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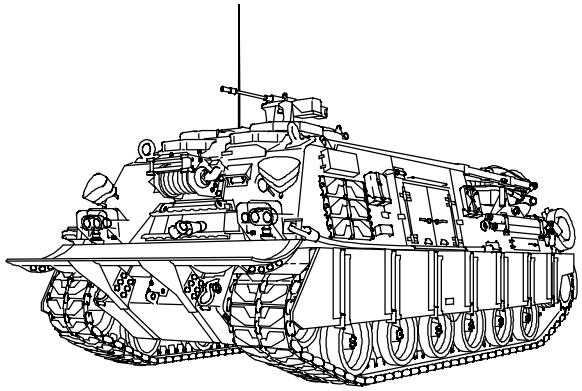
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TECHNICAL MANUAL
VOLUME 1 OF 2

UNIT MAINTENANCE MANUAL

FOR

RECOVERY VEHICLE, HEAVY, FULL-TRACKED: M88A2 (NSN 2350-01-390-4683) (EIC: ACQ)



This manual supercedes TM 9-2350-292-20-1 dated 1 October 2000.
Distribution Statement A: Approved for public release; distribution is unlimited.

01 JANUARY 2002
HEADQUARTERS, DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. MARINE CORPS

WARNING SUMMARY



CARBON MONOXIDE POISONING IS DEADLY

Carbon monoxide is a colorless, odorless, DEADLY POISONOUS gas and when breathed deprives the body of oxygen and causes SUFFOCATION. Breathing air with carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, a sleepy feeling, and coma. Permanent BRAIN DAMAGE or DEATH can result from severe exposure.

The following precautions MUST be followed to ensure personnel are safe whenever the personnel heater, main, or auxiliary engine of any vehicle is operated for any purpose.

DO NOT operate personnel heater or engine of vehicle in enclosed area without adequate ventilation.

DO NOT idle engine for long periods without ventilator blower operation. If tactical situation permits, open hatches.

DO NOT drive any vehicle with inspection plates, cover plates, or engine compartment doors removed unless necessary for maintenance purposes.

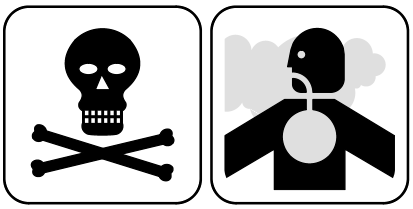
NEVER sleep in a vehicle when the heater is operating or engine is idling.

BE ALERT at all times during vehicle operation for exhaust odors and exposure symptoms. If either are present, IMMEDIATELY EVACUATE AND VENTILATE the area. Affected personnel treatment shall be: expose to fresh air; keep warm; DO NOT PERMIT PHYSICAL EXERCISE; if necessary, administer artificial respiration as described in FM 21–11 and get medical attention.

BE AWARE; neither the gas particulate filter unit nor field protection mask for nuclear–biological–chemical protection will protect you from carbon monoxide poisoning.

THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS ADEQUATE VENTILATION.

WARNING



EXHAUST GASES CAN KILL

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

1. Do not operate vehicle engine in enclosed areas.
2. Do not idle vehicle engine with vehicle windows closed.
3. Be alert at all times for exhaust odors.
4. Be alert for exhaust poisoning symptoms. They are:

   Headache.
   Dizziness.
   Sleepiness.
   Loss of muscular control.

5. If you see another person with exhaust poisoning symptoms:

   Remove person from area.
   Expose to open air.
   Keep person warm.
   Do not permit physical exercise.
   Administer artificial respiration, if necessary*
   Seek immediate medical attention.
   *For artificial respiration, refer to FM 21-11.

6. BE AWARE, the field protective mask for Nuclear-Biological-Chemical (NBC) protection will not protect you from carbon monoxide poisoning.

THE BEST DEFENSE AGAINST EXHAUST POISONING IS ADEQUATE VENTILATION.

WARNING



CHEMICAL AGENT RESISTANT COATING (CARC) PAINTING HAZARD

CARC paint contains isocyanate (HDI) which is highly irritating to skin and respiratory system. High concentrations of HDI can produce symptoms of itching and reddening of skin, a burning sensation in throat and nose and watering of the eyes. In extreme concentrations, HDI can cause cough, shortness of breath, pain during respiration, 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. Use chemical cartridge respirator if air sampling is below standards.

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

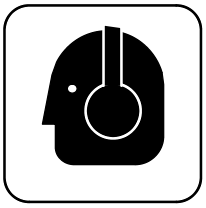
DO NOT use CARC paint without adequate ventilation.

NEVER weld or cut CARC-coated materials.

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

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

WARNING



NOISE HAZARD

Personnel hearing can be PERMANENTLY DAMAGED if exposed to constant high noise levels of 85 dB (A) or greater. Wear approved hearing protection devices when working in high noise level areas. Personnel exposed to high noise levels shall participate in a hearing conservation program in accordance with DA PAM 40-501. Hearing loss occurs gradually but becomes permanent over time.

WARNING



FALLING EQUIPMENT HAZARDS

Never crawl under equipment when performing maintenance unless equipment is securely blocked. Equipment may fall and cause serious injury or death to personnel.

Keep clear of equipment when it is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.

Do not work on any item supported by only lift jacks or hoist. Always use blocks or proper stands to support the item prior to work. Equipment may fall and cause serious injury or death to personnel.

Do not allow heavy components to swing while suspended by lifting device. Equipment may strike personnel and cause injury.

Exercise extreme caution when working near a cable or chain under tension. A snapped cable, shifting or swinging load may result in injury or death to personnel.

All personnel must stand clear during lifting operations. A swinging or shifting load may cause injury or death to personnel.

Unless otherwise specified, perform all maintenance procedures with all equipment lowered to the ground, transmission in neutral, parking/emergency brake applied, and the engine stopped to prevent possible injury to personnel due to falling equipment or rolling vehicle (ref. FM 21-11).



FIRE HAZARD

Diesel fuel and combustible materials are used in operation and maintenance of this equipment. Do not smoke or allow open flames or sparks in areas where diesel fuel and combustible materials are used or stored. DEATH or severe injury may result if personnel fail to observe this precaution. If you are burned, seek medical aid immediately (ref. FM 21–11).



DO NOT USE MINERAL SPIRITS OR PAINT THINNER TO CLEAN THE M88 HRV.

Mineral spirits and paint thinners are highly toxic and combustible. Prolonged breathing can cause dizziness, nausea, and even death (ref. FM 21–11).

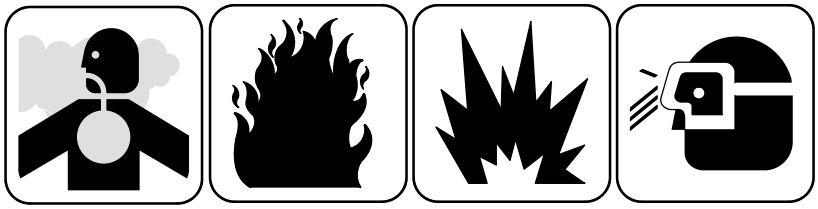
DO NOT USE THESE MATERIALS



Use care when removing snap and retaining rings. Snap and retaining rings are under spring tension and can act as projectiles when released and could cause severe eye injury.

Use care when cutting lockwire. Wire can act as a projectile when cut and could cause severe eye injury.

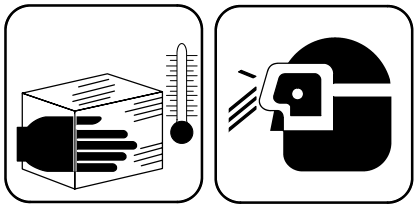
WARNING



DRY-CLEANING SOLVENT

Dry-cleaning solvent (P-D-680) used to clean parts, is toxic and flammable. Wear protective goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes. Do not breathe vapors. Do not use near open flame or excessive heat. Do not smoke when using solvent. Failure to do so could cause SERIOUS INJURY. If you become dizzy while using cleaning solvent, get fresh air immediately, and if necessary, get medical attention. If contact with skin or clothes is made, flush thoroughly with water. If the solvent contacts your eyes, wash with water immediately, and obtain medical aid (ref. FM 21-11).

WARNING



FIRE EXTINGUISHING SYSTEM HAZARDS

Fire bottles can discharge and injure personnel. Insert antirecoil plugs, lock pins, and cotter pins before working on or near bottles.

CO^2 can cause frostbite or eye injury. Wear protective clothing and goggles to avoid contact. If CO^2 contacts hands, hold hands under armpits or in warm water until warmed. If CO^2 contacts eyes, flush with large amounts of water and get medical attention immediately.

WARNING

FASTENERS AND ATTACHING HARDWARE HAZARD

Always use the same fastener part number (or equivalent) when replacing fasteners. Do not risk using a fastener of less quality; do not mix metric and inch (customary) fasteners. Mismatched or incorrect fasteners can result in damage, malfunction, or injury.

WARNING



NBC EXPOSURE AND VEHICLE AIR FILTER HAZARDS

NBC-contaminated air filters must be handled and disposed of only by authorized and trained personnel. The unit commander or senior officer in charge of maintenance personnel must ensure that prescribed protective clothing (FM 3-4) is used, and prescribed safety measures and decontamination procedures (FM 3-5) are followed. The local unit SOP is responsible for final disposal of contaminated air filters. Failure to comply may cause severe injury or death to personnel.

The NBC protection filters use a type of carbon that contains Chromium VI. This is a known carcinogen if inhaled or swallowed. Damaged or unusable filters are classified as hazardous waste.

a. Do not throw away damaged or unusable filters as trash.

b. Turn in damaged or unusable filters to your Hazardous Waste Management Office or Defense Reutilization and Marketing Office (DRMO).

Filters are completely safe to handle and use if they are not damaged in such a way that carbon leaks from them. If carbon does leak, use protection such as a dust respirator to cover nose and mouth and put carbon in container such as self-sealing plastic bag; turn in to Hazardous Waste Management Office or DRMO.

Disposal of hazardous waste is restricted by law. Violation is subject to criminal penalties.

WARNING

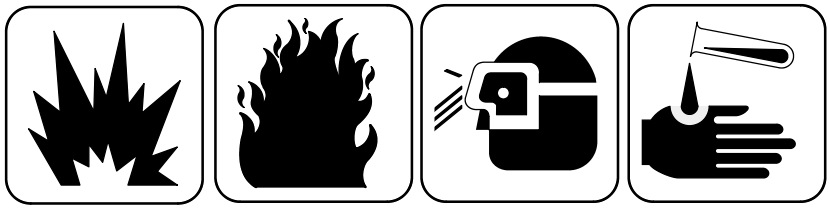


ELECTRICAL HAZARDS

Be certain vehicle MASTER switch is OFF when working on vehicle electrical system to prevent injury due to electrical shock (ref. FM 21-11).

Remove rings, bracelets, wristwatches and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

WARNING



BATTERY HAZARDS

Lead-acid gases can explode. Do not smoke, have open flames, or make sparks around a battery, especially if caps are off. If a battery is gassing, it can explode and cause injury to personnel.

a. Ventilate when charging or using in a enclosed space.

b. Wear safety goggles and acid-proof gloves when battery cover must be removed or when adding electrolyte.

c. Avoid electrolyte contact with skin, eyes, or clothing. If battery electrolyte spills, take immediate action to stop burning effects:

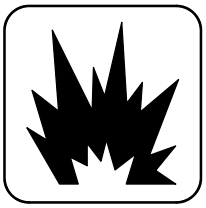
External: Immediately flush with cold running water to remove all acid.

Eyes: Flush with cold water for at least 15 minutes. Seek immediate medical attention.

Internal: Drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Seek immediate medical attention.

Clothing or Vehicle: Wash at once with cold water. Neutralize with baking soda or household ammonia solution.

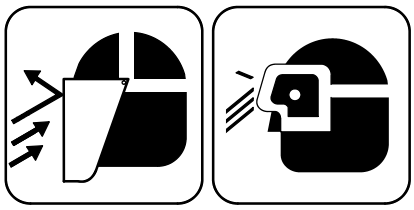
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EXPLOSION HAZARD

Cylinders containing compressed gases must not be dropped, struck, or subjected to any temperature above +140°F (+60°C). This could result in an explosion and injury to personnel (ref. FM 21-11).

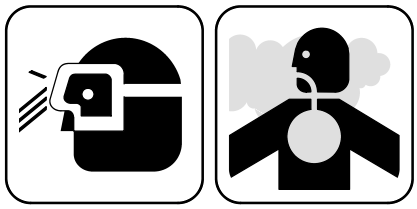
WARNING



COMPRESSED AIR HAZARD

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

WARNING

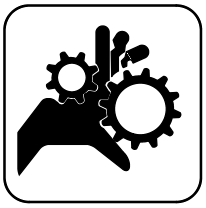


ADHESIVE HAZARDS

Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use it in a well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush eyes with water for 15 minutes and get immediate medical attention.

Adhesive sealant MIL-S-46163 can damage your eyes. Wear your safety goggles/glasses when using; avoid contact with eyes. If sealant contacts eyes, flush eyes with water and get immediate medical attention.

WARNING



ROTATION HAZARD

When working on a running engine, provide shielding for exposed rotating parts. Tools, clothing, or hands can get caught and cause serious injury to personnel.

WARNING



BURN HAZARD

Allow engine to cool before performing maintenance on the muffler, exhaust pipe, exhaust manifold, or turbocharger. If necessary, use insulated pads or gloves.

Do not touch hot exhaust system with bare hands; injury to personnel will result.

Wheels/hubs may be hot after operation. Exercise extreme care when checking wheels/hubs for proper operation. Failure to comply may result in injury to personnel.

WARNING



To avoid personal injury, use an assistant when lifting parts or components that weigh more than 40 lbs (23 kg). Failure to comply may cause injury to personnel.

WARNING



FIRE RETARDANT HYDRAULIC OIL (FRH)

FRH hydraulic fluid may contain Tricresyl Phosphate which if taken internally, can cause paralysis.

Hydraulic Fluid may be absorbed through the skin. Follow these precautions.

Wear long sleeves, gloves, goggles, and face shield when using FRH.

If FRH contacts eyes, immediately flush eyes with water and get immediate medical attention.

If FRH contacts skin, thoroughly wash with soap and water.

Wash hands thoroughly before eating or smoking after using FRH.

WARNING



Use two personnel to guide driver when backing the vehicle for emplacement or any other reason. Failure to comply may result in injury or DEATH to personnel or damage to equipment.

WARNING



Never disconnect any hydraulic line or fitting without first dropping pressure to zero. High-pressure hydraulics operate this equipment. Refer to vehicle operator and maintenance manuals for hydraulic oil pressure. A high-pressure oil stream can pierce body and cause severe injury to personnel.

To prevent personnel injury or death, do not attempt to loosen or tighten hydraulic fittings or lines when system is pressurized. Activate hydraulic controls several times with engine and auxiliary power unit OFF to relieve residual pressure in the hydraulic system.

Diesel or hydraulic fluid leaks under pressure may not be visible. Use a piece of wood or cardboard to find leaks, DO NOT use a bare hand. Wear safety goggles for protection. Failure to comply may result in injury to personnel.

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Note: This manual supercedes TM 9-2350-292-20-1 dated 01 October 2000.

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MARINE CORPS TM 07769B-20/2-1

HEADQUARTERS
DEPARTMENT OF THE ARMY
U.S. MARINE CORPS
WASHINGTON, D.C. 01 JANUARY 2002

TECHNICAL MANUAL

UNIT MAINTENANCE MANUAL

RECOVERY VEHICLE, HEAVY, FULL-TRACKED:M88A2
NSN 2350-01-390-4683 (EIC: ACQ)

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

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HOW TO USE THIS MANUAL

This manual was designed to provide you with the information you will need to maintain the M88A2 recovery vehicle.

The information contained in this manual is presented in chapters and work packages. Each chapter is divided into work packages to cover the subject for vehicle system(s) or components. Where references are made to tables, figures, and work packages, refer to those portions of the text.

To find information relating to a specific component or system:

Determine the specific name or function of the component/system.
Find the name or function in the Index Listing, located in the back of this manual.
Refer to appropriate work package(s) called out in the Index Listing.

To find information pertaining to a broader range of information (such as vehicle troubleshooting, preventive maitenance component repair, and component descriptions):

Identify the desired topic.
Find the general topic in the Table of Contents, located in the front of this manual.
Refer to appropriate work package(s) called out in the Table of Contents.

MAINTENANCE

Throughout this manual you will frequently see “notify direct support maintenance”. When you are instructed to notify direct support maintenance, do exactly that; they have the tools and training to efficiently and correctly perform the next level of maintenance.

Maintenance procedures are to be performed in the sequence shown in the text and illustrations. Step 1 must be performed before step 2 and so on.

Equipment illustrations use numbers to identify parts of the system/components.

Throughout this manual the words WARNING, CAUTION, and NOTE will appear. There is a reason for every one of them.

WARNING

A warning is used to alert the user to hazardous operating and maintenance procedures, practices, conditions, statements, etc. that may result in injury to or DEATH or personnel if not strictly observed.

CAUTION

A caution is used to alert the user of hazardous operating and maintenance procedures, practices, conditions, statement, etc. that may result in damage to or destruction of equipment or of mission effectiveness if not observed.

NOTE

A note is used to inform the user of essential information which is of speical interest or importance or will aid the user in performing a job.

END OF TASK

GENERAL INFORMATION 0001 00

THIS WORK PACKAGE COVERS:
General information

SCOPE

Type of manual: Unit Maintenance.

Model number and equipment name: M88A2, Recovery Vehicle, Heavy.

Purpose of equipment: To provide for battlefield recovery (hoist/winch/tow) of vehicles up to and including the M1 series tank.

MAINTENANCE FORMS, RECORDS AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738–750, The Army Maintenance Management System (TAMMS) as contained in the Maintenance Management Update.

Accidents involving injury to personnel or damage to materiel will be reported on DA Form 285 (Accident Reporting) in accordance with AR 385–40.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS

If your M88A2 HRV needs improvement, let us know. Send us an Equipment Improvement Recommendation (EIR). You, the user, are the only one who can tell us what you don't like about our equipment. Let us know why you don't like the design or performance. Put it on a SF 368 (Product Quality Deficiency Report). Mail it to the address specified in DA PAM 738–750.

HAND RECEIPT (HR) MANUALS

This manual has a companion document with a TM number followed by "–HR" (which stands for Hand Receipt). TM 9–2350–292–10–HR consists of preprinted hand receipts that list end item related equipment (i.e., COEI, BII, and AAL) that must be accounted for. As an aid to property accountability, additional HR manuals may be requisitioned through normal publication channels.

CORROSION PREVENTION AND CONTROL

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problem with the HRV be reported so that improvements can be made to prevent the problem in the future. While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem. If a corrosion problem is identified, it can be reported using SF 368, (Product Quality Deficiency Report). Use of keywords such as "corrosion," "rust," "deterioration," or "cracking" will ensure that the information is identified as a CPC problem. SF 368 should be submitted to the address specified in DA PAM 738–750.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Refer to TM 750–244–6 for procedures on how to destroy the M88A2 HRV.

Below are some general guidelines to follow in destruction of equipment to prevent enemy use.

Destruction of the vehicle and equipment, when subject to capture or abandonment in a combat zone, will be undertaken only when such action is necessary in accordance with orders of, or policy established by, the Army commander.

In general, destruction of essential parts, followed by burning, will usually be sufficient to render the vehicle and equipment useless. Time is usually critical.

GENERAL INFORMATION - CONTINUED 0001 00

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE - CONTINUED

Materiel must be damaged so that it cannot be restored to usable condition by either repair or cannibalization. If lack of time or personnel prevents destruction of all parts, give priority to destruction of parts hardest to replace. It is important that the same parts be destroyed on all vehicles to prevent construction of one complete vehicle from several damaged ones.

The procedure outlined below requires the use of demolition materials and explosives which normally may not be authorized items of issue to the using organization. The issue of these and related materials and conditions under which destruction will be effected, are command decisions in each case, according to the tactical situation.

Varying degrees of damage to the armament and other equipment may be expected during destruction of the vehicle as outlined below:

1. Remove and empty portable fire extinguishers and discharge the fixed fire extinguisher system.

2. Smash all vital elements such as auxiliary power unit, batteries, switches, instruments, hydraulic valves, coupling devices, mechanical transmission, hydraulic pumps and all accessible engine and transmission components. Slash hydraulic lines, electrical cables and harnesses.

3. Drain fuel and hydraulic oil tanks or puncture them as near the bottom as possible.

4. For the engine compartment, transmission, tracks, winches and boom, prepare eleven, 2-pound demolition charges. Use 1-pound TNT blocks or equivalent together with the necessary detonating cord to make up the required charges. Place the required charges as follows:

   - Set the first charge on the accessory drive housing at the forward end of the engine.
   - Set the second and third charges on the engine, one on the left side and one on the right side.
   - Set the fourth charge between the engine and transmission.
   - Set the fifth and sixth charges on the track drive sprockets, one on the left side and one on the right side.
   - Set the seventh charge on the main winch motor.
   - Set the eighth and ninth charges on the hoisting boom at the boom crankarms, one on the left side and one on the right side.
   - Set the tenth and eleventh charges on the hoisting boom stayline crankarms, one on the left side and one on the right side.

   Connect all eleven charges for simultaneous detonation with detonating cord.

5. Provide for dual priming to minimize the possibility of a misfire. For complete details on the use of demolition materials and methods of priming and detonating demolition charges, refer to FM 5-250. Training and careful planning are essential. The danger area is estimated to be 500 yards; elapsed time is approximately 10 minutes.

PREPARATION FOR STORAGE OR SHIPMENT

Refer to WP 0712 00 for the requirements for Administrative Storage and requirements for vehicle shipment.

GENERAL INFORMATION - CONTINUED 0001 00

WARRANTY INFORMATION

Refer to TB 9-2350-292-15 for warranty information pertaining to the M88A2 HRV.

NOMENCLATURE CROSS-REFERENCE LIST

Nomenclature in this manual was chosen in accordance with the terms used for provisioning as they appear in the Repair Parts and Special Tools List (RPSTL) and Maintenance Allocation Chart (MAC) for unit maintenance.

A few tools and components are, however, referred to by names more common than those in the RPSTL. In many cases the more common name is a shorter name for the same component.

OFFICIAL PROVISIONING NOMENCLATURE	MORE COMMON NAME
Cable assembly	Wiring harness or lead assembly
Gauge rod	Dipstick, bayonet gauge, saber gauge
Safety wire	Lockwire
Socket head screw key	Hex key
Solid rubber wheel	Roadwheel
Wire rope	Cable
Engine analyzer set	STE-ICE-R
Vehicle cargo tie-down	Track binder
Key, woodruff key, machine key	Key

LIST OF ABBREVIATIONS

AAL	Additional Authorized List
AOAP	Army Oil Analysis Program
ATE	Automatic Test Equipment
BDAR	Battlefield Damage Assessment and Repair
BII	Basic Issue Item
_C	Degree Centigrade
CAGEC	Contract and Government Entity Code
CAM	Chemical Agent Monitor
CAR	Corrective Action Report
CARC	Chemical Agent Resistant Coating
CCW	Counterclockwise
CM	Centimeters
COEI	Component Of End Item
CPC	Corrosion Prevention and Control
CTA	Common Table of Allowances
CW	Clockwise
DC	Direct Current
DCA	Diagnostic Connector Assembly
DMWR	Depot Maintenance Work Order
DOD	Department of Defense
DS	Direct Support
EIR	Equipment Improvement Recommendation
_F	Degree Fahrenheit
FMC	Fully Mission Capable
FOV	Family of Vehicles
FRH	Fire Resistant, Rust Inhibited Hydraulic Fluid
FWD	Forward
GND	Ground
GS	General Support
HRV	Heavy Recovery Vehicle
KG	Kilogram
KPH	Kilometer Per Hour

GENERAL INFORMATION - CONTINUED 0001 00

LIST OF ABBREVIATIONS - CONTINUED

L	Liter
LRU	Line Replaceable Unit
M	Meter
MM	Milimeter
MAC	Maintenance Allocation Chart
MAX	Maximum
MIN	Minimum
MOS	Military Occupational Specialties
MPH	Miles Per Hour
MTOE	Modified Table of Organization and Equipment
N	Neutral
NBC	Nuclear, Biological, Chemical
NSN	National Stock Number
PMCS	Preventative Maintenance Checks and Services
PSI	Pounds Per Square Inch
PWR	Power
QA	Quality Assurance
QDR	Quality Deficiency Report
R	Reverse
RPM	Revolutions Per Minute
RPSTL	Repair Parts and Special Tools List
SPORT	Soldier's Portable On-system Repair Tool
STE	Special Test Equipment
STE/ICE-R	Simplified Test Equipment for Internal Combustion Engines Reprogrammable
TB	Technical Bulletin
TM	Technical Manual
TAMMS	The Army Maintenance Management System
TMDE	Test, Measurement, Diagnostic Equipment
TOE	Tables of Equipment
VIS	Vehicle Intercommunications System
WP	Work Package

QUALITY ASSURANCE (QA)

No particular quality assurance manual pertains specifically to the M88A2 HRV.

Defective material received through the supply system should be reported on Quality Deficiency Report (QDR) SF 368. Instructions for preparing QDR's are provided in AR 702-7, Reporting of Quality Deficiency Data. QDR's should be mailed directly to:

Commander
U.S. Army Tank-automotive and Armaments Command
ATTN: AMSTA-QRT
Warren, MI 48397-5000

A reply will be furnished directly to you.

GENERAL INFORMATION - CONTINUED 0001 00

COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970; or CTA 8-100, as applicable to your unit.

The tool kit (box) assigned to the mechanic (on a 1-per-mechanic-by MOS basis) shall be identified in the individual maintenance paragraphs by nomenclature, item number and work package. No tool in the kit shall be further identified. Other tools required for performance of tall tasks for the maintenance levels covered in the manual shall be identified in the setup and shall be referenced to the Tool identification List, WP 0717 00. "Other tools" includes tools which are part of the components of shop sets authorized to section/teams; tools authorized by RPSTL and CTA 50-970; special and fabricated tools; and items of TMDE.

SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Special tools and equipment necessary to perform the maintenance described in this manual are listed in WP 0715 00 for information only. Special tools and equipment are listed in TM 9-2350-292-24P, which is the authority for requisitioning replacements. Fabricated tools are identified in the initial setup; manufacturing instructions for fabricated tools are found in WP 0719 00

TOOLS, TMDE, AND SUPPORT EQUIPMENT

Refer to Maintenance Allocation Chart (MAC), WP 0715 00 and Repair Parts and Special Tools List (RPSTL) TM 9-2350-292-24P for tools. Fabricated tools are located in WP 0719 00.

REPAIR PARTS

Repair parts are listed and illustrated in the repair parts and special tools list covering unit maintenance (TM 9-2350-292-24P). All mandatory replacement parts identified in the initial setup are listed in WP 0718 00 of this manual.

Gaskets, packings, preformed packings, seals, lockwashers, locknuts, self-locking nuts, cotter pins and spring pins must be replaced. Bushings must be replaced only if removed.

Springs must be replaced if broken, kinked, cracked or do not conform to standards specified in the repair data.

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END OF TASK

CHAPTER 1

DESCRIPTION AND THEORY OF OPERATION

EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES 0002 00

THIS WORK PACKAGE COVERS:
Equipment Characteristics, Capabilities and Features

CHARACTERISTICS

Refer to TM 9-2350-292-10 for Characteristics of the M88A2 HRV.

CAPABILITIES AND FEATURES

Refer to TM 9-2350-292-10 for Capabilities and Features of the M88A2 HRV.

END OF TASK

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS 0003 00

THIS WORK PACKAGE COVERS:

Location and Description of Major Components

Refer to TM 9-2350-292-10 for Location and Description of Major Components of the M88A2 HRV.

END OF TASK

EQUIPMENT DATA 0004 00

THIS WORK PACKAGE COVERS:
Equipment Data

TRACKS AND SUSPENSION

Shoes in each track section	84
Track support roller (pairs)	6
Roadwheel and arm assemblies	12
Suspension	Torsion bar

FUEL CAPACITIES

Fuel tanks (total)	413 gallons (1565L)
Forward tank	269 gallons (1020L)
Right rear tank	89 gallons (337L)
Left rear tank	55 gallons (208L)
Fuel system capacity (total)	436 gallons (1562L)

ENGINE

Make/type	Teledyne Vehicle Systems, 12-cylinder air-cooled, 90-degree, V-type, compression-ignition
Model	AVDS 1790-8CR
Dimensions:	
Length (transmission adapter to guide bars)	71.84 inches (1829.7 mm)
Width (overall, shrouds installed)	67.75 inches (1720 mm)
Height	43.70 inches (1110 mm)
Displacement	1790 cu. in.(29.33 cc)
Weight (dry, with accessories)	5155 lbs (23.38 kg)
Speed, Governed:	
Drive full (at rated load)	2400 to 2450 rpm max.
No load	2600 to 2660 rpm max.
Idle	825 to 875 rpm
Winching	1800 $\pm$25 rpm
Horsepower (Gross)	1050 to 1080 (cgbhp) at 2400 rpm
Horsepower (Net)	893 to 923 (cnbhp) at 2400 rpm
Cooling system	Engine-driven fans for cylinders, transmission and engine oil coolers
Induction system	Super-charged by two exhaust-driven turbosuperchargers
Oil temperature:	
Normal	120° to 240°F (49° to 116°C)
Maximum (out of cooler)	250°F (121°C)
Fuel:	
Type	Turbine Fuel
Grade	JP-8
Specification	MIL-T-83133
Supply pressure (at injection pump inlet)	75-90 psi (517.1-623.5 kPa)
Consumption	0.40 gal/hr at 1800 rpm, 0.42 gal/hr at 2400 rpm and 1050 hp
Torque (Gross)	2420-2510 lb-ft (3281.5-3403.5 N•m) at 2400 rpm
Torque (Net)	2226-2313 lb-ft (3018.5-3136.4 N•m) at 1800 rpm
Firing order	1R, 2L, 5R, 4L, 3R, 1L, 6R, 5L, 2R, 3L, 4R, 6L
Bore	5.750 inches (146 mm)
Stroke	5.750 inches (146 mm)
Compression ratio	14.5:1
Crankshaft rotation	Clockwise (as viewed from damper housing end)

EQUIPMENT DATA - CONTINUED 0004 00

ENGINE-Continued

Valves . . . . . Overhead type, two per cylinder, actuated by a single overhead camshaft per each bank
Injector pump ratio 1:1
Drive . . . . . (From crankshaft) direct
Lubricating oil:
- Type MIL-L-2104D
- Capacity (Dry) . . . . . 22 gallons (83.6L)
- Capacity (Oil change) . . . . . 18.5 gallons (70.3 L)

Oil pressure (Crankcase main oil gallery):
- 825 to 875 rpm (Idle) . . . . . 15 psi (15W-40) at 180°F (104.2 kPa (15W-40) at 82°C)
- 2400 rpm (Full load) . . . . . 40-70 psi (15W-40) at 180°F (275.8-482.7 kPa (15W-40) at 82°C)

ENGINE-RELATED COMPONENTS

Generator:
- Manufacturer . . . . . Bendix Corporation
- Model 30B95-3B
- Amperage 650

Voltage Regulator:
- Manufacturer . . . . . Bendix Corporation
- Model 24B30-3B

Starter . . . . . Delco-Remy
Batteries :
- Type . . . . . 6 TN (12-volts each)
- Quantity per vehicle 6
- Amperage . . . . . 100 amps/hr

TRANSMISSION AND OUTPUT REDUCTION DRIVES

Model (Transmission) XT-1410-5A
Type (Transmission) . . . . . Cross-drive
Weight, Dry . . . . . 6611 lbs (approx.) (3001 kg)
Length . . . . . 42 inches (approx.) (1066.8 mm)
Height . . . . . 31-3/4 inches (806.5 mm)
Width (Between sides of vehicle hull) . . . . . 74 inches (1879.6 mm)
Suspension . . . . . Three-point (engine and two supports)
Drive ranges . . . . . Low, Intermediate, High, Reverse
Shift and steering control:
- External . . . . . Mechanical
- Internal . . . . . Hydraulic

Drive range control . . . . . Multiple-disk clutch
- Clutches (engaged) . . . . . Oil pressure
- Clutches (released) . . . . . Spring pressure

Brakes:
- Type . . . . . Multiple-plate (wet)
- Duty . . . . . Servicing and parking
- Application and release . . . . . Mechanical
- Cooling . . . . . Oil

Oil capacity:
- Initial fill . . . . . 27.0 gallons (102 L)
- Refill . . . . . 17.0 gallons (64.35 L)

Cooling . . . . . External radiators
Filter-type . . . . . Four element convolute

PERSONNEL HEATER

Refer to TM 9-2540-205-24&P for heater description and data.

EQUIPMENT DATA - CONTINUED 0004 00

HOIST WINCH

Manufacturer . . . . . Braden Winch Co.
Model . . . . . CH 230A Special
Cable size . . . . . 3/4 inch (19 mm)
Cable length (total) . . . . . 225 feet (68.58 m)
Available payout of load hook (5 wraps on drum) . . . . . 41 feet (12.50 m) using 4 part line

MAIN WINCH

Manufacturer . . . . . P&H Harnichfeger
Model 7580
Cable size . . . . . 1-3/8 inch (34.9 mm)
Cable length (total) . . . . . 320 feet (97.53 m)
Usable length (4 wraps on drum) . . . . . 280 feet (85.34 m) using single line

AUXILIARY WINCH

Manufacturer . . . . . Braden Winch Co.
Model UT3A
Cable size . . . . . 3/8 inch (9.5 mm)
Cable length (total) . . . . . 668 feet (203.60 m)
Usable length (5 wraps on drum) . . . . . 654 feet (199.34 m) using single line

AUXILIARY ENGINE

Manufacturer . . . . . Onan
Model . . . . . DJBMA
Type . . . . . Diesel (2-cylinder, 4-cycle)
Cooling . . . . . Air-cooled by direct drive centrifugal blower
Bore and stroke . . . . . 3.250 X 2.625 inches (82.55 X 66.68 mm)
Horsepower (full load) . . . . . 10.8 at 2000 $\pm$ 100 rpm
Auxiliary generator:
Part number MS51004-1
Auxiliary hydraulic pump:
Part number 11671411
Auxiliary engine fuel filter assembly:
Manufacturer . . . . . Onan
Part number 11671506
Auxiliary engine oil filter assembly:
Manufacturer . . . . . Onan
Part number 122-0185
Type . . . . . Replaceable
Auxiliary engine fuel transfer pump:
Manufacturer . . . . . Onan
Part number 149-0429
Voltage regulator, solid-state (dual) 11672403-1

AUXILIARY ENGINE (HATZ)

Manufacturer . . . . . HATZ
Model . . . . . HATZ 2G40-HDA9304
Type . . . . . Diesel (2-cylinder, 4-cycle)
Cooling . . . . . Air-cooled by direct drive centrifugal blower
Bore and stroke . . . . . 3.622 X 2.935 inches (92 X 75 mm)
Horsepower (full load) . . . . . 13.5 at 2000 rpm
Auxiliary generator:
Part number MS51004-1
Auxiliary hydraulic pump:
Part number 12367209

EQUIPMENT DATA - CONTINUED 0004 00

AUXILIARY ENGINE (HATZ)-Continued

Auxiliary engine fuel/water separator filter assembly:
- Part number . . . . . 5572-120 RMAM
- Type . . . . . Replaceable

Auxiliary engine oil filter assembly:
- Part number 50302800
- Type . . . . . Replaceable

Auxiliary engine fuel transfer pump:
- Part number MS51321-2-24N1

Voltage regulator, solid-state (dual) 11672403-1

END OF TASK

THEORY OF OPERATION 0005 00

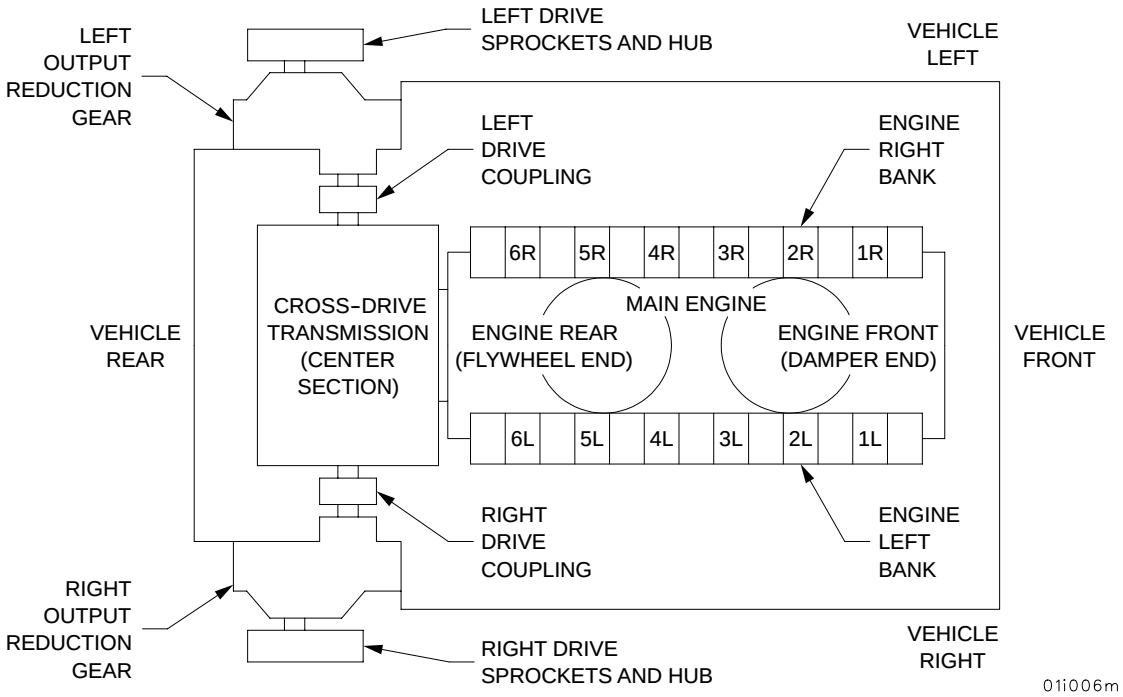
THIS WORK PACKAGE COVERS:

Powerpack, Tracks and Suspension, Fixed Fire Extinguisher System, Hydraulic System, Winch and Spade Assemblies, Auxiliary Power Unit, Gas/Particulate Filter Unit (GPFU), M2A2 Air Purifier with M3 Heaters, Smoke Grenade Launcher System, M239, Exhaust Smoke Generating System, Deep Water Fording Kit, and Electrical System

POWERPACK

Consists of the engine, cross-drive transmission and right and left output reduction gear drive. The powerpack is removed from the vehicle as one complete unit.

The front of the engine is referred to as the damper-end or front, the rear of the engine is referred to as the flywheel-end or rear. As viewed from the front or damper-end toward the rear or flywheel-end, the side to the right is called the right-side and the side to the left is called the left-side. Viewing the engine from the front, the right bank of cylinders is numbered 1R through 6R and the left bank of cylinders is numbered 1L through 6L.



ENGINE

The Teledyne Vehicle Systems model AVDS-1790-8CR engine is a 12-cylinder, 90-degree, V-type, 4-cycle, air-cooled, turbosupercharged diesel engine. The cylinder assemblies are individually replaceable units with overhead valves and valve rocker assemblies in the head. The cylinders are arranged in two banks of six cylinders each. Each bank of cylinders has an overhead camshaft arrangement to actuate the valves of each cylinder.

The engine's fuel injection system utilizes a fuel metering pump which supplies metered fuel to individual cylinders through fuel injector nozzles. The engine fuel pump assembly, located at the front of the engine, delivers fuel to the metering pump. A turbosupercharger is located on each side of the engine at the rear. The exhaust-gas driven turbosupercharger increases the air flow pressure entering the air intake manifolds.

THEORY OF OPERATION - CONTINUED 0005 00

ENGINE - CONTINUED

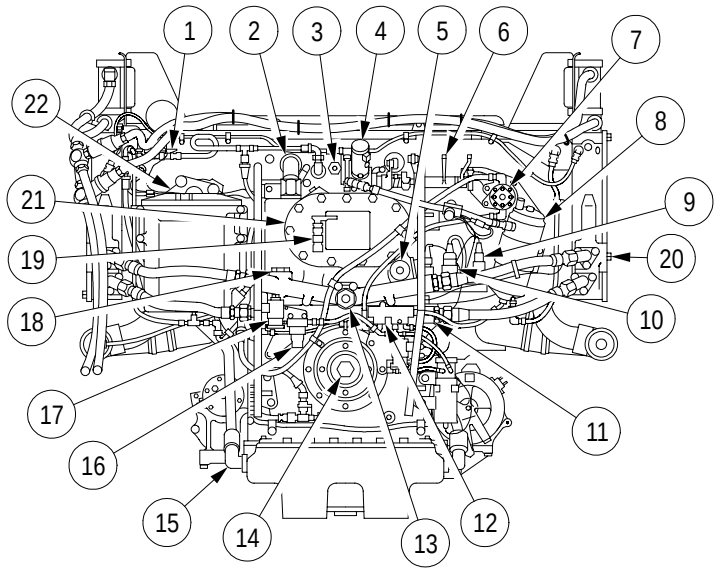
The engine's fuel system primary and fuel/water separator-type secondary fuel filters have top-mounted bleeder valves to assist in the removal of air from the fuel system. Water is removed automatically by a constant bleed orifice in the primary fuel filter and an automatic water drain in the fuel/water separator filter.

The forced-feed engine lubrication system consists of three circuits: the scavenge circuit, the main or pressure circuit and the piston cooling circuit. Each circuit is operated independently by one oil pump which consists of four separate pump sections.

The engine crankcase is vented by the crankcase breather system which exhausts through the crankcase breather tube at the left turbosupercharger exhaust outlet.

The engine is equipped with two intake manifold heaters which are installed in the air intake system between the intake manifold elbows and the turbosuperchargers. The heaters, when operated, preheat the air entering the cylinders to facilitate cold-weather starting and cold-weather idle operation.

The engine is equipped with a 650-amp, 28-V dc generator and a 24 V dc solenoid-operated starter.

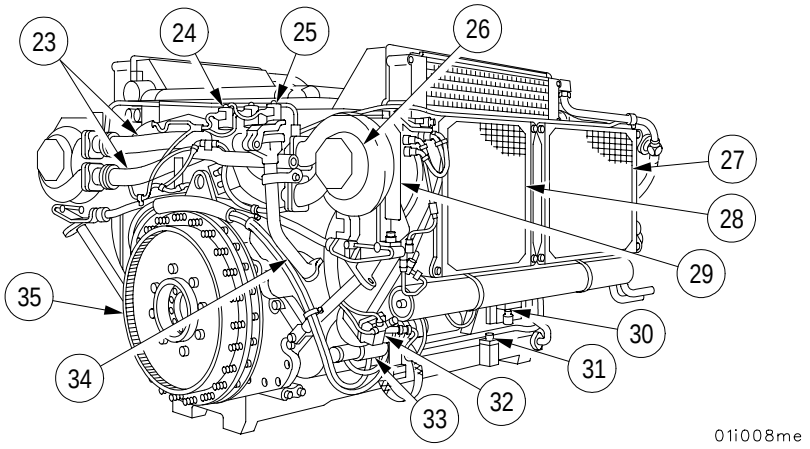


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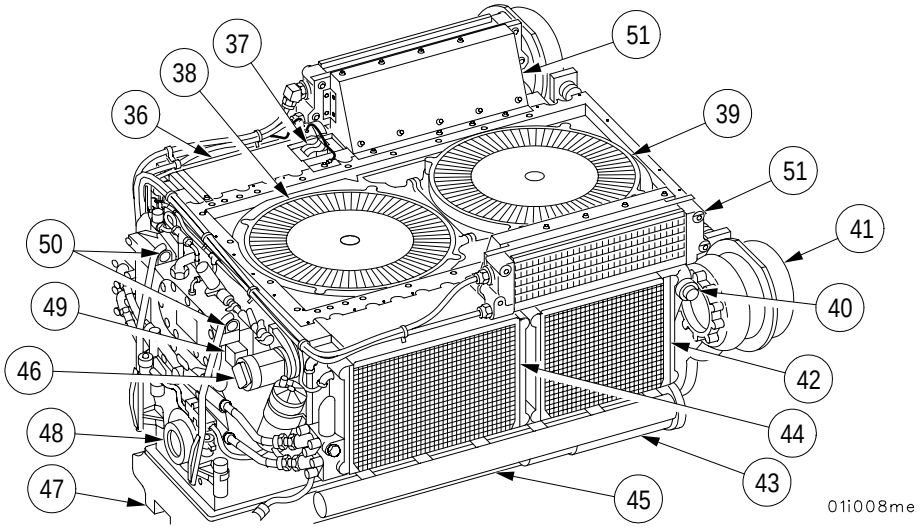
1 Smoke generator manual fuel shutoff valve
2 Front crankcase breather tube
3 Fire extinguisher tube
4 Speed governing solenoid
5 Oil filter bypass valve
6 Manual fuel shutoff
7 Fuel pump assembly
8 Primary fuel filter
9 Oil pressure warning switch
10 Oil pressure gage transmitter
11 Oil pressure regulator valve
12 Fuel check valve (Fuel backflow valve)
13 Damper housing oil drain valve
14 Power takeoff coupling
15 Cylinder head oil drain tube
16 Manifold heater fuel filter
17 Manifold heater fuel solenoid valve
18 Oil cooler bypass valve
19 Oil sampling valve cock
20 Engine oil cooler thermostatic bypass valve
21 Oil filter
22 Fuel/water separator

THEORY OF OPERATION - CONTINUED 0005 00

ENGINE - CONTINUED



23 Exhaust manifold pipe
24 Manifold heater fuel return solenoid
25 Smoke generator fuel solenoid
26 Left bank turbosupercharger
27 Engine oil cooler
28 Transmission oil cooler
29 Air intake manifold
30 Fuel/water automatic drain control
31 Starter low voltage module
32 Manifold heater
33 Engine starter
34 Oil filler tube
35 Flywheel



36 Smoke generator system fuel supply tube
37 Engine oil level check
38 Front engine cooling fan
39 Rear engine cooling fan
40 Transmission oil cooler thermostatic bypass valve
41 Right bank turbosupercharger
42 Transmission oil cooler
43 Engine generator
44 Engine oil cooler
45 Air intake manifold
46 Tachometer drive adapter
47 Oil pan
48 Crankcase
49 Time totalizing meter
50 Front lifting eyes
51 Hydraulic oil coolers

THEORY OF OPERATION - CONTINUED 0005 00

FUEL SYSTEM

Three fuel tanks supply fuel to the engine, auxiliary power unit and the refuel system. Two tanks are adjacent to the engine, one on either side and one forward of the bulkhead in the hydraulic compartment.

A system of four manually operated control valves (1) maintains fuel flow through the check valve (2) and directs fuel to the engine and refueling systems. These valves are also used to drain the fuel tanks.

The fuel from the vehicle fuel tanks is supplied at a minimum pressure of 5 psi to the primary fuel filter (3), which is mounted on the engine right front. Fuel flows through the main fuel check valve (fuel backflow valve) (4) to the engine fuel pump (5) mounted on the front center of the engine. This is an engine-driven, gear-type pump; it boosts fuel pressure to the fuel metering pump (6). A relief valve is incorporated in the pump as a pressure limiting safety valve.

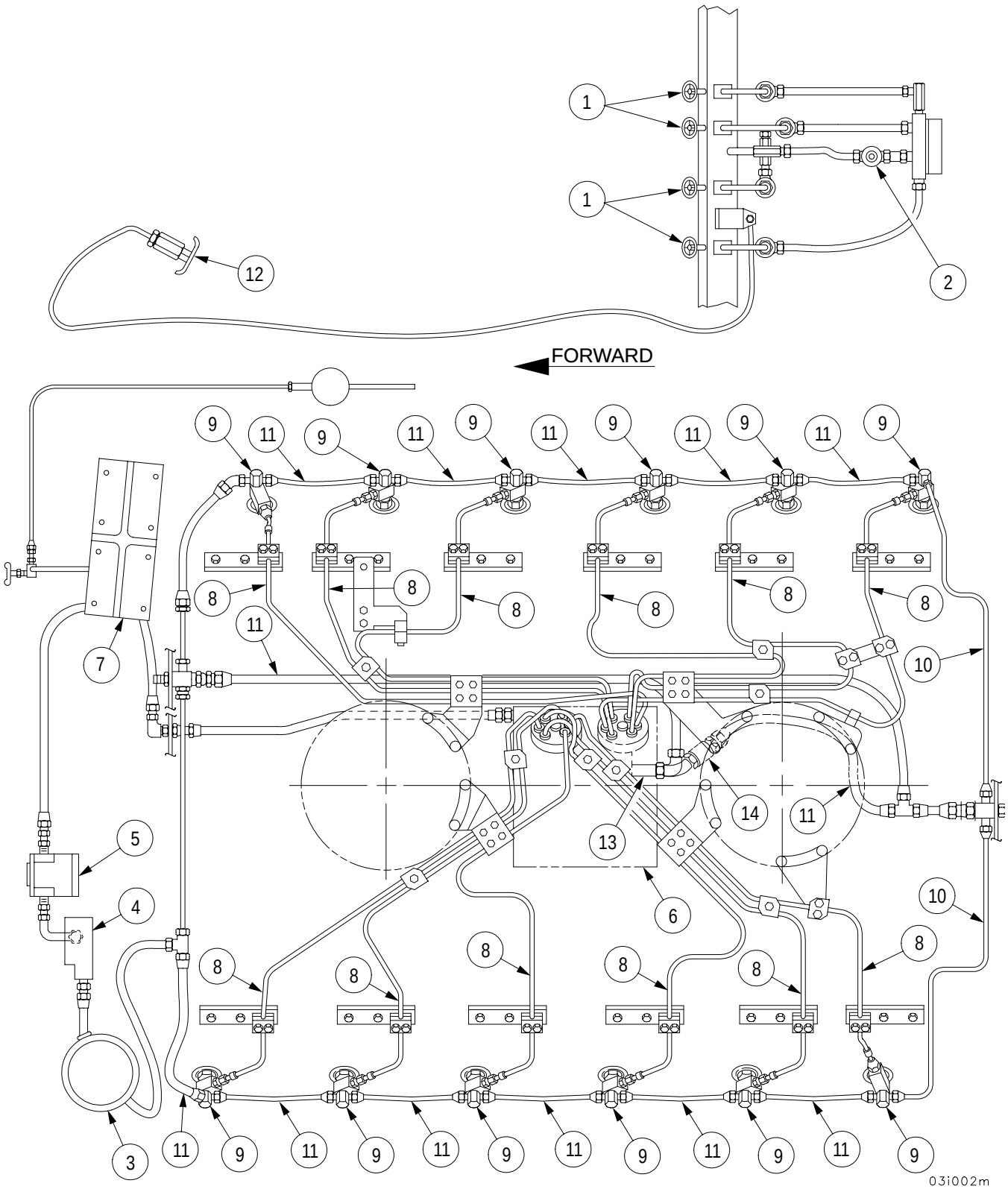
Fuel from the engine fuel pump (5) is filtered through the fuel/water separator filter (7) and passes into the fuel metering pump (6), located in the engine V between the cooling fans. The metering pump (6) delivers metered quantities of fuel under high pressure to each cylinder. An integral governor, of the mechanical-centrifugal type, is used to control fuel delivery as a function of engine speed. Engine shutoff is accomplished by a normally open solenoid control unit in the metering pump (6).

Twelve stainless steel fuel lines (8) carry fuel under high pressure from the fuel metering pump (6) to the twelve fuel injector nozzles (9) on the left and right banks of the engine. The nozzles (9) inject a fine spray of metered fuel under pressure into each cylinder. Excess fuel is carried from the nozzles (9) through return tubes (10) and hoses (11) on each cylinder bank to the fuel return system.

The engine fuel shutoff switch on the master control panel actuates the circuit to close the solenoid in the fuel injector pump (6). Closing the solenoid cuts off fuel from the metering pump (6) and stops the engine. The engine is equipped with a manual fuel shutoff control (12) to stop the engine if the electric fuel shutoff should fail. A bleeder pressure-relief valve (13) in the pump outlet maintains a constant fuel pressure by allowing any accumulated air and excess fuel to return to the fuel tanks through the engine and fuel tank return tubes (10), check valve (14), return hoses (11) and control valves (1). Excess fuel is used to lubricate and cool the fuel metering pump (6). The check valve (14) prevents a back flow of fuel into the metering pump (6) from the fuel return tubes (10) and hoses (11) and prevents continued engine operation after the fuel shutoff valve is closed.

THEORY OF OPERATION - CONTINUED 0005 00

FUEL SYSTEM - CONTINUED



THEORY OF OPERATION - CONTINUED 0005 00

MANIFOLD AIR INDUCTION HEATER SYSTEM

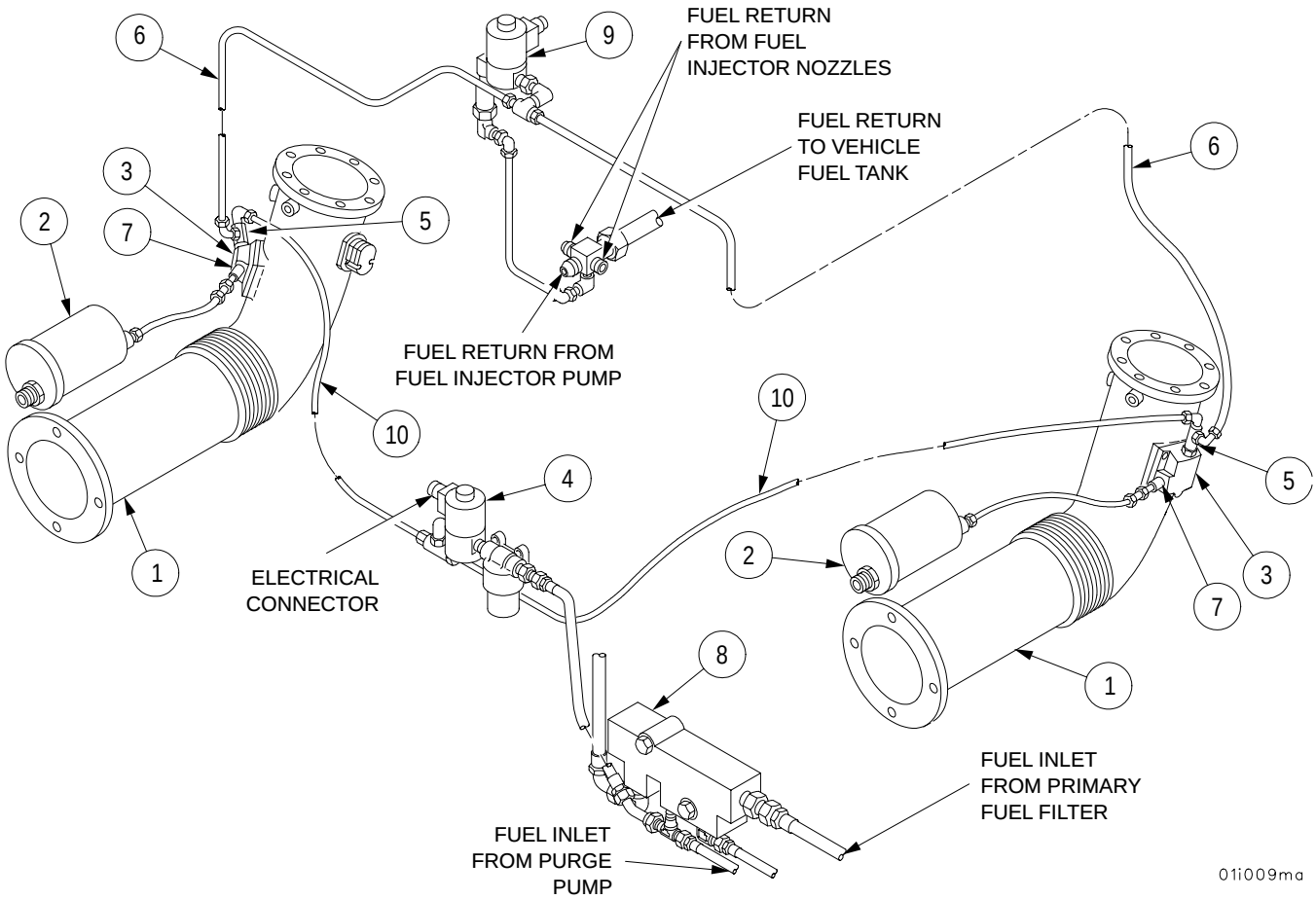
The intake manifold tubes (1) equipped with electrical intake manifold heater ignition units (2) distribute heated supercharged air into each bank of cylinders. These air heaters (3) assist engine starting during cold weather.

Operation of the heater switch energizes the manifold heater fuel inlet solenoid valve (4) to allow fuel flow to the heater nozzles (5). The heater switch also energizes the ignition units (2) to create an electrical spark in the manifold tubes (1), thereby igniting the sprayed fuel.

A leakoff line (6) prevents nozzle fouling and is routed into the fuel injector fuel return line. The fuel is burned in the intake manifold tubes (1) by the ignition of the heater spark plugs (7) which flame heats the incoming air. This flame-heated air and the products of combustion flow directly into the cylinders.

The check valve (fuel backflow valve) (8) ensures the necessary fuel pressure to operate the flame heater nozzles (5). An inlet solenoid valve (4) and fuel return solenoid valve (9) close the flame heater fuel lines (10) when the flame heater switch is off.

The manifold heater fuel return solenoid valve (9) is located at the rear of the engine. When the valves (4 and 9) become energized, the ignition units (2) and heater spark plugs (7) act as a check valve to prevent fuel returning from the injector pump and nozzles from entering the air induction heater system.



THEORY OF OPERATION - CONTINUED 0005 00

COOLING SYSTEM

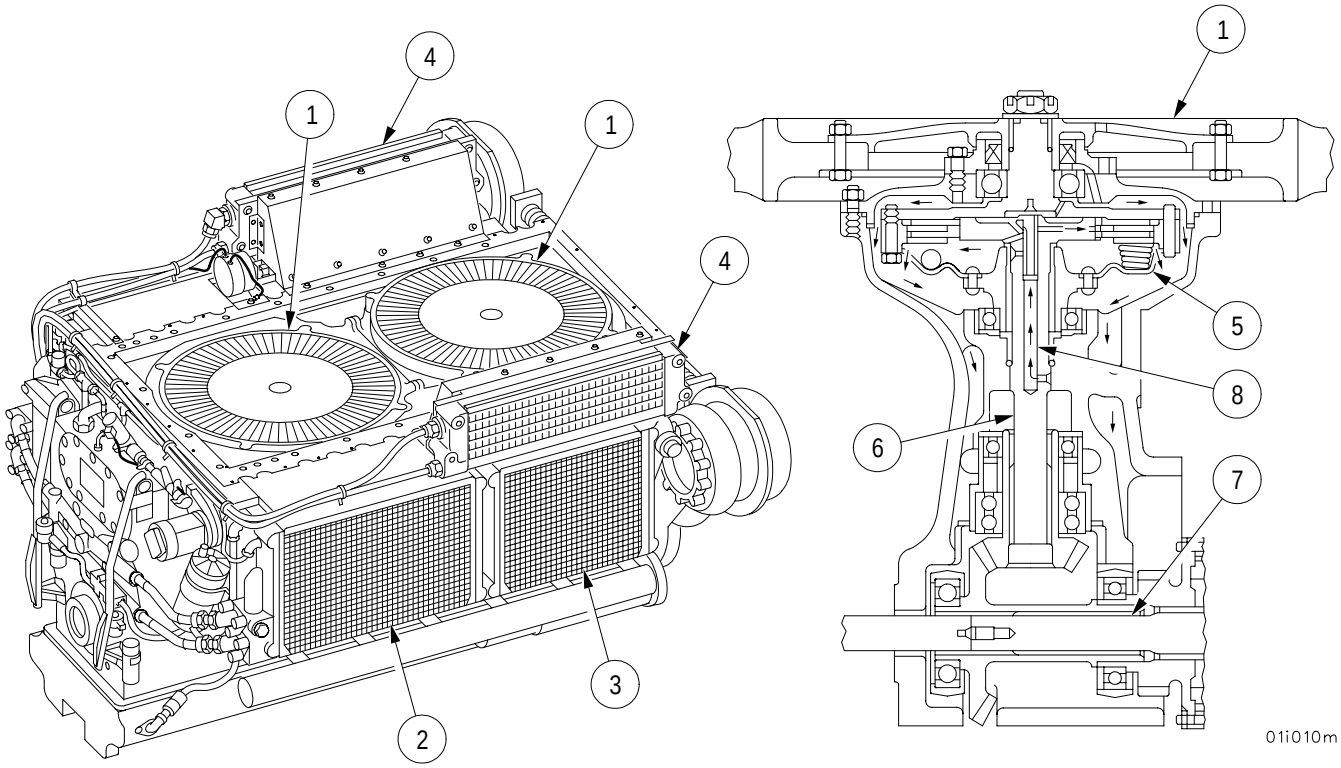
Air Cooling Air for cooling enters the engine compartment through the grille doors. The top of the engine is shrouded and encloses two gear-driven, axial-flow fans (1) which draw air through the cylinder fins and engine (2), transmission oil coolers (3), hydraulic oil coolers (4) and discharge the hot air vertically from the shroud. Sheet metal baffles and deflectors direct the flow of cooling air across the cylinders.

The cooling fans (1) are attached to hubs and are mounted on shafts which are driven by the engine-driven fan drive clutch assembly (5).

The vertical fan drive shaft (6) is driven by a horizontal drive shaft (7).

The fan clutch assembly (5) is oil-cooled. The fan clutch drive and driven disks are loaded by the centrifugal action of clutch balls and springs housed in the clutch assembly (5). The balls and springs are in the driven member and apply upward force to the clutch disks. The clutch oil enters the fan drive vertical shaft (6) from the fan drive housing through an annular groove (8) in the shaft. The depth of the groove (8) controls the amount of oil flow. The oil flows through a central hole in the vertical shaft (6) to a distributor where it is dispersed to lubricate the cooling fan (1) and clutch assembly (5). The oil circulates by centrifugal action and drains back through the fan drive housing into the engine oil pan. The fan drive clutch assembly (5) is designed to slip under deep water fording conditions where the resistance of water exceeds the friction of the clutch assembly (5).

Oil Cooling Two engine (2) and two transmission oil coolers (3) are mounted on the sides of the engine above the cylinders. Two hydraulic oil coolers (4) are mounted on top of the left and right transmission oil cooler frames. The cooling fans (1) draw air through the oil cooler cores to cool oil being circulated within the coolers (2, 3 and 4).



THEORY OF OPERATION - CONTINUED 0005 00

COOLING SYSTEM - CONTINUED

Air-intake System Two dry-type air cleaners, mounted in the right and left rear of the crew compartment, filter intake air for the main engine. A damper control, mounted on each air cleaner, is used to select air intake either from the crew compartment or from outside the vehicle. Refer to TM 9-2350-292-10, Principles of Operation for additional information.

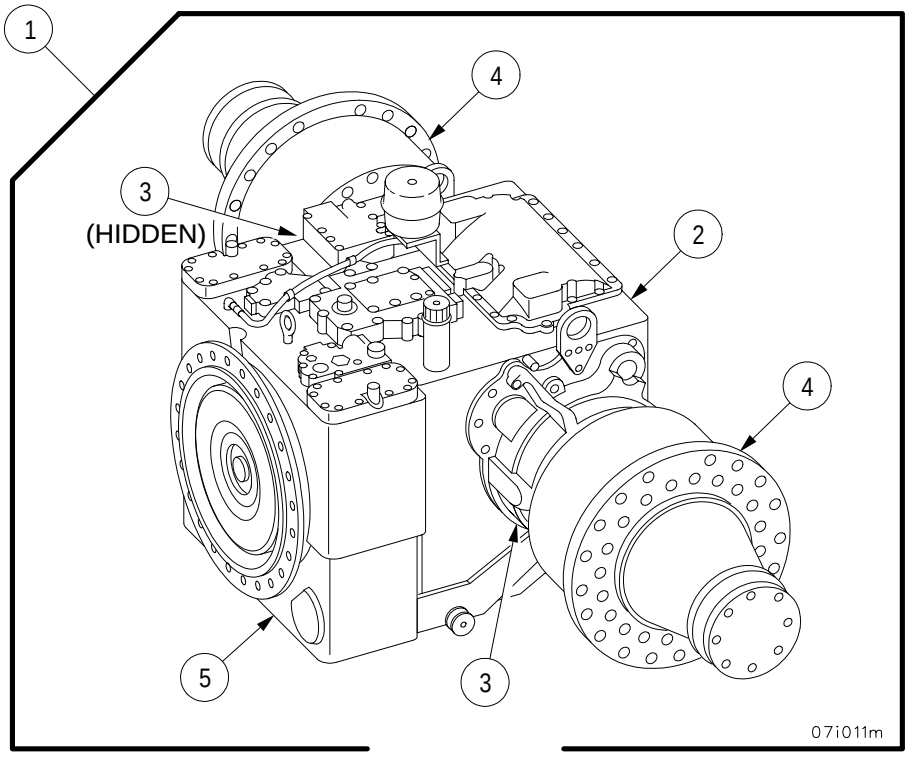
Exhaust System Exhaust pipes connect each exhaust manifold to a turbosupercharger. Exhaust gases are ejected from the engine, via exhaust pipes, through deflector-type louvers at the rear of the vehicle. Refer to TM 9-2350-292-10, Principles of Operation for additional information.

TRANSMISSION

The cross-drive transmission (1) is a combined transmission (2) with two steering clutch units (3) and two output reduction drives (4). It transmits power directly from the engine to the track drive sprockets. The transmission (1) is controlled by the vehicle operator by means of the shifting and steering controls, linkages and the brake control pedal linkage.

The cross-drive transmission (1) includes a hydraulic torque converter (5) with automatic lockup clutch, three forward and one reverse-range gear and clutch groups, a cross shaft and bevel drive gears, two steer clutch units (3) and planetary gear sets, steer drive gearing and two output reduction drive assemblies (4) with brakes. The transmission (1) delivers engine power to the track sprockets at an output torque which varies automatically according to the driven-load conditions when not in lockup.

There are three forward speed ranges and one reverse. Steering is possible in all drive ranges and neutral. Steering in neutral causes the vehicle to pivot in place, the tracks turning in opposite directions.



THEORY OF OPERATION - CONTINUED 0005 00

TRACKS AND SUSPENSION

Refer to TM 9-2350-292-10, Theory of Operation of Tracks and Suspension.

FIXED FIRE EXTINGUISHER SYSTEM (FES)

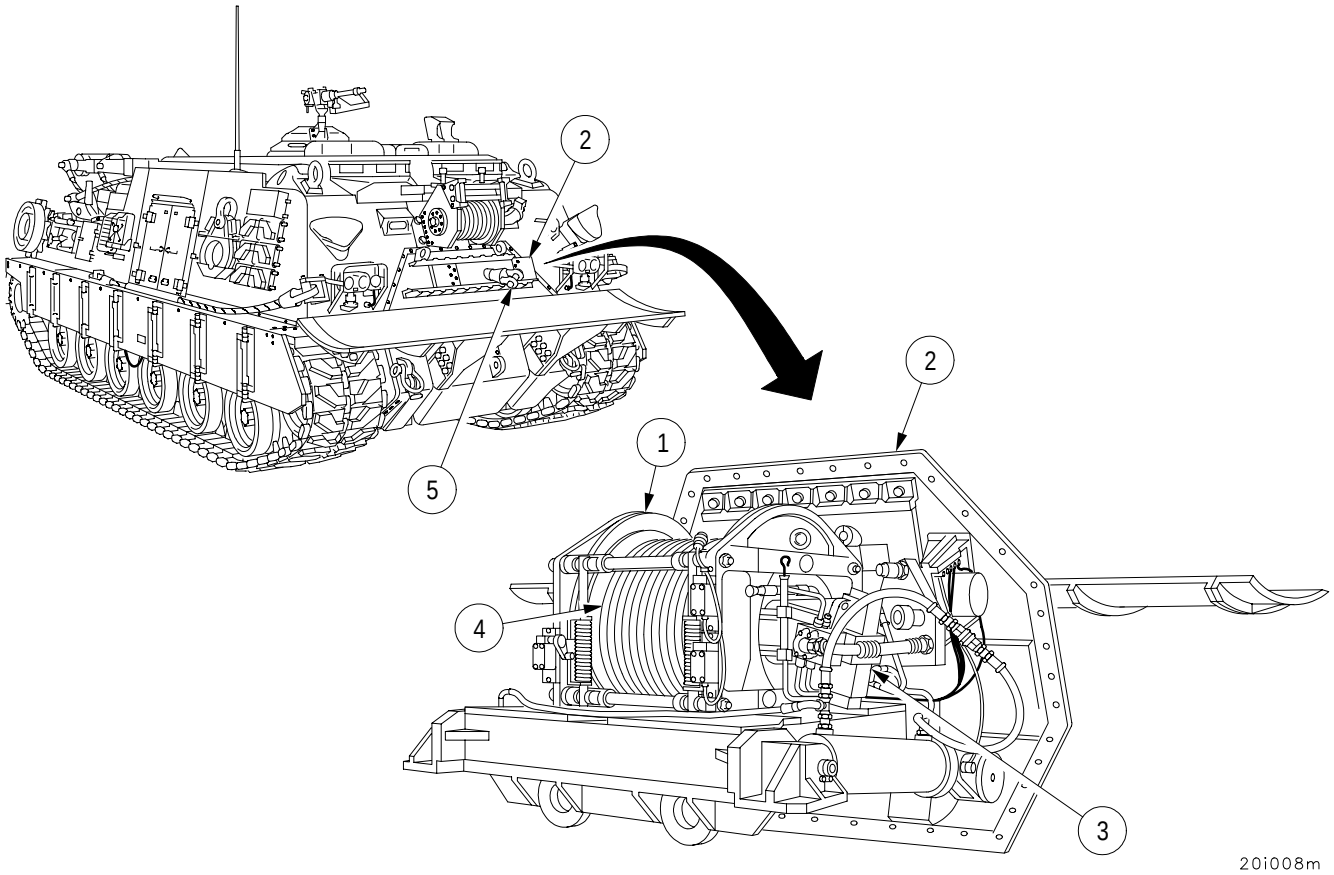
Refer to TM 9-2350-292-10, Theory of Operation of the Fixed Fire Extinguisher System (FES).

HYDRAULIC SYSTEM

The hydraulic system supplies power for the control and operation of the spade, hoisting boom, auxiliary winch, hoist winch, main winch and for releasing the mechanically applied main hoist and auxiliary winch brakes. System power is obtained from the main hydraulic pump. Refer to TM 9-2350-292-10, Theory of Operation and the hydraulic schematic (FP-23 through FP-28) for additional information.

WINCH AND SPADE ASSEMBLIES

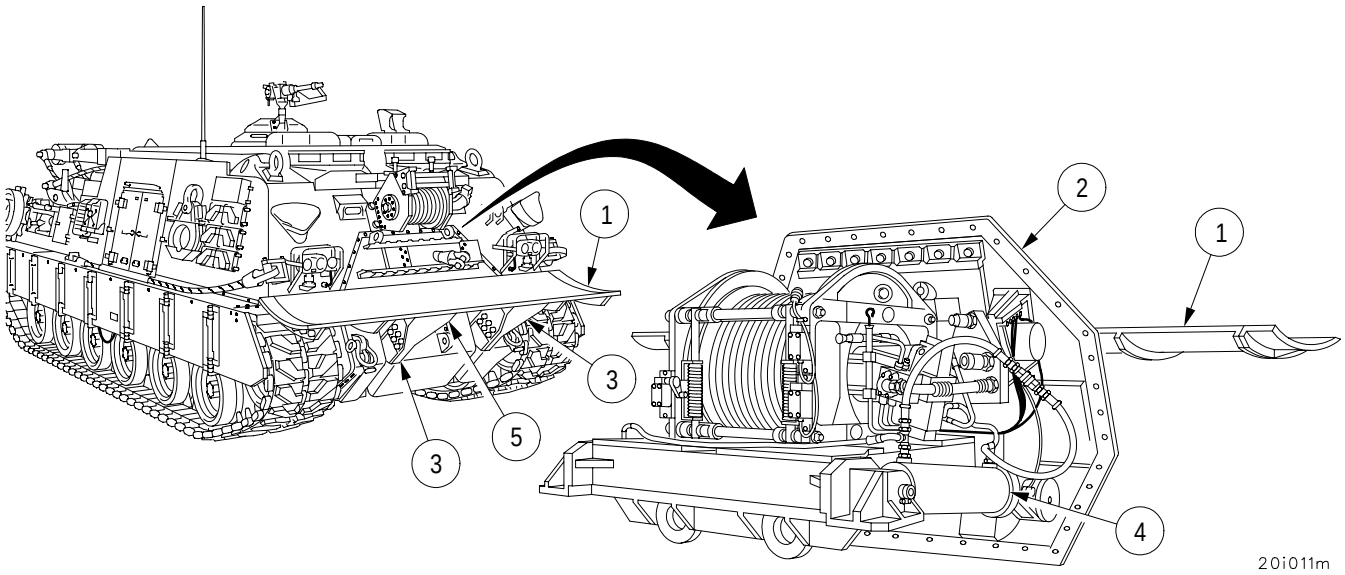
Main Winch The main winch (1) is mounted to the nosepiece (2) of the vehicle beneath the crew compartment. It is gear-driven by a hydraulic motor (3) and is used for heavy-duty recovery operations. The winch (1), wound with 320 feet (97.53 m) of 1-3/8-inch (34.9 mm) steel cable (4), is capable of a 140,000 pound (63,560 kg) line pull. The cable (4) is equipped with a clevis (5) on the free end for securing it to loads.



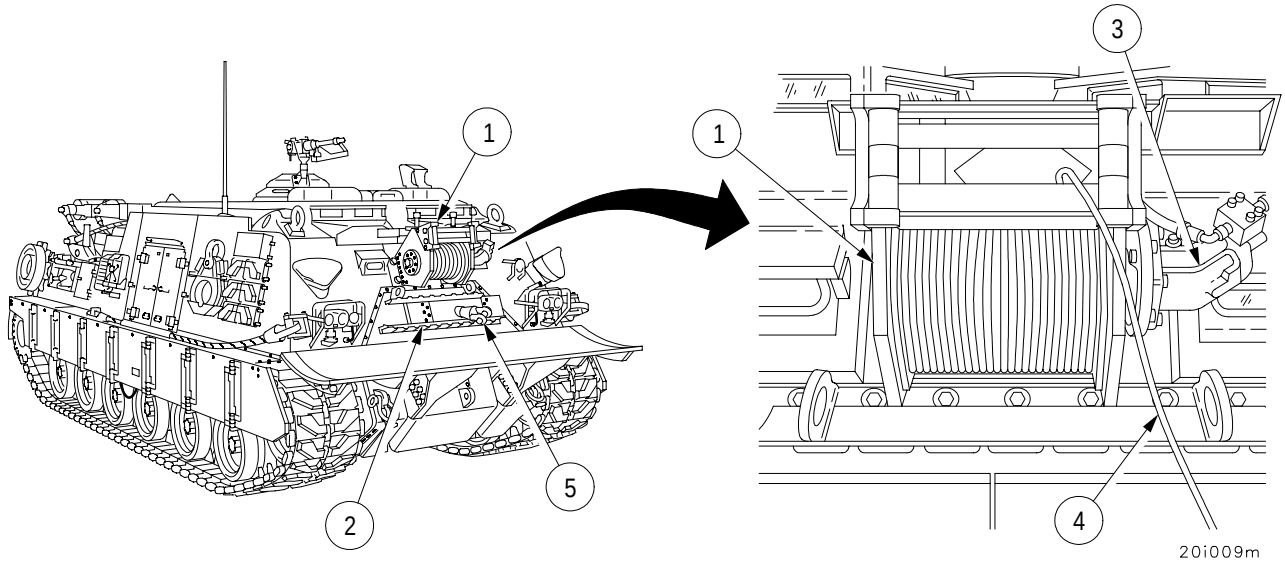
THEORY OF OPERATION - CONTINUED 0005 00

WINCH AND SPADE ASSEMBLIES - CONTINUED

Spade The spade (1) is mounted to the vehicle nosepiece (2) by two trunnion-mounted arms (3). The arms (3) are operated by hydraulic cylinders (4) from within the winch compartment. When not in use, the spade (1) is secured in a raised position by a hydraulically-activated, spring-loaded, spade lock (5).



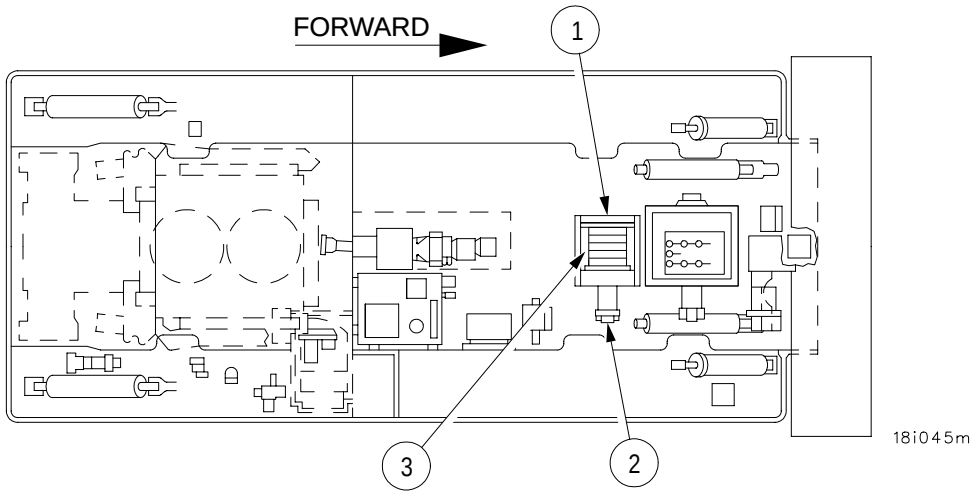
Auxiliary Winch The auxiliary winch (1) is mounted on the front exterior of the vehicle above the main winch level winder (2). It is gear-driven by a hydraulic motor (3). The winch (1) is wound with 668 feet (203.60 m) of 3/8 inch (9.5 mm) cable (4) and is capable of a 6000 pound (2724 kg) maximum line pull. The primary purpose of the auxiliary winch (1) is for deploying the main winch cable (5).



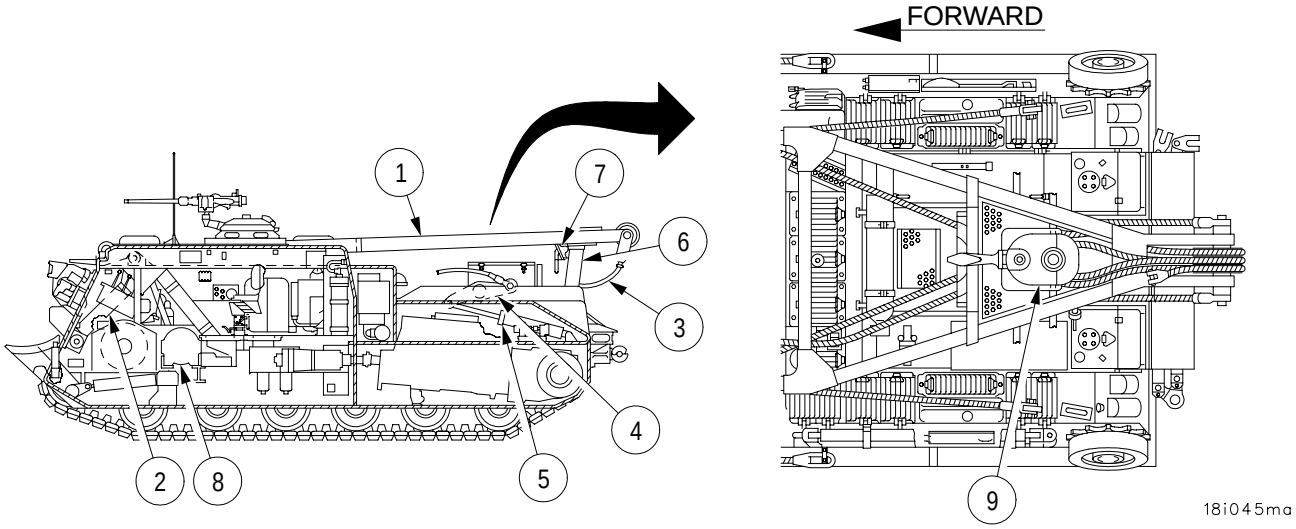
THEORY OF OPERATION - CONTINUED 0005 00

WINCH AND SPADE ASSEMBLIES - CONTINUED

Hoist Winch The hoist winch (1) is mounted in the winch compartment and is gear-driven by a hydraulic motor (2). The winch (1) is capable of hoisting a 70,000 pound (31,780 kg) maximum load with a four-part line using 3/4-inch (19.0 mm) steel cable (3). The hoist winch (1) is wound with 225 feet (68.58 m) of steel cable (3).

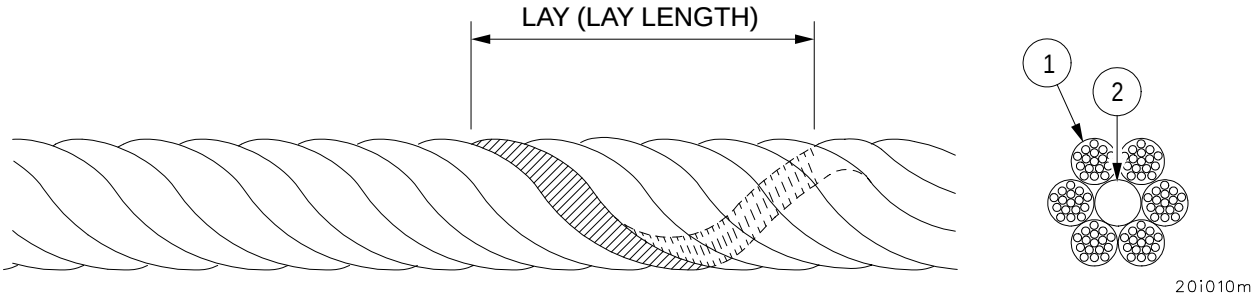


Hoisting Boom The hoisting boom (1) is a rectangular-tube, modified A-frame and is pivot-mounted to the top front of the vehicle. The boom (1) is raised or lowered by two hydraulically operated boom cylinders (2). In operating position, the boom (1) is supported by a stayline cable (3) secured to crank arms (4) located at the rear of the hull. The crank arms (4) control the live-boom movement by means of hydraulically operated stayline cylinders (5). In lowered position, the boom (1) is secured on the boom support assembly (6) by a boom travel lock (7). The hoisting boom (1) is used in conjunction with the hoist winch (8) and 35-ton (31.75 t) hook block (9).



THEORY OF OPERATION - CONTINUED 0005 00

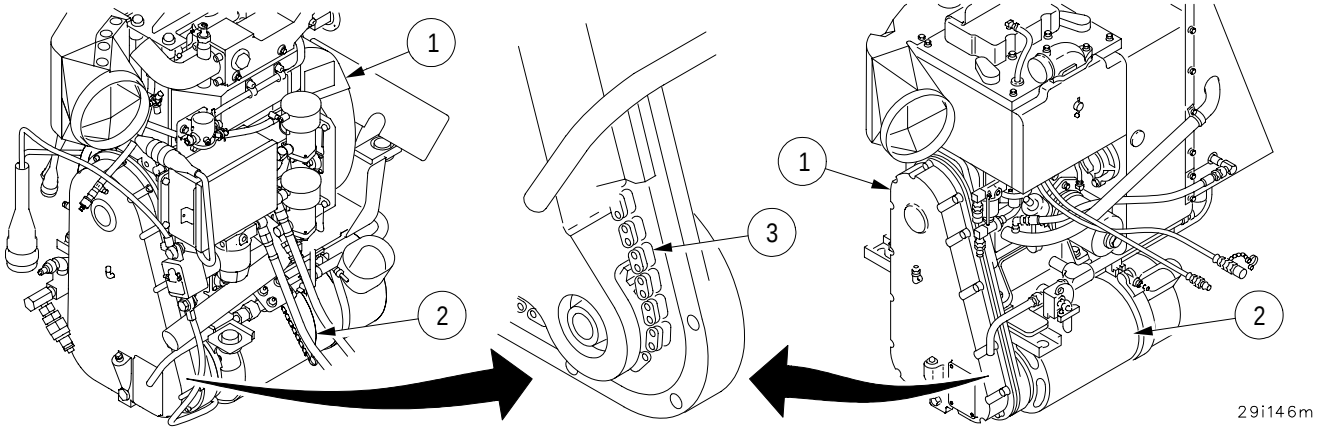
Cable Cables used on the main winch, auxiliary winch, hoist winch and stayline cables consist of strands (1) which are made up of wires twisted together to form the cable. The core (2), a foundation of wire, supports the strands (1) holding them in position during use. Multiple strands (1) around the core (2) increase the strength of the cable. The length of one strand (1) of cable around the core (2) is called a lay.



AUXILIARY POWER UNIT (APU)

The auxiliary power unit (APU) (1) consists of an overhead valve, two-cylinder, four-cycle, air-cooled, diesel engine connected directly to a 300-ampere, 28-volt, shunt-wound, direct-current generator (which is also used as a starter) (2), and auxiliary hydraulic system pump. The auxiliary power unit (1) provides hydraulic power to raise and lower the spade, stow and raise the boom and retrieve the main and hoist winch cables under no-load conditions.

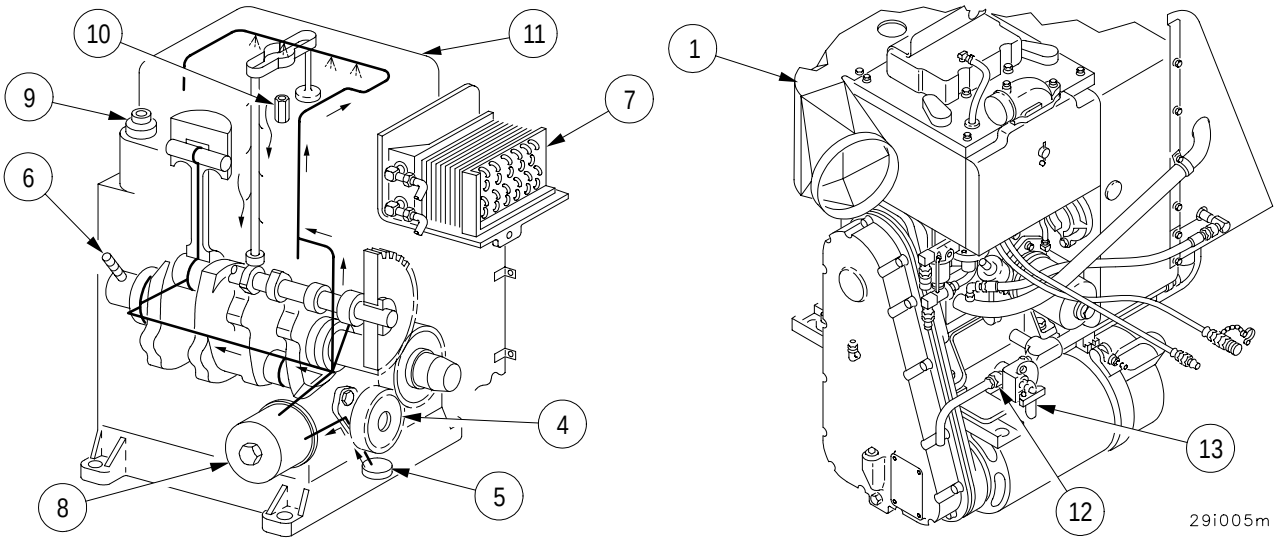
The 300-ampere, 28-volt generator (2) is used as a starter motor for the APU (1). This is accomplished by first feeding 24 V dc to the field coil of the generator (2) from the preheat relay when the preheat switch is activated and then applying 24 V dc to the generator armature through a starting relay when the starter switch is activated. This motorizes the generator (2), which is directly coupled to the APU (1) by a drive chain (3). When the APU (1) starts, the current in the generator armature reverses direction and the system automatically changes from a motorizing mode to a generating mode. After the APU starts, the start and preheat switches must be released to prevent loading down the engine since the voltage regulator is bypassed during the start cycle and full voltage is being applied to the field. After the auxiliary power unit (1) has started, the preheat and start switches are released and the generator output is controlled by a solid-state voltage regulator, located inside the vehicle's engine compartment.



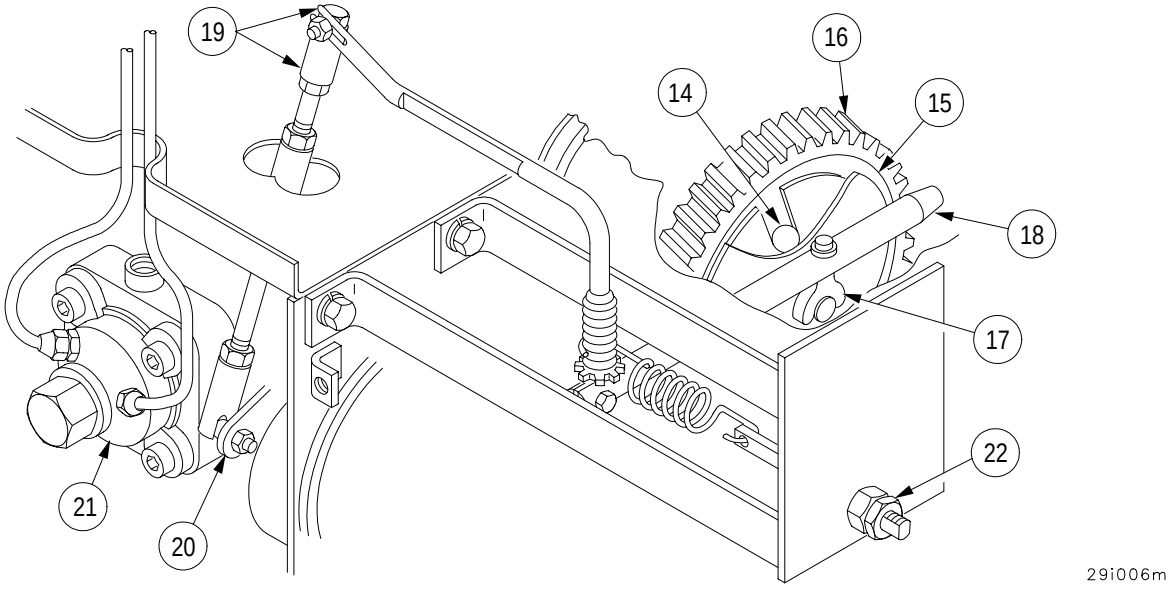
THEORY OF OPERATION - CONTINUED 0005 00

AUXILIARY POWER UNIT (APU) - CONTINUED

The APU lubrication system includes a gear-type oil pump assembly (4) with oil intake cup (5), a bypass valve (6), an oil cooler (7) and an oil filter (8). Oil lines and passages distribute oil to the working parts of the auxiliary power unit (1). A crankcase breather (9) is used to aid oil consumption control. The standpipe breather (10) vents crankcase fumes from the rocker arm cover (11) to the cylinder head intake port. Normal oil pressure should be 16 to 25 psi (110.2 to 172.2 kPa) under normal operating conditions. A crankcase oil drain valve (12) with operating handle (13) is provided to drain the lubricating oil without removing the unit from the vehicle.



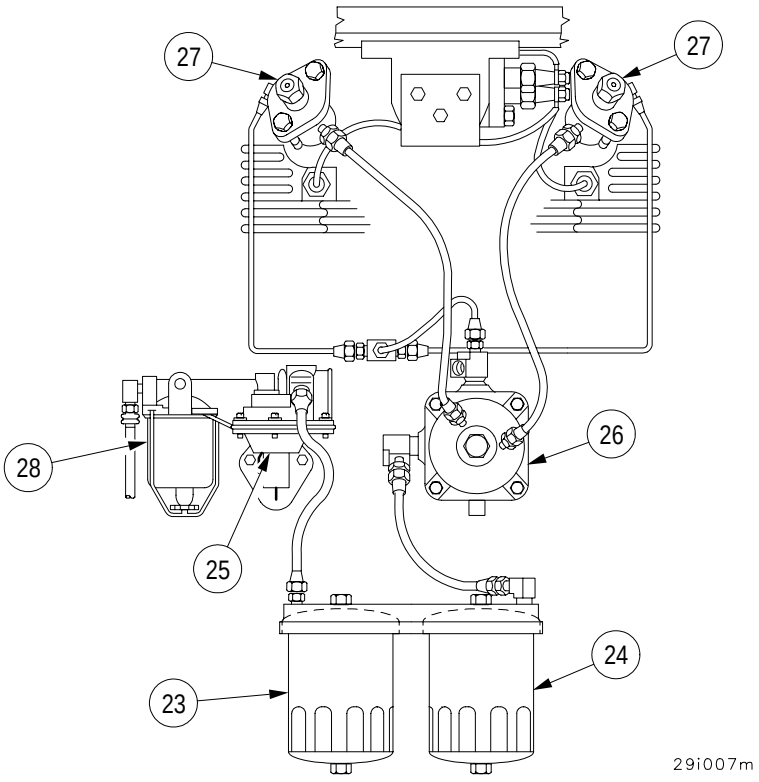
A constant speed governor is set to maintain engine speed at 2400 ± 50 rpm at rated load. The governor uses a flyball (14) and cup mechanism (15) on the camshaft gear (16) as the sensing device. Any change in engine speed is transmitted from the yoke (17), through the governor shaft (18), arm and linkage (19) to the control lever (20) on the injection pump (21). The speed may be adjusted by changing the spring tension, using the speed adjusting nut (22).



THEORY OF OPERATION - CONTINUED 0005 00

AUXILIARY POWER UNIT (APU) - CONTINUED

The fuel system consists basically of a primary (23) and secondary fuel filter (24), fuel transfer pump (25), injection pump (26), injection nozzles (27) and fuel sediment bowl (28). The transfer pump (25), operating off the camshaft draws fuel from the supply tank, through the fuel sediment bowl (28) and delivers it through two filters (23, 24) to the injection pump (26). The injection pump (26) meters and delivers the fuel at high pressure to the nozzles (27).



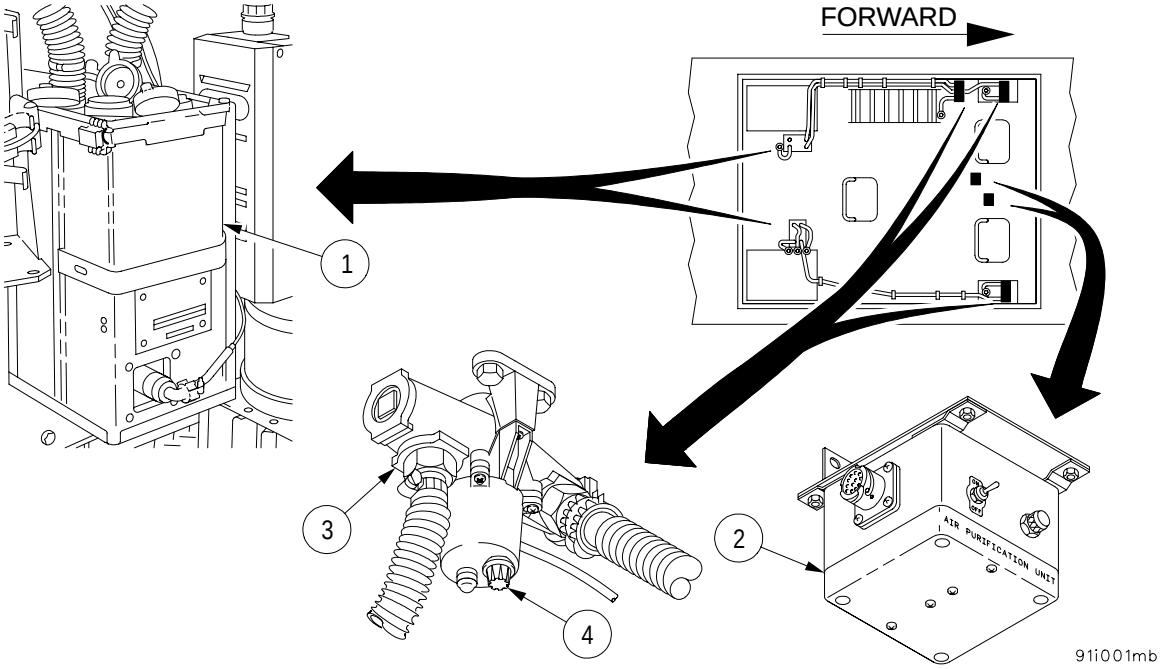
GAS/PARTICULATE FILTER UNIT (GPFU), M2A2 AIR PURIFIER WITH M3 HEATERS

The gas/particulate filter unit (GPFU) installation in the M88A2 HRV is made up of two separate M2A2 systems. One M2A2 GPFU (1) is located on the left side of the vehicle. It serves the driver and positions on the left side of the vehicle and is operated by control assembly (2) to the right of driver's position. The M2A2 GPFU (1) on the left side is equipped with two M3 air heaters (3). The other M2A2 GPFU (1) is located on the right side of the vehicle and serves the commander, mechanic and positions on the right side of the vehicle, and is operated by control assembly (2) located left of the mechanic's position. This system is equipped with only one M3 heater (3). The GPFU supplies filtered air through hoses to NBC mask worn by personnel.

The three M3 heaters (3) in the GPFU systems are individually controlled by switches (4) located on each M3 heater (3). The switch on control assembly (2) must be in the ON position to operate the M3 heaters (3). The M3 heaters (3) heat the filtered air provided by the M2A2 GPFU prior to the air entering the individual NBC mask.

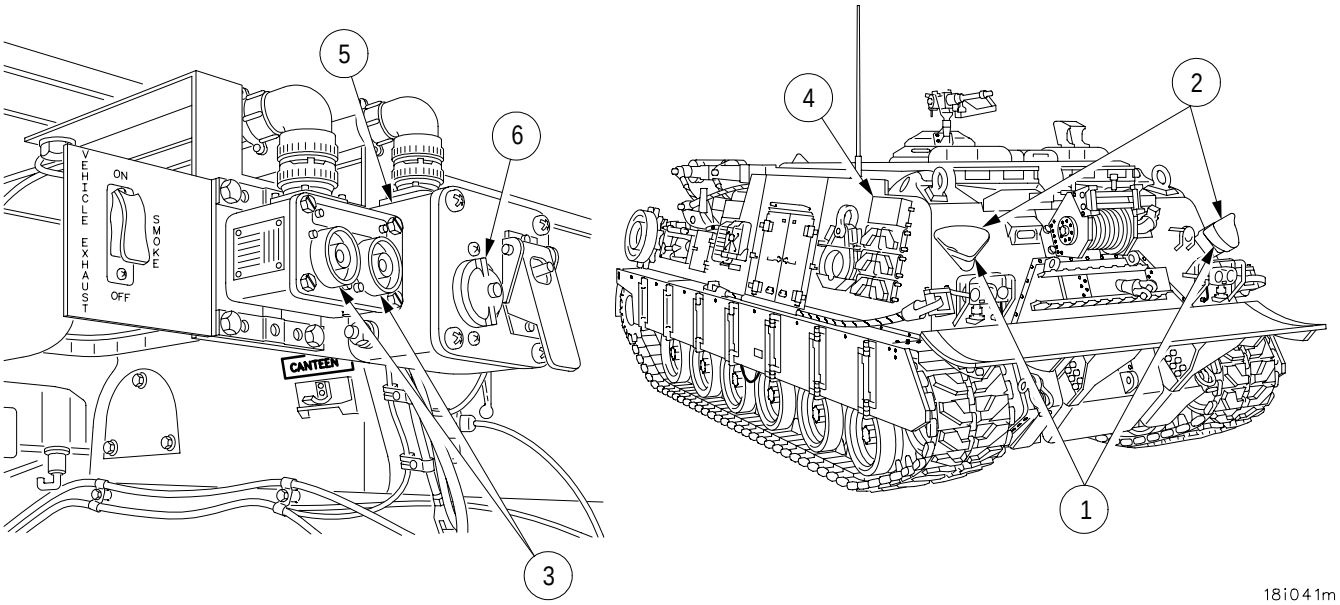
THEORY OF OPERATION - CONTINUED 0005 00

GAS/PARTICULATE FILTER UNIT (GPFU), M2A2 AIR PURIFIER WITH M3 HEATERS - CONTINUED



SMOKE GRENADE LAUNCHER SYSTEM, M239

The M239 smoke grenade launcher system consists of two smoke grenade dischargers (1), two canvas covers (2), a push-button firing switch (3) at the commander's station, two smoke grenade stowage boxes (4), an electrical installation kit composed of a power (arming) switch box (5) and an indicator lamp (6) to show the presence of electrical power.



THEORY OF OPERATION - CONTINUED 0005 00

EXHAUST SMOKE GENERATING SYSTEM

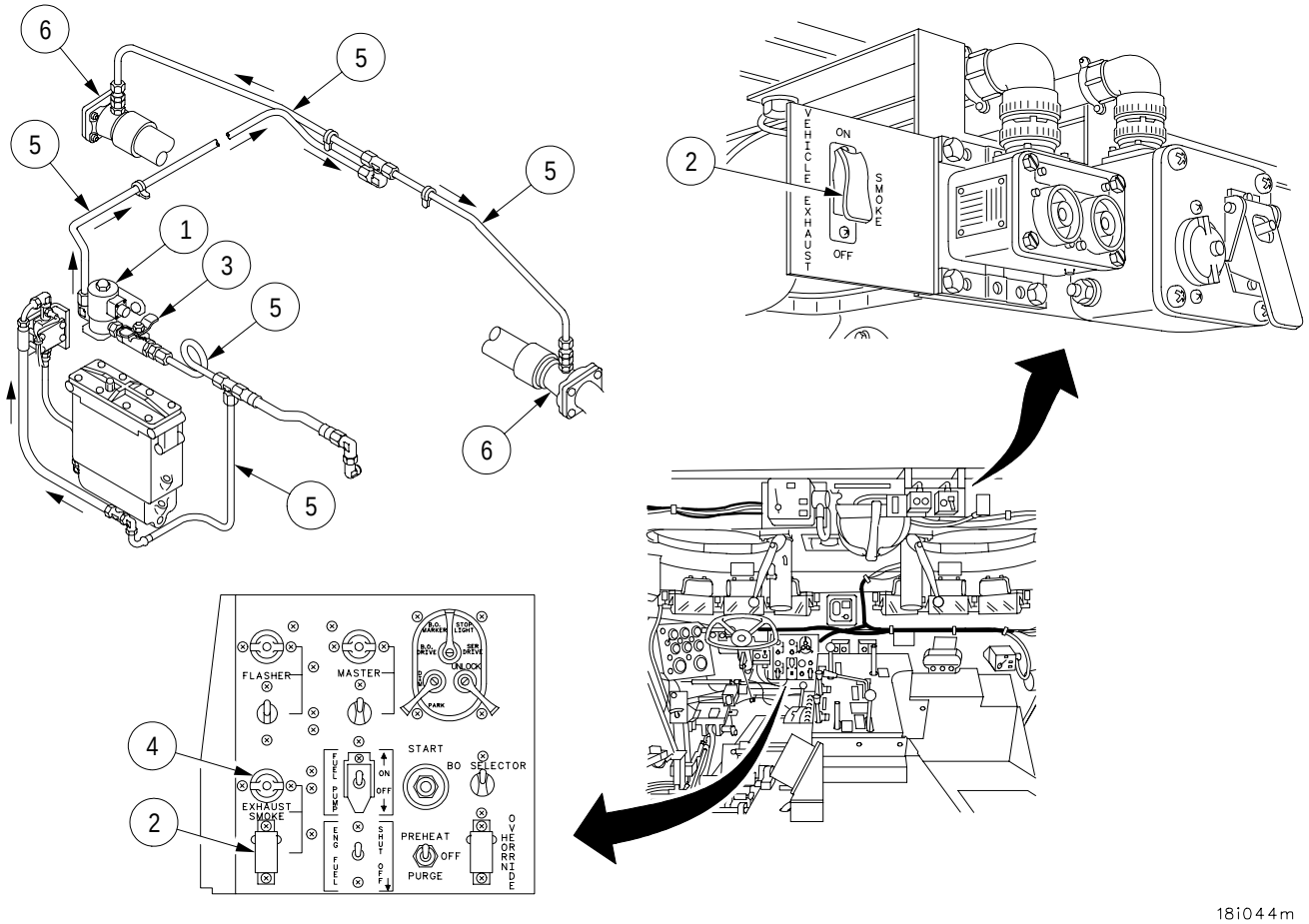
The exhaust smoke generating system consists of a solenoid valve (1), two switch assemblies (2), a manual shutoff valve (3), an indicator light (4), fuel tube assemblies (5), mounting brackets, electrical leads and attaching hardware.

The solenoid valve (1) and fuel tube assemblies (5) are attached to the rear of the engine. Fuel to operate the smoke generating system is taken from the main fuel supply at the front of the engine.

The switch (2) to operate the smoke generating system is installed in the driver's compartment and commander's station and is connected to the main wiring harness using electrical leads provided in the smoke generating system kits.

The smoke generating system uses the engine fuel pump to supply fuel from the vehicle fuel tanks to a solenoid valve (1) mounted at the rear of the engine. When the solenoid valve (1) is energized (opened) it allows fuel to be sprayed into the exhaust system (6). The fuel vaporizes and exits with the engine exhaust gases. The fuel vapor cools on contact with the moving exhaust air and condenses to form a dense smoke screen. The electrical power to energize the solenoid valve (1) is supplied by the warning indicator and warning horn systems. The warning horn will not sound unless the engine is running. Connection to this system prevents accidental activation of the smoke generating system when the engine is not running.

The manual fuel shutoff valve (3) can be used to determine if the smoke produced is from a malfunctioning engine or from the smoke generating system.



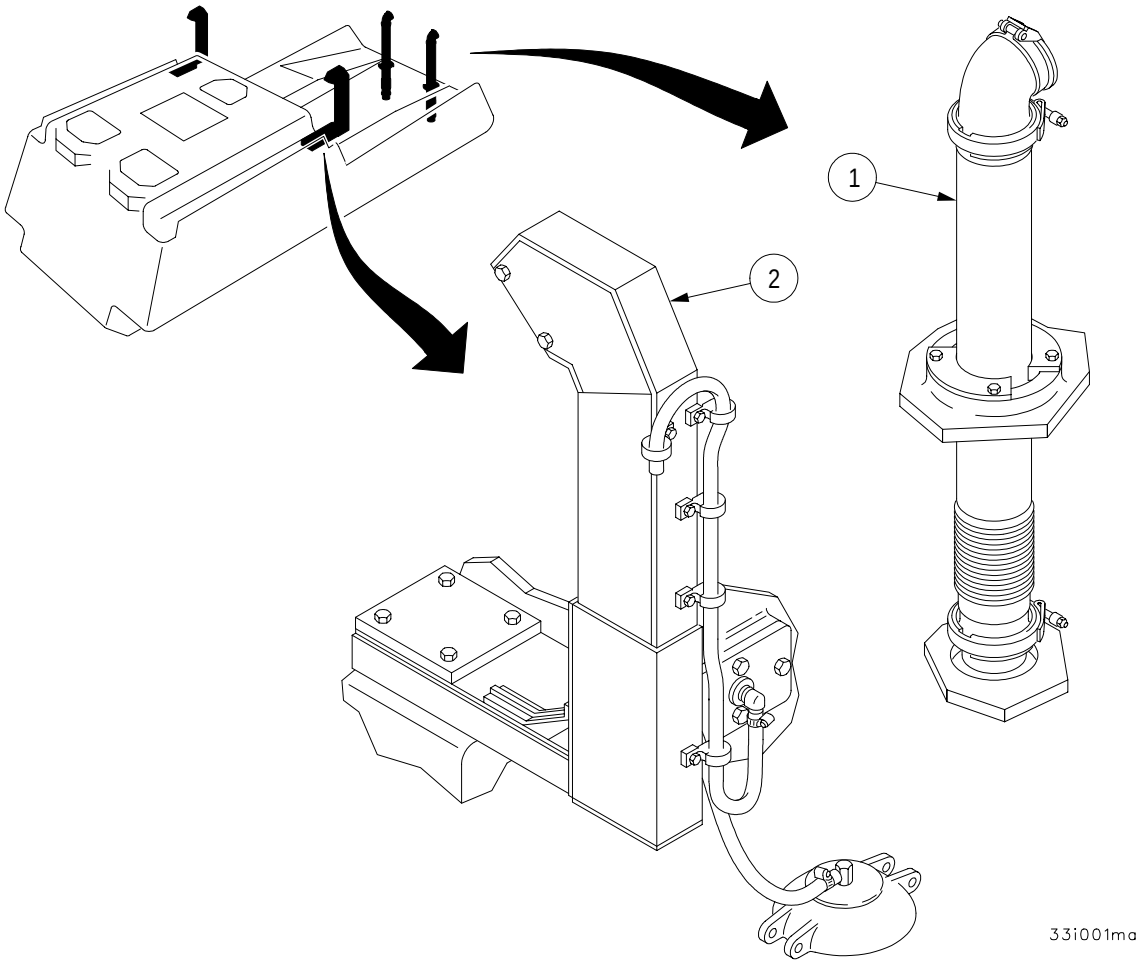
THEORY OF OPERATION - CONTINUED 0005 00

DEEP WATER FORDING KIT

The deep water fording kit as installed on the M88A2 HRV permits fording to a maximum depth of 7 feet, 6 inches (2.286 m). The design of the deep water fording equipment permits the vehicle to be completely operable on land or in water, providing maximum depth is not exceeded.

Main Engine Exhaust The main engine exhaust system (1) for deep water fording consists of a series of pipes to provide the proper venting of the exhaust for the right and left banks of the engine. A flexible bellowed-type pipe is clamped to the main engine exhaust outlet. Utilizing a slip-joint, each pipe is attached to the main engine exhaust pipe which ducts the exhaust gases through the rear engine deck. To each main exhaust pipe, a 4 1/2-inch (114.3 mm) diameter pipe which extends above the specified depth, is clamped and sealed. Two clamps, bolted to the engine deck, are used to hold the system in proper position.

Main Engine Air Inlet The main engine air inlet system (2) provides for the use of outside air for the main engine while the vehicle is in the water. The system (2) consists of two pipes and two seals, which cover and seal each of the air intake vents on the top of the vehicle cab.



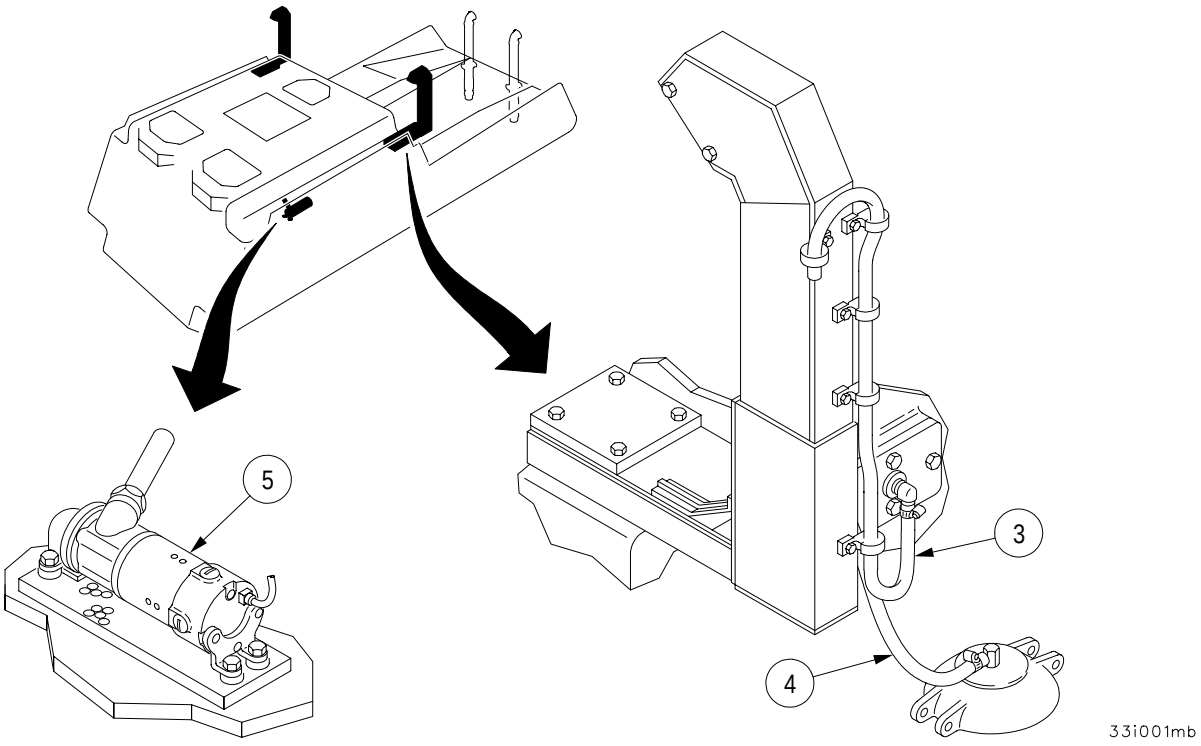
THEORY OF OPERATION - CONTINUED 0005 00

DEEP WATER FORDING KIT - CONTINUED

Acetylene Compartment Vent A vent assembly (3) consisting of tubing, fittings, adapter plate and gasket is attached to a boss which surrounds four vent holes in the left rear of the cab, to provide ventilation of the compartment during the deep water fording operations. Two clips mounted on the left main engine air intake pipe support the vent system.

Fuel Tank Vent The fuel tank vent (4) consists of two 90-degree elbows, a rubber hose, two hose clamps, a seal and a clip. The rubber hose is clamped to an elbow in the left main engine air intake pipe and to an elbow in the fuel tank's filler cover. The seal is installed between the bottom of fuel tank filler cover and the top of the fuel tank filler cap to prevent entry of water. The clip, attached to the acetylene vent cover, keeps the hose from hanging free and being torn.

Bilge Pump, Motor and Support Assembly A centrifugal-type bilge pump (5) with motor and support assembly is installed on the hull floor in the winch compartment. The pump (5) is used to remove any water which may enter the compartment during fording. The discharge of the pump (5) is directed through the bilge pump hose to an outlet adapter, mounted onto the right side of the personnel compartment. A toggle switch and indicator lamp for operating the pump (5) are located at the right of the driver's seat on the accessories panel. A relay, which is activated by the toggle switch, controls the pump motor. A circuit breaker and relay mounted under the floor plates provide overload protection for the pump circuit. The switch and relay coil circuit is protected by a circuit breaker on the accessories panel.



THEORY OF OPERATION - CONTINUED 0005 00

DEEP WATER FORDING KIT - CONTINUED

Auxiliary Power Unit Preparations and precautions should be taken before and after submersion of the auxiliary power unit to prevent corrosion and separation of hot leads due to electrolysis by exposure to salt water and the destruction of the brushes, brush holder and armature by sand.

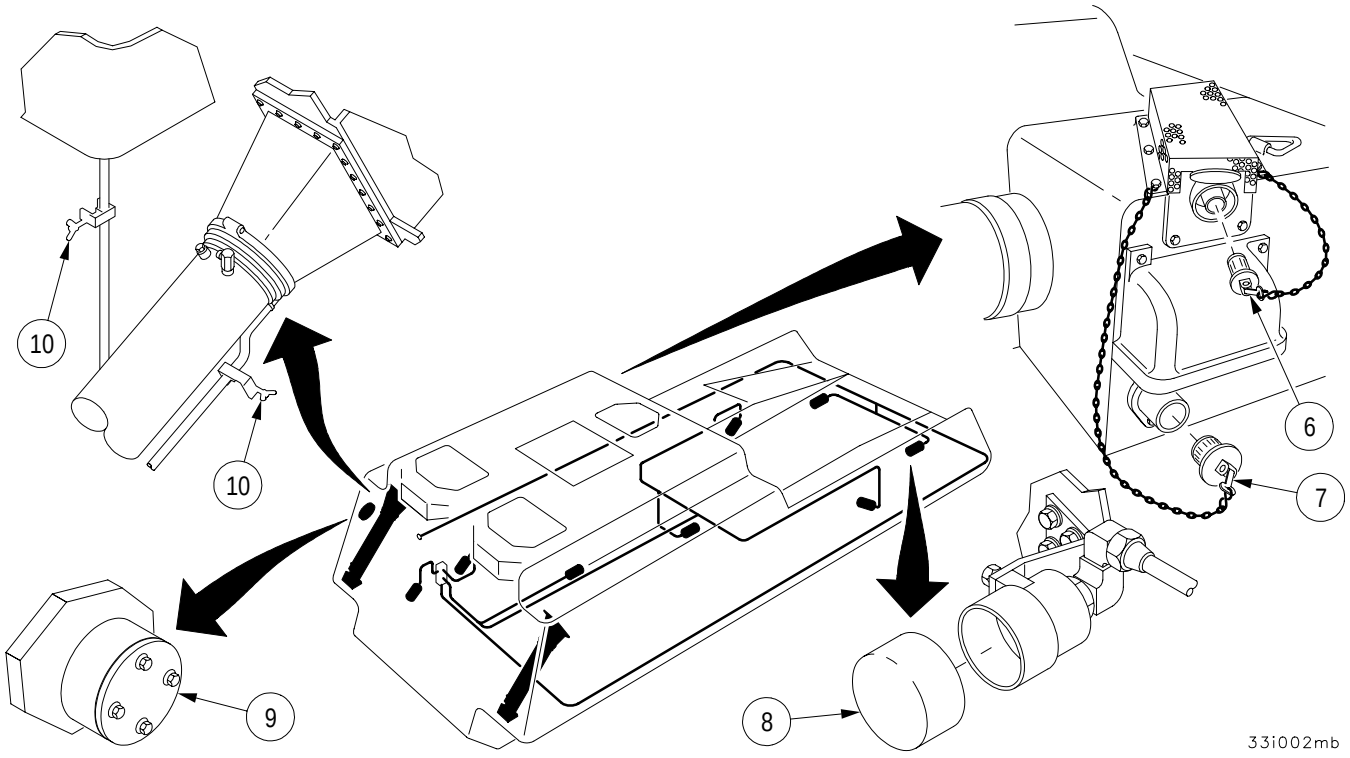
A plug (6) is installed in the APU exhaust outlet to keep water out.

Personnel Heater The personnel heater is not operable during fording operations. The exhaust outlet (7) is plugged during fording operations and unplugged after fording operations.

Fire Extinguisher System Eight rubber fire extinguisher nozzle caps (8) protect the extinguisher system from entrance of water and contaminants. These caps (8) are not sealed and would be blown off the nozzles upon activation of the system.

Crew Fan Air Duct Housing and Boom Foot Drains The crew fan duct seal (9) consisting of a rubber seal between two metal plates fits into and seals the crew fan air duct housing.

Shutoff hose clamps (10) are used to control water flow from the boom foot drains.



THEORY OF OPERATION - CONTINUED 0005 00

DEEP WATER FORDING KIT - CONTINUED

Sealing and Miscellaneous Materials Non-hygroscopic tape is applied around the engine oil fill cap and oil gauge rod, transmission oil filler neck, electro magnetic clutch bayonet gauge and vent, main winch fill/tube/bayonet gauge and/or excessively large open areas if required.

Fording sealer is used as a sealing compound around exterior stowage compartment doors, main winch cable opening, removable hull front cover and all mounting surfaces of the vehicle and deep water fording components.

Electrical insulating and sealing compound is used to seal all exposed electrical connections.

Wiping cloths are supplied to be used in cleaning and drying the vehicle preparatory to sealing.

One spanner wrench is provided for installing bilge pump discharge hoses.

ELECTRICAL SYSTEM

Batteries Six 12-volt batteries are connected in a series-parallel circuit to give the vehicle a 300-ampere/hour source of 24 V dc power. The batteries are located in the left side of the engine compartment.

Positive Bus Distributes power from the batteries to the vehicle electrical systems.

Master Switch Located on the Driver's switch panel. When moved to ON, applies battery voltage to the electrical system. When engine is running, it supplies generator voltage to the electrical system.

Master Relay The master relay is located in the left rear of the engine compartment. It controls primary power to all electrical systems and components except personnel heater system, the MASTER switch and the NATO slave receptacle.

Auxiliary Power Receptacle (NATO Slave) Used to connect two vehicles together to charge batteries or jump start a vehicle.

Starter The 24-volt, waterproof starter assembly is mounted on the lower left side of the engine towards the rear. It is a heavy-duty, solenoid-operated, enclosed shift-lever-type engine starter. The motor utilizes 12 brushes retained in six brush holders which are accessible through inspection plugs in the motor frame. The drive clutch is a heavy-duty over-running type with adjustable pinion clearance.

Low Voltage Protection Module Prevents starter operation below 12 volts.

Engine Generator Waterproof, oil-cooled 28 V dc, 650 ampere field regulated unit. Mounted on the right side of engine (flywheel end) and is gear-driven by the engine. Engine oil is circulated through the generator for cooling.

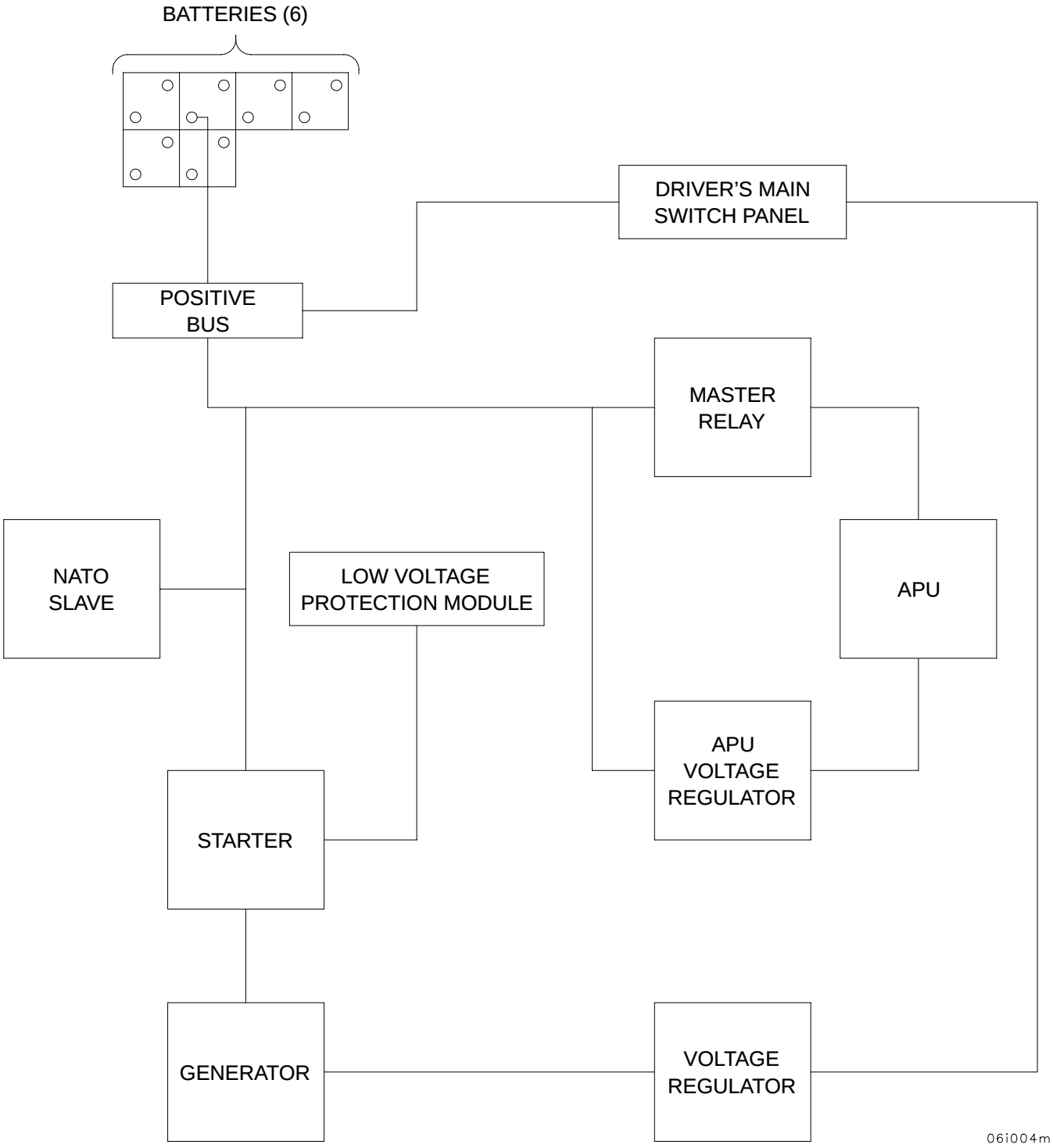
Voltage Regulator Maintains generator output voltage of the engine at a constant 28$\pm$0.7 V dc. Located left rear of engine compartment.

Auxiliary Power Unit (APU) Power from the batteries powers the motor/generator to start the APU. Once started, the motor/generator generates 28 V dc to the APU voltage regulator.

APU Voltage Regulator Receives 28 V dc from motor/generator and provides 28$\pm$0.7 V dc to charge the batteries. Located left rear of engine compartment.

THEORY OF OPERATION - CONTINUED 0005 00

ELECTRICAL SYSTEM - CONTINUED



END OF TASK

CHAPTER 2

TROUBLESHOOTING

TROUBLESHOOTING INSTRUCTIONS 0006 00

THIS WORK PACKAGE COVERS:

Scope, STE-ICE Troubleshooting, Electrical Troubleshooting, Troubleshooting Sample

SCOPE

This work package (WP 0006 00) contains instructions for Unit Level troubleshooting of the M88A2 vehicle, STE-ICE troubleshooting guidelines, and general electrical troubleshooting information. This work package also describes how to do troubleshooting using a sample procedure.

Work package (WP 0007 00) is the Quick Guide To Troubleshooting (Symptom/Malfunction) Index. Information in this work package quickly identifies the particular symptom/malfunction and describes the correct troubleshooting procedure.

Work package (WP 0008 00 through WP 0185 00) contains the various Troubleshooting Procedures which are identified in the Symptom/Malfunction Index. These procedures provide step-by-step instructions for isolating and correcting malfunctions.

TROUBLESHOOTING - CONTINUED 0006 00

STE-ICE-R TROUBLESHOOTING

NOTE

This test is now designated as STE-ICE-R (Reprogrammable). The "R" indicates its circuit boards can now be reprogrammed at depot. There are no other changes to this test set. For testing purposes, STE-ICE and STE-ICE-R are the same.

Introduction

The Simplified Test Equipment for Internal Combustion Engines (Reprogrammable) (STE-ICE-R) set connects to the M88A2 HRV Diagnostic Cable Assembly (DCA) located at the driver's station. The DCA reduces the mechanic's need to install test transducers and leads to perform engine and engine component diagnostic tests. To successfully complete a STE-ICE-R test refer to TM 9-4910-571-12&P. To accurately diagnose a malfunction of the M88A2 HRV, a vehicle identification number (VID) of 04 must be entered into the test set before a test number is entered. Be sure to refer to the "Quick Guide to Troubleshooting (Symptom/Malfunction) Index" to locate the appropriate troubleshooting tree to isolate the cause of malfunction.

General

STE-ICE-R provides measurements on voltage, resistance, pressure, temperature and speed to analyze the condition of an engine system.

STE-ICE-R can also be used as a preventive maintenance tool, ohmmeter and ammeter. For these applications refer to TM 9-4910-571-12&P.

Description and Use of STE-ICE-R Equipment

For a complete description of the STE-ICE-R set, all associated equipment and their uses, refer to TM 9-4910-571-12&P.

ELECTRICAL TROUBLESHOOTING

WARNING

Throughout troubleshooting of the electrical system or electrical components, be certain vehicle MASTER switch is OFF between every step unless otherwise directed. Remove all jewelry and metal objects when working on the electrical system to prevent injury due to electrical shock.

Electrical troubleshooting in this chapter provides schematic diagrams and pictorial diagrams to give insight to the harnesses involved. Refer to the electrical schematics (FP-1 through FP-22) when performing the troubleshooting on the electrical system.

When troubleshooting any electrical system or component, exercise extreme care to prevent electrical shock.

TROUBLESHOOTING - CONTINUED 0006 00

TROUBLESHOOTING SAMPLE

To effectively troubleshoot the M88A2 HRV, follow these steps:

a. Determine the symptom.
b. Locate the symptom (1) in the Quick Guide to Troubleshooting (Symptom/Malfunction) Index.
c. Locate the troubleshooting work package (2) for your symptom.
d. Turn to the procedure (3) identified in the Quick Guide to Troubleshooting (Symptom/Malfunction) Index.
e. Study the function description, pictorial view, and/or schematic located in the particular system overview work package.
f. Perform the corrective action (4) as required by troubleshooting procedure (3).
g. Verify that the corrective action eliminated the symptom.

QUICK GUIDE TO TROUBLESHOOTING (SYMPTOM/MALFUNCTION) INDEX -CONTINUED

SYMPTOM ← 1	ACTION OR WP REF
BILGE PUMP	
BILGE PUMP FIALS TO OPERATE.	WP 0030 00 ← 2

BILGE PUMP FAILS TO OPERATE ← 3 0030 00

THIS WORK PACKAGE COVERS:
Bilge Pump Fails to Operate.

INITIAL SETUP:

Tools and special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required
Three

A

a. Disconnect harness 12365668 from accessory panel (WP 0244 00).
b. Disconnect harness 12365668 from accessory panel (WP 0244 00).
c. Disconnect lead 450 from BILGE PUMP switch (WP 0244 00).
d. Disconnect lead 450B from BILGE PUMP switch (WP 0244 00).

Is zero ohms indicated?

yes

no

Replace bilge pump switch (WP 0244 00). Verify fault is corrected. ← 4

END OF TASK

QUICK GUIDE TO TROUBLESHOOTING (SYMPTOM/MALFUNCTION) INDEX 0007 00

THIS WORK PACKAGE COVERS:
Quick Guide to Troubleshooting

INITIAL SETUP:

Personnel Required
Three

The troubleshooting symptom/malfunction information in this work package is presented in a manner to quickly locate a particular symptom or malfunction. Symptoms/malfunctions are also identified under each vehicle system.

SYMPTOM	ACTION OR WP REF
AUXILIARY POWER UNIT (ONAN)	
AUXILIARY POWER UNIT FAILS TO CRANK.	WP 0009 00
AUXILIARY POWER UNIT FAILS TO KEEP RUNNING.	WP 0010 00
AUXILIARY POWER UNIT ENGINE HARD TO START IN COLD WEATHER.	WP 0011 00
AUXILIARY POWER UNIT FUEL SOLENOID FAILS TO ENERGIZE.	WP 0012 00
BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON.	WP 0013 00
APU CONTROL BOX HIGH AIR TEMP INDICATOR DOES NOT LIGHT.	WP 0014 00
APU CONTROL BOX LOW OIL PRESS INDICATOR DOES NOT LIGHT WHEN APU OIL PRESSURE IS LOW.	WP 0015 00
APU CONTROL BOX ENGINE OIL PRESSURE GAUGE READS ZERO WITH APU ENGINE RUNNING.	WP 0016 00
AUXILIARY POWER UNIT (HATZ)	
AUXILIARY POWER UNIT FAILS TO CRANK.	WP 0018 00
AUXILIARY POWER UNIT FAILS TO KEEP RUNNING.	WP 0019 00
AUXILIARY POWER UNIT ENGINE HARD TO START IN COLD WEATHER.	WP 0020 00
AUXILIARY POWER UNIT FUEL SOLENOID FAILS TO ENERGIZE.	WP 0021 00
BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON.	WP 0022 00
APU CONTROL BOX HIGH AIR TEMP INDICATOR DOES NOT LIGHT.	WP 0023 00
APU CONTROL BOX LOW OIL PRESS INDICATOR DOES NOT LIGHT WHEN APU OIL PRESSURE IS LOW.	WP 0024 00
APU CONTROL BOX ENGINE OIL PRESSURE GAUGE READS ZERO WITH APU ENGINE RUNNING.	WP 0025 00
AUXILIARY POWER UNIT HOURMETER DOES NOT WORK.	WP 0026 00
AUXILIARY POWER UNIT HIGH AIR TEMPERATURE LIGHT IS ILLUMINATED AND DOOR FAN IS NOT RUNNING.	WP 0027 00
AUXILIARY POWER UNIT HIGH AIR TEMPERATURE LIGHT IS ILLUMINATED AND SUMP FAN IS NOT RUNNING.	WP 0028 00

QUICK GUIDE TO TROUBLESHOOTING (SYMPTOM/MALFUNCTION) INDEX - CONTINUED 0007 00

SYMPTOM	ACTION OR WP REF
AUXILIARY POWER UNIT	
AUXILIARY POWER UNIT ENGINE FAILS TO START.	Notify Direct Support Maintenance
AUXILIARY POWER UNIT ENGINE IS HARD TO START.	Notify Direct Support Maintenance
AUXILIARY POWER UNIT ENGINE MISFIRES.	Notify Direct Support Maintenance
AUXILIARY POWER UNIT ENGINE LACKS POWER.	Notify Direct Support Maintenance
AUXILIARY POWER UNIT ENGINE DISCHARGES BLACK SMOKE.	Notify Direct Support Maintenance
AUXILIARY POWER UNIT ENGINE KNOCKS.	Notify Direct Support Maintenance
AUXILIARY POWER UNIT ENGINE USES EXCESSIVE OIL.	Notify Direct Support Maintenance
BILGE PUMP	
BILGE PUMP FAILS TO OPERATE.	WP 0030 00
BILGE PUMP LIGHT FAILS TO OPERATE. ALL OTHER ACCESSORY LIGHTS OPERATE.	WP 0031 00
COMMUNICATIONS	
COMMUNICATIONS SYSTEM FAILS TO OPERATE.	WP 0033 00
DRIVER'S CONTROLS	
VEHICLE WILL NOT STEER OR WILL ONLY STEER IN ONE DIRECTION.	WP 0035 00
BRAKES DO NOT STOP VEHICLE EFFECTIVELY.	WP 0036 00
BRAKE PUMP MOTOR RUNS CONTINUOUSLY AND BRAKE PRESSURE DOES NOT REACH 950 PSI (OLD CONFIGURATION) OR 1300 PSI (NEW CONFIGURATION WITH BRAKE MODULATION)	WP 0036 00
BRAKES DRAG ON ONE OR BOTH SIDES.	WP 0037 00
ENGINE DOES NOT RESPOND PROPERLY TO THROTTLE CONTROLS.	WP 0038 00
PURGE PUMP FAILS TO OPERATE (PURGE PUMP CANNOT BE HEARD OPERATING WHEN TURNED ON).	WP 0039 00
ENGINE	
ENGINE FAILS TO CRANK WHEN STARTER SWITCH IS PRESSED.	WP 0041 00
ENGINE CRANKS AT NORMAL SPEED BUT WILL NOT START.	WP 0042 00
ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER.	WP 0043 00
ENGINE CRANKS SLOWLY AND WILL NOT START.	WP 0044 00
ENGINE FAILS TO SHUT OFF WHEN FUEL SHUTOFF SWITCH IS ACTIVATED.	WP 0045 00
ENGINE FAILS TO SHUT OFF WHEN MANUAL FUEL SHUTOFF HANDLE IS PULLED.	WP 0046 00

QUICK GUIDE TO TROUBLESHOOTING (SYMPTOM/MALFUNCTION) INDEX - CONTINUED 0007 00

SYMPTOM	ACTION OR WP REF
ENGINE - CONTINUED	
ENGINE HAS LOW STALL RPM, DOES NOT DEVELOP FULL POWER, AND HAS EXCESSIVE SMOKE FROM ONE OR BOTH BANKS OF CYLINDERS.	WP 0047 00
ENGINE HAS EXCESSIVE WHITE SMOKE.	WP 0048 00
ENGINE HAS LOW STALL RPM AND DOES NOT DEVELOP FULL POWER, BUT EXHAUST SMOKE IS NORMAL.	WP 0049 00
ENGINE RUNS ROUGH OR MISFIRES AND/OR KNOCKS.	WP 0050 00
ENGINE USES EXCESSIVE FUEL.	WP 0051 00
DUST DETECTOR SYSTEM OPERATING. POWER PLANT WARNING LAMP AND DUST DETECTOR WARNING LAMPS “ON” AND PRESSURE SWITCH PLUNGERS ARE VISIBLE.	WP 0052 00
ENGINE HAS LOW POWER AND EXCESSIVE BLACK SMOKE.	WP 0053 00
FUEL/WATER SEPARATOR OPERATES IMPROPERLY.	WP 0054 00
LOW (OR HIGH) ENGINE OIL PRESSURE; OIL TEMPERATURE IS NORMAL.	WP 0055 00
ENGINE USES EXCESSIVE OIL.	WP 0056 00
ENGINE OIL TEMPERATURE IS HIGH.	WP 0057 00
ENGINE OIL BLOWS FROM DIPSTICK TUBE.	WP 0058 00
ENGINE STARTER CRANKS WHEN MASTER SWITCH IS TURNED ON OR ENGINE STARTER FAILS TO SHUT OFF WHEN ENGINE IS RUNNING.	WP 0059 00
ENGINE CRANKS IN ANY GEAR.	WP 0041 00
ENGINE STARTS BUT FAILS TO KEEP RUNNING.	WP 0041 00
STARTER SPINS BUT DOES NOT ENGAGE. (REPLACE STARTER.)	WP 0240 00
ENGINE STARTER OPERATES WITH LOW BATTERY VOLTAGE. (REPLACE STARTER LOW VOLTAGE PROTECTION MODULE.)	WP 0241 00
ENGINE OVERSPEEDS	Notify Direct Support Maintenance
ENHANCED DIAGNOSTICS SYSTEM	
SPORT CANNOT COMMUNICATE WITH 1553 BUS CARD.	WP 0061 00
SPORT CANNOT COMMUNICATE WITH REMOTE TERMINAL UNIT.	WP 0062 00
THE NON-VOLATILE CALIBRATION DATA STORED IN REMOTE TERMINAL UNIT FAILED AN INTERNAL CONSISTENCY CHECK AFTER BEING READ.	WP 0063 00
FAILED TO READ THE NON-VOLATILE CALIBRATION DATA.	WP 0064 00
ALL SENSORS SIGNALS ARE BELOW RANGE OR OPEN.	WP 0065 00
ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J1 ARE BELOW VALID RANGE OR OPEN.	WP 0066 00
ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J2 ARE BELOW VALID RANGE OR OPEN.	WP 0067 00
ALL SIGNALS AT CABLE ASSEMBLY 4W504 CONNECTOR J1 ARE BELOW VALID RANGE OR OPEN.	WP 0068 00
ALL SIGNALS AT REMOTE TERMINAL CONNECTOR J3 ARE BELOW VALID RANGE OR OPEN.	WP 0069 00

QUICK GUIDE TO TROUBLESHOOTING (SYMPTOM/MALFUNCTION) INDEX - CONTINUED 0007 00

SYMPTOM	ACTION OR WP REF
ENHANCED DIAGNOSTICS SYSTEM - CONTINUED	
ALL SIGNALS AT REMOTE TERMINAL CONNECTOR J5 ARE BELOW VALID RANGE OR OPEN.	WP 0070 00
SIGNAL FROM SENSOR IS BELOW ITS VALID RANGE, INDICATES BOTH CIRCUITS ARE OPEN, IS ABOVE ITS VALID RANGE, INDICATES CIRCUITS ARE CLOSED, OR WAS NOT PROCESSED CORRECTLY.	WP 0071 00
EXHAUST SMOKE GENERATING SYSTEM	
VEHICLE FAILS TO MAKE SMOKE.	WP 0073 00
VEHICLE PRODUCES POOR QUALITY SMOKE OR INSUFFICIENT QUANTITY OF SMOKE.	WP 0074 00
VEHICLE PRODUCES SMOKE WHEN EXHAUST SMOKE SWITCHES ARE OFF.	WP 0075 00
EXHAUST SMOKE INDICATOR LIGHTS FAILS TO OPERATE.	WP 0076 00
GAS PARTICULATE SYSTEM	
LACK OF AIR AT FACEPIECES	WP 0078 00
MOTOR DOES NOT OPERATE	WP 0079 00
M3 HEATER (1, 2 OR 3) FAILS TO OPERATE. AIR PURIFIERS OPERATE PROPERLY.	WP 0080 00
BLOWER FAILS TO OPERATE.	WP 0079 00
MOTOR OVERHEATS. (INSPECT PURIFIER AND HOUSING, REPLACE AS NECESSARY.)	WP 0706 00
GENERATOR SYSTEM	
ENGINE BATT/GEN GAUGE READS IN YELLOW OR LOWER RED REGION WITH MAIN ENGINE RUNNING.	WP 0082 00
ENGINE BATT/GEN GAUGE READS IN GREEN BUT ENGINE ACCESSORIES FAIL TO OPERATE.	WP 0083 00
GENERATOR OUT INDICATOR DOES NOT LIGHT WHEN GENERATOR SWITCH IS PLACED IN ON POSITION.	WP 0084 00
ENGINE BATT/GEN GAUGE SHOWS NO OR INCORRECT READING.	WP 0085 00
HYDRAULICS SYSTEM	
HYDRAULIC OIL CONSTANTLY OVERHEATS.	WP 0087 00
MAIN HYDRAULICS SYSTEM FAILS TO OPERATE.	WP 0088 00
SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN MAIN POSITION.	WP 0089 00
SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYRAULIC SELECTOR SET IN AUXILIARY POSITION.	WP 0090 00
MAIN WINCH FAILS TO OPERATE OR FAILS TO DEVELOP FULL POWER.	WP 0091 00
MAIN WINCH CREEPS WITH CONTROL IN NEUTRAL.	WP 0092 00
MAIN WINCH FAILS TO RELEASE.	WP 0093 00
MAIN WINCH FAILS TO HOLD LOAD.	WP 0094 00
MAIN WINCH LEVEL WINDER FAILS TO OPERATE.	WP 0095 00
AUXILIARY WINCH FAILS TO OPERATE OR DEVELOP FULL POWER.	WP 0096 00
BOOM FAILS TO OPERATE OR OPERATES ROUGHLY.	WP 0097 00

QUICK GUIDE TO TROUBLESHOOTING (SYMPTOM/MALFUNCTION) INDEX - CONTINUED 0007 00

SYMPTOM	ACTION OR WP REF
HYDRAULICS SYSTEM - CONTINUED	
BOOM CREEPS WITH BOOM CONTROL IN NEUTRAL.	WP 0098 00
BOOM STAYLINE CABLES BECOME SLACK DURING LIVE BOOM OPERATION OR BOOM CAN BE STOWED WITHOUT ACTIVATING THE BOOM SAFETY VALVE CONTROL LEVER.	WP 0099 00
HOIST WINCH FAILS TO OPERATE OR DEVELOP FULL POWER.	WP 0100 00
HOIST WINCH CREEPS WITH CONTROL IN NEUTRAL.	WP 0101 00
HOIST WINCH BRAKE FAILS TO HOLD A LOAD.	WP 0102 00
SPADE FAILS TO OPERATE.	WP 0103 00
SPADE CREEPS WITH SPADE CONTROL HANDLE IN HOLD.	WP 0104 00
SPADE LOCK FAILS TO RELEASE.	WP 0105 00
FUEL TRANSFER PUMP FAILS TO OPERATE.	WP 0106 00
IMPACT WRENCH FAILS TO OPERATE OR DEVELOP FULL POWER.	WP 0107 00
LIGHTS	
DOME LIGHT FAILS TO OPERATE.	WP 0109 00
PASSIVE NIGHT VIEWER OR PASSIVE NIGHT VIEWER INDICATOR LIGHT FAILS TO OPERATE.	WP 0110 00
ONE OR BOTH WINCH LIGHTS FAIL TO OPERATE.	WP 0111 00
FIXED SPOTLIGHT FAILS TO OPERATE.	WP 0112 00
TROUBLELIGHT FAILS TO OPERATE.	WP 0113 00
GAUGE PANEL LIGHTS FAIL TO OPERATE.	WP 0114 00
SERVICE HEADLIGHTS FAIL TO OPERATE.	WP 0115 00
STOPLIGHT ASSEMBLIES FAIL TO OPERATE.	WP 0116 00
STOPLIGHTS FAIL TO OPERATE.	WP 0117 00
TURN SIGNALS FAIL TO OPERATE.	WP 0118 00
BLACKOUT STOPLIGHTS FAIL TO OPERATE.	WP 0119 00
BLACKOUT MARKER LIGHTS FAIL TO OPERATE.	WP 0120 00
BLACKOUT DRIVE LIGHTS FAIL TO OPERATE.	WP 0121 00
REAR SERVICE LIGHT FAILS TO OPERATE.	WP 0122 00
EMERGENCY FLASHER LIGHT FAILS TO OPERATE.	WP 0123 00
WHEN ACTIVATING LAMP TEST SWITCH, INDICATOR WILL NOT COME ON.	WP 0124 00
MASTER RELAY AND SLAVE RECEPTACLE	
NO POWER WHEN MASTER SWITCH IS TURNED ON.	WP 0126 00
NO POWER AT SLAVE RECEPTACLE.	WP 0127 00

QUICK GUIDE TO TROUBLESHOOTING (SYMPTOM/MALFUNCTION) INDEX - CONTINUED 0007 00

SYMPTOM	ACTION OR WP REF
MONITORING SYSTEM	
FUEL GAUGE FAILS TO OPERATE PROPERLY.	WP 0129 00
ENGINE OIL TEMPERATURE GAUGE FAILS TO OPERATE PROPERLY.	WP 0130 00
TURBOCHARGER DUST DETECTOR INDICATOR LIGHT FAILS TO OPERATE.	WP 0131 00
TIME TOTALIZING METER FAILS TO OPERATE.	WP 0132 00
TRANSMISSION OIL TEMPERATURE GAUGE FAILS TO OPERATE.	WP 0133 00
TRANSMISSION OIL PRESSURE GAUGE FAILS TO OPERATE.	WP 0134 00
TRANSMISSION FILTER CLOGGED INDICATOR FAILS TO LIGHT WHEN FILTER IS CLOGGED.	WP 0135 00
CHARGE FILTER (RETURN FILTER) CLOGGED LIGHT STAYS ON.	WP 0136 00
HYDRAULIC OIL LOW LEVEL WARNING LIGHT STAYS ON. HYDRAULIC RESERVOIR IS FULL.	WP 0137 00
TRANSMISSION FILTER CLOGGED INDICATOR STAYS ON.	WP 0138 00
PERSONNEL HEATER	
PERSONNEL HEATER FAILS TO OPERATE PROPERLY.	WP 0140 00
PERSONNEL HEATER FAILS TO IGNITE. (HEATER BLOWER OPERATES PROPERLY.)	WP 0141 00
PERSONNEL HEATER FAILS TO KEEP BURNING.	WP 0142 00
PERSONNEL HEATER SMOKES.	WP 0140 00/ WP 0142 00
POWER TAKEOFF ELECTRICAL SYSTEM	
PTO CLUTCH DOES NOT ENGAGE, INDICATOR IS NOT LIT AND GOVERNOR DOES NOT OPERATE PROPERLY.	WP 0144 00
HIGH TEMP INDICATOR FAILS TO LIGHT WHEN PTO CLUTCH OIL TEMPERATURE IS HIGH. ALL OTHER SYSTEMS OPERATE PROPERLY.	WP 0145 00
RADIO INTERFERENCE SUPPRESSION SYSTEM	
EXCESSIVE INTERFERENCE, MAIN ENGINE AND APU NOT RUNNING, ACCESSORIES ON.	WP 0147 00
EXCESSIVE INTERFERENCE WITH MAIN ENGINE RUNNING AND VEHICLE STATIONARY.	WP 0148 00
EXCESSIVE INTERFERENCE WITH APU RUNNING AND APU GENERATOR SWITCH ON. MAIN ENGINE IS OFF AND VEHICLE IS STATIONARY.	WP 0149 00
EXCESSIVE INTERFERENCE WHEN VEHICLE IS TRAVELING.	WP 0150 00
SMOKE GRENADE LAUNCHER SYSTEM	
GRENADE LAUNCHER FAILS TO OPERATE PROPERLY. SOME OR ALL TUBES FAIL TO OPERATE. ALL OTHER SYSTEMS OPERATE PROPERLY.	WP 0152 00

QUICK GUIDE TO TROUBLESHOOTING (SYMPTOM/MALFUNCTION) INDEX - CONTINUED 0007 00

SYMPTOM	ACTION OR WP REF
TRACKS AND SUSPENSION	
VEHICLE PULLS TO ONE SIDE.	WP 0154 00
VEHICLE SAGS TO ONE SIDE.	WP 0155 00
VEHICLE RIDES EXCESSIVELY HARD.	WP 0156 00
VEHICLE MAKES THUMPING NOISE DURING TRAVEL.	WP 0157 00
TRANSMISSION	
VEHICLE STEERS BUT WILL NOT DRIVE IN ANY RANGE.	WP 0159 00
VEHICLE WILL NOT DRIVE IN LOW RANGE.	WP 0159 00
VEHICLE WILL NOT DRIVE IN INTERMEDIATE RANGE.	WP 0159 00
VEHICLE WILL NOT DRIVE IN HIGH RANGE.	WP 0159 00
VEHICLE WILL DRIVE FORWARD BUT NOT IN REVERSE.	WP 0159 00
VEHICLE CREEPS IN NEUTRAL.	WP 0159 00
TRANSMISSION CANNOT BE DOWNSHIFTED.	WP 0159 00
TRANSMISSION OIL TEMPERATURE HIGH.	WP 0160 00
VENTILATING BLOWER	
VENTILATING BLOWER FAILS TO OPERATE. ALL OTHER SYSTEMS OPERATE PROPERLY.	WP 0162 00
VENTILATING BLOWER WILL NOT OPERATE AT FULL SPEED.	WP 0163 00
VENTILATING BLOWER IS UNUSUALLY NOISY.	WP 0164 00
WARNING SYSTEM	
SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN MASTER SWITCH IS ON OR WHEN MAIN ENGINE OIL PRESSURE IS BELOW OPERATING LEVEL.	WP 0166 00
SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN ENGINE OIL TEMPERATURE IS HIGH.	WP 0167 00
SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN TRANSMISSION OIL TEMPERATURE IS HIGH.	WP 0168 00
SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN PTO CLUTCH OIL TEMPERATURE IS HIGH. (HIGH TEMP INDICATOR IS LIT.)	WP 0169 00
SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN BRAKE PRESSURE IS LOW.	WP 0170 00
SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN MAIN WINCH MALFUNCTIONS.	WP 0171 00
WARNING HORN DOES NOT SOUND WHEN ENGINE IS RUNNING AND SYSTEM WARNING LIGHT IS LIT.	WP 0172 00
SYSTEM WARNING LIGHT DOES NOT GO OUT AFTER ENGINE IS STARTED.	WP 0173 00
LOW BRAKE PRESSURE WARNING LIGHT DOES NOT LIGHT WHEN BRAKE PRESSURE IS BELOW 450 PSI.	WP 0174 00
VEHICLE HORN FAILS TO OPERATE.	WP 0175 00

QUICK GUIDE TO TROUBLESHOOTING (SYMPTOM/MALFUNCTION) INDEX - CONTINUED 0007 00

SYMPTOM	ACTION OR WP REF
WARNING SYSTEM - CONTINUED	
SYSTEM WARNING INDICATOR WILL NOT COME ON WHEN ACTIVATING WINCH TEST SWITCH.	WP 0176 00
LOW BRAKE PRESSURE WARNING LIGHT COMES ON AND WARNING HORN SOUNDS.	WP 0177 00
WINCH ELECTRICAL SYSTEM	
LEVEL WINDER MALFUNCTION INDICATOR FAILS TO LIGHT WHEN LEVEL WINDER MALFUNCTIONS.	WP 0179 00
WINCH DRUM MALFUNCTION INDICATOR FAILS TO LIGHT WHEN WINCH DRUM MALFUNCTIONS.	WP 0180 00
PAYOUT LIGHT INDICATOR FAILS TO LIGHT WHEN LESS THAN FOUR WRAPS OF WIRE ROPE ARE LEFT ON DRUM.	WP 0181 00
MAIN WINCH FAILS TO SHUT DOWN DURING A MALFUNCTION.	WP 0182 00
MAIN WINCH FAILS TO SHUT DOWN WHEN WINCH TEST SWITCH IS HELD IN TEST POSITION.	WP 0183 00
MAIN WINCH DOES NOT OPERATE WITH THE OVERRIDE SWITCH HELD IN THE OVERRIDE POSITION.	WP 0184 00
MAIN WINCH POWER IS NOT REDUCED WHEN OVERRIDE SWITCH IS IN OVERRIDE POSITION.	WP 0185 00
WINCH DRUM MALFUNCTION INDICATOR LIGHTS, WINCH IS OPERATING PROPERLY.	WP 0180 00, Steps H–O
WINCH PAYOUT LIMIT INDICATOR LIGHTS, WINCH IS OPERATING PROPERLY.	WP 0181 00, Steps H–N

If any problem is not listed or will not correct through troubleshooting, notify direct support maintenance.

NOTE

Electrical harness views are included in the troubleshooting chart as reference guides only (refer to WP 0237 00 – WP 0344 00 for detailed information on the electrical harnesses).

END OF TASK

AUXILIARY POWER UNIT (ONAN) OVERVIEW AND DIAGRAMS 0008 00

THIS WORK PACKAGE COVERS:

Auxiliary Power Unit (ONAN) Overview And Diagrams

The auxiliary power unit (APU) provides the power source that drives the auxiliary hydraulic pump. The auxiliary hydraulic pump charges a back-up hydraulic system that permits operation of all hydraulic components in a no load condition. In addition, the auxiliary hydraulic pump is the sole source of hydraulic power to operate the fuel transfer pump or impact wrench. If necessary, the APU can also supply electrical power (+28 V dc) to keep vehicle batteries charged and supply power to operate other vehicle electrical components when the main engine is not running. The APU consists of a diesel engine, starter system, fuel system solenoid, monitoring system, and generator output system.

The APU diesel engine is a 2-cylinder, 4-cycle, air cooled, add firing, engine that develops 10.8 hp at an engine speed of 200 rpm (at 500 foot elevation with outside air temperature of 70 degrees F).

The APU starter system consists of the generator/starter, a preheater relay, two 15 ampere circuit breakers, a preheater switch (PREHEAT OFF/MOM ON), the APU generator switch (APU GEN ON/OFF), a starter relay, glow plugs, preheaters and associated electrical wiring. With the MASTER switch ON, operating voltage (+24 V dc) to the starter is supplied from the vehicle batteries through the starter relay. The starter relay is energized when the APU GEN switch is set to the OFF position, and both the PREHEAT and START switches are held in the MOM ON position. In addition, with the PREHEAT switch held in the MOM ON position, operating voltage (+24 V dc) is supplied to the glow plugs and preheaters to aid the APU diesel engine starting process.

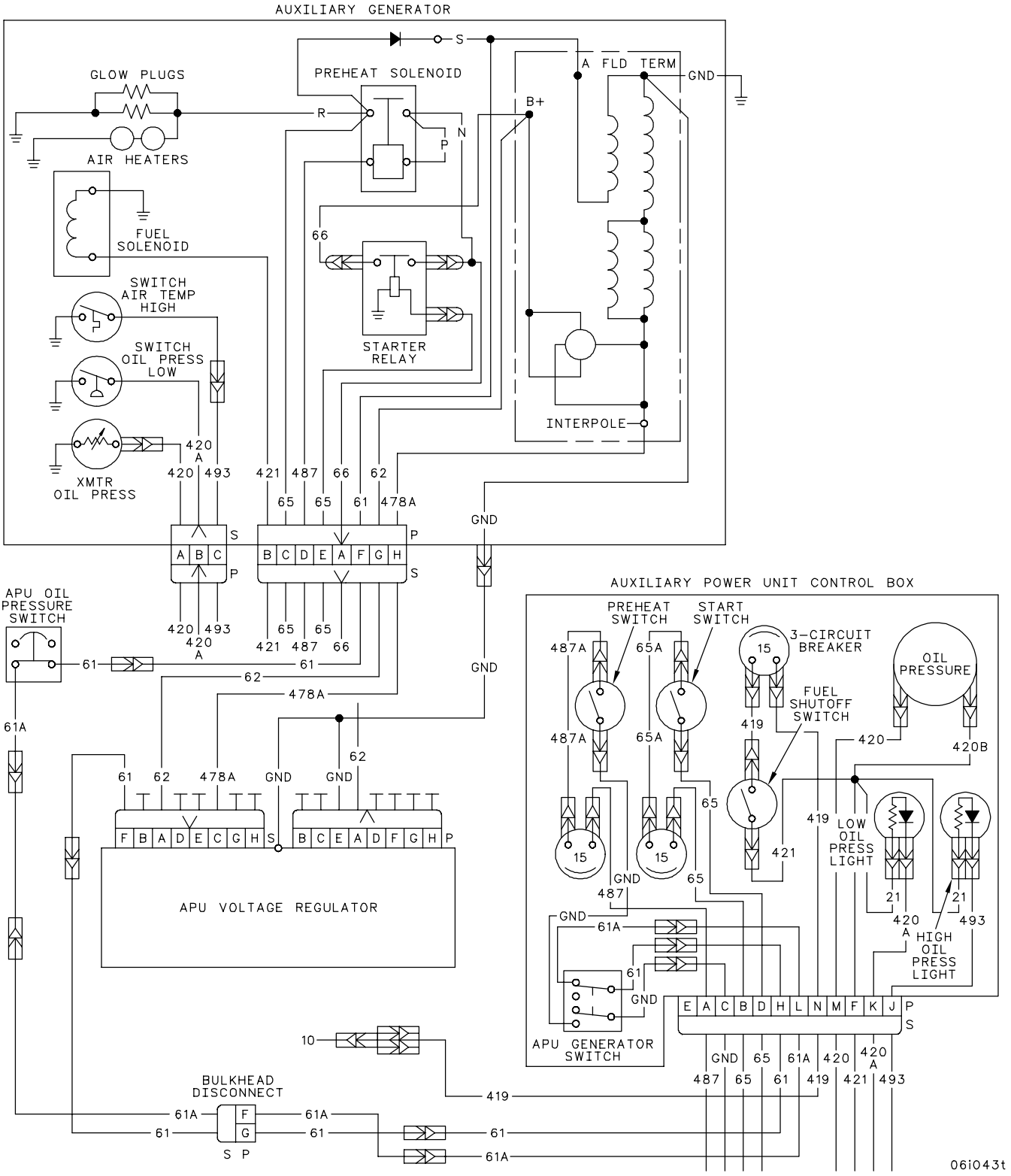
The APU fuel system solenoid circuit consists of the fuel solenoid, 15-ampere circuit breaker, the FUEL SHUT OFF switch, and related electrical wiring. When the MASTER switch is ON, the APU fuel solenoid is energized when the FUEL SHUT OFF switch is set to the ON position.

The APU monitoring system consists of the low oil pressure circuits, high air temperature circuits, and oil pressure gauge circuits. The low oil pressure circuits include the LOW OIL PRESS indicator and the low oil pressure switch The high air temperature circuits include the HIGH AIR TEMP indicator and the high air temperature switch. The oil pressure gauge circuits include the ENGINE OIL PRESSURE gauge and the oil pressure sending unit (transmitter). The indicators are located on the APU control box while the switches and sending unit are part of the APU diesel engine. When the MASTER switch is ON, the APU LOW OIL PRESS light comes on when the FUEL SHUT OFF switch is turned ON. The LOW OIL PRESS light remains lit until the APU engine is started and engine oil pressure reaches the safe operating limit. If the LOW OIL PRESS light comes on while the APU engine is running, the engine should be shut down and the malfunction corrected. The HIGH AIR TEMP indicator is a warning light that indicates that the APU engine temperature has exceeded the safe operating limit. With the MASTER switch ON, the ENGINE OIL PRESSURE gauge indicates APU engine oil pressure.

The APU generator output system consists of the APU generator/starter, the APU voltage regulator, the APU generator switch (APU GEN ON/OFF), a hydraulic pressure switch, and related electrical wiring. The APU generator output system functions as a secondary or back-up system power source (+28 V dc) when the main engine is not running. The hydraulic pressure switch prevents simultaneous operation of the generator and the auxiliary hydraulic system in order to avoid loading or stalling the APU.

A diagram is included to show the relationship of the various APU components.

AUXILIARY POWER UNIT (ONAN) OVERVIEW AND DIAGRAMS - CONTINUED 0008 00



END OF TASK

AUXILIARY POWER UNIT FAILS TO CRANK 0009 00

THIS WORK PACKAGE COVERS:

Auxiliary Power Unit (ONAN) Fails To Crank

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Personnel Required

Two

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU cover removed (WP 0413 00)
System selector valve in MAIN (TM 9-2350-292-10)

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Check APU for loose electrical connections.

Are all connections tight?

yes

no

Clean and tighten loose connections (Chapter 20). Verify fault is corrected.

B

1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Turn PREHEAT switch ON and OFF and listen for the preheater relay to click.
3. Turn MASTER switch OFF (TM 9-2350-292-10).

Does preheater relay click?

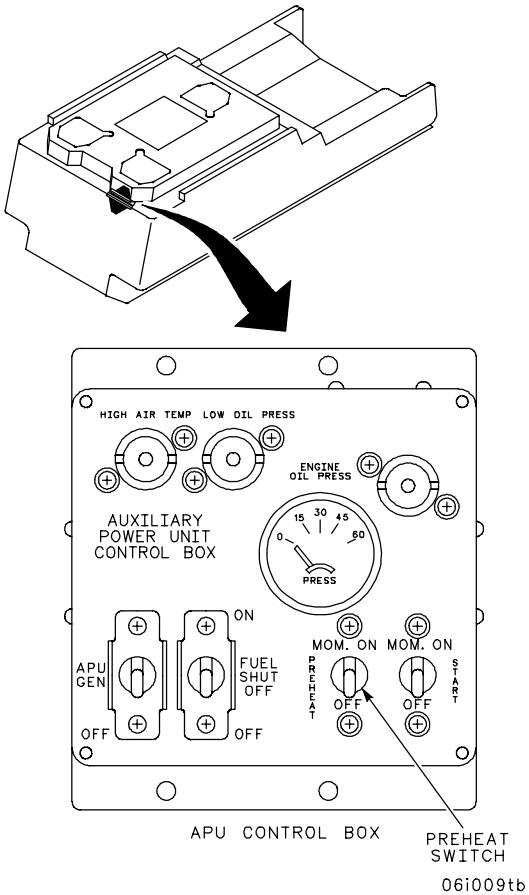
yes

no

Go to step E.

Go to step C.

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0009 00

CONTINUED FROM STEP B

C

1. Remove forward air intake grilles (TM 9-2350-292-10).
2. Disconnect harness 3W711 P1 at APU engine disconnect.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on harness 3W702 J1 socket A and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes — no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

D

1. Reconnect harness 3W711 P1.
2. Remove APU preheater relay/fuel solenoid access cover.
3. Disconnect lead N at preheater relay.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Place multimeter red lead in lead N connector and black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes — no

Go to step F.

Repair (WP 0290 00) or replace (WP 0648 00) harness 3W711. Verify fault is corrected.

CONTINUED FROM STEP B

E

1. Remove APU preheater relay/fuel solenoid access cover.
2. Disconnect lead P from preheater relay.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in lead P connector and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).
6. Reconnect lead P to preheater relay.

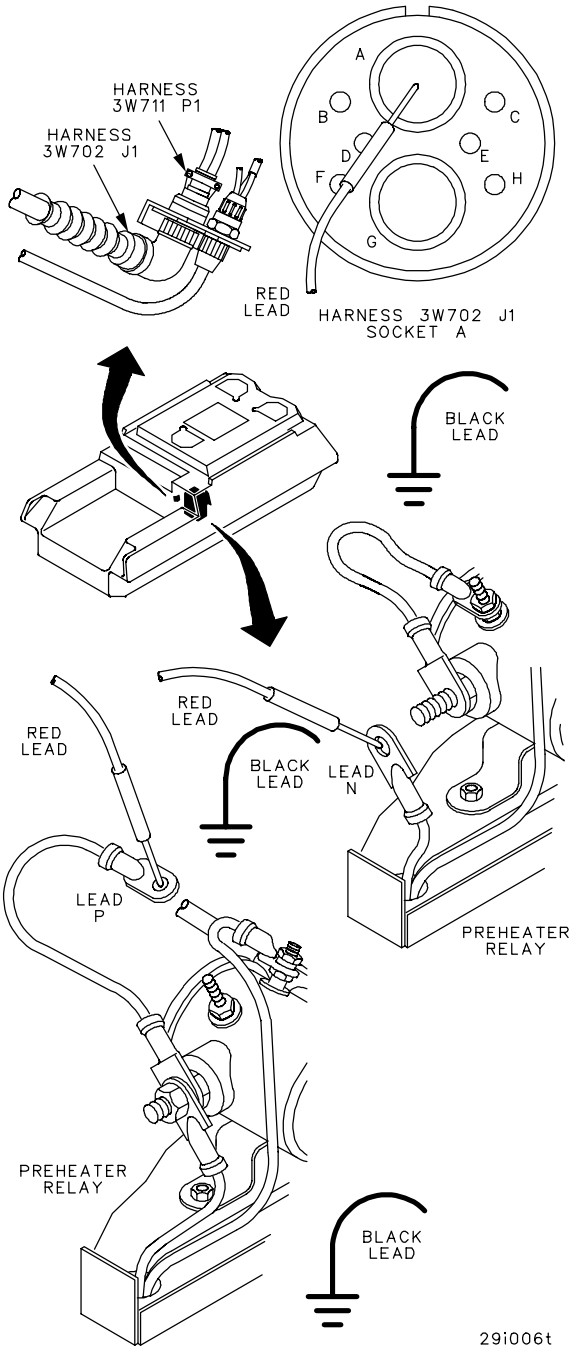
Is 24 V dc present?

yes — no

Go to step U.

Repair or replace lead P (WP 0655 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



CONTINUED FROM STEP D

F

1. Disconnect lead 487 at preheater relay and disconnect harness 3W711 P1 at APU engine disconnect.
2. Place one multimeter lead on lead 487 and place other lead on pin D of harness 3W711 P1. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP0648 00) harness 3W711. Verify fault is corrected.

G

1. Reconnect lead 487 at preheater relay.
2. Open air intake grilles above battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W702 P1 at bulkhead disconnect.
4. Place one multimeter lead in socket D of 3W702 J1 and other lead in harness 3W702 P1 socket B. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

H

1. Reconnect harness 3W711 P1 at APU engine disconnect.
2. Disconnect harness 4W700 P1 at APU control box.
3. Disconnect harness 4W700 P2 from bulkhead disconnect.
4. Place one multimeter lead on pin B of harness 4W700 P2 and other lead in socket A of harness 4W700 P1. Check for continuity.

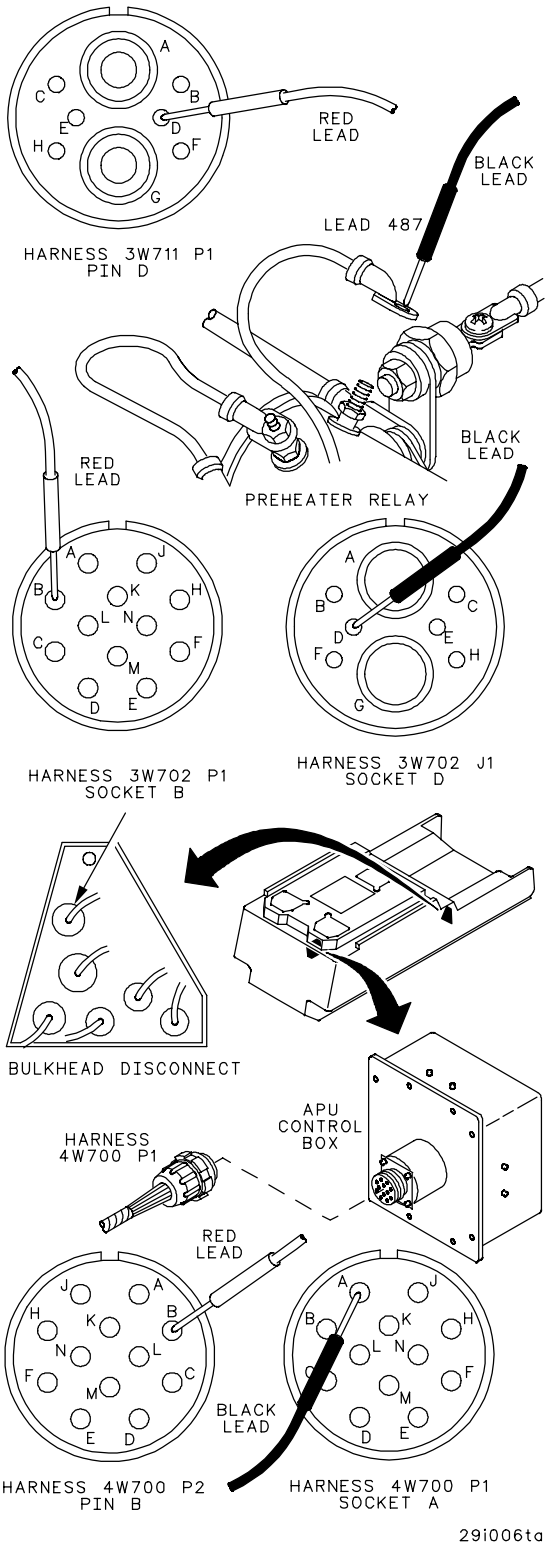
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.

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AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0009 00

CONTINUED FROM STEP H

I Place one multimeter lead in harness 4W700 P1 socket C and place other lead to vehicle ground. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0322 00) ground lead from control box connector to ground. Verify fault is corrected.

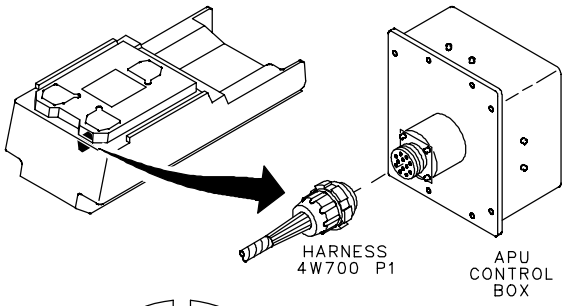
J
1. Turn APU control box switch ON (TM 9-2350-292-10).
2. Place one multimeter lead on APU control box receptacle pin D and other lead on APU control box receptacle pin B. Check for continuity.

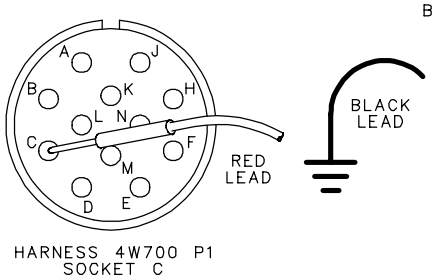
Is continuity present?

yes

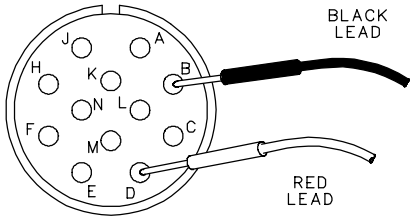
no

Notify Direct Support Maintenance.





HARNESS 4W700 P1
SOCKET C



APU CONTROL BOX
RECEPTACLE PINS D & B

RED
LEAD

29i006tb

CONTINUED ON NEXT PAGE

AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0009 00

CONTINUED FROM STEP J

K

1. Remove control box rear panel (WP 0247 00).
2. Set APU GEN switch OFF (TM 9-2350-292-10).
3. Place one multimeter lead on control box receptacle pin A and the other lead on receptacle pin C.
4. Momentarily hold PREHEAT switch in MOM ON position (TM 9-2350-292-10). Check for continuity.

Is continuity present?

yes

no

Go to Step P.

L

1. Disconnect lead 65 from switch S1.
2. Disconnect lead 4W123-5 from switch S4.
3. Place multimeter leads across switch S1 connector pins.
4. Momentarily hold START switch in MOM ON position (TM 9-2350-292-10) and check for continuity.

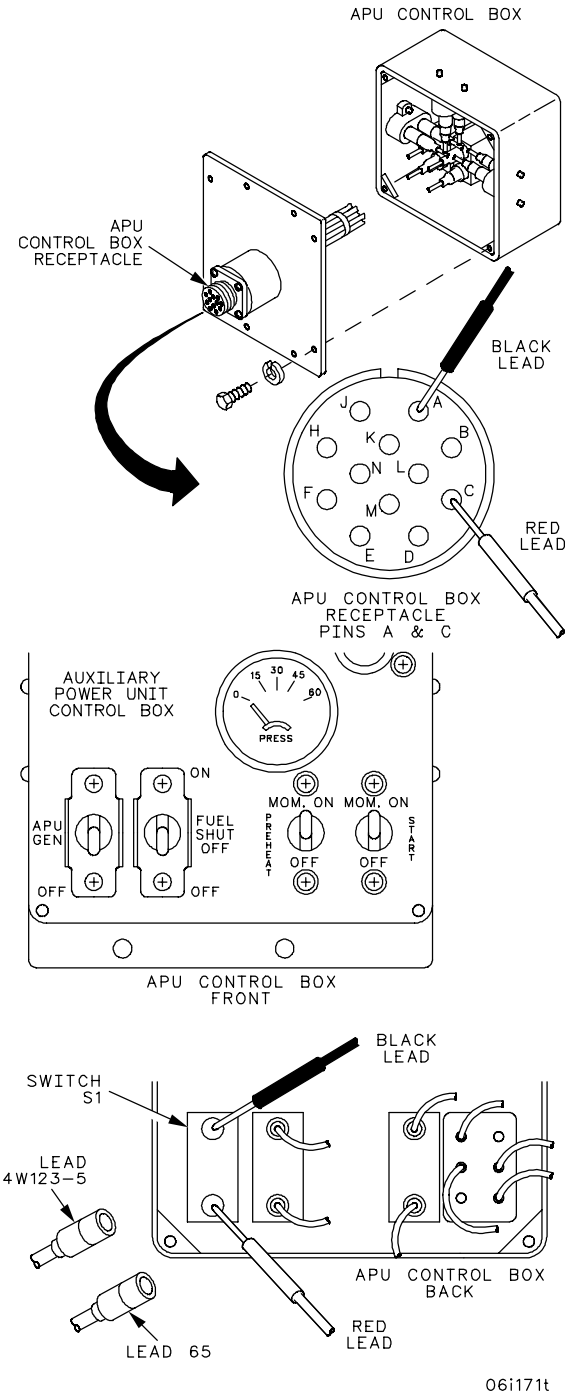
Is continuity present?

yes

no

Replace START switch (WP 0247 00). Verify fault is corrected.

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AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0009 00

CONTINUED FROM STEP L

M Place one multimeter lead in lead 65 connector socket and the other multimeter lead on control box receptacle pin D. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0247 00) wiring harness 4W725. Verify fault is corrected.

N
1. Reconnect lead 65 at switch S1.
2. Disconnect lead 4W123-5 from CB1.
3. Place one multimeter lead in lead 4W123-5 connector socket for CB1 and the other multimeter lead in lead 4W123-5 connector socket for the switch S1. Check for continuity.

Is continuity present?

yes

no

Replace lead 4W123-5 (WP 0247 00). Verify fault is corrected.

O
1. Reconnect lead 4W123-5 at switch S1.
2. Disconnect lead 65 at CB1.
3. Place multimeter leads across CB1 connector pins. Check for continuity.

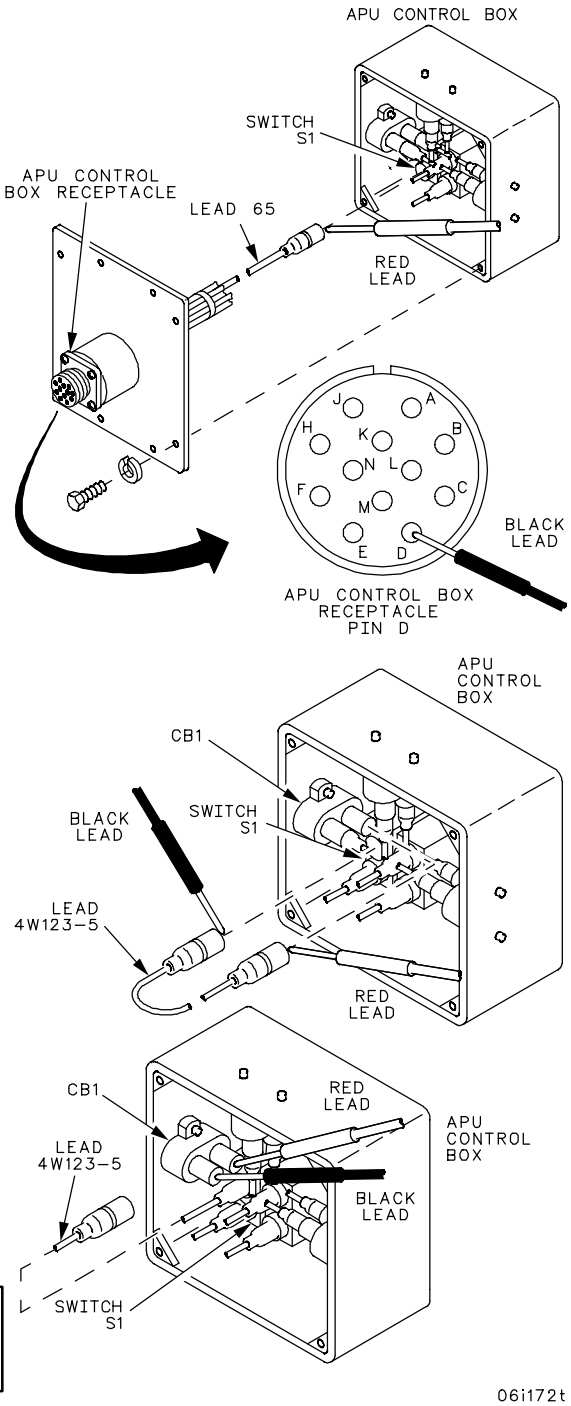
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0247 00) wiring harness 4W725. Verify fault is corrected.

Replace CB1 (WP 0247 00). Verify fault is corrected.



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AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0009 00

CONTINUED FROM STEP K

P

1. Disconnect lead 487 from CB2.
2. Disconnect lead 4W123-4 from other side of CB2.
3. Place multimeter leads across CB2 connector pins. Check for continuity.

Is continuity present?

yes

no

Replace CB2 (WP 0247 00). Verify fault is corrected.

Q

Place one multimeter lead on control box receptacle pin A and place other multimeter lead on lead 487 connector socket for CB2. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0247 00) wiring harness 4W725. Verify fault is corrected.

R

1. Reconnect lead 487 at CB2.
2. Disconnect lead 4W123-4 at switch S2.
3. Place one multimeter lead on lead 4W123-4 connector socket for CB2 and place the other multimeter lead on lead 4W123-4 at connector socket for the switch S2. Check for continuity.

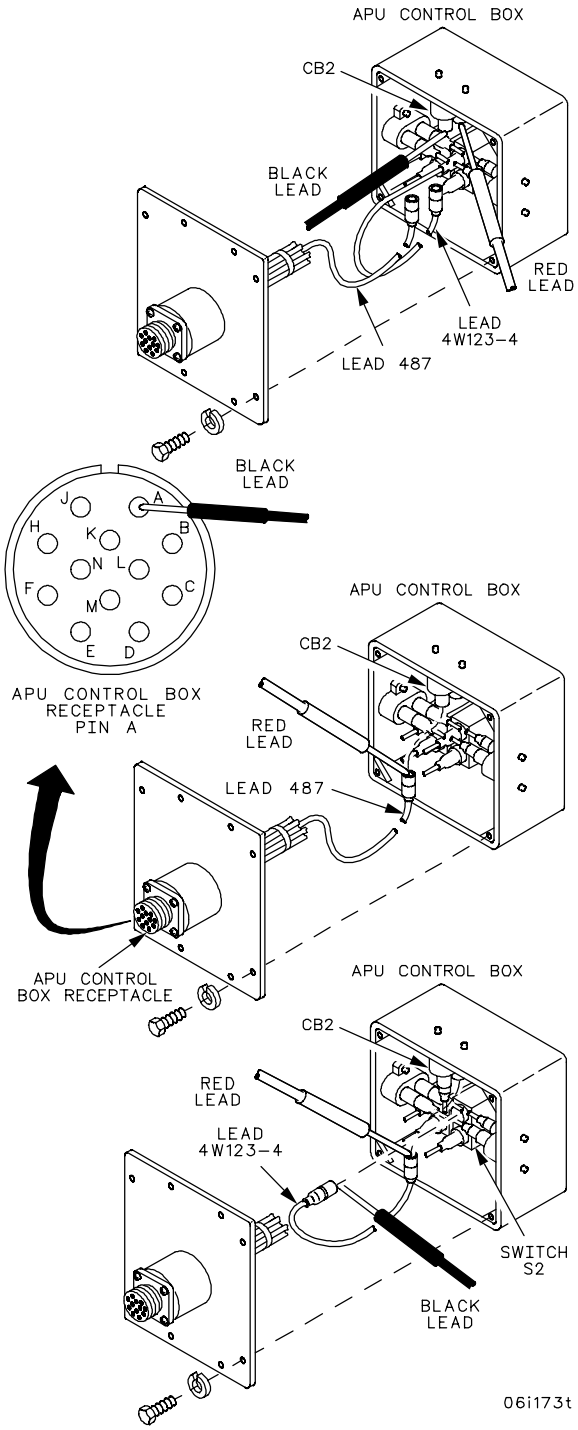
Is continuity present?

yes

no

Replace lead 4W123-4 (WP 0247 00). Verify fault is corrected.

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AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0009 00

CONTINUED FROM STEP R

S

1. Reconnect lead 4W123-4 at CB2.
2. Disconnect GND lead at switch S2.
3. Hold PREHEAT switch S2 in the MOM ON position (TM 9-2350-292-10).
4. Place multimeter leads on switch S2 connector pins. Check for continuity.

Is continuity present?

yes

no

Replace PREHEAT switch (WP 0247 00). Verify fault is corrected.

T

1. Reconnect lead 4W123-4 at switch S2.
2. Disconnect GND lead at switch S4.
3. Place one multimeter lead on GND lead connector socket at switch S2 and other multimeter leader on the GND lead connector pin to switch S4. Check for continuity.

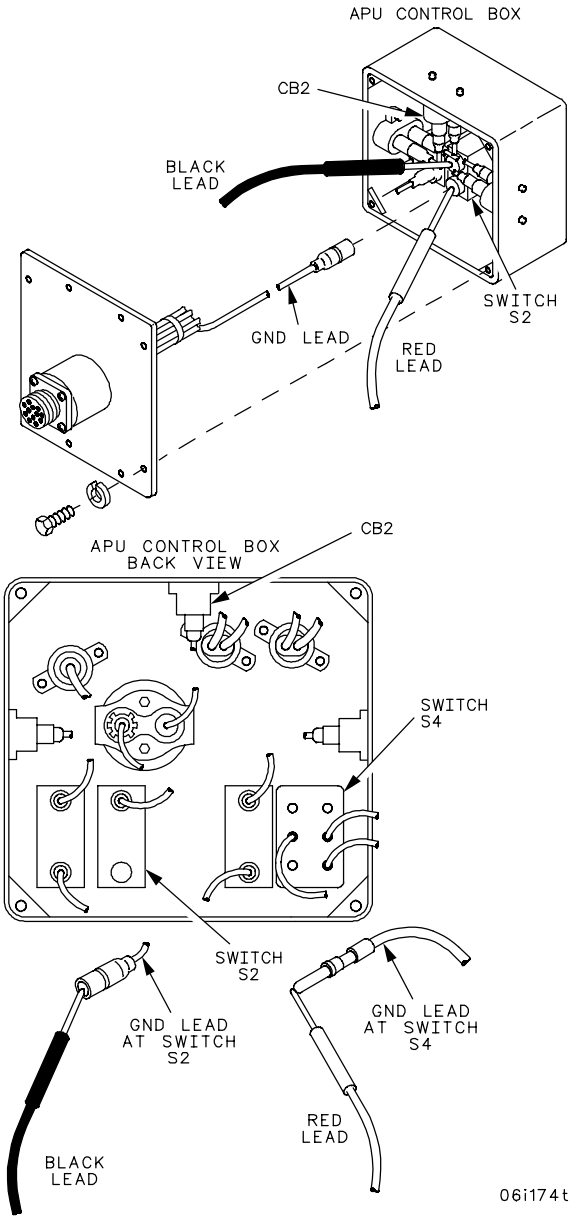
Is continuity present?

yes

no

Replace APU GEN switch (WP 0247 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0247 00) wiring harness 4W725. Verify fault is corrected.



AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0009 00

CONTINUED FROM STEP E

U

1. Hold PREHEAT switch ON and turn START switch ON and OFF several times (TM 9-2350-292-10). Listen for starter relay to click.
2. Turn MASTER switch OFF (TM 9-2350-292-10).

Does relay click?

yes → Go to step AB.

no

V

1. Disconnect lead 65 from preheater relay and harness 3W711 P1 from APU engine disconnect.
2. Place one multimeter lead on preheater lead 65 connector and other lead on harness 3W711 P1 pin C. Check for continuity.

Is continuity present?

yes → Repair (WP 0290 00) or replace (WP 0648 00) harness 3W711. Verify fault is corrected.

no

W

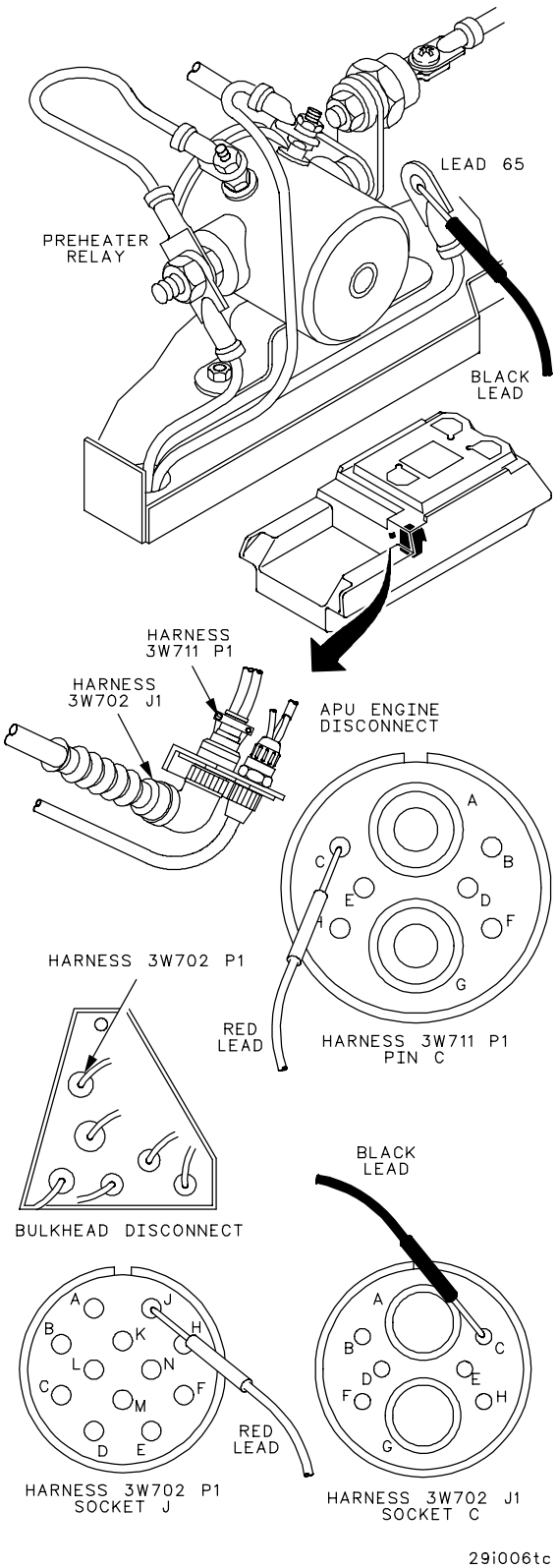
1. Reconnect lead 65 to preheater relay connector.
2. Disconnect harness 3W702 P1 at bulkhead disconnect.
3. Place one multimeter lead in harness 3W702 P1 socket J and other lead in harness 3W702 J1 socket C. Check for continuity.

Is continuity present?

yes → Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0009 00

CONTINUED FROM STEP W

X

1. Reconnect harness 3W711 P1 at APU engine disconnect.
2. Disconnect harness 4W700 P1 at APU control box.
3. Place one multimeter lead on harness 4W700 P2 pin J and other lead in harness 4W700 P1 socket B. Check for continuity.

Is continuity present?

yes / no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.

Y

1. Hold PREHEAT switch to MOM ON (TM 9-2350-292-10).
2. Place one multimeter lead on control box receptacle pin B and other lead on receptacle pin D. Check for continuity.

Is continuity present?

yes / no

Replace APU control box (WP 0247 00). Verify fault is corrected.

Z

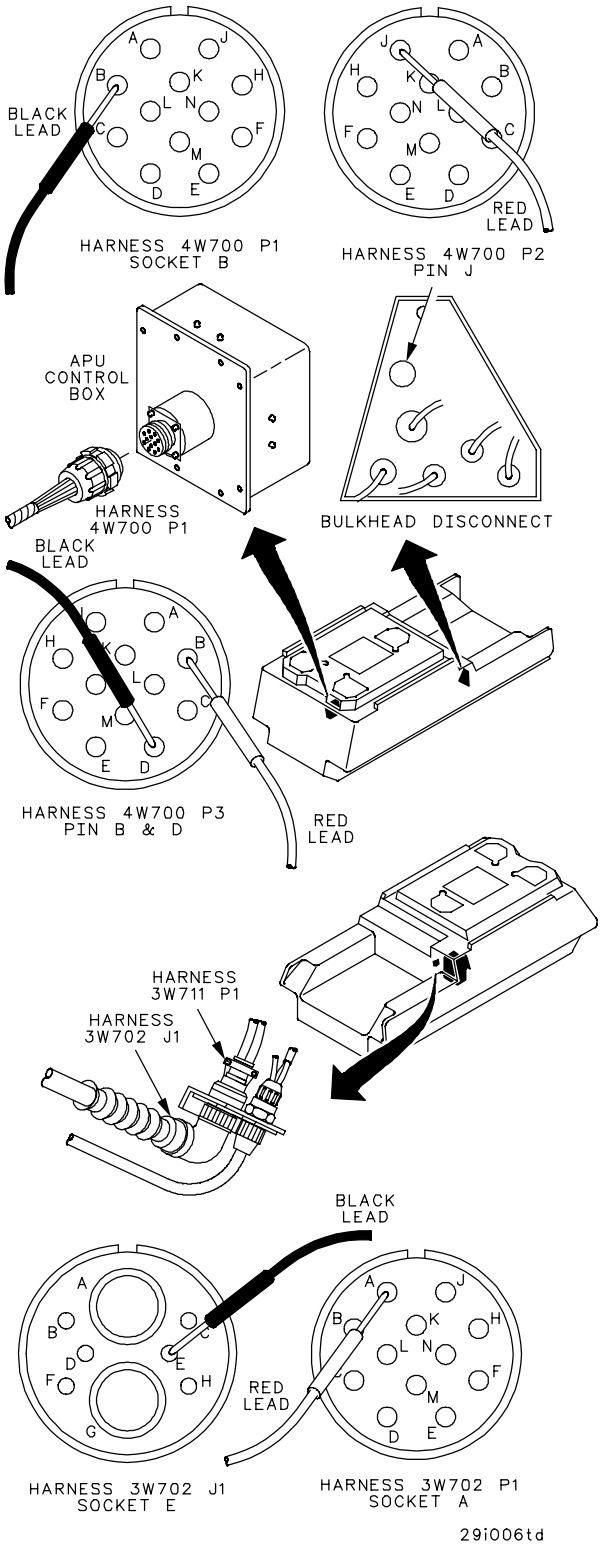
1. Reconnect harness 4W700 P1 to APU control box.
2. Disconnect harness 3W711 P1 at APU engine disconnect.
3. Place one multimeter lead in harness 3W702 P1 socket A and other lead in harness 3W702 J1 socket E. Check for continuity.

Is continuity present?

yes / no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702 . Verify fault is corrected.

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0009 00

CONTINUED FROM STEP Z

AA

1. Reconnect harness 3W702 P1 at bulkhead disconnect.
2. Disconnect lead 65 lead from starter relay.
3. Place one multimeter lead on harness 3W711 P1 pin E and other lead in harness 3W711 circuit 65 lead socket. Check for continuity.

Is continuity present?

yes

Replace starter relay (WP 0640 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0648 00) harness 3W711. Verify fault is corrected.

CONTINUED FROM STEP U

AB

1. Disconnect harness 3W711 lead 66 from APU engine connector at starter relay.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 3W711 lead 66 socket and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

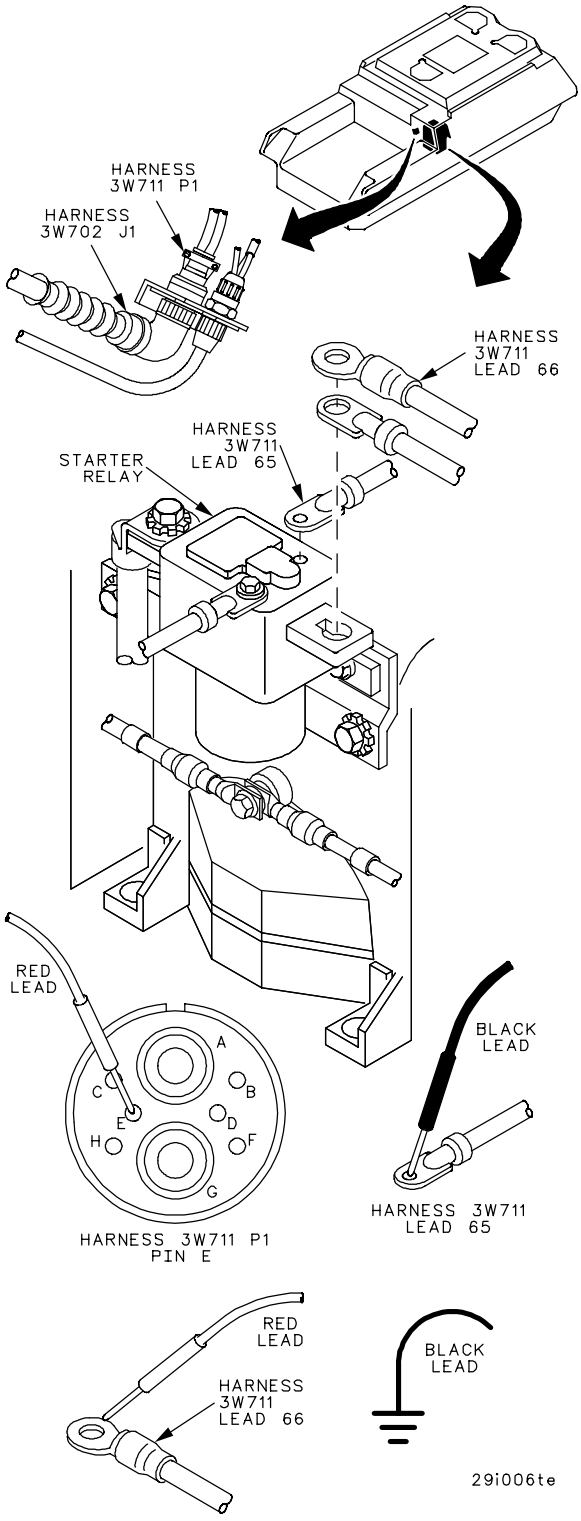
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0648 00) harness 3W711. Verify fault is corrected.

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0009 00

CONTINUED FROM STEP AB

AC

1. Reconnect harness 3W711 lead 66 to starter relay.
2. Disconnect lead 3W706 lead 66 from starter relay on generator side.
3. Turn MASTER switch ON and hold START switch and PREHEAT switch in the ON position (TM 9-2350-292-10).
4. Place multimeter red lead on starter relay connector pin and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Replace starter relay (WP 0640 00). Verify fault is corrected.

AD

1. Disconnect lead 3W706 lead 66 from terminal B of generator.
2. Place one multimeter lead in lead 3W706 lead 66 socket and other lead on lead 66 terminal B connector. Check for continuity.

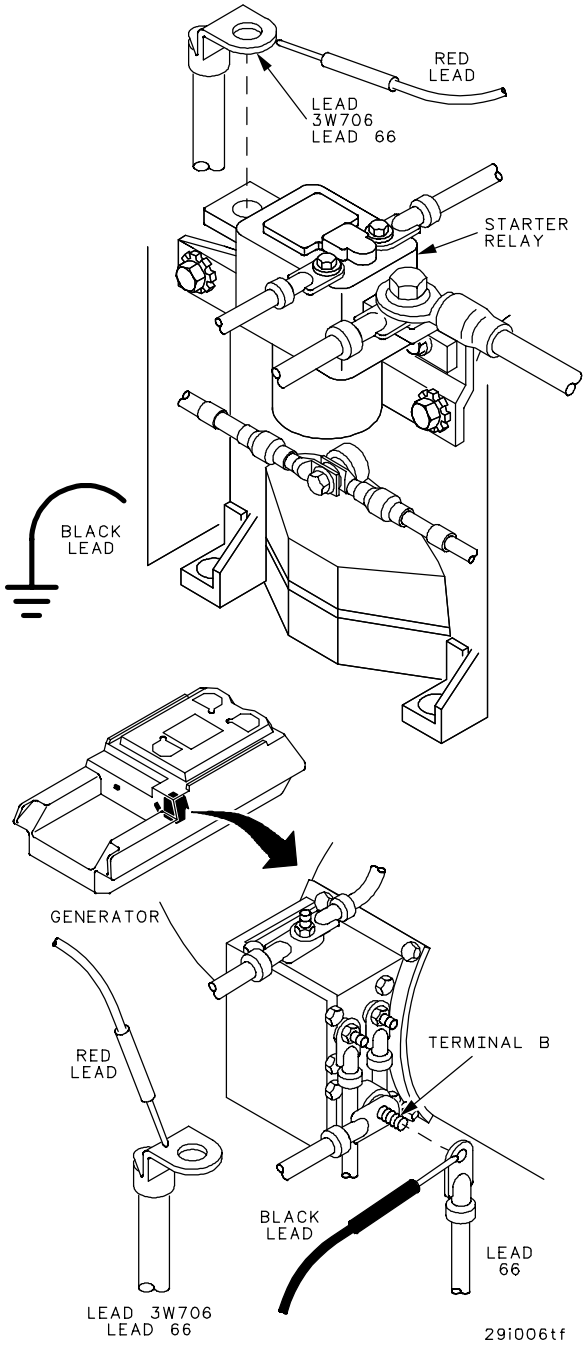
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0646 00) lead 66 from starter relay to generator terminal B. Verify fault is corrected.

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0009 00

CONTINUED FROM STEP AD

AE

1. Reconnect lead 3W706 lead 66 to starter relay and generator terminal B.
2. Disconnect lead S from generator terminal A.
3. Turn MASTER switch ON and hold PREHEAT and START switches in ON position (TM 9-2350-292-10).
4. Place multimeter red lead on lead S lead connector and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0648 00) lead S lead from preheat relay to generator terminal A. Verify fault is corrected.

AF

1. Reconnect lead S to terminal A.
2. Disconnect ground wire from generator terminal E.
3. Place one multimeter lead on end of ground wire and other lead to vehicle ground. Check for continuity.

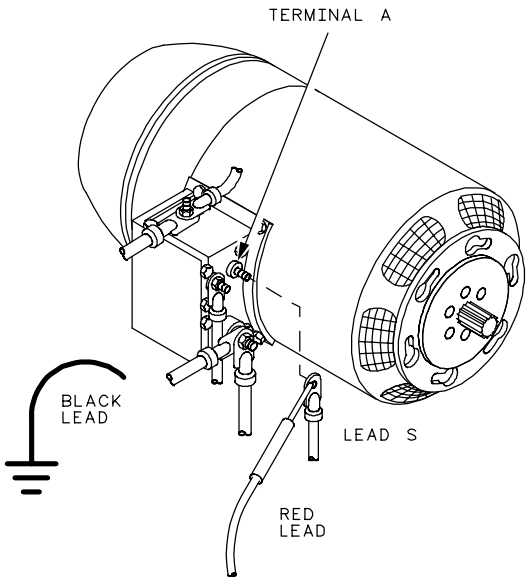
Is continuity present?

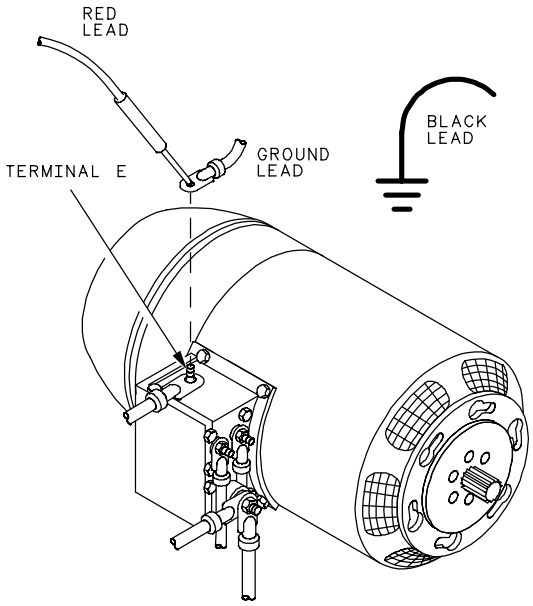
yes

no

Replace generator (WP 0633 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0652 00) ground wire. Verify fault is corrected.





29i006tg

END OF TASK

AUXILIARY POWER UNIT FAILS TO KEEP RUNNING 0010 00

THIS WORK PACKAGE COVERS:

Auxiliary Power Unit Fails To Keep Running

INITIAL SETUP:

Tools and special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Personnel Required

Two

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU cover removed (WP 0413 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Inspect fuel lines for kinks, clogs and leaks.

Are lines free of restrictions and leaks?

yes

Replace fuel filters (WP 0609 00). Verify fault is corrected.

no

Clean, repair and/or replace fuel lines (WP 0613 00). Verify fault is corrected.

B Start APU (TM 9-2350-292-10).

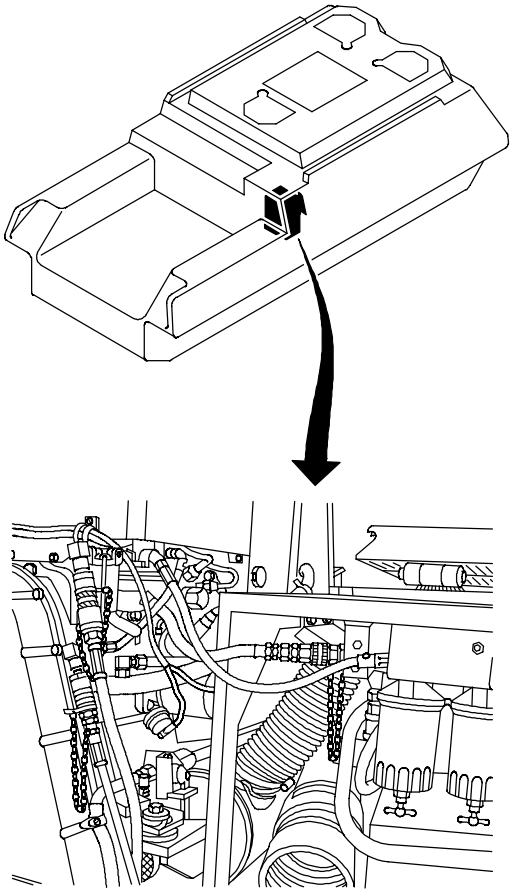
Does APU run properly?

yes

Fault corrected.

no

Notify Direct Support Maintenance.



29i002t

END OF TASK

AUXILIARY POWER UNIT ENGINE HARD TO START IN COLD WEATHER 0011 00

THIS WORK PACKAGE COVERS:

Auxiliary Power Hard To Start in Cold Weather

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU cover removed (WP 0413 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect circuit R leads from preheater relay, all glow plugs and preheaters.
2. Place one multimeter lead on lead R lead connector and other lead on all glow plug and preheater leads (one at a time). Check for continuity.

Is continuity present at all tests?

yes

no

Repair (WP 0290 00) or replace (WP 0657 00) lead R lead(s) to respective glow plug and/or preheater. Verify fault is corrected.

B

1. Reconnect lead R lead to preheater relay.
2. Place one multimeter lead on glow plugs (one at a time) and other lead to ground. Check for resistance.

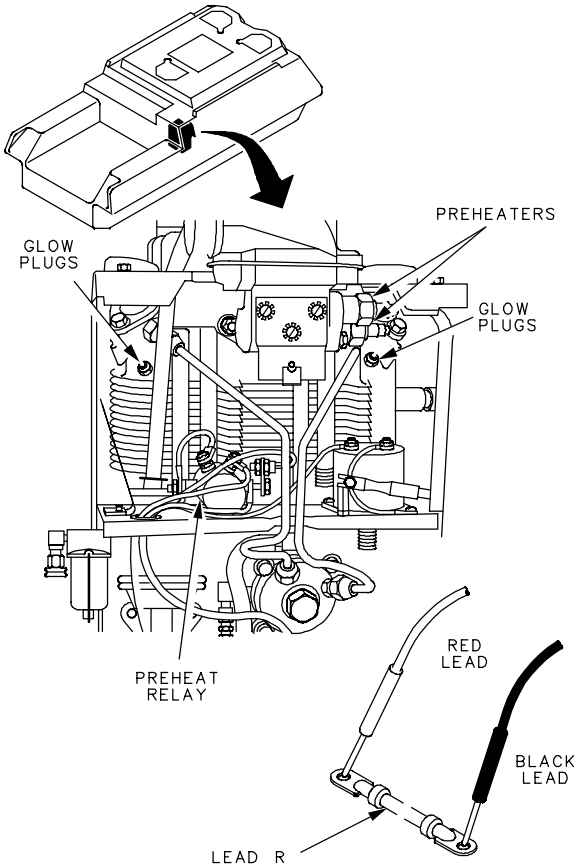
Is 4.75 $\pm$ 1.5 ohms indicated at all tests?

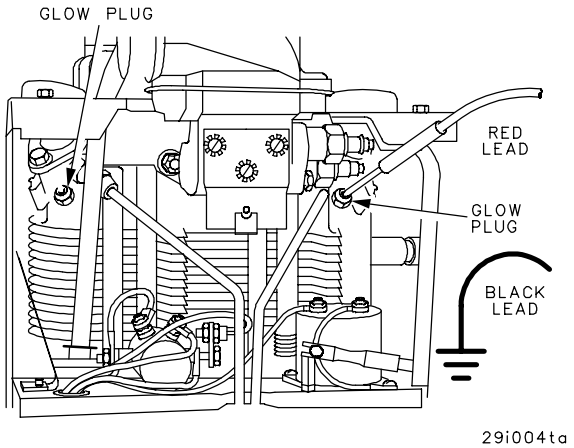
yes

no

Notify Direct Support Maintenance.

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29i004ta

AUXILIARY POWER UNIT ENGINE HARD TO START IN COLD WEATHER - CONTINUED 0011 00

CONTINUED FROM STEP B

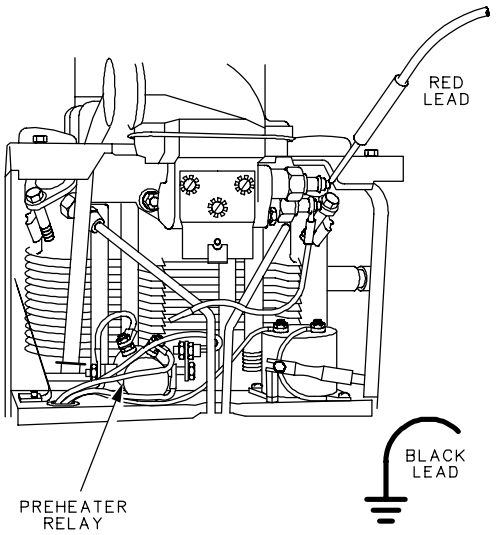
C

1. Reconnect lead R leads to glow plugs.
2. Disconnect lead R leads from preheaters.
3. Place one multimeter lead on each preheater terminal (one at a time) and other lead to ground. Check for resistance.

Is .7 ± .5 ohms indicated at all tests?

yes → Fault corrected.

no → Notify Direct Support Maintenance.



29i004tb

END OF TASK

AUXIILIARY POWER UNIT FUEL SOLENOID FAILS TO ENERGIZE. 0012 00

THIS WORK PACKAGE COVERS:

Auxiliary Power Unit Fuel Solenoid Fails To Energize

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU cover removed (WP 0413 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove APU preheater relay/fuel solenoid access cover (WP 0624 00).
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on lead 421 at solenoid and multimeter black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Notify Direct Support Maintenance.

no

B

1. Disconnect harness 4W700 P1 from APU control box.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W700 P1 socket N and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

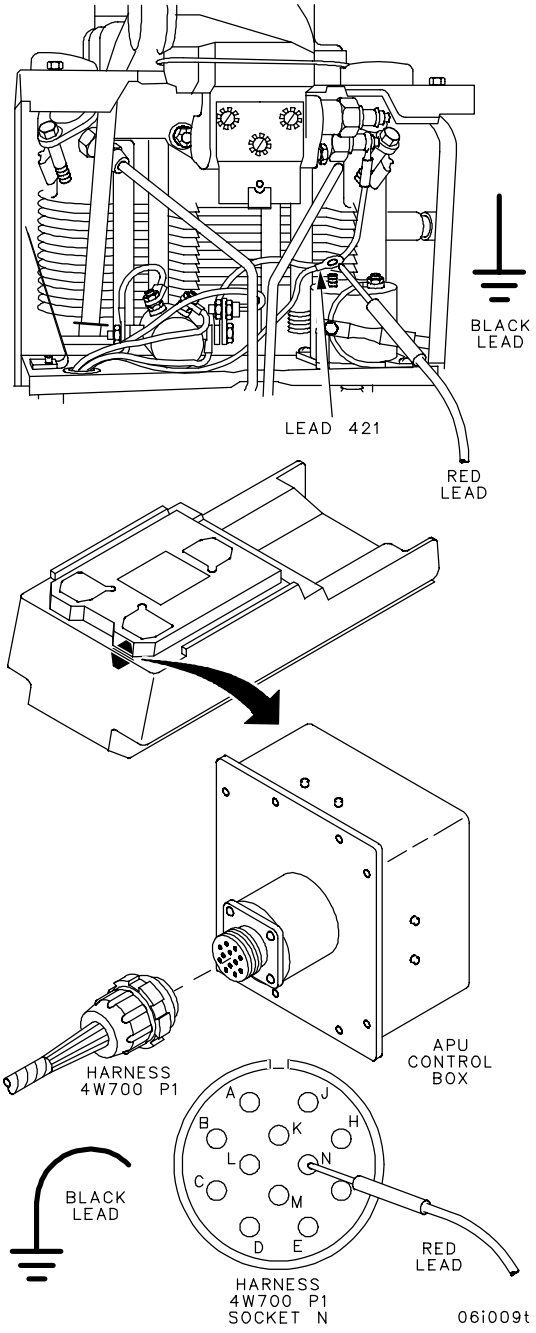
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.

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AUXIILIARY POWER UNIT FUEL SOLENOID FAILS TO ENERGIZE - CONTINUED 0012 00

CONTINUED FROM STEP B

C

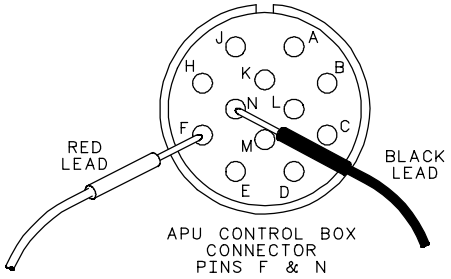
1. Turn FUEL SHUTOFF switch to ON (TM 9-2350-292-10).
2. Place one multimeter lead on pin N of control box connector and other lead on pin F of control box connector. Check for continuity.

Is continuity present?

yes

Go to Step H.

no

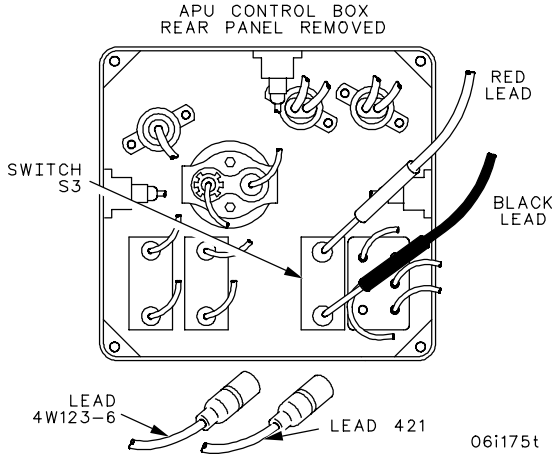


D

1. Remove APU control box from the vehicle (WP 0247 00).
2. Remove control box rear panel (WP 0247 00).
3. Disconnect lead 421 from switch S3.
4. Disconnect lead 4W123-6 from switch S3.
5. Set FUEL SHUT OFF switch to the ON position (TM 9-2350-292-10).
6. Place multimeter leads across switch S3 connector pins. Check for continuity.

Is continuity present?

yes



no

Replace FUEL SHUT OFF switch (WP 0247 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE

AUXIILIARY POWER UNIT FUEL SOLENOID FAILS TO ENERGIZE - CONTINUED 0012 00

CONTINUED FROM STEP D

E Place multimeter lead on lead 421 connector socket for switch S3 and place other multimeter lead on control box receptacle pin F. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0247 00) wiring harness 4W725. Verify fault is corrected.

F

1. Reconnect lead 421 at switch S3.
2. Disconnect lead 4W123-6 at CB3.
3. Place one multimeter lead on lead 4W123-6 connector socket for switch S3 and the other multimeter lead on lead 4W123-6 connector socket for CB3. Check for continuity.

Is continuity present?

yes

no

Replace lead 4W123-6 (WP 0247 00). Verify fault is corrected.

G

1. Reconnect lead 4W123-6 at switch S3.
2. Disconnect lead 419 from the other side of CB3.
3. Place multimeter leads on CB3 connector pins. Check for continuity.

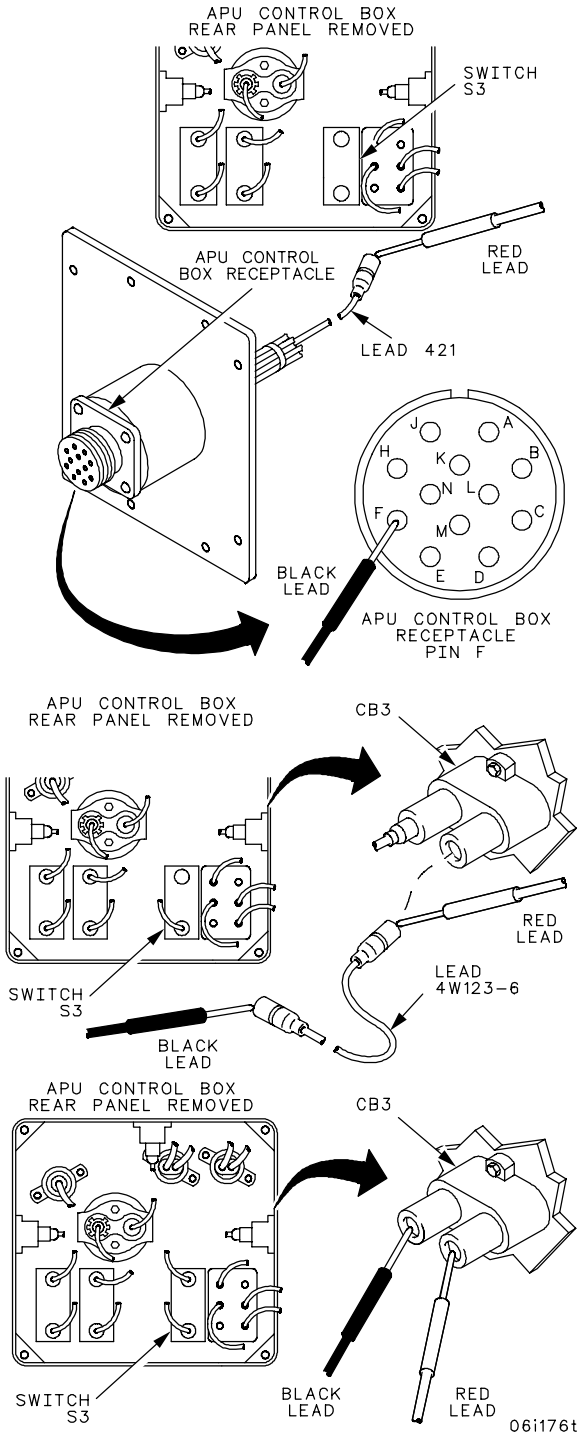
Is continuity present?

yes

no

Repair (WP 0298 00) or replace (WP 0247 00) wiring harness 4W725. Verify fault is corrected.

Replace CB3 (WP 0247 00). Verify fault is corrected.



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AUXIILIARY POWER UNIT FUEL SOLENOID FAILS TO ENERGIZE - CONTINUED 0012 00

CONTINUED FROM STEP C

H

1. Reconnect harness 4W700 P1.
2. Open air intake grilles above battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W702 P1 at bulkhead disconnect.
4. Turn MASTER switch and FUEL SHUT OFF switch ON (TM 9-2350-292-10).
5. Place multimeter red lead on bulkhead receptacle pin F and black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.

I

1. Reconnect harness 3W702 P1 to bulkhead disconnect.
2. Disconnect harness 3W711 P1 at APU engine disconnect.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 3W702 J1 socket B and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10)

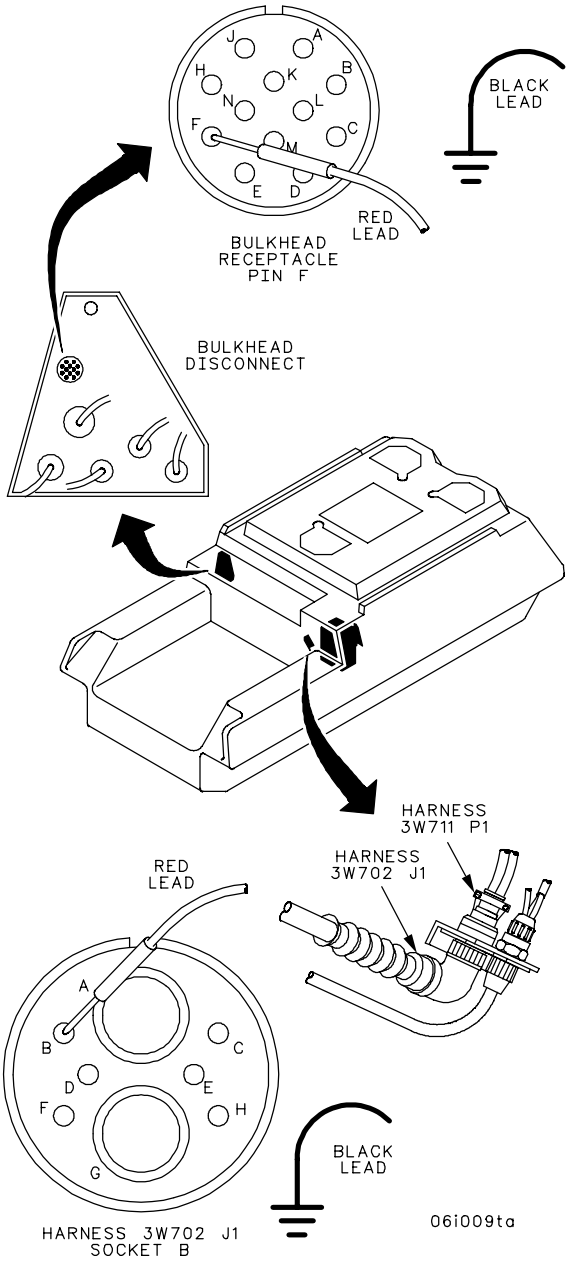
Is 24 V dc present?

yes

no

Fault corrected.

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.



END OF TASK

BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON. 0013 00

THIS WORK PACKAGE COVERS:

Batt/Gen Gauge Reads In Yellow Or Lower Red With APU Running And APU GEN Switch On.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Personnel Required

Two

Equipment Conditions

APU OFF (TM 9-2350-292-10)
Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU cover removed (WP 0413 00)
System selector lever set to MAIN (TM 9-2350-292-10)

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Start APU (TM 9-2350-292-10).
3. Place multimeter red lead on center conductor of slave receptacle and black lead to ground. Check for voltage.
4. Shut off APU (TM 9-2350-292-10).
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 28 V dc present?

yes

Go to WP 0085 00.

no

B

1. Remove splash cover protecting voltage regulator (WP 0239 00).
2. Disconnect harness 3W710 from APU voltage regulator, but do not remove ground lead.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Start APU (TM 9-2350-292-10).
5. Place multimeter red lead on harness 3W710 pin A and black lead to ground. Check for voltage.
6. Shut off APU (TM 9-2350-292-10).
7. Turn MASTER switch OFF (TM 9-2350-292-10).

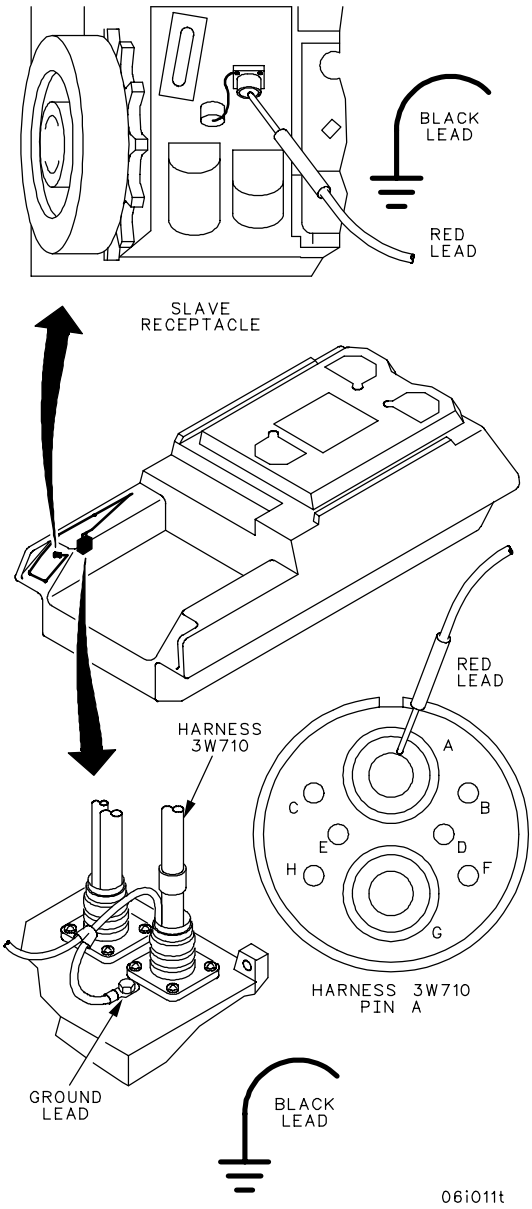
Is 28 V dc present?

yes

Repair (WP 0290 00) or replace (WP 0312 00) harness 3W710. Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED 0013 00

CONTINUED FROM STEP B

C

1. Reconnect harness 3W710 to APU voltage regulator.
2. Remove forward air intake grilles (WP 0415 00).
3. Disconnect harness 3W711 P1 from APU engine disconnect.
4. Place one multimeter on APU generator/starter terminal A and other lead on harness 3W711 P1 pin F. Check for continuity.

Is continuity present?

yes / no

Repair (WP 0290 00) or replace (WP 0648 00) harness 3W711. Verify fault is corrected.

D

1. Disconnect harness 3W702 J1 from APU engine disconnect and 3W702 P3 from hydraulic pressure switch.
2. Place one multimeter lead in harness 3W702 J1 socket F and other lead in harness 3W702 P3 socket B. Check for continuity.

Is continuity present?

yes / no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

E

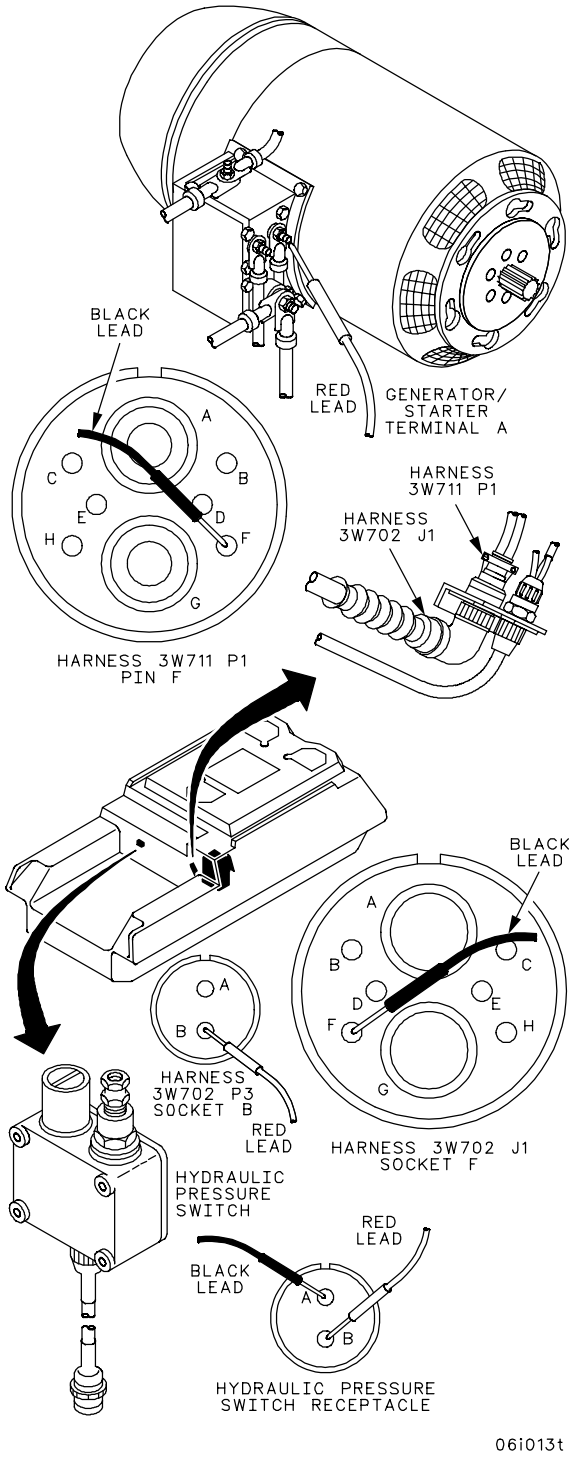
1. Reconnect harness 3W711 P1 to APU engine disconnect.
2. Place one multimeter lead on each hydraulic pressure switch receptacle pin. Check for continuity.

Is continuity present?

yes / no

Repair or replace hydraulic pressure switch (WP 0564 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED

0013 00

CONTINUED FROM STEP E

F

1. Disconnect harness 3W702 P4 from harness 3W132 J1.
2. Place one multimeter lead in harness 3W702 P4 socket B and other lead on harness 3W702 P3 pin A. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702.

G

1. Reconnect harness 3W702 P3 to hydraulic pressure switch.
2. Open air intake grilles above battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W132 P1 from bulkhead disconnect.
4. Place one multimeter lead on harness 3W132 J1 pin B and other lead in harness 3W132 P1 socket F. Check for continuity.

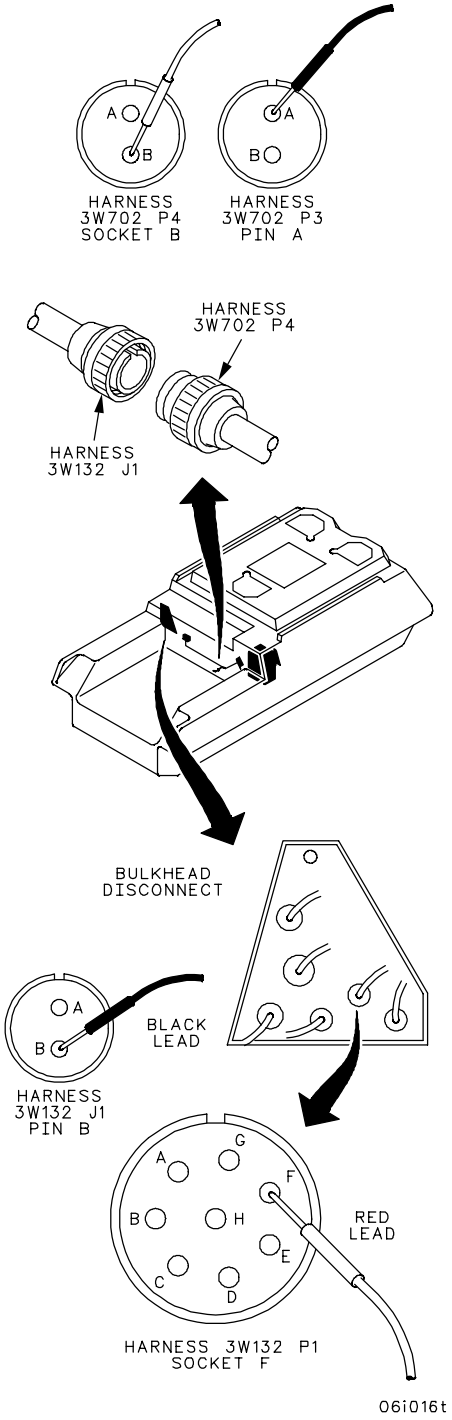
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0293 00) harness 3W132.

CONTINUED ON NEXT PAGE



BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED

0013 00

CONTINUED FROM STEP G

H

1. Disconnect harness 4W700 P1 from APU control box and disconnect harness 4W101 P6 from bulkhead.
2. Place one multimeter lead in harness 4W101 P6 socket F and other lead in harness 4W700 P1 socket L. Check for continuity.

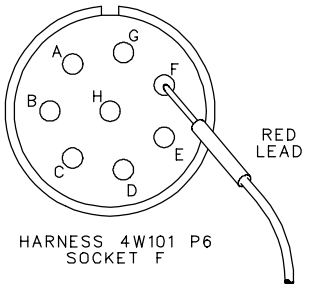
Is continuity present?

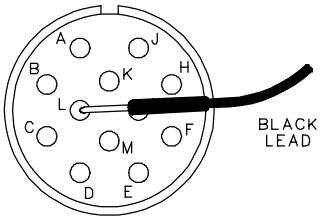
yes

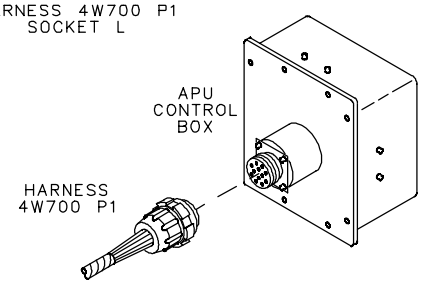
no

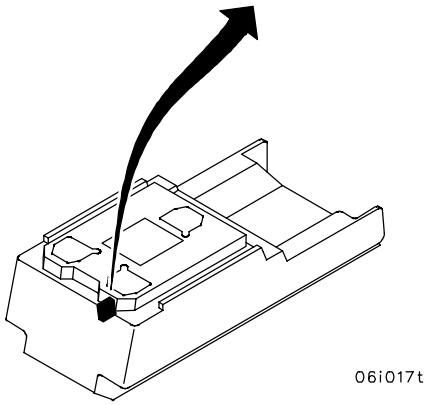
Repair (WP 0290 00) or replace (WP 0315 00) harness 4W101. Verify fault is corrected.

CONTINUED ON NEXT PAGE









BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED

0013 00

CONTINUED FROM STEP H

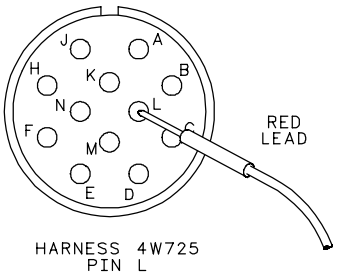
I

1. Open APU control box (WP 0247 00).
2. Disconnect lead 61A from switch SW4.
3. Place one multimeter lead on harness 4W725 receptacle pin L and other lead on lead 61A connector. Check for continuity.

Is continuity present?

yes / no

Notify Direct Support Maintenance.



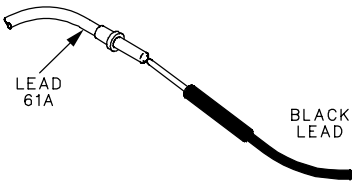
J

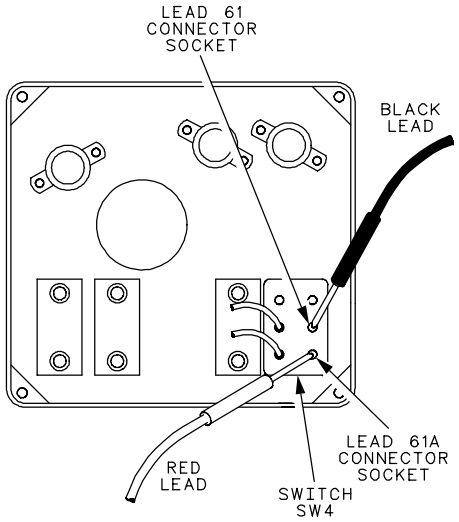
1. Disconnect lead 61 from APU GEN switch.
2. Turn APU GEN switch ON (TM 9-2350-292-10).
3. Place one multimeter lead in APU GEN switch lead 61 connector socket and other lead in lead 61A APU GEN switch connector pin socket. Check for continuity.

Is continuity present?

yes / no

Notify Direct Support Maintenance.





CONTINUED ON NEXT PAGE

06i018t

BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED 0013 00

CONTINUED FROM STEP J

K

1. Reconnect lead 61A to APU GEN switch.
2. Place one multimeter lead in lead 61 APU GEN switch connector socket and other lead on harness 4W725 receptacle pin H. Check for continuity.

Is continuity present?

yes

no

Notify Direct Support Maintenance.

L

1. Reconnect lead 61 to APU GEN switch.
2. Place one multimeter lead in harness 4W700 P1 socket H and other lead on harness 4W101 P6 socket G. Check for continuity.

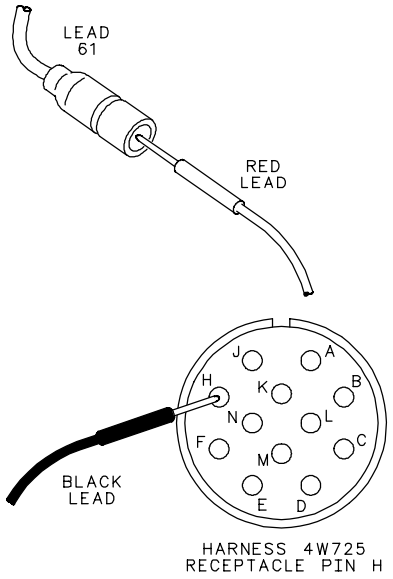
Is continuity present?

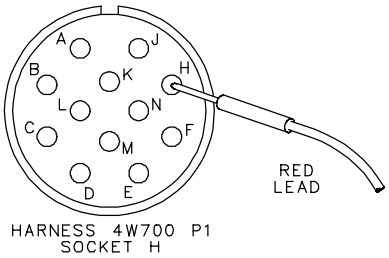
yes

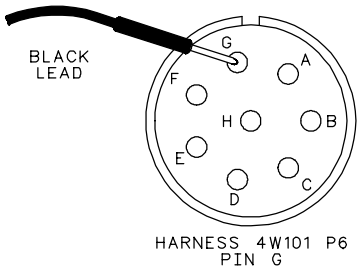
no

Repair (WP 0290 00) or replace (WP 0315 00) harness 4W101. Verify fault is corrected.

CONTINUED ON NEXT PAGE







06i019t

BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED 0013 00

CONTINUED FROM STEP L

M

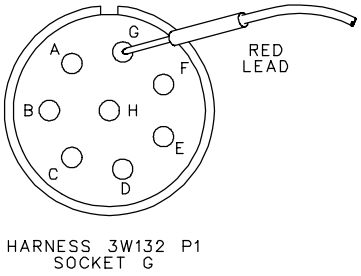
1. Reconnect harness 4W700 P1 to APU control box.
2. Disconnect harness 3W702 P2 from generator side of APU voltage regulator.
3. Place one multimeter lead in harness 3W132 P1 socket G and other lead on harness 3W702 P2 pin F. Check for continuity.

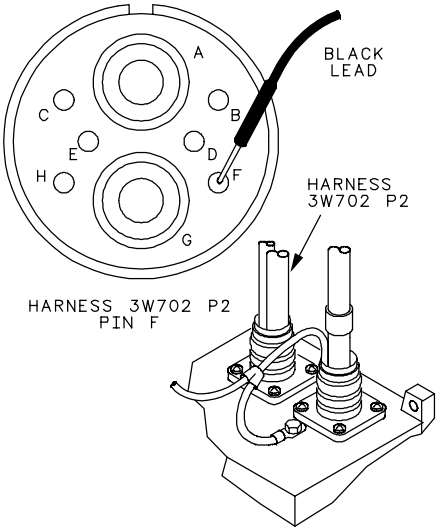
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0293 00) harness 3W132. Verify fault is corrected.





N

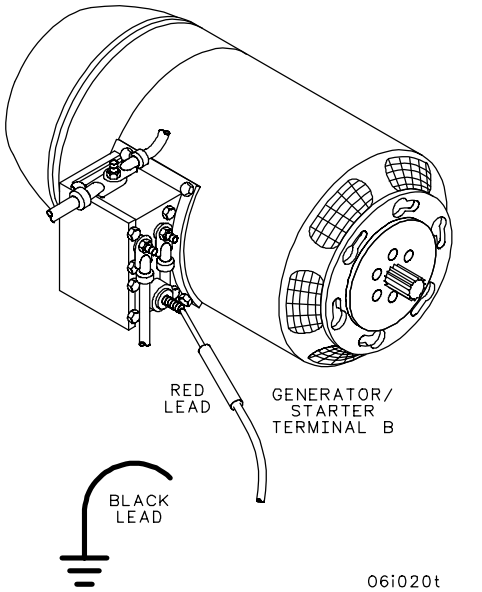
1. Reconnect harness 3W132 P1 to bulkhead disconnect.
2. Disconnect leads 62 and 66 from APU generator/starter terminal B.
3. Turn MASTER switch ON, APU GEN switch OFF, and start APU (TM 9-2350-292-10).
4. Place multimeter red lead on generator/starter terminal B and black lead to ground. Check for voltage.
5. Shut off APU and turn MASTER switch OFF (TM 9-2350-292-10).

Is 0.5 to 5.0 V dc present?

yes

no

Replace APU generator/ starter (WP 0634 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED

0013 00

CONTINUED FROM STEP N

O

1. Disconnect harness 3W711 P1 from APU engine disconnect.
2. Place one multimeter lead on generator/starter terminal B and other lead on harness 3W711 P1 pin G. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0648 00) harness 3W711. Verify fault is corrected.

P

1. Reconnect lead 62 to generator/starter terminal B.
2. Place one multimeter lead in harness 3W702 J1 socket G and other lead on harness 3W702 P2 pin A. Check for continuity.

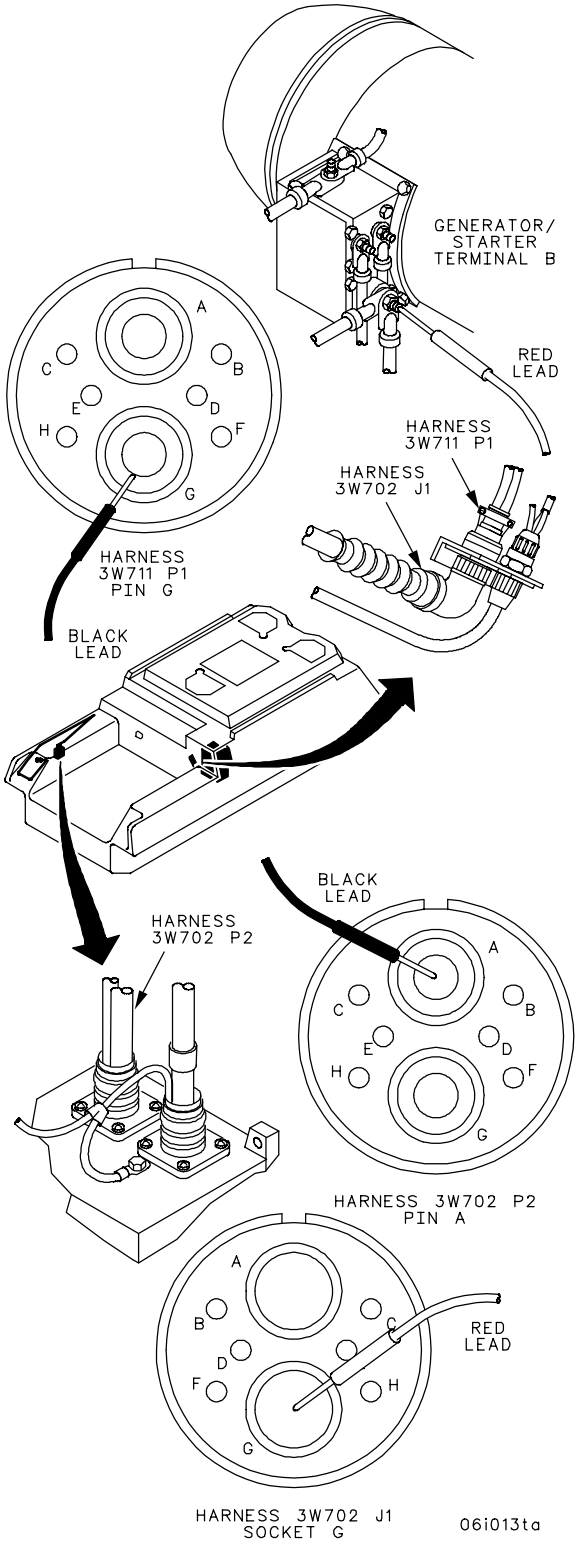
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

CONTINUED ON NEXT PAGE



BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED 0013 00

CONTINUED FROM STEP P

R

1. Disconnect lead 478A from generator/starter terminal D.
2. Place one multimeter lead on lead 478A connector and other lead on harness 3W711 pin H. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0648 00) harness 3W711. Verify fault is corrected.

Q

Place one multimeter lead in harness 3W702 J1 socket H and other lead on harness 3W702 P2 pin C. Check for continuity.

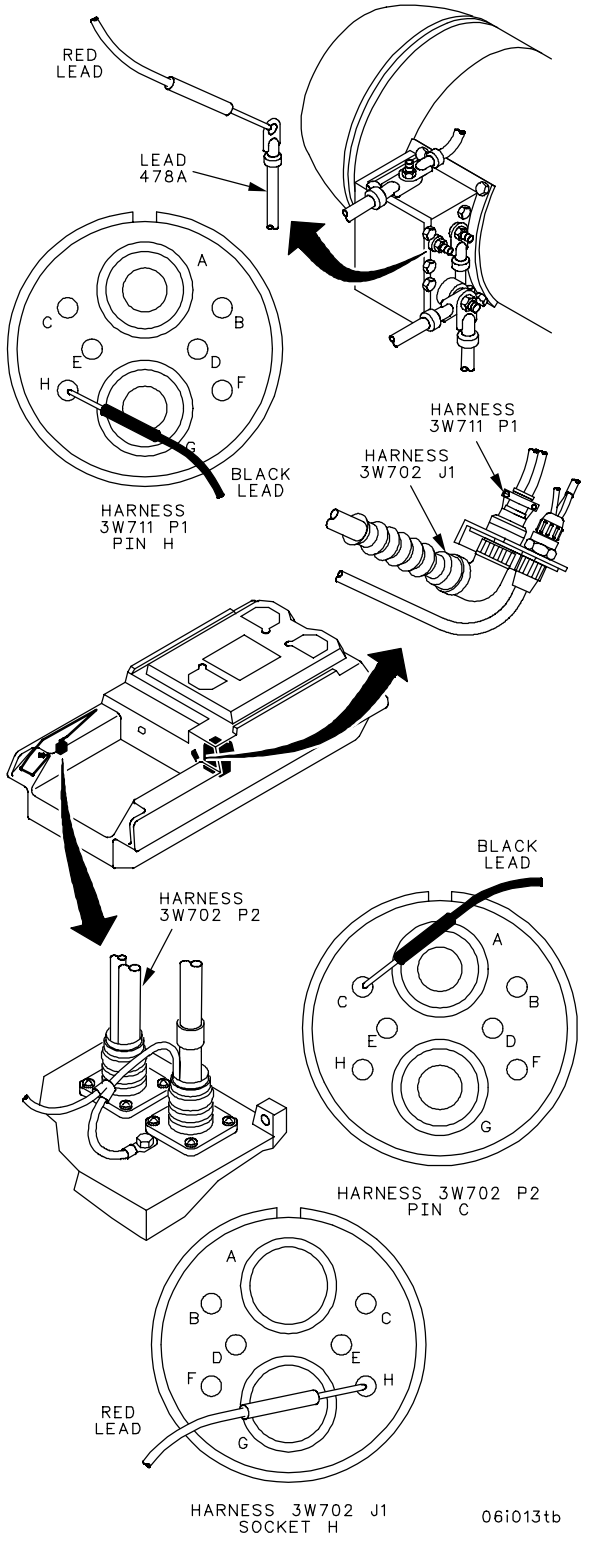
Is continuity present?

yes

Replace APU voltage regulator (WP 0239 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.



END OF TASK

APU CONTROL BOX HIGH AIR TEMP INDICATOR DOES NOT LIGHT. 0014 00

THIS WORK PACKAGE COVERS:

APU Control Box High Air Temp Indicator Does Not Light.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Personnel Required

Two

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
HIGH AIR TEMP indicator lamp (LED) has been replaced (TM 9-2350-292-10)

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

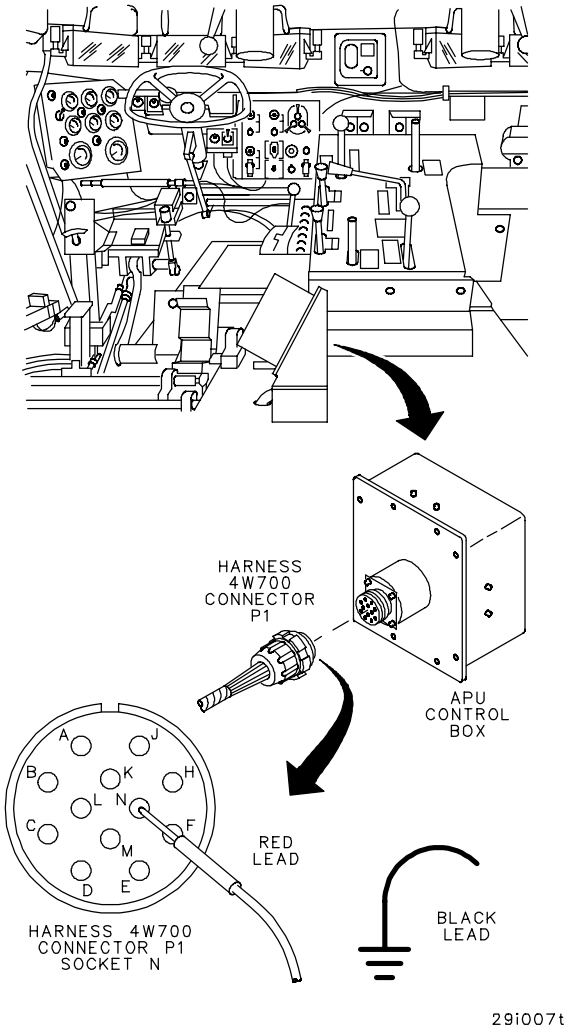
1. Disconnect harness 4W700 connector P1 at the APU control box.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place red multimeter lead on harness 4W700 connector P1 socket N and black multimeter lead on vehicle ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.



CONTINUED ON NEXT PAGE

APU CONTROL BOX HIGH AIR TEMP INDICATOR DOES NOT LIGHT - CONTINUED 0014 00

CONTINUED FROM STEP A

B

1. Reconnect harness 4W700 connector P1 at the control box.
2. Remove APU cover and shields (WP 0413 00/WP 0622 00) and open forward air intake grilles (TM 9-2350-292-10).
3. Disconnect lead 3W705 at high temperature air switch on APU.
4. Temporarily connect a jumper wire from lead 3W705 connector socket to vehicle ground.
5. Turn MASTER switch ON (TM 9-2350-292-10).
6. Turn FUEL SHUT OFF switch ON (TM 9-2350-292-10).
7. Observe HIGH AIR TEMP indicator light (TM 9-2350-292-10).
8. Turn MASTER AND FUEL SHUT OFF switches OFF (TM 9-2350-292-10).

Did HIGH AIR TEMP indicator light?

yes

Notify Direct Support Maintenance.

no

C

1. Disconnect the temporary jumper wire.
2. Disconnect harness 3W704 from lead 3W705.
3. Place one multimeter lead on each end of lead 3W705. Check for continuity.

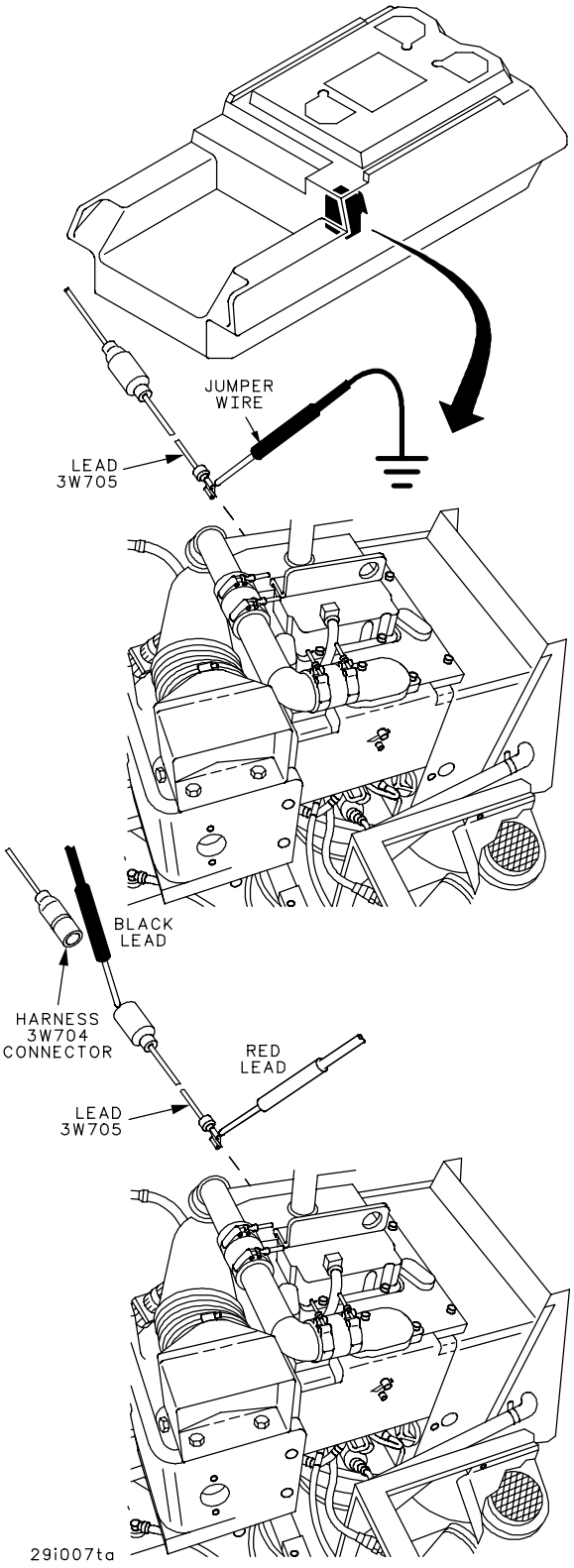
Is continuity present?

yes

no

Replace lead 3W705 (WP 0644 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



APU CONTROL BOX HIGH AIR TEMP INDICATOR DOES NOT LIGHT - CONTINUED 0014 00

CONTINUED FROM STEP C

D

1. Reconnect lead 3W705 at the high air temperature switch.
2. Disconnect harness 3W704 connector P1 at APU engine disconnect.
3. Place one multimeter lead on harness connector at P1 socket C and the other multimeter lead on lead 493 connector socket to lead 3W705. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0642 00) harness 3W704. Verify fault is corrected.

E

1. Reconnect harness lead 493 to lead 3W705.
2. Open air intake grilles over battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W702 connector P1 at bulkhead disconnect.
4. Place one multimeter lead on harness 3W702 P1 connector socket D and other multimeter lead on harness 3W702 connector J2 Pin C at the APU engine disconnect. Check for continuity.

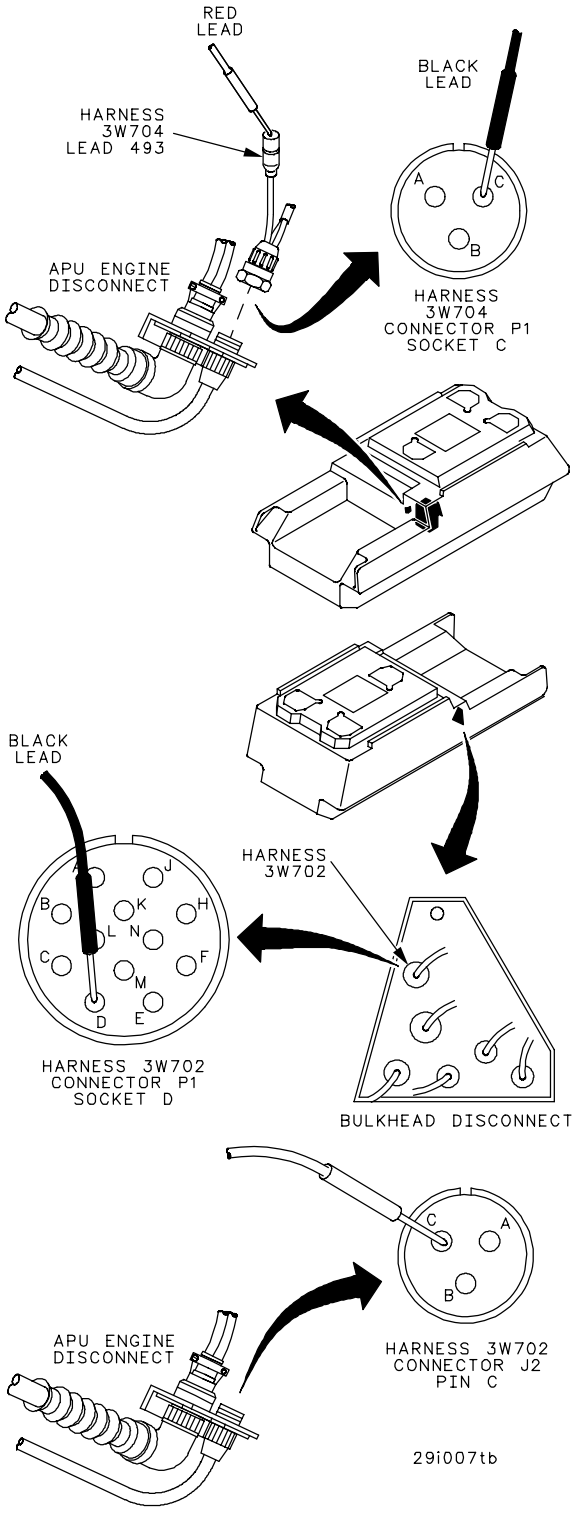
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

CONTINUED ON NEXT PAGE



APU CONTROL BOX HIGH AIR TEMP INDICATOR DOES NOT LIGHT - CONTINUED 0014 00

CONTINUED FROM STEP E

F

1. Reconnect harness 3W704 P1 at APU engine disconnect.
2. Disconnect harness 4W700 connector P1 at APU control box.
3. Place one multimeter lead on harness 3W702 connector P1 bulkhead receptacle pin D and the other multimeter lead on harness 4W700 P1 connector socket J. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.

G

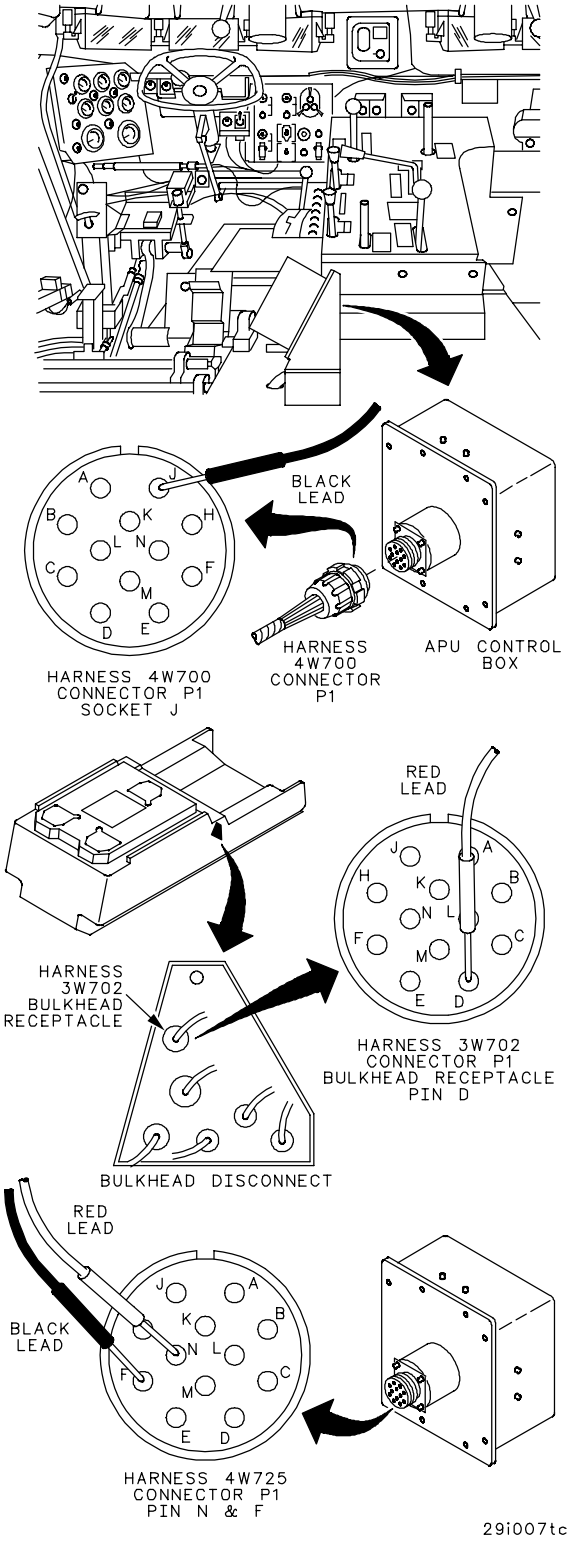
1. Reconnect harness 3W702 connector P1 at bulkhead disconnect.
2. Remove APU control box from the vehicle (WP 0247 00).
3. Turn FUEL SHUT OFF switch ON (TM 9-2350-292-10).
4. Place one multimeter lead on harness 4W725 receptacle pin N and the other multimeter lead on pin F. Check for continuity.

Is continuity present?

yes

no

Go to STEP D of trouble-shooting procedures for AUXILIARY POWER UNIT FUEL SOLENOID FAILS TO ENERGIZE (WP 0021 00).



CONTINUED ON NEXT PAGE

APU CONTROL BOX HIGH AIR TEMP INDICATOR DOES NOT LIGHT - CONTINUED 0014 00

CONTINUED FROM STEP G

H

1. Remove APU control box rear panel (WP 0247 00).
2. Disconnect lead 421 from switch S3.
3. Remove connector from indicator L1.
4. Place one multimeter lead on lead 421 connector socket and the other multimeter lead on lead 27 indicator connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.

I

Place one multimeter lead on lead 493 indicator connector socket and the other multimeter lead on harness 4W725 receptacle pin J. Check for continuity.

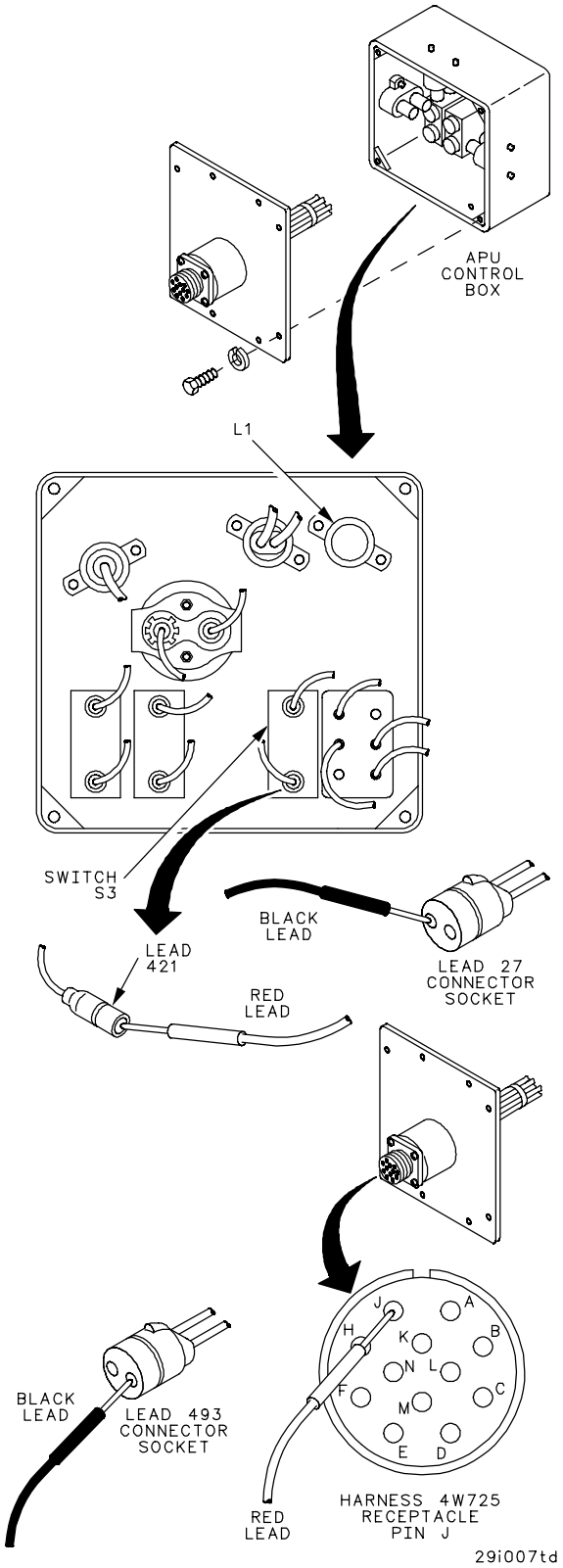
Is continuity present?

yes

no

Replace HIGH AIR TEMP indicator socket assembly (WP 0247 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.



END OF TASK

APU CONTROL BOX LOW OIL PRESS INDICATOR DOES NOT LIGHT WHEN APU OIL PRESSURE IS LOW. 0015 00

THIS WORK PACKAGE COVERS:

APU Control Box Low Oil Press Indicator Does Not Light When Apu Oil Pressure Is Low.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

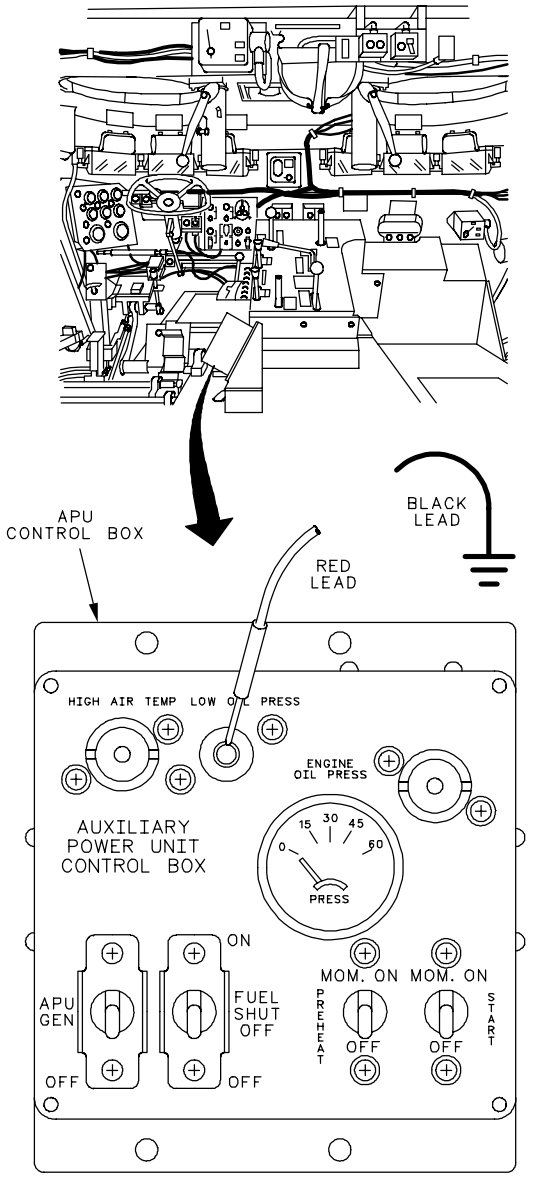
1. Remove APU low oil pressure indicator lamp (WP 0247 00).
2. Turn MASTER switch and APU control switch ON (TM 9-2350-292-10).
3. Place red multimeter lead on lamp holder contact and black multimeter lead to ground. Check for voltage.
4. Turn MASTER switch and APU control switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Replace low oil pressure indicator lamp (WP 0247 00). Verify fault is corrected.

no



29i017t

CONTINUED ON NEXT PAGE

APU CONTROL BOX LOW OIL PRESS INDICATOR DOES NOT LIGHT WHEN APU OIL PRESSURE IS LOW - CONTINUED 0015 00

CONTINUED FROM STEP A

B

1. Remove APU cover and shields (WP 0413 00 and WP 0624 00) and open forward air intake grilles (TM 9-2350-292-10).
2. Temporarily connect a jumper wire from lead 420A connector to vehicle ground
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Turn FUEL SHUT OFF switch ON (TM 9-2350-292-10).
5. Observe LOW OIL PRESS indicator light (TM 9-2350-292-10).
6. Turn MASTER and FUEL SHUT OFF switches OFF (TM 9-2350-292-10).

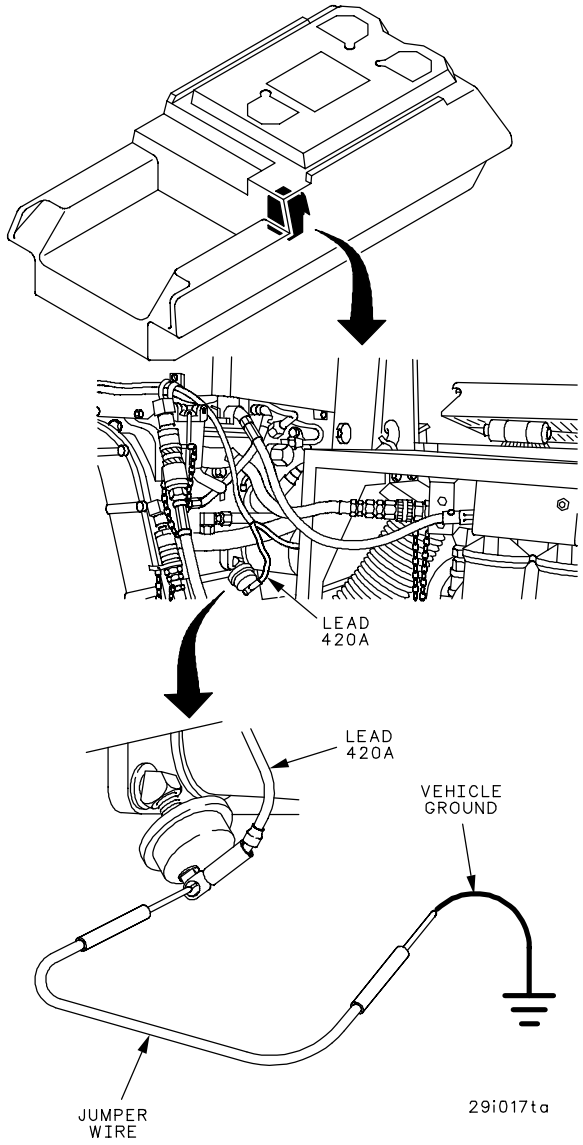
Did LOW OIL PRESS indicator light?

yes

Notify Direct Support Maintenance.

no

CONTINUED ON NEXT PAGE



APU CONTROL BOX LOW OIL PRESS INDICATOR DOES NOT LIGHT WHEN APU OIL PRESSURE IS LOW - CONTINUED 0015 00

CONTINUED FROM STEP B

C

1. Disconnect the temporary jumper wire.
2. Disconnect harness 3W704 connector P1 at APU engine disconnect.
3. Place one multimeter lead on harness 3W704 connector P1 socket B and the other multimeter lead on lead 420A lead connector. Check for continuity.

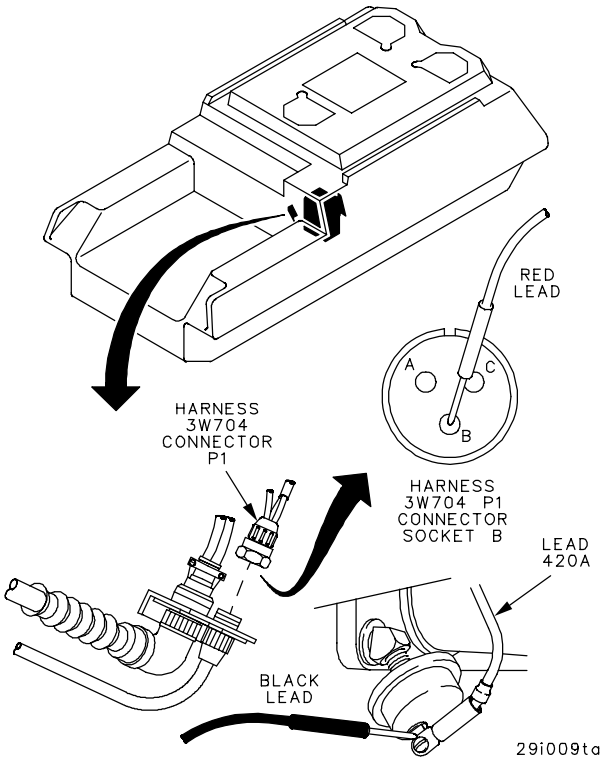
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0642 00) harness 3W704. Verify fault is corrected.

CONTINUED ON NEXT PAGE



APU CONTROL BOX LOW OIL PRESS INDICATOR DOES NOT LIGHT WHEN APU OIL PRESSURE IS LOW - CONTINUED 0015 00

CONTINUED FROM STEP C

D

1. Open air intake grille over battery compartment (TM 9-2350-292-10).
2. Disconnect harness 3W702 connector P1 at bulkhead disconnect.
3. Place one multimeter lead on harness 3W702 connector P1 socket C. Place the other multimeter lead on harness 3W702 connector J2 APU engine disconnect receptacle pin B. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

E

1. Reconnect harness 3W704 connector P1 at APU engine disconnect.
2. Disconnect harness 4W700 connector P1 at APU control box.
3. Place one multimeter lead on bulkhead harness 4W700 connector P2 receptacle pin C and the other multimeter lead on harness 4W700 connector P1 socket K. Check for continuity

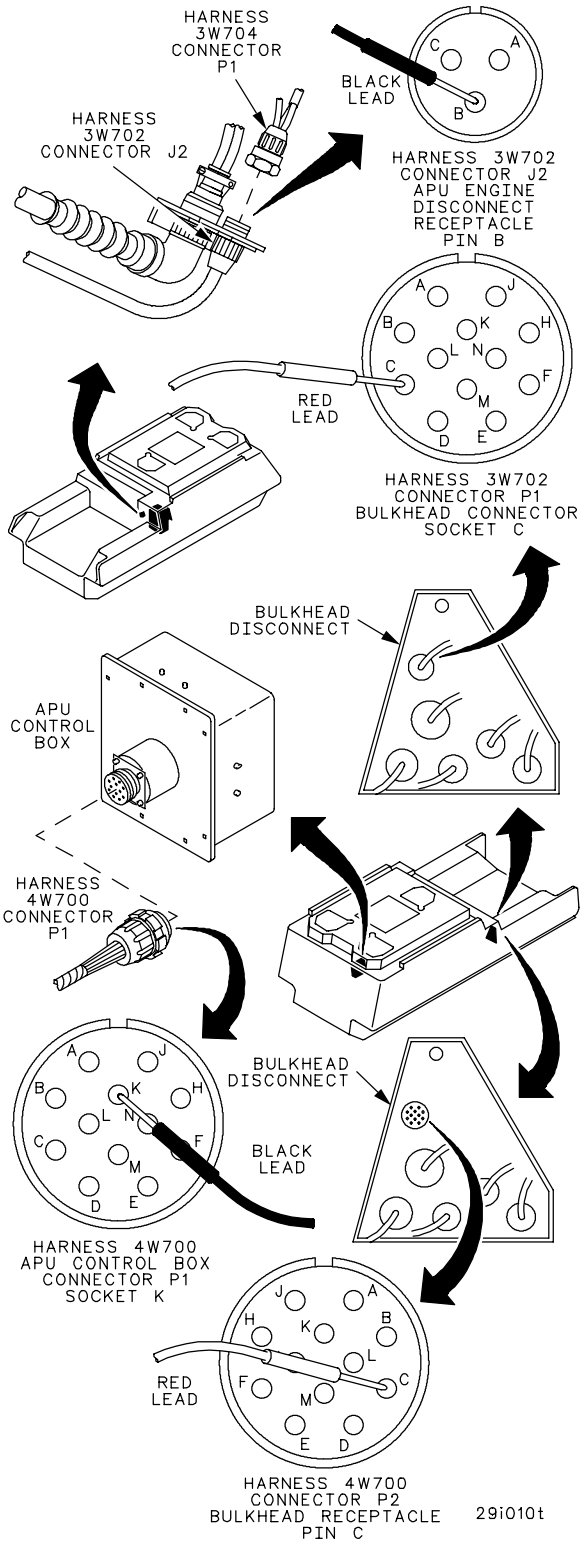
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.

CONTINUED ON NEXT PAGE



APU CONTROL BOX LOW OIL PRESS INDICATOR DOES NOT LIGHT WHEN APU OIL PRESSURE IS LOW - CONTINUED 0015 00

CONTINUED FROM STEP E

F

1. Reconnect harness 4W700 connector P2 at bulkhead disconnect.
2. Remove APU control box from the vehicle (WP 0247 00).
3. Turn FUEL SHUT OFF switch ON (TM 9-2350-292-10).
4. Place one multimeter lead on control box receptacle pin N and the other multimeter lead on pin F. Check for continuity.

Is continuity present?

yes

no

Go to STEP D of trouble-shooting procedures for AUXILIARY POWER UNIT FUEL SOLENOID FAILS TO ENERGIZE (WP 0012 00).

G

1. Remove APU control box rear panel (WP 0247 00).
2. Disconnect lead 421 from switch S3.
3. Remove connector from indicator L2.
4. Place one multimeter lead on lead 421 connector socket and the other multimeter lead on indicator L2 lead 27 connector socket. Check for continuity.

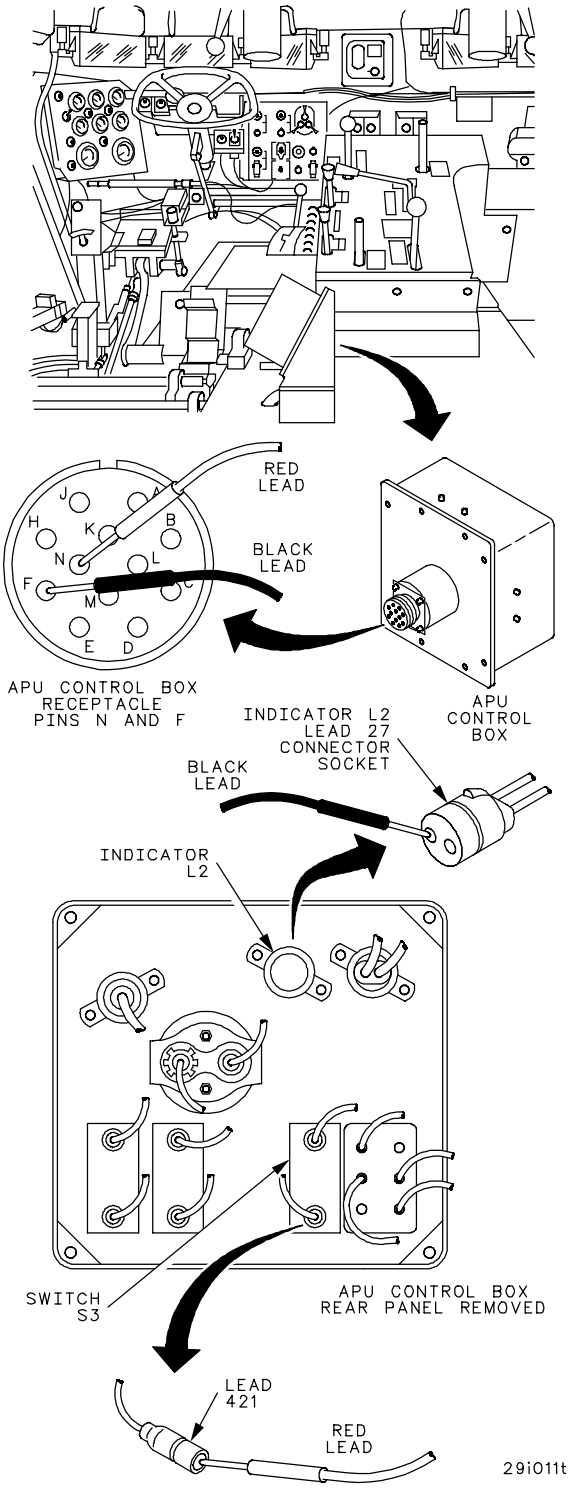
Is continuity present?

yes

no

Replace LOW OIL PRESS indicator socket assembly (WP 0247 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.



