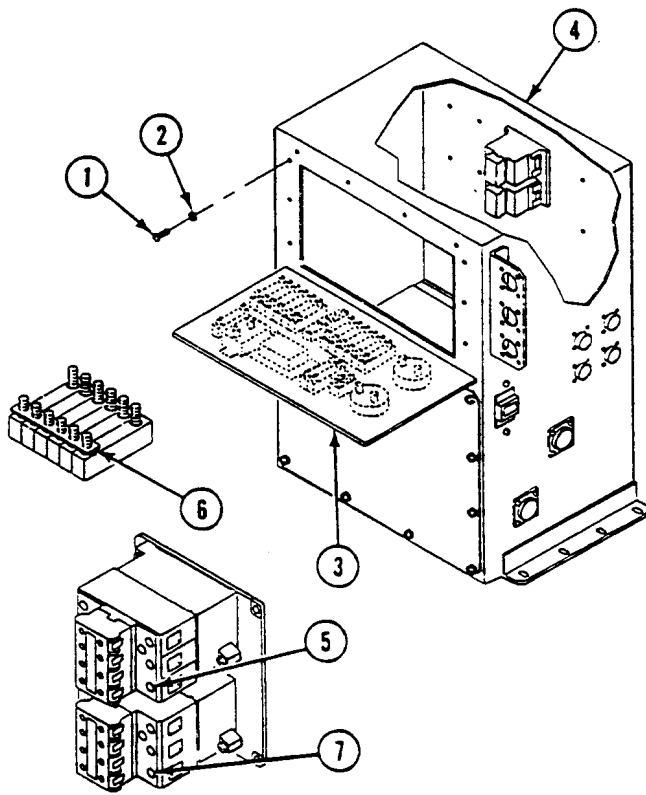
BE CAREFUL not to touch high-voltage connections when installing or operating this equipment.

NO POWER TO AC CIRCUITS (M1068 ONLY) — Continued

0087 00

T

1. Turn off all power from SICPS system (see your -10 and TM 11-7010-256-12&P).
2. Remove ten screws (1) and lockwashers (2) and lower the faceplate (3) of power enclosure (4). Discard lockwashers.
3. Measure resistance of circuit 17B between reversing contactor reverse terminal T1 (5) and circuit breaker CB10 terminal 1 (6).
4. Measure resistance of circuit 17A between terminal T1 and forward terminal T1 (7).
5. Does multimeter read 0 ohms for both readings?

**YES****NO****TN**

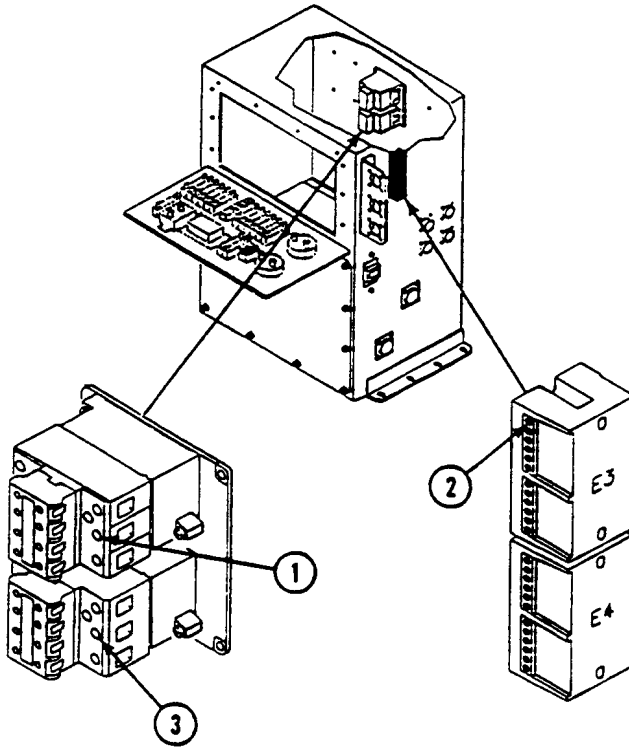
1. Faulty lead 17A and/or lead 17B.
2. Notify your supervisor.

NO POWER TO AC CIRCUITS (M1068 ONLY) — Continued

0087 00

Y

1. Measure resistance of circuit 18B between reversing contactor reverse terminal T2 (1) and terminal block E3 terminal 1 (2).
2. Measure resistance of circuit 18A between terminal T2 (1) and forward terminal T2 (3).
3. Does multimeter read 0 ohms for both readings?



YES

NO

YN

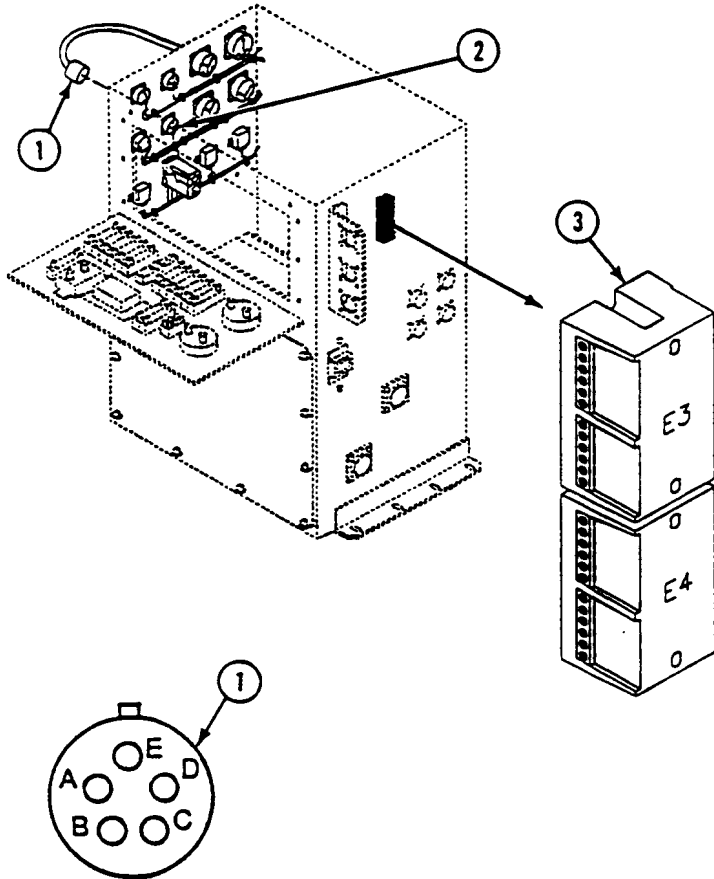
1. Faulty lead 18A and/or lead 18B.
2. Notify your supervisor.

NO POWER TO AC CIRCUITS (M1068 ONLY) — Continued

0087 00

2Y

1. Remove plug P1 (1) from J30 (2).
2. Measure resistance of circuit 18N between power enclosure jack J30 (2) socket B and terminal block E3 (3).
3. Measure resistance for circuit 18K between jack J30 (2) socket D and terminal block E3 (3).
4. Does multimeter read 0 ohms for both readings?

**NO****2YN**

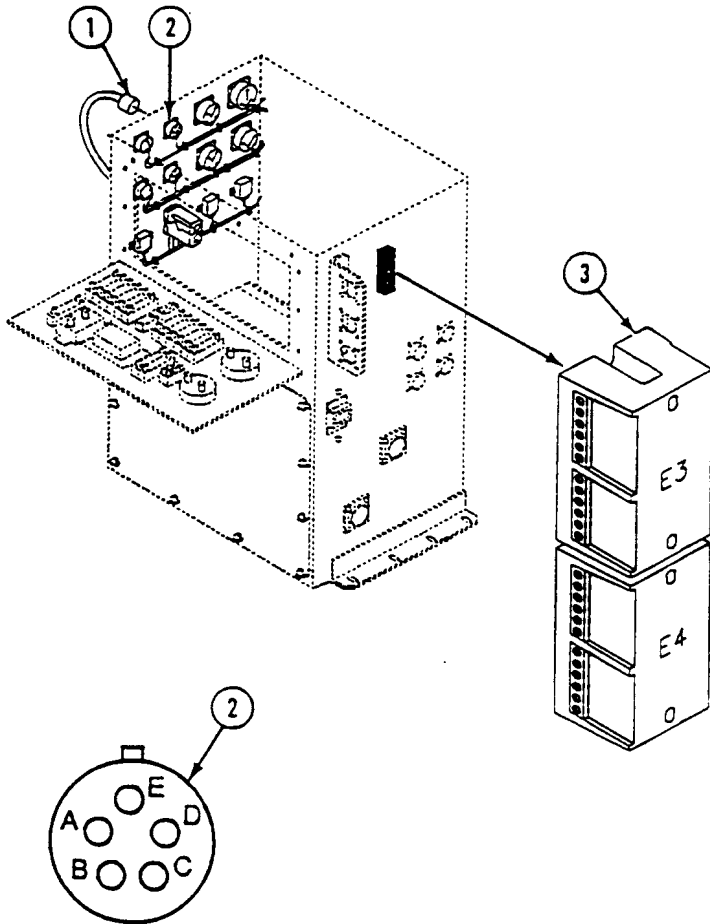
1. Faulty lead 18N and/or lead 18K.
2. Notify your supervisor.

NO POWER TO AC CIRCUITS (M1068 ONLY) — Continued

0087 00

3Y

1. Remove plug P11 (1) from J31 (2).
2. Measure resistance of circuit 18H between power enclosure jack J31 (2) socket B and terminal block E3 (3).
3. Measure resistance for circuit 18E between jack J31 (2) socket D and terminal block E3 (3).
4. Does multimeter read 0 ohms for both readings?



YES

3YN

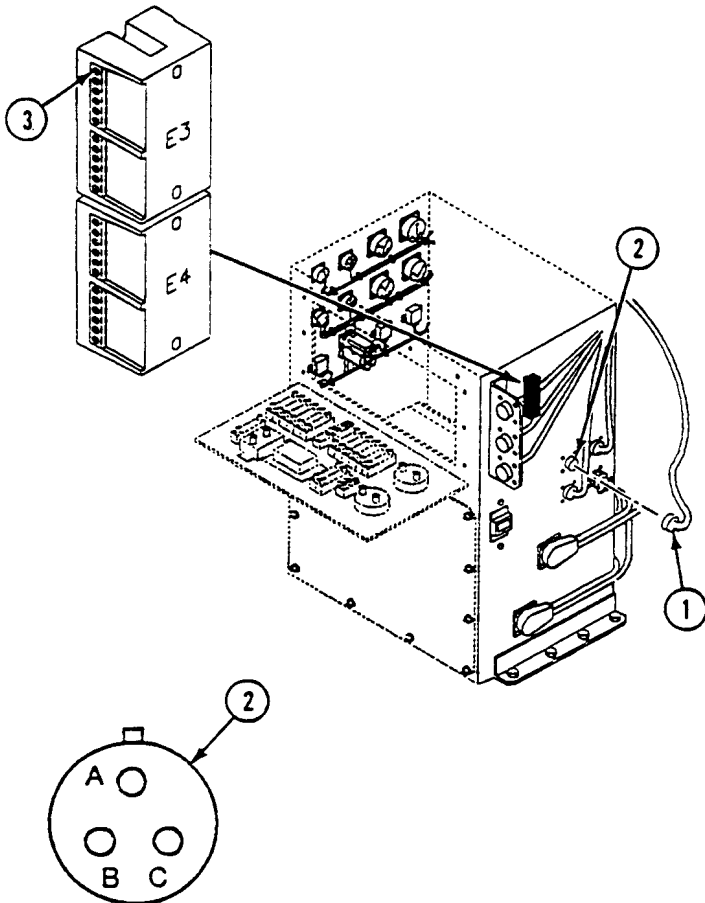
1. Faulty lead 18E and/or lead 18H.
2. Notify your supervisor.

NO POWER TO AC CIRCUITS (M1068 ONLY) — Continued

0087 00

4Y

1. Remove plug P17 (1) from J37 (2).
2. Measure resistance of circuit 18D between power enclosure jack J37 (2) socket B and terminal block E3 (3).
3. Does multimeter read 0 ohms?

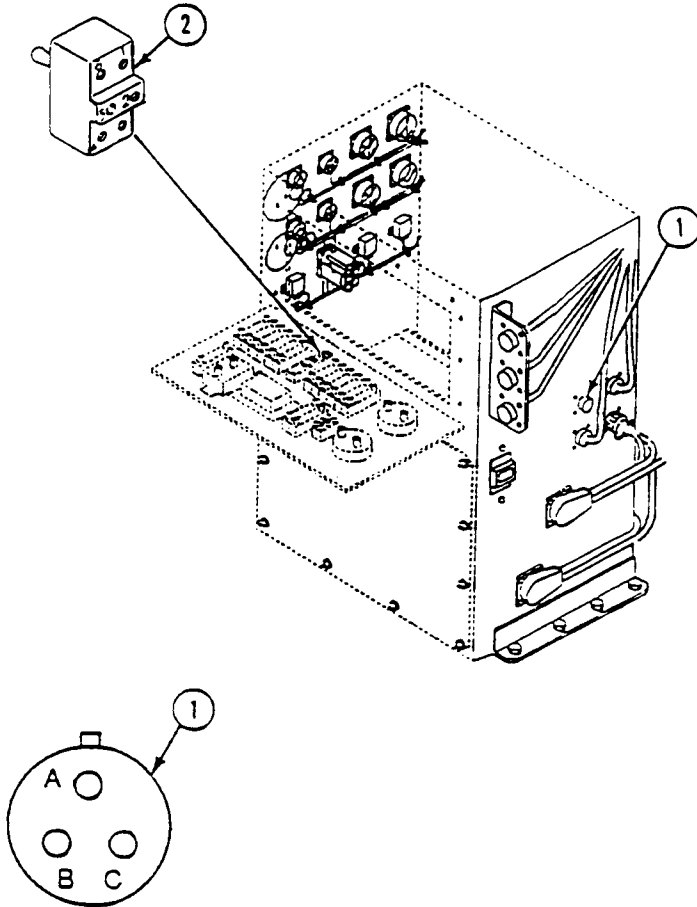
**NO****4YN**

1. Faulty lead 18D.
2. Notify your supervisor.

YES

5Y

1. Set BLACKOUT ENABLE SWITCH to upward position. See TM 11-7010-256-12&P.
2. Measure resistance of circuit 20B between power enclosure jack J37 (1) socket A and BLACKOUT ENABLE SWITCH S1 (2) terminal 3.
3. Does multimeter read 0 ohms?

**YES****NO****5YN**

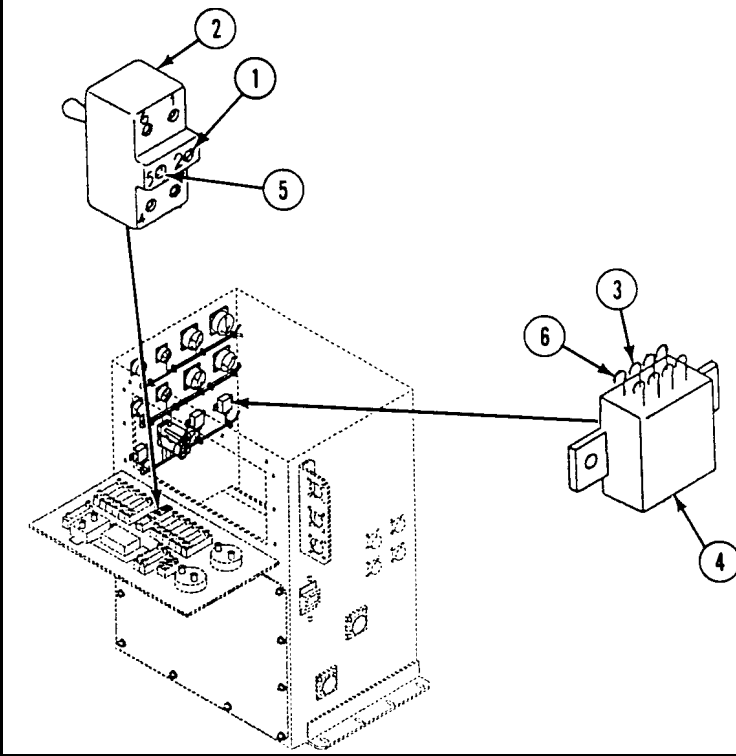
1. Faulty lead 20B.
2. Notify your supervisor.

NO POWER TO AC CIRCUITS (M1068 ONLY) — Continued

0087 00

6Y

1. Measure resistance of circuit 19B from terminal 2 (1) of switch S1 (2) and A2 (3) of relay K5 (4).
2. Measure resistance of circuit 20A from terminal 3 (5) of switch S1 (2) and A3 (6) of relay K5 (4).
3. Does multimeter read 0 ohms?



NO

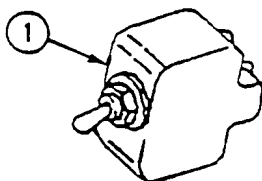
6YN

1. Faulty leads 19B and/or 20A.
2. Notify your supervisor.

YES

7Y

1. Remove leads 19A and 19B from switch S1 position 2.
2. Measure resistance with switch S1 (1) in both up and down positions.
3. Does multimeter read 0 ohms when switch is down and infinite ohms when switch is up?



NO

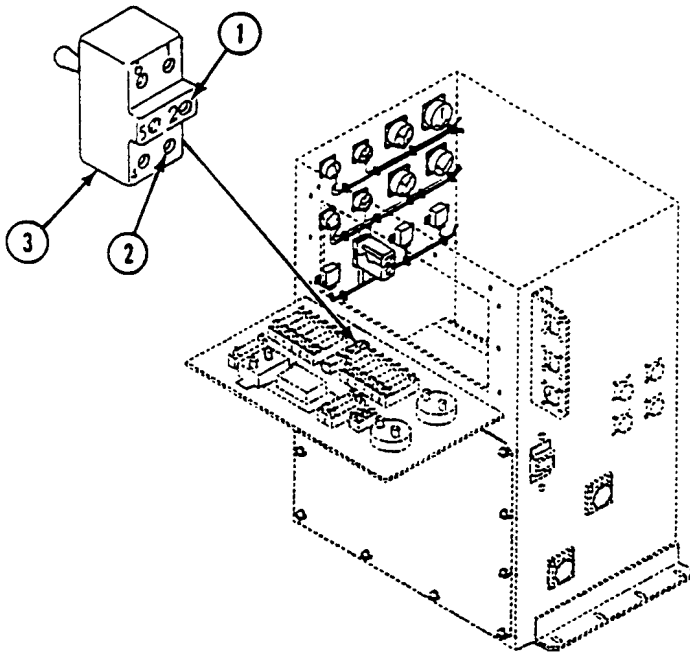
7YN

1. Replace switch S1 (WP 0730 00).
2. Verify no faults found.

YES

8Y

1. Reconnect leads 19A and 19B to S1 position 2.
2. Set BLACKOUT ENABLE SWITCH to upward position. See TM 11-7010-256-12&P.
3. Measure resistance between terminal 2 (1) and terminal 3 (2) of BLACKOUT ENABLE SWITCH S1 (3).
4. Does multimeter read infinite ohms?

**YES****NO****8YN**

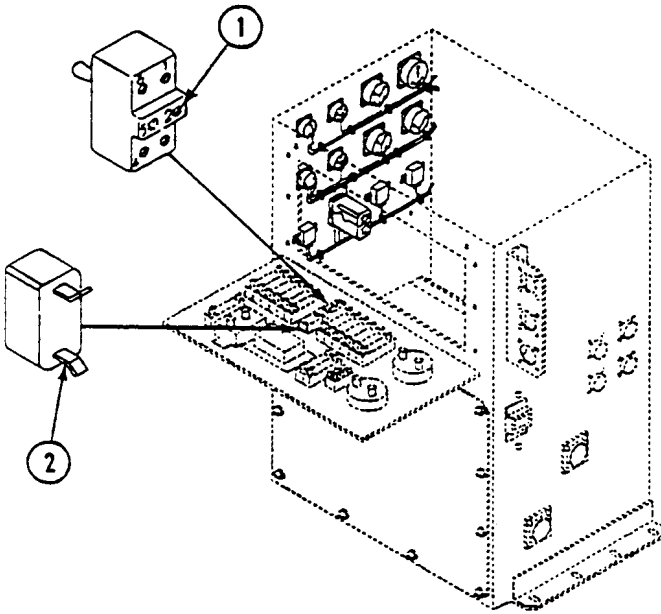
1. Faulty relay K5.
2. Notify your supervisor.

NO POWER TO AC CIRCUITS (M1068 ONLY) — Continued

0087 00

9Y

1. Measure resistance of circuit 19A between BLACKOUT ENABLE SWITCH S1 (1) terminal 2 and circuit breaker CB17 (2) terminal 2.
2. Does multimeter read 0 ohms for both readings?



YES

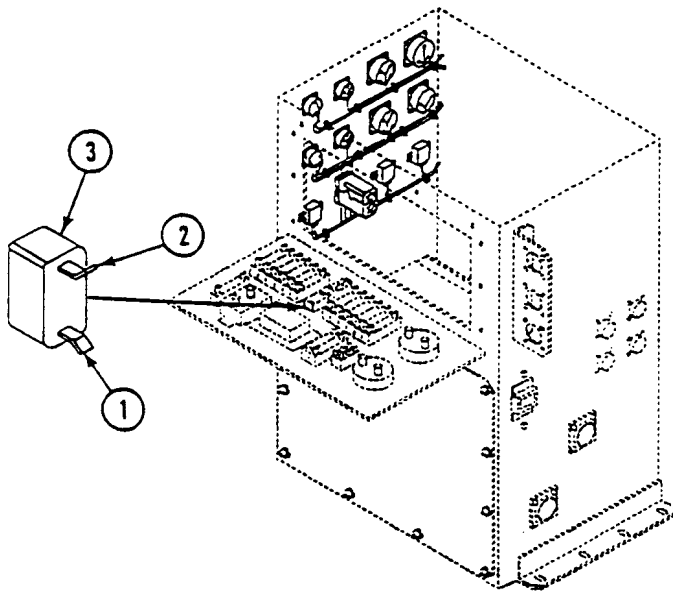
NO

9YN

1. Replace lead 19A (WP 0730 00).
2. Verify no faults found.

NO POWER TO AC CIRCUITS (M1068 ONLY) — Continued**0087 00****10Y**

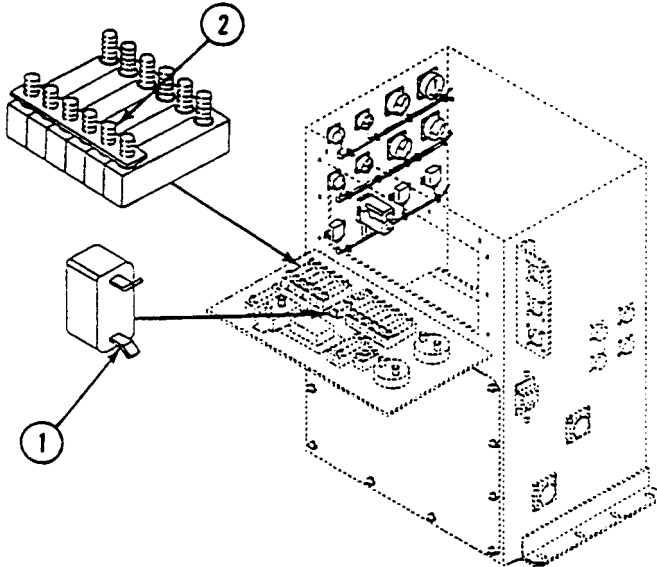
1. Set BLACKOUT ENABLE SWITCH to down position.
2. Set AC LIGHTS SWITCH in upward position. See TM 11-7010-256-12&P.
3. Measure resistance between terminal 2 (1) and terminal 1 (2) of circuit breaker CB17 (3).
4. Does multimeter read 0 ohms?

**YES****NO****10YN**

1. Replace circuit breaker CB17 (WP 0730 00).
2. Verify no faults found.

NO POWER TO AC CIRCUITS (M1068 ONLY) — Continued**0087 00****11Y**

1. Set AC LIGHTS SWITCH in upward position. See TM 11-7010-256-12&P.
2. Measure resistance of circuit 17C between circuit breaker CB17 terminal 2 (1) and AC bus bar at CB9 (2) terminal 1.
3. Does multimeter read 0 ohms?

**NO****11YN**

1. Replace lead 17C (WP 0730 00).
2. Verify no faults found.

YES**12Y**

1. Raise faceplate and secure with ten new lockwashers and screws.
2. Verify no faults found.

NO DC OUTPUT FROM DC POWER SUPPLY (M1068 ONLY)**0088 00****INITIAL SETUP:**Maintenance Level

Unit

References

TM 11-7010-256-12&P

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Personnel Required

Power-Generation Equipment Repairer 52D10

Helper (H)

WARNING**HIGH VOLTAGE** is used in the operation of this equipment.**DEATH ON CONTACT** may result if personnel fail to observe safety precautions.

NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

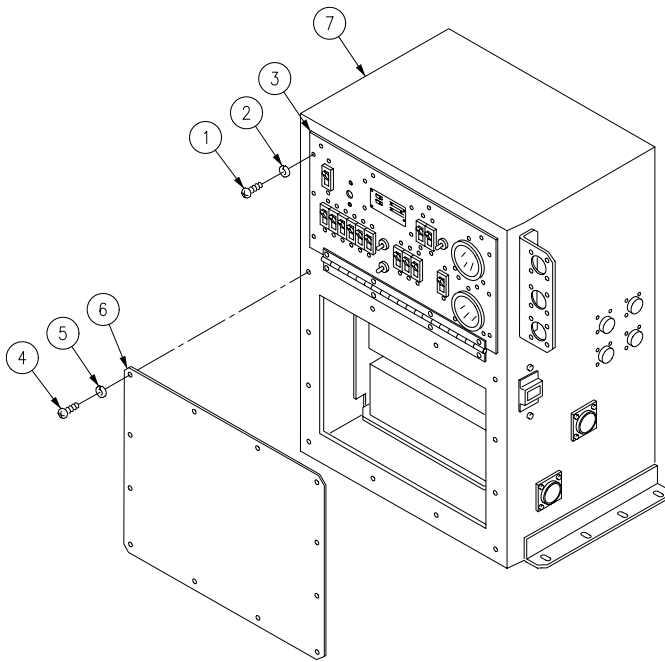
BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

NO DC OUTPUT FROM DC POWER SUPPLY (M1068 ONLY) — Continued

0088 00

T

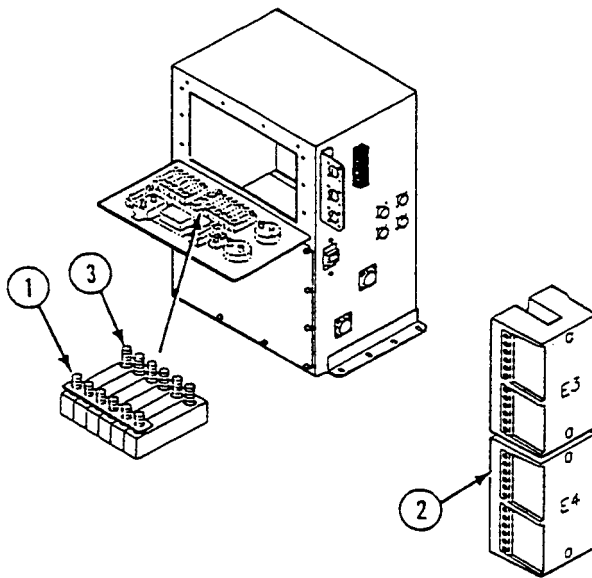
1. Remove ten screws (1) and lockwashers (2) and lower the faceplate (3). Discard lockwashers.
2. Remove 12 screws (4), lockwashers (5), and cover (6) from power control enclosure (7). Discard lockwashers.
3. Apply an external source of AC power. See TM 11-7010-256-12&P.
4. Set AC MAIN circuit breaker on power control enclosure panel to ON.
5. Is external source of AC power accepted by power control enclosure?

**YES****NO****TN**

1. Go to Vehicle Will Not Accept External AC Power (WP 0084 00).

Y

1. Set DC power supply circuit breaker on power control enclosure panel to ON.
2. Measure voltage between CB5 terminal 1 (1) and terminal block E4 (2). Also measure voltage from CB5 terminal 2 (3) to terminal block E4 (2).
3. Does multimeter read 110 volts AC or more for both measurements?

**YES****NO****YN**

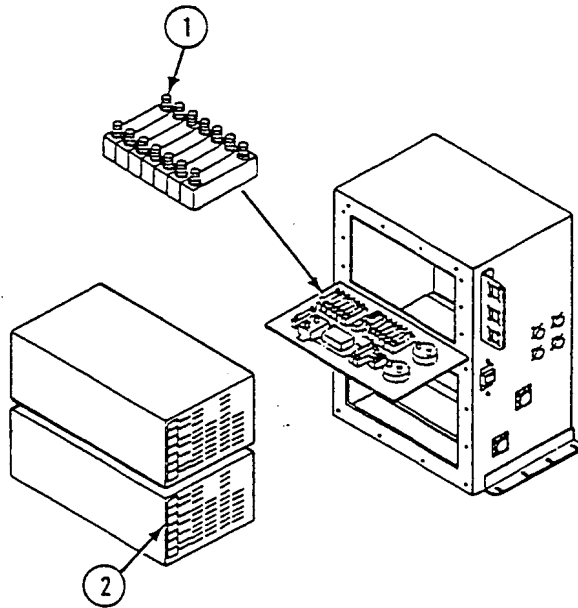
1. Replace circuit breaker CB5 (WP 0730 00).
2. Verify no faults found.

NO DC OUTPUT FROM DC POWER SUPPLY (M1068 ONLY) — Continued

0088 00

2Y

1. Set MASTER SWITCH to OFF (see your -10).
2. Measure resistance between circuit breaker CB5 terminal 2 (1) and power supply PS2 terminal AC HIGH (2).
3. Does multimeter read 0 ohms?

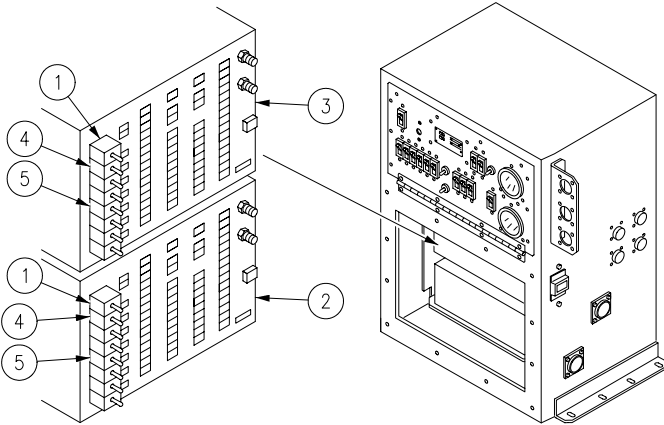
**NO****2YN**

1. Faulty lead 10A in power control enclosure.
2. Notify your supervisor.

YES

3Y

1. Measure resistance between circuit 10B terminals (1) on power supply PS2 (2) and power supply PS1 (3).
2. Measure resistance between circuit 8C terminals (4) on power supply PS2 (2) and power supply PS1 (3).
3. Measure resistance between circuit 3Z terminals (5) on power supply PS2 (2) and power supply PS1 (3).
4. Does multimeter read 0 ohms for each measurement?

**YES****4Y**

1. Faulty power supply.
2. Notify your supervisor.

NO**3YN**

1. Faulty lead 10B, 8C, and 3Z in power control enclosure.
2. Notify your supervisor.

NO AC POWER FROM INVERTERS (M1068 ONLY)

0089 00

INITIAL SETUP:

Maintenance Level

Unit

References

See your -10

Tools and Special Tools

- Digital Multimeter (WP 0780 00, Item 43)
- General Mechanic’s Tool Kit (WP 0780 00, Item 29)
- Inverter Test Solo Plug (WP 0781 00)

Equipment Condition

- Engine stopped/shutdown (see your -10)
- Carrier blocked (see your -10)

Personnel Required

- Power-Generation Equipment Repairer 52D10
- Helper (H)

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel do not observe safety precautions.

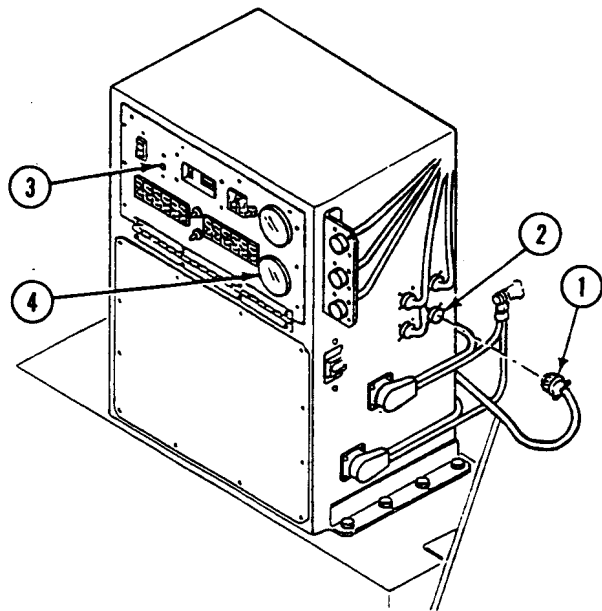
NEVER work on equipment unless at least one other person is nearby, familiar with the operation and hazards of the equipment and is familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

T

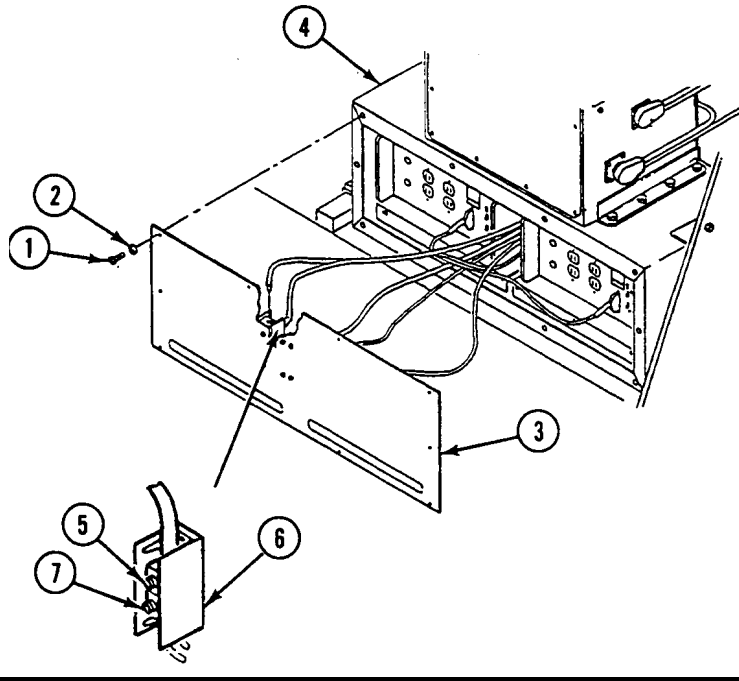
1. Remove cable W5 plug P6 (1) from power control enclosure jack J27 (2).
2. Turn MASTER SWITCH to ON (see your -10).
3. If popped out, press DC TO INVERTERS button (3) on power control enclosure panel.
4. Does DC VOLTS meter (4) on power control enclosure panel read 26 volts DC or more?

**YES****NO****TN**

1. Go to Power Control Enclosure A1 DC Input/Output Inoperative (WP 0071 00).

Y

1. Remove ten screws (1), lockwashers (2), and cover (3) from inverter housing (4). Discard lockwashers.
2. Measure voltage between terminal E2 (5) on terminal block TB1 (6) and ground.
3. Repeat measurement between terminal E4 (7) and ground.
4. Does multimeter read 22 volts DC or more for both measurements?

**YES****NO****YN**

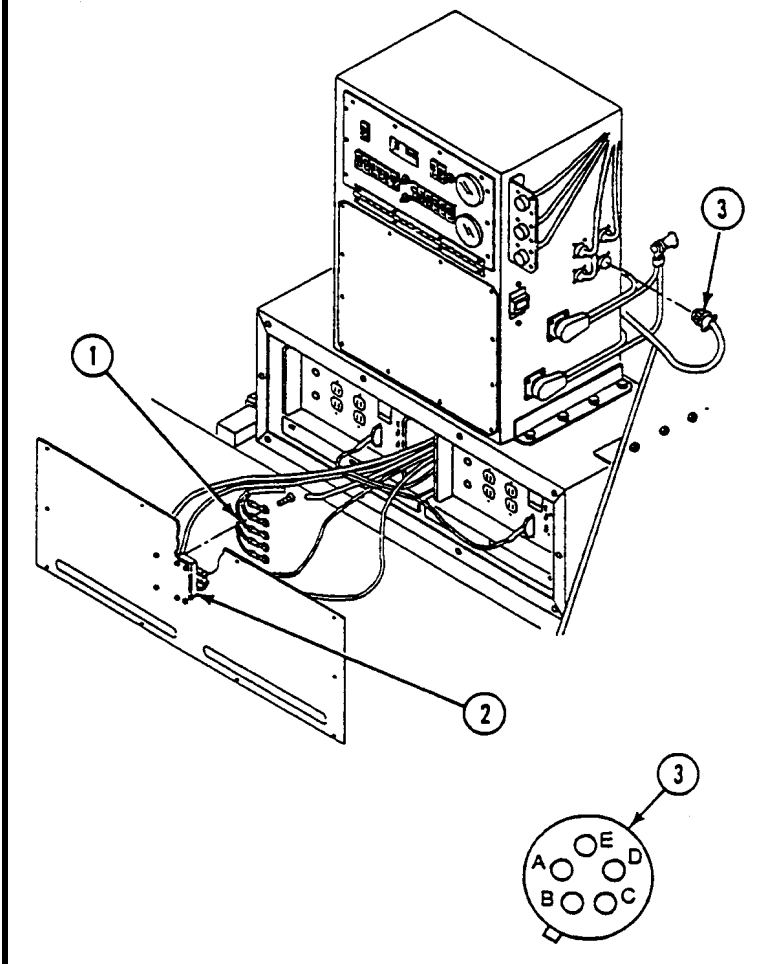
1. Replace terminal block TB1 (WP 0728 00).
2. Verify no faults found.

2Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Tag leads E1 thru E5 before removal. Remove cable W5 leads (1) from posts on terminal block TB2 (2).
3. Measure resistance between sockets of plug P6 (3) and W5 leads (1) as follows:
 - Socket A to lead E1
 - Socket B to lead E2
 - Socket C to lead E3
 - Socket D to lead E4
 - Socket E to lead E5
4. Does multimeter read 0 ohms for each measurement?

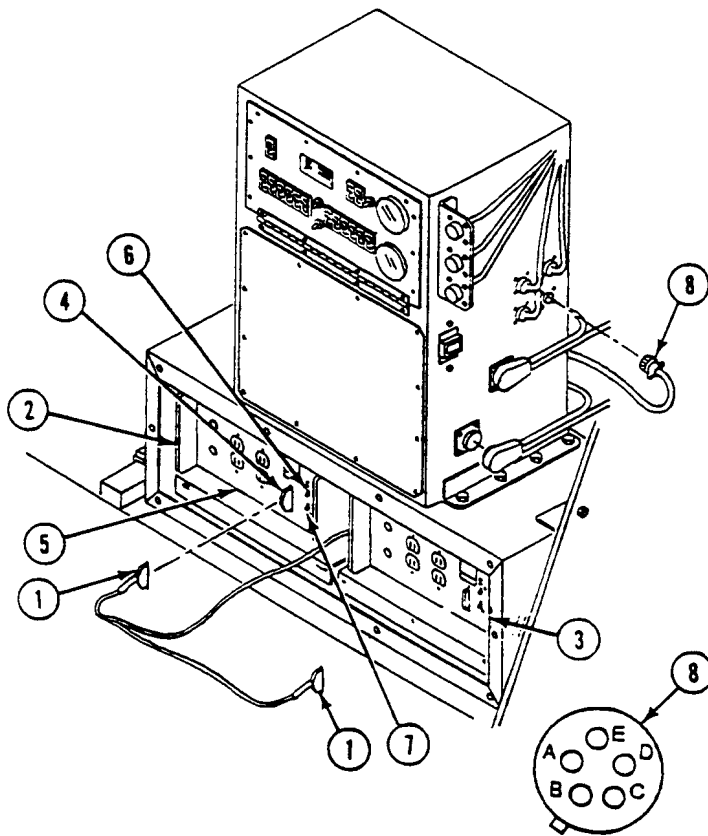
NO**2YN**

1. Replace cable W5 (WP 0741 00).
2. Verify no faults found.

**YES**

3Y

1. Install cable W5 leads on terminal block TB2.
2. Remove cable W15 plugs (1) from inverters IN1 (2) and IN2 (3).
3. Install inverter test solo plug (4) in inverter IN1 (2).
4. Turn MASTER SWITCH to ON (see your -10).
5. On inverter front panel (5), set POWER SWITCH (6) to ON and momentarily move RESET SWITCH (7) up.
6. Measure voltage between sockets A and B of cable W5 plug P6 (8).
7. Does multimeter read 110 volts AC or more?



YES

NO

3YN

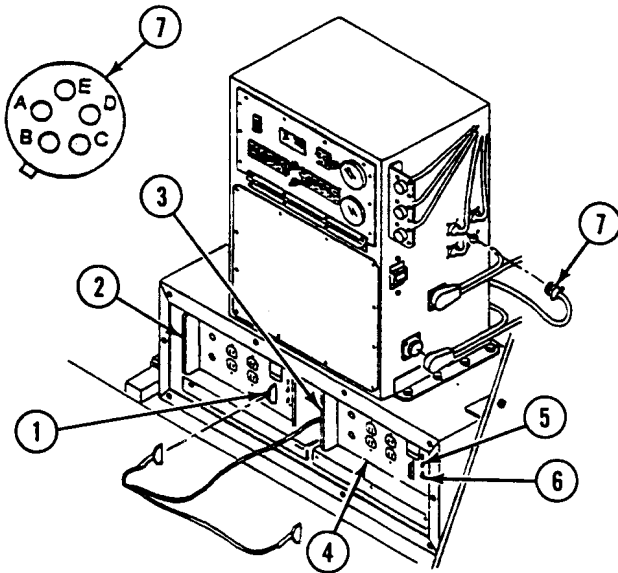
1. Faulty inverter IN1 (with solo plug installed).
2. Notify your supervisor.

NO AC POWER FROM INVERTERS (M1068 ONLY) — Continued

0089 00

4Y

1. Turn MASTER SWITCH to OFF (see your -10).
2. Remove solo plug (1) from tested inverter IN1 (2) and install in inverter IN2 (3).
3. Turn MASTER SWITCH to ON (see your -10).
4. On inverter front panel (4), set POWER SWITCH (5) to ON and momentarily move RESET SWITCH (6) up.
5. Measure voltage between sockets C and D of cable W5 plug P6 (7).
6. Does multimeter read 110 volts AC or more?



NO

4YN

1. Faulty inverter IN2 (with solo plug installed).
2. Notify your supervisor.

YES

5Y

1. Install cable W5 plug P6 on power control enclosure jack J27.
2. Replace cascade remote harness W15 (WP 0745 00).
3. Verify no faults found.

NO DATA OUTPUT FROM DATA PANEL A12 (M1068 ONLY)

0090 00

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Signal Support System Specialist 31U10
Helper (H)

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)
Electronic Equipment Tool Kit (WP 0780 00, Item 81)

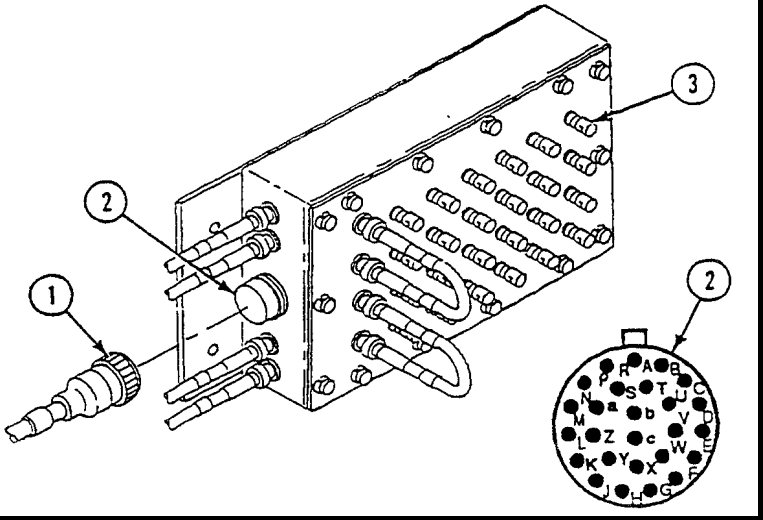
Equipment Condition

Engine stopped/shutdown (see your -10)
Carrier blocked (see your -10)

T

1. Remove cable W124 plug P1 (1) from data panel A12 jack J3 (2).
2. Measure resistance between posts (3) and pins of jack J3 (2) as follows:

Post 1 (Red) to pin A	Post 7 (Red) to pin N
Post 1 (Blk) to pin B	Post 7 (Blk) to pin P
Post 2 (Red) to pin C	Post 8 (Red) to pin R
Post 2 (Blk) to pin D	Post 8 (Blk) to pin S
Post 3 (Red) to pin E	Post 9 (Red) to pin T
Post 3 (Blk) to pin F	Post 9 (Blk) to pin U
Post 4 (Red) to pin G	Post 10 (Red) to pin V
Post 4 (Blk) to pin H	Post 10 (Blk) to pin W
Post 5 (Red) to pin J	Post 11 (Red) to pin X
Post 5 (Blk) to pin K	Post 11 (Blk) to pin Y
Post 6 (Red) to pin L	Post 12 (Red) to pin Z
Post 6 (Blk) to pin M	Post 12 (Blk) to pin a
3. Does multimeter read 0 ohms for each measurement?



YES

NO

TN

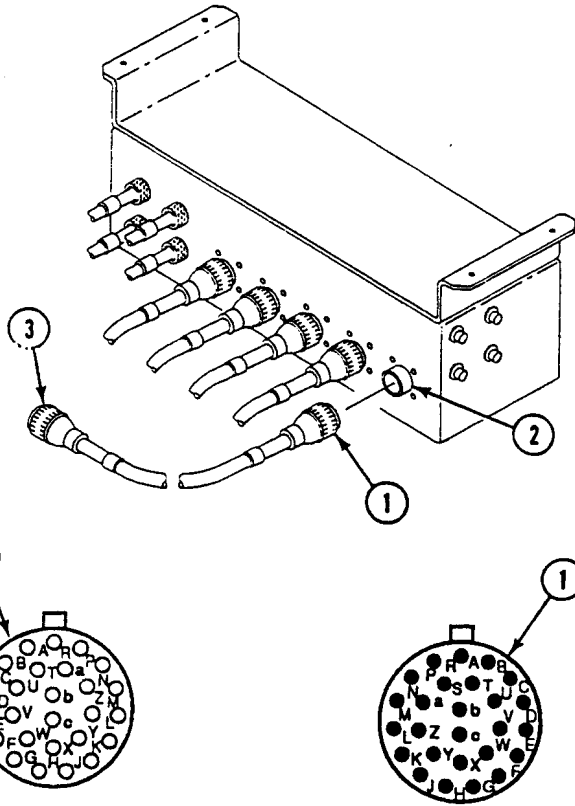
1. Replace data panel A12 (WP 0716 00).
2. Verify no faults found.

NO DATA OUTPUT FROM DATA PANEL A12 (M1068 ONLY) — Continued

0090 00

Y

1. Remove cable W124 plug P109 (1) from patch panel box A10 jack J140 (2).
2. Measure resistance between pin A on plug P109 (1) and socket A on plug P1 (3) of cable W124. Repeat for pins B through a.
3. Does multimeter read 0 ohms for each measurement?

**NO****YN**

1. Replace cable W124 (WP 0757 00).
2. Verify no faults found.

YES**2Y**

1. Replace patch panel box A10 (WP 0724 00).
2. Verify no faults found.

NO LAN OUTPUT FROM DATA PANEL A12 (M1068 ONLY)

0091 00

INITIAL SETUP:

Maintenance Level	Personnel Required
Unit	Signal Support System Specialist 31U10 Helper (H)
Tools and Special Tools	Equipment Condition
Digital Multimeter (WP 0780 00, Item 43)	Engine stopped/shutdown (see your -10)
Electronic Equipment Tool Kit (WP 0780 00, Item 81)	Carrier blocked (see your -10)

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

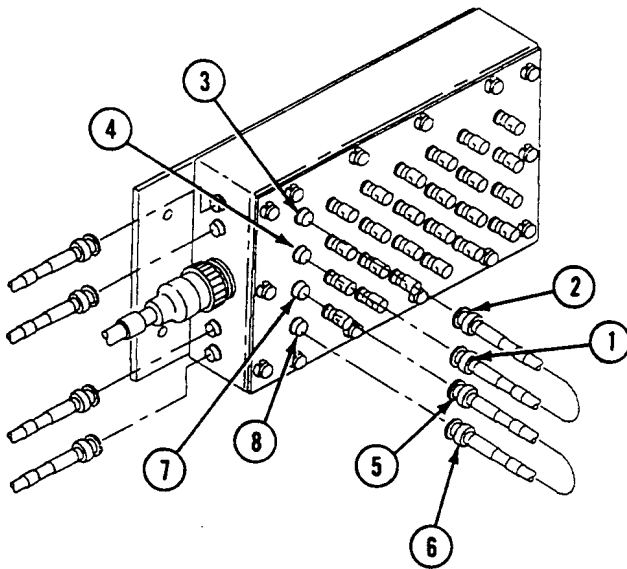
BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

NO LAN OUTPUT FROM DATA PANEL A12 (M1068 ONLY) — Continued

0091 00

T

1. Remove cable W108 plugs P1 (1) and P2 (2) from data panel A12 jacks J107 (3) and J108 (4).
2. Remove cable W107 plugs P1 (5) and P2 (6) from data panel A12 jacks J105 (7) and J106 (8).
3. Measure resistance between center pins of plugs P1 and P2 of each cable.
4. Does multimeter read 0 ohms for each measurement?

**YES****NO****TN**

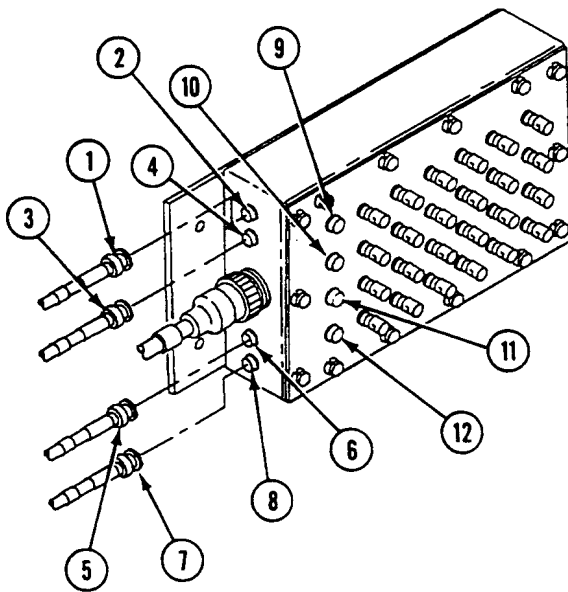
1. Replace cable W107 and/or W108 (WP 0716 00).
2. Verify no faults found.

NO LAN OUTPUT FROM DATA PANEL A12 (M1068 ONLY) — Continued

0091 00

Y

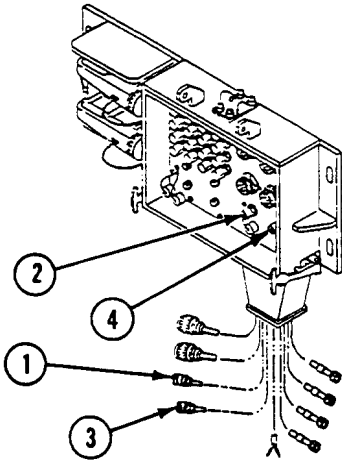
1. Remove the following cable plugs from jacks on data panel A12:
W101 plug P1 (1) from jack J1 (2)
W103 plug P1 (3) from jack J2 (4)
W102 plug P1 (5) from jack J4 (6)
W104 plug P1 (7) from jack J5 (8)
2. Measure resistance between pins of the following jacks on data panel A12:
J1 (2) to J105 (9)
J2 (4) to J106 (10)
J4 (6) to J107 (11)
J5 (8) to J108 (12)
3. Does multimeter read 0 ohms for each measurement?

**YES****YN**

1. Replace data panel A12 (WP 0716 00).
2. Verify no faults found.

2Y

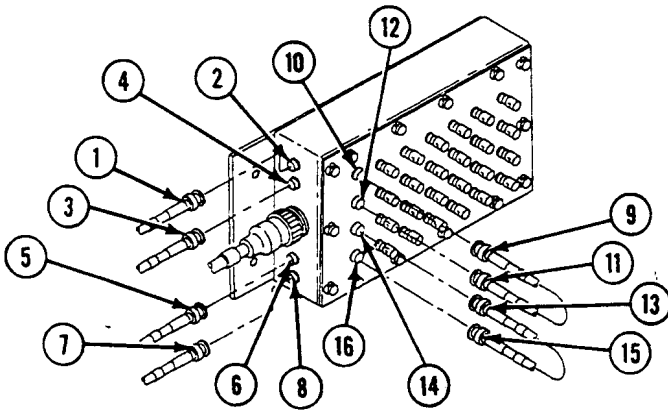
1. Measure resistance between cable W101 plug P1 (1) and external communication box A11 jack J103 (2).
2. Measure resistance between cable W102 plug P1 (3) and external communication box A11 jack J104 (4).
3. Does multimeter read 0 ohms for each measurement?

**YES****NO****2YN**

1. Faulty cables W101 and/or W102. Beyond unit maintenance repair.
2. Notify your supervisor.

3Y

1. Install the following plugs and cables on data panel A12 jacks:
 - W101 plug P1 (1) on jack J1 (2)
 - W103 plug P1 (3) on jack J2 (4)
 - W102 plug P1 (5) on jack J4 (6)
 - W104 plug P1 (7) on jack J5 (8)
 - W107 plug P1 (9) on jack J105 (10)
 - W107 plug P2 (11) on jack J106 (12)
 - W108 plug P1 (13) on jack J107 (14)
 - W108 plug P2 (15) on jack J108 (16)
2. Verify no faults found.



NO DATA OUTPUT FROM DATA PANEL A13 (M1068 ONLY)**0092 00****INITIAL SETUP:**Maintenance Level

Unit

Personnel Required

Signal Support System Specialist 31U10

Helper (H)

Tools and Special Tools

Digital Multimeter (WP 0780 00, Item 43)

Electronic Equipment Tool Kit (WP 0780 00, Item 81)

Equipment Condition

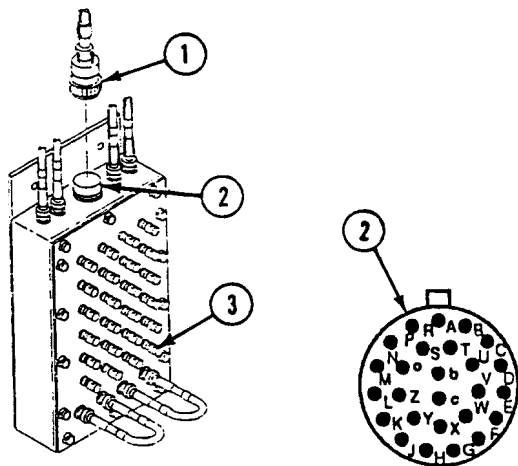
Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

T

1. Remove cable W126 plug P1 (1) from data panel A13 jack J3 (2).
2. Measure resistance between posts (3) and pins of jack J3 (2) as follows:

Post 1 (Red) to pin A	Post 7 (Red) to pin N
Post 1 (Blk) to pin B	Post 7 (Blk) to pin P
Post 2 (Red) to pin C	Post 8 (Red) to pin R
Post 2 (Blk) to pin D	Post 8 (Blk) to pin S
Post 3 (Red) to pin E	Post 9 (Red) to pin T
Post 3 (Blk) to pin F	Post 9 (Blk) to pin U
Post 4 (Red) to pin G	Post 10 (Red) to pin V
Post 4 (Blk) to pin H	Post 10 (Blk) to pin W
Post 5 (Red) to pin J	Post 11 (Red) to pin X
Post 5 (Blk) to pin K	Post 11 (Blk) to pin Y
Post 6 (Red) to pin L	Post 12 (Red) to pin Z
Post 6 (Blk) to pin M	Post 12 (Blk) to pin a
3. Does multimeter read 0 ohms for each measurement?

**YES****TN**

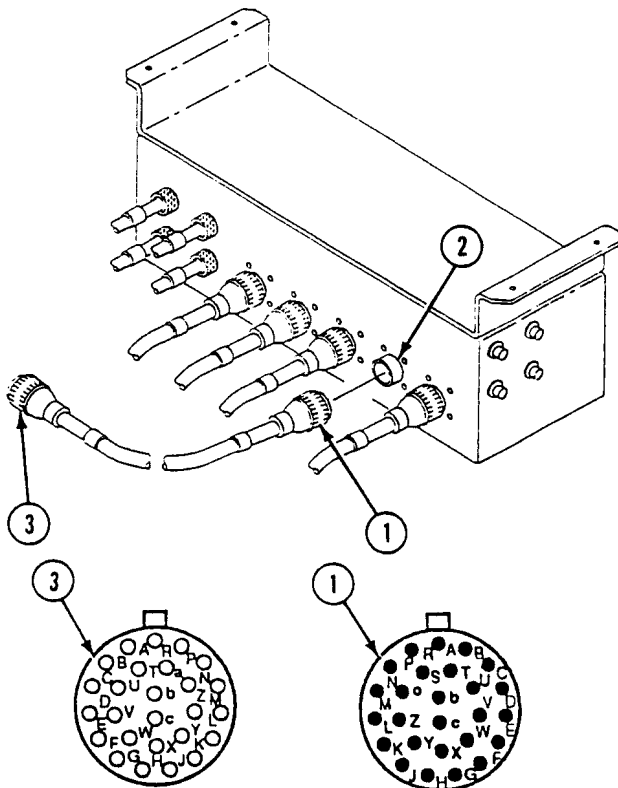
1. Replace data panel A13 (WP 0727 00).
2. Verify no faults found.

NO DATA OUTPUT FROM DATA PANEL A13 (M1068 ONLY) — Continued

0092 00

Y

1. Remove cable W126 plug P108 (1) from patch panel box A10 jack J139 (2).
2. Measure resistance between pin A on plug P108 (1) and socket A on plug P1 (3) of cable W126. Repeat for pins B through a.
3. Does multimeter read 0 ohms for each measurement?

**NO****YN**

1. Replace cable W126 (WP 0758 00).
2. Verify no faults found.

YES**2Y**

1. Replace patch panel box A10 (WP 0724 00).
2. Verify no faults found.

NO LAN OUTPUT FROM DATA PANEL A13 (M1068 ONLY)**0093 00****INITIAL SETUP:**Maintenance Level

Unit

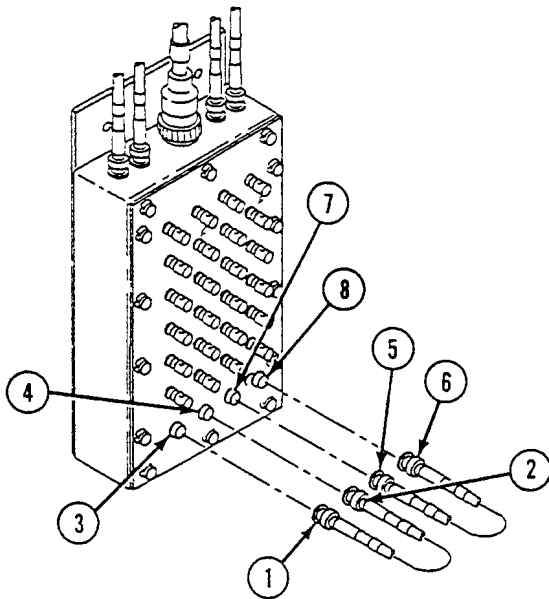
Personnel RequiredSignal Support System Specialist 31U10
Helper (H)Tools and Special ToolsDigital Multimeter (WP 0780 00, Item 43)
Electronic Equipment Tool Kit (WP 0780 00, Item 81)Equipment ConditionEngine stopped/shutdown (see your -10)
Carrier blocked (see your -10)**WARNING****HIGH VOLTAGE** is used in the operation of this equipment.**DEATH ON CONTACT** may result if personnel fail to observe safety precautions.**NEVER** work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.**SHUT OFF POWER** supply to equipment before beginning work. Make sure all external power is off/disconnected.**BE CAREFUL** not to contact high-voltage connections when installing or operating this equipment.

NO LAN OUTPUT FROM DATA PANEL A13 (M1068 ONLY) — Continued

0093 00

T

1. Remove cable W109 plugs P1 (1) and P2 (2) from data panel A13 jacks J109 (3) and J110 (4).
2. Remove cable W110 plugs P1 (5) and P2 (6) from data panel A13 jacks J111 (7) and J112 (8).
3. Measure resistance between center pins of plugs P1 and P2 of each cable.
4. Does multimeter read 0 ohms for each measurement?

**NO****TN**

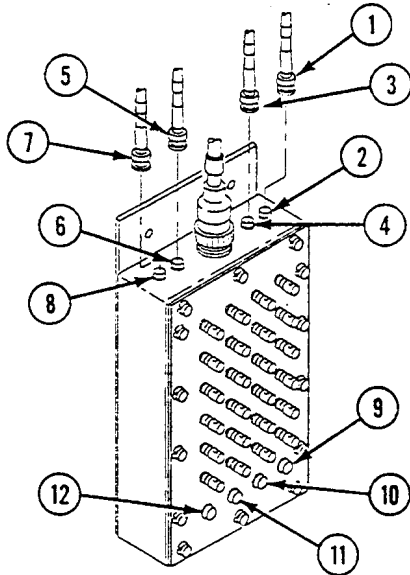
1. Replace cable W109 and/or W110 (WP 0727 00).
2. Verify no faults found.

NO LAN OUTPUT FROM DATA PANEL A13 (M1068 ONLY) — Continued

0093 00

Y

1. Remove the following cable plugs from jacks on data panel A13:
W32 plug P5 (1) from jack J1 (2)
W104 plug P2 (3) from jack J2 (4)
W32 plug P4 (5) from jack J4 (6)
W103 plug P2 (7) from jack J5 (8)
2. Measure resistance between pins of the following jacks on data panel A13:
J1 (2) to J112 (9)
J2 (4) to J111 (10)
J4 (6) to J110 (11)
J5 (8) to J109 (12)
3. Does multimeter read 0 ohms for each measurement?

**YES****YN**

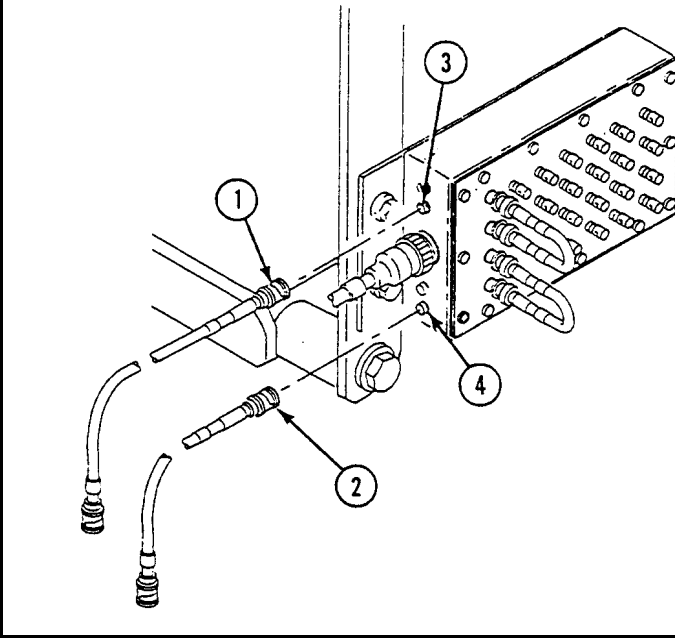
1. Replace data panel A13 (WP 0727 00).
2. Verify no faults found.

2Y

1. Remove cables W103 plug P1 (1) and W104 plug P2 (2) from jacks J2 (3) and J5 (4) on data panel A12.
2. Measure resistance between center pins of plugs P1 and P2 of cables W103 and W104.
3. Does multimeter read 0 ohms for each measurement?

NO**2YN**

1. Replace cable W103 and/or W104 (WP 0756 00).
2. Verify no faults found.

**YES****3Y**

1. Go to No LAN Output from Data Panel A12 (WP 0091 00).

PHONE EXTENSION BOX A14 POST(S) INOPERATIVE (M1068 ONLY)

0094 00

INITIAL SETUP:

Maintenance Level	Personnel Required
Unit	Signal Support System Specialist 31U10 Helper (H)
Tools and Special Tools	Equipment Condition
Digital Multimeter (WP 0780 00, Item 43)	Engine stopped/shutdown (see your -10)
Electronic Equipment Tool Kit (WP 0780 00, Item 81)	Carrier blocked (see your -10)

WARNING



HIGH VOLTAGE is used in the operation of this equipment.

DEATH ON CONTACT may result if personnel fail to observe safety precautions.

NEVER work on equipment unless at least one other person familiar with the operation and hazards of the equipment is nearby. That person should also be familiar with giving first aid. When an operator helps a mechanic, that operator must be warned about dangerous areas.

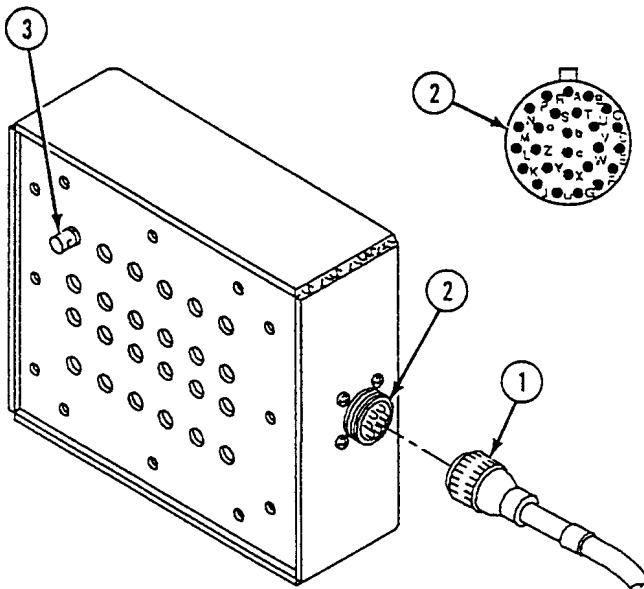
SHUT OFF POWER supply to equipment before beginning work. Make sure all external power is off/disconnected.

BE CAREFUL not to contact high-voltage connections when installing or operating this equipment.

T

1. Remove cable W129 plug P2 (1) from phone extension box A14 jack J1 (2).
2. Measure resistance between posts (3) and pins of jack J1 (2) as follows:

Post 1 (Blk) to pin A	Post 7 (Blk) to pin N
Post 1 (Red) to pin B	Post 7 (Red) to pin P
Post 2 (Blk) to pin C	Post 8 (Blk) to pin R
Post 2 (Red) to pin D	Post 8 (Red) to pin S
Post 3 (Blk) to pin E	Post 9 (Blk) to pin T
Post 3 (Red) to pin F	Post 9 (Red) to pin U
Post 4 (Blk) to pin G	Post 10 (Blk) to pin V
Post 4 (Red) to pin H	Post 10 (Red) to pin W
Post 5 (Blk) to pin J	Post 11 (Blk) to pin X
Post 5 (Red) to pin K	Post 11 (Red) to pin Y
Post 6 (Blk) to pin L	Post 12 (Blk) to pin Z
Post 6 (Red) to pin M	Post 12 (Red) to pin a
3. Does multimeter read 0 ohms for each measurement?



YES

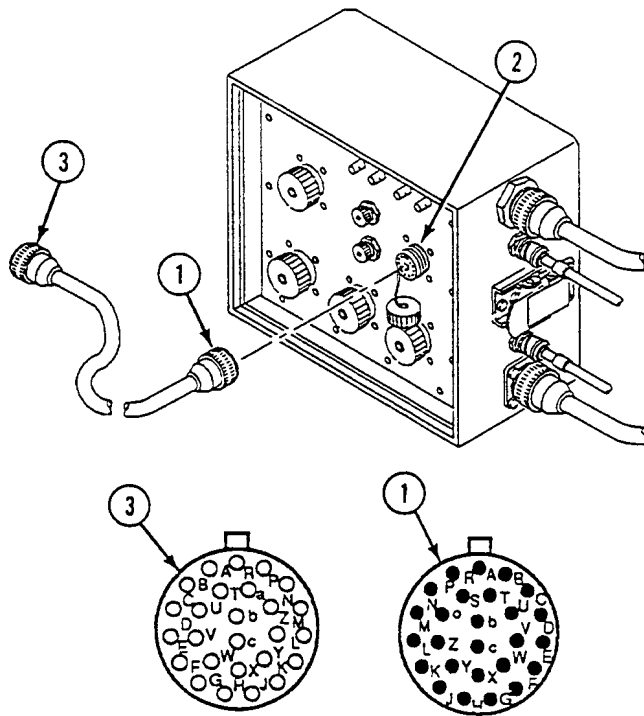
NO

TN

1. Replace phone extension box A14. See TM 11-7010-256-12&P.
2. Verify no faults found.

Y

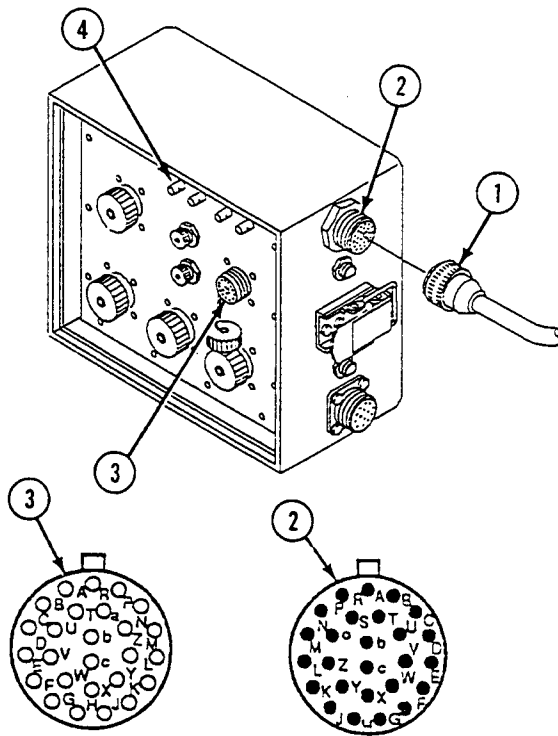
1. Remove cable W129 plug P1 (1) from tent interface panel jack J137 (2).
2. Measure resistance between pin A on plug P1 (1) and socket A on plug P2 (3) of cable W129. Repeat for pins B through a.
3. Does multimeter read 0 ohms for each measurement?

**YES****NO****YN**

1. Replace cable W129.
2. Verify no faults found.

2Y

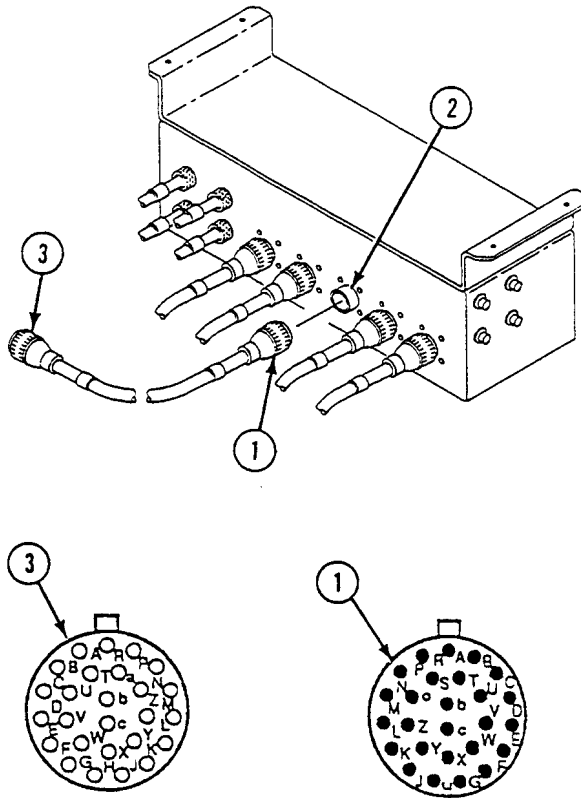
1. Remove cable W32 plug P7 (1) from tent interface panel jack J8 (2).
2. Measure resistance between socket A of jack J137 (3) and pin A of jack J8 (2). Repeat for sockets/pins B through a.
3. Measure resistance between sockets of J137 (3) and posts (4) as follows:
 - Socket A to E117
 - Socket B to E118
 - Socket C to E119
 - Socket D to E120
4. Does multimeter read 0 ohms for each measurement?

**NO****2YN**

1. Replace tent interface panel box A5 (WP 0734 00).
2. Verify no faults found.

3Y

1. Remove cable W32 plug P107 (1) from jack J138 (2) on patch panel box A10.
2. Measure resistance between socket A of plug P7 (3) and pin A of plug P107 (1). Repeat for socket/pins B through a.
3. Does multimeter read 0 ohms for each measurement?

**NO****3YN**

1. Replace cable W32 (WP 0749 00).
2. Verify no faults found.

YES**4Y**

1. Replace patch panel box A10 (WP 0724 00).
2. Verify no faults found.

SPEEDOMETER MALFUNCTIONS

0095 00

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

Power plant front access door opened (see your -10)

Driver's power plant access panel removed
(WP 0430 00)

Power plant front access cover removed (WP 0429 00)

T

1. Check to see if speedometer fails to give any reading.
2. Does speedometer fail to give any reading?

NO

TN

GO TO BY (PAGE 0095 00-2)

YES

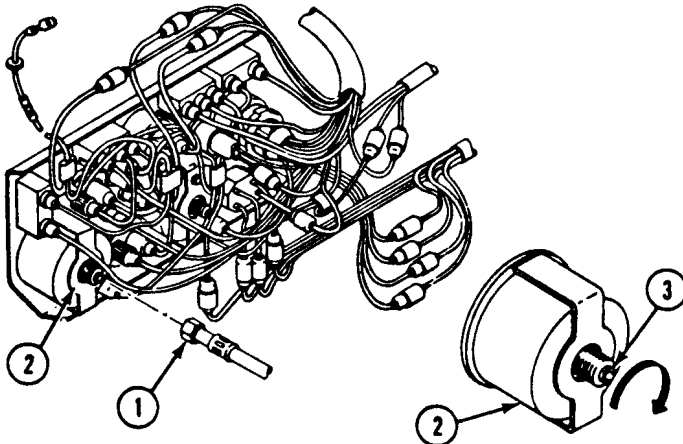
Y

1. Remove speedometer cable (1) from speedometer (2).
2. Check speedometer drive (3).
3. Does speedometer drive spin freely?

NO

YN

1. Replace speedometer (WP 0247 00).
2. Verify no faults found.



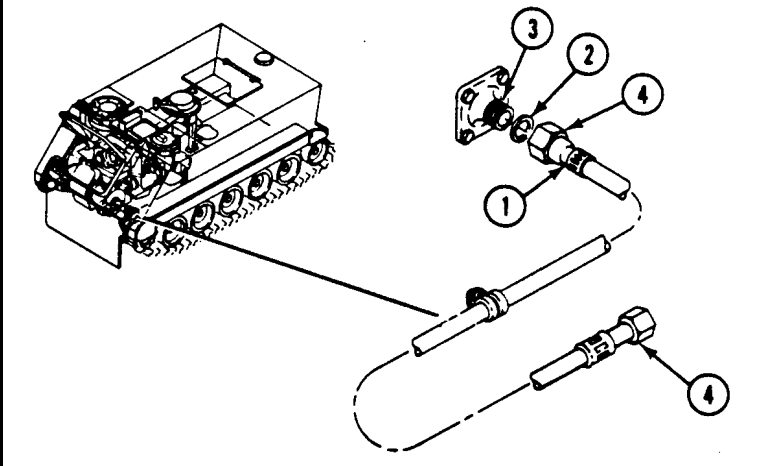
YES

SPEEDOMETER MALFUNCTIONS — Continued

0095 00

2Y

1. Remove speedometer cable (1) and packing (2) from final drive adapter (3).
2. Check speedometer cable ends (4).
3. Does cable spin freely?



NO

2YN

1. Repair or replace speedometer cable (WP 0248 00).
2. Verify no faults found.

YES

3Y

1. Remove speedometer drive adapter from final drive (WP 0248 00).
2. Inspect final drive adapter.
3. Is final drive adapter seized or damaged?

NO

3YN

1. Replace speedometer (WP 0247 00).
2. Verify no faults found.

YES

4Y

1. Install speedometer cable on speedometer.
2. Replace final drive adapter (WP 0248 00).
3. Verify no faults found.

BY

1. Check to see if speedometer cable flexible core has been serviced.
2. Has speedometer cable flexible core been serviced?

NO

BYN

1. Service speedometer cable flexible core (WP 0248 00).
2. Verify no faults found.

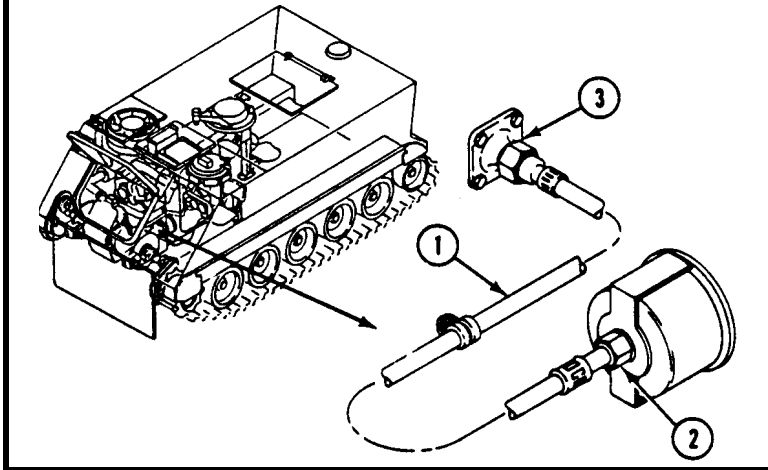
YES

SPEEDOMETER MALFUNCTIONS — Continued

0095 00

B2Y

1. Inspect speedometer cable assembly (1) for damage between speedometer (2) and final drive (3).
2. Is cable assembly free of damage?

**YES****B3Y**

1. Replace speedometer (WP 0247 00).
2. Verify no faults found.

NO**B2YN**

1. Replace speedometer cable assembly (WP 0248 00).
2. Verify no faults found.

TACHOMETER MALFUNCTIONS**0096 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

Helper (H)

References

See your -10

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

Power plant front access door opened (see your -10)

Driver's power plant access panel removed
(WP 0430 00)

Power plant front access cover removed (WP 0429 00)

Crew compartment power plant access panel removed
(see your -10)**T**

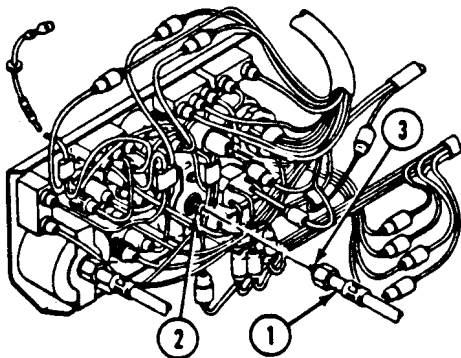
1. Start engine (see your -10).
2. Does tachometer fail to show any reading?

NO**TN****GO TO BY (PAGE 0096 00-2)****YES****Y**

1. Stop engine (see your -10).
2. Remove tachometer cable (1) from tachometer (2).
3. Start engine (see your -10).
4. Observe tachometer cable drive tip (3).
5. Does tachometer cable drive tip fail to rotate?

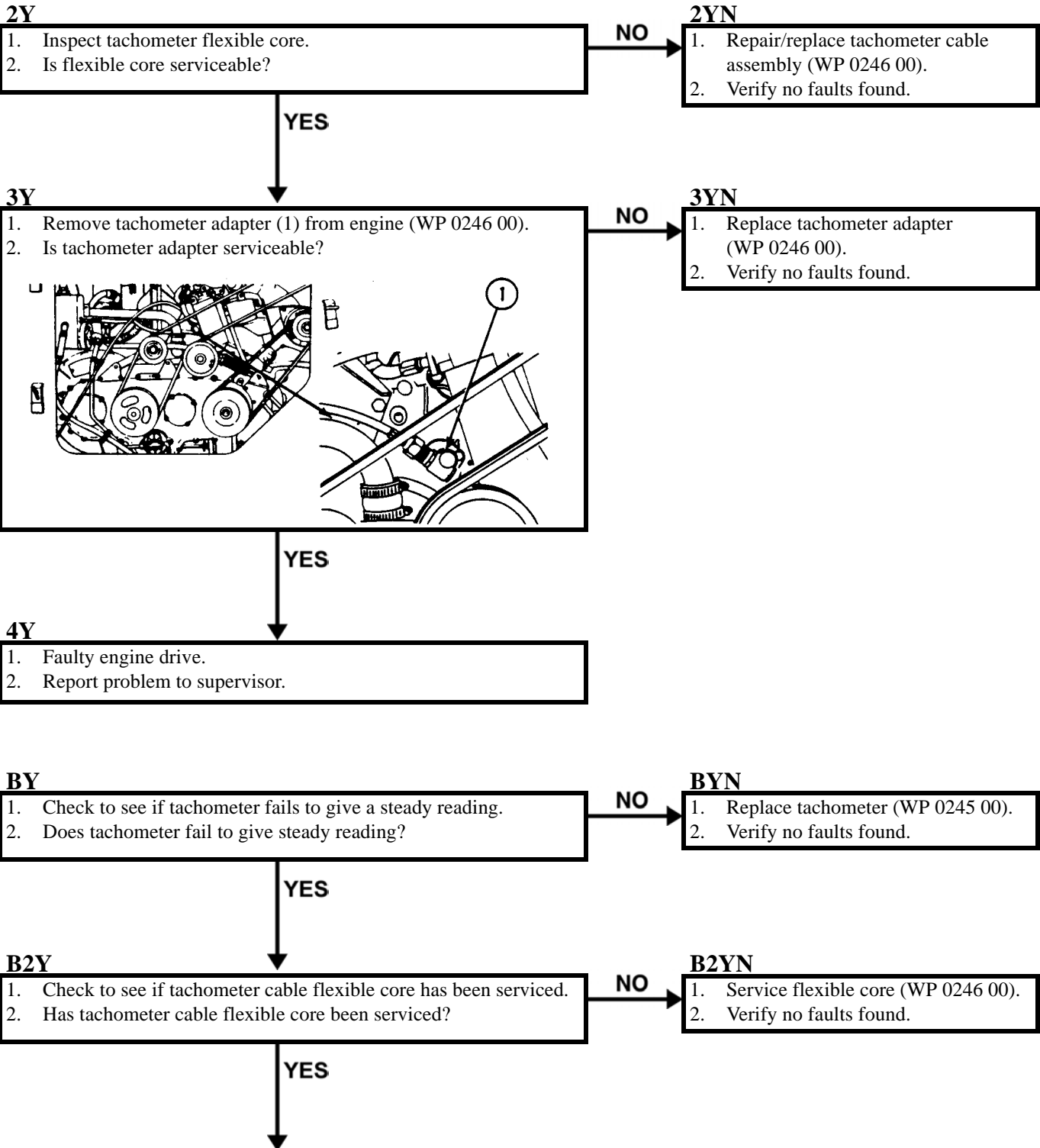
NO**YN**

1. Stop engine (see your -10).
2. Replace tachometer (WP 0245 00).
3. Verify no faults found.

**YES**

TACHOMETER MALFUNCTIONS — Continued

0096 00



TACHOMETER MALFUNCTIONS — Continued

0096 00**B3Y**

- | |
|--|
| <ol style="list-style-type: none">1. Repair/replace tachometer cable assembly (WP 0246 00).2. Verify no faults found. |
|--|

CHEMICAL AGENT AUTO ALARM MALFUNCTIONS**0097 00****INITIAL SETUP:**Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

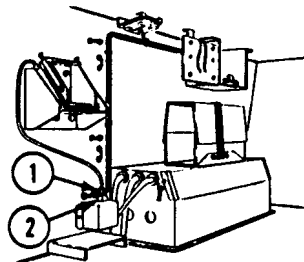
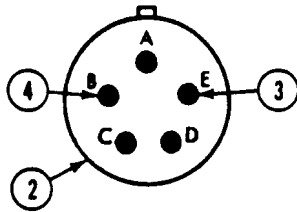
Digital Multimeter (WP 0780 00, Item 43)
 General Mechanic's Tool Kit (WP 0780 00, Item 29)
 Jumper Wire

Equipment Condition

Engine stopped/shutdown (see your -10)
 Operator's manual troubleshooting performed
 (TM 3-6665-225-12)

T

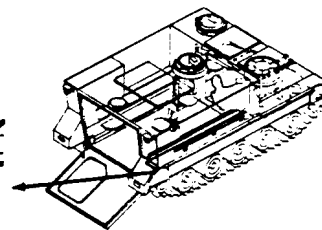
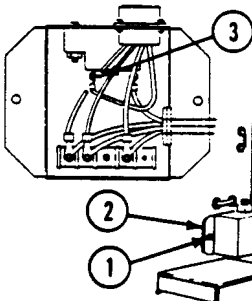
1. Remove wiring harness plug (1) from junction box jack (2).
2. Measure voltage at junction box jack (2) between 6C pos (+) pin E (3) and 7C neg (-) pin B (4).
3. Does multimeter read less than 17 volts?

**NO****TN**

1. Faulty detector. Notify your supervisor.

YES**Y**

1. Remove two screws (1) and pull junction box (2) away from bulkhead.
2. Measure voltage between terminal 6C (3) on circuit breaker and ground.
3. Does multimeter read less than 17 volts?

**NO****YN**

1. Repair wiring harness 12313234 (WP 0312 00).
2. Verify no faults found.

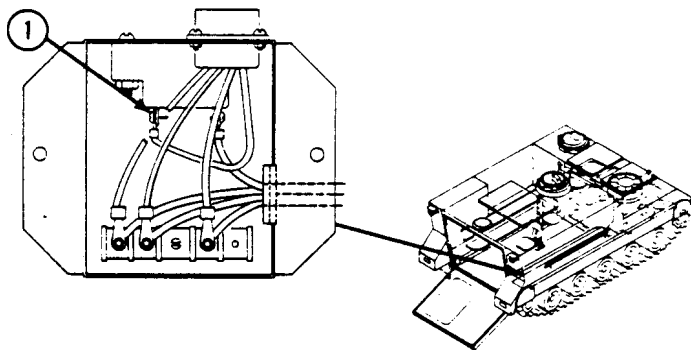
YES

CHEMICAL AGENT AUTO ALARM MALFUNCTIONS — Continued

0097 00

2Y

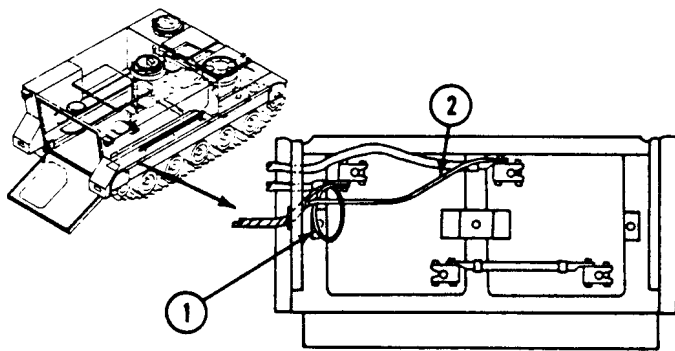
1. Measure voltage between terminal 6B (1) on circuit breaker and ground.
2. Does multimeter read less than 17 volts?

**NO****2YN**

1. Replace circuit breaker (WP 0773 00).
2. Verify no faults found.

YES**3Y**

1. Remove battery box cover.
2. Remove 6B pos (+) and 7B neg (-) terminal from battery post.
3. Measure resistance between 6B pos (+) (1) terminal from battery and circuit breaker.
4. Measure resistance between 7B neg (-) (2) terminal from battery and circuit breaker.
5. Does multimeter read 0 ohms for either measurement?

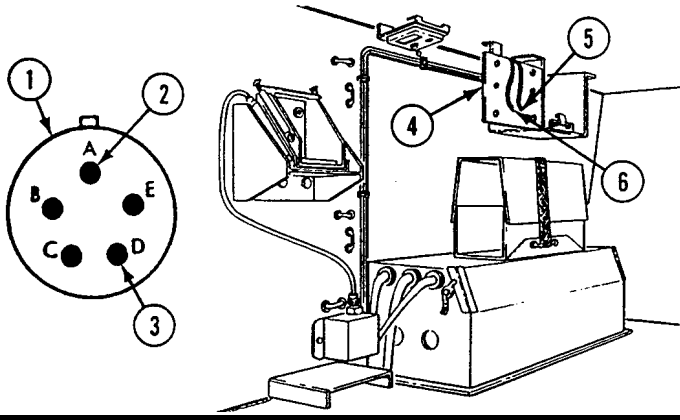
**NO****3YN**

1. Replace cable assembly (WP 0776 00).
2. Verify no faults found.

YES

4Y

1. Install a jumper wire on wiring harness 12313234 (1) connector between pins A (2) and D (3) on cable assembly 11647665 (4).
2. Measure resistance between circuits 509B (5) and 509C (6) at M42 alarm.
3. Does multimeter read 0?

**YES****5Y**

1. Faulty M42 alarm. Notify your supervisor.

NO**4YN**

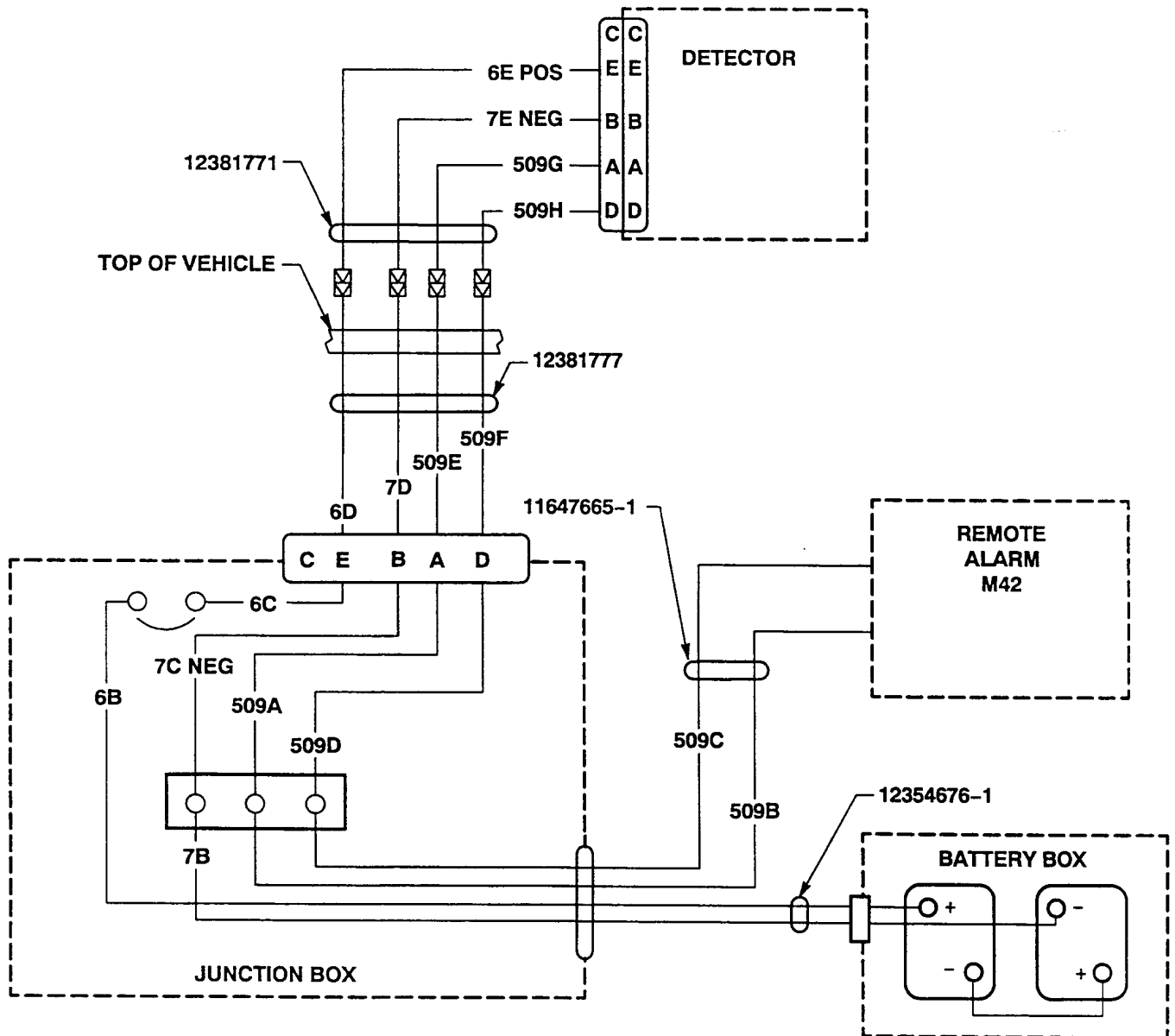
1. Remove jumper wire.
2. Repair cable assembly 11647665 (WP 0312 00).
3. Verify no faults found.

CHEMICAL AGENT AUTO ALARM SCHEMATICS

0098 00

DESCRIPTION

Use the schematic below as an aid for performing system troubleshooting procedures.



CHEMICAL AGENT AUTO ALARM SYSTEM SCHEMATICS

STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL COMBUSTION ENGINES (REPROGRAMMABLE))

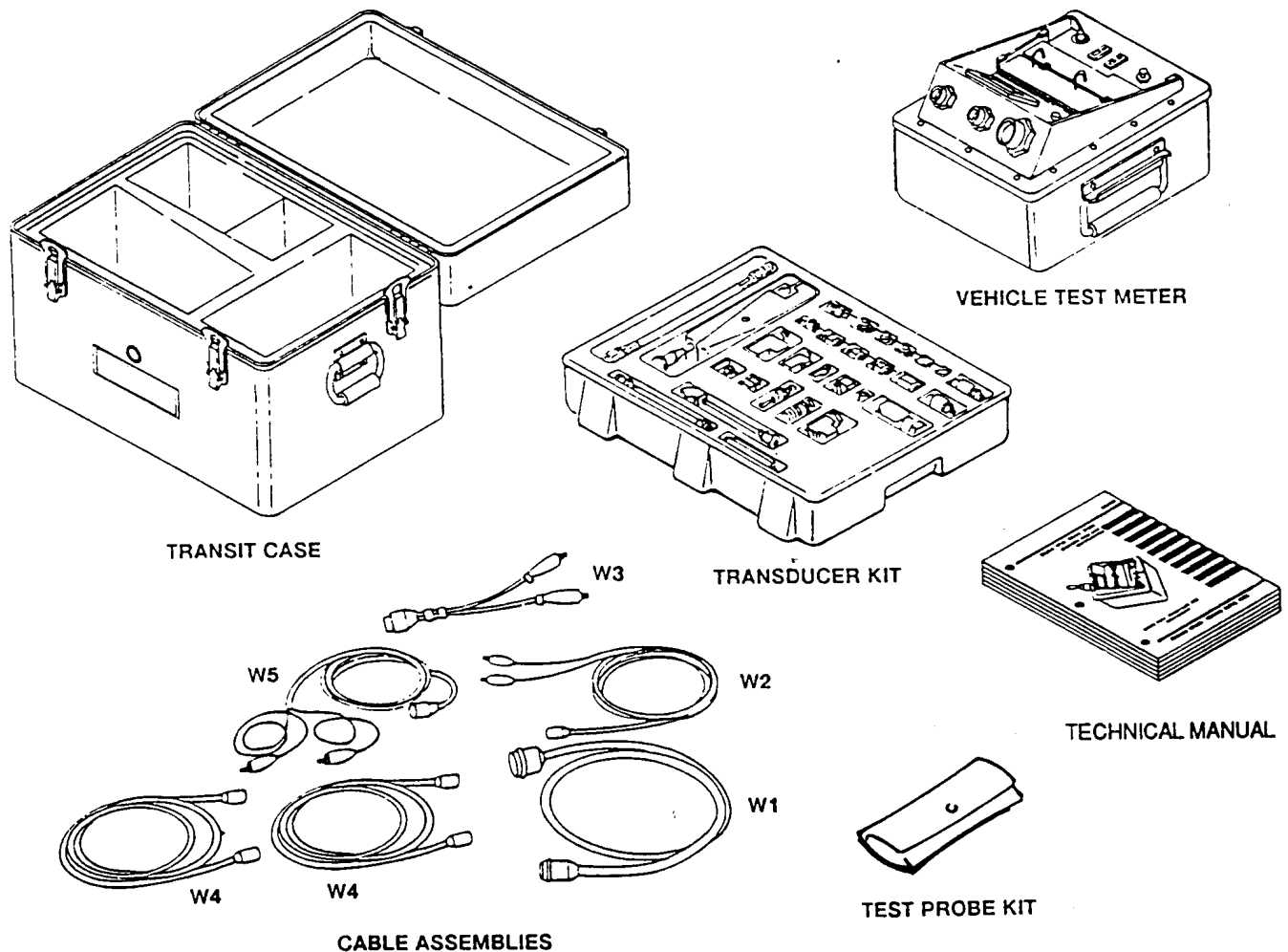
0099 00

GENERAL

- (1) STE/ICE-R, a testing system for internal combustion engines, provides measurements on voltage resistance, pressure, temperature and speed to analyze the condition of an engine system.
- (2) This section provides a general overview of STE/ICE-R equipment and operations, along with specific procedures in diagnosing and isolating malfunctions of the M113A2, M577A2, M1064, M901A1, or M1059 engine.
- (3) STE/ICE-R will also provide a thorough preventative maintenance check on M113A2, M577A2, M1064, M901A1, or M1059 engine as part of service upon receipt and as an annual check in the PMCS.

DESCRIPTION OF STE/ICE-R EQUIPMENT

The STE/ICE-R set consists of a vehicle test meter (VTM), five cable assemblies, transducer kit (TK), manual, test probe kit, and transit case.

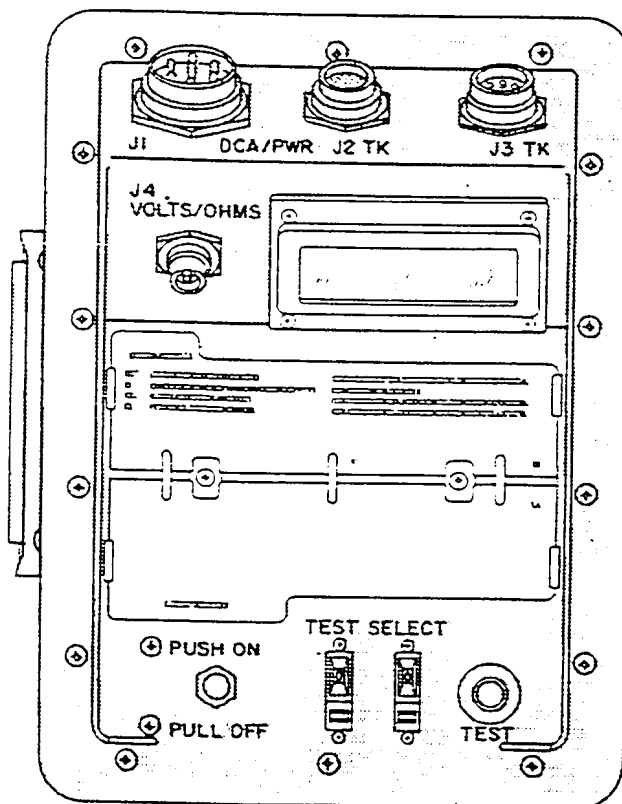


STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL COMBUSTION ENGINES REPROGRAMMABLE) — Continued

0099 00

VEHICLE TEST METER (VTM)

The VTM is the diagnostic meter of STE/ICE-R used for testing electrical and mechanical components of the M113A2, M577A2, M1064, M901A1, or M1059 engine. The VTM consists of three switches, a readout display, flip cards, and four cable connectors.



a. Switches.

The three switches are a PUSH ON/PULL OFF switch, TEST SELECT switch, and TEST button. The PUSH ON/PULL OFF switch is used to control power to the VTM from the power source. The TEST SELECT switches are two ten-position switches used to select the test to be performed. The TEST button has two functions: (1) when pressed and released, it initiates selected test; (2) when pressed and held, it initiates an offset test.

b. Readout Display.

The readout display gives five different types of messages during testing and up to a maximum of four characters per message. Readout display messages can be found later in this work package. The types of messages are:

- error
- status
- numerical
- prompting
- confidence test error

c. Flip Cards.

The flip cards, attached to the front of the VTM, provide a quick but limited reference for the operator. These flip cards list test numbers, messages, and some procedures. Test limits are also provided for some vehicles.

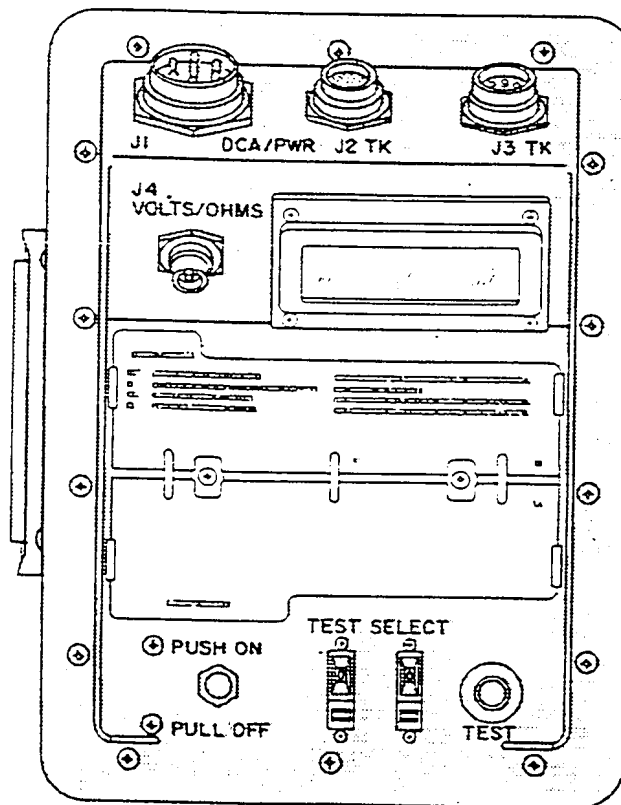
STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL COMBUSTION ENGINES REPROGRAMMABLE) — Continued

0099 00

d. Cable Connectors.

The four cable connectors on the VTM are: DCA/PWR J1, transducer cable connectors J2 TK and J3 TK, and VOLTS/OHMS J4.

- DCA/PWR connector J1 – used to connect VTM to either a vehicle diagnostic connector with the DCA cable W1 or to a DC power source with the power cable W5. The DC power source is usually the vehicle's batteries.
- Transducer cable connectors J2 TK and J3 TK – used to connect transducer cables W4 to VTM. Power and signals are routed through these connectors. Both connectors may be used when a test requires two measurements to be made at the same time.
- VOLTS/OHMS connector J4 – used to connect test probe cable W2 to VTM for voltage and resistance tests.

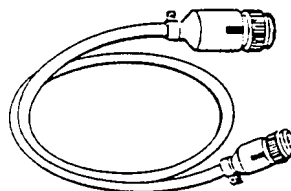
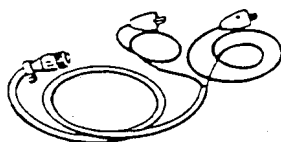
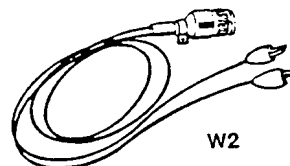
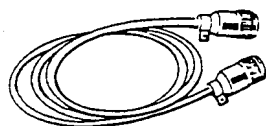
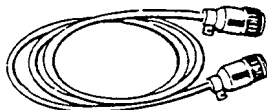


**STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL
COMBUSTION ENGINES REPROGRAMMABLE) — Continued****0099 00****CABLE ASSEMBLIES**

In procedures in this manual, the cable assemblies are referred to by a number for quick identification. Each cable also has a name which describes its use. A reference to W1, for example, would indicate the DCA cable. Connectors on the cable are identified by a number preceded by either a P or an E, such as P1 or E2.

The cable assemblies included in the STE/ICE-R are:

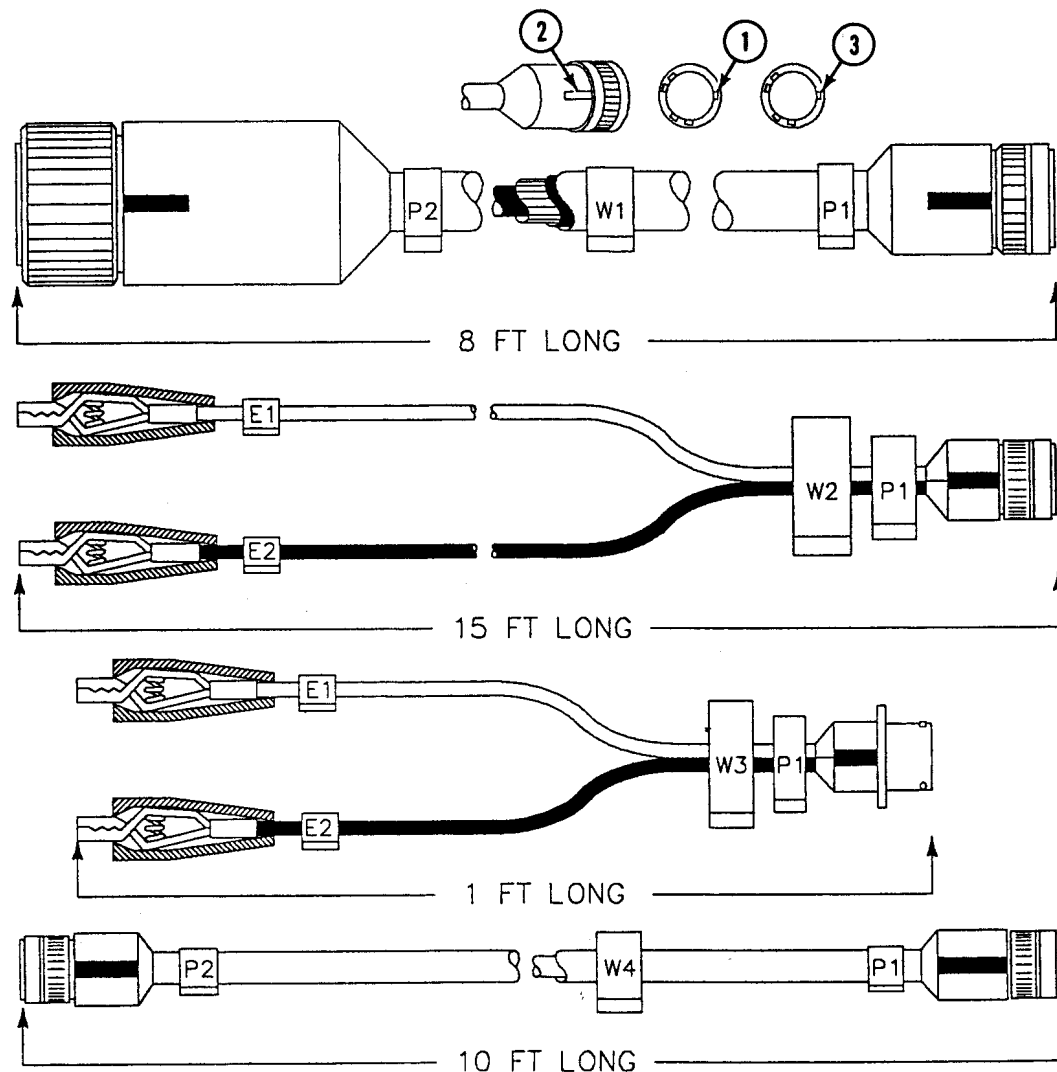
- W1 — DCA cable,
- W2 — test probe cable,
- W3 — ignition adapter cable,
- W4 — transducer cable (two), and
- W5 — power cable.

**W1****W5****W2****W4****W4****W3**

When cables are connected, the large key (1) located by the white stripe (2) on the cable connector mates with large keyway (3) of connector on VTM or transducer.

STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL COMBUSTION ENGINES REPROGRAMMABLE) — Continued

0099 00


a. Diagnostic Connector Assembly Cable W1.

The W1 is used to power the VTM and provide access to test points and sensors connected to vehicle/equipment mounted DCA. There is no DCA capability in the M113A2 FOV presently.

b. Test Probe Cable W2.

The test probe cable for both general and special measurements. It is used for measuring voltages, frequency, resistance, and continuity, and also for the first peak series and compression unbalance tests. W2 is divided into two color coded leads: red for E1 and black for E2. Test clips E1 and E2 of W2 attach to points on the vehicle/equipment being tested.

c. Ignition Adapter Cable W3.

The ignition adapter cable W3 is used in measuring dwell angle, points voltage, engine RPM, and power tests. W3 is divided into two color coded leads: red for E1 and black for E2. Cable W3 is not used in the M113A2 FOV.

d. Transducer Cables W4.

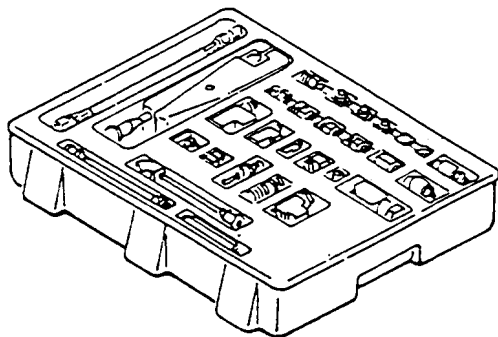
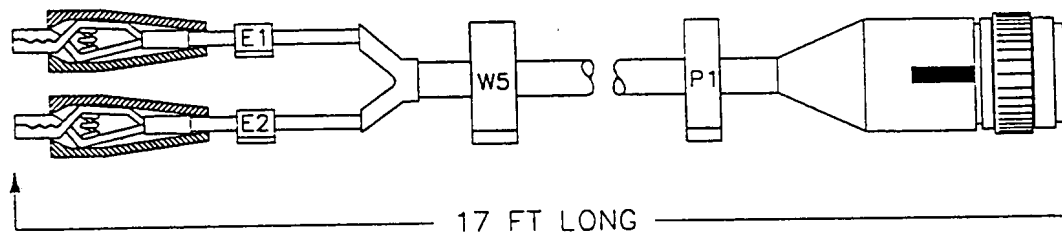
The transducer cables W4 are used as extensions to connect the VTM to a pressure transducer, pulse tachometer, current probe, or ignition adapter cable. If necessary, two transducer cables can be joined using connector adapter, TK item 29.

STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL COMBUSTION ENGINES REPROGRAMMABLE) — Continued

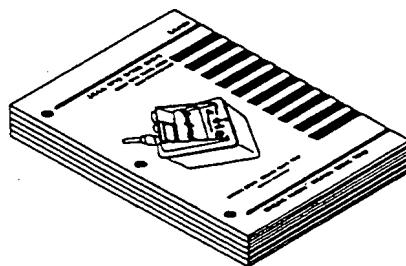
0099 00

e. Power Cable W5.

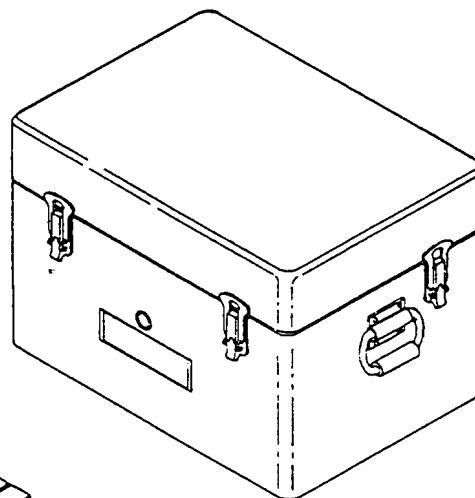
The power cable W5 is used to power the VTM when cable W1 is not being used. Cable W5 is divided into two leads with color coded clips: red for E1 and black for E2. Battery clips E1 and E2 are attached to a vehicle/equipment battery or a 9 to 32 volt 4A regulated power supply. Do not connect the VTM to a battery charger. Damage to the VTM may result.



TRANSDUCER KIT



TECHNICAL MANUAL



TRANSIT CASE

TRANSDUCER KIT (TK)

The transducer kit (TK) is a tray inside the transit case that contains transducers, adapters, and fittings. The TK is stored in a molded tray in the top of the transit case.

Many of the fittings do not have part number markings on them and are referred to by TK item number and name. Each fitting is identified by TK item number and part number.

MANUAL

TM 9-4910-571-12&P contains operating instructions, operator and organizational maintenance instructions, and repair parts and special tools information.

**STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL
COMBUSTION ENGINES REPROGRAMMABLE) — Continued**

0099 00**TRANSIT CASE**

The STE/ICE-R is housed in a portable protective transit case which contains all necessary accessories and instructions. A pressure relief valve located on the front of the case allows the operator to release any pressure or vacuum resulting from changes in climate during transit.

READOUT DISPLAY MESSAGES**Error Messages**

Error messages indicate the VTM needs additional or corrected information before testing can continue or additional procedures are required.

All error messages are displayed as an E followed by three numbers (for example, E003).

DISPLAY	MEANING
E000	VTM has been asked for information that it does not have. For example, you have requested the vehicle/equipment ID and it has not been entered.
E001	A test number which does not exist has been entered on the TEST SELECT switches.
E002	The required transducer is not connected.
E003	Test number wrong for DCA connected. This can occur if test selected does not apply to the class of vehicle/equipment under test or if the DCA harness does not have the required transducer.
E004	No longer used. If message appears, turn in test set.
E005	Required offset test was not performed.
E007	The VID number and number-of-cylinders information entered do not agree.
E008	VTM is not receiving required voltage signal for selected test. This message can occur on tests 14, 15, and 72 through 79.
E009	VTM is not receiving engine speed signal. This applies only to engine power test and SI full power simulation.
E010	A wrong VID number was entered. The VTM will only accept numbers between 01 and 99. If E010 is displayed when the VID entered was between 01 and 99, it means that the VID does not agree with the identity of the DCA harness powering the VTM. The VTM will accept this, allowing you to power through the DCA while testing another vehicle.
E011	Throttle control was operated incorrectly. It was taking too long to accelerate or decelerate during power test.
E012	The SI ignition adapter, TK item 30, or CI pulse tachometer, TK item 34, is missing or is not connected to the VTM.
E013	VTM is unable to use data received.
E014	The wrong number of cylinders was entered.
E015	No longer used. If message appears, turn in test set.
E017	VTM is not receiving ignition information during dwell test.
E018	Test discontinued due to no information being detected by VTM. This will occur after several minutes of no-signal operation.

**STE/ICE–R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL
COMBUSTION ENGINES REPROGRAMMABLE) — Continued**

0099 00

E020	No first peak information was detected by the VTM.
E021	VTM cannot calculate result. Current is over current probe's range, and VTM did not sample correct portion of data.
E022	External voltage was detected in the circuit under test while measuring resistance.
E023	VTM's constant voltage source is not working.
E024	Test is not valid for VID entered.
E027	Error is entry of compression unbalance constants.
E028	Test just entered cannot be used with control function 06.
E030	VID entered conflicts with speed transducer attached.
E032	Vehicle's cranking speed is varying too much for a compression unbalance measurement.
E033	Error in entry of power test constants.

Status Messages

Status messages keep the operator informed of what is happening.

DISPLAY	MEANING
.8.8.8.8	There is power to the VTM, and the display is working properly. This appears only for a short period after power is turned on.
.9.9.9.9	VTM is reading a test value beyond its range.
PASS	Unit under test has passed test, or VTM has accepted a control function entry.
FAIL	Unit under test has failed test.
CON	Accepted control function input.
AUE	Numerical display is an average value.
LO	Engine speed below 1600 rpm during SI power test indicates the engine failed the power test.
	VTM is busy.

Numerical Readouts

Units of measurement (psi, rpm, Volts, etc.) are not displayed. Numerical readouts indicate the measured value in units of the measurement being made. For example, if you are measuring 0–45 volts DC, 12.7 is volts DC. If you are measuring 0–25 psig pressure, 12.7 is psig. The units for each test are listed on the flip cards. Also, the readout will alternate between displaying values and displaying vehicle identification data (VID).

**STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL
COMBUSTION ENGINES REPROGRAMMABLE) — Continued**

0099 00**Prompting Messages**

Prompting messages tell the operator to do something. After the operator action is completed, testing will continue. Some of the prompting messages and their meanings are as follows:

DISPLAY	MEANING
UEH	Tells the operator to enter VID on the TEST SELECT switches.
CYL	Tells the operator to enter the number of cylinders into the VTM.
GO	Tells the operator to crank engine.
0066	Tells the operator to set TEST SELECT switches to 99 during confidence test.
CAL	Tells the operator to release the TEST button during an offset test.
CIP	Tells the operator to apply full throttle in a CI power test.

Confidence Test Error Messages

Confidence test messages are displayed either as PASS or by a C followed by three numbers (#). A C### is an error message used by VTM repair personnel as an aid in troubleshooting.

If a C### message appears during confidence test or during normal operation, go to confidence test fault isolation, TM 9-4910-571-12&P, for the necessary corrective action.

TEST METHOD

The test method consists of a pre-test inspection and STE/ICE-R testing.

Pre-test Inspection

Before using STE/ICE-R to test the carriers, perform the following pre-test inspections:

- | | |
|-----------------------|--|
| a. Fan Belts. | Check for proper tension. Replace if cracked or frayed. |
| b. Oil Level. | Bring up to proper level if low. |
| c. Fuel Level. | Check that the fuel tank has enough fuel for testing. |
| d. Radiator. | Bring up to proper level if low. |
| e. Battery. | Replace the battery if the case is cracked or the terminal posts are damaged. Clean off all corrosion. Check that the battery connections to ground and starter motor are in good condition, securely connected, and clean. Check the electrolyte level (see TM 9-6140-200-14). If low, bring up to proper level with distilled water. |

**STE/ICE–R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL
COMBUSTION ENGINES REPROGRAMMABLE) — Continued**

0099 00**VEHICLE TEST CARD (VTC)**

Once familiar with STE/ICE–R testing procedures, the vehicle test card (located later in this work package) can be used as a quick reference.

The front of the test card contains all of the information, in abbreviated format, that the user will need to perform common measurements on the carrier. The organization from the top of the card to the bottom represents a logical order of steps from powering up the VTM to completing a series of tests.

The top of the card describes the power up sequence of STE/ICE–R for the carrier. Next, a table is provided which lists many measurements that are useful in troubleshooting the carrier. The table includes: the associated VTM test number, any required offset test limits, operating condition of the engine, special connections required, the expected limits for pass or fail, and the units of measurement. Also included on the front of the card are hook-up diagrams.

The organization of the table allows measurements with the carrier engine turned off to be performed first. These measurements will ensure that the starting system of the carrier is in working order before proceeding. The order of the other measurements is as follow:

- Measurements with the engine running but not warm.
- Measurements requiring the engine to be warm and running.
- Measurements requiring the engine to be warm and not running.
- Miscellaneous measurements.

The back of the VTC contains the hookups for measurements used to troubleshoot carrier components. Measurements that require special hookups are also included on this side of the VTC.

To start the test message, first perform the pre-test inspection and then the charging system operational check (WP 0020 00).

STE/ICE–R ENGINE TROUBLESHOOTING METHOD

When a malfunction in the engine is recognized by the mechanic, the “flip cards to Troubleshooting” will provide a reference to a specific procedure to isolate the cause of the malfunction.

To start the STE/ICE–R engine troubleshooting method, do the following:

- | | |
|------------------------------|---|
| a. Perform Hook Up. | First, perform HOOK UP to set up STE/ICE–R and check to see if it is in working order. |
| b. Perform Procedure. | Now that STE/ICE–R is hooked up properly and checks out, perform the procedure cited in the “Quick Guide to Troubleshooting.” |

The rules to follow when using STE/ICE–R engine troubleshooting method are:

- (1) Never enter in the middle of a procedure.
- (2) Follow each instruction in a procedure. Do not skip any instructions or procedures.
- (3) After correcting a problem with a procedure, test run the component, engine, or power plant to ensure the problem does not still exist.

**STE/ICE–R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL
COMBUSTION ENGINES REPROGRAMMABLE) — Continued**

0099 00**BATTERY TEST CARDS**

The STE/ICE–R battery test procedures allow the user to evaluate the condition and state of charge of carrier/equipment batteries. These procedures use the battery internal resistance and battery resistance change measurements. Battery internal resistance evaluates the state of charge of the battery. Battery resistance change evaluates the battery condition.

Battery state of charge is a measure of the amount of energy stored in the battery. A fully charged battery contains the maximum amount of energy stored. If the battery fails the battery state of charge evaluation, the battery may be recharged to return the battery to full charge.

The battery condition is a measure of the battery's ability to accept and maintain a good charge. A battery in poor condition may be able to be fully recharged. However, a battery in poor condition with a full charge will lose its charge more quickly than a battery in good condition with a full charge. If a battery fails the battery condition evaluation, then the battery should be replaced.

The procedures for testing batteries are listed on three battery test cards. Each card describes procedures for evaluating different combinations of batteries:

- Complete battery pack
- Series pair of batteries
- Individual batteries

BATTERY PACKS

A battery pack is the combination of four or more batteries in a particular circuit of a carrier/equipment, i.e. the starting circuit. Testing the batteries in a pack evaluates the general condition of the pack as a whole. Note, the results of a battery pack test may be misleading. A single battery from a pack of four may be bad even though the pack as a whole may pass the tests. This can happen if the other three batteries in the pack are in very good condition. In order to test a battery pack, the current probe must be clamped around a single cable carrying all of the starter current. If such a connection cannot be made, then test each pair of batteries separately.

SERIES PAIRS

A series pair is one in which the negative terminal of one battery is connected by a cable to the positive terminal of another battery. This test configuration should be used when any of the following conditions exists:

There are only two batteries (one series pair) in the carrier/equipment.

An evaluation of the pack is desired, but the current probe cannot measure the total starter current.

This condition can occur if the cable is not readily accessible or if the cable is physically too large.

The battery pack test has failed, and the user wants to further identify any bad battery pair.

NOTE

Testing each series pair yields a better evaluation than testing the pack as a whole.

INDIVIDUAL BATTERIES

An individual battery test refers to the process of testing one battery at a time. The battery could be part of a pack, a series pair, or a single battery. Test the batteries individually if a battery series pair failed the tests and it is desired to isolate to a single battery (or if there is only one battery in the circuit). Testing individual batteries gives the best evaluation.

**STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL
COMBUSTION ENGINES REPROGRAMMABLE) — Continued**

0099 00

DESCRIPTION OF TEST CARDS

The front of each test card has three sections. The top of the card explains how to connect the VTM to the batteries being tested. The middle part of the card describes the procedure to follow in order to evaluate the batteries. The bottom of the card contains illustrations showing typical carrier hookups.

The back of each card also has three sections. The upper left-hand block lists the possible VTM displays and explains their meanings. This block suggests corrective action for the user. The right-hand side of the card contains battery test limits for three common military batteries. These limits may be used if the carrier/equipment TM does not provide limits. The lower left-hand portion of the card contains a table showing how to apply the limits to evaluate the battery condition and state of charge.

BATTERY EVALUATION PROCEDURE**Use Procedures On Battery Test Card To Hook-up VTM.**

The following information will enable the user to determine the correct tests:

Use series 73 and 75 for the following conditions:

- (1) Testing a battery pack that is also powering the VTM.
- (2) Testing a battery series pair that is also powering the VTM.
- (3) Testing an individual battery that is the only battery in the circuit and is powering the VTM.

Use series 77 and 79 for the following conditions:

- (1) Testing a battery pack that is not powering the VTM.
- (2) Testing a battery series pair that is not powering the VTM.
- (3) Testing an individual battery that is not the only battery in a circuit or is not powering the VTM.

Use Test Procedure On Battery Test Card To Complete Evaluation.

- a. Evaluate battery condition using battery resistance change test (#75 or #79). Note the result.
- b. Evaluate battery state of charge using the battery internal resistance test (#73 or #77). Note the result.
- c. Compare test results to limits in carrier/equipment TM. If carrier/equipment TM does not have test limits, use test limits provided in this section. If the battery internal resistance test passes, then the batteries are fully charged. If the battery internal resistance test fails, then the batteries are not adequately charged. If the battery resistance change test passes, then the batteries are good and will retain their charge. If the battery resistance change test fails, then the batteries are bad and will not retain their charge.
- d. If batteries are out of limits, perform one or all of the following:
 - (1) Check battery electrolyte level.
 - (2) Check battery connections and terminals. Clean or tighten if necessary. Check connections between VTM and batteries.
 - (3) Refer to carrier/equipment TM to check battery specific gravity.
 - (4) Repeat battery resistance change and internal battery resistance tests one time. If internal battery resistance result (test #73 or #77) is out of limits, then charge batteries. If battery resistance change result (test #75 or #79) is out of limits, then continue testing to isolate bad batteries.

STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL COMBUSTION ENGINES REPROGRAMMABLE) — Continued

0099 00

PRE-TEST INSPECTION

- 1 Fan Belts
- 2 Oil Level
- 3 Coolant Level
- 4 Fuel Level
- 5 Batteries

POWERING UP VTM

- 1 Connect VTM to W5 cable, W5 cable attaches to batteries as shown in figure 2
- 2 Enter VID into VTM using test 60.
- 3 Perform confidence test, test 66 (second entry 99).

MEASUREMENT NAME	VTM TEST NOS.	VTM OFFSET LIMITS	OPERATING CONDITION	SPECIAL CONNECTIONS REQUIRED	LIMITS		UNITS
					MIN	MAX	
Battery Voltage	67	-	Engine off		22	-	Volts
Current First Peak	72	± 225	Crank on GO		700	1275	Amps
Vehicle Oil Pressure Warning Light	-	-	Idle-use test 10 to check idle speed	Current probe-figure 2			
Charging Voltage	01.67	-	Lights & accessories on 1000-1200 RPM	Pulse tachometer-figure 1	26.5	22.9	Volts
Vehicle Gage Coolant Temp	-	-	Warm engine	Pulse tachometer-figure 1	120	185	F
Engine RPM (Average)	10	-	Governor	Pulse tachometer-figure 1	2950	3000	RPM
* Power	13	-	Engine warm	Pulse tachometer-figure 1	75	-	%
Engine RPM (Average)	10	-	Idle	Pulse tachometer-figure 1	650	700	RPM
Compression Unbalance	14	-	Warm Engine-Crank on GO		-	8	%
Cranking RPM	10	-	Cranking	Pulse tachometer-figure 1	100	-	RPM
Cranking Voltage	67	-	Cranking	Current probe-figure 2	18	-	Volts
Cranking Current	90	± 225	Cranking	Current probe-figure 2	250	425	Amps
Battery Pack Internal Resistance	73	± 225	Crank on GO	Current probe-figure 2	-	25.0	Milliohms
Starter Circuit Resistance	74	± 225	Crank on GO	Current probe-figure 2	5	27.0	Milliohms
Battery Pack Resistance Change	75	± 225	Crank on GO	Current probe-figure 2	-	50.0	Milliohms/sec

Test limits given are advisory only and are not necessarily the same as vehicle TM's specifications.

If test limits are different, use vehicle TM's specification.

*If vehicle has a turbocharger or fuel limiter, go to vehicle TM for procedure to do power test.

FIGURE 1

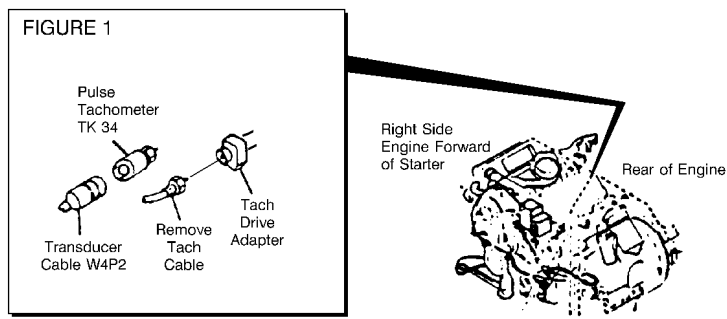
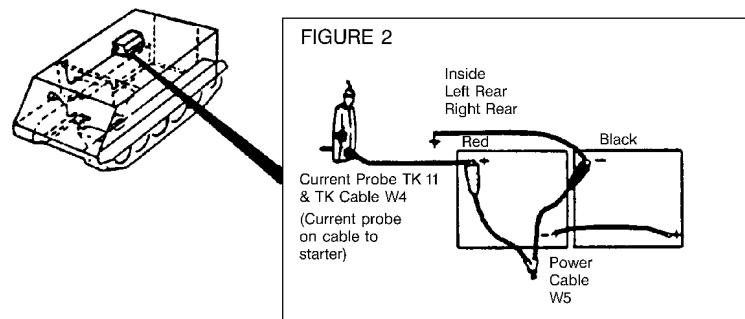


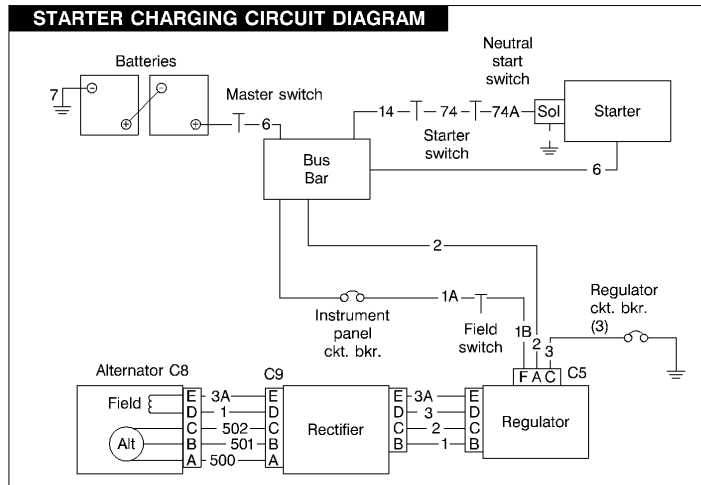
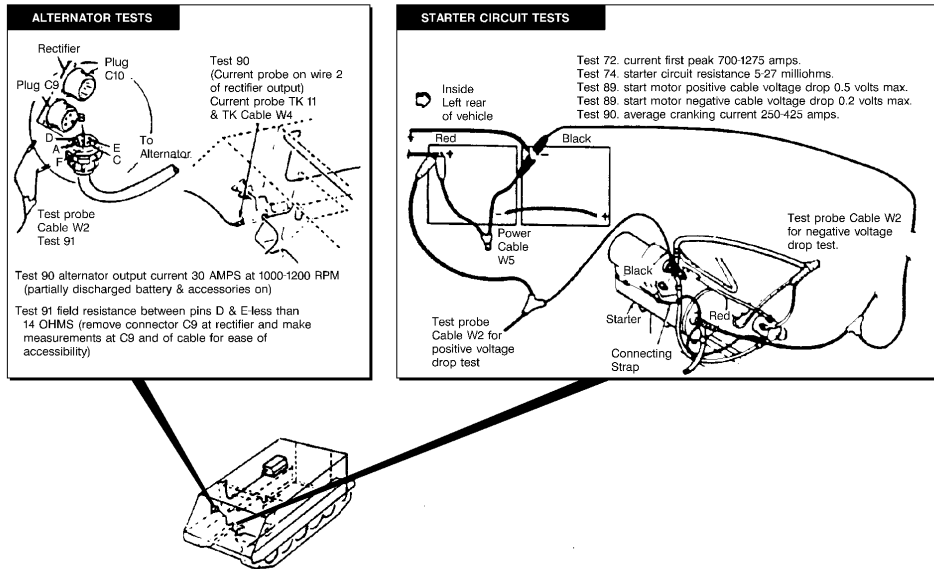
FIGURE 2



M113 VEHICLE TEST CARD – VID 03

STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL COMBUSTION ENGINES REPROGRAMMABLE) — Continued

0099 00

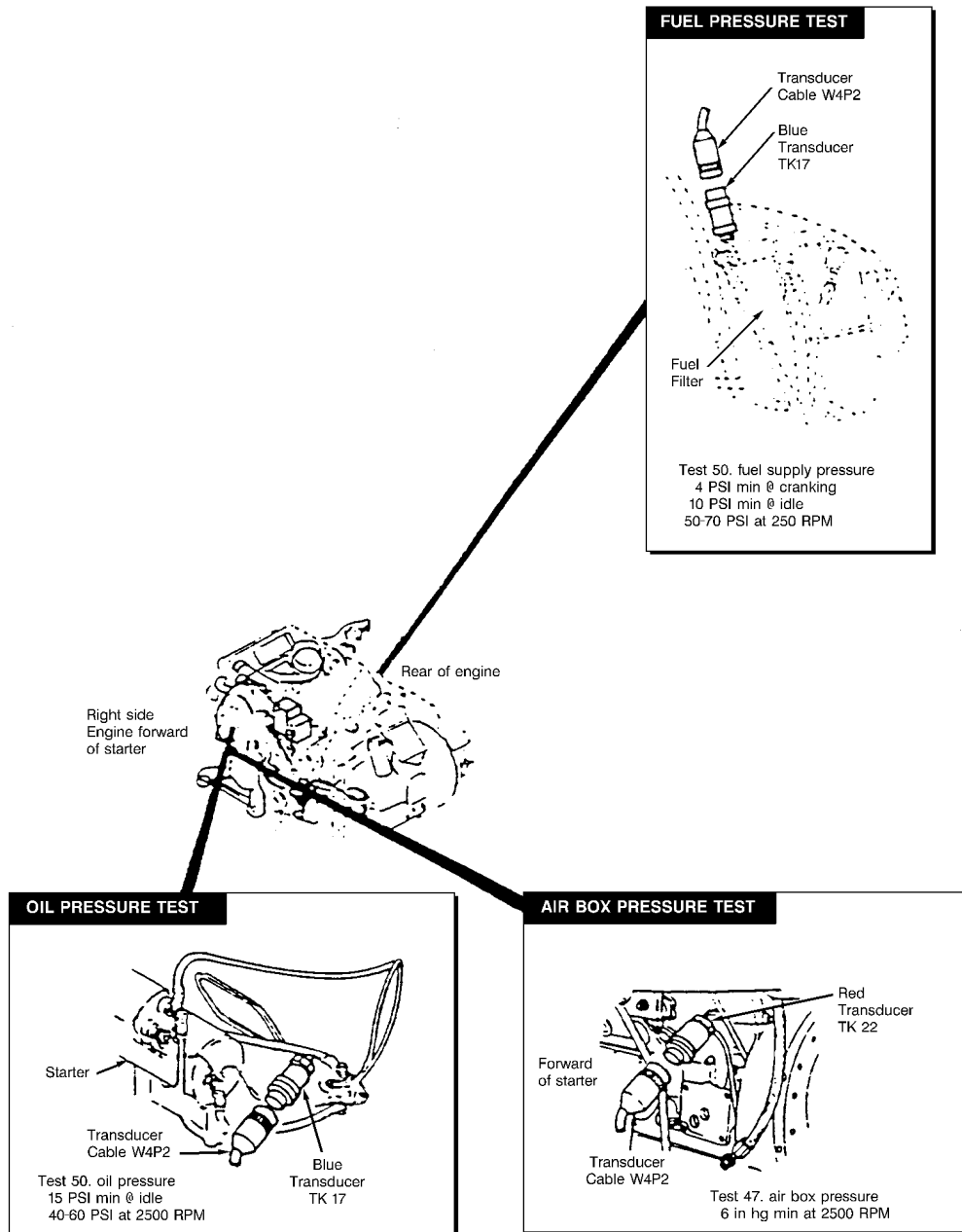


Test limits given are advisory only and are not necessarily the same as vehicle TM's specifications.
 If test limits are different, use vehicle TM's specifications.

M113 VEHICLE TEST CARD – VID 03 ADDITIONAL TEST CONNECTIONS

STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL COMBUSTION ENGINES REPROGRAMMABLE) — Continued

0099 00



Test limits given are advisory only and are not necessarily the same as vehicle TM's specifications.
If test limits are different, use vehicle TM's specifications.

M113 VEHICLE TEST CARD – VID 03 ADDITIONAL TEST CONNECTIONS

STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL COMBUSTION ENGINES REPROGRAMMABLE) — Continued

0099 00

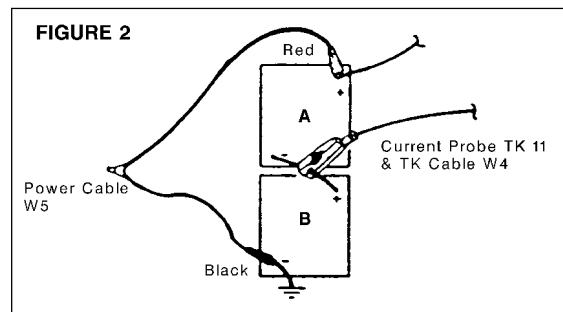
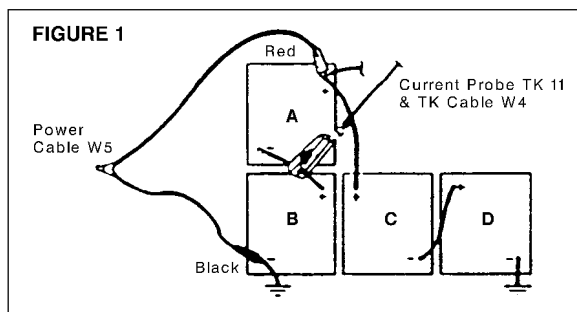
THE BATTERY INTERNAL RESISTANCE TEST (73 OR 77) evaluates the state of charge of the battery series pair. The BATTERY RESISTANCE CHANGE TEST (75 OR 79) evaluates whether the battery is good or bad, even if it is discharged. A good battery that is discharged may be recharged. A bad battery may hold a charge for a short time.

STE/ICE HOOKUP

1. The power to operate the STE/ICE-R VTM may be taken from the batteries being tested as shown in the appropriate figure below or from an alternate power source (such as another vehicle's batteries).
2. Perform VTM general setup, run confidence test, and enter vehicle ID.
3. Find a series pair of batteries. A battery series pair has the negative terminal of the one battery connected to the positive terminal of another battery by a cable. For example, in figures 1 and 2 below, batteries A and B are a series pair; and in figure 1 below batteries C and D are a series pair.
4.
 - a. If power to the VTM comes from a different set of batteries than the batteries under test, use tests 77 and 79 instead of tests 73 and 75. Connect test probe cable W2 to the batteries under test. Connect the red clip to the positive terminal closest to the starter and the black clip lead to the negative terminal closest to the ground.
 - b. If power to the VTM comes from the same set of batteries as the batteries under test, use tests 73 and 75. The test probe cable W2 is not used.
5. Clamp the current probe around the cable connecting the two batteries. Point the arrow of the current probe along the cable leading towards the negative battery terminal as shown below in figures 1 and 2 for batteries A and B.

TEST PROCEDURE

1. Condition the current probe before running these tests.
2. Measure the battery resistance change by entering test number 75 or 79 (as described in the hook up procedure). Then engage the starter for about 5 seconds.
3. Measure the battery internal resistance by entering test number 73 or 77 (as described in the hook up procedure). Then engage the starter for about 5 seconds.
4. Compare the results of both measurements to limits in the vehicle/equipment TM or to limits on the reverse side of this card.
5. If either measurement is outside of normal limits, check battery terminals and connections, and check battery electrolyte level. Then perform both measurements a second time.
6. If the battery resistance change test (75 or 79) fails after the second measurement, then the battery series pair is in bad condition. Test each battery individually to determine which is good and which is bad or replace the battery series pair.
7. If the battery internal resistance test (73 or 77) fails after the second measurement, then the batteries should be recharged.



STE/ICE BATTERY SERIES PAIR TEST CARD

STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL COMBUSTION ENGINES REPROGRAMMABLE) — Continued

0099 00

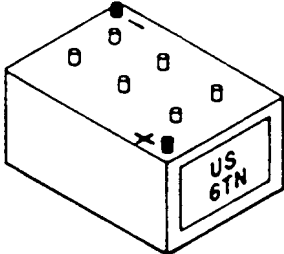
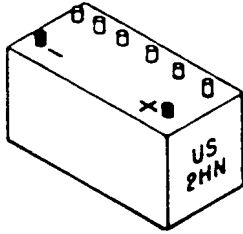
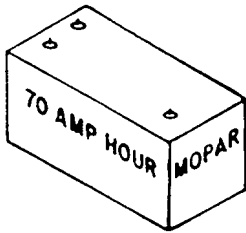
BATTERY TEST RESULTS	
STE/ICE-R DISPLAY AFTER-TEST	WHAT IT MEANS
GO	<ol style="list-style-type: none"> 1. The battery in series with the battery under test may be bad. Check that battery next. 2. There is a bad connection in the starter circuit somewhere. Check the battery negative cables, and cables to the starter for corroded or loose connections. If all of the cables and connections are o.k., then the starter is possibly faulty.
.9.9.9.9	<ol style="list-style-type: none"> 1. There is a bad connection on the battery being tested. Clean and tighten the posts and clamps, and check the cable between the batteries. 2. The battery under test is in extremely poor condition.
14.2	If any number is displayed, then the number is a STE/ICE test result. Compare the test result to the values shown along the right edge of this card to determine a pass or fail. See table below to determine the condition of the battery.
E013	<ol style="list-style-type: none"> 1. The battery being tested may be in a discharged state. Check battery electrolyte level; charge battery, and then retest. 2. If display shows E013 after battery has been charged, then the battery is in poor condition.
E002	The current probe is not connected. Connect current probe.
E005	Offset test for current probe has not been performed. Perform current probe offset test.
E008	Test leads are improperly connected. Check test leads.

BATTERY CONDITION		
TEST 77 BATTERY INTERNAL RESISTANCE TEST RESULT	TEST 79 BATTERY RESISTANCE CHANGE TEST RESULT	BATTERY CONDITION
PASS	PASS	The battery tested is o.k. and in good state of charge.
PASS	FAIL	The battery tested is in poor condition, but has a fresh charge.
FAIL	PASS	The battery tested is o.k., but needs to be recharged.
FAIL	FAIL	The battery tested is in poor condition and in a state of discharge.

STE/ICE INDIVIDUAL BATTERY TEST CARD

STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL
COMBUSTION ENGINES REPROGRAMMABLE) — Continued

0099 00

TEST LIMITS		Individual Battery Test Limits	
<u>For Type 6TN Batteries</u>			
<u>STE/ICE-R Test No</u>	<u>Maximum Acceptable Value to Pass Test</u>		
Battery Internal Resistance Test 77	13 Milliohms max		
Battery Resistance Change Test 79	25 Milliohms/Sec max		
<u>For Type 2HN Batteries</u>			
<u>STE/ICE-R Test No</u>	<u>Maximum Acceptable Value to Pass Test</u>		
Battery Internal Resistance Test 79	25 Milliohms max		
Battery Resistance Change Test 79	70 Milliohms/Sec max		
<u>For Commerical 12 volt batteries in M880 vehicles</u>			
<u>STE/ICE-R Test No</u>	<u>Maximum Acceptable Value to Pass Test</u>		
Battery Internal Resistance Test 77	13 Milliohms max		
Battery Resistance Change Test 79	50 Milliohms/Sec max		

STE/ICE INDIVIDUAL BATTERY TEST CARD

STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL COMBUSTION ENGINES REPROGRAMMABLE) — Continued

0099 00

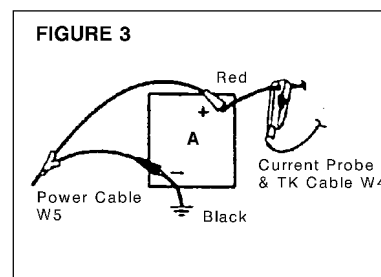
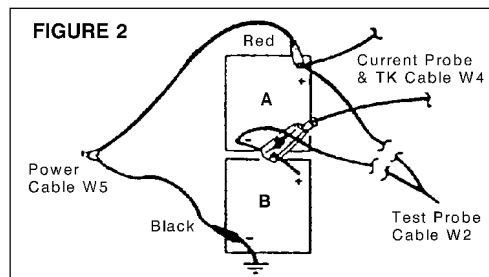
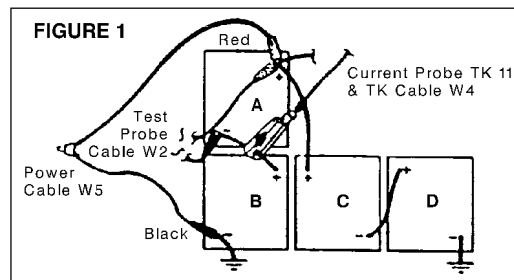
THE BATTERY INTERNAL RESISTANCE TEST (73 OR 77) evaluates the state of charge of an individual battery. The BATTERY RESISTANCE CHANGE TEST (75 OR 79) evaluates whether the battery is good or bad, even if it is discharged. A good battery that is discharged may be recharged. A bad battery may hold a charge for a short time.

STE/ICE HOOKUP

1. The power to operate the STE/ICE-R VTM may be taken from the batteries being tested as shown in the appropriate figure below or from an alternate power source (such as another vehicle's batteries).
2. Perform VTM general setup, run confidence test, and enter vehicle ID.
3. If there is more than one battery in the vehicle/equipment, then find the battery series pair that includes the battery under test. A battery series pair is a pair of batteries for which the negative terminal of one battery is connected by a cable to the positive terminal of another battery. For example, in figure 1 and 2 below, batteries A and B are a series pair; and in figure 1 below, batteries C and D are a series pair.
4.
 - a. If the vehicle/equipment under test has more than one battery or if the VTM is powered from an alternate power source, then use tests 77 and 79. Connect the red clip of test probe cable W2 to the positive terminal of the battery under test. Connect the black clip of test probe cable W2 to the negative terminal of the battery under test.
 - b. If the vehicle/equipment under test has only one battery which is also supplying power to the VTM, use tests 73 and 75. The test probe cable W2 is not used.
5.
 - a. If the vehicle/equipment under test has more than one battery, then the battery under test is part of a series pair of batteries. Clamp the current probe around the cable connecting the series pair. Point the arrow on the current probe along the cable leading towards the negative terminal as shown in figures 1 and 2.
 - b. If the vehicle/equipment under test has only one battery, then clamp the current probe around the positive battery cable connected to the starter. Point the arrow on the current probe along the cable in the direction leading towards the starter as shown in figure 3.

TEST PROCEDURE

1. Condition the current probe before running these tests.
2. Measure the battery resistance change by entering test number 75 or 79 (as described in the hookup procedure). Then engage the starter for about 5 seconds.
Measure the battery internal resistance by entering test number 73 or 77 (as described in the hookup procedure). Then engage the starter for about 5 seconds.
Compare the results of both measurements to limits in the vehicle/equipment TM or to limits on the reverse side of this card.
If either measurement is outside of normal limits, check battery terminals and connections, and check battery electrolyte level. Then perform both measurements a second time.
3. If the battery resistance change test (75 or 79) fails after the second measurement, then the battery is in bad condition. The battery may be able to accept and hold a charge, but it will quickly become discharged during use. A battery in bad condition should be replaced.
4. If the battery internal resistance test (73 or 77) fails after the second measurement, then the battery should be recharged.



STE/ICE INDIVIDUAL BATTERY TEST CARD

**STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL
COMBUSTION ENGINES REPROGRAMMABLE) — Continued**

0099 00

BATTERY TEST RESULTS**WHAT IT MEANS****STE/ICE-R DISPLAY
AFTER-TEST**

- | | | |
|---------------|---|--|
| GO..... | } | 1. The battery in series with the battery under test may be bad. Check that battery next. |
| | | 2. Check the battery negative cables and cables to the starter for corroded or loose connections. If all of the cables and connections are o.k., then the starter is possibly faulty. connections are o.k., it is possible that the starter is faulty. |
| .9.9.9.9..... | } | 1. There is a bad connection on the battery being tested. Clean and tighten the posts and clamps, and check the cable between the batteries. |
| | | 2. The battery under test is in extremely poor condition. |
| 14.2..... | } | If any number is displayed, then the number is a STE/ICE test result. Compare the test result to the values shown along the right edge of this card to determine a pass or fail. See table below to determine the condition of the battery. |
| | | |
| E013..... | } | 1. The battery being tested may be in a discharged state. Check battery electrolyte level; charge battery, and then retest. |
| | | 2. If display shows E013 after battery has been charged, then the battery is in poor condition. |
| E002..... | | The current probe is not connected. Connect current probe. |
| E005..... | | Offset test for current probe has not been performed. Perform current probe offset test. |
| E008..... | | Test leads are improperly connected. Check test leads. |

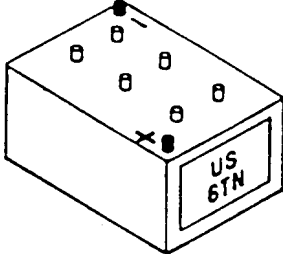
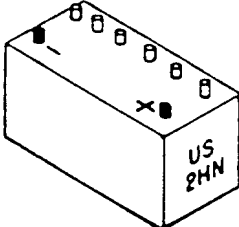
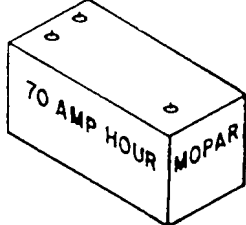
BATTERY CONDITION

TEST 77 BATTERY INTERNAL RESISTANCE TEST RESULT	TEST 79 BATTERY RESISTANCE CHANGE TEST RESULT	BATTERY CONDITION
PASS	PASS	The battery tested is o.k. and in good state of charge.
PASS	FAIL	The battery tested is in poor condition, but has a fresh charge
FAIL	PASS	The battery tested is o.k., but needs to be recharged.
FAIL	FAIL	The battery tested is in poor condition and in a state of discharge.

STE/ICE BATTERY SERIES PAIR TEST CARD

**STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL
COMBUSTION ENGINES REPROGRAMMABLE) — Continued**

0099 00

TEST LIMITS	
Battery Test Limits for a Series Pair	
<u>For Type 6TN Batteries</u>	
	
STE/ICE-R Test No	Maximum Acceptable Value to Pass Test
Battery Internal Resistance Test 77	25 Milliohms max
Battery Resistance Change Test 79	50 Milliohms/Sec max
<u>For Type 2HN Batteries</u>	
	
STE/ICE-R Test No	Maximum Acceptable Value to Pass Test
Battery Internal Resistance Test 77	50 Milliohms max
Battery Resistance Change Test 79	140 Milliohms/Sec max
<u>For Commerical 12 volt batteries in M880 vehicles</u>	
	
STE/ICE-R Test No	Maximum Acceptable Value to Pass Test
Battery Internal Resistance Test 77	25 Milliohms max
Battery Resistance Change Test 79	100 Milliohms/Sec max

STE/ICE BATTERY SERIES PAIR TEST CARD

STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL COMBUSTION ENGINES REPROGRAMMABLE) — Continued

0099 00

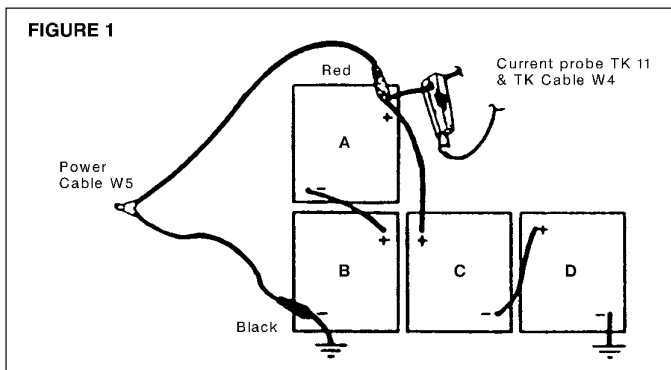
THE BATTERY INTERNAL RESISTANCE TEST (73 OR 77) evaluates the state of charge of an individual battery. The BATTERY RESISTANCE CHANGE TEST (75 or 79) evaluates whether the battery is good or bad, even if it is discharged. A good battery that is discharged may be recharged. A bad battery may hold a charge for a short time.

STE/ICE HOOKUP

1. The power to operate the STE/ICE-R VTM may be taken from the batteries being tested as shown in the appropriate figure below or from an alternate power source (such as another vehicle's batteries).
2. Perform VTM general setup, run confidence test, and enter vehicle ID.
3.
 - a. If power to the VTM comes from a different set of batteries then the battery pack under test, use tests 77 and 79. Connect test probe cable W2 to the battery pack under test. Connect the red clip to the positive terminal closest to the starter. Connect the black clip to the negative terminal closest to vehicle/equipment ground.
 - b. If power to the VTM comes from the battery pack under tests, use tests 73 and 75. The test probe cable W2 is not used.
4. Clamp the current probe around the positive cable connected to the starter. Point the arrow on the current probe along the cable leading towards the starter as shown in figure 1.

TEST PROCEDURE

1. Condition the current probe before running these tests.
2. Measure the battery resistance change by entering test number 75 or 79 (as described in the hookup procedure). Then engage the starter for about 5 seconds.
3. Measure the battery internal resistance by entering test number 73 or 77 (as described in the hookup procedure). Then engage the starter for about 5 seconds.
4. Compare the results of both measurements to limits in the vehicle/equipment TM or to limits on the reverse side of this card.
5. If either measurement is outside of normal limits, check battery terminals and connections, and check battery electrolyte level. Then perform both measurements a second time.
6. If the battery resistance change test (75 or 79) fails after the second measurement, then the battery pack is in bad condition. Test each series pair to determine which is good and which is bad.
7. If the battery internal resistance test (73 or 77) fails after the second measurement, then the battery should be recharged.



STE/ICE BATTERY PACK TEST CARD

**STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL
COMBUSTION ENGINES REPROGRAMMABLE) — Continued**

0099 00

BATTERY TEST RESULTS	
STE/ICE-R DISPLAY AFTER-TEST	WHAT IT MEANS
GO.....	1. The battery in series with the battery under test may be bad. Check that battery next. 2. There is a bad connection in the starter circuit somewhere. Check the battery negative cables, and cables to the starter for corroded or loose connections. If all of the cables and connections are o.k., then the starter is possibly faulty.
.9.9.9.9.....	1. There is a bad connection on the battery being tested. Clean and tighten the posts and clamps, and check the cable between the batteries. 2. The battery under test is in extremely poor condition.
14.2.....	If any number is displayed, then the number is a STE/ICE test result. Compare the test result to the values shown along the right edge of this card to determine a pass or fail. See table below to determine the condition of the battery.
E013.....	1. The battery being tested may be in a discharged state. Check battery electrolyte level; charge battery, and then retest. 2. If display shows E013 after battery has been charged, then the battery is in poor condition.
E002.....	The current probe is not connected. Connect current probe.
E005.....	Offset test for current probe has not been performed. Perform current probe offset test.
E008.....	Test leads are improperly connected. Check test leads.

BATTERY CONDITION		
TEST 77 BATTERY INTERNAL RESISTANCE TEST RESULT	TEST 79 BATTERY RESISTANCE CHANGE TEST RESULT	BATTERY CONDITION
PASS	PASS	The battery tested is o.k. and in good state of charge.
PASS	FAIL	The battery tested is in poor condition, but has a fresh charge.
FAIL	PASS	The battery tested is o.k., but needs to be recharged.
FAIL	FAIL	The battery tested is in poor condition and in a state of discharge.