END OF TASK

APU CONTROL BOX ENGINE OIL PRESSURE GAUGE READS ZERO WITH APU ENGINE RUNNING. 0016 00

THIS WORK PACKAGE COVERS:

APU Control Box Engine Oil Pressure Gauge Reads Zero With APU Running

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove APU control box REAR PANEL (WP 0247 00).
2. Disconnect lead 420B from fuel gauge.
3. Turn MASTER switch and APU fuel shutoff switch to ON (TM 9-2350-292-10).
4. Place red multimeter lead in lead 420B socket and black lead to ground. Check for voltage.
5. Turn MASTER switch and APU fuel shutoff switch to OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to step C.

B

Place one multimeter lead on oil pressure gauge and the other multimeter lead to ground. Check for continuity.

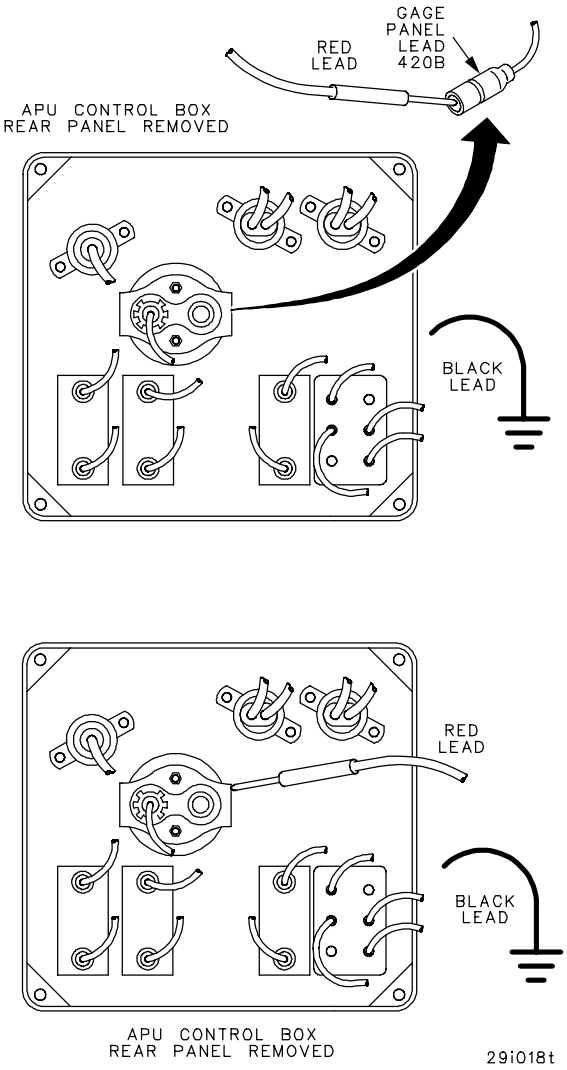
Is continuity present?

yes

Verify fault is corrected.

no

Remove gauge (WP 0247 00) and clean grounding points on gauge and panel. Reinstall gauge and do step B again. If there is still no continuity, replace gauge (WP 0247 00).



CONTINUED ON NEXT PAGE

APU CONTROL BOX ENGINE OIL PRESSURE GAUGE READS ZERO WITH APU ENGINE RUNNING - CONTINUED 0016 00

CONTINUED FROM STEP A

C

1. Disconnect harness 4W700 connector P1 at the APU control box.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place red multimeter lead on harness 4W700 connector P1 socket N and black multimeter lead on vehicle ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

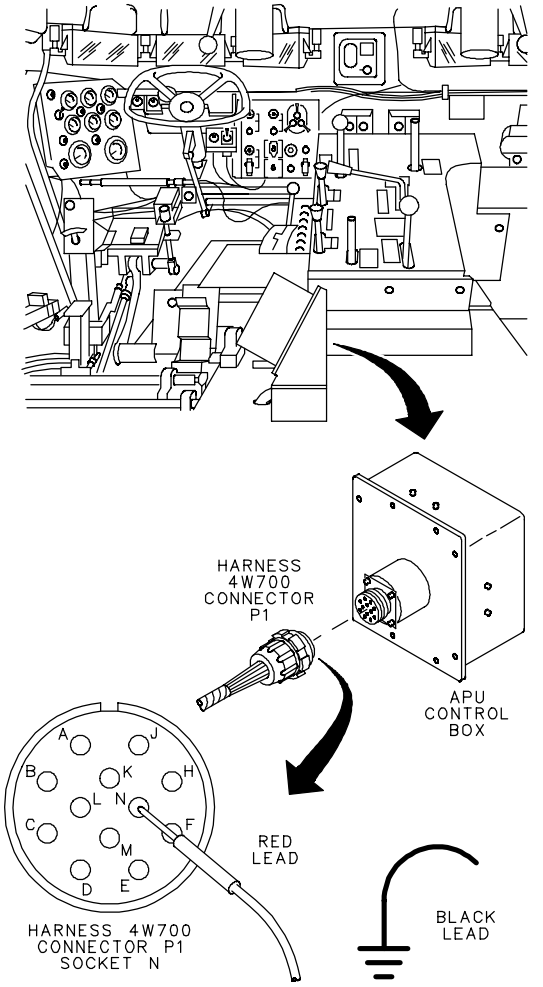
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.

CONTINUED ON NEXT PAGE



29i008t

APU CONTROL BOX ENGINE OIL PRESSURE GAUGE READS ZERO WITH APU ENGINE RUNNING - CONTINUED 0016 00

CONTINUED FROM STEP C

D

1. Disconnect harness 3W704 connector P1 at APU engine disconnect.
2. Disconnect lead 420 from APU oil pressure sending unit.
3. Place one multimeter lead on harness 3W704 connector P1 socket A and the other multimeter lead on lead 420 lead connector socket. Check for continuity.

Is continuity present?

yes

Replace APU oil sending unit (WP 0631 00).

no

E

1. Reconnect lead 420 at oil pressure sending unit.
2. Open air intake grilles over battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W702 connector P1 at bulkhead disconnect.
4. Place one multimeter lead on harness 3W702 connector P1 socket E. Place the other multimeter lead on the APU engine disconnect receptacle J2 pin A. Check for continuity.

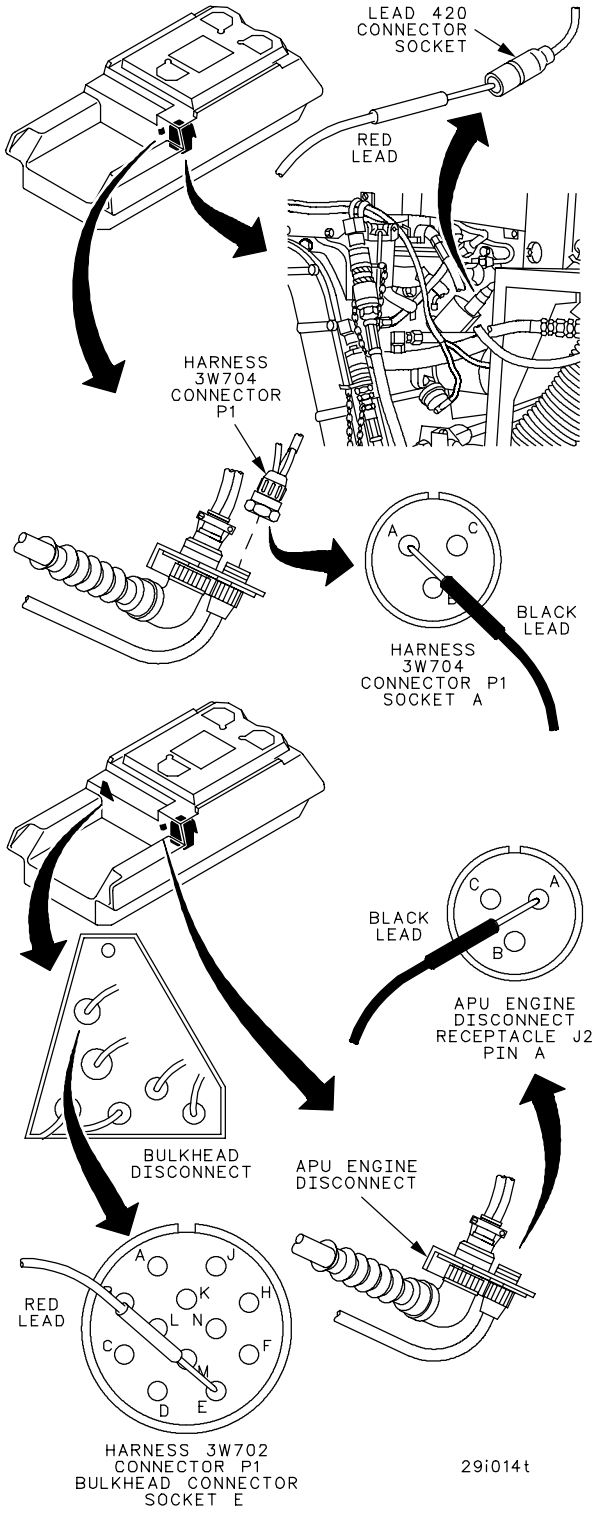
Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



APU CONTROL BOX ENGINE OIL PRESSURE GAUGE READS ZERO WITH APU ENGINE RUNNING - CONTINUED 0016 00

CONTINUED FROM STEP E

F

1. Reconnect harness 3W704 connector P1 at APU engine disconnect.
2. Disconnect harness 4W700 connector P1 at APU control box.
3. Place one multimeter lead on harness 4W700 connector P2 bulkhead receptacle pin E and the other multimeter lead on harness connector socket M. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.

G

1. Reconnect harness 4W700 connector P2 at bulkhead disconnect.
2. Remove APU control box from the vehicle (WP 0247 00).
3. Turn FUEL SHUT OFF switch ON (TM 9-2350-292-10).
4. Place one multimeter lead on control box receptacle pin N and the other multimeter lead on pin F. Check for continuity.

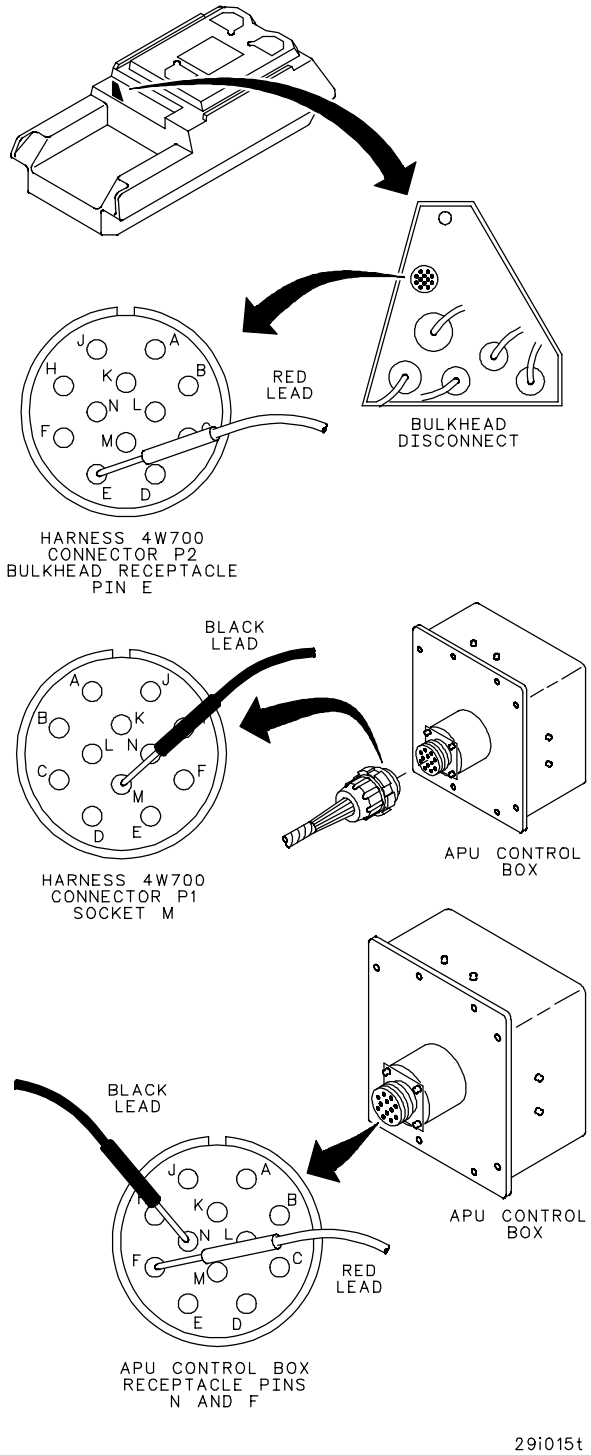
Is continuity present?

yes

no

Go to STEP D of troubleshooting chart for AUXILIARY POWER UNIT FUEL SOLENOID FAILS TO ENERGIZE (WP 0021 00).

CONTINUED ON NEXT PAGE



APU CONTROL BOX ENGINE OIL PRESSURE GAUGE READS ZERO WITH APU ENGINE RUNNING - CONTINUED 0016 00

CONTINUED FROM STEP G

H

1. Remove APU control box rear panel (WP 0247 00), if not removed.
2. Disconnect lead 421 from FUEL SHUT OFF switch.
3. Remove connector from ENGINE OIL PRESSURE gauge.
4. Place one multimeter lead on lead 421 connector socket and the other multimeter lead on pressure gauge lead 420B connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.

I

Place one multimeter lead on lead 420 connector socket and the other multimeter lead on control box receptacle pin M. Check for continuity.

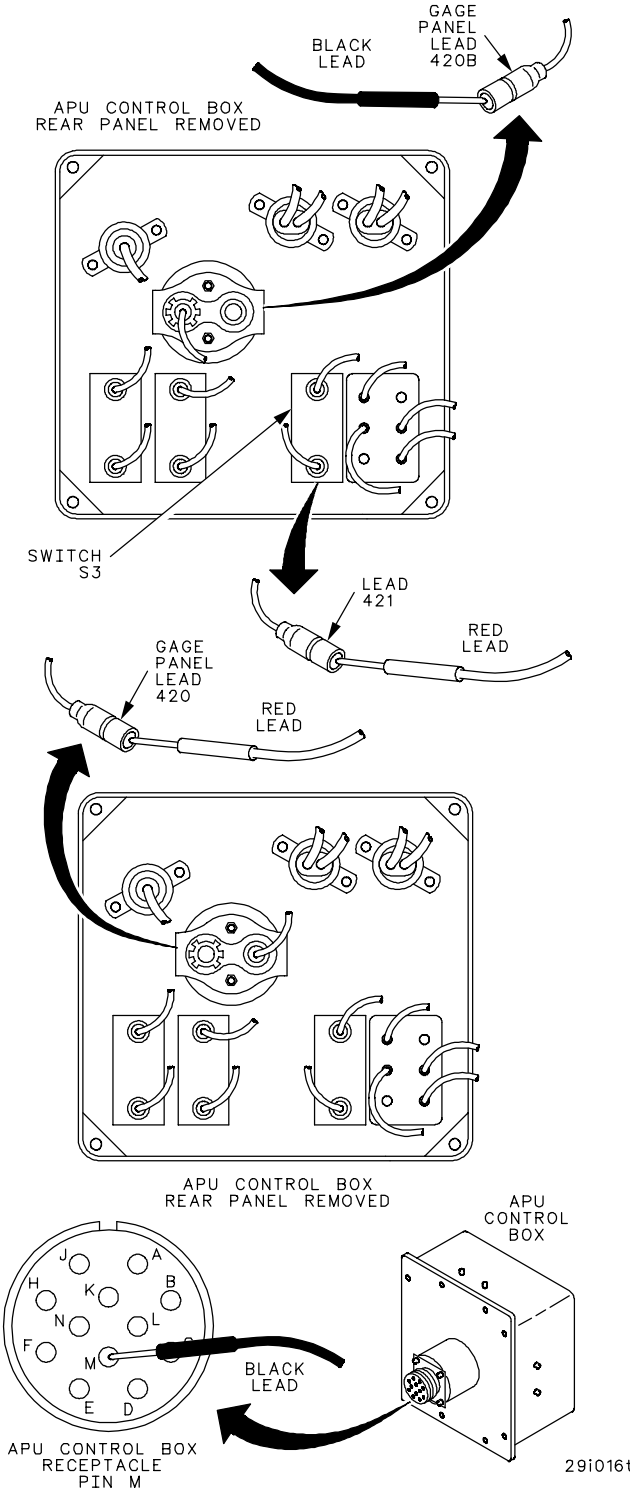
Is continuity present?

yes

no

Replace ENGINE OIL PRESSURE gauge (WP 0247 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.



END OF TASK

AUXILIARY POWER UNIT OVERVIEW AND DIAGRAMS (HATZ). 0017 00

THIS WORK PACKAGE COVERS:

APU Power Unit Overview and Diagrams (HATZ)

The auxiliary power unit (APU) provides the power source that drives the starter/generator and auxiliary hydraulic pump. The APU starter/generator supplies electrical power (+28 V dc) to charge vehicle batteries and supply electrical power to operate other vehicle electrical components when the main engine is not running. The auxiliary hydraulic pump under normal operation provides hydraulic pressure to operate the hydraulic impact wrench and the fuel transfer pump. In an emergency situation, the auxiliary hydraulic pump can provide hydraulic pressure to raise/lower the spade or boom or to retrieve main, hoist, or auxiliary winch cables under no load conditions. The APU consists of a diesel engine, starter system, fuel system solenoid, monitoring system, generator output system, relay box, door fan, door fan temperature relay, sump fan, sump fan temperature relay, hour meter, and fuel pumps number one and two.

The APU diesel engine is a 2-cylinder, 4-cycle, air cooled, add firing, engine that develops 13.5 hp at an engine speed of 2000 rpm (at 500 foot elevation with outside air temperature of 70_F).

The APU starter system consists of the generator/starter, a preheater relay, two 15 ampere circuit breakers, a preheater switch (PREHEAT OFF/MOM ON), the APU generator switch (APU GEN ON/OFF), a starter relay, glow plug, and associated wiring. With the MASTER switch ON, operating voltage (+24 V dc) to the starter is supplied from the vehicle batteries through the starter relay. The starter relay is energized when the APU GEN switch is set to the OFF position, and both the PREHEAT and START switches are held in the MOM ON position. In addition, with the PREHEAT switch held in the MOM ON position, operating voltage (+24 V dc) is supplied to the glow plug to aid the APU diesel engine starting process.

The APU fuel system solenoid circuit consists of the fuel solenoid, 15-ampere circuit breaker, the FUEL SHUTOFF switch, relay box, wiring harness 3W730, and other related electrical wiring. When the MASTER switch is ON, the APU fuel solenoid is energized when the FUEL SHUTOFF switch is set to the ON position. 24 V dc is applied to relay box relays K1 and K2, through timing capacitor C1, then to ground at COMMON GROUND E3. The initial surge of voltage charges the PULL-IN and HOLD-IN circuits at the same time, which pulls in the FUEL solenoid arm. With the FUEL solenoid arm in, fuel is allowed to flow to the APU engine. As timing capacitor C1 fully charges, the voltage to the PULL-IN circuit is dropped off, leaving only the HOLD-IN circuit to keep the FUEL solenoid arm in. Loss of vehicle battery power, or positioning the FUEL SHUTOFF switch and/or the MASTER switch to OFF will remove the voltage to relay box relays K1 and K2, which in turn will remove electrical power from the FUEL solenoid. A mechanical spring returns the FUEL solenoid arm to its original position, thereby shutting off the fuel supply to the APU engine.

When relay K1 is energized, 24 V dc is supplied to both APU fuel pumps and to the hourmeter. Fuel pump number 1 (lower) draws fuel from the vehicle fuel tank and supplies it through two external fuel filters and a fuel/water separator located on the APU to fuel pump number 2 (upper). Fuel pump number 2 (upper) draws fuel from the fuel/water separator, then supplies it to the APU fuel injector pump. Excess fuel is returned to the vehicle fuel tank.

The APU monitoring system consists of the low oil pressure circuits, high air temperature circuits, oil pressure gauge circuits, two oil temperature sensing thermostatic switches (160 to 180_F and 180 to 200_F) (71.1 to 82.2_C and 82.2 to 93.3_C), a door fan, and a sump vaneaxial fan. The low pressure circuit includes the LOW OIL PRESS indicator and the low oil pressure switch. The high air temperature circuits include the HIGH AIR TEMP indicator and the high air temperature switch. The oil pressure gauge circuits include the ENGINE OIL PRESSURE gauge and the Oil Pressure Sending Unit (transmitter). The indicators are located on the APU control box while the switches and sending unit are part of the APU diesel engine.

AUXILIARY POWER UNIT OVERVIEW AND DIAGRAMS (HATZ) - CONTINUED 0017 00

When the MASTER switch is ON, the APU LOW OIL PRESS light comes on when the FUEL SHUTOFF switch is turned ON. The LOW OIL PRESS light remains lit until the APU engine is started and engine oil pressure reaches the safe operating limit. If the LOW OIL PRESS light comes on while the APU is running, the engine should be shut down and the malfunction corrected. The HIGH AIR TEMP indicator is a warning light that indicates that the APU engine temperature has exceeded the safe operating limit. With the MASTER switch ON, the ENGINE OIL PRESSURE gauge indicates APU engine oil pressure.

If the engine oil temperature reaches 160 to 180_F (71.1 to 82.2_C), the door fan oil temperature thermostatic switch will close, applying 24 V dc through relay box relay K4, which turns on the door fan. There is no electrical indication that the door fan is operating. If the engine oil temperature should reach 180 to 200_F (82.2 to 93.3_C), then the sump fan oil thermostatic switch will close applying 24 V dc to relay box relay K3, which applies 24 V dc to the sump vaneaxial fan. There is no electrical indication that the sump fan is operating.

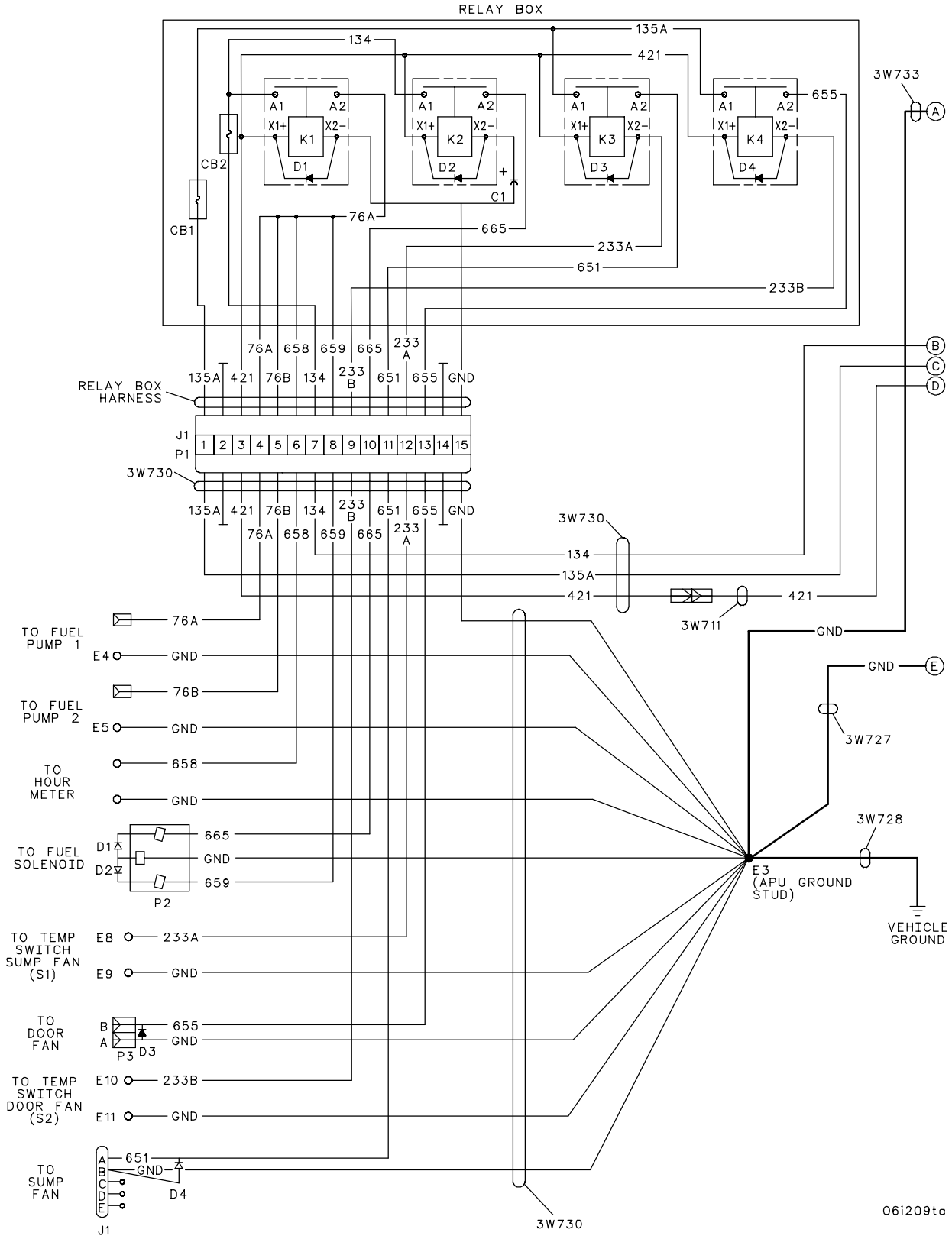
The hour meter indicates the amount of time (in operating hours) that the APU engine has been in operation. The hour meter is used to determine when PMCS and other maintenace tasks are to be performed.

The APU generator output system consists of the APU generator/starter, the APU voltage regulator, the APU generator switch (APU GEN ON/OFF), a hydraulic pressure switch, and related electrical wiring. The APU generator output system functions as a secondary or back-up system power source (+28 V dc) when the main (vehicle) engine is not running. The hydraulic pressure switch prevents simultaneous operation of the generator and the auxiliary hydraulic system in order to avoid loading or stalling the APU.

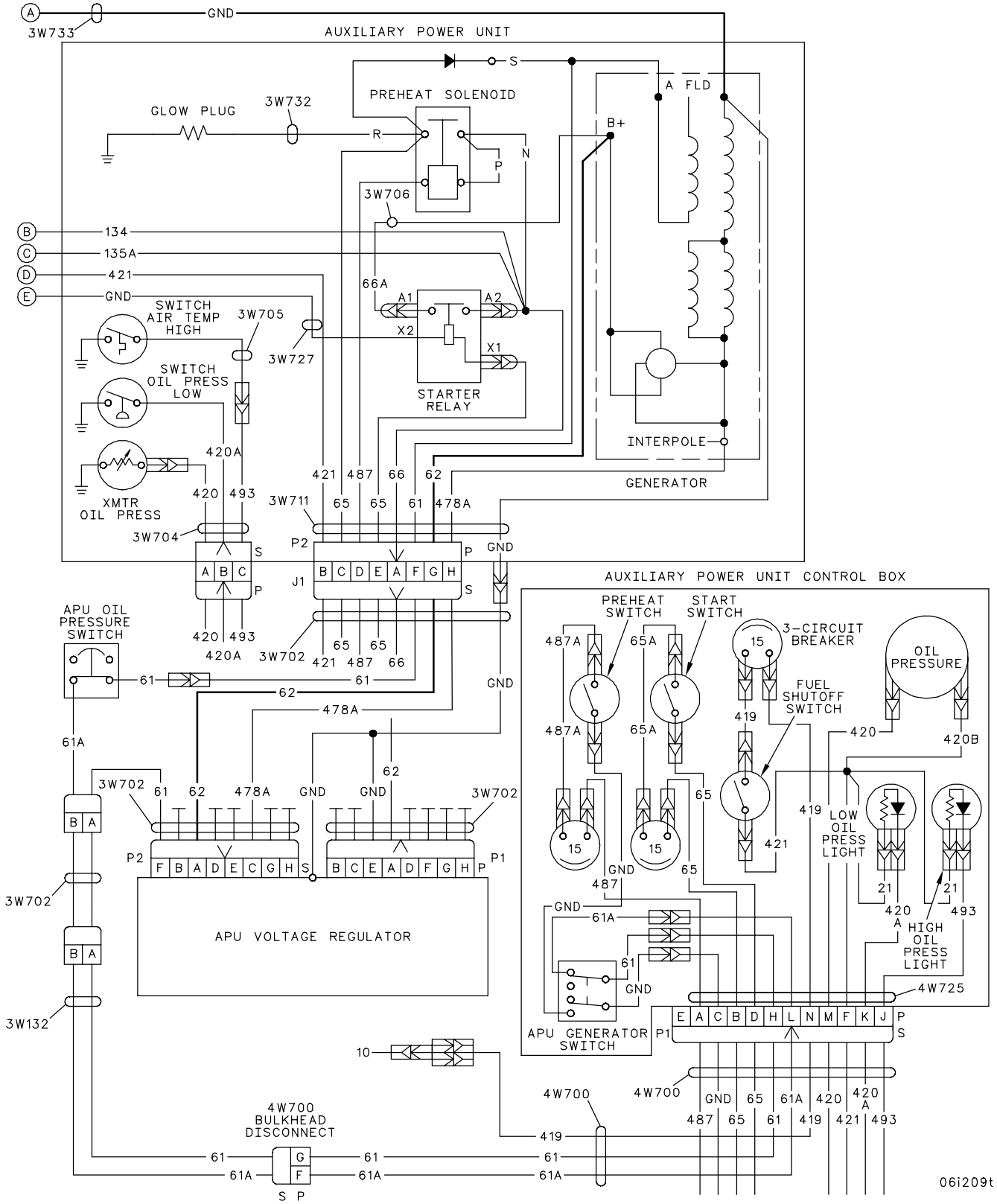
A diagram is included to show the relationship of the various APU components.

AUXILIARY POWER UNIT OVERVIEW AND DIAGRAMS (HATZ) - CONTINUED

0017 00



AUXILIARY POWER UNIT OVERVIEW AND DIAGRAMS (HATZ) - CONTINUED 0017 00



END OF TASK

AUXILIARY POWER UNIT FAILS TO CRANK. 0018 00

THIS WORK PACKAGE COVERS:

Auxiliary Power Unit Fails To Crank

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Materials

Adhesive (item 25, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU cover removed (WP 0413 00)
System selector valve in MAIN (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

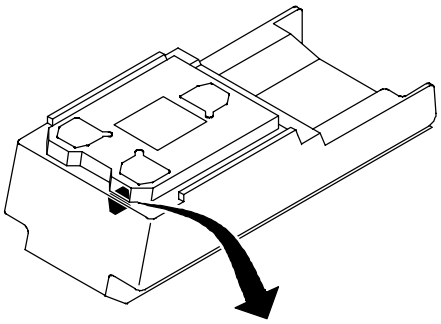
A Check APU for loose electrical connections.

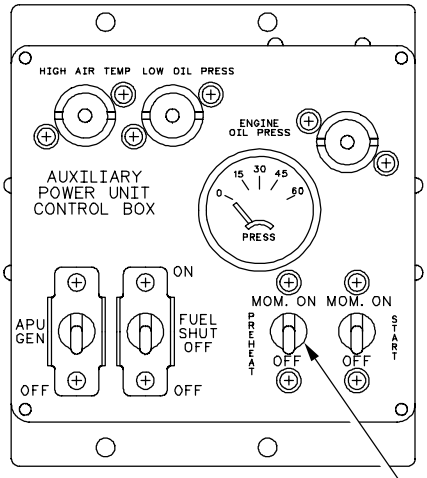
Are all connections tight?

yes

no

Clean and tighten loose connections. Verify fault is corrected.





06i009tb

B

1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Turn PREHEAT switch ON and OFF and listen for the preheater relay to click.
3. Turn MASTER switch OFF.

Does preheater click?

yes

no

Go to step E.

CONTINUED ON NEXT PAGE

AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP B

C

1. Remove front engine deck grilles (TM 9-2350-292-10).
2. Disconnect harness 3W711 P1 from harness 3W702 J1.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Turn PREHEAT switch to MOM ON (TM 9-2350-292-10).
5. Place multimeter red lead on harness 3W702 J1 socket A and black lead to ground.
6. Check for voltage.
7. Turn MASTER switch OFF.

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

D

NOTE

Remove sealant from electrical terminals to ensure good contact for multimeter leads. Apply adhesive to all exposed terminals after troubleshooting is complete.

1. Reconnect harness 3W711 P1 to harness 3W702 J1.
2. Disconnect harness 3W711 lead 66 from starter relay terminal A2.
3. Place multimeter red lead to lead 66 connector and black lead to ground.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Turn PREHEAT switch to MOM ON (TM 9-2350-292-10).
6. Check for voltage.
7. Turn MASTER switch OFF.

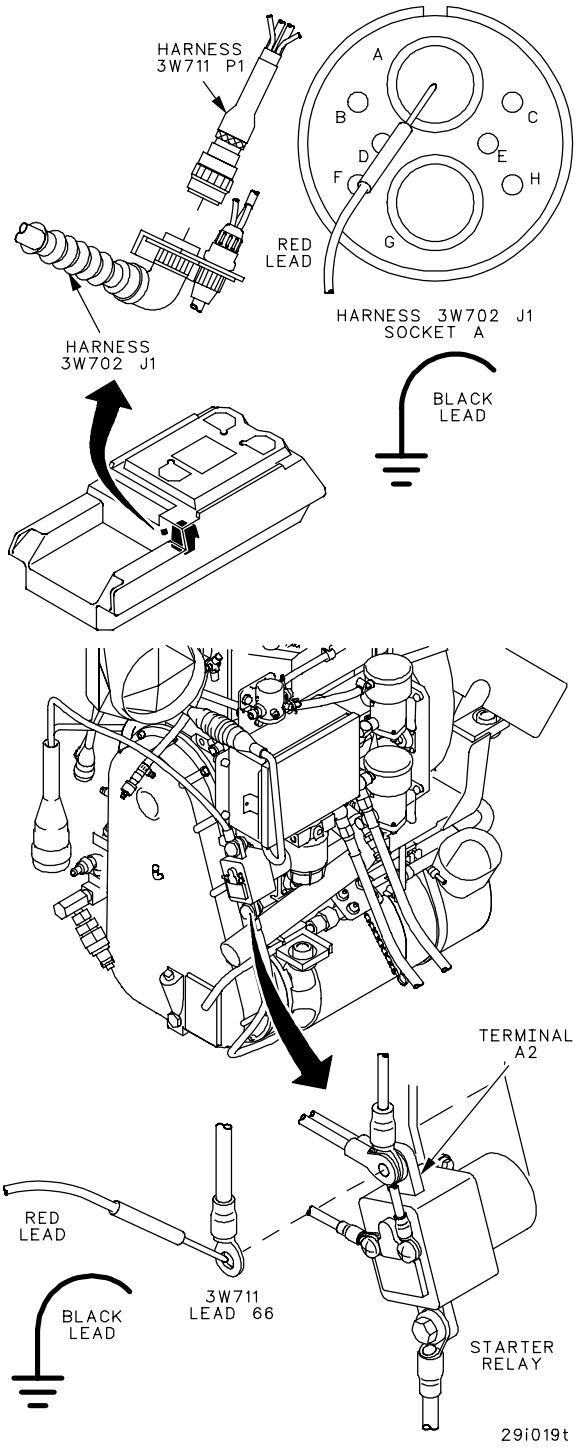
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0649 00) harness 3W711. Verify fault is corrected.

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP B AND D

E

NOTE

Remove sealant from electrical terminals to ensure good contact for multimeter leads. Apply adhesive to all exposed terminals after troubleshooting is complete.

1. Reconnect harness 3W711 lead 66 to starter relay terminal A2.
2. Disconnect lead N at preheater relay.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead to lead N connector and black lead to ground.
5. Turn PREHEAT switch to MOM ON (TM 9-2350-292-10).
6. Check for voltage.
7. Turn MASTER switch OFF.

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0649 00) harness 3W711. Verify fault is corrected.

F

1. Reconnect lead N to preheater relay.
2. Disconnect lead P from preheater relay.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead to lead P connector and black lead to ground.
5. Turn PREHEAT switch to MOM ON (TM 9-2350-292-10).
6. Check for voltage.
7. Turn MASTER switch OFF.

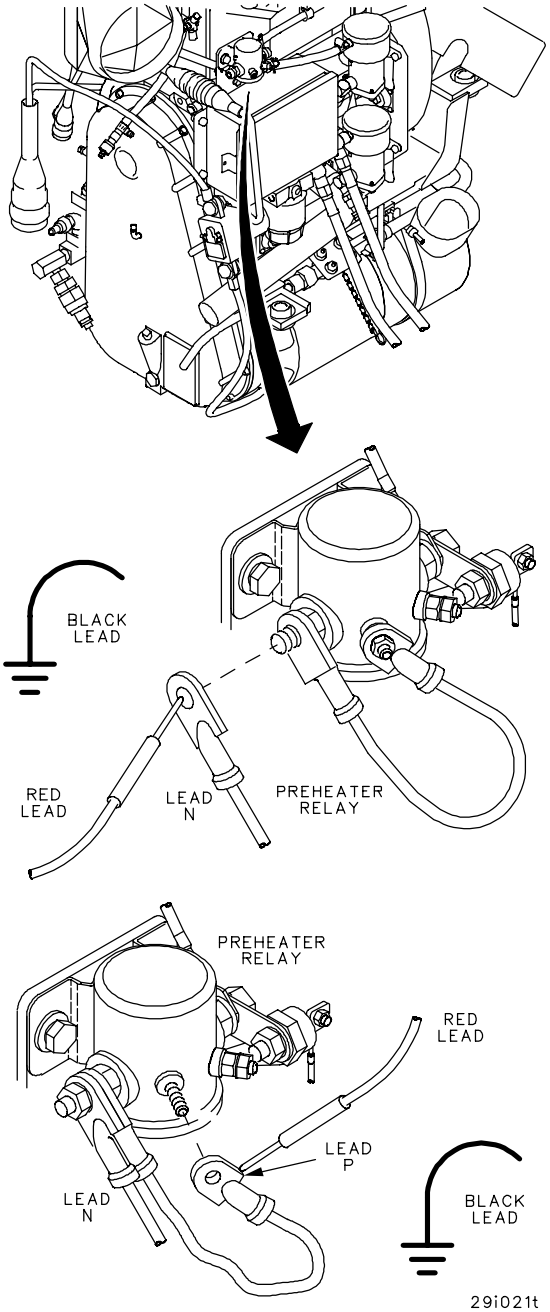
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0656 00) lead P. Verify fault is corrected.

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP F

G

1. Reconnect lead P to preheater relay.
2. Disconnect lead 487 at preheater relay.
3. Place multimeter red lead to preheater relay terminal and black lead to ground.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Turn PREHEAT switch to MOM ON (TM 9-2350-292-10). Check for voltage.
6. Turn MASTER switch OFF.

Is 24 V dc present?

yes

no

Replace preheat relay (WP 0664 00). Verify fault is corrected.

H

1. Disconnect harness 3W702 J1 from harness 3W711 P1.
2. Place multimeter red lead to lead 487 and black lead to pin D of harness 3W711 P1.
3. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0649 00) harness 3W711. Verify fault is corrected.

I

1. Reconnect harness 3W711 P1 to harness 3W702 J1.
2. Reconnect lead 487 to preheater relay.
3. Disconnect harness 3W711 lead S from diode terminal.
4. Place multimeter red lead to diode terminal and black lead to ground.
5. Turn MASTER switch ON (TM 9-2350-292-10).
6. Turn PREHEAT switch to MOM ON (TM 9-2350-292-10). Check for voltage.
7. Turn MASTER switch OFF.

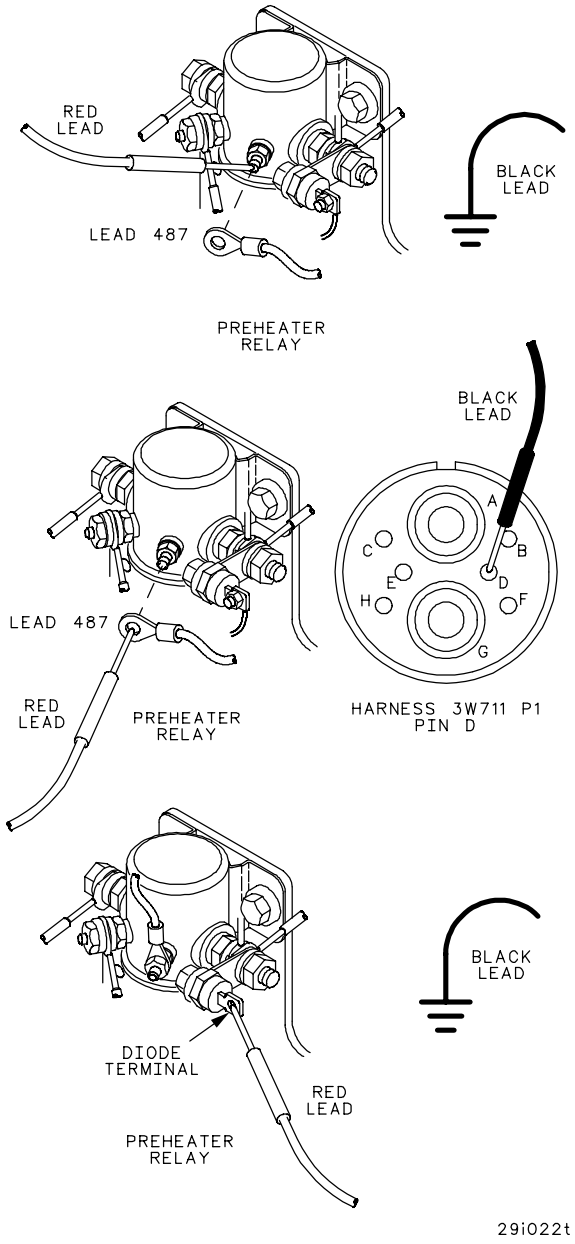
Is 24 V dc present?

yes

no

CONTINUED ON NEXT PAGE

Replace diode (WP 0639 00). Verify fault is corrected.



AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP I

J

1. Disconnect harness 3W711 P1 from harness 3W702 J1.
2. Place multimeter red lead to harness 3W711 P1 pin F and black lead to harness 3W711 lead S.
3. Check for continuity.

Is continuity present?

yes / no

Repair (WP 0290 00) or replace (WP 0649 00) harness 3W711. Verify fault is corrected.

K

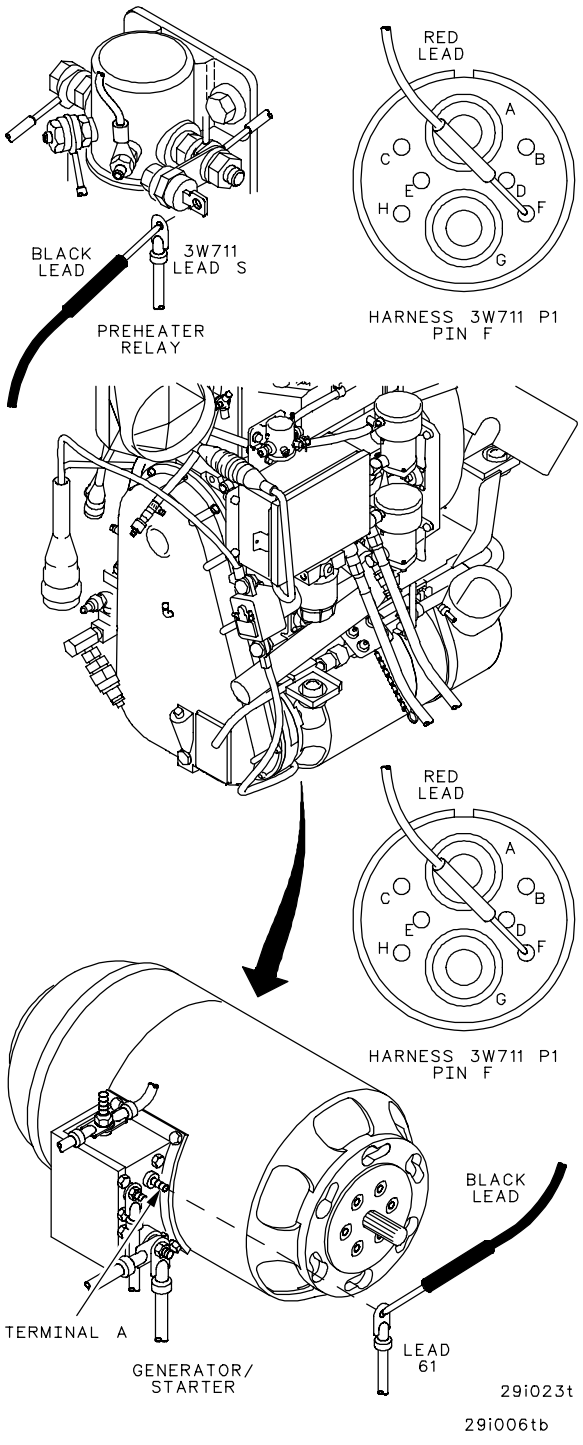
1. Reconnect harness 3W711 lead S to diode terminal.
2. Disconnect harness 3W711 lead 61 from generator terminal A.
3. Place multimeter red lead to harness 3W711 P1 pin F and black lead to lead 61.
4. Check for continuity.

Is continuity present?

yes / no

Repair (WP 0290 00) or replace (WP 0649 00) harness 3W711. Verify fault is corrected.

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AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP K

L

1. Place multimeter red lead onto generator field terminal A and black lead to generator ground terminal E.
2. Check for continuity.

Is continuity present?

yes

no

Replace generator (WP 0635 00). Verify fault is corrected.

M

1. Place multimeter red lead to generator terminal E and black lead to common ground E3.
2. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0659 00) harness 3W733. Verify fault is corrected.

N

1. Open air intake grilles above battery compartment (TM 9-2350-292-10).
2. Disconnect harness 3W702 P1 at bulkhead disconnect.
3. Place multimeter red lead to harness 3W702 J1 socket D and black lead to 3W702 P1 socket B.
4. Check for continuity.

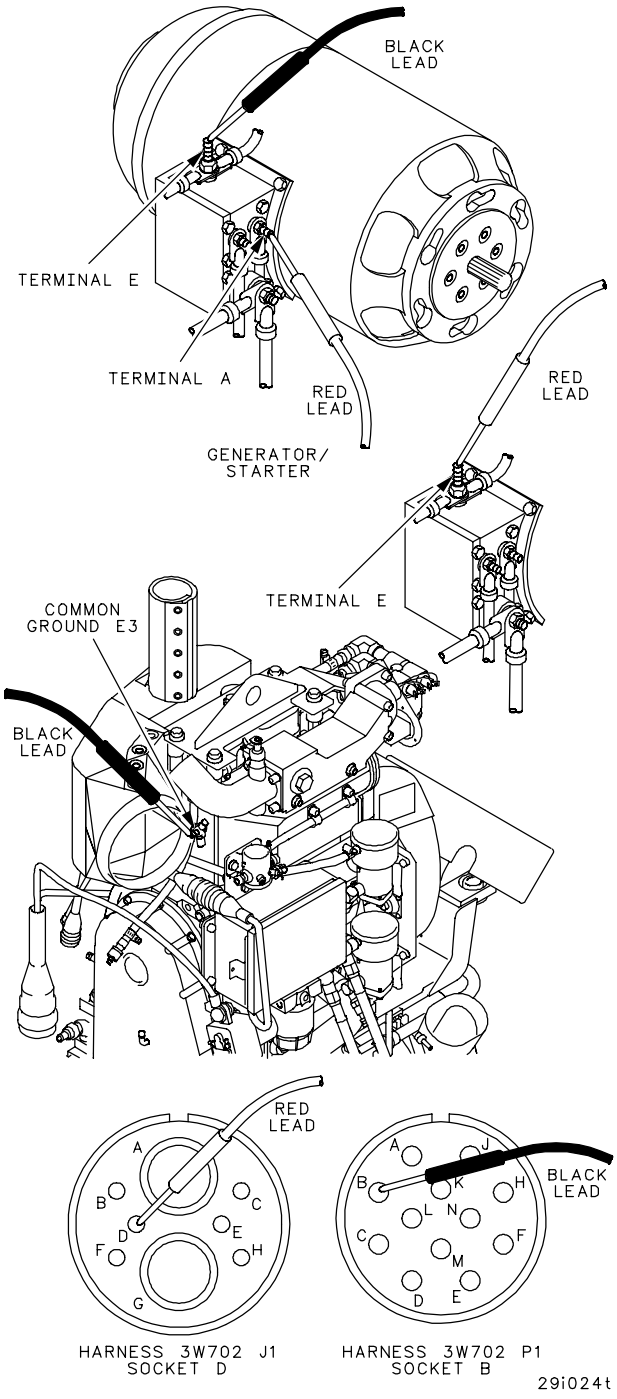
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0313 00) harness 3W702. Verify fault is corrected.

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP N

O

1. Reconnect harness 3W711 P1 at APU engine disconnect.
2. Disconnect harness 4W700 P1 at APU control box.
3. Disconnect harness 4W700 P2 from bulkhead disconnect.
4. Place multimeter red lead to harness 4W700 P2 pin B and black lead to harness 4W700 P1 socket A.
5. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.

P

1. Place multimeter red lead to harness 4W700 P1 socket C and black lead to ground.
2. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0332 00) ground lead from control box connector to ground. Verify fault is corrected.

Q

1. Remove control box rear panel (WP 0247 00).
2. Turn PREHEAT switch to MOM ON (TM 9-2350-292-10).
3. Place APU GEN switch to OFF.
4. Place multimeter red lead to control box harness 4W725 pin A and black lead to pin C.
5. Check for continuity.

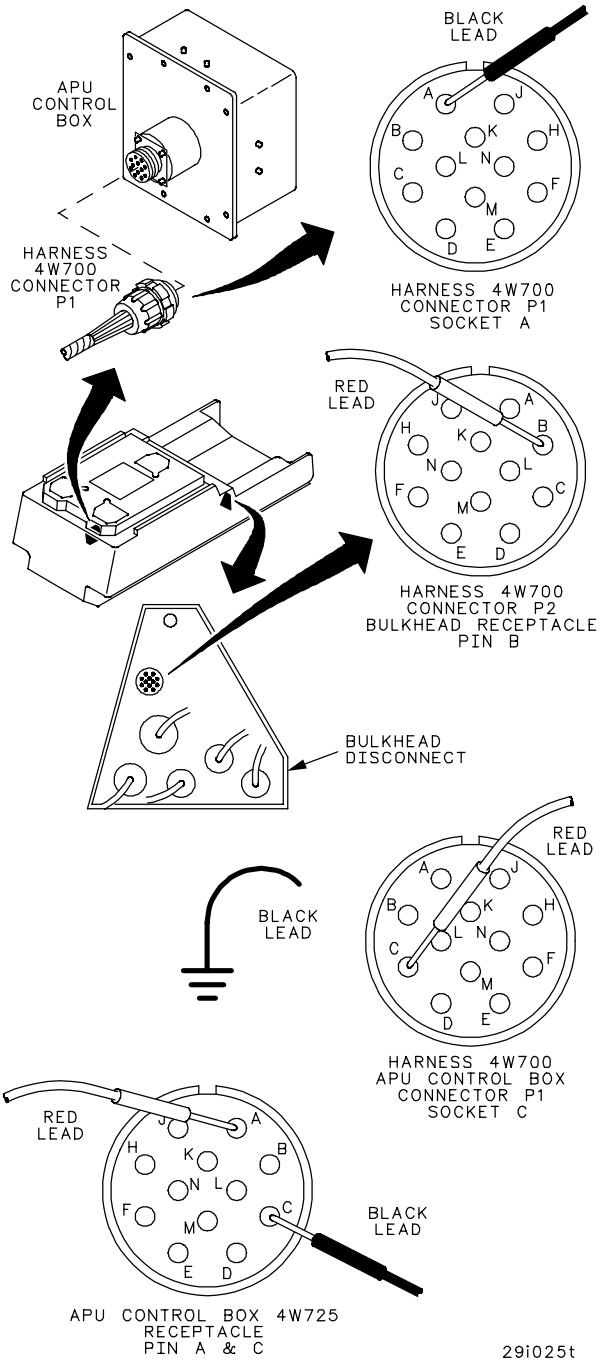
Is continuity present?

yes

no

Go to step AA.

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP Q

R

1. Disconnect harness 4W725 lead 487 connector from circuit breaker CB2 connector.
2. Place multimeter red lead to harness 4W725 pin A and black lead to lead 487 connector.
3. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.

S

1. Disconnect lead 4W123-4 from circuit breaker CB2 connector.
2. Place multimeter leads across circuit breaker CB2 connectors.
3. Check for continuity.

Is continuity present?

yes

no

Replace circuit breaker CB2 (WP 0247 00). Verify fault is corrected.

T

1. Reconnect harness 4W725 lead 487 to circuit breaker CB2 connector.
2. Disconnect lead 4W123-4 from PREHEAT switch S2.
3. Place multimeter leads across lead 4W123-4.
4. Check for continuity.

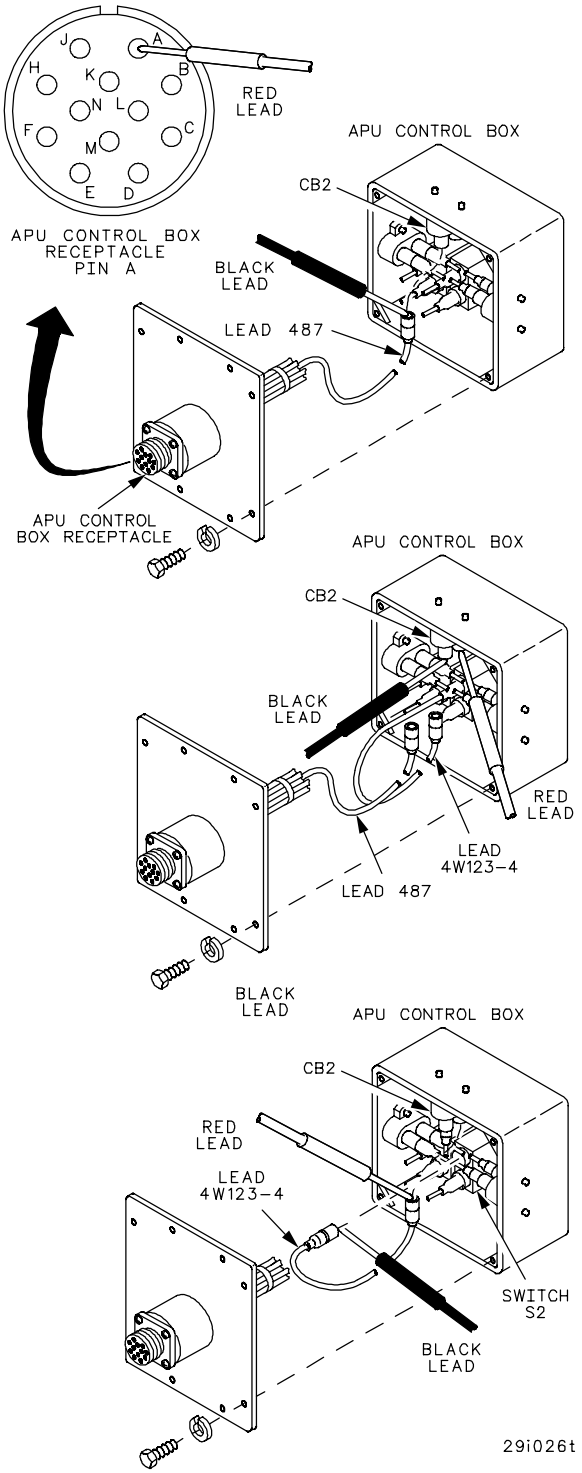
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0247 00) lead 4W123-4. Verify fault is corrected.

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP T

U

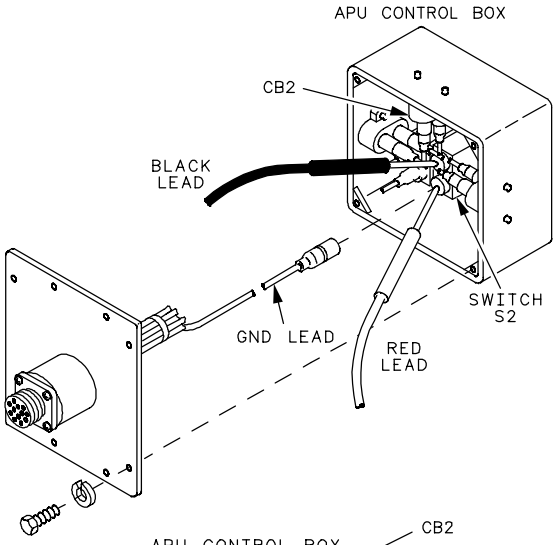
1. Reconnect lead 4W123-4 to circuit breaker CB2 connector.
2. Disconnect ground lead from PREHEAT switch S2 connector.
3. Place multimeter leads across PREHEAT switch and turn switch to MOM ON.
4. Check for continuity.

Is continuity present?

yes

no

Replace PREHEAT switch (WP 0247 00). Verify fault is corrected.



V

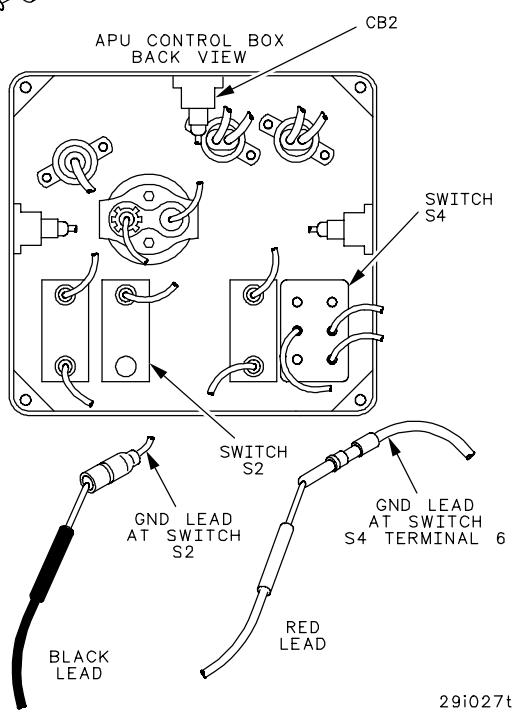
1. Reconnect lead 4W123-4 to PREHEAT switch S2 connector.
2. Disconnect ground wire from APU GEN switch S4 terminal 6.
3. Place multimeter leads across ground wire.
4. Check for continuity.

Is continuity present?

yes

no

Replace ground wire (WP 0247 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP V

W

1. Reconnect ground wire to PREHEAT switch S2 connector.
2. Disconnect ground wire from APU GEN switch S4 terminal 5.
3. Place multimeter leads across APU GEN switch S4 terminals 5 and 6.
4. Check for continuity.

Is continuity present?

yes

no

Replace generator switch S4 (WP 0247 00). Verify fault is corrected.

X

1. Reconnect ground wire to APU GEN switch S4 terminals 6.
2. Place multimeter red lead onto 4W725 pin C and black lead on to ground wire.
3. Check for continuity.
4. Reconnect ground wire to APU GEN switch S4 terminal 5.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.

Y

1. Disconnect lead 3W732 wire R from the preheat solenoid and from glow plug connector.
2. Place multimeter red leads across harness 3W732 connectors.
3. Check for continuity.
4. Reconnect harness 3W732 wire R to the preheat solenoid connector.

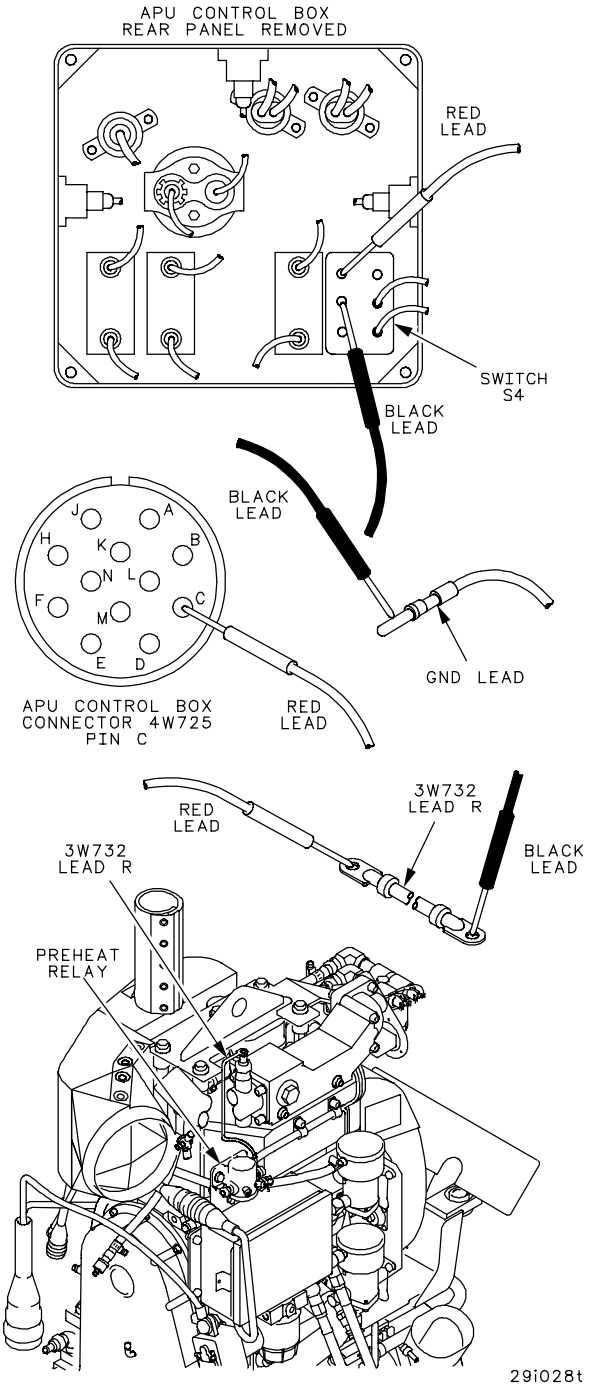
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0658 00) lead 3W732 wire R. Verify fault is corrected.

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP Y

Z

1. Turn PREHEAT switch to MOM ON (TM 9-2350-292-10).
2. Place hand close to, but not directly on, glow plug.
3. Feel for glow plug heating up.

Is glow plug warm or hot?

yes

no

Replace glow plug (WP 0629 00). Verify fault is corrected.

CONTINUED FROM STEP Q

AA

1. Reconnect harness 4W700 P1 to APU control box, if disconnected.
2. Reconnect harness 4W702 P2 to bulkhead disconnect, if disconnected.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Turn PREHEAT switch to MOM ON (TM 9-2350-292-10).
5. Turn START switch to MOM ON (TM 9-2350-292-10), turn START switch ON and OFF several times.
6. Listen for starter relay to click.
7. Turn MASTER switch OFF.

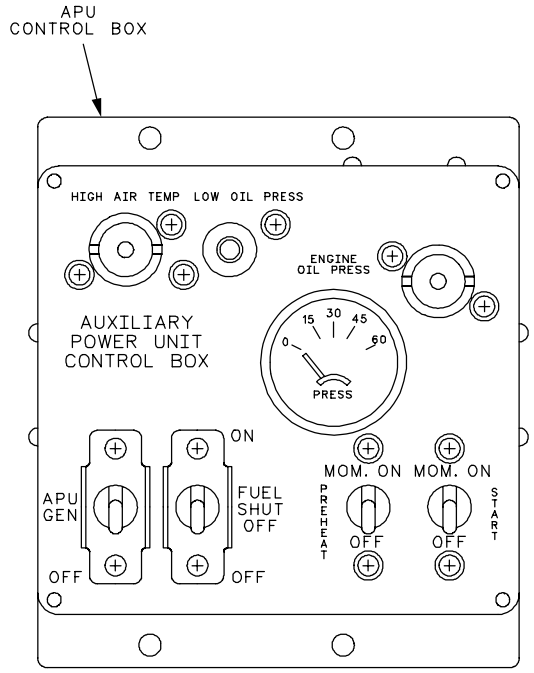
Does relay click?

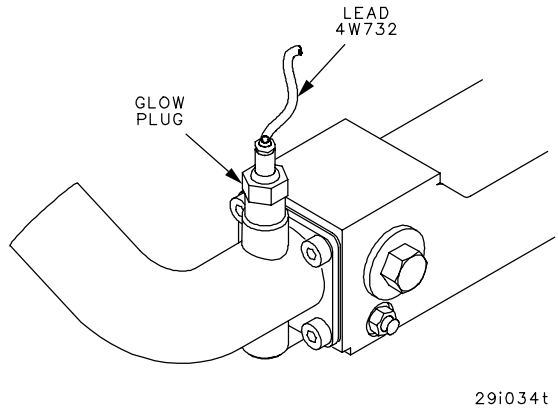
yes

no

Go to Step AG.

CONTINUED ON NEXT PAGE





29i034t

AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP AA

AB

1. Disconnect harness 3W702 J1 from harness 3W711 P1.
2. Place multimeter red lead to harness 3W702 J1 socket E and black lead to ground.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Turn PREHEAT switch to MOM ON (TM 9-2350-292-10).
5. Turn START switch to MOM ON.
6. Check for voltage.
7. Turn MASTER switch OFF.
8. Reconnect harness 3W702 J1 to harness 3W711 P1.

Is 24 V dc present?

yes

no

Go to Step AI.

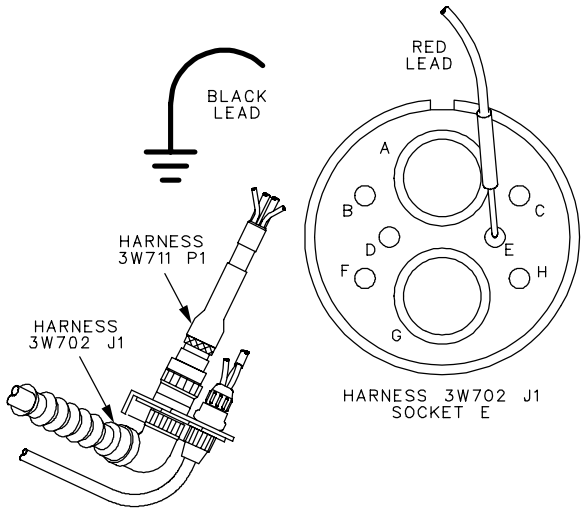
AC

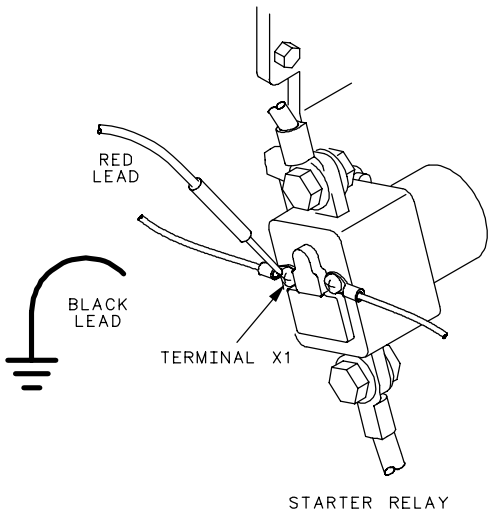
1. Place multimeter red lead to starter relay terminal X1 and black lead to ground.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Turn PREHEAT switch to MOM ON (TM 9-2350-292-10).
4. Turn START switch to MOM ON (TM 9-2350-292-10).
5. Check for voltage.
6. Turn MASTER switch OFF.

Is 24 V dc present?

Repair (WP 0290 00) or replace (WP 0649 00) harness 3W711. Verify fault is corrected.

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29i035t

AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP AC

AD

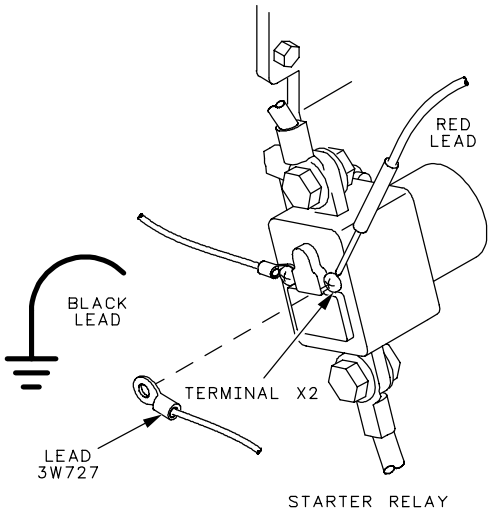
1. Disconnect lead 3W727 from starter relay terminal X2.
2. Place multimeter red lead to starter relay terminal X2 and black lead to ground.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Turn PREHEAT switch to MOM ON (TM 9-2350-292-10).
5. Turn START switch to MOM ON (TM 9-2350-292-10).
6. Check for voltage.
7. Turn MASTER switch OFF.

Is 24 V dc present?

yes

no

Replace starter relay (WP 0641 00). Verify fault is corrected.



AE

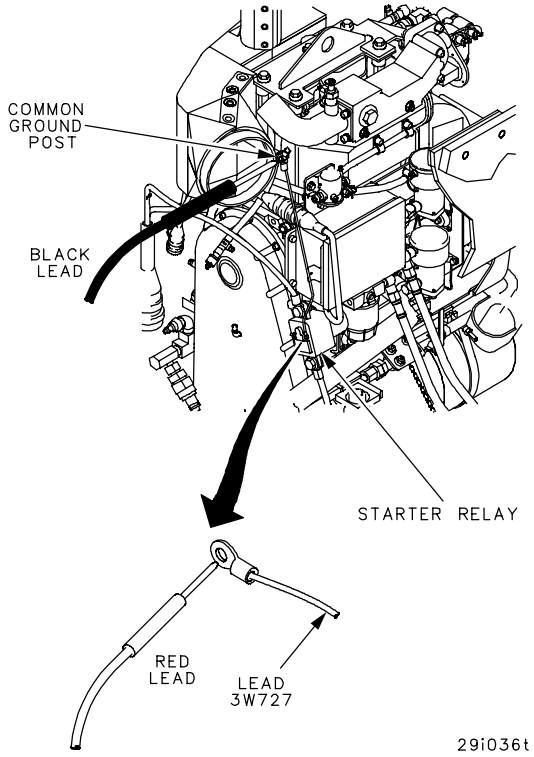
1. Place multimeter leads on lead 3W727 and common ground E3.
2. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0651 00) lead 3W727. Verify fault is corrected.



CONTINUED ON NEXT PAGE

AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP AE

AF

1. Reconnect lead 3W727 to starter relay terminal X2.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Turn PREHEAT switch to MOM ON (TM 9-2350-292-10).
4. Turn START switch to MOM ON (TM 9-2350-292-10).
5. Place multimeter red lead to starter relay terminal A1 and black lead to ground.
6. Check for voltage.
7. Turn MASTER switch OFF.

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0649 00) harness 3W711 ground wire. Verify fault is corrected.

CONTINUED FROM STEP AA

AG

1. Disconnect harness 3W706 lead 66A from generator terminal B+ and from starter relay terminal A1.
2. Place multimeter leads across 3W706 lead 66A
3. Check for continuity.

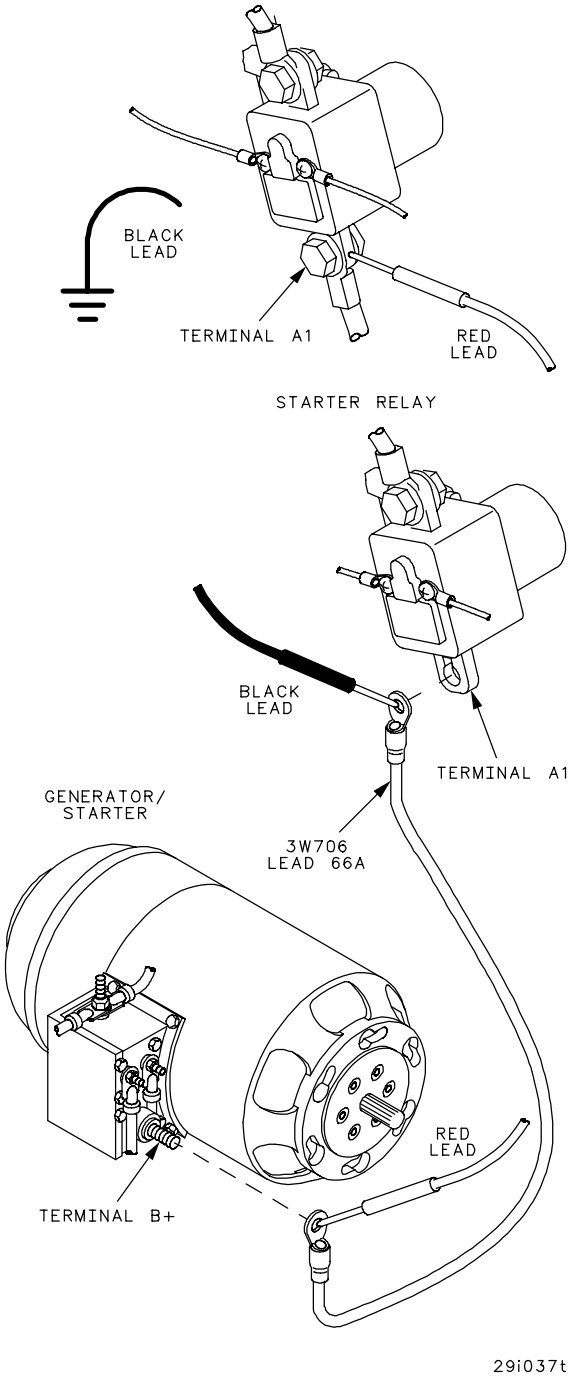
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0647 00) 3W706 lead 66A. Verify fault is corrected.

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP AG

AH

1. Reconnect harness 3W706 lead 66A to generator terminal B+ and to starter relay terminal A1.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Turn PREHEAT switch to MOM ON (TM 9-2350-292-10).
4. Turn START switch to MOM ON (TM 9-2350-292-10).
5. Place multimeter red lead to generator terminal B+ and black lead to ground.
6. Check for voltage.
7. Turn MASTER switch OFF.

Is 24 V dc present?

yes

no

Replace generator (WP 0635 00). Verify fault is corrected.

CONTINUED FROM STEP AB

AI

1. Disconnect harness 3W702 J1 from harness 3W711 P1.
2. Disconnect harness 3W702 P1 from bulkhead connector.
3. Place multimeter red lead to harness 3W702 J1 socket E and black lead to harness 3W702 P1 socket A.
4. Check for continuity.

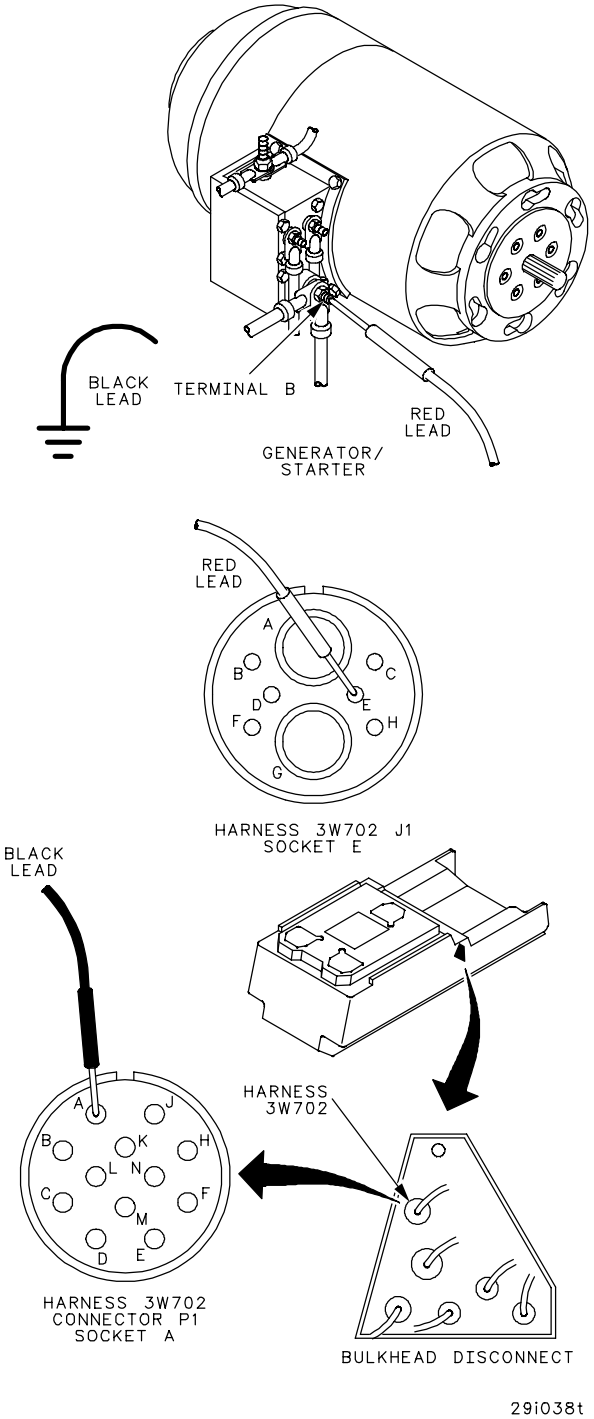
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

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AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP AI

AJ

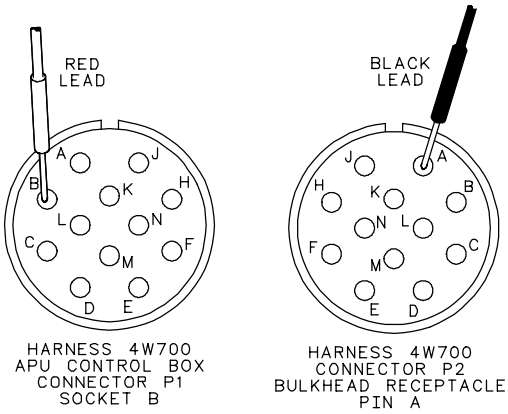
1. Disconnect harness 4W700 P1 from APU control box connector 4W725.
2. Place multimeter red lead to harness 4W700 P1 socket B and black lead to harness 4W700 P2 bulkhead receptacle pin A.
3. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.



AK

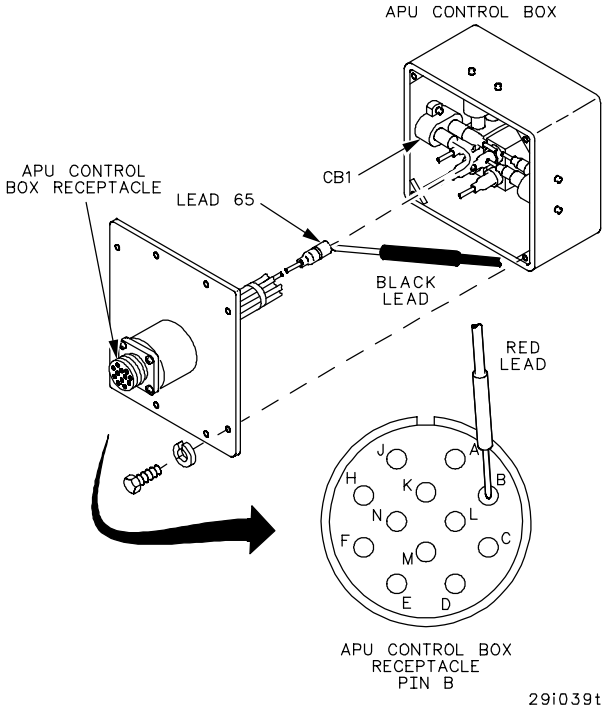
1. Disconnect harness 4W725 lead 65 connector from circuit breaker CB1 connector.
2. Place multimeter red lead to harness 4W725 pin B and black lead to lead 65 connector.
3. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.



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AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP AK

AL

1. Disconnect 4W123-5 lead 65A from circuit breaker CB1 connector.
2. Place multimeter leads across circuit breaker CB1 connectors.
3. Check for continuity.

Is continuity present?

yes

no

Replace circuit breaker CB1 (WP 0247 00). Verify fault is corrected.

AM

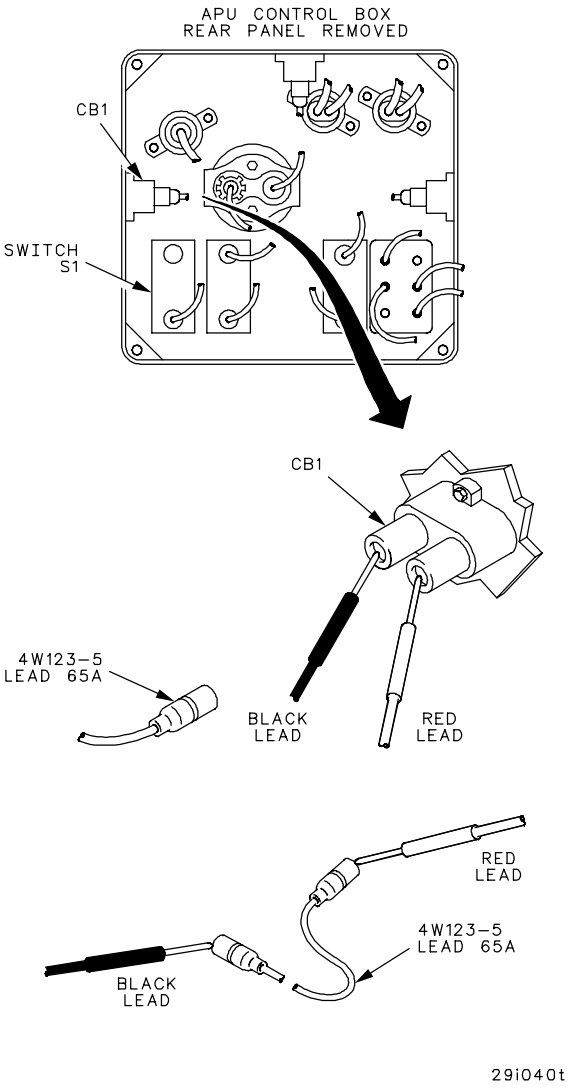
1. Reconnect harness 4W725 lead 65 to circuit breaker CB1 connector.
2. Disconnect 4W123-5 lead 65A from START switch S1.
3. Place multimeter leads across 4W123-5 lead 65A.
4. Check for continuity.

Is continuity present?

yes

no

Replace lead 4W123-5 (WP 0247 00). Verify fault is corrected.



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AUXILIARY POWER UNIT FAILS TO CRANK - CONTINUED 0018 00

CONTINUED FROM STEP AM

AN

1. Reconnect lead 4W123-5 to circuit breaker CB1 connector.
2. Disconnect lead 65 from START switch connector.
3. Place multimeter leads across START switch connectors and turn switch to MOM ON.
4. Check for continuity.

Is continuity present?

yes

no

Replace START switch (WP 0247 00). Verify fault is corrected.

AO

1. Place multimeter red lead onto 4W725 pin D and black lead to lead 65.
2. Check for continuity.
3. Reconnect lead 65 to START switch connector.

Is continuity present?

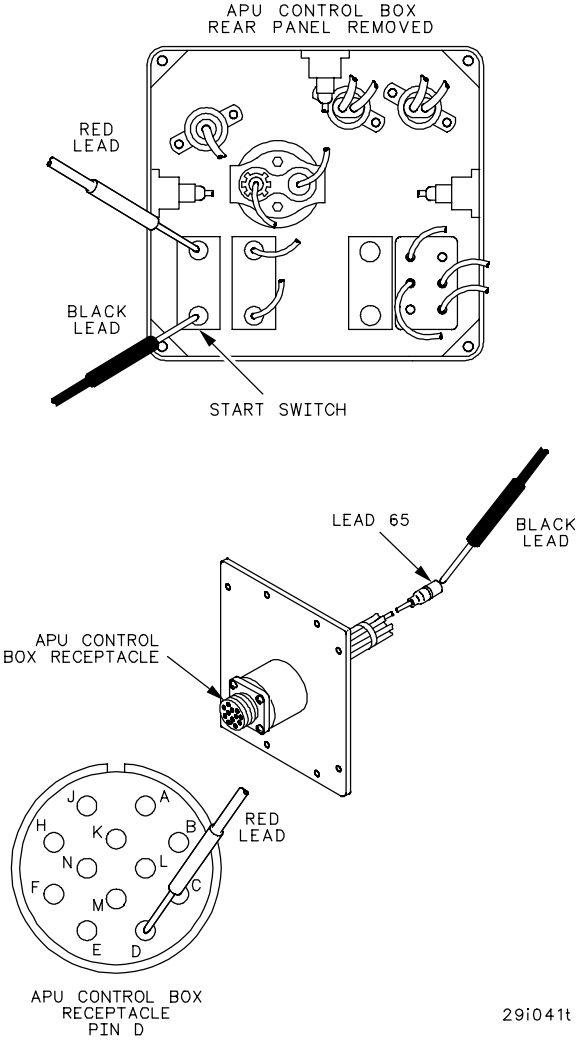
yes

no

Repair (WP 0290 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.

AP

If APU still fails to crank, go to (WP 0021 00).



END OF TASK

AUXILIARY POWER UNIT FAILS TO KEEP RUNNING. 0019 00

THIS WORK PACKAGE COVERS:

Deploying Tow Bar, Connecting Tow Bar, Disconnect Tow Bar, Stowing Tow Bar

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Personnel Required

Two

Equipment Conditions

APU removed and Ground Hop Kit (HATZ) installed (WP 0589 00)
Vehicle fuel manual shutoff valve open (TM 9-2350-292-10)

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



WARNING

A Inspect fuel lines for fuel line damage and leaks (WP 0617 00).

Do fuel lines have damage and/or leaks?

yes

Tighten leaking fuel line connectors, repair and replace fuel lines (WP 0617 00). Verify fault is corrected.

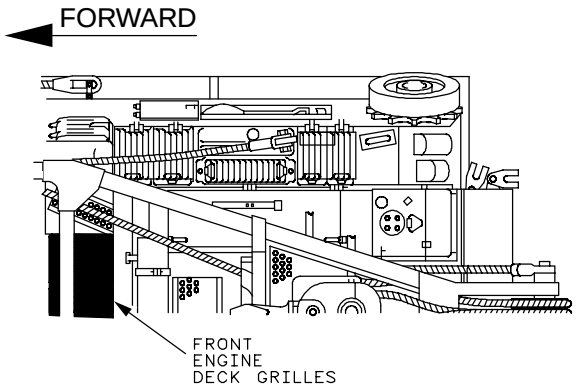
no

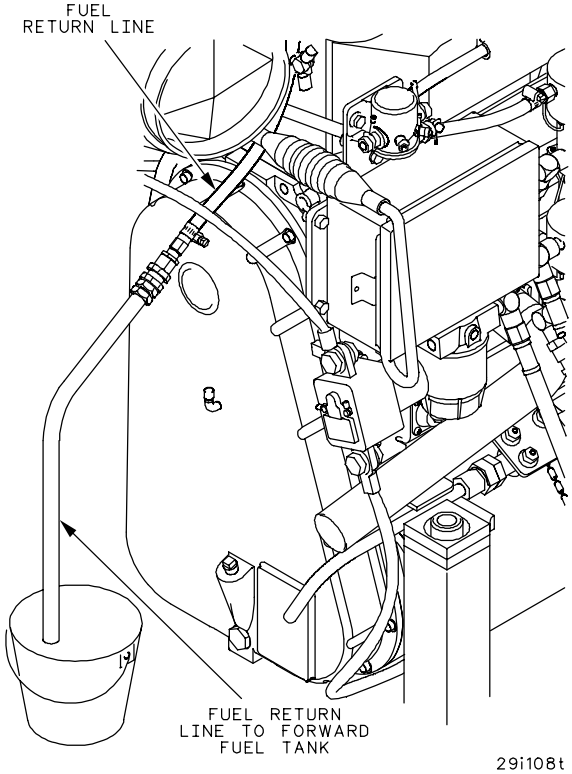
B

1. Remove front engine deck grilles (TM 9-2350-292-10).
2. Disconnect fuel return line quick-disconnect hose going to forward fuel tank (WP 0587 00).
3. Remove quick-disconnect connector from fuel return line (WP 0587 00).
4. Place fuel hose into catch bucket.
5. Turn MASTER switch ON (TM 9-2350-292-10).
6. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
7. Watch for fuel.
8. Turn FUEL SHUTOFF and MASTER switches OFF.
9. Reinstall quick-disconnect connector to fuel return line (WP 0587 00).
10. Reconnect fuel return line onto forward fuel tank quick-disconnect line connector (WP 0587 00).

Does fuel flow?

CONTINUED ON NEXT PAGE





AUXILIARY POWER UNIT FAILS TO KEEP RUNNING - CONTINUED 0019 00

CONTINUED FROM STEP B

yes / no

Notify Direct Support Maintenance.

C

1. Disconnect fuel hose from injection pump (WP 0617 00).
2. Place fuel hose into catch bucket.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
5. Watch for fuel flow and listen for injector pump actuation noise.
6. Turn FUEL SHUTOFF and MASTER switches OFF.

Was injector pump actuation noise heard?

yes / no

Notify Direct Support Maintenance.

D

Did fuel flow from fuel line?

yes / no

Go to WP 0021 00.

E

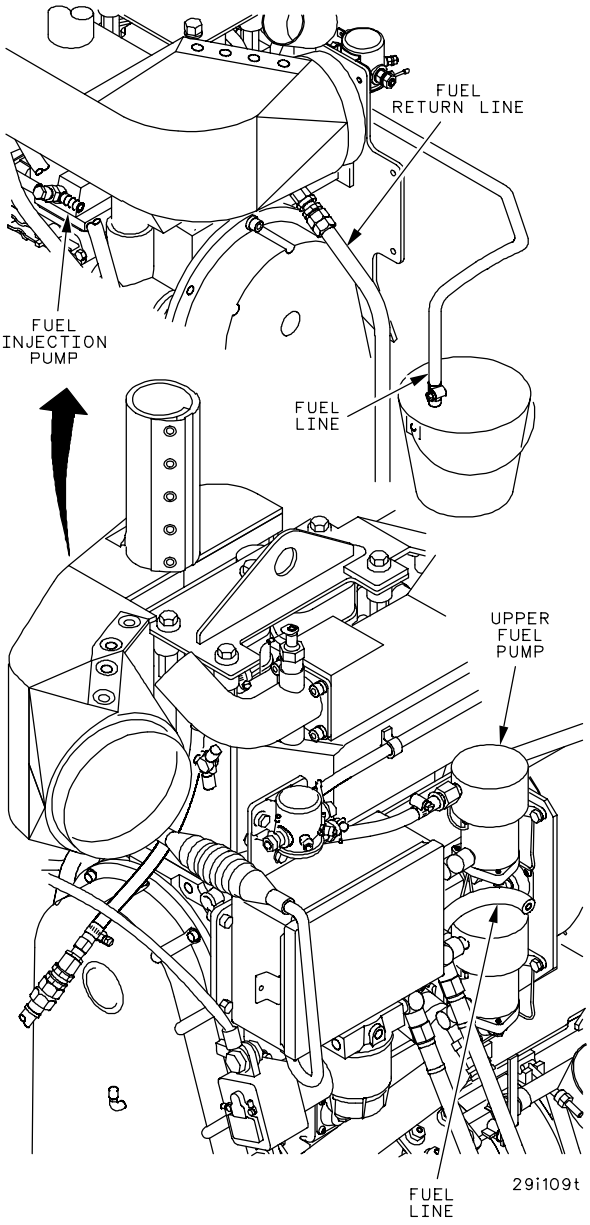
1. Reconnect fuel hose to injection pump (WP 0617 00).
2. Disconnect fuel line from input of upper fuel pump (WP 0616 00).
3. Place fuel hose into catch bucket.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
6. Watch for fuel flow.
7. Turn FUEL SHUTOFF and MASTER switches OFF.
8. Reinstall fuel line to input of upper fuel pump (WP 0616 00).

Did fuel flow?

yes / no

Go to Step H.

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FAILS TO KEEP RUNNING - CONTINUED 0019 00

CONTINUED FROM STEP E

F

1. Disconnect harness 3W730 lead 76B from upper fuel pump.
2. Place multimeter red lead on harness 3W730 lead 76B and black lead to ground.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
5. Check for voltage.
6. Turn FUEL SHUTOFF and MASTER switches OFF.
7. Reconnect harness 3W730 lead 76B to upper fuel pump.

Is 24 V dc present?

yes

Replace upper fuel pump (WP 0615 00). Verify fault is corrected.

no

G

1. Disconnect harness 3W730 connector P1 from APU relay box connector J1.
2. Place one multimeter lead on harness 3W730 P1 socket 5 and other lead on harness 3W730 lead 76B. Check for continuity.

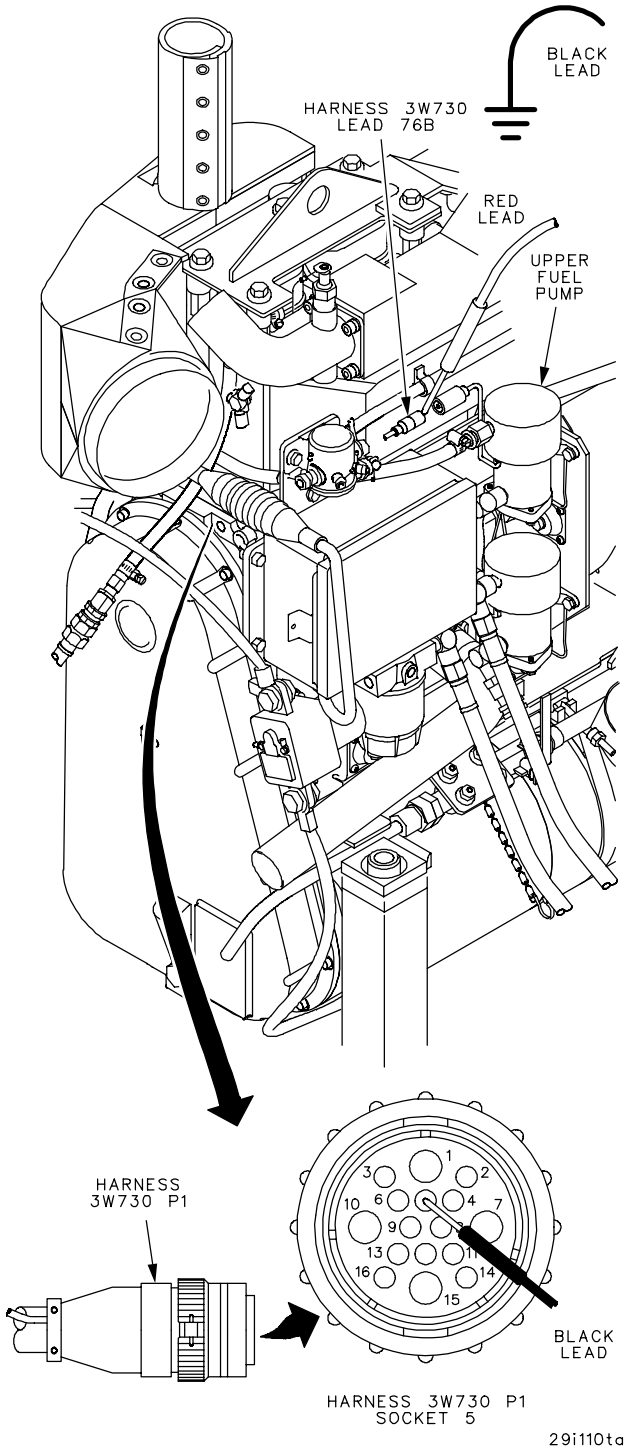
Is continuity present?

yes

Replace relay box (WP 0662 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.



CONTINUED ON NEXT PAGE

AUXILIARY POWER UNIT FAILS TO KEEP RUNNING - CONTINUED 0019 00

CONTINUED FROM STEP E

H

1. Disconnect fuel line at quick-disconnect between diesel fuel filter/water seperator and manual shutoff valve.
2. Remove quick-disconnect connector from fuel line.
3. Place fuel hose into catch bucket.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
6. Watch for fuel flow.
7. Turn FUEL SHUTOFF and MASTER switches OFF.

Did fuel flow?

yes

Replace fuel filter/water separator (WP 0616 00). Verify fault is corrected.

no

I

1. Reinstall quick-disconnect connector to fuel line.
2. Reconnect fuel line at quick-disconnect between diesel fuel filter/water separator and manual shutoff valve.
3. Disconnect quick-disconnect between hull mounted double bank fuel filters and lower fuel pump.
4. Place fuel hose into catch bucket.
5. Turn MASTER switch ON (TM 9-2350-292-10).
6. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
7. Watch for fuel flow.
8. Turn FUEL SHUTOFF and MASTER switches OFF.

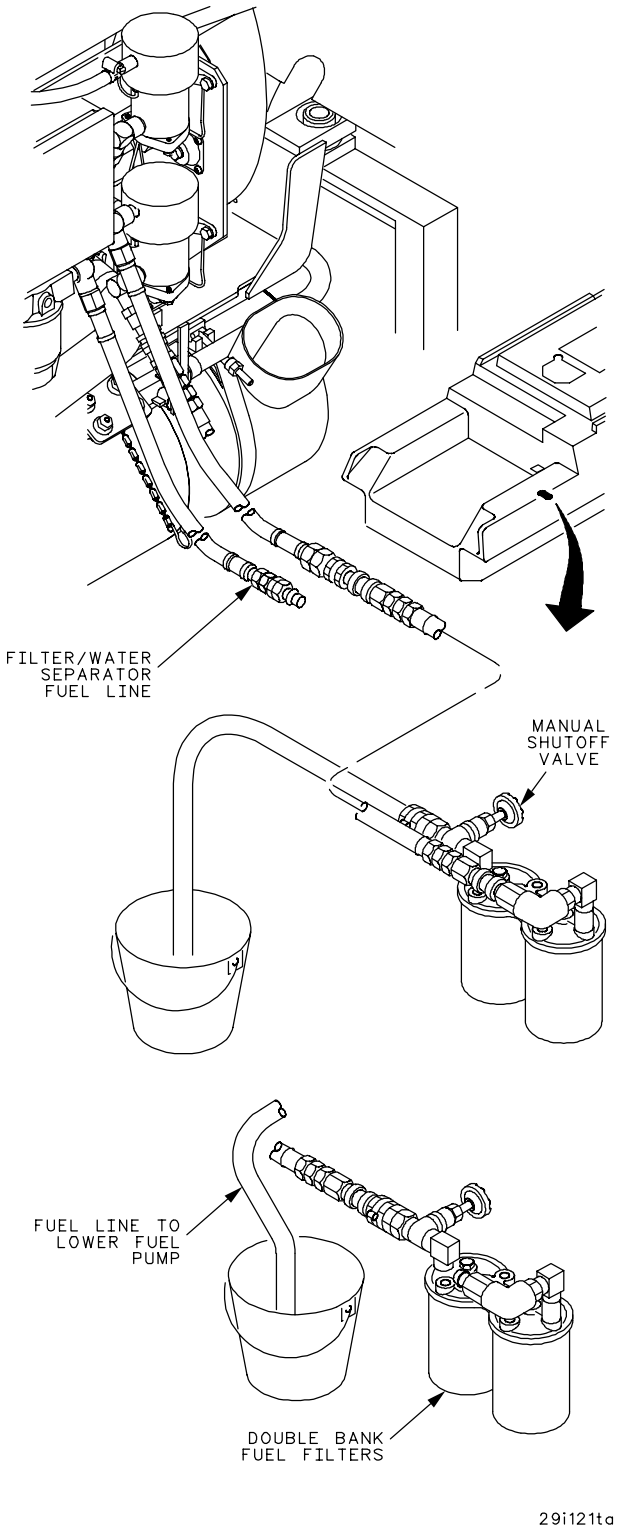
Did fuel flow?

yes

Replace fuel filter (WP 0611 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FAILS TO KEEP RUNNING - CONTINUED 0019 00

CONTINUED FROM STEP I

J

1. Reinstall quick-disconnect connector to fuel line.
2. Reconnect fuel line at quick-disconnect between hull mounted double bank fuel filters and lower fuel pump.
3. Disconnect harness 3W730 lead 76A from lower fuel pump.
4. Place multimeter red lead to harness 3W730 lead 76A and black lead to ground.
5. Turn MASTER switch ON (TM 9-2350-292-10).
6. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
7. Check for voltage.
8. Turn FUEL SHUTOFF and MASTER switches OFF.

Is 24 V dc present?

yes

Replace lower fuel pump (WP 0615 00). Verify fault is corrected.

no

K

1. Disconnect harness 3W730 P1 from relay box J1 connector.
2. Place multimeter red lead onto harness 3W730 lead 76A and black lead to harness 3W730 P1 socket 4.
3. Check for continuity.

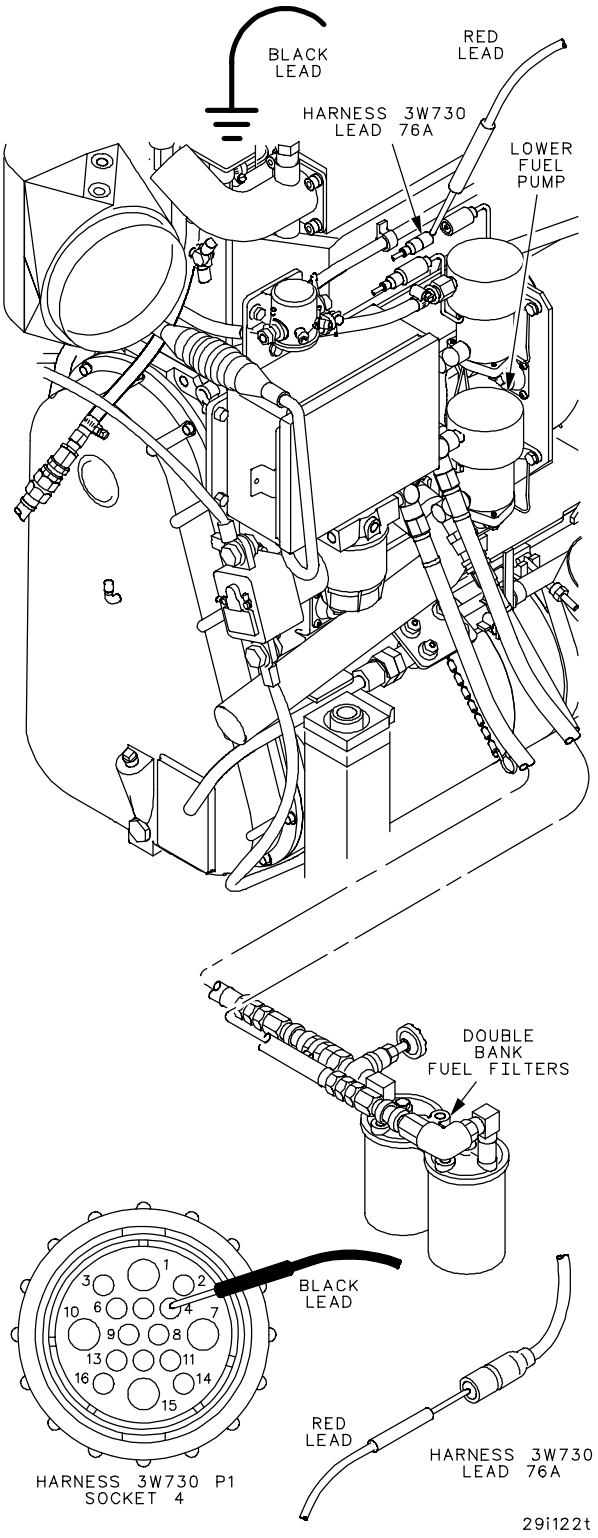
Is continuity present?

yes

Replace relay box (WP 0662 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.



END OF TASK

AUXILIARY POWER UNIT ENGINE HARD TO START IN COLD WEATHER. 0020 00

THIS WORK PACKAGE COVERS:

Auxiliary Power Unit Engine Hard To Start In Cold Weather

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Materials

Adhesive (item 25, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU cover removed (WP 0413 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

NOTE

Remove sealant from electrical terminals to ensure good contact for multimeter leads. Apply adhesive to all exposed terminals after troubleshooting is complete.

1. Disconnect lead 3W732 from preheater relay and from glow plug.
2. Place multimeter leads across lead 3W732.
3. Check for continuity.

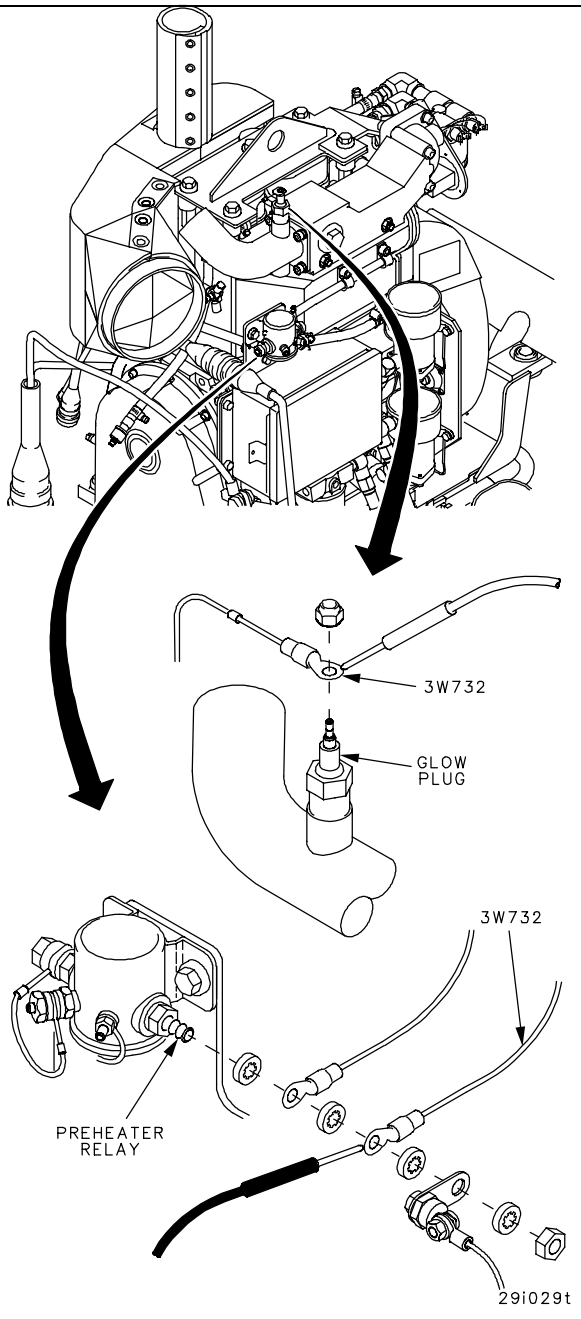
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0658 00) lead 3W732. Verify fault is corrected.

CONTINUED ON NEXT PAGE



PACKET NAME AUXILIARY POWER UNIT ENGINE HARD TO START IN COLD WEATHER - CONTINUED 0020 00

CONTINUED FROM STEP A

B

1. Reconnect lead 3W732 lead to preheater relay.
2. Place one multimeter lead on glow plug and other lead to ground.
3. Check for resistance.
4. Reconnect lead 3W732 to glow plug.

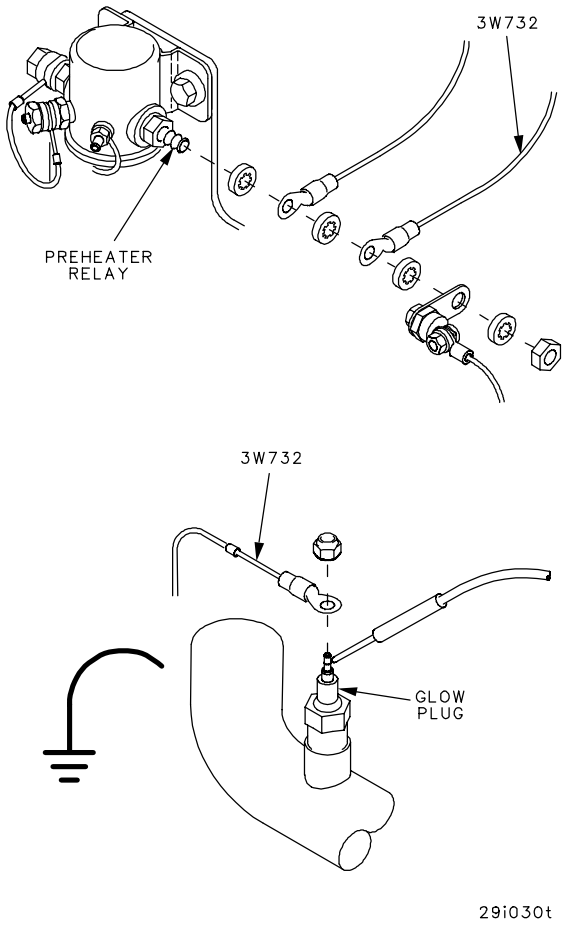
Is 4.75 ± 1.5 ohms indicated?

yes

Fault corrected.

no

Replace glow plug (WP 0629 00). Verify fault is corrected.



END OF TASK

AUXILIARY POWER UNIT FUEL SOLENOID FAILS TO ENERGIZE. 0021 00

THIS WORK PACKAGE COVERS:

Auxiliary Power Unit Fuel Solenoid Fails To Energize

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU cover removed (WP 0413 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Inspect solenoid and mechanical linkage for dirt, obstructions, and bent, broken, or missing mechanical linkage.

Is there an obstruction or bent, broken, or missing parts?

yes

Clear obstruction, clean dirt, and repair or replace bent, broken, or missing parts (WP 0665 00).

no

B

1. Disconnect harness 3W730 P2 from fuel solenoid.
2. Place multimeter red lead to harness 3W730 P2 ground and black lead to common ground E3.
3. Check for continuity.

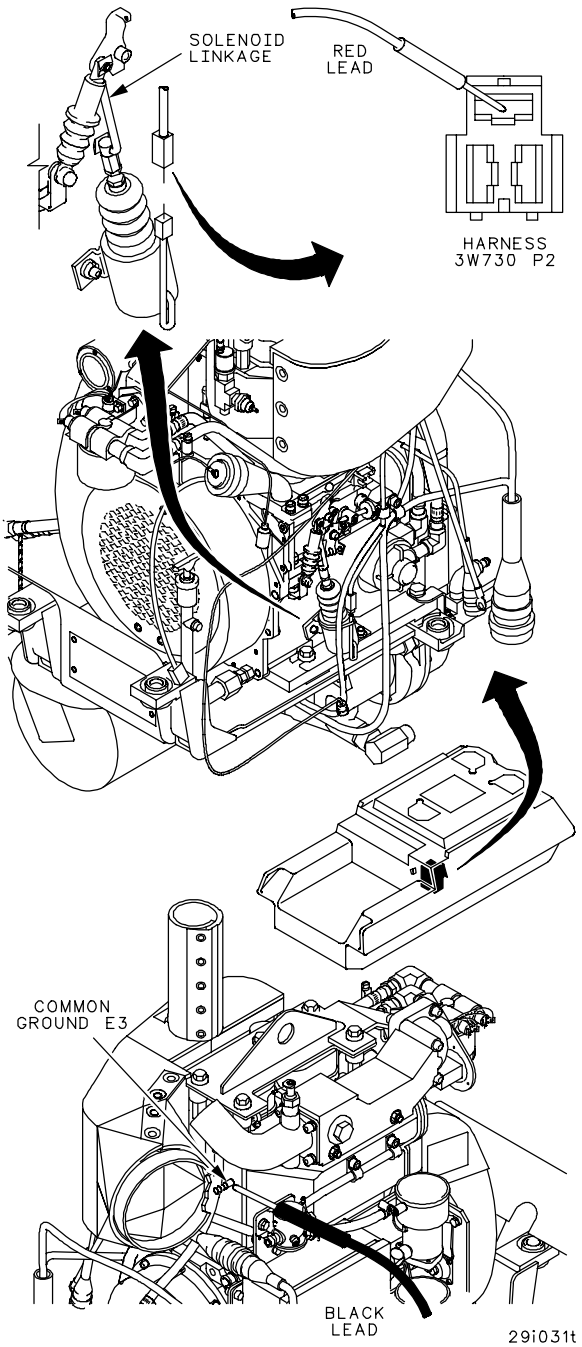
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT FUEL SOLENOID FAILS TO ENERGIZE - CONTINUED 0021 00

CONTINUED FROM STEP B

C

1. Place multimeter red lead on harness 3W730 P2 lead 665 contact and black lead to ground.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
4. Check for voltage.
5. Turn FUEL SHUTOFF and MASTER switches OFF.

Is voltage present? 24 V dc initially, then voltage drops to zero.

yes

Go to Step E.

no

D

1. Disconnect harness 3W730 from relay box J1 connector.
2. Place multimeter red lead to harness 3W730 P2 lead 665 and black lead to 3W730 P1 socket 10.
3. Check for continuity.

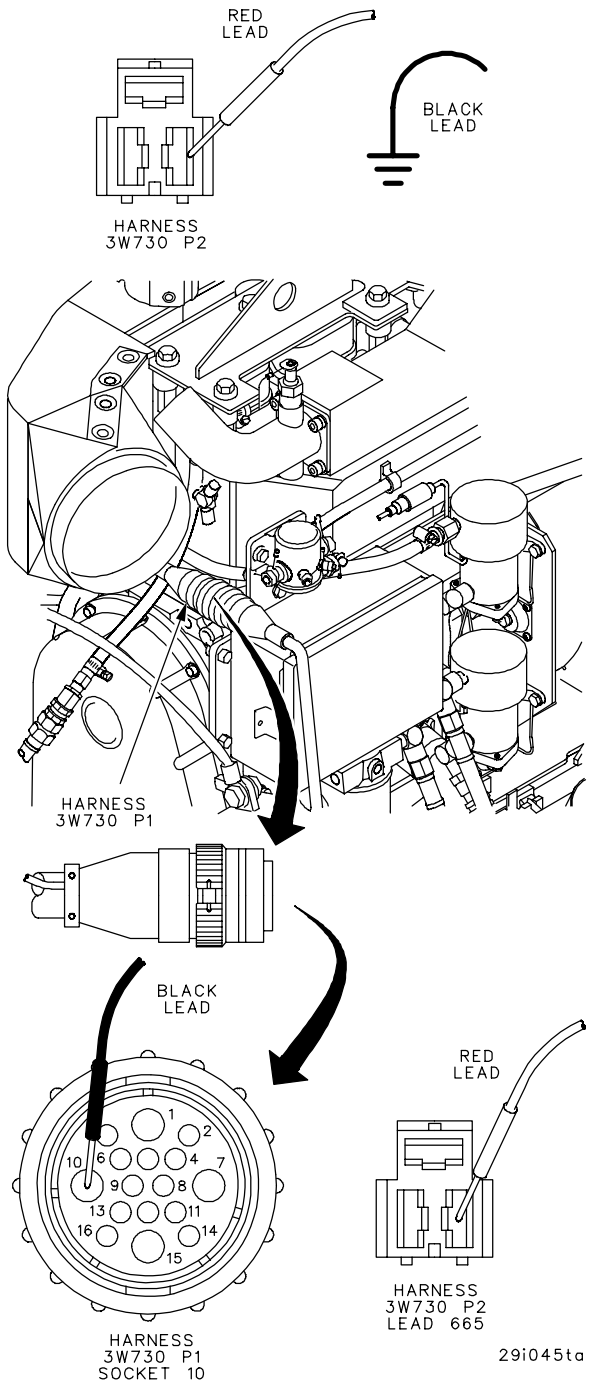
Is continuity present?

yes

Replace relay box (WP 0662 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.



CONTINUED ON NEXT PAGE

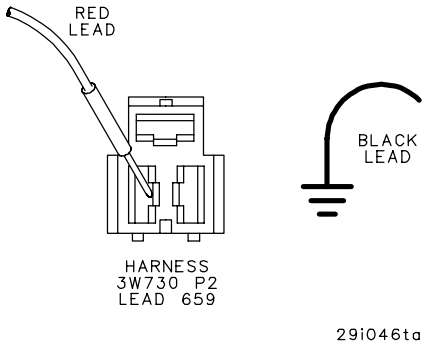
AUXILIARY POWER UNIT FUEL SOLENOID FAILS TO ENERGIZE - CONTINUED 0021 00

CONTINUED FROM STEP C

E

1. Place multimeter red lead on harness 3W730 P2 lead 659 contact and black lead to ground.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
4. Check for voltage.
5. Turn FUEL SHUTOFF and MASTER switches OFF.

Is 24 V dc present?



yes

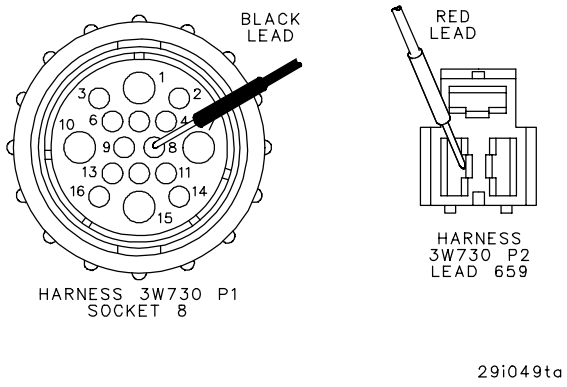
Replace fuel shutoff solenoid (WP 0665 00). Verify fault is corrected.

no

F

1. Disconnect harness 3W730 P1 from relay box J1 connector.
2. Place multimeter red lead to harness 3W730 P2 lead 659 and black lead to 3W730 P1 socket 8.
3. Check for continuity.

Is continuity present?



yes

Replace relay box (WP 0662 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.

END OF TASK

BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON. 0022 00

THIS WORK PACKAGE COVERS:

Batt/Gen Gauge Reads In Yellow Or Lower Red With Apu Running And Apu Gen Switch On

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Materials

Adhesive (item 25, WP 0716 00)

Equipment Conditions

APU shut down (TM 9-2350-292-10)
Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU removed and APU ground hop kit installed (WP 0589 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Start APU (TM 9-2350-292-10).
3. Place multimeter red lead on center conductor of slave receptacle and black lead to ground. Check for voltage.
4. Shut off APU (TM 9-2350-292-10).
5. Turn MASTER switch OFF.

Is 28 V dc present?

yes

Go to WP 0085 00.

no

B

1. Remove splash cover protecting voltage regulator (WP 0239 00).
2. Disconnect harness 3W710 P1 from APU voltage regulator, but do not remove ground lead.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Start APU (TM 9-2350-292-10).
5. Place multimeter red lead on harness 3W710 pin A and black lead to ground. Check for voltage.
6. Shut off APU (TM 9-2350-292-10).
7. Turn MASTER switch OFF.

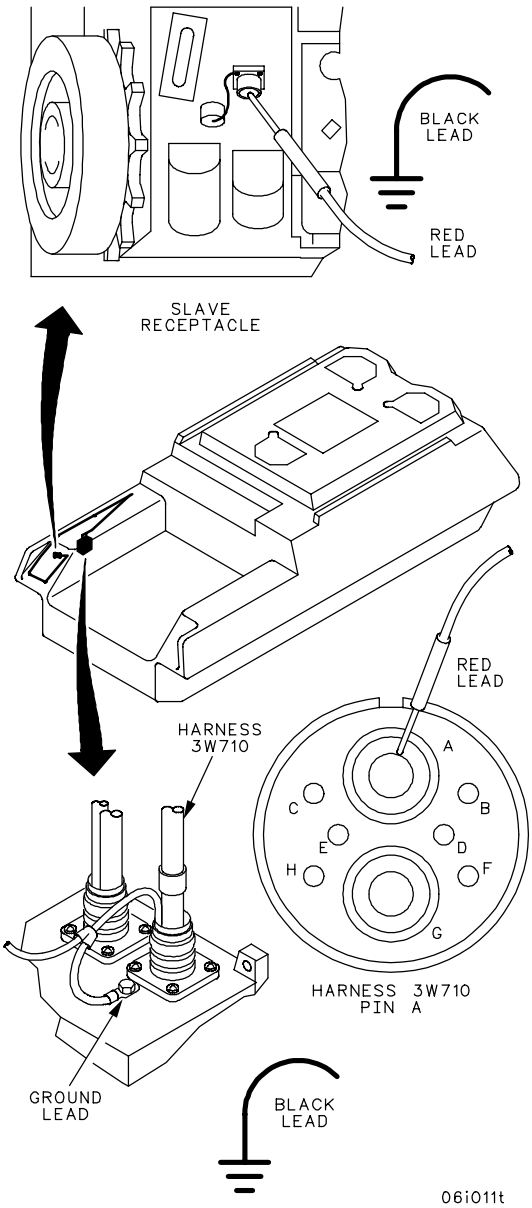
Is 28 V dc present?

yes

Repair (WP 0290 00) or replace (WP 0312 00) harness 3W710. Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED 0022 00

CONTINUED FROM STEP B

C

NOTE

Remove sealant from electrical terminals to ensure good contact for multimeter leads. Apply adhesive to all exposed terminals after troubleshooting is complete.

1. Reconnect harness 3W710 to APU voltage regulator.
2. Disconnect harness 3W711 P1 from APU engine disconnect.
3. Place one multimeter on APU generator/starter terminal A and other lead on harness 3W711 P1 pin F. Check for continuity.

Is continuity present?

yes — no

Repair (WP 0290 00) or replace (WP 0649 00) harness 3W711. Verify fault is corrected.

D

1. Disconnect harness 3W702 J1 from APU engine disconnect and 3W702 P3 from hydraulic pressure switch.
2. Place one multimeter lead in harness 3W702 J1 socket F and other lead in harness 3W702 P3 socket B. Check for continuity.

Is continuity present?

yes — no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

E

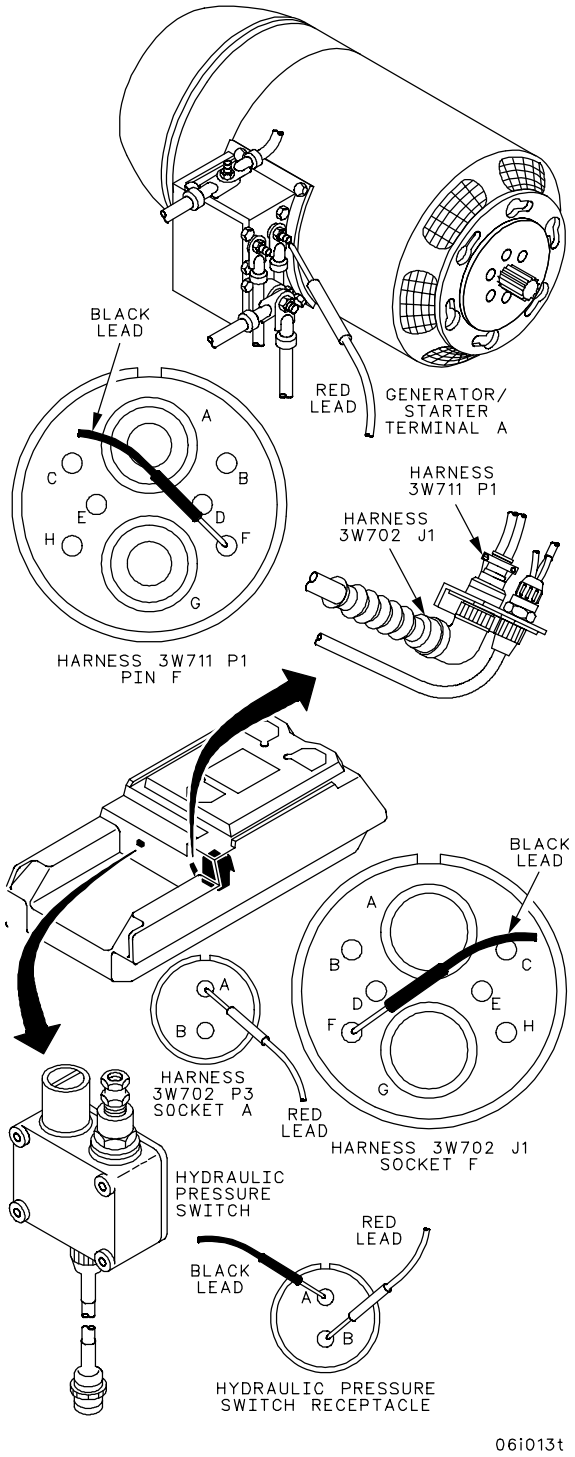
1. Reconnect harness 3W711 P1 to APU engine disconnect.
2. Place one multimeter lead on each hydraulic pressure switch receptacle pin. Check for continuity.

Is continuity present?

yes — no

Repair or replace hydraulic pressure switch (WP 0564 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED

0022 00

CONTINUED FROM STEP E

F

1. Disconnect harness 3W702 P4 from harness 3W132 J1.
2. Place one multimeter lead in harness 3W702 P4 socket B and other lead on harness 3W702 P3 pin A. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

G

1. Reconnect harness 3W702 P3 to hydraulic pressure switch.
2. Open air intake grilles above battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W132 P1 from bulkhead disconnect.
4. Place one multimeter lead on harness 3W132 J1 pin B and other lead in harness 3W132 P1 socket F. Check for continuity.

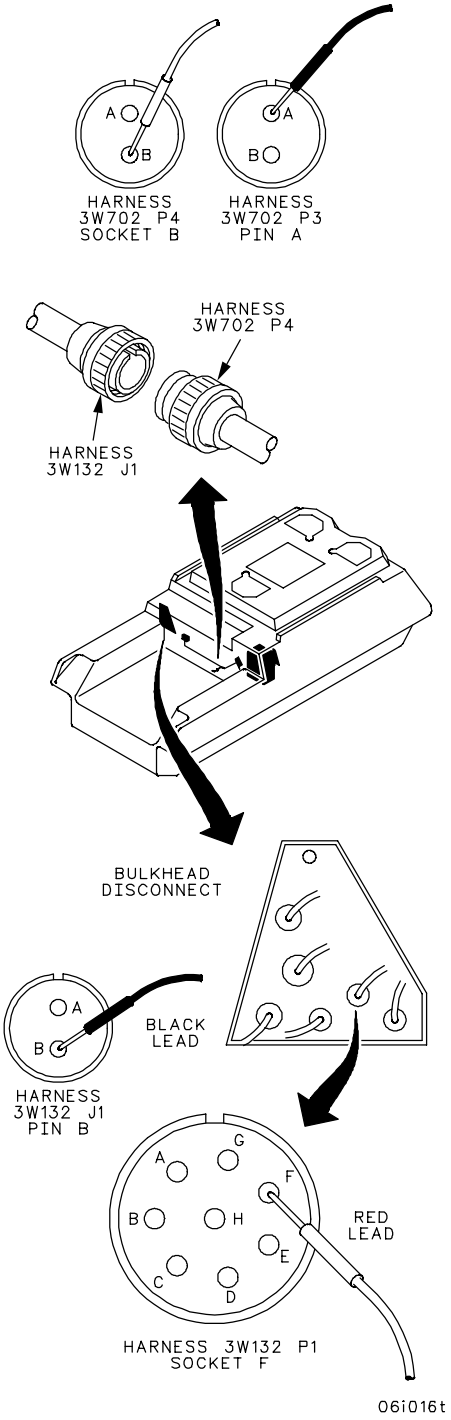
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0293 00) harness 3W132. Verify fault is corrected.

CONTINUED ON NEXT PAGE



BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED

0022 00

CONTINUED FROM STEP G

H

1. Disconnect harness 4W700 P1 from APU control box and disconnect harness 4W101 P6 from bulkhead.
2. Place one multimeter lead in harness 4W101 P6 socket F and other lead in harness 4W700 P1 socket L. Check for continuity.

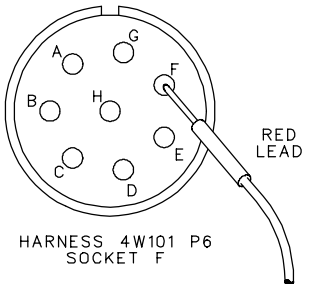
Is continuity present?

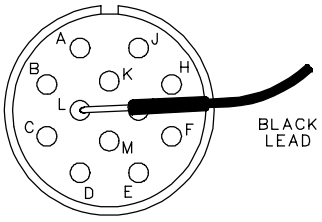
yes

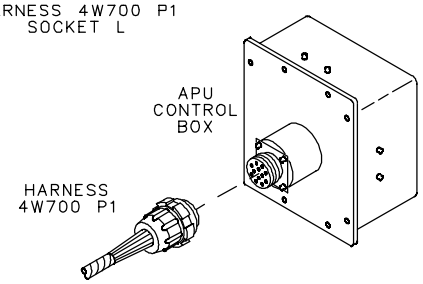
no

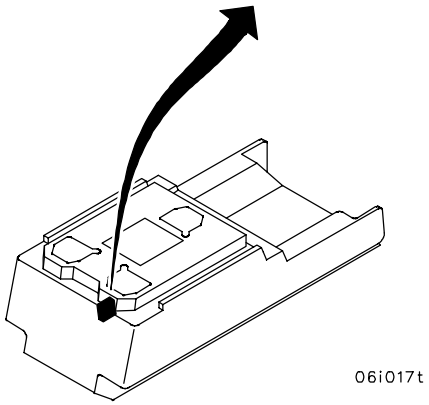
Repair (WP 0290 00) or replace (WP 0315 00) harness 4W101. Verify fault is corrected.

CONTINUED ON NEXT PAGE









BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED 0022 00

CONTINUED FROM STEP H

I

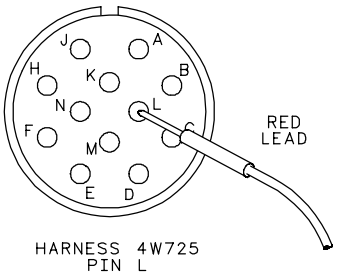
1. Open APU control box (WP 0247 00).
2. Disconnect lead 61A from switch SW4 terminal 1.
3. Place one multimeter lead on harness 4W725 receptacle pin L and other lead on lead 61A connector. Check for continuity.

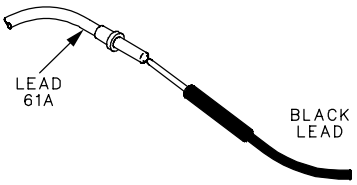
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.





J

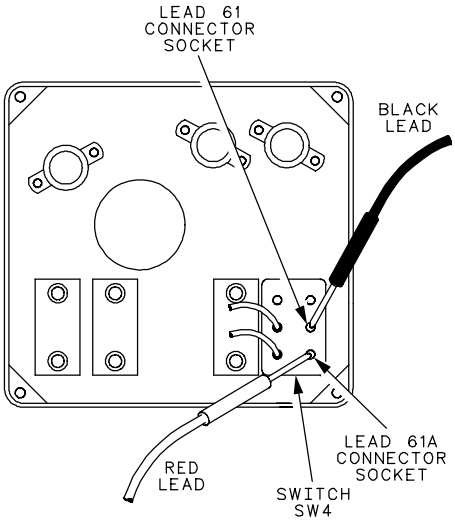
1. Disconnect lead 61 from APU GEN switch terminal 2.
2. Turn APU GEN switch ON (TM 9-2350-292-10).
3. Place one multimeter lead in APU GEN switch lead 61 connector socket and other lead in lead 61A APU GEN switch connector pin socket. Check for continuity.

Is continuity present?

yes

no

Replace APU GEN switch SW4 (WP 0247 00). Verify fault is corrected.



06i018t

CONTINUED ON NEXT PAGE

BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED 0022 00

CONTINUED FROM STEP J

K

1. Reconnect lead 61A to APU GEN switch.
2. Place one multimeter lead in lead 61 APU GEN switch connector socket and other lead on harness 4W725 receptacle pin H. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.

L

1. Reconnect lead 61 to APU GEN switch.
2. Place one multimeter lead in harness 4W700 P1 socket H and other lead on harness 4W101 P6 socket G. Check for continuity.

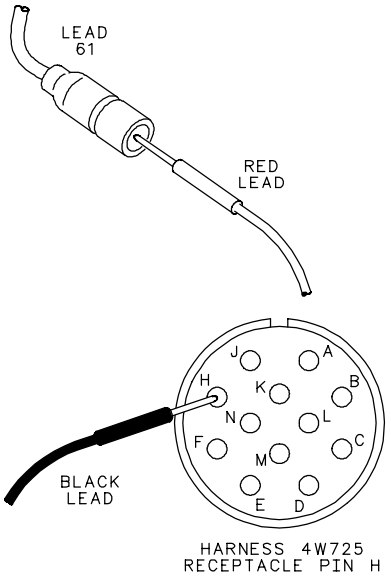
Is continuity present?

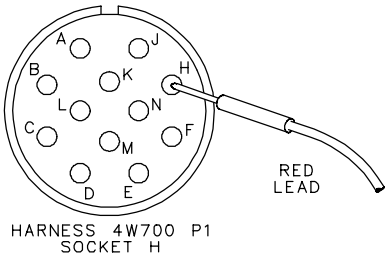
yes

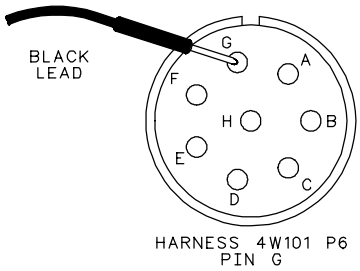
no

Repair (WP 0290 00) or replace (WP 0315 00) harness 4W101. Verify fault is corrected.

CONTINUED ON NEXT PAGE







06i019t

BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED 0022 00

CONTINUED FROM STEP L

M

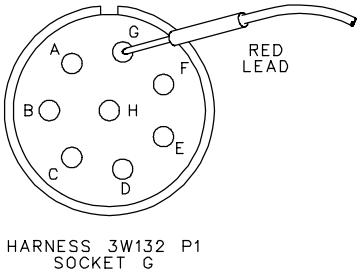
1. Reconnect harness 4W700 P1 to APU control box.
2. Disconnect harness 3W702 P2 from generator side of APU voltage regulator.
3. Place one multimeter lead in harness 3W132 P1 socket G and other lead on harness 3W702 P2 pin F. Check for continuity.

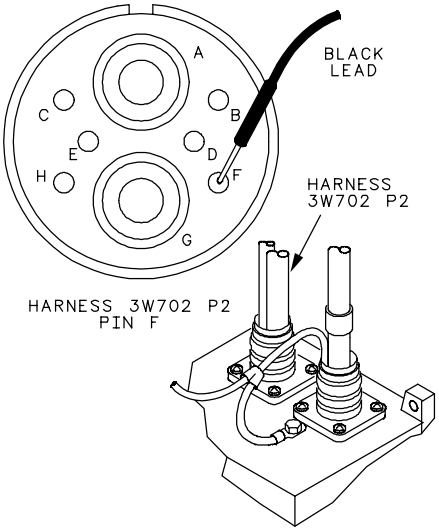
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0293 00) harness 3W132. Verify fault is corrected.





N

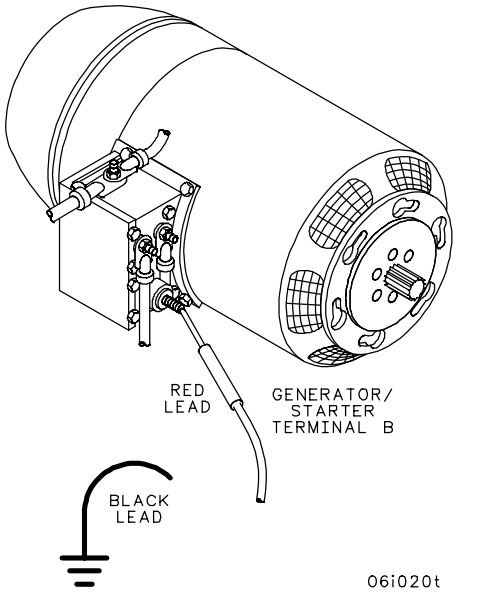
1. Reconnect harness 3W132 P1 to bulkhead disconnect.
2. Disconnect leads 62 and 66 from APU generator/starter terminal B.
3. Turn MASTER switch ON, APU GEN switch OFF, and start APU (TM 9-2350-292-10).
4. Place multimeter red lead on generator/starter terminal B and black lead to ground. Check for voltage.
5. Shut off APU and turn MASTER switch OFF (TM 9-2350-292-10).

Is 0.5 to 5.0 V dc present?

yes

no

Replace APU generator/ starter (WP 0635 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED 0022 00

CONTINUED FROM STEP N

O

1. Disconnect harness 3W711 P1 from APU engine disconnect.
2. Place one multimeter lead on generator/starter terminal B and other lead on harness 3W711 P1 pin G. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0649 00) harness 3W711. Verify fault is corrected.

P

1. Reconnect lead 62 to generator/starter terminal B.
2. Place one multimeter lead in harness 3W702 J1 socket G and other lead on harness 3W702 P2 pin A. Check for continuity.

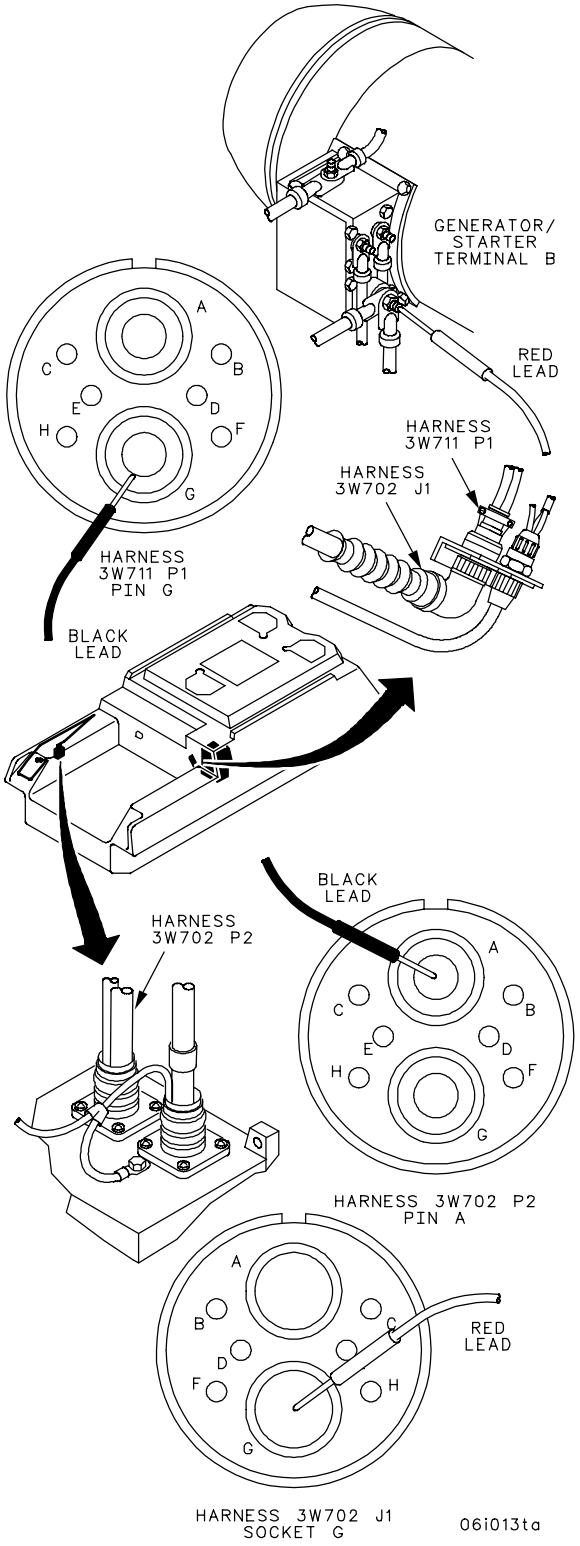
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

CONTINUED ON NEXT PAGE



BATT/GEN GAUGE READS IN YELLOW OR LOWER RED WITH APU RUNNING AND APU GEN SWITCH ON - CONTINUED 0022 00

CONTINUED FROM STEP P

R

1. Disconnect lead 478A from generator/starter terminal D.
2. Place one multimeter lead on lead 478A connector and other lead on harness 3W711 pin H. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0649 00) harness 3W711. Verify fault is corrected.

Q

Place one multimeter lead in harness 3W702 J1 socket H and other lead on harness 3W702 P2 pin C. Check for continuity.

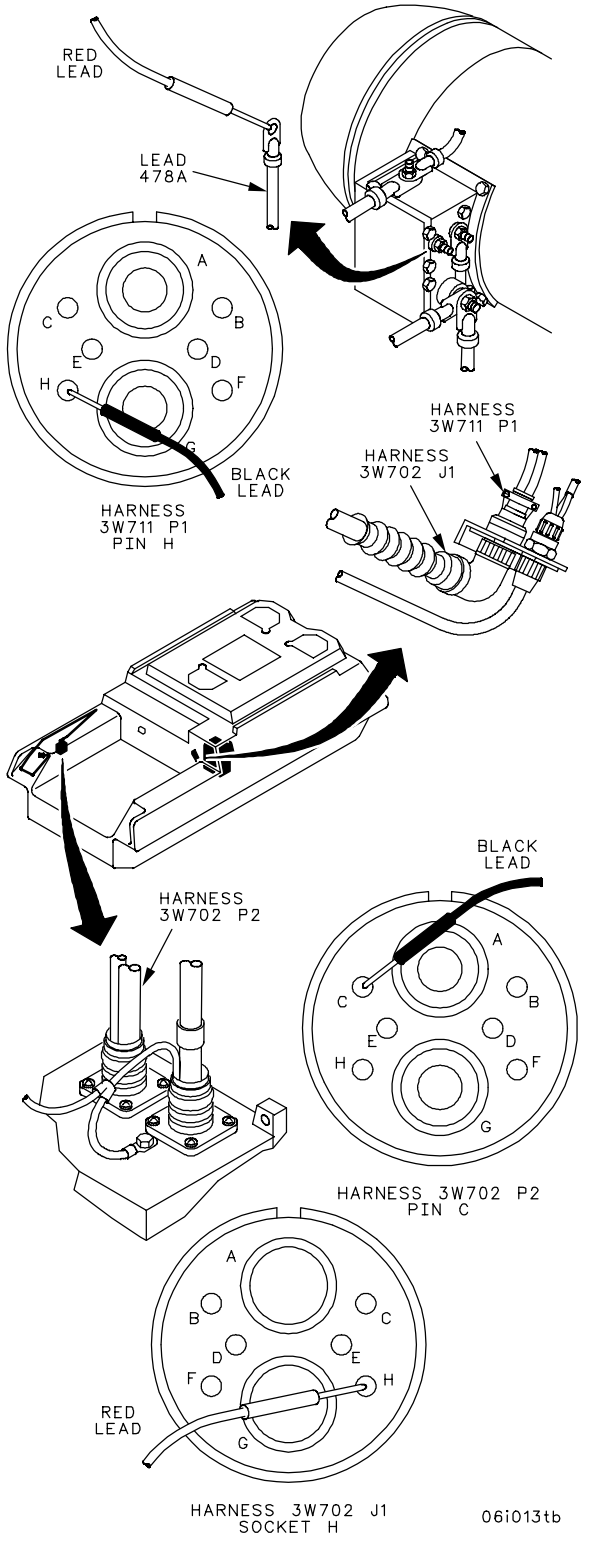
Is continuity present?

yes

Replace APU voltage regulator (WP 0239 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.



END OF TASK

APU CONTROL BOX HIGH AIR TEMP INDICATOR DOES NOT LIGHT. 0023 00

THIS WORK PACKAGE COVERS:

APU Control Box High Air Temp Indicator Does Not Light

INITIAL SETUP:

Tools and special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

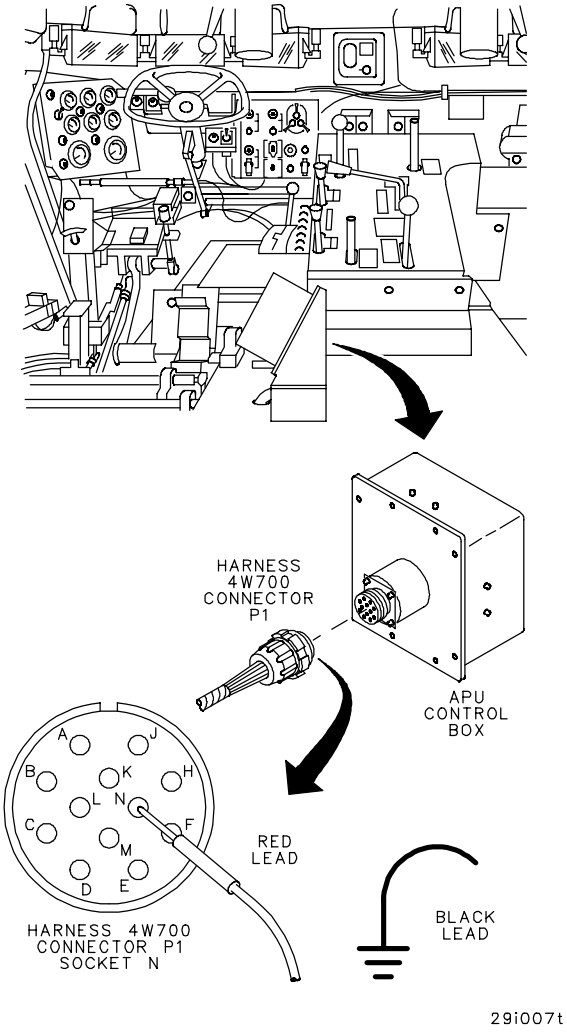
1. Disconnect harness 4W700 connector P1 at the APU control box.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place red multimeter lead on harness 4W700 P1 socket N and black multimeter lead on vehicle ground. Check for voltage.
4. Turn MASTER switch OFF.

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.



CONTINUED ON NEXT PAGE

APU CONTROL BOX HIGH AIR TEMP INDICATOR DOES NOT LIGHT - CONTINUED 0023 00

CONTINUED FROM STEP A

B

1. Reconnect harness 4W700 connector P1 at the APU control box.
2. Open APU door (TM 9-2350-292-10).
3. Disconnect lead 3W705 from harness 3W704 lead 493.
4. Temporarily connect a jumper wire from harness 3W704 lead 493 connector to vehicle ground.
5. Turn MASTER switch ON (TM 9-2350-292-10).
6. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
7. Observe HIGH AIR TEMP indicator light (TM 9-2350-292-10).
8. Turn FUEL SHUTOFF and MASTER switches OFF.

Did HIGH AIR TEMP indicator light?

yes

no

Go to Step D.

C

1. Disconnect the temporary jumper wire from harness 3W704 lead 493.
2. Remove APU cover (WP 0413 00).
3. Remove lead 3W705 from APU (WP 0645 00).
4. Place one multimeter lead on each end of lead 3W705. Check for continuity?

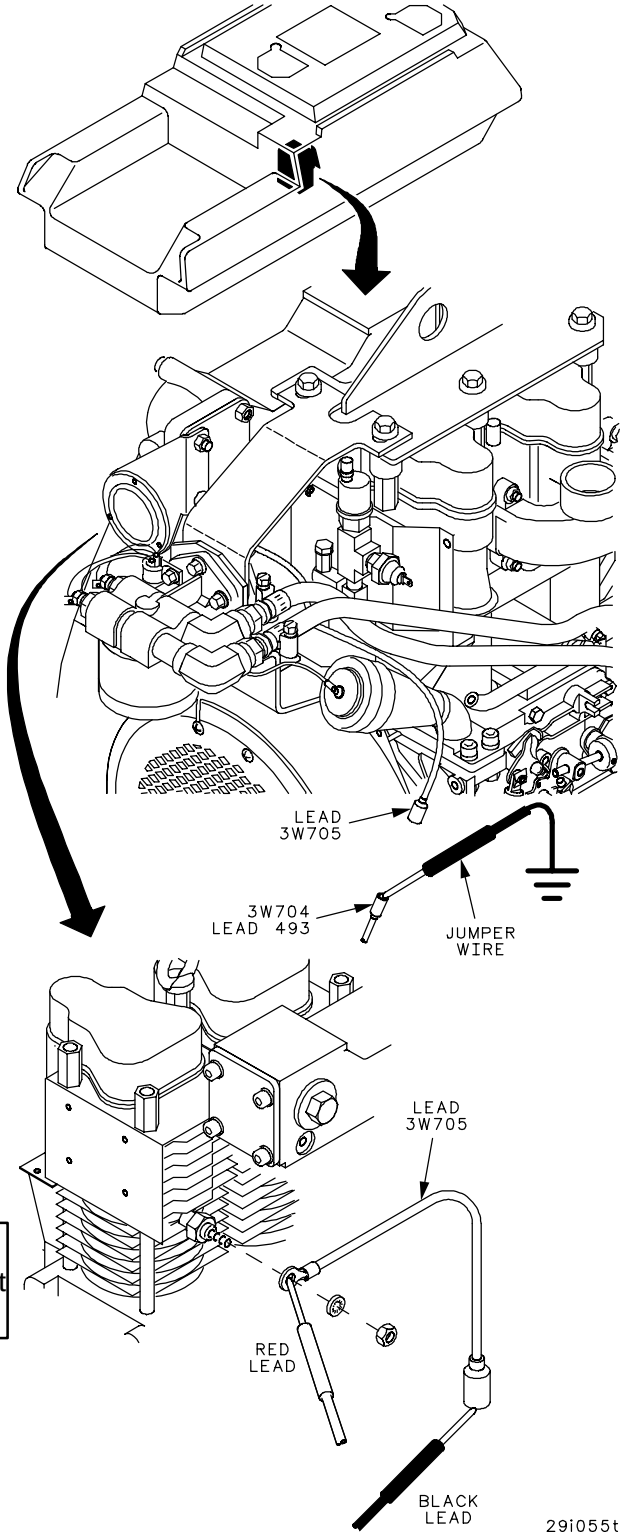
Is continuity present?

yes

no

Replace APU high air temperature switch (WP 0633 00). Verify fault is corrected.

Replace lead 3W705 (WP 0645 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

APU CONTROL BOX HIGH AIR TEMP INDICATOR DOES NOT LIGHT - CONTINUED 0023 00

CONTINUED FROM STEP B

D

1. Remove jumper wire from harness 3W704.
2. Open forward air intake grilles (TM 9-2350-292-10).
3. Disconnect harness 3W704 connector P1 at APU engine disconnect.
4. Place one multimeter lead on harness 3W704 P1 socket C and the other multimeter lead on harness 3W704 lead 493 connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0643 00) harness 3W704. Verify fault is corrected.

E

1. Reconnect harness 3W704 lead 493 to lead 3W705.
2. Open air intake grilles over battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W702 P1 at bulkhead disconnect.
4. Place one multimeter lead on harness 3W702 P1 socket D and other multimeter lead on harness 3W702 J2 pin C at the APU engine disconnect. Check for continuity.

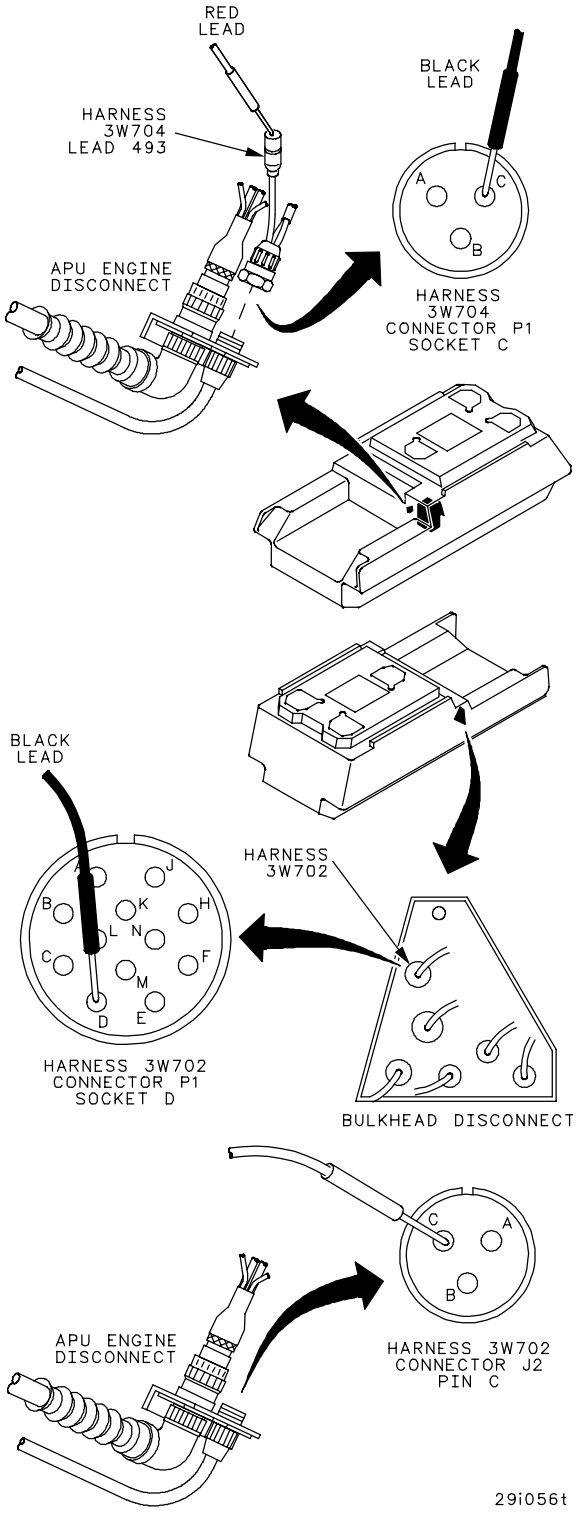
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

CONTINUED ON NEXT PAGE



APU CONTROL BOX HIGH AIR TEMP INDICATOR DOES NOT LIGHT - CONTINUED 0023 00

CONTINUED FROM STEP E

F

1. Reconnect harness 3W704 P1 at APU engine disconnect.
2. Disconnect harness 4W700 connector P1 at APU control box.
3. Place one multimeter lead on harness 3W702 P1 bulkhead receptacle pin D and the other multimeter lead on harness 4W700 P1 socket J. Check for continuity.

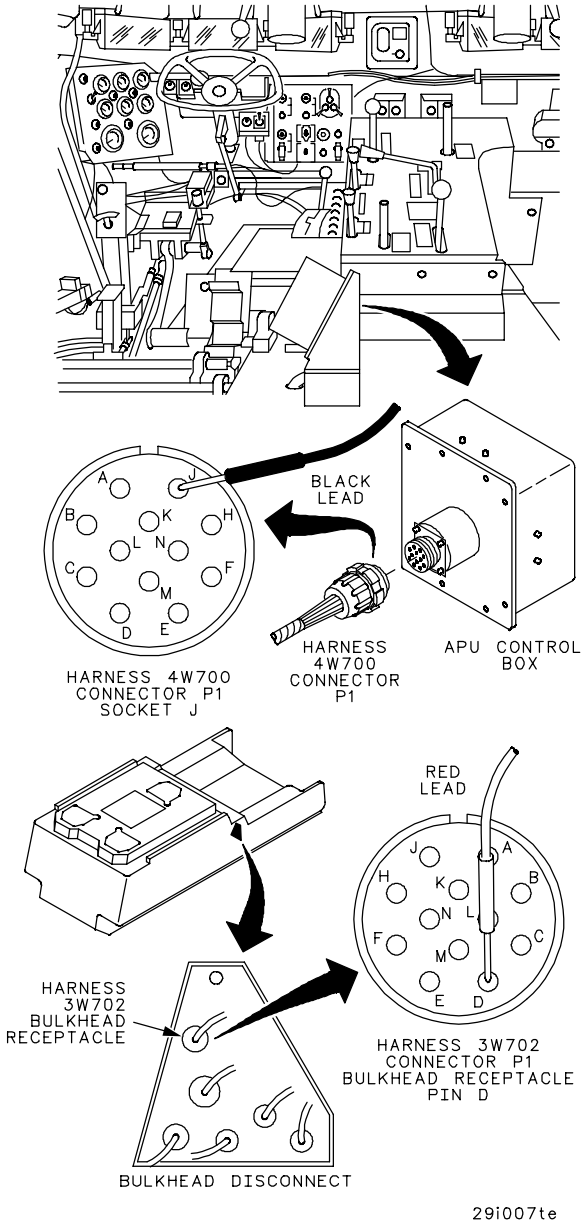
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.

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APU CONTROL BOX HIGH AIR TEMP INDICATOR DOES NOT LIGHT - CONTINUED 0023 00

CONTINUED FROM STEP F

G

1. Remove APU control box from vehicle (WP 0247 00).
2. Remove APU control box rear panel (WP 0247 00).
3. Disconnect lead 421 from FUEL SHUTOFF switch S3.
4. Remove connector lead 27 from HIGH AIR TEMP indicator L1.
5. Place one multimeter lead on lead 421 connector socket and the other multimeter lead on lead 27 indicator connector socket. Check for continuity.
6. Connect lead 421 to switch S3.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.

H

1. Place one multimeter lead on lead 493 indicator connector socket and the other multimeter lead on harness 4W725 receptacle pin J. Check for continuity.
2. Connect harness W725 to harness W700.

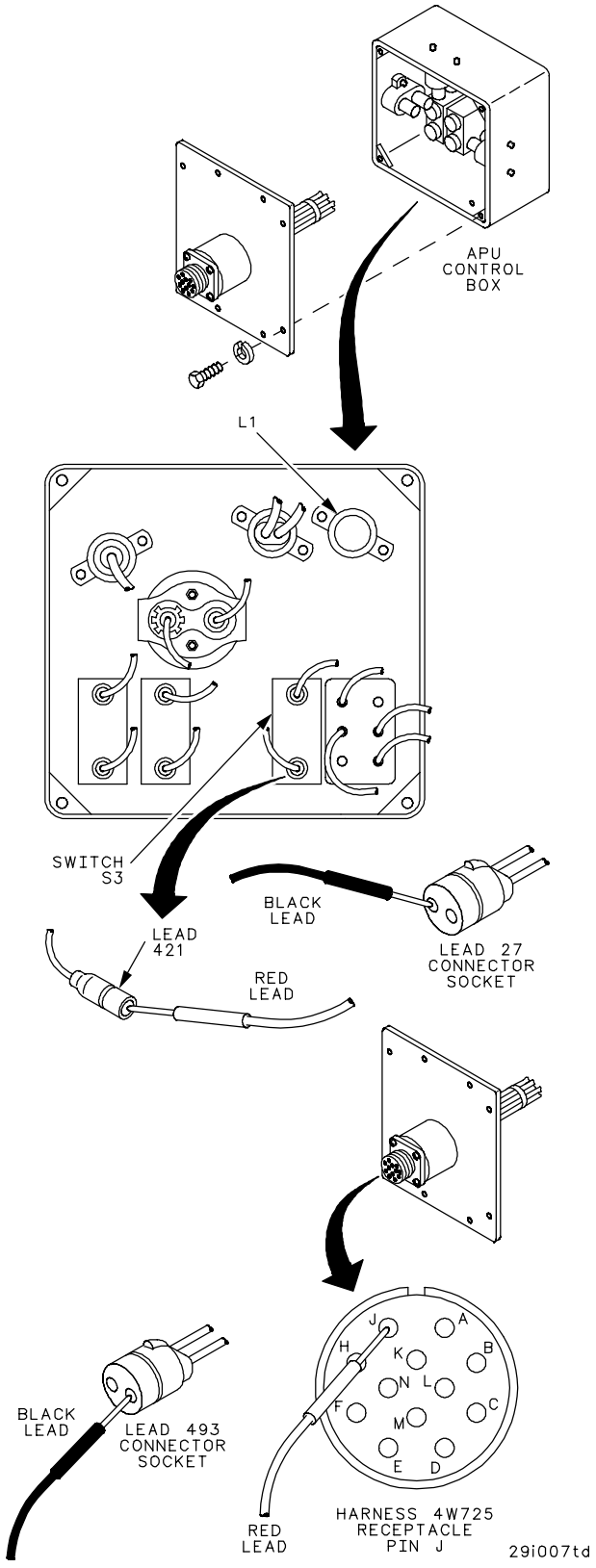
Is continuity present?

yes

no

Replace HIGH AIR TEMP indicator socket assembly (WP 0247 00). Verify fault is corrected.

Repair (WP 0247 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.



END OF TASK

APU CONTROL BOX LOW OIL PRESS INDICATOR DOES NOT LIGHT WHEN APU OIL PRESSURE IS LOW. 0024 00

THIS WORK PACKAGE COVERS:

APU Control Box Low Oil Press Indicator Does Not LIght When APU Oil Pressure is Low

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove APU LOW OIL PRESSure indicator lamp (WP 0247 00).
2. Turn MASTER switch and FUEL SHUTOFF switch ON (TM 9-2350-292-10).
3. Place red multimeter lead on lamp holder contact and black multimeter lead to ground. Check for voltage.
4. Turn FUEL SHUTOFF and MASTER switches OFF.

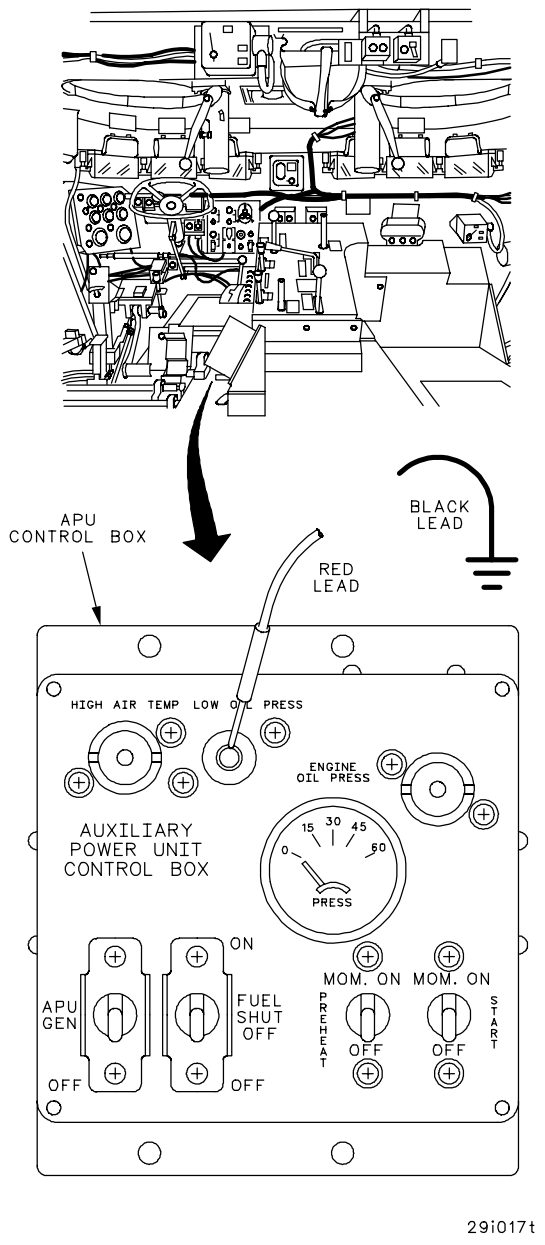
Is 24 V dc present?

yes

Replace LOW OIL PRESSure indicator lamp (WP 0247 00). Verify fault is corrected.

no

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29i017t

APU CONTROL BOX LOW OIL PRESS INDICATOR DOES NOT LIGHT WHEN APU OIL PRESSURE IS LOW - CONTINUED 0024 00

CONTINUED FROM STEP A

B

1. Replace LOW OIL PRESSure indicator lamp (WP 0247 00).
2. Remove APU cover (WP 0413 00) and open forward air intake grilles (TM 9-2350-292-10).
3. Disconnect harness 3W704 lead 420A from low oil pressure switch.
4. Temporarily connect a jumper wire from harness 3W704 lead 420A connector to vehicle ground.
5. Turn MASTER switch ON (TM 9-2350-292-10).
6. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
7. Observe LOW OIL PRESS indicator light (TM 9-2350-292-10).
8. Turn FUEL SHUTOFF and MASTER switches OFF.

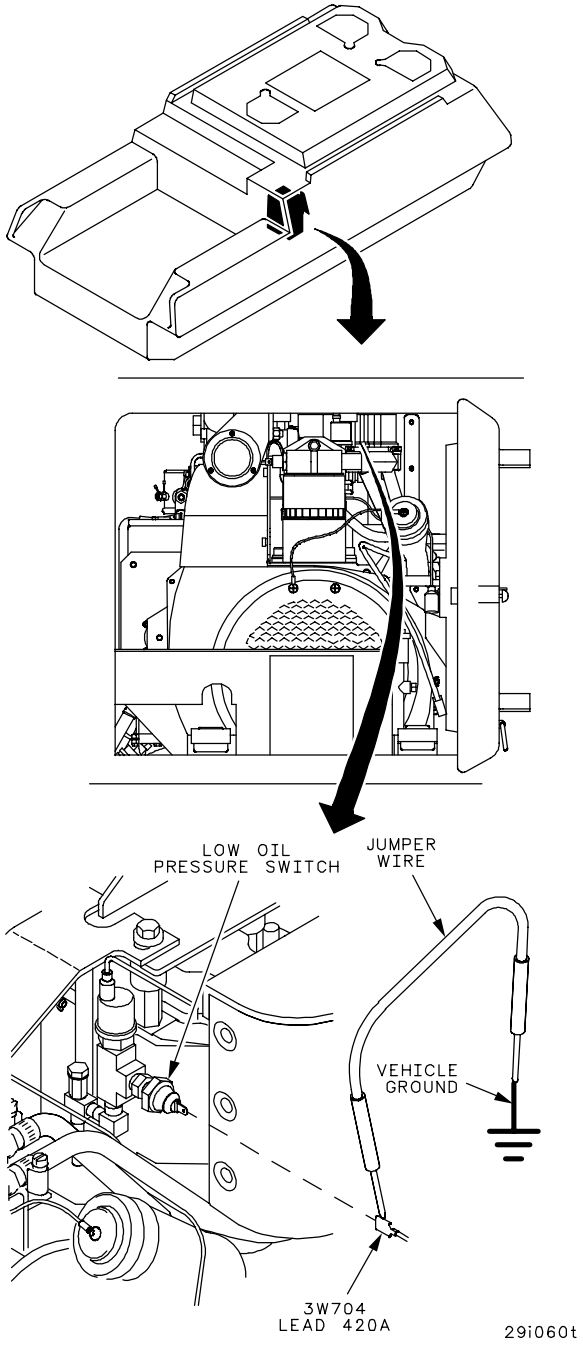
Did LOW OIL PRESS indicator light?

yes

Replace LOW OIL PRESSure switch (WP 0632 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



APU CONTROL BOX LOW OIL PRESS INDICATOR DOES NOT LIGHT WHEN APU OIL PRESSURE IS LOW - CONTINUED 0024 00

CONTINUED FROM STEP B

C

1. Disconnect the temporary jumper wire.
2. Disconnect harness 3W704 connector P1 at APU engine disconnect.
3. Place multimeter red lead on harness 3W704 P1 socket B and black lead on harness 3W704 lead 420A connector. Check for continuity.

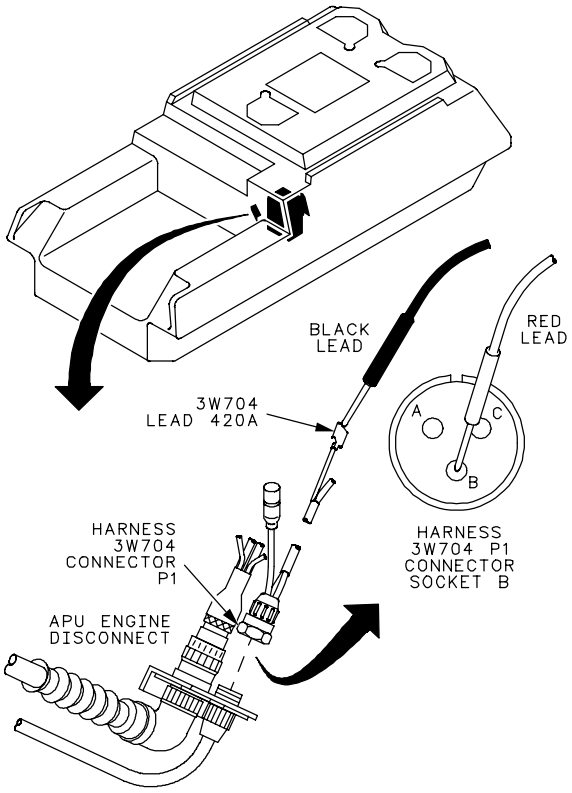
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0643 00) harness 3W704. Verify fault is corrected.

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APU CONTROL BOX LOW OIL PRESS INDICATOR DOES NOT LIGHT WHEN APU OIL PRESSURE IS LOW - CONTINUED 0024 00

CONTINUED FROM STEP C

D

1. Open air intake grille over battery compartment (TM 9-2350-292-10).
2. Disconnect harness 3W702 P1 at bulkhead disconnect.
3. Place multimeter red lead on harness 3W702 P1 socket C and black lead on harness 3W702 J2 pin B. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

E

1. Disconnect harness 4W700 P1 from APU control box.
2. Reconnect harness 3W704 P1 to APU engine disconnect.
3. Place multimeter red lead on bulkhead harness 4W700 P2 pin C and black lead on harness 4W700 P1 socket K. Check for continuity.

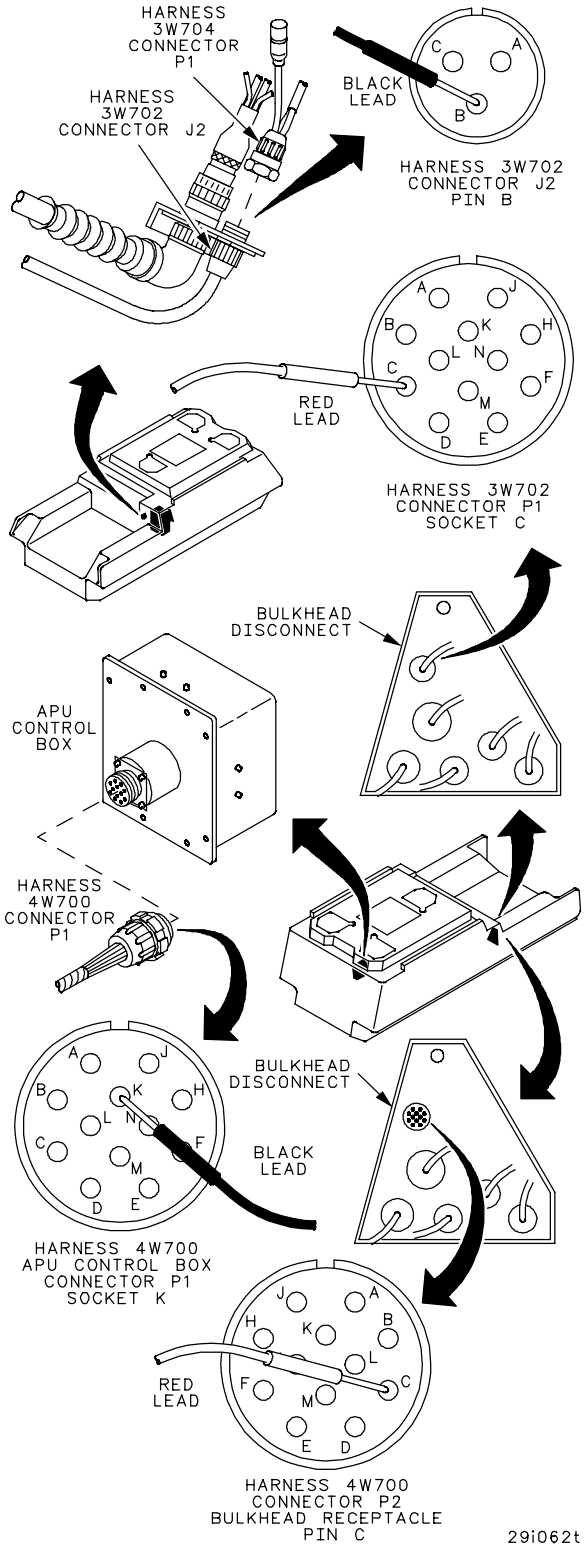
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.

CONTINUED ON NEXT PAGE



APU CONTROL BOX LOW OIL PRESS INDICATOR DOES NOT LIGHT WHEN APU OIL PRESSURE IS LOW - CONTINUED 0024 00

CONTINUED FROM STEP E

F

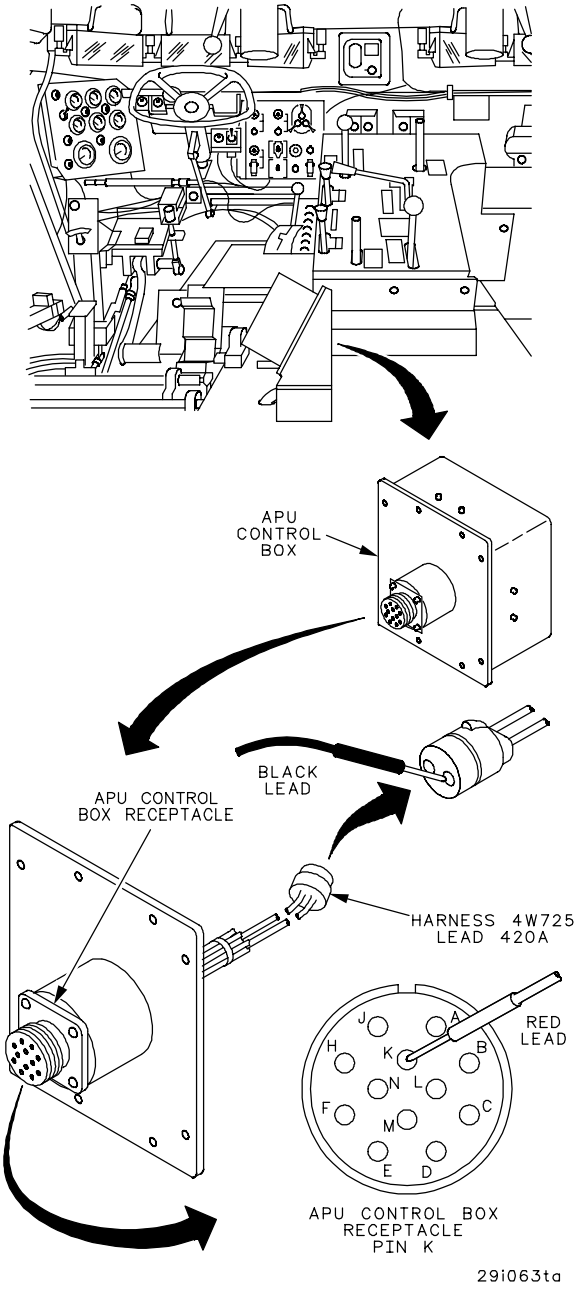
1. Reconnect harness 4W700 P2 at bulkhead disconnect.
2. Remove APU control box from the vehicle (WP 0247 00).
3. Remove APU control box rear panel (WP 0247 00).
4. Disconnect harness 4W725 lead 420A from LOW OIL PRESS indicator L2.
5. Place multimeter red lead onto 4W725 pin K and black lead on harness 4W725 lead 420A.
6. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.



CONTINUED ON NEXT PAGE

APU CONTROL BOX LOW OIL PRESS INDICATOR DOES NOT LIGHT WHEN APU OIL PRESSURE IS LOW - CONTINUED 0024 00

CONTINUED FROM STEP F

G

1. Disconnect 4W725 lead 421 from FUEL SHUTOFF switch S3.
2. Remove lead 27 connector from LOW OIL PRESS indicator L2.
3. Place multimeter red lead on lead 421 connector socket and black lead on LOW OIL PRESS indicator L2 lead 27 connector socket. Check for continuity.

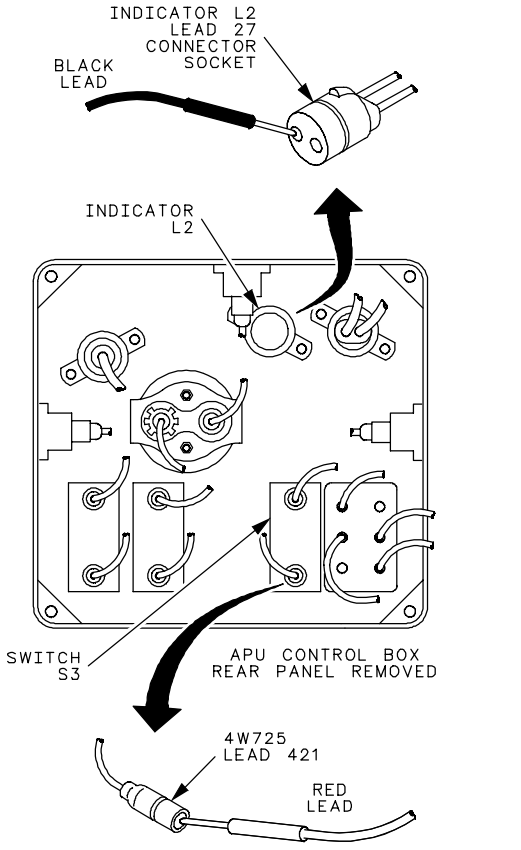
Is continuity present?

yes

Replace LOW OIL PRESS indicator socket assembly (WP 0247 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0247 00) harness 4W725. Verify fault is corrected.



29i064ta

END OF TASK

APU CONTROL BOX ENGINE OIL PRESSURE GAUGE READS ZERO WITH APU ENGINE RUNNING. 0025 00

THIS WORK PACKAGE COVERS:

APU Control Box Engine Oil Pressure Gauge Reads Zero With APU Engine Running

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove APU control box rear panel (WP 0247 00).
2. Disconnect lead 420B from fuel gauge.
3. Turn MASTER switch and APU FUEL SHUTOFF switch to ON (TM 9-2350-292-10).
4. Place red multimeter lead in lead 420B socket and black lead to ground. Check for voltage.
5. Turn APU FUEL SHUTOFF and MASTER switches to OFF.

Is 24 V dc present?

yes

no

Go to Step C.

B

Place one multimeter lead on oil pressure gauge and the other lead to ground. Check for continuity.

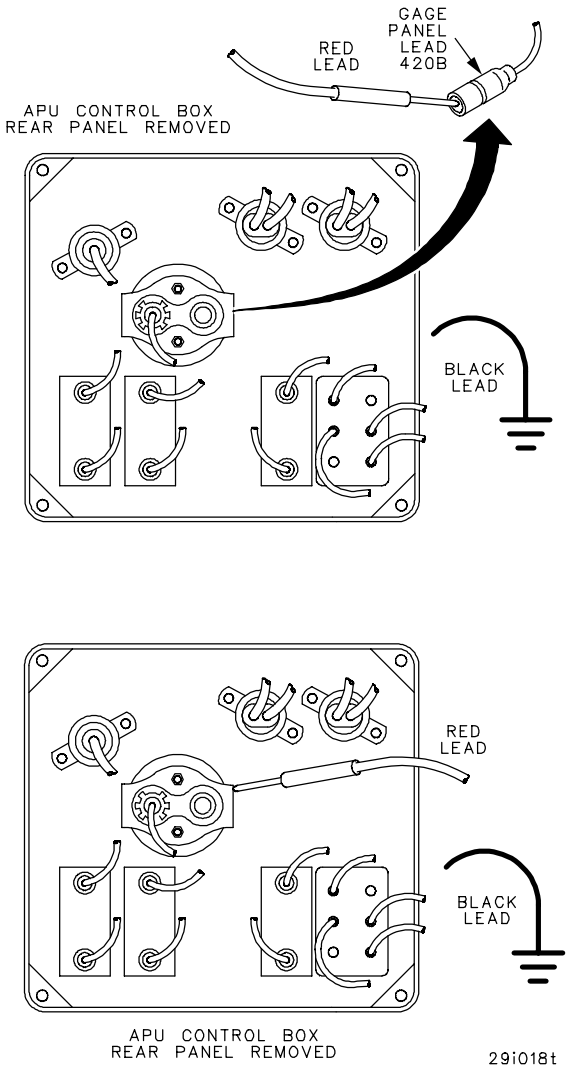
Is continuity present?

yes

Replace oil pressure gauge (WP 0247 00). Verify fault is corrected.

no

Remove gauge (WP 0247 00) and clean grounding points on gauge and panel. Reinstall gauge and do step B again. If there is still no continuity, replace gauge (WP 0247 00).



CONTINUED ON NEXT PAGE

APU CONTROL BOX ENGINE OIL PRESSURE GAUGE READS ZERO WITH APU ENGINE RUNNING - CONTINUED 0025 00

CONTINUED FROM STEP A

C

1. Disconnect harness 3W704 P1 at APU engine disconnect.
2. Disconnect lead 420 from APU oil pressure sending unit.
3. Place one multimeter lead on harness 3W704 P1 socket A and the other multimeter lead on lead 420 lead connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0643 00) harness 3W704. Verify fault is corrected.

D

1. Reconnect lead 420 at oil pressure sending unit.
2. Open air intake grilles over battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W702 P1 at bulkhead disconnect.
4. Place one multimeter lead on harness 3W702 P1 socket E and the other lead on harness 3W702 J2 pin A. Check for continuity.

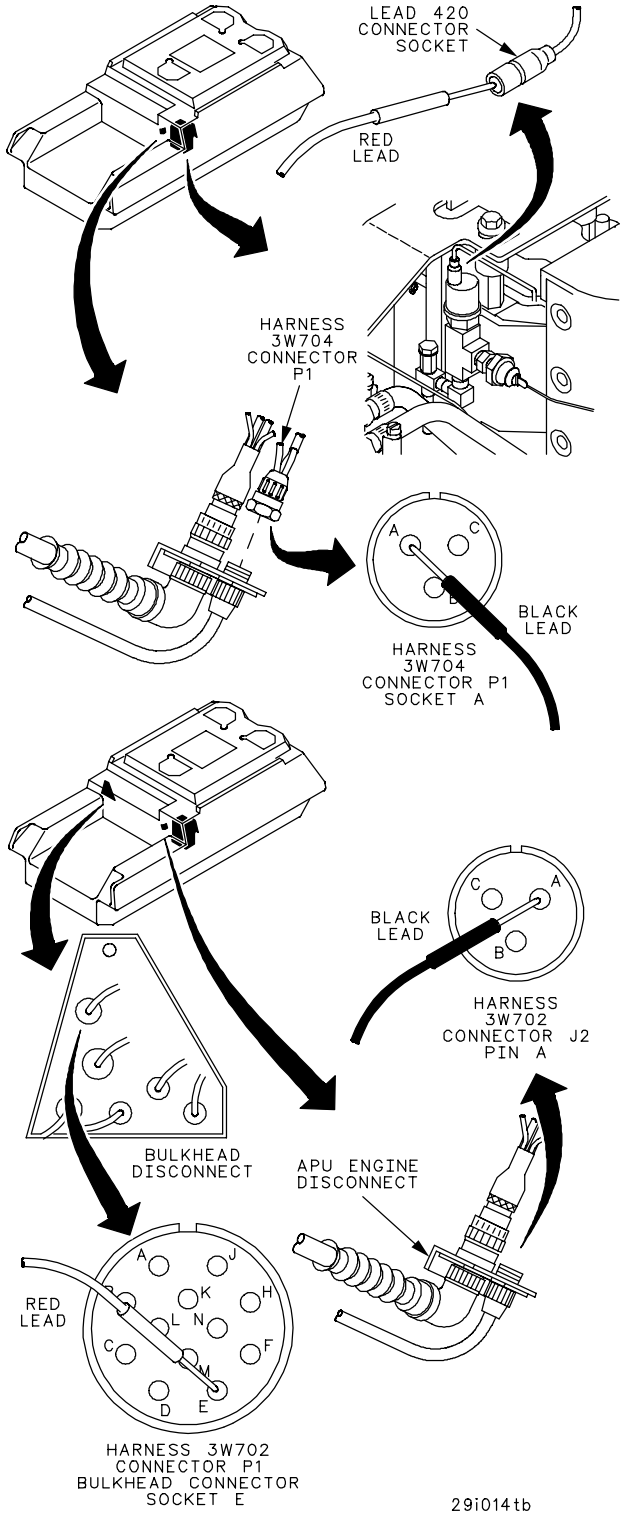
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0311 00) harness 3W702. Verify fault is corrected.

CONTINUED ON NEXT PAGE



APU CONTROL BOX ENGINE OIL PRESSURE GAUGE READS ZERO WITH APU ENGINE RUNNING - CONTINUED 0025 00

CONTINUED FROM STEP D

E

1. Reconnect harness 3W704 P1 at APU engine disconnect.
2. Disconnect harness 4W700 P1 at APU control box.
3. Place one multimeter lead on harness 4W700 P2 bulkhead receptacle pin E and the other lead on harness 4W700 P1 socket M. Check for continuity.

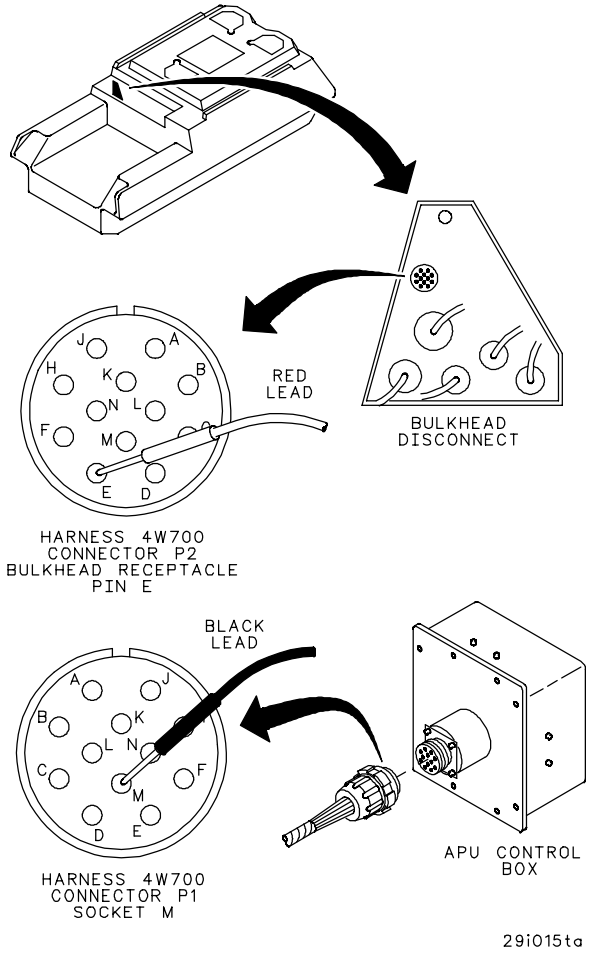
Is continuity present?

yes

Replace engine oil pressure transducer (WP 0632 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.



END OF TASK

AUXILIARY POWER UNIT HOURMETER DOES NOT WORK. 0026 00

THIS WORK PACKAGE COVERS:

Auxiliary Power Unit Hourmeter Does Not Work

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Materials/Parts

Adhesive (item 25, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU cover removed (WP 0413 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Open APU door (TM 9-2350-292-10).
2. Observe hourmeter for broken glass window or other physical damage.

Is hourmeter damaged?

yes

Replace hourmeter (WP 0663 00). Verify fault is corrected.

no

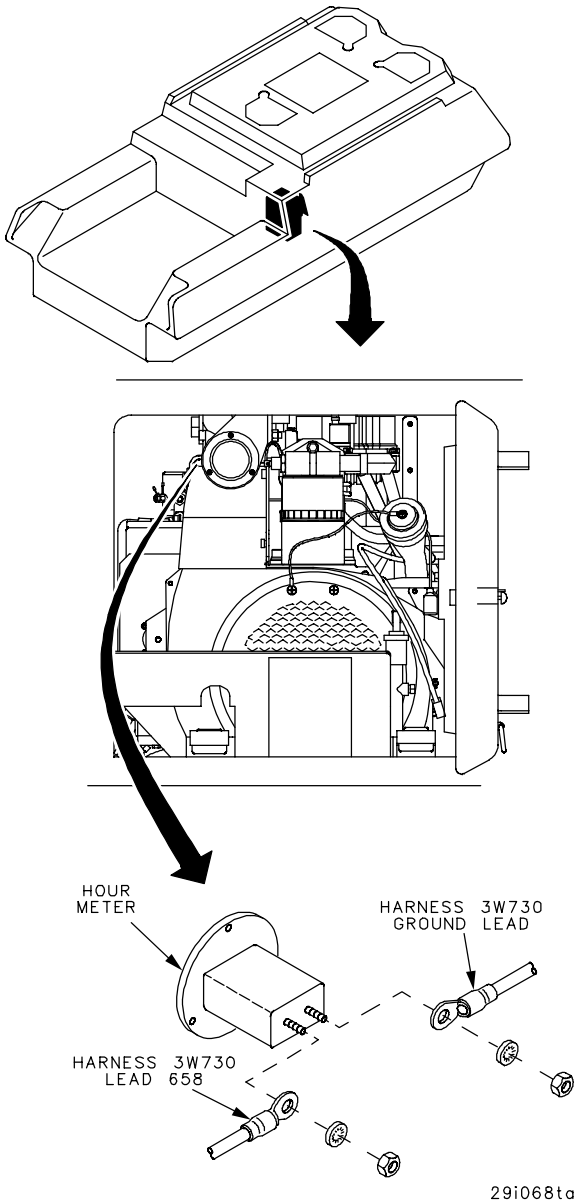
B

NOTE

Remove sealant from electrical terminals to ensure good contact for multimeter leads. Apply adhesive to all exposed terminals after troubleshooting is complete.

1. Open front engine deck grilles (TM 9-2350-292-10).
2. Disconnect harness 3W730 lead 658 and ground lead from hourmeter.
3. Place multimeter red lead to harness 3W730 lead 658 and black lead to ground.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10)
6. Check for voltage
7. Turn FUEL SHUTOFF and MASTER switches switch OFF (TM 9-2350-292-10).

Is 24 V dc present?



CONTINUED ON NEXT PAGE

AUXILIARY POWER UNIT HOURMETER DOES NOT WORK - CONTINUED 0026 00

CONTINUED FROM STEP B

yes

Go to Step D.

no

C

1. Disconnect harness 3W730 from relay box J1 connector.
2. Place multimeter red lead to harness 3W730 lead 658 and black lead to harness 3W730 P1 socket 6.
3. Check for continuity.

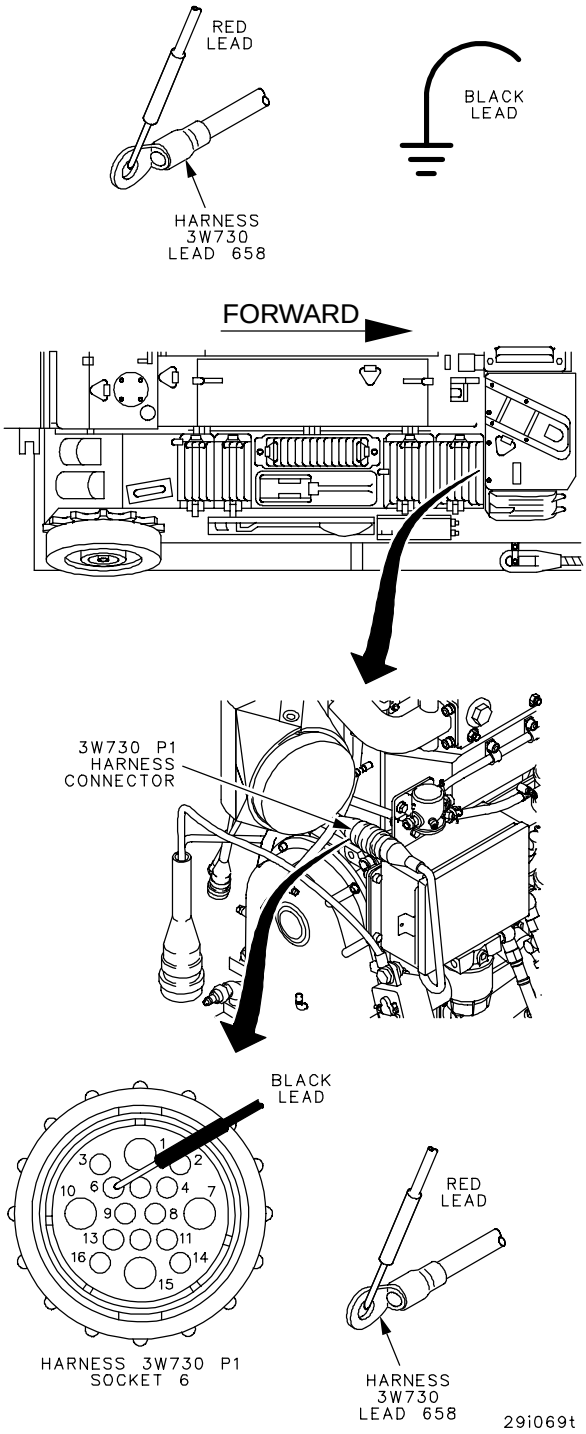
Is continuity present?

yes

Replace relay box (WP 0662 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.



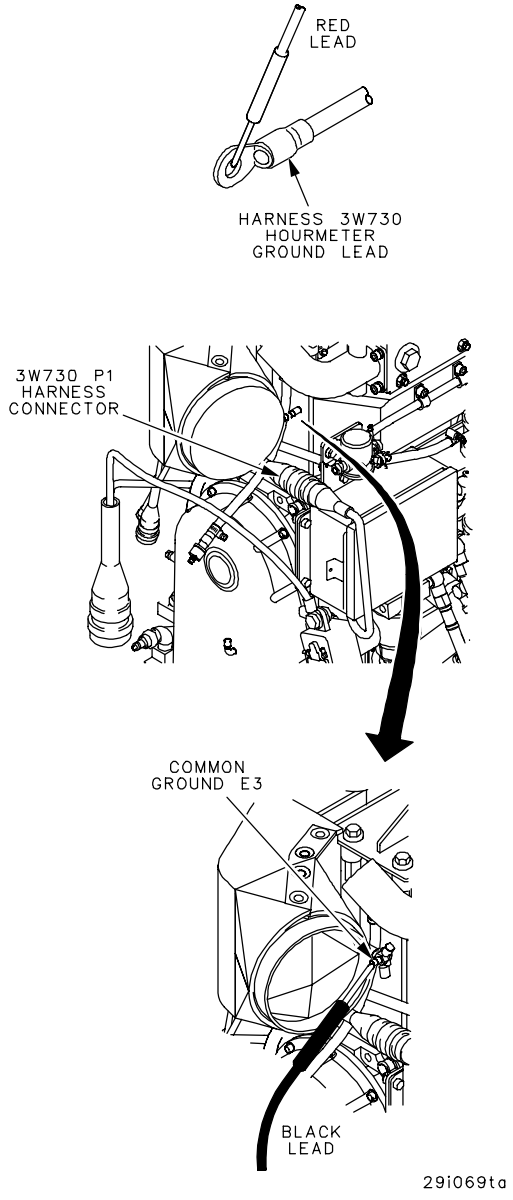
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AUXILIARY POWER UNIT HOURMETER DOES NOT WORK - CONTINUED 0026 00

CONTINUED FROM STEP B

D	Place one multimeter lead on harness 3W730 hourmeter ground lead and other lead on common ground E3. Check for continuity.
	Is continuity present?

yes	no
Replace hourmeter (WP 0663 00). Verify fault is corrected.	Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.



END OF TASK

AUXILIARY POWER UNIT HIGH AIR TEMPERATURE LIGHT IS ILLUMINATED AND DOOR FAN IS NOT RUNNING. 0027 00

THIS WORK PACKAGE COVERS:

Auxiliary Power Unit High Air Temperature Light Is Illuminated And Door Fan Is Not Running

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Materials

Adhesive (item 25, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU cover removed (WP 0413 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

NOTE

The high air temperature switch is normally open and set to close on temperature rise of 446_F ±18_.

If oil temperature rises above 200_F, the APU engine oil and oil filter must be replaced (WP 0597 00).

A

NOTE

Remove sealant from electrical terminals to ensure good contact for multimeter leads. Apply adhesive to all exposed terminals after troubleshooting is complete.

1. Disconnect harness 3W730 lead 233B and ground wire from door fan thermostatic switch S2.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place a jumper wire between harness 3W730 lead 233B and ground wire.
4. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
5. Observe door fan.
6. Turn FUEL SHUTOFF and MASTER switches OFF.

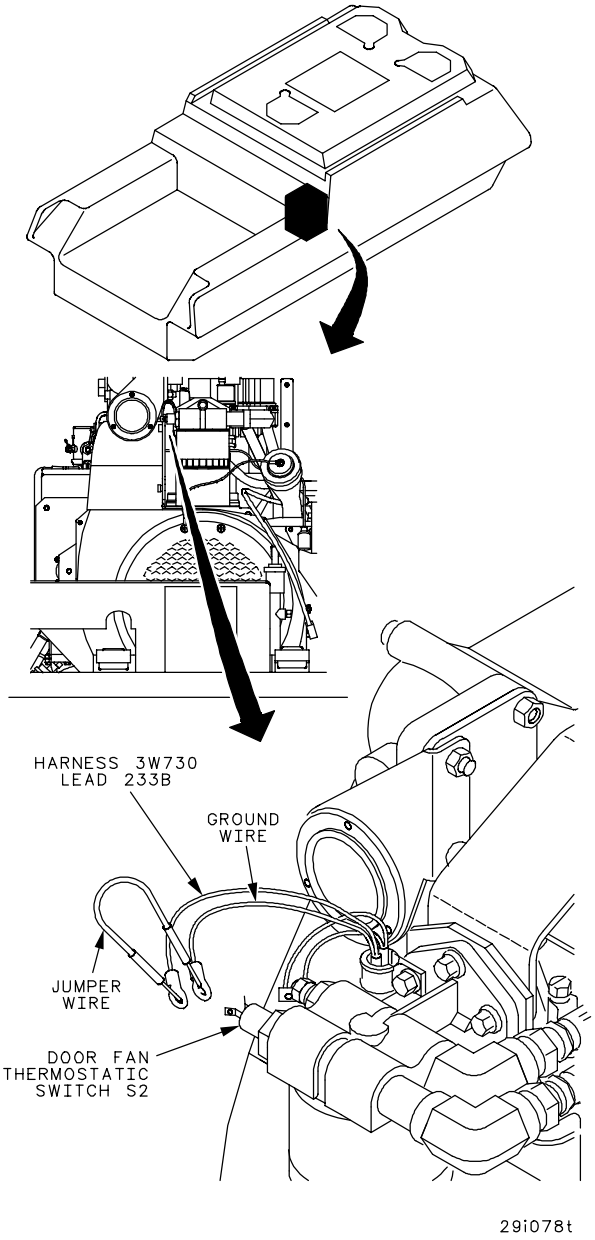
Does door fan run?

yes

Replace door fan thermostatic switch S2 (WP 0660 00). Verify that fault is corrected.

no

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT HIGH AIR TEMPERATURE LIGHT IS ILLUMINATED AND DOOR FAN IS NOT RUNNING - CONTINUED 0027 00

CONTINUED FROM STEP A

B

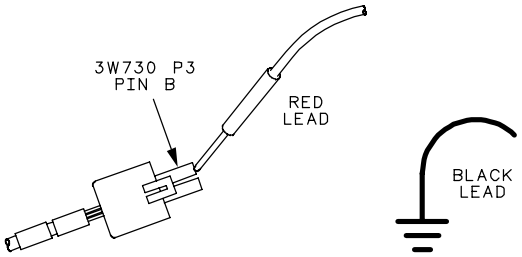
1. Place multimeter red lead to harness 3W730 P3 pin B lead and black lead to ground.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
4. Check for voltage.
5. Turn FUEL SHUTOFF and MASTER switches OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to Step D.



C

1. Place multimeter red lead to harness 3W730 P3 pin A and black lead to common ground point E3.
2. Check for continuity.

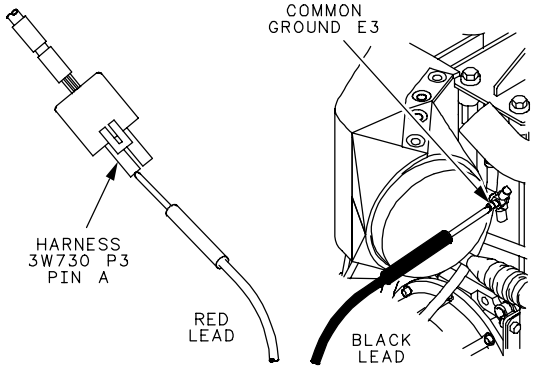
Is continuity present?

yes

no

Replace door fan (WP 0439 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.



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CONTINUED ON NEXT PAGE

AUXILIARY POWER UNIT HIGH AIR TEMPERATURE LIGHT IS ILLUMINATED AND DOOR FAN IS NOT RUNNING - CONTINUED 0027 00

CONTINUED FROM STEP B

D

1. Disconnect harness 3W730 connector P1 from relay box connector J1.
2. Place multimeter red lead to door fan lead 655 connector and black lead to 3W730 P1 socket 13.
3. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.

E

1. Disconnect jumper wire from harness 3W730 lead 233B and ground lead.
2. Place multimeter red lead on harness 3W730 P1 socket 9 and black lead on harness 3W730 lead 233B.
3. Check for continuity.

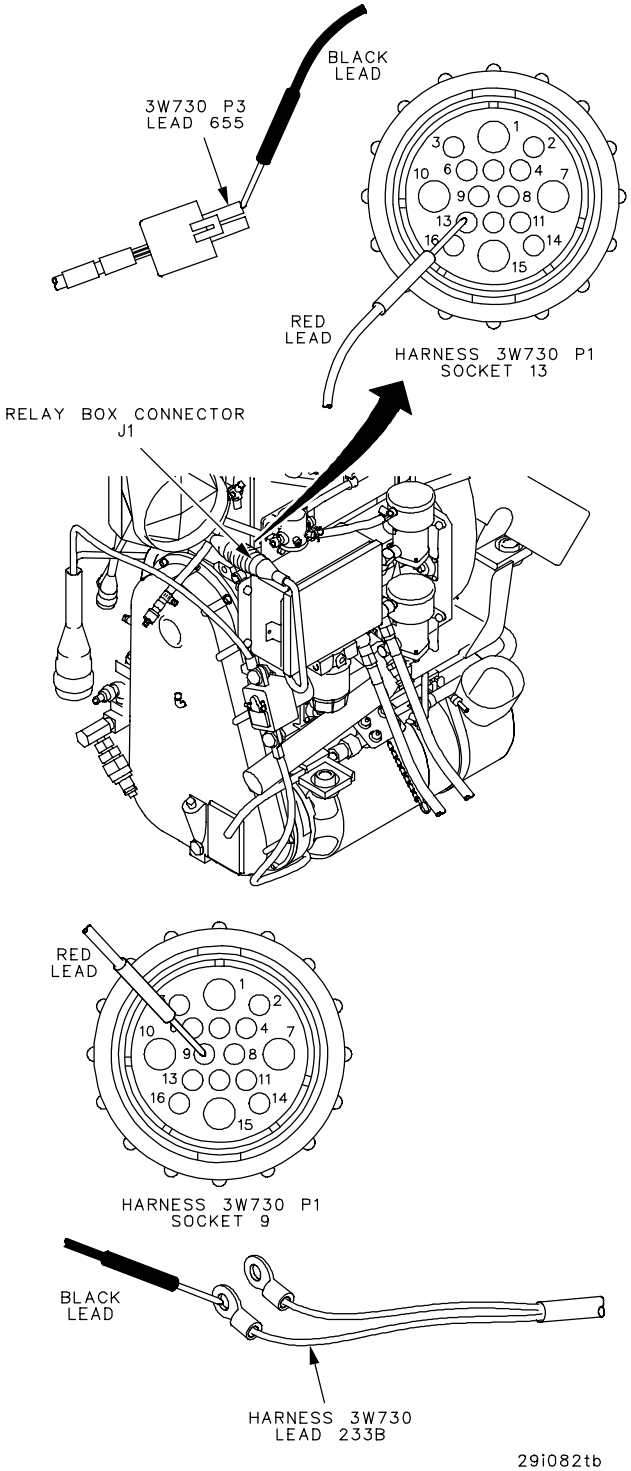
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.

CONTINUED ON NEXT PAGE



AUXILIARY POWER UNIT HIGH AIR TEMPERATURE LIGHT IS ILLUMINATED AND DOOR FAN IS NOT RUNNING - CONTINUED 0027 00

CONTINUED FROM STEP E

F

1. Place multimeter red lead to harness 3W730 ground lead E11 and black lead to common ground point E3.
2. Check for continuity.

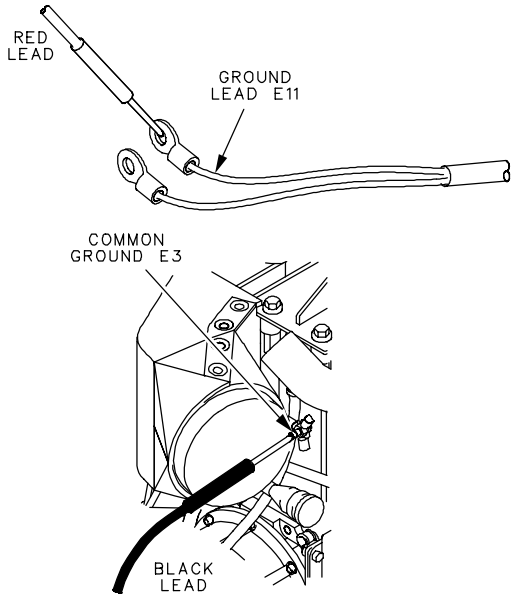
Is continuity present?

yes

Replace relay box (WP 0662 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.



29i082tc

END OF TASK

AUXILIARY POWER UNIT HIGH AIR TEMPERATURE LIGHT IS ILLUMINATED AND SUMP FAN IS NOT RUNNING. 0028 00

THIS WORK PACKAGE COVERS:

Auxiliary Power Unit High Air Temperataure Light Is Illuminated And Sump Fan Is Not Running

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Materials

Adhesive (item 25, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU cover removed (WP 0413 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

NOTE

The high air temperature switch is normally open and set to close on temperature rise of 446_F ±18_.

If oil temperature rises above 200_F the APU engine oil and oil filter must be replaced (WP 0597 00).

A

NOTE

Remove sealant from electrical terminals to ensure good contact for multimeter leads. Apply adhesive to all exposed terminals after troubleshooting is complete.

1. Disconnect harness 3W730 lead 233A and ground wire from sump fan thermostatic switch.
2. Place a jumper wire between harness 3W730 lead 233A and ground wire.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
5. Observe sump fan.
6. Turn FUEL SHUTOFF and MASTER switches OFF.

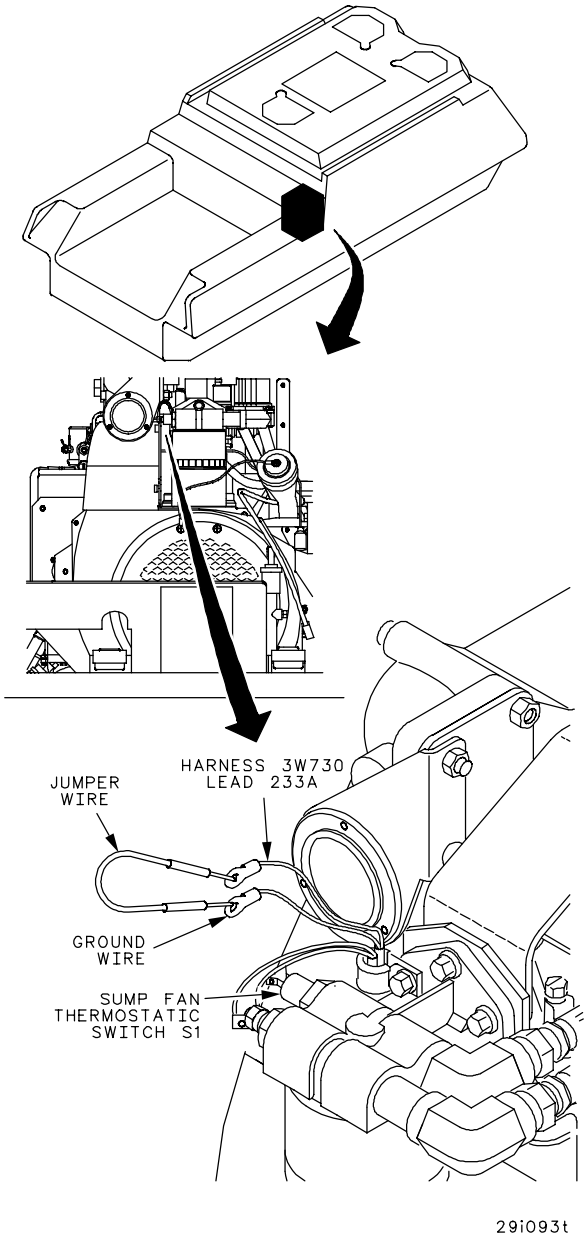
Does sump fan run?

yes

Replace sump fan thermostatic switch (WP 0660 00). Verify fault is corrected.

no

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AUXILIARY POWER UNIT HIGH AIR TEMPERATURE LIGHT IS ILLUMINATED AND SUMP FAN IS NOT RUNNING - CONTINUED 0028 00

CONTINUED FROM STEP A

B

1. Place multimeter red lead to harness 3W730 J1 socket A and black lead to ground.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Turn FUEL SHUTOFF switch ON (TM 9-2350-292-10).
4. Check for voltage.
5. Turn FUEL SHUTOFF and MASTER switches OFF.

Is 24 V dc present?

yes

no

Go to Step D.

C

1. Place multimeter red lead to harness 3W730 J1 socket B and black lead to common ground E3.
2. Check for continuity.

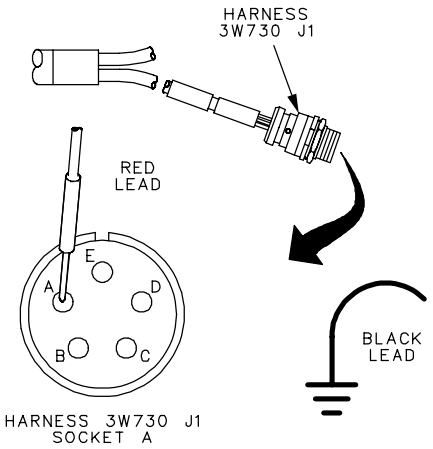
Is continuity present?

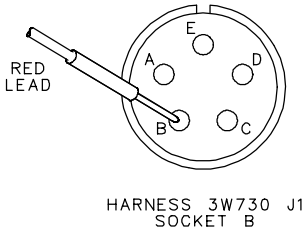
yes

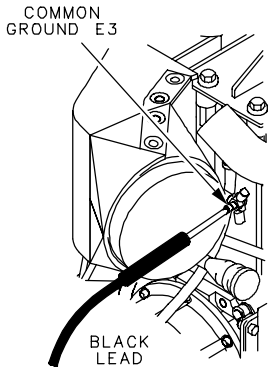
no

Replace relay box (WP 0662 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.







29i098ta

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AUXILIARY POWER UNIT HIGH AIR TEMPERATURE LIGHT IS ILLUMINATED AND SUMP FAN IS NOT RUNNING - CONTINUED 0028 00

CONTINUED FROM STEP B

D

1. Place multimeter red lead to harness 3W730 J1 socket A and black lead to harness 3W730 P1 socket 11.
2. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.

E

1. Disconnect jumper wire from harness 3W730 lead 233A and ground wire.
2. Place multimeter red lead to harness 3W730 P1 socket 12 and black lead to harness 3W730 lead 233A.
3. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.

F

1. Place multimeter leads across harness 3W730 GND lead and common ground point E3.
2. Check for continuity.

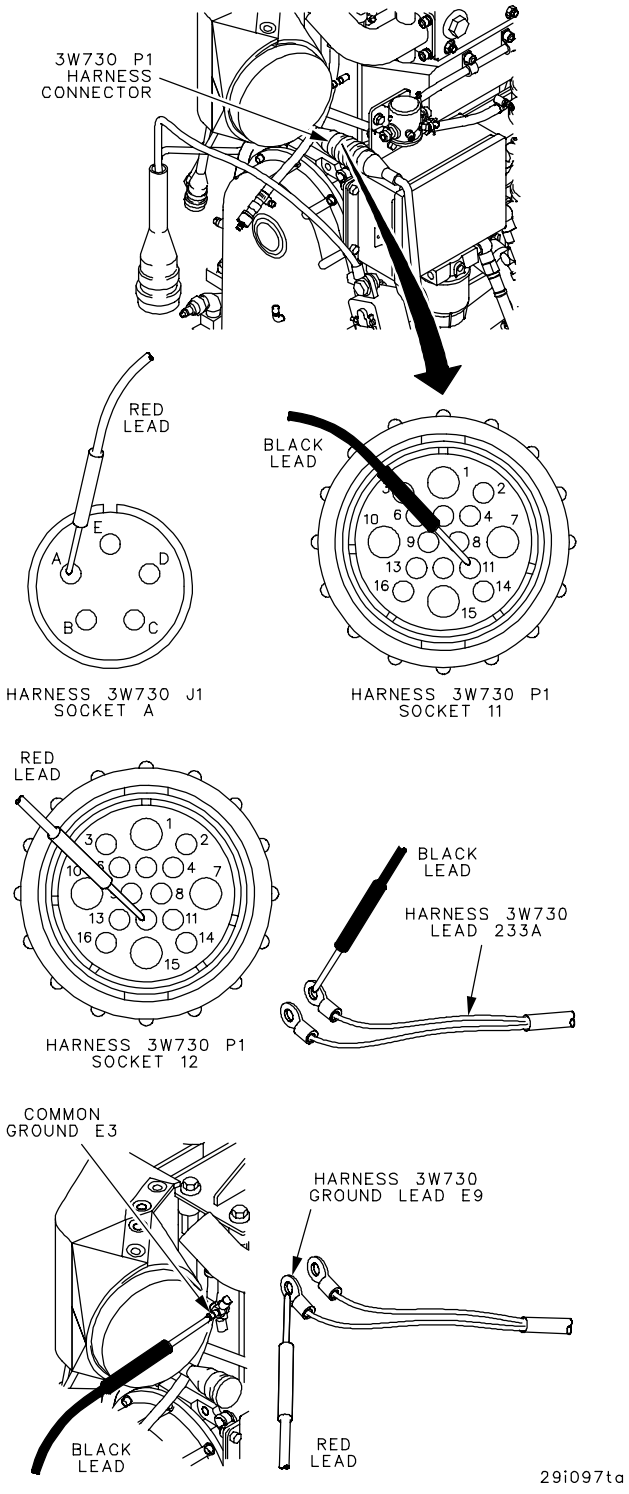
Is continuity present?

yes

no

Replace relay box (WP 0662 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0654 00) harness 3W730. Verify fault is corrected.



END OF TASK

BILGE PUMP OVERVIEW AND DIAGRAMS. 0029 00

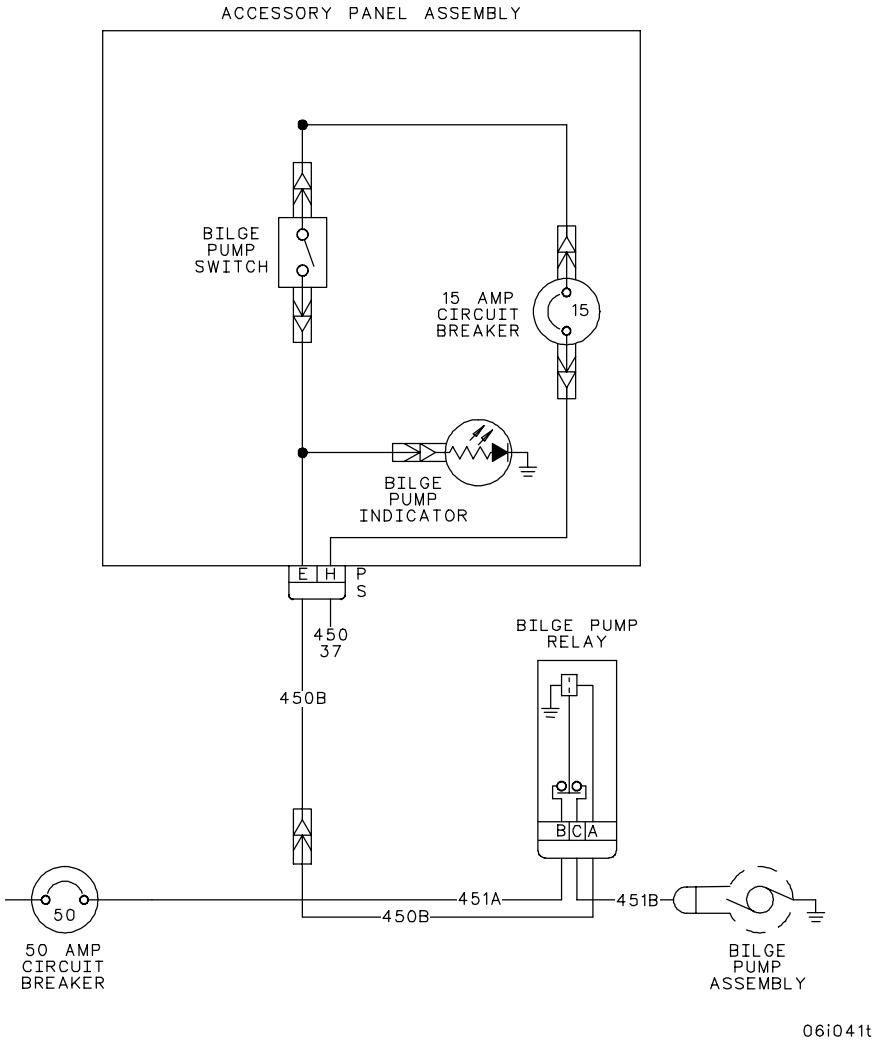
THIS WORK PACKAGE COVERS:

Bilge Pump Overview and Diagrams

The bilge pump system consists of the bilge pump, bilge pump relay, BILGE PUMP switch, BILGE PUMP indicator, a 15-amp circuit breaker, a 50-amp circuit breaker, and related electrical wiring.

When the MASTER switch is ON, the bilge pump operates and the BILGE PUMP indicator lights whenever the BILGE PUMP switch is turned ON. With the BILGE PUMP switch ON, system power (+24 - 28 V dc) is supplied through the 15-amp circuit breaker and BILGE PUMP switch to energize the bilge pump relay. With the relay energized, system power is now supplied through the 50-amp circuit breaker and relay contacts as operating voltage for the bilge pump. System power is also supplied to light the BILGE PUMP indicator while the bilge pump is in operation,

The diagram below shows the relationship of the bilge pump system components.



END OF TASK

BILGE PUMP FAILS TO OPERATE. 0030 00

THIS WORK PACKAGE COVERS:
Bilge Pump Fails To Operate

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required
Two

WARNING
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

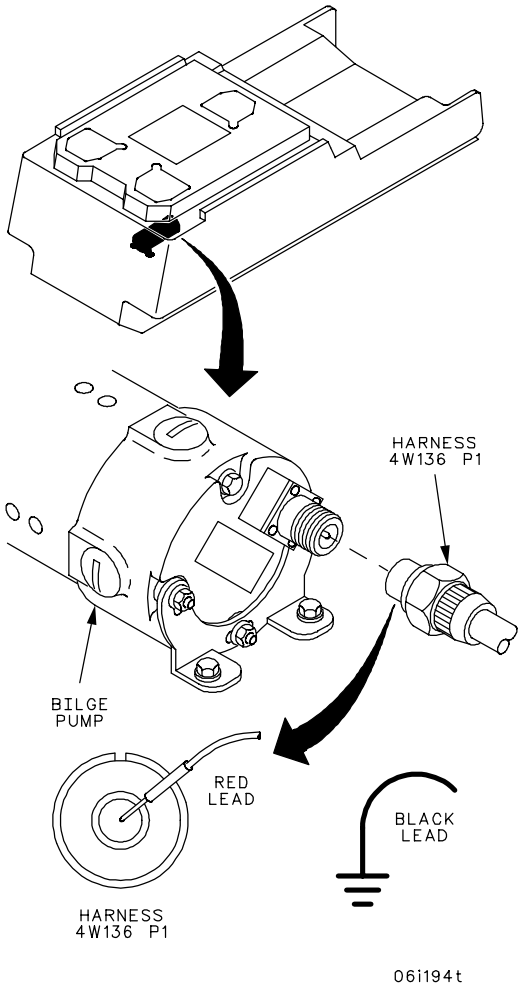
1. Remove subfloor plate 7 (WP 0454 00).
2. Disconnect harness 4W136 P1 from bilge pump.
3. Turn MASTER switch and BILGE PUMP switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W136 P1 and black lead to ground. Check for voltage.
5. Turn MASTER switch and BILGE PUMP switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Replace bilge pump (WP 0667 00). Verify fault is corrected.

no



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BILGE PUMP FAILS TO OPERATE - CONTINUED 0030 00

CONTINUED FROM STEP A

B

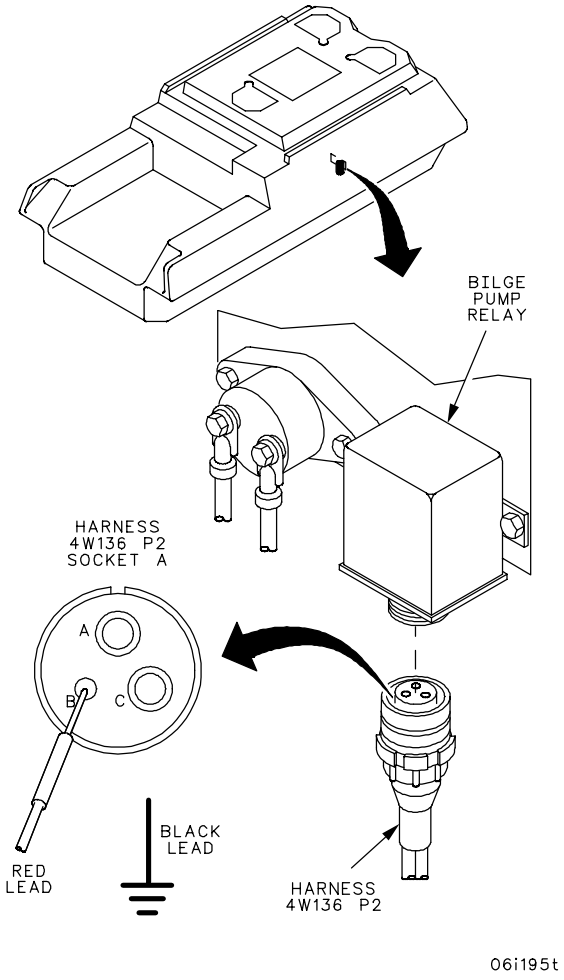
1. Remove subfloor plate 18 (WP 0454 00).
2. Disconnect harness 4W136 P2 from bilge pump relay.
3. Turn MASTER switch and BILGE PUMP switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W136 P2 socket B and black lead to ground. Check for voltage.
5. Turn MASTER switch and BILGE PUMP switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Replace bilge pump relay (WP 0264 00). Verify fault is corrected.

no



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BILGE PUMP FAILS TO OPERATE - CONTINUED 0030 00

CONTINUED FROM STEP B

C

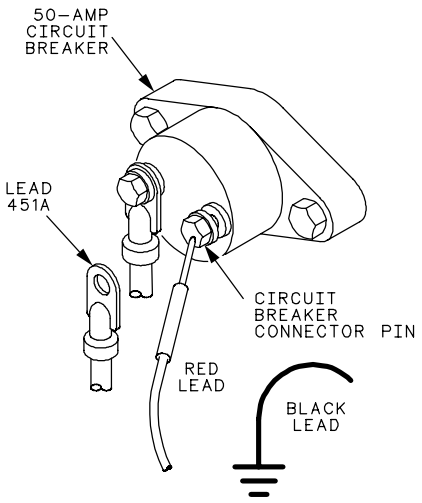
1. Disconnect lead 451A from 50-amp circuit breaker.
2. Turn MASTER switch and BILGE PUMP switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on lead 451A circuit breaker connector pin and black lead to ground. Check for voltage.
4. Turn MASTER switch and BILGE PUMP switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Repair (WP 0290 00) or replace (WP 0325 00) harness 4W136. Verify fault is corrected.

no



D

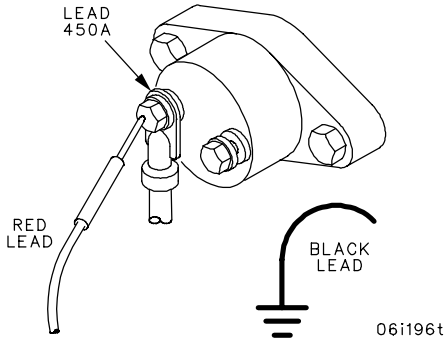
1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Place multimeter red lead on lead 450A terminal and black lead to ground. Check for voltage.
3. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Replace circuit breaker (WP 0264 00). Verify fault is corrected.

no



CONTINUED ON NEXT PAGE

BILGE PUMP FAILS TO OPERATE - CONTINUED 0030 00

CONTINUED FROM STEP D

E

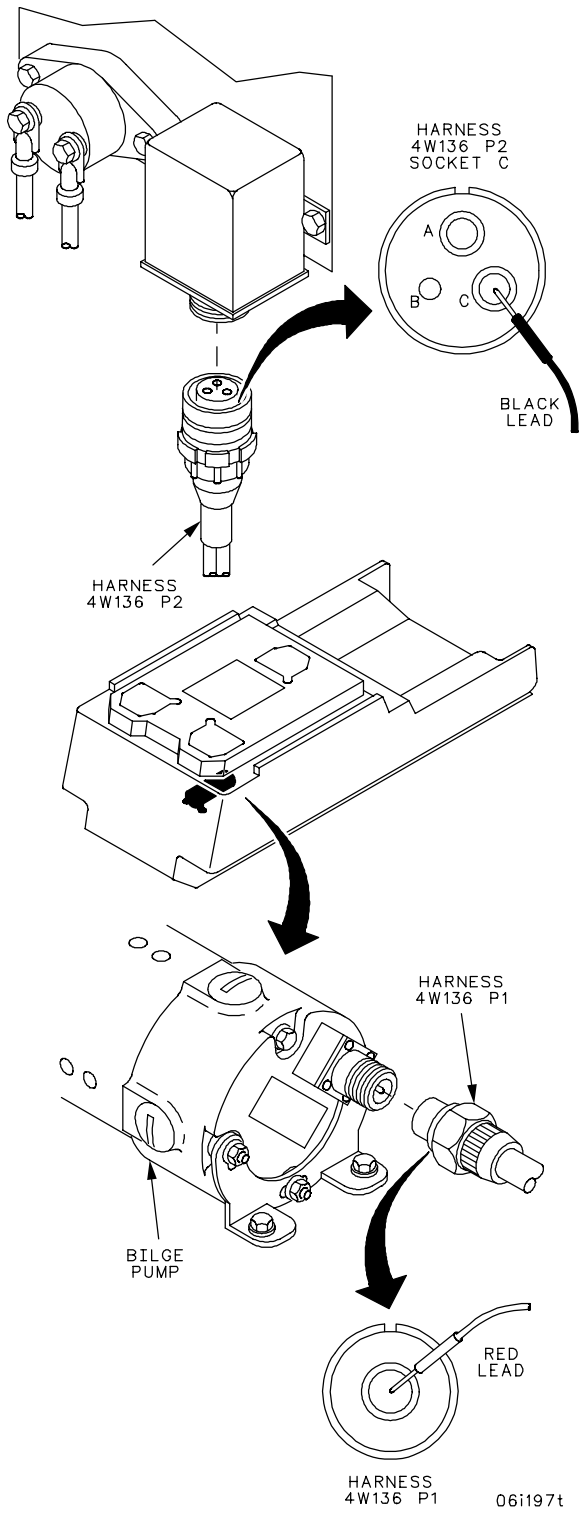
1. Disconnect harness 4W136 P1 from bilge pump.
2. Place one multimeter lead in harness 4W136 P2 socket C and other lead in harness 4W136 P1. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0325 00) harness 4W136. Verify fault is corrected.



CONTINUED ON NEXT PAGE

BILGE PUMP FAILS TO OPERATE - CONTINUED 0030 00

CONTINUED FROM STEP E

F

1. Remove accessory panel (WP 0244 00).
2. Place one multimeter lead on terminal board T16 terminal B and other lead on accessory control panel receptacle J3 pin E. Check for continuity.

Is continuity present?

yes

no

Replace lead 450B from terminal B to receptacle J3 pin E (WP 0244 00). Verify fault is corrected.

G

Place one multimeter lead on terminal board T16 terminal F and other lead on terminal board T16 terminal B. Check for continuity.

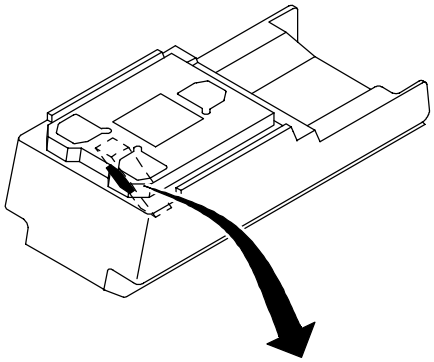
Is continuity present?

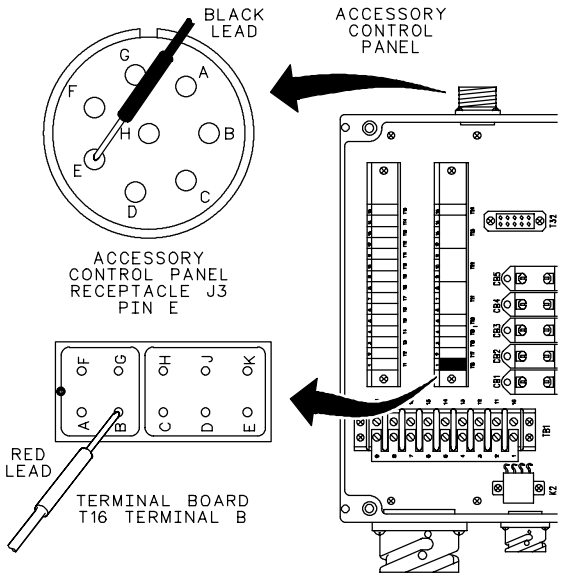
yes

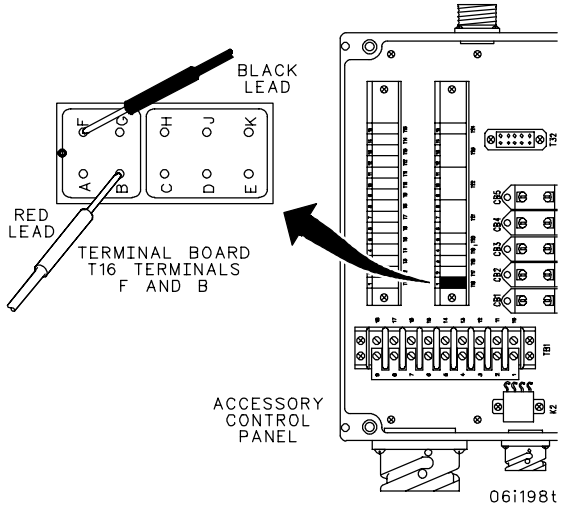
no

Replace lead 450B from terminal B (WP 0244 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE







BILGE PUMP FAILS TO OPERATE - CONTINUED 0030 00

CONTINUED FROM STEP G

H Place one multimeter lead on terminal 1 of switch S3 and other lead on accessory control panel terminal board T16 terminal F. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 450B from switch S3 to terminal board T16 terminal F. Verify fault is corrected.

I Place one multimeter lead on TB1 450 B terminal and other lead on terminal 2 of switch S3. Check for continuity.

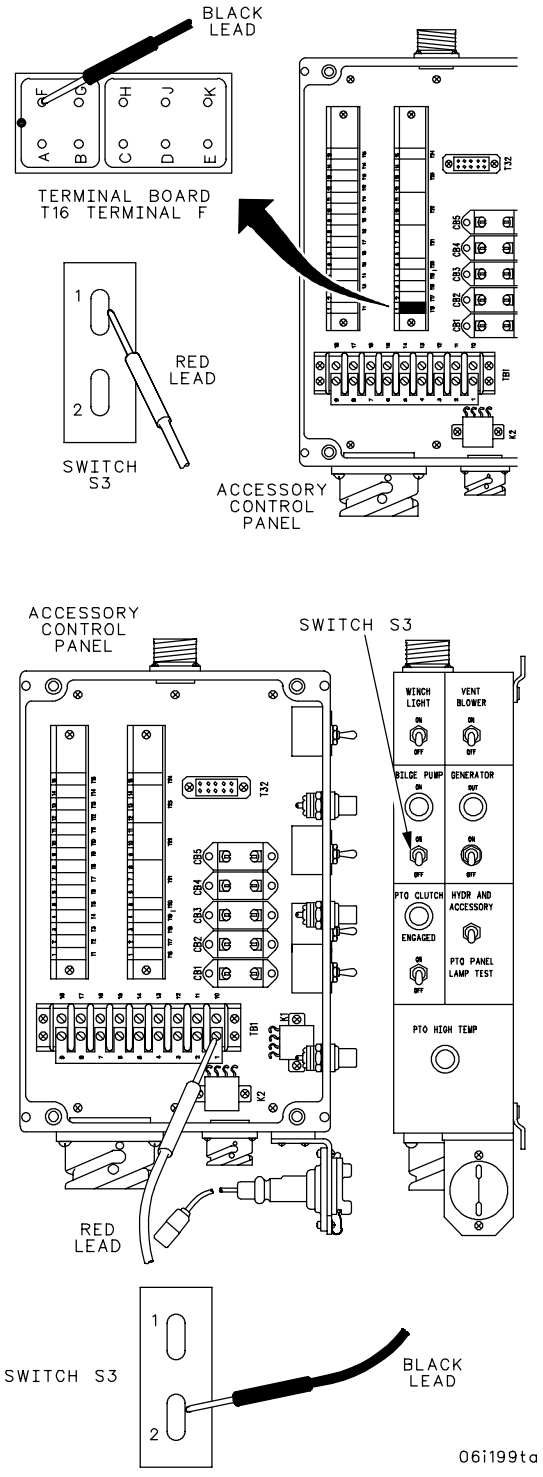
Is continuity present?

yes

no

Replace switch S3 (WP 0244 00). Verify fault is corrected.

Replace lead from TB1 to S3 (WP 0244 00). Verify fault is corrected.



END OF TASK

BILGE PUMP LIGHT FAILS TO OPERATE. ALL OTHER ACCESSORY LIGHTS OPERATE. 0031 00

THIS WORK PACKAGE COVERS:

Bilge Pump Light Fails To Operate. All Other Accessory Lights Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

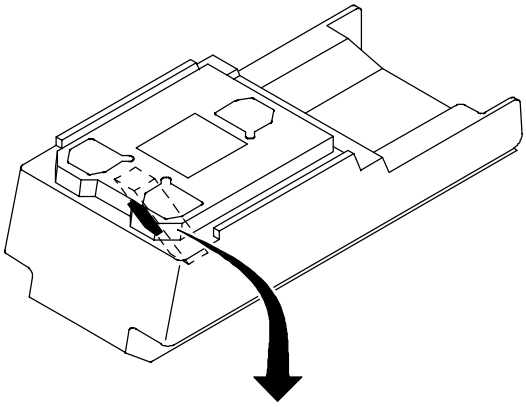
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Accessory panel open (TM 9-2350-292-10)
LED replaced (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



1. Turn MASTER switch and BILGE PUMP switch ON (TM 9-2350-292-10).
2. Place multimeter red lead on light lead terminal 1 and black lead to ground. Check for voltage.
3. Turn MASTER switch and BILGE PUMP switch OFF (TM 9-2350-292-10).

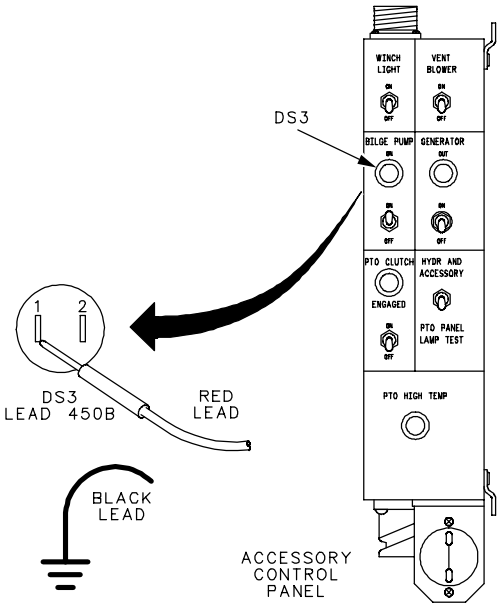
Is 24 V dc present?

yes

Replace light socket (WP 0244 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0244 00) lead to light socket. Verify fault is corrected.



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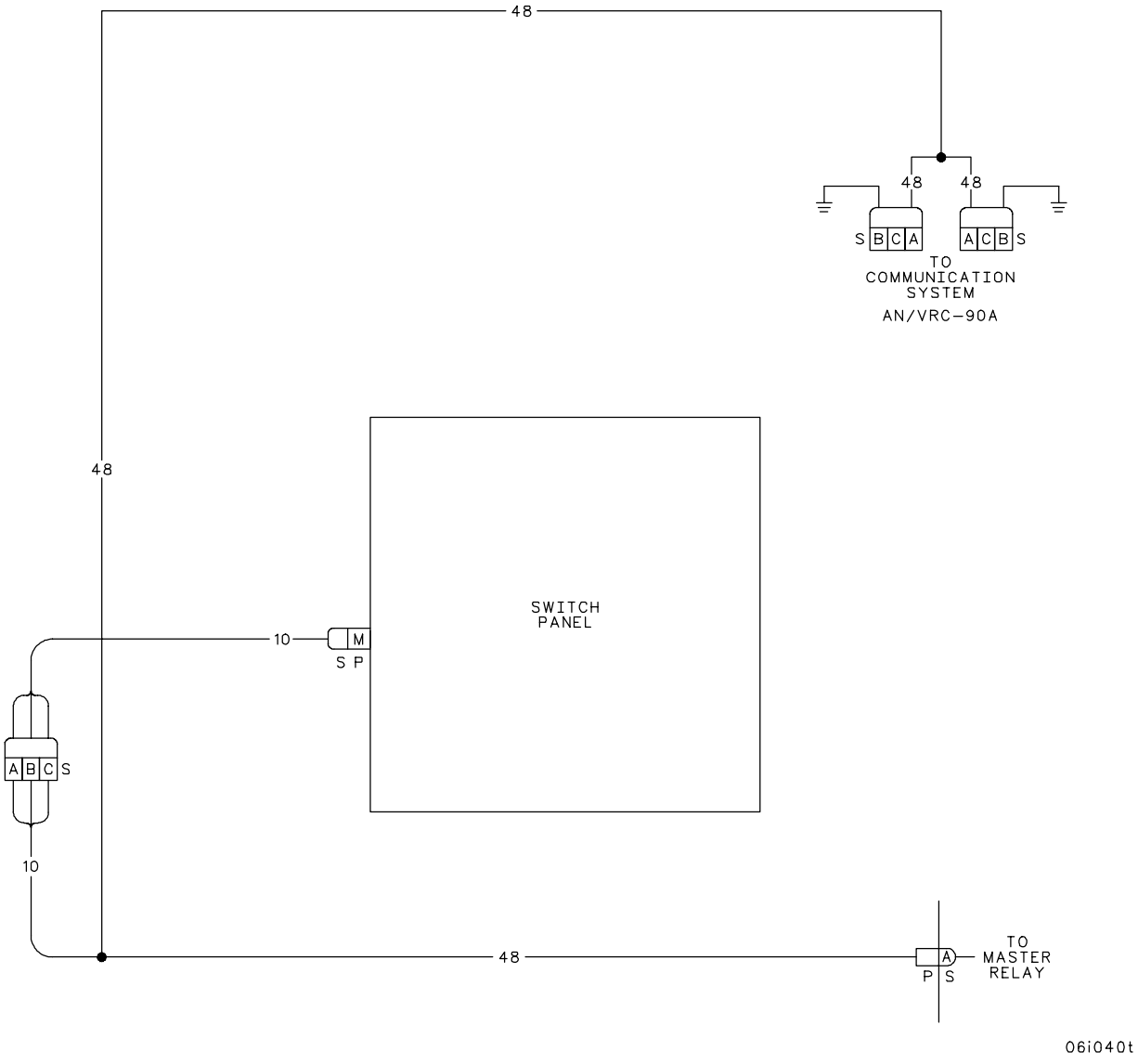
END OF TASK

COMMUNICATIONS OVERVIEW AND DIAGRAM. 0032 00

THIS WORK PACKAGE COVERS:

Communications Overview And Diagram

The communications system consists of intercommunications set AN/VIC-1(V) or AN/VIC-3(V) to provide the capability for communications between crew during operations, radio set AN/VRC-90A to provide the capability for external communications, and associated wiring. When the MASTER switch is turned ON, system power (+24 - 28 V dc) is supplied to the communications system. The relationship of these components is shown in the diagram below.



END OF TASK

COMMUNICATIONS SYSTEM FAILS TO OPERATE. 0033 00

THIS WORK PACKAGE COVERS:

Communications System Fails To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 4W100 J1 and J4 from communication connectors.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on each connector socket A (one at a time) and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present at both points?

yes

B

Place one multimeter lead on each connector socket B (one at a time) and black lead to ground. Check for continuity.

Is continuity present at both points?

yes

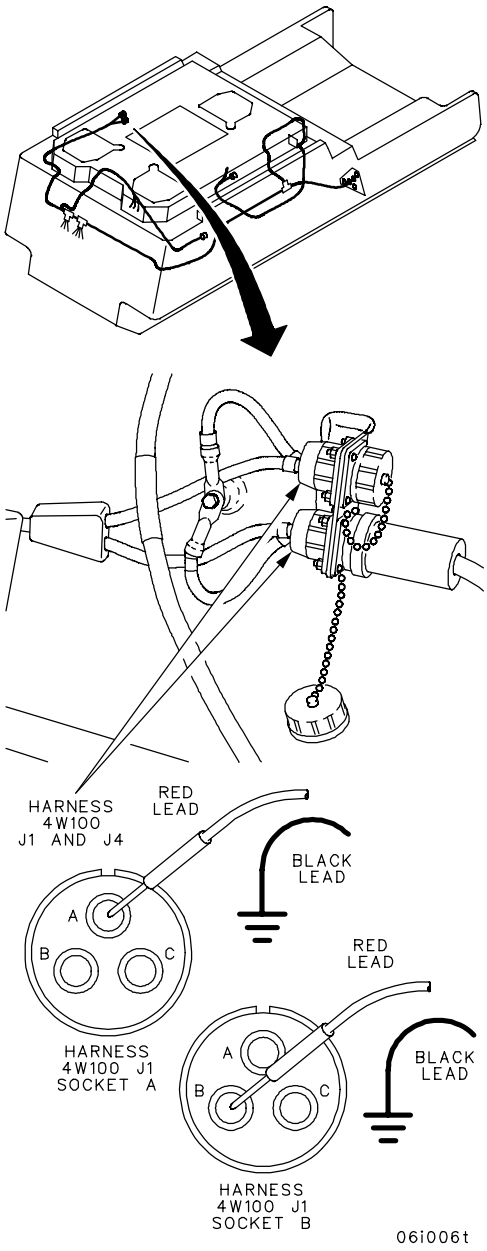
Notify Commo.

no

Repair (WP 0290 00) or replace (WP 0314 00) receptacle ground lead(s). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0314 00) harness 4W100. Verify fault is corrected.



END OF TASK

DRIVER'S CONTROLS OVERVIEW AND DIAGRAMS. 0034 00

THIS WORK PACKAGE COVERS:

Driver's Controls Overview And Diagrams

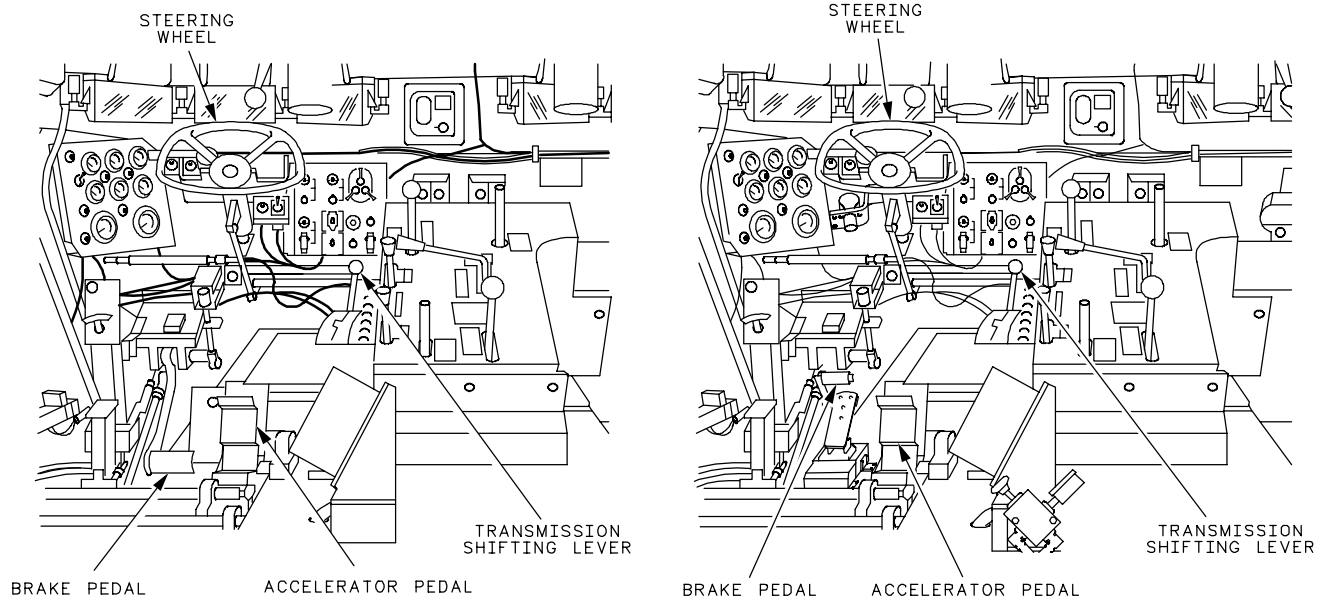
The driver's controls consists of the vehicle steering wheel, transmission shifting lever, brake pedal, purge pump, accelerator pedal, and associated linkages.

The vehicle steering wheel is connected by rods and linkage to a steering lever mounted on the steering valve body on the transmission. Movement of the steering wheel actuates the steering valve in the transmission controlling track movement for steering. The transmission shifting lever is connected to the transmission by rods and linkage. The shifting lever is used to select a desired driving range or direction (forward or reverse).

(Old configuration) The brake pedal is connected by rods and linkage to left and right side brake levers which are connected to the brakes. Also the brake pedal is connected by linkage to the steering linkage. When the brake pedal is applied it locks up with the steering. As a result, a hand brake is not needed. The brake pedal is assisted by an electrically operated pump, motor, relay, 80-amp circuit breaker, and associated wiring.

(New configuration with brake modulation) The brake pedal is mechanically connected to the brake modulation valve. When the brake pedal is depressed, the output pressure from the modulation valve increases, causing the brake hydraulic cylinder rod assembly to move. As a result of this movement, the brake rods, linkage and cables to the left and right side brake levers, which are connected to the vehicle's brakes also move. The hydraulic cylinder rod assembly also controls the linkage that is connected to the steering linkage. When the brake pedal is fully depressed, it locks up the steering and as a result, a hand brake is not required. The brake pedal is assisted by a hydraulic pump and motor, pressure switches and regulators, relay and electrical power and associated wiring.

The accelerator pedal is connected by linkage and throttle rods to the engine. Depressing the accelerator pedal increases the flow of fuel to the engine and increases vehicle speed. The purge pump is an electrical/mechanical pump mounted on the engine and is used to purge air from the fuel lines. The purge pump is connected in line with the fuel lines and fuel pump. The purge pump is activated by turning on the engine preheat switch and the switch panel.



END OF TASK

VEHICLE WILL NOT STEER OR WILL ONLY STEER IN ONE DIRECTION. 0035 00

THIS WORK PACKAGE COVERS:

Vehicle Will Not Steer Or Will Only Steer In One Direction

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

Right rear exhaust grille and inside deck doors open (TM 9-2350-292-10)

Vehicle engine operating (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Move steering wheel to full right turn and back to full left turn and watch movement of lever on steering control valve body of transmission.

Does steering arm move?

yes

no

Replace damaged or missing linkage parts (WP 0404 00). Verify fault is corrected.

B Check steering linkage for proper adjustment (WP 0405 00).

Is linkage adjusted properly?

yes

no

Adjust linkage (WP 0405 00). Verify fault is corrected.

C Operate vehicle (TM 9-2350-292-10) at slow speed and check steering in both directions.

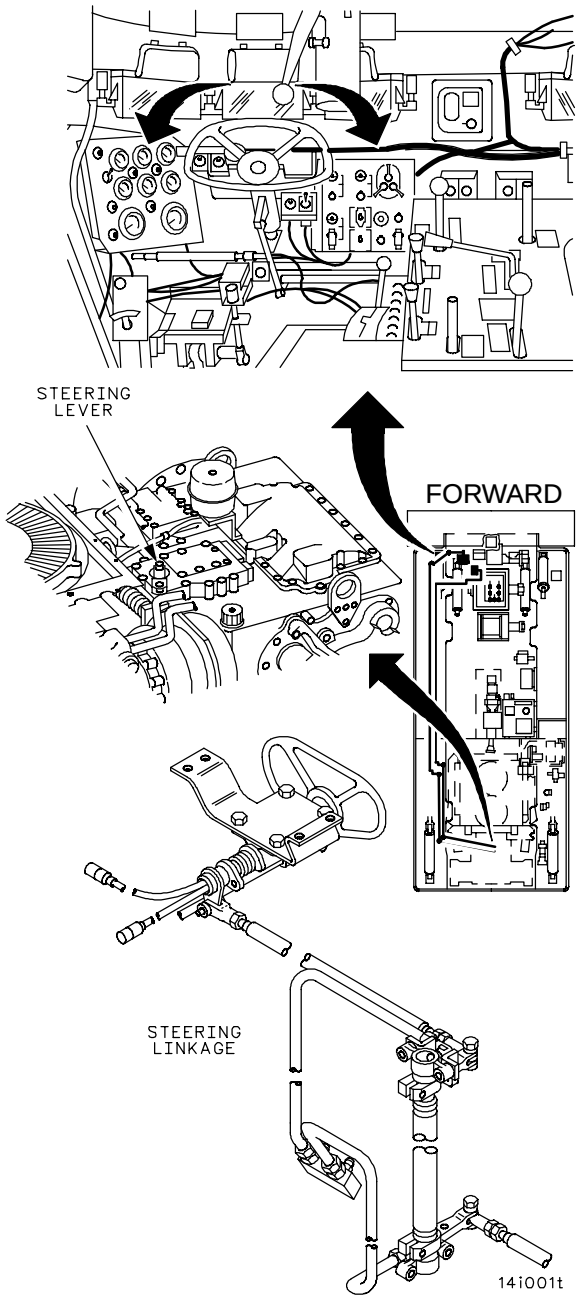
Does vehicle steer properly?

yes

no

Fault corrected.

Notify Direct Support Maintenance.



END OF TASK

BRAKES DO NOT STOP VEHICLE EFFECTIVELY. 0036 00

THIS WORK PACKAGE COVERS:

Brakes Do Not Stop Vehicle Effectively

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)
0-4000 psi test gauge assembly (item 82, WP 0717 00)
Lubricant (item 87, WP 0716 00)

Equipment Conditions

Subfloor plates 13 and 16 removed (WP 0454 00)
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Release and pump brake pedal 4 or 5 times.
2. Disconnect harness 4W110 P1 at brake pump motor.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W110 P1 socket F and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to step N.

B

1. Reconnect shielded cable 4W110 to pump motor.
2. Turn MASTER switch ON (TM 9-2350-292-10) and listen to brake pump motor.
3. Turn MASTER switch OFF (TM 9-2350-292-10).

Does brake pump motor operate?

yes

no

Replace pump motor (WP 0381 00). Verify fault is corrected.

C

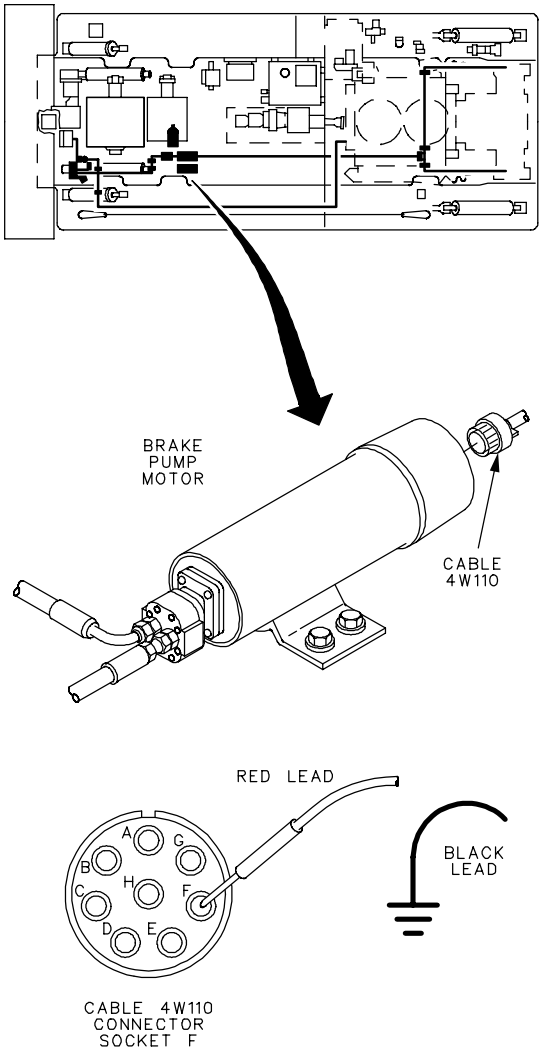
WARNING

To prevent personnel injury, do not attempt to loosen or tighten hydraulic lines and fittings when system is pressurized.

Check brake lines and fittings for leaks and/or damage.

Is system free of leaks and damage?

CONTINUED ON NEXT PAGE



BRAKES DO NOT STOP EFFECTIVELY - CONTINUED 0036 00

CONTINUED FROM STEP C

yes / no

Repair leaks and/or damage (WP 0355 00) thru (WP 0384 00) . Verify fault is corrected.

D

1. Observe brake pressure gauge for a pressure reading between 750 and 950 psi (old configuration) or 1100 to 1300 psi (new configuration with brake modulation) (TM 9-2350-292-10).
2. Apply brakes (TM 9-2350-292-10).

NOTE

If pressure will not build up and motor is running, replace regulating valve (WP 0378 00). If motor shuts off before pressure is reached or if motor does not shut off when pressure is above 1000 psi, replace pressure switch (WP 0379 00).

3. Check modulating valve for leaks.

Is modulating valve free of leaks?

yes / no

Replace modulating valve (WP 0376 00) or WP 0377 00). Verify fault is corrected.

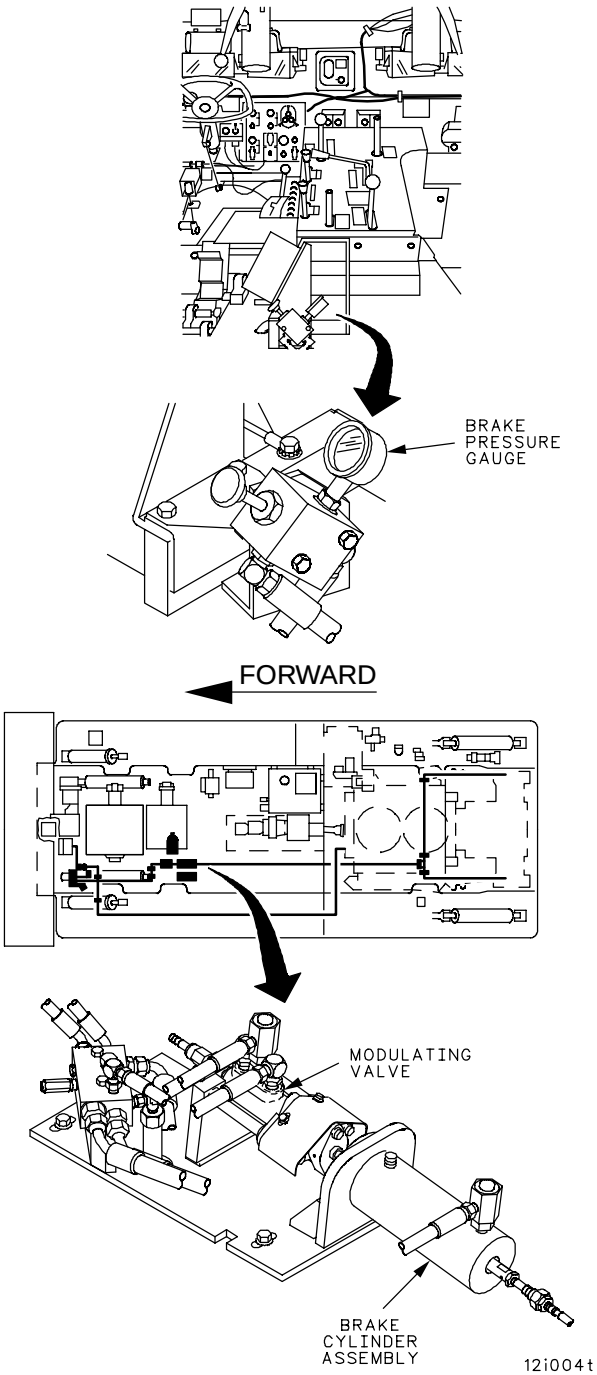
E Hold brake pedal down and observe brake cylinder assembly.

Does plunger come out of cylinder without leaks?

yes / no

(Old Configuration) Replace brake cylinder (WP 0370 00). Verify fault is corrected. (New Configuration with brake modulation) Go to Step F.

GO TO STEP H.



BRAKES DO NOT STOP EFFECTIVELY - CONTINUED 0036 00

CONTINUED FROM STEP E

F Press and release brake pedal while observing the underside of the brake pedal assembly.

Does the brake modulating valve plunger move in and out as the brake pedal is moved?

yes

no

Replace brake pedal assembly (WP 0377 00). Verify fault is corrected.

G

1. Turn MASTER switch OFF (TM 9-2350-292-10).
2. Release and pump brake pedal 4 or 5 times.
3. Check brake pressure gauge for indication of zero.
4. Disconnect hydraulic hose from brake cylinder adapter.
5. Connect removed hydraulic hose to 0-4000 psi test gauge (item 82, WP 0717 00).
6. Turn MASTER switch ON (TM 9-2350-292-10).
7. Press and hold down the brake pedal.

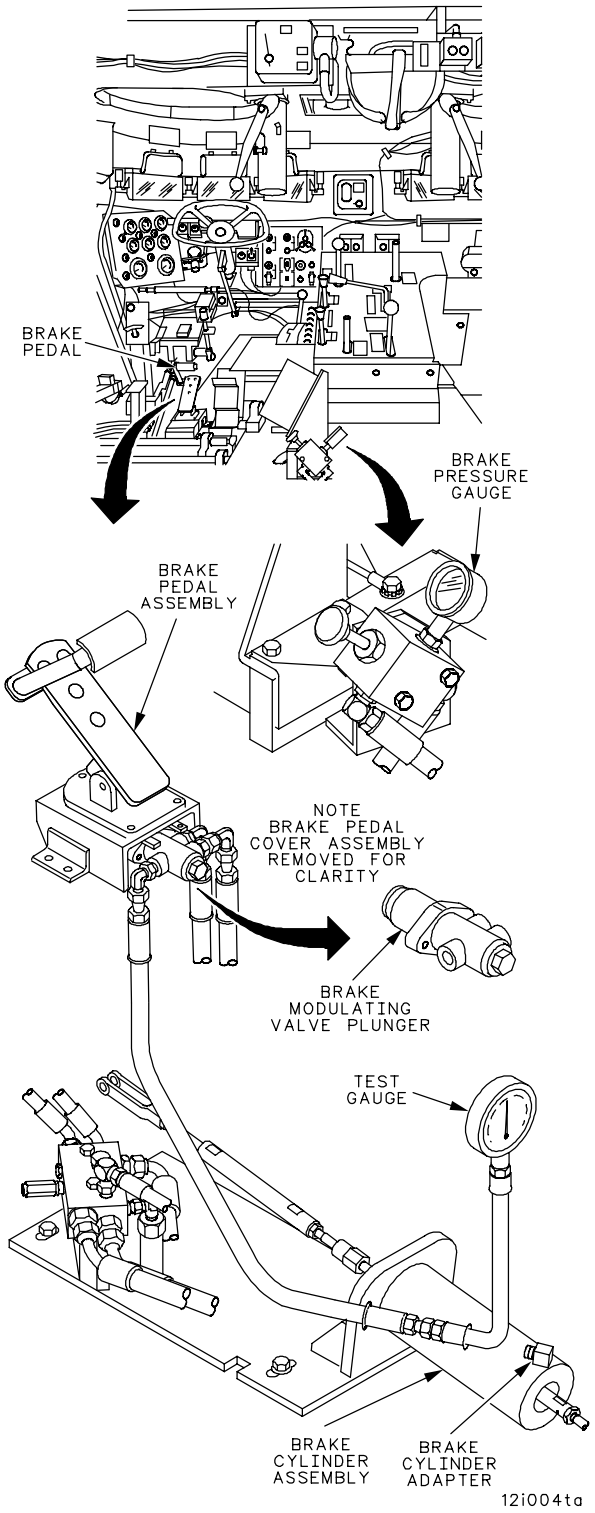
Does the test gauge indicate 1100 psi or greater?

yes

no

Replace hydraulic cylinder (WP 0370 00) or WP 0371 00). Verify fault is corrected.

Replace brake modulation valve (WP 0376 00) or WP 0377 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

BRAKES DO NOT STOP EFFECTIVELY - CONTINUED 0036 00

CONTINUED FROM STEP E

H With brakes released, check that disk is resting against face of brake cylinder assembly.

Is disk resting against face of brake cylinder assembly?

yes → Go to Step K.

no → (Old Configuration) Go to step I. (New Configuration with brake modulation) go to step J.

CONTINUED FROM STEP H

I
1. Inspect two spacers on modulating valve for dirt, rust or pitting.
2. Clean and lubricate both spacers.
3. Operate brake pedal through its entire range several times while observing disk and brake cylinder assembly.

Does disk return to rest against face of brake cylinder assembly?

yes → Go to Step K.

no → Adjust brakes (WP 0355 00, WP 0356 00 or WP 0357 00). Verify fault is corrected.

CONTINUED FROM STEP H

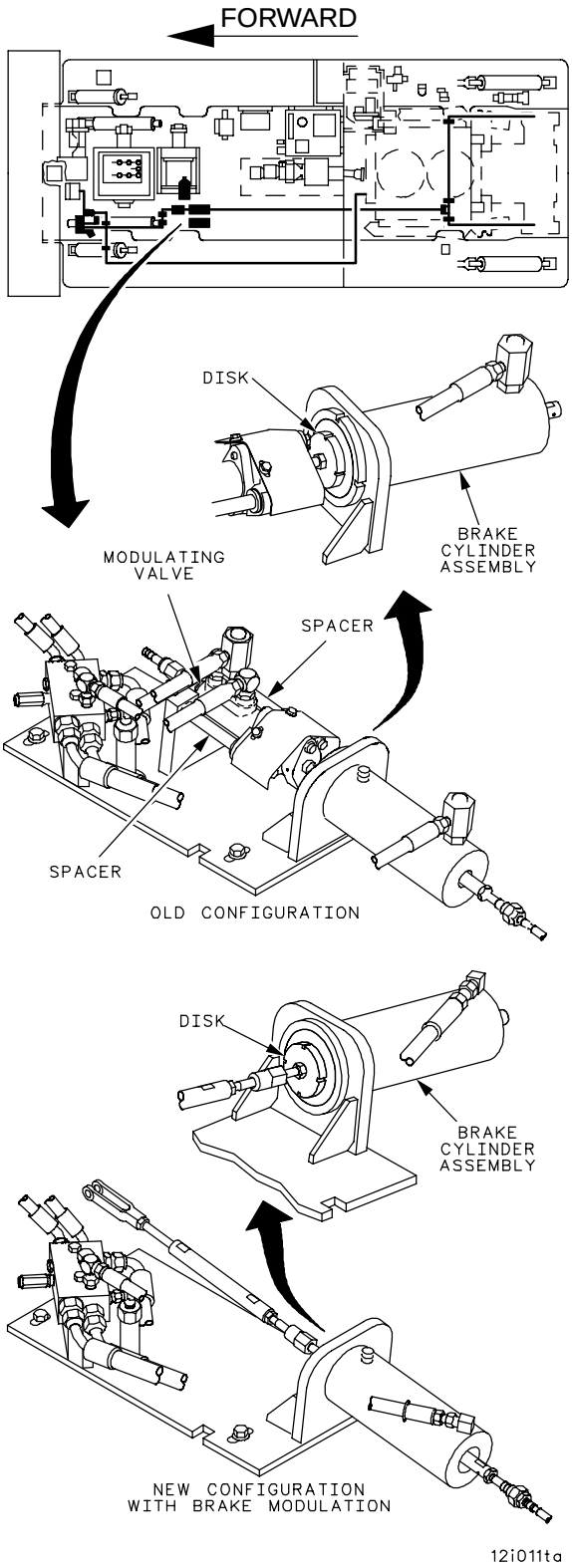
J
1. Inspect disk for build up of dirt and rust.
2. Clean disk of all foreign material.
3. Press and release brake pedal several times while observing disk and brake cylinder assembly.

Does disk return to rest against the face of brake cylinder assembly?

yes

no → Adjust brake rod assembly (WP 0357 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



BRAKES DO NOT STOP EFFECTIVELY - CONTINUED 0036 00

CONTINUED FROM STEP H, J

K

1. Open rear engine deck exhaust grille (TM 9-2350-292-10).

WARNING

Make sure brake alignment mark on rod and brake adjustment indicator are aligned. Failure to comply could result in loss of vehicle service brakes resulting in personnel injury or vehicle damage.

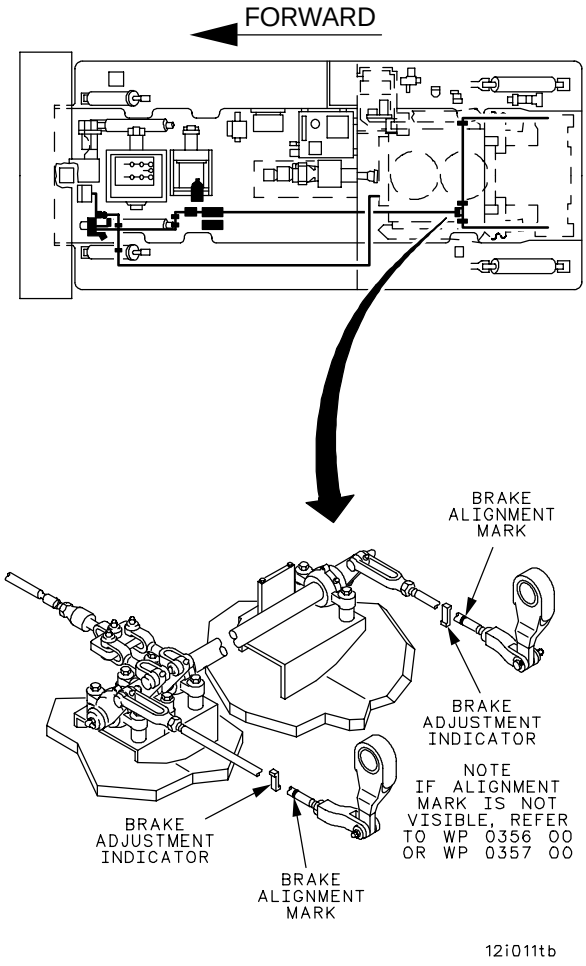
2. Apply brakes (TM 9-2350-292-10).
3. Observe brake adjustment indicator and alignment mark on brake rod.

Does indicator and alignment mark line up?

yes

no

Adjust brakes (WP 0355 00 or WP 0356 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

BRAKES DO NOT STOP EFFECTIVELY - CONTINUED 0036 00

CONTINUED FROM STEP H

L Check brake actuating linkage adjustment (WP 0384 00).

Is air valve linkage adjusted properly?

yes

no

Adjust linkage (WP 0384 00) and readjust brake linkage (WP 0356 00 or WP 0357 00). Verify fault is corrected.

M
1. Return vehicle to operating condition (TM 9-2350-292-10).
2. Operate vehicle at slow speed and apply brake (TM 9-2350-292-10).

Does vehicle stop effectively?

yes

no

Fault corrected.

Replace output reduction drive units (WP 0354 00). Verify fault is corrected.

CONTINUED FROM STEP A

N
1. Remove cover from brake relay (WP 0263 00).
2. Place one multimeter lead on harness 4W155 lead 578 ground connector and other lead on harness 4W155 lead 578 brake relay connector. Check for continuity.

Is continuity present?

yes

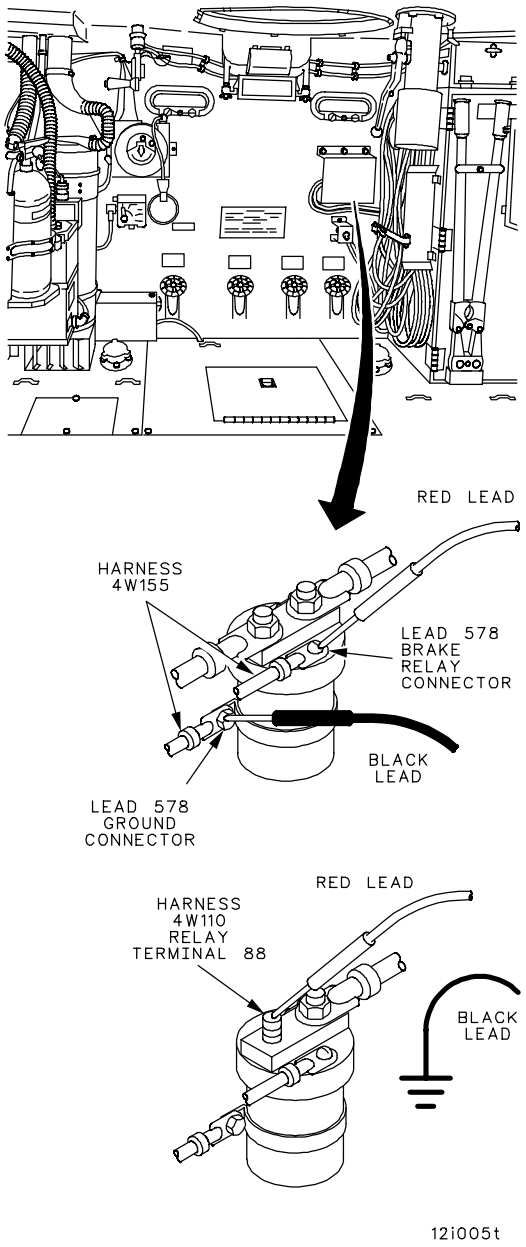
no

Repair (WP 0290 00) or replace (WP 0328 00) harness 4W155 lead 578. Verify fault is corrected.

O
1. Disconnect harness 4W155 and 4W110 from brake relay.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on relay terminal 88 and black lead to ground. Press brake pedal and check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

CONTINUED ON NEXT PAGE



BRAKES DO NOT STOP EFFECTIVELY - CONTINUED 0036 00

CONTINUED FROM STEP L

yes / no

Repair (WP 0290 00) or replace (WP 0320 00) harness 4W110. Verify fault is corrected.

P

1. Disconnect harness 4W155 lead 48 from circuit breaker at brake relay.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on lead 48 and black lead to ground check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes / no

Replace brake relay (WP 0263 00). Verify fault is corrected.

Q

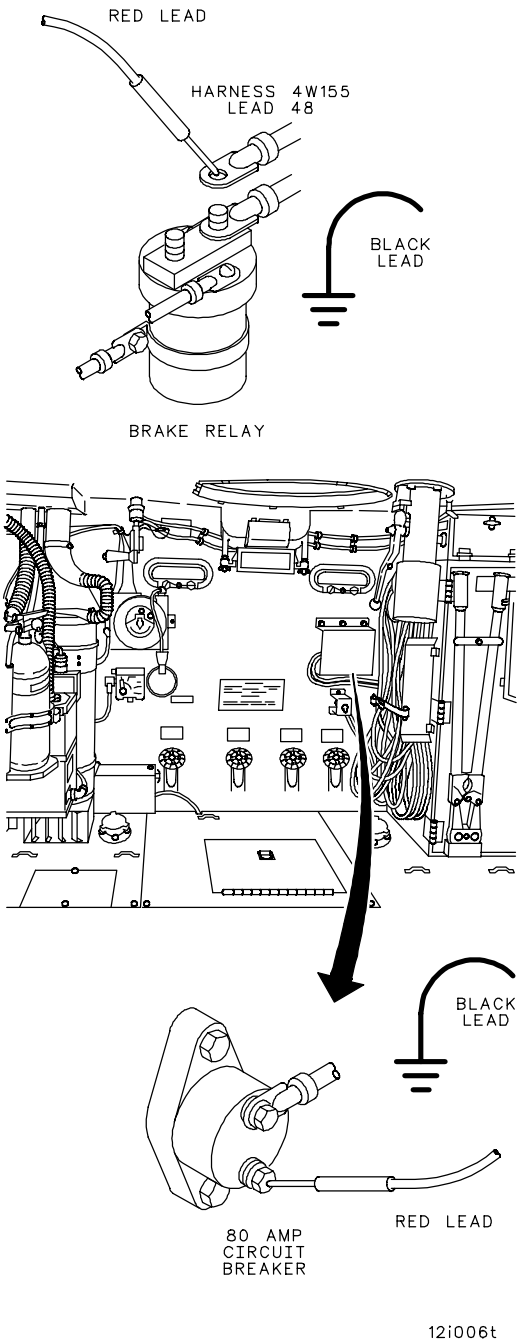
1. Reconnect harness 4W110 and harness 4W155 lead 48 to brake relay.
2. Disconnect harness 4W155 lead 48 from brake relay side of 80-amp circuit breaker.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on circuit breaker terminal and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes / no

Repair (WP 0290 00) or replace (WP 0328 00) harness 4W155. Verify fault is corrected.

CONTINUED ON NEXT PAGE



BRAKES DO NOT STOP EFFECTIVELY - CONTINUED 0036 00

CONTINUED FROM STEP N

R

1. Disconnect harness 4W100 lead 48 from bulkhead side of 80-amp circuit breaker.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on harness 4W100 lead 48 bulkhead side circuit breaker connector and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).
5. Reconnect harness 4W110 P1 at brake pump motor.

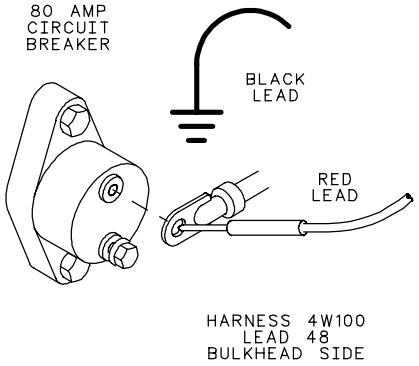
Is 24 V dc present?

yes

Replace circuit breaker (WP 0263 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0314 00) harness 4W100. Verify fault is corrected.



END OF TASK

BRAKES DRAG ON ONE OR BOTH SIDES 0037 00

THIS WORK PACKAGE COVERS:

Brakes Drag On One Or Both Sides

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

Output reduction access covers removed (WP 0453 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Inspect brake apply adjustment levers (WP 0356 00 or WP 0357 00).

Do levers touch their stops?

yes

no

Adjust brake linkage (WP 0356 00 or WP 0357 00). Verify fault is corrected.

B

1. Apply and release brakes 3 to 4 times (TM 9-2350-292-10).
2. Observe brake apply adjustment levers for proper return to stops.
3. If brakes do not fully release, check for binding, bent or broken parts.

Are all parts in good condition and operating properly?

yes

no

Repair or replace faulty parts (WP 0365 00). Verify fault is corrected.

C Operate vehicle (TM 9-2350-292-10).

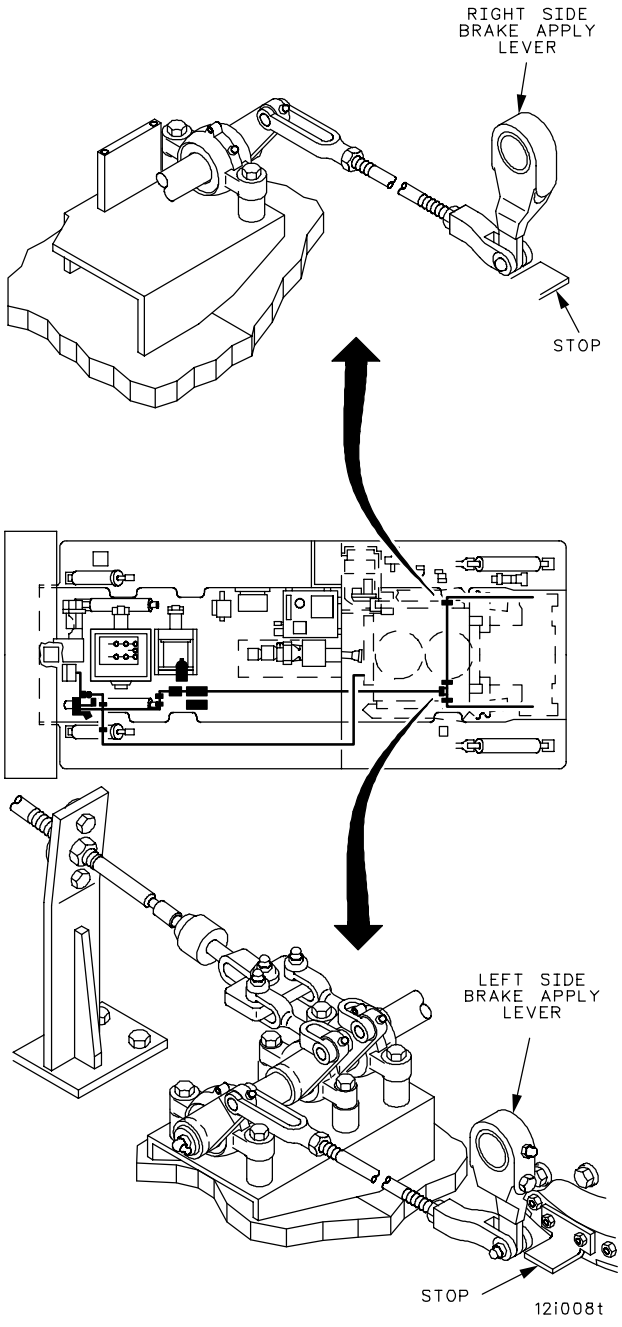
Do brakes still drag?

yes

no

Replace faulty output reduction unit (WP 0354 00). Verify fault is corrected.

Fault corrected.



END OF TASK

ENGINE DOES NOT RESPOND PROPERLY TO THROTTLE CONTROLS 0038 00

THIS WORK PACKAGE COVERS:

Engine Does Not Respond properly To Throttle Controls

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

Forward air intake grille door removed (WP 0415 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect one end of throttle rod.
2. Depress accelerator linkage to maximum and check for free pin fit when reconnecting linkage.

Can free pin fit be made?

yes

no

Adjust linkage (WP 0227 00). Verify fault is corrected.

B

1. Start main engine (TM 9-2350-292-10).
2. Check idle speed and solenoid speed adjustment.

Are idle and solenoid speed adjustments proper?

yes

no

Notify Direct Support Maintenance.

C

Operate throttle controls (TM 9-2350-292-10).

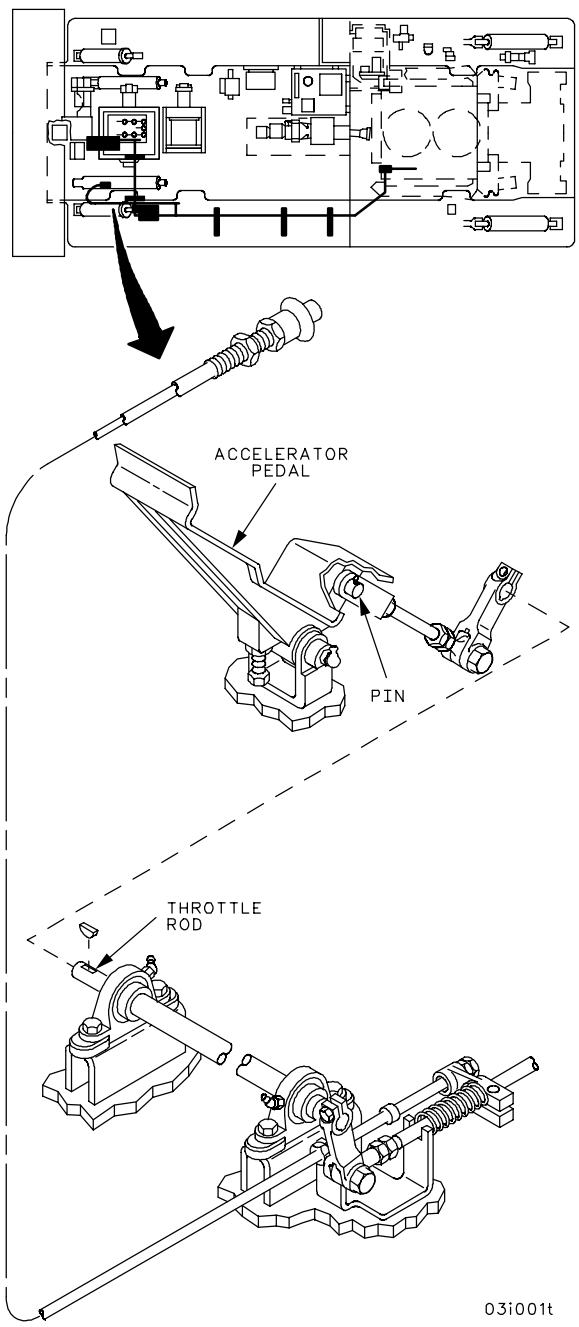
Does engine respond properly?

yes

no

Fault corrected.

Notify Direct Support Maintenance.



END OF TASK

PURGE PUMP FAILS TO OPERATE (PURGE PUMP CANNOT BE HEARD OPERATING WHEN TURNED ON) 0039 00

THIS WORK PACKAGE COVERS:

Purge Pump Fails To Operate (Purge Pump Cannot Be Heard Operating When Turned On)

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Utility Pail (item 27, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Powerpack removed (WP 0188 00)
Engine ground hop kit installed (WP 0189 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Inspect purge pump fuel lines and connections for leaks and damage.

Are lines and connections free of leaks and damage?

yes

no

Replace leaking and damaged lines and connectors (WP 0225 00). Verify fault is corrected.

B

1. Disconnect fuel line from IN port of purge pump.
2. Place fuel line in a container and turn MASTER switch ON and FUEL PUMP switch to PURGE (TM 9-2350-292-10).
3. Turn MASTER switch and FUEL PUMP switch OFF (TM 9-2350-292-10).

Is fuel pumped from fuel line?

yes

no

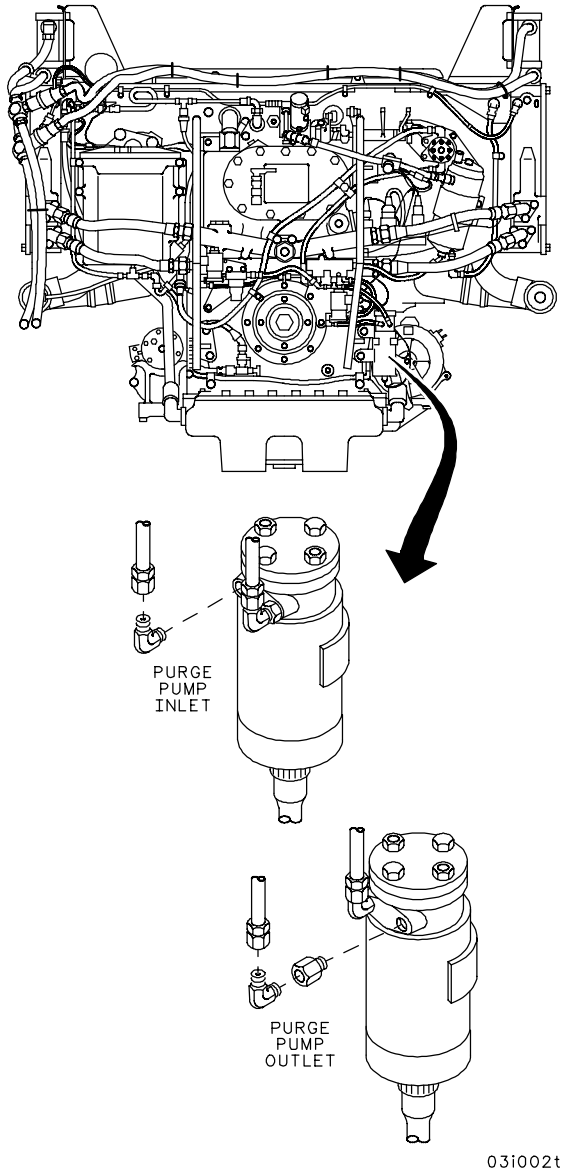
Go to Step E.

C

1. Reconnect fuel line to IN port of purge pump and disconnect fuel line from OUT port of purge pump.
2. Place container under purge pump and turn MASTER switch ON and hold ENGINE PREHEAT switch in PURGE position (TM 9-2350-292-10).
3. Turn MASTER switch OFF (TM 9-2350-292-10).

Does fuel flow from purge pump?

CONTINUED ON NEXT PAGE



PURGE PUMP FAILS TO OPERATE (PURGE PUMP CANNOT BE HEARD OPERATING WHEN TURNED ON) - CONTINUED 0039 00

CONTINUED FROM STEP C

yes / no

Replace purge pump (WP 0225 00). Verify fault is corrected.

D

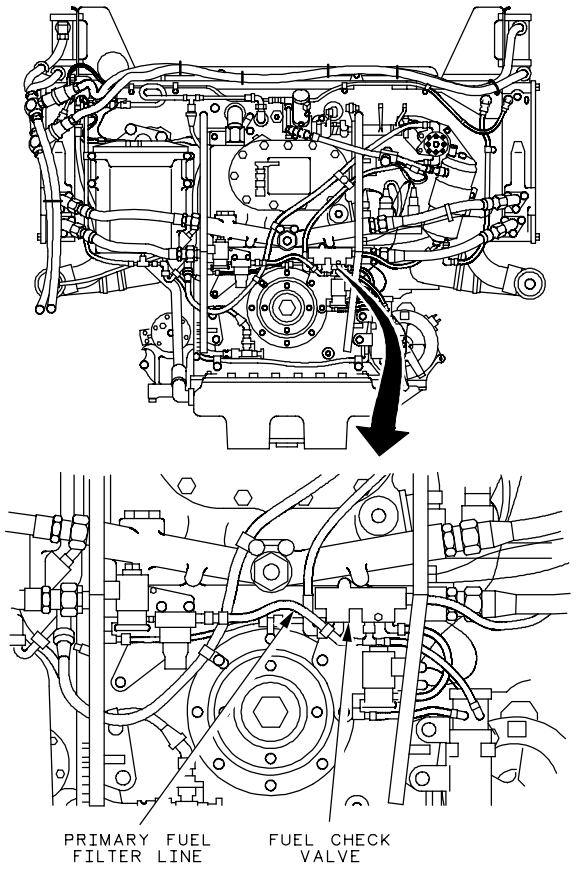
1. Reconnect fuel line to OUT port of purge pump.
2. Disconnect fuel outlet hose from main engine fuel check valve.
3. Place container under check valve and turn MASTER switch ON and FUEL PUMP switch to PURGE (TM 9-2350-292-10).
4. Hold ENGINE PREHEAT switch in PURGE position (TM 9-2350-292-10).
5. Turn MASTER switch and FUEL PUMP switch OFF (TM 9-2350-292-10).

Does fuel flow freely from check valve?

yes / no

Fault corrected.

Replace main engine check valve (WP 0225 00). Verify fault is corrected.



03i003t

CONTINUED FROM STEP B

E

1. Turn MASTER switch ON and FUEL PUMP switch to PURGE (TM 9-2350-292-10).
2. Place ENGINE PREHEAT switch in ON position (TM 9-2350-292-10) and listen for purge pump to operate.
3. Turn MASTER switch and FUEL PUMP switch OFF (TM 9-2350-292-10).

Can purge pump be heard operating?

yes / no

Go to step I.

CONTINUED ON NEXT PAGE

PURGE PUMP FAILS TO OPERATE (PURGE PUMP CANNOT BE HEARD OPERATING WHEN TURNED ON) - CONTINUED 0039 00

CONTINUED FROM STEP E

F

1. Disconnect electrical connectors from purge pump and purge solenoid.
2. Turn MASTER switch ON and hold ENGINE PREHEAT switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on socket A of purge pump connector and black lead to ground.
4. Place multimeter red lead on socket A of purge solenoid connector and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present for both connectors?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

G

1. Disconnect harness 3W202 P1 at engine disconnect receptacle J3
2. Place one multimeter lead on harness 3W202 pin V and other lead in purge pump connector socket B and purge solenoid connector socket B (one at a time) and check for continuity.

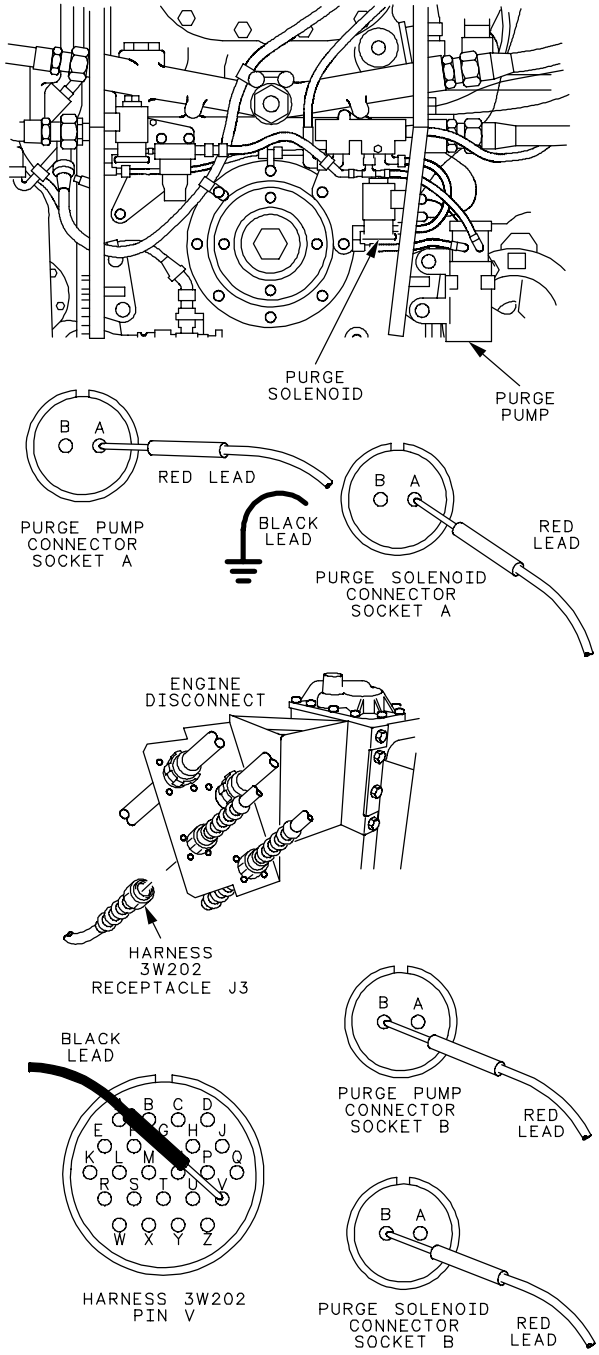
Is continuity present for both tests?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

CONTINUED ON NEXT PAGE



PURGE PUMP FAILS TO OPERATE (PURGE PUMP CANNOT BE HEARD OPERATING WHEN TURNED ON) - CONTINUED 0039 00

CONTINUED FROM STEP G

H

1. Reconnect harness 3W202 P1 to engine disconnect receptacle J3.
2. Turn MASTER switch and ENGINE PREHEAT switch ON (TM 9-2350-292-10) and listen for purge pump to operate.

Does purge pump operate?

yes

Replace purge solenoid (WP 0225 00). Verify fault is corrected.

no

Replace purge pump (WP 0225 00). Verify fault is corrected.

CONTINUED FROM STEP E

I

1. Remove switch panel from bracket (WP 0242 00) and reattach ground strap to switch panel.
2. Disconnect harness 4W101 P1 from switch panel.
3. Turn MASTER switch ON and FUEL PUMP switch to PURGE (TM 9-2350-292-10).
4. Place multimeter red lead on pin C of switch panel receptacle and black lead to ground. Check for voltage.
5. Turn MASTER switch and FUEL PUMP switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Go to step P.

no

J

1. Disconnect harness 4W105 P1 from switch panel.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on harness 4W105 P1 pin E and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

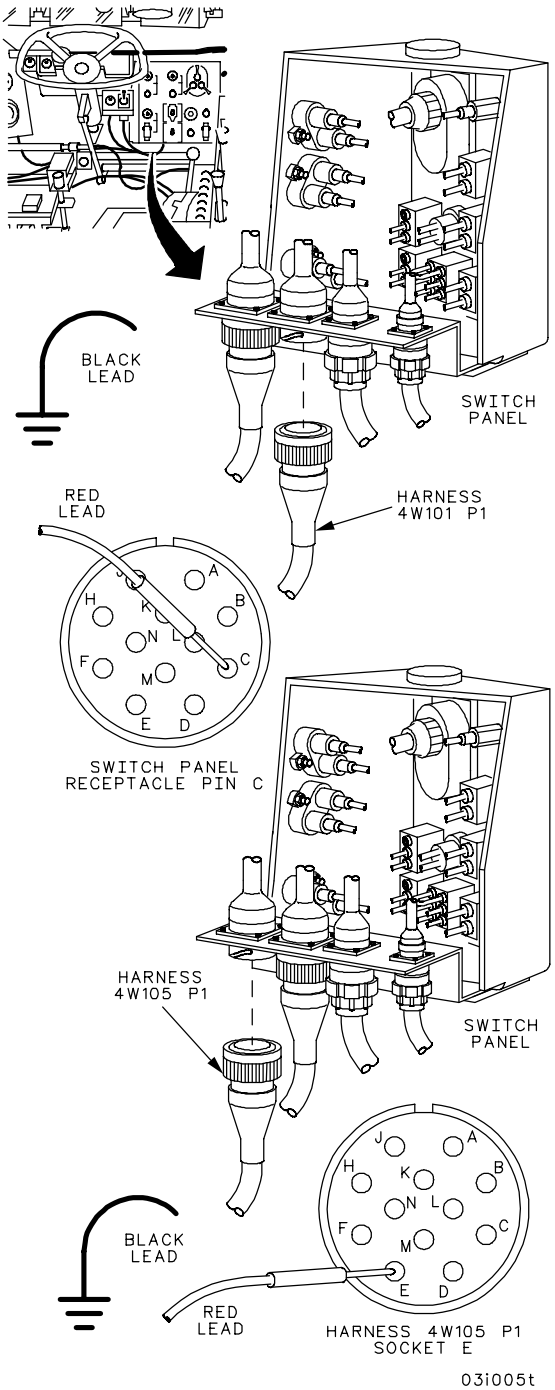
Is 24 V dc present?

yes

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected

no

CONTINUED ON NEXT PAGE



PURGE PUMP FAILS TO OPERATE (PURGE PUMP CANNOT BE HEARD OPERATING WHEN TURNED ON) - CONTINUED 0039 00

CONTINUED FROM STEP J

K

1. Remove switch panel (WP 0242 00), reconnect ground lead and disconnect lead 10 from CB3.
2. Place one multimeter lead on switch panel receptacle pin E and other lead in lead 10 circuit breaker connector socket. Check for continuity.

Is continuity present?

yes

no — Repair (WP 0290 00) or replace (WP 0242 00) lead 10 from switch panel connector to CB3. Verify fault is corrected.

L

1. Disconnect lead 76 from CB3.
2. Place one multimeter lead on each connector end of fuel pump circuit breaker. Check for continuity.

Is continuity present?

yes

no — Replace CB3 (WP 0242 00). Verify fault is corrected.

M

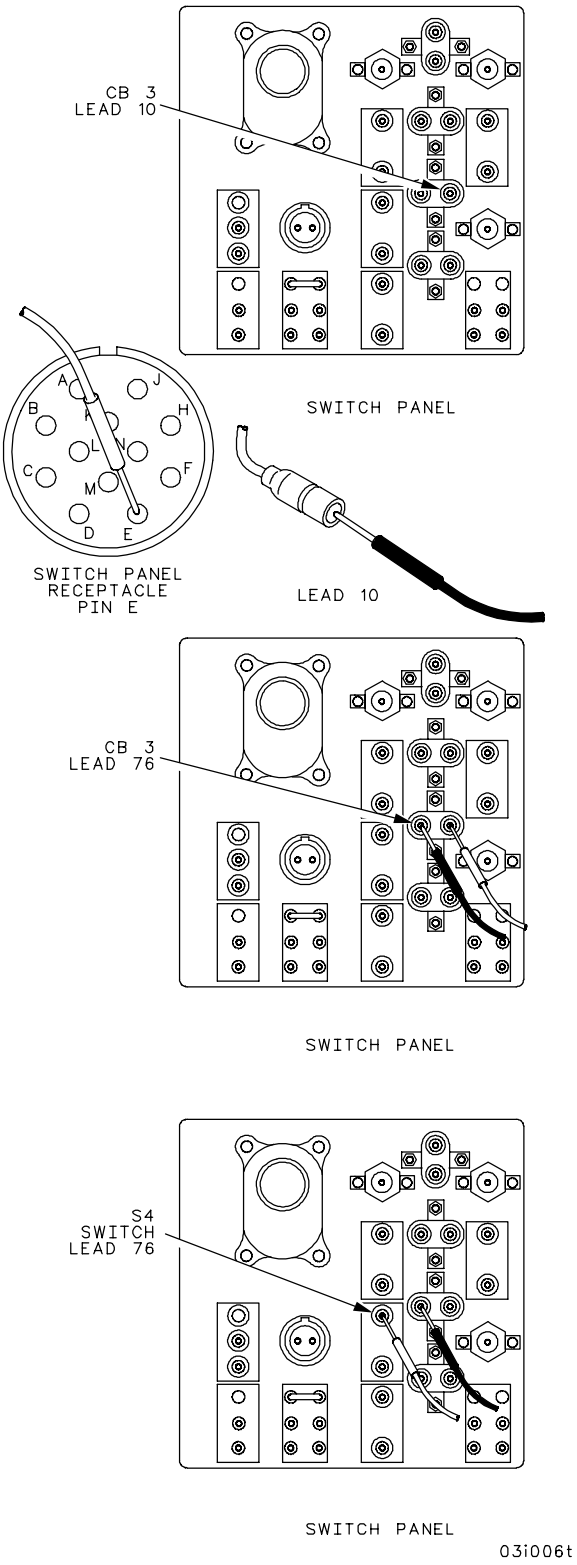
1. Reconnect lead 10 to CB3.
2. Disconnect lead 76 from CB3 side of switch S4.
3. Place one multimeter lead in lead 76 CB3 connector socket and other lead in lead 76 switch S4 connector socket. Check for continuity.

Is continuity present?

yes

no — Repair (WP 0290 00) or replace (WP 0242 00) lead 76. Verify fault is corrected.

CONTINUED ON NEXT PAGE



PURGE PUMP FAILS TO OPERATE (PURGE PUMP CANNOT BE HEARD OPERATING WHEN TURNED ON) - CONTINUED 0039 00

CONTINUED FROM STEP M

N

1. Reconnect lead 76 to CB3.
2. Disconnect lead 76 from panel side of switch S4.
3. Place one multimeter lead on each end of switch S4. Check for continuity.

Is continuity present?

yes

no

Replace fuel pump switch (WP 0242 00). Verify fault is corrected.

O

1. Reconnect lead 76 to CB3 side of switch S4.
2. Place one multimeter lead in lead 76 switch S4 connector socket and other lead on harness 4W109 J3 receptacle pin C. Check for continuity.

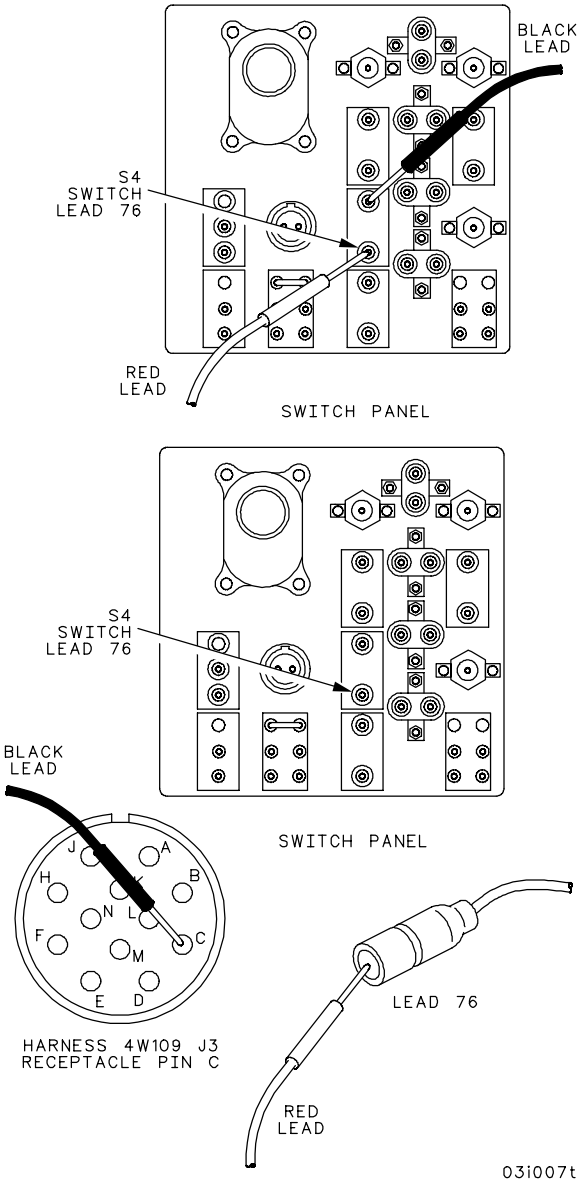
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 76 from harness receptacle to switch S4. Verify fault is corrected.

CONTINUED ON NEXT PAGE



PURGE PUMP FAILS TO OPERATE (PURGE PUMP CANNOT BE HEARD OPERATING WHEN TURNED ON) - CONTINUED 0039 00

CONTINUED FROM STEP I AND O

P

1. Reconnect lead 76 to switch S4.
2. Remove subfloor plate 20 (WP 0454 00).
3. Disconnect harness 4W101 P5 from fuel pump.
4. Turn MASTER switch ON and FUEL PUMP switch to PURGE (TM 9-2350-292-10).
5. Place multimeter red lead in harness 4W101 P5 socket at fuel pump and black lead to ground. Check for voltage.
6. Turn MASTER switch and FUEL PUMP switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Q

Place one multimeter lead in ground socket of harness 4W101 P5 and other lead to ground. Check for continuity.

Is continuity present?

yes

R

1. Remove fuse block from fuel pump (WP 0201 00).
2. Remove fuse from fuse block (WP 0201 00) and place one multimeter lead on each end of fuse. Check for continuity.

Is continuity present?

yes

Replace fuel pump (WP 0201 00). Verify fault is corrected.

no

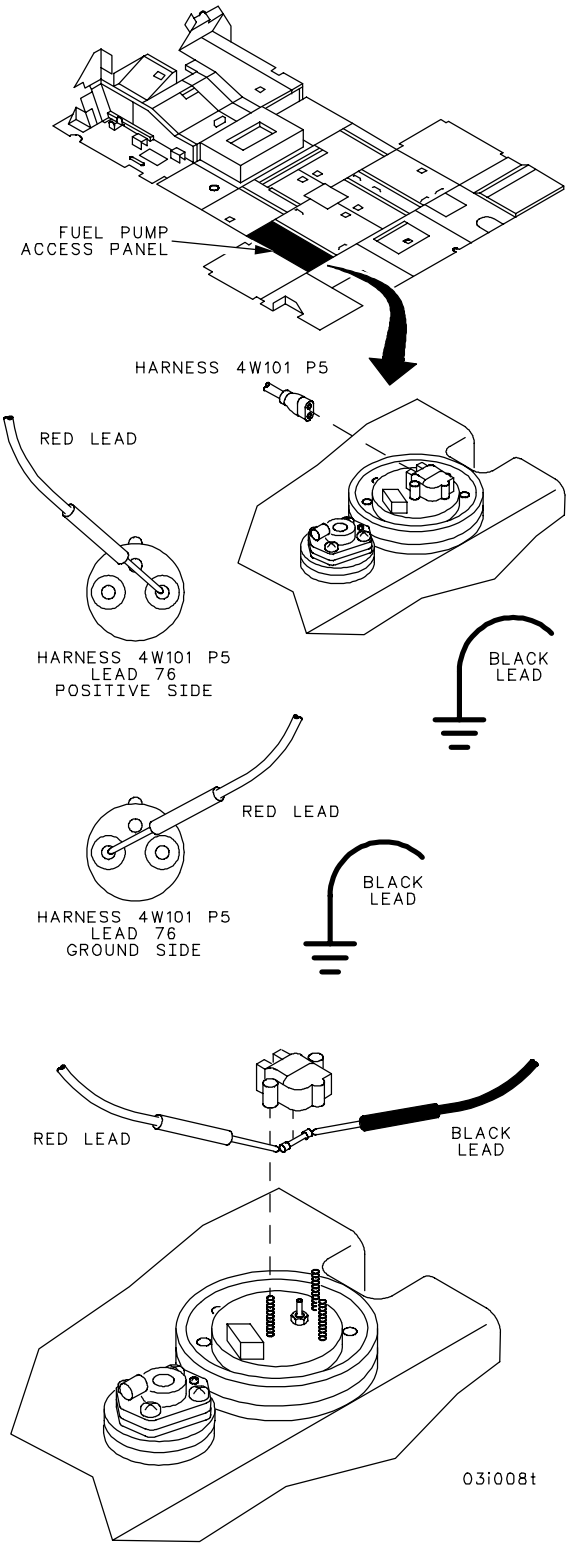
Replace fuse (WP 0201 00). Verify fault is corrected.

no

Replace ground lead. Verify fault is corrected.

no

Replace harness 4W101 (WP 0315 00). Verify fault is corrected.



END OF TASK

ENGINE OVERVIEW AND DIAGRAMS 0040 00

THIS WORK PACKAGE COVERS:

Engine Overview And Diagrams

The engine is a 12-cyclinder, 90 degree, V-type, air cooled turbosupercharged diesel engine. The engine features a fuel injection system and a turbosupercharged air induction system which obtains optimum engine performance. The engine is equipped with a 28 volt, 650 ampere oil cooled alternator (generator) and a 24-volt solenoid activated starter. The engine is also equipped with two intake manifold heaters and purge pump, time totalizing meter, fuel/water separator and smoke generating system. A monitoring system indicates engine oil pressure, engine oil temperature, fuel level and the status of the turbocharger dust detectors. The generator, smoke generating system and the monitoring systems are each described in separate sections.

The main engine starter system consists of the starter, starter solenoid, a starter low voltage protective module, a park position switch (neutral safety switch), a START switch, a 20-amp circuit breaker, and related electrical wiring.

Operating voltage (+24 V dc) for the starter is supplied from the batteries through the starter solenoid to the starter motor. The low voltage protective module prevents starter activation with improperly charged batteries. The low voltage protective module also shuts the starter off when the engine starts and prevents the starter from engaging when the engine is running. When the MASTER switch is ON, system power (+24 V dc) is supplied through the 20-amp circuit breaker to the START switch. When the START switch is pressed, system power is applied through the park position switch to the low voltage protective module which, in turn, energizes the starter solenoid. Battery power (+24 V dc) is then applied through the solenoid to the starter motor and the engine is cranked. The park position switch prevents cranking the engine when the transmission shift selector is not in the neutral position.

The main engine manifold preheater and purge pump system consists of an ENGINE PREHEAT ON/OFF switch, a 20-amp circuit breaker, two manifold preheater coils, the preheater spark plugs, two fuel solenoids, a purge solenoid, a purge pump, and related electrical wiring.

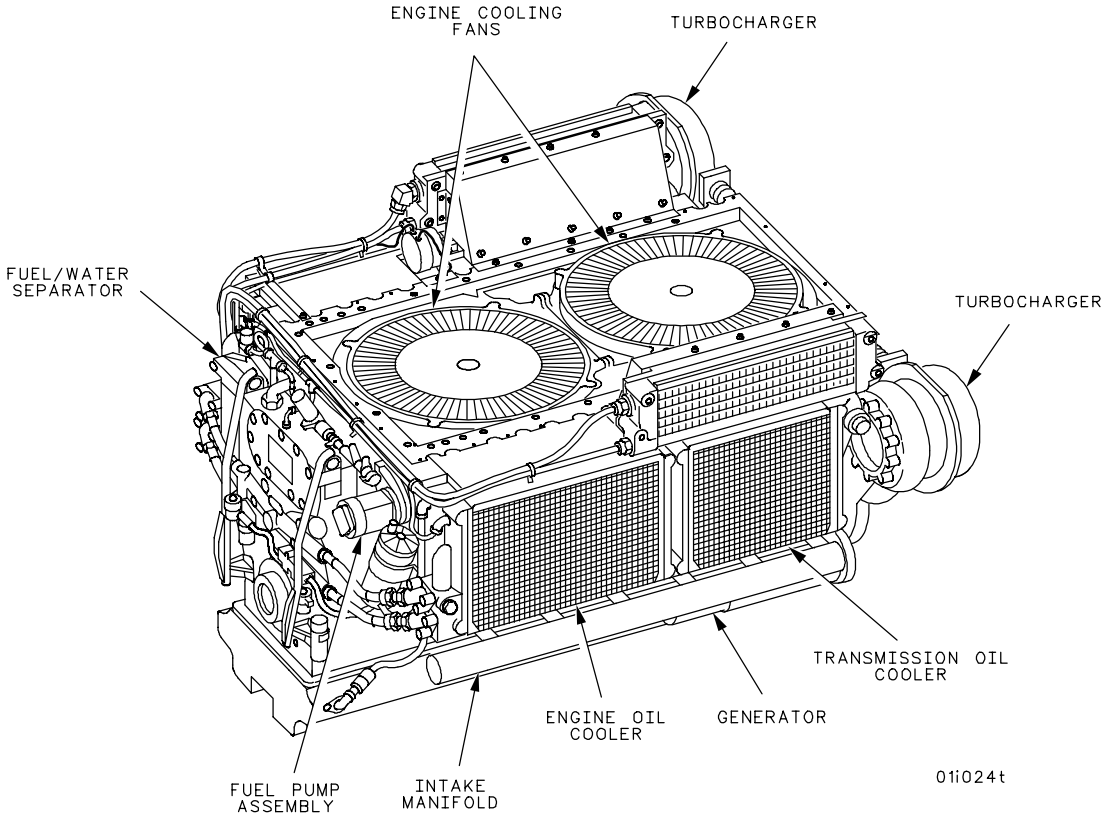
The main engine manifold preheater and purge pump system provides the capability to start and sustain main engine operation in cold weather conditions. The heaters, when operated, preheat the air entering the cylinders to facilitate cold weather starting and cold weather idle operation. The purge pump and solenoid allow air to be purged from the fuel and manifold air induction heater systems in order to fill the systems with fuel. When the MASTER switch is ON, the manifold preheaters are turned on whenever the ENGINE PREHEAT switch is held in the ON position. Likewise, the purge pump and purge solenoid are also turned on as long as the ENGINE PREHEAT switch is held in the ON position. When the engine reaches normal operating temperatures, the ENGINE PREHEAT switch can be set to OFF to shut down manifold preheater and purge operations.

The main engine fuel supply electrical system consists of the electric fuel pump, the fuel shutoff solenoid, the fire extinguisher fuel line interlock switch, the FUEL PUMP switch, the ENG FUEL SHUT OFF switch, two 15-amp circuit breakers, the FIRE EXTINGUISHER ENGINE SHUTOFF indicator, and related electrical wiring.

System power (+24 - 28 V dc) is supplied to the FUEL PUMP switch and ENG FUEL SHUT OFF switch through separate 15-amp circuit breakers. When the MASTER switch is ON, the fuel pump operates to supply fuel to the main engine whenever the FUEL PUMP switch is set to ON. If either the FUEL SHUTOFF switch is ON or the fire extinguisher fuel line interlock switch is activated, the fuel solenoid is energized and fuel is shut off to the engine injector pump. In addition, the FIRE EXTINGUISHER ENGINE SHUTOFF indicator will light.

The fuel/water separator consists of a control module and solenoid valve. The separator system operates automatically whenever the engine is running to detect and remove water from the fuel system. A time totalizing meter records elapsed main engine running time. Both the fuel/water separator and the time totalizing meter operate from the main engine generator output (+28 V dc); thus, these accessories operate whenever the main engine is running.

ENGINE OVERVIEW AND DIAGRAMS - CONTINUED 0040 00



ENGINE FAILS TO CRANK WHEN STARTER SWITCH IS PRESSED 0041 00

THIS WORK PACKAGE COVERS:

Engine Fails To Crank When Starter Swtich Is Pressed

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)
STE-ICE-R (item 85, WP 0717 00)
Engine ground hop kit (item 14, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Is STE-ICE-R available?

yes

no

Go to Step K.

B

1. Setup STE-ICE-R for operation (TM 9-4910-571-12&P).
2. Connect STE-ICE-R harness W1 to vehicle harness 4W800 J1 DCA connector.
3. Enter vehicle ID (VID) 04 and perform STE-ICE-R test 72 (TM 9-4910-571-12&P) and record results.

Is VTM reading between 1125 and 2925 amps?

yes

no

Go to Step F.

C Perform STE-ICE-R test 73 (TM 9-4910-571-12&P) and record results.

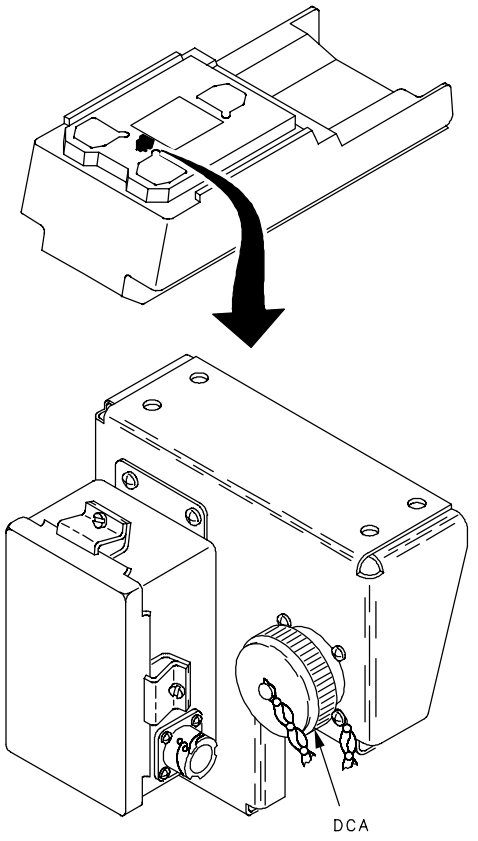
Is VTM reading less than 8.33 milliohms?

yes

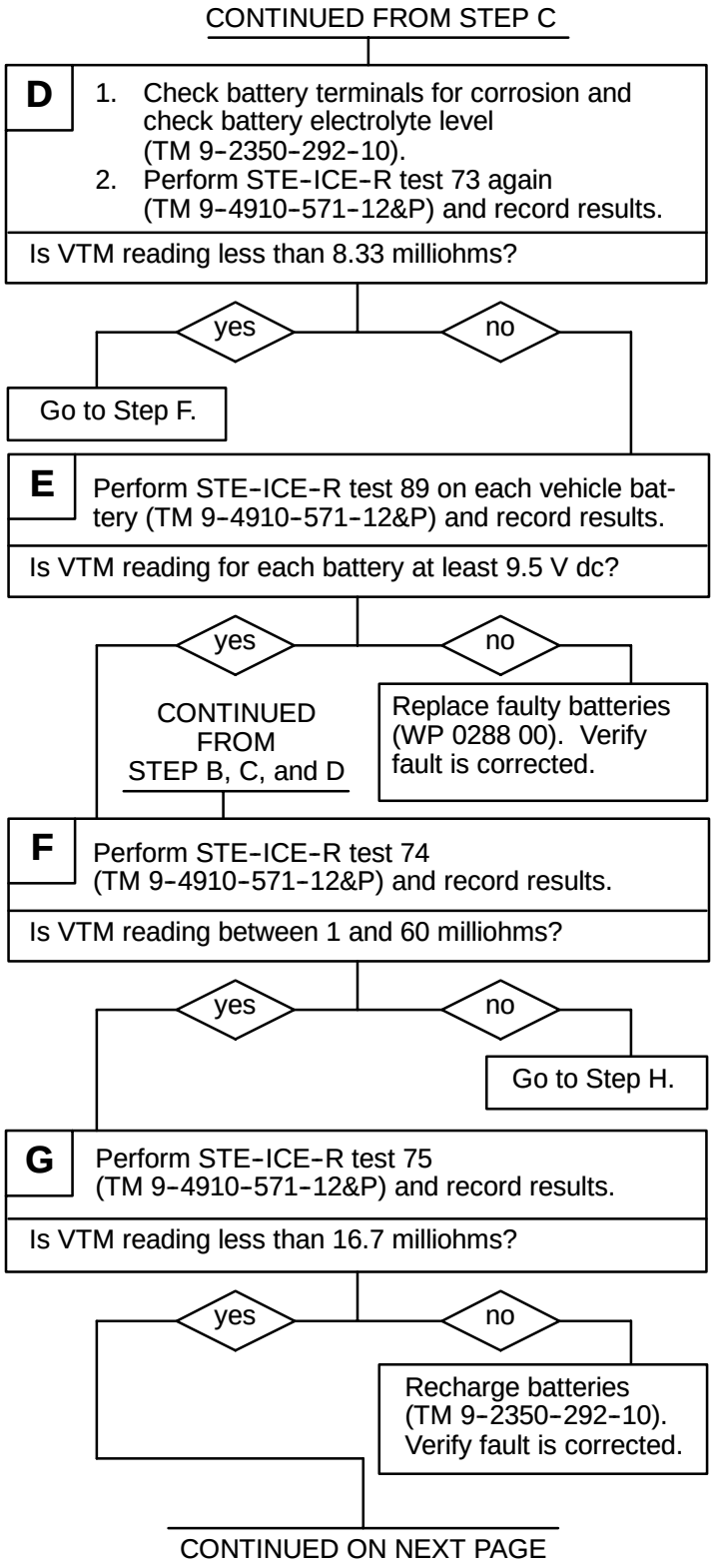
no

Go to Step F.

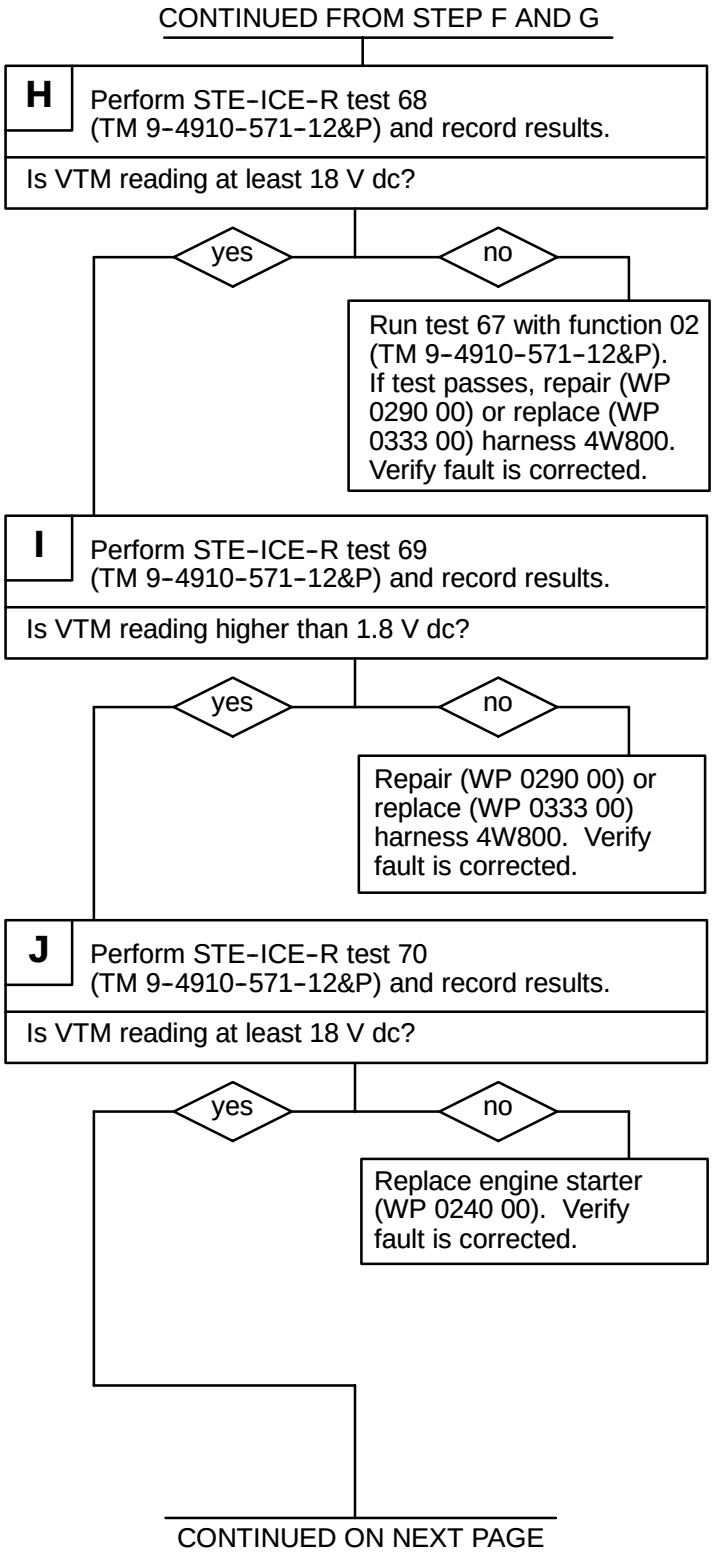
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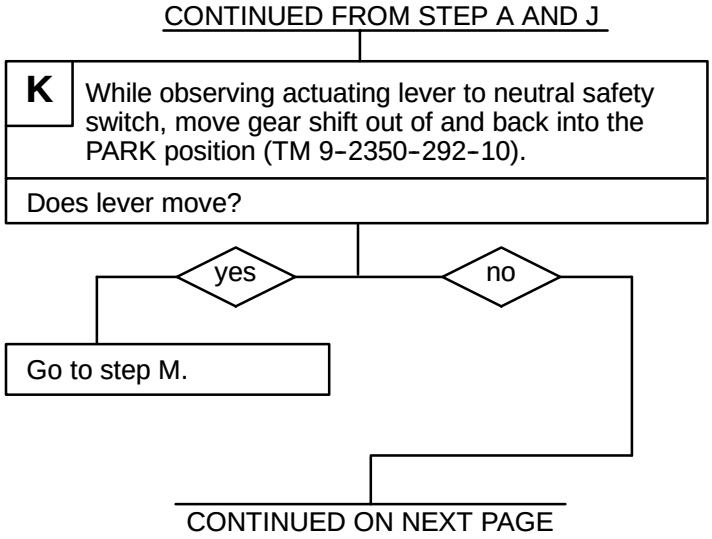
ENGINE FAILS TO CRANK WHEN STARTER SWTICH IS PRESSED - CONTINUED 0041 00



ENGINE FAILS TO CRANK WHEN STARTER SWTICH IS PRESSED - CONTINUED 0041 00



ENGINE FAILS TO CRANK WHEN STARTER SWTICH IS PRESSED - CONTINUED 0041 00



ENGINE FAILS TO CRANK WHEN STARTER SWTICH IS PRESSED - CONTINUED 0041 00

CONTINUED FROM STEP K

L Inspect linkage from transmission lever to neutral safety switch for connection and damage.

Is linkage connected and/or free of damage?

- yes → Adjust linkage (WP 0408 00). Verify fault is corrected.
- no → Connect and/or repair linkage (WP 0406 00). Verify fault is corrected.

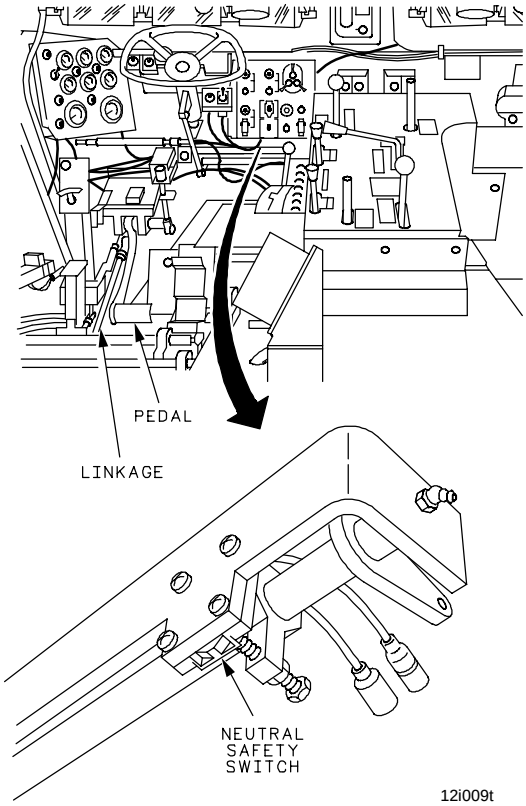
CONTINUED FROM STEP K

M Observe linkage to make sure lever depresses neutral safety switch.

Does lever depress neutral safety switch?

- yes
- no → Adjust linkage (WP 0408 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE FAILS TO CRANK WHEN STARTER SWTICH IS PRESSED - CONTINUED 0041 00

CONTINUED FROM STEP M

N

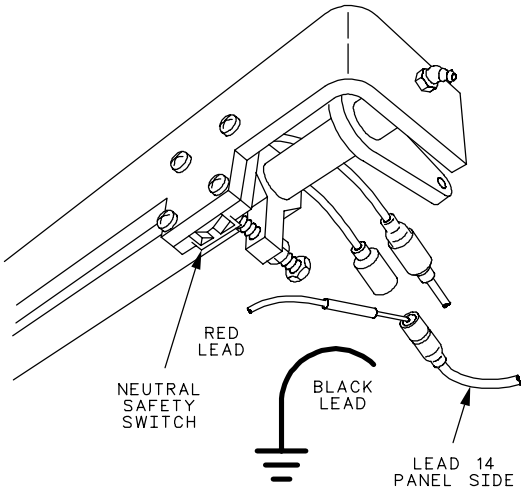
1. Disconnect lead 14 from panel side of neutral safety switch.
2. Turn MASTER switch ON and hold START switch in the ON position (TM 9-2350-292-10).
3. Place multimeter red lead in lead 14 neutral safety switch connector socket and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0315 00) lead 14 to neutral safety switch. Verify fault is corrected.



O

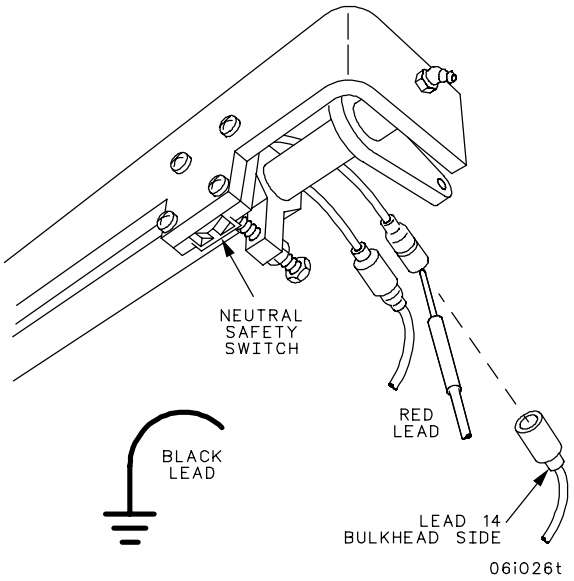
1. Turn MASTER switch OFF (TM 9-2350-292-10).
2. Reconnect lead 14 to panel side of neutral safety switch.
3. Disconnect lead 14 from bulkhead side of neutral safety switch.
4. Turn MASTER switch ON and hold START switch in the ON position (TM 9-2350-292-10).
5. Place multimeter red lead in neutral safety switch connector socket and black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Replace neutral safety switch (WP 0252 00) . Verify fault is corrected.



CONTINUED ON NEXT PAGE

ENGINE FAILS TO CRANK WHEN STARTER SWTICH IS PRESSED - CONTINUED 0041 00

f. ENGINE - CONTINUED (1) ENGINE FAILS TO CRANK WHEN STARTER SWITCH IS PRESSED - CONTINUED

CONTINUED FROM STEP O

P

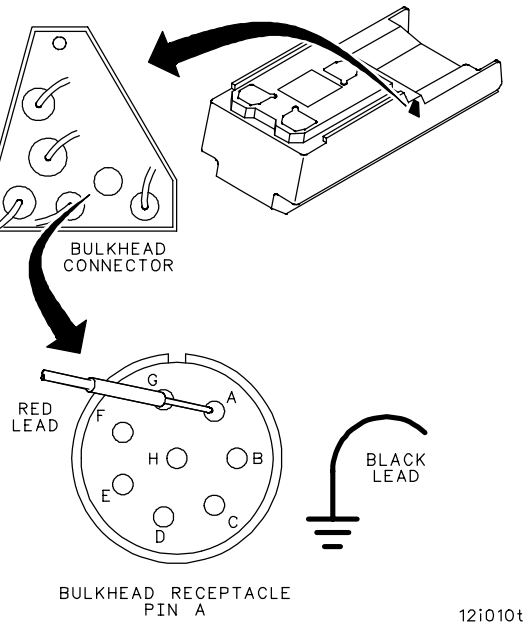
1. Open air intake grilles above battery compartment (TM 9-2350-292-10).
2. Disconnect harness 3W132 P1 from bulkhead disconnect.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on pin A of bulkhead disconnect receptacle and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Go to step W.

no



CONTINUED ON NEXT PAGE

ENGINE FAILS TO CRANK WHEN STARTER SWTICH IS PRESSED - CONTINUED 0041 00

CONTINUED FROM STEP P

Q

1. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
2. Disconnect harness 4W105 P1 at switch panel disconnect.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on socket M of harness 4W105 P1 and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.

R

1. Disconnect lead 10 from CB1.
2. Place one multimeter lead in lead 10 connector socket and other lead on harness 4W151 J4 pin M. Check for continuity.

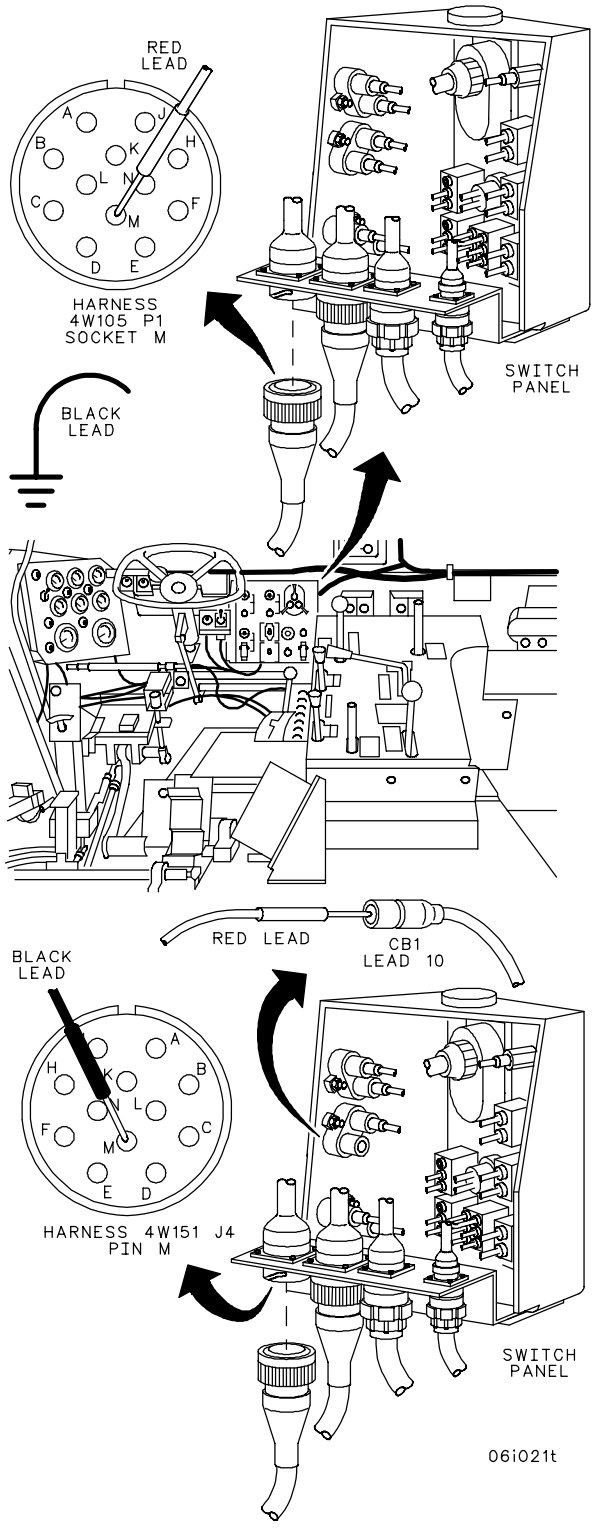
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 10 from switch panel connector to CB1. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE FAILS TO CRANK WHEN STARTER SWTICH IS PRESSED - CONTINUED 0041 00

CONTINUED FROM STEP R

S

1. Disconnect lead 14 from CB1.
2. Place one multimeter lead in each end of CB1. Check for continuity.

Is continuity present?

yes

no

Replace CB1 (WP 0242 00). Verify fault is corrected.

T

1. Reconnect lead 10 to CB1.
2. Disconnect lead 14 from switch S4.
3. Place one multimeter lead in lead 14 to CB1 and other lead in lead 14 switch S4 connector socket to CB1. Check for continuity.

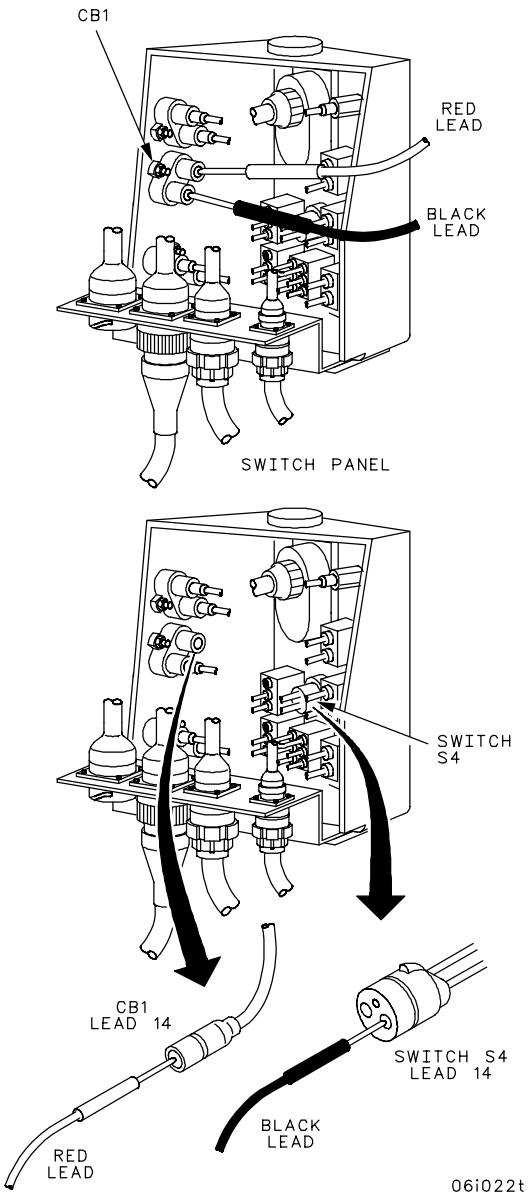
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 14. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE FAILS TO CRANK WHEN STARTER SWTICH IS PRESSED - CONTINUED 0041 00

CONTINUED FROM STEP T

U

1. Reconnect lead 14 to CB1.
2. Hold START switch ON and place one multimeter lead on each connector pin of switch S4. Check for continuity.

Is continuity present?

yes

no

Replace START switch (WP 0242 00). Verify fault is corrected.

V

Place one multimeter lead in lead 14 switch S4 connector socket to harness 4W109 J3 and other lead in harness 4W151 J4 pin A. Check for continuity.

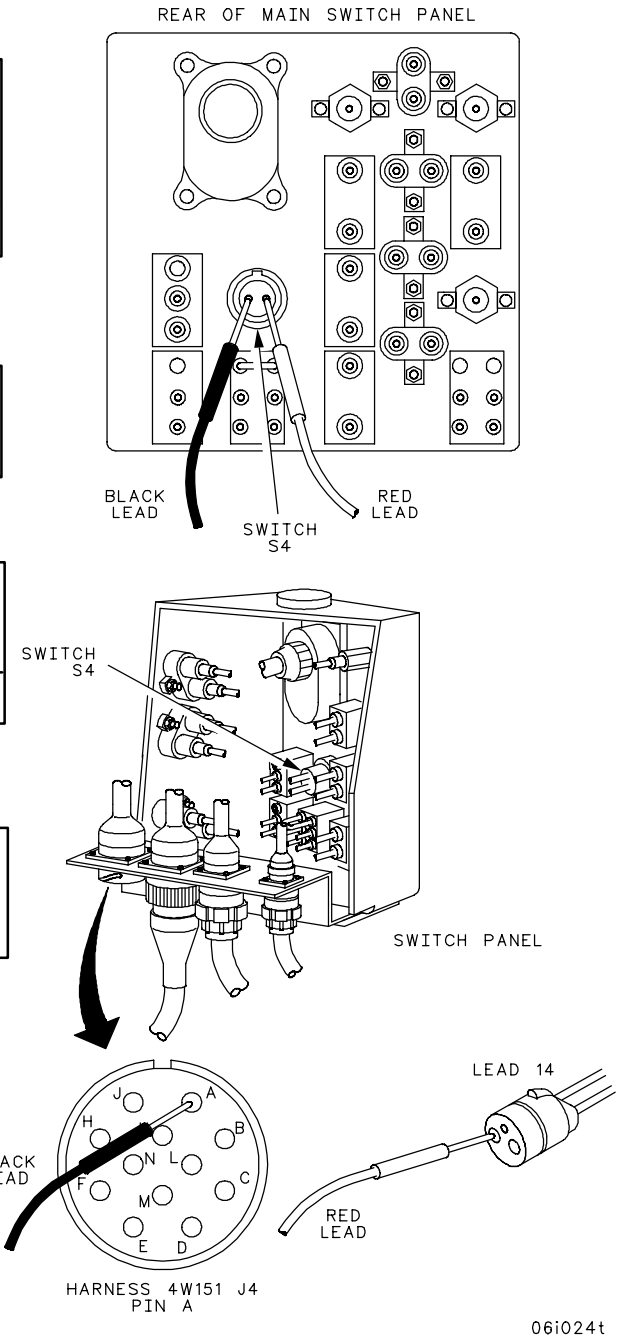
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 14. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE FAILS TO CRANK WHEN STARTER SWTICH IS PRESSED - CONTINUED 0041 00

CONTINUED FROM STEP P AND V

W

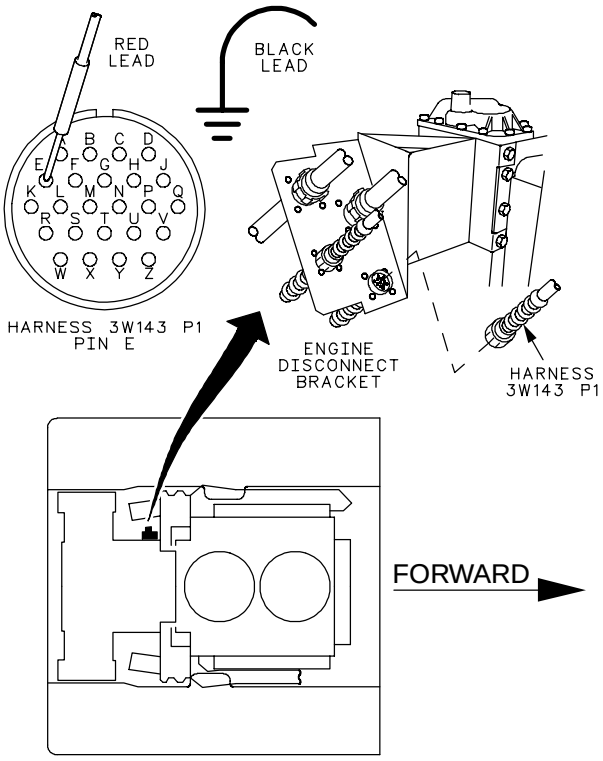
1. Turn MASTER switch OFF (TM 9-2350-292-10).
2. Reconnect harness 3W132 P1 to bulkhead disconnect.
3. Disconnect harness 3W143 P1 from engine disconnect.
4. Turn MASTER switch ON and hold START switch in the ON position (TM 9-2350-292-10).
5. Place multimeter red lead in pin E of harness 3W143 P1 and black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0293 00) harness 3W132 lead 14. Verify fault is corrected.



X

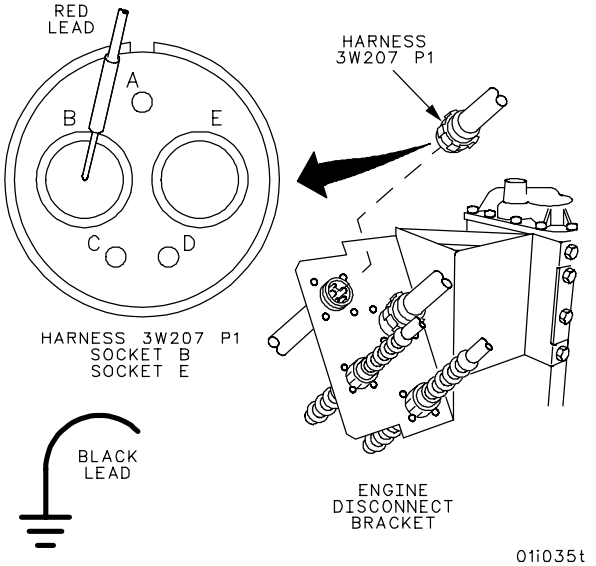
1. Disconnect harness 3W207 P1 at engine disconnect.
2. Place multimeter red lead in harness 3W207 P1 socket B and E (one at a time) while holding black lead to ground. Check for voltage.

Is 24 V dc present at both sockets?

yes

no

Repair (WP 0290 00) or replace (WP 0312 00) harness 3W710. Verify fault is corrected.



CONTINUED ON NEXT PAGE

ENGINE FAILS TO CRANK WHEN STARTER SWTICH IS PRESSED - CONTINUED 0041 00

CONTINUED FROM STEP X

Y

1. Disconnect harness 3W206 P1 from engine disconnect.
2. Place one multimeter lead on pins B and E (one at a time) while holding other lead to vehicle ground. Check for continuity.

Is continuity present at both points?

yes

no

Repair (WP 0290 00) or replace (WP 0302 00) harness 3W206. Verify fault is corrected.

Z

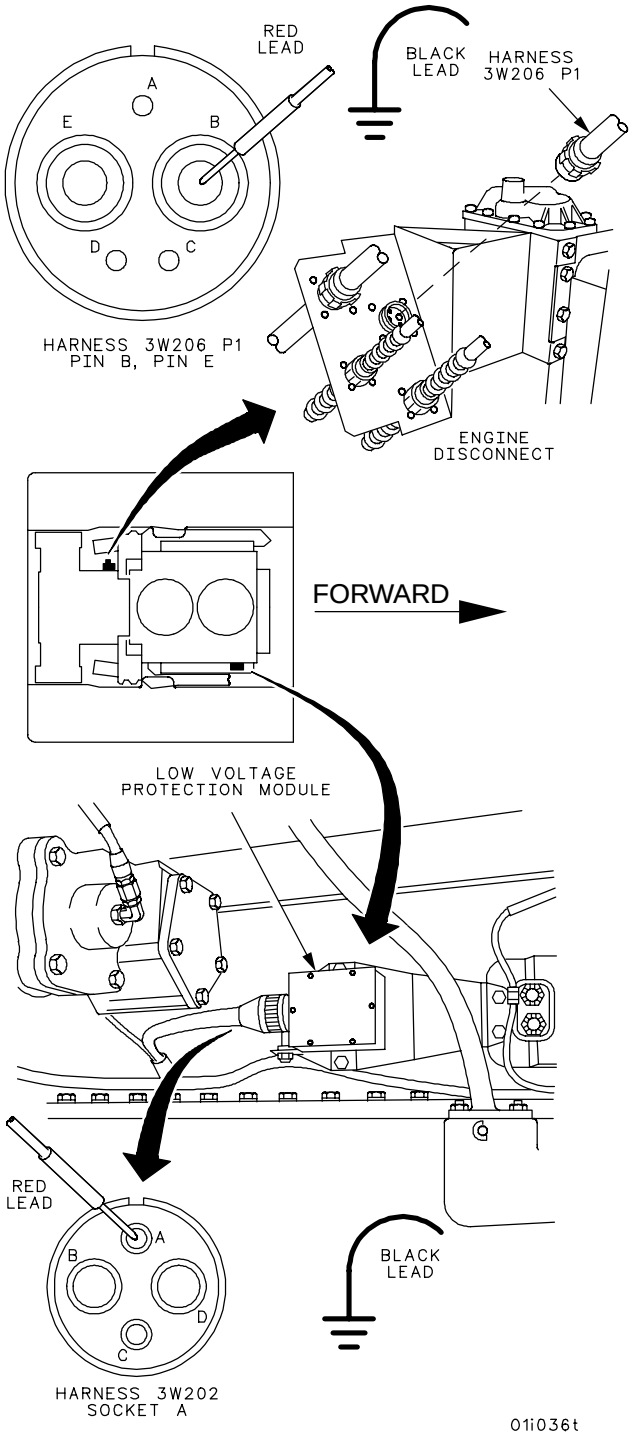
1. Reconnect harness 3W143 P1 at engine disconnect.
2. Remove powerpack (WP 0188 00).
3. Install engine ground hop kit (WP 0189 00).
4. Disconnect harness 3W202 connector from low voltage starter protection module.
5. Turn MASTER switch ON (TM 9-2350-292-10).
6. Place multimeter red lead in harness 3W202 connector socket A and black lead to ground. Check for voltage.
7. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.



CONTINUED ON NEXT PAGE

ENGINE FAILS TO CRANK WHEN STARTER SWTICH IS PRESSED - CONTINUED 0041 00

CONTINUED FROM STEP Z

AA

1. Reconnect harness 3W207 P1 at engine disconnect.
2. Place multimeter red lead on lead 82 terminal on starter solenoid and black lead to ground. Check for voltage.

Is 24 V dc present?

yes

no

Replace harness 3W200 (WP 0298 00). Verify fault is corrected.

AB

1. Reconnect harness 3W206 P1.
2. Disconnect ground lead from starter.
3. Place one multimeter lead on ground lead connector and other lead to chassis ground. Check for continuity.

Is continuity present?

yes

no

Replace ground lead (WP 0342 00). Verify fault is corrected.

AC

1. Reconnect ground lead to starter.
2. Place one multimeter lead on starter negative terminal and other lead on solenoid negative terminal. Check for continuity.

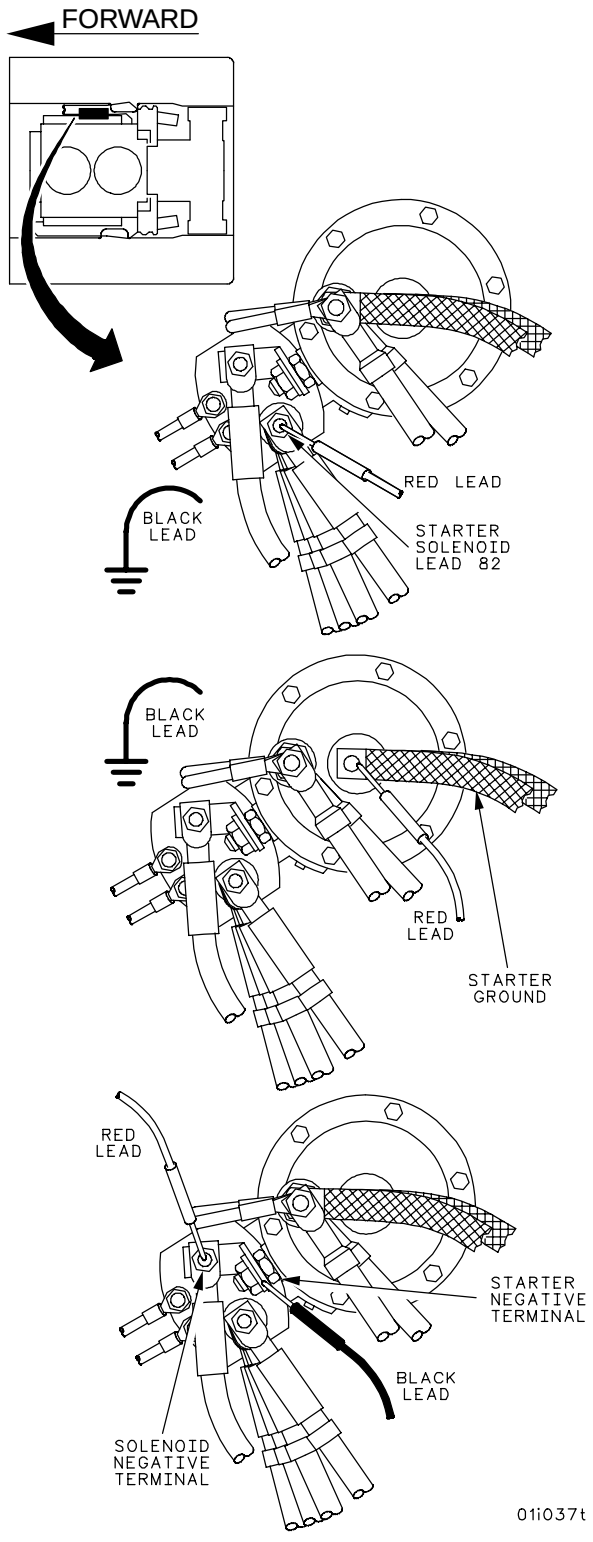
Is continuity present?

yes

no

Replace starter (WP 0240 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE FAILS TO CRANK WHEN STARTER SWTICH IS PRESSED - CONTINUED 0041 00

CONTINUED FROM STEP AC

AD
1. Disconnect connector from low voltage starter protection module.
2. Place multimeter red lead on connector socket B and black lead to ground. Check for voltage.

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

AE Place multimeter red lead on connector socket C. Check for voltage.

Is voltage less than 18 V dc?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) lead 26 of harness 3W202. Verify fault is corrected.

AF
1. Disconnect lead 14D from solenoid.
2. Place one multimeter lead on lead 14D terminal end and other lead on connector socket D. Check for continuity.

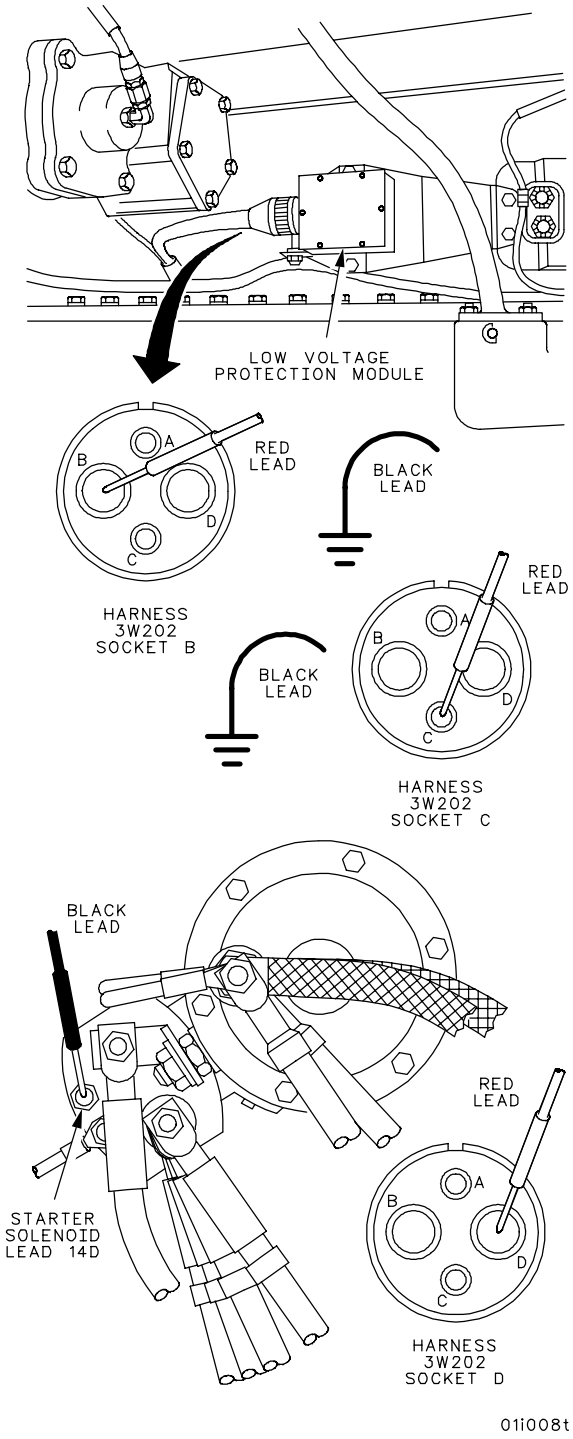
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

CONTINUED ON NEXT PAGE



01i008t

ENGINE FAILS TO CRANK WHEN STARTER SWTICH IS PRESSED - CONTINUED 0041 00

CONTINUED FROM STEP AF

AG

1. Reconnect 3W202 connector to low voltage starter protection module.
2. Turn MASTER switch ON and engage START switch (TM 9-2350-292-10).
3. Place multimeter red lead on lead 14D starter terminal and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

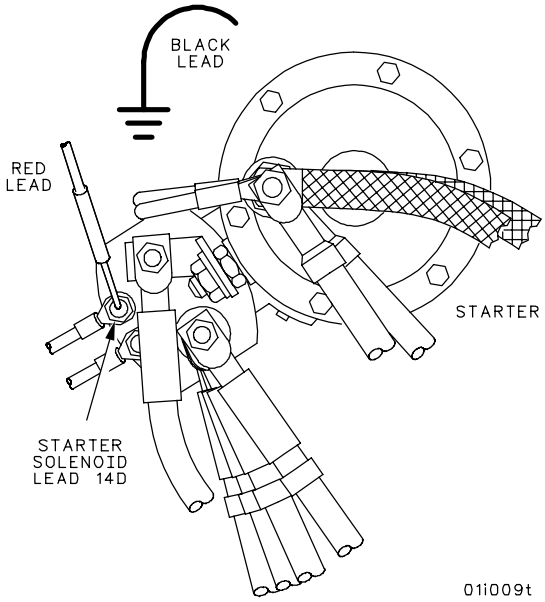
Is voltage present?

yes

Replace starter (WP 0240 00). Verify fault is corrected.

no

Replace low voltage starter protection module (WP 0241 00). Verify fault is corrected.



END OF TASK

ENGINE CRANKS AT NORMAL SPEED BUT WILL NOT START 0042 00

THIS WORK PACKAGE COVERS:

Engine Cranks At Normal Speed But Will Not Start

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)
Engine ground hop kit (item 14, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Check fire extinguisher engine shutoff switch for proper adjustment (WP 0699 00).

Is switch properly adjusted?

yes

no

Adjust fire extinguisher engine shutoff switch (WP 0699 00). Verify fault is corrected.

B

1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Close fuel shutoff switch several times (TM 9-2350-292-10).
3. Turn MASTER switch OFF (TM 9-2350-292-10).

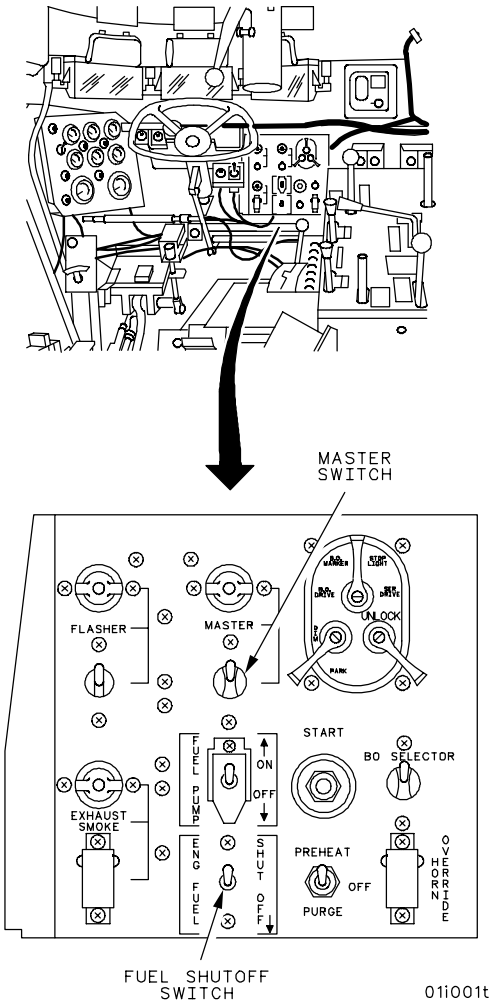
Is a click heard from the engine?

yes

no

Go to Step I.

CONTINUED ON NEXT PAGE



ENGINE CRANKS AT NORMAL SPEED BUT WILL NOT START - CONTINUED 0042 00

CONTINUED FROM STEP B

C

1. Place manual fuel shutoff handle in the ON position (TM 9-2350-292-10).
2. Remove cotter pin from one end of connector link between control cable and engine shutoff lever.
3. Place engine shutoff lever in the on position (TM 9-2350-292-10).
4. Check connector link for a free pin fit.

Is there a free pin fit?

yes

no

Adjust connector (WP 0216 00). Verify fault is corrected.

D

Turn MASTER switch and intank fuel pump switch ON and OFF (TM 9-2350-292-10).

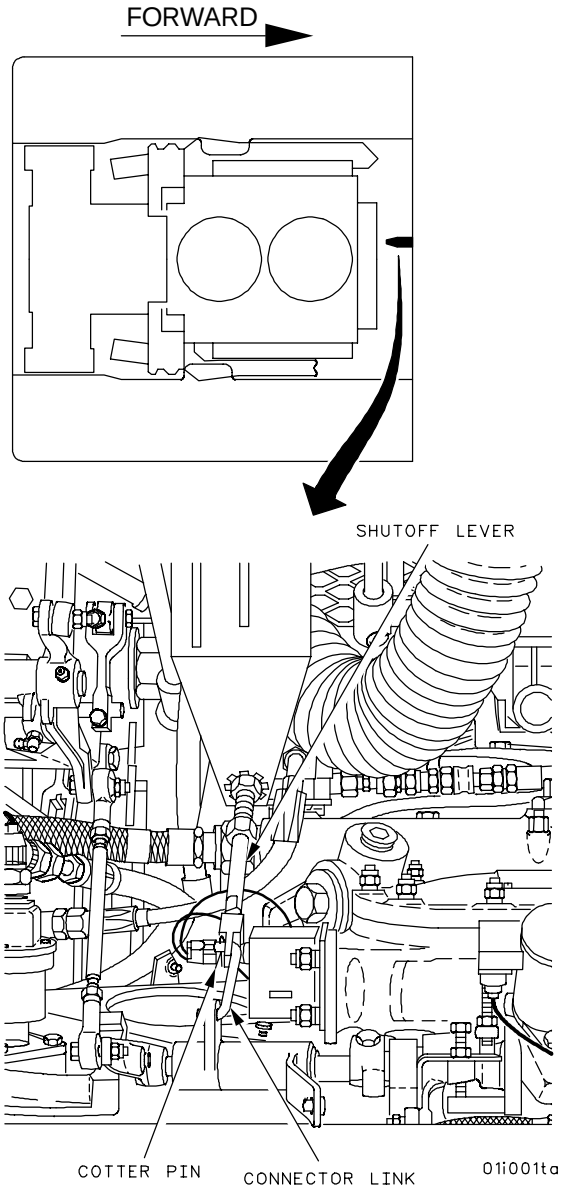
Does electric fuel pump make a noise?

yes

no

Go to step P. (WP 0039 00)

CONTINUED ON NEXT PAGE



ENGINE CRANKS AT NORMAL SPEED BUT WILL NOT START - CONTINUED 0042 00

f. ENGINE - CONTINUED	(2) ENGINE CRANKS AT NORMAL SPEED BUT WILL NOT START - CONTINUED

CONTINUED FROM STEP D

E

1. Remove powerpack (WP 0188 00).
2. Install engine ground hop kit (WP 0189 00).
3. Disconnect primary fuel filter line at main fuel check valve.
4. Place fuel line in suitable container.
5. Turn MASTER switch and fuel pump switches ON (TM 9-2350-292-10).
6. Turn MASTER switch and intank fuel pump switch OFF (TM 9-2350-292-10).

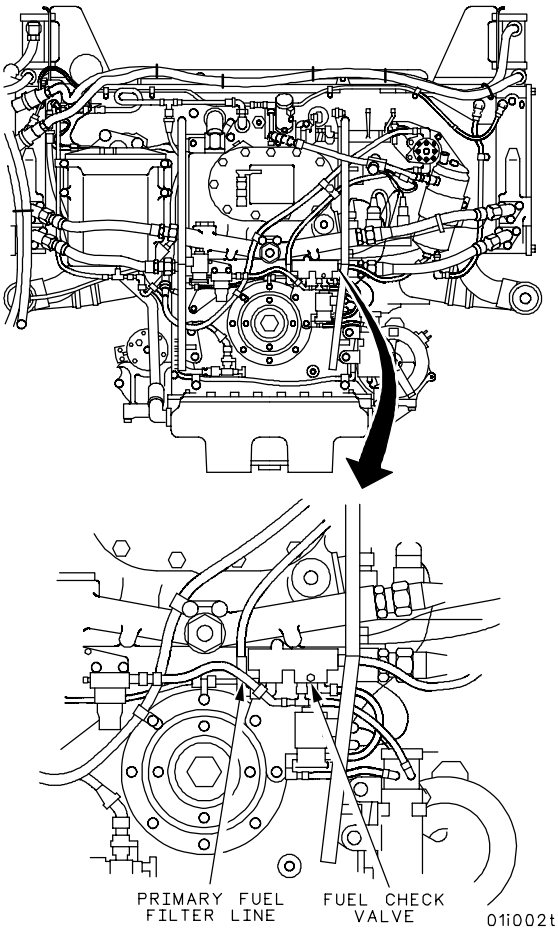
Does fuel flow freely?

yes

no

Replace primary fuel filter element (WP 0222 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE CRANKS AT NORMAL SPEED BUT WILL NOT START - CONTINUED 0042 00

f. ENGINE - CONTINUED	(2) ENGINE CRANKS AT NORMAL SPEED BUT WILL NOT START - CONTINUED

CONTINUED FROM STEP E

F

1. Disconnect mechanical fuel pump fuel line from fuel/water separator.
2. Place fuel line over a suitable container.
3. Turn MASTER switch and fuel pump switches ON and crank engine (TM 9-2350-292-10).
4. Turn MASTER switch and fuel pump switch OFF (TM 9-2350-292-10).

Does fuel flow freely?

yes

no

Replace mechanical fuel pump (WP 0206 00). Verify fault is corrected.

G

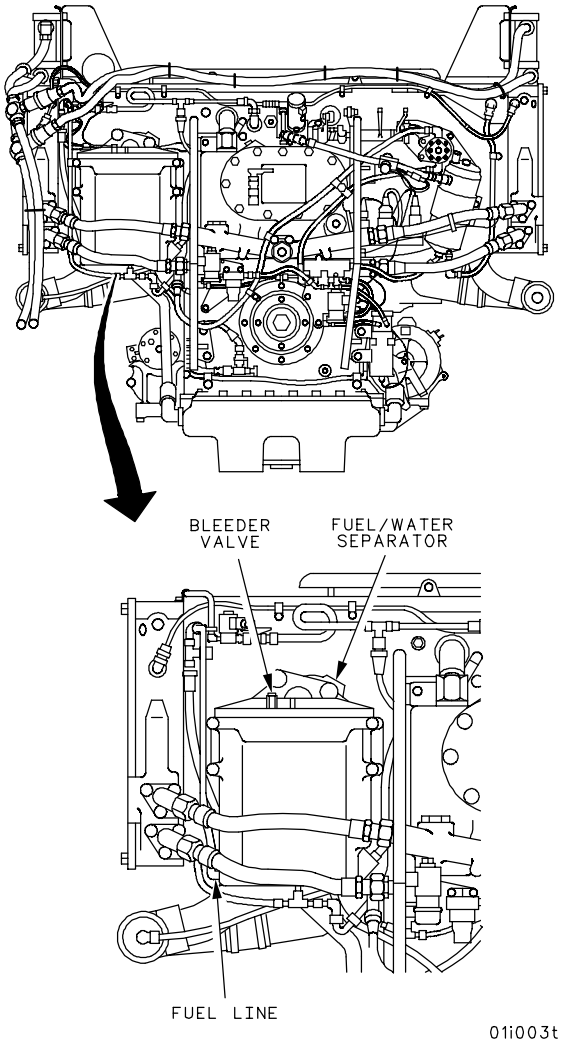
1. Reconnect mechanical fuel pump fuel line to fuel/water separator.
2. Loosen air bleeder valve on top of fuel/water separator.
3. Crank engine (TM 9-2350-292-10).

Does fuel flow from air bleeder valve?

yes

no

Replace fuel/water separator elements (WP 0220 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

ENGINE CRANKS AT NORMAL SPEED BUT WILL NOT START - CONTINUED 0042 00

CONTINUED FROM STEP G

H

1. Close air bleeder valve on fuel/water separator.
2. Disconnect fuel/water separator fuel line from elbow on left front engine shroud.
3. Place a suitable container under fuel line and crank engine (TM 9-2350-292-10).

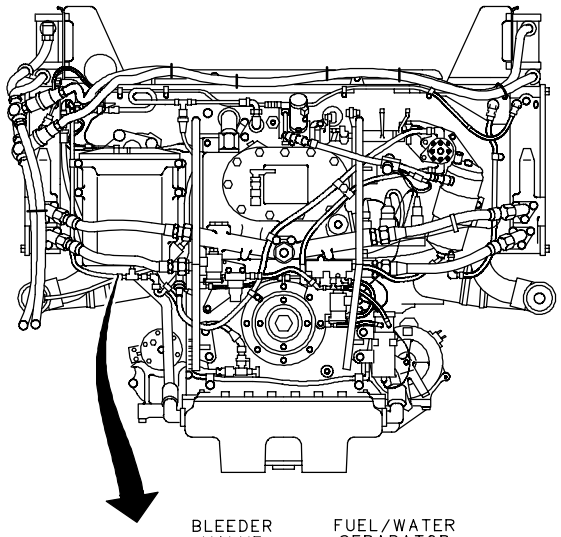
Does fuel flow freely?

yes

Notify Direct Support Maintenance.

no

Replace fuel/water separator final filter (WP 0220 00). Verify fault is corrected.



CONTINUED FROM STEP B

I

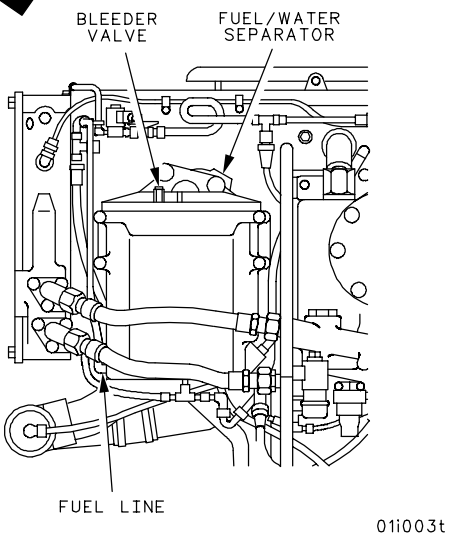
1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Check fire extinguisher engine shutoff indicator (TM 9-2350-292-10).
3. Turn MASTER switch OFF (TM 9-2350-292-10).

Is indicator lit?

yes

no

Replace fuel shutoff solenoid (WP 0219 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

ENGINE CRANKS AT NORMAL SPEED BUT WILL NOT START - CONTINUED 0042 00

CONTINUED FROM STEP I

J

1. Disconnect harness 4W101 lead 54A from indicator side of fire extinguisher fuel line interlock switch.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Turn MASTER switch OFF (TM 9-2350-292-10).

Does indicator remain lit?

yes

no

Replace interlock switch (WP 0701 00). Verify fault is corrected.

K

1. Reconnect harness 4W101 lead 54A to interlock switch.
2. Remove switch panel (WP 0242 00) and reconnect ground strap to switch panel.
3. Disconnect harness 4W101 P1 from switch panel.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Turn MASTER switch OFF (TM 9-2350-292-10).

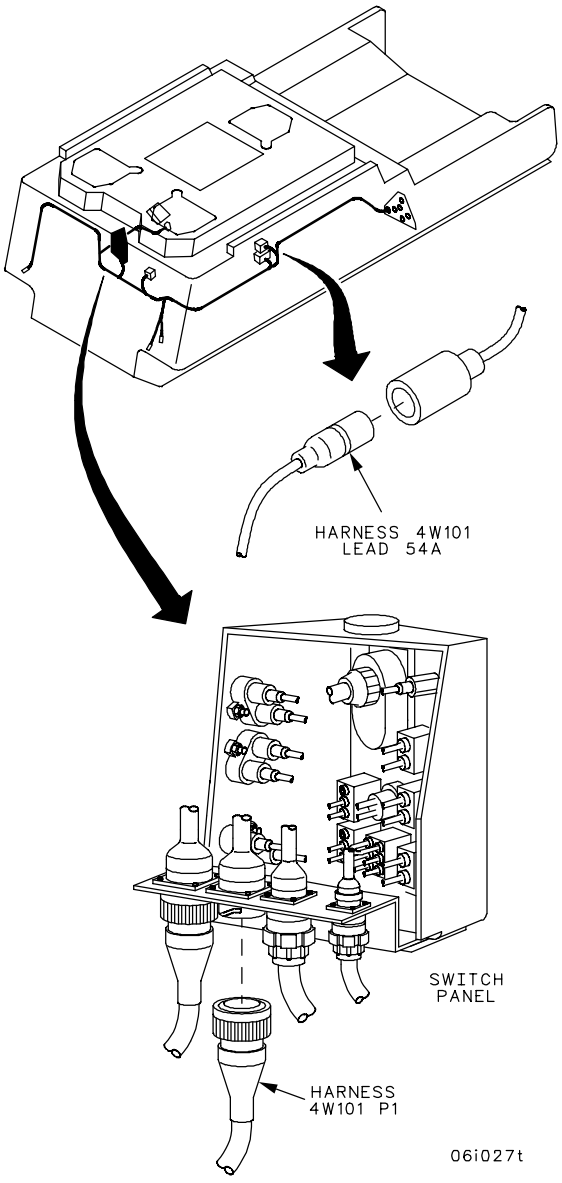
Does indicator remain lit?

yes

no

Replace fuel shut-off switch (WP 0242 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE CRANKS AT NORMAL SPEED BUT WILL NOT START - CONTINUED 0042 00

CONTINUED FROM STEP K

L

1. Reconnect harness 4W101 P1 to switch panel.
2. Disconnect harness 3W202 lead 54 connector from fuel shutoff solenoid.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Does indicator remain lit?

yes

Replace fuel shutoff solenoid (WP 0219 00). Verify fault is corrected.

no

M

1. Remove gauge panel from bracket (WP 0243 00).
2. Disconnect lead 4W152 CKT 54 from indicator L3 in gauge panel.
3. Turn MASTER switch and ENG FUEL SHUTOFF switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on pin of lead 4W152 CKT 54 connector and black lead to ground. Check for voltage.
5. Turn MASTER switch and ENG FUEL SHUTOFF switch OFF (TM 9-2350-292-10).

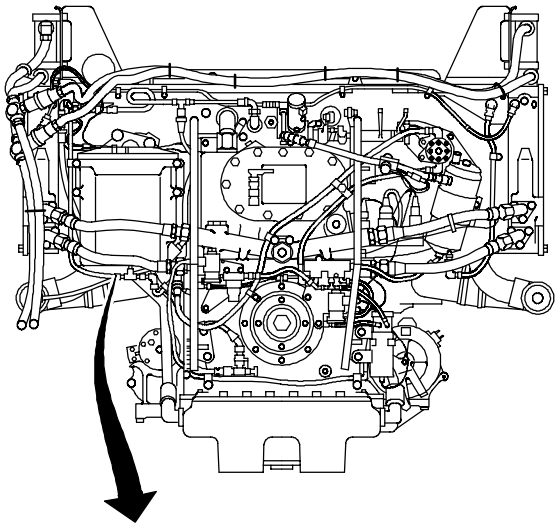
Is 24 V dc present?

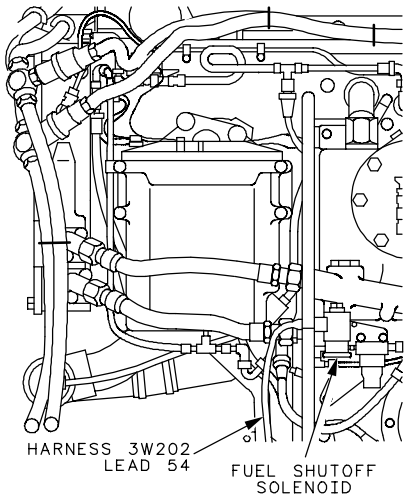
yes

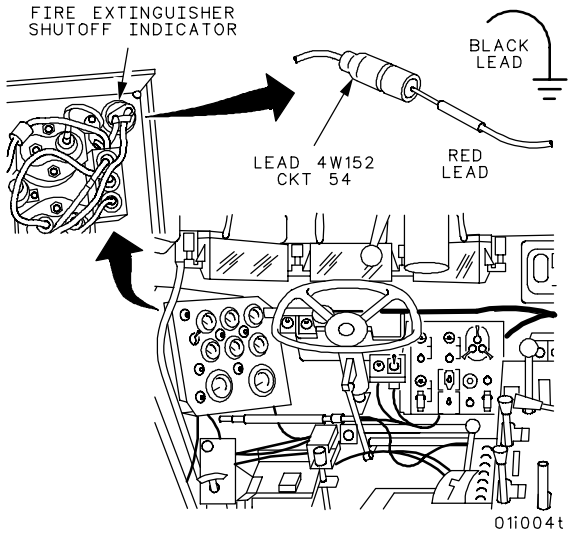
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no

Repair (WP 0290 00) or replace (WP 0243 00) lead 54. Verify fault is corrected.







ENGINE CRANKS AT NORMAL SPEED BUT WILL NOT START - CONTINUED 0042 00

CONTINUED FROM STEP M

N

1. Disconnect diode from lead 4W152 J1 CKT 54 connector from ground.
2. Disconnect harness 4W103 P1 from gauge panel.
3. Place multimeter red lead in harness 4W152 J1 gauge panel connector pin B and black lead to ground. Measure resistance.
4. Place multimeter black lead on cathode end of diode and red lead to ground. Measure resistance.

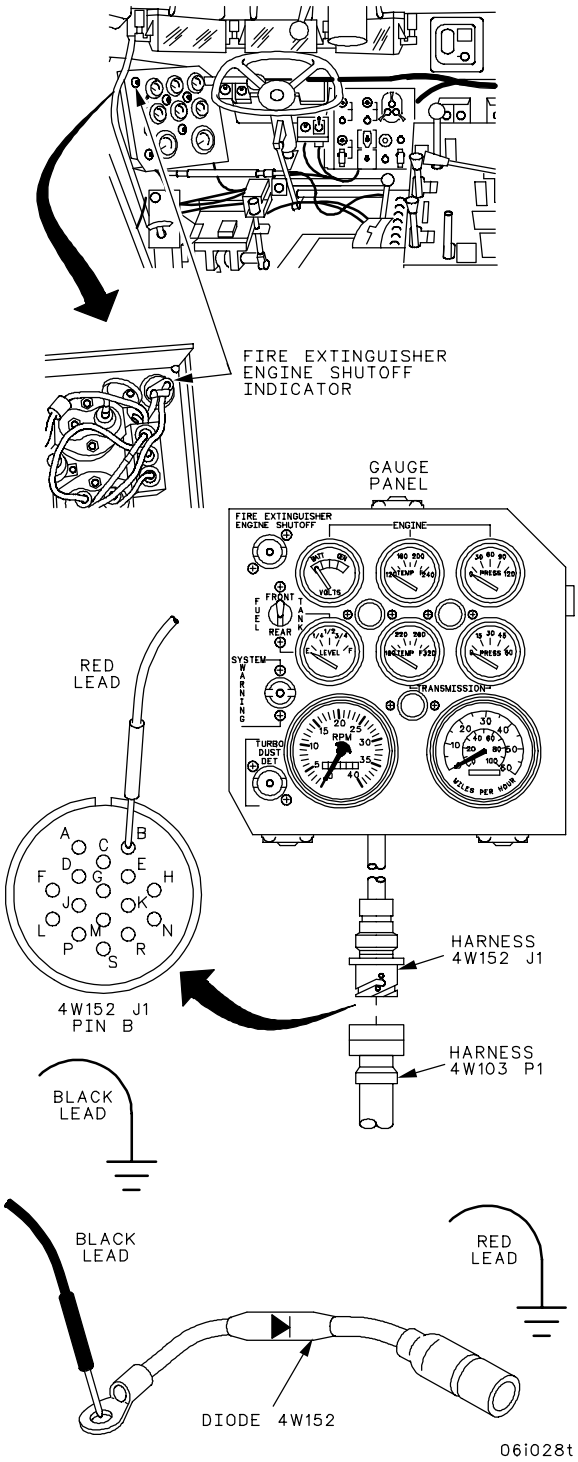
Is resistance measured with black lead to ground low and with red lead to ground high?

yes

Replace FIRE EXTINGUISHERS ENGINE SHUTOFF indicator (WP 0243 00). Verify fault is corrected.

no

Replace diode and leads from indicator to ground (WP 0243 00). Verify fault is corrected.



END OF TASK

ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00

THIS WORK PACKAGE COVERS:

Engine Cranks But Will Not Start In Cold Weather

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)
STE-ICE-R (item 85, WP 0717 00)
Engine ground hop kit (item 14, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Is STE-ICE-R available?

yes / no

no → Go to Step H.

B

1. Setup STE-ICE-R for operation (TM 9-4910-571-12&P).
2. Connect STE-ICE-R harness W1 to vehicle harness 4W800 J1 DCA connector.
3. Enter vehicle ID (VID) 04 and perform STE-ICE-R test 74 (TM 9-4910-571-12&P) and record results.

Is VTM reading between 1 and 60 milliohms?

yes / no

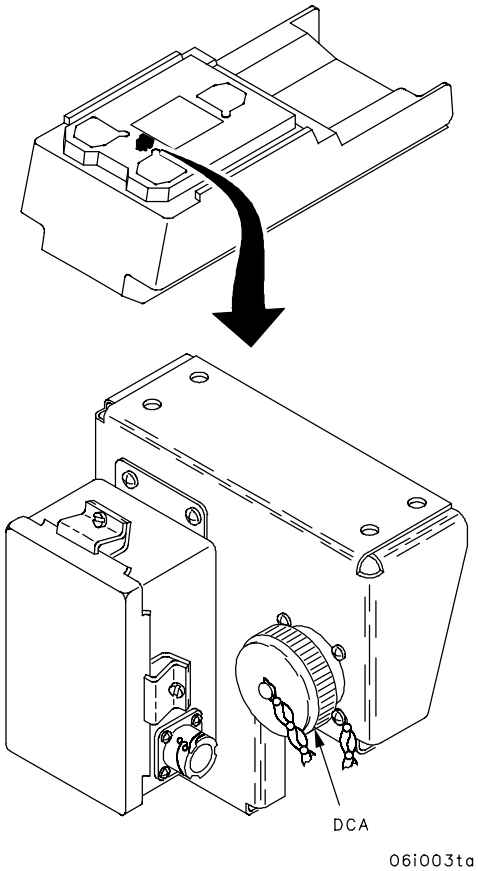
yes → Go to Step D.

C Perform STE-ICE-R test 67 (TM 9-4910-571-12&P) and record results.

Is static voltage 27-30 volts?

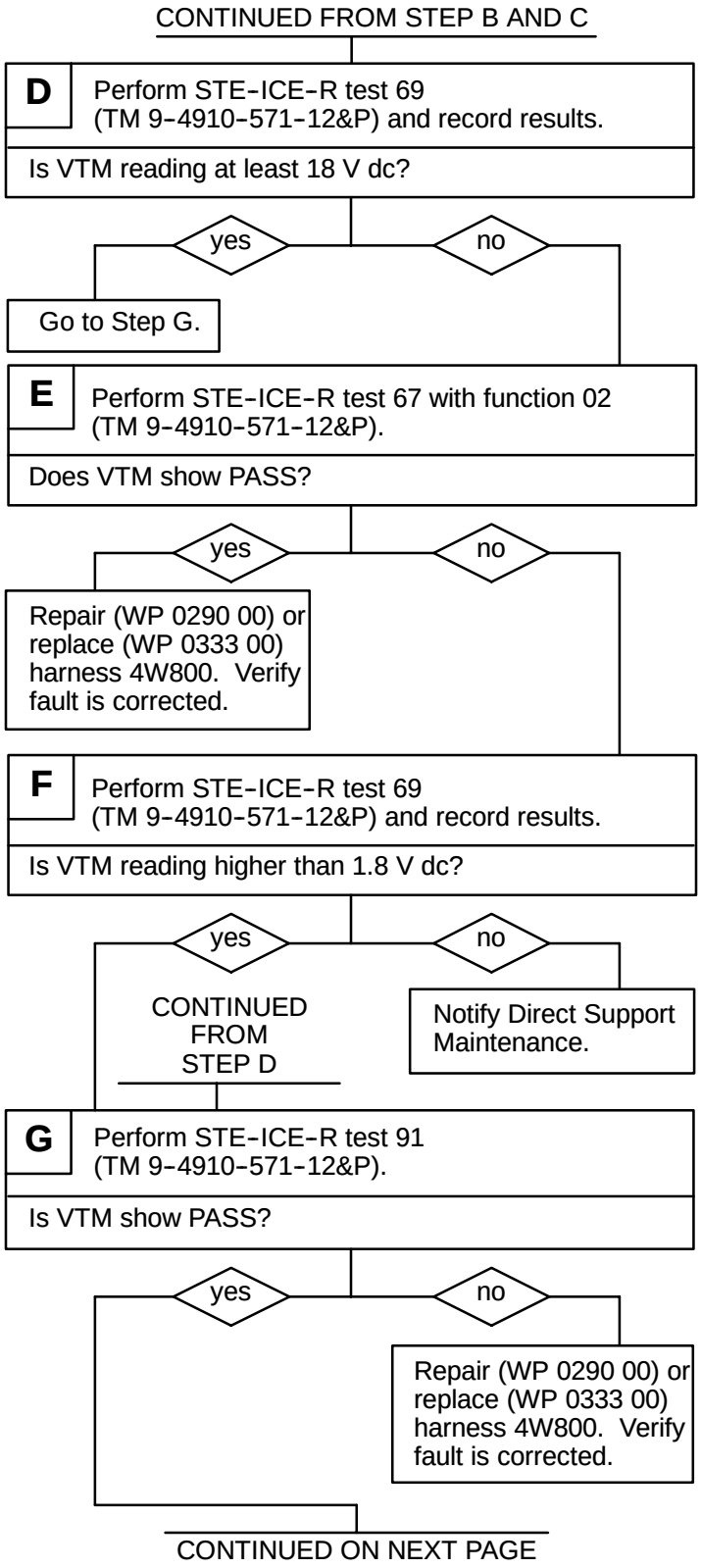
yes / no

no → Recharge and/or replace batteries (TM 9-2350-292-10/WP 0288 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00



ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00

CONTINUED FROM STEP A AND G

H Check FIRE EXTINGUISHER ENGINE SHUT-OFF switch for proper adjustment (WP 0699 00).

Is switch adjusted properly?

yes

no

Adjust switch (WP 0699 00). Verify fault is corrected.

I

1. Disconnect harness 3W143 P1 at engine disconnect.
2. Turn MASTER switch, ENG FUEL SHUTOFF switch, and ENGINE PREHEAT switch to ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 3W143 P1 socket F and black lead to ground. Check for voltage.
4. Turn MASTER switch, ENG FUEL SHUTOFF switch, and ENGINE PREHEAT switch OFF (TM 9-2350-292-10).

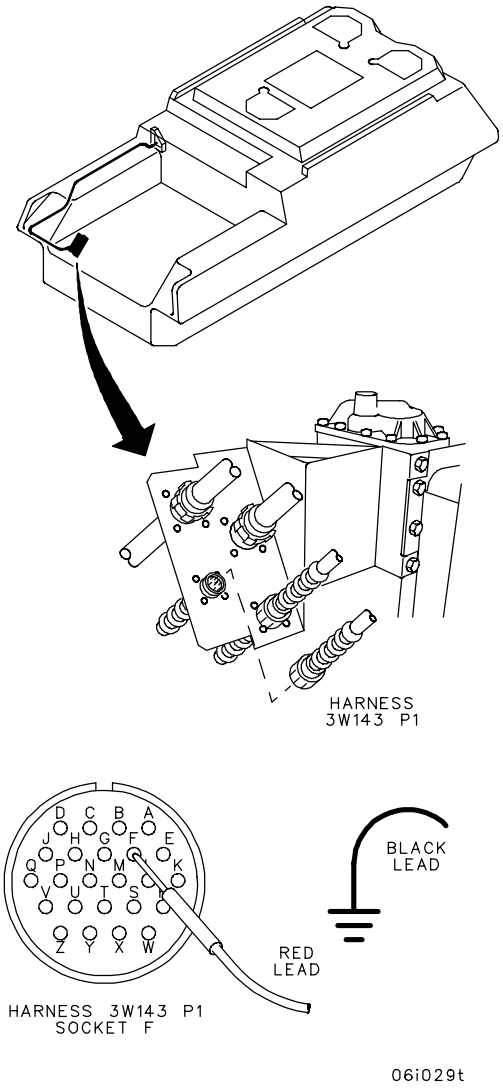
Is 24 V dc present?

yes

no

Go to Step L.

CONTINUED ON NEXT PAGE



ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00

CONTINUED FROM STEP I

J

1. Turn MASTER switch, ENG FUEL SHUTOFF switch, and ENGINE PREHEAT switch ON (TM 9-2350-292-10).
2. Place multimeter red lead in harness 3W143 P1 socket G and black lead to ground. Check for voltage.
3. Turn MASTER switch, ENG FUEL SHUTOFF switch, and ENGINE PREHEAT switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Go to Step S.

no

K

1. Open air intake grilles above battery compartment (TM 9-2350-292-10).
2. Disconnect harness 3W143 P2 at bulkhead disconnect.
3. Turn MASTER switch ON and hold ENGINE PREHEAT switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in 3W143 P2 socket G and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

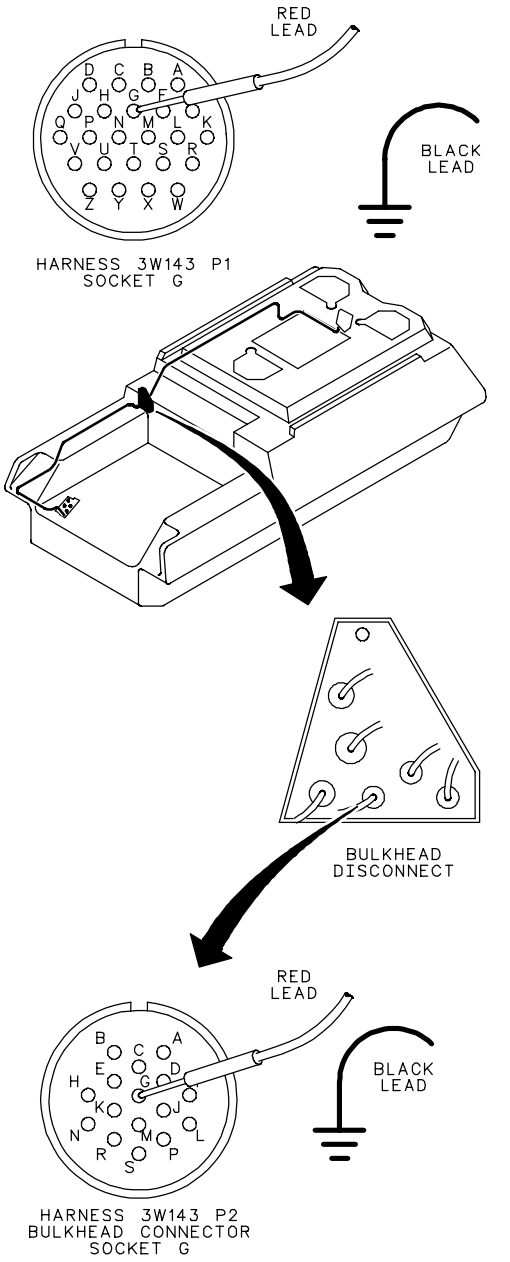
Is 24 V dc present?

yes

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.



CONTINUED ON NEXT PAGE

ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00

CONTINUED FROM STEP I

L

1. Open air intake grilles above battery compartment (TM 9-2350-292-10).
2. Disconnect harness 3W143 P2 from bulkhead disconnect.
3. Turn MASTER switch ON and hold ENGINE PREHEAT switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 3W143 P2 socket F and black lead to ground. Check for voltage.
5. Release ENGINE PREHEAT switch and turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

no

M

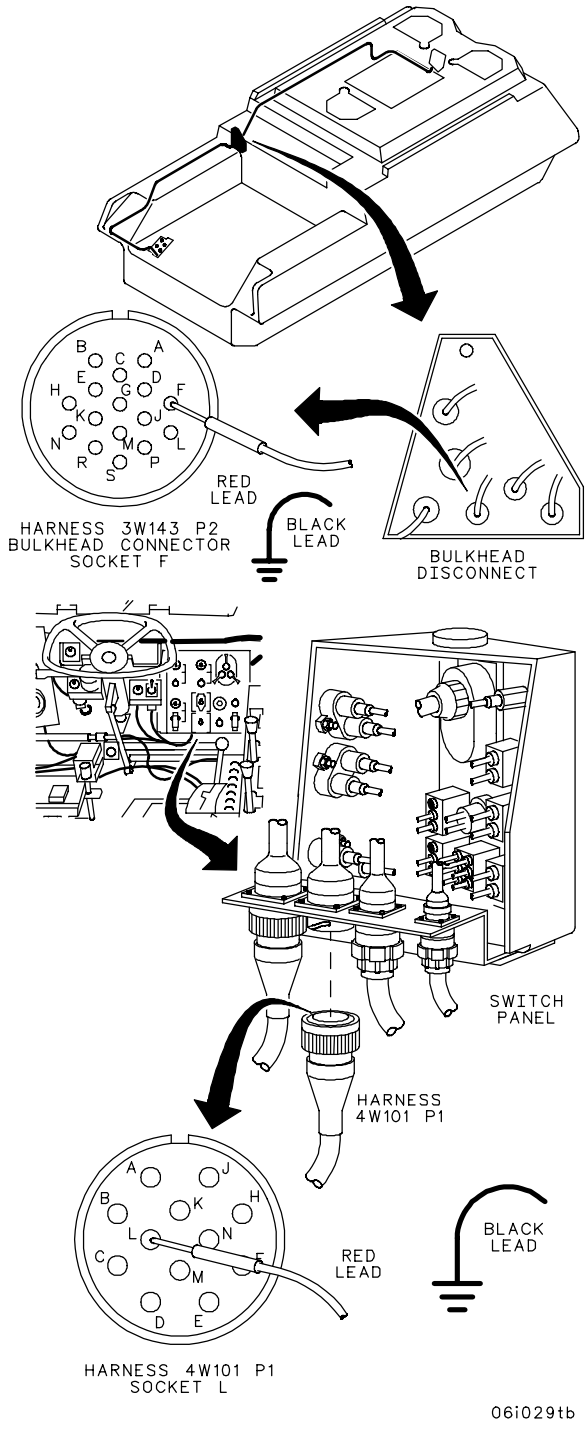
1. Reconnect harness 3W143 P2.
2. Remove switch panel (WP 0242 00) and reconnect ground strap to switch panel.
3. Disconnect harness 4W101 P1 at switch panel.
4. Turn MASTER switch ON and hold ENGINE PREHEAT switch ON (TM 9-2350-292-10).
5. Place multimeter red lead in harness 4W101 P1 socket L and black lead to ground. Check for voltage.
6. Release ENGINE PREHEAT switch and turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0315 00) harness 4W101. Verify fault is corrected.



CONTINUED ON NEXT PAGE

ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00

CONTINUED FROM STEP M

N

1. Hold ENGINE PREHEAT switch ON (TM 9-2350-292-10).
2. Place one multimeter lead on pin D of harness 4W109 J3 and other lead on pin L. Check for continuity.
3. Release ENGINE PREHEAT switch (TM 9-2350-292-10).

Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

no

O

1. Disconnect harness 4W109 J3 lead 530 from CB4.
2. Place one multimeter lead on pin L of harness 4W109 J3 and other lead in lead 530 CB4 connector socket. Check for continuity.

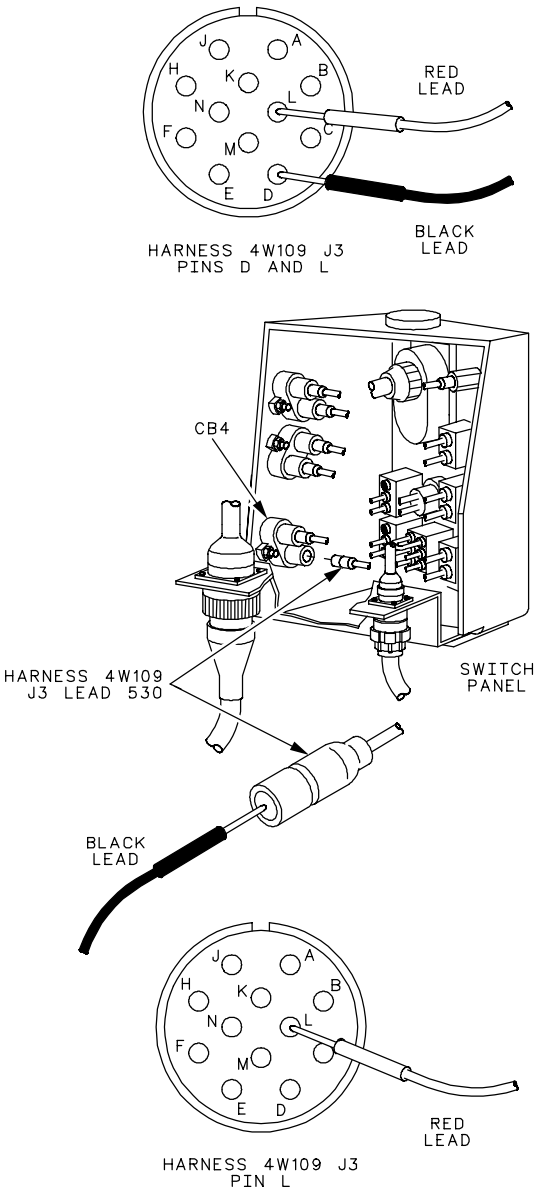
Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0242 00) lead 530 to circuit breaker. Verify fault is corrected.

no

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ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00

CONTINUED FROM STEP O

P

1. Disconnect lead 530 from “out” side of CB4.
2. Place one multimeter lead on each CB4 connector pin. Check for continuity.

Is continuity present?

yes

no

Replace CB4 (WP 0242 00). Verify fault is corrected.

Q

1. Reconnect lead 530 to “in” side of CB4.
2. Disconnect lead 530 from connector socket 2 of switch S5.
3. Place one multimeter lead in lead 530 CB4 connector socket and other lead on switch S5 lead 530 connector pin. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 530 from CB4 to switch S5. Verify fault is corrected.

R

1. Reconnect lead 530 to CB4.
2. Disconnect lead 530A from switch S5.
3. Place one multimeter lead in connector socket 2 of switch S5 and place other multimeter lead in connector socket 5 of switch S5.
4. Place PREHEAT switch to PREHEAT position and check for continuity

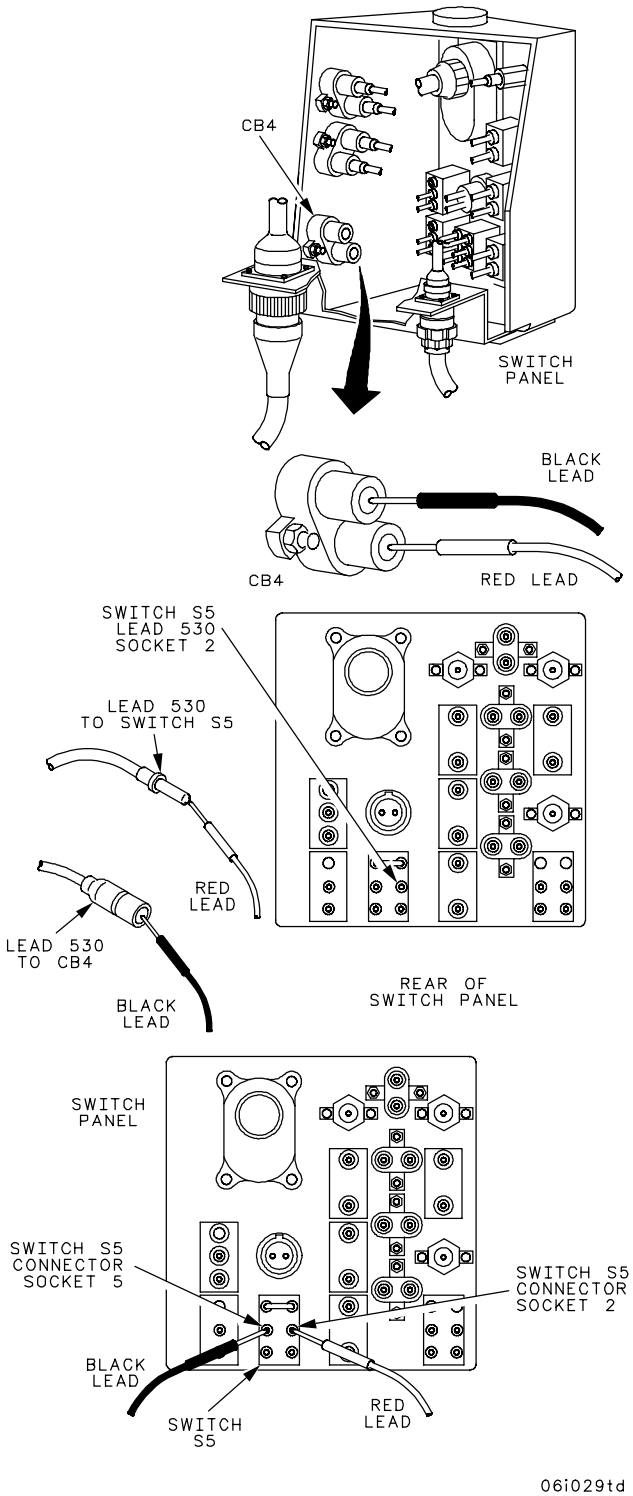
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 530 from switch S5 to harness 4W109 J3 pin D. Verify fault is corrected.

Replace switch S5 (WP 0242 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00

CONTINUED FROM STEP J

S

1. Remove powerpack (WP 0188 00).
2. Disconnect connectors from both manifold preheat coils and both fuel solenoids.
3. Place one multimeter lead on harness 3W143 P1 receptacle pin F and other lead on each harness connector socket A of coils and solenoids (one at a time). Check for continuity.

Is continuity present at both tests?

yes — no

Repair (WP 0290 00) or replace (WP 0300 00) lead 530 from engine receptacle to respective coil and/or solenoid. Verify fault is corrected.

T

Place one multimeter lead on pin P of harness 3W143 P1 receptacle and other lead on harness connector socket B of each coil and solenoid (one at a time). Check for continuity.

Is continuity present at both tests?

yes — no

Repair (WP 0290 00) or replace (WP 0300 00) ground lead to respective coil/solenoid. Verify fault is corrected.

U

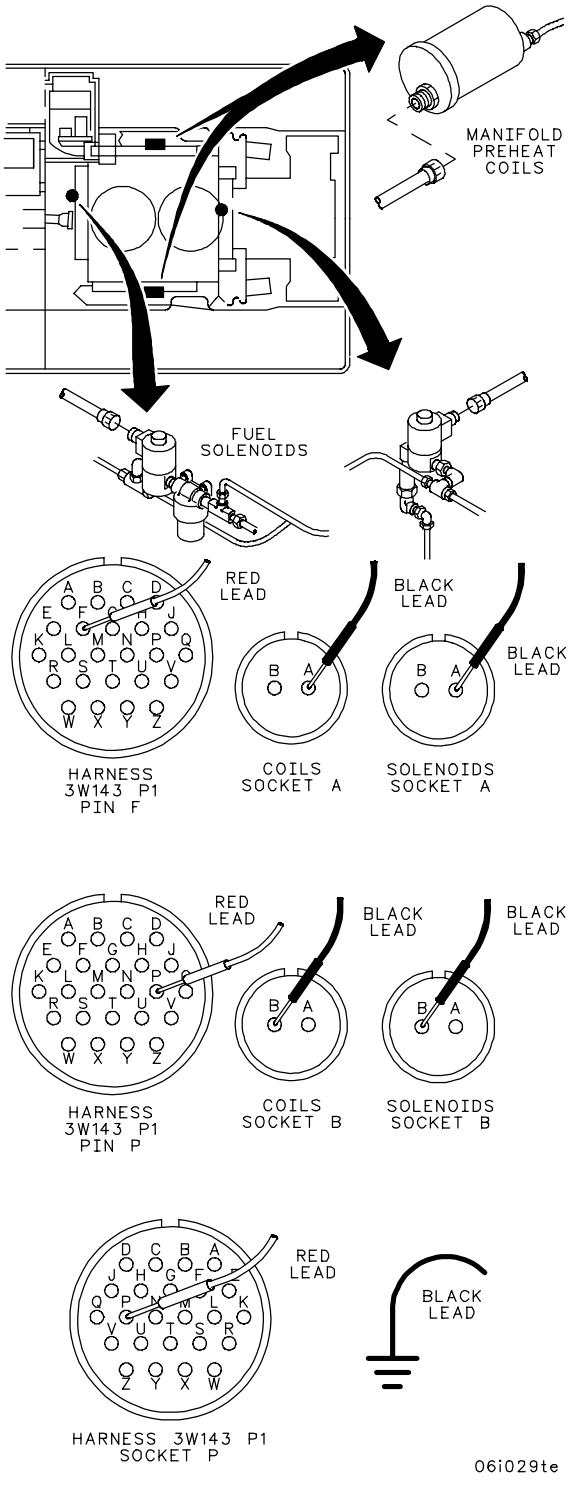
Place one multimeter lead in socket P of harness 3W143 P1 and other lead to grounding point. Check for continuity.

Is continuity present?

yes — no

Repair (WP 0290 00) or replace (WP 0336 00) vehicle ground lead. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00

CONTINUED FROM STEP U

V Place one multimeter lead in pin A of each fuel solenoid (one at a time) while placing other multimeter lead in pin B of each fuel solenoid (one at a time). Check for continuity.

Is continuity present at both tests?

yes / no

Replace faulty solenoid (WP 0224 00/WP 0225 00). Verify fault is corrected.

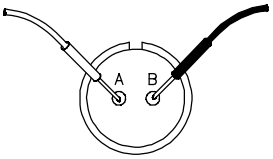
W
1. Disconnect spark plug cables from spark plugs and preheat coils.
2. Place one multimeter lead on center conductor of cable and other lead on center conductor of opposite end of cable. Check for continuity on each cable in this manner.

Is continuity present on each cable?

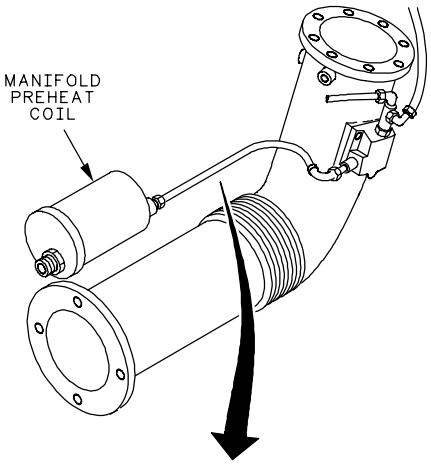
yes / no

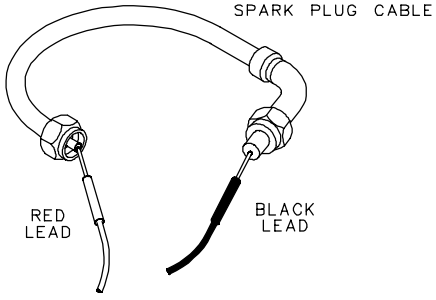
Replace faulty cable. Verify fault is corrected.

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FUEL SOLENOID RECEPTACLES PINS A AND B





06i029tf

ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00

CONTINUED FROM STEP W

X

1. Reconnect all spark plug cables.
2. Reconnect connectors to both fuel solenoids and both preheat coils.
3. Install engine ground hop kit (WP 0189 00).
4. Disconnect spark plug cable from one of the manifold preheater spark plugs.

WARNING

High voltage is present at spark plug cables. Wear protective gloves to avoid personnel injury while performing this procedure.

5. Turn MASTER switch and ENG FUEL SHUTOFF switch ON (TM 9-2350-292-10).
6. Hold center conductor of cable close to a ground point.
7. Hold ENGINE PREHEAT switch ON (TM 9-2350-292-10). Check for spark.
8. Release ENGINE PREHEAT switch and turn MASTER switch and ENG FUEL SHUTOFF switch OFF (TM 9-2350-292-10).
9. Repeat steps 4 thru 8 on remaining plug cable.

Is spark observed for both cables?

yes / no

Replace applicable faulty preheat coil (WP 0224 00/WP 0225 00). Verify fault is corrected.

Y

1. Remove preheater spark plugs and attach spark plug cables to them.

WARNING

High voltage is present at spark plug cables. Wear protective gloves to avoid personnel injury while performing this procedure.

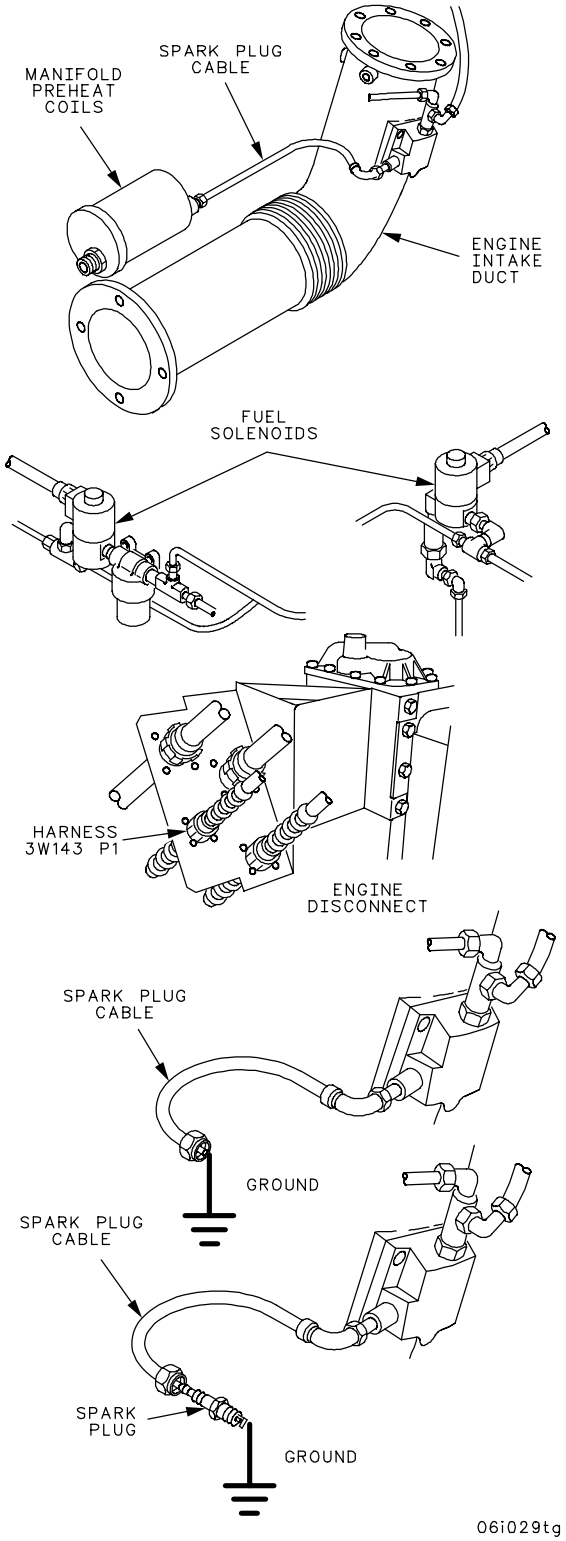
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Hold ENGINE PREHEAT switch ON (TM 9-2350-292-10).
4. Place spark plug case to ground. Check for spark.
5. Release ENGINE PREHEAT switch and turn MASTER switch OFF (TM 9-2350-292-10).
6. Repeat steps 2 thru 5 for remaining plug.

Is spark observed for both plugs?

yes / no

Replace faulty plug (WP 0224 00/ WP 0225 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00



CONTINUED FROM STEP Y

Z Inspect fuel supply hose to primary fuel filter for kinks and restrictions (WP 0222 00).

Is hose free of kinks and restrictions?

yes

no

Replace hose (WP 0222 00). Verify fault is corrected.

AA Inspect primary fuel filter for clogs and obstructions (WP 0222 00).

Is filter free of clogs and obstructions?

yes

no

Service primary fuel filter (WP 0222 00). Verify fault is corrected.

AB
1. Disconnect fuel supply hose from backflow valve (WP 0224 00).
2. Turn vehicle MASTER switch and fuel pump switch ON (TM 9-2350-292-10). Check for fuel flow from supply hose.
3. Turn vehicle MASTER switch and fuel pump switch OFF (TM 9-2350-292-10).

Did fuel flow from supply hose?

yes

no

Replace fuel supply hose (WP 0225 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE

ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00

CONTINUED FROM STEP AB

AC

1. Reconnect fuel supply hose to backflow valve (WP 0225 00).
2. Disconnect fuel hose from elbow on bottom of backflow valve (WP 0225 00).
3. Turn vehicle MASTER switch and fuel pump switch ON (TM 9-2350-292-10). Check for fuel flow from elbow on backflow valve.
4. Turn vehicle MASTER switch and fuel pump switch OFF (TM 9-2350-292-10).

Did fuel flow from backflow valve?

yes

no

Replace backflow valve (WP 0207 00). Verify fault is corrected.

AD

1. Reconnect fuel hose to elbow on bottom of backflow valve (WP 0225 00).
2. Disconnect fuel hose from “in” side of right preheat solenoid (WP 0225 00).
3. Turn vehicle MASTER switch, fuel pump switch and preheat switch ON (TM 9-2350-292-10). Check for fuel flow from hose.
4. Turn vehicle MASTER switch, fuel pump switch and preheat switch OFF (TM 9-2350-292-10).

Did fuel flow from hose?

yes

no

Replace fuel hose to right pre-heat solenoid (WP 0225 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE

ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00

CONTINUED FROM STEP AD

AE

1. Reconnect fuel hose to “in” side of right preheat solenoid (WP 0225 00).
2. Disconnect fuel hose from right preheat solenoid elbow (WP 0225 00).
3. Turn vehicle MASTER switch, fuel pump switch and preheat switch ON (TM 9-2350-292-10). Check for fuel flow from solenoid.
4. Turn vehicle MASTER switch, fuel pump switch and preheat switch OFF (TM 9-2350-292-10).

Did fuel flow from solenoid?

yes

no

Replace right preheat solenoid (WP 0225 00). Verify fault is corrected.

AF

1. Reconnect fuel hose to right preheat solenoid (WP 0225 00).
2. Disconnect fuel hose from right preheat solenoid at manifold pump “in” port (WP 0225 00).
3. Turn vehicle MASTER switch, fuel pump switch and preheat switch ON (TM 9-2350-292-10). Check for fuel flow from hose.
4. Turn vehicle MASTER switch, fuel pump switch and preheat switch OFF (TM 9-2350-292-10).

Did fuel flow from hose?

yes

no

Replace fuel hose (WP 0225 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE

ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00

CONTINUED FROM STEP AF

AG

1. Reconnect fuel hose to manifold pump “in” port (WP 0225 00).
2. Disconnect fuel hose from manifold pump “out” port (WP 0025 00).
3. Turn vehicle MASTER switch, fuel pump switch and preheat switch ON (TM 9-2350-292-10). Check for fuel flow from manifold pump.
4. Turn vehicle MASTER switch, fuel pump switch and preheat switch OFF (TM 9-2350-292-10).

Did fuel flow from manifold pump?

yes

no

Replace manifold pump (WP 0225 00). Verify fault is corrected.

AH

1. Reconnect fuel hose to “out” port of manifold pump (WP 0225 00).
2. Disconnect fuel hose from manifold “out” port at fuel filter tee (WP 0225 00).
3. Turn vehicle MASTER switch, fuel pump switch and preheat switch ON (TM 9-2350-292-10). Check for fuel flow from hose.
4. Turn vehicle MASTER switch, fuel pump switch and preheat switch OFF (TM 9-2350-292-10).

Did fuel flow from hose?

yes

no

Replace fuel hose (WP 0225 00). Verify fault is corrected.

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ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00

CONTINUED FROM STEP AH

AI

1. Reconnect fuel hose to fuel filter tee (WP 0225 00).
2. Disconnect fuel hose from backflow valve at manifold heater fuel filter (WP 0223 00).
3. Turn vehicle MASTER switch, fuel pump switch and preheat switch ON (TM 9-2350-292-10). Check for fuel flow from hose.
4. Turn vehicle MASTER switch, fuel pump switch and preheat switch OFF (TM 9-2350-292-10).

Did fuel flow from hose?

yes

no

Replace fuel hose to filter (WP 0223 00). Verify fault is corrected.

AJ

1. Disconnect fuel hoses from tee at left preheat solenoid (WP 0223 00).
2. Turn vehicle MASTER switch, fuel pump switch and preheat switch ON (TM 9-2350-292-10). Check for fuel flow from left prehat solenoid.
3. Turn vehicle MASTER switch, fuel pump switch and preheat switch OFF (TM 9-2350-292-10).

Did fuel flow from solenoid?

yes

no

Replace left preheat solenoid (WP 0223 00). Verify fault is corrected.

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ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00

CONTINUED FROM STEP AJ

AK

1. Reconnect fuel hoses to tee on left preheat solenoid (WP 0223 00).
2. Disconnect fuel hose from nozzle on left manifold heater assembly (WP 0224 00).
3. Turn vehicle MASTER switch, fuel pump switch and preheat switch ON (TM 9-2350-292-10). Check for fuel flow from hose.
4. Turn vehicle MASTER switch, fuel pump switch and preheat switch OFF (TM 9-2350-292-10).

Did fuel flow from hose?

yes

no

Replace fuel hose (WP 0224 00). Verify fault is corrected.

AL

1. Remove nozzle assembly from left manifold heater assembly (WP 0224 00).
2. Connect nozzle assembly to left manifold heater assembly fuel hose (WP 0223 00).
3. Turn vehicle MASTER switch, fuel pump switch and preheat switch ON (TM 9-2350-292-10). Check for fuel flow from nozzle assembly.
4. Turn vehicle MASTER switch, fuel pump switch and preheat switch OFF (TM 9-2350-292-10).

Did fuel flow from nozzle assembly?

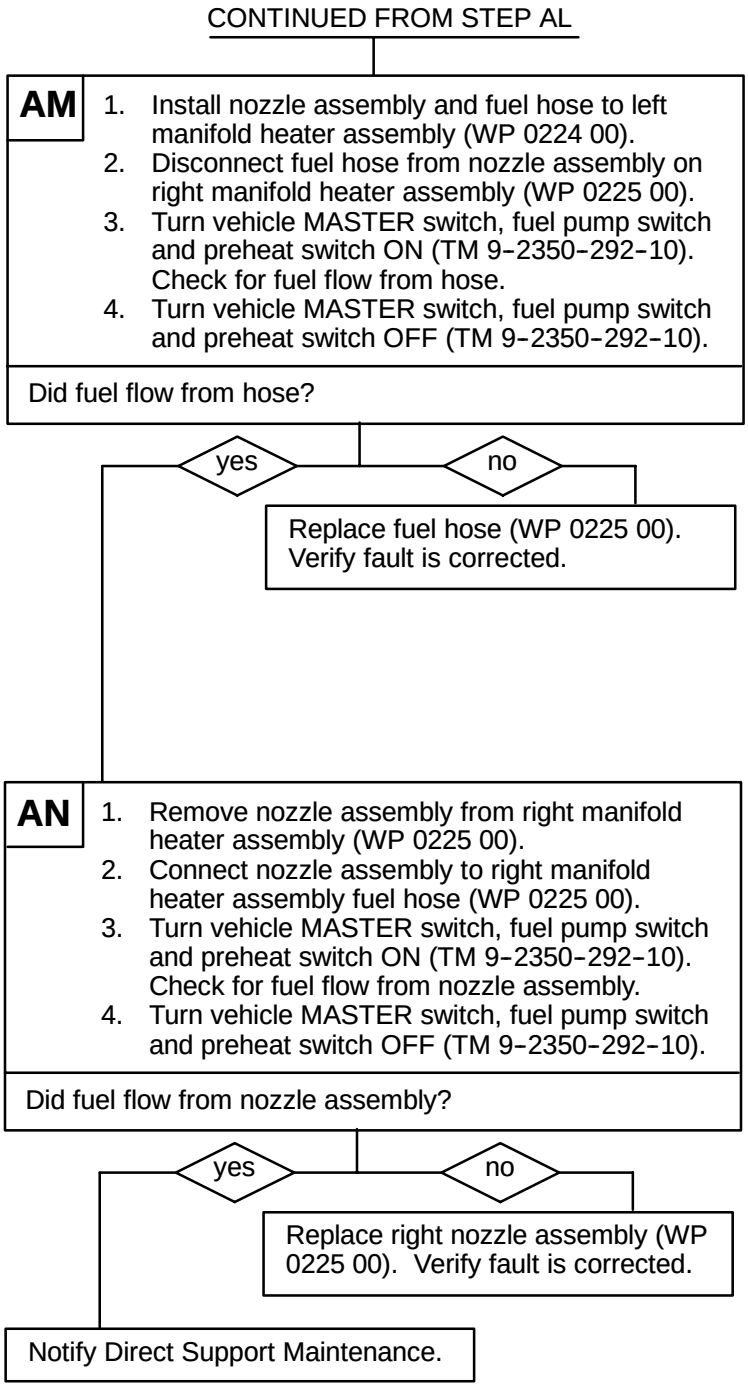
yes

no

Replace left nozzle assembly (WP 0224 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE

ENGINE CRANKS BUT WILL NOT START IN COLD WEATHER 0043 00



END OF TASK

ENGINE CRANKS SLOWLY AND WILL NOT START 0044 00

THIS WORK PACKAGE COVERS:

Engine Cranks Slowly And Will Not Start

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
STE-ICE-R (item 85, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Is STE-ICE-R available?

yes

no

Go to Step H.

B

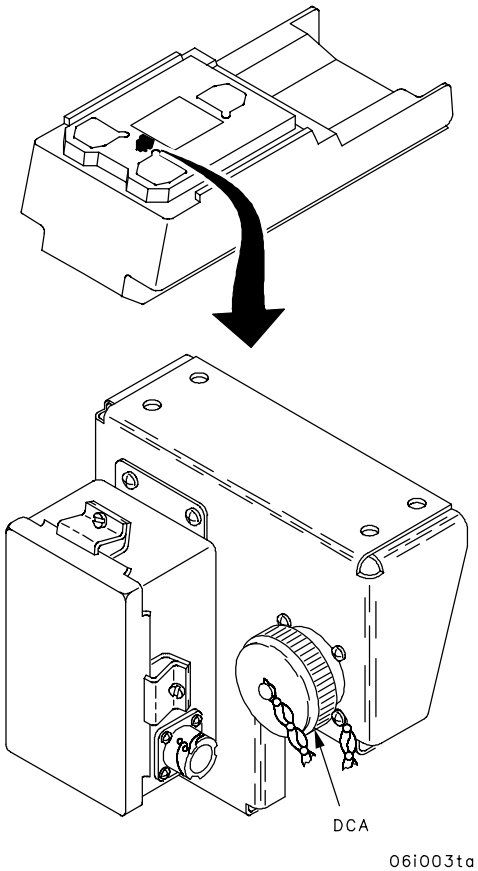
1. Setup STE-ICE-R for operation (TM 9-4910-571-12&P).
2. Connect STE-ICE-R harness W1 to vehicle harness 4W800 J1 DCA connector.
3. Enter vehicle ID (VID) 04 and perform STE-ICE-R test 75 (TM 9-4910-571-12&P) and record results.

Is VTM reading less than 16.7 milliohms?

yes

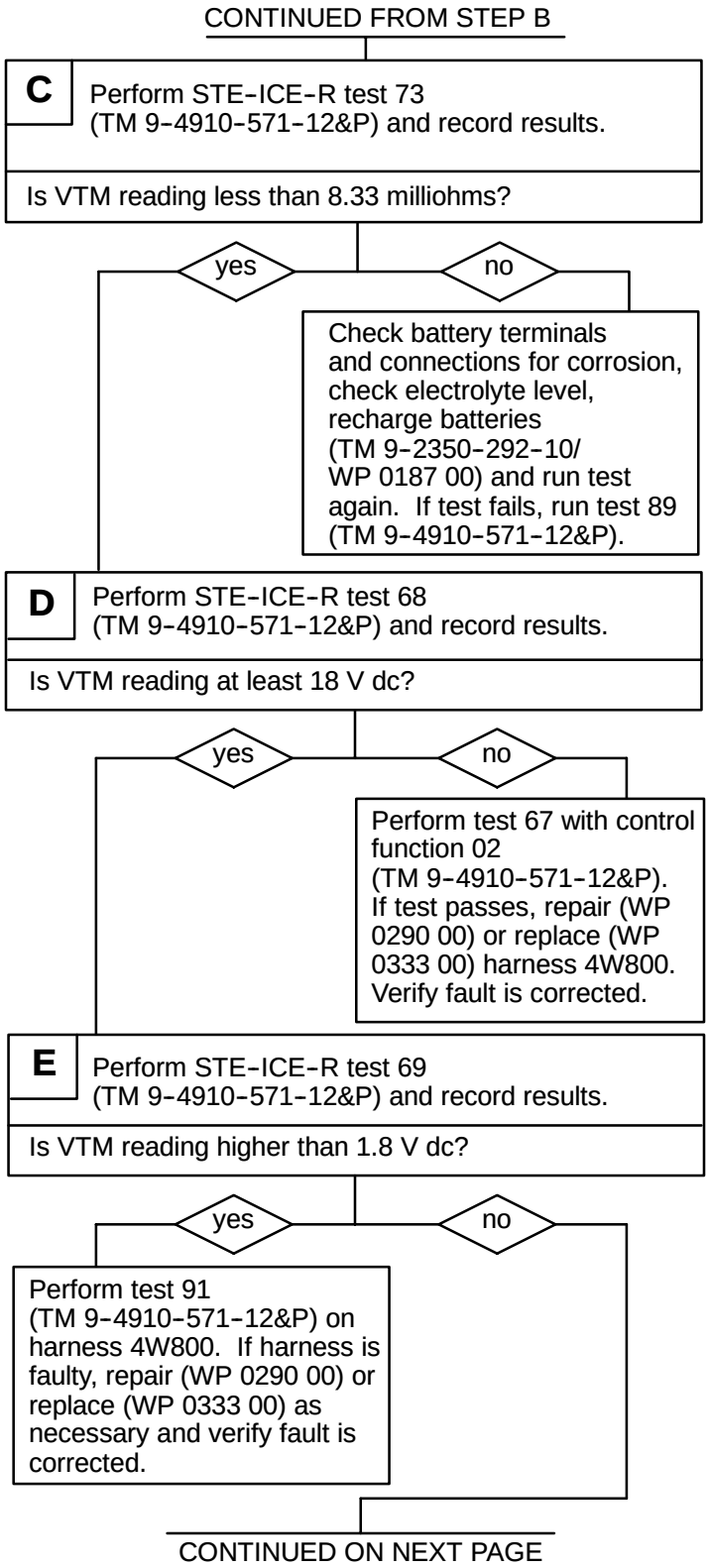
no

Check battery terminals and connections for corrosion, check electrolyte level, recharge batteries (TM 9-2350-292-10/ WP 0187 00) and run test again. If test fails, run test 89 (TM 9-4910-571-12&P).

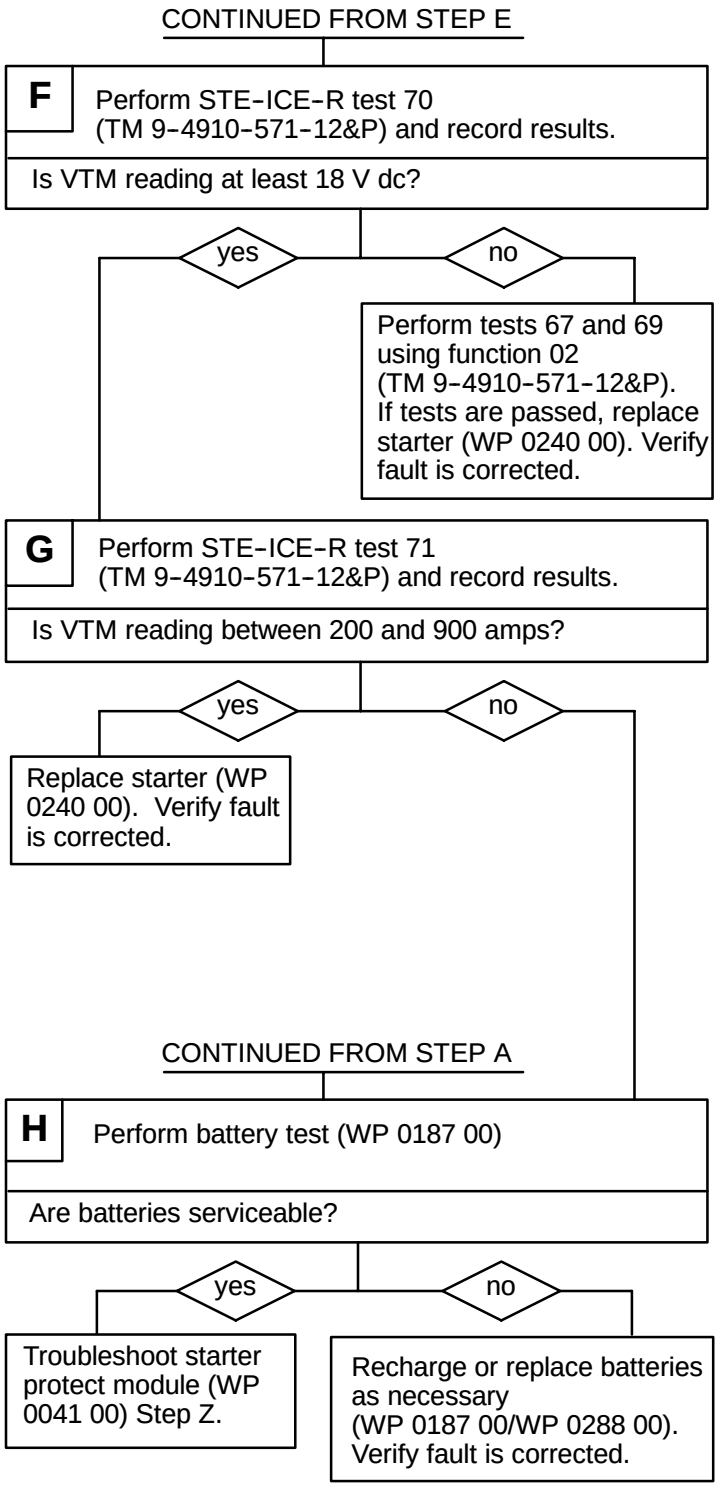


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ENGINE CRANKS SLOWLY BUT WILL NOT START - CONTINUED 0044 00



ENGINE CRANKS SLOWLY BUT WILL NOT START - CONTINUED 0044 00



END OF TASK

ENGINE FAILS TO SHUTOFF WHEN SHUTOFF SWITCH IS ACTIVATED 0045 00

THIS WORK PACKAGE COVERS:

Engine Fails To Shutoff When Shutoff Switch Is Activated

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Turn MASTER switch and FUEL SHUTOFF switch ON (TM 9-2350-292-10).
2. Operate FUEL SHUTOFF switch several times and listen for a click from the engine.
3. Turn MASTER switch and FUEL SHUTOFF switch OFF (TM 9-2350-292-10).

Can a click be heard?

yes

Notify Direct Support Maintenance.

no

B

1. Remove switch panel (WP 0242 00) and reconnect ground strap to switch panel.
2. Disconnect harness 4W101 P1 from switch panel.
3. Turn MASTER switch and FUEL SHUTOFF switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on harness 4W109 J3 pin B and black lead to ground. Check for voltage.
5. Turn MASTER switch and FUEL SHUTOFF switch OFF (TM 9-2350-292-10).

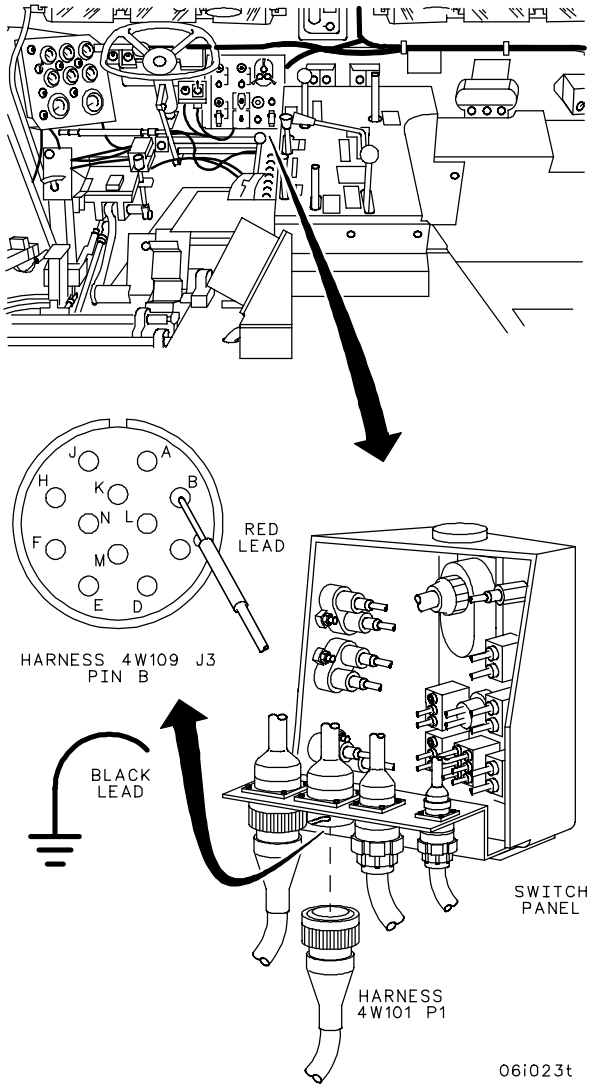
Is 24 V dc present?

yes

Go to Step H.

no

CONTINUED ON NEXT PAGE



ENGINE FAILS TO SHUTOFF WHEN SHUTOFF SWITCH IS ACTIVATED - CONTINUED 0045 00

CONTINUED FROM STEP B

C

1. Disconnect harness 4W105 P1 from switch panel.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on socket B of harness 4W105 P1 and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.

D

1. Disconnect lead 10 from CB2.
2. Place one multimeter lead on harness 4W151 J4 pin E and other lead in lead 10 connector socket. Check for continuity.

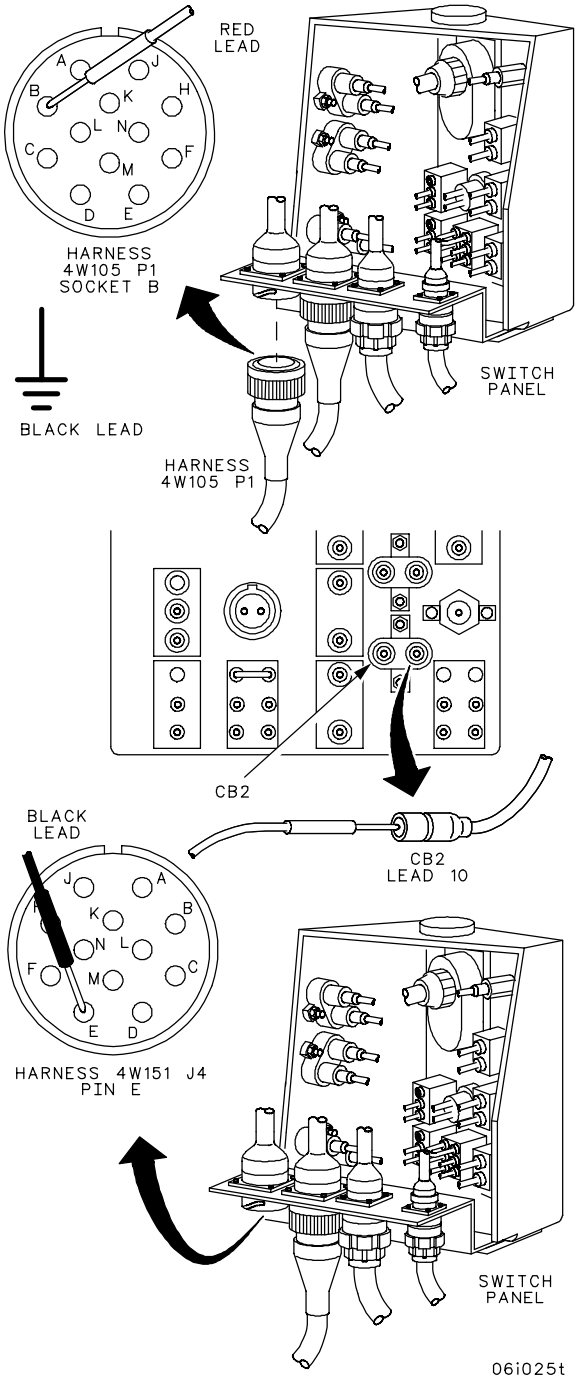
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 10 to CB2. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE FAILS TO SHUTOFF WHEN SHUTOFF SWITCH IS ACTIVATED - CONTINUED 0045 00

CONTINUED FROM STEP D

E

1. Disconnect lead 54 from other side of CB2.
2. Place one multimeter lead on each CB2 connector pin. Check for continuity.

Is continuity present?

yes

no

Replace CB2 (WP 0242 00). Verify fault is corrected.

F

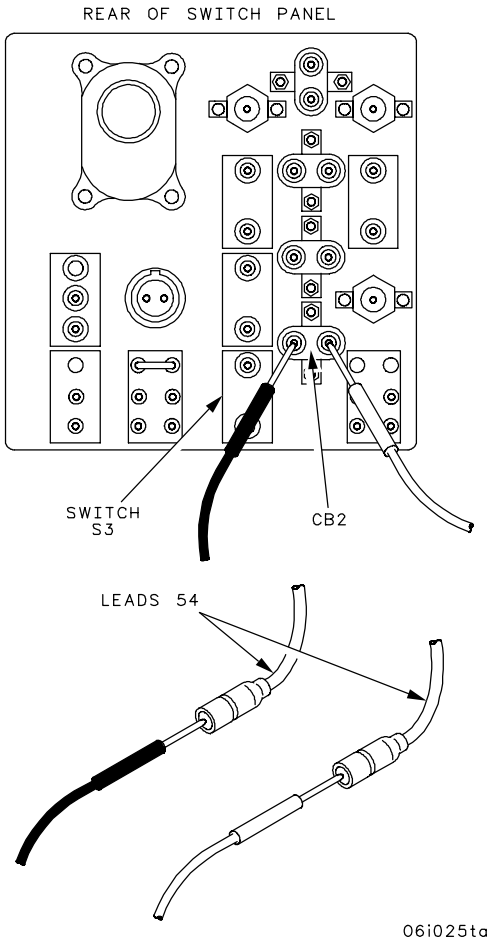
1. Disconnect lead 54 at switch S3.
2. Place one multimeter lead in each socket end of lead 54. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 54 from CB2 to switch S3. Verify fault is corrected.



CONTINUED ON NEXT PAGE

ENGINE FAILS TO SHUTOFF WHEN SHUTOFF SWITCH IS ACTIVATED - CONTINUED 0045 00

CONTINUED FROM STEP F

G

1. Reconnect leads 10 and 54 to CB2.
2. Disconnect lead 54 from switch S3 at receptacle side.
3. Place one multimeter lead on each switch S3 connector. Check for continuity.

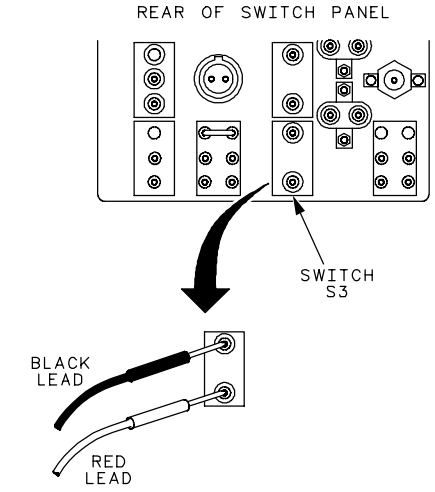
Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0242 00) lead 54 from switch S3 to harness 4W151 J4 pin B. Verify fault is corrected.

no

Replace switch S3 (WP 0242 00). Verify fault is corrected.



CONTINUED FROM STEP B

H

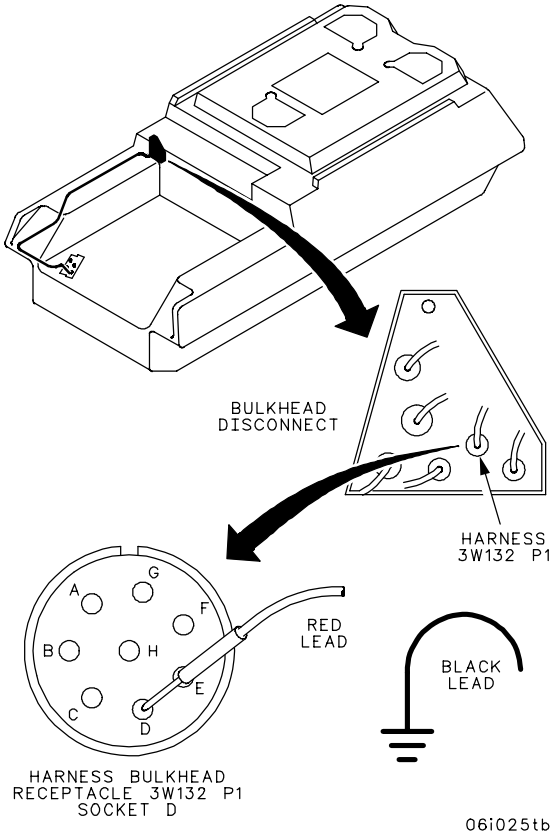
1. Reconnect harness 4W101 P1 to switch panel.
2. Disconnect harness 3W132 P1 at bulkhead.
3. Turn MASTER switch and FUEL SHUTOFF switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 3W132 P1 bulkhead receptacle socket D and black lead to ground. Check for voltage.
5. Turn MASTER switch and FUEL SHUTOFF switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0315 00) harness 4W101. Verify fault is corrected.



CONTINUED ON NEXT PAGE

ENGINE FAILS TO SHUTOFF WHEN SHUTOFF SWITCH IS ACTIVATED - CONTINUED 0045 00

CONTINUED FROM STEP H

I

1. Reconnect harness 3W132 P1 to bulkhead disconnect.
2. Remove engine deck (WP 0417 00).
3. Disconnect harness 3W143 P1 at engine disconnect.
4. Turn MASTER switch and FUEL SHUTOFF switch ON (TM 9-2350-292-10).
5. Place multimeter red lead in harness 3W143 P1 pin M and black lead to ground. Check for voltage.
6. Turn MASTER switch and FUEL SHUTOFF switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0293 00) harness 3W132. Verify fault is corrected.

J

1. Reconnect harness 3W143 P1 to engine disconnect.
2. Disconnect harness 3W202 from fuel shutoff solenoid.
3. Turn MASTER switch and FUEL SHUTOFF switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 3W202 socket A of solenoid connector and black lead to ground. Check for voltage.
5. Turn MASTER switch and FUEL SHUTOFF switch OFF (TM 9-2350-292-10).

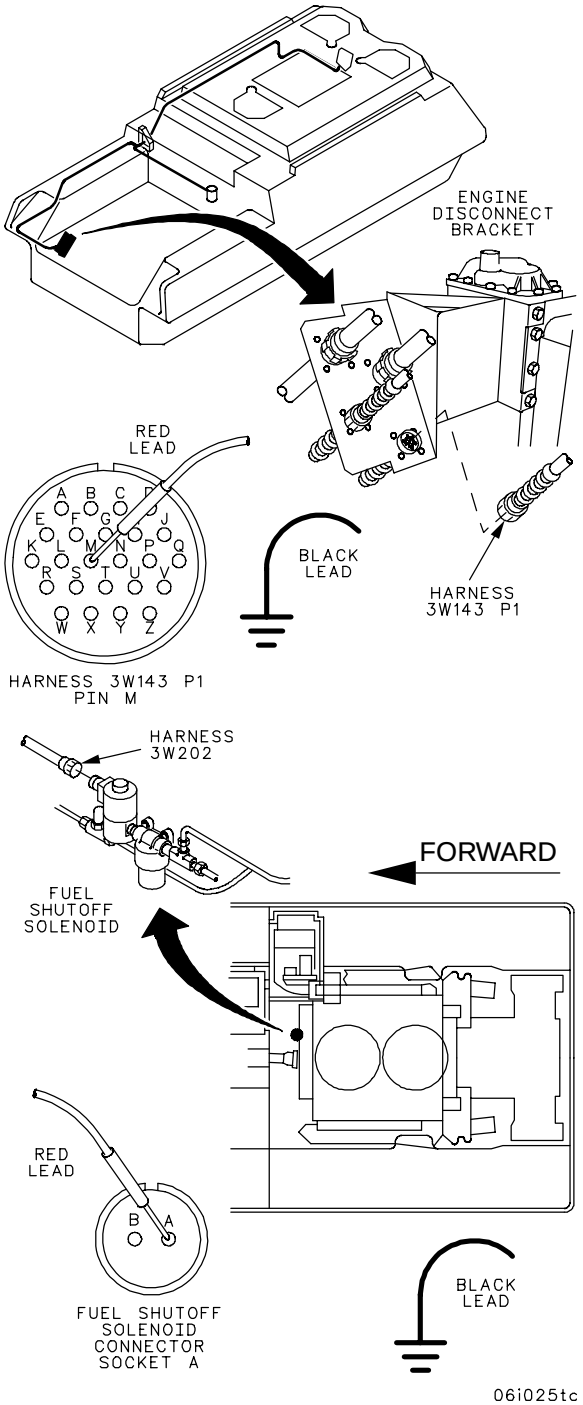
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE FAILS TO SHUTOFF WHEN SHUTOFF SWITCH IS ACTIVATED - CONTINUED 0045 00

CONTINUED FROM STEP J

K Place one multimeter lead in fuel shutoff solenoid connector socket B and other lead to ground. Check for continuity.

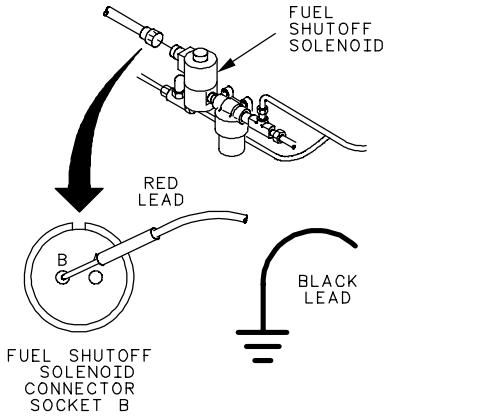
Is continuity present?

yes

Replace fuel shutoff solenoid (WP 0224 00/WP 0225 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace WP 0224 00/WP 0225 00) fuel shutoff solenoid ground wire. Verify fault is corrected.



06i025td

END OF TASK

ENGINE FAILS TO SHUTOFF WHEN MANUAL FUEL SHUTOFF HANDLE IS PULLED 0046 00

THIS WORK PACKAGE COVERS:

Engine Fails To Shutoff When Manual Fuel Shutoff Handle Is Pulled

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

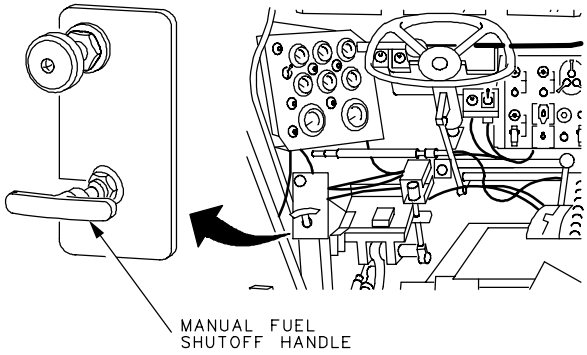
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine shrouds removed (WP 0232 00)
Engine cooling fans removed (WP 0235 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



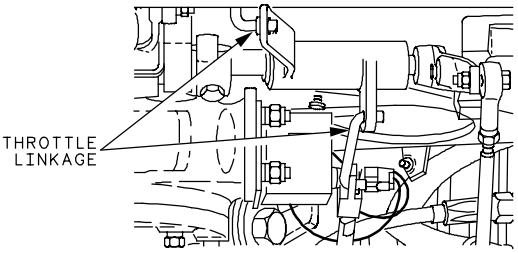
A Move manual FUEL SHUTOFF handle in and out while observing linkage on front of engine.

Does linkage move?

yes

no

Replace control cable (WP 0216 00). Verify fault is corrected.



B Move manual FUEL SHUTOFF handle in and out while observing lever on side fuel injector pump.

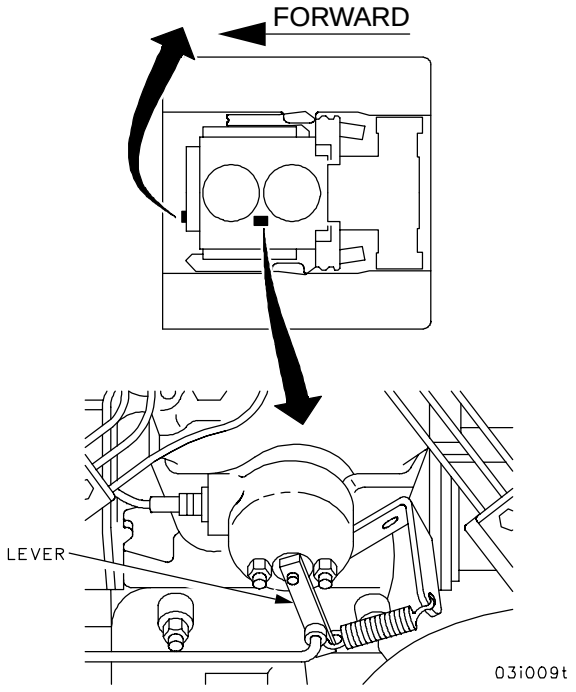
Does lever move?

yes

no

Adjust control assembly linkage (WP 0216 00 installation). Verify fault is corrected.

Repair or replace lever and cable to fuel injector pump (WP 0216 00). Verify fault is corrected.



END OF TASK

ENGINE HAS LOW STALL RPM, DOES NOT DEVELOP FULL POWER, AND HAS EXCESSIVE SMOKE FROM ONE OR BOTH BANKS OF CYLINDERS

0047 00

THIS WORK PACKAGE COVERS:

Engine Has Low Stall RPM, Does Not Develop Full Power, And Has Excessive Smoke From One Or Both Banks Of Cylinders

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
STE-ICE-R (item 85, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Is STE-ICE-R available?

yes

no

Go to Step L.

B

1. Start engine (TM 9-2350-292-10).
2. Let engine run at idle for one minute and read rpm.

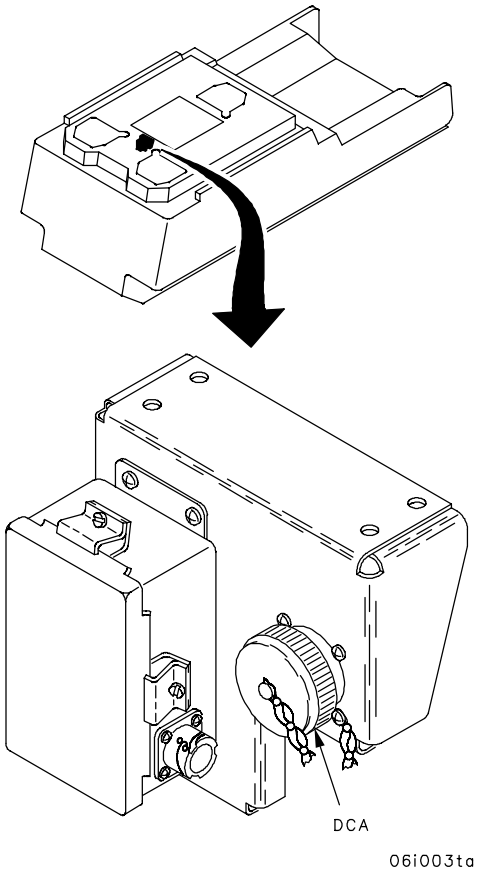
Is idle rpm between 825 and 875 rpm?

yes

no

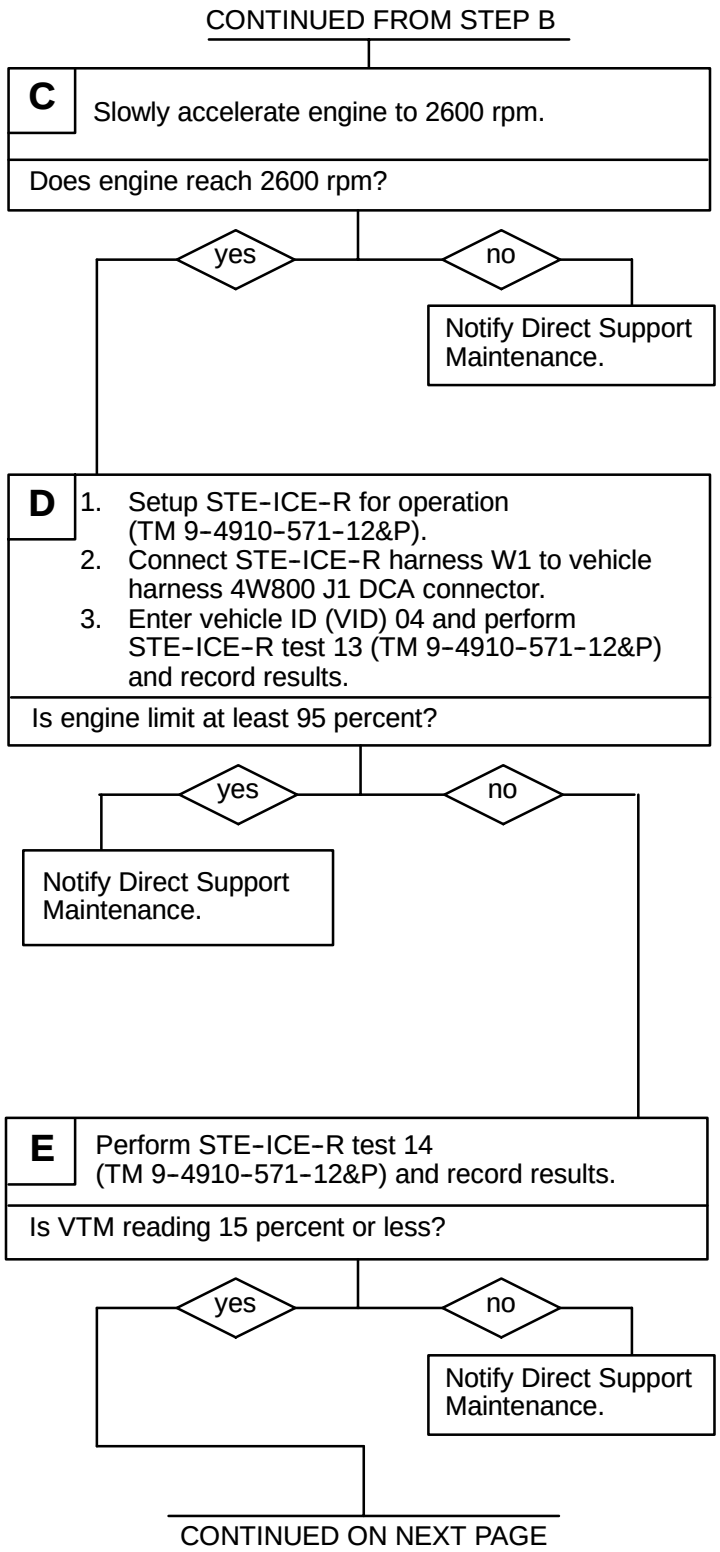
Notify Direct Support Maintenance.

CONTINUED ON NEXT PAGE



ENGINE HAS LOW STALL RPM, DOES NOT DEVELOP FULL POWER, AND HAS EXCESSIVE SMOKE FROM ONE OR BOTH BANKS OF CYLINDERS - CONTINUED

0047 00



ENGINE HAS LOW STALL RPM, DOES NOT DEVELOP FULL POWER, AND HAS EXCESSIVE SMOKE FROM ONE OR BOTH BANKS OF CYLINDERS - CONTINUED

0047 00

CONTINUED FROM STEP E

F

1. Dial 01 into VTM and press and release "TEST".
2. When VTM shows "CON" enter 24 into TEST SELECT and press TEST until "CAL" is shown on VTM and release TEST.
3. Press and release TEST.
4. Crank engine for 10 seconds while holding fuel shutoff switch in OFF. Record results.
5. Start engine (TM 9-2350-292-10). Record results.
6. Shut engine down (TM 9-2350-292-10).

Is VTM reading between 60 and 90 psi?

yes

Notify Direct Support Maintenance.

no

G Check results of 10-second crank.

Was VTM reading at least 6 psi?

yes

Go to Step K.

no

H

1. Replace fuel/water separator elements (WP 0220 00).
2. Perform Step F.

Is VTM reading between 60 and 90 psi?

yes

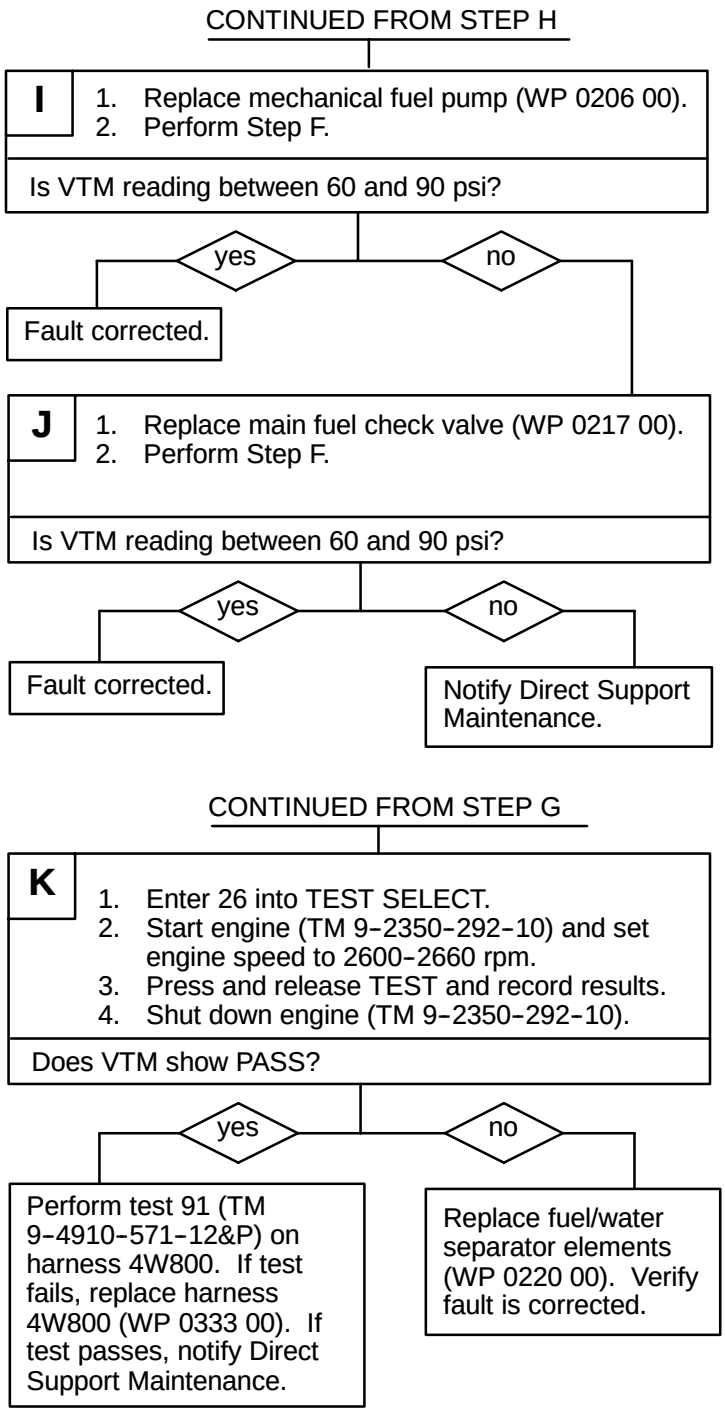
Fault corrected.

no

CONTINUED ON NEXT PAGE

ENGINE HAS LOW STALL RPM, DOES NOT DEVELOP FULL POWER, AND HAS EXCESSIVE SMOKE FROM ONE OR BOTH BANKS OF CYLINDERS - CONTINUED

0047 00



CONTINUED ON NEXT PAGE

ENGINE HAS LOW STALL RPM, DOES NOT DEVELOP FULL POWER, AND HAS EXCESSIVE SMOKE FROM ONE OR BOTH BANKS OF CYLINDERS - CONTINUED

0047 00

CONTINUED FROM STEP A

L Check exhaust outlets, pipes, intake hoses and intake tubes for damage and/or restrictions.

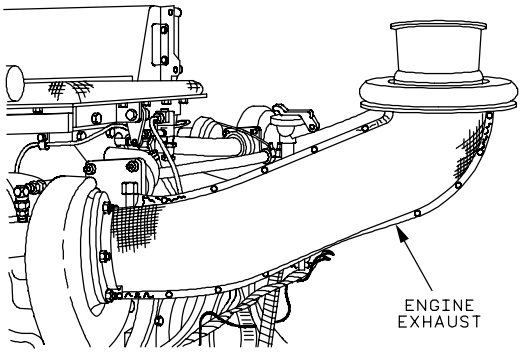
Are all outlets, pipes, hoses and tubes free of damage and/or restrictions.

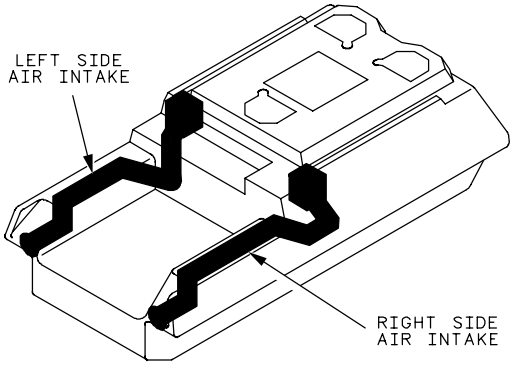
yes

Notify Direct Support Maintenance.

no

Repair or replace damaged and/or restricted parts (WP 0217 00 and WP 0228 00). Verify fault is corrected.





04i001t

END OF TASK

ENGINE HAS EXCESSIVE WHITE SMOKE 0048 00

THIS WORK PACKAGE COVERS:
Engine Has Excessive White Smoke

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Engine operating (TM 9-2350-292-10)

Personnel Required
Two

WARNING
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Close manual fuel valve to smoke generator (TM 9-2350-292-10) and observe exhaust.

Is excessive white smoke still coming from exhaust?

yes → **B**

no → Fault corrected.

B
1. Shut down engine (TM 9-2350-292-10).
2. Service primary fuel filter (WP 0222 00).
3. Start engine (TM 9-2350-292-10) and observe exhaust.

Is excessive white smoke still coming from exhaust?

yes → **C**

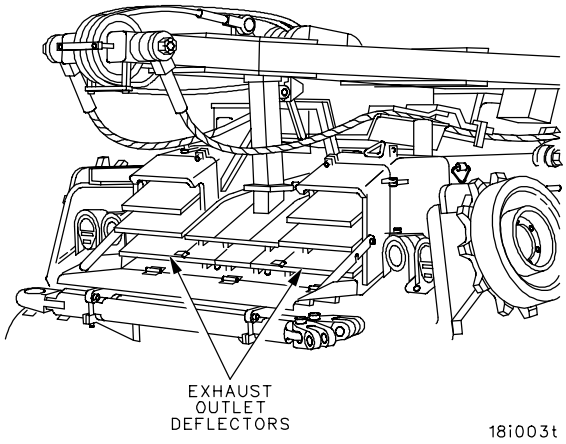
no → Fault corrected.

C
1. Shut down engine (TM 9-2350-292-10).
2. Service fuel water separator (WP 0220 00).
3. Start engine (TM 9-2350-292-10) and observe exhaust.

Is excessive white smoke still coming from exhaust?

yes → Notify Direct Support Maintenance.

no → Fault corrected.



END OF TASK

ENGINE HAS LOW STALL RPM AND DOES NOT DEVELOP FULL POWER, BUT EXHAUST SMOKE IS NORMAL 0049 00

THIS WORK PACKAGE COVERS:

Engine Has Low Stall RPM And Does Not Develop Full Power, But Exhaust Smoke Is Normal

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-300 psi dial pressure gauge (item 81, WP 0717 00)
STE-ICE-R (item 85, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Is STE-ICE-R available?

yes

no

Go to Step I.

B

1. Setup STE-ICE-R for operation (TM 9-4910-571-12&P).
2. Connect STE-ICE-R harness W1 to vehicle harness 4W800 J1 DCA connector.
3. Enter vehicle ID (VID) 04.
4. Dial 01 into VTM and press and release "TEST".
5. When VTM shows "CON" enter 24 into TEST SELECT and press TEST until "CAL" is shown on VTM and release TEST.
6. Press and release TEST.
7. Crank engine for 10 seconds while holding fuel shutoff switch in OFF. Record results.
8. Start engine (TM 9-2350-292-10). Record results.
9. Shut engine down (TM 9-2350-292-10).

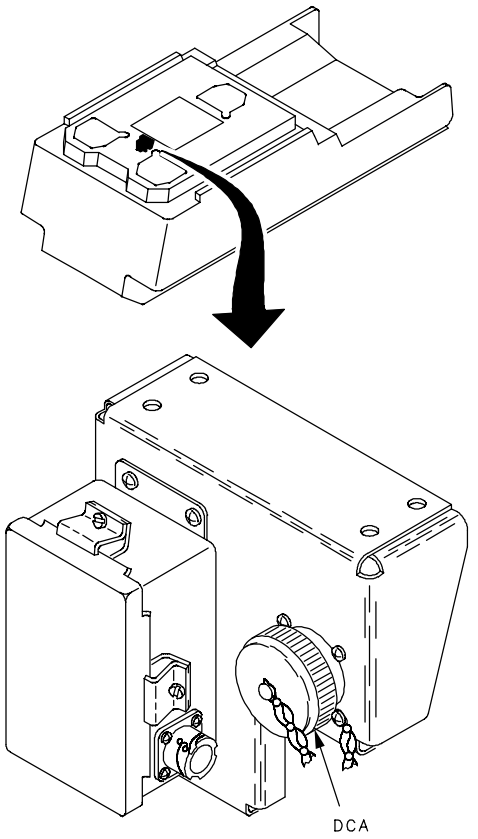
Is VTM reading between 60 and 90 psi?

yes

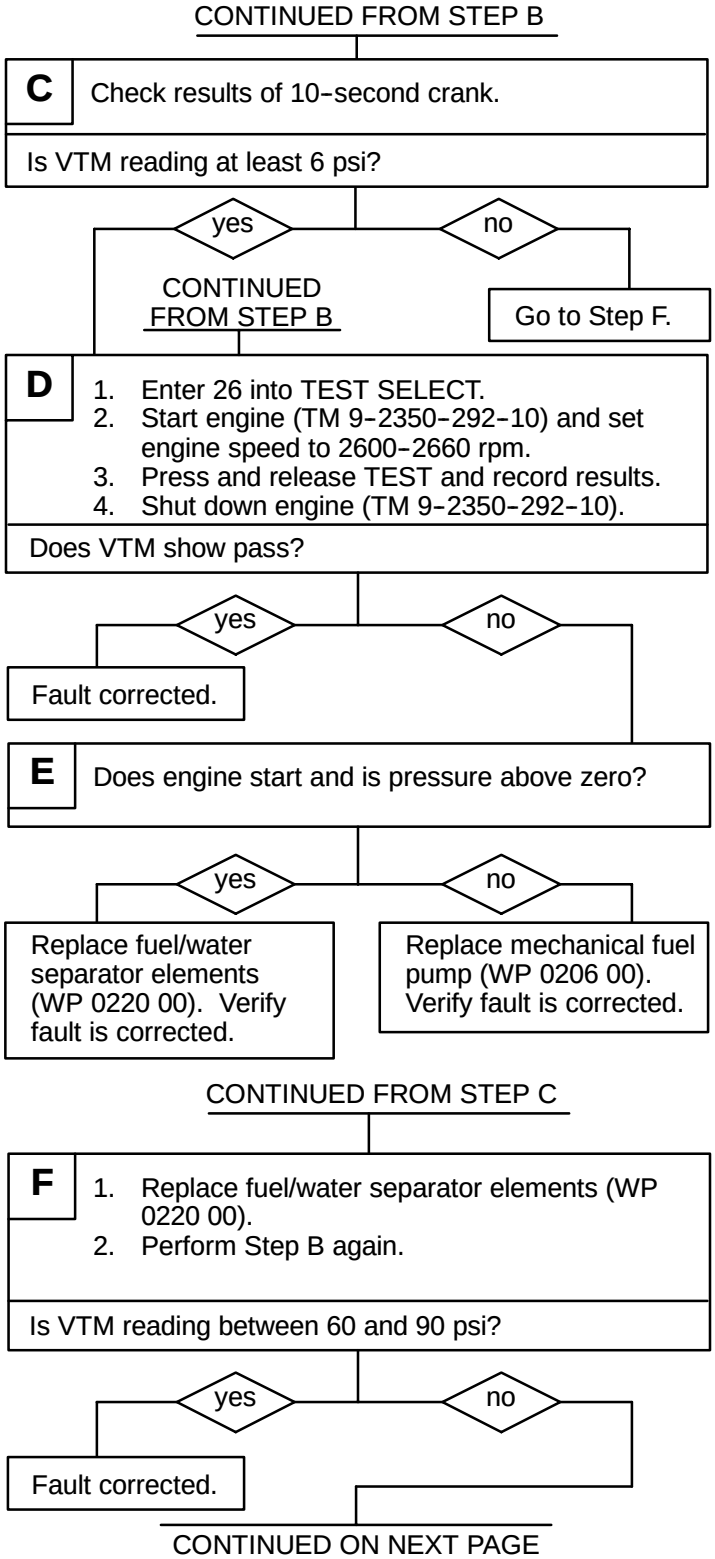
no

Go to Step D.

CONTINUED ON NEXT PAGE

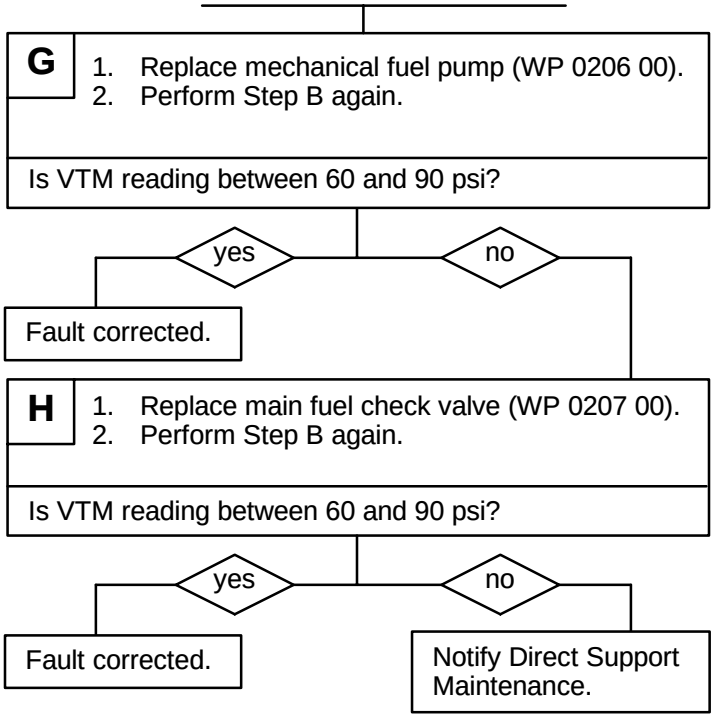


ENGINE HAS LOW STALL RPM AND DOES NOT DEVELOP FULL POWER, BUT EXHAUST SMOKE IS NORMAL 0049 00



ENGINE HAS LOW STALL RPM AND DOES NOT DEVELOP FULL POWER, BUT EXHAUST SMOKE IS NORMAL 0049 00

CONTINUED FROM STEP F



CONTINUED ON NEXT PAGE

ENGINE HAS LOW STALL RPM AND DOES NOT DEVELOP FULL POWER, BUT EXHAUST SMOKE IS NORMAL 0049 00

CONTINUED FROM STEP A

I Move accelerator to full throttle position (TM 9-2350-292-10) and observe linkage on front of engine.

Does linkage have full travel?

yes

no

Adjust linkage (WP 0227 00). Verify fault is corrected.

J Check fuel return line to fuel tank on front of engine for proper connection.

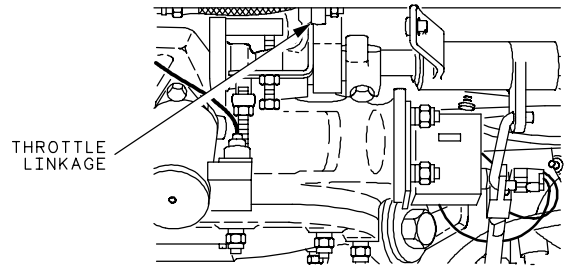
Is fuel return line properly connected?

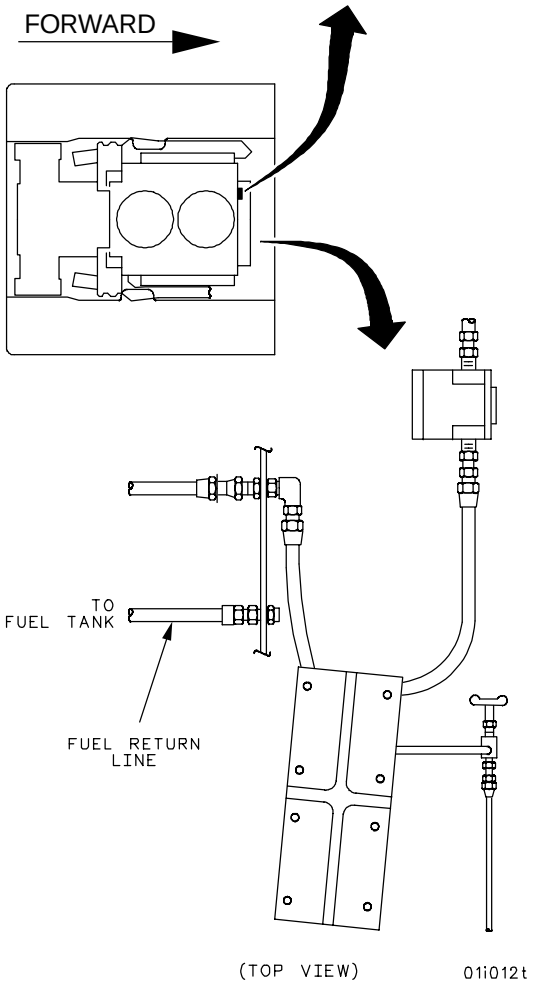
yes

no

Properly connect line (WP 0217 00). Verify fault is corrected.

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ENGINE HAS LOW STALL RPM AND DOES NOT DEVELOP FULL POWER, BUT EXHAUST SMOKE IS NORMAL 0049 00

CONTINUED FROM STEP J

K

1. Turn MASTER switch and intank fuel pump switch ON (TM 9-2350-292-10).
2. Turn MASTER switch and intank fuel pump switch OFF (TM 9-2350-292-10).

Does electric fuel pump make noise?

yes

no

Go to page WP 0039 00 step P.

CONTINUED ON NEXT PAGE

ENGINE HAS LOW STALL RPM AND DOES NOT DEVELOP FULL POWER, BUT EXHAUST SMOKE IS NORMAL 0049 00

CONTINUED FROM STEP K

L

1. Remove bleeder valve from fuel/water separator (WP 0220 00).
2. Install 0-300 psi dial pressure gauge in bleeder valve opening.
3. Turn MASTER switch and intank fuel pump switch ON (TM 9-2350-292-10).
4. Start engine (TM 9-2350-292-10) and run at high idle (1800-2400 rpm).
5. Turn MASTER switch and intank fuel pump switch OFF and shut off engine (TM 9-2350-292-10).

Does gauge read between 60 and 90 psi?

yes — Fault corrected.

no

M

1. Replace primary fuel filter (WP 0222 00).
2. Repeat items 3 thru 5 of Step E.

Does gauge read between 60 and 90 psi?

yes — Fault corrected.

no

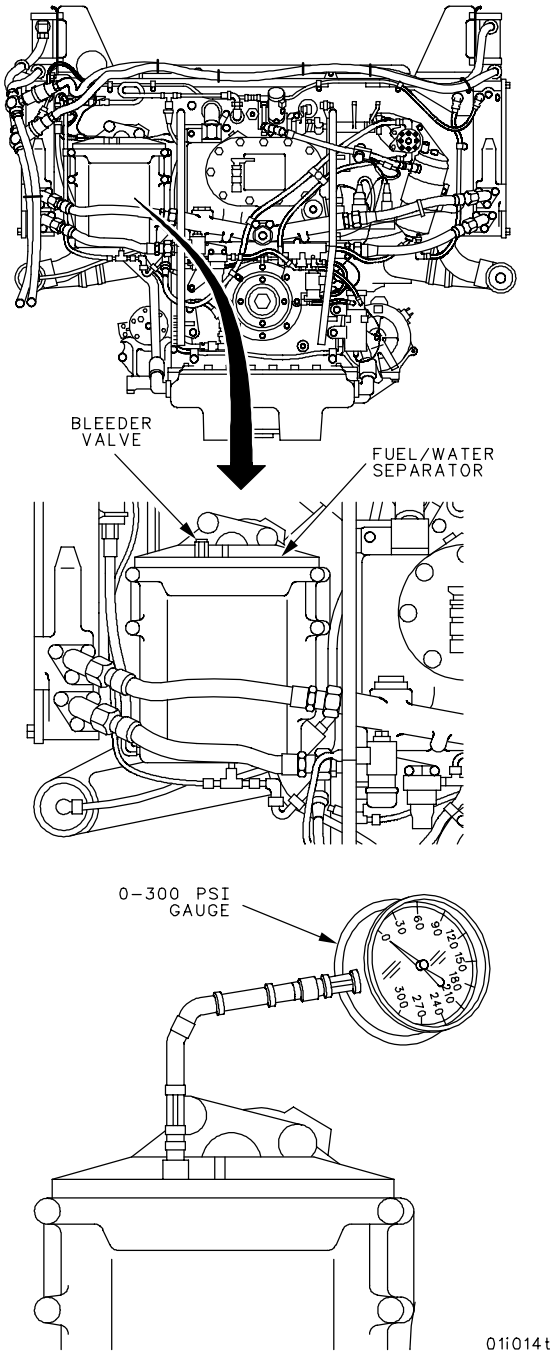
N

1. Replace mechanical fuel pump (WP 0206 00).
2. Repeat items 3 thru 5 of Step E.

Does gauge read between 60 and 90 psi?

yes — Fault corrected.

no — Replace primary fuel filter and fuel/water separator elements (WP 0220 00 and WP 0222 00). Verify fault is corrected.



END OF TASK

ENGINE RUNS ROUGH OR MISFIRES AND/OR KNOCKS 0050 00

THIS WORK PACKAGE COVERS:

Engine Runs Rough Or Misfires And/Or Knocks

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
STE-ICE-R (item 85, WP 0717 00)
0-300 psi dial pressure gauge (item 81, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Is STE-ICE-R available?

yes / no

no → Go to Step I.

B

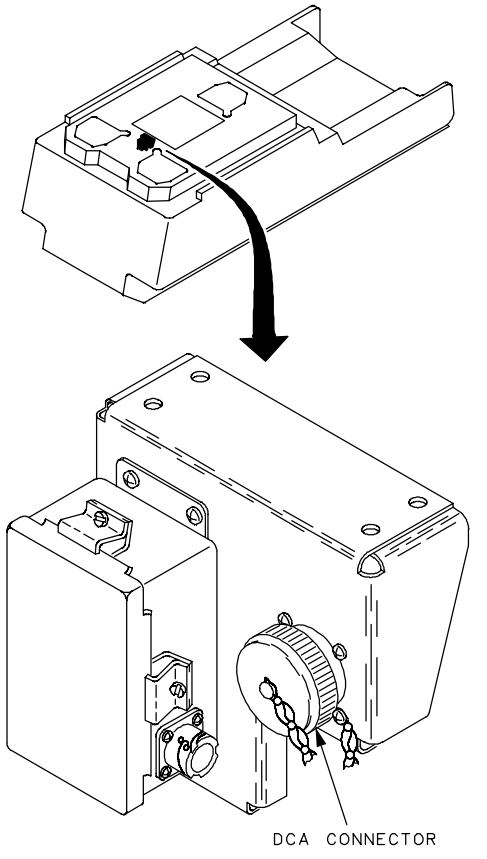
1. Setup STE-ICE-R for operation (TM 9-4910-571-12&P).
2. Connect STE-ICE-R harness W1 to vehicle harness 4W800 J1 DCA connector.
3. Enter vehicle ID (VID) 04.
4. Dial 01 into VTM and press and release "TEST".
5. When VTM shows "CON" enter 24 into TEST SELECT and press TEST until "CAL" is shown on VTM and release TEST.
6. Press and release TEST.
7. Crank engine for 10 seconds while holding fuel shutoff switch in OFF. Record results.
8. Start engine (TM 9-2350-292-10). Record results.
9. Shut engine down (TM 9-2350-292-10).

Is VTM reading between 60 and 90 psi?

yes / no

yes → Go to Step D.

CONTINUED ON NEXT PAGE



ENGINE RUNS ROUGH OR MISFIRES AND/OR KNOCKS 0050 00

CONTINUED FROM STEP B

C Check results recorded during 10-second crank.

Is VTM reading at least 6 psi?

yes / no

Go to Step F.

CONTINUED FROM STEP B

D

1. Enter 26 into TEST SELECT.
2. Start engine (TM 9-2350-292-10) and set engine speed to 2600-2660 rpm.
3. Press and release TEST and record results.
4. Shut down engine (TM 9-2350-292-10).

Does VTM show PASS?

yes / no

Notify Direct Support Maintenance.

E

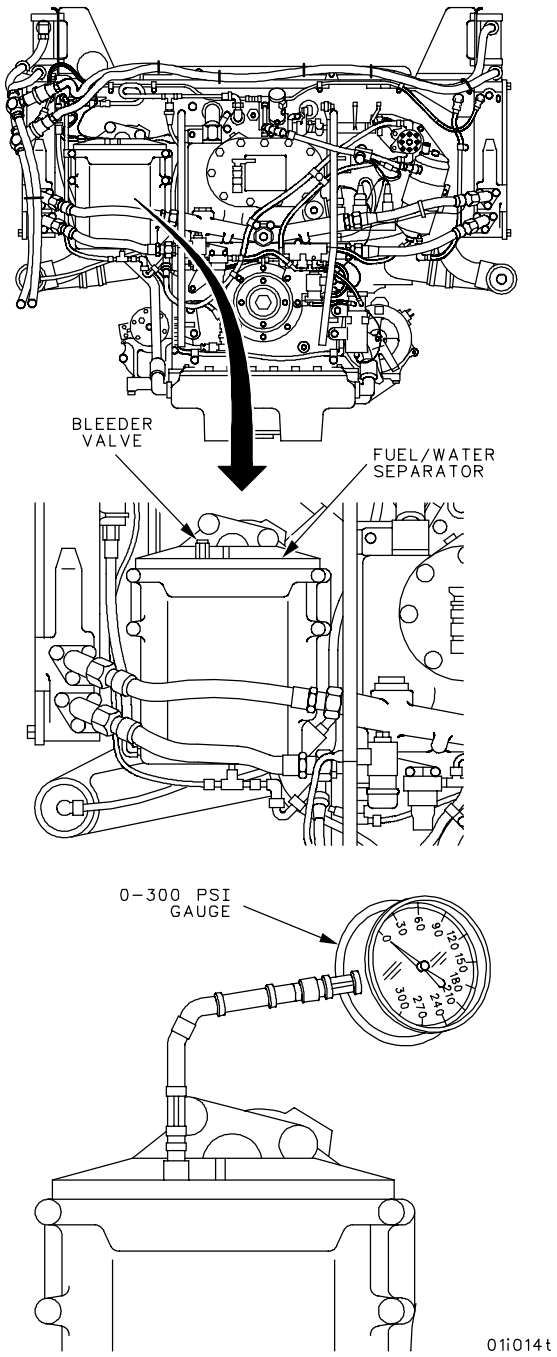
1. Remove bleeder valve from fuel/water separator (WP 0220 00).
2. Install 0-300 psi dial pressure gauge in bleeder valve opening.
3. Turn MASTER switch and intank fuel pump switch ON (TM 9-2350-292-10).
4. Start engine (TM 9-2350-292-10) and run at high idle (1800-2400 rpm).
5. Turn MASTER switch and intank fuel pump switch OFF and shut off engine (TM 9-2350-292-10).

Does gauge read between 60 and 90 psi?

yes / no

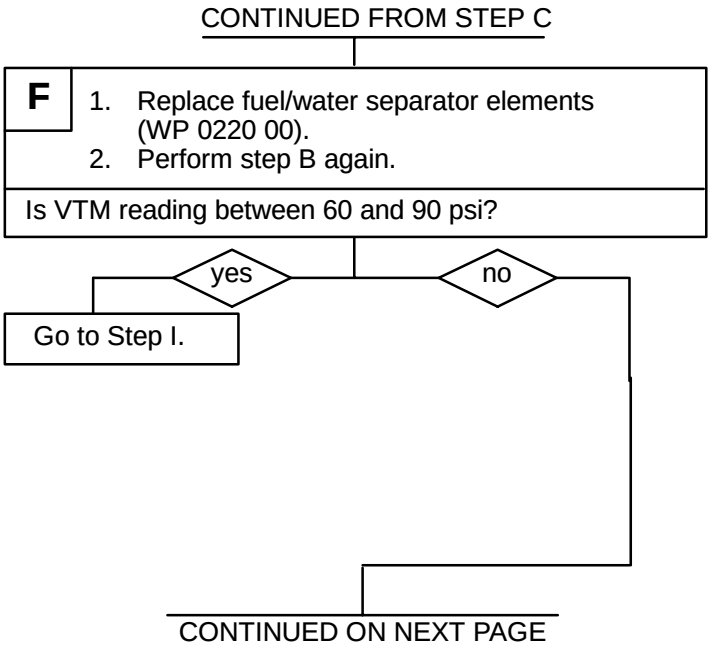
Replace fuel/water separator elements (WP 0220 00). Verify fault is corrected.

Replace mechanical fuel pump (WP 0206 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

ENGINE RUNS ROUGH OR MISFIRES AND/OR KNOCKS 0050 00



ENGINE RUNS ROUGH OR MISFIRES AND/OR KNOCKS 0050 00

CONTINUED FROM STEP F

G
1. Replace mechanical fuel pump (WP 0206 00).
2. Perform Step B again.

Is VTM reading between 60 and 90 psi?

yes → Go to Step I.

no

H
1. Replace main fuel check valve (WP 0207 00).
2. Perform Step B again.

Is VTM reading between 60 and 90 psi?

yes

no → Notify Direct Support Maintenance.

CONTINUED FROM STEP A, F AND G

I Inspect engine exhaust for evidence of fuel.

Are there fuel spots?

yes

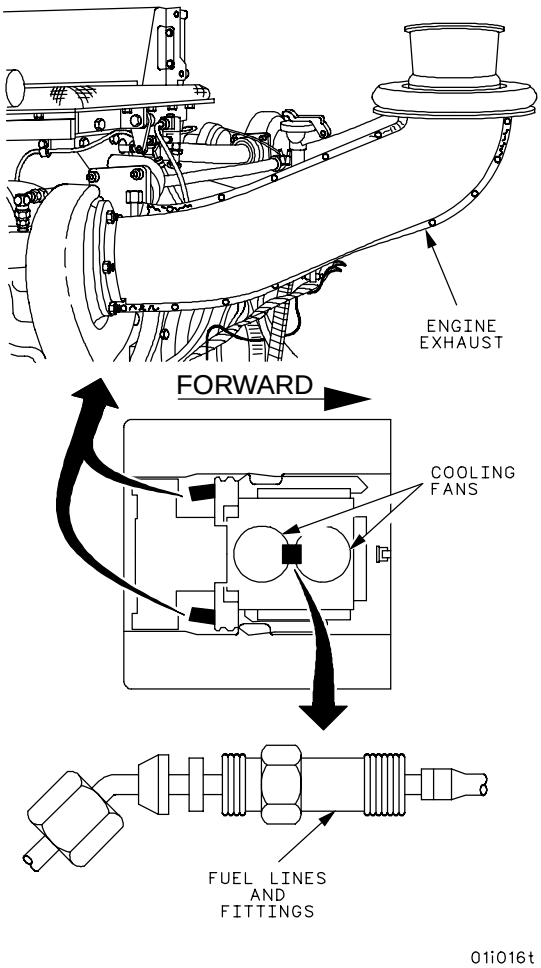
no → Go to Step K.

J
1. Remove front and rear cooling fans (WP 0235 00).
2. Loosen and tighten fuel lines and fittings that show evidence of leaking.
3. Inspect lines and fittings (TM 9-2350-292-10).

Do fuel lines and/or fittings still leak?

yes → Notify Direct Support Maintenance.

no → Fault corrected.



CONTINUED ON NEXT PAGE

ENGINE RUNS ROUGH OR MISFIRES AND/OR KNOCKS 0050 00

CONTINUED FROM STEP I

K Check fuel return hose for proper connection.

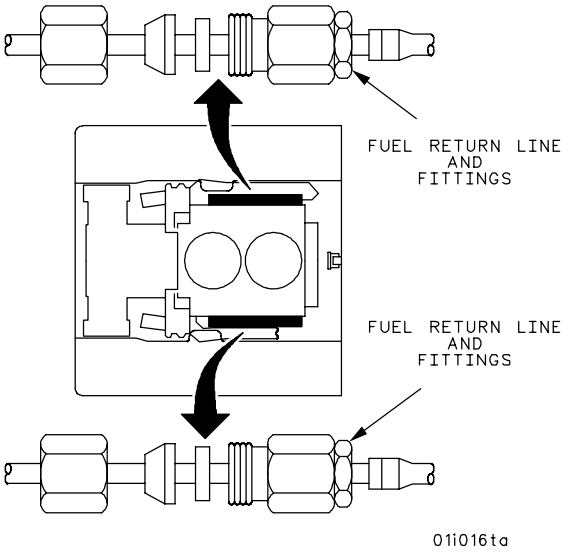
Is fuel return hose properly connected?

yes

Notify Direct Support Maintenance.

no

Properly connect fuel return hose (WP 0217 00). Verify fault is corrected. If engine still runs rough, misfires, or knocks, notify Direct Support Maintenance.



END OF TASK

ENGINE USES EXCESSIVE FUEL 0051 00

THIS WORK PACKAGE COVERS:

Engine Uses Excessive Fuel

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
STE-ICE-R (item 85, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Is STE-ICE-R available?

yes

no

Go to Step I.

B

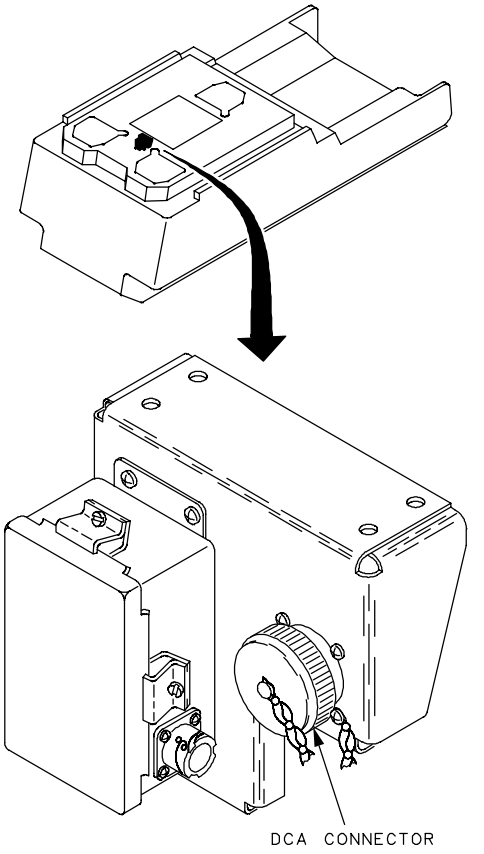
1. Setup STE-ICE-R for operation (TM 9-4910-571-12&P).
2. Connect STE-ICE-R harness W1 to vehicle harness 4W800 J1 DCA connector.
3. Enter vehicle ID (VID) 04.
4. Dial 01 into VTM and press and release "TEST".
5. When VTM shows "CON" enter 24 into TEST SELECT and press TEST until "CAL" is shown on VTM and release TEST.
6. Press and release TEST.
7. Crank engine for 10 seconds while holding fuel shutoff switch in OFF. Record results.
8. Start engine (TM 9-2350-292-10). Record results.
9. Shut engine down (TM 9-2350-292-10).

Does VTM show PASS?

yes

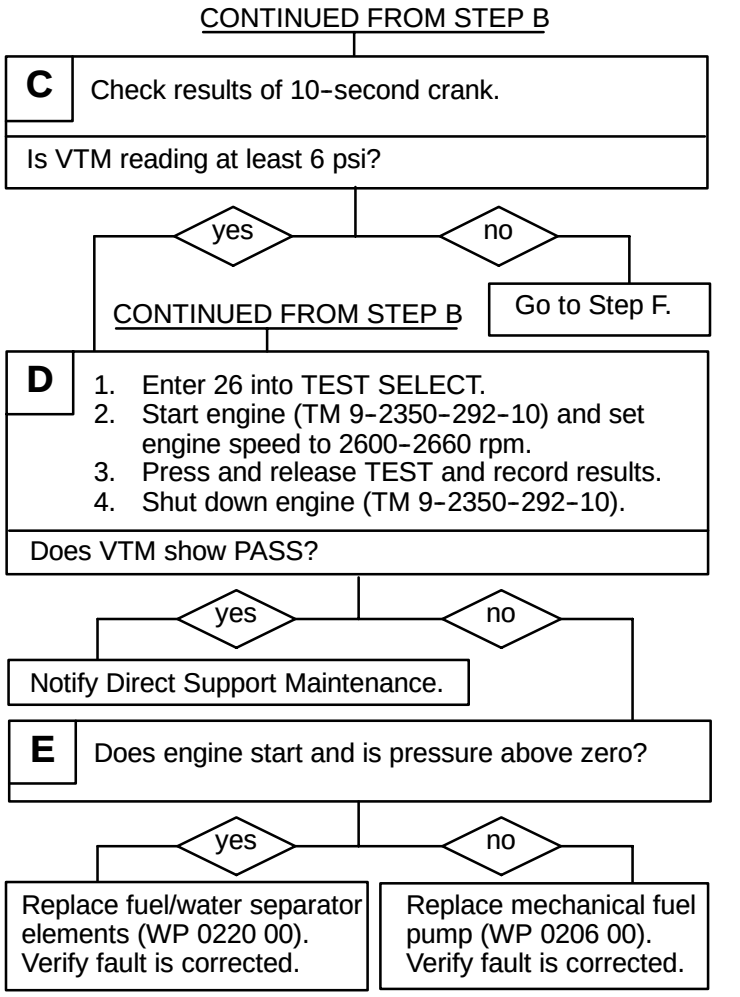
no

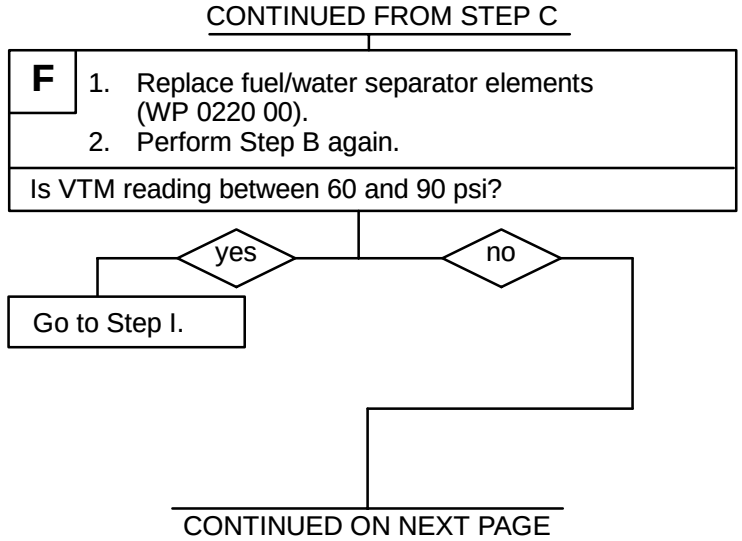
Go to Step D.



CONTINUED ON NEXT PAGE

ENGINE USES EXCESSIVE FUEL - CONTINUED 0051 00





ENGINE USES EXCESSIVE FUEL - CONTINUED 0051 00

CONTINUED FROM STEP F

G

1. Replace mechanical fuel pump (WP 0206 00).
2. Perform Step B again.

Is VTM reading between 60 and 90 psi?

yes → Fault corrected.

no

H

1. Replace main fuel check valve (WP 0207 00).
2. Perform Step B again.

Is VTM reading between 60 and 90 psi?

yes → Fault corrected.

no → Notify Direct Support Maintenance.

CONTINUED FROM STEPS A AND F

I Perform steps I through K on pages WP 0050 00-4 and WP 0050 00-5.

Is excessive fuel still used?

yes

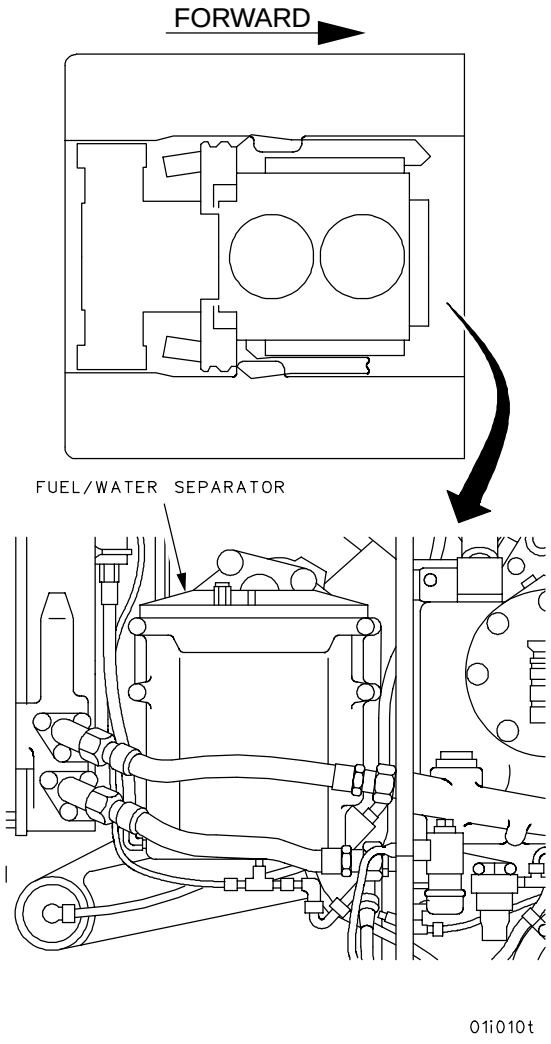
no → Fault corrected.

J Check fuel/water separator automatic drain system for proper operation (WP 0221 00).

Does fuel/water separator automatic drain system operate properly?

yes → Notify Direct Support Maintenance.

no → Repair system as necessary (WP 0220 00). Verify fault is corrected.



END OF TASK

DUST DETECTOR SYSTEM OPERATING. POWER PLANT WARNING LAMP AND DUST DETECTOR WARNING LAMPS "ON" AND PRESSURE SWITCH PLUNGERS ARE VISIBLE

0052 00

THIS WORK PACKAGE COVERS:

Dust Detector System Operating. Power Plant Warning Lamp And Dust Detector Warning Lamps "ON" And Pressure Switch Plungers Are Visible

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Check dust detector filter strip for restrictions (TM 9-2350-292-10).

Is filter strip restricted?

yes

Service turbo dust detectors (TM 9-2350-292-10). Verify fault is corrected.

no

B Check turbocharger inlet hose for loose or defective clamps.

Are clamps loose or defective?

yes

Tighten or replace clamps as necessary (WP 0213 00). Verify fault is corrected.

no

C Check at turbocharger air inlet elbow and air cleaner outlet elbow for missing or defective seals.

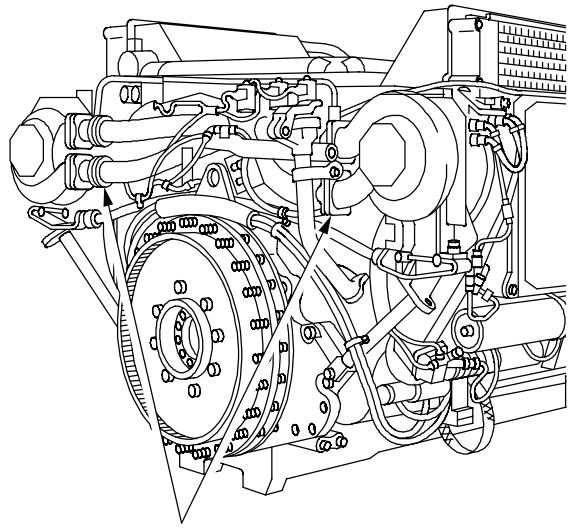
Are seals missing or defective?

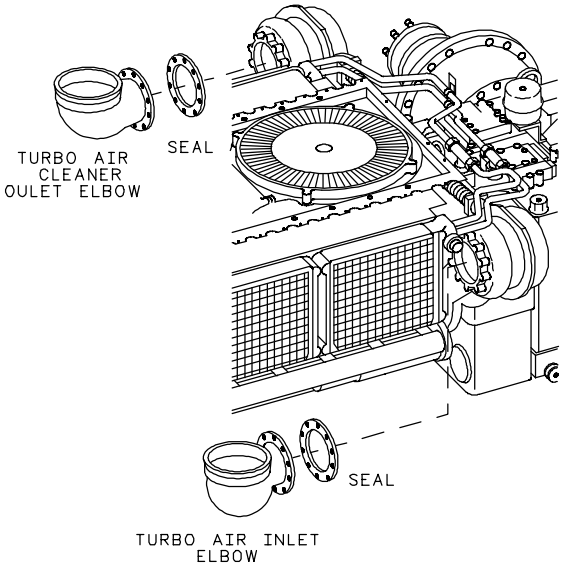
yes

Replace seals (WP 0213 00). Verify fault is corrected.

no

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NOTE: HYDRAULIC OIL COOLERS REMOVED FOR CLARITY

04i002t

DUST DETECTOR SYSTEM OPERATING. POWER PLANT WARNING LAMP AND DUST DETECTOR WARNING LAMPS "ON" AND PRESSURE SWITCH PLUNGERS ARE VISIBLE - CONTINUED 0052 00

CONTINUED FROM STEP C

D Check air cleaner access door seals and cam arm pin for wear and damage.

Is wear or damage present?

yes

Replace seals and pin as necessary (WP 0210 00). Verify fault is corrected.

no

E Check air cleaner for recirculated smoke or fuel (filter black with carbon) being ingested through access door seals.

Is smoke or fuel being ingested?

yes

Service as necessary (TM 9-2350-292-10). Verify fault is corrected.

no

F Check air cleaner for damage.

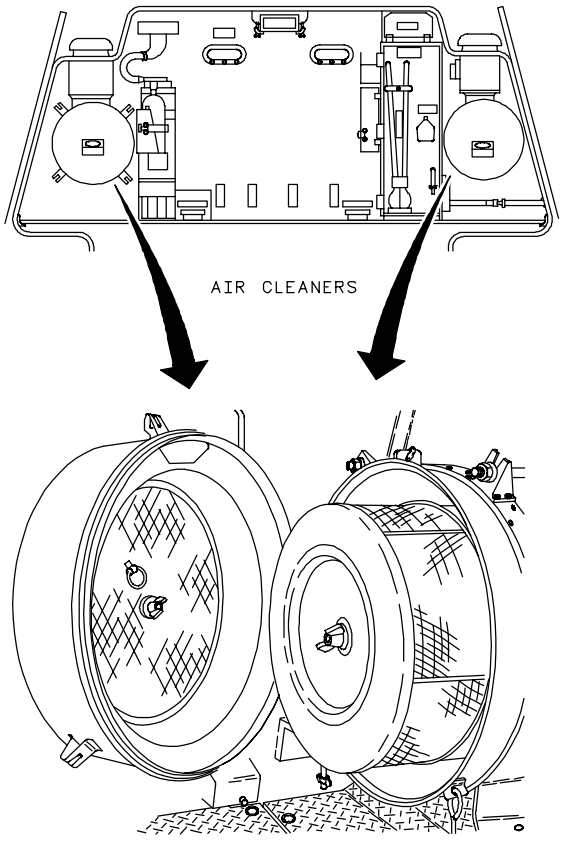
Is air cleaner damaged?

yes

Service air cleaner (TM 9-2350-292-10). Verify fault is corrected.

no

Fault corrected.



END OF TASK

ENGINE HAS LOW POWER AND EXCESSIVE BLACK SMOKE 0053 00

THIS WORK PACKAGE COVERS:

Engine Has Low Power And Excessive Black Smoke

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU cover removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Inspect turbocharger for damage.

Is turbocharger defective?

yes → Notify Direct Support Maintenance.

no →

B Check air cleaner indicators (TM 9-2350-292-10).

Do air filter indicators show red?

yes → Service air cleaners (TM 9-2350-292-10). Verify fault is corrected.

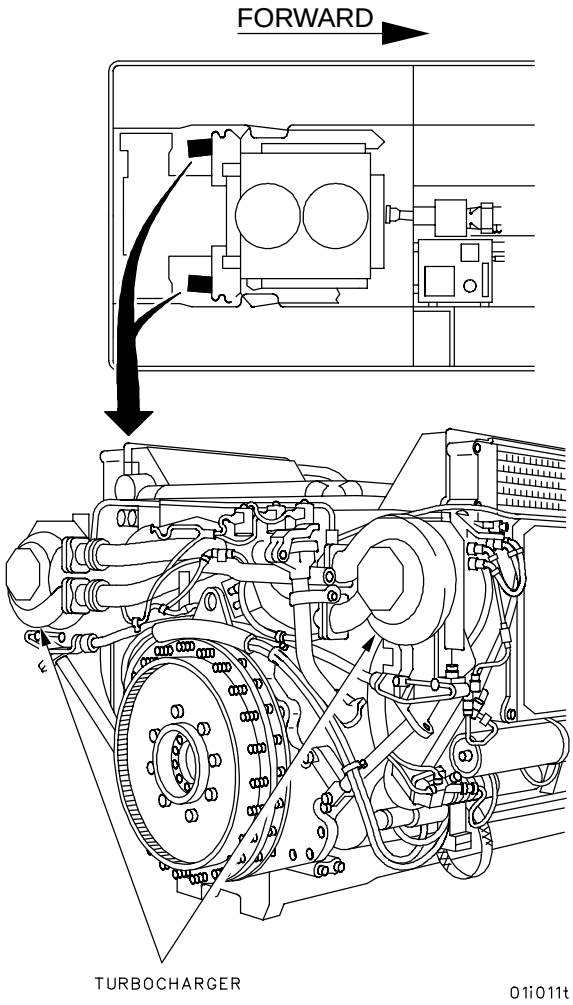
no →

C Inspect air cleaners and hoses for restrictions.

Are air cleaners and hoses free of restrictions?

yes → Fault corrected.

no → Clear restrictions and verify fault is corrected.



END OF TASK

FUEL/WATER SEPARATOR OPERATES IMPROPERLY 0054 00

THIS WORK PACKAGE COVERS:

Fuel/Water Separator Operates Improperly

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
STE-ICE-R (item 85, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Powerplant removed (WP 0188 00)
Engine ground hop kit installed (WP 0189 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Is STE-ICE-R available?

yes

no → Go to Step D.

B

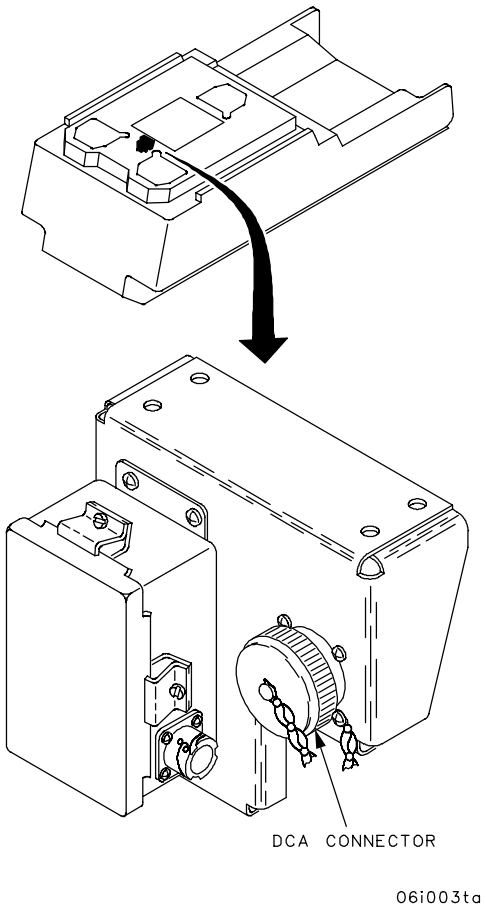
1. Setup STE-ICE-R for operation (TM 9-4910-571-12&P).
2. Connect STE-ICE-R harness W1 to vehicle harness 4W800 J1 DCA connector.
3. Enter vehicle ID (VID) 04.
4. Dial 01 into VTM and press and release "TEST".
5. When VTM shows "CON" enter 24 until "CAL" is shown on VTM and release TEST.
6. Press and release TEST.
7. Crank engine for 10 seconds while holding fuel shutoff switch in OFF. Record results.
8. Start engine (TM 9-2350-292-10). Record results.
9. Shut engine down (TM 9-2350-292-10).

Does VTM show PASS?

yes → Notify Direct Support Maintenace.

no

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FUEL/WATER SEPARATOR OPERATES IMPROPERLY - CONTINUED 0054 00

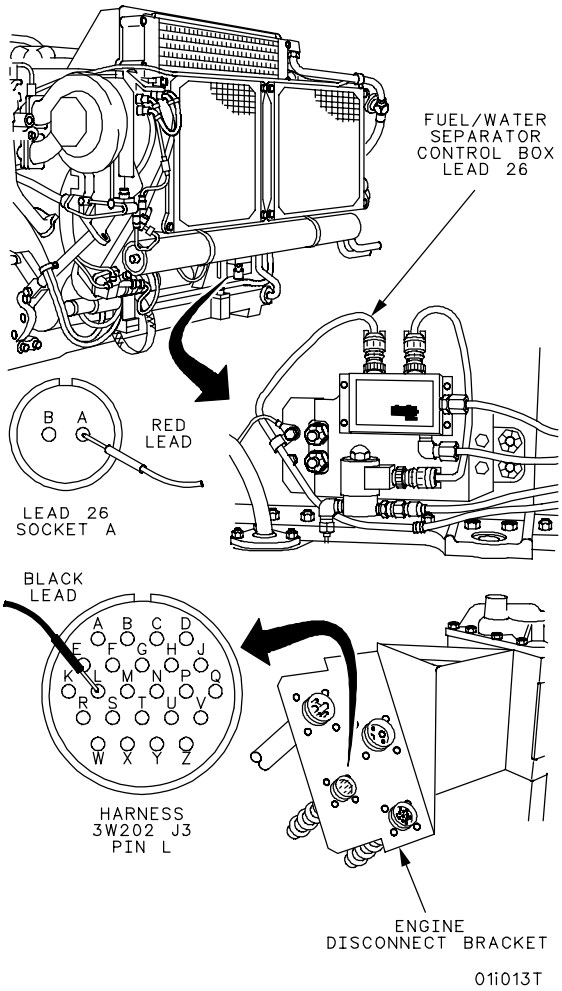
CONTINUED FROM STEP B

C Does engine start and is pressure above zero?

yes

no

Replace mechanical fuel pump (WP 0206 00). Verify fault is corrected.



CONTINUED FROM STEP A

D

1. Disconnect lead 26 connector from fuel/water separator control box.
2. Place one multimeter lead in pin L of harness 3W202 J3 and other lead in socket A of lead 26 connector. Check for continuity.

Is continuity present?

yes

no

Perform fuel/water separator operational test (WP 0220 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0219 00) lead 26. Verify fault is corrected.

END OF TASK

LOW (OR HIGH) ENGINE OIL PRESSURE; OIL TEMPERATURE IS NORMAL 0055 00

THIS WORK PACKAGE COVERS:

Low (Or High) Engine Oil Pressure; Oil Temperature Is Normal

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)
0-300 psi dial pressure gauge (item 81, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove forward air intake grille doors (WP 0415 00).
2. Open side air intake grille doors (TM 9-2350-292-10).
3. Inspect oil lines and connections for leaks (TM 9-2350-292-10).

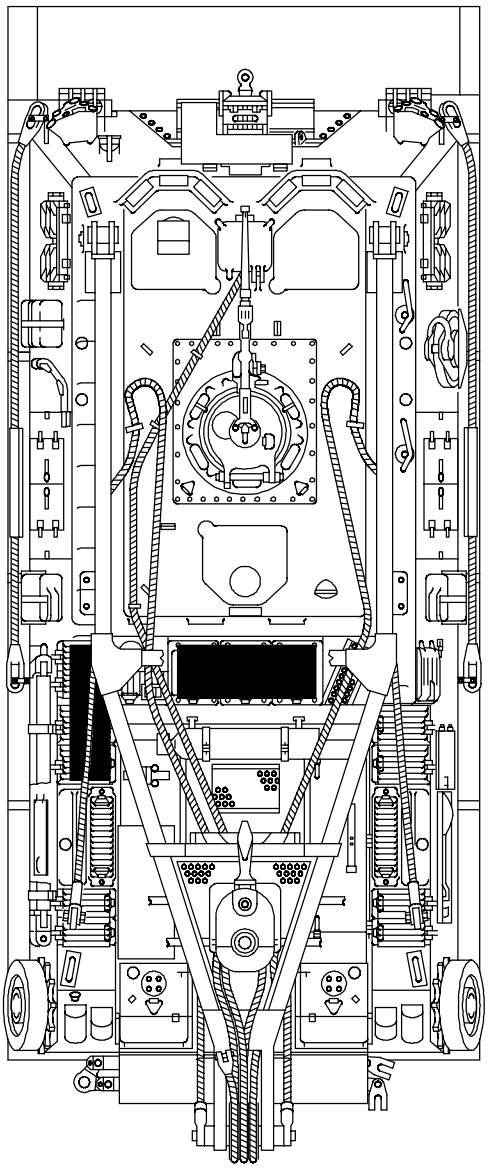
Are oil leaks present?

yes

Tighten and/or repair/replace lines and fittings (WP 0200 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



01i015t

LOW (OR HIGH) ENGINE OIL PRESSURE; OIL TEMPERATURE IS NORMAL - CONTINUED 0055 00

CONTINUED FROM STEP A

B Inspect oil drain valve plug for looseness.

Is oil drain valve plug loose?

yes

no

Tighten plug (WP 0196 00). Verify fault is corrected.

C

1. Remove engine low oil pressure switch (WP 0284 00).
2. Install 0-300 psi dial pressure gauge in pressure switch port.
3. Start engine (TM 9-2350-292-10) and hold rpm at 2400.
4. Read pressure gauge.
5. Shut engine down and turn MASTER switch OFF (TM 9-2350-292-10).

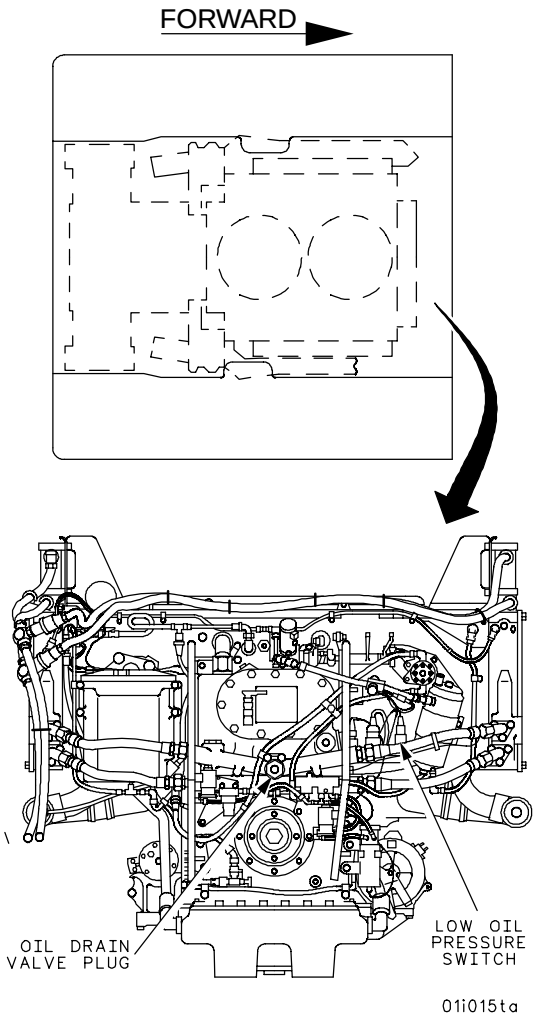
Does pressure gauge indicated 40-70 psi?

yes

no

If oil pressure gauge and pressure gauge installed at switch port read the same, recheck fault indication. If oil pressure gauge reads lower, continue with tree.

If pressure gauge indicates less than 40 psi or more than 70 psi, adjust or replace oil pressure regulating valve (WP 0197 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

LOW (OR HIGH) ENGINE OIL PRESSURE; OIL TEMPERATURE IS NORMAL - CONTINUED 0055 00

CONTINUED FROM STEP C

D

1. Remove gauge panel from bracket (WP 0243 00).
2. Disconnect lead 27 from oil pressure gauge connector.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in lead 27 connector socket and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0243 00) lead 27. Verify fault is corrected.

E

Place one multimeter lead on gauge mounting bracket and other lead to ground. Check for continuity.

Is continuity present?

yes

no

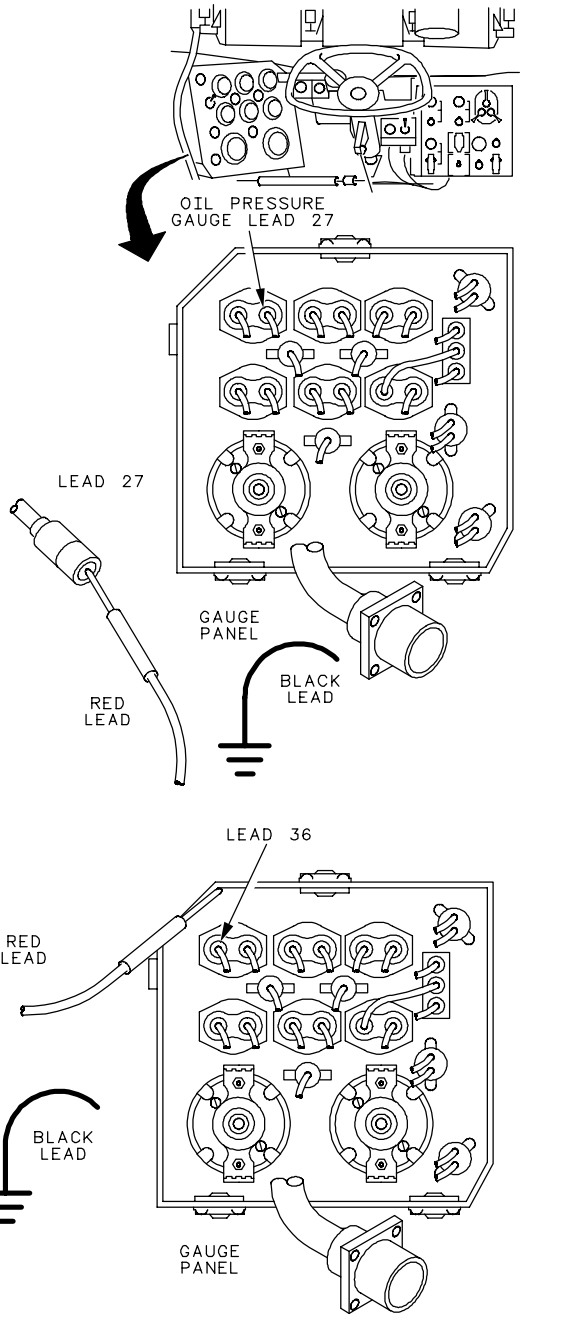
Remove gauge (WP 0243 00) and clean mounting bracket. Properly ground gauge (WP 0243 00). Verify fault is corrected.

F

1. Reconnect lead 27 to oil pressure gauge.
2. Disconnect lead 36 from oil pressure gauge.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Observe pressure gauge.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Does gauge read full scale?

CONTINUED ON NEXT PAGE



LOW (OR HIGH) ENGINE OIL PRESSURE; OIL TEMPERATURE IS NORMAL - CONTINUED 0055 00

CONTINUED FROM STEP F

yes / no

Replace oil pressure gauge (WP 0243 00). Verify fault is corrected.

G

1. Disconnect harness 4W103 P1 from gauge panel.
2. Place one multimeter lead in lead 36 gauge socket and other lead on harness 4W152 J1 pin H. Check for continuity.

Is continuity present?

yes / no

Repair (WP 0290 00) or replace (WP 0243 00) lead 36. Verify fault is corrected.

H

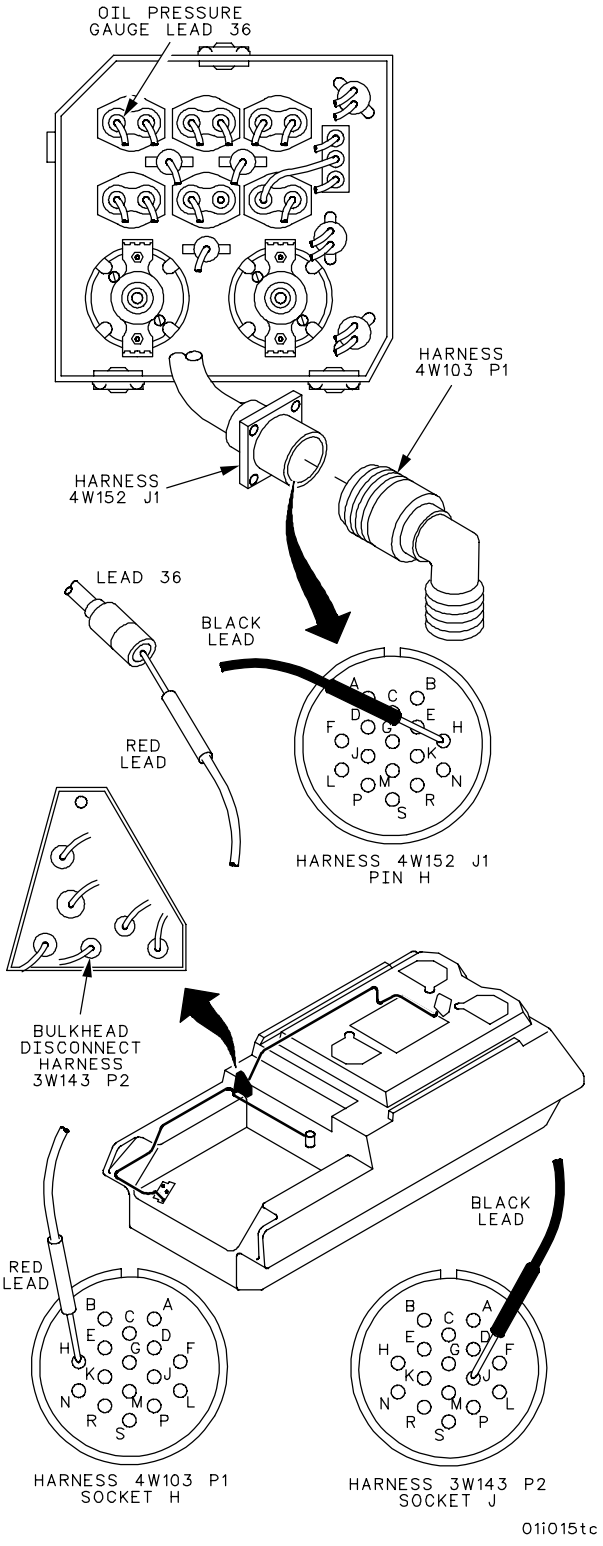
1. Reconnect lead 36 to gauge.
2. Open air intake grilles above battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W142 P1 at bulkhead disconnect.
4. Place one multimeter in harness 3W142 P1 socket J and other lead in harness 4W103 P1 socket H at gauge panel. Check for continuity.

Is continuity present?

yes / no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

CONTINUED ON NEXT PAGE



LOW (OR HIGH) ENGINE OIL PRESSURE; OIL TEMPERATURE IS NORMAL - CONTINUED 0055 00

CONTINUED FROM STEP H

I

1. Remove engine deck (WP 0417 00).
2. Reconnect harness 4W103 P1 to gauge panel.
3. Disconnect harness 3W143 P1 at engine disconnect.
4. Place one multimeter lead on harness 3W143 P2 pin J and other lead in harness 3W143 P1 socket J. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

J

1. Reconnect harness 3W143 P2 at bulkhead disconnect.
2. Disconnect harness 3W202 connector from engine oil pressure transmitter.
3. Place one multimeter lead on harness 3W202 J3 pin J and other lead on transmitter connector socket C. Check for continuity.

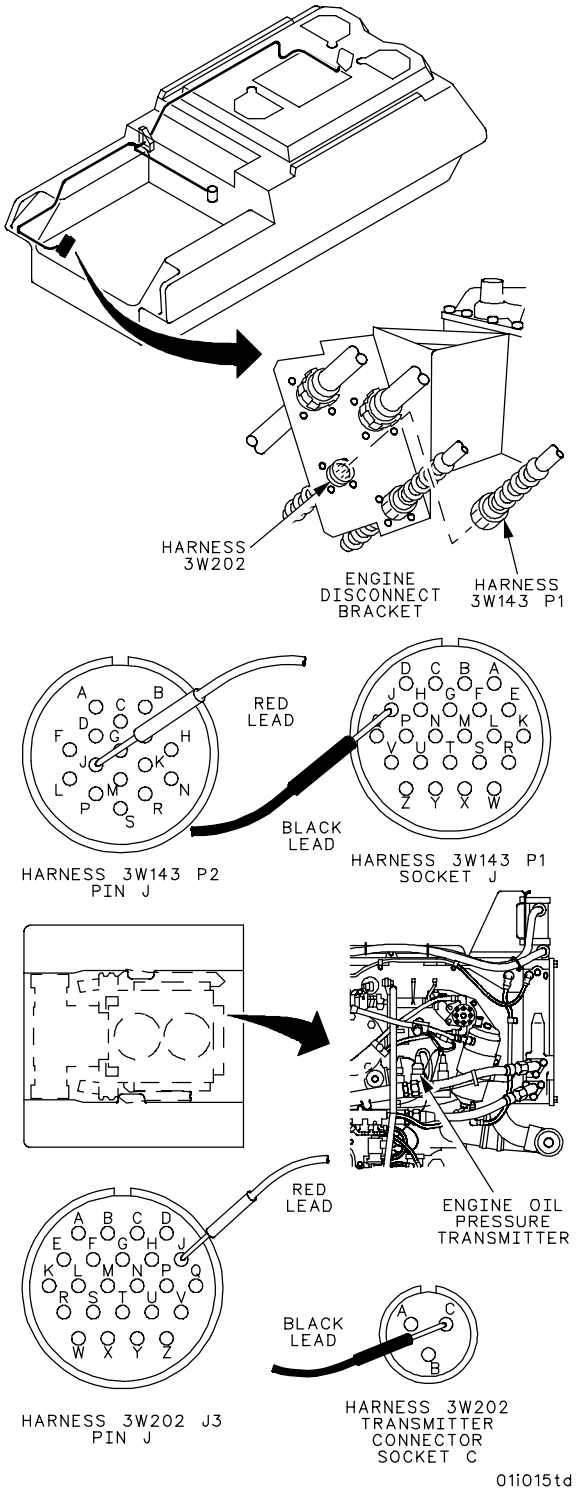
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) lead 36 to pressure transmitter. Verify fault is corrected.

CONTINUED ON NEXT PAGE



LOW (OR HIGH) ENGINE OIL PRESSURE; OIL TEMPERATURE IS NORMAL - CONTINUED 0055 00

CONTINUED FROM STEP J

K Place one multimeter lead on harness 3W202 J3 pin U and other lead on transmitter connector pin B. Check for continuity.

Is continuity present?

yes

no

Replace ground lead (WP 0284 00). Verify fault is corrected.

L Place one multimeter lead in harness 3W202 J3 pin U and other lead on hull ground point. Check for continuity.

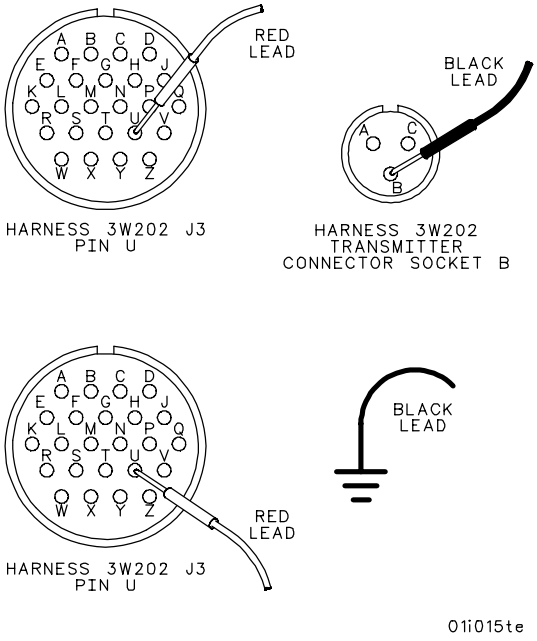
Is continuity present?

yes

no

Replace pressure transmitter (WP 0284 00). Verify fault is corrected.

Replace hull ground lead (WP 0336 00). Verify fault is corrected.



END OF TASK

ENGINE USES EXCESSIVE OIL 0056 00

THIS WORK PACKAGE COVERS:
Engine Uses Excessive Oil

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required
Two

WARNING
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A
1. Start engine (TM 9-2350-292-10).
2. Observe engine exhaust.
3. Shut down engine and turn MASTER switch OFF (TM 9-2350-292-10).

Is exhaust excessive or oily?

yes

no → Go to Step C.

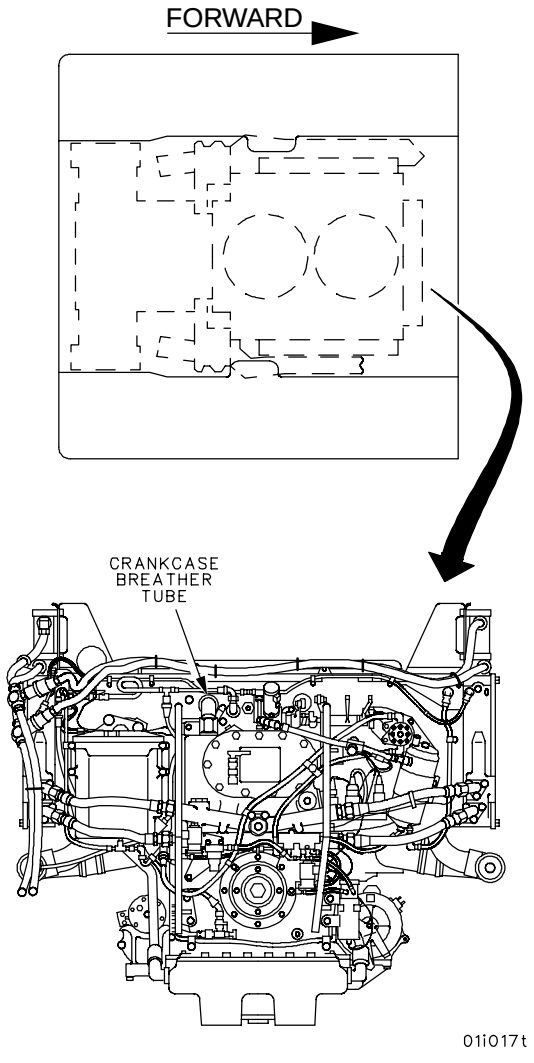
B
1. Remove forward air intake grilles (WP 0000 00).
2. Remove crankcase breather tube and inspect.

Is crankcase breather clogged?

yes → Service breather (WP 0200 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



ENGINE USES EXCESSIVE OIL - CONTINUED 0056 00

CONTINUED FROM STEPS A AND B

C

1. Open side air intake grille doors (TM 9-2350-292-10).
2. Check for engine oil leaks (TM 9-2350-292-10).

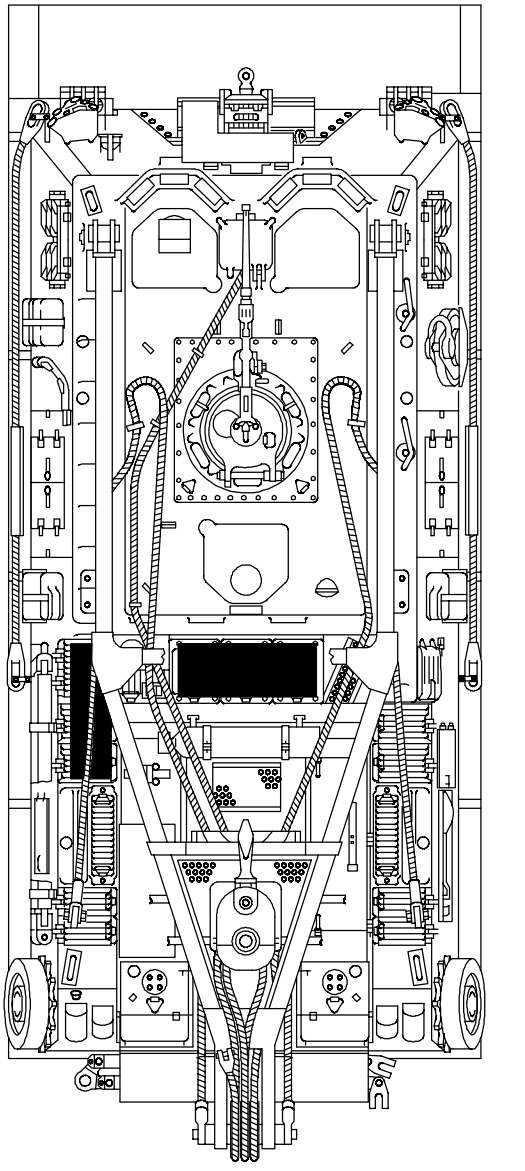
Are leaks present?

yes

Tighten and/or repair fittings and connectors as necessary (WP 0200 00). Verify fault is corrected.

no

Notify Direct Support Maintenance.



01i015t

END OF TASK

ENGINE OIL TEMPERATURE IS HIGH 0057 00

THIS WORK PACKAGE COVERS:
Engine Oil Temperature Is High

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required
Two

WARNING
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Check engine cooling air intake grille openings for obstructions.

Are openings obstructed?

yes

Remove obstructions.
Verify fault is corrected.

no

B Open side air intake grille doors and check engine oil cooler for restrictions (TM 9-2350-292-10).

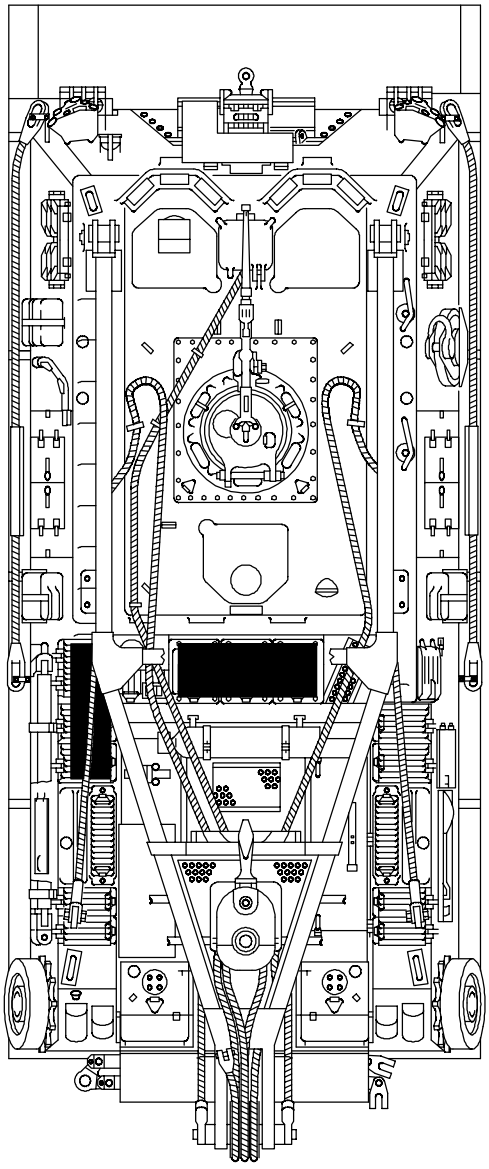
Is oil cooler free of restrictions?

yes

no

Remove obstructions.
Verify fault is corrected.

CONTINUED ON NEXT PAGE



01i015t

ENGINE OIL TEMPERATURE IS HIGH - CONTINUED 0057 00

CONTINUED FROM STEP B

C Remove forward air intake grille doors (WP 0415 00) and inspect oil cooler lines for twists and kinks.

Are lines free of twists and kinks?

yes

no

Repair or replace lines as necessary (WP 0200 00). Verify fault is corrected.

D

1. Start engine and bring temperature to 200°F (TM 9-2350-292-10).

CAUTION

Oil cooler lines can heat up enough to burn skin. Use care when feeling lines.

2. Feel oil cooler lines.
3. Shutdown engine and turn MASTER switch OFF (TM 9-2350-292-10).

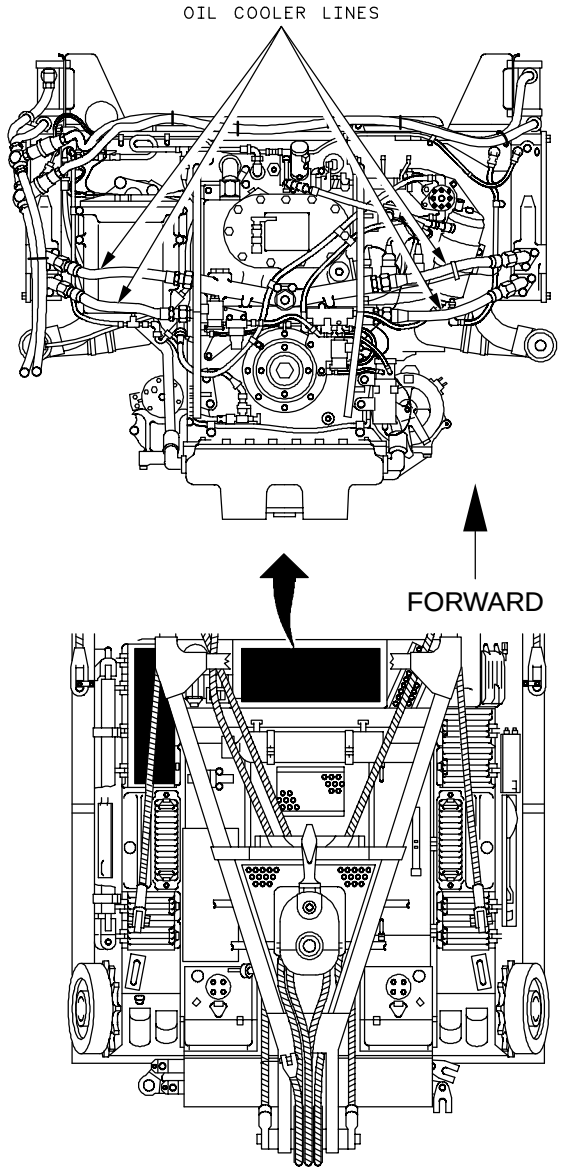
Is oil cooler warm and cooler lines hot?

yes

no

Replace oil cooler flow control thermostat (WP 0231 00). Verify fault is corrected.

Notify Direct Support Maintenance.



01i018t

END OF TASK

ENGINE OIL BLOWS FROM DIPSTICK TUBE 0058 00

THIS WORK PACKAGE COVERS:
Engine Oil Blows From Dipstick Tube

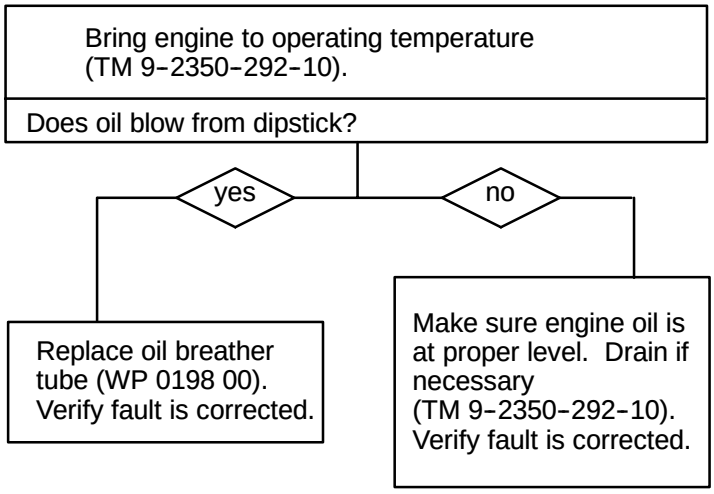
INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required
Two

WARNING
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



END OF TASK

ENGINE STARTER CRANKS WHEN MASTER SWITCH IS TURNED ON OR ENGINE STARTER FAILS TO SHUT OFF WHEN ENGINE IS RUNNING 0059 00

THIS WORK PACKAGE COVERS:

Engine Starter Cranks When Master Switch Is Turned On or Engine Starter Fails To Shut Off When Engine Is Running

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)
Powerpack removed (WP 0188 00)

Personnel Required

Two

WARNING

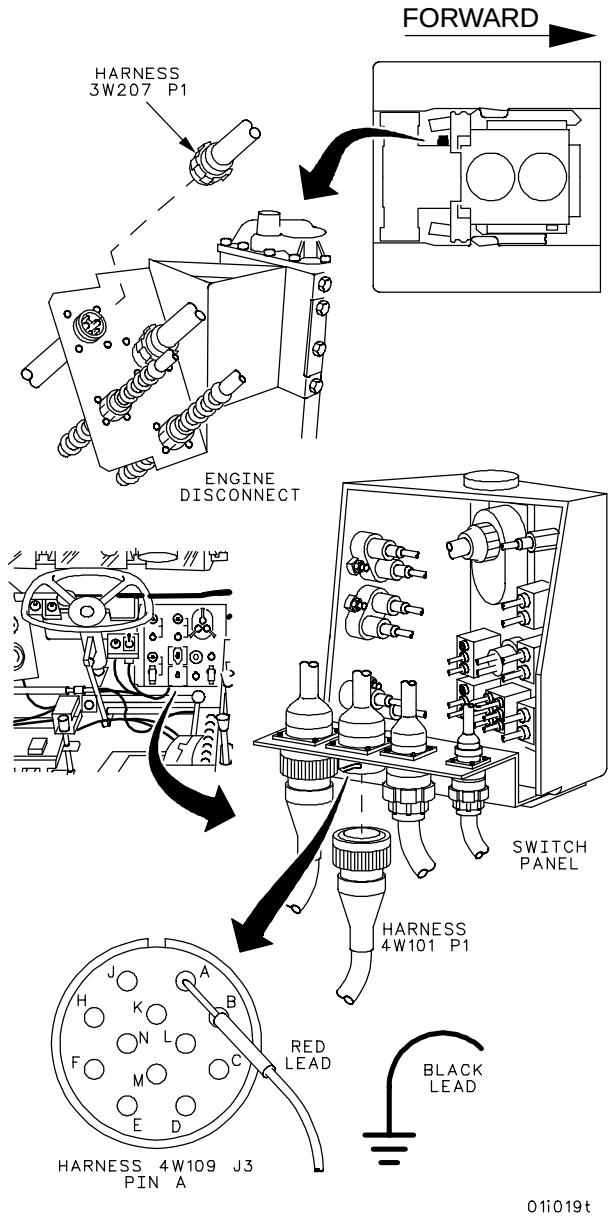
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 3W207 P1 from engine disconnect.
2. Remove switch panel (WP 0242 00) and reconnect ground strap to switch panel.
3. Disconnect harness 4W101 P1 from switch panel receptacle.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Place multimeter red lead on harness 4W109 J3 pin A and black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

Is zero volts indicated?

CONTINUED ON NEXT PAGE



ENGINE STARTER CRANKS WHEN MASTER SWITCH IS TURNED ON OR ENGINE STARTER FAILS TO SHUT OFF WHEN ENGINE IS RUNNING - CONTINUED

0059 00

CONTINUED FROM STEP A

yes

no

Go to WP 0041 00 and perform Steps P thru U.

B

1. Reconnect harness 4W101 P1 to switch panel receptacle.
2. Disconnect connector from starter low voltage protection module.
3. Place one multimeter lead on module pin B and other lead on module pin D. Check for continuity.

Is continuity present?

yes

no

Replace module (WP 0241 00). Verify fault is corrected.

C

1. Reconnect starter low voltage protection module.
2. Place one multimeter lead on lead 82 connector at starter solenoid and other lead on solenoid bus bar connector. Check for continuity.

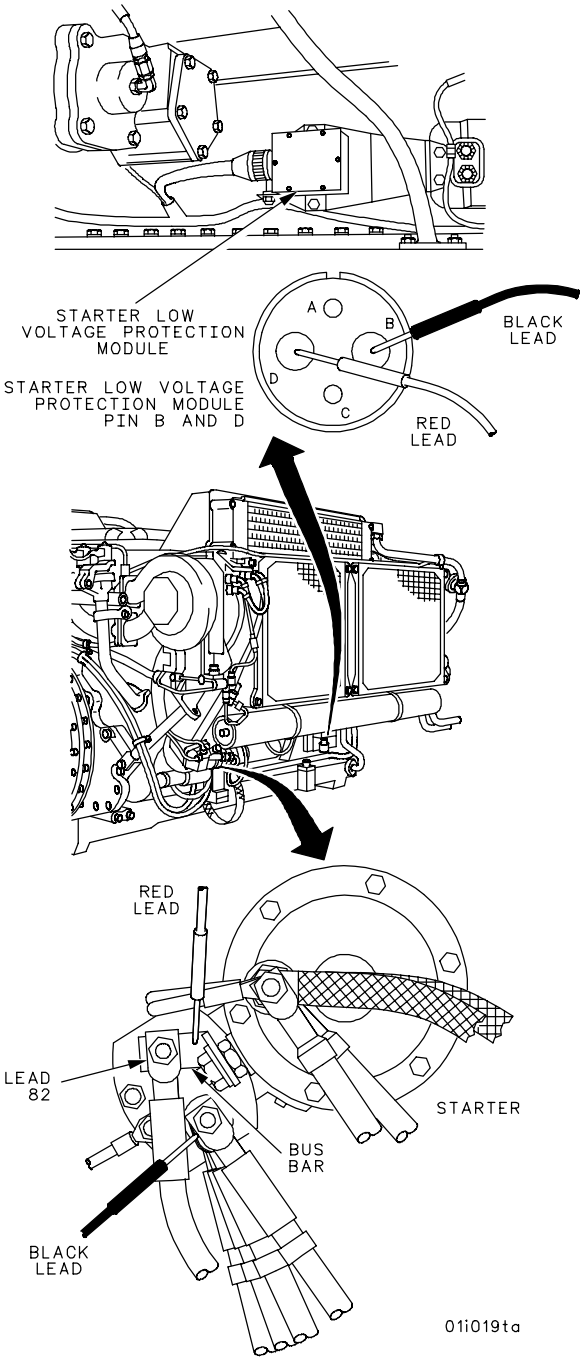
Is continuity present?

yes

no

Replace starter low voltage protection module (WP 0241 00). Verify fault is corrected.

Replace starter (WP 0246 00). Verify fault is corrected.



END OF TASK

ENHANCED DIAGNOSTICS OVERVIEW AND DIAGRAMS 0060 00

THIS WORK PACKAGE COVERS:

Enhanced diagnostics Overview And Diagrams

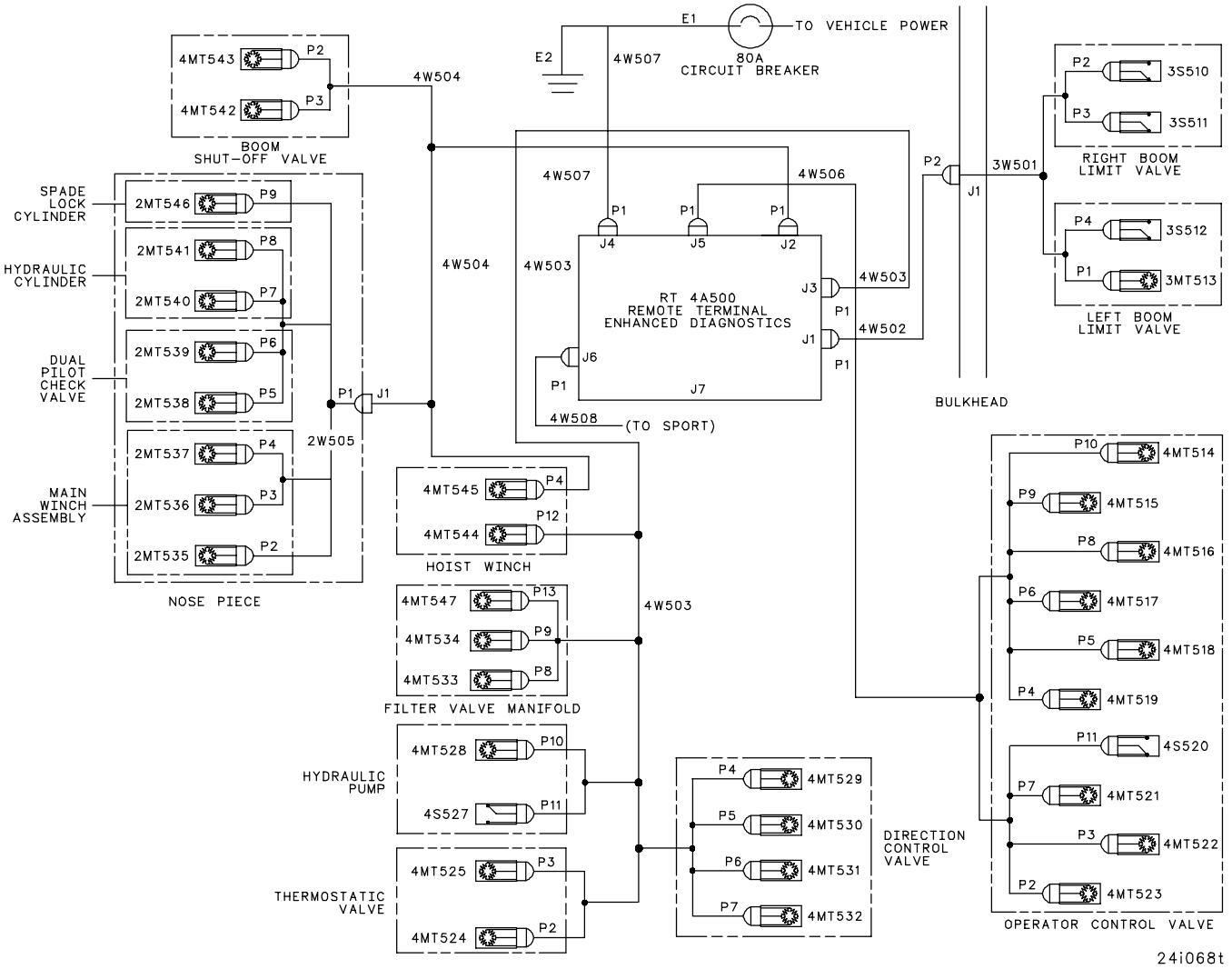
The Enhanced Diagnostics System (EDS) provides a tool to permit troubleshooting of hydraulic malfunctions while reducing the need to install gauges which reduces the possibility of introducing contaminants into the system. The EDS consists of 37 pressure sensors, a remote terminal (RT) unit and cabling to connect the sensors to the RT unit. The EDS is permanently installed in the vehicle and does not interfere with the normal operation of the vehicle's hydraulic system. The RT unit is connected to the Soldier Portable On-system Repair Tool (SPORT) via a 1553 bus cable and the SPORT's 1553 bus card. The SPORT runs the EDS software program which allows a maintainer to use the EDS to read hydraulic pressures in realtime while conducting hydraulic troubleshooting.

The 37 pressure sensors are divided into 32 pressure transducers and 5 pressure switches. The sensors are installed in the hydraulic system in the same locations that the hydraulic troubleshooting called for gauges to be installed.

The RT unit is an electronic enclosure that contains a printed circuit card, a power module, POWER toggle switch, a POWER indicator lamp and connector jacks to connect the cables from the sensors. The RT unit also stores the sensor calibration offset data.

When the EDS software program is running the maintainer can view selftest results by clicking on TEST in the menu then on Self Test in the drop down menu.

The following functional diagram provides information about cabling and sensor location.



SPORT CANNOT COMMUNICATE WITH 1553 BUS CARD 0061 00

THIS WORK PACKAGE COVERS:

Sprot Cannot Communicate With 1553 Bus Card

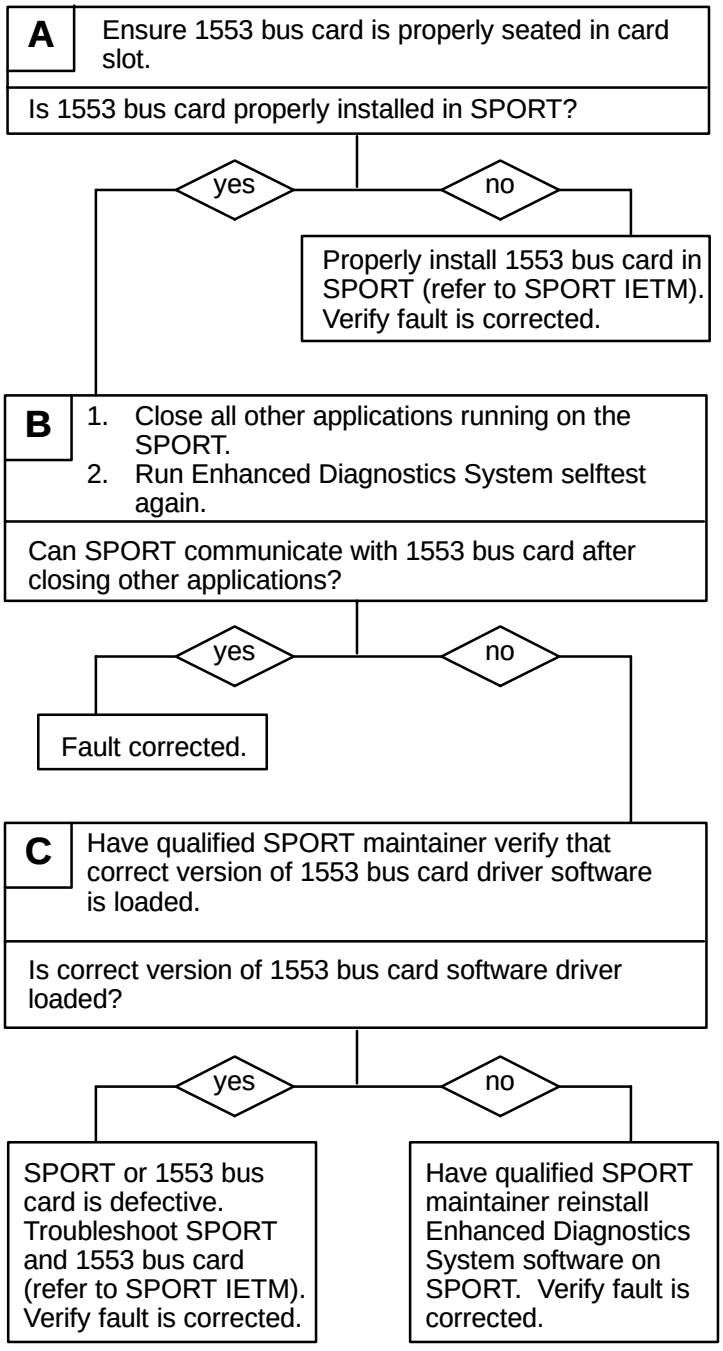
INITIAL SETUP:

Tools and Special Tools

SPORT with Enhanced Diagnostics System software loaded (item 133, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch ON (TM 9-2350-292-10)
SPORT connected to Enhanced Diagnostics System remote terminal (WP 0086 00)
Enhanced Diagnostics System POWER switch ON



END OF TASK

SPORT CANNOT COMMUNICATE WITH REMOTE TERMINAL UNIT 0062 00

THIS WORK PACKAGE COVERS:

SPORT Cannot Communicate With Remote Terminal Unit

INITIAL SETUP:

Tools and Special Tools

SPORT with Enhanced Diagnostics system software loaded (item 133, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle parked with main engine running (TM 9-2350-292-10)
SPORT connected to Enhanced Diagnostics System remote terminal (WP 0086 00)
Enhanced Diagnostics System POWER switch ON

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

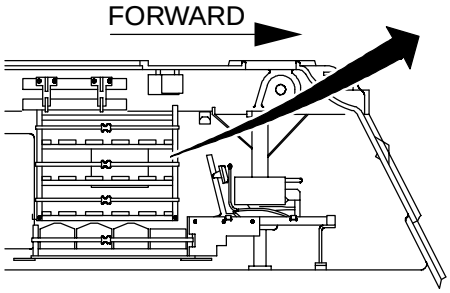
1. Ensure MASTER switch is ON (TM 9-2350-292-10.
2. Ensure remote terminal unit POWER switch is ON.
3. Ensure one end of wiring harness 4W508 is connected to 1553 bus card channel A lead and other end is connected to connector J6 of the remote terminal unit.