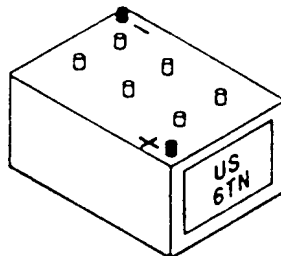
STE/ICE BATTERY PACK TEST CARD

STE/ICE-R PROCEDURES (SIMPLIFIED TEST EQUIPMENT FOR INTERNAL
COMBUSTION ENGINES REPROGRAMMABLE) — Continued

0099 00

TEST LIMITS:

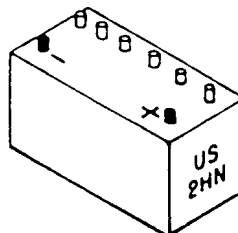
Battery Test Limits for a Four Battery Pack *

For Type 6TN BatteriesSTE/ICE-R Test NoMaximum Acceptable Value to Pass TestBattery Internal Resistance
Test 77

13 Milliohms max

Battery Resistance Change
Test 79

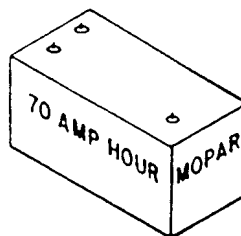
25 Milliohms/Sec max

For Type 2HN BatteriesSTE/ICE-R Test NoMaximum Acceptable Value to Pass TestBattery Internal Resistance
Test 77

25 Milliohms max

Battery Resistance Change
Test 79

70 Millionms/Sec max

For Commerical 12 volt batteries
in M880 vehiclesSTE/ICE-R Test NoMaximum Acceptable Value to Pass TestBattery Internal Resistance
Test 77

13 Milliohms max

Battery Resistance Change
Test 79

50 Milliohms/Sec max

* When a vehicle has more than four batteries in a pack, it is usually easier to test each series pair separately.

STE/ICE BATTERY PACK TEST CARD

STE/ICE-R CHARGING CIRCUIT TROUBLESHOOTING**0100 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)
STE/ICE-R Test Set (WP 0780 00, Item 73)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped (see your -10)
Carrier blocked (see your -10)
Trim vane lowered (see your -10)
Power plant access door open (see your -10)
STE/ICE-R power hooked up (WP 0106 00)

CONDITION CURRENT PROBE**T**

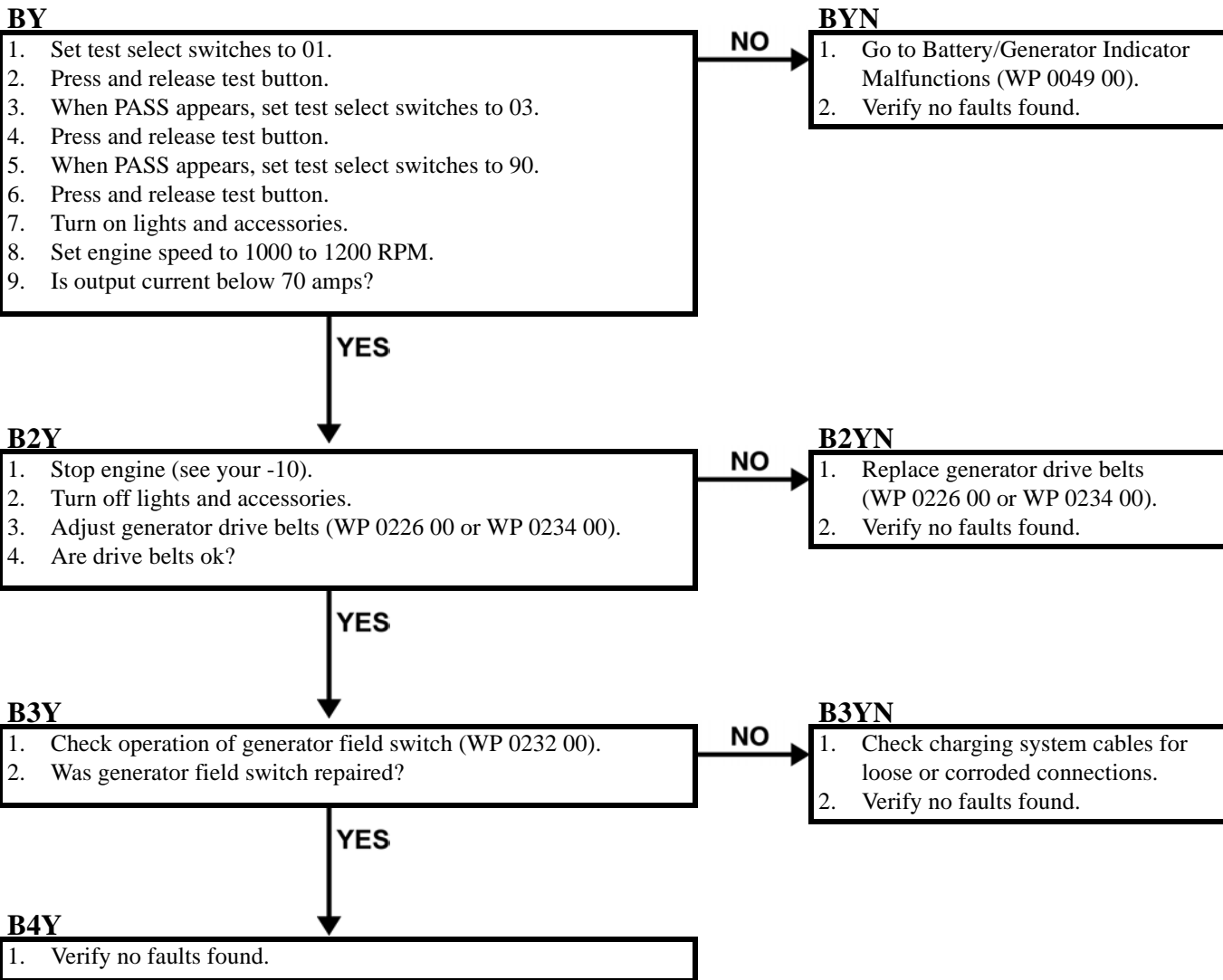
1. Clamp current probe around battery positive cable.
2. Point arrow on current probe toward starter and clamp probe on battery positive cable to starter.
3. Ensure current probe is closed.
4. Crank engine for several cycles with fuel off.
5. Turn off all electrical power.
6. Set test select switches to 90.
7. Press and hold test until CAL appears on display.
8. Is offset value within limits of -225 to + 225?

NO**TN**

1. Go to Offset Fault Isolation. See TM 9-4910-571-12&P.
2. Repeat this troubleshooting.

YES**Y**

1. Remove current probe from battery cable.
2. Start engine (see your -10).
3. Install current probe around circuit 2 lead of generator.
4. Point arrow on current probe toward battery.

OUTPUT CURRENT

FIELD CURRENT**CY**

1. Install current probe around circuit 1 lead of generator to regulator cable.
2. Point arrow on current probe toward generator.
3. Set test select switches to 01.
4. Press and release test button.
5. When PASS appears, set test select switches to 90.
6. Press and release test button.
7. Raise engine speed to 1000 to 1200 RPM and read RPM display.
8. Stop engine (see your -10).
9. Is current below 6 amps?

NO**CYN**

1. Go to Charging System Malfunctions (WP 0018 00).
2. Verify no faults found.

YES**C2Y**

1. Check continuity of cables from regulator to generator.
2. If cables are ok, go to Charging System Malfunctions (WP 0018 00).
3. Verify no faults found.

STE/ICE-R STARTER CIRCUIT TROUBLESHOOTING**0101 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)
STE/ICE-R Test Set (WP 0780 00, Item 73)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped (see your -10)
Carrier blocked (see your -10)
Trim vane lowered (see your -10)
Power plant access door open (see your -10)
All electrical power off (see your -10)
STE/ICE-R hooked up for tests 72 thru 75 (WP 0109 00)
STE/ICE-R hooked up for power (WP 0106 00)

T

1. Make sure all electrical accessories are off.
2. Set test select switches to 74.
3. Press and hold test button until CAL appears on display.
4. Release test button, wait for offset value to appear on display.
5. Is offset value within -225 to +225?

NO**TN**

1. Go to Offset Fault Isolation. See TM 9-4910-571-12&P.
2. Verify no faults found.

YES**Y****NOTE**

While cranking engine with bad or discharged batteries, it is possible for VTM to lose power and come on again after cranking has stopped. If this occurs, clean battery posts and clamps. If they are loose or corroded, correct them and repeat test.

1. Install current probe on positive battery cable.
2. Shut off fuel.
3. Press and release test button.
4. When GO appears, crank engine until OFF or ERROR message is displayed (normally 5 seconds).
5. Is a number displayed?

NO**YN****GO TO BY (PAGE 0101 00-2)****YES****2Y**

1. Check if starter circuit resistance is within 5 to 27.
2. Is starter circuit resistance within 5 to 27?

NO**2YN****GO TO CY (PAGE 0101 00-3)****YES**

3Y

1. Check batteries to make sure they are fully charged.
See TM 9-6140-200-14.
2. Verify no faults found.

BY

1. Check to see if E013 is displayed.
2. Is E013 displayed?

NO

BYN

1. Check batteries to make sure they are fully charged. See TM 9-6140-200-14.
2. Verify no faults found.

YES

B2Y

1. Crank engine (see your -10).
2. Does any message appear other than GO?

NO

B2YN

GO TO C2Y (PAGE 0101 00-3)

YES

B3Y

1. Check how many times E013 has been displayed.
2. Is this the third time E013 was displayed?

NO

B3YN

1. Repeat this part of troubleshooting.

YES

B4Y

1. Turn off all electrical equipment.
2. Set test select switches to 90.
3. Press and hold test until CAL appears on display.
4. Is offset value within limits of -225 to +225?

NO

B4YN

1. Go to Offset Fault Isolation. See TM 9-4910-571-12&P.
2. Verify no faults found.

YES

B5Y

1. Press and release test button.
2. Crank engine for a few seconds with fuel off.
3. Is starter current above 100 amps?

NO

B5YN

1. Check batteries. See TM 9-6140-200-14.
2. Verify no faults found.

YES

B6Y

1. Error message E013 displayed earlier indicates short circuit, frozen starter, or tight engine.
2. Check wiring to starter for short circuits.
3. If wiring is ok, engine may be tight.
4. Notify direct support maintenance.
5. Verify no faults found.

CY

1. Check to see if resistance is high.
2. Is resistance high?

NO

CYN

1. Repair short circuit in starter circuit.
2. Verify no faults found.

YES

C2Y

1. Attempt to start engine while listening for clicking of starter solenoid.
2. Does starter solenoid click?

NO

C2YN

1. Check switches, wiring, relays, and circuit breakers to starter solenoid.
2. Verify no faults found.

YES

C3Y

1. Connect test probe cable W2 P1 to J4 on VTM.
2. Connect red and black clips together.
3. Set test select switches to 89.
4. Press and hold test until CAL appears on display.
5. Is offset value within limits of -6.8 to $+6.8$?

NO

C3YN

1. Go to Offset Fault Isolation. See TM 9-4910-571-12&P.
2. Verify no faults found.

YES

C4Y

1. Connect black clip of test probe cable W2 to the negative battery terminal.
2. Connect red clip of test probe cable W2 to the positive terminal of starter.
3. Press and release test button.
4. Crank engine and read displayed voltage.
5. Is starter voltage above 17 volts?

NO

C4YN

GO TO DY (PAGE 0101 00-4)

YES

STE/ICE-R STARTER CIRCUIT TROUBLESHOOTING — Continued

0101 00

C5Y

1. Move red clip of test probe cable W2 to ground terminal of starter.
2. Crank engine and read displayed voltage.
3. Is voltage drop less than 18 volts?

NO

C5YN

1. Clean, inspect, and repair cables as needed.
2. Verify no faults found.

YES

C6Y

1. Replace starter (WP 0236 00).
2. Verify no faults found.

DY

1. Move red clip of test probe cable W2 to positive terminal of starter solenoid.
2. Crank engine and read displayed voltage.
3. Is solenoid voltage above 18 volts?

NO

DYN

GO TO EY (PAGE 0101 00-5)

YES

D2Y

1.

NOTE

Voltage drop across a connection should be less than 0.1 volt and a voltage drop across a cable should be less than 0.2 volts. Check voltage drop across solenoid and all cables/connections in positive side of starter circuit.

 2. If GO message occurred during starter circuit resistance test, check switches and wiring to solenoid.
 3. Set test select switches to 89.
 4. Connect clip leads of test probe W2 across part to be measured.
 5. Press and release test button.
 6. Engage starter.
 7. Repair part if voltage drop is high.
 8. If switches and wiring to solenoid are ok, replace solenoid and starter (WP 0236 00).
 9. Verify no faults found.

EY

1. Set test select switches to 67.
2. Press and release test button.
3. Crank engine and read displayed voltage.
4. Was battery voltage above 19 volts while cranking?

NO**EYN**

1. Check batteries. See TM 9-6140-200-14.
2. Verify no faults found.

YES**E2Y**

1. Check switches and wiring to starter solenoid.
2. Repair if necessary.
3. Verify no faults found.

Y

1. Set test select switches to 01.
2. Press and release test button.
3. When CON appears, set test select switches to 50.
4. Press and release test button.
5. Start engine (see your -10).
6. Raise engine speed to 2500 RPM.
7. Is oil pressure within 40-60 psi (276-414 kPa)?

NO**YN**

1. Stop engine immediately (see your -10).
2. Replace engine oil filter element (WP 0123 00).
3. Verify no faults found.
4. If oil pressure is not within 40-60 psi (276-414 kPa), notify direct support maintenance.

YES**2Y**

1. Check sending unit and engine wiring harness.
2. Verify no faults found.

STE/ICE-R BATTERY TROUBLESHOOTING**0103 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)
STE/ICE-R Test Set (WP 0780 00, Item 73)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped (see your -10)
Carrier blocked (see your -10)
Fuel off, engine must not start (see your -10)
All electrical power off (see your -10)
STE/ICE-R starter circuit test hooked up (WP 0108 00)
STE/ICE-R hooked up for power (WP 0106 00)

T

1. Make sure all electrical accessories are off.
2. Set test select switches to 75.
3. Press and hold test button until CAL appears on display.
4. Release test button, wait for offset value to appear on display.
5. Is offset value within -225 to +225?

NO**TN**

1. Go to Offset Fault Isolation. See TM 9-4910-571-12&P.
2. Verify no faults found.

YES**Y****NOTE**

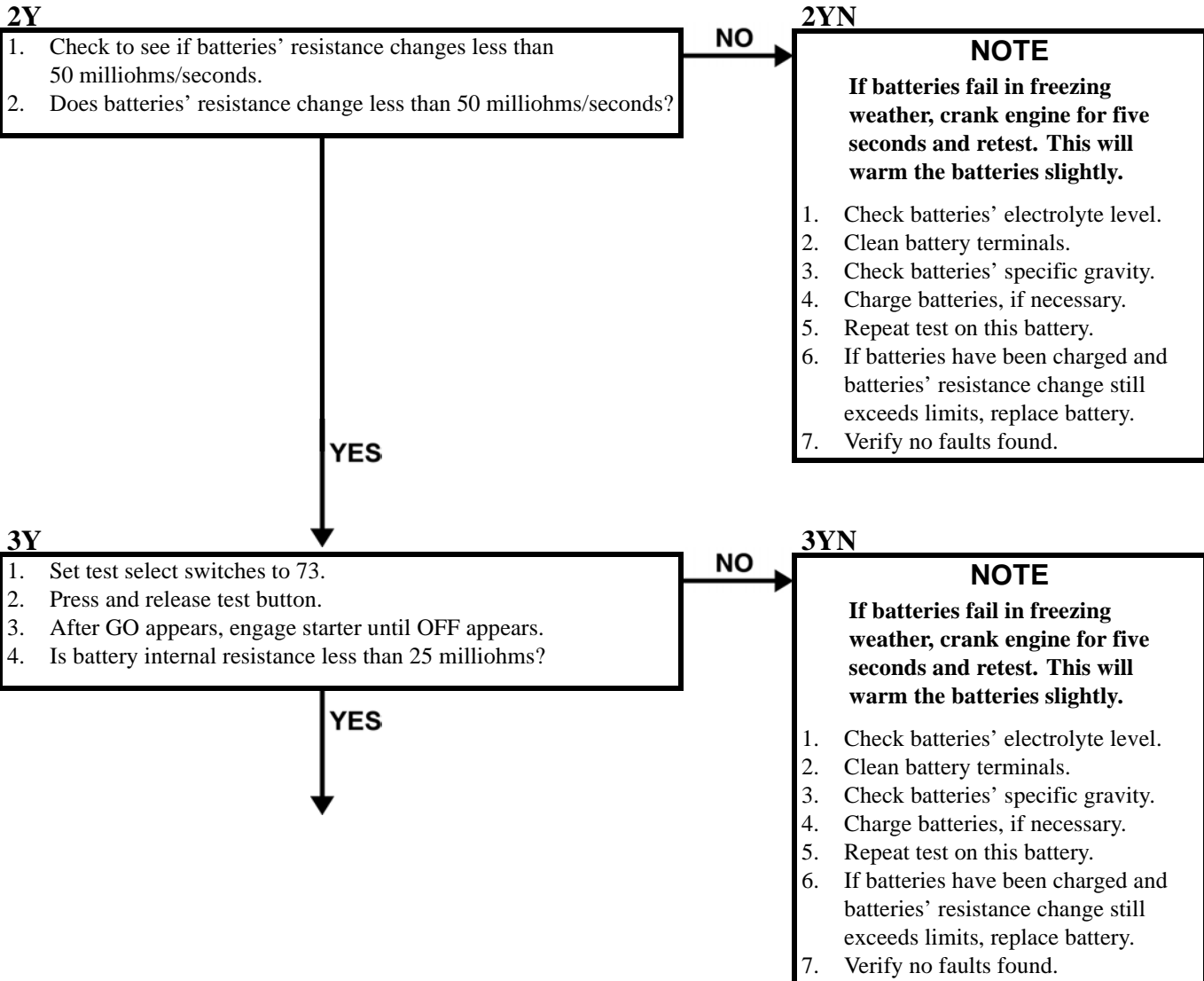
While cranking engine with bad or discharged batteries, it is possible for VTM to lose power and come on again after cranking has stopped. If this occurs, clean battery posts and clamps. If they are loose or corroded, correct them and repeat test.

1. Press and release test button.
2. When GO appears, engage starter switch for two seconds or until OFF is displayed.
3. Is test value displayed?

NO**YN**

1. If display shows GO, there is a bad connection in the starter circuit. Check cables and connections to starter and repeat test.
2. If GO is still displayed, then you may have a very poor battery in the series pair being tested.
3. If display shows .9.9.9.9., there may be a bad connection on the batteries being tested. Clean and tighten the connections on the batteries and repeat test.
4. If display shows ——— or .9.9.9.9., the batteries being tested may be in a discharged state. Check batteries' electrolyte level; charge batteries and repeat test.
5. If display shows E013 three times, or ———, or .9.9.9.9. after batteries have been charged, replace batteries.
6. Verify no faults found.

YES



4Y

1. Batteries are OK.
2. If display shows GO, there is a bad connection in the starter circuit. Check cables and connections to starter and repeat test.
3. If GO is still displayed, then you may have a very poor battery in the series pair being tested. Test each battery individually.
4. If display shows .9.9.9.9., there may be a bad connection on the battery being tested. Clean and tighten the connections on the batteries and repeat test.
5. If display shows E013 or .9.9.9.9., the batteries being tested may be in a discharged state. Check batteries' electrolyte level; charge batteries and repeat test.
6. If display shows E013 three consecutive times, or ———, or .9.9.9.9. after batteries have been charged, replace battery.
7. Verify no faults found.

BY

1. Clamp current probe between batteries and starter.
2. Point arrow on probe toward starter.
3. Set test select switches to 72.
4. Press and release test button.
5. When GO appears, shut off fuel and engage starter switch for two seconds or until OFF is displayed.
6. Is a number displayed?

NO**BYN**

GO TO CY (PAGE 0103 00-5)

YES**B2Y**

1. Check to see if first peak current reading is within 700 to 1275 amps.
2. Is the first peak current reading within 700 to 1275 amps?

NO**B2YN**

GO TO DY (PAGE 0103 00-5)

YES**B3Y**

1. Check electrolyte levels in batteries. See TM 9-6140-200-14.
2. Clean battery terminals.
3. Check specific gravity in batteries. See TM 9-6140-200-14.
4. Charge batteries if necessary.
5. Verify no faults found.

TEST	RESULT
72	700-1275 amps
73	≤ 25 milliohms
75	≤ 50 milliohms

CY

1. Check to see if E013 is displayed.
2. Is E013 displayed?

NO**CYN**

1. Check electrolyte levels in batteries. See TM 9-6140-200-14.
2. Clean battery terminals.
3. Check specific gravities in batteries. See TM 9-6140-200-14.
4. Charge batteries, if necessary.
5. Verify no faults found.

YES**C2Y**

1. Check to see if E013 is displayed for the third time.
2. Is this the third time E013 was displayed?

NO**C2YN**

1. Verify no faults found.

YES**C3Y**

1. Check electrolyte levels in batteries. See TM 9-6140-200-14.
2. Clean battery terminals.
3. Check specific gravities in batteries. See TM 9-6140-200-14.
4. Charge batteries, if necessary.
5. Verify no faults found.

DY

1. Check to see if first peak current is below 700 amps.
2. Is first peak current below 700 amps?

NO**DYN**

1. Engine is tight.
2. Notify direct support maintenance.

YES**D2Y**

1. Check electrolyte levels in batteries. See TM 9-6140-200-14.
2. Clean battery terminals.
3. Check specific gravities in batteries. See TM 9-6140-200-14.
4. Charge batteries, if necessary.
5. Verify no faults found.

STE/ICE-R ENGINE WILL NOT CRANK TROUBLESHOOTING**0104 00****INITIAL SETUP:**Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

Power plant access door open (see your -10)

Trim vane lowered (see your -10)

T

1. Engage starter switch and listen to starter.
2. Does starter sound like it is running over speed?

NO**TN**

1. Go to Starter Circuit Troubleshooting (WP 0101 00).
2. Verify no faults found.

YES**Y**

1. Remove starter (WP 0236 00).
2. Check for missing or damaged teeth on flywheel.
3. Are all teeth good?

NO**YN**

1. Notify direct support maintenance.

YES**2Y**

1. Check bendix spring, starter, or solenoid.
2. Replace parts as needed.
3. Verify no faults found.

STE/ICE-R ENGINE WILL CRANK BUT WILL NOT START
TROUBLESHOOTING

0105 00

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

- General Mechanic’s Tool Kit (WP 0780 00, Item 29)
- STE/ICE-R Test Set (WP 0780 00, Item 73)

Personnel Required

Unit Mechanic

References

See your -10

Equipment Condition

- Engine stopped (see your -10)
- Carrier blocked (see your -10)
- Trim vane lowered (see your -10)
- Power plant access door open (see your -10)
- STE/ICE-R power hooked up (WP 0106 00)
- STE/ICE-R engine RPM test hooked up (WP 0107 00)

T

1. Shut off fuel (see your -10).
 2. Set test select switches to 10.
 3. Press and release test button.
 4. Crank engine and read display.
 5. Is crank speed 100 RPM or more?

YES

NO

TN

1. Go to STE/ICE-R Starter Circuit Troubleshooting (WP 0117 00).
 2. Verify no faults found.

STE/ICE-R ENGINE WILL CRANK BUT WILL NOT START
TROUBLESHOOTING — Continued

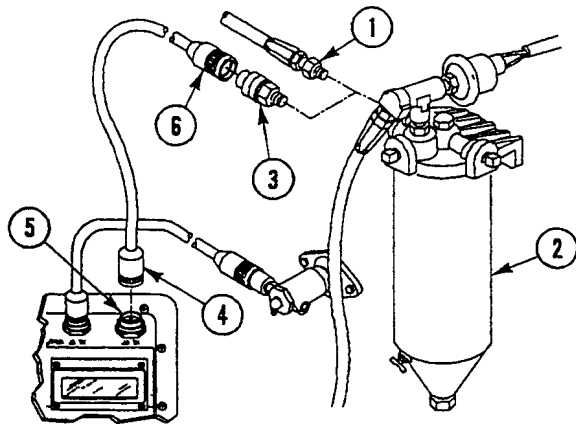
0105 00

Y

CAUTION

Operation of engine with red stripe transducer installed could damage transducer. Remove red stripe transducer before starting engine.

1. Verify that there is fuel in fuel tank.
2. Bleed air out of fuel system as necessary.
3. Drain water from primary fuel filter.
4. Check for kinked, flattened, or broken fuel lines.
5. Check quick disconnect fittings for blockage in fittings.
6. Check fuel shutoff cable (WP 0403 00).
7. Check engine fuel pump (WP 0171 00).
8. Disconnect fuel supply hose (1) from secondary fuel filter (2).
9. Connect red stripe pressure transducer (3) to secondary fuel filter outlet.
10. Connect transducer cable W4 P1 (4) to J3 on VTM (5).
11. Connect transducer cable W4 P2 (6) to red stripe pressure transducer (3).
12. Set test select switches to 49.
13. Press and hold test until CAL appears on display.
14. Is offset value within range of -4 to +4?



YES

2Y

1. Turn on fuel and accessory switches.
2. Press and release test button.
3. Crank engine and read display.
4. Is fuel pressure greater than 4 psi (28 kPa)?

YES

NO

YN

1. Go to Offset Fault Isolation. See TM 9-4910-571-12&P.
2. Verify no faults found.

NO

2YN

GO TO BY (PAGE 0105 00-3)

STE/ICE-R ENGINE WILL CRANK BUT WILL NOT START

TROUBLESHOOTING — Continued

0105 00

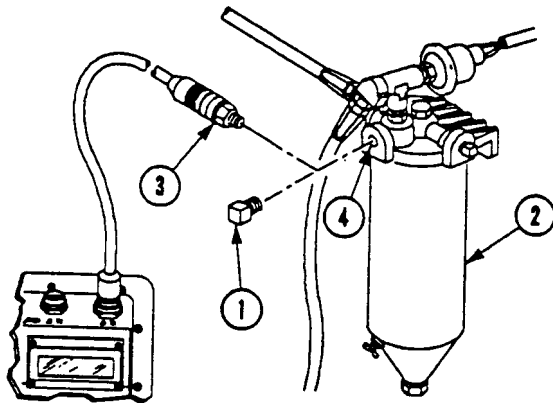
3Y

1. Remove red stripe pressure transducer from secondary fuel filter.
2. Check operation of engine shutoff cable (WP 0403 00).
3. Check restriction in air intake (WP 0403 00).
4. Check cold weather operation (see your -10).
5. If engine still does not start, notify direct support maintenance.
6. Verify no faults found.

BY**CAUTION**

Pull fuel shutoff all the way out. Transducer will be damaged if engine starts.

1. Remove red stripe pressure transducer from secondary fuel filter.
2. Connect fuel supply hose to secondary fuel filter.
3. Remove inlet plug (1) from secondary fuel filter (2) and install red stripe pressure transducer (3) in inlet hole (4) of filter.
4. Pull fuel shutoff all the way out.
5. Crank engine and read display.
6. Is fuel pressure greater than 4 psi (28 kPa)?



YES

B2Y

1. Remove red striped pressure transducer and install plug in secondary fuel filter.
2. Replace fuel filter element (WP 0174 00).
3. Start engine (see your -10).
4. If engine still does not start, check fuel system.
5. Verify no faults found.

NO

BYN

1. Remove red stripe pressure transducer from secondary fuel filter.
2. Check engine fuel pump (WP 0171 00).
3. Check generator field switch (WP 0232 00).
4. In freezing temperatures, check fuel lines for ice blockage or coagulation of fuel.
5. Start engine (see your -10).
6. If engine still does not start, repair blockage in fuel line.
7. Verify no faults found.

HOOK UP/REMOVE STE/ICE-R FOR POWER**0106 00****THIS WORK PACKAGE COVERS:**

Hook-up (page 0106 00-1).
Removal (page 0106 00-2).

INITIAL SETUP:Maintenance Level

Unit

References

See your -10
TM 9-4910-571-12&P

Tools and Special Tools

Electrical connector pliers (WP 0780 00, Item 44)
STE/ICE-R Test Set (WP 0780 00, Item 73)

Equipment Condition

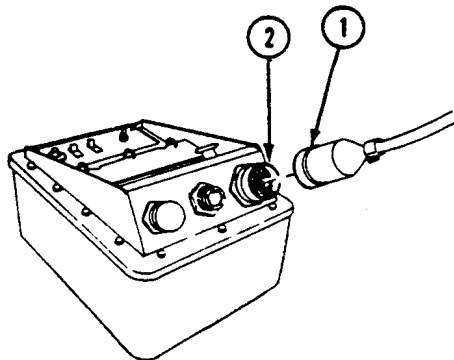
Engine stopped (see your -10)
Carrier blocked (see your -10)

Personnel Required

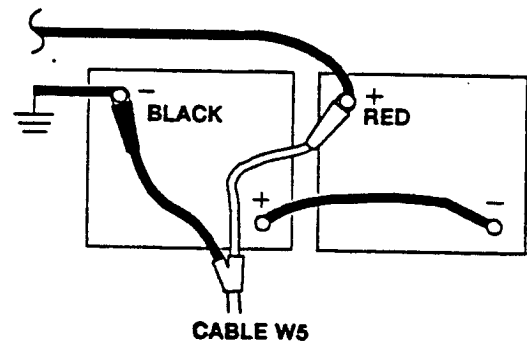
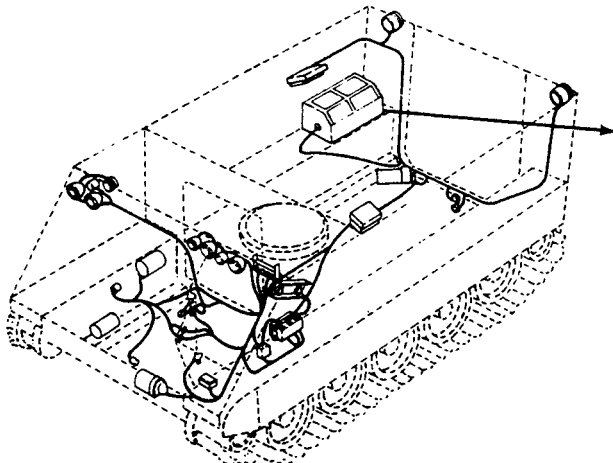
Unit Mechanic

HOOK-UP

1. Remove VTM and power cable W5 from transit case.
2. Pull VTM circuit breaker to OFF.
3. Install plug W5 P1 (1) on VTM jack J1 (2).



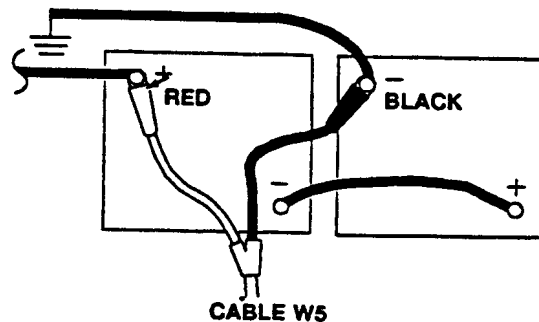
4. Remove battery cover (see your -10).
5. Connect red clip of power cable W5 to positive terminal of battery.



HOOK UP/REMOVE STE/ICE-R FOR POWER — Continued

0106 00

6. Connect black clip of power cable W5 to negative terminal of battery.



7. Push VTM circuit breaker to ON.
- If display reads **(8888)** and **(---)**, go to Step 8.
 - If display is not blank, but does not read **(8888)** and **(---)**, write up DA Form 2404 on faulty VTM display. Report problem to supervisor.
 - If display is blank, go to VTM blank display diagnostic troubleshooting. See TM 9-4910-571-12&P.
8. Perform VTM confidence check, see TM 9-4910-571-12&P. If VTM confidence check does not pass, go to STE/ICE confidence test fault isolation, see TM 9-4910-571-12&P.
9. Select test 60, then press and release TEST button.
10. Enter carrier VID **(03)** into VTM, then press and release TEST button.
11. Select test 61, then press and release TEST button. If carrier VID **(03)** does not appear on VTM display, see TM 9-4910-571-12&P.
12. Return to troubleshooting.

REMOVAL

- Pull VTM circuit breaker to OFF.
- Remove power cable W5 from batteries and VTM. Use electrical connector pliers.
- Install battery cover (see your -10).
- Stow VTM and power cable W5 in transit case.

HOOK UP/REMOVE STE/ICE-R FOR ENGINE RPM**0107 00****THIS WORK PACKAGE COVERS:**

Hook-up (page 0107 00-1).
Removal (page 0107 00-2).

INITIAL SETUP:Maintenance Level

Unit

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

STE/ICE-R power hooked up (WP 0106 00)

Power plant rear access panel removed (WP 0431 00,
WP 0432 00, or WP 0433 00)Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

STE/ICE-R Test Set (WP 0780 00, Item 73)

Personnel Required

Unit Mechanic

References

WP 0246 00

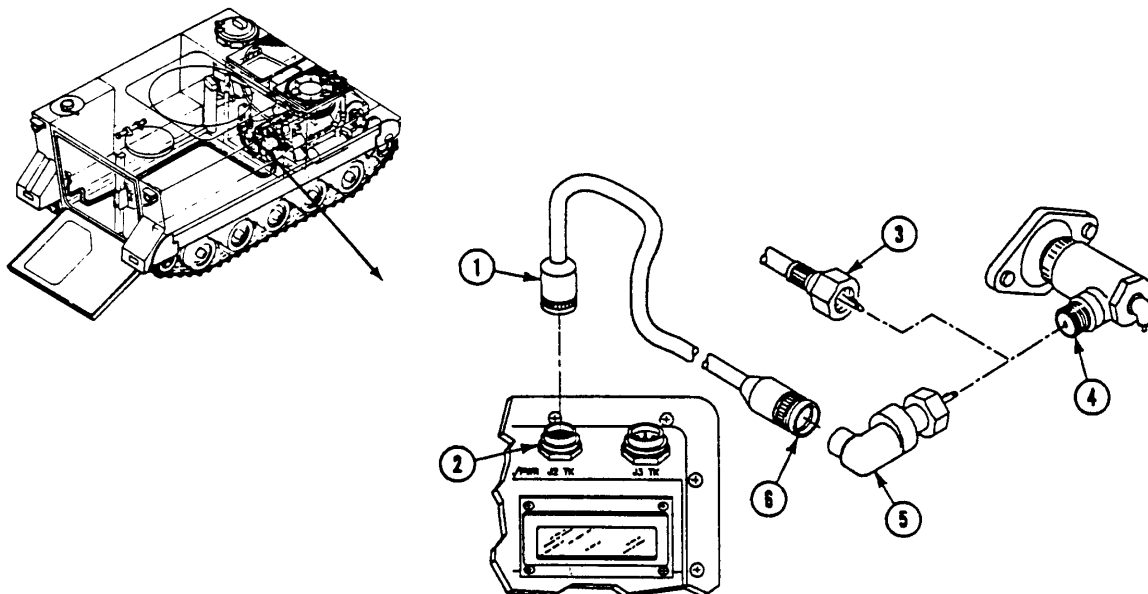
HOOK-UP

1. Remove transducer cable W4 and pulse tachometer from transit case.
2. Pull VTM circuit breaker to OFF.
3. Connect cable W4 P1 (1) to jack J2 TK (2) on VTM.
4. Disconnect tachometer cable (3) from tachometer drive adapter (4) on engine (WP 0246 00).
5. Install pulse tachometer (5) on tachometer drive adapter (4).

CAUTION

To prevent cable damage, make sure cable is clear of belts and fan blade.

6. Connect cable W4 P2 (6) to pulse tachometer (5).



HOOK UP/REMOVE STE/ICE-R FOR ENGINE RPM — Continued

0107 00

7. Push VTM circuit breaker to ON.
8. Return to troubleshooting.

REMOVAL

1. Pull VTM circuit breaker to OFF.
2. Disconnect cable W4 P2 from pulse tachometer.
3. Remove pulse tachometer from tachometer drive adapter.
4. Install tachometer cable on drive adapter (WP 0246 00).
5. Remove cable W4 P1 from jack J2 TK on VTM.
6. Stow transducer cable and pulse tachometer in transit case.

HOOK UP/REMOVE STE/ICE-R FOR STARTER CIRCUIT TESTS**0108 00****THIS WORK PACKAGE COVERS:**

Hook-up (page 0108 00-1).
Removal (page 0108 00-2).

INITIAL SETUP:Maintenance Level

Unit

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

STE/ICE-R power hooked up (WP 0106 00)

Tools and Special Tools

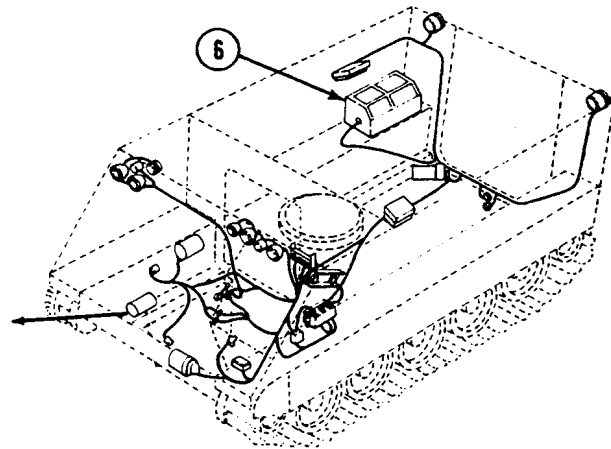
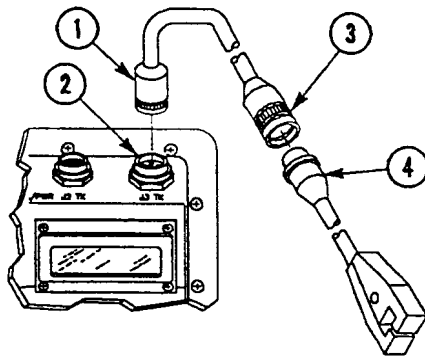
STE/ICE-R Test Set (WP 0780 00, Item 73)

Personnel Required

Unit Mechanic

HOOK-UP

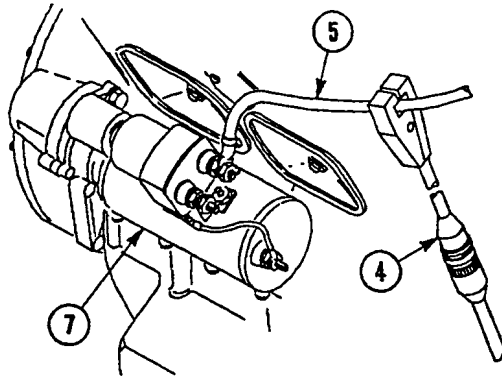
1. Remove transducer cable W4 from transit case.
2. Pull VTM circuit breaker to OFF.
3. Install cable W4 P1 (1) on VTM jack J3 TK (2).
4. Attach cable W4 P2 (3) to current probe (4).



NOTE

If current probe is below room temperature, wait at least 5 minutes after connecting probe to VTM before doing offset test, or perform offset within 30 seconds of starting each measurement.

5. Clamp current probe (4) around positive (+) battery cable (5) going to the starter (7). Point arrow on probe along cable to starter. Make sure probe is closed.



6. Push VTM circuit breaker to ON.
 - a. If display reads **(8888)** and **(---)**, go to Step 7.
 - b. If display is not blank, but does not read **(8888)** and **(---)**, write up DA Form 2404 on faulty VTM display. Report problem to supervisor.
 - c. If display is blank, go to VTM blank display diagnostic troubleshooting, see TM 9-4910-571-12&P.
7. Return to troubleshooting task.

REMOVAL

1. Pull VTM circuit breaker to OFF.
2. Remove transducer cable W4 from battery cable and VTM.
3. Disconnect cable W4 P2 from current probe.
4. Stow transducer cable W4 and current probe in transit case.

HOOK UP/REMOVE STE/ICE-R TEST SET FOR TEST
NUMBERS 72 THRU 75

0109 00

THIS WORK PACKAGE COVERS:

- Hook-up (page 0109 00-1).
- Removal (page 0109 00-3).

INITIAL SETUP:

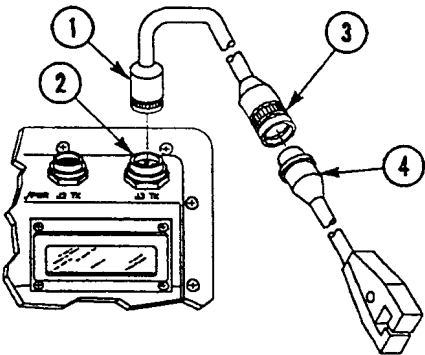
<u>Maintenance Level</u>	<u>Equipment Condition</u>
Unit	Engine stopped (see your -10)
<u>Tools and Special Tools</u>	Carrier blocked (see your -10)
STE/ICE-R Test Set (WP 0780 00, Item 73)	All electrical accessories turned off (see your -10)
<u>Personnel Required</u>	Engine at operating temperature (see your -10)
Unit Mechanic	Fuel off, engine must not start (see your -10)
<u>References</u>	STE/ICE-R power hooked up (WP 0106 00)
See your -10	

HOOK-UP

NOTE

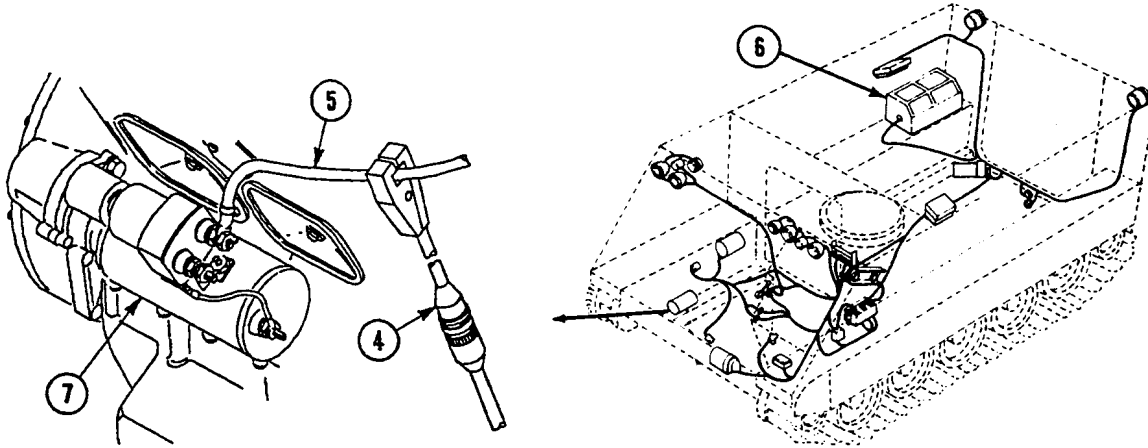
Do not have battery charger connected when performing test numbers 72 thru 75.

1. Remove transducer cable W4 and current probe from transit case.
2. Pull VTM circuit breaker to OFF.
3. Install cable W4 P1 (1) on VTM jack J3 TK (2).
4. Attach cable W4 P2 (3) to current probe (4).
5. Push VTM circuit breaker to ON.
6. Remove battery cover (see your -10).

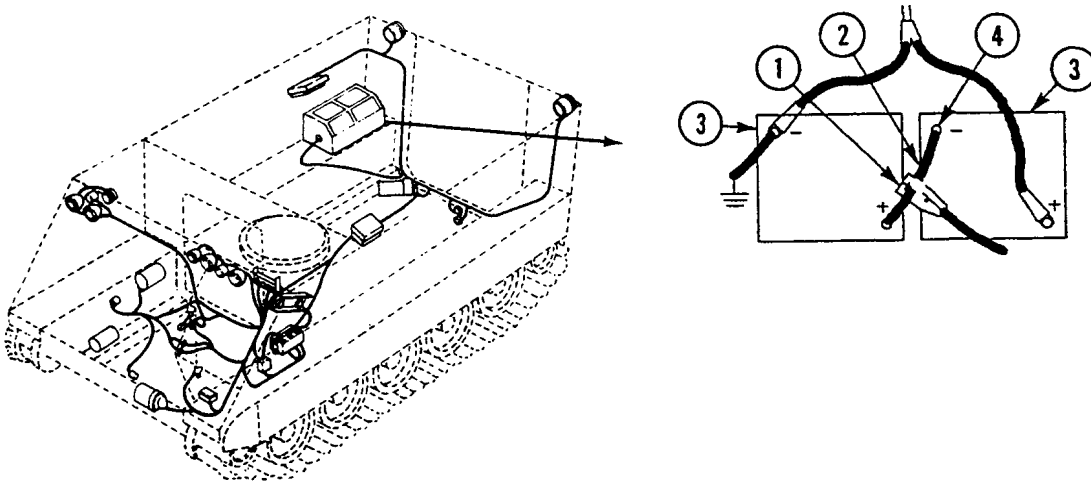


**HOOK UP/REMOVE STE/ICE-R TEST SET FOR TEST NUMBERS 72
THRU 75 — Continued****0109 00**

7. For test numbers 72 (WP 0115 00) or 74 (WP 0117 00), current probe (4) is connected to positive cable (5) between battery (6) and starter (7). Point arrow on current probe along cable to starter. Make sure current probe is closed.



8. For test numbers 73 or 75 (WP 0116 00), clamp current probe (1) around cable (2) connecting series pair of batteries (3). Point arrow on current probe along cable toward negative (-) terminal (4). Make sure current probe is closed.



**HOOK UP/REMOVE STE/ICE-R TEST SET FOR TEST NUMBERS 72
THRU 75 — Continued**

0109 00**NOTE**

Engine must not start while cranking engine. If engine starts, repeat Step 8.

9. Continue current probe by engaging starter only long enough to briefly turn engine (approximately 1 second).
10. Return to troubleshooting task.

REMOVAL

1. Pull VTM circuit breaker to OFF.
2. Remove cable W4 P1 from VTM jack J3 TK.
3. Remove cable W4 P2 from current probe.
4. Install battery cover (see your -10).
5. Stow transducer cable W4 and current probe in transit case.

STE/ICE-R TEST 01 DISPLAY ENGINE RPM WITH NEXT MEASUREMENT0110 00

THIS WORK PACKAGE COVERS:

Test (page 0110 00-1).

INITIAL SETUP:

<u>Maintenance Level</u>	<u>Equipment Condition</u>
Unit	Engine stopped (see your -10)
<u>Tools and Special Tools</u>	Carrier blocked (see your -10)
STE/ICE-R Test Set (WP 0780 00, Item 73)	STE/ICE-R power hooked up (WP 0106 00)
<u>Personnel Required</u>	STE/ICE-R engine RPM test hooked up (WP 0107 00)
Unit Mechanic	

TEST

1. Select TEST 01.
2. Press and release TEST button.
3. VTM will display CON.

NOTE

Hook up and offset steps should already have been completed. Do not repeat.
Go to desired measurement procedure. Follow that procedure. VTM will alternately display the engine speed and the desired measurement. The first number displayed will be RPM.

4. Return to troubleshooting.

STE/ICE-R TEST 10 ENGINE RPM**0111 00****THIS WORK PACKAGE COVERS:**

Test (page 0111 00-1).

INITIAL SETUP:Maintenance Level

Unit

Tools and Special Tools

STE/ICE-R Test Set (WP 0780 00, Item 73)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

STE/ICE-R power hooked up (WP 0106 00)

STE/ICE-R starter circuit test hooked up (WP 0108 00)

STE/ICE-R engine RPM test hooked up (WP 0107 00)

TEST

1. Select TEST 10.
2. Press and release TEST button.

NOTE

At speeds below 50 RPM, the VTM will display 0. At speeds above 5000 RPM, the display may give a false reading.

3. VTM will display engine RPM:

CONDITIONS	ENGINE RPM
Cranking	100 minimum
Idle	650–700
Governed Speed (No Load)	2975–3000

- a. If error message appears, see WP 0099 00.
 - b. If display is erratic or reads **0** with engine turning, see TM 9-4910-571-12&P.
4. Read cranking RPM while starting engine.
5. Check engine idle speed.
 - a. Watch VTM for 10 seconds.
 - b. If engine idle speed does not remain between 650 and 700 RPM, notify direct support maintenance.
6. Return to troubleshooting task.

STE/ICE-R TEST 13 POWER (PERCENT)**0112 00****THIS WORK PACKAGE COVERS:**

Test (page 0112 00-1).

INITIAL SETUP:Maintenance Level

Unit

Tools and Special Tools

STE/ICE-R Test Set (WP 0780 00, Item 73)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

STE/ICE-R power hooked up (WP 0106 00)

STE/ICE-R engine RPM test hooked up (WP 0107 00)

Warm engine to operating temperature (see your -10)

TEST**NOTE**

If VID has been performed during power hookup procedures (WP 0106 00), go to Step 2. If not, continue with Step 1.

1. Enter VID.
 - a. Set TEST SELECT switches to 60.
 - b. Press and release TEST button.
 - c. Wait for prompting message **UEH** to appear on display.
 - d. Set TEST SELECT switches to 03.
 - e. Press and release TEST button.
 - f. Wait for **VTM** to display and hold VID number.

NOTE

Engine idle speed must be checked before performing power test. If idle speed is not within limits specified for vehicle/equipment, adjust idle speed to be within proper limits.
Do not run power test if idle speed cannot be properly adjusted.

2. Start and idle engine.
 - a. Set TEST SELECT switches to 10.
 - b. Press and release TEST button.
 - c. Observe displayed value (RPM) and adjust idle speed if necessary.
 - d. Observe displayed value (RPM).

CAUTION

Engine governor speed must be checked before performing power test. If governor speed is not within limits specified for vehicle/equipment, notify direct support maintenance.
Do not run power test if governor speed is not within specified limits. Damage to engine may result.

3. Perform power test.
 - a. Set TEST SELECT switches to 13.
 - b. Press and release TEST button.
 - c. Wait for prompting message **UEH** to appear on display. If **UEH** does not appear on display, go to Step g.

- d. Set TEST SELECT switches to 03.
- e. Press and release TEST button.

NOTE

The number just entered will remain on the display only a few seconds.

- f. f. Wait for **VTM** to display the VID just entered.

NOTE

If a prompting message Po-1 appears on the display, refer to Step 2c for Po-1 and Step 2d for Po-2.

If prompting message Po-1 does not appear on the display, go to Step 1.

- g. Wait for prompting message Po-1 to appear on display.
- h. Set TEST SELECT switches to Po-1 value.
- i. Press and release TEST button.
- j. Wait for prompting message Po-2 to appear on display.
- k. Set TEST SELECT switches to Po-2 value.
- l. Press and release TEST button.
- m. When **CIP** is displayed, sharply depress accelerator. Hold it to the floor. When **VTM** displays OFF, release accelerator.

CAUTION

To prevent damage to equipment, allow engine to idle for at least two minutes after running power test.

- n. A number will be displayed after engine has returned to idle speed. This number is the test result in units of percent of nominal rated power.
4. Return to troubleshooting.

Table 1. % Power: Minimum Test Limit

Vehicle	Altitude		
	0 to 2000 ft	2000 ft to 4000 ft	Above 4000 ft
M113 FOV	75%	66%	60%

STE/ICE-R TEST 14 COMPRESSION UNBALANCE (POWER CABLE)**0113 00****THIS WORK PACKAGE COVERS:**

Test (page 0113 00-1).

INITIAL SETUP:Maintenance Level

Unit

Tools and Special Tools

STE/ICE-R Test Set (WP 0780 00, Item 73)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

STE/ICE-R power hooked up (WP 0106 00)

Warm engine to operating temperature (see your -10)

Disengage transfer gearcase (see your -10)

Run test 72 (WP 0115 00)

Run test 73 (WP 0116 00)

Run test 74 (WP 0117 00)

Run test 75 (WP 0116 00)

TEST**NOTE**

**If VID has been performed during power hook up procedure (WP 0106 00), go to Step 2.
If not, then continue with Step 1.**

1. Enter VID.
 - a. Set TEST SELECT switches to 60.
 - b. Press and release TEST button.
 - c. Wait for prompting message **UEH** to appear on display.
 - d. Set TEST SELECT switches to 03 for vehicle being tested.
 - e. Press and release TEST button.
 - f. Wait for VTM to display and hold VID number.

NOTE

Do not run more than two compression unbalance tests in a row. Idle engine between pairs of compression unbalance tests.

Crank engine without fuel for 5 seconds to clear fuel from cylinders.

2. Perform test.
 - a. Set TEST SELECT switches to 14.
 - b. Press and release TEST button.
 - c. Wait for prompting message **UEH** to appear on display. If **UEH** does not appear on display, go to Step g.
 - d. Set TEST SELECT switches to 03.
 - e. Press and release TEST button.

NOTE

The number just entered will remain on the display only a few seconds.

- f. Wait for **VTM** to display the VID just entered.
- g. Wait for prompting message **CYL** to appear on display. If cylinder does not appear, go to Step y.

- h. Set TEST SELECT switches to 06.
- i. Press and release TEST button.
- j. Wait for VTM to display the **Cu-1** prompting message.
- k. Set TEST SELECT switches to the value of the **Cu-1** constant.
- l. Press and release TEST button.
- m. Wait for VTM to display the **Cu-2** prompting message.
- n. Set TEST SELECT switches to the value of the **Cu-2** constant.
- o. Press and release TEST button.
- p. Wait for VTM to display the **Cu-3** prompting message.
- q. Set TEST SELECT switches to the value of the **Cu-3** constant.
- r. Press and release TEST button.
- s. Wait for VTM to display the **Cu-4** prompting message.
- t. Set TEST SELECT switches to the value of the **Cu-4** constant.
- u. Press and release TEST button.
- v. Wait for VTM to display the **Cu-5** prompting message.
- w. Set TEST SELECT switches to the value of the **Cu-5** constant.
- x. Press and release TEST button.
- y. When GO appears, crank engine. Display will change to (- - -) while engine is turning.

NOTE

If E013 appears, test data cannot be analyzed because of weak batteries or interrupted cranking during test. Correct problem and repeat Step 2.

- z. When OFF or E013 appears, stop cranking. Wait for message to appear.
 - 1) If a number is displayed, refer to the vehicle test card for its meaning.
 - 2) If GO appears, go back to Step 2y.
 - 3) A FAIL message usually means compression is too far unbalanced to measure with STE/ICE-R. Occasionally, a FAIL message may be caused by carrier/equipment accessories that are activated during cranking or by imperfections in the starting system.

STE/ICE-R TEST 67 BATTERY VOLTAGE

0114 00

THIS WORK PACKAGE COVERS:

Test (page 0114 00-1).

INITIAL SETUP:

<u>Maintenance Level</u>	<u>Equipment Condition</u>
Unit	Engine stopped (see your -10)
<u>Tools and Special Tools</u>	Carrier blocked (see your -10)
STE/ICE-R Test Set (WP 0780 00, Item 73)	STE/ICE-R power hooked up (WP 0106 00)
<u>Personnel Required</u>	STE/ICE-R starter circuit test hooked up (WP 0108 00)
Unit Mechanic	STE/ICE-R engine rpm test hooked up (WP 0107 00)

TEST

1. Select TEST 67.
2. Press and release TEST button.

CONDITION	VOLTS
Engine Off, Master Switch Off	22 or more
Cranking Engine, Fuel Off	18 or more
Charging, 1200 RPM, Service Lights On	26 to 29

- a. If display is erratic or shows **0** volts, see TM 9-4910-571-12&P.
 - b. If error message appears, see WP 0099 00.
 - c. If **.9.9.9.9** is displayed, voltage is not within test range. Use test 89, see TM 9-4910-571-12&P.
3. Return to troubleshooting.

STE/ICE-R TEST 72 STARTER CURRENT (FIRST PEAK)

0115 00

THIS WORK PACKAGE COVERS:

Test (page 0115 00-1).

INITIAL SETUP:

Maintenance Level	Equipment Condition
Unit	Engine stopped (see your -10)
Tools and Special Tools	Carrier blocked (see your -10)
STE/ICE-R Test Set (WP 0780 00, Item 73)	All electrical accessories turned off (see your -10)
Personnel Required	Fuel OFF, engine must not start (see your -10)
Unit Mechanic	STE/ICE-R power hooked up (WP 0106 00)
	STE/ICE-R starter circuit test hooked up (WP 0108 00)

TEST

1. Select TEST 72.
2. Perform offset test.
 - a. Press and hold TEST button until **CAL** appears. Release TEST button.
 - b. If VTM reads between **-225** and **+225**, offset test passes.
 - c. If offset test fails, see TM 9-4910-571-12&P.
3. Press and release TEST button.
4. When GO appears, turn MASTER SWITCH to ON and crank engine for 2 seconds or until one of the following appears on VTM:

DISPLAY	PERFORM/RESULT
OFF	Stop cranking and wait for message to appear.
A number	Circuit Resistance (in amps).
.9.9.9.9	Beyond range of VTM, cannot be measured.
Error message	See WP 0099 00.

5. Turn MASTER SWITCH to OFF.
6. Observe VTM reading.
 - a. If VTM reading is between **700** and **1275**, test passes.
 - b. If reading is erratic or cannot be obtained, see TM 9-4910-571-12&P.
7. Return to troubleshooting.

STE/ICE-R TEST 73 BATTERY RESISTANCE — STE/ICE-R TEST 75 BATTERY RESISTANCE CHANGE (PACK)

0116 00

THIS WORK PACKAGE COVERS:

Test (page 0116 00-1).

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

STE/ICE-R Test Set (WP 0780 00, Item 73)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

Battery cover removed (see your -10)

STE/ICE-R power hooked up (WP 0106 00)

STE/ICE-R starter circuit test hooked up (WP 0108 00)

TEST

1. Reposition current probe.
 - a. Pull VTM switch to OFF.
 - b. Remove current probe from positive battery cable.
 - c. Connect current probe to cable connecting series pair of batteries together.
 - d. Push VTM switch to ON.
 - e. Select TEST 73.

NOTE

Both TEST 73 and TEST 75 must be performed to determine condition of series pair of batteries.

2. Perform offset test.
 - a. Press and hold TEST button until **CAL** appears. Release TEST button.
 - b. If VTM reads between **-225** and **+225**, offset test passes.
 - c. If offset test fails, see TM 9-4910-571-12&P.
3. Press and release TEST button.
4. When GO appears, crank engine for two seconds or until one of the following appears on display:

DISPLAY

OFF

A number

.9.9.9.9

Error message

(----

PERFORM/RESULT

Stop cranking and wait for message to appear.

Battery Resistance (milliohms test 73: milliohms/seconds test 75).

Beyond range of VTM, cannot be measured.

See WP 0099 00.

VTM lost power during test. Batteries may be too weak. Try powering VTM using external source.

**STE/ICE-R TEST 73 BATTERY RESISTANCE — STE/ICE-R TEST 75 BATTERY
RESISTANCE CHANGE (PACK) — Continued**

0116 00

5. Observe VTM reading.
 - a. If test 73 VTM reading is **25** or less, test passes.
 - b. If test 73 VTM reading is over **25**, test fails.
 - c. If test 75 VTM reading is **50** or less, test passes.
 - d. If test 75 VTM reading is over **50**, test fails.

Table 1. BATTERY RESISTANCE TEST RESULTS

TEST 73	TEST 75	
BATTERY INTERNAL RESISTANCE TEST RESULT	BATTERY RESISTANCE CHANGE TEST RESULT	BATTERY PACK CONDITION
PASS	PASS	The batteries tested are ok and in good state of charge.
PASS	FAIL	The batteries tested are in poor condition, but have a fresh charge.
FAIL	PASS	The batteries tested are ok, but need to be recharged.
FAIL	FAIL	The batteries tested are in poor condition and in a state of discharge.

6. Select test 75.
7. Repeat Steps 2–5.
8. Determine condition of series pair of batteries using Table 1.
 - a. If batteries are in poor condition, go to individual battery tests 77 and 79. See TM 9-4910-571-12&P.
9. Return to troubleshooting task.

STE/ICE-R TEST 74 STARTER CIRCUIT RESISTANCE

0117 00

THIS WORK PACKAGE COVERS:

Test (page 0117 00-1).

INITIAL SETUP:

<u>Maintenance Level</u>	<u>Equipment Condition</u>
Unit	Engine stopped (see your -10)
<u>Tools and Special Tools</u>	Carrier blocked (see your -10)
STE/ICE-R Test Set (WP 0780 00, Item 73)	All electrical accessories turned off (see your -10)
<u>Personnel Required</u>	Fuel OFF, engine must not start (see your -10)
Unit Mechanic	STE/ICE-R power hooked up (WP 0106 00)
	STE/ICE-R starter circuit test hooked up (WP 0108 00)

TEST

1. Select TEST 74.
2. Perform offset test.
 - a. Press and hold TEST button until **CAL** appears. Release TEST button.
 - b. If VTM reads between **-225** and **+225**, offset test passes.
 - c. If offset test fails, see TM 9-4910-571-12&P.
3. Press and release TEST button.
4. When GO appears, turn MASTER SWITCH to ON and crank engine for 5 seconds or until one of the following appears on VTM:

DISPLAY	PERFORM/RESULT
OFF	Stop cranking and wait for message to appear.
A number	Circuit Resistance (in milliohms).
.9.9.9.9	Beyond range of VTM, cannot be measured.
Error message	See WP 0099 00.

5. Turn MASTER SWITCH to OFF.
6. Observe VTM reading.
 - a. If VTM reading is between **5** and **27**, test passes.
 - b. If reading is erratic or cannot be obtained, see TM 9-4910-571-12&P.
7. Return to troubleshooting task.

STE/ICE-R TEST 90 DC CURRENT 0 TO 1500 AMP**0118 00****THIS WORK PACKAGE COVERS:**

Test (page 0118 00-1).

INITIAL SETUP:Maintenance Level

Unit

Tools and Special Tools

STE/ICE-R Test Set (WP 0780 00, Item 73)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

STE/ICE-R power hooked up (WP 0106 00)

STE/ICE-R starter circuit test hooked up (WP 0108 00)

TEST**NOTE**

If current probe is below room temperature, wait at least 5 minutes after connecting probe to VTM before doing offset test, or perform offset within 30 seconds of starting each measurement.

1. Perform offset test.
 - a. Set TEST select switches to 90.
 - b. Push and hold TEST button until **CAL** appears. Release TEST button.
 - c. If VTM reads between **-225** and **+225**, offset test passes.
 - d. If offset test fails, see TM 9-4910-571-12&P.
2. Press and release TEST button.
3. Turn on circuit used to condition current probe. If starter is used to condition probe, energize starter long enough to obtain a reading. Do not allow engine to start.
4. Note polarity sign of conditioning current. If readout is negative (-), reverse current probe, and repeat Steps 1 - 4.
5. Turn off circuit used to condition current probe.
6. Perform offset test.

NOTE

Stray magnetic fields can affect the current reading. Such fields may exist within a foot or so of operating carrier generators and alternators, motor generators under load, and electric motors. Keep current probe at least one foot away from any operating generators, alternators, or electric motors.

7. During offset test, the component being tested must be off, and the circuit must be de-energized.
 - a. Turn off component to be tested.
 - b. Install current probe where current is to be measured.
 - c. Push and hold TEST button until **CAL** appears. Release TEST button.
 - d. If VTM reads between **-225** and **+225**, offset test passes.
 - e. If offset test fails, see TM 9-4910-571-12&P.
8. Press and release TEST button.
9. Turn on component to be tested.

NOTE

If .9.9.9.9 appears on display, the test current is greater than 1500 amp and cannot be measured with STE/ICE-R.

If display reads a value with a minus sign, current probe has been installed backwards. Repeat Steps 1 - 5. Be careful not to reinstall current probe backwards.

10. Observe VTM reading.
 - a. If VTM reads between **250** and **425** amps, test passes.
 - b. If reading is erratic or cannot be obtained, see TM 9-4910-571-12&P.
11. Turn off component turned on in Step 9.
12. Return to troubleshooting.

CHAPTER 3
UNIT MAINTENANCE INSTRUCTIONS
FOR MAINTENANCE OF CARRIER

WORK PACKAGE INDEX	
<u>Title</u>	<u>Sequence No.</u>
SERVICE UPON RECEIPT OF MATERIEL.....	0119 00
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING LUBRICATION INSTRUCTIONS.....	0120 00

SERVICE UPON RECEIPT OF MATERIEL

0119 00**THIS WORK PACKAGE COVERS:**

This section tells you how to service your carrier when it is first received from a depot. It also gives information on administrative storage.

INITIAL SETUP:Maintenance LevelUnit

GENERAL INSTRUCTIONS

If you find anything wrong during this preliminary check and service, or during break-in period, report them to your supervisor. These deficiencies must be corrected before carrier can be placed in service.

You are required to report any serious problems which appear to involve unsatisfactory design or material. Prepare the Equipment Improvement Recommendations (EIR) using SF-368, Product Quality Deficiency Report, as stated in DA PAM 738-750.

PRELIMINARY CHECKS AND ADJUSTMENTS

1. All new or reconditioned carriers, when first received by using soldiers, must be deprocessed. Unit Mechanics must decide if carrier has been properly prepared for service. The carrier must be in condition to perform its assigned mission.

SPECIFIC DEPROCESSING PROCEDURES

ITEM	ACTION
Tiedowns and covers	Remove and stow covers. They are reusable. Do not damage covers. Check with supply personnel about cover disposition.
Tape and protective paper	Remove and discard from seats, air intake, exhaust grills, and all lamp lenses.
Basic issue items	Unpack and stow on carrier (TM 9-2350-261-10 or TM 9-2350-259-10). Report any missing items.
Tools and hardware	Clean and degrease.
Batteries	Install batteries in carrier (WP 0303 00). Check electrolyte and add distilled water as needed.
Drain plugs	Install and tighten (WP 0435 00).
Drive belts	Restore tension: Water pump (WP 0196 00); Generator (WP 0226 00 or WP 0234 00); Fan (WP 0211 00).
Engine, transfer gearcase, differential final drives, and fan	Check lubricant levels. Check drain plugs and filters for leaks (WP 0120 00 or LO 9-2350-259-12). Tighten all plugs and hose connections.
DD Form 1397	Check for correct viscosity. This tag should be in driver's compartment attached to a steering lever or the range selector.
Fuel	Fill tanks with diesel fuel (TM 9-2350-261-10, TM 9-2350-259-10, or TM 9-2350-266-10). Check for fuel leaks at filler, drain cocks, drain plugs, quick disconnects, filters, and pump.
Start engine	Check immediately for fuel leaks and oil leaks (TM 9-2350-259-10 or TM 9-2350-261-10). Disregard smoky exhaust for first few minutes of operation. Some rust-preventive fuel will be in the system and will burn along with the regular fuel.
Semi-annual check	Perform all semi-annual checks and services required for your carrier (WP 0120 00).
Road test	See TM 9-2350-261-10 or TM 9-2350-259-10 for proper operating instructions. Become familiar with all controls and instruments before you road test. Drive a new or reconditioned carrier at least 5 to 10 miles (8 to 16 km). Make sure carrier operates normally. Don't start out too fast, or drive too fast. You'll overload the engine or power train. Stop at least every mile. Look for overheated hubs, loose parts, and fuel or oil leaks. After the road test, the carrier is ready for regular soldier use.

SERVICE UPON RECEIPT OF MATERIEL — Continued

0119 00**ADMINISTRATIVE STORAGE**

1. Instructions for administrative storage of your carrier are contained in the following documents:

SPECIFICATION	APPLICABLE CARRIERS
MIL-DTL-45360H(AT)	M113A2, M1064, and M1059
ATPD 2227	M577A2 and M1068
ATPD 2230	M901A1 TOW Vehicle (Less TOW Weapon)

END OF TASK

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING LUBRICATION INSTRUCTIONS

0120 00

THIS WORK PACKAGE COVERS:

Semi-annual (Table 16, page 0120 00-19).

Annual (Table 17, page 0120 00-19).

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

Adapter (WP 0780 00, Item 4)
 Adapter (WP 0780 00, Item 7)
 Antifreeze and Battery Tester (WP 0780 00, Item 77)
 Socket Set (WP 0780 00, Item 95)
 Socket Set (WP 0780 00, Item 96)
 Torque Wrench (WP 0780 00, Item 100)
 Torque Wrench (WP 0780 00, Item 101)
 Torque Wrench (WP 0780 00, Item 102)
 Torque Wrench (WP 0780 00, Item 103)
 Torque Wrench (WP 0780 00, Item 104)
 Torque Wrench (WP 0780 00, Item 106)
 Weighing Scale (WP 0780 00, Item 63)

References

DA PAM 738-750
 FM 90-3
 FM 9-207
 TM 9-214
 TB 43-0211
 TM 43-0139
 TM-3-6680-316-10
 TM 9-6140-200-14
 TM 9-2350-261-24P
 TM 9-2540-205-24&P
 TM 3-4240-276-30&P
 TM 9-2540-207-14&P
 TM 9-2350-261-10

Materials/Parts

Aircraft grease (WP 0782 00, Item 5)
 Antiseize compound (WP 0782 00, Item 8)
 Automotive grease (WP 0782 00, Item 24)
 Cleaning compound (WP 0782 00, Item 16)
 Crocus cloth (WP 0782 00, Item 1)
 General purpose detergent (WP 0782 00, Item 23)
 Insulation Tape (WP 0782 00, Item 35)
 Wiping rag (WP 0782 00, Item 76)

Equipment Condition

Engine stopped (see your -10)

SCOPE

This section details preventive maintenance checks and services (PMCS) and lubrication procedures required for the M113A2 FOV Carriers at the unit maintenance level. For crew level PMCS, see your -10.

MAINTENANCE FORMS AND RECORDS

The forms and records you fill out have many uses. They are a permanent record of the service, repairs, and changes made to your vehicle. They also tell you whether faults have been repaired. For information on forms and records, see DA Pamphlet 738-750.

WARNINGS AND CAUTIONS

Always observe the WARNINGS and CAUTIONS appearing in the PMCS tables BEFORE, DURING, and AFTER you operate the equipment. The WARNINGS and CAUTIONS appear before certain procedures. You must observe these WARNINGS and CAUTIONS to prevent serious injury to yourself and others or prevent your equipment from being damaged.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00**PMCS PROCEDURES**

- (1) Obey all WARNINGS and CAUTIONs when you do PMCS.
- (2) Name, caution, and instruction plates should be easy to read. If they are dirty or corroded, clean them, and coat them with lacquer. See TM 43-0139 for instructions.
- (3) Perform all lubrication in accordance with LO 9-2350-259-12 (M901A1 Only).
- (4) If something doesn't work, troubleshoot it using the troubleshooting procedures (WP 0005 00).
- (5) Do the semi-annual PMCS every 1500 miles (2400 km) of operation or no later than 6 months after the last semi-annual PMCS.
- (6) Always do your PMCS in the same order so it gets to be a habit. With practice, you'll spot anything that is wrong.
- (7) Keep your vehicle clean. Dirt, grease, oil, and debris only get in the way, and may cover up a serious problem. Clean your vehicle as you work and as needed.
- (8) Use cleaning compound (WP 0782 00, Item 16) on metal surfaces. Use general purpose detergent (WP 0782 00, Item 23) and water when you clean rubber or plastic parts.
- (9) You need to know how fluid leaks affect your vehicle. Definitions of the types and classes of leaks are given in General Maintenance Instructions below. You need to know them to determine the condition of your vehicle. Learn them. REMEMBER: WHEN IN DOUBT, NOTIFY YOUR SUPERVISOR!

GENERAL MAINTENANCE INSTRUCTIONS**Scope**

This work package contains safety warnings, guidelines, and general maintenance instructions. They should be followed when doing maintenance procedures authorized for unit level maintenance.

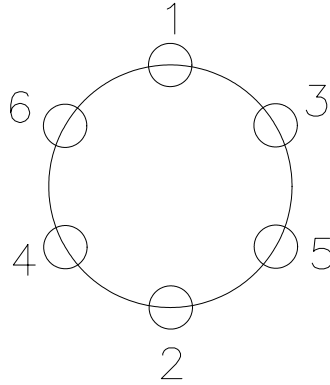
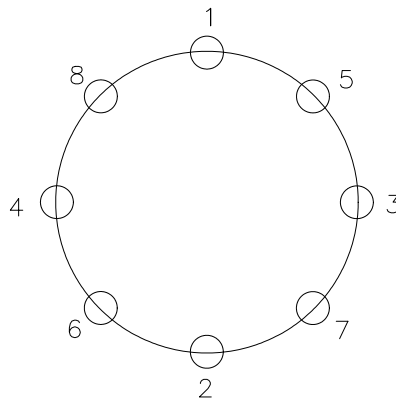
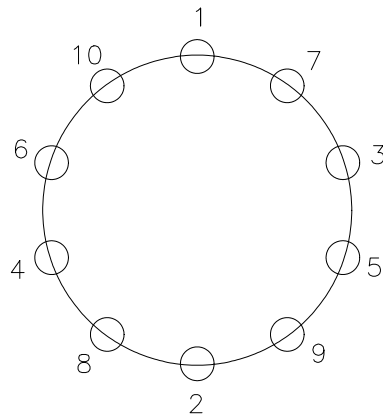
1. PREPARATION FOR MAINTENANCE

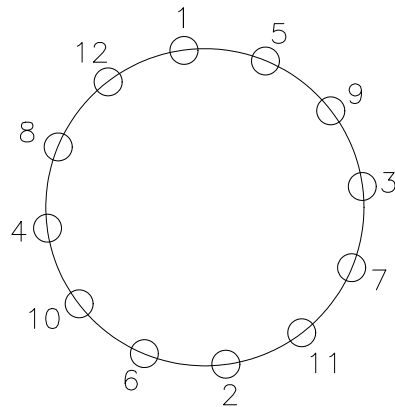
- a. *PERSONNEL SAFETY.* Practice all shop safety procedures and read all warnings in this manual.
- b. *PROPER EQUIPMENT.* Get tools and equipment before starting a maintenance task. See RPSTL (TM 9-2350-261-24P) and the maintenance task for tools, equipment, parts, and materials.
- c. *WHAT TO DISCARD.* Parts to discard, such as lockwashers, locknuts, and gaskets, are listed in the maintenance tasks. If the step does not say to discard a part, the part should be saved. It may be used later or may be repaired.
- d. *HANDLING TECHNIQUES.*
 - 1) Avoid damage to parts during removal, cleaning, inspection, repair, and installation procedures. Nicks, scratches, and dents caused by careless handling could result in equipment failure.
 - 2) Dirt can damage parts and cause malfunctions. Make sure all air and fluid openings, lines, and hoses are capped or plugged during maintenance procedures.
- e. *IDENTIFICATION.*
 - 1) During removal, tag parts to ensure proper installation.
 - 2) During removal, tag leads on electrical parts to ensure proper installation. Tag each lead as it is removed.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

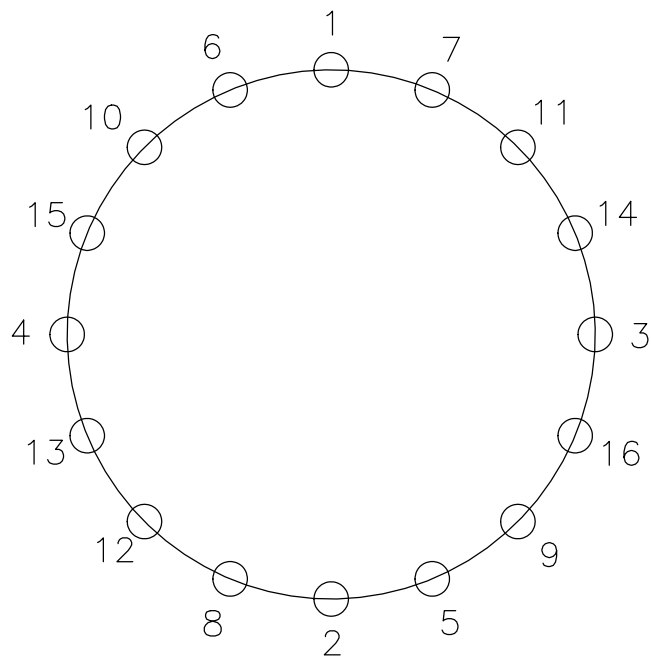
0120 00

- f. *TORQUING.* Where needed, torque values are listed in the maintenance task. When torquing, use one of the star pattern sequences below unless otherwise stated in the maintenance task.

**6-HOLE PATTERN****8-HOLE PATTERN****10-HOLE PATTERN**



12-HOLE PATTERN



17-HOLE PATTERN

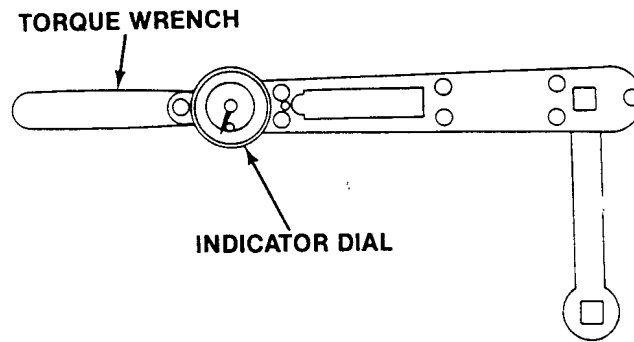
g. *USE OF TORQUE WRENCH ADAPTERS AND THE CONVERSION FORMULA.*

- 1) The torque values given in the text of this manual are the actual values that must be applied to the nut or screw for proper maintenance.
- 2) Some tasks require the use of a torque wrench adapter when the nut or screw cannot be reached with a regular socket on the end of the torque wrench. When an adapter is used on a torque wrench, definite rules must be followed or the nut or screw will be over- or under-torqued. The center line of the adapter should be used in one of two positions:

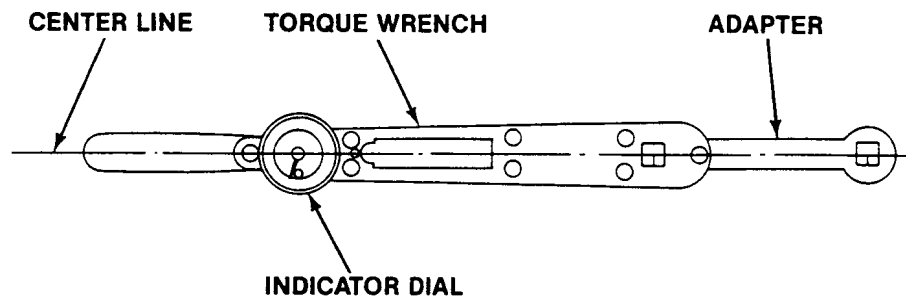
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

- a) One position is to have the adapter center line at right angles to the center line of the torque wrench. In this position, the indicator reading does not have to be calculated and it may be read direct.



- b) The other position is to have the center line of the adapter in line with the center line of the torque wrench. In this case, the adapter adds to the overall length of the torque wrench and makes the dial or scale reading less than the actual torque applied to the nut or screw. To prevent overtorquing and damage to equipment, you must calculate a corrected dial or scale reading.



3) To determine the corrected scale or dial reading, use the following formula and refer to the example.

NOTE

The length of the torque wrench is measured from the center of the handle to the center of the drive. The length of the adapter is measured from the center of the drive to the center of the wrench.

Corrected reading = **Required torque value** ÷ $\frac{\text{Length of torque wrench + length of adapter}}{\text{Length of torque wrench}}$

Length of torque wrench

Length of adapter

The following example is taken from the PMCS, Item 16. The torque wrench measured 12 inches and the adapter measured 3 inches. The required torque is 130–140 lb-ft (176–190 N·m) and the corrected reading is 104–112 lb-ft (141–152 N·m).

EXAMPLE

Replace missing track tension adjuster screws. TIGHTEN LOOSE SCREWS TO 130-140 LB-FT (176-190 N·M) TORQUE. Use adapter (WP 0780 00, Item 7) and torque wrench (WP 0780 00, Item 103).
Adapter measures 3 inches from drive center to 12–point wrench center. 1/2–inch drive torque wrench measures 12 inches from handle center to drive center.
To determine the corrected reading for this task, use the formula as follows:

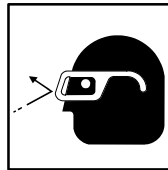
Corrected reading	=	Required torque value	÷	$\frac{\text{Length of torque wrench + length of adapter}}{\text{Length of torque wrench}}$
Corrected reading	=	130 lb-ft	÷	$\frac{12 \text{ inches} + 3 \text{ inches}}{12 \text{ inches}}$
Corrected reading	=	130 lb-ft	÷	$\frac{15 \text{ inches}}{12 \text{ inches}}$
Corrected reading	=	130 lb-ft	÷	1.25
Corrected reading	=	104 lb-ft		
Repeat last step for other torque value.				
Corrected reading	=	140 lb-ft	÷	1.25 = 112 lb-ft

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00**2. CLEANING**

- a. *GENERAL.* Cleaning is very important. All parts must be cleaned well and kept clean during maintenance. Dirt or foreign matter can cause malfunctions and equipment failure. General cleaning procedures are detailed in steps b through m. Special cleaning procedures are covered in the task relating to the specific part. Clean after repair and before assembly.
- b. *CLEAN EVERY PART.* Clean every part well after removal and before installation. Clean parts such as housings, covers, and dipsticks before removal. Avoid getting dirt and foreign matter in a system. Inspect and cap all air and fluid openings, lines, and hoses.
- c. *HANDLE WITH CARE.* Use care when handling parts during cleaning and maintenance. Nicks, scratches, dents, or burrs can prevent proper assembly or cause malfunctions after assembly. Keep hands free of grease. Grease collects grease. Cover or wrap parts to protect from dirt.
- d. *AVOID ABRASIVES.* Except where specially called for in a task, don't use abrasives, files, wire brushes, or sharp tools. On some surfaces, finish is important to the operation of close-fitting parts.
- e. *REMOVAL AGENTS.* Remove gum or old grease deposits by soaking parts in cleaning compound (WP 0782 00, Item 16). Scrub with a brush. Use crocus cloth (WP 0782 00, Item 1) to remove minor surface defects.

WARNING



Air pressure in excess of 30 psi (207 kPa) can injure personnel. Do not direct pressurized air at yourself or others. Always wear goggles.

CAUTION

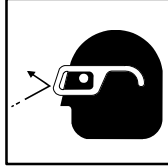
Lye or caustic mixtures will damage metal surfaces. Do not use lye or caustic mixtures to clean metal surfaces.

- f. *STEAM CLEANING.* If steam cleaning is used, dry clean parts at once with compressed air. Apply a thin film of clean oil to surfaces that are not painted to prevent rusting. Never use lye or caustic mixtures that will corrode or etch metal surfaces.
- g. *LUBRICATION OF NEW BEARINGS.* See TM 9-214 for cleaning and lubrication procedures. Bearings that have been in service should also be lubricated.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

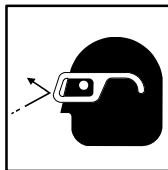
WARNING



Air pressure in excess of 30 psi (207 kPa) can injure personnel. Do not direct pressurized air at yourself or others. Always wear goggles.

- h. *CASTINGS.*
 - 1) Clean inner and outer surfaces of casting with cleaning compound (WP 0782 00, Item 16). Dry casting with compressed air.
 - 2) Remove sludge and gum deposits with a brush.
 - 3) Blow out all tapped holes with compressed air.
- i. *BALL BEARINGS.* Bearings require special cleaning techniques. See TM 9-214 for cleaning and maintenance procedures for ball bearings.
- j. *OIL PASSAGES.*
 - 1) Make sure oil passages are not clogged.
 - 2) Clean oil passages and break up any sludge or gum deposits.

WARNING



Air pressure in excess of 30 psi (207 kPa) can injure personnel. Do not direct pressurized air at yourself or others. Always wear goggles.

- 2) Flush oil passages with cleaning compound (WP 0782 00, Item 16). Dry parts with compressed air.

CAUTION

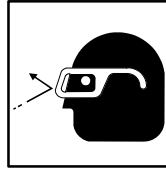
Cleaning compound causes leather, rubber, and synthetic materials to become brittle. Do not use cleaning compound to clean seals, cables, and flexible hoses.

- k. *OIL SEALS, ELECTRIC CABLES, AND FLEXIBLE HOSES.*
- k. Clean seals, cables, and flexible hoses with general purpose detergent (WP 0782 00, Item 23) and water. Dry with wiping rag (WP 0782 00, Item 76).

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

WARNING



Air pressurized in excess of 30 psi (207 kPa) can injure personnel. Do not direct pressurized air at yourself or others. Always wear goggles.

- l. *INSERTS*. Blow out insert holes with compressed air.
- m. *GASKETS*. If a gasket is being removed, scrape old gasket material and sealant off mating surface. Clean mating surface with cleaning compound (WP 0782 00, Item 16). Dry with wiping rag (WP 0782 00, Item 76).

3. **INSPECTION**

All removed parts must be inspected with care. Replace parts if damage or wear exceeds allowable limits.

- a. *GENERAL*. Procedures for inspection will be the same for most parts. General inspection procedures are given in steps b through p below. Special inspection procedures are covered in the task as needed.
- b. *CASTINGS*.
 - 1) Inspect all castings and forgings for breaks, cracks, and wear or scoring that would impair function.
 - 2) Inspect machined surfaces for nicks, burrs, and raised metal. Mark damaged areas for repair.
 - 3) Use straightedge to check all mounting flanges on housings and supports for bends. Inspect mating flanges for stains which would indicate oil leakage.
 - 4) Inspect all threaded parts for damaged or stripped threads.
- c. *NEEDLE ROLLER BEARINGS*. Inspect bearings for free and smooth rotation, and broken or missing rollers. Also look for tightness of fit in bearing bores. Inspect bearing races for wear and color changes due to heat. See TM 9-214 for inspection procedures.
- d. *STUDS*. Inspect all studs for stripped or damaged threads, bent or loose condition, and signs of stretching.
- e. *GEARS*. Inspect gears for burrs, wear, cracked or broken teeth, and pitting at tooth contact areas.
- f. *BUSHINGS AND BUSHING-TYPE BEARINGS*.
 - 1) Check all bushings and bushing-type bearings for secure fit in casting. Check for color changes which could mean overheating. Inspect for size, scoring, out-of-roundness, burrs, sharp edges, and signs of seizing.
 - 2) Check for dirt in oil holes and in bushing-type bearings. Oil holes and grooves must be clean and not damaged.
- g. *OIL SEALS*.
 - 1) Inspect feather edge of oil seals for tears, fraying, hardening, and cracking.
 - 2) Replace metal-covered oil seals when there are signs of damage or oil leakage.
- h. *CORE HOLE PLUGS*. Inspect core hole plugs for signs of leakage. Replace damaged core hole plugs.
- i. *INSERTS*.
 - 1) Inspect inserts for cracks and stripped or damaged threads.
 - 2) Check inserts for loose fit.
 - 3) Inspect armor mounting inserts and hull screw holes for loose or missing plugs and setscrews, as required.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

- j. *GREASE SEALS, PREFORMED PACKINGS, AND GASKETS.*
 - 1) Inspect composition seals, rings, and preformed packings for wear, brittleness, cracks, cuts, and damage.
 - 2) Inspect lip seals for cracks, wear, cuts, and brittleness. Inspect springs and seal shells for damage.
 - 3) Gaskets and seals on electrical parts may be reused. Inspect gaskets and seals for wear, nicks, cuts, and torn or missing gasket material. Replace gasket, if needed.
- k. *SPLINED PARTS.* Inspect splined parts for burrs, wear, twisted, cracked, or broken splines.
- l. *THREADED PARTS.* Inspect all threaded parts for burrs and stripped or damaged threads.
- m. *RETAINING RINGS.* Inspect retaining rings for nicks, burrs, defects, loss of tension, and wear.
- n. *SPRINGS.* Inspect springs for wear, defects, breaks, and loss of tension or compression. Inspect springs using a spring tester.
- o. *SHAFTS AND SPINDLES.* Inspect shafts and spindles for excessive wear, binding, scores, cracks, burrs, and obstructed oil passages.
- p. *ELECTRICAL PARTS.*
 - 1) Inspect electrical parts before you install them. Look for mildewed, corroded, or burned parts.
 - 2) Inspect electrical parts for pinched or loose wires and for cracked or broken wires, circuit cards, relays, and connectors.
 - 3) Inspect insulation and heatshrink tubing for cracks, tears, burns, or missing material.

4. REPAIR

- a. *GENERAL.* General repair procedures are given in steps b through m below. Special repairs are covered in the task. After repair, clean all parts well.
- b. *CASTINGS.*
 - 1) Replace all cracked or broken castings.
 - 2) Repair minor damage to machined surfaces of castings with crocus cloth (WP 0782 00, Item 1). Replace any part with defects that cannot be corrected or which will impair function.
 - 3) Repair minor surface bends by working bent surface of casting across sheet of crocus cloth (WP 0782 00, Item 1) on surface plate. Replace bent castings which would impair assembly or function.
- c. *BALL BEARINGS.* See TM 9-214 for inspection and maintenance for ball bearings.
- d. *NEEDLE ROLLER BEARINGS.* See TM 9-214 for inspection and maintenance of needle roller bearings.
- e. *BUSHINGS AND BUSHING-TYPE BEARINGS.* Replace bushings and bushing-type bearings if they are loose, scored, or have color change due to heat. When you replace bushings and bushing-type bearings, check nearby parts for damage or wear.
- f. *OIL SEALS.* Oil seals must be replaced when thin feather edge is damaged or when seal material is brittle.
 - 1) Press damaged oil seal from casting. Be careful not to damage bore.
 - 2) When oil seal bore is damaged so an oil-tight seal is impossible, replace casting or adapter. Remove slight nicks, burrs, and scratches with crocus cloth (WP 0782 00, Item 1) dipped in cleaning compound (WP 0782 00, Item 16).
- g. *GREASE SEALS, PREFORMED PACKINGS, GROMMETS, AND GASKETS.* Seals, preformed packings, grommets, and gaskets should be replaced when removed unless otherwise stated in the maintenance task. They should not be reused.
- h. *THREADED PARTS.* Repair all parts that have stripped or damaged threads by chasing threads with a used tap or die. Replace parts that cannot be repaired.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
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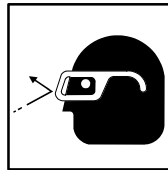
0120 00i. *RETAINING RINGS.*

- 1) Retaining rings should be replaced when removed unless otherwise stated in the maintenance task. They should not be reused.
- 2) Some retaining rings are beveled on one side. When installing this type of ring, the beveled side must face the part to be retained.

j. *SPRINGS.* Discard springs that have defects. Load and height inspection data, where needed, are given in maintenance procedures.k. *SHAFTS AND SPINDLES.*

- 1) Replace shafts and spindles that show signs of wear, binding, scores, cracks, burrs, or clogged oil passages.

WARNING



Air pressure in excess of 30 psi (207 kPa) can injure personnel. Do not direct pressurized air at yourself or others. Always wear goggles.

- 2) Remove obstructions with compressed air or by probing with soft wire.
- 3) Remove burrs and minor surface defects with a crocus cloth (WP 0782 00, Item 1).

l. *ELECTRICAL PARTS.*

- 1) Replace corroded or burned parts and parts which show signs of mildew.
- 2) Tighten loose connections.
- 3) Replace cracked or broken wires, circuit cards, relays, and connectors.
- 4) Replace cracked, torn, or burned insulation and heatshrink tubing.

m. *INSERTS.* Replace insert when threads are stripped or when insert is cracked or loose.

- 1) Drill and remove damaged insert from casting.
- 2) Install new insert in casting using suitable replacement tool.
- 3) Install plugs in armor mounting inserts, as required.
- 4) Install setscrews in hull armor mounting screw holes, as required.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00**5. FLUID LEAKS AND CHECKING FOR LEAKS**

- a. *GENERAL.* Fluid leaks in hoses and fluid lines affect the carrier parts operation. The types and classes of leaks are given below.

CLASS I

Fluid Seepage is not great enough to form drops, but it is shown by wetness or color changes.

CLASS II

Fluid Leakage is great enough to form drops, but drops do not drip from the item being checked or inspected.

CLASS III

Fluid Leakage is great enough to form drops that fall from the item being checked or inspected

NOTE

You are allowed to operate equipment with minor water or oil leaks (Class I or II). You must consider how much fluid the item or system being checked or inspected can hold. When in doubt, notify your supervisor. Any fuel or Class III leaks will make the vehicle NOT READY/AVAILABLE.

- b. *CHECKING FOR LEAKS AFTER A MAINTENANCE TASK.* After doing maintenance on a part which involves hoses or fluid lines, check for leaks. If leaks occur after you have done a replace or repair task, find the source of the leak. Correct the problem. Follow these procedures.
- 1) Do visual inspections to find the source of the leak.
 - a) Check for cracks on housing or cover.
 - b) Check that screws and any connections are not loose or overtight.
 - 2) If you cannot see the source of the leak, check the items listed below.
 - a) Check that preformed gasket is not bent or pinched.
 - b) Check machined surfaces for fit and cleanliness.
 - c) If leak persists, notify supervisor.
- c. *CHECKING FOR LEAKS USING CHALK TEST.* Following replacement, repair, or adjustment of a ramp, door, hatch cover, access panel, or rubber seal, check for leaks by performing a chalk test. Use the following procedure:
- 1) Use chalk or chalk powder to coat area around seal.
 - 2) Close ramp, door, hatch cover, or panel.
 - 3) Open ramp, door, hatch cover, or panel.
 - 4) Check for unbroken chalk line on mating surface. Where chalk does not stick to mating surface, there is a leak in the seal surface.
 - 5) If a leak is found, perform adjustment to correct the problem.

6. WARM-UP ENGINE

To warm up the engine for a maintenance or troubleshooting task, do the following:

- a. Cover air inlet grill.
- b. Start engine (see your -10).
- c. Lock steering levers.
- d. Move gear selector to 2–3 range. Release steering levers.
- e. Raise engine speed to 1500 RPM until normal operating temperature is reached.
- f. Lower engine RPM to idle.
- g. Move gear selector to NEUTRAL.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

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- h. Stop engine (see your -10).
- i. Uncover air inlet grill.

EXPLANATION OF PMCS TABLE ENTRIES

- (1) **Item Number Column** — Numbers in this column are for reference. When completing DA Form 2404 (Equipment Inspection and Maintenance Worksheet), include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do the checks and services for the intervals listed.
- (2) **Interval Column** — This column tells you how often you must perform the checks/services. Semi-annual checks/services must be performed every six months or after 1500 miles (2400 km) of operation.
- (3) **Man-Hour Column** — This column gives the man-hours (to the nearest tenth of an hour) needed to complete the prescribed lubrication service. This column is used only for lubrication services.
- (4) **Item To Be Checked or Serviced Column** — This column lists the item to be checked or serviced.
- (5) **Crewmember/Procedure Column** — This column gives the procedure you must do to check or service the item listed in the *Item To Be Checked or Serviced* column to know if the equipment is ready or available for its intended mission or for operation. You must do the procedure at the time stated in the interval column.
- (6) **Equipment Not Ready/Available If: Column** — Information in this column tells you what faults will keep your equipment from being capable of performing its primary mission. If you perform check and service procedures that show faults as listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failure.

LUBRICATION TABLES

The following tables are used during PMCS lubrication checks.

Intervals (on-condition or hard time) and the related man-hour times are based on normal operation. The man-hour time specified is the time you need to do all the services prescribed for a particular interval. Hard time intervals will be indicated by one of the following symbols as appropriate: Semi-annually (S) and Annually (A). On-condition (OC) oil sample intervals shall be applied unless changed by the Army Oil Analysis Program (AOAP) Laboratory. Change the hard time interval if lubricants are contaminated or if you are operating equipment under adverse operating conditions, including longer-than-usual operating hours. The hard time intervals may be extended during periods of low activity if adequate preservation precautions are taken. Hard time intervals will be applied to oil changes in the event AOAP Laboratory support is not available.

On-condition (OC) AOAP Laboratory determined oil change intervals shall be applied instead of hard time intervals such as hourly, calendar, or mileage, unless otherwise notified. The services will be required when directed by an Army Analysis Program (AOAP) Laboratory which has analyzed the oil for serviceability.

Clean fittings before lubricating. Clean parts with cleaning compound (WP 0782 00, Item 16).

Unless specifically identified, all procedures apply to M113A2, M577A2, M901A1, M981A1, M1059, M1064, and M1068 carriers.

NOTE

Park carrier on level ground to check oil levels. Check/lubricate all oil and grease fitting points after washing or fording.

ARMY OIL ANALYSIS PROGRAM (AOAP) — AOAP is an effective maintenance diagnostic tool and not a maintenance substitute. TB 43-0211 must not be interpreted to mean AOAP minimizes, in any way, the need to employ good maintenance practices and strong maintenance disciplines.

SAMPLING REQUIREMENTS — Samples may be taken without WARMING a component to operating temperature if the equipment has been operated within the last 30 days. If the equipment has not been operated within the last 30 days, the components must be brought to operating temperature. These requisites apply to both routine and special sampling. Oil samples must not be taken immediately after oil is added. When oil sampling valve is not available to take oil sample, use a vampire pump.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**
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Oil Can Points — Every 1500 miles, semi-annually, or as required, lubricate fan tensioner, ramp hinges, ramp door hinges, power plant door hinges, driver's, commander's, and cargo hatch hinges, control linkage pins and shafts and seat control. Use OE/HDO or OEA as appropriate.

Table 1. Engine

LUBRICANTS/ COMPONENTS Interval=OC Manhours=0.5	MAXIMUM CAPACITY	EXPECTED TEMPERATURE (For Arctic Operation Refer to FM 9-207)		
		Above +32°F (Above 0°C)	+40°F to -10°F (+5°C to -23°C)	0°F to -65°F (-18°C to -54°C)
OE/HDO (MIL-PRF-2104H) OR OEA (MIL-PRF-46167C) LUBRICATING OIL, INTERNAL COMBUSTION ENGINE	18 qts.	OE/HDO-15/40	OE/HDO-15/40	OEA
(MIL-PRF-21260E) PRESERVATION OIL		PE 30-1	PE 30-1	

Table 2. Fuel

LUBRICANTS/ COMPONENTS Interval=S Manhours=0.3	MAXIMUM CAPACITY	EXPECTED TEMPERATURE (For Arctic Operation Refer to FM 9-207)		
		Above +32°F (Above 0°C)	+40°F to -10°F (+5°C to -23°C)	0°F to -65°F (-18°C to -54°C)
DIESEL FUEL (A-A-52557A)	95 gal. (All except M577A2 and M1068)	DF-2	DF-1	DF-A
	120 gal. (M577A2 and M1068 Only)			

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**
0120 00**Table 3. Transmission**

LUBRICANTS/ COMPONENTS Interval=OC Manhours=0.5 Interval=S Manhours=0.2	MAXIMUM CAPACITY	EXPECTED TEMPERATURE (For Arctic Operation Refer to FM 9-207)		
		Above +32°F (Above 0°C)	+40°F to -10°F (+5°C to -23°C)	0°F to -65°F (-18°C to -54°C)
OE/HDO (MIL-PRF-2104H) OR OEA (MIL-PRF-46167C), LUBRICATING OIL, INTERNAL COMBUSTION ENGINE	16 qts.	OE/HDO-15/40	OE/HDO-15/40	OEA
(MIL-PRF-21260E) PRESERVATION OIL		PE 10-1	PE 10-1	

Table 4. Final Drive

LUBRICANTS/ COMPONENTS Interval=S Manhours= 0.5	MAXIMUM CAPACITY	EXPECTED TEMPERATURE (For Arctic Operation Refer to FM 9-207)		
		Above +32°F (Above 0°C)	+40°F to -10°F (+5°C to -23°C)	0°F to -65°F (-18°C to -54°C)
OE/HDO (MIL-PRF-2104H) OR OEA (MIL-PRF-46167C), LUBRICATING OIL, INTERNAL COMBUSTION ENGINE	3 1/2 qts or 7 pints (FULL mark on gauge rod)	OE/HDO-15/40	OE/HDO-15/40	OEA

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

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Table 5. Fan Gearbox

LUBRICANTS/ COMPONENTS Interval=S Manhours= 0.4	MAXIMUM CAPACITY	EXPECTED TEMPERATURE (For Arctic Operation Refer to FM 9-207)		
		Above +32°F (Above 0°C)	+40°F to -10°F (+5°C to -23°C)	0°F to -65°F (-18°C to -54°C)
OE/HDO (MIL-PRF-2104H) LUBRICATING OIL, INTERNAL COMBUSTION ENGINE	18 oz. or 3/4 pt.	OE/HDO-15/40	OE/HDO-15/40	OEA

Table 6. Pulley Support Arm

LUBRICANTS/ COMPONENTS Interval=S Manhours= 0.4	MAXIMUM CAPACITY	EXPECTED TEMPERATURE (For Arctic Operation Refer to FM 9-207)		
		Above +32°F (Above 0°C)	+40°F to -10°F (+5°C to -23°C)	0°F to -65°F (-18°C to -54°C)
GAA (MIL-PRF-10924H) GREASE, AUTOMOTIVE AND ARTILLERY	As required	ALL TEMPERATURES		

Table 7. Hydraulic System

LUBRICANTS/ COMPONENTS Interval=S Manhours= 1.0	MAXIMUM CAPACITY	EXPECTED TEMPERATURE (For Arctic Operation Refer to FM 9-207)		
		Above +32°F (Above 0°C)	+40°F to -10°F (+5°C to -23°C)	0°F to -65°F (-18°C to -54°C)
FRH (MIL-PRF-46170D) HYDRAULIC FLUID, RUST INHIBITED, FIRE RESISTANT	3 1/2 qts or 7 pints	ALL TEMPERATURES		

Table 8. Steering Control and Foot Brake Cross-Shaft Bearings

LUBRICANTS/ COMPONENTS Interval=S Manhours=0.3	MAXIMUM CAPACITY	EXPECTED TEMPERATURE (For Arctic Operation Refer to FM 9-207)		
		Above +32°F (Above 0°C)	+40°F to -10°F (+5°C to -23°C)	0°F to -65°F (-18°C to -54°C)
GAA (MIL-PRF-10924H) GREASE, AUTOMOTIVE AND ARTILLERY	As Required	ALL TEMPERATURES		

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

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Table 9. Towing Pintle

LUBRICANTS/ COMPONENTS Interval=S Manhours=0.1	MAXIMUM CAPACITY	EXPECTED TEMPERATURE (For Arctic Operation Refer to FM 9-207)		
		Above +32°F (Above 0°C)	+40°F to -10°F (+5°C to -23°C)	0°F to -65°F (-18°C to -54°C)
GAA (MIL-PRF-10924H) GREASE, AUTOMOTIVE AND ARTILLERY	As Required	ALL TEMPERATURES		

Table 10. Road and Idler Wheel Bearings, Road and Idler Wheel Support Arm Bearings

LUBRICANTS/ COMPONENTS Interval=S Manhours=1.4	MAXIMUM CAPACITY	EXPECTED TEMPERATURE (For Arctic Operation Refer to FM 9-207)		
		Above +32°F (Above 0°C)	+40°F to -10°F (+5°C to -23°C)	0°F to -65°F (-18°C to -54°C)
GAA (MIL-PRF-10924H) GREASE, AUTOMOTIVE AND ARTILLERY	As Required	ALL TEMPERATURES		

Table 11. Tachometer and Speedometer Shafts

LUBRICANTS/ COMPONENTS Interval=A Manhours=0.1	MAXIMUM CAPACITY	EXPECTED TEMPERATURE (For Arctic Operation Refer to FM 9-207)		
		Above +32°F (Above 0°C)	+40°F to -10°F (+5°C to -23°C)	0°F to -65°F (-18°C to -54°C)
GIA (MIL-PRF-23827C(1)) GREASE, INSTRUMENT, AIRCRAFT	As Required	ALL TEMPERATURES		
GAA (MIL-PRF-10924H) GREASE, AUTOMOTIVE AND ARTILLERY	As Required	ALL TEMPERATURES		
OE/HDO (MIL-PRF-2104H) OR OEA (MIL-PRF-46167C), LUBRICATING OIL, INTERNAL COMBUSTION ENGINE	As Required	ALL TEMPERATURES		

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

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Table 12. Universal Joint

LUBRICANTS/ COMPONENTS Interval=S Manhours=0.5	MAXIMUM CAPACITY	EXPECTED TEMPERATURE (For Arctic Operation Refer to FM 9-207)		
		Above +32°F (Above 0°C)	+40°F to -10°F (+5°C to -23°C)	0°F to -65°F (-18°C to -54°C)
GAA (MIL-PRF-10924H) GREASE, AUTOMOTIVE AND ARTILLERY	As Required	ALL TEMPERATURES		

Lubrication Charts**Table 13. Lubricants for Engine Applications**

LUBRICANT		EXPECTED TEMPERATURE
OE/HDO (MIL-PRF-2104H) Lubricating Oil, ICE	OE/HDO-15/40 (O-1236)	0°F to 120°F (-18°C to 49°C)
	OE/HDO-30 (O-238)	10°F to 120°F (-12°C to 49°C)
	OE/HDO-40 (N/A)	20°F to 120°F (-7°C to 49°C)
OEA (MIL-PRF-46167C) Lubricating Oil, ICE, Arctic (If OEA lubricant is required to met the low expected-temperature range, OEA lubricant is to be used in lieu of OE/HDO lubricant for all expected temperatures where OE/HDO is specified.)	OEA (O-183)	-65°F to 40°F (-54°C to 4°C)

Table 14. Lubricants for Transmission Applications

LUBRICANT		EXPECTED TEMPERATURE
OE/HDO (MIL-PRF-2104H) Lubricating Oil, ICE, Tactical	OE/HDO-15/40 (O-1236)	0°F to 120°F (-18°C to 49°C)
OEA (MIL-PRF-46167C) Lubricating Oil, ICE, Arctic (If OEA lubricant is required to met the low expected-temperature range, OEA lubricant is to be used in lieu of OE/HDO lubricant for all expected temperatures where OE/HDO is specified.)	OEA (O-183)	-65°F to 40°F (-54°C to 4°C)

Table 15. Fluids for Hydraulic System Applications

LUBRICANT		EXPECTED TEMPERATURE
FRH (MIL-PRF-46170C) Hydraulic Fluid, Rust Inhibited Fire Resistant, Synthetic Hydrocarbon Base	FRH	-40°F to 120°F (-40°C to 49°C)

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
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0120 00**Table 16. Lubricants for Exposed Gear, Chain, and Wire Rope Applications**

LUBRICANT		EXPECTED TEMPERATURE
CW-II (MIL-PRF-18458C) Lubricating Oil, Chain, Wire Rope, and Exposed Gear	CW-IIC (O-203)	70°F to 120°F (21°C to 49°C)
	CW-IIB (N/A)	30°F to 90°F (-1°C to 32°C)
	CW-IIA (O-199)	-30°F to 50°F (-34°C to 10°C)
GO (MIL-PRF-2105E) Lubricating Oil, Gear Multipurpose	GO-75 (O-186)	-70°F to -10°F (-57°C to 23°C)

Table 17. Fluids for General Purpose Applications

LUBRICANT		EXPECTED TEMPERATURE
PL-S (MIL-PRF-32033(1)) Lubricating Oil, General Purpose, Preservative, Water Displacing, Low Temperature	PL-S (O-190)	-70°F to 120°F (-57°C to 49°C)
PL-M (MIL-PRF-3150D(2)) Lubricating Oil, Preservative, Medium	PL-M (O-192)	30°F to 120°F (-1°C to 49°C)

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
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Table 18. Semi-annual Unit Level Preventive Maintenance Checks and Services for M113A2 FOV

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	Semi-annual		Road Test	<p style="text-align: center;">CAUTION</p> <p>Do not allow engine to operate for prolonged periods if outside air temperature is less than 85°F (29°C) and coolant temperature gauge is above 200°F (93°C) or outside air temperature is above 85°F (29°C) and coolant temperature gauge is above 225°F (100°C). Serious damage to engine may result.</p> <p style="text-align: center;">NOTE</p> <p>Be sure that all operator level PMCS in your -10 have been completed prior to performing this PMCS. Any non-mission capable faults must be corrected prior to road test. Check instruments, gauges, and warning lights for normal indications as outlined in your -10. All operator recorded problems should be reviewed prior to road test.</p> <p style="text-align: center;">NOTE</p> <p>When conditions prevent a road test, perform engine idle test (Step), governed no load test (Step), and stall check (Step).</p> <p>a. Start engine (see your -10). Perform a road test. Drive carrier at least 5 miles (8 km).</p>	Any Class III leak or damage that would prevent operation of the carrier.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
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0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
2	Semi-annual		Left and Right Steering	<p style="text-align: center;"><u>CAUTION</u></p> <p>Power plant can be damaged. Do not pivot steer when carrier is moving except in a track failure emergency.</p> <p>a. Check steering levers for left and right turns. If carrier does not turn left or right when levers are pulled, troubleshoot steering system (WP 0058 00).</p>	Binding, grabbing, unusual noise, vibration, or fails to turn.
3	Semi-annual		Steering in Forward and Reverse Ranges	<p>a. Check steering in forward ranges and in reverse. If carrier does not make a complete turn after steering levers are pulled to the left and right, troubleshoot steering system (WP 0058 00).</p>	
4	Semi-annual		Carrier Braking	<p>a. Check carrier braking. If carrier does not stop when brake steering levers are fully depressed, troubleshoot differential brake adjustment (WP 0058 00).</p>	Carrier fails to stop.
5	Semi-annual		Carrier Shifting in All Ranges	<p>a. Check shifting of carrier in all ranges. If carrier does not respond properly to selected driving range, troubleshoot gear selection system (WP 0059 00).</p>	Carrier fails to shift into selected range.
6	Semi-annual		Drift	<p>a. The vehicle's directional drift shall not exceed three feet in 100 feet of travel at 25 mph \pm 5 mph.</p>	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

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ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
7	Semi-annual		After Road Test	<p style="text-align: center;">WARNING</p> <div> </div> <p>Failure to set the parking brake and block the road wheel can allow the carrier to move and result in injury or death. Always lock the parking brake and block the road wheels before working on the carrier.</p> <p style="text-align: center;">CAUTION</p> <p>Stall check damages the carrier's transmission. Always check the carrier with a road test unless conditions absolutely prevent it.</p> <ol style="list-style-type: none"> Immediately after road test, cautiously feel all wheel and idler hub for noticeable difference in temperature between hubs. An overheated hubs indicates that bearing is out of adjustment, poorly lubricated, or unserviceable. Check temperature of shock absorbers. They should feel warm. A cold shock has failed. Visually check inside, outside, and underneath carrier for fuel, oil, or hydraulic leaks. 	Any Class III leaks or cold shocks.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

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ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
8	Semi-annual		Idle Test	<p style="text-align: center;">CAUTION</p> <p>Avoid lengthy engine idling. This causes coolant temperature to drop below operating temperature and can shorten engine life.</p> <ol style="list-style-type: none"> Run engine at 800 RPM for 3-5 minutes with range selector in 2-3 range and brakes locked until operating temperature is reached. If outside temperature is less than 85°F (29°C), normal operating temperature should be 160° to 200°F (71° to 93°C). If outside air temperature is greater than 85°F (29°C), normal operating temperature should be 160° to 230°F (71° to 110°C). With range selector in N, engine should idle smoothly at 650 to 700 RPM. High or low engine idle speed is usually caused by accelerator linkage being out of adjustment. Adjust linkage if necessary (WP 0401 00). Rough idling is usually caused by faulty injector timing and rack setting, faulty injectors, or air in the injection system. Notify direct support maintenance. 	Engine runs hot or rough.
9	Semi-annual		Governed No Load Test	<ol style="list-style-type: none"> Run engine at 800 RPM for 3-5 minutes with range selector in 2-3 range and brakes locked until normal engine operating temperature is reached. If outside temperature is less than 85°F (29°C), normal operating temperature should be 160° to 200°F (71° to 93°C). If outside air temperature is greater than 85°F (29°C), normal operating temperature should be 160° to 230°F (71° to 110°C). With engine quick-disconnect lever in NEUTRAL, slowly open throttle control until accelerator is fully depressed. 	Engine runs hot or rough.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
10	Semi-annual		Stall Check	<p style="text-align: center;"><u>CAUTION</u></p> <p>When you suspect a faulty governor, do not exceed 3,000 RPM engine speed for more than 2 or 3 seconds.</p> <p>d. Engine speed may exceed 3,000 RPM momentarily, but should stabilize at 2,925 to 2,975 RPM.</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>A stall check can seriously damage the transmission. ALWAYS do a road test on the carrier. Do NOT do a stall check on the carrier unless conditions absolutely prevent a road test.</p> <p style="text-align: center;"><u>NOTE</u></p> <p>The stall check will tell you if the power plant is producing maximum power. If it is not, the check will tell you whether the engine or transmission is at fault. This check is to be used only if no other check is available.</p> <p>a. Run engine at 800 RPM for 3-5 minutes with range selector in 2-3 range and brakes locked until normal engine operating temperature is reached.</p>	If governor cuts in and out, or surges at this speed, adjustments are needed. Notify direct support maintenance.


**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>b. If outside temperature is less than 85°F (29°C), normal operating temperature should be 160° to 200°F (71° to 93°C). If outside air temperature is greater than 85°F (29°C), normal operating temperature should be 160° to 230°F (71° to 110°C).</p> <p style="text-align: center;">CAUTION</p> <p>Limit stall test to 30 seconds. Full throttle use with brakes locked overheats oil and will damage power plant. If you suspect a bad governor, do not perform stall check. Unless absolutely necessary, do NOT use stall check, use alternate test.</p> <p>c. Lock brakes, move range selector to range 2-3 and push accelerator all the way down. Tachometer reading of 1900 to 2100 RPM indicates power plant is operating correctly.</p> <p style="text-align: center;">NOTE</p> <p>Extremely high ambient temperature and high altitude will reduce stall speed.</p> <p>d. Tachometer reading above 2000 RPM indicates transmission problems.</p> <p>e. Tachometer reading below 1900 RPM indicates a faulty engine. Troubleshoot fuel system (WP 0013 00), or check for wrong tachometer adapter. If no fault can be found, notify direct support maintenance.</p>	<p>Tachometer above 2100 RPM or below 1900 RPM.</p> <p>Reading above 2450 RPM or below 2350 RPM.</p>

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
11	Semi-annual	1.2	Engine and Transmission Oil	<p style="text-align: center;">WARNING</p>  <p>Hot parts can burn you.</p> <p>Allow parts to cool before working on or near them. If necessary, use heat protective gloves to work on hot parts.</p> <p>a. With engine at idle, sample engine and transmission oil.</p> <p>b. <u>HARDTIME</u> — Hardtime interval can be shortened if equipment operates under adverse conditions (For Arctic Operations, refer to FM 9-207. For Desert Operations, refer to FM 90-3.)</p> <p style="text-align: center;">NOTE</p> <p>If AOAP laboratory is not available, drain engine oil and change filter element/gaskets every 1500 miles or semi-annually. Transmission oil should be drained and filter element/gaskets changed every 150 hours/1500 miles or semi-annually.</p>	Hardtime interval exceeded.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>c. ON CONDITION — To drain engine or transmission oil, remove bottom access cover and drain plug. Inspect oil for metal particles. Replace engine or transmission oil filters each time an oil change is required. If metal chips are found, notify Direct Support Maintenance. See WP 0123 00 or WP 0341 00 for removal of oil filters.</p> <p style="text-align: center;">NOTE</p> <p>Remove driver's side access panel to replace engine oil filter. Transmission oil filter is replaced through the bottom access cover.</p> <p style="text-align: center;">NOTE</p> <p>Drain oil only when hot after operation. Allow oil to drain for one hour if time permits. Do not mix OE/HDO-15 W 40 with single grade lubricants.</p>	

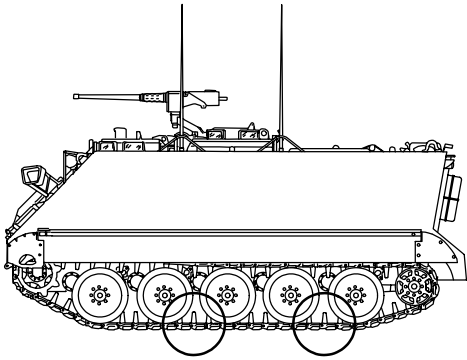
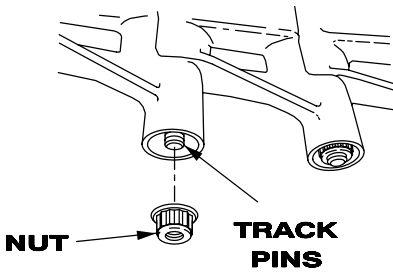
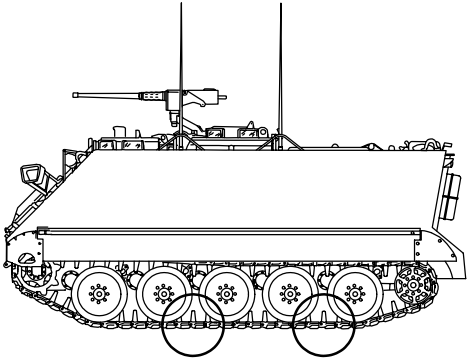
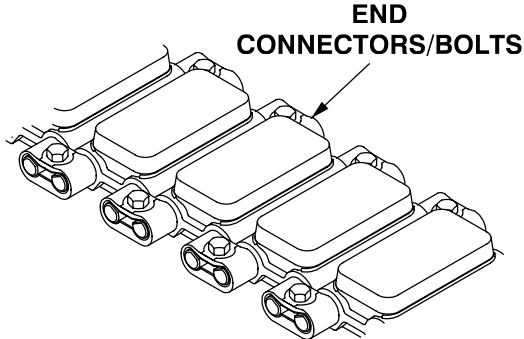
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p style="text-align: center;">NOTE</p> <p>Visual inspection of engine/transmission should not be justification to change oil. Detergent oils may appear dark in color due to additives. Change oil and filters when converting from OE/HDO to OEA, PE30-1 and from OE/HDO, PE10-1 to OE/HDO. See engine and transmission temperature key charts (Table 13, page 0120 00-18 and Table 14, page 0120 00-18).</p> <p>d. Clean inside of engine filter cover or transmission filter cavity with cleaning compound (WP 0782 00, Item 16).</p> <p>e. Install new engine filter element/gasket, or transmission element/packings (WP 0123 00 or WP 0341 00).</p> <p style="text-align: center;">CAUTION</p> <p>Engine and transmission can be damaged if filled above the (F) mark on the gauge rod.</p> <p>f. Refill engine and check oil level with approximately 18 quarts of OE/HDO or OEA. Bring level between full and low marks on gauge rod. Start and run engine and check for oil leaks.</p> <p>g. Refill transmission with approximately 16 quarts of OE/HDO or OEA after oil change. Start and run engine and operate transmission through all gear selector positions.</p> <p>h. Engine and transmission operational check: run engine and check for oil leaks at filter and drain plug. Inspect access covers on hull bottom and replace gasket or cover if required.</p>	<p>Any Class III leaks.</p> <p>Any Class III leaks.</p>

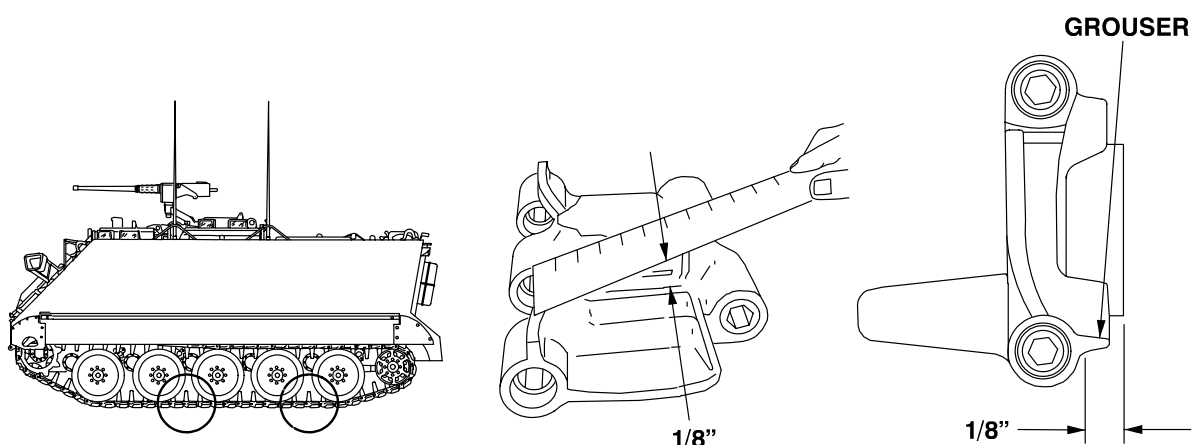
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
12	Semi-annual		Track Pin/Nuts	<p>a. Check track pin nuts for looseness or cracks. Replace cracked nuts. Check track pins for stripped threads. Replace stripped track pins. TIGHTEN LOOSE NUTS TO 115-135 LB-FT (156-183 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104).</p>   <p>T130 TRACK</p>	Any pins/nuts that are cracked, broken, bent, stripped, missing, or protruding.
13	Semi-annual		Track Shoe End Connector/Bolts (T150 Track Only)	<p>a. Check all end connectors/bolts for cracks and looseness. Check bolts for stripped threads. TIGHTEN BOLTS TO 400-430 LB-FT (543-588 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 105).</p>   <p>T150 TRACK</p>	Any connectors that are cracked, broken, bent, stripped, or missing.

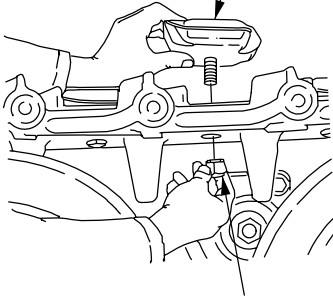
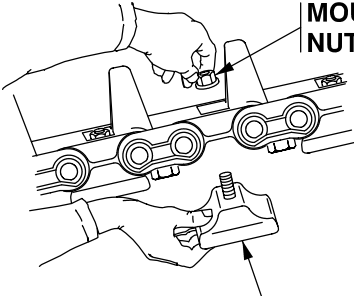
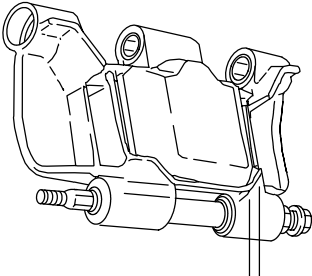
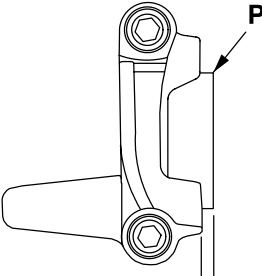
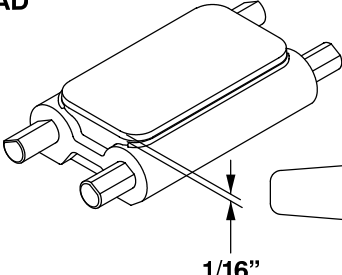
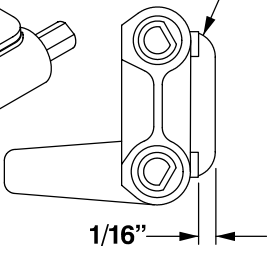
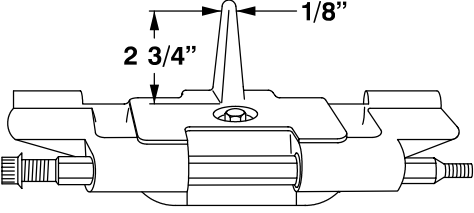
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
14	Semi-annual		Track Grouser (T130 Track Only)	a. Check grouser for wear or cracks on both tracks. Replace track shoe if grouser measures less than 1/8" (3 mm) in height or if grouser is cracked.	Grouser is worn below 1/8" or cracked.
 <p style="text-align: center;">T130 TRACK</p>					
15	Semi-annual		Track Shoe Pads and Mounting Studs/Nuts	a. Check track shoe pads and mountings for looseness and stripped threads on both tracks. If mounting nuts are stripped, replace track shoe pad (T130 Track) (WP 0368 00) or (T150 Track) (WP 0370 00). TIGHTEN LOOSE NUTS TO 135-155 LB-FT (183-210 N·M) (T130 TRACK) OR 120-150 LB-FT (162-203 N·M) (T150 TRACK) TORQUE. Use torque wrench (WP 0780 00, Item 103).	Studs/nuts are cracked, stripped, missing, or pad height is less than 1/16" above grouser (T130 Track). Studs/nuts are cracked, stripped, missing, or pad height is less than 1/16" above track shoe (T150 Track).

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued

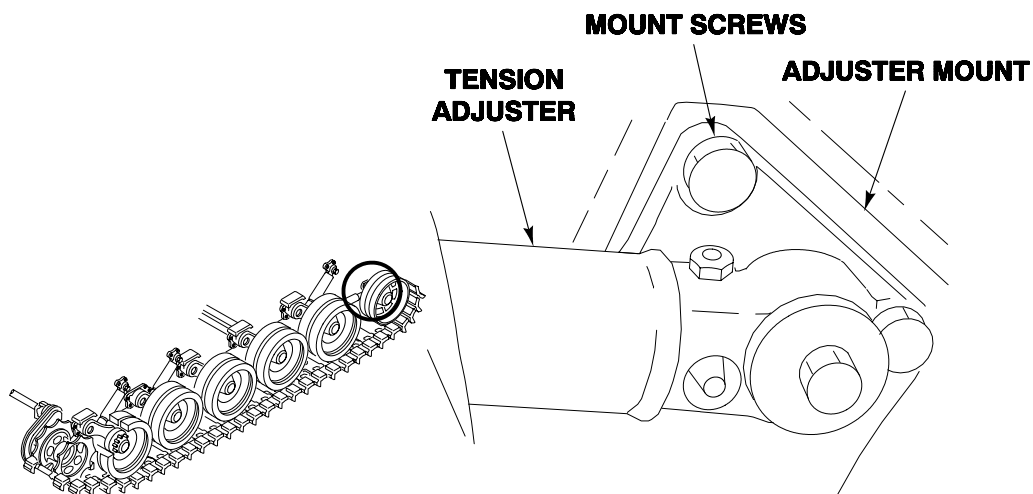
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ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div><div><div><div><div>TRACK SHOE PAD</div><div></div><div>MOUNTING NUTS</div></div><div>T130 TRACK</div></div><div><div><div><div>MOUNTING NUTS</div><div></div><div>TRACK SHOE PAD</div></div><div>T150 TRACK</div></div><div><div><div><div></div><div>1/16"</div><div>T130 TRACK</div></div><div><div><div><div>TRACK PAD</div><div></div><div>1/16"</div><div>T130 TRACK</div></div><div><div><div><div></div><div>1/16"</div><div>T150 TRACK</div></div><div><div><div><div>TRACK PAD</div><div></div><div>1/16"</div><div>T150 TRACK</div></div></div><div><div><div><div>TRACK CENTER GUIDE</div><div></div><div>1/8"</div><div>2 3/4"</div><div>T130 TRACK</div></div></div></div></div></div></div></div></div></div></div></div></div></div>					

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

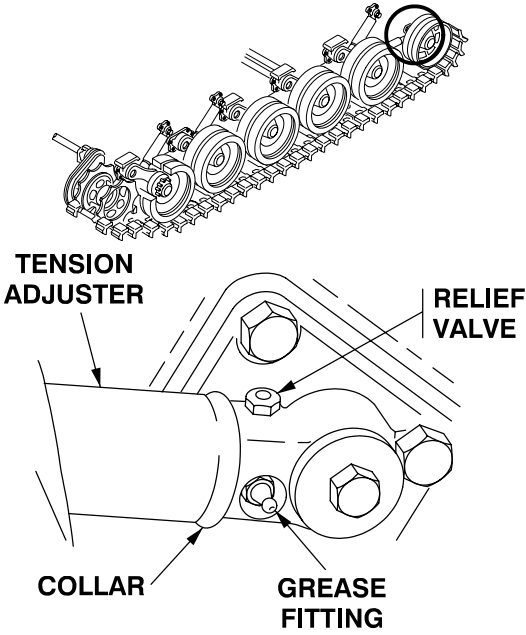
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
16	Semi-annual		Track Tension Adjuster Mounting Hardware	<p>a. Check track tension adjuster for broken hardware or cracks on both sides of the carrier. Replace adjuster if either end is cracked or broken. Replace broken adjuster mount (WP 0378 00).</p> <p style="text-align: center;">NOTE</p> <p>See Step 1g under General Maintenance Instructions for proper use of torque wrench adapters.</p> <p>b. Replace missing track tension adjuster screws. TIGHTEN LOOSE SCREWS TO 130-140 LB-FT (176-190 N·M) TORQUE. Use adapter (WP 0780 00, Item 7) and torque wrench (WP 0780 00, Item 100).</p>	Hardware is broken, cracked, missing, or stripped. Any Class III leaks.



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

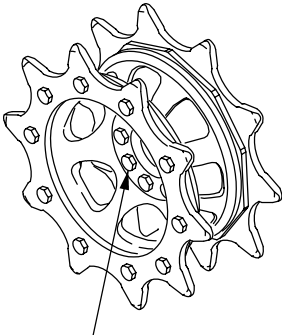
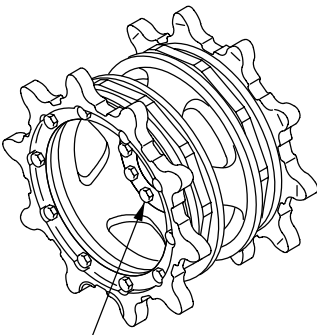
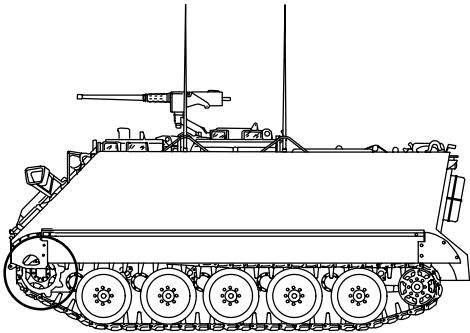
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ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
17	Semi-annual		Track Tension Adjuster Collar	<p>a. Check for leaks around grease fittings, relief valve, and collar of track tension adjuster. Replace leaking track adjuster (WP 0378 00).</p> 	Any leaks or fitting will not accept grease.

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PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING LUBRICATION INSTRUCTIONS — Continued

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
19	Semi-annual		Sprocket Hub Bolts	a. Check sprocket hub bolts for looseness or missing bolts. TIGHTEN LOOSE BOLTS TO 170-190 LB-FT (231-258 N-M) TORQUE. Use torque wrench (WP 0780 00, Item 105). If bolts are missing, replace (T130 Track) (WP 0382 00) or (T150 Track) (WP 0384 00).	Any screws are missing, loose, or worn.
<div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>SPROCKET HUB BOLTS</p> <p>T130 TRACK</p> </div> <div style="text-align: center;">  <p>SPROCKET HUB BOLTS</p> <p>T150 TRACK</p> </div> <div style="text-align: center;">  </div> </div>					

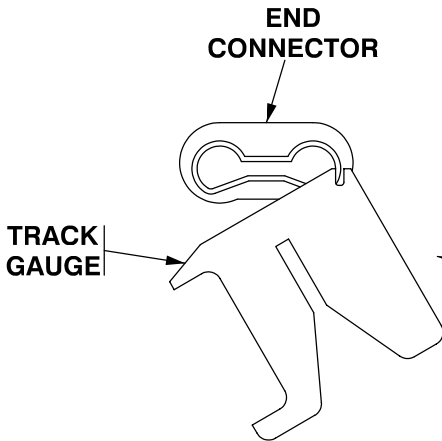
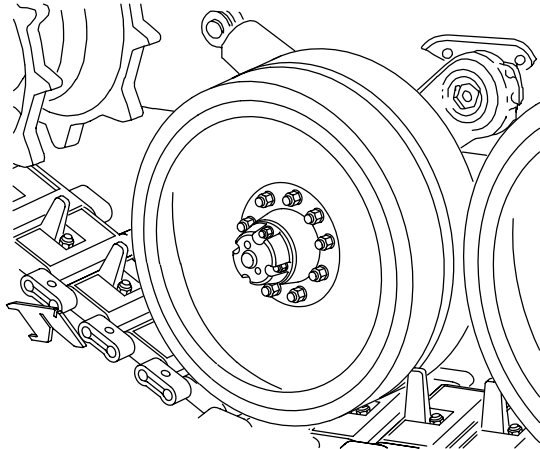
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
20	Semi-annual		Track Assembly (T150 Track Only)	<p style="text-align: center;">NOTE</p> <p>The T150 track assembly is to be reversed semi-annually. It needs to be reversed to put wear on the end connectors and track shoe bushings in both directions.</p> <p>a. The T150 track assembly needs to be reversed to put wear on the end connectors and track shoe bushings in both directions. This will extend the life of the track. If it is not reversed, the track will wear unevenly and the life of the track will be reduced (WP 0383 00).</p>	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>NOTE</p> <p>The end connector can only be checked with the track gauge when it is removed from the track shoe pins.</p> <p>b. Use the track gauge on the inside or facing side of the end connector toward the track shoe when it is removed. The track gauge slot is a no fit condition. If it does not fit, the end connector is still good for use. When the material on the end connector gets too thin and the track gauge fits, the end connector is bad and needs to be replaced with a new one.</p>	
					

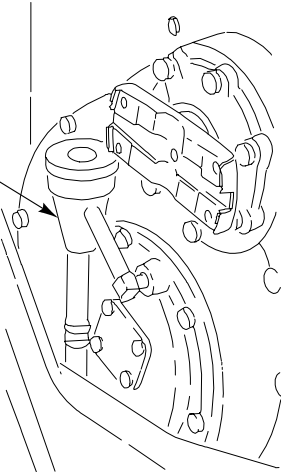
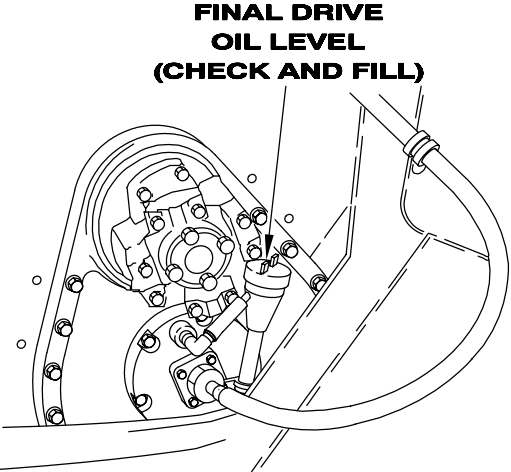
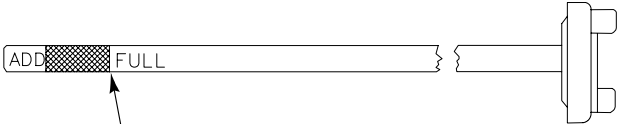
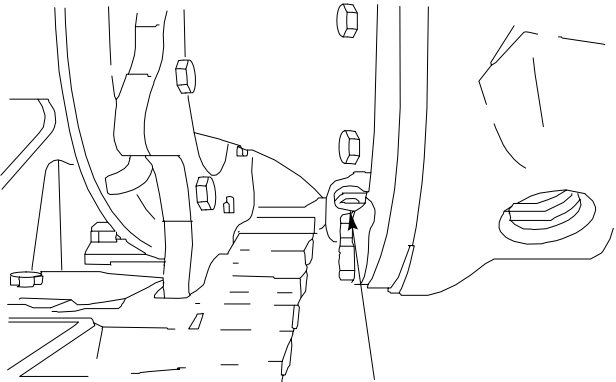

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
21	Semi-annual	0.5	Final Drive	<p>a. TIGHTEN LOOSE FINAL DRIVE-TO-HULL SCREWS TO 75-85 LB-FT (101-115 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 100).</p> <p style="text-align: center;">NOTE</p> <p>Drain oil (3 1/2 quarts) only when hot after operation.</p> <p style="text-align: center;">NOTE</p> <p>Do not substitute hydraulic fluid for OE/HDO or OEA. Red dye has been added to some final drives to aid in detection of leaks.</p> <p style="text-align: center;">NOTE</p> <p>Drain final drives every 150 hours/1500 miles or semi-annually.</p> <ol style="list-style-type: none"> 1) Place a suitable container under final drive housing. 2) Remove and inspect drain plugs from final drive housing and drain oil into the container (WP 0435 00). 3) Inspect drain plugs and oil for metal particles. If metal chips are found, notify direct support maintenance. 4) Clean and install the drain plug (WP 0435 00). 5) Fill each final drive with OE/HDO or OEA, as applicable, to bring oil level to a point between the FULL and ADD marks on gauge rod. Each final drive holds approximately 3 1/2 quarts (Table 4, page 0120 00-15). 	Oil is contaminated with metal chips or particles.

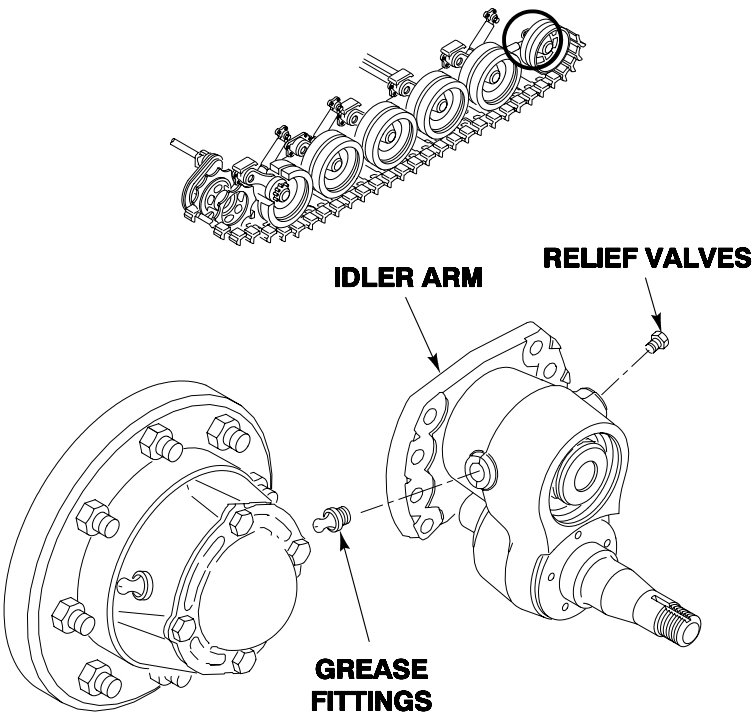
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div><div><div>FINAL DRIVE OIL LEVEL (CHECK AND FILL)</div></div><div><div>FINAL DRIVE OIL LEVEL (CHECK AND FILL)</div></div></div> <div><div>RIGHT FINAL DRIVE FILLER TUBE</div><div>LEFT FINAL DRIVE FILLER TUBE</div><div>FINAL DRIVE GAUGE ROD</div></div> <div><div>FULL MARK</div></div> <div><div>FINAL DRIVE OIL DRAIN</div></div>		

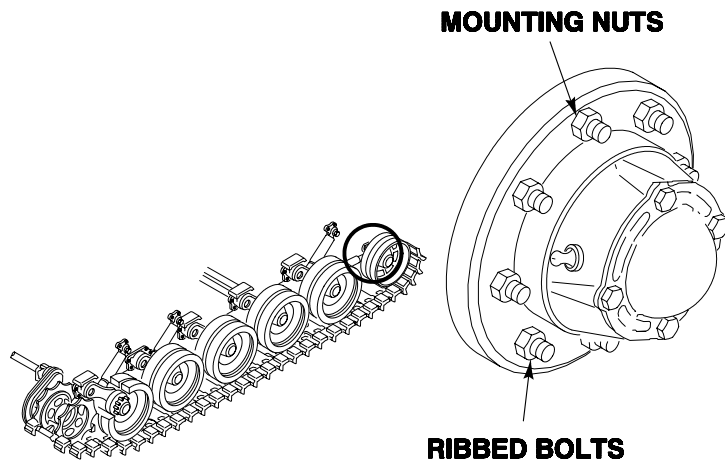
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
22	Semi-annual		Idler and Road Wheel Arms	<p>a. Replace cracked or bent idler or road wheel arms (WP 0374 00 or WP 0377 00). Replace idler or road wheel arm relief valves and grease fittings if leaking (WP 0377 00 or WP 0374 00). Replace leaking road wheel arm seals and gaskets (WP 0377 00).</p>	Any bent, broken, or cracked arm or leaking seal.
					

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

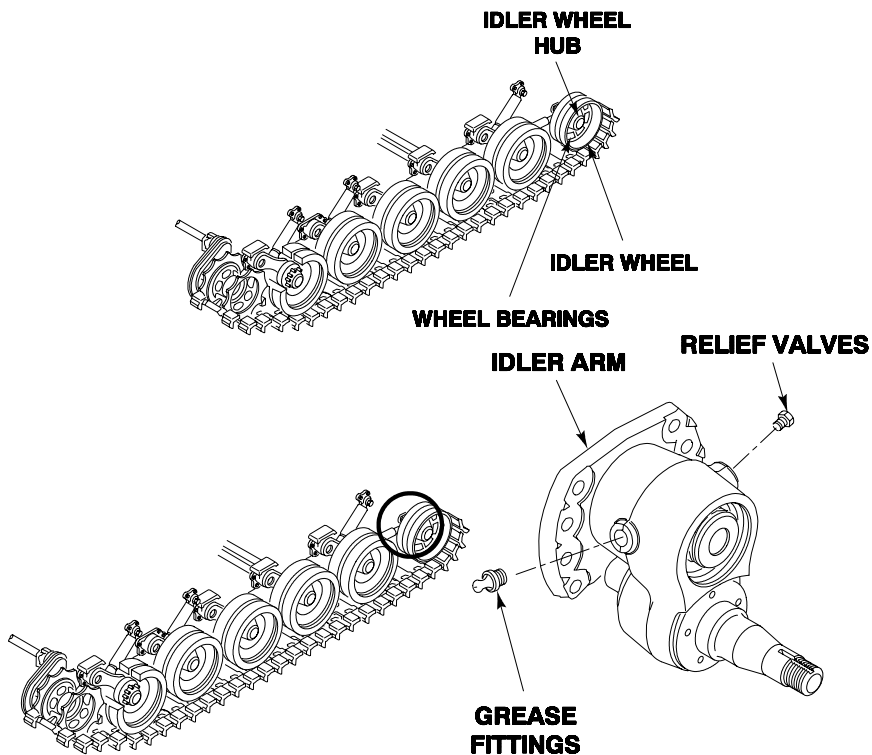
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ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
23	Semi-annual		Idler and Road Wheel Mounting Nuts	<p>a. Check idler and road wheel mounting nuts for looseness. TIGHTEN LOOSE NUTS TO 150-170 LB-FT (203-230 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 103).</p> <div>  <p>MOUNTING NUTS</p> <p>RIBBED BOLTS</p> </div>	Any missing or stripped nuts.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
24	Semi-annual	1.4	Idler, Road Wheels, and Idler/Road Wheel Hubs	<p>a. Replace cracked, broken, or bent idler/road wheels and idler/road wheel hubs (WP 0373 00, WP 0374 00, WP 0376 00, and WP 0377 00).</p> <p>b. At each service, or whenever track is removed, adjust the wheel bearings if looseness or end play is observed (WP 0373 00 or WP 0376 00).</p> <p>c. Replace leaking seals and gaskets (WP 0376 00).</p> <p>d. Replace grease fittings and relief valves if they are leaking (WP 0373 00 and WP 0376 00).</p>	<p>Any broken, bent, or cracked idler/road wheels or leaking hub seals.</p> <p>Number one or number five wheel-bearing loose.</p> <p>Leaky grease fittings.</p>



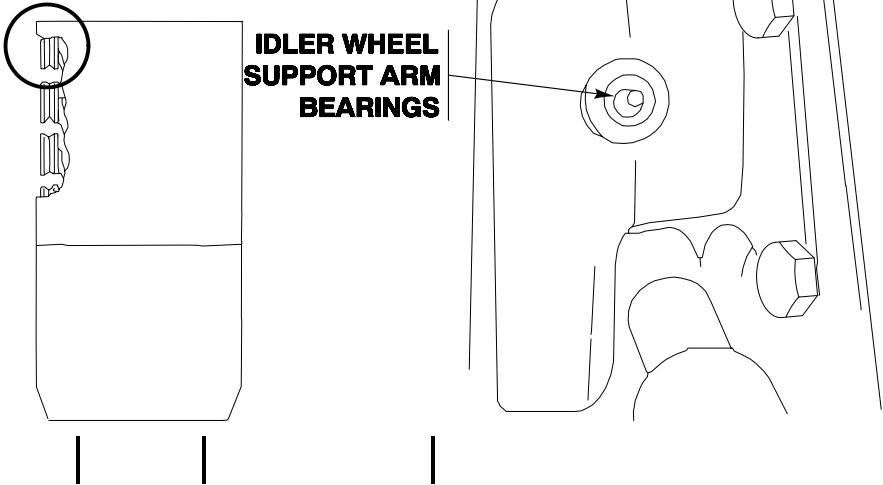
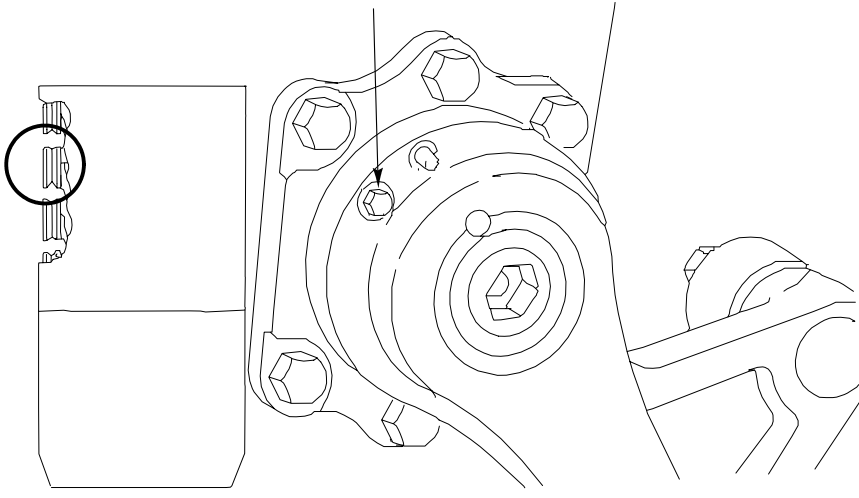
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>e. Every 1500 miles or semi-annually, perform the following lubrication procedures (Table 10, page 0120 00-17).</p> <p style="text-align: center;">NOTE</p> <p>When grease fitting will not accept GAA, notify your supervisor.</p> <ol style="list-style-type: none"> 1) Lubricate idler wheel support arm bearings through fittings. Use grease gun with GAA on fitting at rear of support arm until GAA appears at relief valve. 2) Lubricate road wheel and idler wheel hub bearings. Use GAA and grease gun with flexible adapter. Lubricate hub through fitting until grease appears at relief valve. 3) Lubricate all road wheel support arm bearings. Use GAA and grease gun with flexible adapter on fitting until GAA appears at relief valve. If support arm has plugs but no fittings, remove one plug and install fitting. Remove remaining plug and install relief valve. Perform lubrication. Remove fitting and relief valve. Clean and install two plugs. 4) Clean fittings with cleaning compound (WP 0782 00, Item 16). Check/lubricate grease fitting points after washing or fording. 	

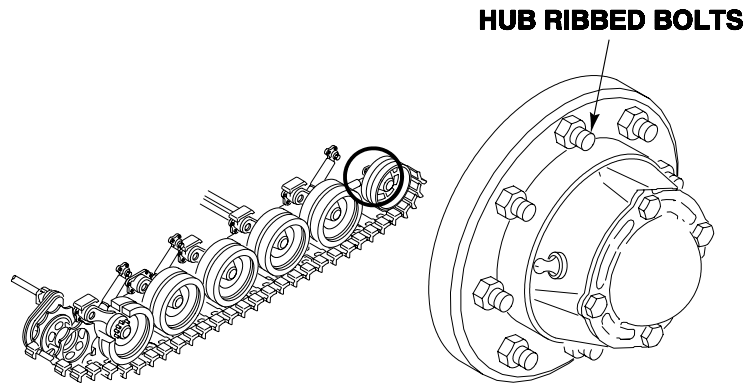
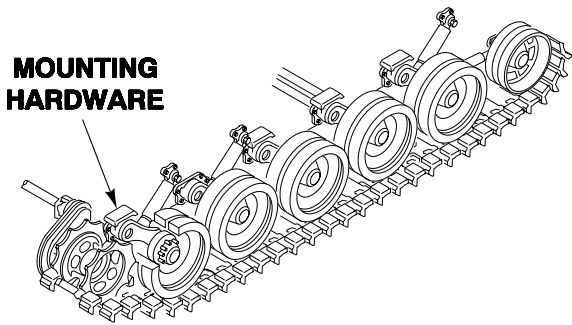
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 <p>IDLER WHEEL SUPPORT ARM BEARINGS</p>		
			 <p>ROAD WHEEL SUPPORT ARM BEARINGS</p>		

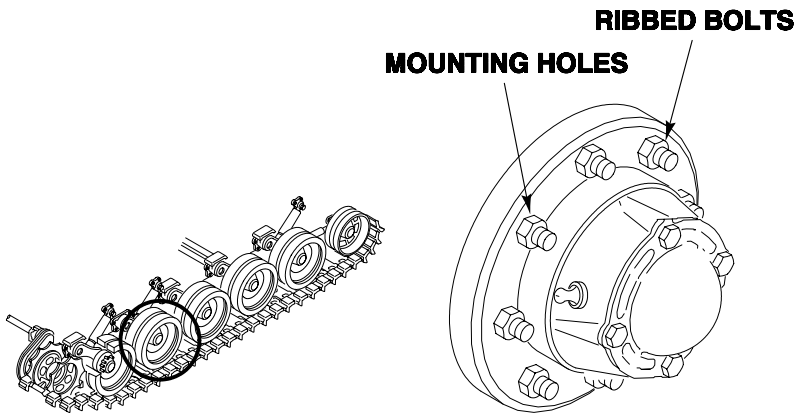
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
25	Semi-annual		Idler and Road Wheel Hub Ribbed Bolts	<p>a. Replace bent, broken, or stripped idler or road wheel hub ribbed bolts (WP 0373 00 or WP 0376 00).</p> <div>  <p>HUB RIBBED BOLTS</p> </div>	Any broken, bent, or stripped bolts.
26	Semi-annual		Road Wheel Arm Mounting Hardware	<p>a. TIGHTEN LOOSE ROAD WHEEL ARM MOUNTING HARDWARE TO 130-140 LB-FT (176-190 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104).</p> <div>  <p>MOUNTING HARDWARE</p> </div>	Any loose mounting hardware.

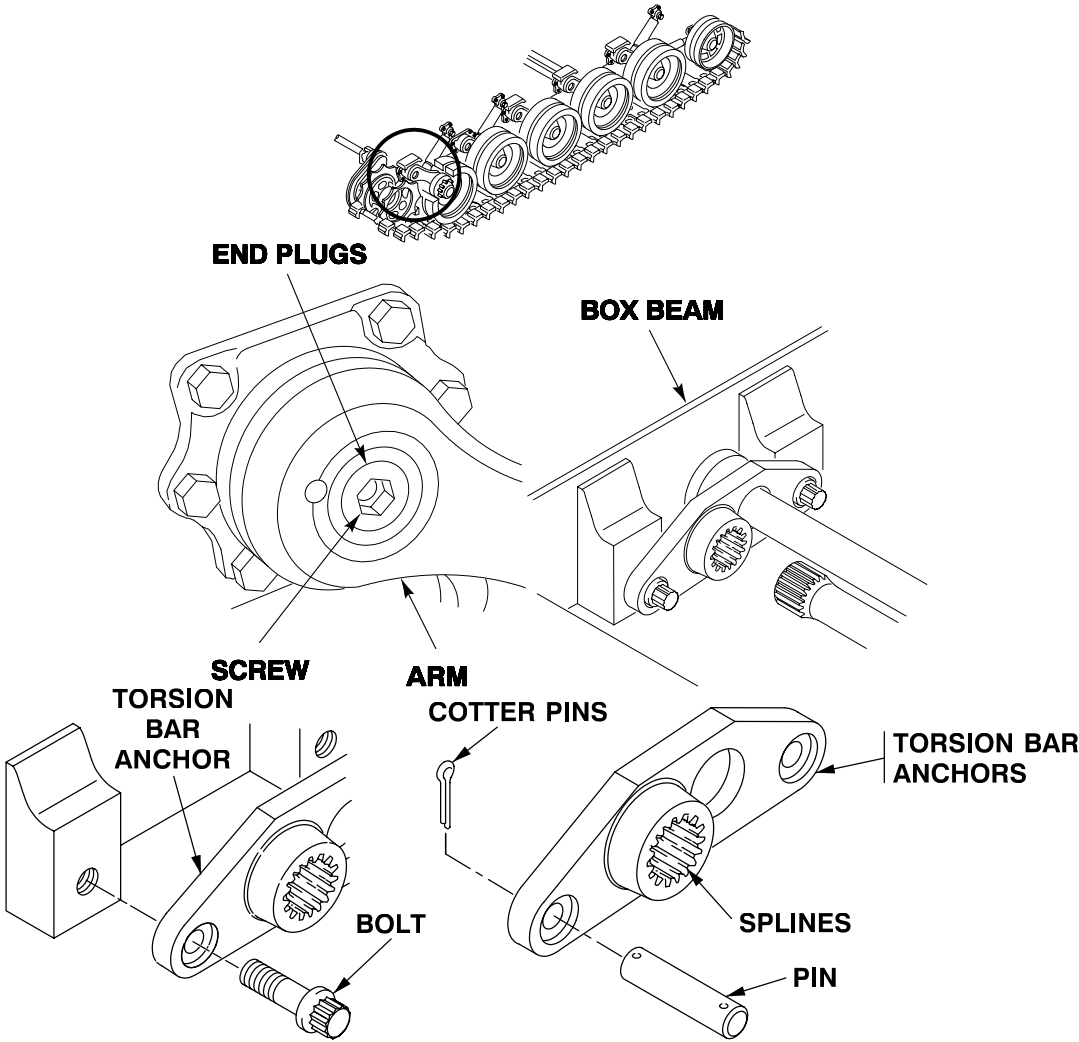
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
27	Semi-annual		Road Wheel Mounting Holes	<p>a. If road wheel mounting holes extend beyond head of mounting nut, replace road wheel (T130) (WP 0371 00) or (T150) (WP 0372 00).</p> <div>  </div>	Any elongated holes that extend beyond mounting nuts.
28	Semi-annual		Torsion Bar Anchors/Splines/ End Plugs	<p>a. Remove floor plates (WP 0436 00, WP 0437 00, WP 0438 00, WP 0439 00, WP 0440 00, and WP 0441 00). Check torsion bar anchors, splines, and end plugs in arm and box beam for looseness on both sides of carrier. If loose, tighten screw.</p> <p>b. Check plugs. Be sure they are fully seated. TIGHTEN PLUGS TO 50-75 LB-FT (68-102 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104).</p> <p>c. Replace missing or damaged cotter pins and pins or bolts from torsion bar anchors (WP 0386 00).</p> <p>d. Coat ends of suspension torsion bar with GAA (Table 12, page 0120 00-18).</p>	Any broken, bent, missing, stripped torsion bars or attaching hardware.