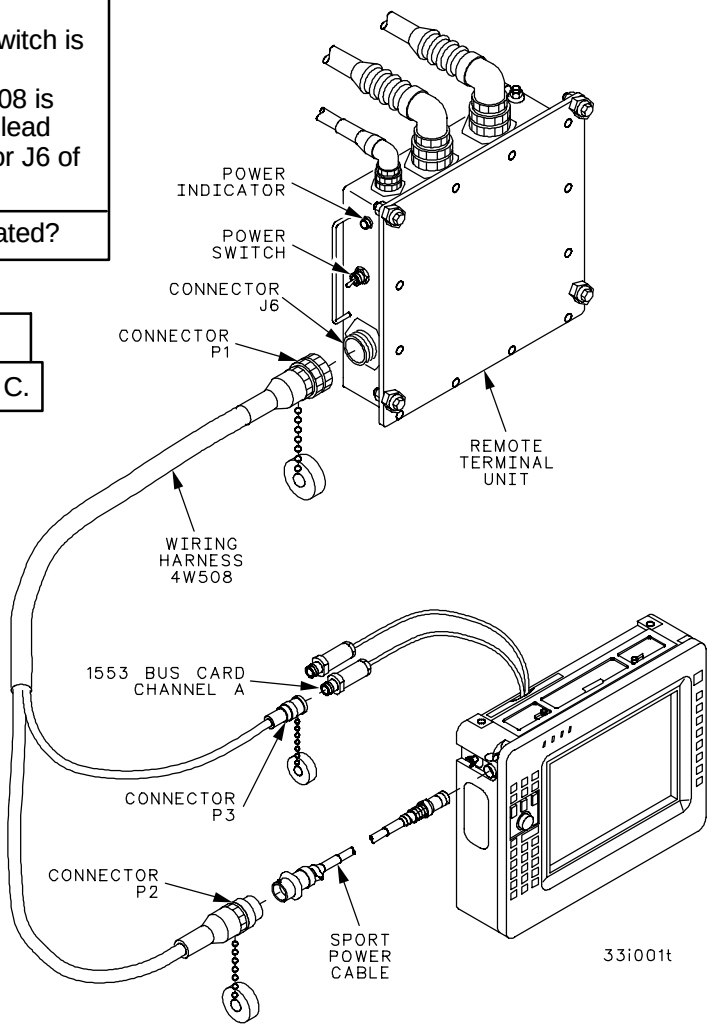
Is remote terminal unit POWER indicator illuminated?

yes

no

Go to Step C.





CONTINUED ON NEXT PAGE

SPORT CANNOT COMMUNICATE WITH REMOTE TERMINAL UNIT - CONTINUED 0062 00

CONTINUED FROM STEP A

B

1. Turn remote terminal unit POWER and vehicle MASTER switches OFF.
2. Remove wiring harness 4W508 from remote terminal unit connector J6 and 1553 bus card channel A lead.
3. Check wiring harness 4W508 using table below. Place one multimeter lead on a pin in the FROM column and the other lead on a pin in the TO column. Check for continuity.

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
P1-W	P2-A
P1-W	P2-B
P1-Z	P2-C
P1-Z	P2-D
P1-T	P3-C
P1-U	P3-I
P1-V	P3-O
P1-X	P1-Y

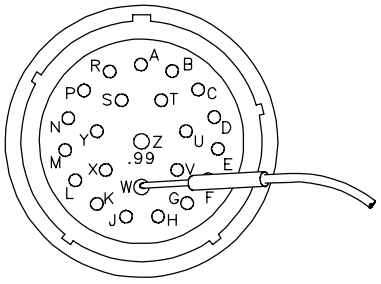
Is continuity present in every test?

yes

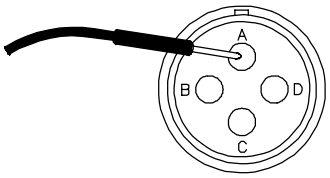
Replace remote terminal unit (WP 0675 00). Verify fault is corrected.

no

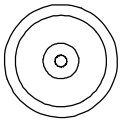
Repair (WP 0290 00) or replace (WP 0683 00) wiring harness 4W508. Verify fault is corrected.



HARNESS 4W508 CONNECTOR P1



HARNESS 4W508 CONNECTOR P2



HARNESS 4W508 CONNECTOR P3

33i002t

CONTINUED ON NEXT PAGE

SPORT CANNOT COMMUNICATE WITH REMOTE TERMINAL UNIT - CONTINUED 0062 00

CONTINUED FROM STEP A

C

1. Turn MASTER switch OFF (TM 9-2350-292-10).
2. Remove wiring harness 4W507 connector P1 from remote terminal unit connector J4.
3. Turn MASTER switch ON.
4. Place multimeter red lead on wiring harness 4W507 connector P1 socket A and black lead on socket C. Check for voltage.
5. Place multimeter red lead on wiring harness 4W507 connector P1 socket B and black lead on socket D. Check for voltage.
6. Turn MASTER switch OFF.

Is 24 V dc present at both places?

yes

Replace remote terminal unit (WP 0675 00). Verify fault is corrected.

no

D

1. Remove brake relay cover (WP 0263 00).
2. Remove wiring harness 4W507 connector E1 from output side of 80 amp circuit breaker.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on 80 amp circuit breaker output terminal and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF.

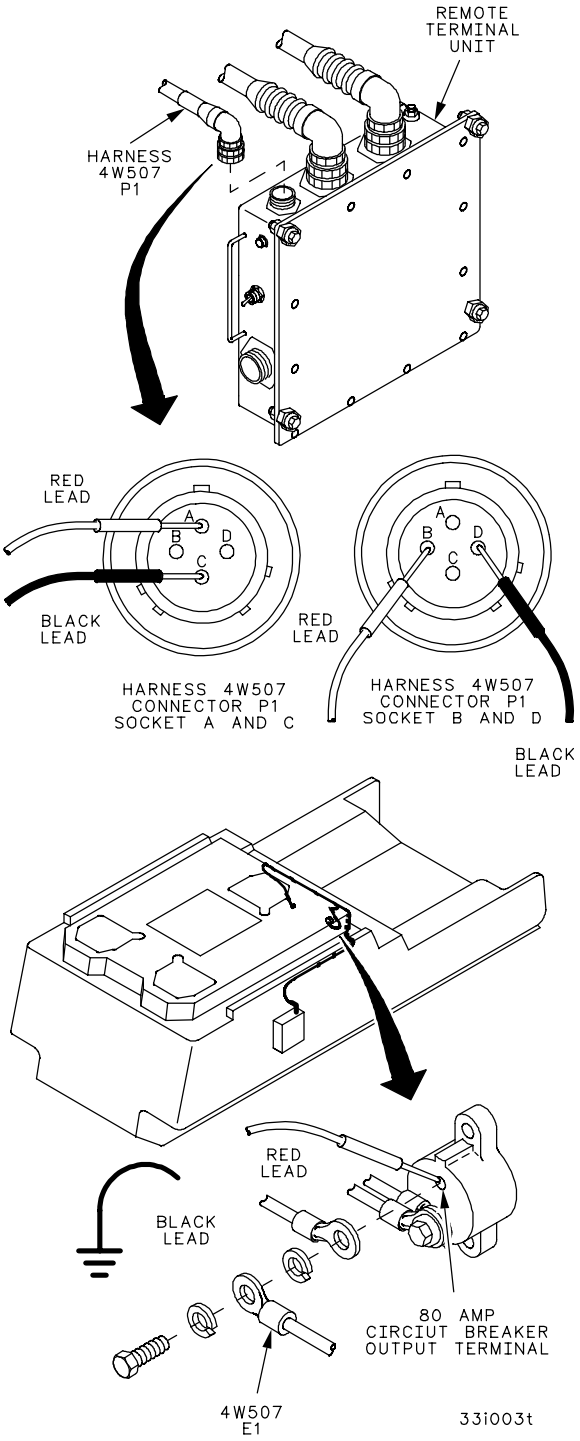
Is 24 V dc present?

yes

Repair (WP 0290 00) or replace (WP 0682 00) wiring harness 4W507. Verify fault is corrected.

no

Go to WP 0036 00 step O.



END OF TASK

THE NON-VOLATILE CALIBRATION DATA STORED IN REMOTE TERMINAL UNIT FAILED AN INTERNAL CONSISTENCY CHECK AFTER BEING READ 0063 00

THIS WORK PACKAGE COVERS:

The Non-Volatile Calibration Data Stored In Remote Terminal Unit Failed An Internal Consistency Check After Being Read

INITIAL SETUP:

Tools and Special Tools

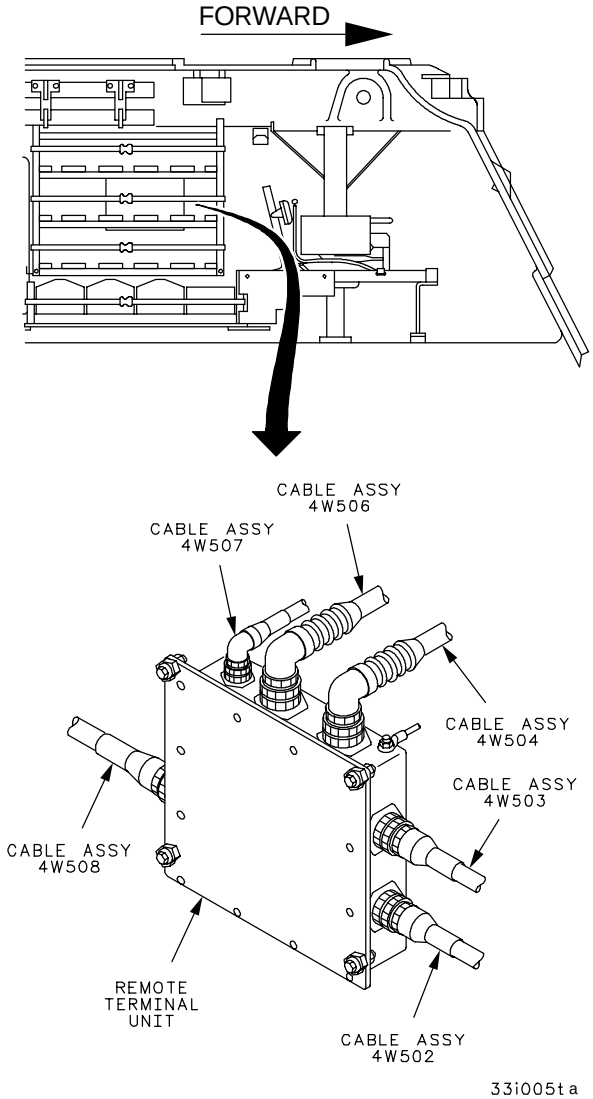
SPORT with Enhanced Diagnostics System software loaded (item 133, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch ON (TM 9-2350-292-10)
SPORTconnected to Enhanced Diagnostic System remote terminal (WP 0086 00)
Enhanced Diagnostic System POWER switch ON

A Has the remote terminal unit been replaced and then calibrated after replacement?

- yes → Replace remote terminal unit (WP 0675 00). Verify fault is corrected.
- no → Calibrate remote terminal unit (WP 0692 00). Verify fault is corrected.



END OF TASK

FAILED TO READ THE NON-VOLATILE CALIBRATION DATA 0064 00

THIS WORK PACKAGE COVERS:

Failed To Read the Non-Volatile Calibration Data

INITIAL SETUP:

Tools and Special Tools

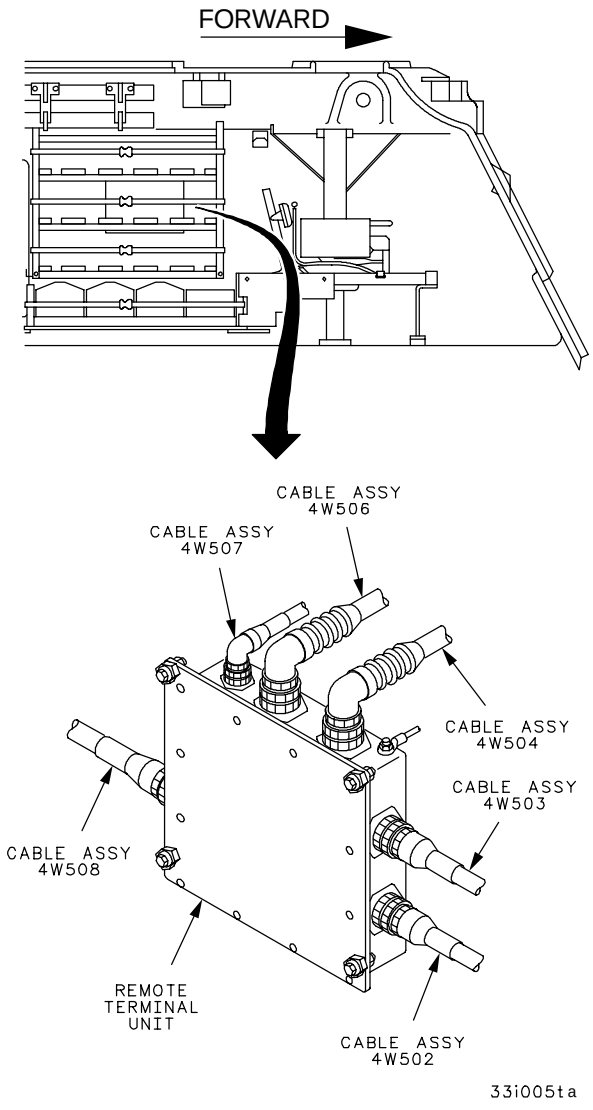
SPORT with Enhanced Diagnostics System software loaded (item 133, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch ON (TM 9-2350-292-10)
SPORT connected the Enhanced Diagnostics System remote terminal (WP 0086 00)
Enhanced Diagnostics System POWER switch ON

A Has the remote terminal unit been replaced and then calibrated after replacement?

- yes → Replace remote terminal unit (WP 0675 00). Verify fault is corrected.
- no → Calibrate remote terminal unit (WP 0692 00). Verify fault is corrected.



END OF TASK

ALL SENSORS SIGNALS ARE BELOW RANGE OR OPEN 0065 00

THIS WORK PACKAGE COVERS:

All Sensors Signals Are Below Range Or Open

INITIAL SETUP:

Tools and Special Tools

SPORT with Enhance Diagnostics System software loaded (item 133, WP 0717 00)

Equipment Conditions

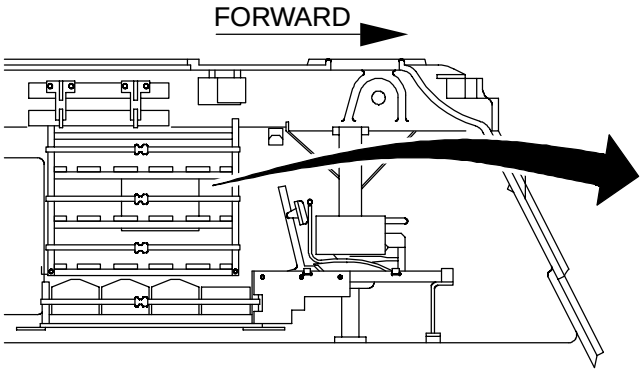
Vehicle MASTER switch OFF (TM 9-2350-292-10)
SPORT connected to Enhanced Diagnostics System remote terminal (WP 0086 00)

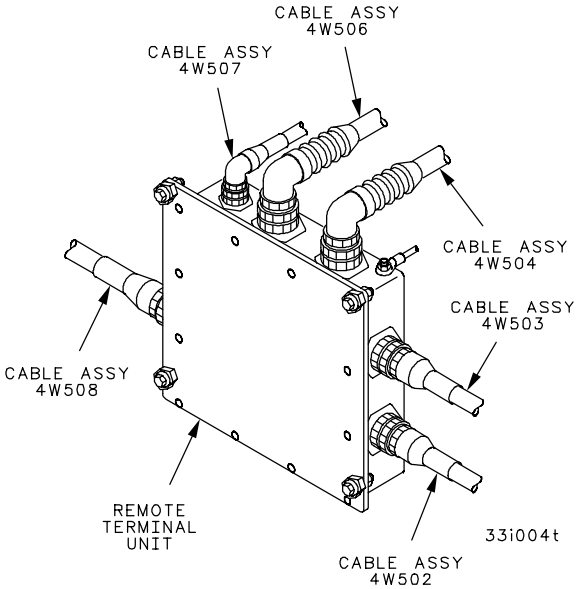
WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Are cables attached to remote terminal unit?

- yes → Replace remote terminal unit (WP 0675 00). Verify fault is corrected.
- no → Connect cables to remote terminal unit (WP 0675 00). Verify fault is corrected.





END OF TASK

ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J1 ARE BELOW VALID RANGE OR OPEN 0066 00

THIS WORK PACKAGE COVERS:

All Signals At Remote Terminal Unit Connector J1 Are Below Valid Range Or Open

INITIAL SETUP:

Tools and Special Tools

SPORT with Enhanced Diagnostics System (item 133, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
SPORT connected to Enhanced Diagnostics System remote terminal (WP 0086 00)
Enhanced Diagnostics System POWER switch OFF

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Ensure that wiring harness 4W502 connector P1 is connected to remote terminal unit connector J1.
2. Remove subfloor plate #29 (WP 0454 00).
3. Ensure that wiring harness 4W502 connector P2 is connected to wiring harness 3W501 connector J1.

Is wiring harness 4W502 properly connected?

yes / no

Properly connect wiring harness 4W502 (WP 0678 00). Verify fault is corrected.

B

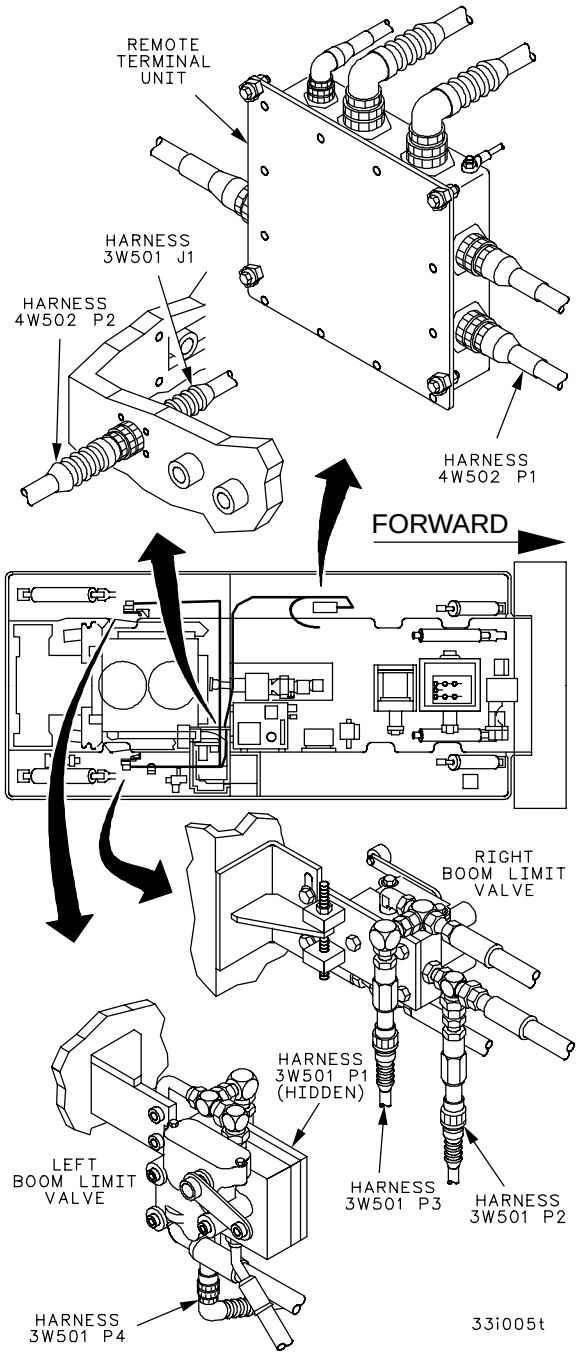
1. Open left and right side engine deck grilles (TM 9-2350-292-10).
2. Ensure that wiring harness 3W501 is properly connected to all four sensors in the engine compartment (WP 0677 00).

Are sensors connected to wiring harness 3W501?

yes / no

Properly connect wiring harness 3W501 to all sensors in the engine compartment (WP 0677 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J1 ARE BELOW VALID RANGE OR OPEN - CONTINUED

0066 00

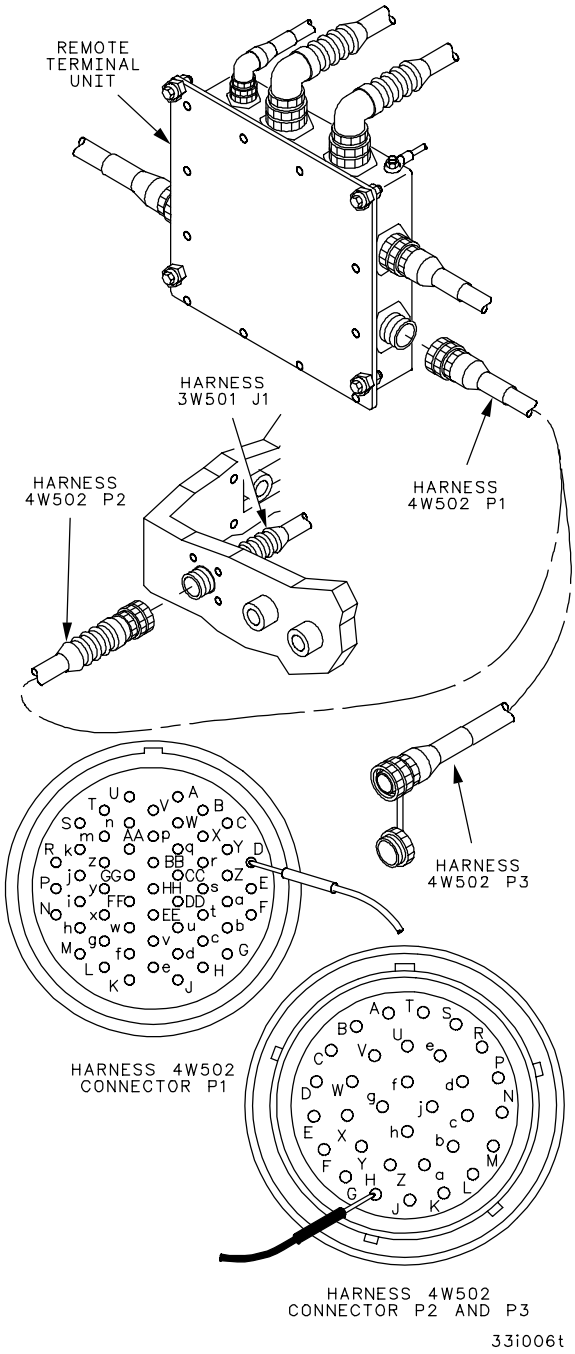
CONTINUED FROM STEP B

C

1. Disconnect wiring harness 4W502 connector P1 from remote terminal unit connector J1 and connector P2 from wiring harness 3W501 bulkhead connector.
2. Check wiring harness 4W502 using table below. Place one multimeter lead on a pin in the FROM column and the other lead on the corresponding pin in the TO column. Check for continuity.

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
P1-D	P2-H
P1-E	P2-J
P1-F	P2-K
P1-N	P2-L
P1-G	P2-M
P1-H	P2-N
P1-J	P2-P
P1-N	P2-R
P1-K	P2-D
P1-L	P2-E
P1-M	P2-F
P1-N	P2-G
P1-P	P2-S
P1-R	P2-T
P1-S	P2-U
P1-Z	P2-V
P1-T	P2-W
P1-U	P2-X
P1-V	P2-Y
P1-Z	P2-Z
P1-w	P2-a
P1-x	P2-b
P1-y	P2-c
P1-z	P2-d
P1-AA	P2-e
P1-BB	P2-f
P1-CC	P2-g
P1-DD	P2-h
P1-EE	P2-j
P1-W	P3-D
P1-X	P3-E
P1-Y	P3-F
P1-Z	P3-G
P1-a	P3-H
P1-b	P3-J
P1-c	P3-K

CONTINUED ON NEXT PAGE



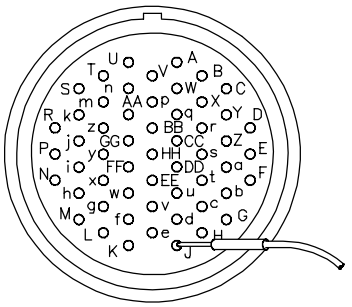
ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J1 ARE BELOW VALID RANGE OR OPEN - CONTINUED 0066 00

CONTINUED FROM STEP C

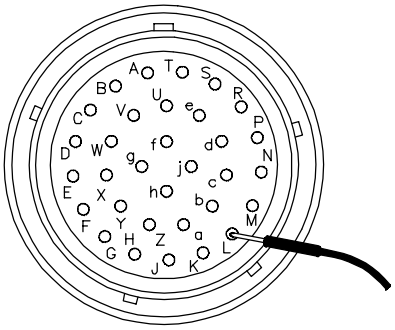
D

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
P1-j	P3-L
P1-d	P3-M
P1-e	P3-N
P1-f	P3-P
P1-j	P3-R
P1-g	P3-S
P1-h	P3-T
P1-i	P3-U
P1-j	P3-V
P1-k	P3-W
P1-m	P3-X
P1-n	P3-Y
P1-v	P3-Z
P1-p	P3-a
P1-q	P3-b
P1-r	P3-c
P1-v	P3-d
P1-s	P3-e
P1-t	P3-f
P1-u	P3-g
P1-v	P3-h
P1-FF	P3-A
P1-GG	P3-B
P1-HH	P3-C

Is continuity present at all checks?



HARNESS 4W502
CONNECTOR P1



HARNESS 4W502
CONNECTOR P3

33i007t

yes

no

Repair (WP 0290 00) or replace (WP 0678 00) wiring harness 4W502. Verify fault is corrected.

CONTINUED ON NEXT PAGE

ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J1 ARE BELOW VALID RANGE OR OPEN - CONTINUED 0066 00

E

1. Disconnect wiring harness 3W501 connectors from sensors on the left and right side boom limit valves (WP 0611 00).
2. Check wiring harness 3W501 using table below. Place one multimeter lead on a pin in the FROM column and the other lead on the corresponding pin in the TO column. Check for continuity.

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
J1-H	P1-1
J1-J	P1-2
J1-K	P1-3
J1-K	P1 Backshell
J1-a	P2-A
J1-b	P2-B
J1-c	P2-C
J1-Backshell	P2 Backshell
J1-d	P3-A
J1-e	P3-B
J1-f	P3-C
J1-Backshell	P3 backshell
J1-g	P4-A
J1-h	P4-B
J1-j	P4-C
J1-Backshell	P4 Backshell

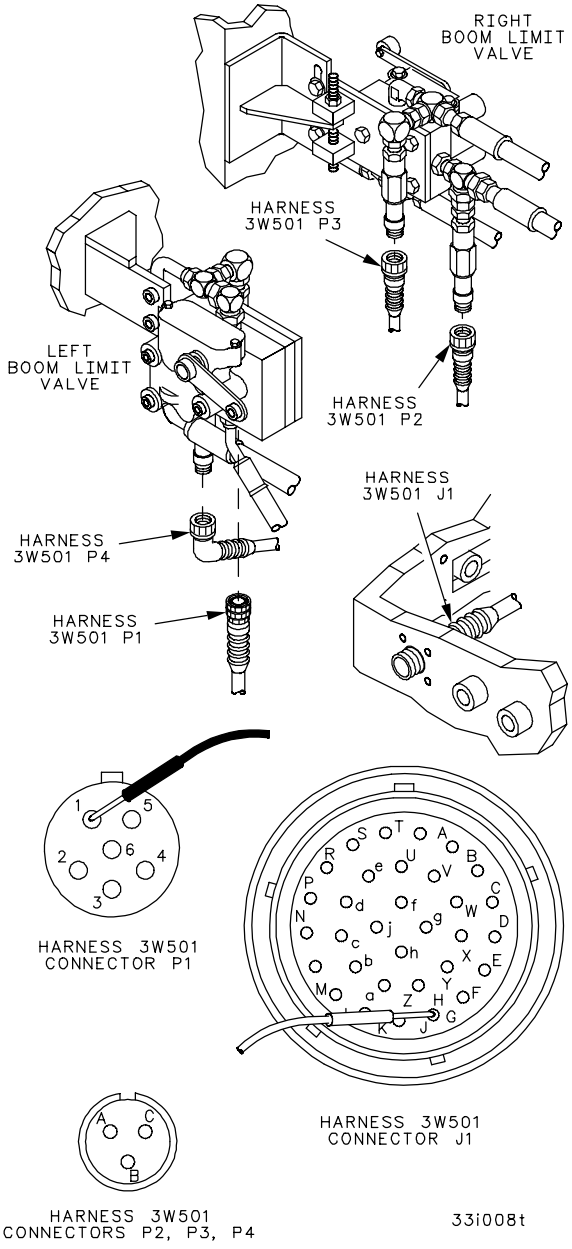
Is continuity present at all checks?

yes

Replace remote terminal unit (WP 0675 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0677 00) wiring harness 3W501. Verify fault is corrected.



END OF TASK

ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J2 ARE BELOW VALID RANGE OR OPEN 0067 00

THIS WORK PACKAGE COVERS:

All Signals At Remote Terminal Unit Connector J2 Are Below Valid Range Or Open

INITIAL SETUP:

Tools and Special Tools

SPORT with Enhanced Diagnostics System software loaded (item 133, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
SPORT connected to Enhanced Diagnostics System remote terminal (WP 0086 00)
Enhanced Diagnostics System POWER switch OFF

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Ensure that wiring harness 4W504 connector P1 is connected to remote terminal unit connector J2.

Is wiring harness 4W504 properly connected?

yes

no

Properly connect wiring harness 4W504 (WP 0680 00). Verify fault is corrected.

B

1. Remove subfloor plates #10, #15 and #18 (WP 0454 00).
2. Ensure that wiring harness 4W504 is properly connected to sensors on the boom shutoff valve, hoist winch motor and wiring harness 2W505 connector P1 to the main winch.

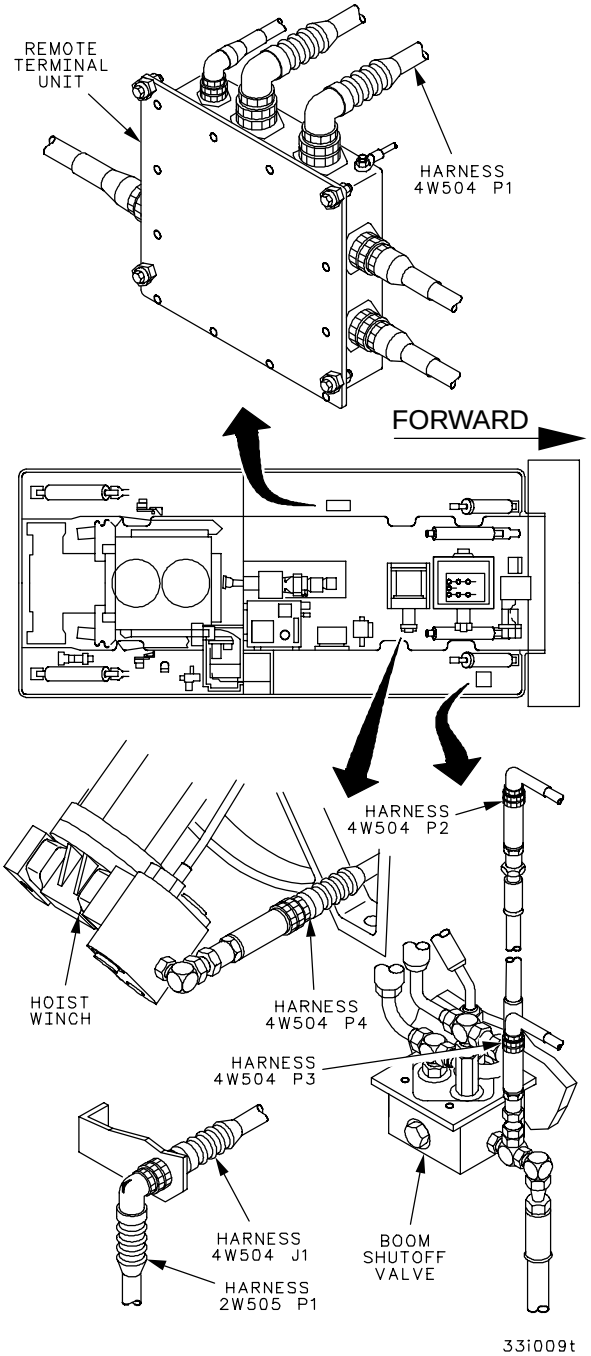
Is wiring harness 4W504 properly connected?

yes

no

Properly connect wiring harness 4W504 (WP 0680 00). Verify fault is corrected.

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ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J2 ARE BELOW VALID RANGE OR OPEN - CONTINUED

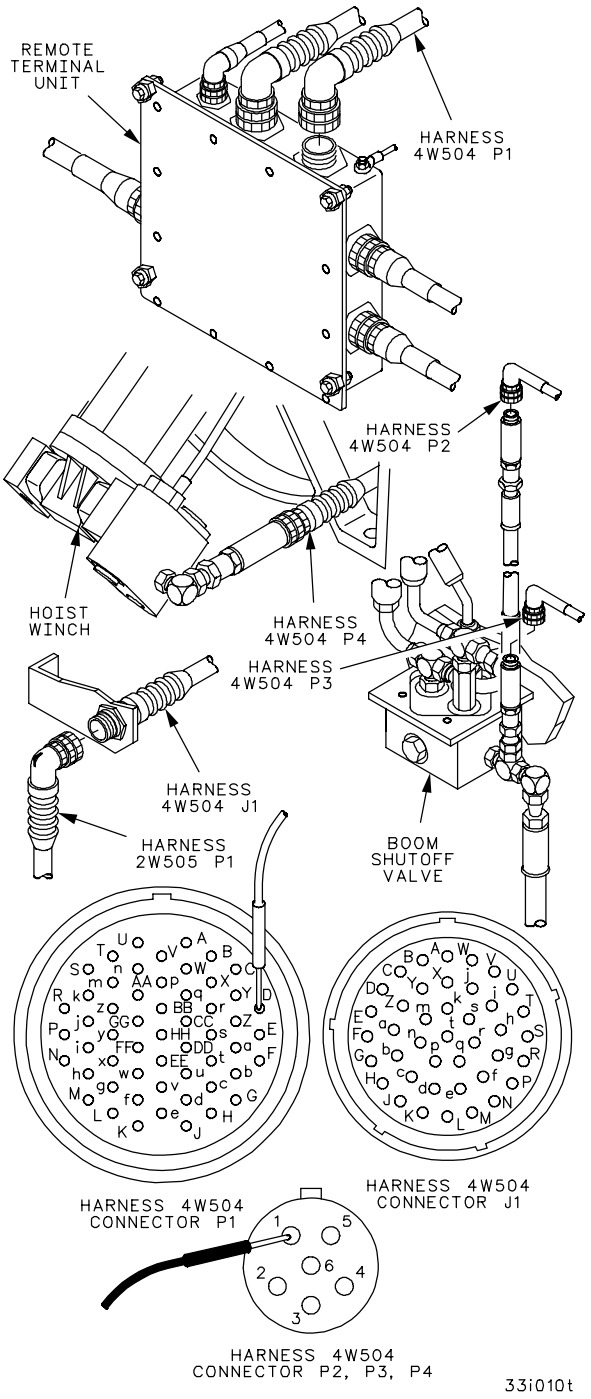
0067 00

CONTINUED FROM STEP B

C

1. Disconnect wiring harness 4W504 from remote terminal unit, boom shutoff valve, hoist winch and wiring harness 2W505 (WP 0680 00).
2. Check wiring harness 4W504 using table below. Place one multimeter lead on a pin in the FROM column and the other lead on the corresponding pin in the TO column. Check for continuity.

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
P1-D	P2-1
P1-E	P2-2
P1-F	P2-3
P1-Backshell	P2-Backshell
P1-G	P3-1
P1-H	P3-2
P1-J	P3-3
P1-Backshell	P3-Backshell
P1-K	P4-1
P1-L	P4-2
P1-M	P4-3
P1-Backshell	P4-Backshell
P1-P	J1-P
P1-R	J1-R
P1-S	J1-S
P1-Z	J1-T
P1-T	J1-U
P1-U	J1-V
P1-V	J1-W
P1-Z	J1-X
P1-W	J1-Y
P1-X	J1-Z
P1-Y	J1-a
P1-Z	J1-b
P1-a	J1-c
P1-b	J1-d
P1-c	J1-e
P1-j	J1-f
P1-d	J1-g
P1-e	J1-h
P1-f	J1-i
P1-j	J1-j
P1-g	J1-k
P1-h	J1-m
P1-i	J1-n



CONTINUED ON NEXT PAGE

ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J2 ARE BELOW VALID RANGE OR OPEN - CONTINUED 0067 00

CONTINUED FROM STEP C

D

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
P1-j	J1-p
P1-k	J1-q
P1-m	J1-r
P1-n	J1-s
P1-v	J1-t
P1-p	J1-K
P1-o	J1-L
P1-r	J1-M
P1-v	J1-N
P1-Backshell	J1-Backshell

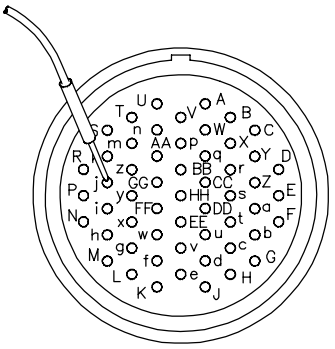
Is continuity present at all checks?

yes

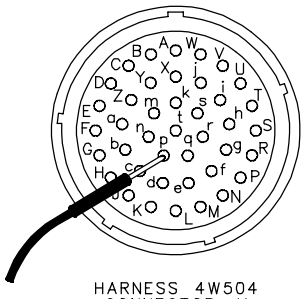
Replace remote terminal unit (WP 0675 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0680 00) wiring harness 4W504. Verify fault is corrected.



HARNESS 4W504
CONNECTOR P1



HARNESS 4W504
CONNECTOR J1

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END OF TASK

ALL SIGNALS AT CABLE ASSEMBLY 4W504 CONNECTOR J1 ARE BELOW VALID RANGE OR OPEN — 0068 00

THIS WORK PACKAGE COVERS:

All Signals At Cable Assembly 4W504 Connector J1 Are Below Valid Range Or Open

INITIAL SETUP:

Tools and Special Tools

SPORT with Enhanced Diagnostics System software loaded (item 133, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
SPORT connected to Enhanced Diagnostics System remote terminal (WP 0086 00)
Enhanced Diagnostics System POWER switch OFF
Subfloor plates #10 and #15 removed (WP 0454 00)

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

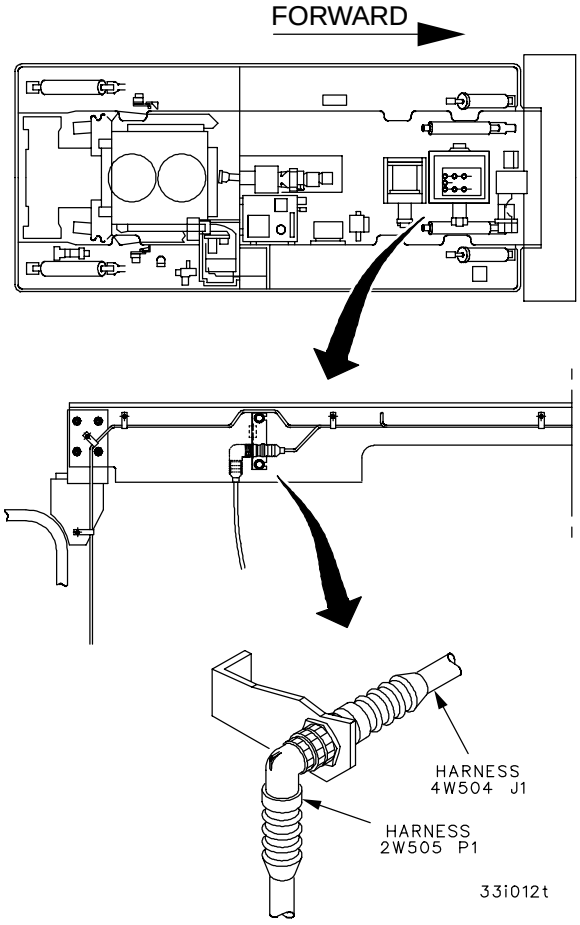
A Ensure that wiring harness 4W504 connector J1 is connected to wiring harness 2W505 connector P1.

Is wiring harness 4W504 properly connected?

yes

no

Properly connect wiring harness 4W504 connector J1 to wiring harness 2W505 connector P1 (WP 0680 00). Verify fault is corrected.



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ALL SIGNALS AT CABLE ASSEMBLY 4W504 CONNECTOR J1 ARE BELOW VALID RANGE OR OPEN - CONTINUED 0068 00

CONTINUED FROM STEP A

B

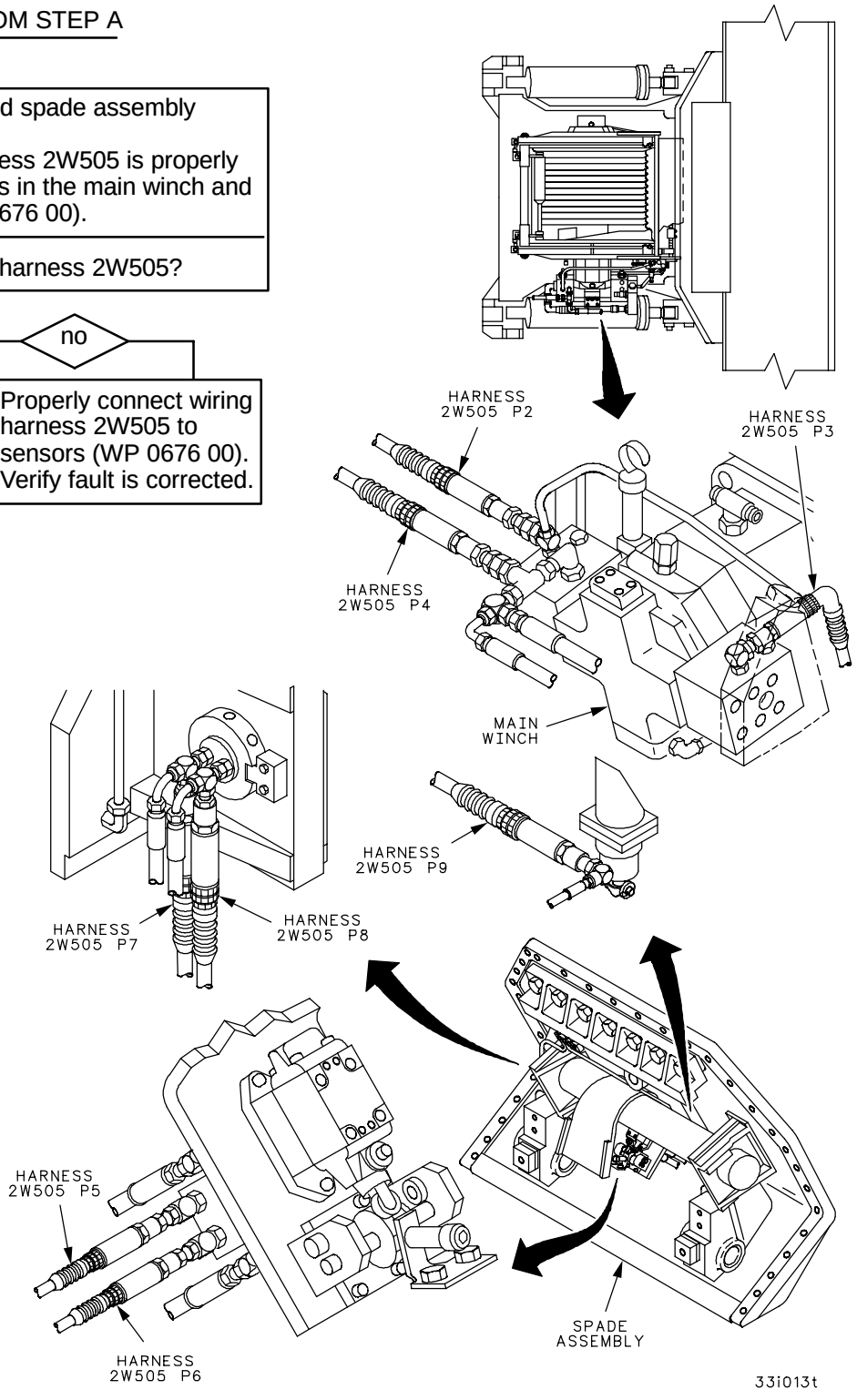
1. Remove main winch and spade assembly (WP 0497 00).
2. Ensure that wiring harness 2W505 is properly connected to all sensors in the main winch and spade assembly (WP 0676 00).

Are sensors connected to wiring harness 2W505?

yes

no

Properly connect wiring harness 2W505 to sensors (WP 0676 00). Verify fault is corrected.



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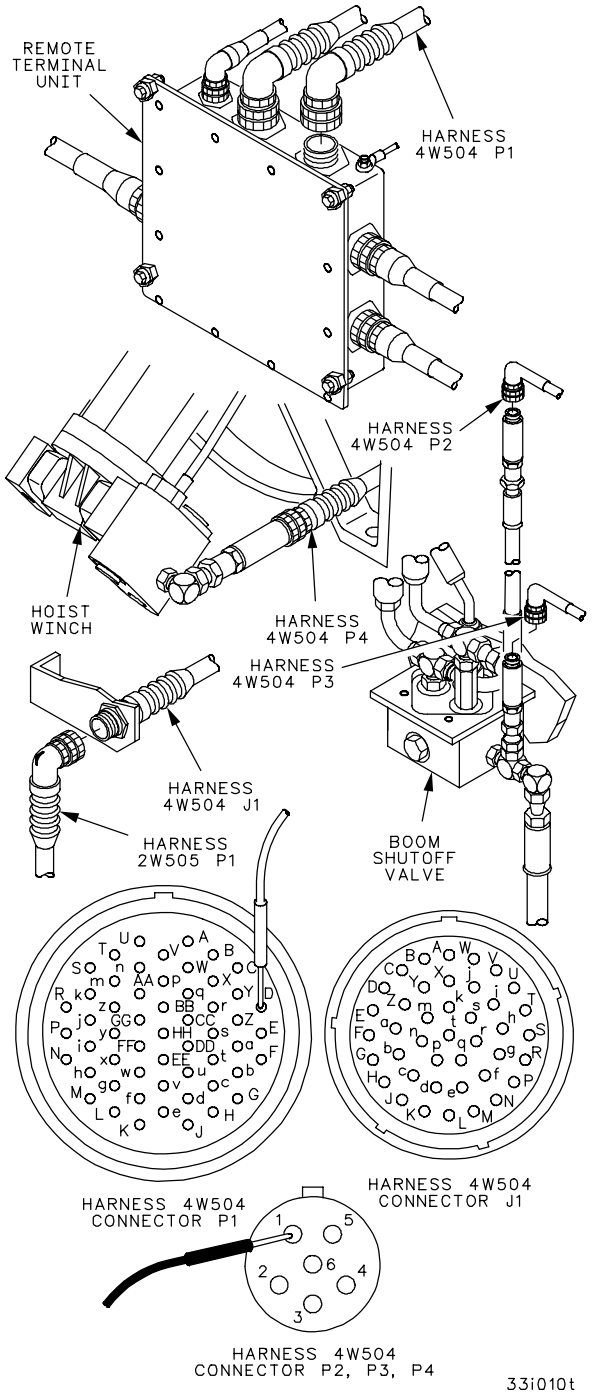
ALL SIGNALS AT CABLE ASSEMBLY 4W504 CONNECTOR J1 ARE BELOW VALID RANGE OR OPEN - CONTINUED 0068 00

CONTINUED FROM STEP B

C

1. Disconnect wiring harness 4W504 from remote terminal unit, boom shutoff valve, hoist winch and wiring harness 2W505 (WP 0680 00).
2. Check wiring harness 4W504 using table below. Place one multimeter lead on a pin in the FROM column and the other lead on the corresponding pin in the TO column. Check for continuity.

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
P1-D	P2-1
P1-E	P2-2
P1-F	P2-3
P1-Backshell	P2-Backshell
P1-G	P3-1
P1-H	P3-2
P1-J	P3-3
P1-Backshell	P3-Backshell
P1-K	P4-1
P1-L	P4-2
P1-M	P4-3
P1-Backshell	P4-Backshell
P1-P	J1-P
P1-R	J1-R
P1-S	J1-S
P1-Z	J1-T
P1-T	J1-U
P1-U	J1-V
P1-V	J1-W
P1-Z	J1-X
P1-W	J1-Y
P1-X	J1-Z
P1-Y	J1-a
P1-Z	J1-b
P1-a	J1-c
P1-b	J1-d
P1-c	J1-e
P1-j	J1-f
P1-d	J1-g
P1-e	J1-h
P1-f	J1-i
P1-j	J1-j
P1-g	J1-k
P1-h	J1-m
P1-i	J1-n



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ALL SIGNALS AT CABLE ASSEMBLY 4W504 CONNECTOR J1 ARE BELOW VALID RANGE OR OPEN - CONTINUED 0068 00

CONTINUED FROM STEP C

D

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
P1-j	J1-p
P1-k	J1-q
P1-m	J1-r
P1-n	J1-s
P1-v	J1-t
P1-p	J1-K
P1-o	J1-L
P1-r	J1-M
P1-v	J1-N
P1-Backshell	J1-Backshell

Is continuity present at all checks?

yes

no

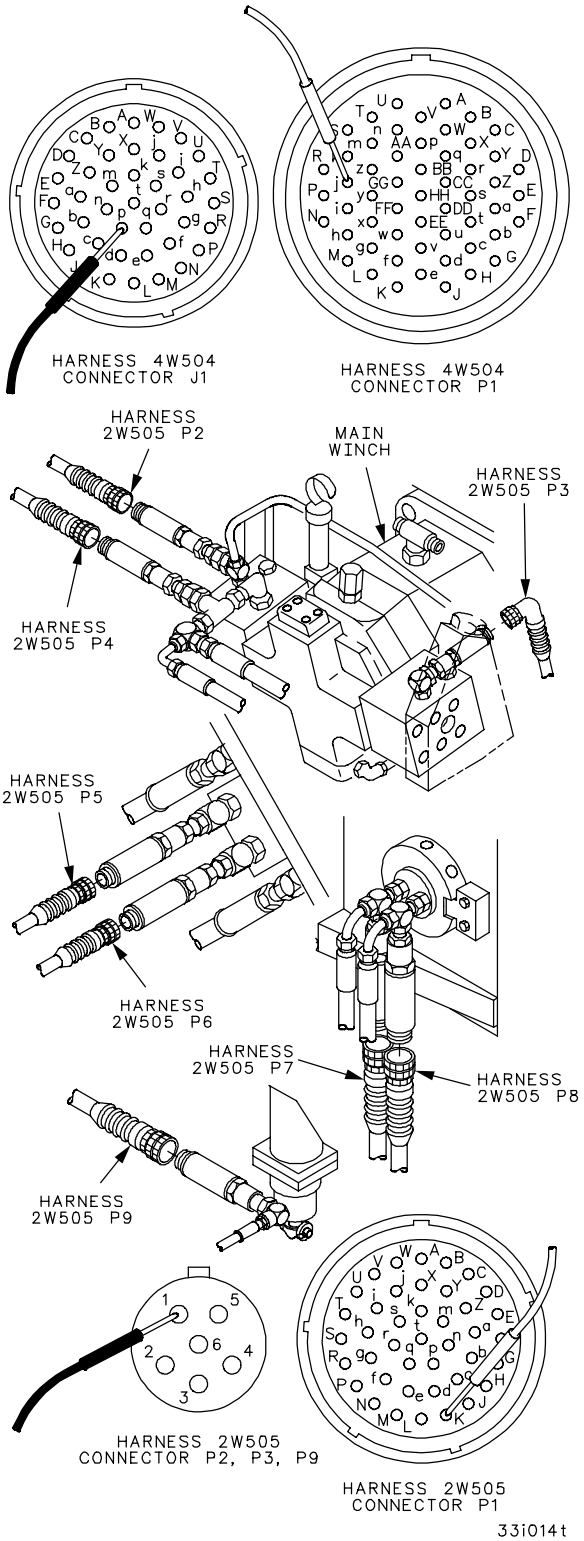
Repair (WP 0290 00) or replace (WP 0680 00) wiring harness 4W504. Verify fault is corrected.

E

1. Disconnect wiring harness 2W505 from main winch and spade assembly sensors (WP 0676 00).
2. Check wiring harness 2W505 using table below. Place one multimeter lead on a pin in the FROM column and the other lead on the corresponding pin in the TO column. Check for continuity.

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
P1-K	P9-1
P1-L	P9-2
P1-M	P9-3
P1-Backshell	P9-Backshell
P1-P	P2-1
P1-R	P2-2
P1-S	P2-3
P1-Backshell	P2-Backshell
P1-U	P3-1
P1-V	P3-2
P1-W	P3-3
P1-Backshell	P3-Backshell

CONTINUED ON NEXT PAGE



ALL SIGNALS AT CABLE ASSEMBLY 4W504 CONNECTOR J1 ARE BELOW VALID RANGE OR OPEN - CONTINUED 0068 00

CONTINUED FROM STEP C

F

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
P1-Y	P4-1
P1-Z	P4-2
P1-a	P4-3
P1-Backshell	P4-Backshell
P1-c	P5-1
P1-d	P5-2
P1-e	P5-3
P1-Backshell	P5-Backshell
P1-g	P6-1
P1-h	P6-2
P1-l	P6-3
P1-Backshell	P6-Backshell
P1-k	P7-1
P1-m	P7-2
P1-n	P7-3
P1-Backshell	P7-Backshell
P1-o	P8-1
P1-r	P8-2
P1-s	P8-3
P1 Backshell	P8 Backshell

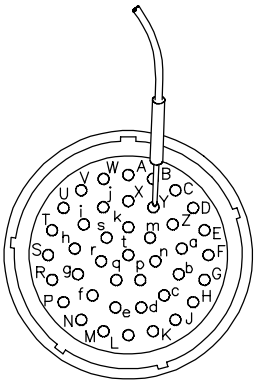
Is continuity present at all checks?

yes

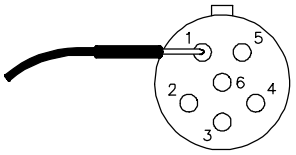
Replace remote terminal unit (WP 0675 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0676 00) wiring harness 2W505. Verify fault is corrected.



HARNESS 2W505
CONNECTOR P1



HARNESS 2W505
CONNECTOR P4, P5, P6, P7, P8

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END OF TASK

ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J3 ARE BELOW VALID RANGE OR OPEN 0069 00

THIS WORK PACKAGE COVERS:

All Signals At Remote Terminal Unit Connector J3 Are Below Valid Range Or Open

INITIAL SETUP:

Tools and Special Tools

SPORT with Enhanced Diagnostics System software loaded (item 133, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
SPORT connected to Enhanced Diagnostics System remote terminal (WP 0086 00)
Enhanced Diagnostics System POWER switch OFF

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

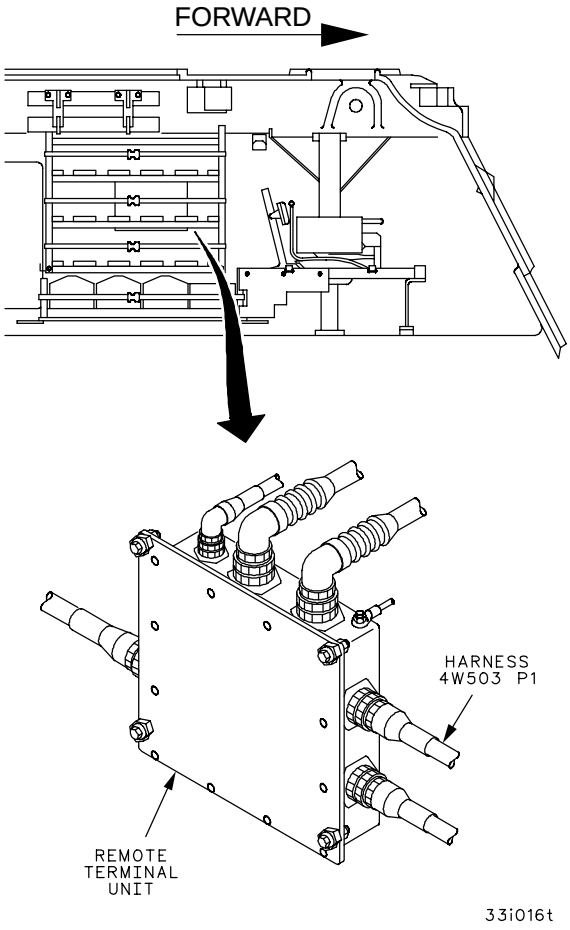
A Ensure that wiring harness 4W503 connector P1 is connected to remote terminal unit connector J3.

Is wiring harness 4W503 properly connected?

yes

no

Properly connect wiring harness 4W503 connector P1 to remote terminal unit connector J3 (WP 0679 00). Verify fault is corrected.



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ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J3 ARE BELOW VALID RANGE OR OPEN - CONTINUED 0069 00

B

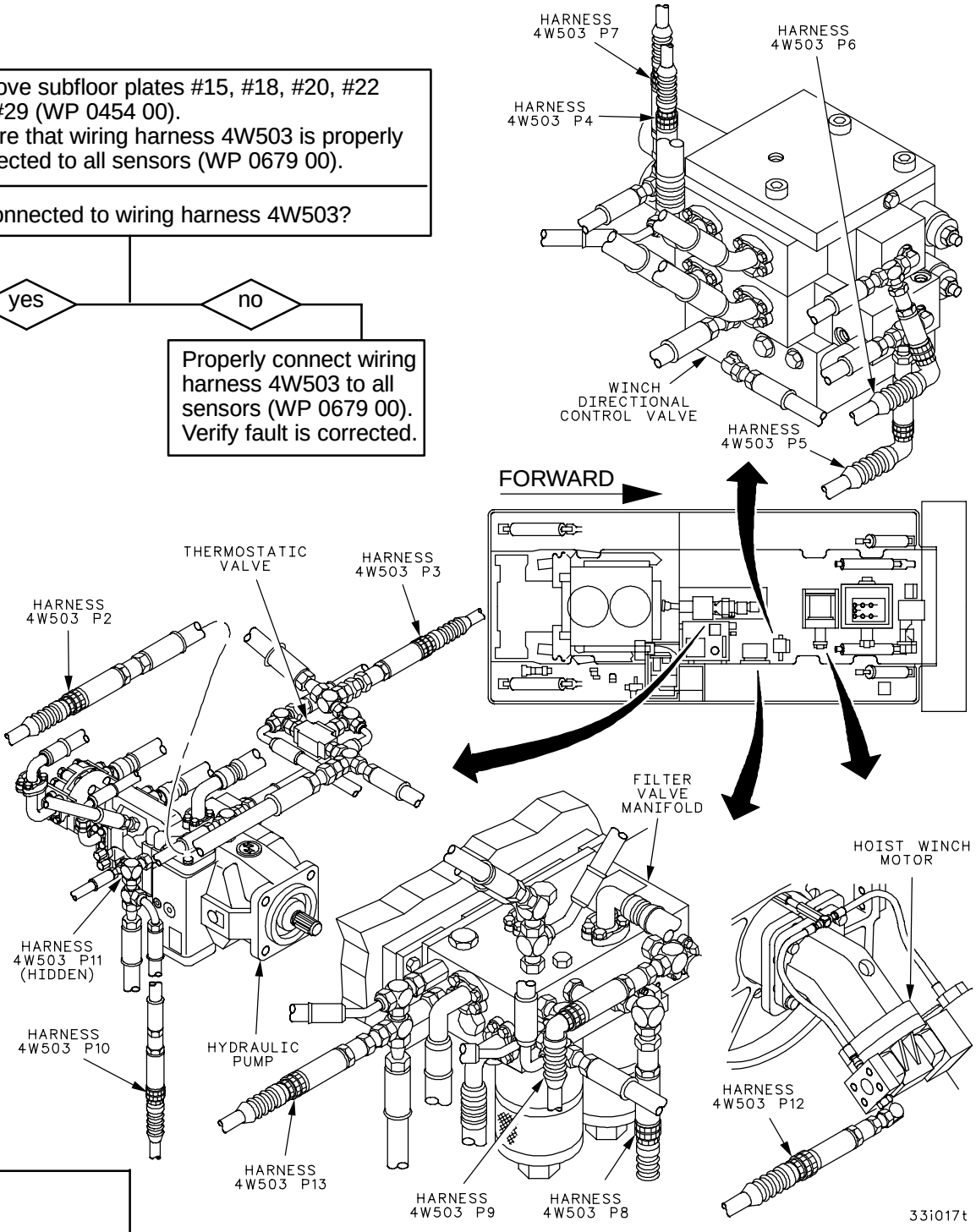
1. Remove subfloor plates #15, #18, #20, #22 and #29 (WP 0454 00).
2. Ensure that wiring harness 4W503 is properly connected to all sensors (WP 0679 00).

Are sensors connected to wiring harness 4W503?

yes

no

Properly connect wiring harness 4W503 to all sensors (WP 0679 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

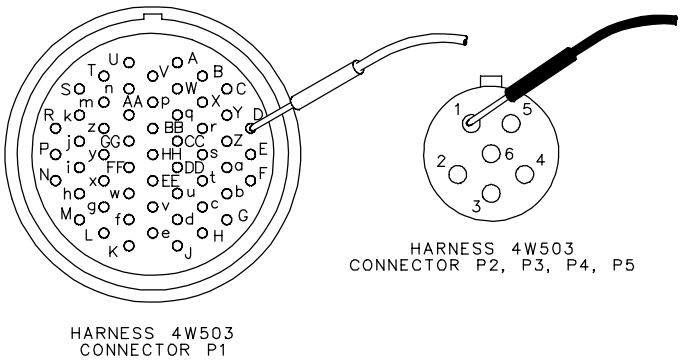
ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J3 ARE BELOW VALID RANGE OR OPEN - CONTINUED 0069 00

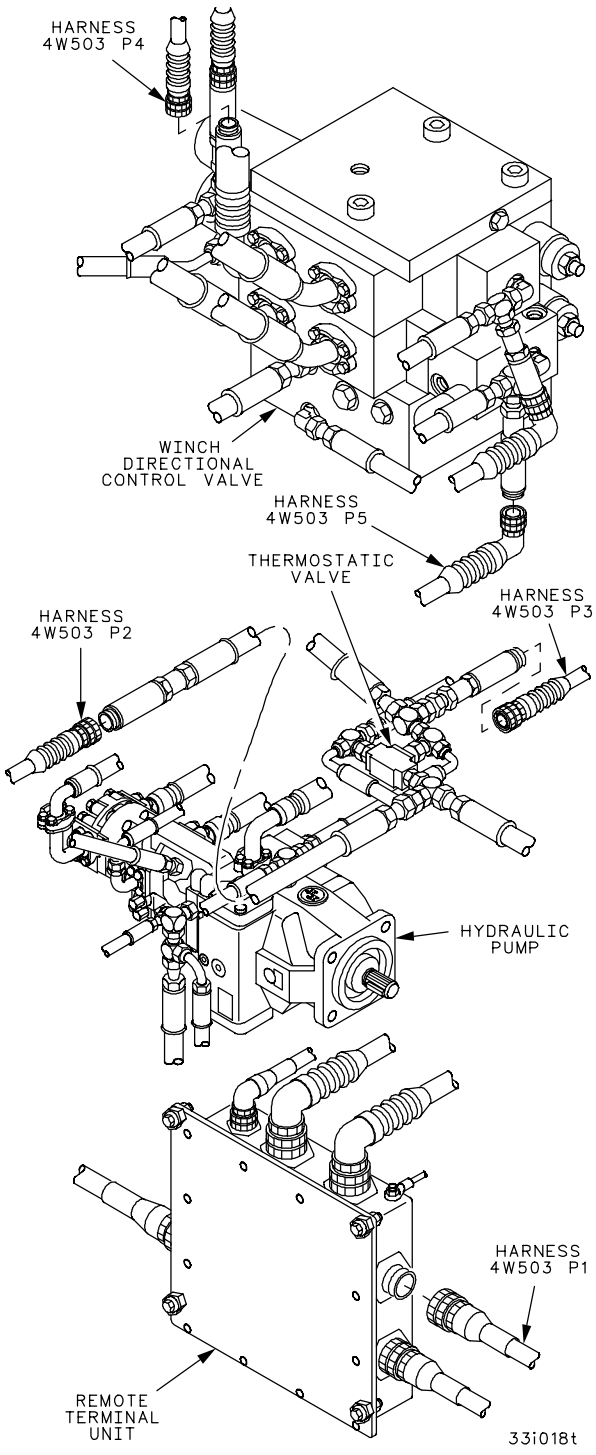
CONTINUED FROM STEP B

C

1. Disconnect wiring harness 4W503 from remote terminal unit and sensors (WP 0679 00).
2. Check wiring harness 4W503 using table below. Place one multimeter lead on a pin in the FROM column and the other lead on the corresponding pin in the TO column. Check for continuity.

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
P1-D	P2-1
P1-E	P2-2
P1-F	P2-3
P1 Backshell	P2 Backshell
P1-G	P3-1
P1-H	P3-2
P1-J	P3-3
P1 Backshell	P3 Backshell
P1-K	P4-1
P1-L	P4-2
P1-M	P4-3
P1 Backshell	P4 Backshell
P1-P	P5-1
P1-R	P5-2
P1-S	P5-3
P1 Backshell	P5 Backshell





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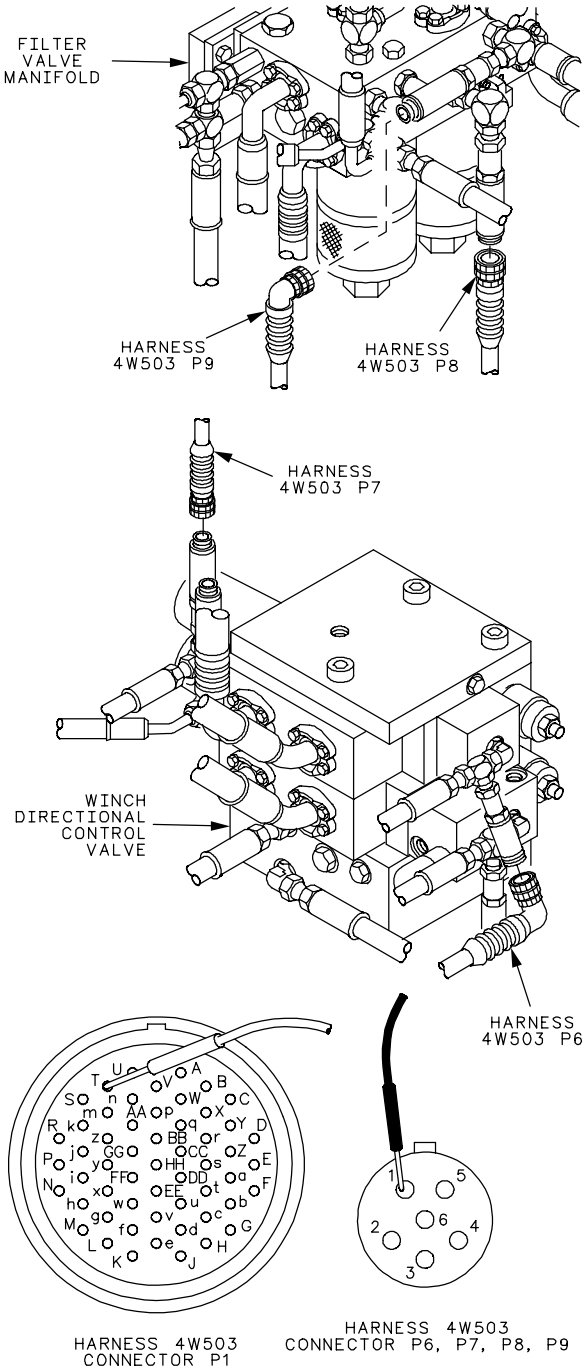
ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J3 ARE BELOW VALID RANGE OR OPEN - CONTINUED 0069 00

CONTINUED FROM STEP C

D

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
P1-T	P6-1
P1-U	P6-2
P1-V	P6-3
P1 Backshell	P6 Backshell
P1-W	P7-1
P1-X	P7-2
P1-Y	P7-3
P1 Backshell	P7 Backshell
P1-a	P8-1
P1-b	P8-2
P1-c	P8-3
P1 Backshell	P8 Backshell
P1-d	P9-1
P1-e	P9-2
P1-f	P9-3
P1 Backshell	P9 Backshell

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ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J3 ARE BELOW VALID RANGE OR OPEN - CONTINUED 0069 00

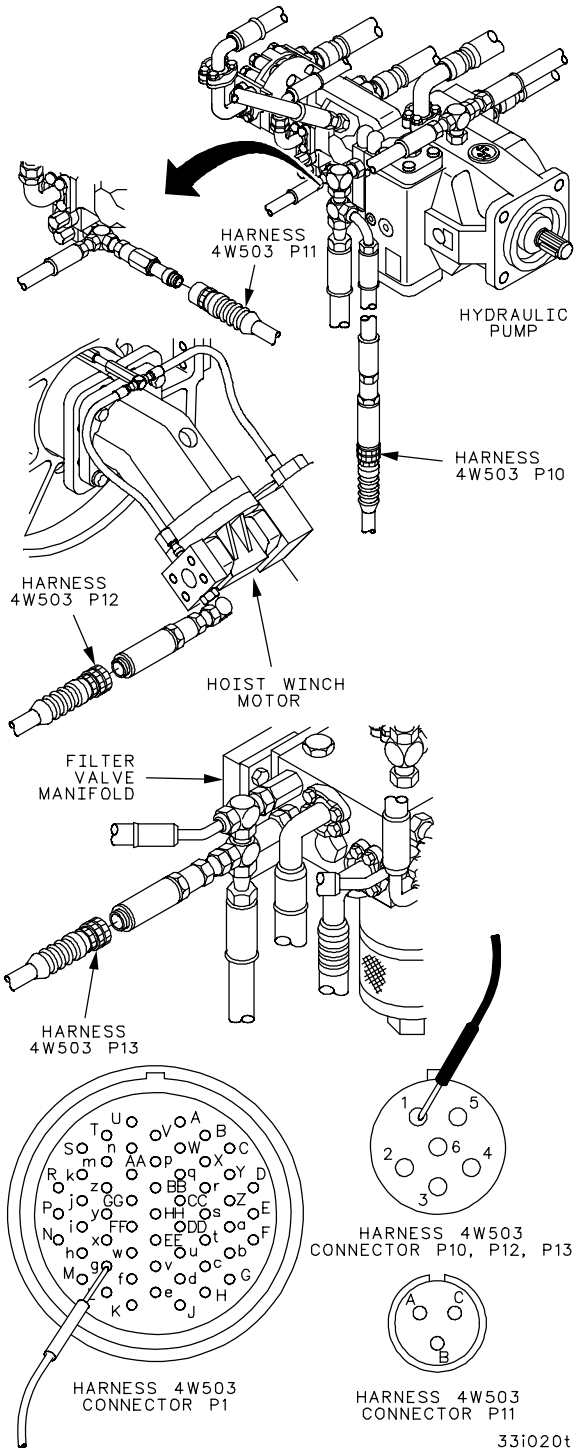
CONTINUED FROM STEP C

E

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
P1-g	P12-1
P1-h	P12-2
P1-i	P12-3
P1 Backshell	P12 Backshell
P1-k	P10-1
P1-m	P10-2
P1-n	P10-3
P1 Backshell	P10 Backshell
P1-w	P11-1
P1-x	P11-2
P1-y	P11-3
P1 Backshell	P11 Backshell
P1-s	P13-1
P1-t	P13-2
P1-u	P13-3
P1 Backshell	P13 Backshell

Is continuity present at all checks?

- yes: Replace remote terminal unit (WP 0675 00). Verify fault is corrected.
- no: Repair (WP 0290 00) or replace (WP 0679 00) wiring harness 4W503. Verify fault is corrected.



END OF TASK

ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J5 ARE BELOW VALID RANGE OR OPEN 0070 00

THIS WORK PACKAGE COVERS:

All Signals At Remote Terminal Unit Connector J5 Are Below Valid Range Or Open

INITIAL SETUP:

Tools and Special Tools

SPORT with Enhanced Diagnostics System software loaded (item 133, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
SPORT connected to Enhanced Diagnostics System remote terminal (WP 0086 00)
Enhanced Diagnostics System POWER switch OFF

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

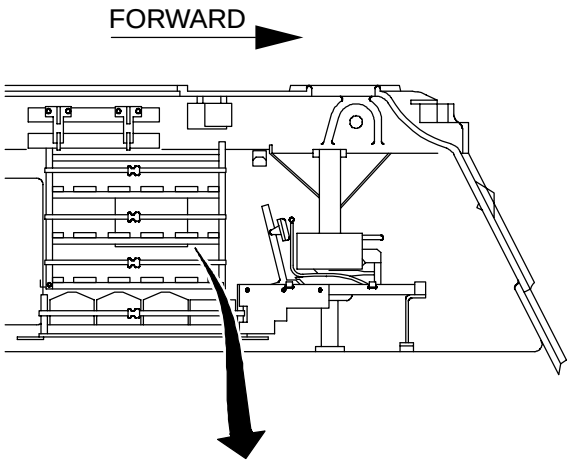
A Ensure that wiring harness 4W506 connector P1 is connected to remote terminal unit connector J5.

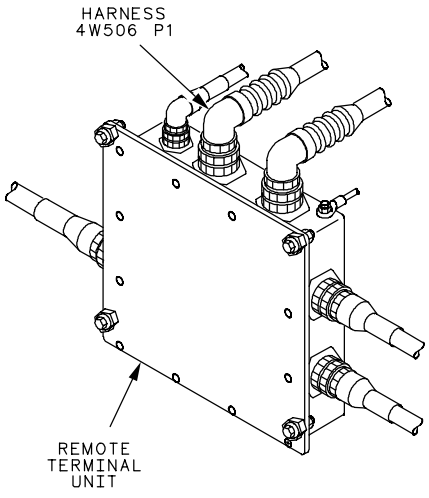
Is wiring harness 4W506 properly connected?

yes

no

Properly connect wiring harness 4W506 connector P1 to remote terminal unit connector J5 (WP 0681 00). Verify fault is corrected.





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ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J5 ARE BELOW VALID RANGE OR OPEN - CONTINUED 0070 00

CONTINUED FROM STEP A

B

1. Remove shields from hydraulic control valve manifold assembly (WP 0519 00).
2. Ensure that wiring harness 4W506 is properly connected to all sensors (WP 0681 00).

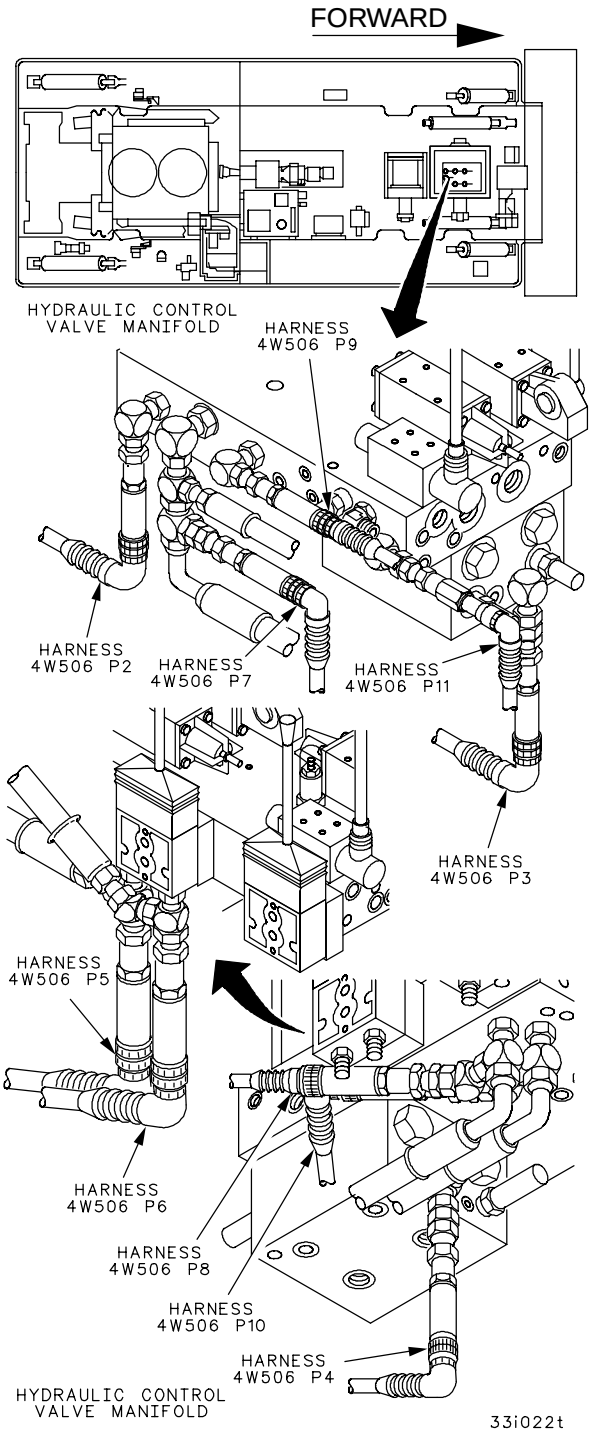
Are sensors connected to wiring harness 4W506?

yes

no

Properly connect wiring harness 4W506 (WP 0681 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



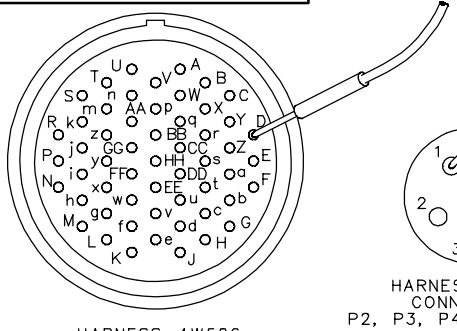
ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J5 ARE BELOW VALID RANGE OR OPEN - CONTINUED 0070 00

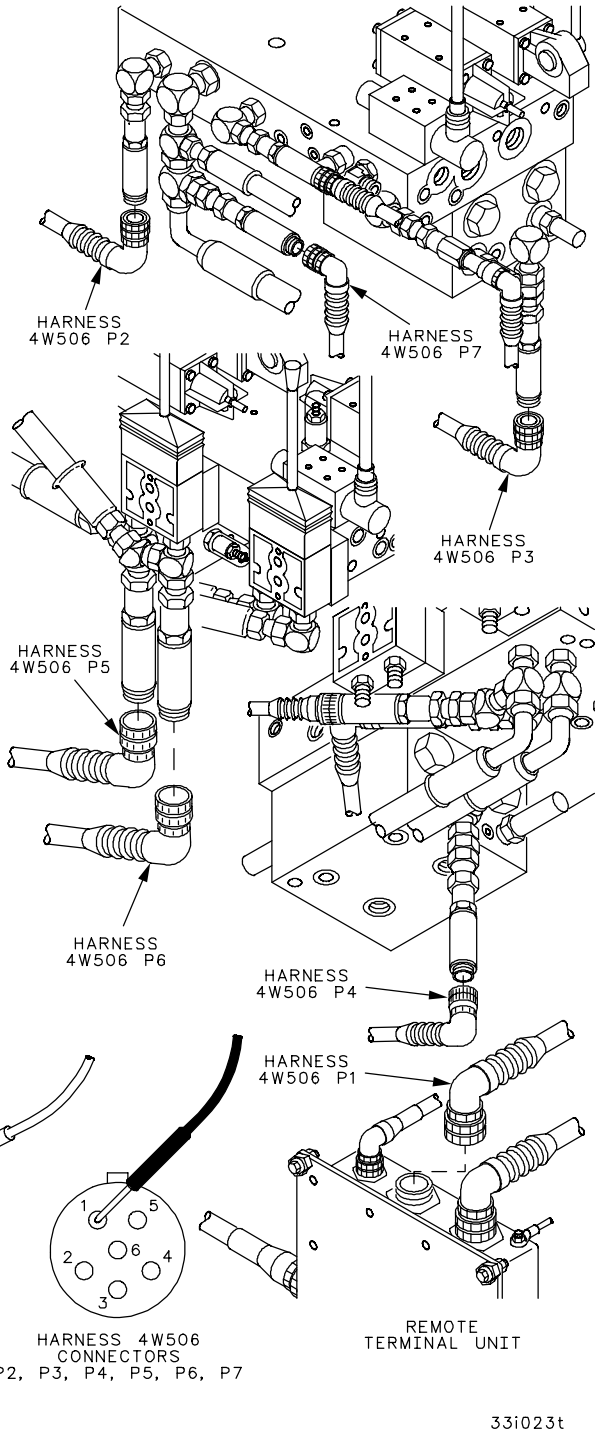
CONTINUED FROM STEP B

C

1. Disconnect wiring harness 4W506 from remote terminal unit and sensors on the hydraulic control valve manifold assembly (WP 0681 00).
2. Check wiring harness 4W506 using table below. Place one multimeter lead on a pin in the FROM column and the other lead on the corresponding pin in the TO column. Check for continuity.

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
P1-D	P2-1
P1-E	P2-2
P1-F	P2-3
P1 Backshell	P2 Backshell
P1-G	P3-1
P1-H	P3-2
P1-J	P3-3
P1 Backshell	P3 Backshell
P1-K	P7-1
P1-L	P7-2
P1-M	P7-3
P1 Backshell	P7 Backshell
P1-P	P4-1
P1-R	P4-2
P1-S	P4-3
P1 Backshell	P4 Backshell
P1-T	P5-1
P1-U	P5-2
P1-V	P5-3
P1 Backshell	P5 Backshell
P1-W	P6-1
P1-X	P6-2
P1-Y	P6-3
P1 Backshell	P6 Backshell





CONTINUED ON NEXT PAGE

ALL SIGNALS AT REMOTE TERMINAL UNIT CONNECTOR J5 ARE BELOW VALID RANGE OR OPEN - CONTINUED 0070 00

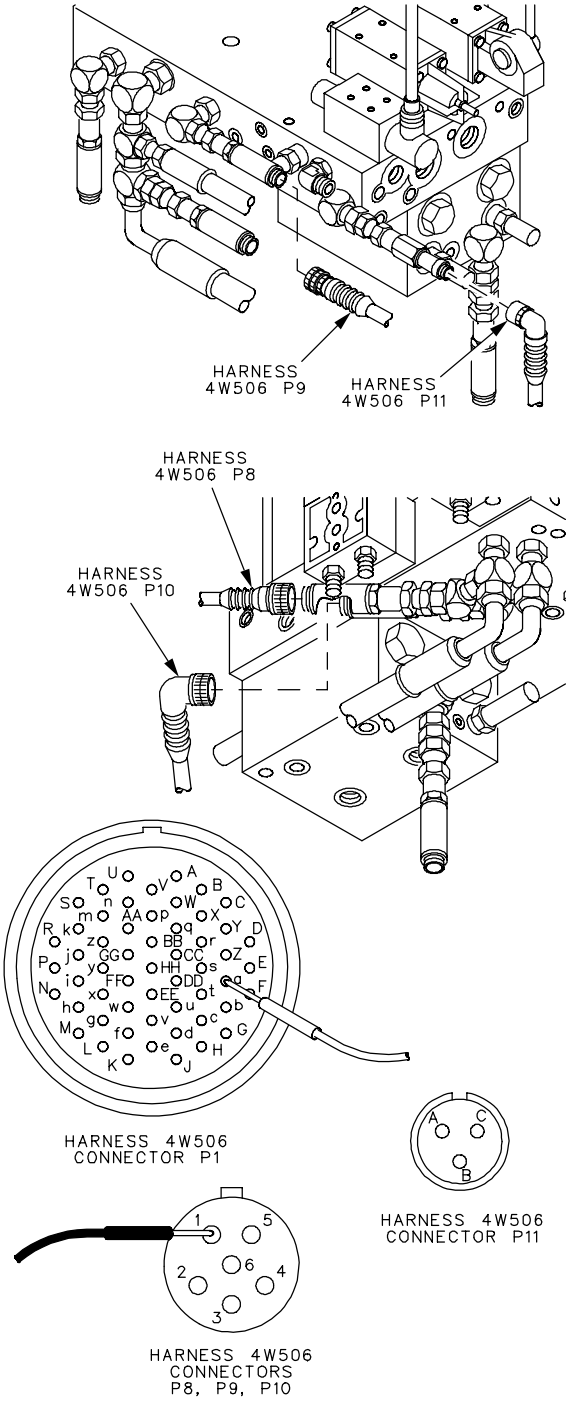
CONTINUED FROM STEP C

D

FROM CONNECTOR/PIN	TO CONNECTOR/PIN
P1-a	P8-1
P1-b	P8-2
P1-c	P8-3
P1 Backshell	P8 Backshell
P1-d	P9-1
P1-e	P9-2
P1-f	P9-3
P1 Backshell	P9 Backshell
P1-g	P10-1
P1-h	P10-2
P1-i	P10-3
P1 Backshell	P10 Backshell
P1-w	P11-A
P1-x	P11-B
P1-y	P11-C
P1 Backshell	P11 Backshell

Is continuity present at all checks?

- yes: Replace remote terminal unit (WP 0675 00). Verify fault is corrected.
- no: Repair (WP 0290 00) or replace (WP 0681 00) wiring harness 4W506. Verify fault is corrected.



END OF TASK

SIGNALS FROM SENSOR IS BELOW ITS VALID RANGE, INDICATES BOTH CIRCUITS ARE OPEN, IS ABOVE ITS VALID RANGE, INDICATES CIRCUITS ARE CLOSED, OR WAS NOT PROCESSED CORRECTLY

0071 00

THIS WORK PACKAGE COVERS:

Signals From Sensor Is Below Its Valid Range, Indicates Both Circuits Are Open, Is Above Its Valid Range, Indicates Circuits Are Closed, Or Was Not Processed Correctly

INITIAL SETUP:

Tools and Special Tools

SPORT with Enhanced Diagnostics System software loaded (item 133, WP 0717 00)
Multimeter (item 84, WP 0717 00)
Main winch ground hop kit (item 26, WP 0717 00)

Equipment Conditions

Vehicle parked (TM 9-2350-292-10)
SPORT connected to Enhanced Diagnostics System remote terminal (WP 0086 00)
Enhanced Diagnostics System POWER switch OFF

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

NOTE

To troubleshoot faults in sensors 2MT535, 2MT536, 2MT537, 2MT538, 2MT539, 2MT540, 2MT541, 2MT546, 4MT542, 4MT543 or 4MT545 start at step A.

To troubleshoot faults in sensors 3MT510, 3S511, 3S512 or 3MT513 start at step D.

To troubleshoot faults in sensors 4MT514, 4MT515, 4MT516, 4MT517, 4MT518, 4MT519, 4S520, 4MT521, 4MT522 or 4MT523 start at step G.

To troubleshoot faults in sensors 4MT524, 4MT525, 4S527, 4MT528, 4MT529, 4MT530, 4MT531, 4MT532, 4MT533 4MT534, 4MT544 or 4MT547 start at step I.

CONTINUED ON NEXT PAGE

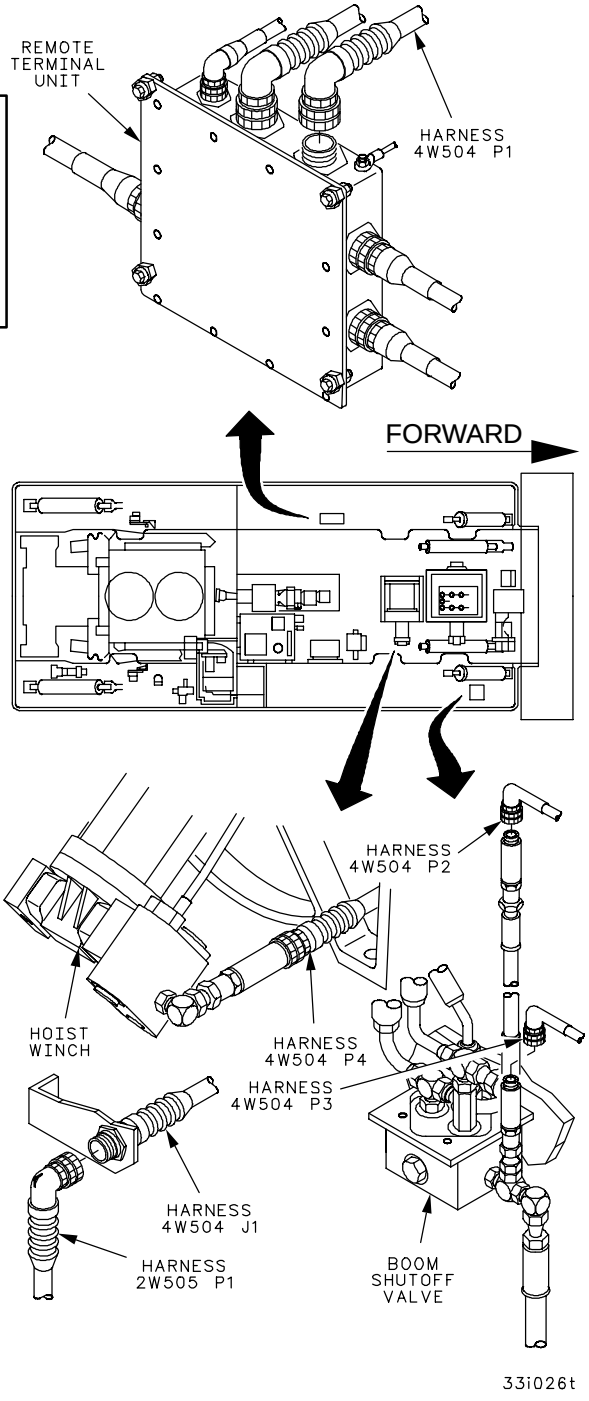
SIGNALS FROM SENSOR IS BELOW ITS VALID RANGE, INDICATES BOTH CIRCUITS ARE OPEN, IS ABOVE ITS VALID RANGE, INDICATES CIRCUITS ARE CLOSED, OR WAS NOT PROCESSED CORRECTLY - CONTINUED

0071 00

A

1. Disconnect wiring harness 4W504 connector P1 from remote terminal unit connector J2.
2. Disconnect wiring harness 4W504 connector J1 from wiring harness 2W505 connector P1, connector P2 or P3 from boom shut-off valve, or connector P4 from hoist winch, depending on which sensor is failing (WP 0680 00).

CONTINUED ON NEXT PAGE



SIGNALS FROM SENSOR IS BELOW ITS VALID RANGE, INDICATES BOTH CIRCUITS ARE OPEN, IS ABOVE ITS VALID RANGE, INDICATES CIRCUITS ARE CLOSED, OR WAS NOT PROCESSED CORRECTLY - CONTINUED

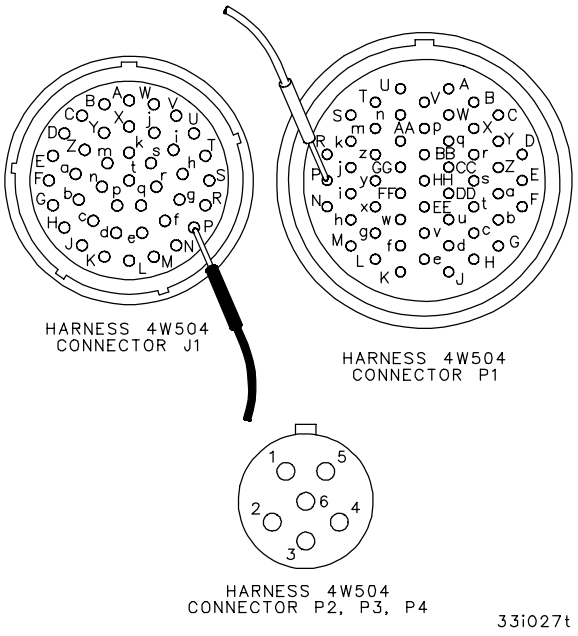
0071 00

CONTINUED FROM STEP NO TAG

A 3. Use the following table to conduct a continuity check of wiring harness 4W504 wires that correspond to the sensor that is failing.

Sensor	Wiring Harness 2W505 Connectors		Wiring Harness 4W504 Connectors		Remote Terminal Connector
2MT535	P2-1	P1-P	J1-P	P1-P	
	P2-2	P1-R	J1-R	P1-R	J2
	P2-3	P1-S	J1-S	P1-Sll	
2MT536	P3-1	P1-U	J1-U	P1-T	
	P3-2	P1-V	J1-V	P1-U	J2
	P3-3	P1-W	J1-W	P1-V	
2MT537	P4-1	P1-Y	J1-Y	P1-W	
	P4-2	P1-Z	J1-Z	P1-X	J2
	P4-3	P1-a	J1-a	P1-Y	
2MT538	P5-1	P1-c	J1-c	P1-a	
	P5-2	P1-d	J1-d	P1-b	J2
	P5-3	P1-e	J1-e	P1-c	
2MT539	P6-1	P1-g	J1-g	P1-d	
	P6-2	P1-h	J1-h	P1-e	J2
	P6-3	P1-I	J1-i	P1-f	
2MT540	P7-1	P1-k	J1-k	P1-g	
	P7-2	P1-m	J1-m	P1-h	J2
	P7-3	P1-n	J1-n	P1-I	
2MT541	P8-1	P1-q	J1-p	P1-k	
	P8-2	P1-r	J1-r	P1-m	J2
	P8-3	P1-s	J1-s	P1-n	
2MT546	P9-1	P1-K	J1-K	P1-p	
	P9-2	P1-L	J1-L	P1-q	J2
	P9-3	P1-M	J1-M	P1-r	
4MT542			P3-1	P1-G	
	---	---	P3-2	P1-H	J2
			P3-3	P1-J	
4MT543			P2-1	P1-D	
	---	---	P2-2	P1-E	J2
			P2-3	P1-F	
4MT545			P4-1	P1-K	
	---	---	P4-2	P1-L	J2
			P4-3	P1-M	

Is continuity present?



yes

no

Repair (WP 0290 00) or replace (WP 0680 00) wiring harness 4W504. Verify fault is corrected.

CONTINUED ON NEXT PAGE

SIGNALS FROM SENSOR IS BELOW ITS VALID RANGE, INDICATES BOTH CIRCUITS ARE OPEN, IS ABOVE ITS VALID RANGE, INDICATES CIRCUITS ARE CLOSED, OR WAS NOT PROCESSED CORRECTLY - CONTINUED

0071 00

CONTINUED FROM STEP NO TAG

B

1. Reconnect wiring harness 4W504 connector P1 to remote terminal unit connector J2.
2. Disconnect wiring harness 2W505 from sensor that is failing (WP 0676 00).
3. Use table in step A to conduct a continuity check of wiring harness 2W505 wires that correspond to the sensor that is failing.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0676 00) wiring harness 2W505. Verify fault is corrected.

C

1. Replace sensor that is failing (WP 0685 00 for sensor 2MT535, 2MT536, 2MT537, 2MT538, 2MT539, 2MT540, 2MT541 or 2MT546, WP 0686 00 for sensor 4MT542 or 4MT543, or WP 0687 00 for sensor 4MT545).
2. Reconnect wiring harness 4W504 to sensors and wiring harness 2W505 (WP 0680 00).
3. Reconnect wiring harness 2W505 to sensor, if removed (WP 0676 00).
4. Install main winch ground hop kit (WP 0498 00).
5. Start Enhanced Diagnostics program (WP 0086 00) and run selftest.

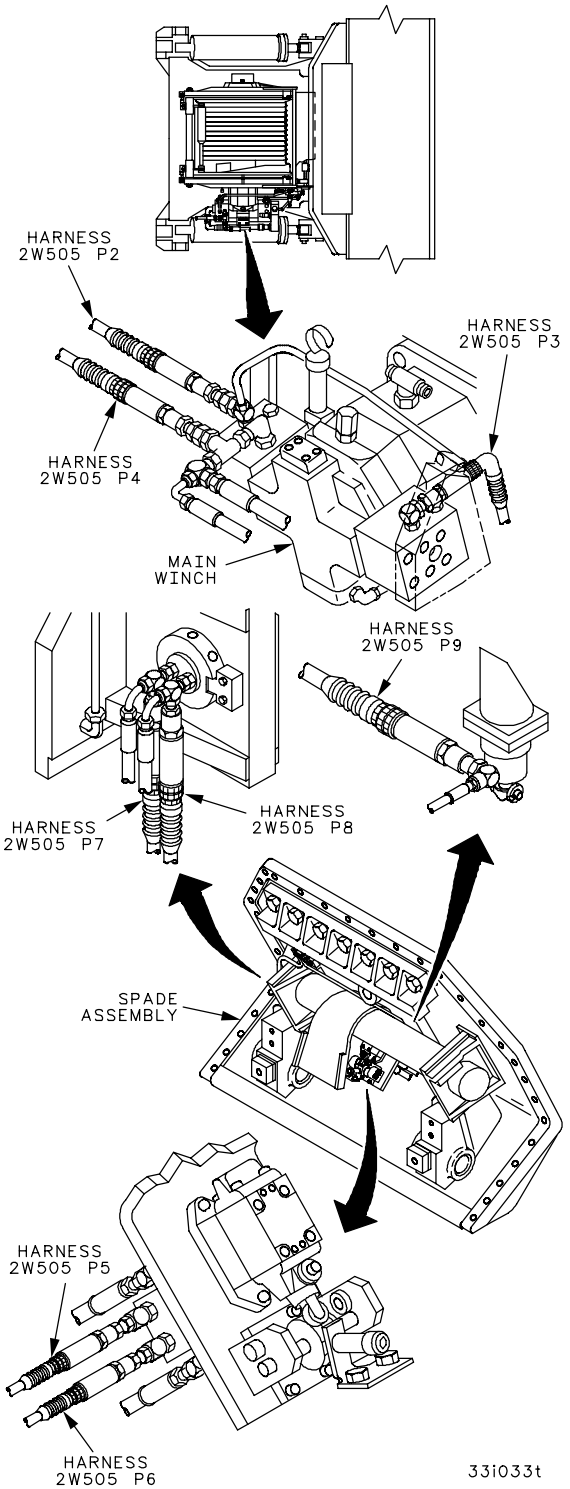
Does failing sensor now pass selftest?

yes

no

Fault corrected.

Replace remote terminal unit (WP 0675 00). Verify fault is corrected.



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SIGNALS FROM SENSOR IS BELOW ITS VALID RANGE, INDICATES BOTH CIRCUITS ARE OPEN, IS ABOVE ITS VALID RANGE, INDICATES CIRCUITS ARE CLOSED, OR WAS NOT PROCESSED CORRECTLY - CONTINUED

0071 00

CONTINUED FROM STEP NO TAG

D

1. Disconnect wiring harness 4W502 connector P1 from remote terminal unit connector J1.
2. Disconnect wiring harness 4W502 connector P2 from wiring harness 3W501 connector J1 (WP 0678 00).
3. Use the following table to conduct a continuity check of wiring harness 4W502 wires that correspond to the sensor that is failing.

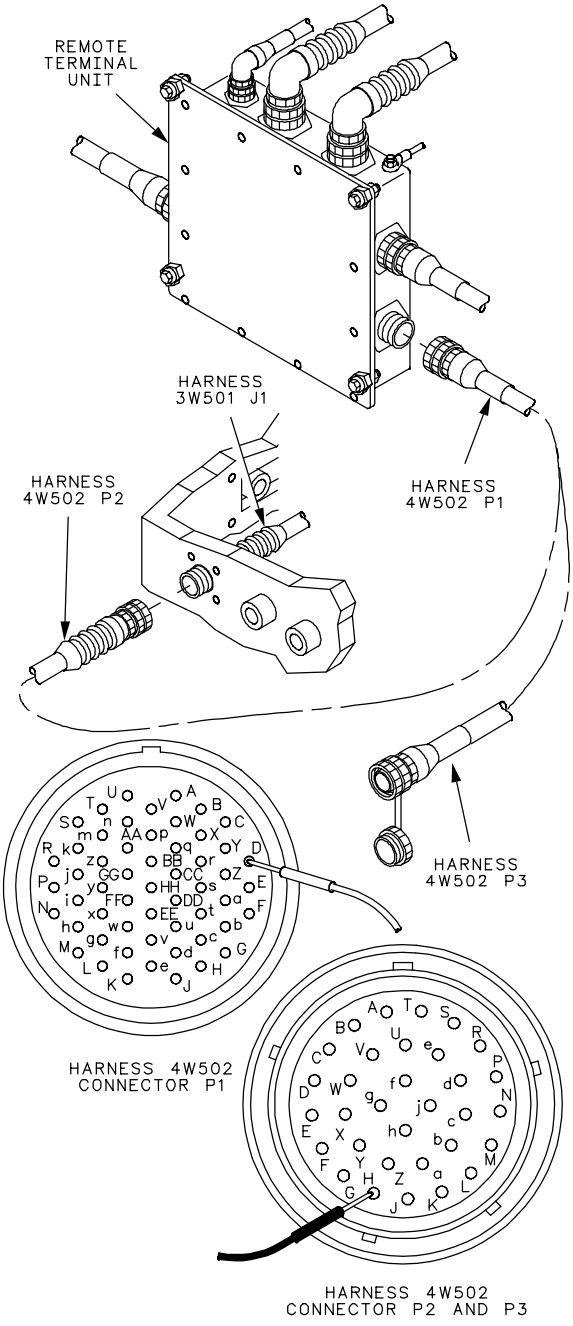
Sensor	Wiring Harness 3W501 Connectors		Wiring Harness 4W502 Connectors		Remote Terminal Connector
3S510	P2-A	J1-a	P2-a	P1-w	
	P2-B	J1-b	P2-b	P1-x	J1
	P2-C	J1-c	P2-c	P1-y	
3S511	P3-A	J1-d	P2-d	P1-z	
	P3-B	J1-e	P2-e	P1-AA	J1
	P3-C	J1-f	P2-f	P1-BB	
3S512	P4-A	J1-g	P2-g	P1-CC	
	P4-B	J1-h	P2-h	P1-DD	J1
	P4-C	J1-j	P2-j	P1-EE	
3MT513	P1-1	J1-H	P2-H	P1-D	
	P1-2	J1-J	P2-J	P1-E	J1
	P1-3	J1-K	P2-K	P1-F	

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0678 00) wiring harness 4W502. Verify fault is corrected.



CONTINUED ON NEXT PAGE

SIGNALS FROM SENSOR IS BELOW ITS VALID RANGE, INDICATES BOTH CIRCUITS ARE OPEN, IS ABOVE ITS VALID RANGE, INDICATES CIRCUITS ARE CLOSED, OR WAS NOT PROCESSED CORRECTLY - CONTINUED

0071 00

CONTINUED FROM STEP D

E

1. Reconnect wiring harness 4W502 connector P1 to remote terminal unit connector J1.
2. Disconnect wiring harness 3W501 from sensor that is failing (WP 0677 00).
3. Use table in step D to conduct a continuity check of wiring harness 3W501 wires that correspond to the sensor that is failing.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0677 00) wiring harness 3W501. Verify fault is corrected.

F

1. Replace sensor that is failing (WP 0691 00).
2. Reconnect wiring harness 4W502 connector P2 to wiring harness 3W501 connector J1 (WP 0678 00).
3. Reconnect wiring harness 3W501 to sensor, if removed (WP 0677 00).
4. Start Enhanced Diagnostics program (WP 0086 00) and run selftest.

Does failing sensor now pass selftest?

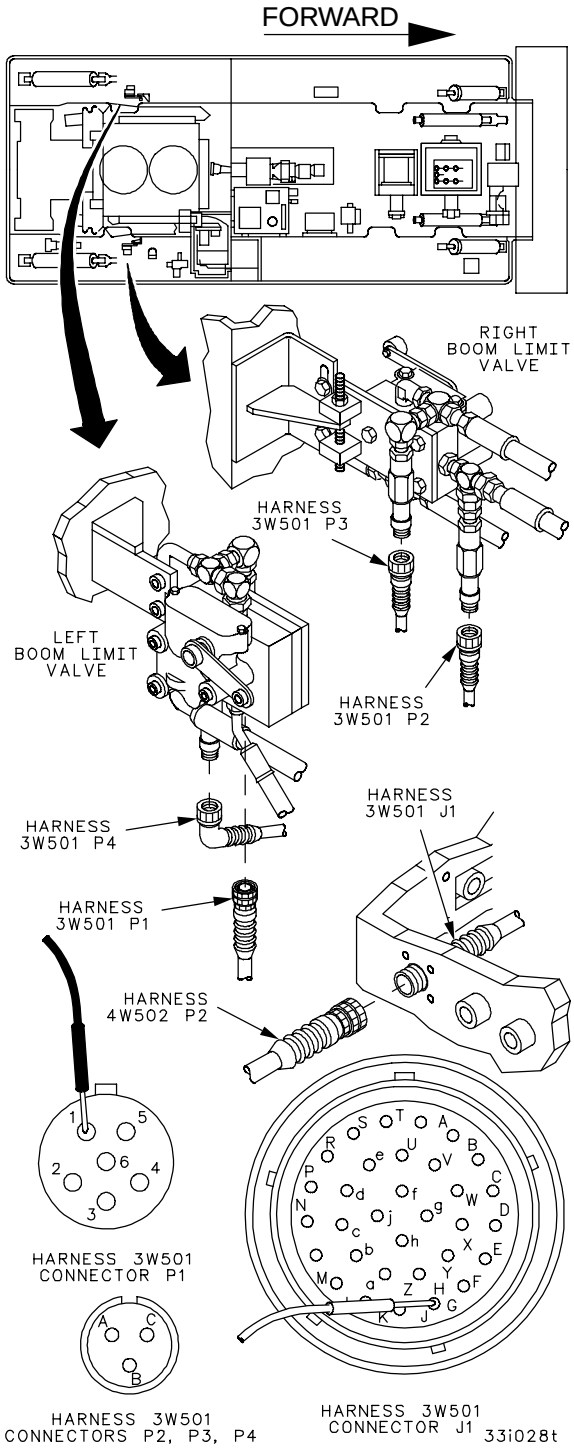
yes

no

Fault corrected.

Replace remote terminal unit (WP 0675 00). Verify fault is corrected.

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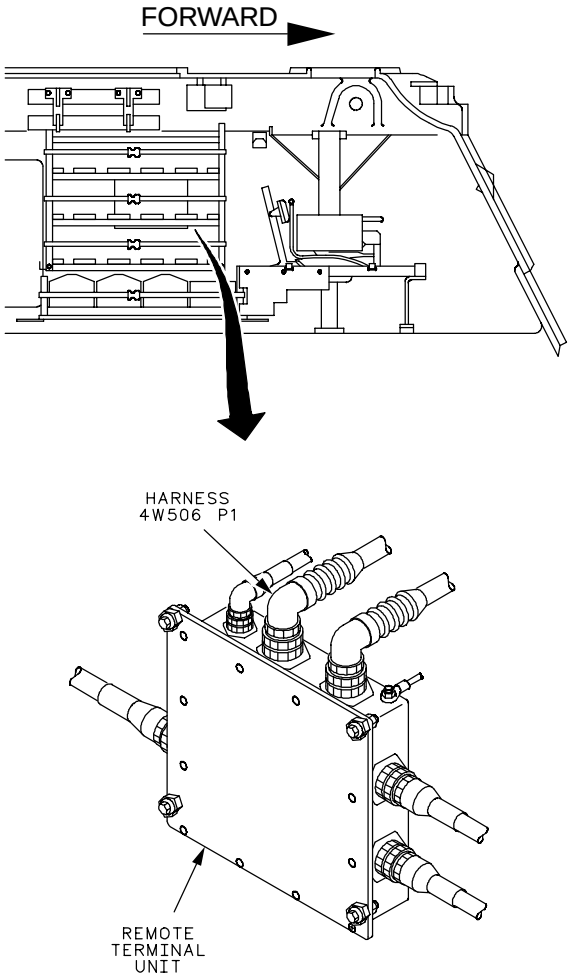
SIGNALS FROM SENSOR IS BELOW ITS VALID RANGE, INDICATES BOTH CIRCUITS ARE OPEN, IS ABOVE ITS VALID RANGE, INDICATES CIRCUITS ARE CLOSED, OR WAS NOT PROCESSED CORRECTLY - CONTINUED

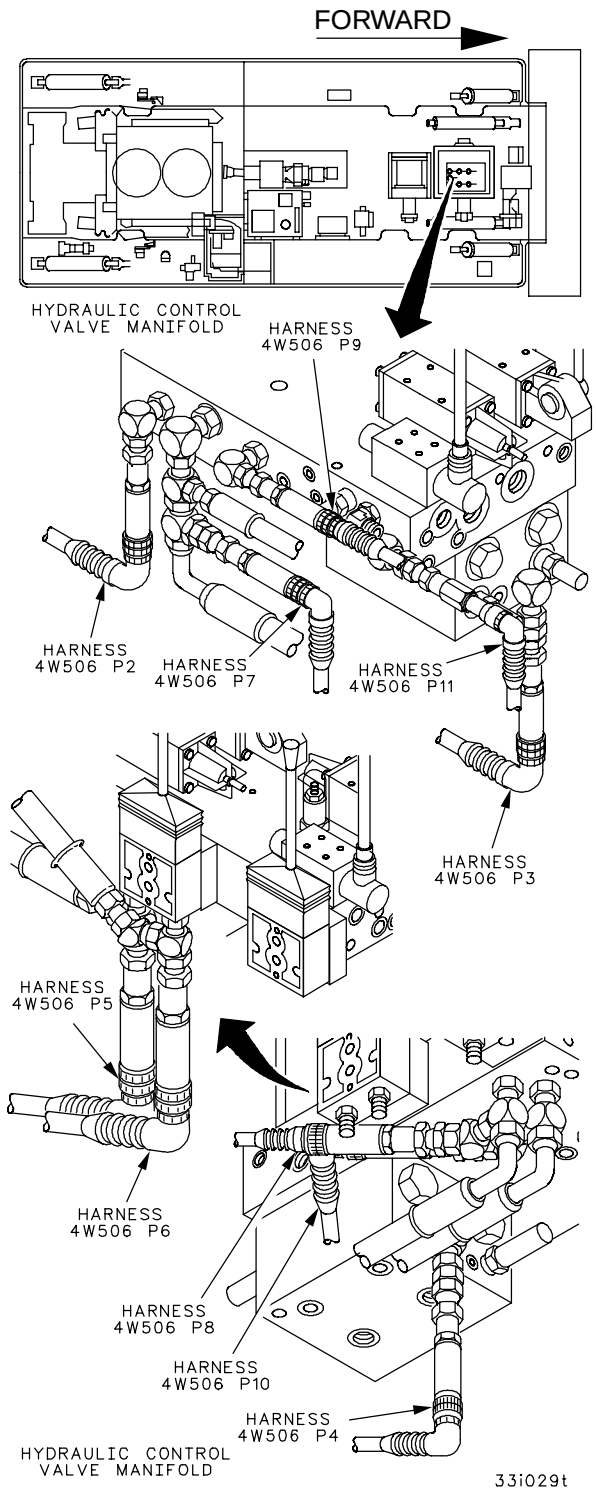
0071 00

CONTINUED FROM STEP F

G

1. Disconnect wiring harness 4W506 connector P1 from remote terminal unit connector J5.
2. Disconnect wiring harness 4W506 from sensor that is failing (WP 0681 00).





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SIGNALS FROM SENSOR IS BELOW ITS VALID RANGE, INDICATES BOTH CIRCUITS ARE OPEN, IS ABOVE ITS VALID RANGE, INDICATES CIRCUITS ARE CLOSED, OR WAS NOT PROCESSED CORRECTLY - CONTINUED

0071 00

CONTINUED FROM STEP F

G

3. Use the following table to conduct a continuity check of wiring harness 4W506 wires that correspond to the sensor that is failing.

Sensor	Wiring Harness 4W506 Connectors		Remote Terminal Connector
4MT514	P10-1	P1-g	
	P10-2	P1-h	J5
	P10-3	P1-I	
4MT515	P9-1	P1-d	
	P9-2	P1-e	J5
	P9-3	P1-f	
4MT516	P8-1	P1-a	
	P8-2	P1-b	J5
	P8-3	P1-c	
4MT517	P6-1	P1-W	
	P6-2	P1-X	J5
	P6-3	P1-Y	
4MT518	P5-1	P1-T	
	P5-2	P1-U	J5
	P5-3	P1-V	
4MT519	P4-1	P1-P	
	P4-2	P1-R	J5
	P4-3	P1-S	
4S520	P11-A	P1-w	
	P11-B	P1-x	J5
	P11-C	P1-y	
4MT521	P7-1	P1-K	
	P7-2	P1-L	J5
	P7-3	P1-M	
4MT522	P3-1	P1-G	
	P3-2	P1-H	J5
	P3-3	P1-J	
4MT523	P2-1	P1-D	
	P2-2	P1-E	J5
	P2-3	P1-F	

Is continuity present?

yes

no

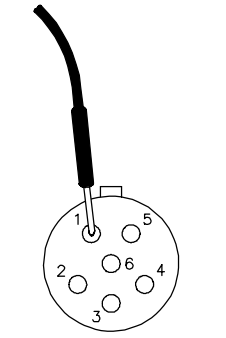
Repair (WP 0290 00) or replace (WP 0681 00) wiring harness 4W506. Verify fault is corrected.

H

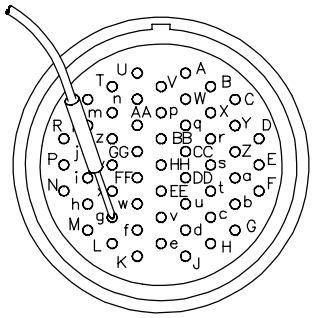
1. Replace sensor that is failing (WP 0684 00).
2. Reconnect wiring harness 4W506 to sensor and remote terminal unit connector J5 (WP 0681 00).
3. Start Enhanced Diagnostics program (WP 0086 00) and run selftest.

Does failing sensor now pass selftest?

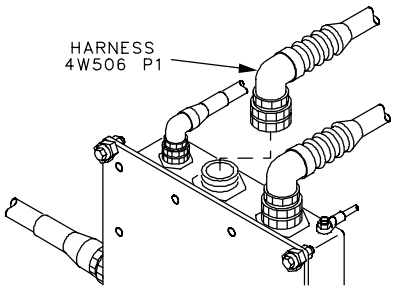
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HARNESS 4W506 CONNECTORS P2, P3, P4, P5, P6, P7, P8, P9, P10, P11



HARNESS 4W506 CONNECTOR P1



REMOTE TERMINAL UNIT

33i030t

SIGNALS FROM SENSOR IS BELOW ITS VALID RANGE, INDICATES BOTH CIRCUITS ARE OPEN, IS ABOVE ITS VALID RANGE, INDICATES CIRCUITS ARE CLOSED, OR WAS NOT PROCESSED CORRECTLY - CONTINUED

0071 00

CONTINUED FROM STEP H

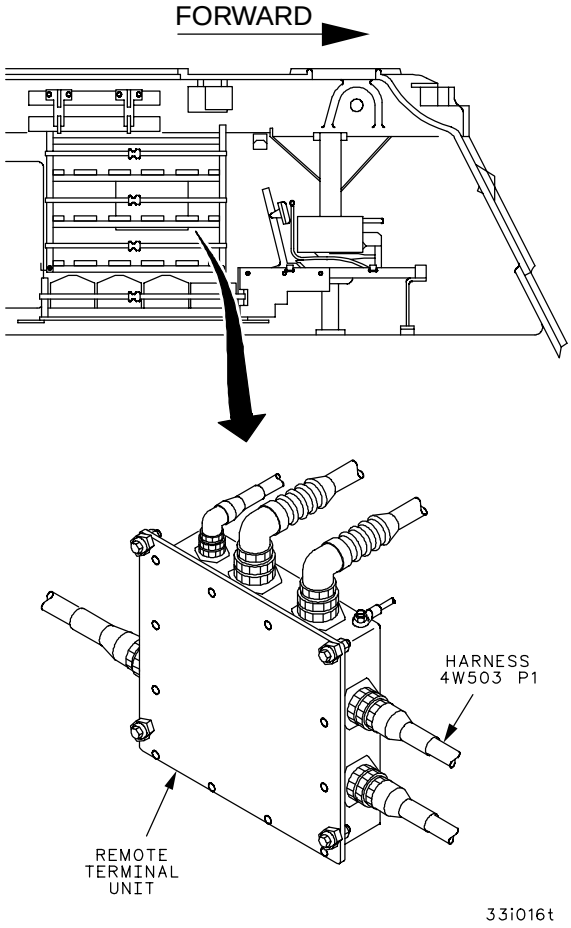
yes

no

Replace remote terminal unit (WP 0675 00). Verify fault is corrected.

I

1. Disconnect wiring harness 4W503 connector P1 from remote terminal unit connector J3.



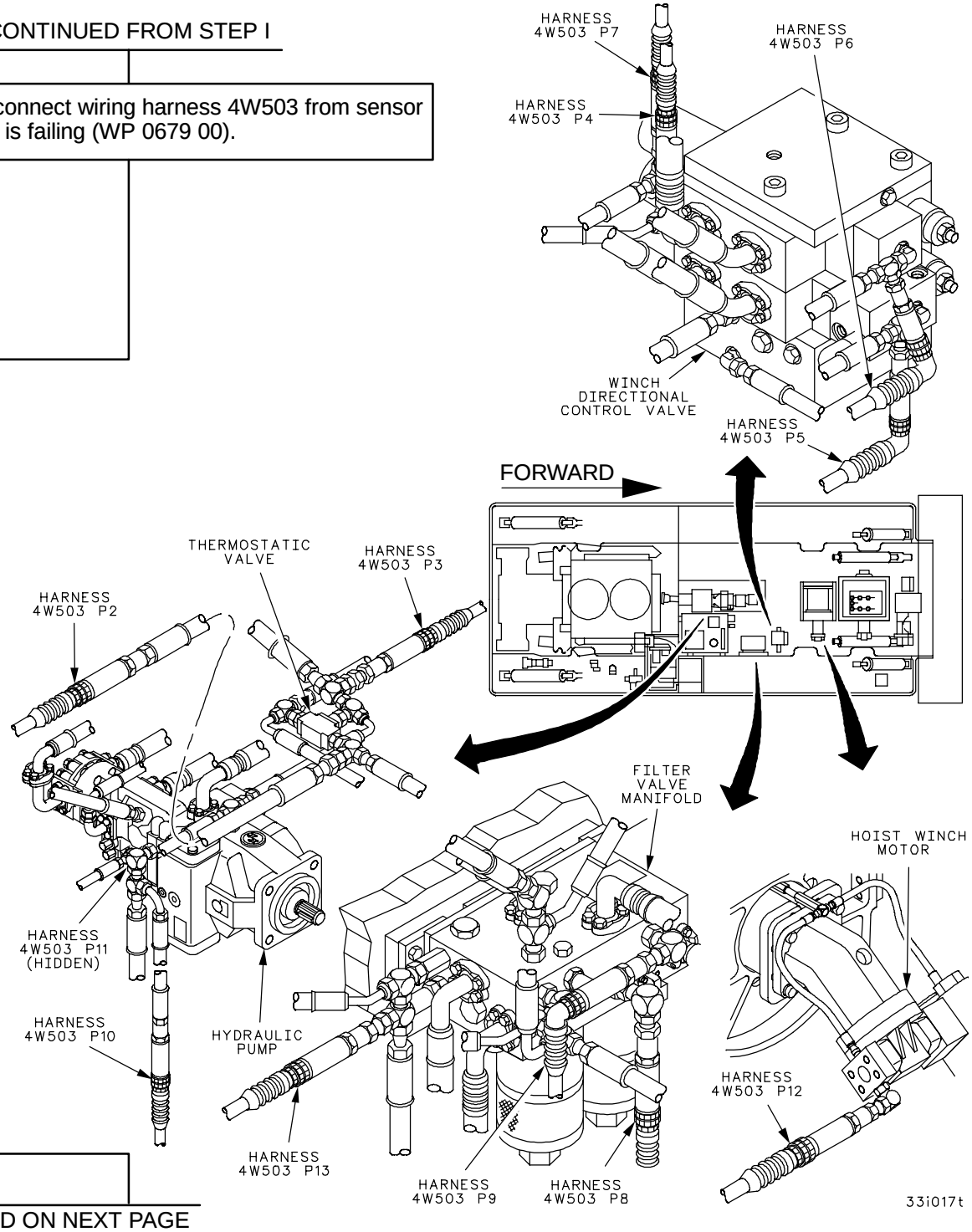
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SIGNALS FROM SENSOR IS BELOW ITS VALID RANGE, INDICATES BOTH CIRCUITS ARE OPEN, IS ABOVE ITS VALID RANGE, INDICATES CIRCUITS ARE CLOSED, OR WAS NOT PROCESSED CORRECTLY - CONTINUED

0071 00

CONTINUED FROM STEP I

I 2. Disconnect wiring harness 4W503 from sensor that is failing (WP 0679 00).



CONTINUED ON NEXT PAGE

SIGNALS FROM SENSOR IS BELOW ITS VALID RANGE, INDICATES BOTH CIRCUITS ARE OPEN, IS ABOVE ITS VALID RANGE, INDICATES CIRCUITS ARE CLOSED, OR WAS NOT PROCESSED CORRECTLY - CONTINUED

0071 00

CONTINUED FROM STEP I

I 3. Use the following table to conduct a continuity check of wiring harness 4W503 wires that correspond to the sensor that is failing.

Sensor	Wiring Harness 4W503 Connectors		Remote Terminal Connector
4MT524	P2-1	P1-D	
	P2-2	P1-E	J3
	P2-3	P1-F	
4MT525	P3-1	P1-G	
	P3-2	P1-H	J3
	P3-3	P1-J	
4S527	P11-A	P1-w	
	P11-B	P1-x	J3
	P11-C	P1-y	
4MT528	P10-1	P1-k	
	P10-2	P1-m	J3
	P10-3	P1-n	
4MT529	P4-1	P1-K	
	P4-2	P1-L	J3
	P4-3	P1-M	
4MT530	P5-1	P1-P	
	P5-2	P1-R	J3
	P5-3	P1-S	
4MT531	P6-1	P1-T	
	P6-2	P1-U	J3
	P6-3	P1-V	
4MT532	P7-1	P1-W	
	P7-2	P1-X	J3
	P7-3	P1-Y	
4MT533	P8-1	P1-a	
	P8-2	P1-b	J3
	P8-3	P1-c	
4MT534	P9-1	P1-d	
	P9-2	P1-e	J3
	P9-3	P1-f	
4MT544	P12-1	P1-g	
	P12-2	P1-h	J3
	P12-3	P1-I	
4MT547	P13-1	P1-s	
	P13-2	P1-t	J3
	P13-3	P1-u	

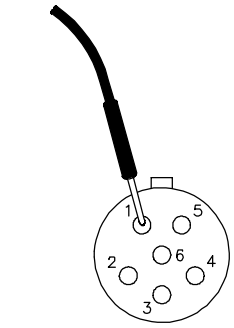
Is continuity present?

yes

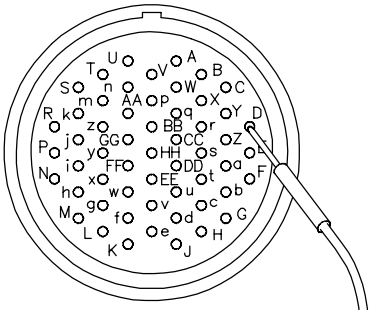
no

Repair (WP 0290 00) or replace (WP 0679 00) wiring harness 4W503. Verify fault is corrected.

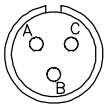
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HARNESS 4W503 CONNECTOR P2, P3, P4, P5, P6, P7, P8, P9, P10, P12, P13



HARNESS 4W503 CONNECTOR P1



HARNESS 4W503 CONNECTOR P11

33i031t

SIGNALS FROM SENSOR IS BELOW ITS VALID RANGE, INDICATES BOTH CIRCUITS ARE OPEN, IS ABOVE ITS VALID RANGE, INDICATES CIRCUITS ARE CLOSED, OR WAS NOT PROCESSED CORRECTLY - CONTINUED

0071 00

CONTINUED FROM STEP I

J

1. Replace sensor that is failing (4MT524 or 4MT525 refer to WP 0684 00, 4S527 or 4MT528 refer to WP 0690 00, 4MT529, 4MT530, 4MT531 or 4MT532 refer to WP 0688 00, 4MT533, 4MT534 or 4MT547 refer to WP 0688 00, or 4MT544 refer to WP 0687 00.
2. Reconnect wiring harness 4W503 to sensor (WP 0679 00).
3. Start Enhanced Diagnostics program (WP 0086 00) and run selftest.

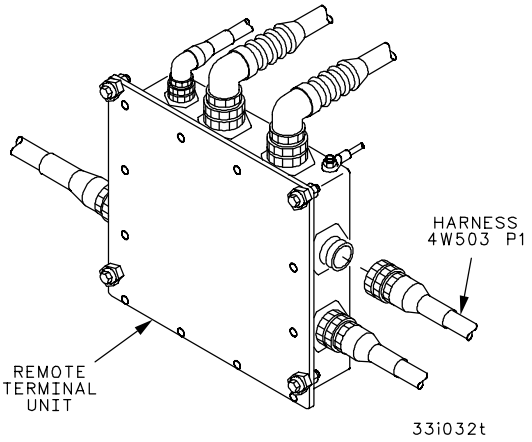
Does failing sensor now pass selftest?

yes

Fault corrected.

no

Replace remote terminal unit (WP 0675 00). Verify fault is corrected.



END OF TASK

EXHAUST SMOKE GENERATING SYSTEM OVERVIEW AND DIAGRAMS. 0072 00

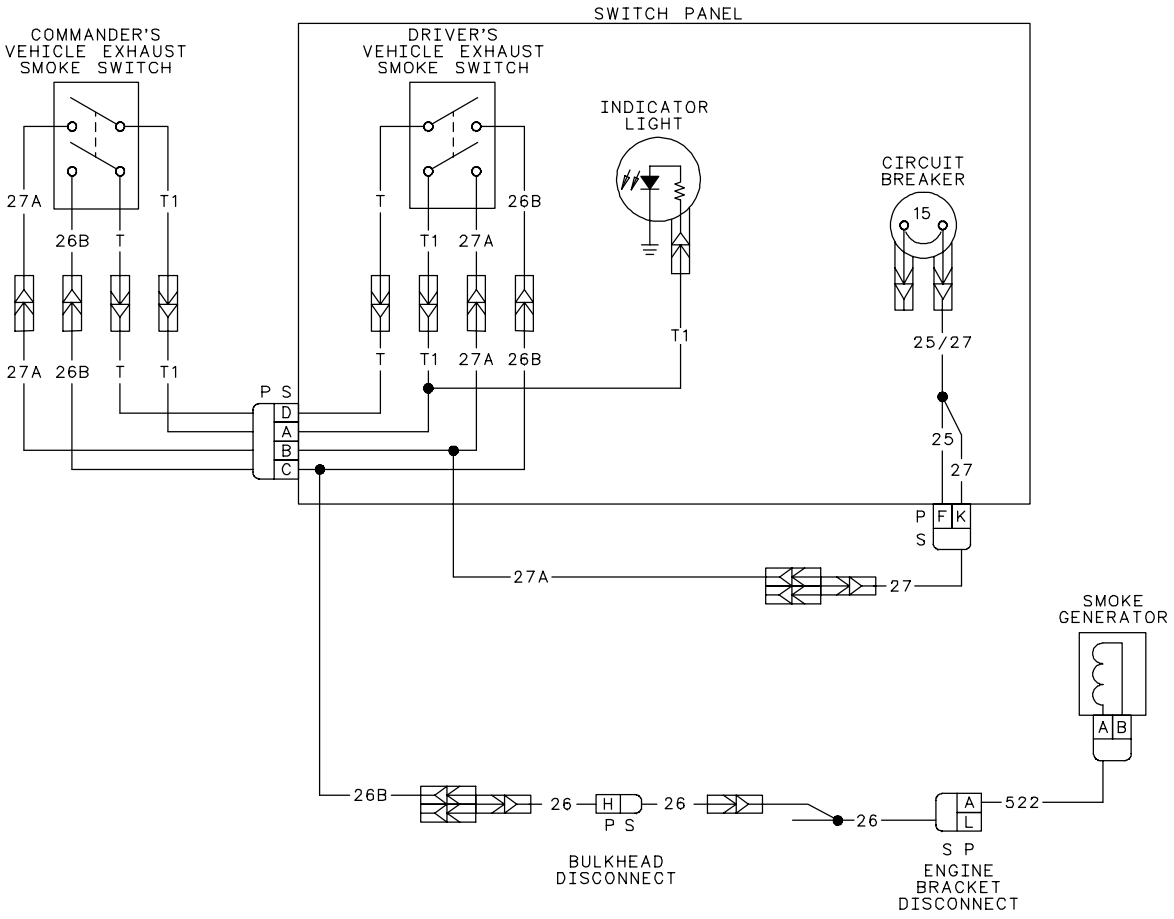
THIS WORK PACKAGE COVERS:

Exhaust Smoke Generating System Overview And Diagrams.

The exhaust smoke generating system consists of the commander's VEHICLE EXHAUST SMOKE switch, the driver's EXHAUST SMOKE switch, EXHAUST SMOKE indicator light, 15-amp circuit breaker, two smoke generators and associated electrical wiring.

When the main engine is running (1600 rpm and above), the exhaust smoke generating system is put in operation when either the commander's VEHICLE EXHAUST SMOKE switch or the driver's EXHAUST SMOKE switch is turned ON. Operating voltage (+28 V dc) is supplied from the main engine generator output system through one or the other of the EXHAUST SMOKE switches to the smoke generators. The VEHICLE EXHAUST SMOKE indicator on the switch panel lights when either of the exhaust smoke switches is set to the ON position. System power (+24 – 28 V dc) is supplied from the master relay circuits through the 15-amp circuit breaker and applicable switch to the indicator.

The relationship of the components of the exhaust smoke generating system are shown below.



END OF TASK

VEHICLE FAILS TO MAKE SMOKE. 0073 00

THIS WORK PACKAGE COVERS:

Vehicle Fails To Make Smoke

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

WARNING

Never operate smoke generating system in a closed in area or with personnel to the rear of the vehicle.

1. Increase engine rpm to 1600 and turn smoke generating system ON (TM 9-2350-292-10).
2. Make sure fuel shutoff valve is open (TM 9-2350-292-10).
3. Reduce engine rpm to 1000 and check BATT/GEN gauge.

Does BATT/GEN gauge read in green region?

yes

no

Go to WP 0082 00.

B

Check fuel hoses, tubes and adapters for looseness and/or damage.

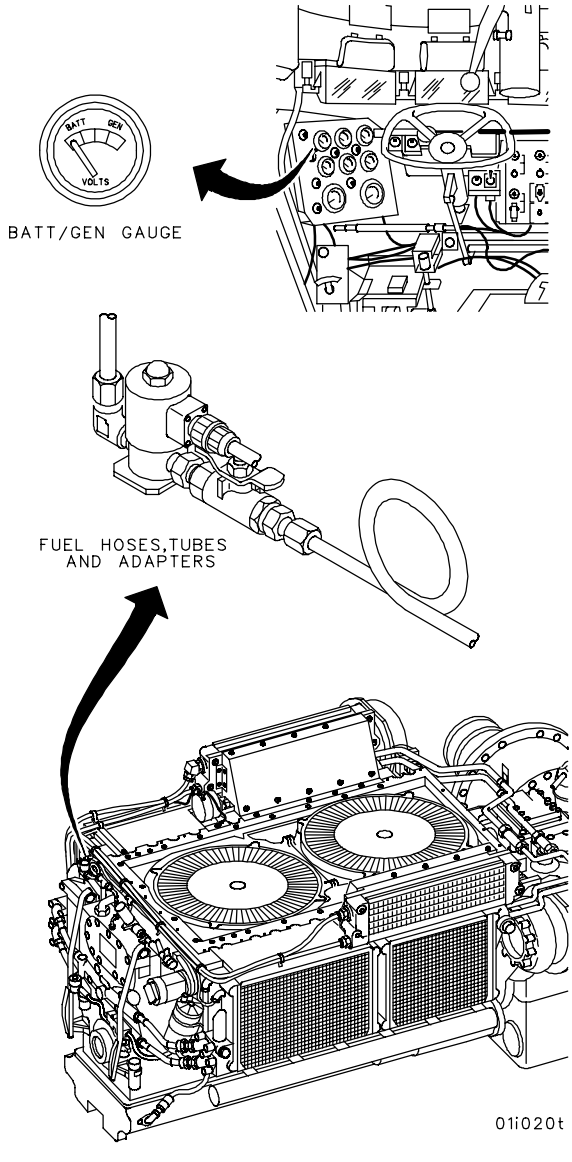
Are hoses, tubes and adapters operational?

yes

no

Repair and replace hoses, tubes and adapters as necessary (WP 0669 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



VEHICLE FAILS TO MAKE SMOKE - CONTINUED 0073 00

CONTINUED FROM STEP B

C

1. Increase rpm to 1600 (TM 9-2350-292-10).
2. Turn smoke generating system ON and OFF (TM 9-2350-292-10) and feel solenoid valve for a click to determine if it activates.

Does solenoid valve activate?

yes

Fault corrected.

no

D

1. Shut engine off and turn MASTER switch OFF (TM 9-2350-292-10).
2. Remove lead connector from solenoid valve.
3. Turn MASTER switch and EXHAUST SMOKE switch ON and start engine (TM 9-2350-292-10).
4. Place multimeter red lead in solenoid valve lead connector socket A and black lead to ground. Check for voltage.
5. Shut engine down (TM 9-2350-292-10).

Is 24 V dc present?

yes

Go to Step G.

no

E

Place one multimeter in solenoid valve lead connector socket B and other lead to ground. Check for continuity.

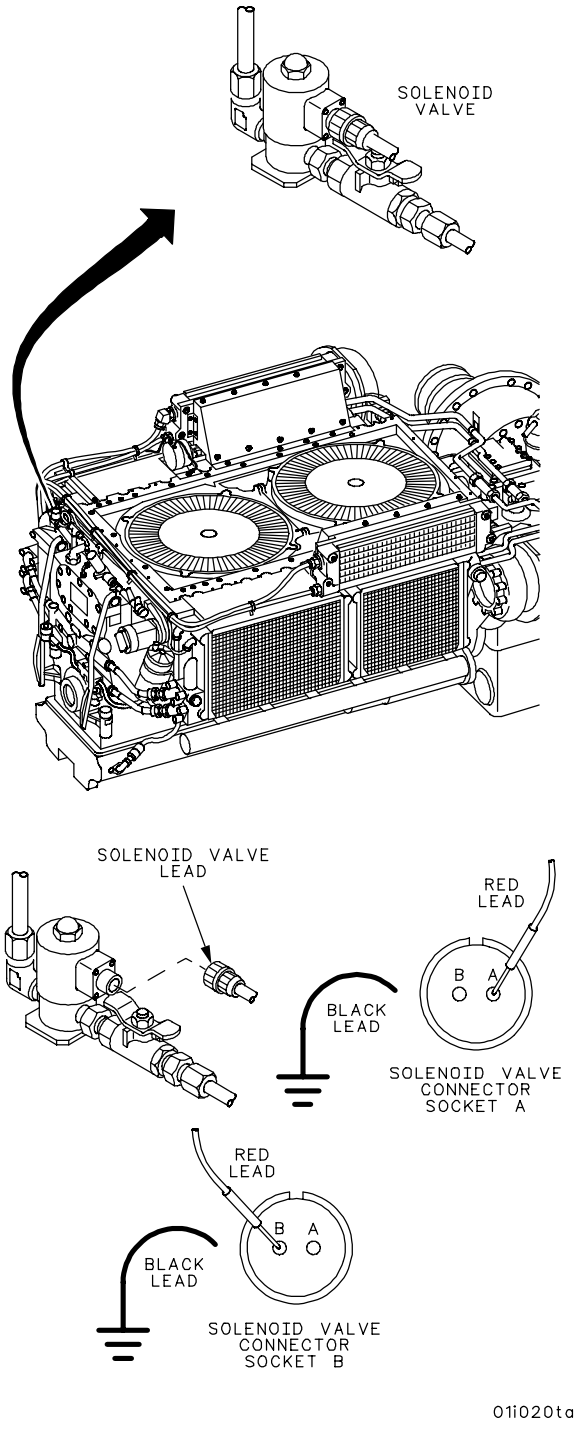
Is continuity present?

yes

Replace solenoid valve (WP 0670 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



VEHICLE FAILS TO MAKE SMOKE - CONTINUED 0073 00

CONTINUED FROM STEP E

F

1. Reconnect lead connector to solenoid valve.
2. Disconnect harness 3W143 P1 at engine disconnect.
3. Place one multimeter lead in harness 3W143 P1 socket V and other lead to ground. Check for continuity.

Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0300 00) ground lead from engine disconnect to solenoid valve. Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0295 00) ground lead from harness 3W143 connector to ground. Verify fault is corrected.

CONTINUED FROM STEP D

G

1. Disconnect harness 3W143 P1 from engine disconnect.
2. Start engine (TM 9-2350-292-10).
3. Place multimeter red lead in harness 3W143 P1 socket A and black lead to ground. Check for voltage.
4. Shut engine down (TM 9-2350-292-10).

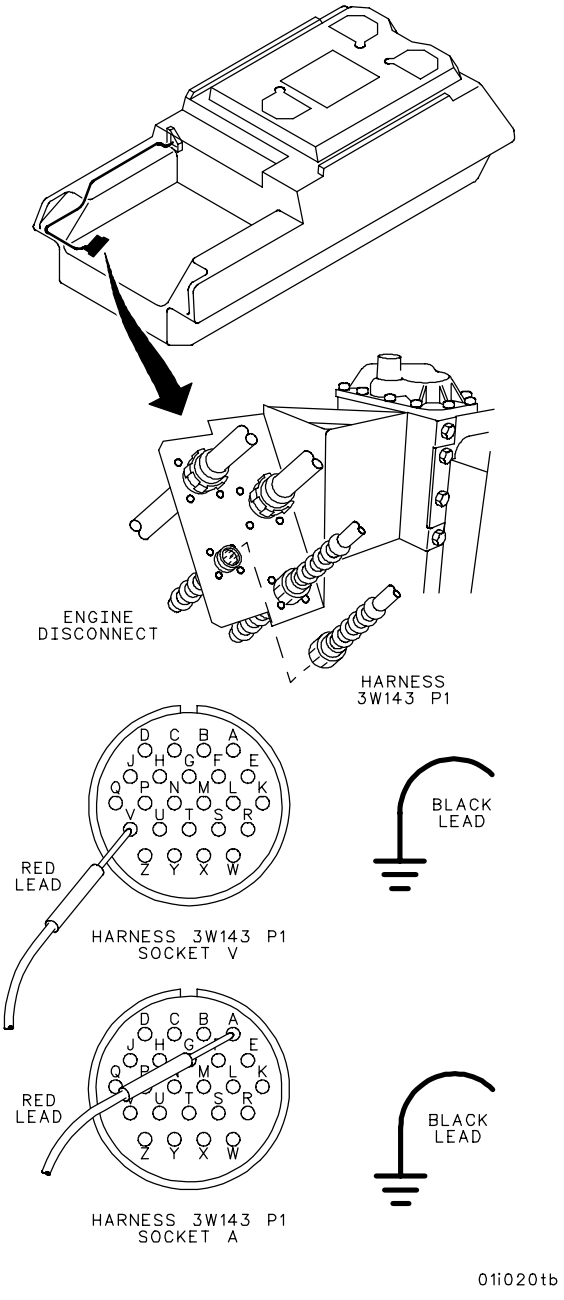
Is 24 V dc present?

yes

Repair (WP 0290 00) or replace (WP 0300 00) lead 522 to solenoid valve from engine disconnect. Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



VEHICLE FAILS TO MAKE SMOKE - CONTINUED 0073 00

CONTINUED FROM STEP G

H

1. Open air intake grilles above battery compartment (TM 9-2350-292-10).
2. Disconnect harness 3W143 P2 from bulkhead disconnect.
3. Start engine (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W103 P3 socket B and black lead to ground. Check for voltage.
5. Shut engine down (TM 9-2350-292-10).

Is 24 V dc present?

yes

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

no

I

1. Reconnect harness 3W143 to engine and bulkhead disconnects.
2. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
3. Disconnect harness 4W106 P1 from switch panel.
4. Start engine (TM 9-2350-292-10).
5. Place multimeter red lead in harness 4W118 J1 socket C and black lead to ground. Check for voltage.
6. Shut engine down (TM 9-2350-292-10).

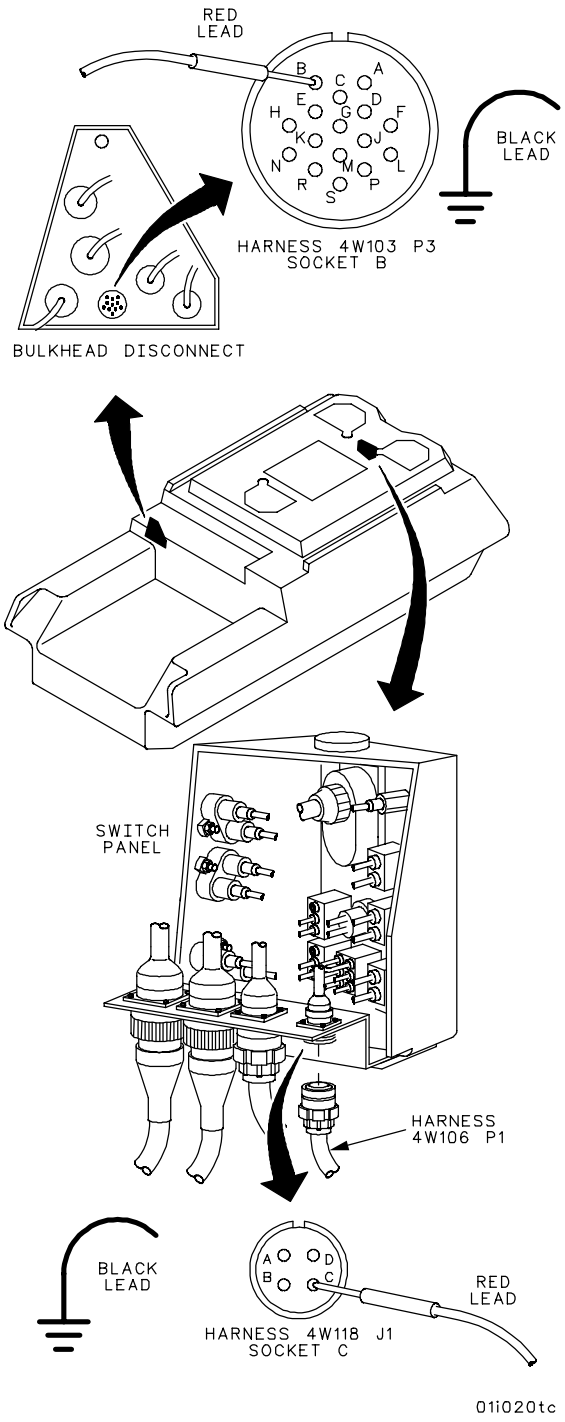
Is 24 V dc present?

yes

Repair (WP 0290 00) or replace (WP 0318 00) lead 26B from harness 4W118 J1 to harness 4W106 connector. Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



VEHICLE FAILS TO MAKE SMOKE - CONTINUED 0073 00

CONTINUED FROM STEP I

J

1. Turn EXHAUST SMOKE switch on switch panel OFF and turn EXHAUST SMOKE switch at commander's switch plate ON (TM 9-2350-292-10).
2. Place one multimeter lead on harness 4W106 P1 pin C and other lead on harness 4W106 P1 pin D. Check for continuity.

Is continuity present?

yes → Go to Step N.

no

K

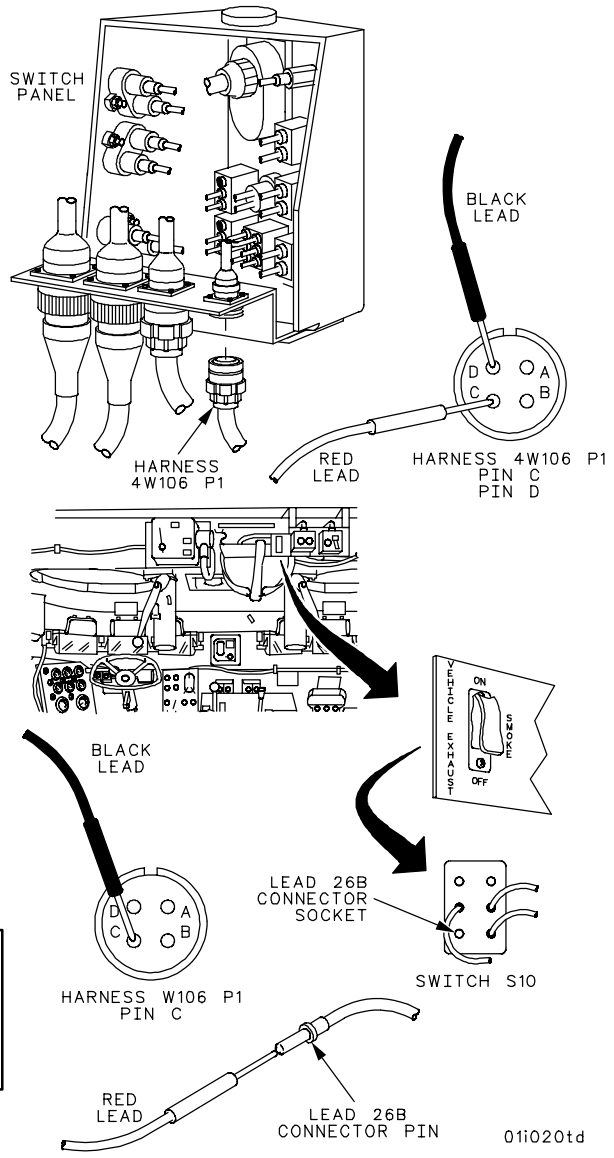
1. Disconnect lead 26B at commander's EXHAUST SMOKE switch connector.
2. Place one multimeter lead on harness 4W106 P1 pin C and other lead on harness 4W106 lead 26B connector pin at commander's EXHAUST SMOKE switch connector. Check for continuity.

Is continuity present?

yes

no → Repair (WP 0290 00) or replace (WP 0318 00) harness 4W106. Verify fault is corrected.

CONTINUED ON NEXT PAGE



VEHICLE FAILS TO MAKE SMOKE - CONTINUED 0073 00

CONTINUED FROM STEP K

L

1. Disconnect lead T at switch S10 connector.
2. Place one multimeter lead in lead 26B connector socket and other lead in lead T connector socket. Check for continuity.

Is continuity present?

yes

no

Replace commander's EXHAUST SMOKE switch (WP 0259 00). Verify fault is corrected.

M

Place one multimeter lead in lead T connector at commander's EXHAUST SMOKE switch and place other lead on pin D of harness 4W106 P1. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0318 00) harness 4W106. Verify fault is corrected.

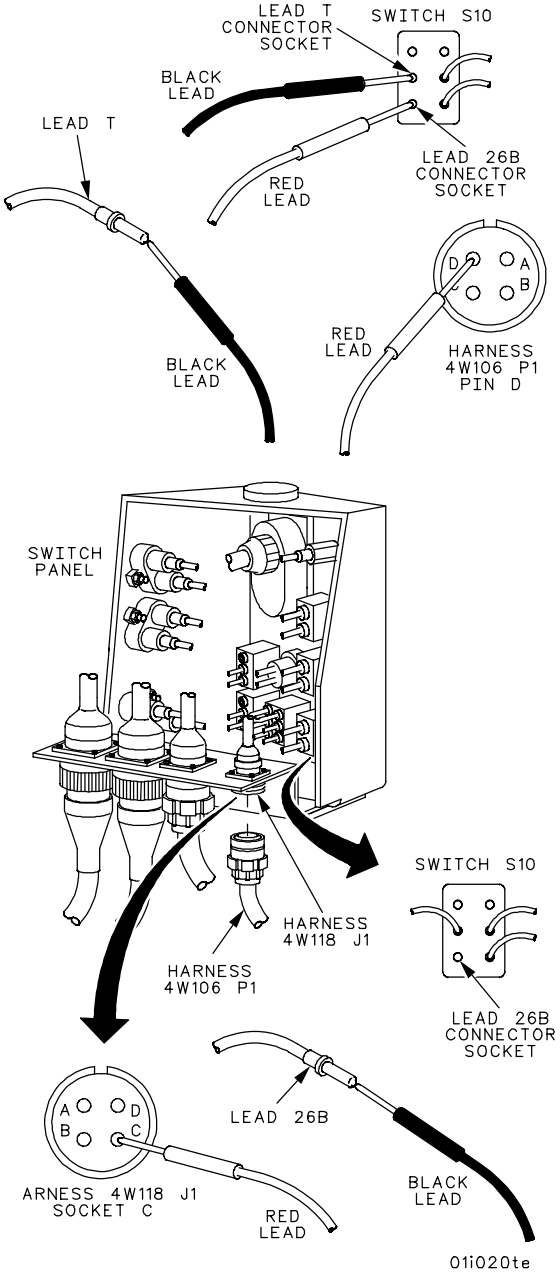
CONTINUED FROM STEP J

N

1. Reconnect lead T at commander's EXHAUST SMOKE switch.
2. Disconnect lead 26B at driver's EXHAUST SMOKE switch.
3. Turn OFF commander's EXHAUST SMOKE switch and turn ON driver's EXHAUST SMOKE switch (TM 9-2350-292-10).
4. Place one multimeter lead in harness 4W118 J1 socket C and other lead on lead 26B switch connector pin. Check for continuity.

Is continuity present?

CONTINUED ON NEXT PAGE



H

VEHICLE FAILS TO MAKE SMOKE - CONTINUED 0073 00

CONTINUED FROM STEP N

yes / no

Repair (WP 0290 00) or replace (WP 0242 00) lead 26B from harness 4W118 J1 pin C to switch connector. Verify fault is corrected.

O

1. Disconnect lead T at driver's EXHAUST SMOKE switch connector.
2. Place one multimeter lead in driver's EXHAUST SMOKE switch lead 26B connector socket and other lead in driver's EXHAUST SMOKE switch lead T connector socket. Check for continuity.

Is continuity present?

yes / no

Replace driver's EXHAUST SMOKE switch (WP 0259 00). Verify fault is corrected.

P

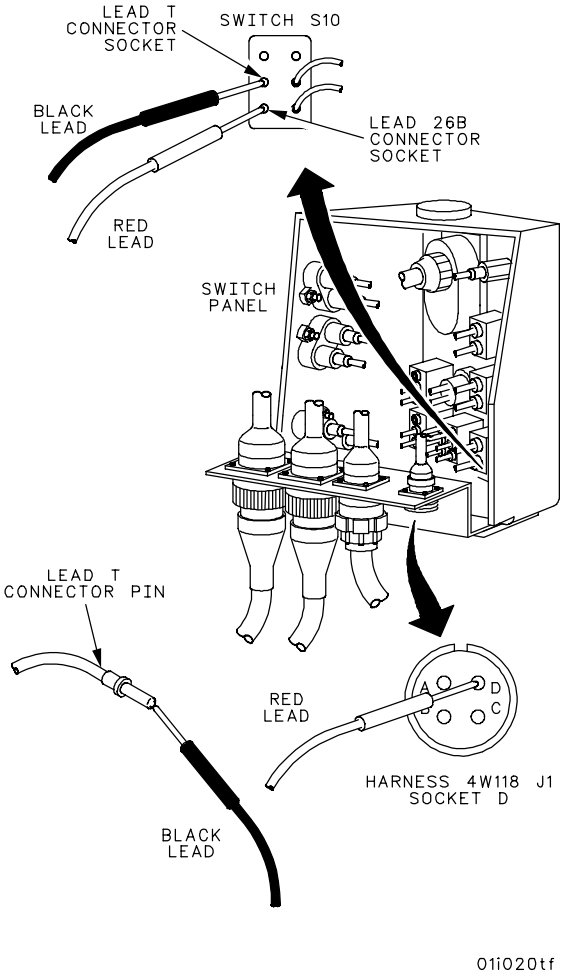
1. Reconnect lead 26B at driver's EXHAUST SMOKE switch.
2. Place one multimeter lead on lead T connector pin and other lead on harness 4W118 J1 socket D. Check for continuity.

Is continuity present?

yes / no

Repair (WP 0290 00) or replace (WP 0242 00) lead T from harness 4W118 J1 to switch S10 connector. Verify fault is corrected.

CONTINUED ON NEXT PAGE



VEHICLE FAILS TO MAKE SMOKE - CONTINUED 0073 00

CONTINUED FROM STEP P

Q

1. Reconnect lead T at driver's EXHAUST SMOKE switch connector.
2. Disconnect harness 3W143 P2 at bulkhead disconnect.
3. Place one multimeter lead on harness 4W106 P1 pin D and other lead in harness 4W103 P3 socket B. Check for continuity.

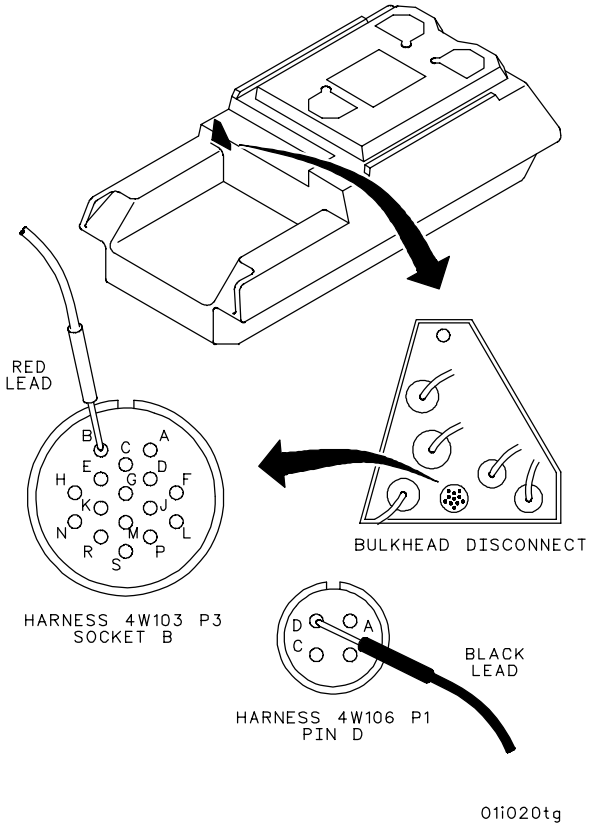
Is continuity present?

yes

Fault corrected.

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.



END OF TASK

VEHICLE PRODUCES POOR QUALITY SMOKE OR INSUFFICIENT QUANTITY OF SMOKE. 0074 00

THIS WORK PACKAGE COVERS:

Vehicle Produces Poor Quality Smoke Or Insufficient Quanity Of Smoke

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

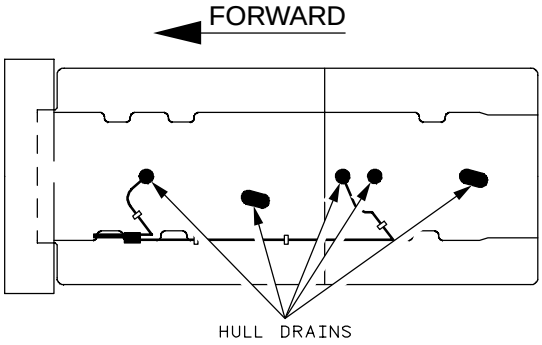
A Check for ruptured fuel hoses and/or loose fuel connections by looking for fuel running out of hull drains.

Is fuel running out of hull drains?

yes

Replace ruptured hose and/or tighten loose connections (WP 0669 00). Verify fault is corrected.

no



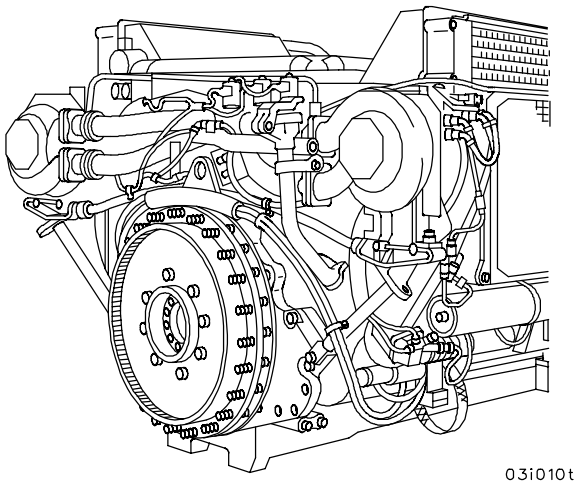
B Inspect fuel tubes for plugs, pinches and/or damage.

Are tubes plugged, pinched and/or damaged?

yes

Replace fuel tubes (WP 0669 00). Verify fault is corrected.

no



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VEHICLE PRODUCES POOR QUALITY SMOKE OR INSUFFICIENT QUANTITY OF SMOKE - CONTINUED

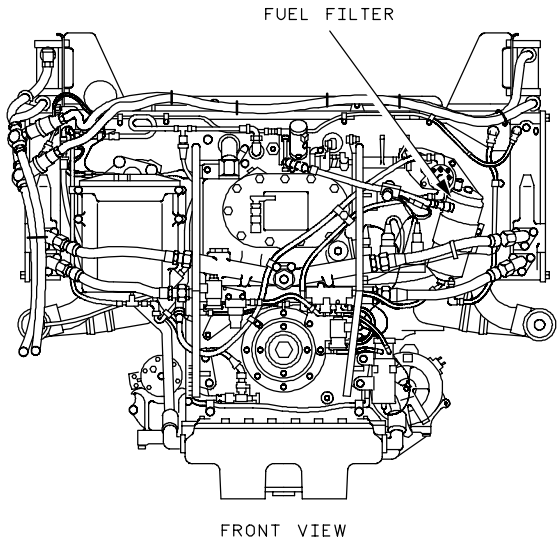
0074 00

CONTINUED FROM STEP B

C Check primary fuel filter for contamination.

Is fuel filter contaminated?

- yes: Replace fuel filter (WP 0222 00). Verify fault is corrected.
- no: Fault corrected.



03i011t

END OF TASK

VEHICLE PRODUCES SMOKE WHEN EXHAUST SMOKE SWITCHES ARE OFF 0075 00

THIS WORK PACKAGE COVERS:

Vehicle Produces Smoke When Exhaust Smoke Switches Are Off

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

1. Disconnect lead 522 from smoke generating solenoid valve.
2. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
3. Disconnect harness 4W106 P1 from switch panel and commander's switch.
4. Start engine (TM 9-2350-292-10).
5. Place multimeter red lead in lead 522 solenoid connector socket A and black lead to ground. Check for voltage.
6. Shut engine down (TM 9-2350-292-10).

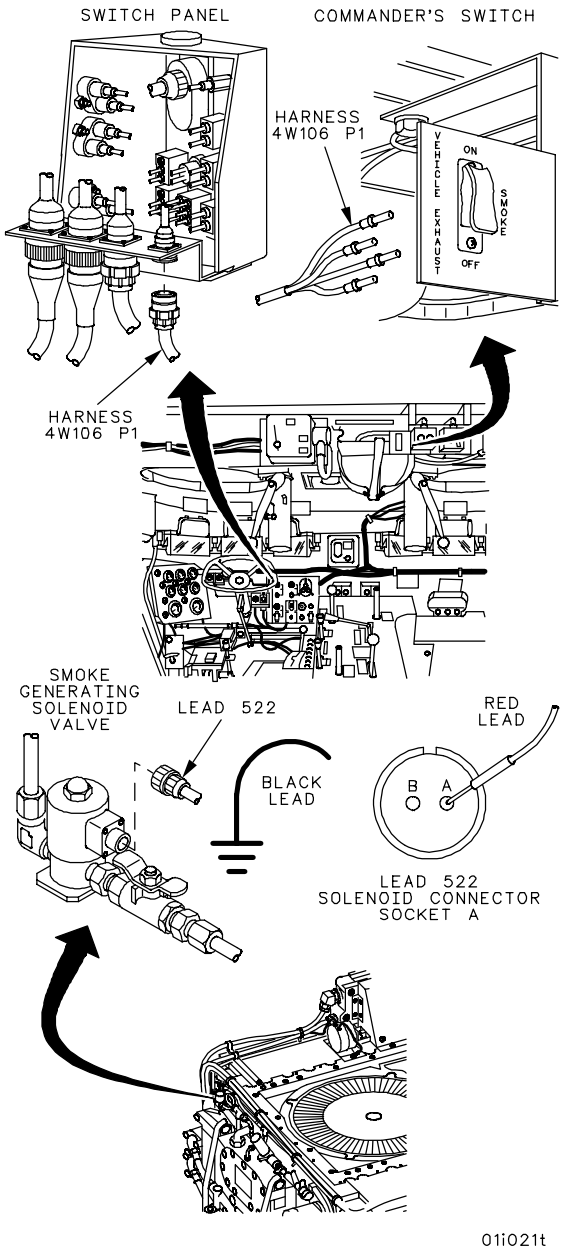
Is 24 V dc present?

yes

Fault corrected.

no

Replace solenoid valve (WP 0670 00). Verify fault is corrected.



END OF TASK

EXHAUST SMOKE INDICATOR LIGHTS FAIL TO OPERATE 0076 00

THIS WORK PACKAGE COVERS:

Smoke Indicator Lights Fail To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Switch panel removed from bracket (WP 0242 00) and ground strap reconnected to switch panel

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 4W106 P1 from switch panel.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W118 J1 socket B and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes → Go to Step H.

no

B

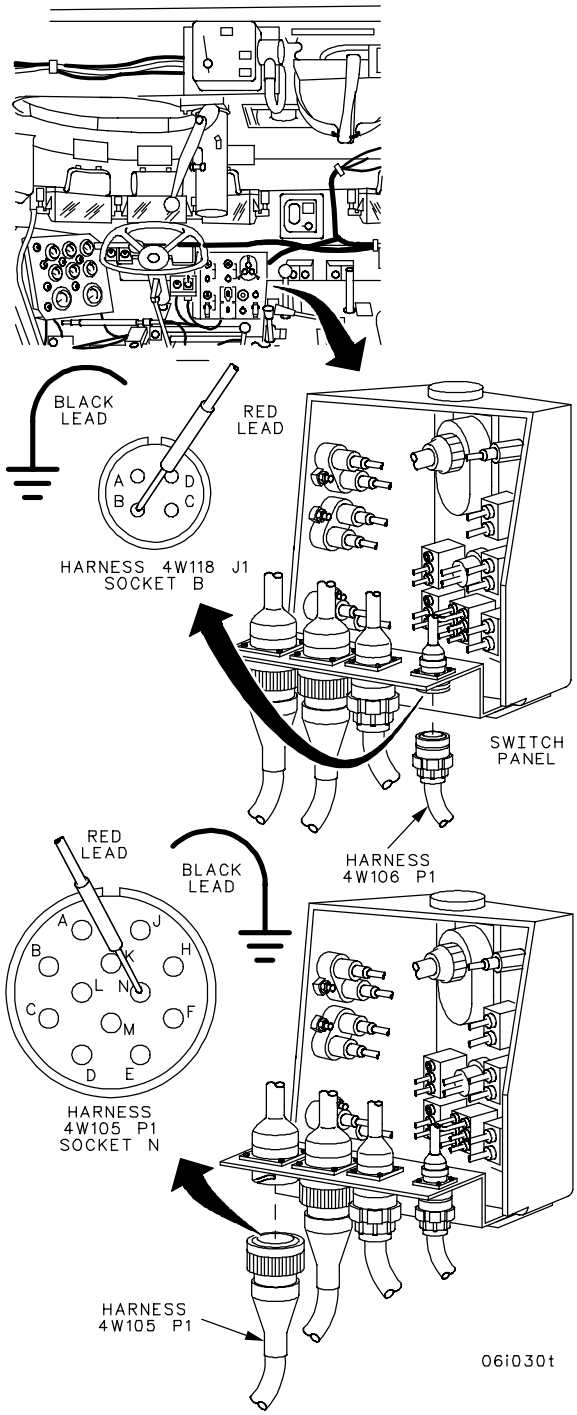
1. Disconnect harness 4W105 P1 from switch panel.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in socket N of harness 4W105 P1 and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no → Repair (WP 0290 00) or replace (WP 0314 00) harness 4W100. Verify fault is corrected.

CONTINUED ON NEXT PAGE



EXHAUST SMOKE INDICATOR LIGHTS FAIL TO OPERATE - CONTINUED 0076 00

CONTINUED FROM STEP B

C

1. Disconnect lead 10 from CB6.
2. Place one multimeter lead on harness 4W151 J4 pin N and other lead in lead 10 CB6 connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 10 to CB6. Verify fault is corrected.

D

1. Disconnect lead 25/27 from CB6.
2. Place one multimeter lead on each CB6 connector pin. Check for continuity.

Is continuity present?

yes

no

Replace CB6 (WP 0242 00). Verify fault is corrected.

E

1. Reconnect lead 10 to CB6.
2. Place one multimeter lead in lead 25/27 CB6 connector socket and other lead in harness 4W151 J4 pin K. Check for continuity.

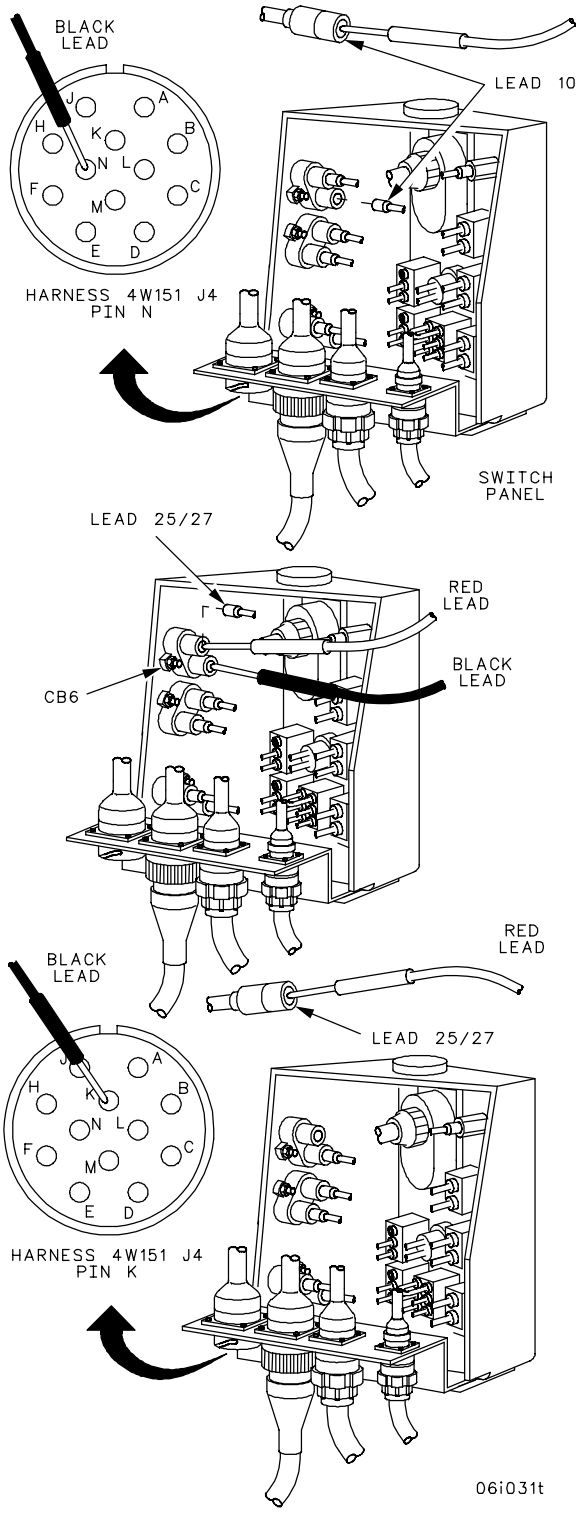
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 25/27. Verify fault is corrected.

CONTINUED ON NEXT PAGE



EXHAUST SMOKE INDICATOR LIGHTS FAIL TO OPERATE - CONTINUED 0076 00

CONTINUED FROM STEP E

F

1. Reconnect lead 25/27 to CB6.
2. Place one multimeter lead in harness 4W105 P1 socket K and other lead in harness 4W118 J1 socket B. Check for continuity.

Is continuity present?

yes — no

Repair (WP 0290 00) or replace (WP 0242 00) lead 27/27A. Verify fault is corrected.

G

1. Reconnect harness 4W105 P1 to switch panel.
2. Turn driver's EXHAUST SMOKE switch ON (TM 9-2350-292-10).
3. Place one multimeter lead in harness 4W118 J1 socket A and other lead in socket B. Check for continuity.
4. Turn driver's EXHAUST SMOKE switch OFF (TM 9-2350-292-10).

Is continuity present?

yes — no

Go to Step K.

CONTINUED FROM STEP A

H

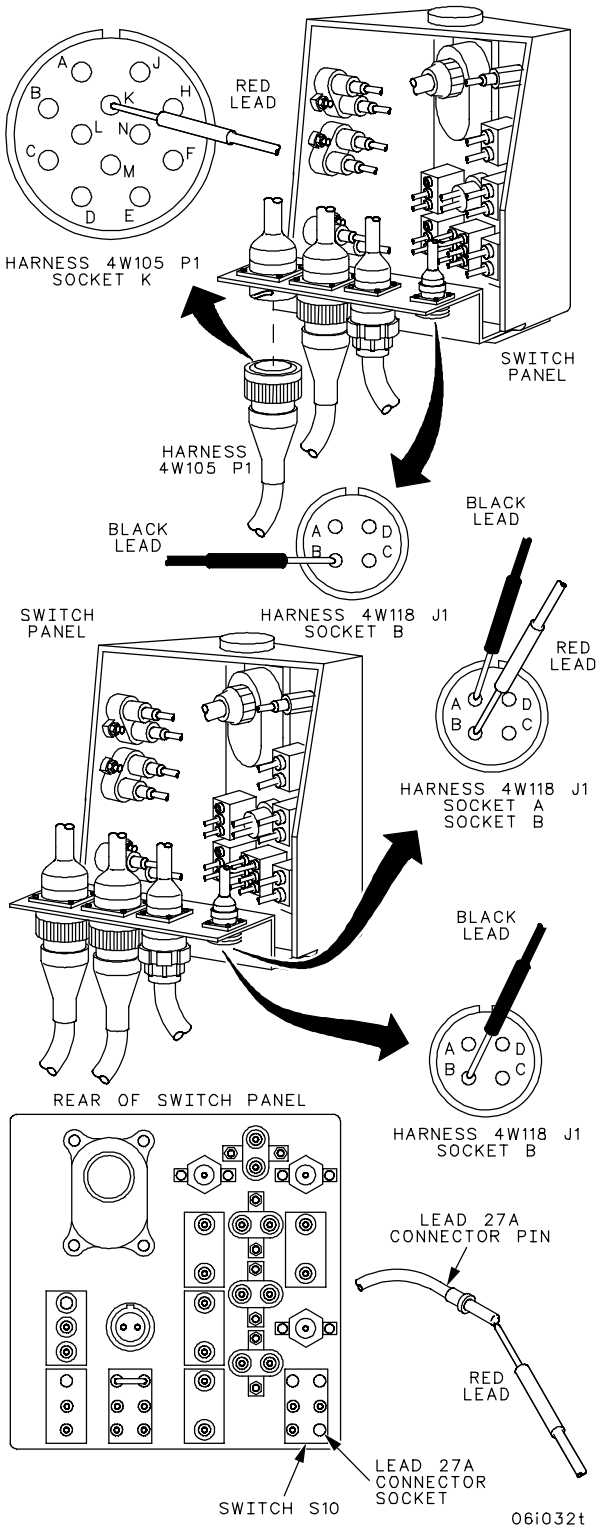
1. Disconnect lead 27A from switch S10 connector.
2. Place one multimeter lead in harness 4W118 J1 socket B and other lead on lead 27A connector pin. Check for continuity.

Is continuity present?

yes — no

Repair (WP 0290 00) or replace (WP 0242 00) lead 27A to switch S10. Verify fault is corrected.

CONTINUED ON NEXT PAGE



EXHAUST SMOKE INDICATOR LIGHTS FAIL TO OPERATE - CONTINUED 0076 00

CONTINUED FROM STEP H

I

1. Disconnect lead T1 from switch S10 connector.
2. Place one multimeter lead on switch S10 connector socket for leads 27A and T1. Check for continuity.

Is continuity present?

yes

no

Replace driver's EXHAUST SMOKE switch (WP 0259 00). Verify fault is corrected.

J

1. Reconnect lead 27A to switch S10.
2. Place one multimeter lead on lead T1 connector pin and other lead in harness 4W118 J1 socket A. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead T1 to switch S10. Verify fault is corrected.

CONTINUED FROM STEP G

K

1. Reconnect lead T1 to switch S10.
2. Disconnect lead T2 from indicator L3.
3. Place one multimeter lead in lead T2 L3 connector socket and other lead in harness 4W118 J1 socket A. Check for continuity.

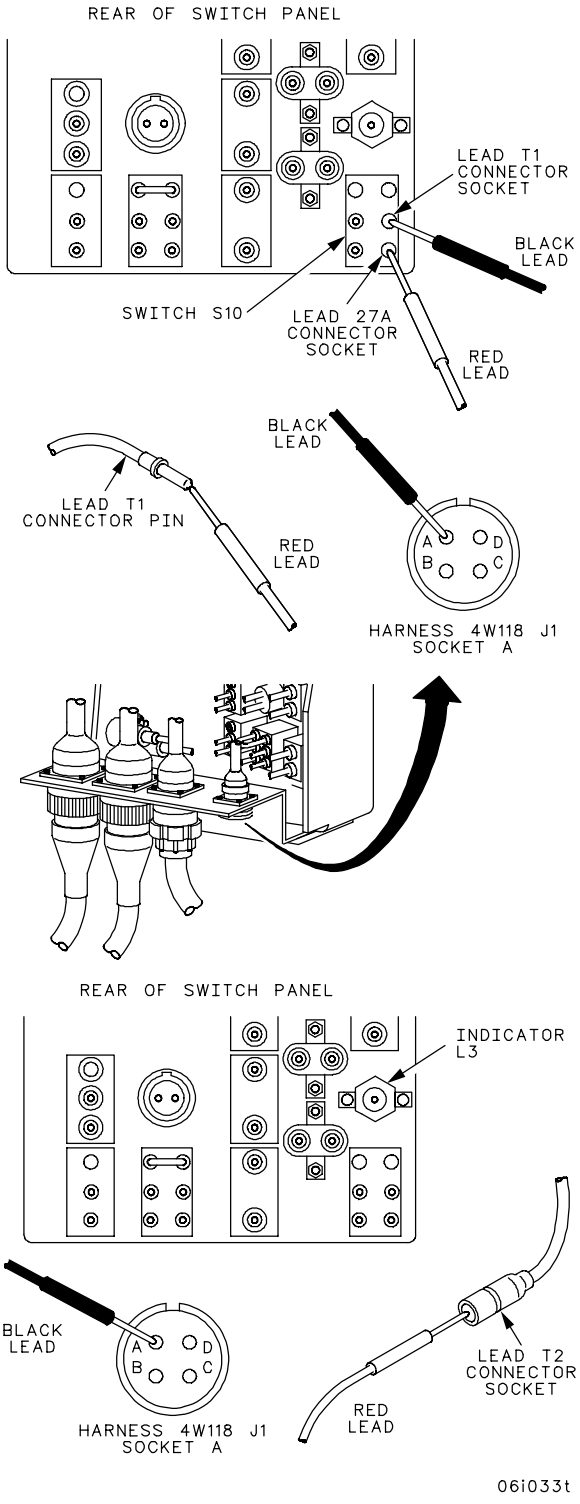
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead T2 to indicator L3 connector. Verify fault is corrected.

CONTINUED ON NEXT PAGE



EXHAUST SMOKE INDICATOR LIGHTS FAIL TO OPERATE - CONTINUED 0076 00

CONTINUED FROM STEP K

L

1. Reconnect lead T2 to indicator L3.
2. Turn driver's EXHAUST SMOKE switch OFF (TM 9-2350-292-10).
3. Turn commander's EXHAUST SMOKE switch ON (TM 9-2350-292-10).
4. Place one multimeter lead on harness 4W106 P1 pin A and other lead on pin B. Check for continuity.

Is continuity present?

yes

Replace indicator L3 assembly (WP 0242 00). Verify fault is corrected.

no

M

1. Disconnect lead 27A from commander's EXHAUST SMOKE switch.
2. Place one multimeter lead in lead 27A switch connector socket and other lead on harness 4W106 P1 pin B. Check for continuity.

Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0242 00) lead 27A to switch. Verify fault is corrected.

no

N

1. Disconnect lead T1 from commander's EXHAUST SMOKE switch.
2. Place one multimeter lead on commander's EXHAUST SMOKE switch lead T1 connector pin and other lead in lead 27A connector socket. Check for continuity.

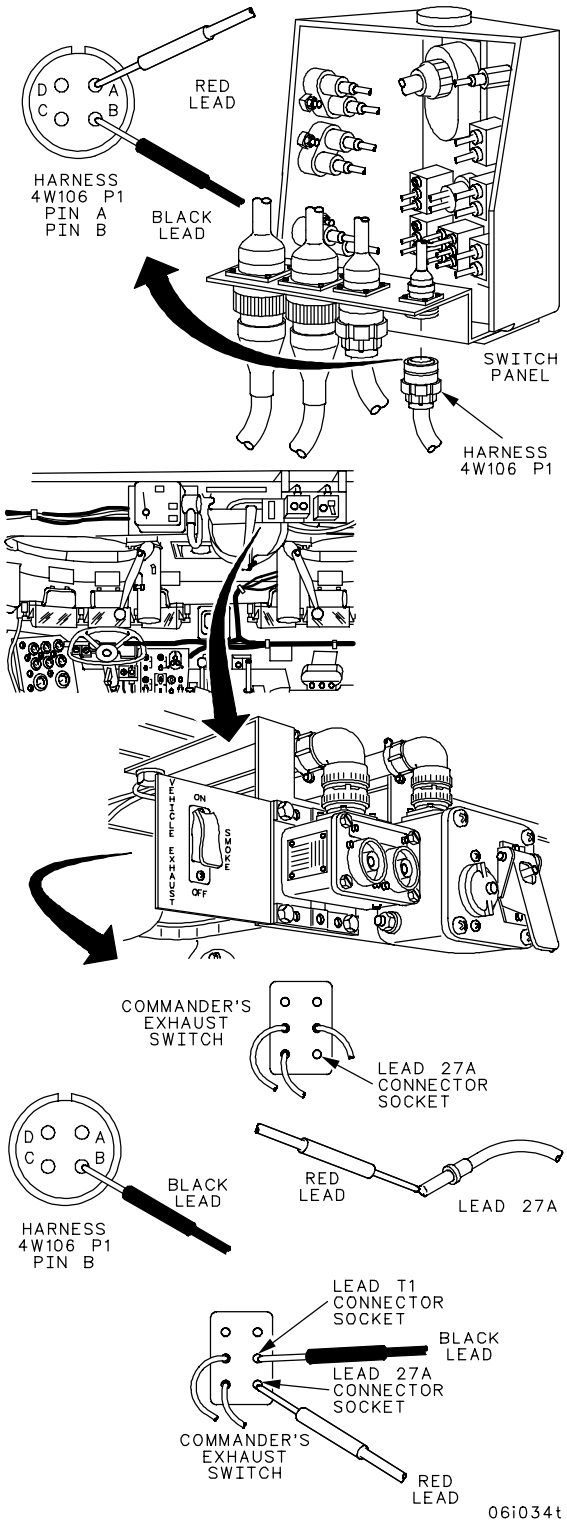
Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0242 00) lead T1 to switch. Verify fault is corrected.

no

Replace commander's EXHAUST SMOKE switch (WP 0259 00). Verify fault is corrected.



END OF TASK

GAS PARTICULATE SYSTEM OVERVIEW AND DIAGRAMS 0077 00

THIS WORK PACKAGE COVERS:

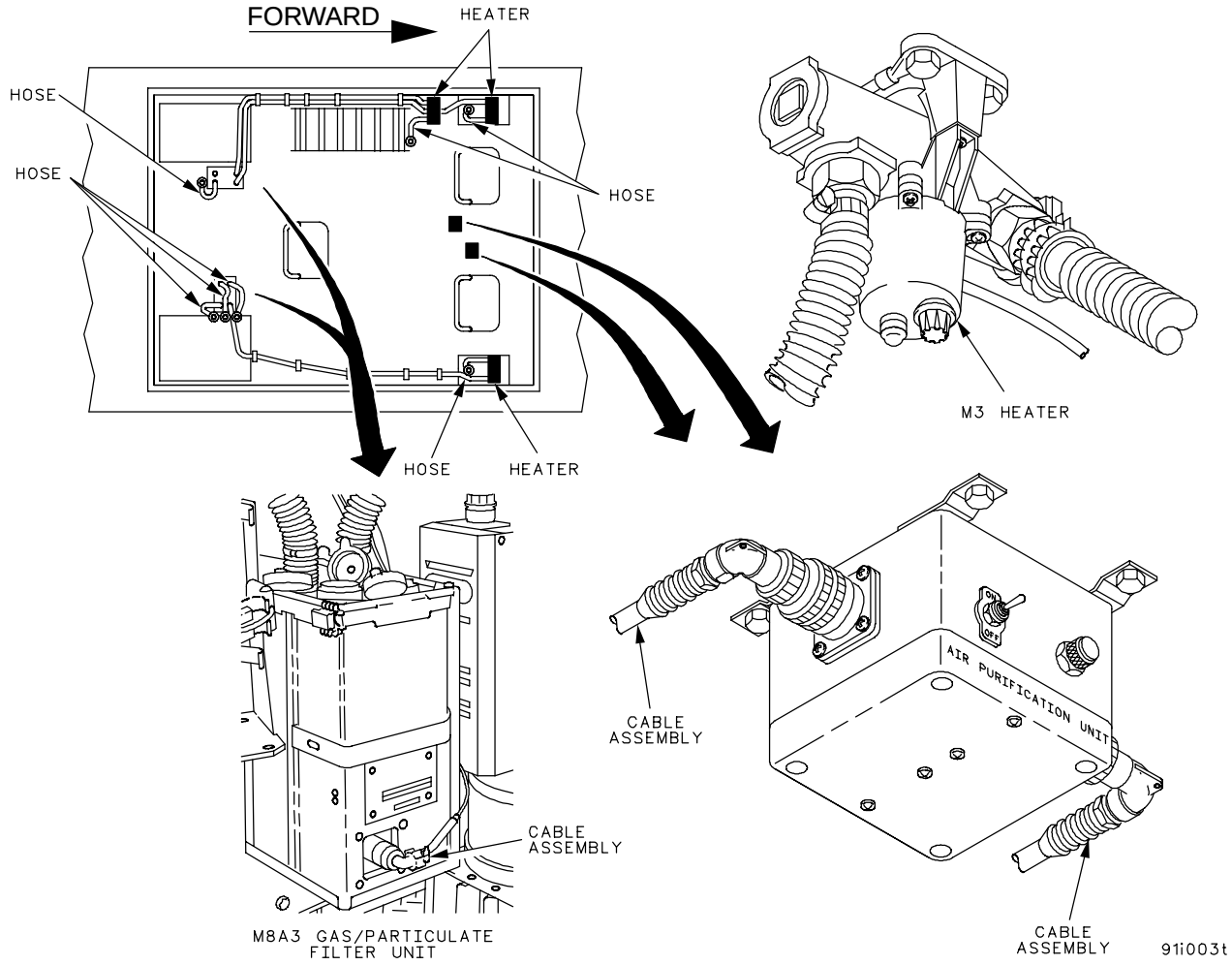
Gas Particulate System Overview And Diagrams

There are two M3A3 gas/particulate filters and three M3 heater units in the vehicle. Each gas/particulate filter unit supplies filtered air to up to 4 persons in the crew compartment. The unit removes all known chemical agents, dust and other particles from the air. Filtered air is supplied from a M2A2 air purifier through hoses to a M25A1 mask worn at the crew member or passenger station. The M2A2 air purifier has an M13 particulate filter, an M12A1 gas filter, and an M1A1 air purifier precleaner.

Each unit consists of identical circuits using a common circuit breaker and separate control units, an M2A2 air purifier assembly containing the blower motor, and related electrical wiring. Operating voltage (+24 – 28 V dc) for the filter system is supplied from the master relay circuits through an 80-amp circuit breaker. When the MASTER switch is ON, the air purifier operates when the AIR PURIFIER switch in the control unit is turned ON.

Also contained within the gas/particulate system are three M3 heaters. The M3 heaters are used to heat the air supplied to the commander's station, driver's station and mechanic's station when necessary. The M3 heaters are controlled by the gas/paritculate filter system control unit and will only operate when the system is turned on.

The relationship of the gas/particulate filter unit system components is shown in the following illustration.



END OF TASK

LACK OF AIR AT FACEPIECES 0078 00

THIS WORK PACKAGE COVERS:
Lack Of Air At Facepieces

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required
Two

WARNING
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Check all hose connections.

Are all connections proper?

yes

no

Properly connect hoses (WP 0706 00). Verify fault is corrected.

B Check for pinched, blocked or damaged hoses.

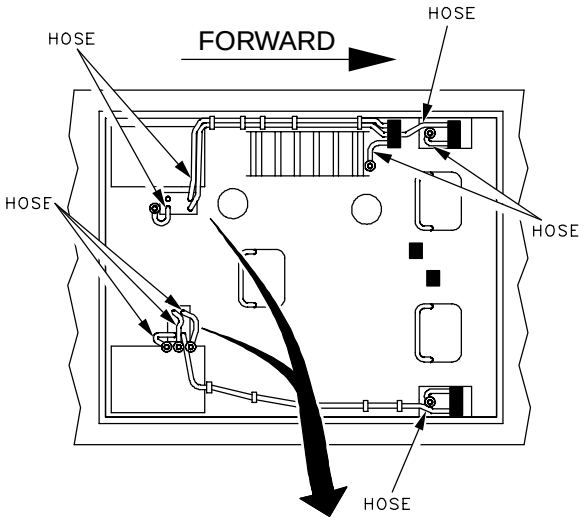
Are hoses free of pinching, blockage and damage?

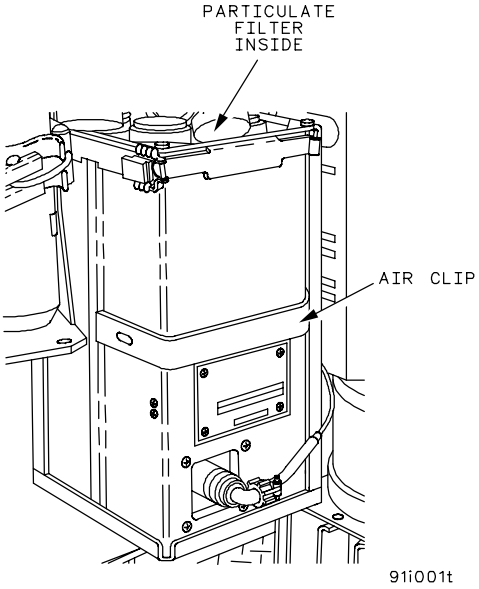
yes

no

Clear or replace hoses (WP 0706 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE





LACK OF AIR AT FACEPIECES - CONTINUED 0078 00

h. GAS/PARTICULATE SYSTEM - CONTINUED (1) LACK OF AIR AT FACEPIECES - CONTINUED

CONTINUED FROM STEP B

C Check cleanliness of particulate filter.

Is filter clean?

yes

no

Notify Direct Support Maintenance.

D Check to ensure air clip has been removed from unit.

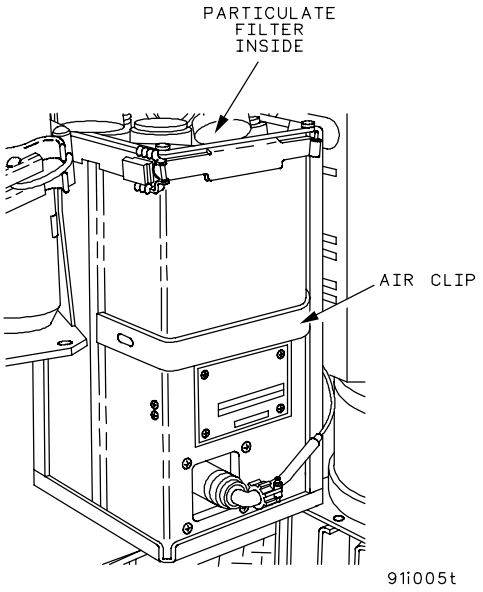
Is air clip removed?

yes

no

Go to WP 0790 00.

Remove air clip (TM 9-2350-292-10). Verify fault is corrected.



END OF TASK

MOTOR DOES NOT WORK 0079 00

THIS WORK PACKAGE COVERS:

Motor Does Not Work

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Check cable assemblies for proper connection to switch assemblies and purifiers.

Are cable assemblies connected properly?

yes

no

Connect properly (WP 0706 00, WP 0709 00, WP 0710 00, and WP 0711 00). Verify fault is corrected.

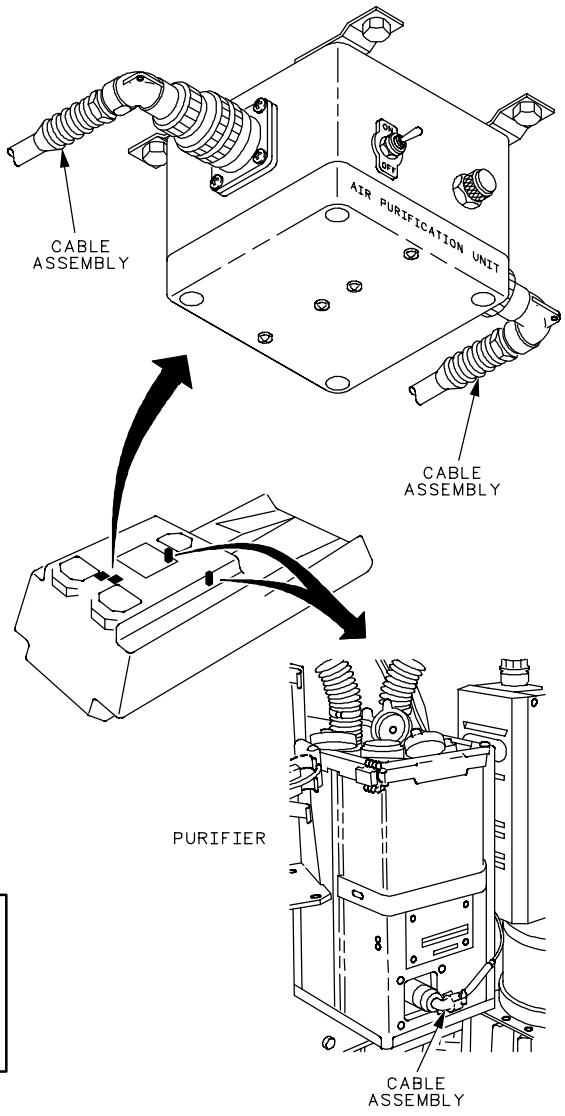
B Inspect cable assemblies for damage.

Are cable assemblies free of damage?

yes

no

Repair (WP 0290 00) or replace (WP 0706 00,WP 0709 00, WP 0710 00, and WP 0711 00) cable(s). Verify fault is corrected.



CONTINUED ON NEXT PAGE

MOTOR DOES NOT OPERATE - CONTINUED 0079 00

CONTINUED FROM STEP B

C

1. Disconnect harness 4W305 P1 (4W305 P2) from control unit.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W305 P1 socket (4W305 P2) while holding black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present at both connectors?

yes

Replace circuit breaker(s) (WP 0707 00). Verify fault is corrected.

no

D

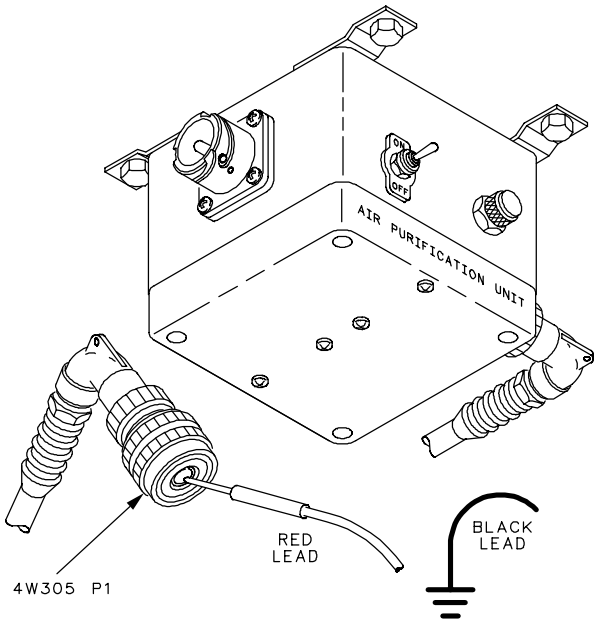
1. Disconnect harness 4W305 from 80 amp circuit breaker.
2. Place one multimeter lead on each circuit breaker connector. Check for continuity.

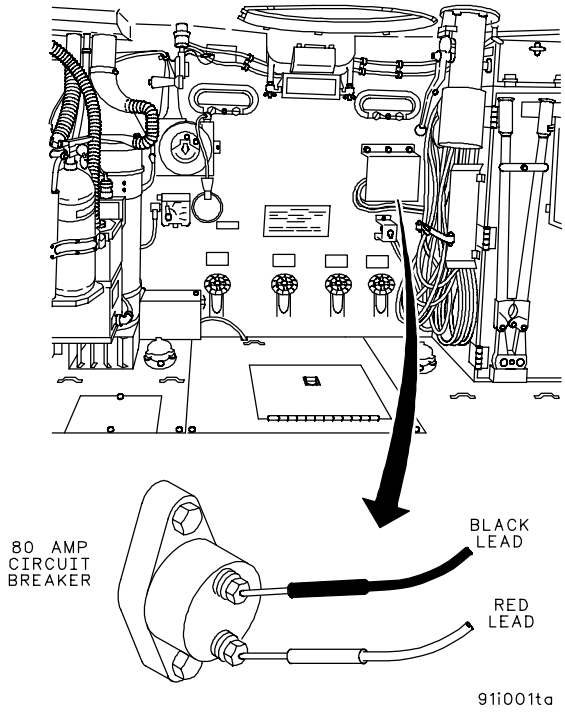
Is continuity present?

yes

no

Replace circuit breaker (WP 0707 00). Verify fault is corrected.





CONTINUED ON NEXT PAGE

MOTOR DOES NOT OPERATE - CONTINUED 0079 00

CONTINUED FROM STEP D

E

1. Reconnect leads to purifier switches.
2. Disconnect leads from switches to purifiers at purifiers.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in each lead connector to purifiers (one at a time) while holding black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

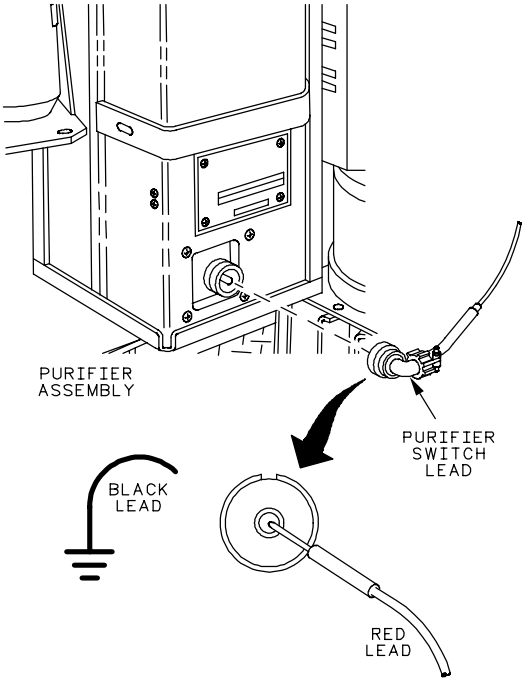
Is 24 V dc present at both connectors?

yes

Replace purifier (WP 0706 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0706 00) lead(s) to purifier(s). Verify fault is corrected.



END OF TASK

M3 HEATER (1, 2, OR 3) FAILS TO OPERATE. AIR PURIFIERS OPERATE PROPERLY 0080 00

THIS WORK PACKAGE COVERS:

M3 Heater (1, 2, Or 3) Fails To Operate. Air Purifiers Operate Properly

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 4W306 P3 (heater 1), 4W306 P4 (heater 2) or 4W307 P3 (heater 3) from faulty M3 heater.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place red multimeter lead on harness 4W306 P3 (heater 1), 4W306 P4 (heater 2) or 4W307 P3 (heater 3) connector pin and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Repair (WP 0290 00) or replace harness 4W306 (heater 1 or 2) (WP 0710 00) or 4W307 (heater 3) (WP 0711 00). Verify fault is corrected.

no

B

1. Make sure ground lead is securely fastened to mounting bracket.
2. Place one multimeter lead on heater ground lead and other lead to vehicle ground. Check for continuity.

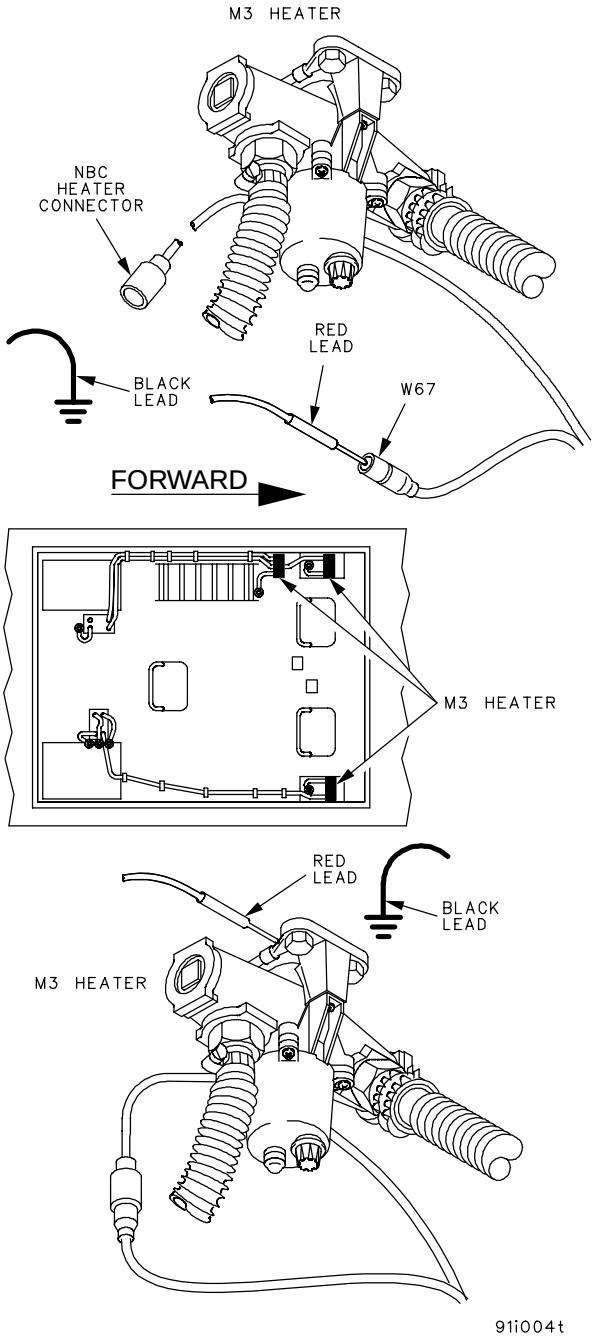
Is continuity present?

yes

Replace M3 heater (WP 0708 00). Verify fault is corrected.

no

Clean and/or repair (WP 0290 00) ground lead as necessary. If fault is not corrected, replace M3 heater (WP 0708 00). Verify fault is corrected.



END OF TASK

GENERATOR SYSTEM OVERVIEW AND DIAGRAMS 0081 00

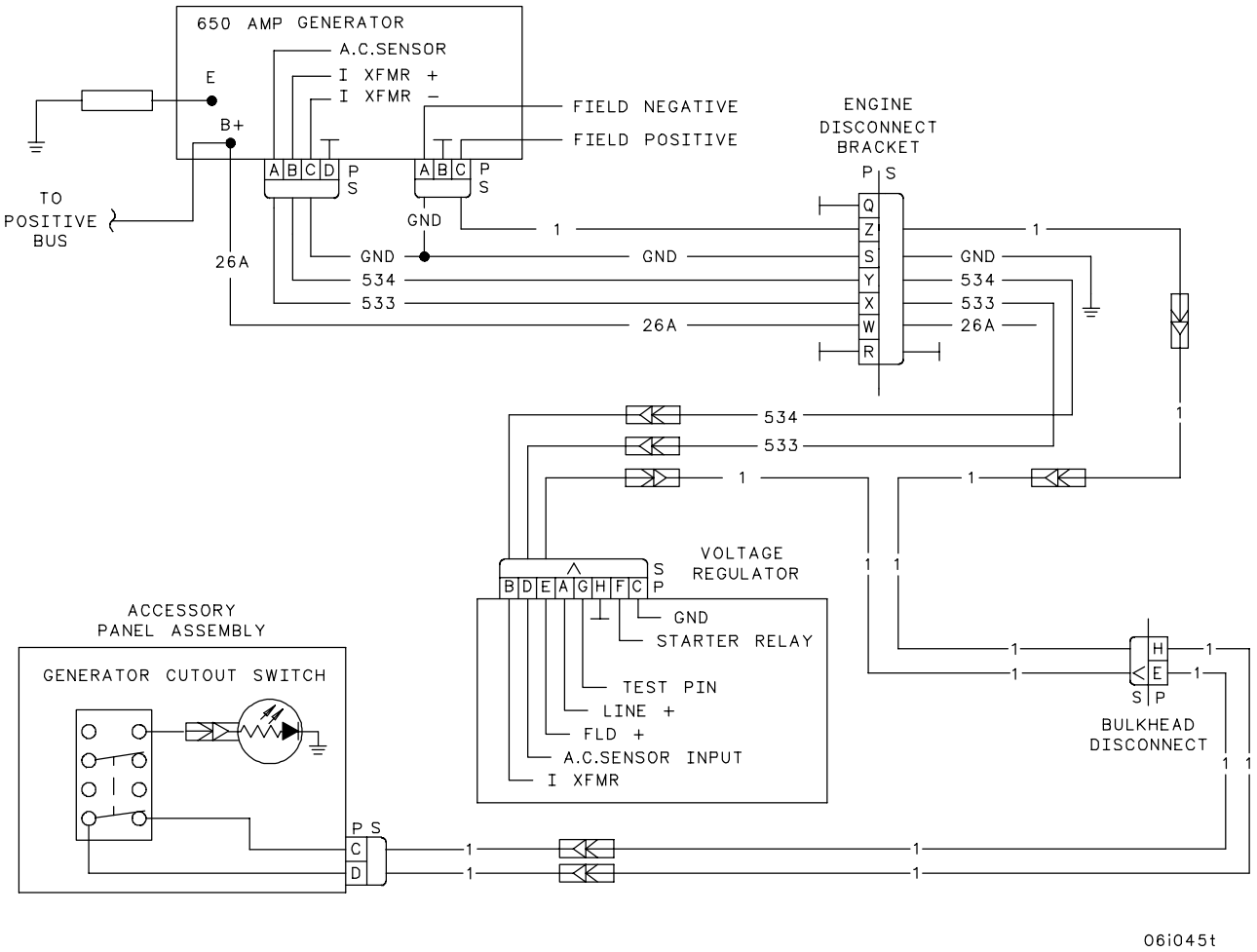
THIS WORK PACKAGE COVERS:

Generator System Overview And Diagrams

The main engine generator and associated circuits provide a 28 V dc, 650 amp capacity output to provide the primary source of vehicle electrical power. Also, the high capacity output of the generator permits using the generator output as an alternate power source for other vehicles. The main generator output system consists of the generator, voltage regulator, accessories relay, generator cutout switch, GENERATOR OUT indicator, 15-amp circuit breaker and associated electrical wiring.

When the main engine is running, the generator is the source of electrical power (+28 V dc) to operate the electrical components of the vehicle and to charge vehicle batteries. The generator is a high current output device that converts mechanical energy of the diesel engine into electrical power. A regulator controls the generator output. The regulator provides voltage regulation, current limiting, and overvoltage protection of the generator output. In addition, the regulator provides automatic control of the accessories relay. The generator output (+28 V dc) is supplied directly to the positive bus to the batteries and through either the accessories relay or master relay for distribution throughout the vehicle. The output (+28 V dc) supplied through the accessories relay provides electrical power to circuits that are part of engine accessories, the main engine monitoring system, the vehicle warning system, and the exhaust smoke generating system. The output supplied through the master relay provides system power (+28 V dc) for the remainder of the vehicle electrical components.

The relationship of the various components of the generator output system are shown in the diagram below.



END OF TASK

ENGINE BATT/GEN GAUGE READS IN YELLOW OR LOWER RED REGION WITH MAIN ENGINE RUNNING 0082 00

THIS WORK PACKAGE COVERS:

Engine BATT/GEN Gauge Reads In Yellow or lower Red Region With Main Engine Running

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)
STE-ICE-R (item 85, WP 0717 00)
Engine ground hop kit (item 14, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Is STE-ICE-R available?

yes / no

no → Go to Step K.

B

1. Setup STE-ICE-R for operation (TM 9-4910-571-12&P).
2. Connect STE-ICE-R harness W1 to vehicle harness 4W800 J1 DCA connector.
3. Enter vehicle ID (VID) 04 and perform STE-ICE-R test 67 (TM 9-4910-571-12&P) and record results.

Is VTM reading between 27 and 30 V dc static?

yes / no

no → Go to Step E.

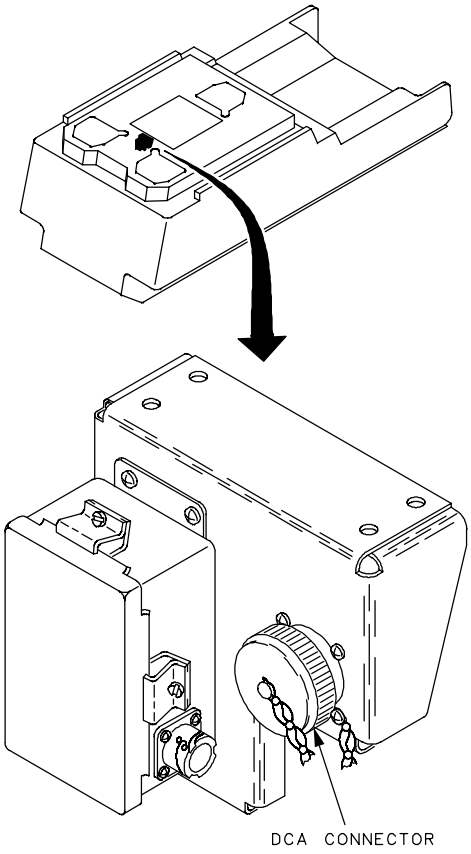
C Perform STE-ICE-R test 67 using function 02 (TM 9-4910-571-12&P) while cranking engine and holding fuel shutoff control. Record results.

Is VTM reading at least 18 V dc?

yes / no

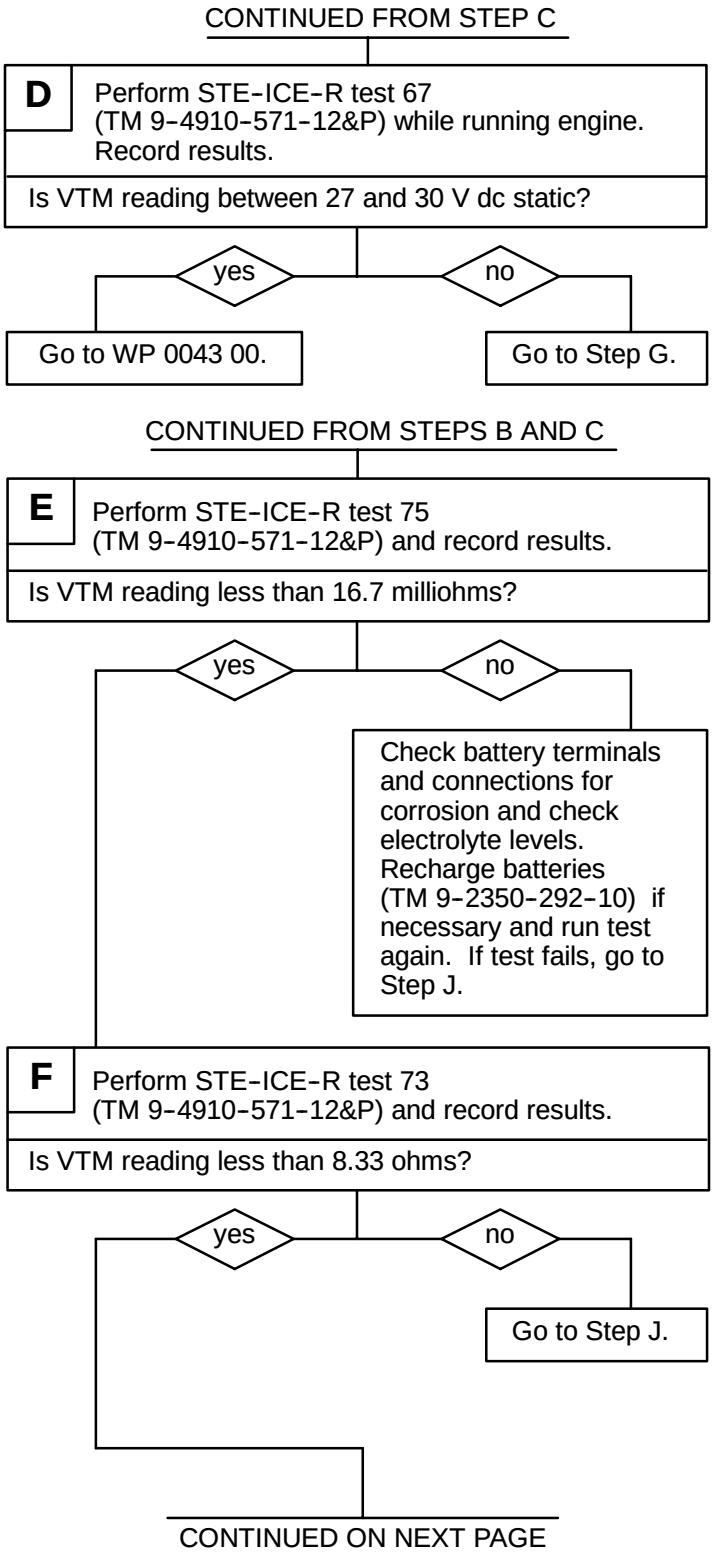
no → Go to Step E.

CONTINUED ON NEXT PAGE



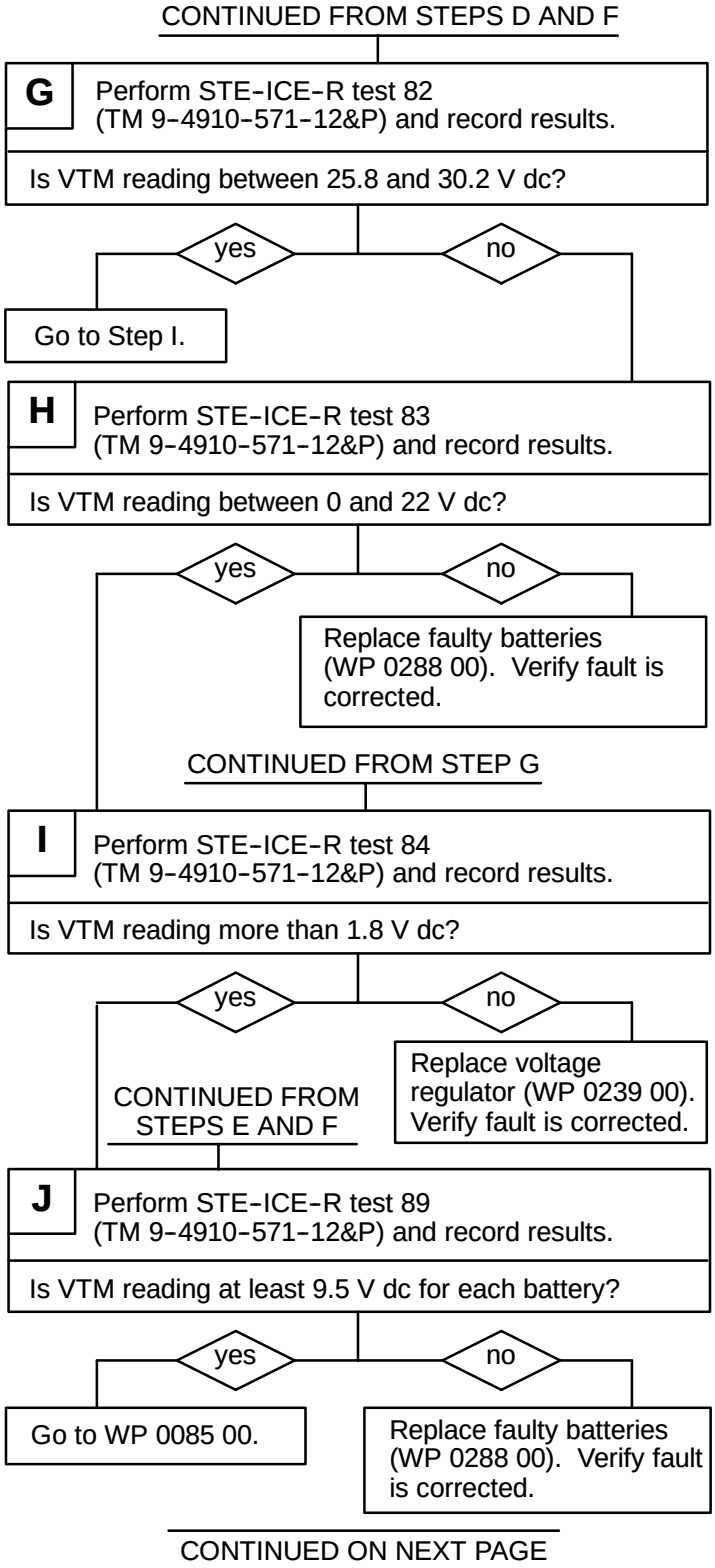
ENGINE BATT/GEN GAUGE READS IN YELLOW OR LOWER RED REGION WITH MAIN ENGINE RUNNING - CONTINUED

0082 00



ENGINE BATT/GEN GAUGE READS IN YELLOW OR LOWER RED REGION WITH MAIN ENGINE RUNNING - CONTINUED

0082 00



ENGINE BATT/GEN GAUGE READS IN YELLOW OR LOWER RED REGION WITH MAIN ENGINE RUNNING - CONTINUED

0082 00

CONTINUED FROM STEP A

K

1. Remove left side air intake grille above voltage regulator (TM 9-2350-292-10).
2. Reset voltage regulator (TM 9-2350-292-10).
3. Start engine (TM 9-2350-292-10).
4. Place GENERATOR switch to ON position, turn FUEL PUMP switch ON (TM 9-2350-292-10).
5. Turn engine voltage regulator OFF then ON (TM 9-2350-292-10) and observe BATT/GEN gauge.
6. Place GENERATOR switch in OFF position and turn FUEL PUMP switch OFF (TM 9-2350-292-10).
7. Shut down engine (TM 9-2350-292-10).

Does gauge return to green region?

yes

Voltage regulator circuit breaker was tripped and is reset.

no

L

1. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
2. Disconnect harness 4W101 P1 from switch panel.
3. Turn FUEL PUMP switch and MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on harness 4W109 J3 pin N and black lead to ground. Check for voltage.
5. Turn FUEL PUMP switch and MASTER switch OFF (TM 9-2350-292-10).

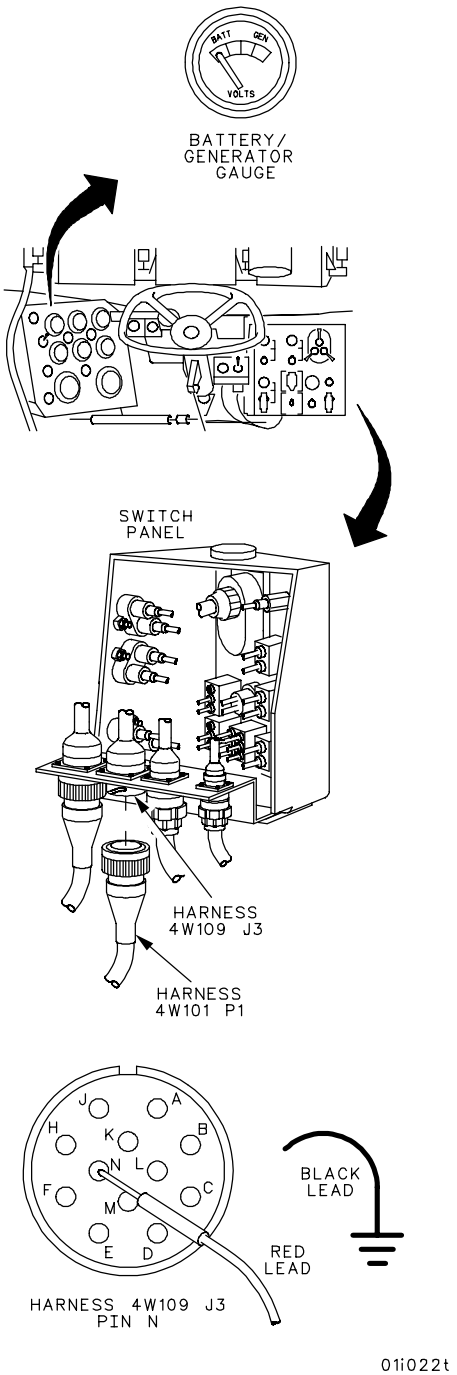
Is 24 V dc present?

yes

Go to Step O.

no

CONTINUED ON NEXT PAGE



ENGINE BATT/GEN GAUGE READS IN YELLOW OR LOWER RED REGION WITH MAIN ENGINE RUNNING - CONTINUED 0082 00

CONTINUED FROM STEP L

M

1. Disconnect lead 1A from switch S4.
2. Place one multimeter lead in lead 1A switch connector and other lead on harness 4W109 J3 pin N. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 1A from harness 4W109 J3 to switch S4 connector. Verify fault is corrected.

N

1. Disconnect lead 76 from circuit breaker side of switch S4.
2. Place one multimeter lead on each switch S4 connector pin. Check for continuity.

Is continuity present?

yes

no

Replace switch S4 (WP 0242 00). Verify fault is corrected.

CONTINUED FROM STEP L

O

1. Open air intake grilles above battery compartment (TM 9-2350-292-10).
2. Disconnect harness 3W132 P1 at bulkhead disconnect.
3. Place one multimeter lead in harness 4W101 P1 socket N and other lead in socket B of harness 3W132 P1. Check for continuity.

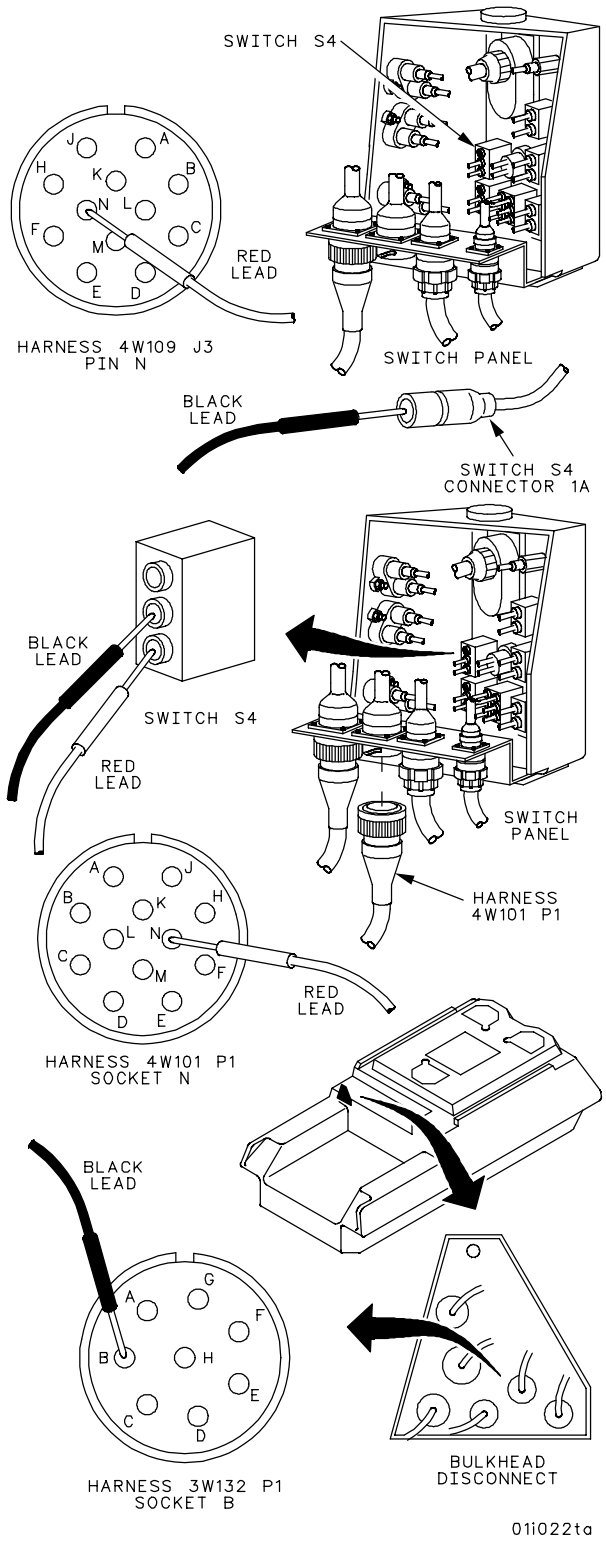
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0315 00) harness 4W101. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE BATT/GEN GAUGE READS IN YELLOW OR LOWER RED REGION WITH MAIN ENGINE RUNNING - CONTINUED 0082 00

CONTINUED FROM STEP O

P

1. Reconnect harness 4W101 P1 to switch panel.
2. Disconnect harness 3W180 P1 from voltage regulator.
3. Place one multimeter lead in harness 3W132 P1 socket B and other lead on harness 3W180 P1 socket A. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0297 00) harness 3W180. Verify fault is corrected.

Q

Place one multimeter lead in harness 3W132 P1 socket E and other lead on harness 3W180 P1 socket E. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0297 00) harness 3W180. Verify fault is corrected.

R

1. Disconnect harness 4W153 P1 from accessory panel.
2. Place one multimeter lead on harness 3W132 P1 socket E and other lead in harness 4W153 P1 socket C. Check for continuity.

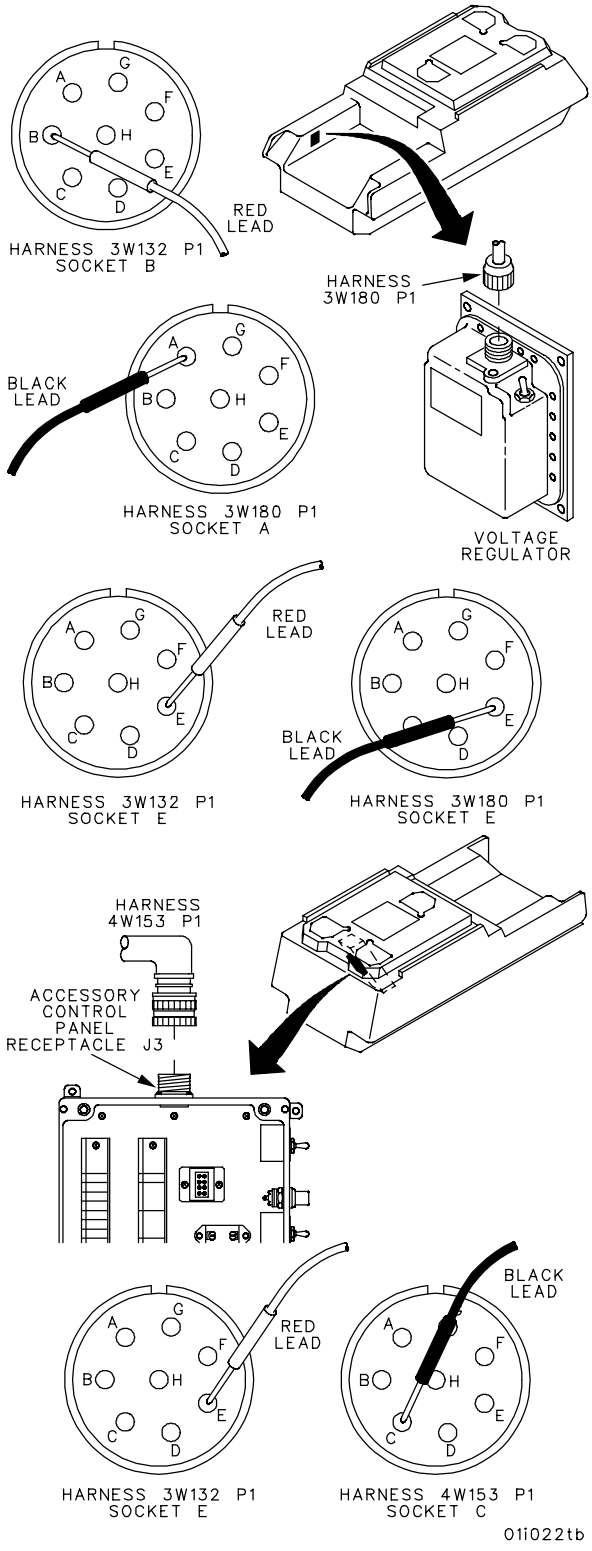
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0327 00) harness 4W153. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE BATT/GEN GAUGE READS IN YELLOW OR LOWER RED REGION WITH MAIN ENGINE RUNNING - CONTINUED 0082 00

CONTINUED FROM STEP R

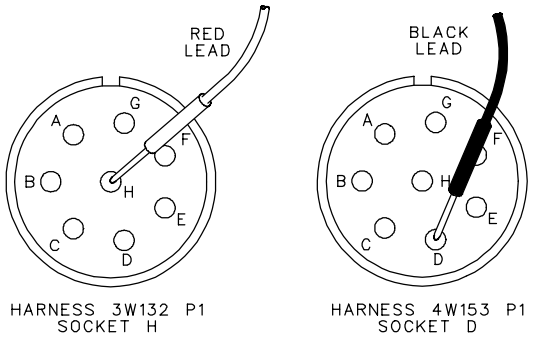
S Place one multimeter lead in harness 3W132 P1 socket H and other lead in harness 4W153 P1 socket D. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0327 00) harness 4W153. Verify fault is corrected.



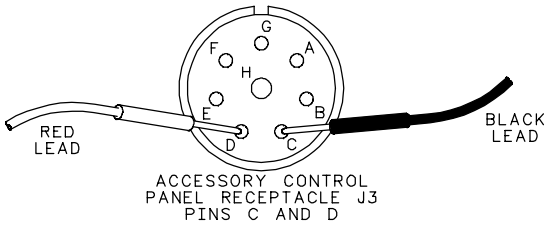
T
1. Place GENERATOR switch in ON position (TM 9-2350-292-10).
2. Place one multimeter lead on accessory panel receptacle J3 pin C and other lead on receptacle J3 pin D. Check for continuity.
3. Place GENERATOR switch in OFF position (TM 9-2350-292-10).

Is continuity present?

yes

no

Go to Step W.



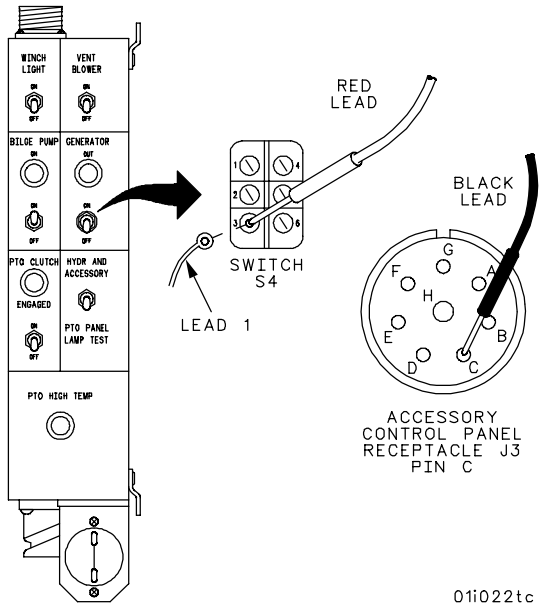
U
1. Remove accessory panel (WP 0244 00) and disconnect lead 1 from switch S4 at receptacle J3 pin C side.
2. Place one multimeter lead on receptacle J3 pin C and other lead in lead 1 switch S4 connector. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 1 to switch S4. Verify fault is corrected.



CONTINUED ON NEXT PAGE

ENGINE BATT/GEN GAUGE READS IN YELLOW OR LOWER RED REGION WITH MAIN ENGINE RUNNING - CONTINUED 0082 00

CONTINUED FROM STEP U

V

1. Disconnect lead 1 from switch S4 at receptacle pin D side.
2. Place one multimeter lead on receptacle J3 pin D and other lead in lead 1 switch S4 connector. Check for continuity.

Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0244 00) lead 1 to switch S4. Verify fault is corrected.

no

Replace switch S4 (WP 0244 00). Verify fault is corrected.

CONTINUED FROM STEP T

W

1. Reconnect harness 4W153 P1 to accessory panel.
2. Disconnect harness 3W143 P1 from engine disconnect.
3. Place one multimeter lead in harness 3W132 P1 socket H and other lead in harness 3W143 P1 socket Z. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

X

1. Reconnect harness 3W132 P1 at bulkhead disconnect.
2. Place one multimeter lead in harness 3W143 P1 socket Y and other lead on harness 3W180 P1 socket B. Check for continuity.

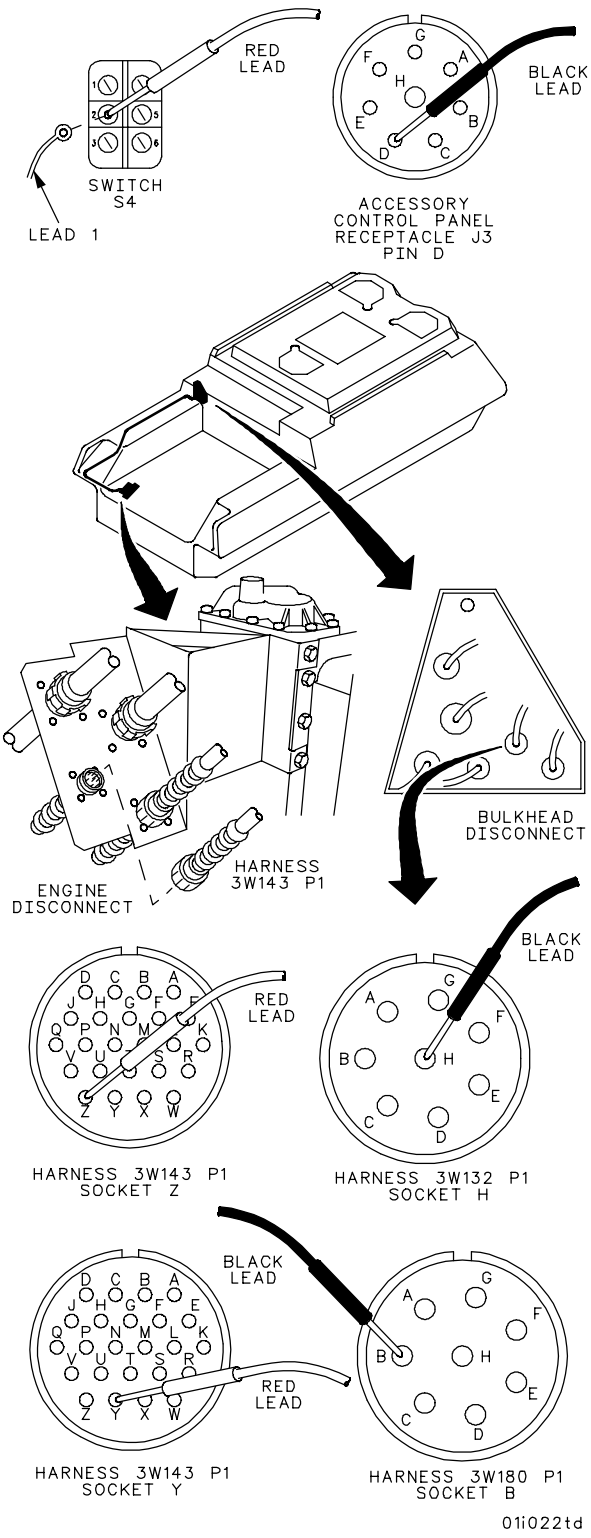
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE BATT/GEN GAUGE READS IN YELLOW OR LOWER RED REGION WITH MAIN ENGINE RUNNING - CONTINUED 0082 00

CONTINUED FROM STEP X

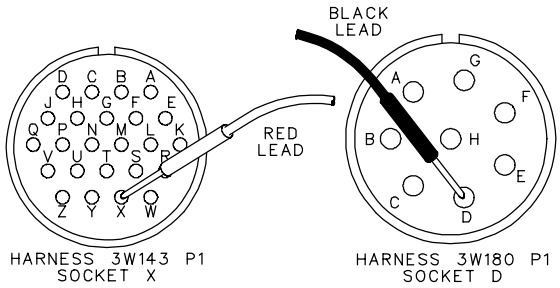
Y Place one multimeter lead in harness 3W143 P1 socket X and other lead on harness 3W180 P1 socket D. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.



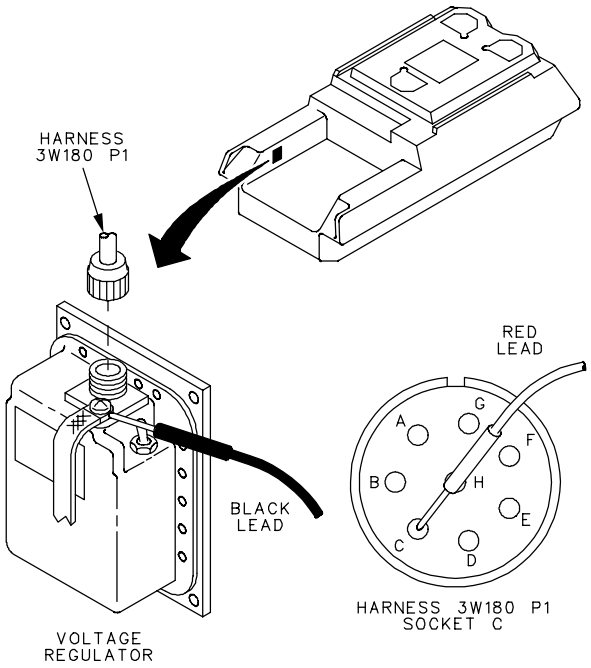
Z Place one multimeter lead on harness 3W180 P1 socket C and other lead on regulator ground terminal. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0297 00) ground lead to pin C. Verify fault is corrected.



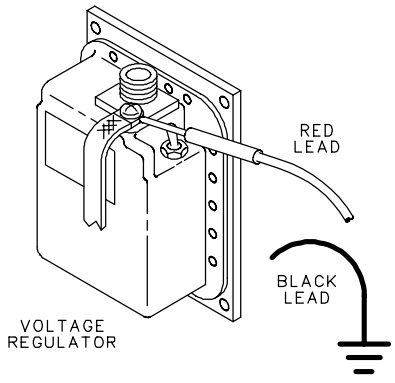
AA Place one multimeter lead on regulator ground terminal and other lead to vehicle ground. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0239 00) ground lead to vehicle ground. Verify fault is corrected.



01i022te

CONTINUED ON NEXT PAGE

ENGINE BATT/GEN GAUGE READS IN YELLOW OR LOWER RED REGION WITH MAIN ENGINE RUNNING - CONTINUED 0082 00

CONTINUED FROM STEP AA

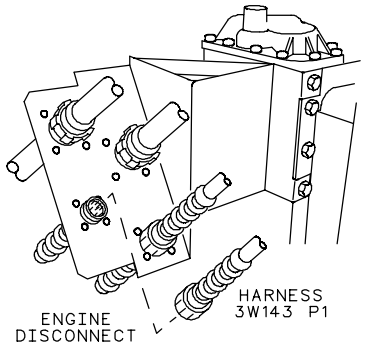
AB
1. Reconnect harness 3W180 P1 to voltage regulator.
2. Place one multimeter lead in harness 3W143 P1 socket S and other lead to vehicle ground. Check for continuity.

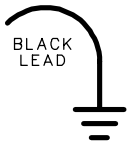
Is continuity present?

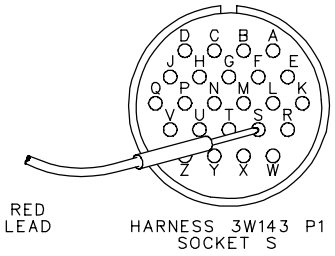
yes

no

Repair (WP 0290 00) or replace (WP 0336 00) ground lead. Verify fault is corrected.







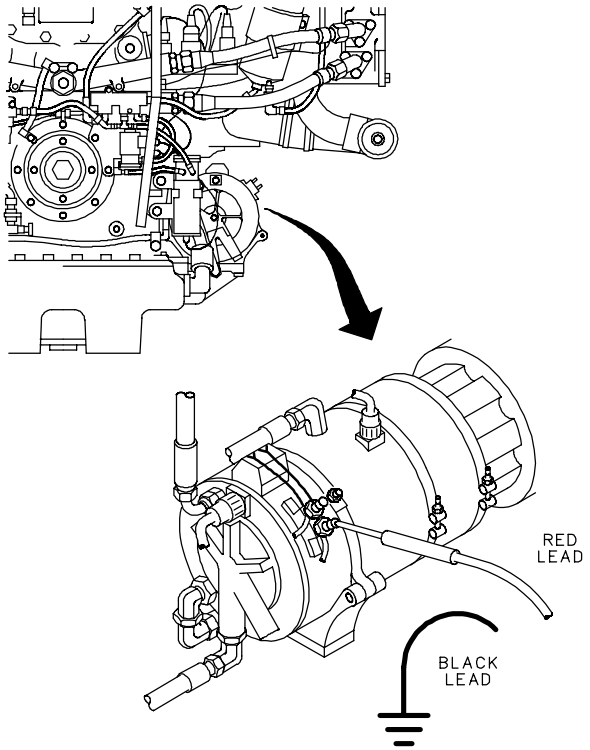
AC
1. Remove powerpack (WP 0188 00).
2. Install ground hop kit (WP 0189 00).
3. Start engine (TM 9-2350-292-10).
4. Place multimeter red lead on generator terminal B+ and black lead to ground. Check for voltage.
5. Shut engine down (TM 9-2350-292-10).

Is 28 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0240 00) lead from terminal B+ to terminal B at engine starter. Verify fault is corrected.



CONTINUED ON NEXT PAGE

01i022tf

ENGINE BATT/GEN GAUGE READS IN YELLOW OR LOWER RED REGION WITH MAIN ENGINE RUNNING - CONTINUED 0082 00

CONTINUED FROM STEP AC

AD
1. Disconnect receptacle J2 connector from generator.
2. Place one multimeter lead on harness 3W202 J3 pin Z and other lead on generator connector J2 socket C. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

AE Place one multimeter lead on harness 3W202 J3 pin S and other lead on generator connector J2 socket A. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

AF
1. Reconnect connector to generator receptacle J2.
2. Disconnect receptacle J1 connector from generator.
3. Place one multimeter lead on harness 3W202 J3 pin S and other lead on generator connector J1 pin C. Check for continuity.

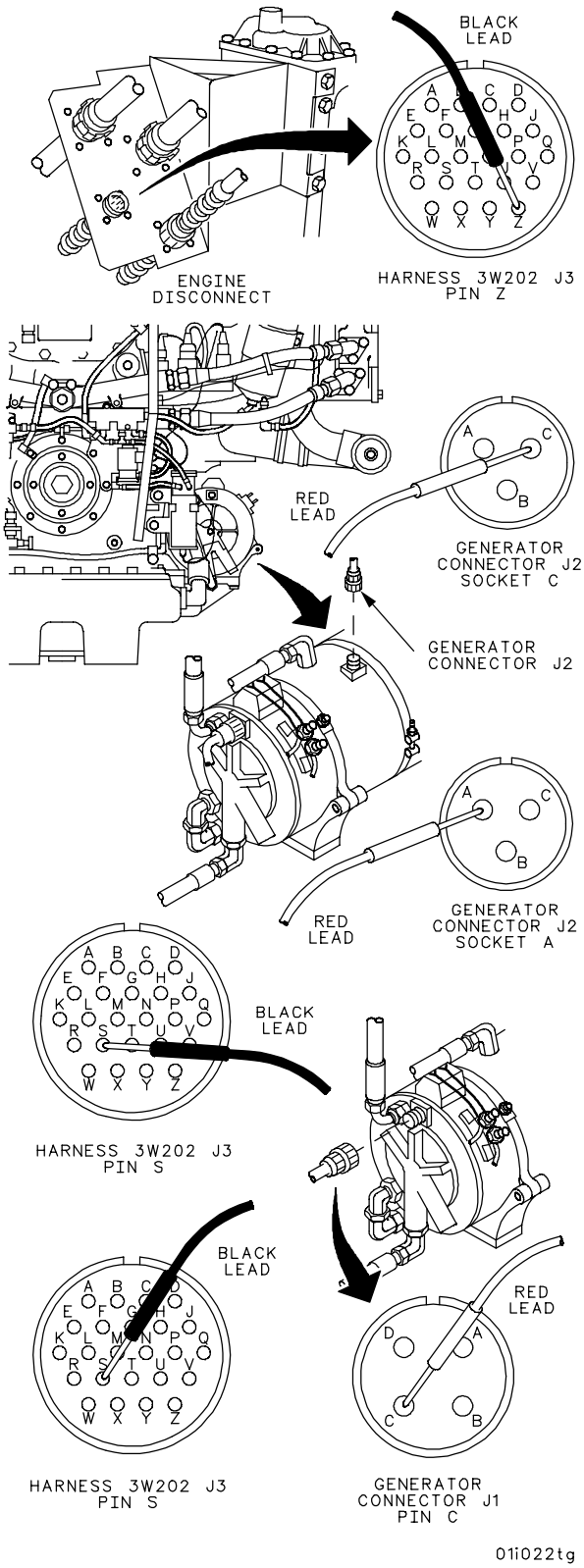
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE BATT/GEN GAUGE READS IN YELLOW OR LOWER RED REGION WITH MAIN ENGINE RUNNING - CONTINUED 0082 00

CONTINUED FROM STEP AF

AG Place one multimeter lead on harness 3W202 J3 pin Y and other lead on generator connector J1 pin B. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

AH Place one multimeter lead on harness 3W202 J3 pin X and other lead on generator connector J1 pin A. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

AI Place one multimeter lead on generator terminal E and other lead on vehicle ground. Check for continuity.

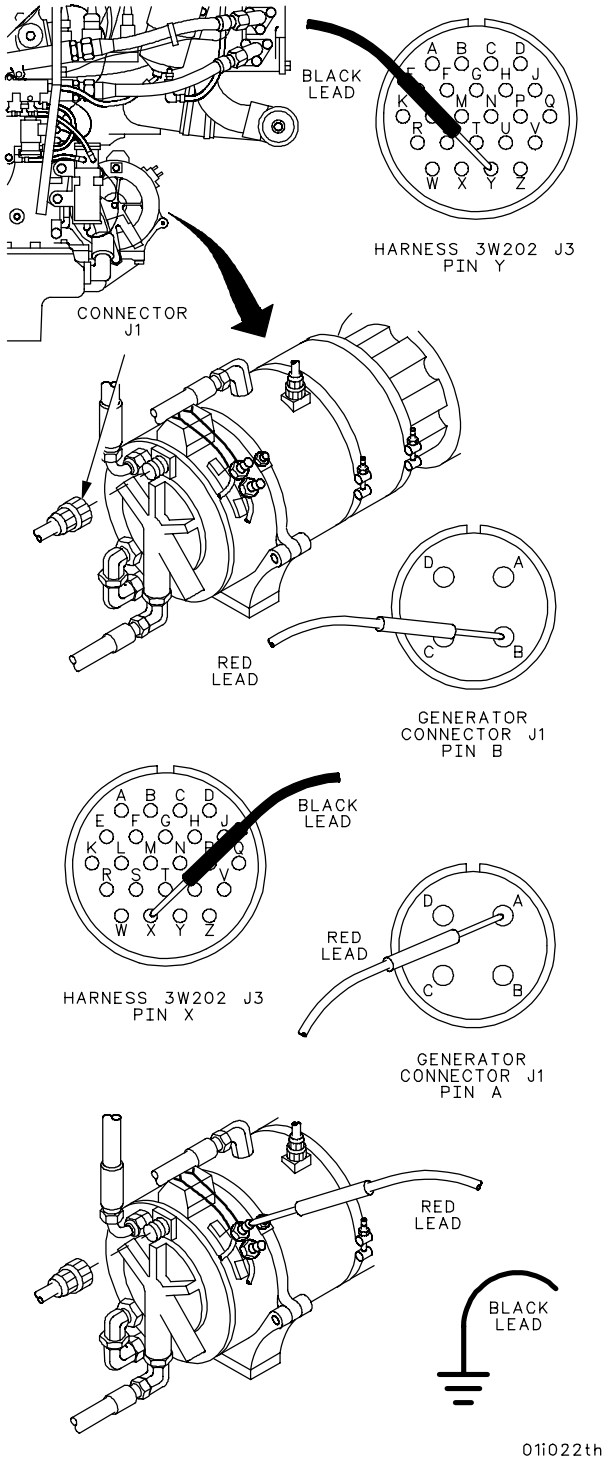
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0336 00) ground lead. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE BATT/GEN GAUGE READS IN YELLOW OR LOWER RED REGION WITH MAIN ENGINE RUNNING - CONTINUED 0082 00

CONTINUED FROM STEP AI

AJ

1. Replace voltage regulator (WP 0239 00).
2. Reconnect connector to generator receptacle J1 and reconnect harness 3W143 P1 to engine disconnect.
3. Turn MASTER switch and FUEL PUMP switch ON, turn GENERATOR switch to ON and start engine (TM 9-2350-292-10).
4. Turn MASTER switch, FUEL PUMP switch and GENERATOR switch OFF (TM 9-2350-292-10).

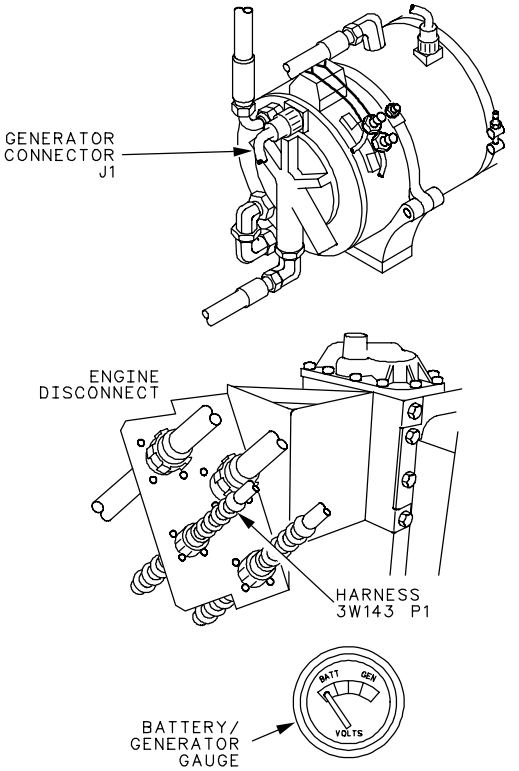
Did BATT/GEN gauge read in green?

yes

Fault corrected.

no

Replace generator (WP 0237 00). Verify fault is corrected.



01i022tj

END OF TASK

ENGINE BATT/GEN GAUGE READS IN GREEN BUT ENGINE ACCESSORIES FAIL TO OPERATE 0083 00

THIS WORK PACKAGE COVERS:

Engine BATT/GEN Gauge Reads In Green But Engine Accessories Fail To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 3W180 P3 from accessory relay.
2. Disconnect harness 3W180 P2 from harness 3W143 J1.
3. Place one multimeter lead on harness 3W180 P2 pin G and other lead in harness 3W180 P3 socket B. Check for continuity.

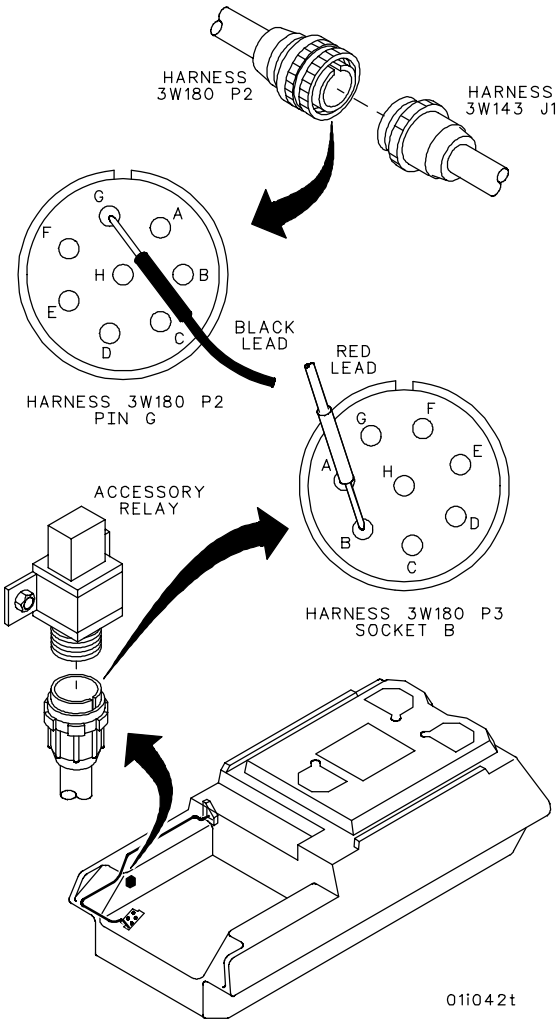
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0297 00) harness 3W180. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE BATT/GEN GAUGE READS IN GREEN BUT ENGINE ACCESSORIES FAIL TO OPERATE - CONTINUED 0083 00

CONTINUED FROM STEP A

B

1. Open left side air intake grilles (TM 9-2350-292-10).
2. Disconnect harness 3W180 P1 at voltage regulator.
3. Place one multimeter lead on harness 3W180 P3 socket D and other lead on harness 3W180 P1 socket C. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0297 00) harness 3W180. Verify fault is corrected.

C

Place one multimeter lead on harness 3W180 P1 socket F and other lead on harness 3W180 P3 socket F. Check for continuity.

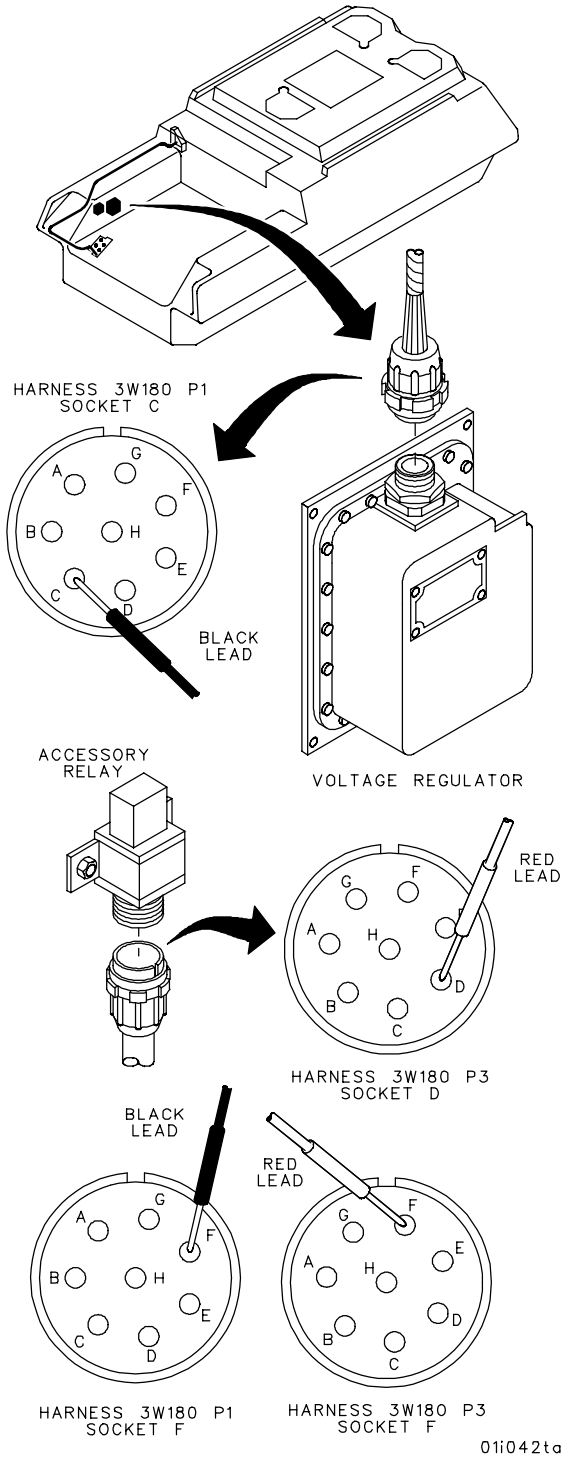
Is continuity present?

yes

no

Replace accessory relay (WP 0244 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



01i023ta

ENGINE BATT/GEN GAUGE READS IN GREEN BUT ENGINE ACCESSORIES FAIL TO OPERATE - CONTINUED 0083 00

CONTINUED FROM STEP C

D Place one multimeter lead on harness 3W180 P2 pin D and other lead on harness 3W180 P1 socket E. Check for continuity.

Is continuity present?

yes

Replace voltage regulator (WP 0239 00). Verify fault is corrected.

no

E Place one multimeter lead on harness 3W180 P2 pin B and other lead on harness 3W180 P3 socket C. Check for continuity.

Is continuity present?

yes

F
1. Disconnect harness 3W143 P1 at engine disconnect bracket.
2. Place one multimeter lead in 3W143 J1 socket G and other lead in harness 3W143 P1 socket W. Check for continuity.

Is continuity present?

yes

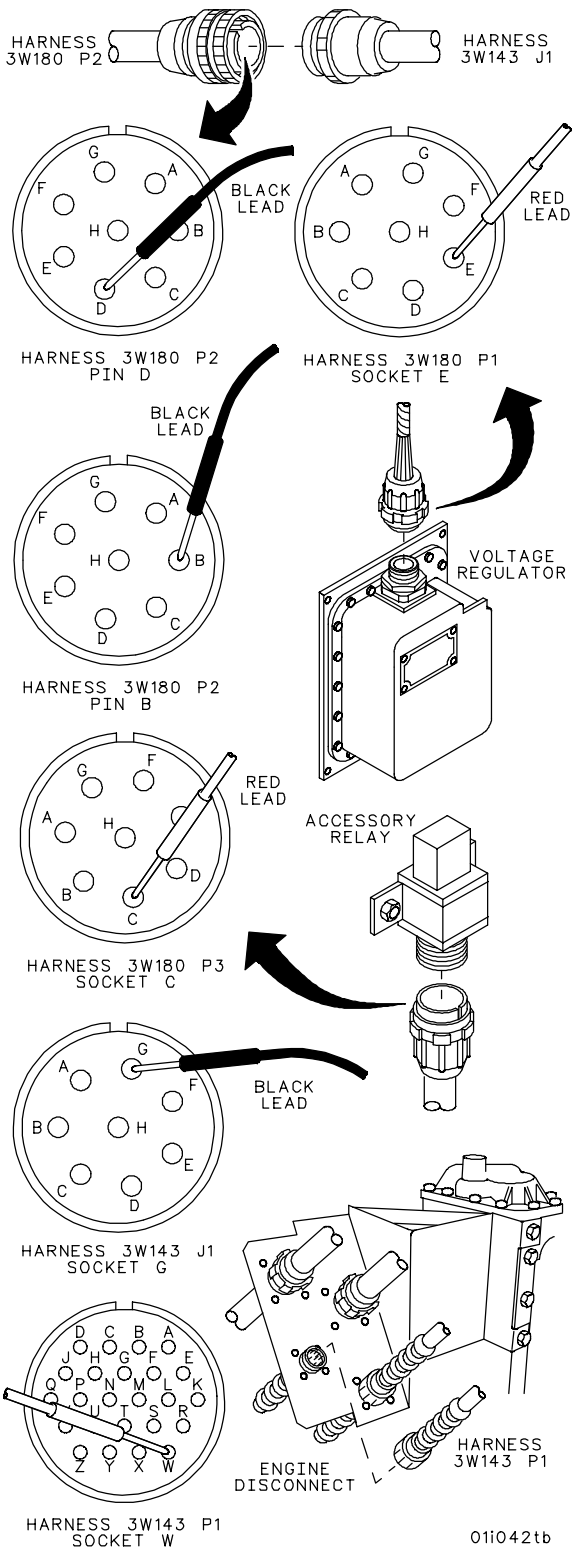
Repair (WP 0290 00) or replace (WP 0295 00) lead 26A to generator terminal B+. Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0297 00) harness 3W180. Verify fault is corrected.



END OF TASK

GENERATOR OUT INDICATOR DOES NOT LIGHT WHEN GENERATOR SWITCH IS PLACED IN ON POSITION 0084 00

THIS WORK PACKAGE COVERS:

Generator Out Indicator Does Not LIght When Generator Switch is Placed in On Position

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

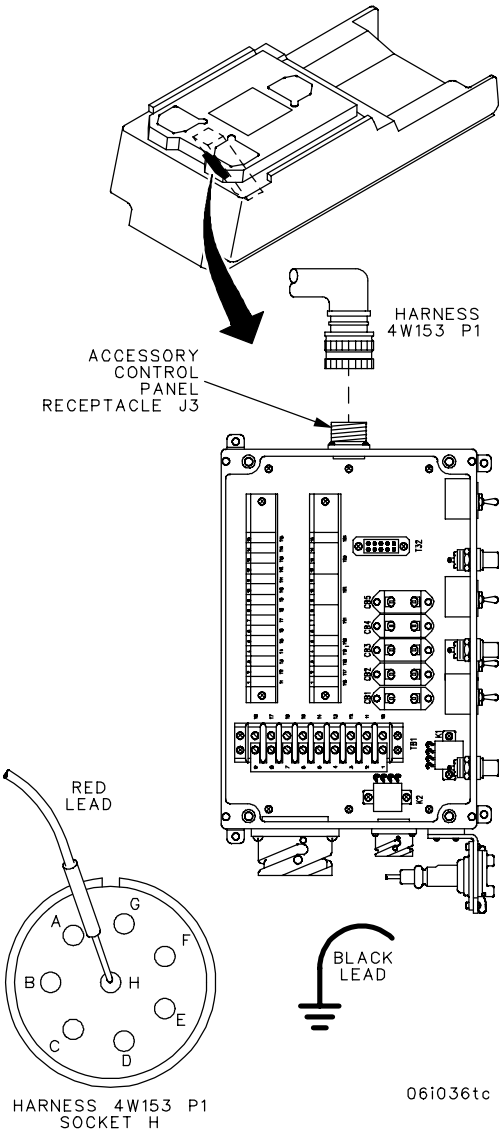
1. Disconnect harness 4W153 P1 from accessory panel.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W153 P1 socket H and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0327 00) harness 4W153. Verify fault is corrected.



CONTINUED ON NEXT PAGE

GENERATOR OUT INDICATOR DOES NOT LIGHT WHEN GENERATOR SWITCH IS PLACED IN ON POSITION - CONTINUED

0084 00

CONTINUED FROM STEP A

B

1. Remove accessory panel (WP 0244 00) and disconnect lead 450A from CB5.
2. Place one multimeter lead on accessory panel receptacle J3 pin H and other lead in lead 450A CB5 connector. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 450A. Verify fault is corrected.

C

1. Disconnect lead 38-138-450A from other side of CB5.
2. Place one multimeter lead on each CB5 connector pin. Check for continuity.

Is continuity present?

yes

no

Replace CB5 (WP 0290 00). Verify fault is corrected.

D

1. Reconnect lead 38-138-450A to CB5.
2. Disconnect lead 450A from switch S4.
3. Place one multimeter lead in lead 38-138-450A connector and other lead in lead 450A switch S4 connector. Check for continuity.

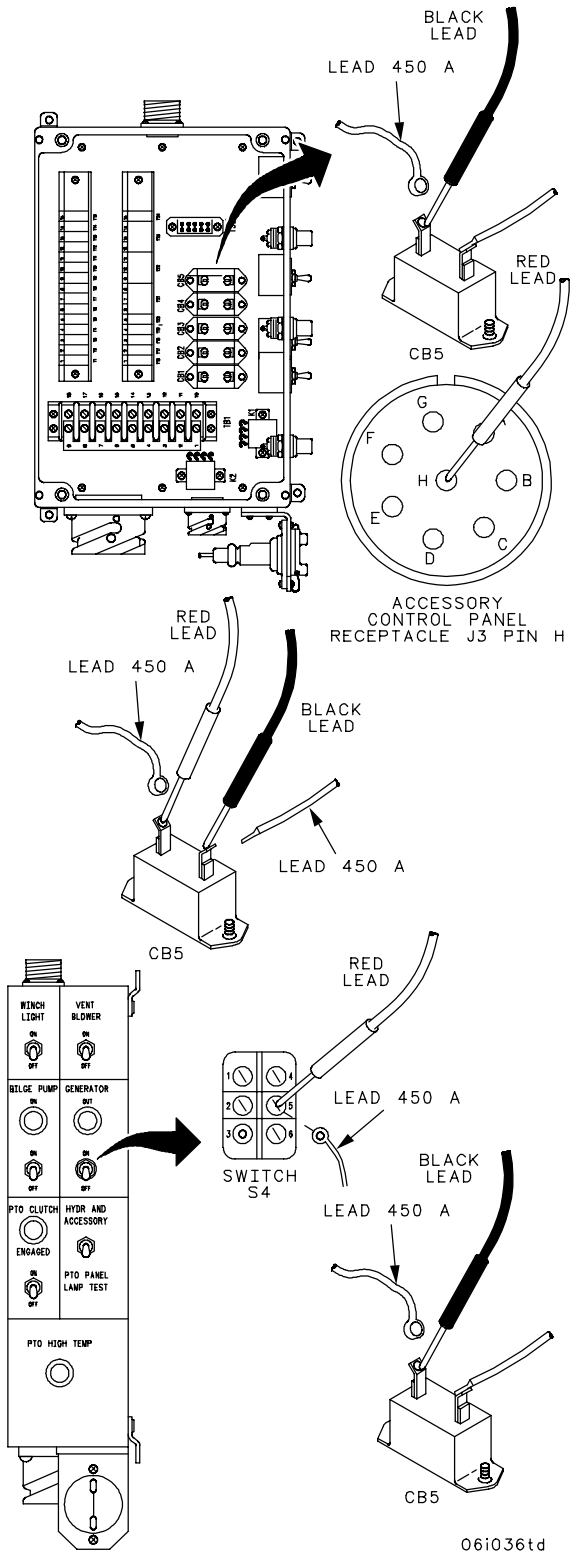
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 38-138-450A from CB5 to switch S4. Verify fault is corrected.

CONTINUED ON NEXT PAGE



GENERATOR OUT INDICATOR DOES NOT LIGHT WHEN GENERATOR SWITCH IS PLACED IN ON POSITION - CONTINUED 0084 00

CONTINUED FROM STEP D

E

1. Reconnect lead 38-138-450A to CB5.
2. Disconnect lead 450A from indicator DS2.
3. Place one multimeter lead on lead 450A terminal on switch S4 and other lead on lead 450A terminal on switch S4. Check for continuity.

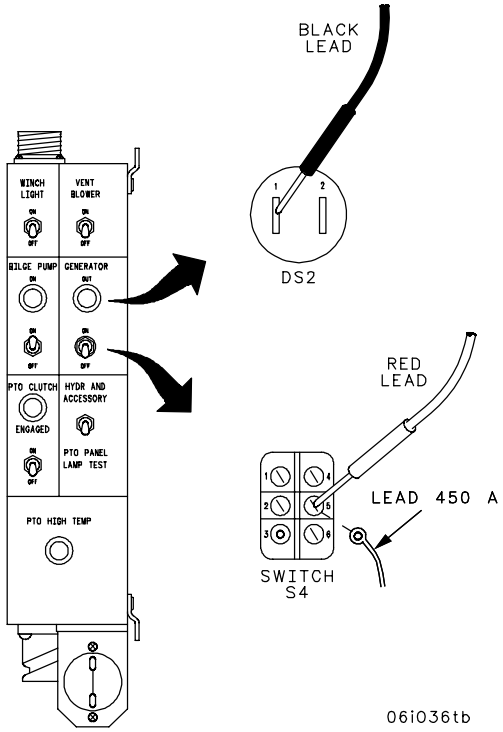
Is continuity present?

yes

Replace indicator DS2 (WP 0244 00). Verify fault is corrected.

no

Replace switch S4 (WP 0244 00). Verify fault is corrected.



END OF TASK

ENGINE BATT/GEN GAUGE SHOWS NO OR INCORRECT READING 0085 00

THIS WORK PACKAGE COVERS:

Engine Batt/Gen Gauge Shows No or Incorrect Reading

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Air intake grille above battery compartment open (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 3W702 P1 at bulkhead disconnect.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on harness 3W702 P1 pin A and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to WP 0126 00.

B

1. Reconnect harness 3W702 P1 to bulkhead disconnect.
2. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
3. Disconnect harness 4W105 P1 from switch panel.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Place multimeter red lead in harness 4W105 P1 socket N and black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

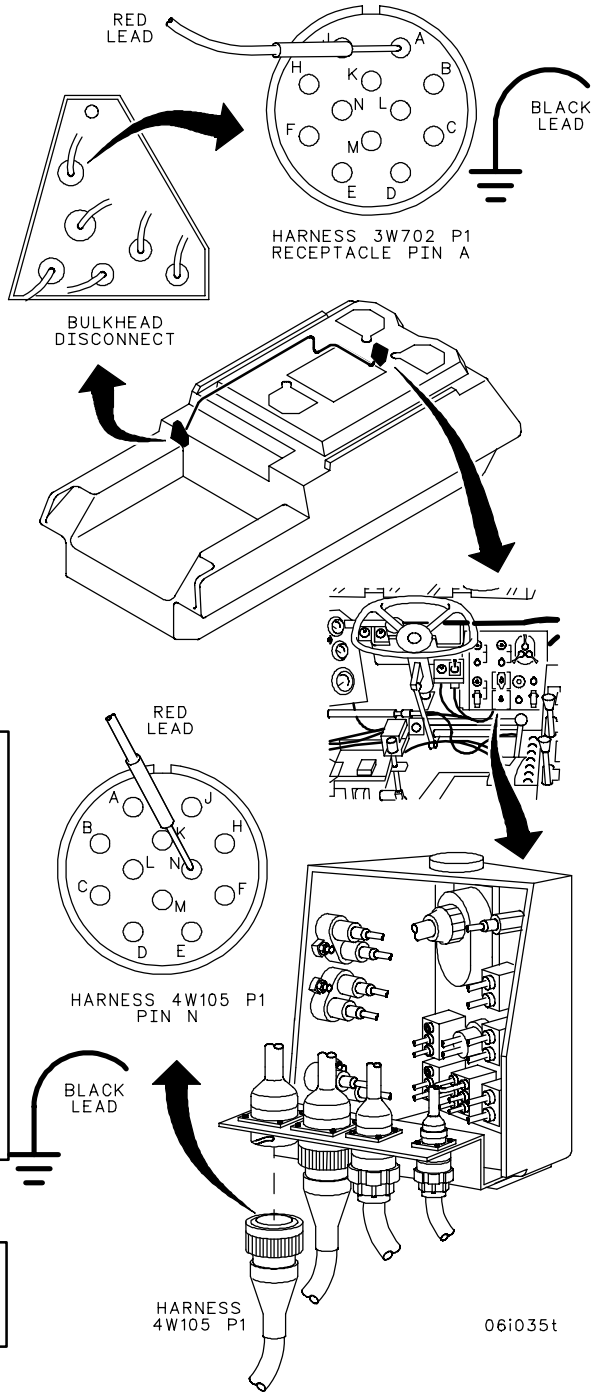
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE BATT/GEN GAUGE SHOWS NO OR INCORRECT READING - CONTINUED 0085 00

CONTINUED FROM STEP B

C

1. Disconnect lead 10 from CB6.
2. Place one multimeter lead on harness 4W151 J4 pin N and other lead in lead 10 CB6 connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 10. Verify fault is corrected.

D

1. Disconnect lead 25/27 from CB6.
2. Place one multimeter lead on each CB6 connector pin. Check for continuity.

Is continuity present?

yes

no

Replace CB6 (WP 0242 00). Verify fault is corrected.

E

1. Reconnect lead 10 to CB6.
2. Place one multimeter lead in lead 25/27 CB6 connector socket and other lead on harness 4W151 J4 pin K. Check for continuity.

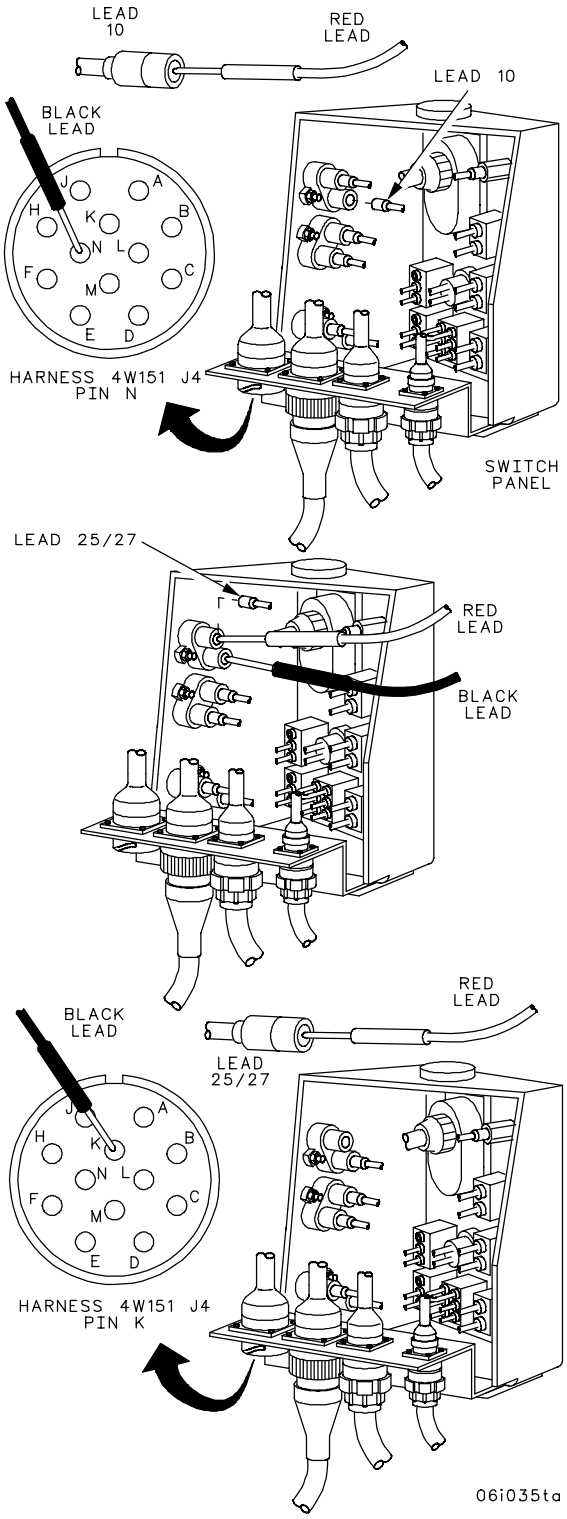
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 25/27. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE BATT/GEN GAUGE SHOWS NO OR INCORRECT READING - CONTINUED 0085 00

CONTINUED FROM STEP E

F

1. Reconnect lead 25/27 to CB6.
2. Reconnect harness 4W105 P1 to switch panel.
3. Remove gauge panel from bracket (WP 0243 00).
4. Disconnect harness 4W103 P1 from gauge panel.
5. Turn MASTER switch ON (TM 9-2350-292-10).
6. Place multimeter red lead in harness 4W103 P1 socket K and black lead to ground. Check for voltage.
7. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

G

1. Reconnect harness 4W103 P1 to gauge panel.
2. Disconnect lead 27 from BATT/GEN gauge.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in lead 27 gauge connector socket and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

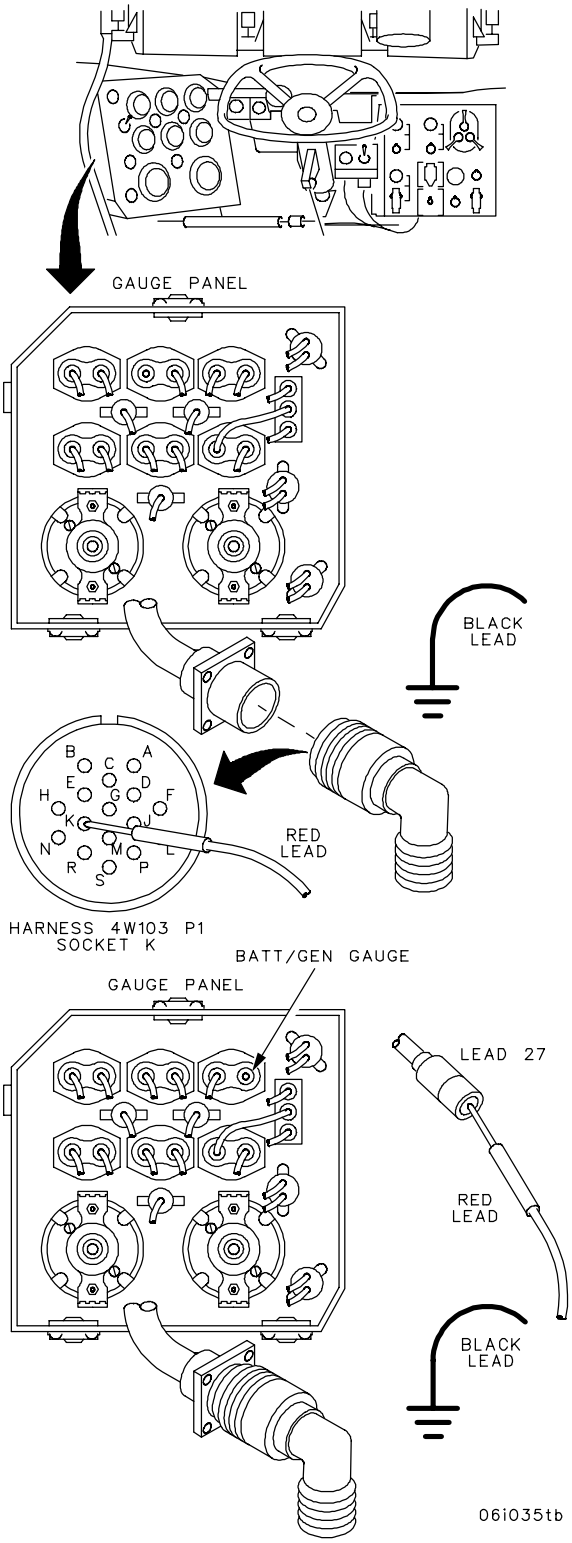
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 27. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE BATT/GEN GAUGE SHOWS NO OR INCORRECT READING - CONTINUED 0085 00

CONTINUED FROM STEP G

H

1. Reconnect lead 27 to BATT/GEN gauge.
2. Disconnect ground lead from BATT/GEN gauge.
3. Place one multimeter lead in gauge ground lead connector and other lead to ground. Check for continuity.

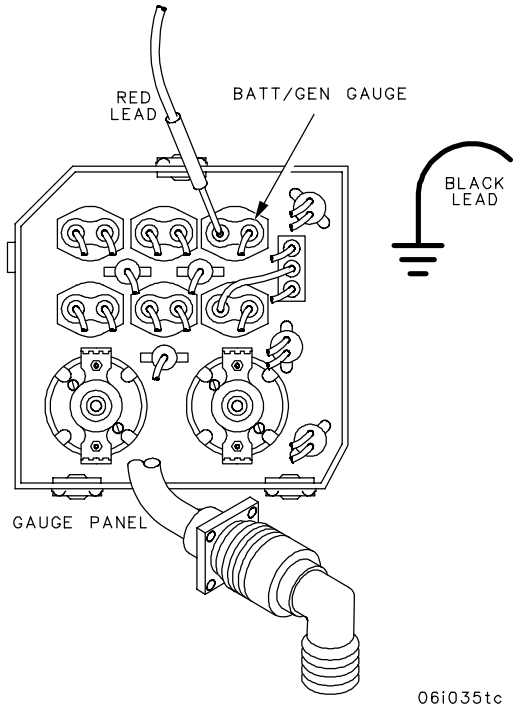
Is continuity present?

yes

Replace gauge (WP 0243 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0243 00) ground lead. Verify fault is corrected.



END OF TASK

HYDARULICS SYSTEM OVERVIEW AND DIAGRAMS 0086 00

THIS WORK PACKAGE COVERS:

Hydraulics System Overview and Diagrams

The hydraulics system consists of the hydraulic reservoir, the main hydraulic pump assembly, the power take-off (PTO) clutch, the auxiliary hydraulic pump, the main winch, the auxiliary winch, the hoist winch, a filter valve manifold, the main and hoist winch directional control valves, the hydraulic control manifold assembly with all major hydraulic controls, the spade lock, two spade cylinders, two boom cylinders, two stayline cylinders, the level winder, a spade lock control valve, a boom shutoff valve, two boom limit valves, the refuel pump motor and controls, the impact wrench with controls, may include a main winch power reduction manifold and related lines and connections.

In the main hydraulics system, oil is pumped from the hydraulic reservoir by a charge pump through the charge filter to two variable displacement pumps: one for the spade, boom, and auxiliary winch; the other for the main winch and hoist winch. The charge pump and variable displacement pumps make up the main hydraulic pump assembly and are driven by main engine power. An electromagnetic PTO clutch is used to connect the main pump assembly to the engine. When the hydraulic pump assembly is operating, pressures of 400 to 4400 psi are supplied to the hydraulic components. All hydraulic components can be operated by main hydraulic pump pressures except the fuel transfer pump and the impact wrench. Hydraulic oil is returned to the reservoir by way of a return filter and hydraulic oil cooler.

The auxiliary hydraulic pump is driven by the auxiliary power unit (APU). The pump delivers 1600 psi and can operate all hydraulic components in a no load condition. The auxiliary hydraulic pump is also the only source of pressure for operation of the fuel transfer pump and the impact wrench.

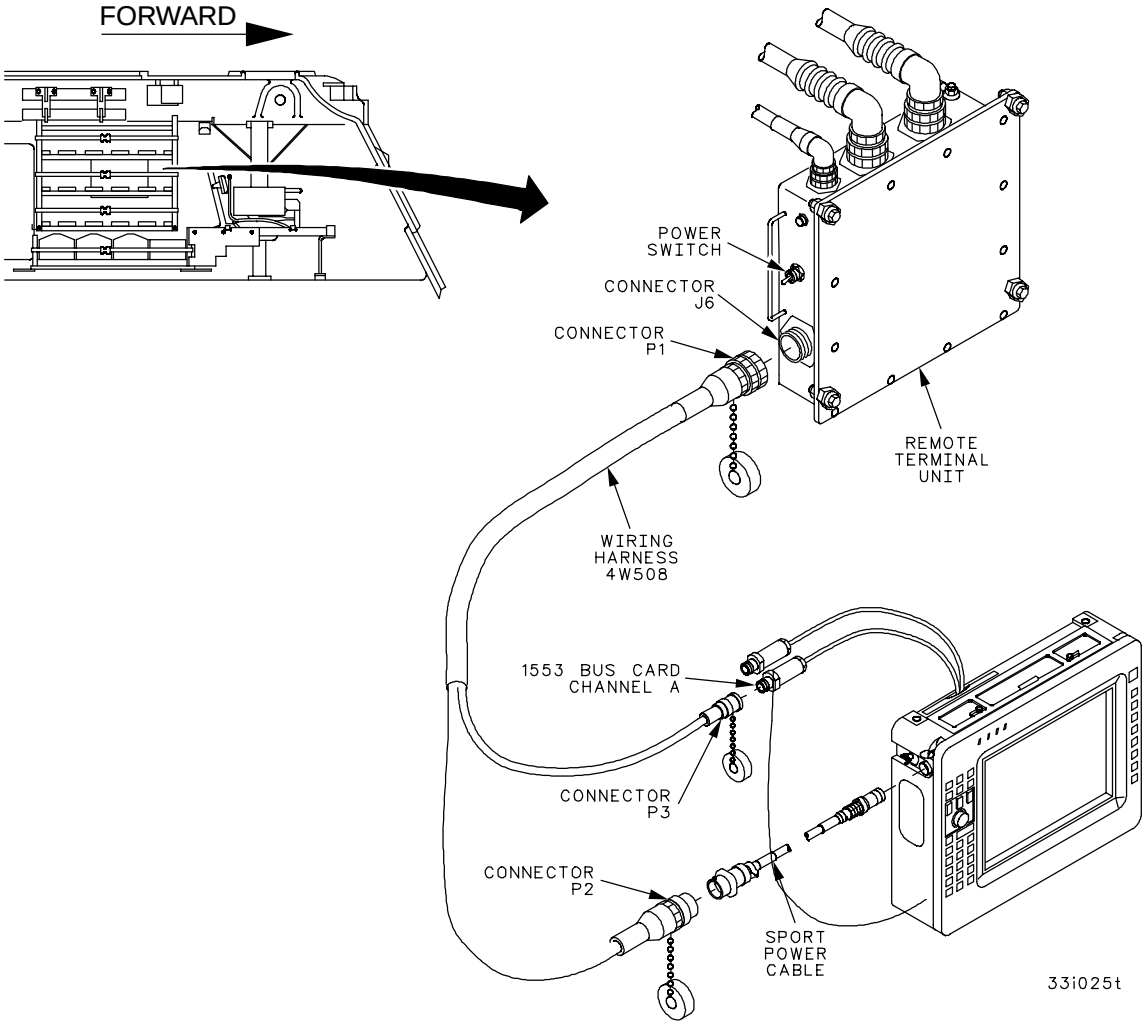
For the relationship of the various hydraulic components refer to FP23 through FP27.

The Enhanced Diagnostic System (EDS) aids the maintainer with hydraulic troubleshooting. The EDS consists of 32 hydraulic pressure transducers, five switches, eight wiring harnesses and a remote terminal unit which are permanently mounted in the vehicle. The transducers and switches are mounted in the hydraulic system in places where the maintainer would normally have to insert gauges to gather pressure data. The hydraulic pressure data gathered by the transducers and switches is sent to the remote terminal (RT) unit where it is transmitted via a 1553 data bus to the Solders' Portable On-system Repair Tool (SPORT). The EDS software program running on the SPORT receives the pressure data from the 1553 data bus and displays it for the maintainer in an easily readable graphical user interface (GUI) that runs in a Microsoft Windows environment.

HYDRAULICS SYSTEM OVERVIEW AND DIAGRAMS - CONTINUED 0086 00

Enhanced Diagnostics System Setup:

1. Connect wiring harness 4W508 connector P1 to remote terminal (RT) unit connector J6.
2. Connect wiring harness 4W508 connector P3 to SPORT 1553 data bus wire branch A.
3. Connect one end of SPORT power cable (part number 54418/711967) to wiring harness 4W508 connector P2 and other end to SPORT power connector.
4. Turn vehicle MASTER switch ON.
5. Turn RT unit circuit breaker switch ON. Power light will indicate RT unit is powered up.
6. Turn on SPORT.
7. Using the mouse, click on the START button in the taskbar.
8. Using the mouse, click on PROGRAMS, then on EDS, then on EDS again.
9. The Enhanced Diagnostics System program will open and display the selftest results then proceed to the troubleshooting symptoms screen.
10. Click on Test in the menu then on Selftest in the dropdown menu to view selftest results. Click the Close button to close the Selftest window.
11. Select the symptom to troubleshoot with either the mouse or the arrow keys.
12. The hydraulic pressure data screen for that symptom will be displayed and ready for use in conjunction with the technical manual troubleshooting procedures.



END OF TASK

HYDRAULIC OIL CONSTANTLY OVERHEATS 0087 00

THIS WORK PACKAGE COVERS:

Hydraulic Oil Constantly Overheats

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
1-inch cap (item 99, WP 0716 00)
1-inch plug (item 100, WP 0716 00)
1-inch tee (item 75, WP 0716 00)*
3/4-inch tee (item 74, WP 0716 00)*
0-3000 psi dial pressure gauges (2) Iitem 81, WP 0717 00)
Safety goggles (item 93, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Subfloor plates 22, 28, 29 and 30 removed (WP 0454 00)
Engine deck removed (WP 0417 00)

Personnel Required

Two

*Not required if vehicle is equipped with Enhanced diagnostics System

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



WARNING

A Inspect all hydraulic oil cooler hoses, fittings, and quick-disconnects for proper connection, leakage, and damage.

Are all hoses, fittings, and quick-disconnects properly connected and free of damage and leakage?

yes

no

Repair or replace damaged and/or leaking hoses, fittings, and quick-disconnects and properly connect (WP 0230 00). Verify fault is corrected.

B Inspect hydraulic oil coolers for air restricting obstructions.

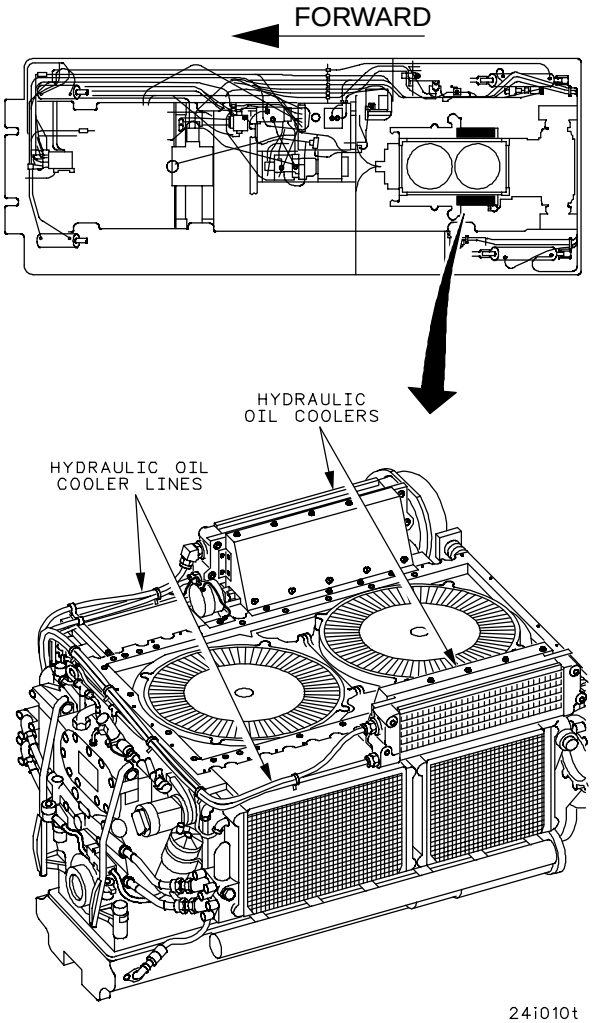
Are oil coolers free of obstructions?

yes

no

Clear obstructions. Verify fault is corrected.

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HYDRAULIC OIL CONSTANTLY OVERHEATS - CONTINUED 0087 00

CONTINUED FROM STEP B

C

WARNING

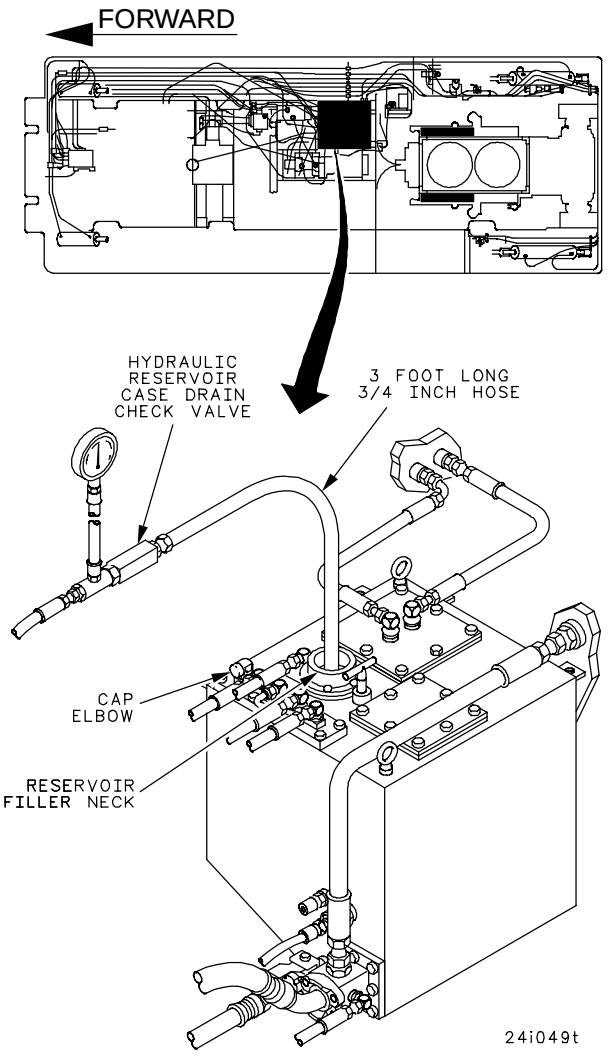
1. Disconnect outlet side of reservoir case drain check valve from reservoir elbow. Connect a 3-foot long hose with 3/4-inch connector to check valve and secure other end of hose into reservoir filler neck. Cap reservoir elbow.
2. Install 0-300 psi dial pressure gauge with 3/4-inch tee between reservoir case drain check valve inlet port and connecting hose.
3. Start main engine and energize main hydraulic system (TM 9-2350-292-10). Set engine RPM to 1800.
4. Observe gauge and oil flow from hose.
5. Shut down hydraulics and main engine (TM 9-2350-292-10).

Does gauge read less than 20 psi?

yes

Replace reservoir check valve (WP 0583 00). Verify fault is corrected.

no



D Is vehicle equipped with Enhanced Diagnostic System?

yes

Go to Step J.

no

CONTINUED ON NEXT PAGE

HYDRAULIC OIL CONSTANTLY OVERHEATS - CONTINUED 0087 00

CONTINUED FROM STEP D

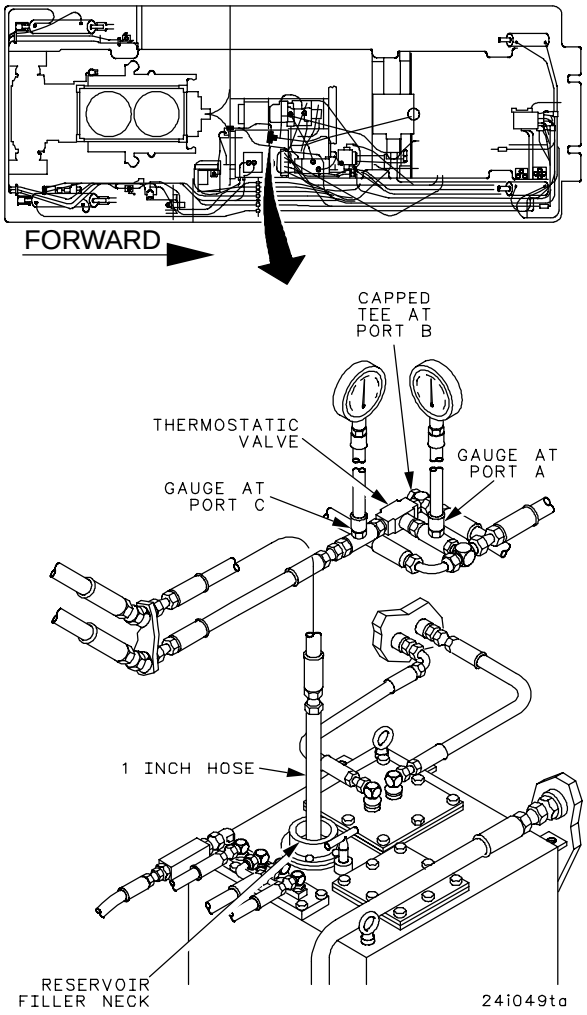
E



WARNING

1. Remove 0-300 psi dial pressure gauge from case drain check valve and install 0-300 psi dial pressure gauge with 3/4-inch tee between the tee in port A of the thermostatic valve and attaching hose.
2. Install another 0-300 psi dial pressure gauge with 1-inch tee between the thermostatic valve port C and attaching hose.
3. Disconnect hose from thermostatic valve port B and cap thermostatic valve port B with 1-inch cap.
4. Connect 1-inch hose to thermostatic hose at port B tee and place other end of hose in reservoir filler neck.
5. Start main engine and energize main hydraulics (TM 9-2350-292-10).
6. Set engine RPM to 1800.
7. Warm hydraulic fluid to 90-100^{d}F and then observe gauges and flow from hose.
8. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is fluid flow detected and do both gauges indicate the same pressure?



CONTINUED ON NEXT PAGE

HYDRAULIC OIL CONSTANTLY OVERHEATS - CONTINUED 0087 00

CONTINUED FROM STEP E

yes / no

Replace thermostatic valve (WP 0583 00). Verify fault is corrected.

F

WARNING

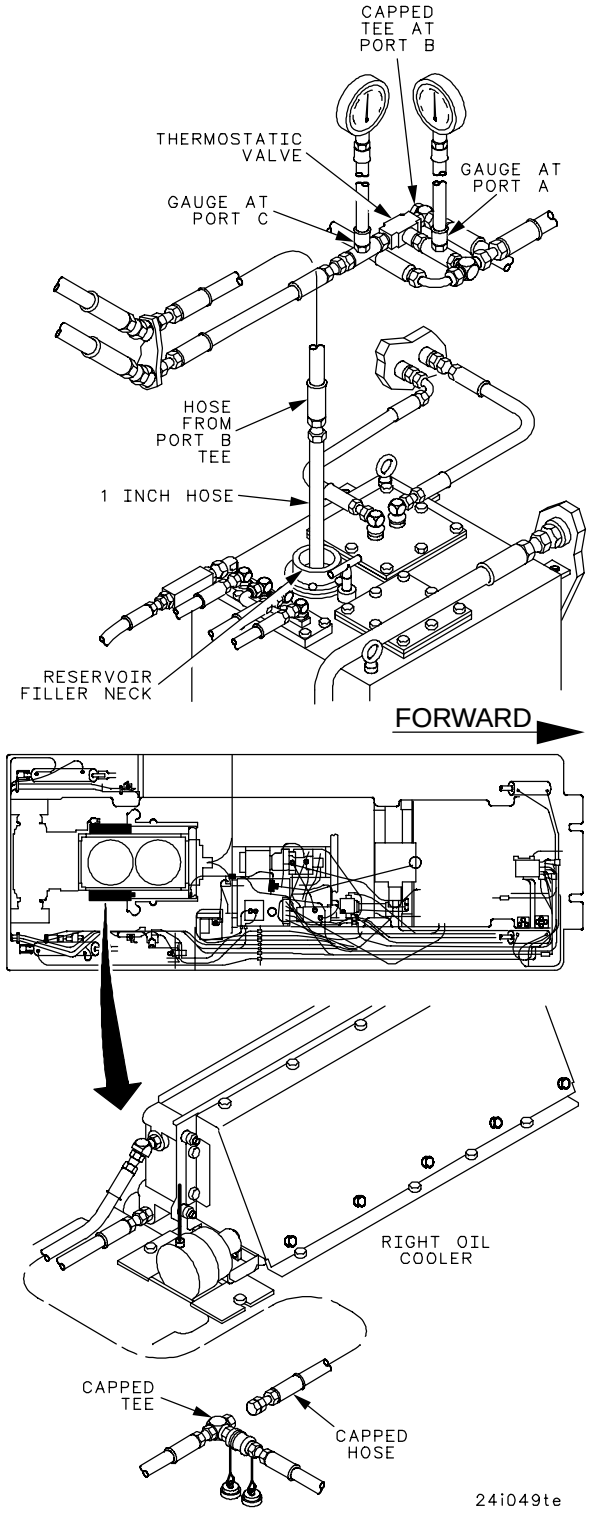
1. Remove 0-300 psi dial pressure gauges and tees from ports A and C of thermostatic valve.
2. Disconnect right oil cooler hose from tee. Cap both hose and tee with 1-inch caps.
3. Start main engine, energize hydraulics system and set engine speed to 1800 rpm (TM 9-2350-292-10).
4. Warm hydraulic fluid to 90-100^{d}F and then observe flow from hose.
5. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is fluid flow detected?

yes / no

Replace right oil cooler (WP 0230 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



HYDRAULIC OIL CONSTANTLY OVERHEATS - CONTINUED 0087 00

CONTINUED FROM STEP F

G

WARNING

1. Remove caps from right side oil cooler hose and tee and reconnect hose to tee.
2. Disconnect left side oil cooler hose from tee and cap both hose and tee with 1-inch caps.
3. Start main engine, energize hydraulics system and set engine speed to 1800 rpm (TM 9-2350-292-10).
4. Warm hydraulic fluid to 90-100^{d}F and then observe flow from hose.
5. Shut down hydraulics and main engine (TM 9-2350-292-10).

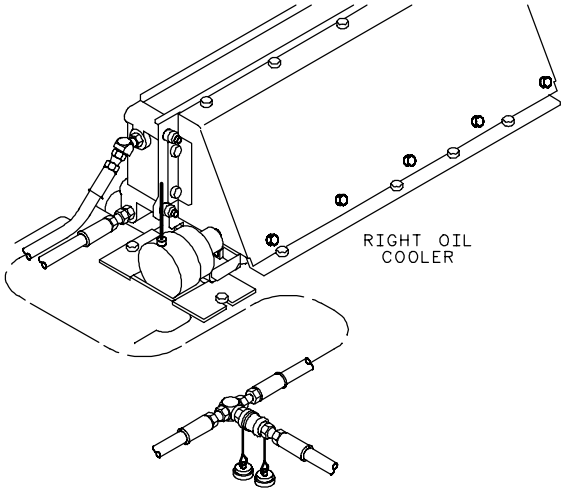
Is fluid flow detected?

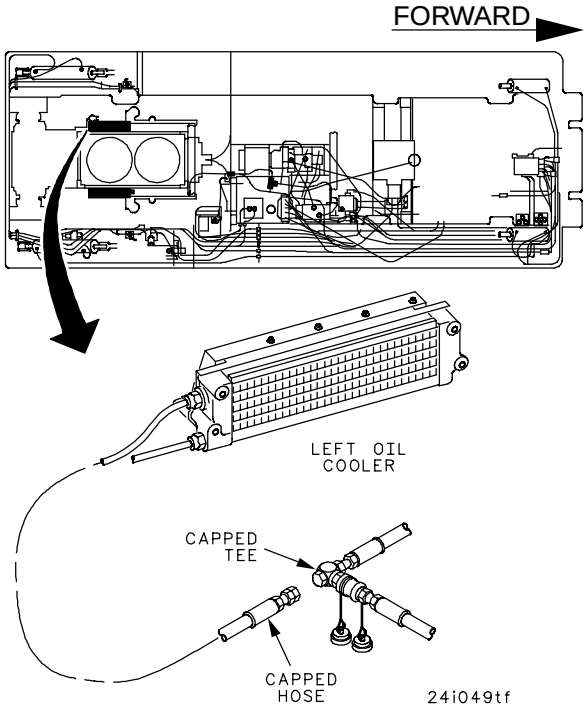
yes

no

Replace left oil cooler (WP 0230 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE





HYDRAULIC OIL CONSTANTLY OVERHEATS - CONTINUED 0087 00

CONTINUED FROM STEP G

H

WARNING

1. Remove hydraulic oil coolers (WP 0230 00).
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Turn PTO switch ON (TM 9-2350-292-10) and observe hydraulic oil cooler doors.
4. Turn PTO switch OFF (TM 9-2350-292-10) and observe hydraulic oil cooler doors.
5. Turn MASTER switch OFF (TM 9-2359-292-10).

Do oil cooler doors open when PTO switch is ON and close when PTO switch is turned OFF?

yes

Verify fault is corrected.

no

I Inspect oil cooler doors for proper installation and loose, missing, and damaged hardware and gaskets.

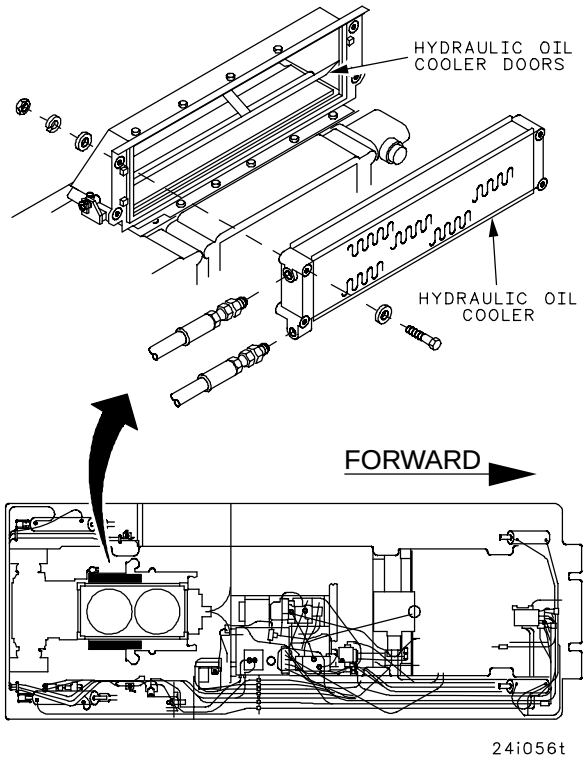
Are doors properly installed and is all hardware and gaskets present, tight, and free of damage?

yes

Go to WP 0144 00 Step K.

no

Repair, replace, or tighten as necessary (WP 0230 00). Verify fault is corrected.



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HYDRAULIC OIL CONSTANTLY OVERHEATS - CONTINUED 0087 00

CONTINUED FROM STEP I

J

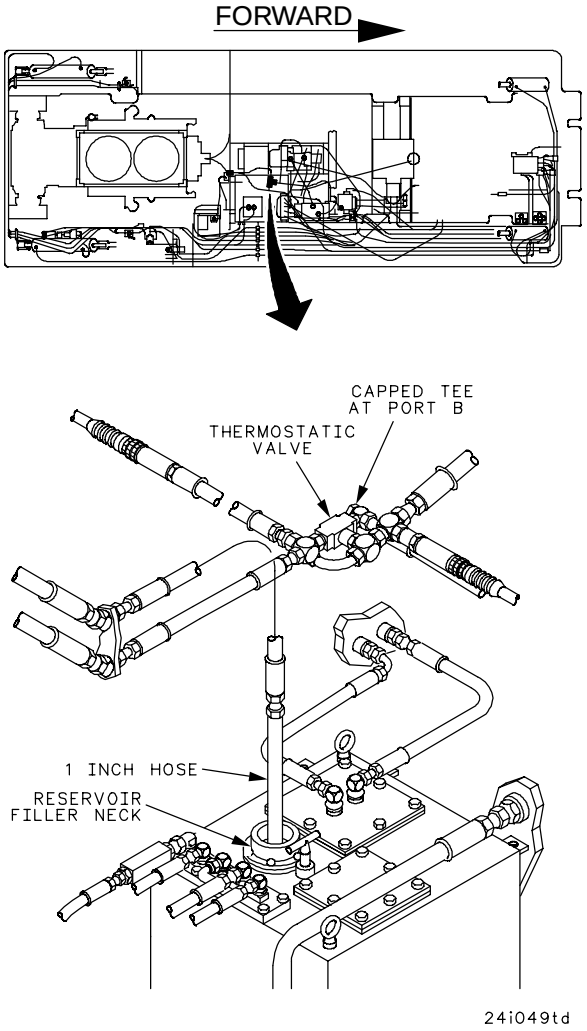
WARNING

1. Remove 0-300 psi dial pressure gauge from case drain check valve.
2. Disconnect hose from thermostatic valve port B and cap thermostatic valve port B with 1-inch cap.
3. Connect 1-inch hose to thermostatic hose at port B tee and place other end of hose in reservoir filler neck.
4. Start main engine and energize main hydraulics (TM 9-2350-292-10).
5. Set engine RPM to 1800.
6. Start Enhanced Diagnostic program (WP 0086 00) and select the corresponding symptom.
7. Warm hydraulic fluid to 90-100^{d}F and then observe pressures at thermostatic valve ports A and C and flow from hose.
8. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is fluid flow detected?

yes → Go to Step F.

no → Replace thermostatic valve (WP 0579 00. Verify fault is corrected.



END OF TASK

MAIN HYDRAULICS SYSTEM FAILS TO OPERATE 0088 00

THIS WORK PACKAGE COVERS:

Main Hydraulics System Fails to Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck grilles above PTO shaft removed (WP 0415 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Start main engine and manually engage PTO (TM 9-2350-292-10).
2. Set engine speed to 1800 rpm and attempt to operate all hydraulic components one at a time.
3. Shut down main engine (TM 9-2350-292-10).

Do all components operate?

yes

no — Go to Step C.

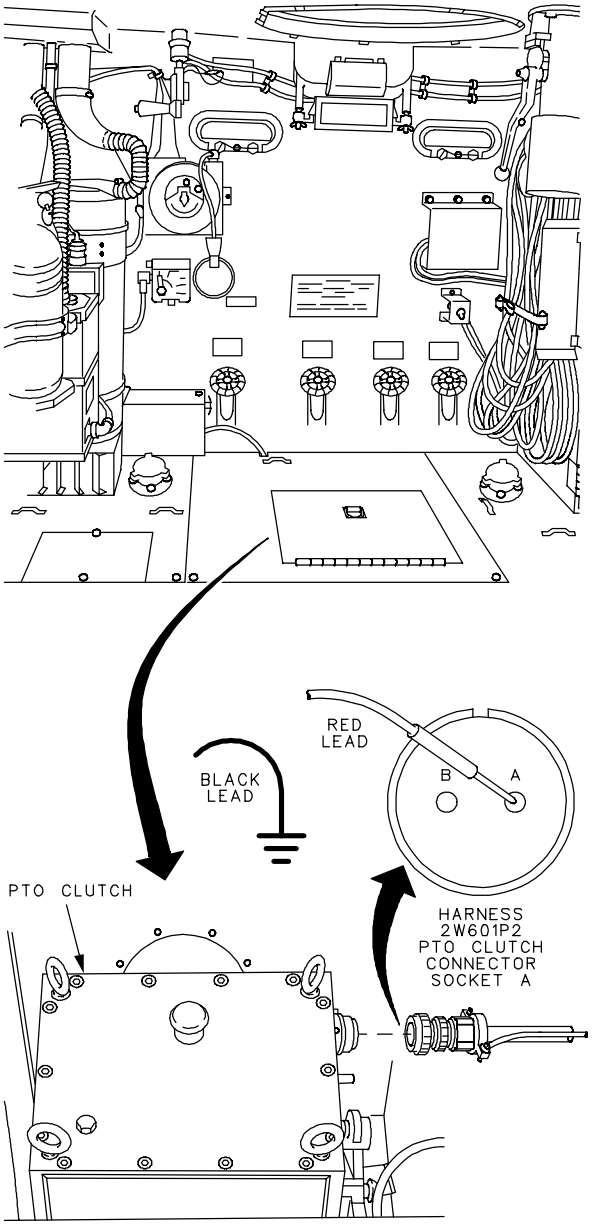
B

1. Remove subfloor plates 26 and 27 (WP 0454 00).
2. Disconnect wiring harness 2W601 P2 connector from PTO clutch (WP 0291 00).
3. Turn ON vehicle MASTER switch (TM 9-2350-292-10).
4. Place multimeter red lead in connector socket A and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes — Notify Direct Support Maintenance.

no — Go to WP 0144 00.



24i012t

CONTINUED ON NEXT PAGE

MAIN HYDRAULICS SYSTEM FAILS TO OPERATE - CONTINUED 0088 00

CONTINUED FROM STEP A

C Loosen clamp and pull back rubber boot to inspect PTO drive shaft for damaged and missing parts.

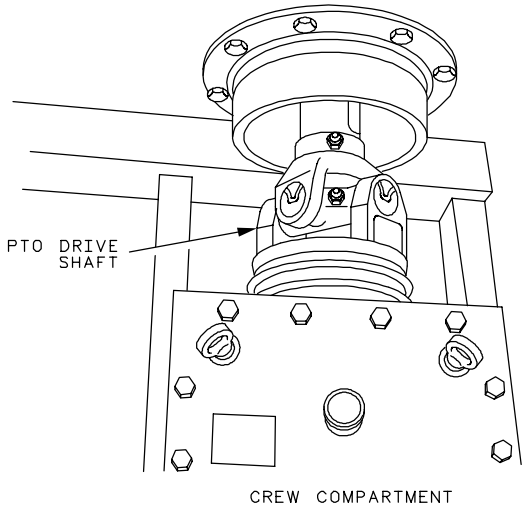
Is PTO drive shaft free of damaged and missing parts?

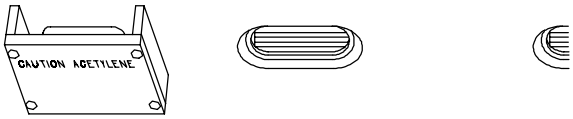
yes

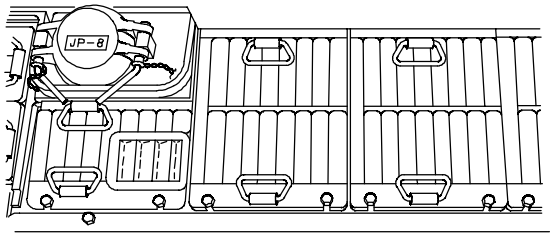
Notify Direct Support Maintenance.

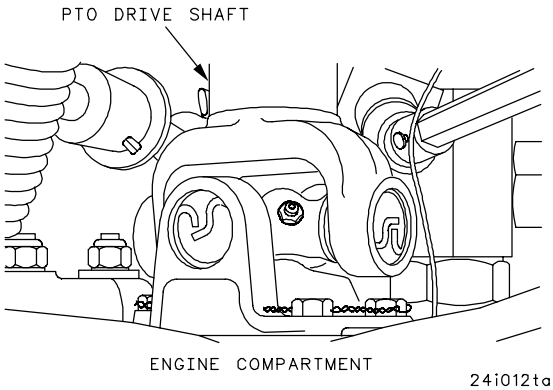
no

Replace damaged and missing parts (WP 0544 00). Verify fault is corrected.









24i012ta

END OF TASK

SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN MAIN POSITION 0089 00

THIS WORK PACKAGE COVERS:

Slow or No Hydraulic Component Operation with Hydraulic Selector Set in Main Position

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-300 psi dial pressure gauge (item 81, WP 0717 00)
0-500 psi dial pressure gauge (2) (item 83, WP 0717 00)
1/4-inch tee (item 71, WP 0716 00)*
3/8-inch tee (item 72, WP 0716 00)*
Safety goggles (item 93, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Subfloor plates 10, 11, 12, 18, 20 and 22 removed (WP 0454 00)
Hydraulic control valve manifold assembly shields removed (WP 0519 00)

Personnel Required

Two

*Not required if vehicle is equipped with Enhanced diagnostics System

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



WARNING

A Is vehicle equipped with Enhanced Diagnostics System?

yes

Go to Step N.

no

CONTINUED ON NEXT PAGE

SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN MAIN POSITION - CONTINUED

0089 00

CONTINUED FROM STEP A

B

WARNING

1. Install 0-300 psi dial pressure gauge in filter valve manifold port CH4.
2. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10). Observe gauge.
3. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is gauge pressure 80-140 psi?

yes

Go to Step F.

no

C Inspect hose from reservoir to charge pump for leaks, restrictions, and damage.

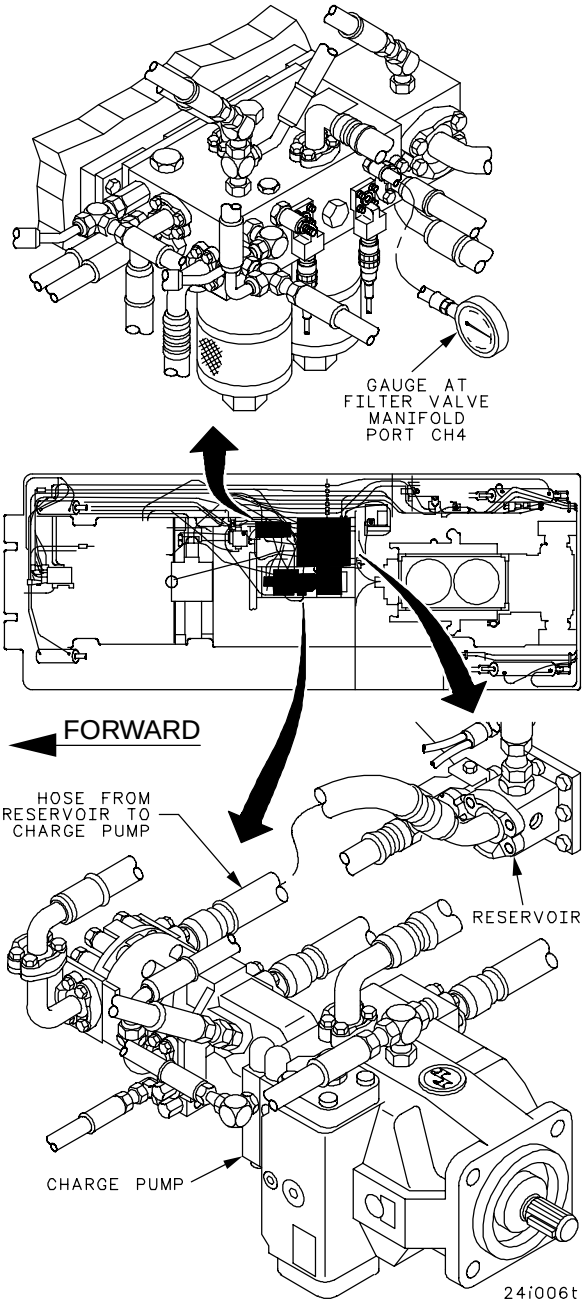
Is hose free of leaks, restrictions, and damage?

yes

no

Tighten leaking connections and remove restrictions. If restrictions cannot be removed or if hose is damaged, replace (WP 0583 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN MAIN POSITION - CONTINUED 0089 00

CONTINUED FROM STEP C

D Inspect the following hoses for leaks, restrictions, and damage: hose from charge pump port A1 to filter valve manifold check valve (CV6) port CH1; hose from charge pump port S1 to filter valve manifold port CH2; hose from front pump port S2 to filter valve manifold port CH2; hose from filter valve manifold port CH3 to hoist and main winch directional control valve port R; hose from filter valve manifold port CH2 to hydraulic control valve manifold assembly port AWR and hose from hydraulic control valve manifold assembly port AWR to port C of crossport relief/anti-cavitational valve.

Are all hoses free of leaks, restrictions, and damage?

yes

no

Tighten leaking connections and remove restrictions. If restrictions cannot be removed or if hoses are damaged, replace (WP 0568 00, WP 0565 00, and WP 0573 00). Verify fault is corrected.

E
1. Start the APU (TM 9-2350-292-10).
2. Place system selector valve in the AUX position and observe gauge at port CH4 of filter valve manifold.
3. Shut down APU (TM 9-2350-292-10).

Does pressure gauge at CH4 read 60-140 psi?

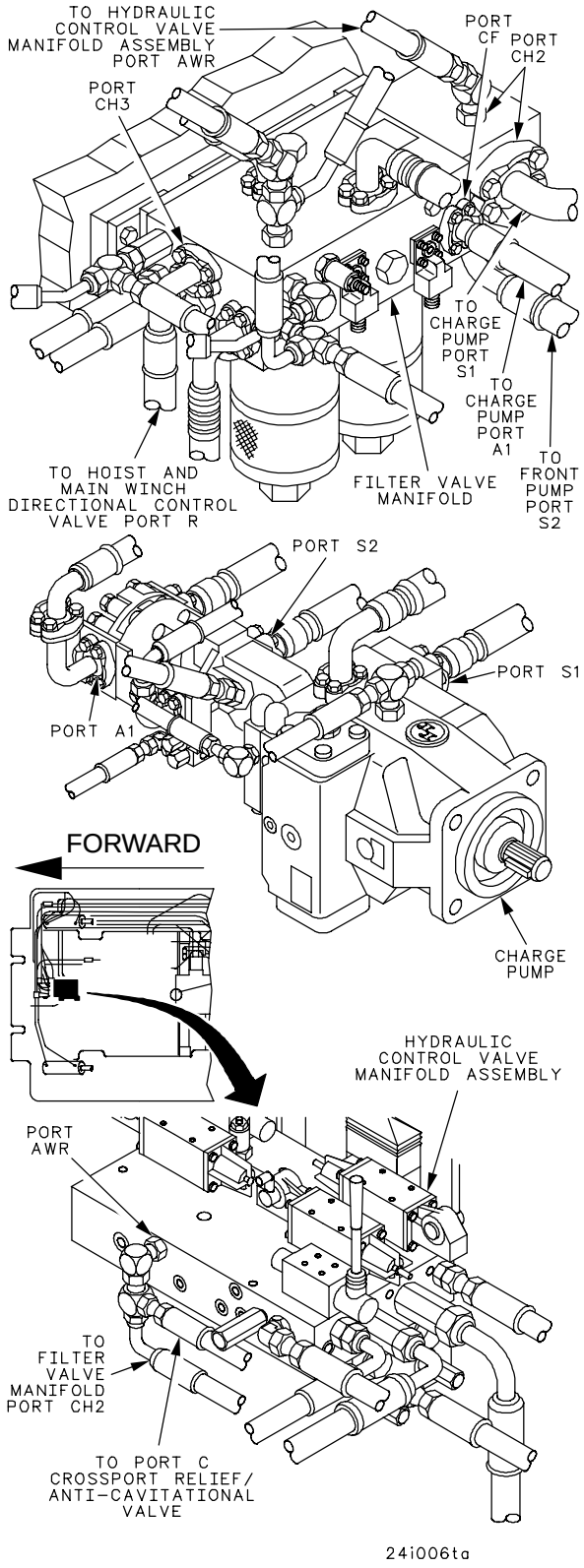
yes

no

Notify Direct Support Maintenance.

Replace charge relief valve on filter valve manifold (WP 0550 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN MAIN POSITION - CONTINUED 0089 00

CONTINUED FROM STEP B

F

1. Start main engine, energize hydraulics and set engine speed to 1800 rpm (TM 9-2350-292-10).
2. Attempt to operate auxiliary winch, boom, and spade.
3. Shut down hydraulics and main engine (TM 9-2350-292-10).

Does auxiliary winch, boom, and spade operate?

yes — Go to Step J.

no

G



WARNING

1. Install 0-5000 psi dial pressure gauge in P test port on hydraulic control valve manifold assembly.
2. Start main engine, energize hydraulics and set engine speed to 1800 rpm (TM 9-2350-292-10). Record gauge reading.
3. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is gauge pressure reading 440-625 psi?

yes

no — Notify Direct Support Maintenance.

H

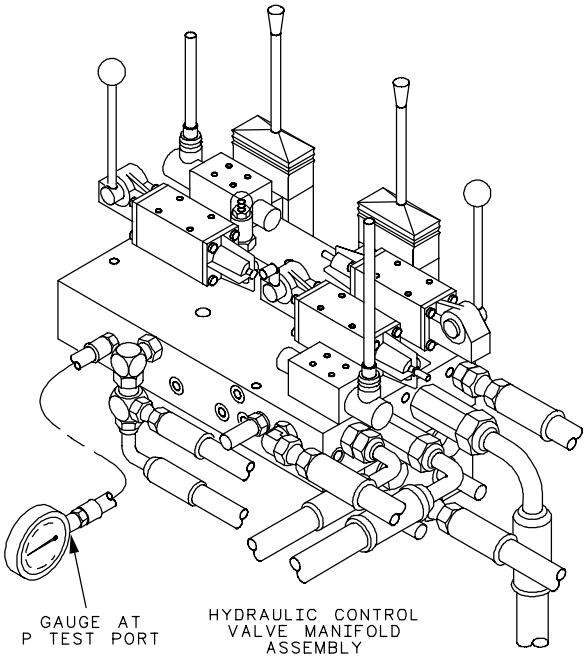


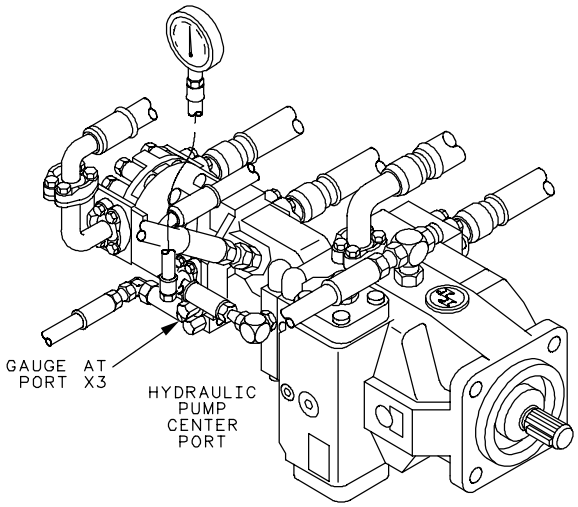
WARNING

1. Install 0-5000 psi dial pressure gauge with 1/4-inch tee between center pump port X3 and attaching hose.
2. Disconnect auxiliary winch quick-disconnects.
3. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
4. Place auxiliary winch control handle in inhaul position.
5. Record gauge readings at port X3 and P test port.
6. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure at both gauges 3900-4100 psi?

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SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN MAIN POSITION - CONTINUED 0089 00

CONTINUED FROM STEP H

yes / no

Fault corrected.

I Inspect the following hoses for leaks, restrictions, and damage: hose from boom directional control valve to boom shutoff valve port A; hose from boom directional control valve to center pump port X3; hose from boom shutoff valve to both check valves, and hose from check valve to center pump port B3.

Are all hoses free of leaks, restrictions, and damage?

yes / no

Notify Direct Support Maintenance.

Tighten leaking connections and remove restrictions. If restrictions cannot be removed, or if hoses are damaged, replace (WP 0565 00 and WP 0576 00). Verify fault is corrected.

CONTINUED FROM STEP F

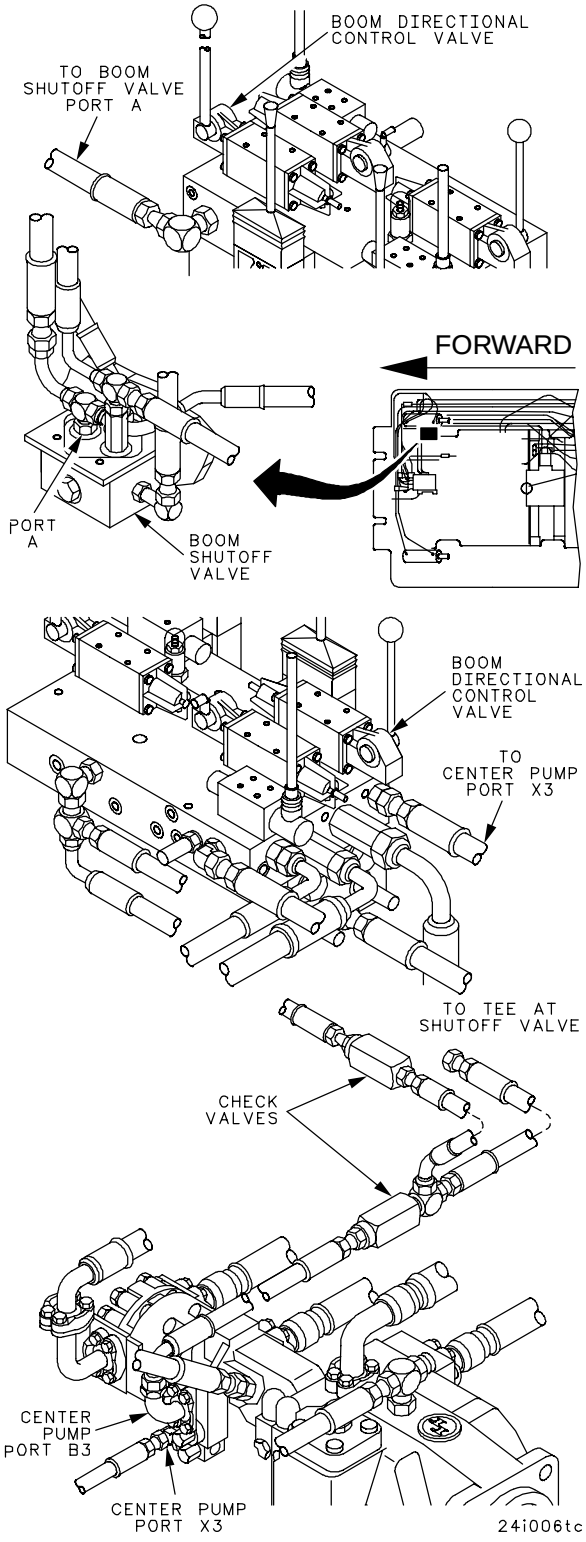
J Perform Step F attempting to operate hoist and main winch.

Does hoist and main winch operate?

yes / no

Fault corrected.

CONTINUED ON NEXT PAGE



SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN MAIN POSITION - CONTINUED 0089 00

CONTINUED FROM STEP J

K

WARNING

1. Install a 0-5000 psi dial pressure gauge in MS port of filter valve manifold.
2. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10). Record gauge pressure.
3. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is gauge pressure approximately 440-625 psi?

yes

no

Notify Direct Support Maintenance.

L

WARNING

1. Install another 0-5000 psi dial pressure gauge with 3/8-inch tee between front pump port X1 and attaching hose.
2. Disconnect quick-disconnects at main winch.
3. Remove hose and adapter from hoist and main winch directional control valve port LS1. Remove plug from port LS and install plug in port LS1 and install hose and adapter from LS1 into port LS.
4. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
5. Place main winch control lever in either inhaul or payout position and record pressures at MS and X1.
6. Shut down hydraulics and main engine (TM 9-2350-292-10).

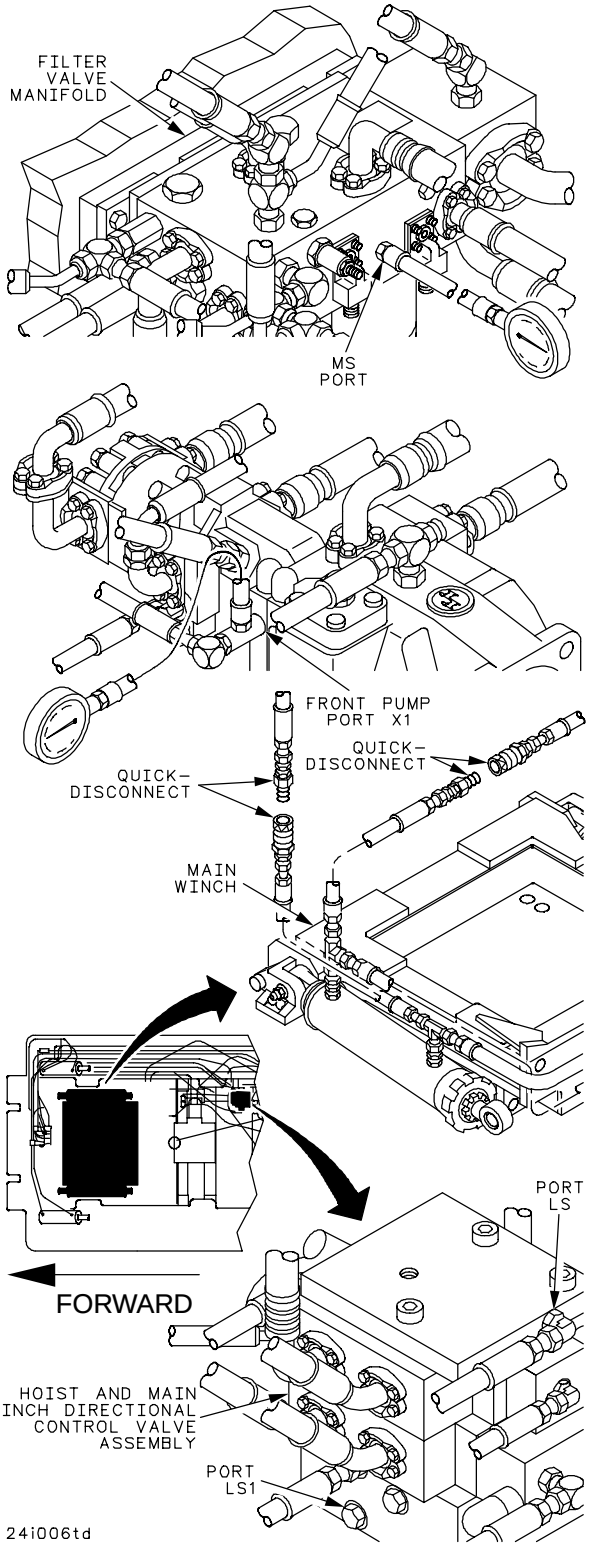
Are both pressures 4100-4300 psi?

yes

no

Fault corrected.

CONTINUED ON NEXT PAGE



SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN MAIN POSITION - CONTINUED 0089 00

CONTINUED FROM STEP L

M

1. Remove hoist and main winch directional control valve assembly (WP 0556 00).
2. Inspect load sense shuttle plugs in hoist and main winch directional control valve assembly, ports LS, LS1, LS2, and all attaching hoses for leaks, restrictions, and damage.

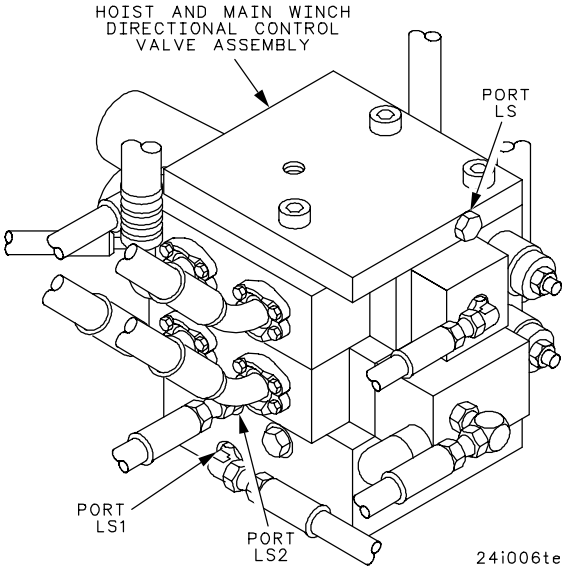
Are plugs, ports, and hoses free of leaks, restrictions, and damage?

yes

Notify Direct Support Maintenance.

no

Tighten leaking connections and remove restrictions. If restrictions cannot be removed, or if parts are damaged, replace (WP 0573 00). Verify fault is corrected.



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SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN MAIN POSITION - CONTINUED 0089 00

CONTINUED FROM STEP A

N

1. Start the Enhanced Diagnostic Program (WP 0086 00) and select the corresponding symptom.
2. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10). Observe pressure at filter valve manifold port CH4.
3. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure 80-140 psi?

yes

Go to Step R.

no

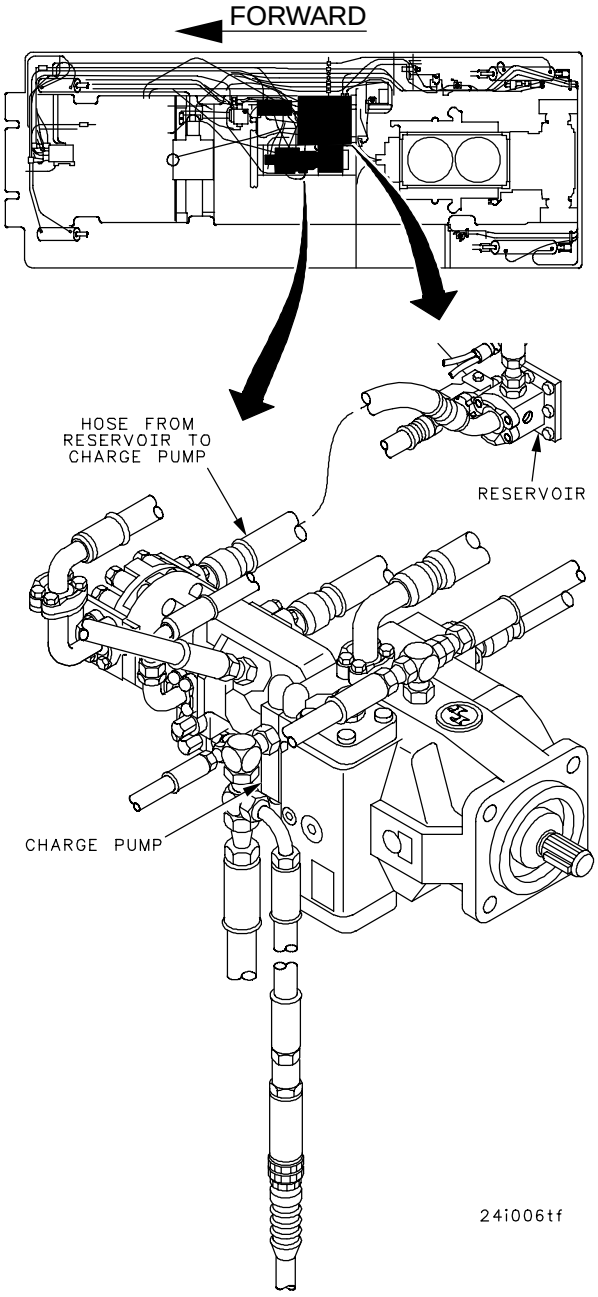
O Inspect hose from reservoir to charge pump for leaks, restrictions, and damage.

Is hose free of leaks, restrictions, and damage?

yes

no

Tighten leaking connections and remove restrictions. If restrictions cannot be removed or if hose is damaged, replace (WP 0583 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN MAIN POSITION - CONTINUED 0089 00

CONTINUED FROM STEP O

P Inspect the following hoses for leaks, restrictions, and damage: hose from charge pump port A1 to filter valve manifold check valve (CV6) port CH1; hose from charge pump port S1 to filter valve manifold port CH2; hose from front pump port S2 to filter valve manifold port CH2; hose from filter valve manifold port CH3 to hoist and main winch directional control valve port R; hose from filter valve manifold port CH2 to hydraulic control valve manifold assembly port AWR and hose from hydraulic control valve manifold assembly port AWR to port C of crossport relief/anti-cavitational valve.

Are all hoses free of leaks, restrictions, and damage?

yes

no

Tighten leaking connections and remove restrictions. If restrictions cannot be removed or if hoses are damaged, replace (WP 0565 00, WP 0568 00, and WP 0573 00 or WP 0572 00). Verify fault is corrected.

Q
1. Start the APU (TM 9-2350-292-10).
2. Place system selector valve in the AUX position and observe pressure at port CH4 of filter valve manifold.
3. Shut down APU (TM 9-2350-292-10).

Is pressure at CH4 60-140 psi?

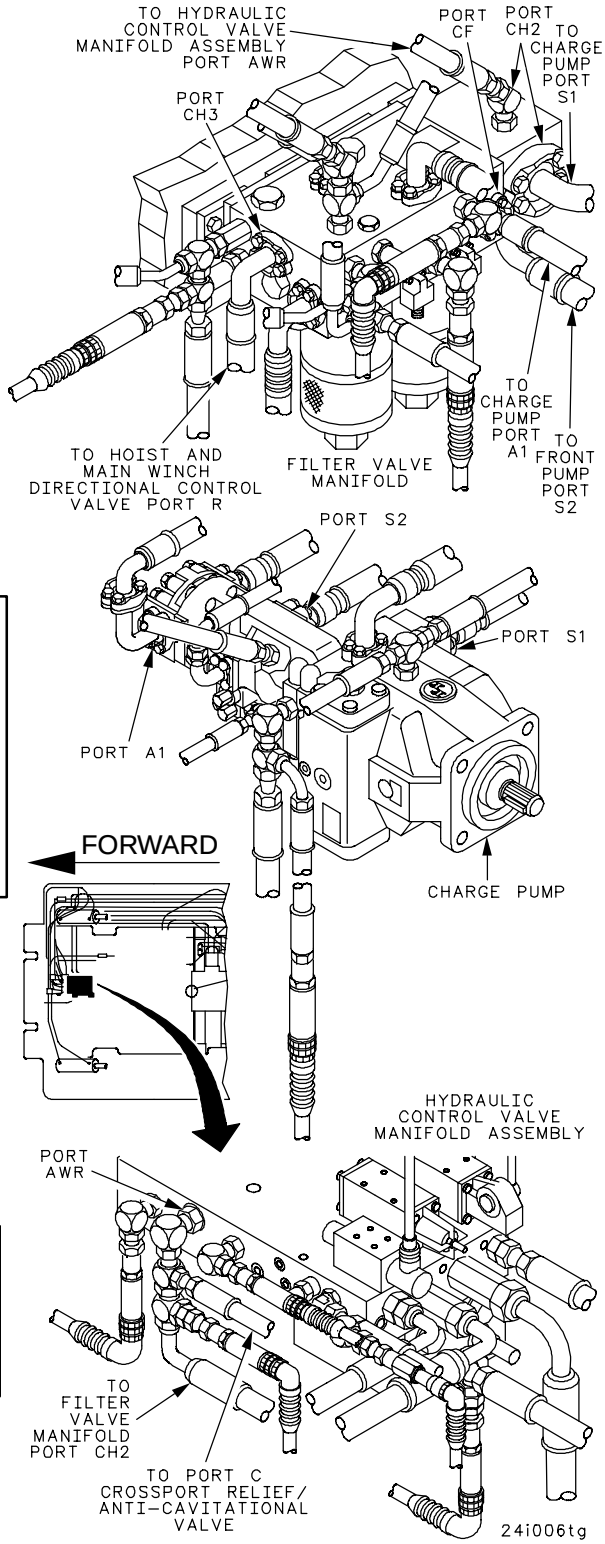
yes

no

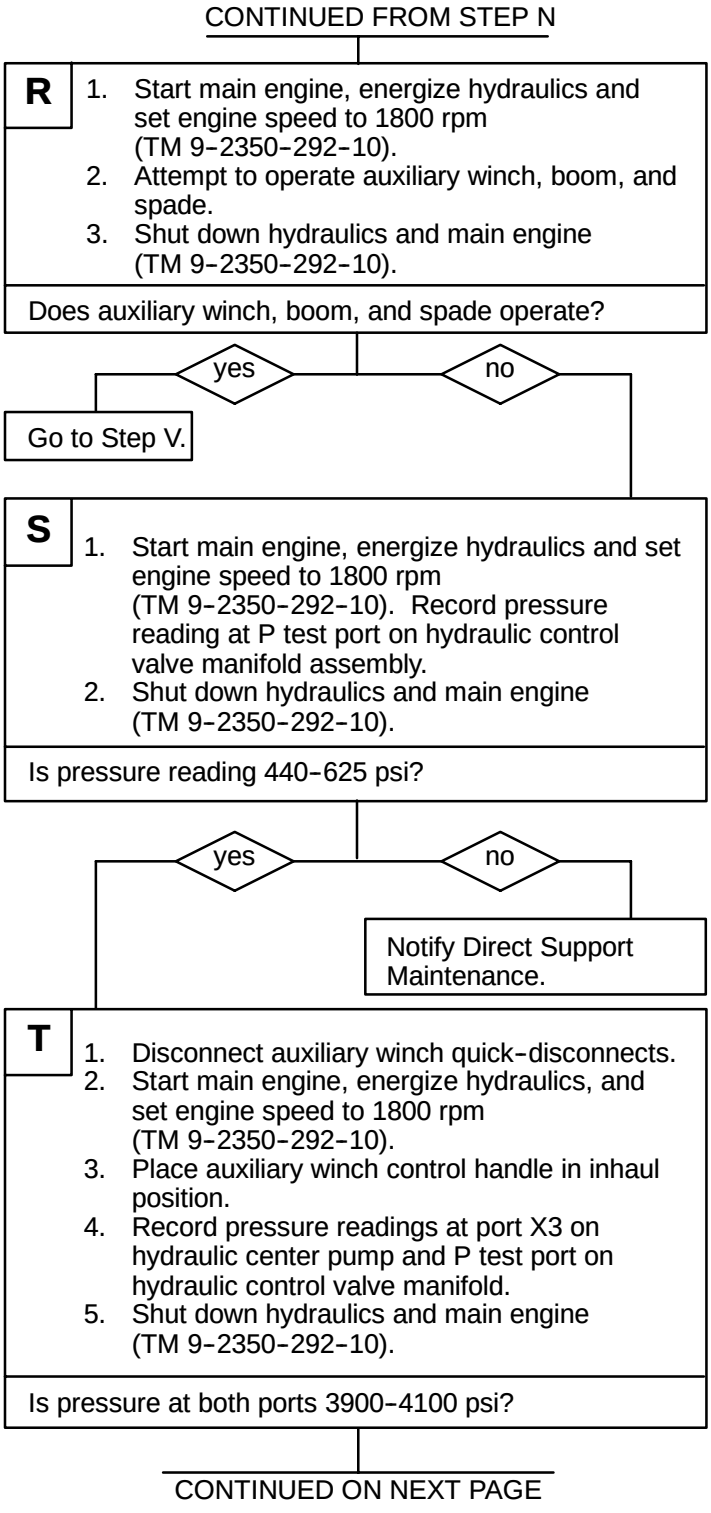
Notify Direct Support Maintenance.

Replace charge relief valve on filter valve manifold (WP 0550 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN MAIN POSITION - CONTINUED 0089 00



SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN MAIN POSITION - CONTINUED 0089 00

CONTINUED FROM STEP T

yes / no

Fault corrected.

U Inspect the following hoses for leaks, restrictions, and damage: hose from boom directional control valve to boom shutoff valve port A; hose from boom directional control valve to center pump port X3; hose from boom shutoff valve to both check valves, and hose from check valve to center pump port B3.

Are all hoses free of leaks, restrictions, and damage?

yes / no

Notify Direct Support Maintenance.

Tighten leaking connections and remove restrictions. If restrictions cannot be removed, or if hoses are damaged, replace (WP 0565 00 and WP 0576 00). Verify fault is corrected.

CONTINUED FROM STEP R

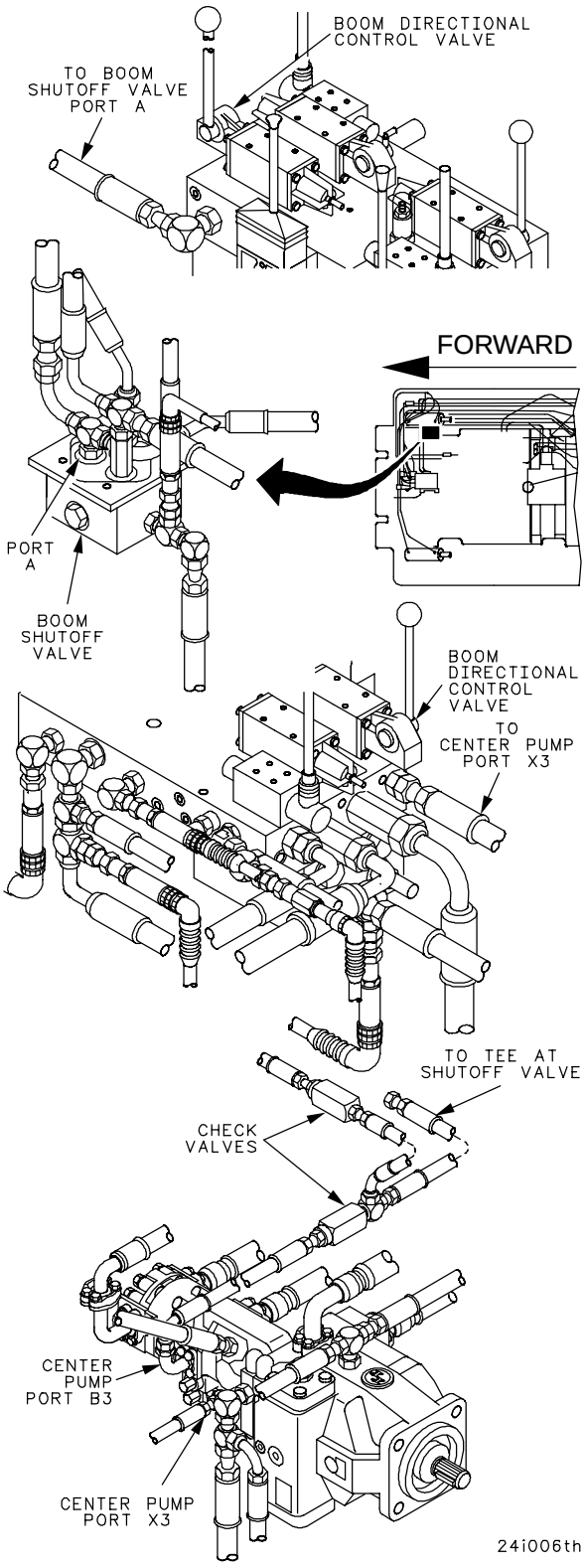
V Perform Step R attempting to operate hoist and main winch.

Does hoist and main winch operate?

yes / no

Fault corrected.

CONTINUED ON NEXT PAGE



SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN MAIN POSITION - CONTINUED

0089 00

CONTINUED FROM STEP V

W

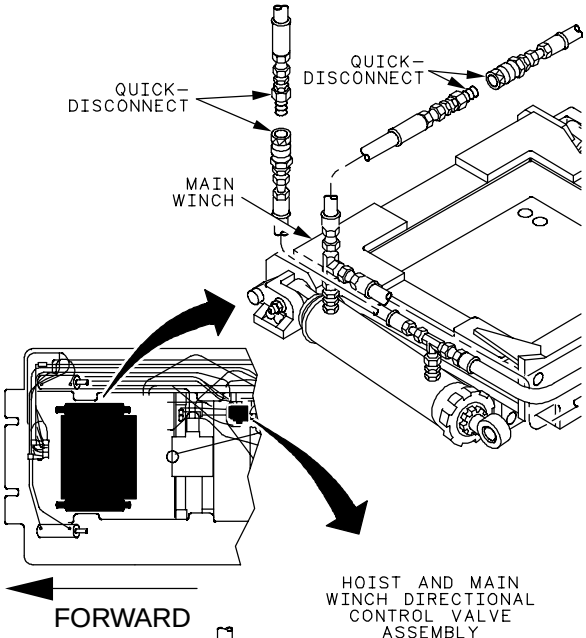
1. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10). Record pressure at MS port of filter valve manifold.
2. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure 440-625 psi?

yes

no

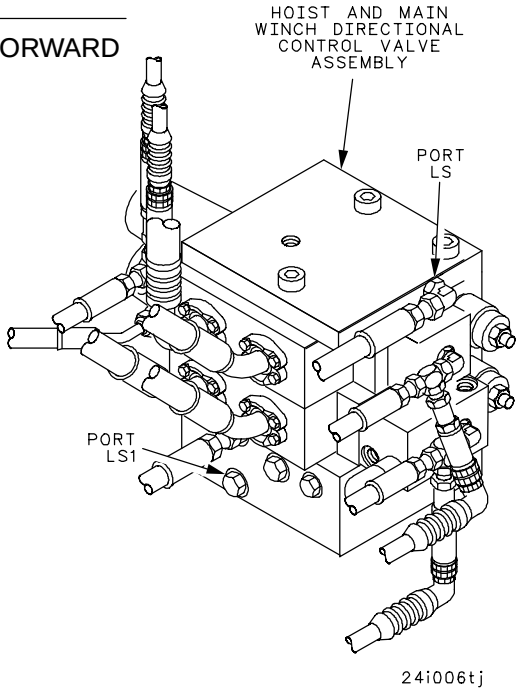
Notify Direct Support Maintenance.



X

1. Disconnect quick-disconnects at main winch.
2. Remove hose and adapter from hoist and main winch directional control valve port LS1. Remove plug from port LS and install plug in port LS1 and install hose and adapter from LS1 into port LS.
3. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
4. Place main winch control lever in either inhaul or payout position and record pressures at ports MS and X1 of hydraulic front pump.
5. Shut down hydraulics and main engine (TM 9-2350-292-10).

Are both pressures 4100-4300 psi?



yes

no

Fault corrected.

CONTINUED ON NEXT PAGE

SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN MAIN POSITION - CONTINUED 0089 00

CONTINUED FROM STEP X

Y

1. Remove hoist and main winch directional control valve assembly (WP 0556 00).
2. Inspect load sense shuttle plugs in hoist and main winch directional control valve assembly, ports LS, LS1, LS2, and all attaching hoses for leaks, restrictions, and damage.

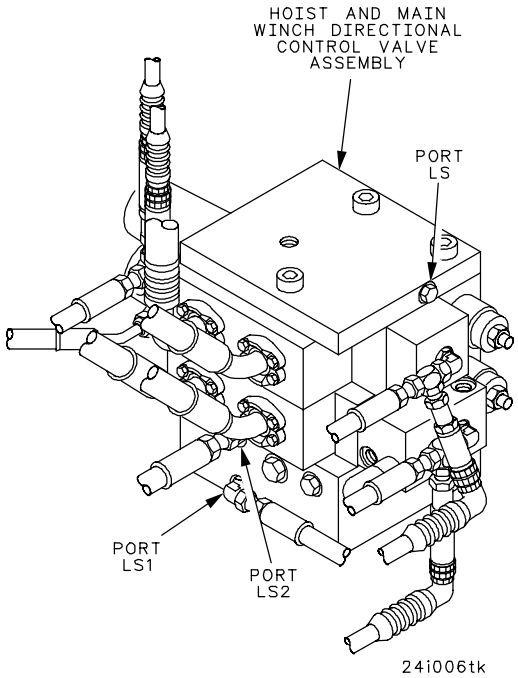
Are plugs, ports, and hoses free of leaks, restrictions, and damage?

yes

Notify Direct Support Maintenance.

no

Tighten leaking connections and remove restrictions. If restrictions cannot be removed, or if parts are damaged, replace (WP 0573 00). Verify fault is corrected.



END OF TASK

SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN AUXILIARY POSITION 0090 00

THIS WORK PACKAGE COVERS:

Slow or No Hydraulic Component Operation With Hydraulic Selector Set in Auxiliary Position

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-4000 psi testing gauge assembly (item 82, WP 0717 00)*
Safety goggles (item 93, WP 0716 00)
1/2" Plug (4) (item 69, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU cover removed (WP 0413 00)
Subfloor plates 28, 29 and 30 removed (WP 0454 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



WARNING

*Not required if vehicle is equipped with Enhanced Diagnostics System

A Check oil in hydraulic reservoir for air bubbles.

Are excessive air bubbles and foam present in oil?

yes

no — Go to Step E.

B Inspect the reservoir supply manifold, supply hoses, bulkhead connections and APU hydraulic pump inlet for leaks, damaged connectors and hoses, and loose hardware.

Are hoses, connectors, and manifold free of leaks and damage and is all hardware tight?

yes

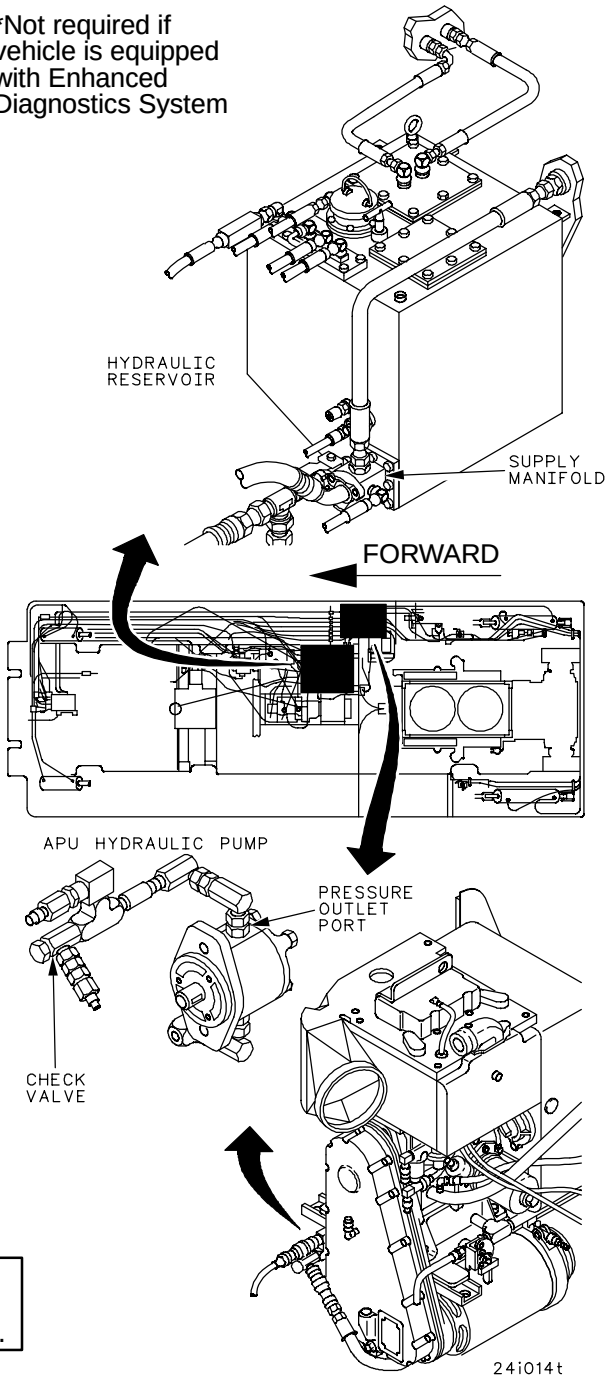
no — Tighten loose hardware. Replace damaged fittings, connections, and/or hoses (WP 0583 00). Verify fault is corrected.

C Inspect the APU hydraulic pump pressure outlet port and check valve and fittings for damage, leaks, and looseness.

Is outlet port, check valve, and fittings free of damage, leaks, and are they tight?

yes

no — Tighten loose and leaking parts. Replace damaged parts (WP 0547 00 or WP 0548 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN AUXILIARY POSITION - CONTINUED

0090 00

CONTINUED FROM STEP C

D



WARNING

Remove check valve and inspect valve seat and internal parts for damage.

Is check valve free of damage?

yes

Replace APU hydraulic pump (WP 0547 00 or WP 0548 00). Verify fault is corrected.

no

Replace check valve (WP 0581 00 or WP 0582 00). Verify fault is corrected.

CONTINUED FROM STEP A

E Inspect APU pressure hoses and air pressure switch hose for damage, restrictions, loose, damaged or improperly connected quick-disconnects.

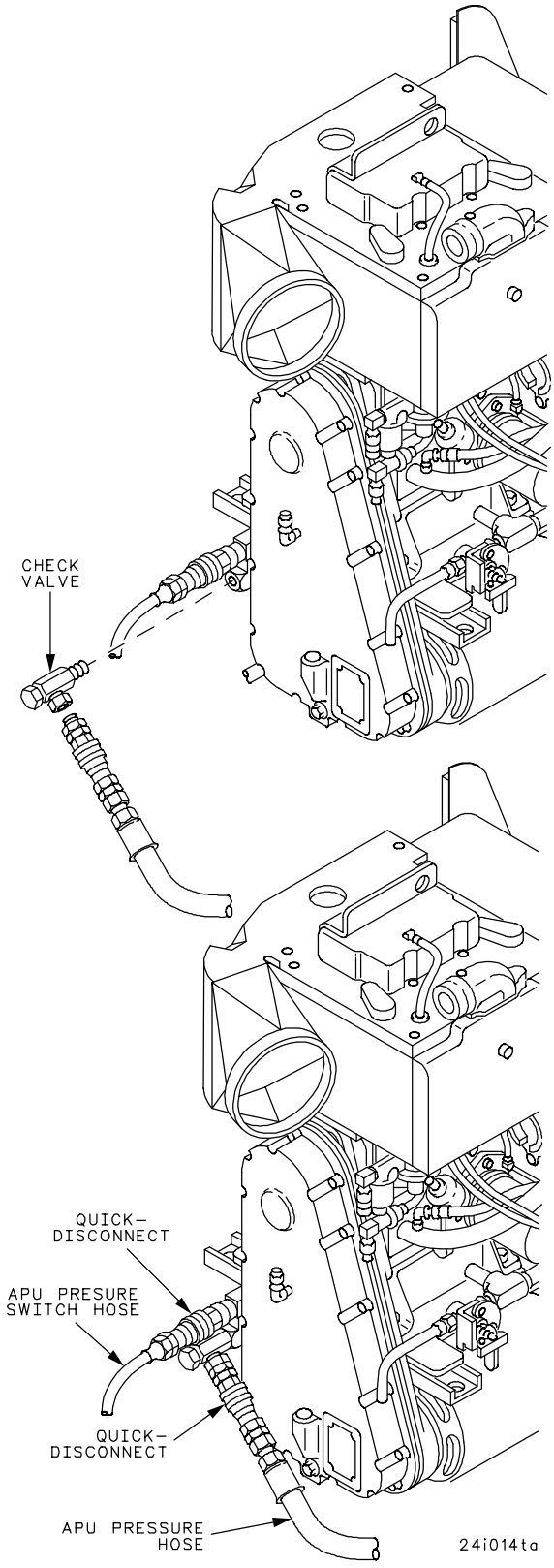
Are hoses and quick-disconnects free of damage, restrictions and properly connected?

yes

no

Connect properly, remove restrictions, replace damaged hoses and quick-disconnects (WP 0581 00 or WP 0582 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN AUXILIARY POSITION - CONTINUED 0090 00

CONTINUED FROM STEP E

F Is vehicle equipped with Enhanced Diagnostic System?

yes → Go to Step K.

no

G

WARNING

1. Remove hydraulic control valve manifold assembly shields (WP 0519 00).
2. Install a 4000 psi testing gauge assembly in the APU TEST port on the hydraulic control valve manifold assembly.
3. Start the APU (TM 9-2350-292-10).
4. Place the system selector in the AUX position.
5. Place all other control handles in the center (neutral) position. Read gauge.
6. Shut down the APU (TM 9-2350-292-10).

Is reading on gauge 1650-1750 psi?

yes

no → Go to Step I.

H

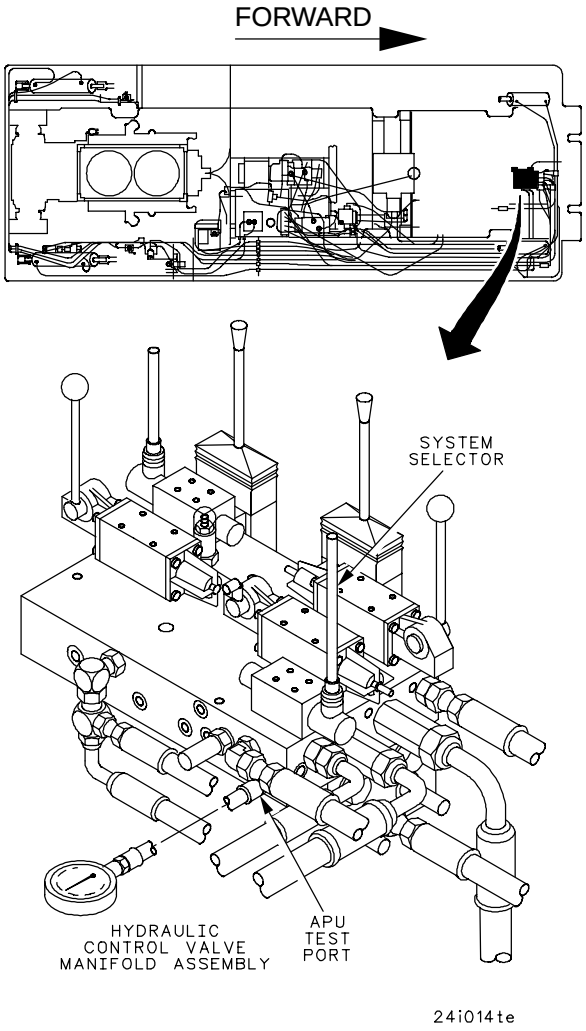
1. Shift system selector to the fuel transfer position.
2. Start the APU (TM 9-2350-292-10) and read gauge.
3. Shut down the APU (TM 9-2350-292-10).

Is reading on gauge 1650-1750 psi?

yes → Fault corrected. If an auxiliary component fails to operate, go to Quick Guide and find appropriate troubleshooting.

no

CONTINUED ON NEXT PAGE



SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN AUXILIARY POSITION - CONTINUED 0090 00

CONTINUED FROM STEP G AND H

I



WARNING

1. Disconnect hoses from ports AUX and FT on the control valve manifold.
2. Plug hoses and manifold.
3. Start the APU (TM 9-2350-292-10).
4. Place the system selector valve in the AUX position and read the gauge in the test port.
5. Shift the system selector valve to the fuel transfer position. Record gauge readings.

Are both readings 1650-1750 psi?

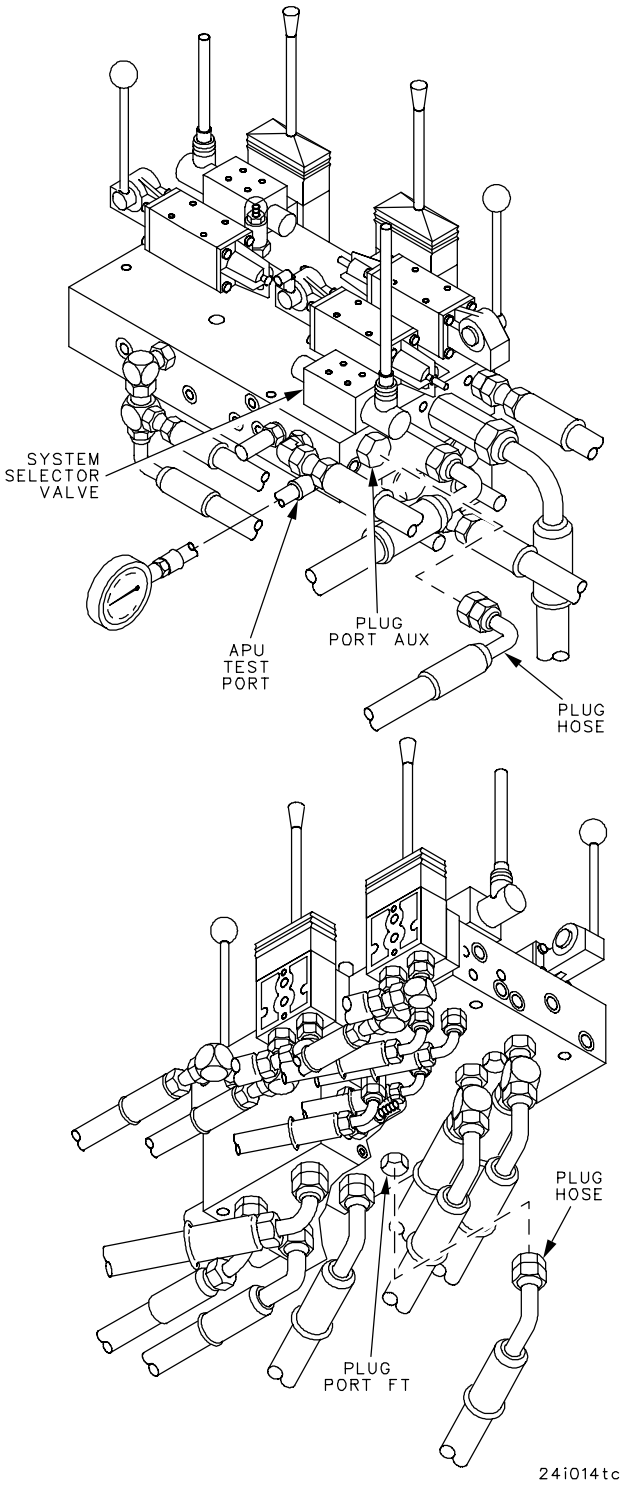
yes

no

Replace system selector valve (WP 0562 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE

HYDRAULIC CONTROL VALVE MANIFOLD ASSEMBLY



SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN AUXILIARY POSITION - CONTINUED 0090 00

CONTINUED FROM STEP I

J



WARNING

1. Unplug hoses and manifold and reconnect hoses to AUX and FT ports on manifold.
2. Open right side air intake grilles and refuel/defuel compartment.
3. Inspect auxiliary hoses, fuel transfer pump hoses and impact wrench pressure quick-disconnect for restrictions and leaks caused by damage or loose hardware.

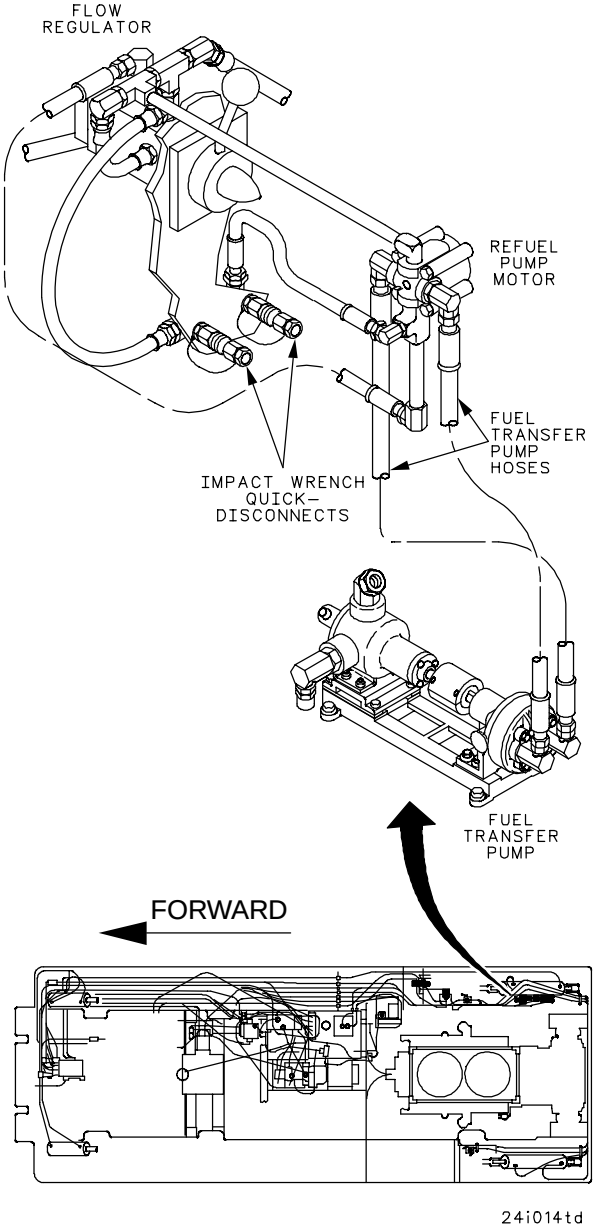
Are all hoses and quick-disconnects free of restrictions, damage and loose hardware?

yes

Fault corrected. If an auxiliary component fails to operate, go to Quick Guide and find appropriate trouble-shooting.

no

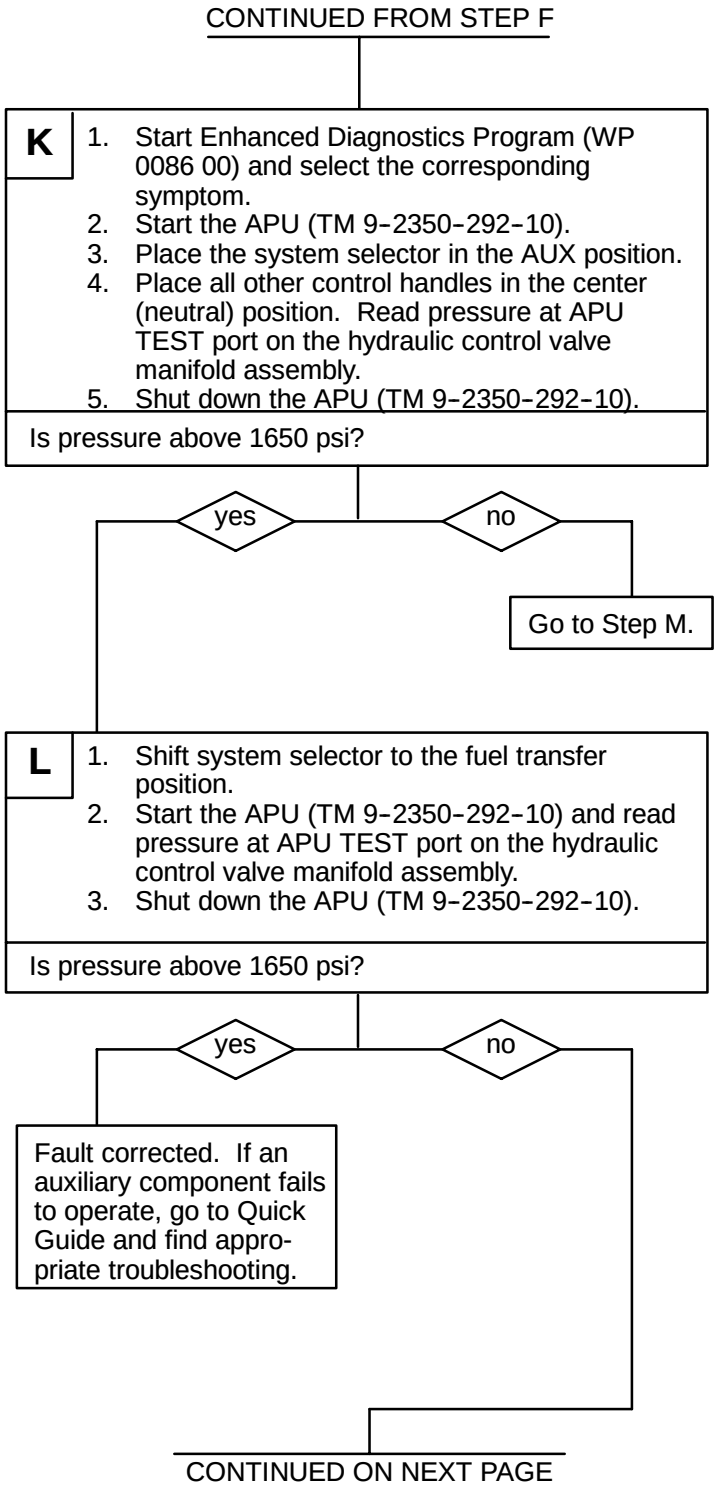
Remove restrictions and tighten loose hardware. Replace damaged parts (WP 0566 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN AUXILIARY POSITION - CONTINUED

0090 00



SLOW OR NO HYDRAULIC COMPONENT OPERATION WITH HYDRAULIC SELECTOR SET IN AUXILIARY POSITION - CONTINUED 0090 00

CONTINUED FROM STEP K AND L

M

WARNING

1. Remove hydraulic control valve manifold assembly shields (WP 0519 00).
2. Disconnect hoses from ports AUX and FT on the hydraulic control valve manifold assembly.
3. Plug hoses and manifold.
4. Start the APU (TM 9-2350-292-10).
5. Place the system selector valve in the AUX position and read the pressure of the APU test port.
6. Shift the system selector valve to the fuel transfer position. Record pressure readings.

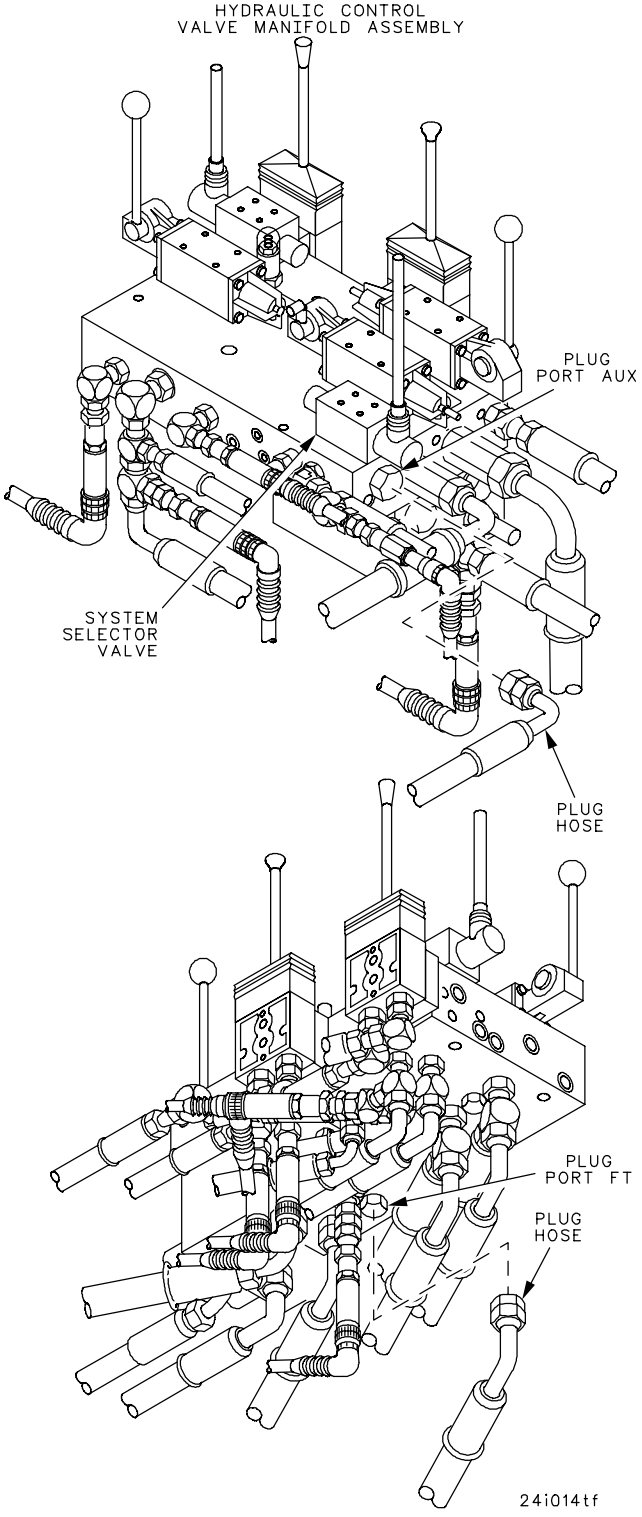
Are both readings above 1650 psi?

yes

Go to Step J.

no

Replace system selector valve (WP 0562 00). Verify fault is corrected.



END OF TASK

MAIN WINCH FAILS TO OPERATE OR FAILS TO DEVELOP FULL POWER. 0091 00

THIS WORK PACKAGE COVERS:

Main Winch Fails To Operate Or Fails To Develop Full Power

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-5000 psi dial pressure gauge (2) (item 83, WP 0717 00)*
0-4000 psi testing gauge assembly (3) (item 82, WP 0717 00)*
1/4-inch tee (2) (item 71, WP 0716 00)*
3/8-inch tee (item 72, WP 0716 00)*
1/4-inch cap (item 44, WP 0716 00)
1/4-inch plug (item 67, WP 0716 00)
Safety goggles (item 93, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Subfloor plates 9, 10, 11, 12, 15, 18, 20 and 22 removed (WP 0454 00)

Personnel Required

Two

* Not required if vehicle is equipped with Enhanced Diagnostics System

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



WARNING

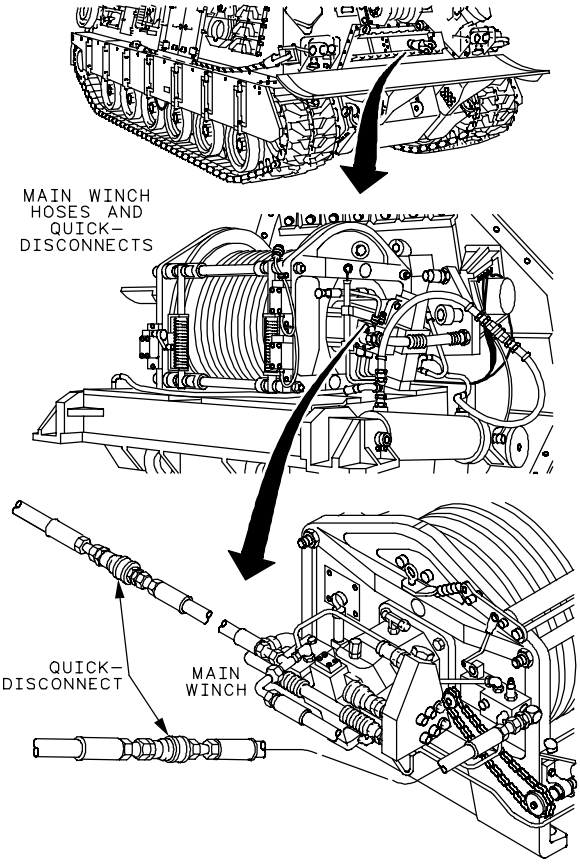
A Inspect main winch hoses and quick-disconnects for proper connection, restrictions, and damage.

Are all hoses and quick-disconnects free of restrictions, damage, and are they properly connected?

yes

no

If quick-disconnects are not properly connected, connect properly. Remove any restrictions found in hoses. If restrictions cannot be removed or if quick-disconnects or hoses are damaged, replace (WP 0500 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

MAIN WINCH FAILS TO OPERATE OR FAILS TO DEVELOP FULL POWER - CONTINUED 0091 00

CONTINUED FROM STEP A

B Is vehicle equipped with Enhanced Diagnostics System?

yes

Go to Step I.

no

C

WARNING

1. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between hoist and main winch directional control valve assembly port PMI and attaching hose.
2. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between hoist and main winch directional control valve assembly port PMO and attaching hose.
3. Start main engine, energize hydraulics, set engine speed to 1800 rpm (TM 9-2350-292-10). Payout main winch cable and record pressure at both gauges.
4. Inhaul main winch cable and record pressure at both gauges.
5. Shut down hydraulics and main engine (TM 9-2350-292-10).

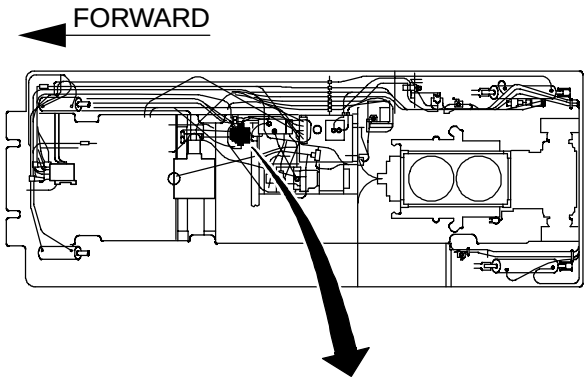
In payout position is PMO pressure 385-470 psi and PMI pressure less than 50 psi and in inhaul position, is PMI pressure 385-470 psi and PMO pressure less than 50 psi?

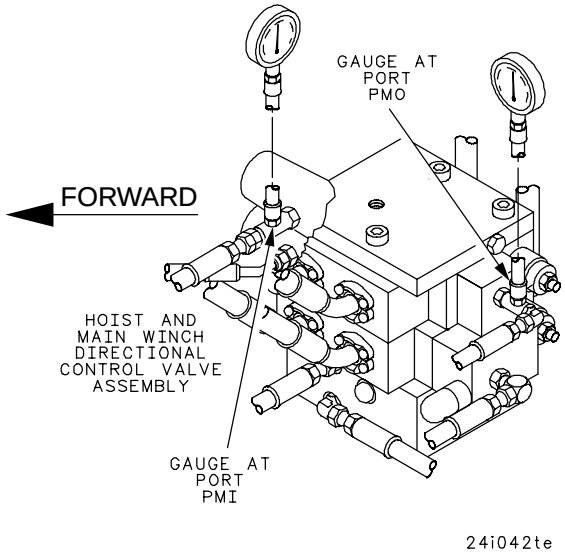
yes

Go to Step E.

no

CONTINUED ON NEXT PAGE





MAIN WINCH FAILS TO OPERATE OR FAILS TO DEVELOP FULL POWER - CONTINUED 0091 00

CONTINUED FROM STEP C

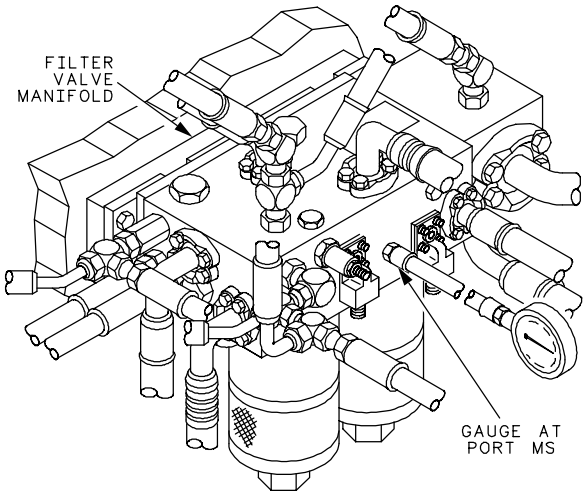
D



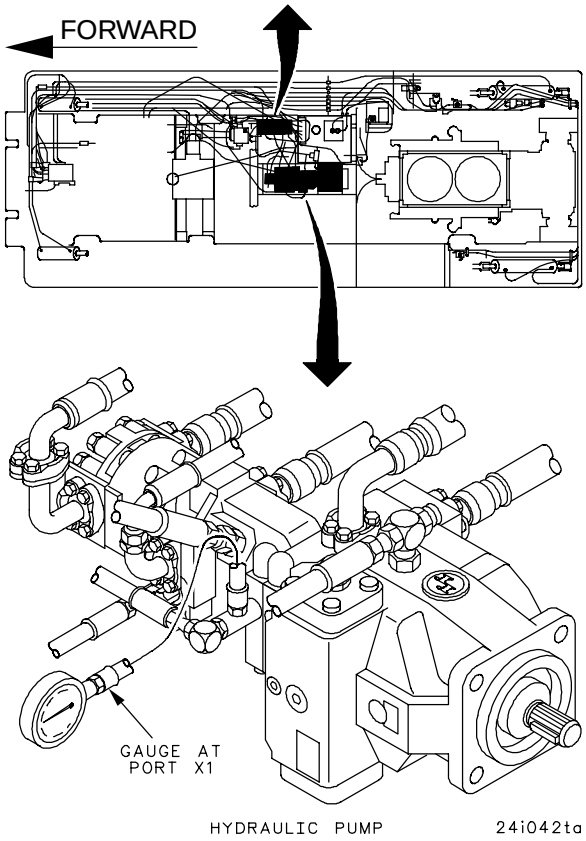
WARNING

1. Remove gauges from hoist and main winch directional control valve.
2. Install 0-5000 psi dial pressure gauge in filter valve manifold port MS.
3. Install 0-5000 psi dial pressure gauge with 3/8-inch tee between front pump port X1 and attaching hose.

CONTINUED ON NEXT PAGE



FILTER VALVE MANIFOLD



HYDRAULIC PUMP 24i042ta

MAIN WINCH FAILS TO OPERATE OR FAILS TO DEVELOP FULL POWER - CONTINUED 0091 00

CONTINUED FROM STEP D

D

WARNING

4. Disconnect quick-disconnects from main winch manifold.
5. Remove plug from hoist and main winch directional control valve assembly port LS and remove hose and fitting from port LS1.
6. Install hose and fitting into port LS and plug port LS1.
7. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
8. Payout main winch and record both pressures.
9. Inhaul main winch and record both pressures.
10. Shut down hydraulics and main engine (TM 9-2350-292-10).

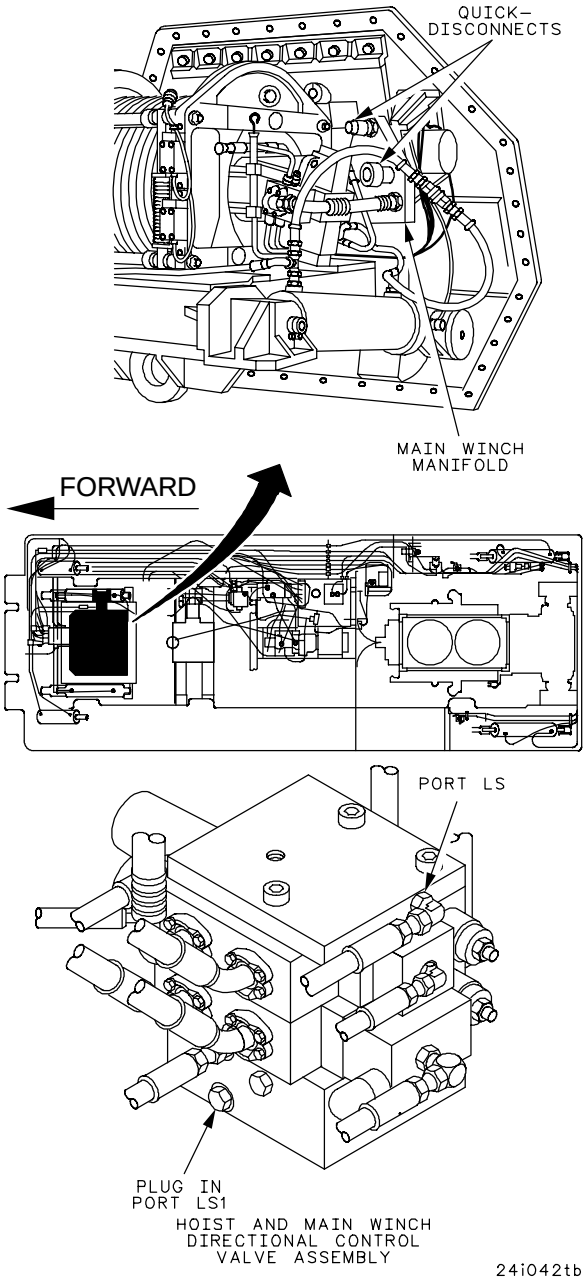
In both payout and inhaul are all pressure readings 4100-4300 psi?

yes

Notify Direct Support Maintenance.

no

Replace hoist and main winch directional control valve assembly WP 0556 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

MAIN WINCH FAILS TO OPERATE OR FAILS TO DEVELOP FULL POWER - CONTINUED 0091 00

CONTINUED FROM STEP C

E Inspect hoses from hoist and main winch directional control valve assembly ports PMI and PMO to hydraulic control valve assembly manifold assembly ports PMI and PMO for loose connections, restrictions, and damage.

Are connections tight and are hoses free of restrictions and damage?

yes / no

Tighten loose connections. Remove restrictions. If restrictions cannot be removed or if damaged, replace WP 0573 00). Verify fault is corrected.

F



WARNING

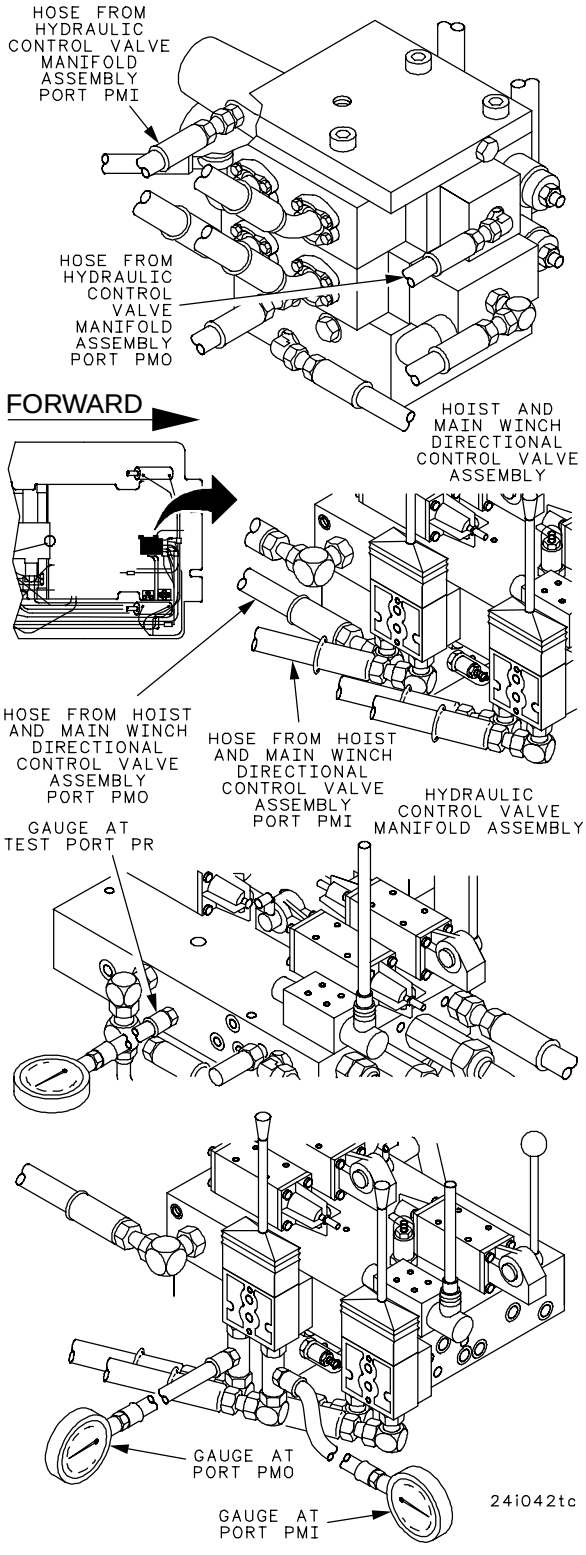
1. Remove hydraulic control valve manifold assembly shields (WP 0519 00).
2. Install 0-4000 psi testing gauge assembly in hydraulic control valve manifold assembly port PR.
3. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between hydraulic control valve manifold assembly port PMO and attaching hose.
4. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between hydraulic control valve manifold assembly port PMI and attaching hose.
5. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
6. Payout main winch and record gauge readings.
7. Inhaul main winch and record gauge readings.
8. Shut down hydraulics and main engine (TM 9-2350-292-10).

Are all pressures 385-470 psi?

yes / no

If PMO and PMI port pressure is less than 385 psi and PR pressure is 385-470 psi, notify Direct Support Maintenance. If PR pressure is less than 385 psi, go to Step H.

CONTINUED ON NEXT PAGE



MAIN WINCH FAILS TO OPERATE OR FAILS TO DEVELOP FULL POWER - CONTINUED 0091 00

CONTINUED FROM STEP F

G

WARNING

Remove main winch pilot valve from hydraulic control valve manifold assembly and inspect valve for restrictions.

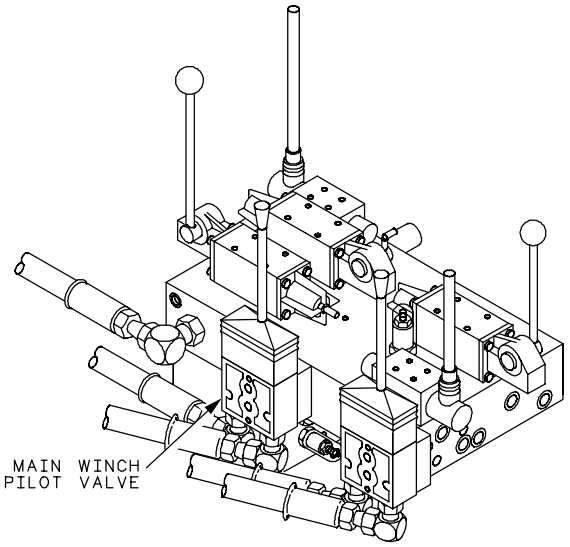
Is valve free of restrictions?

yes

Replace pilot valve (WP 0562 00). Verify fault is corrected.

no

Remove restrictions. If restrictions cannot be removed, replace valve (s) (WP 0562 00). Verify fault is corrected.



HYDRAULIC CONTROL VALVE MANIFOLD ASSEMBLY

CONTINUED FROM STEP F

H

WARNING

1. Disconnect and plug hose from port BLV on the hydraulic control valve manifold assembly and cap port adapter.
2. Perform Step F.

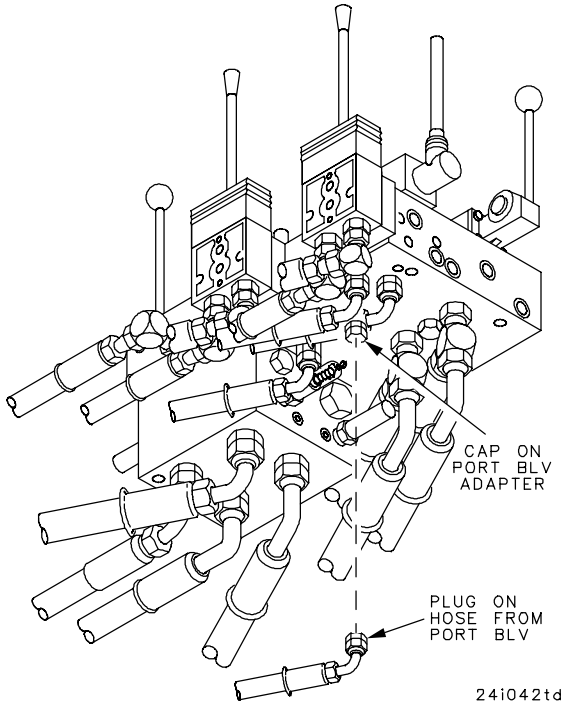
Is pressure at PR port 385-470 psi?

yes

Go to WP 0097 00.

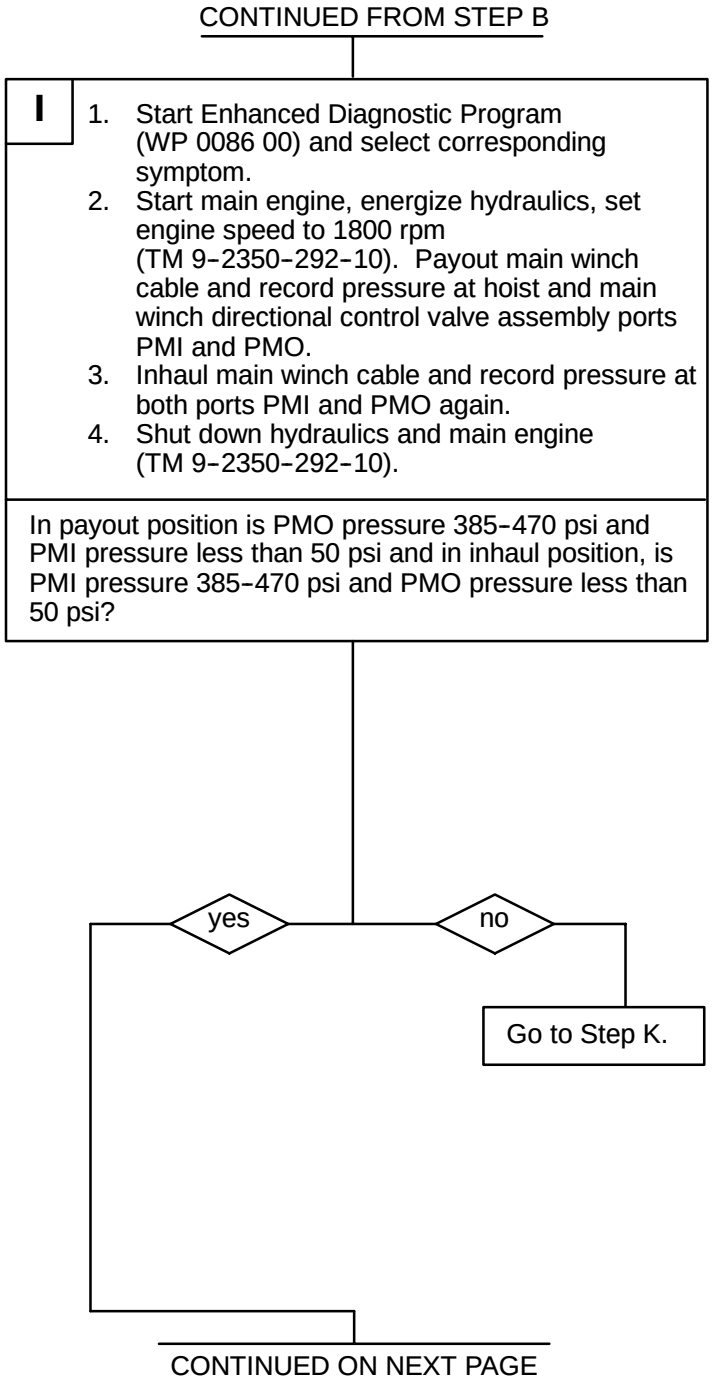
no

Notify Direct Support Maintenance.



CONTINUED ON NEXT PAGE

MAIN WINCH FAILS TO OPERATE OR FAILS TO DEVELOP FULL POWER - CONTINUED 0091 00



MAIN WINCH FAILS TO OPERATE OR FAILS TO DEVELOP FULL POWER - CONTINUED 0091 00

CONTINUED FROM STEP I

J



WARNING

1. Disconnect quick-disconnects from main winch manifold.
2. Remove plug from hoist and main winch directional control valve assembly port LS and remove hose and fitting from port LS1.
3. Install hose and fitting into port LS and plug port LS1.
4. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
5. Payout main winch and record pressures at filter valve manifold port MS and front hydraulic pump port XI.
6. Inhaul main winch and record both pressures again.
7. Shut down hydraulics and main engine (TM 9-2350-292-10).

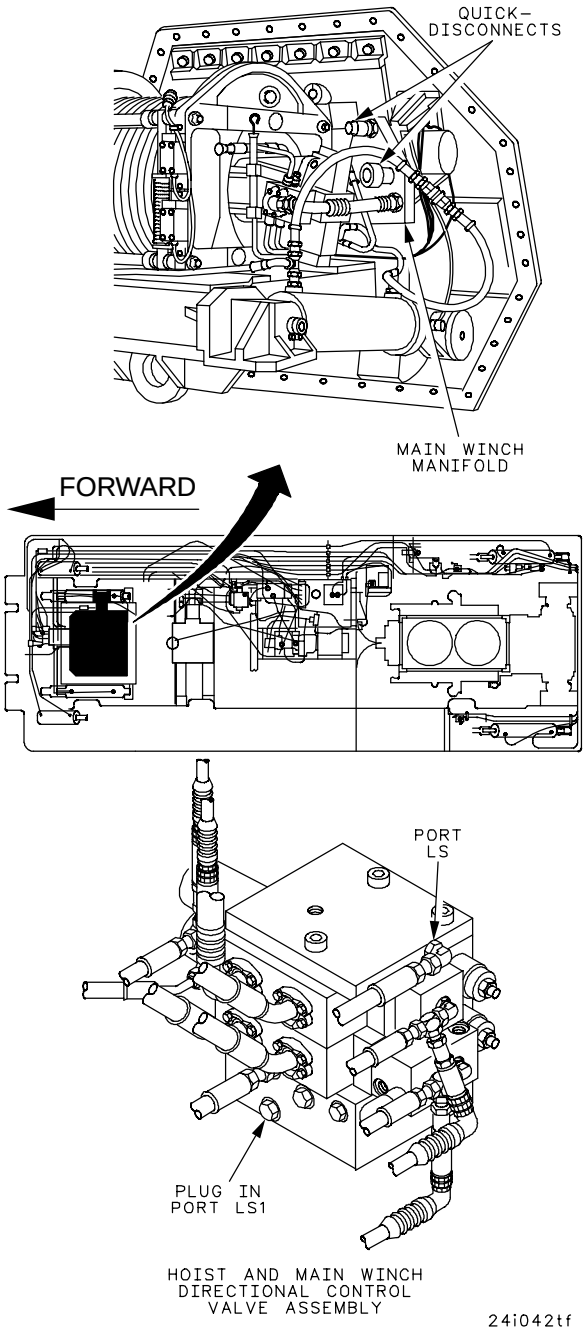
In both payout and inhaul are all pressure readings 4100-4300 psi?

yes

Notify Direct Support Maintenance.

no

Replace hoist and main winch directional control valve assembly (WP 0556 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

MAIN WINCH FAILS TO OPERATE OR FAILS TO DEVELOP FULL POWER - CONTINUED 0091 00

CONTINUED FROM STEP I

K Inspect hoses from hoist and main winch directional control valve assembly ports PMI and PMO to hydraulic control valve assembly manifold assembly ports PMI and PMO for loose connections, restrictions, and damage.

Are connections tight and are hoses free of restrictions and damage?

yes

no

Tighten loose connections. Remove restrictions. If restrictions cannot be removed or if damaged, replace (WP 0573 00). Verify fault is corrected.

L

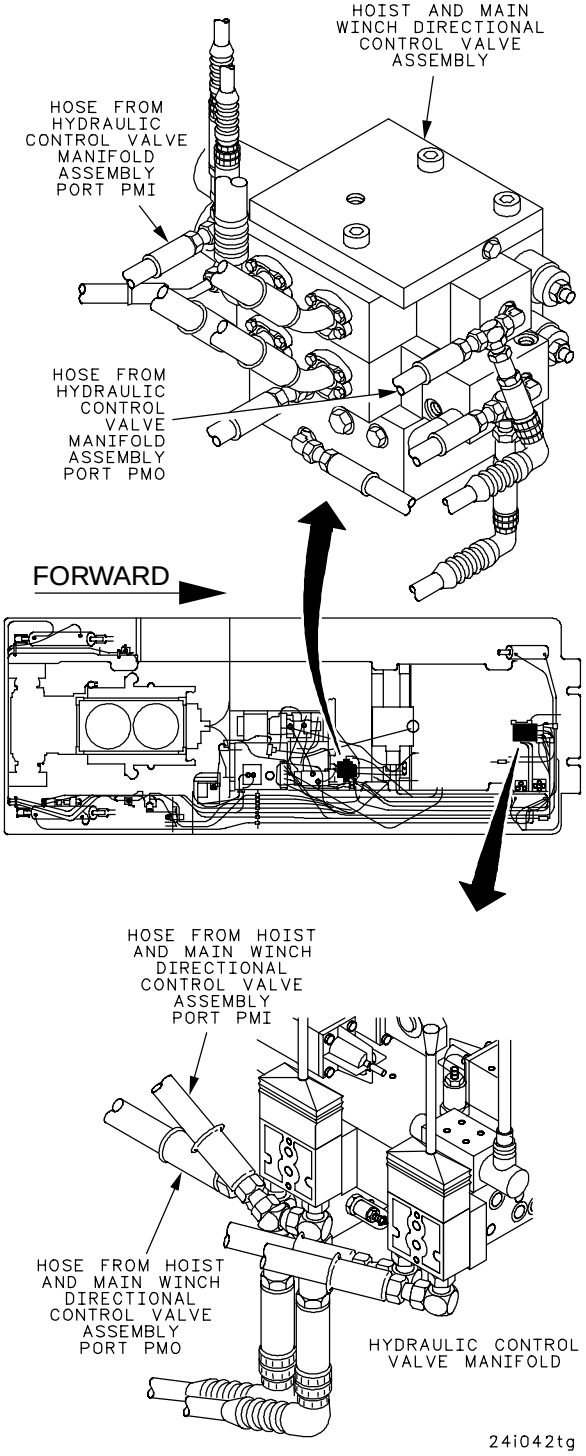
1. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
2. Payout main winch and record pressure at hydraulic control valve manifold assembly ports PR, PMO and PMI.
3. Inhaul main winch and record pressures again.
4. Shut down hydraulics and main engine (TM 9-2350-292-10).

Are all pressures 385-470 psi?

yes

no

If PMO and PMI port pressure is less than 385 psi and PR pressure is 385-470 psi, notify Direct Support Maintenance. If PR pressure is less than 385 psi, go to Step N.



CONTINUED ON NEXT PAGE

MAIN WINCH FAILS TO OPERATE OR FAILS TO DEVELOP FULL POWER - CONTINUED 0091 00

CONTINUED FROM STEP L

M



WARNING

Remove main winch pilot valve from hydraulic control valve manifold assembly and inspect valve for restrictions.

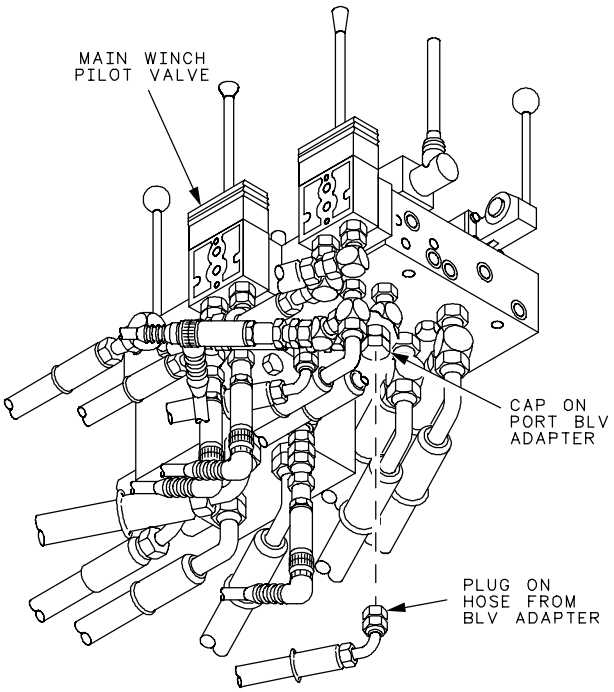
Is valve free of restrictions?

yes

Replace pilot valve (WP 0562 00). Verify fault is corrected.

no

Remove restrictions. If restrictions cannot be removed, replace valve(s) (WP 0562 00). Verify fault is corrected.



HYDRAULIC CONTROL VALVE MANIFOLD ASSEMBLY

24i042th

CONTINUED FROM STEP L

N



WARNING

1. Remove hydraulic control valve manifold assembly shields (WP 0519 00).
2. Disconnect and plug hose from port BLV on the hydraulic control valve manifold assembly and cap port adapter.
3. Perform Step L.

Is pressure at PR port 385-470psi?

yes

Go to WP 0097 00.

no

Notify Direct Support Maintenance.

END OF TASK

MAIN WINCH CREEPS WITH CONTROL IN NEUTRAL. 0092 00

THIS WORK PACKAGE COVERS:

Main Winch Creeps With Control In Neutral

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-300 psi dial pressure gauge (item 81, WP 0717 00)*
0-5000 psi dial pressure gauge (2) (item 83, WP 0717 00)*
0-4000 psi testing gauge assembly (3) (item 82, WP 0717 00)*
1/4-inch tee (2) (item 71, WP 0716 00)*
Safety goggles (item 93, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Subfloor plates 10, 15, 18, and 22 removed (WP 0454 00)

Personnel Required

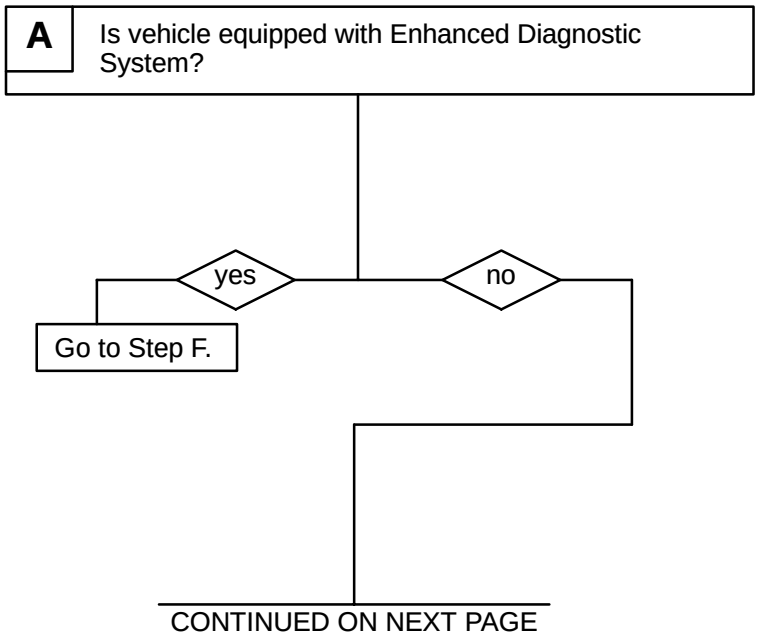
Two

* Not required if vehicle is equipped with Enhanced Diagnostics System

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.





MAIN WINCH CREEPS WITH CONTROL IN NEUTRAL - CONTINUED 0092 00

CONTINUED FROM STEP A

B

WARNING

1. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between port PMO of hoist and main winch directional control valve assembly and attaching hose.
2. Install 0-4000 psi testing gauge assembly and 1/4-inch tee between port PMI of hoist and main winch directional control valve assembly and attaching hose.
3. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10)
4. Shut down hydraulics and main engine (TM 9-2350-292-10).

Are both gauge readings less than 50 psi?

yes

no

Go to Step D.

C

WARNING

1. Remove gauges from hoist and main winch directional control valve assembly.
2. Install 0-300 psi dial pressure gauge in filter valve manifold port CH4.
3. Install 0-5000 psi dial pressure gauge in the main winch motor crossport relief valve manifold test port and install 0-5000 psi dial pressure gauge in main winch motor inhaul test port.
4. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10). Record gauge pressures.
5. Shut down hydraulics and main engine (TM 9-2350-292-10).

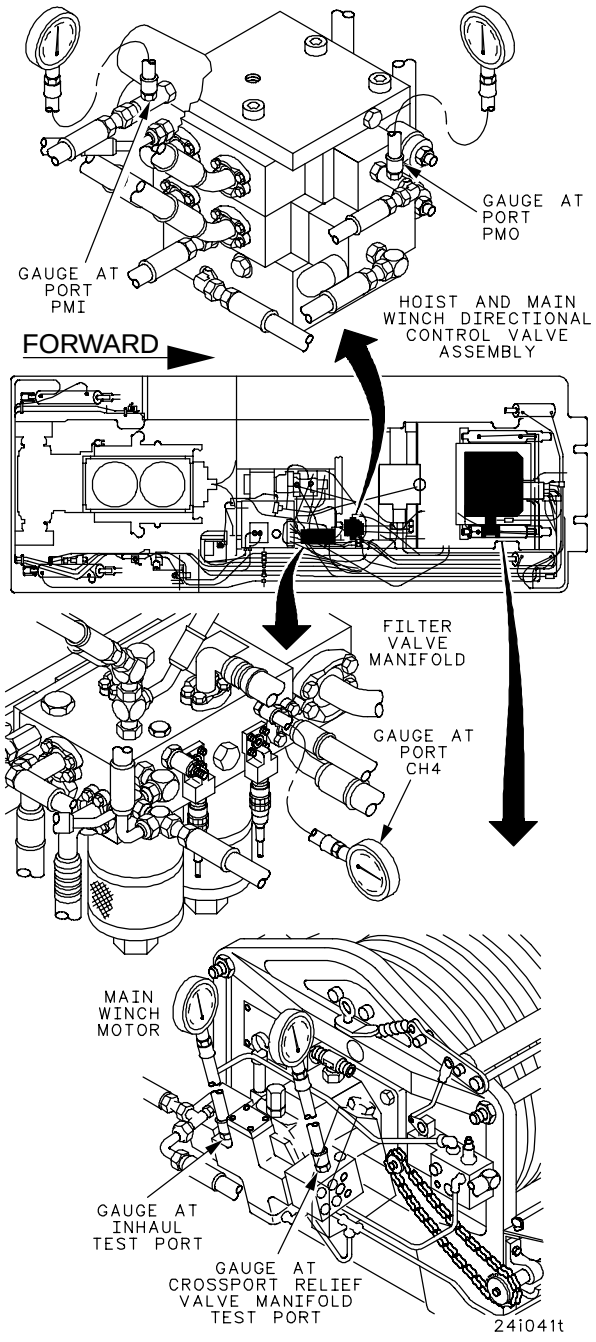
Are pressure readings 140 psi or less?

yes

no

CONTINUED ON NEXT PAGE

Replace hoist and main winch directional control valve assembly (WP 0556 00). Verify fault is corrected.



MAIN WINCH CREEPS WITH CONTROL IN NEUTRAL - CONTINUED 0092 00

CONTINUED FROM STEPS B AND C

D

WARNING

1. Remove hydraulic control valve manifold assembly shields (WP 0519 00).
2. Install 0-4000 psi testing gauge assembly and 1/4-inch tee between port PMO of hydraulic control valve manifold assembly and attaching hose.
3. Install 0-4000 psi testing gauge assembly and 1/4-inch tee between port PMI of hydraulic control valve manifold assembly and attaching hose.
4. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10). Record gauge pressures.
5. Shut down hydraulics and main engine (TM 9-2350-292-10).

Are both pressures less than 50 psi?

yes

no

Notify Direct Support Maintenance.

E

Inspect pilot valves and hoses from ports PMO and PMI of hydraulic control valve manifold assembly to hoist and main winch directional control valve assembly ports PMO and PMI and return line from tee between main winch safety level valves to reservoir for restrictions and damage.

Are all hoses free of restrictions and damage?

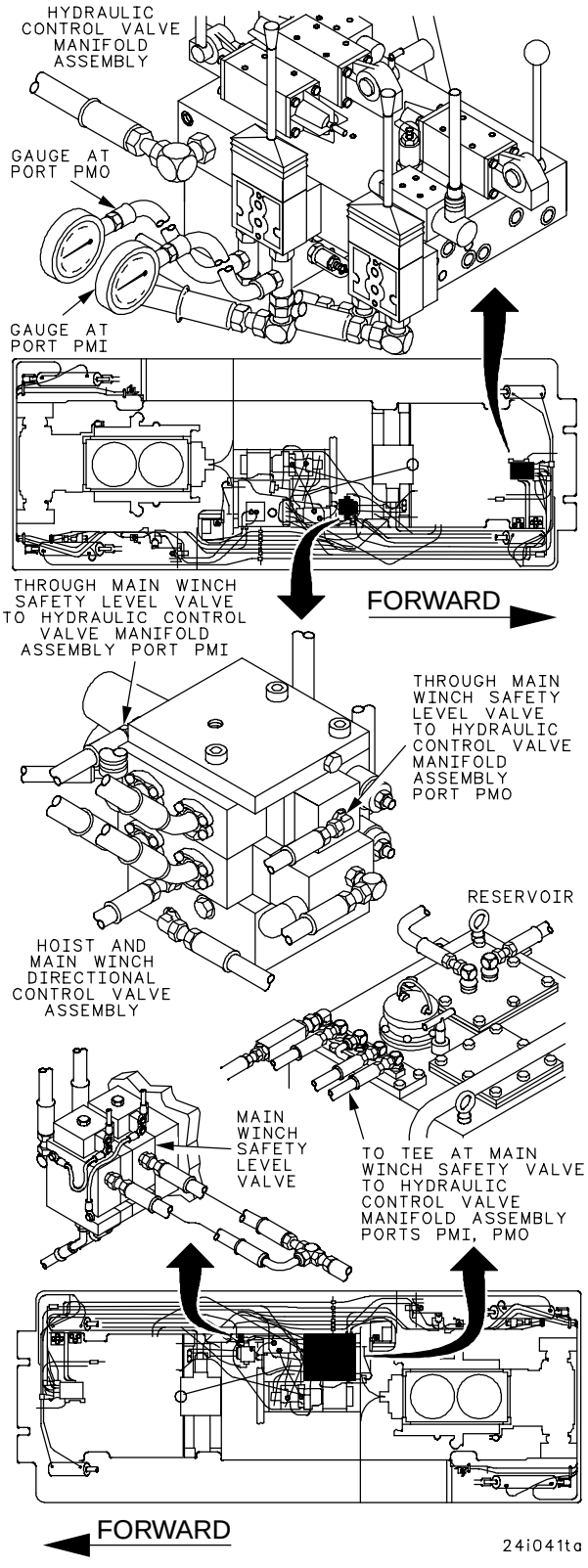
yes

no

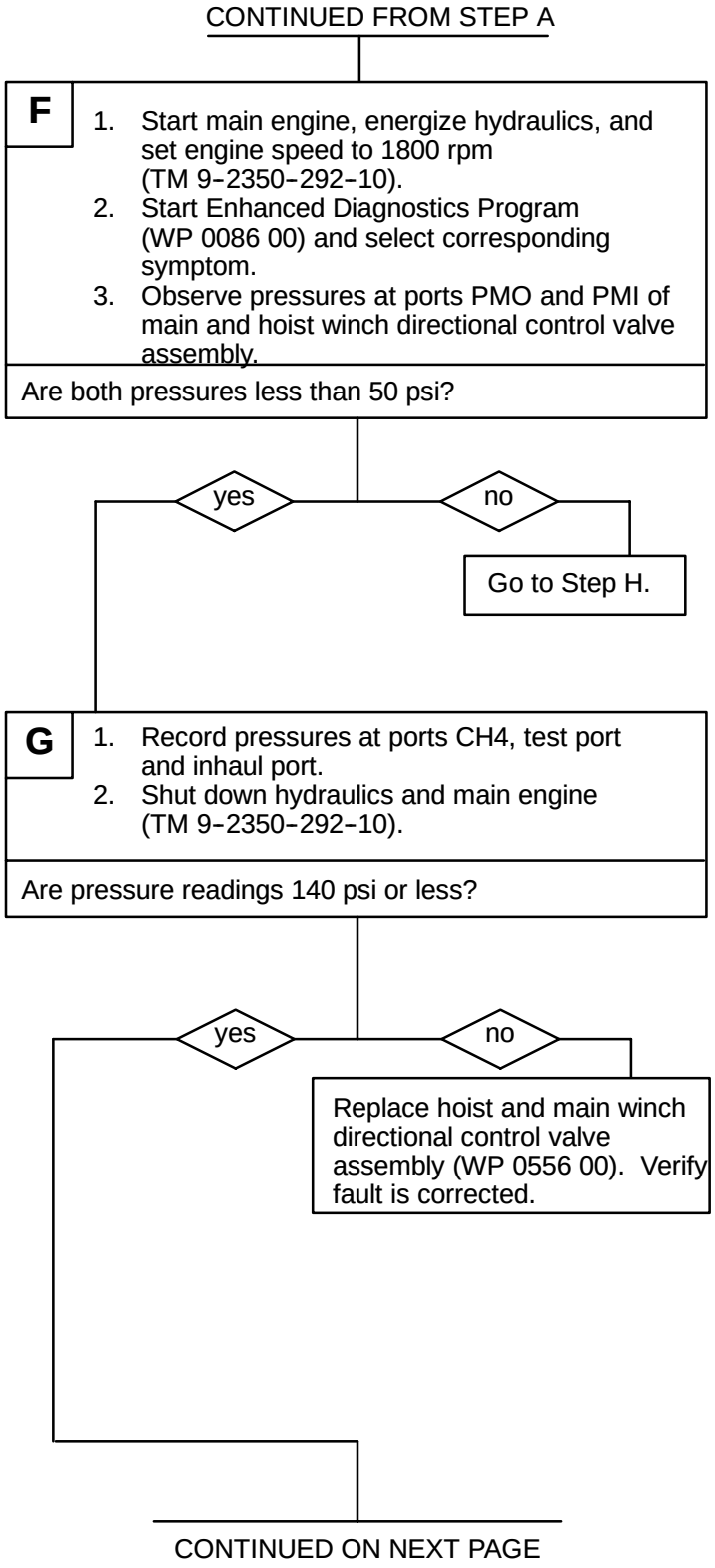
Fault corrected.

Remove restrictions. If restrictions cannot be removed, or if hoses are damaged, replace (WP 0573 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



MAIN WINCH CREEPS WITH CONTROL IN NEUTRAL - CONTINUED 0092 00



MAIN WINCH CREEPS WITH CONTROL IN NEUTRAL - CONTINUED 0092 00

CONTINUED FROM STEPS F AND G

H

1. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
2. Record pressures at hydraulic control valve manifold ports PMO and PMI.
3. Shut down hydraulics and main engine (TM 9-2350-292-10).

Are both pressures less than 50 psi?

yes

no

Notify Direct Support Maintenance.

I

1. Remove hydraulic control valve manifold assembly shields (WP 0519 00).
2. Inspect pilot valves and hoses from ports PMO and PMI of hydraulic control valve manifold assembly to hoist and main winch directional control valve assembly ports PMO and PMI and return line from tee between main winch safety level valves to reservoir for restrictions and damage.

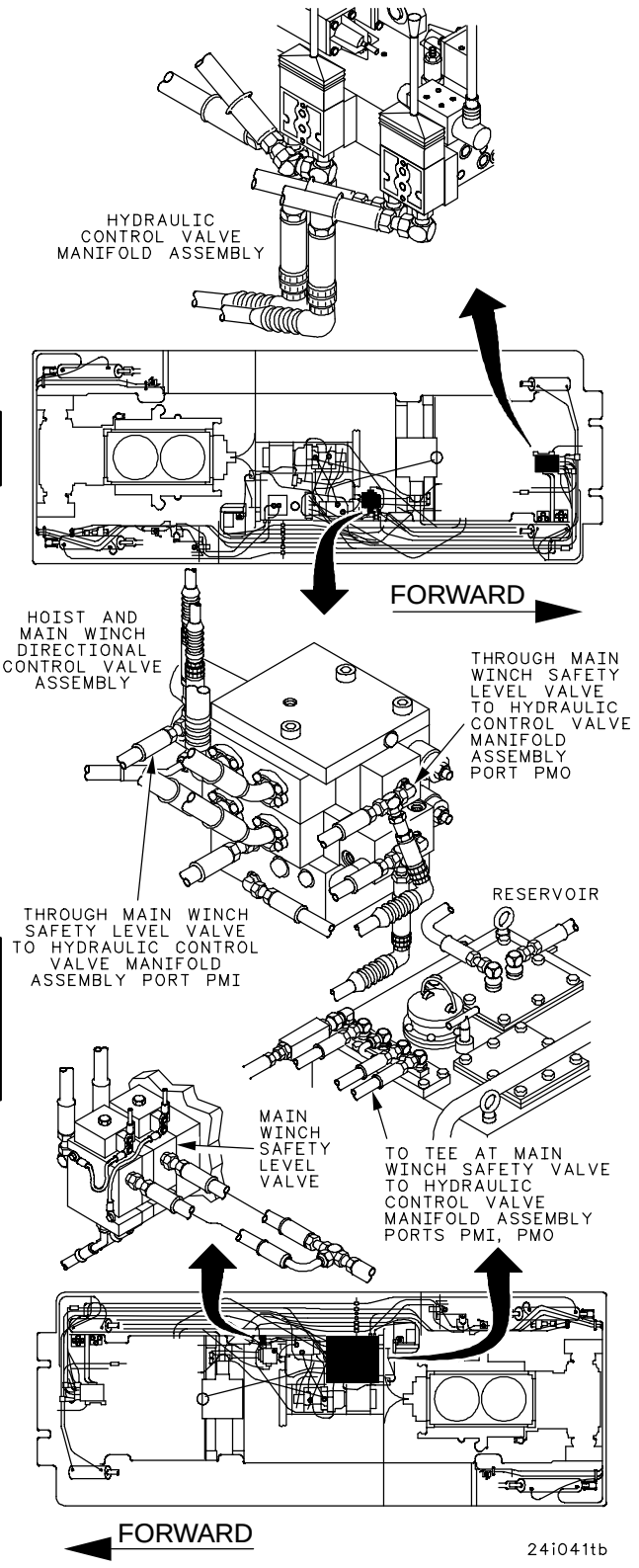
Are all hoses free of restrictions and damage?

yes

no

Fault corrected.

Remove restrictions. If restrictions cannot be removed, or if hoses are damaged, replace (WP 0573 00). Verify fault is corrected.



END OF TASK

MAIN WINCH FAILS TO RELEASE. 0093 00

THIS WORK PACKAGE COVERS:

Main Winch Fails To Release

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-5000 psi dial pressure gauge (2) (item 83, WP 0717 00)*
0-4000 psi testing gauge assembly (2)* (item 82, WP 0717 00)
1/4-inch tee (2) (item 71, WP 0716 00)*
3/8-inch tee (2) (item 72, WP 0716 00)*
Safety goggles (item 93, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Subfloor plates 10, 18, 20 and 22 removed (WP 0454 00)

Personnel Required

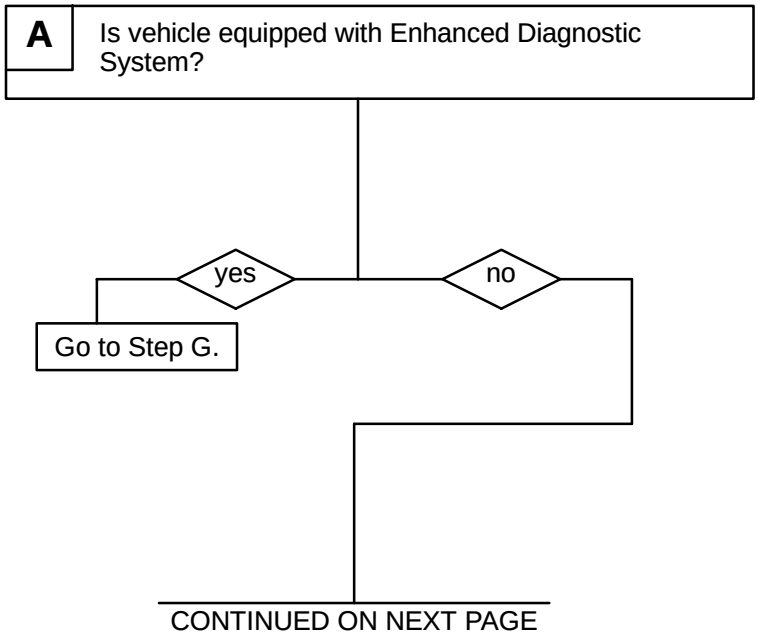
Two

* Not required if vehicle is equipped with Enhanced Diagnostics System

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.





MAIN WINCH FAILS TO RELEASE - CONTINUED 0093 00

CONTINUED FROM STEP A

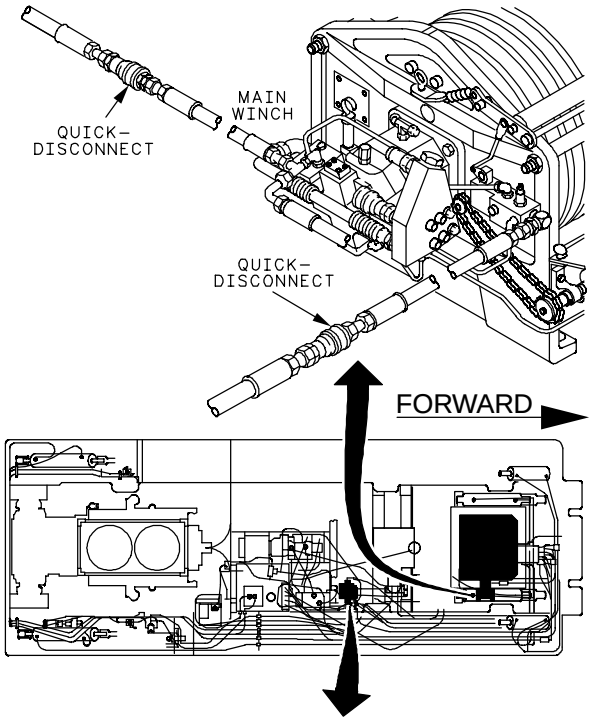
B Inspect main winch quick-disconnects for proper connection, restrictions, and damage.

Are quick-disconnects properly connected and are they free of restrictions and damage?

yes

no

Properly connect quick-disconnects. Remove restrictions. If restrictions cannot be removed, or if there is damage, replace (WP 0500 00). Verify fault is corrected.



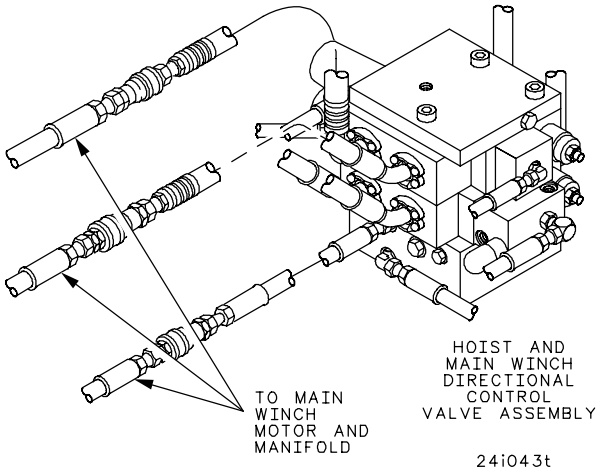
C Inspect hoses from hoist and main winch directional control valve assembly to main winch motor and manifold for restrictions and damage.

Are hoses free of restrictions and damage?

yes

no

Remove restrictions. If restrictions cannot be removed, or if there is damage, replace (WP 0573 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

MAIN WINCH FAILS TO RELEASE - CONTINUED 0093 00

CONTINUED FROM STEP C

D

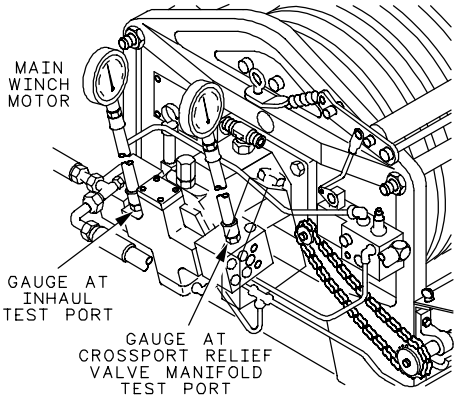
WARNING

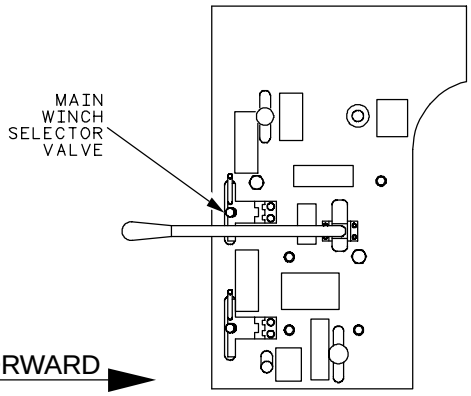
1. Install 0-5000 psi dial pressure gauge in the main winch motor cross port relief valve manifold test port.
2. Install 0-5000 psi dial pressure gauge in the main winch motor inhaul test port.
3. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
4. Place main winch selector valve in the full payout position and attempt to payout winch. Record gauge readings.
5. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure at crossport relief valve test port 1100 psi or higher and is pressure at inhaul test port 250 psi or less?

yes / no

Notify Direct Support Maintenance



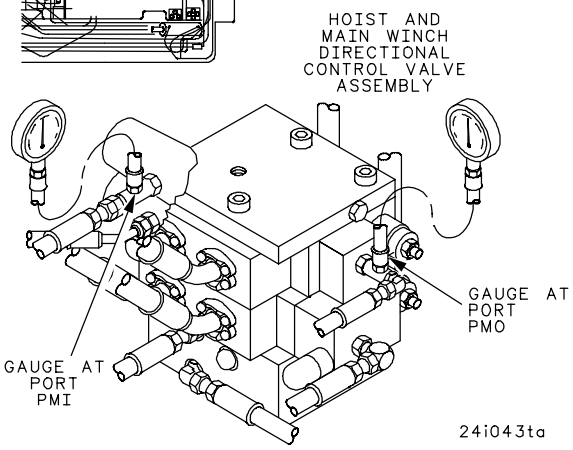


E

WARNING

1. Remove gauges from crossport relief valve and inhaul test ports.
2. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between the hoist and main winch directional control valve assembly port PMI and attaching hose.
3. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between the hoist and main winch directional control valve assembly port PMO and attaching hose.
4. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
5. Attempt to payout main winch and record gauge readings.
6. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure at port PMO 385-470 psi and is pressure at port PMI 50 psi or less?



CONTINUED ON NEXT PAGE

MAIN WINCH FAILS TO RELEASE - CONTINUED 0093 00

CONTINUED FROM STEP E

yes

no

Go to WP 0091 00 Step E.

F



WARNING

1. Remove gauges from ports PMO and PMI of hoist and main winch directional control valve assembly.
2. Install 0-5000 psi dial pressure gauge in filter valve manifold port MS.
3. Install 0-5000 psi dial pressure gauge with 3/8-inch tee between port X1 of front pump and attaching hose.
4. Disconnect main winch quick-disconnects at main winch manifold.
5. Remove plug from port LS of hoist and main winch directional control valve assembly.
6. Disconnect hose and adapter from port LS1 of hoist and main winch directional control valve assembly. Install hose and adapter in port LS and plug port LS1.
7. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
8. Place main winch control lever in the payout position and record gauge readings.
9. Shut down hydraulics and main engine (TM 9-2350-292-10).

Are both pressure readings 4100-4300 psi?

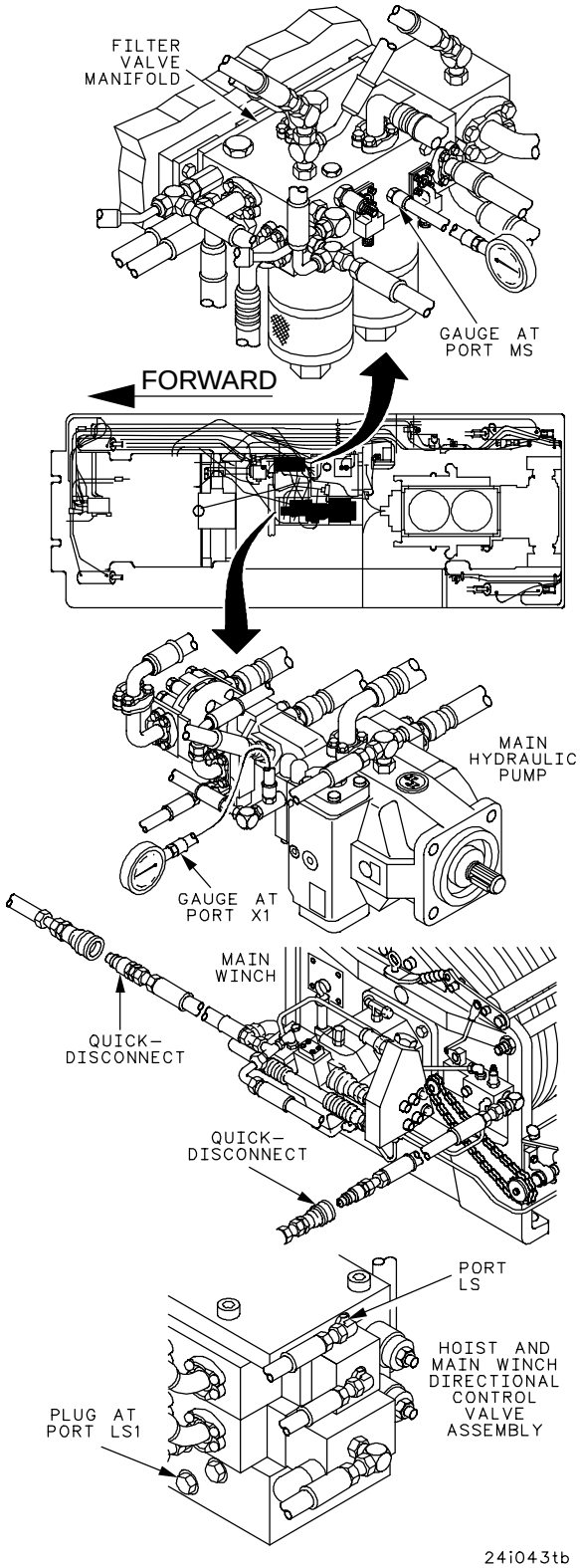
yes

no

Notify Direct Support Maintenance

Replace hoist and main winch directional control valve assembly (WP 0556 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



MAIN WINCH FAILS TO RELEASE - CONTINUED 0093 00

CONTINUED FROM STEP A

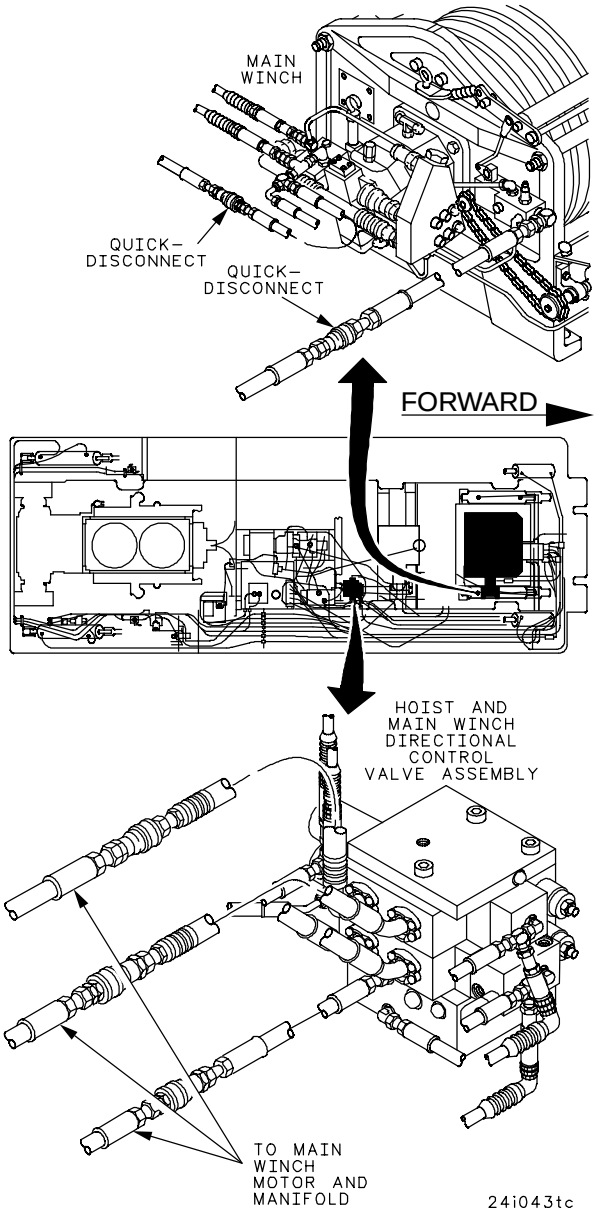
G Inspect main winch quick-disconnects for proper connection, restrictions, and damage.

Are quick-disconnects properly connected and are they free of restrictions and damage?

yes

no

Properly connect quick-disconnects. Remove restrictions. If restrictions cannot be removed, or if there is damage, replace (WP 0500 00). Verify fault is corrected.



H Inspect hoses from hoist and main winch directional control valve assembly to main winch motor and manifold for restrictions and damage.

Are hoses free of restrictions and damage?

yes

no

Remove restrictions. If restrictions cannot be removed, or if there is damage, replace (WP 0573 00). Verify fault is corrected.

I

1. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
2. Start Enhanced Diagnostics System program (WP 0086 00) and select the corresponding symptom.

CONTINUED ON NEXT PAGE

MAIN WINCH FAILS TO RELEASE - CONTINUED 0093 00

CONTINUED FROM STEP I

I

3. Place main winch selector valve in the full payout position and attempt to payout winch.
4. Record pressures at inhaul test port and crossport relief valve manifold test port of main winch.

Is pressure at crossport relief valve test port 1100 psi or higher and is pressure at inhaul test port 250 psi or less?

yes / no

Notify Direct Support Maintenance

J

1. Attempt to payout main winch and record pressures at main winch ports PMO and PMI.
2. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure at port PMO 385-470 psi and is pressure at port PMI 50 psi or less?

yes / no

Go to WP 0091 00 Step E.

K

WARNING

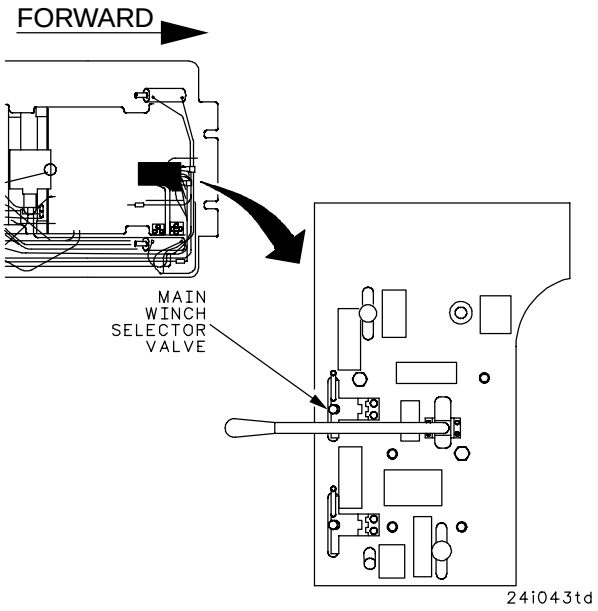
1. Disconnect main winch quick-disconnects at main winch manifold.
2. Remove plug from port LS of hoist and main winch directional control valve assembly.
3. Disconnect hose and adapter from port LS1 of hoist and main winch directional control valve assembly. Install hose and adapter in port LS and plug port LS1.
4. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
5. Place main winch control lever in the payout position and record pressures at ports MS and X1.
6. Shut down hydraulics and main engine (TM 9-2350-292-10).

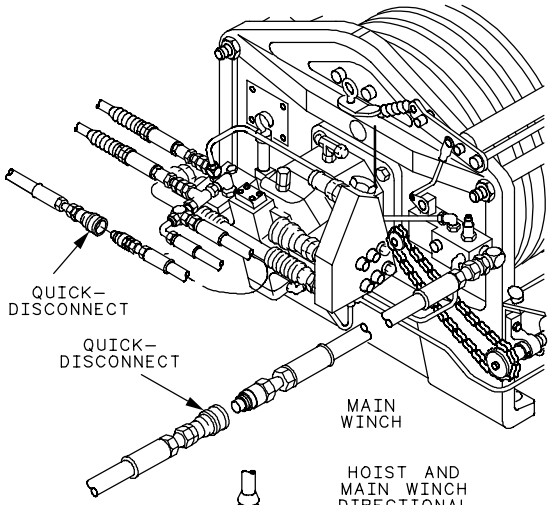
Are both pressure readings 4100-4300 psi?

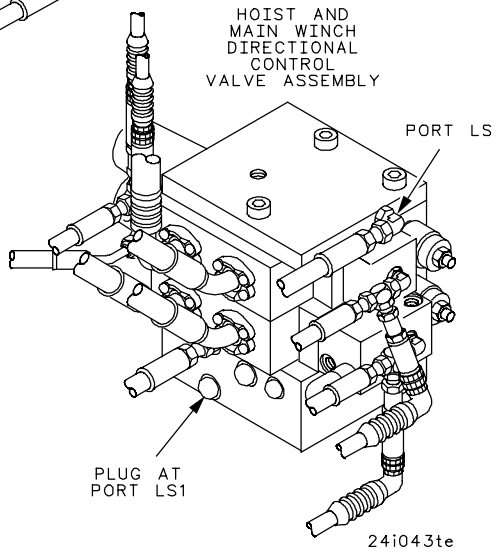
yes / no

Notify Direct Support Maintenance.

Replace hoist and main winch directional control valve assembly (WP 0556 00). Verify fault is corrected.







END OF TASK

MAIN WINCH FAILS TO HOLD LOAD. 0094 00

THIS WORK PACKAGE COVERS:

Main Winch Fails To Hold Load.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-5000 psi dial pressure gauge (2) (item 83, WP 0717 00)*
0-4000 psi testing gauge assembly (2) (item 82, WP 0717 00)*
1/4-inch tee (2) (item 71, WP 0716 00)*
Safety goggles (item 93, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Subfloor plates 10 and 18 removed (WP 0453 00)

Personnel Required

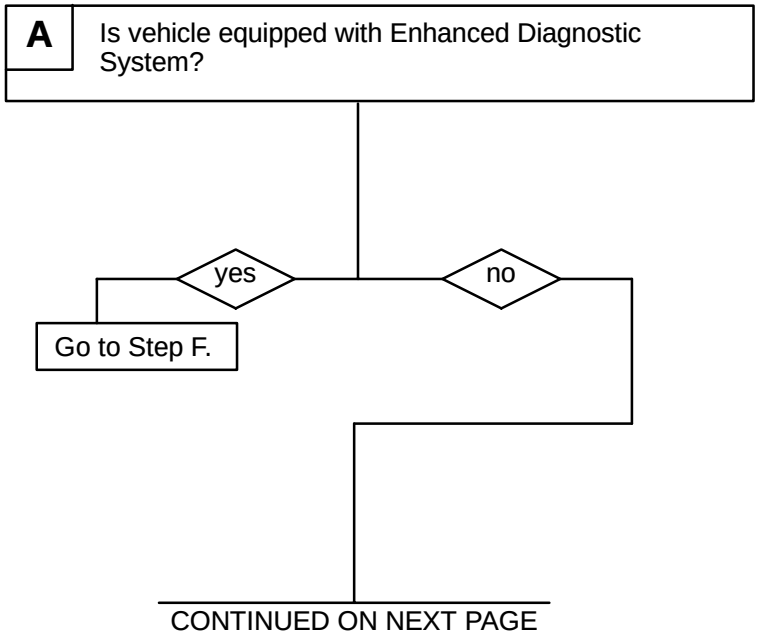
Two

* Not required if vehicle is equipped with Enhanced Diagnostics System

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.





MAIN WINCH FAILS TO HOLD LOAD - CONTINUED 0094 00

CONTINUED FROM STEP A

B Inspect quick-disconnects at main winch manifold for proper connection, restrictions, and damage.

Are quick-disconnects properly connected and free of restrictions and damaged?

yes

no

Properly connect. Remove restrictions. If restrictions cannot be removed or if quick-disconnects are damaged, replace (WP 0500 00). Verify fault is corrected.

C

WARNING

1. Install 0-5000 psi dial pressure gauge in the main winch motor crossport relief valve manifold test port.
2. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
3. Attach a load to winch and inhaul, then return winch control lever to hold position and record gauge readings.
4. Remove load, shut down hydraulics and main engine (TM 9-2350-292-10).

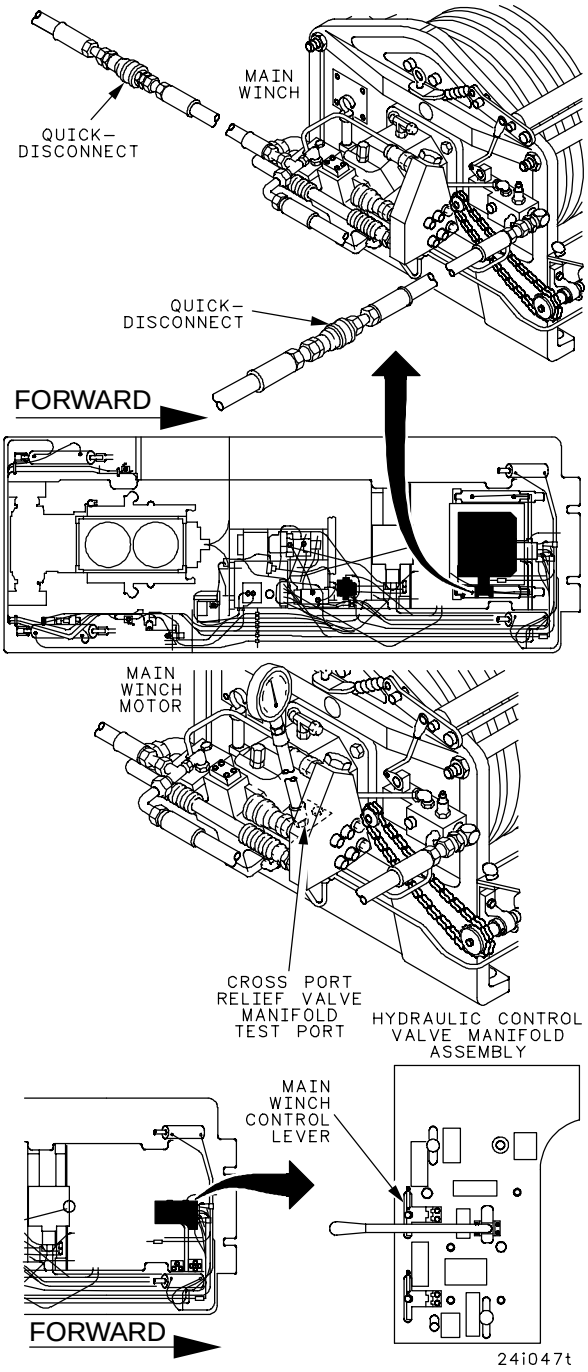
Does gauge read 140 psi or less?

yes

no

Notify Direct Support Maintenance.

CONTINUED ON NEXT PAGE



MAIN WINCH FAILS TO HOLD LOAD - CONTINUED 0094 00

CONTINUED FROM STEP C

D Inspect hoses from hoist and main winch directional control valve assembly ports MI and MO to main winch manifold and motor for restrictions and damage.

Are hoses free of restrictions and damage?

yes

no

Remove restrictions. If restrictions cannot be removed, or if there is damage, replace (WP 0573 00). Verify fault is corrected.

E

WARNING

1. Remove gauge from crossport relief valve test port.
2. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between hoist and main winch directional control valve assembly port PMI and attaching hose.
3. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between hoist and main winch directional control valve assembly port PMO and attaching hose.
4. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
5. With main winch control lever in hold position, record gauge readings.
6. Shut down hydraulics and main engine (TM 9-2350-292-10).

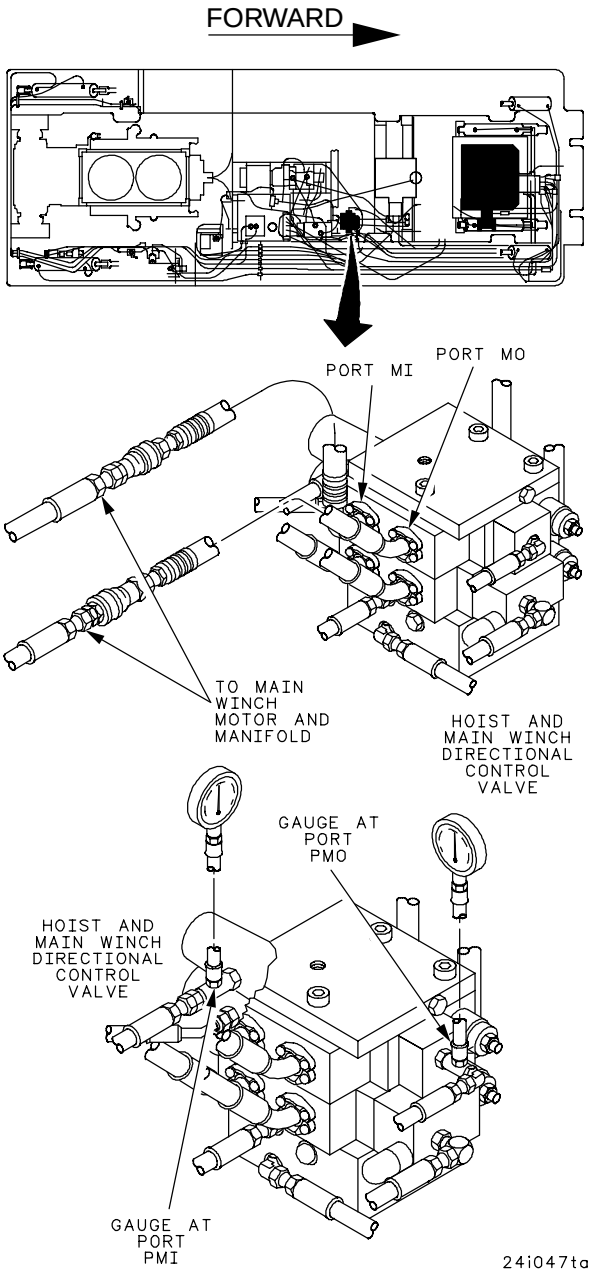
Do both gauges read 50 psi or less?

yes

no

Replace hoist and main winch directional control valve assembly (WP 0556 00). Verify fault is corrected.

Notify Direct Support Maintenance.



CONTINUED ON NEXT PAGE

MAIN WINCH FAILS TO HOLD LOAD - CONTINUED 0094 00

CONTINUED FROM STEP A

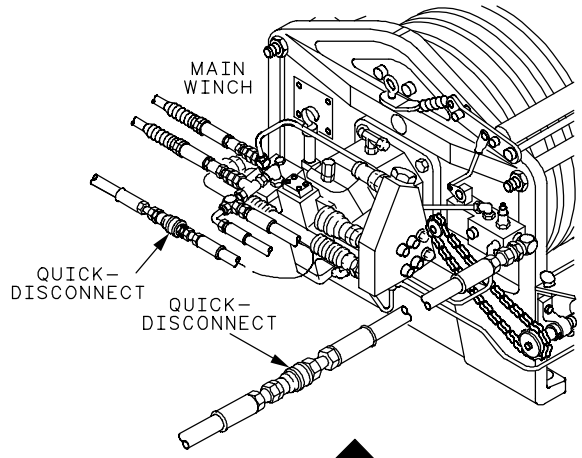
F Inspect quick-disconnects at main winch manifold for proper connection, restrictions, and damage.

Are quick-disconnects properly connected and free of restrictions and damage?

yes

no

Properly connect. Remove restrictions. If restrictions cannot be removed or if quick-disconnects are damaged, replace (WP 0500 00). Verify fault is corrected.



G

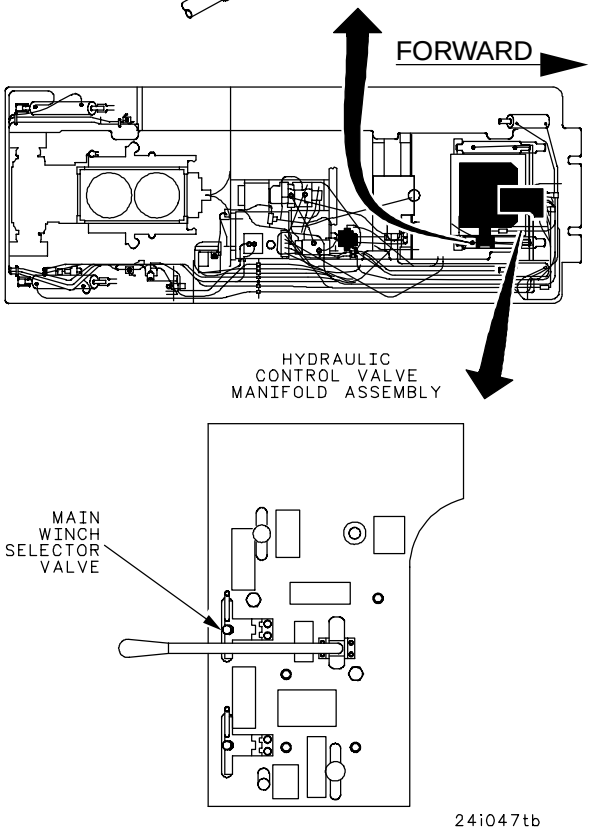
1. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-23350-292-10).
2. Start Enhanced Diagnostics System program (WP 0086 00) and select corresponding symptom.
3. Attach a load to winch and inhaul, then return winch control lever to hold position and record pressure at main winch motor payout test port.
4. Remove load, shut down hydraulics and main engine (TM 9-2350-292-10).

Does gauge read 140 psi or less?

yes

no

Notify Direct Support Maintenance.



CONTINUED ON NEXT PAGE

MAIN WINCH FAILS TO HOLD LOAD - CONTINUED 0094 00

CONTINUED FROM STEP G

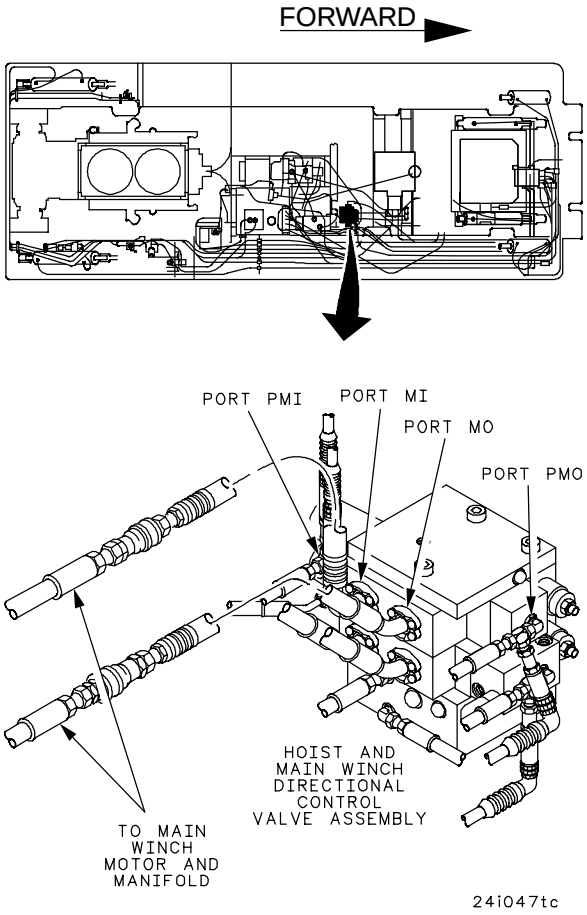
H Inspect hoses from hoist and main winch directional control valve assembly ports MI and MO to main winch manifold and motor for restrictions and damage.

Are hoses free of restrictions and damage?

yes

no

Remove restrictions. If restrictions cannot be removed, or if there is damage, replace (WP 0573 00). Verify fault is corrected.



I
1. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
2. With main winch control lever in hold position, record pressures at hoist and main winch directional control valve ports PMO and PMI.
3. Shut down hydraulics and main engine (TM 9-2350-292-10).

Are both pressures reading 50 psi or less?

yes

no

Replace hoist and main winch directional control valve assembly (WP 0556 00). Verify fault is corrected.

Notify Direct Support Maintenance.

END OF TASK

MAIN WINCH LEVEL WINDER FAILS TO OPERATE. 0095 00

THIS WORK PACKAGE COVERS:

Main Winch Level Winder Fails To Operate.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-5000 psi dial pressure gauge (3) (item 83, WP 0717 00)*
1/4-inch tee (3) (item 71, WP 0716 00)*
Winch ground hop kit (item 26, WP 0716 00)
Safety goggles (item 93, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Vehicle nose piece removed (WP 0497 00)

Personnel Required

Two

* Not required if vehicle is equipped with Enhanced Diagnostics System

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



WARNING

A Inspect the level winder control valve return line quick-disconnect for proper connection.

Is quick-disconnect connected properly?

yes

no

Properly connect quick-disconnect. Verify fault is corrected.

B Inspect diamond screw drive chain for damage (links broken or sprocket missing teeth).

Is chain and sprocket free of damage?

yes

no

Notify Direct Support Maintenance.

C Inspect the shoulder bolt that connects the level winder control valve cam to the diamond screw follower bracket.

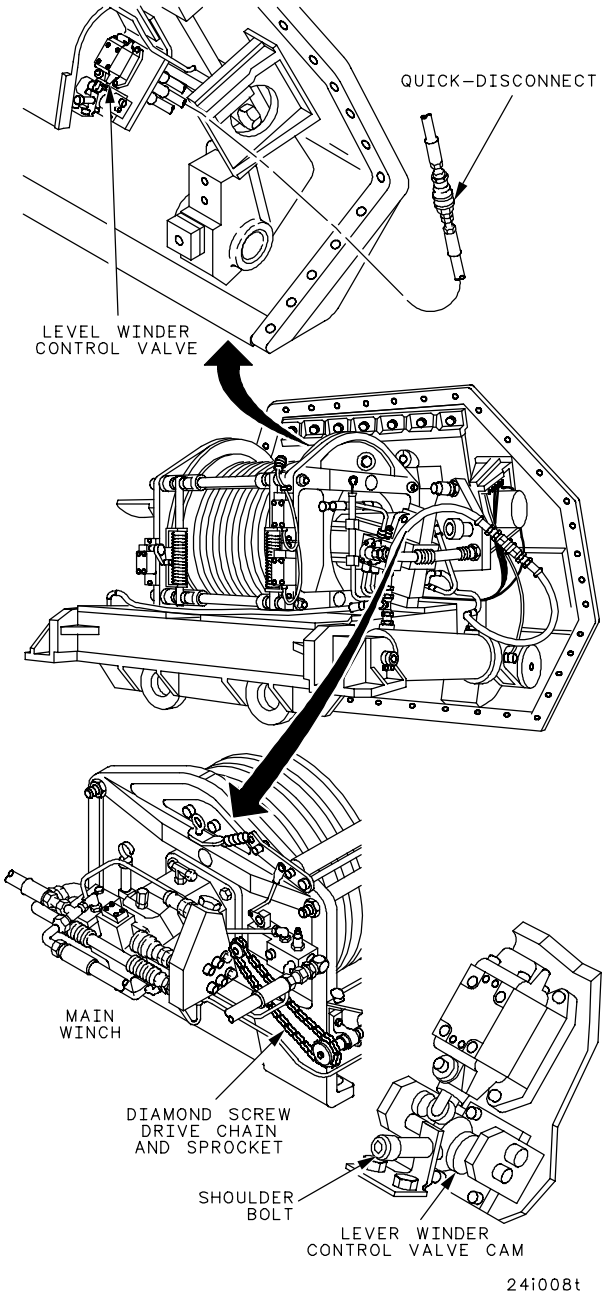
Is bolt present and free of damage?

yes

no

Go to Step K.

CONTINUED ON NEXT PAGE



MAIN WINCH LEVEL WINDER FAILS TO OPERATE - CONTINUED 0095 00

CONTINUED FROM STEP C

D Check the roller bracket assembly for proper alignment and for loose hardware.

Is alignment correct and all hardware tight?

yes

no

Tighten loose hardware. Align roller bracket assembly (WP 0508 00). Verify fault is corrected.

E Check level winder hoses for restrictions, leaking connections, and leaking and damaged hoses.

Are hoses and connections free of restrictions, leaks, and damage?

yes

no

Clear restrictions. Tighten or replace damaged or leaking connections and hoses (WP 0573 00). Verify fault is corrected.

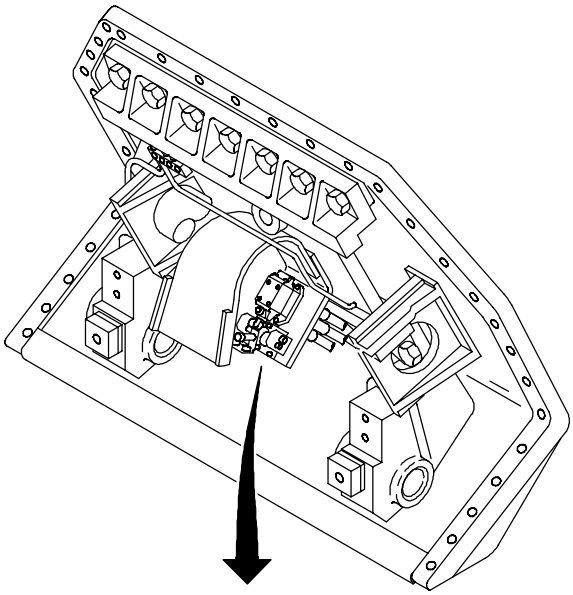
F Is vehicle equipped with Enhanced Diagnostics System?

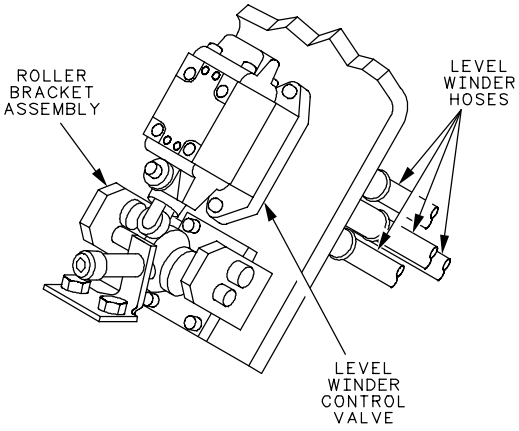
yes

no

Go to Step L.

CONTINUED ON NEXT PAGE





20i008ta

MAIN WINCH LEVEL WINDER FAILS TO OPERATE - CONTINUED 0095 00

CONTINUED FROM STEP F

G

WARNING

1. Install 0-5000 psi dial pressure gauge with 1/4-inch tee between attaching hose and port V1 on level winder dual check valve.
2. Install 0-5000 psi dial pressure gauge with 1/4-inch tee between attaching hose and port V2 on level winder check valve.
3. Install 0-5000 psi dial pressure gauge with 1/4-inch tee between pressure hose and port P of level winder control valve.
4. Install ground hop kit (WP 0498 00).
5. Start main engine and energize main hydraulic system (TM 9-2350-292-10).
6. Payin and payout main winch enough for control valve plunger roller to ride up and down the cam slope only.
7. Read gauges during cylinder extraction and extension. Record readings.
8. Shut down hydraulics and engine (TM 9-2350-292-10).

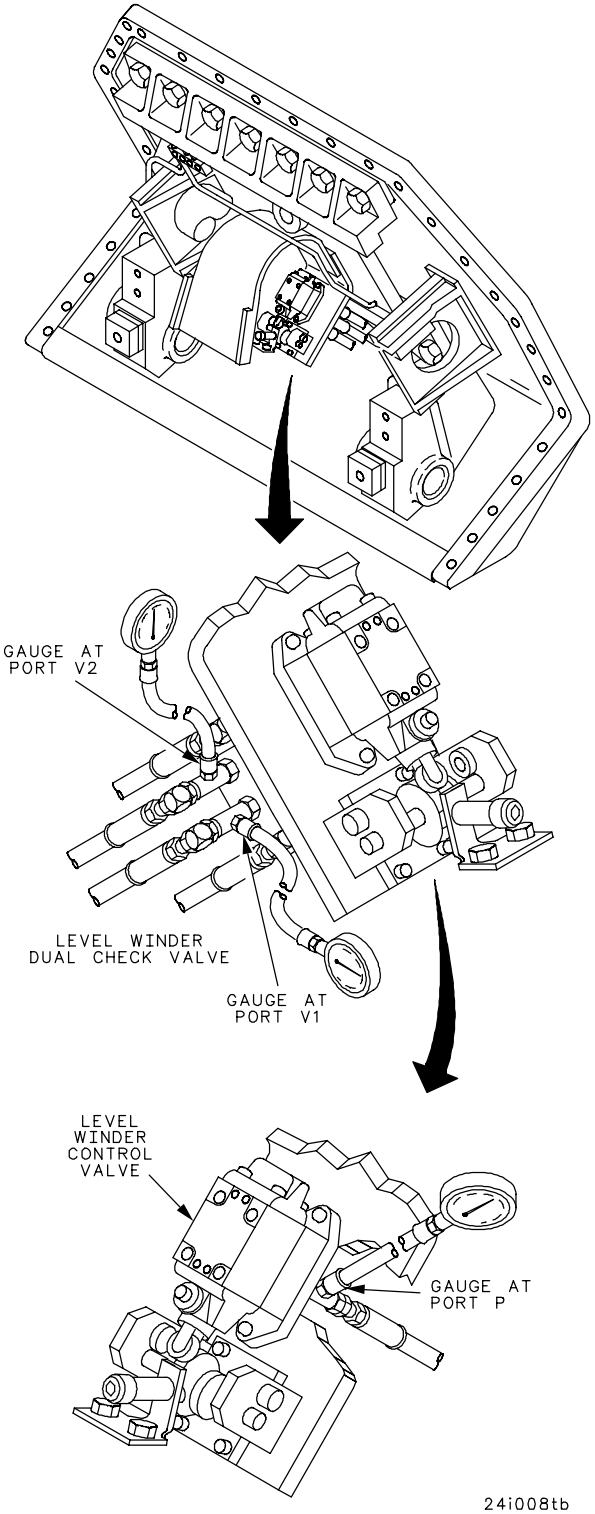
Is pressure at port V1 within 60 psi of pressure at supply port P and is pressure at port V2 60 psi or less when level winder cylinder is retracting and is pressure at port V2 within 60 psi of pressure at supply port P and is pressure at port V1 60 psi or less when level winder cylinder is extending?

yes

no

Go to Step K.

CONTINUED ON NEXT PAGE



MAIN WINCH LEVEL WINDER FAILS TO OPERATE - CONTINUED 0095 00

CONTINUED FROM STEP G

H

WARNING

1. Remove gauge from V1 port, reattach hose and install gauge with 1/4-inch tee between EXT port of level winder cylinder and attaching hose.
2. Remove gauge from V2 port, reattach hose and install gauge with 1/4-inch tee between RET port of level winder cylinder and attaching hose.
3. Perform steps 4 thru 8 of Step F.

Is pressure at port EXT within 60 psi of pressure at supply port P and is pressure at port RET 60 psi or less when level winder cylinder is retracting and is pressure at port RET within 60 psi of pressure at supply port P and is pressure at port EXT 60 psi or less when level winder cylinder is extending?

yes

no

Go to Step J.

I Inspect the level winder subplate assembly ballistic plates for alignment, binding and restrictions.

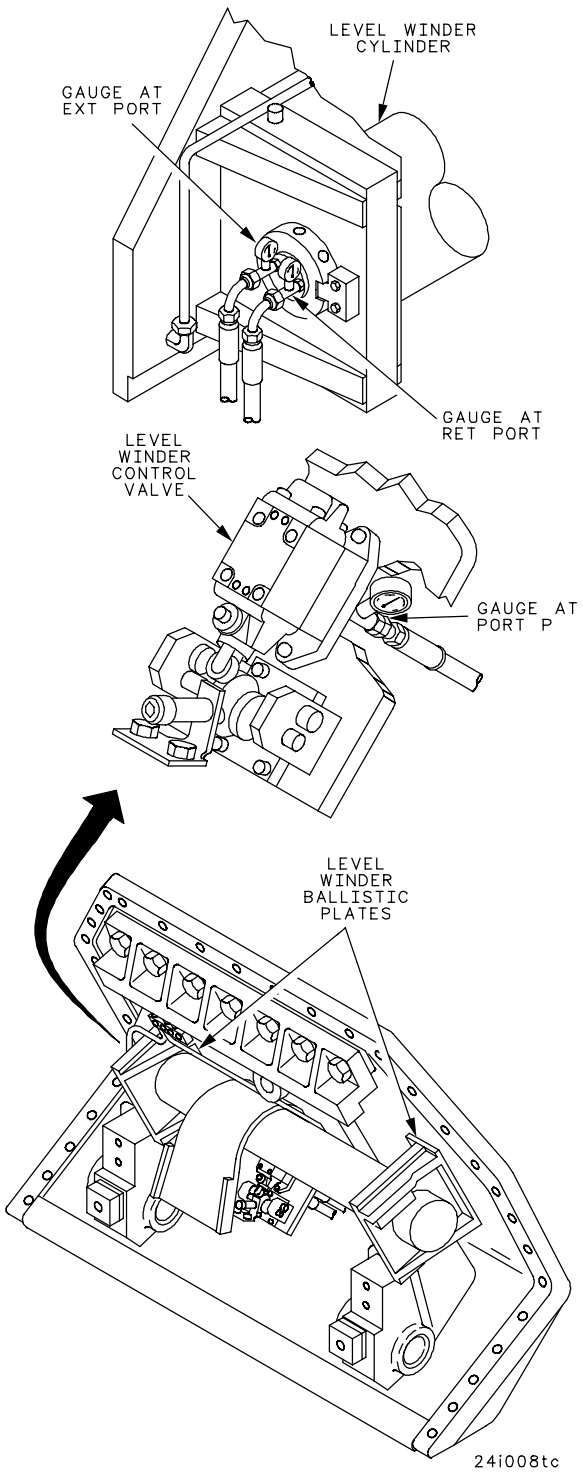
Are plates properly aligned and free of restrictions and binding?

yes

no

Notify Direct Support Maintenance.

Remove restrictions and free bound parts. Verify fault is corrected. If parts are damaged and must be replaced notify Direct Support Maintenance.



CONTINUED ON NEXT PAGE

MAIN WINCH LEVEL WINDER FAILS TO OPERATE - CONTINUED 0095 00

CONTINUED FROM STEP H

J Inspect level winder dual check valve for restrictions.

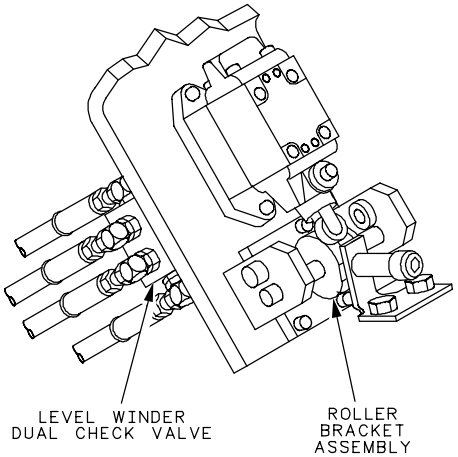
Is dual check valve free of restrictions?

yes

Notify Direct Support Maintenance.

no

Remove restrictions. Verify fault is corrected.



CONTINUED FROM STEP C AND G

K Inspect the roller bracket assembly, diamond screw and tube nut follower for proper operation.

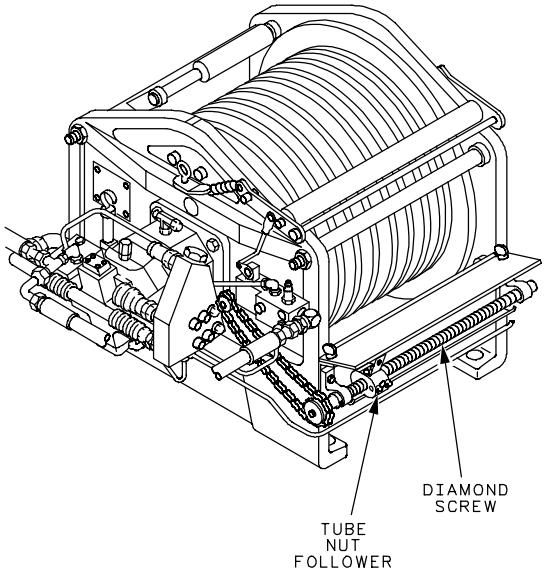
Does roller bracket assembly, diamond screw, and tube nut follower operate properly?

yes

Replace shoulder bolt(WP 0508 00). Verify fault is corrected.

no

Repair or replace bracket assembly (WP 0508 00). Verify fault is corrected. If diamond screw is faulty, notify Direct Support Maintenance.



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CONTINUED ON NEXT PAGE

MAIN WINCH LEVEL WINDER FAILS TO OPERATE - CONTINUED 0095 00

CONTINUED FROM STEP F

L

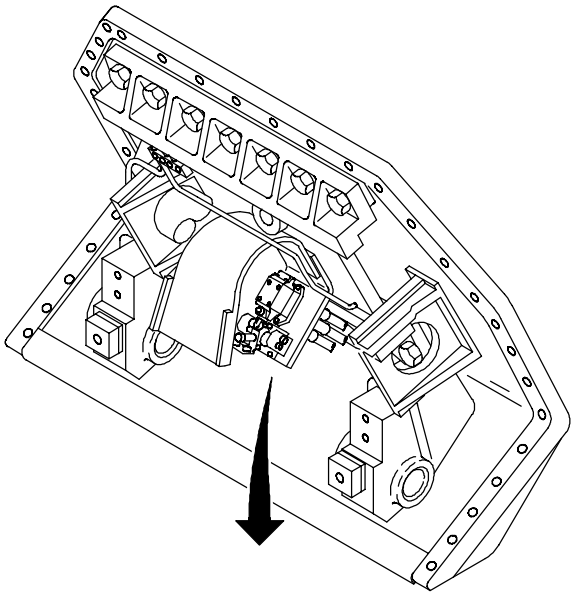
1. Install ground hop kit (WP 0498 00).
2. Start main engine and energize main hydraulic system (TM 9-2350-292-10).
3. Start Enhanced Diagnostic System program (WP 0000 00) and select corresponding system.
4. Payin and payout main winch enough for control valve plunger roller to ride up and down the cam slope only.
5. Record pressures at port P of level winder control valve, and ports V1 and V2 on level winder dual check valve during cylinder extraction and extension.

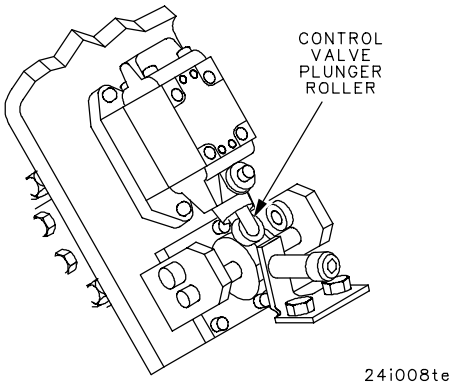
Is pressure at port V1 within 60 psi of pressure at supply port P and is pressure at port V2 60 psi or less when level winder cylinder is retracting and is pressure at port V2 within 60 psi of pressure at supply port P and is pressure at port V1 60 psi or less when level winder cylinder is extending?

yes

no

Go to Step P.





24i008te

CONTINUED ON NEXT PAGE

MAIN WINCH LEVEL WINDER FAILS TO OPERATE - CONTINUED 0095 00

CONTINUED FROM STEP L

M

1. Payin and payout main winch enough for control valve plunger roller to ride up and down the cam slope only.
2. Record pressures at EXT and RET ports of level winder cylinder and port P of level winder control valve.
3. Shut down hydraulic system and main engine (TM 9-2350-292-10).

Is pressure at port EXT within 60 psi of pressure at supply port P and is pressure at port RET 60 psi or less when level winder cylinder is retracting and is pressure at port RET within 60 psi of pressure at supply port P and is pressure at port EXT 60 psi or less when level winder cylinder is extending?

yes

no

Go to Step O.

N

Inspect the level winder subplate assembly ballistic plates for alignment, binding and restrictions.

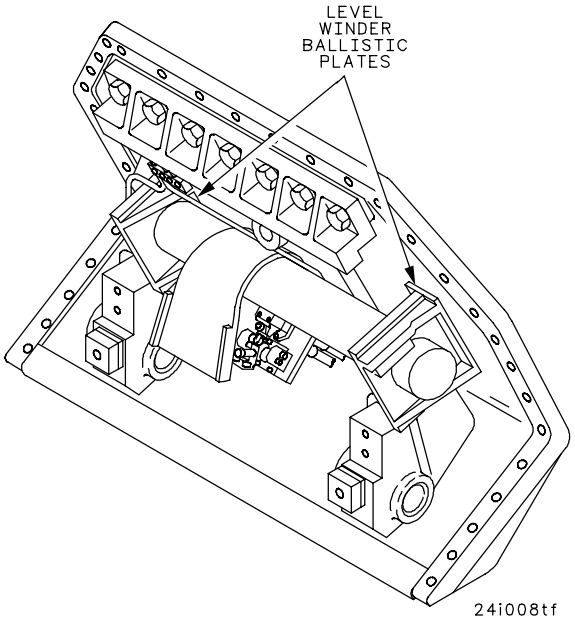
Are plates properly aligned and free of restrictions and binding?

yes

no

Notify Direct Support Maintenance.

Remove restrictions and free bound parts. Verify fault is corrected. If parts are damaged and must be replaced notify Direct Support Maintenance.



CONTINUED ON NEXT PAGE

MAIN WINCH LEVEL WINDER FAILS TO OPERATE - CONTINUED 0095 00

CONTINUED FROM STEP M

O Inspect level winder dual check valve for restrictions.

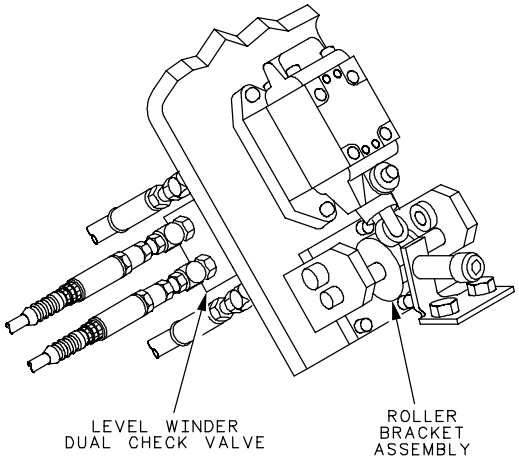
Is dual check valve free of restrictions?

yes

Notify Direct Support Maintenance.

no

Remove restrictions. Verify fault is corrected.



CONTINUED FROM STEP L

P
1. Inspect the roller bracket assembly, diamond screw and tube nut follower for proper operation.
2. Shut down hydraulics and engine (TM 9-2350-292-10).

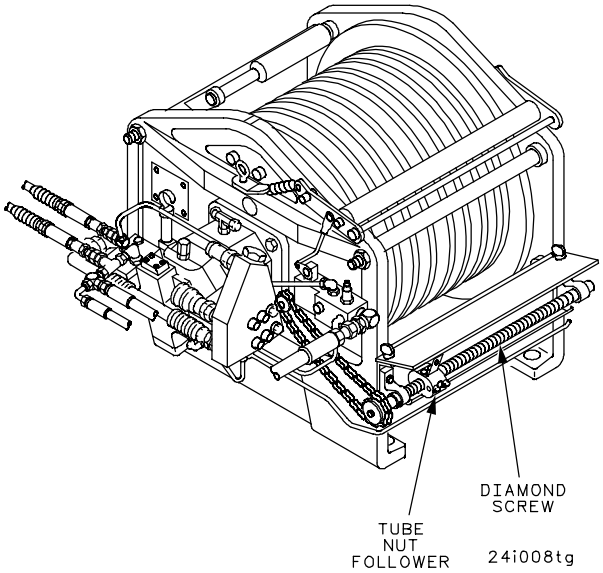
Does roller bracket assembly, diamond screw, and tube nut follower operate properly?

yes

Replace shoulder bolt (WP 0508 00). Verify fault is corrected.

no

Repair or replace bracket assembly (WP 0508 00). Verify fault is corrected. If diamond screw is faulty, notify Direct Support Maintenance.



END OF TASK

AUXILIARY WINCH FAILS TO OPERATE OR DEVELOP FULL POWER. 0096 00

THIS WORK PACKAGE COVERS:

Auxiliary Winch Fails To Operate Or Develop Full Power

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-300 psi dial pressure gauge (item 81, WP 0717 00)
0-5000 psi dial pressure gauge (2) (item 83, WP 0717 00)*
1/4-inch tee (2) (item 71, WP 0716 00)
1/2-inch cap (2) (item 54, WP 0716 00)*
0-4000 psi testing gauge assembly (item 82, WP 0717 00)
3/4-inch tee (item 74, WP 0716 00)*
Safety goggles (item 93, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Auxiliary winch cover removed (WP 0513 00)

Personnel Required

Two

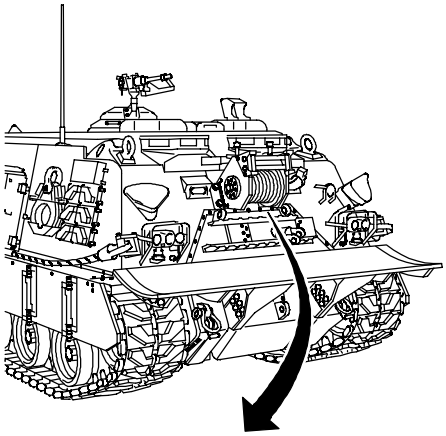
* Not required if vehicle is equipped with Enhanced Diagnostics System

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



WARNING



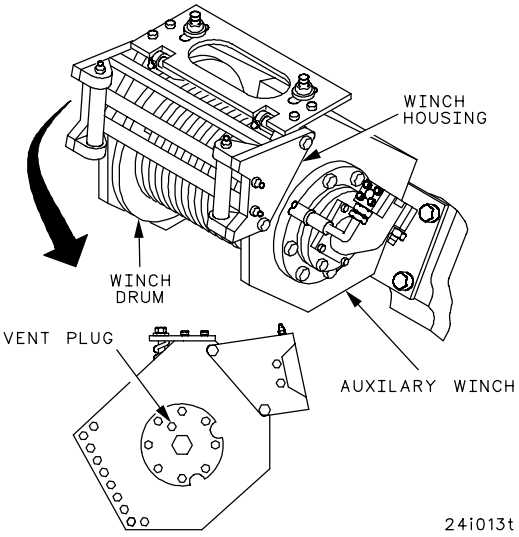
A Inspect for obstructions wedged between auxiliary winch drum and housing.

Is winch drum and housing free of obstructions?

yes

no

Remove obstructions. Check oil seal for damage. If oil seal is not damaged, verify fault is corrected. If seal is damaged or obstruction cannot be removed, replace auxiliary winch (WP 0513 00).



B Inspect between the winch drum and housing and inspect the vent plug on the winch drum bearing support for oil leaks.

Is the winch free of oil leaks?

yes

no

Go to Step D.

CONTINUED ON NEXT PAGE

AUXILIARY WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0096 00

CONTINUED FROM STEP B

C Is vehicle equipped with Enhanced Diagnostics System?

yes → Go to Step S.

no → Go to Step J.

CONTINUED FROM STEP B

D
1. Inspect quick-disconnects for leaks, damage and obstructions.
2. Inspect quick-disconnects on auxiliary winch hoses for proper connection.

Are quick-disconnects properly connected and free of leaks, damage and obstructions?

yes

no → Properly connect quick-disconnects. Remove obstructions. Replace damaged or leaking quick-disconnects (WP 0514 00). Verify faults are corrected.

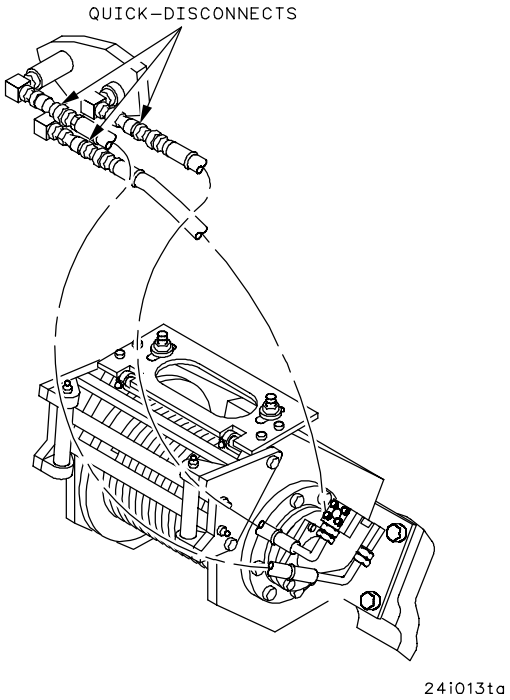
E Inspect auxiliary winch hoses for restrictions, leaks, and damage.

Are hoses free of restrictions, leaks, and damage?

yes

no → Remove restrictions. Replace leaking and damaged hoses (WP 0514 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



AUXILIARY WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0096 00

CONTINUED FROM STEP E

F

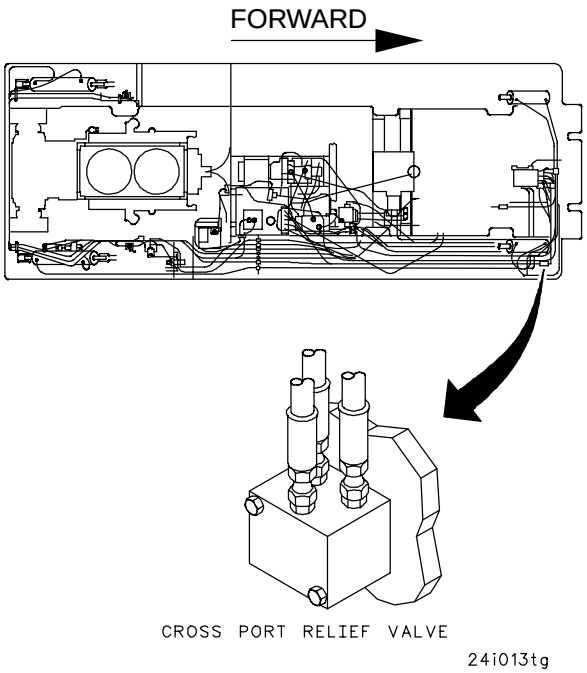
1. Remove subfloor plates 10, 11 and 12 (WP 0454 00).
2. Inspect hoses from auxiliary winch to hydraulic control valve manifold assembly and cross port relief valve for loose connections, leaks, damage and restrictions.

Are all four hoses free of leaks, damage, restrictions and are all connections tight?

yes

no

Tighten loose connections and remove restrictions. Replace leaking and damaged hoses (WP 0514 00). Verify fault is corrected.



G Is vehicle equipped with Enhanced Diagnostics System?

yes

no

Go to Step Q.

CONTINUED ON NEXT PAGE

AUXILIARY WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0096 00

CONTINUED FROM STEP G

H

WARNING

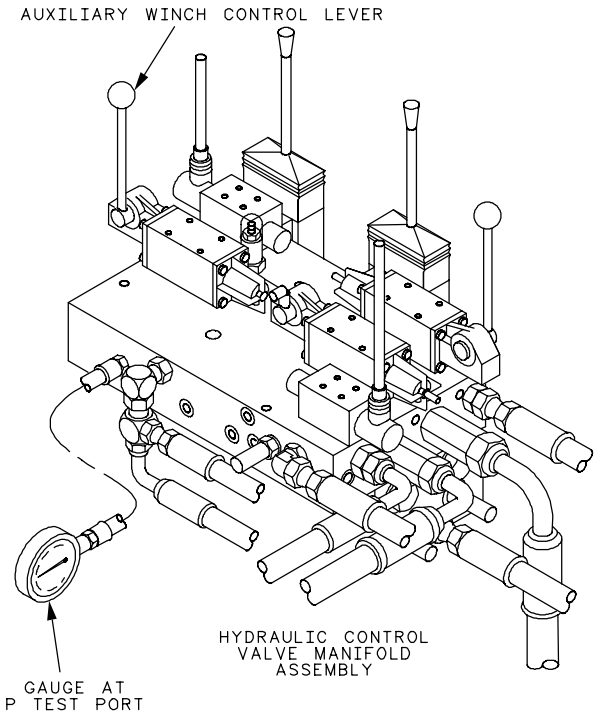
1. Remove hydraulic control valve manifold assembly shields (WP 0519 00).
2. Install a 0-5000 psi dial pressure gauge in test port P of the hydraulic control valve manifold assembly.
3. Disconnect the quick-disconnects of the auxiliary winch hoses.
4. Disconnect hoses from ports A and B of cross port relief valve and plug hoses and ports A and B.
5. Start main engine and set speed to 1800 rpm (TM 9-2350-292-10).
6. Start main hydraulic system (TM 9-2350-292-10).
7. Place the auxiliary winch control lever to the PAYOUT position. Record gauge reading.
8. Place the auxiliary winch control lever to the PAYIN position. Record the gauge reading.
9. Shut down hydraulics and main engine (TM 9-2350-292-10).

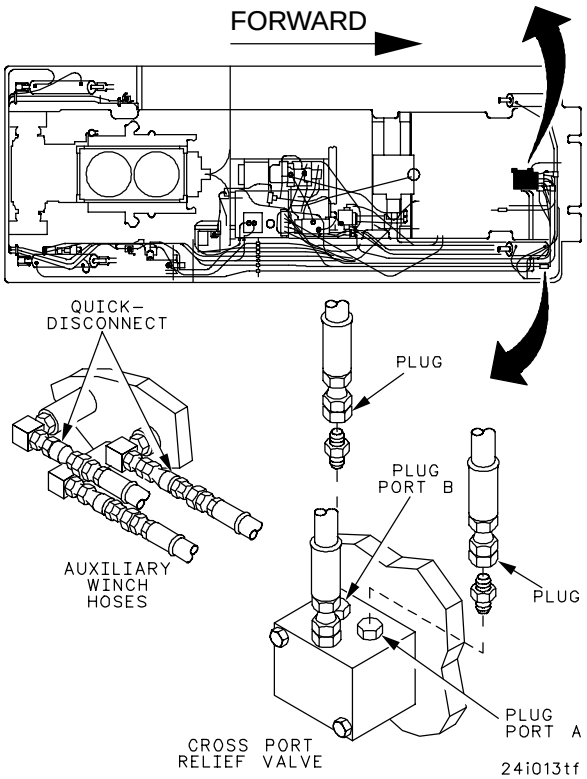
Are both gauge readings between 3900-4100 psi?

yes

Replace cross port relief valve (WP 0560 00). Verify fault is corrected.

no





CONTINUED ON NEXT PAGE

AUXILIARY WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0096 00

CONTINUED FROM STEP H

I

WARNING

1. Install 0-5000 psi dial pressure gauge with 1/4-inch tee between center pump port X3 and attaching hose.
2. Disconnect auxiliary winch quick-disconnects.
3. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
4. Place auxiliary winch control handle in inhaul position.
5. Record gauge readings at port X3 and P test port.
6. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure at both gauges 3900-4100 psi?

yes

Replace auxiliary winch (WP 0513 00). Verify fault is corrected.

no

Notify Direct Support Maintenance.

CONTINUED FROM STEP C

J Inspect the auxiliary winch motor case drain hose quick-disconnect for proper connection and damage.

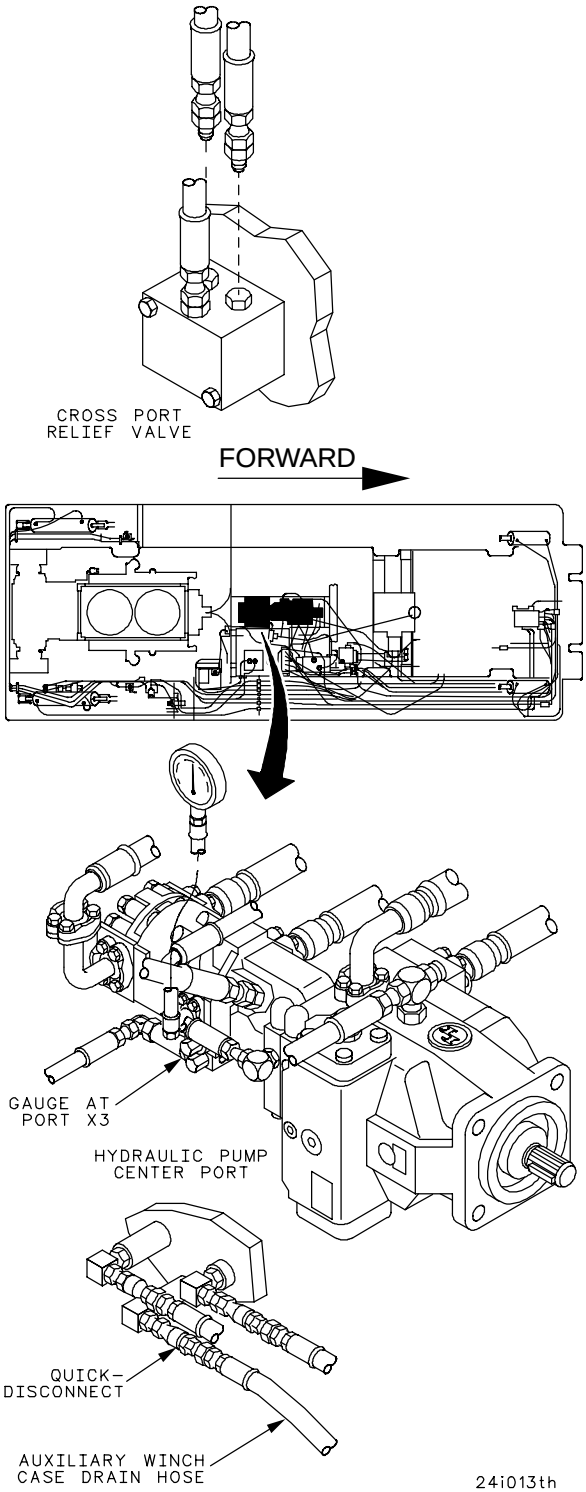
Is case drain hose quick-disconnect free of damage and properly connected?

yes

no

Connect or replace quick-disconnect (WP 0514 00). Proceed to Step M.

CONTINUED ON NEXT PAGE



AUXILIARY WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0096 00

CONTINUED FROM STEP NO TAG

K



WARNING

1. Install a 0-300 psi dial pressure gauge with 1/4-inch tee between auxiliary winch motor case drain port and hose.
2. Start main engine and main hydraulics system (TM 9-2350-292-10).
3. Set engine speed to 1800 rpm.
4. Payout auxiliary winch cable at full speed.
5. Read pressure on gauge at case drain.
6. Shut down engine and hydraulics (TM 9-2350-292-10).

Is pressure less than 40 psi?

yes

Notify Direct Support Maintenance.

no

L Drain oil from auxiliary winch drum.

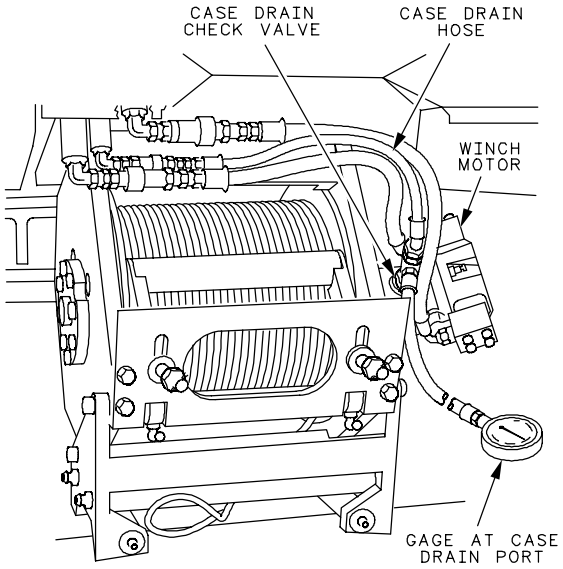
Is oil free of hydraulic fluid?

yes

Refill drum to proper level (TM 9-2350-292-10). Verify fault is corrected.

no

Notify Direct Support Maintenance.



24i013td

CONTINUED FROM STEP NO TAG

M Check auxiliary winch motor case drain check valve and hose for restrictions.

Is check valve and hose free of restrictions?

yes

CONTINUED ON NEXT PAGE

no

Clear hose and check valve of restrictions and perform step L of this task. Verify fault is corrected.

AUXILIARY WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0096 00

CONTINUED FROM STEP M

N

WARNING

1. Disconnect hoses from ports AWI and AWO on the hydraulic control valve manifold assembly. Cap hoses.
2. Install 0-4000 psi testing gauge assembly on ports AWI and AWO.
3. Start main engine, energize hydraulics and set engine speed to 1800 rpm (TM 9-2350-292-10).
4. Place auxiliary winch directional control valve lever in the payout position and record gauge readings.
5. Place auxiliary winch directional control valve lever in the inhaul position and record gauge readings.
6. Shut down hydraulics and main engine (TM 9-2359-292-10).

Is AWI pressure reading 140 psi or less in payout position and AWO pressure reading is 140 psi or less in inhaul position?

yes

Replace auxiliary winch (WP 0513 00). Verify fault is corrected.

no

O

WARNING

1. Install 0-4000 psi testing gauge assembly with 3/4-inch tee between port AWR and connecting hose on hydraulic control valve manifold assembly.
2. Perform step N steps 3 thru 6.

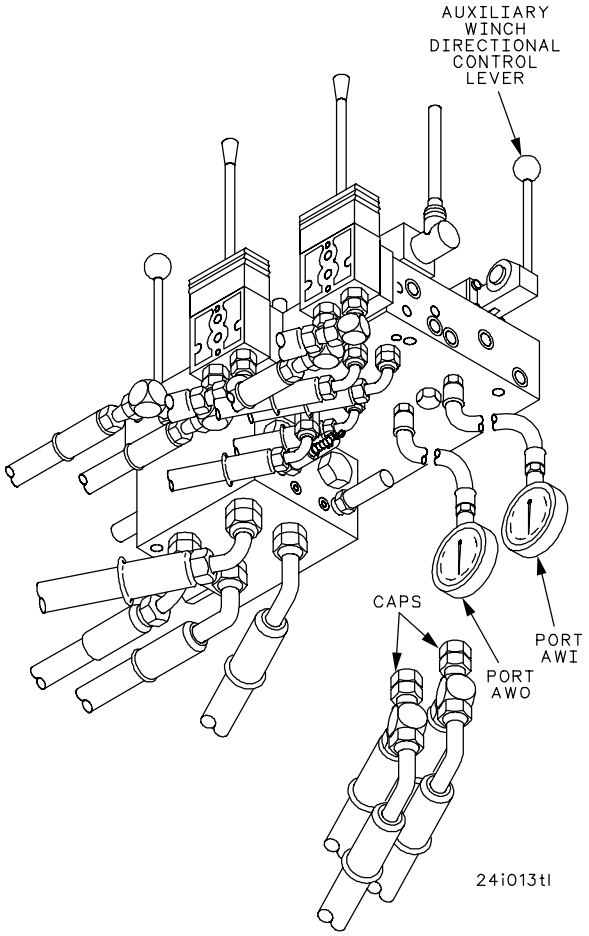
Is pressure at AWR port 140 psi or less?

yes

Notify Direct Support Maintenance.

no

CONTINUED ON NEXT PAGE



AUXILIARY WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0096 00

CONTINUED FROM STEP O

P Inspect hose from AWR port to filter valve manifold for leaks, restrictions, and damage.

Is hose free of leaks, restrictions, and damage?

yes

Verify fault is corrected.

no

Tighten leaking connections and remove restrictions. If restrictions cannot be removed or if hose is damaged, replace (WP 0568 00). Verify fault is corrected.

CONTINUED FROM STEP G

Q

1. Start Enhanced Diagnostics Systems program (WP 0086 00) and select corresponding symptom.
2. Disconnect the quick-disconnects of the auxiliary winch hoses.



WARNING

3. Disconnect hoses from ports A and B of cross port relief valve and plug hoses and ports A and B.
4. Start main engine, energize main hydraulic system and set speed to 1800 rpm (TM 9-2350-292-10).
5. Place the auxiliary winch control lever to the PAYOUT position. Record pressure at port P of hydraulic control valve manifold.
6. Place the auxiliary winch control lever to the PAYIN position. Record pressure at ort P of hydraulic control valve manifold.
7. Shut down hydraulics and main engine (TM 9-2350-292-10).

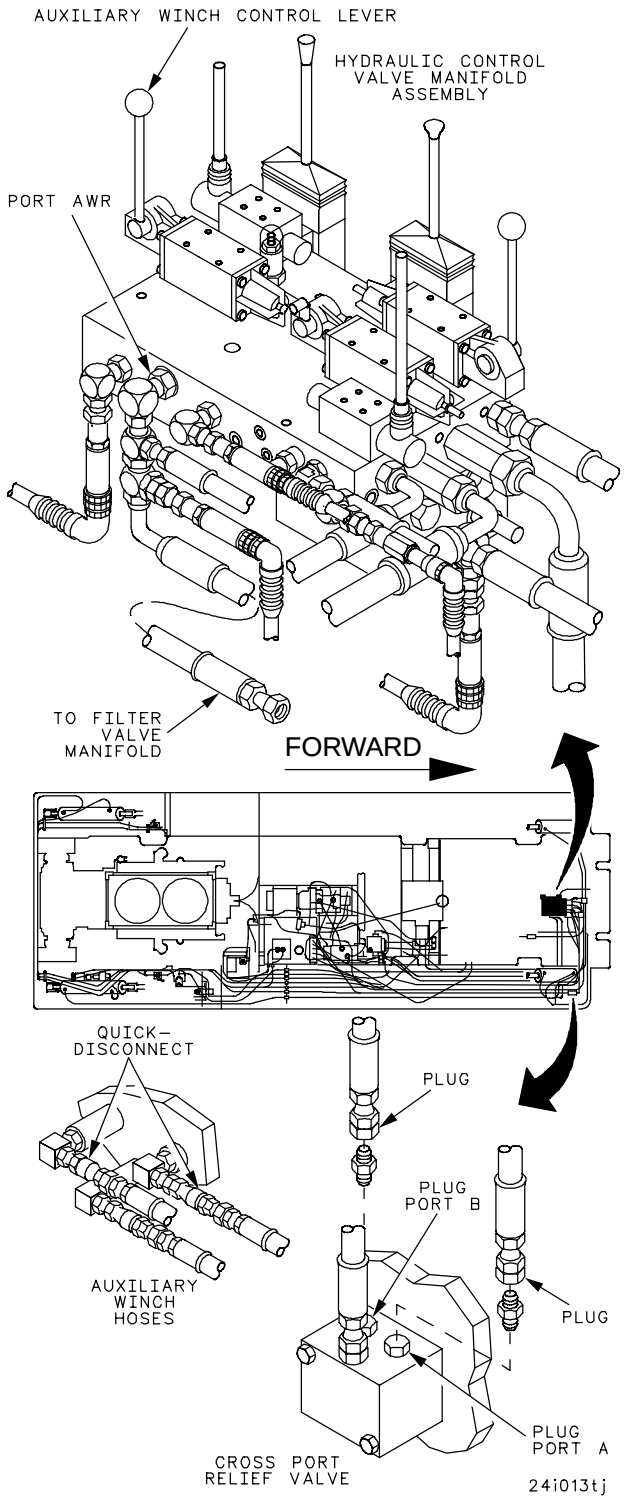
Are both pressures between 3900-4100 psi?

yes

Replace cross port relief valve (WP 0560 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



AUXILIARY WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0096 00

CONTINUED FROM STEP Q

R

1. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
2. Place auxiliary winch control handle in inhaul position.
3. Record pressures at center pump port X3 and P test port of hydraulic control valve manifold assembly.
4. Shut down hydraulics and main engine (TM 9-2350-292-10).

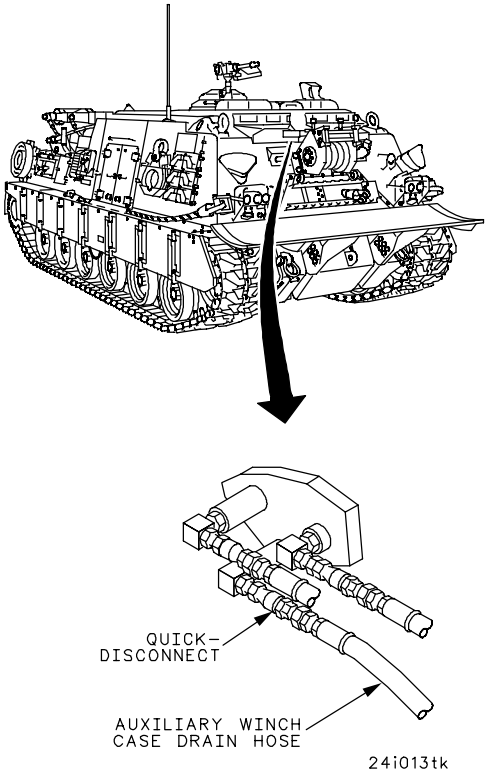
Are both pressures 3900-4100 psi?

yes

Replace auxiliary winch (WP 0513 00). Verify fault is corrected.

no

Notify Direct Support Maintenance.



CONTINUED FROM STEP C

S Inspect the auxiliary winch motor case drain hose quick-disconnect for proper connection and damage.

Is case drain hose quick-disconnect free of damage and properly connected?

yes

no

Connect or replace quick-disconnect (WP 0514 00). Proceed to Step V.

CONTINUED ON NEXT PAGE

AUXILIARY WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0096 00

CONTINUED FROM STEP S

T

WARNING

1. Install a 0-300 psi dial pressure gauge with 1/4-inch tee between auxiliary winch motor case drain port and hose.
2. Start main engine and main hydraulics system (TM 9-2350-292-10).
3. Set engine speed to 1800 rpm.
4. Payout auxiliary winch cable at full speed.
5. Read pressure on gauge at case drain.
6. Shut down engine and hydraulics (TM 9-2350-292-10).

Is pressure less than 40 psi?

yes

Notify Direct Support Maintenance.

no

U Drain oil from auxiliary winch drum.

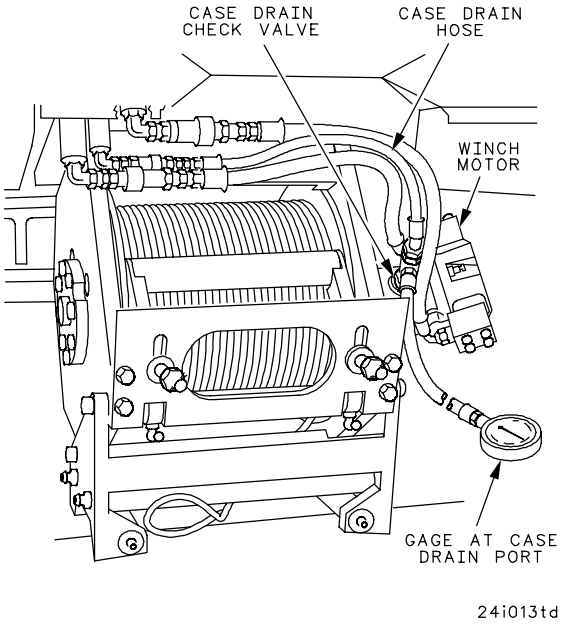
Is oil free of hydraulic fluid?

yes

Refill drum to proper level (TM 9-2350-292-10). Verify fault is corrected.

no

Notify Direct Support Maintenance.



CONTINUED FROM STEP S

V Check auxiliary winch motor case drain check valve and hose for restrictions.

Is check valve and hose free of restrictions?

yes

CONTINUED ON NEXT PAGE

no

Clear hose and check valve of restrictions and perform step U of this task. Verify fault is corrected.

AUXILIARY WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0096 00

CONTINUED FROM STEP U

W

WARNING

1. Disconnect hoses from ports AWI and AWO on the hydraulic control valve manifold assembly. Cap hoses.
2. Install 0-4000 psi testing gauge assembly on ports AWI and AWO.
3. Start main engine, energize hydraulics and set engine speed to 1800 rpm (TM 9-2350-292-10).
4. Place auxiliary winch directional control valve lever in the payout position and record gauge readings.
5. Place auxiliary winch directional control valve lever in the inhaul position and record gauge readings.
6. Shut down hydraulics and main engine (TM 9-2359-292-10).

Is AWI pressure reading 140 psi or less in payout position and AWO pressure reading is 140 psi or less in inhaul position?

yes

Replace auxiliary winch (WP 0086 00). Verify fault is corrected.

no

X

1. Start Enhanced Diagnostics System Program (WP 0086 00) and select the corresponding symptom.
2. Perform step W steps 3 thru 6 and record pressures at port AWR.

Is pressure at AWR port 140 psi or less?

yes

Notify Direct Support Maintenance.

no

Y Inspect hose from AWR port to filter valve manifold for leaks, restrictions, and damage.

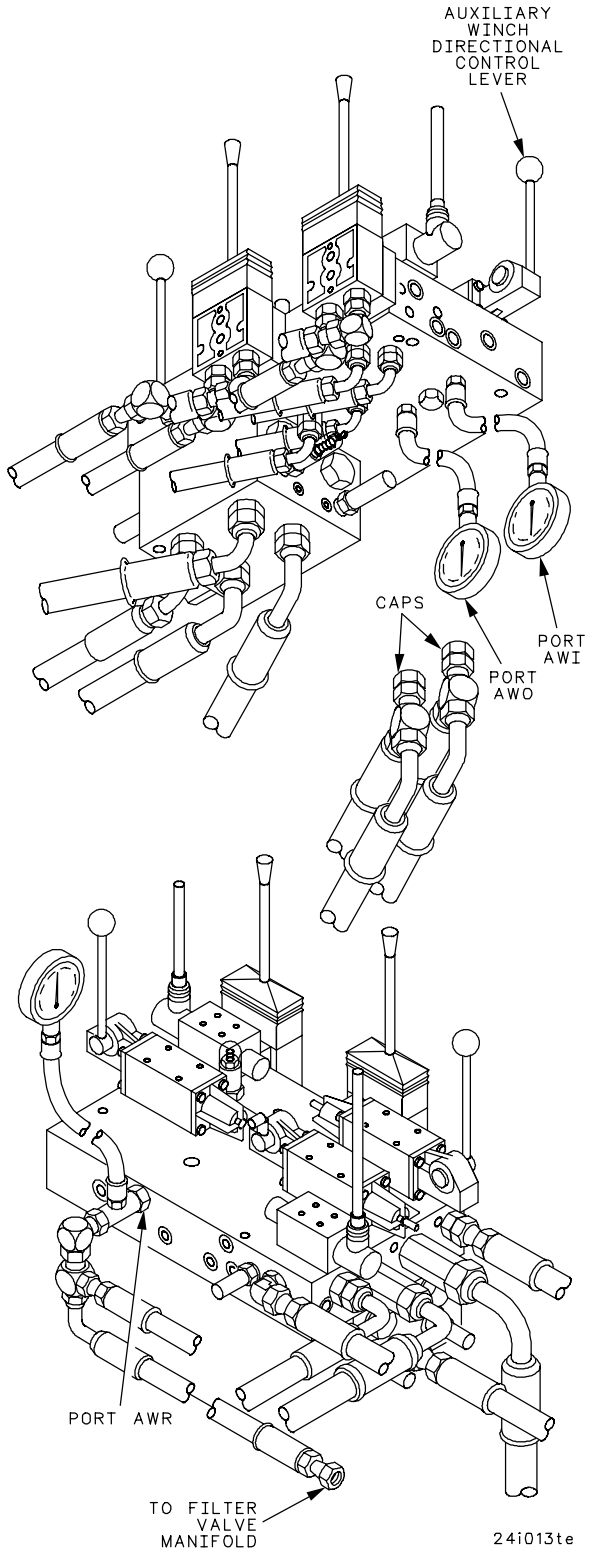
Is hose free of leaks, restrictions, and damage?

yes

Verify fault is corrected.

no

Tighten leaking connections and remove restrictions. If restrictions cannot be removed or if hose is damaged, replace (WP 0568 00). Verify fault is corrected.



END OF TASK

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY 0097 00

THIS WORK PACKAGE COVERS:

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-5000 psi dial pressure gauge (item 83, WP 0717 00)*
0-4000 psi testing gauge assembly (2) (item 82, WP 0717 00)*
3/8-inch tees (2) (item 72, WP 0716 00)*
1/2-inch tee (item 73, WP 0716 00)*
1/4-inch tee (item 71, WP 0716 00)*
Safety goggles (item 93, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

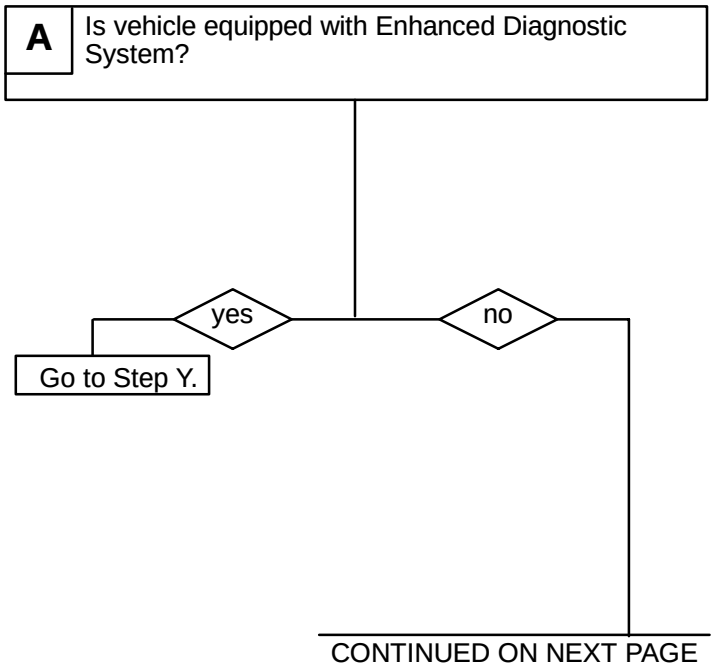
Two

* Not required if vehicle is equipped with Enhanced Diagnostics System

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.





BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP A

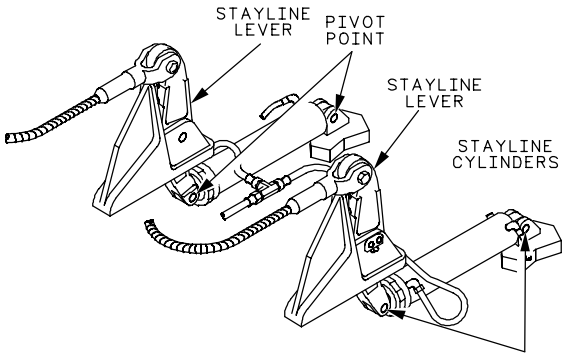
B Inspect the boom, boom cylinder, stayline lever, and stayline cylinder pivot points for restricted, damaged or missing parts.

Are boom components free of restrictions, damaged, or missing parts?

yes

no

Remove restrictions. Verify fault is corrected. If parts are damaged or missing, notify Direct Support Maintenance.



C

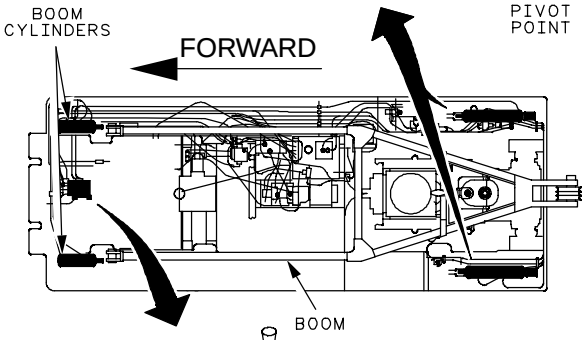
1. Remove hydraulic control valve manifold assembly shields (WP 0519 00).

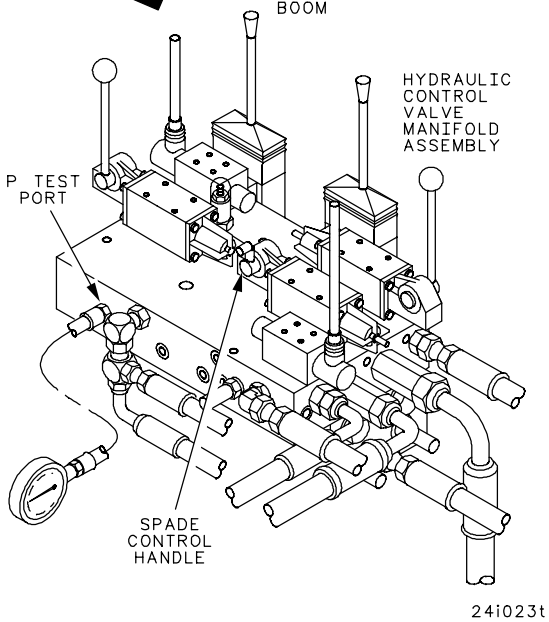


WARNING

2. Install a 0-5000 psi dial pressure gauge in the P test port of the hydraulic control valve manifold assembly.
3. Start the main engine and main hydraulics (TM 9-2350-292-10).
4. Set engine rpm to 1800 and set spade control handle to RAISE position.
5. Read pressure gauge and record reading.
6. Shut down hydraulics and engine (TM 9-2350-292-10).

Is pressure 2300-2800 psi?





24i023t

yes

no

Go to Step F.

CONTINUED ON NEXT PAGE

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP C

D

1. Remove auxiliary winch cover (WP 0513 00).
2. Disconnect quick-disconnects at auxiliary winch.
3. Start the main engine and main hydraulics (TM 9-2350-292-10).
4. Set engine speed to 1800 rpm (TM 9-2350-292-10).
5. Place auxiliary winch control handle in the INHAUL DETENT position.
6. Set spade control handle to RAISE position and record pressure gauge readings.
7. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure 3900-4100 psi?

yes

Go to Step F.

no

E

1. Remove subfloor plates 10 and 20 (WP 0454 00).
2. Inspect load sense hose, from boom directional control valve to pressure hoses, check valve and center pump for leaks and damage.
3. Shut down hydraulics and engine.

Are hoses and valve free of damage and leaks?

yes

Notify Direct Support Maintenance.

no

Repair or replace leaking and/or damaged hoses and valve (WP 0556 00). Verify fault is corrected.

CONTINUED FROM STEPS C AND D

F

1. Operate boom with engine at 1800 rpm (TM 9-2350-292-10).
2. Watch to identify what range boom fails in.

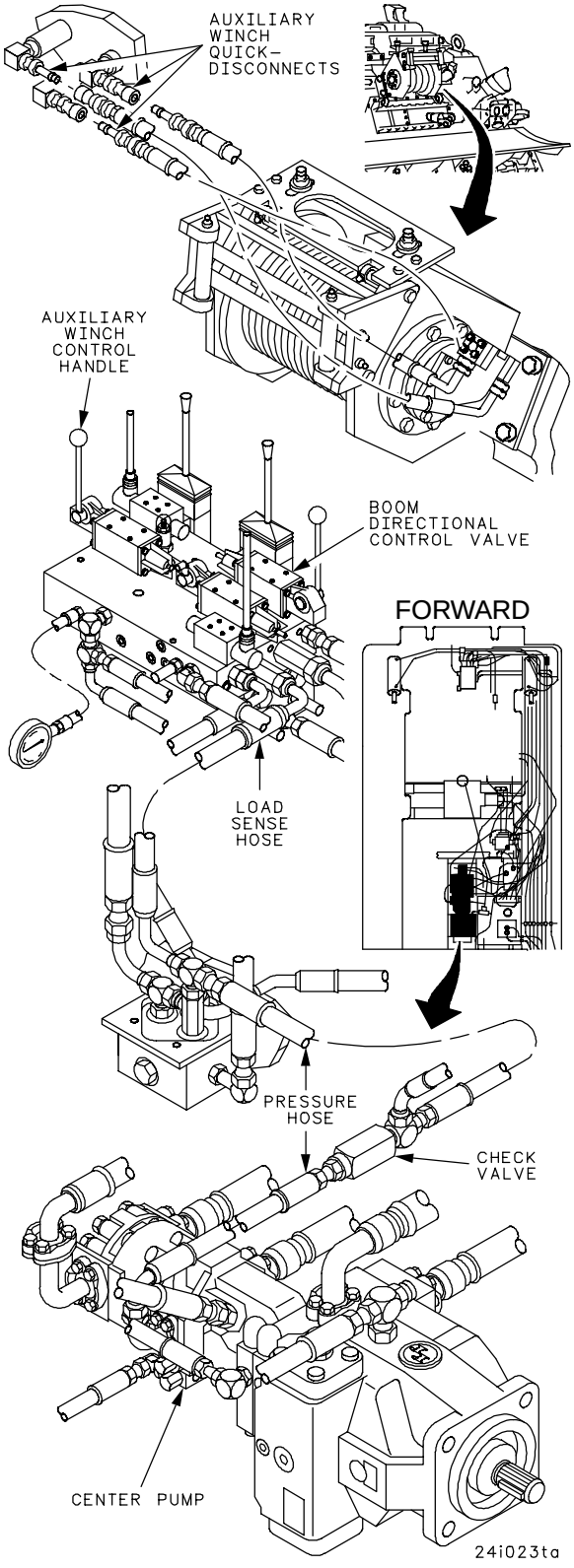
Does boom fail in the stow range?

yes

no

Go to Step R.

CONTINUED ON NEXT PAGE



BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP F

G

WARNING

1. Remove 0-5000 psi dial pressure gauge from hydraulic control valve manifold assembly and install the gauge with 1/2-inch tee between the boom shutoff valve port A and attaching hose.
2. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between boom shutoff valve PILOT port and attaching hose.
3. Install another 0-4000 psi testing gauge assembly in the PR TEST port of the hydraulic control valve manifold assembly.
4. Start the main engine and main hydraulics (TM 9-2350-292-10). Set engine speed to 1800 rpm.
5. Read gauges and record results.
6. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure at PR TEST port 385-470 psi?

yes

no

Notify Direct Support Maintenance.

Is pressure at boom shutoff valve pilot port 385-470 psi?

yes

no

Go to Step K.

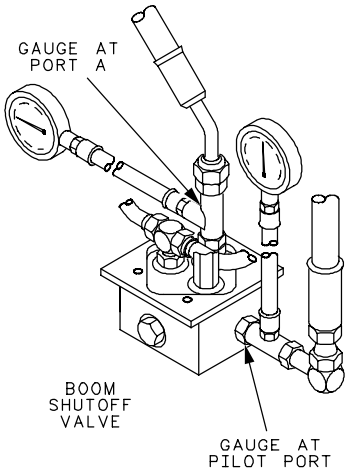
Is pressure at port A greater than 0 but less than 60 psi?

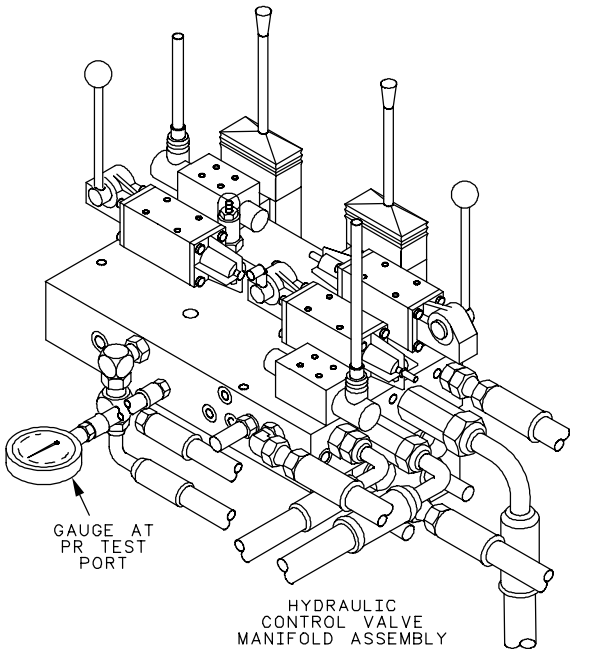
yes

no

Notify Direct Support Maintenance.

CONTINUED ON NEXT PAGE





24i023tb

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP G

H

1. Place boom safety valve handle in STOW position.
2. Perform Step G, steps 4 thru 6.

Is pressure at shutoff valve PILOT port greater than 0 but less than 60 psi?

yes / no

Notify Direct Support Maintenance.

Is pressure at port A 440-625 psi?

yes / no

CONTINUED FROM STEP U

Notify Direct Support Maintenance.

I

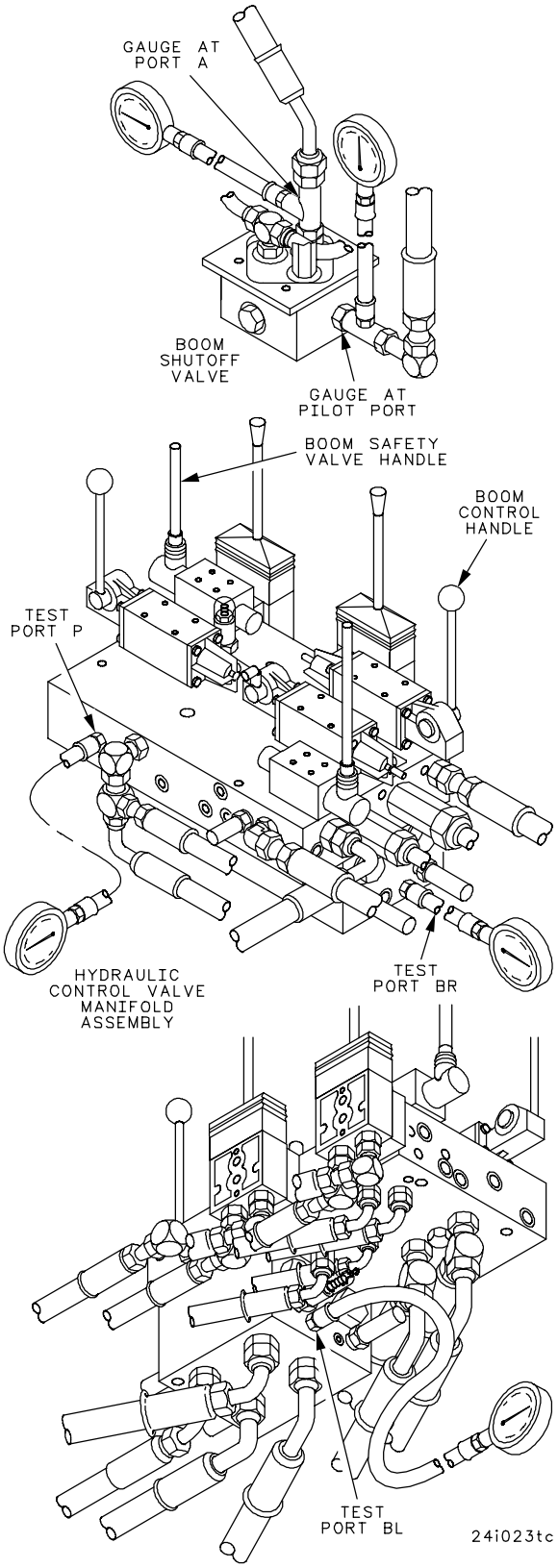


WARNING

1. Remove gauges and tees and reconnect hose/plugs to ports.
2. Install 0-5000 psi dial pressure gauge in P test port of hydraulic control valve manifold assembly.
3. Install 0-4000 psi testing gauge assembly in BR test port of hydraulic control valve manifold assembly.
4. Install 0-4000 psi testing gauge assembly in BL test port of hydraulic control valve manifold assembly.
5. If boom is stowed in travel lock place wood blocks between boom and hull forward of air cleaner inlets.
6. Start main engine, set speed to 1800 rpm and energize main hydraulics (TM 9-2350-292-10).
7. Place boom control handle in RETRACT position (if boom is in live range place handle to FORWARD position).
8. Read gauges and record pressures.
9. Shut down hydraulics and main engine (TM 9-2350-292-10).

If boom control handle is in RETRACT, is pressure at P- test 1800-2300 psi and BL port pressure1575-1900 psi and BR port pressure 75 or less?

CONTINUED ON NEXT PAGE



BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP I

yes / no

Notify Direct Support Maintenance.

If boom control handle is in FORWARD, is pressure at port BR 1500-1900 psi, P test port pressure 1800-2300 psi and BL port pressure 75 or less?

yes / no

Notify Direct Support Maintenance.

J

1. Remove subfloor plates 7, 10, 15, 18, 20, 22, 23, 26, 27 and 31 (WP 0454 00).
2. Inspect flow control valves and attaching hoses and fittings to the boom cylinders, directional control valves, hydraulic control valve manifold assembly, reservoir, stayline cylinder, and center pump for leaks and damage.

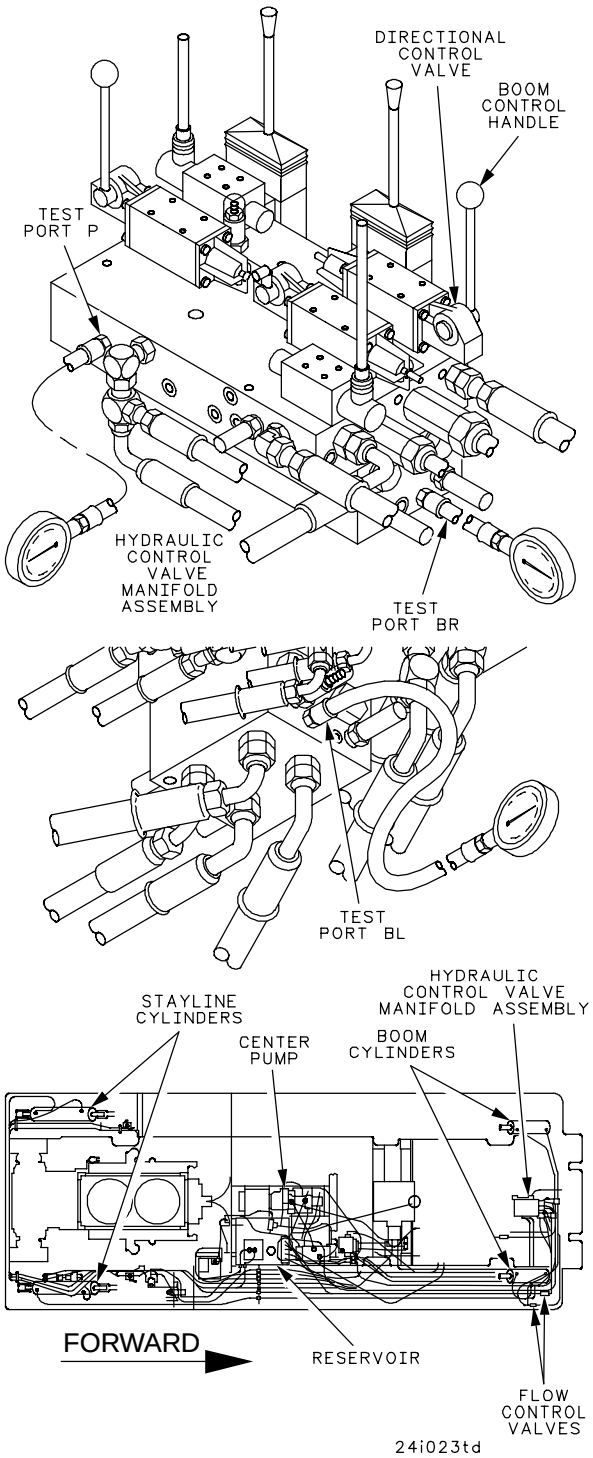
Are flow control valves, hoses and fittings free of leaks and damage?

yes / no

Notify Direct Support Maintenance.

Tighten leaking fittings. Replace damaged hoses, fittings, and valves (WP 0544 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP G

K

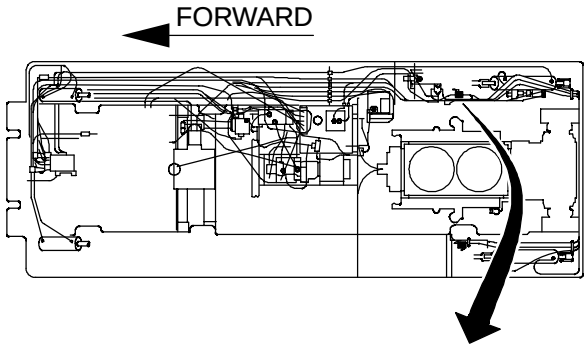
1. Remove air intake grilles beside both boom stayline arms (WP 0415 00).
2. Check adjustment of both boom limit valves.

Are both valves properly adjusted?

yes

no

Adjust valves (WP 0563 00). Verify fault is corrected.



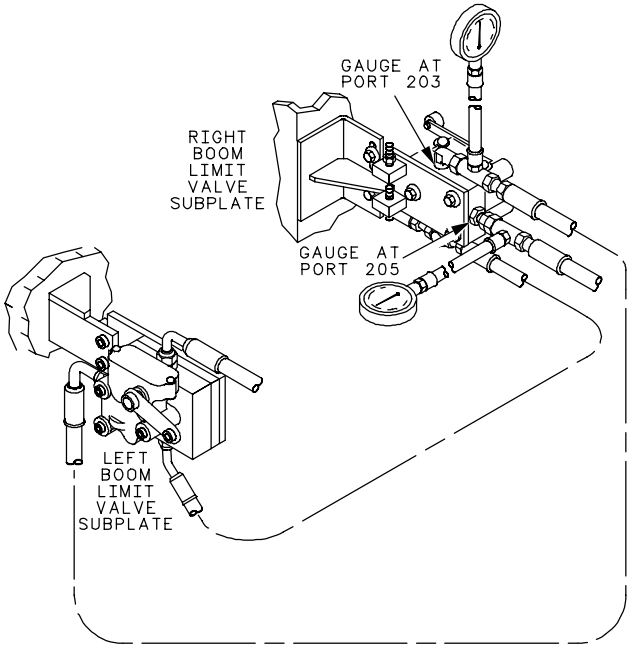
L



WARNING

1. Remove gauges used in Step F and reconnect hoses and plugs.
2. Install 0-4000 psi testing gauge assembly with 3/8-inch tee between right boom limit valve subplate port 205 and attaching hose.
3. Install another 0-4000 psi testing gauge assembly with 3/8-inch tee between right boom limit valve subplate port 203 and attaching hose.
4. Start main engine, set speed to 1800 rpm and energize main hydraulic system (TM 9-2350-292-10).
5. Read gauges and record pressures.
6. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure at port 205 385-470 psi?



24i023te

yes

no

Go to Step Q.

Is pressure at port 203 385-470 psi?

yes

no

Notify Direct Support Maintenance.

CONTINUED ON NEXT PAGE

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP L

M

WARNING

1. Remove gauges and tees from right boom limit valve and reconnect hoses.
2. Install 0-4000 psi testing gauge assembly with 3/8-inch tee between left boom limit valve port 205 and attaching hose.
3. Install another 0-4000 psi testing gauge assembly with 3/8-inch tee between left boom limit valve port 203 and attaching hose.
4. Start main engine, set speed to 1800 rpm, and energize main hydraulic system (TM 9-2350-292-10).
5. Read gauges and record pressures.
6. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure at port 205 385-470 psi?

yes

no

Go to Step P.

Is pressure at port 203 385-470 psi?

yes

no

Notify Direct Support Maintenance.

N

1. Remove subfloor plates 10, 11, 12, 15, 18, 23 and 31 (WP 0454 00).
2. Inspect hoses and fittings from boom safety valve to boom limit valves and to stayline cylinders for leaks and damage.

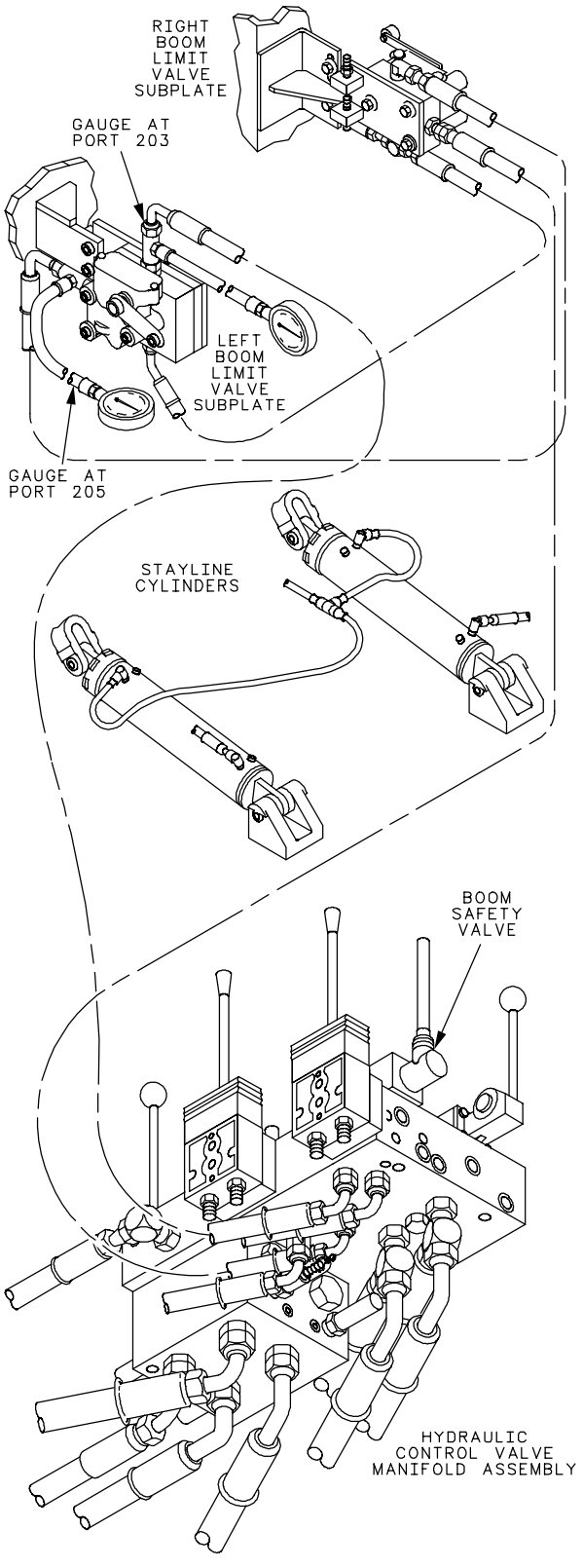
Are hoses and fitting free of leaks and damage?

yes

no

Tighten leaking connections. Replace damaged hoses and connections (Chapter 19). Verify fault is corrected.

CONTINUED ON NEXT PAGE



24i023tf

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP N

O



WARNING

1. Install a 0-4000 psi testing gauge assembly with 1/4-inch tee between the boom safety valve BSO port and attaching hose.
2. Start main engine, set speed at 1800 rpm, and energize hydraulics (TM 9-2350-292-10).
3. Read gauge and record reading.
4. Shut down hydraulics and main engine (TM 9-2350-292-10).

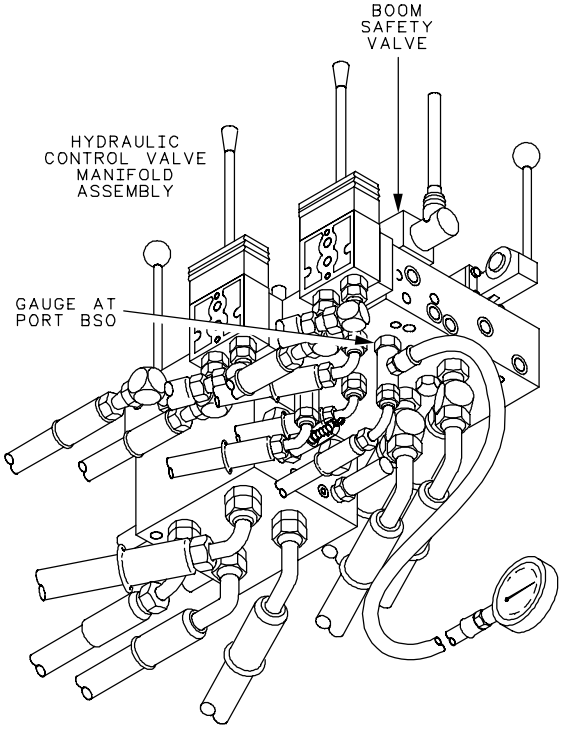
Is pressure at BSO port 385-470 psi?

yes

Replace hose from boom safety valve to boom shutoff valve (WP 0576 00). Verify fault is corrected.

no

Notify Direct Support Maintenance.



CONTINUED FROM STEP M

P

1. Open left and right side engine deck grilles and exhaust deflectors (TM 9-2350-292-10).
2. Inspect hose and fittings between right and left boom limit valve subplate for leaks and damage.

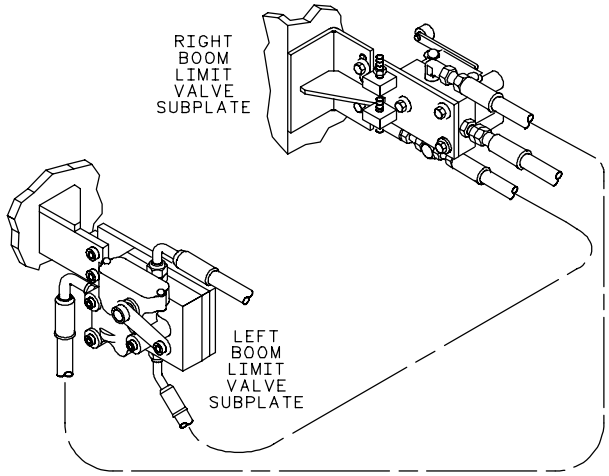
Is hose and fittings free of leaks and damage?

yes

Verify fault is corrected.

no

Tighten leaking fittings. Replace damaged hose and fittings (WP 0578 00). Verify fault is corrected.



24i023tg

CONTINUED ON NEXT PAGE

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP L

Q

1. Remove subfloor plates 10, 11 and 12 (WP 0454 00).
2. Inspect hoses and fittings from hydraulic control valve manifold assembly to right boom limit valve subplate for leaks and damage.

Are hoses and fittings free of leaks and damage?

yes

Verify fault is corrected.

no

Tighten leaking fittings. Replace damaged hoses and fittings (WP 0577 00). Verify fault is corrected.

CONTINUED FROM STEP F

R

1. Remove air intake grilles beside both boom stayline arms (WP 0415 00).
2. Inspect boom limit valve actuating levers for binding.
3. Shut down hydraulics and engine.

Are boom limit valve actuating levers free of binding?

yes

no

Free binding levers. Verify fault is corrected. If levers cannot be freed of binding, notify Direct Support Maintenance.

S



WARNING

1. Install a 0-4000 psi testing gauge assembly with 3/8-inch tee between left boom limit valve subplate port 203 and attaching hose.
2. Start main engine, set speed to 1800 rpm, and energize main hydraulics (TM 9-2350-292-10).
3. Read gauge and record pressure.
4. Shut down hydraulics and main engine (TM 9-2350-292-10).

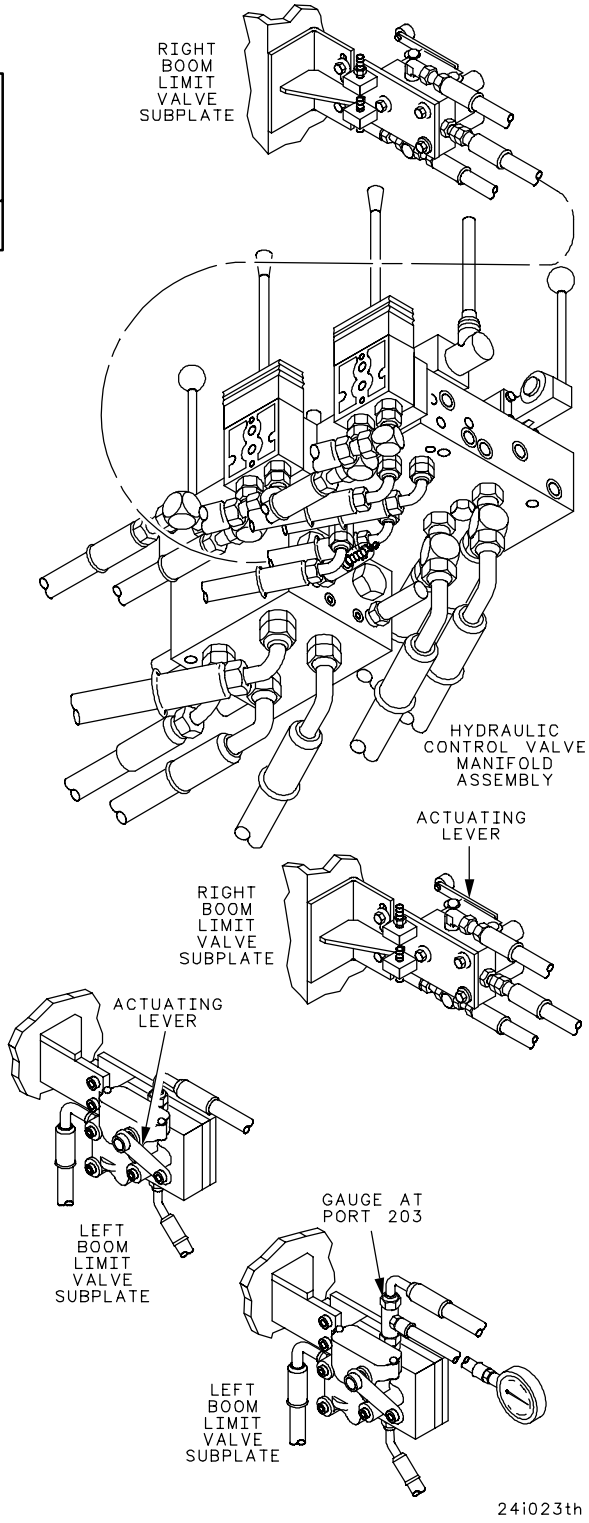
Is pressure 0 psi?

yes

CONTINUED ON NEXT PAGE

no

Go to Step X.



BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP S

T

WARNING

1. Remove gauge and tee from port 203 and reattach hose.
2. Install 0-4000 psi testing gauge assembly with 3/8-inch tee between boom safety valve port BSI and attaching hose.
3. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between boom safety valve port BSO and attaching hose.
4. Start main engine, set speed to 1800 rpm, and energize main hydraulics (TM 9-2350-292-10).
5. Record gauges and record pressures.
6. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure at port BSI 0 psi?

yes

no

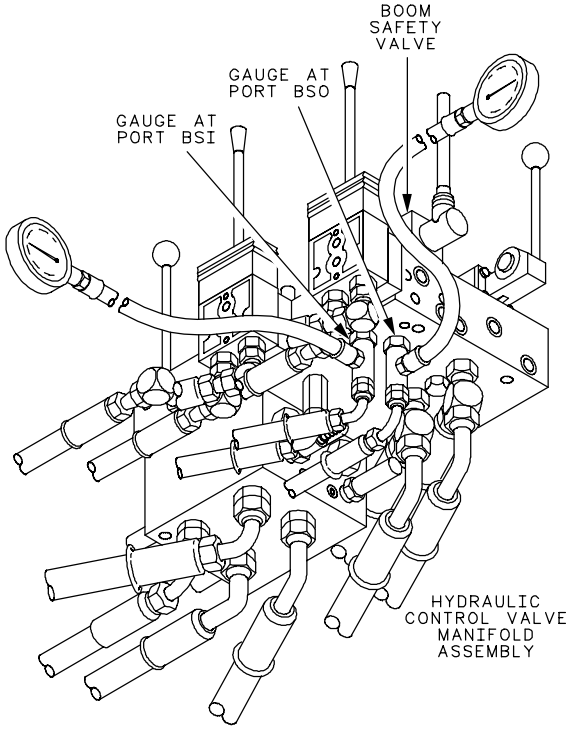
Go to Step W.

Is pressure at port BSO 0 psi?

yes

no

Notify Direct Support Maintenance.



U

WARNING

1. Remove gauges and tees from port BSI and attaching hose at hydraulic control valve manifold assembly and reattach hoses.
2. Install 0-4000 psi testing gauge assembly and 1/4-inch tee between boom shutoff valve PILOT port and attaching hose.
3. Install 0-5000 psi dial pressure gauge and 1/2-inch tee between boom shutoff valve port A and attaching hose.
4. Start main engine, set speed to 1800 rpm, and energize main hydraulics (TM 9-2350-292-10).
5. Read gauges and record pressures.
6. Shut down hydraulics and main engine (TM 9-2350-292-10).

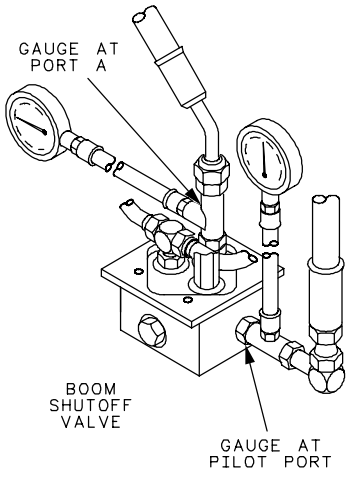
Is pressure at PILOT port 0 psi?

yes

no

CONTINUED ON NEXT PAGE

Go to Step V.



24i023tj

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP U

Is pressure at port A 440-625 psi?

yes → Go to Step I.

no → Notify Direct Support Maintenance.

CONTINUED FROM STEP U

V

1. Remove subfloor plates 10, 11 and 12 (WP 0454 00).
2. Inspect hose and fittings from boom safety valve to boom shutoff valve for leaks and damage.

Are hose and fittings free of leaks and damage?

yes → Notify Direct Support Maintenance.

no → Tighten leaking connections. Replace damaged fittings and hose (WP 0576 00). Verify fault is corrected.

CONTINUED FROM STEP T

W

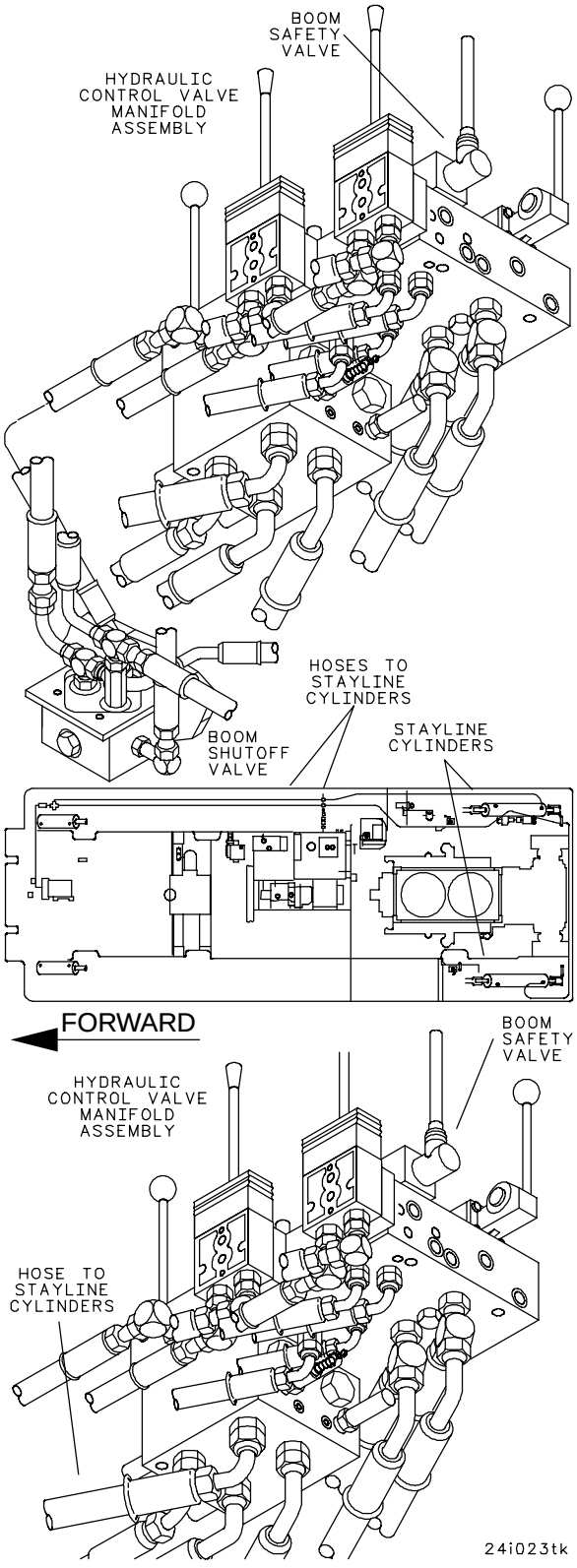
1. Remove subfloor plates 10, 11, 12, 15, 18, 23, 31 and 32 (WP 0454 00).
2. Inspect hoses and fittings from boom safety valve to stayline cylinders for leaks and damage.

Are hoses and fittings free of leaks and damage?

yes → Verify fault is corrected.

no → Tighten leaking connections. Replace damaged hoses and fittings (WP 0566 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP S

X

1. Remove subfloor plates 28, 29 and 30 (WP 0454 00).
2. Inspect hoses and fittings from boom limit valve subplate to reservoir for leaks and damage.