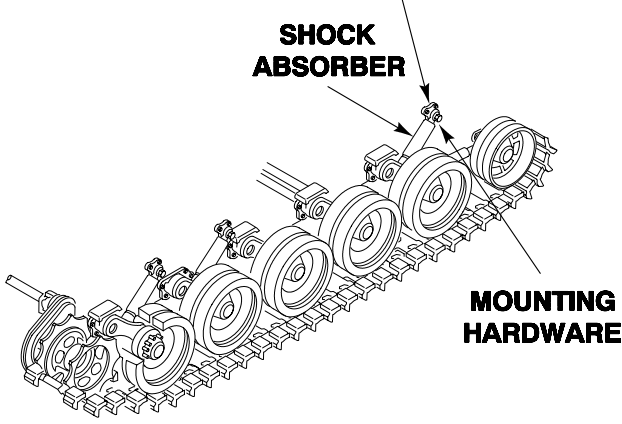
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div><p>The diagram illustrates the maintenance points for a vehicle's track system. At the top, a perspective view of the track is shown with a circle highlighting the end plug area. Below this, several detailed views of components are provided:</p><ul style="list-style-type: none">END PLUGS: A close-up of an end plug being inserted into a housing.BOX BEAM: A view of the track's internal mechanism.SCREW, TORSION BAR ANCHOR, BOLT: A view of a torsion bar anchor being secured with a screw and bolt.ARM, COTTER PINS: A view of an arm being secured with a cotter pin.TORSION BAR ANCHORS, SPLINES, PIN: A view of a torsion bar anchor being secured with a pin.</div>					

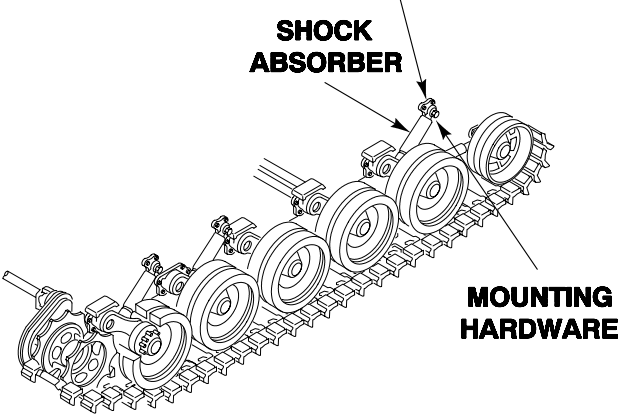
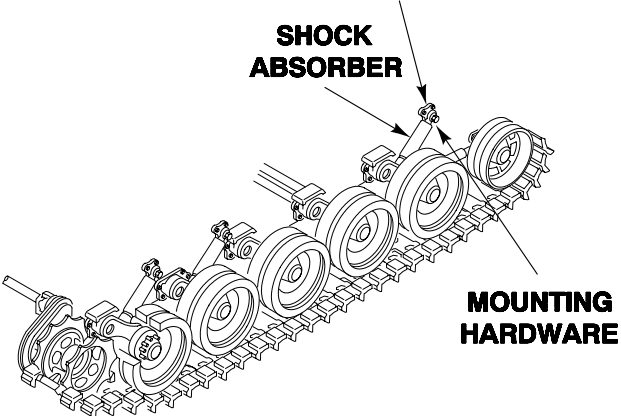
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
29	Semi-annual		Shock Absorber	<p>a. Check shock absorber for dents or cracks. Replace shock absorber that is bent, broken, cracked, or dented enough to hinder operation (WP 0379 00).</p> <p>b. Replace shock absorbers if they have Class III fluid leaks or loose fitting bearings (WP 0379 00).</p>	Any cracked, broken, bent, or missing shocks, dents that hinder shock operation, or Class III fluid leaks.
<p style="text-align: center;">BRACKET MOUNTING HARDWARE</p> <p style="text-align: center;">SHOCK ABSORBER</p>  <p style="text-align: center;">MOUNTING HARDWARE</p>					
30	Semi-annual		Shock Absorber Mounting Hardware	<p>a. Check shock absorber mounting hardware for looseness. TIGHTEN LOOSE HARDWARE TO 130-140 LB-FT (176-190 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104).</p>	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
31	Semi-annual		Shock Absorber Bracket Mounting Hardware	<p>BRACKET MOUNTING HARDWARE</p> <p>SHOCK ABSORBER</p>  <p>MOUNTING HARDWARE</p> <p>a. Check shock absorber mounting hardware for looseness. TIGHTEN LOOSE HARDWARE TO 130-140 LB-FT (176-190 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104).</p> <p>BRACKET MOUNTING HARDWARE</p> <p>SHOCK ABSORBER</p>  <p>MOUNTING HARDWARE</p>	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
32	Semi-annual		Mortar Base Stowage Brackets (M1064 Only)	<p>a. Ensure that bracket (1) closes and locks properly. Check brackets (1) and (2) for cracks. Tighten or replace base or missing bolts on brackets (1) and (2) (WP 0544 00).</p>	
<p>The diagram shows a side view of a mortar base. Two callout lines point to specific components: callout (1) points to a bracket on the upper right side, and callout (2) points to a bracket on the lower right side. Detailed views of these brackets are shown to the right of the main diagram. Bracket (1) is a vertical bracket with a locking mechanism. Bracket (2) is a horizontal bracket with a locking mechanism.</p>					
33	Semi-annual		Generator Set Enclosure (M577A2)	<p>a. TIGHTEN OR REPLACE LOOSE OR MISSING SCREWS ON ENCLOSURE TO 55–60 LB-FT (75–81 N·M). Use torque wrench (WP 0780 00, Item 104).</p> <p>b. Replace damaged enclosure (WP 0472 00).</p>	
<p>The diagram shows a side view of a generator set enclosure. A callout line points to the top of the enclosure, which is labeled 'ENCLOSURE'. The enclosure is a large, rectangular metal box mounted on a tracked vehicle chassis.</p>					

0120 00-51

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

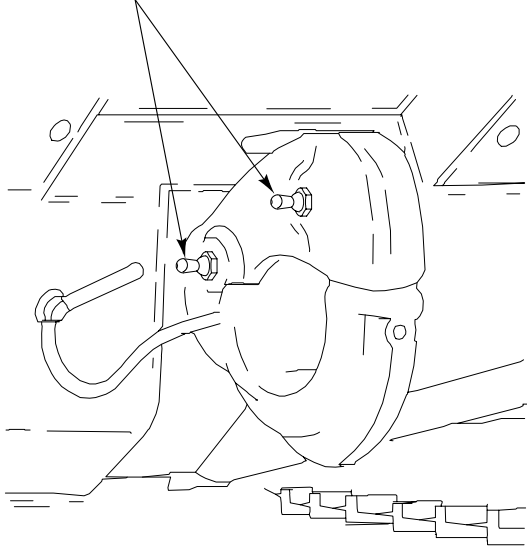
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
35	Semi-annual		Fuel Cans (M1059 Only)	<p style="text-align: center;">WARNING</p> <div> </div> <p>Diesel fuel can catch fire and seriously injure or kill soldiers and damage or destroy vehicles. Wipe up fuel spills immediately. Do not smoke near fuel or when working on the fuel system.</p> <p style="text-align: center;">CAUTION</p> <p>Don't expose sealed areas to steam for more than 15 minutes.</p> <ol style="list-style-type: none"> Inspect fuel cans and lid assembly for contamination. Clean as required. Check for leaks in fuel cans or lid assemblies. Repair leaky lid assemblies (WP 0706 00) or replace leaky fuel cans. 	Contaminated fuel cans or fuel leak.
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0120 00-53

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>b. Every 150 hours/1500 miles or semi-annually lubricate pintle with GAA. Late model pintles do not require lubrication.</p> <p style="text-align: center;">NOTE</p> <p>When grease fitting will not accept GAA, notify your supervisor.</p> <ol style="list-style-type: none"> 1) Lubricate pintle through two fittings with GAA (Table 9, page 0120 00-17). 2) Clean fittings with cleaning compound (WP 0782 00, Item 16) prior to lubrication. Check/lubricate grease fitting points after washing or fording. <p>TOWING PINTLE (2 FITTINGS)</p> 	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

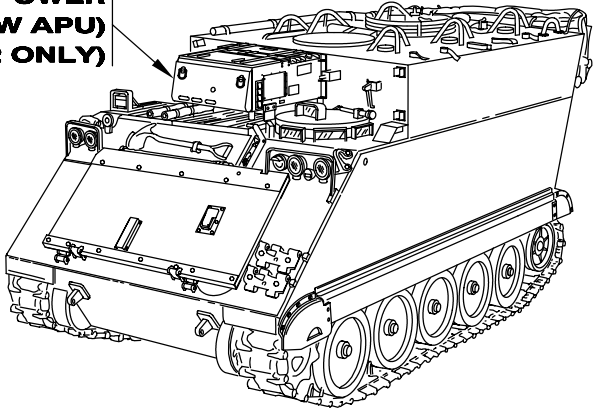
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>c. Check tow hook mount for looseness. TIGHTEN LOOSE SCREWS TO 130-140 LB-FT (176-190 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104).</p> <p>d. Replace missing retaining pin or key (WP 0419 00).</p> <div> </div>	

0120 00-56

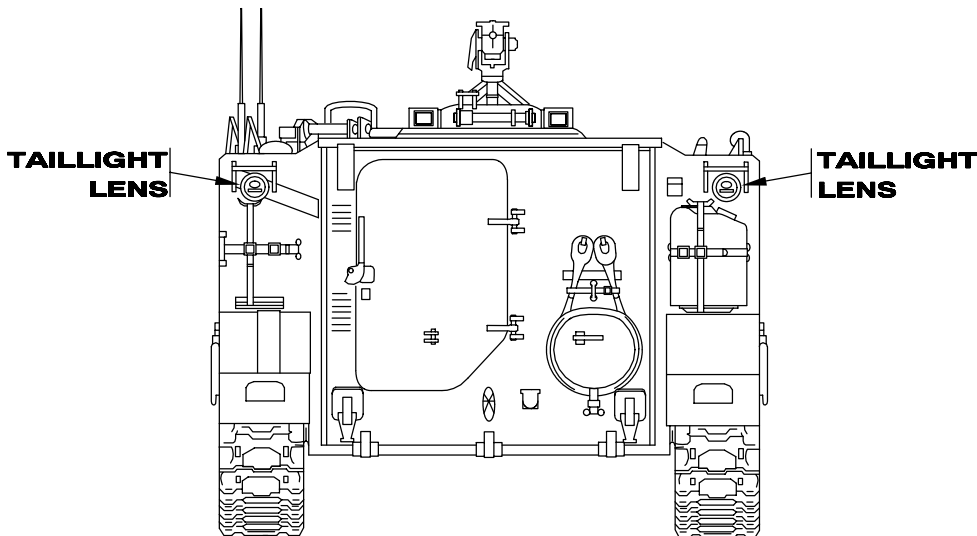
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
38	Semi-annual		5.0 KW Auxiliary Power Unit (APU) (M1068 and M577A2 Only)	a. See TM 9-6115-664-13&P for maintenance procedures. b. Replace damaged APU (WP 0473 00).	
<p>AUXILIARY POWER UNIT (5.0 KW APU) (M1068 AND M577A2 ONLY)</p> 					
39	Semi-annual		Webbing Straps and Loops	a. Replace cracked, cut, or frayed webbing straps and loops, both external and internal (see your-10).	

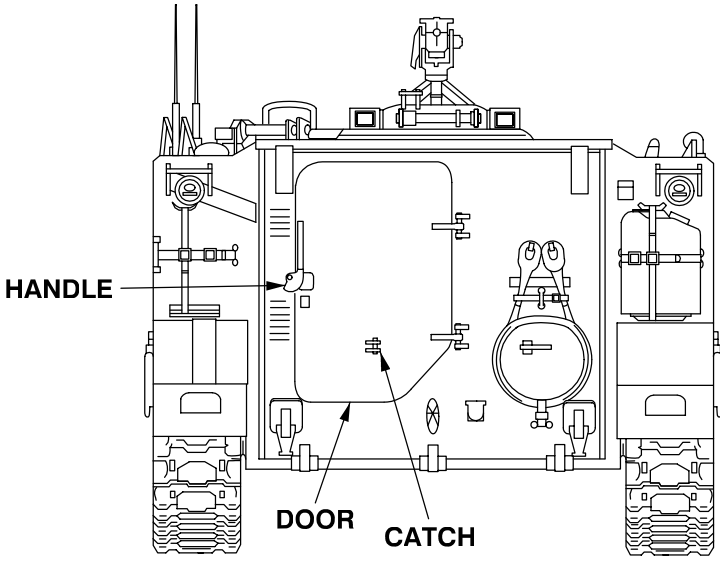

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
40	Semi-annual		Taillights, Stoplights, and Blackout Lights	a. Replace discolored and cracked taillight lens (WP 0258 00, WP 0263 00, or WP 0265 00). b. Have helper operate service taillight, service stoplight, blackout taillight, blackout stoplight (see your -10). Repair or replace lights that do not work. (See Chapter 12 for specific work packages.)	
					
41	Semi-annual		Ramp Door, Seal, and Catch	a. Perform chalk test (Step 5c). Replace leaky ramp door seal (WP 0566 00). b. Check door for smooth operation. If hinges bind, notify your supervisor. Repair catch if door does not lock in open position (WP 0557 00). c. Adjust handle if door does not seal tightly in closed position (WP 0569 00).	Doors fail to lock in any position.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

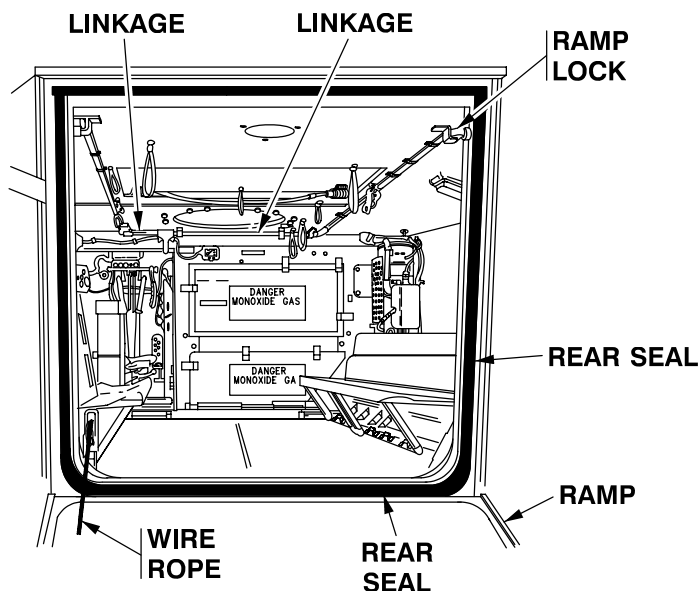
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
42	Semi-annual		Ramp Latches, Seals, and Wire Rope	 <p>WARNING</p>  <p>Lowering ramp could injure personnel. Make sure no one is in ramp zone before you lower ramp. Unlocked ramp can fall open suddenly. Personnel can be killed or injured. Ramp system and hull can get damaged if ramp unlocks when carrier is in operation. Do not operate carrier if locks do not secure ramp properly. Keep away from ramps that have come open during carrier operation.</p>	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

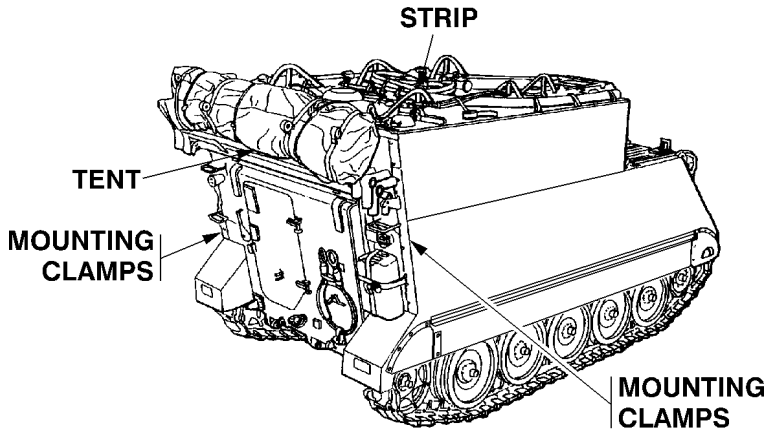
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ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>a. With ramp closed, check for tight fit on rear seal. Adjust ramp lock (WP 0556 00 and WP 0561 00) and linkage (WP 0558 00 and WP 0563 00) if needed.</p> <p style="text-align: center;">NOTE</p> <p>Horn should be sounded before raising ramp, if tactical situation permits.</p> <p>b. Replace ramp seal that is cut, cracked, or hard (WP 0570 00).</p> <p>c. Replace wire rope that is frayed or has broken strands (WP 0564 00 and WP 0565 00).</p>	Ramp fails UP/DOWN operation using controls. Damage which allows ramp to free fall or wire rope is frayed or broken.



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
43	Semi-annual		Tent and Mounting Brackets (M1068 and M577A2 Only)	<p>a. Replace tent that has tears, breaks, fraying, or other damage (M577A2) (WP 0504 00 and WP 0505 00) or (M1068) (TM 10-5410-229-13&P).</p> <p>b. Tighten screws on mounting clamps and strip.</p>	
 <p>The diagram illustrates the rear of a tank with a large rectangular tent mounted on top. A horizontal strip runs along the top edge of the tent. Two sets of mounting clamps are shown: one on the left side of the tent and one on the right side, both securing the tent to the tank's structure. Arrows point from the labels to the corresponding parts.</p>					

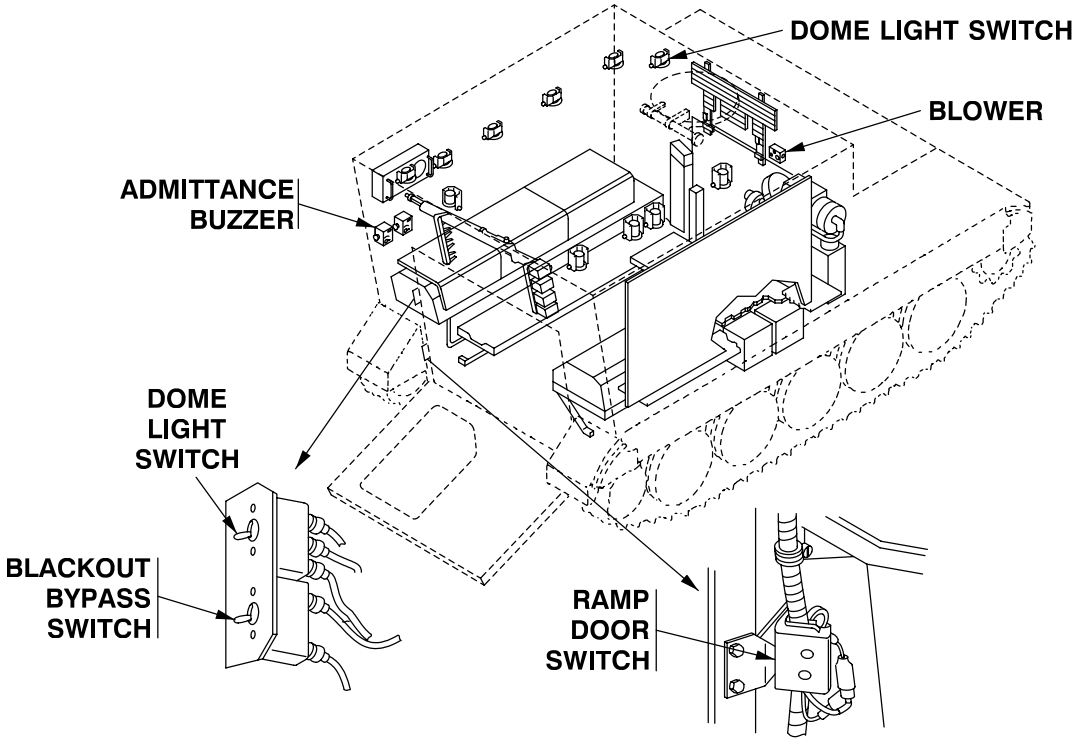
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
44	Semi-annual		Dome Lights and Switches (M1068 and M577A2 Only)	<p>a. Check that dome lights and blackout lights work right (see your -10). Troubleshoot faulty lights (WP 0042 00).</p> <div> </div> <p>b. Check that dome light switches and blackout bypass switch work right (see your -10). Troubleshoot faulty switches (WP 0042 00).</p> <p>c. Check that ramp door switch operates properly (see your -10). Troubleshoot faulty switch (WP 0062 00).</p> <p>d. Check that admittance buzzer operates properly (see your -10). Troubleshoot faulty buzzer (WP 0044 00). Replace unrepairable buzzer (WP 0282 00).</p> <p>e. Check that blower operates properly (see your -10). Troubleshoot faulty blower (WP 0158 00).</p> <p>f. Tape frayed electrical leads.</p>	

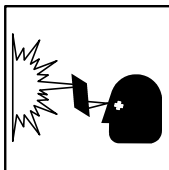
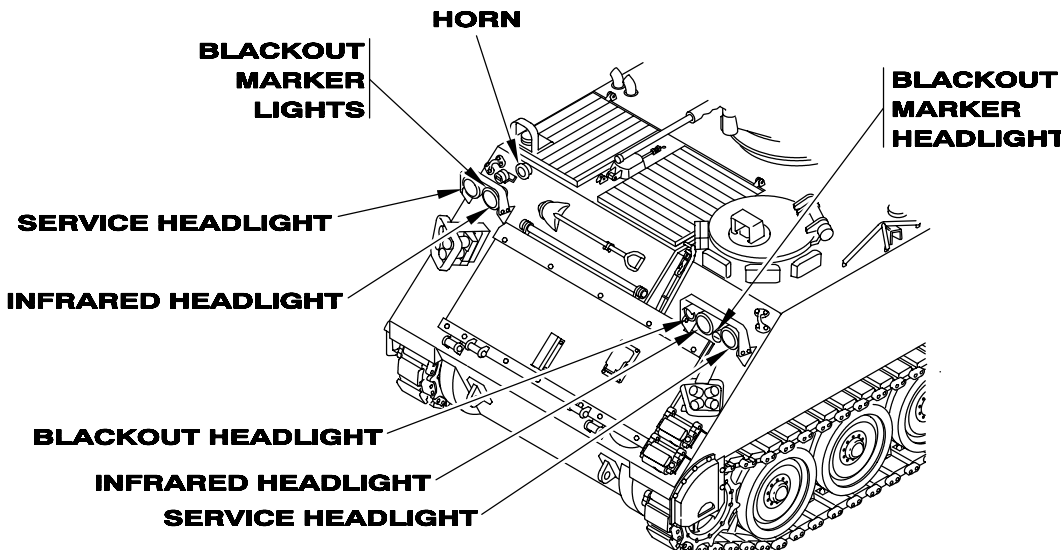
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				g. Replace damaged connectors (WP 0312 00).	
<div></div>					
45	Semi-annual		Headlights, Blackout Lights, and Horn	a. Replace cracked or discolored lens in service headlights, infrared headlights, blackout marker lights, or blackout headlight (WP 0256 00, WP 0258 00, or WP 0260 00).	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

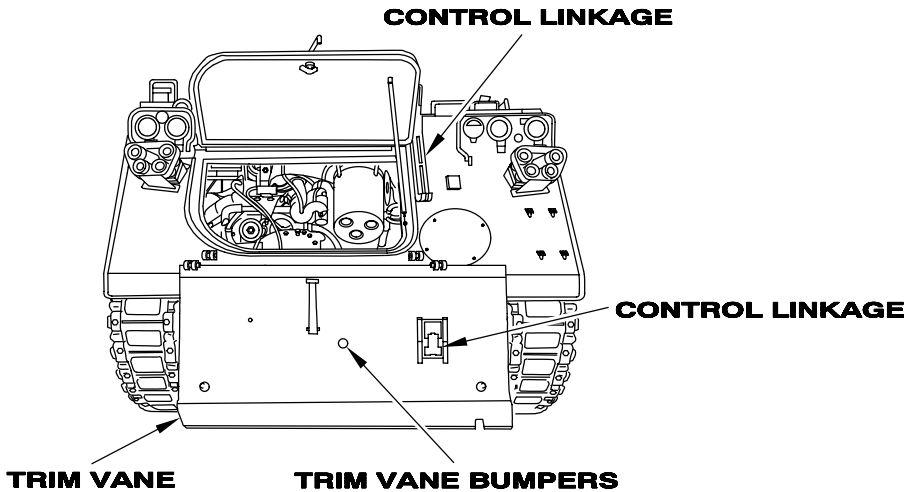

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>WARNING</p>  <p>Looking directly at infrared headlights may burn your eyes. Do not look directly into infrared headlight.</p> <p>b. Have assistant operate service headlights and infrared headlights, feeling for heat. Operate blackout marker lights, blackout headlight, and horn. Repair or replace lights or horn that do not work (WP 0255 00, WP 0256 00, WP 0257 00, WP 0258 00, WP 0259 00, WP 0260 00, or WP 0261 00).</p>	
					
46	Semi-annual		Remove Smoke Grenade Discharger (if installed)	a. Remove base from front hull plate (WP 0576 00).	

0120 00-65

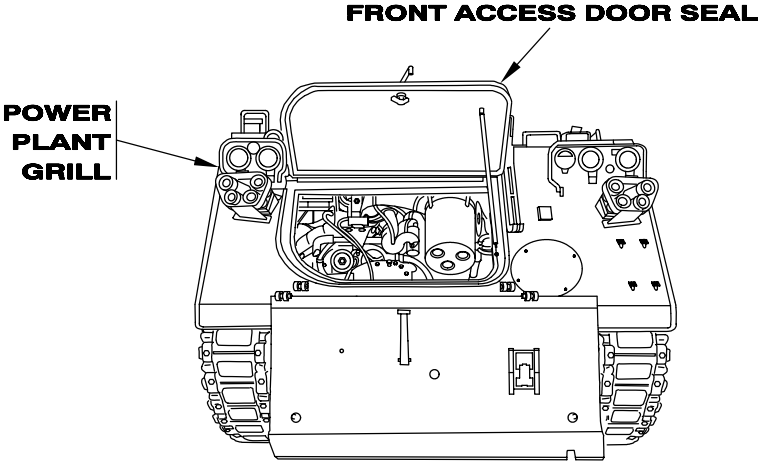
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
47	Semi-annual		Trim Vane	a. Replace gouged or hard trim vane bumpers (WP 0421 00). b. Replace or repair warped or badly damaged trim vane (WP 0421 00 or WP 0422 00). c. Check release mechanism and control linkage for proper operation. Replace weak springs and broken parts (WP 0423 00 or WP 0425 00).	
 <p>The diagram shows a top-down view of the trim vane assembly. It includes a central rectangular base with a handle on top. On the left side, there is a complex mechanism labeled 'TRIM VANE'. On the right side, there are two circular components labeled 'TRIM VANE BUMPERS'. Two lines point to the 'CONTROL LINKAGE' on the right side of the assembly.</p>					
48	Semi-annual		Power Plant Grill and Power Plant Front Access Door	<div style="text-align: center;"> WARNING </div>  <p>Power plant door may spring open. When opening door, stay out of door path. Soldiers can be injured.</p>	

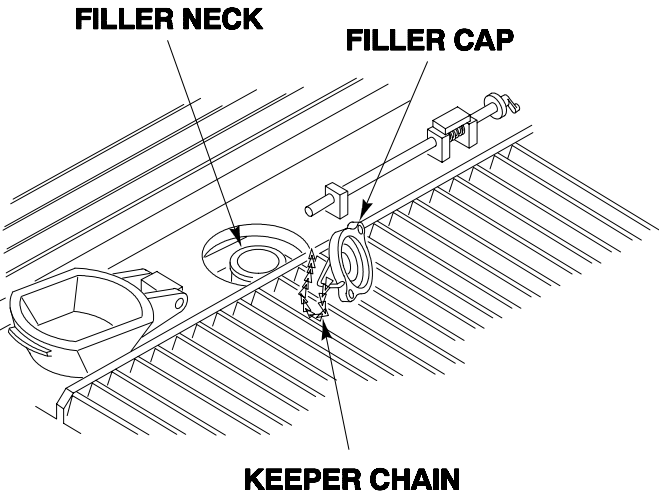
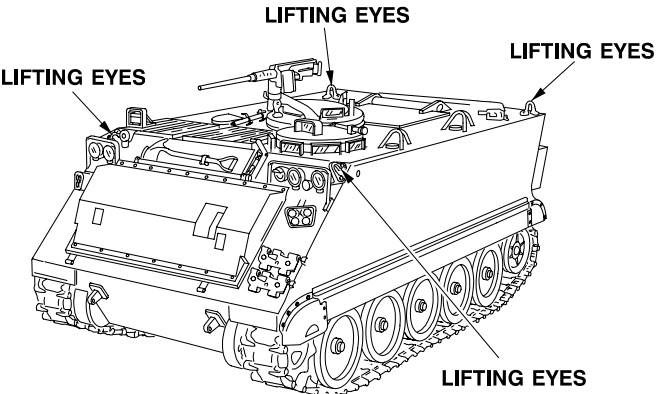
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>a. Check screws on power plant grill for looseness. TIGHTEN LOOSE SCREWS TO 100-120 LB-FT (136-163 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104).</p> <p>b. Check power plant front access door seal for cracks, cuts, stiffness, and looseness. If seal is loose, tighten. If seal is damaged, replace (WP 0429 00).</p> <p>c. Check for tight seal on door in closed position. Perform chalk test (Step 5c).</p>	Damage prevents door from closing, sealing, and locking.
<p style="text-align: center;">FRONT ACCESS DOOR SEAL</p>  <p>The diagram shows a top-down view of the power plant compartment. A label 'POWER PLANT GRILL' points to the front-left section. Another label 'FRONT ACCESS DOOR SEAL' points to the top edge of the access door. The door is shown partially open, revealing internal components.</p>					

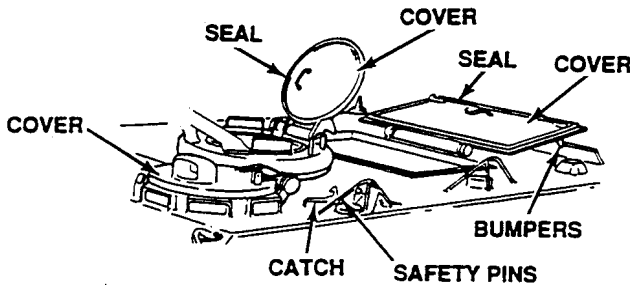
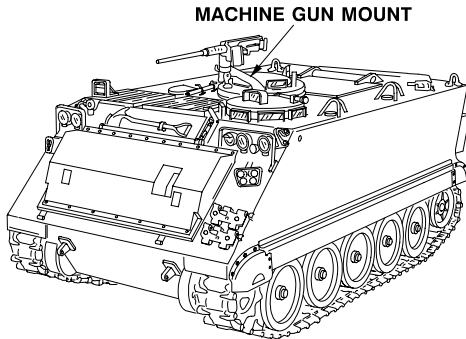
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
49	Semi-annual		Radiator Auxiliary Tank Filler Cap	<p>a. Replace filler cap that does not seal tightly on auxiliary tank filler neck (WP 0202 00).</p> <p>b. Attach or replace loose, broken, or missing keeper chain on filler cap (WP 0202 00).</p>	Any class III coolant leaks.
					
50	Semi-annual		Lifting Eyes	<p>a. Check for loose or missing screws on lifting eyes. Replace missing screws. TIGHTEN LOOSE SCREWS TO 175-200 LB-FT (237-271 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 105).</p>	
					

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

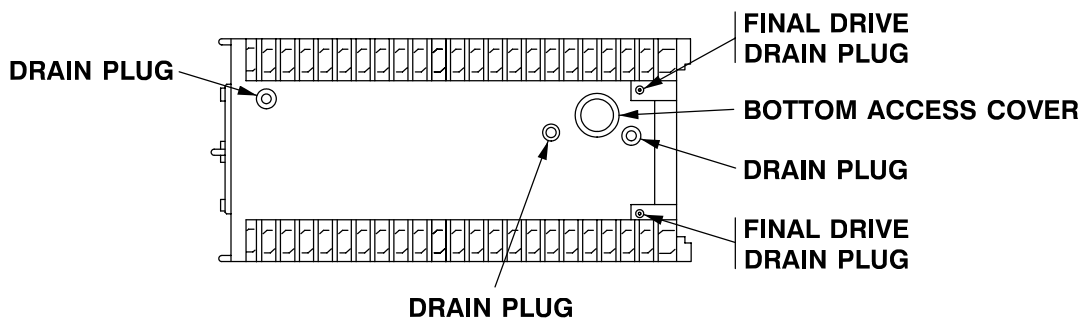
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ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
51	Semi-annual		Hatch Covers, Latches and Seals	<p>a. Replace cracked, cut, or hard seal (WP 0444 00, WP 0451 00, WP 0460 00, WP 0463 00, WP 0468 00, and WP 0469 00).</p> <p>b. Check covers for smooth operation. Repair or lubricate cover that binds. Repair catch if cover doesn't lock in open position.</p> <p>c. Replace damaged or missing catch safety pins.</p> <p>d. Replace bumpers that are cut, gouged, or hard.</p> <p>e. Adjust bumpers that do not compress when covers are locked open (see your -10).</p>	Hatch fails to lock in any position or catch safety pin is missing.
					
52	Semi-annual		Machine Mount Gun	<p>a. Check for loose or missing screws on machine gun mount. Tighten loose screws. Replace missing screws (WP 0457 00).</p>	Mount is cracked or broken.
					

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

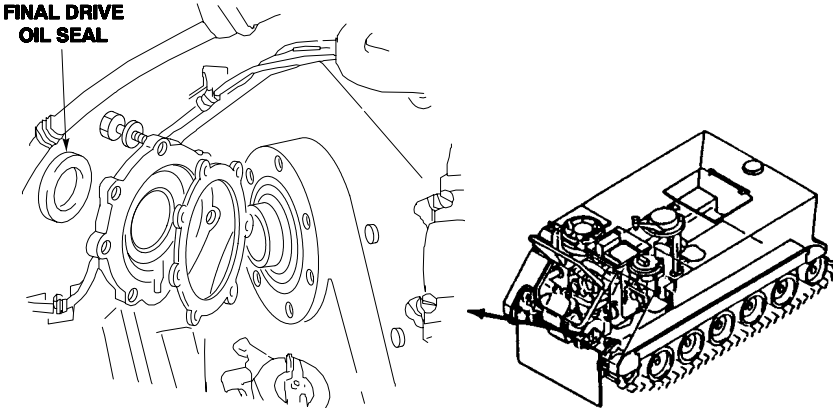
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ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
53	Semi-annual		Power Plant Bottom Access Cover, Hull Drain Plugs, and Final Drive Drain Plugs	<p>a. Check final drive drain plugs for leaks. Tighten leaking plugs (WP 0435 00).</p> <p>b. Check for loose or missing hull drain plugs. If missing, replace hull drain plug. Tighten loose plugs (WP 0435 00).</p> <p>c. Remove power plant bottom access cover and check for missing or damaged seal. Replace missing or damaged seal. Install bottom access cover. TIGHTEN SCREWS TO 40-50 LB-FT (54-68 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104).</p> <p>d. Check for loose or missing screws in power plant bottom access cover. Replace screws if missing. TIGHTEN LOOSE SCREWS TO 40-50 LB-FT (54-68 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104).</p>	<p>Any Class III leaks or missing seals, covers, or plugs.</p> <p>Missing or loose seals, plugs, or covers.</p>



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
54	Semi-annual		Final Drive	a. Inspect final drive input shaft oil seals for evidence of leakage. Replace final drive seals that have leaks (WP 0351 00). TIGHTEN SCREWS TO 252-300 LB-FT (28-34 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104).	Any Class III leaks.
					
55	Semi-annual		Power Plant Noises	a. Check power plant operation. If unusual noises are heard, repair suspect component or contact higher level of maintenance for assistance and repair.	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

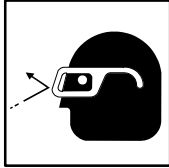
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
56	Semi-annual		Exhaust System	<p style="text-align: center;">NOTE</p> <p>Carrier leaks exhaust gas when cold. For this reason, carbon will be present around joints and exhaust pipe connecting clamps. This is normal. The exhaust system joints will seal after pipes heat up. Check for exhaust leaks only after engine reaches normal operating temperature of 180° to 205°F (71° to 93.3°C). Your carrier may be equipped with new exhaust pipes which do not require a muffler clamp.</p> <p>a. Check manifold, pipes, muffler, and clamps for loose, missing, or damaged hardware. Replace damaged hardware. Tighten loose clamps. After leak check, replace any pipes, clamps, or muffler (WP 0189 00 or WP 0191 00).</p>	Missing or damaged hardware allowing exhaust leaks.

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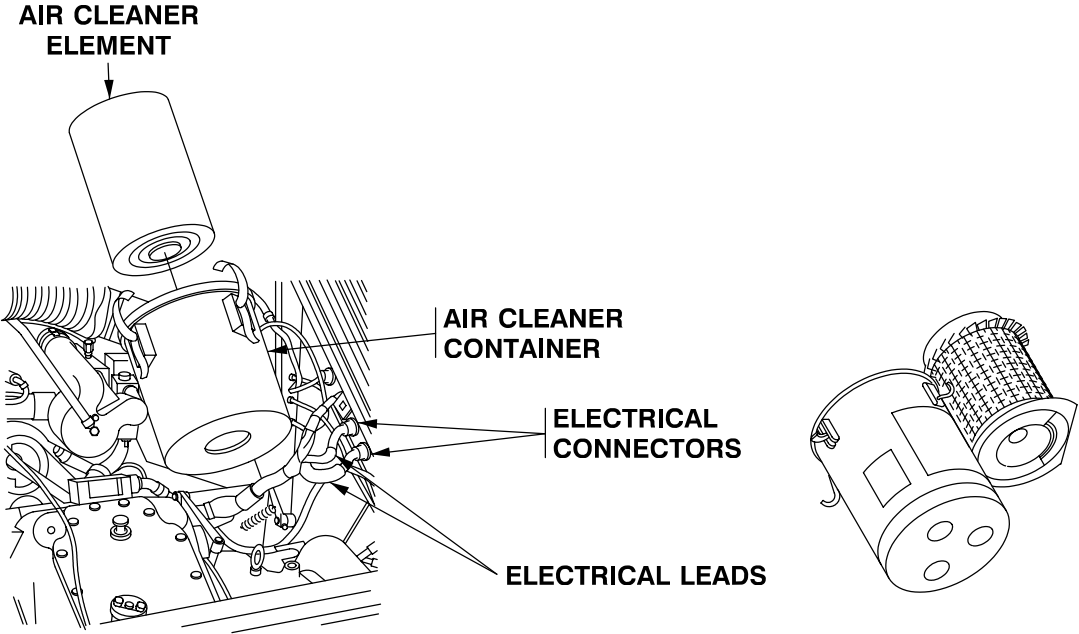
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
57	Semi-annual		Air Cleaner	<p style="text-align: center;">WARNING</p>  <p>Air pressure in excess of 30 psi (207 kPa) can injure personnel. Do not direct pressurized air at yourself or others. Always wear goggles.</p> <p style="text-align: center;">NOTE</p> <p>You will have one of two air cleaner configurations. Body and elements are NOT interchangeable, except as sets.</p> <p>a. Clean or replace air cleaner element (WP 0182 00).</p>	Latches or element is missing, damaged, or broken. Gasket is torn or separated from element.

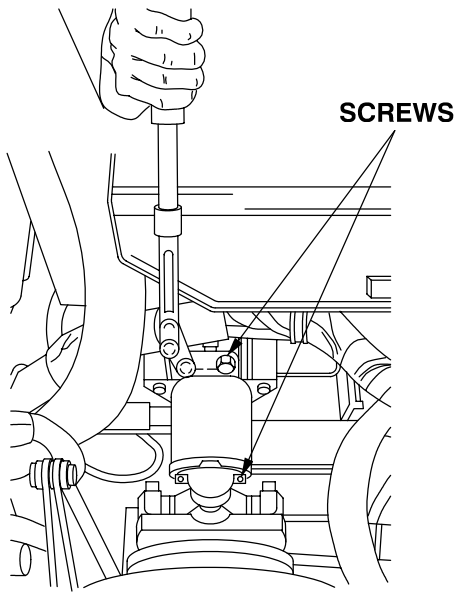
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				b. Clean drain hole on bottom of air cleaner container. Replace damaged container (WP 0185 00).	
					
58	Semi-annual		Air Cleaner Hoses	a. Replace cracked, broken, or brittle hoses (WP 0186 00).	
59	Semi-annual		Electrical Connectors and Leads	a. Check electrical connectors for looseness, broken contacts, or leads. Replace broken connectors (WP 0312 00 or WP 0314 00). b. Check that electrical leads in power plant compartment are not frayed, cut, or broken. If leads are damaged, identify damaged lead. Go to the Table of Contents for electrical lead/harness connectors repairs and locate the specific task to repair or replace the damaged lead or wiring harness.	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
60	Semi-annual	0.5	Drive Shafts and Universal Joints	<p style="text-align: center;">NOTE</p> <p>See 1g under General Maintenance Instructions for proper use of torque wrench adapter.</p> <ol style="list-style-type: none"> Check for loose or missing screws and lockwashers on universal joints. Joints are located on drive shaft between transmission and differential and between differential and final drives. Use adapter (WP 0780 00, Item 7) for 6C joints or (WP 0780 00, Item 6) for 7C to tighten screws. TIGHTEN 6C JOINTS SCREWS TO 35-40 LB-FT (47-54 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 100). TIGHTEN 7C JOINT SCREWS TO 83-100 LB-FT (113-136 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104). Lubricate U-joints every 1500 miles or semi-annually with GAA. 	Any hardware is loose, broken, or missing.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

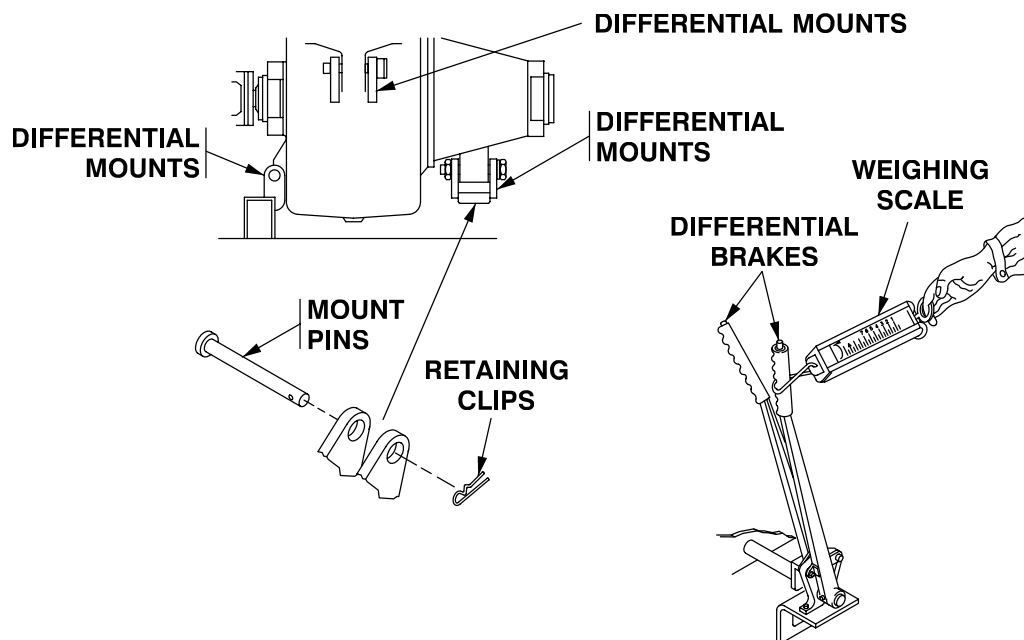
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p style="text-align: center;">CAUTION</p> <p>New style universal joints may not have grease fittings. If grease fittings are not present, DO NOT LUBRICATE. Damage to universal joints will occur.</p> <p style="text-align: center;">NOTE</p> <p>When grease fitting will not accept GAA, notify your supervisor.</p> <ol style="list-style-type: none"> 1) Lubricate four universal joints through fittings with GAA. Universal joints are on ends of propeller shafts (Table 12, page 0120 00-18). 2) Clean fittings with cleaning compound (WP 0782 00, Item 16) prior to lubrication. Check/lubricate grease fitting points after washing or fording. 	
61	Semi-annual		Differential	<ol style="list-style-type: none"> a. Replace missing or damaged retaining clips and mount pins on differential every 150 hours, 1500 miles, or semi-annually. Remove front hull plug and differential drain plug. Inspect drain plugs for metallic particles and refill oil system with OE/HDO as needed. Clean and inspect breather and oil filter with cleaning compound (WP 0782 00, Item 16). If chips are found, notify your supervisor. 	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
62	Semi-annual		Carrier	a. Lubricate steering control lever and shaft bearings every 1500 miles or semi-annually with GAA.	
63	Semi-annual		Differential Brake Adjustment	a. Using weighing scale (WP 0780 00, Item 63), perform pull test to inspect for proper operation of steering levers and differential brakes. With the levers locked at the second quadrant position, 10 to 30 pounds (4.5-14 kg) of pull should unlock the levers. Adjust differential brakes, if needed (WP 0362 00).	



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

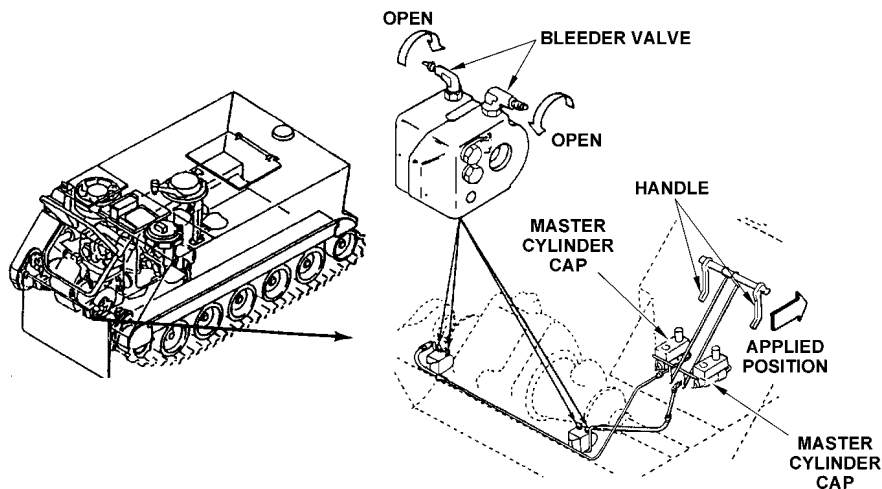
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
64	Semi-annual	1.4	Pivot Steer Brake	<p>a. Check pivot steer brake levers, linkage, hoses, quick-disconnects, disk brakes, and master brake cylinder assemblies. Adjust, repair, or replace damaged parts (WP 0409 00, WP 0410 00, WP 0411 00, WP 0412 00, WP 0413 00, WP 0414 00, or WP 0415 00).</p> <p style="text-align: center;">WARNING</p> <div> </div> <p>Fire resistant hydraulic (FRH) fluid may contain Tricresyl Phosphate which, if taken internally, can produce paralysis. Hydraulic fluid may be absorbed through the skin. Wear long sleeves, gloves, goggles, and face shield. If FRH gets in eyes, wash them immediately and get medical aid immediately. If FRH gets on your skin, thoroughly wash with soap and water. Wash hands thoroughly prior to eating or smoking. Application of these measures is considered an effective control of the hazard.</p> <p style="text-align: center;">NOTE</p> <p>Drain pivot steer brake system every 150 hours/1500 miles or semi-annually.</p> <p>b. Remove plugs and check fluid level in both master cylinders every 150 hours, 1500 miles, or semiannually. Add fluid, as required, to bring fluid within 1/2 to 3/4 inch from top of cylinder.</p>	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

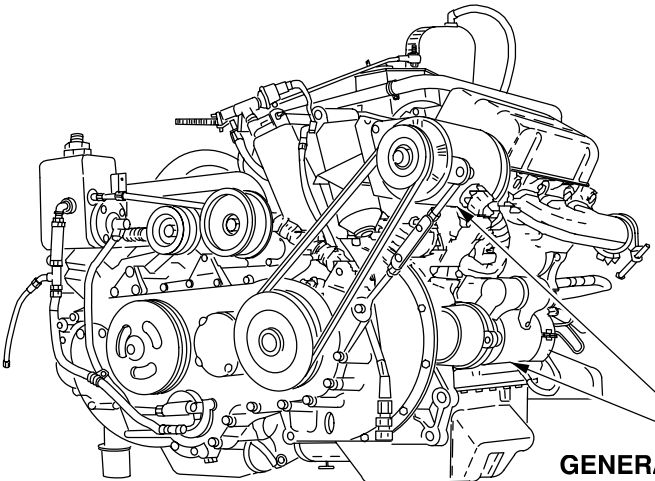
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ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>c. Flush pivot steer system when hydraulic fluid is contaminated or when fluid type is changed, as follows:</p> <ol style="list-style-type: none"> 1) Remove fill plugs, open bleeder valves, and drain hydraulic fluid into a suitable container. 2) Close bleeder valves and fill pivot steer system with hydraulic fluid. 3) Bleed pivot steer system and add hydraulic fluid as needed. Install fill plugs. 4) Move pivot steer levers back and forth several times. 5) Remove fill plugs, open bleeder valves, and drain hydraulic fluid into suitable container. 6) Close bleeder valves and fill pivot steer system with new hydraulic fluid. 7) Bleed pivot steer system and add hydraulic fluid as needed. Install fill plugs. 8) Test pivot steer system. 	



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

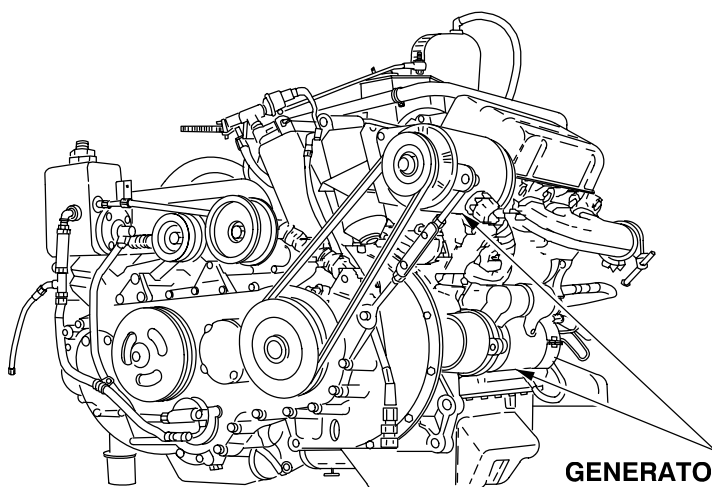
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
65	Semi-annual		Power Plant Compartment	<p>a. Open power plant front access door (see your -10) and remove hull access cover (WP 0429 00).</p> <p>b. Clean power plant compartment with cleaning compound (WP 0782 00, Item 16). Remove debris and wipe up spilled oil and fuel.</p> <p>c. Check power plant components for looseness. Tighten any loose mounting components on the starter, generator, etc.</p>	Any damage that would prevent operation of the vehicle.
 <p>GENERATOR/STARTER COMPONENTS</p>					

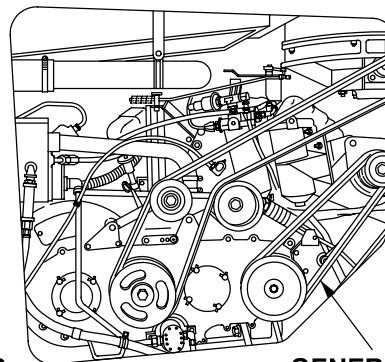
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
66	Semi-annual		Electrical System	<p>a. Check all generator mounting bolts for tightness. Tighten or replace parts.</p> <p>b. Check generator drive belt for cracking, fraying, and breaks. Check for tightness. Play should be about 1/2".</p> <p>c. Check generator pulley for tightness on alternator shaft. Grasp pulley with both hands and try to move it fore and aft on shaft. If pulley moves on shaft, tighten shaft nut.</p> <p>d. Check starter hardware and wiring for tightness. Tighten or replace parts as required.</p>	<p>Belt is broken, cracked to belt fiber, has more than one crack (1/8" in depth or 50% of the belt thickness), has frays more than 2" long or excessive play.</p> <p>Pulley moves on shaft.</p>

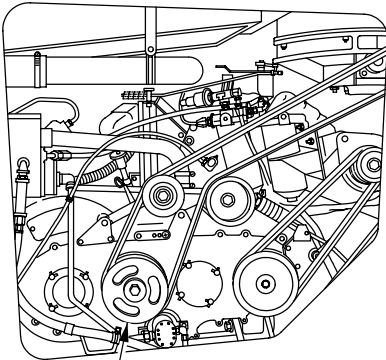


GENERATOR/STARTER COMPONENTS



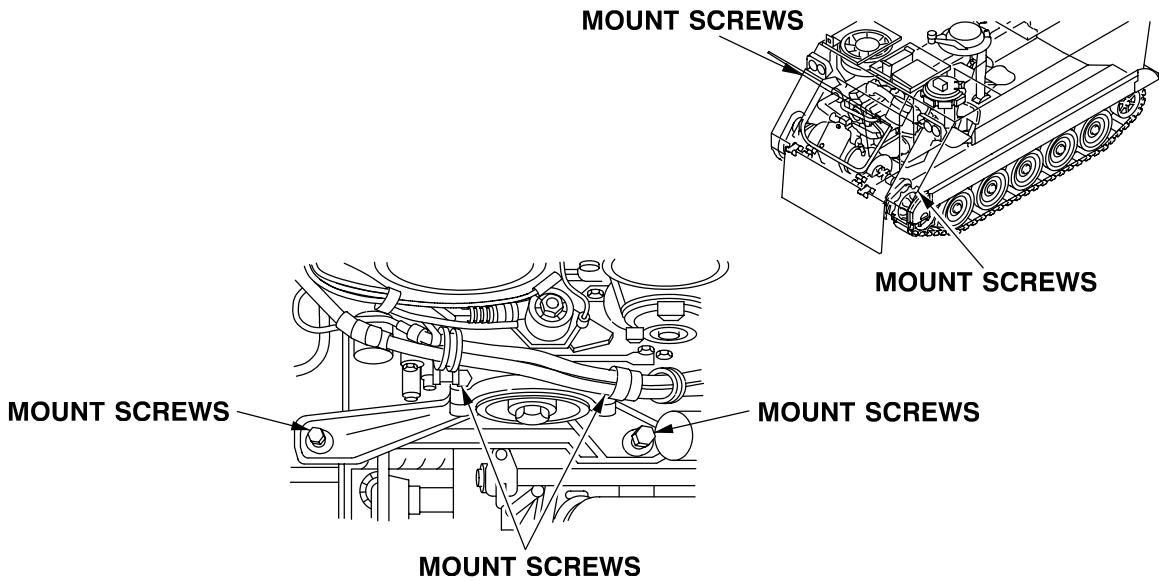
GENERATOR DRIVE BELTS

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>e. Check drive pulley on transfer gearcase for play or wobble and for cracks. Grasp pulley with both hands and try to move it in all directions. If pulley moves on shaft or shows signs of cracking, report it to your supervisor.</p> <p>f. Check regulator mounting screws for tightness. Tighten if necessary.</p> <p>g. Check regulator operating voltage. Adjust voltage if necessary (WP 0229 00).</p> <div>  <p>DRIVE PULLEY</p> </div>	Pulley moves on shaft or shows signs of cracking.

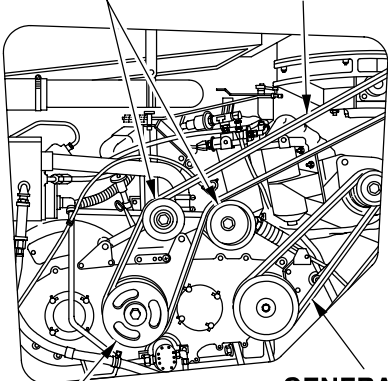
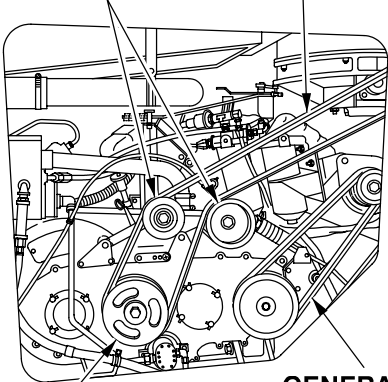
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
67	Semi-annual		Power Plant Mount	<p>a. TIGHTEN LOOSE MOUNT SCREWS (ON FORWARD ENGINE MOUNT) TO 360-420 LB-IN (41-48 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 102) and socket set (WP 0780 00, Item 96).</p>	Any cracked or broken nuts.
					
68	Semi-annual		Drive Belts	<p>a. Check fan belts for proper tension (see your -10). Adjust if needed (WP 0211 00).</p> <p>b. Check generator drive belts for proper tension (see your -10). Adjust if needed (WP 0226 00 or WP 0234 00).</p> <p>c. Replace any frayed or cracked fan belts (WP 0211 00) and frayed or cracked generator drive belts (WP 0226 00 or WP 0234 00).</p>	Any belt that is missing, broken, frayed more than 2 inches, cracks 1/8 inch in depth or 50% of belt thickness.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
69	Semi-annual	0.4	Cooling Fan	<p>IDLER PULLEY FAN BELT</p>  <p>DRIVE PULLEY GENERATOR DRIVE BELTS</p> <p>a. Replace cracked or bent drive pulley (WP 0214 00) and idler pulley (WP 0212 00).</p> <p>IDLER PULLEY FAN BELT</p>  <p>DRIVE PULLEY GENERATOR DRIVE BELTS</p> <p>b. Replace loose/worn bearings (WP 0217 00).</p>	Any cracked, broken, loose, or missing hardware.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

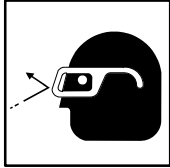
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
70	Semi-annual		Transfer Gearcase	<p>a. Replace missing or damaged retaining clip and mounting pin on transfer gearcase (WP 0342 00).</p> <p>b. TIGHTEN MOUNTING NUT TO 75-80 LB-FT (102-108 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104) and adapter (WP 0780 00, Item 4).</p> <p>c. LOOSEN AND RE-TORQUE 10 TRANSFER GEARCASE-TO-TRANSMISSION BOLTS TO 252-300 LB-IN (28-34 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 102) and socket set (WP 0780 00, Item 96).</p> <p>d. Drain transfer gearcase every 150 hours, 1500 miles, or semi-annually. Remove the hull drain plug and gearcase plug.</p> <p>e. Inspect oil for metallic particles. If metal chips are found, notify your supervisor.</p>	Any missing, cracked, broken hardware or Class III leaks.

The top diagram is a detailed view of the transfer gearcase mounting. It shows a circular gearcase with a mounting bracket. A retaining clip is shown securing the bracket. A mount pin is shown passing through the bracket. An adapter is shown being used to tighten the mounting nut. The bottom diagram is a view of the entire engine/transmission assembly, showing the location of the transmission bolts that connect the gearcase to the transmission.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

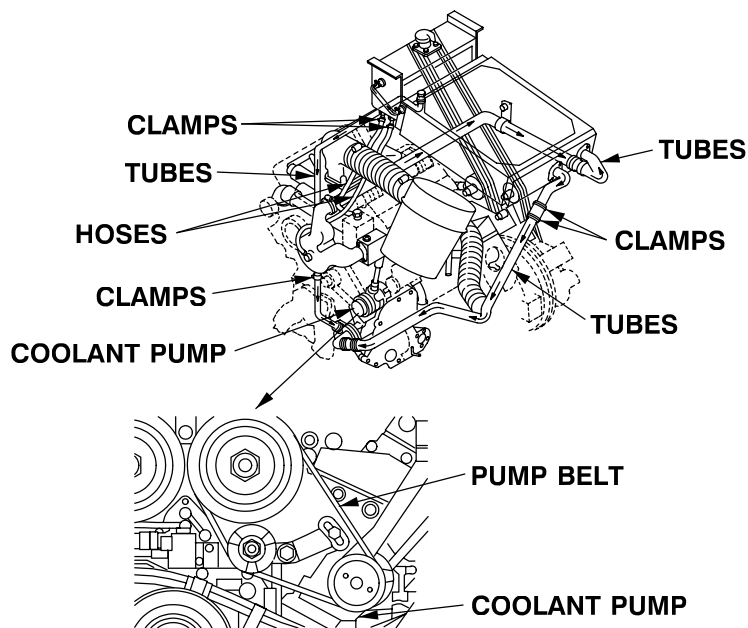
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ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
71	Semi-annual		Cooling System	<p style="text-align: center;">WARNING</p>  <p>Air pressure in excess of 30 psi (207 kPa) can injure personnel. Do not direct pressurized air at yourself or others. Always wear goggles.</p> <ol style="list-style-type: none"> Clean outside of radiator including fins. Use air gun. Check radiator for damage, cracks, and leaks. Check hoses for kinks, cracks, and breaks. 	<p>Any Class III leak.</p> <p>Missing hardware or Class III leaks.</p>

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>d. Check engine coolant pump belt for cracking, fraying, or breaks. Check for tightness. Play should be about 1/2".</p> <p>e. Check for bent or damaged pulley.</p>	<p>Belt is broken, cracks to belt fiber, has more than one crack (1/8" in depth or 50% of belt thickness), has frays more than 2" long, or has excessive play.</p> <p>Pulley damaged or unserviceable.</p>



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p style="text-align: center;">WARNING</p> <div> </div> <p>Hot coolant can burn you. Do not remove radiator cap until coolant temperature gauge reads in bottom one-quarter of green zone. Use heat protective mittens to turn radiator cap. Turn cap slowly to release pressure.</p> <p style="text-align: center;">NOTE</p> <p>A freeze protection indication beyond the limits shown in the chart below, when A-A-52624 antifreeze is used, will require partial coolant drain and replacement with water. Freeze protection must not exceed -55°F (-48°C) when A-A-52624 is used.</p> <p>f. Test for antifreeze protection by use of a combination antifreeze and battery tester (WP 0780 00, Item 77).</p>	Antifreeze protection does not comply with chart below.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:																				
			<table><tr><th>Lowest Estimated Temperature In Geographic Area</th><th>Pints of Ethylene Glycol Antifreeze to be Included In Preparation of 1 gal. Antifreeze Solution</th></tr><tr><td>+20°F (-7°C)</td><td>1-1/2</td></tr><tr><td>+10°F (-12°C)</td><td>2</td></tr><tr><td>0°F (-18°C)</td><td>2-3/4</td></tr><tr><td>-10°F (-23°C)</td><td>3-1/4</td></tr><tr><td>-20°F (-29°C)</td><td>3-1/2</td></tr><tr><td>-30°F (-34°C)</td><td>4</td></tr><tr><td>-40°F (-40°C)</td><td>4-1/4</td></tr><tr><td>-50°F (-46°C)</td><td>4-1/2</td></tr><tr><td>-55°F (-48°C) or below</td><td>4-3/4</td></tr></table>	Lowest Estimated Temperature In Geographic Area	Pints of Ethylene Glycol Antifreeze to be Included In Preparation of 1 gal. Antifreeze Solution	+20°F (-7°C)	1-1/2	+10°F (-12°C)	2	0°F (-18°C)	2-3/4	-10°F (-23°C)	3-1/4	-20°F (-29°C)	3-1/2	-30°F (-34°C)	4	-40°F (-40°C)	4-1/4	-50°F (-46°C)	4-1/2	-55°F (-48°C) or below	4-3/4	<p>g. Test for reserve alkalinity (corrosion protection) by means of the Test Kit, Reserve Alkalinity. Color indication of the test stick will determine condition of the coolant and its potential corrosion protection. Instructions for use are as follows:</p> <p>1) Dip stick into coolant, and remove immediately. Do not use test stick if coolant temperature is below 50°F (10°C) or if using a commercial brand antifreeze.</p> <p>2) Fifteen seconds after dipping, compare color on the stick with the color on the chart on the container, and annotate.</p> <p>3) Blue indicates coolant is safe to use.</p> <p>4) Green indicates reserve alkalinity and corrosion protection of coolant is marginal but may be used safely until next service inspection.</p>	Test kit indicates the coolant is unsafe.
Lowest Estimated Temperature In Geographic Area	Pints of Ethylene Glycol Antifreeze to be Included In Preparation of 1 gal. Antifreeze Solution																								
+20°F (-7°C)	1-1/2																								
+10°F (-12°C)	2																								
0°F (-18°C)	2-3/4																								
-10°F (-23°C)	3-1/4																								
-20°F (-29°C)	3-1/2																								
-30°F (-34°C)	4																								
-40°F (-40°C)	4-1/4																								
-50°F (-46°C)	4-1/2																								
-55°F (-48°C) or below	4-3/4																								

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p style="text-align: center;">NOTE</p> <p>Do not use antifreeze extender additive (MIL-A-53009A(1)) when arctic antifreeze is used in the cooling system.</p> <p>5) Yellowish green indicates the coolant is unsafe to use. If the DD Form 314 identifies the coolant as the original charge, then add three percent by volume (1 pint per 17 quarts) of antifreeze extender additive (MIL-A-53009A(1)) to the cooling system.</p> <p>6) Addition of extender to the antifreeze is a one time service. When the extender is added to the antifreeze, the date must be recorded in the "remarks" block of DD Form 314. If the DD Form 314 identifies the unsafe coolant as having been extended before, or the coolant as arctic antifreeze, then the coolant must be drained and replaced with fresh coolant (WP 0193 00 and WP 0194 00).</p> <p>h. Check coolant cleanliness by draining a small amount of coolant into a clean container, and look for excessive rust, foreign particles and/or sediment.</p>	Excessive coolant contamination is found.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
72	Semi-annual	0.4	Fan Gearbox	<p>a. Check fan gearbox oil level. Add OE/HDO or OEA, as needed, to bring oil level to center of sight glass.</p> <div> </div> <p>NOTE</p> <p>Drain oil only when hot after operation.</p> <p>b. Drain gearbox every 150 hours/1500 miles or semiannually.</p> <ol style="list-style-type: none"> 1) Place a suitable container under fan gearbox drain. 2) Remove drain plug and packing from gearbox housing and drain oil into container (WP 0215 00). Discard packing. 3) Inspect drain plug and oil for metallic particles and foreign matter. If metal chips are found, notify your supervisor. 	No oil in sight glass. Any Class II or greater oil leak.

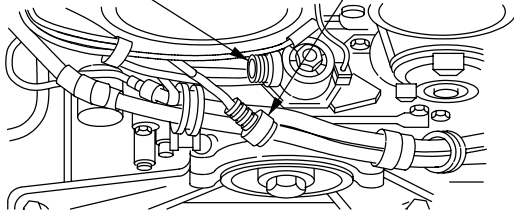
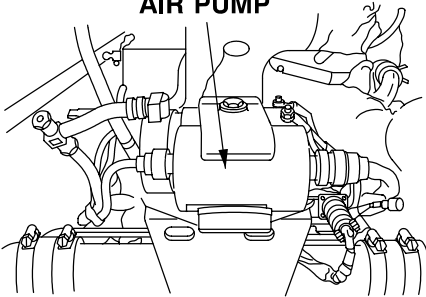
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
73	Semi-annual		Operate Air Box Heater Air Pump	<p>4) Clean drain plug and apply antiseize compound to threads.</p> <p>5) Lubricate new performed packing with OE/HDO prior to installing.</p> <p>6) Install drain plug and packing in gearbox housing.</p> <p>7) Fill gearbox with enough OE/HDO oil to bring the level to center of sight glass (Table 5, page 0120 00-16).</p> <p style="text-align: center;">NOTE</p> <p>The purpose of the item is to exercise the vanes in the air box heater air pump.</p>	

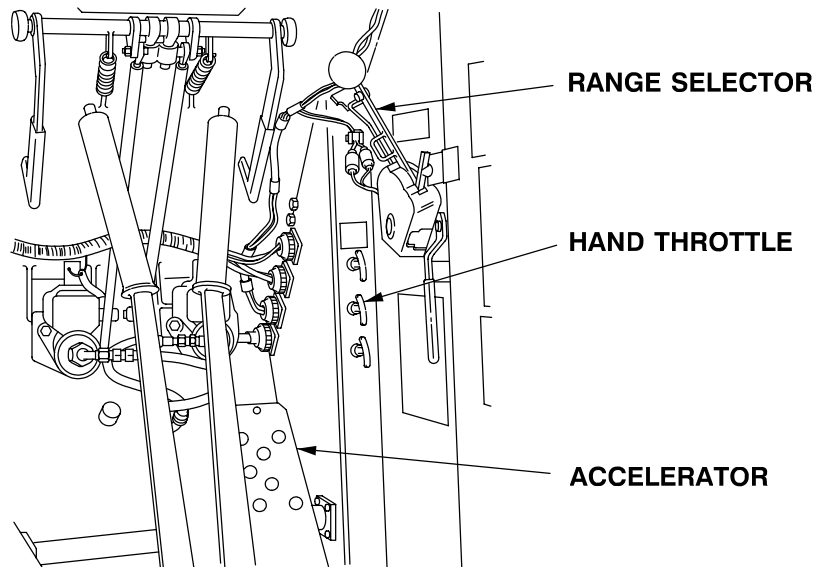
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>a. Disconnect lead from fuel shutoff solenoid (WP 0179 00).</p> <p>b. To prevent engine from starting, pull fuel cutoff out (see your -10).</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>Air pump can be damaged if switch is held too long. Do not exceed a total of 20 seconds of operation.</p> <p>c. Have helper crank engine and run air pump at the same time intermittently for a total of 20 seconds. Listen for air pump operation (see your -10).</p> <p>d. Connect lead to fuel shutoff solenoid.</p> <p>e. Lubricate air motor with OE/HDO every 150 hours/1500 miles, semi-annually, or as required.</p> <p>FUEL SHUTOFF SOLENOID</p> <p>LEAD</p>  <p>AIR PUMP</p> 	

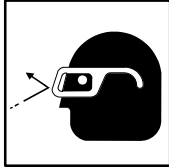

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
74	Semi-annual		Throttle Controls and Transmission Linkage	<ol style="list-style-type: none"> Operate hand throttle while pressing on throttle pedal to check for binding. Operate accelerator to check for binding in linkage. Check transmission range selector mounting screws for proper installation. Check to see that the engine will start only with ranger selector in "N" position. Move range selector through all gears to check for binding. 	Any binding, broken, cracked, missing, or loose hardware.



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
75	Semi-annual		Fuel System	<p>WARNING</p>  <p>Air pressure in excess of 30 psi (207 kPa) can injure personnel. Do not direct pressurized air at yourself or others. Always wear goggles.</p> <p>WARNING</p>  <p>Fuel can catch fire and burn you. Do not smoke. Disconnect battery ground cables before you work on fuel systems. Wipe up spilled fuel.</p> <p>CAUTION</p> <p>Don't expose sealed areas to steam for more than 15 minutes.</p>	

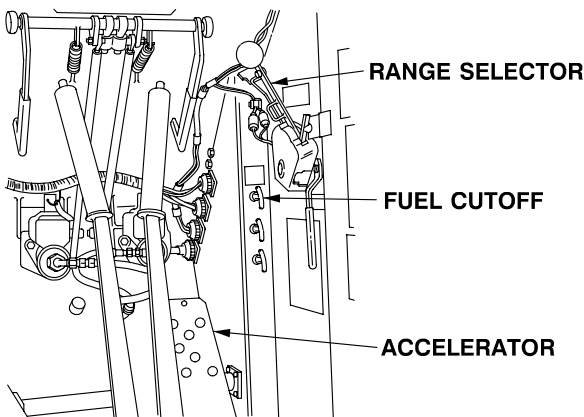

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>a. Check fuel tanks for leaks. Repair or replace fuel tanks that leak (WP 0139 00, WP 0140 00, or WP 0161 00).</p> <p>b. Tighten all fuel hoses, tubes, and fittings that leak.</p> <p>c. Replace fuel hoses and tubes that are cracked, crimped, or worn (WP 0141 00, WP 0148 00, WP 0149 00, WP 0151 00, WP 0152 00, WP 0158 00, WP 0159 00).</p> <p>d. Replace cracked or stripped fittings (WP 0141 00, WP 0148 00, WP 0149 00, WP 0151 00, WP 0152 00, WP 0158 00, WP 0160 00, WP 0159 00).</p>	Any contaminated tanks, fuel leaks, or cracked, broken, stripped, or crimped hardware.

The diagram illustrates the fuel system components within a vehicle's chassis. Two fuel tanks are shown at the rear, connected by a network of fuel tubes and fittings. Arrows point from the labels 'FUEL TANKS', 'FITTINGS', and 'TUBES' to their respective parts in the diagram. The fuel tubes run along the length of the chassis, with various fittings securing them at different points.

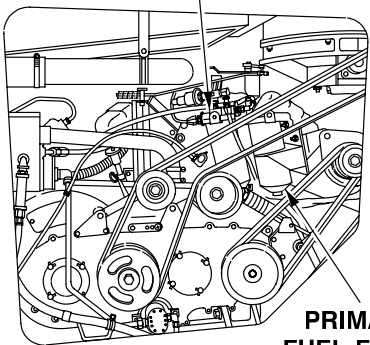
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
76	Semi-annual		Fuel Cutoff	<p>a. Operate fuel cutoff to check for binding. If binding occurs, adjust (WP 0403 00).</p> <p>b. Operate accelerator to check for binding linkage. If binding occurs, adjust (WP 0401 00).</p> <p>c. Move range selector through all gears to check for binding. If binding occurs, adjust (WP 0407 00).</p>	Any binding, broken, missing, or loose hardware.
					
77	Semi-annual	0.3	Fuel Filters	<p>WARNING</p>  <p>Fuel can catch fire and burn you. Do not smoke. Disconnect battery ground cables before you work on fuel system. Wipe up spilled fuel.</p>	


**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p style="text-align: center;">NOTE</p> <p>Large amounts of sediment or debris may indicate contamination of fuel tanks.</p> <ol style="list-style-type: none"> a. Every 150 hours/1500 miles or semi-annually, replace primary and secondary filter elements (WP 0174 00). See Fuel Filter Lubrication Table (Table 2, page 0120 00-14). b. If engine will not start or hesitates, check for trapped air and drain fuel filter. <ol style="list-style-type: none"> 1) Remove rear power plant access panels and drain fuel filter assemblies (see your -10). 2) Place suitable container under primary fuel filter. Remove and inspect primary filters/shell first, then secondary filter/shell. 3) Pre-fill primary and secondary shells with fuel and install. 4) Check for fuel leaks at primary and secondary fuel filters while engine is running. If leak is found, notify your supervisor. <p style="text-align: center;">SECONDARY FUEL FILTER</p>  <p style="text-align: right;">PRIMARY FUEL FILTER</p>	Any fuel leaks.


**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
78	Semi-annual	1.0	Hydraulic System	<p style="text-align: center;">WARNING</p>  <p>Fire resistant hydraulic (FRH) fluid may contain Tricresyl Phosphate which, if taken internally, can produce paralysis. Hydraulic fluid may be absorbed through the skin. Wear long sleeves, gloves, goggles, and face shield. If FRH gets in eyes, wash them immediately and get medical aid immediately. If FRH gets on your skin, thoroughly wash with soap and water. Wash hands thoroughly prior to eating or smoking. Application of these measures is considered an effective control of the hazard.</p> <ul style="list-style-type: none"> a. Replace ramp control or pump that leaks (WP 0588 00 or WP 0589 00). b. Tighten or replace fittings on hydraulic fluid tank, ramp cylinder, pump, and ramp control that are cracked or leak. c. Check hydraulic tank fluid level, and service if needed. Drain hydraulic system tank and replace strainer every 1500 miles, semi-annually, or when hydraulic fluid type is changed. 	Any hydraulic leaks, fluid not visible on sight gauge; cracked, broken, crimped, missing, or loose hardware.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p style="text-align: center;">WARNING</p>  <p>Lowering ramp could injure personnel. Make sure no one is in ramp zone before you lower the ramp. Unlocked ramp can fall open suddenly. Personnel can be killed or injured. Ramp system and hull can get damaged if ramp unlocks when carrier is in operation. Do not operate carrier if locks do not secure ramp properly. Keep away from ramps that have come open during carrier operation.</p> <p>d. Lower ramp and remove drain plug. Disconnect hose at filter elbow, remove four bolts and washers that secure filter adapter to tank. Remove filter and packing from adapter. Clean and inspect tank interior and adapter with cleaning compound (WP 0782 00, Item 16).</p> <p>e. Install new filter and packing on adapter. Secure adapter to tank with new washers and original bolts. Connect hose to adapter elbow. Fill tank with FRH to bring level between max and min on sight window (approximately 2 quarts).</p>	


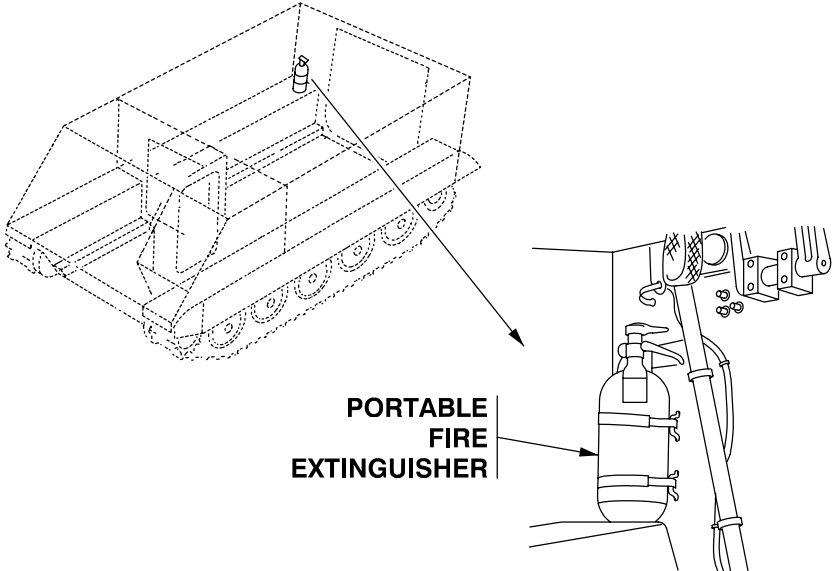
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING LUBRICATION INSTRUCTIONS — Continued

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<div> <div>f. Tighten tubes or hoses that leak.</div> <div>g. Replace tubes or hoses that are cracked, crimped, or worn (WP 0591 00).</div> <div>h. Replace ramp cylinder that leaks (WP 0593 00).</div> <div>i. Operate ramp and check for leaks.</div> </div>	<div> Pumps fail to operate or raise ramp. </div>
			<div> </div>		
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**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
79	Semi-annual		Portable Fire Extinguisher	<p style="text-align: center;">WARNING</p>  <p>You could be injured if cylinder discharges when it is out of its mounting brackets or is dropped. Handle with great care.</p> <p>a. Weigh portable fire extinguishers. Recharge or exchange fire extinguisher if weight loss is more than 10 percent of charged weight stamped on bottle. Exchange or recharge cylinders per local SOP.</p> 	Extinguisher is missing or seal/hardware is missing or broken.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**


0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
80	Semi-annual		Fixed Fire Extinguisher	<p style="text-align: center;"><u>CAUTION</u></p> <p>Fire extinguisher control valve sealed with steel wire will not work. Make sure seal wire is made out of .020 light copper.</p> <p style="text-align: center;"><u>NOTE</u></p> <p>Extinguisher contains CO2.</p> <ol style="list-style-type: none"> Remove and weigh fixed fire extinguisher cylinder (WP 0769 00). Recharge or exchange fire extinguisher if weight loss is more than 10 percent of charged weight stamped on bottle. Inspect fire extinguisher cylinder data plate to ensure that a hydrostatic test has been performed within the past 12 years. Faulty extinguishers, or those beyond the test time limit (12 years), shall be declared unserviceable and replaced. <p style="text-align: center;"><u>CAUTION</u></p> <p>Fire extinguisher control valve sealed with steel wire WILL NOT work. Use .020 thin copper wire.</p> <ol style="list-style-type: none"> Before reconnecting cylinder, operate discharge handles to be sure cables and controls work properly. 	Extinguisher is missing, or seal/lockwire missing or broken, or bottles are overdue for hydrostatic test. Lock wire is not .020 light copper.

0120 00-105

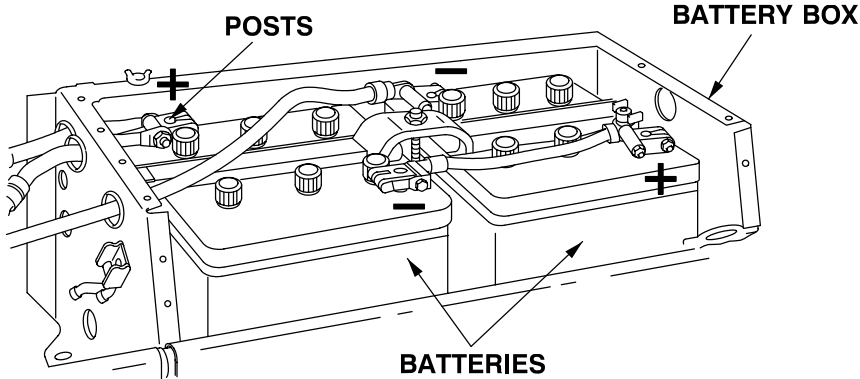
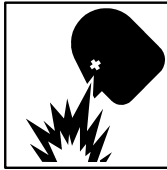
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

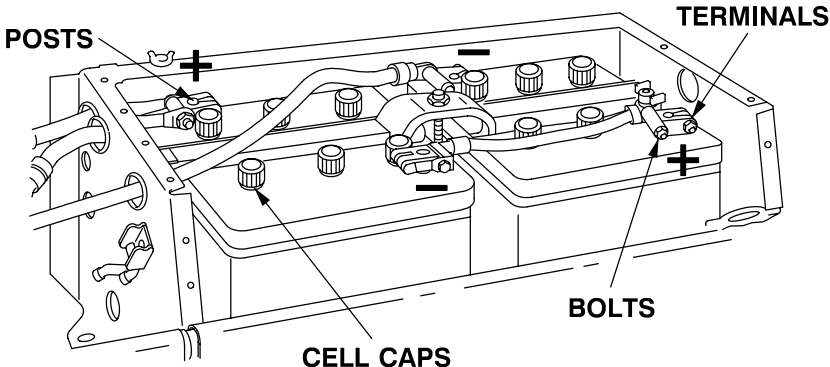
ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
81	Semi-annual		Batteries	<p style="text-align: center;">WARNING</p>  <p>Battery posts and cables touched by metal objects can short circuit and burn you or injure you. Use caution when you work with tools or other metal objects. Do not wear jewelry when you work on electrical system. Electrical current can burn you.</p> <ul style="list-style-type: none"> a. Remove battery ground lead before you start task (WP 0294 00). b. Clean battery and battery box. c. Replace batteries that leak, have cracked cases, or burned posts (WP 0302 00). <p style="text-align: center;">NOTE</p> <p>Location of batteries and connection of battery leads varies by model.</p> <ul style="list-style-type: none"> d. Check and record specific gravity of each cell. <ul style="list-style-type: none"> (1) Tropical Electrolyte 1.180-1.225. (2) Temperate Electrolyte 1.225-1.280. 	<p>Any leaks, loose, damaged, cracked, broken, or missing battery or hardware.</p> <p>Specific gravity is not within set standards.</p>

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

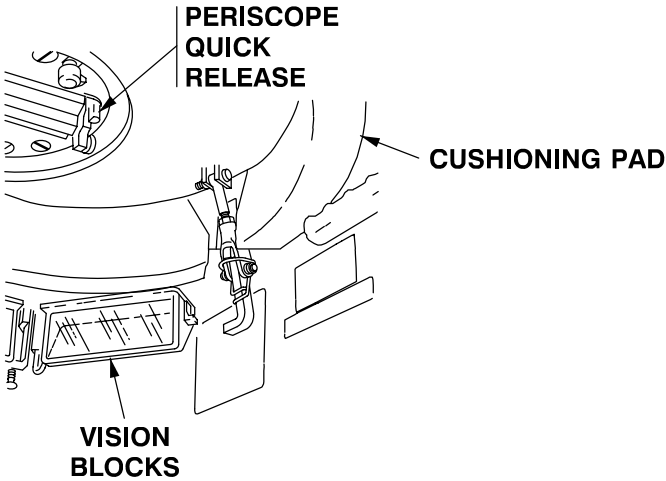
ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p style="text-align: center;">WARNING</p>  <p>Gas from batteries can explode and injure you. Do not allow sparks near batteries. Battery acid can blind or burn you. Do not get acid on your skin or eyes.</p> <p>e. Check electrolyte level in all cell batteries. Add distilled water as needed. See TM 9-6140-200-14.</p> <p>f. Check battery cables for frays and splits. Test specific gravity of batteries. See TM 9-6140-200-14.</p>	One or more batteries unserviceable, missing, cables frayed, or broken.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				g. Clean vent holes in cell caps. Replace missing or damaged caps. h. Clean terminals, posts, and bolts. i. Tighten terminals and bolts with care to avoid damage to batteries. Apply light coat of grease (WP 0782 00, Item 24) to terminals.	
 <p>The diagram shows a perspective view of a battery bank. It consists of several rectangular battery cells connected in series. Labels with leader lines point to various components: 'POSTS' points to the vertical terminals on the top of the cells; 'TERMINALS' points to the horizontal connection points; 'BOLTS' points to the fasteners securing the terminal connections; and 'CELL CAPS' points to the vent holes on top of the individual battery cells.</p>					
82	Semi-annual		Driver's Hatch	a. Replace hard, cracked, or cut cushioning pad (WP 0443 00). b. Check periscope quick release for smooth operation. c. Check vision blocks for cracks and chips. d. Replace vision blocks that have more than 50 percent impairment (WP 0444 00).	Any missing lock pins or latches that fail to secure hatch in any position.

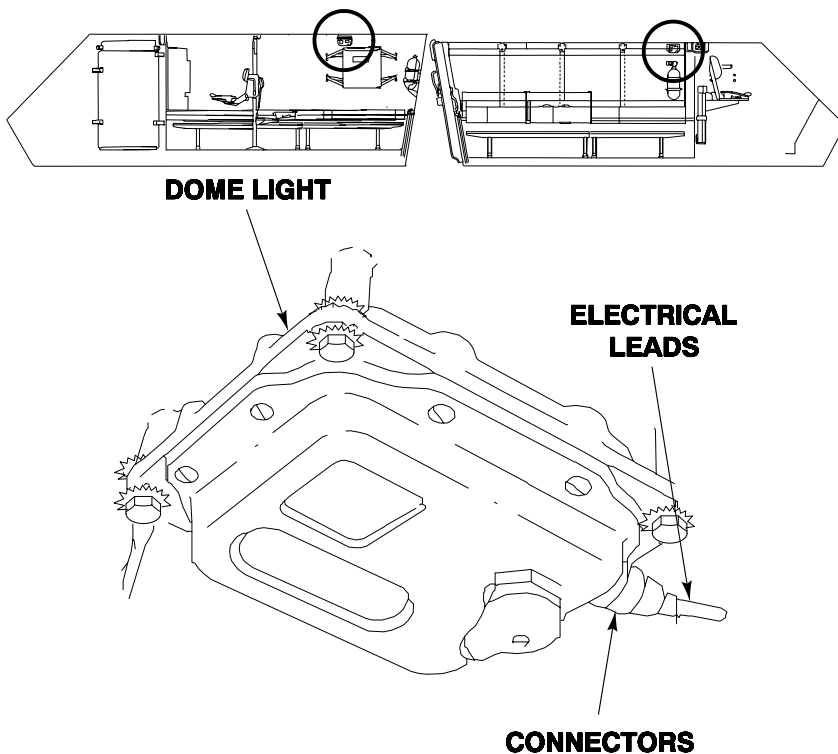
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>e. Push driver's release handle up and measure between hatch release handle and washer. Make sure gap is 0.06 to 0.09 inch (1.5 to 2.3 mm). If clearance is not within limits, loosen or tighten nut on cable end, as required.</p> <p>f. Remove driver's hatch periscope guard and quick release assembly (WP 0446 00). Check felt gasket for rips, tears, dirt, or moisture. Replace as necessary.</p>	

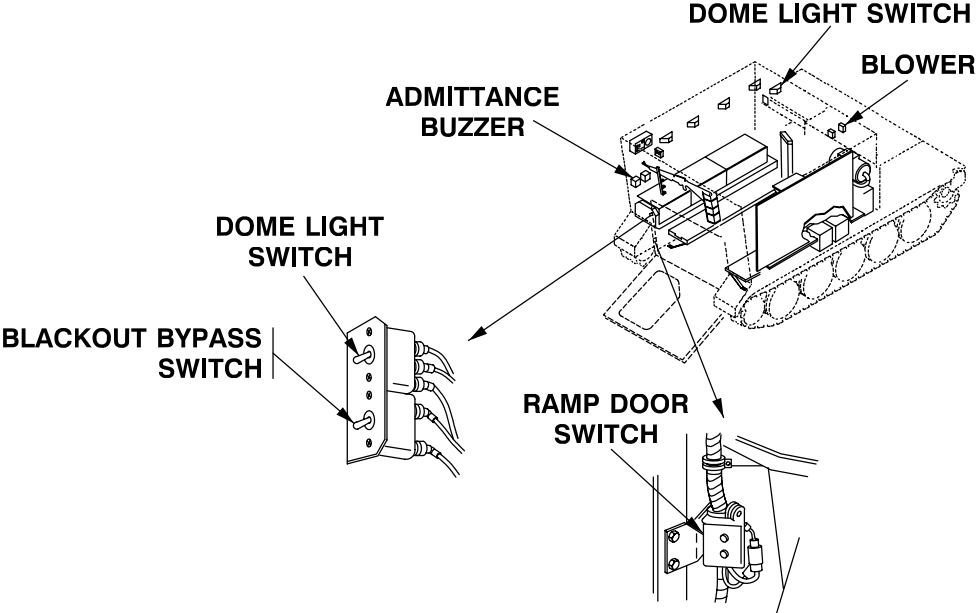
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
83	Semi-annual		Dome Lights	<p>a. Check that all dome lights work correctly. Troubleshoot faulty lights (WP 0039 00).</p> <p>b. Tape frayed electrical leads and replace damaged connectors (WP 0274 00 or WP 0275 00).</p>	
 <p>DOMELIGHT</p> <p>ELECTRICAL LEADS</p> <p>CONNECTORS</p>					
84	Semi-annual		Dome Lights and Switches (M1068 and M577A2 Only)	<p>a. Check that dome lights and blackout lights work right (see your -10). Troubleshoot faulty lights (WP 0039 00).</p> <p>b. Check that ramp door switch operates properly (see your -10). Troubleshoot faulty switch (WP 0006 00).</p> <p>c. Check that admittance buzzer operates properly (see your -10). Troubleshoot faulty buzzer. Replace unrepairable buzzer (WP 0006 00).</p>	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<div><div><div>d. Check that blower operates properly (see your -10). Troubleshoot faulty blower (WP 0045 00).</div><div>e. Tape frayed electrical leads.</div><div>f. Replace damaged connectors (WP 0312 00).</div></div><div></div></div>	

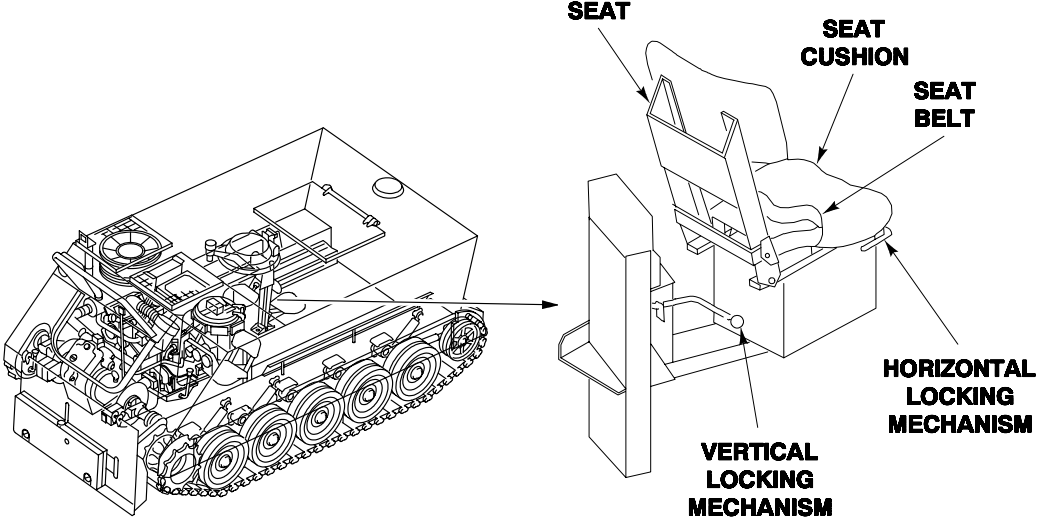
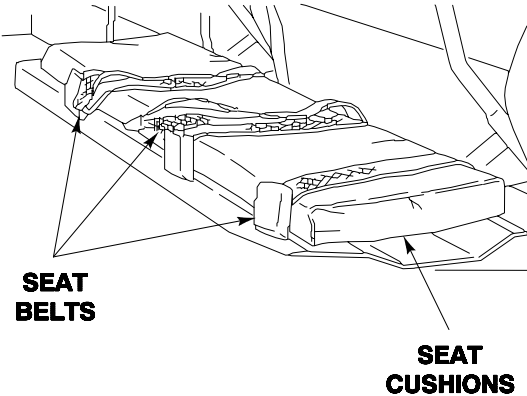
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
85	Semi-annual		Driver's Seat	<p>a. Replaced damaged seat components (WP 0479 00).</p> <p>b. Replace seat belts with cuts, frayed, or broken buckle (WP 0479 00).</p> <p style="text-align: center;">WARNING</p> <div style="display: flex; justify-content: center; gap: 20px;">   </div> <p>Seat can spring up and hit you when vertical control handle is released. Make sure you are sitting in the seat before releasing vertical control handle.</p> <p>c. See that seat vertical locking mechanism and horizontal locking mechanism work properly (WP 0479 00). Lubricate locking mechanism as needed with OE/HDO.</p>	Any missing, broken, or cracked seat hardware (less seat cushions) or locking mechanism fails to lock in any position.



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
86	Semi-annual		Personnel Seats		Any missing, broken, or cracked seat hardware (less seat cushions), or cut or frayed seat belts.
				<p>a. Repair or replace damaged seat cushions (WP 0495 00, WP 0496 00, WP 0497 00).</p> <p>b. Repair or replace cut, broken, or frayed seat belts (WP 0495 00, WP 0496 00, WP 0497 00).</p> 	

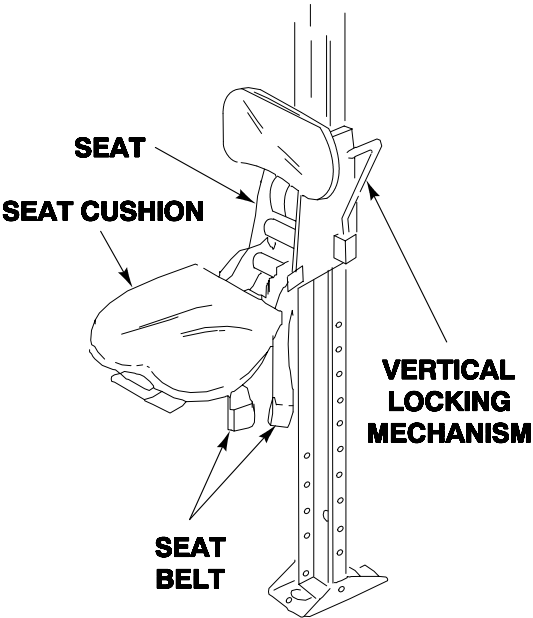
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
87	Semi-annual		Commander's Seat	<p>a. Replace damaged seat cushions (WP 0487 00).</p> <p>b. Replace cut, broken, or frayed seat belt (WP 0486 00, WP 0487 00, WP 0494 00).</p> <p style="text-align: center;">WARNING</p> <div style="display: flex; justify-content: center; gap: 20px;">   </div> <p>Seat can spring up and hit you when vertical control handle is released. Make sure you are sitting in the seat before releasing the vertical control handle.</p> <p>c. Check for smooth operation of seat and vertical locking mechanism (see your -10). Lubricate locking mechanism as needed with OE/HDO.</p>	Any missing, broken, or cracked seat hardware (less seat cushions), or cut or frayed seat belts, or locking mechanism fails to lock in any position.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued

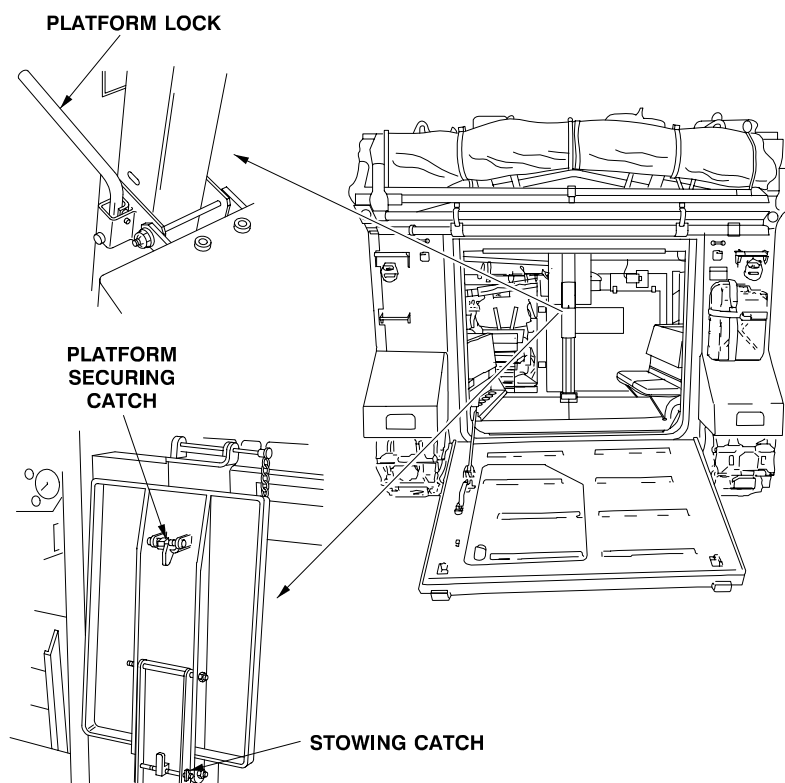
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ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
					

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

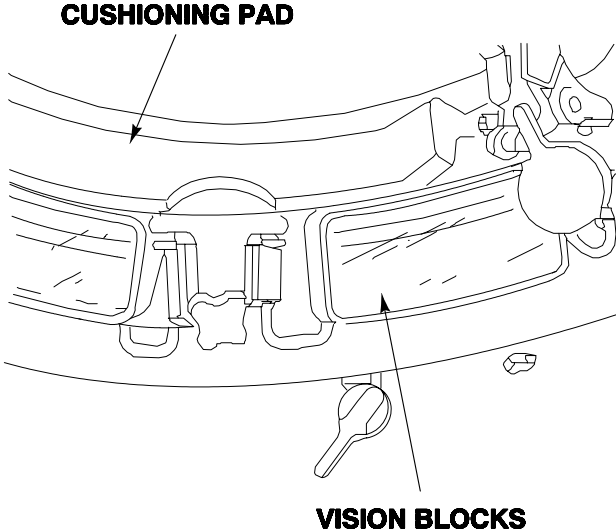
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
88	Semi-annual		Commander's Platform	<p>a. Check platform lock to make sure the platform locks securely in various vertical positions (see your -10).</p> <p>b. Check that platform securing catch and stowing catch work properly (see your -10).</p> <p>c. Lubricate locking mechanism and catch as needed with OE/HDO.</p>	Any missing, broken, or cracked platform hardware or vertical locking mechanism failing to lock in any position.



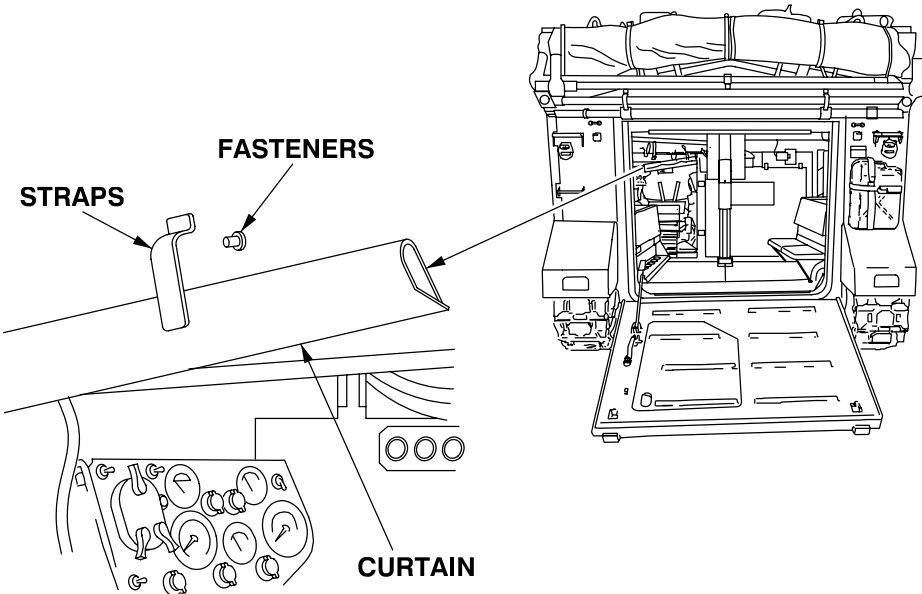
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
89	Semi-annual		Commander's Cupola	a. Replace cut, cracked, or hard cushioning pad. Replace vision blocks that have more than 50 percent impairment (see your -10). b. Replace cracked or chipped vision blocks (WP 0451 00). c. Check for smooth rotation of commander's cupola. Replace bearings as required.	
					
90	Semi-annual		Data Plates, Decals, Stencils, and Markers	a. Replace missing or damaged data plates, decals, stencils, and markers (WP 0511 00, WP 0512 00, WP 0513 00, WP 0514 00, WP 0515 00, WP 0516 00, WP 0517 00).	

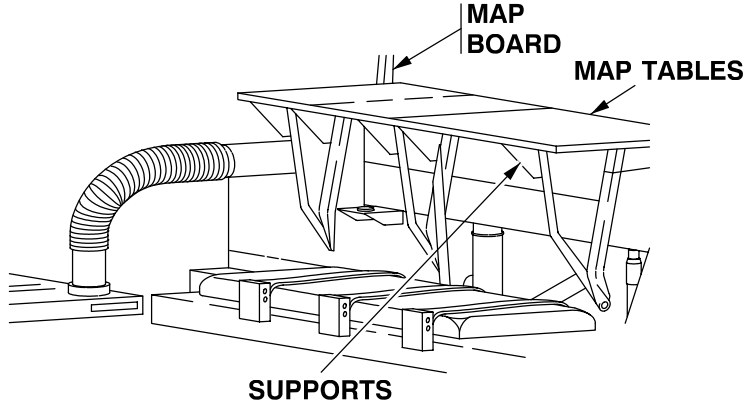
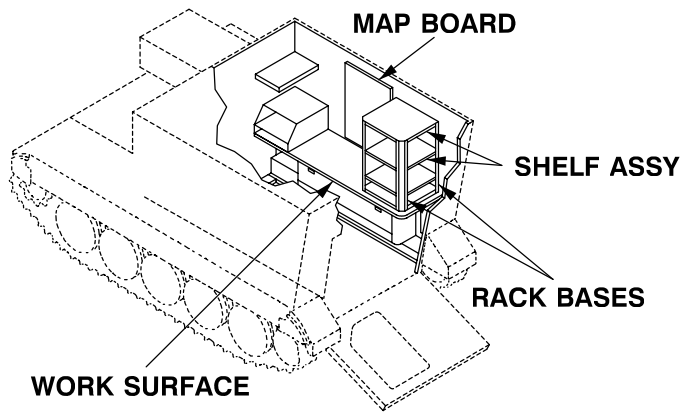
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

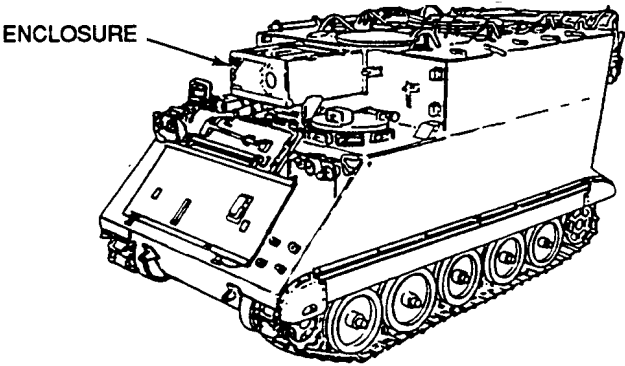
ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
91	Semi-annual		Blackout Curtain (M1068 and M577A2 Only)	<p>a. Repair or replace blackout curtain that is torn or worn thin (WP 0499 00).</p> <p>b. Replace blackout curtain that has torn or missing straps (WP 0499 00).</p> <p>c. Replace broken or missing fasteners (WP 0499 00).</p>	
					
92	Semi-annual		Map Tables and Map Board (M577A2 Only)	<p>a. Tighten or replace loose or missing screws on map tables and supports.</p> <p>b. Replace map table or map board that is badly damaged or warped (WP 0500 00, WP 0501 00, WP 0502 00, and WP 0534 00).</p>	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

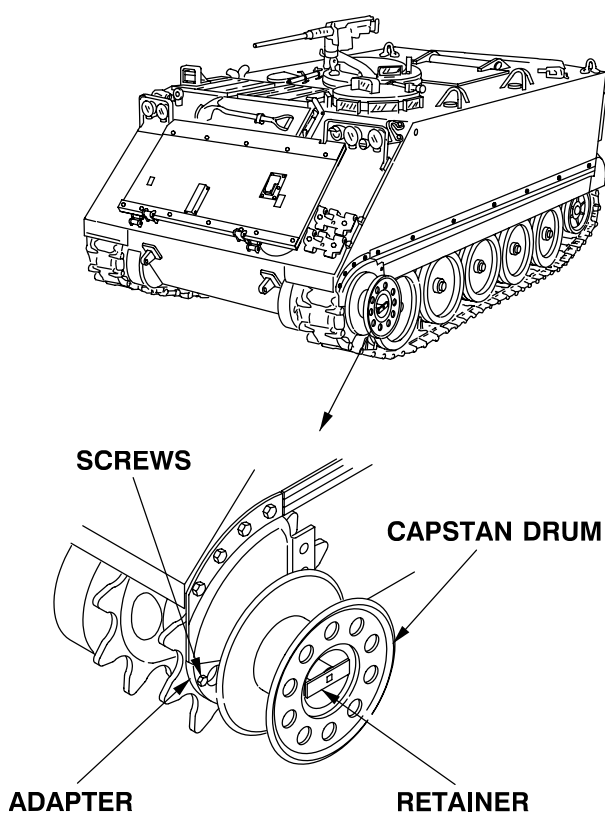
ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
93	Semi-annual		 <p>Map Board, Rack Bases, Shelf Assembly, and Work Surfaces (M1068)</p>	<p>a. Tighten or replace loose or missing screws on work surface, supports, map board, and shelf assembly.</p> <p>b. Replace badly damaged map boards and work surfaces (WP 0535 00).</p> 	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
94	Semi-annual		4.2 KW Generator Set Enclosure (M577A2 Only)	a. TIGHTEN OR REPLACE LOOSE OR MISSING SCREWS ON ENCLOSURE TO 55-60 LB-FT (75-81 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104). b. Replace damaged 4.2 KW generator enclosure (WP 0472 00).	
					
95	Semi-annual		5.0 KW APU (M1068 and M577A2 Only)	a. See TM 9-6115-664-13&P for PMCS procedures.	
96	Semi-annual		Capstan Drum and Adapter (M113A2 and M1059)	a. Check capstan drum and adapter. Replace cracked or damaged drum or adapter. Tighten loose screws or retainer. b. If retainer can be unscrewed from drum, replace spring pin (WP 0653 00).	

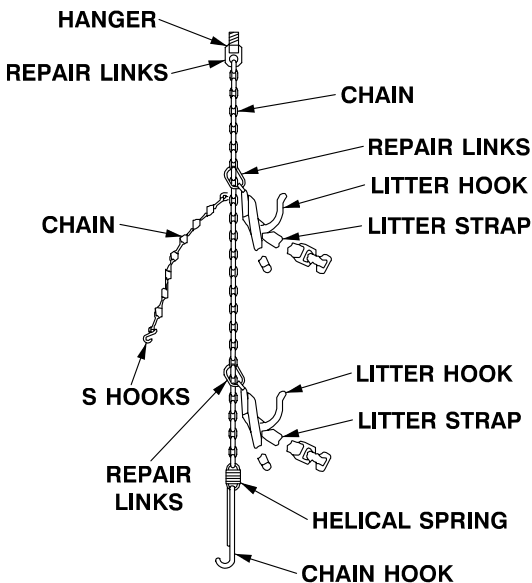
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
97	Semi-annual		Litter Kit	 <p>NOTE</p> <p>The carrier is not considered NMC for an unserviceable litter kit. If litter kit hardware is unserviceable, the kit should be removed to prevent use. See WP 0658 00 thru WP 0661 00 for litter kit maintenance.</p> <p>a. Perform preventive maintenance checks and services every 750 miles (1207 km), 75 hours, semiannually, or whichever comes first.</p>	

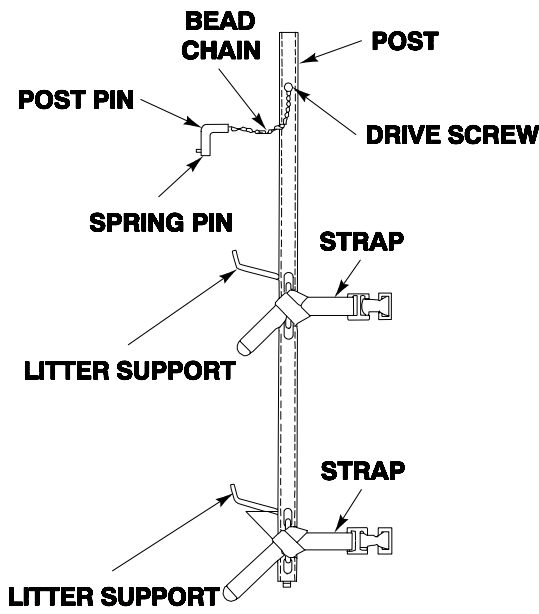
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>b. Check hanger. Replace hanger if cracked or if threads are stripped.</p> <p>c. Check three repair links. Replace cracked links.</p> <p>d. Check chain. Replace chain if links are broken.</p> <p>e. Check two litter straps. Replace straps if torn or if buckles are damaged.</p> <p>f. Check two litter hooks. Replace hooks if cracked or if they can't be recurved to hold litters.</p> <p>g. Check chain. Replace chain if links are broken.</p> <p>h. Check S hooks. Replace damaged S hooks.</p> <p>i. Check helical spring. Replace cracked spring.</p> <p>j. Check chain hook. Replace hook if cracked or if they can't be recurved.</p>	
				 <p>The diagram illustrates a vertical litter suspension system. At the top is a HANGER. Below it are three REPAIR LINKS. A CHAIN runs vertically down the center. To the left of the chain, there are two S HOOKS and another set of REPAIR LINKS. To the right of the chain, there are two LITTER HOOKS, each connected to a LITTER STRAP. At the bottom of the chain is a HELICAL SPRING, which is attached to a CHAIN HOOK.</p> <p>k. Check posts. Straighten bent posts. Replace cracked posts.</p>	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<ol style="list-style-type: none"> l. Check drive screw. Make sure it holds bead chain securely. Replace loose screw. m. Check bead chain. Replace broken chain. n. Check spring pin. Replace loose pin. o. Check litter support. Replace post if support is cracked. p. Check strap. Replace strap if torn or if buckles are damaged. q. Check bracket, screws, and washers. Replace loose or missing parts. 	
					
98	Semi-annual		Final Road Test	<ol style="list-style-type: none"> a. Insure all operational faults are corrected. Pay attention to any items that were previously recorded on DA Form 2404. Perform final carrier road test. Drive carrier at least 5 miles (8 km). 	Any Class III leaks or operational faults.

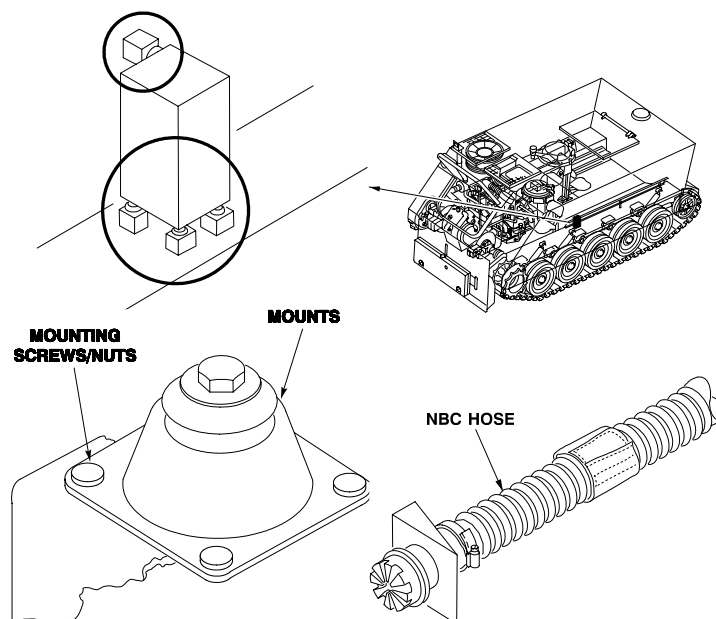
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
99	Semi-annual		Left and Right Steering	<p style="text-align: center;">NOTE</p> <p>Power plant can be damaged. Do not pivot steer when carrier is moving except on a track failure emergency.</p> <p>b. Operate steering levers and check for satisfactory response (see your -10). With carrier operating at moderate speed and steering levers released, check for tendency to wander or pull to one side. Release accelerator and apply brakes. Check if carrier stops without pulling to one side. With carrier stopped on an incline, lock steering levers and move transmission to N position. Check that brakes lock securely and carrier is held place. On level ground, operate pivot steer levers, one at a time, and check for pivot steer.</p> <p>c. If steering or brakes do not operate properly, see steering system troubleshooting (WP 0058 00).</p> <p>d. Check shifting of carrier in all ranges. If carrier does not respond properly to selected driving range, troubleshoot gear selection system (WP 0059 00).</p> <p style="text-align: center;">NOTE</p> <p>Power plant can be damaged. Do not pivot steer when carrier is moving except on a track failure emergency.</p> <p>a. Check steering in left or right turns. If carrier doesn't finish a complete turn when left or right levers are pulled back, troubleshoot steering system (WP 0058 00).</p>	Carrier fails to slow down or stop.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
100	Semi-annual		Steering in Forward and Reverse	a. Check steering in forward and reverse. If carrier doesn't finish a complete turn when left or right levers are pulled back, troubleshoot steering system (WP 0058 00).	
101	Semi-annual		Carrier Braking	a. If carrier doesn't slow down with steering levers slightly pulled back or stop when steering levers are fully pulled back, troubleshoot brake system (WP 0058 00).	
102	Semi-annual		Carrier Shifting in All Ranges	a. Check shifting of carrier in all ranges. If carrier doesn't respond properly to selected driving range, troubleshoot gear system (WP 0059 00).	
103	Semi-annual		NBC Mounting Hardware Kit	a. Check mounts. Replace worn, weak, or cracked mounts. b. Tighten loose mounting screws and nuts. c. Check webstraps securing NBC hoses properly.	



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

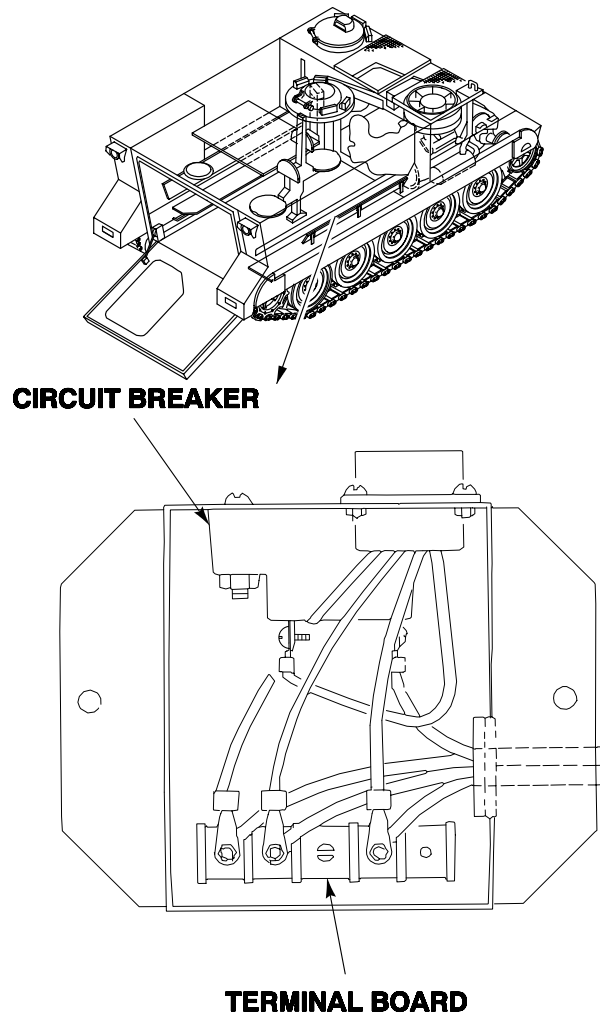
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
104	Semi-annual		Gas Particulate Filter	<p style="text-align: center;">NOTE</p> <p>Refer to TM 3-6680-316-10 for use of the M39 tester. Refer repair of particulate filter to direct maintenance personnel as per TM 3-4240-276-30&P.</p> <ol style="list-style-type: none"> Slide spring clip away from slotted openings of precleaner (blower) assembly and vehicle MASTER SWITCH and NBC POWER SWITCH to ON (blower must function) (all except M981). Slide spring clip away from slotted openings of precleaner (blower) assembly and set VEHICLE BAT SWITCH and VFM POWER SWITCH to ON (blower must function) (M981 only). Remove calibrated orifice assembly from airflow tester (6650-00-436-4212) and zero magnetic gauge. Disconnect crew member nose (for station being tested) from container in M981 vehicle and attach connector to calibrated orifice assembly connector of airflow tester. <p style="text-align: center;">NOTE</p> <p>An acceptable gauge reading is between 2.6 and 4.3 inches of water.</p> <ol style="list-style-type: none"> If reading is not within limits, note reading. See TM 3-6680-316-10. Connect crew member hose to vehicle connection. Set VEHICLE BAT SWITCH and VHF POWER SWITCH to OFF and recover slotted holes in precleaner (blower) assembly with spring clip (M981 only). 	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

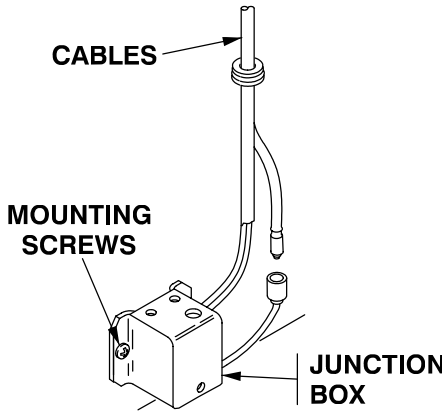
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
105	Semi-annual		Chemical Agent Automatic Alarm Kit	<p>a. Perform preventive maintenance checks and services every 750 miles (1,207 km), 75 hours, or semiannually, whichever comes first.</p> <p>b. Cable maintenance is limited to replacement of terminals (WP 0774 00).</p> <p>c. Remove distribution box from hull (WP 0773 00). Check terminal board and circuit breaker. Tighten loose connection. Install distribution box on hull (WP 0773 00).</p>	



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

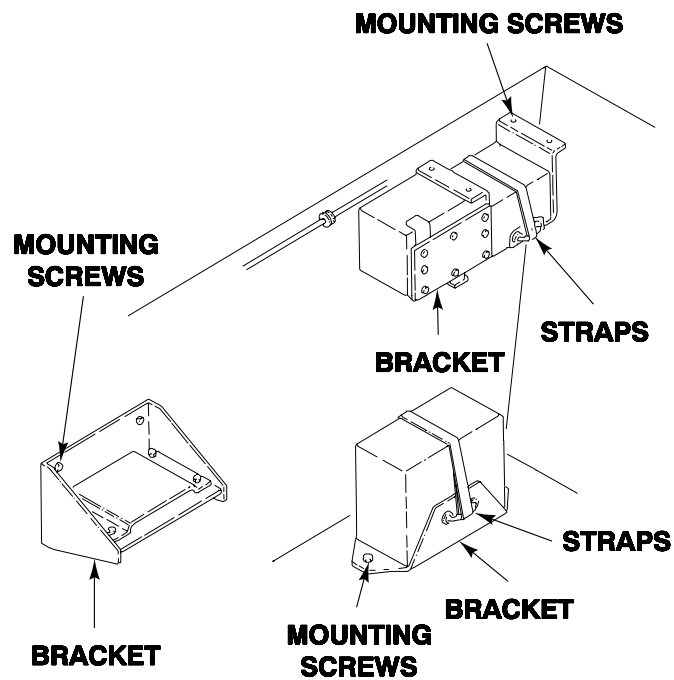
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p style="text-align: center;">NOTE</p> <p>Additional data on chemical Agent Automatic Alarm Kit for the M113 FOV can be found in: Operator's and Unit Manual TM 3-6665-225-12 Repair Parts and Special Tools List TM 9-2350-261-24P</p> <p>d. Check mounting screws on junction box. Tighten loose screws in junction box. TIGHTEN LOOSE SCREWS TO 72 LB-IN (8 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 100) and socket set (WP 0780 00, Item 96).</p> <p>e. Check grommet. Replace cracked or worn grommet.</p> <p>f. Check cable and circuit breaker terminal. Tighten loose connections. Replace damaged terminals (WP 0774 00).</p> <p>g. Check cables. Replace frayed or cracked cables (WP 0775 00).</p>  <p>The diagram shows a perspective view of a rectangular junction box. Two cables are connected to the top of the box. One cable is labeled 'CABLES' with an arrow pointing to it. The junction box is labeled 'JUNCTION BOX' with an arrow pointing to it. Two screws on the front face of the box are labeled 'MOUNTING SCREWS' with an arrow pointing to them.</p>	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>h. Check brackets. Replace cracked or broken brackets.</p> <p>i. Check mounting screws. TIGHTEN SCREWS TO 264-285 LB-IN (30-32 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 102) and socket set (WP 0780 00, Item 96).</p> <p>j. Check straps. Replace worn straps.</p>	



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
106	Semi-annual		Engine Coolant Heater Kit	<p>a. Perform preventive maintenance checks every 750 miles (1,207 km), 75 hours, or semiannually, whichever comes first.</p> <p>b. Tighten mounting screws and clamps.</p> <p>c. Check heater inlet for debris.</p> <p>d. Check pump for leaks. Tighten connections that leak.</p>	Any fuel, coolant, or exhaust leaks.

CLAMPS

CLAMPS

MOUNTING SCREWS

PUMP

MOUNTING SCREWS

MOUNTING SCREWS

HEATER INLET

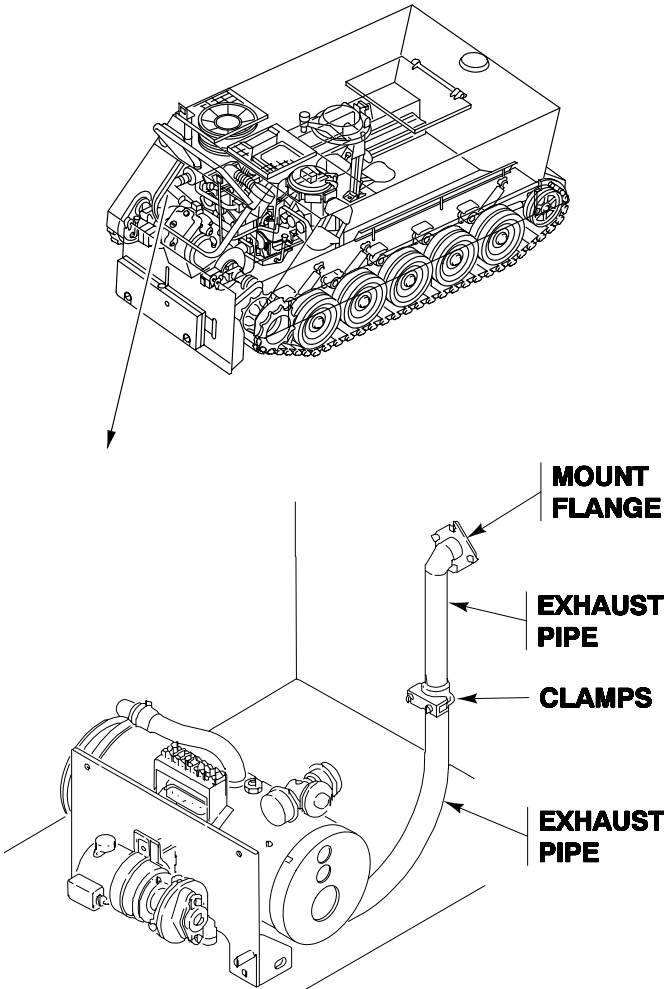
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>e. Check heat exchanger and hose connections for leaks. Tighten connections that leak. Replace connections that continue to leak.</p> <p>f. Check hose. Replace damaged hose (WP 0642 00, WP 0643 00, or WP 0645 00).</p> <div> </div>	

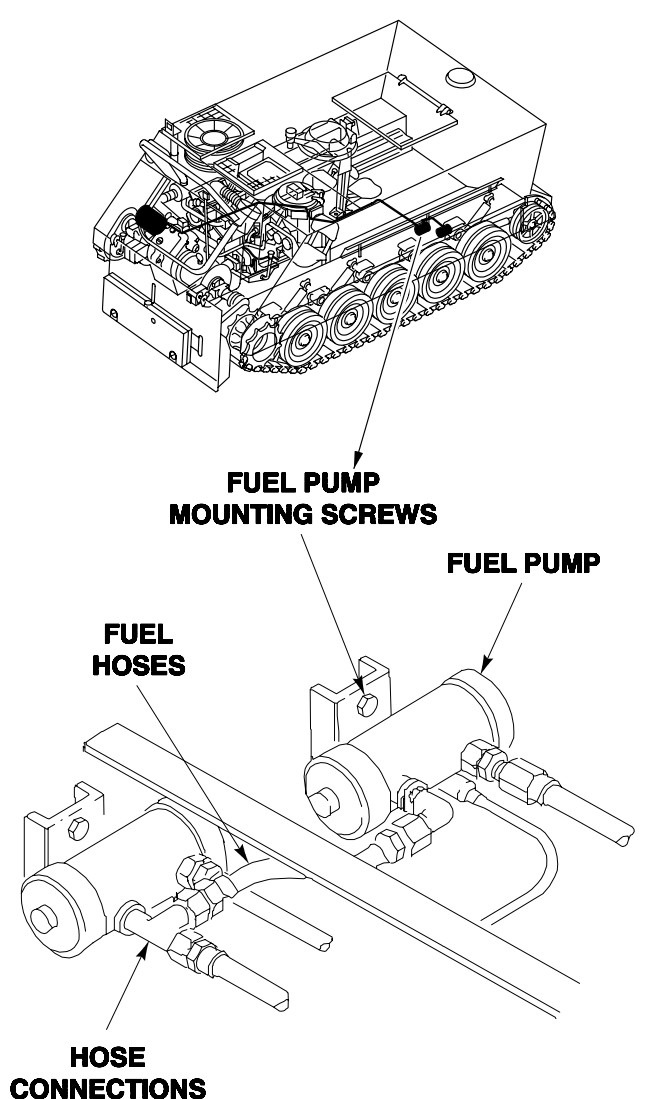
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>g. Check clamps and mount flange for exhaust leaks. Tighten clamp. Replace bad flange gaskets (WP 0647 00).</p> <p>h. Check exhaust pipe. Replace cracked or damaged pipe.</p>	
<div></div>					

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>i. Check fuel hoses, other hose connections, and fuel pump for leaks. Tighten connections that leak. Replace connections that continue to leak.</p> <p>j. Service fuel pump (WP 0639 00).</p> <p>k. Tighten fuel pump mounting screws.</p> <div>  <p>The diagram consists of two parts. The top part is a perspective view of a vehicle chassis showing the engine and fuel pump assembly. An arrow points from the text 'FUEL PUMP MOUNTING SCREWS' to the screws securing the pump. The bottom part is a detailed view of the fuel pump assembly. It shows the 'FUEL PUMP' mounted on a bracket. 'FUEL HOSES' are connected to the pump. 'HOSE CONNECTIONS' are shown at the ends of the hoses. The text 'FUEL PUMP' is also present near the pump itself.</p> </div>	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<ol style="list-style-type: none"> l. Check electrical leads and connectors at heater, at control box, and at fuel pump. Tape frayed leads. Replace damaged connectors (WP 0649 00). m. Check heater control box, switches, and light bulbs. Tighten or replace bad switches and bulbs (WP 0648 00). n. Start, run, and stop heater (see your -10). During start cycle, verify that switches and lights work properly. o. During operation, check for unusual noises. Check for increase in coolant temperature. p. When stopping heater, check for correct purge cycle. Verify that indicator lights properly. If heater does not operate as specified above, perform troubleshooting (WP 0070 00). 	<p>Heater fails to cycle for proper shutdown.</p> <p>Any faults that would prevent proper operation.</p>

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p>The diagram illustrates the electrical system components and their interconnections. It includes a heater assembly with its own control box, a fuel pump, and various electrical leads and connectors. A central cutaway view of the engine compartment shows the internal layout of these components. Arrows point from text labels to the specific parts in the diagram.</p>					

CLIP

DOOR

CLIP

DOOR

CLIP

DOOR

DOOR

RIGHT ARMOR SHIELD

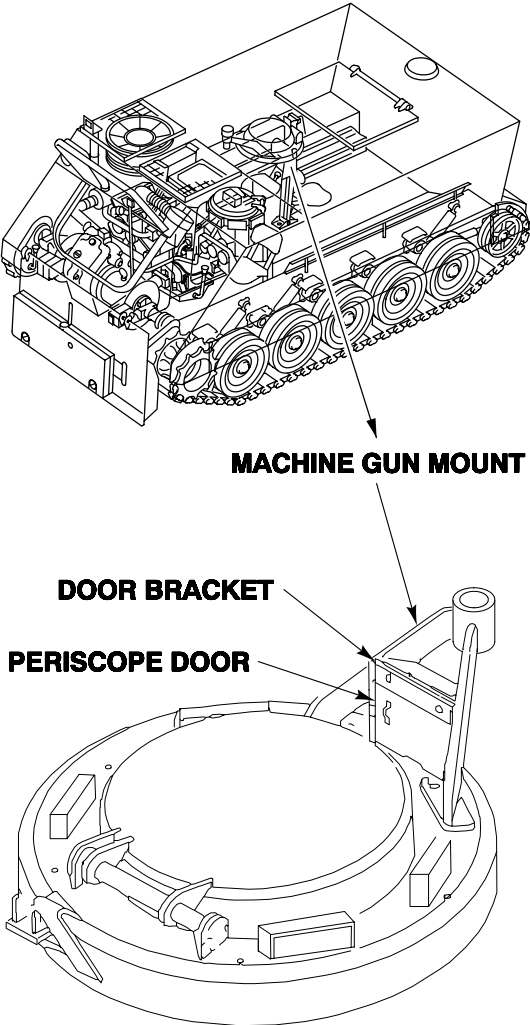
CLAMP

STORAGE STRAP

LEFT ARMOR SHIELD

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<div><div>d. Check periscope door and door bracket on machine gun mount.</div><div>e. Straighten dents and bends. Replace cracked parts.</div></div> <div><p>The diagram consists of two parts. The top part is a perspective view of a tank turret with a machine gun mounted on top. An arrow points from the text 'MACHINE GUN MOUNT' to the gun's base. The bottom part is a top-down view of the machine gun mount. It shows a circular base with a central opening. An arrow points from the text 'DOOR BRACKET' to a bracket on the right side of the mount. Another arrow points from the text 'PERISCOPE DOOR' to a door on the left side of the mount.</p></div>	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued

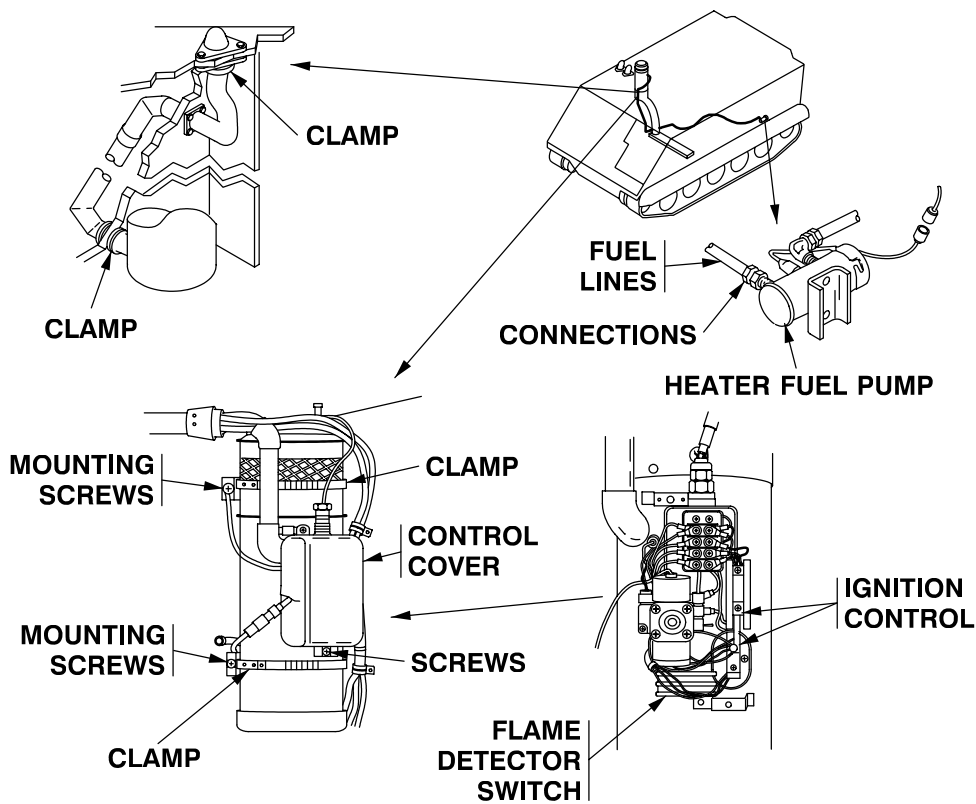
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<div><div><div>f. Check left armor shield. Repair or replace cracked shield.</div><div>g. Check straps. Replace worn or damaged straps.</div><div>h. Check mounting arm. Replace damaged mounting arm.</div><div>i. Check gun strap. Replace damaged strap.</div><div>j. Check bracket and clip. Replace cracked or bent bracket.</div><div>k. Check right gun traverse restrictor. Replace restrictor that has cracked rod or spring.</div></div></div>	
<div><div><div><div>STRAP</div><div>STRAP</div><div>LEFT ARMOR SHIELD</div></div><div><div>LEFT ARMOR SHIELD</div><div>MOUNTING ARM</div><div>RIGHT GUN TRAVERSE RESTRICTOR</div></div><div><div>BRACKET AND CLIP</div><div>GUN STRAP</div></div></div></div>					

0120 00-139

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

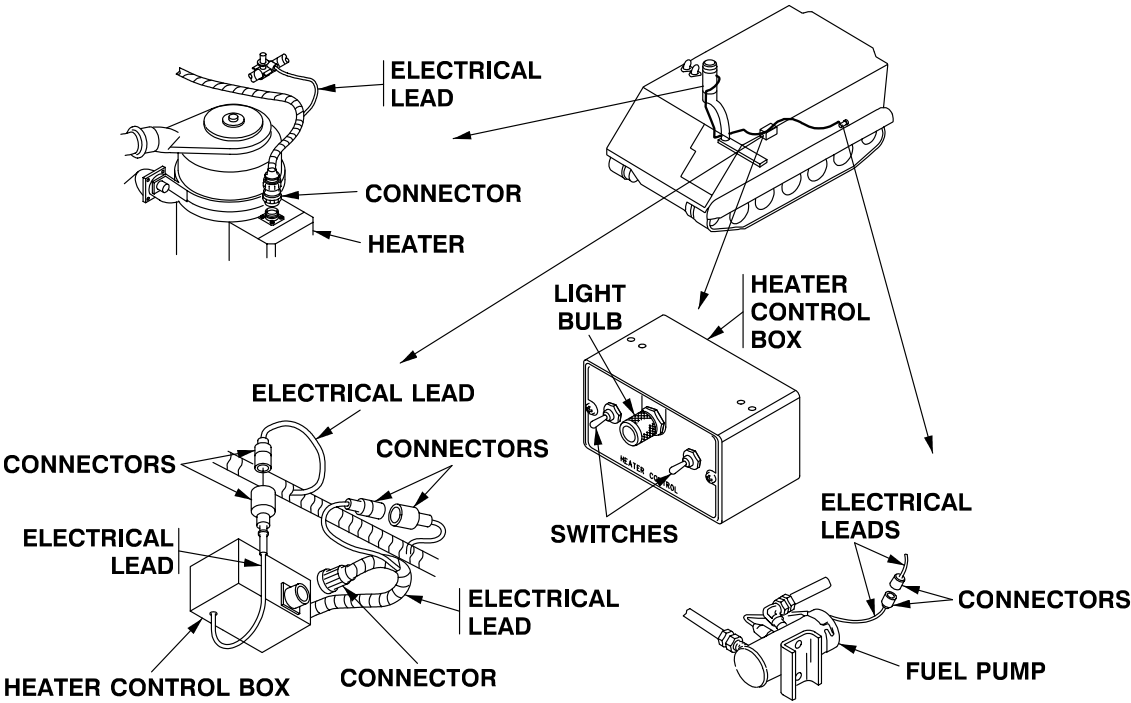
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
108	Semi-annual		Personnel Heater Kit	<p>a. Tighten loose mounting screws and clamps.</p> <p>b. Remove control cover by turning two screws to the left.</p> <p>c. Check flame detector switch and ignition control. See TM 9-2540-205-24&P or TM 9-2540-207-14&P.</p>	Any fuel, coolant, or exhaust leaks.
 <p>The diagram illustrates the components and assembly of a Personnel Heater Kit. It includes several sub-diagrams: 1. A top-left view showing a fuel line connection with a clamp. 2. A top-right view showing the heater fuel pump with fuel lines and connections. 3. A bottom-left view showing the heater unit with mounting screws and clamps. 4. A bottom-right view showing the control cover and ignition control. Labels include: CLAMP, CLAMP, FUEL LINES, CONNECTIONS, HEATER FUEL PUMP, MOUNTING SCREWS, CLAMP, CONTROL COVER, SCREWS, CLAMP, FLAME DETECTOR SWITCH, and IGNITION CONTROL.</p>					
				<p>d. Check heater fuel pump, fuel lines, and connections for leaks. Replace connections that continue to leak.</p> <p>e. Check for signs of exhaust leaks. Tighten clamps.</p>	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<div><div>f.</div><div>Check electrical leads and connectors at heater, at heater control box, and at fuel pump. Tape leads if frayed. Replace damaged connectors (WP 0555 00 or WP 0613 00).</div><div>g.</div><div>Check heater control box, switches, and light bulb. Tighten or replace bad switches and bulbs (WP 0555 00 or WP 0613 00).</div><div>h.</div><div>Start, run, and stop heater (see your -10). During start cycle, check that switches and light work properly. Check for increase in blower speed after ignition.</div><div>i.</div><div>During operation, check for unusual noises. Check for differences between high and low heat levels.</div><div>j.</div><div>When stopping heater, check for correct purge cycle. Verify that indicator light operates properly. If heater does not operate as specified above, perform troubleshooting (WP 0069 00).</div></div>	



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

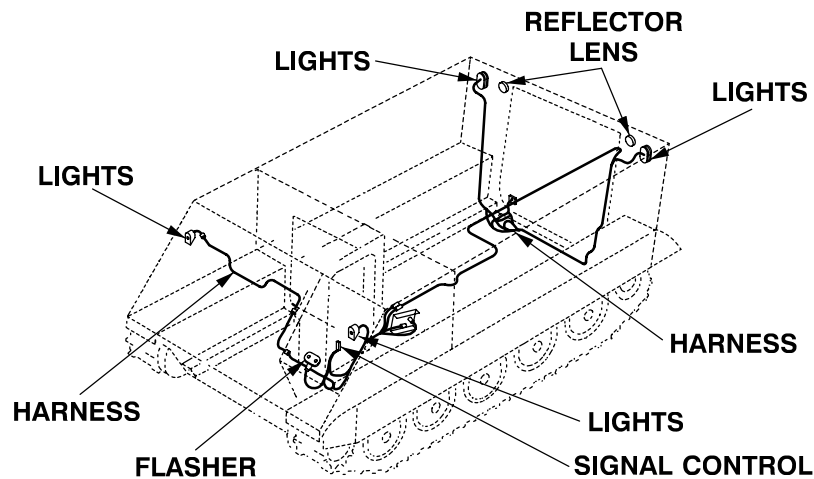
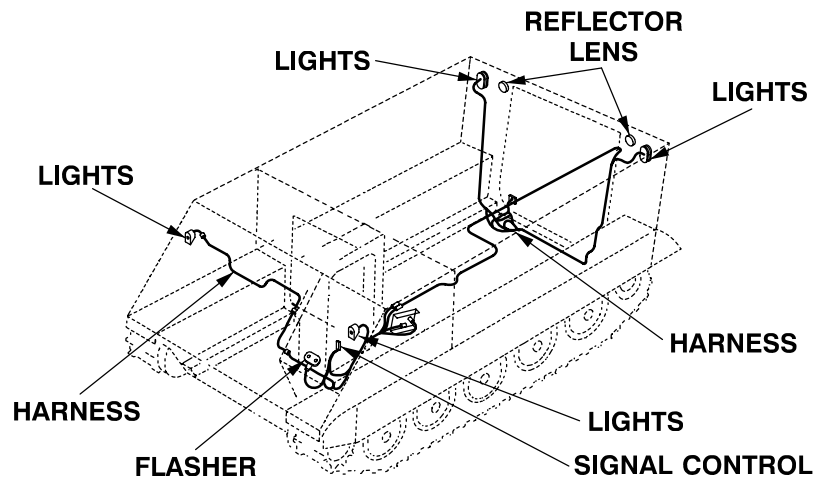
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
109	Semi-annual		Driver's Windshield Kit	<ol style="list-style-type: none"> Clean windshield with clean water. Check windows. Replace cracked or chipped windshield Check windshield. Replace windshield that has broken or missing legs. Check mounting bracket and plates. Replace damaged brackets and plates. Check windshield canvas. Repair tears with sealing tape or replace windshield. 	
110	Semi-annual		Turn Signal Lights, Stoplights, Blackout Stoplights, Dome Lights, Fluorescent Lights, and Switches	<ol style="list-style-type: none"> Test operation of lights with signal control in all four operating positions. Repair or replace damaged or discolored lenses. Repair or replace defective lights, control, flasher, and lights. 	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

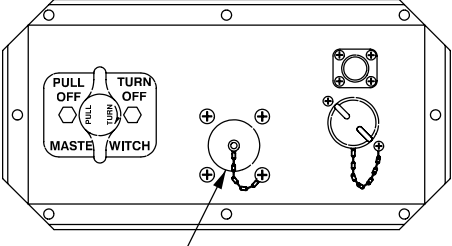
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
111	Semi-annual		Reflectors	a. Check reflectors lens. Replace damaged or missing lens.	
112	Semi-annual		Electrical Wiring	a. Tighten electrical connections and mounting brackets. Tape frayed harness. Replace missing or damaged connectors.	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued

0120 00

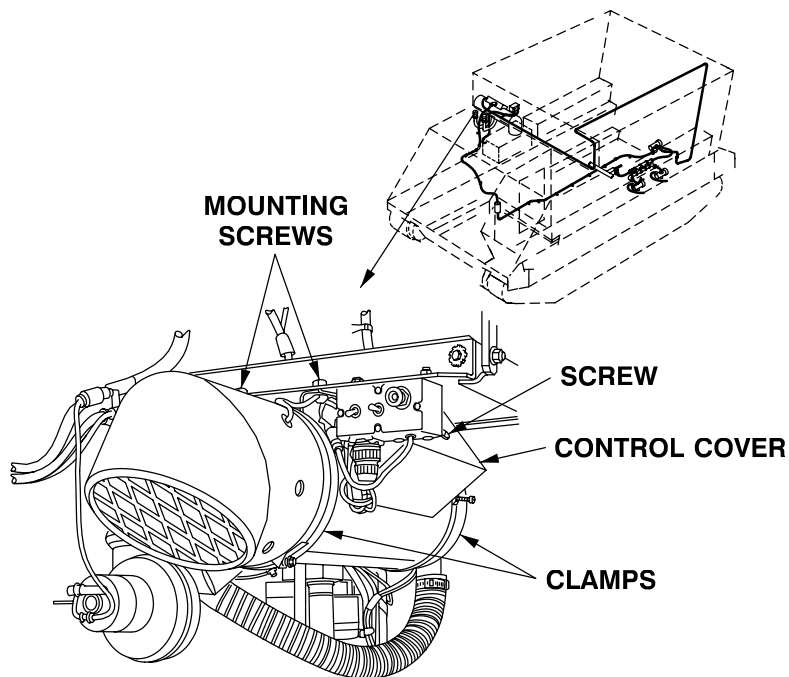
ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
113	Semi-annual		Slave Cable	<div><p>NOTE</p><p>Location varies by model.</p><p>a. Check the slave cable receptacle and cap for damage, burnt condition, and corrosion.</p><div></div><p>SLAVE CABLE RECEPTACLE AND CAP</p></div>	

0120 00-145

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

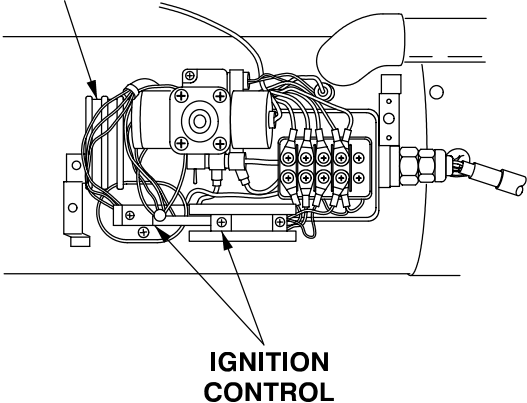
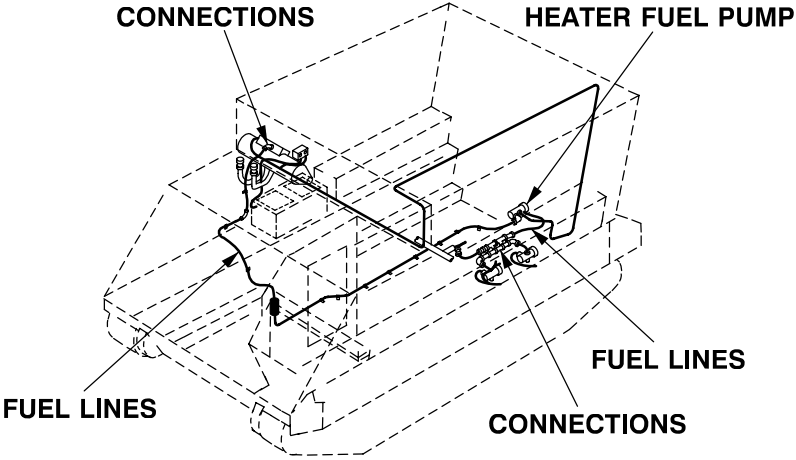
0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
115	Semi-annual		Electronic Equipment Heater (M577A2 Only)	<p>NOTE</p> <p>Electronic equipment heater is completely removed if the 5.0 KW APU is installed.</p> <ol style="list-style-type: none"> Tighten loose mounting screws and clamps. Remove control cover by turning screw to the left. 	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
116	Semi-annual			<p>c. Check flame detector switch and ignition control. See TM 9-2540-205-24&P.</p> <div><p>FLAME DETECTOR SWITCH</p><p>IGNITION CONTROL</p></div>	
			Fuel System (M577A2 Only)	<p>a. Check heater fuel pump, fuel lines, and connections. Tighten connections that leak. Replace connections that continue to leak.</p> <div><p>CONNECTIONS</p><p>HEATER FUEL PUMP</p><p>FUEL LINES</p><p>CONNECTIONS</p></div>	Any fuel leaks.

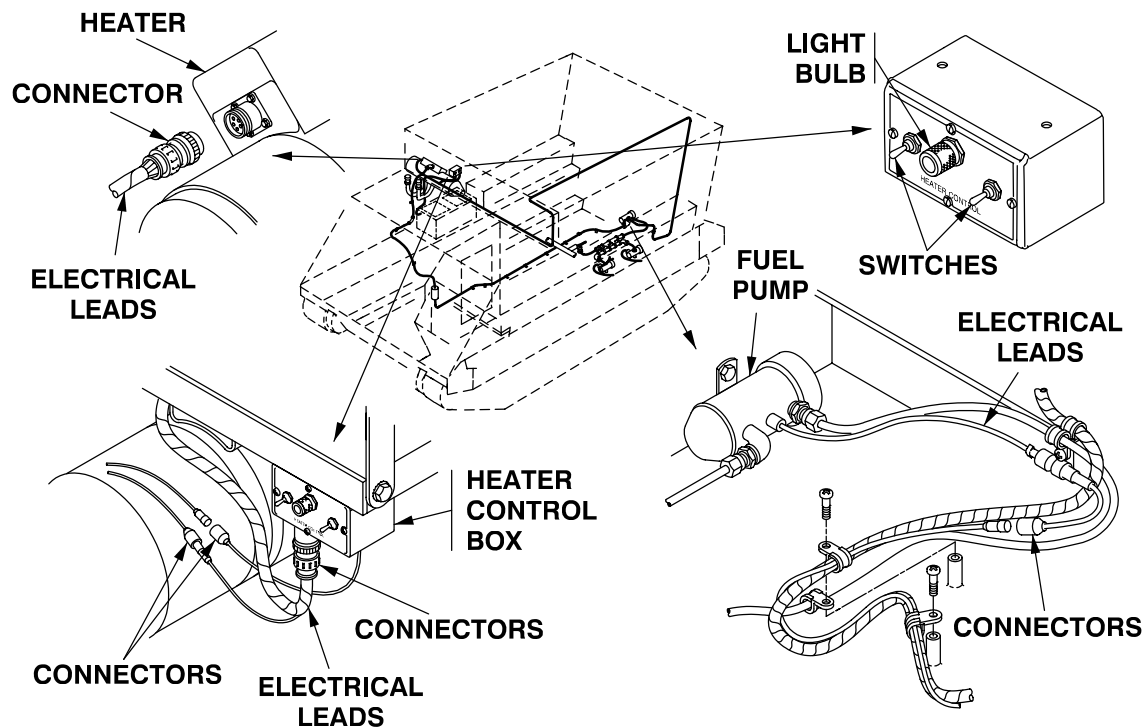
CLAMP

0120 00-149

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
119	Semi-annual		Performance Test (M577A2 Only)	<p>a. Start and run heater (see your -10). During start cycle, check that switches and light work right. Check for increase in blower speed after ignition.</p> <p>b. During operation, check for unusual noises. Check for differences between high and low heat levels. When stopping heater, check for correct purge cycle. Check that indicator light operates properly. If heater does not operate as specified above, perform troubleshooting (WP 0069 00).</p>	



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

Table 19. Annual Unit Level Preventive Maintenance Checks and Services for M113A2 FOV

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	CREWMEMBER PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	Annual	0.4	Carrier	<p>a. Lubricate tachometer and speedometer shafts annually with GIA (Table 11, page 0120 00-17).</p> <p>b. Disconnect shafts at both ends (WP 0246 00 and WP 0248 00), remove slotted washers from drive ends of cores, and remove cores from instrument panel end of shafts.</p> <p>c. Clean, inspect, and lubricate cores. Insert cores in shafts. Install slotted washers and connect both ends of shafts. If tachometer adapter has a grease fitting, lubricate sparingly with GIA.</p>	

The diagrams illustrate the mechanical components for lubrication. The top diagram shows a tachometer shaft assembly with a label 'TACHOMETER SHAFT (A)' pointing to a specific part and 'TACHOMETER SHAFT' pointing to the main shaft. The middle diagram shows a speedometer shaft assembly with labels 'SPEEDOMETER SHAFT' and 'SPEEDOMETER SHAFT (A)'. The bottom diagram shows a close-up of a shaft assembly with a label 'SPEEDOMETER SHAFT (A)'.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING
LUBRICATION INSTRUCTIONS — Continued**

0120 00

The following list of parts are required when performing semi-annual, annual, or on-condition PMCS. The semi-annual parts list contain the mandatory replacement parts for one semi-annual PMCS. The annual parts list contains the mandatory replacement parts for one semi-annual PMCS combined with the mandatory replacement parts for one (1) annual PMCS. The on-condition parts list contains replacement parts that are required when engine and transmission oil changes are directed by the Army Oil Analysis Program (AOAP) Laboratory. If AOAP Laboratory support is not available, change oil and filter elements/gasket every 150 hours/1500 miles or annually.

Table 20. SEMI-ANNUAL (1500 MILES)

Item No.	Part Number	NSN	Nomenclature	Qty
1	MS28775-126	5305-00-702-1048	PACKING	1

Table 21. ANNUAL (1500 MILES)

Item No.	Part Number	NSN	Nomenclature	Qty
1	MS287758-126	5330-00-702-1048	PACKING	1
2	10874832	4730-00-766-4714	FILTER	1
3	8756978	5310-00-655-9669	KEY WASHER	4
4	MS28775-231	5330-00-527-7025	PACKING	1
5	5574161	5330-00-846-9841	GASKET	1
6	CW226MP	2910-00-287-1912	FILTER, ELEMENT	1
7	5574126	5330-00-612-3123	GASKET	1
8	1503536	5330-00-551-0433	GASKET	1
9	T552	2940-00-745-7730	FILTER, ELEMENT	1

Table 22. ON-CONDITION (1500 MILES)

Item No.	Part Number	NSN	Nomenclature	Qty
1	MS35802-3	2940-00-580-6283	FILTER, ELEMENT	1
2	5571024	5330-00-290-7860	GASKET	1
3	5187310	5330-01-604-8094	PACKING	1
4	MS35769-21	5330-00-514-3289	GASKET	1
5	C-1670	2940-00-678-0641	FILTER, ELEMENT	1
6	6772423	5330-00-064-6589	PACKING	1
7	6772373	5330-00-999-3756	PACKING	1

CHAPTER 4

UNIT MAINTENANCE INSTRUCTIONS
FOR ENGINE-RELATED COMPONENTS

WORK PACKAGE INDEX

<u>Title</u>	<u>Sequence No.</u>
ENGINE OIL FLOW DIAGRAM.....	0121 00
REPLACE FRONT ENGINE MOUNT.....	0122 00
REPLACE ENGINE OIL FILTER ELEMENT AND PARTS.....	0123 00
REPLACE ENGINE OIL FILTER ASSEMBLY.....	0124 00
REPLACE ENGINE OIL FILTER BRACKET, HOSES, AND FITTINGS.....	0125 00
REPLACE AIR BOX DRAIN HOSES, TUBES, AND FITTINGS.....	0126 00
REPLACE CRANKCASE BREATHER COLLECTOR CAN AND HOSE.....	0127 00
REPLACE OIL FILLER CAP AND TUBE.....	0128 00
REPLACE OIL GAUGE ROD AND GUIDE.....	0129 00

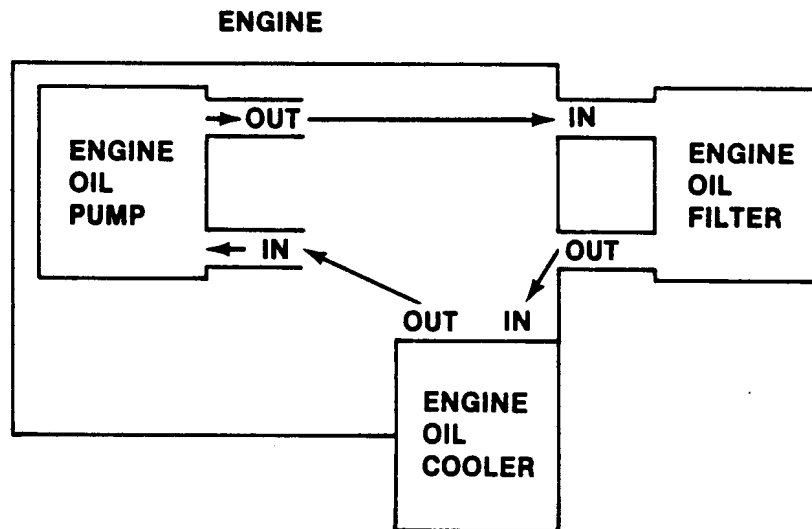
ENGINE OIL FLOW DIAGRAM

0121 00

THIS WORK PACKAGE COVERS:

INITIAL SETUP:Maintenance LevelUnit

This task shows the engine oil flow in the M113A2 FOV carriers.