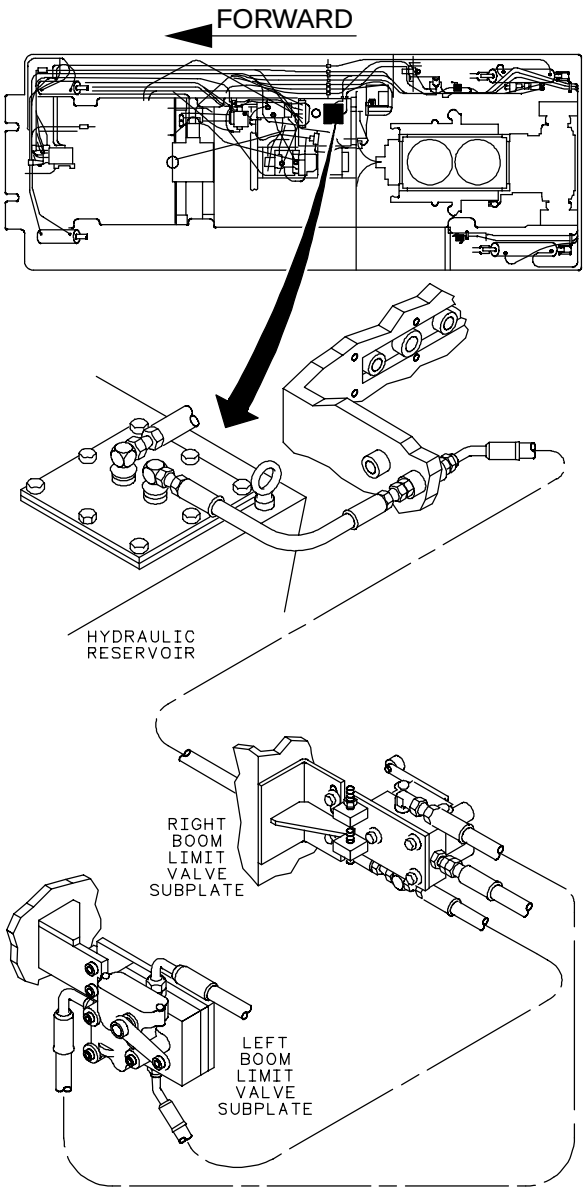
Are hoses and fittings free of leaks and damage?

yes

Notify Direct Support Maintenance.

no

Tighten leaking connections. Replace damaged hoses and fittings (WP 0578 00). Verify fault is corrected.



24i023tm

CONTINUED ON NEXT PAGE

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP A

Y Inspect the boom, boom cylinder, stayline lever, and stayline cyliner pivot points for restricted, damaged or missing parts.

Are boom components free of restrictions, damaged, or missing parts?

yes

no

Remove restrictions. Verify fault is corrected. If parts are damaged or missing, notify Direct Support Maintenance.

Z

1. Start Enhanced Diagnostic System program (WP 0086 00) and select corresponding symptom.
2. Start the main engine and main hydraulics (TM 9-2350-292-10).
3. Set engine rpm to 1800 and set spade control handle to RAISE position.
4. Record pressure at P test port of the hydraulic control valve manifold assembly.
5. Shut down hydraulics and engine (TM 9-2350-292-10).

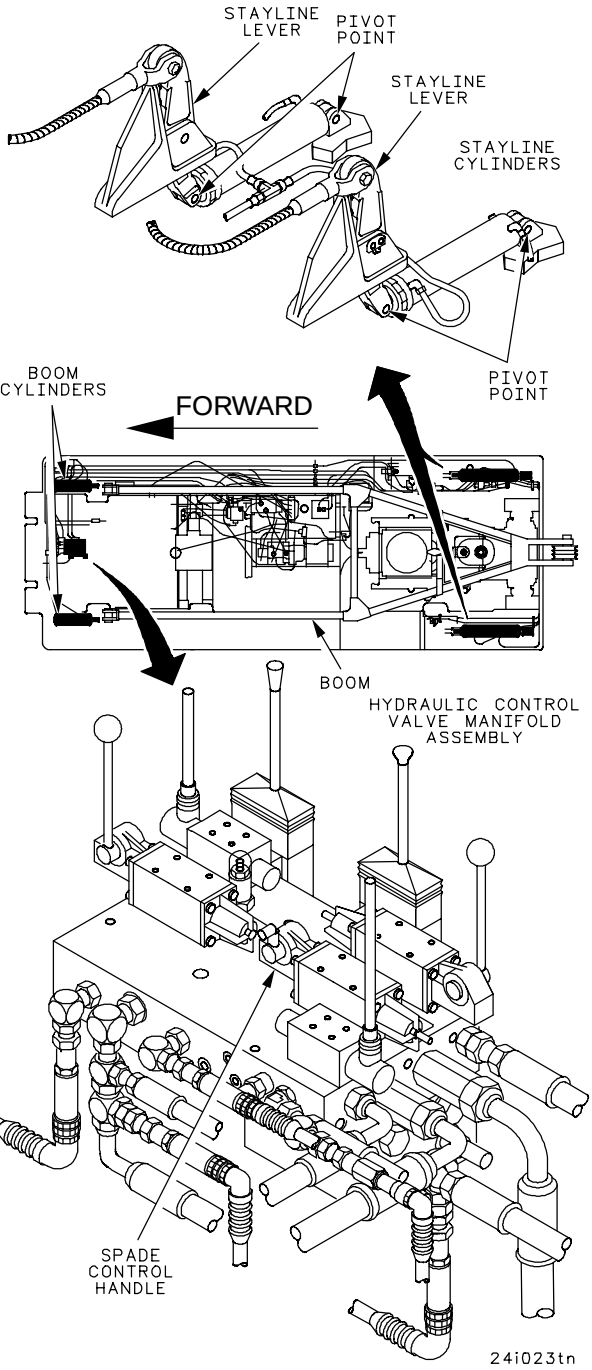
Is pressure 2300-2800 psi?

yes

no

Go to Step AC.

CONTINUED ON NEXT PAGE



BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP Z

AA
1. Remove auxiliary winch cover (WP 0513 00).
2. Disconnect quick-disconnects at auxiliary winch.
3. Place auxiliary winch control handle in the INHAUL DETENT position.
4. Perform Step Z steps 2 thru 5.

Is pressure 3900-4100 psi?

yes

Go to Step AC.

no

AB
1. Remove subfloor plates 10 and 20 (WP 0454 00).
2. Inspect load sense hose, from boom directional control valve to pressure hoses, check valve and center pump for leaks and damage.
3. Shut down hydraulics and engine.

Are hoses and valve free of damage and leaks?

yes

Notify Direct Support Maintenance.

no

Repair or replace leaking and/or damaged hoses and valve (WP 0576 00). Verify fault is corrected.

CONTINUED FROM STEPS Z AND AA

AC
1. Start main engine and main hydraulics (TM 9-2350-292-10).
2. Operate boom (TM 9-2350-292-10).
3. Watch to identify what range boom fails in.

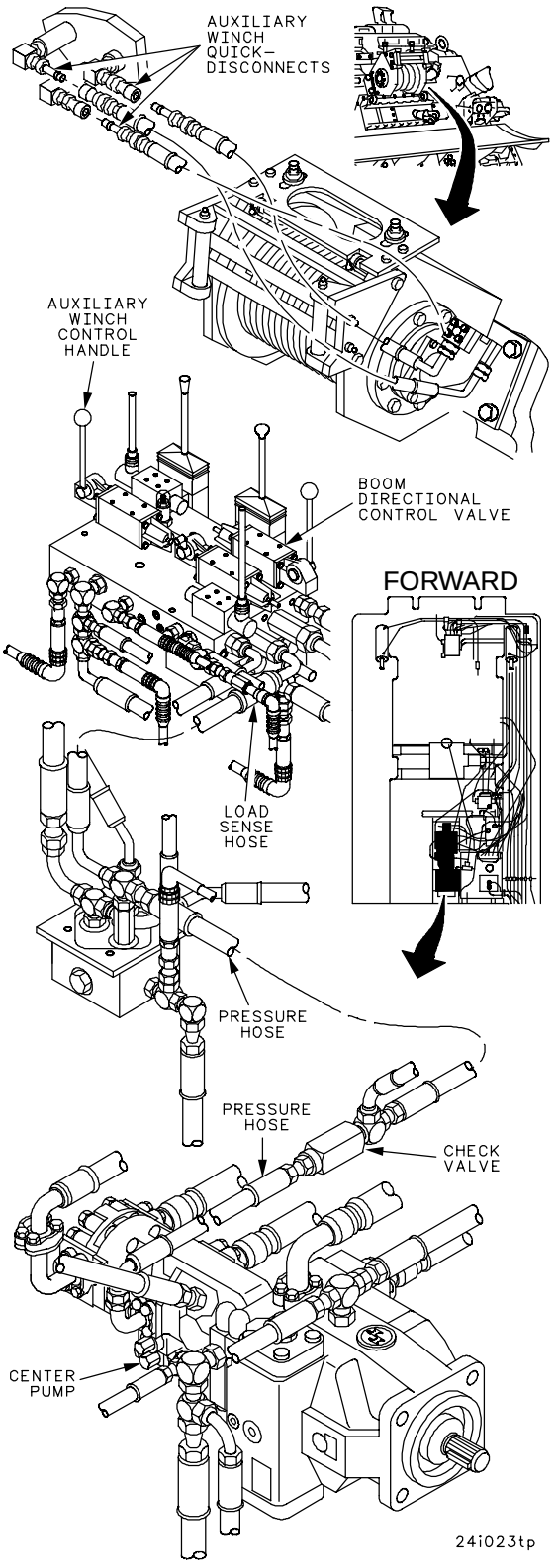
Does boom fail in the stow range?

yes

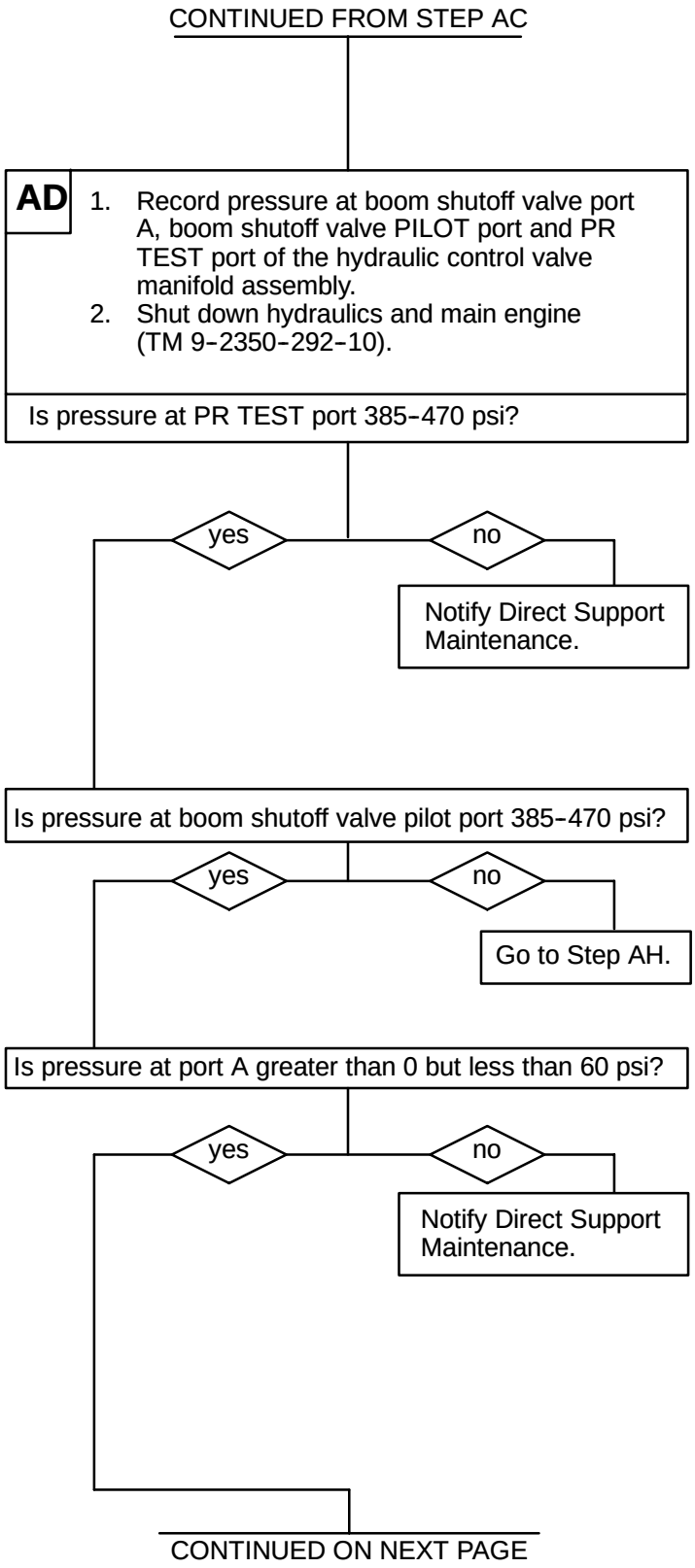
Go to Step AO.

no

CONTINUED ON NEXT PAGE



BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00



BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP AD

AE

1. Start main engine and energize hydraulic system (TM 9-2350-292-10).
2. Place boom safety valve handle in STOW position.
3. Perform Step AD.
4. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure at shutoff valve PILOT port greater than 0 but less than 60 psi?

yes / no

Notify Direct Support Maintenance.

Is pressure boom shutoff valve at port A approximately 440-625 psi?

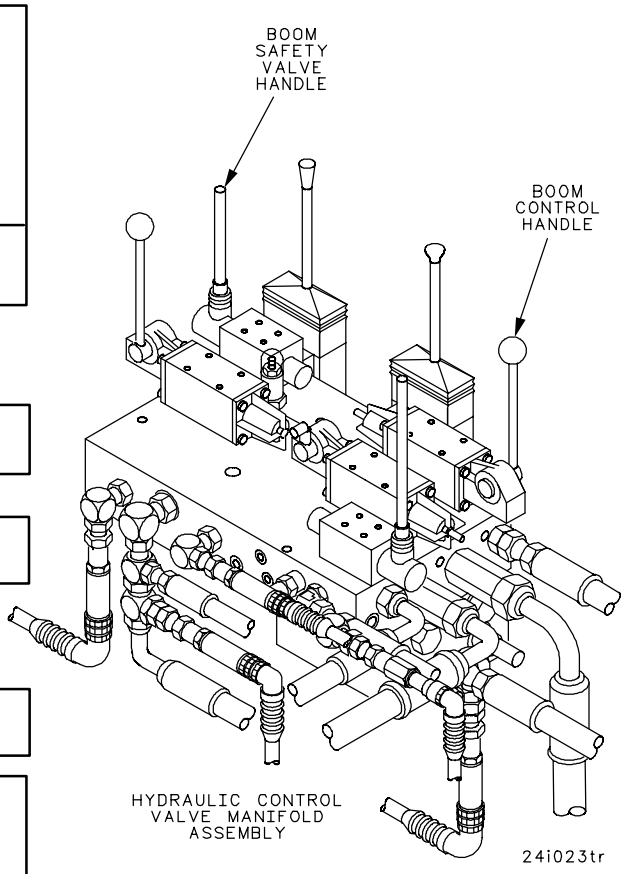
yes / no

Notify Direct Support Maintenance.

AF

1. If boom is stowed in travel lock place wood blocks between boom and hull forward of air cleaner inlets.
2. Start main engine, set speed to 1800 rpm and energize main hydraulics (TM 9-2350-292-10).
3. Place boom control handle in RETRACT position (if boom is in live range place handle to FORWARD position).
4. Record pressures at ports P TEST, BR and BL of hydraulic control valve manifold assembly.
5. Shut down hydraulics and main engine (TM 9-2350-292-10).

If boom control handle is in RETRACT, is pressure at P test 1800-2300 psi, BL port 1575-1900 psi and BR port pressure 75 psi or less?



CONTINUED ON NEXT PAGE

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP AF

yes / no

Notify Direct Support Maintenance.

If boom control handle is in FORWARD, is pressure at port BR 1500-1900 psi, port P-test 1800-2300 psi, and BL port pressure 75 psi or less?

yes / no

Notify Direct Support Maintenance.

AG

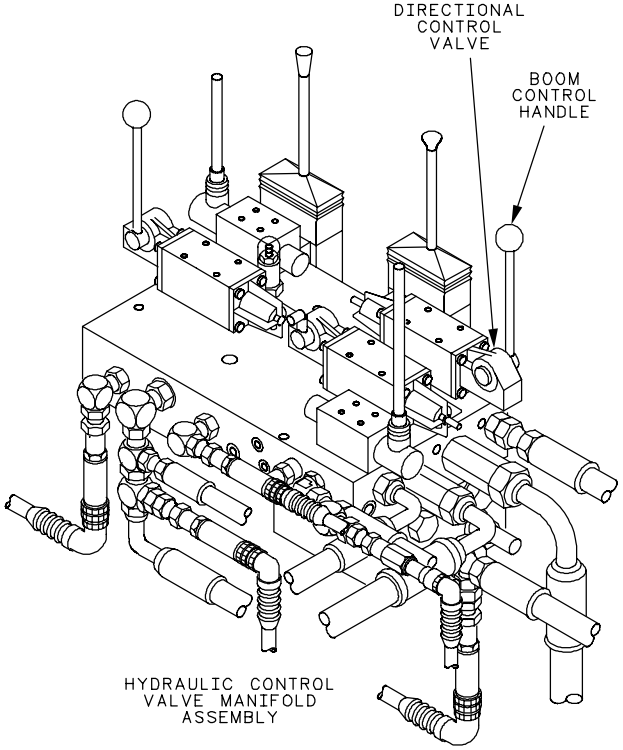
1. Remove subfloor plates 7, 10, 15, 18, 20, 22, 23, 26, 27 and 31 (WP 0454 00).
2. Inspect flow control valves and attaching hoses and fittings to the boom cylinders, directional control valves, hydraulic control valve manifold assembly, reservoir, stayline cylinder, and center pump for leaks and damage.

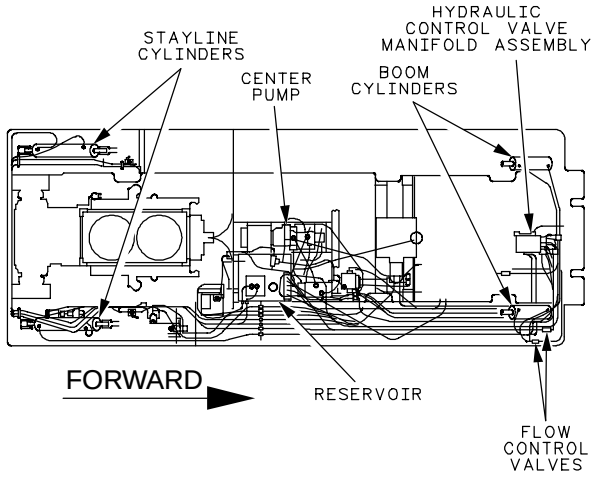
Are flow control valves, hoses and fittings free of leaks and damage?

yes / no

Notify Direct Support Maintenance.

Tighten leaking fittings. Replace damaged hoses, fittings, and valves (Chapter 19). Verify fault is corrected.





24i023ts

CONTINUED ON NEXT PAGE

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP AD

AH

1. Remove air intake grilles beside both boom stayline arms (WP 0415 00).
2. Check adjustment of both boom limit valves.

Are both valves properly adjusted?

yes

no

Adjust valves (WP 0563 00). Verify fault is corrected.

AI

1. Start main engine, set speed to 1800 rpm and energize main hydraulic system (TM 9-2350-292-10).
2. Record pressures at right boom limit valve subplate port 205 and right boom limit valve subplate port 203.
3. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure at port 205 greater than 385 psi?

yes

no

Go to Step AN.

Is pressure at port 203 greater than 385 psi?

yes

no

Notify Direct Support Maintenance.

CONTINUED ON NEXT PAGE

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP L

AJ

1. Start main engine, set speed to 1800 rpm, and energize main hydraulic system (TM 9-2350-292-10).
2. Record pressures at left boom limit valve port 203 and left boom limit valve port 205.
3. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure at port 205 greater than 315 psi?

yes

no

Go to Step AM.

Is pressure at port 203 385-470 psi?

yes

no

Notify Direct Support Maintenance.

AK

1. Remove subfloor plates 10, 11, 12, 15, 18, 23 and 31 (WP 0454 00).
2. Inspect hoses and fittings from boom safety valve to boom limit valves and to stayline cylinders for leaks and damage.

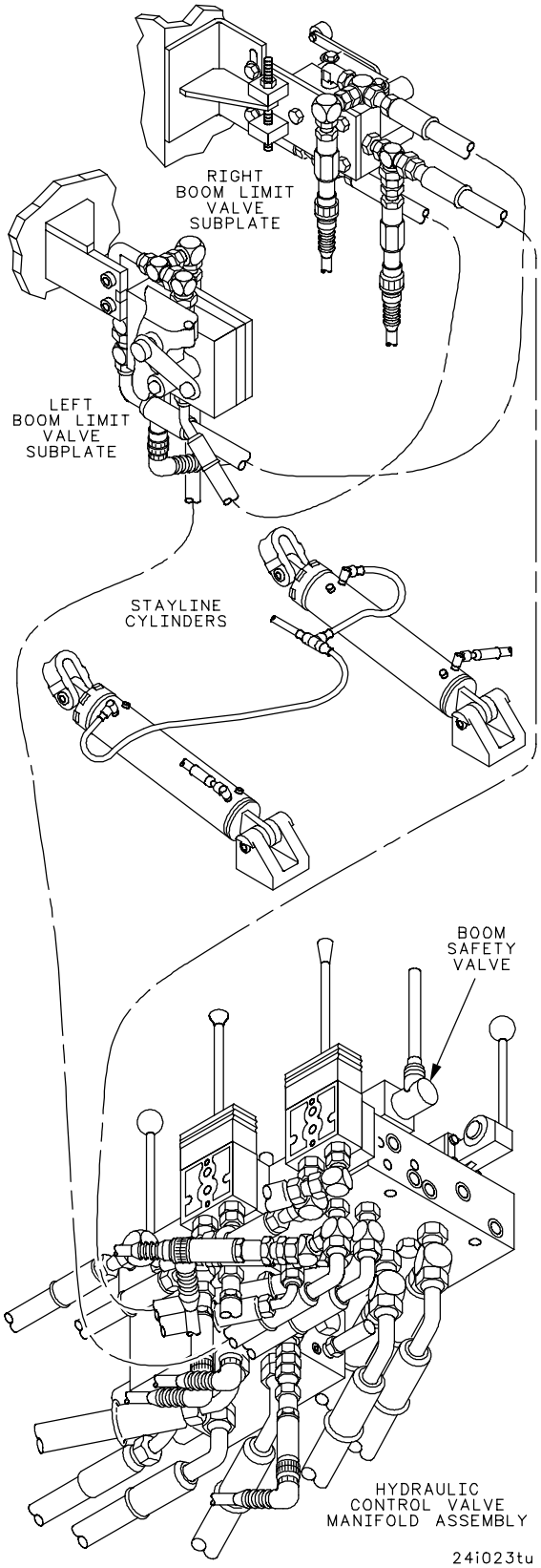
Are hoses and fitting free of leaks and damage?

yes

no

Tighten leaking connections. Replace damaged hoses and connections (Chapter 19). Verify fault is corrected.

CONTINUED ON NEXT PAGE



BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP AK

AL
1. Start main engine, set speed at 1800 rpm, and energize hydraulics (TM 9-2350-292-10).
2. Record pressure at boom safety valve BSO port.
3. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure at BSO port 385-470 psi?

yes

Replace hose from boom safety valve to boom shutoff valve (WP 0576 00). Verify fault is corrected.

no

Notify Direct Support Maintenance.

CONTINUED FROM STEP AJ

AM
1. Open left and right side engine deck grilles and exhaust deflectors (TM 9-2350-292-10).
2. Inspect hose and fittings between right and left boom limit valve subplate for leaks and damage.

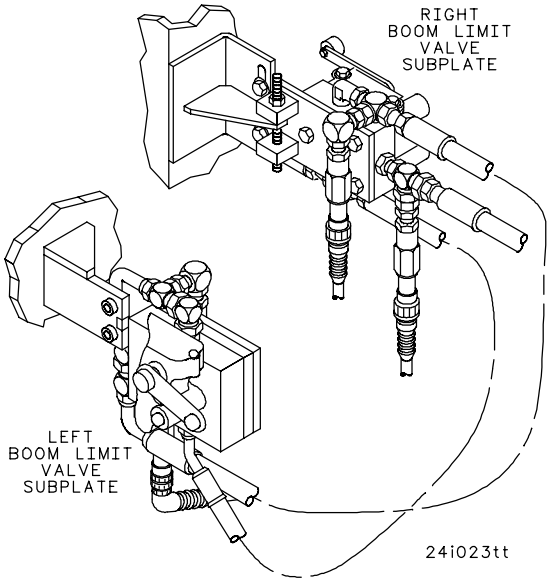
Is hose and fittings free of leaks and damage?

yes

Verify fault is corrected.

no

Tighten leaking fittings. Replace damaged hose and fittings (WP 0578 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

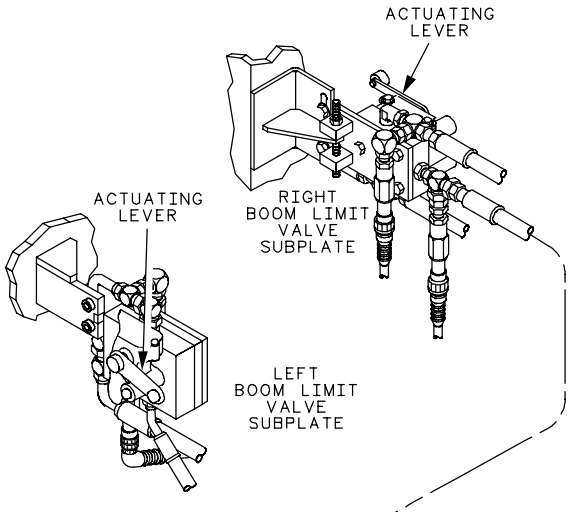
CONTINUED FROM STEP AI

AN
1. Remove subfloor plates 10, 11 and 12 (WP 0454 00).
2. Inspect hoses and fittings from hydraulic control valve manifold assembly to right boom limit valve subplate for leaks and damage.

Are hoses and fittings free of leaks and damage?

yes → Verify fault is corrected.

no → Tighten leaking fittings. Replace damaged hoses and fittings (WP 0577 00). Verify fault is corrected.



CONTINUED FROM STEP AC

AO
1. Shut down hydraulics and main engine (TM 9-2350-292-10).
2. Remove air intake grilles beside both boom stayline arms (WP 0415 00).
3. Inspect boom limit valve actuating levers for binding.

Are boom limit valve actuating levers free of binding?

yes →

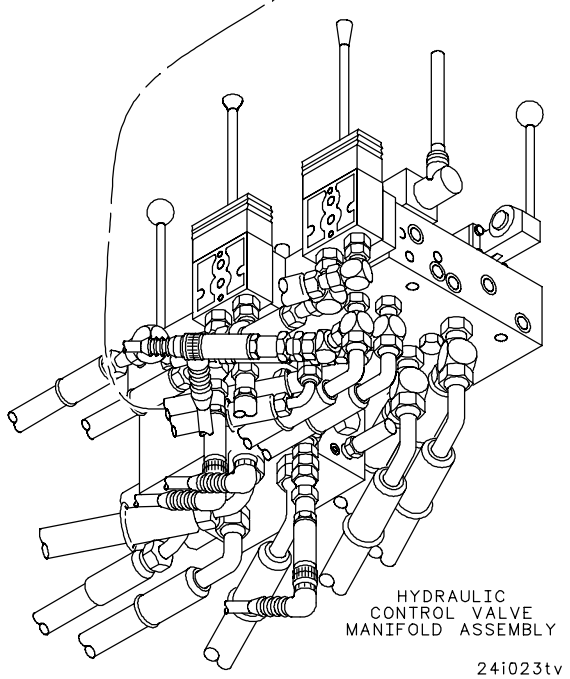
no → Free binding levers. Verify fault is corrected. If levers cannot be freed of binding, notify Direct Support Maintenance.

AP
1. Start main engine, set speed to 1800 rpm, and energize main hydraulics (TM 9-2350-292-10).
2. Read pressure at port 203.

Is pressure 0 psi?

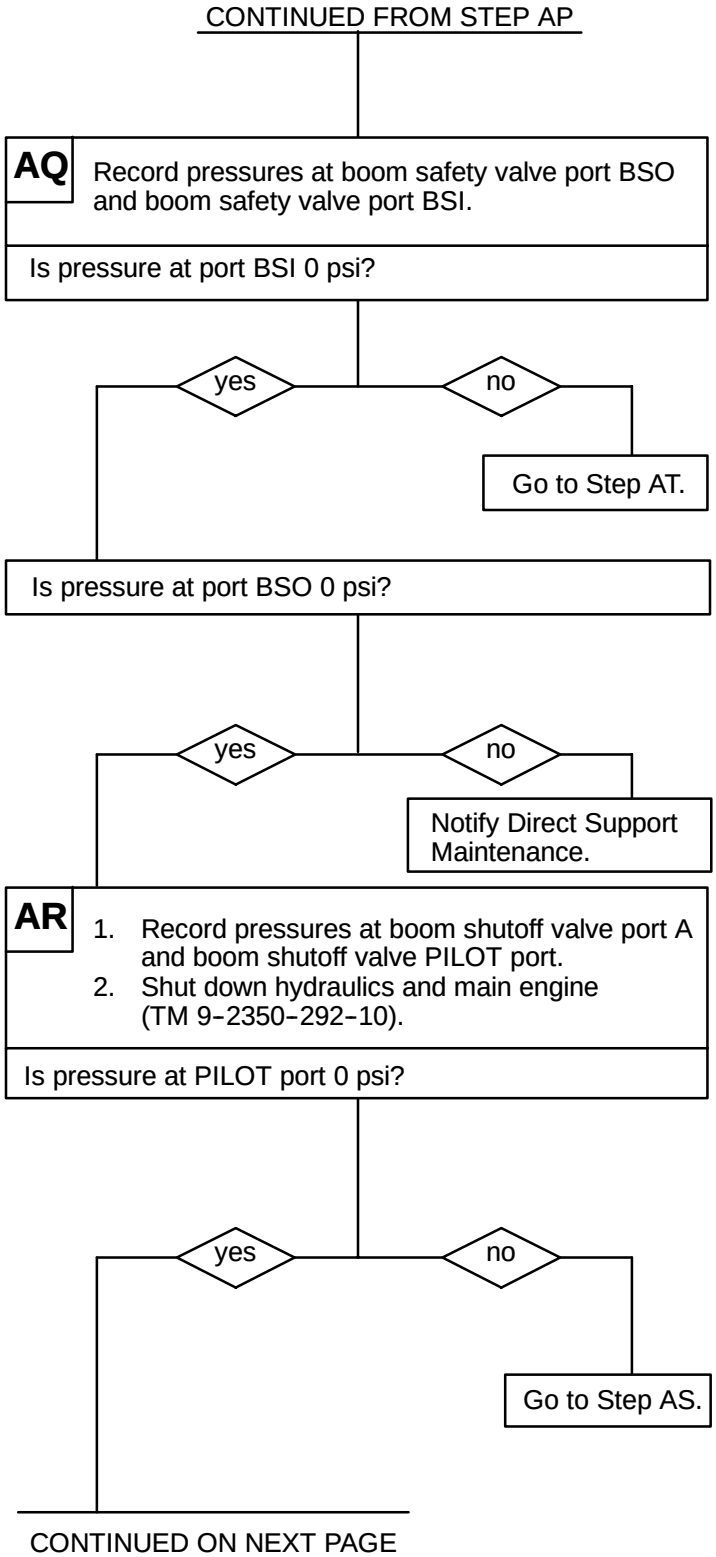
yes →

no → Go to Step AU.



CONTINUED ON NEXT PAGE

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00



BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP AR

Is pressure at port A 440-625 psi?

yes

Go to Step AF.

no

Notify Direct Support Maintenance.

CONTINUED FROM STEP AR

AS

1. Remove subfloor plates 10, 11 and 12 (WP 0454 00).
2. Inspect hose and fittings from boom safety valve to boom shutoff valve for leaks and damage.

Are hose and fittings free of leaks and damage?

yes

Notify Direct Support Maintenance.

no

Tighten leaking connections. Replace damaged fittings and hose (WP 0576 00). Verify fault is corrected.

CONTINUED FROM STEP AQ

AT

1. Shut down hydraulics and main engine.
2. Remove subfloor plates 10, 11, 12, 15, 18, 23, 31 and 32 (WP 0454 00).
3. Inspect hoses and fittings from boom safety valve to stayline cylinders for leaks and damage.

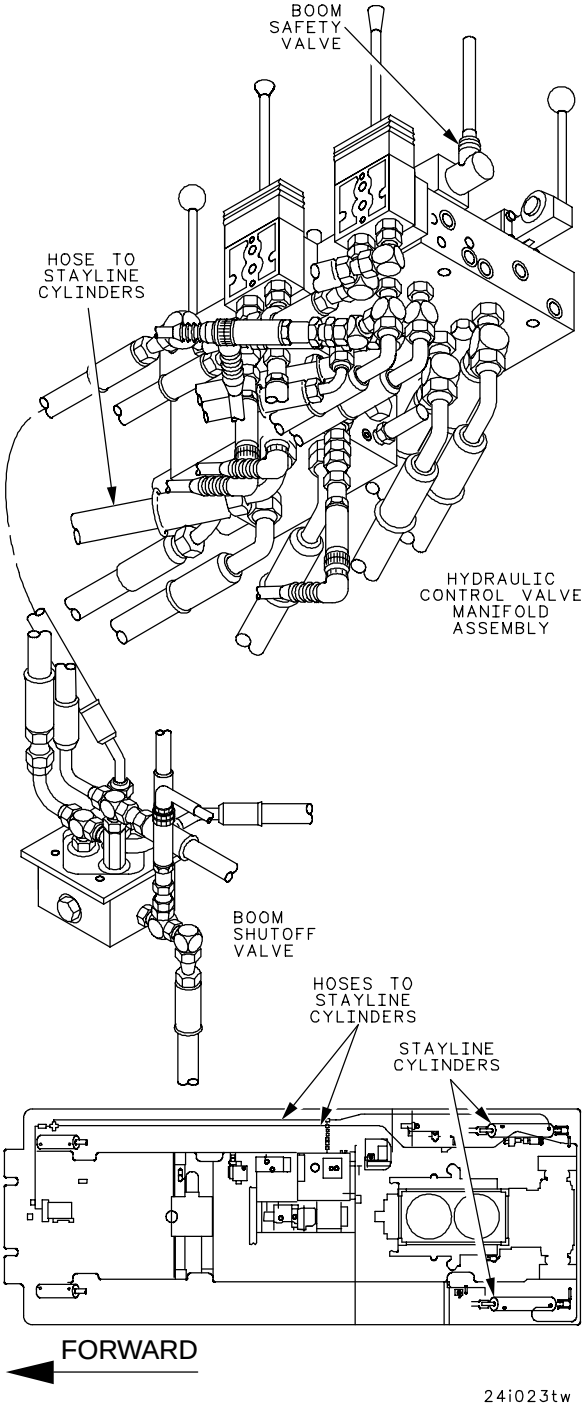
Are hoses and fittings free of leaks and damage?

yes

Verify fault is corrected.

no

Tighten leaking connections. Replace damaged hoses and fittings (WP 0566 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

BOOM FAILS TO OPERATE OR OPERATES ROUGHLY - CONTINUED 0097 00

CONTINUED FROM STEP AP

AU

1. Shut down hydraulics and main engine.
2. Remove subfloor plates 28, 29 and 30 (WP 0454 00).
3. Inspect hoses and fittings from boom limit valve subplate to reservoir for leaks and damage.

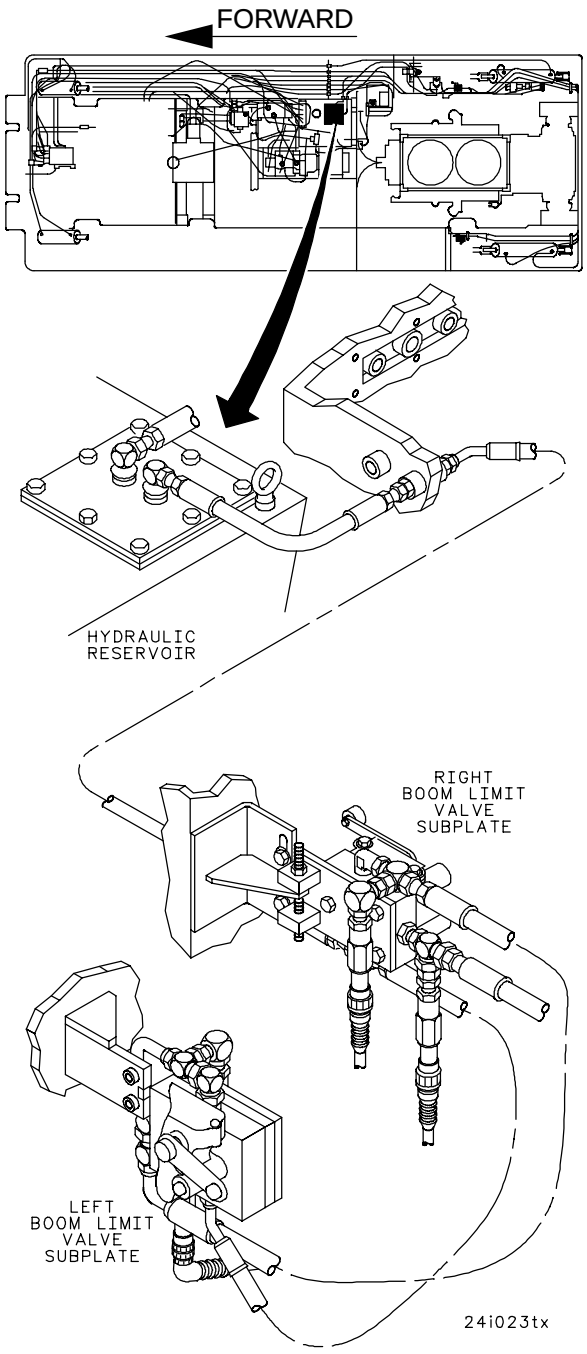
Are hoses and fittings free of leaks and damage?

yes

Notify Direct Support Maintenance.

no

Tighten leaking connections. Replace damaged hoses and fittings (WP 0578 00). Verify fault is corrected.



END OF TASK

BOOM CREEPS WITH BOOM CONTROL IN NEUTRAL 0098 00

THIS WORK PACKAGE COVERS:

Boom Creeps With Boom Control in Neutral

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-4000 psi testing gauge assembly (item 82, WP 0717 00)
Safety goggles (item 93, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

*Not required if vehicle is equipped with Enhanced Diagnostics System

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



WARNING

A

1. Operate the boom (TM 9-2350-292-10).
2. Release boom control handle while in the live range and observe boom.
3. Place boom control handle in the stow position and when boom is in stow range release control handle and observe boom.

Does boom drift in stow range?

yes → Go to Step C.

no

B Is vehicle equipped with Enhanced Diagnostic System?

yes → Go to Step J.

no → Go to Step G.

CONTINUED ON NEXT PAGE

BOOM CREEPS WITH BOOM CONTROL IN NEUTRAL - CONTINUED 0098 00

CONTINUED FROM STEP A

C

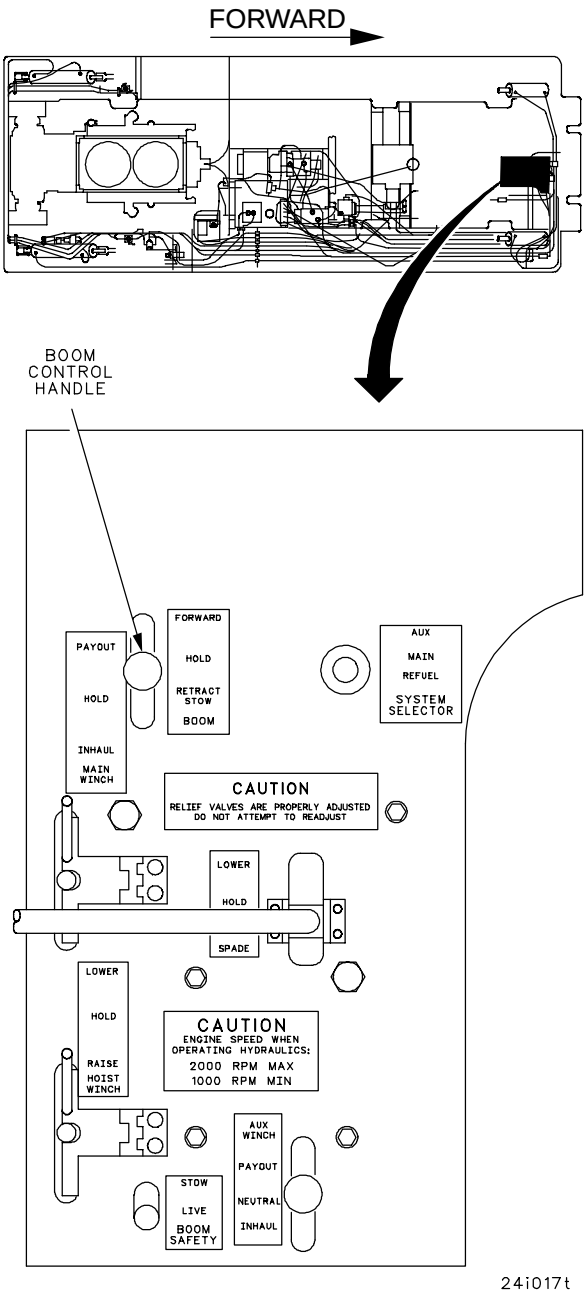
1. Start the main engine, energize hydraulics system, and set engine speed to 1800 rpm (TM 9-2350-292-10).
2. Retract boom until boom is over center in the stow range and place control handle in hold position.
3. Shut down hydraulics system and main engine (TM 9-2350-292-10).

Does boom drift continuously until in travel lock?

yes

no

Notify Direct Support Maintenance.



CONTINUED ON NEXT PAGE

BOOM CREEPS WITH BOOM CONTROL IN NEUTRAL - CONTINUED 0098 00

CONTINUED FROM STEP B

D

1. Remove subfloor plates 1, 2, 6, 7, 10, 11 and 12 (WP 0454 00).
2. Inspect all boom hoses, connections, and raise flow control valve for restrictions and damage.

Are hoses, connections, and flow control valve free of restrictions and damage?

yes

no

Remove restrictions. If restrictions cannot be removed or if damaged, replace (WP 0544 00). Verify fault is corrected.

E

Is vehicle equipped with Enhanced Diagnostic System?

yes

no

Go to Step I.

F



WARNING

1. Remove hydraulic control valve manifold assembly shields (WP 0519 00).
2. Install 0-4000 psi testing gauge assembly in BR port of hydraulic control valve manifold assembly.
3. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
4. Deploy boom to maximum live position.
5. Hold control handle in forward position and record gauge pressure.
6. Shut down hydraulics and main engine (TM 9-2350-292-10).

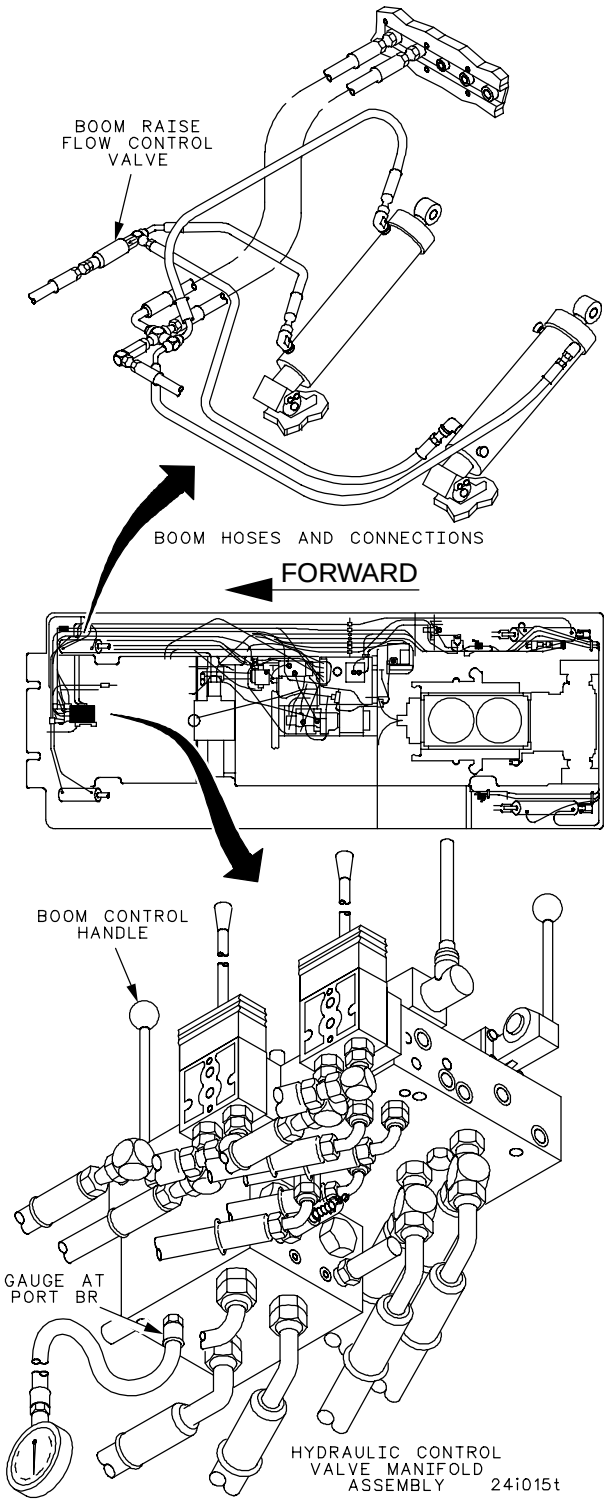
Is gauge pressure reading less 1500-1900 psi?

yes

no

Notify Direct Support Maintenance.

Notify Direct Support Maintenance.



CONTINUED ON NEXT PAGE

BOOM CREEPS WITH BOOM CONTROL IN NEUTRAL - CONTINUED 0098 00

CONTINUED FROM STEP B

G

1. Remove subfloor plates 1, 2, 6, 7, 10, 11 and 12 (WP 0454 00).
2. Inspect all boom hoses, connections, and retract flow control valve for restrictions and damage.

Are all hoses, connections, and flow control valve free of restrictions and damage?

yes

no

Remove restrictions. If restrictions cannot be removed, or if damaged, replace (WP 0544 00). Verify fault is corrected.

H



WARNING

1. Remove hydraulic control valve manifold assembly shields (WP 0519 00).
2. Install 0-4000 psi testing gauge assembly in BL port of hydraulic control valve manifold assembly.
3. Place blocks under boom frame forward of air intake vents.
4. Start main engine, energize hydraulics system, and set engine speed to 1800 rpm (TM 9-2350-292-10).
5. Place boom control handle in retract position, and boom safety in stow position. Record gauge pressure.
6. Shut down hydraulics system and main engine (TM 9-2350-292-10).

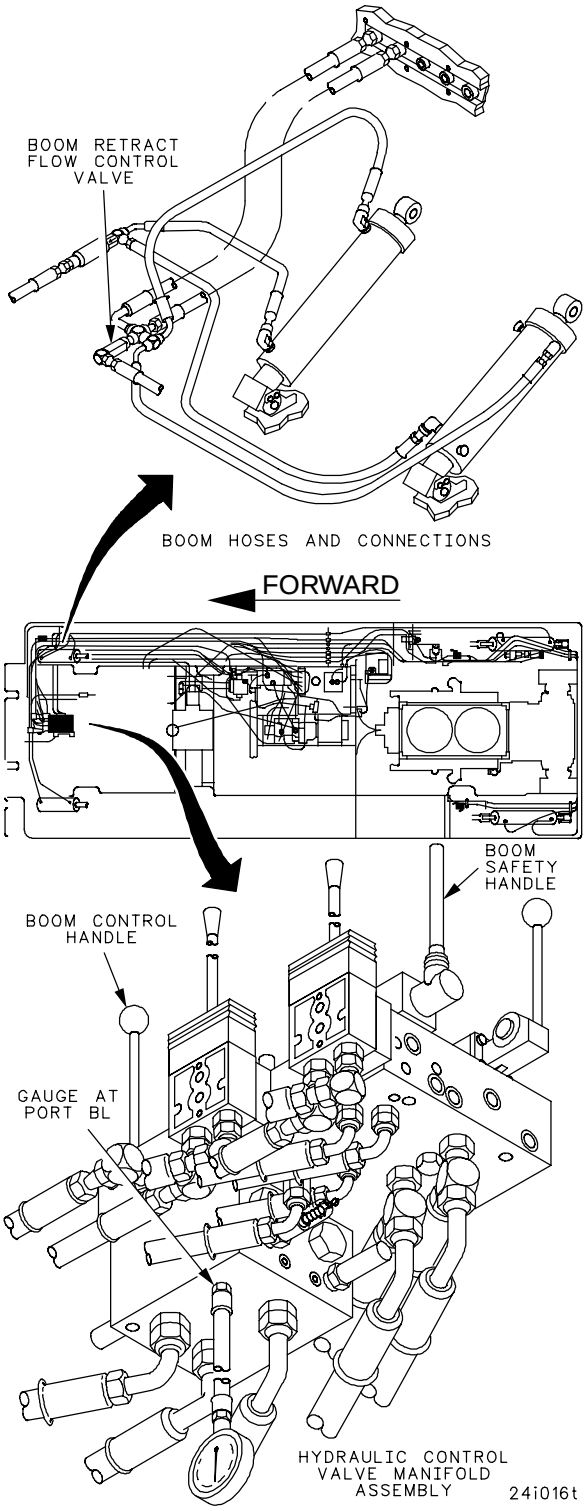
Is gauge pressure reading less than 1600 psi?

yes

no

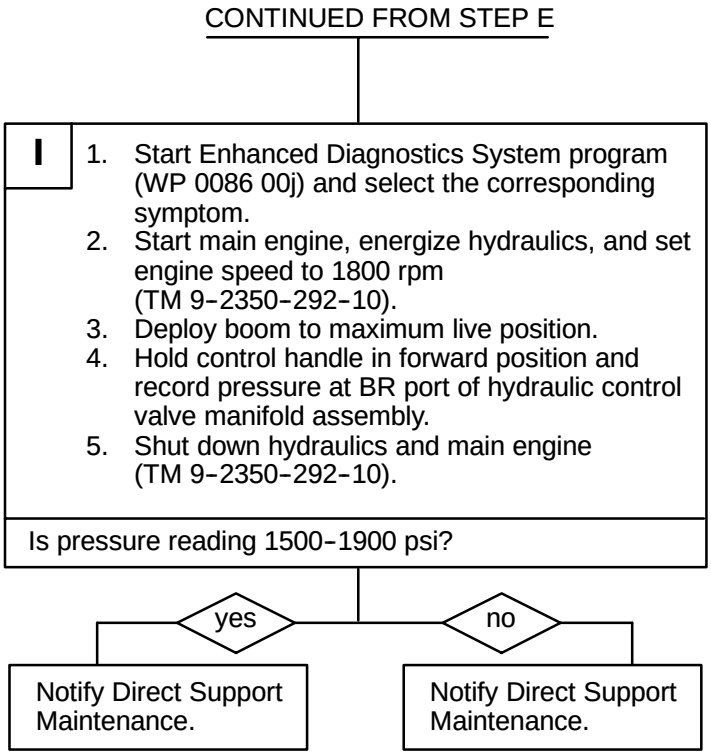
Notify Direct Support Maintenance.

Notify Direct Support Maintenance.



CONTINUED ON NEXT PAGE

BOOM CREEPS WITH BOOM CONTROL IN NEUTRAL - CONTINUED 0098 00



BOOM CREEPS WITH BOOM CONTROL IN NEUTRAL - CONTINUED 0098 00

CONTINUED FROM STEP B

J

1. Remove subfloor plates 1, 2, 6, 7, 10, 11 and 12 (WP 0454 00).
2. Inspect all boom hoses, connections, and retract flow control valve for restrictions and damage.

Are all hoses, connections, and flow control valve free of restrictions and damage?

yes

no

Remove restrictions. If restrictions cannot be removed, or if damaged, replace (WP 0544 00). Verify fault is corrected.

K

1. Start Enhanced Diagnostic System program (WP 0086 00) and select corresponding symptom.
2. Place blocks under boom frame forward of air intake vents.
3. Start main engine, energize hydraulics system, and set engine speed to 1800 rpm (TM 9-2350-292-10).
4. Place boom control handle in retract position, and boom safety in stow position. Record pressure at BL port of hydraulic control valve manifold assembly.
5. Shut down hydraulics system and main engine (TM 9-2350-292-10).

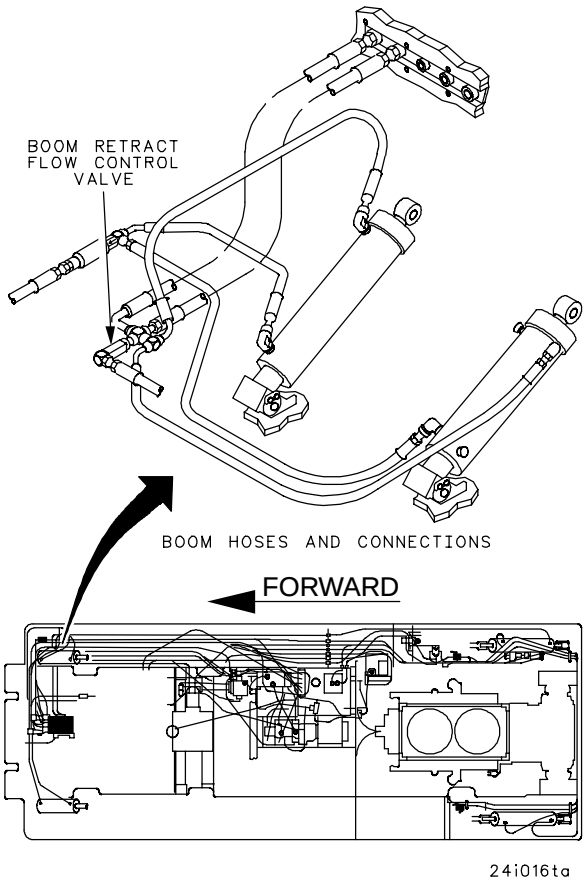
Is pressure reading less than 1600 psi?

yes

no

Notify Direct Support Maintenance.

Notify Direct Support Maintenance.



END OF TASK

BOOM STAYLINE CABLES BECOME SLACK DURING LIVE BOOM OPERATION OR BOOM CAN BE STOWED WITHOUT ACTIVATING THE BOOM SAFETY VALVE CONTROL LEVER

0099 00

THIS WORK PACKAGE COVERS:

Boom Stayline Cables Become Slack During Live Boom Operation or Boom Can Be Stowed Without activating the Boom Safety Valve Control Lever

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-4000 psi testing gauge assemby (2) (item 84, WP 0717 00)
1/4-inch tee (item 71, WP 0716 00)
3/8-inch tee (item 72, WP 0716 00)
1/4-inch tee (item 67, WP 0716 00)
Safety goggles (item 93, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

* Not required if vehicle is equipped with Enhanced Diagnostic System.

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



WARNING

L Operate the boom (TM 9-2350-292-10).

Do stayline cables stay tight?

yes → Go to Step C.

no

M Is vehicle equipped with Enhanced Diagnostic System?

yes → Go to Step L.

no → Go to Step J.

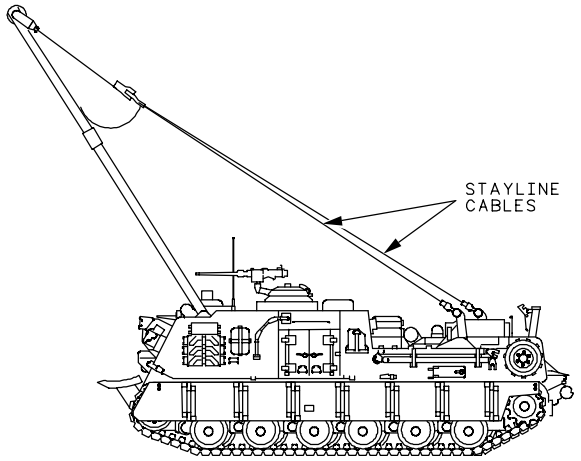
N Check the boom safety valve for operation of safety valve handle.

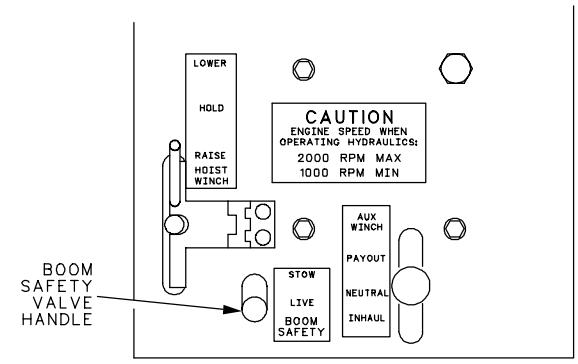
Is valve free of binding and does handle return to live position when released from stow position?

yes

no → Notify Direct Support Maintenance.

CONTINUED ON NEXT PAGE





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BOOM STAYLINE CABLES BECOME SLACK DURING LIVE BOOM OPERATION OR BOOM CAN BE STOWED WITHOUT ACTIVATING THE BOOM SAFETY VALVE CONTROL LEVER - CONTINUED

0099 00

CONTINUED FROM STEP C

O Operate the boom (TM 9-2350-292-10) and stow the boom.

Do both boom limit valves activate in stow range?

yes / no

Adjust boom limit valves (WP 0563 00). Verify fault is corrected.

P Is vehicle equipped with Enhanced Diagnostic System?

yes / no

Go to Step L.

Q

WARNING

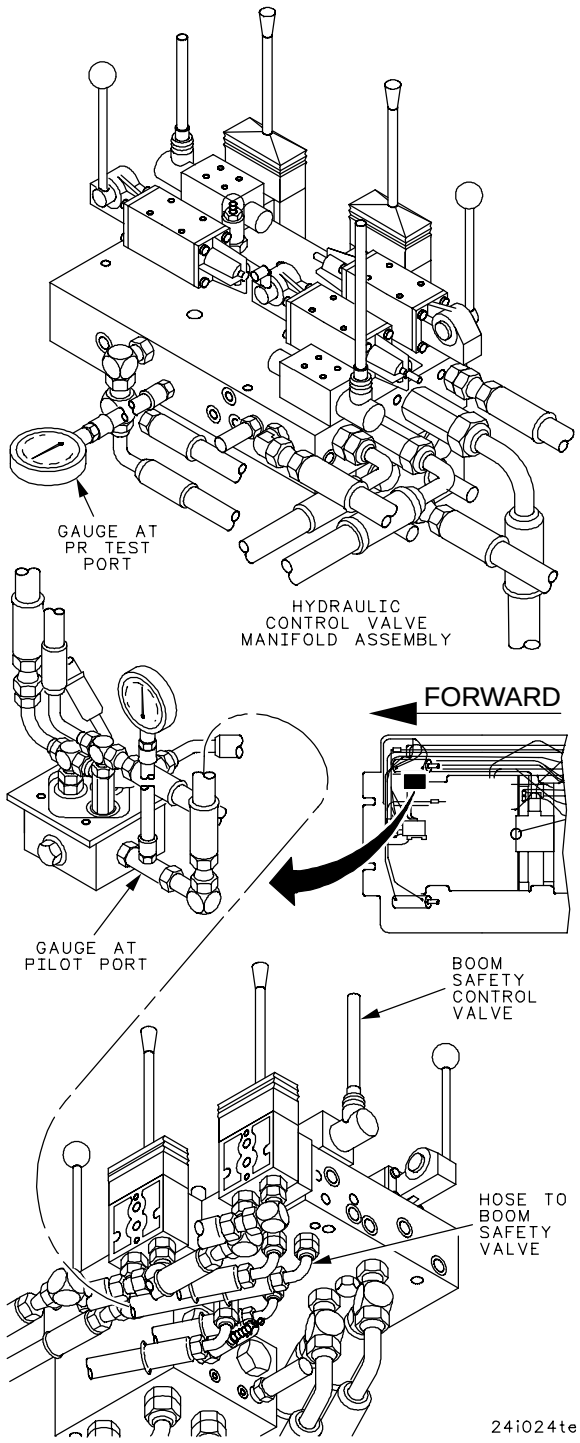
1. Remove cover from hydraulic control valve manifold assembly shields (WP 0519 00).
2. Install 0-4000 psi testing gauge assembly in the PR port of the hydraulic control valve manifold assembly.
3. Remove subfloor plates 10, 11 and 12 (WP 0454 00).
4. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between boom shutoff valve pilot port and hose to boom safety valve.
5. Start main engine, energize hydraulics system, and set engine speed to 1800 rpm (TM 9-2350-292-10).
6. With boom in stow range and boom safety valve in live range, record gauge readings.
7. Shut down hydraulics system and main engine (TM 9-2350-292-10).

Do both gauges read 385-470 psi?

yes / no

Notify Direct Support Maintenance.

CONTINUED ON NEXT PAGE



BOOM STAYLINE CABLES BECOME SLACK DURING LIVE BOOM OPERATION OR BOOM CAN BE STOWED WITHOUT ACTIVATING THE BOOM SAFETY VALVE CONTROL LEVER - CONTINUED

0099 00

CONTINUED FROM STEP F

R

WARNING

1. Disconnect hose from BLV port of hydraulic control valve manifold assembly and plug hose with 1/4-inch plug.
2. Remove auxiliary winch cover (WP 0513 00) and disconnect hose quick-disconnects at auxiliary winch.
3. Start main engine, energize hydraulics system, and set engine speed to 1800 rpm (TM 9-2350-292-10) and observe gauge at PR port.
4. Shut down hydraulic system and main engine (TM 9-2350-292-10).

Is pressure at PR port 385-470 psi?

yes / no

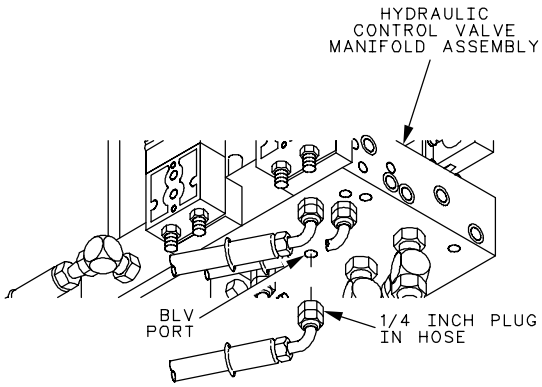
Notify Direct Support Maintenance.

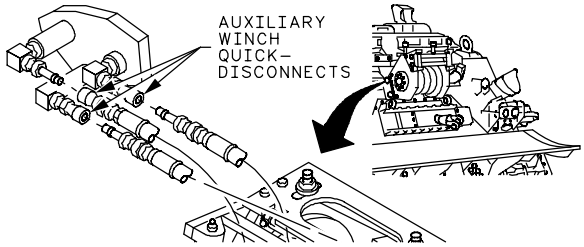
S

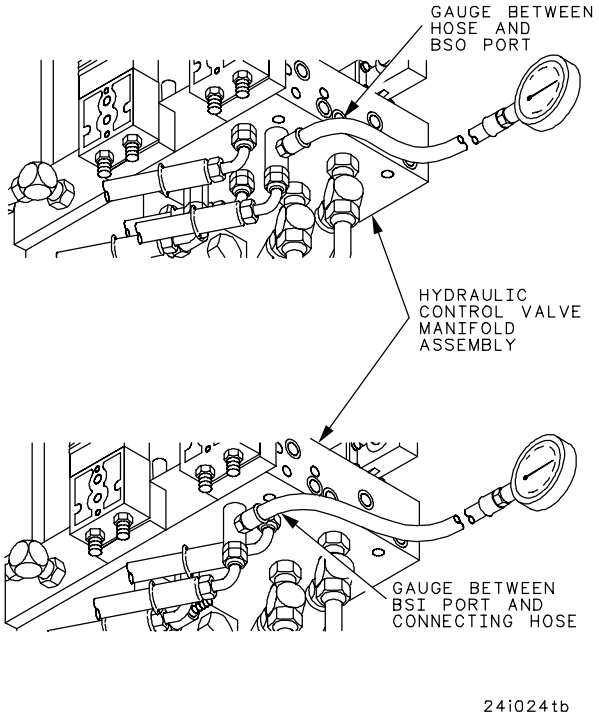
WARNING

1. Remove plug and reinstall hose to BLV port of hydraulic control valve manifold assembly.
2. Remove gauge and tee from boom shutoff valve and reinstall hose.
3. Install a 0-4000 psi testing gauge assembly and 1/4-inch tee between hose and BSO port of boom safety valve.
4. Remove gauge from PR port on hydraulic control valve manifold assembly.
5. Install 0-4000 psi testing gauge assembly with 3/8-inch tee between BSI port of boom safety valve and connecting hose.
6. Start main engine, energize hydraulics and set engine speed to 1800 rpm (TM 9-2350-292-10). Operate boom (TM 9-2350-292-10).
7. When boom is in live range, place boom safety valve lever to stow position, retract boom, and record both pressure gauge readings while in live range and again in stow range.

CONTINUED ON NEXT PAGE







BOOM STAYLINE CABLES BECOME SLACK DURING LIVE BOOM OPERATION OR BOOM CAN BE STOWED WITHOUT ACTIVATING THE BOOM SAFETY VALVE CONTROL LEVER - CONTINUED

0099 00

CONTINUED FROM STEP H

U 8. Shut down hydraulics and main engine (TM 9-2350-292-10).

Is pressure at boom safety valve ports BSI and BSO 60 psi or less with boom in live range and is pressure at port BSI 385-470 psi and pressure at port BSO 60 psi or less with boom in stow range?

yes

no

If pressure at BSI in stow range is less than 385 psi, go to Step I. If pressure at BSI in live range is greater than 60 psi, notify Direct Support Maintenance.

CONTINUED FROM STEP N

T
1. Remove subfloor plates 10, 11, 12, 15, 18, 23 and 31 (WP 0454 00).
2. Inspect the hydraulic control valve manifold assembly, boom safety valve, boom limit valve subplates, boom limit valves and all connecting hoses for leaks, restrictions, and damage.

Are all hoses and components free of leaks, restrictions, and damage?

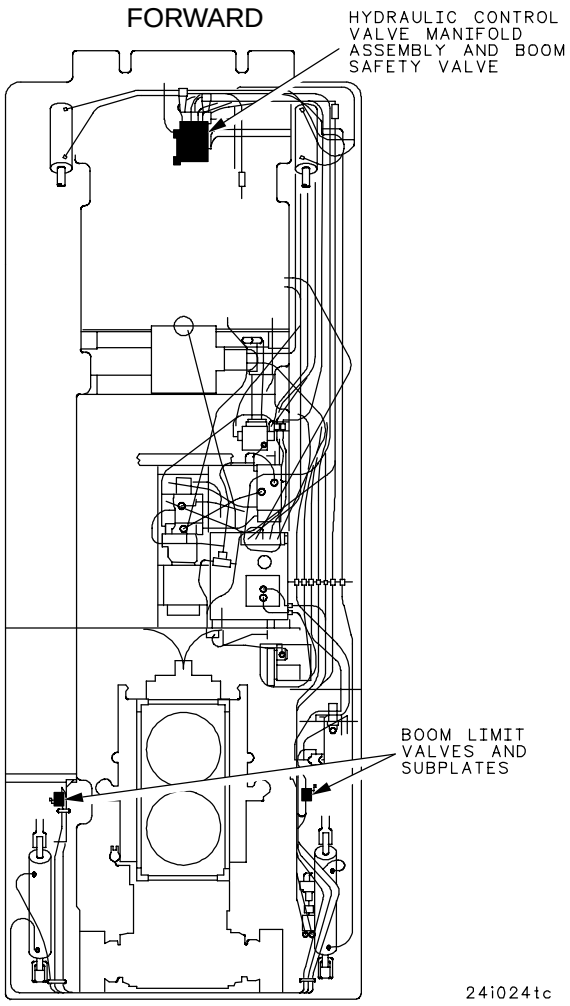
yes

no

Notify Direct Support Maintenance.

Tighten leaking connections and remove restrictions. Verify fault is corrected. If restrictions cannot be removed from hoses, replace hoses (WP 0544 00). Verify fault is corrected. If subplates or valves are damaged or if restrictions cannot be removed from them, notify Direct Support Maintenance.

CONTINUED ON NEXT PAGE



BOOM STAYLINE CABLES BECOME SLACK DURING LIVE BOOM OPERATION OR BOOM CAN BE STOWED WITHOUT ACTIVATING THE BOOM SAFETY VALVE CONTROL LEVER - CONTINUED

0099 00

CONTINUED FROM STEP B

V 1. Remove air intake grilles beside both boom stayline arms.
2. Inspect stayline arms, pivot pins, cylinder mounting pins, and stayline cylinders for binding, missing parts, restrictions, and damage.

Are all arms, pivot pins, mounting pins, and cylinders free of binding, missing parts, restrictions, and damage?

yes

no

Free parts that are bound or have restrictions. Verify fault is corrected. If parts cannot be freed or are damaged or missing, notify Direct Support Maintenance.

W Inspect stayline cylinder hoses for leaks, restrictions, and damage.

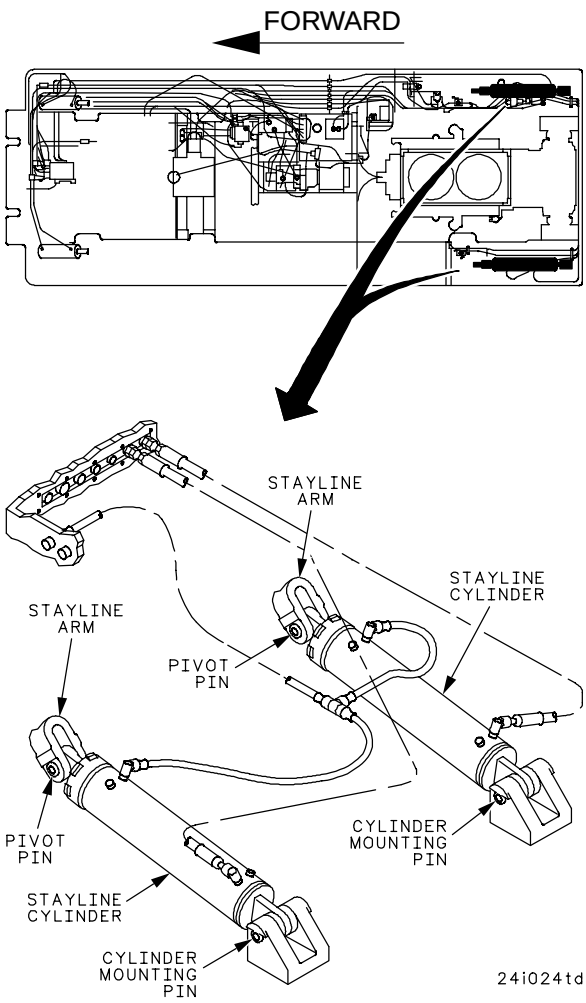
Are hoses free of leaks, restrictions, and damage?

yes

Notify Direct Support Maintenance.

no

Tighten leaking connections and free hoses of restrictions. Verify fault is corrected. If hoses cannot be freed of restrictions or are damaged, replace hoses (WP 0566 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

BOOM STAYLINE CABLES BECOME SLACK DURING LIVE BOOM OPERATION OR BOOM CAN BE STOWED WITHOUT ACTIVATING THE BOOM SAFETY VALVE CONTROL LEVER - CONTINUED

0099 00

CONTINUED FROM STEPS B AND E

X

1. Start Enhanced Diagnostics System program (WP 0086 00) and select corresponding symptom.
2. Start main engine, energize hydraulics system, and set engine speed to 1800 rpm (TM 9-2350-292-10).
3. With boom in stow range and boom safety valve in live range, record pressures at PR port of the hydraulic control valve manifold assembly and boom shutoff valve pilot port.
4. Shut down hydraulics system and main engine (TM 9-2350-292-10).

Is pressure at both ports 385-470 psi?

yes

Notify Direct Support Maintenance.

no

Y



WARNING

1. Remove cover from hydraulic control valve manifold assembly cover (WP 0518 00).

CONTINUED ON NEXT PAGE

BOOM STAYLINE CABLES BECOME SLACK DURING LIVE BOOM OPERATION OR BOOM CAN BE STOWED WITHOUT ACTIVATING THE BOOM SAFETY VALVE CONTROL LEVER - CONTINUED

0099 00

CONTINUED FROM STEP L

Z

2. Disconnect hose from BLV port of hydraulic control valve manifold assembly and plug hose with 1/4-inch plug.
3. Remove auxiliary winch cover (WP 0513 00) and disconnect hose quick-disconnects at auxiliary winch.
4. Start main engine, energize hydraulics system, and set engine speed to 1800 rpm (TM 9-2350-292-10) and observe pressure at PR port.
5. Shut down hydraulic system and main engine (TM 9-2350-292-10).

Is pressure at PR port 385-470 psi?

yes

no

Notify Direct Support Maintenance.

AA

1. Remove plug and reinstall hose to BLV port of hydraulic control valve manifold assembly.
2. Start main engine, energize hydraulics and set engine speed to 1800 rpm (TM 9-2350-292-10).
3. Operate boom (TM 9-2350-292-10).
4. When boom is in live range, place boom safety valve lever to stow position, retract boom, and record pressures at BSI port of boom safety and BSO port of boom safety valve while in live range and again in stow range.
5. Shut down hydraulics and main engine (TM 9-2350-292-10).

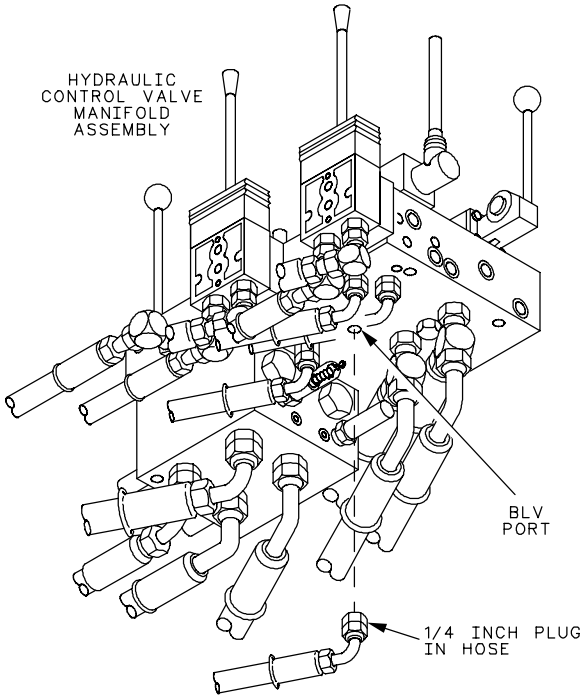
Is pressure at boom safety valve ports BSI and BSO 60 psi or less with boom in live range and is pressure at port BSI 385-470 psi and pressure at port BSO 60 psi or less with boom in stow range?

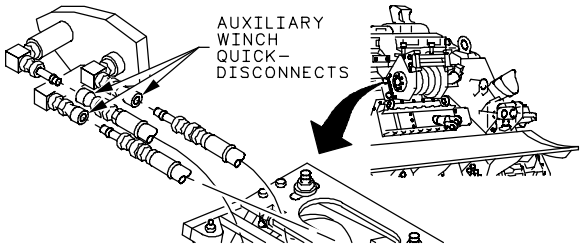
yes

no

Go to Step I.

If pressure at BSI in stow range is less than 385 psi, go to Step I. If pressure at BSI in live range is greater than 60 psi, notify Direct Support Maintenance.





24i024tf

END OF TASK

HOIST WINCH FAILS TO OPERATE OR DEVELOP FULL POWER. 0100 00

THIS WORK PACKAGE COVERS:

Hiost Winch Fails To Operate Or Develop Full Power

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-5000 psi dial pressure gauge (2)
(item 83, WP 0717 00)*
0-4000 psi testing gauge assembly (2)
(item 82, WP 0717 00)
1/4-inch tee (2) (item 71, WP 0716 00)
3/8-inch tee (item 72, WP 0716 00)
1-inch flange plug with o-ring (2)
(item 76, WP 0716 00)
Safety goggles (item 93, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Boom derigged (TM 9-2350-292-10)

Personnel Required

Two

*Not required if vehicle is equipped with Enhanced Diagnostic System.

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



WARNING

A Check to ensure boom pulleys freely rotate on their shaft.

Do boom pulleys freely rotate?

yes

Go to Step C.

no

B Remove stayline cables, shaft, pulleys, and spacers from boom (WP 0524 00) and inspect them for binding and damage.

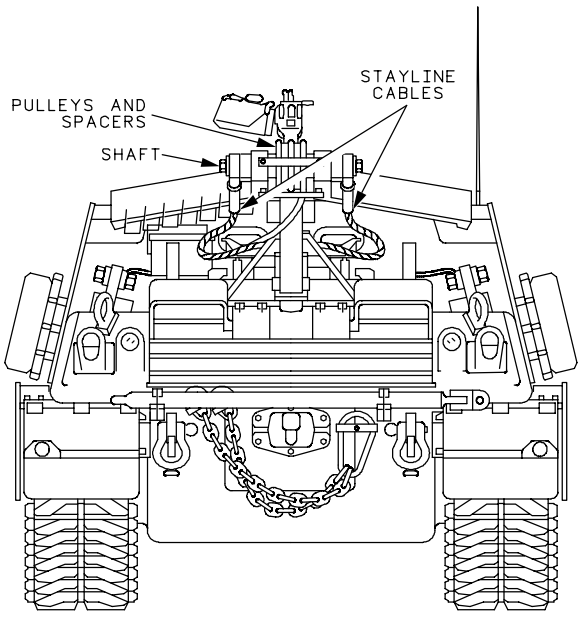
Are all parts free of binding and damage?

yes

no

Repair or replace binding and/or damaged parts (WP 0524 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



HOIST WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0100 00

CONTINUED FROM STEP A AND B

C Operate the main winch (TM 9-2350-292-10).

Does main winch operate properly?

yes

no

Go to WP 0087 00.

D

1. Remove subfloor plates 18, 20 and 22 (WP 0454 00).
2. Inspect hoist and main winch directional control valve assembly hoses for leaks, loose connections, and damaged hoses and fittings.

Are both hoses free of leaks, loose connections, and damage?

yes

no

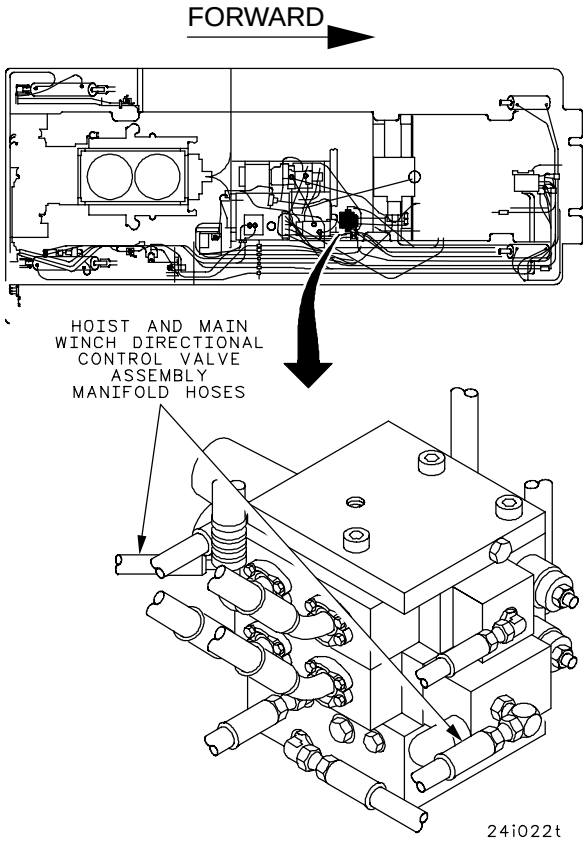
Tighten loose and leaking connections. If hoses or connectors are damaged, replace hoses or connectors (WP 0572 00 or WP 0573 00). Verify fault is corrected.

E Is vehicle equipped with Enhanced Diagnostic System?

yes

no

Go to Step I.



CONTINUED ON NEXT PAGE

HOIST WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0100 00

CONTINUED FROM STEP E

F

WARNING

1. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between port PHR on hoist and main winch directional control valve assembly and attaching hose.
2. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between port PHL on hoist and main winch directional control valve assembly and attaching hose.
3. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
4. Place hoist control valve lever in lower position and record gauge pressures.
5. Place hoist control valve lever in raise position and record gauge pressures.
6. Shut down hydraulics and main engine (TM 9-2350-292-10).

When in raise position was pressure at PHR port 385-470 psi, and was pressure at PHL port less than 50 psi; and when in lower position, was pressure at PHL port 385-470 psi, and was pressure at PHR port less than 50 psi?

yes

no

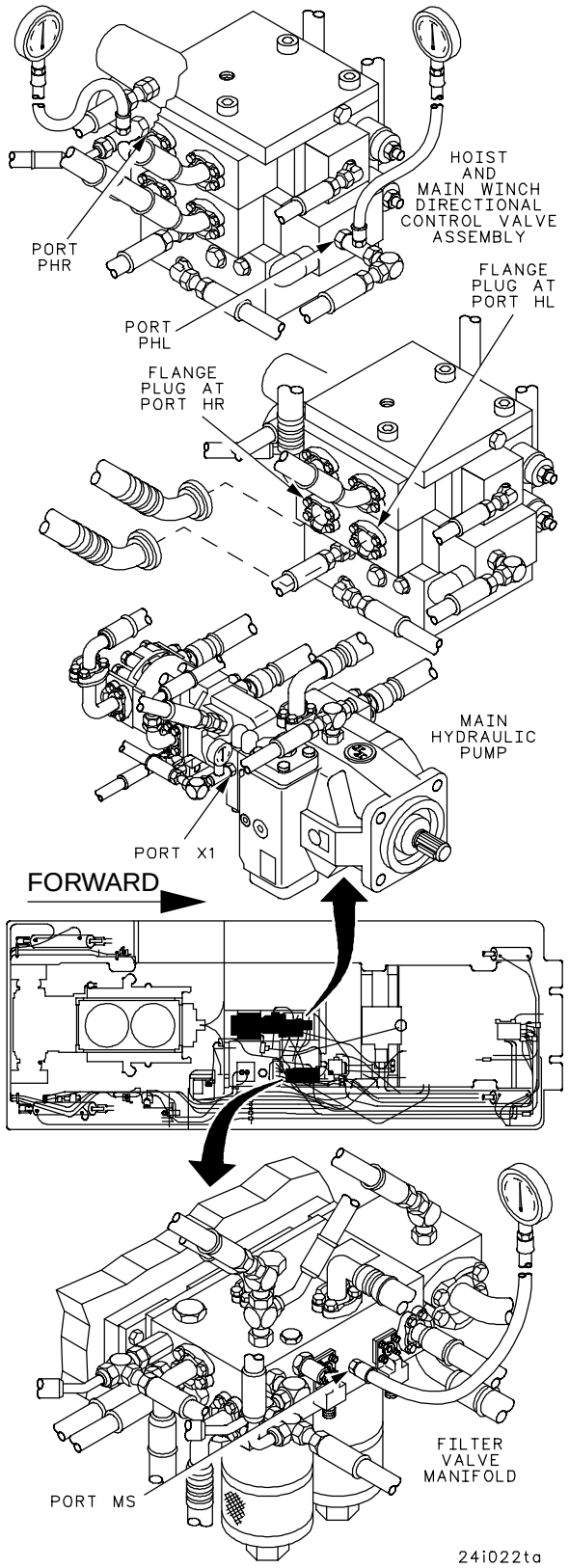
Go to Step H.

G

WARNING

1. Remove hoses from split flanges at ports HR and HL of hoist and main winch directional control valve assembly.
2. Install 1-inch flange plugs with o-ring in ports HR and HL, and secure plugs with split flanges.
3. Install 0-5000 psi dial pressure gauge in the MS port of the filter valve manifold.
4. Install 0-5000 psi dial pressure gauge with 3/8-inch tee between port X1 of front pump on main hydraulic pump assembly and attaching hose.

CONTINUED ON NEXT PAGE



HOIST WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0100 00

CONTINUED FROM STEP G

G

7. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
8. Place hoist control lever in the raise position and record gauge pressures.
9. Place hoist control lever in the lower position and record gauge pressures.
10. Shut down hydraulics and main engine (TM 9-2350-292-10).

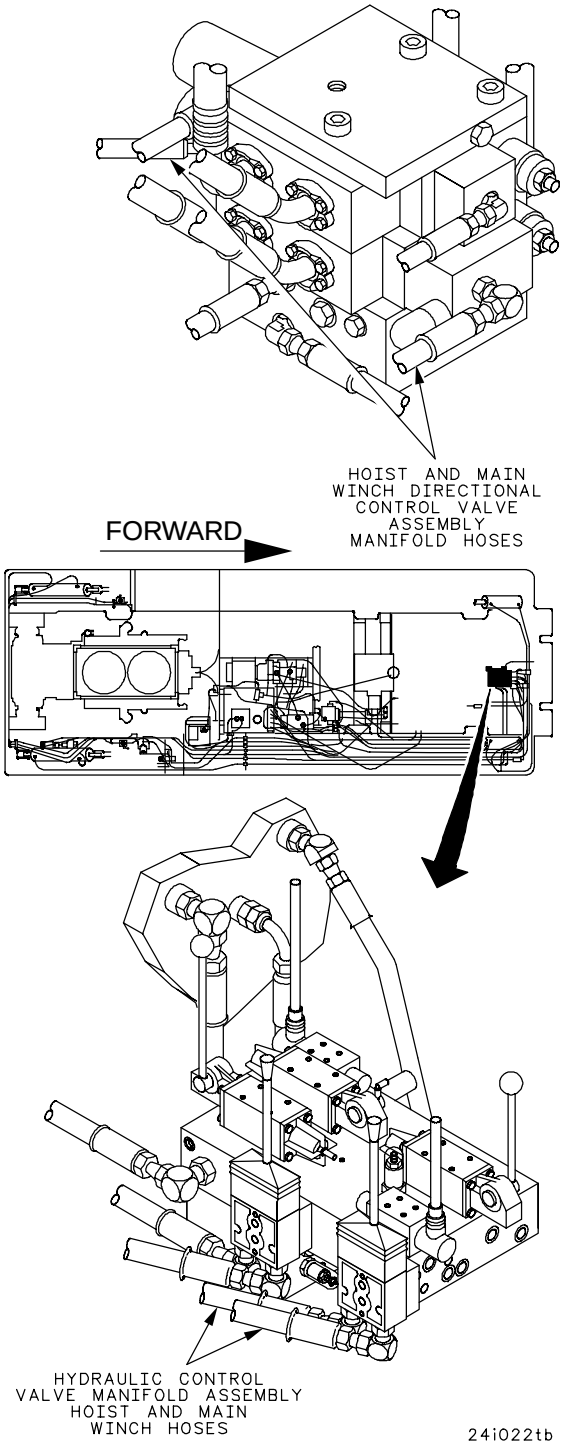
Are all pressures at ports MS and X1 3600-3700 psi?

yes

Notify Direct Support Maintenance.

no

Replace hoist and main winch directional control valve assembly (WP 0556 00). Verify fault is corrected.



CONTINUED FROM STEPS F AND I

H

Inspect hoses and connections from hoist and main winch directional control valve assembly to hydraulic control valve manifold assembly for restrictions, leaks, looseness, and damage.

Are hoses and connections free of restrictions, leaks, looseness, and damage?

yes

Notify Direct Support Maintenance.

no

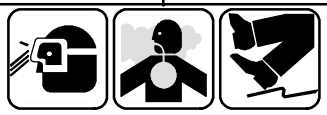
Remove restrictions and tighten loose and leaking connections. If restrictions cannot be removed or if hoses and connectors are damaged, replace (WP 0572 00 or WP 0573 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE

HOIST WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0100 00

CONTINUED FROM STEP E

I



WARNING

1. Start Enhanced Diagnostic System program (WP 0086 00) and select corresponding symptom.
2. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
3. Place hoist control valve lever in lower position and record pressures at port PHL and PHR on hoist and main winch directional control valve assembly.
4. Place hoist control valve lever in raise position and record pressures again.
5. Shut down hydraulics and main engine (TM 9-2350-292-10).

When in raise position was pressure at PHR port 385-470 psi, and was pressure at PHL port less than 50 psi; and when in lower position, was pressure at PHL port 385-470 psi, and was pressure at PHR port less than 50 psi?

yes

no

Go to Step H.

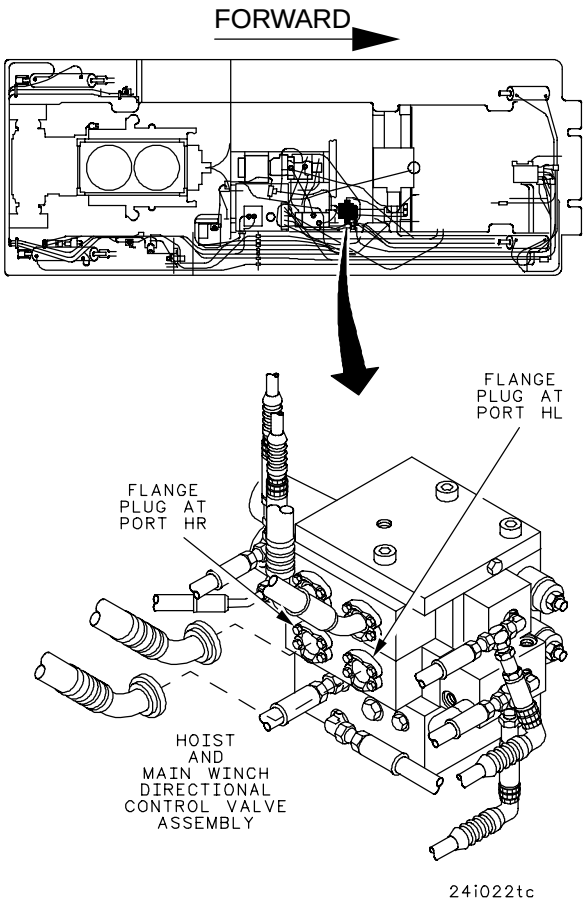
J



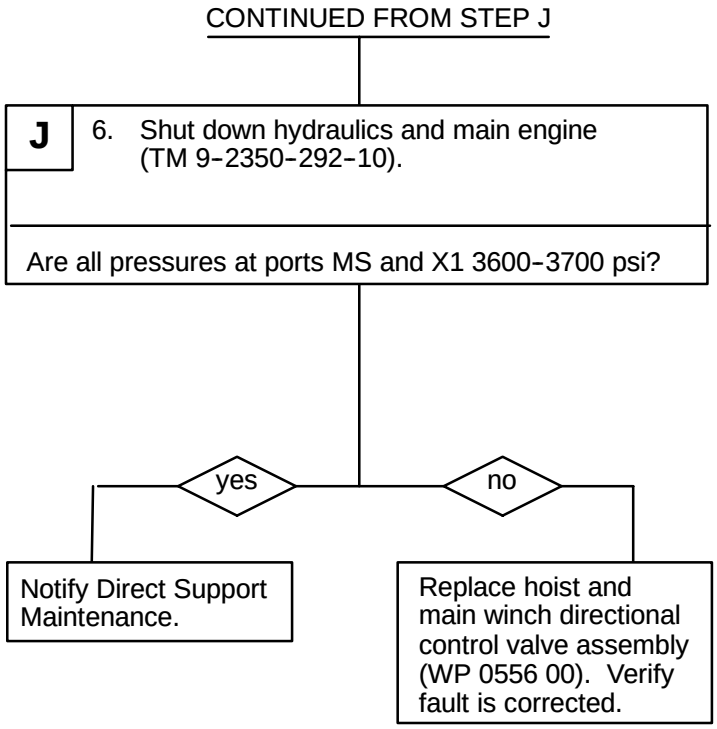
WARNING

1. Remove hoses from split flanges at ports HR and HL of hoist and main winch directional control valve assembly.
2. Install 1-inch flange plugs with o-ring in ports HR and HL, and secure plugs with split flanges.
3. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10).
4. Place hoist control lever in the raise position and record pressures at port X1 of front pump on main hydraulic pump assembly and MS port of the filter valve manifold.
5. Place hoist control lever in the lower position and record pressures again.

CONTINUED ON NEXT PAGE



HOIST WINCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0100 00



END OF TASK

HOIST WINCH CREEPS WITH CONTROL IN NEUTRAL. 0101 00

THIS WORK PACKAGE COVERS:

Hoist Winch Creeps With Control In Neutral

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-300 psi dial pressure gauge (item 81, WP 0717 00)*
0-4000 psi testing gauge assembly (2)
(item 82, WP 0717 00)*
0-5000 psi dial pressure gauge (2)
(item 83, WP 0717 00)*
1/4-inch tee (2) (item 71, WP 0716 00)*
Safety goggles (item 93, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Subfloor plates 10, 15, 18 and 22 removed
(WP 0454 00)

Personnel Required

Two

*Not required if vehicle is equipped with Enhanced Diagnostic System.

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



WARNING

A Is vehicle equipped with Enhanced Diagnostic System?

yes → Go to Step D.

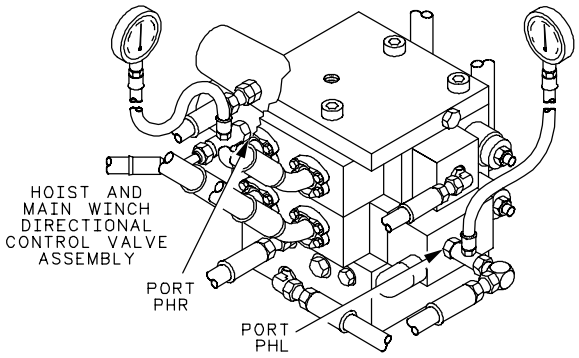
no

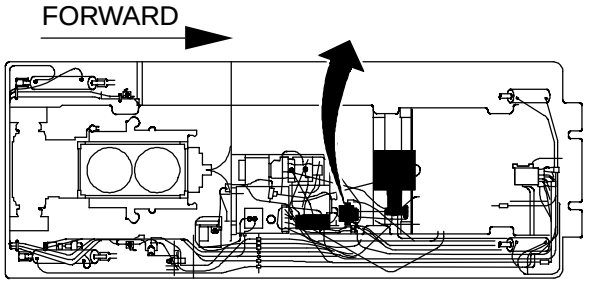
B



WARNING

1. Install 0-4000 psi testing gauge assembly with1/4-inch tee between hoist and main winch directional control valve assembly port PHR and attaching hose.
2. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between hoist and main winch directional control valve assembly port PHL and attaching hose.
3. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10). Observe gauges.





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HOIST WINCH CREEPS WITH CONTROL IN NEUTRAL - CONTINUED 0101 00

CONTINUED FROM STEP B

B 4. Shut down hydraulics and main engine (TM 9-2350-292-10).

Are pressures at port PHR and PHL less than 50 psi?

yes

no

Notify Direct Support Maintenance.

C

1. Install 0-300 psi dial pressure gauge in port CH4 of filter valve manifold.
2. Install 0-5000 psi dial pressure gauge in hoist winch motor test port and install 0-5000 psi gauge in hoist winch motor counterbalance drain port.
3. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10). Observe gauges.
4. Shut down hydraulics and main engine (TM 9-2350-292-10).

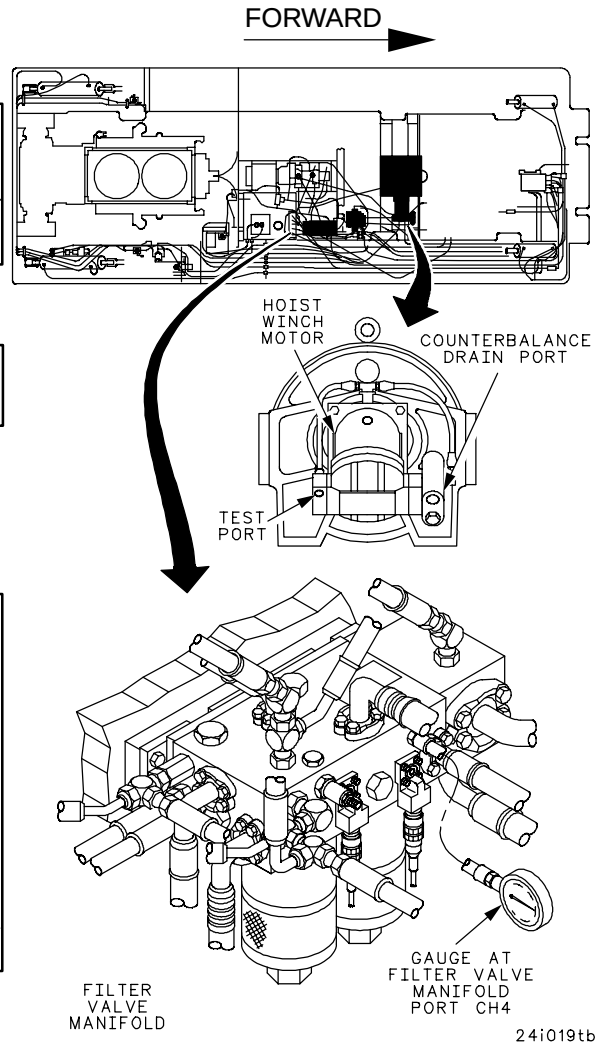
Are all gauge pressures 140 psi or less?

yes

no

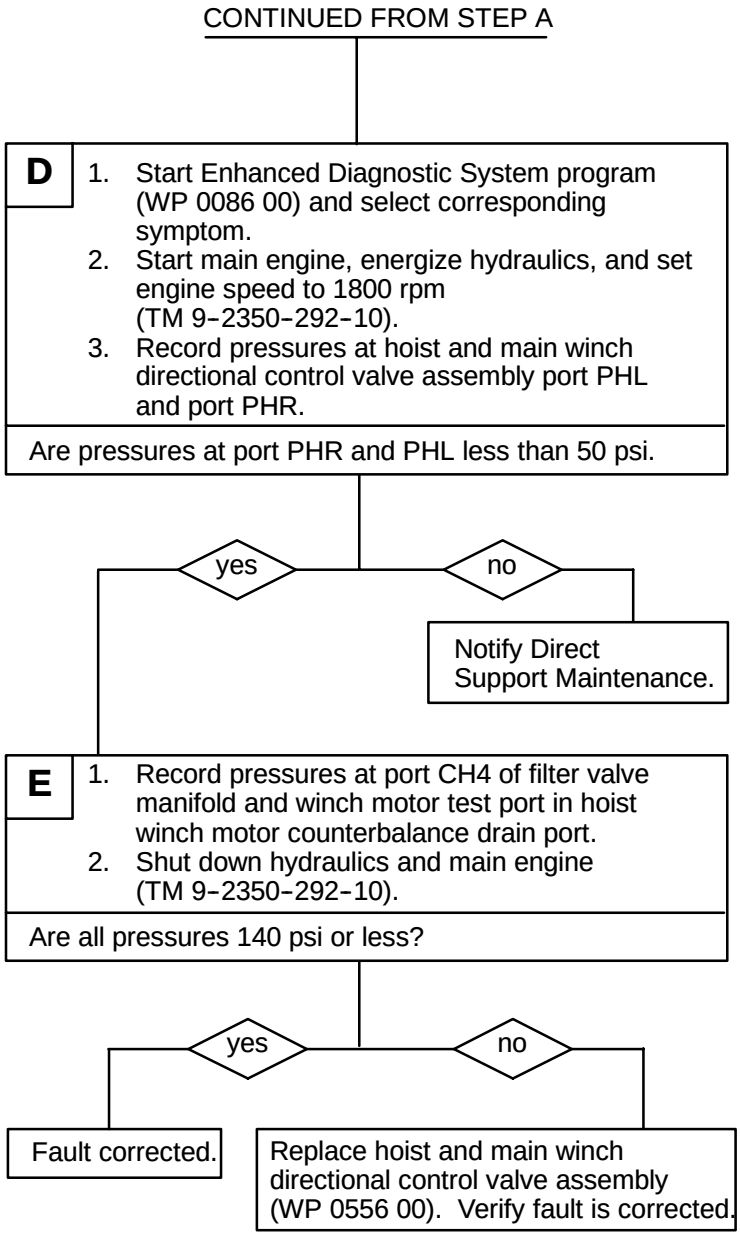
Fault corrected.

Replace hoist and main winch directional control valve assembly (WP 0556 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

HOIST WINCH CREEPS WITH CONTROL IN NEUTRAL - CONTINUED 0101 00



END OF TASK

HOIST WINCH BRAKE FAILS TO HOLD A LOAD. 0102 00

THIS WORK PACKAGE COVERS:

Hoist Winch Fails To Hold A Load

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
0-5000 psi dial pressure gauge (item 83, WP 0717 00)*
0-4000 psi testing gauge assembly (2) (item 82, WP 0717 00)*
1/4-inch tee (2) (item 71, WP 0716 00)*
Safety goggles (item 93, 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Subfloor plates 10, 15, 18 and 22 removed (WP 0454 00)

Personnel Required

Two

*Not required if vehicle is equipped with Enhanced Diagnostic System.

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



WARNING

A Is vehicle equipped with Enhanced Diagnostic System?

yes → Go to Step D.

no

B



WARNING

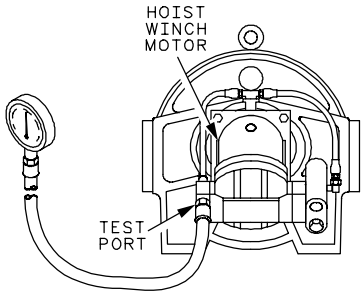
1. Install 0-5000 psi dial pressure gauge in hoist winch motor test port.
2. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10). Observe gauge.
3. Shut down hydraulics and main engine (TM 9-2350-292-10).

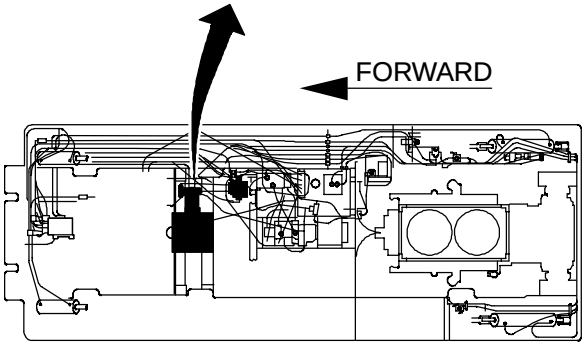
Is gauge pressure reading less than 460 psi?

yes → Notify Direct Support Maintenance.

no

CONTINUED ON NEXT PAGE





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HOIST WINCH BRAKE FAILS TO HOLD A LOAD - CONTINUED 0102 00

CONTINUED FROM STEP B

C

WARNING

1. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between hoist and main winch directional control valve assembly port PHL and attaching hose.
2. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between hoist and main winch directional control valve assembly port PHR and attaching hose.
3. Start main engine, energize hydraulics, and set engine speed to 1800 rpm (TM 9-2350-292-10). Observe gauges.
4. Shut down hydraulics and main engine (TM 9-2350-292-10).

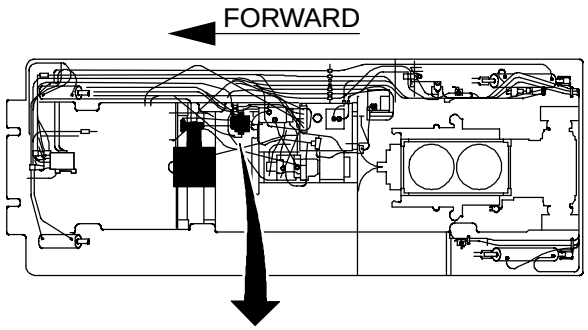
Are pressures at ports PHL and PHR less than 50 psi?

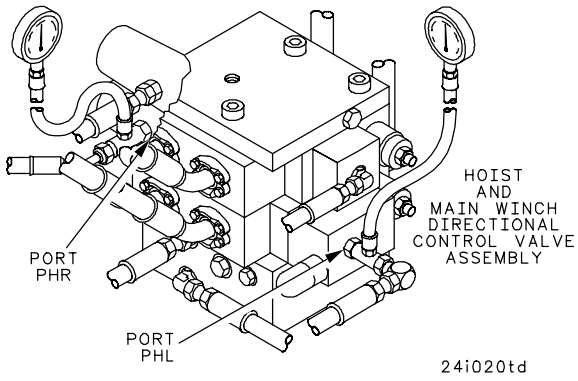
yes

Replace hoist winch directional control valve (WP 0556 00). Verify fault is corrected.

no

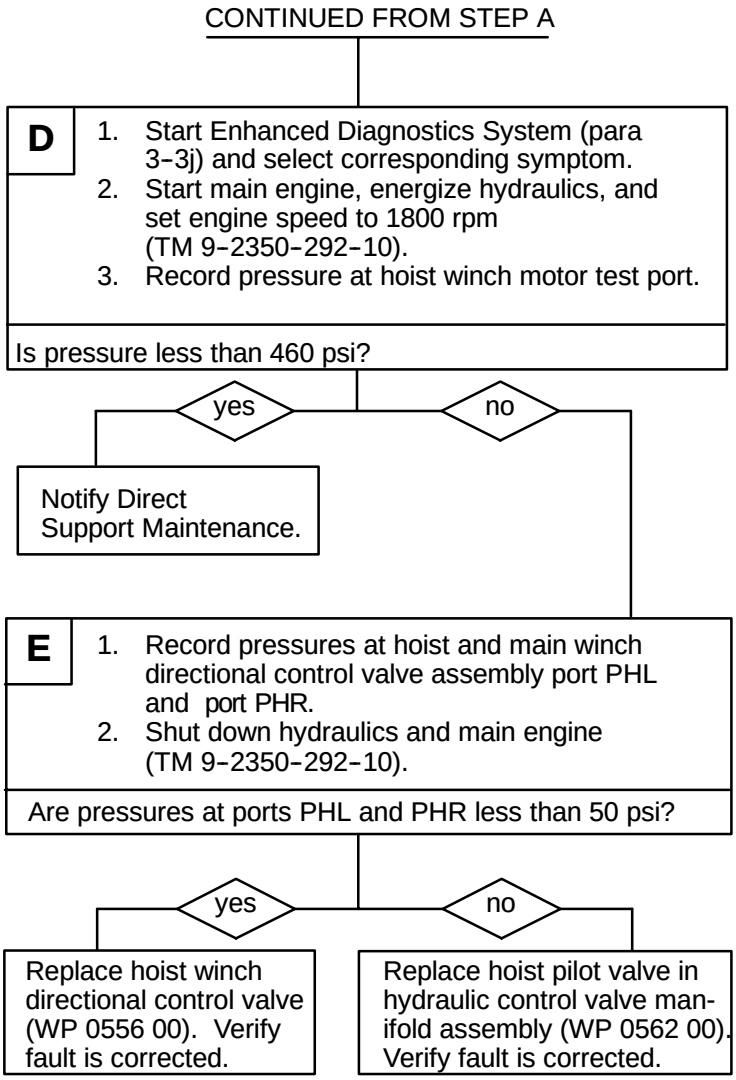
Replace hoist pilot valve in hydraulic control valve manifold assembly (WP 0562 00). Verify fault is corrected.





CONTINUED ON NEXT PAGE

HOIST WINCH BRAKE FAILS TO HOLD A LOAD - CONTINUED 0102 00



END OF TASK

SPADE FAILS TO OPERATE. 0103 00

THIS WORK PACKAGE COVERS:
Spade Fails To Operate

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required
Two

WARNING
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Remove subfloor plate 7 (WP 0454 00) and inspect spade hose quick-disconnects for proper connection.

Is quick-disconnect connected properly?

yes

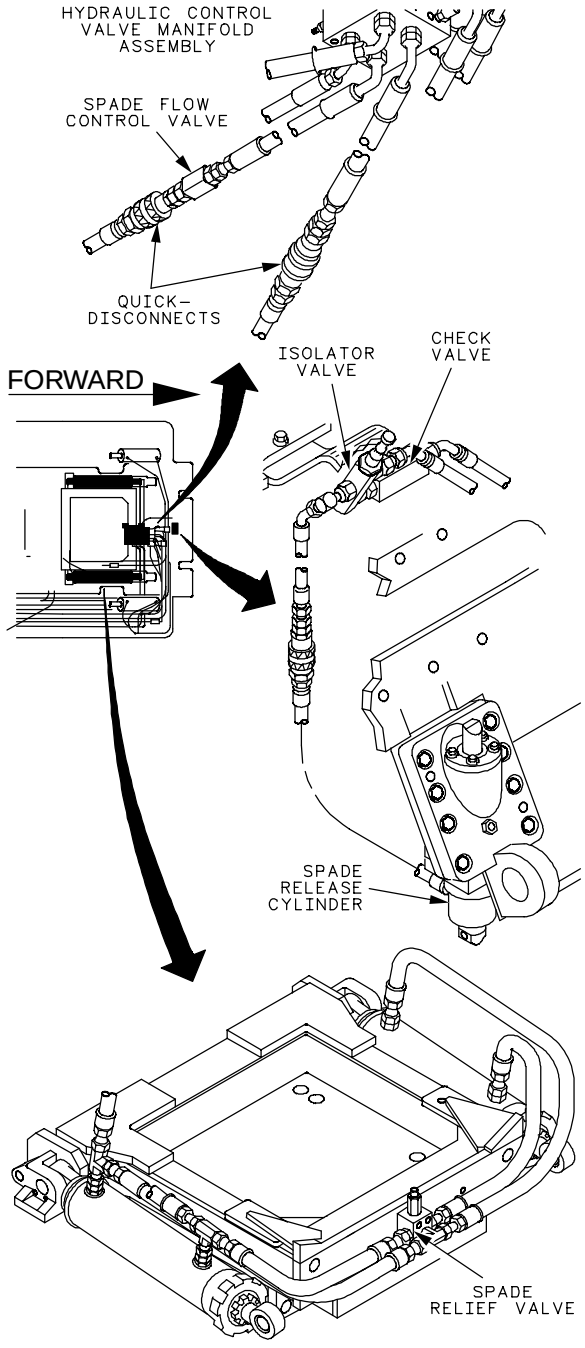
no — Properly connect quick-disconnect. Verify fault is corrected.

B
1. Remove vehicle nose piece (WP 0497 00).
2. Check spade flow control valve, relief valve, spade release cylinder, spade cylinders, check valve, isolator valve, and all attached hoses for leaks, restrictions, and damage.

Are all components and hoses free of leaks, restrictions, and damage?

yes — Notify Direct Support Maintenance.

no — Tighten leaking connections and remove restrictions. If restrictions cannot be removed or if there is damage, replace (WP 0544 00 through WP 0585 00). Verify fault is corrected.



SPADE CYLINDERS AND HOSE CONNECTIONS 24i018t

END OF TASK

SPADE CREEPS WITH SPADE CONTROL HANDLE IN HOLD. 0104 00

THIS WORK PACKAGE COVERS:

Spade Creeps With Spade Control Handle In Hold

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Start main engine, energize hydraulics system and set engine speed to 1800 rpm (TM 9-2350-292-10).
2. Fully extend and retract spade five times.
3. Position spade in the mid-range position.
4. Shut down hydraulics and main engine (TM 9-2350-292-10).

Does spade continue to creep?

yes

no

Fault corrected.

B

1. Remove vehicle nose piece (WP 0497 00).
2. Inspect spade cylinders, isolator valve, directional control valve, spade release cylinder, check valve, and all connecting hoses for leaks, restrictions, and damage.

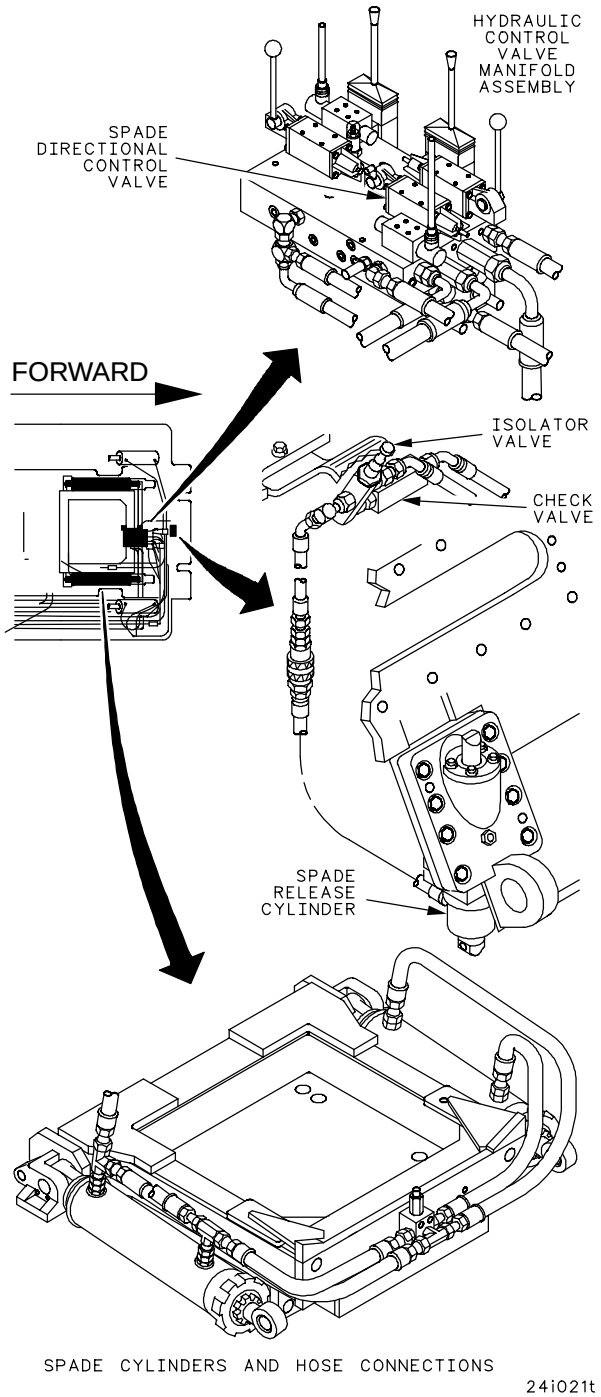
Are all components and hoses free of leaks, restrictions, and damage?

yes

Notify Direct Support Maintenance.

no

Remove restrictions and tighten leaking connections. If restrictions cannot be removed or if components are damaged, replace (WP 0544 00 through WP 0585 00). Verify fault is corrected.



SPADE CYLINDERS AND HOSE CONNECTIONS

24i021t

END OF TASK

SPADE LOCK FAILS TO RELEASE. 0105 00

THIS WORK PACKAGE COVERS:

Spade Lock Fails To Release.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, (WP 0717 00)
0-4000 psi testing gauge assembly
(item 82, (WP 0717 00)*
1/4-inch tee (item 71, (WP 0716 00)*
Crowbar (item 52, (WP 0717 00)
Safety goggles (item 93, (WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



WARNING

A Is vehicle equipped with Enhanced Diagnostic System?

yes → Go to Step H.

no

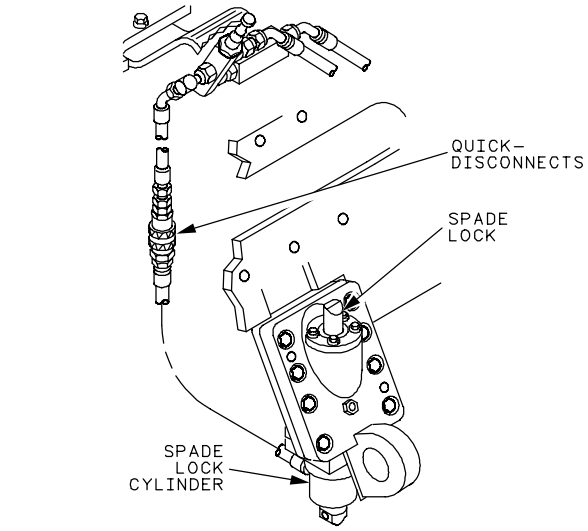
B

1. Using crowbar, pry down on spade lock and disengage lock.
2. Lower the spade (TM 9-2350-292-10) and remove nose piece (WP 0497 00).
3. Inspect spade lock cylinder quick-disconnect and hose for leaks, restrictions, and damage.

Is quick-disconnect and hose free from restrictions and damage?

yes

no → Tighten leaking connections and remove restrictions. If restrictions cannot be removed or if parts are damaged, replace (WP 0575 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

SPADE LOCK FAILS TO RELEASE - CONTINUED 0105 00

CONTINUED FROM STEP B

C

WARNING

1. Install 0-4000 psi testing gauge assembly with 1/4-inch tee between spade lock hose and quick-disconnect.
2. Start main engine, energize hydraulics system and set engine speed to 1800 rpm (TM 9-2350-292-10).
3. Place spade control lever in raise position and press isolator valve button. Record gauge reading.
4. Shut down hydraulics and main engine.

Does pressure gauge read 2000-2300 psi?

yes

CONTINUED FROM STEP I

no

Go to Step E.

D Inspect the spade release plunger, collar, and hardware for restrictions, damage, or missing parts.

Are plunger, collar, and hardware free of restrictions, damage, and missing parts.

yes

Replace spade lock cylinder (WP 0521 00). Verify fault is corrected.

no

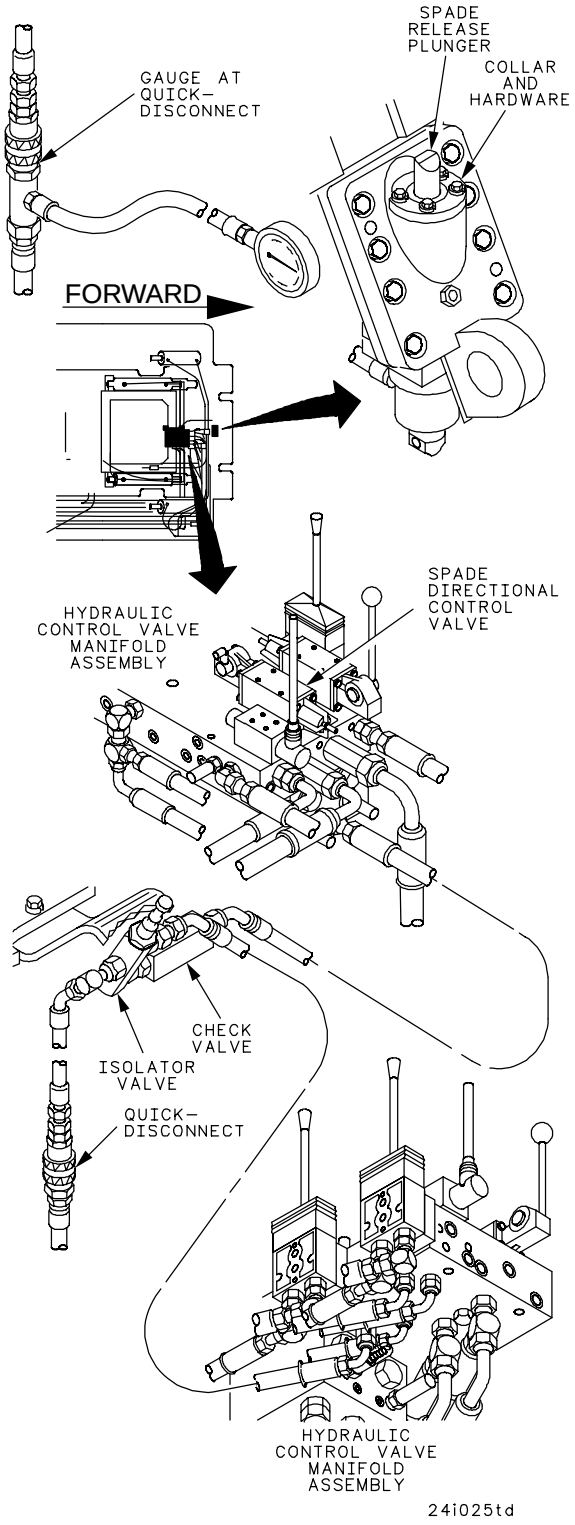
Remove restrictions. If restrictions cannot be removed or if parts are damaged or missing, replace (WP 0521 00). Verify fault is corrected.

CONTINUED FROM STEP C AND I

E Inspect both hoses from spade lock quick-disconnect to isolator valve to check valve to spade directional control valve on hydraulic control valve manifold assembly for leaks, restrictions, and damage.

Are hoses free of leaks, restrictions, and damage?

CONTINUED ON NEXT PAGE



SPADE LOCK FAILS TO RELEASE - CONTINUED 0105 00

CONTINUED FROM STEP E

yes / no

Tighten leaking connections and remove restrictions. If restrictions cannot be removed or if hoses are damaged, replace (WP 0575 00). Verify fault is corrected.

F Inspect spade isolator valve for restrictions, leaks, and damage.

Is isolator valve free of restrictions, leaks, and damage?

yes / no

Remove restrictions and tighten leaking connections. If restrictions cannot be removed, or if valve is damaged, replace (WP 0575 00). Verify fault is corrected.

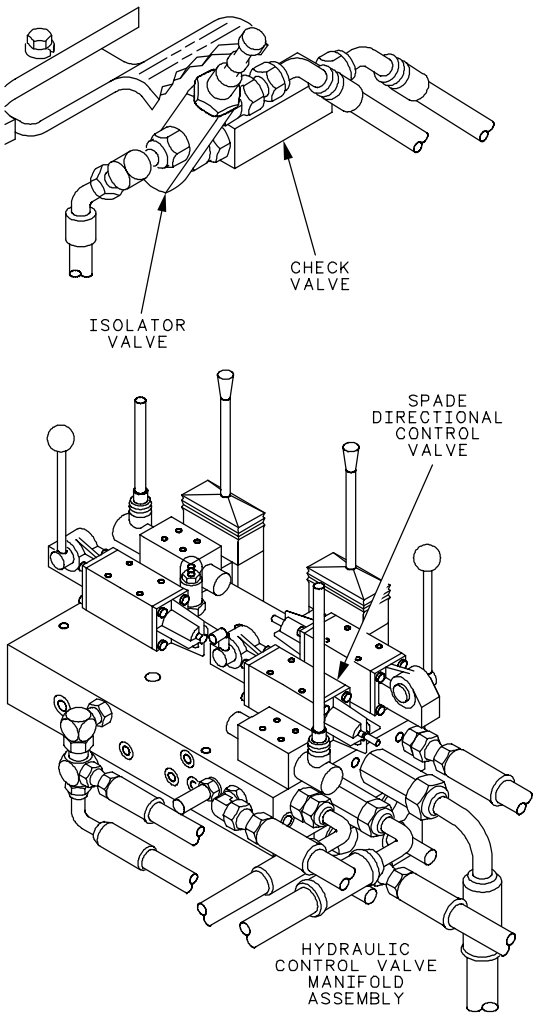
G Inspect check valve between isolator valve and spade directional control valve for restrictions, leaks, and damage.

Is check valve free of restrictions, leaks, and damage?

yes / no

Fault corrected.

Remove restrictions and tighten leaking connections. If restrictions cannot be removed, or if valve is damaged, replace (WP 0575 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

SPADE LOCK FAILS TO RELEASE - CONTINUED 0105 00

CONTINUED FROM STEP A

H

1. Using crowbar, pry down on spade lock and disengage lock.
2. Lower the spade (TM 9-2350-292-10) and remove nose piece (WP 0497 00).
3. Inspect spade lock cylinder quick-disconnect and hose for leaks, restrictions, and damage.

Is quick-disconnect and hose free from restrictions and damage?

yes / no

Tighten leaking connections and remove restrictions. If restrictions cannot be removed or if parts are damaged, replace (WP 0575 00). Verify fault is corrected.

I

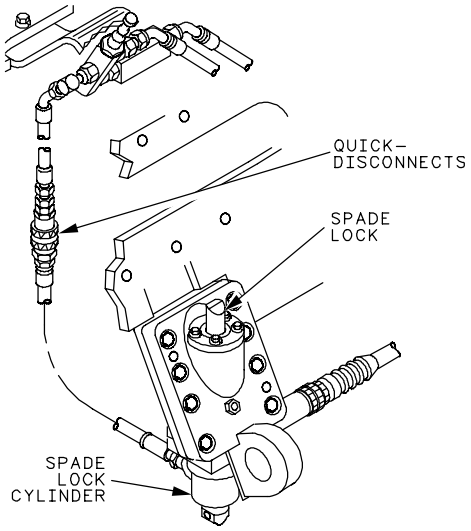
1. Start Enhanced Diagnostic System program (WP 0086 00) and select corresponding symptom.
2. Start main engine, energize hydraulics system and set engine speed to 1800 rpm (TM 9-2350-292-10).
3. Place spade control lever in raise position and press isolator valve button. Record pressure at spade lock cylinder.
4. Shut down hydraulics and main engine.

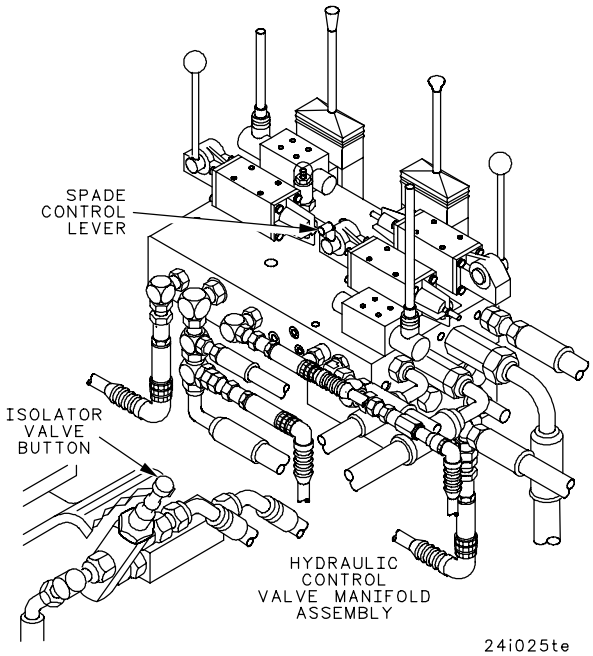
Is pressure 2000-2300 psi?

yes / no

Go to Step D.

Go to Step E.





END OF TASK

FUEL TRANSFER PUMP FAILS TO OPERATE. 0106 00

THIS WORK PACKAGE COVERS:

Fuel Transfer Pump Fails To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, (WP 0717 00)
0-4000 psi testing gauge assembly (2)
(item 82, (WP 0717 00)
0-300 psi dial pressure gauge (2)
(item 81, (WP 0717 00)
1/2-inch plugs (2) (item 69, (WP 0716 00)
Safety goggles (item 93, (WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



A

1. Connect impact wrench (TM 9-2350-292-10).
2. Start APU (TM 9-2350-292-10).
3. Operate impact wrench (TM 9-2350-292-10).
4. Shut down APU (TM 9-2350-292-10).

Does impact wrench operate properly?

yes

no → Go to Step H.

B

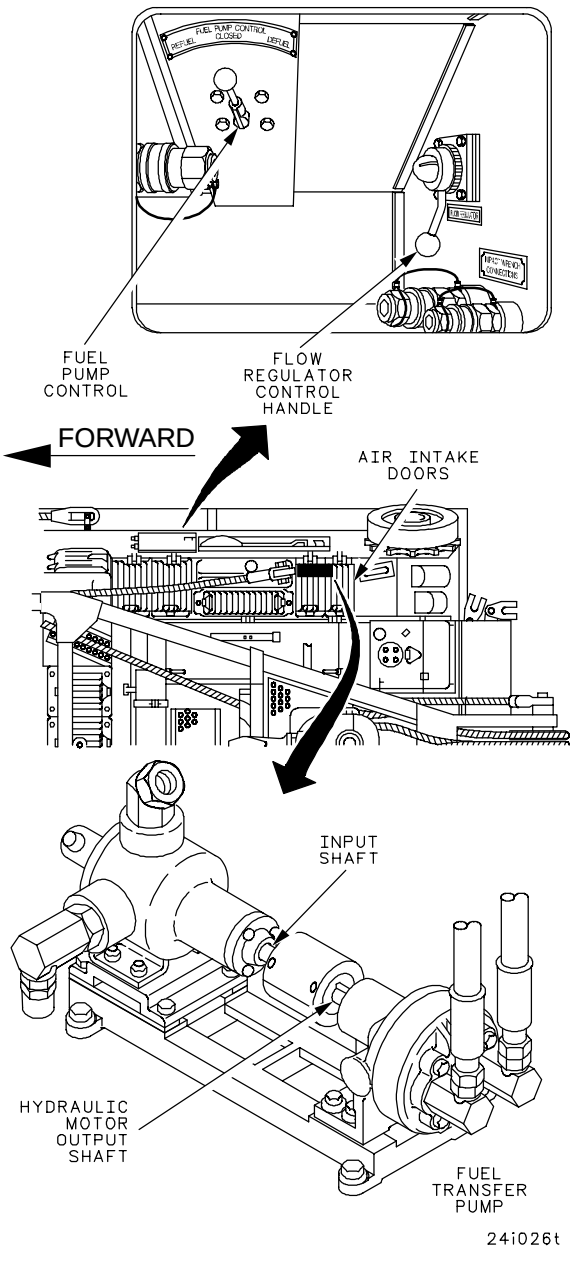
1. Set flow regulator control handle to 0.5.
2. Open air intake doors (TM 9-2350-292-10).
3. Start APU (TM 9-2350-292-10).
4. Place fuel pump control to DEFUEL then to REFUEL while observing transfer pump input shaft and hydraulic motor output shaft.
5. Shut down APU (TM 9-2350-292-10).

Do both shafts turn simultaneously?

yes

no → Go to Step D.

CONTINUED ON NEXT PAGE



FUEL TRANSFER PUMP FAILS TO OPERATE - CONTINUED 0106 00

CONTINUED FROM STEP B

C

1. Remove air intake grille above fuel transfer pump hoses (TM 9-2350-292-10).
2. Check all transfer pump fuel hoses and connections for kinks, leaks, and damage.

Are all hoses and connections free of kinks, leaks, and damage?

yes

Replace transfer pump (WP 0203 00). Verify fault is corrected.

no

Tighten or replace leaking, damaged and/or kinked hoses and connections (WP 0202 00). Verify fault is corrected.

CONTINUED FROM STEP B

D If hydraulic motor output shaft turned faster than the pump input shaft or if pump input shaft did not turn at all, check the pump shaft coupling and shaft keys for looseness or damage.

Are shaft coupling and keys tight and free of damage?

yes

no

Replace fuel transfer pump (WP 0203 00). Verify fault is corrected.

E If the hydraulic output shaft did not turn, check fuel transfer pump hoses and connections for leaks, damage and loose connections.

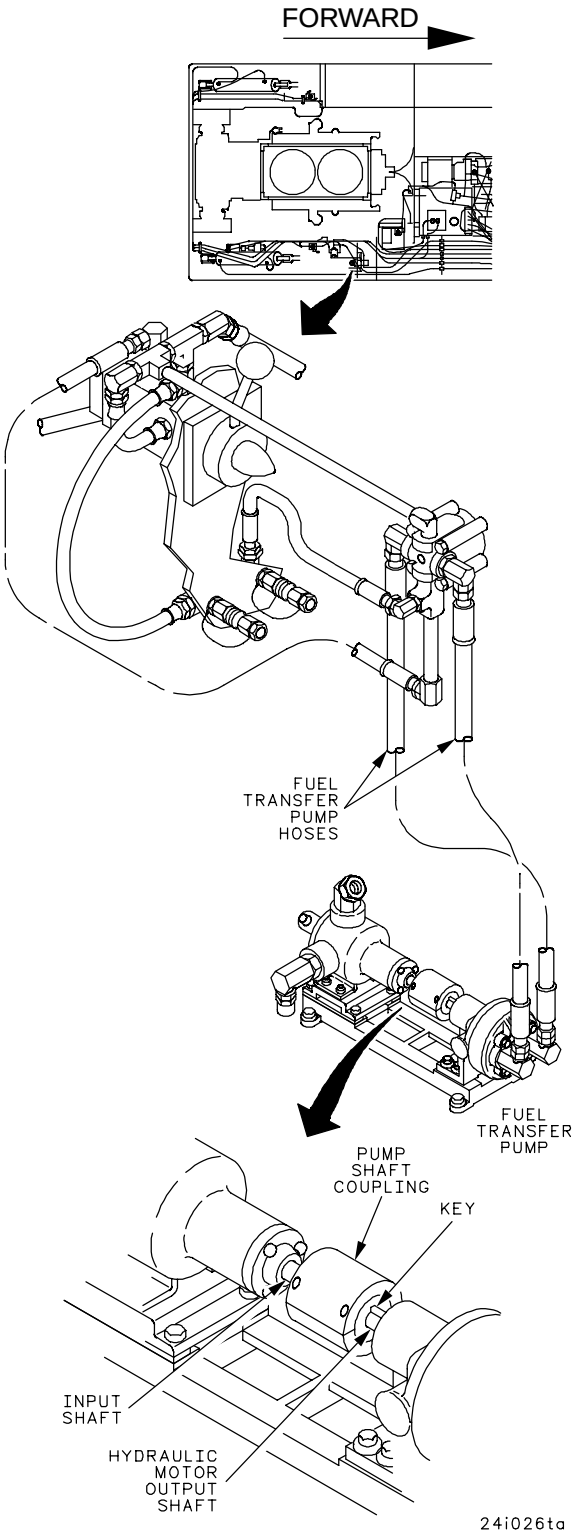
Are hoses and connections tight and free of leaks and damage?

yes

no

Tighten connections and/or replace damaged parts (WP 0202 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



FUEL TRANSFER PUMP FAILS TO OPERATE - CONTINUED 0106 00

CONTINUED FROM STEP E

F

WARNING

1. Disconnect hoses from refuel pump motor and plug hoses.
2. Install 0-4000 psi testing gauge in refuel pump motor port CYL1 and install 0-4000 psi assembly gauge in refuel pump motor port CYL2.
3. Start APU (TM 9-2350-292-10).
4. Place flow control valve to setting 0.5 and place system selector valve to FT position.
5. Place refuel/defuel control valve to refuel position and record gauge pressures.
6. Place refuel/defuel control valve to defuel position and record gauge pressures.
7. Shut down APU (TM 9-2350-292-10).

Is refuel pressure at CYL1 1650-1750 psi; is defuel pressure at CYL2 1650-1750 psi and is CYL1 less than 75 psi in defuel and CYL2 less than 75 psi in refuel?

yes

Replace transfer pump (WP 0203 00). Verify fault is corrected.

no

G Inspect hose from refuel/defuel control valve for leaks, restrictions, and damage.

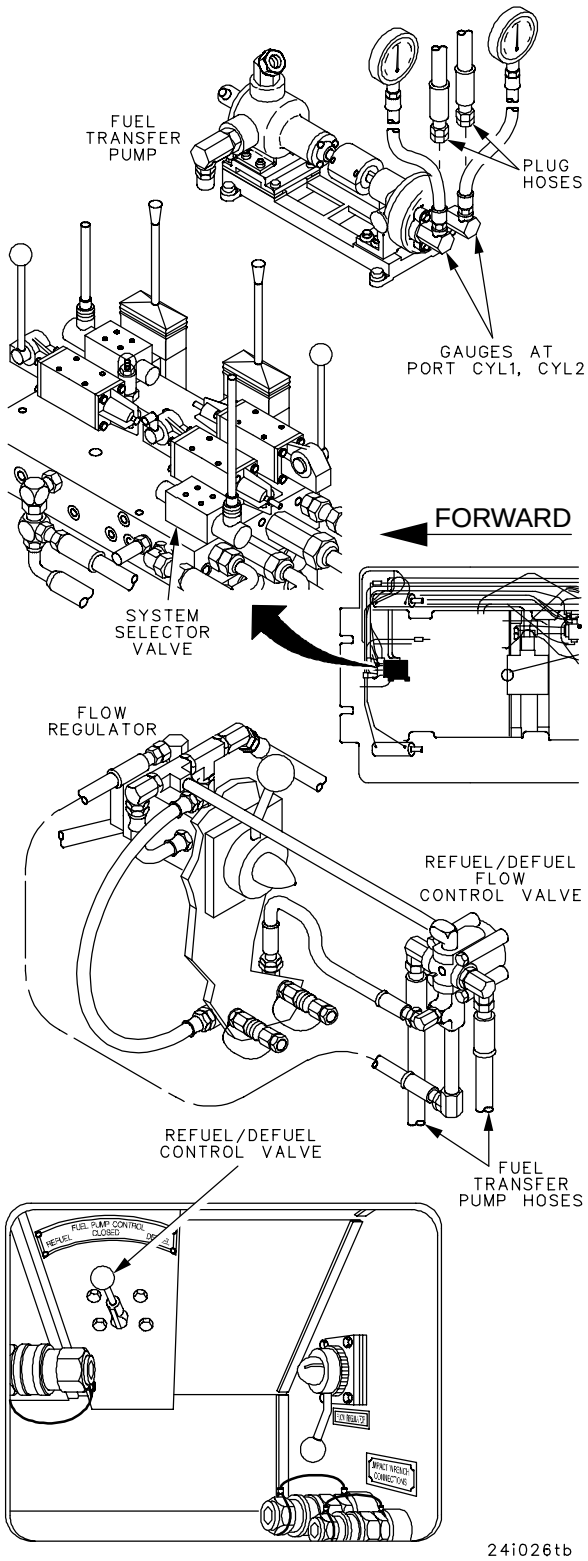
Is hose free of leaks, restrictions, and damage?

yes

Replace control valve (WP 0555 00). Verify fault is corrected.

no

Tighten leaking connections and remove restrictions. If restriction cannot be removed or if hose and/or connections are damaged, replace (WP 0217 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

FUEL TRANSFER PUMP FAILS TO OPERATE - CONTINUED 0106 00

CONTINUED FROM STEP A

H

WARNING

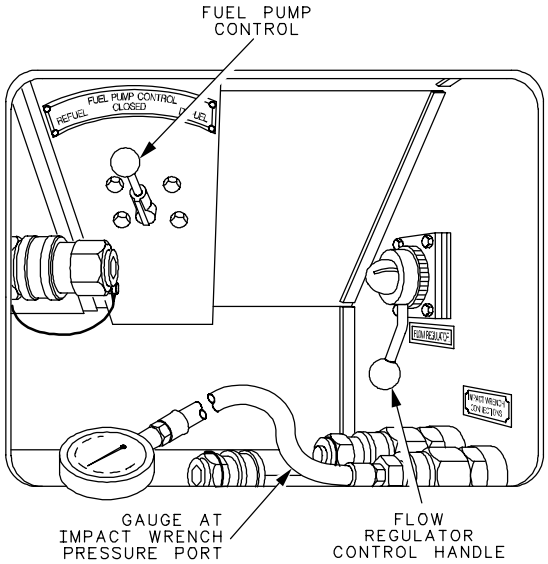
1. Install 0-4000 psi testing gauge assembly with adapter in impact wrench pressure port (smaller of the quick-disconnects) in the refuel/defuel compartment.
2. Place fuel pump control to CLOSED position and set flow regulator control handle to 0.5.
3. Start APU (TM 9-2350-292-10) and set system selector to AUX. Observe gauge.
4. Shut APU down (TM 9-2350-292-10).

Does gauge read 1650 - 1750 psi?

yes

no

Go to Step M.



I

WARNING

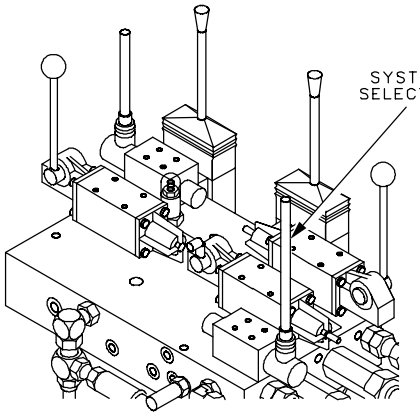
1. Remove gauge from pressure port.
2. Install 0-300 psi dial pressure gauge with adapter in impact wrench return port (larger of quick disconnects) in the refuel/defuel compartment.
3. Place fuel pump control to CLOSED position and set flow regulator control handle to 0.5.
4. Start APU (TM 9-2350-292-10) and set system selector to AUX. Observe gauge and record reading.
5. Set flow regulator control handle to 6.0 and observe gauge and record reading.
6. Shut down APU (TM 9-2350-292-10).

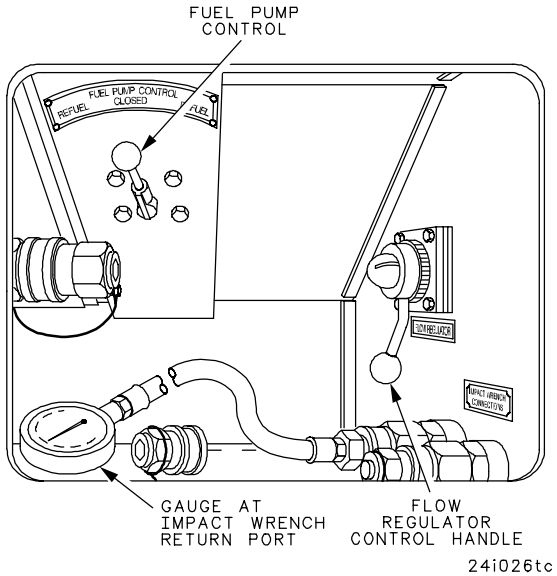
Are pressure readings below 75 psi?

yes

no

Replace flow control valve (WP 0555 00). Verify fault is corrected.





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FUEL TRANSFER PUMP FAILS TO OPERATE - CONTINUED 0106 00

CONTINUED FROM STEP I

J

1. Remove subfloor plate 22 (WP 0454 00).
2. Check pump return hose and connection at filter manifold and hoses and connections at pump for restrictions (kinks/blockage).

Are hoses and connections free of restrictions?

yes

no

Clear restrictions. If restrictions cannot be cleared, replace hose/connection (WP 0202 00). Verify fault is corrected.

K Is vehicle equipped with Enhanced Diagnostic System?

yes

no

Go to Step O.

L



WARNING

1. Install a 0-300 psi dial pressure gauge with 1/2-inch tee between port R1 and hose at filter manifold.
2. Perform step I and record pressures at test port R1 and at impact wrench return port.

Are pressures at both ports approximately the same?

yes

no

Replace hydraulic filters (WP 0554 00). Verify fault is corrected.

CONTINUED FROM STEP H AND O

M Check filter manifold oil passages and check valve at port R1 for obstructions.

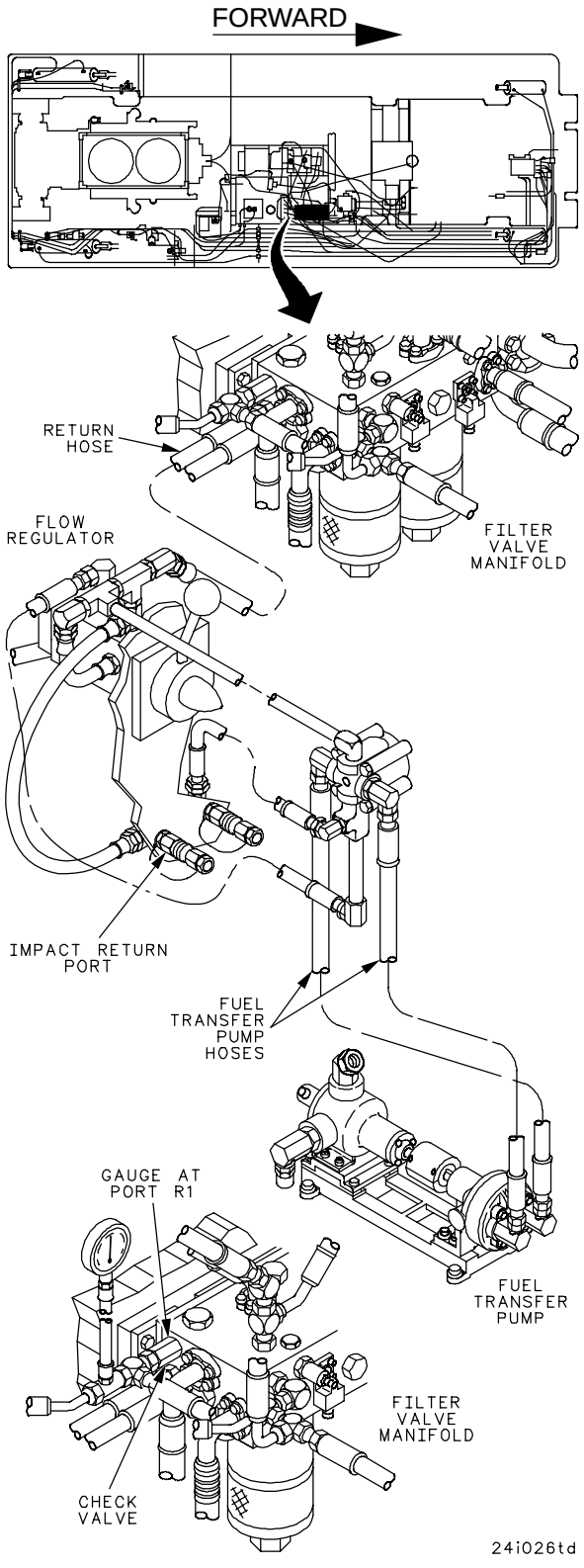
Are passages and check valve free of obstructions?

yes

no

Clear obstructions. If obstructions cannot be cleared, replace check valve (WP 0551 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



FUEL TRANSFER PUMP FAILS TO OPERATE - CONTINUED 0106 00

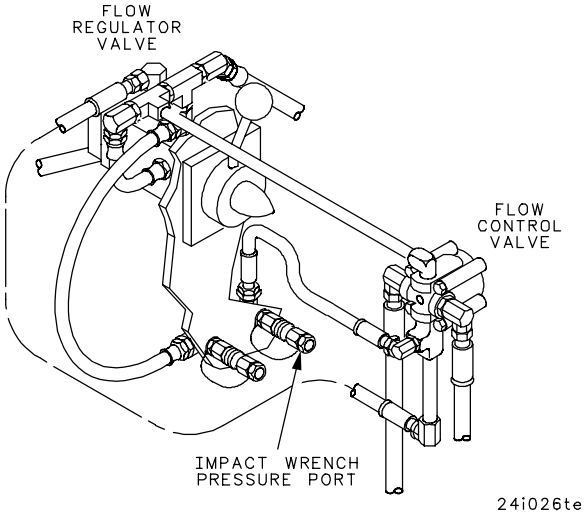
CONTINUED FROM STEP M

N Check pressure hose connections for the flow regulator valve, flow control valve and impact wrench pressure port for leaks and loose or damaged connectors.

Are connections tight and free of damage?

yes → Go to page (WP 0089 00).

no → Tighten loose connections and/or replace damaged parts (WP 0555 00). Verify fault is corrected.



CONTINUED FROM STEP K

O
1. Start Enhanced Diagnostic System program (WP 0086 00) and select the corresponding symptom.
2. Perform step I steps 3 through 6 and record pressures at test port R1 and impact wrench return port.

Are pressures at both ports approximately the same?

yes → Replace hydraulic filters (WP 0554 00). Verify fault is corrected.

no → Go to Step M.

END OF TASK

IMPACT WRENCH FAILS TO OPERATE OR DEVELOP FULL POWER. 0107 00

THIS WORK PACKAGE COVERS:

Impact Wrench Fails To Operate Or Develop Full Power.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, (WP 0717 00)
0-4000 psi testing gauge assembly
(item 82, (WP 0717 00)
0-300 psi dial pressure gauges (2)
(item 81, (WP 0717 00)*
Safety goggles (item 93, (WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

*Not required if vehicle is equipped with Enhanced Diagnostic System.

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



WARNING

A

1. Connect impact wrench without extension hoses.
2. Operate the wrench at various flow rates from 0.5 to 7.0 (TM 9-2350-292-10).

Does impact wrench operate properly?

yes

Remove restrictions from extension hoses. If restrictions cannot be removed, or if hoses are damaged, replace. Verify fault is corrected.

no

B

Operate the refuel/defuel pump at various speeds from 0.5 to 8.0 (TM 9-2350-292-10).

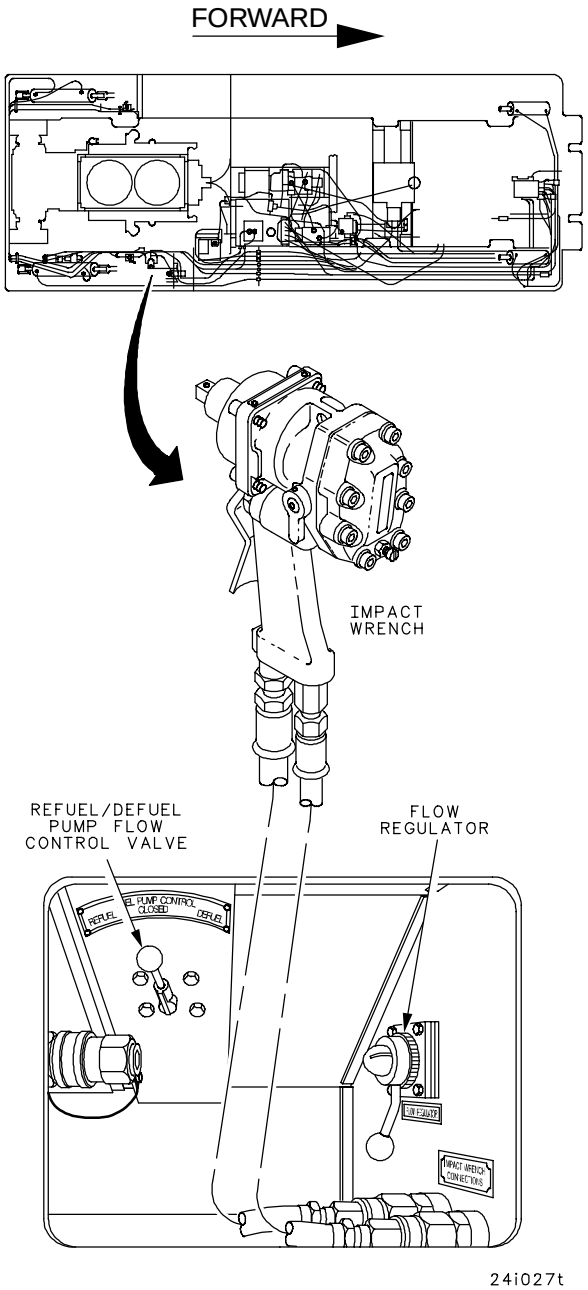
Does refuel/defuel pump operate properly?

yes

no

Go to WP 0089 00.

CONTINUED ON NEXT PAGE



IMPACT WRENCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0107 00

CONTINUED FROM STEP B

C



WARNING

1. Install 0-4000 psi testing gauge assembly with adapter in impact wrench pressure port (smaller of quick-disconnects) in the refuel/defuel stowage compartment.
2. Install 0-300 psi dial pressure gauge with adapter in impact wrench return port (larger of quick-disconnects) in the refuel/defuel stowage compartment.
3. Place flow control valve to closed position and set flow regulator to 0.5 setting.
4. Start APU (TM 9-2350-292-10) and place system selector valve to fuel transfer position. Record gauge readings.
5. Shut down APU (TM 9-2350-292-10).

Does pressure port gauge read 1650-1750 psi and does return port gauge read less than 75 psi?

yes

no

If pressure port is not 1650-1750 psi go to Step E. If return pressure is not less than 75 psi go to Step F.

D Check the impact wrench and quick-disconnects and connections in stowage compartment for leaks, restrictions, and damage.

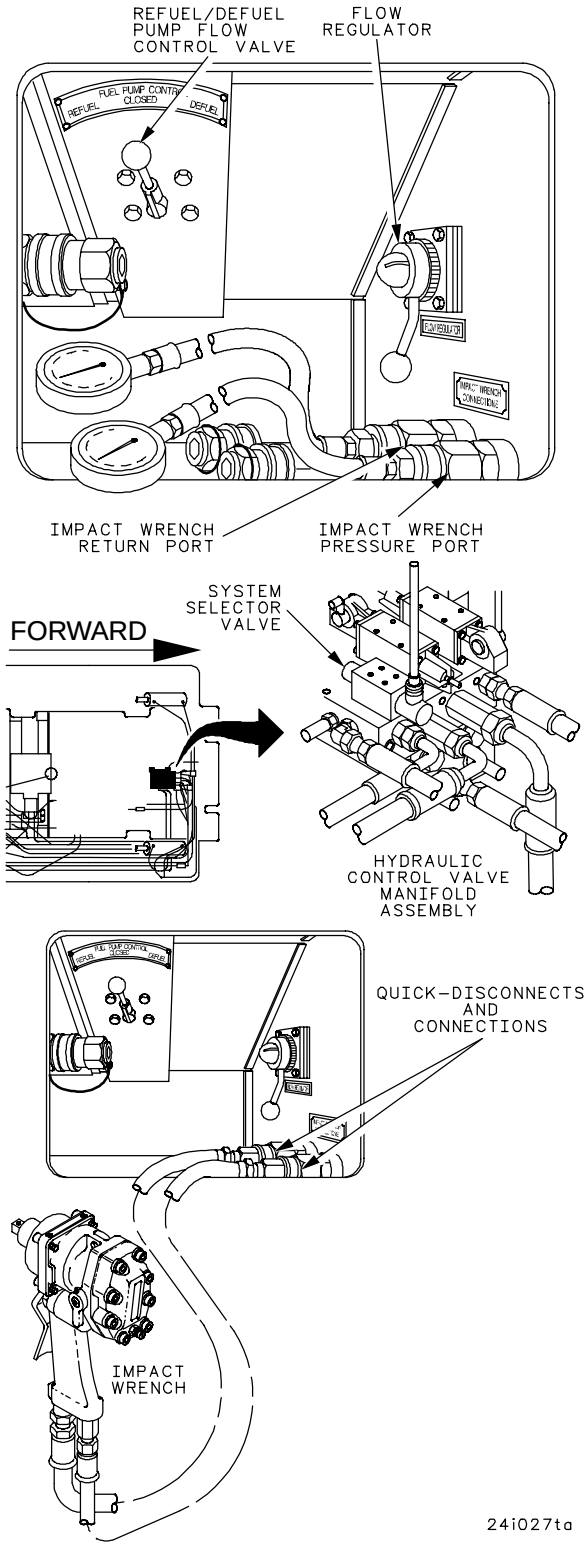
Are wrench, quick-disconnects, and connections free of leaks, restriction, and damage?

yes

no

Troubleshoot impact wrench (TM 9-5130-338-12&P)

Tighten leaking connections and remove restrictions. If restrictions cannot be removed, or if part is damaged, replace (WP 0570 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

IMPACT WRENCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0107 00

CONTINUED FROM STEP C

E Inspect flow regulator valve, flow control valve, impact wrench pressure port quick-disconnect, and connecting hoses for leaks, restrictions, and damage.

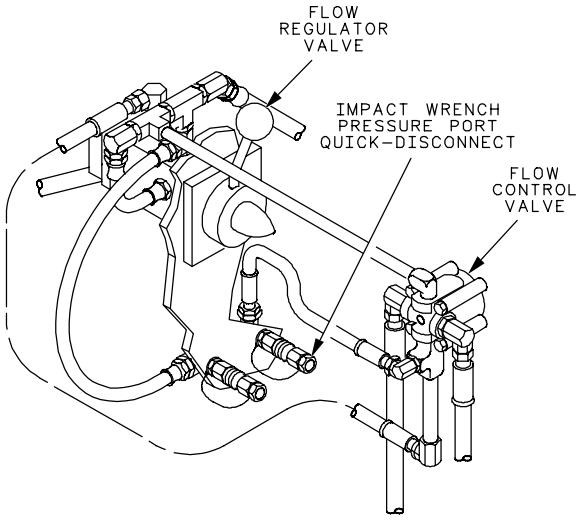
Are impact wrench pressure port quick-disconnect, valves, and hoses free of leaks, restrictions, and damage?

yes

Go to WP 0089 00.

no

Tighten leaking connections and remove restrictions. If restrictions cannot be removed, or if parts are damaged, replace (WP 0570 00). Verify fault is corrected.



CONTINUED FROM STEP C

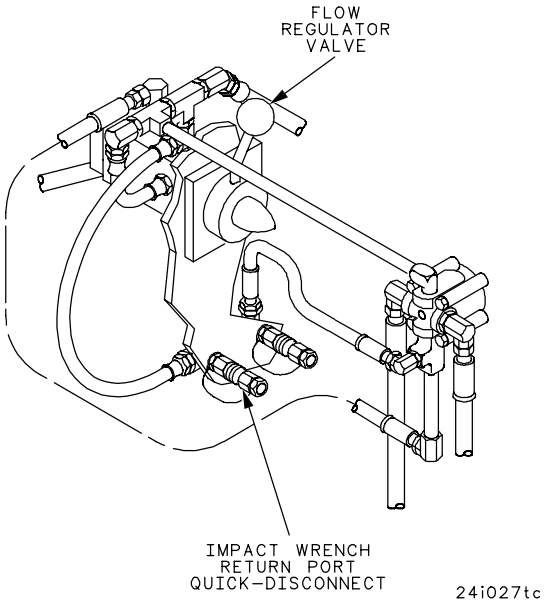
F Inspect flow regulator valve, impact wrench return port quick-disconnect and connecting hoses for leaks, restrictions, and damage.

Are flow regulator valve, impact wrench return port quick-disconnect, and connecting hoses free of leaks, restrictions, and damage.

yes

no

Tighten leaking connections and remove restrictions. If restrictions cannot be removed, or if parts are damaged, replace (WP 0570 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

IMPACT WRENCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0107 00

CONTINUED FROM STEP F

G Is vehicle equipped with Enhanced Diagnostic System?

yes → Go to Step J.

no

H

WARNING

1. Remove subfloor plate 22 (WP 0454 00).
2. Install 0-300 psi dial pressure gauge in port R1 of filter manifold.
3. Remove 0-4000 psi testing gauge assembly from impact wrench pressure port.
4. Perform Step C steps 3 thru 5.

Is pressure at port RI approximately the same as at impact wrench return port?

yes → Replace hydraulic filters (WP 0554 00). Verify fault is corrected.

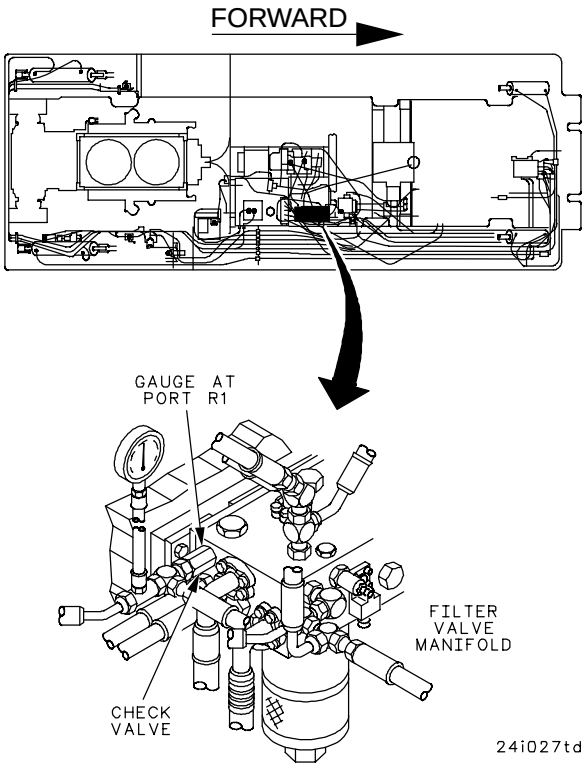
no → CONTINUED FROM STEP J

I Inspect the return check valve on bottom of filter manifold for restrictions and damage.

Is check valve free of restrictions and damage?

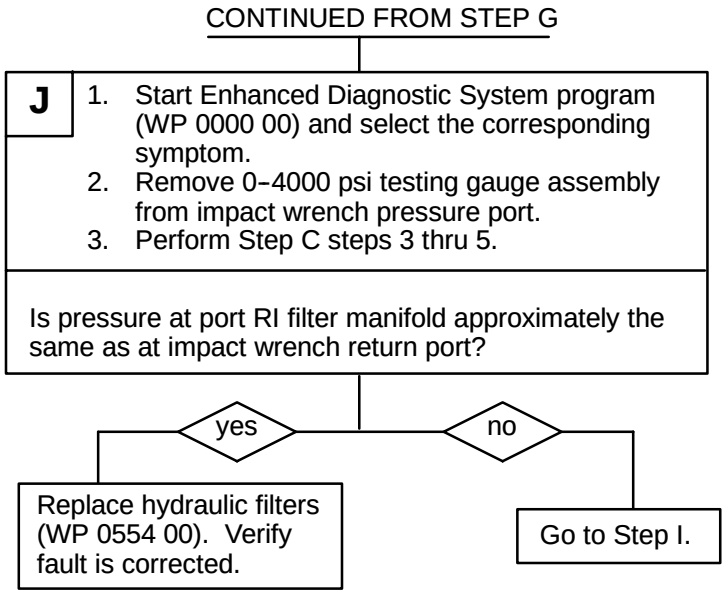
yes → Remove restrictions from filter manifold. If restrictions cannot be removed, replace manifold (WP 0550 00). Verify fault is corrected.

no → Remove restrictions. If restrictions cannot be removed or if valve is damaged, replace (WP 0551 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

IMPACT WRENCH FAILS TO OPERATE OR DEVELOP FULL POWER - CONTINUED 0107 00



END OF TASK

LIGHTS OVERVIEW AND DIAGRAMS. 0108 00

THIS WORK PACKAGE COVERS:

Lights Overview And Diagram

The vehicle lights include both the interior lighting system and the exterior light system. The interior lighting system consists of the dome lights, passive night viewer, winch lights, gauge panel lights, fixed spotlight and troublelight assembly. The exterior lighting system consists of the headlights, stoplights, marker lights, turn signals, rear service light and warning flasher.

System power (+24 – 28 V dc) is supplied to the interior lighting system any time the MASTER switch is turned ON. The left front and left rear dome lights are supplied through a switch panel 15–amp circuit breaker while the center and right front dome lights, winch lights, fixed spotlight and troublelight assembly are supplied through an accessories panel 15–amp circuit breaker. The gauge panel lights are supplied through a separate circuit from the light switch assembly in the switch panel. Each dome light has a three position switch that allows either a white lamp or a blue (blackout) lamp to be turned on or both lamps to be turned off. The fixed spotlight and troublelight are both turned on and off at their respective lamp locations. The winch lights are turned on and off by the WINCH LT switch on the accessories panel. The passive night viewer operates when the PASSIVE NIGHT VIEWER switch is set to the ON position. The PASSIVE NIGHT VIEWER indicator also lights whenever the PASSIVE NIGHT VIEWER switch is turned ON. The gauge panel lights are lit whenever the main lighting switch on the switch panel is set to any position other than OFF. The gauge panel lights are then controlled by the auxiliary switch and can be set to either PANEL BRT (bright), DIM, or OFF. If the main light switch is set to the SER DRIVE position and auxiliary switch is set to PARK, dim panel lights are automatically selected.

System power (+24 – 28 V dc) is supplied to the external lighting system whenever the MASTER switch is turned ON. Power is applied through a circuit breaker in the switch assembly and, depending on switch position, routed to selected lamps. The main lighting switch defines the operating mode of the external lighting system and includes SER DRIVE (service drive), STOP LIGHT, BO MARKER (blackout marker), BO DRIVE (blackout drive) and OFF. In the OFF position, all circuits are open and no lights are lit. In the SER DRIVE position, the service drive headlights, service drive stop lights, and service drive turn signals are all operable. When the STOP LIGHT position is selected, the service drive turn signals and service drive stop lights are operable. In the BO MARKER POSITION, the blackout marker, blackout turn signals, and blackout stop lights are operable. When the BO DRIVE position is selected, the blackout driving lamp, blackout marker, blackout turn signals, and blackout stop lights are all operable. Additionally, in the BO DRIVE position, a BO SELECTOR switch enables blackout driving lamps.

When the service drive headlights are in operation, a dimmer switch selects either a low beam headlight or a high beam headlight. The HIGH BEAM indicator lights whenever the high beams are selected.

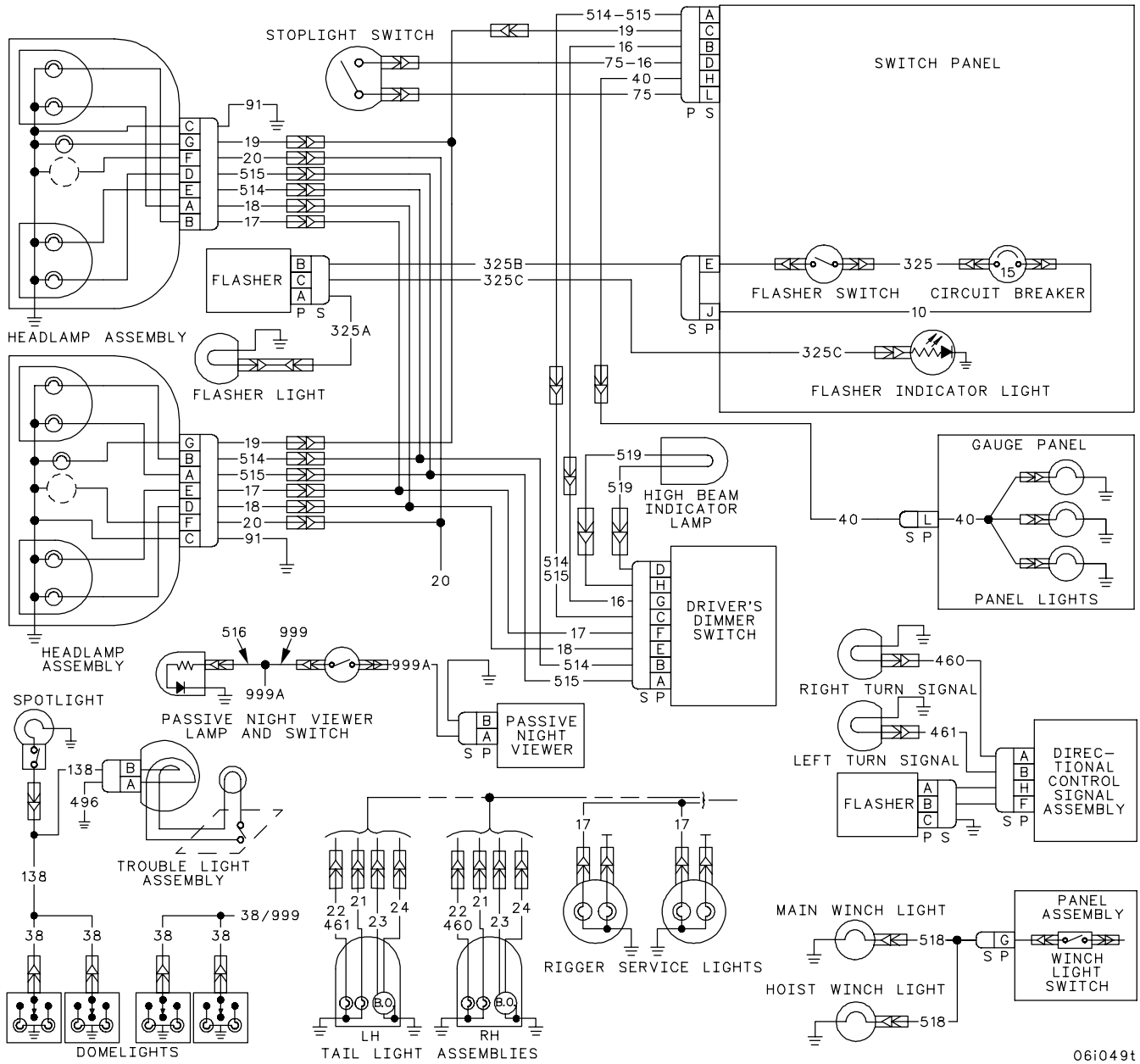
When the brake pedal is pressed and the turn signal control lever is in the center position (no turn signal operation), both stoplights will light. If the turn signal is in the right turn position when the brake pedal is pressed, only the left stoplight will light; and, in the left turn position only the right stoplight will light. When the turn signal control lever is in the right turn position, the right front turn signal lamp and the right rear turn signal lamp will flash. Likewise, when the turn signal control lever is in the left turn position, the left front and left rear turn signals will flash. If the turn signal control lever is pulled out, all four turn signal lamps flash. When the turn signal control lever is in either the right turn, left turn, or 4–way flasher position, the indicator on the directional signal control assembly will flash to signify turn signal operation.

LIGHTS OVERVIEW AND DIAGRAMS - CONTINUED 0108 00

When the main light switch is set to any position except OFF, the rear service lights are turned on by setting the REAR SERVICE light switch to the ON position.

The warning flasher operates independently of the other external lights. A separate system power (+24 - 28 V dc) input is supplied to the FLASHER switch through a 15-amp circuit breaker on the switch panel. When the FLASHER switch is set to the ON position, the flasher control is activated and the warning light flashes. Additionally, the flasher indicator light flashes whenever the warning flasher light is operating.

A diagram is included to show the relationship of the various lighting components.



END OF TASK

DOME LIGHT FAILS TO OPERATE. 0109 00

THIS WORK PACKAGE COVERS:

Dome Light Fails To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

NOTE

Dome light troubleshooting is identical for all dome lights. This procedure only covers procedures for one dome light.

1. Remove both dome light lamps (TM 9-2350-292-10).
2. Turn MASTER switch ON and dome light switch alternately to both ON position (TM 9-2350-292-10).
3. Place red multimeter lead on each dome light lamp connector pin (one at a time) and black lead to ground. Check for voltage.
4. Turn MASTER switch and dome light switch to OFF (TM 9-2350-292-10).

Is 24 V dc present at both checks?

yes → Tighten light mounting screws (WP 0283 00). Verify fault is corrected.

no →

B

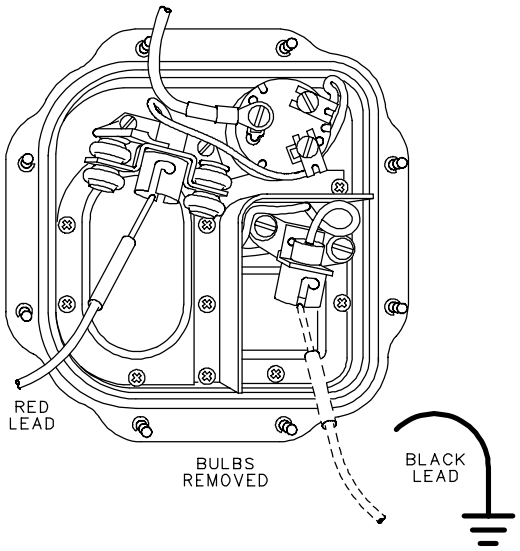
1. Turn MASTER switch ON and dome light switch alternately to both ON position (TM 9-2350-292-10).
2. Place red multimeter lead on each dome light lamp.
3. Hold lead at switch (one at a time) and black lead to ground. Check for voltage.
4. Turn MASTER switch and dome light switch to OFF (TM 9-2350-292-10).

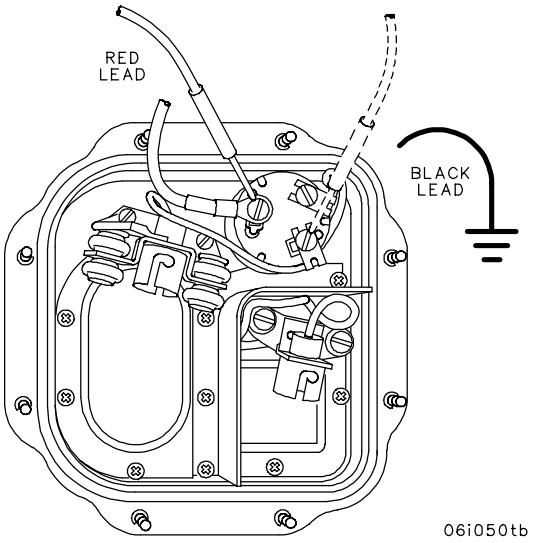
Is 24 V dc present at both checks?

yes → Replace bulb holder (WP 0283 00). Verify fault is corrected.

no →

CONTINUED ON NEXT PAGE





DOME LIGHT FAILS TO OPERATE - CONTINUED 0109 00

CONTINUED FROM STEP B

C

1. Disconnect lead 38 from dome light.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in lead 38 connector socket and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

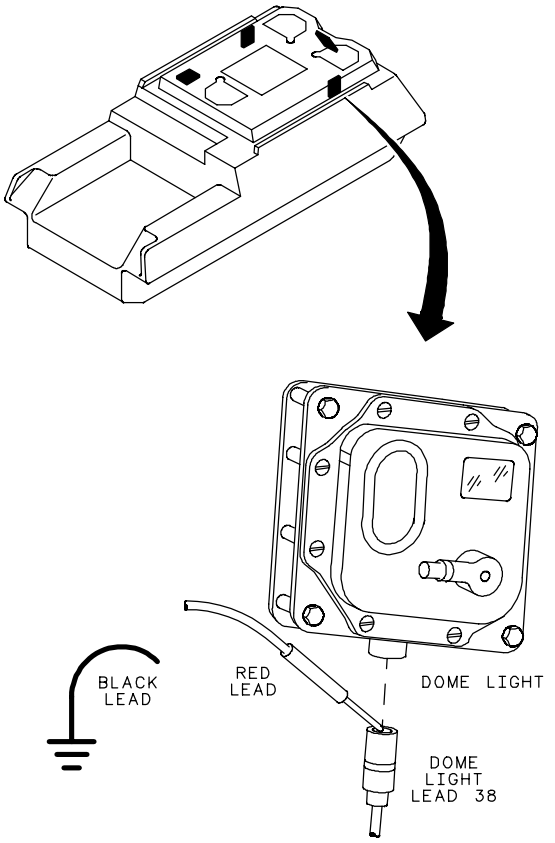
Is 24 V dc present?

yes

Replace switch (WP 0283 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0317 00, WP 0327 00) harness 4W105 (4W153). Verify fault is corrected.



06i050t

END OF TASK

PASSIVE NIGHT VIEWER OR PASSIVE NIGHT VIEWER INDICATOR LIGHT FAILS TO OPERATE. 0110 00

THIS WORK PACKAGE COVERS:

Passive Night Viewer Or Passive Night Viewer Indicator Light Fails To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

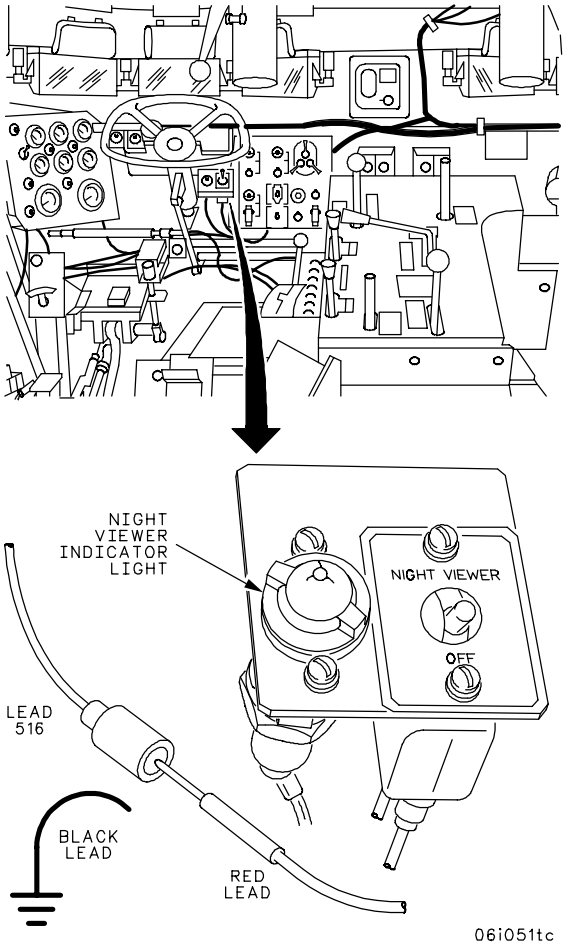
1. Disconnect lead 516 from viewer indicator light.
2. Turn MASTER switch and night viewer switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in lead 516 light connector socket and black lead to ground. Check for voltage.
4. Turn MASTER switch and night viewer switch OFF (TM 9-2350-292-10).
5. Reconnect lead 516 to viewer indicator light.

Is 24 V dc present?

yes

Replace indicator socket (WP 0266 00). Verify fault is corrected.

no



CONTINUED ON NEXT PAGE

PASSIVE NIGHT VIEWER OR PASSIVE NIGHT VIEWER INDICATOR LIGHT FAILS TO OPERATE - CONTINUED

0110 00

CONTINUED FROM STEP A

B

1. Disconnect lead 999A connector from switch panel side of night viewer switch.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in lead 999A connector socket and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.

C

1. Disconnect lead 999A from viewer side of night viewer switch.
2. Turn night viewer switch ON (TM 9-2350-292-10).
3. Place one multimeter lead on each night viewer switch connector pin. Check for continuity.

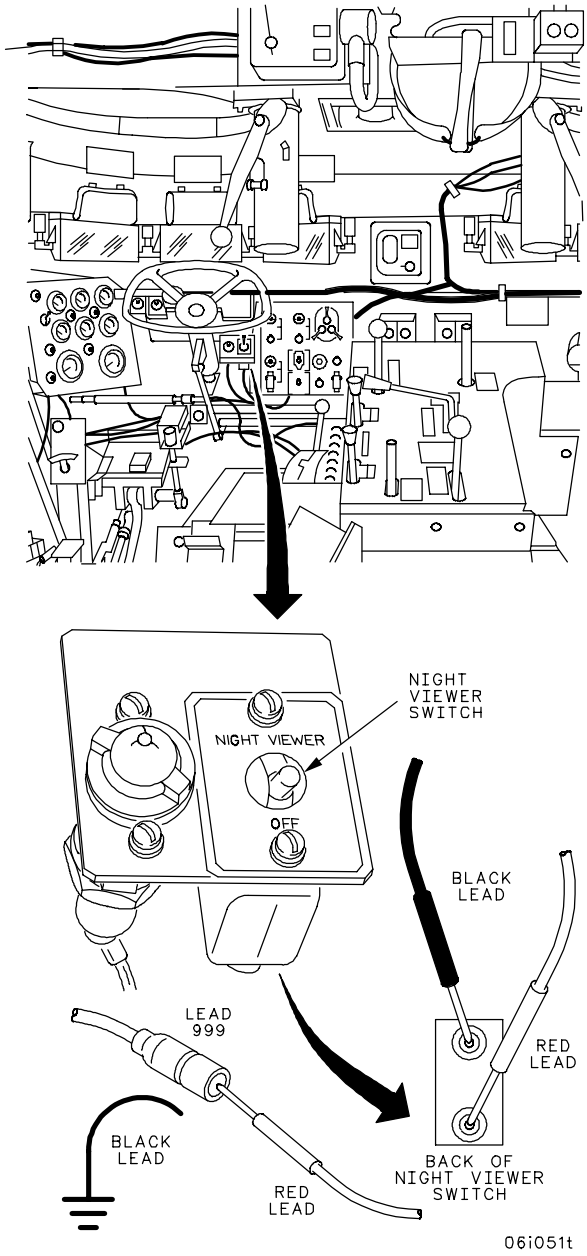
Is continuity present?

yes

no

Replace switch (WP 0266 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



PASSIVE NIGHT VIEWER OR PASSIVE NIGHT VIEWER INDICATOR LIGHT FAILS TO OPERATE - CONTINUED

0110 00

CONTINUED FROM STEP C

D

1. Disconnect harness 4W105 P4 from night viewer.
2. Turn MASTER switch and night viewer switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W105 P4 socket A and black lead to ground. Check for voltage.
4. Turn MASTER switch and night viewer switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.

E

Place one multimeter lead in harness 4W105 P4 socket B and other lead to ground. Check for continuity.

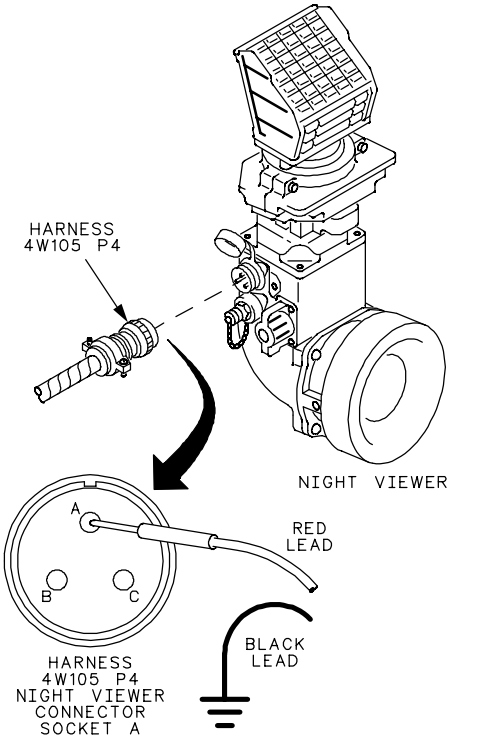
Is continuity present?

yes

no

Replace night viewer (WP 0266 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.



END OF TASK

ONE OR BOTH WINCH LIGHTS FAIL TO OPERATE. 0111 00

THIS WORK PACKAGE COVERS:

One Or both Winch Lghts Fail To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

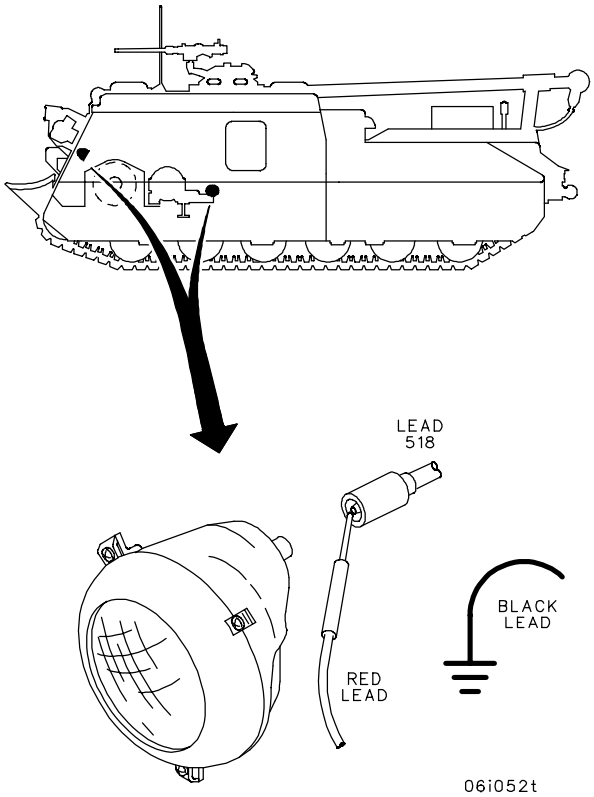
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Subfloor plates 4 and 18 removed (WP 0454 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



A

1. Disconnect lead 518 from both winch lights.
2. Turn MASTER switch and WINCH LT switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in each lead 518 connector socket (one at a time) and black lead to ground. Check for voltage.
4. Turn MASTER switch and WINCH LT switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Replace faulty winch light (WP 0282 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE

ONE OR BOTH WINCH LIGHTS FAIL TO OPERATE - CONTINUED 0111 00

CONTINUED FROM STEP A

B

1. Remove accessory panel (WP 0244 00).
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on terminal 2 of switch S1 lead 518 connector and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 518. Verify fault is corrected.

C

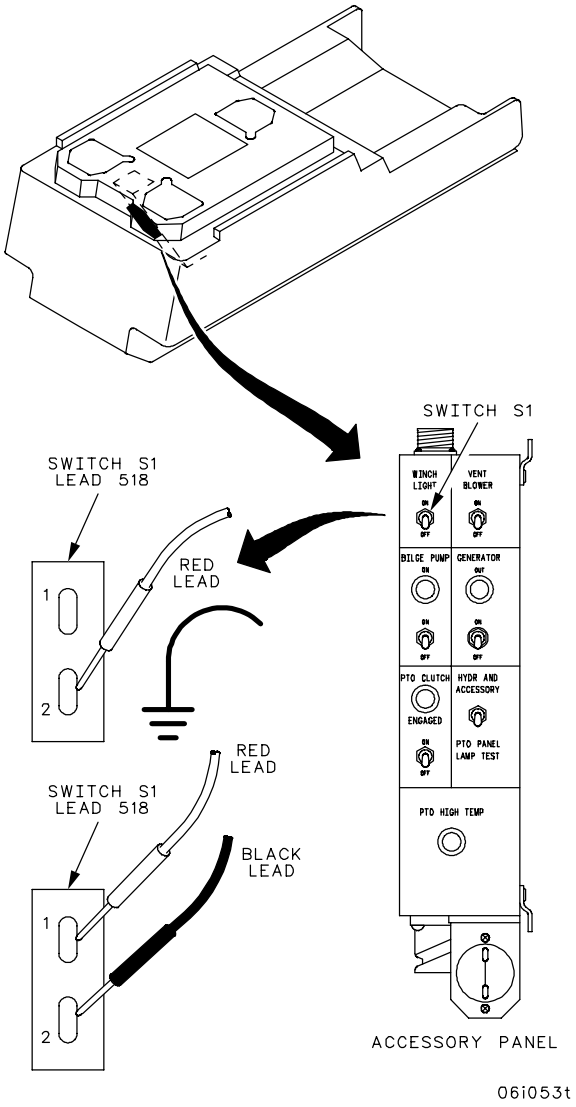
1. Turn WINCH LIGHT switch ON (TM 9-2350-292-10).
2. Place one multimeter lead on each switch S1 connector. Check for continuity.

Is continuity present?

yes

no

Replace switch S1 (WP 0244 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

ONE OR BOTH WINCH LIGHTS FAIL TO OPERATE - CONTINUED 0111 00

CONTINUED FROM STEP C

D

1. Disconnect harness 4W153 P1 from accessory panel.
2. Place one multimeter lead on switch S1 terminal 1 and other lead on pin G of receptacle J3. Check for continuity.

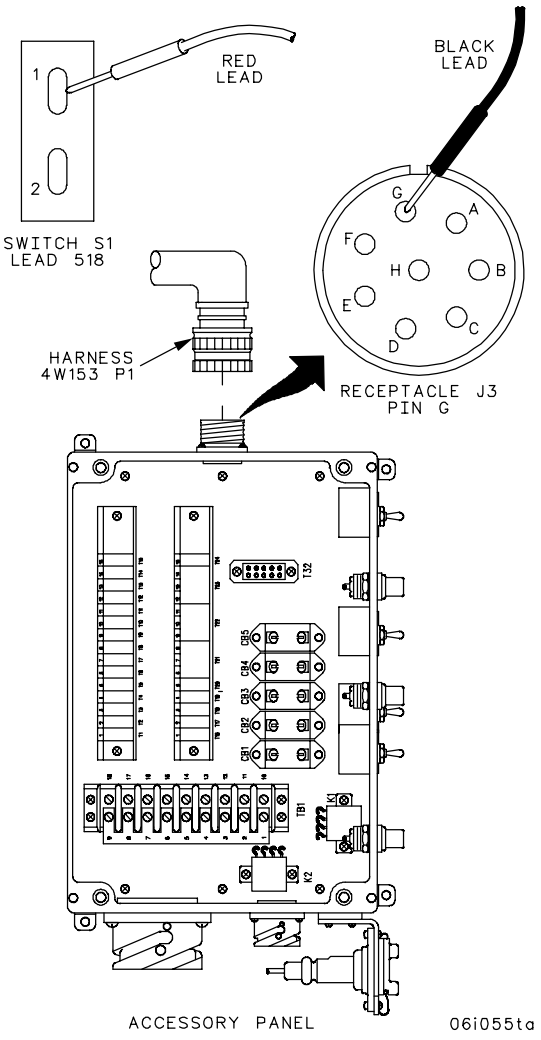
Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0327 00) harness 4W153. Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 518. Verify fault is corrected.



END OF TASK

FIXED SPOTLIGHT FAILS TO OPERATE. 0112 00

THIS WORK PACKAGE COVERS:
Fixed Spotlight Fails To Operate

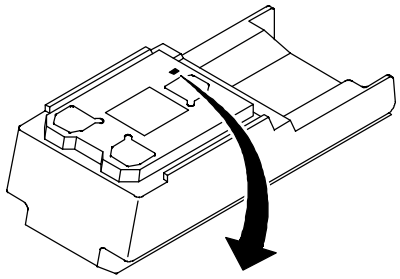
INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required
Two

WARNING
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

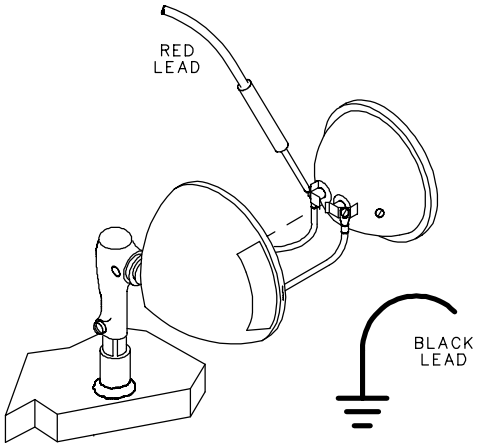


A
1. Remove spotlight lamp (WP 0281 00]).
2. Turn MASTER switch and spotlight switch ON (TM 9-2350-292-10).
3. Place red multimeter lead on black wire at lamp and black lead to ground. Check for voltage.
4. Turn MASTER switch and spotlight switch OFF (TM 9-2350-292-10).

Is 24 V dc present and lamp does not light?

yes — no

Go to Step C.



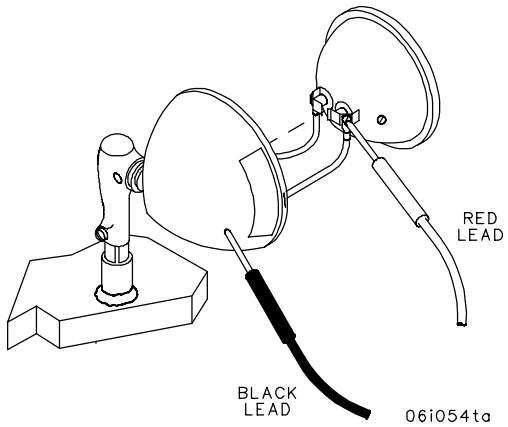
B
Place one multimeter lead on gray wire (ground wire) and the other on lamp shell. Check for continuity.

Is continuity present?

yes — no

Replace lamp (WP 0281 00). Verify fault is corrected.

Replace shell (WP 0281 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

FIXED SPOTLIGHT FAILS TO OPERATE - CONTINUED 0112 00

CONTINUED FROM STEP A

C Place one multimeter lead on black wire at lamp and the other lead on black wire at binding electric. Check for continuity.

Is continuity present?

yes

no

Replace black wire lamp and binding electric (WP 0281 00). Verify fault is corrected.

D

1. Remove spotlight handle (WP 0281 00).
2. Place one multimeter lead on wire contact at binding electric and the other lead on end of carbon rod at end of tube and housing assembly. Check for continuity.

Is continuity present?

yes

no

Replace tube and housing assembly (WP 0281 00). Verify fault is corrected.

E

1. Remove two screws and cap from handle assembly.
2. Remove one screw and drop switch out of handle assembly.
3. Disconnect harness 4W153 wire 138 from spotlight.
4. Place one multimeter lead on switch wire contact at switch and the other lead in socket end of switch wire. Check for continuity.

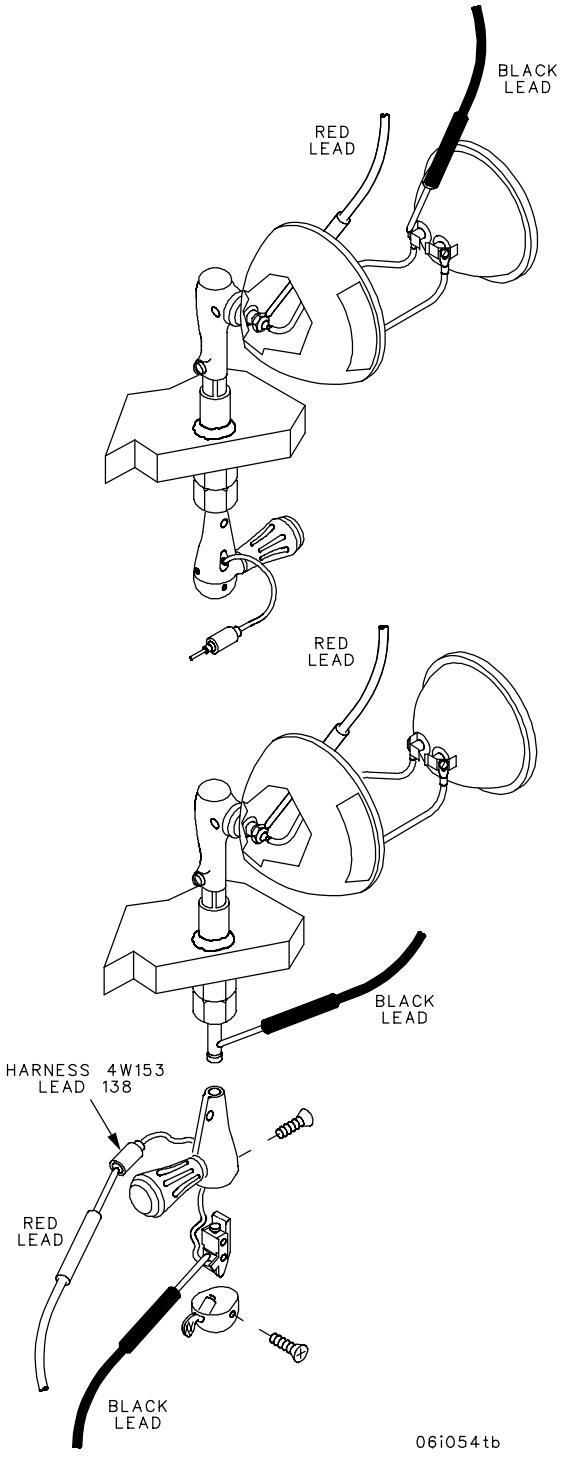
Is continuity present?

yes

no

Replace handle assembly (WP 0281 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



FIXED SPOTLIGHT FAILS TO OPERATE - CONTINUED 0112 00

CONTINUED FROM STEP E

F Place one multimeter on black wire contact at switch and the other multimeter on switch ground lead (push switch several times) while checking for continuity.

Is continuity present?

yes

no

Replace handle assembly (WP 0281 00). Verify fault is corrected.

G

1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Place multimeter red lead in lead 138 spotlight connector socket and black lead to ground. Check for voltage.
3. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair or replace spotlight (WP 0281 00). Verify fault is corrected.

H

1. Disconnect harness 4W153 P1 from accessory panel.
2. Place one multimeter lead in harness 4W153 lead 138 spotlight connector and other lead in harness 4W153 P1 socket F. Check for continuity.

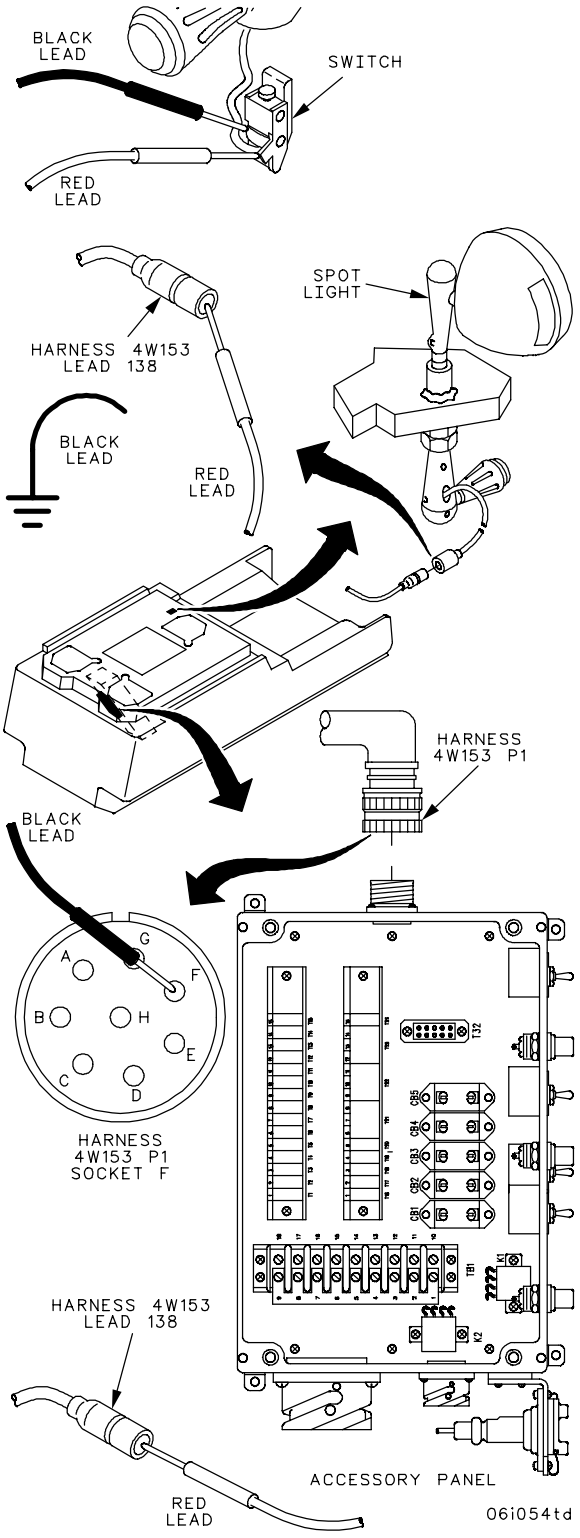
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 38-138 in accessory panel. Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0327 00) harness 4W153. Verify fault is corrected.



END OF TASK

TROUBLELIGHT FAILS TO OPERATE. 0113 00

THIS WORK PACKAGE COVERS:

Troublelight Fails To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

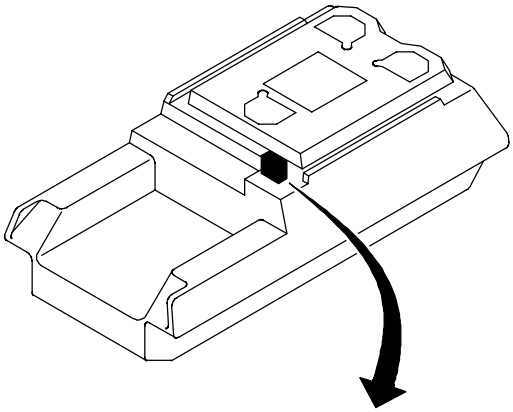
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



A

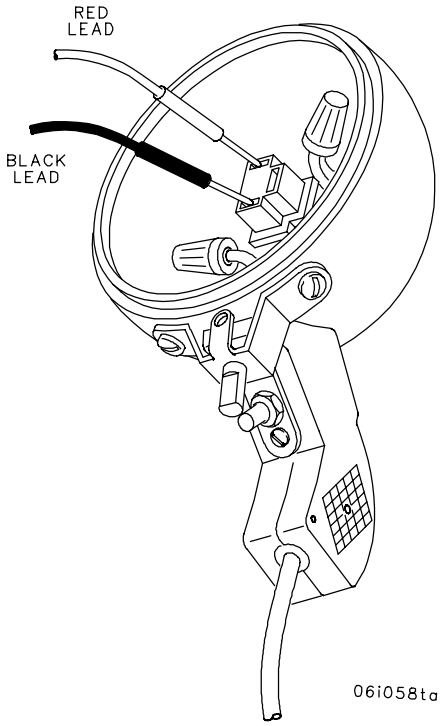
1. Remove trouble light lamp (WP 0280 00).
2. Turn MASTER switch and trouble light switch to ON (TM 9-2350-292-10).
3. Place red multimeter lead in DRIVE side of lamp holder socket and black lead in GROUND side. Check for voltage.
4. Turn MASTER switch and trouble light switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Replace trouble light lamp (WP 0280 00). Verify fault is corrected.

no



CONTINUED ON NEXT PAGE

TROUBLELIGHT FAILS TO OPERATE - CONTINUED 0113 00

CONTINUED FROM STEP A

B

1. Disconnect harness 4W153 from troublelight.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W153 socket B and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0327 00) harness 4W153. Verify fault is corrected.

C

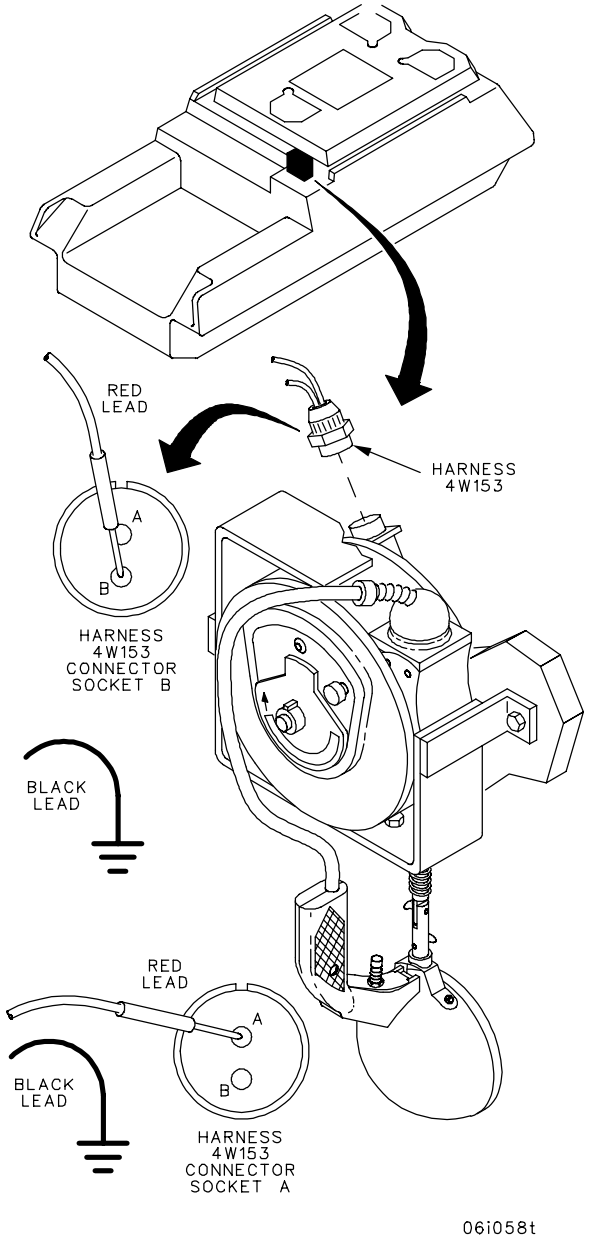
Place one multimeter lead in harness 4W153 socket A and other lead to ground. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0327 00) harness 4W153. Verify fault is corrected.



CONTINUED ON NEXT PAGE

TROUBLELIGHT FAILS TO OPERATE - CONTINUED 0113 00

CONTINUED FROM STEP C

D

1. Open trouble light handle (WP 0280 00).
2. Turn MASTER switch ON and trouble light switch ON (TM 9-2350-292-10).
3. Place red multimeter lead on white wire terminal at trouble light switch and black lead to ground. Check for voltage.
4. Turn MASTER switch and trouble light switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Replace trouble light (WP 0280 00). Verify fault is corrected.

E

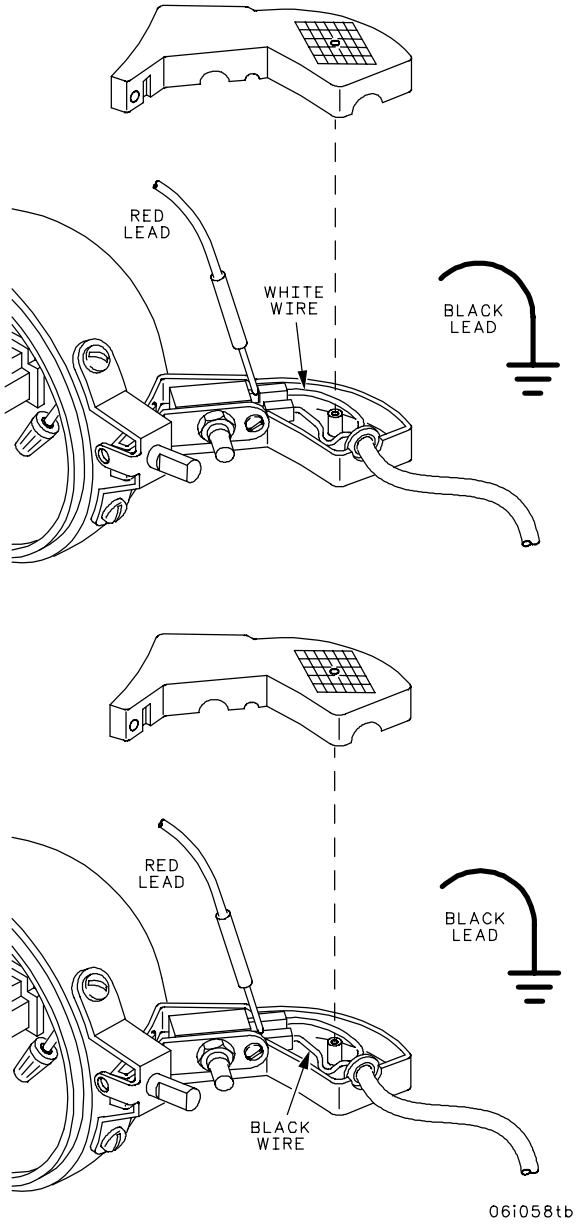
1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Place red multimeter lead on black wire terminal at trouble light switch and black lead to ground.
3. Turn trouble light switch ON (TM 9-2350-292-10).
4. Check for voltage. (Push switch twice while checking for voltage.)

Is 24 V dc present?

yes

no

Replace trouble light switch (WP 0280 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

TROUBLELIGHT FAILS TO OPERATE - CONTINUED 0113 00

CONTINUED FROM STEP E

F Place one multimeter lead on black wire terminal at trouble light switch and the other in IN side of lamp holder socket labeled DRIVE. Check for continuity.

Is continuity present?

yes

no

Replace black wire between switch and lamp socket holder (WP 0280 00). Verify fault is corrected.

G Place one multimeter lead in GROUND side of lamp holder socket and the other lead in pin A in trouble light harness connector. Check for continuity.

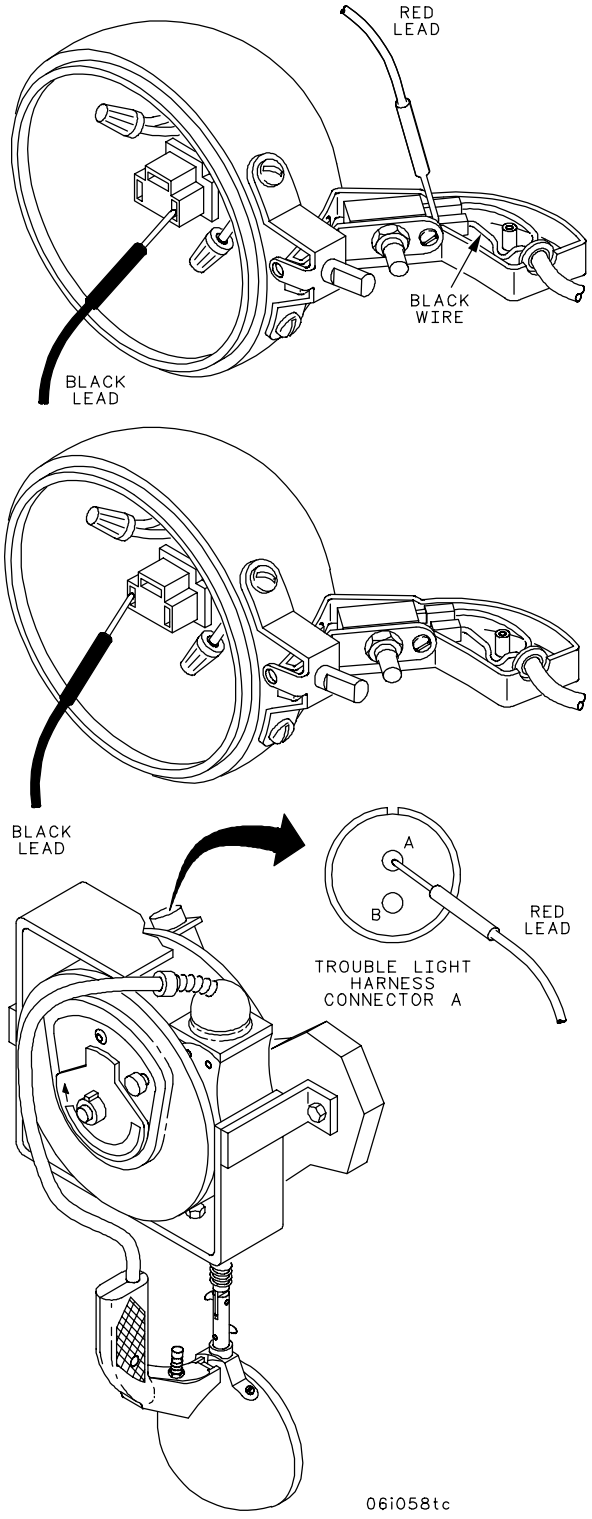
Is continuity present?

yes

no

Replace lamp holder socket (WP 0280 00). Verify fault is corrected.

Replace trouble light (WP 0280 00). Verify fault is corrected.



END OF TASK

GAUGE PANEL LIGHTS FAIL TO OPERATE. 0114 00

THIS WORK PACKAGE COVERS:

Gauge Panel Lights Fail to Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove three gauge panel lights and lens (TM 9-2350-292-10).
2. Turn MASTER switch and gauge panel lights switch ON (TM 9-2350-292-10).
3. Place red multimeter on lamp socket contact pin and black lead to ground. Check all three lamp sockets for voltage (one at a time).
4. Turn MASTER switch and gauge panel lights switch OFF (TM 9-2350-292-10).

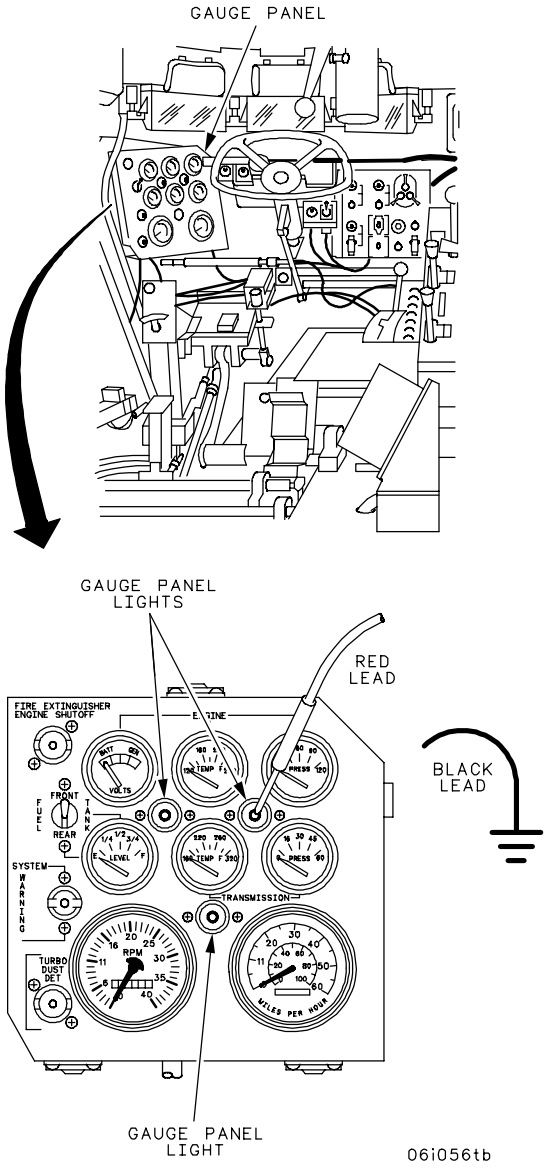
Is 24 V dc present at all lamp sockets?

yes

Remove gauge panel ground strap and clean mounting surfaces. Reinstall ground strap (WP 0243 00). Verify fault is corrected.

no

1. If 24 V dc is not present at any lamp socket, proceed to step B.
2. If 24 V dc is present at one or more lamp sockets, but not all, perform numbers 1 and 2 of step B then proceed to Step I.



CONTINUED ON NEXT PAGE

GAUGE PANEL LIGHTS FAIL TO OPERATE - CONTINUED 0114 00

CONTINUED FROM STEP A

B

1. Remove gauge panel from bracket (WP 0243 00).
2. Disconnect harness 4W103 P1 from gauge panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W103 P1 socket L and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes → Go to Step I.

no

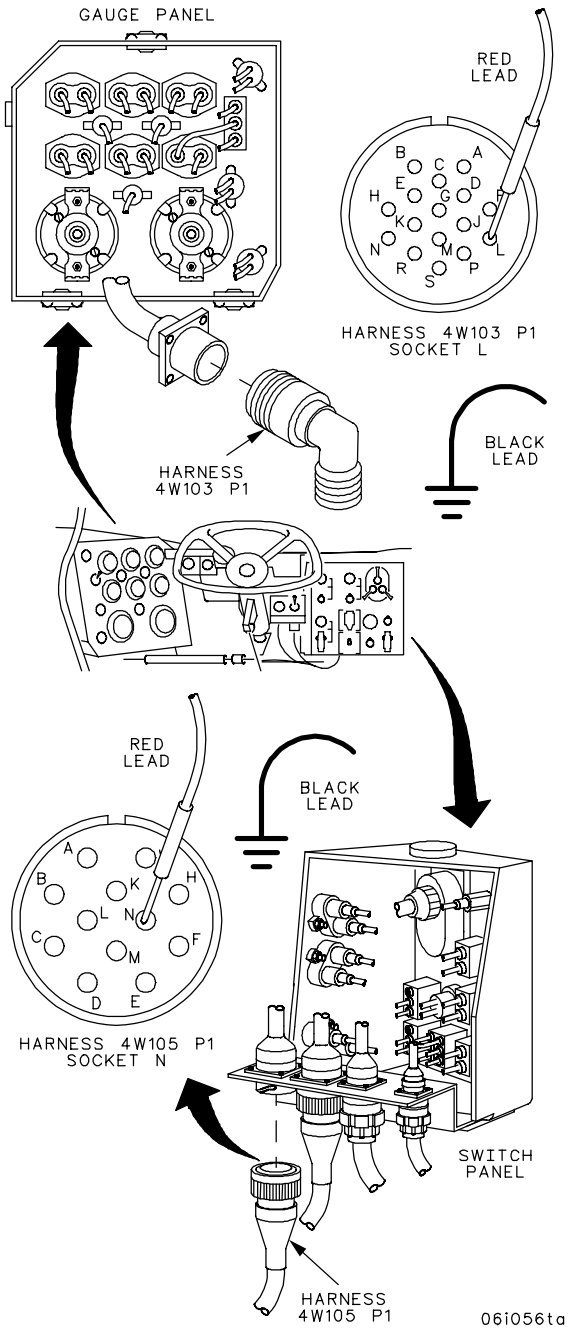
C

1. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
2. Disconnect harness 4W105 P1 from switch panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on harness 4W105 P1 socket N and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no → Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.



CONTINUED ON NEXT PAGE

GAUGE PANEL LIGHTS FAIL TO OPERATE - CONTINUED 0114 00

CONTINUED FROM STEP C

D

1. Disconnect harness 4W151 P1 from switch S8.
2. Place one multimeter lead on harness 4W151 J4 pin N and other lead in harness 4W151 P1 socket F. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

E

1. Place main light switch in any position except OFF (TM 9-2350-292-10).
2. Place one multimeter lead on switch S8 receptacle pin F and other lead on pin A. Check for continuity.

Is continuity present?

yes

no

Replace S8 switch (WP 0242 00). Verify fault is corrected.

F

1. Place auxiliary switch in PANEL BRT position.
2. Place one multimeter lead on switch S8 receptacle pin A and other lead on pin B. Check for continuity.

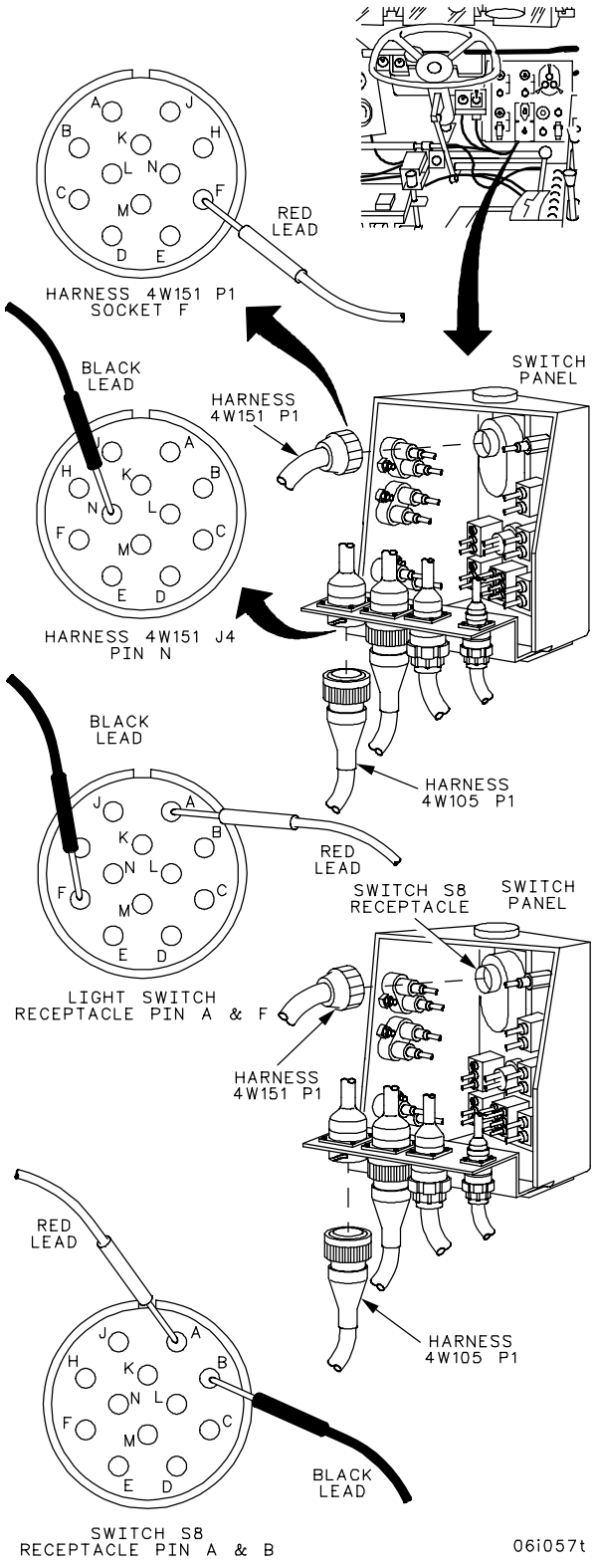
Is continuity present?

yes

no

Replace switch S8 (WP 0242 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



GAUGE PANEL LIGHTS FAIL TO OPERATE - CONTINUED 0114 00

CONTINUED FROM STEP F

G Place one multimeter lead in harness 4W151 P1 socket B and other lead on harness 4W151 J4 pin H. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

H

1. Reconnect harness 4W151 P1 to switch S8.
2. Place one multimeter lead in harness 4W105 P1 socket H and other lead in harness 4W103 P1 socket L. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

CONTINUED FROM STEP B

I

1. Disconnect lead 40 from light L4, L5 and L6 connectors.
2. Place one multimeter lead on harness 4W152 J1 pin L and other lead on each lead 40 light connector pin (one at a time). Check continuity.

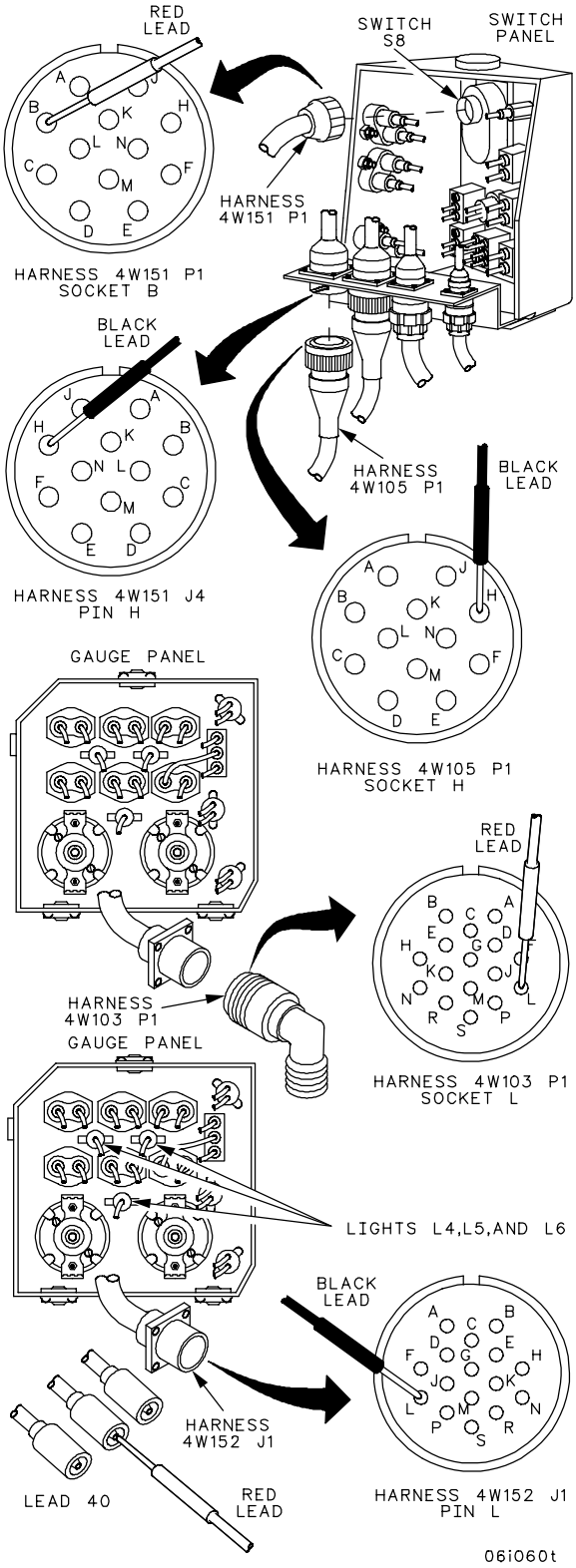
Is continuity present at all three connectors?

yes

Replace faulty panel light socket(s) (WP 0243 00). Verify fault is corrected.

no

Replace faulty lead 40 in gauge panel (WP 0243 00). Verify fault is corrected.



END OF TASK

SERVICE HEADLIGHTS FAIL TO OPERATE. 0115 00

THIS WORK PACKAGE COVERS:
Service Headlights Fail To Operate

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

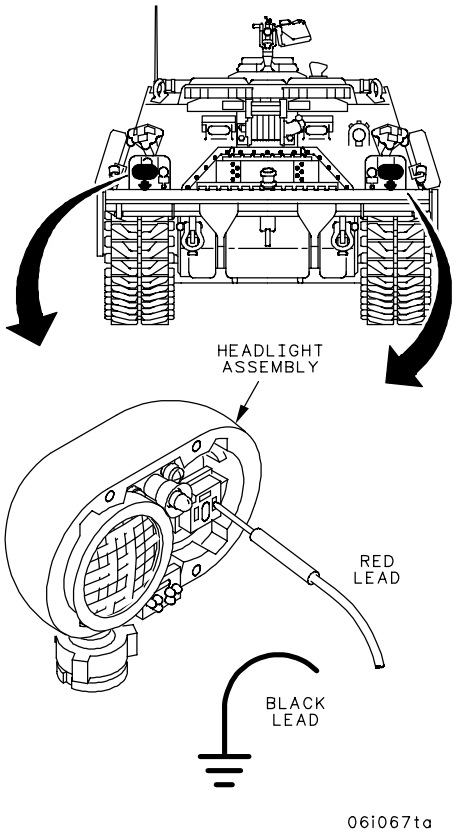
Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required
Two

WARNING
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

NOTE
If service headlights operate on low beam but not on high beam, go to Step C.

Left and right service headlights are checked in the same manner, except as noted. When testing the left service drive headlight the red multimeter lead must be placed in the left side of the lamp holder socket.



A

1. Remove right service headlight cover and sealed beam (WP 0275 00).
2. Turn MASTER switch and main headlight switch to ON and auxiliary switch to any position except PARK (TM 9-2350-292-10).
3. Place red multimeter lead in the right side of the lamp holder socket and the black lead to ground. Check for voltage (check left service drive headlight).
4. Turn MASTER switch and main headlight switch to OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Replace sealed beam (WP 0275 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE

SERVICE HEADLIGHTS FAIL TO OPERATE - CONTINUED 0115 00

CONTINUED FROM STEP A

B

1. Remove headlight assemblies (WP 0273 00).
2. Turn MASTER switch and main headlight switch to ON and auxiliary switch to any position except PARK (TM 9-2350-292-10).
3. Place red multimeter lead in each headlight connector socket (D left headlight and B right headlight, one at a time) and black lead to ground. Check for voltage.
4. Turn MASTER switch and main headlight switch to OFF (TM 9-2350-292-10).

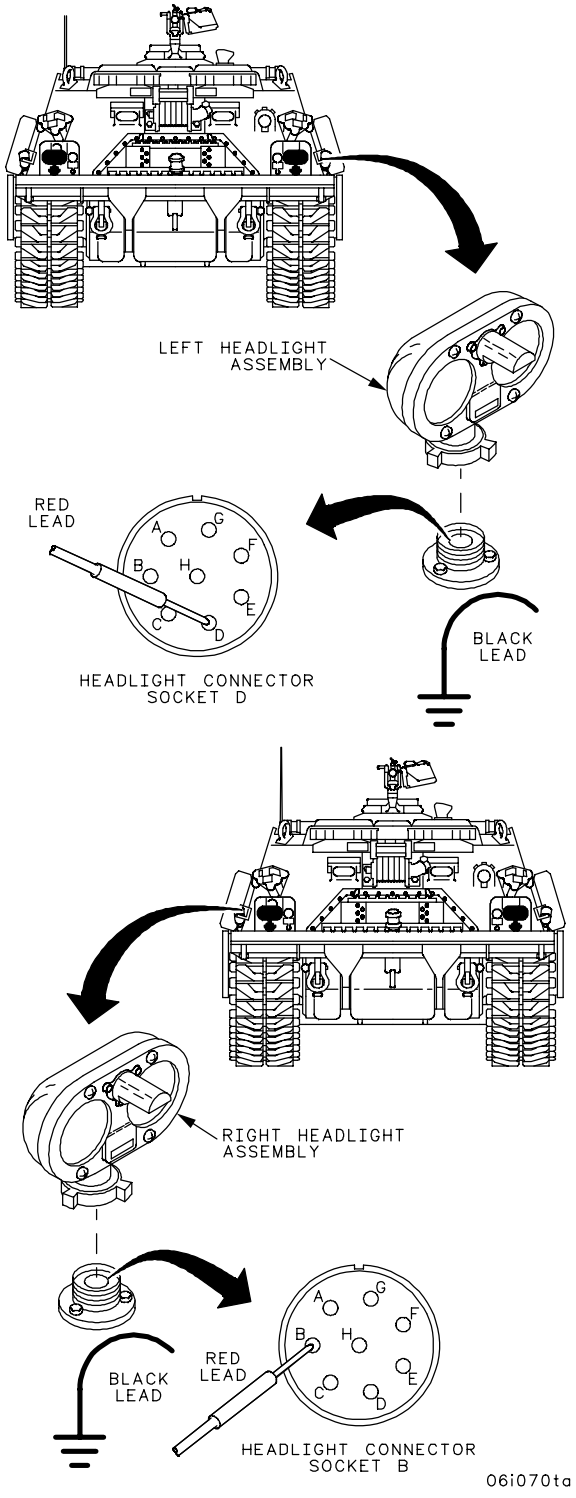
Is 24 V dc present at both checks?

yes

Replace faulty headlight assembly (WP 0273 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



SERVICE HEADLIGHTS FAIL TO OPERATE - CONTINUED 0115 00

CONTINUED FROM STEP B

C

1. Disconnect harness 4W107 P1 from dimmer switch.
2. Turn main light switch to SER DRIVE and auxiliary switch to any position except PARK.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W107 P1 socket G and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

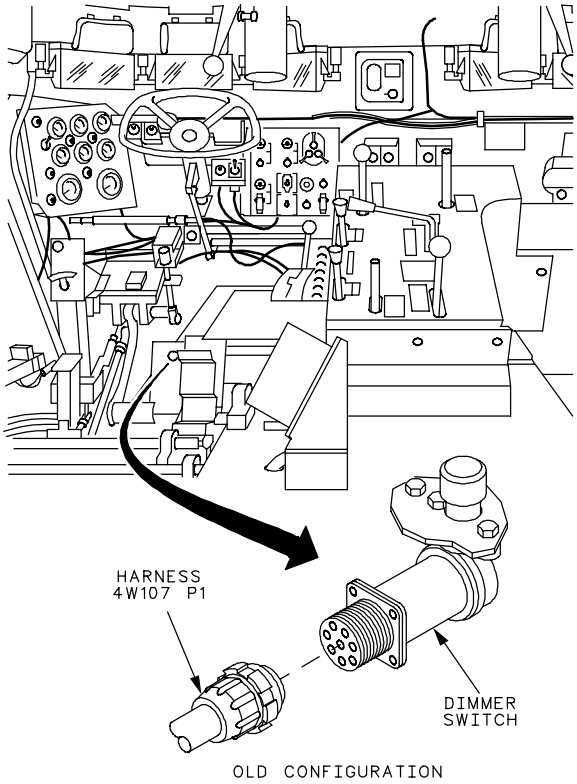
Is 24 V dc present?

yes

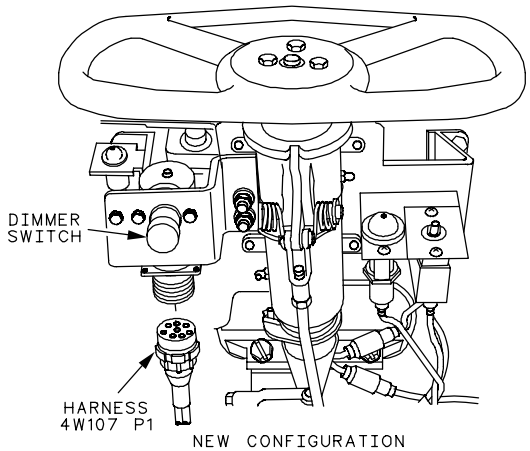
Go to Step I, number 2.

no

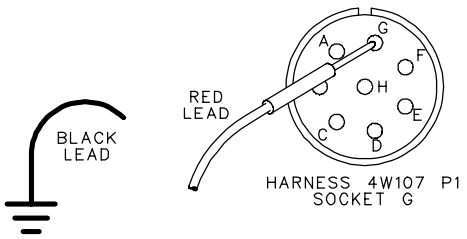
CONTINUED ON NEXT PAGE



OLD CONFIGURATION



NEW CONFIGURATION
WITH BRAKE MODULATION



HARNESS 4W107 P1
SOCKET G

06i061ta

SERVICE HEADLIGHTS FAIL TO OPERATE - CONTINUED 0115 00

CONTINUED FROM STEP C

D

1. Remove switch panel from bracket (WP 00242 00) and reconnect ground strap to switch panel.
2. Disconnect harness 4W105 P1 at switch panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W105 P1 socket N and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0324 00) harness 4W127. Verify fault is corrected.

E

1. Disconnect harness 4W151 P1 at switch S8.
2. Place one multimeter lead on harness 4W151 J4 pin N and other lead in harness 4W151 P1 socket F. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

F

Place one multimeter on switch S8 receptacle pin F and other lead on pin M. Check for continuity.

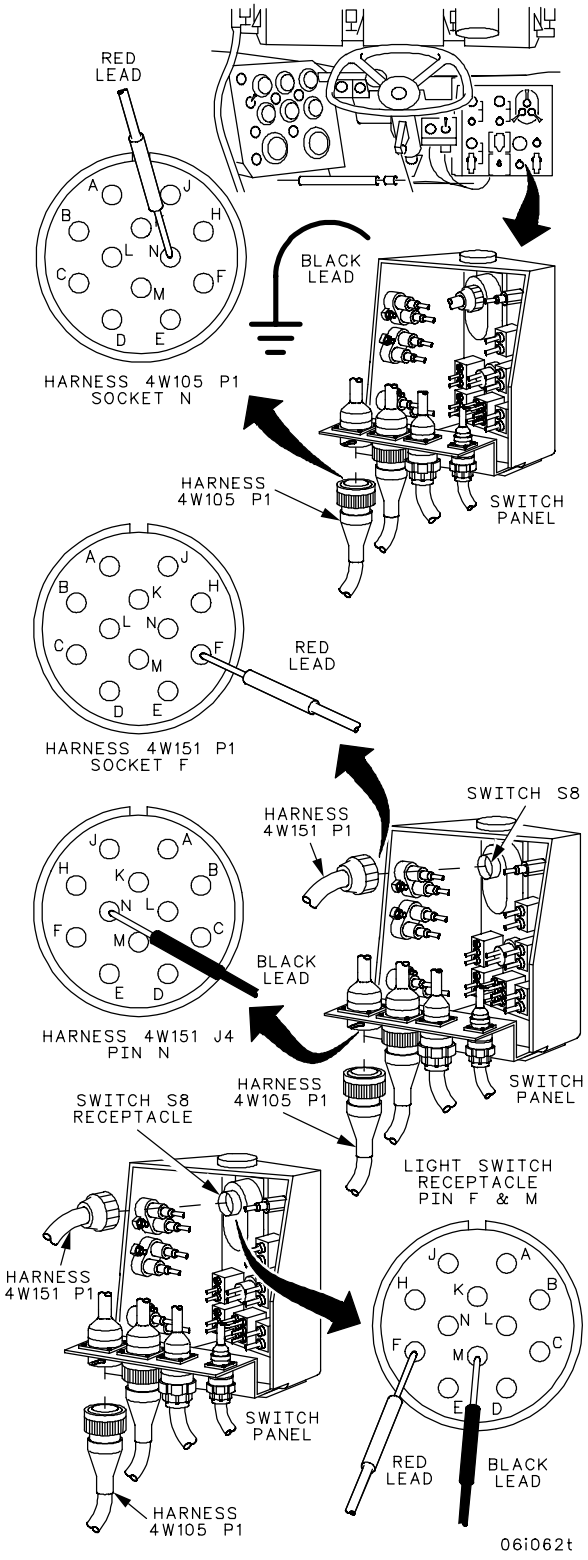
Is continuity present?

yes

no

Repair or replace switch S8 (WP 0242 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



SERVICE HEADLIGHTS FAIL TO OPERATE - CONTINUED 0115 00

CONTINUED FROM STEP F

G Place one multimeter lead on harness 4W151 J4 pin B and other lead in harness 4W151 P1 socket M. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

H
1. Reconnect harness 4W151 P1 to switch S8.
2. Place one multimeter lead in harness 4W105 P1 socket B and other lead in harness 4W107 P1 socket G. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.

CONTINUED FROM STEP C

I
1. Reconnect harness 4W105 P1 to switch panel.
2. Place one multimeter lead on dimmer switch receptacle pin G and other lead on pin F and H (one at a time). Press dimmer switch twice while on each pin. Check for continuity.

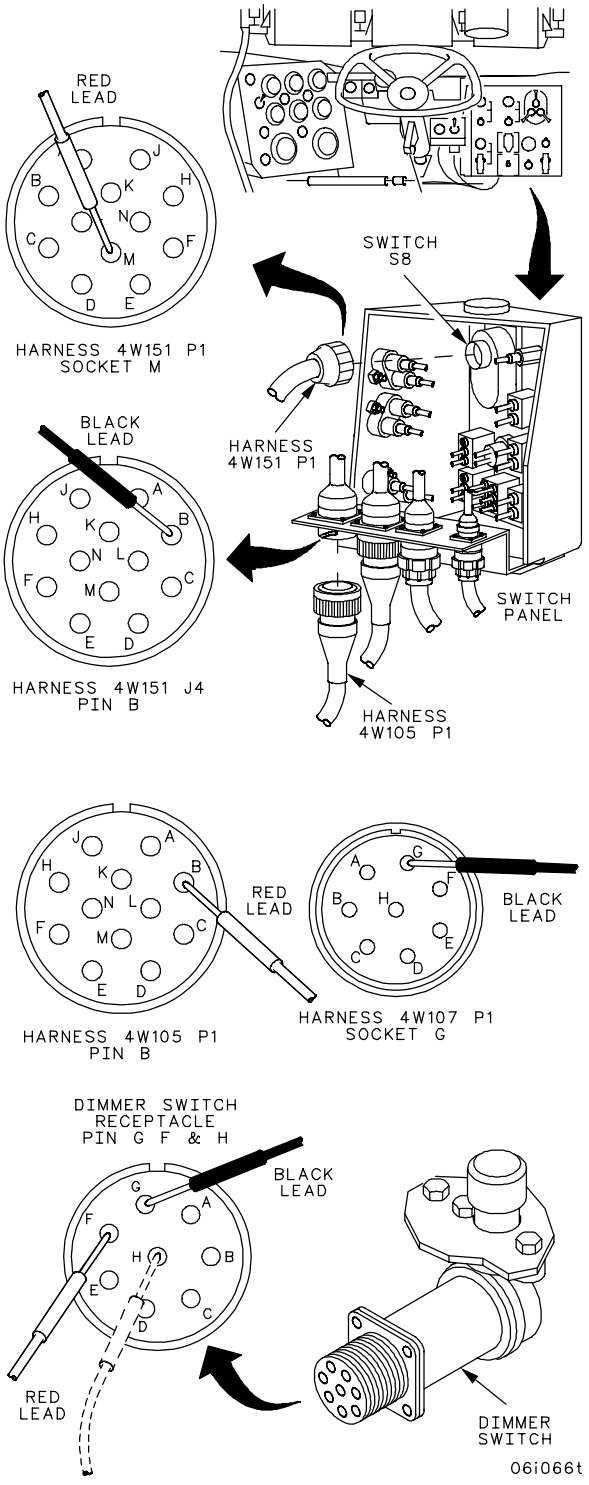
Is continuity present at both pins F and H when dimmer switch is pressed the first or second time, but not both times?

yes

no

Replace dimmer switch (WP 0260 00 or WP 0261 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



SERVICE HEADLIGHTS FAIL TO OPERATE - CONTINUED 0115 00

CONTINUED FROM STEP I

J Place one multimeter lead on dimmer switch receptacle pin G and other lead on pin E and press dimmer switch twice. Check for continuity.

Is continuity present when dimmer switch is pressed the first or second time, but not both times?

yes

no

Replace dimmer switch (WP 0260 00 or WP 0261 00). Verify fault is corrected.

K
1. Remove headlight assemblies (WP 0273 00).
2. Place one multimeter lead in harness 4W107 P1 socket F and other lead in right headlight connector socket B and left headlight connector socket E (one at a time). Check for continuity.

Is continuity present for both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0319 00) harness 4W107. Verify fault is corrected.

L Place one multimeter lead in harness 4W107 P1 socket E and other lead in right headlight connector socket A and left headlight connector socket D (one at a time). Check for continuity.

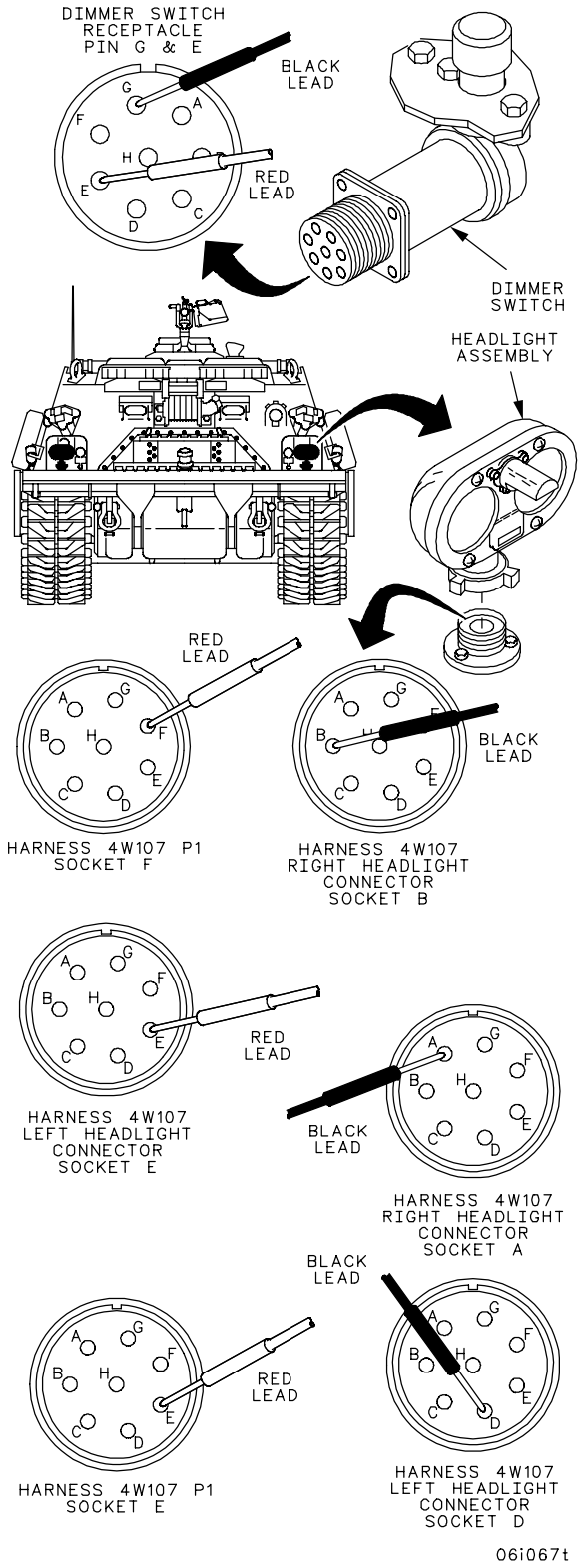
Is continuity present for both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0319 00) harness 4W107. Verify fault is corrected.

CONTINUED ON NEXT PAGE



SERVICE HEADLIGHTS FAIL TO OPERATE - CONTINUED 0115 00

CONTINUED FROM STEP L

M

1. Disconnect connector from high beam indicator.
2. Place one multimeter lead in harness 4W107 P1 socket H and other lead in indicator left (facing) socket. Check for continuity.
3. Place one multimeter lead in harness 4W107 P1 socket D and other lead in other indicator socket. Check for continuity.

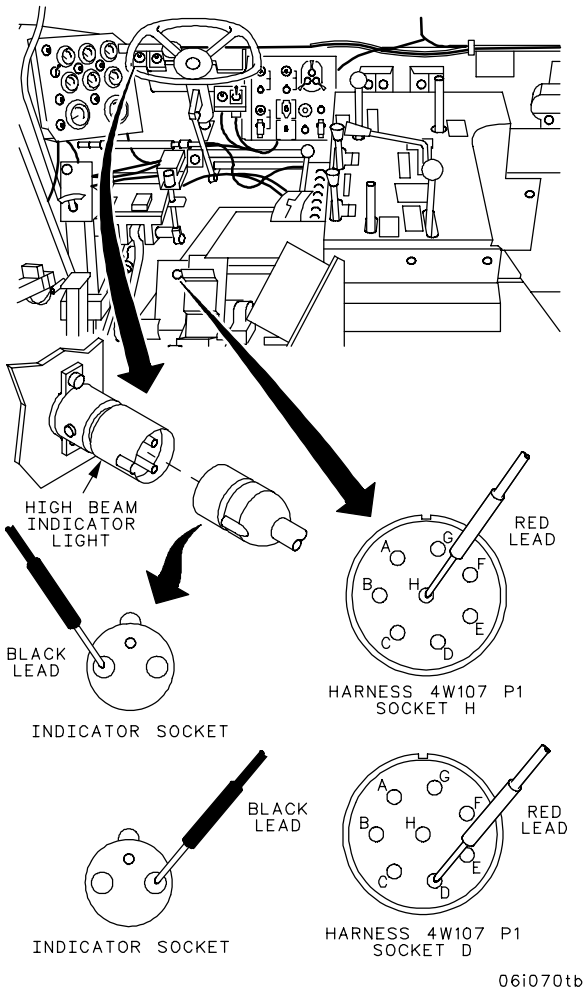
Is continuity present for both checks?

yes

Replace high beam indicator light socket assembly (WP 0249 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0319 00) harness 4W107. Verify fault is corrected.



END OF TASK

STOPLIGHT ASSEMBLIES FAIL TO OPERATE. 0116 00

THIS WORK PACKAGE COVERS:

Stoplight Assemblies Fail To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

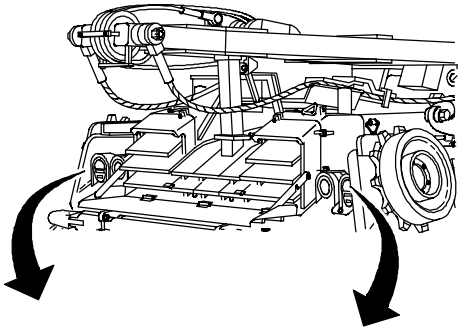
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Air intake grilles above battery compartment open (TM 9-2350-292-10)

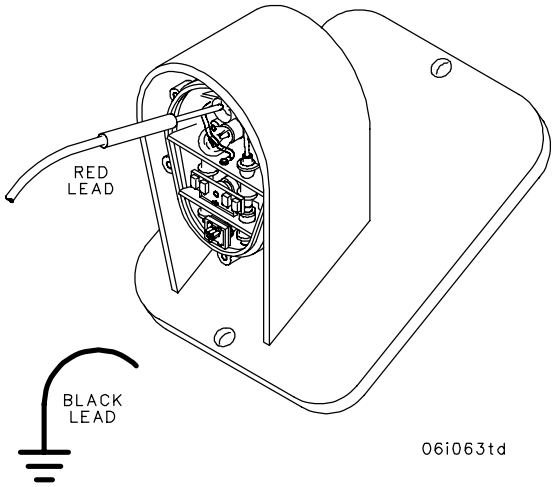
Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.





A

1. Remove left and right stoplight door assemblies and stoplight lamps.
2. Turn MASTER switch ON and place main light switch to SER DRIVE (TM 9-2350-292-10).
3. Place red multimeter lead on contact in stoplight lamp holder socket and black lead to ground. Check for voltage. (Check both lights.)
4. Turn MASTER switch and main light switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Replace stoplight lamps (WP 0276 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE

STOPLIGHT ASSEMBLIES FAIL TO OPERATE - CONTINUED 0116 00

CONTINUED FROM STEP A

B

1. Disconnect harness 3W142 P1 from bulkhead disconnect.
2. Turn MASTER switch ON and turn main light switch to SER DRIVE (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W127 P4 socket D and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Go to Step H, number 3.

no

C

1. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
2. Disconnect harness 4W105 P1 from switch panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W105 P1 socket N and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

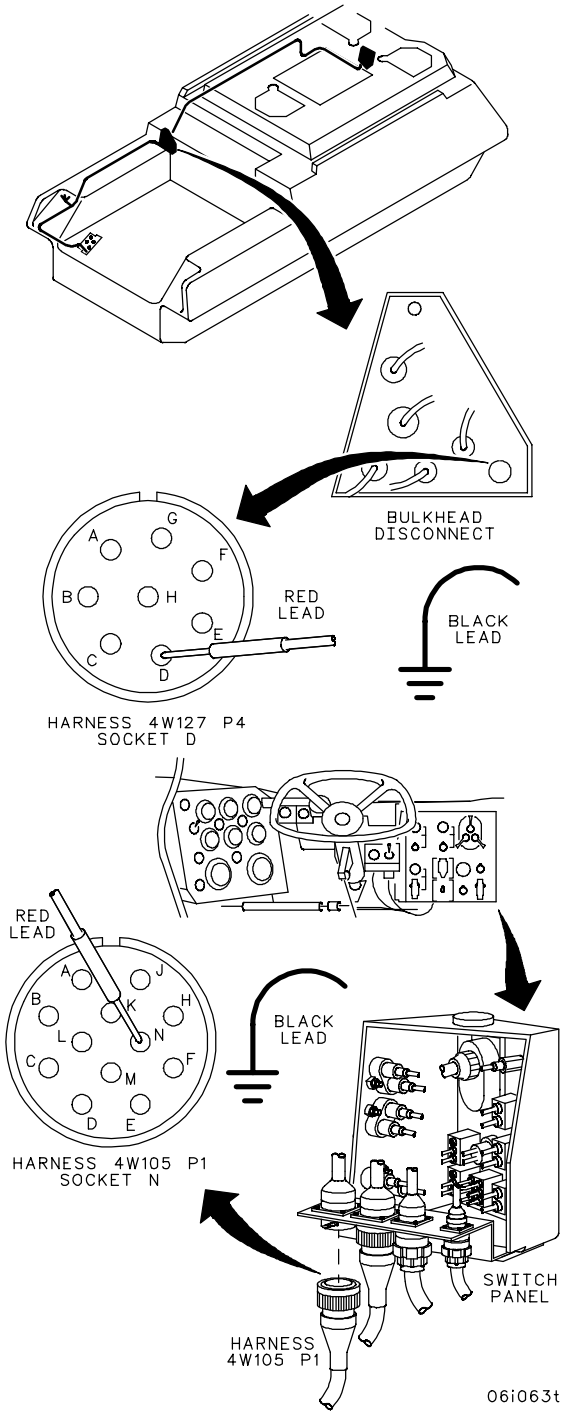
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0314 00) harness 4W100. Verify fault is corrected.

CONTINUED ON NEXT PAGE



STOPLIGHT ASSEMBLIES FAIL TO OPERATE - CONTINUED 0116 00

CONTINUED FROM STEP C

D

1. Disconnect harness 4W151 P1 from switch S8.
2. Place one multimeter lead on harness 4W151 J4 pin N and other lead in harness 4W151 P1 socket F. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

E

Place one multimeter lead on S8 switch receptacle pin F and other lead on switch S8 receptacle pin H. Check for continuity.

Is continuity present?

yes

no

Replace switch S8 (WP 0242 00). Verify fault is corrected.

F

1. Disconnect harness 4W127 P1 from switch panel.
2. Place one multimeter lead in harness 4W151 P1 socket H and other lead on harness 4W151 J2 pin D. Check for continuity.

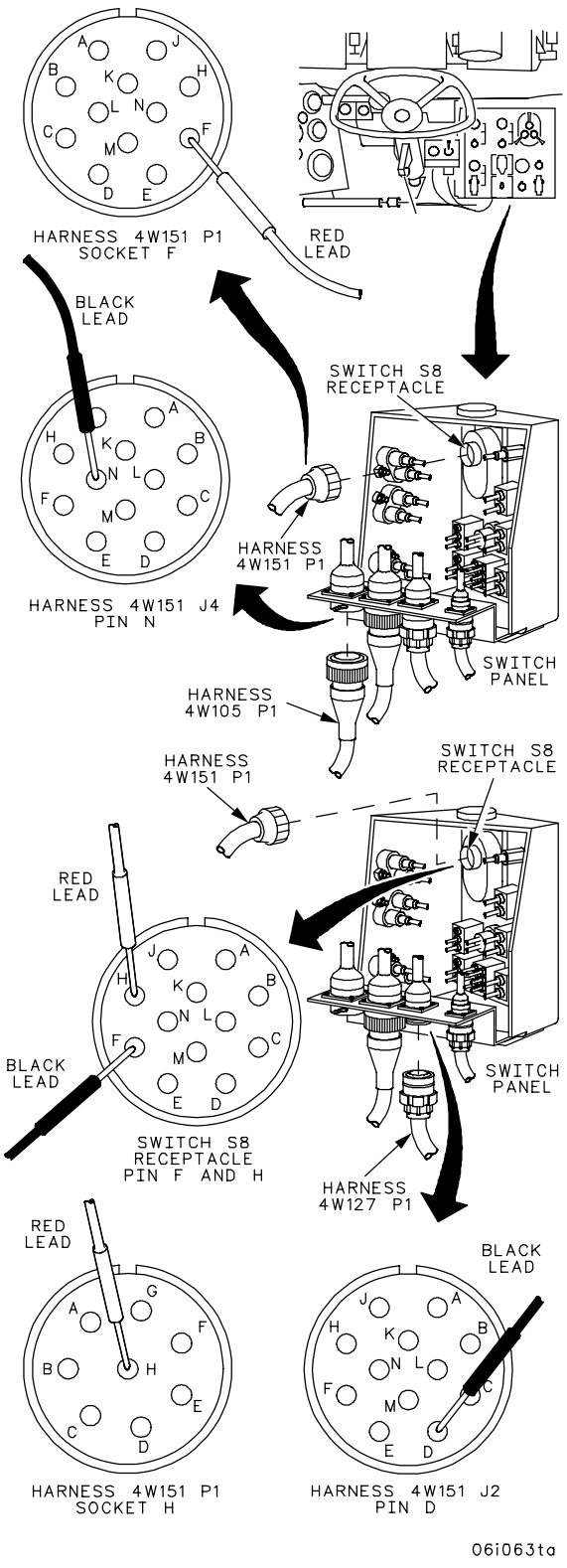
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

CONTINUED ON NEXT PAGE



STOPLIGHT ASSEMBLIES FAIL TO OPERATE - CONTINUED 0116 00

CONTINUED FROM STEP F

G

1. Reconnect harness 4W151 P1 to light switch.
2. Place one multimeter lead in harness 4W127 P2 socket D and other lead in harness 4W127 P4 pin D. Check for continuity.

Is continuity present?

yes

CONTINUED FROM STEP B

no

Repair (WP 0290 00) or replace (WP 0324 00) harness 4W127. Verify fault is corrected.

H

1. Reconnect harness 3W142 P1 to bulkhead disconnect.
2. Reconnect harness 4W105 P1 and 4W127 P2 to switch panel (if disconnected).
3. Remove right side and left side access covers holding stoplight assemblies.
4. Disconnect lead 21 from right and left stoplight assemblies below access covers.
5. Turn MASTER switch ON and place light switch in the SERVICE DRIVE position (TM 9-2350-292-10).
6. Place multimeter red lead in both lead 21 connectors (one at a time) while holding black lead to ground. Check for voltage.
7. Turn MASTER switch OFF (TM 9-2350-292-10).

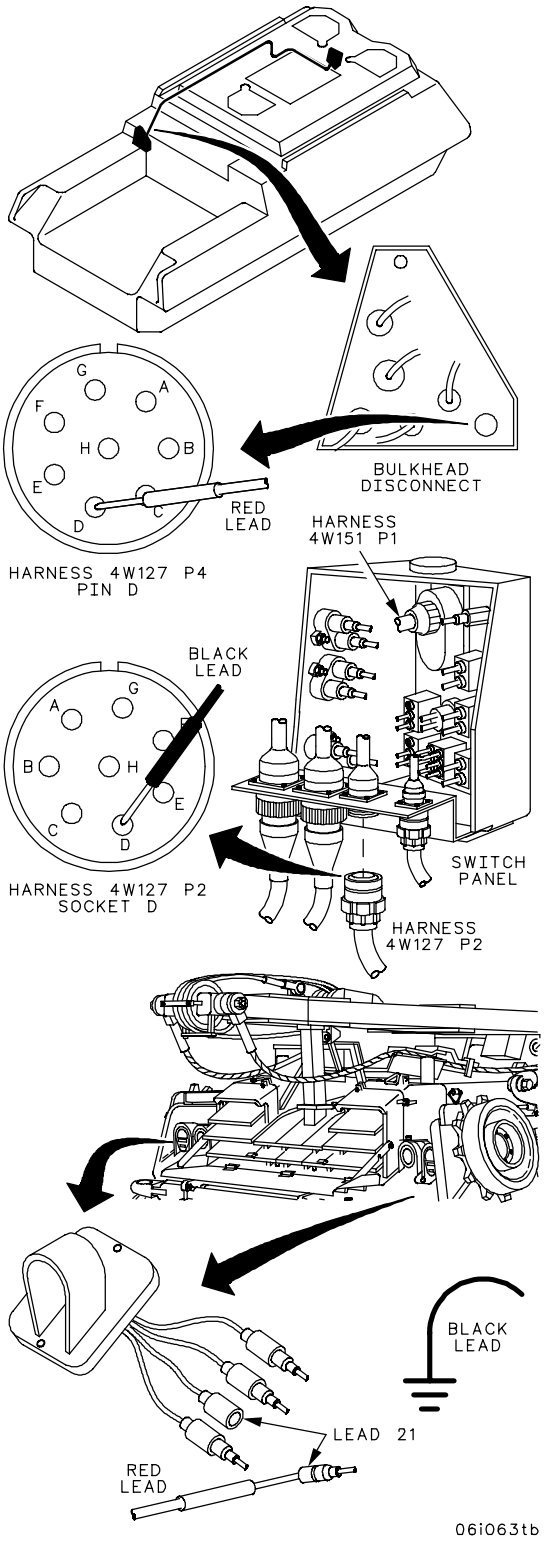
Is 24 V dc present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0294 00) harness 3W142. Verify fault is corrected.

CONTINUED ON NEXT PAGE



STOPLIGHT ASSEMBLIES FAIL TO OPERATE - CONTINUED 0116 00

CONTINUED FROM STEP H

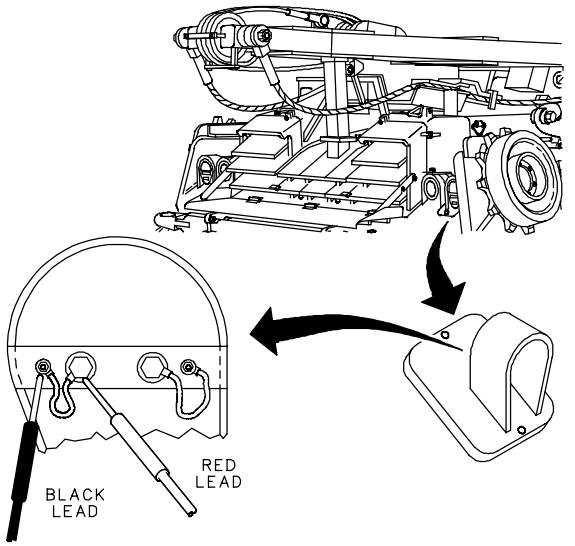
I	Place one multimeter lead on each stoplight assembly ground stud (one at a time) while holding other lead to each light grounding point. Check for continuity.
Is continuity present at both checks?	

yes

Replace stoplight assembly (WP 0276 00). Verify fault is corrected.

no

Replace faulty ground lead (WP 0276 00). Verify fault is corrected.



06i063tc

END OF TASK

STOPLIGHTS FAIL TO OPERATE. 0117 00

THIS WORK PACKAGE COVERS:

Stoplights Fail To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU cover removed (WP 0413 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove left and right stoplight door assemblies and stoplight lamps (WP 0276 00).
2. Turn MASTER switch ON and main light switch to STOPLIGHT position (TM 9-2350-292-10).
3. Place red multimeter lead on stoplight lamp holder contact and black lead to ground. Check for voltage.
4. Turn MASTER switch and main light switch to OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes — Replace stoplight lamp (WP 0276 00). Verify fault is corrected.

no

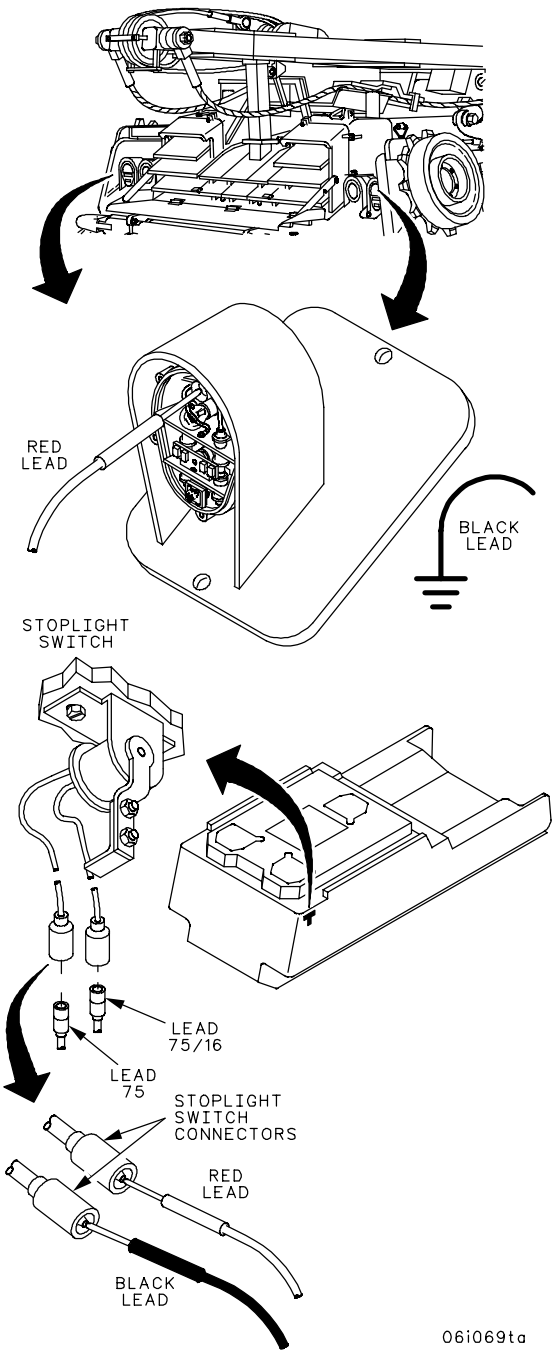
B

1. Remove subfloor plate #16 (WP 0454 00).
2. Disconnect two circuit 75 wires of harness 4W105 from stoplight switch (WP 0250 00).
3. Place one multimeter lead in one stoplight switch connector and place the other lead in the other stoplight switch connector.
4. Lock brake pedal (TM 9-2350-292-10). Check for continuity.
5. Release brake pedal (TM 9-2350-292-10) and check for continuity.

Is continuity present when brake pedal is locked and not present when brake pedal is released?

yes

no — Replace stoplight switch (WP 0250 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

STOPLIGHTS FAIL TO OPERATE - CONTINUED 0117 00

CONTINUED FROM STEP B

C

1. Disconnect harness 4W127 P1 from directional signal control assembly.
2. Turn MASTER switch ON and turn main light switch to STOPLIGHT position (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W127 P1 socket D and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes — Go to Step J.

no

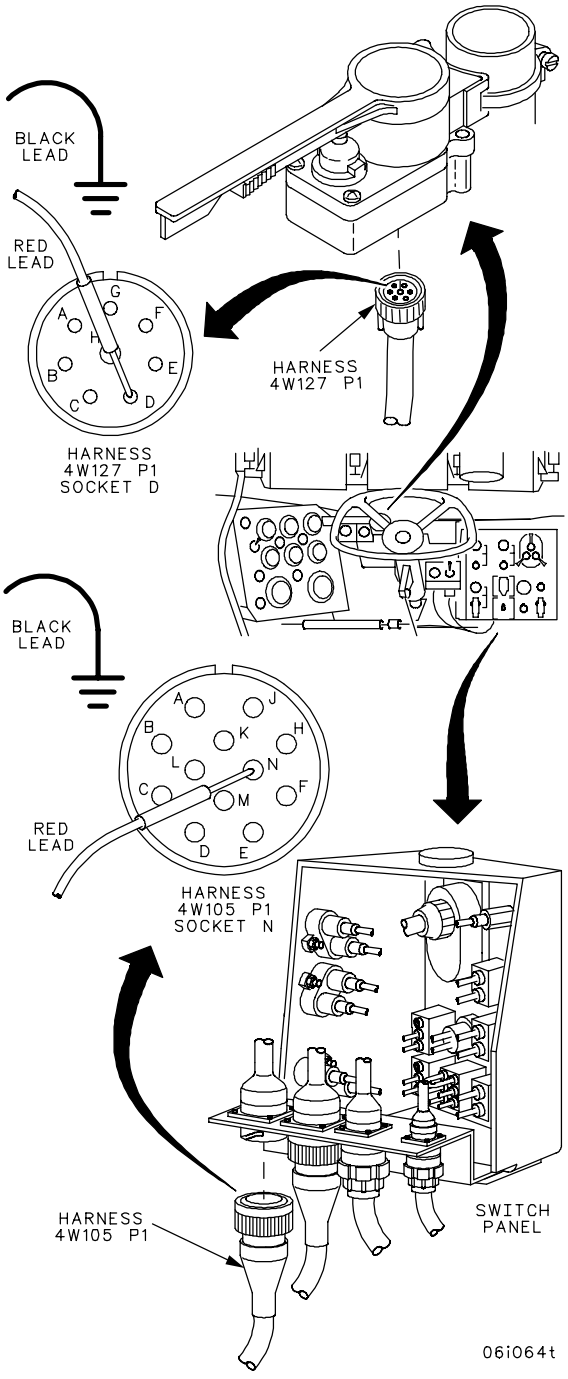
D

1. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
2. Disconnect harness 4W105 P1 from switch panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on harness 4W105 P1 socket N and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no — Repair (WP 0290 00) or replace (WP 0314 00) harness 4W100. Verify fault is corrected.



CONTINUED ON NEXT PAGE

STOPLIGHTS FAIL TO OPERATE - CONTINUED 0117 00

CONTINUED FROM STEP D

E

1. Disconnect harness 4W151 P1 from switch S8.
2. Place one multimeter lead on 4W151 J4 pin N and other lead in harness 4W151 P1 socket F. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

F

1. Place one multimeter lead on switch S8 receptacle pin F and other lead on pin A. Check for continuity.
2. Place one multimeter lead on switch S8 receptacle pin K and other lead on pin C. Check for continuity.

Is continuity present at both checks?

yes

no

Replace S8 switch (WP 0242 00). Verify fault is corrected.

G

1. Place one multimeter lead in harness 4W151 P1 socket A and other lead on harness 4W151 J4 pin D. Check for continuity.
2. Place one multimeter lead in harness 4W151 P1 socket K and other lead on harness 4W151 J4 pin L. Check for continuity.

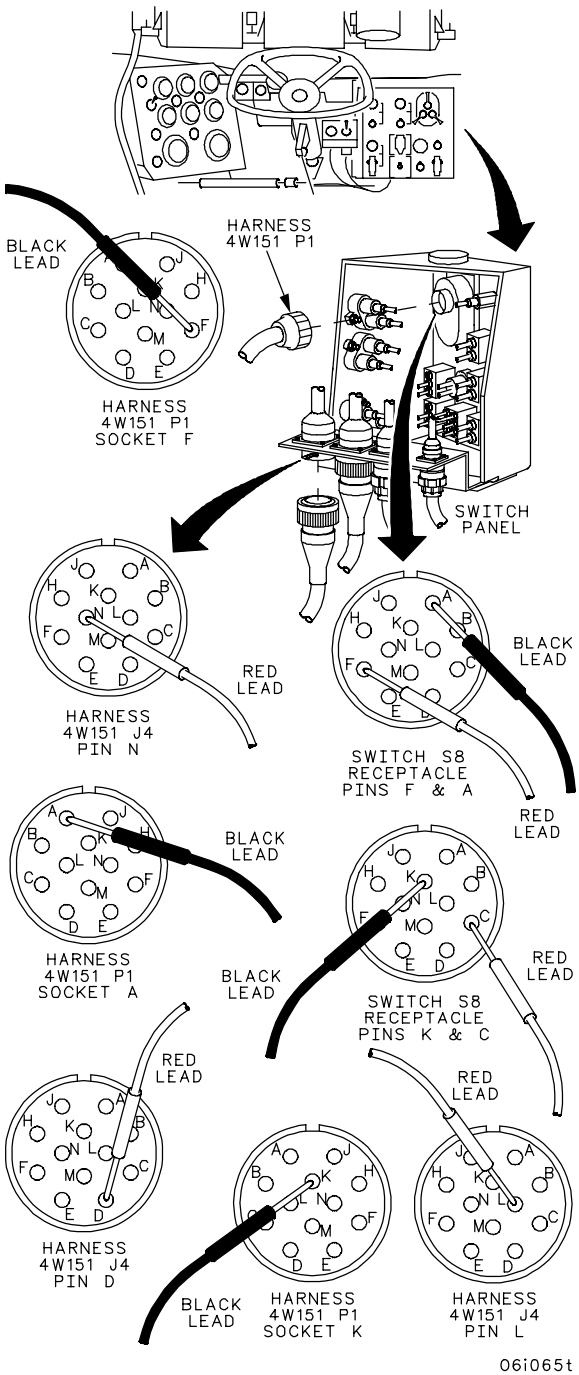
Is continuity present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

CONTINUED ON NEXT PAGE



STOPLIGHTS FAIL TO OPERATE - CONTINUED 0117 00

CONTINUED FROM STEP G

H

1. Disconnect harness 4W127 P2 from switch panel.
2. Place one multimeter lead in harness 4W151 P1 socket C and other lead on harness 4W151 J2 pin B. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

I

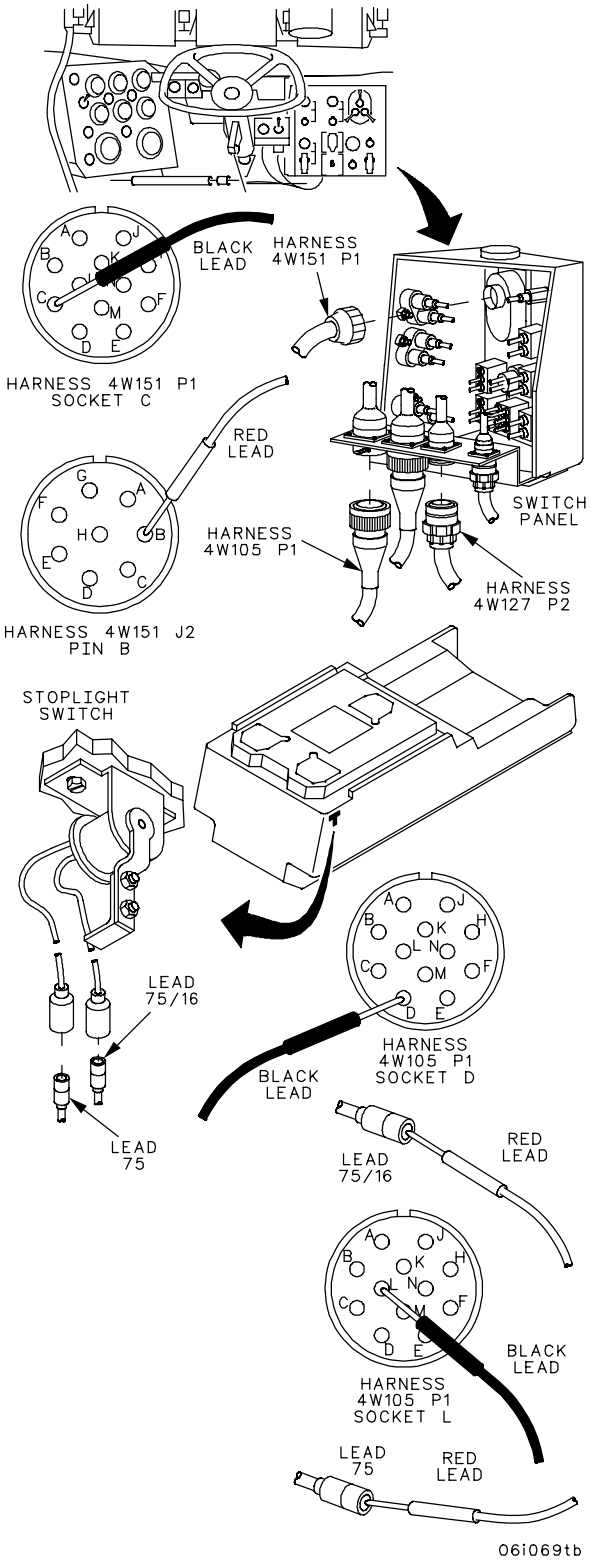
1. Reconnect harness 4W151 P1 to switch S8.
2. Disconnect both leads 75 and 75/16 from stoplight switch.
3. Place one multimeter lead in harness 4W105 P1 socket D and other lead in lead 75/16 connector socket. Check for continuity.
4. Place one multimeter lead in harness 4W105 P1 socket L and other lead in lead 75 connector socket. Check for continuity.

Is continuity present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.



CONTINUED ON NEXT PAGE

STOPLIGHTS FAIL TO OPERATE - CONTINUED 0117 00

CONTINUED FROM STEP C AND I

J

1. Place directional signal control lever to the center position (TM 9-2350-292-10).
2. Place one multimeter lead on directional signal control receptacle J2 pin D and other lead on pin C and E (one at a time). Check for continuity.

Is continuity present at both checks?

yes

no

Replace directional signal control (WP 0267 00 or WP 0268 00). Verify fault is corrected.

K

1. Reconnect harness 4W127 P1 to directional signal control.
2. Open air intake grilles above battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W142 P1 from bulkhead disconnect.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Place multimeter red lead in harness 4W127 P4 socket B and H (one at a time) while holding black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

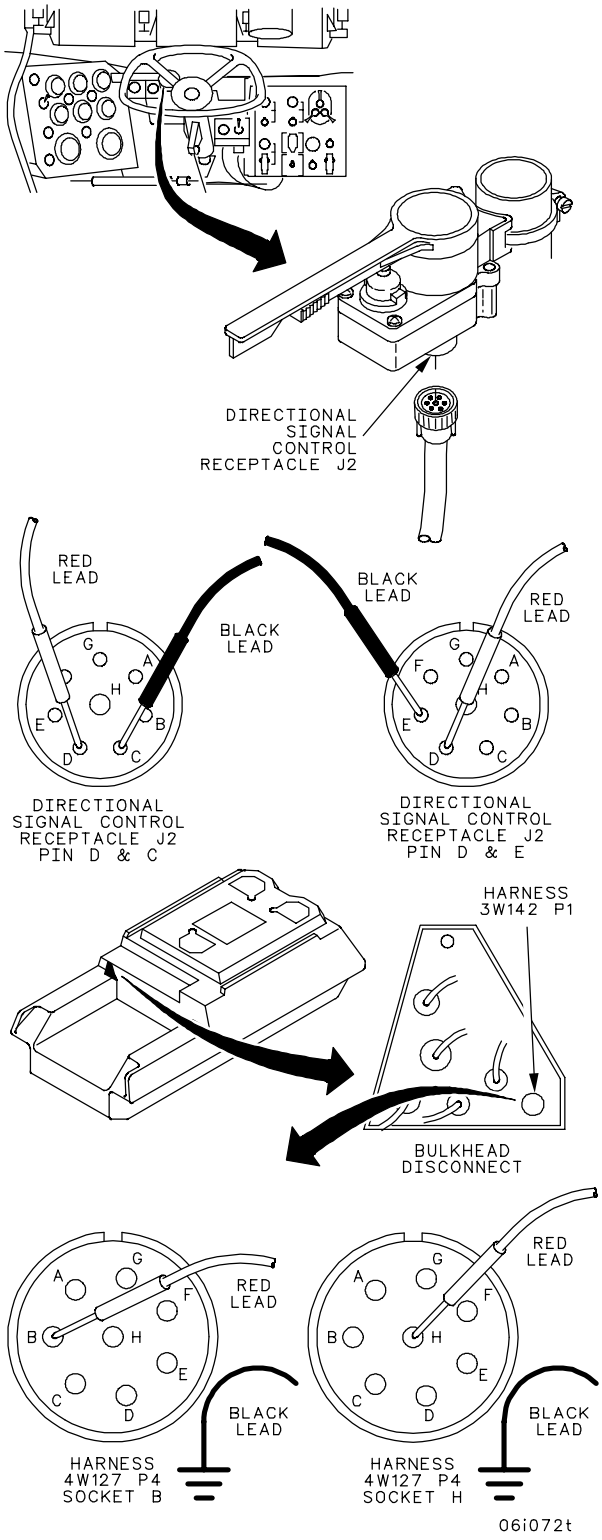
Is 24 V dc present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0324 00) harness 4W127. Verify fault is corrected.

CONTINUED ON NEXT PAGE



STOPLIGHTS FAIL TO OPERATE - CONTINUED 0117 00

CONTINUED FROM STEP K

L

1. Reconnect harness 3W142 P1 to bulkhead disconnect.
2. Remove stoplight assembly access cover (WP 0276 00).
3. Disconnect lead 22/460 and 22/461 from right and left stoplight assembly.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Place multimeter red lead in each stoplight assembly lead connector socket (one at a time) while holding black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present at both checks?

yes

M Place one multimeter lead on each stoplight assembly ground stud (one at a time) while holding other lead to vehicle ground. Check for continuity.

Is continuity present at both checks?

yes

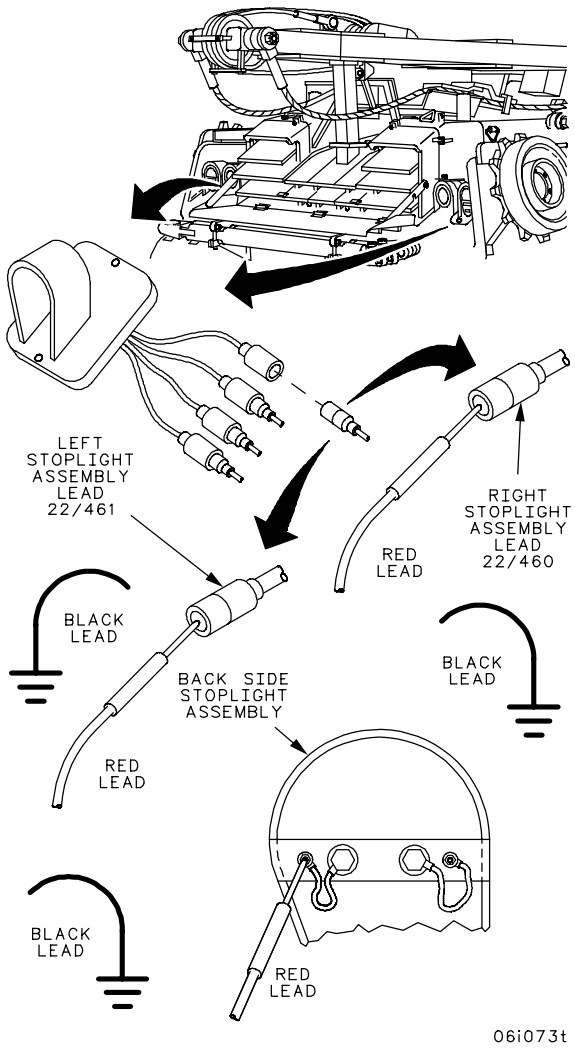
Replace stoplight assembly (WP 0276 00). Verify fault is corrected.

no

Replace ground lead (WP 0276 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0294 00) harness 3W142. Verify fault is corrected.