**END OF TASK**

REPLACE FRONT ENGINE MOUNT

0122 00

THIS WORK PACKAGE COVERS:

Removal (page 0122 00-1).
Installation (page 0122 00-2).

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)
Torque Wrench (WP 0780 00, Item 103)

References

WP 0131 00

Materials/Parts

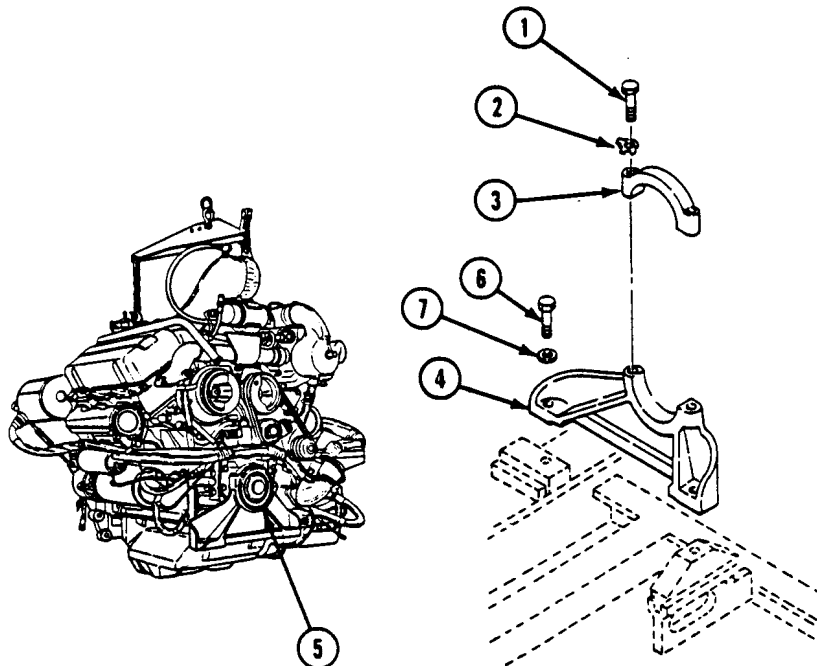
Antiseize compound (WP 0782 00, Item 8)
Sealing compound (WP 0782 00, Item 60)
Key washer (2)

Equipment Condition

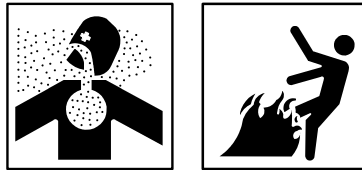
Engine stopped (see your -10)
Carrier blocked (see your -10)

REMOVAL

1. Remove two screws (1), key washers (2), and cap (3) from base (4) on engine (5). Discard key washers.
2. Remove power plant (WP 0131 00).
3. Remove two self-locking bolts (6) and washers (7) from base (4) on engine (5). Remove base from engine.



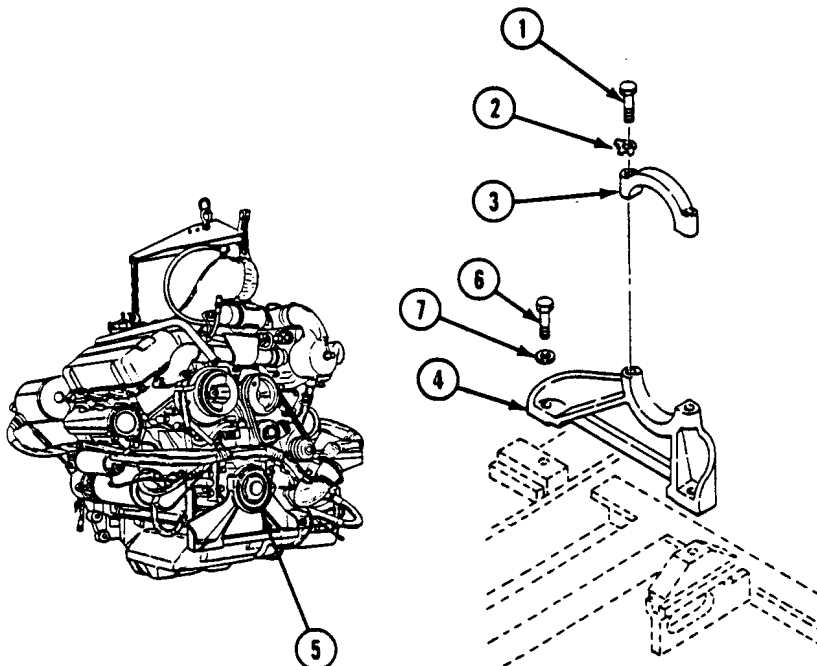
INSTALLATION

WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin coat of antiseize compound and sealing compound to cleaned threads of two screws (1) and self-locking bolts (6).
2. Install base (4) on engine (5) with two self-locking bolts (6) and washers (7).
3. Install power plant (WP 0131 00).
4. Install cap (3) on base (4) with two new key washers (2) and screws (1).
5. TIGHTEN TWO SCREWS (1) TO 30-35 FT-LB (41-48 N·M) TORQUE. TIGHTEN TWO SELF-LOCKING BOLTS (6) TO 90-100 FT-LB (122-135 N·M) TORQUE. Use torque wrench.



END OF TASK

REPLACE ENGINE OIL FILTER ELEMENT AND PARTS

0123 00**THIS WORK PACKAGE COVERS:**

Removal (page 0123 00-1).
Installation (page 0123 00-3).

INITIAL SETUP:Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Torque Wrench (WP 0780 00, Item 103)

References

See your -10

Equipment Condition

Engine stopped/shutdown (see your -10)

Driver's power plant access panel removed
(WP 0430 00)Materials/Parts

Engine lubricating oil (WP 0782 00, Item 19)

Sealing compound (WP 0782 00, Item 60)

Gasket

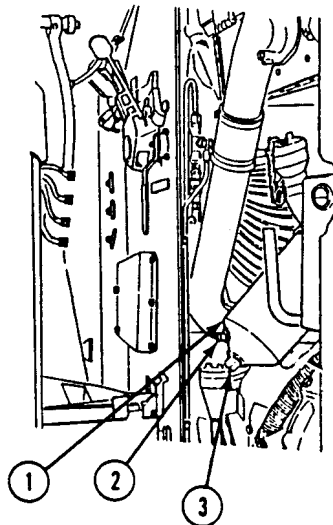
Gasket

Preformed packing

Suitable container

REMOVAL

1. Place suitable container under oil filter housing (1).
2. Remove drain plug (2) from housing (1) and drain oil.



REPLACE ENGINE OIL FILTER ELEMENT AND PARTS — Continued

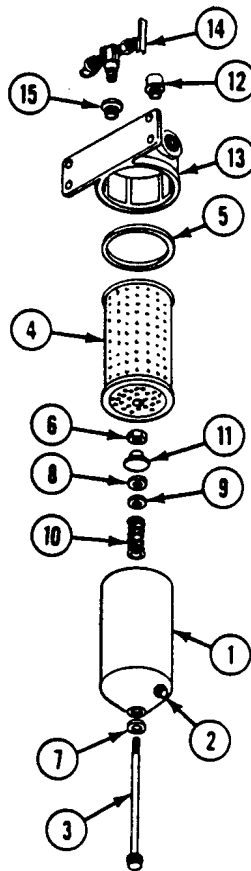
0123 00

3. Back out retaining bolt (3). Remove housing (1), element (4), gasket (5), and bolt. Discard filter element and gasket.

NOTE

If only filter element is being replaced, go to Step 9.

4. Remove nut (6) from bolt (3).
5. Remove bolt (3) and gasket (7) from housing (1). Discard gasket.
6. Remove element preformed packing (8) and bolt (3). Discard preformed packing.
7. Remove washer (9), spring (10), and retainer (11) from bolt (3).
8. If needed, remove plug (12) from head (13).
9. Remove valve (14) and bushing (15) from filter head (13).

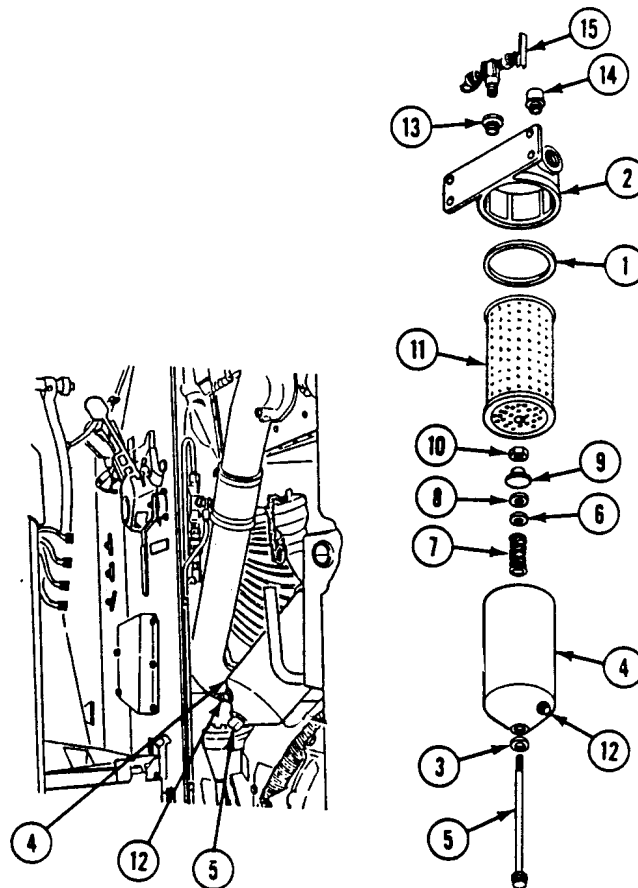


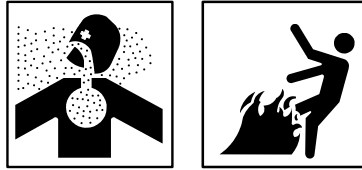
INSTALLATION

NOTE

If only filter element is being replaced, do Step 1, Steps 4 - 7, and Steps 12 - 13.

1. Apply a thin coat of engine oil on new gasket (1). Install gasket in filter head (2).
2. Install new gasket (3) on housing (4). Install bolt (5) in housing.
3. Install washer (6), spring (7), new preformed packing (8), and retainer (9) on bolt (5). Secure with nut (10).
4. Place new filter element (11) very carefully over bolt (5) in housing (4).
5. Install housing (4) with new element (11) on head (2).
6. Install drain plug (12) in housing (4).
7. TIGHTEN BOLT (5) TO 50-60 LB-FT (68-81 N·M) TORQUE. Use torque wrench.

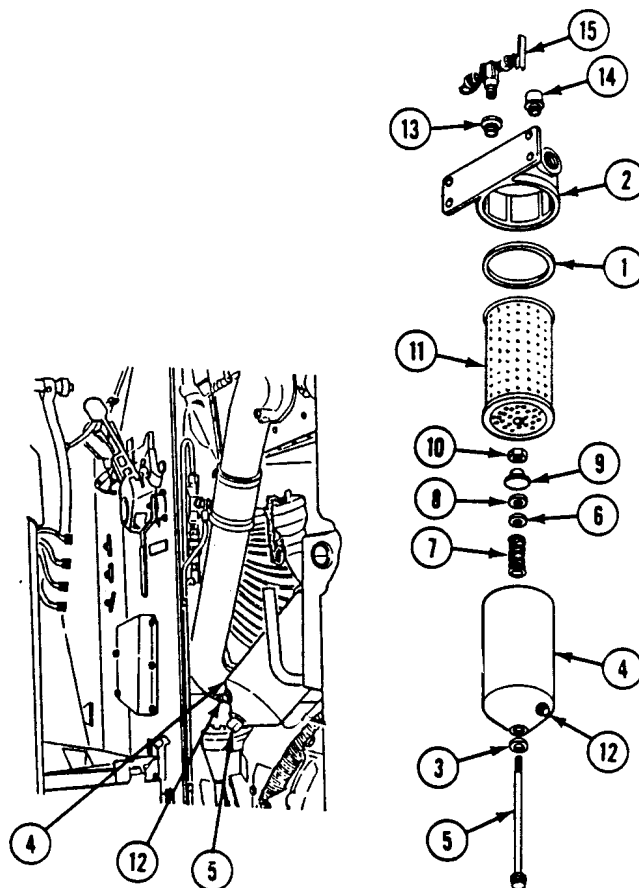


WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

8. Apply a thin coat of sealing compound to cleaned external threads of plug (14) and bushing (13).
9. If removed, install plug (14) in head (2).
10. Install bushing (13) in head (2).
11. Install valve (15) in bushing (13).



WARNING

Carbon monoxide is poisonous and can kill you. Do not idle engine with driver's power plant access panel off unless there is VERY GOOD AIR FLOW.

12. Start engine (see your -10). Check for oil leaks.
13. Stop engine (see your -10). Wait about 20 minutes for oil to drain back to pan, then check oil level. Add oil if needed (WP 0120 00).

FOLLOW-THROUGH STEPS

1. Install power plant bottom access cover (WP 0430 00).

END OF TASK

REPLACE ENGINE OIL FILTER ASSEMBLY**0124 00****THIS WORK PACKAGE COVERS:**

Removal (page 0124 00-1).
 Installation (page 0124 00-2).

INITIAL SETUP:Maintenance Level

Unit

References

See your -10

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Ramp lowered (see your -10)

Driver's power plant access panel removed
(WP 0430 00)Materials/Parts

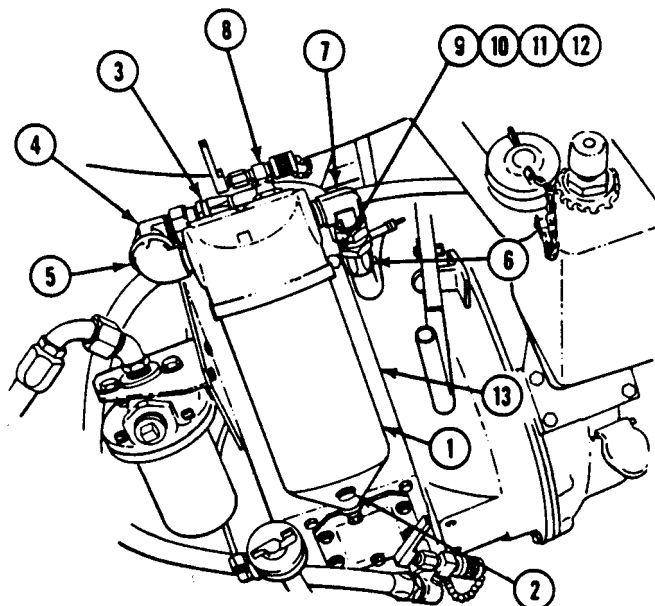
Sealing compound (WP 0782 00, Item 60)

Personnel Required

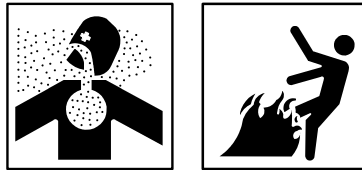
Unit Mechanic

REMOVAL

1. Place container of suitable size under oil filter assembly (1).
2. Remove drain plug (2) from filter assembly (1). Allow oil to drain.
3. Disconnect oil hose (3) from elbow (4).
4. Remove elbow (4) from elbow (5).
5. Remove elbow (5) from filter assembly (1).
6. Disconnect oil hose (6) from elbow (7).
7. Remove elbow (7) from filter assembly (1).
8. Remove sampling valve (8).
9. Remove four screws (9), two washers (10), four nuts (11), two clamps (12), and filter assembly (1) from bracket (13).



INSTALLATION

WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

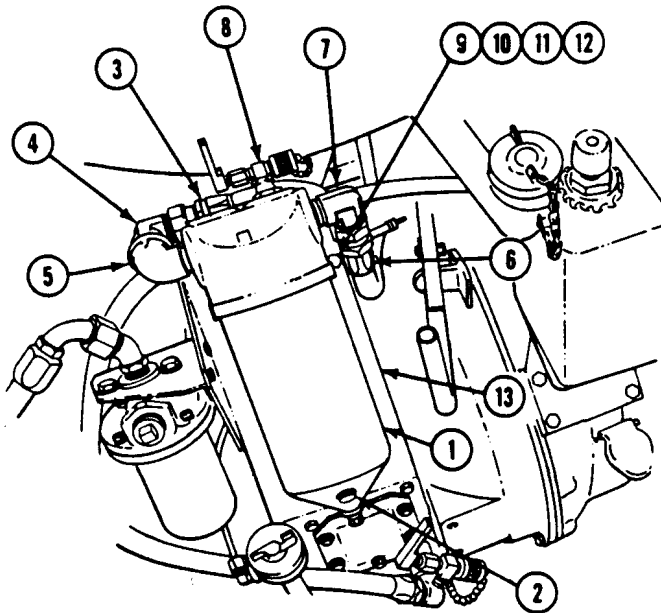
Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin coat of sealing compound to clean external threads of elbows (4), (5), and (7) before installation.

NOTE

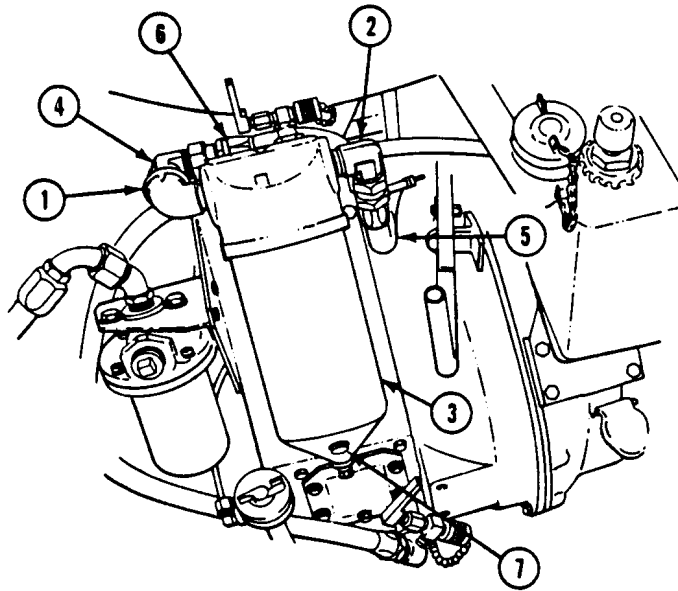
Washers (10) are used on the two top screws only.

2. Install filter assembly (1) and two clamps (12) on bracket (13). Secure with four screws (9), two washers (10), and four nuts (11).
3. Install sampling valve (8).



REPLACE ENGINE OIL FILTER ASSEMBLY — Continued**0124 00**

4. Install two elbows (1) and (2) in filter assembly (3).
5. Install elbow (4) in elbow (1).
6. Connect oil hose (5) to elbow (2).
7. Connect oil hose (6) to elbow (4).
8. Install drain plug (7) in filter assembly (3).

**WARNING**

Carbon monoxide is poisonous and can kill you. Do not idle engine with driver's power plant access panel off unless there is VERY GOOD AIR FLOW.

9. Start engine (see your -10). Check filter assembly for leaks.
10. Stop engine (see your -10). Wait about 20 minutes for oil to drain back to pan, then check oil level. Add oil if needed (WP 0120 00).

FOLLOW-THROUGH STEPS

1. Install power plant bottom access cover (WP 0430 00).
2. Raise and lock ramp (see your -10).
3. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE ENGINE OIL FILTER BRACKET, HOSES, AND FITTINGS0125 00

THIS WORK PACKAGE COVERS:

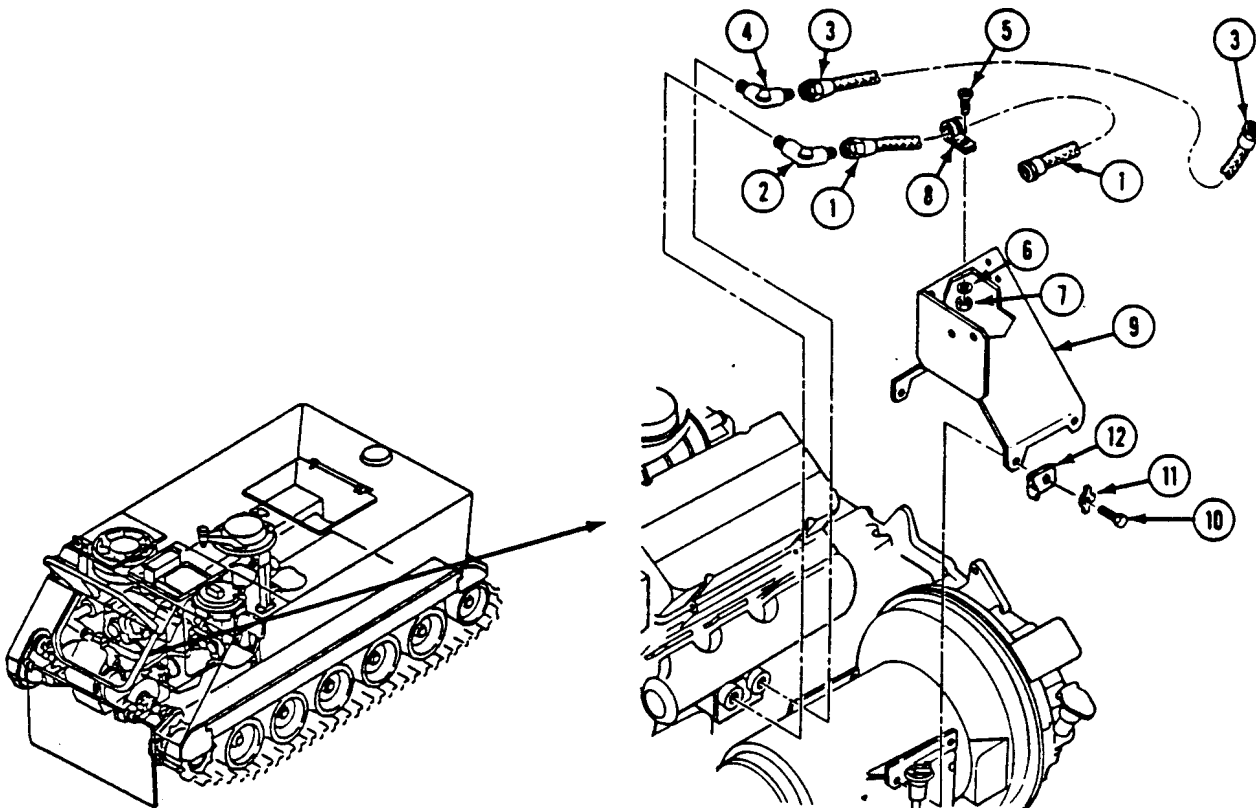
- Removal (page 0125 00-2).
 - Installation (page 0125 00-3).
-

INITIAL SETUP:

<u>Maintenance Level</u>	<u>Personnel Required</u>
Unit	Unit Mechanic
<u>Tools and Special Tools</u>	<u>Equipment Condition</u>
Adjustable Wrench (WP 0780 00, Item 87)	Engine stopped/shutdown (see your -10)
General Mechanic’s Tool Kit (WP 0780 00, Item 29)	Carrier blocked (see your -10)
Open End Wrench Set (WP 0780 00, Item 94)	Power plant removed (WP 0131 00)
<u>Materials/Parts</u>	Engine oil filter assembly removed (WP 0124 00)
Antiseize compound (WP 0782 00, Item 8)	Differential oil filter assembly removed (WP 0355 00)
Sealing compound (WP 0782 00, Item 60)	
Tab washer (4)	

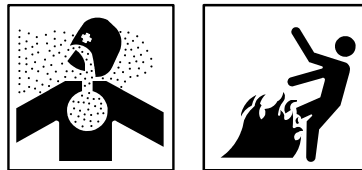
REPLACE ENGINE OIL FILTER BRACKET, HOSES, AND FITTINGS — Continued**0125 00****REMOVAL**

1. Disconnect engine oil hose (1) from elbow (2) and engine oil hose (3) from elbow (4). Use adjustable and open end wrenches.
2. Remove two elbows (2) and (4) from engine block.
3. Remove screw (5), washer (6), nut (7), clamp (8), and engine oil hose (1) from bracket (9).
4. Remove clamp (8) from engine oil hose (1).
5. Remove four screws (10), tab washers (11), oil filler tube bracket (12), and bracket (9) from transmission. Discard tab washers.



INSTALLATION

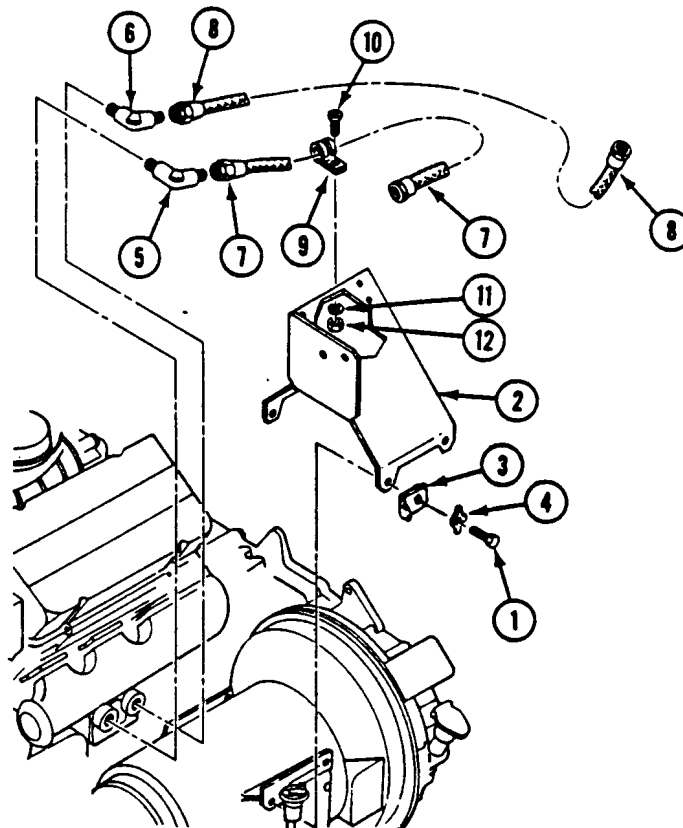
1. Apply a thin coat of antiseize compound to clean threads of four screws (1).
2. Place bracket (2) and oil filler tube bracket (3) on transmission. Secure with four screws (1) and new tab washers (4).

WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

3. Apply a thin coat of sealing compound to cleaned external threads of two elbows (5) and (6).
4. Install two elbows (5) and (6) in engine block.
5. Connect engine oil hose (7) to elbow (5) and engine oil hose (8) to elbow (6). Use adjustable and open end wrenches.
6. Install clamp (9) on engine oil hose (7). Secure clamp to bracket (2) with screw (10), washer (11), and nut (12).



REPLACE ENGINE OIL FILTER BRACKET, HOSES, AND FITTINGS — Continued

0125 00**FOLLOW-THROUGH STEPS**

1. Install differential oil filter assembly (WP 0355 00).
2. Install engine oil filter assembly (WP 0124 00).
3. Install power plant (WP 0131 00).
4. Start engine (see your -10).
5. Stop/shutdown engine (see your -10). Wait about 20 minutes for oil to drain back to pan, then check oil level. Add oil if needed (WP 0120 00).

END OF TASK

REPLACE AIR BOX DRAIN HOSES, TUBES, AND FITTINGS**0126 00****THIS WORK PACKAGE COVERS:**

Removal (page 0126 00-1).

Installation (page 0126 00-2).

INITIAL SETUP:Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Socket Set (WP 0780 00, Item 96)

Torque Wrench (WP 0780 00, Item 102)

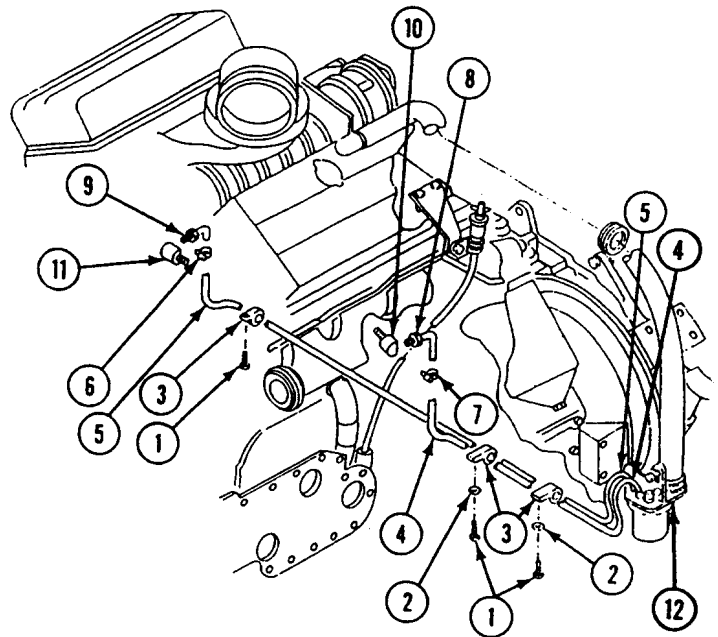
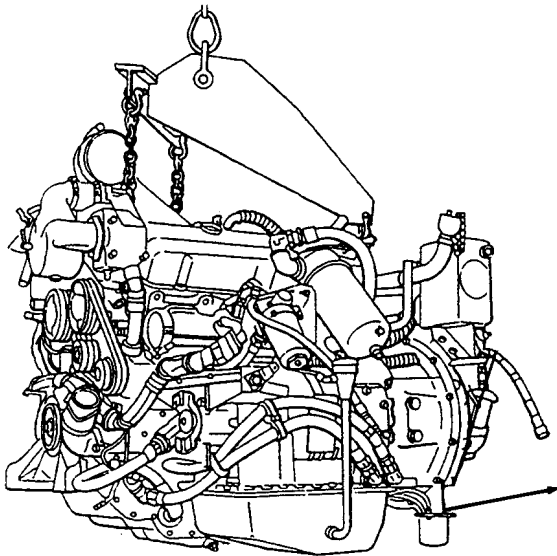
Equipment Condition

Power plant removed (WP 0131 00)

Starter removed (WP 0236 00)

REMOVAL

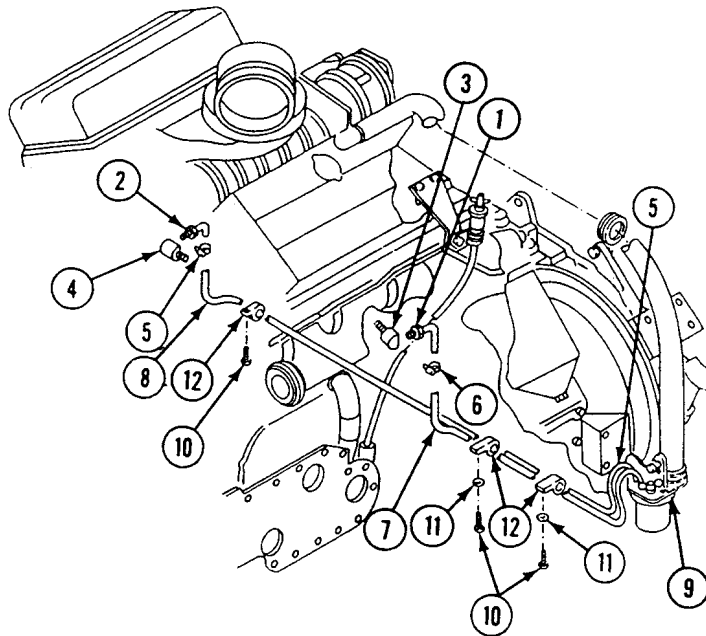
1. Remove three screws (1), two washers (2), and three clamps (3), securing two drain hoses (4) and (5) to engine.
2. Loosen two hose clamps (6) and (7) on two drain hoses (4) and (5).
3. Disconnect two drain hoses (4) and (5) from two tube assemblies (8) and (9).
4. Remove two hose clamps (6) and (7) from two drain hoses (4) and (5).
5. Remove two tube assemblies (8) and (9) from elbows (10) and (11).
6. Remove two drain hoses (4) and (5) from container bracket (12).



INSTALLATION**NOTE**

If elbows (3) and (4) need to be replaced, notify direct support maintenance.

1. Connect two tube assemblies (1) and (2) to two elbows (3) and (4).
2. Install two hose clamps (5) and (6) on two drain hoses (7) and (8).
3. Connect two drain hoses (7) and (8) to two tube assemblies (1) and (2).
4. Tighten two hose clamps (5) and (6) on two drain hoses (7) and (8).
5. Install two drain hoses (7) and (8) on container bracket (9).
6. Install two drain hoses (7) and (8) in engine block. Secure with three screws (10), two washers (11), and three clamps (12). **TIGHTEN SCREWS TO 180-216 LB-IN (20-25 N·M) TORQUE.** Use torque wrench and socket set.

**FOLLOW-THROUGH STEPS**

1. Install starter (WP 0236 00).
2. Install power plant (WP 0131 00).

END OF TASK

REPLACE CRANKCASE BREATHER COLLECTOR CAN AND HOSE0127 00

THIS WORK PACKAGE COVERS:

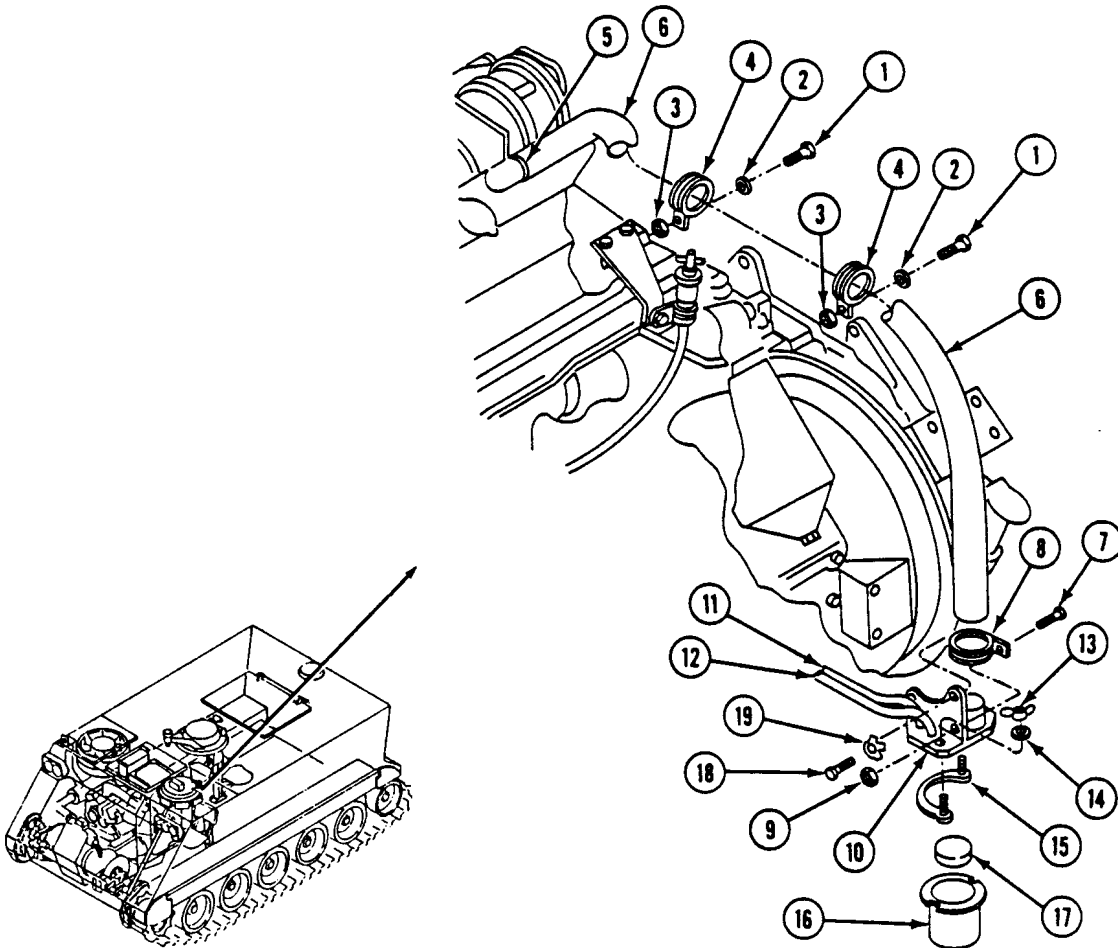
- Removal (page 0127 00-2).
 - Installation (page 0127 00-3).
-

INITIAL SETUP:

<u>Maintenance Level</u>	<u>Personnel Required</u>
Unit	Unit Mechanic
<u>Tools and Special Tools</u>	<u>Equipment Condition</u>
General Mechanics Tool Kit (WP 0780 00, Item 29)	Engine stopped/shutdown (see your -10)
Socket Wrench Set (WP 0780 00, Item 96)	Carrier blocked (see your -10)
Torque Wrench (WP 0780 00, Item 102)	Power plant rear access panel removed (WP 0431 00, WP 0432 00, or WP 0433 00)
<u>Materials/Parts</u>	Driver’s power plant access panel removed (WP 0430 00)
General lubricating oil (WP 0782 00, Item 22)	
Tab washer (2)	

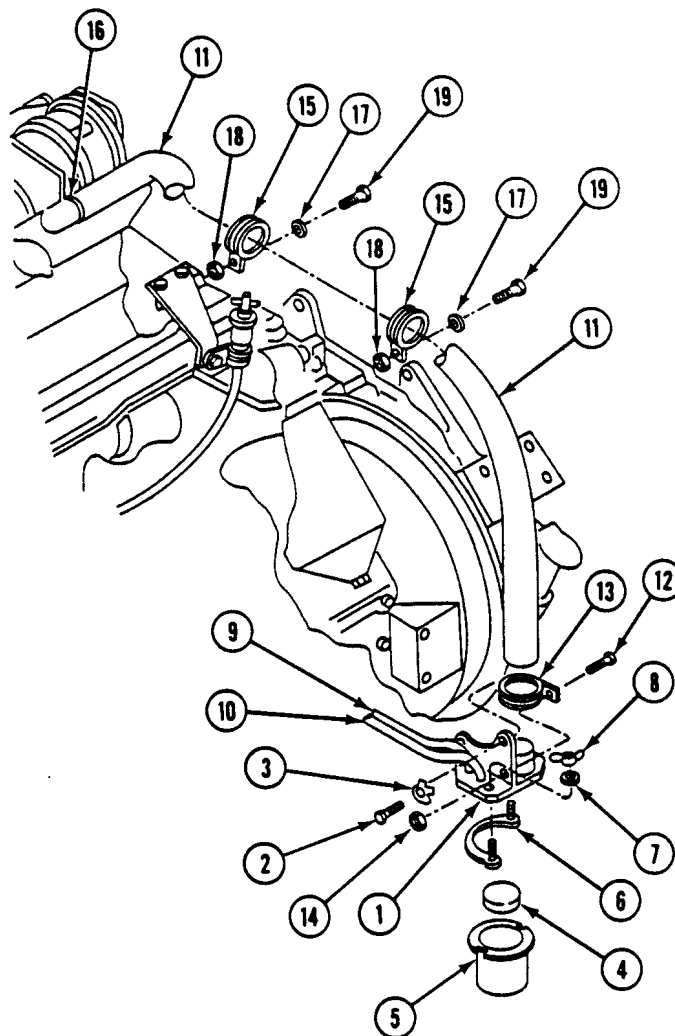
REPLACE CRANKCASE BREATHER COLLECTOR CAN AND HOSE — Continued**0127 00****REMOVAL**

1. Remove two screws (1), washer (2), nut (3), two clamps (4), clamp (5), and breather hose (6) from power plant disconnect bracket and from engine.
2. Remove screw (7), clamp (8), nut (9), and breather hose (6) from collector can bracket (10).
3. Disconnect two drain hoses (11) and (12) from collector can bracket (10).
4. Remove two wing nuts (13), washers (14), retainer (15), collector can (16), and element (17) from collector can bracket (10).
5. Remove two screws (18), tab washers (19), and collector can bracket (10) from transmission. Discard tab washers.



REPLACE CRANKCASE BREATHER COLLECTOR CAN AND HOSE — Continued**0127 00****INSTALLATION**

1. Install collector can bracket (1) on transmission case. Secure with two screws (2) and new tab washers (3). **TIGHTEN SCREWS (2) TO 252-300 LB-IN (28-34 N·M) TORQUE. LOOSEN SCREWS AND RETIGHTEN TO ABOVE TORQUE.** Use torque wrench and socket set.
2. Install clean element (4) in collector can (5).
3. Install collector can (5) on bracket (1). Secure with retainer (6), two washers (7), and wing nuts (8). Stake top threads of retainer studs after installing wing nuts.
4. Install two drain hoses (9) and (10) in collector can bracket (1).
5. Install breather hose (11) in collector can bracket (1). Secure with screw (12), clamp (13), and nut (14).
6. Install breather hose (11) on engine and on power plant disconnect bracket. Secure with two clamps (15), clamp (16), washer (17), nut (18), and two screws (19).

**FOLLOW-THROUGH STEPS**

1. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).
2. Install driver's power plant access panel (WP 0430 00).

END OF TASK

REPLACE OIL FILLER CAP AND TUBE

0128 00

THIS WORK PACKAGE COVERS:

Removal (page 0128 00-2).
Installation (page 0128 00-3).

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

General Mechanics Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Gasket
Key washer (3)
Locknut

Personnel Required

Unit Mechanic

Equipment Condition

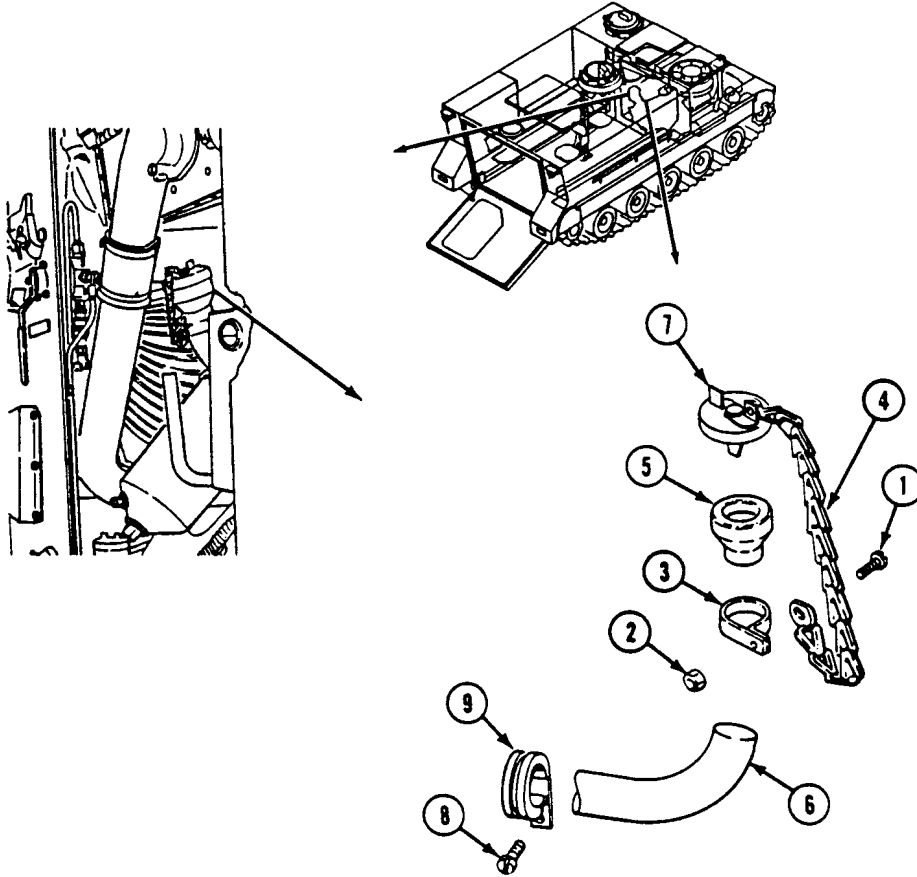
Engine stopped/shutdown (see your -10)
Carrier blocked (see your -10)
Ramp lowered (see your -10)
Power plant rear access panel removed (WP 0431 00,
WP 0432 00, or WP 0433 00)
Driver’s power plant access panel removed
(WP 0430 00)

REPLACE OIL FILLER CAP AND TUBE — Continued

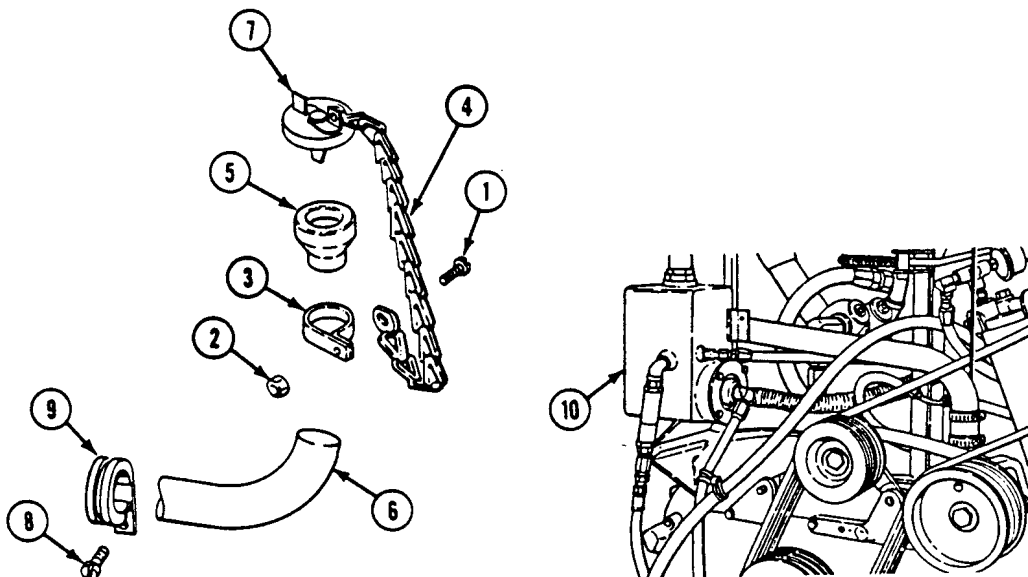
0128 00

REMOVAL

1. Remove screw (1), locknut (2), clamp (3), chain (4), and sleeve (5) from filler neck (6). Discard locknut.
2. Remove filler cap (7) with chain (4).

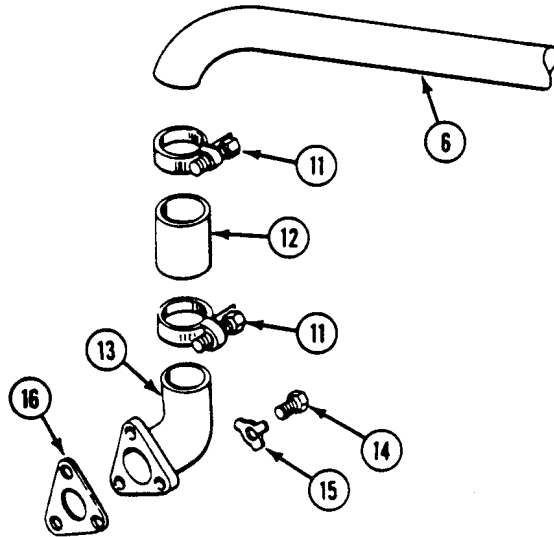


3. Remove screw (8), clamp (9), and filler neck (6) from hydraulic reservoir (10).

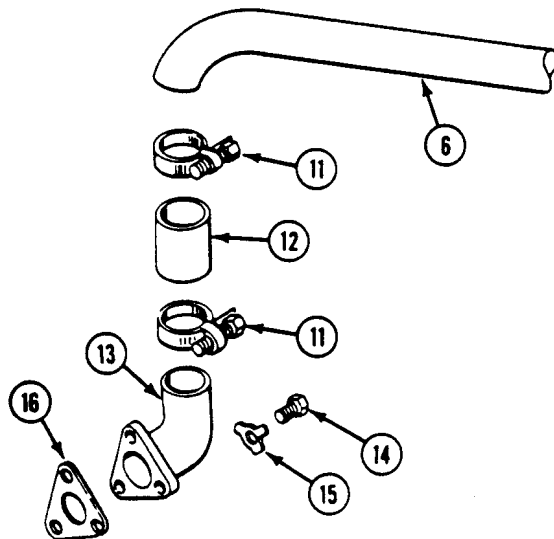


REPLACE OIL FILLER CAP AND TUBE — Continued**0128 00**

4. Remove two clamps (11) and hose (12) from filler neck (6) and elbow (13).
5. Remove three screws (14), key washers (15), gasket (16), and elbow (13) from engine block. Discard key washers and gasket.

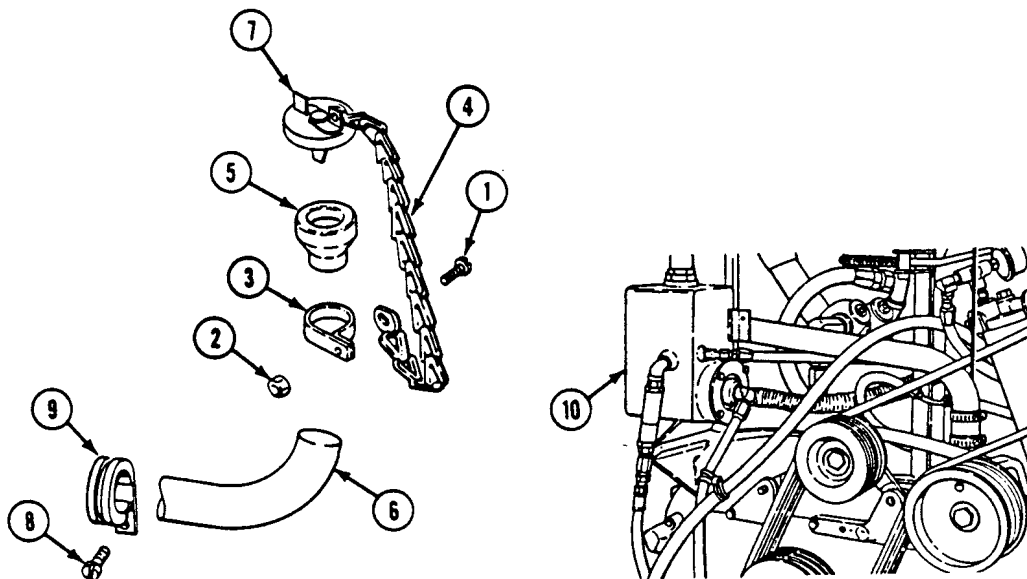
**INSTALLATION**

1. Place new gasket (16) and elbow (13) on engine block. Secure with three new key washers (15) and screws (14).
2. Connect filler neck (6) and elbow (13) to hose (12). Secure with two clamps (11).

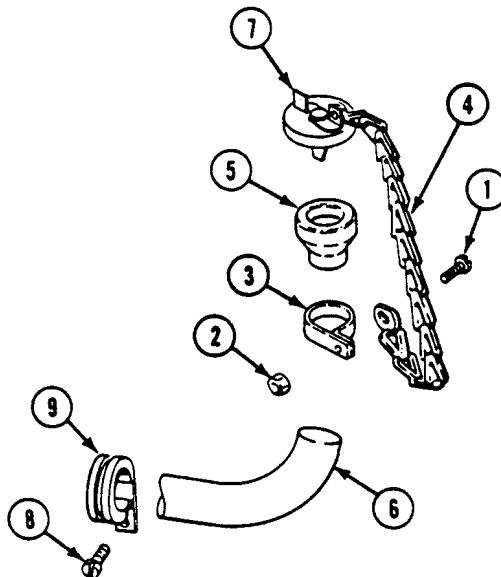


REPLACE OIL FILLER CAP AND TUBE — Continued**0128 00**

3. Secure filler neck (6) to hydraulic reservoir (10) with screw (8) and clamp (9).



4. Install filler cap (7) with chain (4) and sleeve (5) on filler neck (6). Secure with clamp (3), screw (1), and new locknut (2).

**FOLLOW-THROUGH STEPS**

1. Install driver's power plant access panel (WP 0430 00).
2. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).
3. Start engine (see your -10).
4. Raise and lock ramp (see your -10).
5. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE OIL GAUGE ROD AND GUIDE**0129 00****THIS WORK PACKAGE COVERS:**

Removal (page 0129 00-1).

Installation (page 0129 00-2).

INITIAL SETUP:Maintenance Level

Unit

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Driver's power plant access panel removed
(WP 0430 00)Power plant rear access panel removed (WP 0431 00,
WP 0432 00, or WP 0433 00)

Power plant bottom access cover removed (WP 0434 00)

Tools and Special Tools

General Mechanics Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Sealing compound (WP 0782 00, Item 66)

Locknut

Personnel Required

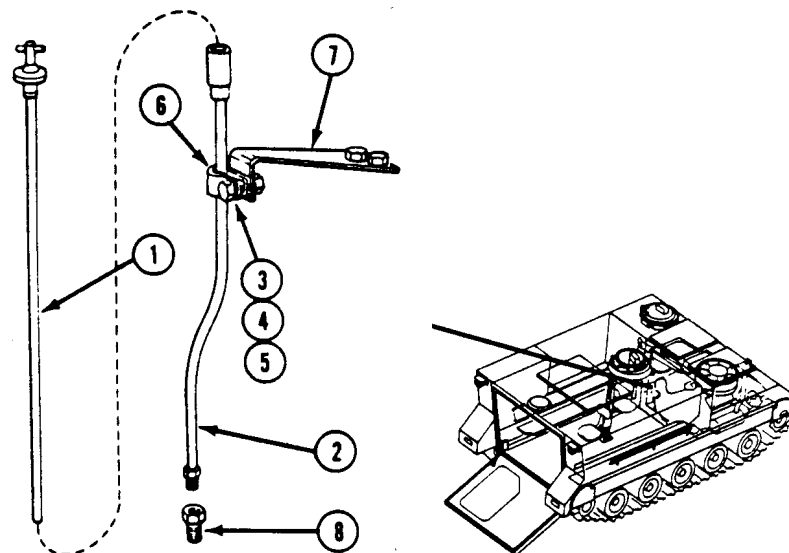
Unit Mechanic

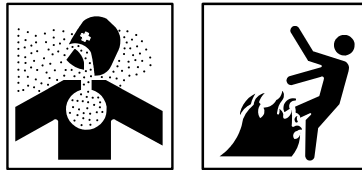
REMOVAL

1. Remove gauge rod (1) from gauge rod guide (2).
2. Remove locknut (3), screw (4), washer (5), clamp (6), and gauge rod guide (2) from bracket (7). Discard locknut.
3. Remove gauge rod guide (2) from adapter (8).

NOTE**Plug or cover engine block opening to prevent dirt or debris from entering engine.**

4. Remove adapter (8) from engine block.

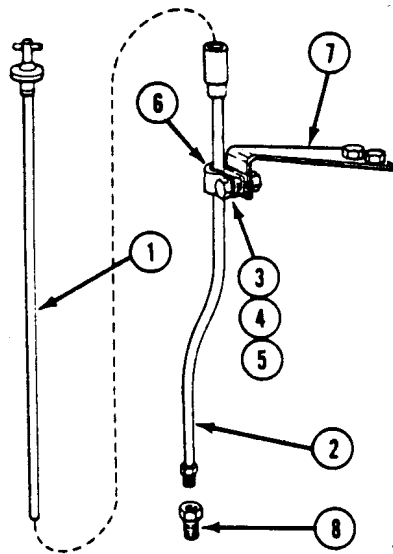


INSTALLATION**WARNING**

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin coat of sealing compound to external threads of adapter (8).
2. Install adapter (8) in engine block.
3. Install gauge rod guide (2) in adapter (8).
4. Install gauge rod guide (2) on bracket (7). Secure with clamp (6), screw (4), washer (5), and new locknut (3).
5. Install gauge rod (1) in gauge rod guide (2).

**FOLLOW-THROUGH STEPS**

1. Install driver's power plant access panel (WP 0430 00).
2. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).
3. Install power plant bottom access cover (WP 0434 00).

END OF TASK

CHAPTER 5
UNIT MAINTENANCE INSTRUCTIONS
FOR POWER PLANT

<hr/>	
WORK PACKAGE INDEX	
<hr/>	
<u>Title</u>	<u>Sequence No.</u>
RAISE/LOWER POWER PLANT GRILL.....	0130 00
REMOVE/INSTALL POWER PLANT.....	0131 00

RAISE/LOWER POWER PLANT GRILL**0130 00****THIS WORK PACKAGE COVERS:**

Raise Grill (page 0130 00-2).
Lower Grill (page 0130 00-11).

INITIAL SETUP:Maintenance Level

Unit

References

See your -10

Tools and Special Tools

Antifreeze and Battery Tester (WP 0780 00, Item 77)
General Mechanic's Tool Kit (WP 0780 00, Item 29)
Socket Wrench Set (WP 0780 00, Item 97)
Torque Wrench (WP 0780 00, Item 104)
Torque Wrench (WP 0780 00, Item 105)
Lifting Device

Equipment Condition

Engine stopped (see your -10)
Carrier blocked (see your -10)
Trim vane lowered (see your -10)
Power plant front access door opened (see your -10)
Driver's power plant access panel removed
(WP 0430 00)
Power plant upper rear access panel removed
(WP 0431 00, WP 0432 00, or WP 0433 00)
4.2 KW generator set removed (M577A2 and M1068
only) (see your -10)
or 5.0 KW auxiliary power unit removed (M577A2 and
M1068 only) (TM 9-6115-664-13&P)
Battery ground lead disconnected (WP 0294 00)

Materials/Parts

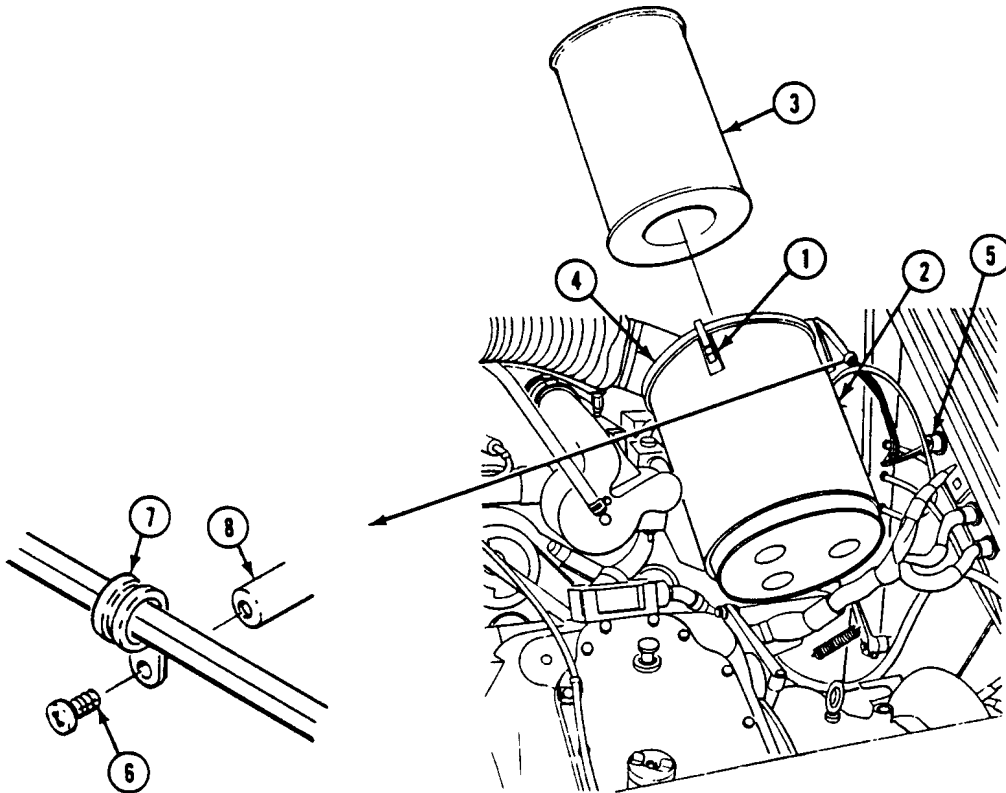
Antifreeze (WP 0782 00, Item 7)
Caulking compound (WP 0782 00, Item 12)
Locknut (2)
Tab washer (4)

Personnel Required

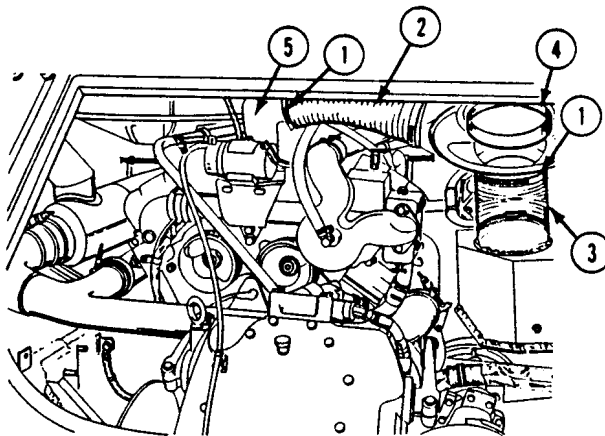
Unit Mechanic
Helper (H)

RAISE/LOWER POWER PLANT GRILL — Continued**0130 00****RAISE GRILL**

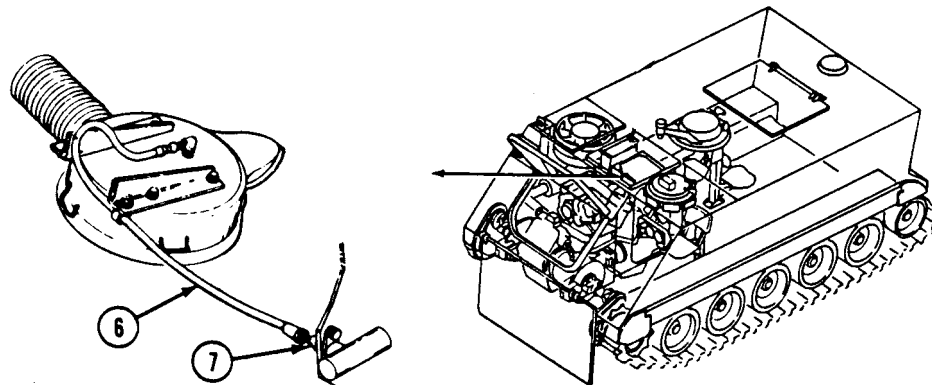
1. Release four latches (1). Remove air cleaner housing (2) and element (3) from cover (4).
2. Disconnect electrical cable (5) at driver's compartment bulkhead. Remove screw (6), clamp (7), and cables from weldnut (8).



3. Loosen two clamps (1). Disconnect two hoses (2) and (3) from air cleaner cover (4) and engine intake elbow (5).

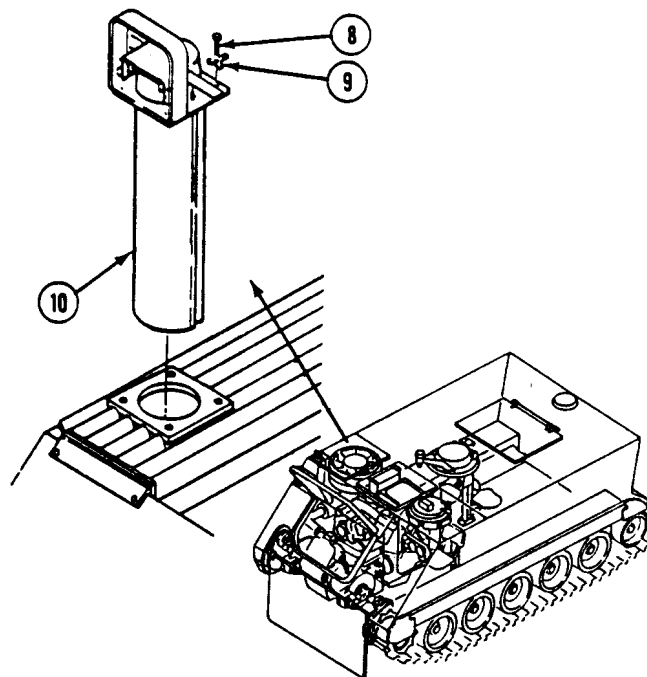


4. Disconnect air indicator hose (6) from adapter (7) at driver's compartment bulkhead.

**WARNING**

Do not touch hot exhaust pipes with bare hands. You could get a bad burn.

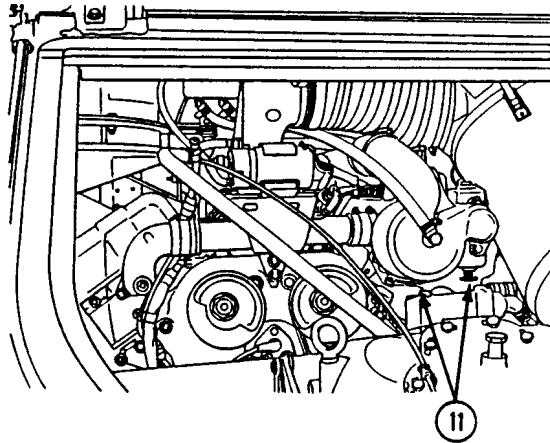
5. Remove four screws (8), tab washers (9), and exhaust extension (10) from power plant.



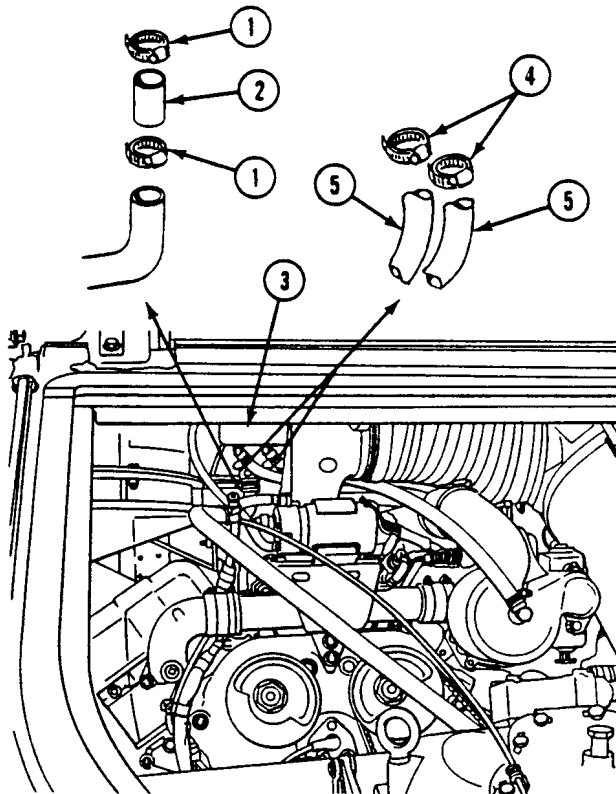
RAISE/LOWER POWER PLANT GRILL — Continued

0130 00

6. Remove radiator cap (see your -10). Open valves (11) and drain coolant into a container with capacity of 15 gallons (57 liters) or more.

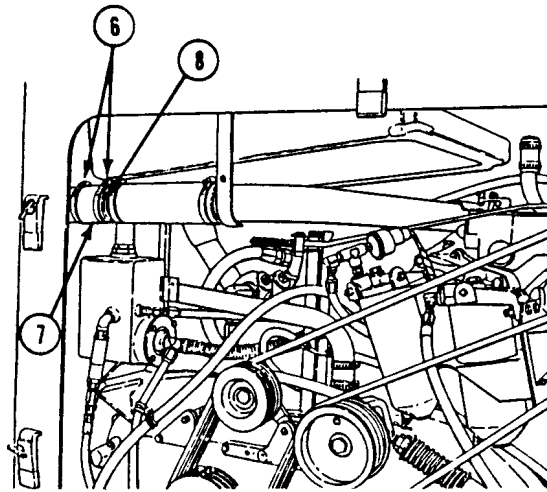


7. Loosen two clamps (1). Disconnect hose (2) from auxiliary tank (3).
8. Loosen two clamps (4). Disconnect two deaeration hoses (5) from auxiliary tank (3).

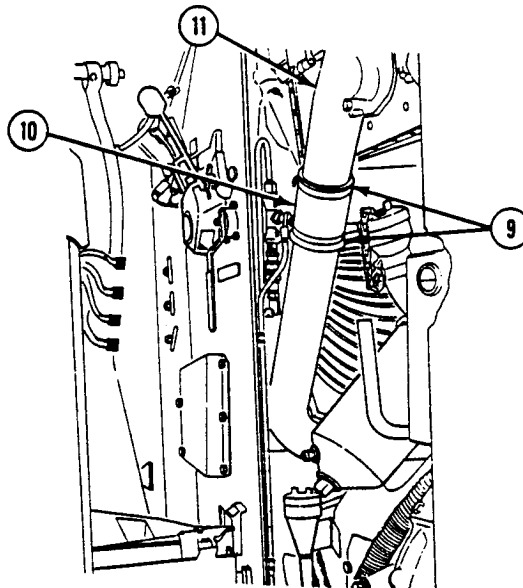


RAISE/LOWER POWER PLANT GRILL — Continued**0130 00**

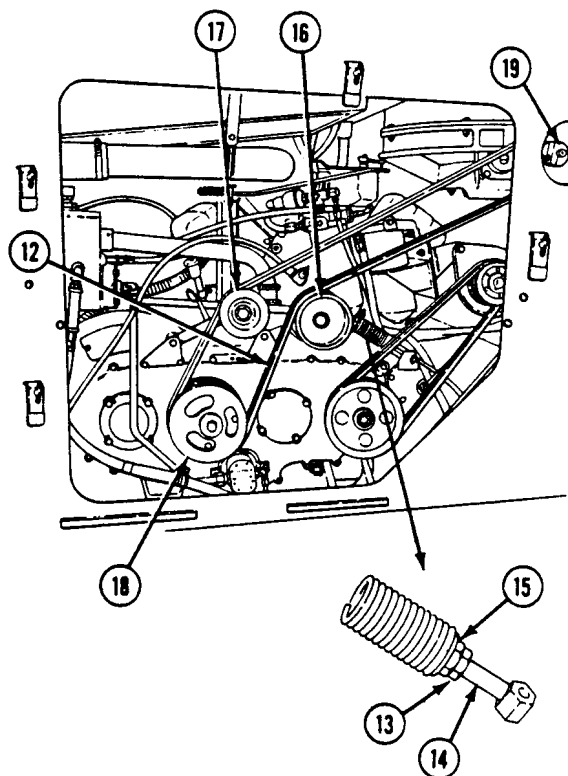
9. Loosen two clamps (6). Disconnect hose (7) from tube (8).



10. Loosen two clamps (9). Disconnect hose (10) from radiator elbow (11).



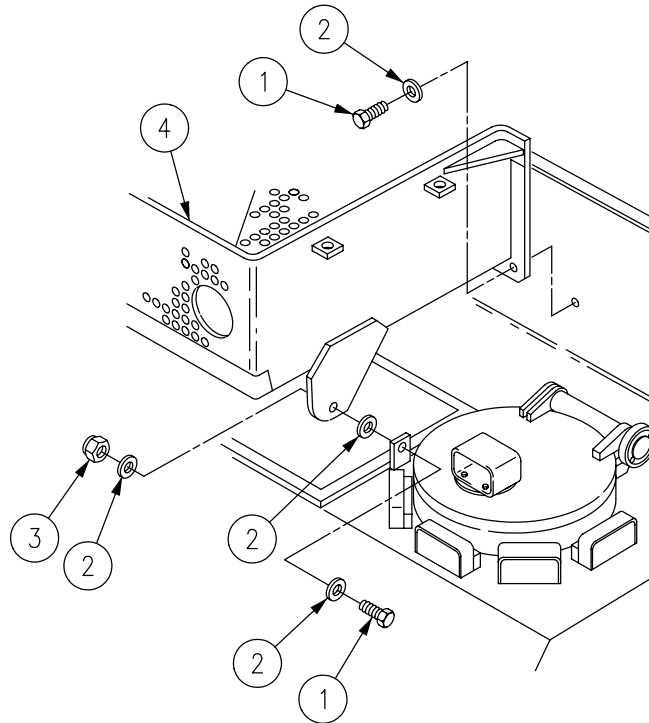
11. Remove drive belts (12) by loosening locknut (13) that secures rod end (14) to adjusting nut (15).
12. Remove drive belts (12) from idler pulleys (16) and (17) and pulleys (18) and (19).



WARNING

Lifting or moving objects in excess of 70 pounds could injure you. Get an assistant or use a lifting device to move heavy objects.

13. On M577A2 and M1068 only, remove six screws (1), eight washers (2), two locknuts (3), and 4.2 KW generator enclosure (4) or 5.0 KW APU from hull. Discard locknuts. Use davit for 4.2 KW generator enclosure (see your -10) or suitable lifting device (capable of lifting 600 lb (273 kg)) for 5.0 KW APU.

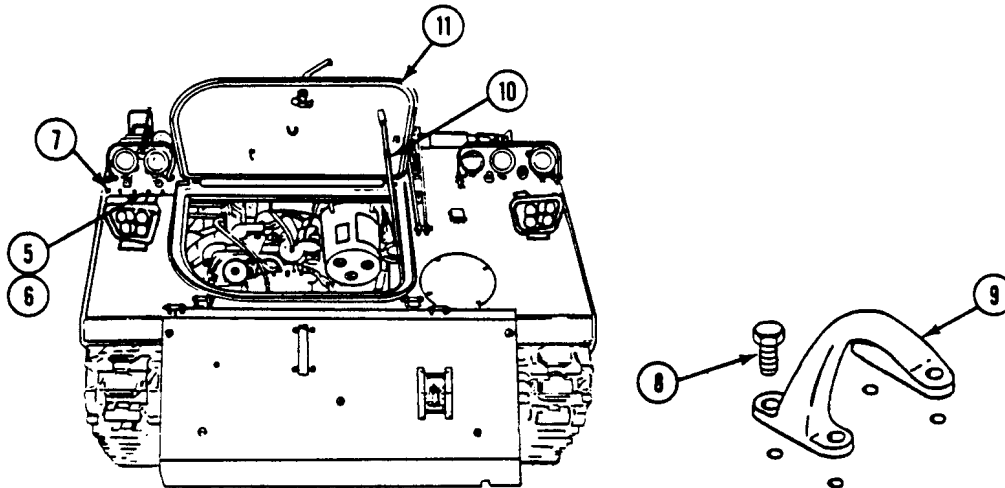


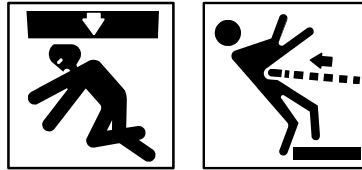
M577A2 & M1068 ONLY

RAISE/LOWER POWER PLANT GRILL — Continued

0130 00

14. Remove 13 screws (5) and washers (6) that secure grill (7). Remove screw (8) that secures lifting eye (9) to hull.
15. Stow power plant front access door brace (10). Lay access door (11) back on power plant grill (7).



WARNING

Damaged slings can fail when loaded. Breaking slings can strike and injure personnel. Suspended load can fall and crush personnel.

Inspect all slings before use. Do not use damaged slings. Clearly mark all damaged slings as **DAMAGED - DO NOT USE**.

WARNING

Grill and access cover are very heavy. Use extreme caution when lifting, blocking, and lowering assembly. Allowing assembly to fall could cause death or injury.

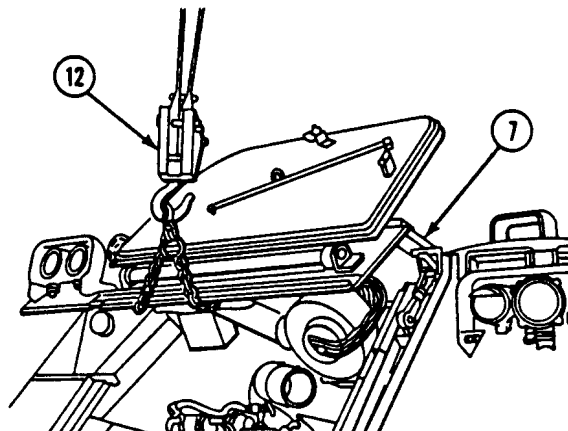
CAUTION

Use chain and lifting device capable of lifting and holding 2000 lbs (908 kg) securely.

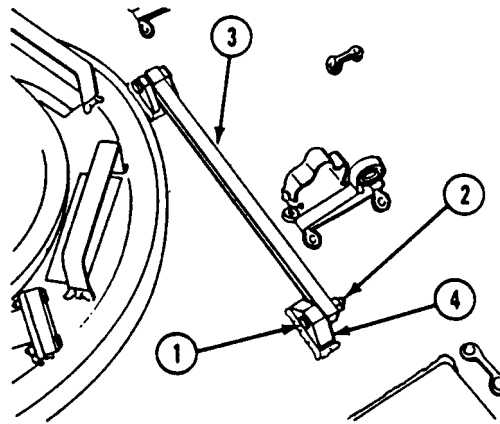
CAUTION

The power plant door is heavy. If necessary, use extra helpers and straps/chains to guide and control power plant door.

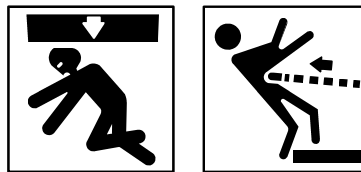
16. Use lifting device to raise grill (7) to vertical position.



17. Remove screw (1) and locknut (2) that secure brace (3) to lug (4).



WARNING



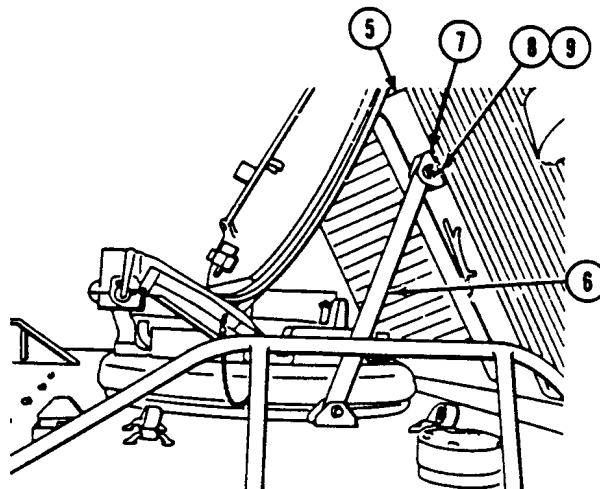
Damaged slings can fail when loaded. Breaking slings can strike and injure personnel.
Suspended load can fall and crush personnel.

Inspect all slings before use. Do not use damaged slings. Clearly mark all damaged slings as **DAMAGED - DO NOT USE**.

CAUTION

To prevent damage to power plant door, guide the door as the power plant grill is lowered into braced position.

18. Lower power plant grill (5) into full open position. Place brace (6) between two lugs (7). Secure with screw (8) and locknut (9).

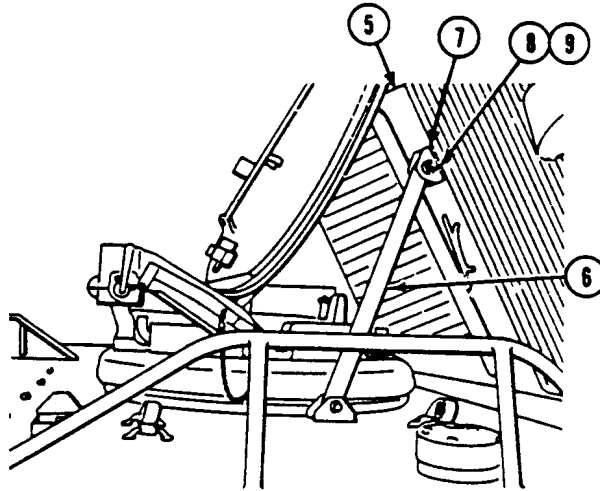


LOWER GRILL

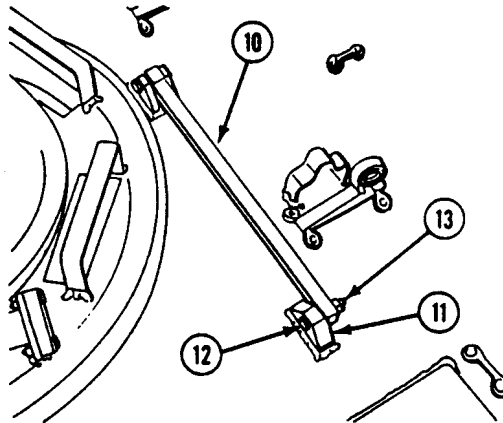
NOTE

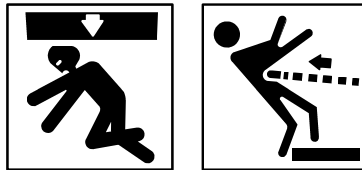
Before lowering grill, apply caulking compound to metal joints between hull and lower support of grill to assure water tightness.

1. With lifting device attached to grill (5), remove screw (8), locknut (9), and brace (6) from two lugs (7).



2. Secure brace (10) to lug (11) with screw (12) and locknut (13).



WARNING

Damaged slings can fail when loaded. Breaking slings can strike and injure personnel. Suspended load can fall and crush personnel.

Inspect all slings before use. Do not use damaged slings. Clearly mark all damaged slings as **DAMAGED - DO NOT USE**.

WARNING

Grill and access cover are very heavy. Use extreme caution when lifting, blocking, and lowering assembly. Allowing assembly to fall could cause death or injury.

CAUTION

Use chain and lifting device capable of lifting and holding 2000 lbs (908 kg) securely.

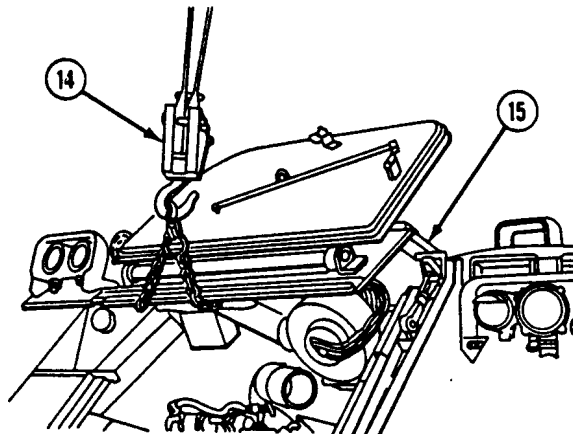
CAUTION

The power plant door is heavy. If necessary, use extra helpers and straps/chains to guide and control power plant door.

CAUTION

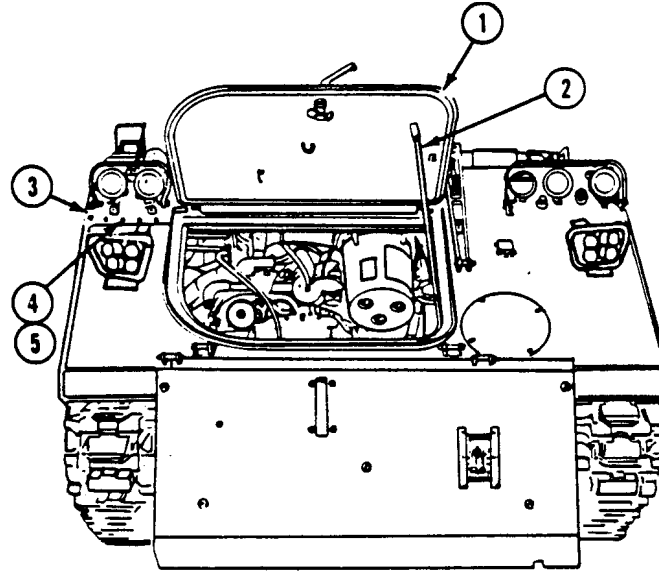
To prevent damage to power plant wiring harness, guide the door as the power plant grill is lowered into braced position.

3. Use lifting device (14) to lower grill (15) into closed position.

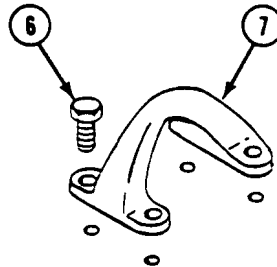


RAISE/LOWER POWER PLANT GRILL — Continued**0130 00**

4. Secure power plant front access door (1) in open position with door brace (2).
5. Secure grill (3) to hull with 13 screws (4) and washers (5). TIGHTEN 13 SCREWS TO 100-120 LB-FT (136-163 N·M) TORQUE. Use torque wrench and socket wrench set.



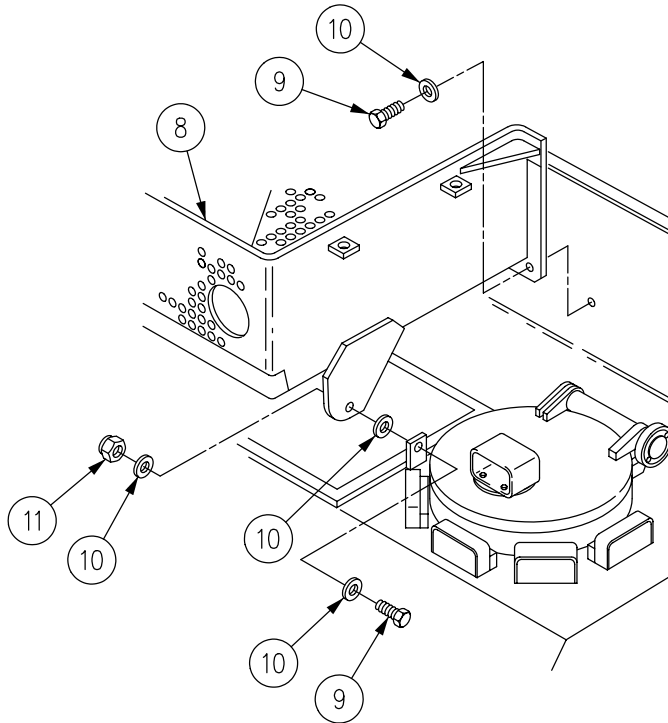
6. Install lifting eye screw (6) on lifting eye (7). TIGHTEN LIFTING EYE SCREW TO 175-200 LB-FT (237-271 N·M) TORQUE. Use torque wrench and socket wrench set.



WARNING

Lifting or moving objects in excess of 70 pounds could injure you. Get an assistant or use a lifting device to move heavy objects.

7. On M577A2 and M1068 only, position 4.2 KW generator enclosure (8) or 5.0 KW APU on hull. Use davit for 4.2 KW generator enclosure (see your -10) or suitable lifting device (capable of lifting 600 lb (273 kg)) for 5.0 KW APU.
8. On M577A2 and M1068 only, secure 4.2 KW generator enclosure (8) or 5.0 KW APU to hull with six screws (9), eight washers (10), and two new locknuts (11). **TIGHTEN FOUR SCREWS THAT SECURE REAR ENCLOSURE TO HULL TO 55–60 LB-FT (75–81 N·M) TORQUE.** Use torque wrench.

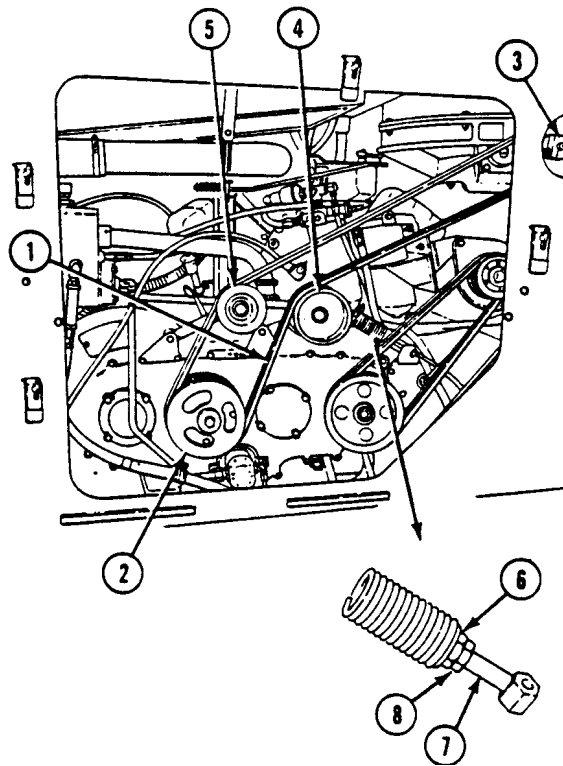


M577A2 & M1068 ONLY

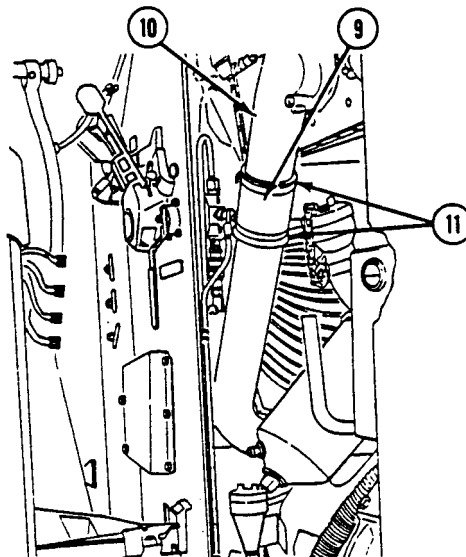
RAISE/LOWER POWER PLANT GRILL — Continued

0130 00

9. Position matched set of drive belts (1) on pulleys (2) and (3) and idler pulleys (4) and (5).
10. Turn adjusting nut (6) on rod end (7) to left or right until lower end is within operating range shown on adjusting sleeve. Tighten locknut (8).



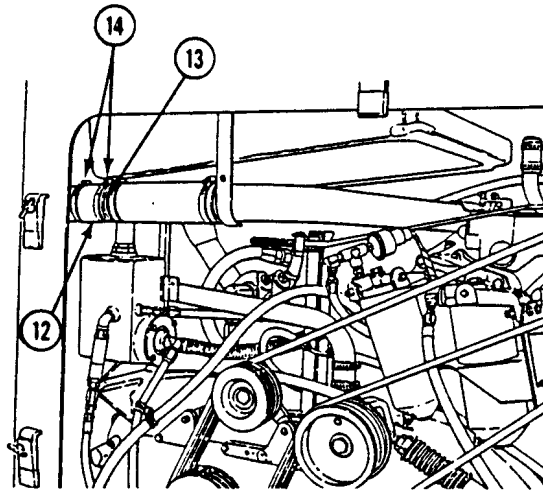
11. Position hose (9) on elbow (10) and tighten two clamps (11).



RAISE/LOWER POWER PLANT GRILL — Continued

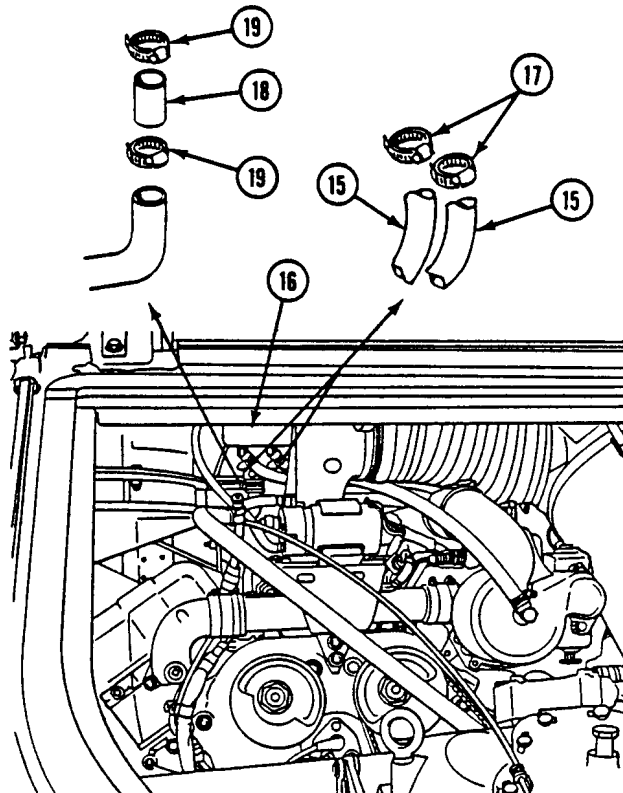
0130 00

12. Position hose (12) on tube (13) and tighten two clamps (14).

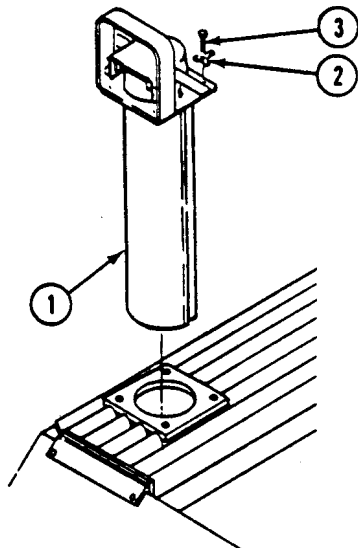


13. Secure two hoses (15) to auxiliary tank (16) with two clamps (17).

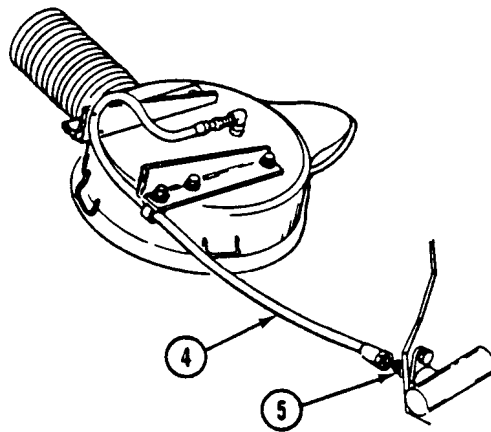
14. Position hose (18) on auxiliary tank (16) and tighten two clamps (19).



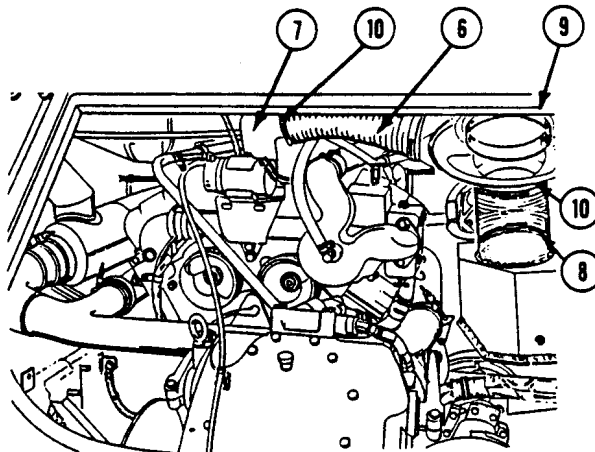
15. Secure exhaust extension (1) to power plant grill with four new tab washers (2) and screws (3).



16. Connect air indicator hose (4) to adapter (5) at driver's compartment bulkhead.

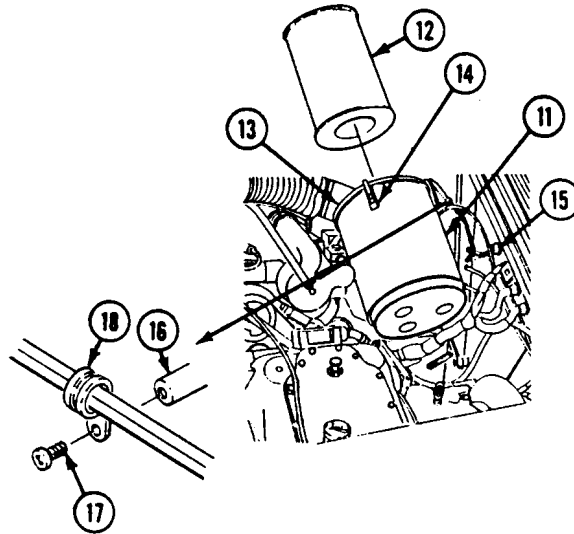


17. Position hose (6) on engine air intake elbow (7). Position hose (8) on air cleaner cover (9). Secure with two clamps (10).

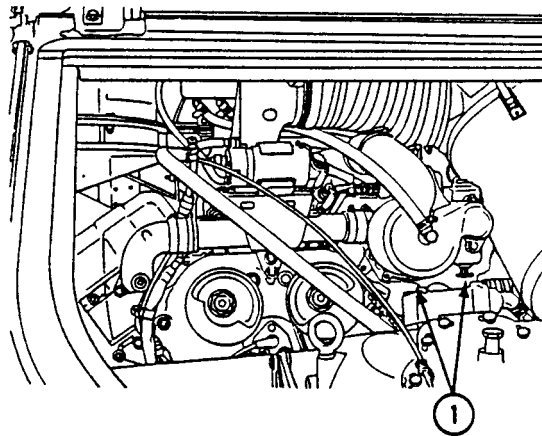


RAISE/LOWER POWER PLANT GRILL — Continued**0130 00**

18. Position air cleaner housing (11) and element (12) on air cleaner cover (13) with housing drain hole in down position.
19. Secure housing (11) and element (12) to cover (13) with four latches (14).
20. Secure electrical cable (15) to weldnut (16) with screw (17) and clamp (18).
21. Connect electrical cable (15) to receptacle at driver's compartment bulkhead.



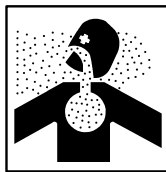
22. Close thermostat housing valves (1).



NOTE

Use coolant in cooling system at all times. It will reduce corrosion in engine block and provide low temperature protection. Mix coolant and clean water based on the requirements for your carrier. Use tester.

23. Fill cooling system slowly with 14 gallons (53 liters) of coolant and water until level is within 1/2 inch (13 mm) of filler neck (WP 0194 00).
24. Replace coolant filler cap (see your -10).

WARNING

Carbon monoxide is poisonous and can kill you. Do not idle engine with power plant access panels off unless there is VERY GOOD AIR FLOW.

25. Connect battery ground lead (WP 0294 00).
26. Start engine (see your -10). Check that power plant grill is installed properly and the cooling system does not leak.

WARNING

Hot coolant can burn you. Do not remove radiator cap until coolant temperature gauge reads in bottom one-quarter of green zone. Use heat protective mittens to turn radiator cap. Turn cap slowly to release pressure.

27. Check coolant level (see your -10).

FOLLOW-THROUGH STEPS

1. Engine stopped/shutdown (see your -10).
2. Install power plant upper rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).
3. Install driver's power plant access panel (WP 0430 00).
4. Close power plant front access door (see your -10).
5. Raise trim vane (see your -10).

END OF TASK

REMOVE/INSTALL POWER PLANT**0131 00****THIS WORK PACKAGE COVERS:**

Removal (page 0131 00-1).

Installation (page 0131 00-11).

INITIAL SETUP:Maintenance Level

Unit

References

WP 0348 00

WP 0349 00

Tools and Special Tools

Engine and Transmission Sling (WP 0780 00, Item 67)

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Socket Wrench Set (WP 0780 00, Item 96)

Torque Wrench Adapter (WP 0780 00, Item 6)

Torque Wrench Adapter (WP 0780 00, Item 7)

Torque Wrench (WP 0780 00, Item 102)

Torque Wrench (WP 0780 00, Item 103)

Lifting Device

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Battery ground lead disconnected (WP 0294 00)

Power plant rear access panel removed (WP 0431 00,
WP 0432 00, or WP 0433 00)Driver's power plant access panel removed
(WP 0430 00)Power plant bottom access cover removed
(WP 0434 00)

Cooling system drained (WP 0193 00)

Power plant grill raised (WP 0130 00)

Fuel supply valve at tank closed (see your -10)

Air control valve and housing assembly removed
(WP 0187 00)Materials/Parts

Key washer (2)

Lockbolt (2)

Screw (4)

Washer (4)

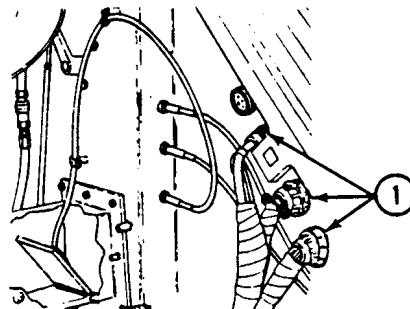
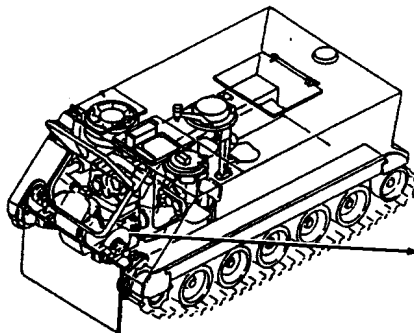
Personnel Required

Unit Mechanic

Helper (H)

REMOVAL

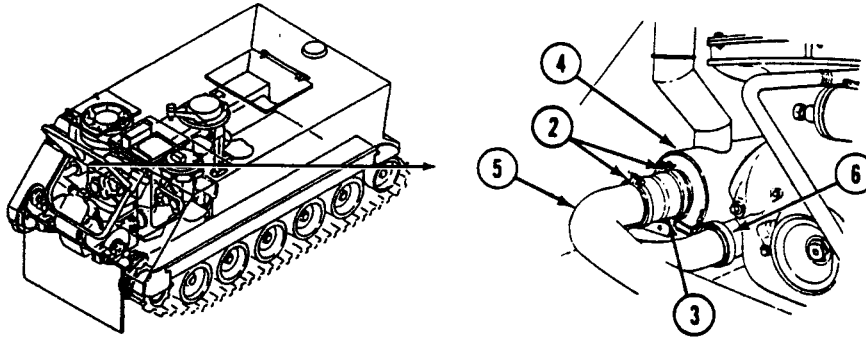
1. Disconnect three electrical cables (1) at driver's compartment bulkhead.



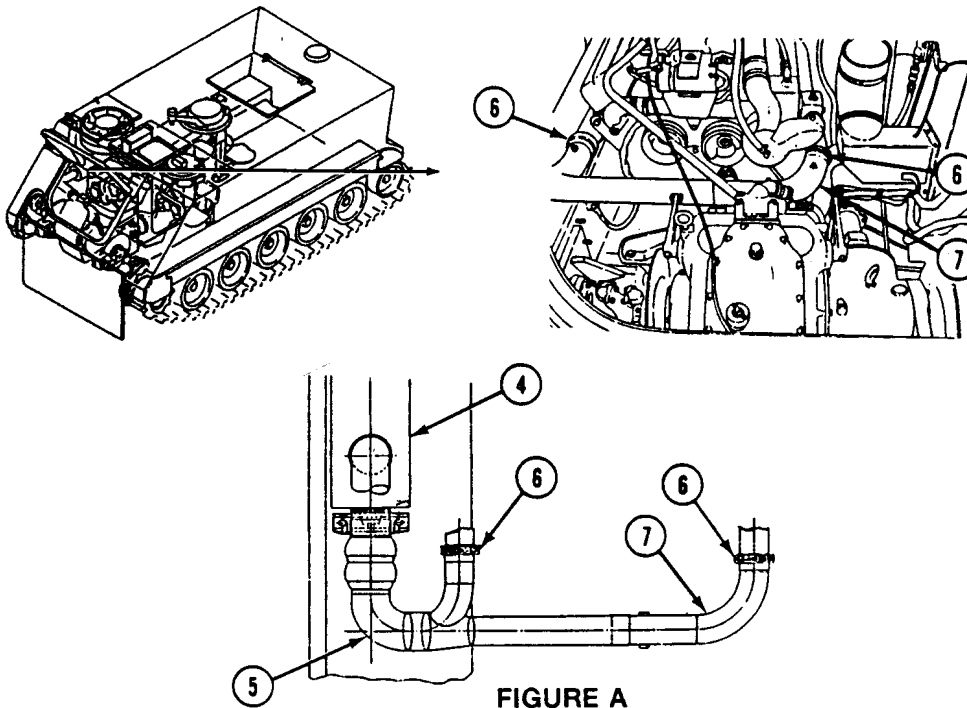
NOTE

On carriers with exhausts as shown in Figure A, go to Step 3.

2. Loosen two clamps (2) and remove pipe joint (3) from muffler (4) and exhaust pipe (5).

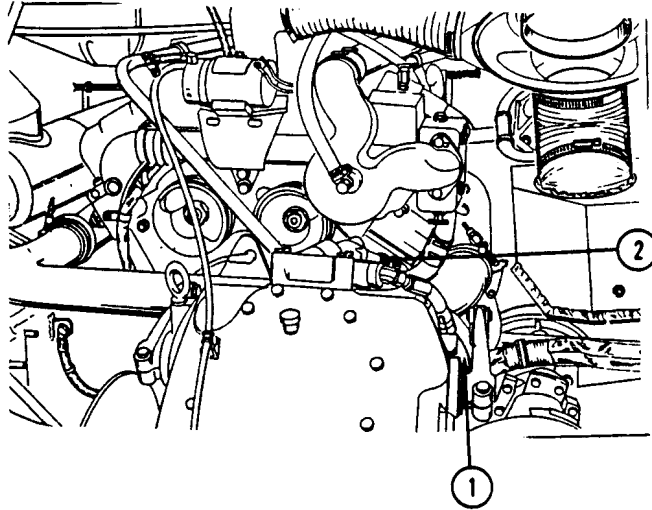


3. Loosen two clamps (6). Remove exhaust pipes (5) and (7).

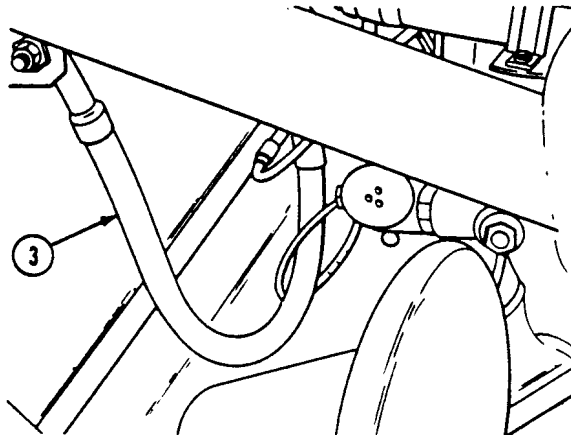


REMOVE/INSTALL POWER PLANT — Continued**0131 00**

4. Disconnect differential oil temperature lead (1) from differential.
5. Disconnect oil inlet hose (2) from differential.

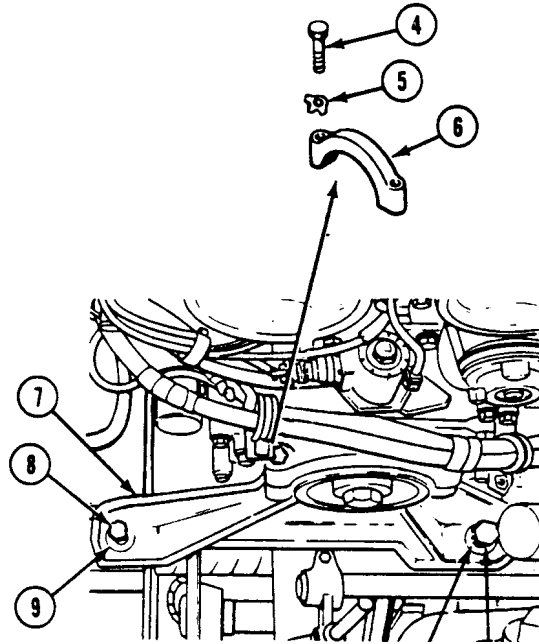


6. Disconnect starter ground lead (3) from hull.

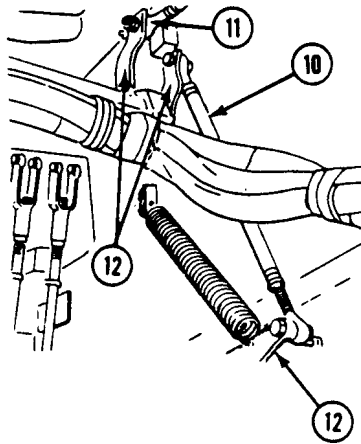


REMOVE/INSTALL POWER PLANT — Continued**0131 00**

7. Remove two screws (4), key washers (5), and cap (6) from mount base (7). Discard key washers.
8. Remove two lockbolts (8) and washers (9) that secures engine mount base (7) to carrier. Discard lockbolts.

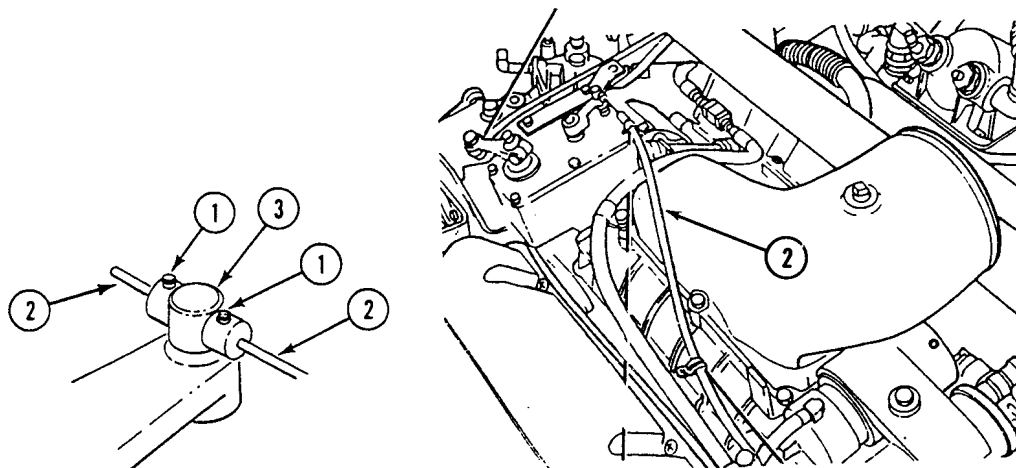


9. Disconnect accelerator pedal linkage (10) and range selector linkage (11) from bellcranks (12).

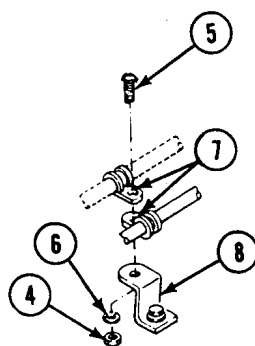


REMOVE/INSTALL POWER PLANT — Continued**0131 00**

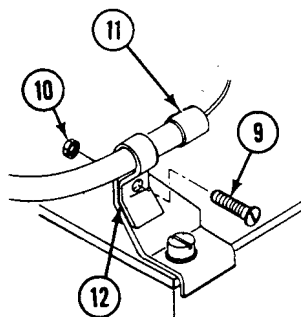
10. Loosen two setscrews (1) that secures fuel cutoff control cable (2) to governor arm pin (3).



11. Remove nut (4), screw (5), washer (6), and clamps (7) from engine cylinder head cover bracket (8).



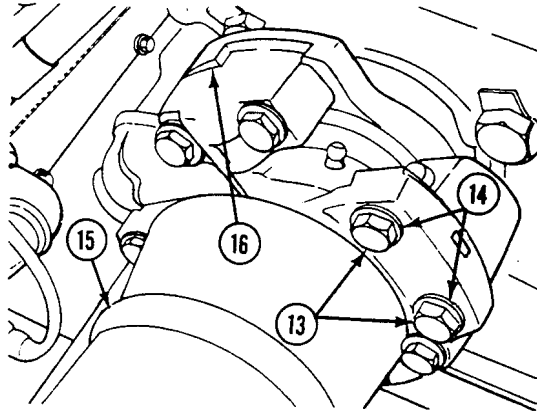
12. Remove screw (9) and nut (10). Pull cable (11) through clamp (12).



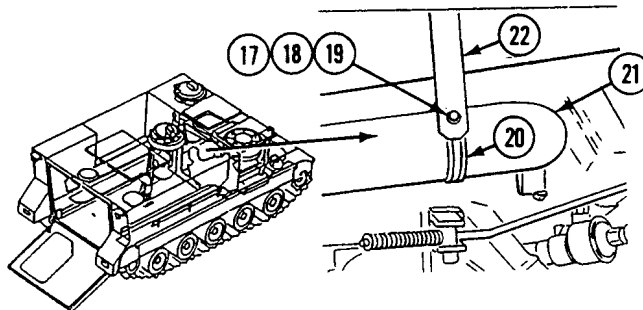
REMOVE/INSTALL POWER PLANT — Continued

0131 00

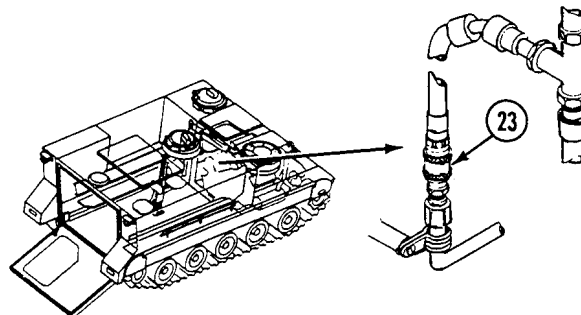
13. Remove four screws (13) and washers (14). Separate propeller shaft (15) from yoke (16) on transmission. Discard screws and washers.



14. Remove left and right final drive propeller shafts (WP 0348 00 and WP 0349 00).
15. Remove nut (17), washer (18), screw (19), clamp (20), and radiator inlet tube (21) from hanger (22).



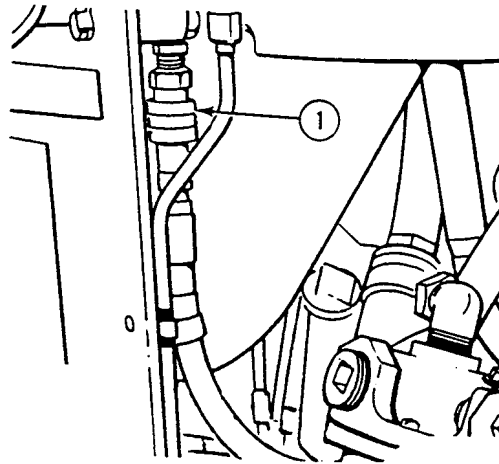
16. Disconnect ramp hydraulic line at coupling (23).



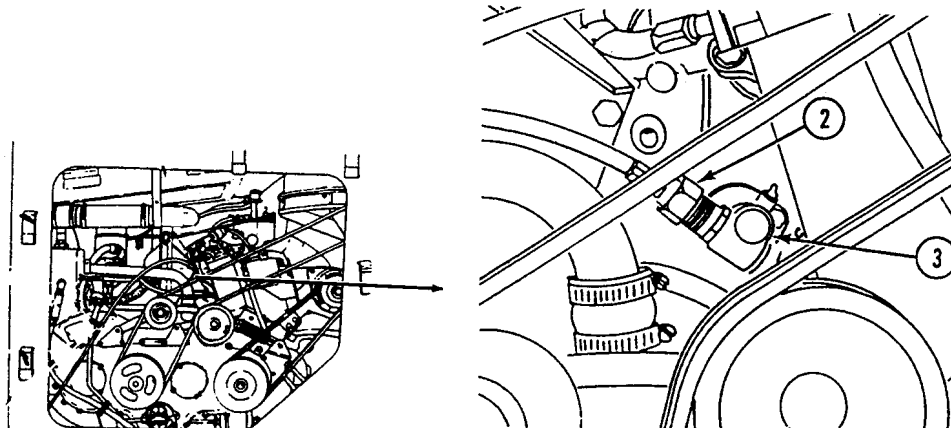
REMOVE/INSTALL POWER PLANT — Continued

0131 00

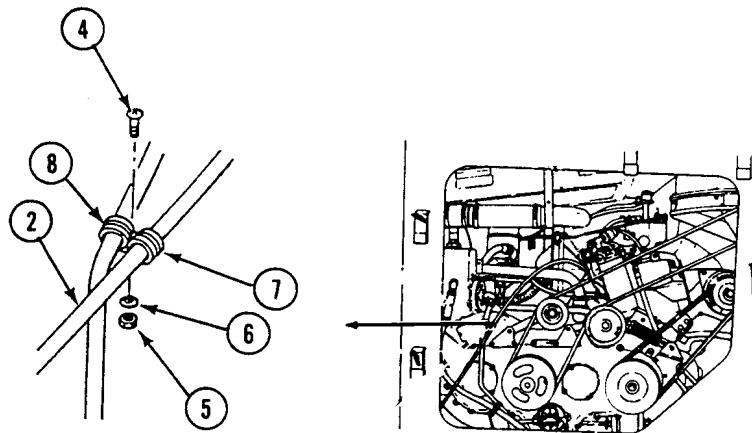
17. Disconnect ramp hydraulic line at coupling (1).



18. Disconnect tachometer cable (2) from adapter (3) on engine.



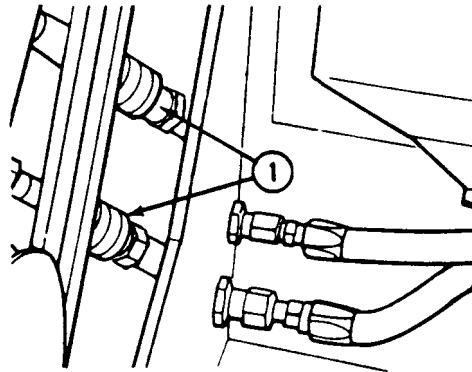
19. Remove screw (4), nut (5), washer (6), clamp (7), and tachometer cable (2) from tank tube clamp (8).



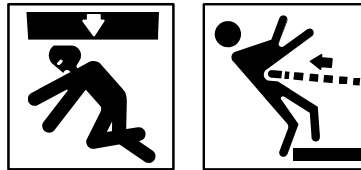
REMOVE/INSTALL POWER PLANT — Continued

0131 00

20. Disconnect two fuel hoses at couplings (1).



WARNING



Damaged slings can fail when loaded. Breaking slings can strike and injure personnel.
Suspended load can fall and crush personnel.

Inspect all slings before use. Do not use damaged slings. Clearly mark all damaged slings
as **DAMAGED - DO NOT USE**.

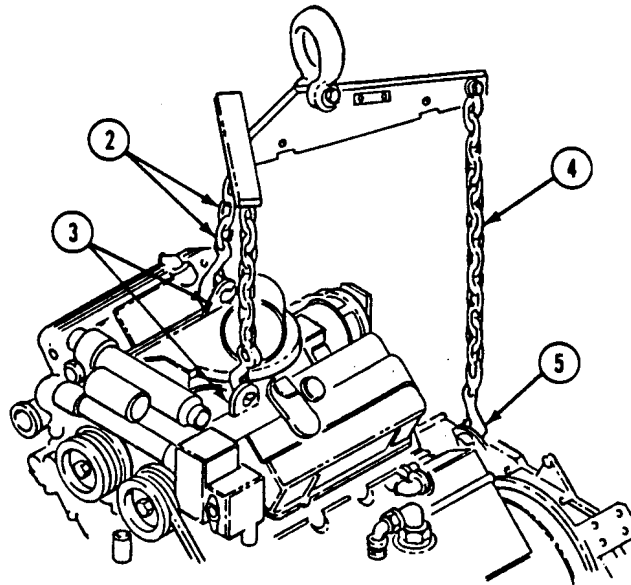
WARNING



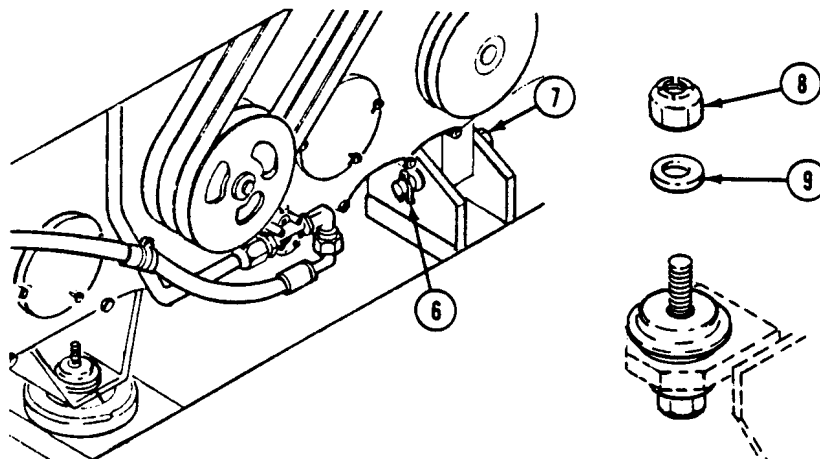
Hanging loads can kill or injure you. Keep away from hanging loads and overhead equipment.
Keep hands out of compartment while power plant is being lifted for removal or lowered for
installation.

REMOVE/INSTALL POWER PLANT — Continued**0131 00**

21. Attach power plant sling's two 6 link chains (2) to lifting eyes (3) on engine, and one 17 link chain (4) to lifting eye (5) on transfer gearcase.

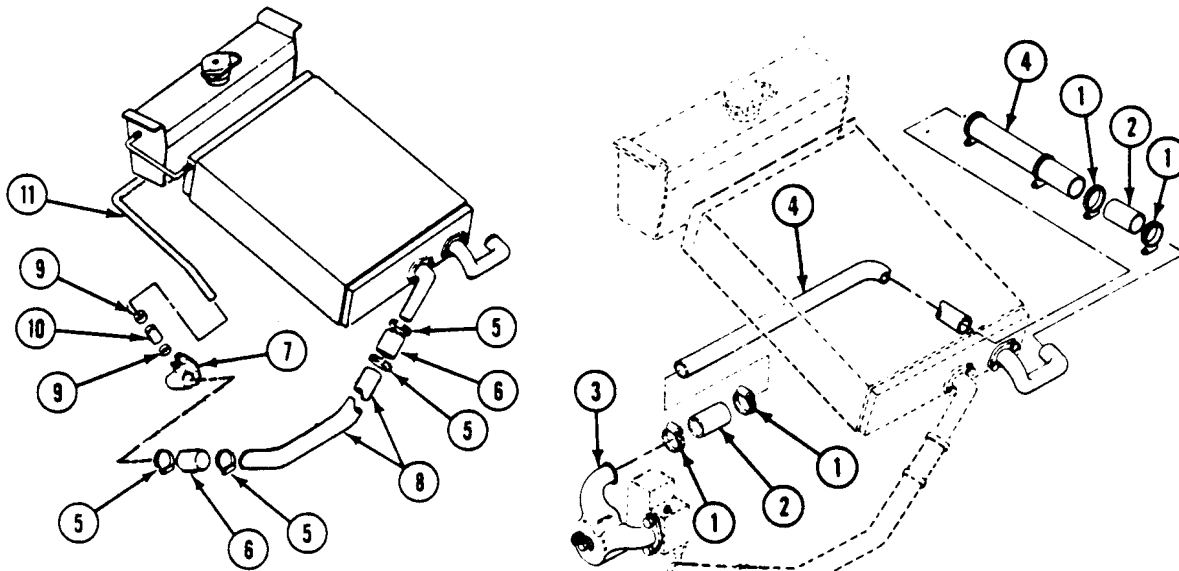


22. Remove clip pin (6) on headed pin (7) at transfer gearcase right mount.
23. Remove nut (8) and washer (9) from transfer gearcase left mount.
24. Raise power plant slightly to permit removal of headed pin (7) from transfer gearcase right mount. Have helper assist.

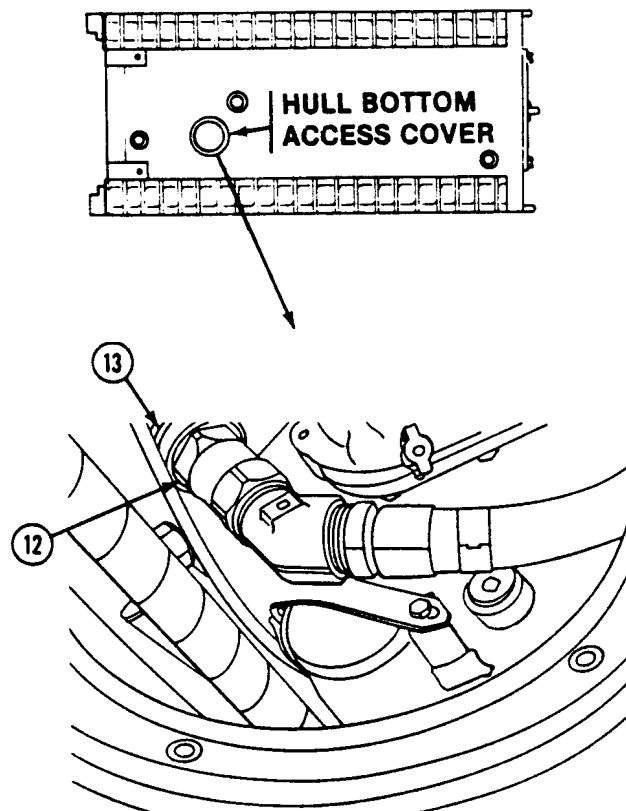


REMOVE/INSTALL POWER PLANT — Continued**0131 00**

25. Remove four clamps (1) and two hoses (2) from deaeration elbow (3) and tube (4).
26. Remove four clamps (5) and two hoses (6) from oil cooler elbow (7) and tube (8).
27. Remove tubes (4) and (8) through power plant front access opening.
28. Remove two clamps (9) and hose (10) from oil cooler elbow (7) and vent tube (11).



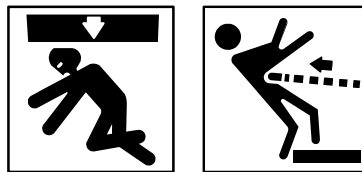
29. From underneath carrier, disconnect hose (12) from differential oil pump (13).



WARNING

Hanging loads can kill or injure you. Keep away from hanging loads and overhead equipment. Keep hands out of compartment while power plant is being lifted for removal or lowered for installation.

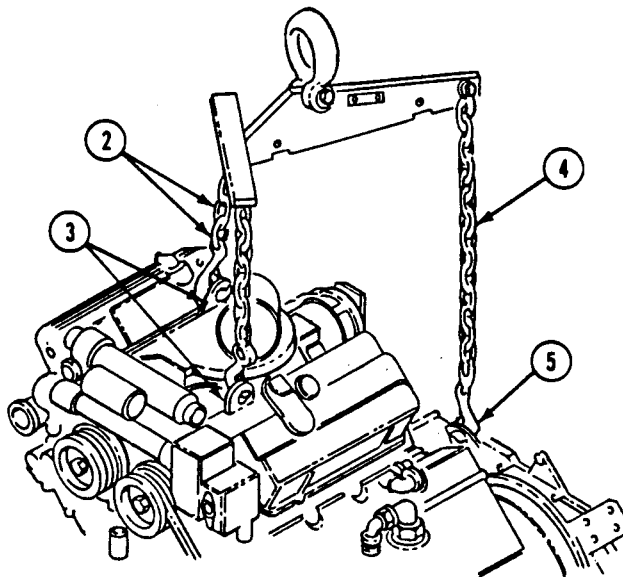
30. Remove power plant from carrier. Have helper assist.

INSTALLATION**WARNING**

Damaged slings can fail when loaded. Breaking slings can strike and injure personnel. Suspended load can fall and crush personnel.

Inspect all slings before use. Do not use damaged slings. Clearly mark all damaged slings as DAMAGED - DO NOT USE.

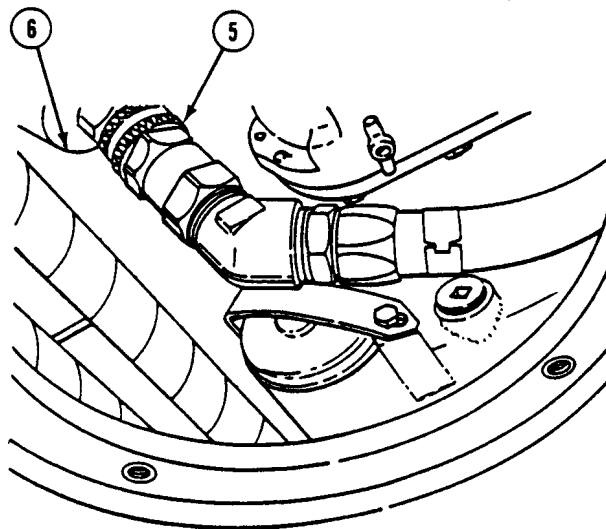
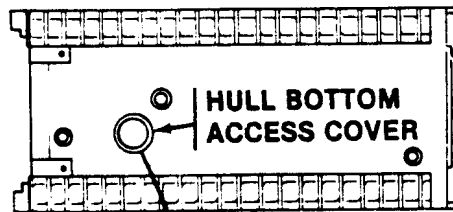
1. If required, attach power plant sling's two 6 link chains (2) to lifting eyes (3) on engine and one 17 link chain (4) to lifting eye (5) on transfer gearcase.



WARNING

Hanging loads can kill or injure you. Keep away from hanging loads and overhead equipment. Keep hands out of compartment while power plant is being lifted for removal or lowered for installation.

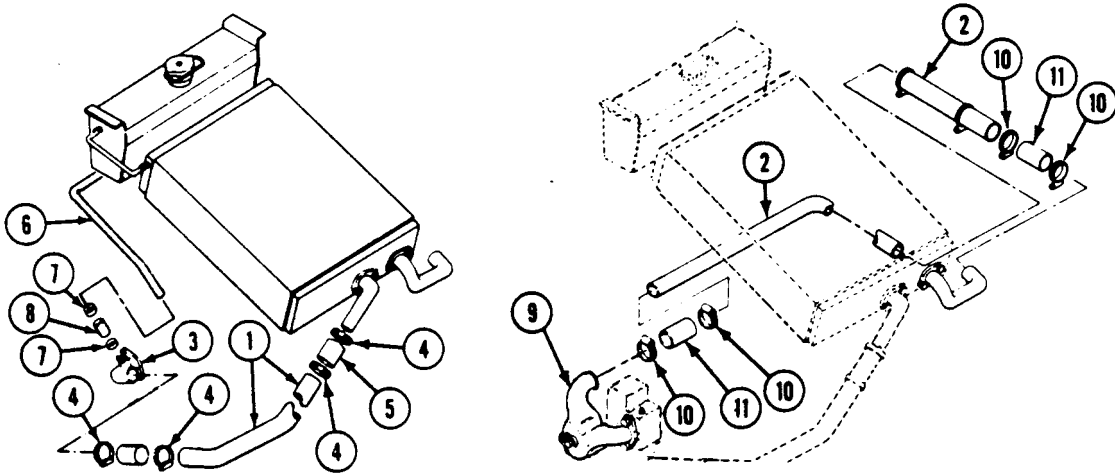
2. Lower power plant into carrier. Have helper assist. Do not detach sling.
3. From underneath carrier, connect hose (5) to differential oil pump (6).



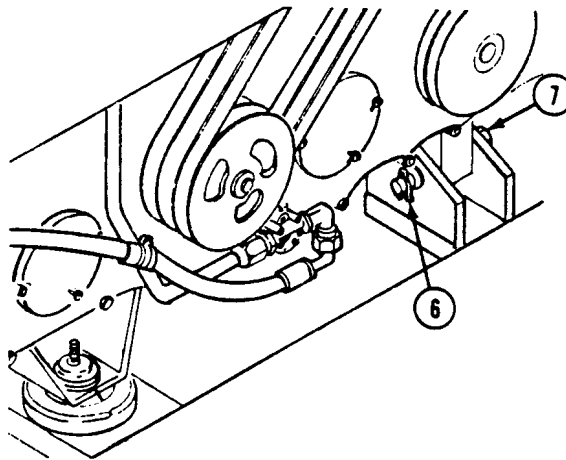
REMOVE/INSTALL POWER PLANT — Continued

0131 00

4. Install tubes (1) and (2) through power plant access door opening.
5. Connect tube (1) to oil cooler elbow (3) and radiator with four clamps (4) and two hoses (5).
6. Connect vent tube (6) to oil cooler elbow (3) with two clamps (7) and hose (8).
7. Connect tube (2) to deaeration elbow (9) and radiator with four clamps (10) and two hoses (11).

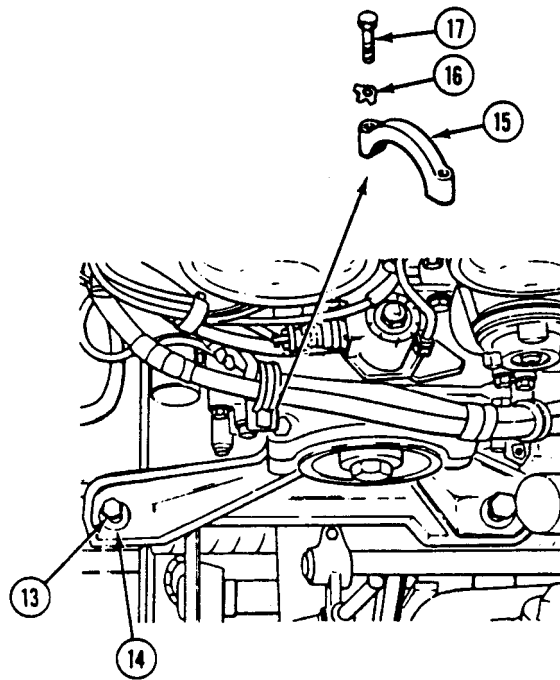


8. Raise power plant slightly and install headed pin (7) in transfer gearbox right mount.

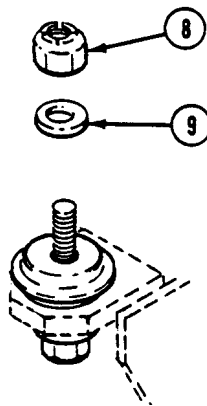


REMOVE/INSTALL POWER PLANT — Continued**0131 00**

9. Lower power plant and remove lifting sling.
10. Install two washers (13) and new lockbolts (14) in front engine mount base. TIGHTEN LOCKBOLTS TO 120-130 LB-FT (162-176 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 103).
11. Install cap (15) with two new key washers (16) and screws (17). TIGHTEN SCREWS TO 30-35 LB-FT (41-48 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 103).



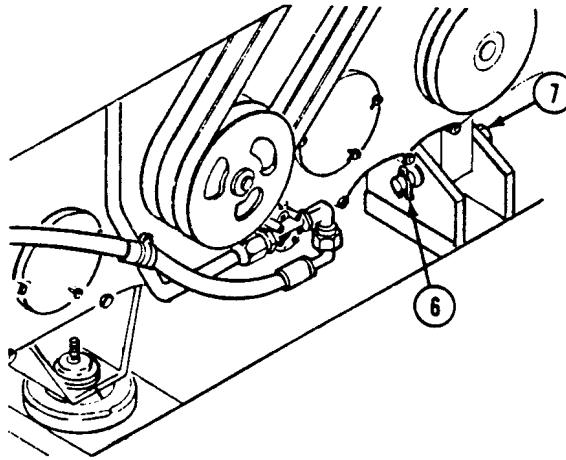
12. Install washer (9) and nut (8) on transfer gearbox left mount.
13. TIGHTEN NUT (8) TO 75-80 LB-FT (102-108 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 103).



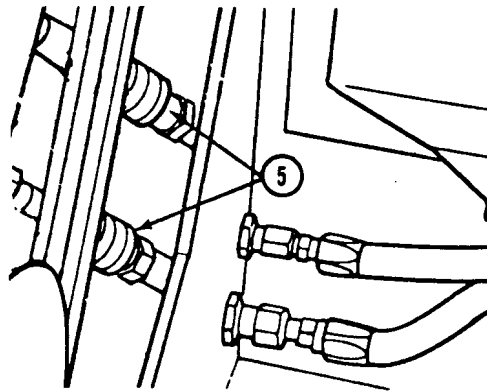
REMOVE/INSTALL POWER PLANT — Continued

0131 00

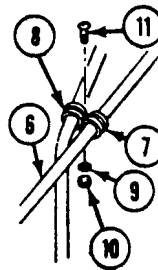
14. Install clip (6) on headed pin (7) at transfer gearcase right mount.



15. Connect two fuel hoses at couplings (5).

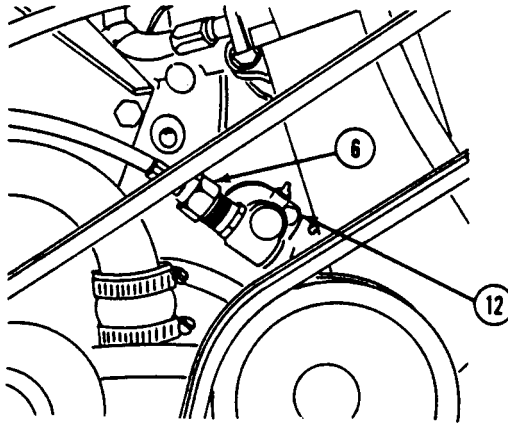


16. Install tachometer cable (6) on tank with clamp (7), clamp (8), washer (9), nut (10), and screw (11).

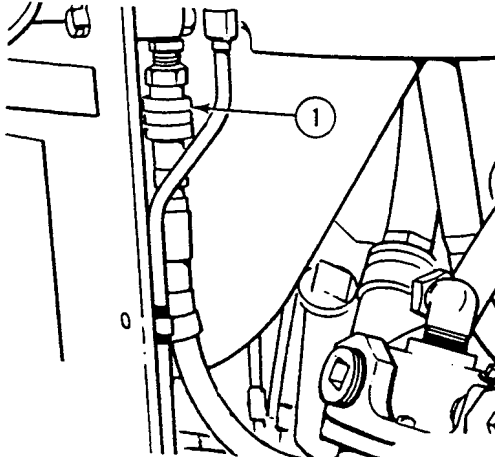


REMOVE/INSTALL POWER PLANT — Continued**0131 00**

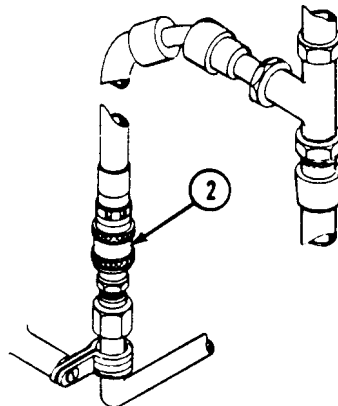
17. Connect tachometer cable (6) to engine adapter (12).



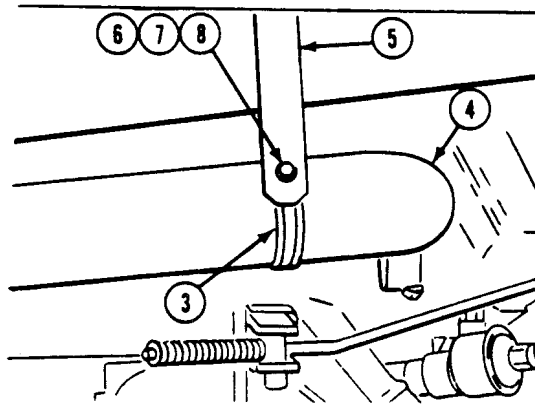
18. Connect ramp hydraulic line at coupling (1).



19. Connect ramp hydraulic line at coupling (2).

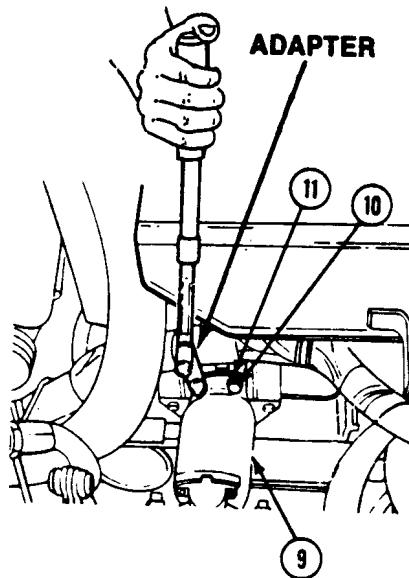


20. Install clamp (3) on radiator inlet tube (4). Secure clamp to hanger (5) with washer (6), screw (7), and nut (8).

**NOTE**

Screws and washers must be clean, dry, and free of lubricants and paint. If your carrier is equipped with 6C universal joints, screws are 3/8-24 x 1-3/4; if equipped with 7C universal joints, screws are 1/2-20 x 2.

21. Connect propeller shaft (9) to transmission with four new washers (10) and new screws (11). **TIGHTEN 6C UNIVERSAL JOINTS TO 35-40 LB-FT (47-54 N·M) TORQUE.** Use torque wrench (WP 0780 00, Item 103) and adapter (WP 0780 00, Item 7). **TIGHTEN 7C UNIVERSAL JOINTS TO 83-100 LB-FT (113-136 N·M) TORQUE.** Use torque wrench (WP 0780 00, Item 103) and adapter (WP 0780 00, Item 6). Loosen screws and retighten to correct torque again. See WP 0120 00 for correct readings on torque wrenches with adapters.

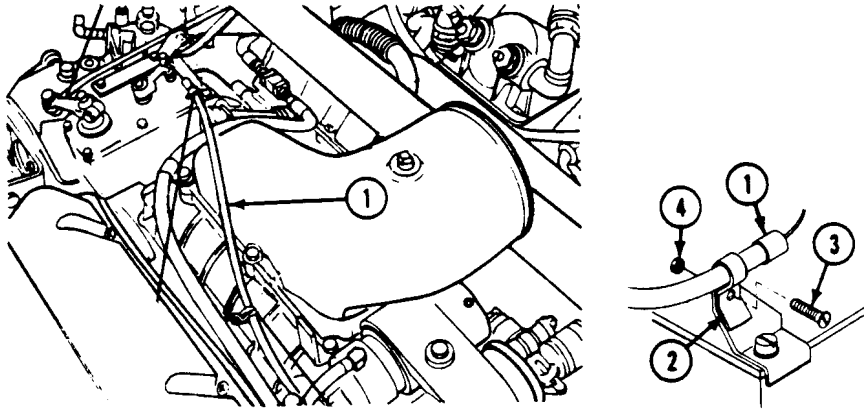


22. Install left and right final drive propeller shafts (WP 0348 00 and WP 0349 00).

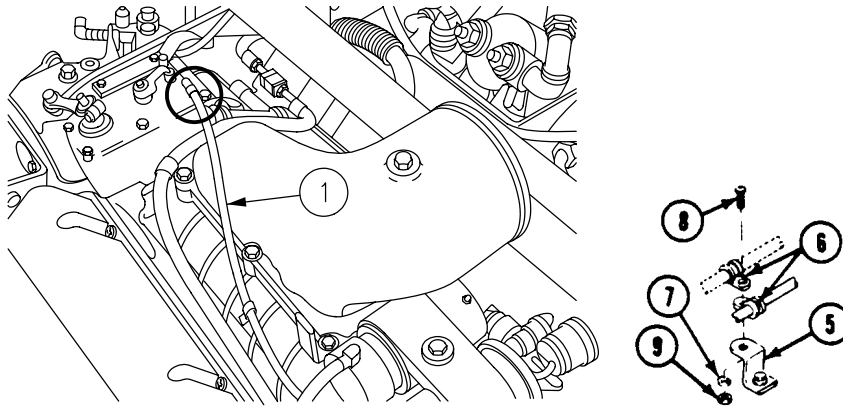
REMOVE/INSTALL POWER PLANT — Continued

0131 00

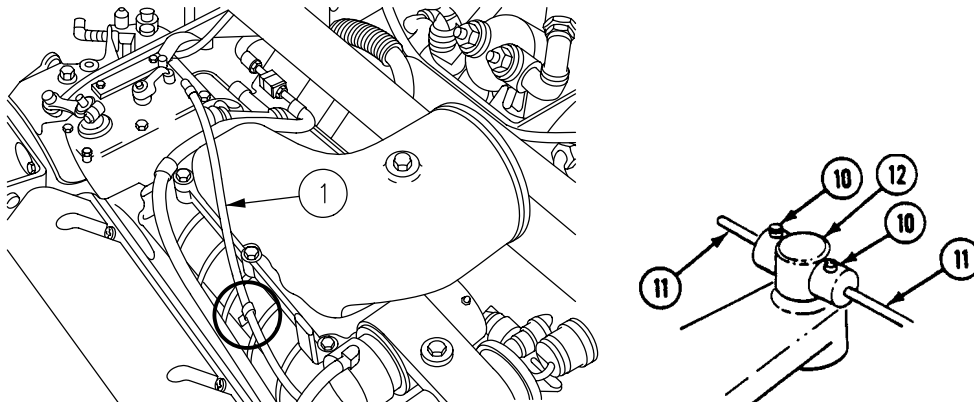
23. Install control cable (1) in clamp (2). Secure with screw (3) and nut (4).



24. Fasten control cable (1) to engine cylinder-head cover bracket (5) with two clamps (6), washer (7), screw (8), and nut (9).

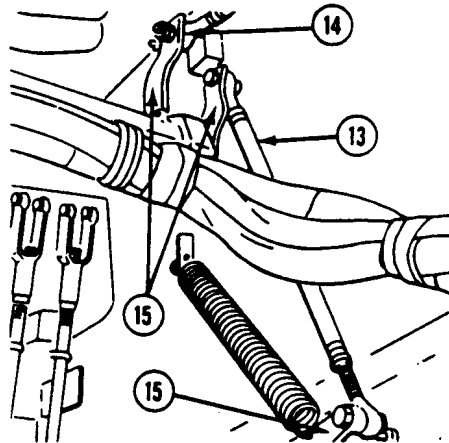


25. Tighten setscrews (10) that secure fuel cutoff control cable (11) to governor arm pin (12).

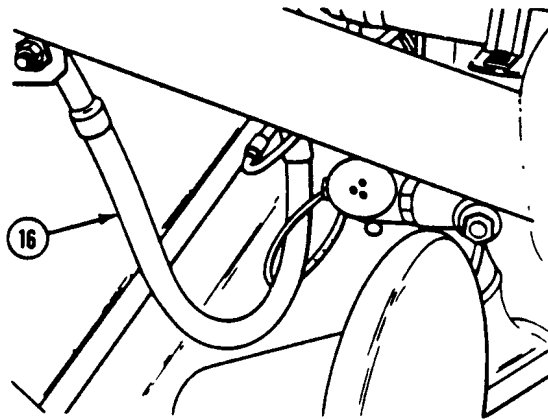


REMOVE/INSTALL POWER PLANT — Continued**0131 00**

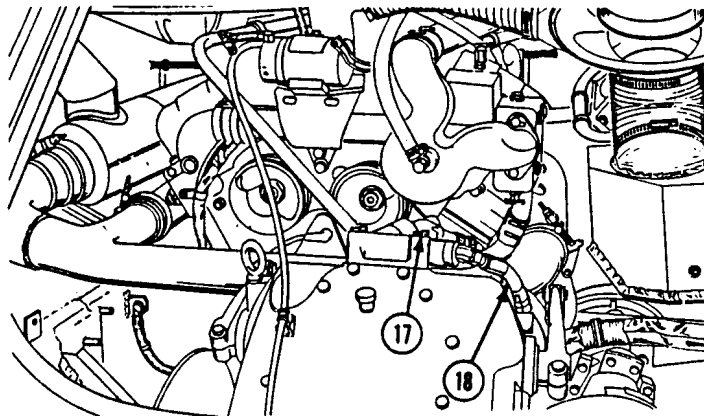
26. Connect accelerator pedal linkage (13) and range selector linkage (14) to bellcranks (15).



27. Connect starter ground lead (16) to hull.



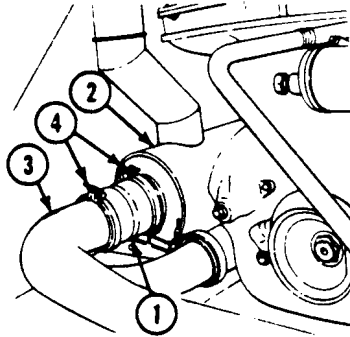
28. Connect differential oil inlet hose (17) to differential.
29. Connect differential oil temperature lead (18) to differential.



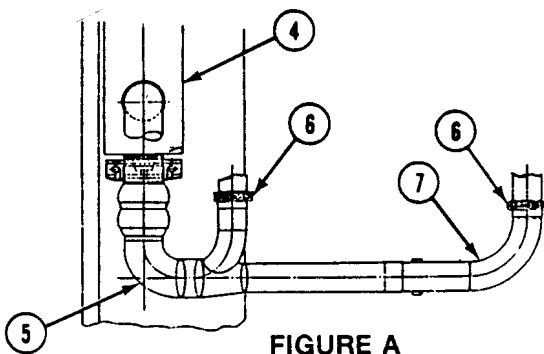
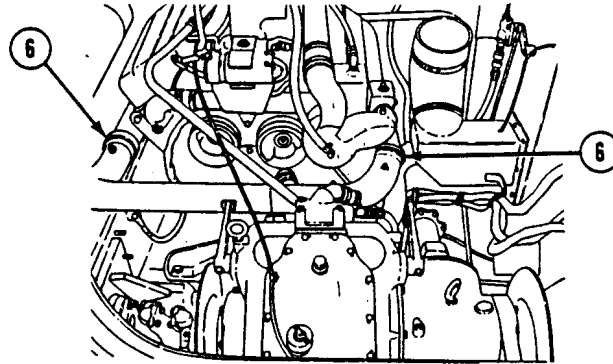
NOTE

On carriers with exhausts as shown in Figure A, go to Step 31.

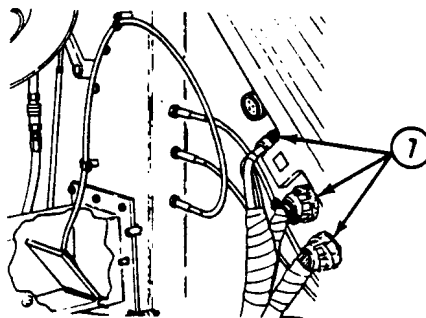
30. Install pipe joint (1) on muffler (2) and exhaust pipe (3). Secure with two clamps (4).



31. Install exhaust pipes (5) and (7) on engine exhaust manifolds. Secure with two clamps (6). TIGHTEN CLAMPS TO 192-216 LB-IN (22-24 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 102) and socket wrench set.

**FIGURE A**

32. Connect three electrical cables (7) at driver's compartment bulkhead.



FOLLOW-THROUGH STEPS

1. Install air control valve and housing assembly (WP 0187 00).
2. Open fuel supply valve at tank (see your -10).
3. Connect battery ground strap (WP 0294 00).
4. Lower power plant grill (WP 0130 00).
5. Fill cooling system (WP 0194 00).
6. Adjust fuel control cutoff cable (WP 0403 00).
7. Check installation and operation of controls.
8. Start engine (see your -10). Check for leaks and proper installation.
9. Stop/shutdown engine (see your -10).
10. Install power plant bottom access cover (WP 0434 00).
11. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).
12. Install driver's power plant access panel (WP 0430 00).

END OF TASK

CHAPTER 6

UNIT MAINTENANCE INSTRUCTIONS
FOR FUEL SYSTEM

WORK PACKAGE INDEX

<u>Title</u>	<u>Sequence No.</u>
FUEL FLOW DIAGRAM (M113A2, M1059, AND M901A1 WITH INSIDE TANK OR COMPARTMENT ONLY).....	0132 00
FUEL FLOW DIAGRAM (M577A2 AND M1068 ONLY).....	0133 00
FUEL FLOW DIAGRAM (M981 AND M1064 WITH EXTERNAL FUEL TANKS).....	0134 00
DRAIN FUEL TANK (M113A2, M901A1, AND M1059 ONLY).....	0135 00
REPLACE COMBAT FILLER COVER AND LOCK	0136 00
REPLACE FILLER CAP AND STRAINER PARTS	0137 00
REPLACE FUEL QUANTITY TRANSMITTER (M113A2, M901A1, AND M1059 ONLY).....	0138 00
REPLACE FUEL TANK (M113A2, M901A1, AND M1059 ONLY).....	0139 00
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REPLACE FUEL QUANTITY TRANSMITTER (M577A2 AND M1068 ONLY).....	0155 00
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CHAPTER 6
UNIT MAINTENANCE INSTRUCTIONS
FOR FUEL SYSTEM

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REPLACE AIR BOX HEATER TO FUEL RETURN TEE TUBE AND HOSE.....	0169 00
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REPLACE ENGINE FUEL PUMP.....	0171 00
REPLACE PRIMARY FUEL FILTER ASSEMBLY.....	0172 00
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REPLACE AIR BOX HEATER.....	0180 00
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**FUEL FLOW DIAGRAM (M113A2, M1059, AND M901A1 WITH
INSIDE TANK OR COMPARTMENT ONLY)**

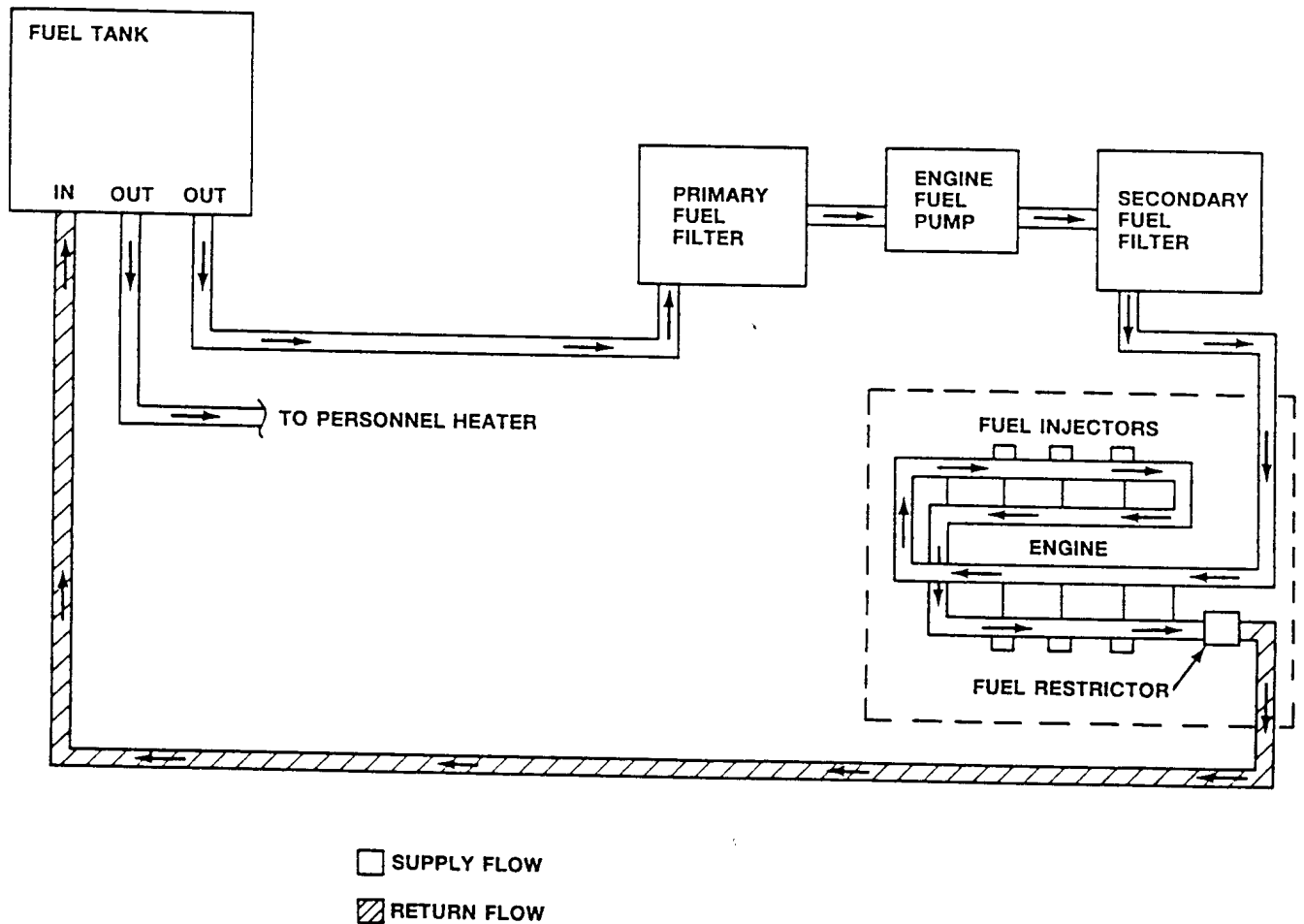
0132 00

THIS WORK PACKAGE COVERS:

INITIAL SETUP:

Maintenance Level

Unit



END OF TASK

FUEL FLOW DIAGRAM (M577A2 AND M1068 ONLY)

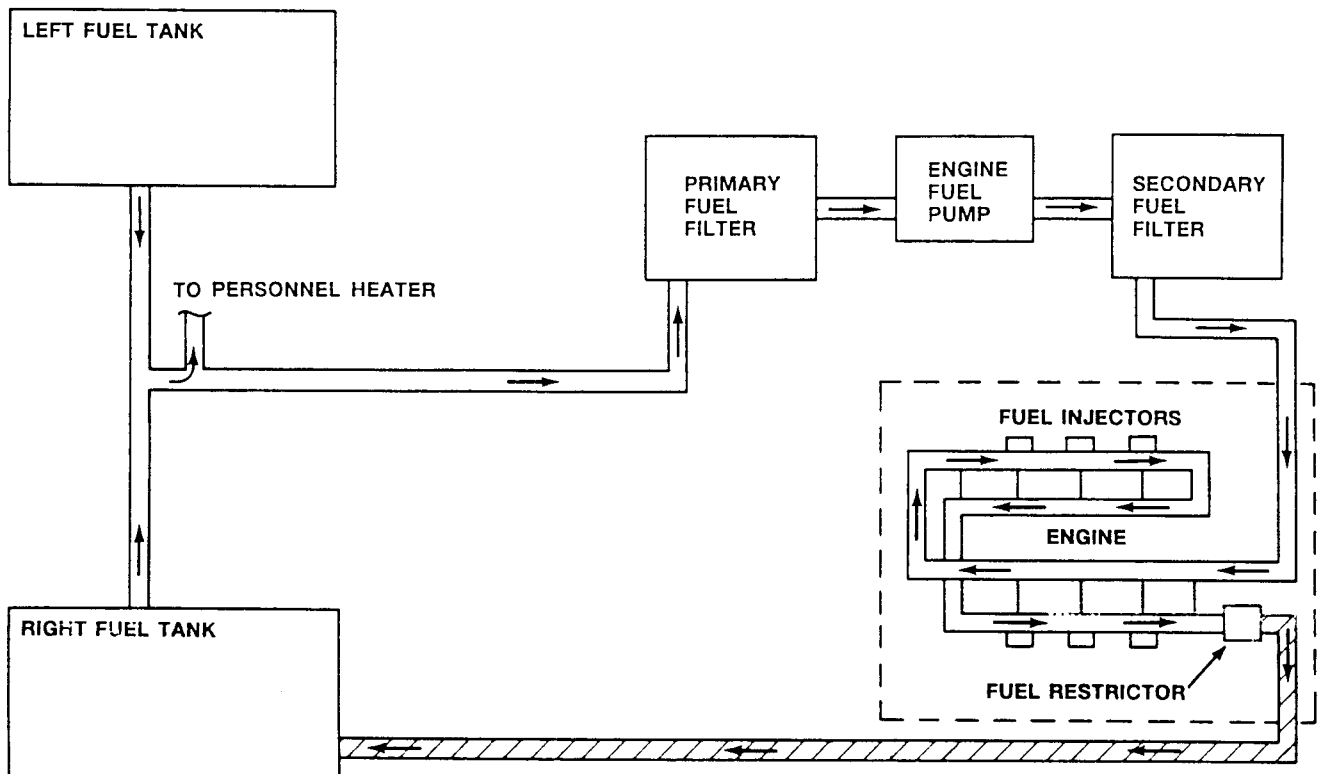
0133 00

THIS WORK PACKAGE COVERS:

INITIAL SETUP:

Maintenance Level

Unit



□ SUPPLY FLOW

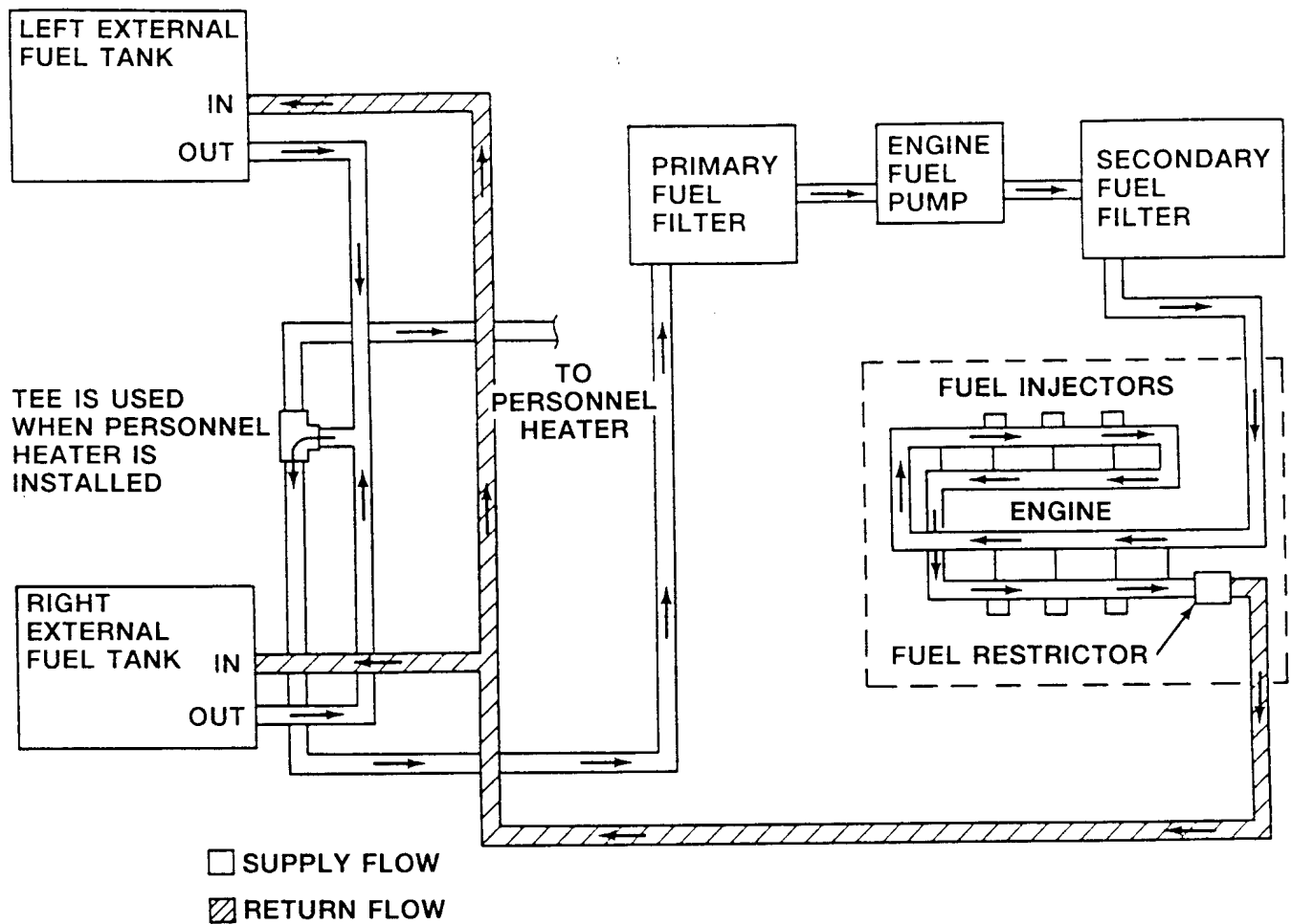
▨ RETURN FLOW

END OF TASK

FUEL FLOW DIAGRAM (M981 AND M1064 WITH EXTERNAL FUEL TANKS)**0134 00****THIS WORK PACKAGE COVERS:****INITIAL SETUP:**

Maintenance Level

Unit

**END OF TASK**

DRAIN FUEL TANK (M113A2, M901A1, AND M1059 ONLY)**0135 00****THIS WORK PACKAGE COVERS:**

Drain (page 0135 00-1).

INITIAL SETUP:Maintenance Level

Unit

References

See your -10

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Hose assembly (WP 0780 00, Item 36)

Equipment Condition

Engine stopped (see your -10)

Ramp lowered (see your -10)

Carrier blocked (see your -10)

Battery ground strap disconnected (WP 0294 00)

Materials/Parts

Wiping rag (WP 0782 00, Item 76)

Suitable size containers at least 95 gal (360 liter)

Personnel Required

Unit Mechanic

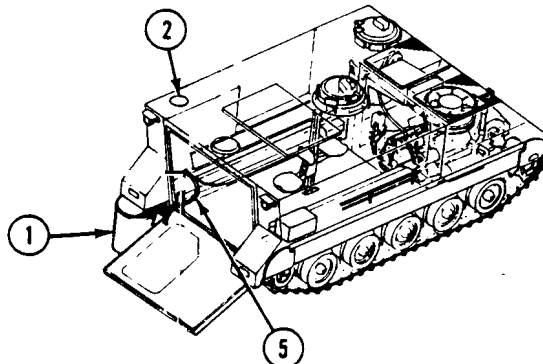
DRAIN**WARNING**

Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

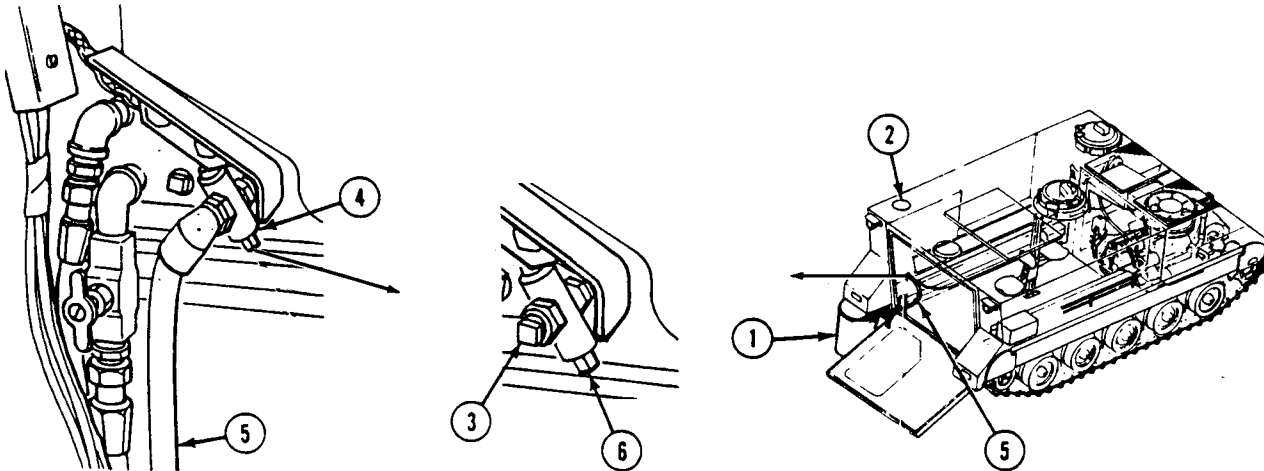
Use wiping rag to wipe up any spilled fuel.

1. Place a metal container (1) of suitable capacity directly behind carrier to left of lowered ramp.
2. Place container (1) against side of lowered ramp and rear of carrier to get metal-to-metal contact. Make sure there is a good ground.
3. Open fuel filler combat cover (2) and remove fuel filler cap (see your -10).



DRAIN FUEL TANK (M113A2, M901A1, AND M1059 ONLY) — Continued**0135 00**

4. Remove square head pipe plug (3) from drain valve (4).
5. Attach drain hose (5) to drain valve (4). Place open end of hose in container (1).
6. Turn square fitting (6) in valve (4). Drain fuel from tank.
7. When tank is drained, remove drain hose (5) from valve (4). Insert plug (3).
8. Turn fitting (6) on valve (4) to close drain valve.
9. Install fuel filler cap. Close filler combat cover (2) (see your -10).

**FOLLOW-THROUGH STEPS**

1. After maintenance has been performed, fill fuel tank (see your -10).
2. Connect battery ground strap (WP 0294 00).
3. Start engine (see your -10).
4. Raise and lock ramp (see your -10).
5. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE COMBAT FILLER COVER AND LOCK

0136 00**THIS WORK PACKAGE COVERS:**

Removal (page 0136 00-1).
Installation (page 0136 00-2).

INITIAL SETUP:Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Ramp lowered (see your -10)

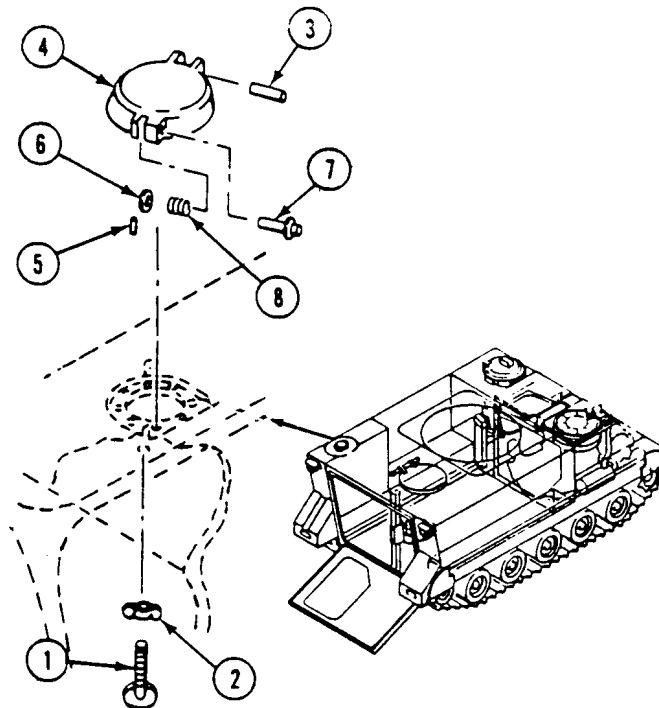
Materials/Parts

Spring pin

Spring pin

REMOVAL**NOTE****If threads on thumbscrew were previously deformed, do Step 1.**

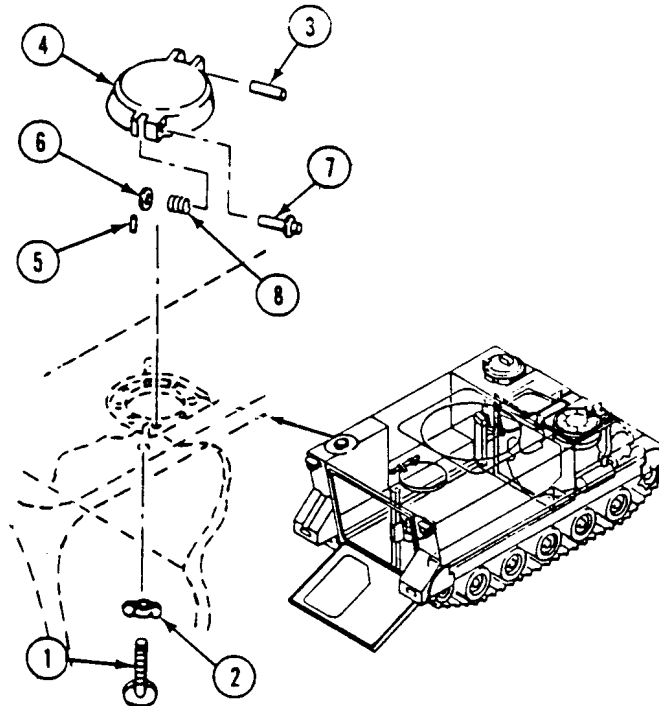
1. Grind away deformed threads on thumbscrew (1). Remove wing nut (2) and thumbscrew.
2. Loosen wing nut (2) and thumbscrew (1) above fuel tank inside carrier.
3. Remove spring pin (3) and cover (4) from top of hull. Discard spring pin.
4. Remove spring pin (5), washer (6), pin (7), and spring (8) from cover (4). Discard spring pin.



REPLACE COMBAT FILLER COVER AND LOCK — Continued**0136 00****INSTALLATION****NOTE**

If thumbscrew and wing nut were removed, do Step 1.

1. Screw wing nut (2) on thumbscrew (1) and install thumbscrew inside carrier. Deform threads on thumbscrew. Tighten wing nut.
2. Secure spring (8), pin (7), and washer (6) to cover (4) with new spring pin (5).
3. Secure cover (4) to hull with new spring pin (3).
4. Turn thumbscrew (1) into lock position. Tighten wing nut (2).

**FOLLOW-THROUGH STEPS**

1. Raise and lock ramp (see your -10).
2. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE FILLER CAP AND STRAINER PARTS**0137 00****THIS WORK PACKAGE COVERS:**

Removal (page 0137 00-1).
 Installation (page 0137 00-2).

INITIAL SETUP:Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Battery ground lead disconnected (WP 0294 00)

Combat filler cover and lock open (see your -10)

Materials/Parts

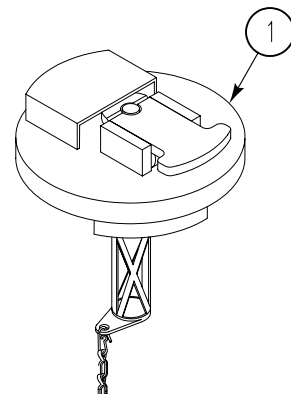
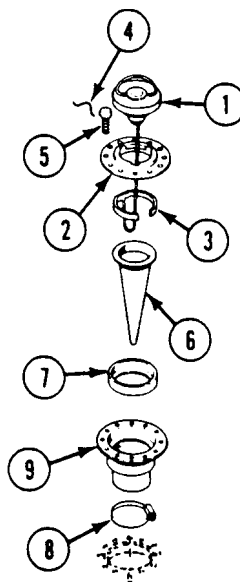
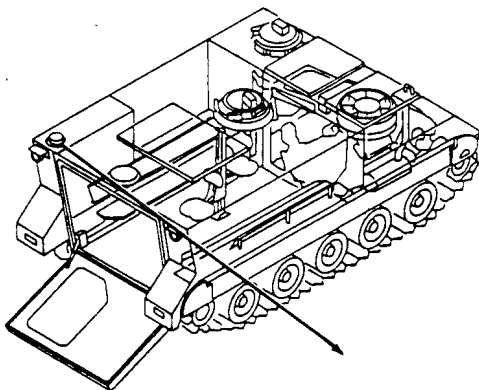
Non-electrical wire (WP 0782 00, Item 40)

Gasket

REMOVAL**NOTE**

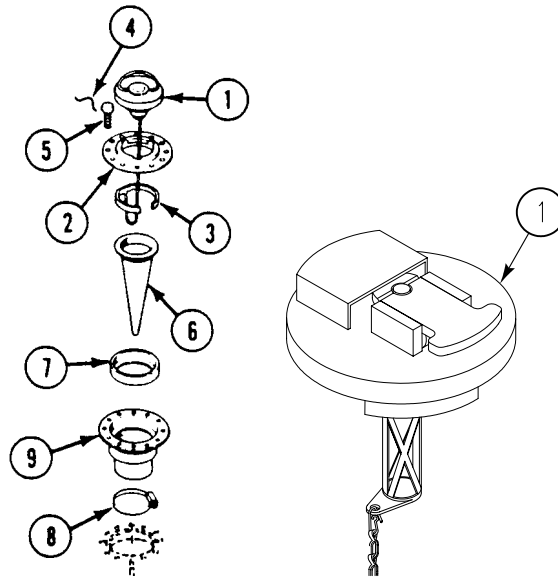
Carrier may have optional cap with pressure relief valve. If fuel cap has pressure relief valve, remove cap by lifting pressure relief valve and turning cap counterclockwise.

1. Unfasten fuel filler cap and chain assembly (1) from filler neck (2).
2. Compress C ring (3) and remove from filler neck (2).
3. Remove lockwire (4), 12 screws (5), filler neck (2), strainer (6), retainer (7), and filler cap and chain assembly (1) from hull top. Discard lockwire.
4. Loosen clamp (8) that secures boot (9) to inside fuel tank. Remove boot through top of hull.



REPLACE FILLER CAP AND STRAINER PARTS — Continued**0137 00****INSTALLATION**

1. Align mounting holes in boot (9) with mounting holes in hull top. Secure boot (9) to inside fuel tank neck with clamp (8).
2. Secure filler neck (2), retainer (7), strainer (6), and filler cap and chain assembly (1) to hull top with 12 screws (5).
3. Install new lockwire (4) through heads of 12 screws (5). Secure with double twist method.
4. Compress C ring (3) and install through filler neck (2).
5. Fasten filler cap and chain assembly (1) in filler neck (2).

**FOLLOW-THROUGH STEPS**

1. Connect battery ground lead (WP 0294 00).
2. Combat filler cover closed and locked (see your -10).

END OF TASK

REPLACE FUEL QUANTITY TRANSMITTER (M113A2, M901A1, AND M1059 ONLY)

0138 00

THIS WORK PACKAGE COVERS:

Removal (page 0138 00-1).
Installation (page 0138 00-2).

INITIAL SETUP:

Maintenance Level

Unit

References

See your -10

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Ramp lowered (see your -10)

Battery ground lead disconnected (WP 0294 00)

Fuel tank drained (WP 0135 00)

Materials/Parts

Non-electrical wire (WP 0782 00, Item 40)

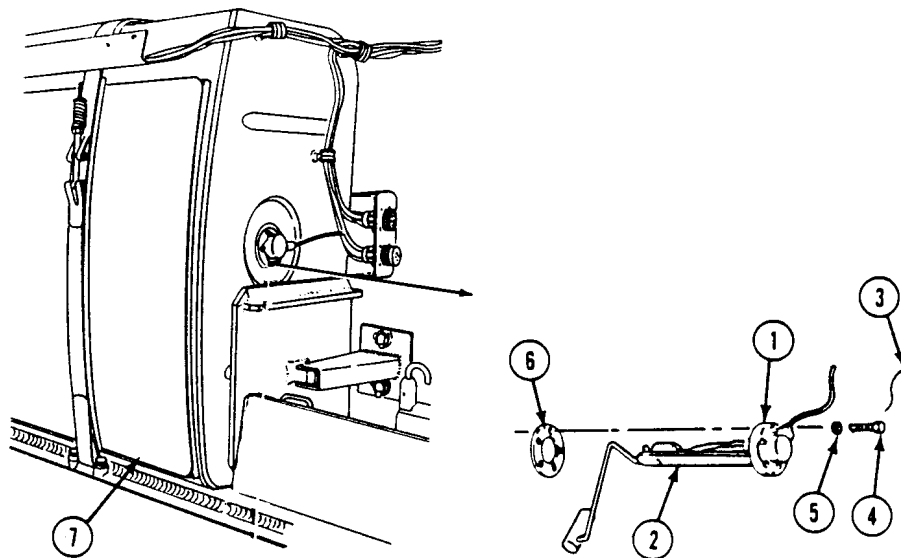
Gasket

Personnel Required

Unit Mechanic

REMOVAL

1. Disconnect circuit 28 lead (1) from transmitter (2).
2. Remove lockwire (3) from five screws (4). Discard lockwire.
3. Remove five screws (4), washers (5), transmitter (2), and gasket (6) from fuel tank (7). Discard gasket.

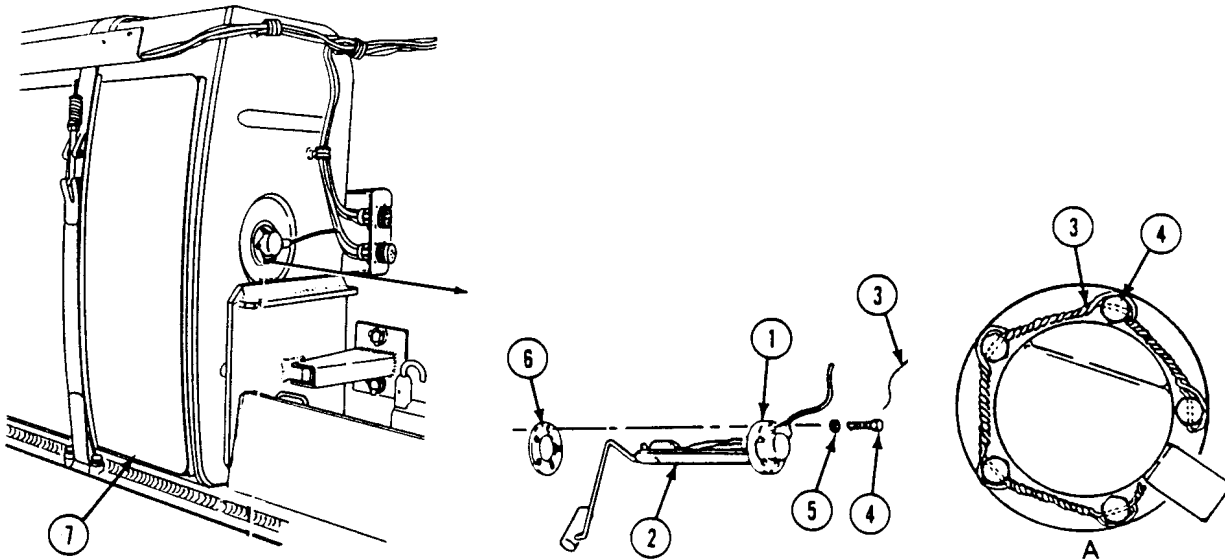


REPLACE FUEL QUANTITY TRANSMITTER (M113A2, M901A1, AND M1059 ONLY) — Continued

0138 00

INSTALLATION

1. Place new gasket (6) and transmitter (2) in fuel tank (7). Secure with five washers (5) and screws (4).
2. Secure five screws (4) with new lockwire (3).
3. Connect circuit 28 lead (1) to transmitter (2).



4. Fill fuel tank (see your -10).
5. Check fuel tank for leaks.

FOLLOW-THROUGH STEPS

1. Connect battery ground lead (WP 0294 00).
2. Raise and lock ramp (see your -10).
3. Check that fuel quantity transmitter works properly (see your -10).
4. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE FUEL TANK (M113A2, M901A1, AND M1059 ONLY)**0139 00****THIS WORK PACKAGE COVERS:**

Removal (page 0139 00-1).
 Disassembly (page 0139 00-6).
 Cleaning, Inspection, and Repair (page 0139 00-7).
 Assembly (page 0139 00-7).
 Installation (page 0139 00-10).

INITIAL SETUP:Maintenance Level

Unit

Personnel Required

Unit Mechanic

Helper (H)

Tools and Special Tools

General Mechanics Tool Kit (WP 0780 00, Item 29)
 Socket Wrench Set (WP 0780 00, Item 96)
 Torque Wrench (WP 0780 00, Item 102)
 Torque Wrench (WP 0780 00, Item 104)

Equipment Condition

Engine stopped/shutdown (see your -10)
 Carrier blocked (see your -10)
 Ramp lowered (see your -10)
 Battery ground lead disconnected (WP 0294 00)
 Fuel tank drained (WP 0135 00)
 Fuel filler neck and boot removed (WP 0137 00)
 Fuel quantity transmitter removed (WP 0138 00)

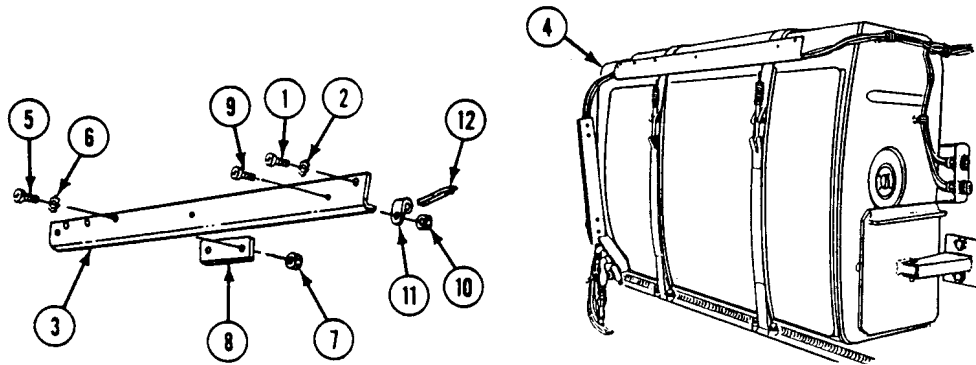
Materials/Parts

Sealing compound (WP 0782 00, Item 60)
 Cotter pin
 Locknut (7)
 Lockwasher (9)
 Tab washer (13)

REMOVAL**NOTE**

Permanent fuel tank repair is authorized at depot only. For temporary repair, go to WP 0140 00.

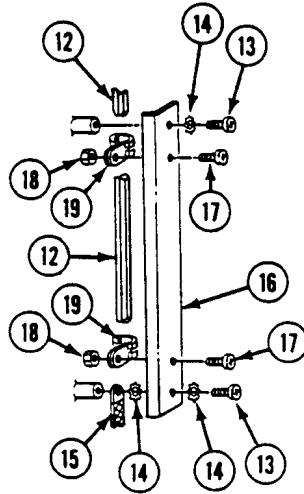
1. Remove two screws (1), lockwashers (2), and wiring harness cover (3) from fuel tank (4). Discard lockwashers.
2. Remove two screws (5), lockwashers (6), locknuts (7), and access cover (8) from cover (3). Discard lockwashers and locknuts.
3. Remove three screws (9), locknuts (10), clamps (11), and wiring harness (12) from cover (3). Discard locknuts.



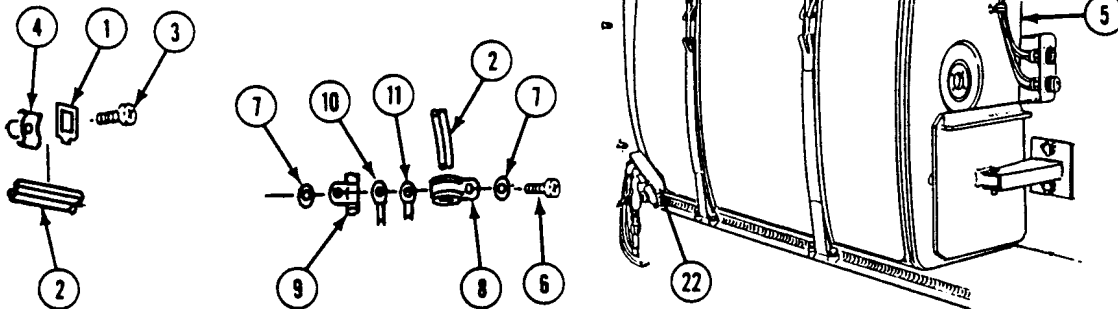
REPLACE FUEL TANK (M113A2, M901A1, AND M1059 ONLY) — Continued

0139 00

4. Remove two screws (13), three lockwashers (14), ground lead (15), and wiring harness guard (16) from hull. Discard lockwashers.
5. Remove two screws (17), locknuts (18), clamps (19), and wiring harness (12) from guard (16). Discard locknuts.

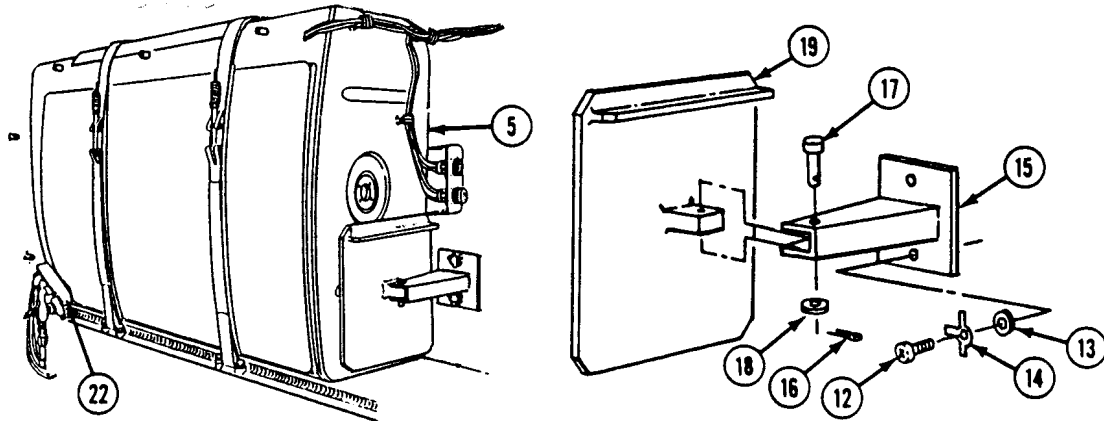


6. Remove two clips (1), harness (2), screws (3), and cradles (4) from front end of fuel tank (5).
7. Remove screw (6), two washers (7), clamp (8), condenser (9), and two ground leads (10) and (11), from harness (2) and fuel tank (5).

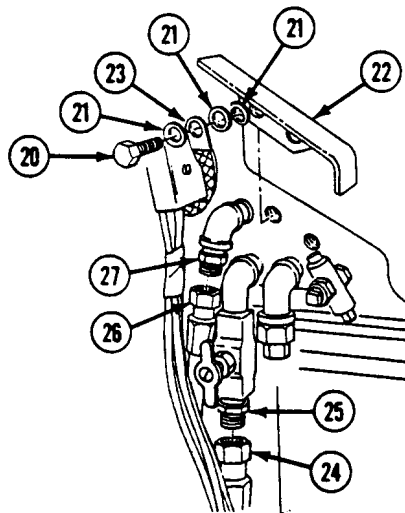
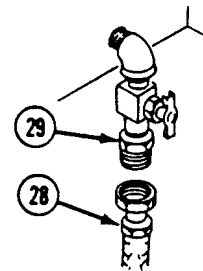


REPLACE FUEL TANK (M113A2, M901A1, AND M1059 ONLY) — Continued**0139 00**

8. Remove two screws (12), flat washers (13), key washers (14), and bracket (15) from hull at front end of fuel tank (5). Discard key washers.
9. Remove cotter pin (16), headed pin (17), washer (18), and restraint plate (19) from bracket (15). Discard cotter pin.

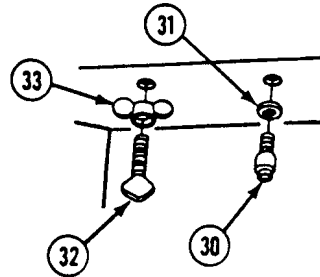


10. Remove two screws (20), five lockwashers (21), fuel tank guard (22), and ground lead (23) from fuel tank. Discard lockwashers.
11. Disconnect fuel supply hose (24) from adapter (25).
12. Disconnect fuel return hose (26) from adapter (27).
13. Disconnect heater fuel supply hose (28) from fuel shutoff valve (29) (when personnel heater is installed).

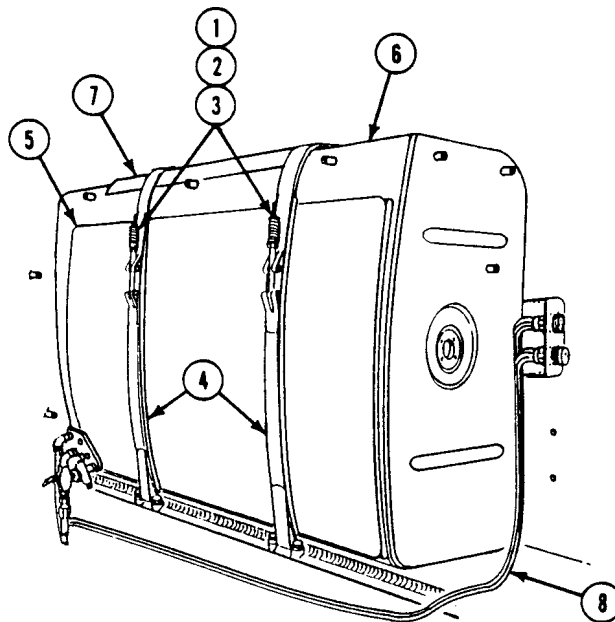
**WITHOUT PERSONNEL HEATER INSTALLED****WITH PERSONNEL HEATER INSTALLED**

REPLACE FUEL TANK (M113A2, M901A1, AND M1059 ONLY) — Continued**0139 00**

14. Remove litter kit mount pin (30) and lockwasher (31) from hull top. Discard lockwasher.
15. Remove thumbscrew (32) and wing nut (33) from hull top.

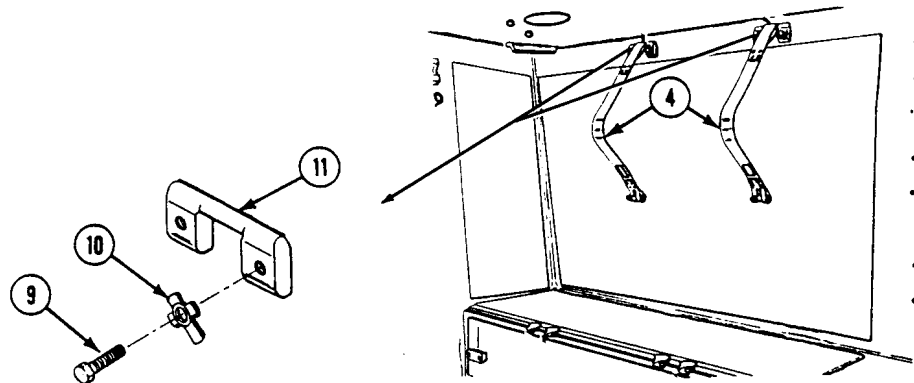


16. Remove two locknuts (1), springs (2), and four washers (3) from four bands (4). Discard locknuts.
17. Remove shield (5) from inboard side of fuel tank (6).
18. Remove retainer (7) from top side of fuel tank (6).
19. Position harness (8) to clear top of fuel tank (6). Remove fuel tank from carrier.

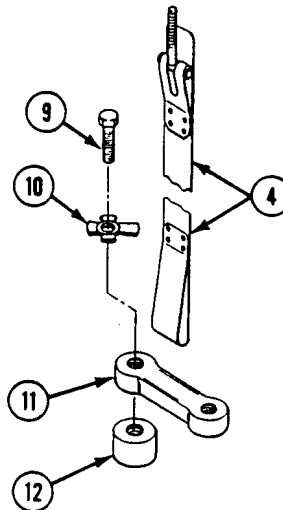


REPLACE FUEL TANK (M113A2, M901A1, AND M1059 ONLY) — Continued**0139 00**

20. Remove four screws (9), key washers (10), two brackets (11), and bands (4). Discard key washers.



21. Remove four screws (9), key washers (10), two brackets (11), four spacers (12), and two straps (4). Discard key washers.



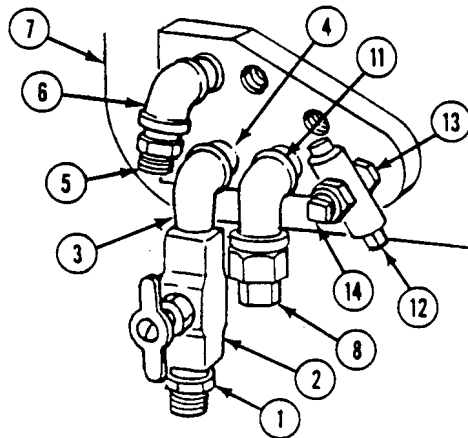
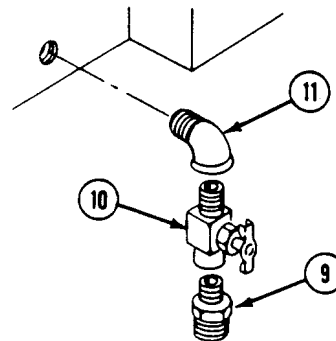
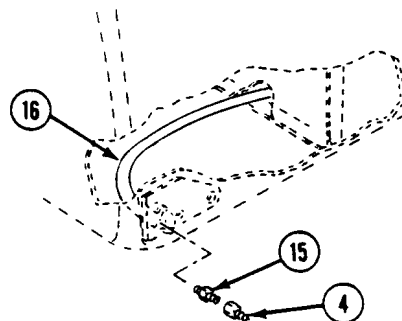
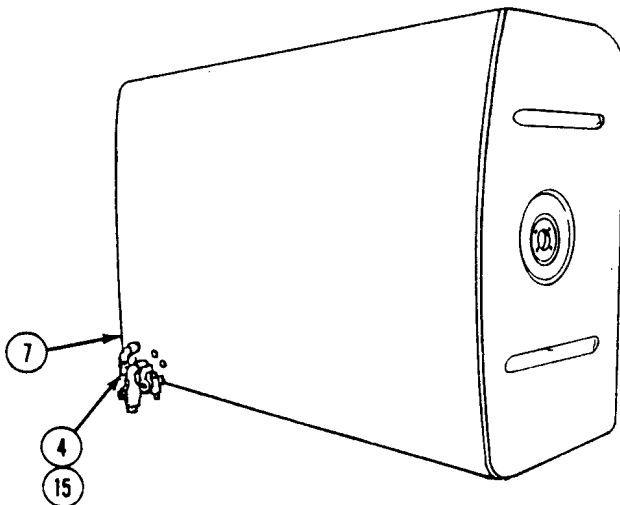
REPLACE FUEL TANK (M113A2, M901A1, AND M1059 ONLY) — Continued**0139 00****DISASSEMBLY**

1. Remove adapter (1) from fuel shutoff valve (2).
2. Remove shutoff valve (2) from elbow (3).
3. Remove elbow (3) from adapter (4).
4. Remove adapter (5) from elbow (6).
5. Remove elbow (6) from fuel tank (7).

NOTE

If heater is installed, go to Step 7.

6. Remove pipe plug (8) and elbow (11) from fuel tank (7) (without personnel heater installed).
7. Remove adapter (9), shutoff valve (10), and elbow (11) from fuel tank (7) (with personnel heater installed).
8. Remove fuel drain valve (12) from nipple (13). Remove drain plug (14) from drain valve (12).
9. Remove nipple (13) from fuel tank (7).
10. Remove adapter (4), adapter (15), and tube (16) from fuel tank (7).

**WITHOUT PERSONNEL HEATER INSTALLED****WITH PERSONNEL HEATER INSTALLED**

CLEANING, INSPECTION, AND REPAIR

1. Clean hull, retainer, shield, and pad surface thoroughly so that metal and rubber surfaces are clean and dry.
2. Check fittings. Repair or replace parts that have stripped threads.
3. Check pads on bottom of tank retainer and on hull, and rubber strips on both sides of shield. Replace missing, cut, broken, or cracked pads and rubber strips (WP 0523 00).
4. Check decals. Replace decals that cannot be read (WP 0511 00).

ASSEMBLY

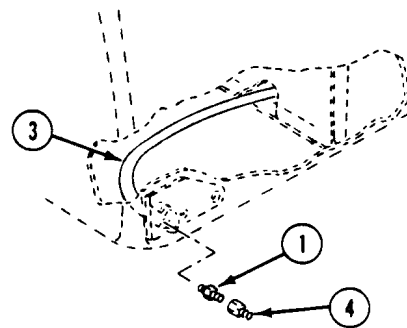
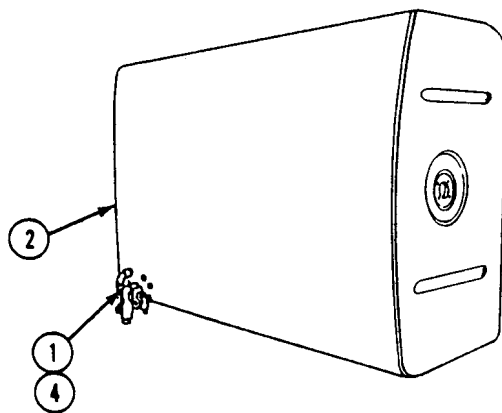
WARNING



Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

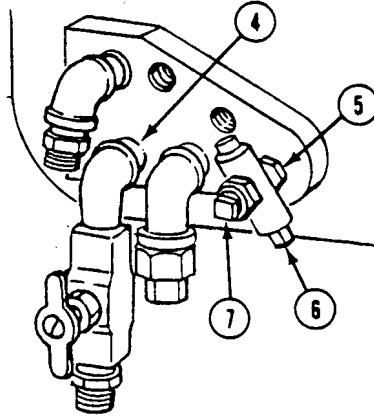
Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to cleaned external threads of fittings before installation.
2. Install adapter (1) in fuel tank (2).
3. Install tube (3) through adapter (1) and guide tube into tank baffle from fuel filler opening.
4. Install adapter (4) on adapter (1).



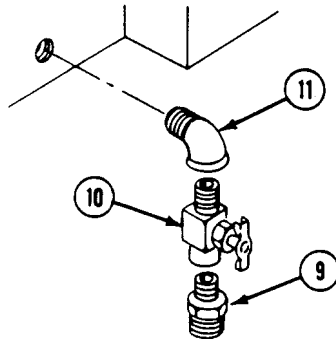
REPLACE FUEL TANK (M113A2, M901A1, AND M1059 ONLY) — Continued**0139 00**

5. Install nipple (5) in fuel tank.
6. Install fuel drain valve (6) on nipple (5). Install drain plug (7) in drain valve (6).

**WITHOUT PERSONNEL HEATER INSTALLED****NOTE**

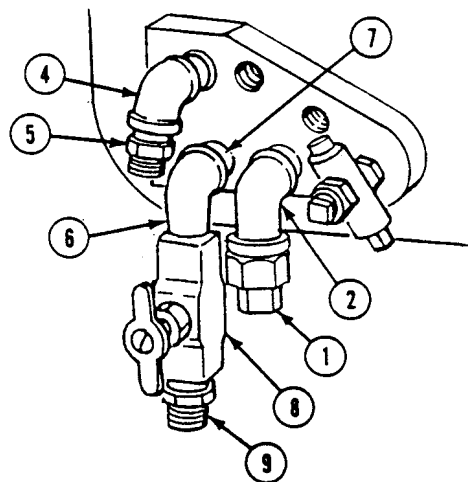
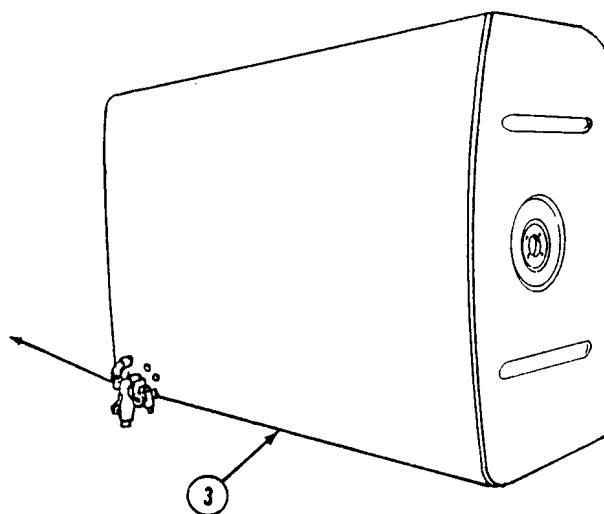
If personnel heater is not installed, go to Step 8.

7. Install elbow (11), shutoff valve (10), and adapter (9) in fuel tank (when personnel heater is installed).

**WITH PERSONNEL
HEATER INSTALLED**

REPLACE FUEL TANK (M113A2, M901A1, AND M1059 ONLY) — Continued**0139 00**

8. Install pipe plug (1) and elbow (2) in fuel tank (3) (without personnel heater installed).
9. Install elbow (4) in fuel tank (3).
10. Install adapter (5) in elbow (4).
11. Install elbow (6) in adapter (7).
12. Install fuel shutoff valve (8) on elbow (6).
13. Install adapter (9) in fuel shutoff valve (8).

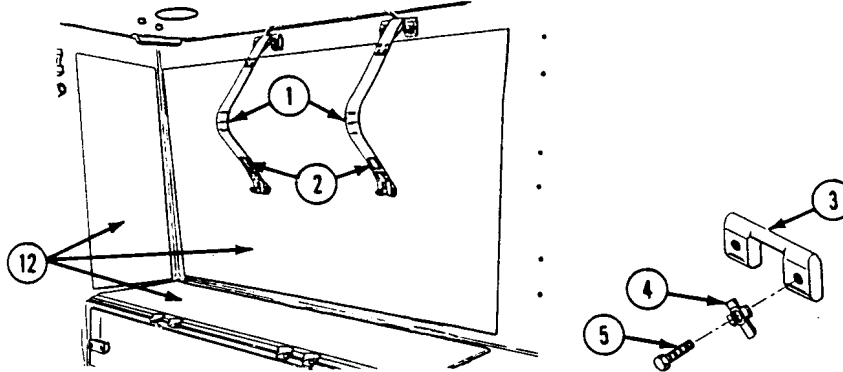
**WITHOUT PERSONNEL HEATER INSTALLED**

REPLACE FUEL TANK (M113A2, M901A1, AND M1059 ONLY) — Continued

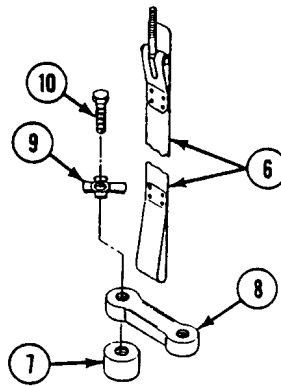
0139 00

INSTALLATION

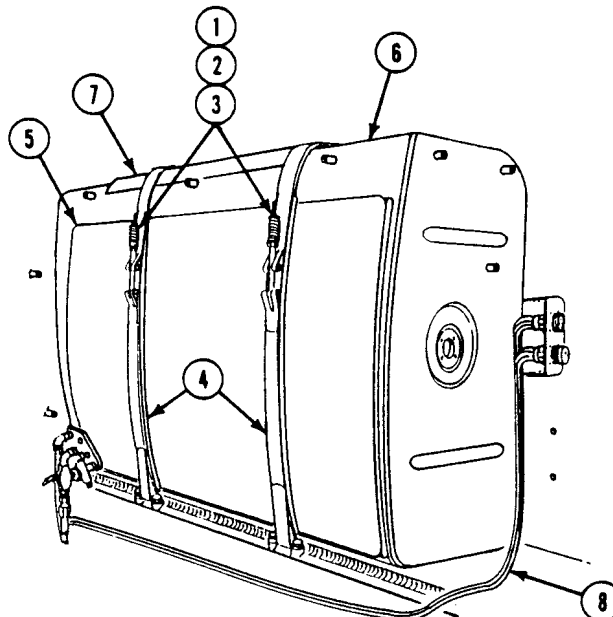
1. Secure bands (1) with two decals (2) to hull with two brackets (3), four new key washers (4), and screws (5). TIGHTEN SCREWS TO 40-45 LB-FT (54-61 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104).



2. Secure bands (6) to hull with four spacers (7), two anchor straps (8), four new key washers (9), and screws (10). TIGHTEN SCREWS TO 168-204 LB-IN (19-23 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 102) and socket wrench set.

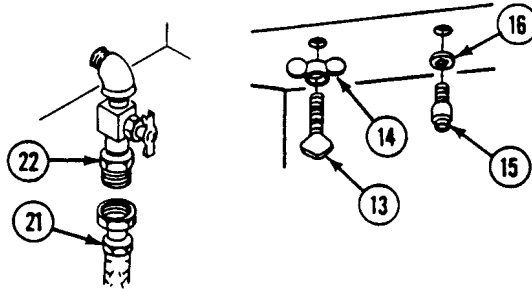


3. Position wiring harness (8) to clear fuel tank installation area. Install fuel tank in carrier.

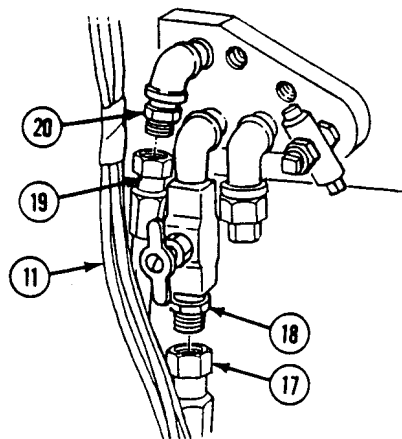


REPLACE FUEL TANK (M113A2, M901A1, AND M1059 ONLY) — Continued**0139 00**

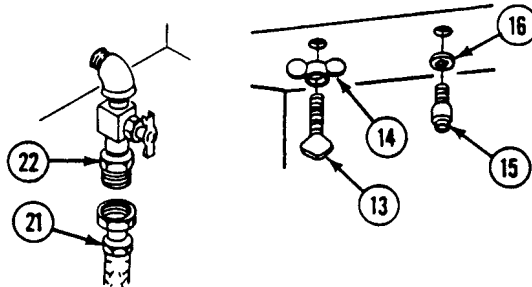
4. Install thumbscrew (13) and wingnut (14) in hull top.
5. Install litter kit mount pin (15) and new lockwasher (16) in hull top.

**WITH PERSONNEL HEATER INSTALLED**

6. Connect fuel supply hose (17) to adapter (18).
7. Connect fuel return hose (19) to adapter (20).

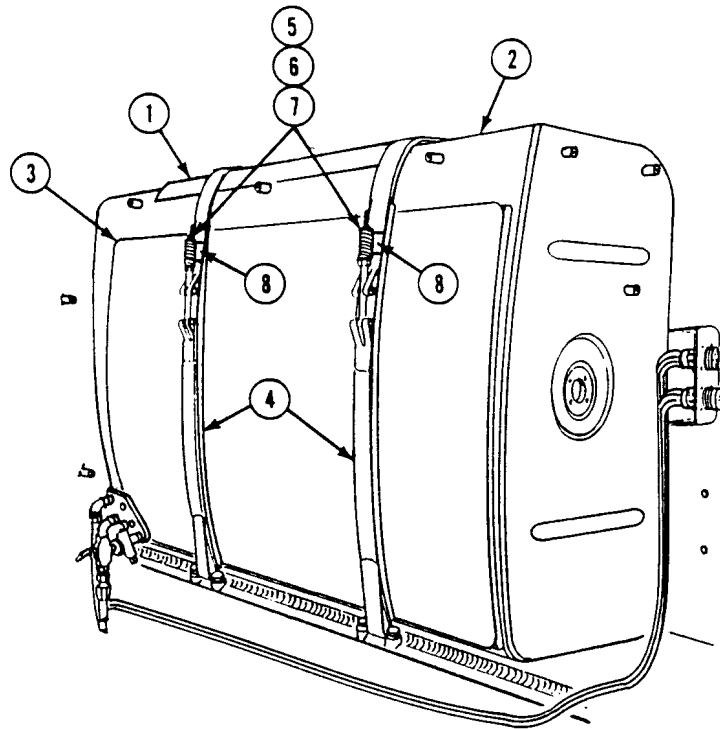
**WITHOUT PERSONNEL HEATER INSTALLED**

8. Connect heater fuel supply hose (21) to shutoff valve (22) (when personnel heater is installed).

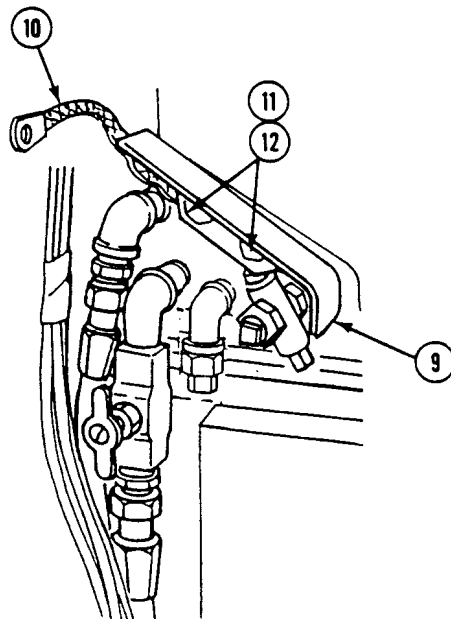
**WITH PERSONNEL HEATER INSTALLED**

REPLACE FUEL TANK (M113A2, M901A1, AND M1059 ONLY) — Continued**0139 00**

9. Place retainer (1) on top side of fuel tank (2).
10. Place shield (3) on inboard side of fuel tank (2).
11. Secure fuel tank (2) to hull with four straps (4), two springs (5), nuts (6), and four washers (7). Adjust strap springs as shown on decal (8).

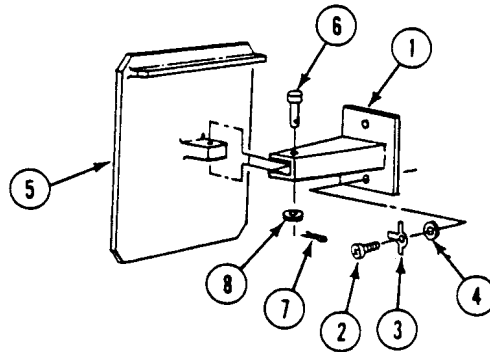


12. Install fuel line guard (9) and ground lead (10) on fuel tank. Secure with two screws (11) and five new lockwashers (12).

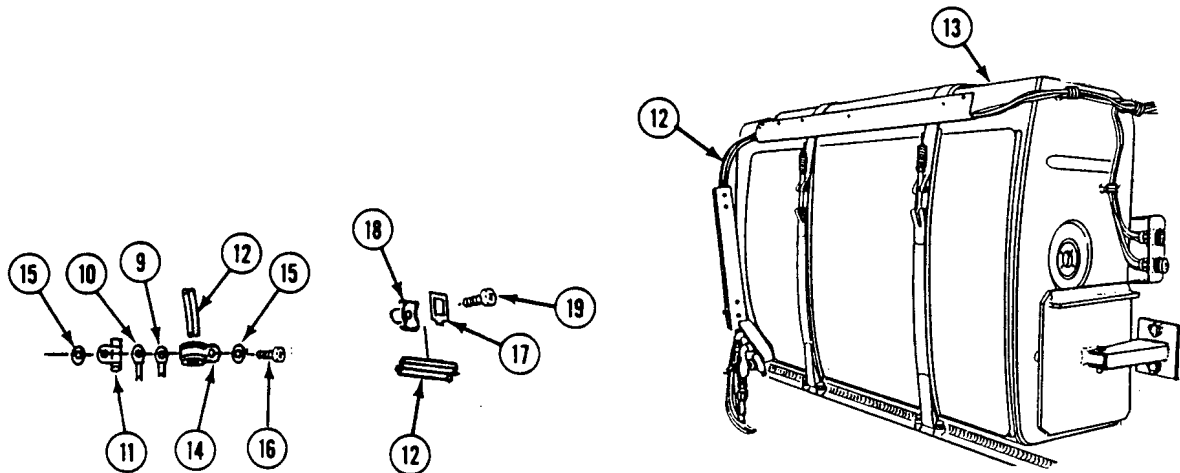


REPLACE FUEL TANK (M113A2, M901A1, AND M1059 ONLY) — Continued**0139 00**

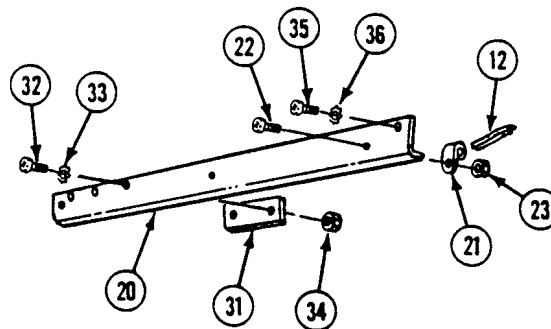
13. Secure bracket (1) to hull with two screws (2), new key washers (3), and flat washers (4). TIGHTEN SCREWS TO 40-45 LB-FT (54-61 N·M) TORQUE. Use torque wrench (WP 0780 00, Item 104).
14. Install restraint plate (5) on bracket (1). Secure with headed pin (6), new cotter pin (7), and washer (8).



15. Install two ground leads (9) and (10), condenser (11), and wiring harness (12) on fuel tank (13). Secure with clamp (14), two washers (15), and screw (16).
16. Install wiring harness (12) on front end of fuel tank (13). Secure with two clips (17), cradles (18), and screws (19).

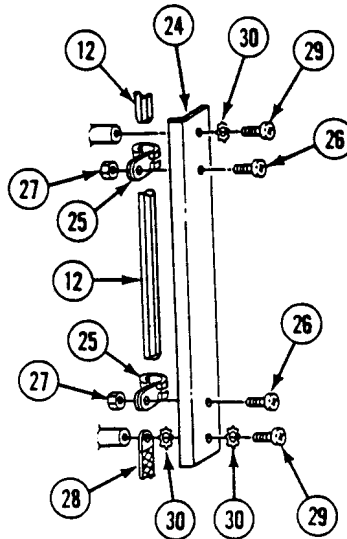


17. Install wiring harness (12) on wiring harness cover (20). Secure with three clamps (21), screws (22), and new locknuts (23).

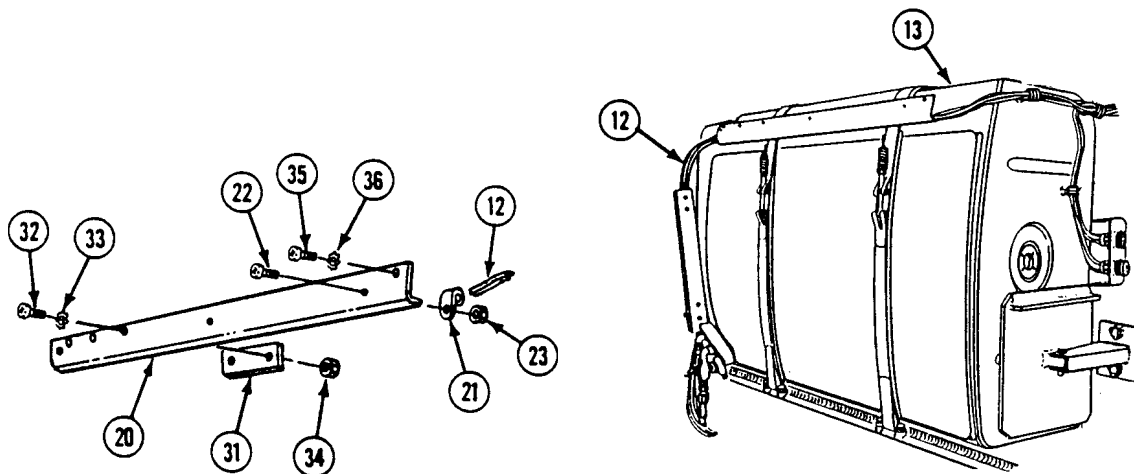


REPLACE FUEL TANK (M113A2, M901A1, AND M1059 ONLY) — Continued**0139 00**

18. Install wiring harness (12) on wiring harness guard (24). Secure with two clamps (25), screws (26), and nuts (27).
19. Install guard (24) and ground lead (28) on hull. Secure with two screws (29) and three new lockwashers (30).



20. Install access cover (31) on cover (20). Secure with two screws (32), new lockwashers (33), and nuts (34).
21. Install cover (20) on fuel tank (13). Secure with two screws (35) and new lockwashers (36).

**FOLLOW-THROUGH STEPS**

1. Install fuel quantity transmitter (WP 0138 00).
2. Install fuel filler neck and boot (WP 0137 00).
3. Fill fuel tank (see your -10).
4. Connect battery ground lead (WP 0294 00).
5. Raise and lock ramp (see your -10).
6. Stop/shutdown engine (see your -10).

END OF TASK

TEMPORARY FUEL TANK REPAIR (ALL EXCEPT M1064)

0140 00

THIS WORK PACKAGE COVERS:

Repair (page 0140 00-1).

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

General Mechanics Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Adhesive tape (WP 0782 00, Item 56)

Cleaning solvent (WP 0782 00, Item 16)

Sealing compound (WP 0782 00, Item 63)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Ramp lowered (see your -10)

Battery ground lead disconnected (WP 0294 00)

Fuel tank removed (optional, (WP 0139 00)) or fuel drained below area of repair (WP 0135 00)

REPAIR

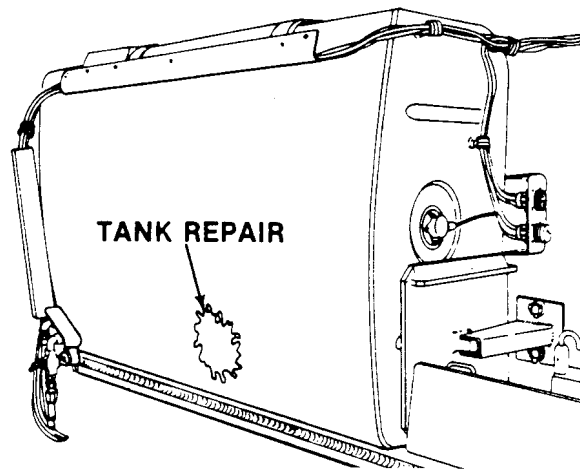
NOTE

Be sure fuel level in tank is below area to be repaired.

NOTE

This task is for fuel tank temporary repair only. Repair is not feasible in temperatures below +40° F (+4° C). Best results are obtained if temperature is between 75° and 90° F (24° and 32° C).

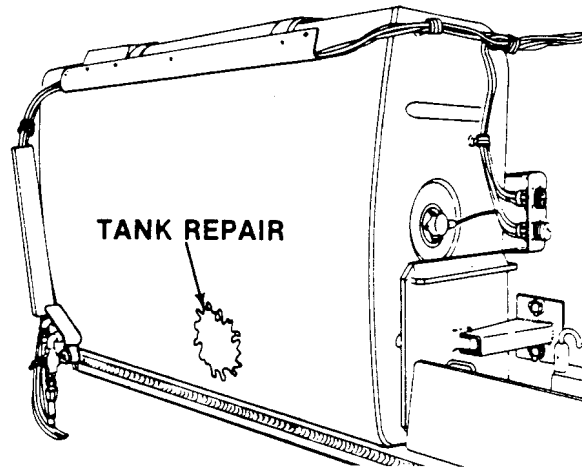
1. Clean 3– 4 inches (8–10 cm) around repair area. Use a wire brush, steel wool, or emery cloth.
2. Clean area with cleaning solvent. Dry area with a clean cloth.
3. Reinforce small repair area with clean cloth or adhesive tape.
4. Reinforce large repair area with sheet metal (aluminum), cut to fit.



NOTE

Sealing compound is usable for two hours after mixing. Use mixed sealing compound within this time.

5. Apply mixed sealing compound 3/16-1/4 inch (4-6 mm) thick over repair area.
6. Apply 1/16 inch (2 mm) minimum of sealing compound over reinforcement. Sealing compound must extend at least two inches (5 cm) beyond reinforcement on all sides.
7. Allow sealing compound to cure before filling fuel tank. Sealing compound will be tack-free in 40 hours and cured in 72 hours.

**FOLLOW-THROUGH STEPS**

1. Install fuel tank (WP 0139 00), (optional).
2. Fill fuel tank (see your -10). Check tank for leaks.
3. Connect battery ground lead (WP 0294 00).
4. Raise and lock ramp (see your -10).
5. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE FUEL TANK-TO-BULKHEAD HOSES, TUBES, AND FITTINGS
(M113A2, M901A1, AND M1059 ONLY)

0141 00

THIS WORK PACKAGE COVERS:

- Removal (page 0141 00-1).
- Installation (page 0141 00-6).

INITIAL SETUP:

<u>Maintenance Level</u>	<u>References</u>
Unit	See your -10 WP 0135 00
<u>Tools and Special Tools</u>	<u>Equipment Condition</u>
General Mechanic’s Tool Kit (WP 0780 00, Item 29)	Engine stopped/shutdown (see your -10)
<u>Materials/Parts</u>	Carrier blocked (see your -10)
Sealing compound (WP 0782 00, Item 60)	Ramp lowered (see your -10)
Wiping rag (WP 0782 00, Item 76)	Disconnect battery ground lead (WP 0294 00)
Lockwasher (5)	Rear compartment floor plates removed (WP 0436 00, WP 0438 00, or WP 0441 00)
Tie strap (5)	Power plant rear access panel removed (WP 0431 00)
<u>Personnel Required</u>	
Unit Mechanic	

REMOVAL

WARNING



Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

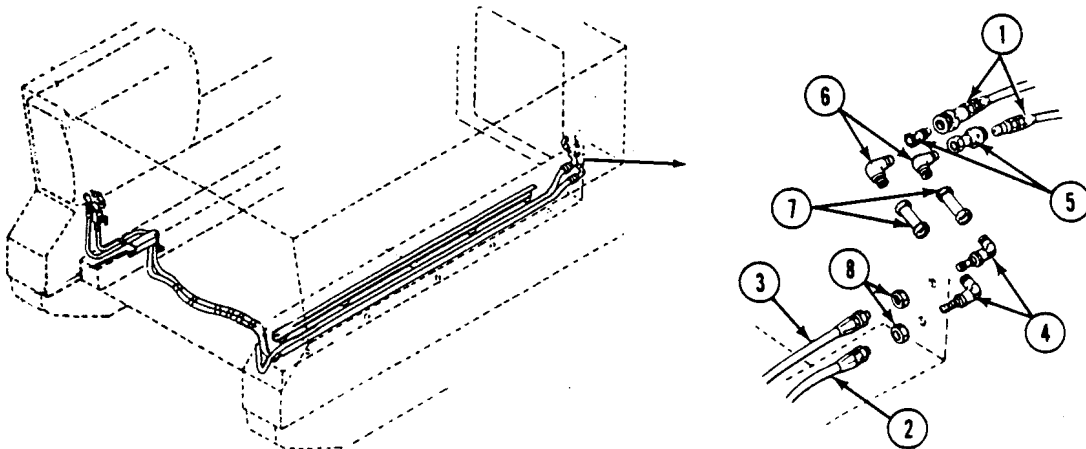
NOTE

Tag hoses and quick disconnects before removing. Use wiping rag to wipe up any spilled fuel.

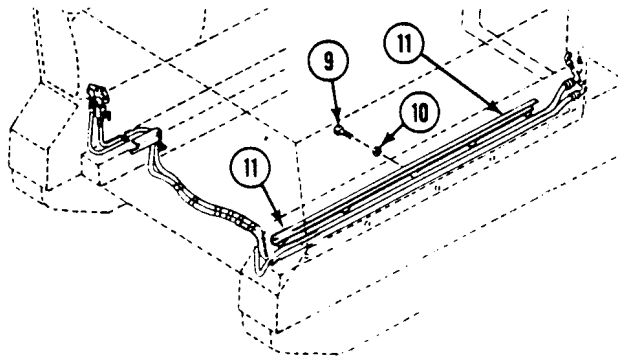
1. Drain fuel tank (WP 0135 00).

REPLACE FUEL TANK-TO-BULKHEAD HOSES, TUBES, AND FITTINGS (M113A2, M901A1, AND M1059 ONLY) — Continued**0141 00**

2. Separate two quick-disconnect couplings (1) inside power plant rear bulkhead.
3. Disconnect fuel supply hose (2) and fuel return hose (3) from two bulkhead elbows (4).
4. Remove two quick-disconnect coupling halves (5) from two elbows (6).
5. Remove two elbows (6) from two tube assemblies (7).
6. Remove two tube assemblies (7) from two bulkhead elbows (4).
7. Remove two nuts (8) and bulkhead elbows (4) from power plant rear bulkhead.

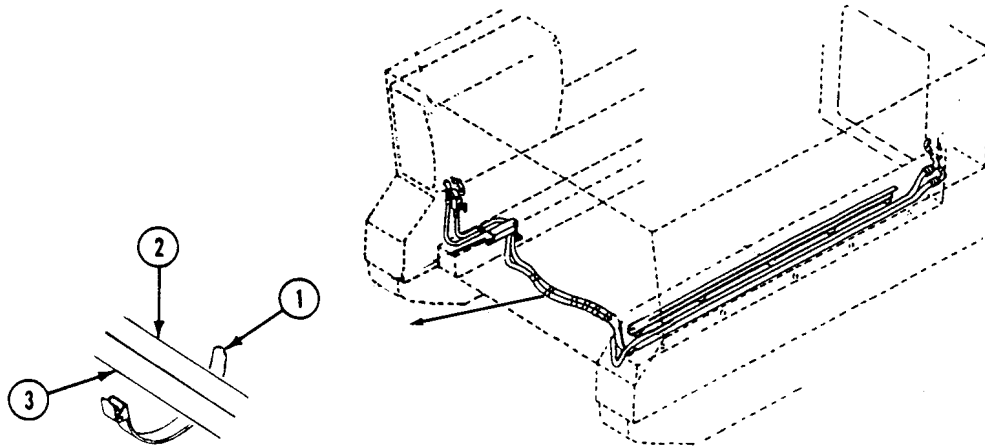


8. Remove five screws (9), washers (10), and two guards (11) from hull.

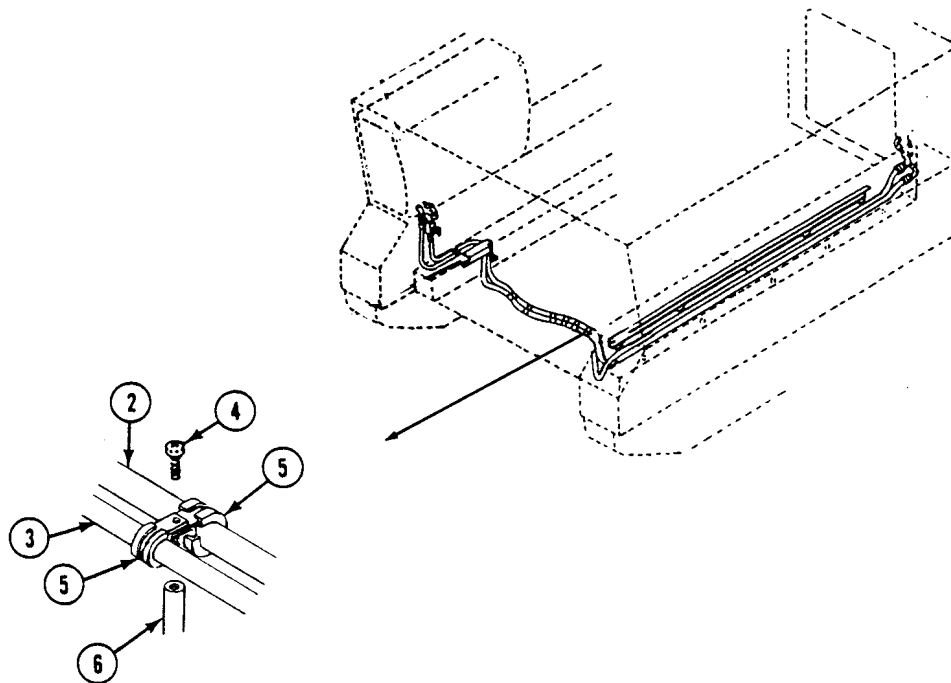


REPLACE FUEL TANK-TO-BULKHEAD HOSES, TUBES, AND FITTINGS (M113A2, M901A1, AND M1059 ONLY) — Continued**0141 00**

9. Remove five tie straps (1) from fuel hoses (2) and (3). Discard tie straps.



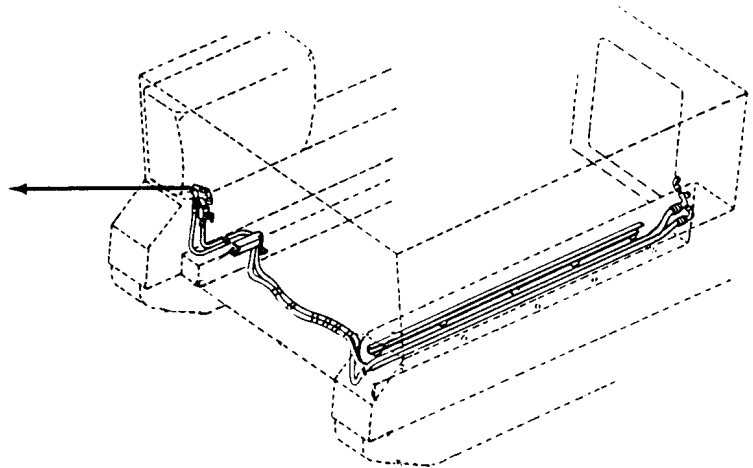
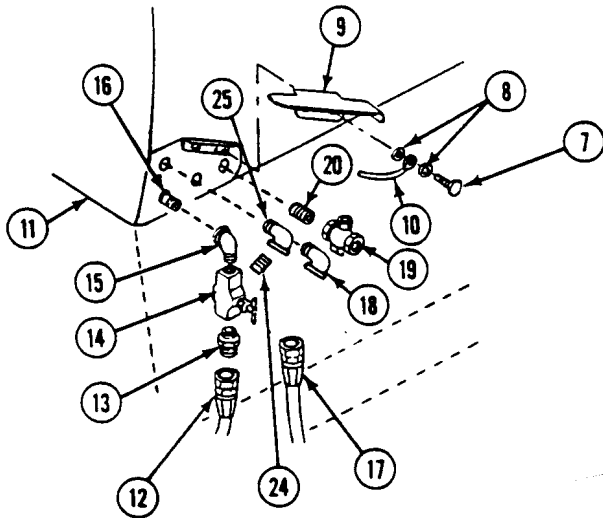
10. Remove four screws (4), eight clamps (5), and fuel hoses (2) and (3) from four weldnuts (6).



REPLACE FUEL TANK-TO-BULKHEAD HOSES, TUBES, AND FITTINGS (M113A2, M901A1, AND M1059 ONLY) — Continued

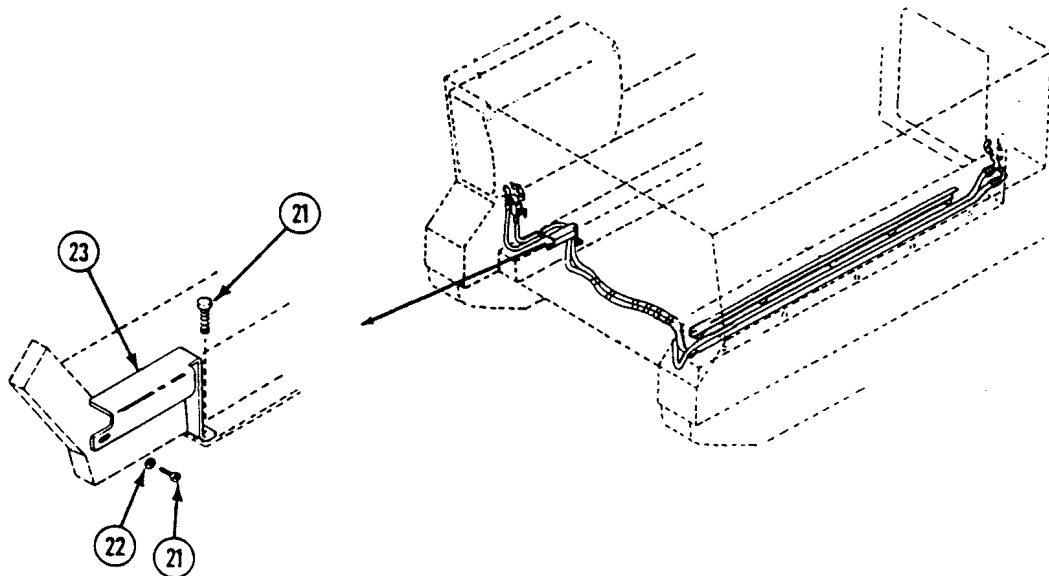
0141 00

11. Remove two screws (7), five lockwashers (8), guard (9), and ground lead (10) from fuel tank (11). Discard lockwashers.
12. Disconnect fuel supply hose (12) from adapter (13).
13. Remove adapter (13) from fuel shutoff valve (14).
14. Remove fuel shutoff valve (14) from elbow (15).
15. Remove elbow (15) from adapter (16).
16. Remove adapter (16) from fuel tank (11).
17. Disconnect fuel return hose (17) from elbow (18).
18. Remove elbow (18) from fuel tank (11).
19. Remove drain cock (19) from nipple (20).
20. Remove nipple (20) from fuel tank (11).

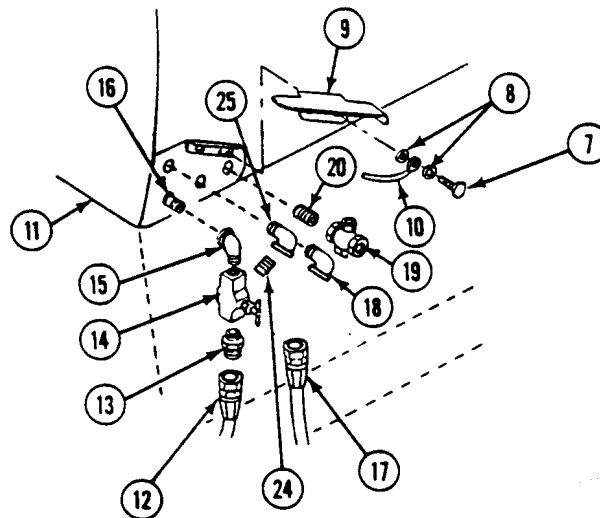


REPLACE FUEL TANK-TO-BULKHEAD HOSES, TUBES, AND FITTINGS (M113A2, M901A1, AND M1059 ONLY) — Continued**0141 00**

21. Remove two screws (21), washers (22), and guard (23).



22. Remove plug (24) from elbow (25).
23. Remove elbow (25) from fuel tank (11).

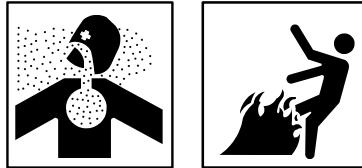


REPLACE FUEL TANK-TO-BULKHEAD HOSES, TUBES, AND FITTINGS (M113A2, M901A1, AND M1059 ONLY) — Continued

0141 00

INSTALLATION

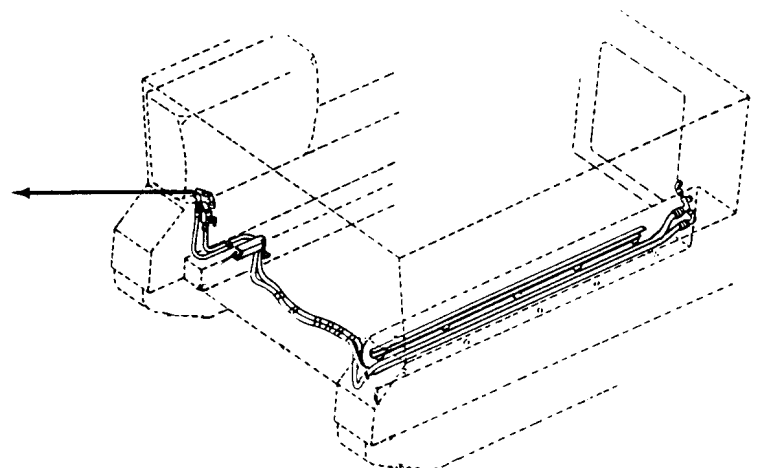
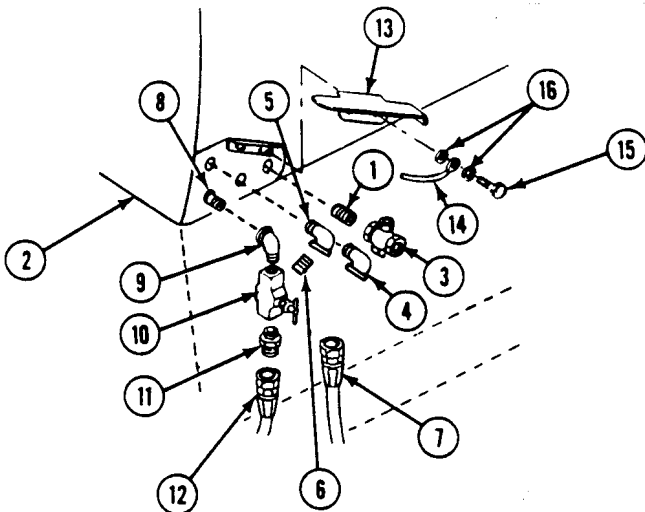
WARNING



Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

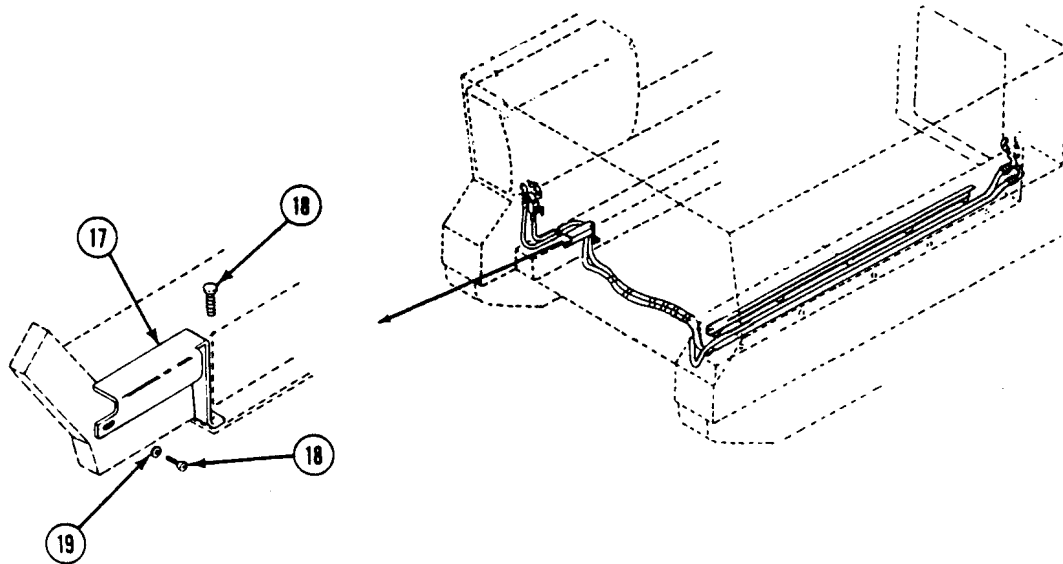
1. Apply a thin, even coat of sealing compound to cleaned external threads of fittings.
2. Install nipple (1) in fuel tank (2).
3. Install drain cock (3) on nipple (1).
4. Install elbows (4) and (5) in fuel tank (2).
5. Install plug (6) in elbow (5).
6. Connect fuel return hose (7) to elbow (4).
7. Install adapter (8) in fuel tank (2).
8. Install elbow (9) on adapter (8).
9. Install fuel shutoff valve (10) on elbow (9) with arrow pointing in down direction.
10. Install adapter (11) in fuel shutoff valve (10).
11. Connect fuel supply hose (12) to adapter (11).
12. Install guard (13) and ground lead (14) on fuel tank (2). Secure with two screws (15) and five new lockwashers (16).



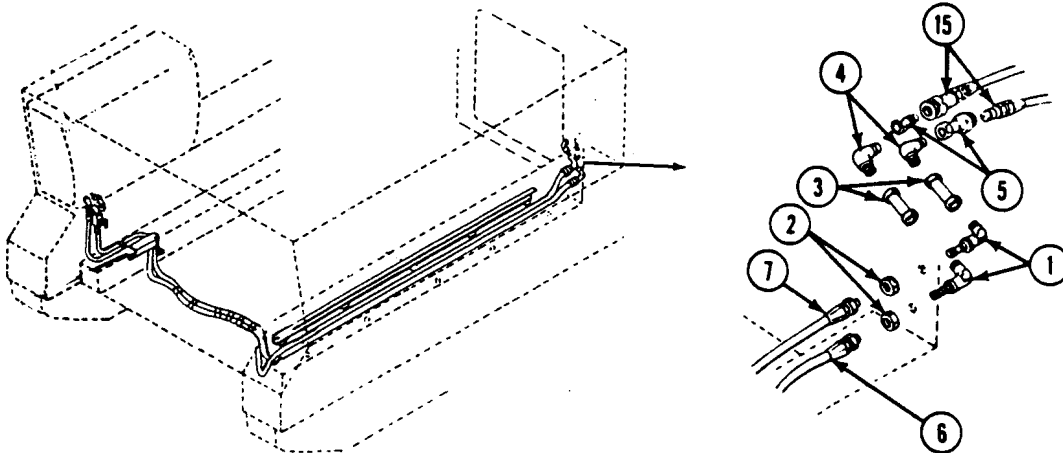
REPLACE FUEL TANK-TO-BULKHEAD HOSES, TUBES, AND FITTINGS (M113A2, M901A1, AND M1059 ONLY) — Continued

0141 00

13. Install guard (17). Secure with two screws (18) and washers (19).



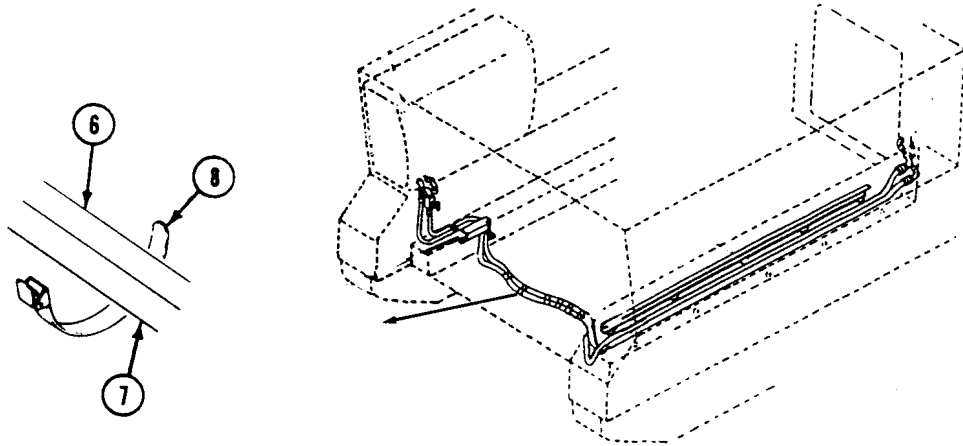
14. Secure two bulkhead elbows (1) to power plant rear bulkhead with two nuts (2).
 15. Connect two tube assemblies (3) to two elbows (1).
 16. Connect two elbows (4) to two tubes (3).
 17. Install two quick-disconnect coupling halves (5) on two elbows (4).
 18. Connect fuel supply hose (6) and fuel return hose (7) to two elbows (1).



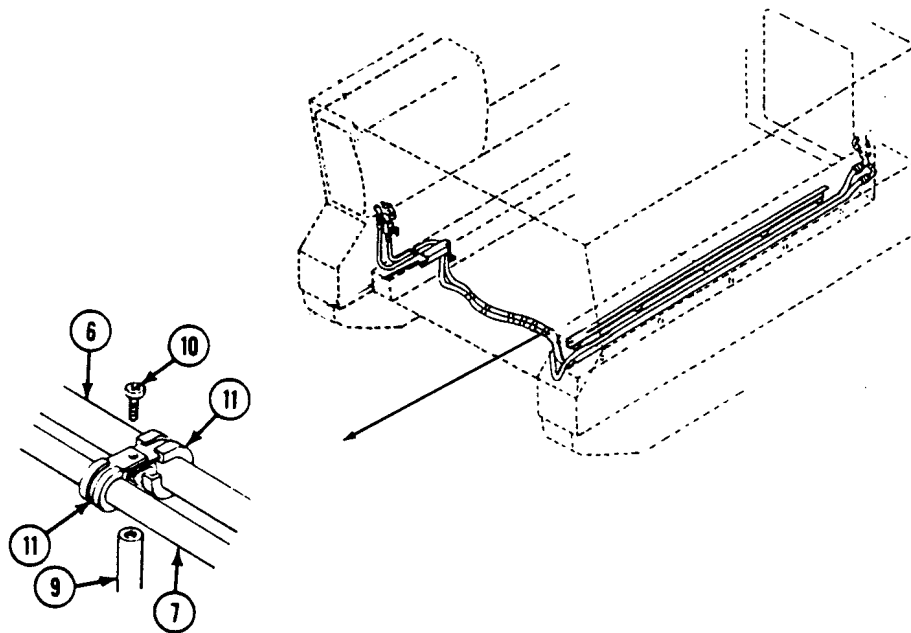
REPLACE FUEL TANK-TO-BULKHEAD HOSES, TUBES, AND FITTINGS (M113A2, M901A1, AND M1059 ONLY) — Continued

0141 00

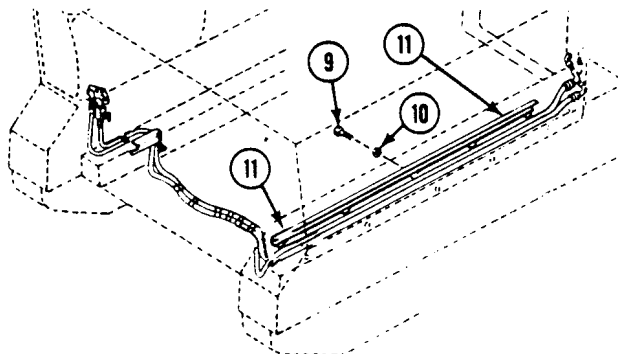
19. Secure two fuel hoses (6) and (7) together with five straps (8).



20. Install two hoses (6) and (7) on four weldnuts (9). Secure with four screws (10) and eight clamps (11).



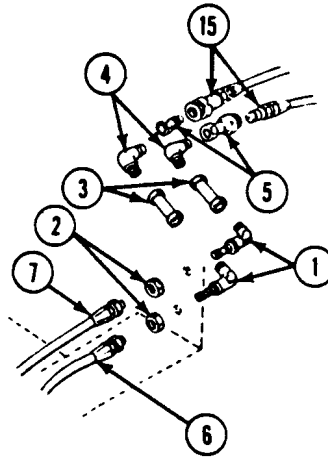
21. Secure two guards (11) to hull with five screws (9) and washers (10).



REPLACE FUEL TANK-TO-BULKHEAD HOSES, TUBES, AND FITTINGS (M113A2, M901A1, AND M1059 ONLY) — Continued

0141 00

22. Connect two quick-disconnect couplings (15) inside power plant rear bulkhead.



23. Fill fuel tank (see your -10).

FOLLOW-THROUGH STEPS

1. Connect battery ground lead (WP 0294 00).
2. Start engine (see your -10). Check for leaks.
3. Install power plant rear access panel (WP 0431 00).
4. Install rear compartment floor plates (WP 0436 00, WP 0438 00, or WP 0441 00).
5. Raise and lock ramp (see your -10).
6. Stop/shutdown engine (see your -10).

END OF TASK

DRAIN EXTERNAL FUEL TANKS (M981 AND M1064 ONLY)

0142 00**THIS WORK PACKAGE COVERS:**

Drain (page 0142 00-1).

INITIAL SETUP:Maintenance Level

Unit

References

See your -10

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

Battery ground strap disconnected (WP 0294 00)

Materials/Parts

Wiping rag (WP 0782 00, Item 76)

Suitable container (2)

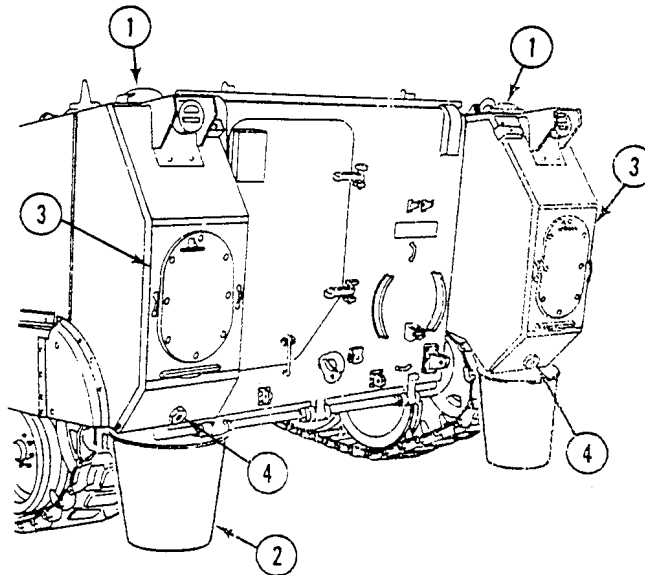
Personnel RequiredUnit Mechanic

DRAIN

1. Open fuel filler combat cover (1). Remove fuel filler cap (see your -10).

NOTE**Fuel tank capacity is 45 gallons (170 liters).**

2. Place suitable container (2) directly beneath the fuel tank (3).



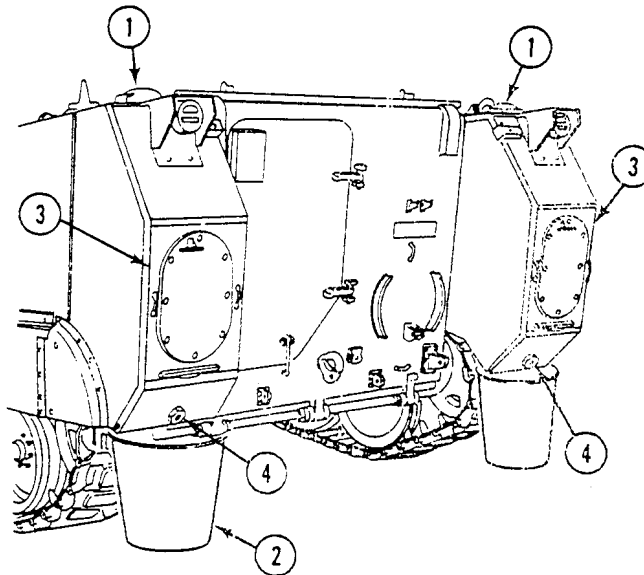
WARNING

Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

Use wiping rag to wipe up any spilled fuel.

3. Ground container (2) to carrier.
4. Close both fuel tank shutoff valves (see your -10).
5. Remove plug (4) from fuel tank (3). Drain fuel.
6. Install plug (4) in fuel tank (3) after the tank has been drained.
7. Install fuel filler cap (see your -10). Close filler combat cover (1).

**FOLLOW-THROUGH STEPS**

1. Connect battery ground strap (WP 0294 00).
2. After maintenance has been performed, fill fuel tanks (see your -10).

END OF TASK

REPLACE FUEL TANK FILLER COVER AND LOCK (M981 AND M1064 ONLY)

0143 00

THIS WORK PACKAGE COVERS:

Removal (page 0143 00-1).
Installation (page 0143 00-2).

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Ramp lowered (see your -10)

Carrier blocked (see your -10)

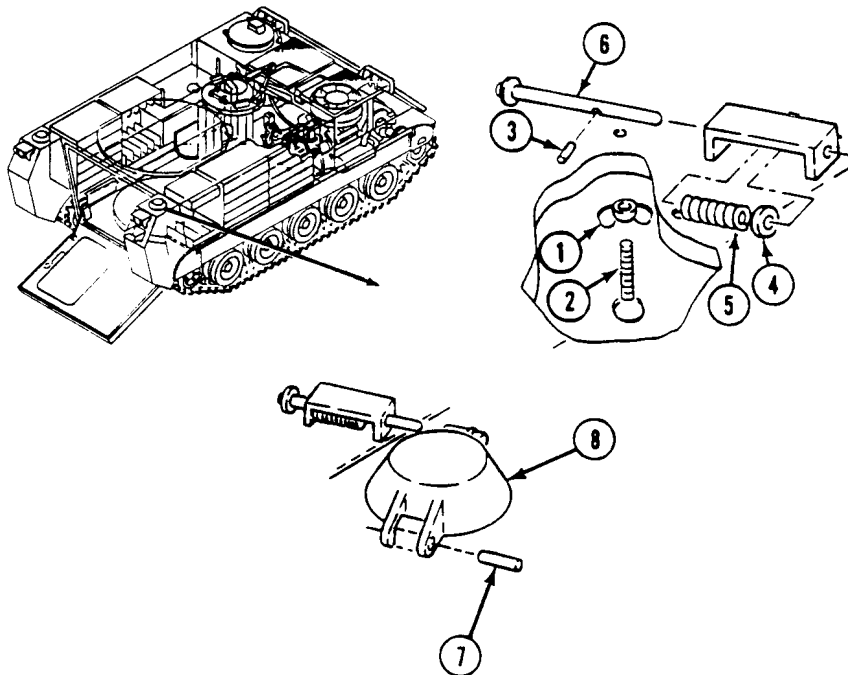
Materials/Parts

Spring pin

Spring pin

REMOVAL

1. Loosen wing nut (1). Remove thumbscrew (2) and wing nut (1) from inside carrier.
2. Remove spring pin (3), washer (4), spring (5), and pin (6) from top of hull. Discard spring pin.
3. Remove spring pin (7) and cover (8) from fuel tank. Discard spring pin.

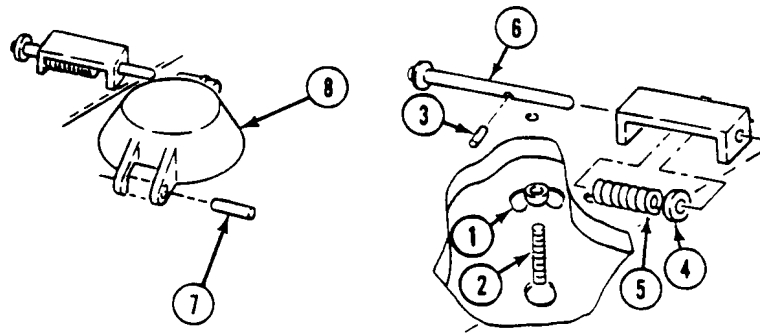


REPLACE FUEL TANK FILLER COVER AND LOCK (M981 AND M1064 ONLY) — Continued

0143 00

INSTALLATION

1. Secure cover (8) to fuel tank with new spring pin (7).
2. Install pin (6) on top of hull. Secure with spring (5), washer (4), and new spring pin (3).
3. Install wing nut (1) and thumbscrew (2) from inside carrier. Tighten wing nut.

**FOLLOW-THROUGH STEPS**

1. Raise and lock ramp (see your -10).
2. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE FILLER CAP AND STRAINER PARTS (M981 AND M1064 ONLY)**0144 00****THIS WORK PACKAGE COVERS:**

Removal (page 0144 00-1).
 Installation (page 0144 00-2).

INITIAL SETUP:Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

Battery ground lead disconnected (WP 0294 00)

Combat filler cover open (see your -10)

Materials/Parts

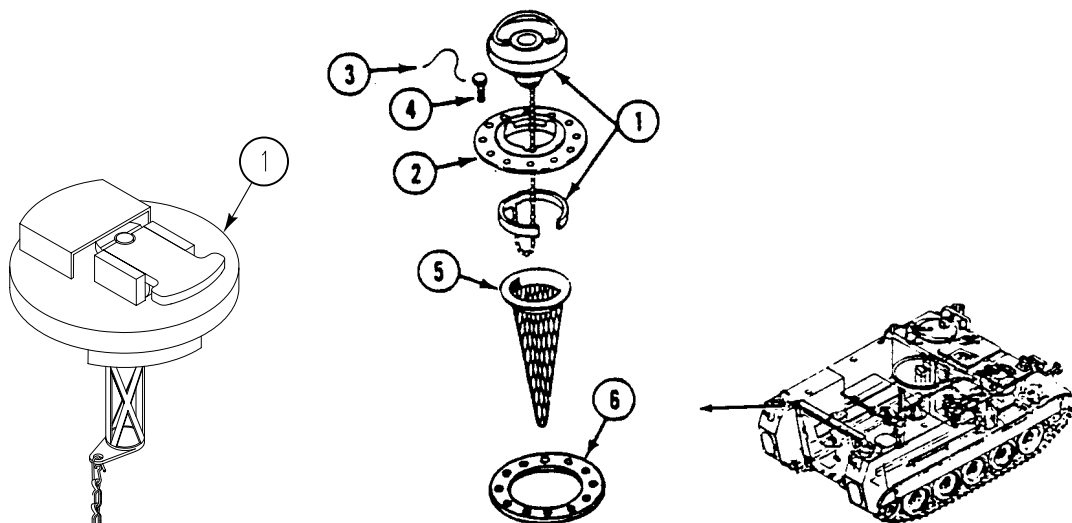
Non-electrical wire (WP 0782 00, Item 40)

Gasket

REMOVAL**NOTE**

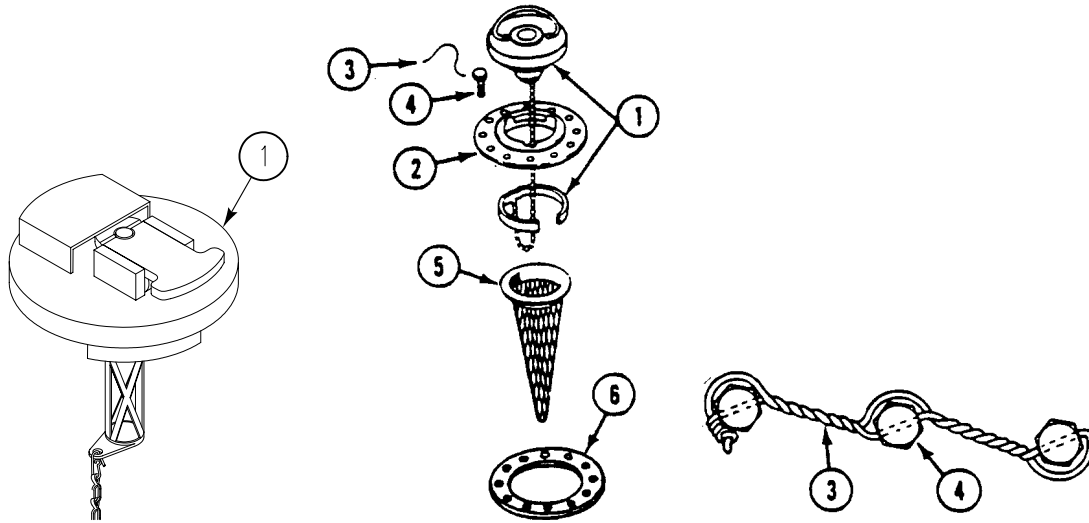
Carrier may have optional cap with pressure relief valve. If fuel cap has pressure relief valve, remove cap by lifting pressure relief handle and turning cap counterclockwise.

1. Unfasten fuel filler cap and chain assembly (1) from filler neck (2).
2. Remove lockwire (3), 12 screws (4), filler neck (2), strainer (5), and filler cap and chain assembly (1) from hull top. Discard lockwire.
3. Pull filler cap and chain assembly (1) through opening in filler neck (2).
4. Remove gasket (6). Discard gasket.



INSTALLATION

1. Install new gasket (6).
2. Install filler cap and chain assembly (1) through filler neck (2).
3. Secure filler neck (2), strainer (5), and filler cap and chain assembly (1) to hull top with 12 screws (4).
4. Install new lockwire (3) thru heads of 12 screws (4). Secure with double twist method.
5. Fasten filler cap and chain assembly (1) in filler neck (2).

**FOLLOW-THROUGH STEPS**

1. Connect battery ground strap (WP 0294 00).
2. Close and lock combat filler cover (see your -10).

END OF TASK

REPLACE FUEL TANK ACCESS COVERS AND DRAIN PLUGS (M981 AND M1064 ONLY)

0145 00

THIS WORK PACKAGE COVERS:

Removal (page 0145 00-1).
Installation (page 0145 00-2).

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)
Torque Wrench (WP 0780 00, Item 103)

Equipment Condition

Engine stopped (see your -10)
Carrier blocked (see your -10)
Fuel tanks drained (WP 0142 00)

Materials/Parts

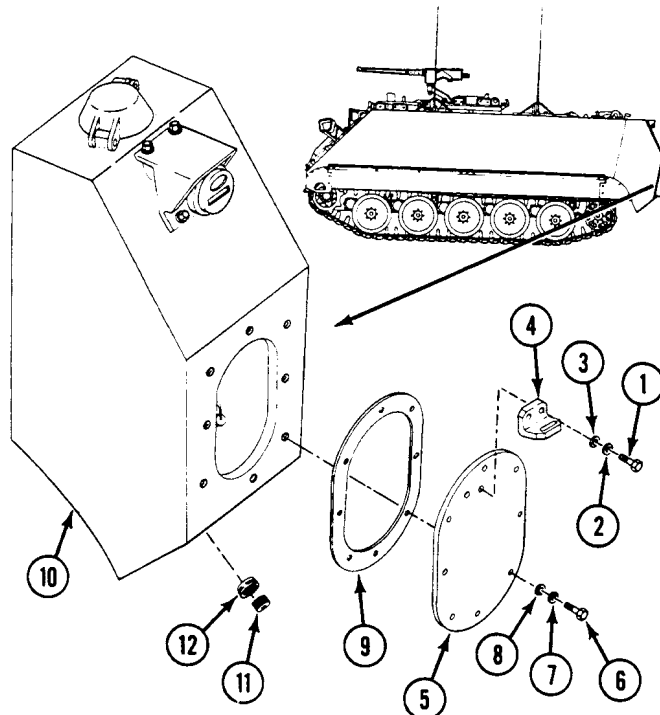
Sealing compound (WP 0782 00, Item 60)
Gasket
Lockwasher (8)
Lockwasher (2)

REMOVAL

NOTE

Right and left access covers are the same. The following steps apply to one cover.

1. Remove two screws (1), lockwashers (2), flat washers (3), and bracket (4) from cover (5). Discard lockwashers.
2. Remove eight screws (6), lockwashers (7), flat washers (8), cover (5), and gasket (9) from fuel tank (10). Discard gasket and lockwashers.
3. Remove drain plug (11) and bushing (12) from fuel tank (10).



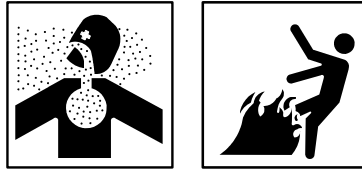
REPLACE FUEL TANK ACCESS COVERS AND DRAIN PLUGS (M981 AND M1064 ONLY) — Continued

0145 00

INSTALLATION

1. Install cover (5) and new gasket (9) on fuel tank (10). Secure with eight screws (6), new lockwashers (7), and flat washers (8). **TIGHTEN SCREWS TO 45-50 LB-FT (61-68 N·M) TORQUE.**
2. Install bracket (4) on cover (5). Secure with two screws (1), new lockwashers (2), and flat washers (3).

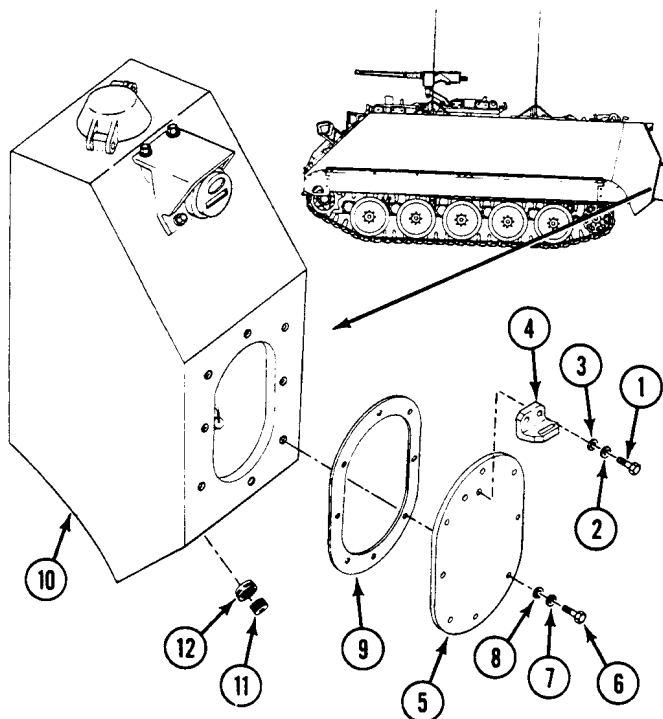
WARNING



Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

3. Apply a coat of sealing compound to cleaned threads of bushing (12) and drain plug (11).
4. Install bushing (12) in fuel tank (10).
5. Install drain plug (11) in bushing (12).



**REPLACE FUEL TANK ACCESS COVERS AND DRAIN PLUGS (M981
AND M1064 ONLY) — Continued**

0145 00

FOLLOW-THROUGH STEPS

1. Fill fuel tanks (see your -10).
2. Check for fuel leaks.

END OF TASK

REPLACE FUEL QUANTITY TRANSMITTER (M981 AND M1064 ONLY)**0146 00****THIS WORK PACKAGE COVERS:**

Removal (page 0146 00-1).
 Installation (page 0146 00-3).

INITIAL SETUP:Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Sealing compound (WP 0782 00, Item 60)

Lockwasher (2)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Battery ground lead disconnected (WP 0294 00)

Fuel tanks drained (WP 0142 00)

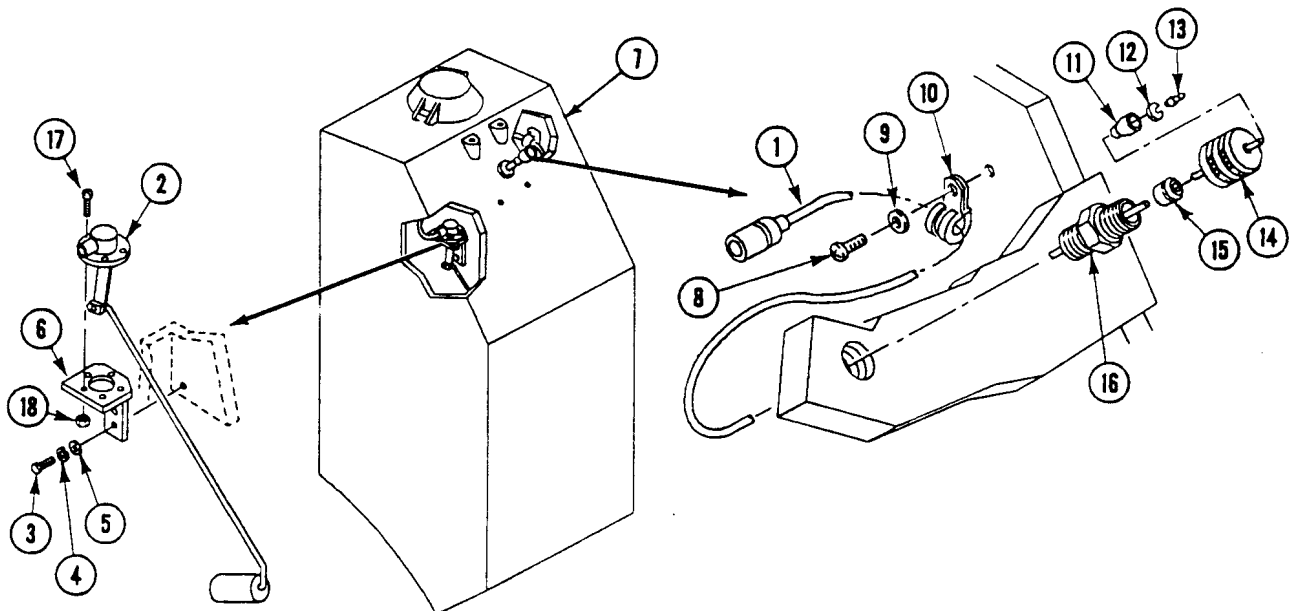
Fuel tank access covers removed (WP 0145 00)

Taillights and guards removed (WP 0272 00)

REMOVAL**NOTE**

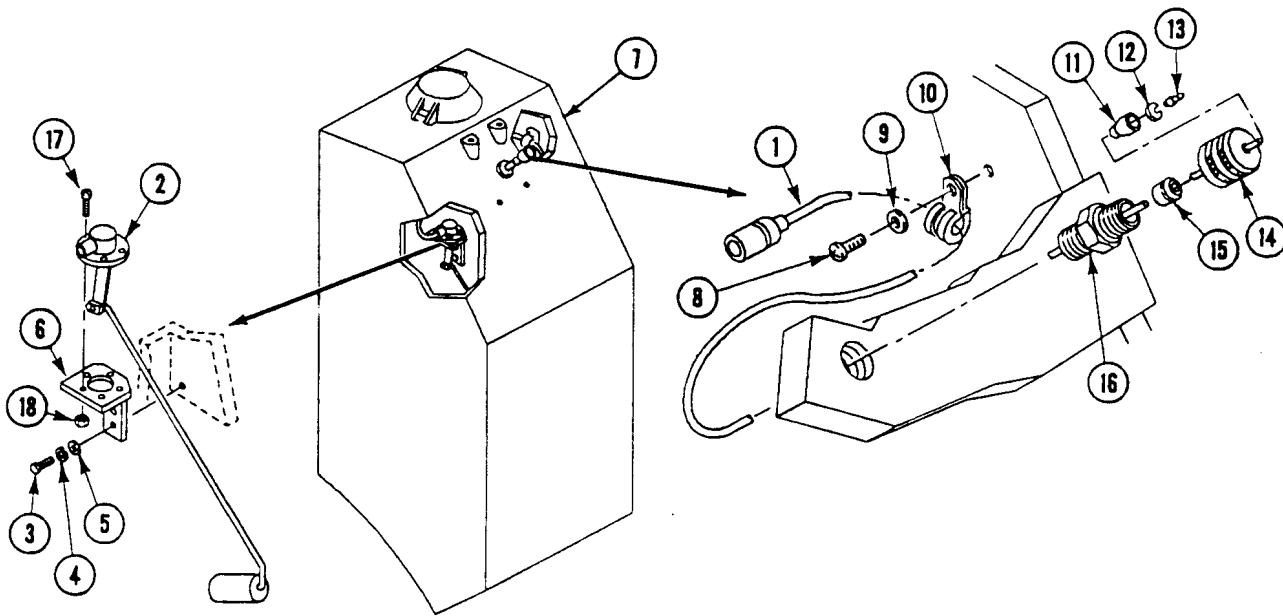
Right and left fuel quantity transmitters are replaced in the same manner. The following steps apply to one unit.

1. Disconnect lead (1) from transmitter (2). Circuit 30A is left tank transmitter lead. Circuit 31A is right tank transmitter lead.
2. Remove two screws (3), lockwashers (4), washers (5), bracket (6), and transmitter (2) from fuel tank (7). Discard lockwashers.

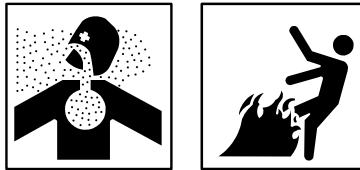


REPLACE FUEL QUANTITY TRANSMITTER (M981 AND M1064 ONLY) — Continued**0146 00**

3. Remove screw (8), washer (9), and clamp (10) that secures lead (1) to fuel tank (7).
4. Remove shell (11), washer (12), and contact (13) from lead (1).
5. Remove nut (14) and bushing (15) from connector (16).
6. Remove connector (16) and lead (1) from fuel tank (7).
7. Remove five screws (17) and nuts (18). Separate transmitter (2) from bracket (6).



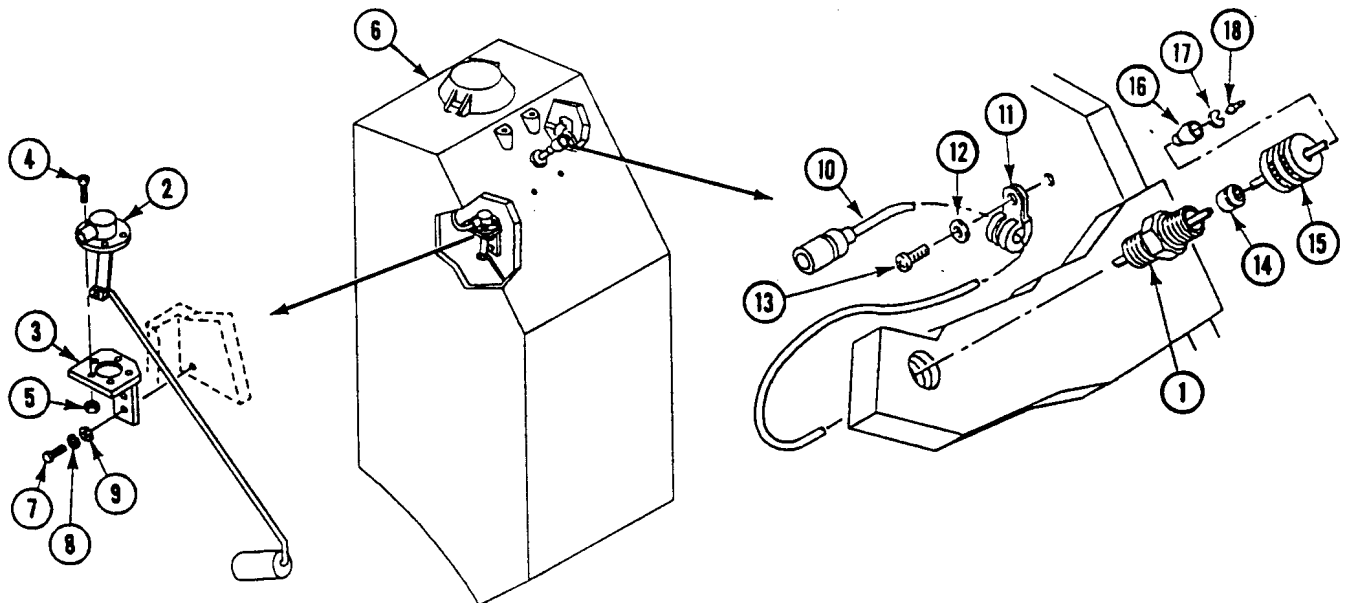
INSTALLATION

WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin coat of sealing compound to cleaned external threads of connector (1) before installation.
2. Secure transmitter (2) to bracket (3) with five screws (4) and nuts (5).
3. Install bracket (3) and transmitter (2) on fuel tank (6). Secure with two screws (7), new lockwashers (8), and washers (9).
4. Install lead (10) and connector (1) in tank (6).
5. Connect lead (10) to transmitter (2). Circuit 30A is left tank transmitter. Circuit 31A is right tank transmitter.
6. Secure lead (10) to tank (6) with clamp (11), washer (12), and screw (13).
7. Install bushing (14) and nut (15) on connector (1).
8. Install shell (16), washer (17), and contact (18) on lead (10).



REPLACE FUEL QUANTITY TRANSMITTER (M981 AND M1064 ONLY) — Continued

0146 00**FOLLOW-THROUGH STEPS**

1. Install fuel tank access covers (WP 0145 00).
2. Fill fuel tanks (see your -10).
3. Connect battery ground lead (WP 0294 00).
4. Check that fuel level transmitter works properly (see your -10).
5. Install taillights and guards (WP 0272 00).

END OF TASK

REPLACE FUEL TANKS (M981 AND M1064 ONLY)

0147 00

THIS WORK PACKAGE COVERS:

Removal (page 0147 00-1).
Installation (page 0147 00-6).

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic
Helper (H)

Tools and Special Tools

Angle Lifting Bracket (WP 0780 00, Item 14)
General Mechanic's Tool Kit (WP 0780 00, Item 29)
Socket Wrench Set (WP 0780 00, Item 97)
Torque Wrench (WP 0780 00, Item 105)
Lifting Device

Equipment Condition

Engine stopped (see your -10)
Carrier blocked (see your -10)
Ramp lowered (see your -10)
Battery ground lead disconnected (WP 0294 00)
Fuel tanks drained (WP 0142 00)
Filler covers and locks removed (WP 0143 00)
Filler caps and strainers removed (WP 0144 00)
Fuel tank access covers removed (WP 0145 00)
Fuel quantity transmitter removed (WP 0146 00)
Cable reel holder assembly removed (WP 0509 00)
Taillights and guards removed (WP 0272 00)

Materials/Parts

Caulking compound (WP 0782 00, Item 12)
Molybdenum D grease (WP 0782 00, Item 39)
Sealing compound, adhesive (WP 0782 00, Item 66)
Sealing compound (WP 0782 00, Item 60)
Sealing compound (WP 0782 00, Item 64)
Sealing compound primer (WP 0782 00, Item 58)
Wiping rag (WP 0782 00, Item 76)
Gasket
Setscrew (4)

REMOVAL

WARNING



Fuel flowing over metal causes static electricity. This will cause a spark unless the surface is grounded.

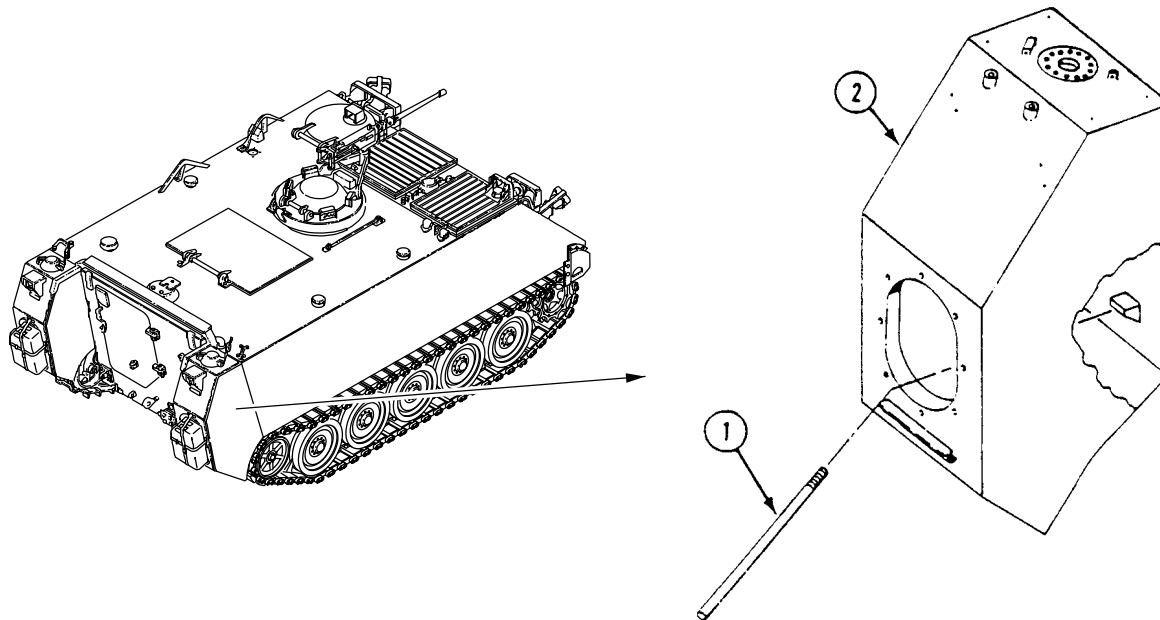
NOTE

Pipes are removed from both fuel tanks in the same way. Use wiping rag to wipe up spilled fuel.

REPLACE FUEL TANKS (M981 AND M1064 ONLY) — Continued

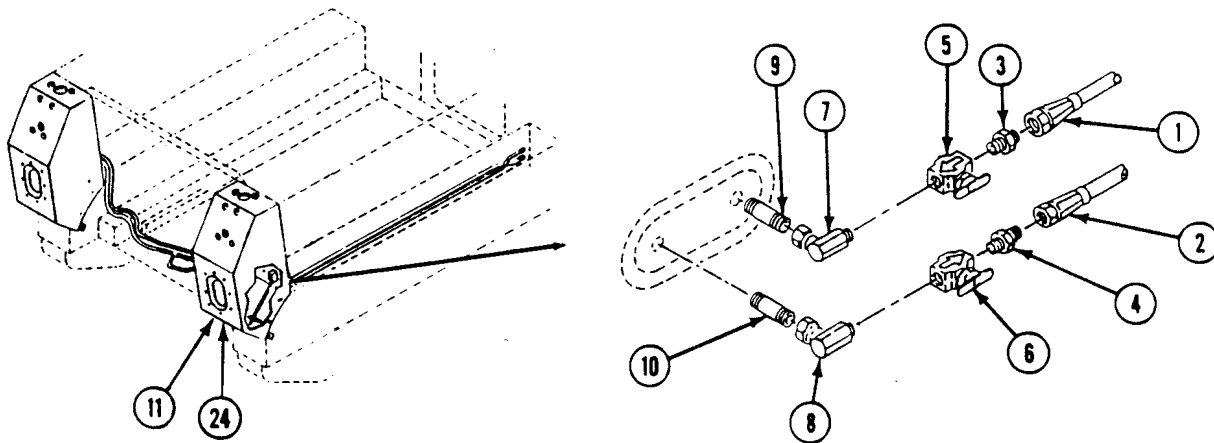
0147 00

1. Unscrew pipe (1) from fuel tank (2).

**NOTE**

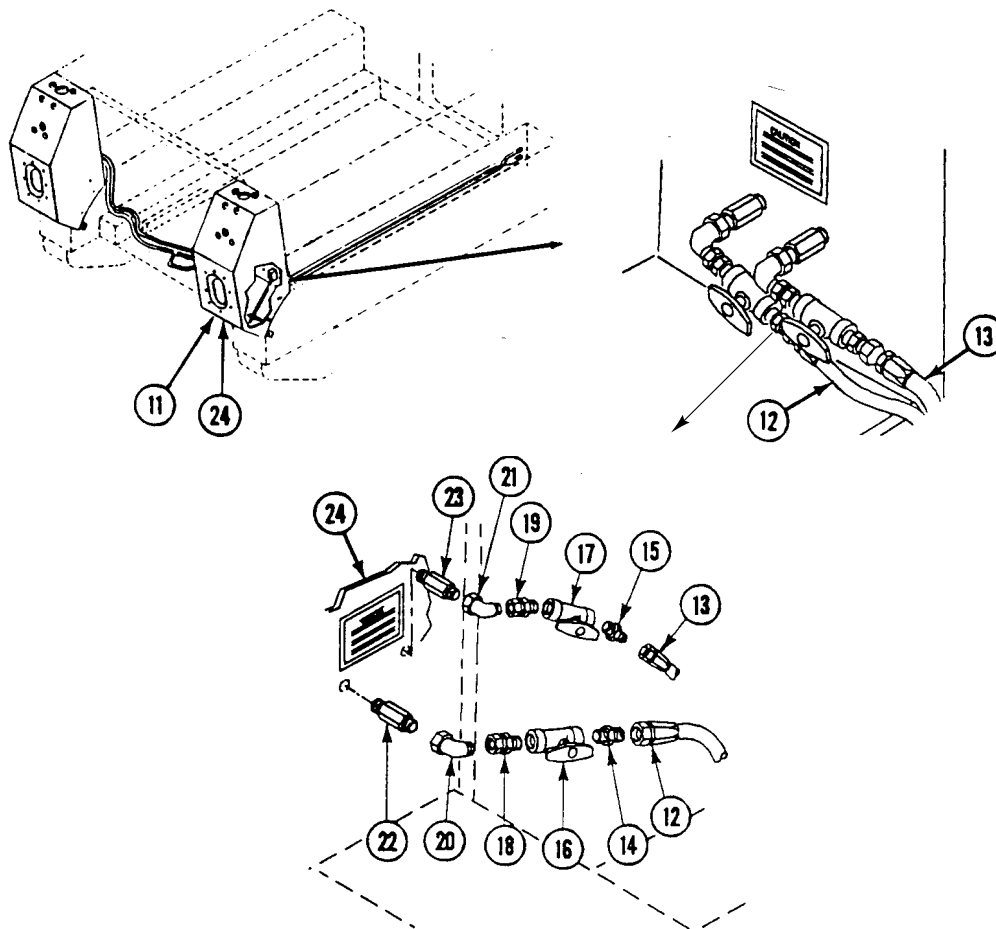
Fuel hoses are removed from both fuel tanks in the same way. Right side fuel tank shown. Do Steps 2 - 6 for M981 only.

2. Disconnect fuel supply hose (1) and fuel return hose (2) from adapters (3) and (4).
3. Remove adapters (3) and (4) from valves (5) and (6).
4. Remove valves (5) and (6) from unions (7) and (8).
5. Remove unions (7) and (8) from nipples (9) and (10).
6. Remove nipples (9) and (10) from fuel tank (11).



NOTE**Do Steps 7 - 12 for M1064 only.**

7. Disconnect fuel supply hose (12) and fuel return hose (13) from adapters (14) and (15).
8. Remove adapters (14) and (15) from valves (16) and (17).
9. Remove valves (16) and (17) from adapters (18) and (19).
10. Remove adapters (18) and (19) from elbows (20) and (21).
11. Remove elbows (20) and (21) from adapters (22) and (23).
12. Remove adapters (22) and (23) from fuel tank (24).

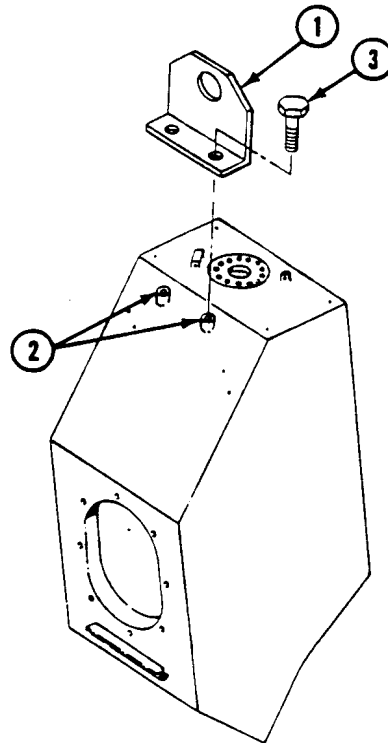


NOTE

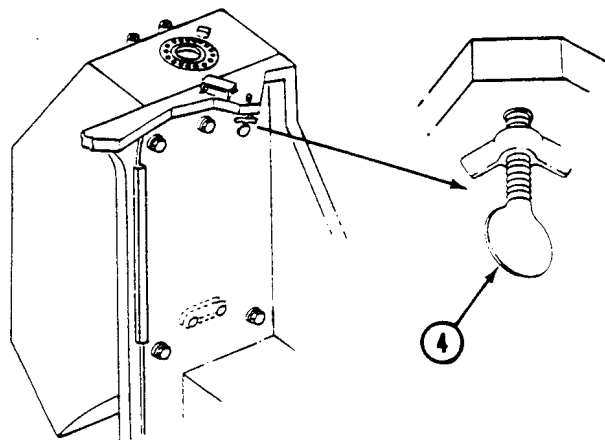
Both fuel tanks are removed from carrier in the same way. Left side fuel tank shown.

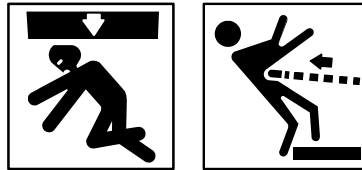
Use taillight bracket screws to secure lifting bracket to fuel tank.

13. Install angle lifting bracket (1) on taillight bracket mounting holes (2). Secure with two screws (3). Attach lifting device to lifting bracket.



14. Remove fuel cap locking thumbscrew (4) from inside carrier.



WARNING

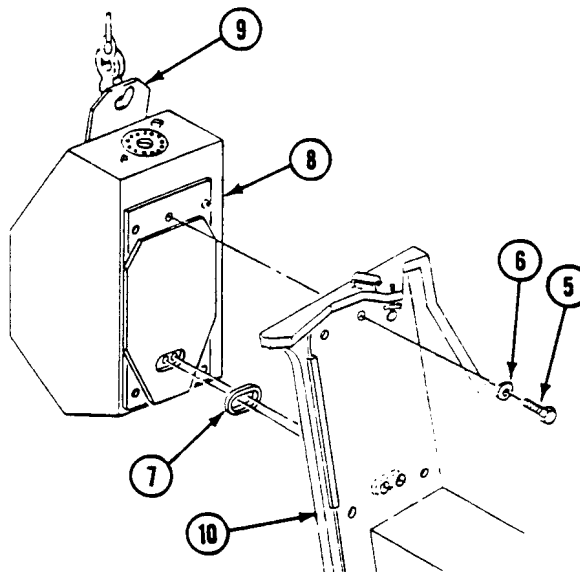
Damaged slings can fail when loaded. Breaking slings can strike and injure personnel. Suspended load can fall and crush personnel.

Inspect all slings before use. Do not use damaged slings. Clearly mark all damaged slings as DAMAGED - DO NOT USE.

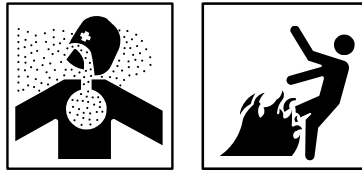
WARNING

Hanging loads can kill or injure you. Keep away from hanging loads and overhead equipment. Keep hands out of compartment while power plant is being lifted for removal or lowered for installation.

15. Remove five screws (5), washers (6), and gasket (7) from fuel tank (8). Discard gasket. Remove fuel tank (8) from carrier (10). Have helper assist.



INSTALLATION

WARNING

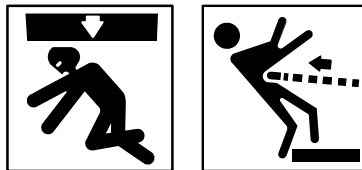
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

NOTE

Both fuel tanks are installed on carrier in the same way. Left side fuel tank shown.

1. Apply thin coat of sealing compound (WP 0782 00, Item 66) to gasket mating surface of fuel tank (8) and new gasket (7). When sealing compound has become tacky, install gasket on tank.

WARNING

Damaged slings can fail when loaded. Breaking slings can strike and injure personnel. Suspended load can fall and crush personnel.

Inspect all slings before use. Do not use damaged slings. Clearly mark all damaged slings as **DAMAGED - DO NOT USE**.

WARNING

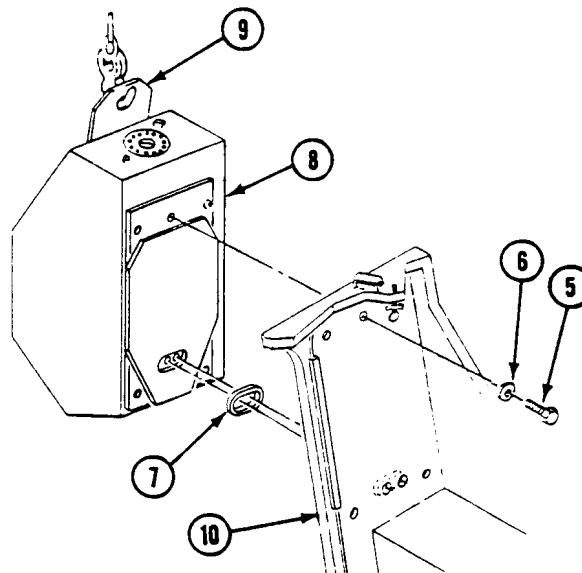
Hanging loads can kill or injure you. Keep away from hanging loads and overhead equipment. Keep hands out of compartment while power plant is being lifted for removal or lowered for installation.

2. Attach lifting device to lifting bracket (9). Position fuel tank (8) against rear hull plate (10). Have helper assist.

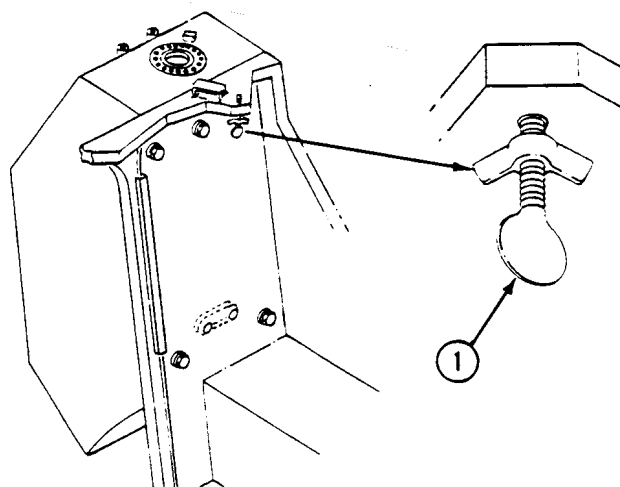
NOTE

Inside of mounting holes and full diameter area under each washer must be clean and free of paint to ensure good electrical ground.

3. Apply molybdenum D grease to threads of five screws (5).
4. Secure fuel tank (8) to rear hull plate (10) with five screws (5) and washers (6). TIGHTEN SCREWS TO 270-295 LB-FT (366-400 N·M) TORQUE. Use torque wrench and socket wrench set. Remove lifting device. Have helper assist.
5. Apply caulking compound to space around installed screw heads (5) and washers (6) on rear hull plate (10). Do not apply compound to screw threads which engage with fuel tank (8).



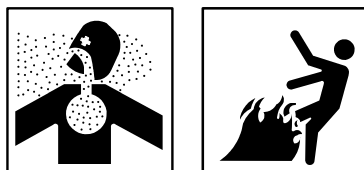
6. Install fuel cap locking thumbscrew (1) in carrier bulkhead.



NOTE

Save lifting bracket screws for installation of taillight bracket.

7. Remove two screws (2) and lifting bracket (3) from fuel tank (4).

WARNING

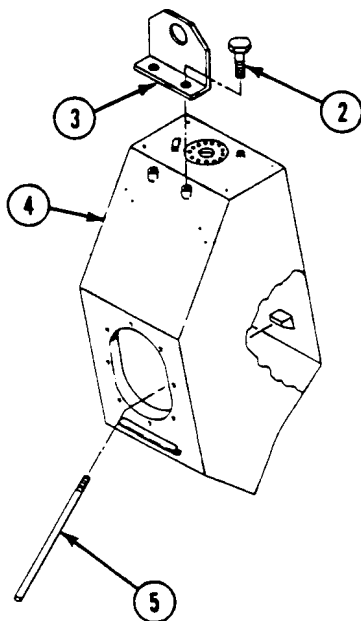
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

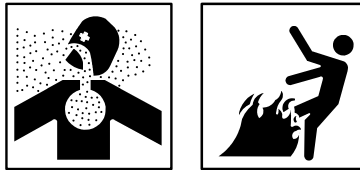
Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

NOTE

Pipes are installed in both fuel tanks in the same way.

8. Apply sealing compound primer to threads of pipe (5). Then coat threads with sealing compound (WP 0782 00, Item 60).
9. Install pipe (5) in fuel tank (4).



WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

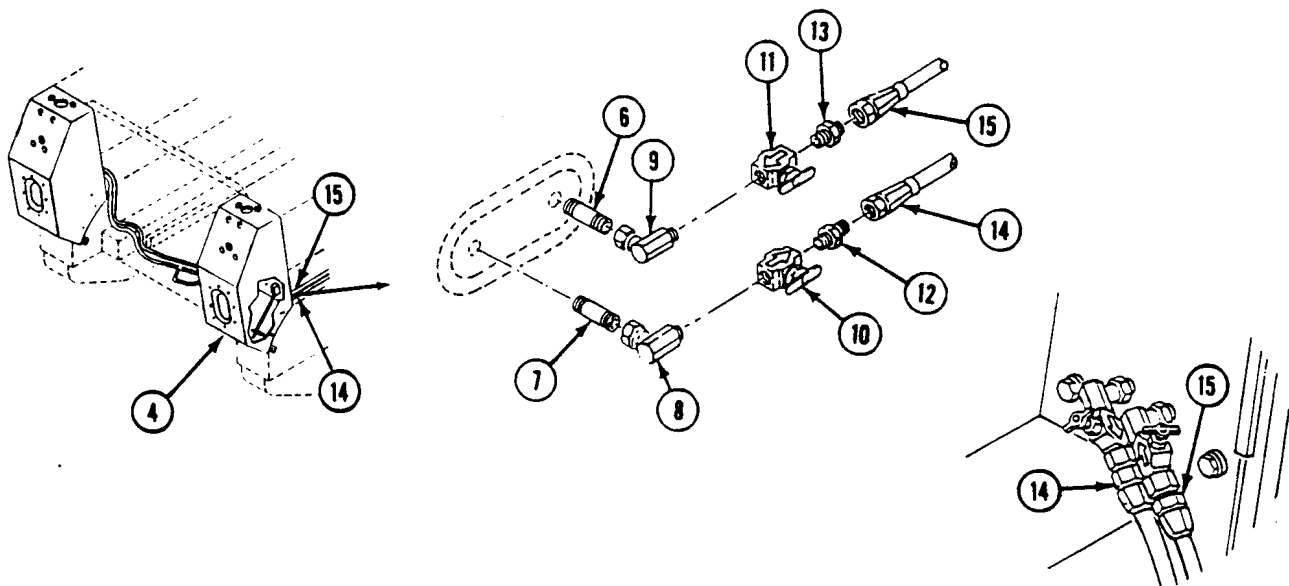
Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

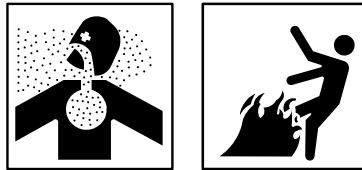
NOTE

Fuel hoses are installed on both fuel tanks the same way. Right side fuel tank shown.

Do Steps 10 - 17 for M981 only.

10. Apply sealing compound (WP 0782 00, Item 64) to threads of nipples (6) and (7) and unions (8) and (9).
11. Install nipples (6) and (7) in fuel tank (4).
12. Install unions (8) and (9) on nipples (6) and (7).
13. Install fuel supply valve (10) on union (8) with arrow pointing toward the engine.
14. Install fuel return valve (11) on union (9) with arrow pointing toward fuel tank.
15. Install adapters (12) and (13) in valves (10) and (11).
16. Connect fuel supply hose (14) to adapter (12).
17. Connect fuel return hose (15) to adapter (13).



WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

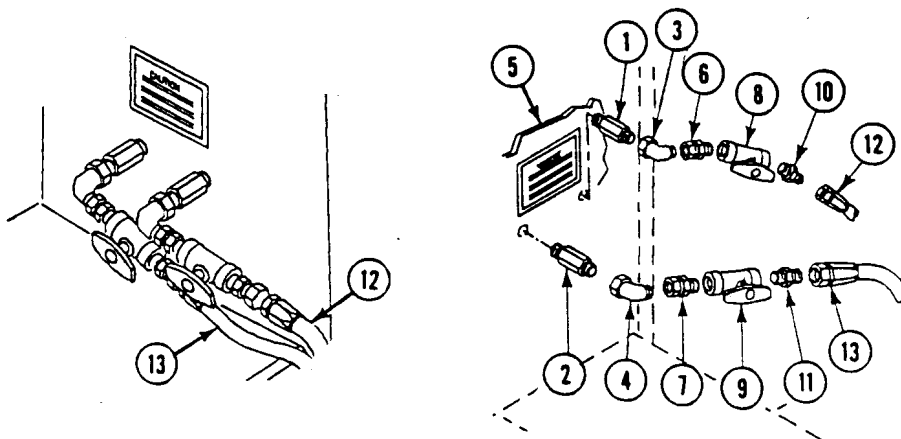
Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

NOTE

Fuel hoses are installed on both fuel tanks the same way. Right side fuel tank shown.

Do Steps 18 - 26 for M1064 only.

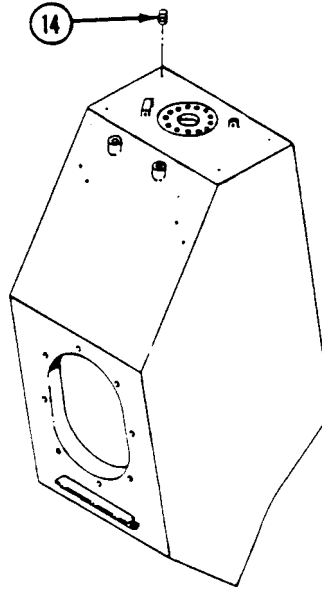
18. Apply sealing compound (WP 0782 00, Item 64) to threads of adapters (1) and (2) and elbows (3) and (4).
19. Install adapters (1) and (2) in fuel tank (5).
20. Install elbows (3) and (4) on adapters (1) and (2).
21. Install adapters (6) and (7) on elbows (3) and (4).
22. Install fuel return valve (8) on adapter (6) with arrow pointing toward fuel tank.
23. Install fuel supply valve (9) on adapter (7) with arrow pointing toward the engine.
24. Install adapters (10) and (11) on valves (8) and (9).
25. Connect fuel return hose (12) to adapter (10).
26. Connect fuel supply hose (13) to adapter (11).



NOTE

The four spare electrical mounting holes are always the holes located on the outer edge of each fuel tank. The electrical guards are always mounted on the inner edge of each fuel tank.

27. Install four setscrews (14) in spare holes provided for electrical mounting.

**FOLLOW-THROUGH STEPS**

1. Install filler caps and strainers (WP 0144 00).
2. Install filler covers and locks (WP 0143 00).
3. Install fuel quantity transmitter (WP 0146 00).
4. Install fuel tank access covers (WP 0145 00).
5. Install guards and taillights (WP 0272 00).
6. Connect battery ground lead (WP 0294 00).
7. Cable reel holder assembly installed (WP 0509 00).
8. Fill fuel tanks (see your -10).
9. Start engine (see your -10). Check for leaks.
10. Raise and lock ramp (see your -10).
11. Stop engine (see your -10).

END OF TASK

REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M981 ONLY)0148 00

THIS WORK PACKAGE COVERS:

- Removal (page 0148 00-1).
 - Installation (page 0148 00-7).
-

INITIAL SETUP:

<u>Maintenance Level</u>	<u>Personnel Required</u>
Unit	Unit Mechanic
<u>Tools and Special Tools</u>	<u>Equipment Condition</u>
General Mechanic’s Tool Kit (WP 0780 00, Item 29)	Engine stopped/shutdown (see your -10)
	Ramp lowered (see your -10)
<u>Materials/Parts</u>	Battery ground lead disconnected (WP 0294 00)
Sealing compound (WP 0782 00, Item 60)	Fuel tanks drained (WP 0142 00)
Wiping rag (WP 0782 00, Item 76)	Cargo area floor plates removed (TM 9-2350-266-20)
Lockwasher (6)	Power plant rear access panel removed (WP 0431 00)
Lockwasher (4)	
Tie strap (4)	

REMOVAL



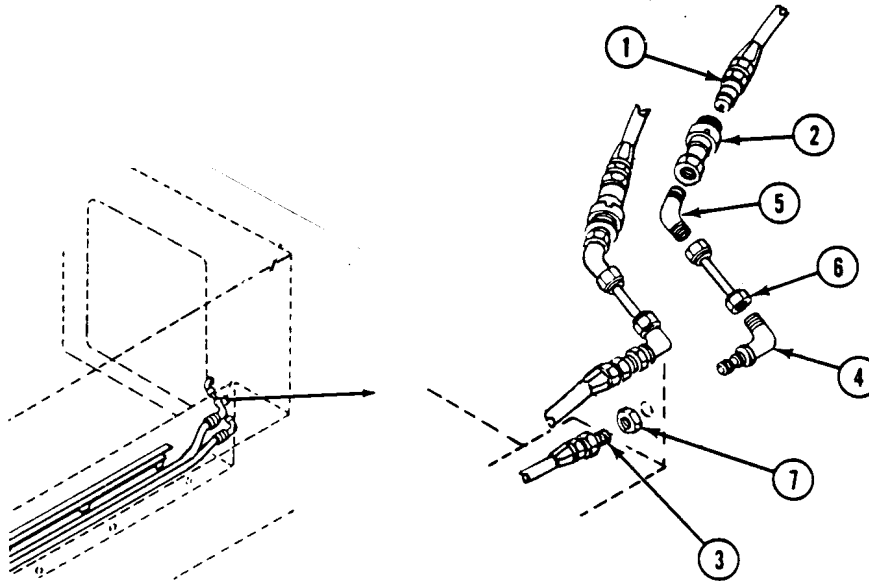
Fuel flowing over metal causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

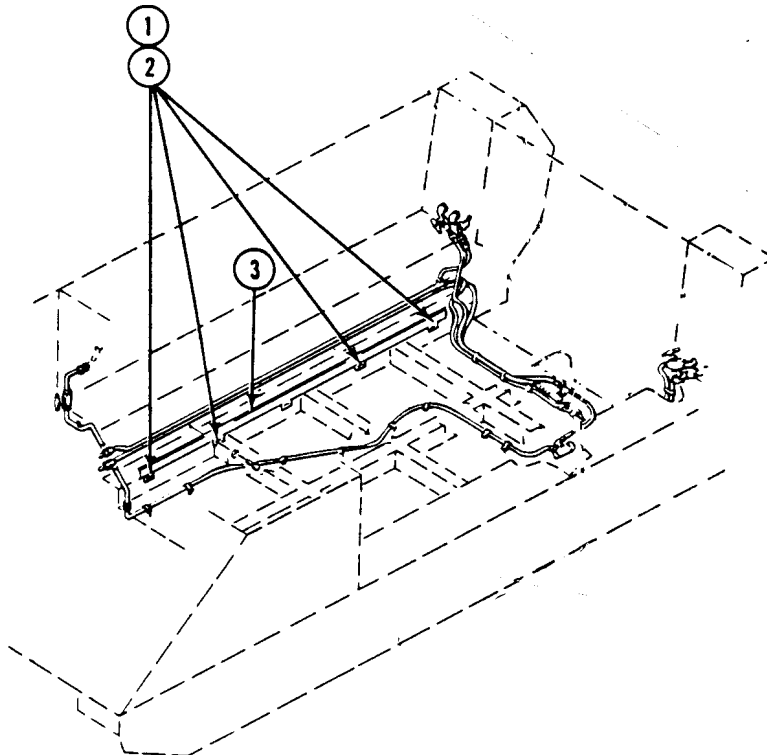
Tag hoses before removal. Use wiping rag to wipe up any spilled fuel.

REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0148 00**

1. Disconnect quick disconnect half (1) from quick disconnect half (2) at power plant rear bulkhead.
2. Disconnect fuel supply hose (3) from bulkhead elbow (4).
3. Remove quick disconnect half (2) from elbow (5).
4. Disconnect tube assembly (6) from elbows (4) and (5).
5. Remove nut (7) and bulkhead elbow (4) from power plant rear bulkhead.