END OF TASK

TURN SIGNALS FAIL TO OPERATE. 0118 00

THIS WORK PACKAGE COVERS:

Turn Signals Fail To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Set main lighting switch to SER DRIVE position (TM 9-2350-292-10).
2. Place turn signal lever to 4-way flasher position (TM 9-2350-292-10).
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Observe front turn signals.

Do both front turn signals flash?

yes

B

1. Place turn signal lever to neutral position (TM 9-2350-292-10).
2. Press brake pedal and have assistant observe stoplights.

Do both stoplights light?

yes

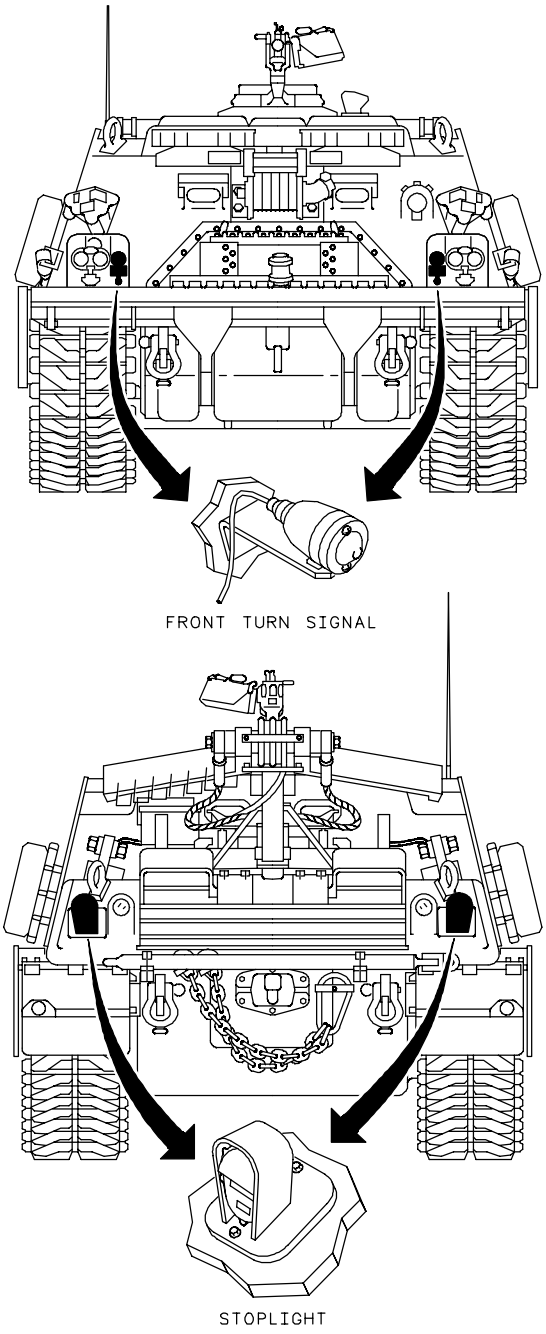
Replace directional signal control (WP 0267 00 or WP 0268 00). Verify fault is corrected.

no

Go to WP 0116 00.

no

Go to Step C.



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TURN SIGNAL FAILS TO OPERATE - CONTINUED 0118 00

CONTINUED FROM STEP A

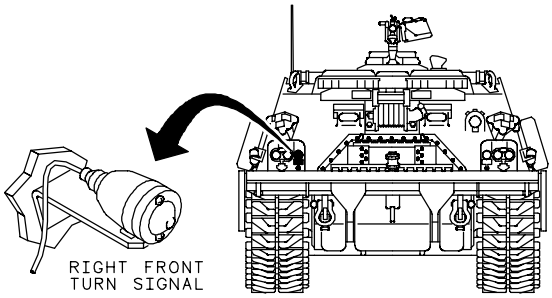
C While observing front turn signals, does right front turn signal operate?

yes

If right front signal operates go to Step E. If left front signal operates go to Step D.

no

Go to Step F.



CONTINUED FROM STEP C

D

1. Turn MASTER switch OFF (TM 9-2350-292-10).
2. Disconnect harness 4W127 P1 from directional signal control.
3. Disconnect lead 460 from right front signal lamp.
4. Place one multimeter lead in harness 4W127 P1 socket A and other lead in lead 460 connector socket. Check for continuity.

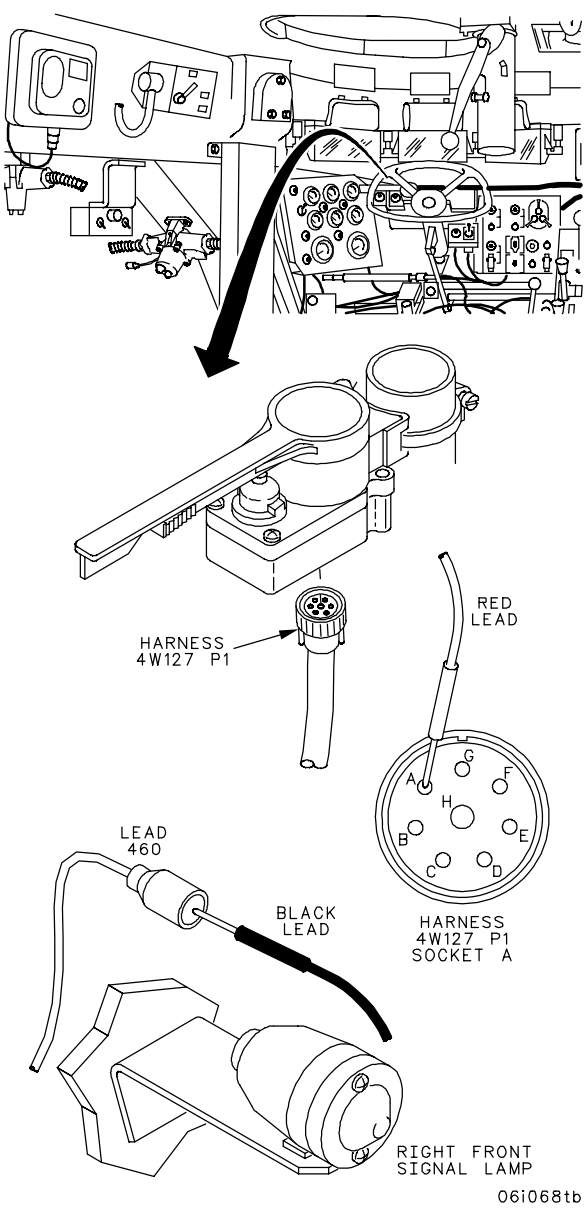
Is continuity present?

yes

Replace directional signal control (WP 0267 00 or WP 0268 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0324 00) harness 4W127. Verify fault is corrected.



CONTINUED ON NEXT PAGE

TURN SIGNAL FAILS TO OPERATE - CONTINUED 0118 00

CONTINUED FROM STEP C

E

1. Turn MASTER switch OFF (TM 9-2350-292-10).
2. Disconnect harness 4W127 P1 from directional signal control.
3. Disconnect lead 461 from left front signal lamp.
4. Place one multimeter lead in harness 4W127 P1 socket B and other lead in lead 461 connector socket. Check for continuity.

Is continuity present?

yes

Replace directional signal control (WP 0267 00 or WP 0268 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0324 00) harness 4W127. Verify fault is corrected.

CONTINUED FROM STEP C

F Observe rear turn signals.

Does one or both rear turn signals operate?

yes

Replace directional signal control (WP 0267 00 or WP 0268 00). Verify fault is corrected.

no

G Observe indicator flasher on directional signal control.

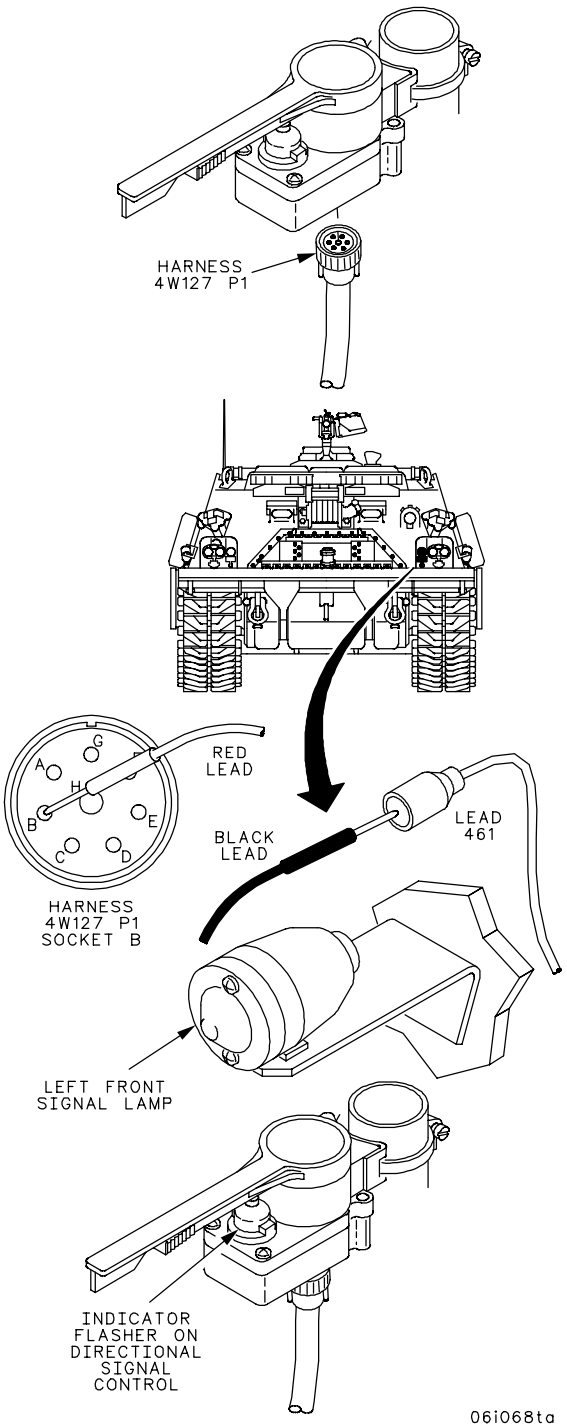
Is indicator flashing?

yes

Replace directional signal control (WP 0267 00 or WP 0268 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



TURN SIGNAL FAILS TO OPERATE - CONTINUED 0118 00

CONTINUED FROM STEP G

H

1. Turn MASTER switch OFF (TM 9-2350-292-10).
2. Disconnect harness 4W127 P1 from directional signal control.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W127 P1 socket G and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to Step M.

I

1. Reconnect harness 4W127 P1 to directional signal control.
2. Disconnect harness 4W127 P3 from flasher.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W127 P3 socket B and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

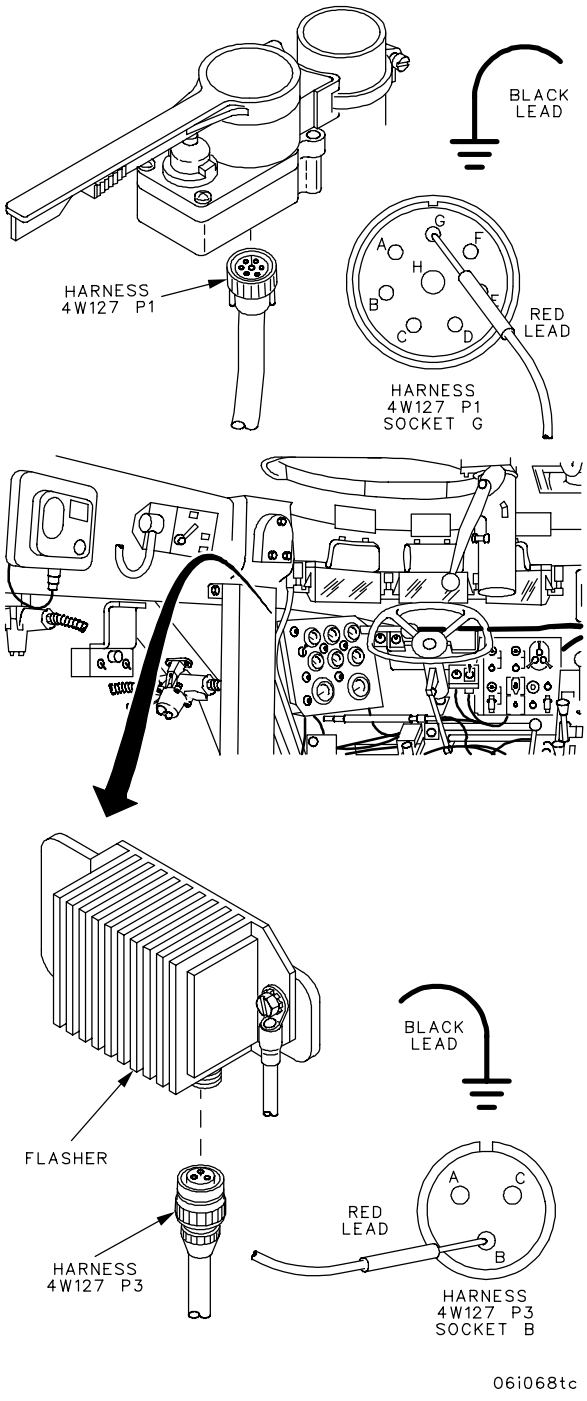
Is 24 V dc present?

yes

no

Go to Step L.

CONTINUED ON NEXT PAGE



TURN SIGNAL FAILS TO OPERATE - CONTINUED 0118 00

CONTINUED FROM STEP I

J

1. Disconnect harness 4W127 P1 from directional signal control.
2. Place one multimeter lead in harness 4W127 P1 socket H and other lead in harness 4W127 P3 socket A. Check for continuity.

Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0324 00) harness 4W127. Verify fault is corrected.

no

K Place one multimeter lead in harness 4W127 P3 socket C and other lead to ground. Check for continuity.

Is continuity present?

yes

Replace flasher (WP 0269 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0324 00) harness 4W127. Verify fault is corrected.

CONTINUED FROM STEP I

L

1. Disconnect harness 4W127 P1 from directional signal control.
2. Place one multimeter lead in harness 4W127 P3 socket B and other lead in harness 4W127 P1 socket B. Check for continuity.

Is continuity present?

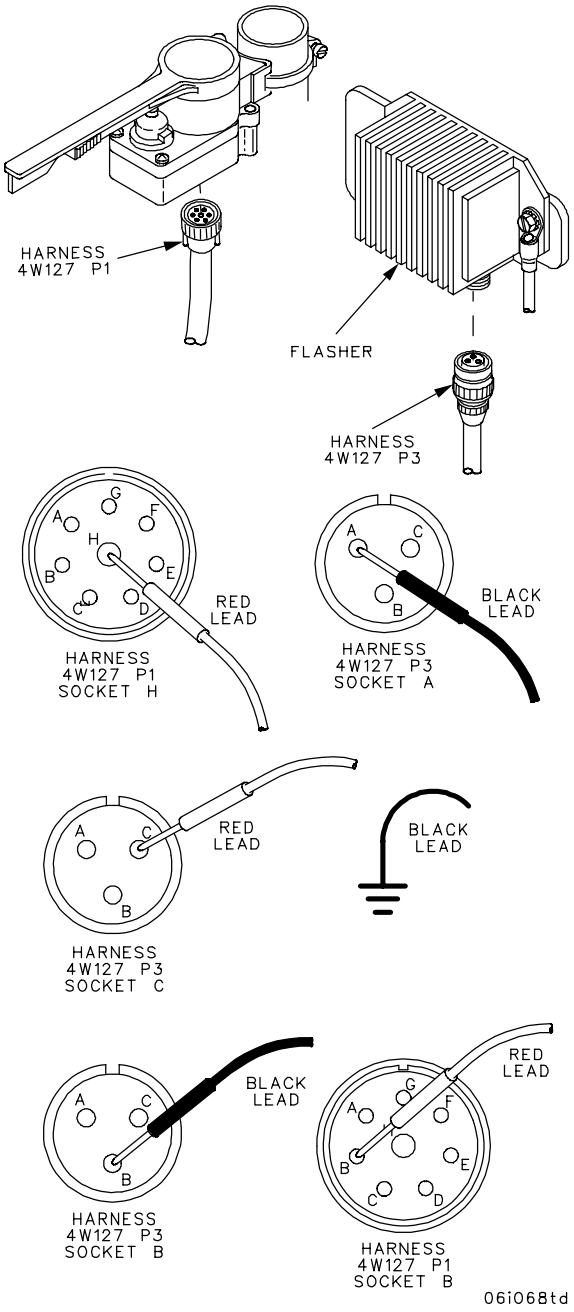
yes

Replace directional signal control (WP 0267 00 or WP 0268 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0324 00) harness 4W127. Verify fault is corrected.

CONTINUED ON NEXT PAGE



TURN SIGNAL FAILS TO OPERATE - CONTINUED 0118 00

CONTINUED FROM STEP H

M

1. Remove switch panel from bracket (WP 0000 00) and reconnect ground strap to switch panel.
2. Disconnect harness 4W127 P2 from switch panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on harness 4W151 J2 pin E and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Repair (WP 0290 00) or replace (WP 0324 00) harness 4W127. Verify fault is corrected.

no

N

1. Reconnect harness 4W127 P1 to directional signal control.
2. Disconnect harness 4W151 P1 from switch S8 receptacle.
3. Place one multimeter lead on harness 4W151 J2 pin E and other lead in harness 4W151 P1 socket J. Check for continuity.

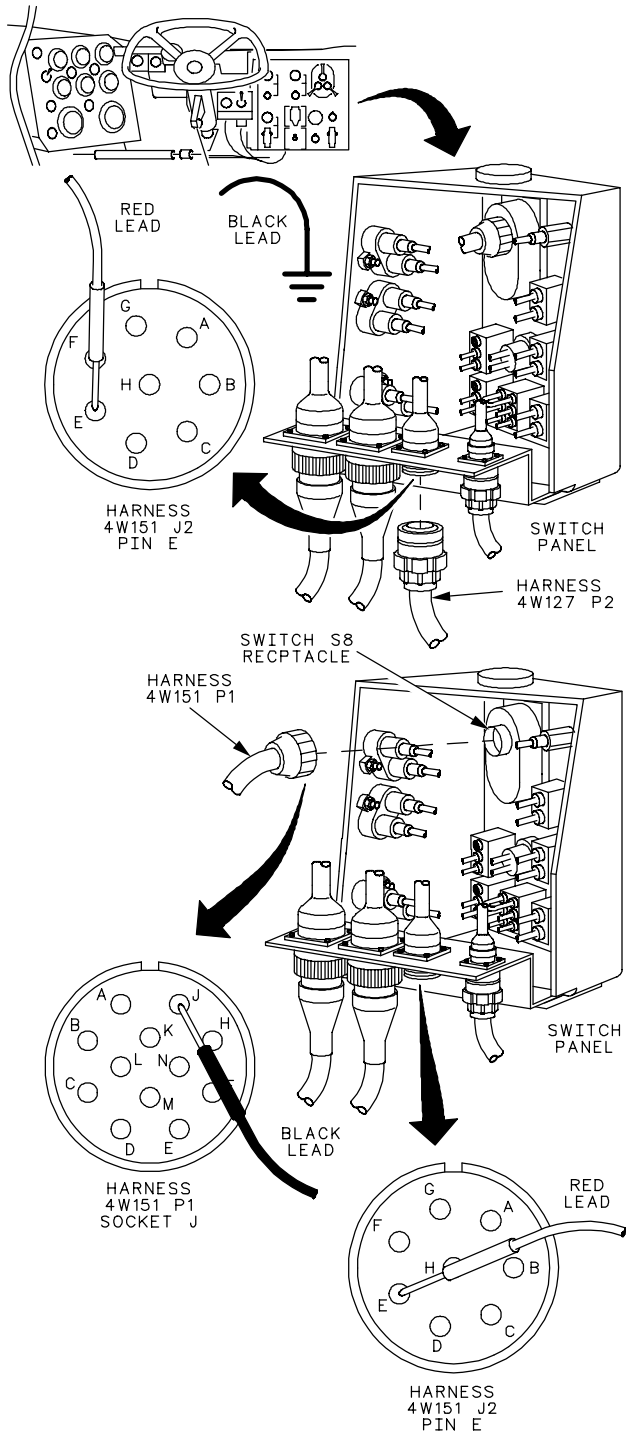
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

CONTINUED ON NEXT PAGE



TURN SIGNAL FAILS TO OPERATE - CONTINUED 0118 00

CONTINUED FROM STEP N

O

1. Disconnect harness 4W105 P1 from switch panel.
2. Place one multimeter lead on harness 4W151 J4 pin N and other lead in harness 4W151 P1 socket F. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

P

1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Place multimeter red lead in harness 4W105 P1 socket N and black lead to ground. Check for voltage.
3. Turn MASTER switch OFF (TM 9-2350-292-10).

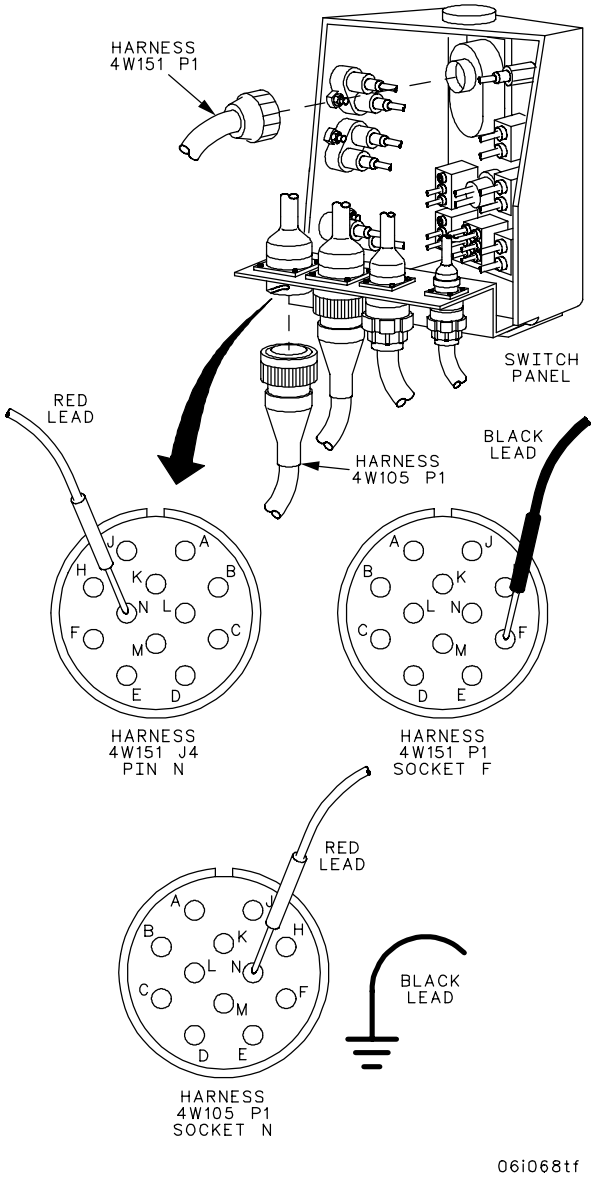
Is 24 V dc present?

yes

no

Replace light switch (WP 0242 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0314 00) harness 4W100. Verify fault is corrected.



END OF TASK

BLACKOUT STOPLIGHTS FAIL TO OPERATE. 0119 00

THIS WORK PACKAGE COVERS:

Blackout Stoplights Fail To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Air intake grilles above battery compartment open (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove left and right stoplight door assemblies and blackout stoplight lamp (WP 0276 00).
2. Turn MASTER switch ON and main light to BO DRIVE or BO MARKER position (TM 9-2350-292-10).
3. Place red multimeter lead on lamp holder contact and black lead to ground. Check for voltage.
4. Turn MASTER switch and main light switch to OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes / no

Replace blackout stoplight lamp (WP 0276 00). Verify fault is corrected.

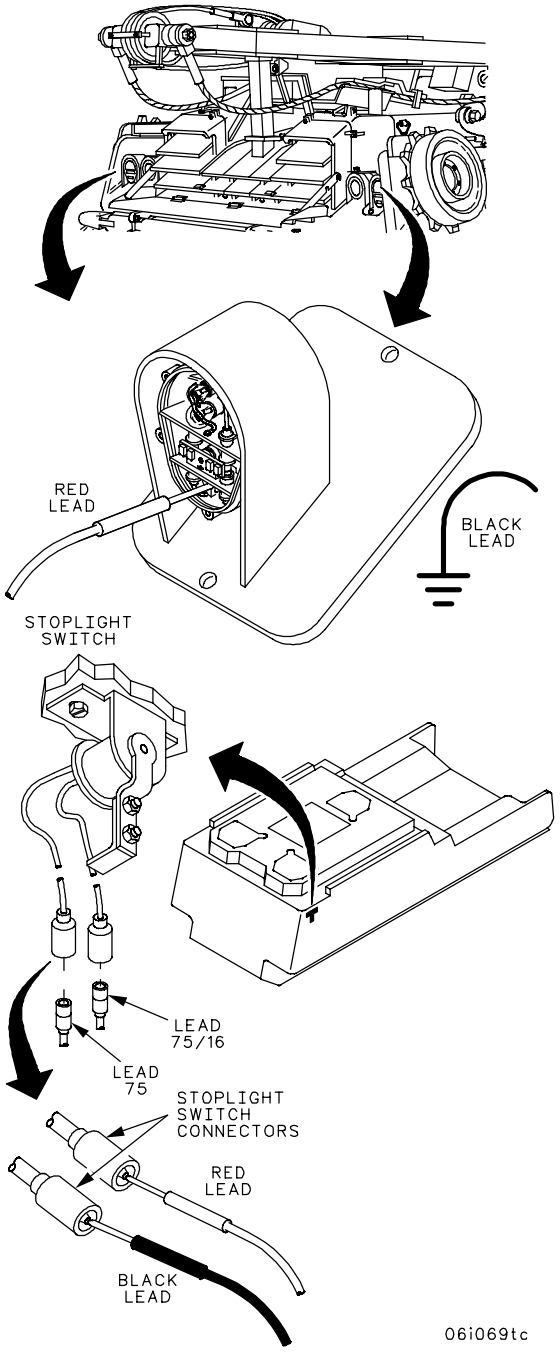
B

1. Remove subfloor plate #16 (WP 0454 00).
2. Disconnect two circuit 75 wires of harness 4W105 from stoplight switch (WP 0250 00).
3. Place one multimeter lead in one stoplight switch connector and place the other lead in the other stoplight switch connector.
4. Lock brake pedal (TM 9-2350-292-10). Check for continuity.
5. Release brake pedal (TM 9-2350-292-10) and check for continuity.

Is continuity present when brake pedal is locked and not present when brake pedal is released?

yes / no

Replace stoplight switch (WP 0250 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

BLACKOUT STOPLIGHTS FAIL TO OPERATE - CONTINUED 0119 00

CONTINUED FROM STEP B

C

1. Disconnect harness 3W142 P1 from bulkhead disconnect.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Set main light switch to BO DRIVE or BO MARKER (TM 9-2350-292-10).
4. While assistant presses brake pedal, place multimeter red lead in harness 3W142 P1 socket C and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

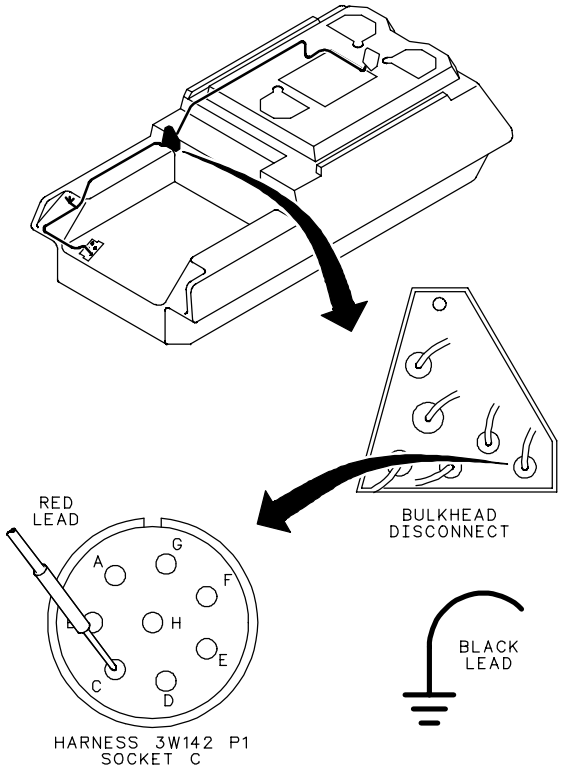
Is 24 V dc present?

yes

Go to Step L.

no

CONTINUED ON NEXT PAGE



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BLACKOUT STOPLIGHTS FAIL TO OPERATE - CONTINUED 0119 00

CONTINUED FROM STEP C

D

1. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
2. Disconnect harness 4W105 P1 from switch panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W105 P1 socket N and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0314 00) harness 4W100. Verify fault is corrected.

E

1. Disconnect harness 4W151 P1 from switch S8.
2. Place one multimeter lead on harness 4W151 J4 pin N and other lead in harness 4W151 P1 socket F. Check for continuity.

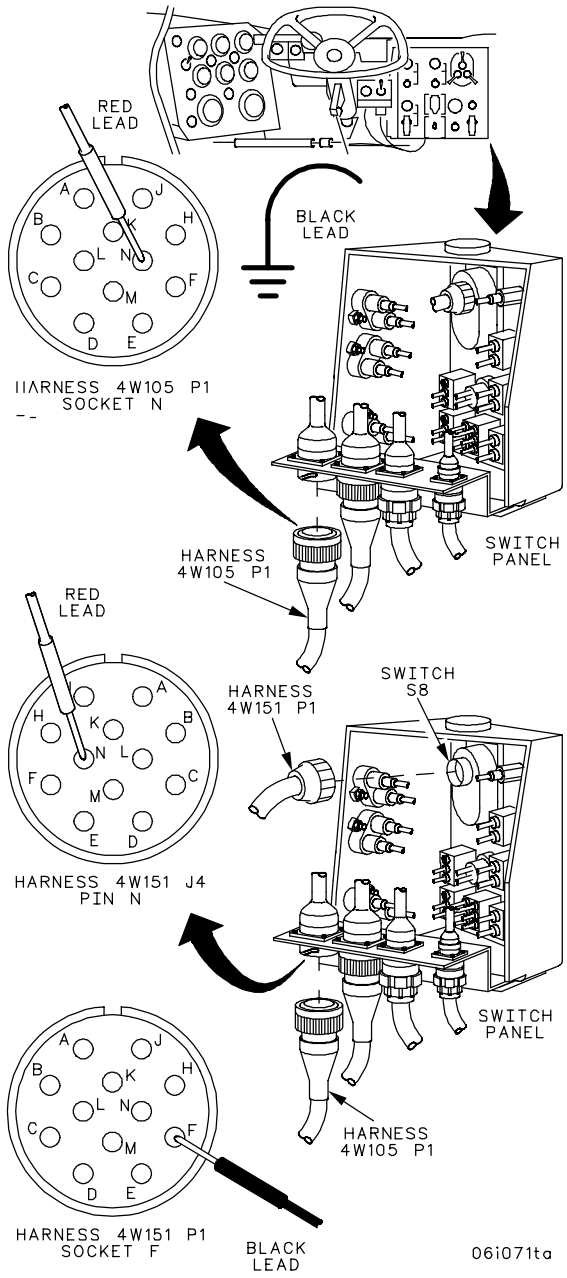
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

CONTINUED ON NEXT PAGE



BLACKOUT STOPLIGHTS FAIL TO OPERATE - CONTINUED 0119 00

CONTINUED FROM STEP E

F

1. Place one multimeter lead on switch S8 receptacle pin F and other lead on pin A. Check for continuity.
2. Place one multimeter lead on switch S8 receptacle pin N and other lead on pin K. Check for continuity.

Is continuity present at both checks?

yes

no

Replace switch S8 (WP 0242 00). Verify fault is corrected.

G

Place one multimeter lead on harness 4W151 J4 pin D and other lead in harness 4W151 P1 socket A. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

H

Place one multimeter lead on 4W151 J4 pin L and other lead in harness 4W151 P1 socket K. Check for continuity.

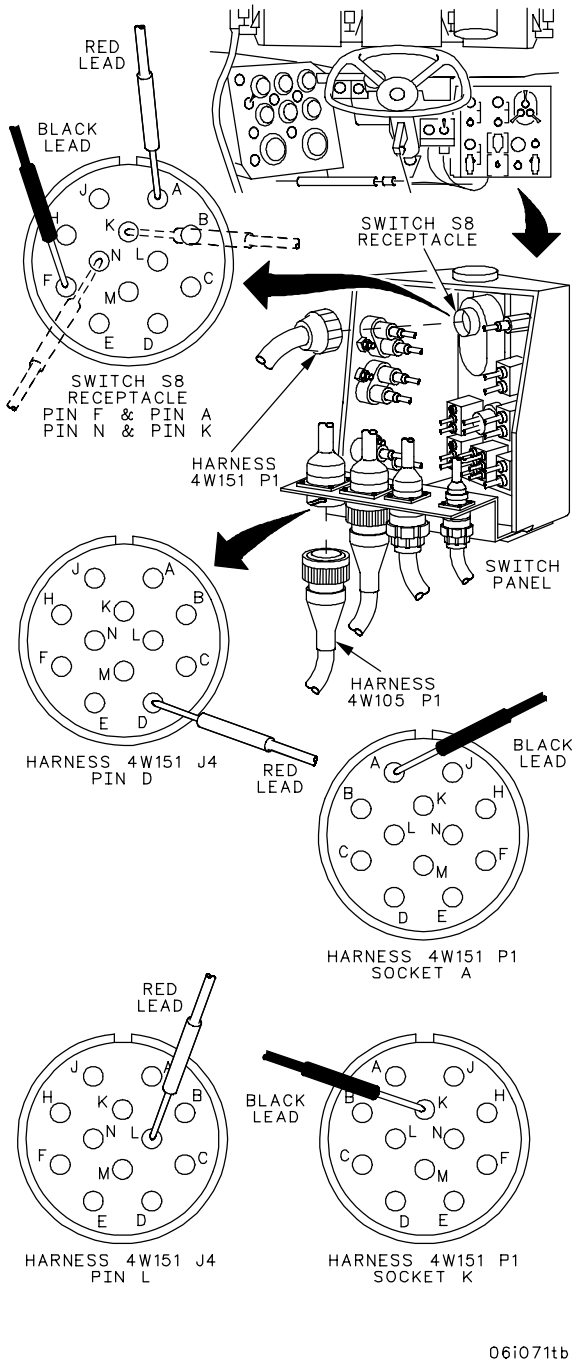
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

CONTINUED ON NEXT PAGE



BLACKOUT STOPLIGHTS FAIL TO OPERATE - CONTINUED 0119 00

CONTINUED FROM STEP H

I

1. Disconnect harness 4W127 P2 from switch panel.
2. Place one multimeter lead on harness 4W151 J2 pin C and other lead in harness 4W151 P1 socket N. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

J

1. Reconnect harness 4W151 P1 to switch S8.
2. Disconnect lead 75 and 75/16 stoplight switch.
3. Place one multimeter lead in harness 4W105 P1 socket D and other lead in lead 75 and 75/16 connector socket (one at a time). Check for continuity.

Is continuity present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.

K

Place one multimeter lead in harness 4W105 P1 socket L and other lead in lead 75 and 75/16 connector socket (one at a time). Check for continuity.

Is continuity present at one or both checks?

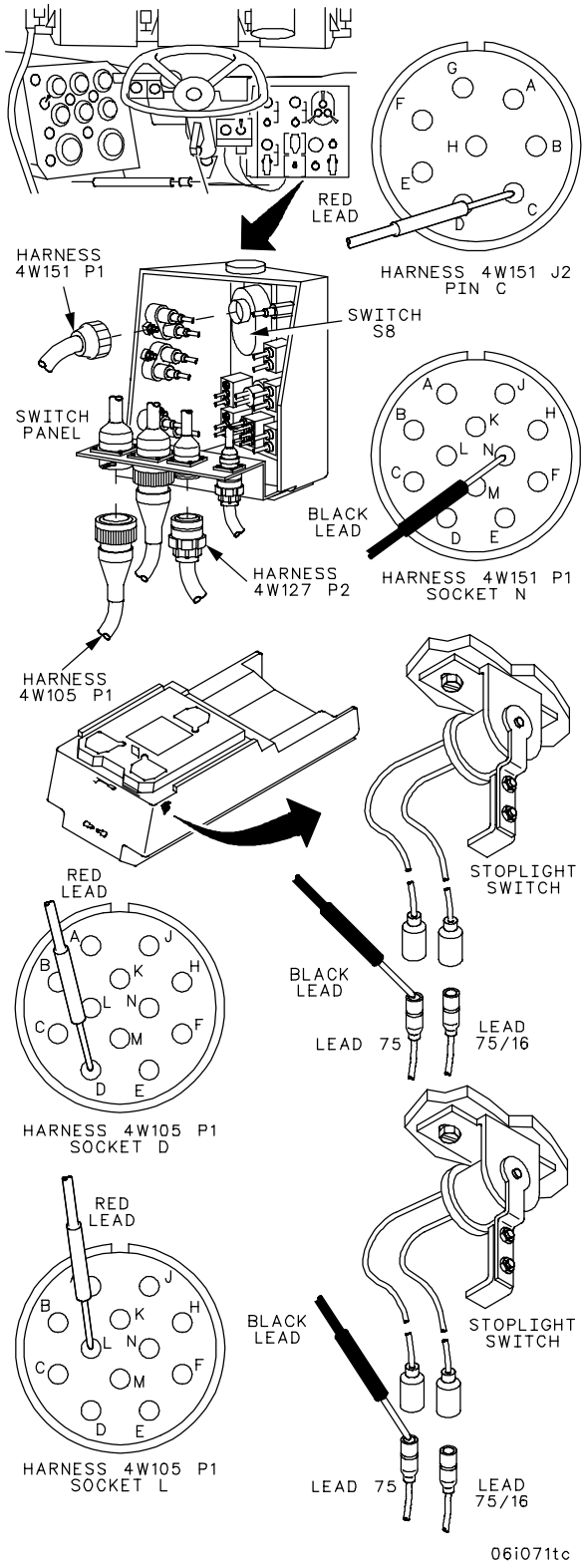
yes

no

Repair (WP 0290 00) or replace (WP 317

) harness 4W105. Verify fault is corrected.

CONTINUED ON NEXT PAGE



BLACKOUT STOPLIGHTS FAIL TO OPERATE - CONTINUED 0119 00

CONTINUED FROM STEP C AND K

L

1. Remove right side and left side access covers holding stoplight assemblies (WP 0276 00).
2. Disconnect lead 23 from both stoplight assemblies.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. While assistant presses brake pedal, place multimeter red lead in each lead 23 connector socket (one at a time) while holding black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

M

1. Reconnect lead 23 to both stoplight assemblies.
2. Install access covers holding stoplight assemblies (WP 0276 00).
3. Place one multimeter lead on each stoplight assembly grounding stud (one at a time) while holding other lead to vehicle ground. Check for continuity.

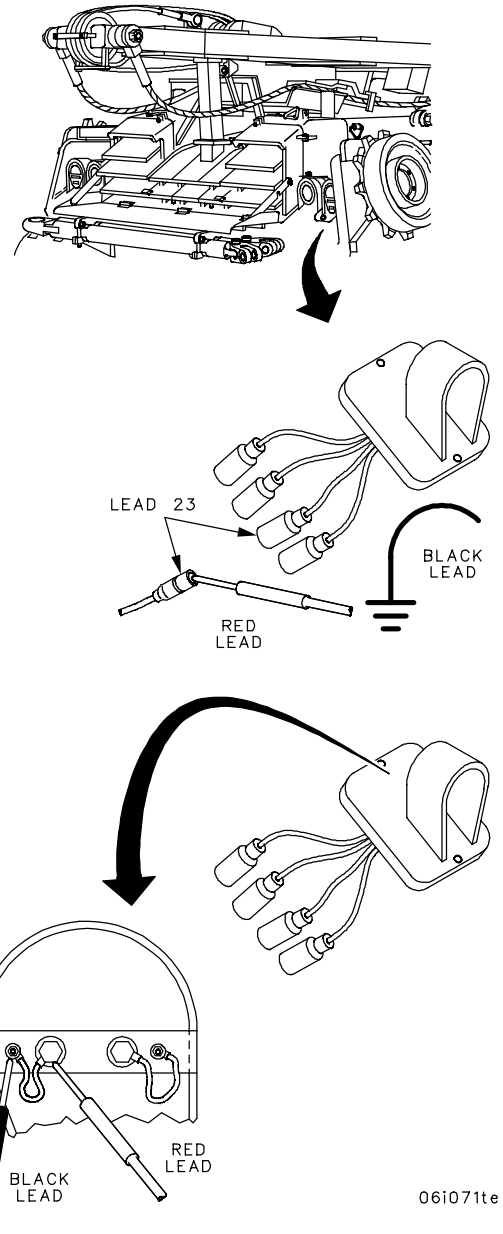
Is continuity present at both checks?

yes

no

Replace faulty stoplight assembly (WP 0276 00). Verify fault is corrected.

Replace faulty ground lead (WP 0276 00). Verify fault is corrected.



END OF TASK

BLACKOUT MARKER LIGHT FAILS TO OPERATE. 0120 00

THIS WORK PACKAGE COVERS:
Blackout Stoplights Fail To Operate

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required
Two

WARNING
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Set main light switch to BO MARKER (TM 9-2350-292-10).
3. Observe blackout marker lights.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Do any blackout marker lights light?

yes

If one or both blackout markers on headlamps fail to light, go to Step F. If one or both tail lamps fail to light, go to Step J.

no

B

1. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
2. Disconnect harness 4W105 P1 from switch panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W105 P1 socket N and black led to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

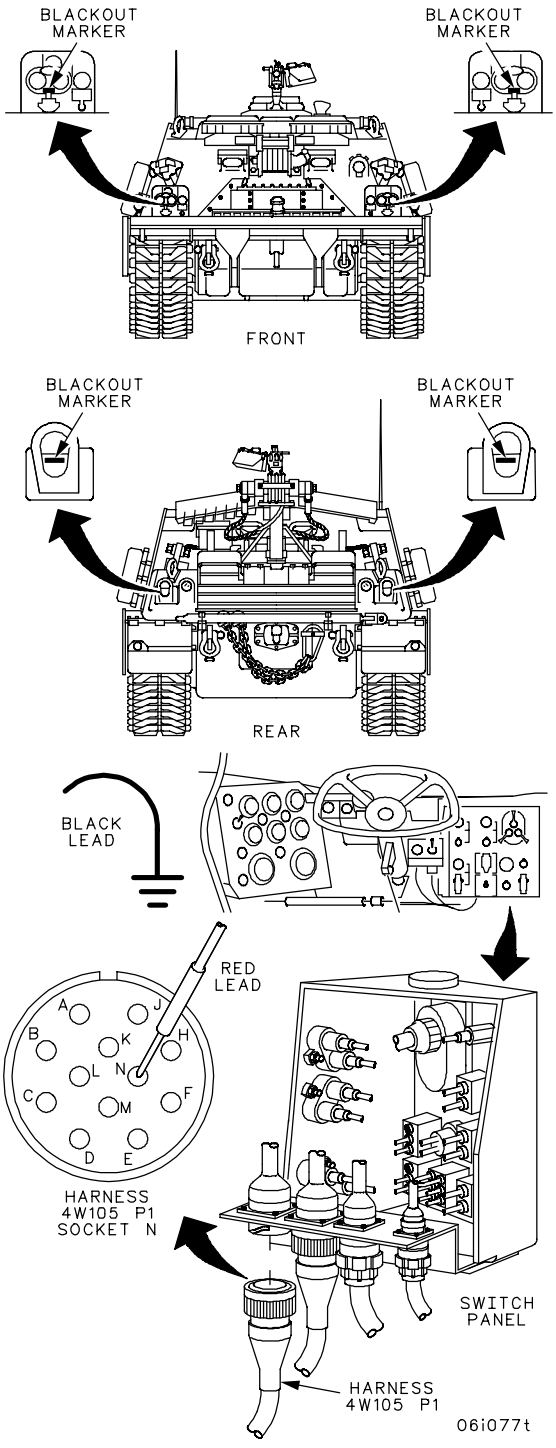
Is 24 V dc present?

yes

CONTINUED ON NEXT PAGE

no

Repair (WP 0290 00) or replace (WP 0314 00) harness 4W100. Verify fault is corrected.



BLACKOUT MARKER LIGHT FAILS TO OPERATE - CONTINUED 0120 00

CONTINUED FROM STEP B

C

1. Disconnect harness 4W151 P1 from switch S8.
2. Place one multimeter lead on harness 4W151 J4 pin N and other lead in harness 4W151 P1 socket F. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

D

Place one multimeter lead on switch S8 receptacle pin F and other lead on switch S8 receptacle pin E. Check for continuity.

Is continuity present?

yes

no

Replace switch S8 (WP 0242 00). Verify fault is corrected.

E

1. Disconnect harness 4W127 P2 from switch panel.
2. Place one multimeter lead on harness 4W151 J2 pin A and other lead in harness 4W151 P1 socket E. Check for continuity.

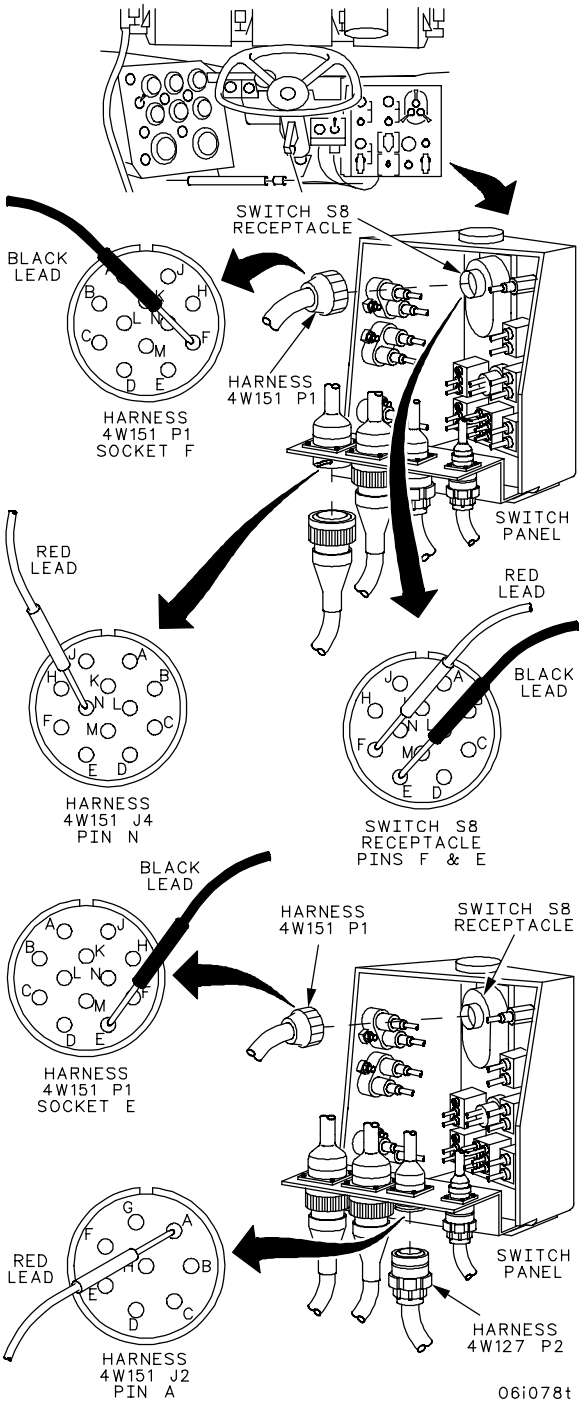
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0324 00) harness 4W127. Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.



CONTINUED ON NEXT PAGE

BLACKOUT MARKER LIGHT FAILS TO OPERATE - CONTINUED 0120 00

CONTINUED FROM STEP A

F

1. Remove lamp from faulty blackout marker (WP 0273 00).
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Set main light switch to BO MARKER (TM 9-2350-292-10).
4. Place red multimeter lead on lamp holder socket contact and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no → Go to Step H.

G

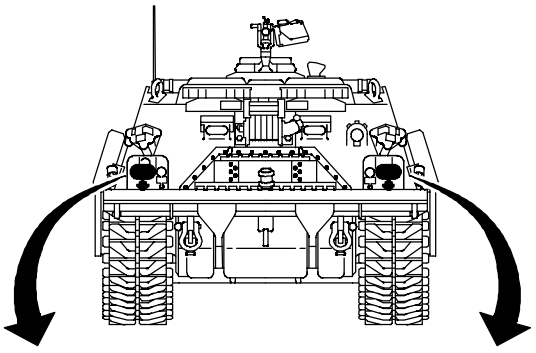
1. Remove spare headlight sealed-beam (WP 0275 00)
2. Place one multimeter lead on blackout marker lamp holder socket ground lead and the other lead on ground lead mounting screw. Check for continuity.

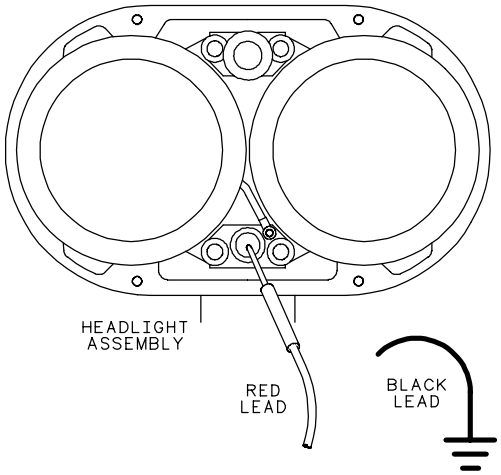
Is continuity present?

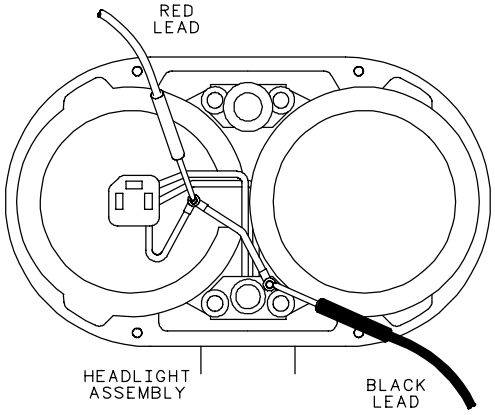
yes → Replace faulty blackout marker lamp (WP 0273 00). Verify fault is corrected.

no → Replace blackout marker lamp socket holder (WP 0273 00). Verify fault is corrected.

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BLACKOUT MARKER LIGHT FAILS TO OPERATE - CONTINUED 0120 00

CONTINUED FROM STEP F

H

1. Remove faulty head lamp assembly from base (WP 0273 00).
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W107 headlamp connector socket F and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0319 00) harness 4W107. Verify fault is corrected.

I

Place one multimeter lead in harness 4W107 headlamp base connector socket C and black lead to ground. Check for continuity.

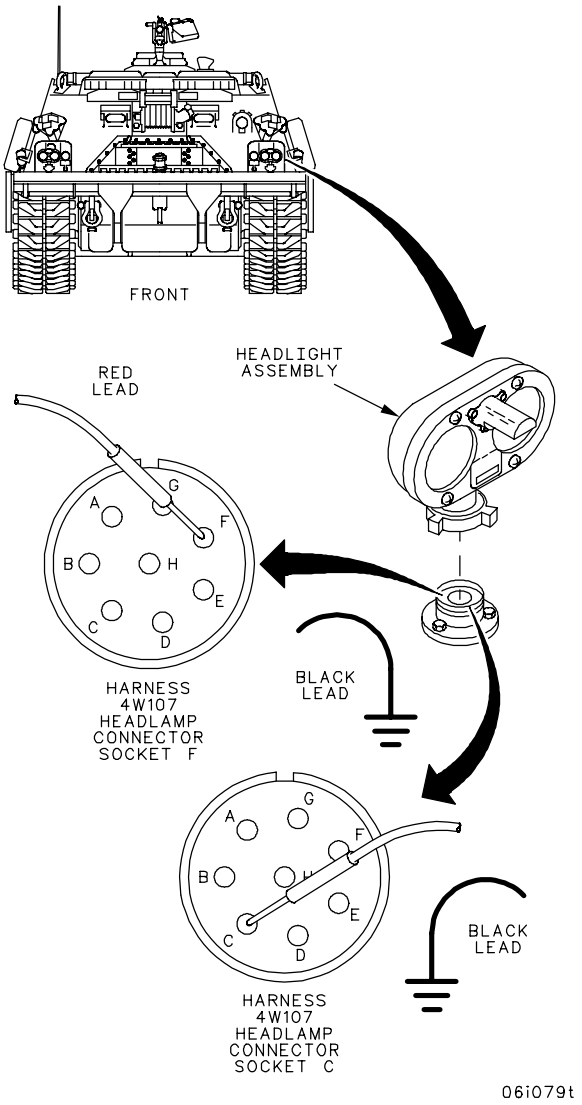
Is continuity present?

yes

no

Replace head lamp assembly (WP 0273 00). Verify fault is corrected.

Replace base ground lead (WP 0273 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

BLACKOUT MARKER LIGHT FAILS TO OPERATE - CONTINUED 0120 00

CONTINUED FROM STEP A

J

1. Remove lamp from faulty blackout marker (WP 0273 00).
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Set main light switch to BO MARKER (TM 9-2350-292-10).
4. Place red multimeter lead on lamp holder socket contact and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to Step L.

K Place one multimeter lead on black marker lamp holder socket ground lead and the other on ground lead mounting screw. Check for continuity.

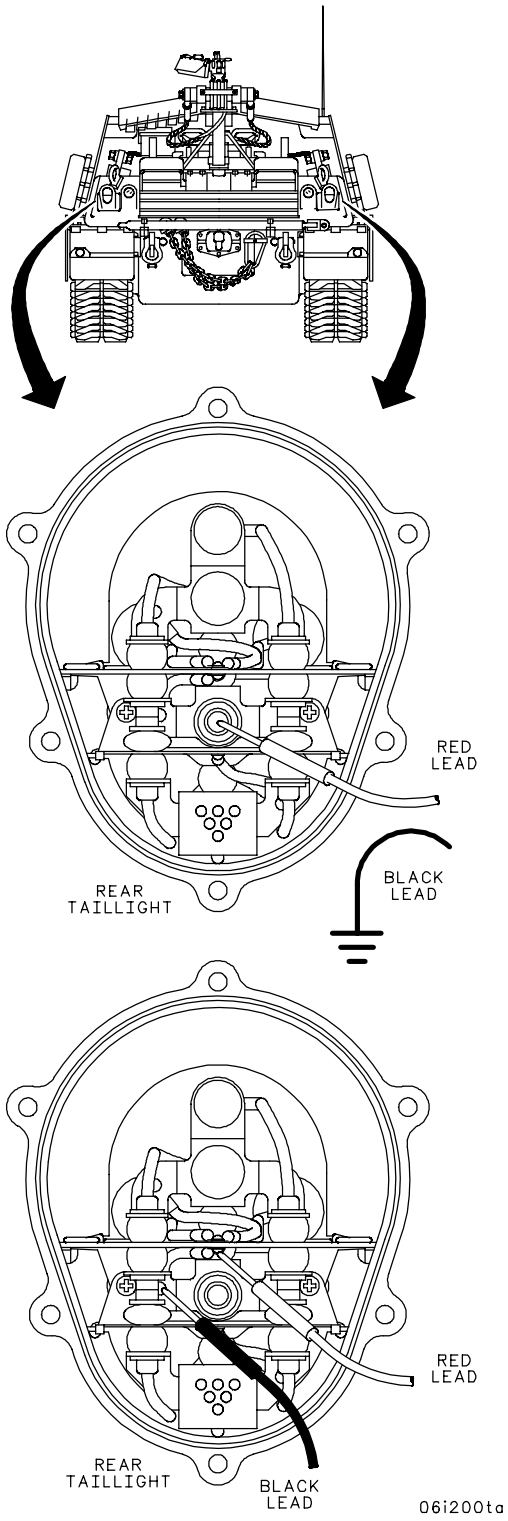
Is continuity present?

yes

Replace faulty blackout marker lamp (WP 0273 00). Verify fault is corrected.

no

Replace taillight assembly (WP 0276 00). Verify fault is corrected.



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BLACKOUT MARKER LIGHT FAILS TO OPERATE - CONTINUED 0120 00

CONTINUED FROM STEP J

L

1. Open air intake grilles above battery compartment (TM 9-2350-292-10).
2. Disconnect harness 3W142 P1 from bulkhead disconnect.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W127 P4 socket A and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Repair (WP 0290 00) or replace (WP 0324 00) harness 4W127. Verify fault is corrected.

no

M

1. Reconnect harness 3W142 P1 at bulkhead disconnect.
2. Remove access cover holding faulty stoplight assembly (WP 0276 00).
3. Disconnect lead 24 from faulty stoplight assembly.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Place multimeter red lead in lead 24 connector socket of faulty stoplight assembly and black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

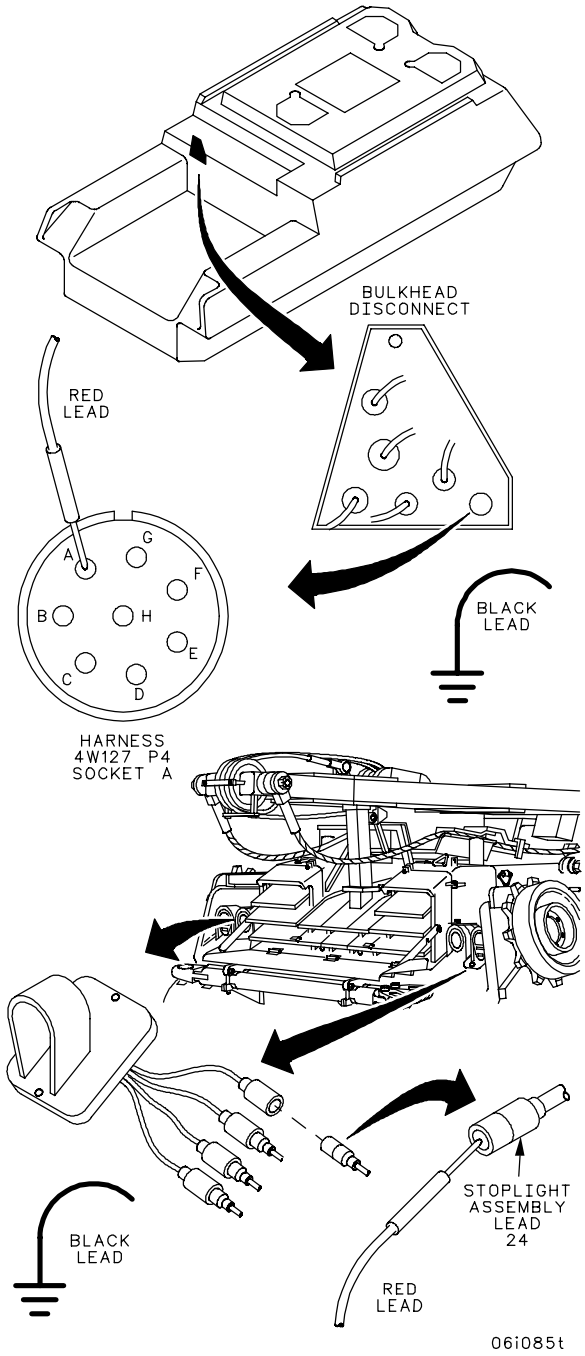
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0294 00) harness 3W142. Verify fault is corrected.

CONTINUED ON NEXT PAGE



BLACKOUT MARKER LIGHT FAILS TO OPERATE - CONTINUED 0120 00

CONTINUED FROM STEP M

N

1. Reconnect lead 24 to faulty stoplight assembly.
2. Install access cover holding faulty stoplight assembly (WP 0276 00).
3. Place one multimeter lead on faulty stoplight assembly grounding stud and other lead to ground. Check for continuity.

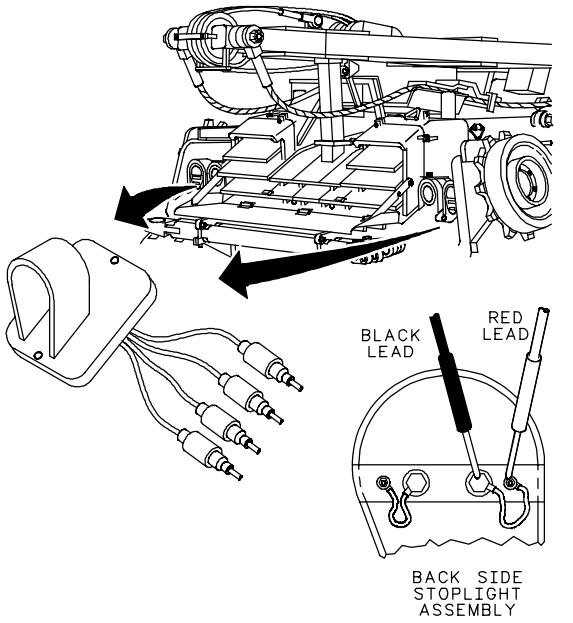
Is continuity present?

yes

Replace taillight assembly (WP 0276 00). Verify fault is corrected.

no

Replace ground lead (WP 0276 00). Verify fault is corrected.



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END OF TASK

BLACKOUT DRIVE LIGHTS FAIL TO OPERATE. 0121 00

THIS WORK PACKAGE COVERS:

Blackout Drive Lights Fail To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

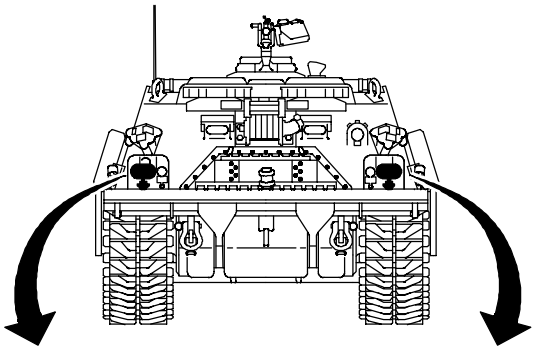
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Switch panel removed from bracket (WP 0242 00) and ground strap reconnected to switch panel

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



A

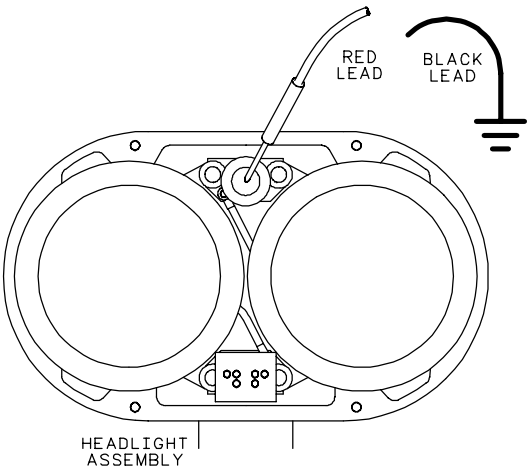
1. Remove faulty blackout drive lamp from headlight assembly (WP 0273 00).
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Set main light switch to blackout drive (TM 9-2350-292-10).
4. Place red multimeter lead on lamp holder socket contact and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to Step C.



B

Place one multimeter lead on blackout drive lamp socket holder and the other on blackout drive lamp ground lead. Check for continuity.

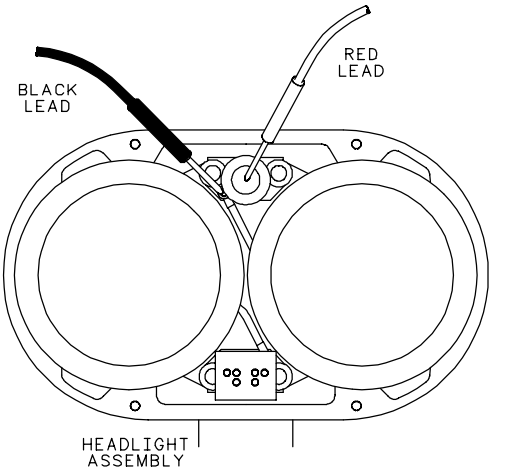
Is continuity present?

yes

Replace blackout drive lamp (WP 0273 00). Verify fault is corrected.

no

Replace blackout drive lamp holder socket (WP 0273 00). Verify fault is corrected.



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BLACKOUT DRIVE LIGHTS FAIL TO OPERATE - CONTINUED 0121 00

CONTINUED FROM STEP A

C

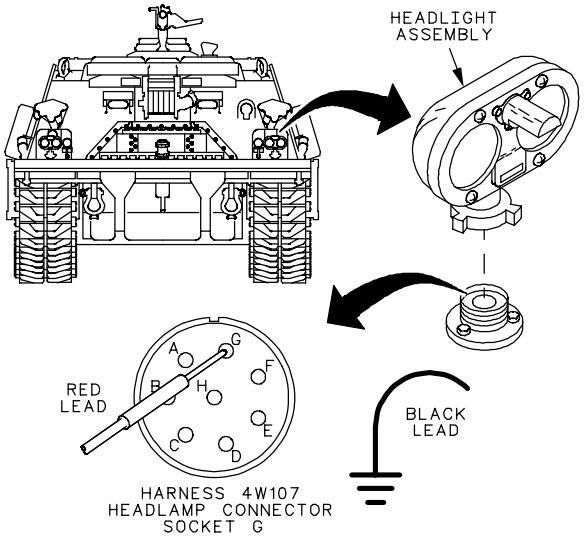
1. Remove left headlamp assembly from base (WP 0273 00).
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W107 headlamp connector socket G and black lead to base ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to Step E.



D

Place one multimeter lead in harness 4W107 headlamp base connector socket C and other lead to ground. Check for continuity.

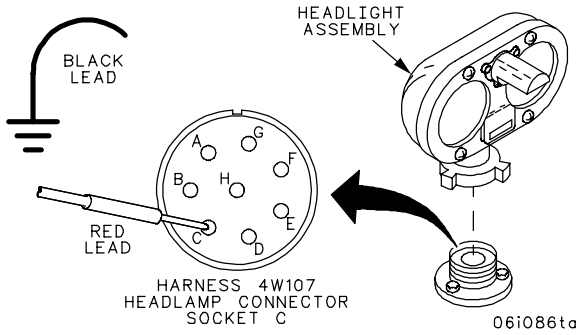
Is continuity present?

yes

no

Repair or replace left headlamp assembly (WP 0273 00). Verify fault is corrected.

Replace headlamp base ground lead (WP 0274 00). Verify fault is corrected.



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BLACKOUT DRIVE LIGHTS FAIL TO OPERATE - CONTINUED 0121 00

CONTINUED FROM STEP C

E

1. Disconnect harness 4W105 P1 from switch panel.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W105 P1 socket N and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.

F

1. Disconnect harness 4W151 P1 from switch S8.
2. Place one multimeter lead in harness 4W151 P1 socket F and other lead on harness 4W151 J4 pin N. Check for continuity.

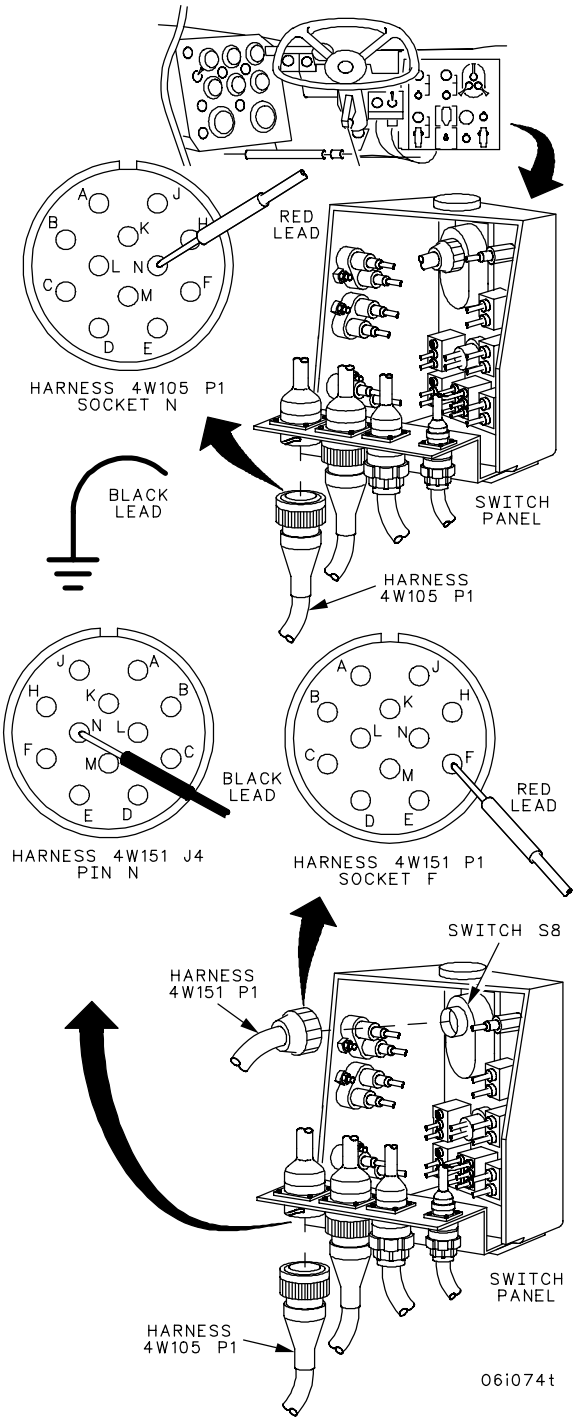
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

CONTINUED ON NEXT PAGE



BLACKOUT DRIVE LIGHTS FAIL TO OPERATE - CONTINUED 0121 00

CONTINUED FROM STEP F

G

1. Place main light switch to BO DRIVE (TM 9-2350-292-10).
2. Place one multimeter lead on switch S8 receptacle pin F and other lead on switch S8 receptacle pin D. Check for continuity.

Is continuity present?

yes

no

Replace switch S8 (WP 0242 00). Verify fault is corrected.

H

1. Disconnect lead 520 from BO SELECTOR switch.
2. Place one multimeter lead in harness S8 switch S8 receptacle pin D and other lead in lead 520 connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 520. Verify fault is corrected.

I

1. Reconnect harness 4W151 P1 to switch S8.
2. Disconnect lead 19 from switch S7.
3. Place BO SELECTOR switch to BO SELECTOR (TM 9-2350-292-10).
4. Place one multimeter lead on lead 19 switch S7 pin and other lead on lead 520 switch S7 pin. Check for continuity.

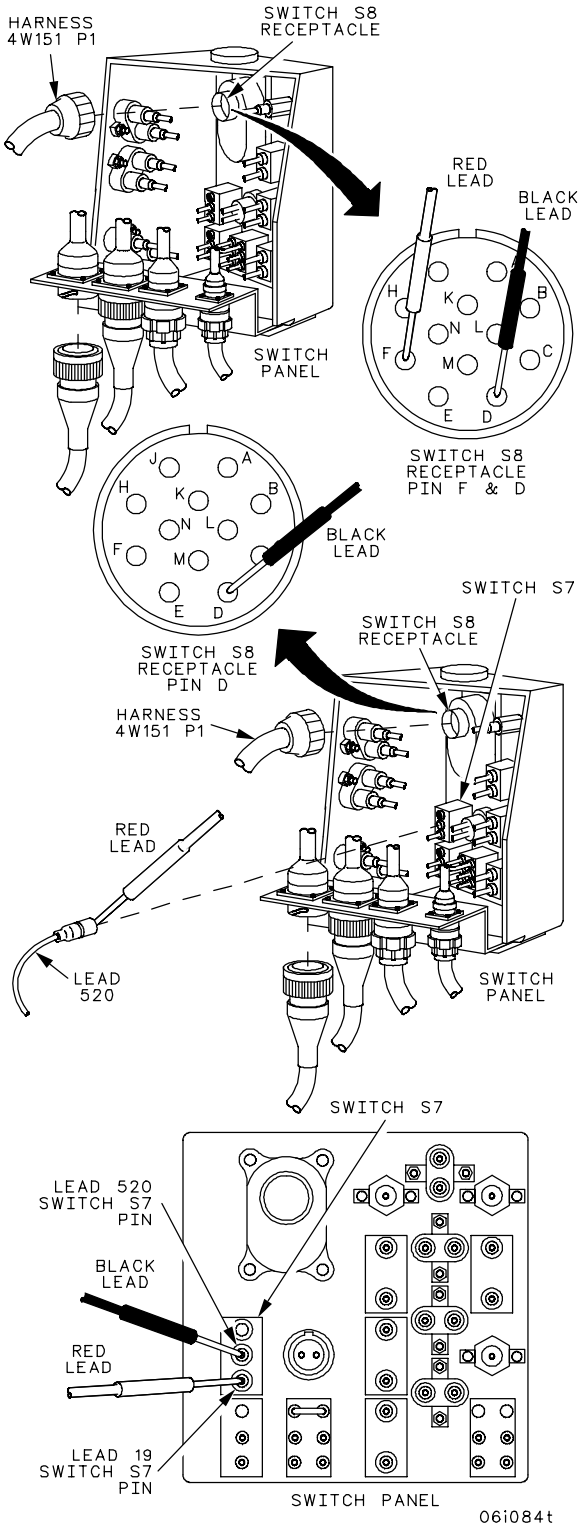
Is continuity present?

yes

no

Replace switch S7 (WP 0242 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



BLACKOUT DRIVE LIGHTS FAIL TO OPERATE - CONTINUED 0121 00

CONTINUED FROM STEP I

J

1. Reconnect lead 520 to switch S7.
2. Place one multimeter lead in lead 19 connector socket and other lead on harness 4W151 J4 pin C. Check for continuity.

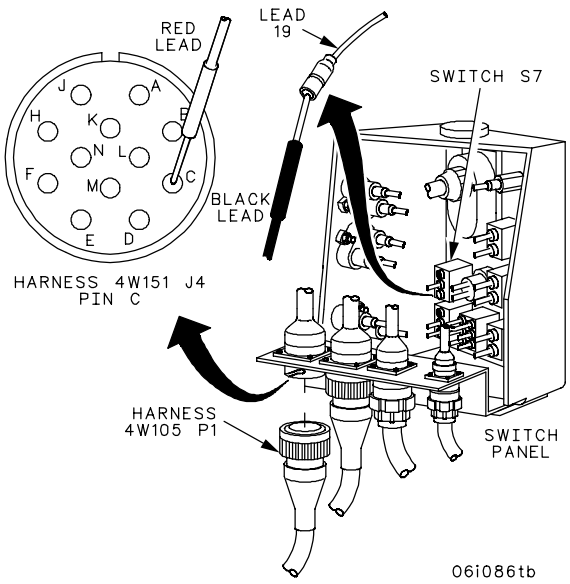
Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0319 00) harness 4W107. Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.



END OF TASK

REAR SERVICE LIGHT FAILS TO OPERATE 0122 00

THIS WORK PACKAGE COVERS:

Rear Service Light Fails to Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove rear service light lamp (WP 0279 00).
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Turn rear service light switch ON (TM 9-2350-292-10).
4. Place red multimeter lead in lead 17 side of lamp holder socket and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no — Go to Step C.

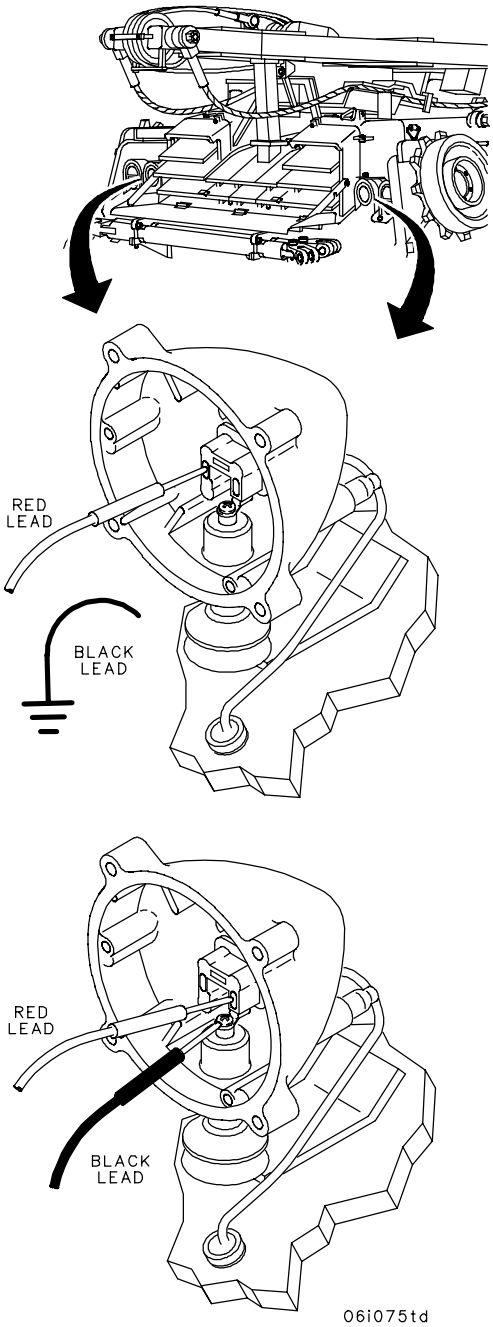
B

Place one multimeter lead in ground side of rear service lamp holder socket and the other lead on socket ground lead mounting screw. Check for continuity.

Is continuity present?

yes — Replace service light lamp (WP 0279 00). Verify fault is corrected.

no — Replace rear service light lamp holder socket (WP 0279 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

REAR SERVICE LIGHT FAILS TO OPERATE - CONTINUED 0122 00

CONTINUED FROM STEP B

C

1. Disconnect lead 16 from rear service light switch.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Turn main light switch to any position except OFF (TM 9-2350-292-10).
4. Turn rear service light switch ON (TM 9-2350-292-10).
5. Place multimeter red lead in lead 16 connector socket and black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to Step I.

D

1. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
2. Disconnect harness 4W105 P1 from switch panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W105 P1 socket N and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

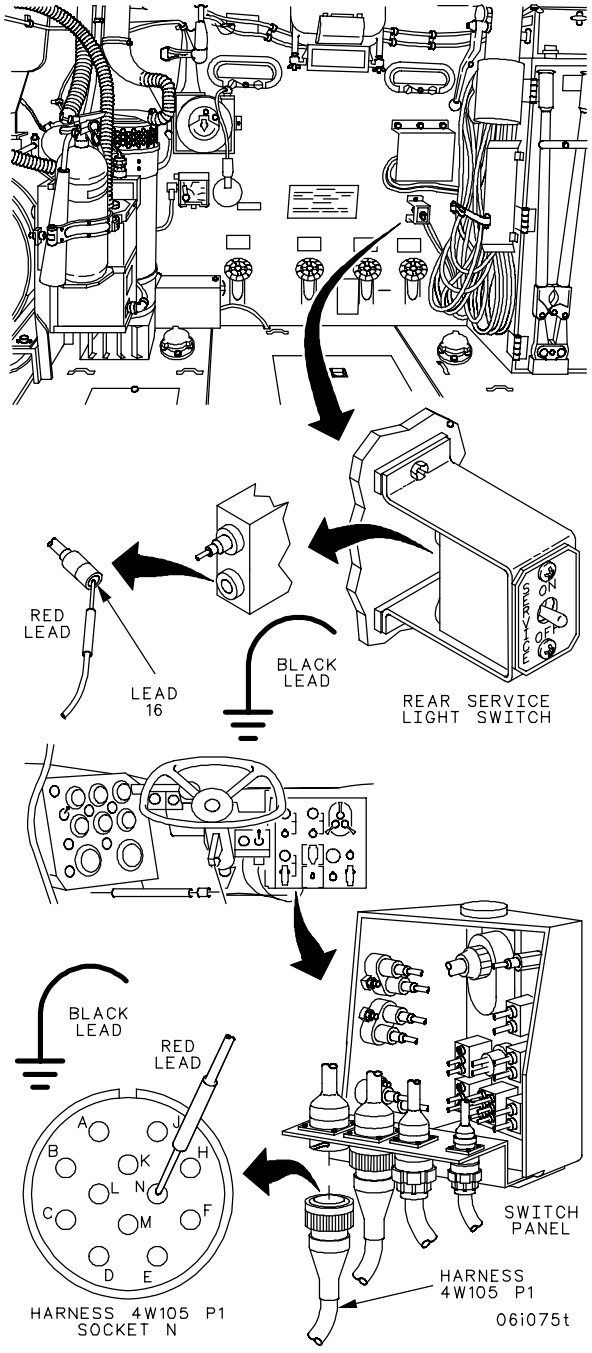
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.

CONTINUED ON NEXT PAGE



REAR SERVICE LIGHT FAILS TO OPERATE - CONTINUED 0122 00

CONTINUED FROM STEP D

E

1. Disconnect lead 17 from rear service light switch.
2. Place one multimeter lead on each service light switch connector pin. Check for continuity.

Is continuity present?

yes

no

Replace light switch (WP 0262 00). Verify fault is corrected.

F

1. Reconnect leads 16 and 17 to rear service light switch.
2. Open air intake grilles above battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W702 P1 from bulkhead disconnect.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Place multimeter red lead on harness 4W700 P2 pin K and black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

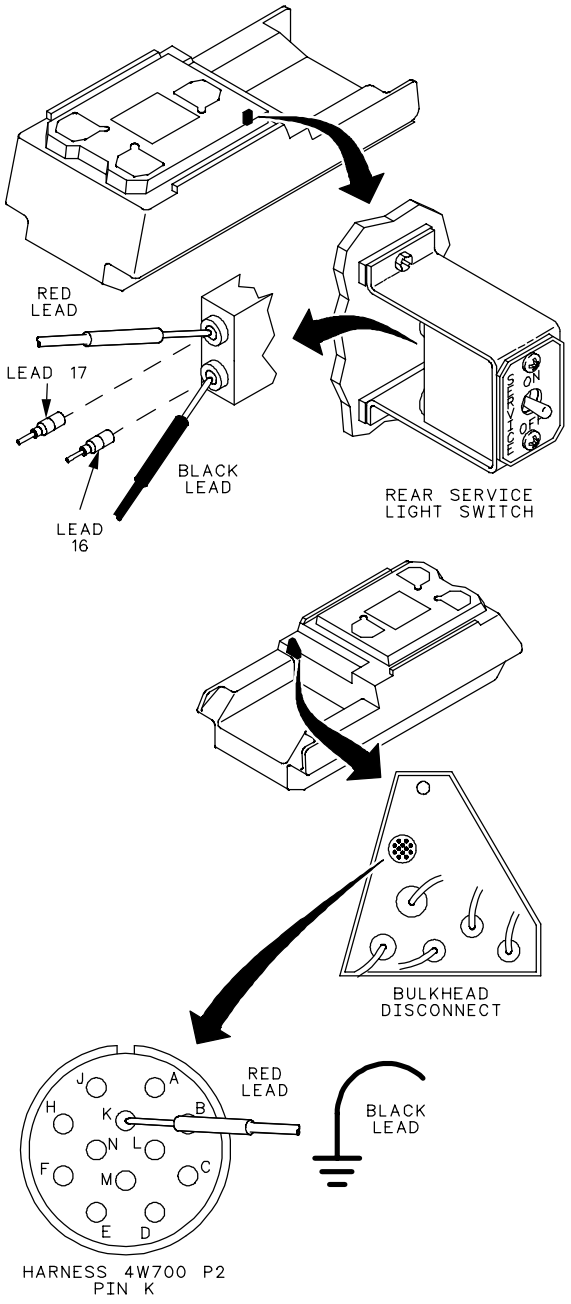
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0332 00) harness 4W700. Verify fault is corrected.



END OF TASK

EMERGENCY FLASHER LIGHT FAILS TO OPERATE 0123 00

THIS WORK PACKAGE COVERS:

Emergency Flasher Light Fails to Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove emergency flasher light lamp (WP 0277 00).
2. Turn MASTER switch and emergency flasher light switch ON (TM 9-2350-292-10).
3. Place red multimeter lead in lead 325A connector socket and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to Step C.

B

Place one multimeter in lamp connector socket and lead on lamp ground connector. Check for continuity.

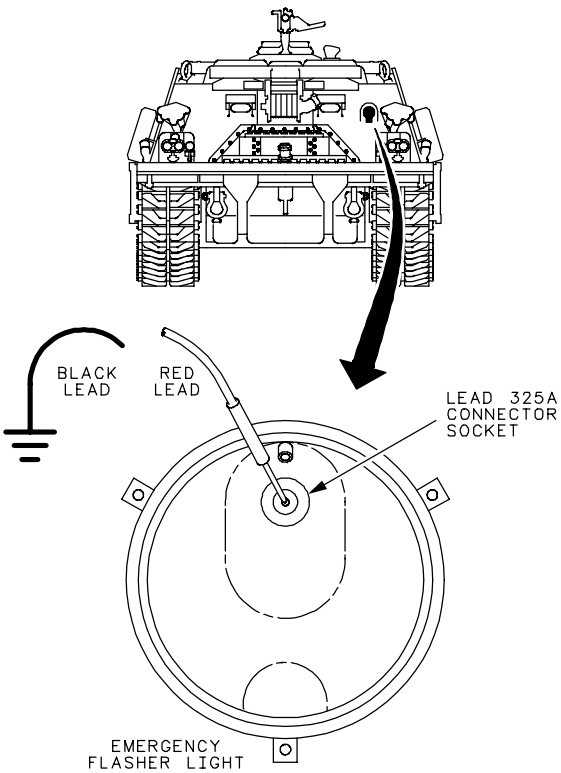
Is continuity present?

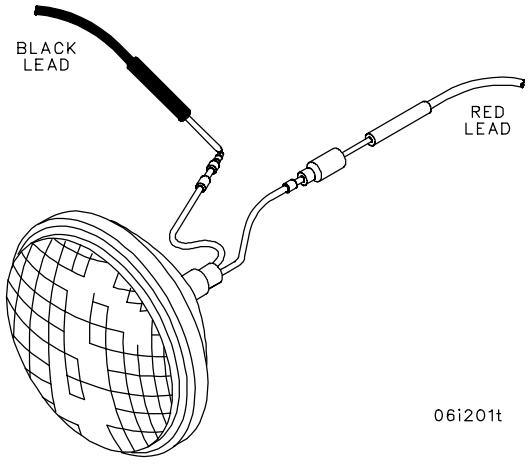
yes

Remove emergency flasher light assembly. Clean mounting surface. Remount light assembly (WP 0277 00). Verify fault is corrected.

no

Replace emergency flasher light lamp (WP 0277 00). Verify fault is corrected.





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CONTINUED ON NEXT PAGE

EMERGENCY FLASHER LIGHT FAILS TO OPERATE - CONTINUED 0123 00

CONTINUED FROM STEP A

C

1. Disconnect harness 4W101 wire 325A from emergency flasher light assembly (WP 0277 00).
2. Turn MASTER switch and EMERGENCY FLASHER LIGHT switch ON (TM 9-2350-292-10).
3. Place red multimeter lead in harness 4W101 wire 325A connector and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

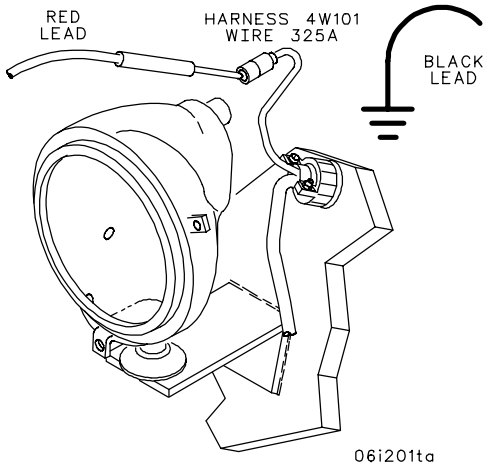
Is 24 V dc present?

yes

Replace connector socket between harness 4W101 wire 325A and emergency flasher light assembly (WP 0277 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



EMERGENCY FLASHER LIGHT FAILS TO OPERATE - CONTINUED 0123 00

CONTINUED FROM STEP C

D

1. Disconnect harness 4W101 P2 from flasher.
2. Turn MASTER switch and FLASHER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W101 P2 socket B and black lead to ground. Check for voltage.
4. Turn MASTER switch and FLASHER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Go to Step K.

no

E

1. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
2. Disconnect harness 4W101 P1 from switch panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W101 P1 socket J and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

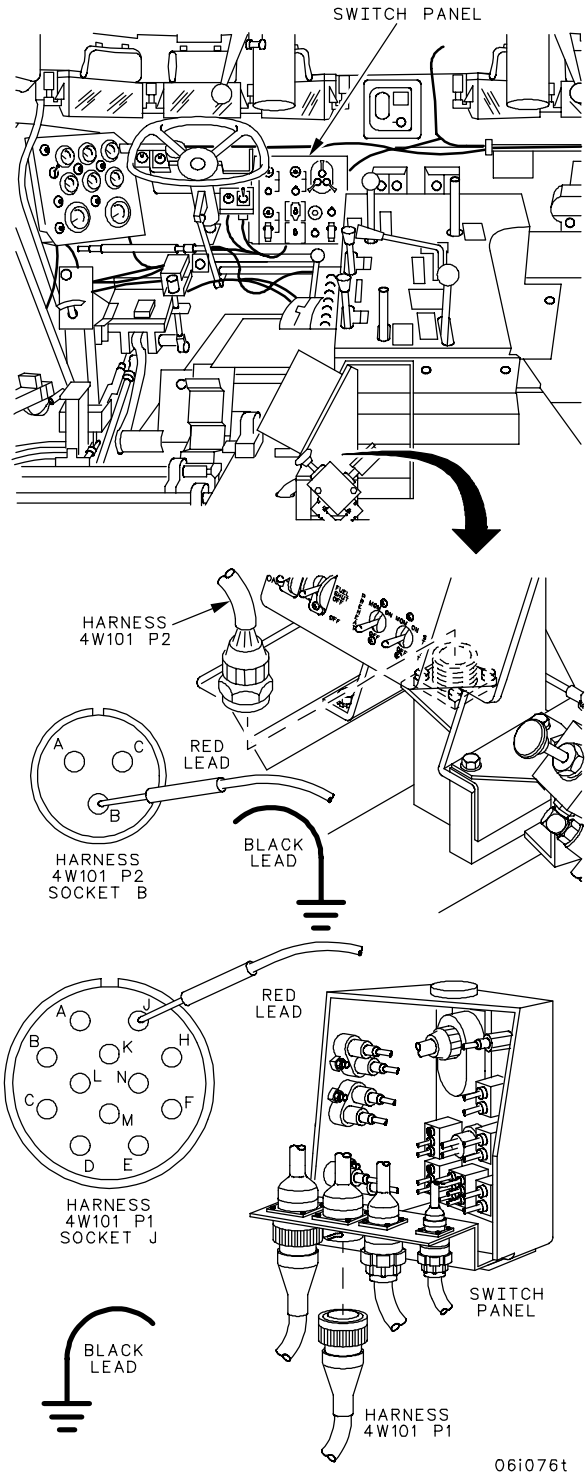
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0315 00) harness 4W101. Verify fault is corrected.

CONTINUED ON NEXT PAGE



EMERGENCY FLASHER LIGHT FAILS TO OPERATE - CONTINUED 0123 00

CONTINUED FROM STEP E

F

1. Disconnect lead 10 from CB5.
2. Place one multimeter lead on harness 4W109 J3 pin J and other lead in lead 10 CB5 connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 10 to CB5. Verify fault is corrected.

G

1. Disconnect lead 325 from CB5.
2. Place one multimeter lead on each CB5 connector pin. Check for continuity.

Is continuity present?

yes

no

Replace CB5 (WP 0242 00). Verify fault is corrected.

H

1. Reconnect lead 10 to CB5.
2. Disconnect lead 325 from CB5 side of switch S6.
3. Place one multimeter lead in each lead 325 connector socket. Check for continuity.

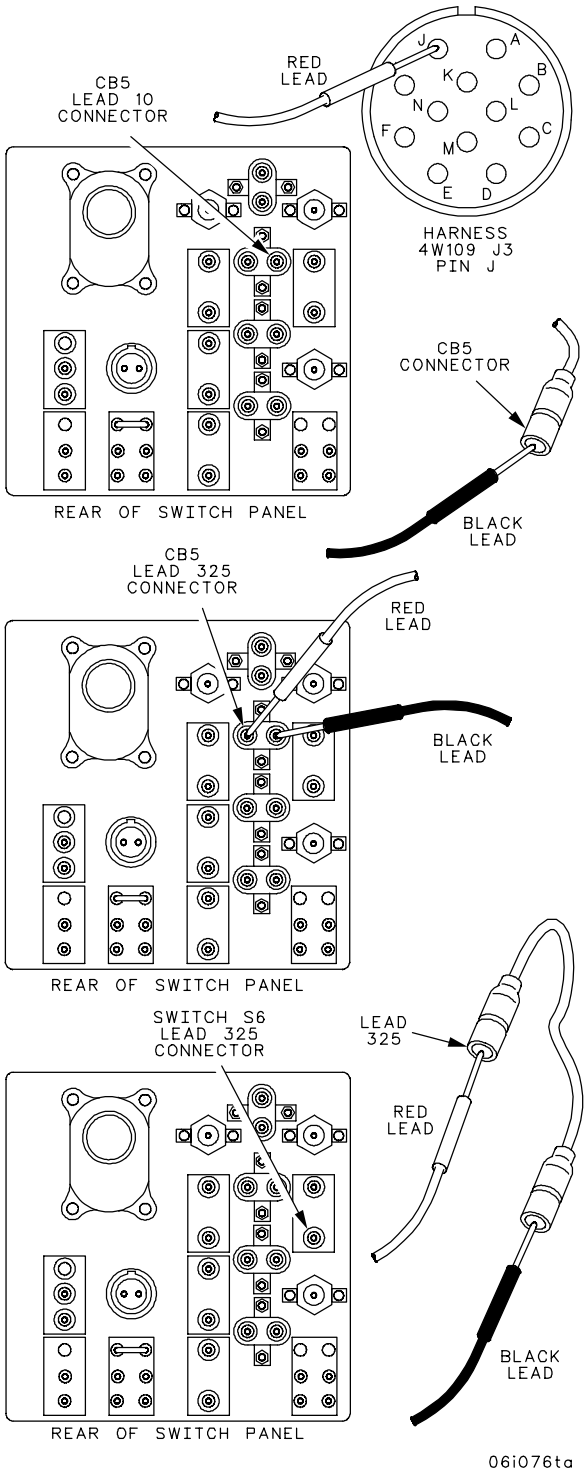
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 325. Verify fault is corrected.

CONTINUED ON NEXT PAGE



EMERGENCY FLASHER LIGHT FAILS TO OPERATE - CONTINUED 0123 00

CONTINUED FROM STEP H

I

1. Reconnect lead 325 to CB5.
2. Disconnect lead 325 from panel receptacle side of switch S6.
3. Place one multimeter lead on each switch S6 connector pin. Check for continuity.

Is continuity present?

yes

no

Replace switch S6 (WP 0242 00). Verify fault is corrected.

J

1. Reconnect lead 325 to CB5 side of switch S6.
2. Place one multimeter lead on harness 4W109 J3 pin E and other lead in switch S6 lead 325 connector socket. Check for continuity.

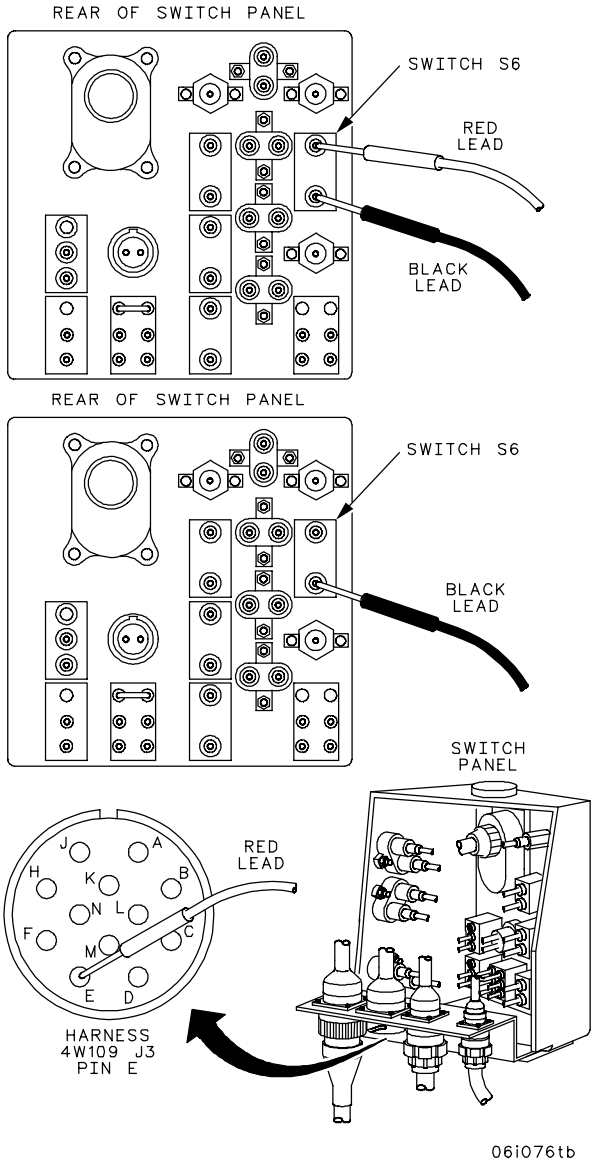
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0315 00) harness 4W101. Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0242 00) lead 325. Verify fault is corrected.



CONTINUED ON NEXT PAGE

EMERGENCY FLASHER LIGHT FAILS TO OPERATE - CONTINUED 0123 00

CONTINUED FROM STEP D

K

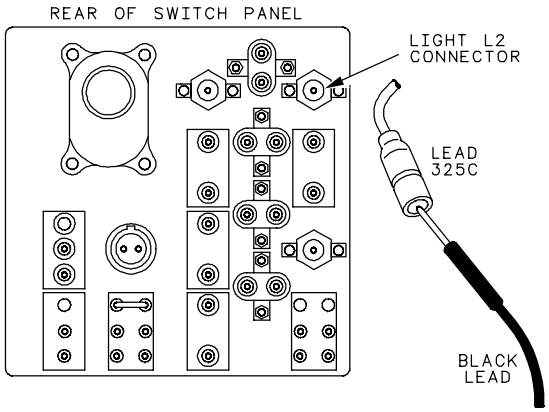
1. Disconnect lead 325C from light L2.
2. Place one multimeter lead in harness 4W101 P2 socket C and other lead on light L2 lead 325C connector pin. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0315 00) harness 4W101. Verify fault is corrected.



L

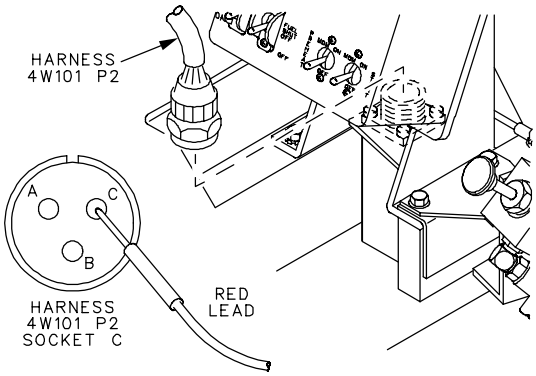
1. Reconnect harness 4W101 P1 to switch panel.
2. Connect a jumper wire from harness 4W101 P2 socket B to socket C.
3. Turn MASTER switch and FLASHER switch ON (TM 9-2350-292-10). Observe flasher indicator.
4. Turn MASTER switch and FLASHER switch OFF (TM 9-2350-292-10).

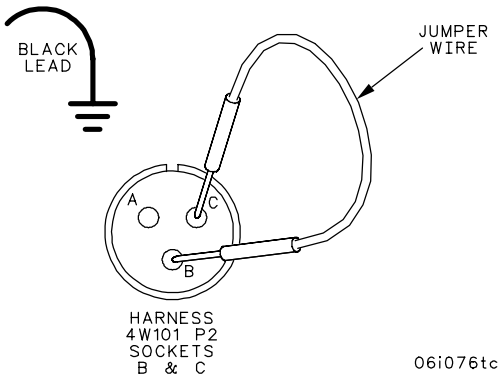
Does indicator light?

yes

no

Replace indicator assembly (WP 0242 00). Verify fault is corrected.





CONTINUED ON NEXT PAGE

EMERGENCY FLASHER LIGHT FAILS TO OPERATE - CONTINUED 0123 00

CONTINUED FROM STEP L

M

1. Move jumper wire from socket C to socket A (wire should now be in sockets A and B).
2. Turn MASTER switch and FLASHER switch ON (TM 9-2350-292-10) and observe flasher light.
3. Turn MASTER switch OFF (TM 9-2350-292-10).

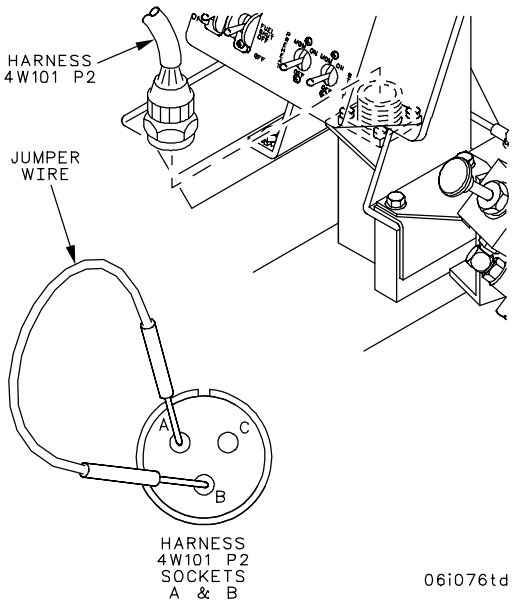
Does flasher light operate?

yes

Replace flasher (WP 0253 00). Verify fault is corrected.

no

Repair or replace flasher lamp assembly (WP 0277 00). Verify fault is corrected.



END OF TASK

WHEN ACTIVATING LAMP TEST SWITCH, INDICATOR WILL NOT COME ON 0124 00

THIS WORK PACKAGE COVERS:

When Activating Lamp Test Switch, Indicator Will Not Come On

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Open PTO/accessory panel (WP 0244 00).
2. Turn vehicle MASTER switch ON (TM 9-2350-292-10).
3. Place red multimeter lead on test lamp switch terminal 2 and black lead to ground.
4. Check for voltage.
5. Turn vehicle MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to Step C.

B

1. Hold LAMP TEST switch in ON position and place one multimeter lead on switch terminal 3 and other lead on terminal 2. Check for continuity.
2. Release LAMP TEST switch.

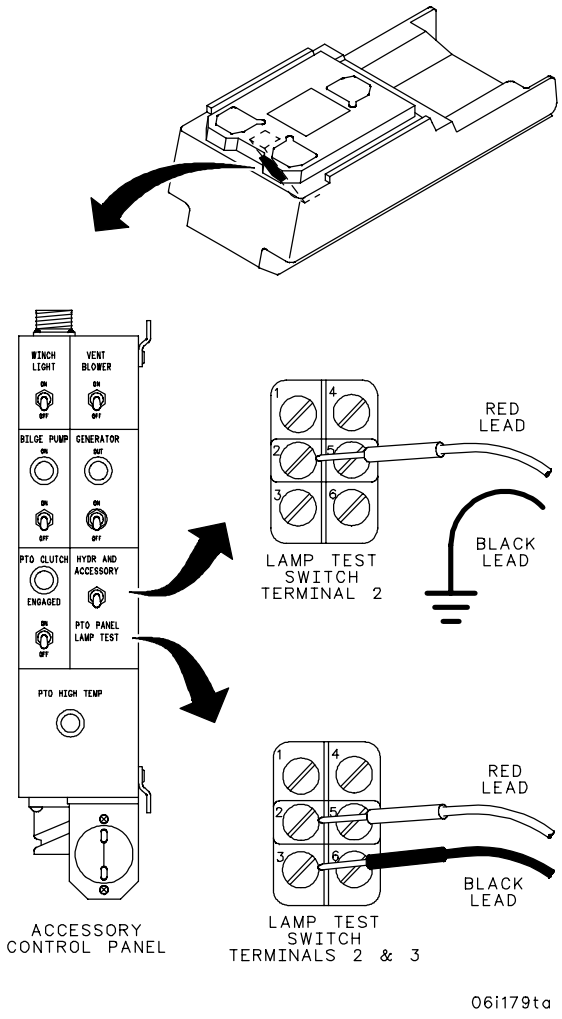
Is continuity present?

yes

no

Replace TEST LAMP holder socket (WP 0244 00). Verify fault is corrected.

Replace LAMP TEST switch (WP 0244 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

WHEN ACTIVIATING LAMP TEST SWITCH, INDICATOR WILL NOT COME ON - CONTINUED 0124 00

CONTINUED FROM STEP A

C Place one multimeter lead on CB3 terminal 1 and other multimeter lead on CB3 terminal 2. Check for continuity.

Is continuity present?

yes

no

Replace CB3 (WP 0244 00). Verify fault is corrected.

D Place one multimeter lead on LAMP TEST switch terminal 3 and other multimeter lead on CB3 terminal 1. Check for continuity.

Is continuity present?

yes

no

Replace lead 10 from CB3 to LAMP TEST switch terminal 3 (WP 0244 00). Verify fault is corrected.

E Place one multimeter lead on terminal board T17 terminal F and other multimeter lead on LAMP TEST switch terminal 2. Check for continuity.

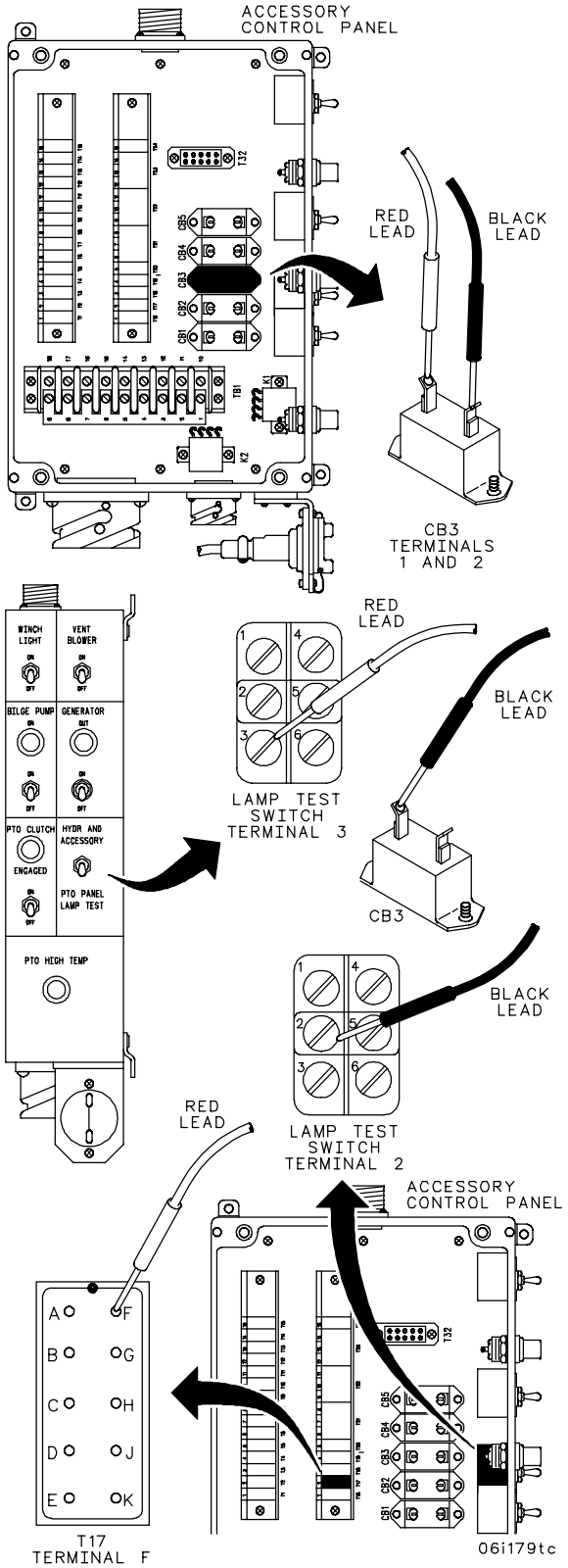
Is continuity present?

yes

no

Replace lead 10 from terminal board T17 to LAMP TEST switch (WP 0244 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



WHEN ACTIVIATING LAMP TEST SWITCH, INDICATOR WILL NOT COME ON - CONTINUED 0124 00

CONTINUED FROM STEP E

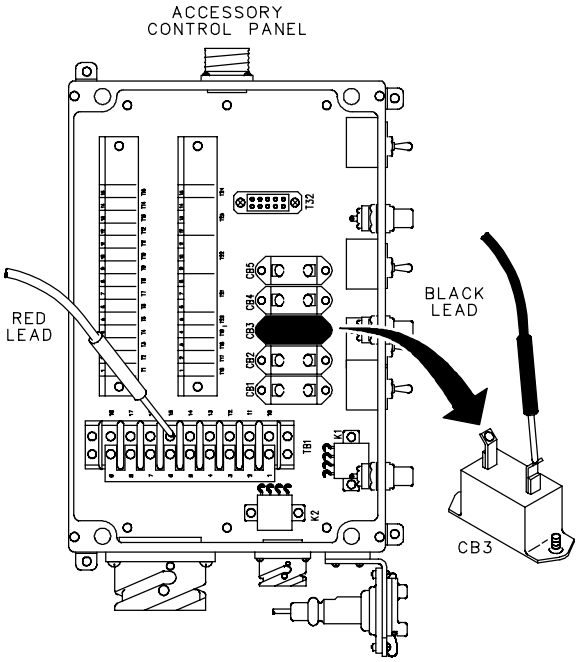
F Place one multimeter lead on CB3 terminal 2 and the other lead on TB1 terminal 15. Check for continuity.

Is continuity present?

yes

no

Replace lead 10-663A from terminal board TB1 to CB3 terminal 2 (WP 0244 00). Verify fault is corrected.



G

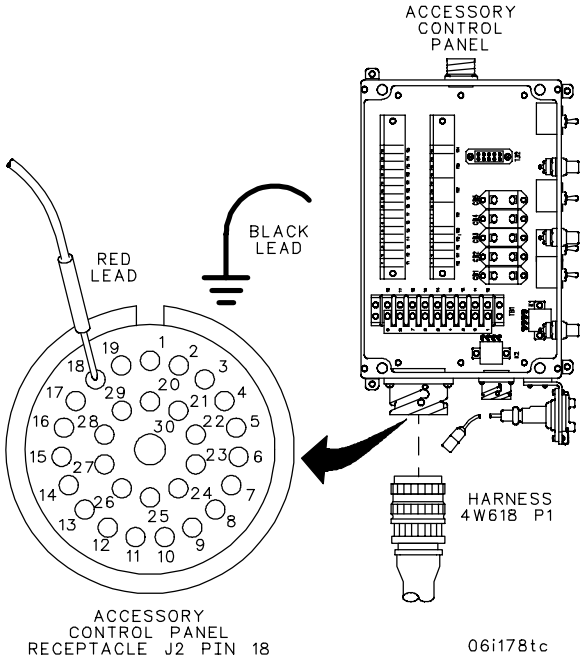
1. Disconnect harness 4W618 connector P1 from PTO/accessory control panel (WP 0331 00).
2. Turn vehicle MASTER switch ON (TM 9-2350-292-10).
3. Place red multimeter lead on PTO/accessory control panel connector J2 pin 18 and black multimeter lead to ground. Check for voltage.
4. Turn vehicle MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0314 00) harness 4W100 lead 10 to harness 4W618. Verify fault is corrected.



CONTINUED ON NEXT PAGE

WHEN ACTIVIATING LAMP TEST SWITCH, INDICATOR WILL NOT COME ON - CONTINUED 0124 00

CONTINUED FROM STEP G

H

1. Disconnect harness 4W618 connector P2 from harness 4W617 connector J1 (WP 0331 00).
2. Place one multimeter lead in harness 4W618 connector P1 socket 18 and other multimeter lead on harness 4W618 connector P2 pin H. Check for continuity.

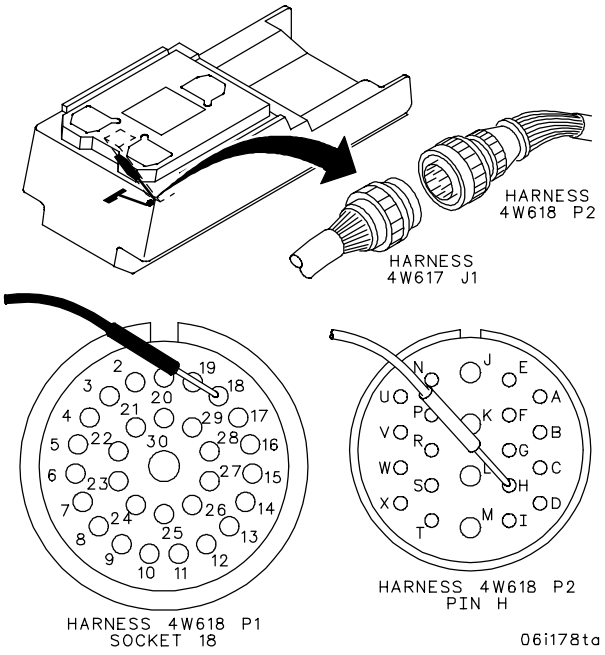
Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0330 00) harness 4W617. Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0331 00) harness 4W618. Verify fault is corrected.



END OF TASK

MASTER RELAY AND SLAVE RECEPTACLE OVERVIEW AND DIAGRAMS. 0125 00

THIS WORK PACKAGE COVERS:

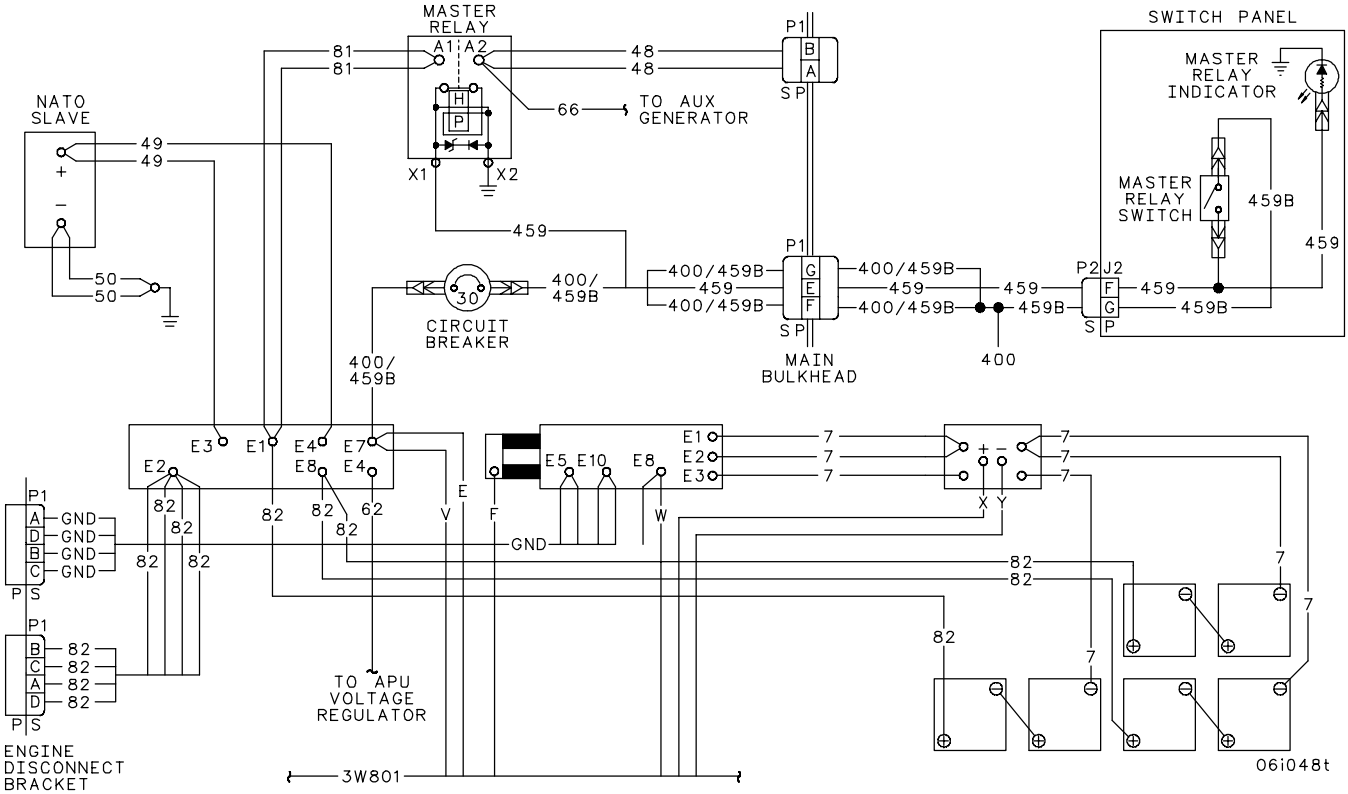
Master Relay And Slave Receptacle Overview and Diagrams

The master relay and slave receptacle system consists of the positive bus, negative bus, batteries, shunts, the master relay, a MASTER switch, a MASTER relay indicator light, a 30-amp circuit breaker, and related electrical wiring. The master relay and slave receptacle system switches and distributes electrical power (+24 - 28 V dc) to most of the vehicle electrical components. The source of electrical power can be either the batteries (+24 V dc), main engine generator (+28 V dc), APU engine generator (+28 V dc), or an external source (+24 - 28 V dc). Not all electrical components are supplied system power from the master relay. Some circuits, such as the personnel heater, operate directly from battery or generator power outputs while others in the exhaust smoke generator, main engine monitoring system, engine accessories and warning system operate only from output power produced by the main engine generator. The 30-amp circuit breaker provides overload protection for the master relay and personnel heater circuits

When the MASTER switch is turned ON, battery power (+24 V dc) energizes the master relay to supply system power to the vehicle electrical components including the main engine starting system. Additionally, the MASTER indicator lights to show that system power is available in the vehicle. After the engine is started and running, the generator power output (+28 V dc) is supplied as system power through the master relay and distributed through the vehicle. Power can also be supplied by the auxiliary power unit or from an external source. When an external source is used, power is supplied by way of the slave receptacle. The various vehicle power sources can also be used as an alternate power source for other vehicles. In this case, power is supplied from the slave receptacle to the other vehicle.

Since the MASTER switch controls the application of system power to most of the vehicle electrical components, turning the MASTER switch OFF will shut down vehicle system power. The MASTER switch should be set to the OFF position when starting maintenance procedures.

The relationship of the master relay and slave receptacle components is shown in the following diagram.



END OF TASK

NO POWER WHEN MASTER SWITCH IS TURNED ON. 0126 00

THIS WORK PACKAGE COVERS:

No Power When Master Switch Is Turned On

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)
STE-ICE-R (item 85, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine access doors open (TM 9-2350-292-10)
MASTER switch lamp replaced (TM 9-2350-292-10)
MASTER relay cover removed (WP 0271 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A While holding your hand on master relay, have assistant turn MASTER switch ON and OFF (TM 9-2350-292-10) several times.

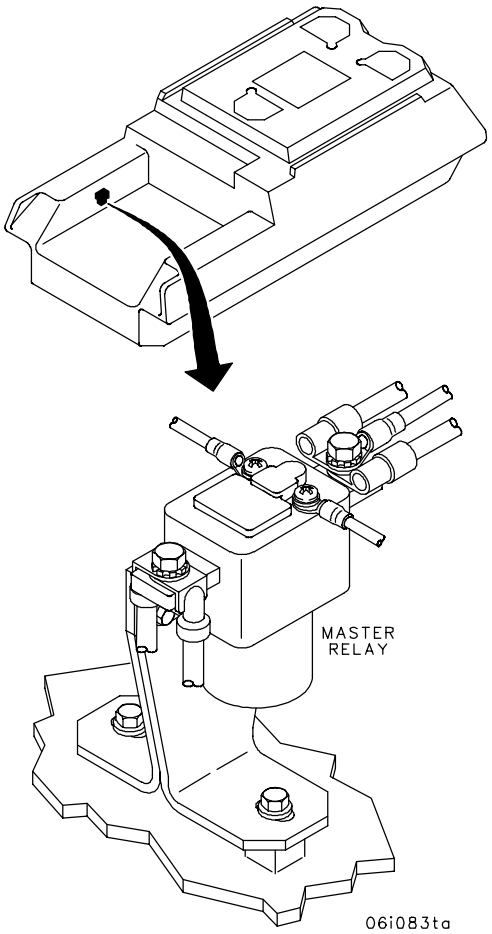
Is a clicking noise heard or felt from master relay?

yes

no

Go to Step D.

CONTINUED ON NEXT PAGE



NO POWER WHEN MASTER SWITCH IS TURNED ON - CONTINUED 0126 00

CONTINUED FROM STEPS A AND D

B

WARNING

Lead 81 has voltage present at all times. To avoid personnel injury or equipment damage use extreme caution when working with this lead. Never allow lead 81 to contact vehicle ground.

1. Disconnect harness 3W217 lead(s) 48 from master relay.
2. Place multimeter red lead on each harness 3W217 lead 48 connector and black lead to ground. Check for voltage.

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0309 00) lead 48. Verify fault is corrected.

C

1. Reconnect harness 3W217 leads 48 to master relay.
2. Disconnect harness 3W215 leads 81 from positive bus side of master relay.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on each harness 3W215 lead 81 master relay terminal and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

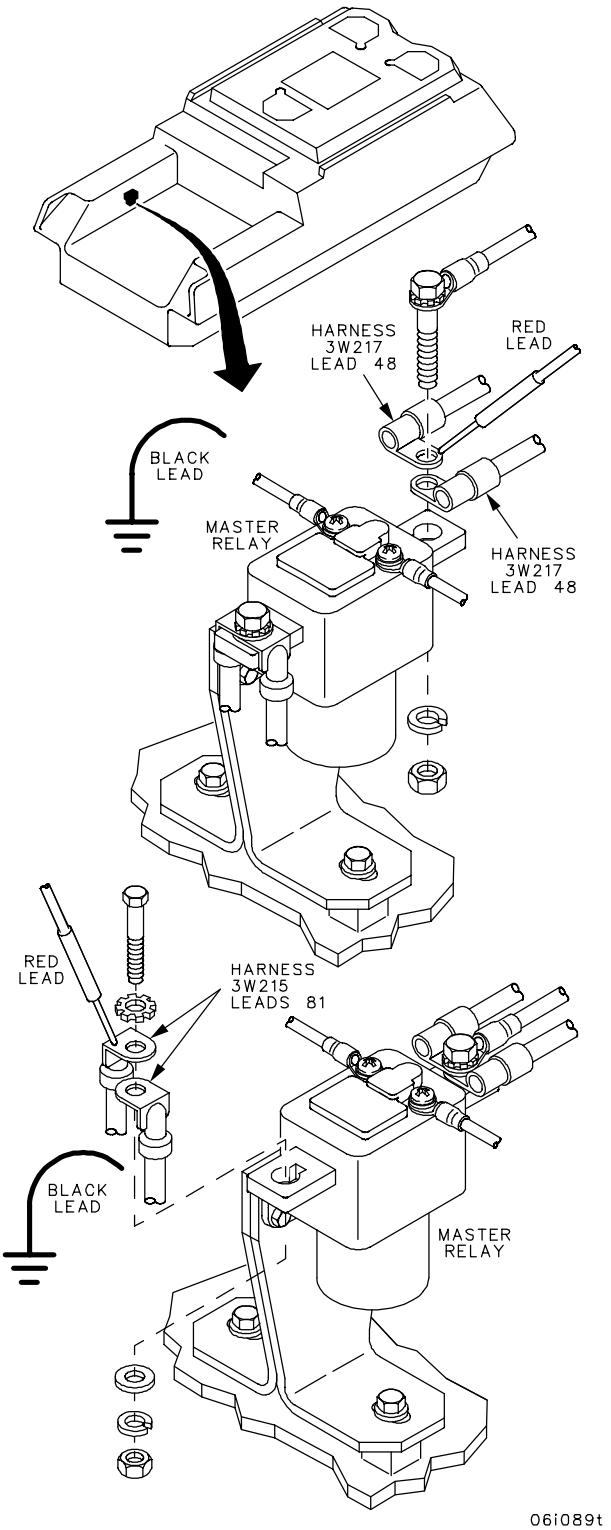
Is 24 V dc present?

yes

no

Go to Step H.

Replace master relay (WP 0271 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

NO POWER WHEN MASTER SWITCH IS TURNED ON - CONTINUED 0126 00

CONTINUED FROM STEP A

D Is STE-ICE-R available?

yes

no

Go to Step B.

E

1. Setup STE-ICE-R for operation (TM 9-4910-571-12&P).
2. Connect STE-ICE-R harness W1 to vehicle harness 4W800 J1 DCA connector.
3. Enter vehicle ID (VID) 04 and perform STE-ICE-R test 75 (TM 9-4910-571-12&P) and record results.

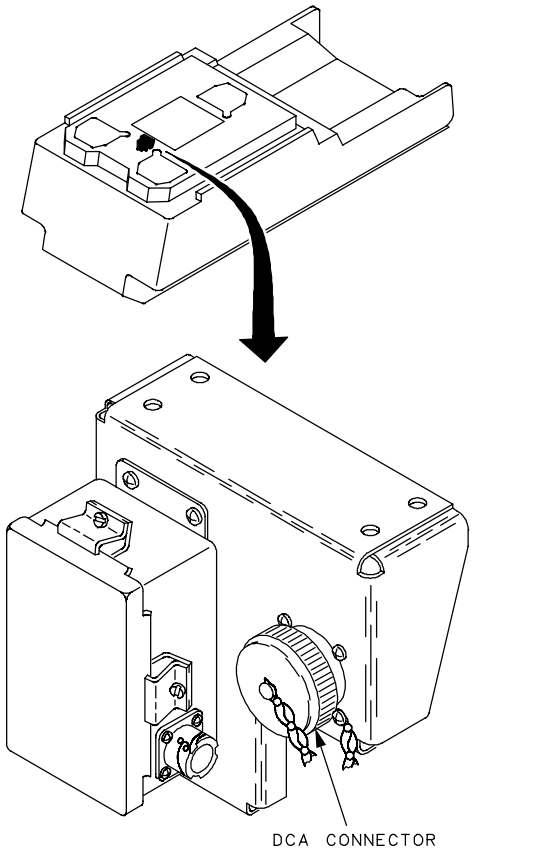
Is VTM reading less than 16.7 milliohms?

yes

no

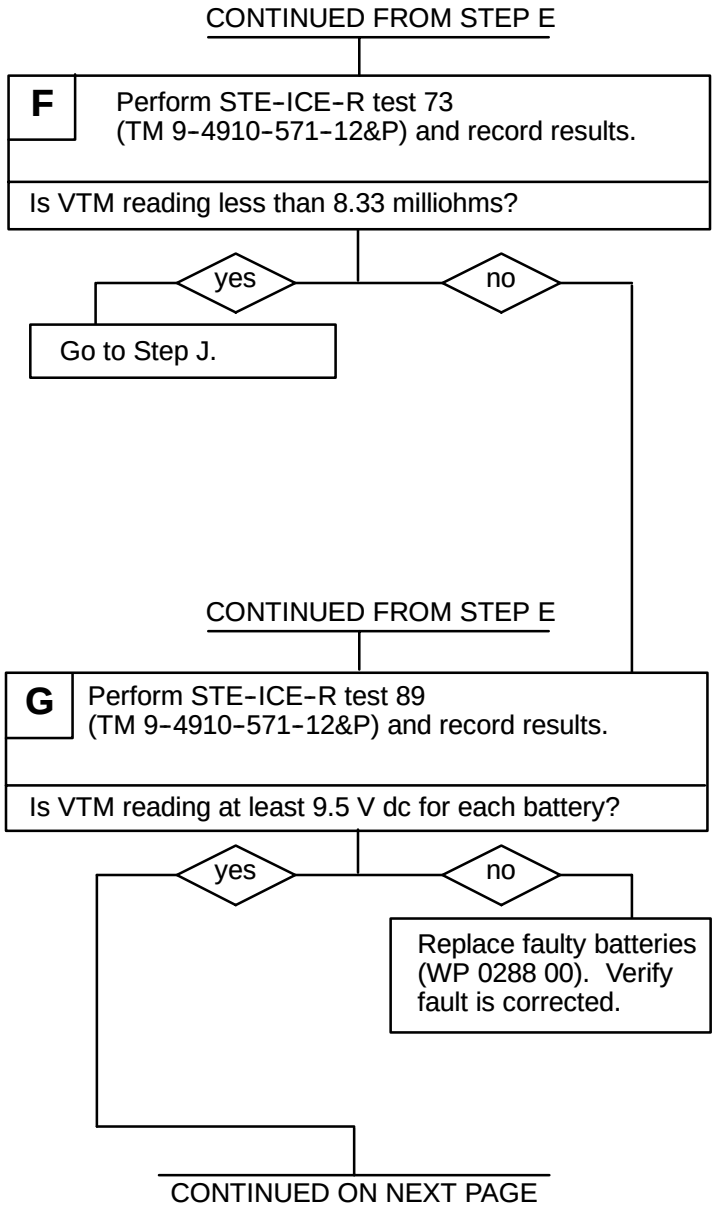
Go to Step G.

CONTINUED ON NEXT PAGE



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NO POWER WHEN MASTER SWITCH IS TURNED ON - CONTINUED 0126 00



NO POWER WHEN MASTER SWITCH IS TURNED ON - CONTINUED 0126 00

CONTINUED FROM STEPS C AND G

H

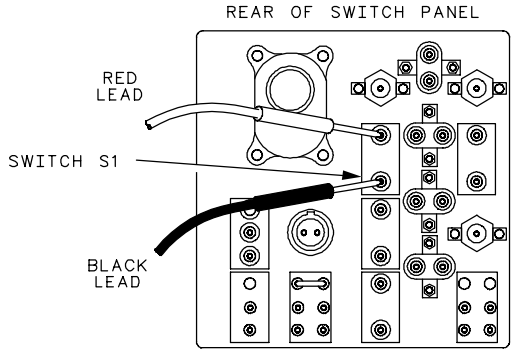
1. Remove switch panel from vehicle (WP 0242 00).
2. Disconnect lead 459 from switch S1.
3. Place one multimeter lead on each switch S1 connector pin. Check for continuity.

Is continuity present?

yes

no

Replace switch S1 (WP 0242 00). Verify fault is corrected.



I

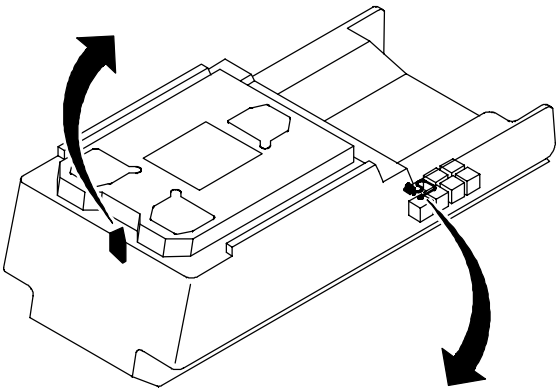
1. Reconnect harness 3W218 lead 400/459B to circuit breaker.
2. Disconnect harness 3W142 lead 400/459B from bulkhead side of 30-amp circuit breaker.
3. Place multimeter red lead on 30-amp circuit breaker pin and black lead to ground. Check for voltage.

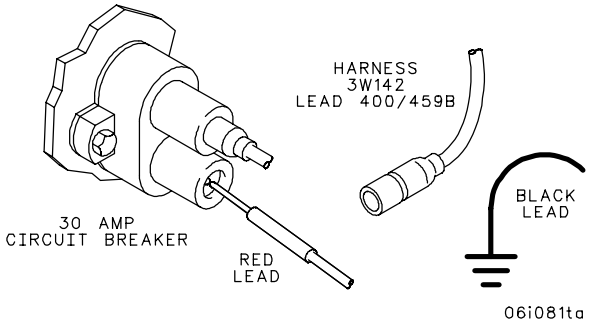
Is 24 V dc present?

yes

no

Replace 30-amp circuit breaker (WP 0270 00). Verify fault is corrected.





CONTINUED ON NEXT PAGE

NO POWER WHEN MASTER SWITCH IS TURNED ON - CONTINUED 0126 00

CONTINUED FROM STEPS F AND I

J

1. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
2. Disconnect harness 4W127 P2 from switch panel.
3. Place multimeter red lead in harness 4W127 P2 socket G and black lead to ground. Check for voltage.

Is 24 V dc present?

yes

Go to Step M.

no

K

1. Disconnect harness 3W218 lead 400/459B from 30-amp circuit breaker.
2. Place multimeter red lead in lead 400/459B circuit breaker connector socket and black lead to ground. Check for voltage.

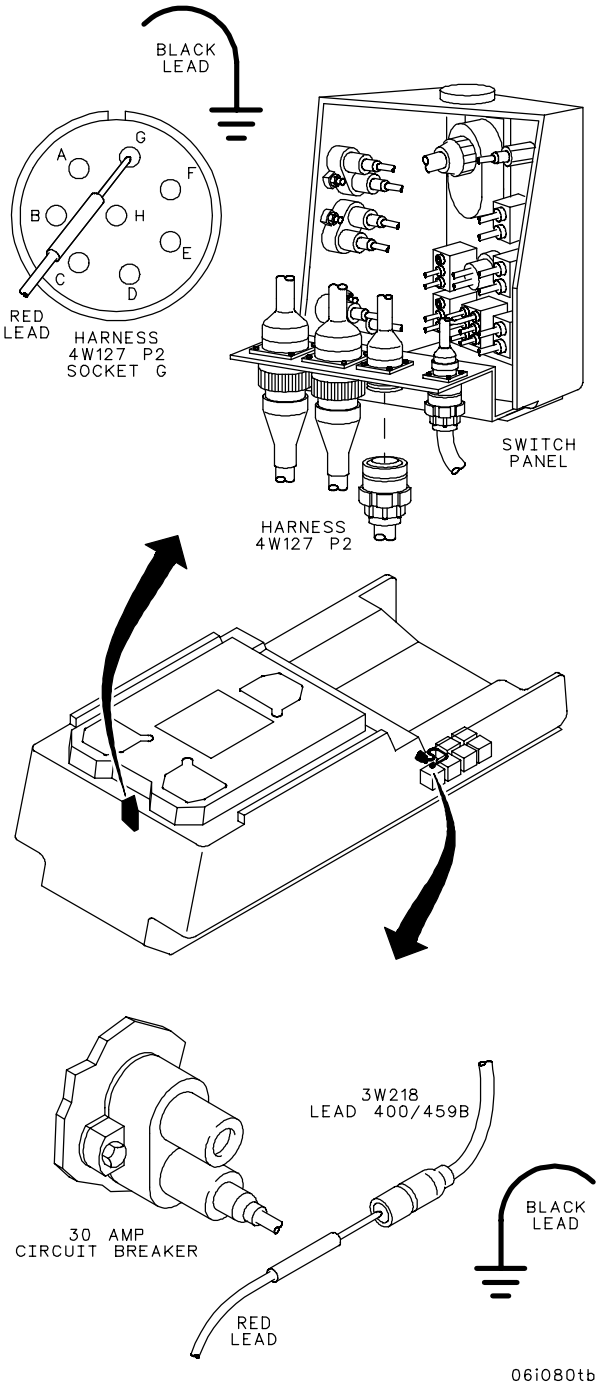
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0310 00) harness 3W218. Verify fault is corrected.

CONTINUED ON NEXT PAGE



NO POWER WHEN MASTER SWITCH IS TURNED ON - CONTINUED 0126 00

CONTINUED FROM STEP K

L

1. Reconnect lead 400/459B to 30-amp circuit breaker.
2. Open air intake grilles above battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W142 P1 from bulkhead disconnect.
4. Place multimeter red lead in harness 3W142 P1 socket G and F (one at a time) while holding black lead to ground. Check for voltage.

Is 24 V dc present at both checks?

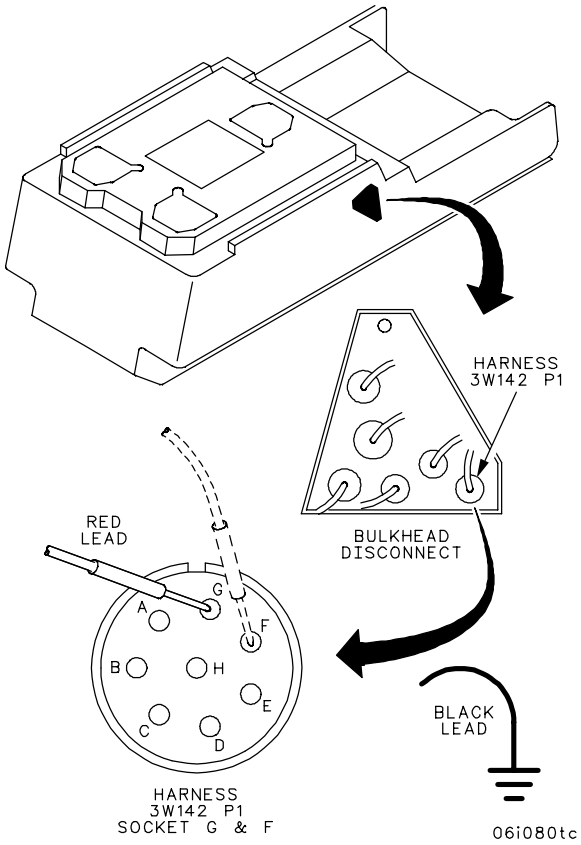
yes

Repair (WP 0290 00) or replace (WP 0324 00) harness 4W127. Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0294 00) harness 3W142. Verify fault is corrected.

CONTINUED ON NEXT PAGE



NO POWER WHEN MASTER SWITCH IS TURNED ON - CONTINUED 0126 00

CONTINUED FROM STEP J

M

1. Remove switch panel from vehicle (WP 0242 00).
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place one multimeter lead on harness 4W151 J2 pin F and other lead on pin G. Check for continuity.

Is continuity present?

yes

Go to Step P.

no

N

1. Disconnect lead 459B from switch S1.
2. Place one multimeter lead on harness 4W151 J2 pin G and other lead in lead 459B MASTER switch connector socket. Check for continuity.

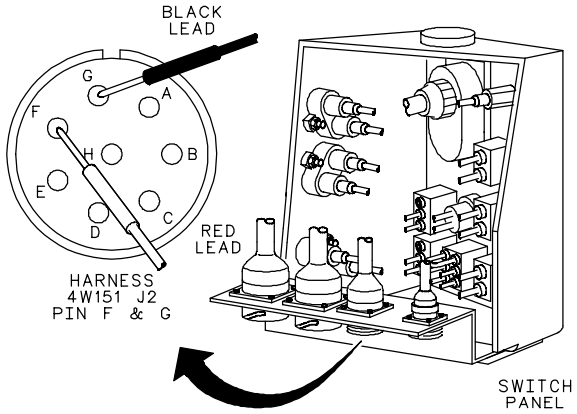
Is continuity present?

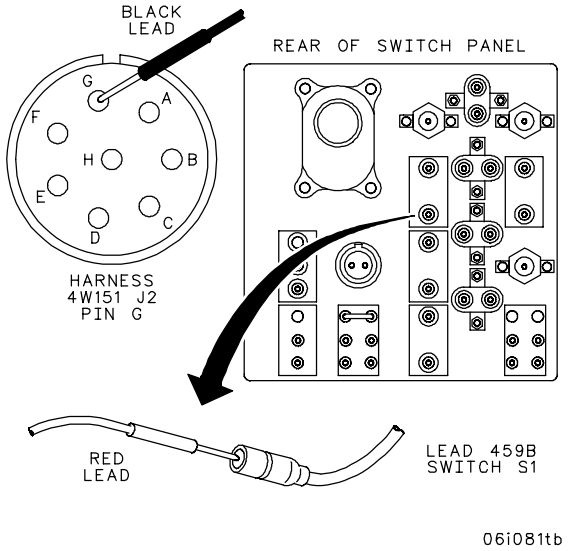
yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

CONTINUED ON NEXT PAGE





NO POWER WHEN MASTER SWITCH IS TURNED ON - CONTINUED 0126 00

CONTINUED FROM STEP N

O Place one multimeter lead in lead 459 switch S1 connector socket and other lead on harness 4W151 J2 pin F. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151. Verify fault is corrected.

CONTINUED FROM STEP M

P

1. Place one multimeter lead in harness 4W127 P4 socket E and other lead in harness 4W127 P2 socket F. Check for continuity.
2. Turn MASTER switch OFF (TM 9-2350-292-10).

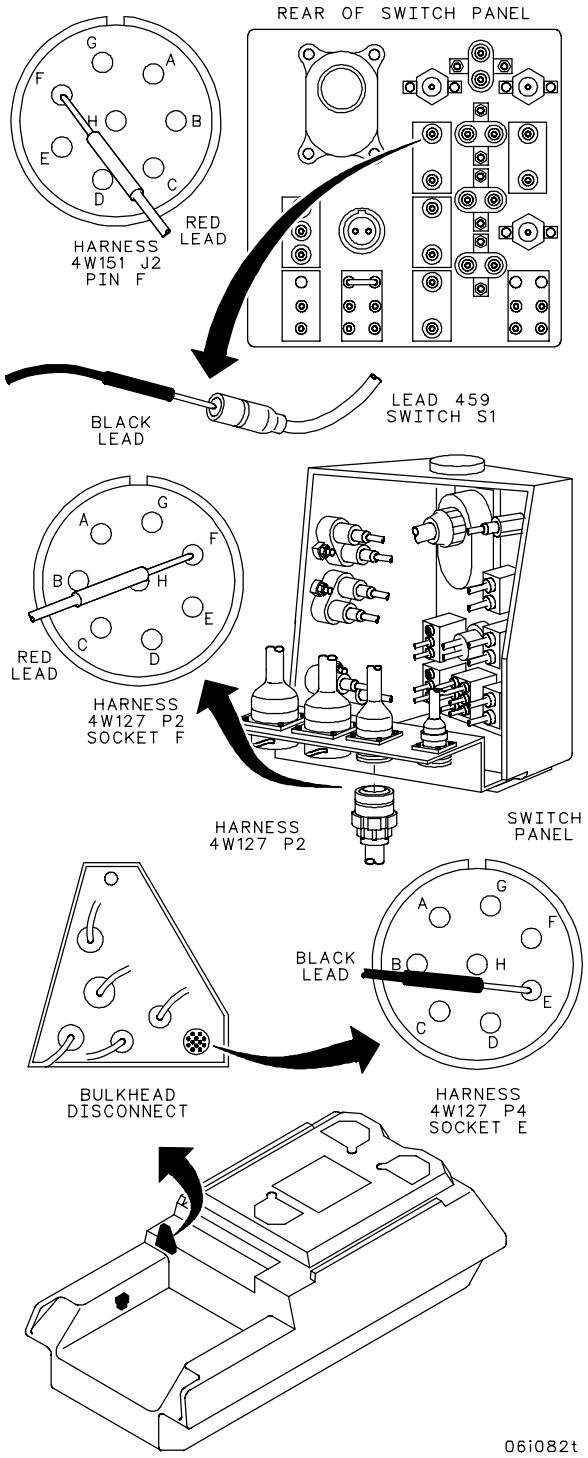
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0324 00) harness 4W127. Verify fault is corrected.

CONTINUED ON NEXT PAGE



NO POWER WHEN MASTER SWITCH IS TURNED ON - CONTINUED 0126 00

CONTINUED FROM STEP P

Q

1. Reinstall switch panel (WP 0242 00).
2. Reconnect harness 3W142 P1 to bulkhead disconnect.
3. Disconnect harness 3W142 lead 459 from master relay.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Place multimeter red lead on harness 3W142 lead 459 master relay connector and black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

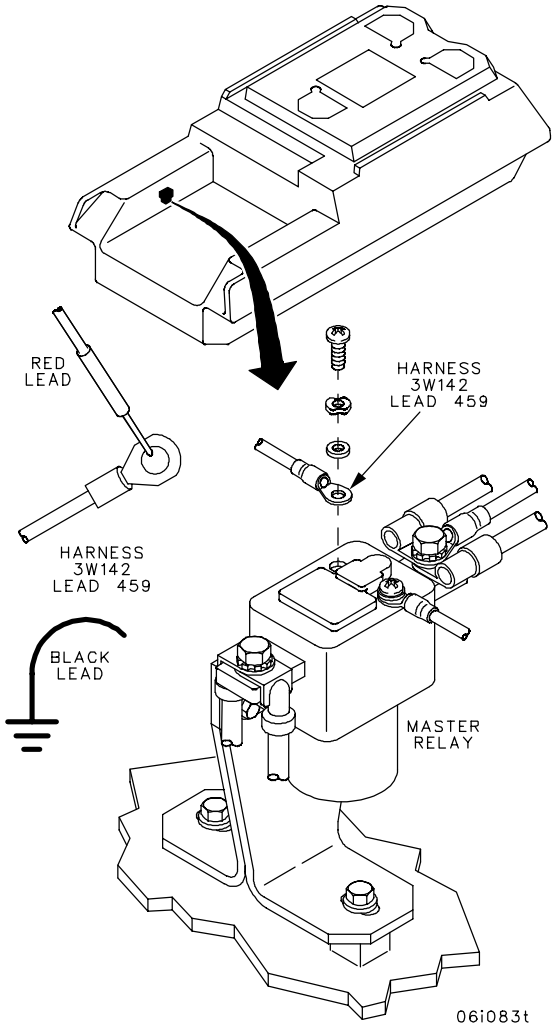
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0294 00) harness 3W142. Verify fault is corrected.

CONTINUED ON NEXT PAGE



NO POWER WHEN MASTER SWITCH IS TURNED ON - CONTINUED 0126 00

CONTINUED FROM STEP Q

R

1. Reconnect harness 3W217 lead 81 to master relay.
2. Disconnect harness 3W217 lead 48 from bulkhead disconnect.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on harness 3W217 lead 48 connector pin A and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0309 00) harness 3W217. Verify fault is corrected.

S

1. Reconnect harness 3W217 lead 48 to bulkhead disconnect.
2. Disconnect harness 4W105 P1 from switch panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W105 P1 socket M and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10)

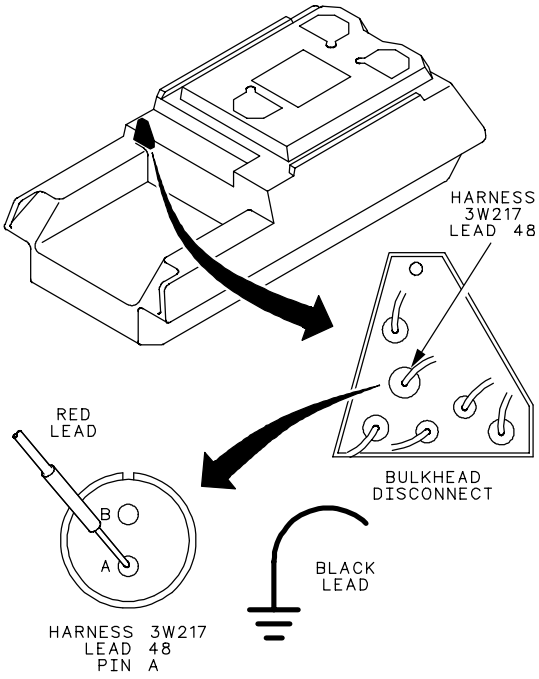
Is 24 V dc present?

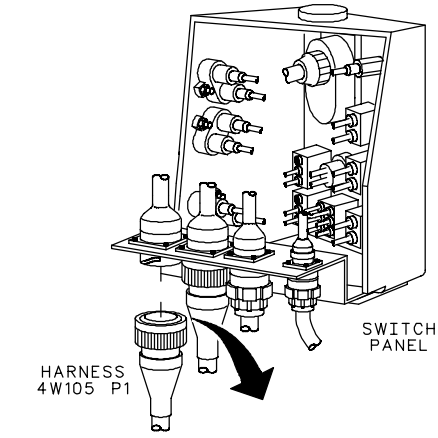
yes

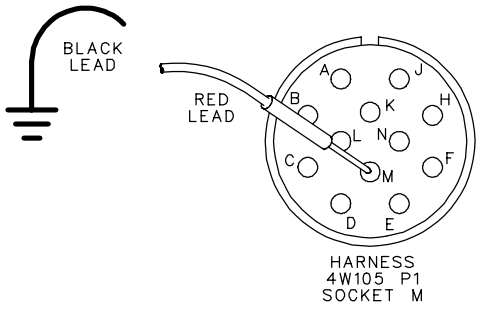
no

Replace switch panel (WP 0242 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.







06i090t

END OF TASK

NO POWER AT SLAVE RECEPTACLE. 0127 00

THIS WORK PACKAGE COVERS:
No Power At Slave Receptacle

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Batteries in good condition

Personnel Required
Two

WARNING
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Place multimeter red lead on NATO receptacle positive terminal and black lead to ground. Check for voltage.

Is 24 V dc present?

yes

no → Go to Step C.

B

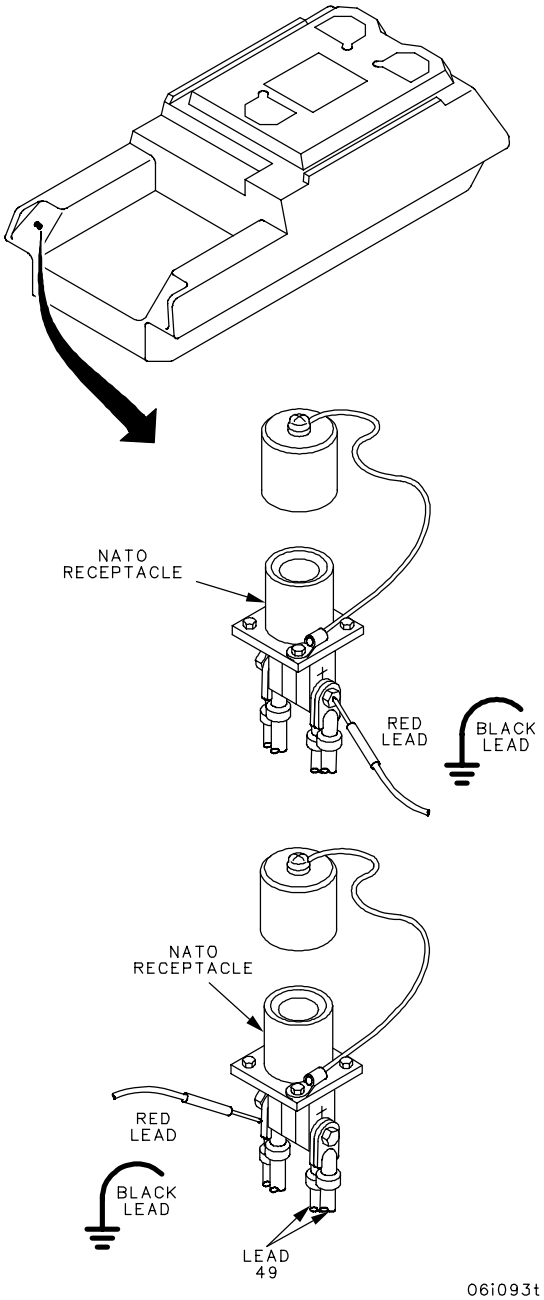
WARNING
Contact of jewelry, metal tools and equipment between positive terminal and vehicle ground can result in short circuiting and even battery explosion which can cause severe burns or death.

Place one multimeter lead on receptacle negative terminal and other lead to ground. Check for continuity.

Is continuity present?

yes → Replace slave receptacle (WP 0307 00). Verify fault is corrected.

no → Repair (WP 0290 00) or replace (WP 0307 00) lead 50. Verify fault is corrected.



CONTINUED ON NEXT PAGE

NO POWER AT SLAVE RECEPTACLE - CONTINUED 0127 00

CONTINUED FROM STEP A

C

WARNING

Contact of jewelry, metal tools and equipment between positive terminal and vehicle ground can result in short circuiting and even battery explosion which can cause severe burns or death.

1. Remove positive bus cover (WP 0317 00).
2. Place red multimeter lead on wires 49 at terminals E-3 and E-4 (one at a time) and black lead to ground. Check for voltage.

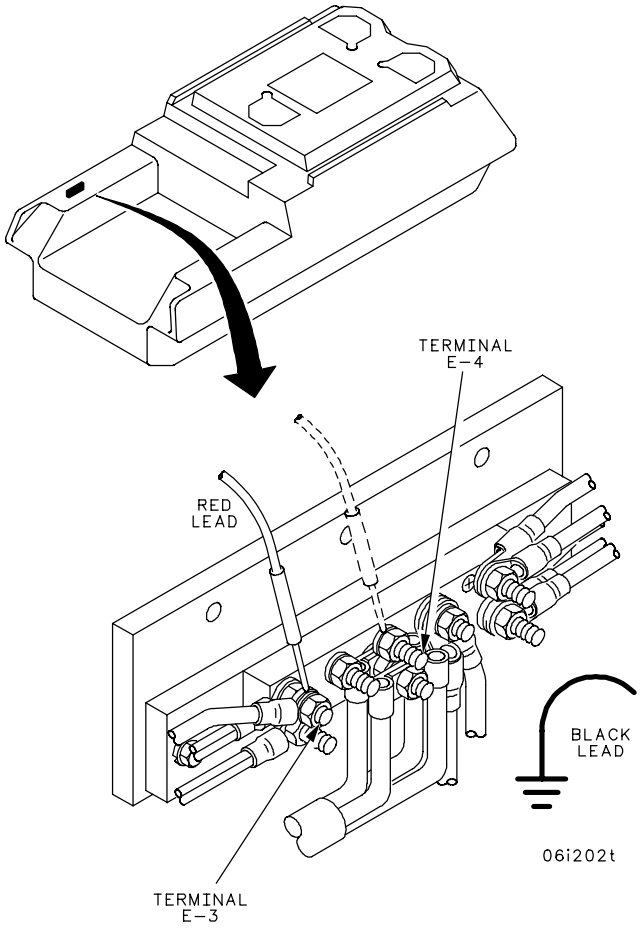
Is 24 V dc present?

yes

Replace lead 49 between positive bus and slave receptacle (WP 0317 00). Verify fault is corrected.

no

Replace positive bus (WP 0256 00) verify fault is corrected.



END OF TASK

MONITORING SYSTEM OVERVIEW AND DIAGRAMS. 0128 00

THIS WORK PACKAGE COVERS:

Monitoring System Overview and Diagrams

The monitoring system includes electrical circuits for the generator output and battery system indicator, main engine gauges and indicators, transmission gauges and indicators, and hydraulic system gauges and indicators.

The generator output and battery system indicator circuits consists of the ENGINE BATT/GEN VOLTS gauge, 15–amp circuit breaker, and related electrical wiring. When the MASTER switch is ON, the ENGINE BATT/GEN VOLTS gauge displays the status of the vehicle system power source. When neither the main engine nor APU engine is running, the gauge indicates the condition of the batteries based on the voltage measured (nominally +24 V dc). If either the main engine or APU engine is in operation, the gauge indicates the status of the applicable generator output again based on the voltage measured (nominally +28 V dc). The gauge will also indicate the status of an external power source, if applicable. The system power source, regardless of the origin, is applied from the master relay through the 15–amp circuit breaker in the switch panel to the ENGINE BATT/GEN VOLT gauge. The gauge is grounded on the gauge panel completing the circuit to provide the status indication (voltage measurement).

The main engine gauges and indicators circuit include the ENGINE TEMP gauge (engine oil temperature), ENGINE PRESS gauge (engine oil pressure), FUEL TANK LEVEL gauge, TURBO DUST DET indicator (turbocharger dust detector), FUEL TANK FRONT/REAR selector switch, two liquid level transmitters, engine oil temperature transmitter, engine oil pressure transmitter, two dust detector pressure switches, 15–amp circuit breaker, and related electrical wiring.

The engine oil pressure gauge operates whenever the main engine is running and provides an indication of current engine oil pressure. The oil temperature and FUEL TANK LEVEL gauges together with the turbocharger dust detector indicator operate anytime the MASTER switch is turned ON. The engine oil temperature gauge provides an indication of current engine oil temperature. The FUEL TANK LEVEL gauge indicates the level of fuel in either the front or rear fuel tank depending on the position of the FUEL TANK FRONT/REAR selector switch. The turbocharger dust detector indicator lights when either of the dust detector pressure switch plungers extend to close the respective switch. The plunger extends when the filter strips in the compressor housings become restricted from dust ingestion.

All engine gauges and indicators operate from system power (+24 – 28 V dc) supplied from the master relay through the 15–amp circuit breaker in the switch panel. Both the oil temperature and oil pressure transmitters are engine mounted and each monitors its respective engine operating parameter. The electrical signal output of each transmitter is sent directly to the corresponding gauge which, in turn, produces the indicated value as a function of the input provided. Similarly, the two liquid quantity transmitters, which are mounted in the front and rear fuel tanks, monitor the level of fuel in their respective fuel tank The FUEL TANK FRONT/REAR selector switch selects the desired transmitter electrical signal output where it is routed to the FUEL TANK LEVEL gauge which produces the indicated fuel level as a function of the input signal. When either of the turbocharger dust detector switches are closed, a ground is applied to the TURBO DUST DET indicator to complete the electrical circuit and light the indicator.

The transmission gauges and indicators electrical circuits include the TRANSMISSION TEMP gauge (transmission temperature), TRANSMISSION PRESS gauge (transmission oil pressure), TRANSMISSION FILTER CLOGGED indicator, transmission oil temperature transmitter, transmission oil pressure transmitter, transmission filter switch, 15 amp circuit breaker, 20–amp circuit breaker, and related electrical wiring, The TRANSMISSION TEMP and TRANSMISSION PRESS gauges display the current transmission oil temperature and transmission oil pressure, respectively. The TRANSMISSION FILTER CLOGGED indicator, when lit, signifies that the transmission filter is clogged and needs to be serviced. The transmission gauges and indicator operate whenever the MASTER switch is turned ON; however, if the engine is not running, the gauges normally will not show any readings. An exception would be the oil temperature gauge if the engine was just turned off. In this case, a reading will be shown on the oil temperature gauge while the transmission oil is still hot.

MONITORING SYSTEM OVERVIEW AND DIAGRAMS - CONTINUED 0128 00

The transmission gauges operate from system power (+24 - 28 V dc) supplied from the master relay through the 15-amp circuit breaker in the switch panel. Both the oil temperature and oil pressure transmitters are transmission mounted and each monitors its respective transmission operating parameter. The electrical signal output of each transmitter is sent directly to the corresponding gauge which, in turn, produces the indicated value as a function of the input provided.

The TRANSMISSION FILTER CLOGGED indicator receives system power (+24 - 28 V dc) supplied from the master relay through a 20-amp circuit breaker in the hydraulic control panel. The transmission filter switch is part of the transmission filter and closes when the filter becomes clogged. As a result, a ground is applied to the indicator that completes the circuit to light the TRANSMITTER FILTER CLOGGED indicator LED.

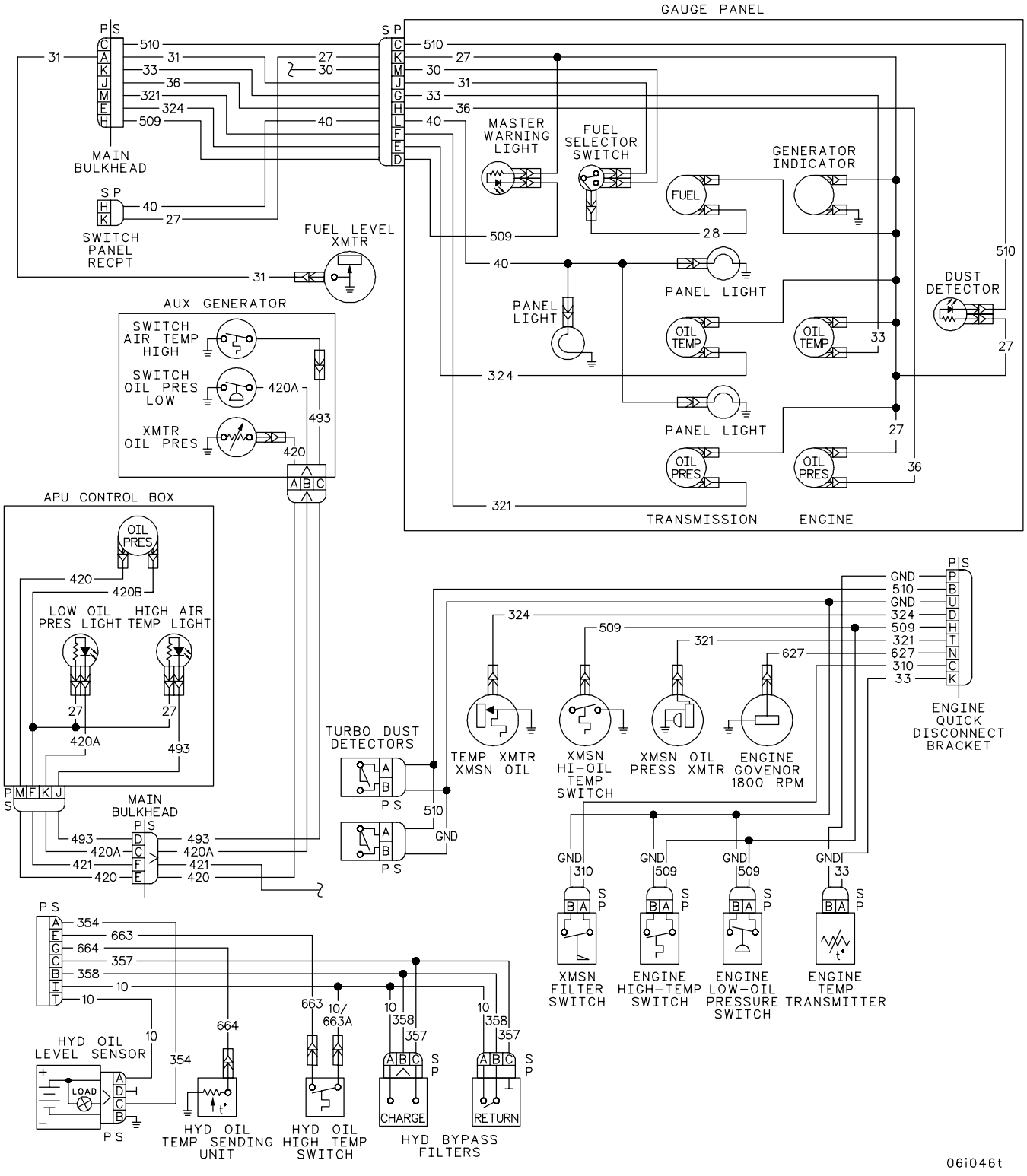
Hydraulic system gauges and indicator circuits include the LOW OIL LEVEL, CHARGE FILTER, RETURN FILTER, and MAX OIL TEMP EXCEEDED (225° F) indicators; the HYDRAULIC OIL TEMPERATURE gauge; the liquid level sensor; charge filter switch circuit; return filter switch circuit; hydraulic high temperature switch circuit; hydraulic oil temperature transmitter; a 20-amp circuit breaker; a 15-amp circuit breaker, and related electrical wiring.

All of the hydraulic indicators and gauge become operable when the MASTER switch is turned ON; however, the MAX OIL TEMP EXCEEDED (225° F) indicator and the HYDRAULIC OIL TEMPERATURE gauge normally operate only when the hydraulic system is in operation. Again, an exception would be if the system was just disengaged and hydraulic oil is still hot. The hydraulic LOW OIL LEVEL indicator lights whenever oil in the reservoir falls below the prism of the liquid level sensor. The CHARGE FILTER, RETURN FILTER, and MAX OIL TEMP EXCEEDED (225° F) are lit when the respective filter is clogged or the hydraulic oil temperature exceeds 225° F. The HYDRAULIC OIL TEMPERATURE gauge indicates the current hydraulic oil temperature.

System power (+24 - 28 V dc) is supplied to the LOW OIL LEVEL indicator from the master relay through the 20-amp circuit breaker on the hydraulic control panel. System power is also supplied to the liquid level sensor through the 15-amp circuit breaker. The low oil level sensor monitors the hydraulic oil level and senses a low level condition. When this occurs, a ground is applied to the indicator to complete the electrical circuit and light the LOW OIL LEVEL indicator LED. The CHARGE FILTER, RETURN FILTER, and MAX OIL TEMP EXCEEDED (225°F) indicators are all connected directly to ground at hydraulic control panel. In this case, system power (+24 - 28 V dc) is applied to respective switches through the 15-amp circuit breaker on the hydraulic control panel. The charge filter switch and return filter switch are part of their respective filter assemblies and close when the filter becomes clogged. This connects system power to the applicable indicator to complete the circuit and light the LED. The hydraulic high temperature switch is mounted in the reservoir and closes when the oil temperature reaches 225 + 7° F. As a result, system power is applied through the switch to the indicator to light the indicator LED. System power is applied through the 20-amp circuit breaker to HYDRAULIC OIL TEMPERATURE gauge. The hydraulic oil temperature transmitter is also mounted in the reservoir and monitors the hydraulic oil temperature. The transmitter produces an electrical signal output that is supplied to the gauge. The gauge, in turn, indicates the current hydraulic oil temperature as a function of the signal input.

The relationship of all of the monitoring circuits is shown in the following diagram.

MONITORING SYSTEM OVERVIEW AND DIAGRAMS - CONTINUED 0128 00



END OF TASK

FUEL GAUGE FAILS TO OPERATE PROPERLY. 0129 00

THIS WORK PACKAGE COVERS:

Fuel Gauge Fails To Operate Properly

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

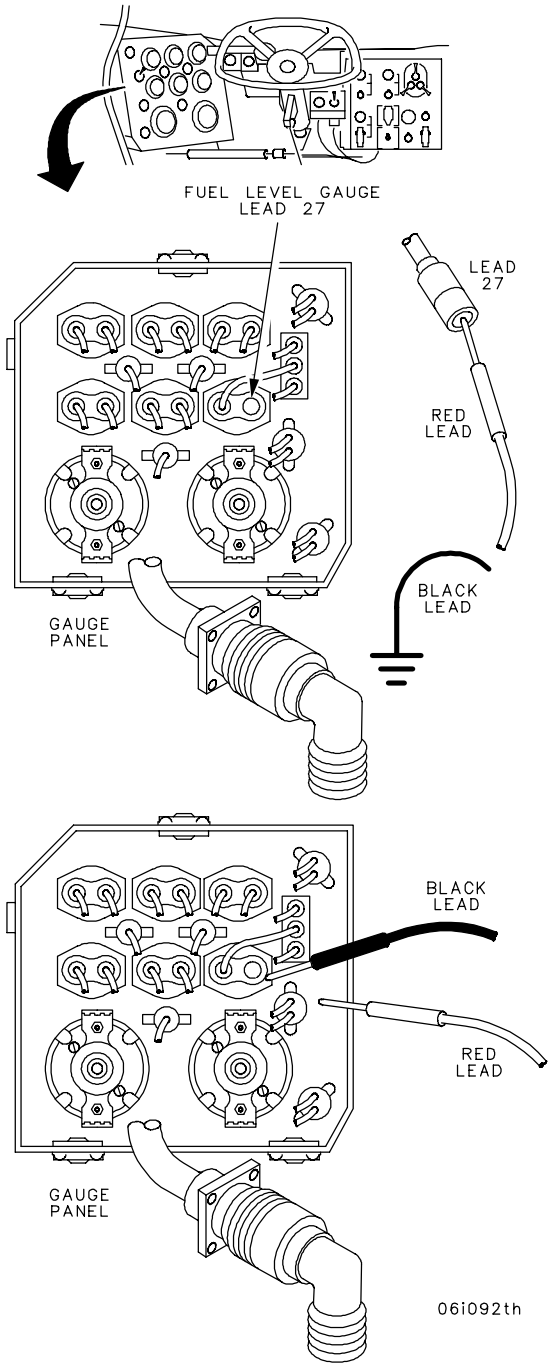
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Fuel tanks filled (TM 9-2350-292-10)
Gauge panel removed from bracket (WP 0243 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



A

1. Disconnect wire 27 from fuel gauge.
2. Turn MASTER switch ON and FUEL TANK toggle switch to FRONT (TM 9-2350-292-10).
3. Place red multimeter lead on wire 27 connector at fuel gauge and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no — Go to Step C.

B

Place one multimeter lead on back side of fuel gauge and place other lead on gauge panel assembly. Check for continuity.

Is continuity present?

yes

no — Remove gauge (WP 0243 00) and clean grounding points on gauge and panel. Reinstall gauge and do Step B again. If there is still no continuity, replace gauge (WP 0243 00).

CONTINUED ON NEXT PAGE

FUEL GAUGE FAILS TO OPERATE PROPERLY - CONTINUED 0129 00

CONTINUED FROM STEPS A AND B

C

1. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
2. Disconnect lead 10 from CB6 inside switch panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place red multimeter lead in lead 10 connector socket at CB6. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to Step E.

D

1. Disconnect lead 25/27 from CB6.
2. Place one multimeter lead on each CB6 connector pin. Check for continuity.

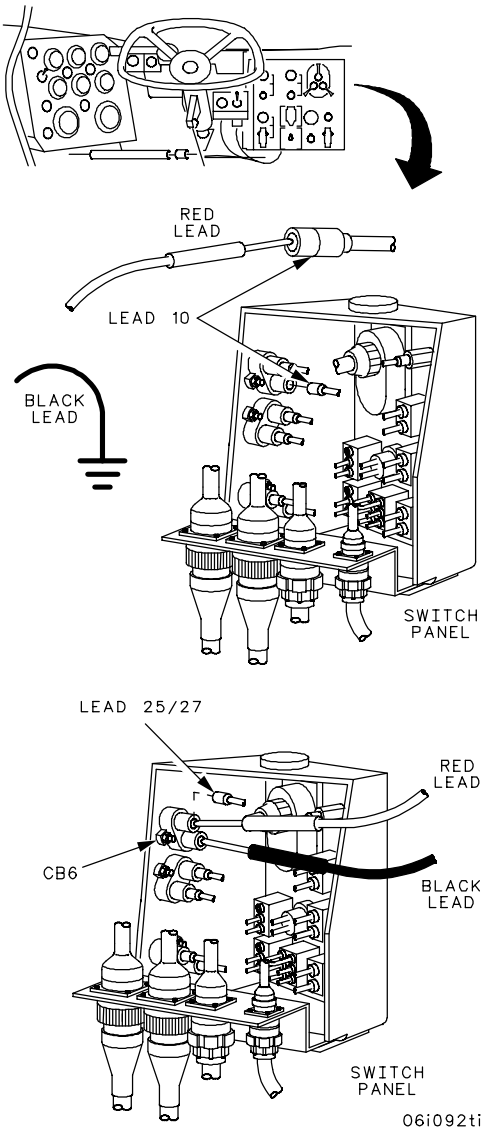
Is continuity present?

yes

no

Replace CB6 (WP 0242 00). Verify fault is corrected.

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FUEL GAUGE FAILS TO OPERATE PROPERLY - CONTINUED 0129 00

CONTINUED FROM STEPS C AND D

E

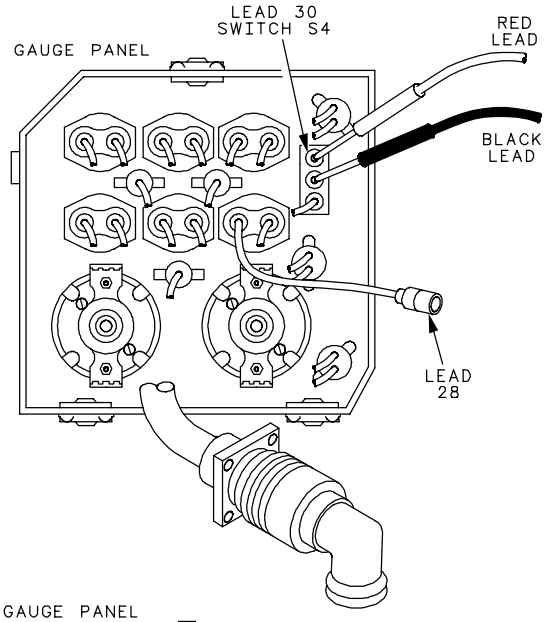
1. Disconnect lead 28 from switch S4.
2. Disconnect lead 30 from switch S4.
3. Turn switch S4 to FRONT position (TM 9-2350-292-10).
4. Place one multimeter lead on each switch S4 connector pin. Check for continuity.

Is continuity present?

yes

no

Replace switch S4 (WP 0243 00). Verify fault is corrected.



F

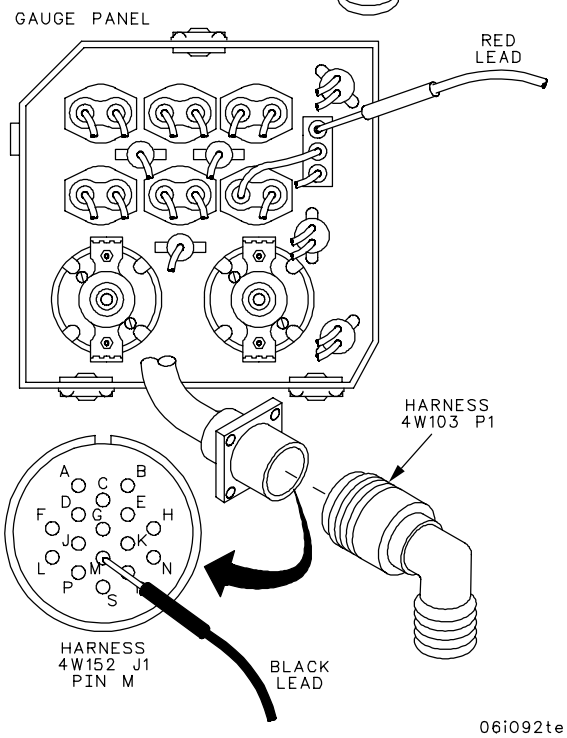
1. Reconnect lead 28 to switch S4.
2. Disconnect harness 4W103 P1 from gauge panel.
3. Place one multimeter lead in lead 30 switch S4 connector socket and other lead on harness 4W152 J1 pin M. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0243 00) lead 30. Verify fault is corrected.



CONTINUED ON NEXT PAGE

FUEL GAUGE FAILS TO OPERATE PROPERLY - CONTINUED 0129 00

CONTINUED FROM STEP F

G

1. Disconnect harness 4W103 P1 from gauge panel.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W103 P1 socket K and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

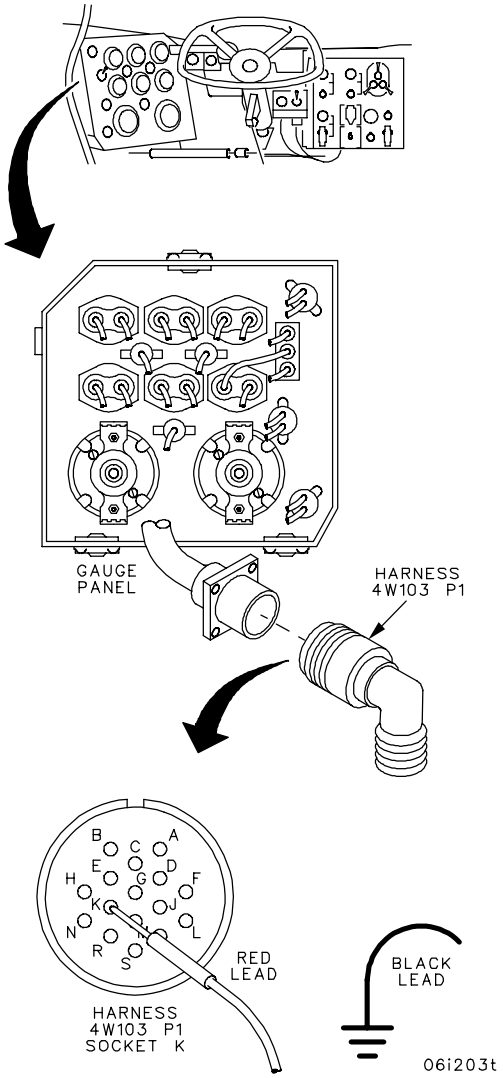
Is continuity present?

yes

Go to Step L.

no

CONTINUED ON NEXT PAGE



FUEL GAUGE FAILS TO OPERATE PROPERLY - CONTINUED 0129 00

CONTINUED FROM STEP G

H

1. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
2. Disconnect harness 4W105 P1 from switch panel.
3. Place one multimeter lead in harness 4W103 P1 socket K and other lead on harness 4W105 P1 pin K. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.

I

1. Reconnect harness 4W103 P1 to gauge panel.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on harness 4W105 P1 pin N and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0314 00) harness 4W100. Verify fault is corrected.

J

1. Disconnect lead 10 from CB6 inside of switch panel.
2. Place one multimeter lead in harness 4W151 J4 socket N and other lead in lead 10 CB6 connector socket. Check for continuity.

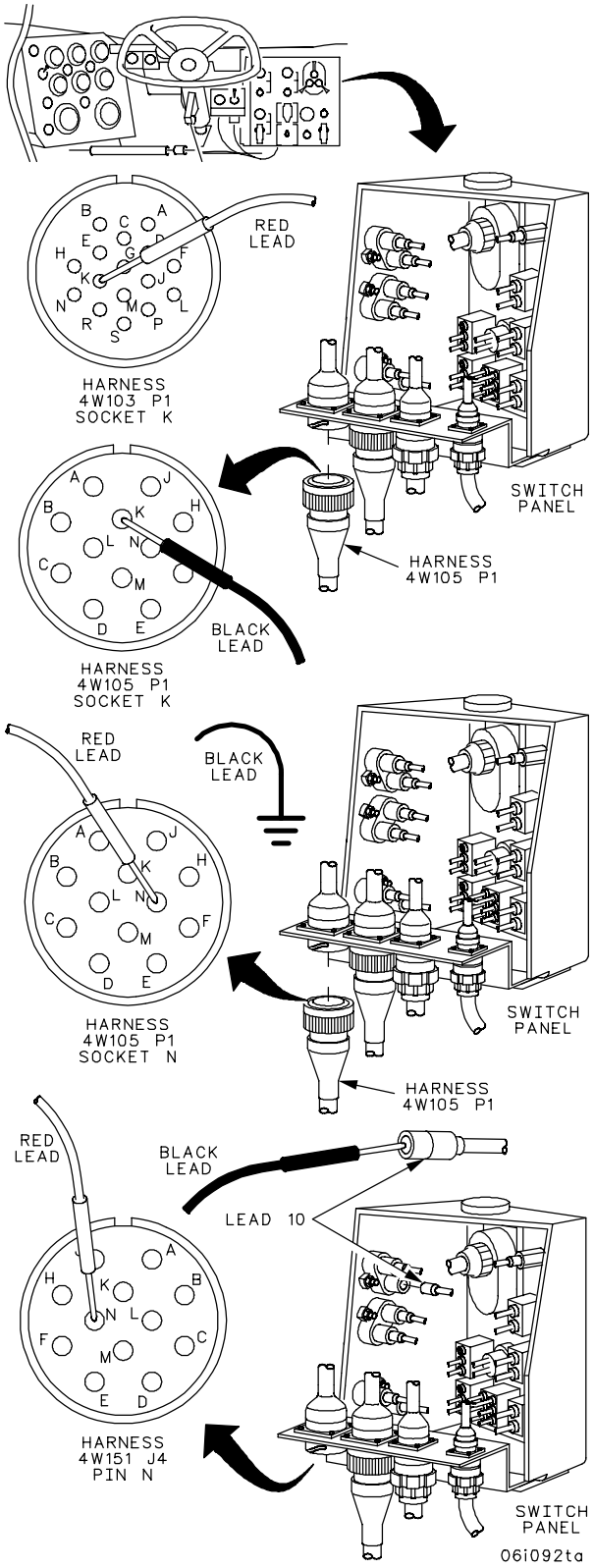
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 10 from harness 4W151 J4 to CB6. Verify fault is corrected.

CONTINUED ON NEXT PAGE



FUEL GAUGE FAILS TO OPERATE PROPERLY - CONTINUED 0129 00

CONTINUED FROM STEP J

K

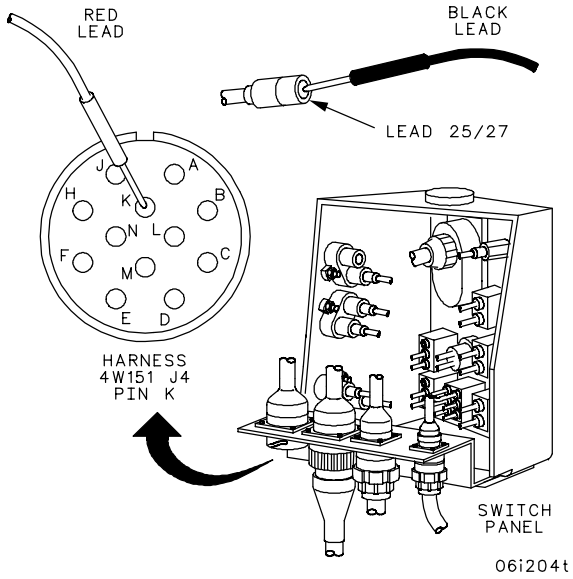
1. Reconnect lead 10 to CB6.
2. Place one multimeter lead in harness 4W151 J4 pin K and other lead in lead 25/27 CB6 connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 25/27 from CB6 to harness 4W151 J4. Verify fault is corrected.



CONTINUED ON NEXT PAGE

FUEL GAUGE FAILS TO OPERATE PROPERLY - CONTINUED 0129 00

CONTINUED FROM STEPS G AND K

L

1. If disconnected, reconnect lead 25/27 to CB6 in switch panel, reconnect harness 4W105 P1 to switch panel and harness 4W103 P1 to gauge panel.
2. Disconnect lead 27 from fuel level gauge inside gauge panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in lead 27 gauge connector socket and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

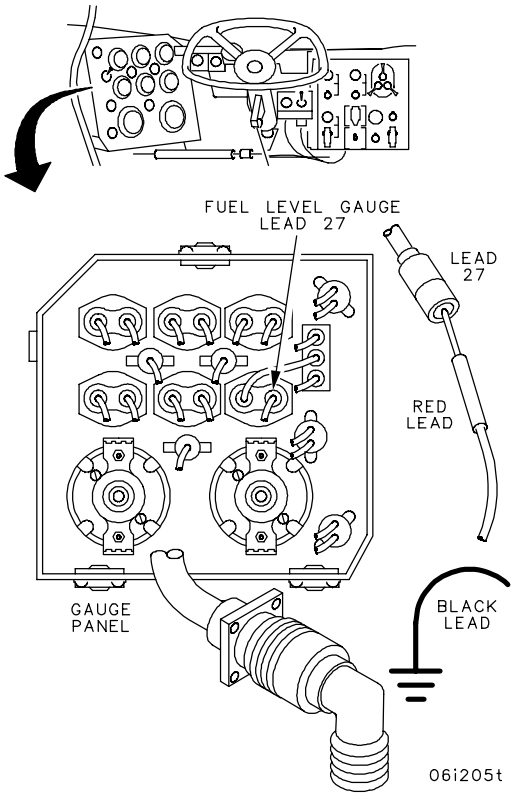
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0243 00) lead 27. Verify fault is corrected.

CONTINUED ON NEXT PAGE



06i092tc

FUEL GAUGE FAILS TO OPERATE PROPERLY - CONTINUED 0129 00

CONTINUED FROM STEP L

M

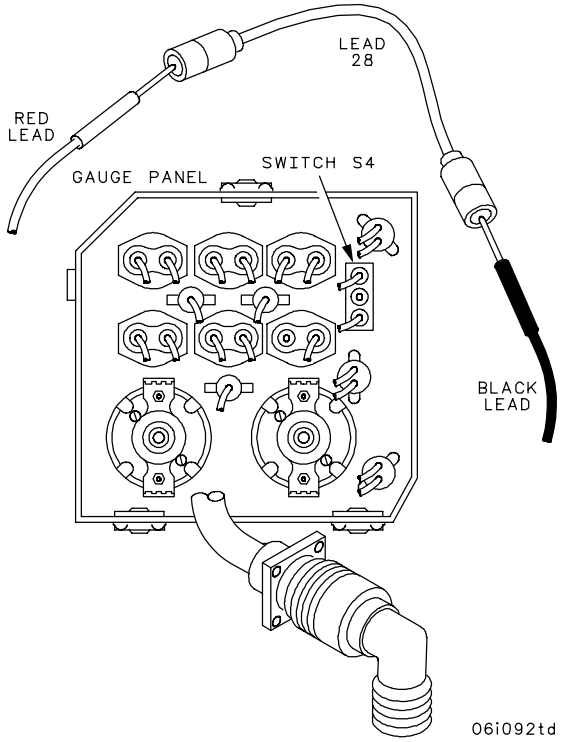
1. Disconnect lead 28 from switch S4.
2. Place one multimeter lead in each end of lead 28. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace lead 28 between FUEL TANK toggle switch and fuel gauge (WP 0243 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

FUEL GAUGE FAILS TO OPERATE PROPERLY - CONTINUED 0129 00

CONTINUED FROM STEP M

N

1. Reconnect lead 30 to switch S4.
2. Open subfloor plate 20 (WP 0454 00).
3. Disconnect lead 30 from liquid level transmitter.
4. Place one multimeter lead in harness 4W103 P1 socket M and other lead in lead 30 liquid level transmitter connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

O

1. Reconnect lead 30 to liquid level transmitter.
2. Reconnect harness 4W103 P1 to gauge panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Does fuel gauge show proper reading?

yes

no

Replace liquid level transmitter (WP 0215 00). Verify fault is corrected.

P

1. Disconnect leads 28 and 31 from switch S4.
2. Turn selector switch to REAR position (TM 9-2350-292-10).
3. Place one multimeter lead on each switch S4 connector pin. Check for continuity.

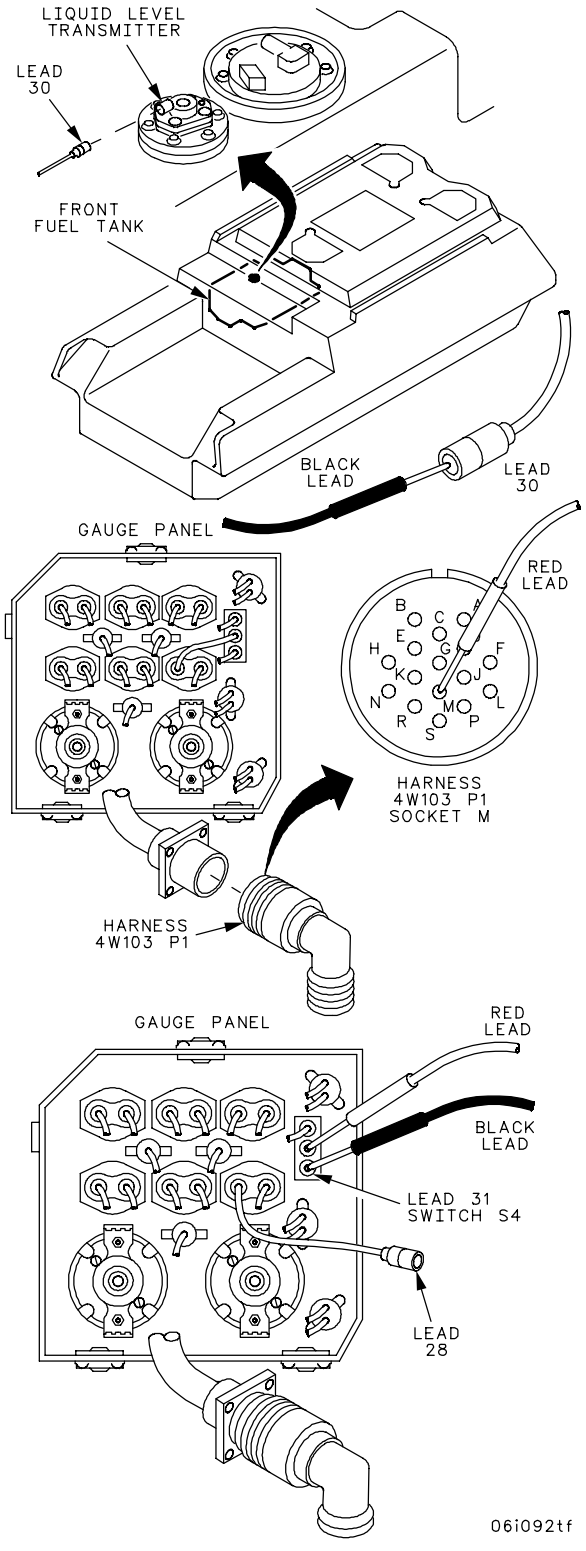
Is continuity present?

yes

no

Replace switch S4 (WP 0243 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



FUEL GAUGE FAILS TO OPERATE PROPERLY - CONTINUED 0129 00

CONTINUED FROM STEP P

Q

1. Reconnect lead 28 to switch S4.
2. Disconnect harness 4W103 P1 from gauge panel.
3. Place one multimeter lead in lead 31 switch S4 connector socket and other lead on harness 4W152 J1 pin J. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0243 00) lead 31. Verify fault is corrected.

R

1. Reconnect lead 31 to switch S4.
2. Disconnect harness 3W143 P2 from bulkhead disconnect.
3. Place one multimeter lead in harness 4W103 P1 socket J and other lead in harness 3W143 P2 receptacle socket A. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

S

1. Reconnect harness 4W103 P1 to gauge panel.
2. Disconnect lead 31 from liquid level transmitter.
3. Place one multimeter lead in lead 31 liquid level transmitter connector socket and other lead on harness 3W143 P2 pin A. Check for continuity.

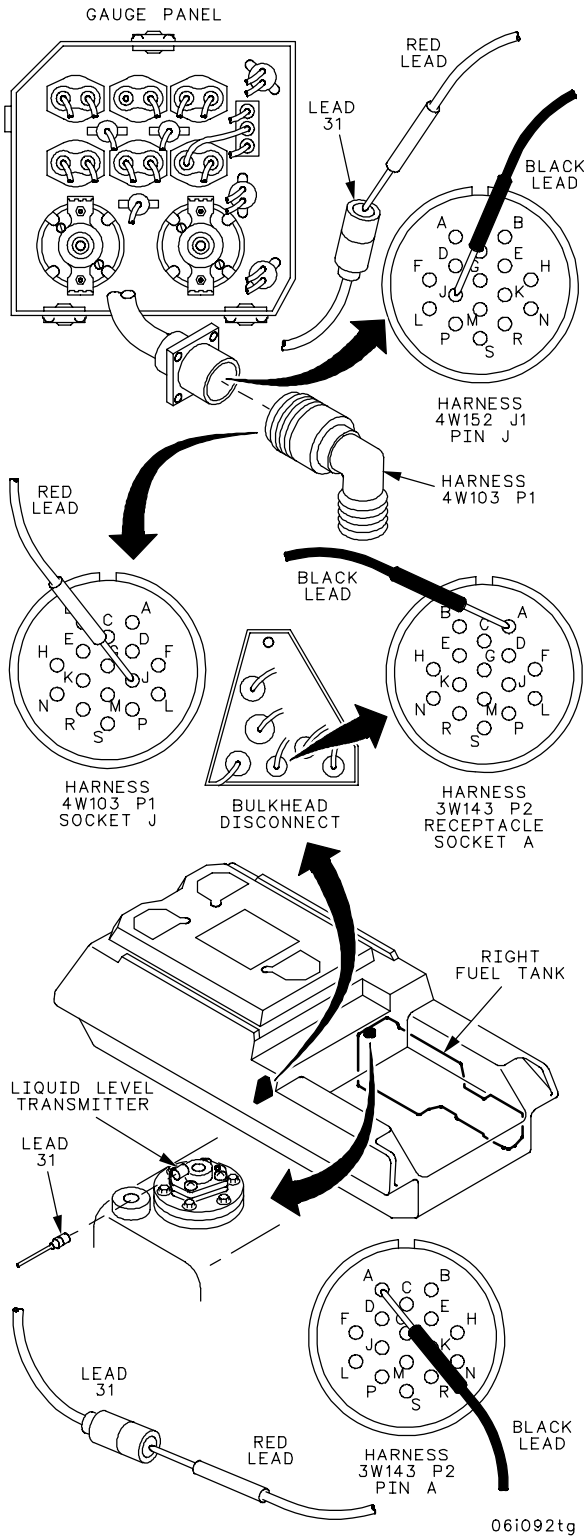
Is continuity present?

yes

no

Replace liquid level transmitter (WP 0215 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.



END OF TASK

ENGINE OIL TEMPERATAURE GAUGE FAILS TO OPERATE PROPERLY. 0130 00

THIS WORK PACKAGE COVERS:

Engine Oil Temperature Gauge Fails To Operate Properly

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)
Gauge panel removed from bracket (WP 0243 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect lead 27 from oil temperature gauge.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in lead 27 oil temperature gauge connector socket and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0243 00) lead 27. Verify fault is corrected.

B

1. Reconnect lead 27 to gauge.
2. Disconnect lead 33 from oil temperature gauge.
3. Place a ground lead in gauge connector and run to vehicle ground.
4. Turn MASTER switch ON and then OFF (TM 9-2350-292-10) watching gauge.
5. Remove ground lead and turn MASTER switch ON then OFF (TM 9-2350-292-10) watching gauge.

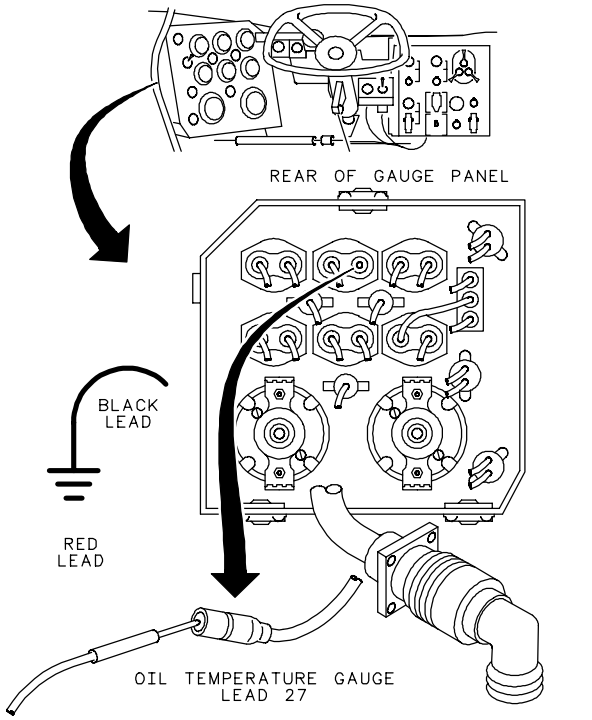
Does gauge read full scale with ground lead on and no movement with ground lead off?

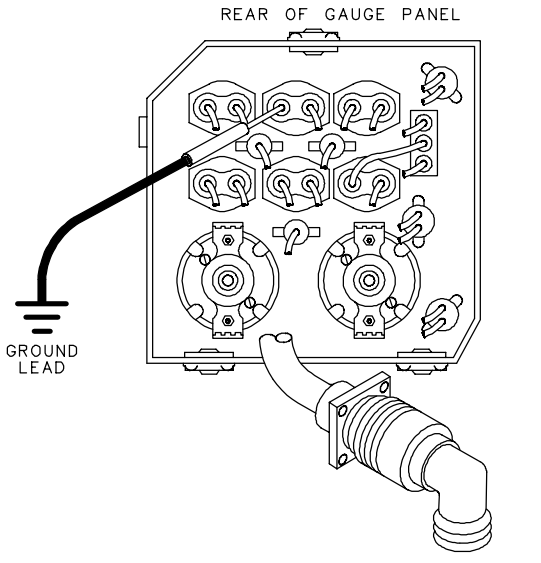
yes

no

Replace gauge (WP 0243 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE





01i025tb

ENGINE OIL TEMPERATURE GAUGE FAILS TO OPERATE PROPERLY - CONTINUED 0130 00

CONTINUED FROM STEP B

C

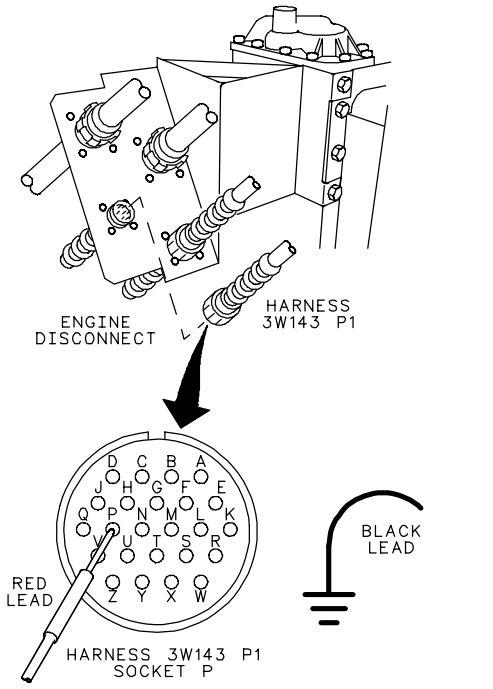
1. Disconnect wiring harness 3W143 P1 from engine disconnect bracket.
2. Place one multimeter lead in harness 3W143 P1 socket P and other lead on harness ground lead connector. Check for continuity.
3. Reconnect wiring harness 3W143 P1 to engine disconnect bracket.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.



01i029t

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ENGINE OIL TEMPERATURE GAUGE FAILS TO OPERATE PROPERLY - CONTINUED 0130 00

CONTINUED FROM STEP C

D

1. Disconnect harness 4W103 P1 from gauge panel.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W103 P1 socket K and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 Vdc present?

yes

no

Go to WP 0129 00 and perform steps H through K, then WP 0129 00 step D.

E

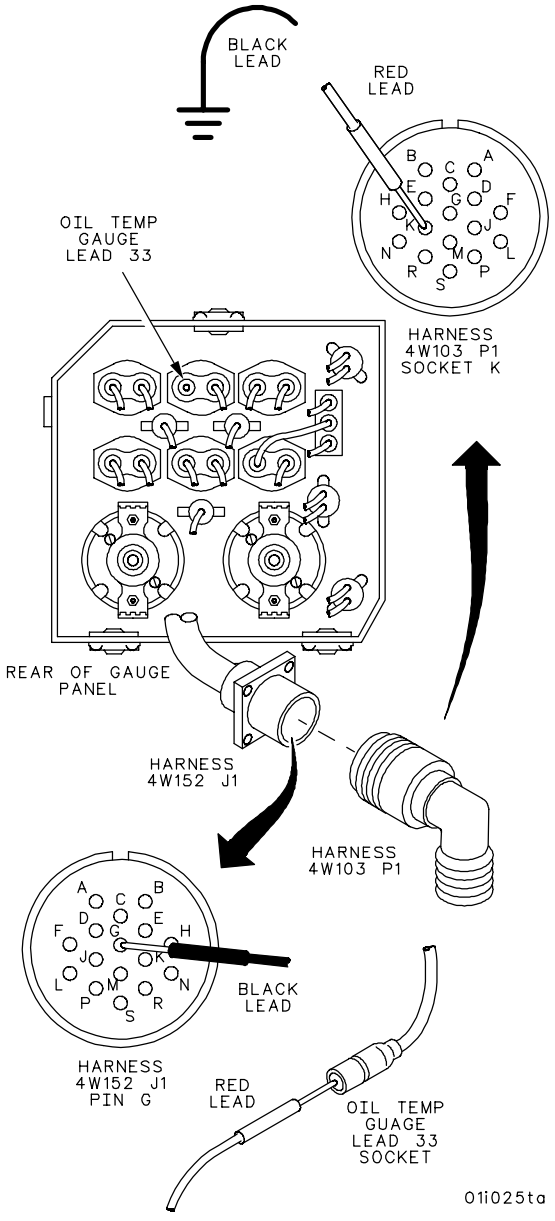
Place one multimeter lead in lead 33 gauge connector socket and other lead on harness 4W152 J1 pin G. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0243 00) lead 33 (WP 0243 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

ENGINE OIL TEMPERATURE GAUGE FAILS TO OPERATE PROPERLY - CONTINUED 0130 00

CONTINUED FROM STEP E

F

1. Reconnect lead 33 to gauge.
2. Reconnect harness 4W103 P1 to gauge panel.
3. Disconnect harness 3W143 P2 from bulkhead disconnect.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Place multimeter red lead in bulkhead connector J2 socket K and black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

G

1. Reconnect harness 3W143 P2 to bulkhead disconnect.
2. Disconnect harness 3W143 P1 from engine disconnect.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 3W143 P1 socket K and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

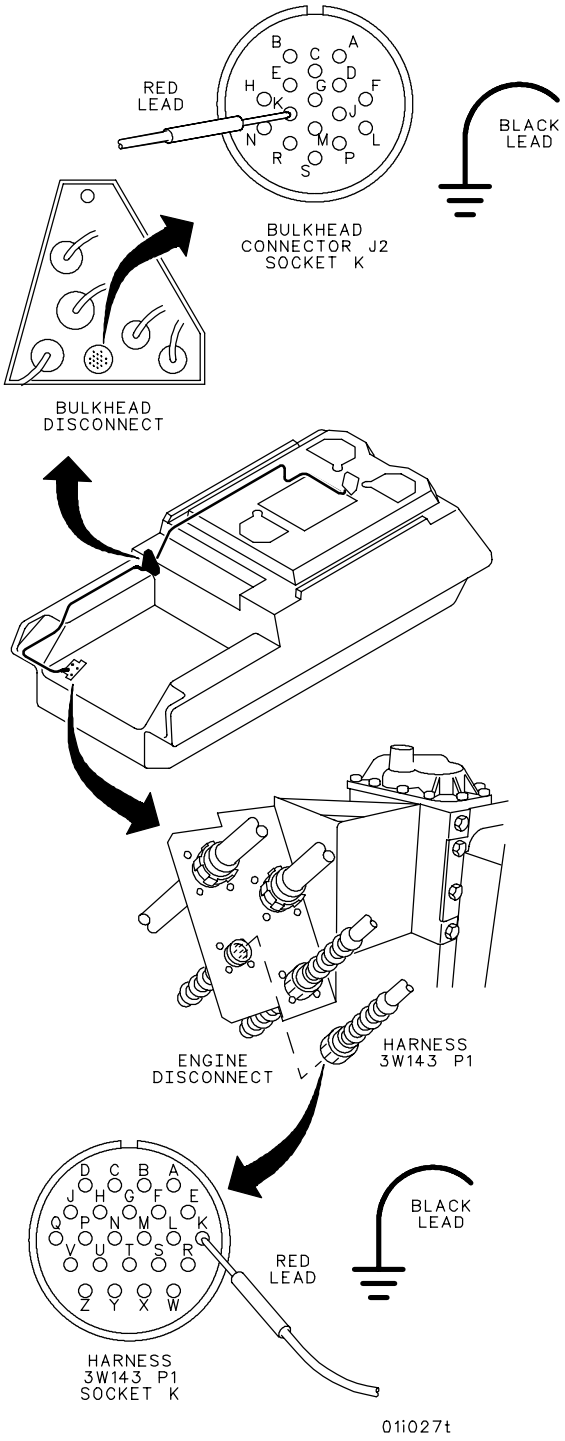
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

CONTINUED ON NEXT PAGE



ENGINE OIL TEMPERATURE GAUGE FAILS TO OPERATE PROPERLY - CONTINUED 0130 00

CONTINUED FROM STEP G

H

1. Reconnect harness 3W143 P1 to engine disconnect.
2. Disconnect harness 3W202 from engine oil temperature transmitter.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 3W202 transmitter connector socket A and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

I

1. Disconnect harness 3W143 P1 from engine disconnect.
2. Place one multimeter lead in oil temperature transmitter connector socket B and other lead on harness 3W202 J3 pin P. Check for continuity.

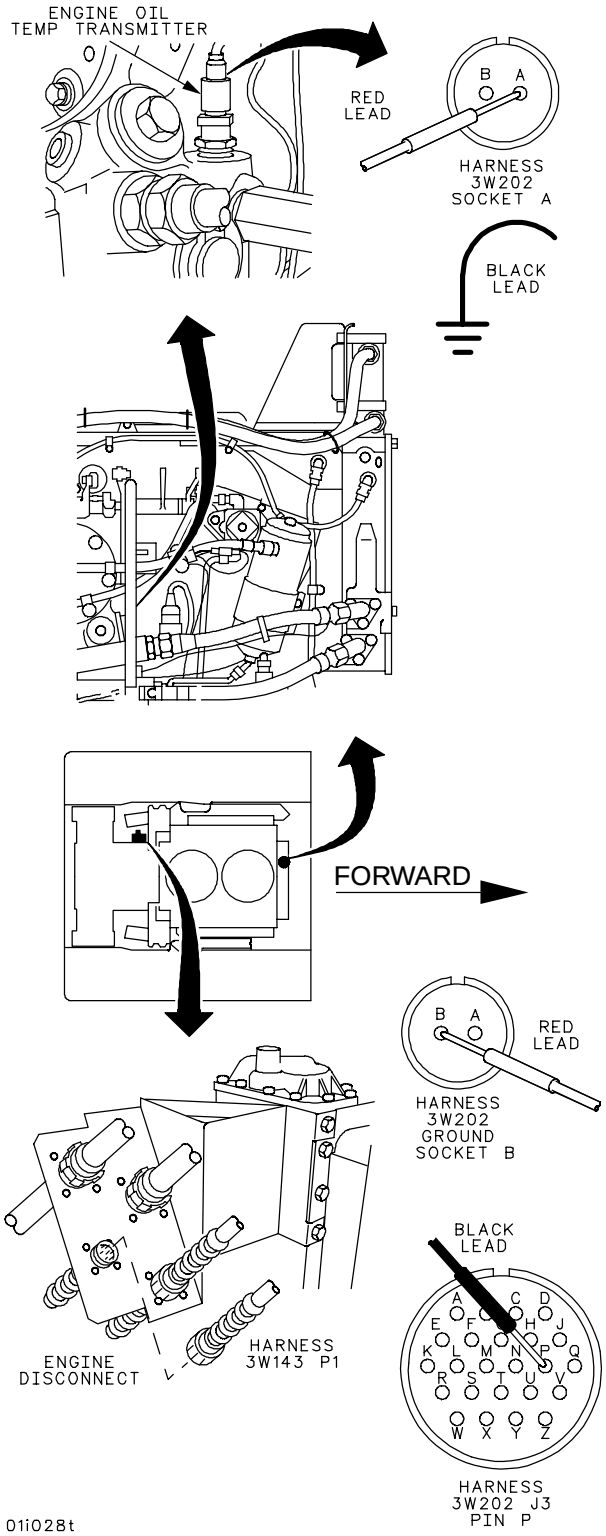
Is continuity present?

yes

no

Replace engine oil temperature transmitter (WP 0284 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.



END OF TASK

TURBOCHARGER DUST DETECTOR INDICATOR LIGHT FAILS TO OPERATE. 0131 00

THIS WORK PACKAGE COVERS:

Turbocharger Dust Detector Indicator Light Fails To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)
Gauge panel removed from bracket (WP 0243 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove lamp from turbocharger dust detector indicator (TM 9-2350-292-10).
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place red multimeter lead to lamp holder socket contact and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Replace turbocharger dust detector indicator lamp (TM 9-2350-292-10). Verify fault is corrected.

no

B

1. Remove switch panel from bracket and reconnect ground strap to switch panel (WP 0242 00).
2. Disconnect lead 10 from CB6.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place red multimeter lead in lead 10 CB6 connector socket and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

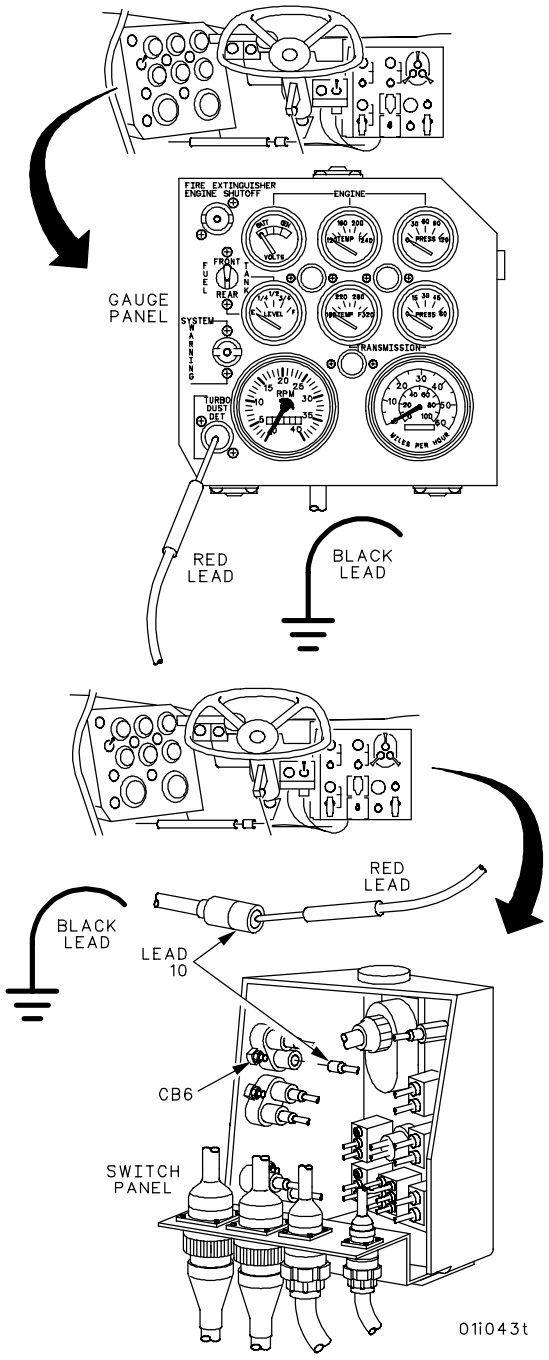
Is 24 V dc present?

yes

Go to Step F.

no

CONTINUED ON NEXT PAGE



TURBOCHARGER DUST DETECTOR INDICATOR LIGHT FAILS TO OPERATE - CONTINUED 0131 00

CONTINUED FROM STEP B

C

1. Disconnect lead 27 from indicator L2.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in lead 27 light connector socket and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Go to Step J.

no

D

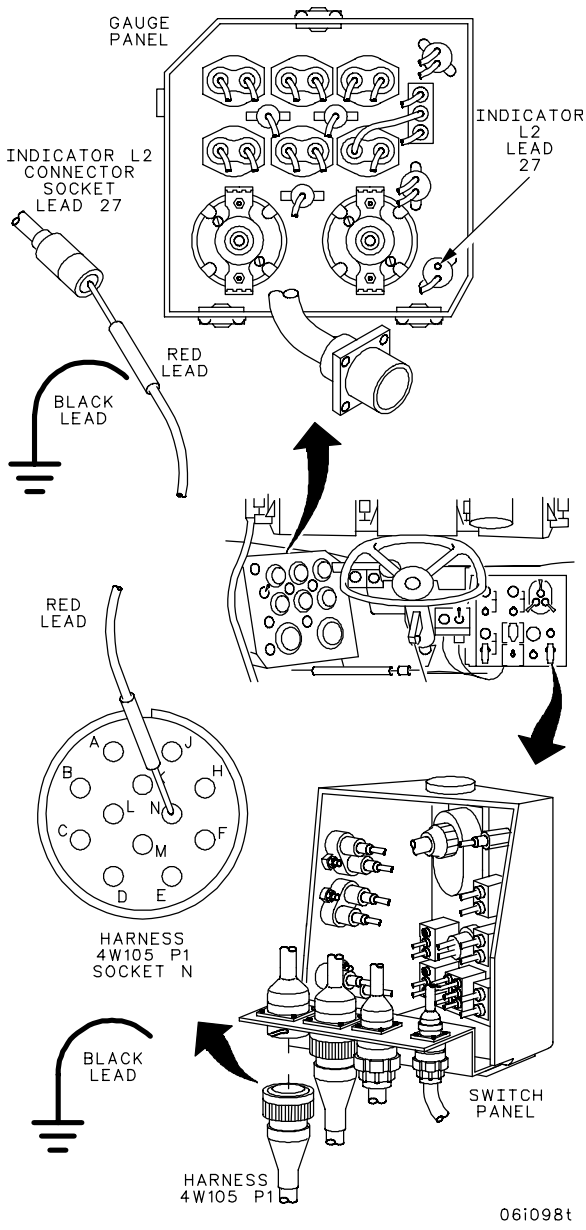
1. Disconnect harness 4W105 P1 from switch panel.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on harness 4W105 P1 socket N and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0314 00) harness 4W100. Verify fault is corrected.



CONTINUED ON NEXT PAGE

TURBOCHARGER DUST DETECTOR INDICATOR LIGHT FAILS TO OPERATE - CONTINUED 0131 00

CONTINUED FROM STEP D

E

1. Disconnect lead 10 from CB6.
2. Place one multimeter lead in harness 4W151 J4 pin N and other lead in lead 10 CB6 connector socket. Check for continuity.

Is continuity present?

yes → Go to Step G.

no → Repair (WP 0290 00) or replace (WP 0242 00) lead 10. Verify fault is corrected

CONTINUED FROM STEP B

F

1. Disconnect lead 25/27 from CB6.
2. Place one multimeter lead on each CB6 connector pin. Check for continuity.
3. Reconnect lead 10 and lead 25/27 to CB6.

Is continuity present?

yes → Go to Step M.

no → Replace CB6 (WP 0242 00). Verify fault is corrected.

CONTINUED FROM STEP E

G

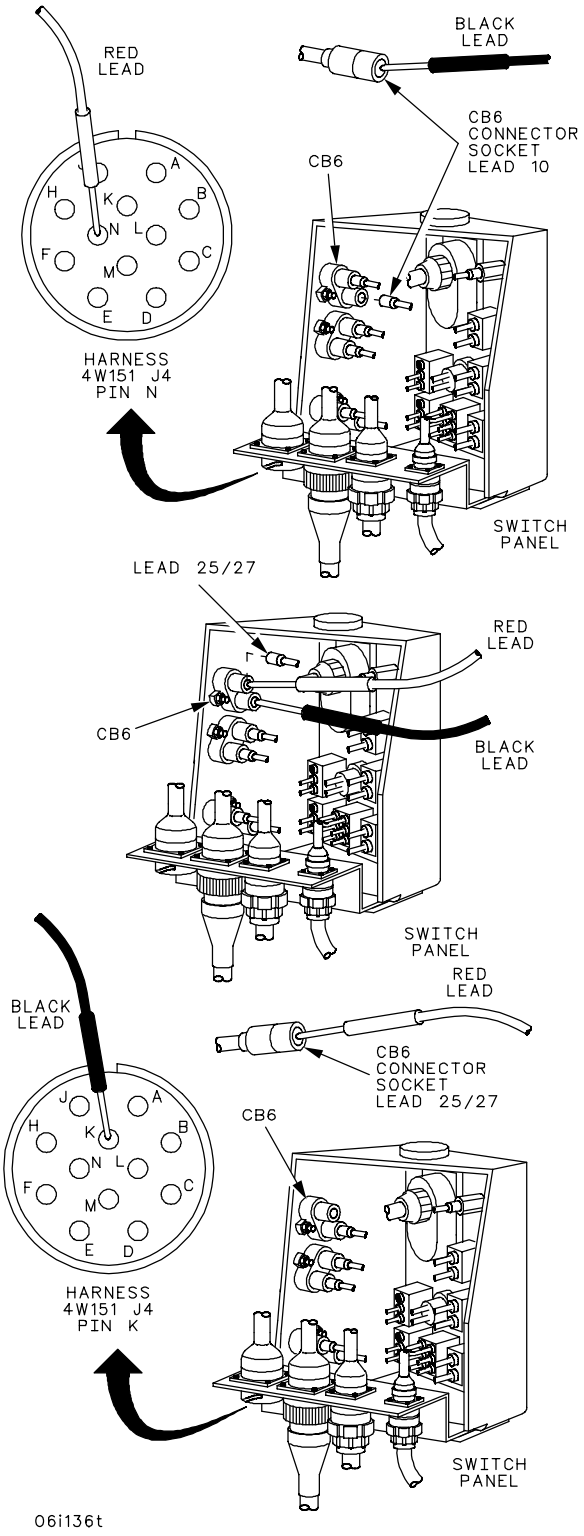
1. Disconnect lead 25/27 from CB6.
2. Place one multimeter lead in lead 25/27 CB6 connector socket and other lead in harness 4W151 J4 pin K. Check for continuity.

Is continuity present?

yes

no → Repair (WP 0290 00) or replace (WP 0242 00) lead 25/27. Verify fault is corrected.

CONTINUED ON NEXT PAGE



TURBOCHARGER DUST DETECTOR INDICATOR LIGHT FAILS TO OPERATE - CONTINUED 0131 00

CONTINUED FROM STEP G

H

1. Reconnect lead 25/27 to CB6.
2. Disconnect harness 4W103 P1 from gauge panel.
3. Place one multimeter lead on harness 4W105 P1 socket K and other lead in harness 4W103 P1 socket K. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

I

1. Reconnect harness 4W105 P1 to switch panel.
2. Place one multimeter lead on harness 4W152 J1 pin K and other lead in lead 27 light connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0243 00) lead 27. Verify fault is corrected.

CONTINUED FROM STEP C

J

1. Disconnect lead 510 from indicator L2.
2. Place one multimeter lead in lead 510 indicator L2 connector socket and other lead on harness 4W152 J1 pin C. Check for continuity.

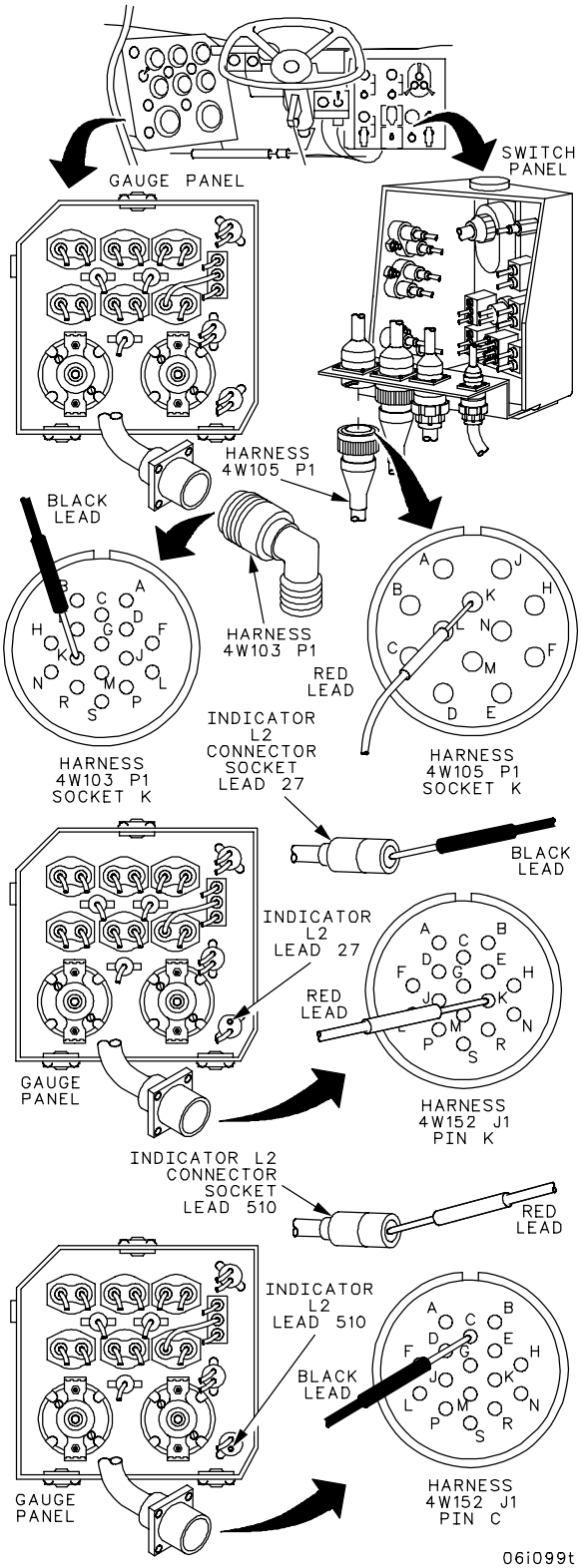
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0243 00) lead 510. Verify fault is corrected.

CONTINUED ON NEXT PAGE



TURBOCHARGER DUST DETECTOR INDICATOR LIGHT FAILS TO OPERATE - CONTINUED 0131 00

CONTINUED FROM STEP J

K

1. Reconnect leads 27 and 510 to indicator L2.
2. Open air intake grilles above battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W143 P2 from bulkhead disconnect.
4. Place one multimeter lead in harness 4W103 P1 socket C and other lead in harness 3W143 P2 receptacle socket C. Check for continuity.

Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

L

1. Reconnect harness 4W103 P1 to gauge panel.
2. Disconnect harness 3W143 P1 from engine disconnect.
3. Place one multimeter lead on harness 3W143 P2 pin C and other lead in harness 3W143 P1 socket B. Check for continuity.

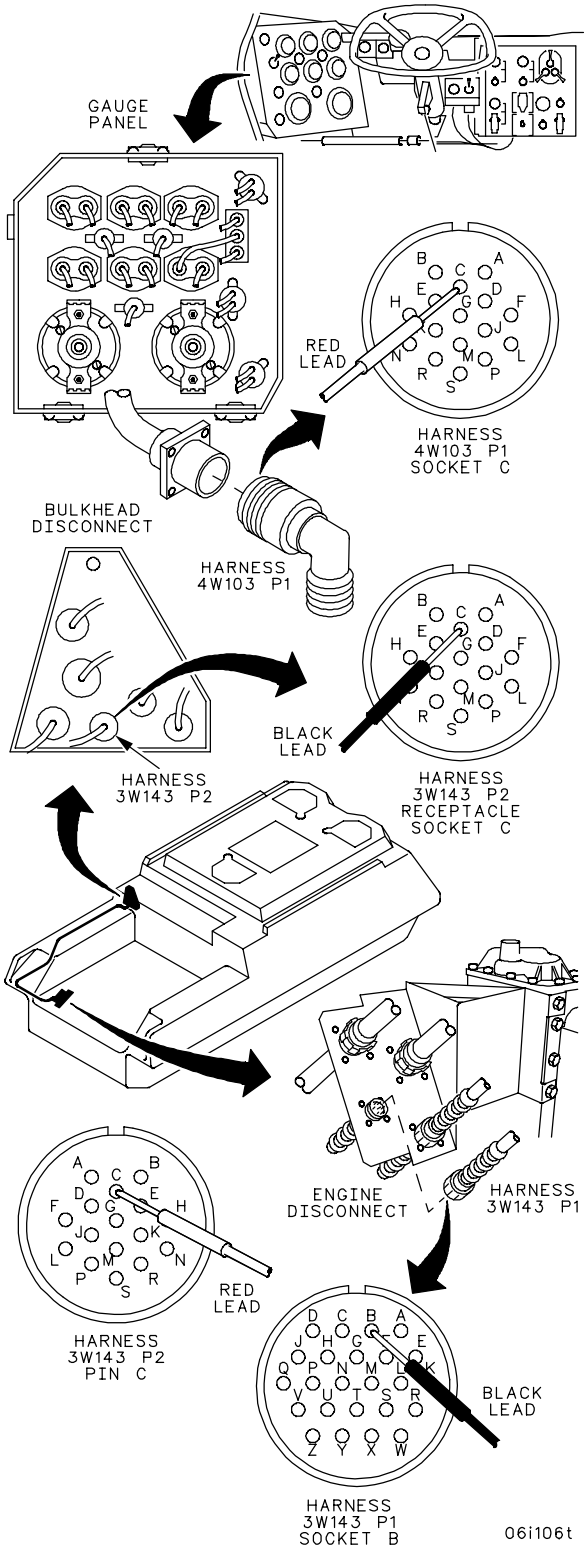
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

CONTINUED ON NEXT PAGE



TURBOCHARGER DUST DETECTOR INDICATOR LIGHT FAILS TO OPERATE - CONTINUED 0131 00

CONTINUED FROM STEPS F AND L

M

1. Disconnect wiring harness 3W202 from left and right dust detector pressure switches.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place red multimeter lead in each harness 3W202 detector connector socket A (one at a time) and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

N With plungers up on each pressure switch, place one multimeter lead on each switch connector pin (one switch at a time). Check for continuity.

Is continuity present at both checks?

yes

no

Replace faulty pressure switch (WP 0213 00). Verify fault is corrected.

O Place one multimeter lead on harness 3W202 J3 pin U and other lead in each detector switch connector socket B (one at a time). Check for continuity.

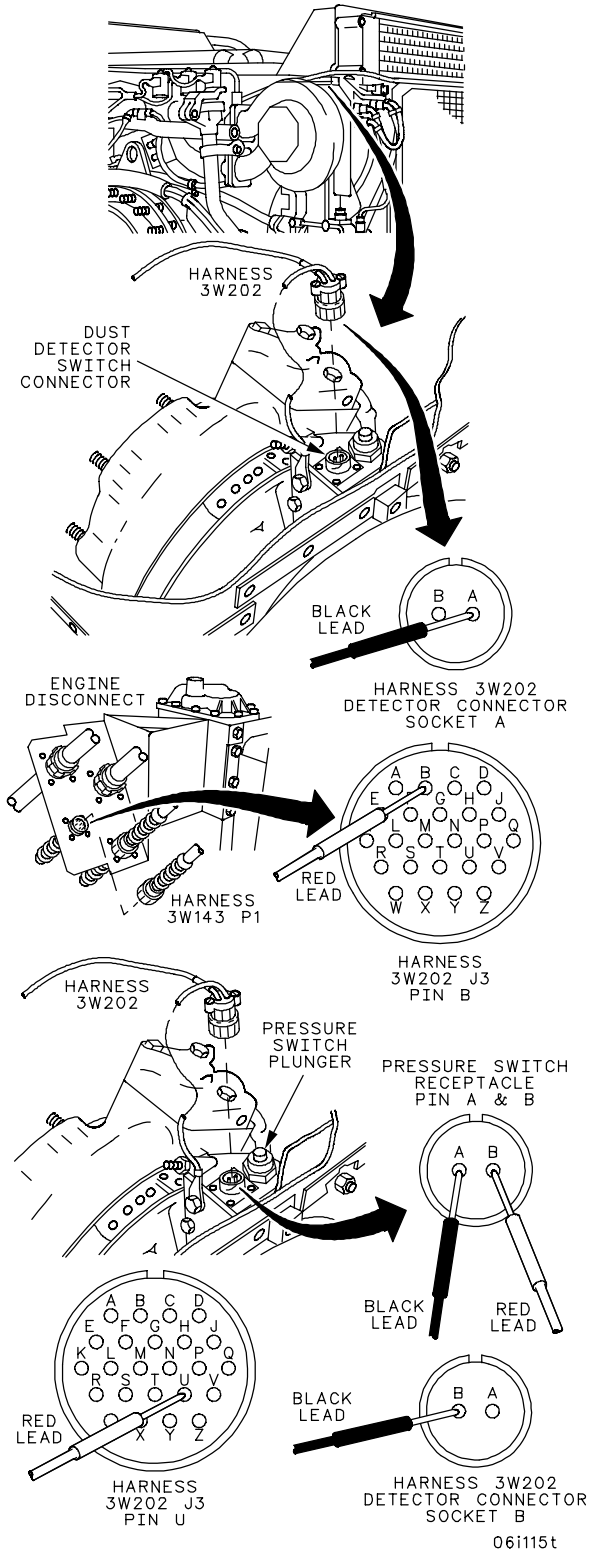
Is continuity present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0213 00) harness 3W202. Verify fault is corrected.

CONTINUED ON NEXT PAGE



TURBOCHARGER DUST DETECTOR INDICATOR LIGHT FAILS TO OPERATE - CONTINUED 0131 00

CONTINUED FROM STEP O

P

1. Reconnect harness 3W202 to both dust detector pressure switches.
2. Disconnect wiring harness 3W143 P1 at engine disconnect bracket if connected.
3. Place one multimeter lead in harness 3W143 P1 socket U and other lead to ground. Check for continuity.

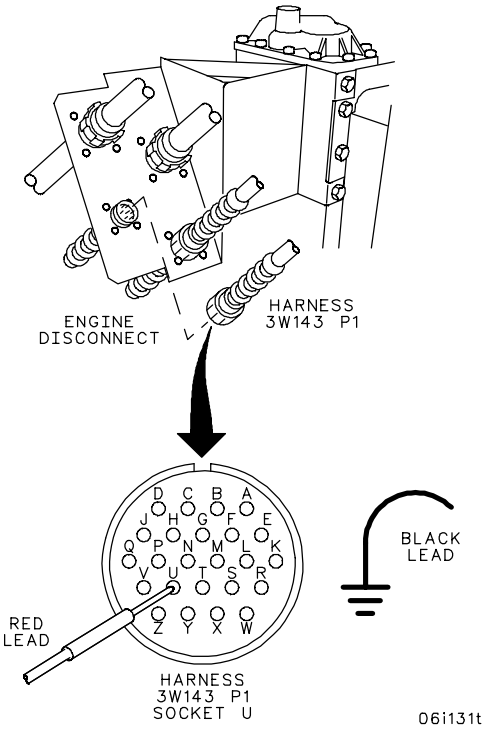
Is continuity present?

yes

Replace faulty detector (WP 0213 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.



END OF TASK

TIME TOTALIZING METER FAILS TO OPERATE. 0132 00

THIS WORK PACKAGE COVERS:

Time Totalizing Meter Fails To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 3W143 P1 from engine disconnect.
2. Disconnect harness 3W202 connector from time totalizing meter.
3. Place one multimeter lead on harness 3W202 time totalizing meter connector socket A and other lead on harness 3W202 J3 engine disconnect receptacle pin L. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

B

Place one multimeter lead on harness 3W202 time totalizing meter connector socket B and other lead on harness 3W202 J3 pin U. Check for continuity.

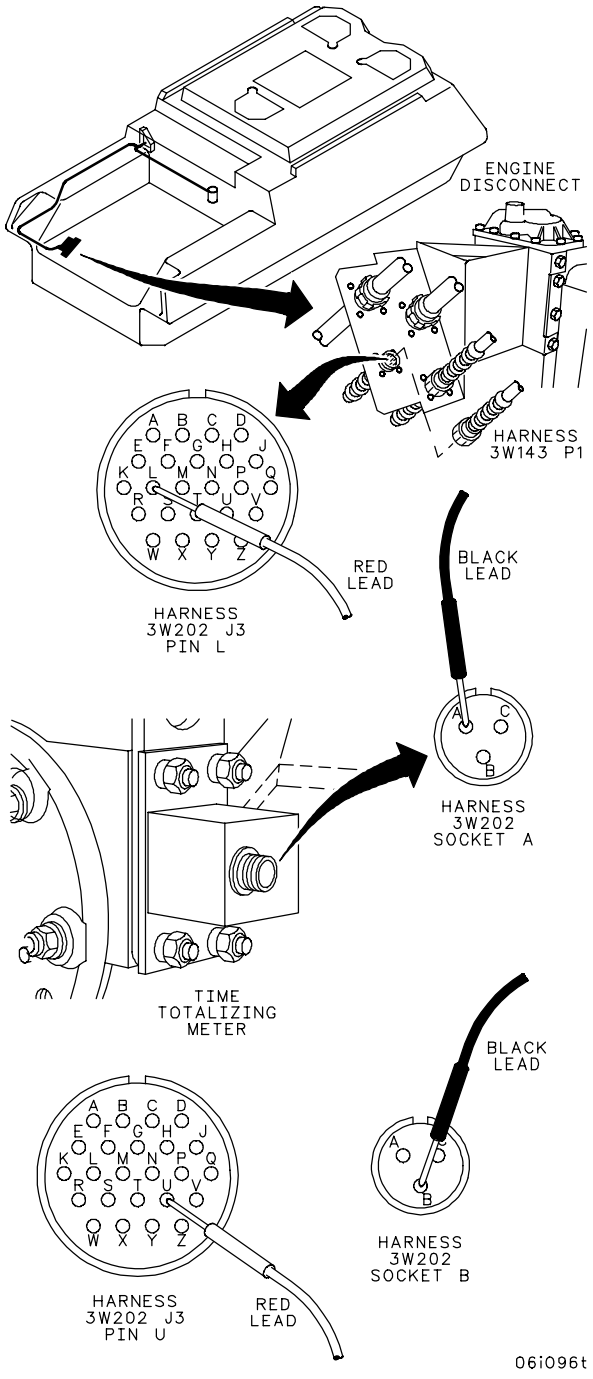
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

CONTINUED ON NEXT PAGE



TIME TOTALIZING METER FAILS TO OPERATE - CONTINUED 0132 00

CONTINUED FROM STEP B

C

1. Reconnect harness 3W202 to meter.
2. Disconnect harness 3W143 P1 from engine disconnect.
3. Place one multimeter lead in harness 3W143 P1 socket U and other lead to vehicle ground. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

D

1. Reconnect harness 3W143 P1 to engine disconnect.
2. Start main engine (TM 9-2350-292-10) and watch time totalizing meter.
3. Shut engine down (TM 9-2350-292-10).

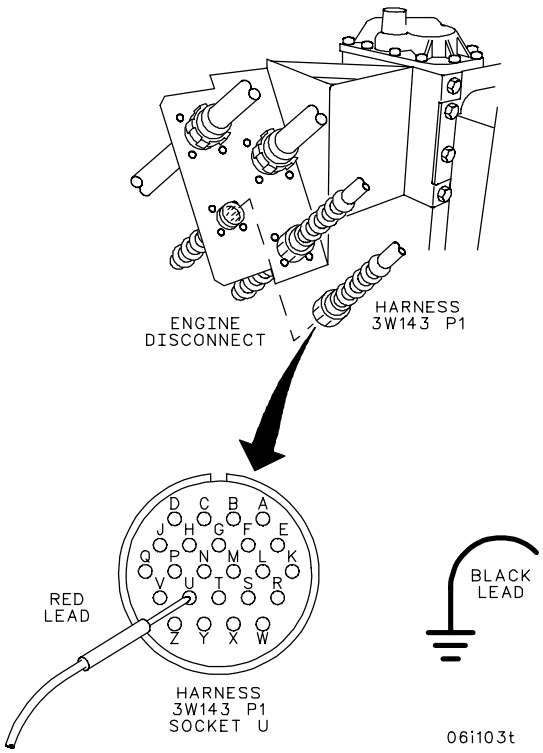
Does meter register actual time?

yes

no

Fault corrected.

Notify Direct Support Maintenance.



END OF TASK

TRANSMISSION OIL TEMPERATURE GAUGE FAILS TO OPERATE. 0133 00

THIS WORK PACKAGE COVERS:

Transmission Oil Temperature Gauge Fails To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)
Gauge panel removed (WP 0243 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect lead 27 from temperature gauge.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in lead 27 gauge connector socket and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no → Go to Step C.

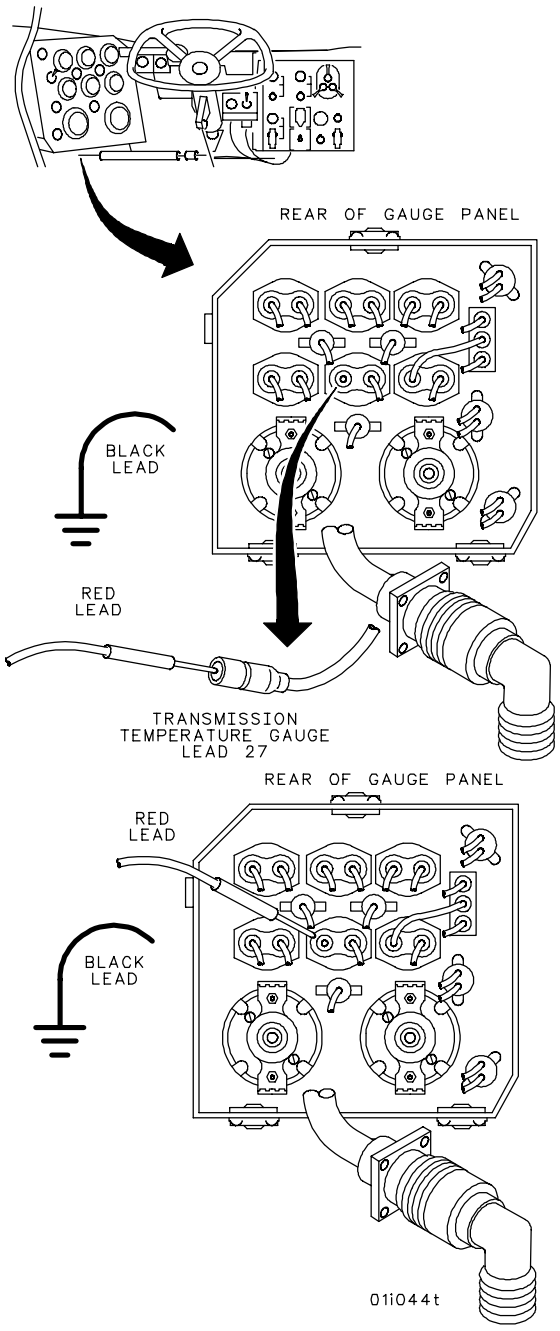
B

Place one multimeter lead on temperature gauge and the other to ground. Check for continuity.

Is continuity present?

yes → Go to Step D.

no → Remove temperature gauge, clean gauge mounting surface, reinstall gauge (WP 0243 00). Verify fault is corrected. If fault still exists, replace temperature gauge (WP 0243 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

TRANSMISSION OIL TEMPERATURE GAUGE FAILS TO OPERATE - CONTINUED 0133 00

CONTINUED FROM STEP A

C

1. Remove switch panel from bracket and reconnect ground strap to switch panel (WP 0242 00).
2. Disconnect lead 10 from CB6.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place red multimeter lead in lead 10 socket connector and black to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes / no

Go to WP 0131 00 and troubleshoot wiring harness 4W105 P1 lead 10 from switch panel. Verify fault is corrected.

CONTINUED FROM STEP B

D

1. Disconnect lead 25/27 from CB6.
2. Place one multimeter lead on each CB6 connector pin. Check for continuity.
3. Reconnect leads 10 and 25/27 to CB6.

Is 24 V dc present?

yes / no

Replace CB 6 (WP 0242 00). Verify fault is corrected.

E

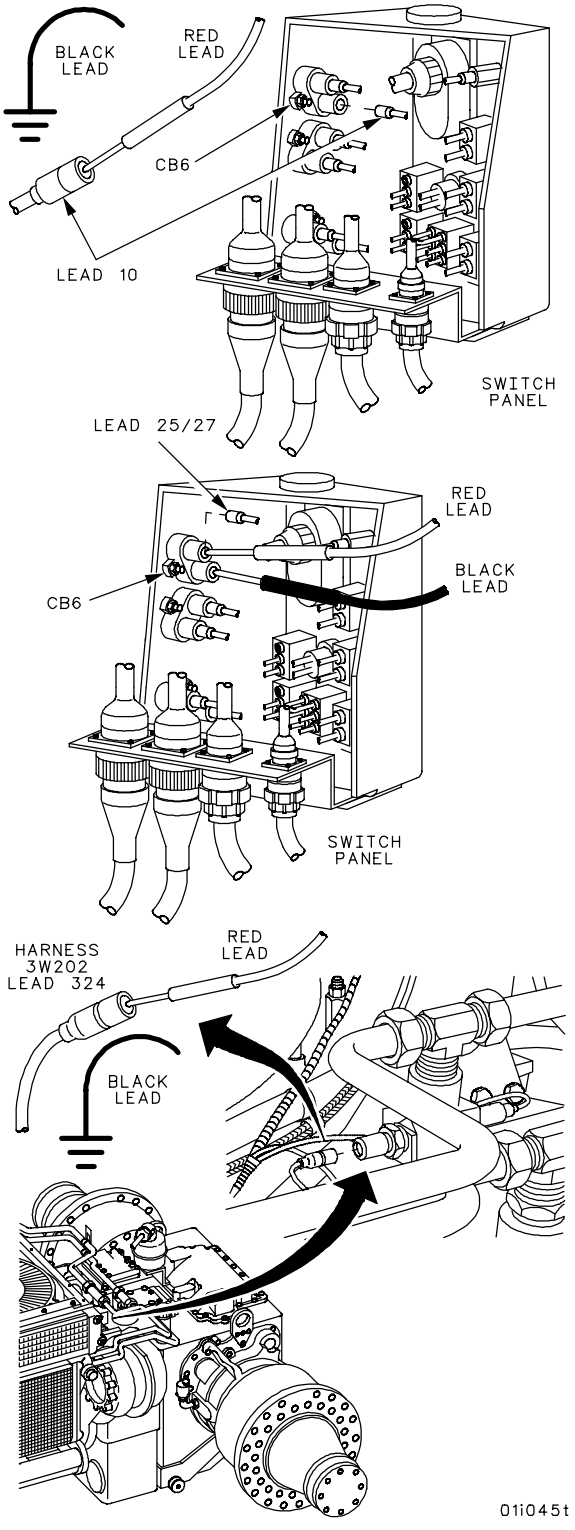
1. Disconnect harness 3W202 lead 324 from transmission oil temperature transmitter.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in lead 324 transmitter connector socket and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes / no

Replace transmitter (WP 0348 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



TRANSMISSION OIL TEMPERATURE GAUGE FAILS TO OPERATE - CONTINUED

0133 00

CONTINUED FROM STEP E

F

1. Disconnect harness 4W103 P1 from gauge panel.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W103 P1 socket K and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

G

1. Disconnect lead 27 from temperature gauge.
2. Place one multimeter lead in lead 27 connector socket and one multimeter lead in harness 4W152 J1 socket K and check for continuity.
3. Reconnect lead 27 to temperature gauge.

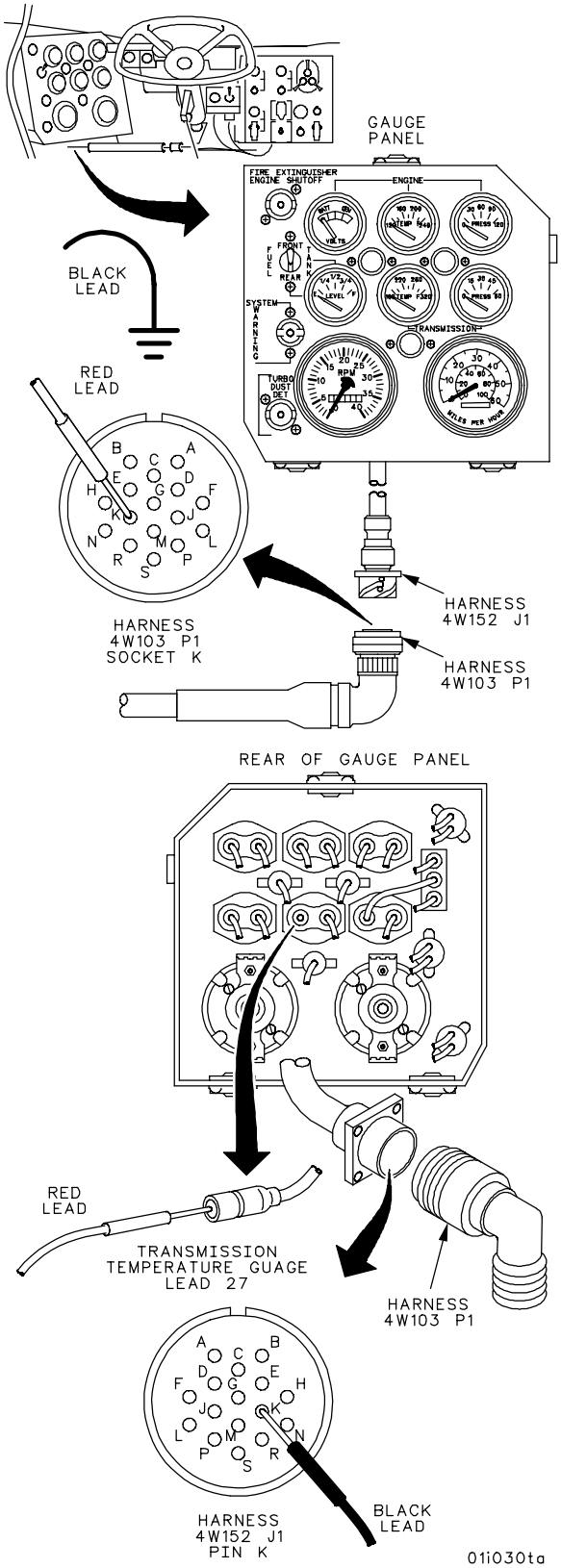
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0243 00) lead 27. Verify fault is corrected.

CONTINUED ON NEXT PAGE



TRANSMISSION OIL TEMPERATURE GAUGE FAILS TO OPERATE - CONTINUED 0133 00

CONTINUED FROM STEP G

H

1. Disconnect harness 4W103 P1 from gauge panel.
2. Place one multimeter lead on harness 4W152 J1 pin E and other lead in lead 324 temperature connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0243 00) lead 324. Verify fault is corrected.

I

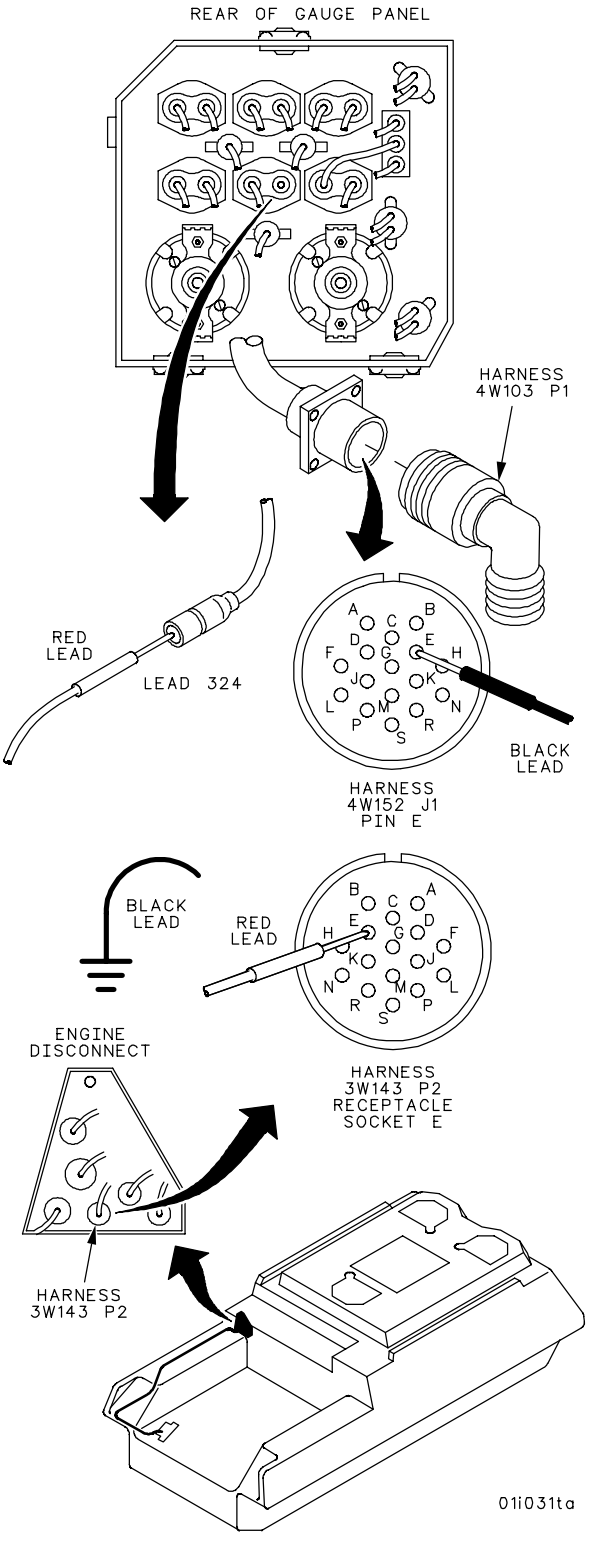
1. Reconnect lead 324 to temperature gauge.
2. Reconnect harness 4W103 P1 to gauge panel.
3. Open air intake grilles above battery compartment (TM 9-2350-292-10).
4. Disconnect harness 3W143 P2 from bulkhead connector.
5. Turn MASTER switch ON (TM 9-2350-292-10).
6. Place multimeter red lead in harness 3W143 P2 receptacle socket E and black lead to ground. Check for voltage.
7. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.



CONTINUED ON NEXT PAGE

TRANSMISSION OIL TEMPERATURE GAUGE FAILS TO OPERATE - CONTINUED 0133 00

CONTINUED FROM STEP I

J

1. Reconnect harness 3W143 P2 to bulkhead disconnect.
2. Disconnect harness 3W143 P1 from engine disconnect.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 3W143 P1 socket D and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

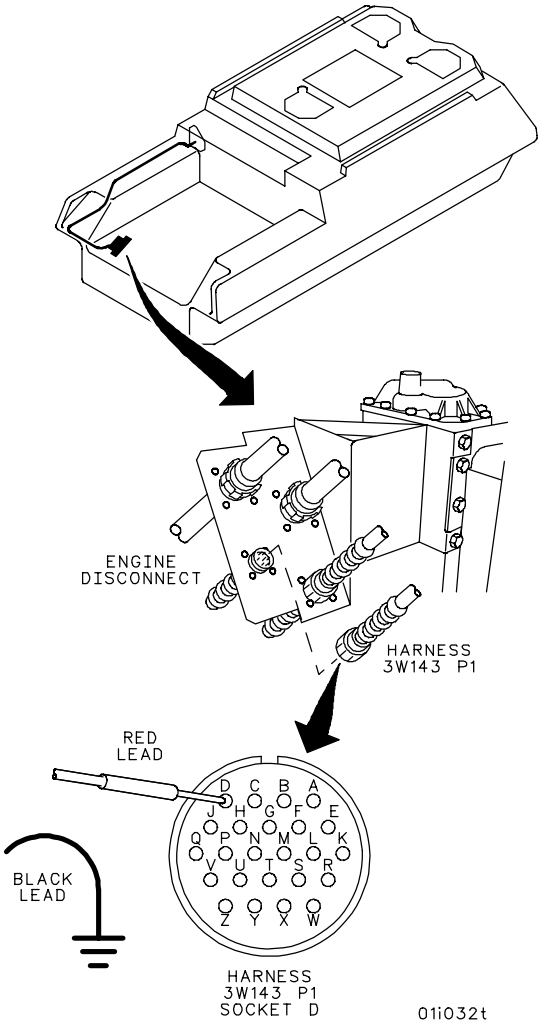
Is 24 V dc present?

yes

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.



END OF TASK

TRANSMISSION OIL PRESSURE GAUGE FAILS TO OPERATE. 0134 00

THIS WORK PACKAGE COVERS:

Transmission Oil Pressure Gauge Fails To Operate

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)
Gauge panel removed from bracket (WP 0243 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect lead 27 from transmission pressure gauge.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in lead 27 gauge connector socket and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).
5. Reconnect lead 27 to pressure gauge.

Is 24 V dc present?

yes

no — Go to Step C.

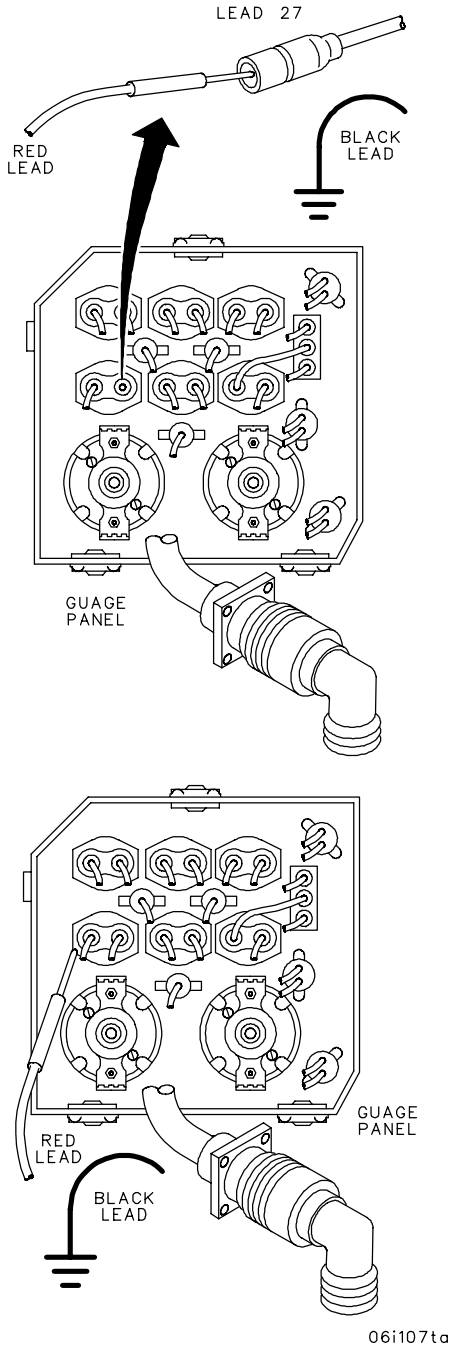
B

Place one multimeter lead on transmission oil pressure gauge and one multimeter lead to ground. Check for continuity.

Is continuity present?

yes — Go to Step D.

no — Remove pressure gauge and clean gauge mounting surface, reinstall gauge (WP 0243 00). Verify fault is corrected. If fault still exists, replace pressure gauge (WP 0243 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

TRANSMISSION OIL PRESSURE GAUGE FAILS TO OPERATE - CONTINUED 0134 00

CONTINUED FROM STEP A

C

1. Remove switch panel from bracket and reconnect ground strap to switch panel (WP 0242 00).
2. Disconnect lead 10 from CB6.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place red multimeter lead in lead 10 socket connector and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to WP 0131 00 and troubleshoot wiring harness 4W105 P1 lead 10 from switch panel. Verify fault is corrected.

CONTINUED FROM STEP B

D

1. Disconnect lead 25/27 from CB6.
2. Place one multimeter lead on each CB6 connector pin. Check for continuity.
3. Reconnect leads 10 and 25/27 to CB6.

Is 24 V dc present?

yes

no

Replace CB6 (WP 0242 00). Verify fault is corrected.

E

1. Disconnect harness 3W202 lead 321 from transmission oil pressure transmitter.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in lead 321 transmitter connector socket and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

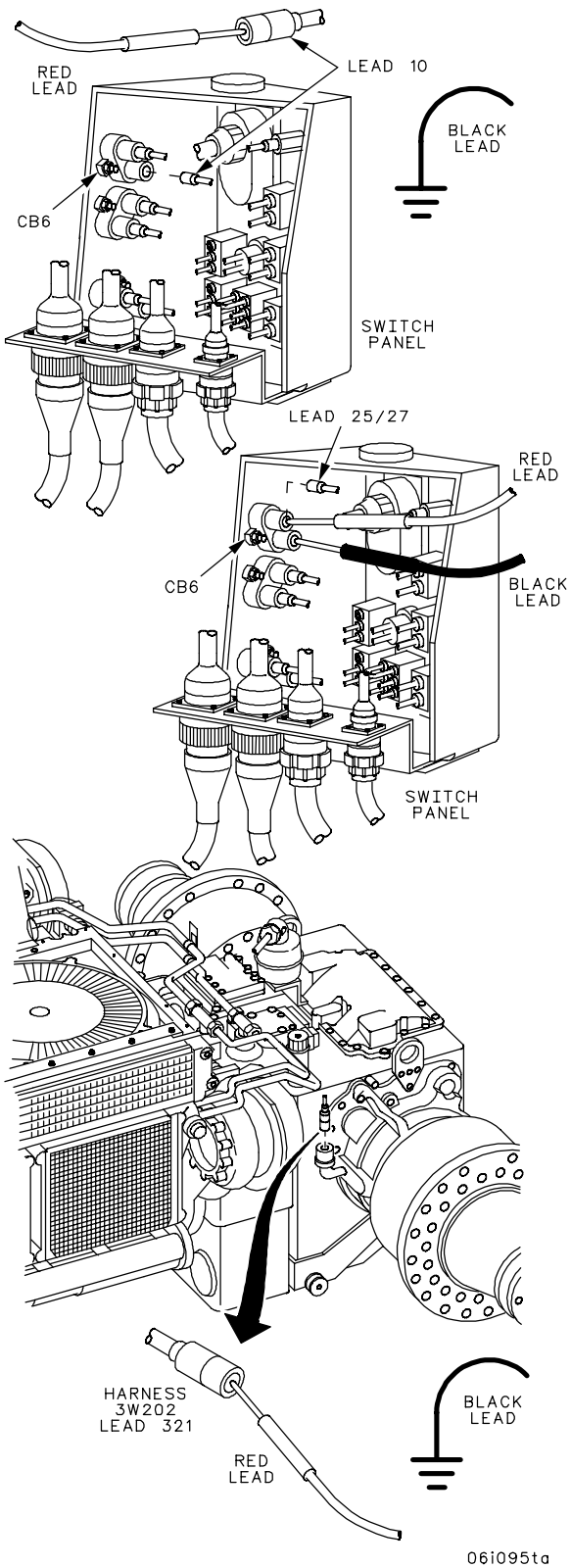
Is 24 V dc present?

yes

no

Replace transmitter (WP 0349 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



TRANSMISSION OIL PRESSURE GAUGE FAILS TO OPERATE - CONTINUED 0134 00

CONTINUED FROM STEP E

F

1. Disconnect harness 4W103 P1 from gauge panel.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W103 P1 socket K and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

G

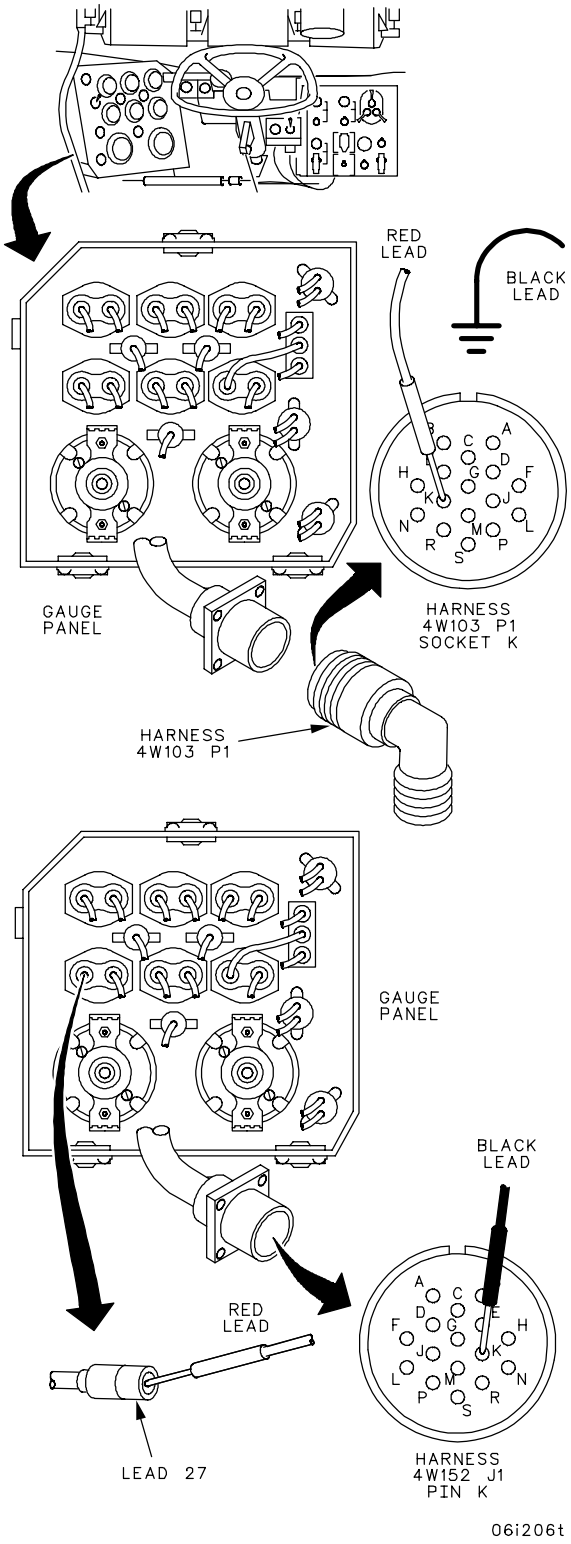
1. Disconnect lead 27 from pressure gauge.
2. Place one multimeter lead in lead 27 connector socket and one lead in harness 4W152 J1 pin K and check for continuity.
3. Reconnect lead 27 to pressure gauge.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0243 00) lead 27. Verify fault is corrected.



CONTINUED ON NEXT PAGE

TRANSMISSION OIL PRESSURE GAUGE FAILS TO OPERATE - CONTINUED 0134 00

CONTINUED FROM STEP G

H

1. Turn MASTER switch ON (TM 9-2350-292-10) and watch gauge.
2. Turn MASTER switch OFF (TM 9-2350-292-10).

Does gauge needle return to far left position?

yes

no

Replace gauge (WP 0243 00). Verify fault is corrected.

I

1. Disconnect harness 4W103 P1 from gauge panel.
2. Place one multimeter lead on harness 4W152 J1 pin F and other lead in lead 321 gauge connector socket. Check for continuity.

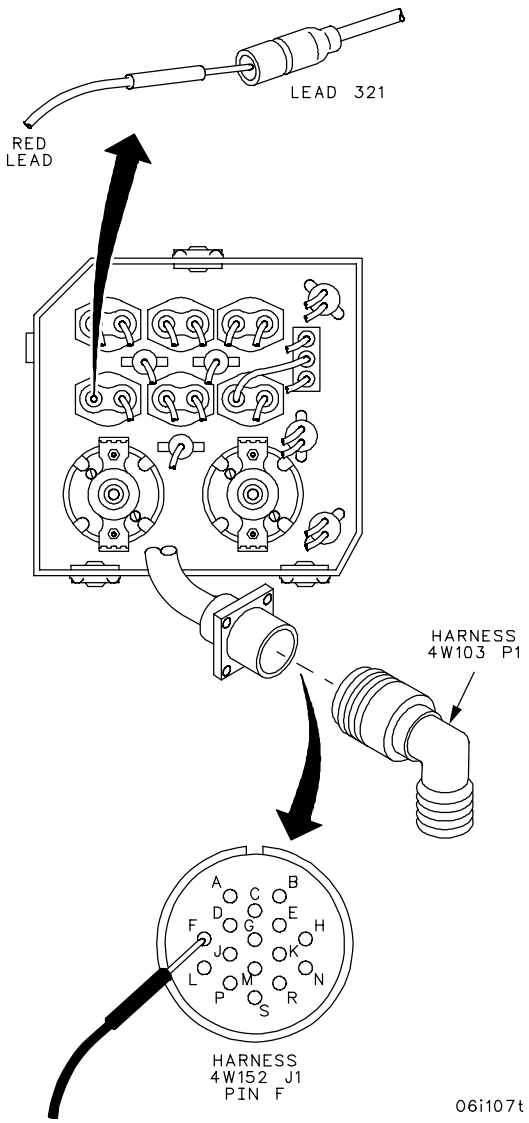
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0243 00) lead 321. Verify fault is corrected.

CONTINUED ON NEXT PAGE



TRANSMISSION OIL PRESSURE GAUGE FAILS TO OPERATE - CONTINUED 0134 00

CONTINUED FROM STEP I

J

1. Reconnect lead 321 to gauge.
2. Reconnect harness 4W103 P1 to gauge panel.
3. Open air intake grilles above battery compartment (TM 9-2350-292-10).
4. Disconnect harness 3W143 P2 from bulkhead disconnect.
5. Turn MASTER switch ON (TM 9-2350-292-10).
6. Place multimeter red lead on harness 3W143 P2 receptacle socket M and black lead to ground. Check for voltage.
7. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

K

1. Reconnect harness 3W143 P2 to bulkhead disconnect.
2. Disconnect harness 3W143 P1 from engine disconnect.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 3W143 P1 socket T and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

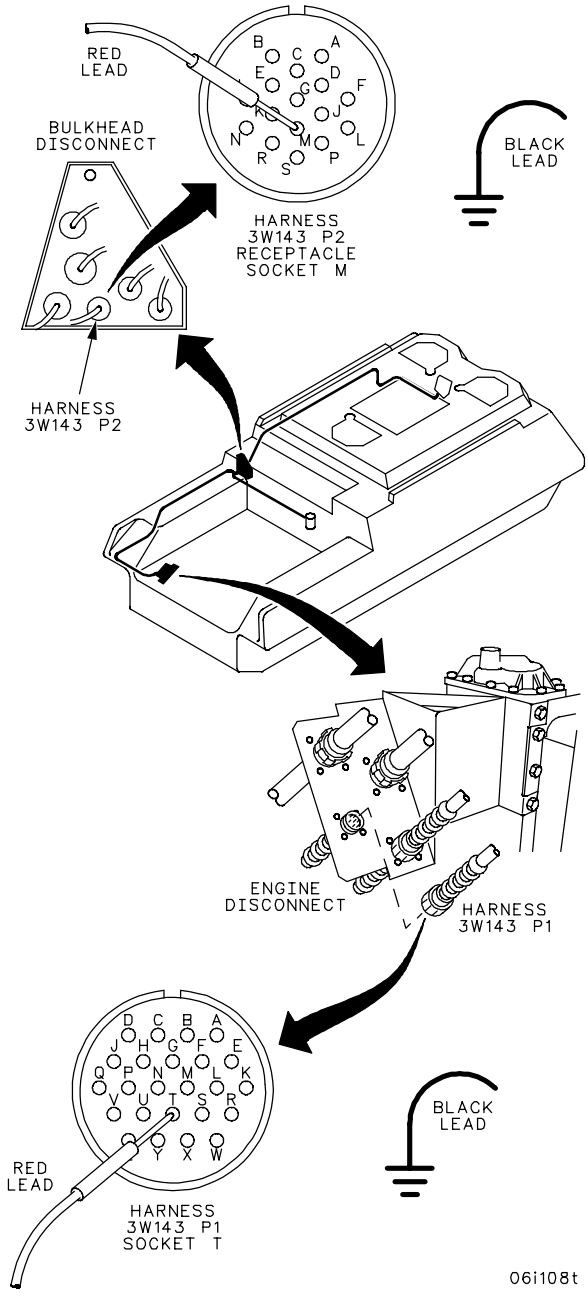
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.



END OF TASK

TRANSMISSION FILTER CLOGGED INDICATOR FAILS TO LIGHT WHEN FILTER IS CLOGGED. 0135 00

THIS WORK PACKAGE COVERS:

Transmission Filter Clogged Indicator Fails To Light When Filter Is Clogged

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Lamp replaced (TM 9-2350-292-10)
Engine access doors open (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove lamp from TRANSMISSION FILTER CLOGGED indicator (WP 0245 00).
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place red multimeter lead in lamp socket and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no → Go to Step C.

B

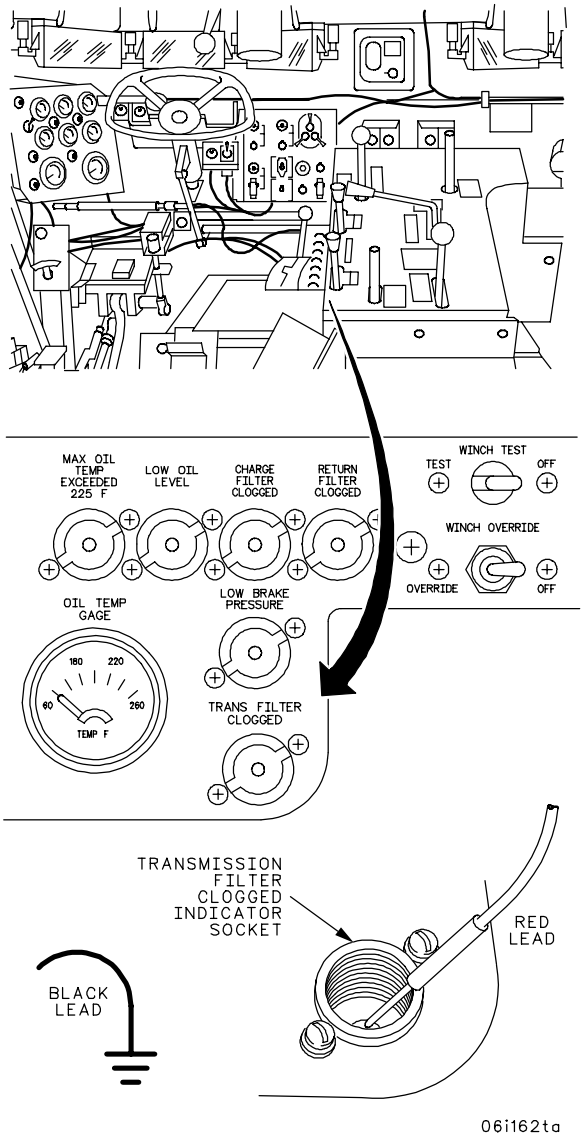
1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Hold LAMP TEST switch on PTO panel in TEST position (TM 9-2350-292-10).
3. Watch TRANSMISSION FILTER CLOGGED indicator.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Does indicator light?

yes

no → Replace lamp socket (WP 0245 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



TRANSMISSION FILTER CLOGGED INDICATOR FAILS TO LIGHT WHEN FILTER IS CLOGGED - CONTINUED 0135 00

CONTINUED FROM STEPS A AND B

C

1. Disconnect harness 3W202 from transmission filter switch.
2. Place one multimeter lead on harness 3W202 transmission filter switch receptacle pin A and other lead on pin B. Check for continuity.

Is continuity present?

yes

no

Replace switch (WP 0352 00). Verify fault is corrected.

D

1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Place multimeter red lead on harness 3W202 transmission filter switch connector socket A and black lead to ground. Check for voltage.
3. Turn MASTER switch OFF (TM 9-2350-292-10).

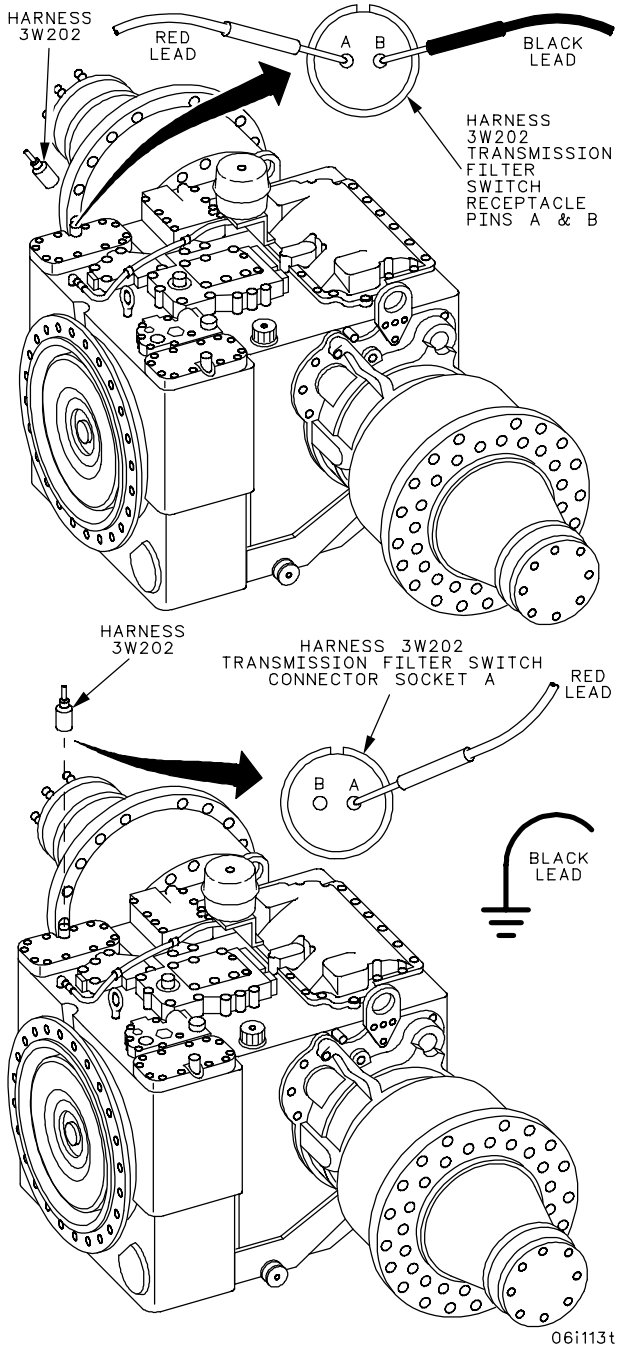
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) ground lead from switch receptacle pin B to ground. Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.



END OF TASK

CHARGE FILTER (RETURN FILTER) CLOGGED LIGHT STAYS ON. 0136 00

THIS WORK PACKAGE COVERS:

Charge Filter (Return Filter) Clogged Light Stays On

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Subfloor plate 22 removed (WP 0454 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Reset clogged filter switch push button on hydraulic filter manifold.
2. Turn vehicle MASTER switch ON, start engine, engage PTO and set engine speed to 1800 rpm (TM 9-2350-292-10). Observe CHARGE FILTER (RETURN FILTER) CLOGGED light.
3. Reduce engine speed to idle, disengage PTO, shut down engine and turn vehicle MASTER switch OFF (TM 9-2350-292-10).

Did CHARGE FILTER (RETURN FILTER) CLOGGED light stay on?

yes

no

Fault corrected.

B Check position of clogged filter switch push button.

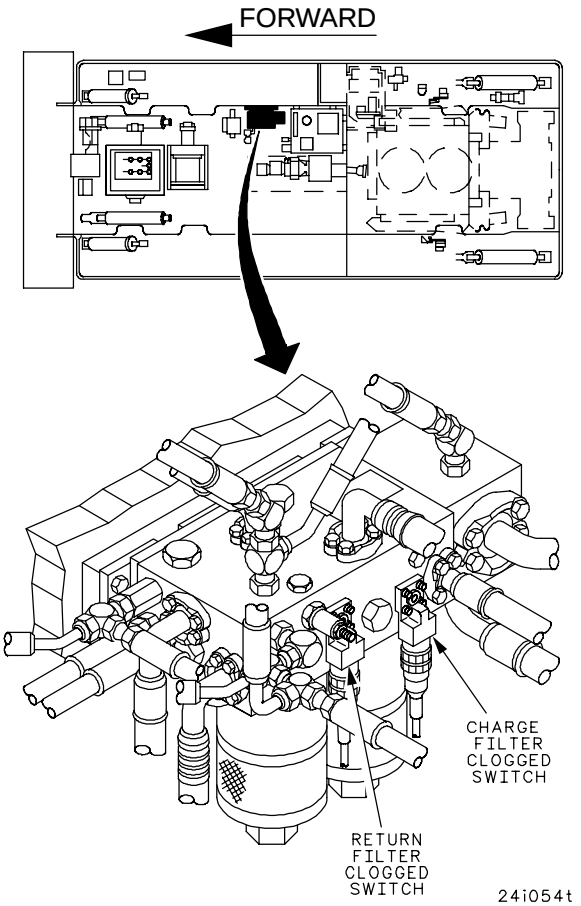
Did push button pop back out?

yes

no

Replace clogged filter switch on hydraulic filter manifold (WP 0553 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



CHARGE FILTER (RETURN FILTER) CLOGGED LIGHT STAYS ON - CONTINUED 0136 00

CONTINUED FROM STEP B

C

1. Remove CHARGE (RETURN) filter from hydraulic filter manifold (WP 0554 00).
2. Inspect filter for clogs and damage.

Is filter free of clogs and damage?

yes

no

Replace filter (WP 0554 00). Verify fault is corrected.

D

1. Re-install CHARGE (RETURN) filter (WP 0554 00).
2. Disconnect harness 2W601 connectors P3 and P4 from CHARGE and RETURN CLOGGED filter switches (WP 0291 00).
3. Turn vehicle MASTER switch ON, start engine, engage PTO and set engine speed to 1800 rpm (TM 9-2350-292-10). Check CHARGE FILTER (RETURN FILTER) CLOGGED light.
4. Return engine speed to idle, disengage PTO, shut down engine and turn vehicle MASTER switch OFF (TM 9-2350-292-10).