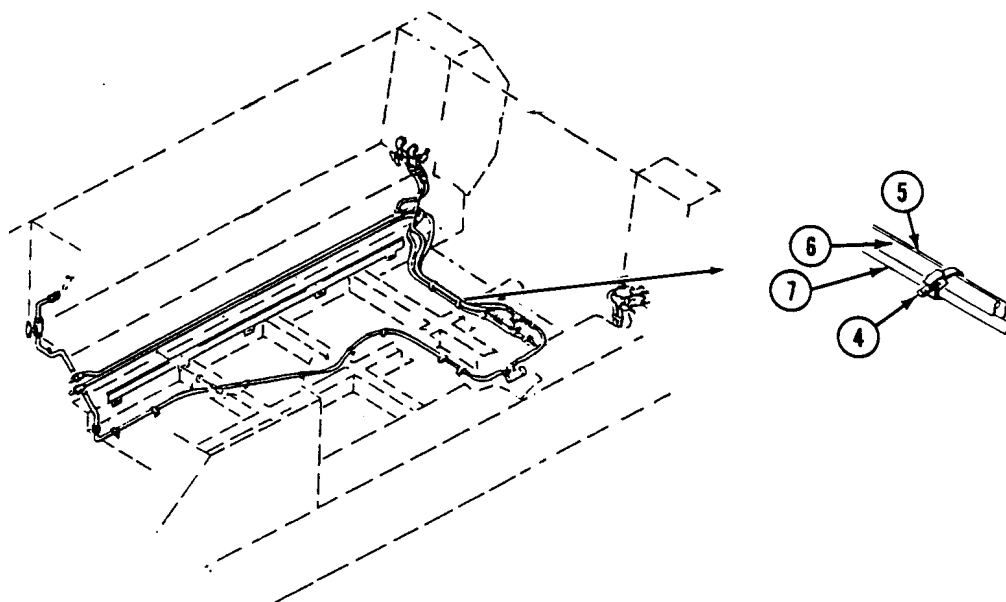


6. Remove five screws (1), lockwashers (2), and two guards (3) from hull. Discard lockwashers.

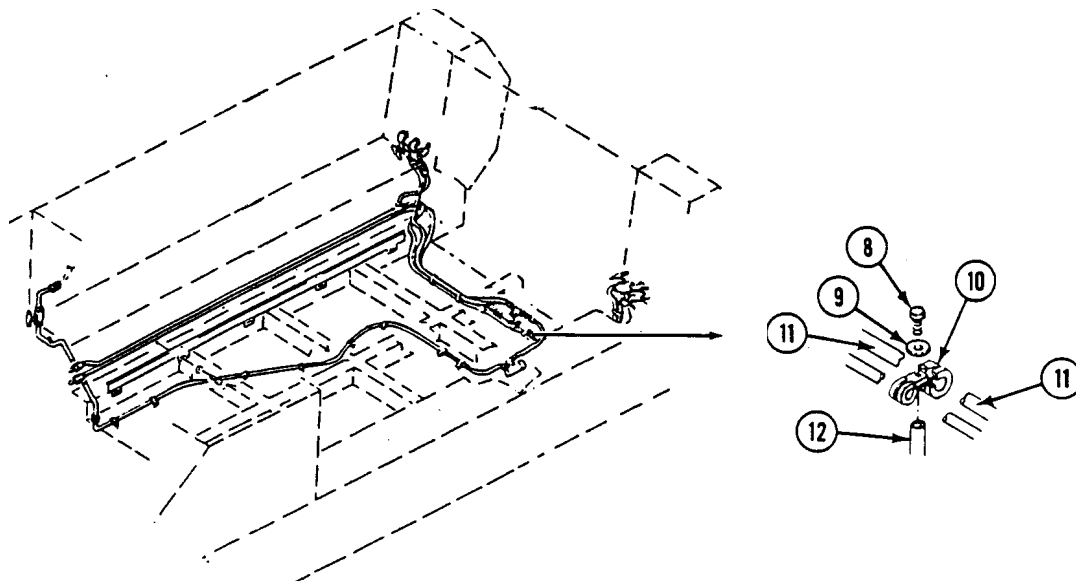


REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0148 00**

7. Remove three straps (4) that secure supply hoses (5) and (6) and return hose (7) together. Discard straps.

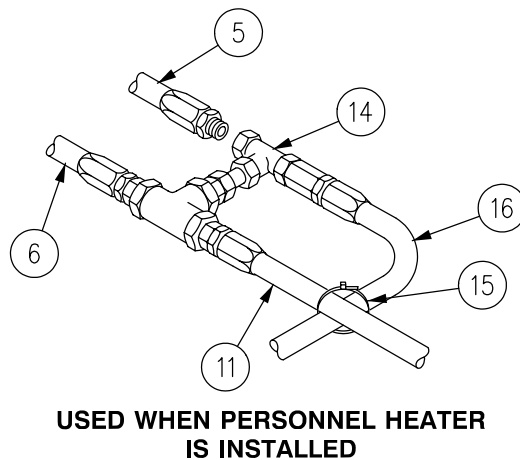
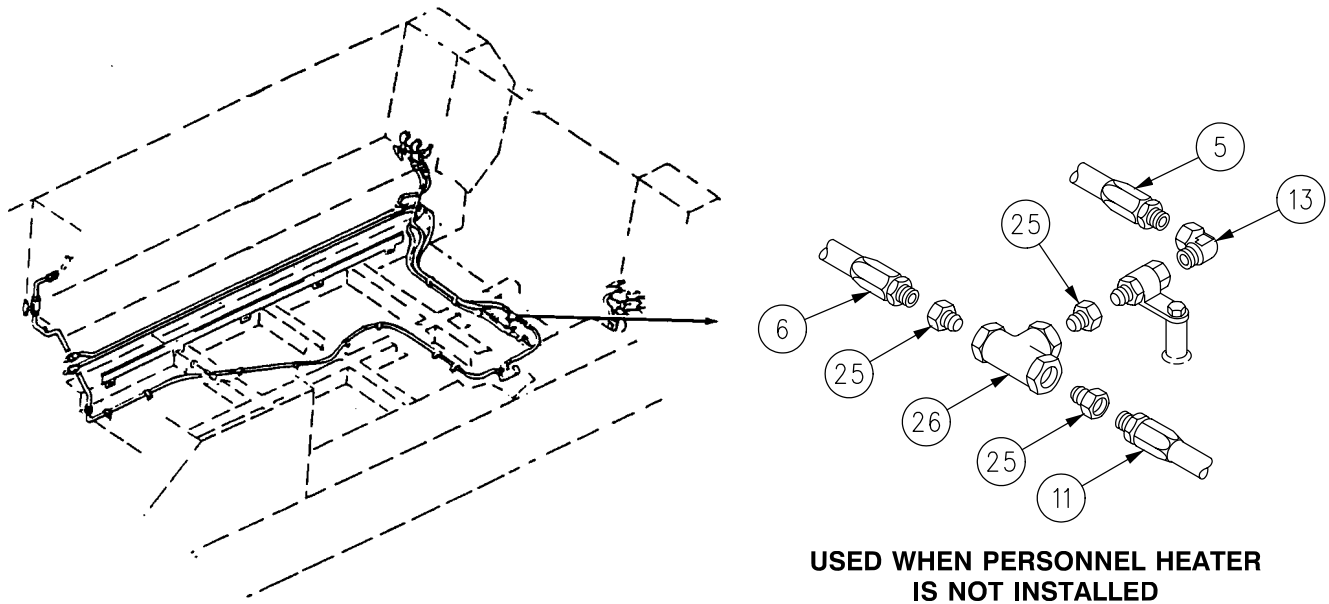


8. Remove three screws (8), lockwashers (9), six clamps (10), and supply hose (11) from three weldnuts (12). Discard lockwashers.

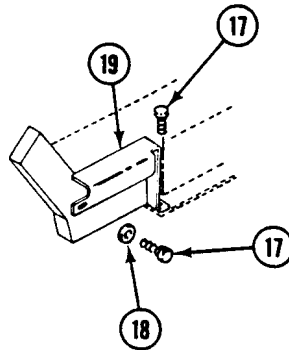


REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0148 00**

9. Disconnect supply hose (5) from elbow (13) or tee (14) (if personnel heater is installed).
10. Remove strap (15) that secures personnel heater fuel hose (16) to supply hose (11) (if personnel heater is installed). Discard strap.

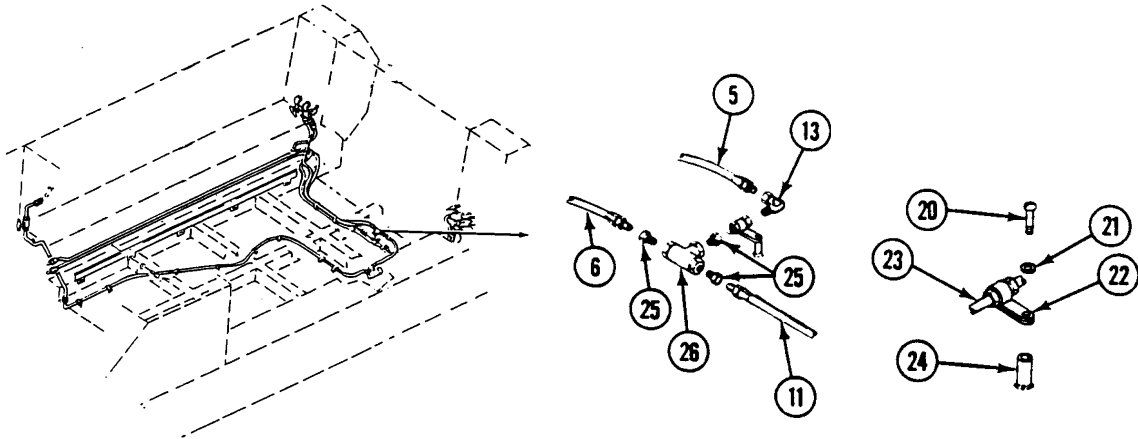


11. Remove two screws (17), washer (18), and guard (19) from hull.

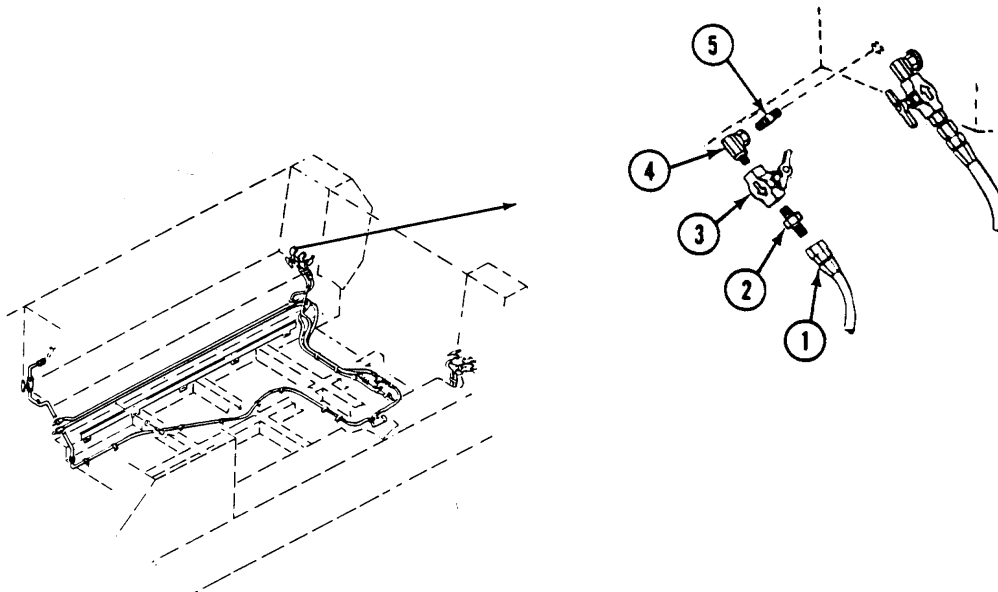


REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0148 00**

12. Remove personnel heater tube (if personnel heater is installed) (WP 0607 00).
13. Remove screw (20), lockwasher (21), clamp (22), and tube assembly (23) from weldnut (24). Discard lockwasher.
14. Remove elbow (13) from tube (5).
15. Disconnect tube (5) and two supply hoses (6) and (11) from three adapters (25).
16. Remove three adapters (25) from check valve (26).

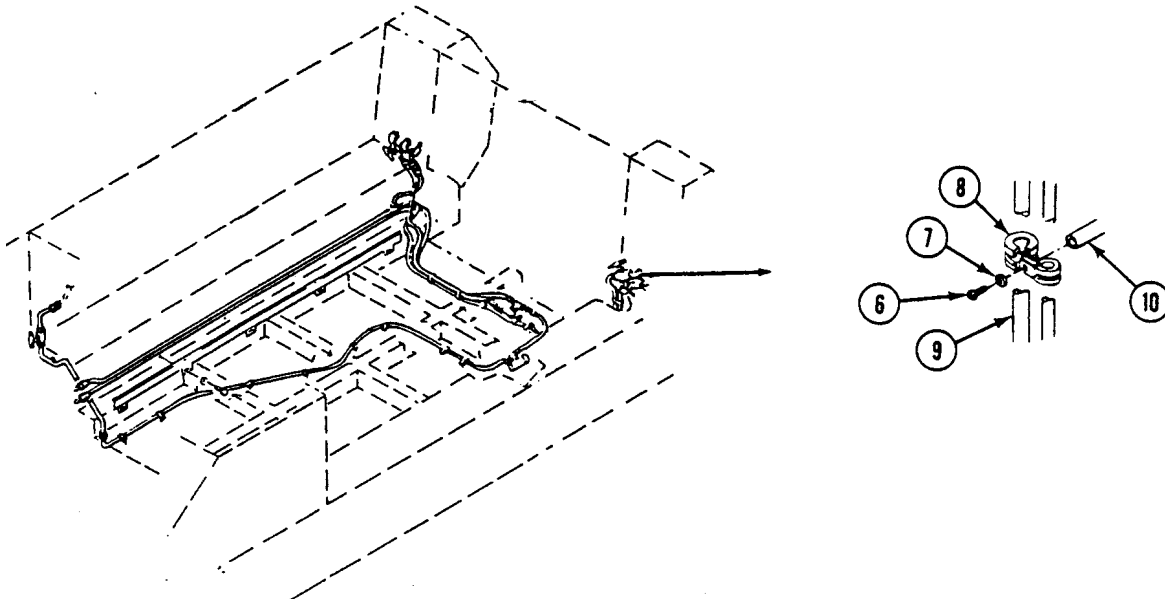


17. Disconnect supply hose (1) from adapter (2).
18. Remove adapter (2) from supply shutoff valve (3).
19. Remove supply shutoff valve (3) from union (4).
20. Remove union (4) from nipple (5).
21. Remove nipple (5) from right fuel tank.

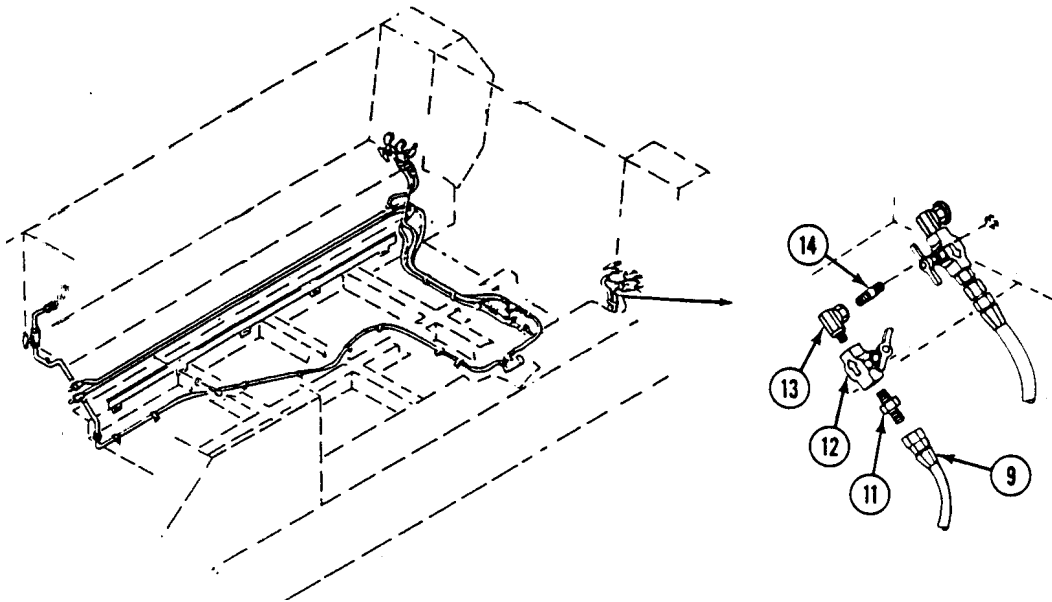


REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0148 00**

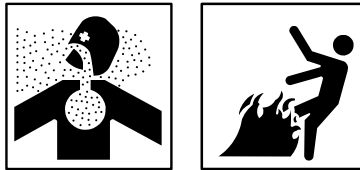
22. Remove screw (6), lockwasher (7), clamp (8), and supply hose (9) from weldnut (10). Discard lockwasher.



23. Remove supply hose (9) from adapter (11).
24. Remove adapter (11) from supply shutoff valve (12).
25. Remove supply shutoff valve (12) from union (13).
26. Remove union (13) from nipple (14).
27. Remove nipple (14) from left fuel tank.



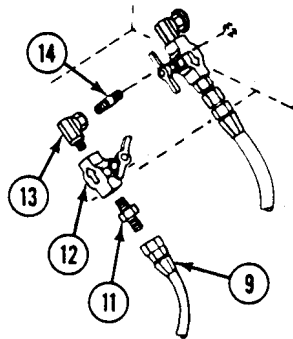
INSTALLATION

WARNING

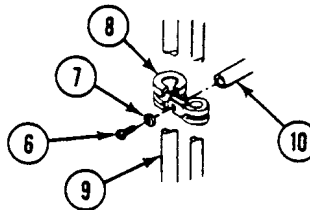
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin coat of sealing compound to cleaned external threads of fittings before installation.
2. Install nipple (14) in left fuel tank.
3. Install union (13) on nipple (14).
4. Install supply shutoff valve (12) on union (13) with arrow pointing away from fuel tank.
5. Install adapter (11) in supply shutoff valve (12).
6. Connect supply hose (9) to adapter (11).

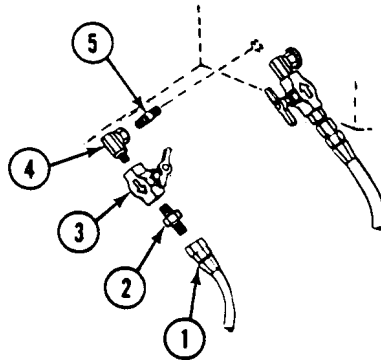


7. Secure supply hose (9) to weldnut (10) with clamp (8), new lockwasher (7), and screw (6).

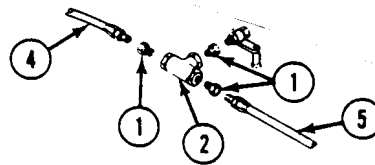


REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0148 00**

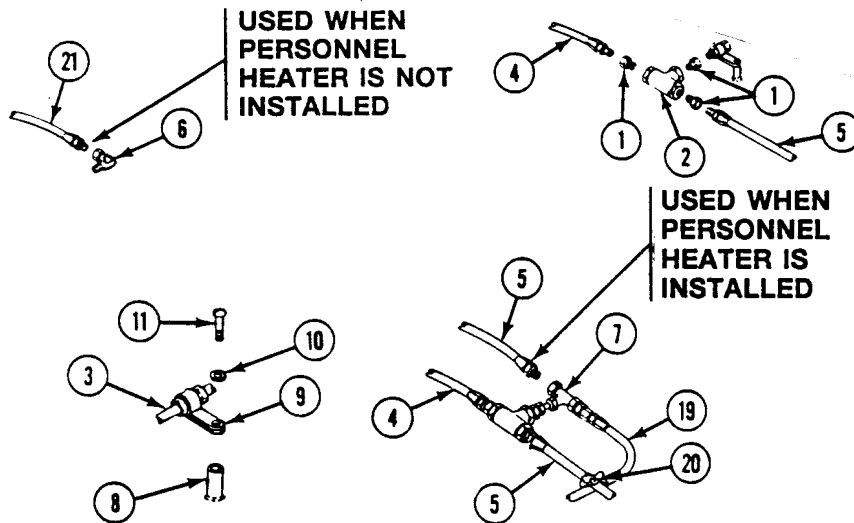
8. Install nipple (5) in right fuel tank.
9. Install union (4) on nipple (5).
10. Install supply shutoff valve (3) on union (4) with arrow pointing away from fuel tank.
11. Install adapter (2) on supply shutoff valve (3).
12. Connect supply hose (1) to adapter (2).



13. Install three adapters (1) in check valve (2).

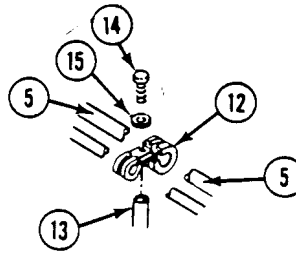


14. Connect tube assembly (3) and two supply hoses (4) and (5) to three adapters (1).
15. Connect elbow (6) (or tee (7) if personnel heater is installed) to tube (3).
16. Secure tube (3) to weldnut (8) with clamp (9), new lockwasher (10), and screw (11).

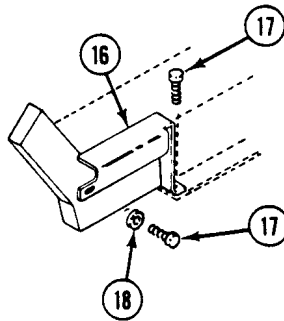


REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0148 00**

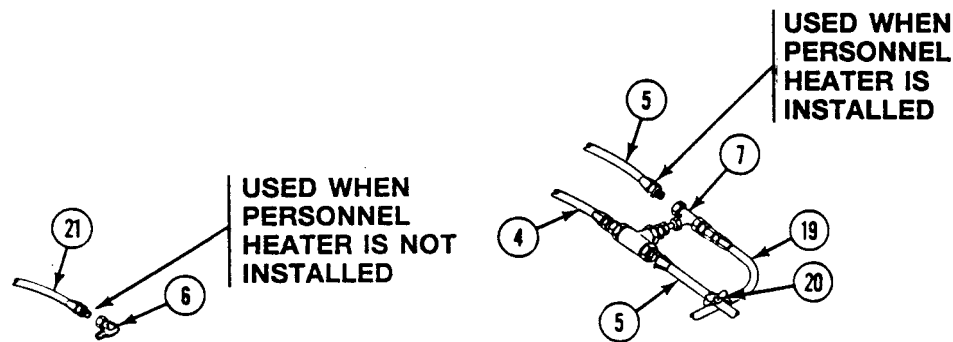
17. Install supply hose (5) and six clamps (12) on three weldnuts (13). Secure with three screws (14) and new lockwashers (15).



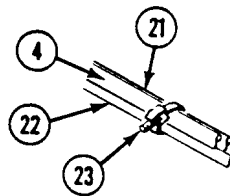
18. Install personnel heater tube (if personnel heater is installed) (WP 0607 00).
 19. Secure guard (16) to hull with two screws (17) and washer (18).



20. Secure supply hose (5) to heater fuel hose (19) with new strap (20) (if personnel heater is installed).
 21. Connect supply hose (21) to elbow (6) (or tee (7) if personnel heater is installed).

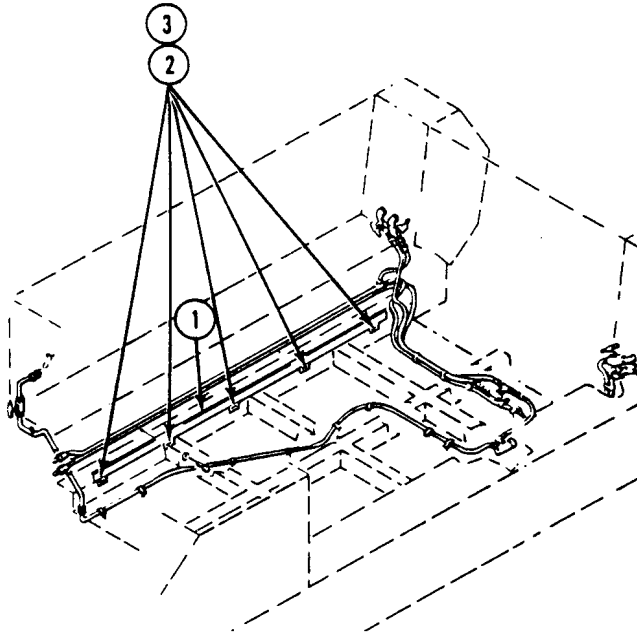


22. Secure supply hoses (4) and (21) and return hose (22) together with three new straps (23).

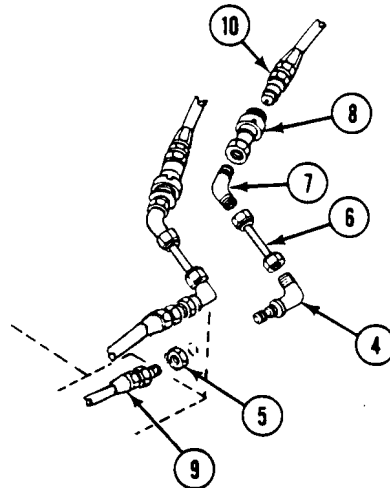


REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0148 00**

23. Install two guards (1) on hull. Secure with five screws (2) and new lockwashers (3).



24. Secure bulkhead elbow (4) to power plant rear bulkhead with nut (5).
25. Connect tube assembly (6) to bulkhead elbow (4).
26. Connect elbow (7) to tube assembly (6).
27. Connect quick disconnect half (8) to elbow (7).
28. Connect supply hose (9) to bulkhead elbow (4).
29. Connect quick disconnect half (10) to quick disconnect half (8) at power plant rear bulkhead.



FOLLOW-THROUGH STEPS

1. Fill fuel tanks (see your -10).
2. Connect battery ground lead (WP 0294 00).
3. Start engine (see your -10). Check for leaks.
4. Install cargo area floor plates. See TM 9-2350-266-20.
5. Install power plant lower rear access panel (WP 0431 00).
6. Raise and lock ramp (see your -10).
7. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M981 ONLY)

0149 00

THIS WORK PACKAGE COVERS:

- Removal (page 0149 00-1).
- Installation (page 0149 00-7).

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Equipment Condition

- Engine stopped/shutdown (see your -10)
- Carrier blocked (see your -10)
- Ramp lowered (see your -10)
- Battery ground lead disconnected (WP 0294 00)
- Fuel tanks drained (WP 0142 00)
- Cargo area floor plates removed (TM 9-2350-266-20)
- Power plant rear access panel removed (WP 0431 00)

Materials/Parts

- Sealing compound (WP 0782 00, Item 60)
- Wiping rag (WP 0782 00, Item 76)
- Lockwasher (5)
- Lockwasher (3)
- Lockwasher
- Tie strap (3)

REMOVAL

WARNING



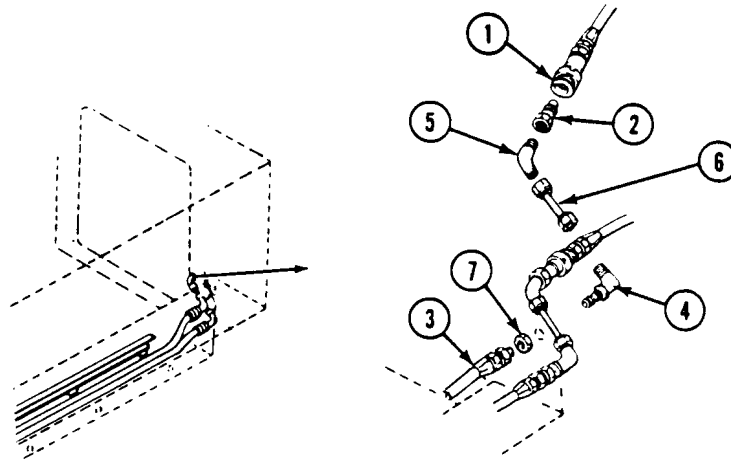
Fuel flowing over metal causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

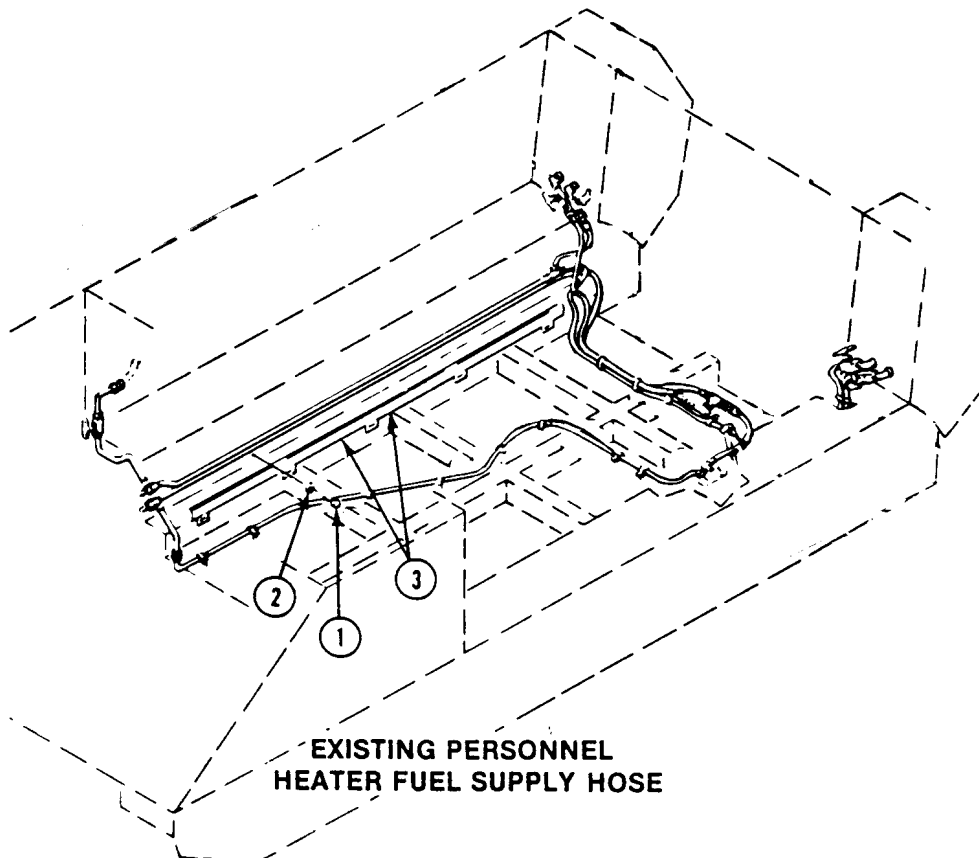
Use wiping rag to wipe up any spilled fuel.

REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0149 00**

1. Remove quick disconnect half (1) from quick disconnect half (2) at power plant rear bulkhead.
2. Disconnect fuel return hose (3) from bulkhead elbow (4).
3. Remove quick disconnect half (2) from elbow (5).
4. Disconnect tube assembly (6) from elbows (4) and (5).
5. Remove nut (7) and bulkhead elbow (4) from power plant rear bulkhead.

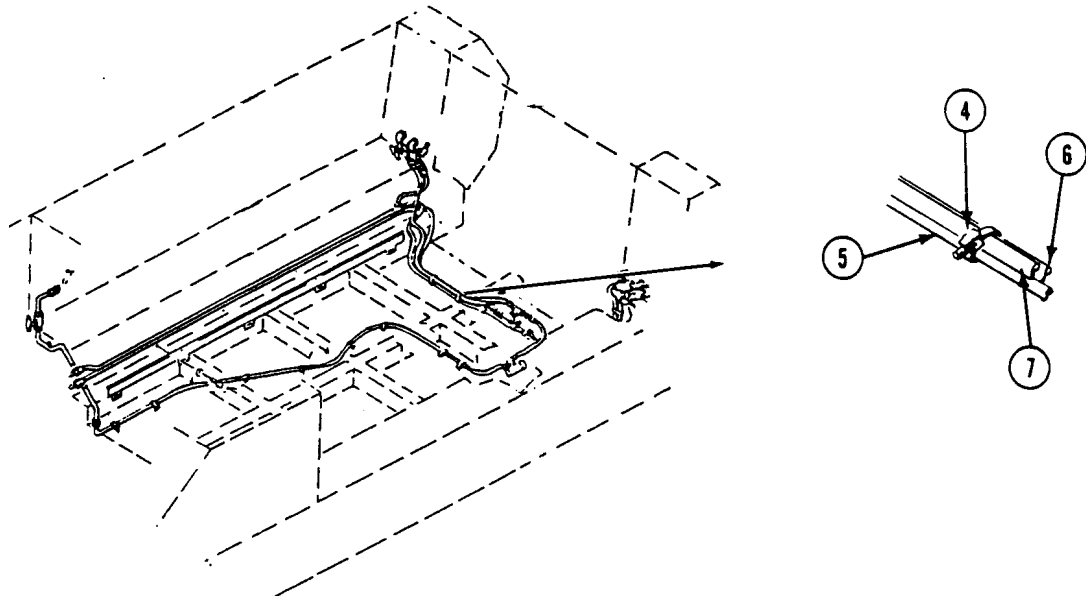


6. Remove five screws (1), lockwashers (2), and two guards (3) from hull. Discard lockwashers.

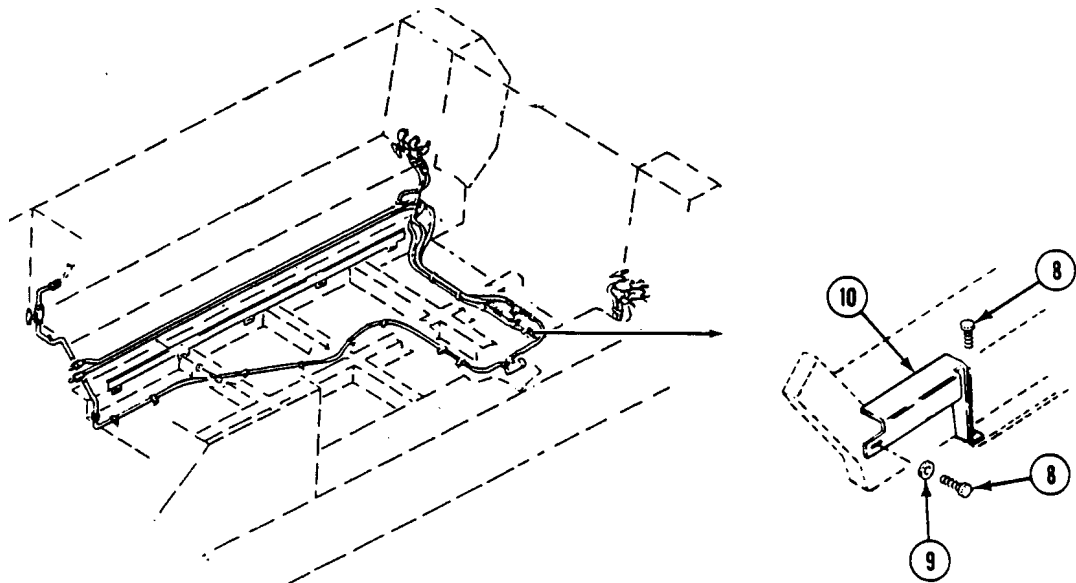


REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0149 00**

7. Remove three tie straps (4) that secure return hose (5) and supply hoses (6) and (7) together. Discard tie straps.

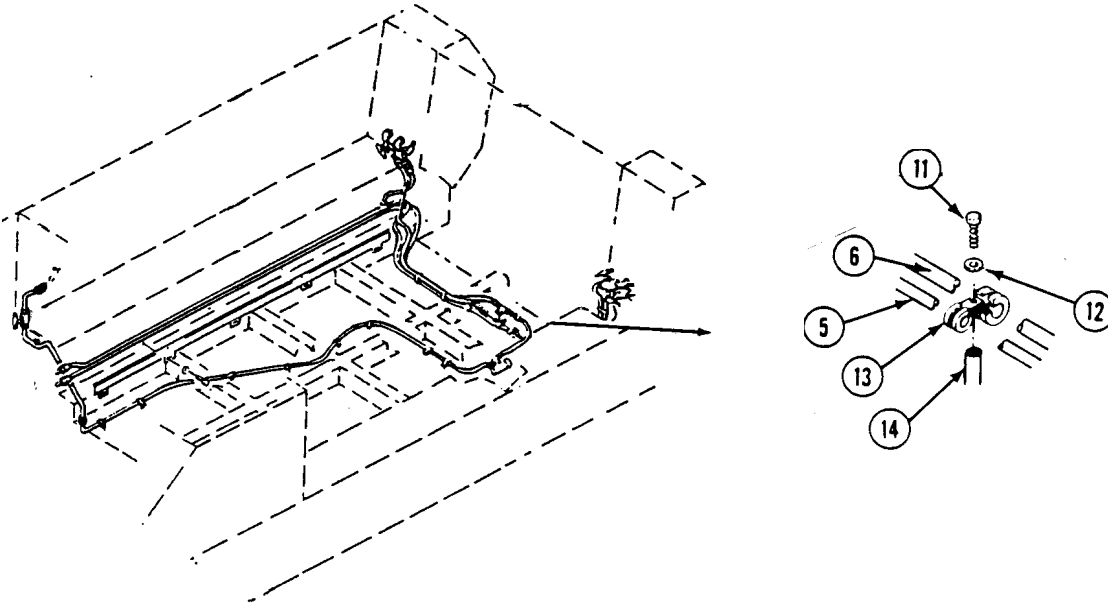


8. Remove two screws (8), lockwasher (9), and guard (10) from hull. Discard lockwasher.

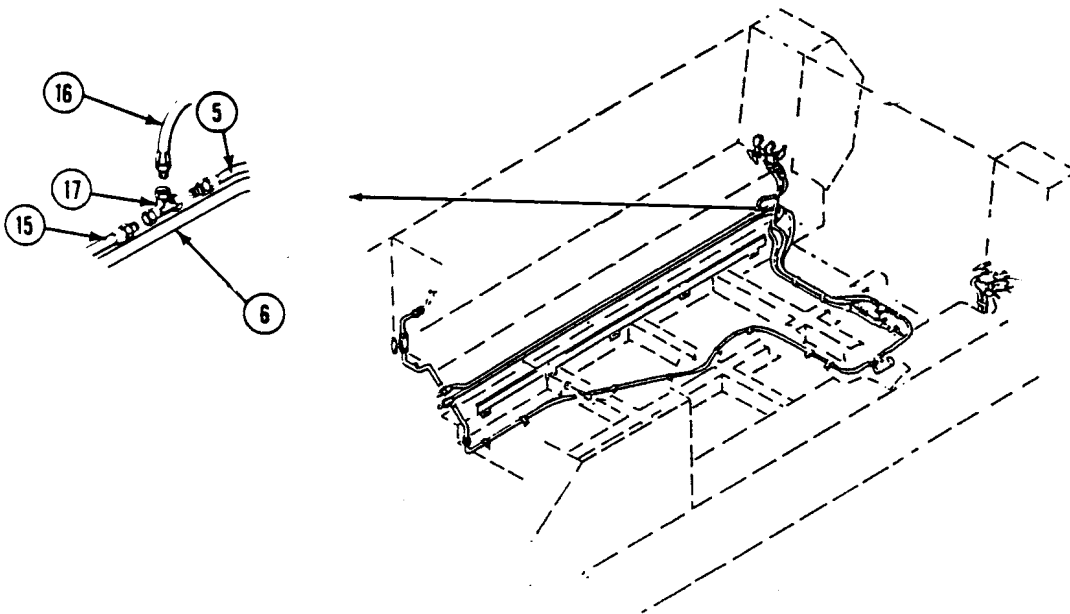


REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0149 00**

9. Remove three screws (11), lockwashers (12), six clamps (13), and return hose (5) from three weldnuts (14). Discard lockwashers.

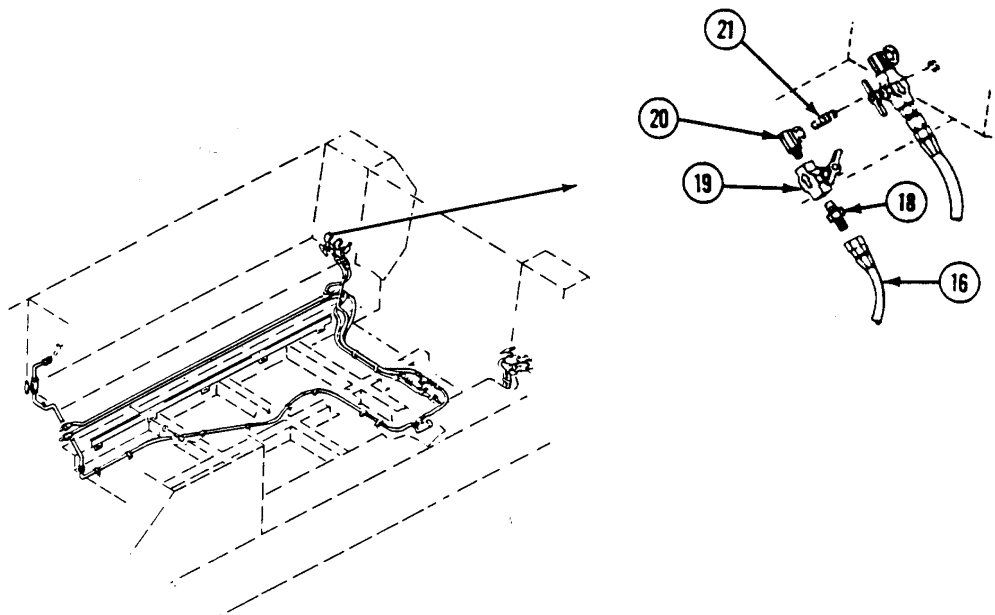


10. Disconnect return hoses (5), (15), and (16) from tee (17).

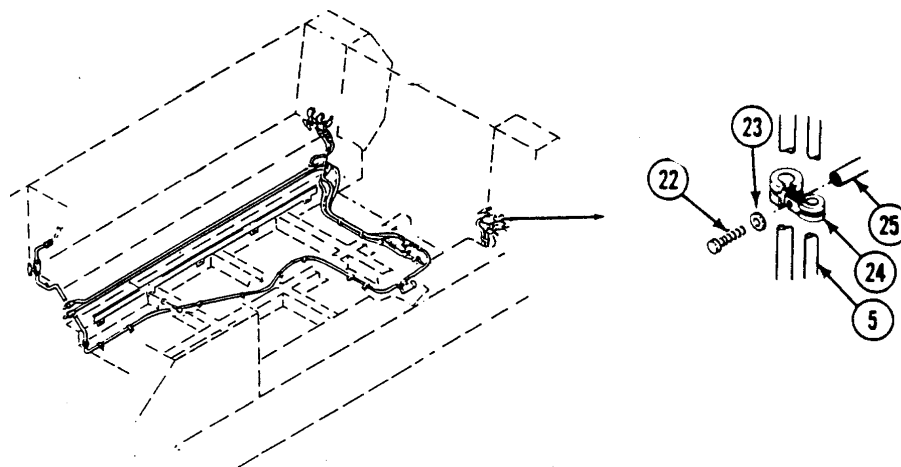


REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0149 00**

11. Disconnect return hose (16) from adapter (18).
12. Remove adapter (18) from return shutoff valve (19).
13. Remove return shutoff valve (19) from union (20).
14. Remove union (20) from nipple (21).
15. Remove nipple (21) from right fuel tank.

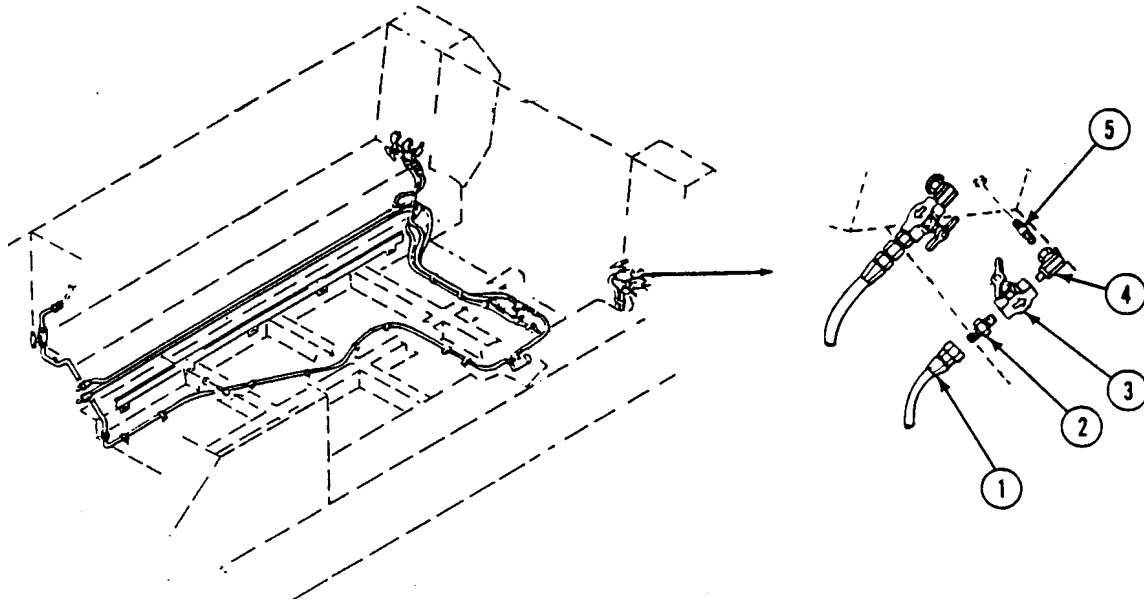


16. Remove screw (22), lockwasher (23), clamp (24), and return hose (5) from weldnut (25).

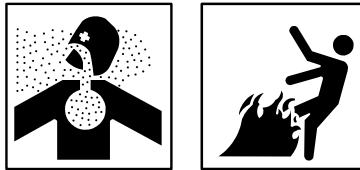


REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0149 00**

17. Disconnect return hose (1) from adapter (2).
18. Remove adapter (2) from shutoff valve (3).
19. Remove shutoff valve (3) from union (4).
20. Remove union (4) from nipple (5).
21. Remove nipple (5) from left fuel tank.



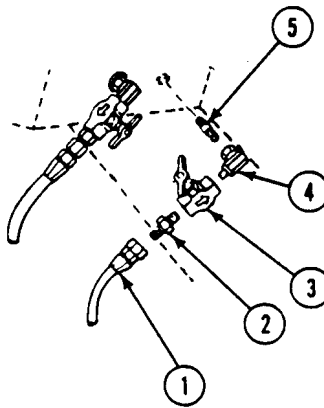
INSTALLATION

WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

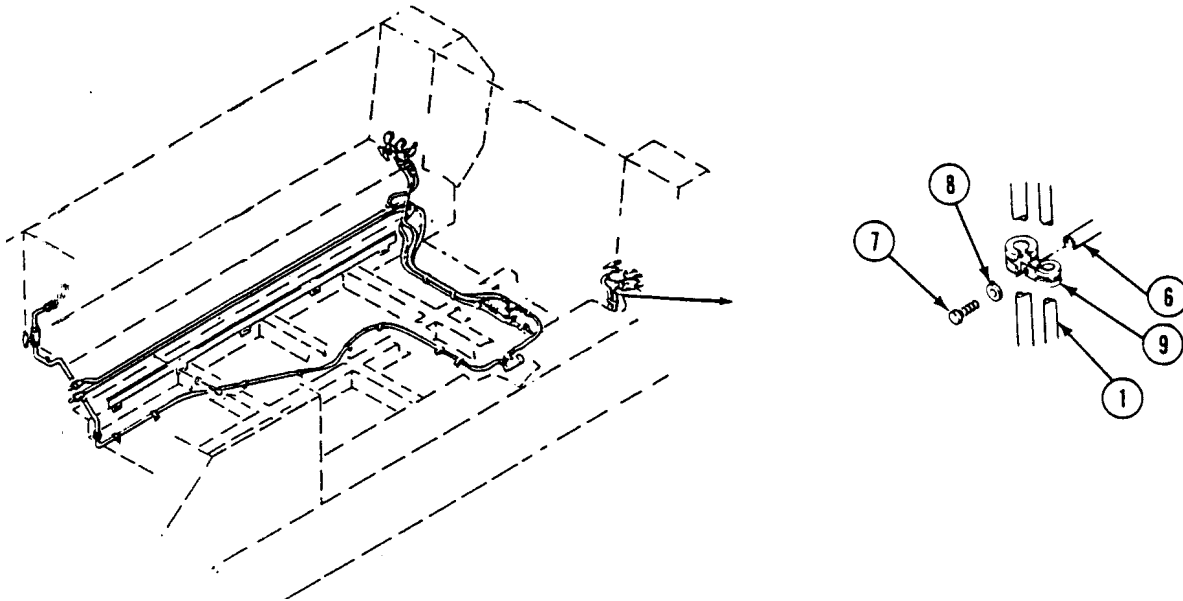
Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin coat of sealing compound to cleaned external threads of fittings before installation.
2. Install nipple (5) in left fuel tank.
3. Install union (4) on nipple (5).
4. Install shutoff valve (3) on union (4) with arrow pointing toward fuel tank.
5. Install adapter (2) in supply shutoff valve (3).
6. Connect return hose (1) to adapter (2).

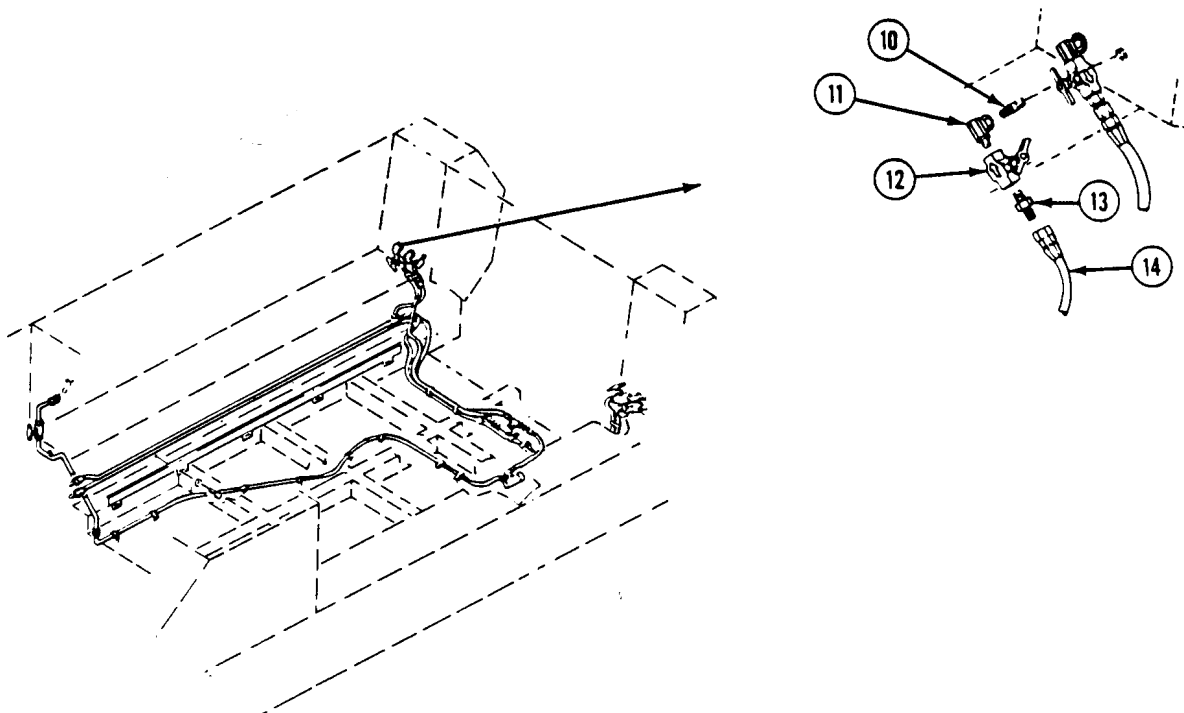


REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0149 00**

7. Install return hose (1) to weldnut (6). Secure with clamp (9), new lockwasher (8), and screw (7).

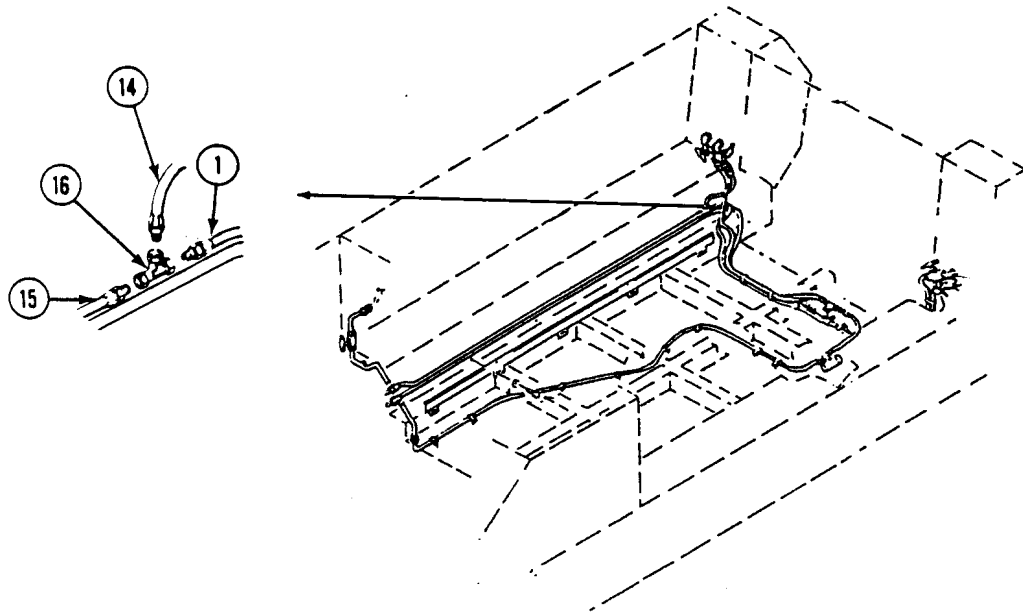


8. Install nipple (10) in right fuel tank.
 9. Install union (11) on nipple (10).
 10. Install shutoff valve (12) on union (11) with arrow pointing toward fuel tank.
 11. Install adapter (13) on shutoff valve (12).
 12. Connect return hose (14) to adapter (13).

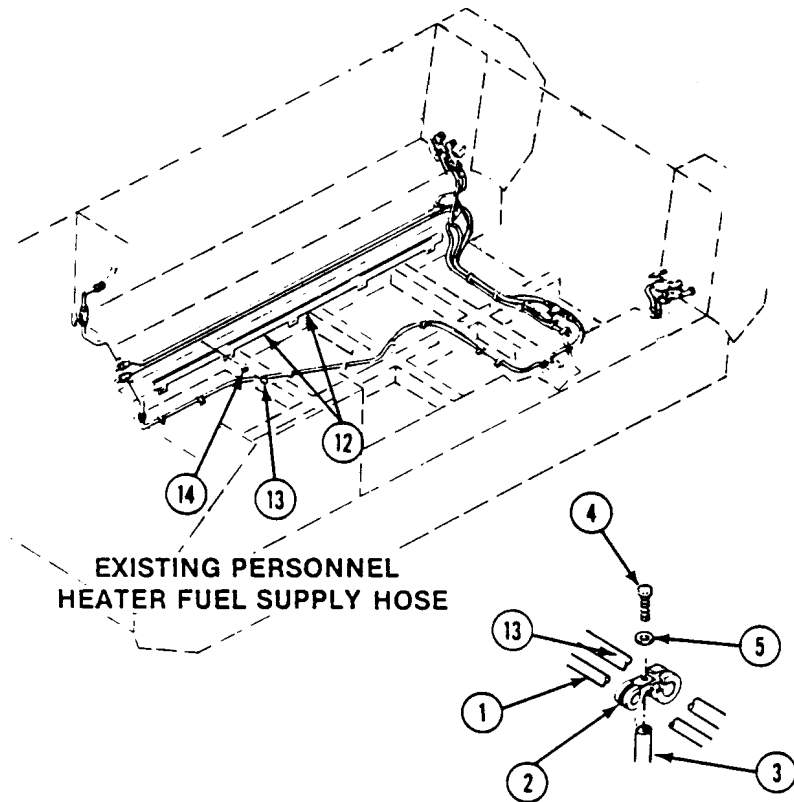


REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0149 00**

13. Connect three return hoses (15), (1), and (14) to tee (16).



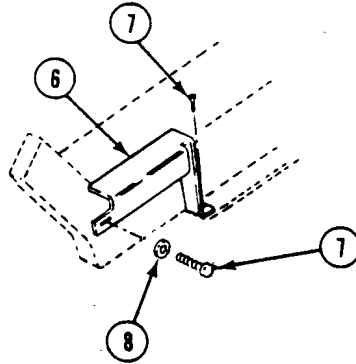
14. Install return hose (1) and six clamps (2) on three weldnuts (3). Secure with three screws (4) and new lockwashers (5).



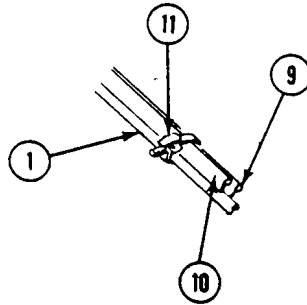
REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued

0149 00

15. Secure guard (6) to hull with two screws (7) and new lockwasher (8).

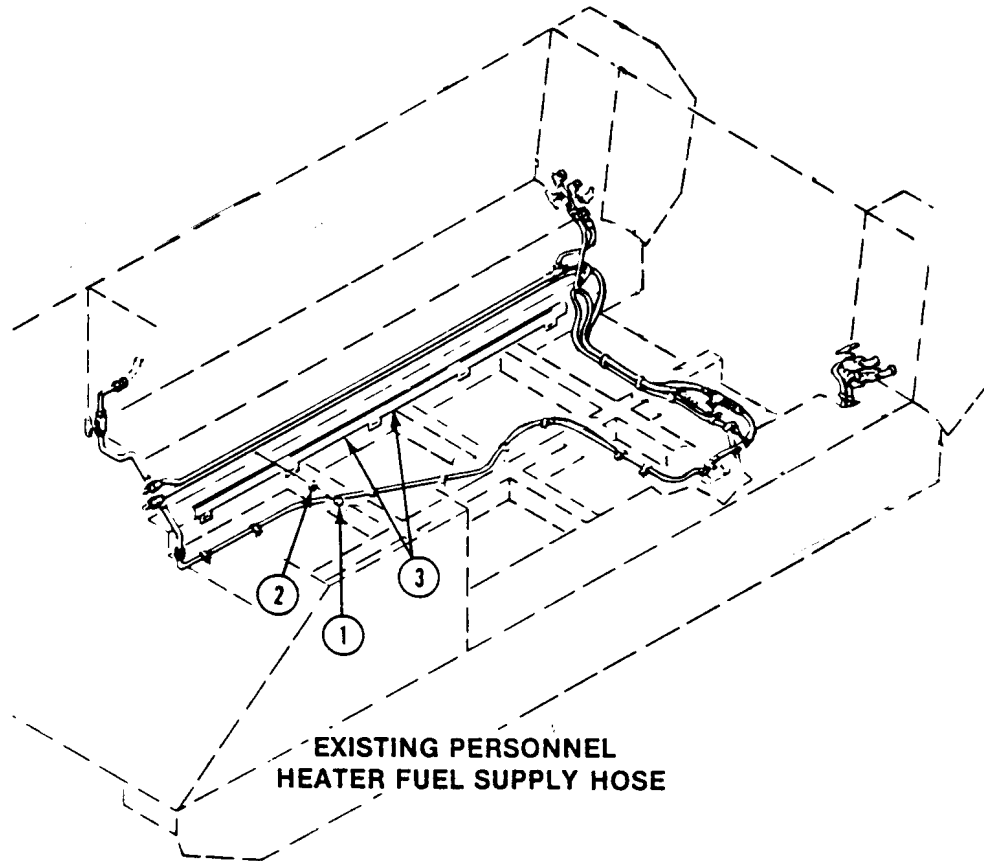


16. Secure return hose (1) and supply hoses (9) and (10) together with three new tie straps (11).

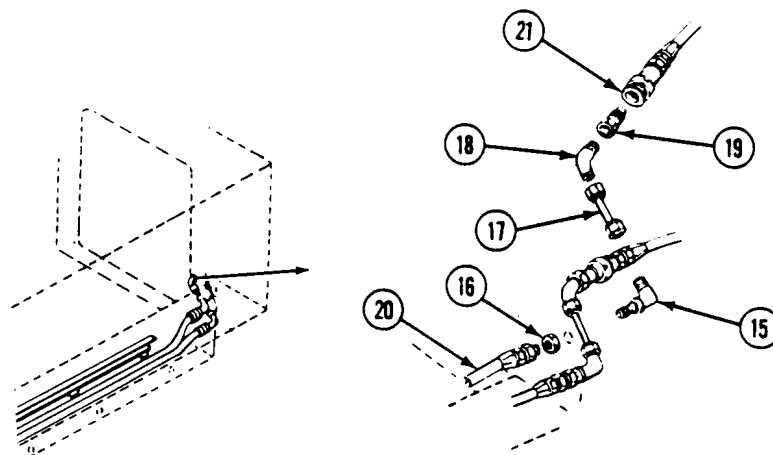


REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M981 ONLY) — Continued**0149 00**

17. Secure two guards (3) to hull with five screws (1) and new lockwashers (2).



18. Secure bulkhead elbow (15) to power plant rear bulkhead with nut (16).
 19. Connect tube assembly (17) to bulkhead elbow (15).
 20. Connect elbow (18) to tube (17).
 21. Connect quick disconnect half (19) to elbow (18).
 22. Connect return hose (20) to bulkhead elbow (15).
 23. Connect quick disconnect half (21) to quick disconnect half (19) at power plant rear bulkhead.



FOLLOW-THROUGH STEPS

1. Fill fuel tanks (see your -10).
2. Connect battery ground strap (WP 0294 00).
3. Start engine (see your -10). Check for leaks.
4. Raise and lock ramp (see your -10).
5. Stop engine (see your -10).
6. Install cargo area floor plates. See TM 9-2350-266-20.
7. Install power plant rear access panel (WP 0431 00).

END OF TASK

CLEAN FUEL CAP VENT AND FILTER SCREEN (M981 AND M1064 ONLY)

0150 00

THIS WORK PACKAGE COVERS:

Cleaning (page 0150 00-1).

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped (see your -10)

Carrier blocked (see your -10)

Materials/Parts

Cleaning compound, solvent (WP 0782 00, Item 16)

Wiping rag (WP 0782 00, Item 76)

CLEANING

WARNING

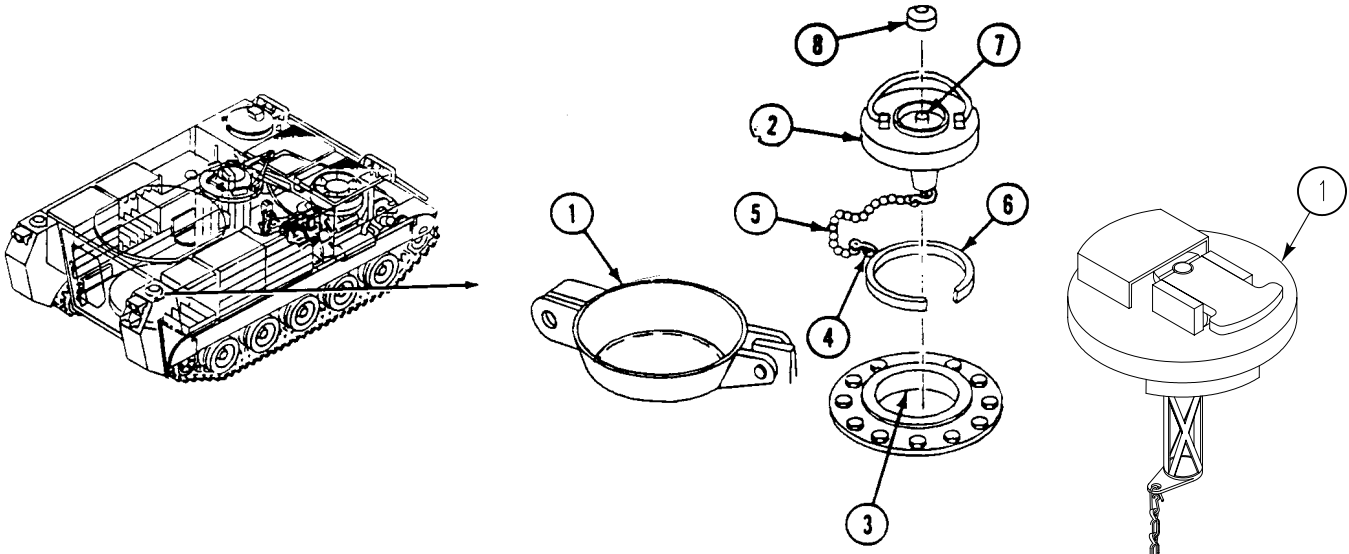


Fuel fumes can explode and burn you. Do not smoke or allow open flame near carrier when removing and cleaning fuel cap(s).

NOTE

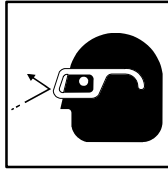
Carrier may have optional cap with pressure relief valve. If fuel cap has pressure relief valve, remove cap by lifting pressure relief valve and turning cap counterclockwise.

1. Open fuel filler combat cover (1), and remove fuel cap (2) from filler neck (3).
2. Open hook (4) and remove attached chain (5) with fuel cap (2) from spring plate (6).
3. While holding end of spring plate (6) out of groove, rotate spring plate and remove from filler neck (3).

**NOTE**

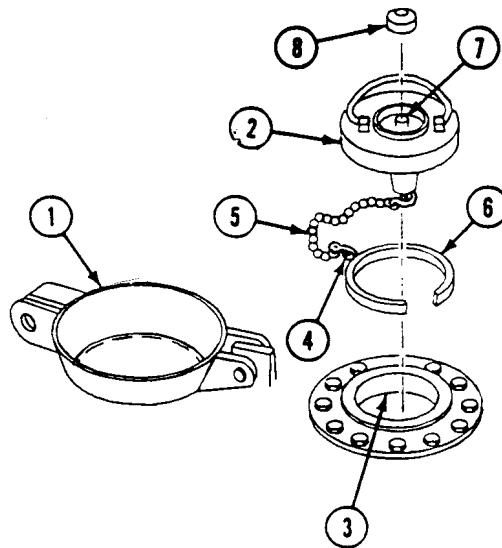
Do not remove internal filter screen from screen cap.

4. Clean vent grommet (7) and screen cap (8) in fuel cap (2) as follows:
 - a. Using pliers, pull on the tang in the center of screen cap (8), and remove screen cap from fuel cap (2).
 - b. Check vent grommet (7) to make sure it is clean, free from damage, and secure.
 - c. If vent grommet (7) is damaged, replace entire fuel cap (WP 0144 00).
 - d. If grommet (7) is clogged or dirty, remove and clean with dry cleaning solvent and clean rag.
 - e. Install grommet (7) in fuel cap (2). Make sure it is properly seated.

WARNING

Air pressure in excess of 30 psi (207 kPa) can injure personnel. Do not direct pressurized air at yourself or others. Always wear goggles.

- f. Clean screen cap (8) with dry cleaning solvent. Dry with compressed air.
- g. Install screen cap (8) in fuel cap (2). Dry with compressed air.
5. While holding one end of spring plate (6), place other end in groove in filler neck (3). Rotate spring plate and install in filler neck.
6. Install hook (4) with attached chain (5) and fuel cap (2) to spring plate (6).
7. Install fuel cap (2), with attached chain (5) in filler neck (3).
8. Close fuel filler combat cover (1).



END OF TASK

REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M1064 ONLY)

0151 00

THIS WORK PACKAGE COVERS:

Removal (page 0151 00-1).
Installation (page 0151 00-6).

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Sealing compound (WP 0782 00, Item 60)

Wiping rag (WP 0780 00, Item 76)

Lockwasher (11)

Lockwasher (8)

Tie strap (20)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Ramp lowered (see your -10)

Battery ground lead disconnected (WP 0294 00)

Fuel tanks drained (WP 0142 00)

Power plant rear access panel removed (WP 0433 00)

Heater duct removed (WP 0617 00)

Floor plates removed (WP 0437 00)

REMOVAL

WARNING



Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

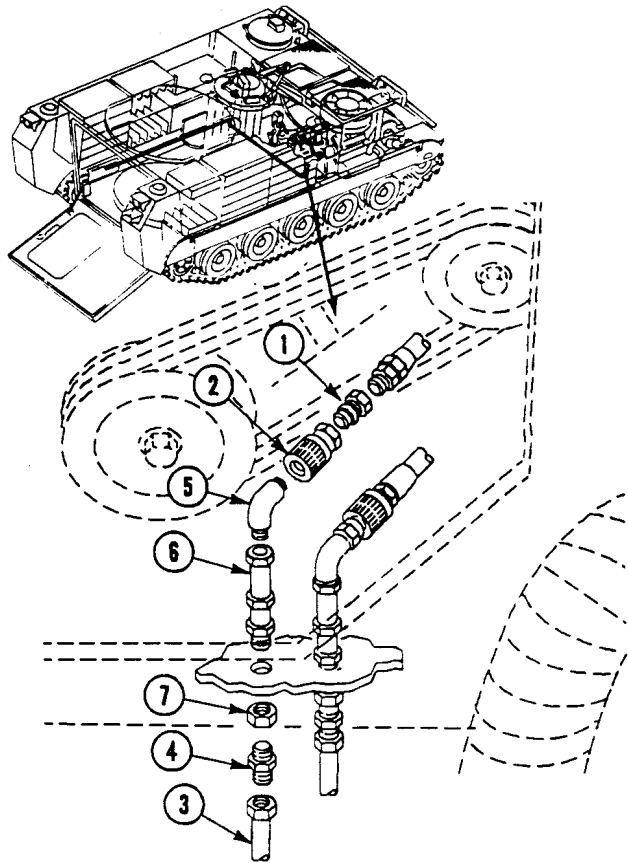
Use wiping rags to wipe any spilled fuel.

REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M1064 ONLY) — Continued**0151 00**

1. Separate quick disconnect half (1) from quick disconnect half (2) inside power plant rear bulkhead.
2. Remove fuel supply hose (3) from nipple (4).

NOTE**Tag quick disconnect couplings before removal.**

3. Remove quick disconnect half (2) from elbow (5).
4. Remove elbow (5) from tube assembly (6).
5. Remove tube assembly (6) from nipple (4).
6. Remove nut (7) and nipple (4) from transverse beam.

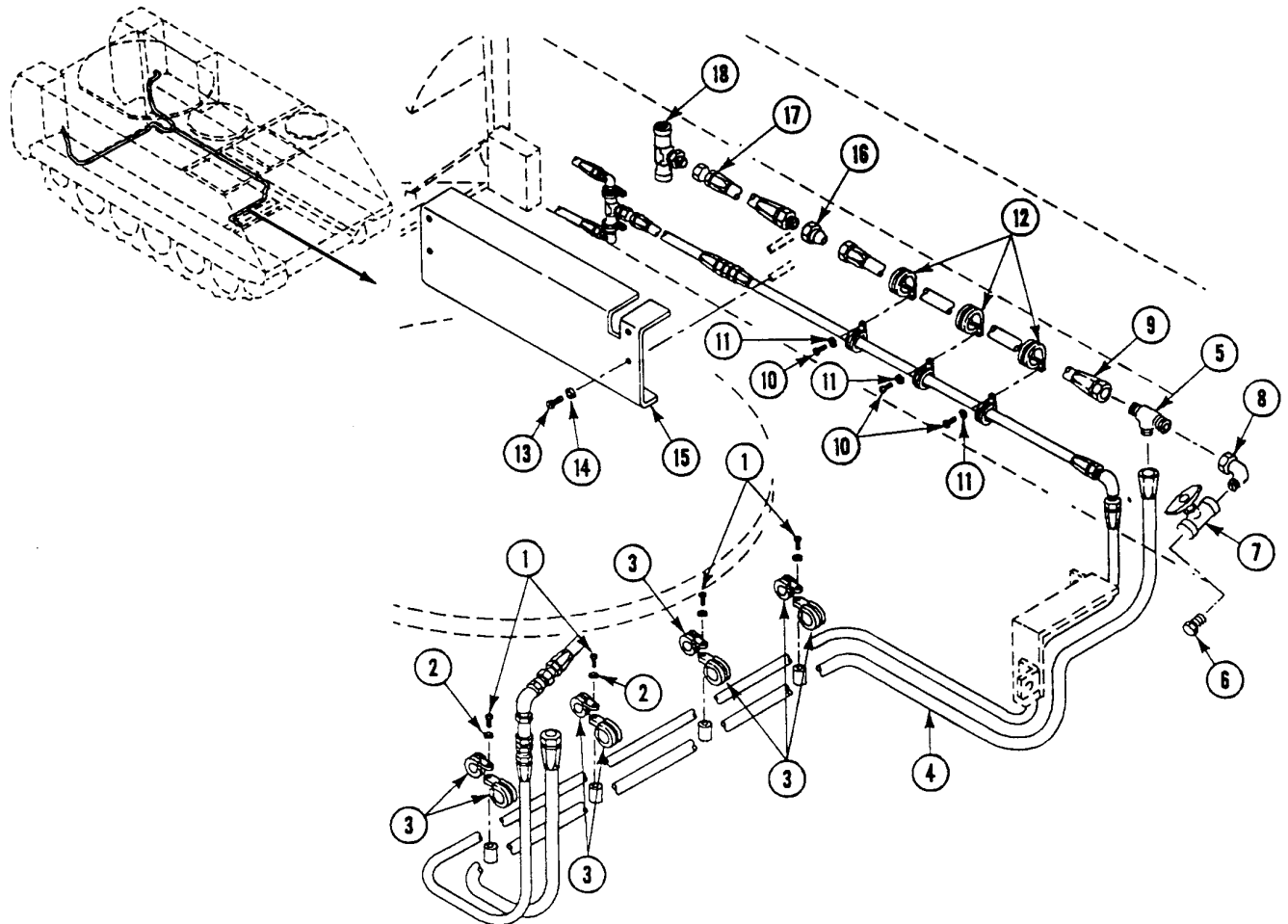


7. Remove four screws (1), lockwashers (2), and eight clamps (3) from weldnuts. Discard lockwashers.
8. Remove clamps (3) from fuel supply hose (4).
9. Disconnect fuel supply hose (4) from tee (5).

NOTE

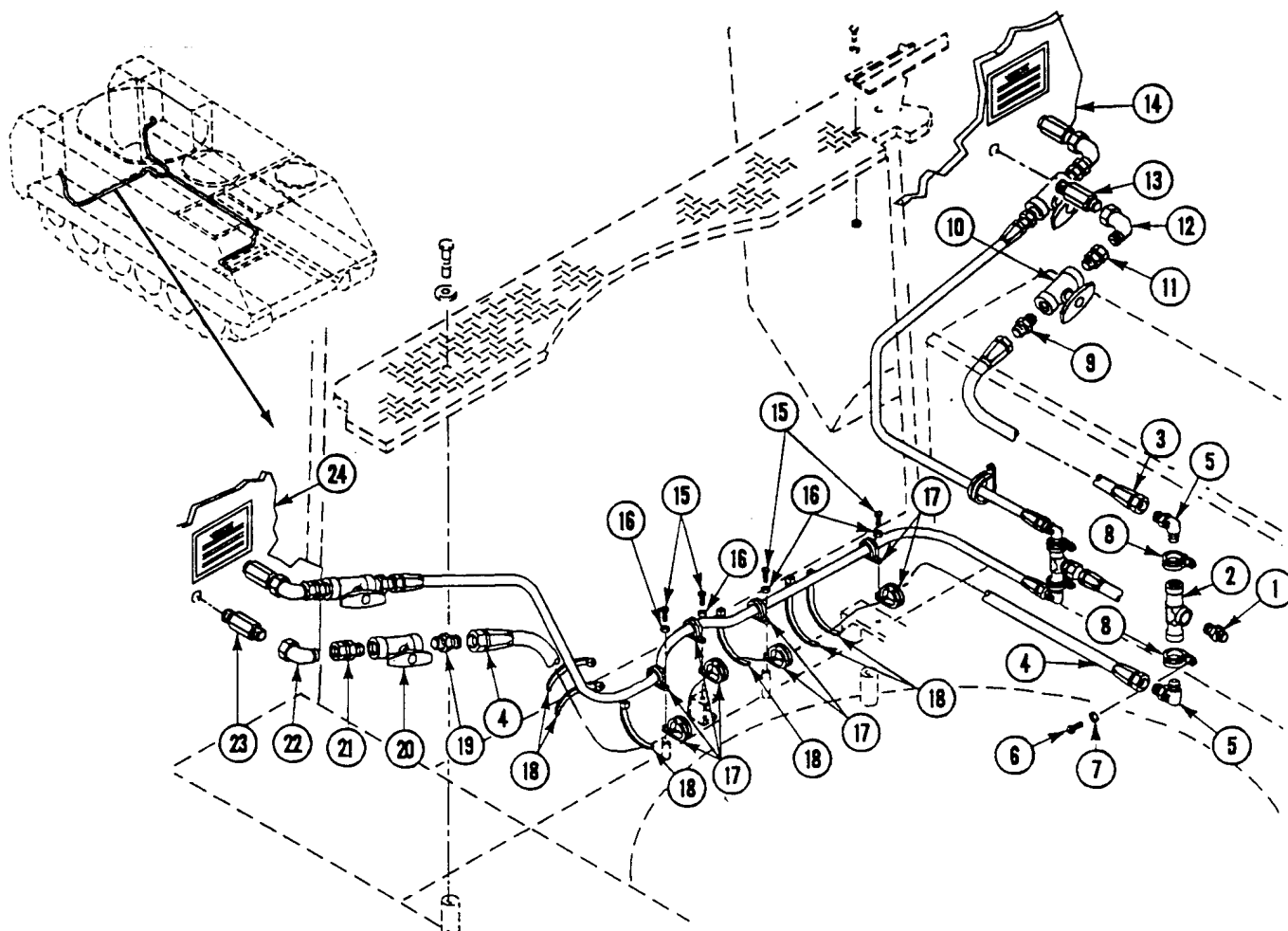
If personnel heater is installed, plug (6) will be replaced by a hose.

10. Remove plug (6) from valve (7).
11. Remove valve (7) from elbow (8).
12. Remove elbow (8) from tee (5).
13. Remove tee (5) from fuel supply tube (9).
14. Remove three screws (10), lockwashers (11), and six clamps (12) from weldnuts. Discard lockwashers.
15. Remove clamps (12) from fuel supply tube (9).
16. Remove four screws (13), lockwashers (14), and guard (15) from sponson. Discard lockwashers.
17. Disconnect fuel supply tube (9) from nipple (16).
18. Remove nipple (16) from fuel supply hose (17).
19. Remove fuel supply hose (17) from adapter (18).



REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M1064 ONLY) — Continued**0151 00**

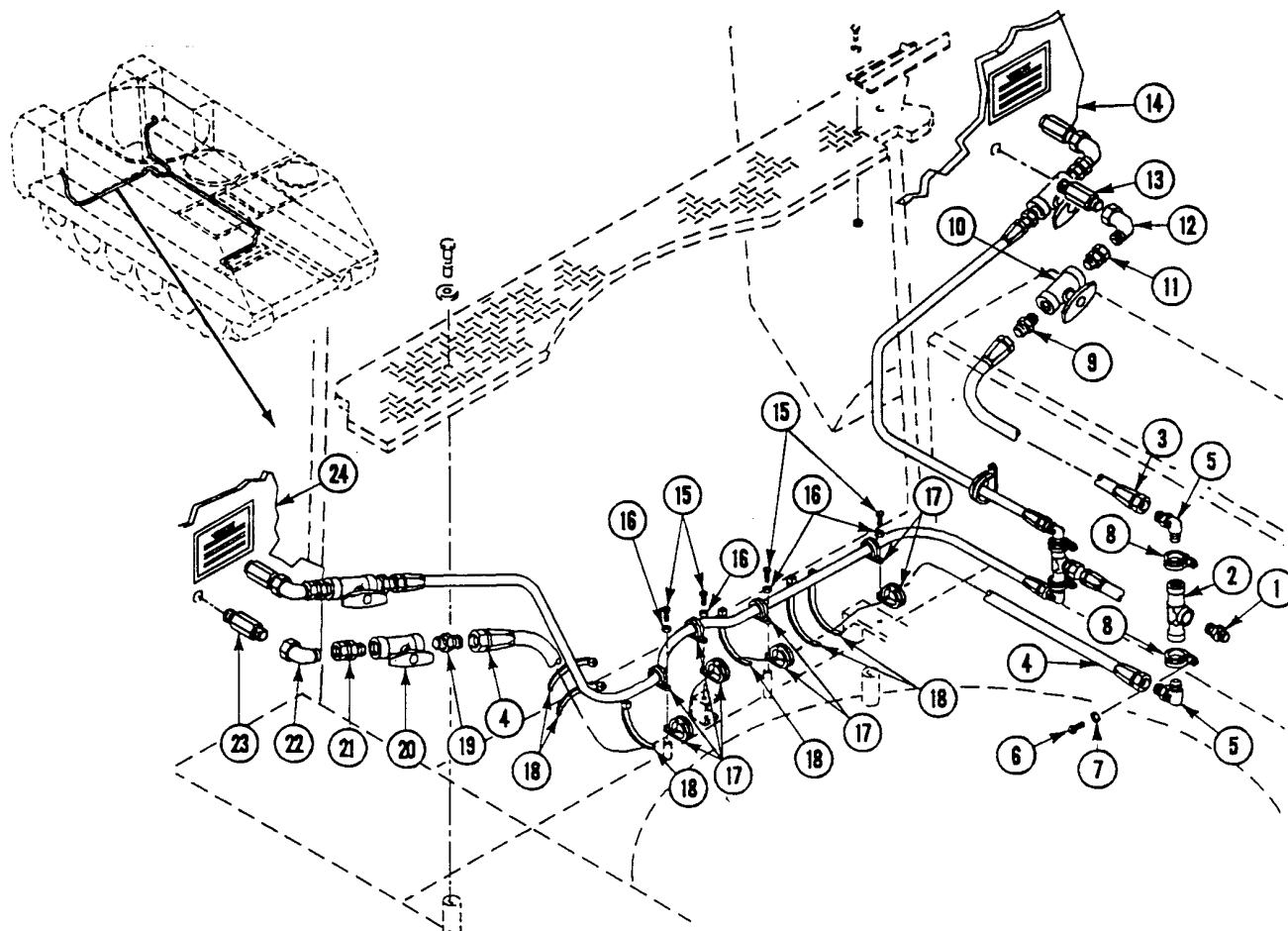
20. Remove adapter (1) from tee (2).
21. Remove two fuel supply hoses (3) and (4) from two elbows (5).
22. Remove two screws (6) and lockwashers (7) from clamps (8). Discard lockwashers.
23. Remove two clamps (8) and elbows (5) from tee (2).
24. Disconnect fuel supply hose (3) from adapter (9).
25. Remove adapter (9) from valve (10).
26. Remove valve (10) from adapter (11).
27. Remove adapter (11) from elbow (12).
28. Remove elbow (12) from adapter (13).
29. Remove adapter (13) from left fuel tank (14).
30. Remove four screws (15), lockwashers (16), and clamps (17) from weldnuts. Discard lockwashers.
31. Remove clamps (17) and tie straps (18) from fuel hoses, wiring harness, and bilge pump tube. Discard tie straps.



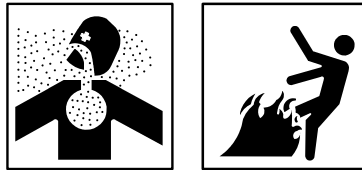
REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M1064 ONLY) — Continued

0151 00

32. Disconnect fuel supply hose (4) from adapter (19).
33. Remove adapter (19) from valve (20).
34. Remove valve (20) from adapter (21).
35. Remove adapter (21) from elbow (22).
36. Remove elbow (22) from adapter (23).
37. Remove adapter (23) from right fuel tank (24).



INSTALLATION

WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

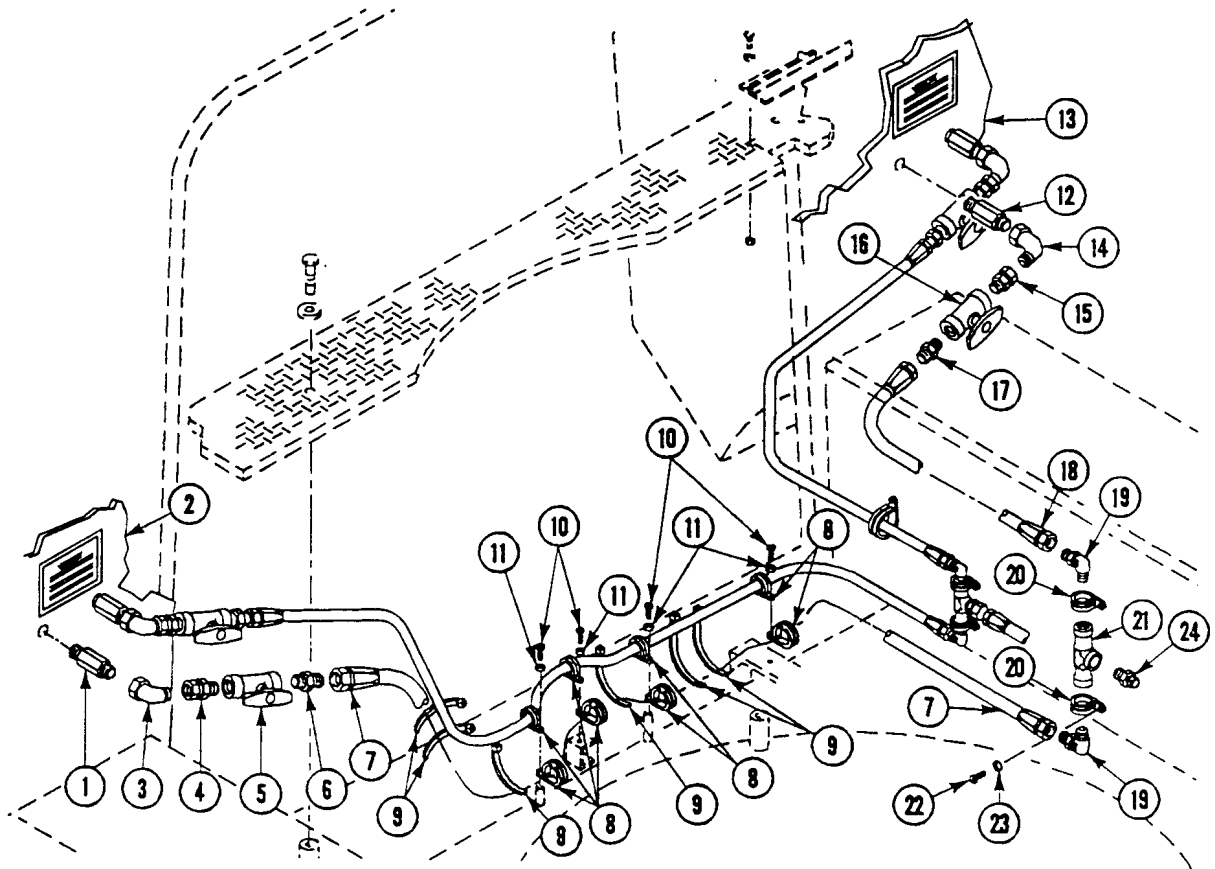
Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to cleaned external threads of fittings before installation.
2. Install adapter (1) on right fuel tank (2).
3. Install elbow (3) on adapter (1).
4. Install adapter (4) on elbow (3).
5. Install valve (5) on adapter (4) with arrow pointing away from fuel tank.
6. Install adapter (6) on valve (5).
7. Connect fuel supply hose (7) to adapter (6).
8. Install four clamps (8) and straps (9) as required on fuel hoses, wiring harness, and bilge pump tube.

REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M1064 ONLY) — Continued

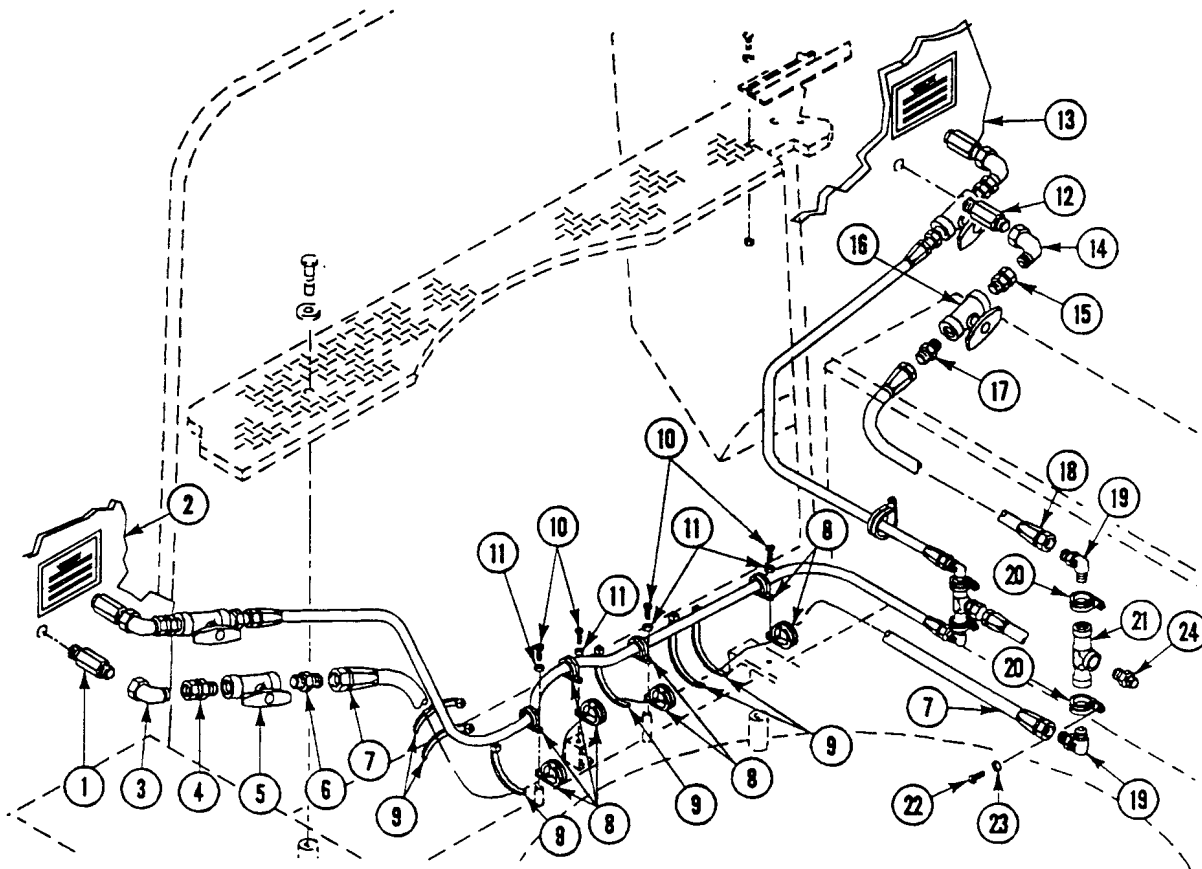
0151 00

9. Install four screws (10), new lockwashers (11), and clamps (8) on weldnuts.



REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M1064 ONLY) — Continued**0151 00**

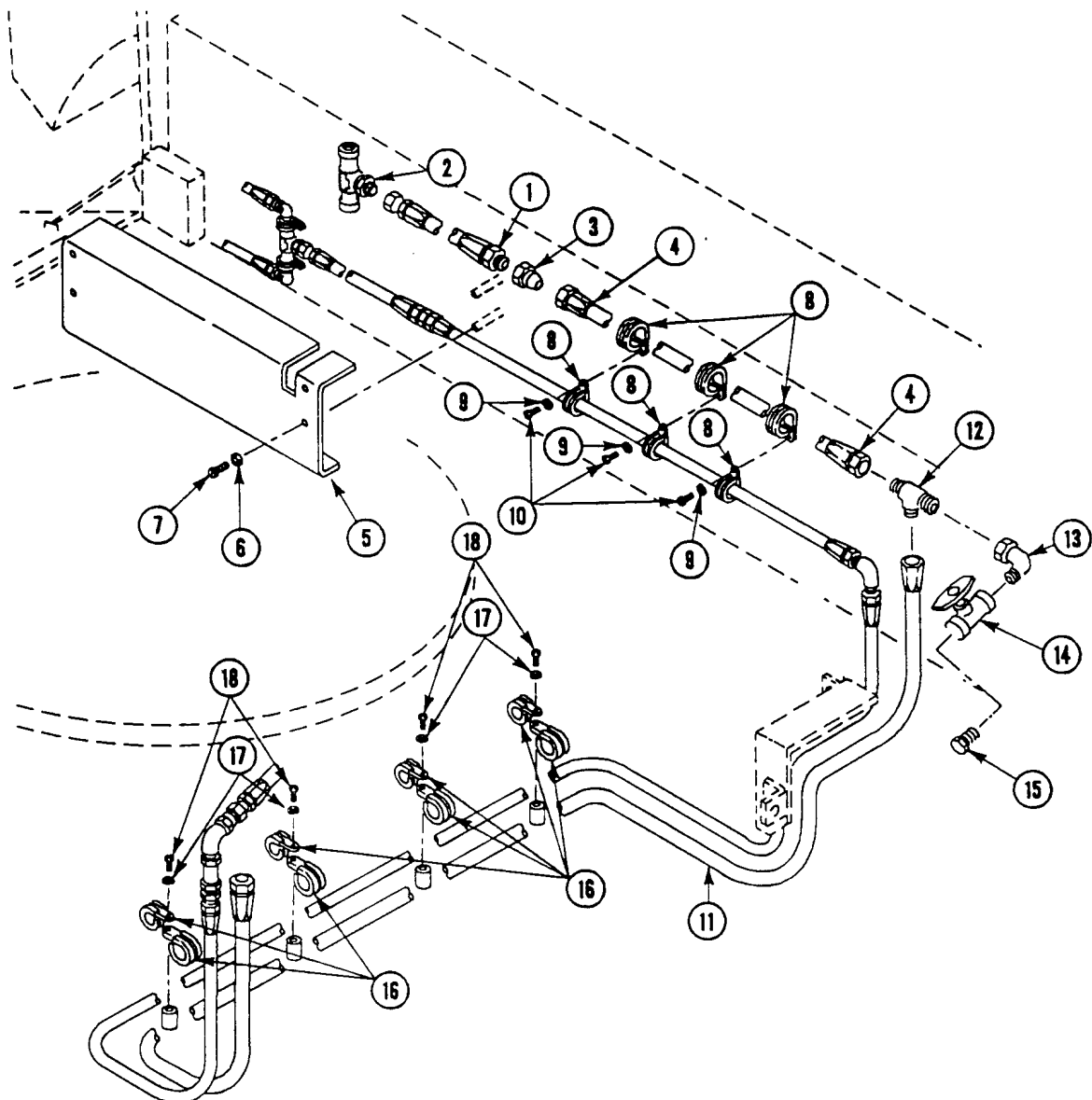
10. Install adapter (12) in left fuel tank (13).
11. Install elbow (14) on adapter (12).
12. Install adapter (15) on elbow (14).
13. Install valve (16) on adapter (15).
14. Install adapter (17) on valve (16).
15. Connect fuel supply hose (18) to adapter (17).
16. Install two elbows (19) and clamps (20) on tee (21).
17. Install two screws (22), new lockwashers (23), and clamps (20) on weldnuts.
18. Connect two fuel supply hoses (7 and 18) to two elbows (19).
19. Install adapter (24) on tee (21).



20. Connect fuel supply hose (1) to adapter (2).
21. Install nipple (3) on fuel supply hose (1).

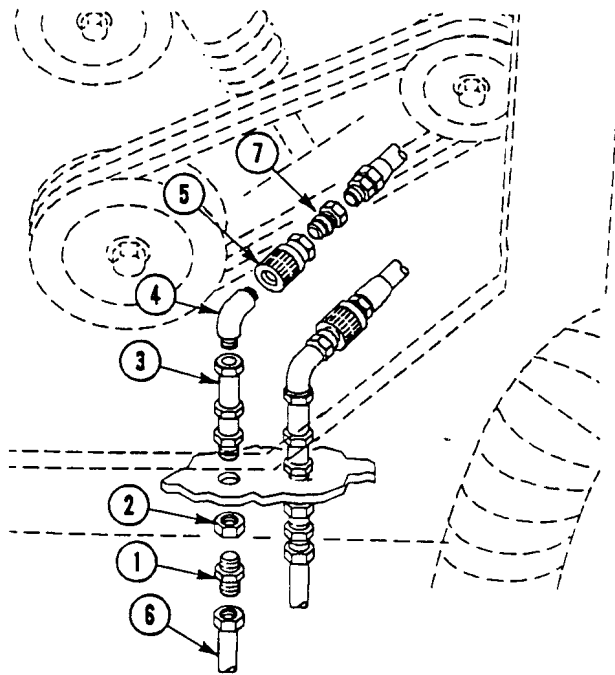
REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M1064 ONLY) — Continued**0151 00**

22. Connect fuel supply tube (4) to nipple (3).
23. Install guard (5), four new lockwashers (6), and screws (7) on sponson.
24. Install three clamps (8) on fuel supply tube (4).
25. Install six clamps (8), three new lockwashers (9), and screws (10) on weldnuts.
26. Connect fuel supply hose (11) to tee (12).
27. Install elbow (13) on tee (12).
28. Install valve (14) on elbow (13).
29. Install plug (15) on valve (14).
30. Connect fuel supply tube (4) to tee (12).
31. Install four clamps (16) fuel supply tube (11).
32. Install eight clamps (16), four new lockwashers (17), and screws (18) on weldnuts.



REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M1064 ONLY) — Continued**0151 00**

33. Install nipple (1) and nut (2) on transverse beam inside power plant rear bulkhead.
34. Connect tube assembly (3) to nipple (1).
35. Install elbow (4) on tube assembly (3).
36. Install quick disconnect half (5) on elbow (4).
37. Connect fuel supply hose (6) to nipple (1).
38. Connect quick disconnect half (7) to quick disconnect half (5) at power plant rear bulkhead.

**FOLLOW-THROUGH STEPS**

1. Fill fuel tanks (see your -10).
2. Connect battery ground lead (WP 0294 00).
3. Start engine (see your -10). Check for leaks.
4. Install power plant rear access panel (WP 0433 00).
5. Install heater duct (WP 0617 00).
6. Install floor plates (WP 0437 00).
7. Raise and lock ramp (see your -10).
8. Stop/shutdown engine (see your -10).
9. Unblock carrier (see your -10).

END OF TASK

REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M1064 ONLY)

0152 00

THIS WORK PACKAGE COVERS:

Removal (page 0152 00-1).
Installation (page 0152 00-6).

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Sealing compound (WP 0782 00, Item 60)

Wiping rag (WP 0780 00, Item 76)

Lockwasher (5)

Lockwasher (4)

Strap (20)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Ramp lowered (see your -10)

Battery ground lead disconnected (WP 0294 00)

Fuel tanks drained (WP 0142 00)

Power plant rear access panel removed (WP 0433 00)

Heater duct removed (WP 0617 00)

Floor plates removed (WP 0437 00)

REMOVAL

WARNING



Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

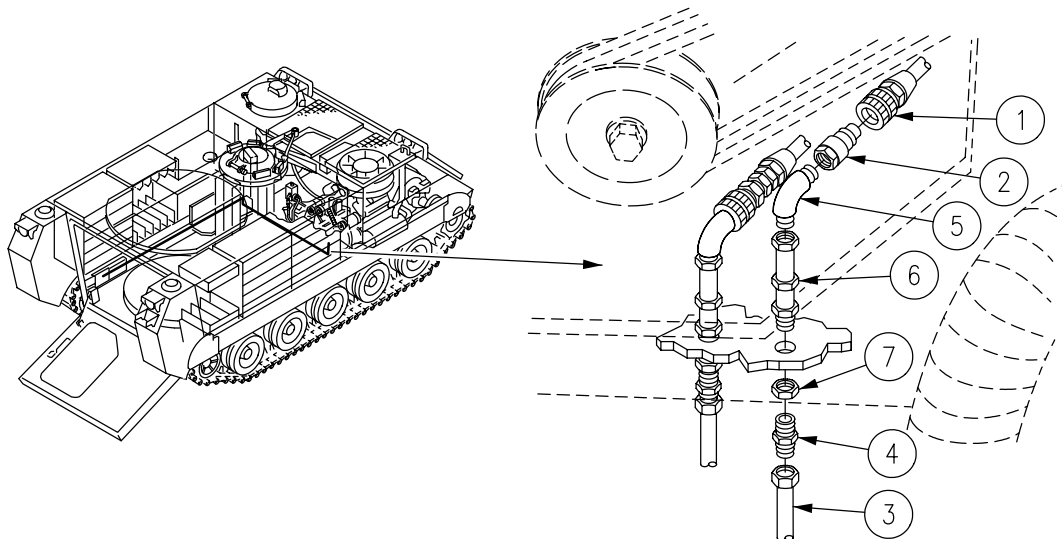
Use wiping rags to wipe any spilled fuel.

1. Separate quick disconnect half (1) from quick disconnect half (2) inside power plant rear bulkhead.
2. Remove fuel return hose (3) from nipple (4).

NOTE

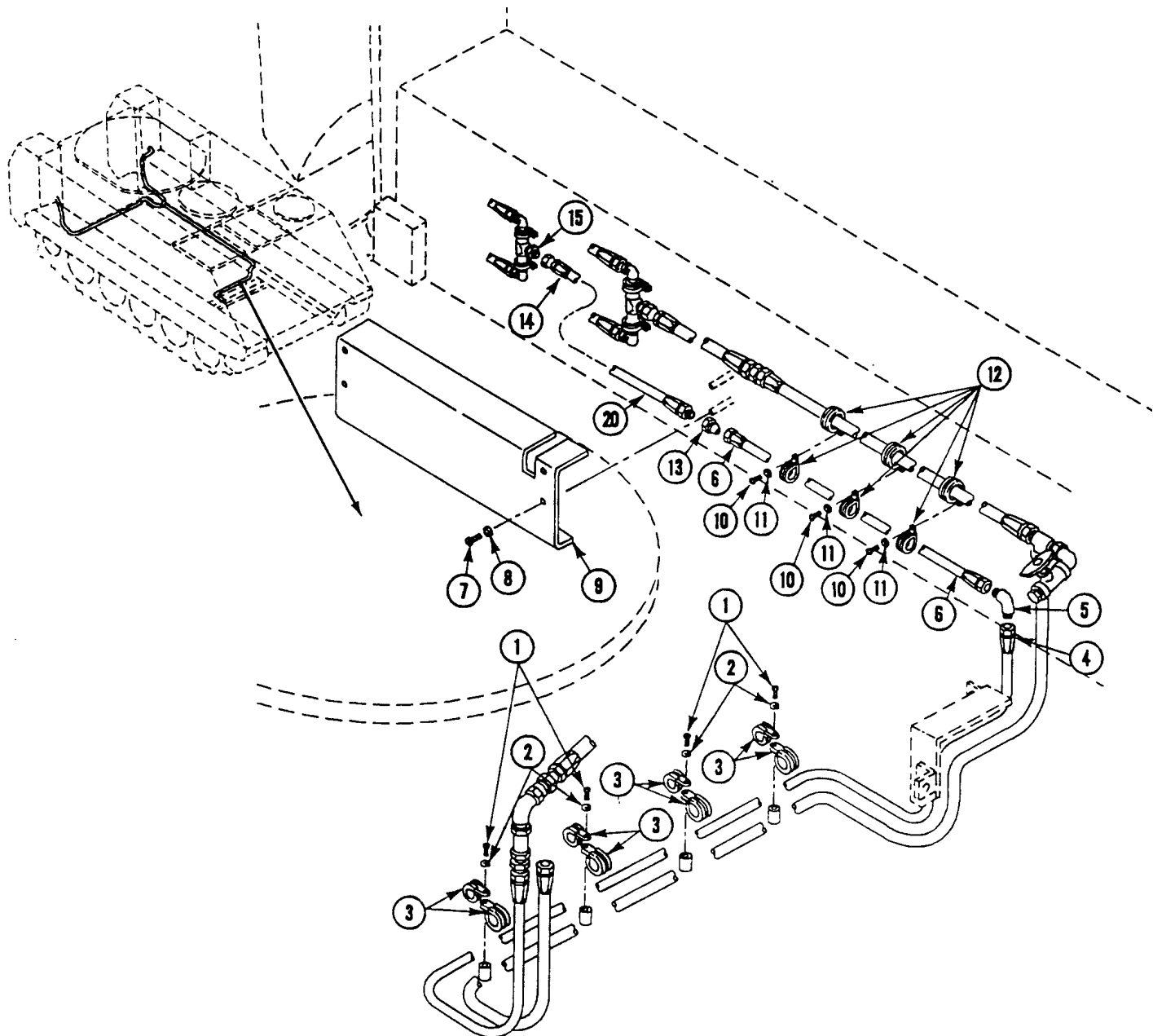
Tag quick disconnect couplings before removal.

3. Remove quick disconnect half (2) from elbow (5).
4. Remove elbow (5) from tube assembly (6).
5. Remove tube assembly (6) from nipple (4).
6. Remove nut (7) and nipple (4) from transverse beam.



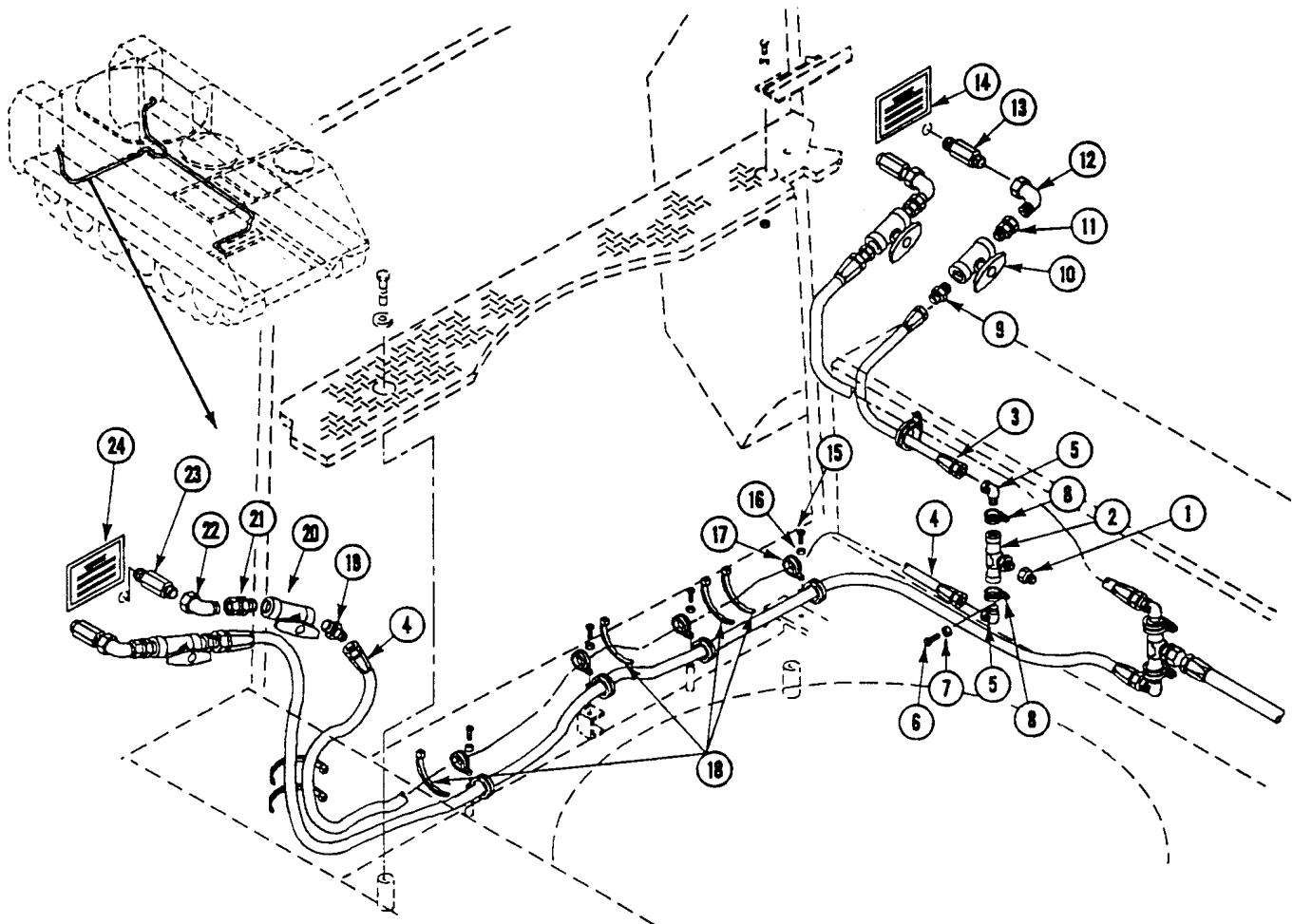
REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M1064 ONLY) — Continued**0152 00**

7. Remove four screws (1), lockwashers (2), and eight clamps (3) from weldnuts. Discard lockwashers.
8. Remove clamps (3) from fuel return hose (4).
9. Disconnect fuel return hose (4) from elbow (5).
10. Remove elbow (5) from fuel return tube (6).
11. Remove four screws (7), lockwashers (8), and guard (9) from sponson. Discard lockwashers.
12. Remove three screws (10), lockwashers (11), and six clamps (12) from weldnuts. Discard lockwashers.
13. Remove clamps (12) from fuel return tube (6).
14. Disconnect fuel return tube (6) from nipple (13).
15. Remove nipple (13) from fuel return hose (14).
16. Remove fuel return hose (14) from adapter (15).



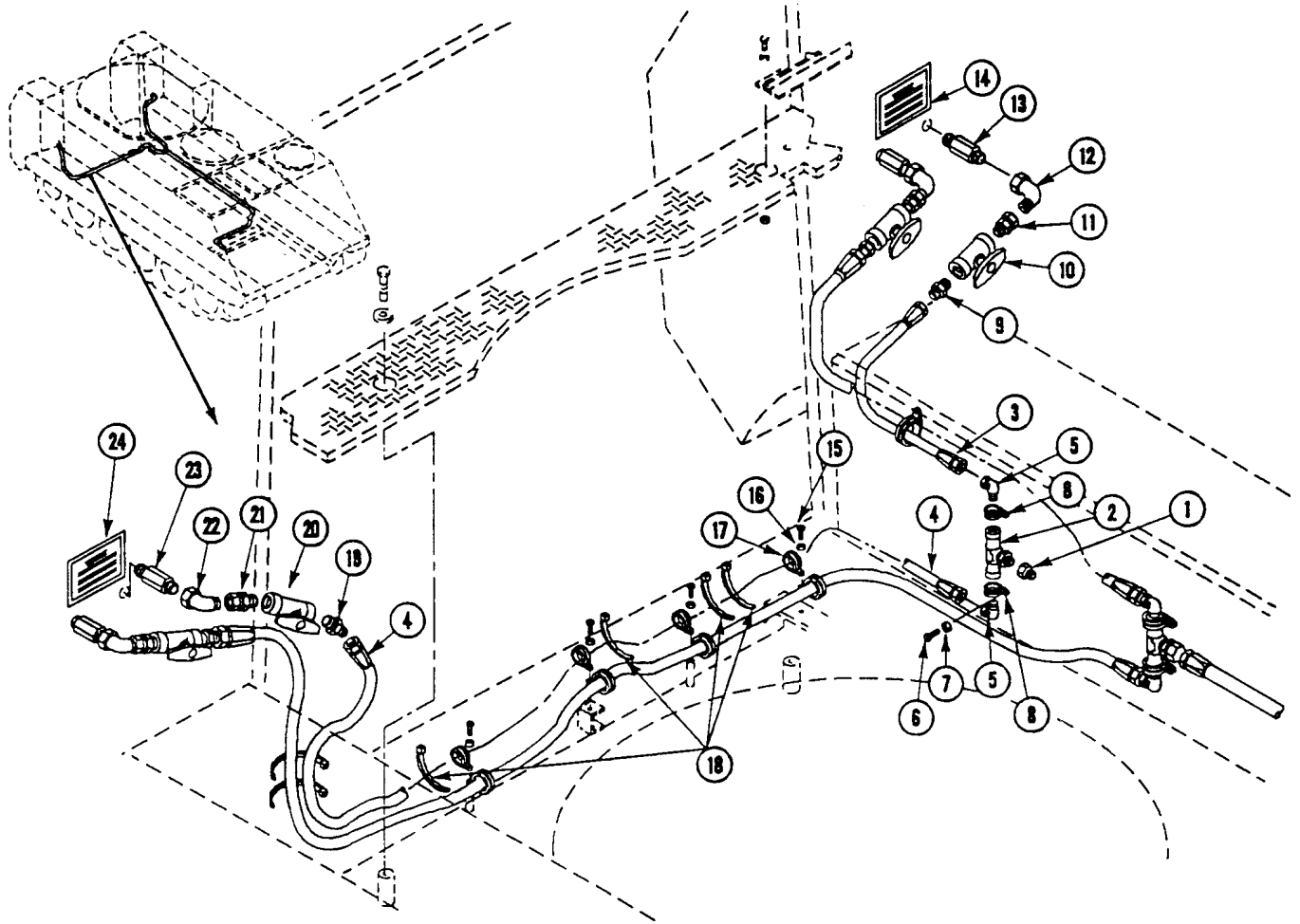
REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M1064 ONLY) — Continued**0152 00**

17. Remove adapter (1) from tee (2).
18. Remove two fuel return hoses (3) and (4) from two elbows (5).
19. Remove two screws (6) and lockwashers (7) from clamps (8). Discard lockwashers.
20. Remove two clamps (8) and elbows (5) from tee (2).
21. Disconnect fuel return tube (3) from adapter (9).
22. Remove adapter (9) from valve (10).
23. Remove valve (10) from adapter (11).
24. Remove adapter (11) from elbow (12).
25. Remove elbow (12) from adapter (13).
26. Remove adapter (13) from left fuel tank (14).
27. Remove four screws (15), lockwashers (16), and clamps (17) from weldnuts. Discard lockwashers.
28. Remove clamps (17) and tie straps (18) from fuel hoses, wiring harness, and bilge pump tube.

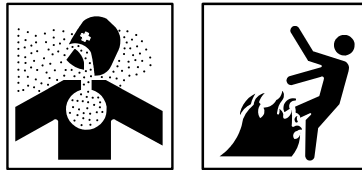


REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M1064 ONLY) — Continued**0152 00**

29. Disconnect fuel return hose (4) from adapter (19).
30. Remove adapter (19) from valve (20).
31. Remove valve (20) from adapter (21).
32. Remove adapter (21) from elbow (22).
33. Remove elbow (22) from adapter (23).
34. Remove adapter (23) from right fuel tank (24).



INSTALLATION

WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

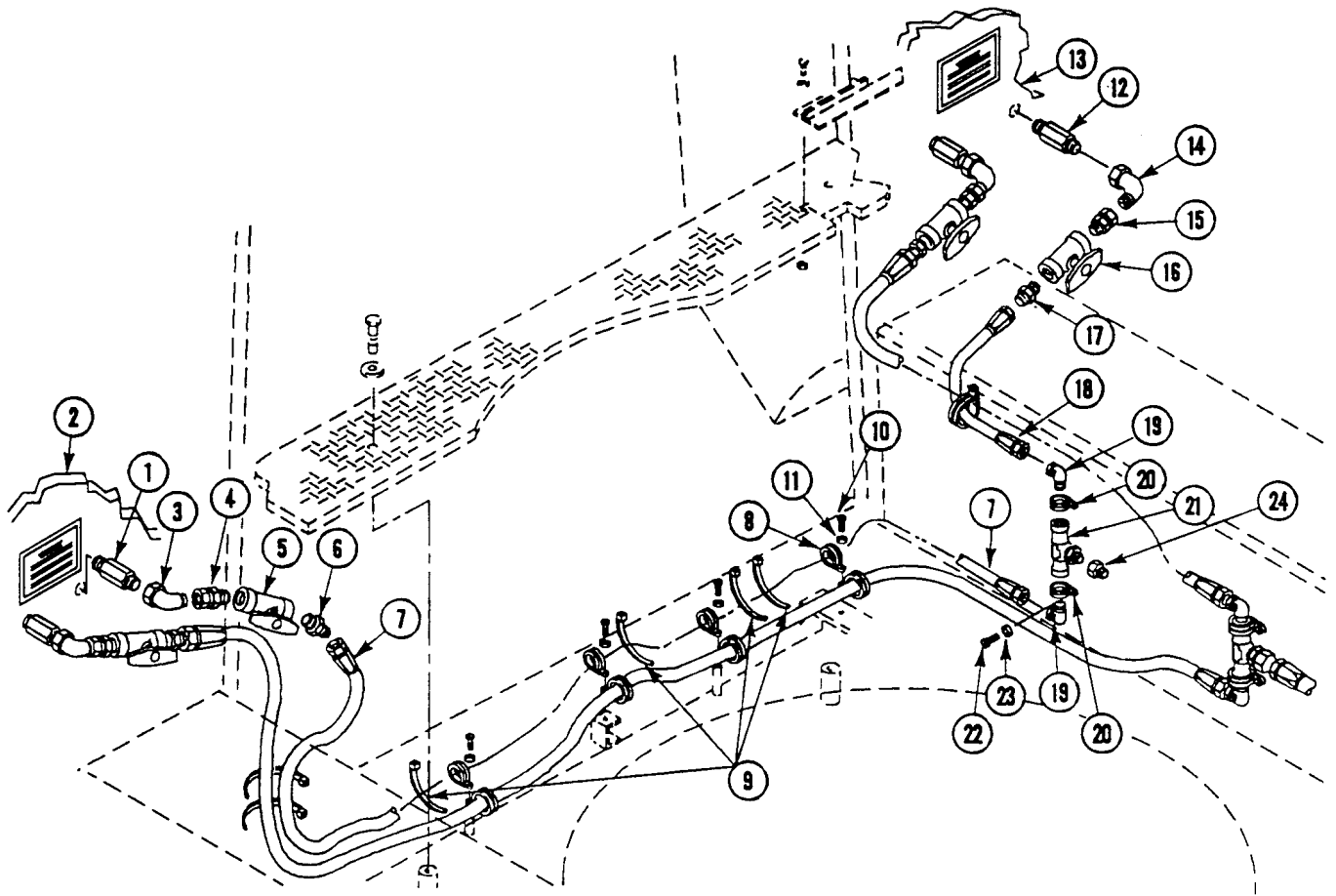
Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to cleaned external threads of fittings.
2. Install adapter (1) on right fuel tank (2).
3. Install elbow (3) on adapter (1).
4. Install adapter (4) on elbow (3).
5. Install valve (5) on adapter (4) with arrow pointing away from fuel tank.
6. Install adapter (6) on valve (5).
7. Connect fuel return hose (7) to adapter (6).
8. Install four clamps (8) and straps (9) as required on fuel hoses, wiring harness, and bilge pump tube.
9. Install four screws (10), new lockwashers (11), and clamps (8) on weldnuts.
10. Install adapter (12) in left fuel tank (13).
11. Install elbow (14) on adapter (12).
12. Install adapter (15) on elbow (14).

REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M1064 ONLY) — Continued

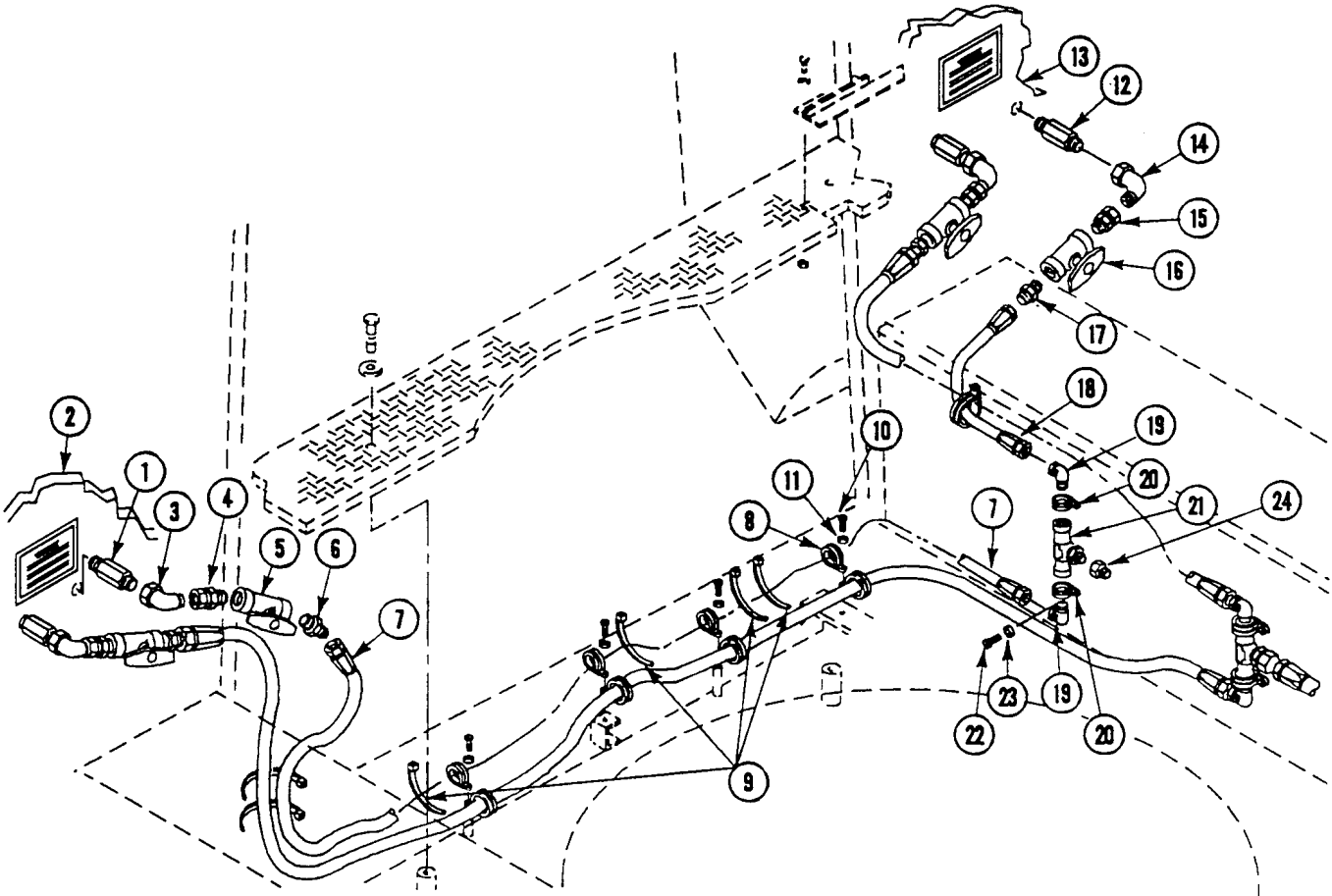
0152 00

13. Install valve (16) on adapter (15).



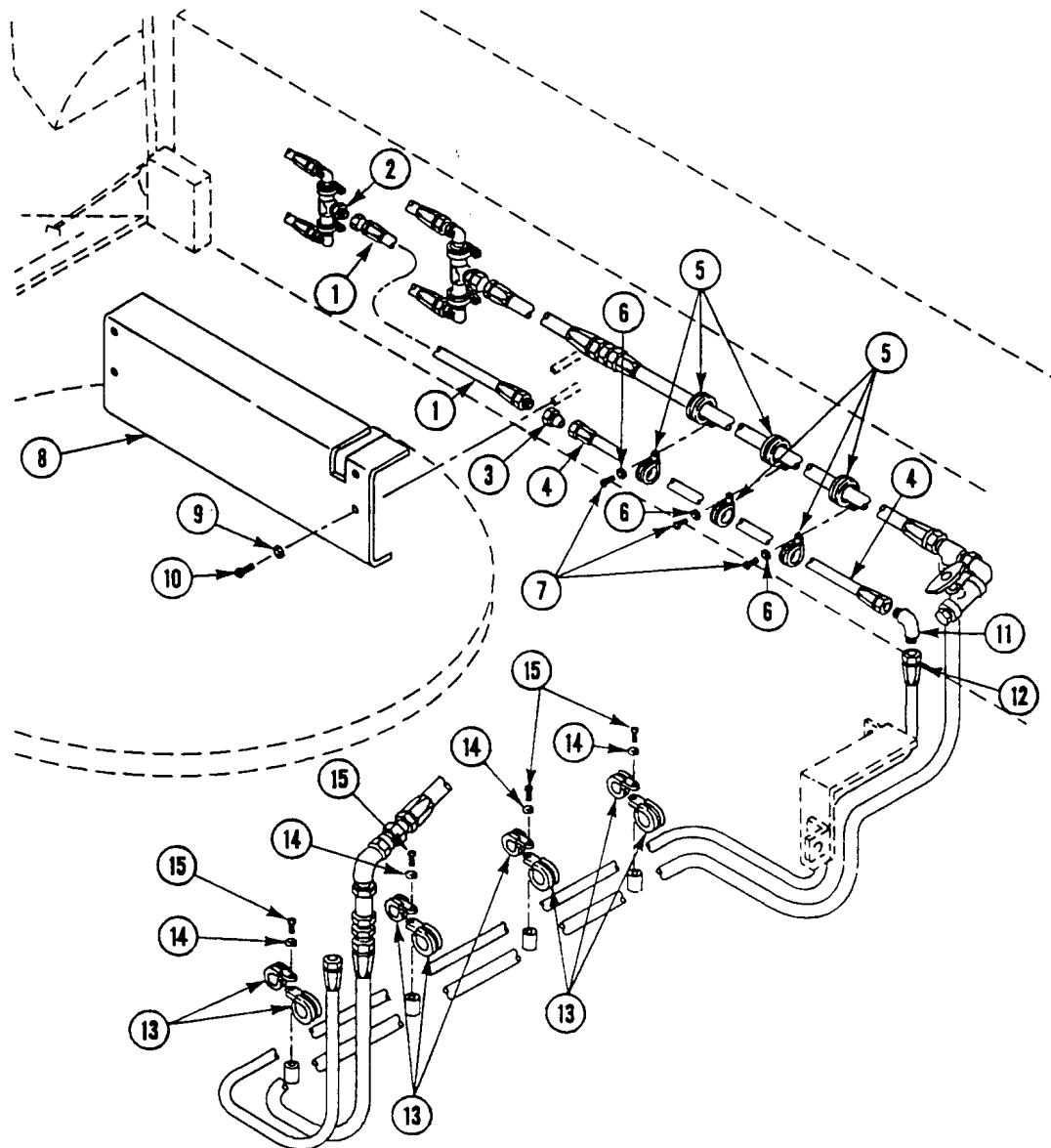
REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M1064 ONLY) — Continued**0152 00**

14. Install adapter (17) on valve (16).
15. Connect fuel return hose (18) to adapter (17).
16. Install two elbows (19) and clamps (20) on tee (21).
17. Install two screws (22), new lockwashers (23), and clamps (20) on weldnuts.
18. Connect two fuel return hoses (7) and (18) to two elbows (19).
19. Install adapter (24) on tee (21).



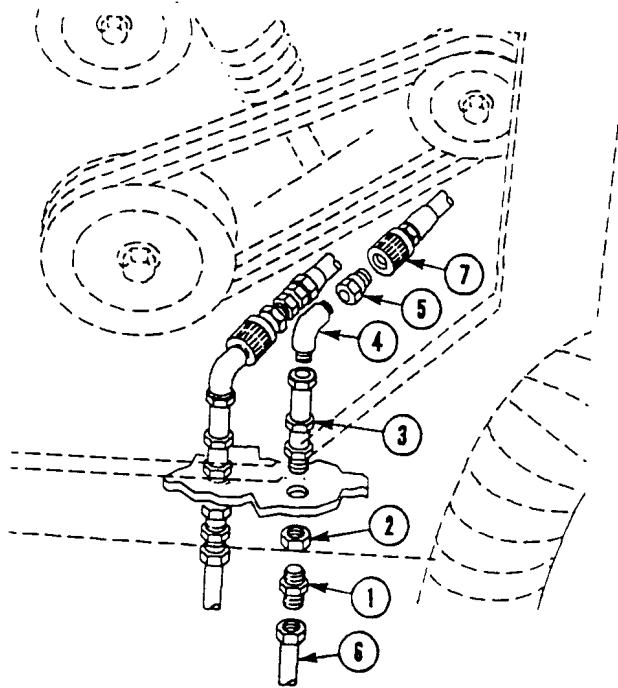
REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M1064 ONLY) — Continued**0152 00**

20. Connect fuel return hose (1) to adapter (2).
21. Install nipple (3) on fuel return hose (1).
22. Connect fuel return tube (4) to nipple (3).
23. Install three clamps (5) on fuel return tube (4).
24. Install six clamps (5), three new lockwashers (6), and screws (7) on weldnuts.
25. Install guard (8), four new lockwashers (9), and screws (10) on sponson.
26. Install elbow (11) on fuel return tube (4).
27. Connect fuel return hose (12) to elbow (11).
28. Install four clamps (13) on fuel return hose (12).
29. Install eight clamps (13), four new lockwashers (14), and screws (15) on weldnuts.



REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M1064 ONLY) — Continued**0152 00**

30. Install nipple (1) with nut (2) on transverse beam inside power plant rear bulkhead.
31. Connect tube assembly (3) to nipple (1).
32. Install elbow (4) on tube assembly (3).
33. Install quick disconnect half (5) on elbow (4).
34. Connect fuel return hose (6) to nipple (1).
35. Connect quick disconnect half (7) to quick disconnect half (5) at power plant rear bulkhead.

**FOLLOW-THROUGH STEPS**

1. Fill fuel tanks (see your -10).
2. Connect battery ground lead (WP 0294 00).
3. Start engine (see your -10). Check for leaks.
4. Install power plant rear access panel (WP 0433 00).
5. Install heater duct (WP 0617 00).
6. Install floor plates (WP 0437 00).
7. Raise and lock ramp (see your -10).
8. Stop/shutdown engine (see your -10).
9. Unblock carrier (see your -10).

END OF TASK

DRAIN FUEL TANKS (M577A2 AND M1068 ONLY)

0153 00

THIS WORK PACKAGE COVERS:

Drain (page 0153 00-1).

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

- General Mechanic’s Tool Kit (WP 0780 00, Item 29)
- Hose Assembly (WP 0780 00, Item 36)

Equipment Condition

- Ramp lowered (see your -10)
- Engine stopped/shutdown (see your -10)
- Battery ground lead disconnected (WP 0294 00)
- Rear compartment floor plates removed (WP 0436 00 or WP 0440 00)
- Carrier blocked (see your -10)

Materials/Parts

- Sealing compound (WP 0782 00, Item 60)
- Wiping rag (WP 0782 00, Item 76)
- Suitable container

DRAIN

WARNING



Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

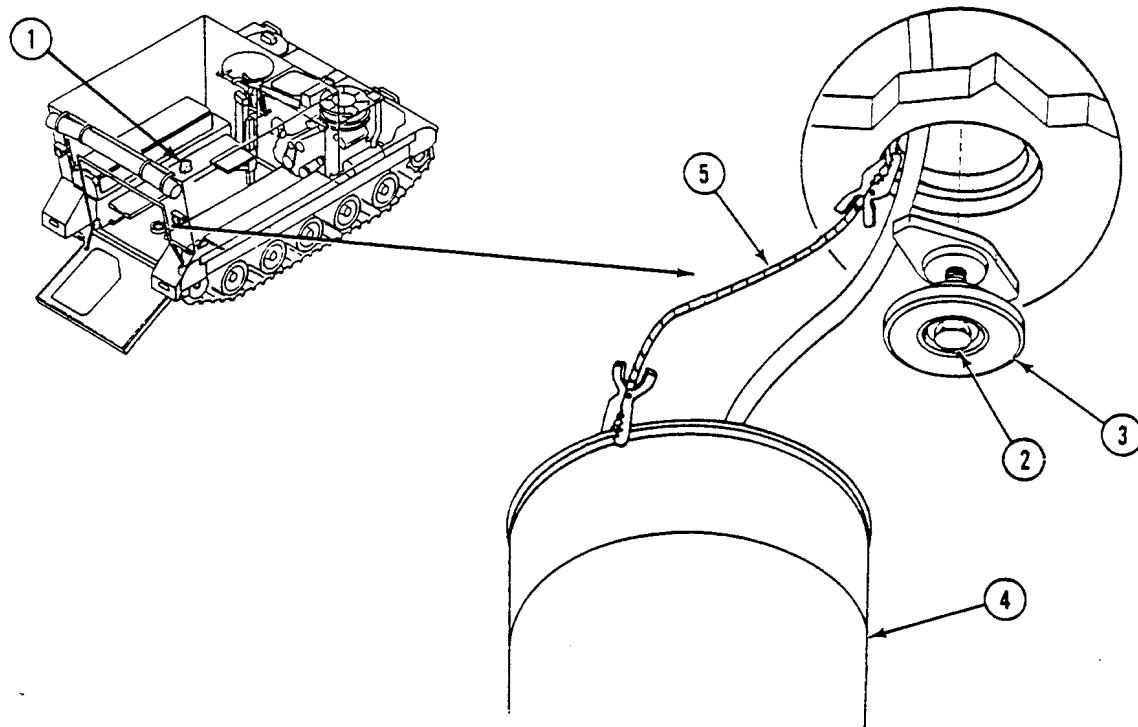
DRAIN FUEL TANKS (M577A2 AND M1068 ONLY) — Continued**0153 00**

1. Open fuel filler combat cover (1) and remove filler cap.
2. Loosen drain plug retaining screw (2) from under carrier. Remove drain plug (3).
3. Place container (4) under hull drain opening.

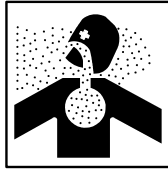
NOTE

Use wiping rag to wipe up any spilled fuel.

4. Attach a ground strap (5) between hull and container (4).



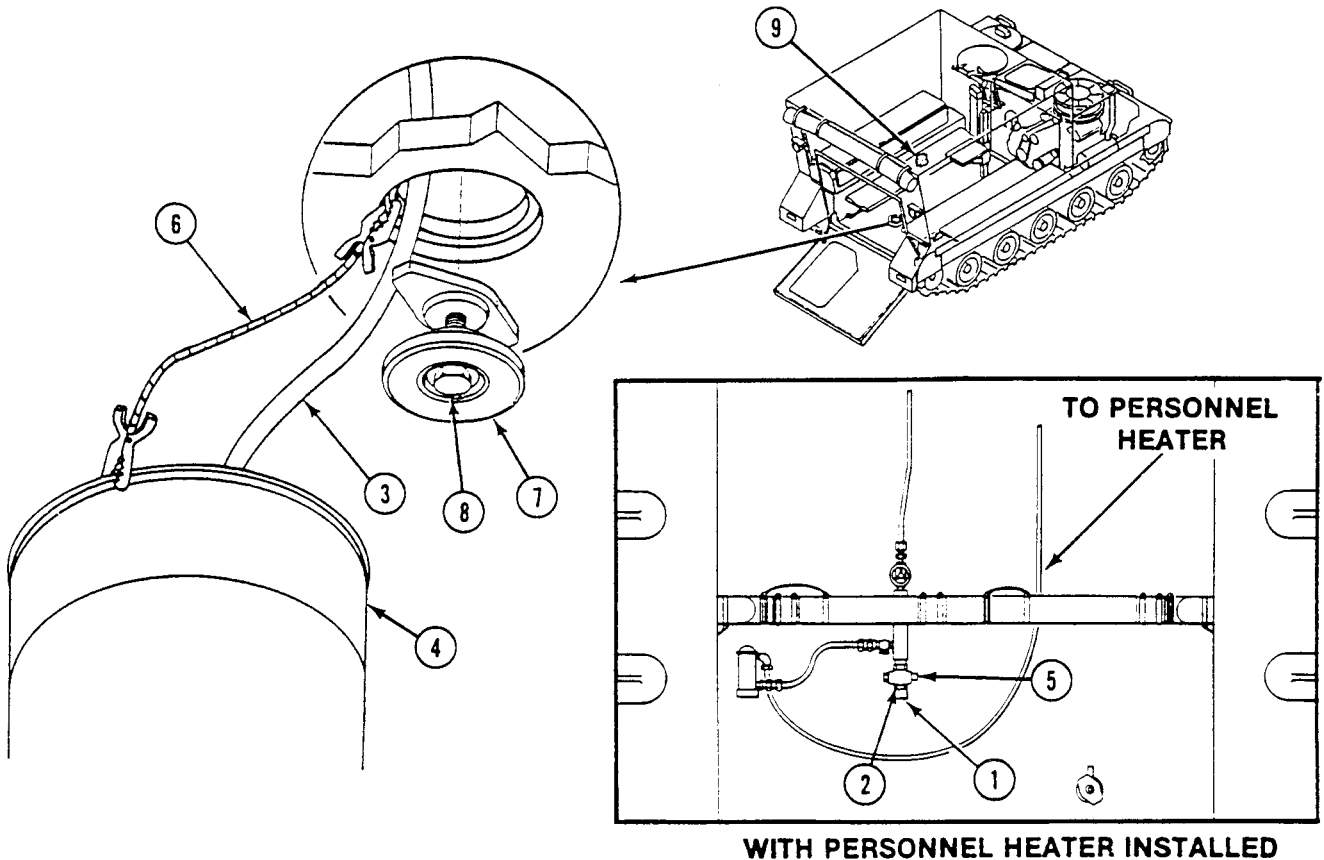
5. Remove pipe plug (1) from drain cock (2).
6. Install fuel drain hose (3) on drain cock (2). Insert drain hose through hull opening into container (4).
7. Open valve (5) and drain fuel from tanks.
8. Close valve (5) and remove hose (3) from drain cock (2).

WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

9. Apply sealing compound to threads of pipe plug (1) and install plug in drain cock (2).
10. Remove ground strap (6) from hull and container (4).
11. Install drain plug (7) in hull and secure with retaining screw (8).
12. Install fuel filler cap. Close combat cover (9).



DRAIN FUEL TANKS (M577A2 AND M1068 ONLY) — Continued

0153 00**FOLLOW-THROUGH STEPS**

1. Fill fuel tanks (see your -10).
2. Install rear compartment floor plates (WP 0436 00 or WP 0440 00).
3. Connect battery ground lead (WP 0294 00).
4. Start engine (see your -10).
5. Raise and lock ramp (see your -10).
6. Stop engine/shutdown (see your -10).

END OF TASK

REPLACE FILLER AND STRAINER PARTS (M577A2 AND M1068 ONLY)0154 00

THIS WORK PACKAGE COVERS:

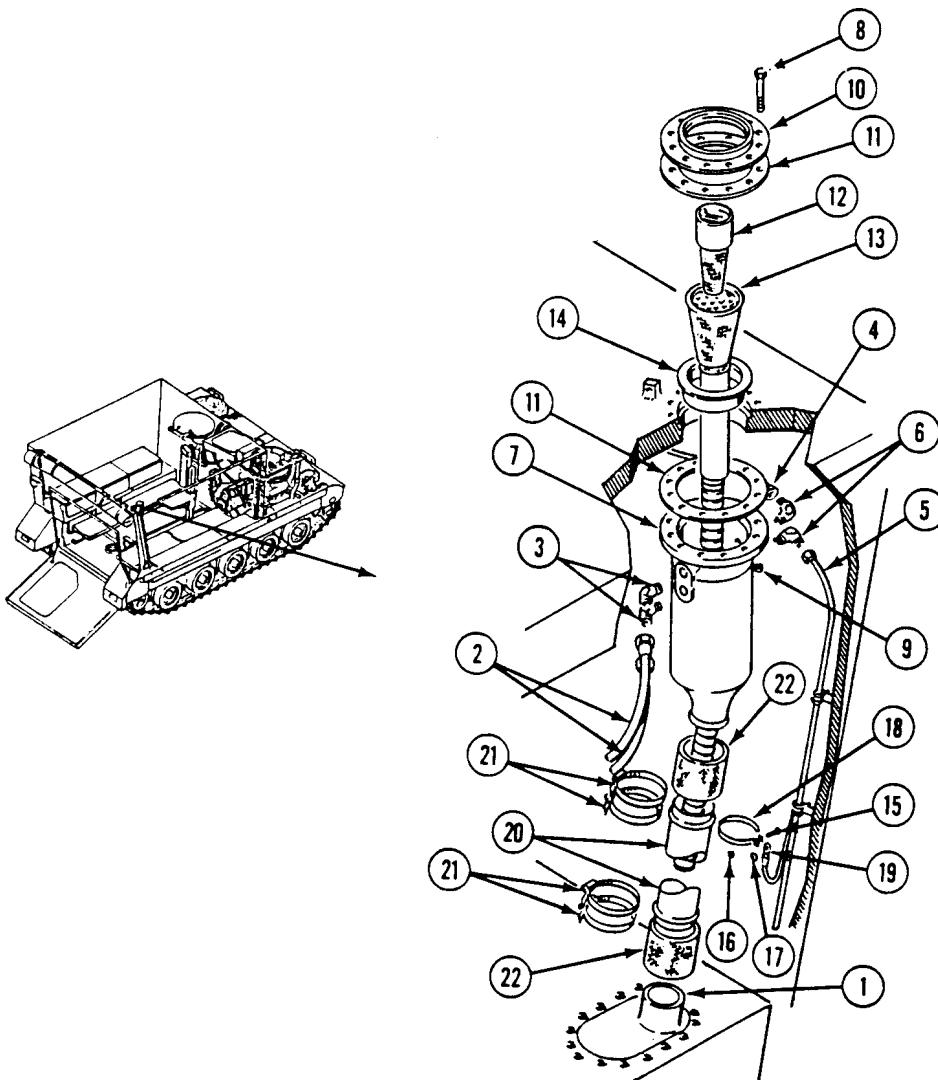
- Removal (page 0154 00-2).
 - Installation (page 0154 00-3).
-

INITIAL SETUP:

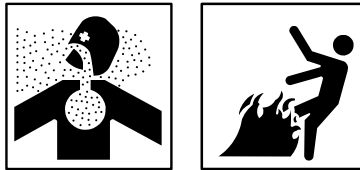
<u>Maintenance Level</u>	<u>References</u>
Unit	See your -10 WP 0153 00
<u>Tools and Special Tools</u>	<u>Equipment Condition</u>
General Mechanic’s Tool Kit (WP 0780 00, Item 29)	Ramp lowered (see your -10)
<u>Materials/Parts</u>	Engine stopped/shutdown (see your -10)
Sealing compound (WP 0782 00, Item 60)	Battery ground lead disconnected (WP 0294 00)
Gasket (2)	Combat cover and lock removed (WP 0136 00)
<u>Personnel Required</u>	Filler cap removed (WP 0137 00)
Unit Mechanic	Carrier blocked (see your -10)

REPLACE FILLER AND STRAINER PARTS (M577A2 AND M1068 ONLY) — Continued**0154 00****REMOVAL**

1. Drain fuel tanks below level of filler flange (1) on top of right fuel tank (WP 0153 00).
2. Disconnect two fuel tank vent hoses (2) from two elbows (3).
3. Disconnect fuel return tube (4) and fuel tank vent tube (5) from two elbows (6).
4. Remove two elbows (3) from lower filler neck (7).
5. Remove two elbows (6) from lower filler neck (7).
6. Remove 12 screws (8) and nuts (9) that secure flange (10), lower filler neck (7), and two gaskets (11) to hull top opening. Discard gaskets.
7. Remove filler neck (12), insert (13), and flange (14) from hull.
8. Remove screw (15), nut (16), washer (17), clamp (18), and ground lead (19) from filler tube (20).
9. Remove four clamps (21), filler tube (20), lower filler neck (7), and two hoses (22) from fuel tank flange (1).
10. Check hoses and tubes. Replace worn, crimped, or cracked parts.
11. Check machined surfaces of parts. Repair or replace nicked or dented parts.



INSTALLATION

WARNING

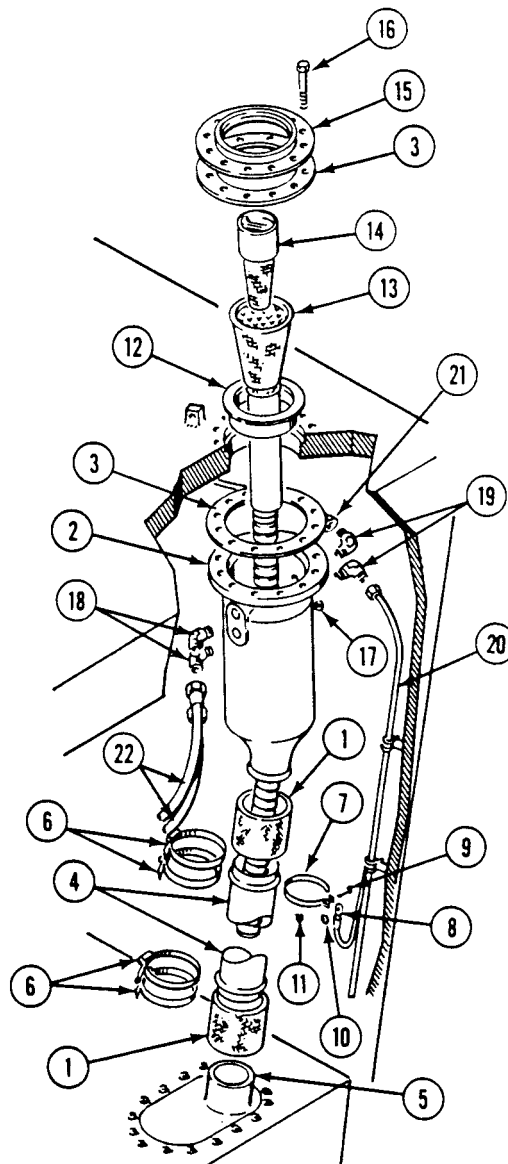
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to clean external threads of fittings before installation.

REPLACE FILLER AND STRAINER PARTS (M577A2 AND M1068 ONLY) — Continued**0154 00**

2. Install two hoses (1), and lower filler neck (2) with a new gasket (3) and filler tube (4) on filler flange (5). Secure with four clamps (6).
3. Install clamp (7) and ground lead (8) on filler tube (4). Secure with screw (9), washer (10), and nut (11).
4. Install flange (12), insert (13), and filler neck screen (14) into hull.
5. Install flange (15), lower filler neck (2), and new gasket (3) on hull top opening. Secure with 12 screws (16) and nuts (17).
6. Install two elbows (18) in lower filler neck (2).
7. Install two elbows (19) in lower filler neck (2).
8. Connect fuel tank vent tube (20) and fuel return tube (21) to two elbows (19).
9. Connect two fuel tank vent hoses (22) to two elbows (18).



REPLACE FILLER AND STRAINER PARTS (M577A2 AND M1068 ONLY) — Continued

0154 00

10. Fill fuel tank (see your -10).
11. Check filler tube and hoses for leaks.

FOLLOW-THROUGH STEPS

1. Install filler cap (WP 0137 00).
2. Install filler cover and lock (WP 0136 00).
3. Connect battery ground lead (WP 0294 00).
4. Raise and lock ramp (see your -10).
5. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE FUEL QUANTITY TRANSMITTER (M577A2 AND M1068 ONLY)**0155 00****THIS WORK PACKAGE COVERS:**

Removal (page 0155 00-1).
 Cleaning (page 0155 00-2).
 Installation (page 0155 00-2).

INITIAL SETUP:Maintenance Level

Unit

References

See your -10
 WP 0153 00

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)
 Carrier blocked (see your -10)
 Ramp lowered (see your -10)
 Battery ground lead disconnected (WP 0294 00)
 Map board removed (see your -10)
 Work tables removed (WP 0500 00, WP 0501 00, or
 WP 0502 00)

Materials/Parts

Cleaning compound, solvent (WP 0782 00, Item 16)
 Non-electrical wire (WP 0782 00, Item 40)
 Gasket

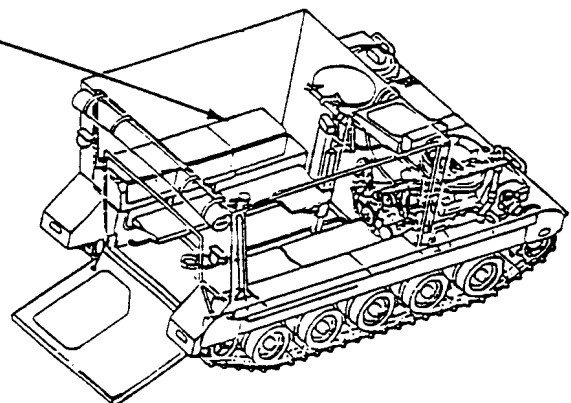
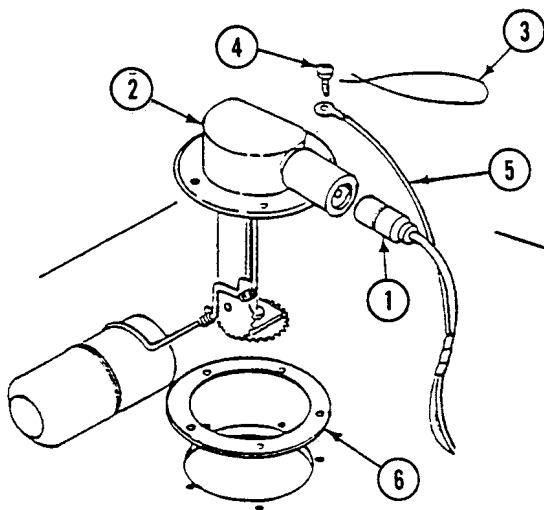
Personnel Required

Unit Mechanic

REMOVAL**NOTE**

Right and left fuel quantity transmitter are removed and installed in the same way. The following steps apply to only one transmitter.

1. Drain fuel tank to less than 3/4 full (WP 0153 00).
2. Disconnect lead (1) from transmitter (2). Circuit 29 lead is for right transmitter. Circuit 30 lead is for left transmitter.
3. Remove lockwire (3) from five screws (4). Discard lockwire.
4. Remove five screws (4), ground lead (5), transmitter (2), and gasket (6) from fuel tank. Discard gasket.

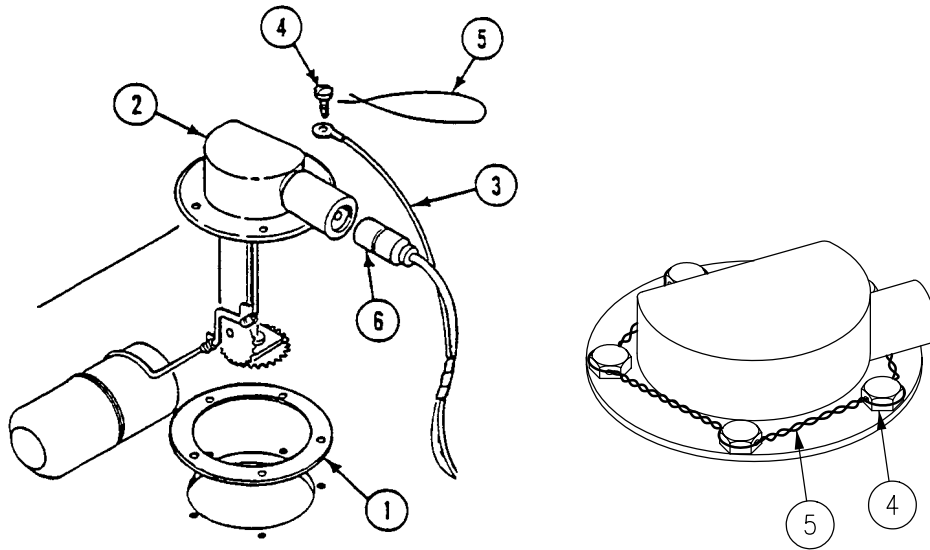


REPLACE FUEL QUANTITY TRANSMITTER (M577A2 AND M1068 ONLY) — Continued**0155 00****CLEANING**

1. Clean gasket mating surface on top of fuel tank with dry cleaning solvent.

INSTALLATION

1. Install new gasket (1), transmitter (2), and ground lead (3) on fuel tank. Secure with five screws (4).
2. Install new lockwire (5) through heads of five screws (4). Secure with double twist method.
3. Connect lead (6) to transmitter (2). Circuit 29 is lead for right transmitter. Circuit 30 is lead for left transmitter.



4. Fill fuel tank. Check for leaks (see your -10).

FOLLOW-THROUGH STEPS

1. Connect battery ground lead (WP 0294 00).
2. Check that fuel quantity transmitter operates properly (see your -10).
3. Install map board (see your -10).
4. Install work tables (WP 0500 00, WP 0501 00, or WP 0502 00).
5. Raise and lock ramp (see your -10).
6. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE FUEL TANK ACCESS COVERS (M577A2 AND M1068 ONLY)0156 00

THIS WORK PACKAGE COVERS:

- Removal (page 0156 00-1).
 - Installation (page 0156 00-2).
-

INITIAL SETUP:

<u>Maintenance Level</u>	<u>References</u>
Unit	See your -10 WP 0153 00
<u>Tools and Special Tools</u>	<u>Equipment Condition</u>
General Mechanic’s Tool Kit (WP 0780 00, Item 29)	Engine stopped (see your -10)
Socket Wrench Set (WP 0780 00, Item 95)	Carrier blocked (see your -10)
Torque Wrench (WP 0780 00, Item 106)	Ramp lowered (see your -10)
<u>Materials/Parts</u>	Battery ground lead disconnected (WP 0294 00)
Gasket	Map board removed (see your -10)
Locking plate bolt (8)	Work tables removed (WP 0500 00, WP 0501 00, or WP 0502 00)
<u>Personnel Required</u>	
Unit Mechanic	

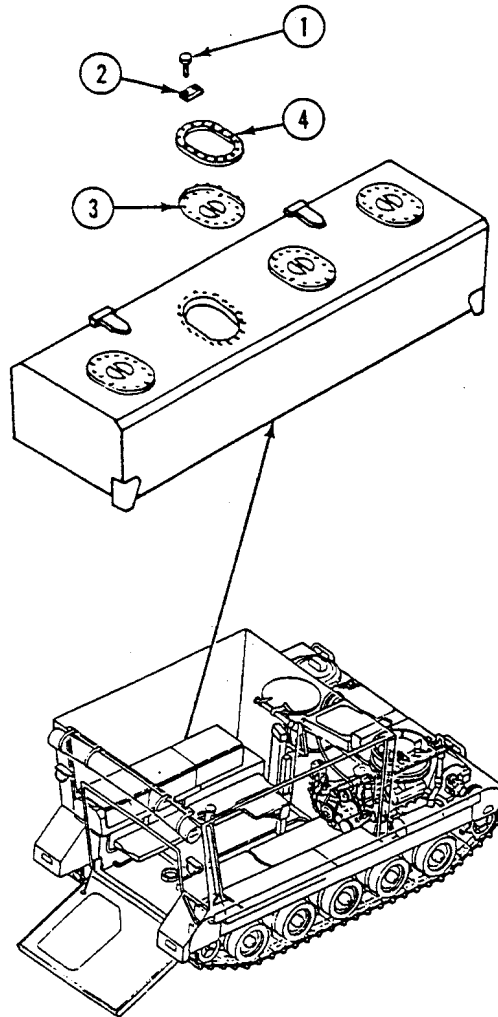
REMOVAL

NOTE

Left and right fuel tank access covers are removed and installed in the same way. The following steps apply to one cover.

REPLACE FUEL TANK ACCESS COVERS (M577A2 AND M1068 ONLY) — Continued**0156 00**

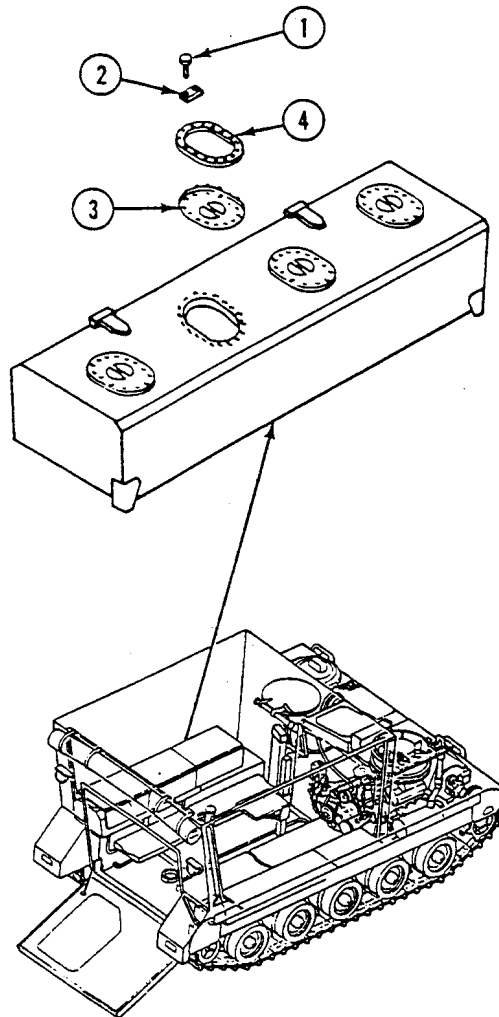
1. Drain fuel tank below access cover level (WP 0153 00).
2. Remove 16 screws (1) and eight locking plate bolts (2) that secure fuel tank access cover (3) and gasket (4) to fuel tank. Discard locking plate bolts.
3. Remove fuel tank access cover (3) and gasket (4) from fuel tank. Discard gasket.

**INSTALLATION**

1. Place new gasket (4) on access cover (3).
2. Place cover (3) and new gasket (4) inside fuel tank opening. Secure with eight new locking plate bolts (2) and 16 screws (1).

REPLACE FUEL TANK ACCESS COVERS (M577A2 AND M1068 ONLY) — Continued**0156 00**

3. TIGHTEN 16 SCREWS (1) TO 36-48 LB-IN (4-6 N·M) TORQUE. Use torque wrench and socket wrench set.



4. Fill fuel tank (see your -10). Check tank for leaks.

FOLLOW-THROUGH STEPS

1. Install work tables (WP 0500 00, WP 0501 00, or WP 0502 00).
2. Install map board (see your -10).
3. Connect battery ground lead (WP 0294 00).
4. Raise and lock ramp (see your -10).
5. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE FUEL TANK FILLER FLANGE (M577A2 AND M1068 ONLY)**0157 00****THIS WORK PACKAGE COVERS:**

Removal (page 0157 00-1).
 Installation (page 0157 00-2).

INITIAL SETUP:Maintenance Level

Unit

References

See your -10
 WP 0153 00

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)
 Socket Wrench Set (WP 0780 00, Item 95)
 Torque Wrench (WP 0780 00, Item 106)

Equipment Condition

Engine stopped/shutdown (see your -10)
 Carrier blocked (see your -10)
 Ramp lowered (see your -10)
 Battery ground lead disconnected (WP 0294 00)
 Map board removed (see your -10)
 Work tables removed (WP 0500 00, WP 0501 00, or
 WP 0502 00)

Materials/Parts

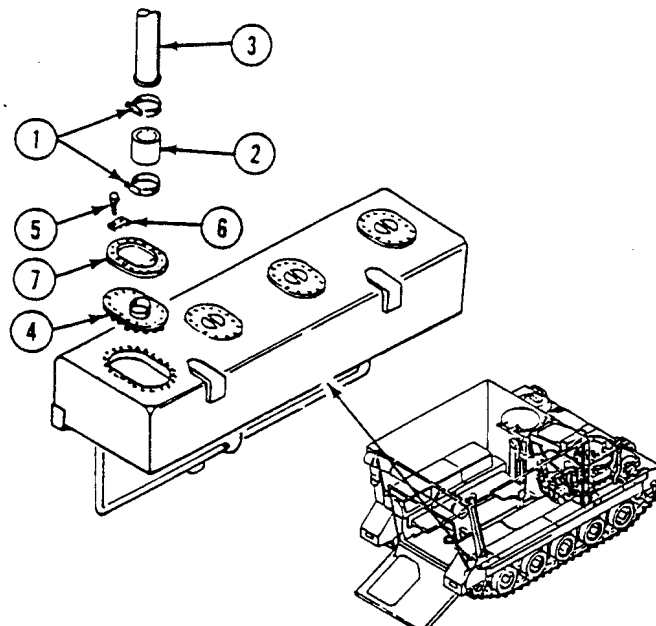
Gasket
 Locking plate bolt (8)

Personnel Required

Unit Mechanic

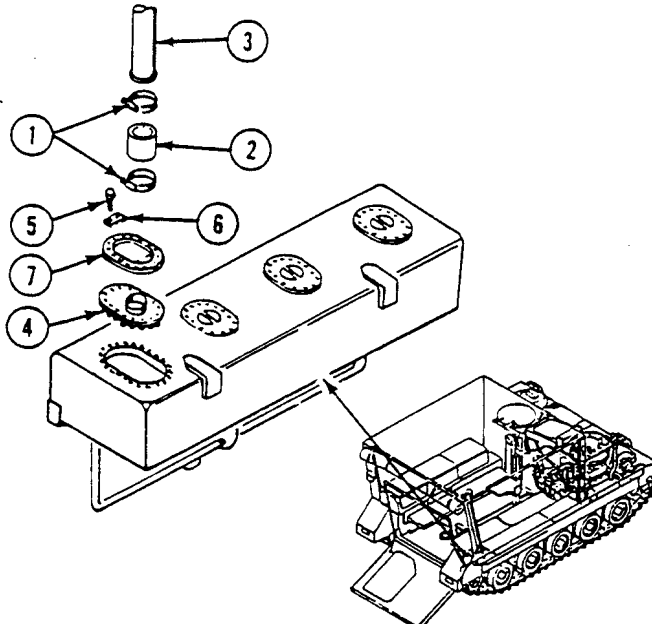
REMOVAL

1. Drain fuel tank below filler flange level (WP 0153 00).
2. Remove two clamps (1) and filler hose (2) from filler tube (3) and filler flange (4).
3. Remove 16 screws (5), eight locking plate bolts (6), filler flange (4), and gasket (7) from fuel tank. Discard gasket and locking plate bolts.

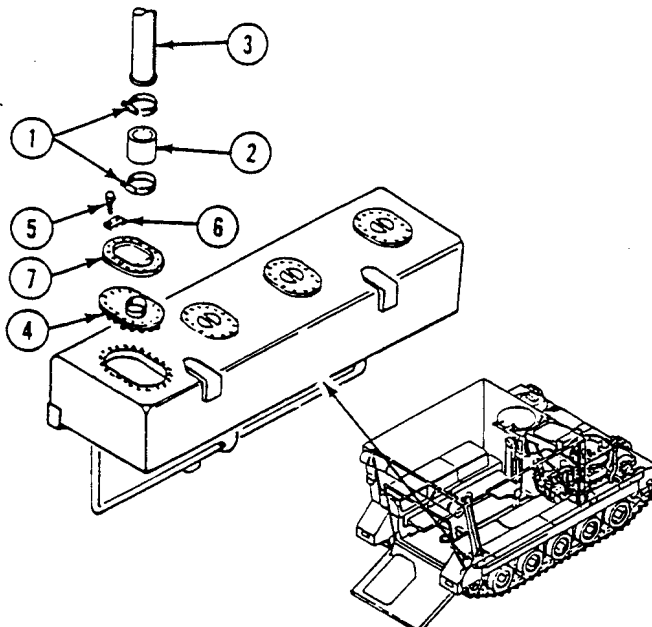


REPLACE FUEL TANK FILLER FLANGE (M577A2 AND M1068 ONLY) — Continued**0157 00****INSTALLATION**

1. Place new gasket (7) on filler flange (4).
2. Place filler flange (4) and new gasket (7) inside fuel tank opening. Secure with eight new locking plate bolts (6) and 16 screws (5).



3. TIGHTEN 16 SCREWS (5) TO 36-48 LB-IN (4-6 N·M) TORQUE. Use torque wrench and socket wrench set.
4. Secure filler hose (2) to filler flange (4) and filler tube (3) with two clamps (1).



REPLACE FUEL TANK FILLER FLANGE (M577A2 AND M1068 ONLY) — Continued

0157 00

5. Fill fuel tank (see your -10). Check tank for leaks.

FOLLOW-THROUGH STEPS

1. Install work tables (WP 0500 00, WP 0501 00, or WP 0502 00).
2. Install map board (see your -10).
3. Connect battery ground lead (WP 0294 00).
4. Raise and lock ramp (see your -10).
5. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M577A2 AND M1068 ONLY)

0158 00

THIS WORK PACKAGE COVERS:

Removal (page 0158 00-1).
Installation (page 0158 00-5).

INITIAL SETUP:

Maintenance Level

Unit

References

See your -10

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)
Carrier blocked (see your -10)
Battery ground lead disconnected (WP 0294 00)
Fuel tanks drained (WP 0153 00)
Power plant rear access panel removed (WP 0433 00)
Rear compartment floor plates removed (WP 0436 00
or WP 0440 00)
Ramp lowered (see your -10)

Materials/Parts

Sealing compound (WP 0782 00, Item 63)
Wiping rag (WP 0782 00, Item 76)
Locknut (4)
Lockwasher (9)
Lockwasher (4)

Personnel Required

Unit Mechanic

REMOVAL

WARNING



Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

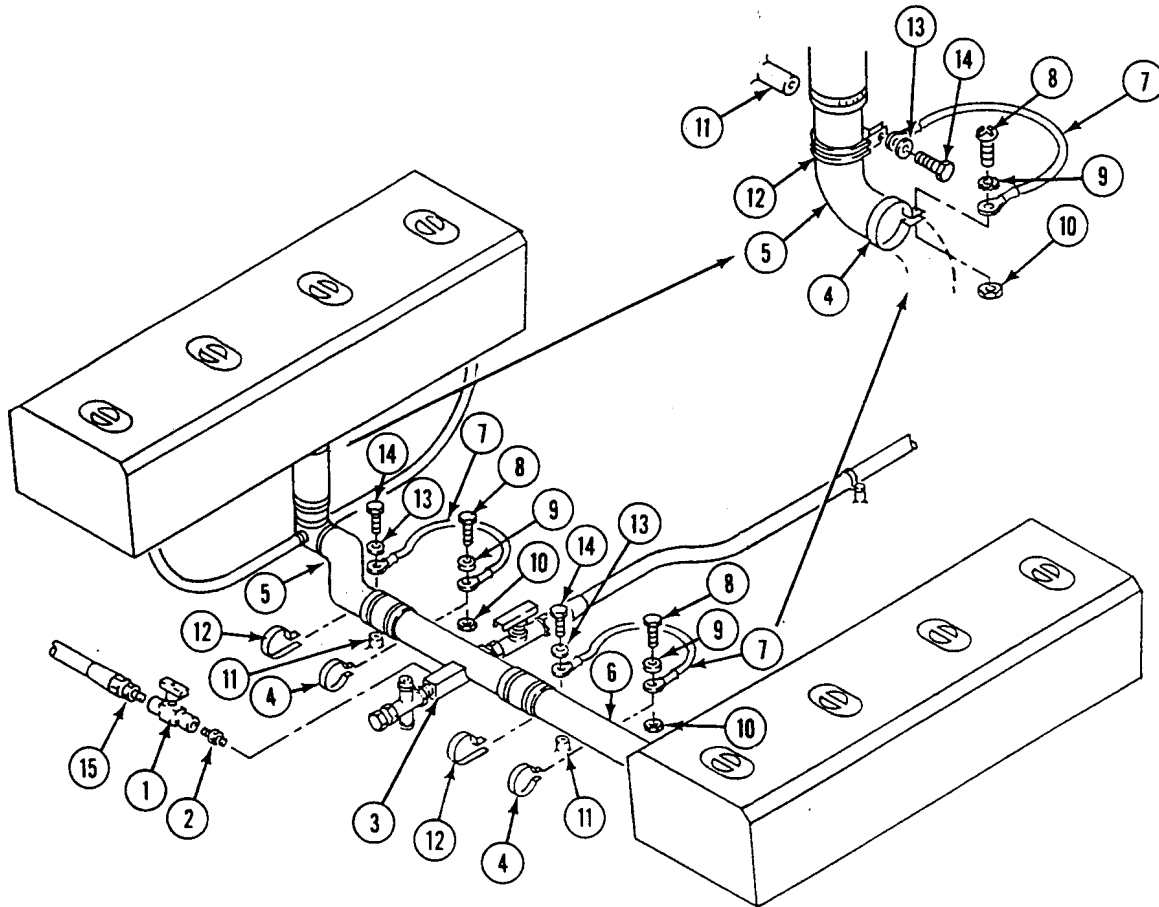
NOTE

Use wiping rag to wipe up any spilled fuel.

**REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M577A2
AND M1068 ONLY) — Continued**

0158 00

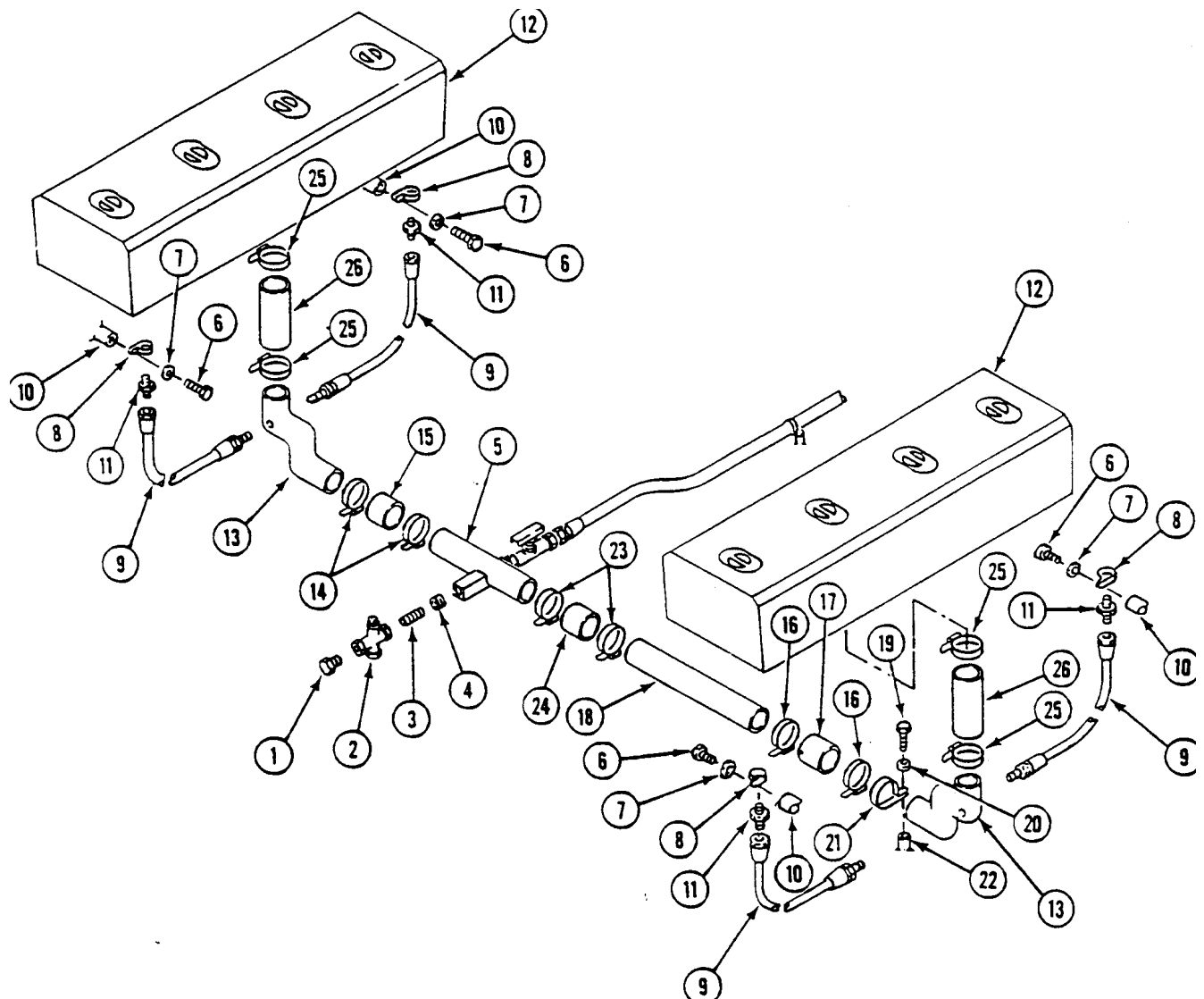
1. Disconnect personnel heater fuel hose (15) from shutoff valve (1), if installed.
2. Remove shutoff valve (1) and nipple (2) from tube (3).
3. Remove four screws (14) and lockwashers (13) that secure four ground leads (7), clamps (12), and two elbows (5) to four weldnuts (11). Discard lockwashers.
4. Remove four locknuts (10), lockwashers (9), and screws (8) that secure four leads (7) and clamps (4) to elbows (5) and tubes (3) and (6). Discard locknuts and lockwashers.



5. Remove plug (1), draincock (2), nipple (3), and bushing (4) from tube (5). Separate plug from draincock, draincock from nipple, and nipple from bushing.
6. Remove four screws (6), lockwashers (7), and clamps (8) that secure four hose assemblies (9) to weldnuts (10). Discard lockwashers.
7. Disconnect four hose assemblies (9) from nipples (11).
8. Remove four nipples (11) from two fuel tanks (12).
9. Disconnect four hose assemblies (9) from two elbows (13).
10. Remove two clamps (14) and hose (15) from elbow (13) and tube (5).
11. Remove two clamps (16) and hose (17) from elbow (13) and tube (18).
12. Remove screw (19), lockwasher (20), and clamp (21) securing elbow (13) to weldnut (22). Discard lockwasher.
13. Remove two clamps (23) and hose (24) from two tubes (5) and (18).
14. Remove four clamps (25) that secure two hoses (26) to two elbows (13) and fuel tanks (12). Remove hoses.

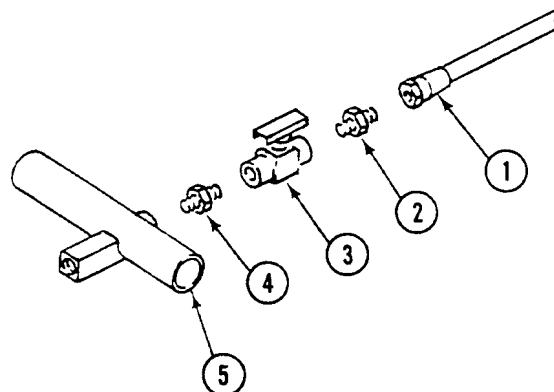
**REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M577A2
AND M1068 ONLY) — Continued**

0158 00



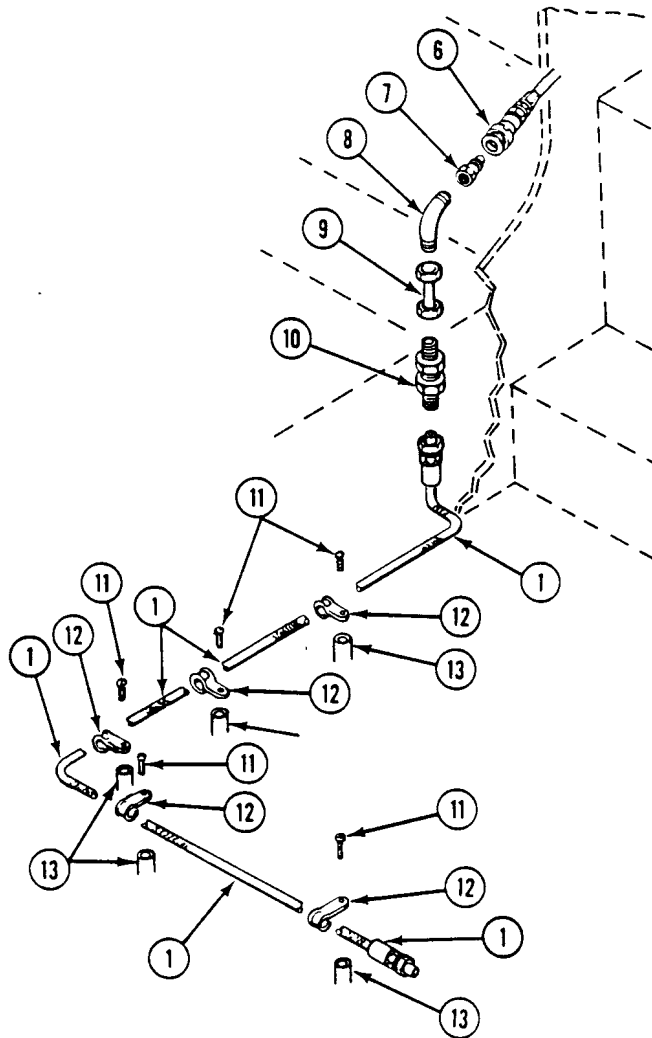
15. Disconnect hose assembly (1) from adapter (2).

16. Remove adapter (2), shutoff valve (3), and nipple (4) from tube (5).



**REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M577A2
AND M1068 ONLY) — Continued****0158 00**

17. Separate quick-disconnect coupling (6) and (7).
18. Remove elbow (8) from tube (9).
19. Remove quick-disconnect coupling half (7) from elbow (8).
20. Remove tube (9) from nipple (10).
21. Remove five screws (11) and clamps (12) that secure hose assembly (1) to weldnuts (13).
22. Remove hose assembly (1) from nipple (10).
23. Remove jam nut and nipple (10) from power plant compartment bulkhead.

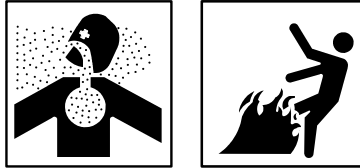


**REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M577A2
AND M1068 ONLY) — Continued**

0158 00

INSTALLATION

WARNING



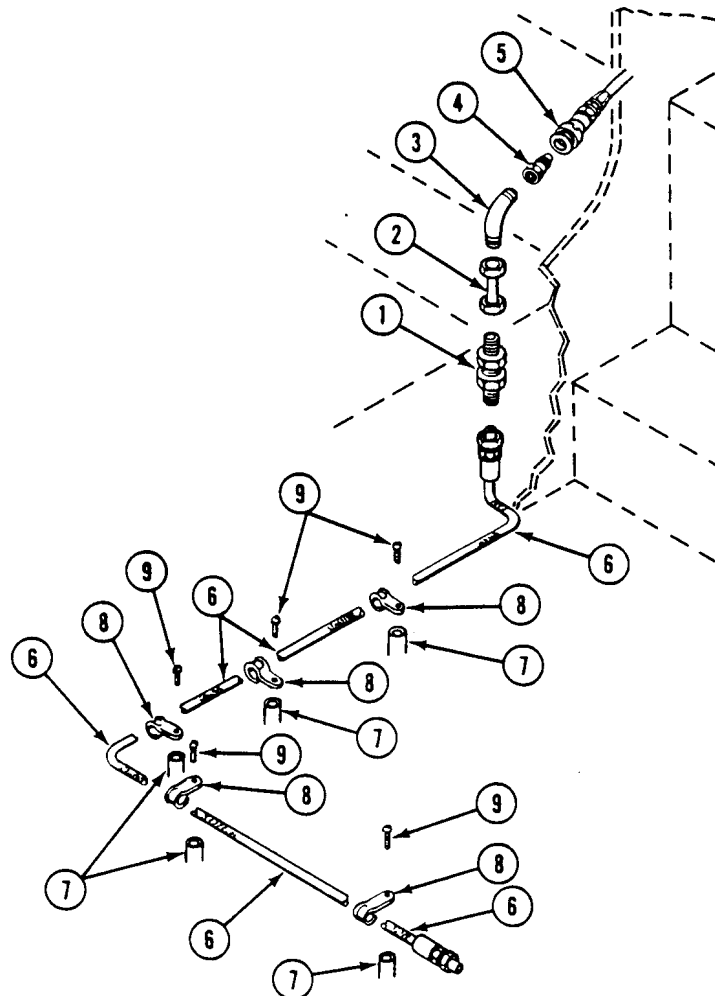
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to cleaned external pipe threads on fittings.

**REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M577A2
AND M1068 ONLY) — Continued****0158 00**

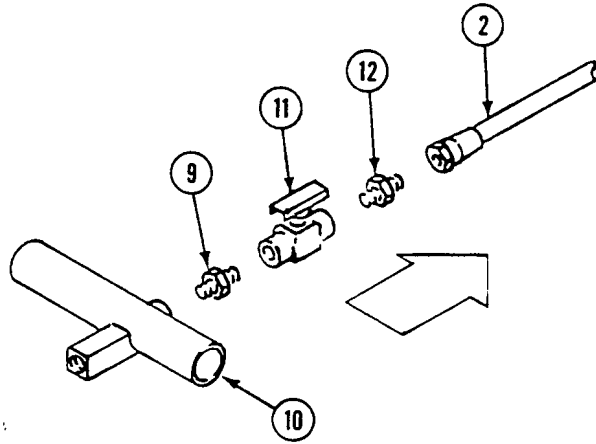
2. Install nipple (1) in power plant compartment bulkhead. Secure with jam nut.
3. Install tube (2) on nipple (1).
4. Install elbow (3) on tube (2).
5. Install quick-disconnect coupling half (4) on elbow (3).
6. Connect quick-disconnect coupling (4) and (5).
7. Connect hose assembly (6) to nipple (1).
8. Install hose assembly (6) on weldnuts (7). Secure with five clamps (8) and screws (9).



**REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M577A2
AND M1068 ONLY) — Continued**

0158 00

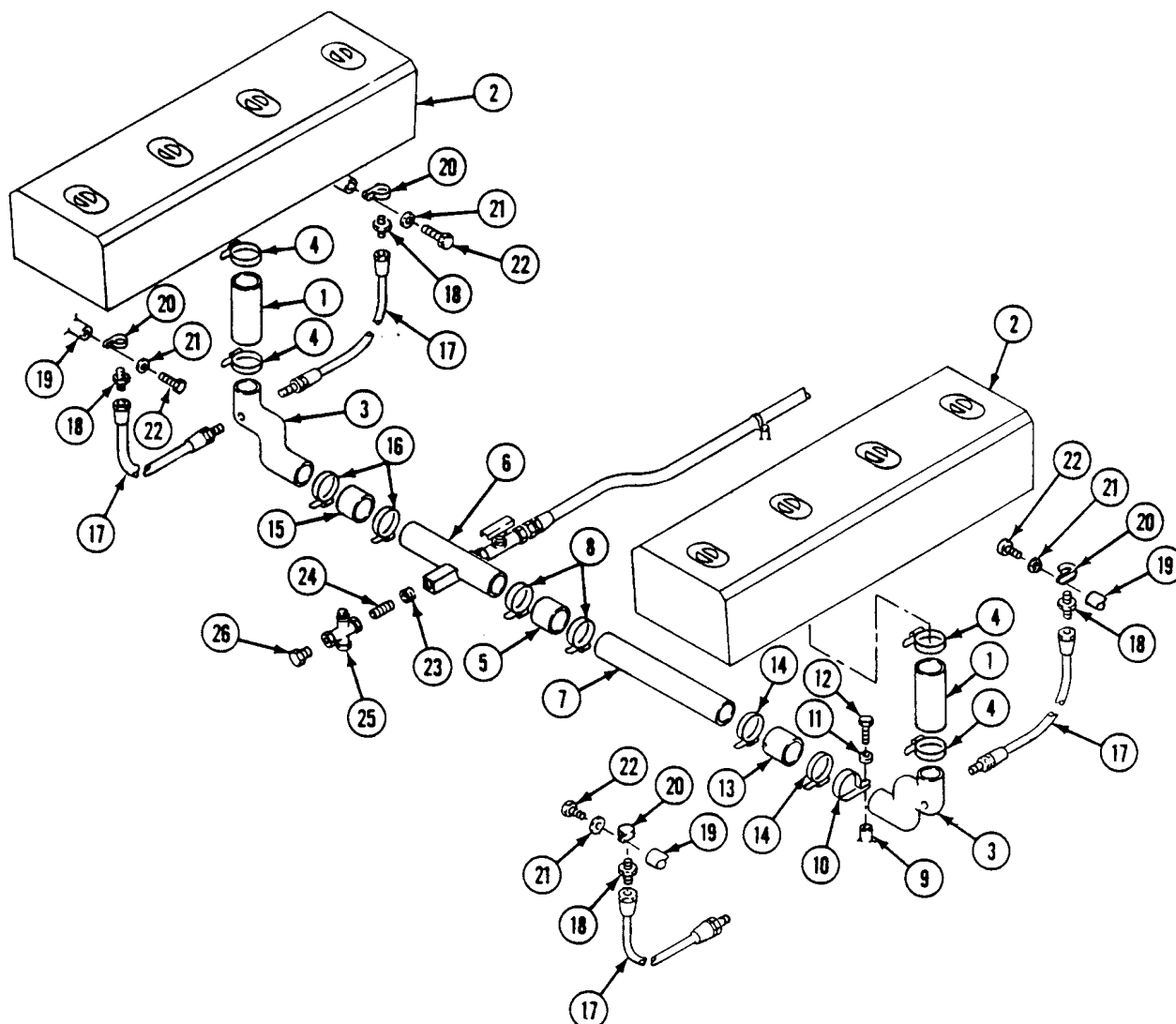
9. Install nipple (9) tube (10).
10. Install shutoff valve (11) on nipple (9) with arrow pointing toward front of carrier.
11. Install adapter (12) in shutoff valve (11).
12. Connect hose assembly (2) to adapter (12).



**REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M577A2
AND M1068 ONLY) — Continued**

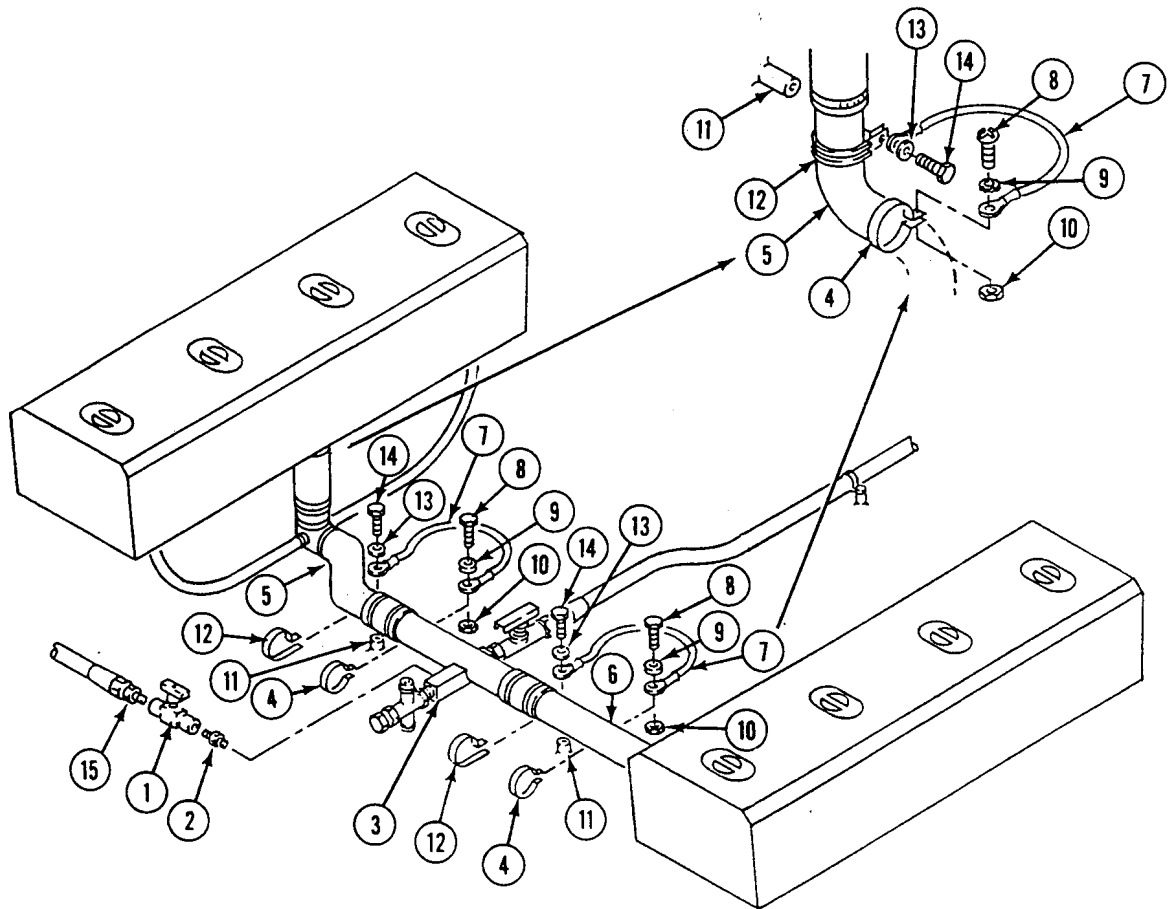
0158 00

13. Connect two hoses (1) to two fuel tanks (2) and elbows (3), and secure with four clamps (4).
14. Connect hose (5) to tubes (6) and (7) with two clamps (8).
15. Secure elbow (3) to weldnut (9) with clamp (10), new lockwasher (11), and screw (12).
16. Connect hose (13) to elbow (3) and tube (7), and secure with two clamps (14).
17. Connect hose (15) to elbow (3) and tube (6), and secure with two clamps (16).
18. Connect four hose assemblies (17) to two elbows (3).
19. Install four nipples (18) in two fuel tanks (2).
20. Connect four hose assemblies (17) to four nipples (18).
21. Install four hose assemblies (17) on four weldnuts (19). Secure with four clamps (20), new lockwashers (21), and screws (22).
22. Install bushing (23), nipple (24), draincock (25), and plug (26) on tube (6).



**REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M577A2
AND M1068 ONLY) — Continued****0158 00**

23. Install shutoff valve (1) on nipple (2).
24. Install nipple (2) in tube (3).
25. Install four clamps (4) on two elbows (5) and tubes (3) and (6). Secure four ground leads (7) to clamps (4) with four screws (8), new lockwashers (9), and new locknuts (10).
26. Install leads (7), two elbows (5), and two tubes (3) and (6) on four weldnuts (11). Secure with four clamps (12), new lockwashers (13), and screws (14).
27. Connect personnel heater fuel hose (15) to shutoff valve (1), if not connected.



28. Fill fuel tank (see your -10).

**REPLACE FUEL SUPPLY HOSES, TUBES, AND FITTINGS (M577A2
AND M1068 ONLY) — Continued**

0158 00

FOLLOW-THROUGH STEPS

1. Connect battery ground lead (WP 0294 00).
2. Start engine (see your -10). Check for leaks.
3. Install power plant rear access panel (WP 0433 00).
4. Install rear compartment floor plates (WP 0436 00 or WP 0440 00).
5. Raise and lock ramp (see your -10).
6. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M577A2 AND M1068 ONLY)

0159 00

THIS WORK PACKAGE COVERS:

Removal (page 0159 00-1).
Installation (page 0159 00-5).

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Sealing compound (WP 0782 00, Item 60)

Wiping rag (WP 0782 00, Item 76)

Locknut

Lockwasher (8)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Map board removed (see your -10)

Battery ground lead disconnected (WP 0294 00)

Electronic equipment heater removed (WP 0633 00)

Generator removed (WP 0227 00 or WP 0228 00)

Personnel heater removed (WP 0620 00)

Muffler removed (WP 0191 00)

Power plant lower rear access panel removed
(WP 0433 00)

Ramp lowered (see your -10)

REMOVAL

WARNING



Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

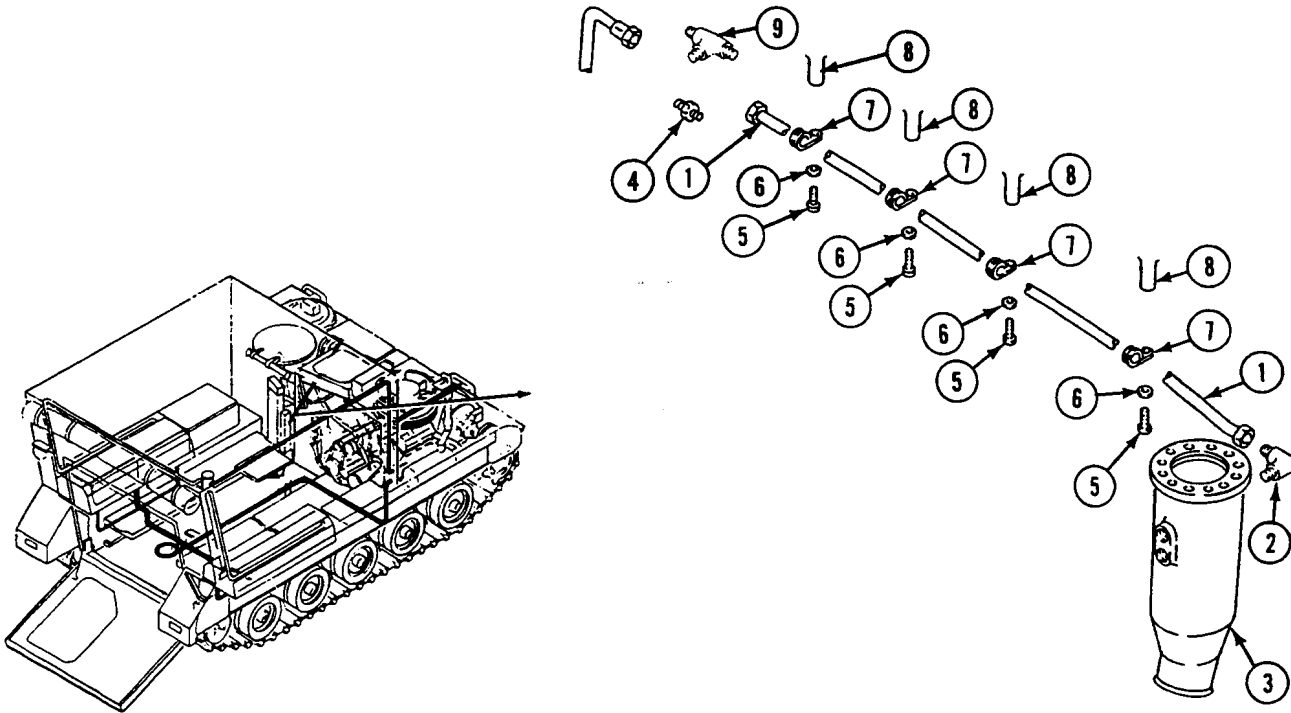
NOTE

Use wiping rag to wipe up any spilled fuel.

**REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M577A2
AND M1068 ONLY) — Continued**

0159 00

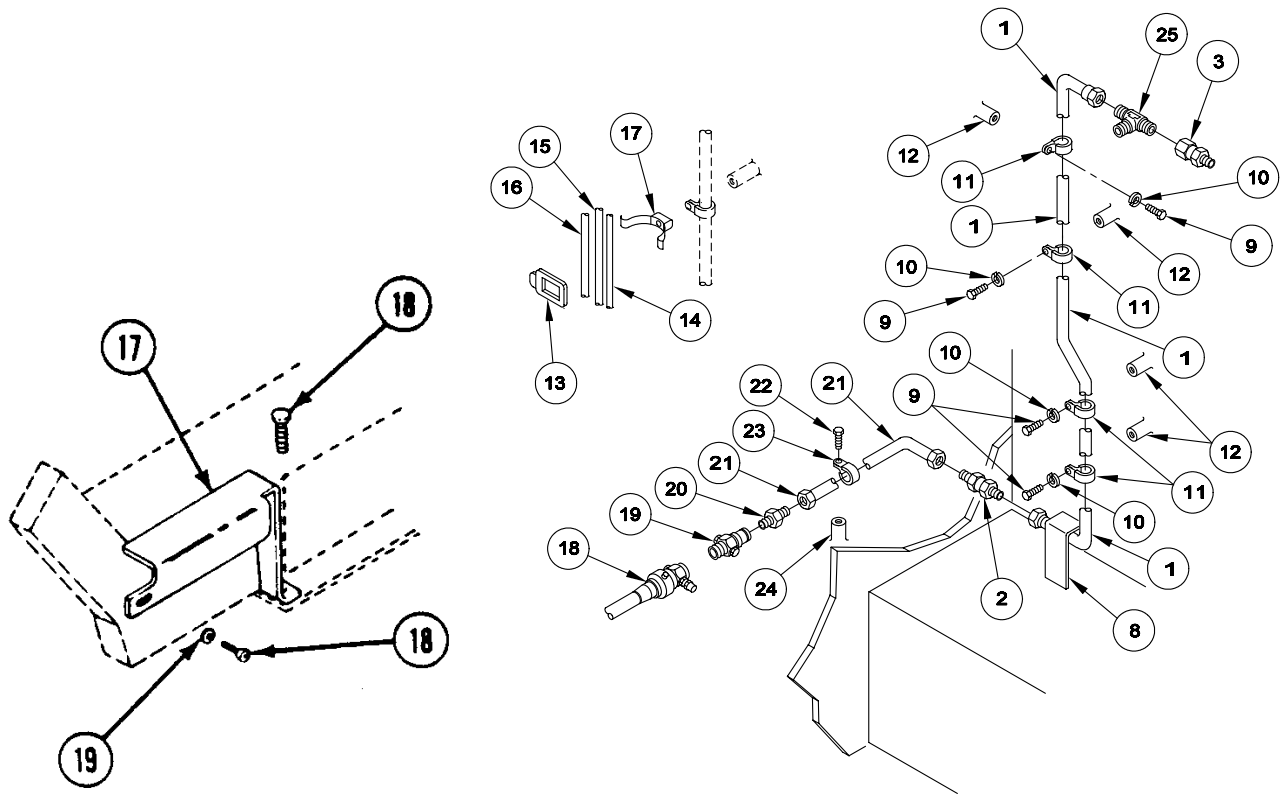
1. Disconnect return tube (1) from elbow (2).
2. Remove elbow (2) from filler neck (3).
3. Disconnect return tube (1) from nipple (4) or tee (9) (M1068 Only).
4. Remove four screws (5), lockwashers (6), clamps (7) and return tube (1) from four weldnuts (8). Discard lockwashers.



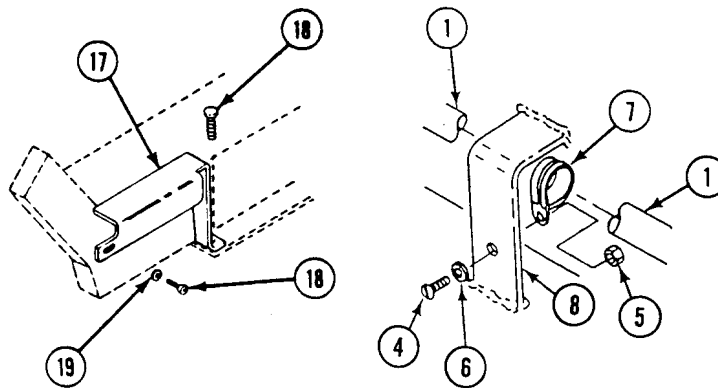
**REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M577A2
AND M1068 ONLY) — Continued**

0159 00

5. Disconnect return hose (1) from nipples (2) and (3) or tee (25) (M1068 only).



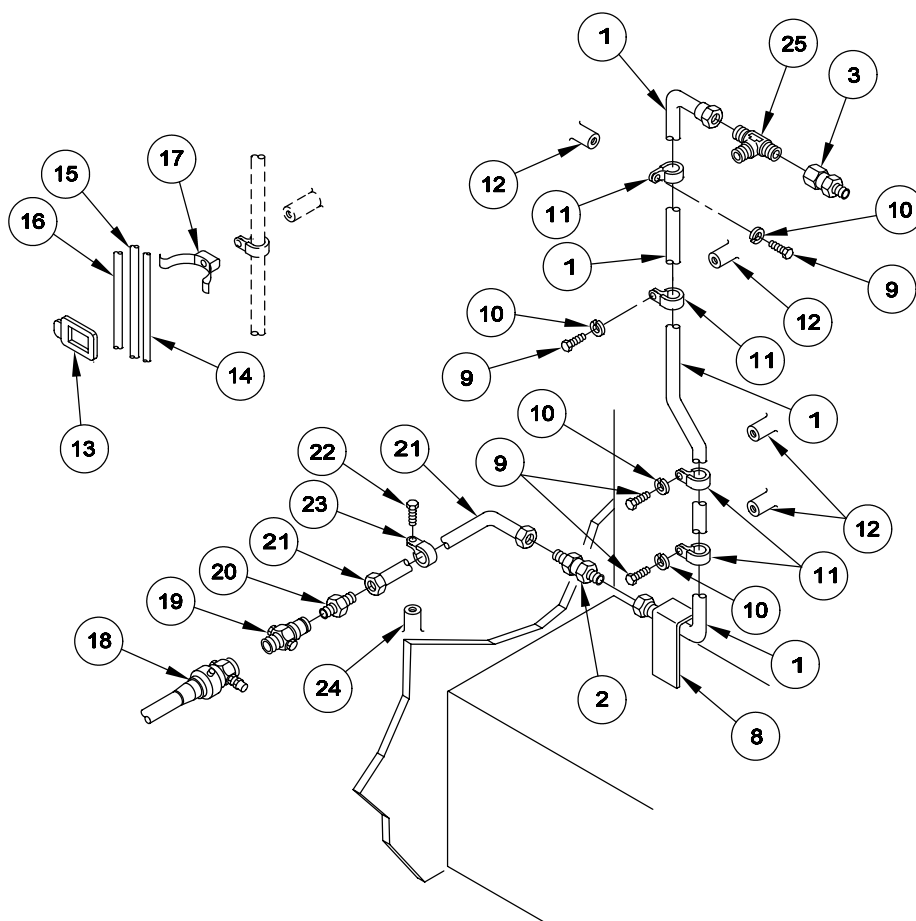
6. Remove screw (4), locknut (5), washer (6), and clamp (7) securing return hose (1) to bracket (8). Discard locknut.



**REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M577A2
AND M1068 ONLY) — Continued**

0159 00

7. Remove four screws (9), lockwashers (10), clamps (11), and return hose (1) from four weldnuts (12). Discard lockwashers.
8. Remove two clips (13), circuit 601 lead (14), circuit 6 cable (15), and circuit 48B cable (16) from two cradles (17). Remove two cradles.
9. Disconnect quick-disconnect half (18) from quick-disconnect half (19).
10. Remove quick-disconnect half (19) from adapter (20).
11. Remove adapter (20) from return tube (21).
12. Disconnect return tube (21) from nipple (2).
13. Remove screw (22), clamp (23), and return tube (21) from weldnut (24).
14. Remove jam nut and nipple (2) from power plant rear bulkhead.

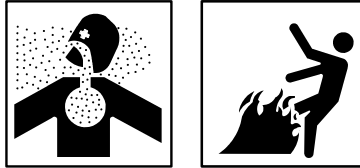


**REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M577A2
AND M1068 ONLY) — Continued**

0159 00

INSTALLATION

WARNING



Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to cleaned external threads of fittings before installation.

REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M577A2 AND M1068 ONLY) — Continued

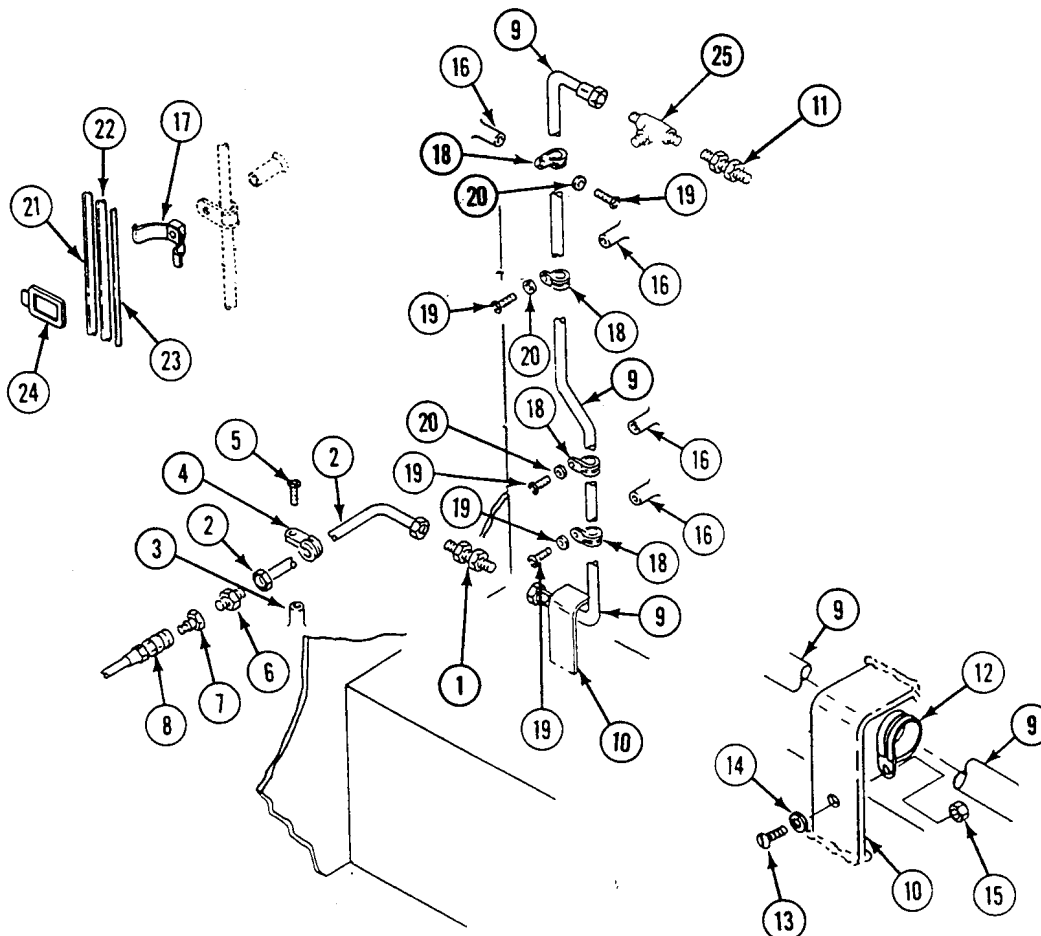
0159 00

2. Secure nipple with jam nut (1) on power plant rear bulkhead.
3. Connect return tube (2) to nipple (1).
4. Install return tube (2) on weldnut (3). Secure with clamp (4) and screw (5).
5. Install adapter (6) on return tube (2).
6. Install quick disconnect half (7) on adapter (6).
7. Connect quick-disconnect half (8) to quick disconnect half (7).
8. Install return hose (9) under bracket (10) and connect to nipple (1).
9. Install nipple with jam nut (11) or tee (25) (M1068 Only) on return hose (9).
10. Secure return hose (9) to bracket (10) with clamp (12), screw (13), washer (14), and new locknut (15).

NOTE

Make sure clamp is installed behind cradle.

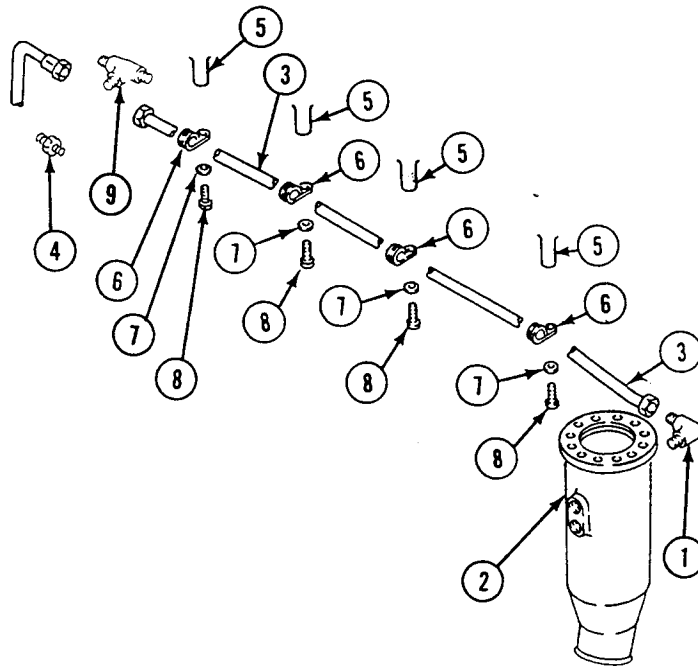
11. Position return hose (9) on four weldnuts (16). Secure return hose (9) and two cradles (17) with four clamps (18), screws (19), and new lockwashers (20).
12. Install circuit 48B cable (21), circuit 6 cable (22), and circuit 601 lead (23) on two cradles (17). Secure with two clips (24).



REPLACE FUEL RETURN HOSES, TUBES, AND FITTINGS (M577A2 AND M1068 ONLY) — Continued

0159 00

13. Install elbow (1) in filler neck (2).
14. Connect return tube (3) to elbow (1).
15. Connect return tube (3) to nipple (4) or tee (9) (M1068 Only).
16. Install return tube (3) on four weldnuts (5). Secure with four clamps (6), new lockwashers (7), and screws (8).



FOLLOW-THROUGH STEPS

1. Install muffler (WP 0191 00).
2. Install personnel heater (WP 0620 00).
3. Install generator (WP 0227 00 or WP 0228 00).

NOTE

Electronic equipment heater is not installed if 5.0 KW APU is installed.

4. Install electronic equipment heater (WP 0633 00).
5. Connect battery ground lead (WP 0294 00).
6. Start engine (see your -10). Check return hoses for leaks.
7. Install map board (see your -10).
8. Install power plant rear access panel (WP 0433 00).
9. Raise and lock ramp (see your -10).
10. Engine stopped/shutdown (see your -10).

END OF TASK

REPLACE FUEL VENT HOSES, TUBES, AND FITTINGS
(M577A2 AND M1068 ONLY)

0160 00

THIS WORK PACKAGE COVERS:

- Removal (page 0160 00-1).
 - Installation (page 0160 00-4).
-

INITIAL SETUP:

<u>Maintenance Level</u>	<u>References</u>
Unit	See your -10 WP 0153 00
<u>Tools and Special Tools</u>	<u>Equipment Condition</u>
General Mechanic’s Tool Kit (WP 0780 00, Item 29)	Engine stopped/shutdown (see your -10)
<u>Materials/Parts</u>	Carrier blocked (see your -10)
Sealing compound (WP 0782 00, Item 60)	Ramp lowered (see your -10)
Lockwasher (12)	Battery ground lead disconnected (WP 0294 00)
Lockwasher (5)	Map board removed (see your -10)
Suitable container	Work tables removed (WP 0502 00)
<u>Personnel Required</u>	
Unit Mechanic	

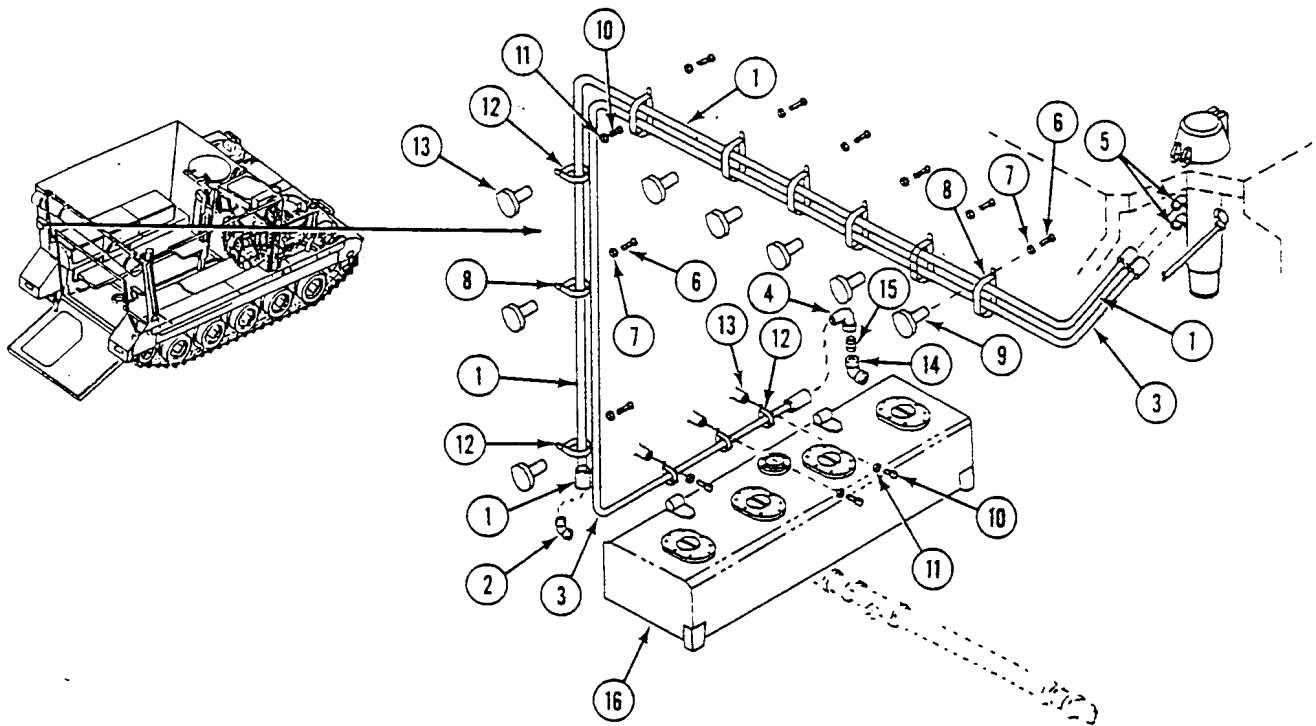
REMOVAL

1. Drain fuel tanks below level of vent hoses (WP 0153 00).

REPLACE FUEL VENT HOSES, TUBES, AND FITTINGS (M577A2 AND M1068 ONLY) — Continued

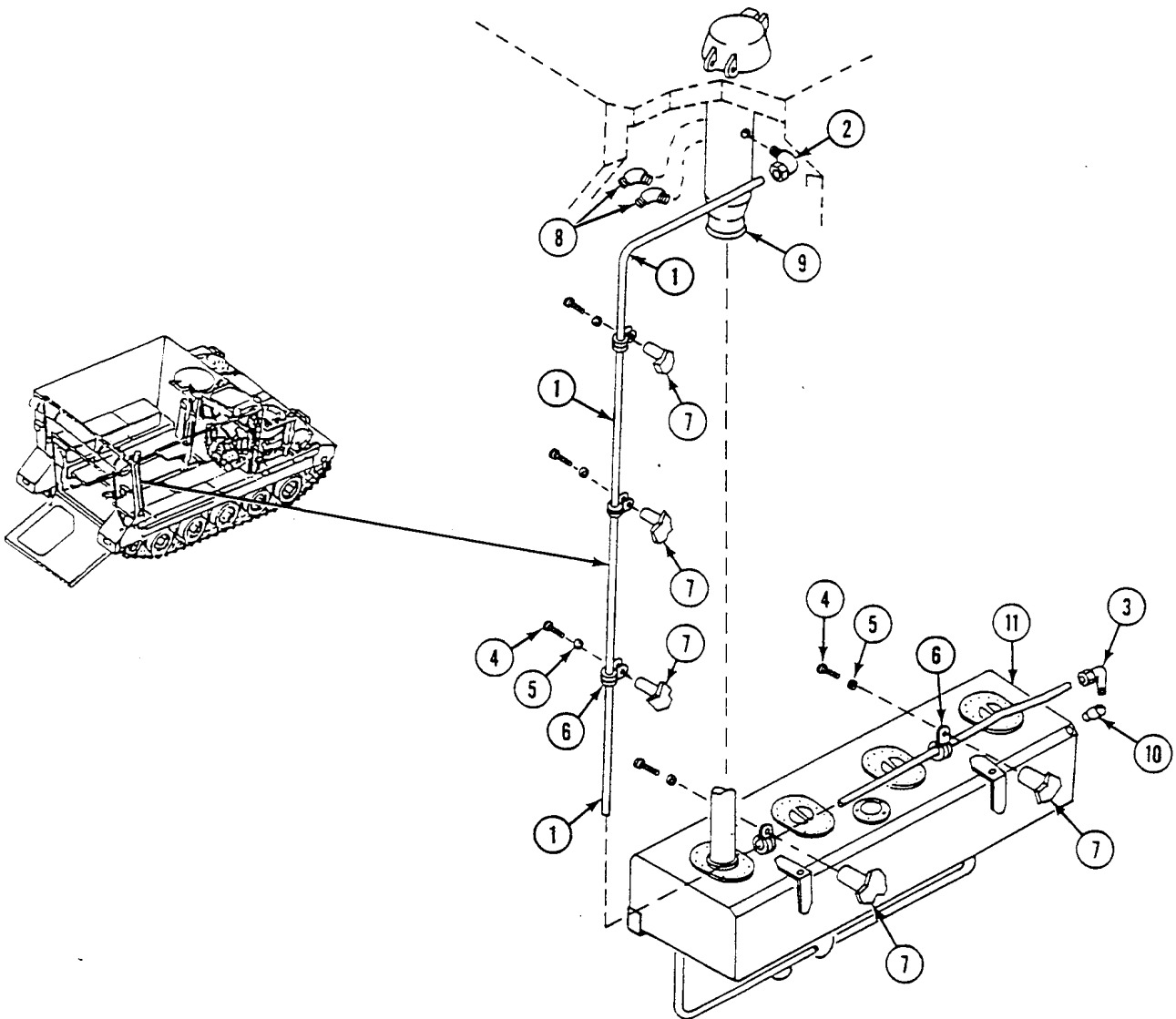
0160 00

2. Disconnect vent hose (1) from elbow (2).
3. Disconnect vent hose (3) from elbow (4).
4. Disconnect vent hoses (1) and (3) from two elbows (5).
5. Remove seven screws (6), lockwashers (7), clamps (8), and vent hoses (1) and (3) from seven weldnuts (9). Discard lockwashers.
6. Remove five screws (10), lockwashers (11), clamps (12), and vent hoses (1) and (3) from five weldnuts (13). Discard lockwashers.
7. Remove three elbows (2), (4), and (14) and nipple (15) from left fuel tank (16).



REPLACE FUEL VENT HOSES, TUBES, AND FITTINGS (M577A2 AND M1068 ONLY) — Continued**0160 00**

8. Disconnect vent tube (1) from two elbows (2) and (3).
9. Remove five screws (4), lockwashers (5), clamps (6), and vent tube (1) from five weldnuts (7). Discard lockwashers.
10. Remove two elbows (8) and elbow (2) from filler neck (9).
11. Remove elbow (3) and bushing (10) from right fuel tank (11).

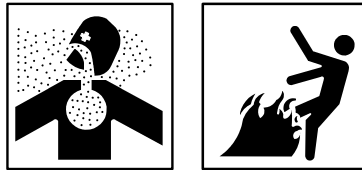


REPLACE FUEL VENT HOSES, TUBES, AND FITTINGS (M577A2 AND M1068 ONLY) — Continued

0160 00

INSTALLATION

WARNING



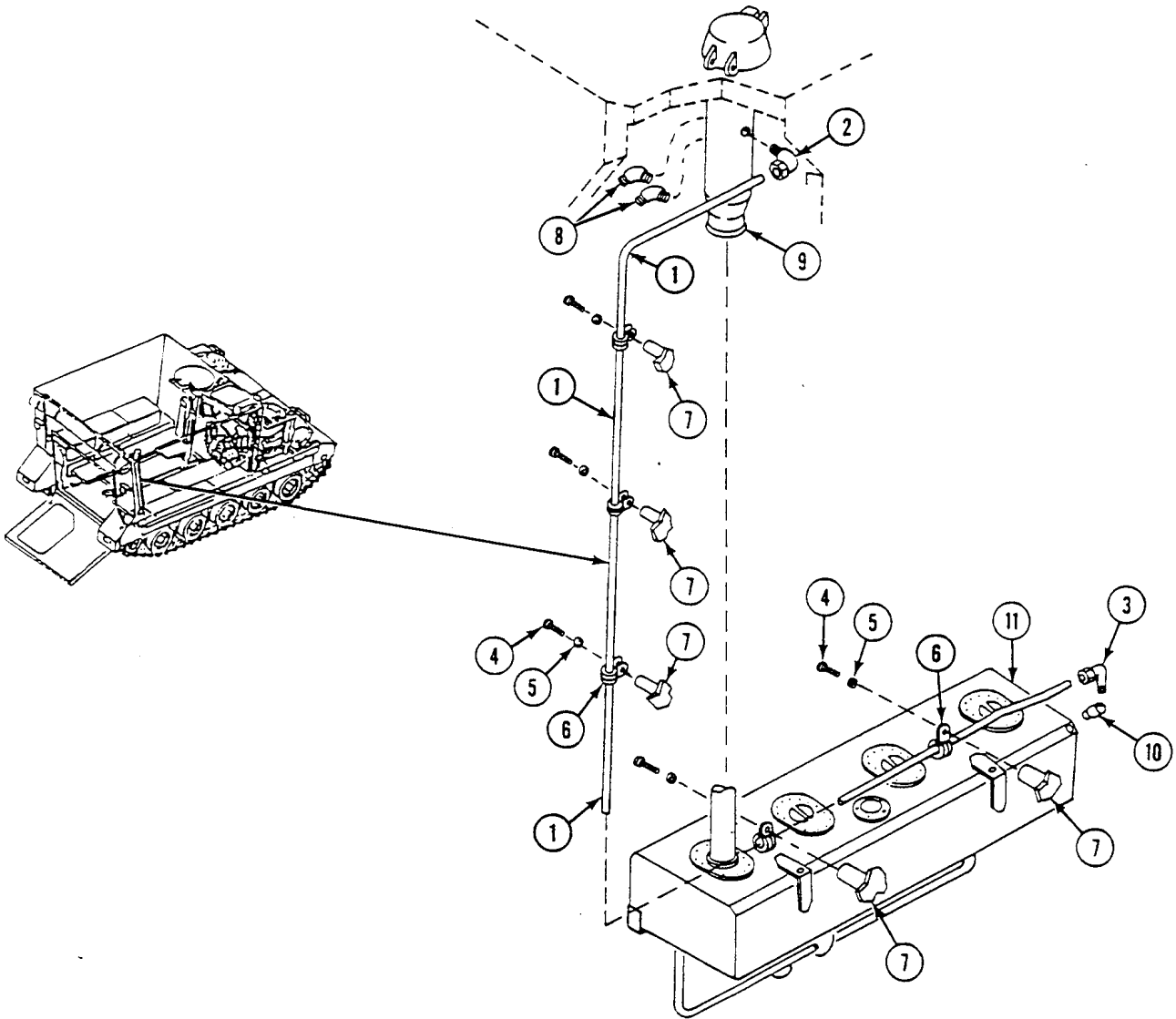
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to cleaned external threads of fittings.

REPLACE FUEL VENT HOSES, TUBES, AND FITTINGS (M577A2 AND M1068 ONLY) — Continued**0160 00**

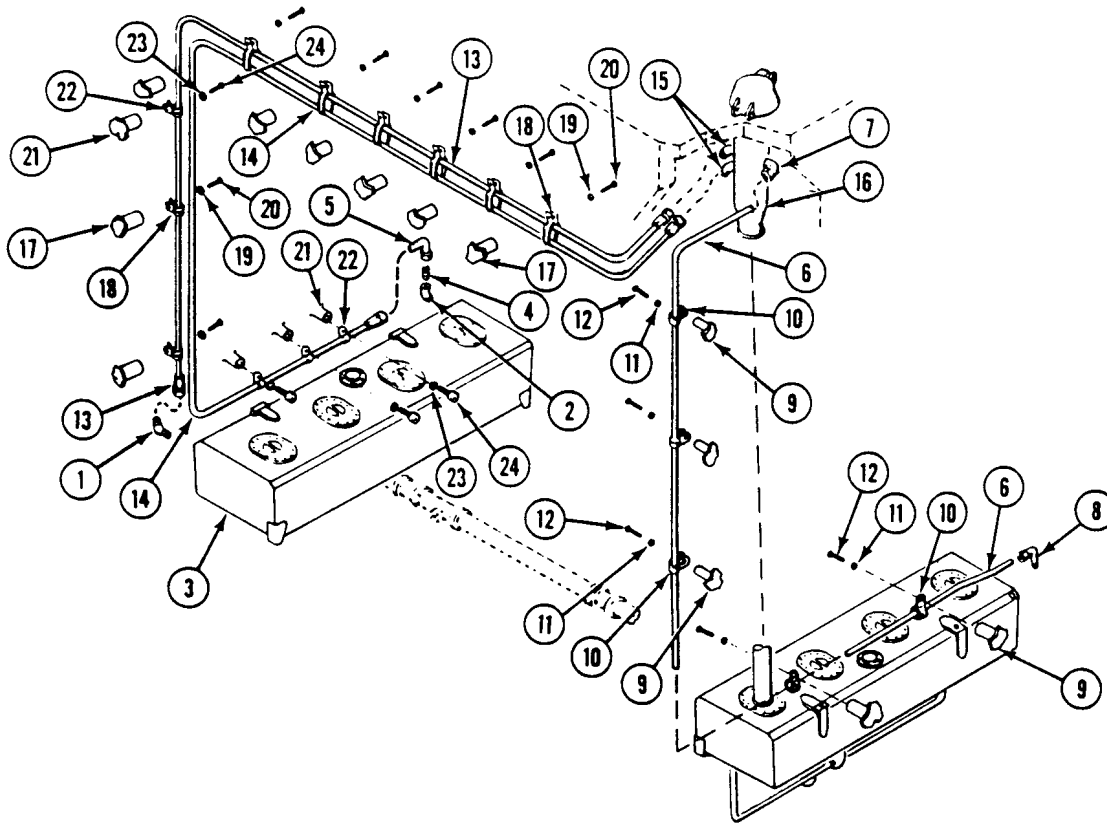
2. Install bushing (10) in right fuel tank (11).
3. Install elbow (3) on bushing (10).
4. Install two elbows (8) and elbow (2) in filler neck (9).



REPLACE FUEL VENT HOSES, TUBES, AND FITTINGS (M577A2 AND M1068 ONLY) — Continued

0160 00

5. Install two elbows (1) and (2) in left fuel tank (3).
6. Install nipple (4) in elbow (2).
7. Install elbow (5) on nipple (4).
8. Connect vent tube (6) to two elbows (7) and (8).
9. Install vent tube (6) on five weldnuts (9). Secure with five clamps (10), new lockwashers (11), and screws (12).
10. Connect vent hose (13) to elbow (1) at left fuel tank (3).
11. Connect vent hose (14) to elbow (5) at left fuel tank (3).
12. Connect two vent hoses (13) and (14) to two elbows (15) at filler neck (16).
13. Install two vent hoses (13) and (14) on seven weldnuts (17). Secure with seven clamps (18), new lockwashers (19), and screws (20).
14. Secure vent hose (14) to five weldnuts (21) with five clamps (22), new lockwashers (23), and screws (24).



15. Fill fuel tanks. Check for leaks (see your -10).

FOLLOW-THROUGH STEPS

1. Install map board (see your -10).
2. Install work tables (WP 0502 00).
3. Connect battery ground lead (WP 0294 00).
4. Raise and lock ramp (see your -10).
5. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE FUEL TANKS (M577A2 AND M1068 ONLY)**0161 00****THIS WORK PACKAGE COVERS:**

Removal (page 0161 00-1).
 Installation (page 0161 00-4).

INITIAL SETUP:Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Sealing compound (WP 0782 00, Item 60)

Key washer (6)

Locknut (4)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown and ramp lowered (see your -10)

Battery ground lead disconnected (WP 0294 00)

Map board removed (see your -10)

Work tables removed (WP 0500 00, WP 0501 00, or WP 0502 00)

Fuel tanks drained (WP 0153 00)

Rear bilge pump discharge tube removed (WP 0326 00)

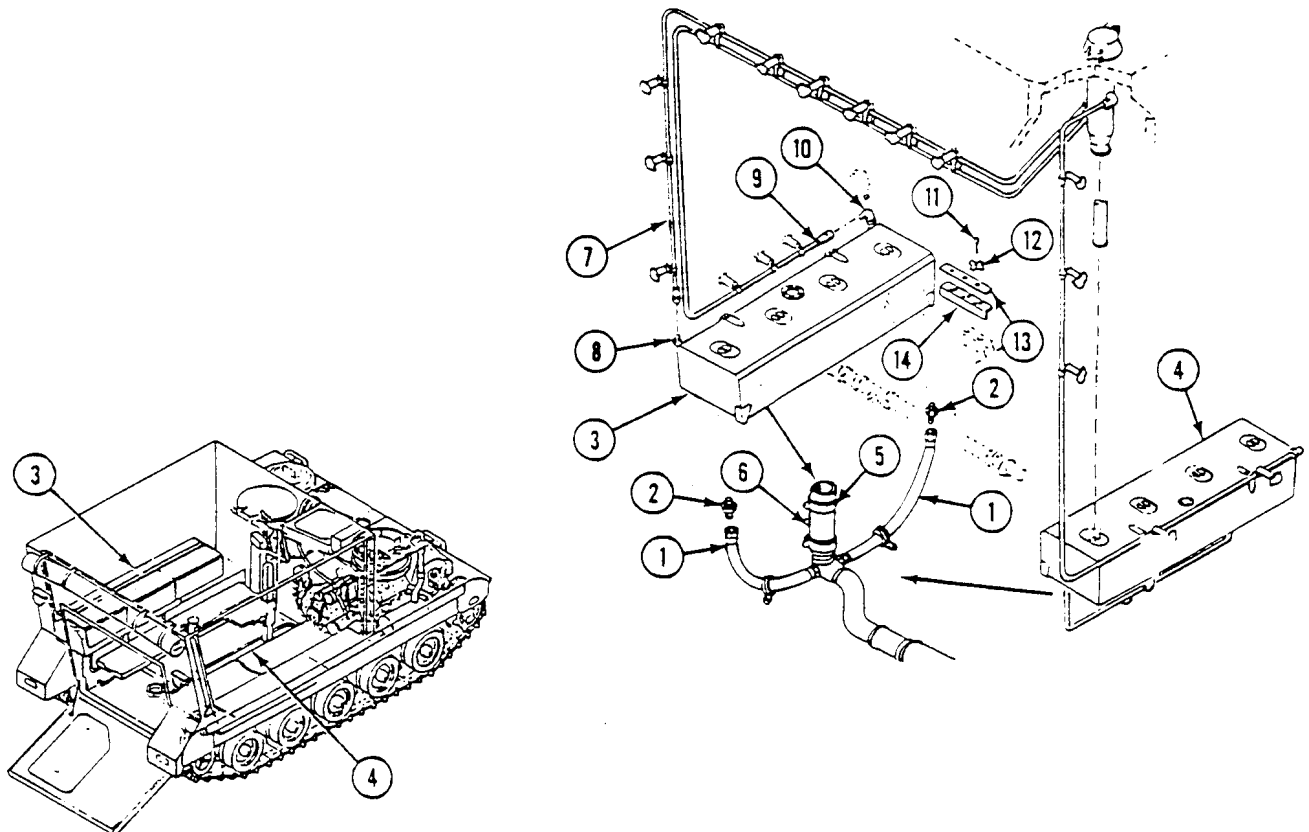
Fuel quantity transmitter removed (WP 0155 00)

Fuel tank access cover removed (WP 0156 00)

Fuel tank filler flange removed (WP 0157 00)

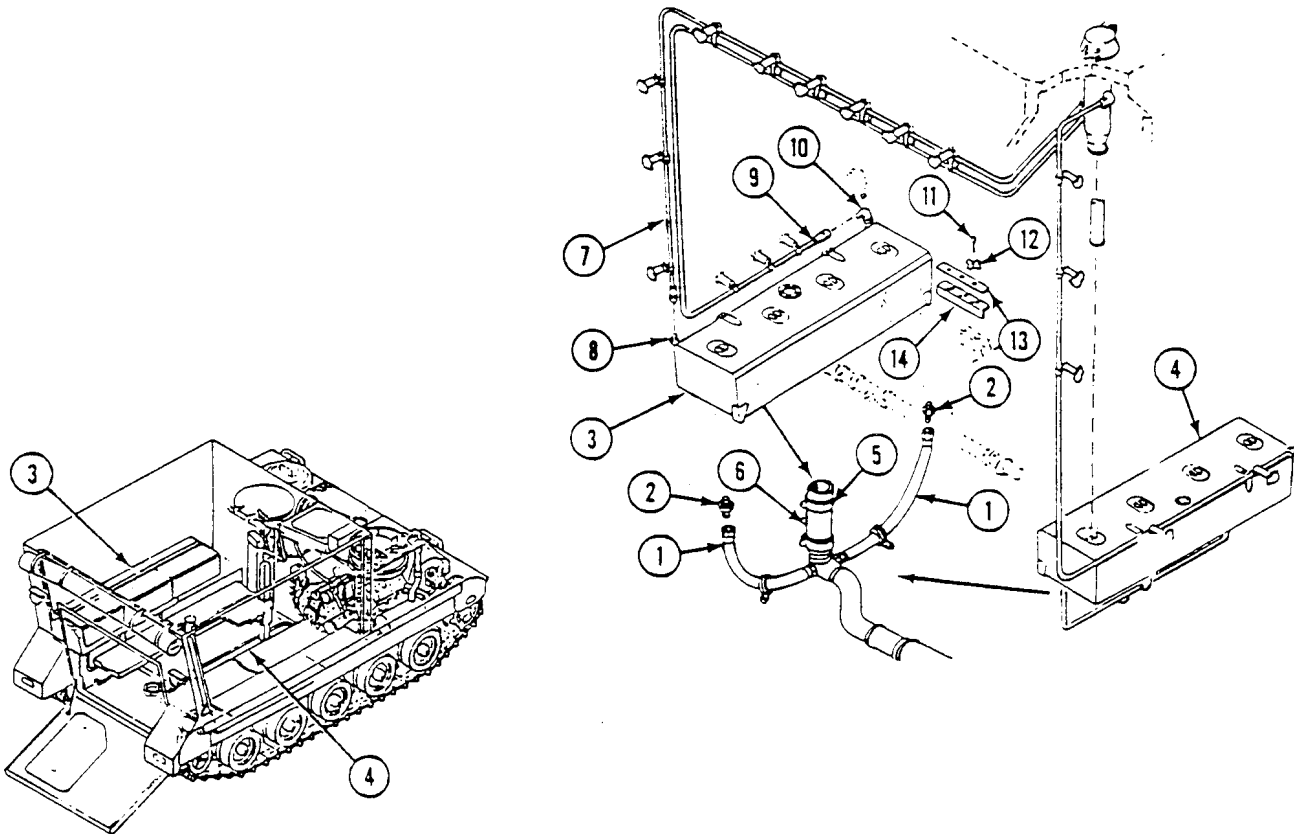
REMOVAL

1. Disconnect four supply hoses (1) and four adapters (2) from fuel tanks (3) and (4).
2. Loosen two clamps (5) and remove two supply hoses (6) from fuel tanks (3) and (4).



REPLACE FUEL TANKS (M577A2 AND M1068 ONLY) — Continued**0161 00**

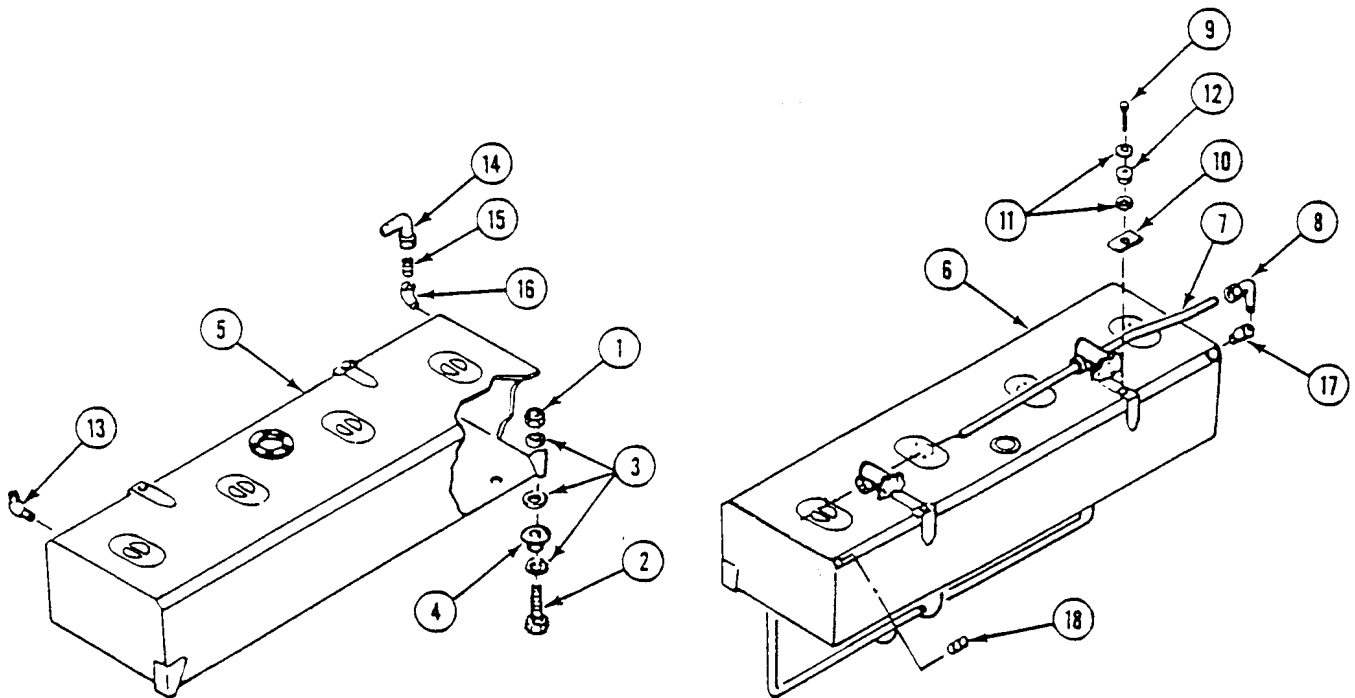
3. Disconnect vent hose (7) from elbow (8).
4. Disconnect vent hose (9) from elbow (10).
5. Remove six screws (11), key washers (12), two plates (13), and two brackets (14) that secure front of fuel tanks (3) and (4) on sponson. Discard key washers.



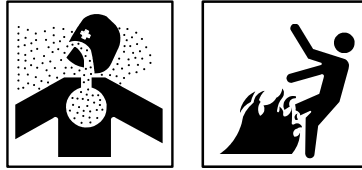
REPLACE FUEL TANKS (M577A2 AND M1068 ONLY) — Continued

0161 00

6. Remove four locknuts (1), screws (2), 12 washers (3), and 4 mounts (4) that secure bottom of fuel tanks (5) and (6) to sponson. Discard locknuts.
7. Disconnect vent tube (7) from elbow (8).
8. Remove four screws (9), plates (10), eight washers (11), and four mounts (12) that secure bottom of fuel tanks (5) and (6) to sponson.
9. Remove two fuel tanks (5) and (6) from carrier.
10. Remove elbow (13) from left fuel tank (5).
11. Remove elbow (14) from nipple (15).
12. Remove nipple (15) and elbow (16) from left fuel tank (5).
13. Remove elbow (8) and bushing (17) from right fuel tank (6).
14. Remove plug (18) from right fuel tank (6).



INSTALLATION

WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

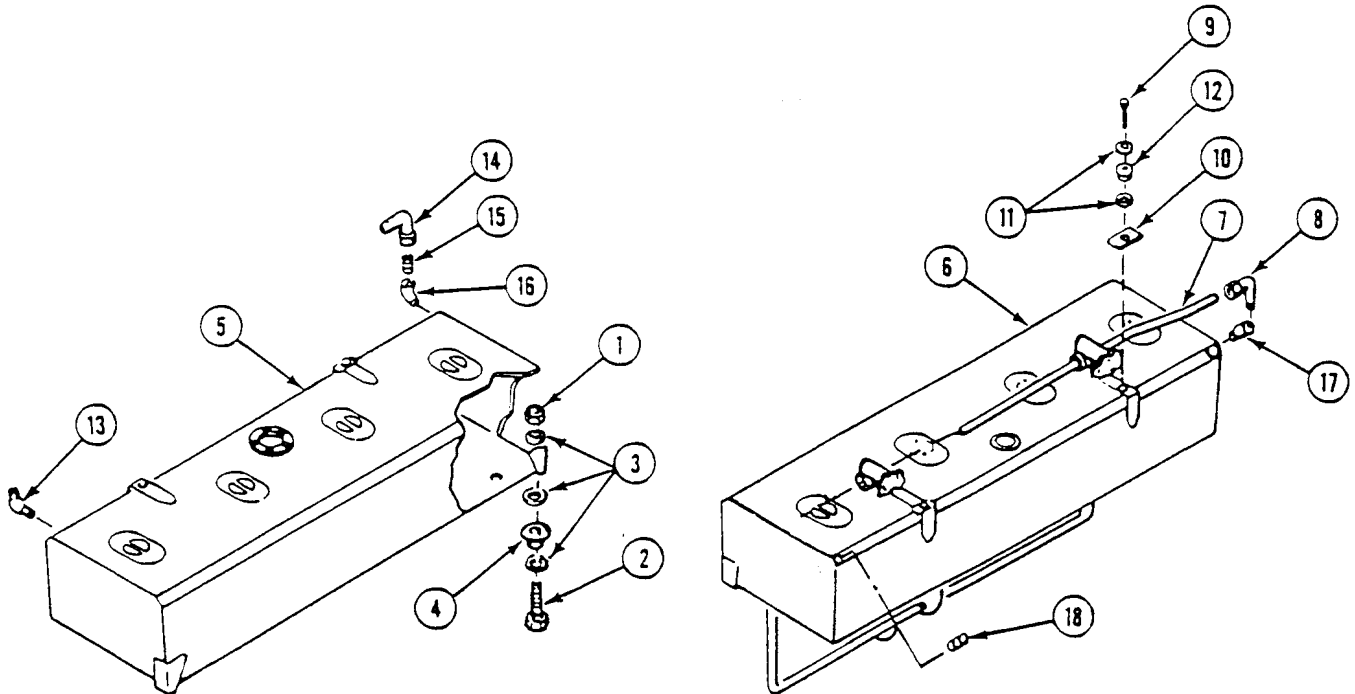
Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to cleaned external threads of fittings.

REPLACE FUEL TANKS (M577A2 AND M1068 ONLY) — Continued

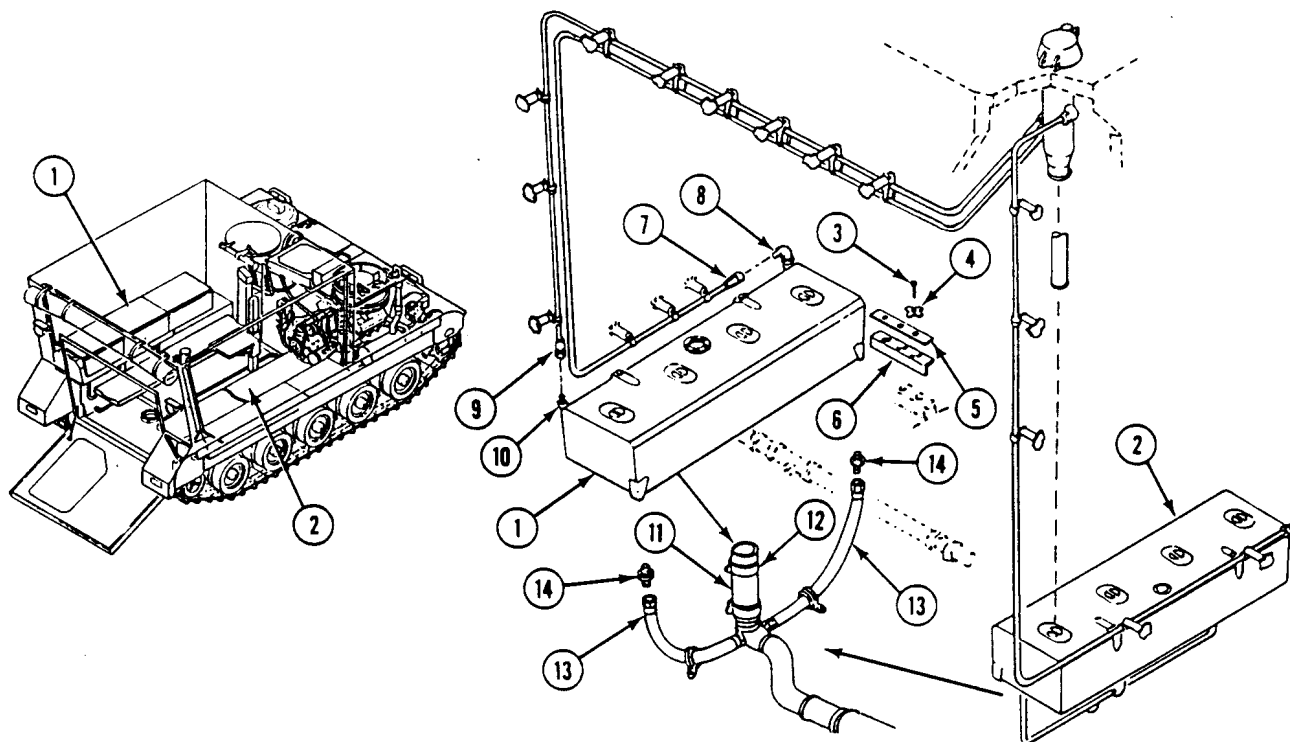
0161 00

2. Install plug (18) in right fuel tank (6).
3. Install bushing (17) in fuel tank (6).
4. Install elbow (8) in bushing (17).
5. Install elbow (13) in left fuel tank (5).
6. Install elbow (16) in left fuel tank (5).
7. Install nipple (15) in elbow (16).
8. Install elbow (14) on nipple (15).
9. Place fuel tanks (5) and (6) on left and right sponsons.
10. Secure top of two fuel tanks (5) and (6) to hull with four screws (9), plates (10), eight washers (11), and four mounts (12).
11. Secure bottom of two fuel tanks (5) and (6) to sponson with four mounts (4), new locknuts (1), screws (2), and 12 washers (3).



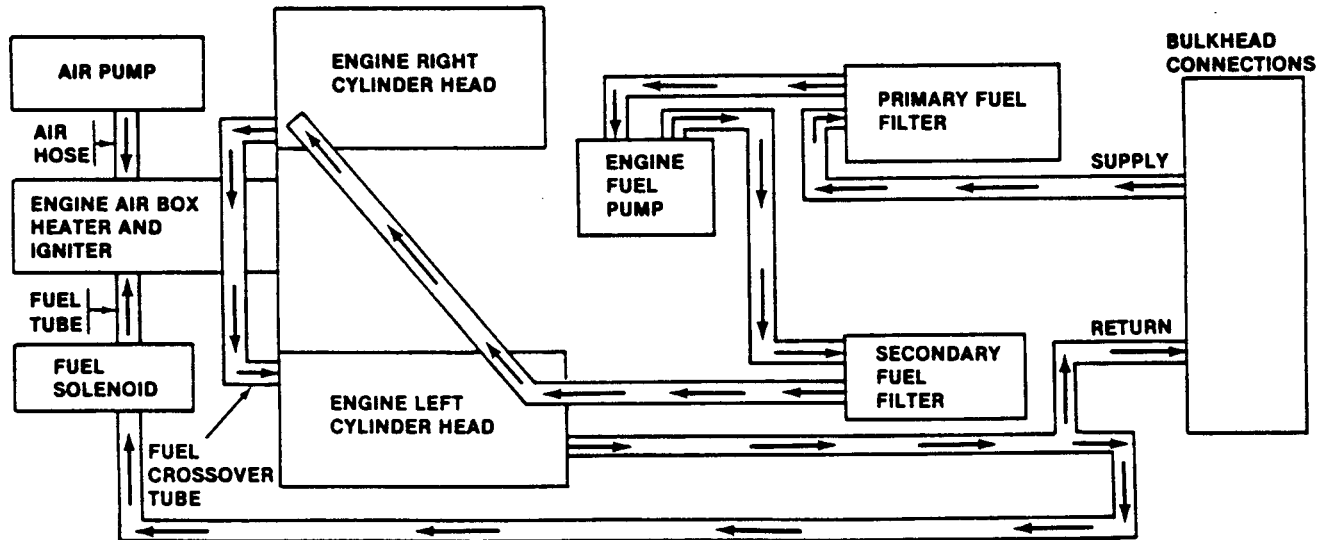
REPLACE FUEL TANKS (M577A2 AND M1068 ONLY) — Continued**0161 00**

12. Secure front of two fuel tanks (1) and (2) to sponson with six screws (3), new key washers (4), two plates (5), and bracket (6).
13. Connect vent hose (7) to elbow (8).
14. Connect vent hose (9) to elbow (10).
15. Install two supply hoses (11) on fuel tanks (1) and (2). Secure with two clamps (12).
16. Connect four supply hoses (13) with four adapters (14) on fuel tanks (1) and (2).

**FOLLOW-THROUGH STEPS**

1. Install fuel tank filler flange (WP 0157 00).
2. Install fuel tank access cover (WP 0156 00).
3. Install fuel quantity transmitter (WP 0155 00).
4. Install rear bilge pump discharge tube (WP 0326 00).
5. Fill fuel tanks (see your -10). Check for leaks.
6. Connect battery ground lead (WP 0294 00).
7. Start engine (see your -10). Check for leaks.
8. Raise and lock ramp (see your -10).
9. Stop/shutdown engine (see your -10).
10. Install work tables (WP 0500 00, WP 0501 00, or WP 0502 00).
11. Install map board (see your -10).

END OF TASK

ENGINE FUEL SYSTEM DIAGRAM**0162 00****THIS WORK PACKAGE COVERS:****INITIAL SETUP:**Maintenance LevelUnit**END OF TASK**

REPLACE BULKHEAD CONNECTION TO PRIMARY FUEL FILTER HOSE0163 00

THIS WORK PACKAGE COVERS:

Removal (page 0163 00-1).
Installation (page 0163 00-3).

INITIAL SETUP:

<u>Maintenance Level</u>	<u>Equipment Condition</u>
Unit	Engine stopped/shutdown (see your -10)
<u>Tools and Special Tools</u>	Carrier blocked (see your -10)
General Mechanic’s Tool Kit (WP 0780 00, Item 29)	Ramp lowered (see your -10)
<u>Materials/Parts</u>	Battery ground lead disconnected (WP 0294 00)
Sealing compound (WP 0782 00, Item 60)	Power plant rear access panel removed (WP 0431 00, WP 0432 00, or WP 0433 00)
Wiping rag (WP 0780 00, Item 76)	
<u>Personnel Required</u>	
Unit Mechanic	

REMOVAL



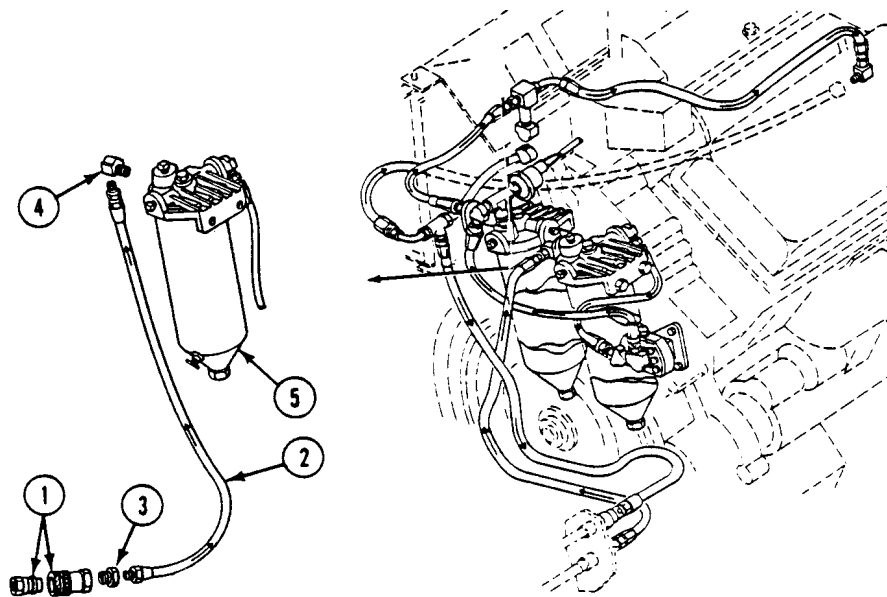
Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

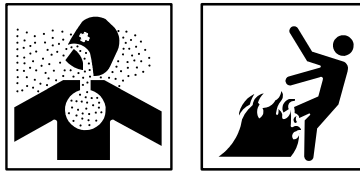
Use wiping rag to wipe up any spilled fuel.

REPLACE BULKHEAD CONNECTION TO PRIMARY FUEL FILTER HOSE — Continued**0163 00**

1. Disconnect supply hose quick disconnect coupling (1).
2. Disconnect fuel supply hose (2) from adapter (3) and elbow (4).
3. Remove adapter (3) from quick disconnect coupling (1).
4. Remove elbow (4) from primary fuel filter (5).



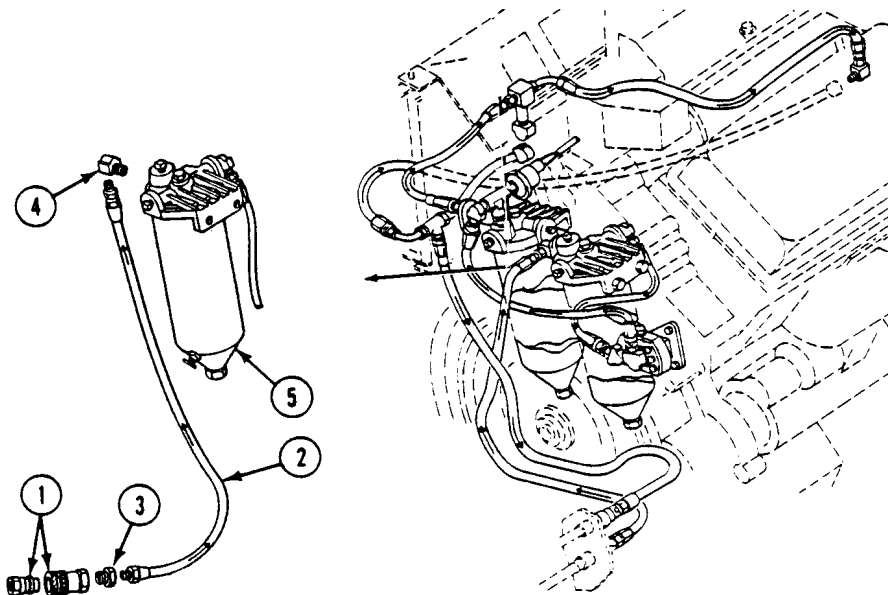
INSTALLATION

WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to cleaned external threads of hose ends and fittings.
2. Install elbow (4) in primary fuel filter (5).
3. Install adapter (3) in quick disconnect coupling (1).
4. Connect fuel supply hose (2) to elbow (4) and adapter (3).
5. Connect quick disconnect coupling (1).

**FOLLOW-THROUGH STEPS**

1. Connect battery ground lead (WP 0294 00).
2. Start engine (see your -10). Check for leaks.
3. Raise and lock ramp (see your -10).
4. Stop/shutdown engine (see your -10).
5. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).

END OF TASK

REPLACE PRIMARY FUEL FILTER TO ENGINE FUEL PUMP HOSE

0164 00

THIS WORK PACKAGE COVERS:

Removal (page 0164 00-1).
Installation (page 0164 00-3).

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Sealing compound (WP 0782 00, Item 60)

Wiping rag (WP 0780 00, Item 76)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Ramp lowered (see your -10)

Battery ground lead disconnected (WP 0294 00)

Power plant rear access panel removed (WP 0431 00,
WP 0432 00, or WP 0433 00)

REMOVAL

WARNING



Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

Use wiping rag to wipe up any spilled fuel.

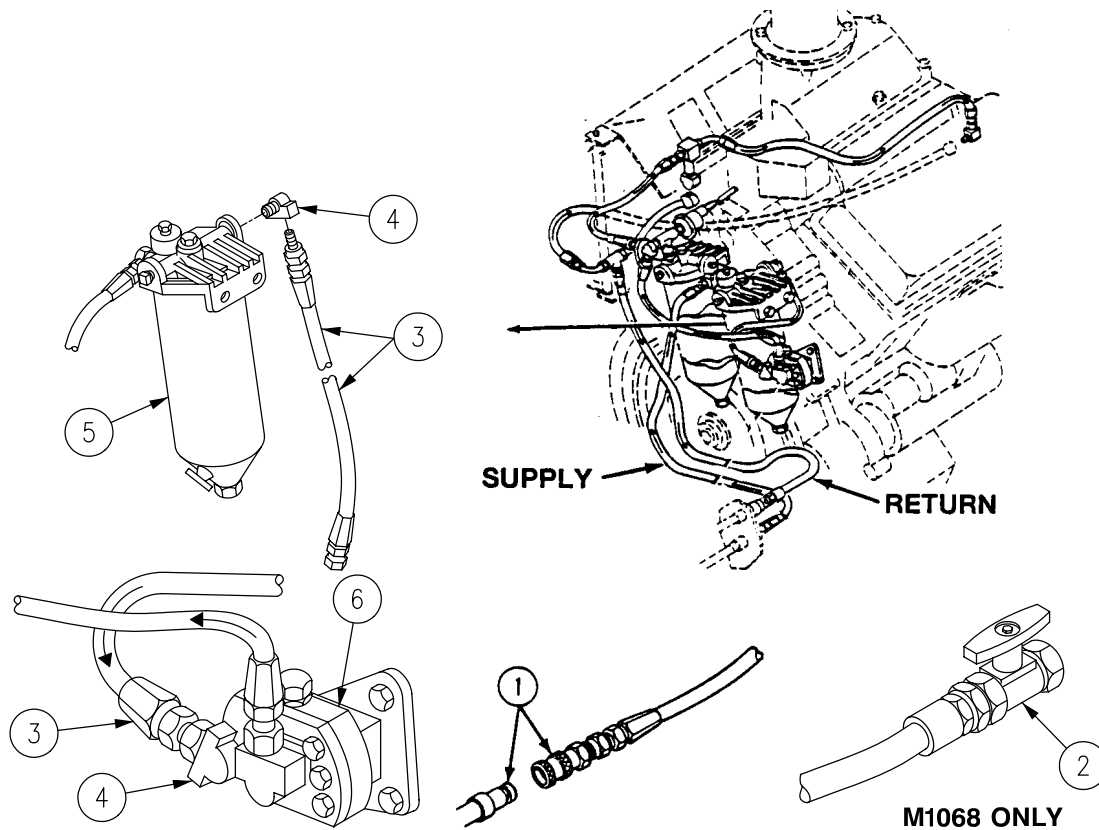
REPLACE PRIMARY FUEL FILTER TO ENGINE FUEL PUMP HOSE — Continued**0164 00**

1. Disconnect supply and return quick disconnect couplings (1).

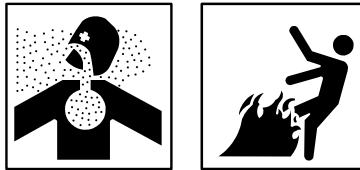
NOTE

Step 2 is for M1068 only, if equipped with fuel shutoff valve.

2. Turn fuel shutoff valve (2) to closed position (M1068 Only). Disconnect fuel supply hose (3) from fuel shutoff valve (2).
3. Disconnect fuel supply hose (3) from elbow (4).
4. Remove elbow (4) from primary fuel filter (5).
5. Disconnect fuel supply hose (3) from elbow (4).
6. Remove elbow (4) from engine fuel pump (6).



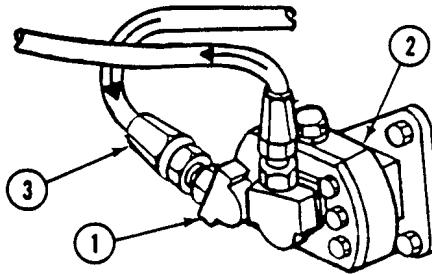
INSTALLATION

WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to cleaned external threads of hose ends and fittings.
2. Install elbow (1) in engine fuel pump (2).
3. Connect fuel supply hose (3) to elbow (1).



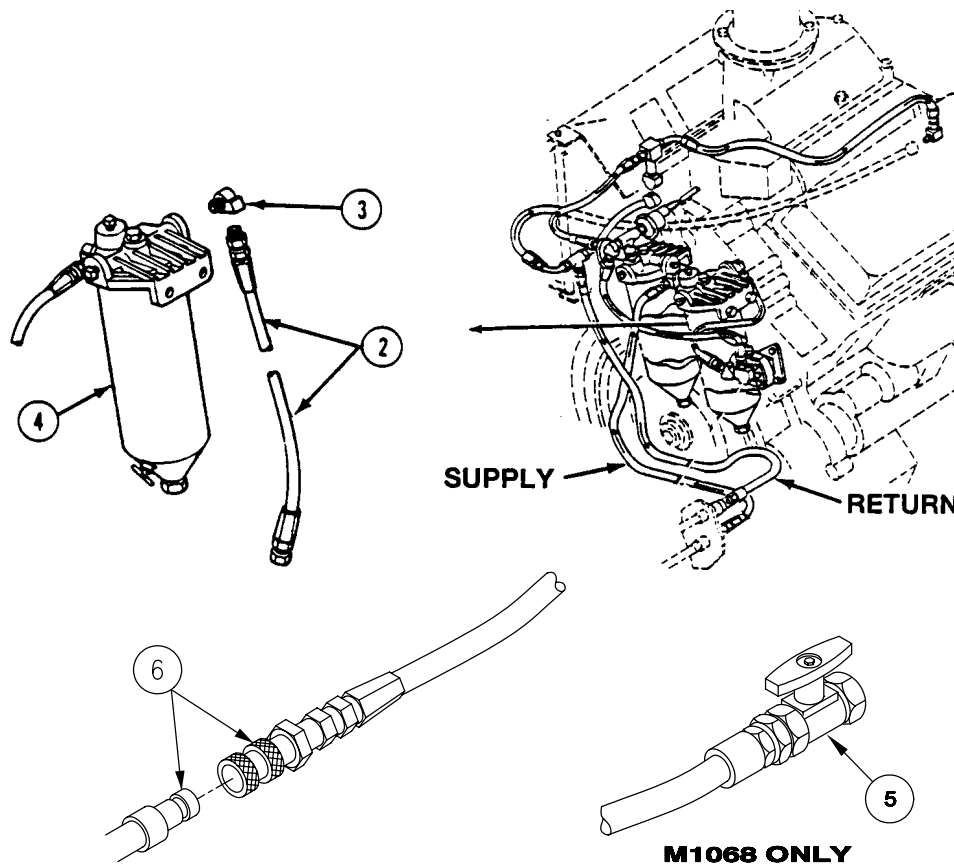
REPLACE PRIMARY FUEL FILTER TO ENGINE FUEL PUMP HOSE — Continued**0164 00**

4. Install elbow (3) in primary fuel filter (4).
5. Connect fuel supply hose (2) to elbow (3).
6. Connect supply and return quick disconnect couplings (6).

NOTE

Step 7 is for M1068 only if equipped with fuel shutoff valve.

7. Connect fuel supply hose (2) to fuel shutoff valve (5) and turn fuel shutoff valve to open position.

**FOLLOW-THROUGH STEPS**

1. Connect battery ground lead (WP 0294 00).
2. Start engine (see your -10). Check for leaks.
3. Raise and lock ramp (see your -10).
4. Stop/shutdown engine (see your -10).
5. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).

END OF TASK

REPLACE ENGINE FUEL PUMP TO SECONDARY FUEL FILTER HOSE

0165 00**THIS WORK PACKAGE COVERS:**

Removal (page 0165 00-1).
Installation (page 0165 00-3).

INITIAL SETUP:Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Sealing compound (WP 0782 00, Item 63)

Wiping rag (WP 0780 00, Item 76)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown (see your -10)

Ramp lowered (see your -10)

Battery ground lead disconnected (WP 0294 00)

Power plant rear access panel removed (WP 0431 00,
WP 0432 00, or WP 0433 00)

REMOVAL

WARNING



Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

Use wiping rag to wipe up any spilled fuel.

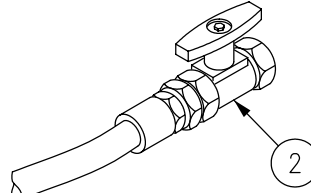
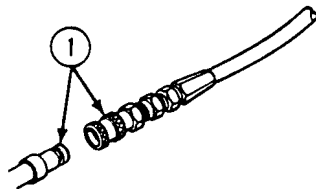
REPLACE ENGINE FUEL PUMP TO SECONDARY FUEL FILTER HOSE — Continued**0165 00**

1. Disconnect supply and return quick disconnect couplings (1).

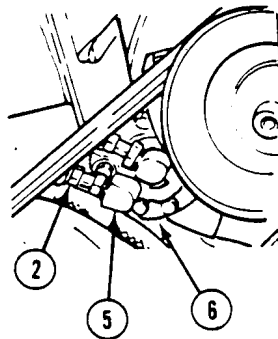
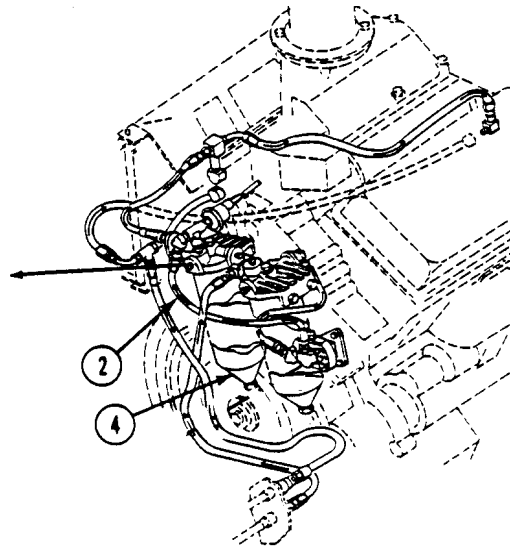
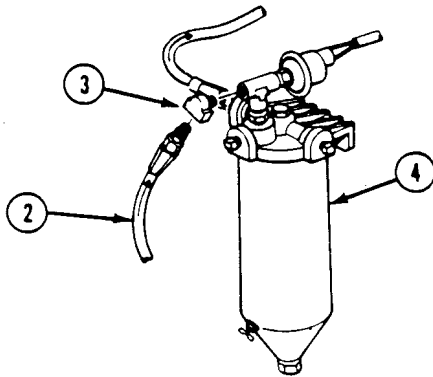
NOTE

Step 2 is for M1068 only, if equipped with fuel shutoff valve.

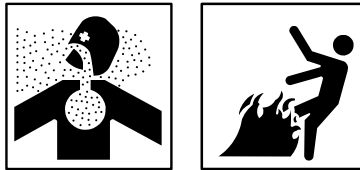
2. Turn fuel shutoff valve (2) to closed position (M1068 Only).

**M1068 ONLY**

3. Disconnect fuel supply hose (2) from elbow (3).
4. Remove elbow (3) from secondary fuel filter (4).
5. Disconnect fuel supply hose (2) from elbow (5).
6. Remove elbow (5) from engine fuel pump (6).



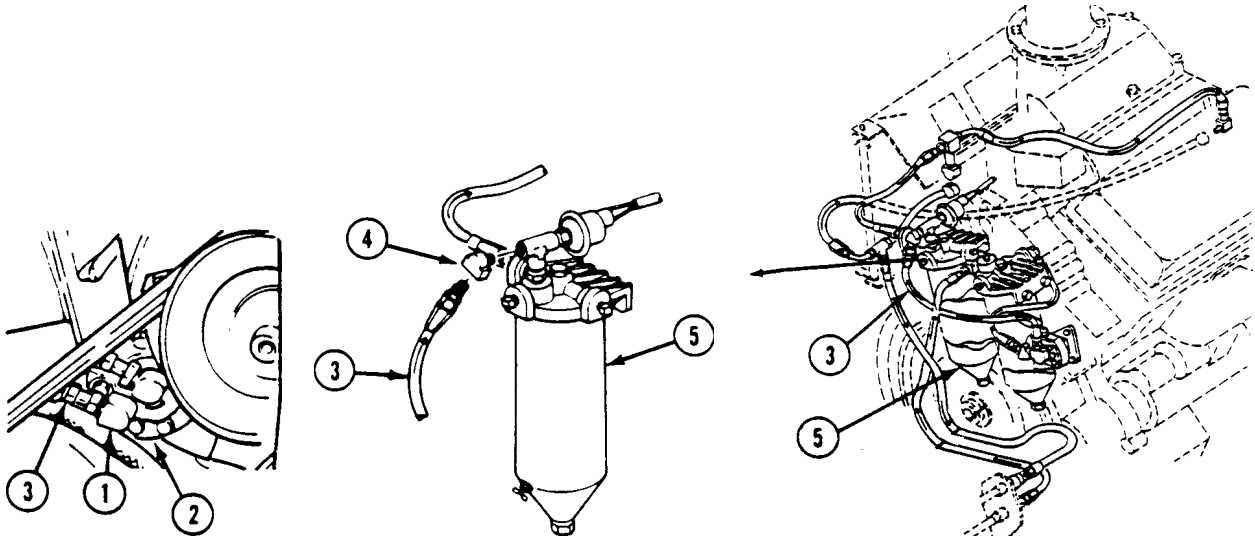
INSTALLATION

WARNING

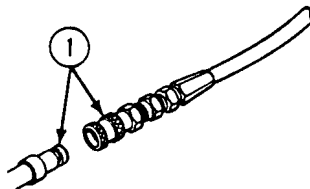
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to cleaned external threads of hose ends and fittings.
2. Install elbow (1) in engine fuel pump (2).
3. Connect fuel supply hose (3) to elbow (1).
4. Install elbow (4) in secondary fuel filter (5).
5. Connect fuel supply hose (3) to elbow (4).



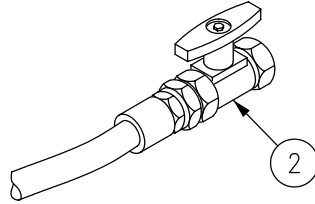
6. Connect supply and return quick disconnect couplings (1).



NOTE

Step 7 is for M1068 only.

7. Turn fuel shutoff valve (2) to open position (M1068 Only).



M1068 ONLY

FOLLOW-THROUGH STEPS

1. Connect battery ground lead (WP 0294 00).
2. Start engine (see your -10). Check for leaks.
3. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).
4. Raise and lock ramp (see your -10).
5. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE SECONDARY FILTER TO LEFT CYLINDER HEAD FUEL HOSE

0166 00

THIS WORK PACKAGE COVERS:

Removal (page 0166 00-1).
Installation (page 0166 00-3).

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Sealing compound (WP 0782 00, Item 60)

Wiping rag (WP 0780 00, Item 76)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Ramp lowered (see your -10)

Battery ground lead disconnected (WP 0294 00)

Power plant rear access panel removed (WP 0431 00,
WP 0432 00, or WP 0433 00)

REMOVAL

WARNING



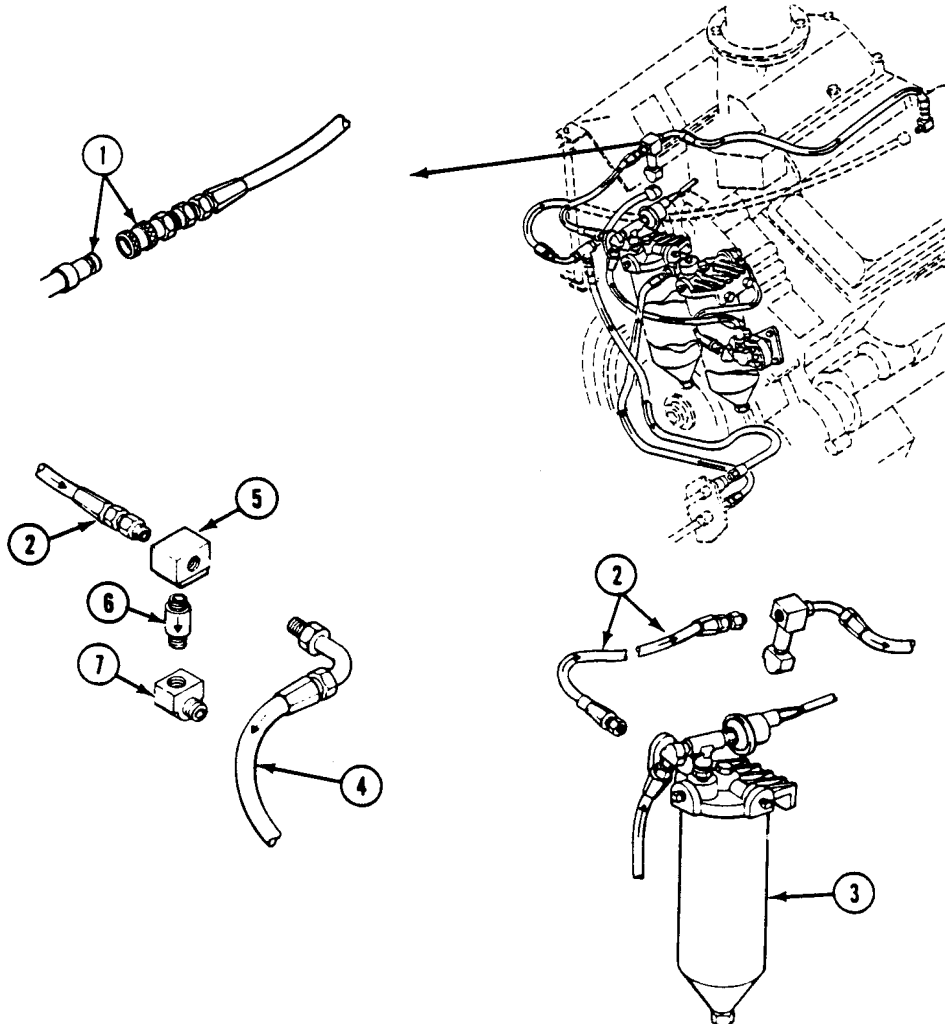
Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

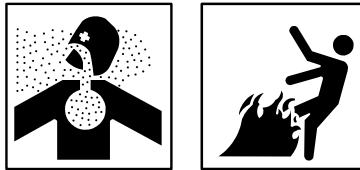
Use wiping rag to wipe up any spilled fuel.

REPLACE SECONDARY FILTER TO LEFT CYLINDER HEAD FUEL HOSE — Continued**0166 00**

1. Separate quick-disconnect coupling (1).
2. Disconnect fuel supply hose (2) from secondary fuel filter (3).
3. Disconnect fuel supply hoses (2) and (4) from tee (5).
4. Disconnect tee (5) from nipple (6).
5. Remove nipple (6) from elbow (7).
6. Remove elbow (7) from engine left cylinder head.



INSTALLATION

WARNING

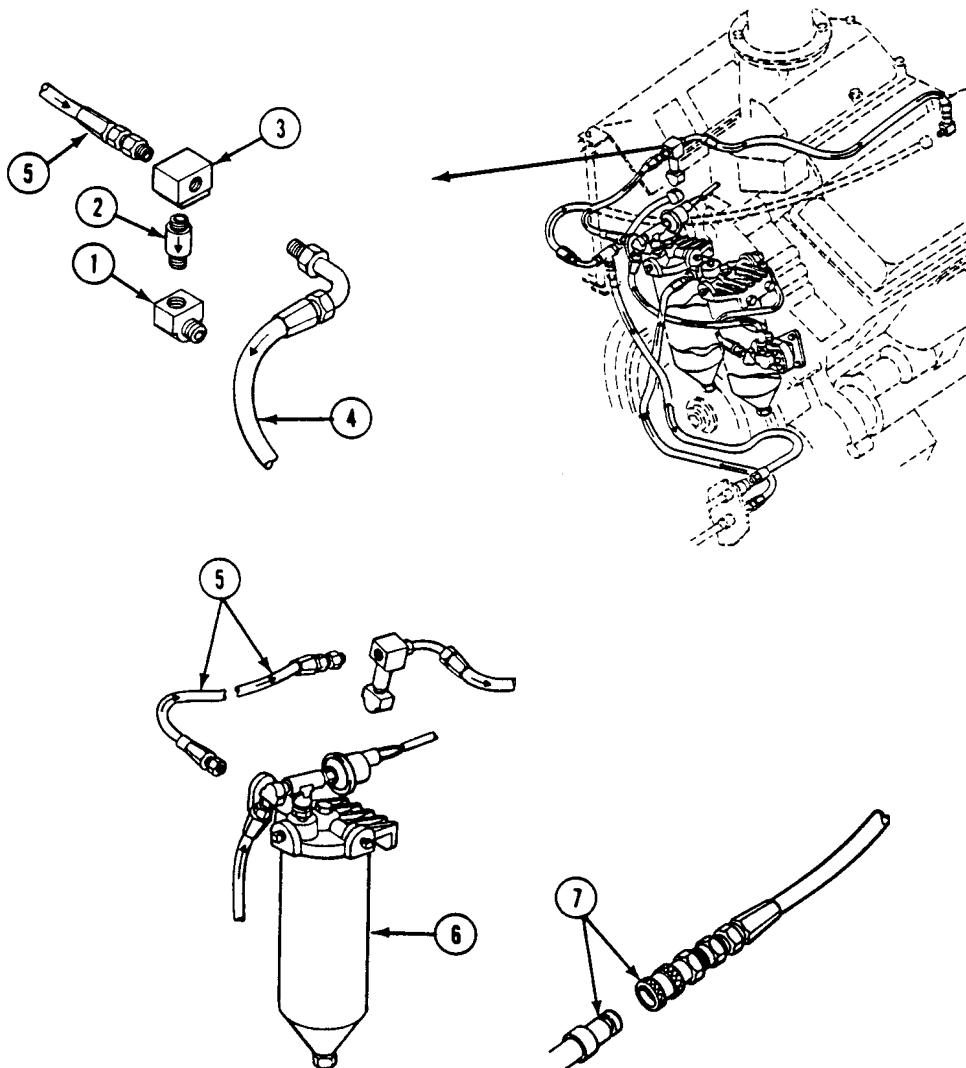
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to cleaned external threads of hose ends and fittings.

REPLACE SECONDARY FILTER TO LEFT CYLINDER HEAD FUEL HOSE — Continued**0166 00**

2. Install elbow (1) in engine left cylinder head.
3. Install nipple (2) in elbow (1).
4. Install tee (3) in nipple (2).
5. Connect fuel supply hoses (4) and (5) to tee (3).
6. Connect fuel supply hose (5) to secondary fuel filter (6).
7. Connect quick disconnect coupling (7).

**FOLLOW-THROUGH STEPS**

1. Connect battery ground lead (WP 0294 00).
2. Start engine (see your -10). Check for leaks.
3. Raise and lock ramp (see your -10).
4. Stop/shutdown engine (see your -10).
5. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).

END OF TASK

REPLACE LEFT TO RIGHT CYLINDER HEAD FUEL HOSE

0167 00

THIS WORK PACKAGE COVERS:

- Removal (page 0167 00-1).
- Installation (page 0167 00-2).

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Materials/Parts

- Sealing compound (WP 0782 00, Item 60)
- Wiping rag (WP 0780 00, Item 76)

Personnel Required

Unit Mechanic

Equipment Condition

- Engine stopped/shutdown (see your -10)
- Carrier blocked (see your -10)
- Ramp lowered (see your -10)
- Trim vane lowered and power plant front access door open (see your -10)
- Battery ground lead disconnected (WP 0294 00)
- Power plant rear access panel removed (WP 0431 00, WP 0432 00, or WP 0433 00)

REMOVAL

WARNING



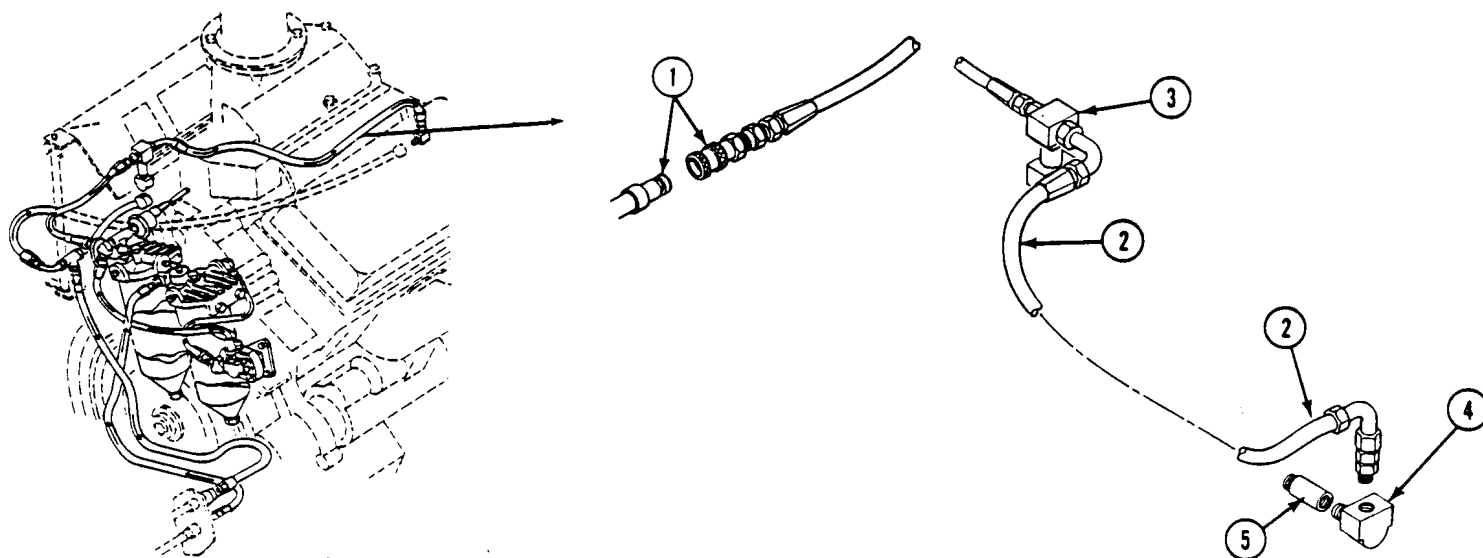
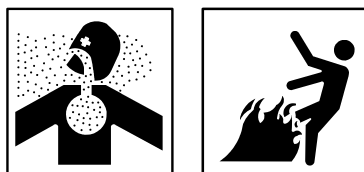
Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

Use wiping rag to wipe up any spilled fuel.

REPLACE LEFT TO RIGHT CYLINDER HEAD FUEL HOSE — Continued**0167 00**

1. Separate quick disconnect coupling (1).
2. Disconnect fuel supply hose (2) from tee (3).
3. Disconnect fuel supply hose (2) from elbow (4).
4. Remove elbow (4) from adapter (5).
5. Remove adapter (5) from right cylinder head.

**INSTALLATION****WARNING**

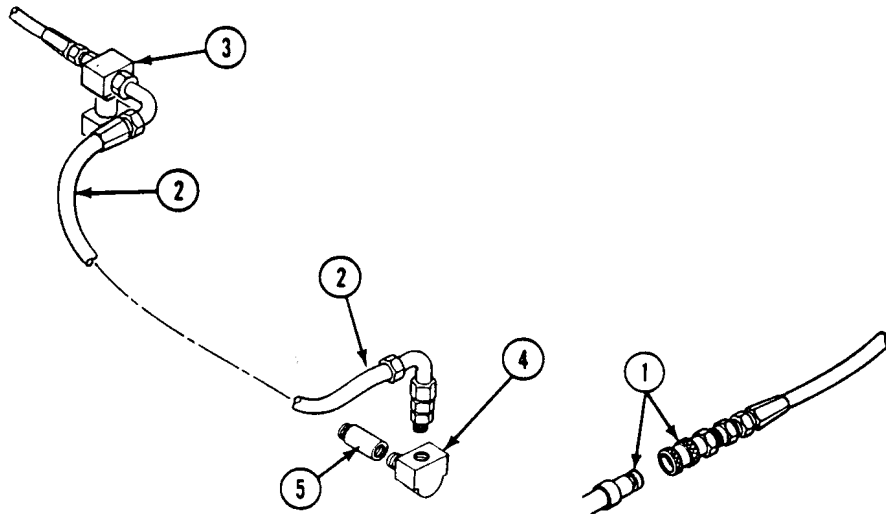
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to cleaned external threads of hose ends and fittings.

REPLACE LEFT TO RIGHT CYLINDER HEAD FUEL HOSE — Continued**0167 00**

2. Install adapter (5) in engine right cylinder head.
3. Install elbow (4) in adapter (5).
4. Connect fuel supply hose (2) to elbow (4).
5. Connect fuel supply hose (2) to tee (3).
6. Connect quick disconnect coupling (1).

**FOLLOW-THROUGH STEPS**

1. Connect battery ground lead (WP 0294 00).
2. Start engine (see your -10). Check for leaks.
3. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).
4. Raise and lock ramp (see your -10).
5. Stop/shutdown engine (see your -10).
6. Close power plant front access door and raise trim vane (see your -10).

END OF TASK

REPLACE ENGINE AIR INLET ELBOW TO AIR BOX HEATER HOSES

0168 00**THIS WORK PACKAGE COVERS:**

Removal (page 0168 00-1).

Installation (page 0168 00-3).

INITIAL SETUP:Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Sealing compound (WP 0782 00, Item 60)

Personnel Required

Unit Mechanic

Equipment Condition

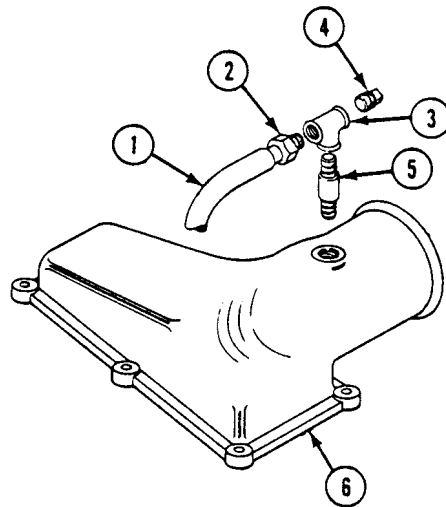
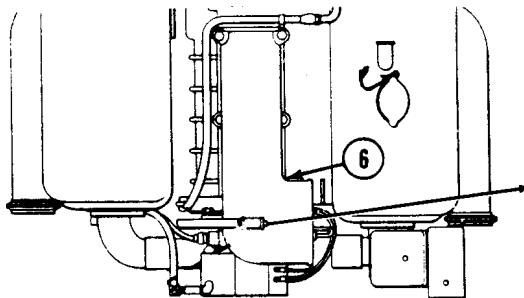
Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered and power plant front access door open (see your -10)

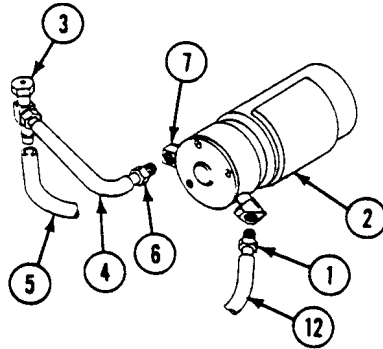
REMOVAL

1. Remove hose (1) with adapter (2) from tee (3). If hose is damaged, cut hose from adapter.
2. Remove plug (4) from tee (3).
3. Remove tee (3) from nipple (5).
4. Remove nipple (5) from air inlet elbow (6).

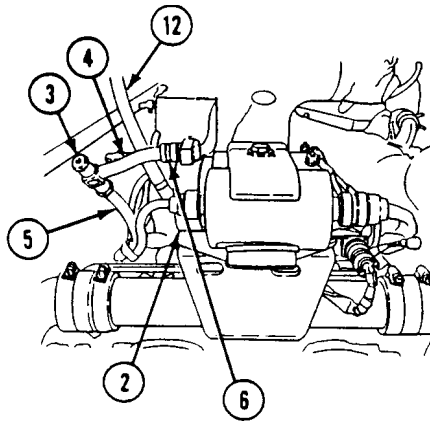


REPLACE ENGINE AIR INLET ELBOW TO AIR BOX HEATER HOSES — Continued**0168 00**

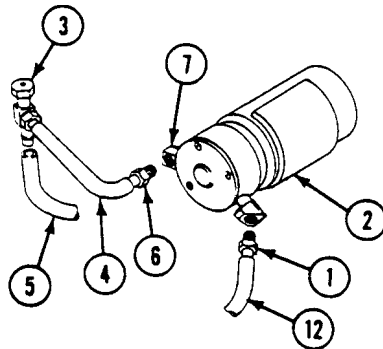
5. Remove adapter (1) from air pump (2). If hose (12) is damaged, cut hose from adapter.



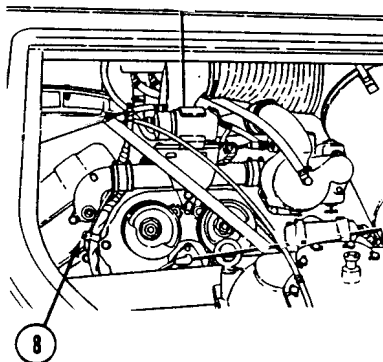
6. Disconnect check valve (3) from air hoses (4) and (5).



7. Disconnect air hose (4) with adapter (6) from elbow (7).



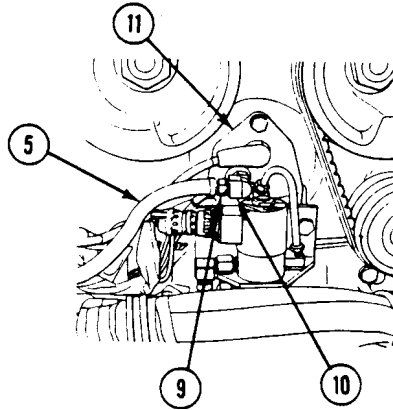
8. Remove strap (8) securing fuel, air, and electrical lines together.



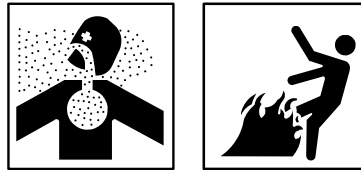
REPLACE ENGINE AIR INLET ELBOW TO AIR BOX HEATER HOSES — Continued

0168 00

9. Remove adapter (9) with hose (5) from elbow (10).
10. Remove elbow (10) from air box heater (11).

**INSTALLATION**

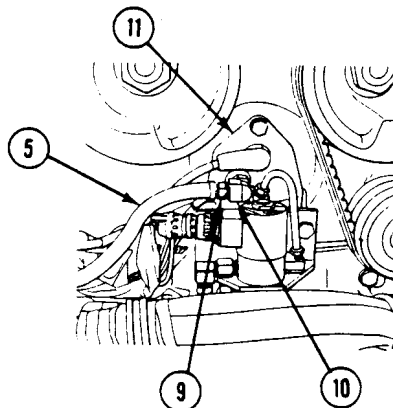
WARNING



Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

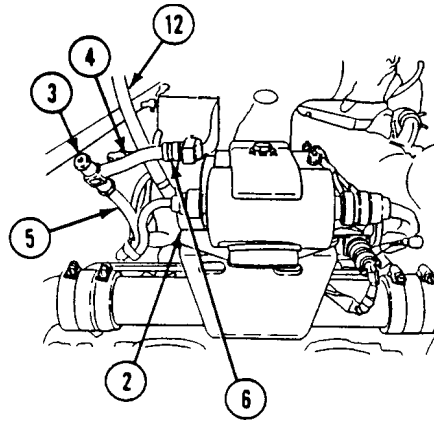
1. Apply a thin, even coat of sealing compound to cleaned external threads of hose ends and fittings.
2. Install elbow (10) in air box heater (11).
3. Install adapter (9) with hose (5) in elbow (10).



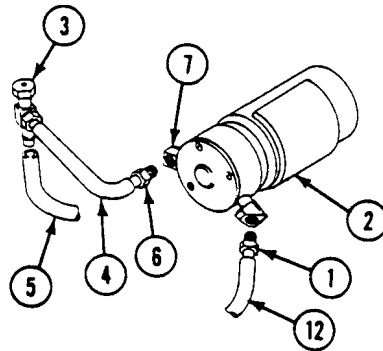
REPLACE ENGINE AIR INLET ELBOW TO AIR BOX HEATER HOSES — Continued

0168 00

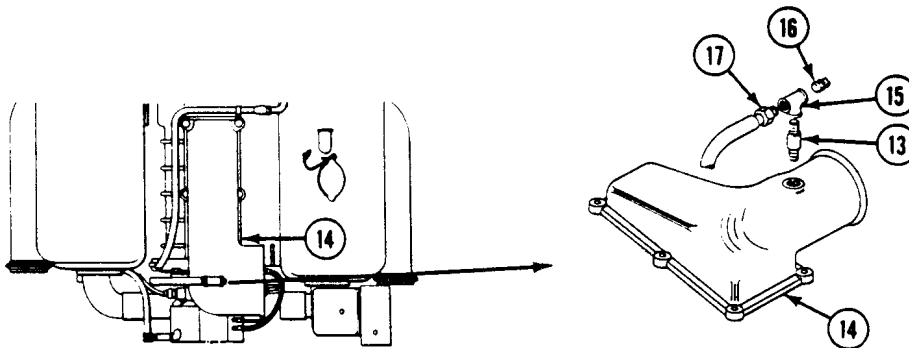
4. Connect adapter (6) with hose (4) in air pump (2).



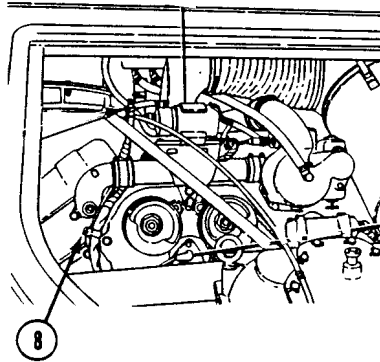
5. Connect adapter (6) with air hose (4) to elbow (7).
 6. Connect check valve (3) to air hoses (4) and (5).
 7. Install adapter (1) with hose (12) in air pump (2).



8. Install nipple (13) in engine air inlet elbow (14).
 9. Install tee (15) on nipple (13).
 10. Install plug (16) on tee (15).
 11. Install adapter (17) with hose in tee (15).



12. Secure fuel, air, and electrical lines together with strap (8).

**FOLLOW-THROUGH STEPS**

1. Start engine (see your -10). Check for leaks.
2. Stop/shutdown engine (see your -10).
3. Close power plant front access door and raise trim vane (see your -10).

END OF TASK

REPLACE AIR BOX HEATER TO FUEL RETURN TEE TUBE AND HOSE0169 00

THIS WORK PACKAGE COVERS:

Removal (page 0169 00-1).
Installation (page 0169 00-4).

INITIAL SETUP:

Maintenance Level	Equipment Condition
Unit	Engine stopped/shutdown (see your -10)
Tools and Special Tools	Carrier blocked (see your -10)
General Mechanic’s Tool Kit (WP 0780 00, Item 29)	Trim vane lowered and power plant front access door open (see your -10)
Materials/Parts	Battery ground lead disconnected (WP 0294 00)
Sealing compound (WP 0782 00, Item 60)	Power plant rear access panel removed (WP 0431 00, WP 0432 00, or WP 0433 00)
Wiping rag (WP 0780 00, Item 76)	Driver’s power plant access panel removed (WP 0430 00)
Personnel Required	Air cleaner housing and element removed (WP 0185 00)
Unit Mechanic	Air cleaner hose removed (WP 0183 00)
	Air control valve and guard removed (WP 0187 00)
	Differential oil filter bracket removed (WP 0355 00)

REMOVAL

WARNING

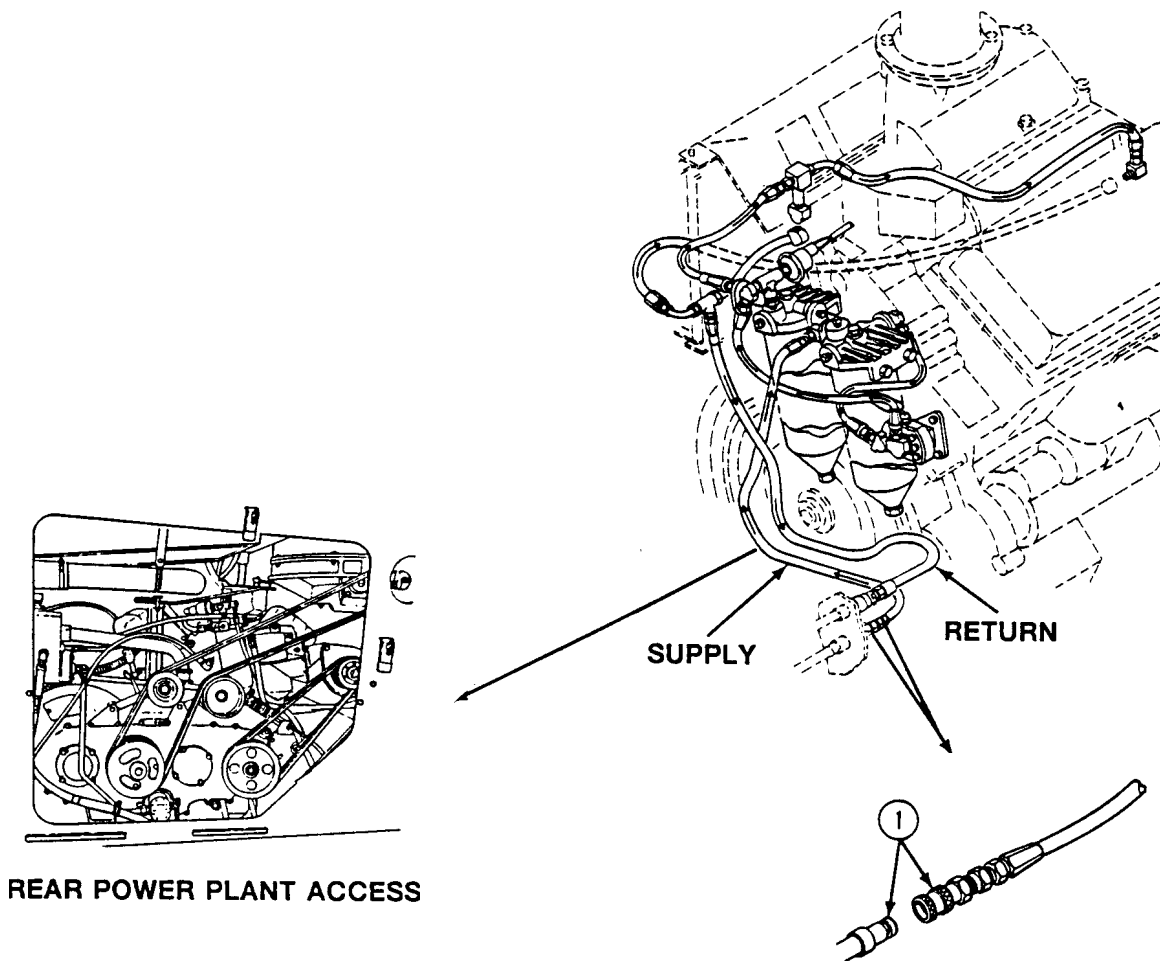


Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

Use wiping rag to wipe up any spilled fuel.

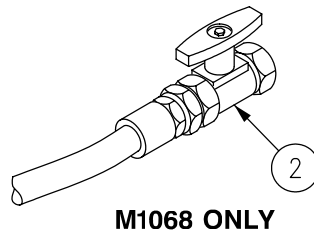
1. Disconnect supply and return quick disconnect couplings (1).



NOTE

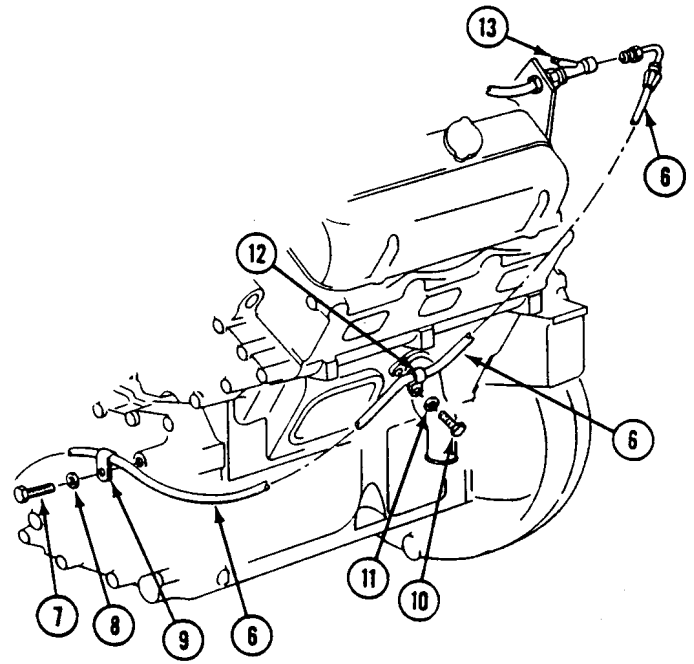
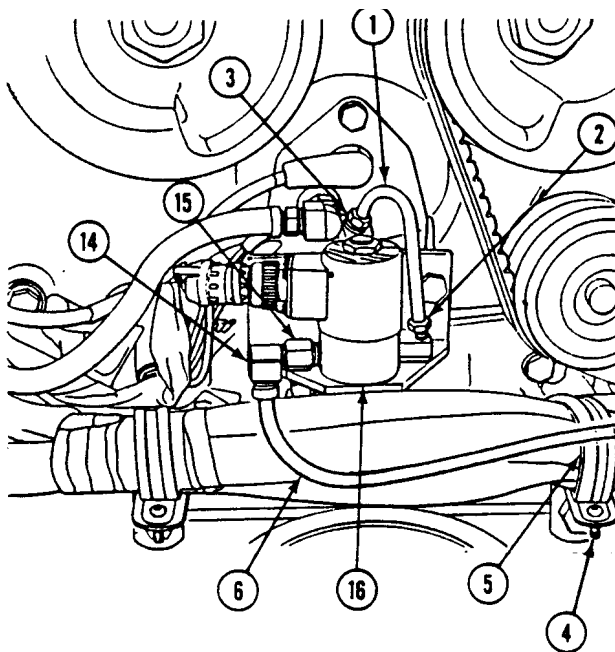
Step 2 is for M1068 only, if equipped with fuel shutoff valve.

2. Turn fuel shutoff valve (2) to closed position (M1068 Only).

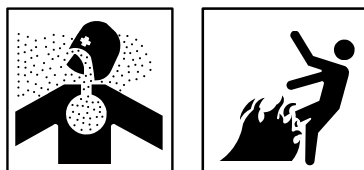


REPLACE AIR BOX HEATER TO FUEL RETURN TEE TUBE AND HOSE — Continued**0169 00**

3. Disconnect fuel tube (1) from elbows (2) and (3).
4. Remove screw (4) securing wiring harness clamp (5) to bracket on engine block. Fuel hose (6) is behind wiring harness.
5. Remove screw (7), washer (8), clamp (9), and fuel hose (6) from engine block.
6. Remove screw (10), washer (11), clamp (12), and fuel hose (6).
7. Disconnect fuel hose (6) from fuel return tee (13).
8. Disconnect fuel hose (6) from elbow (14).
9. Remove elbow (14) from adapter (15).
10. Remove adapter (15) from solenoid (16).



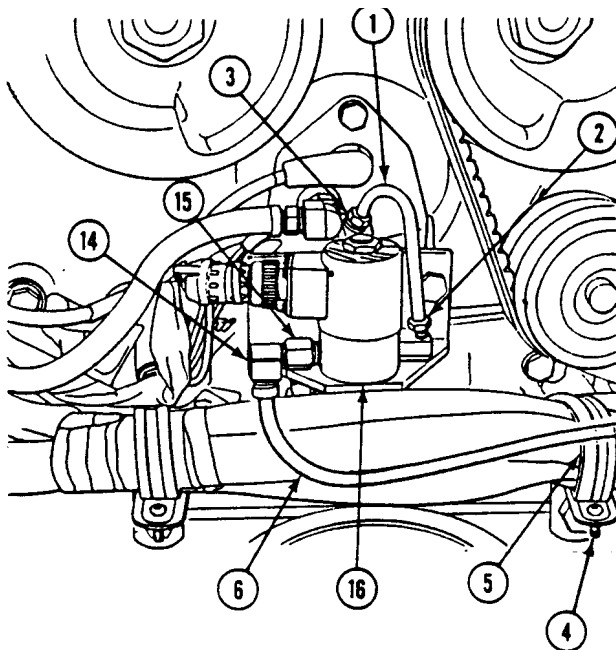
INSTALLATION

WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

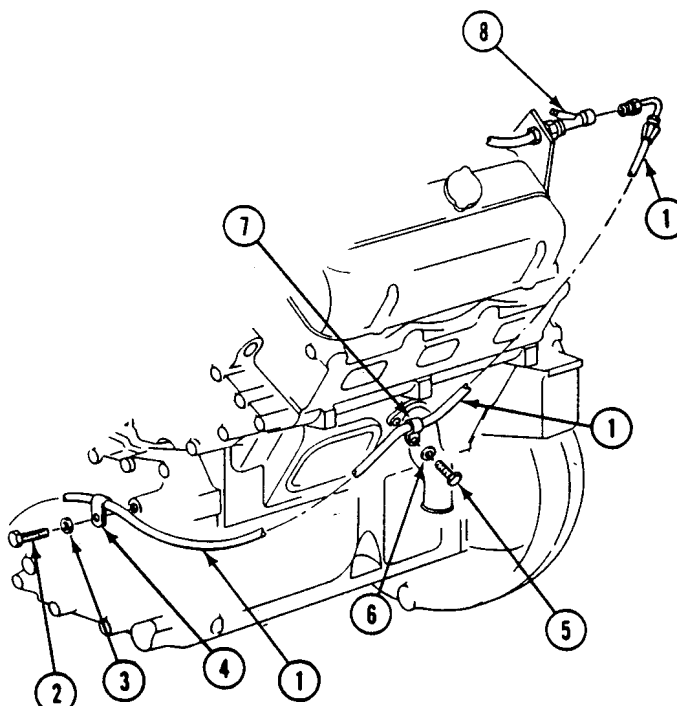
Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to cleaned external threads of hose, tube, and fittings.
2. Install adapter (15) in solenoid (16).
3. Install elbow (14) in adapter (15).
4. Install elbow (2) in solenoid (16).
5. Connect fuel tube (1) to elbow (2) and (3).
6. Connect fuel hose (6) to elbow (14).
7. Feed fuel hose (6) behind wiring harness and through clamp (5). Secure clamp to bracket on engine block with screw (4).

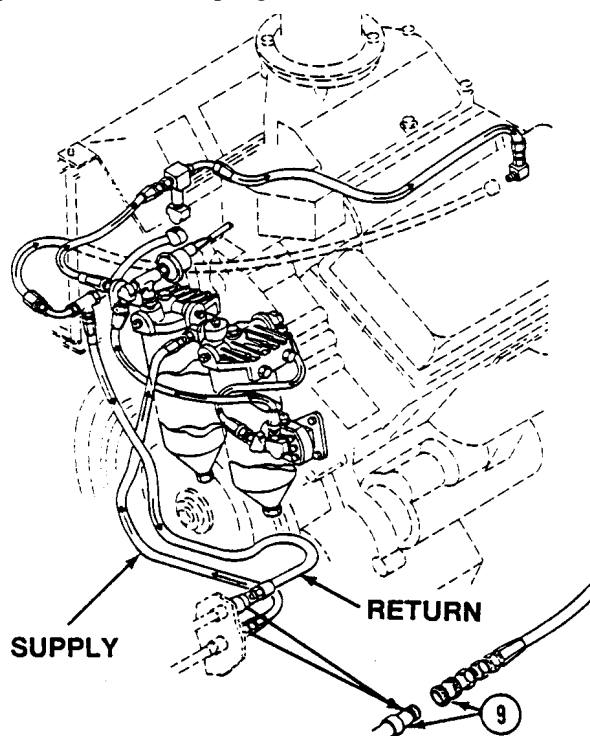


REPLACE AIR BOX HEATER TO FUEL RETURN TEE TUBE AND HOSE — Continued**0169 00**

8. Install fuel hose (1) on engine block. Secure with screw (2), washer (3), and clamp (4).
9. Install fuel hose (1) on engine block. Secure with screw (5), washer (6), and clamp (7).
10. Connect fuel hose (1) to fuel return tee (8).



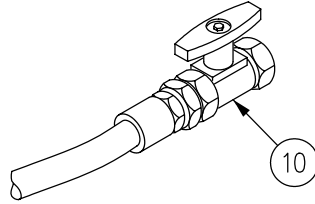
11. Connect supply and return quick disconnect couplings (9).



NOTE

Step 12 is for M1068 only, if equipped with a fuel shutoff valve.

12. Turn fuel shutoff valve (10) to open position (M1068 Only).



M1068 ONLY

FOLLOW-THROUGH STEPS

1. Install differential oil filter bracket (WP 0355 00)
2. Install air control valve and guard (WP 0187 00)
3. Install air cleaner hose (WP 0183 00)
4. Install air cleaner housing and element (WP 0185 00)
5. Connect battery ground lead (WP 0294 00)
6. Start engine (see your -10). Check for leaks.
7. Stop/shutdown engine (see your -10).
8. Install driver's power plant access panel (WP 0430 00)
9. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00)
10. Close power plant front access door and raise trim vane (see your -10).

END OF TASK

REPLACE LEFT CYLINDER HEAD FUEL RETURN TUBE AND HOSE

0170 00

THIS WORK PACKAGE COVERS:

Removal (page 0170 00-1).
Installation (page 0170 00-2).

INITIAL SETUP:

<u>Maintenance Level</u>	<u>Personnel Required</u>
Unit	Unit Mechanic
<u>Tools and Special Tools</u>	<u>Equipment Condition</u>
General Mechanic's Tool Kit (WP 0780 00, Item 29)	Engine stopped/shutdown (see your -10)
Open End Box Wrench (WP 0780 00, Item 92)	Ramp lowered (see your -10)
<u>Materials/Parts</u>	Battery ground lead disconnected (WP 0294 00)
Sealing compound (WP 0782 00, Item 60)	Power plant rear access panel removed (WP 0431 00, WP 0432 00, or WP 0433 00)
Wiping rag (WP 0780 00, Item 76)	
Lockwasher (2)	

REMOVAL

WARNING



Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

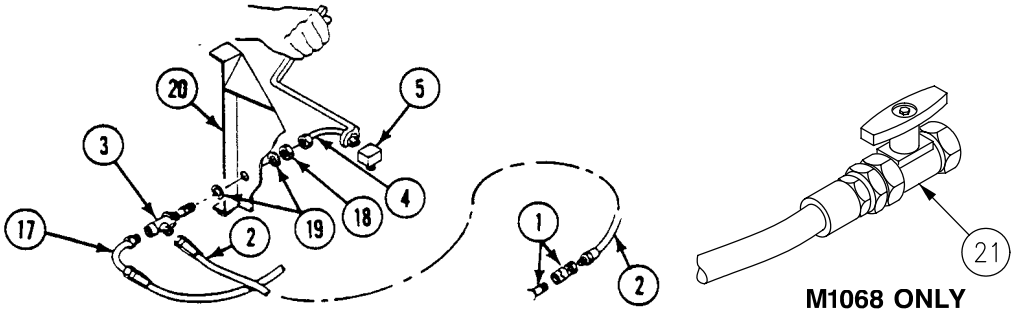
Use wiping rag to wipe up any spilled fuel.

1. Disconnect quick disconnect couplings (1).

NOTE

Step 2 is for M1068 only, if equipped with fuel shutoff valve.

2. Turn fuel shutoff valve (21) to closed position (M1068 Only).
3. Remove quick disconnect coupling half (1) from fuel return hose (2).



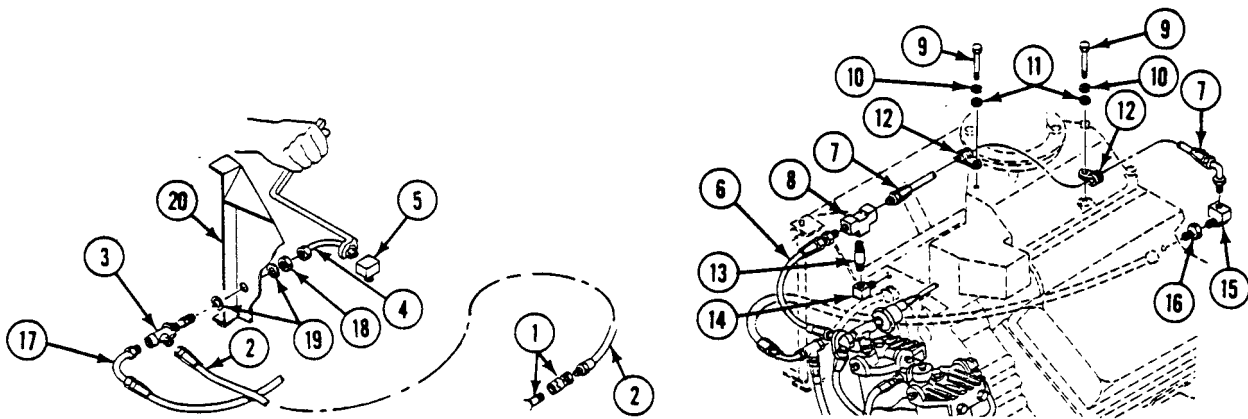
REPLACE LEFT CYLINDER HEAD FUEL RETURN TUBE AND HOSE — Continued**0170 00**

4. Disconnect fuel return hose (2) from tee (3).
5. Disconnect tube (4) from tee (3) and elbow (5). Use open end box wrench.
6. Remove elbow (5) from left cylinder head.

NOTE

If elbow (5) is damaged, do Steps 7 - 9.

7. Remove hoses (6) and (7) from tee (8).
8. Remove two screws (9), lockwashers (10), washers (11), and clamps (12) from hose (7). Discard lockwashers.
9. Remove tee (8), nipple (13), and elbow (14) from engine.
10. Remove hose (7) from elbow (15). Remove elbow (15) and coupling (16) from engine.
11. Disconnect air box heater hose (17) from tee (3).
12. Remove nut (18), two washers (19), and tee (3) from linkage bracket (20).

**INSTALLATION****WARNING**

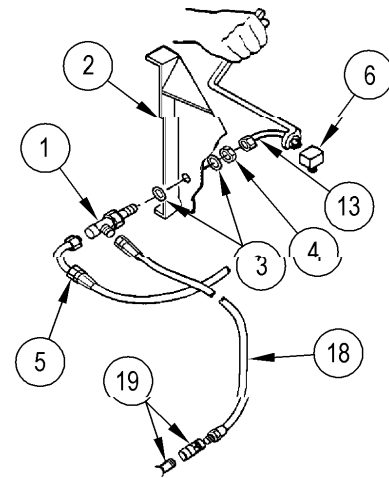
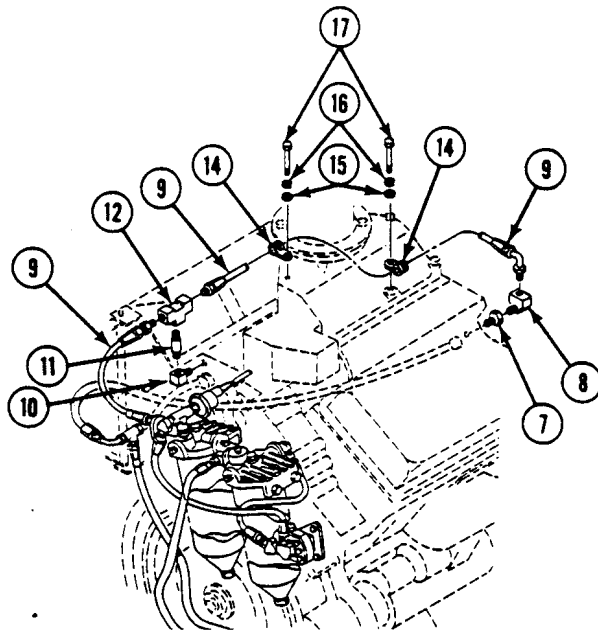
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin, even coat of sealing compound to cleaned external threads of hose ends and fittings.
2. Install tee (1) in linkage bracket (2). Secure with two washers (3) and nut (4).
3. Connect air box heater hose (5) to tee (1).
4. Install elbow (6) in left cylinder head.
5. Install coupling (7) and elbow (8) in engine. Connect hose (9) to elbow (8).

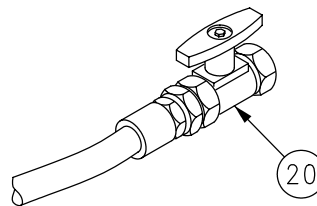
REPLACE LEFT CYLINDER HEAD FUEL RETURN TUBE AND HOSE — Continued**0170 00**

6. Install elbow (10), nipple (11), and tee (12) on engine.
7. Connect hoses (9) to tee (12).
8. Secure hose (9) with two clamps (14), washers (15), new lockwashers (16), and screws (17) to engine.
9. Connect tube (13) to tee (1) and elbow (6). Use open end wrench to tighten.
10. Connect fuel return hose (18) to tee (1).
11. Install quick disconnect coupling (19) in fuel return hose (18).
12. Connect quick disconnect couplings (19).

**NOTE**

Step 13 is for M1068 only, if equipped with fuel shutoff valve.

13. Turn fuel shutoff valve (20) to closed position (M1068 Only).

**M1068 ONLY****FOLLOW-THROUGH STEPS**

1. Connect battery ground lead (WP 0294 00).
2. Start engine (see your -10). Check for leaks.
3. Raise and lock ramp (see your -10).
4. Stop/shutdown engine (see your -10).
5. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).

END OF TASK

REPLACE ENGINE FUEL PUMP

0171 00

THIS WORK PACKAGE COVERS:

Removal (page 0171 00-1).
Installation (page 0171 00-3).

INITIAL SETUP:

Maintenance Level

Unit

Equipment Condition

Engine stopped/shutdown (see your -10)
Carrier blocked (see your -10)
Ramp lowered (see your -10)
Battery ground lead disconnected (WP 0294 00)
Power plant rear access panels and support removed
(WP 0431 00, WP 0432 00, or WP 0433 00)

Tools and Special Tools

General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Sealing compound (WP 0782 00, Item 60)
Wiping rag (WP 0782 00, Item 76)
Gasket

Personnel Required

Unit Mechanic

REMOVAL

WARNING



Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

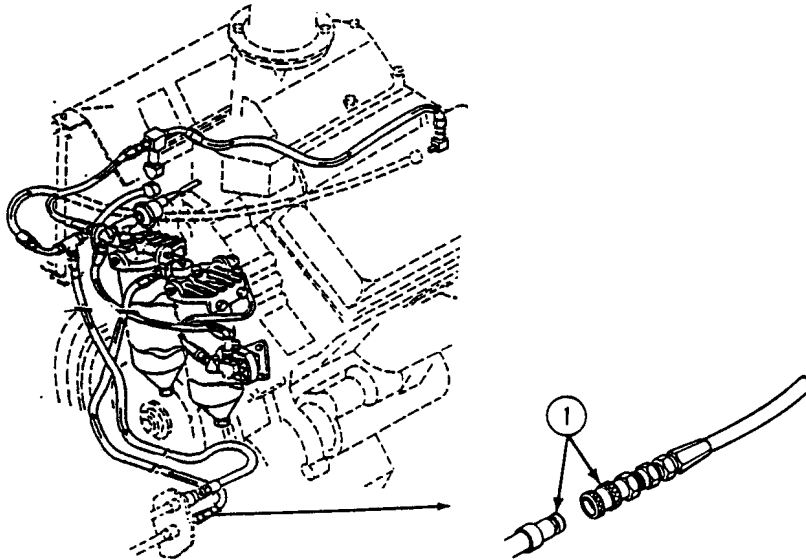
NOTE

Use wiping rag to wipe up any spilled fuel.

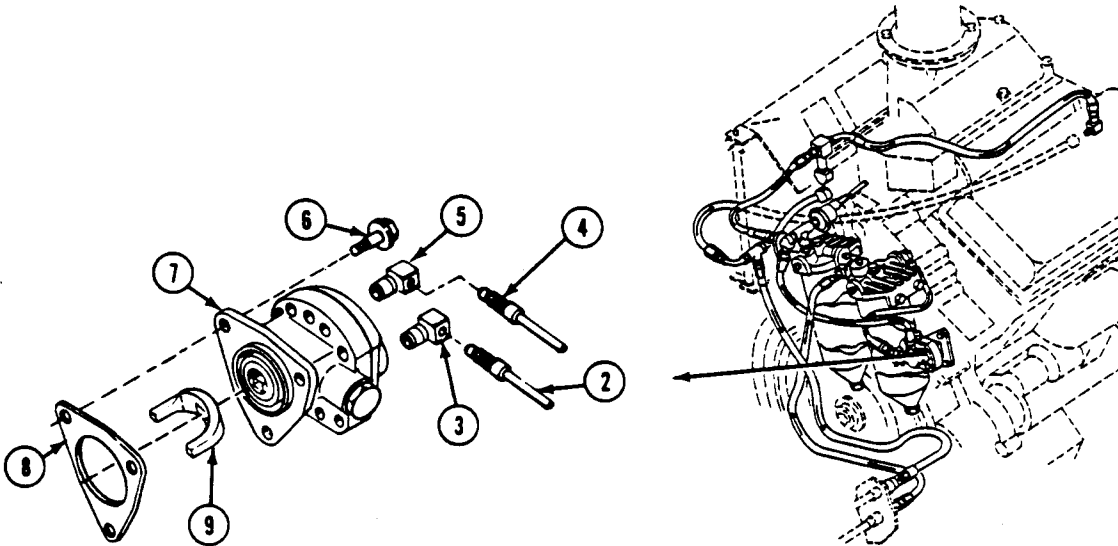
REPLACE ENGINE FUEL PUMP — Continued

0171 00

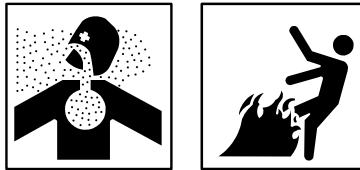
1. Disconnect supply hose at quick disconnect coupling (1).



2. Disconnect primary fuel filter supply hose (2) at elbow (3).
3. Disconnect secondary fuel filter supply hose (4) from elbow (5).
4. Remove three screws (6), fuel pump (7), gasket (8), and fork (9) from engine block. Discard gasket.
5. Remove two elbows (3) and (5) from pump (7).



INSTALLATION

WARNING

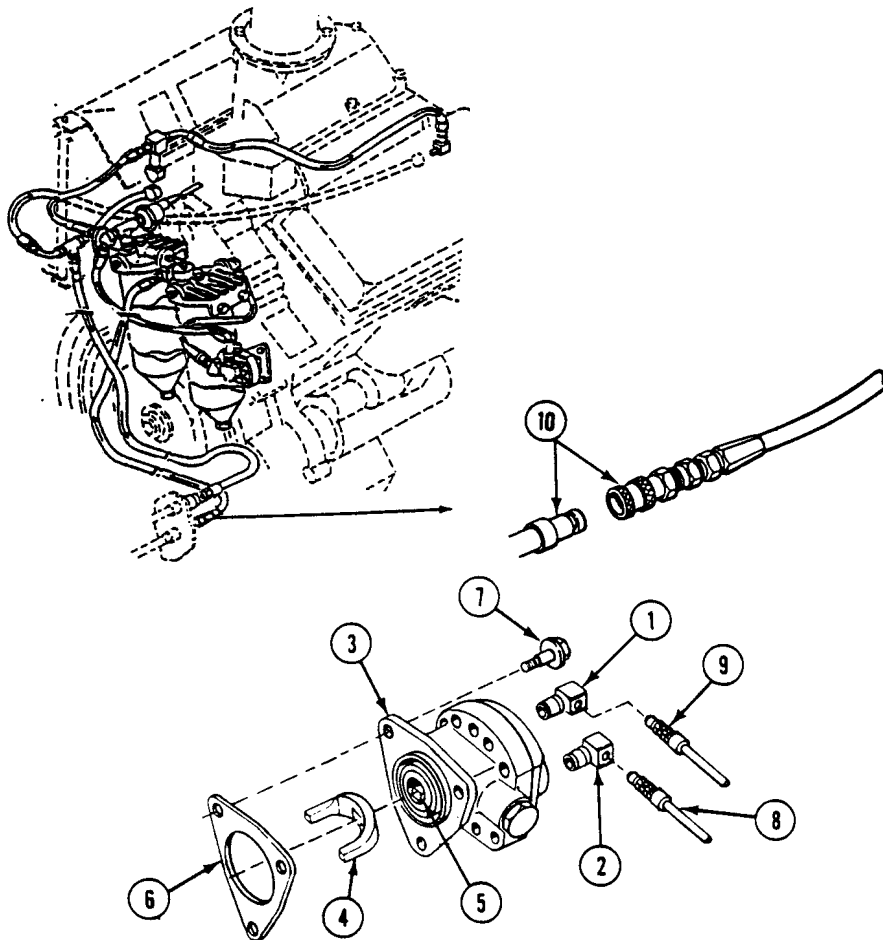
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply sealing compound to cleaned external threads of fittings.

REPLACE ENGINE FUEL PUMP — Continued**0171 00**

2. Install two elbows (1) and (2) in fuel pump (3).
3. Place fork (4) on pump drive shaft (5). Place new gasket (6) and fuel pump (3) on engine.
4. Secure fuel pump (3) to engine with three screws (7).
5. Connect primary fuel filter supply hose (8) to elbow (2).
6. Connect secondary fuel filter supply hose (9) to elbow (1).
7. Connect supply hose at quick disconnect coupling (10).

**FOLLOW-THROUGH STEPS**

1. Connect battery ground lead (WP 0294 00).
2. Start engine (see your -10). Check for leaks.
3. Raise and lock ramp (see your -10).
4. Stop/shutdown engine (see your -10).
5. Install power plant rear access panels and support (WP 0431 00, WP 0432 00, or WP 0433 00).

END OF TASK

REPLACE PRIMARY FUEL FILTER ASSEMBLY

0172 00

THIS WORK PACKAGE COVERS:

- Removal (page 0172 00-1).
- Installation (page 0172 00-3).

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Equipment Condition

- Engine stopped/shutdown (see your -10)
- Ramp lowered (see your -10)
- Battery ground lead disconnected (WP 0294 00)
- Power plant rear access panel removed (WP 0431 00, WP 0432 00, or WP 0433 00)

Materials/Parts

- Sealing compound (WP 0782 00, Item 60)
- Wiping rag (WP 0782 00, Item 76)
- Suitable container
- 1–1/4 inch hose

REMOVAL

WARNING



Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

Use wiping rag to wipe up any spilled fuel.

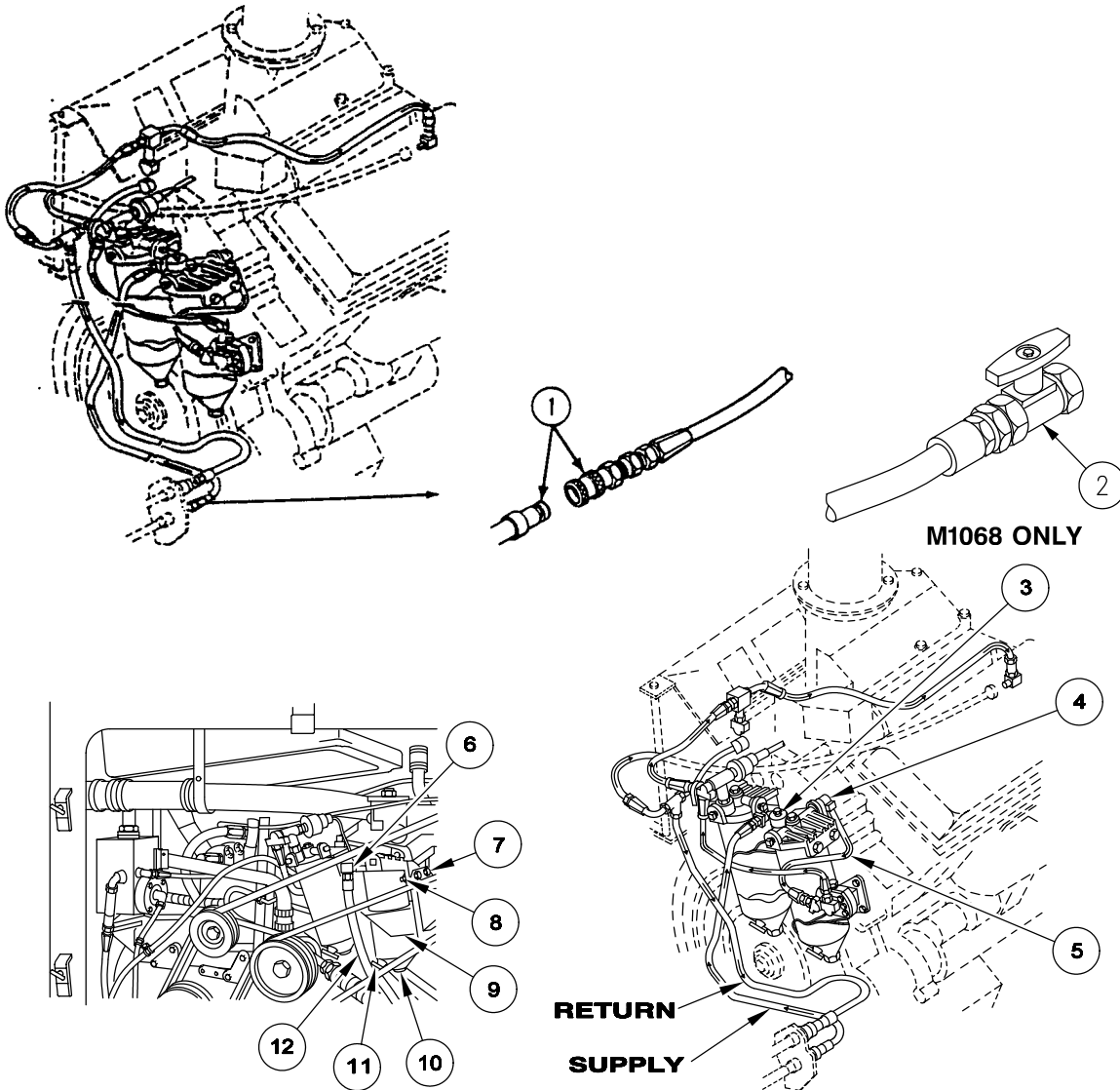
REPLACE PRIMARY FUEL FILTER ASSEMBLY — Continued**0172 00**

1. Disconnect supply hose at quick disconnect coupling (1).

NOTE

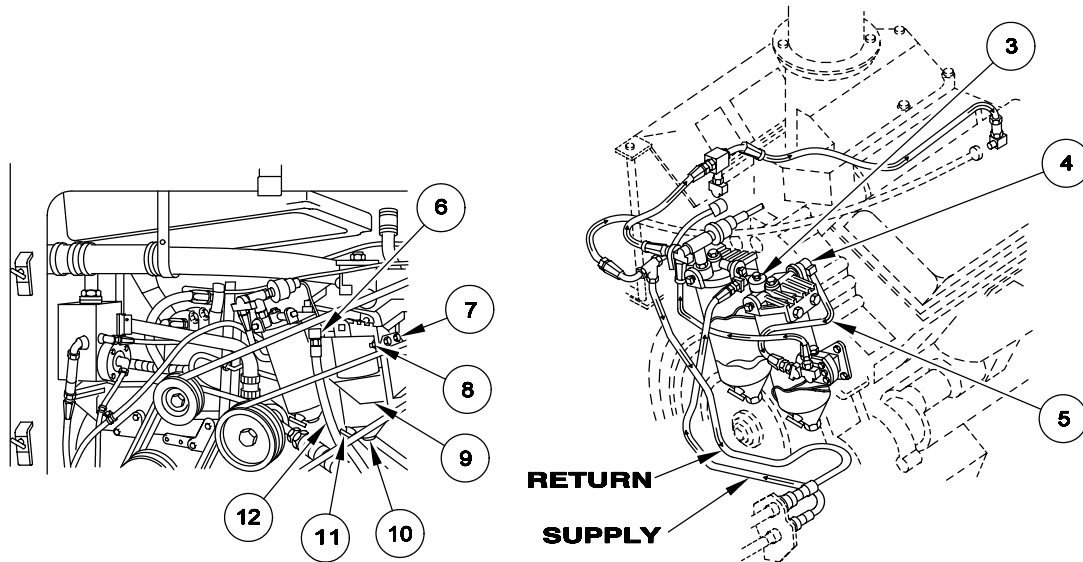
Step 2 is for M1068 only, if fuel shutoff valve is installed.

2. Turn fuel shutoff valve (2) to closed position (M1068 Only).
3. Place two foot (60 cm) length of 1 1/4 inch (3.175 cm) hose or other suitable bulk hose past drive belts and idlers and slip one end of hose over drain cock. Run other end of hose into suitable container resting on crew compartment floor to catch drained fuel. Open drain valve (11) and remove bleed plug (3) to drain filter.



REPLACE PRIMARY FUEL FILTER ASSEMBLY — Continued**0172 00**

4. Disconnect two fuel supply hoses (5) and (12) from two elbows (4) and (6).
5. Remove two nuts (8), screws (7), and filter assembly (10) from bracket (9).
6. Remove two elbows (4) and (6) from filter assembly (10).

**INSTALLATION****WARNING**

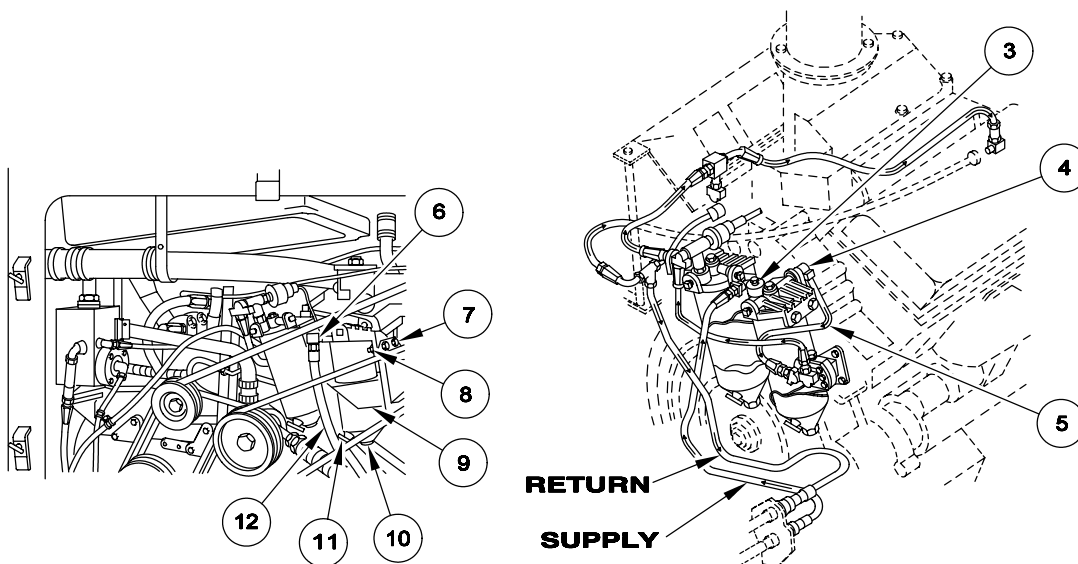
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply sealing compound to cleaned external threads of fittings.

REPLACE PRIMARY FUEL FILTER ASSEMBLY — Continued**0172 00**

2. Install two elbows (4) and (6) in filter assembly (10).
3. Secure filter assembly (10) to bracket (9) with two screws (7) and nuts (8).
4. Connect two fuel supply hoses (5) and (12) to two elbows (4) and (6).
5. Close drain valve (11) and fill filter assembly (10) with fuel.
6. Install bleed plug (3) in filter assembly (10).

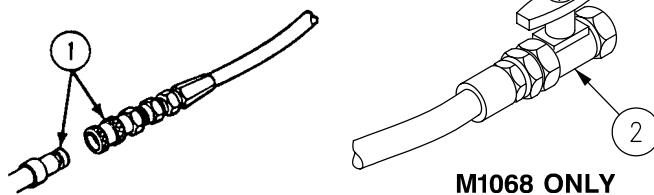


7. Connect supply hose at quick disconnect coupling (1).

NOTE

Step 8 is for M1068 only, if fuel shutoff valve is installed.

8. Turn fuel shutoff valve (2) to open position (M1068 Only).

**FOLLOW-THROUGH STEPS**

1. Connect battery ground lead (WP 0294 00).
2. Start engine (see your -10).
3. Check for leaks. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).
4. Raise and lock ramp (see your -10).
5. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE SECONDARY FUEL FILTER ASSEMBLY

0173 00

THIS WORK PACKAGE COVERS:

- Removal (page 0173 00-1).
- Installation (page 0173 00-3).

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Equipment Condition

- Engine stopped/shutdown (see your -10)
- Carrier blocked (see your -10)
- Ramp lowered (see your -10)
- Battery ground lead disconnected (WP 0294 00)
- Power plant rear access panel removed (WP 0431 00, WP 0432 00, or WP 0433 00)

Materials/Parts

- Sealing compound (WP 0782 00, Item 60)
- Wiping rag (WP 0782 00, Item 76)
- Suitable container
- 1–1/4 inch hose

REMOVAL

WARNING



Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

Use wiping rag to wipe up any spilled fuel.

REPLACE SECONDARY FUEL FILTER ASSEMBLY — Continued

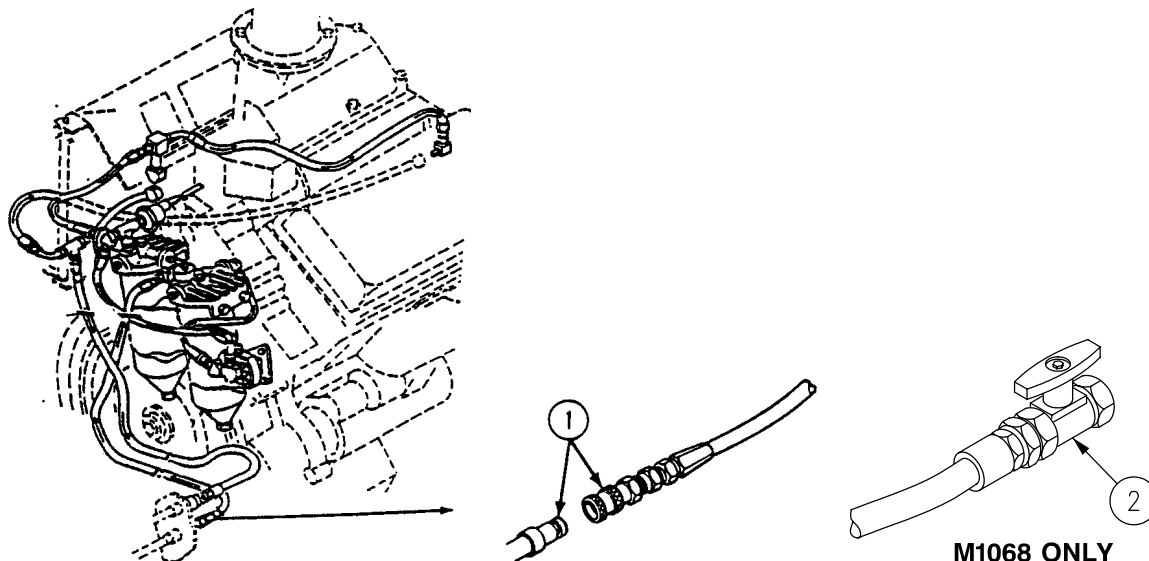
0173 00

1. Disconnect supply hose at quick disconnect coupling (1).

NOTE

Step 2 is for M1068 only, if a fuel shutoff valve is installed.

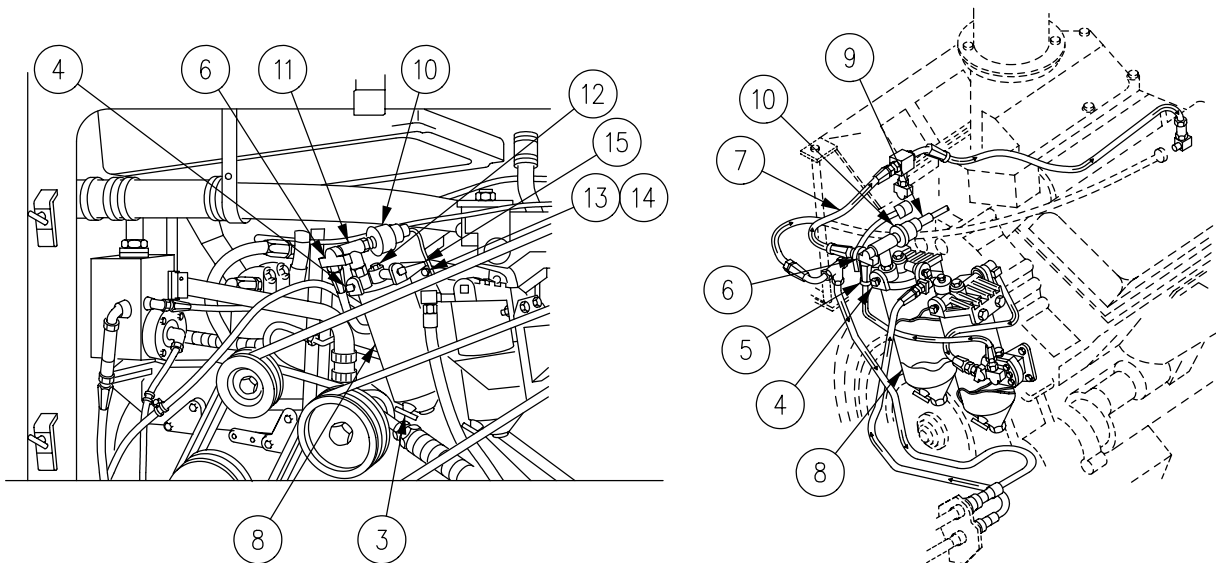
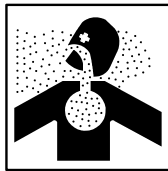
2. Turn fuel shutoff valve (2) to closed position (M1068 Only).



3. Place two foot (60 cm) length of 1 1/4 inch (3.175 cm) hose or other suitable bulk hose past drive belts and idlers and slip one end of hose over drain cock. Run other end of hose into suitable container resting on crew compartment floor to catch drained fuel. Open drain valve (3) and remove bleed plug (4) to drain filter.
4. Disconnect fuel supply hose (5) from elbow (6).
5. Disconnect fuel supply hose (7) from secondary filter assembly (8).
6. Disconnect circuits 1A and 1B plug (9) from generator field switch (10).
7. Remove field switch (10) from tee (11).
8. Remove elbow (6) from tee (11).
9. Remove tee (11) from adapter (12).
10. Remove adapter (12) from filter assembly (8).

REPLACE SECONDARY FUEL FILTER ASSEMBLY — Continued**0173 00**

11. Remove two screws (13), nuts (14), and filter assembly (8) from bracket (15).

**INSTALLATION****WARNING**

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

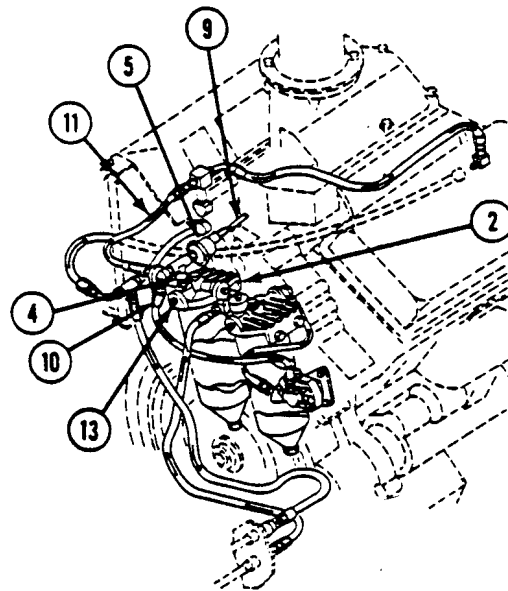
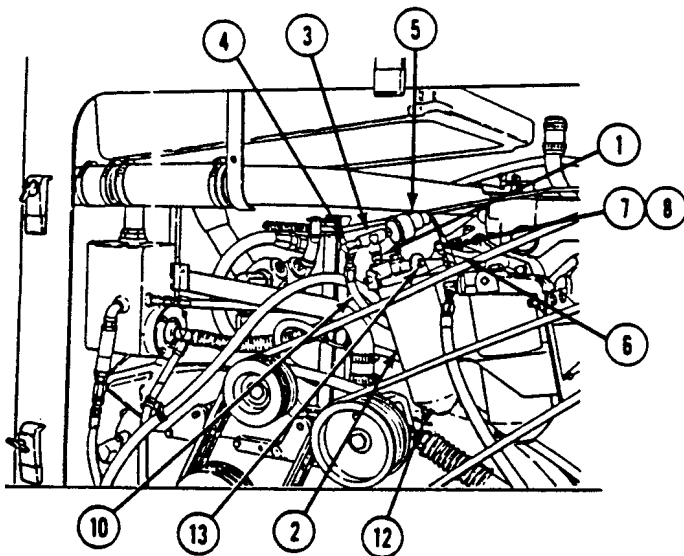
Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply sealing compound to cleaned external threads of fittings.

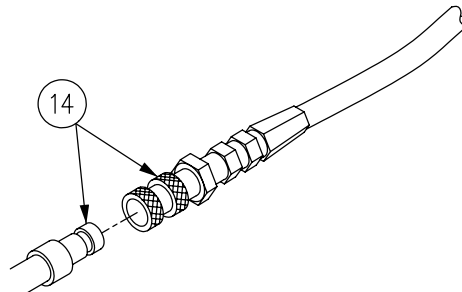
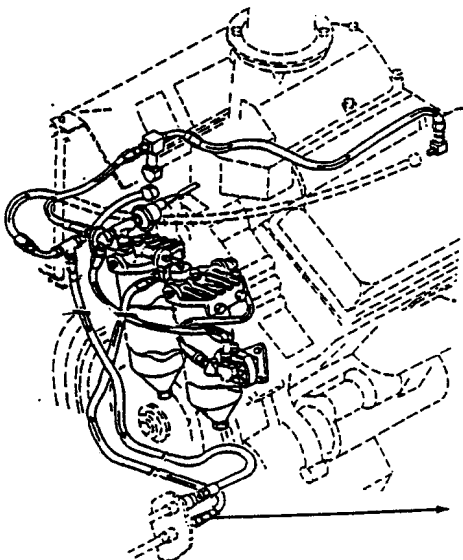
REPLACE SECONDARY FUEL FILTER ASSEMBLY — Continued

0173 00

2. Install adapter (1) in secondary filter assembly (2).
3. Install tee (3) in adapter (1).
4. Install elbow (4) and generator field switch (5) in tee (3).
5. Secure filter assembly (2) to bracket (6) with two screws (7) and nuts (8).
6. Connect circuits 1A and 1B plug (9) to field switch (5).
7. Connect fuel supply hose (10) to elbow (4).
8. Connect fuel supply hose (11) to filter assembly (2).
9. Close drain valve (12) and fill filter assembly (2) with fuel.
10. Install bleed plug (13) in filter assembly (2).



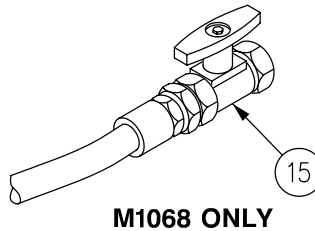
11. Connect quick disconnect coupling (14).



NOTE

Step 12 is for M1068 only, if a fuel shutoff valve is installed.

12. Turn fuel shutoff valve (15) to open position (M1068 Only).

**FOLLOW-THROUGH STEPS**

1. Connect battery ground strap (WP 0294 00).
2. Start engine (see your -10). Check for leaks.
3. Raise and lock ramp (see your -10).
4. Stop/shutdown engine (see your -10).
5. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).

END OF TASK

REPLACE FUEL FILTER ELEMENTS**0174 00****THIS WORK PACKAGE COVERS:**

Removal (page 0174 00-1).

Installation (page 0174 00-2).

INITIAL SETUP:Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)

Ramp lowered (see your -10)

Battery ground lead disconnected (WP 0294 00)

Power plant rear access panel removed (WP 0431 00,
WP 0432 00, or WP 0433 00)Materials/Parts

Fuel filter element

Fuel filter element

Gasket (2)

Gasket (2)

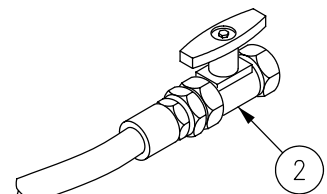
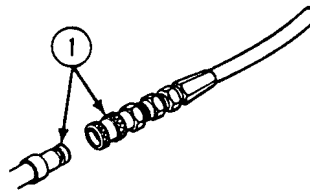
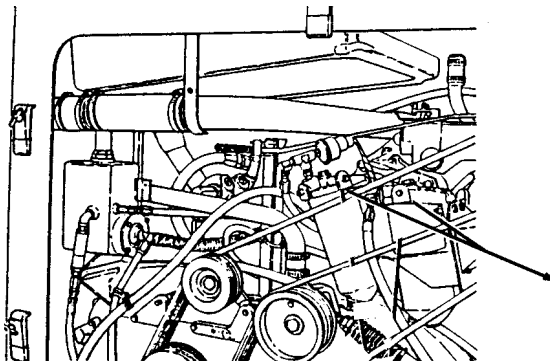
Suitable container

REMOVAL**NOTE****Both primary and secondary filter elements are removed and installed in the same way.**

1. Disconnect supply hose at quick disconnect coupling (1).

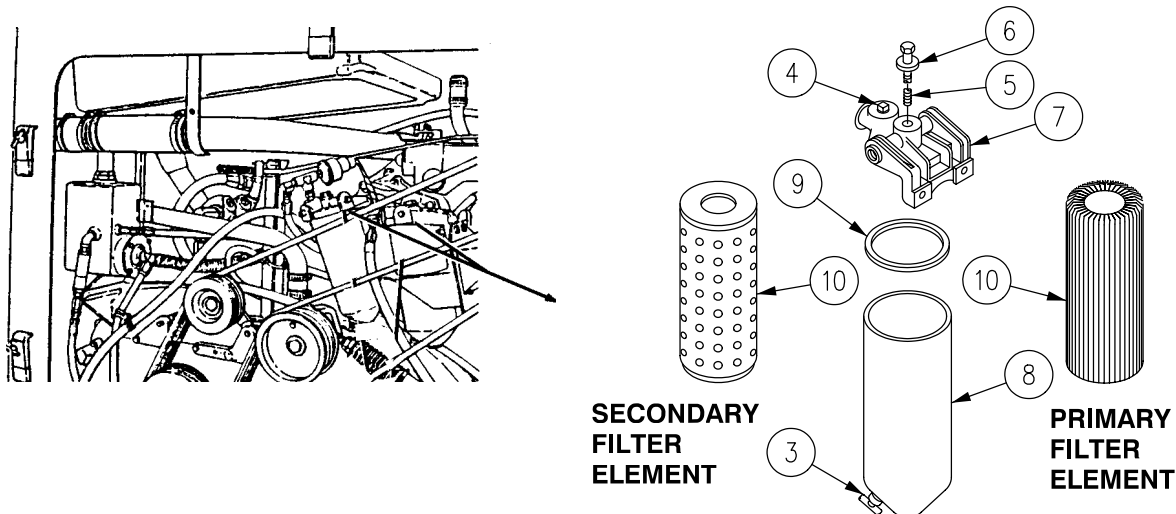
NOTE**Step 2 is for M1068 only, if a fuel shutoff valve is installed.**

2. Turn fuel shutoff valve (2) to closed position (M1068 Only).

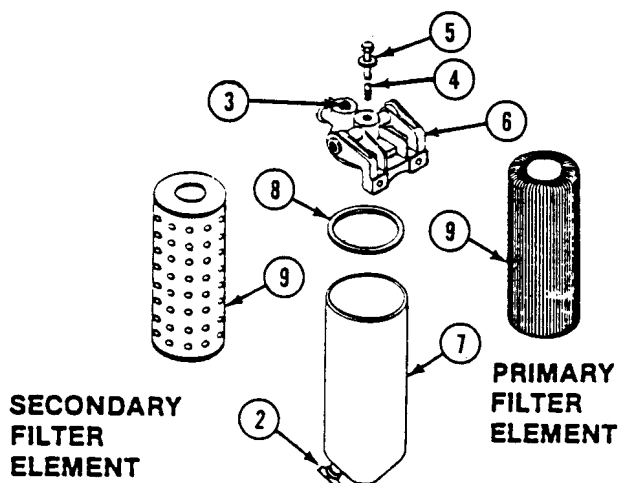
**M1068 ONLY**

REPLACE FUEL FILTER ELEMENTS — Continued**0174 00**

3. Place suitable sized container under fuel filter assembly to be drained.
4. Open drain valve (3) and loosen bleed plug (4). Drain fuel filter assembly.
5. Close drain valve (3).
6. Remove screw (5) and gasket (6) from filter head (8). Discard gasket.
7. Separate element container (8) and gasket (9) from fuel filter head (7). Discard gasket.
8. Remove primary or secondary element (10) from container (8).

**INSTALLATION**

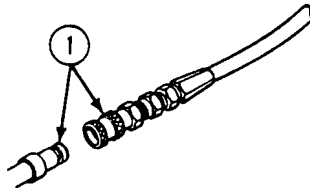
1. Install new filter element (9) in container (7).
2. Fill container (7) with fuel.
3. Install new gasket (8) in fuel filter head (6).
4. Secure container (7) to fuel filter head (6) with screw (4) and new gasket (5).
5. Tighten bleed plug (3) in fuel filter head (6).



REPLACE FUEL FILTER ELEMENTS — Continued

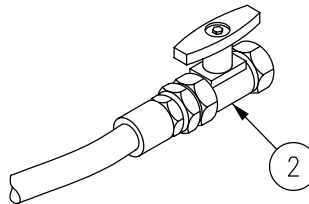
0174 00

6. Connect supply hose at quick disconnect coupling (1).

**NOTE**

Step 7 is for M1068 only, if a fuel shutoff valve is installed.

7. Turn fuel shutoff valve (2) to open position (M1068 Only).



M1068 ONLY

FOLLOW-THROUGH STEPS

1. Connect battery ground lead (WP 0294 00).
2. Start engine (see your -10).
3. Check for leaks. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).
4. Raise and lock ramp (see your -10).
5. Stop engine (see your -10).

END OF TASK

REPLACE FUEL FILTER MOUNTING BRACKET

0175 00

THIS WORK PACKAGE COVERS:

Removal (page 0175 00-1).
Installation (page 0175 00-2).

INITIAL SETUP:

Maintenance Level

Unit

Equipment Condition

Engine stopped/shutdown (see your -10)
Carrier blocked (see your -10)
Battery ground lead disconnected (WP 0294 00)
Power plant rear access panel removed (WP 0431 00,
WP 0432 00, or WP 0433 00)
Primary fuel filter assembly removed (WP 0172 00)
Secondary fuel filter assembly removed (WP 0173 00)
Generator mounting bracket removed (100 amp only)
(WP 0227 00) or (200 amp only) (WP 0228 00)
Ramp lowered (see your -10)

Tools and Special Tools

General Mechanic’s Tool Kit (WP 0780 00, Item 29)
Torque wrench (WP 0780 00, Item 103)

Materials/Parts

Antiseize compound (WP 0782 00, Item 8)
Lockwasher (4)

Personnel Required

Unit Mechanic

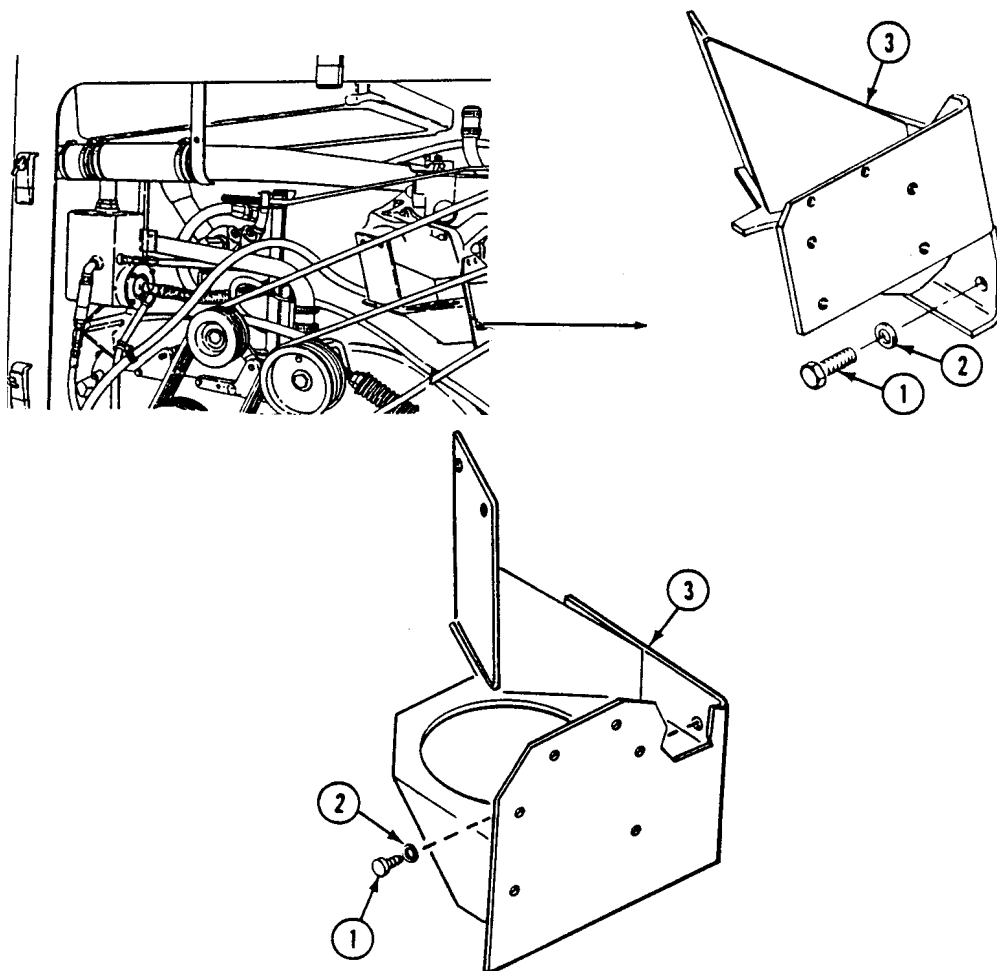
REMOVAL

NOTE

The 200 amp fuel filter mounting bracket is different from the 100 amp fuel filter mounting bracket.

REPLACE FUEL FILTER MOUNTING BRACKET — Continued**0175 00**

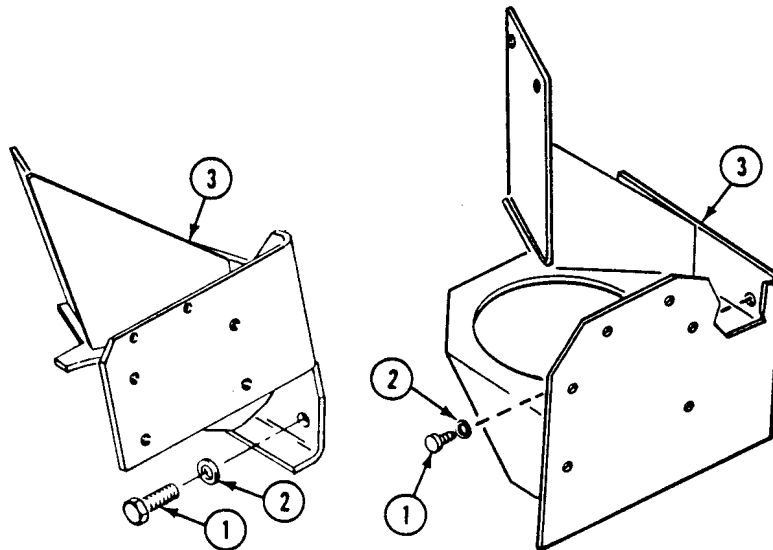
1. Remove four screws (1), lockwashers (2), and fuel filter bracket (3) from engine. Discard lockwashers.

**INSTALLATION**

1. Apply antiseize compound to threads of four screws (1).
2. Secure bracket (3) to engine with four screws (1) and new lockwashers (2).

REPLACE FUEL FILTER MOUNTING BRACKET — Continued**0175 00**

3. TIGHTEN FOUR SCREWS (1) TO 50-55 LB-FT (68-75 N·M) TORQUE. Use torque wrench.

**FOLLOW-THROUGH STEPS**

1. Install generator mounting bracket (100 amp only) (WP 0227 00) or (200 amp only) (WP 0228 00).
2. Install secondary fuel filter assembly (WP 0173 00).
3. Install primary fuel filter assembly (WP 0172 00).
4. Connect battery ground lead (WP 0294 00).
5. Start engine (see your -10). Check for leaks.
6. Raise and lock ramp (see your -10).
7. Stop/shutdown engine (see your -10).
8. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).

END OF TASK

REPLACE AIR BOX HEATER IGNITION COIL

0176 00**THIS WORK PACKAGE COVERS:**

Removal (page 0176 00-1).
Installation (page 0176 00-2).

INITIAL SETUP:Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown (see your -10)

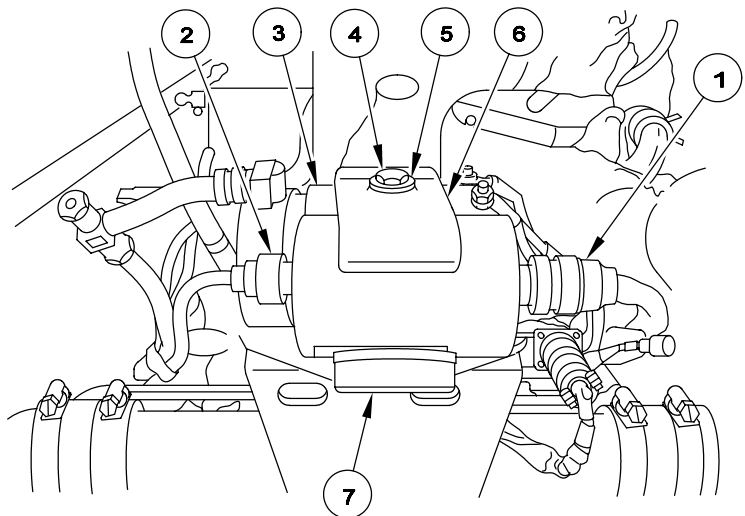
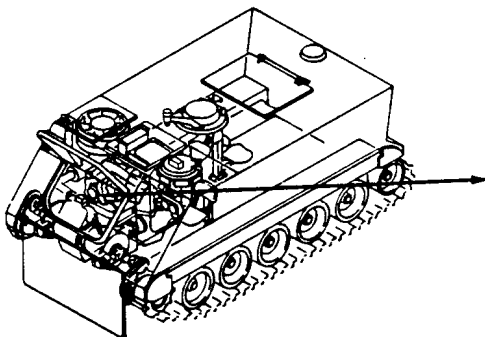
Carrier blocked (see your -10)

Battery ground lead disconnected (WP 0294 00)

Trim vane lowered and power plant front access door open (see your -10)

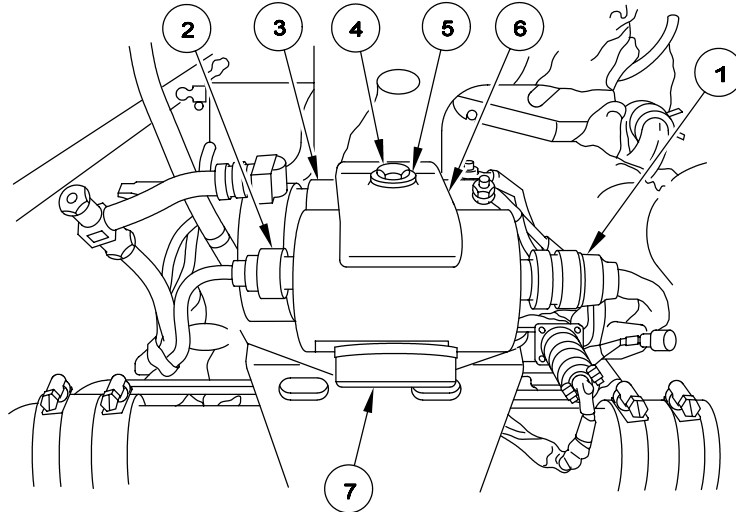
REMOVAL

1. Disconnect circuit 406 and 406A (1) plug and high tension wire (2) from ignition coil (3).
2. Remove screw (4), washer (5), retainer (6), coil (3), and pad from mount (7).



REPLACE AIR BOX HEATER IGNITION COIL — Continued**0176 00****INSTALLATION**

1. Install ignition coil (3) and pad on mount (7). Secure with retainer (6), washer (5), and screw (4).
2. Connect circuit 406 and 406A plug (1) and high tension wire (2) to coil (3).

**FOLLOW-THROUGH STEPS**

1. Close power plant front access door and raise trim vane (see your -10).
2. Connect battery ground lead (WP 0294 00).

END OF TASK

REPLACE AIR BOX HEATER AIR PUMP**0177 00****THIS WORK PACKAGE COVERS:**

Removal (page 0177 00-1).

Installation (page 0177 00-2).

INITIAL SETUP:Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Sealing compound (WP 0782 00, Item 60)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

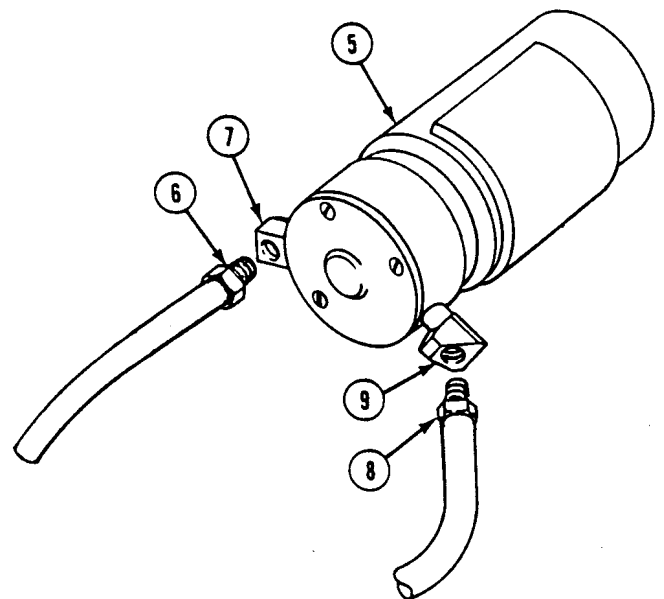
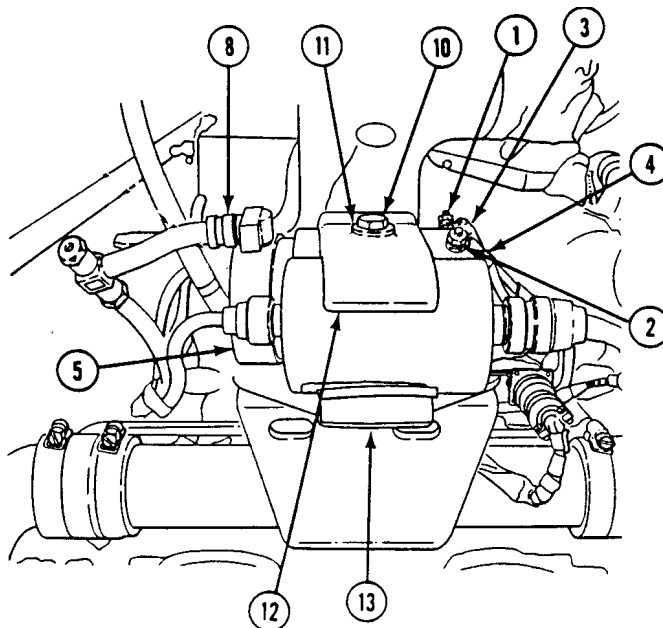
Ramp lowered (see your -10)

Battery ground lead disconnected (WP 0294 00)

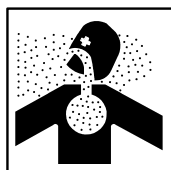
Trim vane lowered and power plant front access door open (see your -10)

REMOVAL

1. Remove two nuts (1), washers (2), and leads (3) and (4) from air box heater air pump (5).
2. Remove adapter (6) from elbow (7).
3. Remove adapter (8) from elbow (9).
4. Remove screw (10), washer (11), retainer (12), air pump (5), and pad from mount (13).
5. Remove elbow (7) from air pump (5).
6. Remove elbow (9) from air pump (5).



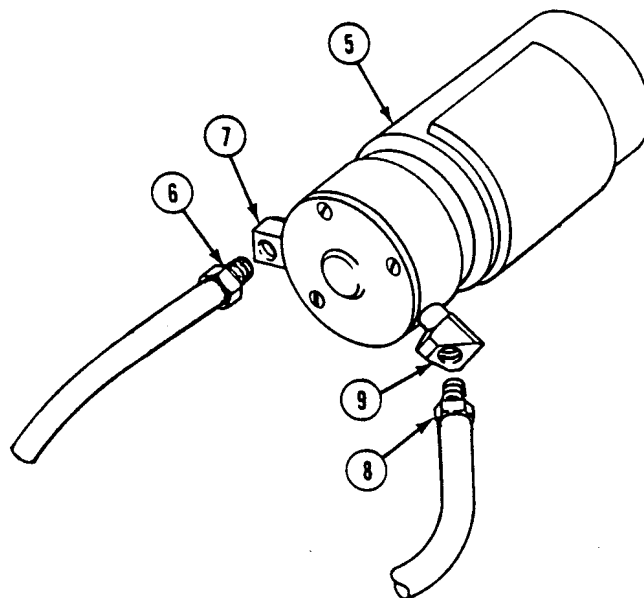
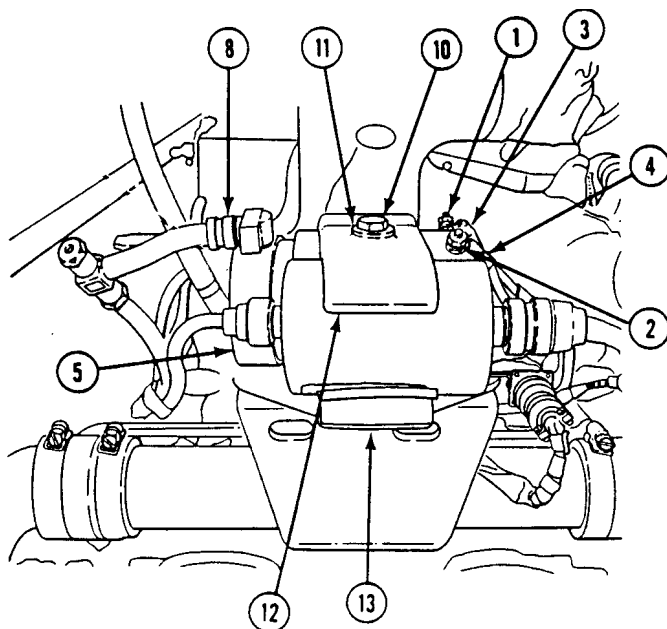
INSTALLATION

WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply sealing compound to cleaned external threads of fittings.
2. Install elbows (7) and (9) in air pump (5).
3. Install air pump (5) and pad on mount (13). Secure with retainer (12), washer (11), and screw (10).
4. Install adapters (6) and (8) on elbows (7) and (9).
5. Secure leads (3) and (4) to air pump (5) with two washers (2) and nuts (1).

**FOLLOW-THROUGH STEPS**

1. Connect battery ground lead (WP 0294 00).
2. Close power plant front access door and raise trim vane (see your -10).
3. Raise and lock ramp (see your -10).

END OF TASK

REPLACE AIR PUMP VANES

0178 00**THIS WORK PACKAGE COVERS:**

Removal (page 0178 00-1).
Installation (page 0178 00-2).

INITIAL SETUP:Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Equipment Condition

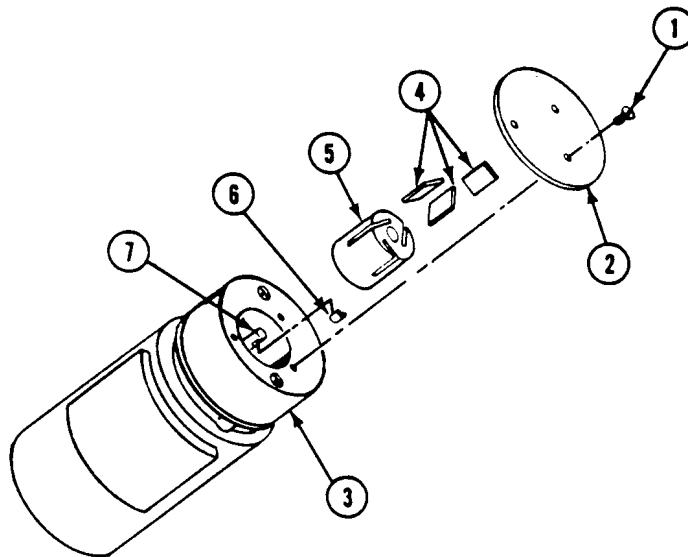
Air box heater air pump removed (WP 0177 00)

Materials/Parts

Vane kit

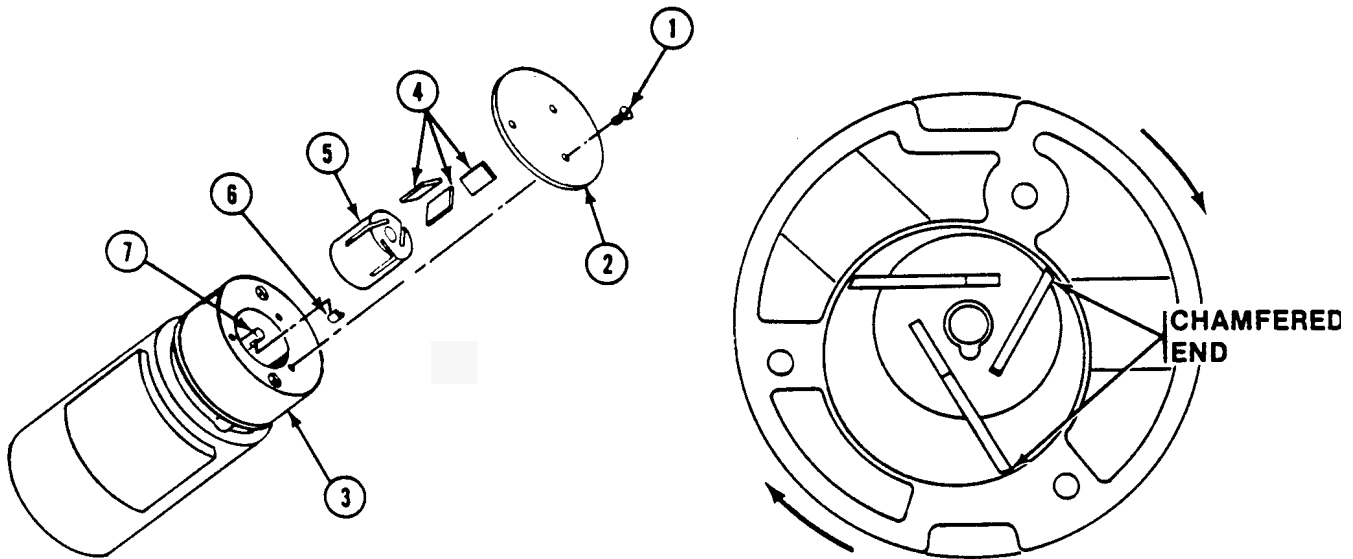
REMOVAL

1. Remove three screws (1) and cover (2) from pump body (3).
2. Remove three vanes (4), hub (5), and key (6) from pump shaft (7). Discard vanes.



REPLACE AIR PUMP VANES — Continued**0178 00****INSTALLATION**

1. Secure hub (5) to pump shaft (7) with key (6).
2. Install three new vanes (4) in hub (5). Be sure chamfered ends of vanes are against pump body.
3. Secure cover (2) to pump body (3) with screws (1).

**FOLLOW-THROUGH STEPS**

1. Install air box heater air pump (WP 0177 00).

END OF TASK

REPLACE AIR BOX HEATER SOLENOID VALVE

0179 00

THIS WORK PACKAGE COVERS:

Removal (page 0179 00-1).
Installation (page 0179 00-3).

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)
Battery ground lead disconnected (WP 0294 00)
Carrier blocked (see your -10)
Trim vane lowered and power plant front access door open (see your -10)

Materials/Parts

Sealing compound (WP 0782 00, Item 60)
Wiping rag (WP 0780 00, Item 76)
Lockwasher (4)

REMOVAL

WARNING



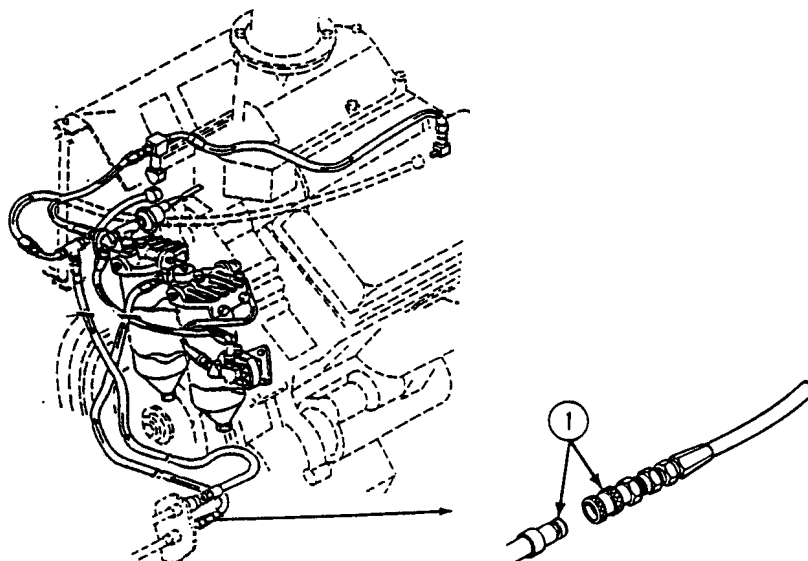
Fuel flowing over a metal surface causes static electricity. This will cause a spark unless the surface is grounded.

NOTE

Use wiping rag to wipe up any spilled fuel.

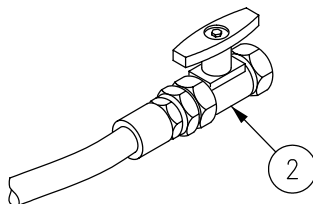
REPLACE AIR BOX HEATER SOLENOID VALVE — Continued**0179 00**

1. Separate fuel return hose quick disconnect coupling (1).

**NOTE**

Step 2 is for M1068 only, if fuel shutoff valve is installed.

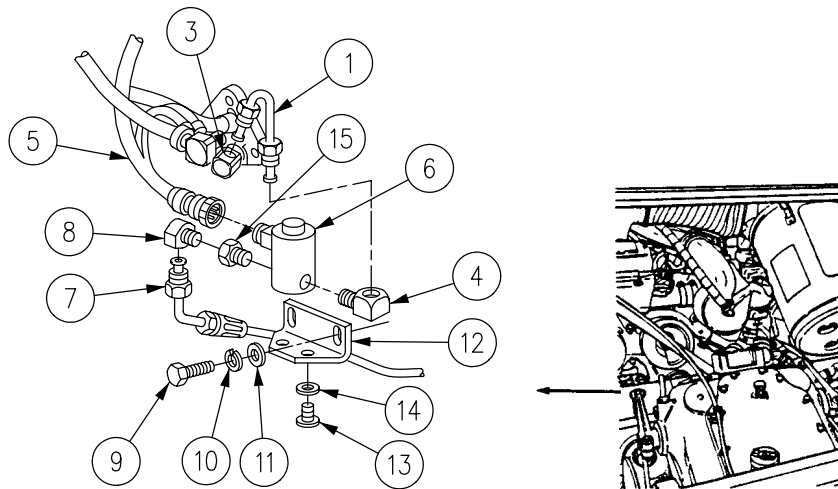
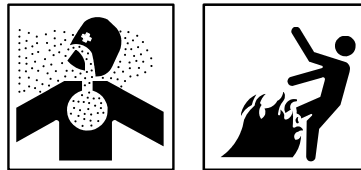
2. Turn fuel shutoff valve (2) to closed position (M1068 Only).

**M1068 ONLY**

3. Disconnect fuel tube (1) from two elbows (3) and (4).
4. Disconnect electrical lead (5) from solenoid valve (6).
5. Disconnect fuel hose (7) from elbow (8).
6. Remove two screws (9), lockwashers (10), flat washers (11), bracket (12), and solenoid valve (6) from engine. Discard lockwashers.
7. Remove two screws (13), lockwashers (14), and solenoid valve (6) from bracket (12). Discard lockwashers.
8. Remove elbow (8) from adapter (15).
9. Remove adapter (15) from solenoid valve (6).

REPLACE AIR BOX HEATER SOLENOID VALVE — Continued**0179 00**

10. Remove elbow (4) from solenoid valve (6).

**INSTALLATION****WARNING**

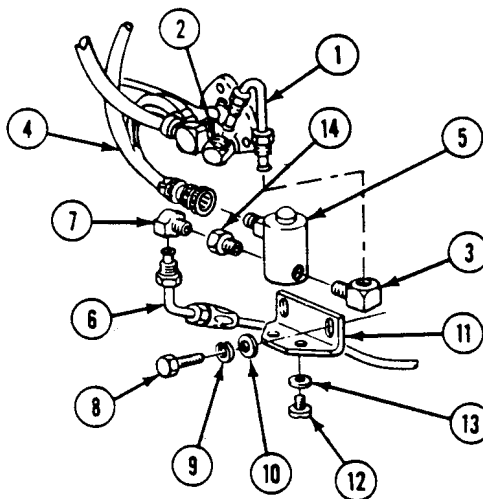
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply sealing compound to cleaned external threads of fittings.

REPLACE AIR BOX HEATER SOLENOID VALVE — Continued**0179 00**

2. Install elbow (3) in solenoid valve (5).
3. Install adapter (14) and elbow (7) in solenoid valve (5).
4. Secure solenoid valve (5) to bracket (11) with two new lockwashers (13) and screws (12).
5. Install bracket (11) and solenoid valve (5) on engine. Secure with two flat washers (10), new lockwashers (9), and screws (8).
6. Connect fuel hose (6) to elbow (7).
7. Connect electrical lead (4) to solenoid valve (5).
8. Connect fuel tube (1) to two elbows (2) and (3).

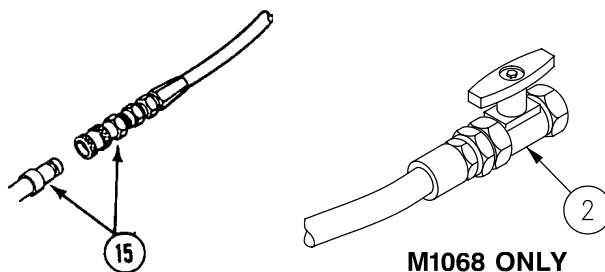


9. Connect fuel return hose quick-disconnect coupling (15).

NOTE

Step 10 is for M1068 only, if fuel shutoff valve is installed.

10. Turn fuel shutoff valve (2) to open position (M1068 Only).

**FOLLOW-THROUGH STEPS**

1. Connect battery ground lead (WP 0294 00).
2. Close power plant front access door and raise trim vane (see your -10).

END OF TASK

REPLACE AIR BOX HEATER

0180 00

THIS WORK PACKAGE COVERS:

Removal (page 0180 00-1).
Installation (page 0180 00-2).

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Sealing compound (WP 0782 00, Item 60)
Gasket
Preformed packing

Personnel Required

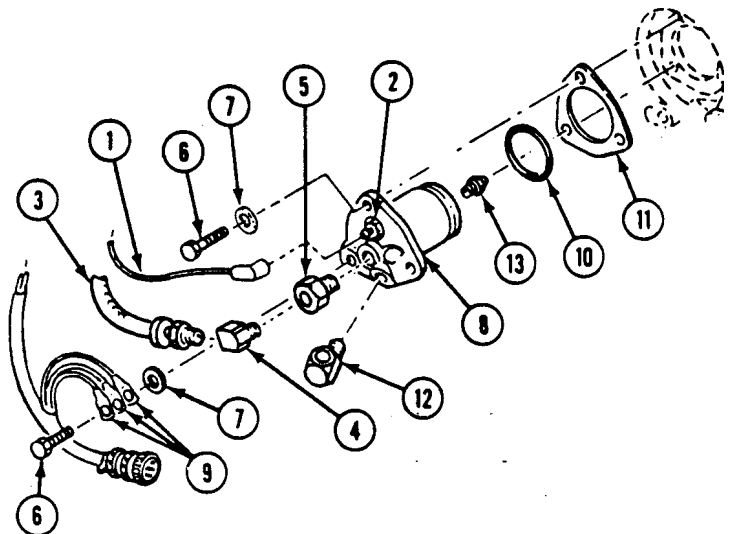
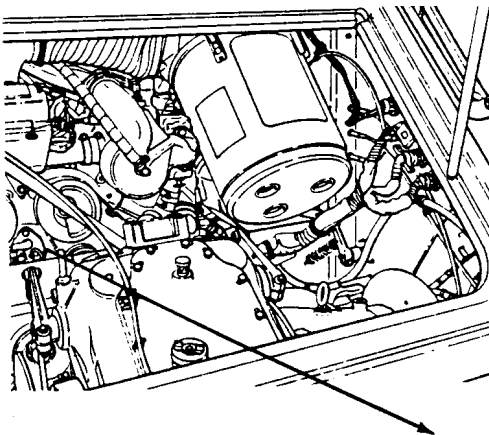
Unit Mechanic

Equipment Condition

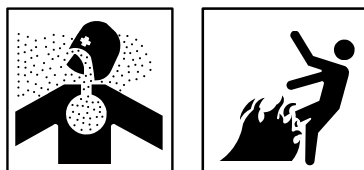
Engine stopped/shutdown (see your -10)
Battery ground lead disconnected (WP 0294 00)
Carrier blocked (see your -10)
Air box heater solenoid valve removed (WP 0179 00)
Trim vane lowered and power plant front access door open (see your -10)

REMOVAL

1. Disconnect lead (1) from igniter (2).
2. Disconnect air hose (3) from elbow (4).
3. Remove elbow (4) from adapter (5).
4. Remove three screws (6) and washers (7) that secure air box heater body (8) to engine. Three leads (9) will come off with one screw (6).
5. Remove heater body (8), packing (10), and gasket (11) from engine. Discard packing and gasket.
6. Remove elbow (12), spray nozzle (13), and adapter (5) from heater body (8).



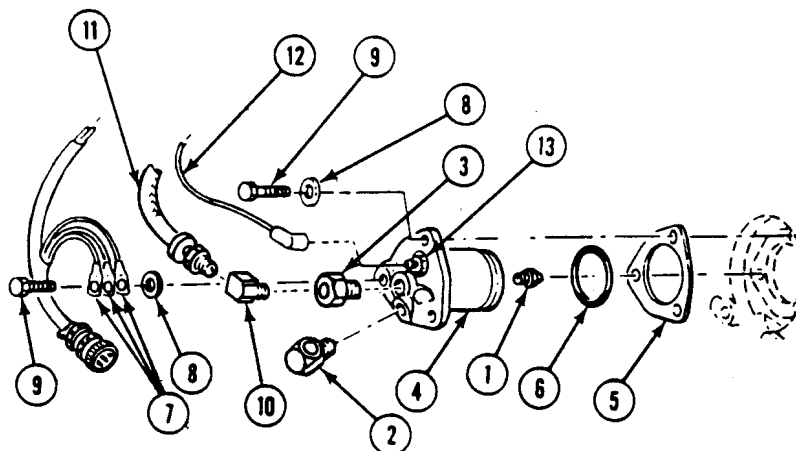
INSTALLATION

WARNING

Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply sealing compound to cleaned external threads of fittings.
2. Install spray nozzle (1), elbow (2), and adapter (3) on air box heater body (4).
3. Place new gasket (5), new packing (6), and heater body (4) on engine.
4. Install heater body (4) on engine and attach three ground leads (7) to heater body. Secure with three washers (8) and screws (9).
5. Install elbow (10) in adapter (3).
6. Connect air hose (11) to elbow (10).
7. Connect lead (12) to igniter (13).

**FOLLOW-THROUGH STEPS**

1. Install air box heater solenoid valve (WP 0179 00).
2. Connect battery ground lead (WP 0294 00).
3. Close power plant front access door and raise trim vane (see your -10).

END OF TASK

REPLACE AIR BOX HEATER WIRING HARNESS

0181 00**THIS WORK PACKAGE COVERS:**

Removal (page 0181 00-1).
Installation (page 0181 00-2).

INITIAL SETUP:Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Adhesive tape (WP 0782 00, Item 56)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown (see your -10)

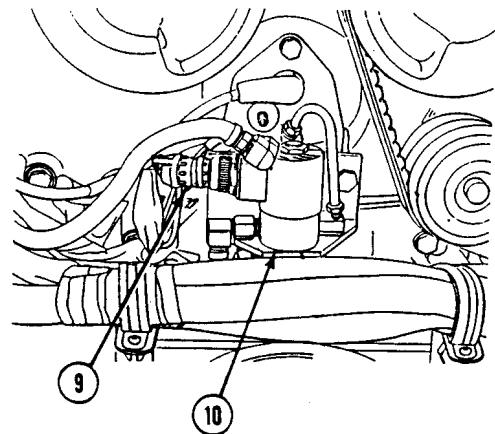
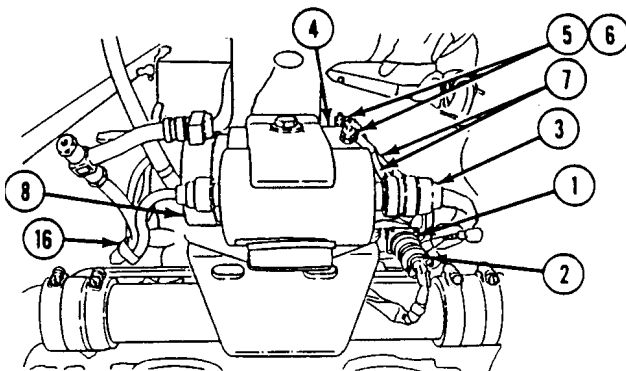
Battery ground lead disconnected (WP 0294 00)

Carrier blocked (see your -10)

Trim vane lowered and power plant front access door open (see your -10)

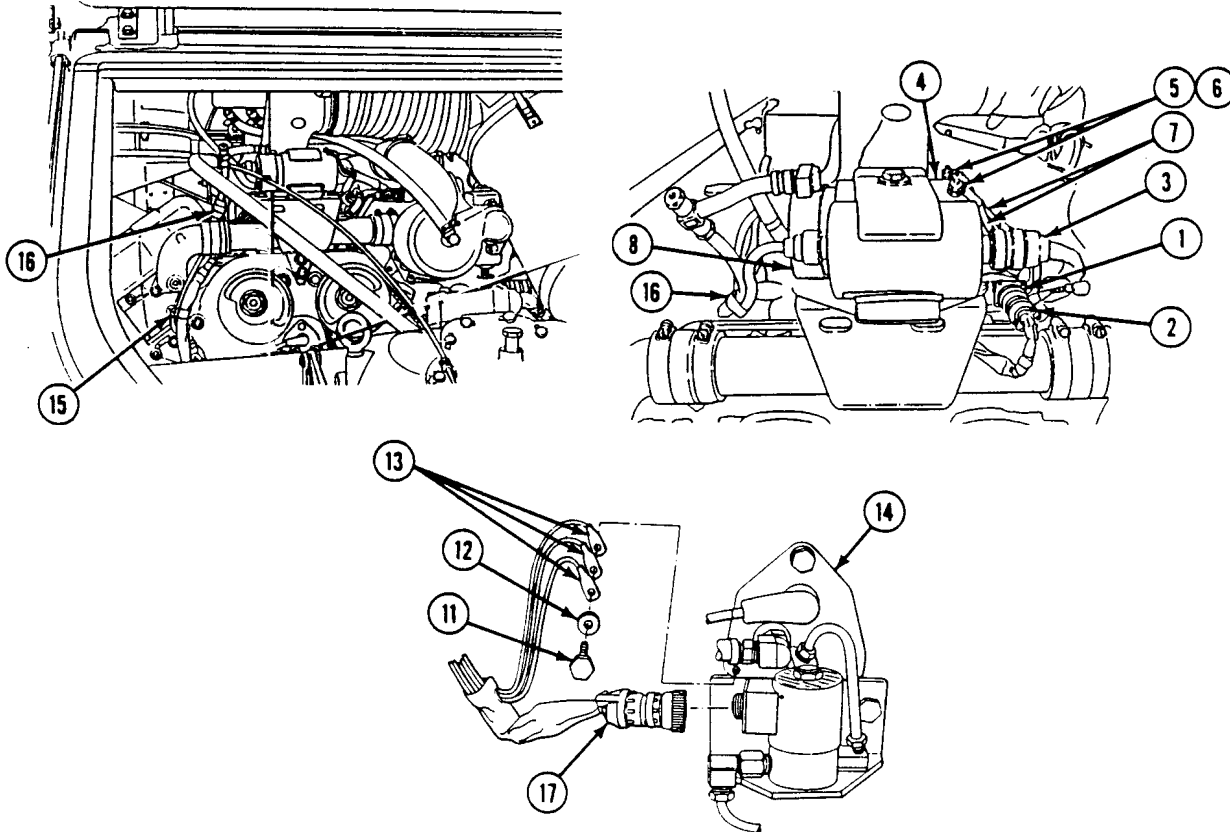
REMOVAL

1. Disconnect air box heater wiring harness connector (1) from power plant wiring harness receptacle (2).
2. Disconnect wiring harness connector (3) from coil (4).
3. Remove two nuts (5), washers (6), and two wiring harness leads (7) from air pump (8).
4. Disconnect wiring harness connector (9) from fuel control solenoid (10).



REPLACE AIR BOX HEATER WIRING HARNESS — Continued**0181 00**

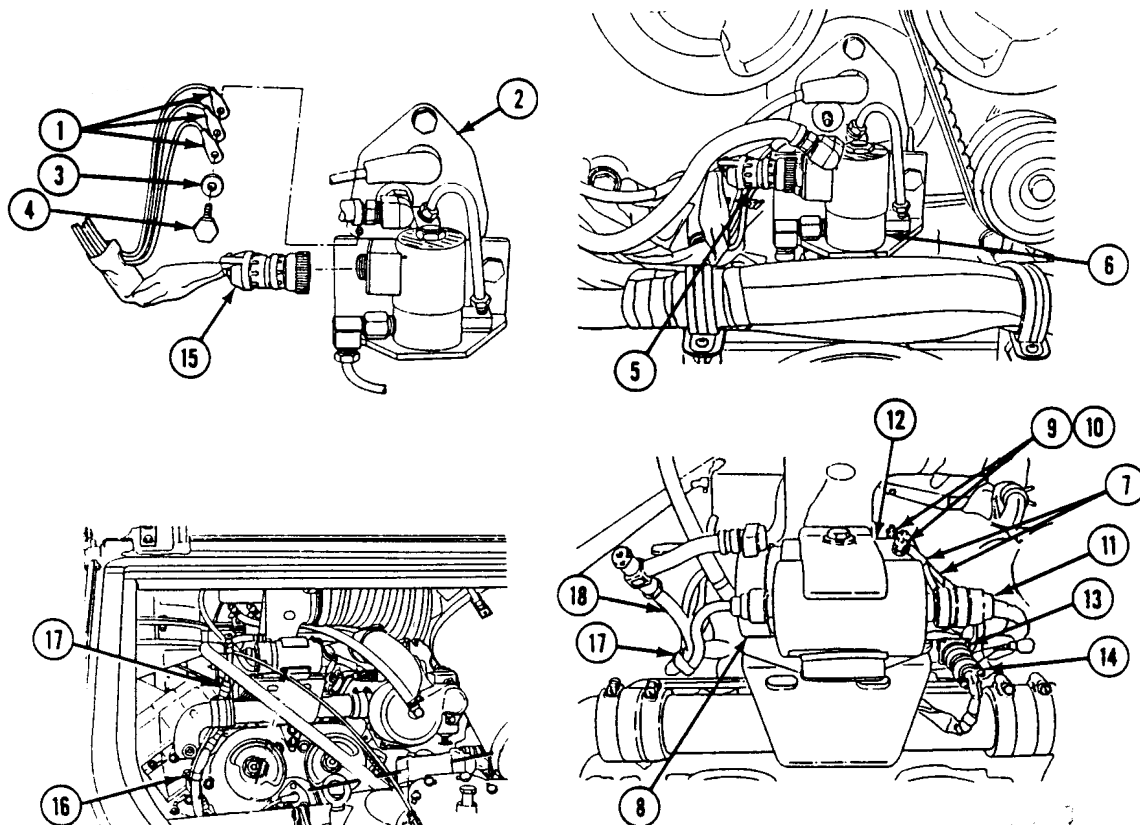
5. Remove screw (11), washer (12), and three ground leads (13) from air box heater (14).
6. Remove strap (15), adhesive tape (16), and air box heater wiring harness (17) from power plant compartment.

**INSTALLATION**

1. Secure three ground leads (1) to air box heater (2) with washer (3) and screw (4).
2. Connect wiring harness connector (5) to fuel control solenoid (6).
3. Secure two wiring harness leads (7) to air pump (8) with two washers (9) and nuts (10).
4. Connect wiring harness connector (11) to coil (12).
5. Connect air box heater wiring harness connector (13) to power plant wiring harness receptacle (14).
6. Secure air box heater wiring harness (15) to air box heater hose with strap (16).

REPLACE AIR BOX HEATER WIRING HARNESS — Continued**0181 00**

7. Use sealing tape (17) to secure air box heater wiring harness (15) to air box heater hose (18).

**FOLLOW-THROUGH STEPS**

1. Close power plant front access door and raise trim vane (see your -10).
2. Connect battery ground lead (WP 0294 00).

END OF TASK

CHAPTER 7

UNIT MAINTENANCE INSTRUCTIONS
FOR AIR INDUCTION AND EXHAUST SYSTEM

WORK PACKAGE INDEX

<u>Title</u>	<u>Sequence No.</u>
SERVICE AIR CLEANER FILTER ELEMENT.....	0182 00
REPLACE AIR CLEANER HOSES.....	0183 00
REPLACE AIR CLEANER COVER.....	0184 00
REPLACE AIR CLEANER HOUSING.....	0185 00
REPLACE AIR CLEANER RESTRICTION INDICATOR AND HOSE.....	0186 00
REPAIR AIR CONTROL VALVE.....	0187 00
REPAIR AIR CONTROL VALVE CABLE.....	0188 00
REPLACE EXHAUST PIPES.....	0189 00
REPLACE MUFFLER EXTENSION AND VALVE.....	0190 00
REPLACE MUFFLER AND BRACKETS.....	0191 00

SERVICE AIR CLEANER FILTER ELEMENT**0182 00****THIS WORK PACKAGE COVERS:**

Servicing (page 0182 00-1).

INITIAL SETUP:Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Suitable Container

Equipment Condition

Engine stopped/shutdown (see your -10)

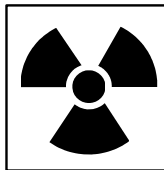
Carrier blocked (see your -10)

Air cleaner element removed (see your -10)

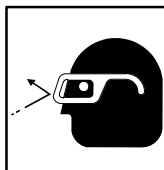
Materials/Parts

General purpose detergent (WP 0782 00, Item 23)

Suitable container (5 gal)

SERVICING**WARNING**

After suspected NBC exposure of this carrier, all air cleaner media shall be handled only by personnel wearing full NBC protective equipment.

WARNING

Air pressure in excess of 30 psi (207 kPa) can injure personnel. Do not direct pressurized air at yourself or others. Always wear goggles.

NOTE

Cleaning element may be cleaned by either or both of the following methods.

1. Using air gun, blow out element with 30 psi (207 kPa) maximum compressed air from inside to outside of element (in direction opposite to normal air flow).

SERVICE AIR CLEANER FILTER ELEMENT — Continued

0182 00

2. Wash element in solution of non-sudsing or low sudsing detergent and water or soap and water. Do not use gasoline or solvents for cleaning.
 - a. Prepare solution of 1 cup of dry detergent to 5 gallons of water in a container large enough to completely submerge the element. The temperature of the solution should not exceed 190°F (88°C). Make solution stronger if element is extremely dirty.
 - b. Immerse element completely in washing solution. Agitate element gently for 2 minutes.
 - c. Allow element to soak in solution for a minimum of 15 minutes. Agitate element gently for an additional 3 to 5 minutes.
 - d. Remove element from solution and allow to drain.
 - e. Rinse element with cold water from a hose with a maximum 30 psi (207 kPa) water pressure from inside to outside of element. Continue rinsing until water runs clear and detergent or soap residue is removed from element.
 - f. Allow element to air dry thoroughly.

FOLLOW-THROUGH STEPS

1. Install air cleaner element (see your -10).

END OF TASK

REPLACE AIR CLEANER HOSES**0183 00****THIS WORK PACKAGE COVERS:**

Removal (page 0183 00-1).

Installation (page 0183 00-2).

INITIAL SETUP:Maintenance Level

Unit

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

Power plant front access door open (see your -10)

Driver's power plant access panel removed
(WP 0430 00)Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

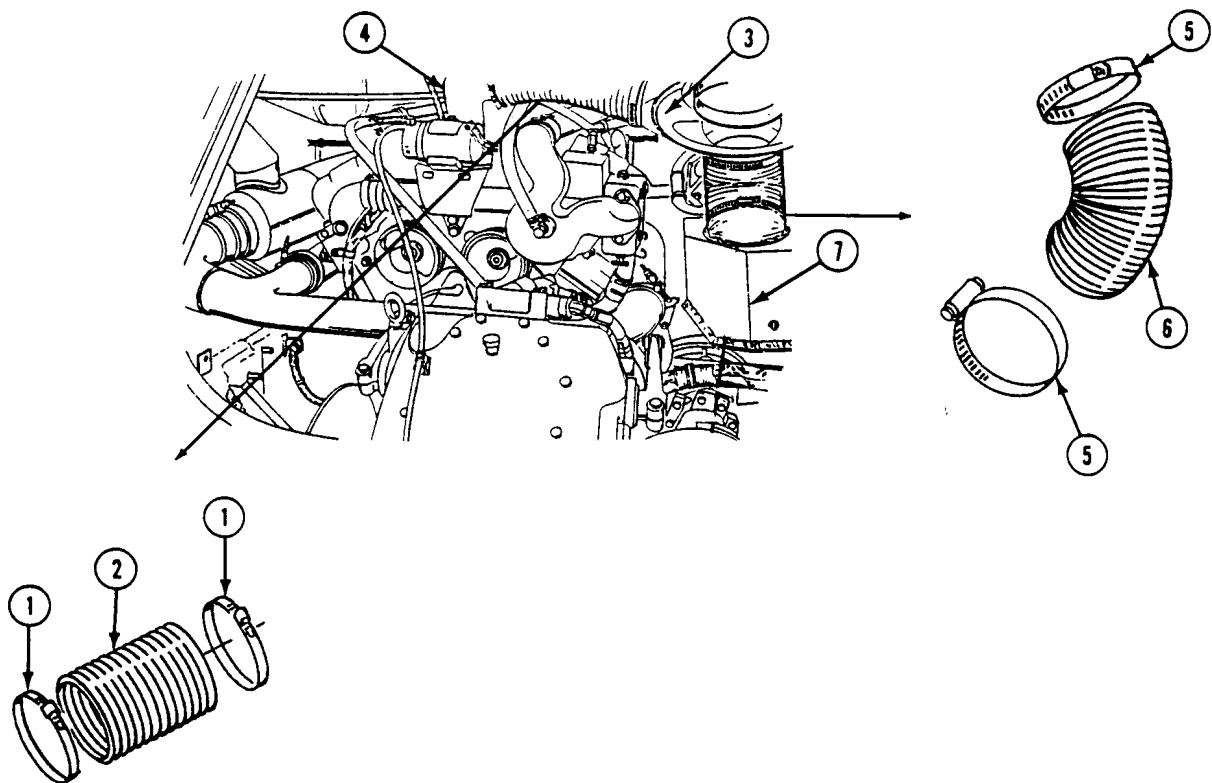
Unit Mechanic

References

WP 0184 00

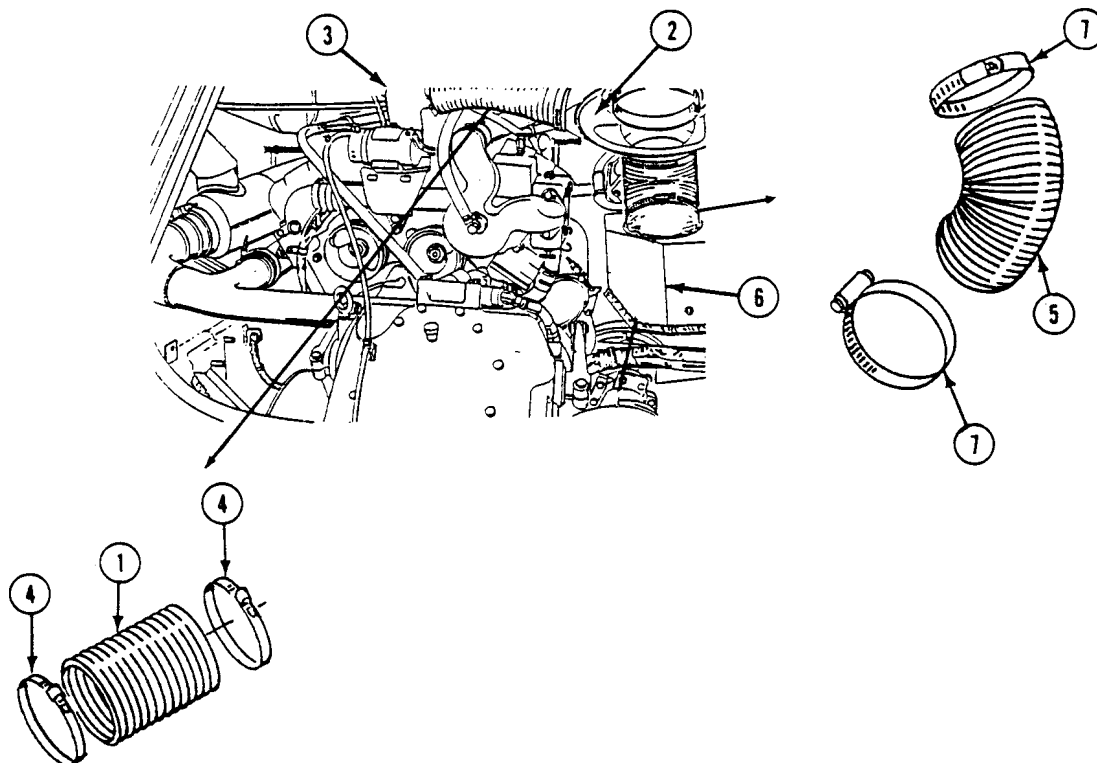
REMOVAL

1. Remove air cleaner housing and element from air cleaner cover (WP 0184 00).
2. Remove two clamps (1) and outlet hose (2) from air cleaner cover (3) and engine air inlet (4).
3. Remove two clamps (5) and inlet hose (6) from air cleaner cover (3) and air control housing (7).



REPLACE AIR CLEANER HOSES — Continued**0183 00****INSTALLATION**

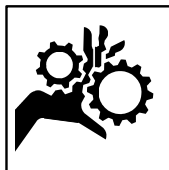
1. Secure outlet hose (1) to air cleaner cover (2) and air inlet (3) on engine with two clamps (4).
2. Secure inlet hose (5) to air cleaner cover (2) and air control housing (6) with two clamps (7).



3. Install air cleaner housing and element on cover (WP 0184 00).

FOLLOW-THROUGH STEPS

1. Install driver's power plant access panel (WP 0430 00).

WARNING

Loose clothing is dangerous around moving belts and pulleys. You could get badly hurt if your clothes get caught in moving parts.

2. Start engine (see your -10). Check air cleaner for proper operation.
3. Stop/shutdown engine (see your -10).
4. Close power plant front access door (see your -10).
5. Raise trim vane (see your -10).

END OF TASK

REPLACE AIR CLEANER COVER

0184 00

THIS WORK PACKAGE COVERS:

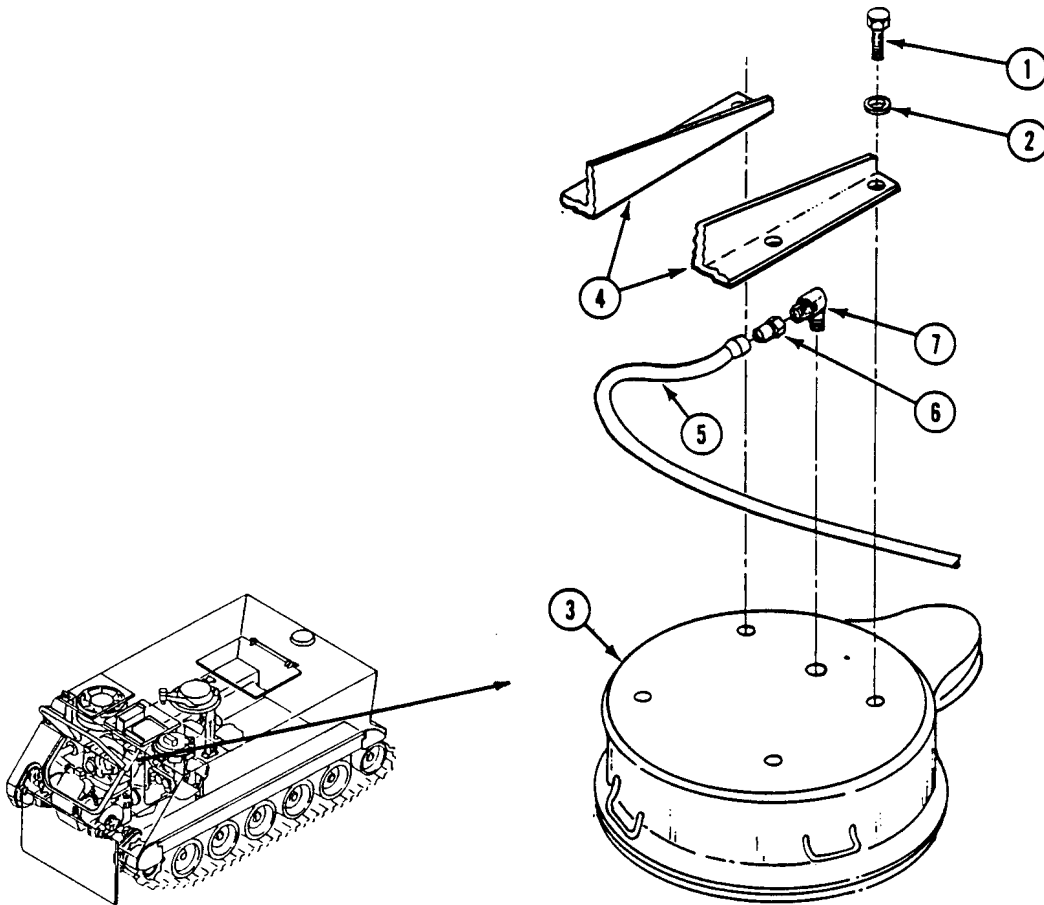
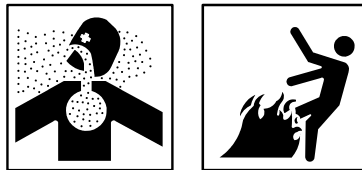
- Removal (page 0184 00-2).
 - Installation (page 0184 00-2).
-

INITIAL SETUP:

<u>Maintenance Level</u>	<u>Equipment Condition</u>
Unit	Engine stopped/shutdown (see your -10)
<u>Tools and Special Tools</u>	Carrier blocked (see your -10)
General Mechanic’s Tool Kit (WP 0780 00, Item 29)	Trim vane lowered (see your -10)
<u>Materials/Parts</u>	Power plant front access door opened (see your -10)
Sealing Compound (WP 0782 00, Item 60)	Driver’s power plant access panel removed (WP 0430 00)
<u>Personnel Required</u>	Air cleaner element and housing removed (WP 0185 00)
Unit Mechanic	Air cleaner hoses removed (WP 0183 00)

REPLACE AIR CLEANER COVER — Continued**0184 00****REMOVAL**

1. Remove four screws (1), eight washers (2), and air cleaner (3) from two brackets (4).
2. Disconnect air restriction indicator hose (5) from adapter (6).
3. Remove adapter (6) and elbow (7) from air cleaner cover (3).

**INSTALLATION****WARNING**

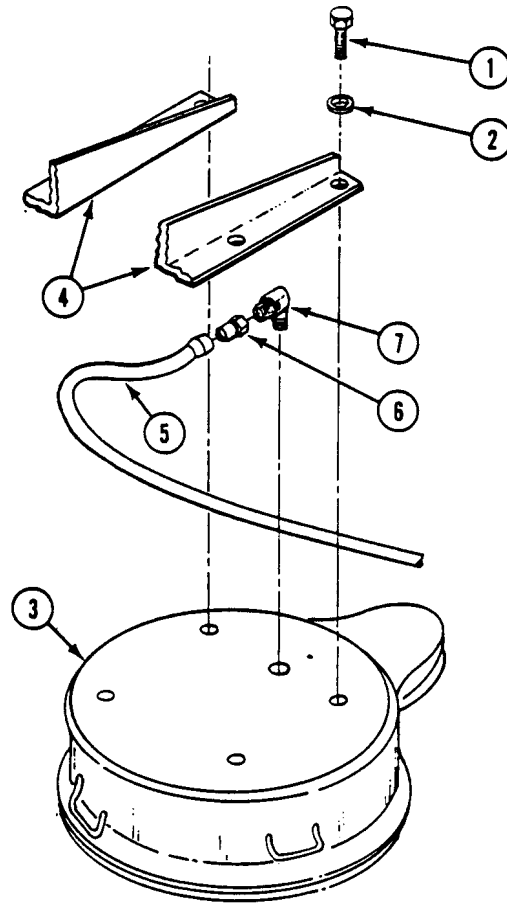
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

1. Apply a thin coat of sealing compound to external threads of adapter (6) and elbow (7).

REPLACE AIR CLEANER COVER — Continued**0184 00**

2. Install elbow (7) in air cleaner cover (3) and adapter (6) in elbow.
3. Connect air restriction indicator hose (5) to adapter (6).
4. Place air cleaner cover (3) on two brackets (4) and secure with four screws (1) and eight washers (2).

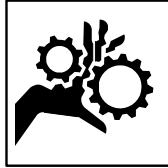


REPLACE AIR CLEANER COVER — Continued

0184 00**FOLLOW-THROUGH STEPS**

1. Install air cleaner hoses (WP 0183 00).
2. Install air cleaner element and housing (WP 0185 00).
3. Install driver's power plant access panel (WP 0430 00).

WARNING



Loose clothing is dangerous around moving belts and pulleys. You could get badly hurt if your clothes get caught in moving parts.

4. Start engine (see your -10). Check air cleaner for proper operation.
5. Stop/shutdown engine (see your -10).
6. Close power plant front access door (see your -10).
7. Raise trim vane (see your -10).

END OF TASK

REPLACE AIR CLEANER HOUSING**0185 00****THIS WORK PACKAGE COVERS:**

Removal (page 0185 00-1).
 Installation (page 0185 00-2).

INITIAL SETUP:Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

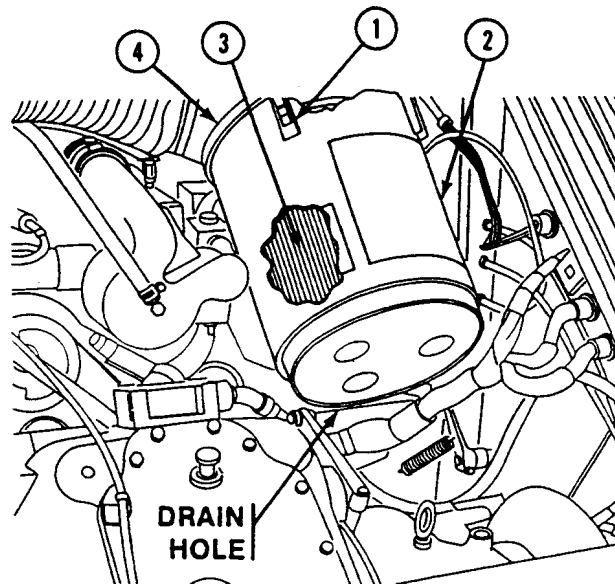
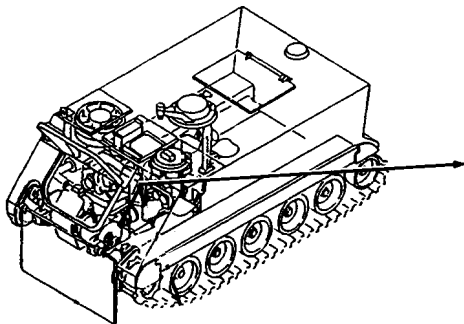
Trim vane lowered (see your -10)

Power plant front access door opened (see your -10)

Driver's power plant access panel removed
(WP 0430 00)**REMOVAL****NOTE**

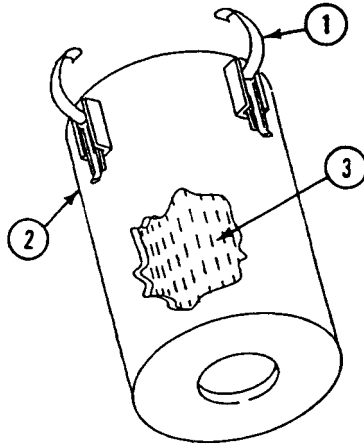
There are two air cleaner configurations. Body and elements are not interchangeable except as sets.

1. Release four latches (1), remove housing (2) and element (3) from cover (4).



REPLACE AIR CLEANER HOUSING — Continued**0185 00**

2. Remove element (3) from housing (2).

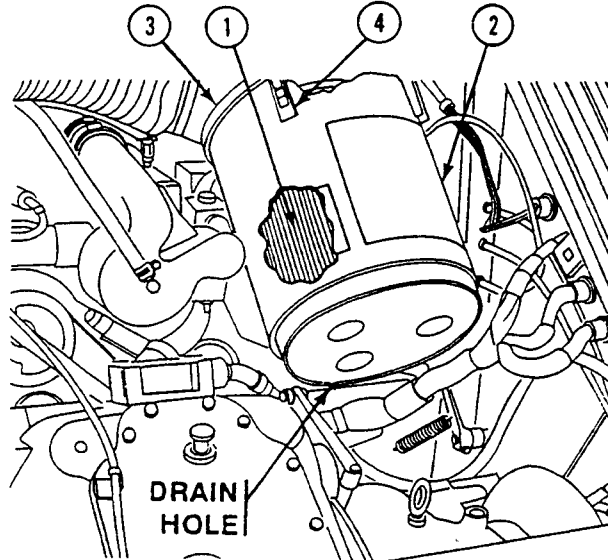
**INSTALLATION**

1. Install air cleaner element (1) in housing (2) and turn element until slot on bottom is between stops in housing.

NOTE

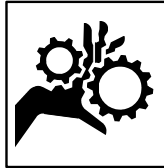
Drain hole in housing (2) must be positioned as shown to align latches.

2. Secure housing (2) to cover (3) with four latches (4).



FOLLOW-THROUGH STEPS

1. Install driver's power plant access panel (WP 0430 00).

WARNING

Loose clothing is dangerous around moving belts and pulleys. You could get badly hurt if your clothes get caught in moving parts.

2. Start engine (see your -10). Check air cleaner for proper operation.
3. Stop/shutdown engine (see your -10).
4. Close power plant front access door (see your -10).
5. Raise trim vane (see your -10).

END OF TASK

REPLACE AIR CLEANER RESTRICTION INDICATOR AND HOSE**0186 00****THIS WORK PACKAGE COVERS:**

Removal (page 0186 00-1).
 Installation (page 0186 00-2).

INITIAL SETUP:Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Sealing compound (WP 0782 00, Item 60)

Locknut (2)

Personnel Required

Unit Mechanic

Helper (H)

References

See your -10

WP 0183 00

WP 0184 00

WP 0185 00

WP 0430 00

Equipment Condition

Engine stopped/shutdown (see your -10)

Trim vane lowered (see your -10)

Power plant front access door open (see your -10)

Carrier blocked (see your -10)

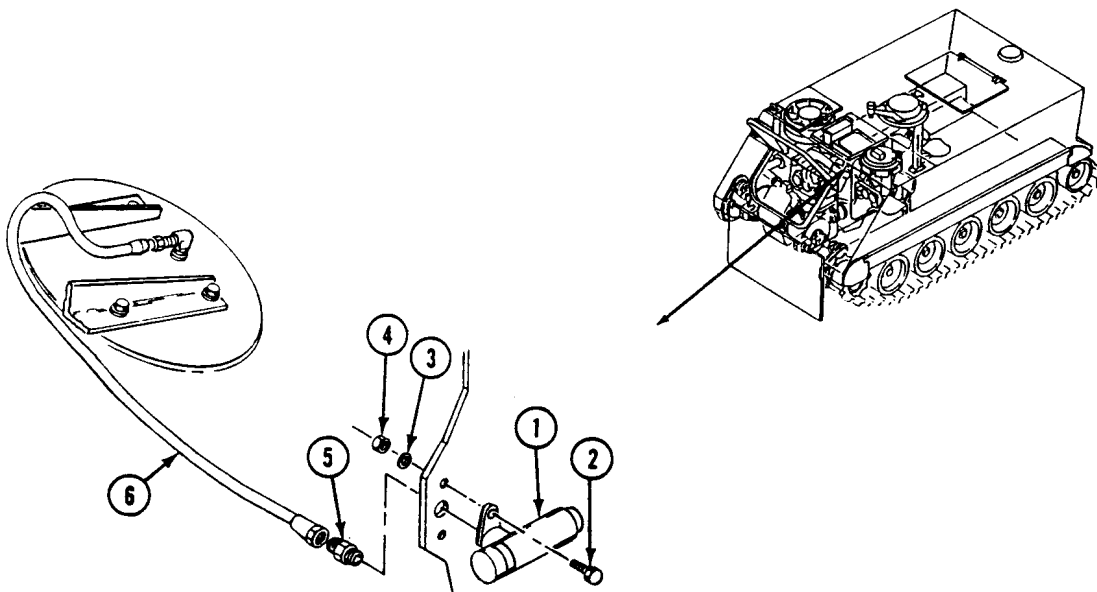
Air cleaner element and housing removed (WP 0185 00)

Air cleaner hoses removed (WP 0183 00)

Air cleaner cover removed (WP 0184 00)

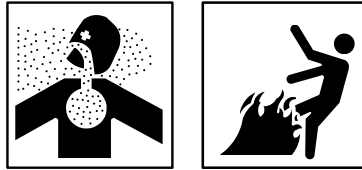
Driver's power plant access panel removed
(WP 0430 00)**REMOVAL**

1. Disconnect air restriction indicator hose (6) from adapter (5), and remove adapter from indicator (1).
2. Remove two locknuts (4), washers (3), screws (2), and indicator (1) from bulkhead. Discard locknuts.



INSTALLATION

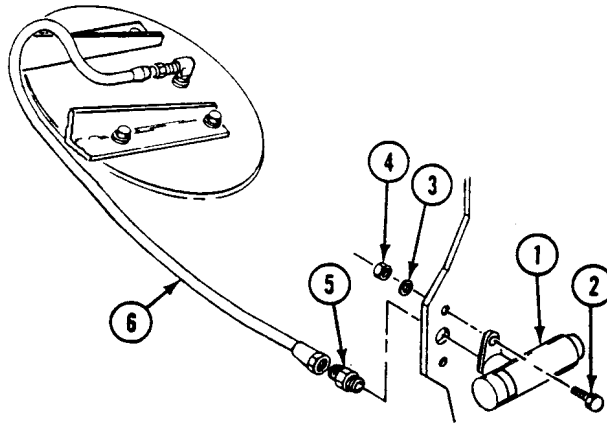
1. Secure indicator (1) to bulkhead with two screws (2), washers (3), and new locknuts (4).

WARNING

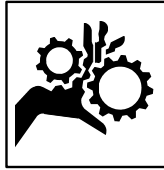
Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.

Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.

2. Apply a thin coat of sealing compound to threads of adapter (5).
3. Install adapter (5) in indicator (1).
4. Connect indicator hose (6) to adapter (5).



5. Install air cleaner cover (WP 0184 00).
6. Install air cleaner housing and element (WP 0185 00).
7. Install air cleaner inlet hose (WP 0183 00).
8. Install driver's power plant access panel (WP 0430 00).

WARNING

Loose clothing is dangerous around moving belts and pulleys. You could get badly hurt if your clothes get caught in moving parts.

9. Start engine and set at 800 RPM (see your -10).
10. Block air cleaner outlet opening with a piece of cardboard. Check window in indicator. It should be red.
11. Turn engine off and remove cardboard. Indicator should remain red.
12. Press reset button on indicator. Window should turn green.
13. If indicator does not operate properly, replace it.

FOLLOW-THROUGH STEPS

1. Engine stopped/shutdown (see your -10).
2. Install air cleaner outlet hose (WP 0183 00).
3. Close power plant front access door (see your -10).
4. Raise trim vane (see your -10).

END OF TASK

REPAIR AIR CONTROL VALVE**0187 00****THIS WORK PACKAGE COVERS:**

Removal (page 0187 00-1).
 Installation (page 0187 00-4).

INITIAL SETUP:Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Cotter pin

Gasket

Locknut (3)

Locknut

Personnel Required

Unit Mechanic

Helper (H)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

Trim vane lowered (see your -10)

Power plant front access door open (see your -10)

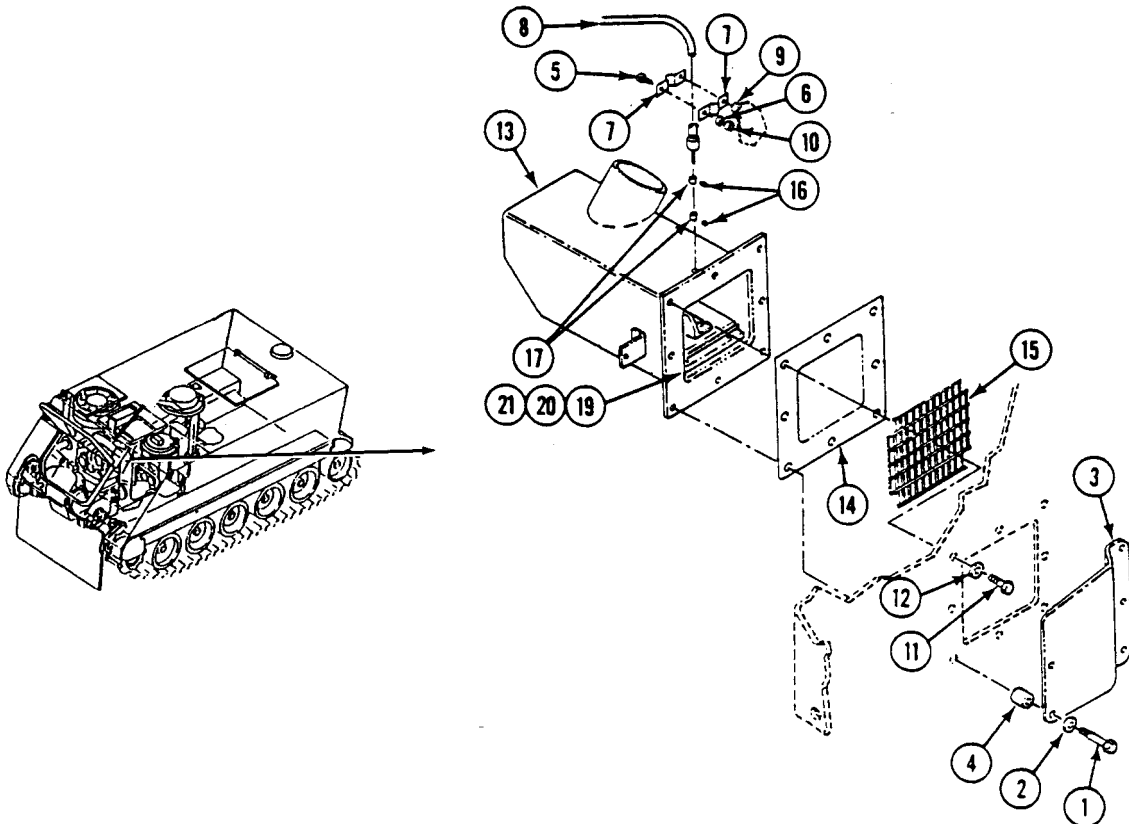
Driver's power plant access panel removed
(WP 0430 00)

Air cleaner hose removed (WP 0183 00)

Air cleaner element and housing removed (WP 0185 00)

REMOVAL

1. Remove five screws (1), washers (2), plate (3), and two spacers (4) from driver's compartment bulkhead.

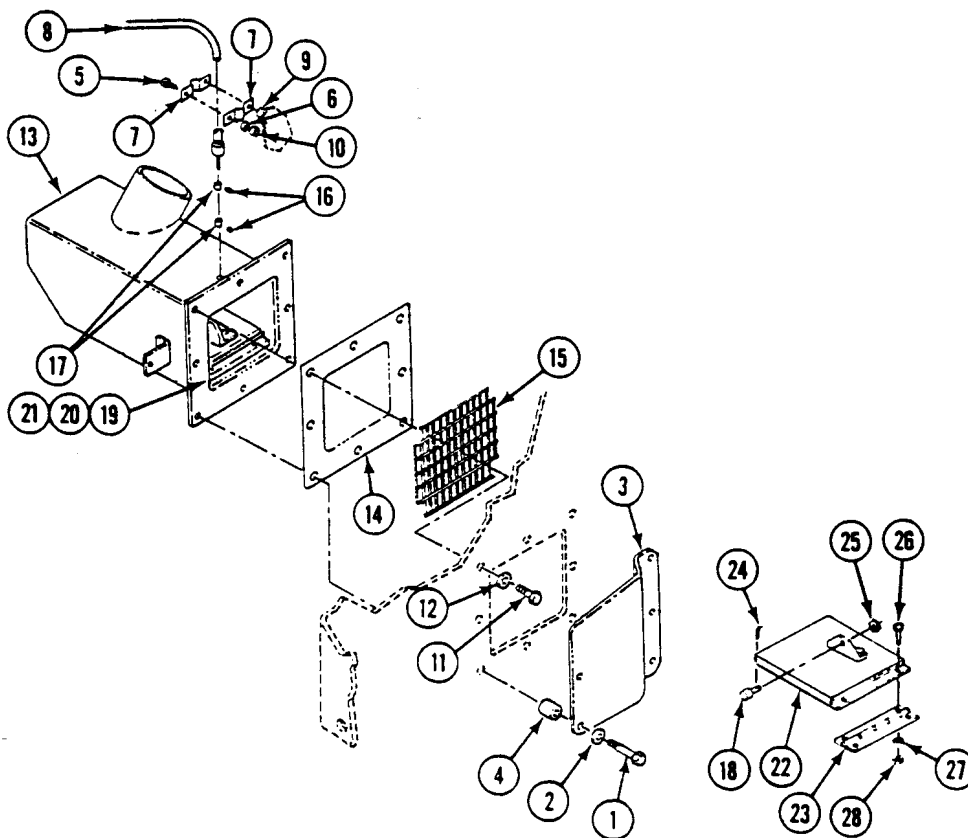


2. Remove two screws (5), washer (6), two clamps (7), and cable (8) from weldnut (9) and locknut (10). Discard locknut.

NOTE

Support air control valve housing to prevent it hanging by control cable. Have helper assist.

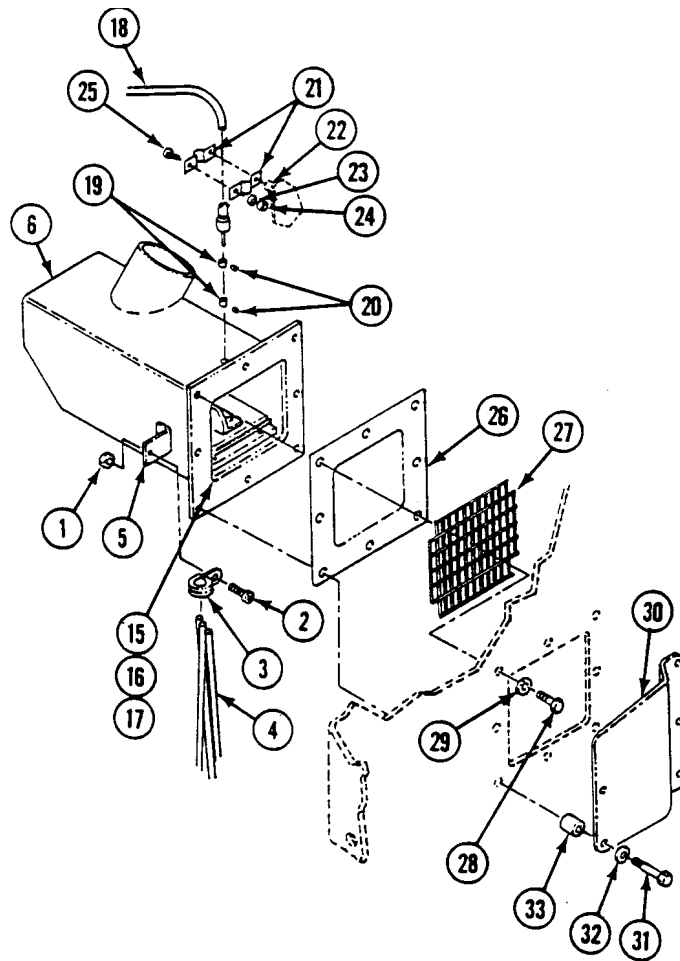
3. Remove three screws (11), washers (12), housing (13), gasket (14) and screen (15) from driver's compartment bulkhead. Discard gasket.
4. Remove two setscrews (16) and collars (17) to separate cable (8) from pin (18).
5. Remove two screws (19), washers (20), nuts (21), baffle (22), and hinge (23) from housing (13).
6. Remove cotter pin (24), washer (25), and pin (18) from baffle (22). Discard cotter pin.
7. Remove two screws (26), washers (27), locknuts (28), and hinge (23) from baffle (22). Discard locknuts.



REPAIR AIR CONTROL VALVE — Continued

0187 00

8. Remove locknut (1), screw (2), clamp (3), and three cables (4) from bracket (5) on housing (6). Discard locknut.

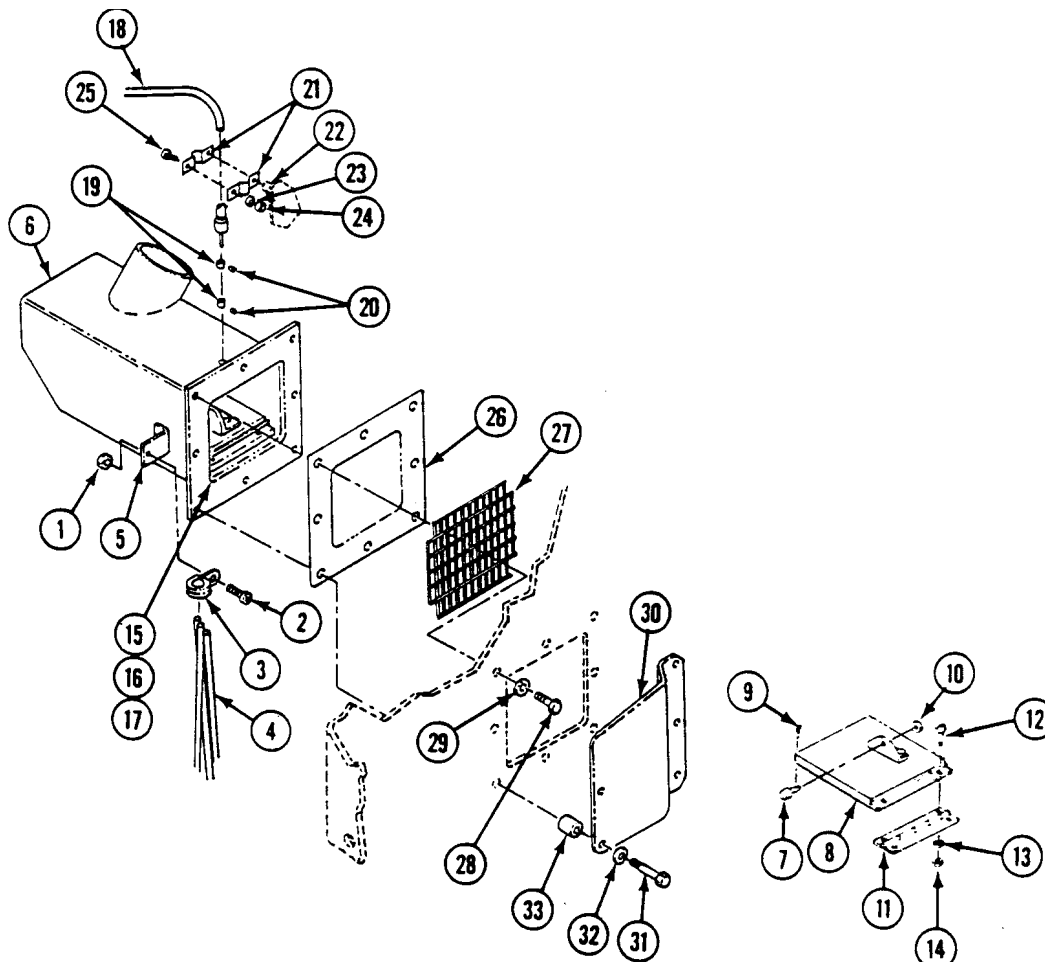


REPAIR AIR CONTROL VALVE — Continued

0187 00

INSTALLATION

1. Install three cables (4) on bracket (5) on housing (6). Secure with clamp (3), screw (2), and new locknut (1).
2. Secure pin (7) to baffle (8) with new cotter pin (9) and washer (10).
3. Secure hinge (11) to baffle (8) with two screws (12), washers (13), and new locknuts (14).
4. Install baffle (8) and hinge (11) in housing (6). Secure with two screws (15), washers (16), and nuts (17).
5. With cable (18) in full forward position and baffle (8) in down position, support housing (6) and secure cable (18) to pin (7) with two collars (19) and setscrews (20).
6. Secure cable (18) and two clamps (21) to weldnut (22) with washer (23), two screws (25), and new locknut (24).
7. Secure housing (6), new gasket (26), and screen (27) to driver's compartment bulkhead with three screws (28) and washers (29).
8. Secure plate (30), housing (6), and new gasket (26) to driver's compartment bulkhead with five screws (31), washers (32), and two spacers (33).



REPAIR AIR CONTROL VALVE — Continued

0187 00**FOLLOW-THROUGH STEPS**

1. Install air cleaner hose (WP 0183 00).
2. Install air cleaner element and housing (WP 0185 00).
3. Install driver's power plant access panel (WP 0430 00).
4. Close power plant front access door (see your -10).
5. Raise trim vane (see your -10).
6. Start engine (see your -10). Check air control valve for proper operation.
7. Engine stopped/shutdown (see your -10).

END OF TASK

REPAIR AIR CONTROL VALVE CABLE

0188 00

THIS WORK PACKAGE COVERS:

Removal (page 0188 00-1).
Installation (page 0188 00-2).

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)

Materials/Parts

Locknut

Personnel Required

Unit Mechanic

Helper (H)

Equipment Condition

Engine stopped/shutdown (see your -10)

Carrier blocked (see your -10)

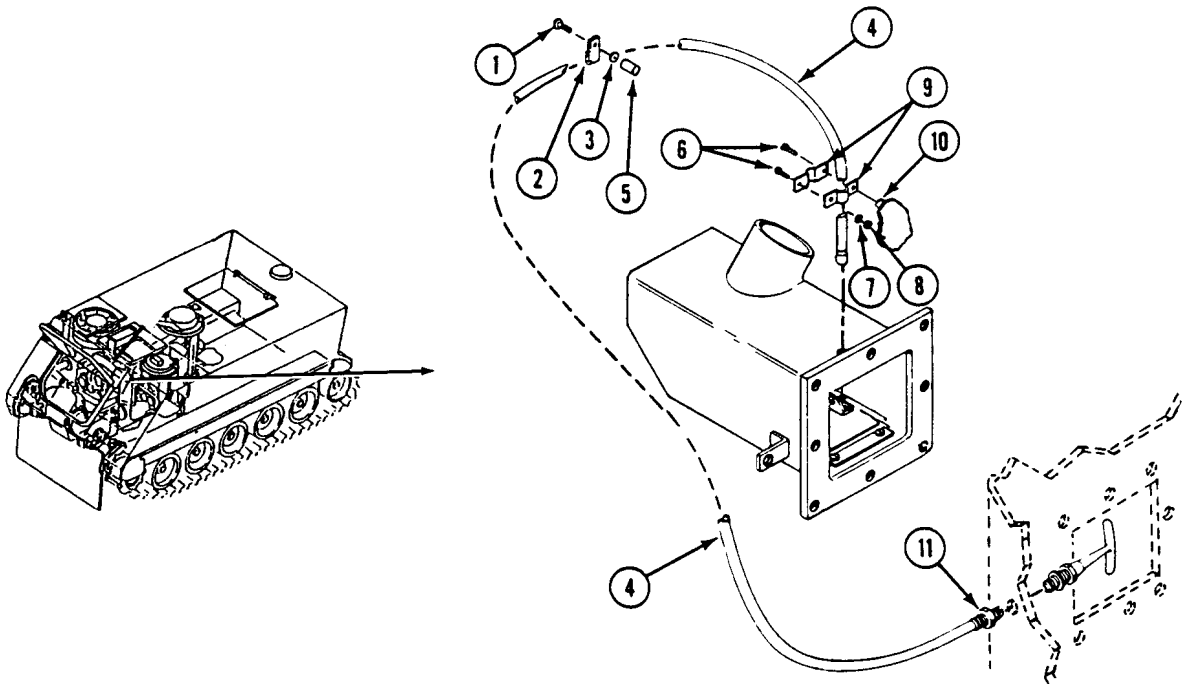
Trim vane lowered (see your -10)

Power plant front access door open (see your -10)

Air control valve removed (WP 0187 00)

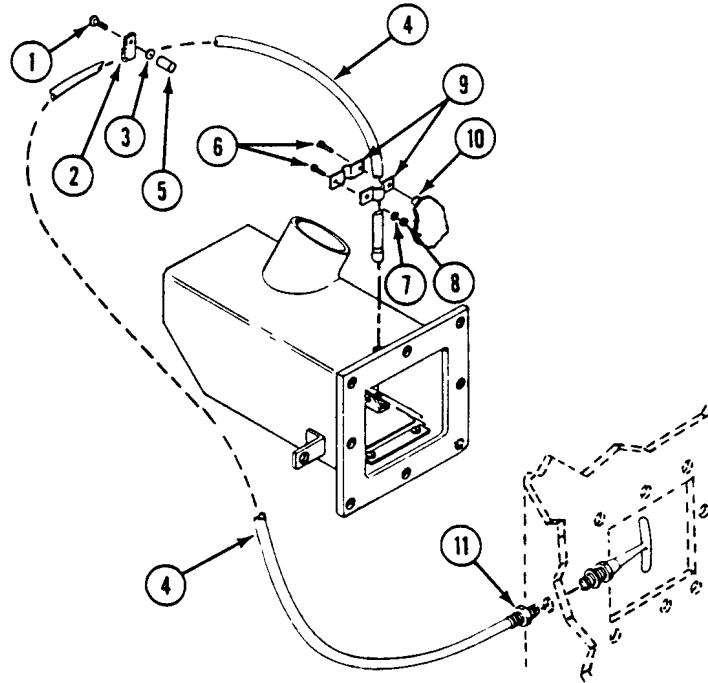
REMOVAL

1. Remove screw (1), clamp (2), and washer (3) securing cable (4) to weldnut (5).
2. Remove clamp (2) from cable (4).
3. Remove two screws (6), washer (7), locknut (8), and two clamps (9) from cable (4) and weldnut (10). Discard locknut.
4. Remove nut (11) from cable (4).
5. Remove cable (4) through opening in driver's compartment bulkhead below throttle and fuel cutoff controls.



REPAIR AIR CONTROL VALVE CABLE — Continued**0188 00****INSTALLATION**

1. Install cable (4) through opening in driver's compartment bulkhead below throttle and fuel cutoff controls.
2. Secure cable (4) to bulkhead with nut (11).
3. Secure two clamps (9) to cable (4) with two screws (6), washer (7), new locknut (8), and weldnut (10).
4. Install clamp (2) on cable (4).
5. Secure clamp (2) to weldnut (5) with screw (1) and washer (3).

**FOLLOW-THROUGH STEPS**

1. Install air control valve (WP 0187 00).
2. Close power plant front access door (see your -10).
3. Raise trim vane (see your -10).

END OF TASK

REPLACE EXHAUST PIPES

0189 00

THIS WORK PACKAGE COVERS:

Removal (page 0189 00-1).
Installation (page 0189 00-2).

INITIAL SETUP:

Maintenance Level

Unit

Tools and Special Tools

General Mechanic's Tool Kit (WP 0780 00, Item 29)
Socket Wrench Set (WP 0780 00, Item 95)
Socket Wrench Set (WP 0780 00, Item 96)
Torque Wrench (WP 0780 00, Item 102)
Torque Wrench (WP 0780 00, Item 106)

Personnel Required

Unit Mechanic

Equipment Condition

Engine stopped/shutdown (see your -10)
Carrier blocked (see your -10)
Trim vane lowered (see your -10)
Power plant front access door open (see your -10)
Air cleaner housing and element removed
(WP 0185 00)

REMOVAL

WARNING



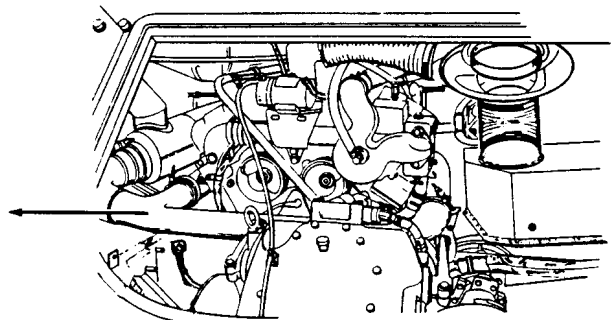
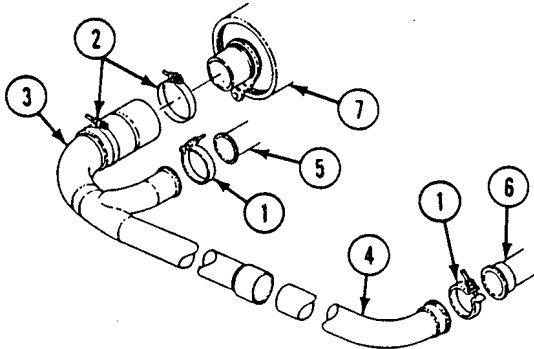
Hot exhaust pipes can burn you. Let power unit cool before you start work.

NOTE

Muffler clamps are used on early exhaust system only. If muffler clamp has to be replaced, new exhaust pipes will need to be ordered.

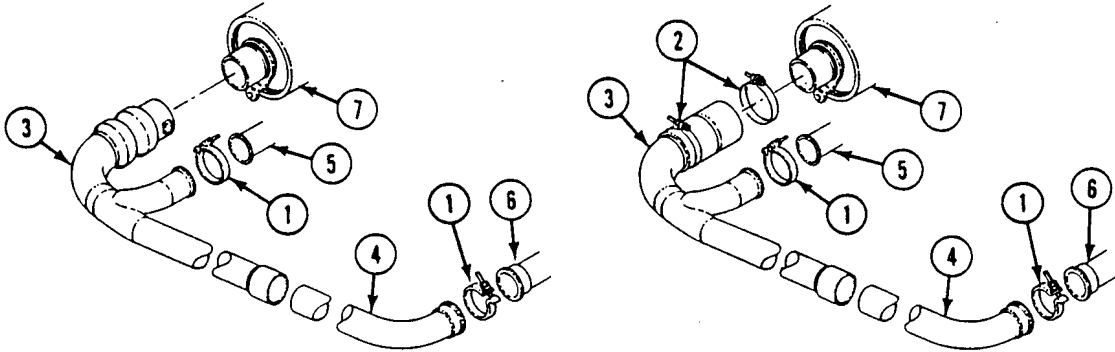
Step 1 is for the early system, Step 2 is for the current system.

1. Loosen two manifold clamps (1) and two muffler joint clamps (2).



REPLACE EXHAUST PIPES — Continued**0189 00**

2. Loosen two manifold clamps (1).
3. Remove exhaust pipes (3) and (4) from engine manifolds (5) and (6) and muffler joint (7).
4. Separate exhaust pipe (3) from exhaust pipe (4).

**INSTALLATION**

1. Install exhaust pipe (1) in exhaust pipe (2).

NOTE

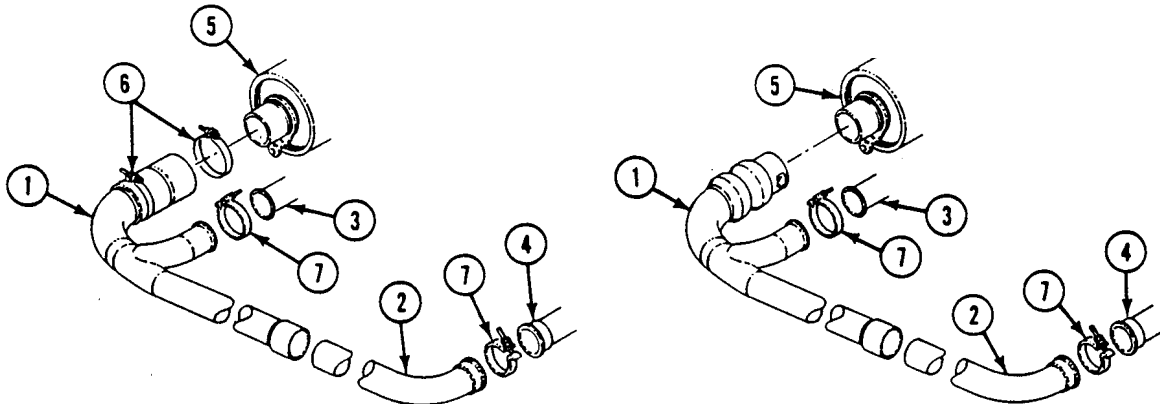
Step 2 is for the early system, Step 3 is for the current system.

2. Install and secure exhaust pipes (1) and (2) on engine exhaust manifolds (3) and (4) and muffler joint (5) with two muffler joint clamps (6).
3. Install exhaust pipe (1) on muffler joint (5). Install and secure exhaust pipes (1) and (2) on engine exhaust manifolds (3) and (4) with two clamps (7).
4. **TIGHTEN TWO CLAMPS (7) TO 204-216 LB-IN (23-25 N·M) TORQUE.** Use torque wrench (WP 0780 00, Item 102) and socket wrench set (WP 0780 00, Item 96).

NOTE

Step 5 is for early system only.

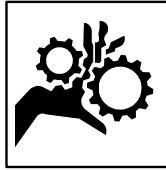
5. **TIGHTEN TWO MUFFLER CLAMPS (6) TO 36-60 LB-IN (4-7 N·M) TORQUE.** Use torque wrench (WP 0780 00, Item 106) and socket wrench set (WP 0780 00, Item 95).



FOLLOW-THROUGH STEPS

1. Install air cleaner housing and element (WP 0185 00).

WARNING



Loose clothing is dangerous around moving belts and pulleys. You could get badly hurt if your clothes get caught in moving parts.

2. Start engine (see your -10). Check for leaks.
3. Engine stopped/shutdown (see your -10).
4. Close power plant front access door (see your -10).
5. Raise trim vane (see your -10).

END OF TASK

REPLACE MUFFLER EXTENSION AND VALVE

0190 00

THIS WORK PACKAGE COVERS:

Removal (page 0190 00-1).
Installation (page 0190 00-3).

INITIAL SETUP:

Maintenance Level

Unit

Personnel Required

Unit Mechanic

Tools and Special Tools

General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Carrier blocked (see your -10)
Engine stopped/shutdown (see your -10)
Power plant front access door open (see your -10)
Trim vane lowered (see your -10)

Materials/Parts

Cotter pin
Key washer (4)

REMOVAL

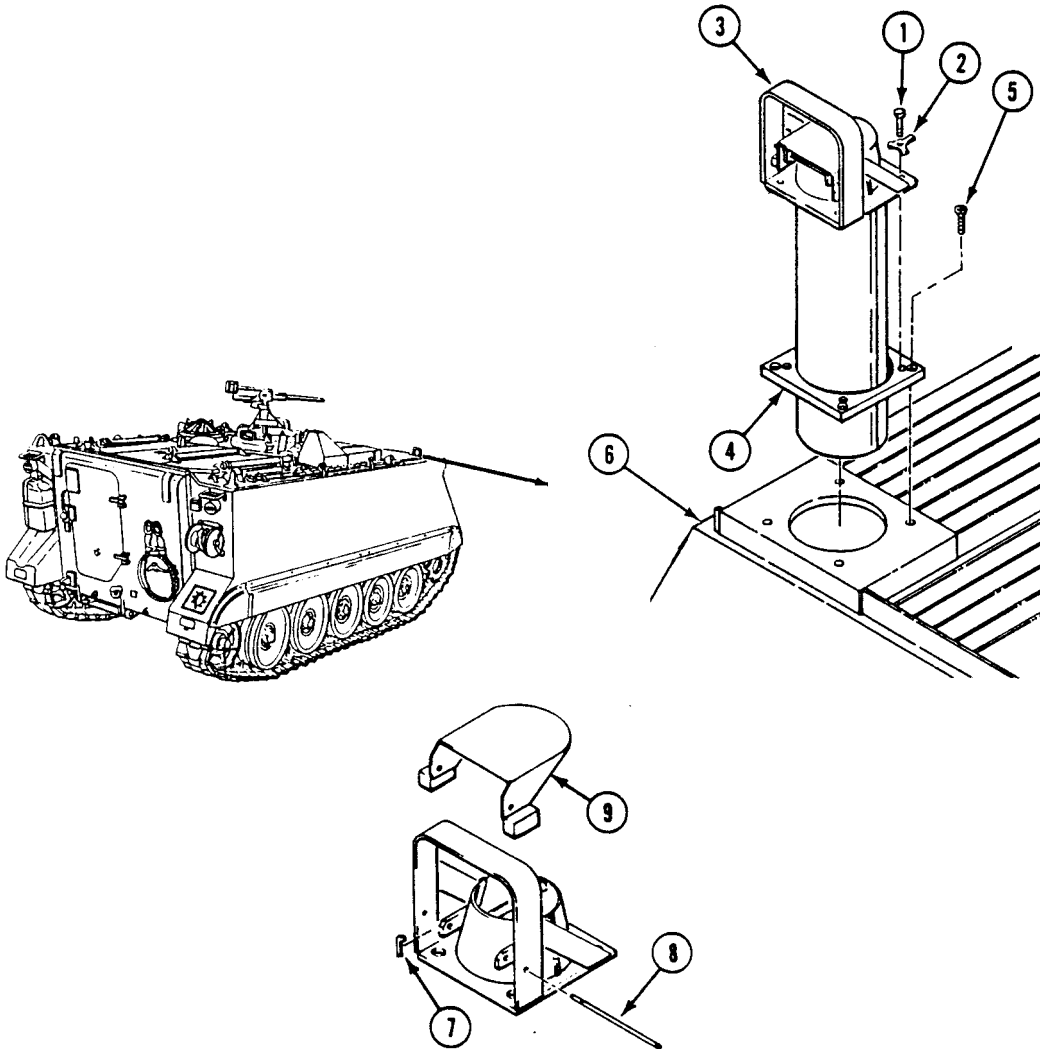
WARNING



Hot exhaust pipes can burn you. Let power unit cool before you start work.

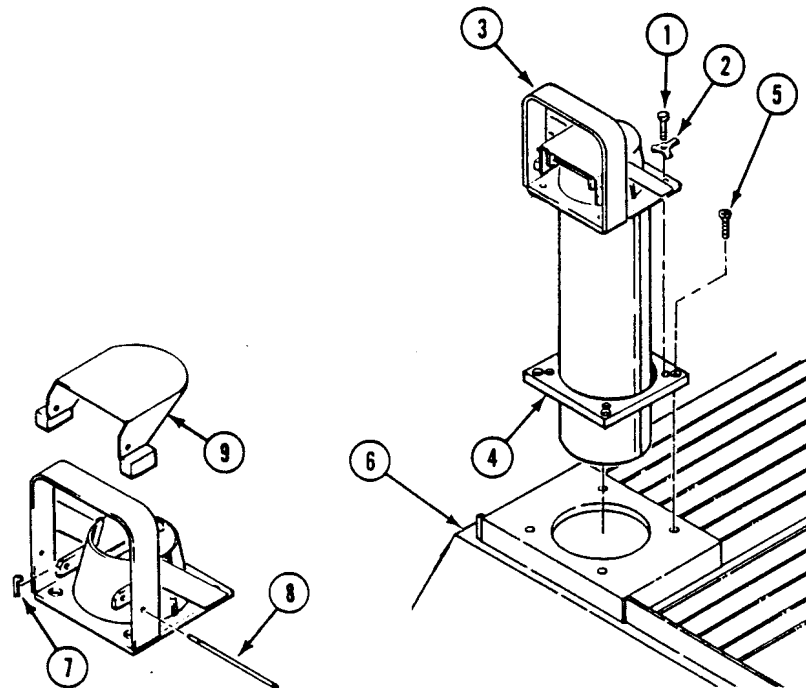
REPLACE MUFFLER EXTENSION AND VALVE — Continued**0190 00**

1. Remove four screws (1) and key washers (2). Lift out exhaust extension (3) from adapter plate (4). Discard washers.
2. Remove four screws (5) and adapter plate (4) from exhaust grill (6).
3. Remove cotter pin (7), pin (8), and valve (9) from exhaust extension (3). Discard cotter pin.



REPLACE MUFFLER EXTENSION AND VALVE — Continued**0190 00****INSTALLATION**

1. Install valve (9) on exhaust extension (3). Secure with pin (8) and new cotter pin (7).
2. Install adapter plate (4) on exhaust grill (6). Secure with four screws (5).
3. Install exhaust extension (3) through adapter plate (4) onto muffler inside carrier.
4. Secure exhaust extension (3) to adapter plate (4) and grill (6) with four new key washers (2) and screws (1).

**FOLLOW-THROUGH STEPS**

1. Start engine (see your -10). Check for exhaust leaks.
2. Close power plant front access door (see your -10).
3. Raise trim vane (see your -10).
4. Stop/shutdown engine (see your -10).

END OF TASK

REPLACE MUFFLER AND BRACKETS

0191 00

THIS WORK PACKAGE COVERS:

Removal (page 0191 00-1).
Installation (page 0191 00-2).

INITIAL SETUP:

Maintenance Level

Unit

References

WP 0190 00

Tools and Special Tools

General Mechanic’s Tool Kit (WP 0780 00, Item 29)

Equipment Condition

Engine stopped/shutdown (see your -10)
Carrier blocked (see your -10)
Trim vane lowered and power plant front access door open (see your -10)
Power plant rear access panel removed (WP 0431 00, WP 0432 00, or WP 0433 00)

Materials/Parts

Cotter pin
Locknut (2)
Lockwasher (2)

Personnel Required

Unit Mechanic

REMOVAL

WARNING

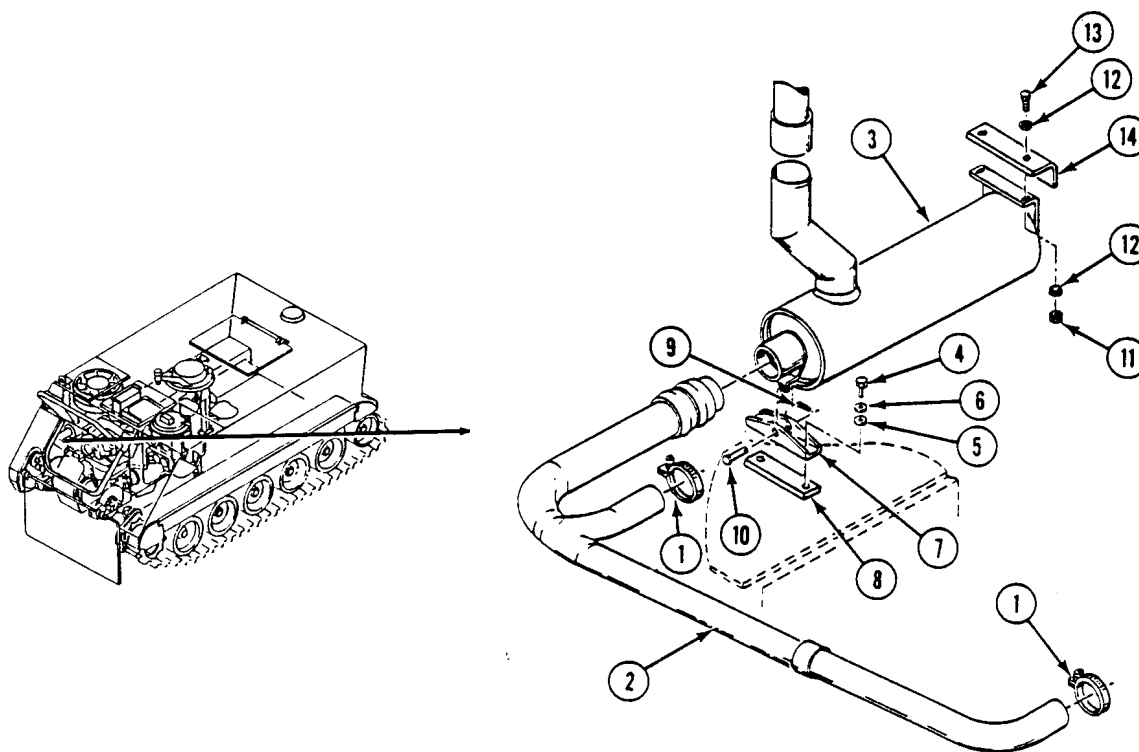


Hot parts can burn you.

Allow parts to cool before working on or near them. If necessary, use heat protective gloves to work on hot parts.

REPLACE MUFFLER AND BRACKETS — Continued**0191 00**

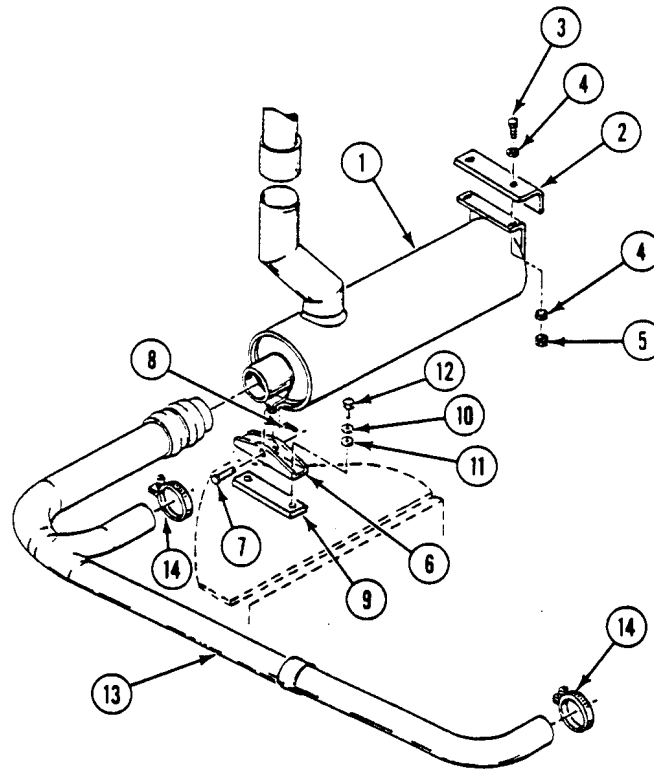
1. Lift exhaust extension up until it clears the muffler (WP 0190 00).
2. Loosen two clamps (1) and remove pipe (2) from muffler (3) and manifold.
3. Remove two screws (4), two washers (5), two lockwashers (6), and front bracket (7) from plate (8). Discard lockwashers.
4. Remove cotter pin (9), pin (10), and muffler (3) from front bracket (7). Discard cotter pin.
5. Remove two locknuts (11), four washers (12), two screws (13), and muffler (3) from rear bracket (14). Discard locknuts.

**INSTALLATION**

1. Secure rear of muffler (1) to bracket (2) with two screws (3), four washers (4), and two new locknuts (5).
2. Secure front of muffler (1) to front bracket (6), with pin (7) and new cotter pin (8).
3. Secure front bracket (6) to plate (9) with two new lockwashers (10), two washers (11), and two screws (12).

REPLACE MUFFLER AND BRACKETS — Continued**0191 00**

4. Secure pipe (13) to muffler (1) and manifold with two clamps (14).



5. Lower exhaust extension into muffler (WP 0190 00).

FOLLOW-THROUGH STEPS

1. Start engine (see your -10). Check for leaks.
2. Stop/shutdown engine (see your -10).
3. Install power plant rear access panel (WP 0431 00, WP 0432 00, or WP 0433 00).
4. Close power plant front access door and raise trim vane (see your -10).

END OF TASK

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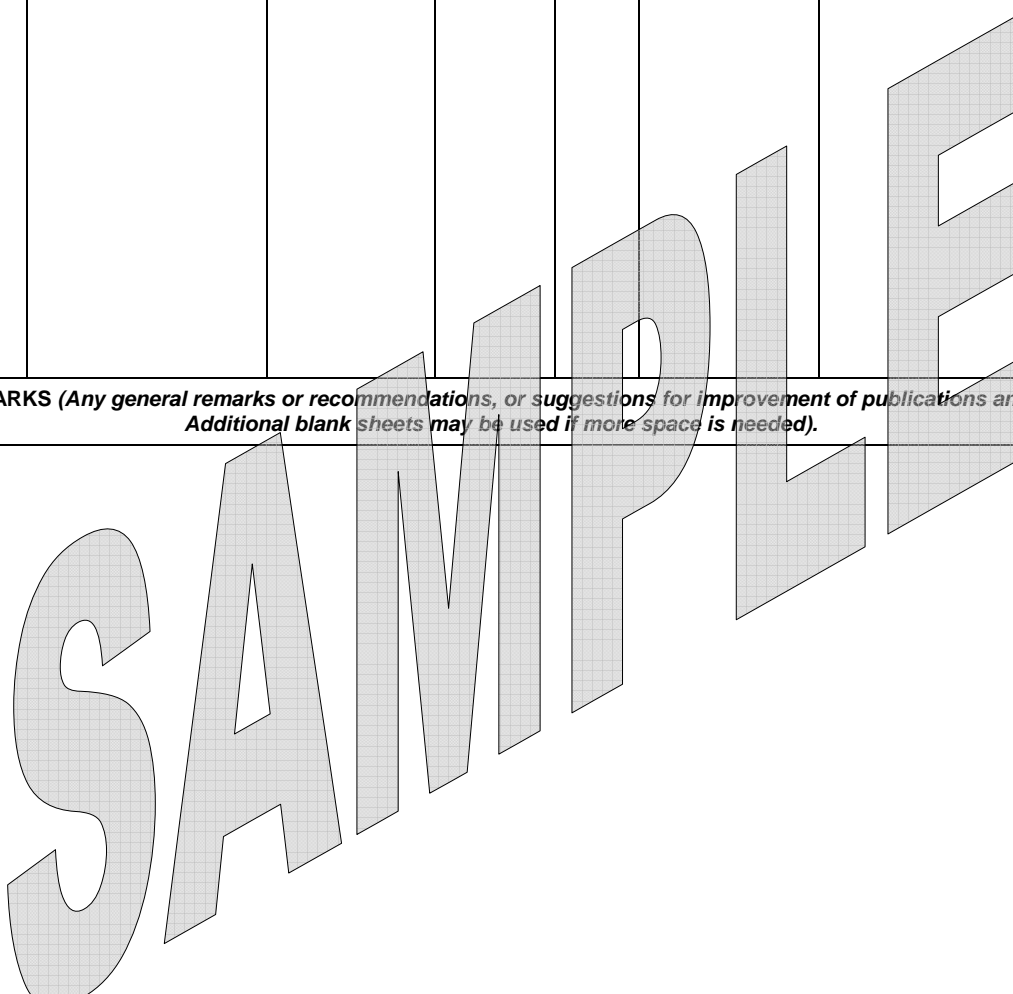
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ITEM	PAGE	PARA	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON			
0052 00-4						Inspection Step 1 WP reference should be (WP 0003 00)			
<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%) rotate(-45deg); opacity: 0.3; font-size: 100px; pointer-events: none;"> SAMPLE </div>									
<i>*Reference to line numbers within the paragraph or subparagraph.</i>									
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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
PART III – REMARKS <i>(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed).</i>								
<div style="position: relative; width: 100%; height: 100%;">  </div>								
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By Order of the Secretary of the Army:

Official:


SANDRA R. RILEY
*Administrative Assistant to the
Secretary of the Army*
0520104

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

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

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

WEIGHTS

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

LIQUID MEASURE

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

SQUARE MEASURE

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

CUBIC MEASURE

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

TEMPERATURE

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

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Millimeters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621