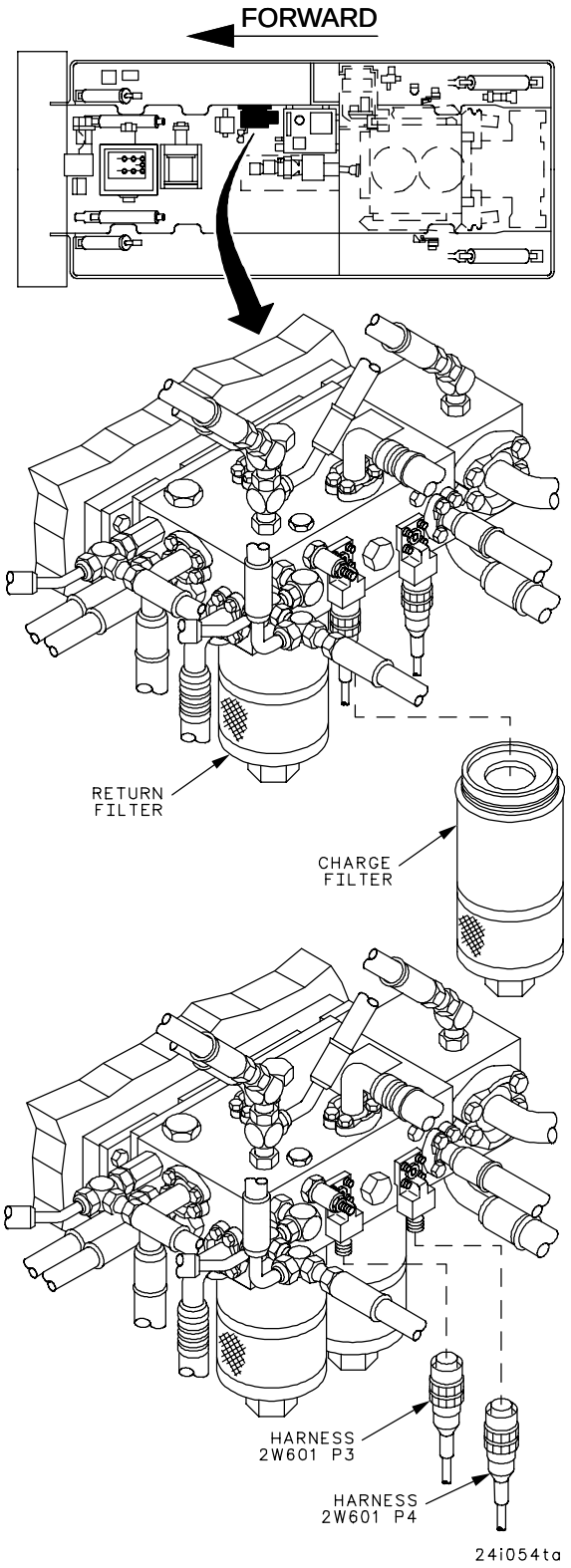
Does CHARGE FILTER (RETURN FILTER) CLOGGED light stay on?

yes

no

Replace clogged filter switch (WP 0553 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



CHARGE FILTER (RETURN FILTER) CLOGGED LIGHT STAYS ON - CONTINUED 0136 00

CONTINUED FROM STEP D

E Place one multimeter lead in harness 2W601 lead 10 connector P4 socket A and place other multimeter lead in harness 2W601 lead 10 connector P3 socket A. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601 lead 10. Verify fault is corrected.

F Place one multimeter lead in harness 2W601 connector P4 (P3 for RETURN) socket A and place other multimeter lead in harness 2W601 connector P4 socket C (P3 socket B for RETURN). Check for continuity.

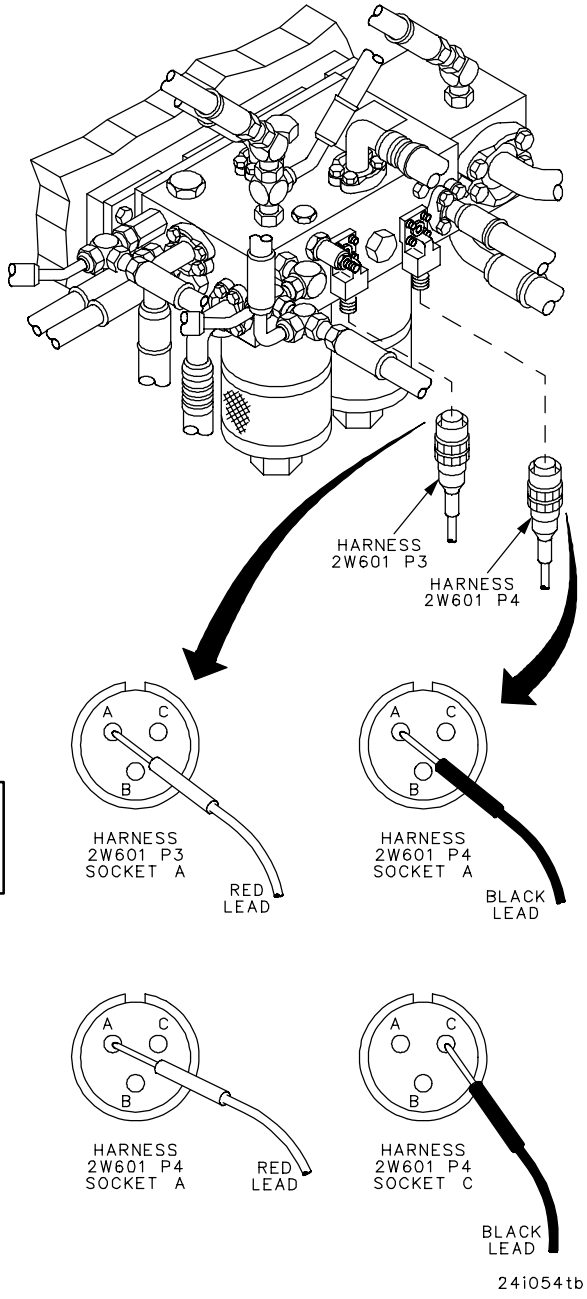
Is continuity present?

yes

no

Replace clogged filter switch (WP 0553 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601 lead 10. Verify fault is corrected.



END OF TASK

HYDRAULIC OIL LOW LEVEL WARNING LIGHT STAYS ON. HYDRAULIC RESERVOIR IS FULL. 0137 00

THIS WORK PACKAGE COVERS:

Hydraulic Oil Low Level Warning Light Stays On. Hydraulic Reservoir Is Full.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Subfloor plate #22 removed (WP 0454 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

1. Disconnect harness 2W601 connector P6 from hydraulic oil level sensor (WP 0291 00).
2. Install a jumper wire from harness 2W601 connector P6 socket A to hydraulic oil level sensor connector pin A.
3. Turn vehicle MASTER switch ON (TM 9-2350-292-10) and wait two (2) minutes.
4. Place red multimeter lead on hydraulic oil level sensor pin A and place black multimeter lead on hydraulic oil level sensor pin B. Check for voltage
5. Turn vehicle MASTER switch OFF (TM 9-2350-292-10).

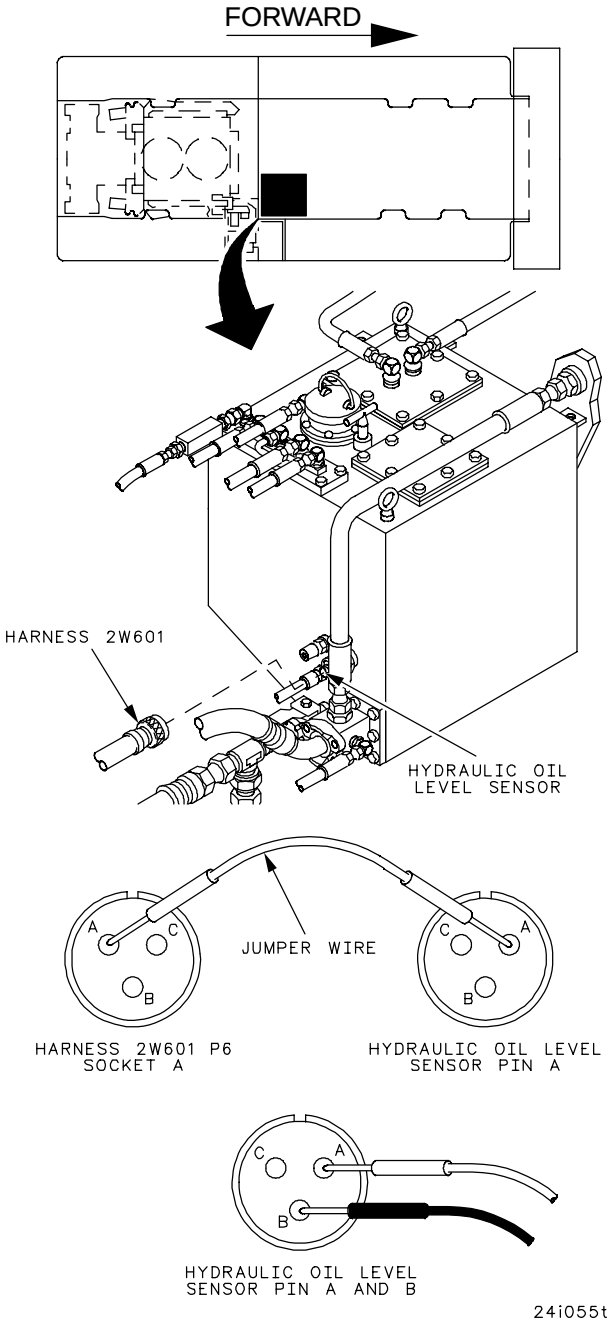
Is voltage present?

yes

Notify Direct Support Maintenance.

no

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.



END OF TASK

TRANSMISSION FILTER CLOGGED INDICATOR STAYS ON. 0138 00

THIS WORK PACKAGE COVERS:

Transmission Filter Clogged Indicator Stays On

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove transmission filters (WP 0353 00).
2. Inspect filters for clogs and damage.

Are filters free of clogs and damage?

yes

no

Replace filters (WP 0353 00). Verify fault is corrected.

B

1. Reinstall filters (WP 0353 00).
2. Disconnect harness 3W202 connector from transmission filter switch (WP 0352 00).
3. Turn MASTER switch ON and start main engine (TM 9-2350-292-10). Check TRANSMISSION FILTER CLOGGED indicator.
4. Shut down main engine and turn MASTER switch OFF (TM 9-2350-292-10).

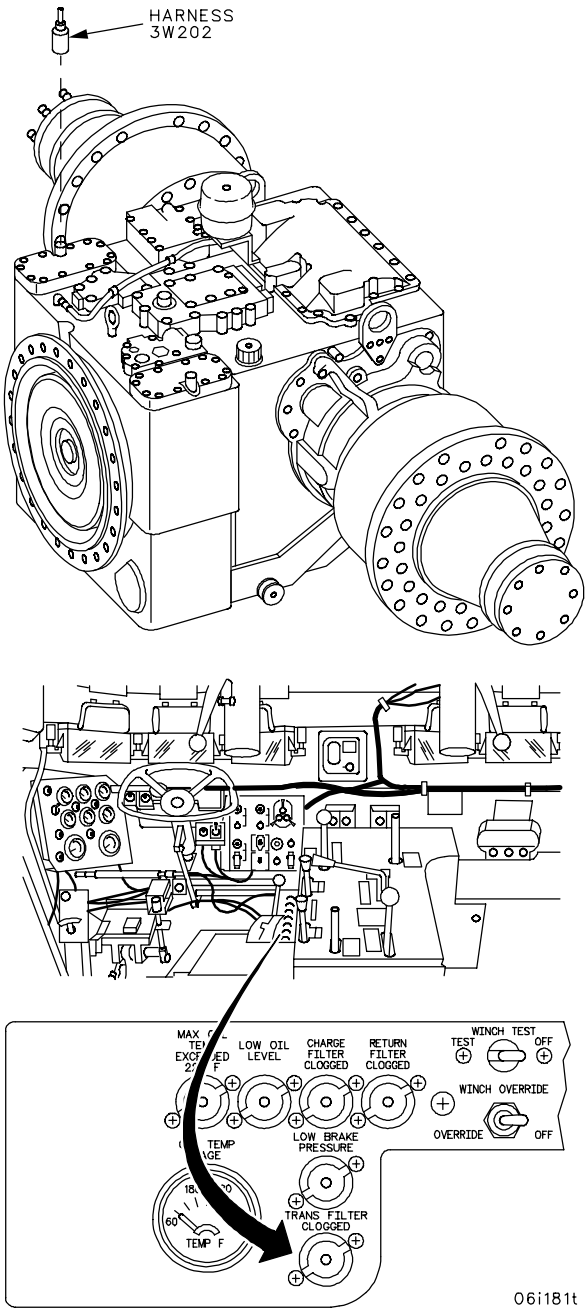
Did TRANSMISSION FILTER CLOGGED indicator stay on?

yes

no

Replace transmission filter switch (WP 0352 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



TRANSMISSION FILTER CLOGGED INDICATOR STAYS ON - CONTINUED 0138 00

CONTINUED FROM STEP B

C

1. Disconnect harness 3W143 connector P1 from engine disconnect bracket (WP 0295 00).
2. Place one multimeter lead on harness 3W202 connector J3 pin C and other multimeter lead in harness 3W202 transmission filter switch connector socket A. Check for resistance.

Is approximately 0 ohms resistance present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

D

1. Disconnect harness 3W143 connector P2 from bulkhead disconnect (WP 0295 00).
2. Place one multimeter lead in harness 3W143 connector P1 socket C and other multimeter lead on harness 3W143 connector P2 pin D. Check for resistance.

Is approximately 0 ohms resistance present?

yes

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

E

1. Disconnect harness 4W103 connector P3 from bulkhead disconnect (WP 0316 00).
2. Disconnect harness 4W103 connector J2 from harness 4W115 connector P3 (WP 0316 00).
3. Place one multimeter lead in harness 4W103 connector P3 socket D and other multimeter lead in harness 4W103 connector J2 socket B. Check for resistance.

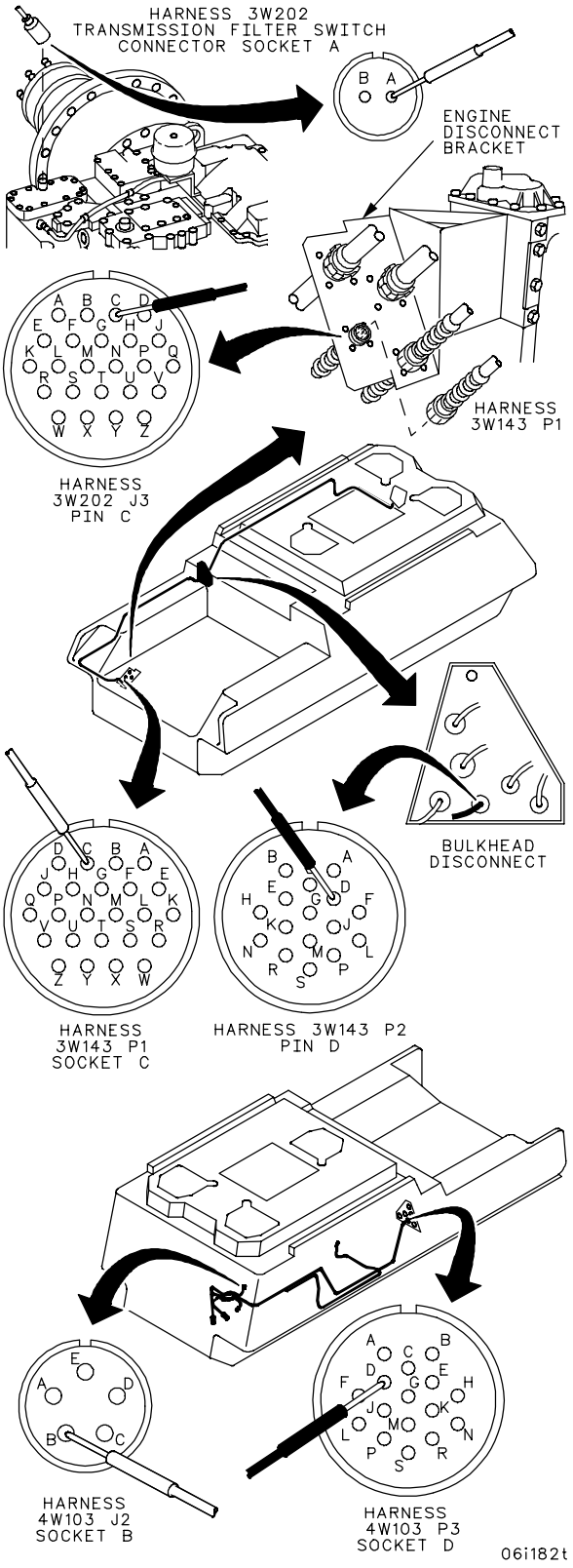
Is approximately 0 ohms resistance present?

yes

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

CONTINUED ON NEXT PAGE



TRANSMISSION FILTER CLOGGED INDICATOR STAYS ON - CONTINUED 0138 00

CONTINUED FROM STEP E

F

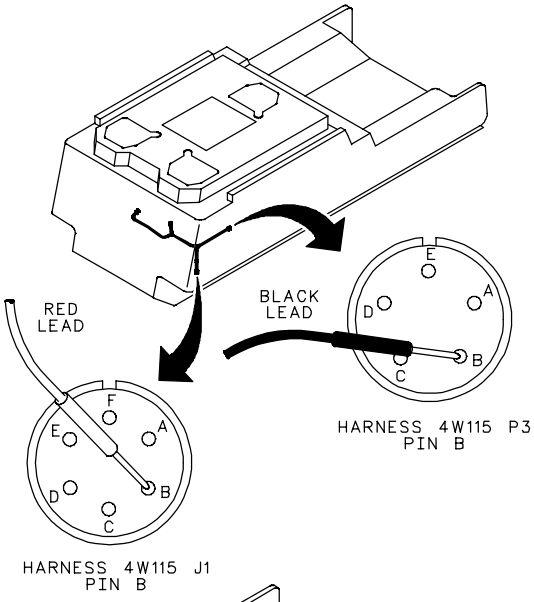
1. Disconnect harness 4W115 connector J1 from harness 4W618 connector P4 (WP 0321 00).
2. Place one multimeter lead on harness 4W115 connector P3 pin B and other multimeter lead on harness 4W115 connector J1 pin B. Check for resistance.

Is approximately 0 ohms resistance present?

yes

no

Repair (WP 0290 00) or replace (WP 0321 00) harness 4W115. Verify fault is corrected.



G

1. Disconnect harness 4W618 connector P2 from harness 4W617 connector J1 (WP 0330 00).
2. Place one multimeter lead in harness 4W618 connector P4 socket B and other multimeter lead on harness 4W618 connector P2 pin N. Check for resistance.

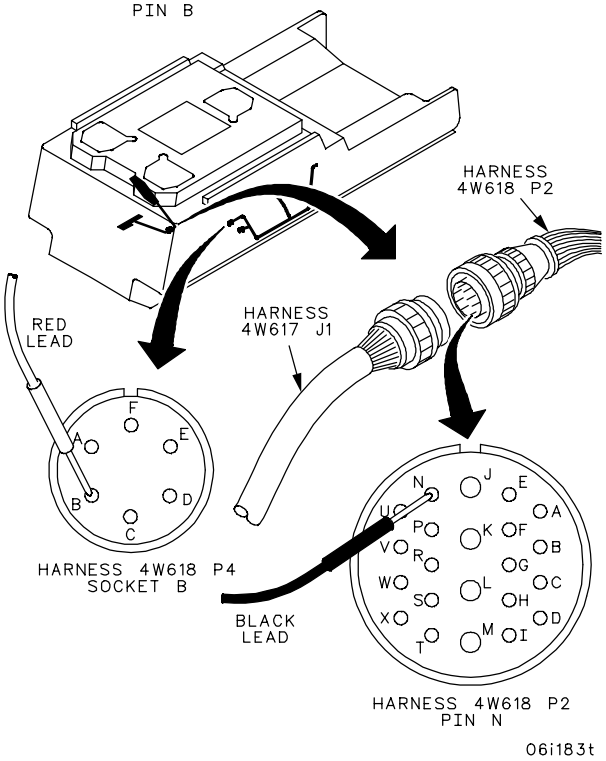
Is approximately 0 ohms resistance present?

yes

no

Repair (WP 0290 00) or replace (WP 0330 00) harness 4W617. Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0331 00) harness 4W618. Verify fault is corrected.



END OF TASK

PERSONNEL HEATER OVERVIEW AND DIAGRAMS. 0139 00

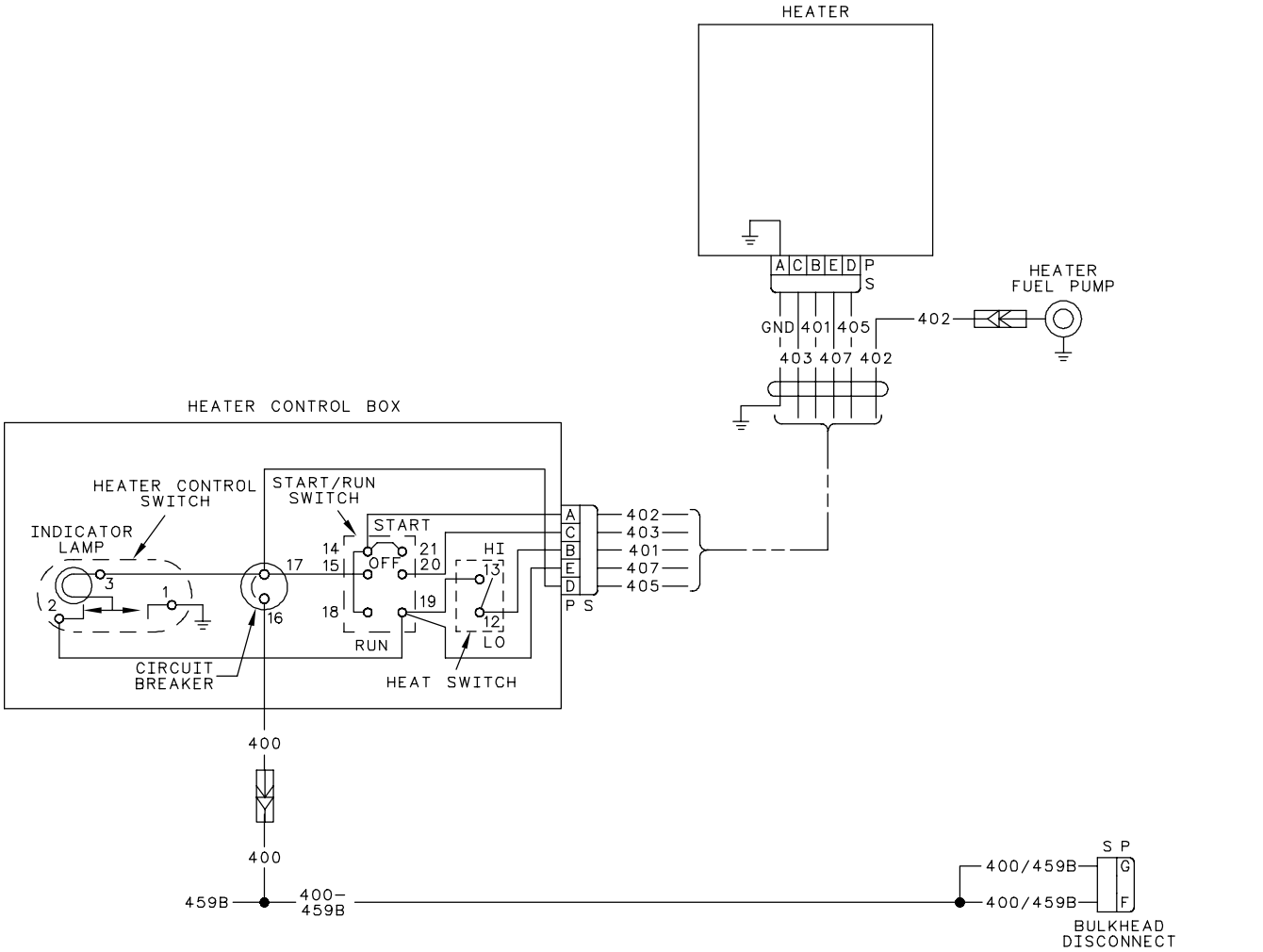
THIS WORK PACKAGE COVERS:

Personnel Heater Overview and Diagrams

The personnel heater system consists of the personnel heater; the heater fuel pump; the HEATER CONTROL box containing a START/RUN switch, HI/LO switch, indicator, and 20-amp circuit breaker; a 30-amp circuit breaker; and related electrical wiring.

The HEATER CONTROL box receives power (+24 - 28 V dc) through the 30-amp circuit breaker directly from the vehicle electrical system power source; either batteries or generator, whichever is applicable When the HEATER CONTROL START/RUN switch is held in the START position, heater ignition is initiated, the HEATER CONTROL indicator lights, and the heater blower motor is turned on. After heater ignition, the START/RUN switch is set to RUN to maintain heater operation. The HI/LO switch selects a desired heater output. When the START/RUN switch is set to OFF, the heater will shut down.

The relationship of the personnel heater system components is shown in the following diagram.



06i039t

END OF TASK

PERSONNEL HEATER FAILS TO OPERATE PROPERLY. 0140 00

THIS WORK PACKAGE COVERS:

Personnel Heater Fails To Operate Properly

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Batteries fully charged

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Press heater indicator test lamp on heater control box.

Does lamp light?

yes → Go to Step H.

no

B
1. Disconnect harness 4W127 lead 400 from heater control box.
2. Place multimeter red lead in harness 4W127 lead 400 and black lead to ground. Check for voltage.

Is 24 V dc present?

yes → Go to Step F.

no

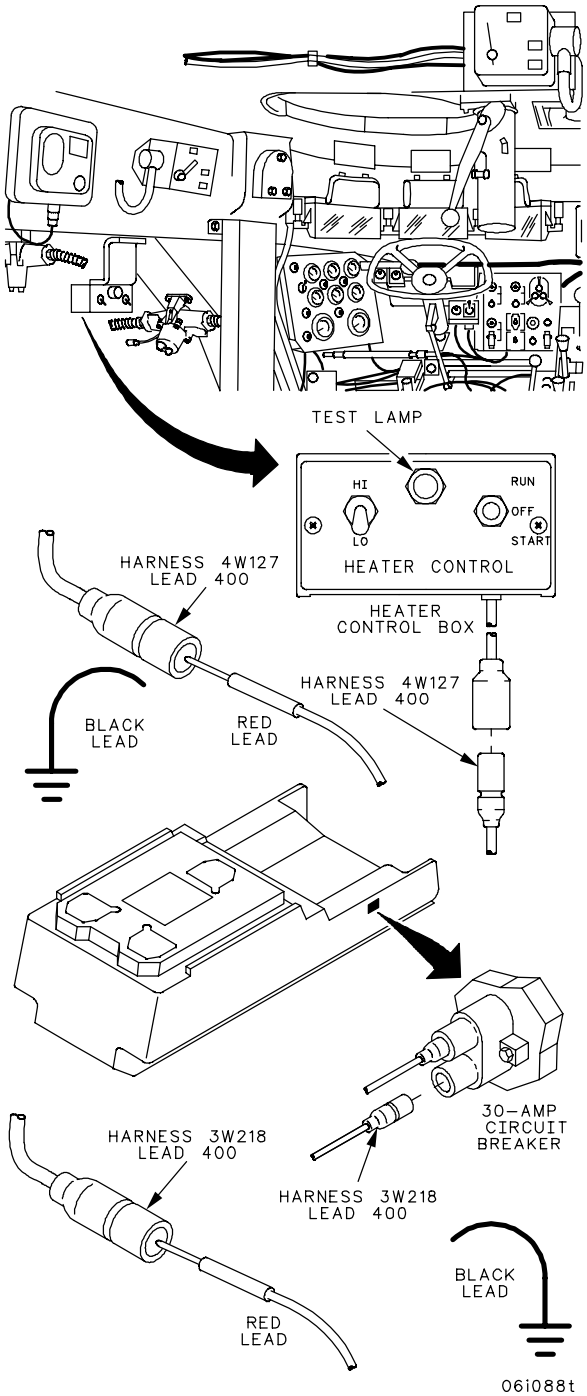
C
1. Open left side air intake grilles above battery compartment (TM 9-2350-292-10).
2. Disconnect harness 3W218 lead 400 from battery side of 30 amp circuit breaker.
3. Place multimeter red lead in harness 3W218 lead 400 circuit breaker connect socket and black lead to ground. Check for voltage.

Is 24 V dc present?

yes

no → Repair (WP 0290 00) or replace harness (WP 0310 00) 3W218 lead 400. Verify fault is corrected.

CONTINUED ON NEXT PAGE



PERSONNEL HEATER FAILS TO OPERATE PROPERLY - CONTINUED 0140 00

CONTINUED FROM STEP C

D

1. Disconnect harness 3W142 lead 400/459B from 30-amp circuit breaker.
2. Place one multimeter lead on each circuit breaker connector. Check for continuity.

Is continuity present?

yes

no

Replace circuit breaker (WP 0270 00). Verify fault is corrected.

E

1. Reconnect harness 3W218 lead 400 and harness 3W142 lead 400/459B to 30-amp circuit breaker.
2. Disconnect harness 3W142 P1 from bulkhead disconnect.
3. Place multimeter red lead in harness 3W142 P1 sockets F and G (one at a time) while holding black lead to ground. Check for voltage.

Is 24 V dc present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0324 00) harness 4W127. Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0294 00) harness 3W142. Verify fault is corrected.

CONTINUED FROM STEP B

F

1. Reconnect harness 4W127 lead 400 to heater control box.
2. Open heater control box and disconnect lead 400 from 20-amp circuit breaker.
3. Place multimeter red lead on lead 400 connector and black lead to ground. Check for voltage.

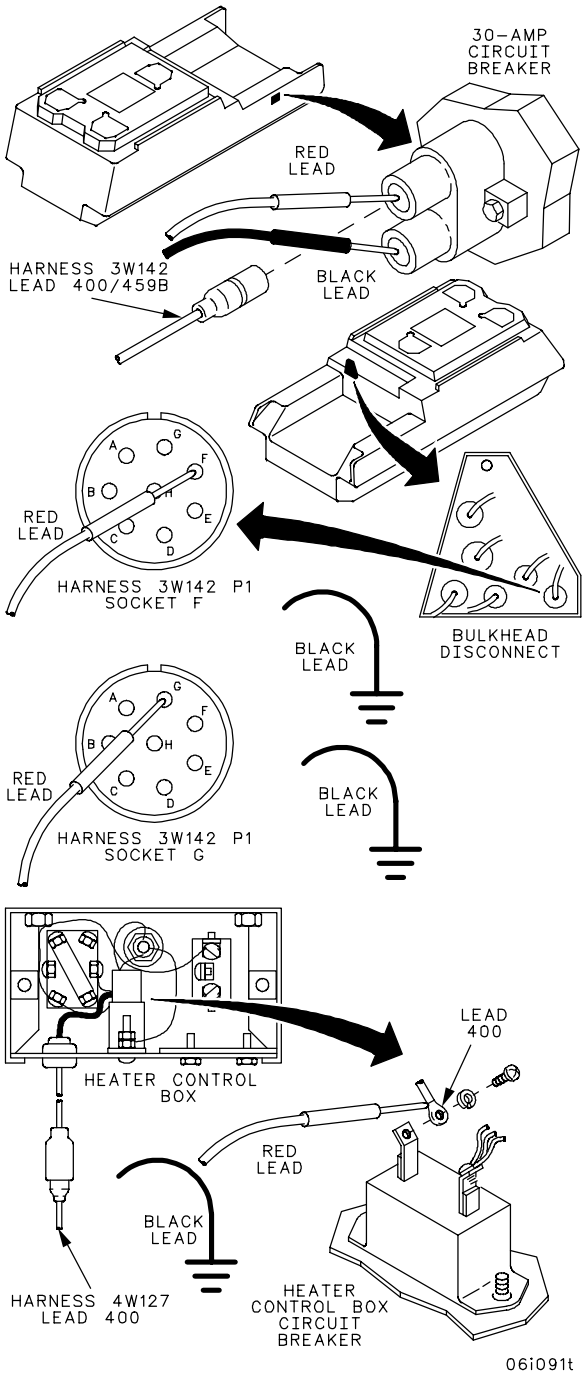
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0248 00) lead 400 from control box connector to 20-amp circuit breaker. Verify fault is corrected.

CONTINUED ON NEXT PAGE



PERSONNEL HEATER FAILS TO OPERATE PROPERLY - CONTINUED 0140 00

CONTINUED FROM STEP F

G

1. Disconnect leads from other side of 20-amp circuit breaker.
2. Place one multimeter lead in each circuit breaker connector socket. Check for continuity.

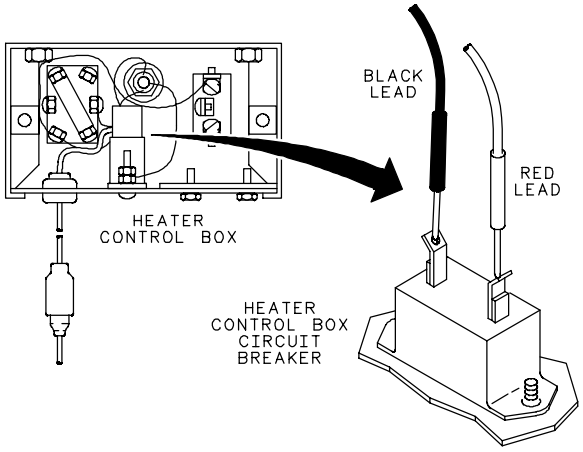
Is continuity present?

yes

Replace indicator socket and cable (WP 0248 00). Verify fault is corrected.

no

Replace 20-amp circuit breaker (WP 0248 00). Verify fault is corrected.



CONTINUED FROM STEP A

H

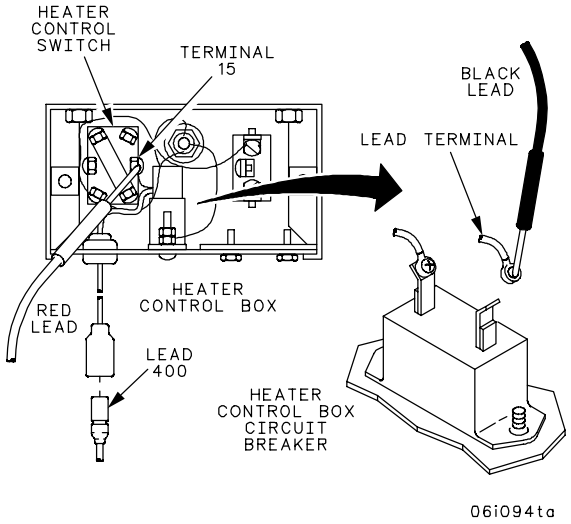
1. Disconnect lead 400 from heater control box.
2. Open heater control box and disconnect leads from indicator side of 20-amp circuit breaker.
3. Place one multimeter lead on HEATER CONTROL switch terminal 15 and other lead on lead terminal to circuit breaker. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0248 00) lead from circuit breaker to switch. Verify fault is corrected.



CONTINUED ON NEXT PAGE

PERSONNEL HEATER FAILS TO OPERATE PROPERLY - CONTINUED 0140 00

CONTINUED FROM STEP H

I

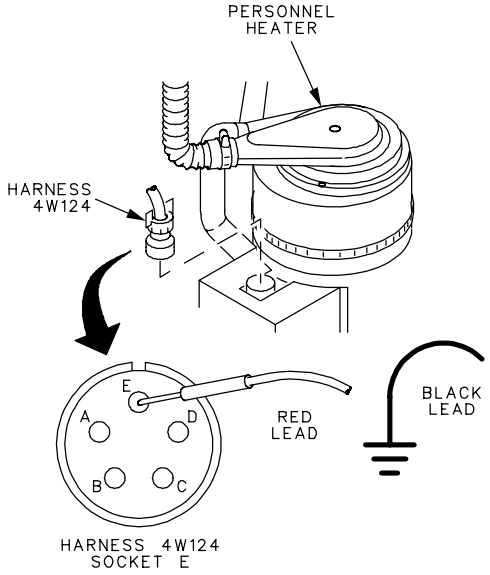
1. Reconnect leads to 20 amp circuit.
2. Reconnect lead 400 to heater control box.
3. Disconnect wiring harness 4W124 at personnel heater.
4. Turn MASTER switch and HEATER CONTROL switch ON (TM 9-2350-292-10).
5. Place red multimeter lead in wiring harness 4W124 personnel heater connector socket E and black lead to ground. Check for voltage.
6. Turn MASTER switch and HEATER CONTROL switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Replace personnel heater (WP 0529 00). Verify fault is corrected.

no



J

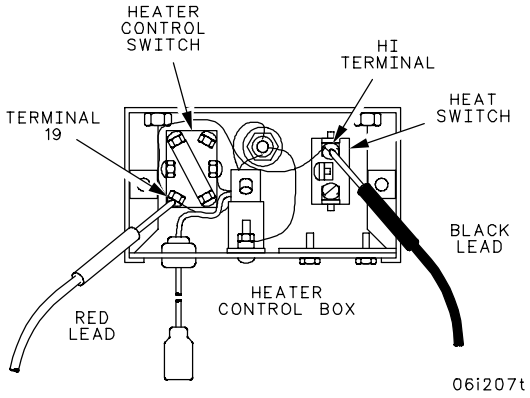
1. Place HEAT switch in HI position (TM 9-2350-292-10).
2. Place one multimeter lead on HEATER CONTROL switch terminal 19 and other lead on HI terminal of HEAT switch. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace lead to HEAT switch (WP 0248 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

PERSONNEL HEATER FAILS TO OPERATE PROPERLY - CONTINUED 0140 00

CONTINUED FROM STEP J

K

1. Disconnect hearness 4W124 from heater control box.
2. Place one multimeter lead on pin E of heater control box receptacle and other lead on HEATER CONTROL switch terminal 19. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0248 00) lead from control box receptacle pin E to HEATER CONTROL switch. Verify fault is corrected.

L

1. Place HEAT switch in LO position.
2. Place one multimeter lead on heater control box receptacle pin B and other lead on HEAT switch LO terminal. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0248 00) lead from control box receptacle pin B to HEAT switch. Verify fault is corrected.

M

1. Place HEAT switch in HI position (TM 9-2350-292-10).
2. Place one multimeter lead on heater control box receptacle pin B and other lead on pin E. Check for continuity.

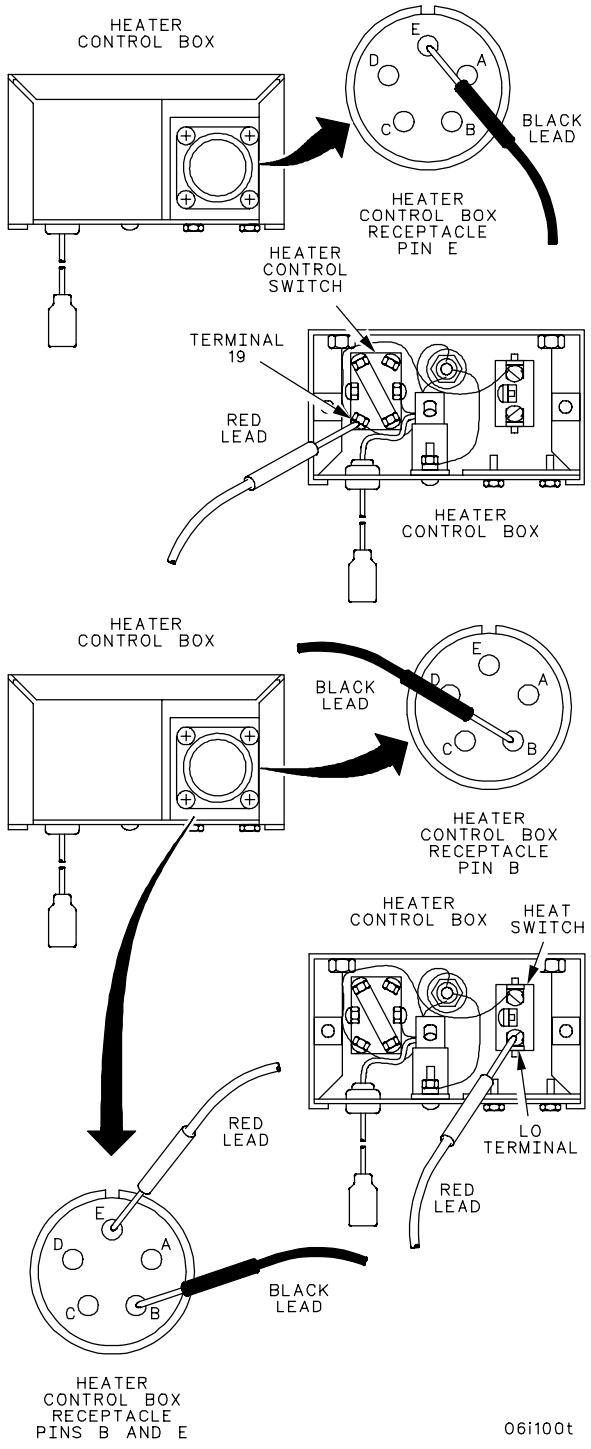
Is continuity present?

yes

no

Replace HEAT switch (WP 0248 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



PERSONNEL HEATER FAILS TO OPERATE PROPERLY - CONTINUED 0140 00

CONTINUED FROM STEP M

N Place one multimeter lead on heater control box receptacle pin C and other lead on HEATER CONTROL switch terminal 20. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0248 00) lead from control box receptacle pin C to HEATER CONTROL switch terminal 20. Verify fault is corrected.

O Place one multimeter lead on heater control box receptacle pin A and other lead on HEATER CONTROL switch terminal 14. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0248 00) lead from control box receptacle to HEATER CONTROL switch terminal 14. Verify fault is corrected.

P Place one multimeter lead on heater control box receptacle pin D and other lead in circuit breaker socket terminal 17. Check for continuity.

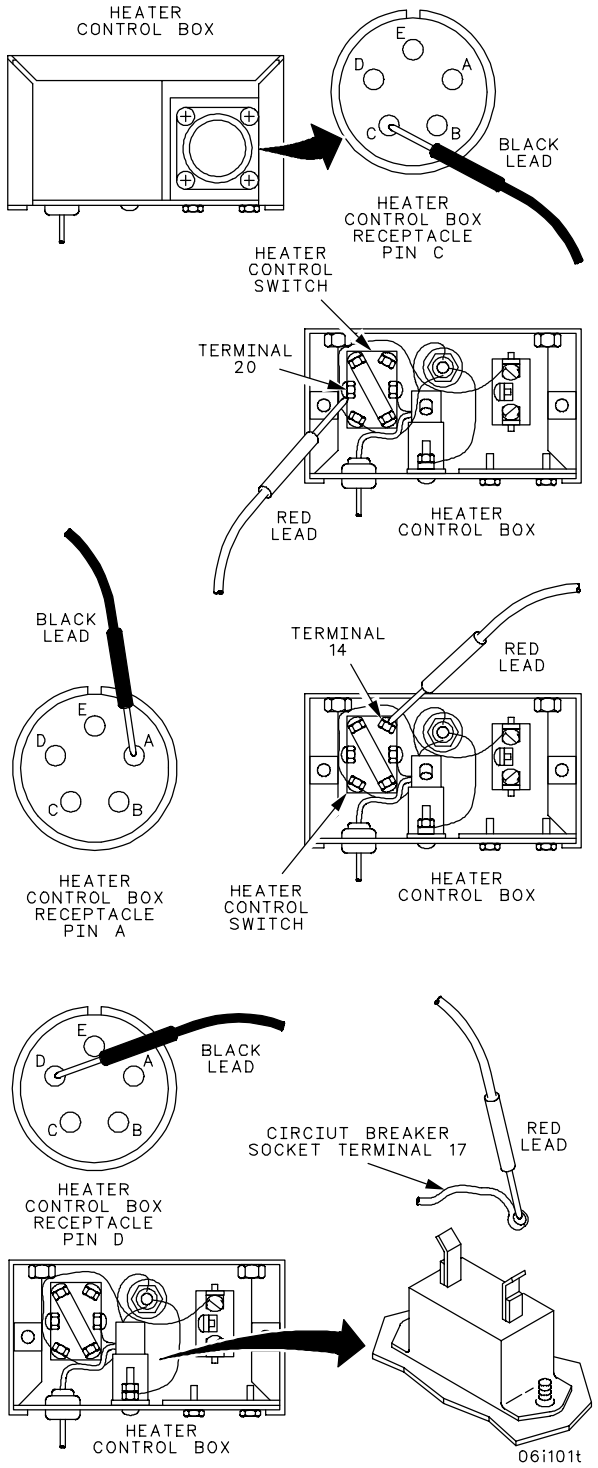
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0248 00) lead from control box receptacle pin D to circuit breaker socket terminal 17. Verify fault is corrected.

CONTINUED ON NEXT PAGE



PERSONNEL HEATER FAILS TO OPERATE PROPERLY - CONTINUED 0140 00

CONTINUED FROM STEP P

Q

1. Place HEATER CONTROL switch to OFF position (TM 9-2350-292-10).
2. Place one multimeter lead on heater control box receptacle pin A and other lead on pin C. Check for continuity.

Is continuity present?

yes

Replace HEATER CONTROL switch (WP 0248 00). Verify fault is corrected.

no

R

1. Hold HEATER CONTROL switch in START position (TM 9-2350-292-10).
2. Place one multimeter lead on heater control box receptacle pin A and other lead on pin C. Check for continuity.

Is continuity present?

yes

no

Replace HEATER CONTROL switch (WP 0248 00). Verify fault is corrected.

S

1. Replace HEATER CONTROL switch to OFF position (TM 9-2350-292-10).
2. Place one multimeter lead on heater control box receptacle pin C and other lead on pin E. Check for continuity.

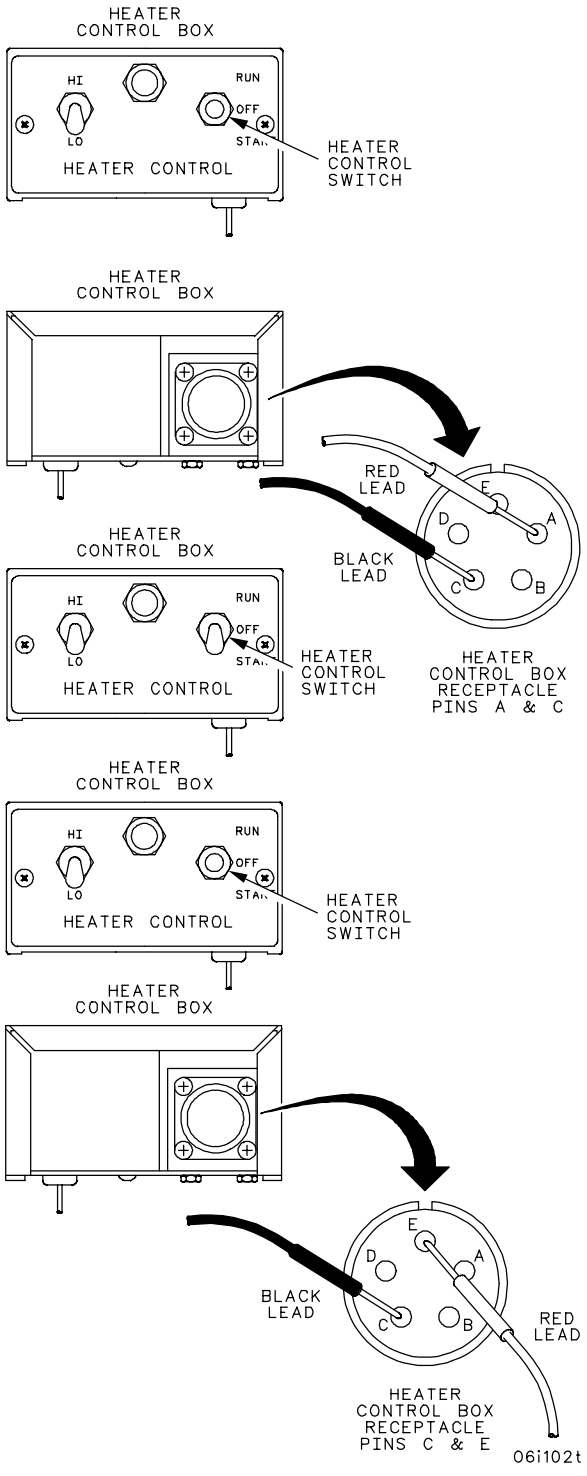
Is continuity present?

yes

Replace HEATER CONTROL switch (WP 0248 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



PERSONNEL HEATER FAILS TO OPERATE PROPERLY - CONTINUED 0140 00

CONTINUED FROM STEP S

T

1. Place HEATER CONTROL switch to RUN position.
2. Place one multimeter lead on heater control box receptacle pin C and other lead on pin E. Check for continuity.

Is continuity present?

yes

no

Replace HEATER CONTROL switch (WP 0248 00). Verify fault is corrected.

U

1. Reconnect lead 400 to heater control box.
2. Reconnect all leads to circuit breaker.
3. Place HEATER CONTROL switch to OFF position (TM 9-2350-292-10).
4. Place multimeter red lead on heater control box receptacle pin A and black lead to ground. Check for voltage.

Is voltage present?

yes

no

Replace HEATER CONTROL switch (WP 0248 00). Verify fault is corrected.

V

1. Place HEATER CONTROL switch in START position (TM 9-2350-292-10).
2. Place multimeter red lead on heater control box receptacle pin A and black lead to ground. Check for voltage.

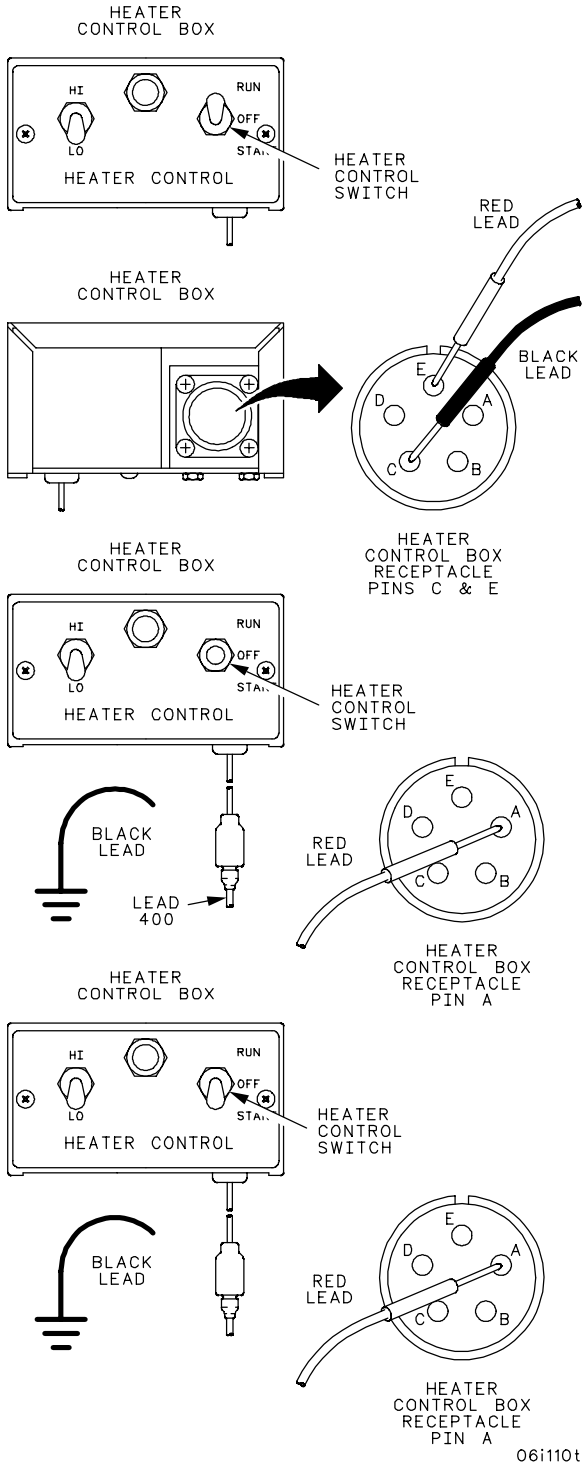
Is 24 V dc present?

yes

no

Replace HEATER CONTROL switch (WP 0248 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



PERSONNEL HEATER FAILS TO OPERATE PROPERLY - CONTINUED 0140 00

CONTINUED FROM STEP V

W

1. Place HEATER CONTROL switch to RUN position (TM 9-2350-292-10).
2. Place multimeter red lead on heater control box receptacle pin A and black lead to ground. Check for voltage.

Is 24 V dc present?

yes

no

Replace HEATER CONTROL switch (WP 0248 00). Verify fault is corrected.

X

1. Place HEATER CONTROL switch to OFF position (TM 9-2350-292-10).
2. Disconnect lead 402 from heater fuel pump.
3. Place one multimeter lead in control box connector socket A and other lead in fuel pump connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0323 00) lead 402 to fuel pump. Verify fault is corrected.

Y

1. Reconnect harness 4W124 to heater control box.
2. Disconnect harness 4W124 from personnel heater.
3. Place HEATER CONTROL switch to RUN position (TM 9-2350-292-10).
4. Place HEATER CONTROL switch to OFF position (TM 9-2350-292-10).

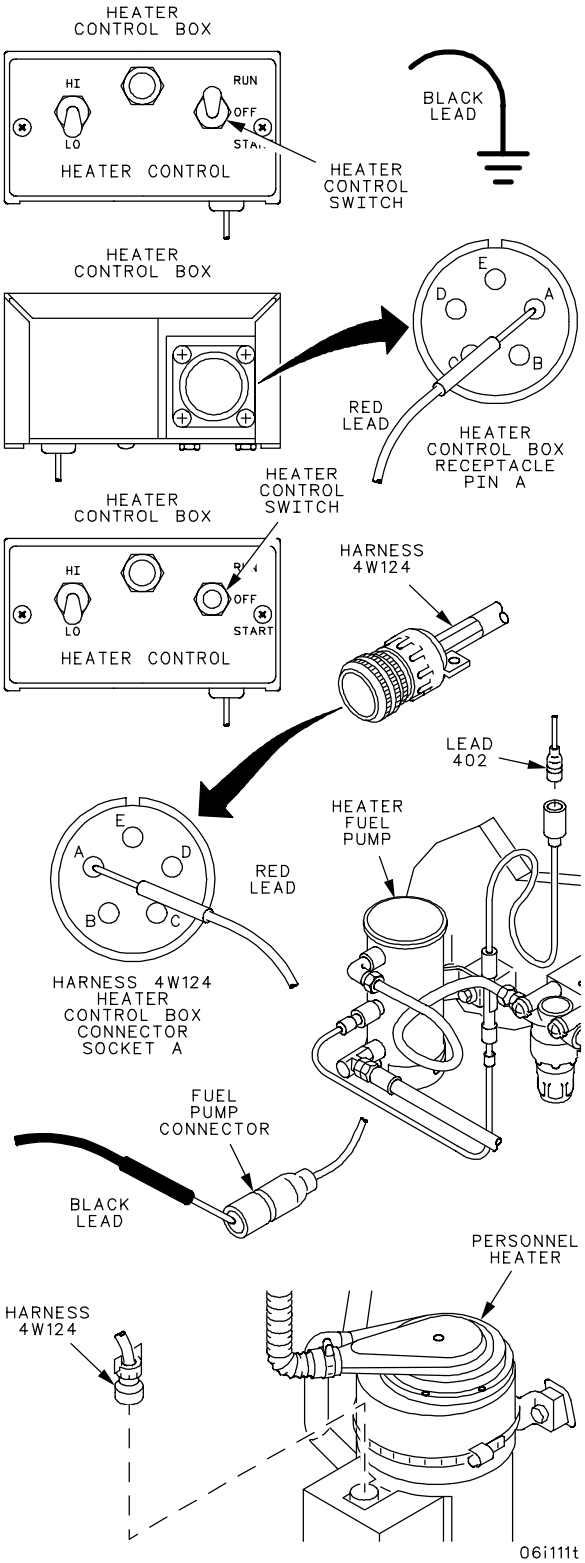
Does fuel pump operate?

yes

no

Go to WP 0141 00 and troubleshoot the fuel pump.

CONTINUED ON NEXT PAGE



PERSONNEL HEATER FAILS TO OPERATE PROPERLY - CONTINUED 0140 00

CONTINUED FROM STEP Y

Z

1. Place HEATER CONTROL switch to START position (TM 9-2350-292-10).
2. Place multimeter red lead in socket D and C (one at a time) of harness 4W124 heater connector while holding black lead to ground. Check for voltage.
3. Place HEATER CONTROL switch to OFF position (TM 9-2350-292-10).

Is 24 V dc present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0323 00) harness 4W124. Verify fault is corrected.

AA Place one multimeter lead in harness 4W124 heater connector socket A and other lead to ground. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0323 00) ground lead from socket A to ground of harness 4W124. Verify fault is corrected.

AB

1. Disconnect harness 4W124 from heater control box.
2. Place one multimeter lead in harness 4W124 heater control box connector socket B and other lead in harness 4W124 personnel heater connector socket B. Check for continuity.

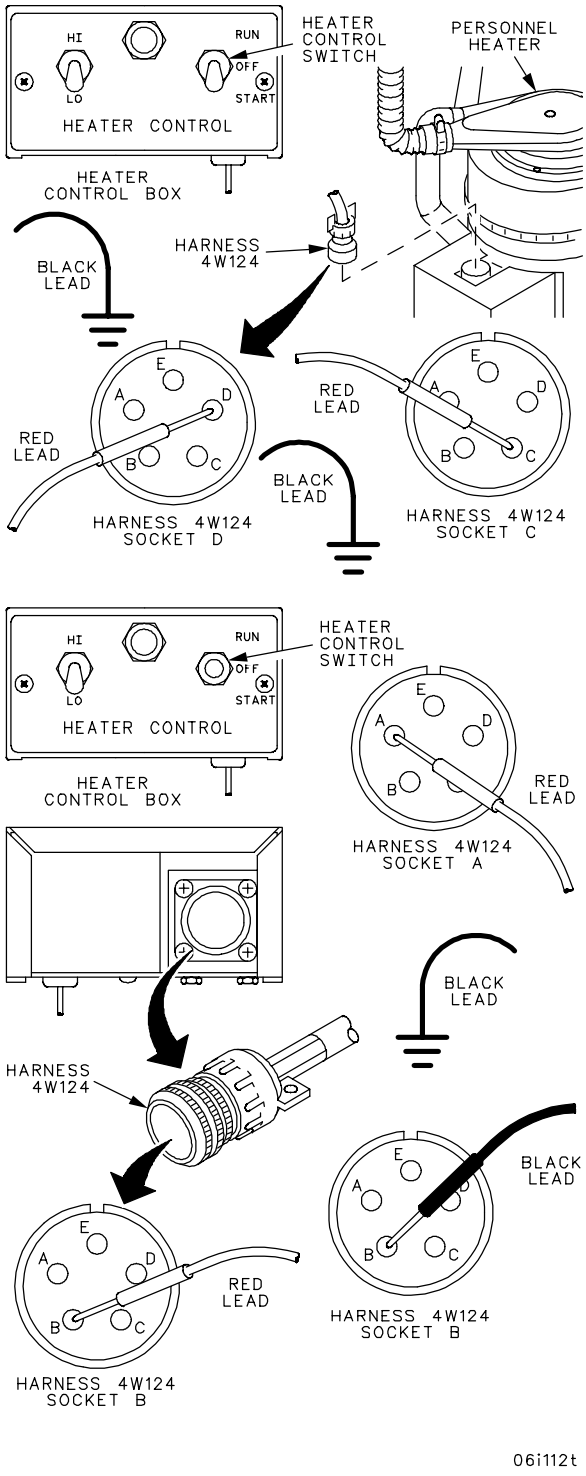
Is continuity present?

yes

no

Replace personnel heater (WP 0529 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0323 00) harness 4W124. Verify fault is corrected.



END OF TASK

PERSONNEL HEATER FAILS TO IGNITE (HEATER BLOWER OPERATES PROPERLY). 0141 00

THIS WORK PACKAGE COVERS:

Personnel Heater Fails To Ignite. (Heater Blower Operates Properly).

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Utility pail (item 27, WP 0717 00)

Personnel Required

Two

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Air particulate filter and bracket removed (WP 0706 00)

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect fuel line from personnel heater.
2. Place disconnected fuel line into container and place HEATER CONTROL switch to RUN position (TM 9-2350-292-10).
3. Place HEATER CONTROL switch to OFF position (TM 9-2350-292-10).

Did fuel run into container?

yes

Go to page WP 0140 00.

no

B

1. Remove personnel heater fuel pump shield.
2. Disconnect fuel line from OUT port of fuel filter.
3. Place container under fuel filter and place HEATER CONTROL switch to RUN position (TM 9-2350-292-10).
4. Place HEATER CONTROL switch to OFF position (TM 9-2350-292-10).

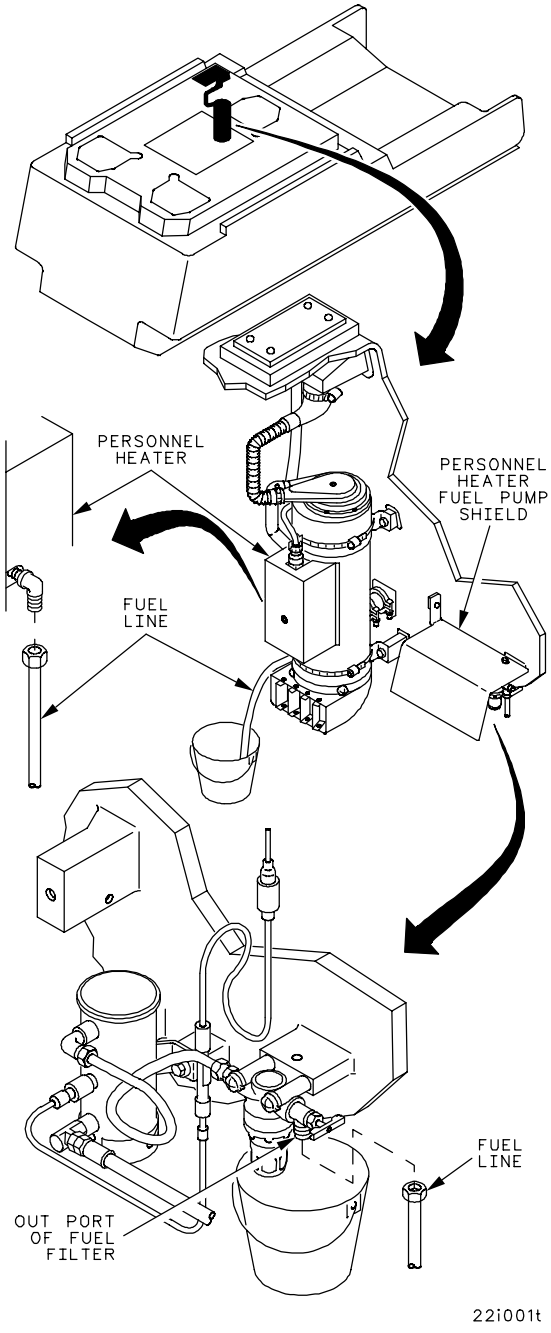
Did fuel run into container?

yes

Clear or replace fuel line from filter to heater (WP 0533 00). Verify fault is corrected.

no

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PERSONNEL HEATER FAILS TO IGNITE. (HEATER BLOWER OPERATES PROPERLY) - CONTINUED 0141 00

CONTINUED FROM STEP B

C

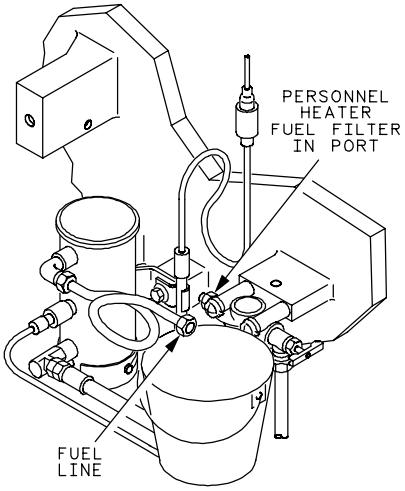
1. Reconnect fuel line to personnel heater and personnel heater fuel filter OUT port.
2. Disconnect fuel line from personnel heater fuel filter IN port.
3. Place disconnected fuel line into container and place HEATER CONTROL switch to RUN position (TM 9-2350-292-10).
4. Place HEATER CONTROL switch to OFF position (TM 9-2350-292-10).

Did fuel run into container?

yes

Replace fuel filter (WP 0534 00). Verify fault is corrected.

no



D

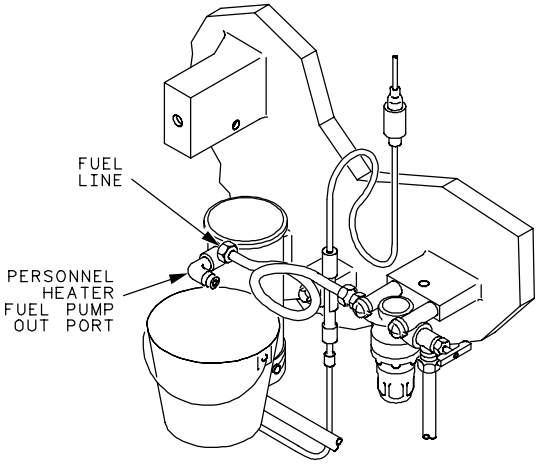
1. Reconnect fuel line to personnel heater fuel filter IN port.
2. Disconnect fuel line from personnel heater fuel pump OUT port.
3. Place container under fuel pump and place HEATER CONTROL switch to RUN position (TM 9-2350-292-10).
4. Place HEATER CONTROL switch to OFF position (TM 9-2350-292-10).

Did fuel run into container?

yes

Clear or replace fuel line from fuel pump to fuel filter (WP 0533 00). Verify fault is corrected.

no



22i001ta

CONTINUED ON NEXT PAGE

PERSONNEL HEATER FAILS TO IGNITE. (HEATER BLOWER OPERATES PROPERLY) - CONTINUED 0141 00

CONTINUED FROM STEP D

E

1. Reconnect fuel line to fuel pump OUT port.
2. Disconnect fuel line from fuel pump IN port.
3. Place disconnected fuel line in container and turn ON MASTER switch and ELECTRIC FUEL PUMP switch (TM 9-2350-292-10).
4. Turn MASTER switch and ELECTRIC FUEL PUMP OFF (TM 9-2350-292-10).

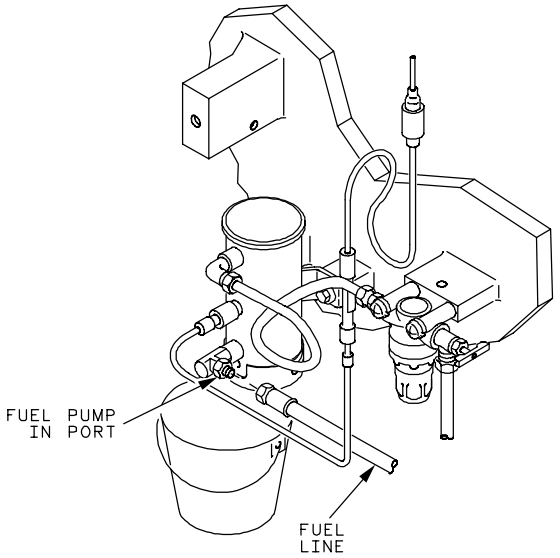
Did fuel run into container?

yes

Replace personnel heater fuel pump (WP 0533 00). Verify fault is corrected.

no

Clear or replace heater fuel supply line under compartment floor plate (WP 0534 00). Verify fault is corrected.



22i001tb

END OF TASK

PERSONNEL HEATER FAILS TO KEEP BURNING. 0142 00

THIS WORK PACKAGE COVERS:

Personnel Heater Fails To Keep Burning

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0000 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Air particulate filter and bracket removed (WP 0000 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

1. Loosen (but do not remove) fuel line from personnel heater.
2. Hold a shop rag around fuel line fitting and place HEATER CONTROL switch to START position (TM 9-2350-292-10).
3. Bleed air from fuel line until steady flow of fuel runs from fuel line.
4. Place HEATER CONTROL switch to OFF position (TM 9-2350-292-10).

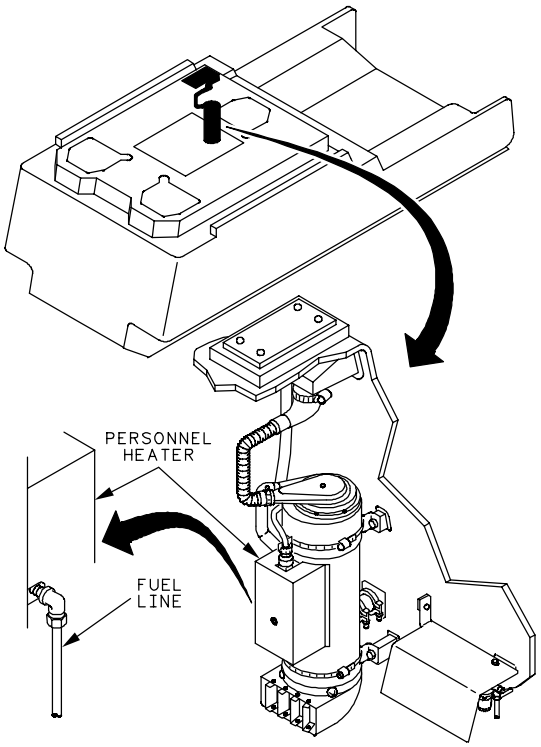
Did fuel flow from fuel line in a steady flow?

yes

Tighten fuel line. Verify fault is corrected.

no

Go to WP 0141 00 Step B.



22i002t

END OF TASK

POWER TAKEOFF ELECTRICAL SYSTEM OVERVIEW AND DIAGRAMS 0143 00

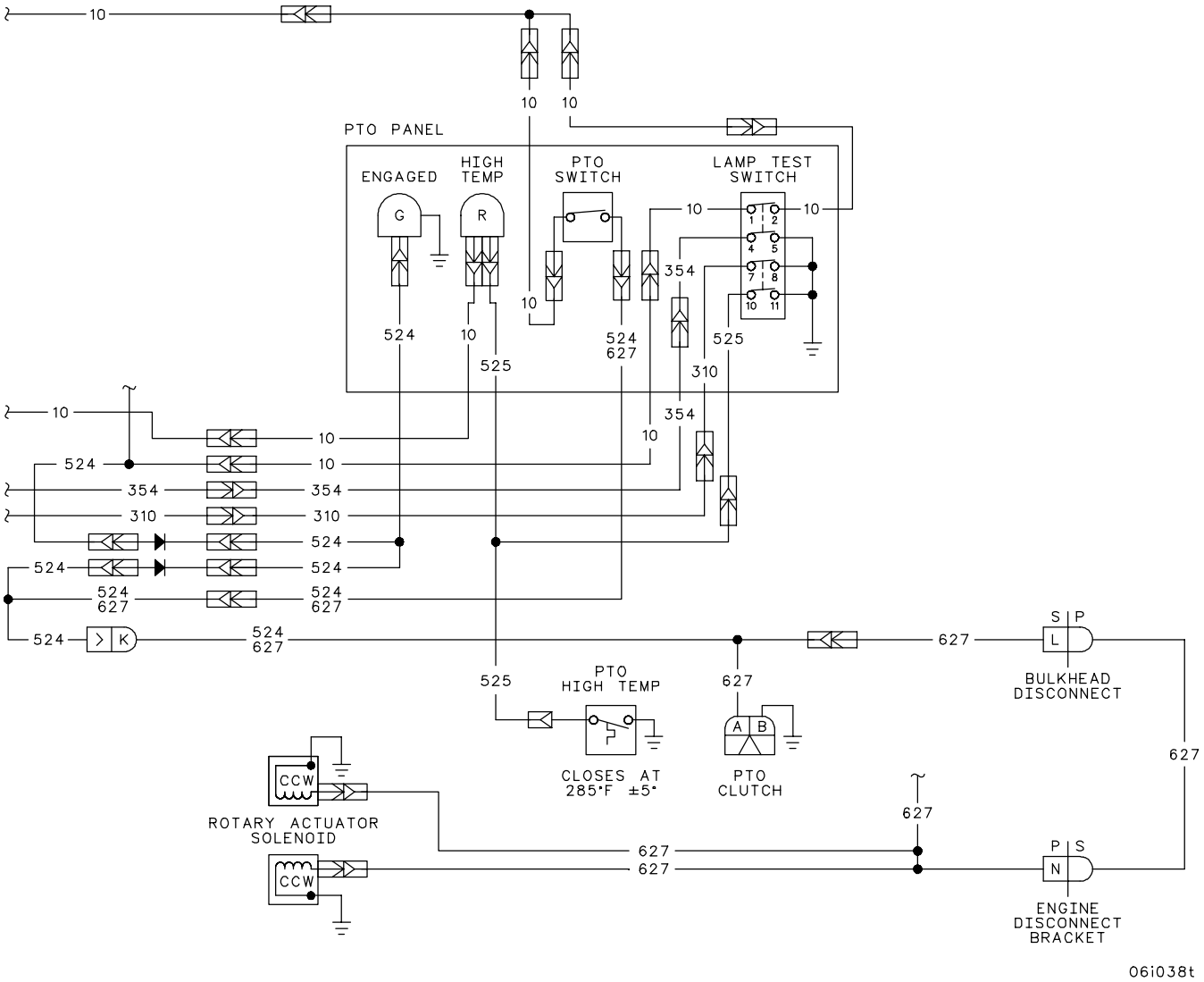
THIS WORK PACKAGE COVERS:

Power Takeoff Electrical System Overview and Diagrams

The power takeoff (PTO) electrical system consists of the PTO clutch, the ENGAGED indicator, PTO CLUTCH switch, diode, 20-amp circuit breaker, engine governor solenoid, two rotary actuator solenoids, and related electrical wiring.

With the main engine running and the MASTER switch set to ON, system power (+28 V dc) is supplied through a 20-amp circuit breaker on the hydraulic control panel to the PTO CLUTCH switch on the PTO clutch panel. Operation of the main hydraulic system is initiated by setting the PTO CLUTCH switch to the ON position. With the PTO CLUTCH switch in the ON position, the PTO clutch is engaged, the ENGAGED indicator is lit, and engine power is transmitted to the main hydraulic pumps. Additionally, both the main engine governor solenoid and the rotary actuator are energized. When the main engine governor solenoid is energized, the governor limits main engine velocity to 1800 rpm during main hydraulic system operations. When the rotary actuator solenoids are energized, air flow is routed through the hydraulic oil cooler to reduce hydraulic fluid temperature.

The relationship of the various components of the PTO electrical system is shown in the following diagram.



END OF TASK

PTO CLUTCH DOES NOT ENGAGE, INDICATOR IS NOT LIT AND GOVERNOR DOES NOT OPERATE PROPERLY. 0144 00

THIS WORK PACKAGE COVERS:

PTO Clutch Does Not Engage, Indicator Is Not Lit And Governor Does Not Operate Properly

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 2W601 P1 from accessory control panel receptacle J1.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 2W601 P1 socket V and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.

B

1. Open accessory control panel (WP 0244 00).
2. Disconnect lead 10 from CB4 terminal 1 in accessory control panel.
3. Place one multimeter lead on lead 10 CB4 connector pin and other lead on accessory control panel receptacle J1 pin V. Check for continuity.

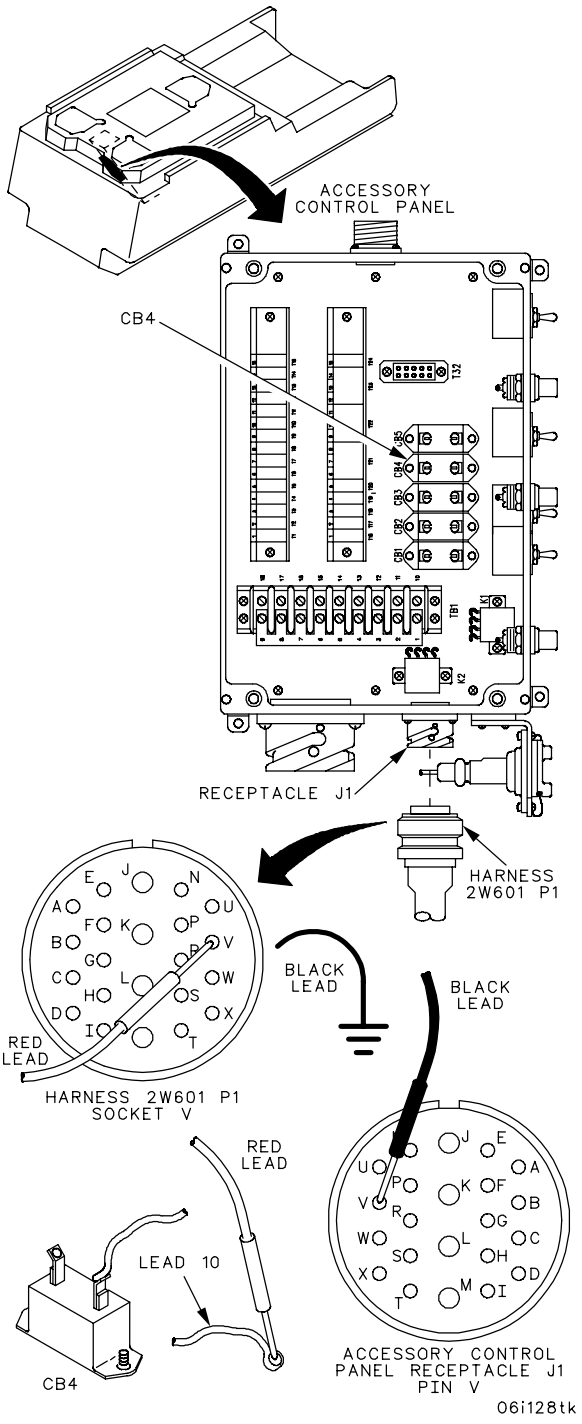
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 10. Verify fault is corrected.

CONTINUED ON NEXT PAGE



PTO CLUTCH DOES NOT ENGAGE, INDICATOR IS NOT LIT AND GOVERNOR DOES NOT OPERATE PROPERLY - CONTINUED

0144 00

CONTINUED FROM STEP B

C

1. Disconnect lead 10 from terminal 2 of CB4.
2. Place one multimeter lead in each CB4 connector. Check for continuity.

Is continuity present?

yes

no

Replace CB4 (WP 0244 00). Verify fault is corrected.

D

1. Disconnect lead 10 from TB1 terminal 14.
2. Place one multimeter lead on lead 10 to CB4 and other lead on lead 10 to TB1 terminal 14. Check for continuity.

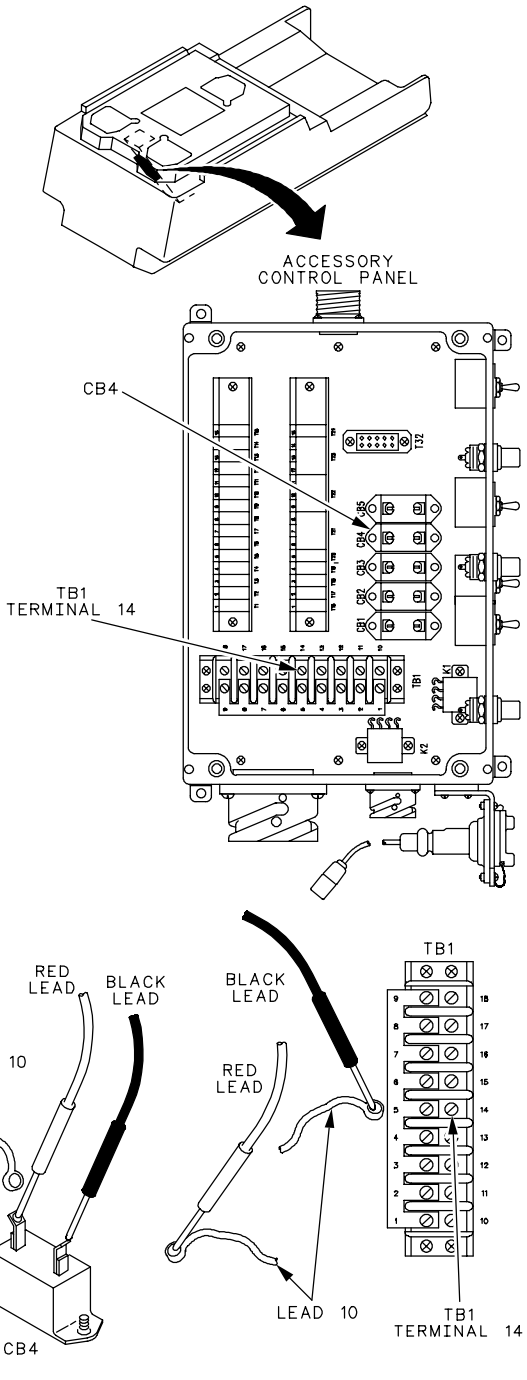
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 10. Verify fault is corrected.

CONTINUED ON NEXT PAGE



06i128tl

PTO CLUTCH DOES NOT ENGAGE, INDICATOR IS NOT LIT AND GOVERNOR DOES NOT OPERATE PROPERLY - CONTINUED

0144 00

CONTINUED FROM STEP D

E

1. Reconnect lead 10 to both sides of CB4 and to TB1 terminal 14.
2. Disconnect lead 524/627 from switch S6 terminal 2.
3. Place one multimeter lead on lead 524/627 and other lead on TB1 terminal 13. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 524/627. Verify fault is corrected.

F

1. Disconnect leads 524 and 627 from switch S6 terminal 1.
2. Place one multimeter lead on each switch S6 connector.
3. Turn PTO CLUTCH switch ON. Check for continuity.

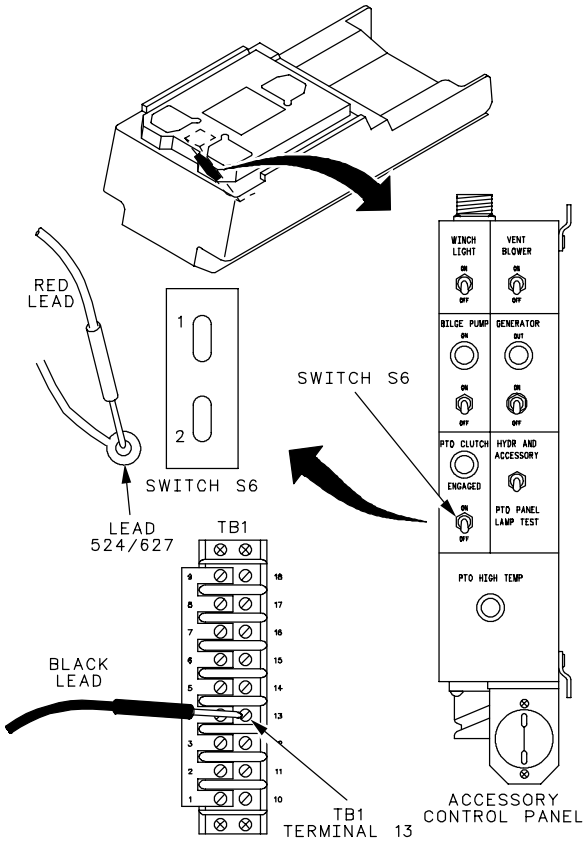
Is continuity present?

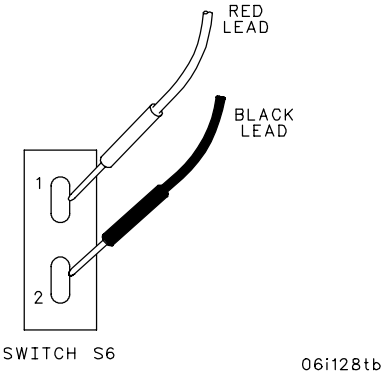
yes

no

Replace switch S6 (WP 0244 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE





PTO CLUTCH DOES NOT ENGAGE, INDICATOR IS NOT LIT AND GOVERNOR DOES NOT OPERATE PROPERLY - CONTINUED

0144 00

CONTINUED FROM STEP F

G

1. Turn PTO CLUTCH switch OFF (TM 9-2350-292-10).
2. Reconnect lead 524/627 to switch S6 and reconnect leads 627 and lead 524 to switch S6.
3. Reconnect harness 2W601 P1 to control panel receptacle J1.
4. Remove subfloor plates 26 and 27 (WP 0454 00).
5. Disconnect harness 2W601 from PTO CLUTCH.
6. Turn PTO CLUTCH switch and MASTER switch ON (TM 9-2350-292-10) and watch ENGAGED indicator.
7. Turn PTO CLUTCH switch and MASTER switch OFF (TM 9-2350-292-10).

Did indicator light?

yes

Go to Step K.

no

H

1. Disconnect lead 524 from diode T10 terminal D.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on lead 524 diode connector and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

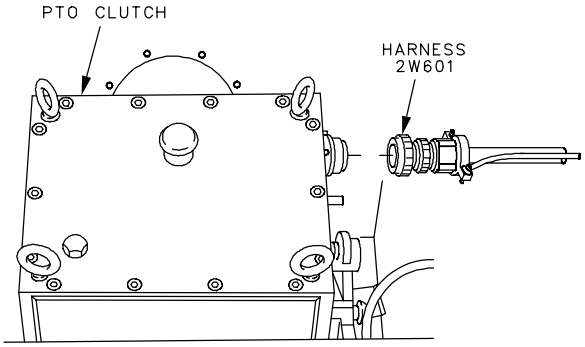
Is 24 V dc present?

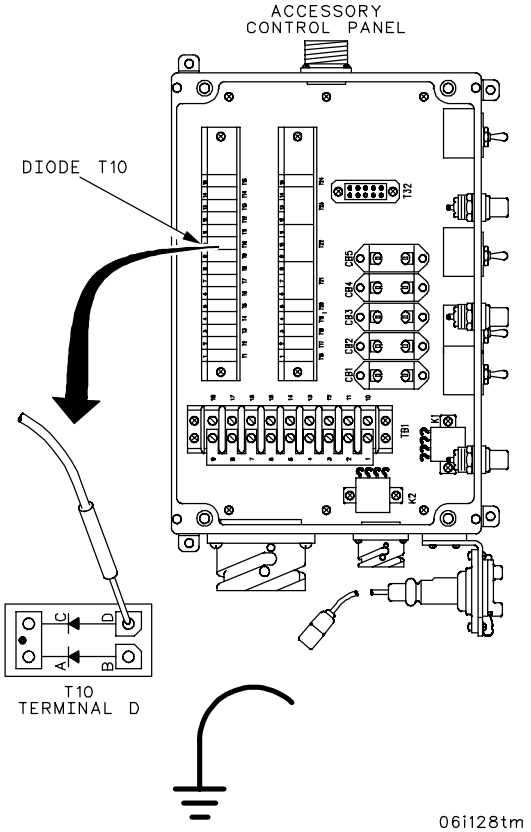
yes

Repair (WP 0290 00) or replace (WP 0244 00) lead 524. Verify fault is corrected.

no

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PTO CLUTCH DOES NOT ENGAGE, INDICATOR IS NOT LIT AND GOVERNOR DOES NOT OPERATE PROPERLY - CONTINUED

0144 00

CONTINUED FROM STEP H

I

1. Disconnect lead 524 from diode T10 terminal A.
2. Place red multimeter lead on terminal D of diode T10 and black lead on terminal A of diode T10. Check resistance.
3. Reverse multimeter leads on diode. Check resistance.

Is resistance low when red lead is on terminal D and high when on terminal A?

yes

no

Replace diode (WP 0244 00). Verify fault is corrected.

J

1. Reconnect lead 524 to diode T10 terminal D.
2. Place one multimeter lead on lead 524 to diode T10 terminal A connector and other lead on lead 524 indicator DS1 connector 1. Check for continuity.

Is continuity present?

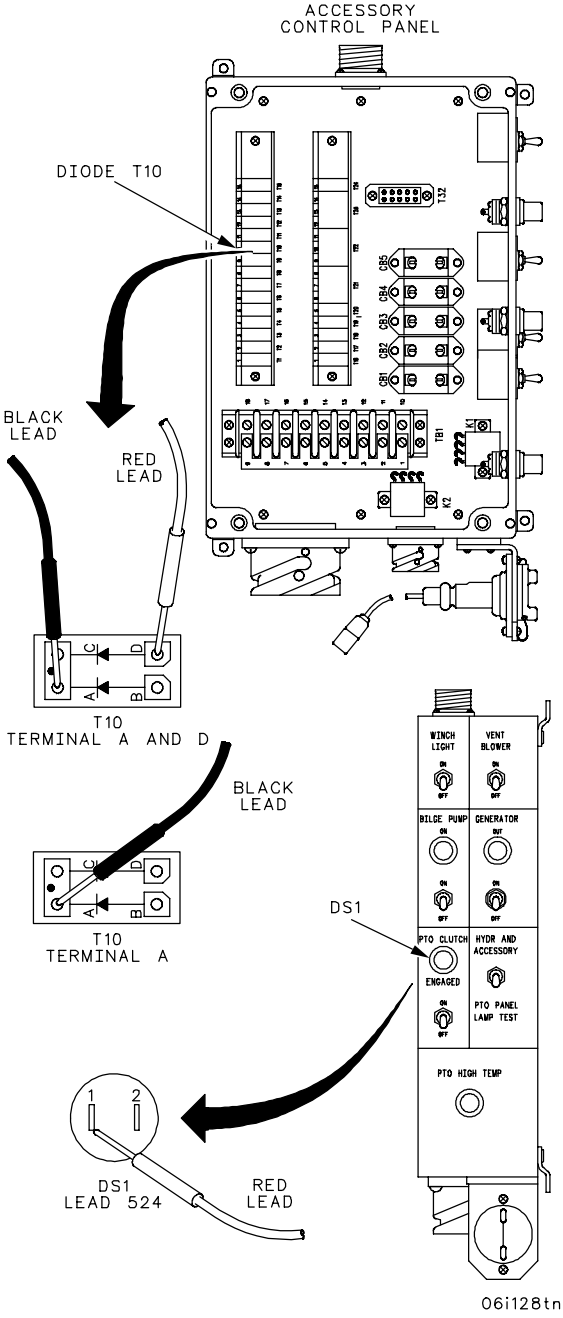
yes

no

Replace indicator DS1 (WP 0244 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0244 00) lead 524. Verify fault is corrected.

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PTO CLUTCH DOES NOT ENGAGE, INDICATOR IS NOT LIT AND GOVERNOR DOES NOT OPERATE PROPERLY - CONTINUED

0144 00

CONTINUED FROM STEP G

K

1. Turn PTO CLUTCH switch and MASTER switch ON (TM 9-2350-292-10) and listen to both rotary actuator solenoids at the hydraulic oil cooler.
2. Turn PTO CLUTCH switch and MASTER switch OFF (TM 9-2350-292-10).

Does either of the solenoids operate?

yes

no

Go to Step O.

L

1. Turn MASTER switch and PTO CLUTCH switch ON (TM 9-2350-292-10) and listen for governor solenoid to operate.
2. Turn MASTER switch and PTO CLUTCH switch OFF (TM 9-2350-292-10).

Does governor solenoid operate?

yes

no

Go to Step Q.

M

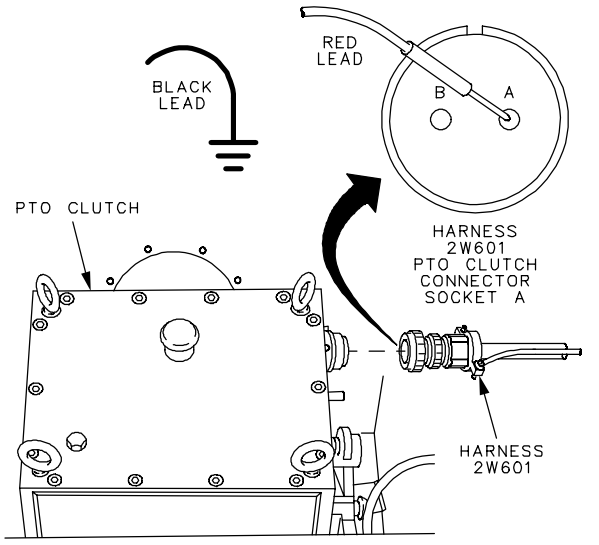
1. Turn MASTER switch and PTO CLUTCH switch ON (TM 9-2350-292-10).
2. Place multimeter red lead in harness 2W601 PTO CLUTCH connector socket A and black lead to ground. Check for voltage.
3. Turn MASTER switch and PTO CLUTCH switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.



06i128tf

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PTO CLUTCH DOES NOT ENGAGE, INDICATOR IS NOT LIT AND GOVERNOR DOES NOT OPERATE PROPERLY - CONTINUED

0144 00

CONTINUED FROM STEP M

N Place one multimeter lead in harness 2W601 PTO CLUTCH connector socket B and other lead to ground. Check for continuity.

Is continuity present?

yes

CONTINUED FROM STEP K

O
1. Remove engine deck (WP 0417 00).
2. Disconnect harness 3W143 P1 from engine disconnect bracket.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on harness 3W143 P1 socket N and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

P
1. Reconnect harness 3W143 P1 to engine disconnect bracket.
2. Disconnect lead from both rotary actuator solenoids.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in each rotary actuator solenoid connector socket A (one at a time) while holding black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present at both checks?

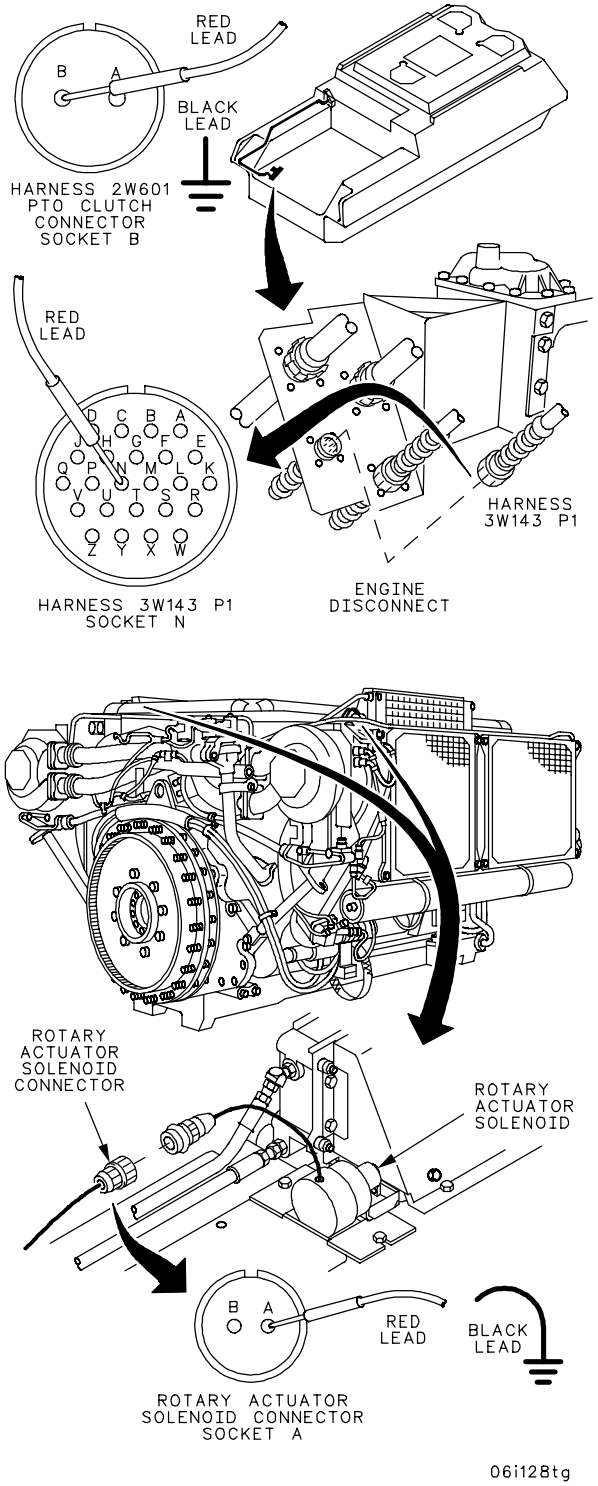
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no

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.



PTO CLUTCH DOES NOT ENGAGE, INDICATOR IS NOT LIT AND GOVERNOR DOES NOT OPERATE PROPERLY - CONTINUED

0144 00

CONTINUED FROM STEP P

yes

Replace rotary actuator solenoids (WP 0230 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

CONTINUED FROM STEP L

Q

1. Open air intake grilles above battery compartment (TM 9-2350-292-10).
2. Disconnect harness 4W103 P3 from bulkhead disconnect bracket.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on harness 4W103 P3 receptacle socket L and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

R

1. Reconnect harness 4W103 P3 to bulkhead disconnect bracket.
2. Remove engine deck (WP 0417 00).
3. Disconnect harness 3W143 P1 from engine disconnect bracket.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Place multimeter red lead on harness 3W143 P1 socket N and black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

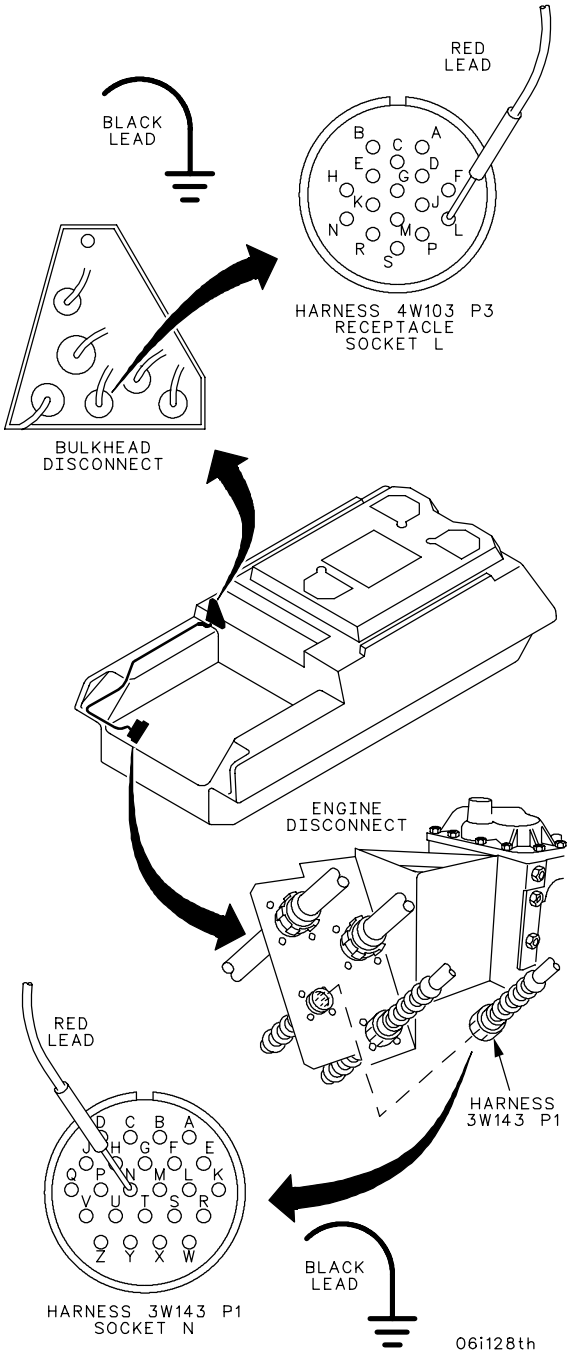
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

CONTINUED ON NEXT PAGE



PTO CLUTCH DOES NOT ENGAGE, INDICATOR IS NOT LIT AND GOVERNOR DOES NOT OPERATE PROPERLY - CONTINUED 0144 00

CONTINUED FROM STEP R

S

1. Reconnect harness 3W143 P1 to engine disconnect bracket.
2. Disconnect lead 627 from engine governor solenoid.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in lead 627 connector socket and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

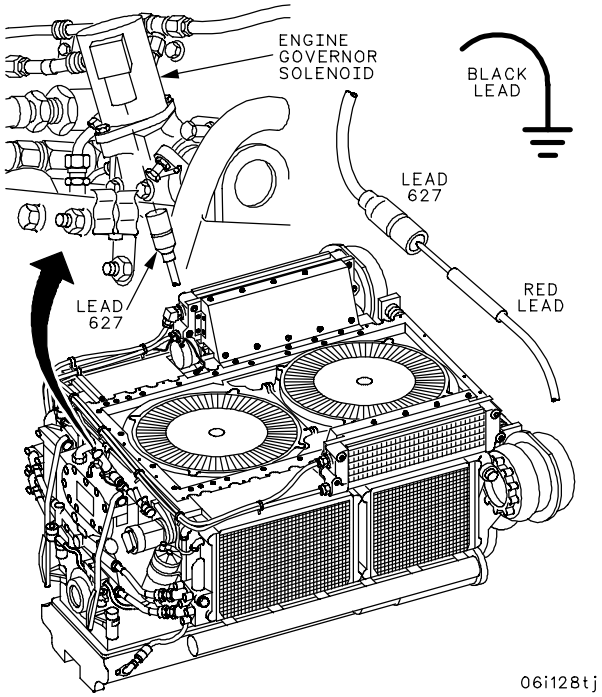
Is 24 V dc present?

yes

Notify Direct Support Maintenance.

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.



END OF TASK

HIGH TEMP INDICATOR FAILS TO LIGHT WHEN PTO CLUTCH OIL TEMPERATURE IS HIGH. ALL OTHER SYSTEMS OPERATE PROPERLY. 0145 00

THIS WORK PACKAGE COVERS:

High Temp Indicator Fails To Light When PTO Clutch Oil Temperature Is High. All Other Systems Operate Properly.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
LED repalced (WP 0244 00)
Subfloor plates 26 And 27 removed (WP 0454 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect lead 525 from PTO oil high temperature switch.
2. Place a jumper wire in lead 525 connector socket and attach other end of jumper to ground.
3. Turn MASTER switch ON (TM 9-2350-292-10) and watch PTO HIGH TEMP indicator.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

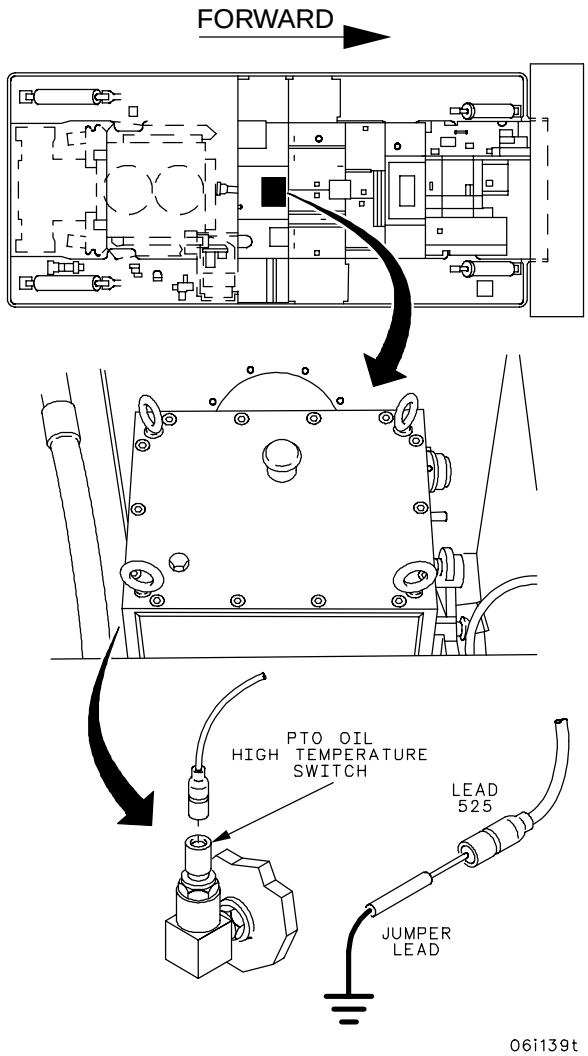
Did indicator light?

yes

Replace PTO high temperature switch (WP 0545 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



HIGH TEMP INDICATOR FAILS TO LIGHT WHEN PTO CLUTCH OIL TEMPERATURE IS HIGH. ALL OTHER SYSTEMS OPERATE PROPERLY - CONTINUED

0145 00

CONTINUED FROM STEP A

B

1. Remove jumper wire from lead 525 and ground.
2. Open accessory control panel (WP 0242 00).
3. Place one multimeter lead on lead 525 connector at indicator DS4 terminal 2 and other lead on diode T2 terminal D. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 525 from indicator to diode T2 terminal D. Verify fault is corrected.

C

Place one multimeter lead on diode T2 terminal D and other lead on diode T2 terminal A. Check for continuity.

Is continuity present?

yes

no

Replace diode T2 (WP 0244 00). Verify fault is corrected.

D

1. Disconnect harness 2W601 P1 from accessory control panel.
2. Place one multimeter lead on accessory control panel receptacle J1 pin G and other lead on diode T2 terminal A. Check for continuity.

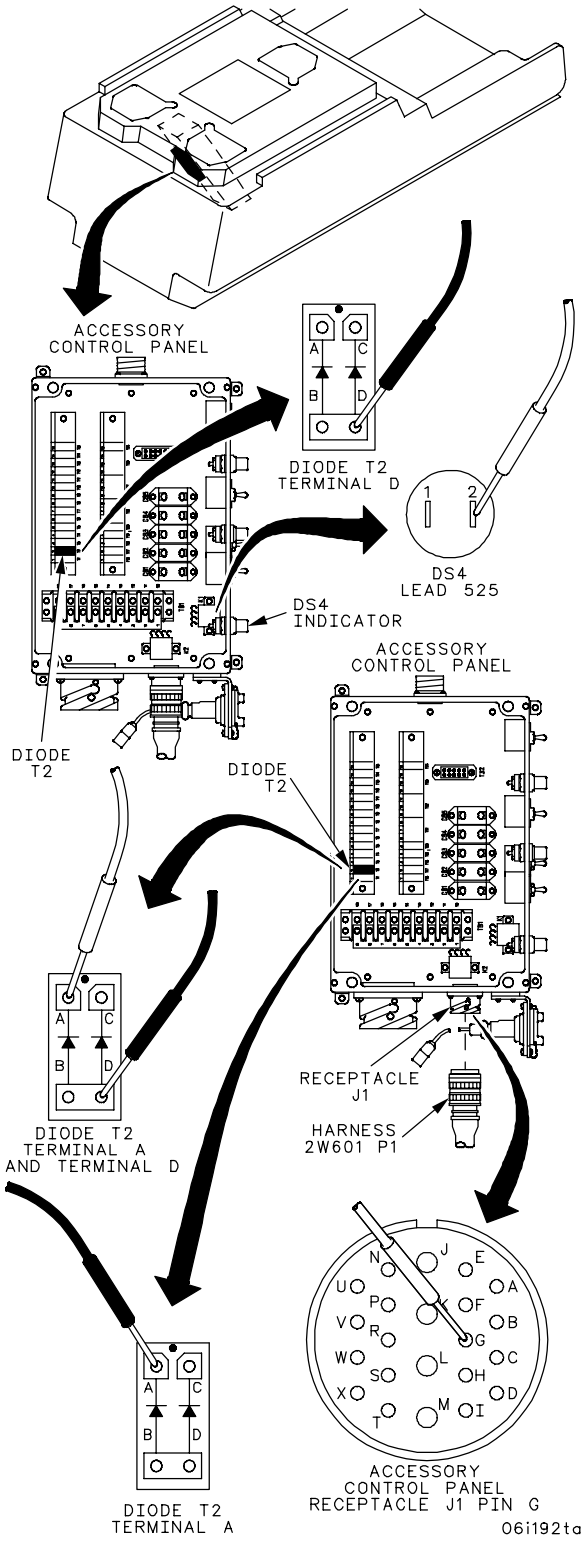
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 525 from diode T2 terminal A to receptacle J1 pin G. Verify fault is corrected.

CONTINUED ON NEXT PAGE



HIGH TEMP INDICATOR FAILS TO LIGHT WHEN PTO CLUTCH OIL TEMPERATURE IS HIGH. ALL OTHER SYSTEMS OPERATE PROPERLY - CONTINUED

0145 00

CONTINUED FROM STEP C

E

1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Place multimeter red lead on terminal 1 of indicator DS4 and black lead to ground. Check for voltage.
3. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Replace indicator DS4 (WP 0244 00). Verify fault is corrected.

no

F Place one multimeter lead on terminal 1 of indicator DS4 and other lead on terminal board T19 terminal K. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 10. Verify fault is corrected.

G Place one multimeter lead on T19 terminal K and other lead on terminal board T19 terminal E. Check for continuity.

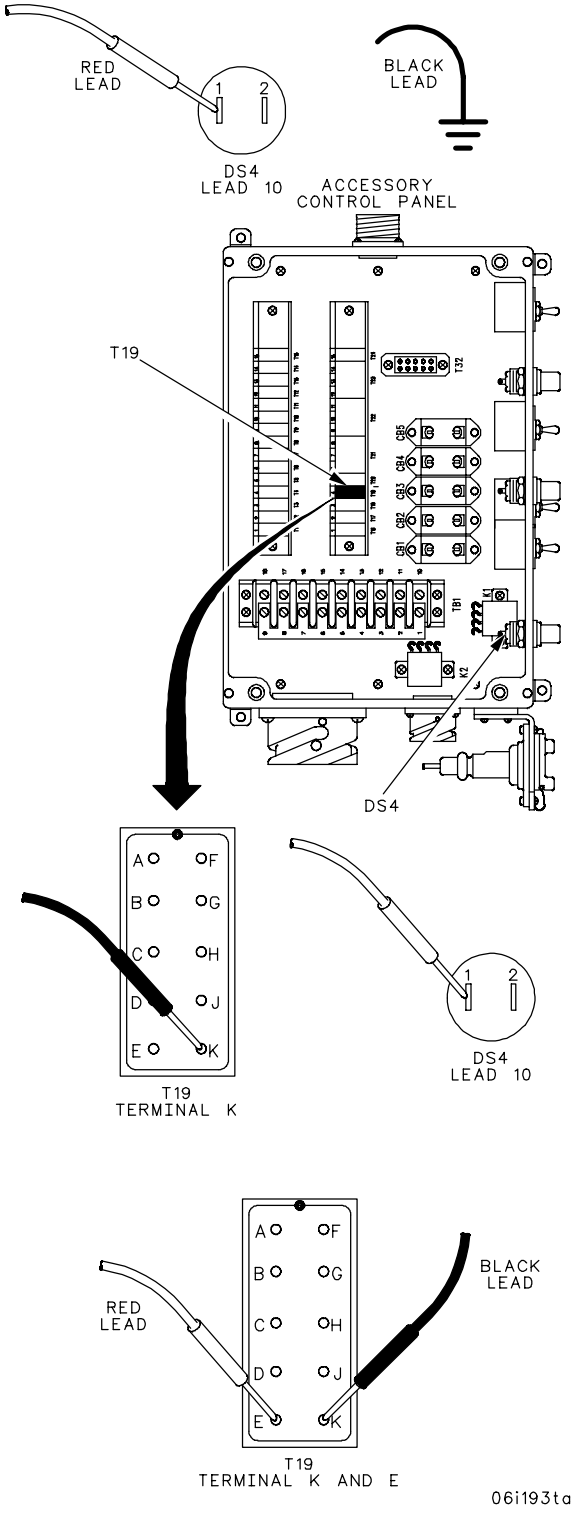
Is continuity present?

yes

no

Replace terminal board T19 (WP 0244 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



HIGH TEMP INDICATOR FAILS TO LIGHT WHEN PTO CLUTCH OIL TEMPERATURE IS HIGH. ALL OTHER SYSTEMS OPERATE PROPERLY - CONTINUED

0145 00

CONTINUED FROM STEP G

H

1. Disconnect harness 4W618 P1 from accessory control panel (WP 0331 00).
2. Place one multimeter lead on terminal board T19 terminal E and other lead on accessory control panel receptacle J2 pin 18. Check for continuity.

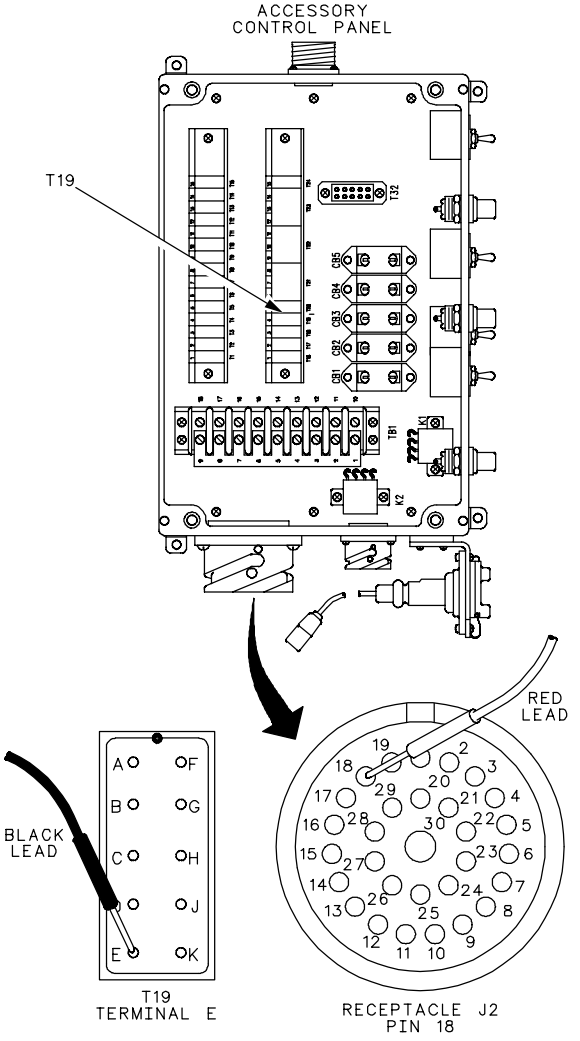
Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0331 00) harness 4W618. Verify fault is corrected.

no

Replace lead 10 (WP 0244 00). Verify fault is corrected.



END OF TASK

RADIO INTERFERENCE SUPPRESSION SYSTEM OVERVIEW AND DIAGRAMS. 0146 00

THIS WORK PACKAGE COVERS:

Radio Interference Suppression System Overview And Diagrams

Various techniques are used within the vehicle to suppress interference and reduce noise in the communications system. Basically, these techniques consists of elimination of the interference or noise at the source. Thus, the radio interference suppression system is more of a method of noise reduction and interference suppression that is built into other individual functional systems rather than a single, separate functional entity. The methods used to suppress interference and eliminate or reduce noise include the addition of ground straps to ensure good connections between the vehicle hull and equipment grounds, clean and tight power and signal connections, proper shielding of audio signals, suppression of static noise produced by moving parts, and when necessary, the identification and replacement of the source of noise or interference usually because of wear and tear of equipment, in particular, electric motors or equipment containing electric motors such as fans, blowers, etc.

END OF TASK

EXCESSIVE INTERFERENCE, MAIN ENGINE AND APU NOT RUNNING, ACCESSORIES ON. 0147 00

THIS WORK PACKAGE COVERS:
Excessive Interference, Main Engine And APU Not Running, Accessories On.

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required
Two

WARNING
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Turn MASTER switch, intank fuel pump and radio ON (TM 9-2350-292-10). Listen for interference.
2. Turn MASTER switch, intank fuel pump and radio OFF (TM 9-2350-292-10).

Is interference heard?

yes

no

Go to Step C.

CONTINUED ON NEXT PAGE

EXCESSIVE INTERFERENCE, MAIN ENGINE AND APU NOT RUNNING, ACCESSORIES ON - CONTINUED 0147 00

CONTINUED FROM STEP A

B

1. Remove subfloor plate 25 (WP 0454 00).
2. Remove ground cable screw from fuel pump and thoroughly clean screw, ground cable, ground terminal and fuel pump mounting base. Reinstall screw.
3. Thoroughly clean fuel pump electrical cable.
4. Place a jumper wire from vehicle hull to fuel pump ground cable.
5. Turn MASTER switch, intank fuel pump and radio ON (TM 9-2350-292-10). Listen for interference.
6. Turn MASTER switch, intank fuel pump and radio OFF (TM 9-2350-292-10).

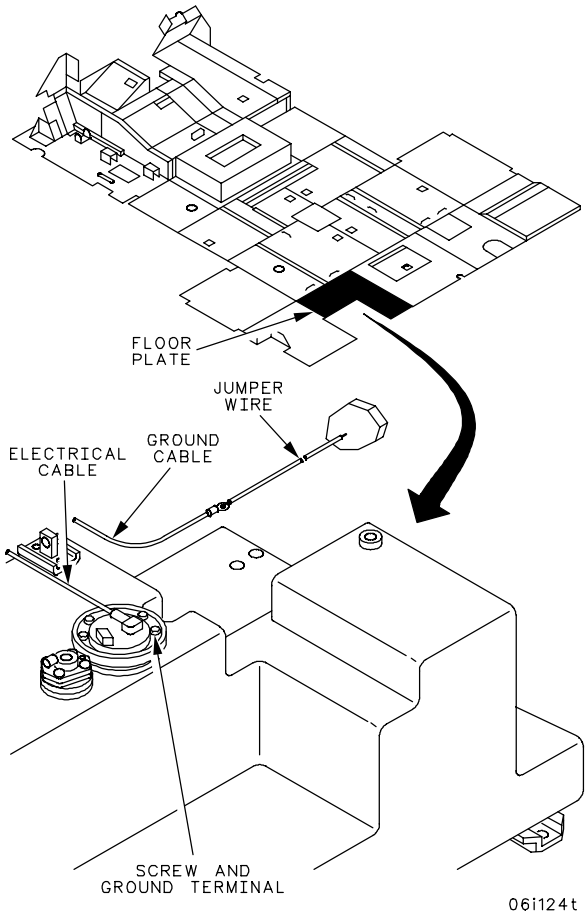
Is interference heard?

yes

Replace intank fuel pump (WP 0201 00). Verify fault is corrected.

no

Notify Direct Support Maintenance.



CONTINUED FROM STEP A

C

1. Turn MASTER switch, ventilating blower and radio ON (TM 9-2350-292-10). Listen for interference.
2. Turn MASTER switch, ventilating blower and radio OFF (TM 9-2350-292-10).

Is interference heard?

yes

no

Go to Step E.

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EXCESSIVE INTERFERENCE, MAIN ENGINE AND APU NOT RUNNING, ACCESSORIES ON - CONTINUED 0147 00

CONTINUED FROM STEP C

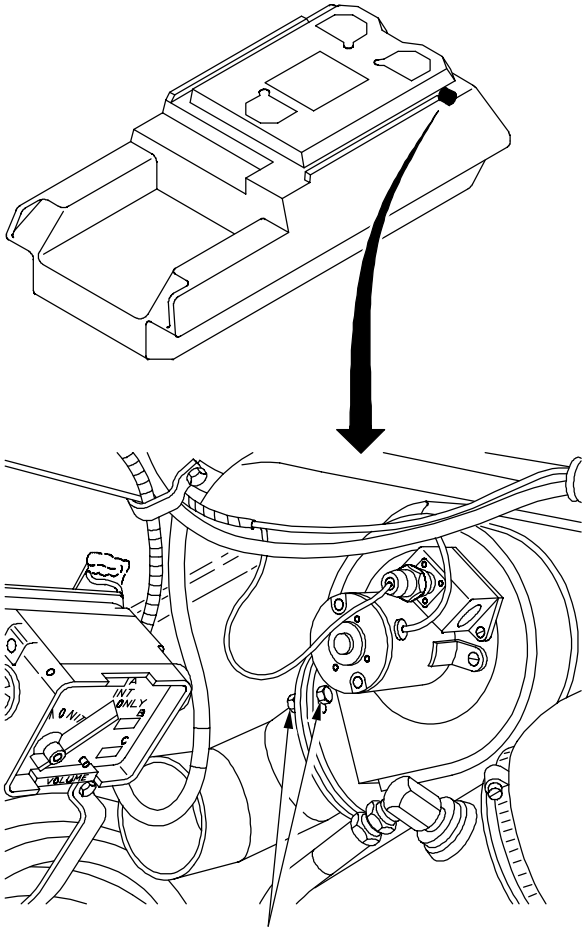
D

1. Remove bolt, nut and washers from ventilating blower.
2. Thoroughly clean bolt, nut, washers and bolt mounting surface and reinstall.
3. Turn MASTER switch, ventilating blower and radio ON (TM 9-2350-292-10). Listen for interference.
4. Turn MASTER switch, ventilating blower and radio OFF (TM 9-2350-292-10).

Is interference heard?

yes: Replace ventilating blower (WP 0344 00). Verify fault is corrected.

no: Fault corrected.



CONTINUED FROM STEP C

E

NOTE

This step is to be accomplished on both the left and right air purifiers identically.

1. Turn MASTER switch, left (right) air purifier and radio ON (TM 9-2350-292-10). Listen for interference.
2. Turn MASTER switch, left (right) air purifier and radio OFF (TM 9-2350-292-10).

Is interference heard?

yes: CONTINUED ON NEXT PAGE

no: Go to Step G.

EXCESSIVE INTERFERENCE, MAIN ENGINE AND APU NOT RUNNING, ACCESSORIES ON - CONTINUED 0147 00

CONTINUED FROM STEP E

F

1. Disconnect ground wire from left (right) air purifier and mounting bracket.
2. Clean mounting screws, ground wire, purifier and mounting base thoroughly and reinstall.
3. Turn MASTER switch, left (right) air purifier and radio ON (TM 9-2350-292-10). Listen for interference.
4. Turn MASTER switch, left (right) air purifier and radio OFF (TM 9-2350-292-10).

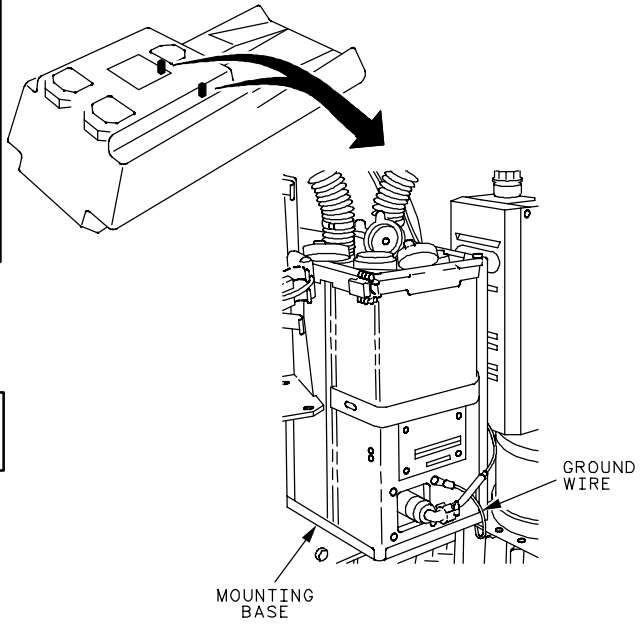
Is interference heard?

yes

Replace left (right) air purifier (WP 0706 00). Verify fault is corrected.

no

Fault corrected.



06i133t

CONTINUED FROM STEP E

G

1. Turn MASTER switch, personnel heater and radio ON (TM 9-2350-292-10). Listen for interference.
2. Turn MASTER switch, personnel heater and radio OFF (TM 9-2350-292-10).

Is interference heard during heater starting cycle?

yes

no

Go to Step I.

CONTINUED ON NEXT PAGE

EXCESSIVE INTERFERENCE, MAIN ENGINE AND APU NOT RUNNING, ACCESSORIES ON - CONTINUED 0147 00

CONTINUED FROM STEP G

H

1. Remove troublelight from bulkhead (WP 0280 00), and shield from personnel heater fuel pump (WP 0533 00).
2. Remove personnel heater fuel pump capacitor mounting screws (WP 0533 00).
3. Thoroughly clean screws.
4. Reinstall capacitor mounting screws and shield (WP 0533 00), and troublelight (WP 0280 00).
5. Turn MASTER switch, personnel heater and radio ON (TM 9-2350-292-10). Listen for interference.

Is interference heard?

yes: Replace fuel pump (WP 0533 00). Verify fault is corrected.

no: Fault corrected.

CONTINUED FROM STEP G

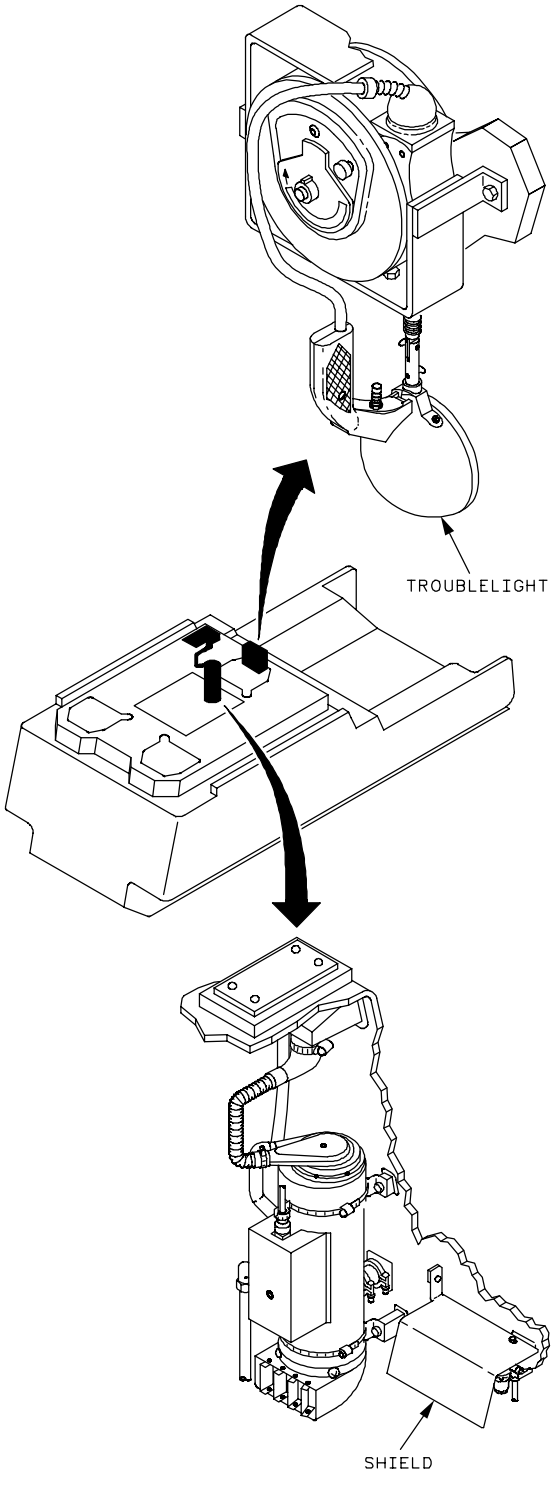
I

1. Turn MASTER switch, personnel heater and radio ON (TM 9-2350-292-10). Listen for interference.
2. Turn MASTER switch personnel heater and radio OFF (TM 9-2350-292-10).

Is interference heard during heater operation?

yes: CONTINUED ON NEXT PAGE

no: Fault corrected.



EXCESSIVE INTERFERENCE, MAIN ENGINE AND APU NOT RUNNING, ACCESSORIES ON - CONTINUED 0147 00

CONTINUED FROM STEP I

J

1. Remove ground wire from personnel heater.
2. Thoroughly clean ground wire and ground mounting surface.
3. Reinstall ground wire, turn MASTER switch, personnel heater and radio ON (TM 9-2350-292-10). Listen for interference.
4. Turn MASTER switch, personnel heater and radio OFF (TM 9-2350-292-10).

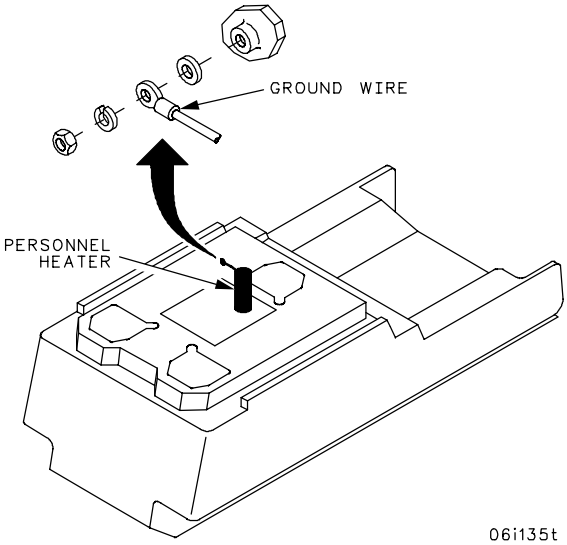
Is interference heard?

yes

Replace personnel heater (WP 0529 00). Verify fault is corrected.

no

Fault corrected.



END OF TASK

EXCESSIVE INTERFERENCE WITH MAIN ENGINE RUNNING AND VEHICLE STATIONARY. 0148 00

THIS WORK PACKAGE COVERS:

Excessive Interference With Main Engine Running And Vehicle Stationary.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove harness 3W143 ground cables from hull.
2. Thoroughly clean mounting screw, wire terminals and mounting surface. Reinstall cables.
3. Start engine and turn radio ON (TM 9-2350-292-10). Listen for interference.
4. Shut down engine and turn radio OFF (TM 9-2350-292-10).

Is interference heard?

yes

no

Fault corrected.

B

1. Open left side rear deck door (TM 9-2350-292-10).
2. Remove ground wire from voltage regulator and hull ground lug.
3. Thoroughly clean ground wire, voltage regulator ground terminal and hull ground lug.
4. Install ground wire to voltage regulator and hull ground lug.
5. Start engine and turn radio ON (TM 9-2350-292-10). Listen for interference.
6. Shut engine down and turn radio OFF (TM 9-2350-292-10).

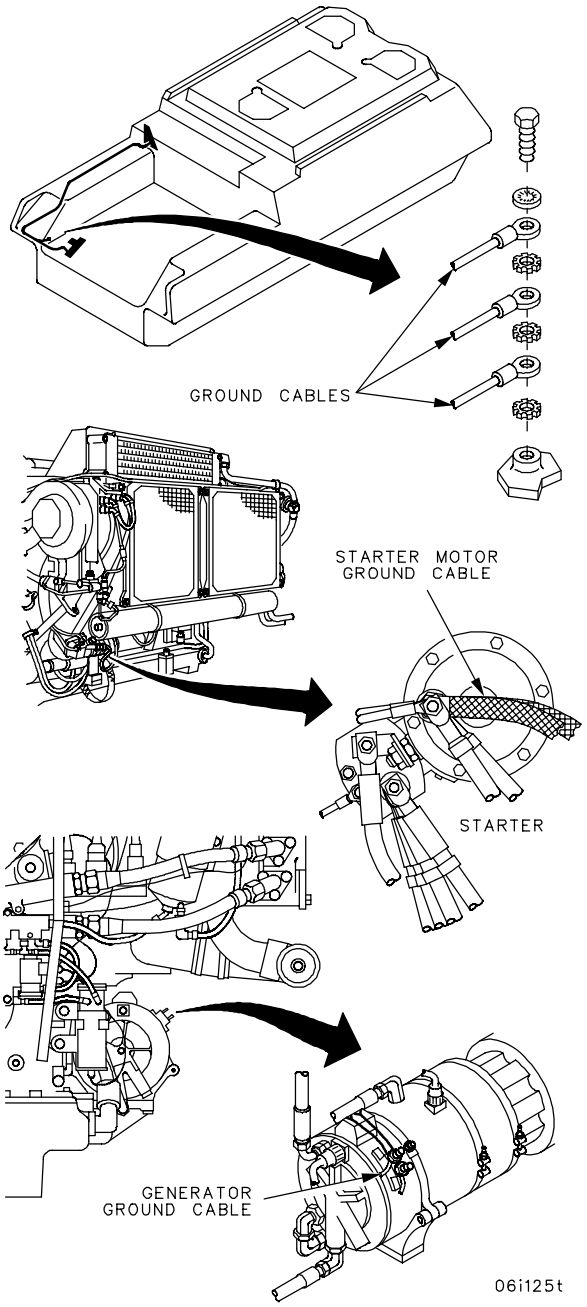
Is interference heard?

yes

no

Replace voltage regulator (WP 0239 00). Verify fault is corrected.

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EXCESSIVE INTERFERENCE WITH MAIN ENGINE RUNNING AND VEHICLE STATIONARY - CONTINUED 0148 00

CONTINUED FROM STEP B

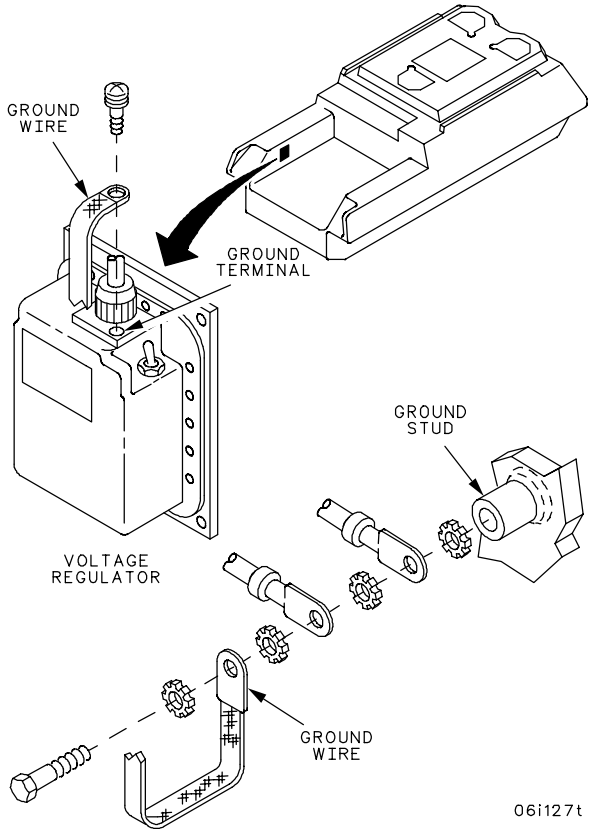
C

1. Remove powerpack (WP 0188 00) and clean generator and starter motor ground cable connections.
2. Make sure capacitors are securely tightened to generator capacitor box.
3. Clean and tighten all engine wiring.
4. Install powerpack (WP 0188 00).
5. Start engine and turn radio ON (TM 9-2350-292-10). Listen for interference.
6. Shut engine down and turn radio OFF (TM 9-2350-292-10).

Is interference heard?

yes → Notify COMMO.

no → Fault corrected.



END OF TASK

EXCESSIVE INTERFERENCE WITH APU RUNNING AND APU GENERATOR SWITCH ON. MAIN ENGINE IS OFF AND VEHICLE IS STATIONARY. 0149 00

THIS WORK PACKAGE COVERS:
Excessive Interference With Apu Running And APU Generator Switch On. Main Engine Is Off And Vehicle Is Stationary.

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required
Two

WARNING
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

NOTE
If a steady whining interference is heard, complete Step A. If interference is a low frequency clicking go to Step B.

A

1. Open left side rear deck doors (TM 9-2350-292-10).
2. Remove ground wire from APU voltage regulator.
3. Thoroughly clean ground wire and ground terminal. Reinstall ground wire.
4. Start APU and turn APU GEN switch and radio ON (TM 9-2350-292-10). Listen for interference.
5. Turn APU GEN switch and radio OFF and shut down APU (TM 9-2350-292-10).

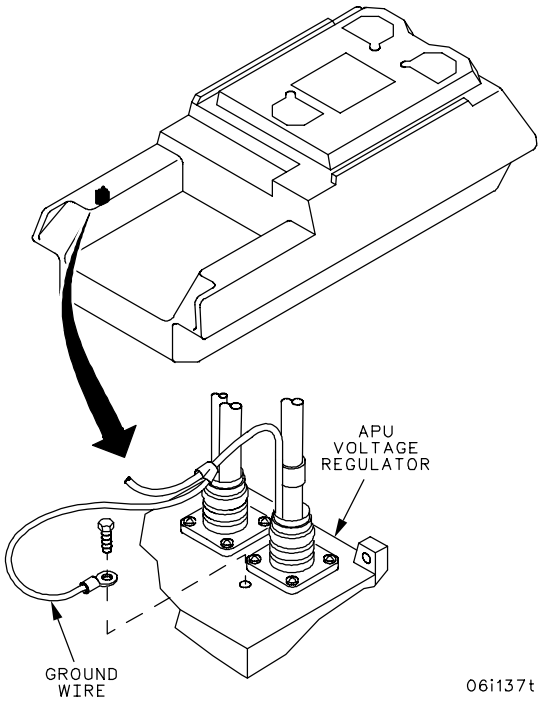
Is interference heard?

yes

Replace voltage regulator (WP 0239 00). Verify fault is corrected.

no

Fault corrected.



CONTINUED ON NEXT PAGE

EXCESSIVE INTERFERENCE WITH APU RUNNING AND APU GENERATOR SWITCH ON. MAIN ENGINE IS OFF AND VEHICLE IS STATIONARY - CONTINUED 0149 00

B

1. Remove APU cover (WP 0413 00).
2. Remove screw holding APU ground cable to hull.
3. Thoroughly clean screw, ground cable terminal and hull mounting lug. Reinstall ground cable.
4. Start APU and turn APU GEN switch and radio ON (TM 9-2350-292-10). Listen for interference.
5. Turn APU GEN switch and radio OFF and shut down APU (TM 9-2350-292-10).

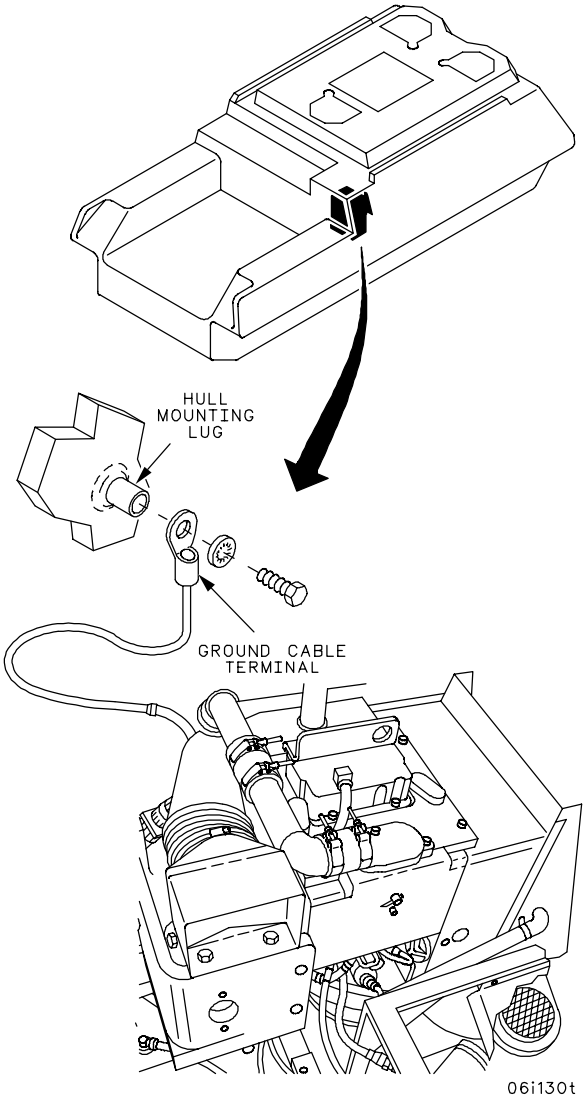
Is interference heard?

yes

Notify Direct Support Maintenance.

no

Fault corrected.



END OF TASK

EXCESSIVE INTERFERENCE WHEN VEHICLE IS TRAVELING. 0150 00

THIS WORK PACKAGE COVERS:

Excessive Interference When Vehicle Is Traveling

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

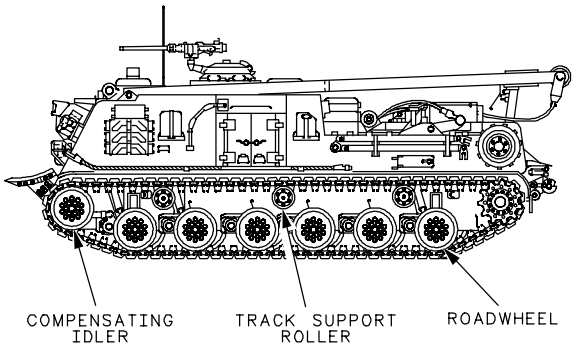
Two

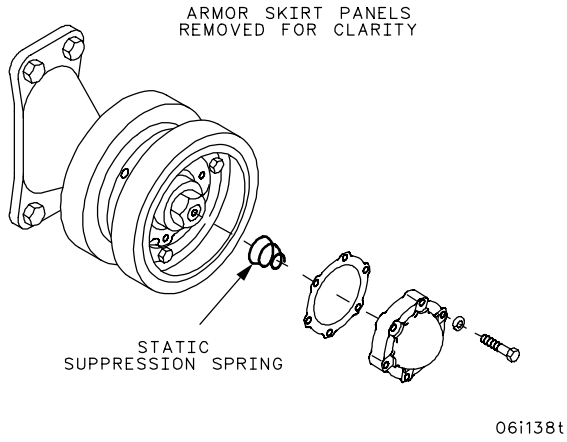
WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

NOTE

If interference is a clicking sound, complete Step A. If interference is a scratching or popping sound that stops when vehicle stops running go to Step B.





A

1. Open vehicle skirt panels and remove hubcaps from roadwheels (WP 0387 00), compensating idlers (WP 0394 00) and track support rollers (WP 0391 00).
2. Inspect static suppression spring in each hubcap. Replace broken or missing springs and install hubcaps.
3. Close vehicle skirts, start engine, turn radio ON and drive vehicle (TM 9-2350-292-10). Listen for interference.
4. Stop vehicle, turn radio OFF and shut down engine (TM 9-2350-292-10).

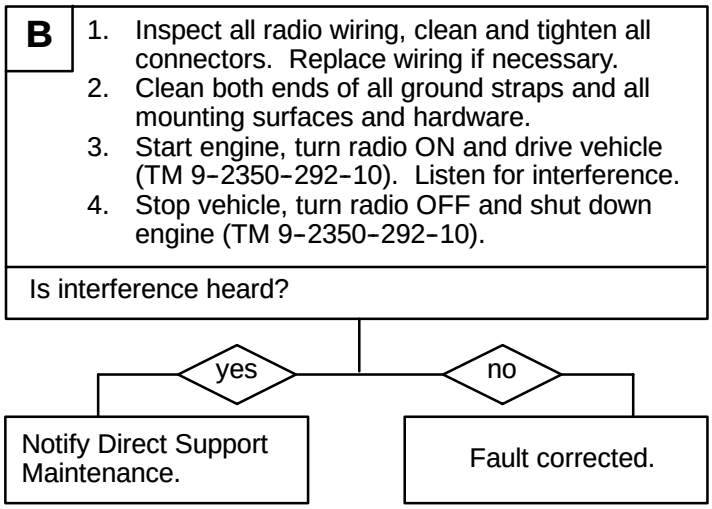
Is interference heard?

yes → Notify Direct Support Maintenance.

no → Fault corrected.

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EXCESSIVE INTERFERENCE WHEN VEHICLE IS TRAVELING - CONTINUED 0150 00



END OF TASK

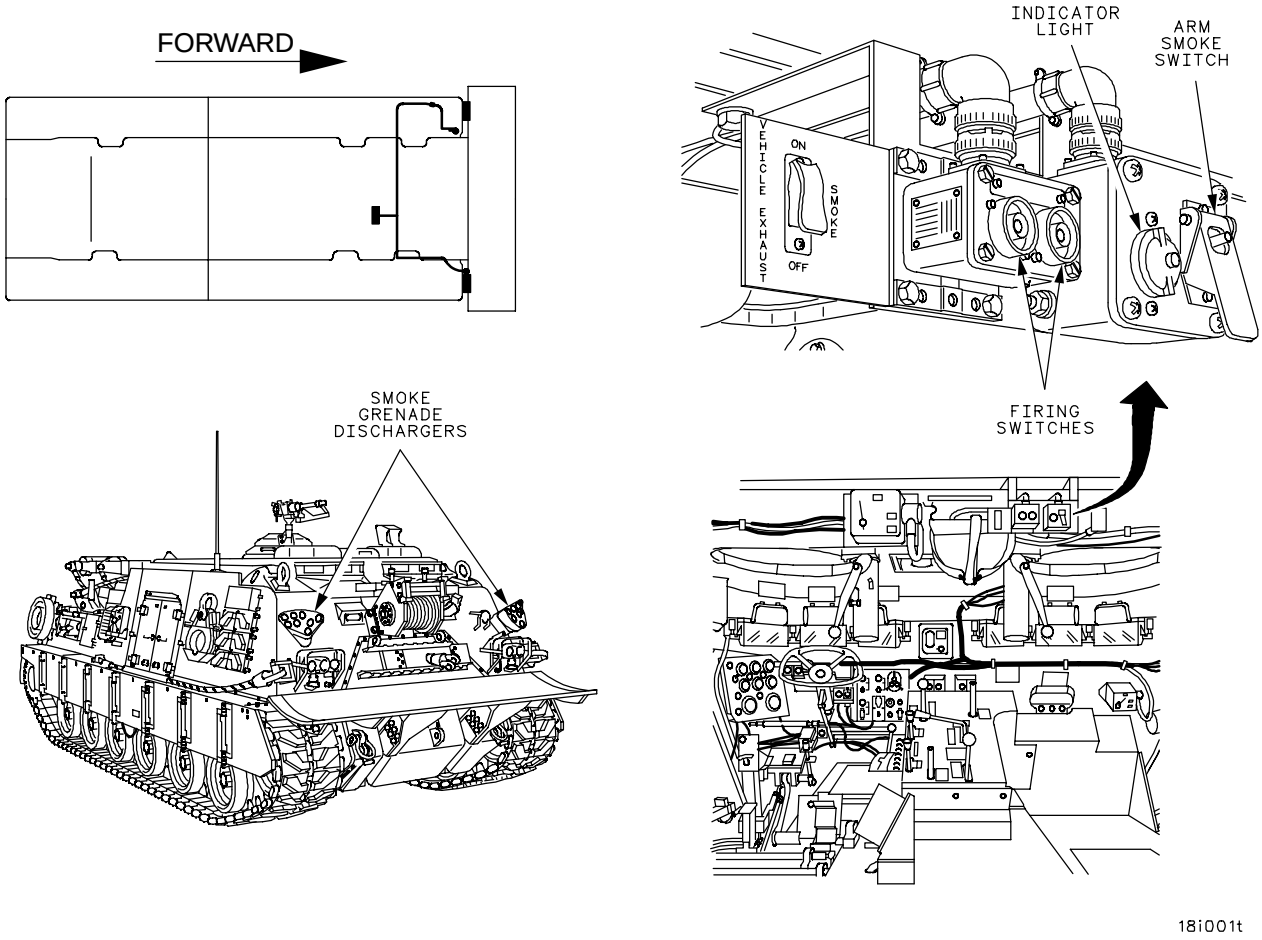
SMOKE GRENADE LAUNCHER SYSTEM OVERVIEW AND DIAGRAMS. 0151 00

THIS WORK PACKAGE COVERS:

Smoke Grenade Launcher System Overview And Diagrams

The M239 screening smoke grenade launcher system consists of the ARM SMOKE ON/OFF arming switch; the ARMED arming switch indicator light; the firing switch assembly with two push button switches; two dischargers, each with six discharge tubes; and related electrical wiring.

When the MASTER switch is ON, system power (+24 – 28 V dc) is supplied to the smoke grenade launcher system through a 15-amp circuit breaker in the accessories panel to the arming switch assembly. The smoke grenade launcher sequence is initiated when the ARM SMOKE switch is set to the ON position. The ARMED indicator will light to indicate smoke grenades are armed. Once armed, the smoke grenades are launched when the firing switches are pressed. Each firing switch launches three grenades on each side of the vehicle. If both switches are pressed simultaneously, all twelve smoke grenades will be launched. A diagram is included to show the relationship of the smoke grenade launching system components.



END OF TASK

GRENADE LAUNCHER FAILS TO OPERATE PROPERLY. SOME OR ALL TUBES FAIL TO OPERATE. ALL OTHER SYSTEMS OPERATE PROPERLY. 0152 00

THIS WORK PACKAGE COVERS:

Grenade Launcher Fails To Operate Properly. Some Or All Tubes Fail To Operate. All Other Systems Operate Properly

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 4W108 from arming switch assembly.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W108 arming switch connector socket A and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0674 00) harness 4W108. Verify fault is corrected.

B

1. Turn ARM SMOKE switch to ON (TM 9-2350-292-10).
2. Place one multimeter lead on arming switch assembly receptacle pin A and other lead on pins B and D (one at a time). Check for continuity.
3. Turn ARM SMOKE switch to OFF (TM 9-2350-292-10).

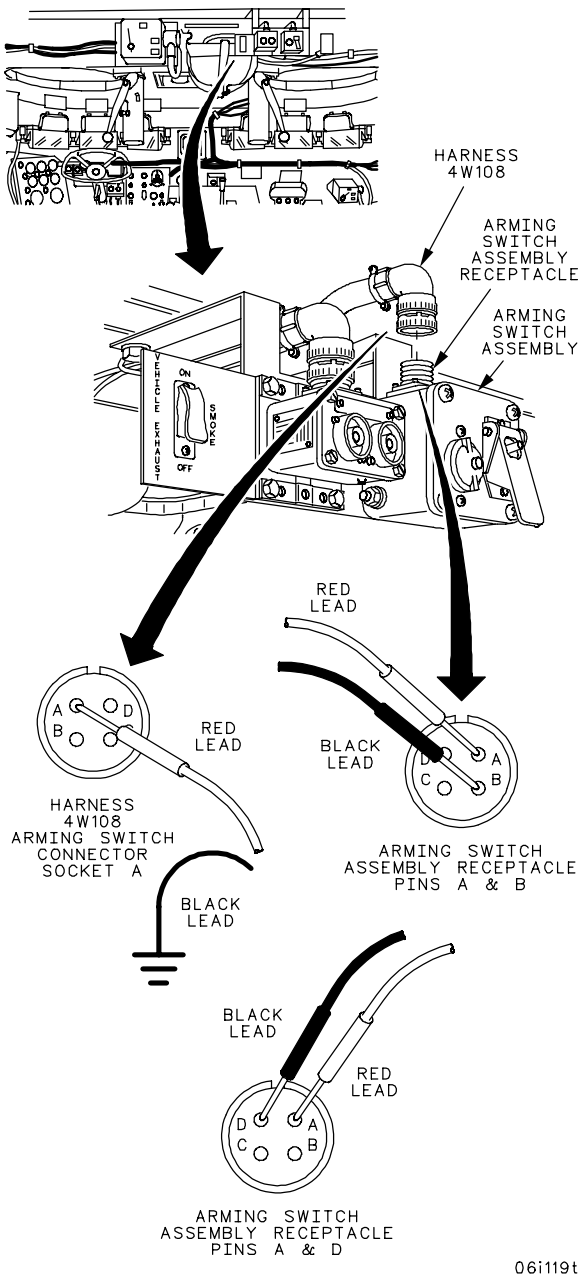
Is continuity present at both checks?

yes

no

Repair ARM SMOKE switch (WP 0671 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



GRENADE LAUNCHER FAILS TO OPERATE PROPERLY. SOME OR ALL TUBES FAIL TO OPERATE. ALL OTHER SYSTEMS OPERATE PROPERLY - CONTINUED

0152 00

CONTINUED FROM STEP B

C

1. Disconnect harness 4W108 from firing switch assembly.
2. Place one multimeter lead on firing switch assembly receptacle pin G and other lead to ground. Check for continuity.

Is continuity present?

yes / no

Repair or replace (TM 9-1055-642-20&P) firing switch ground lead. Verify fault is corrected.

D

Place one multimeter lead on arming switch receptacle pin C and other lead to ground. Check for continuity.

Is continuity present?

yes / no

Repair (WP 0290 00) or replace (WP 0671 00) arming switch ground lead. Verify fault is corrected.

E

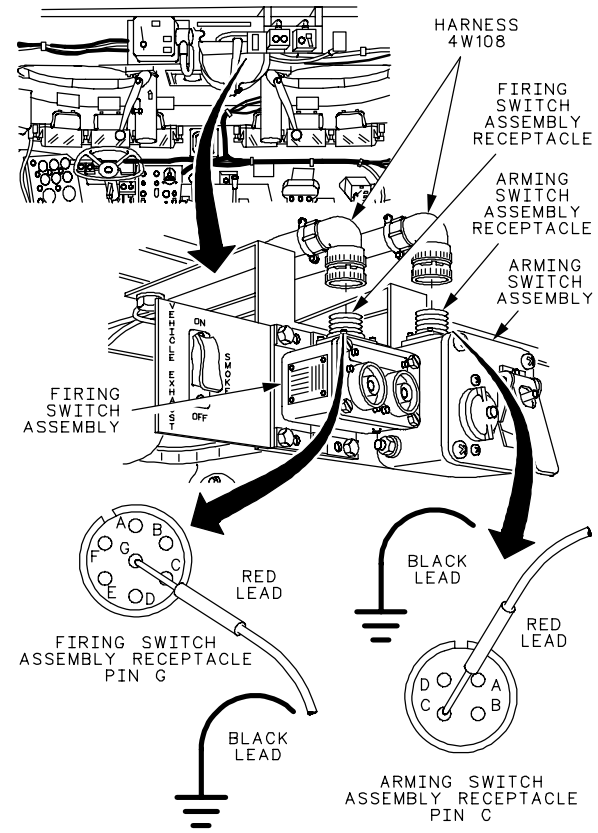
1. Reconnect harness 4W108 to arming switch assembly.
2. Turn MASTER switch and ARM SMOKE switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W108 firing switch connector sockets C and F (one at a time) while holding black lead to ground. Check for voltage.
4. Turn MASTER switch and ARM SMOKE switch OFF (TM 9-2350-292-10).

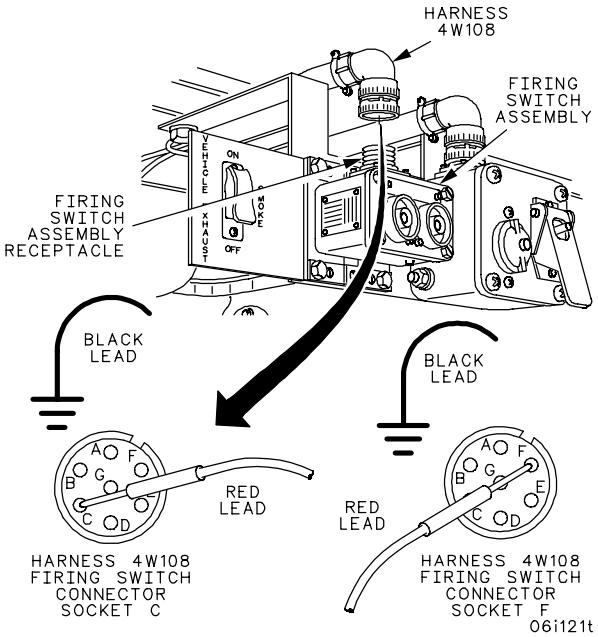
Is 24 V dc present at both checks?

yes / no

Repair (WP 0290 00) or replace (WP 0674 00) harness 4W108. Verify fault is corrected.

CONTINUED ON NEXT PAGE





GRENADE LAUNCHER FAILS TO OPERATE PROPERLY. SOME OR ALL TUBES FAIL TO OPERATE. ALL OTHER SYSTEMS OPERATE PROPERLY - CONTINUED

0152 00

CONTINUED FROM STEP E

F

1. Place one multimeter lead on firing switch receptacle pin A and other lead on pin E. Check for continuity.
2. Place one multimeter lead on firing switch receptacle pin B and other lead on pin D. Check for continuity.

Is continuity present at both checks?

yes

no

Repair or replace firing switch assembly (TM 9-1055-642-20&P). Verify fault is corrected.

G

1. Hold both firing switches in.
2. Place one multimeter lead on firing switch receptacle pin C and other lead on pins B and D (one at a time). Check for continuity.
3. Place one multimeter lead on firing switch receptacle pin F and other lead on pins A and E (one at a time). Check for continuity.

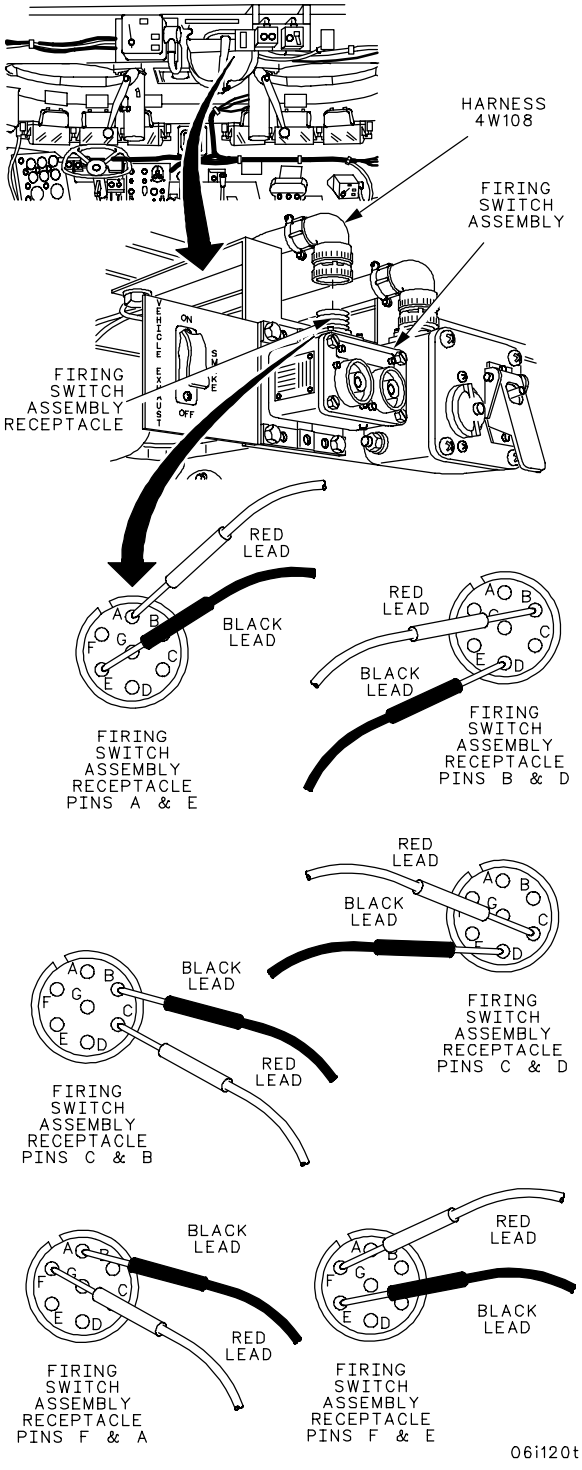
Is continuity present at all four checks?

yes

no

Repair or replace firing switch assembly (TM 9-1055-642-20&P). Verify fault is corrected.

CONTINUED ON NEXT PAGE



GRENADE LAUNCHER FAILS TO OPERATE PROPERLY. SOME OR ALL TUBES FAIL TO OPERATE. ALL OTHER SYSTEMS OPERATE PROPERLY - CONTINUED

0152 00

CONTINUED FROM STEP G

H

1. Reconnect harness 4W108 to firing switch assembly.
2. Disconnect harness 4W108 from leads 1W112-1 and 1W112-2.
3. Turn MASTER switch and ARM SMOKE switch ON (TM 9-2350-292-10). Hold firing switches in.
4. Place multimeter red lead in harness 4W108 lead 1W112-1 and lead 1W112-2 connector sockets A and C (one at a time) while holding black lead to ground. Check for voltage.
5. Release firing switches and turn MASTER switch and ARM SMOKE switch OFF (TM 9-2350-292-10).

Is 24 V dc present at all four checks?

yes

no

Repair (WP 0290 00) or replace (WP 0674 00) harness 4W108. Verify fault is corrected.

I Place one multimeter lead in each harness 4W108 connector socket B (one at a time) while holding other lead to ground. Check for continuity.

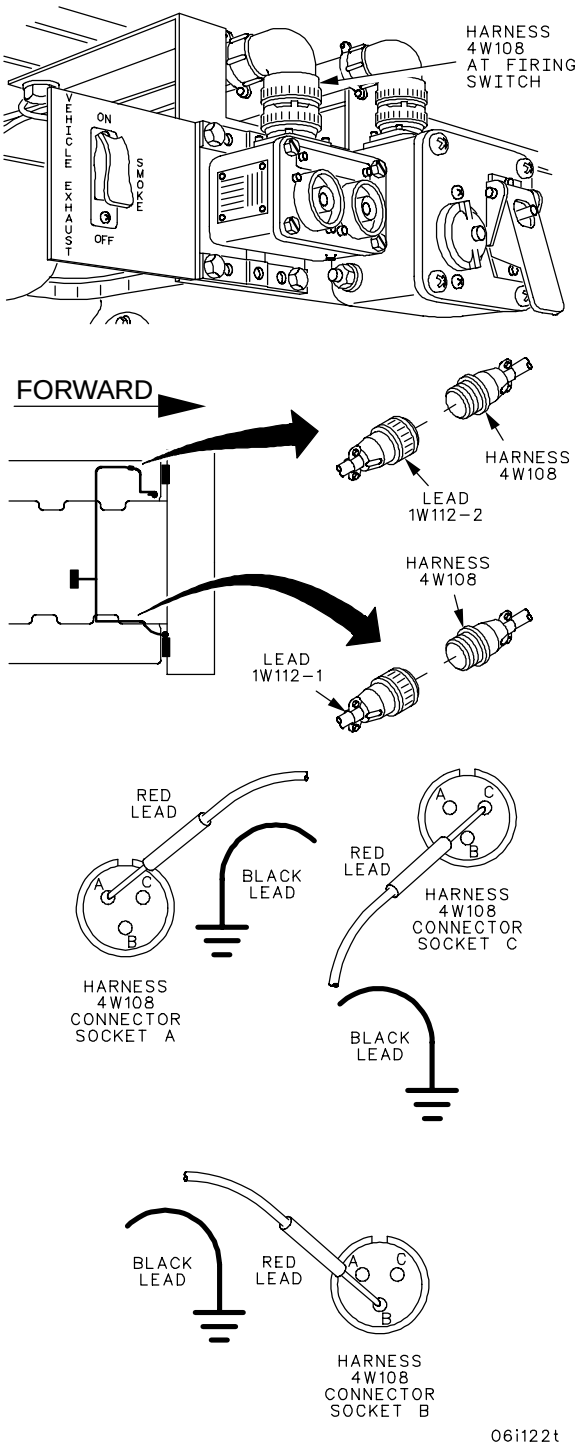
Is continuity present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0674 00) harness 4W108 connector ground leads. Verify fault is corrected.

CONTINUED ON NEXT PAGE



GRENADE LAUNCHER FAILS TO OPERATE PROPERLY. SOME OR ALL TUBES FAIL TO OPERATE. ALL OTHER SYSTEMS OPERATE PROPERLY - CONTINUED 0152 00

CONTINUED FROM STEP I

J

1. Reconnect harness 4W108 to leads 1W112-1 and 1W112-2.
2. Disconnect leads 1W112-1 and 1W112-2 from grenade launchers.
3. Turn MASTER switch and ARM SMOKE switch ON (TM 9-2350-292-10). Press and hold both firing switches.
4. Place multimeter red lead in leads 1W112-1 and 1W112-2 launcher connector sockets A and C (one at a time) while holding black lead to ground. Check for voltage.
5. Release firing switches and turn MASTER switch and ARM SMOKE switch OFF (TM 9-2350-292-10).

Is 24 V dc present at all four checks?

yes

no

Repair (WP 0290 00) or replace (WP 0673 00) lead 1W112-1 or 1W112-2 (whichever is faulty). Verify fault is corrected.

K

Place one multimeter lead in lead 1W112-1 and 1W112-2 socket B (one at a time) and other lead to ground. Check for continuity.

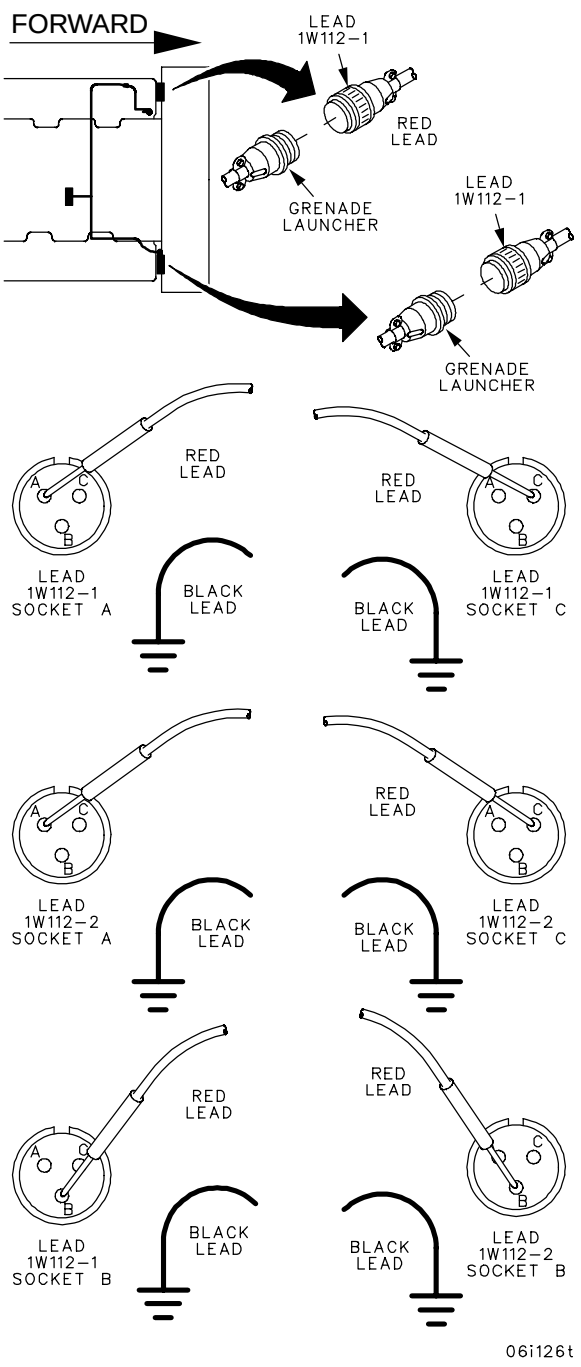
Is continuity present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0673 00) ground lead of 1W112-1 or 1W112-2 (whichever is faulty). Verify fault is corrected.

CONTINUED ON NEXT PAGE



GRENADE LAUNCHER FAILS TO OPERATE PROPERLY. SOME OR ALL TUBES FAIL TO OPERATE. ALL OTHER SYSTEMS OPERATE PROPERLY - CONTINUED

0152 00

CONTINUED FROM STEP K

L Place one multimeter lead on each launcher receptacle pin B (one at a time) and other lead to ground. Check for continuity.

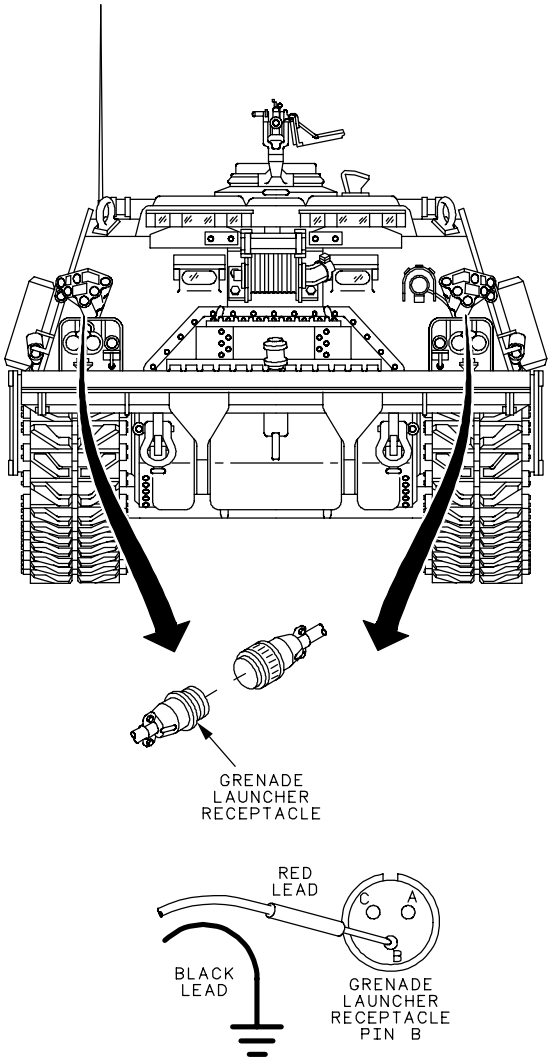
Is continuity present at both checks?

yes

Repair or replace firing tip lead in launcher (TM 9-1055-642-20&P). Verify fault is corrected.

no

Replace faulty launcher ground lead (TM 9-1055-642-20&P). Verify fault is corrected.



06i129t

END OF TASK

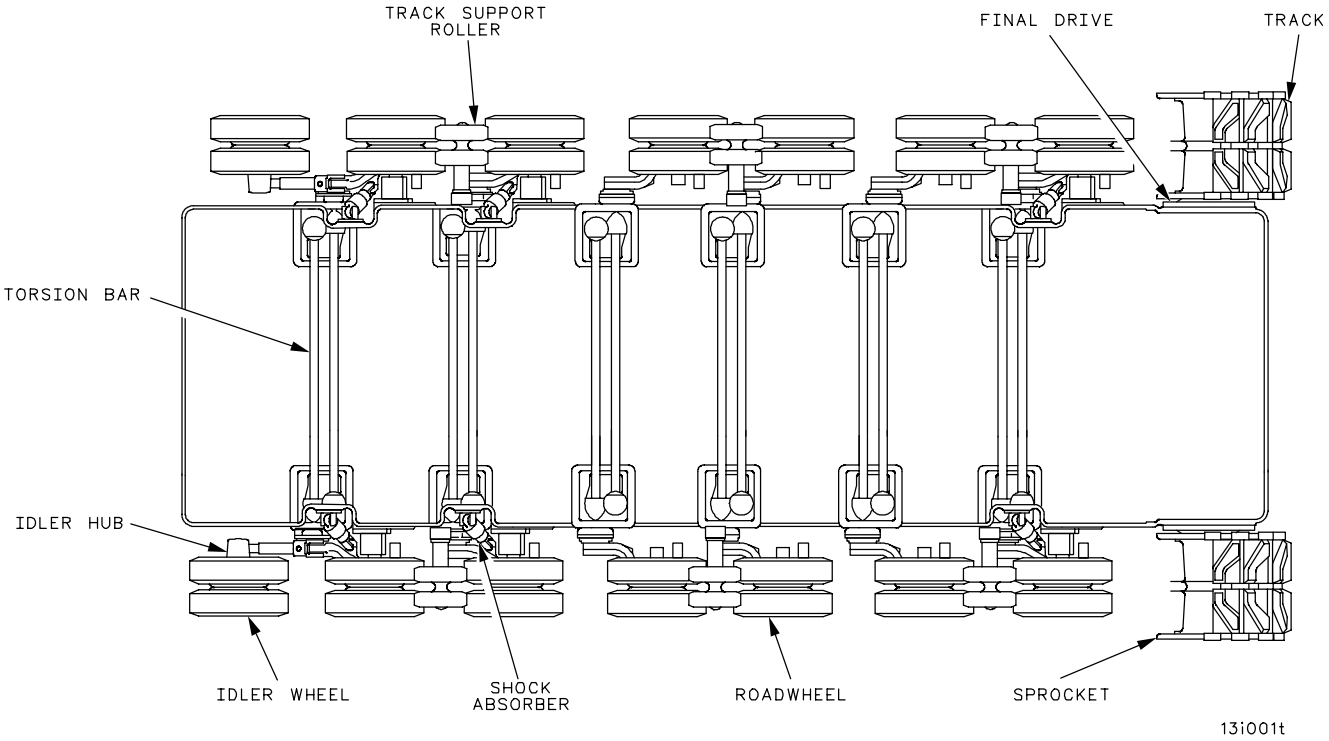
TRACKS AND SUSPENSION OVERVIEW AND DIAGRAMS. 0153 00

THIS WORK PACKAGE COVERS:

Tracks And Suspension Overview And Diagrams

The track and suspension system consists of the vehicle tracks, final drives, sprockets, universal joints, roadwheels, idler wheels, idler hubs, shocks and torsion bars. The relationship of these components is shown in the diagram below.

When the track receives power from the transmission through the universal joints, final drives and sprockets, the track begins to revolve around roadwheels, over the idler wheels and back to the sprocket. This propels the vehicle forward and backward, depending on selected transmission gear.



END OF TASK

VEHICLE PULLS TO ONE SIDE. 0154 00

THIS WORK PACKAGE COVERS:

Vehicle Pulls To One Side

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Crowbar (item 52, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Output reduction access covers removed (WP 0453 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Apply brakes and check black adjustment mark on brake rod to make sure it is alined with brake adjustment gage.

Is black mark aligned with brake adjustment gage?

yes

no

Adjust brakes (WP 0355 00 or WP 0356 00). Verify fault is corrected.

B
1. Inspect track at roadwheels 1 and 6 for decreased angle.
2. Use a crowbar and attempt to lift each roadwheel.

Can roadwheels be lifted?

yes

no

Replace broken torsion bar(s) of roadwheels that can be lifted (WP 0389 00). Verify fault is corrected.

C
1. Remove engine deck (WP 0417 00), left side air inlet tube (WP 0191 00) and subfloor plates 19 and 24 (WP 0454 00).
2. Check steering linkage for proper adjustment and for damaged or missing parts.

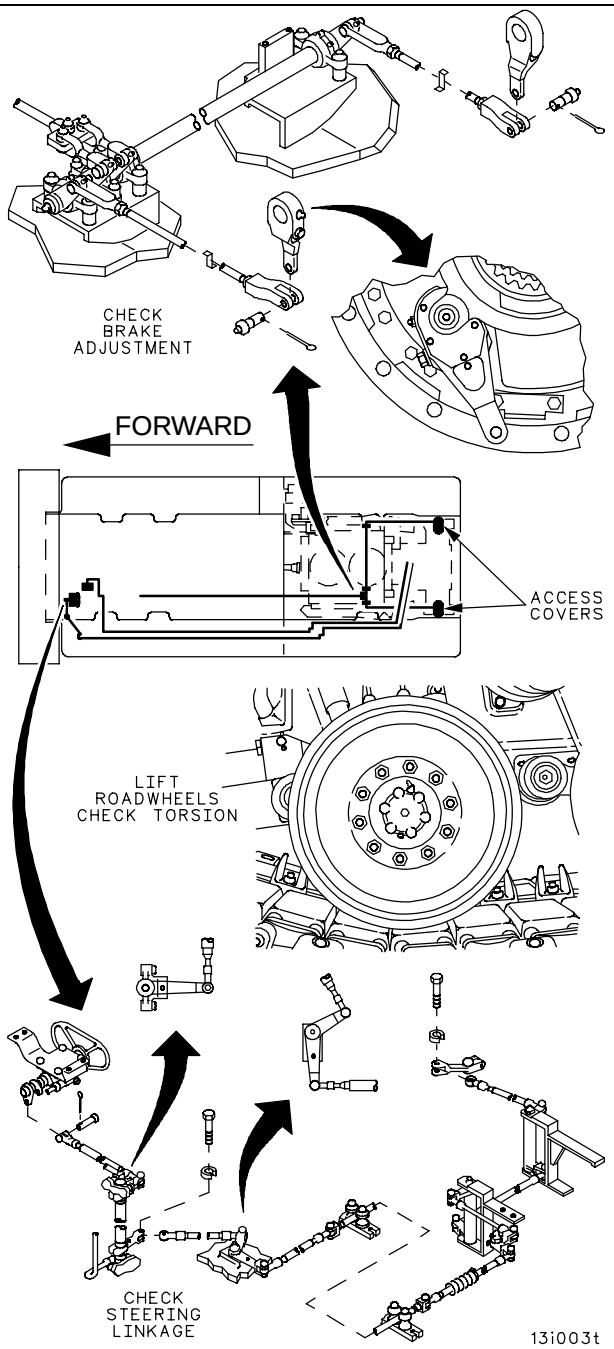
Is steering in adjustment and all parts good?

yes

no

Fault corrected.

Adjust steering and/or repair or replace damaged or missing parts (WP 0405 00). Verify fault is corrected.



END OF TASK

VEHICLE SAGS TO ONE SIDE. 0155 00

THIS WORK PACKAGE COVERS:

Vehicle Sags To One Side

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Crowbar (item 52, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Attempt to lift roadwheels 2, 3, 4, and 5 on sagging side with a crowbar.

Can roadwheels be lifted?

yes

Replace broken torsion bar(s) (WP 0389 00). Verify fault is corrected.

no

B Check torsion bar anchors for spline damage.

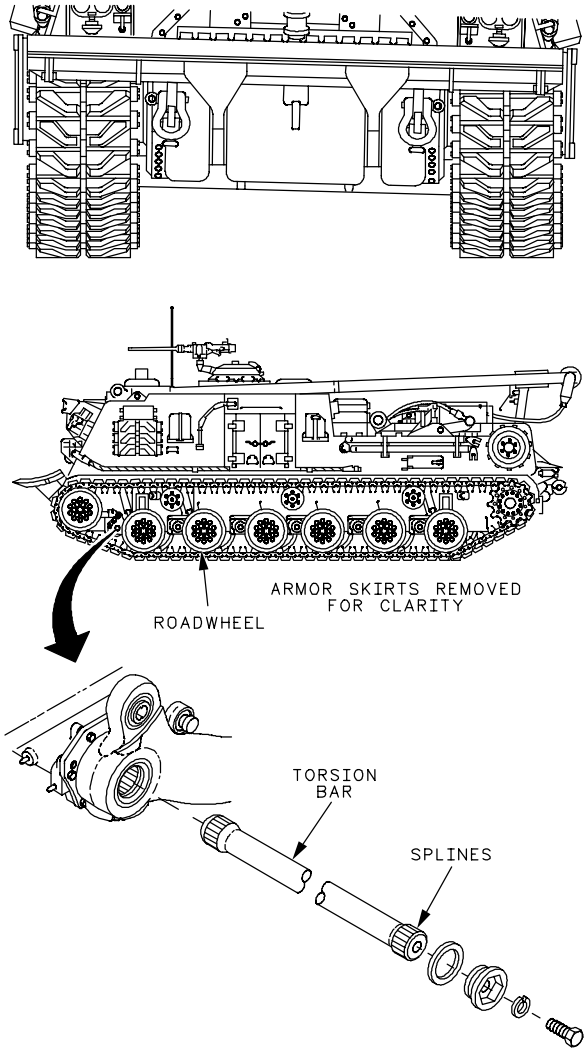
Are torsion bar anchors free of damage?

yes

Fault corrected.

no

Replace damaged torsion bar(s) (WP 0389 00). Verify fault is corrected.



END OF TASK

VEHICLE RIDES EXCESSIVELY HARD. 0156 00

THIS WORK PACKAGE COVERS:
Vehicle Rides Excessively Hard

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Crowbar (item 52, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required
Two

WARNING
Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Start vehicle (TM 9-2350-292-10).
2. Drive vehicle approximately 2 miles and shut engine down (TM 9-2350-292-10).

WARNING
During vehicle operation shock absorbers get hot enough to cause burns. Care must be taken when feeling shock absorbers.

3. Immediately open skirt panels and feel all shock absorbers for heat.

Are all shock absorbers hot?

yes

no

Replace shock absorber(s) that are not hot (WP 0412 00). Verify fault is corrected.

B Using a crowbar, attempt to lift roadwheels 2, 3, 4, and 5.

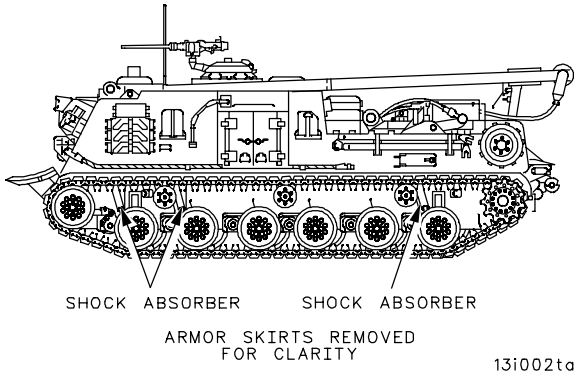
Can any roadwheels be lifted?

yes

no

Replace torsion bar(s) of roadwheel(s) that can be lifted (WP 0389 00). Verify fault is corrected.

Fault corrected.



END OF TASK

VEHICLE MAKES THUMPING NOISE DURING TRAVEL. 0157 00

THIS WORK PACKAGE COVERS:

Vehicle Makes Thumping Noise During Travel

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

1. Open skirt panels (TM 9-2350-292-10).
2. Inspect roadwheels and track support rollers for flat spots, rubber separating from metal base of roadwheels for chunks missing from roadwheels.

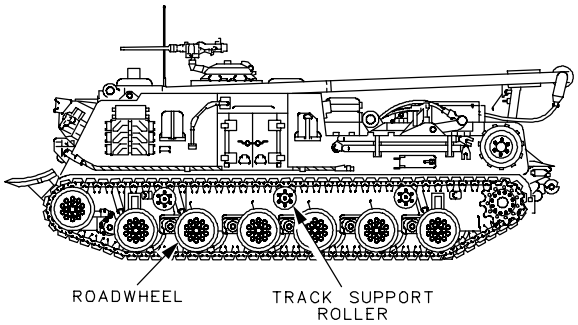
Are track support rollers and roadwheels good?

yes

Fault corrected.

no

Replace faulty track support roller(s) and/or roadwheel(s) (WP 0391 00 or WP 0386 00). Verify fault is corrected.



ARMOR SKIRTS REMOVED FOR CLARITY

13i002tb

END OF TASK

TRANSMISSION OVERVIEWS AND DIAGRAMS. 0158 00

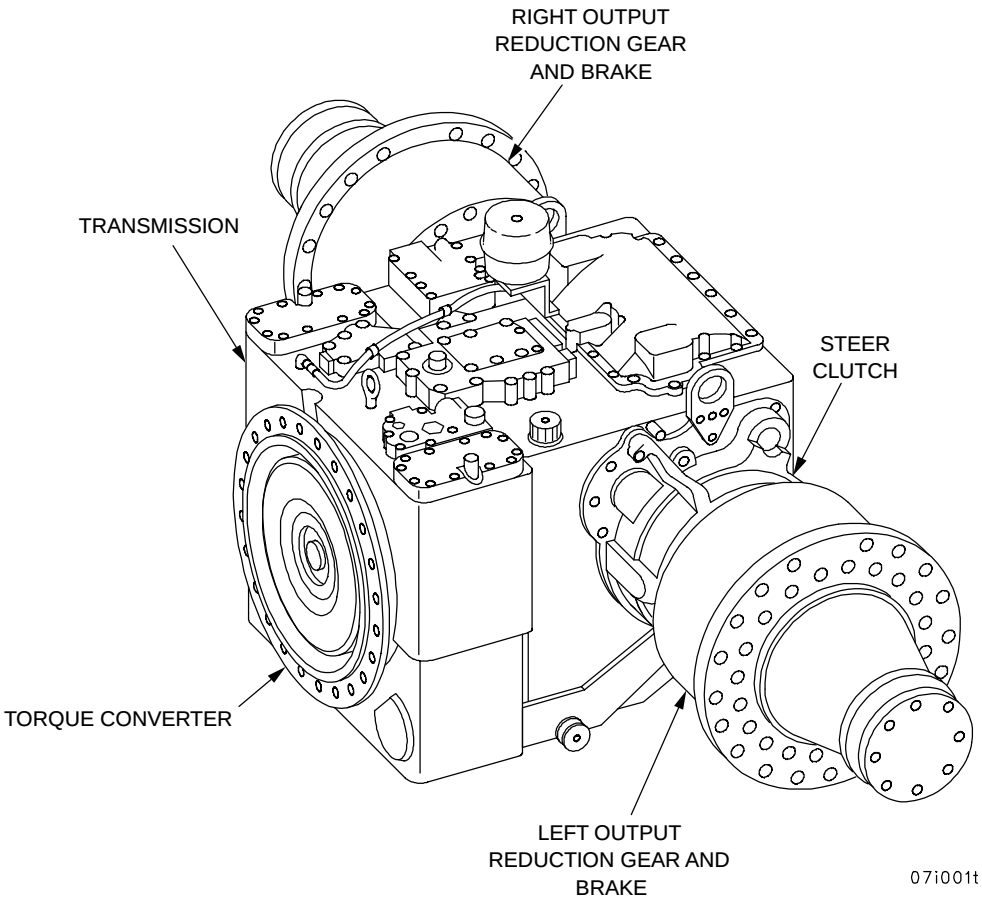
THIS WORK PACKAGE COVERS:

Transmission Overview and Diagrams

The transmission is a mechanically and hydraulically operated oil cooled transmission. Power to operate the transmission is delivered from the engine through a transfer assembly.

The transmission has 5 gears – 3 forward, 1 neutral and 1 reverse. Once power is provided to the transmission, it delivers this power to the drive sprockets through an output shaft, universal joints and the final drives. The final drives reduce the transmission power and provides this reduced power to the sprockets and hubs.

The transmission also serves as the vehicle steering mechanism.



END OF TASK

VEHICLE STEERS BUT WILL NOT DRIVE IN ANY RANGE. 0159 00

THIS WORK PACKAGE COVERS:

Vehicle Steers But will Not Drive In Any Range

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Open right rear exhaust deflector grille door (TM 9-2350-292-10).
2. Move shifting control lever through each position and watch the transmission shift arm for movement.

Does the shift arm move?

yes

no

Reconnect, repair or replace any disconnected, damaged or missing linkage parts (WP 0403 00 or WP 0404 00). Verify fault is corrected.

B

Check transmission shifting linkage for proper adjustment (WP 0408 00).

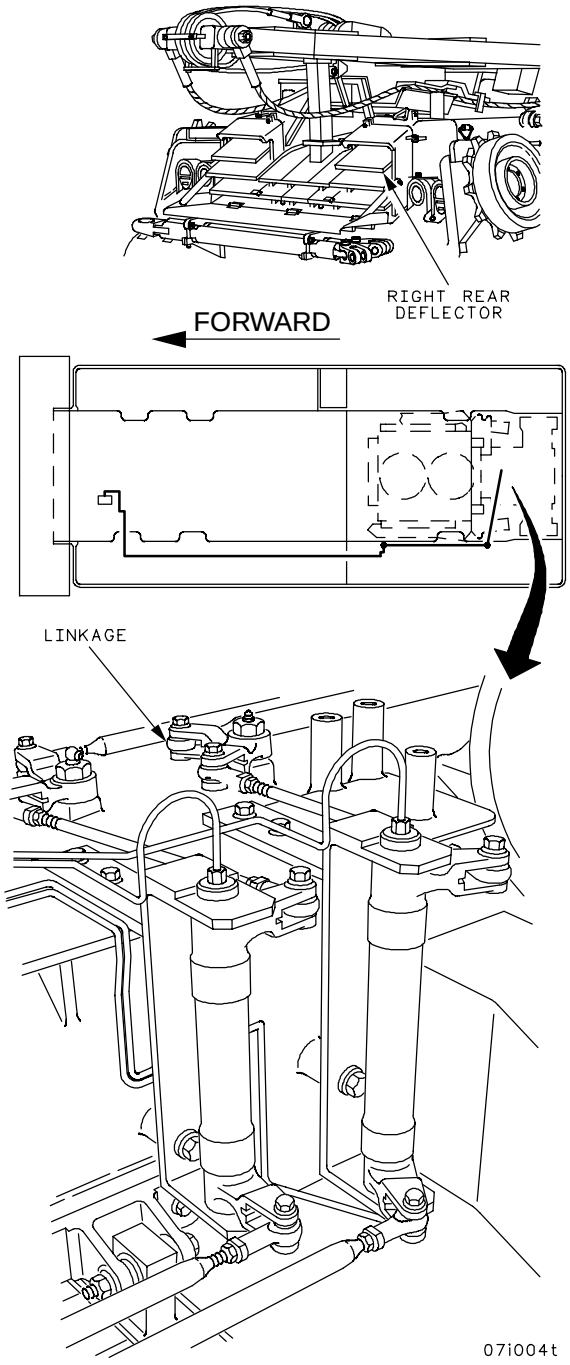
Is shifting linkage properly adjusted?

yes

no

Notify Direct Support Maintenance.

Adjust linkage (WP 00408 00). Verify fault is corrected.



END OF TASK

TRANSMISSION OIL TEMPERATURE HIGH. 0160 00

THIS WORK PACKAGE COVERS:

Transmission Oil Temperature High

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Check engine cooling air intake grille openings for restrictions.

Are intake grill openings free of restrictions?

yes

no

Remove restrictions blocking air flow to engine. Verify fault is corrected.

B

1. Open side air intake grille door (TM 9-2350-292-10).
2. Check transmission oil cooler screens for restrictions.

Are oil cooler screens free of restrictions?

yes

no

Remove restrictions from oil cooler screens. Verify fault is corrected.

C

1. Remove engine deck (WP 0417 00) and air inlet tubes (WP 0191 00).
2. Remove transmission oil cooler screens.
3. Check oil cooler air passages for restrictions.

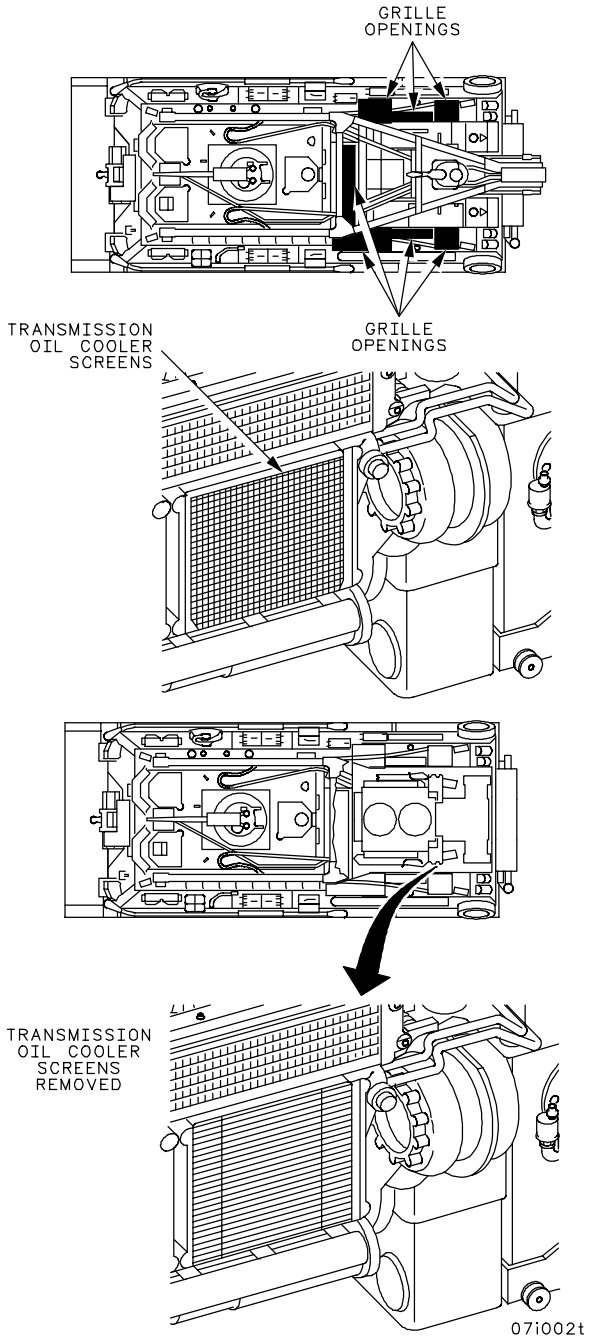
Are passages free of restrictions?

yes

no

Clean restrictions from air passages. Verify fault is corrected.

CONTINUED ON NEXT PAGE



TRANSMISSION OIL TEMPERATURE HIGH - CONTINUED 0160 00

CONTINUED FROM STEP C

D Check the four transmission oil cooler lines for damage.

Are oil cooler lines free of damage?

yes

no

Replace oil cooler lines (WP 0345 00). Verify fault is corrected.

E

1. Start engine (TM 9-2350-292-10) and bring transmission to approximately 200° F.
2. Feel oil cooler and oil cooler lines.

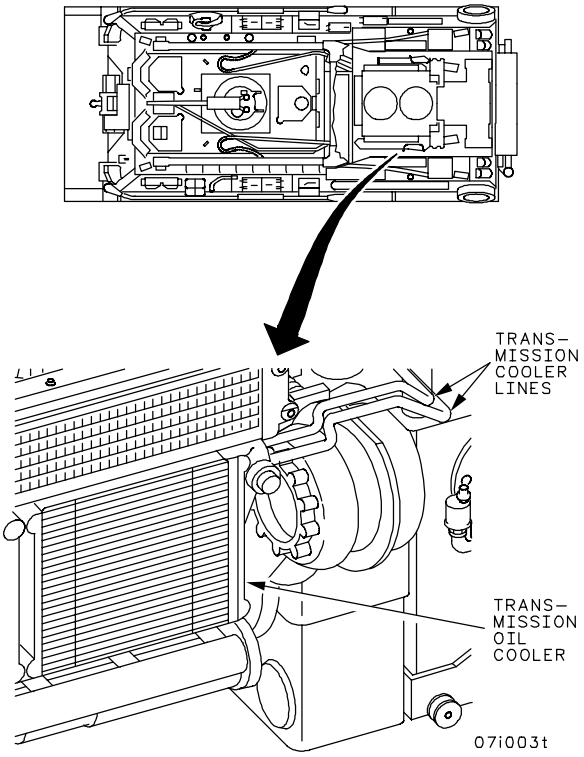
With cooler lines hot, is cooler only warm?

yes

no

Notify Direct Support Maintenance.

Fault corrected.



END OF TASK

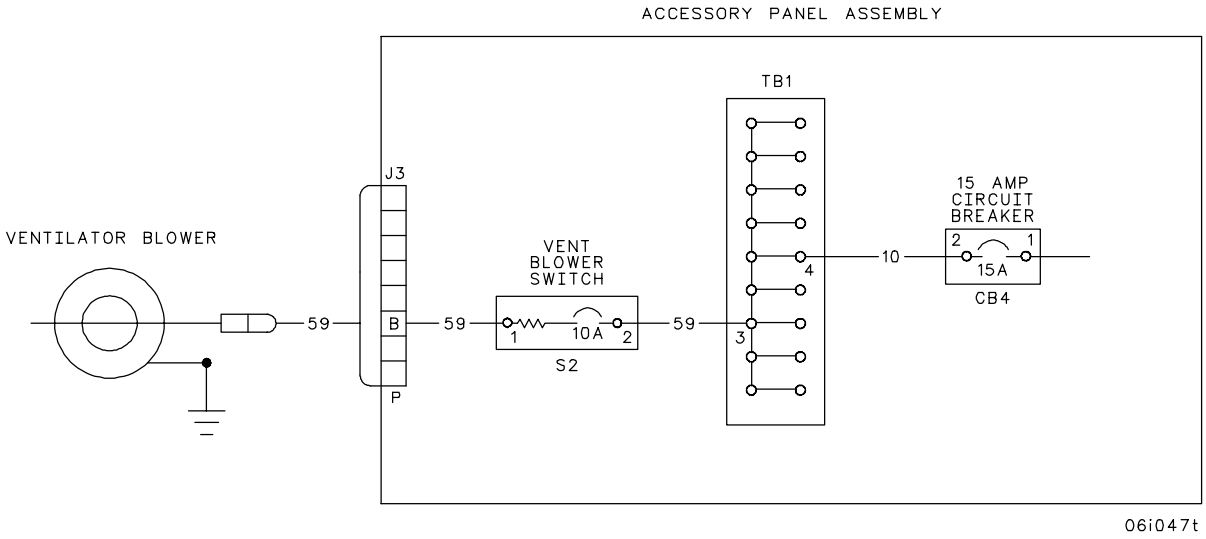
VENTILATING BLOWER OVERVIEW AND DIAGRAMS. 0161 00

THIS WORK PACKAGE COVERS:

Ventilating Blower Overview And Diagrams

The ventilating blower system consists of the blower, VENT BLOWER switch, 15-amp circuit breaker, terminal board and related electrical wiring. When the MASTER switch is ON, system power (+24 - 28 V dc) is supplied to the VENT BLOWER switch through a 15-amp circuit breaker in the accessories panel. When the VENT BLOWER switch is turned ON, operating voltage for the ventilating blower is supplied through the switch to the blower.

The relationship of the components of the ventilating blower system are shown in the diagram below.



END OF TASK

VENTILATING BLOWER FAILS TO OPERATE. ALL OTHER SYSTEMS OPERATE PROPERLY. 0162 00

THIS WORK PACKAGE COVERS:

Ventilating Blower Fails To Operate. All Other Systems Operate Properly.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 4W153 P4 from ventilating blower.
2. Turn MASTER switch and VENT BLOWER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W153 P4 connector socket and black lead to ground. Check for voltage.
4. Turn MASTER switch and VENT BLOWER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Replace ventilating blower (WP 0344 00). Verify fault is corrected.

no

B

1. Disconnect harness 4W153 P1 from accessory control panel.
2. Place one multimeter lead in harness 4W153 P1 socket B and other lead to harness 4W153 P4 connector pin. Check for continuity.
3. Turn MASTER switch OFF (TM 9-2350-292-10).

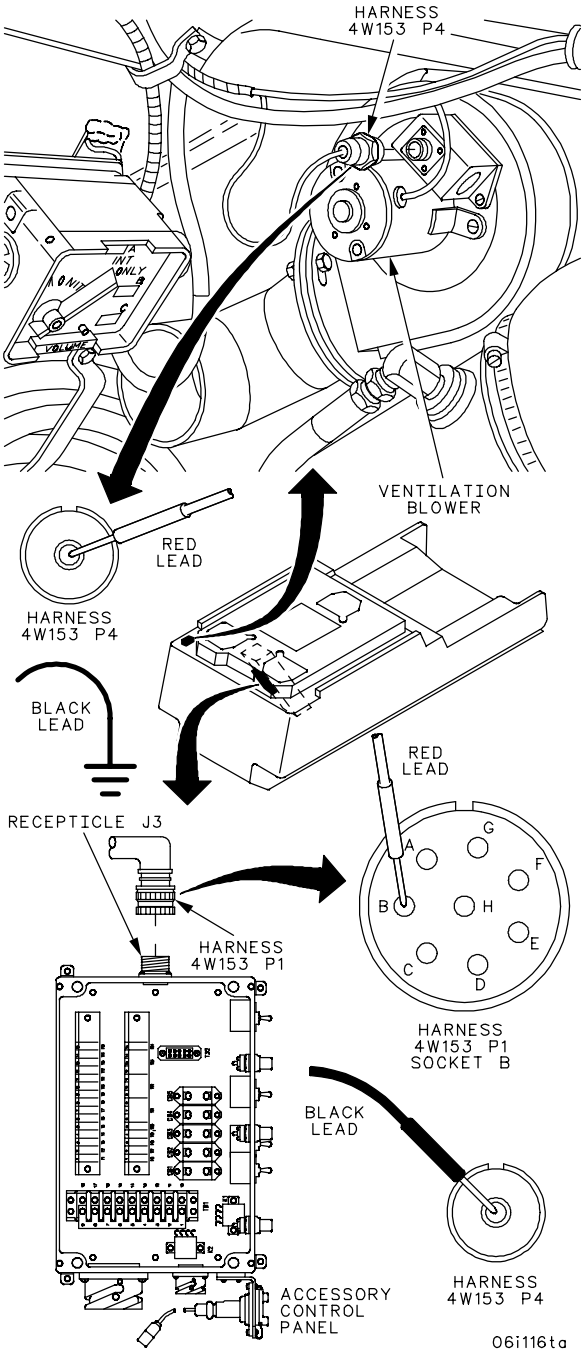
Is continuity present?

yes

Repair (WP 0290 00) or replace (WP 0327 00) harness 4W153. Verify fault is corrected.

no

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VENTILATING BLOWER FAILS TO OPERATE. ALL OTHER SYSTEMS OPERATE PROPERLY - CONTINUED 0162 00

CONTINUED FROM STEP B

C

1. Remove accessory control panel cover (WP 0244 00).
2. Place one multimeter lead on terminal 1 of switch S2 and other lead on accessory control panel receptacle J3 pin B. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 59 from panel receptacle J3 pin B to switch S2. Verify fault is corrected.

D

Place one multimeter lead on each terminal connector of switch S2. Check for continuity.

Is continuity present?

yes

no

Replace switch S2 (WP 0244 00). Verify fault is corrected.

E

Place one multimeter lead on switch S2 terminal 2 and other lead on terminal board 1 (TB1) terminal 3. Check for continuity.

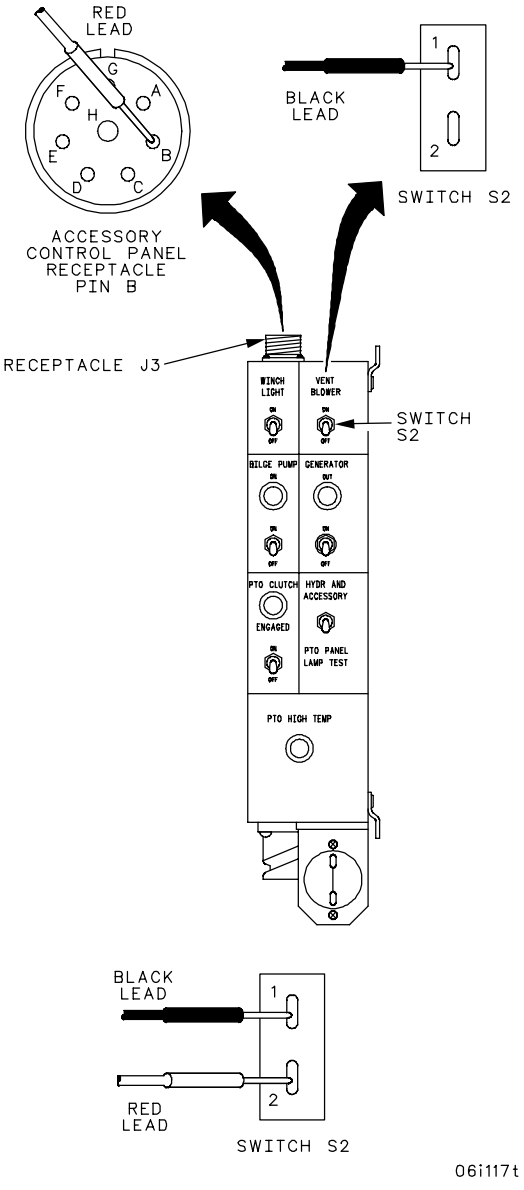
Is continuity present?

yes

no

Replace TB1 (WP 0244 00). Verify fault is corrected.

Replace lead 59 from TB1 to switch S2 (WP 0244 00). Verify fault is corrected.



END OF TASK

VENTILATING BLOWER WILL NOT OPERATE AT FULL SPEED. 0163 00

THIS WORK PACKAGE COVERS:

Ventilating Blower Will Not Operate At Full Speed

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
STE-ICE-R (item 85, WP0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Is STE-ICE-R available?

yes

no

Go to Step D.

B

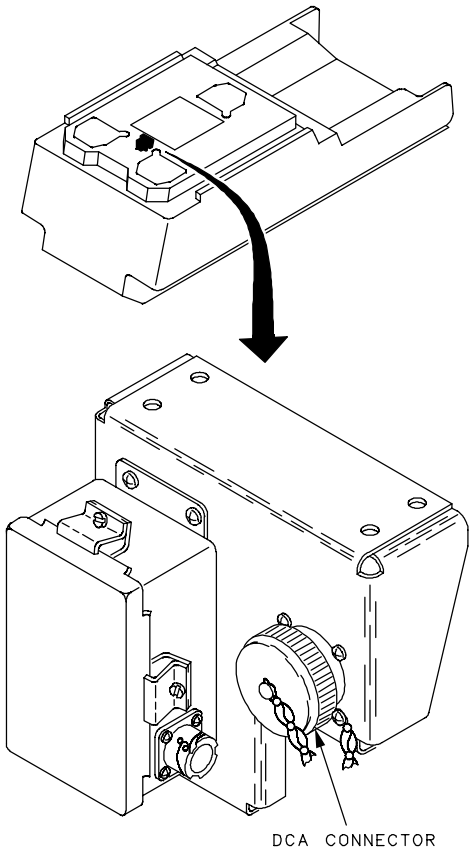
1. Set up STE-ICE-R for operation (TM 9-4910-571-12&P).
2. Connect STE-ICE-R harness W1 to vehicle harness 4W800 J1 DCA connector.
3. Enter vehicle ID (VID) 04 and perform STE-ICE-R test 67 (TM 9-4910-571-12&P) and record results.

Is VTM reading between 27 and 30 V dc static?

yes

no

Perform test 75 (TM 9-4910-571-12&P) on batteries. Verify fault is corrected.



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VENTILATING BLOWER WILL NOT OPERATE AT FULL SPEED - CONTINUED 0163 00

CONTINUED FROM STEP B

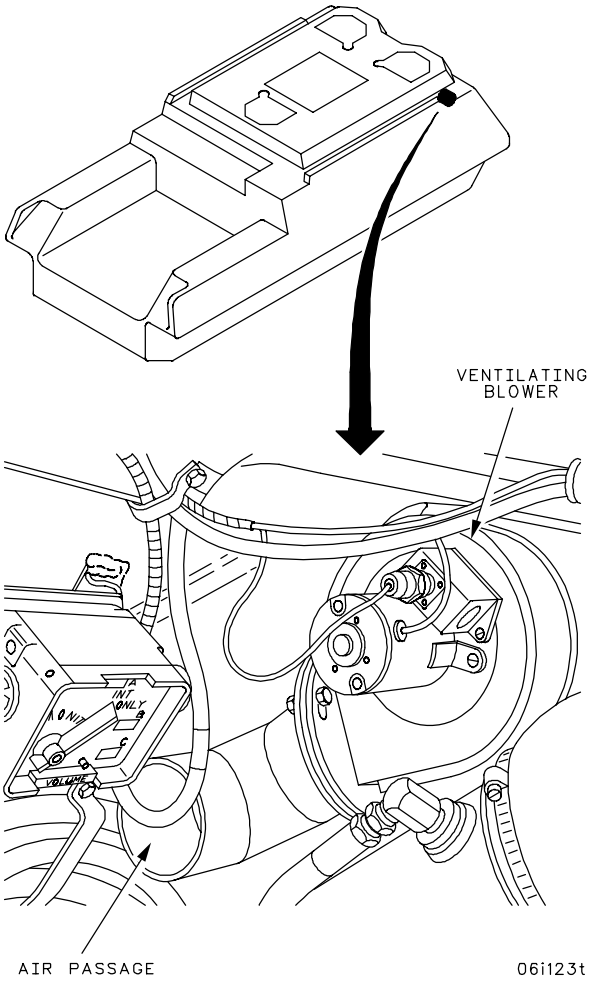
C Perform STE-ICE-R test 82 (TM 9-4910-571-12&P) and record results.

Is VTM reading between 25.8 and 30.2 V dc?

yes

no

Replace generator (WP 0237 00). Verify fault is corrected.



CONTINUED FROM STEP A

D Check ventilating blower air passage for obstructions.

Is air passage obstructed?

yes

no

Clear away obstructions. Verify fault is corrected.

Go to WP 0162 00.

END OF TASK

VENTILATING BLOWER IS UNUSUALLY NOISY. 0164 00

THIS WORK PACKAGE COVERS:

Ventilating Blower Is Unusually Noisy

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

Check ventilating blower for any loose mounted parts, loosely mounted assembly or missing mounting hardware.

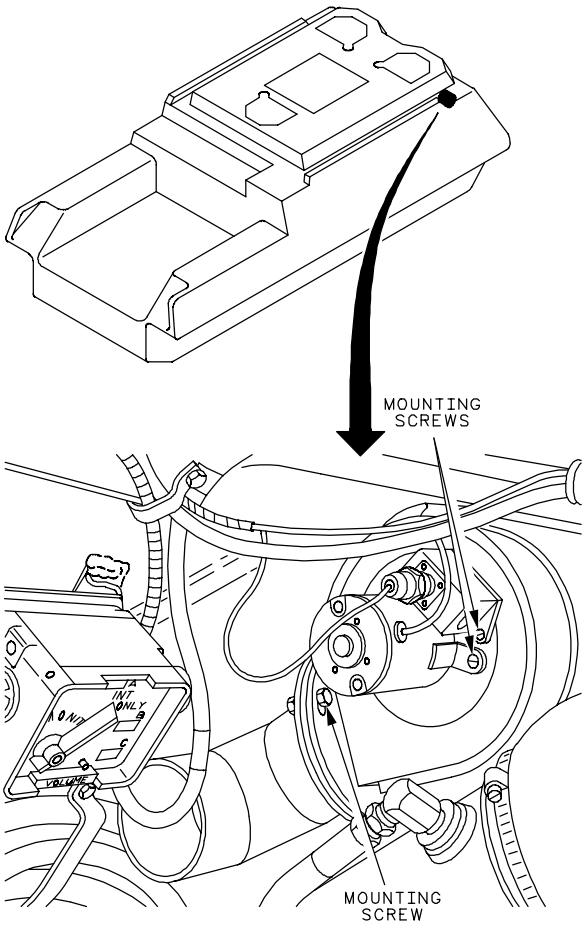
Are parts and assembly securely mounted and all mounting hardware attached?

yes

Replace blower assembly (WP 0344 00). Verify fault is corrected.

no

Tighten hardware and/or replace missing hardware. Verify fault is corrected.



06i114t

END OF TASK

WARNING SYSTEM OVERVIEW AND DIAGRAMS. 0165 00

THIS WORK PACKAGE COVERS:

Warning System Overview And Diagrams

The warning system is comprised of the following electrical circuits; SYSTEM WARNING light and warning horn, PTO clutch high oil temperature warning light, low brake pressure warning light, and lamp test. In addition, the warning system also monitors the winch electrical system to detect winch malfunctions.

The SYSTEM WARNING light and warning horn electrical circuits consists of the SYSTEM WARNING light, warning horn, transmission high oil temperature switch, engine low oil pressure switch, engine high oil temperature switch, two diode assemblies, low brake pressure relay, winch warning relay, horn relay, HORN OVERRIDE switch, 15-amp circuit breaker, and related electrical wiring.

When the MASTER switch is turned ON, the SYSTEM WARNING light will normally come on until the main engine is started and running. Initially, the warning horn will not sound; however, as the engine is started and normal generator voltage output (+28 V dc) is produced, the horn may sound briefly until engine oil pressure reaches normal operating range. At this point both the warning light and the horn are turned off. With the engine running, both the light and the horn will come on if either of the following conditions occur: engine oil pressure drops below 9 psi, engine oil temperature rises above 245_ F, transmission oil temperature rises above 285_ F, brake pressure falls below 475 psi, hydraulic system PTO clutch oil temperature rises above 285_ F, or a fault is detected in the main winch electrical system.

When the MASTER switch is ON, system power (+24 - 28 V dc) to operate the SYSTEM WARNING light is supplied from the switch panel. The warning horn receives supply voltage (+28 V dc) from the main engine generator; thus, the main engine must be running for the warning horn to sound. High engine oil temperature and low engine oil pressure are detected by engine mounted switches. Likewise, high transmission oil temperature is detected by a switch mounted in the transmission. In either case, exceeding the temperature or pressure limit causes the switch contacts to close providing a ground for the SYSTEM WARNING indicator and horn relay. As a result, the indicator circuit is complete and the SYSTEM WARNING light is lit. The ground at the horn relay energizes the relay and completes the horn circuit to sound the horn.

The PTO clutch high oil temperature indicator circuits consist of the HIGH TEMP indicator, the PTO high temperature switch, a 15-amp circuit breaker, and related electrical wiring.

When the MASTER switch is ON, the HIGH TEMP indicator is lit whenever PTO clutch oil temperature exceeds 285° F. System power (+28 V dc) is supplied to the HIGH TEMP indicator through the 15-amp circuit breaker in the hydraulic control panel. The PTO high temperature switch is mounted in the PTO clutch assembly and, when the oil temperature reaches 285°, the switch closes. As a result, a ground is applied to the indicator to complete the circuit and light the indicator. The switch ground is also applied through an isolation diode to the SYSTEM WARNING LIGHT and warning horn circuits; thus, with the main hydraulic system in operation, the warning horn will sound and the SYSTEM WARNING light will be lit.

The low brake pressure warning light electrical circuits consists of the LOW BRAKE PRESSURE warning light, low brake pressure switch, and related electrical wiring.

When the MASTER switch is turned ON, the LOW BRAKE PRESSURE warning light comes on whenever the hydraulic brake pressure falls below 475 $\pm$ 25 PSIG (old configuration) or 550 $\pm$ 25 PSIG (new configuration with brake modulation). The low brake pressure switch detects the low brake pressure condition and the switch contacts close. System power (+24 - 28 V dc) is applied through the closed switch contacts to light the LOW BRAKE PRESSURE warning light and the low brake pressure relay. With the low brake pressure relay energized, a ground is supplied to the SYSTEM WARNING light and warning horn circuits. With the main engine in operation, the SYSTEM WARNING light comes on and the warning horn sounds.

The warning system monitors the winch electrical system to detect level winder drum malfunctions and the payout limit of the main winch wire rope. The LEVEL WINDER MALFUNCTION indicator lights if an improper alinement of the wire rope is detected, Likewise, the WINCH DRUM MALFUNCTION indicator lights if an irregular wrapping sequence onto the winch drum is detected. The PAYOUT LIMIT indicator lights if less than four wraps of the wire rope remain of the main winch drum. When any of these conditions are detected, main winch operation is automatically shut down and the SYSTEM WARNING light is lit.

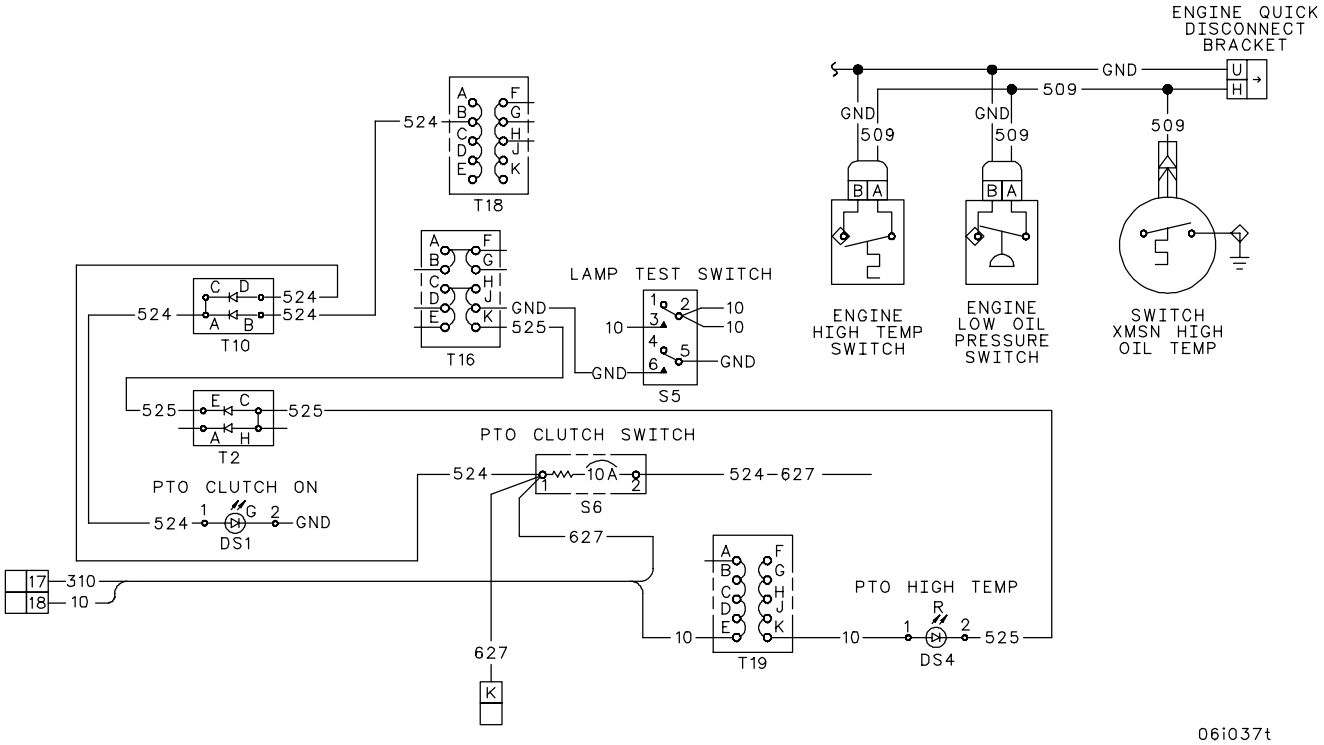
WARNING SYSTEM OVERVIEW AND DIAGRAMS - CONTINUED 0165 00

If the SYSTEM WARNING light comes on and the warning horn sounds when the main engine is running, normal procedure is to shut down the main engine and identify and correct the malfunction. As an aid to operator and maintenance personnel, the warning horn can be turned off by setting the HORN OVERRIDE switch in the open (up) position after a malfunction has been detected. When the malfunction is identified and corrected, the HORN OVERRIDE switch is returned to the closed position (down) for normal vehicle operation.

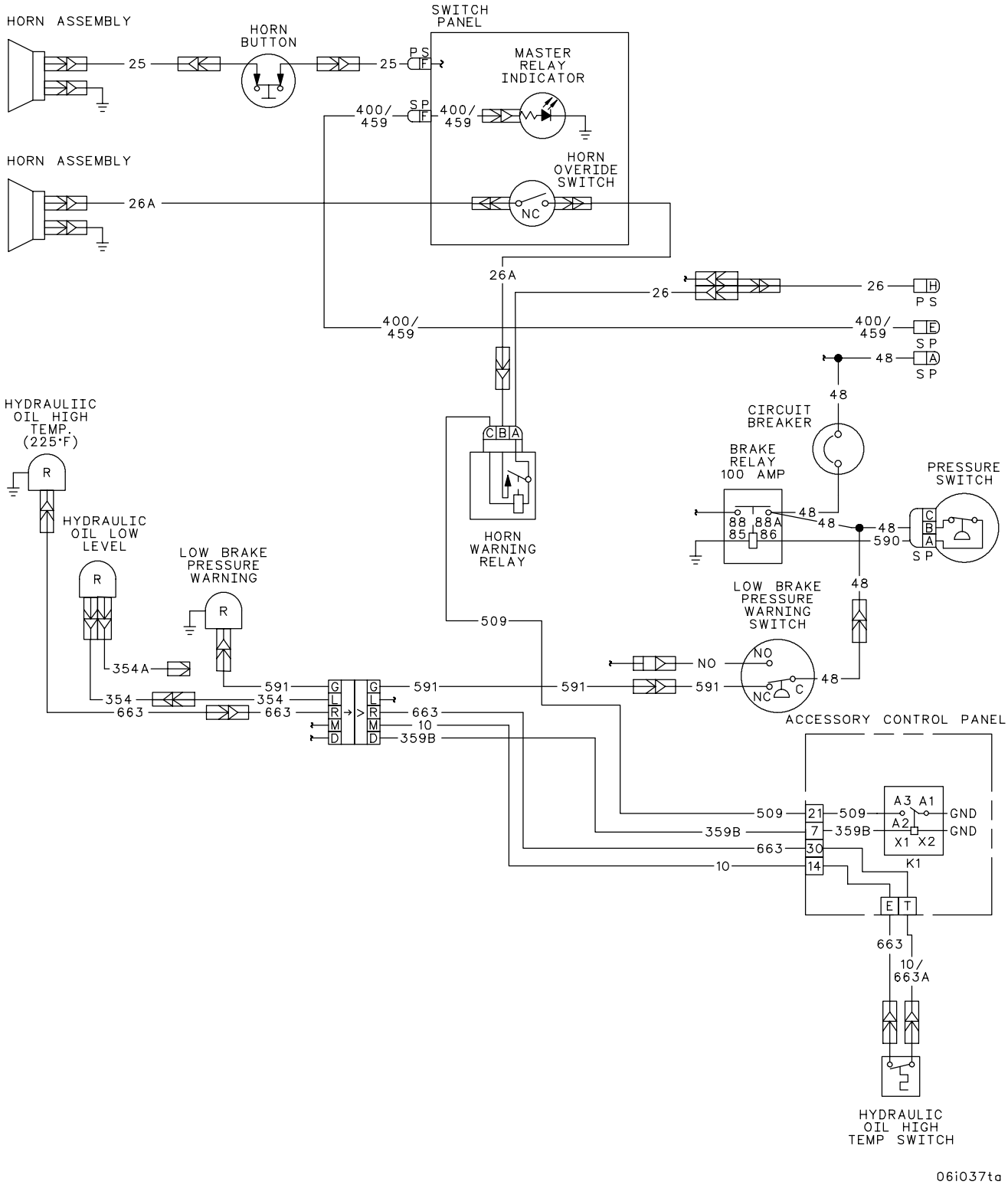
The lamp test electrical circuits consists of the LAMP TEST switch, PTO clutch oil high TEMP warning light, and PTO clutch ENGAGED indicator light, all of which are located on the accessory control panel; the hydraulic LOW OIL LEVEL indicator light, RETURN FILTER CLOGGED indicator light, CHARGE FILTER CLOGGED indicator light, LOW BRAKE PRESSURE warning light, hydraulic MAX OIL TEMP EXCEEDED (225_ F) indicator light. TRANS FILTER CLOGGED INDICATOR LIGHT, LEVEL WINDER MALFUNCTION warning light, WINCH DRUM MALFUNCTION warning light, PAYOUT LIMIT warning light, 20-amp circuit breaker, and 15-amp circuit breaker, all of which are located on the hydraulic control panel; eight diodes and related electrical wiring.

When the main engine is running and the LAMP TEST switch on the accessory control panel is held in the TEST position, all warning lights on the hydraulic control panel and PTO clutch control pane will be illuminated. In addition, the SYSTEM WARNING light will light and the warning horn will sound. This check ensures both the SYSTEM WARNING light, as well as other warning and indicator lights, and warning horn are all operational. If one of the lamps do not light or the warning horn does not sound, normal procedure is to replace respective faulty LEDs or warning horn whichever is applicable.

The relationship of the various warning system components is shown in the following diagram.



WARNING SYSTEM OVERVIEW AND DIAGRAMS - CONTINUED 0165 00



END OF TASK

SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN MASTER SWITCH IS ON OR WHEN MAIN ENGINE OIL PRESSURE IS BELOW OPERATING LEVEL. 0166 00

THIS WORK PACKAGE COVERS:

System Warning Light Does Not Light When Master Switch Is On Or When Main Engine Oil Pressure Is Below Operating Level

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Warning light LED replaced
Batteries fully charged
Gauge panel removed from bracket (WP 0243 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

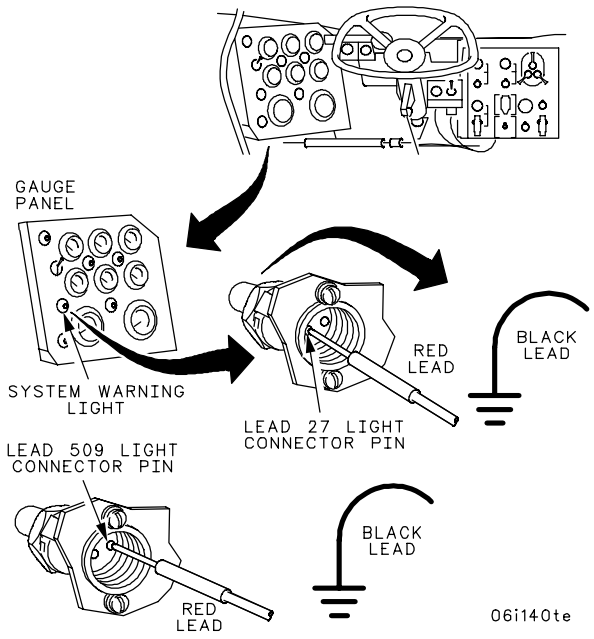
1. Remove LED from light L1.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place red multimeter lead on lead 27 light connector pin and black lead to ground. Check for voltage.
4. Place red multimeter on lead 509 light connector pin and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present at both checks?

yes

Replace system warning light assembly (WP 0243 00). Verify fault is corrected.

no



CONTINUED ON NEXT PAGE

SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN MASTER SWITCH IS ON OR WHEN MAIN ENGINE OIL PRESSURE IS BELOW OPERATING LEVEL - CONTINUED

0166 00

CONTINUED FROM STEP A

B

1. Remove switch panel from bracket and reconnect ground strap to switch panel (WP 0242 00).
2. Disconnect lead 10 from CB6.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place red multimeter lead in lead 10 circuit breaker connector and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to WP 0126 00 and troubleshoot harness 4W105 lead 10. Verify fault is corrected.

C

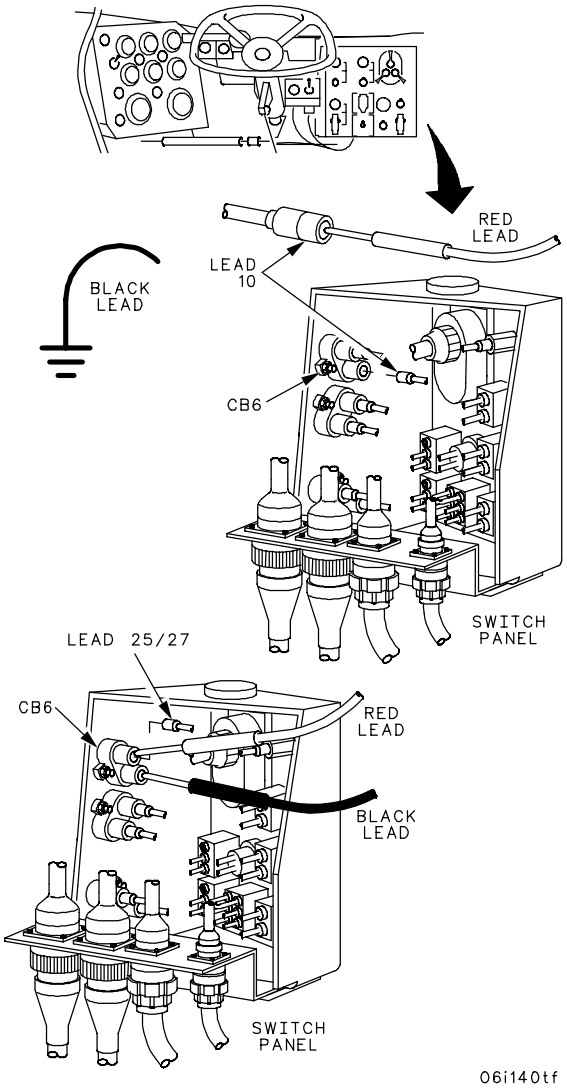
1. Disconnect lead 25/27 from CB6.
2. Place one multimeter lead in each CB6 connector. Check for continuity.
3. Reconnect leads 10 and 25/27 to CB6.

Is continuity present?

yes

no

Replace CB6 (WP 0242 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN MASTER SWITCH IS ON OR WHEN MAIN ENGINE OIL PRESSURE IS BELOW OPERATING LEVEL - CONTINUED

0166 00

CONTINUED FROM STEP C

D

1. Disconnect harness 4W103 P1 from gauge panel.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 4W103 P1 connector socket K and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes — Go to Step H.

no

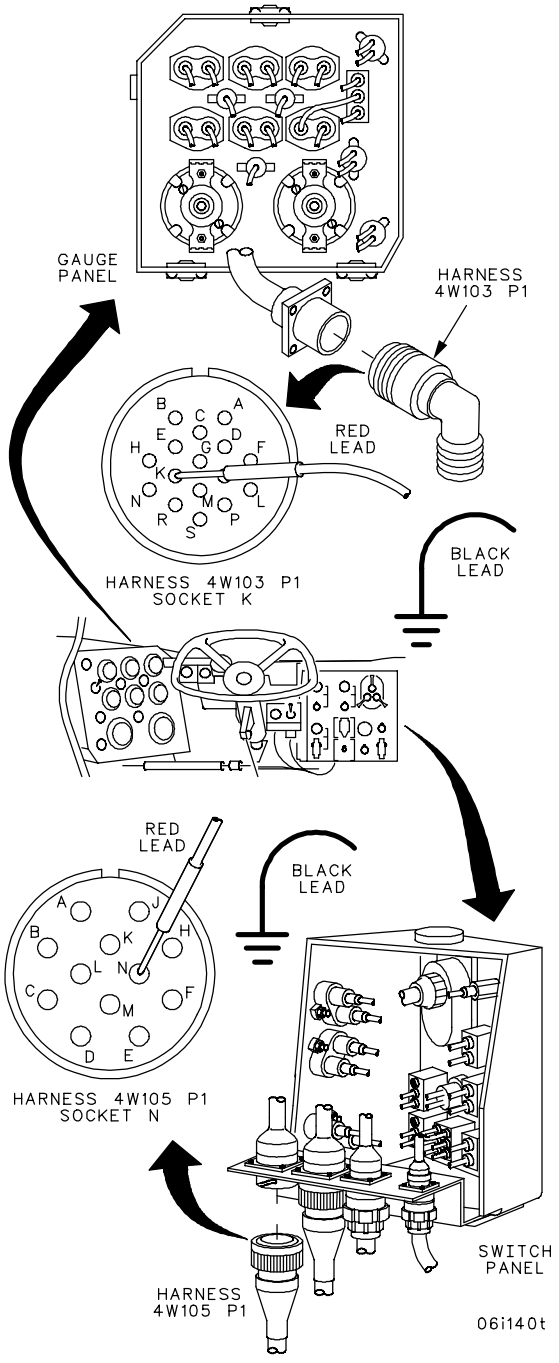
E

1. Reconnect harness 4W103 P1 to gauge panel.
2. Remove switch panel from bracket (WP 0242 00) and reconnect ground strap to switch panel.
3. Disconnect harness 4W105 P1 from switch panel.
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Place multimeter red lead in harness 4W105 P1 socket N and black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no — Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105 P1. Verify fault is corrected.



CONTINUED ON NEXT PAGE

SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN MASTER SWITCH IS ON OR WHEN MAIN ENGINE OIL PRESSURE IS BELOW OPERATING LEVEL - CONTINUED

0166 00

CONTINUED FROM STEP E

F

1. Disconnect lead 10 from CB6.
2. Place one multimeter lead on harness 4W151 switch panel receptacle pin N and other lead in lead 10 circuit breaker connector. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 10 to CB6. Verify fault is corrected.

G

1. Reconnect lead 10 to CB6.
2. Place one multimeter lead in lead 25/27 circuit breaker connector and other lead in harness 4W151 J4 pin K. Check for continuity.

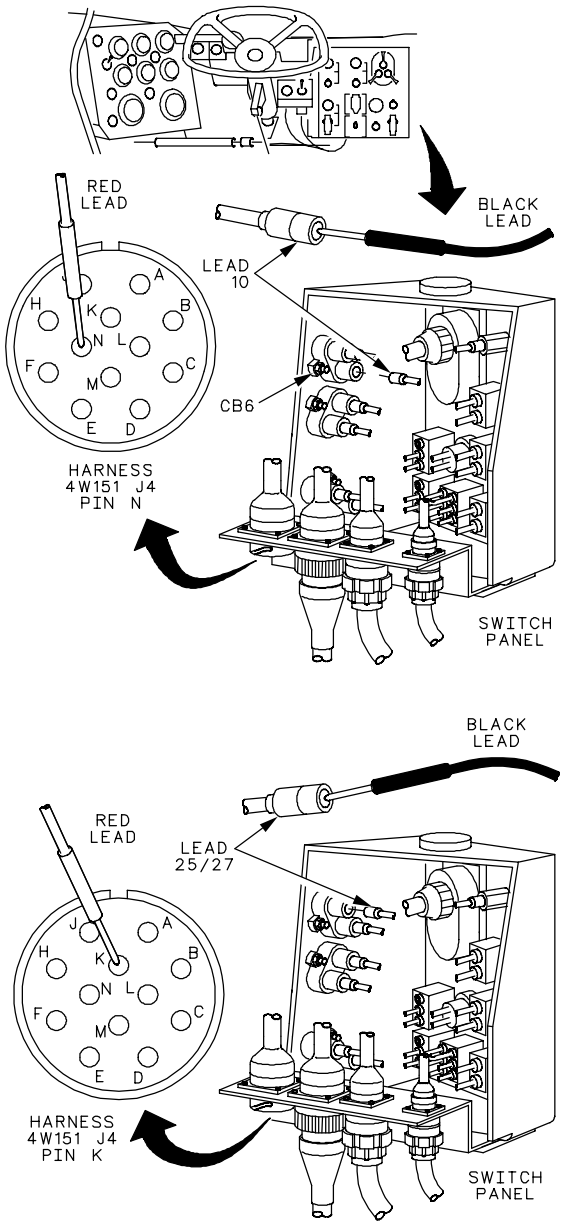
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0317 00) lead 27 from harness 4W105 P1 to harness 4W100 J5. Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0242 00) lead 25/27 and/or 27. Verify fault is corrected.



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CONTINUED ON NEXT PAGE

SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN MASTER SWITCH IS ON OR WHEN MAIN ENGINE OIL PRESSURE IS BELOW OPERATING LEVEL - CONTINUED

0166 00

CONTINUED FROM STEP D

H

1. Disconnect lead 27 from light L1.
2. Place one multimeter lead on harness 4W152 J1 pin K and the other lead in lead 27 of light connector. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0243 00) lead 27. Verify fault is corrected.

I

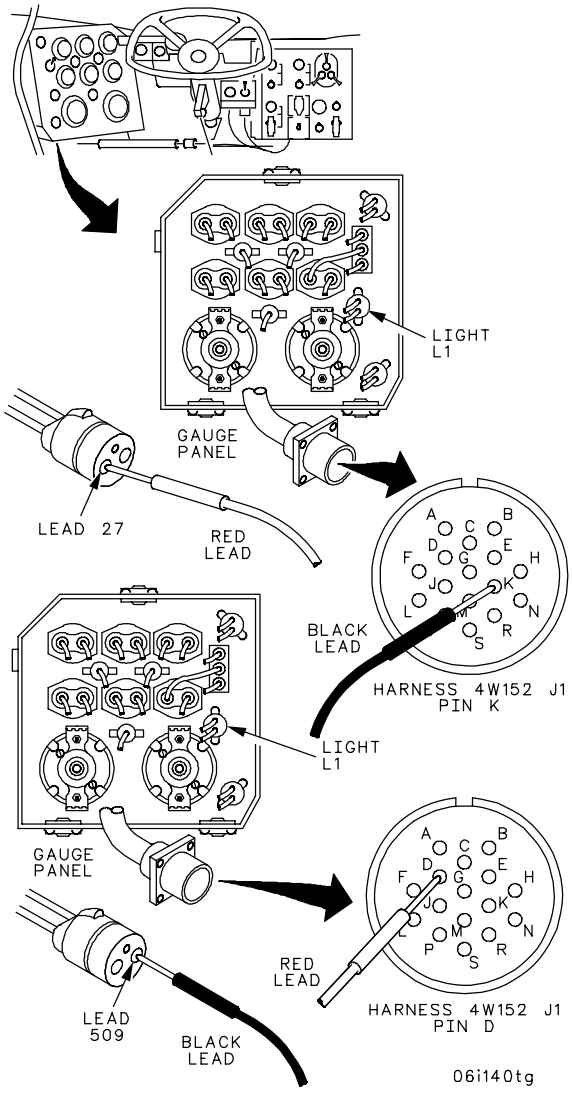
Place one multimeter lead on harness 4W152 J1 pin D and other lead in lead 509 of light connector. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0243 00) lead 509. Verify fault is corrected.



CONTINUED ON NEXT PAGE

SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN MASTER SWITCH IS ON OR WHEN MAIN ENGINE OIL PRESSURE IS BELOW OPERATING LEVEL - CONTINUED

0166 00

CONTINUED FROM STEP I

J

1. Reconnect lead 27 and 509 to SYSTEM WARNING light.
2. Open air intake grilles above battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W143 P2 from bulkhead disconnect.
4. Place one multimeter lead in harness 4W103 P1 socket D and other lead in harness 3W143 P2 socket H. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

K

1. Reconnect harness 3W143 P2 to bulkhead disconnect.
2. Remove engine deck (WP 0417 00).
3. Disconnect harness 3W143 P1 from engine disconnect.
4. Place one multimeter lead on harness 4W103 P1 pin H and other lead in harness 3W143 P1 socket H. Check for continuity.

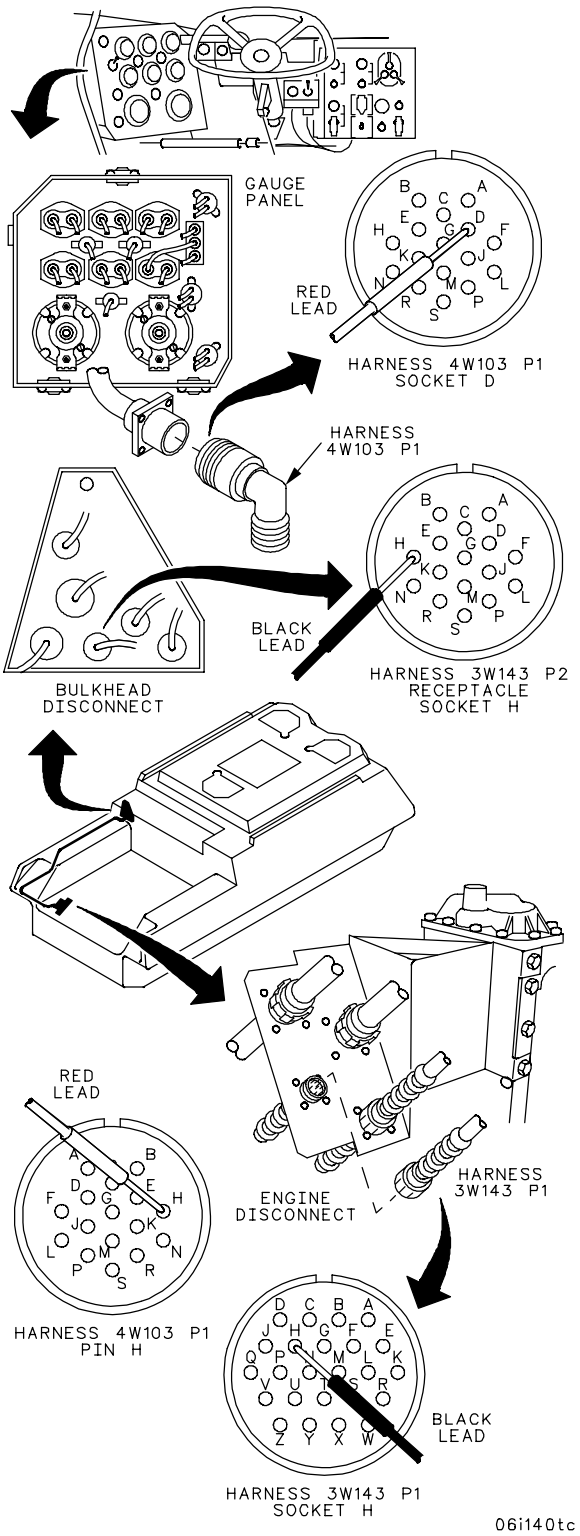
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

CONTINUED ON NEXT PAGE



SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN MASTER SWITCH IS ON OR WHEN MAIN ENGINE OIL PRESSURE IS BELOW OPERATING LEVEL - CONTINUED

0166 00

CONTINUED FROM STEP K

L

1. Reconnect harness 4W103 P1 to gauge panel.
2. Disconnect harness 3W202 connector from engine low oil pressure switch.
3. Place one multimeter lead on harness 3W202 J3 pin H and other lead on engine low oil pressure switch connector socket A. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

M Place one multimeter lead on harness 3W202 J3 pin U and other lead on engine low oil pressure switch socket B. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

N Place one multimeter lead in harness 3W143 P1 socket U and other lead to ground. Check for continuity.

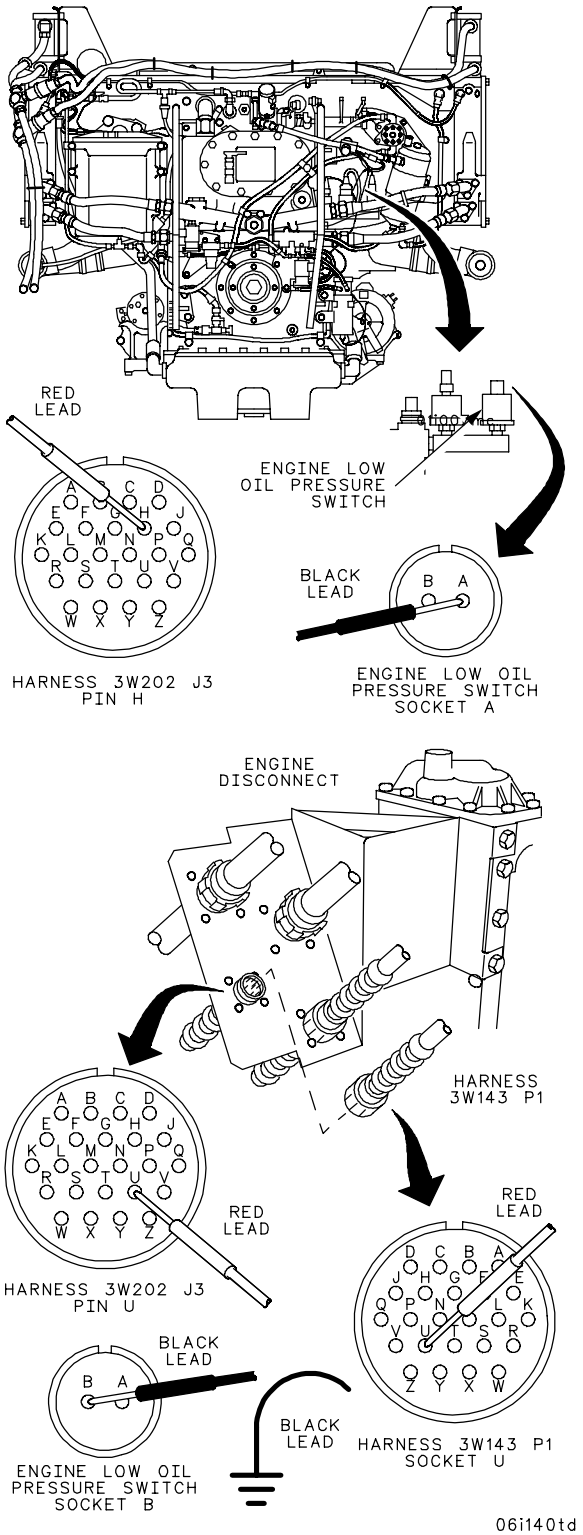
Is continuity present?

yes

no

Replace engine low oil pressure switch (WP 0284 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.



END OF TASK

SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN ENGINE OIL TEMPERATURE IS HIGH. 0167 00

THIS WORK PACKAGE COVERS:

System Warning Light Does Not Light When Engine Oil Temperature Is High

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 3W143 P1 from engine disconnect.
2. Disconnect harness 3W202 connectors from engine low oil pressure switch and engine high oil temperature switch.
3. Place one multimeter lead on harness 3W202 J3 pin H and other lead in engine high oil temperature switch connector socket A. Check for continuity.

Is continuity present?

yes

B

Place one multimeter lead on harness 3W202 J3 pin U and other lead on engine high oil temperature switch connector socket B. Check for continuity.

Is continuity present?

yes

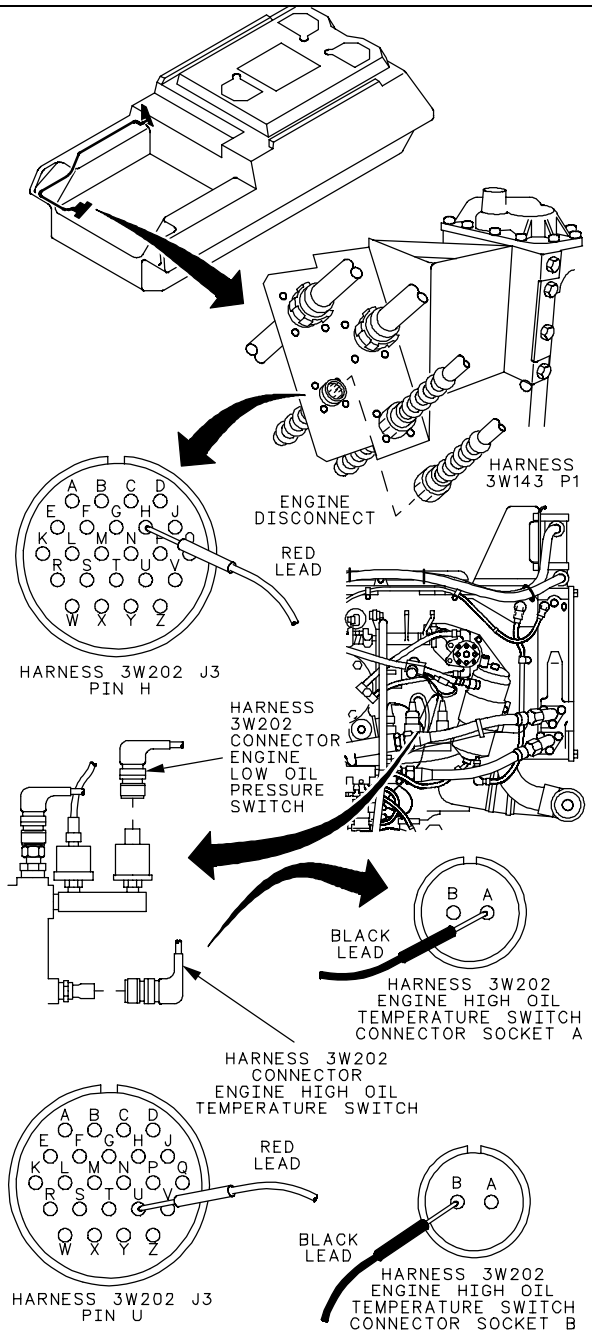
Replace engine high oil temperature switch (WP 0284 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0300 00) harness 3W202. Verify fault is corrected.



END OF TASK

SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN TRANSMISSION OIL TEMPERATURE IS HIGH. 0168 00

THIS WORK PACKAGE COVERS:

System Warning Light Does Not Light When Transmission Oil Temperature Is High

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect lead connector from engine low oil pressure switch.
2. Disconnect harness 3W143 P1 from engine disconnect bracket.
3. Disconnect harness 3W202 connector from engine high oil temperature switch.
4. Place one multimeter lead on harness 3W202 J3 pin H and other lead in harness 3W202 engine high oil temperature switch connector socket A. Check for continuity.

Is continuity present?

yes

B

Place one multimeter in harness 3W202 engine high oil temperature switch connector socket B and other lead on harness 3W202 J3 pin U. Check for continuity.

Is continuity present?

yes

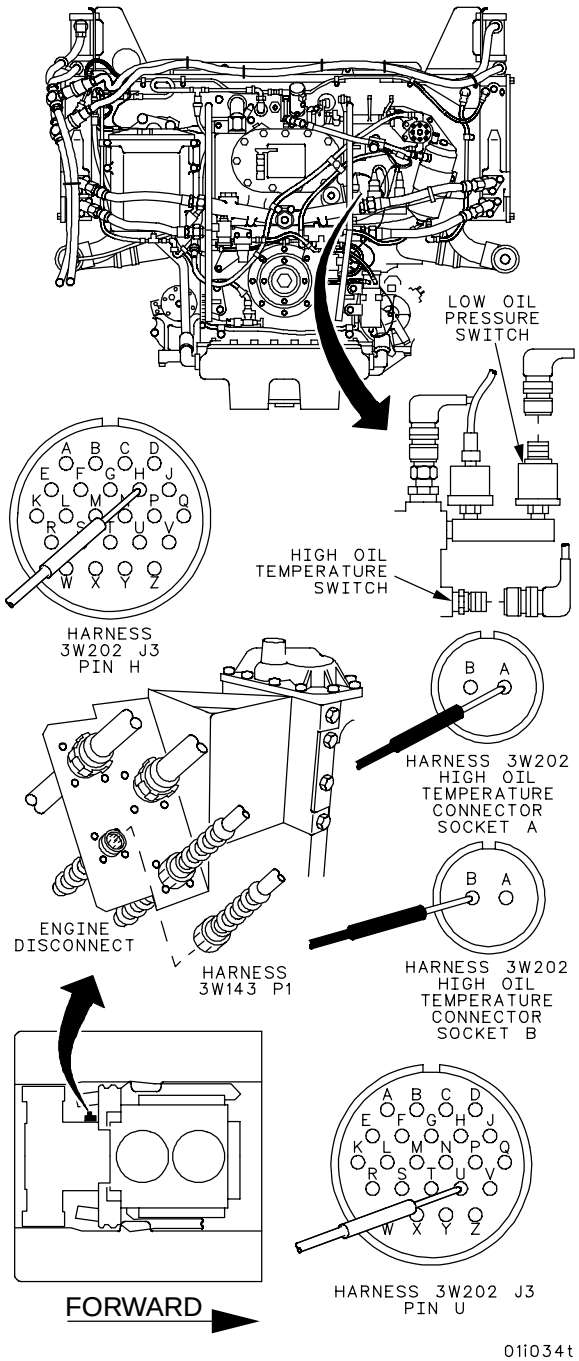
Replace engine high oil temperature switch (WP 0284 00).Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0300 00) ground lead of harness 3W202 to engine high oil temperature switch. Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0300 00) lead 509 of harness 3W202 to engine high oil temperature switch. Verify fault is corrected.



END OF TASK

SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN PTO CLUTCH OIL TEMPERATURE IS HIGH. (HIGH TEMP INDICATOR IS LIT.) 0169 00

THIS WORK PACKAGE COVERS:

System Warning Light Does Not Light When Pto Clutch Oil Temperature Is High. (High Temp Indicator Is Lit.)

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Subfloor plates 26 and 27 removed (WP 0454 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 2W601 lead 525 from PTO high temperature switch.
2. Disconnect harness 2W601 P1 from accessory control panel.
3. Place one multimeter lead in PTO high temperature switch lead 525 connector and other lead in harness 2W601 P1 socket G. Check for continuity.

Is continuity present?

yes

no

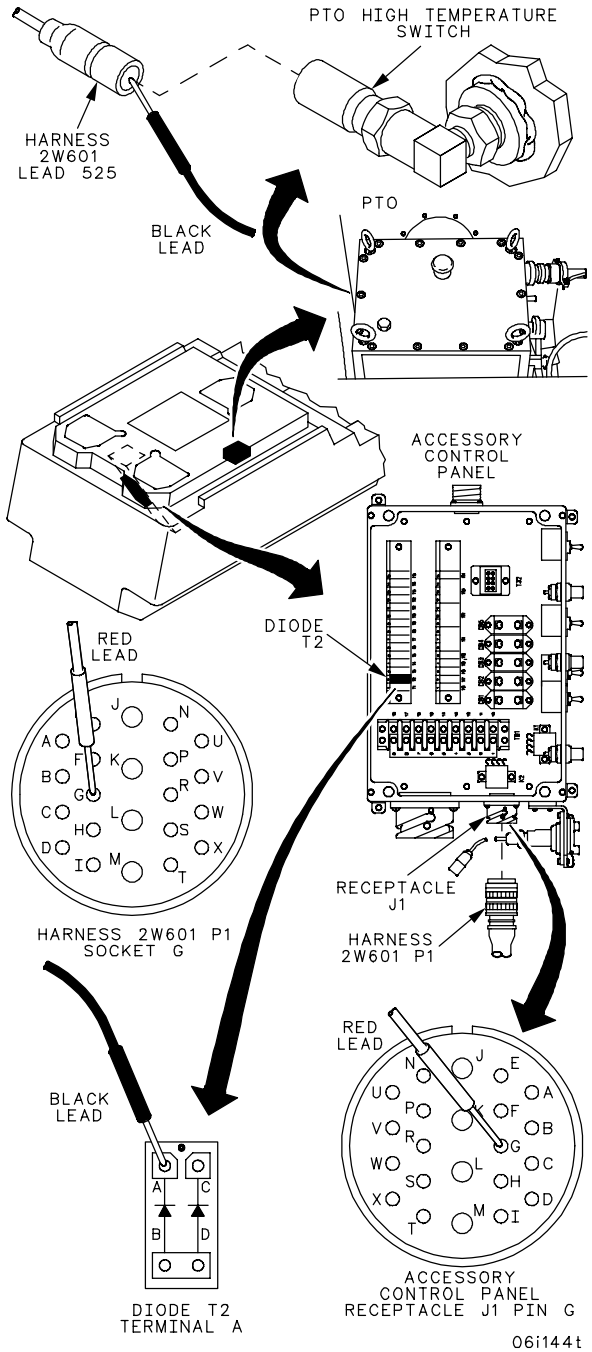
Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.

B

1. Reconnect lead 525 to PTO high temperature switch.
2. Open accessory control panel (WP 0244 00).
3. Place one multimeter lead on accessory control panel receptacle J1 pin G and other lead on diode T2 terminal A. Check for continuity.

Is continuity present?

CONTINUED ON NEXT PAGE



SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN PTO CLUTCH OIL TEMPERATURE IS HIGH (HIGH TEMP INDICATOR IS LIT) - CONTINUED

0169 00

CONTINUED FROM STEP B

yes

no

Replace lead 25 from receptacle J1 to diode T2 terminal A (WP 0244 00). Verify fault is corrected.

C

1. Place red multimeter lead on diode T2 terminal A and black lead on diode T2 terminal B. Check resistance.
2. Place red multimeter lead on diode T2 terminal B and black lead on diode T2 terminal A. Check resistance.

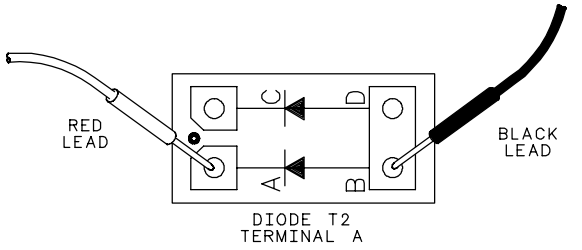
Is resistance low with red lead on terminal A and high with red lead on terminal B?

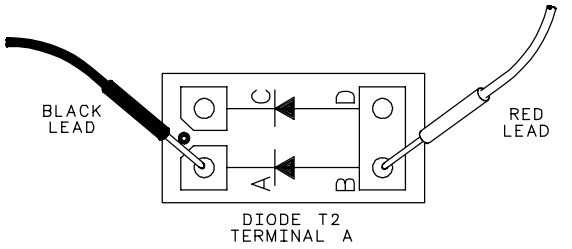
yes

no

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.

Replace diode T2 (WP 0244 00). Verify fault is corrected.





06i144ta

END OF TASK

SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN BRAKE PRESSURE IS LOW. 0170 00

THIS WORK PACKAGE COVERS:

System Warning Light Does Not Light When Brake Pressure Is Low

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Subfloor paltes 16 and 17 removed (WP 0454 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect leads 591 and 48 at low brake pressure switch.
2. Place a jumper wire from lead 48 socket to lead 591 pin.
3. Open accessory control panel (WP 0244 00).
4. Turn MASTER switch ON (TM 9-2350-292-10).
5. Place multimeter red lead on lead 591 of relay K2 in accessory control panel and black lead to ground. Check for voltage.
6. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

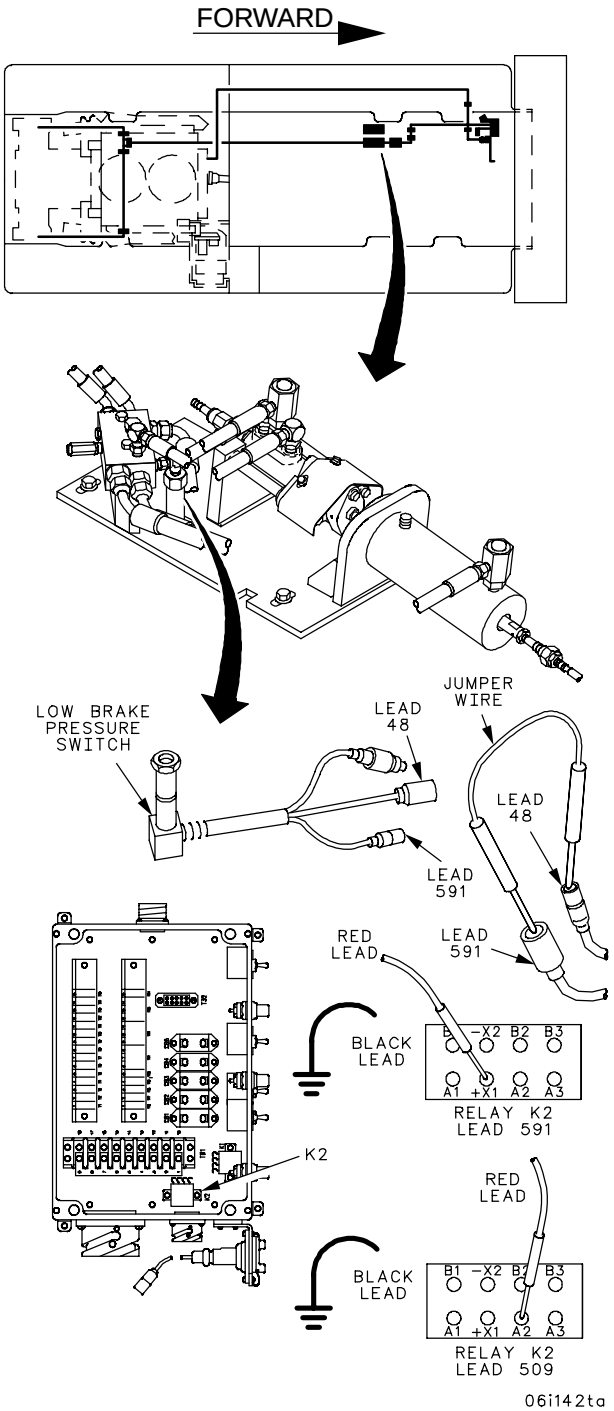
Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.

B

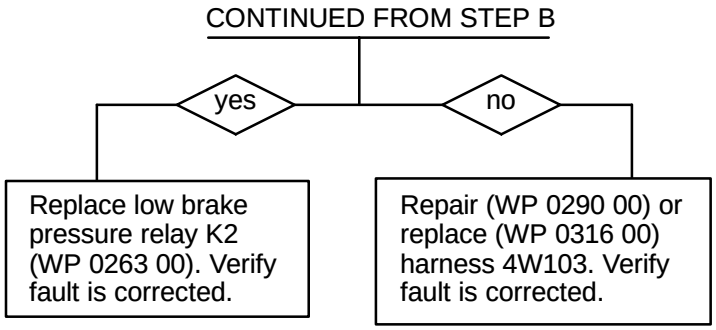
1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Place multimeter red lead on lead 509 of relay K2 and black lead to ground. Check for voltage.
3. Turn MASTER switch OFF (TM 9-2350-292-10).

Is continuity present?

CONTINUED ON NEXT PAGE



SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN BRAKE PRESSURE IS LOW - CONTINUED 0170 00



END OF TASK

SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN MAIN WINCH MALFUNCTIONS. 0171 00

THIS WORK PACKAGE COVERS:

System Warning Light Does Not Light When Main Winch Malfunctions

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Accessory control panel cover removed (WP 0244 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 4W618 P1 from accessory control panel.
2. Place one multimeter lead on accessory control panel receptacle J2 pin 24 and other lead on terminal junction T20 connector D. Check for continuity.

Is 24 V dc present?

yes

no

Replace lead 509 to terminal junction T20 (WP 0244 00). Verify fault is corrected.

B

Place one multimeter lead on terminal junction T20 connector D and other lead to ground. Check for continuity.

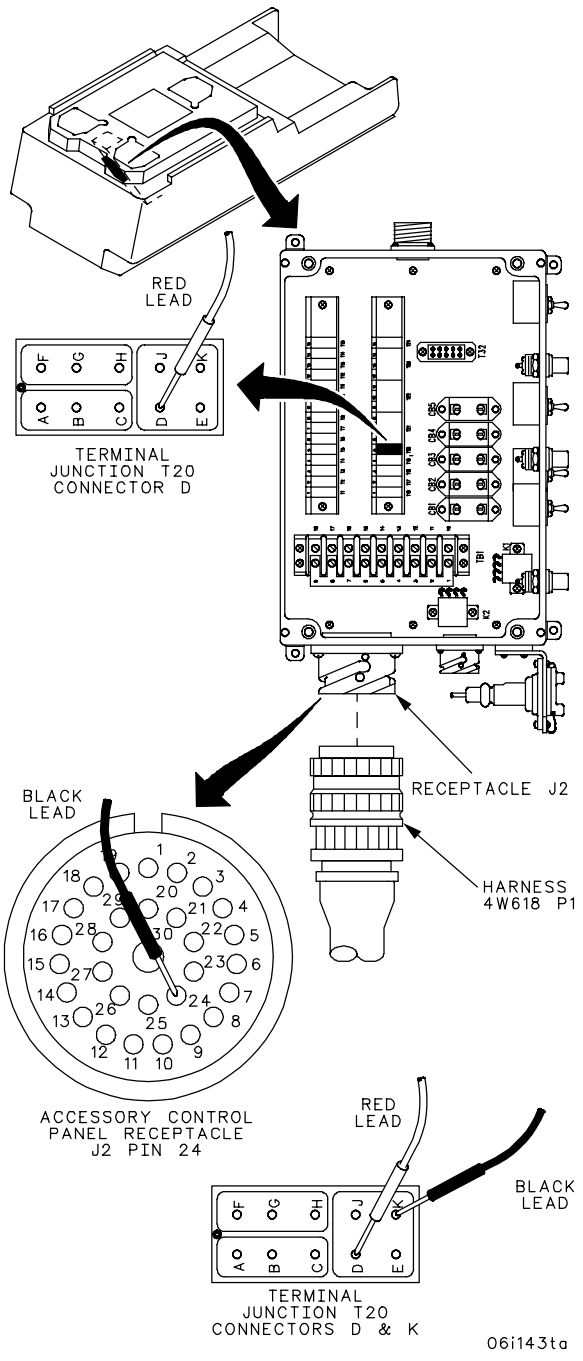
Is continuity present?

yes

no

Replace terminal junction T20 (WP 0244 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



SYSTEM WARNING LIGHT DOES NOT LIGHT WHEN MAIN WINCH MALFUNCTIONS - CONTINUED

0171 00

CONTINUED FROM STEP B

C Place one multimeter lead on terminal junction T20 connector K and other lead on relay K1 connector A2. Check for continuity.

Is continuity present?

yes

no

Replace lead 509 to relay K1 (WP 0244 00). Verify fault is corrected.

D

1. Remove gauge panel from bracket (WP 0243 00).
2. Disconnect harness 4W103 P1 from gage panel.
3. Place one multimeter lead in harness 4W103 P1 socket D and other lead on harness 4W618 P1 pin 24. Check for continuity.

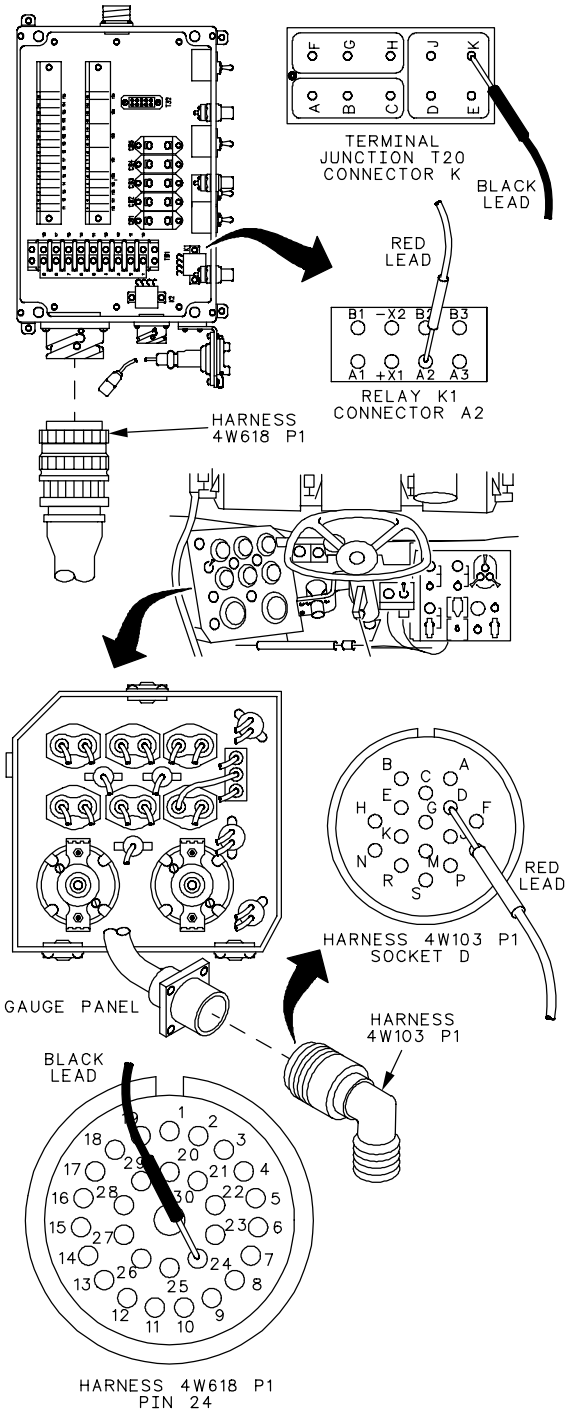
Is continuity present?

yes

no

Replace relay K2 (WP 0244 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.



END OF TASK

WARNING HORN DOES NOT SOUND WHEN ENGINE IS RUNNING AND SYSTEM WARNING LIGHT IS LIT. 0172 00

THIS WORK PACKAGE COVERS:

Warning Horn Does Not Sound When Engine Is Running And System Warning Light Is Lit.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Forward air intake grilles open (TM 9-2359-292-10

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 3W202 from engine low oil pressure switch.
2. Connect a jumper wire between sockets A and B of harness 3W202 low pressure oil switch connector.
3. Turn MASTER switch ON and start engine (TM 9-2350-292-10).
4. Shut engine down and turn MASTER switch OFF (TM 9-2350-292-10).
5. Remove jumper wire and reconnect harness 3W202 to low pressure switch.

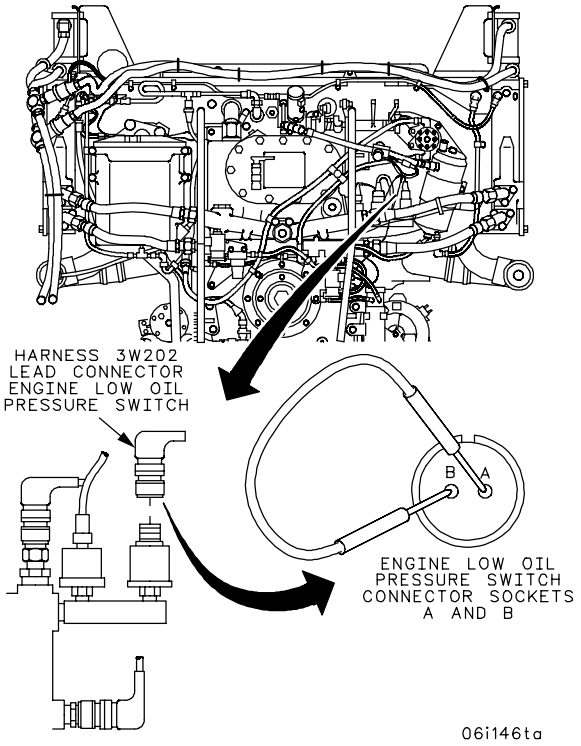
Did warning light come on and warning horn sound?

yes

Replace engine oil low pressure switch (WP 0284 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



WARNING HORN DOES NOT SOUND WHEN ENGINE IS RUNNING AND SYSTEM WARNING LIGHT IS LIT - CONTINUED

0172 00

CONTINUED FROM STEP A

B

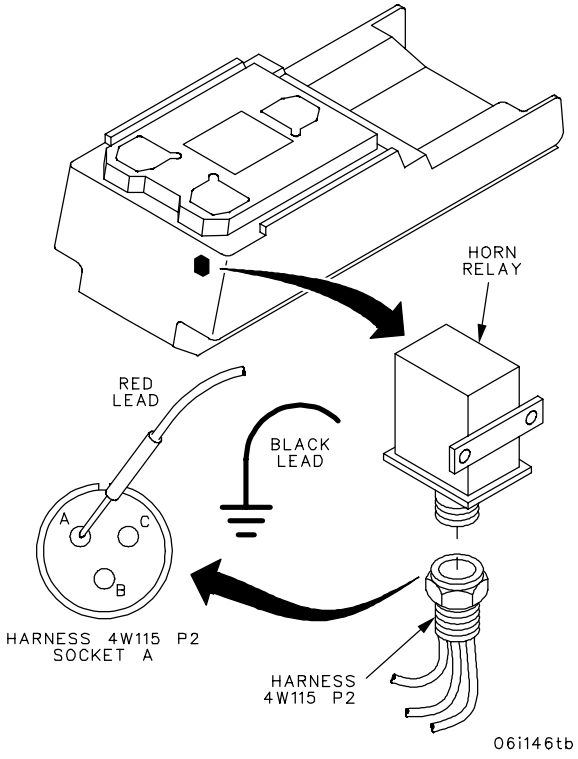
1. Disconnect harness 4W115 P2 from horn relay.
2. Turn MASTER switch ON and start engine (TM 9-2350-292-10).
3. Place red multimeter lead in harness 4W115 P2 socket A and black lead to ground. Check for voltage.
4. Shut engine down and turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0321 00) harness 4W115.



CONTINUED ON NEXT PAGE

WARNING HORN DOES NOT SOUND WHEN ENGINE IS RUNNING AND SYSTEM WARNING LIGHT IS LIT - CONTINUED 0172 00

CONTINUED FROM STEP B

C

1. Connect a jumper wire from socket A to socket B of wiring harness 4W116 P2 horn relay connector.
2. Turn MASTER switch ON and start engine (TM 9-2350-292-10).
3. Shut down engine and turn MASTER switch OFF (TM 9-2350-292-10).

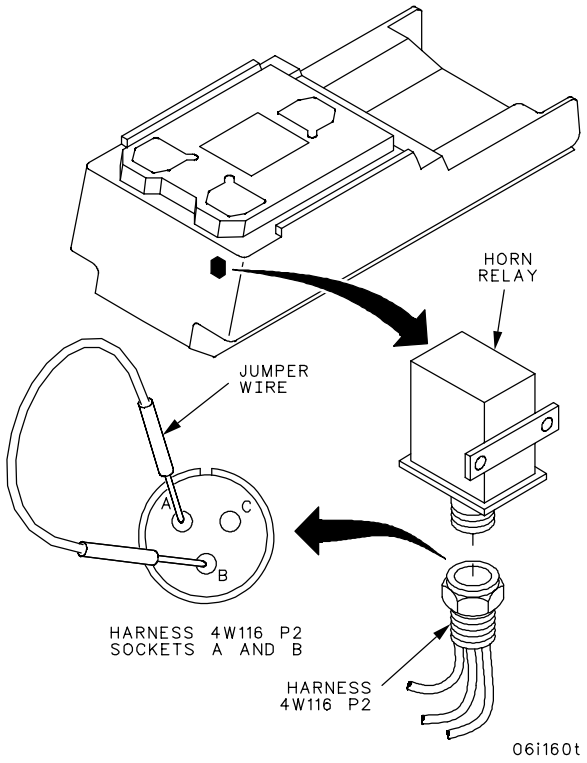
Did warning horn sound?

yes

Replace horn relay (WP 0286 00). Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



WARNING HORN DOES NOT SOUND WHEN ENGINE IS RUNNING AND SYSTEM WARNING LIGHT IS LIT - CONTINUED 0172 00

CONTINUED FROM STEP C

D

1. Remove switch panel and reconnect ground wire to switch panel (WP 0242 00).
2. Disconnect harness 4W117 leads 26A from horn override switch.
3. Place horn override switch in the up (open) position.
4. Turn MASTER switch ON and start engine (TM 9-2350-292-10).
5. Place red multimeter lead in each wiring harness 4W117 lead 26A connector (one at a time) and black lead to ground. Check for voltage.
6. Shut engine down and turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) lead 26A. Verify fault is corrected.

E

Place horn override switch in the down (closed) position and place one multimeter lead on each switch connector pin. Check for continuity.

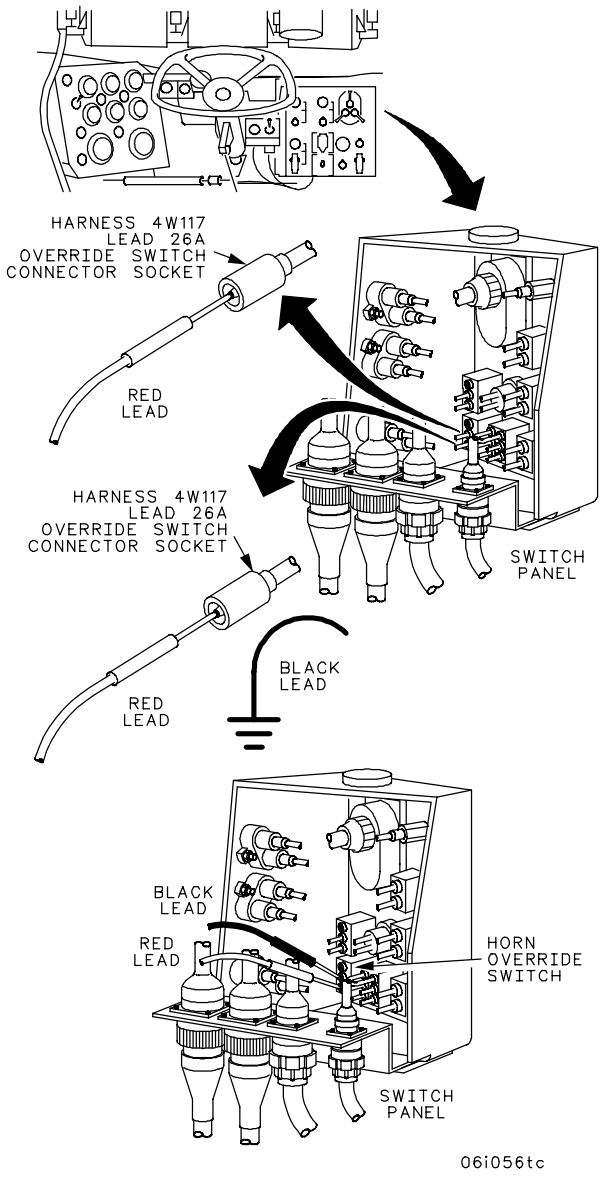
Is continuity present?

yes

no

Replace override switch (WP 0242 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



WARNING HORN DOES NOT SOUND WHEN ENGINE IS RUNNING AND SYSTEM WARNING LIGHT IS LIT - CONTINUED

0172 00

CONTINUED FROM STEP E

F

1. Reconnect wiring harness 4W117 leads 26A to horn override switch.
2. Disconnect wiring harness 4W116 lead 26A from warning horn.
3. Turn MASTER switch ON and start engine (TM 9-2350-292-10).
4. Place red multimeter lead in wiring harness 4W116 lead 26A warning horn connector and black lead to ground. Check for voltage.
5. Shut engine down and turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to Step H.

G

1. Reconnect lead 26A to warning horn and override switch connectors.
2. Disconnect ground lead from warning horn and place one multimeter lead in ground lead connector socket and other lead to ground. Check for continuity.

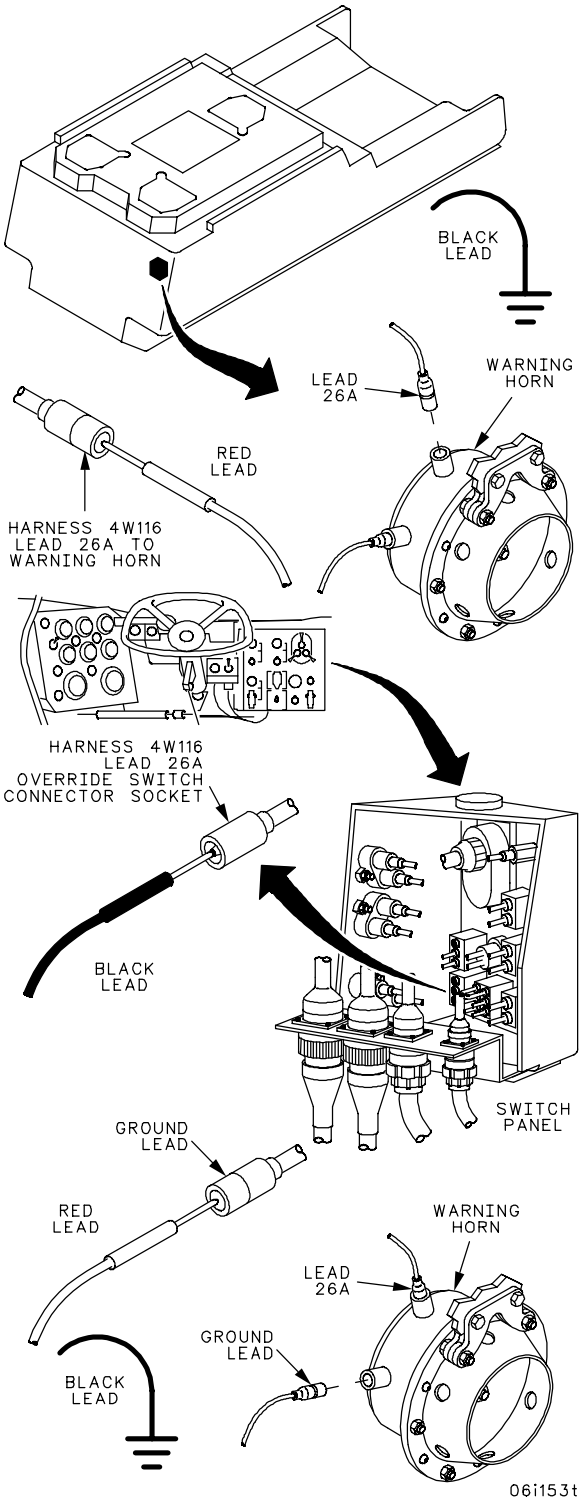
Is continuity present?

yes

no

Replace warning horn (WP 0286 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0286 00) ground lead. Verify fault is corrected.



CONTINUED ON NEXT PAGE

WARNING HORN DOES NOT SOUND WHEN ENGINE IS RUNNING AND SYSTEM WARNING LIGHT IS LIT - CONTINUED

0172 00

CONTINUED FROM STEP F

H

1. Remove gauge panel from bracket (WP 0243 00).
2. Disconnect harness 4W103 P1 from gauge panel.
3. Place one multimeter lead in socket D of harness 4W103 P1 and other lead in socket C of harness 4W115 P2 horn relay connector. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0321 00) harness 4W115. Verify fault is corrected.

I

1. Open air intake grilles above battery compartment (TM 9-2350-292-10).
2. Disconnect harness 3W143 P2 from bulkhead disconnect.
3. Place one multimeter lead in harness 4W115 P2 socket A and other lead in harness 3W143 P2 receptacle socket S. Check for continuity.

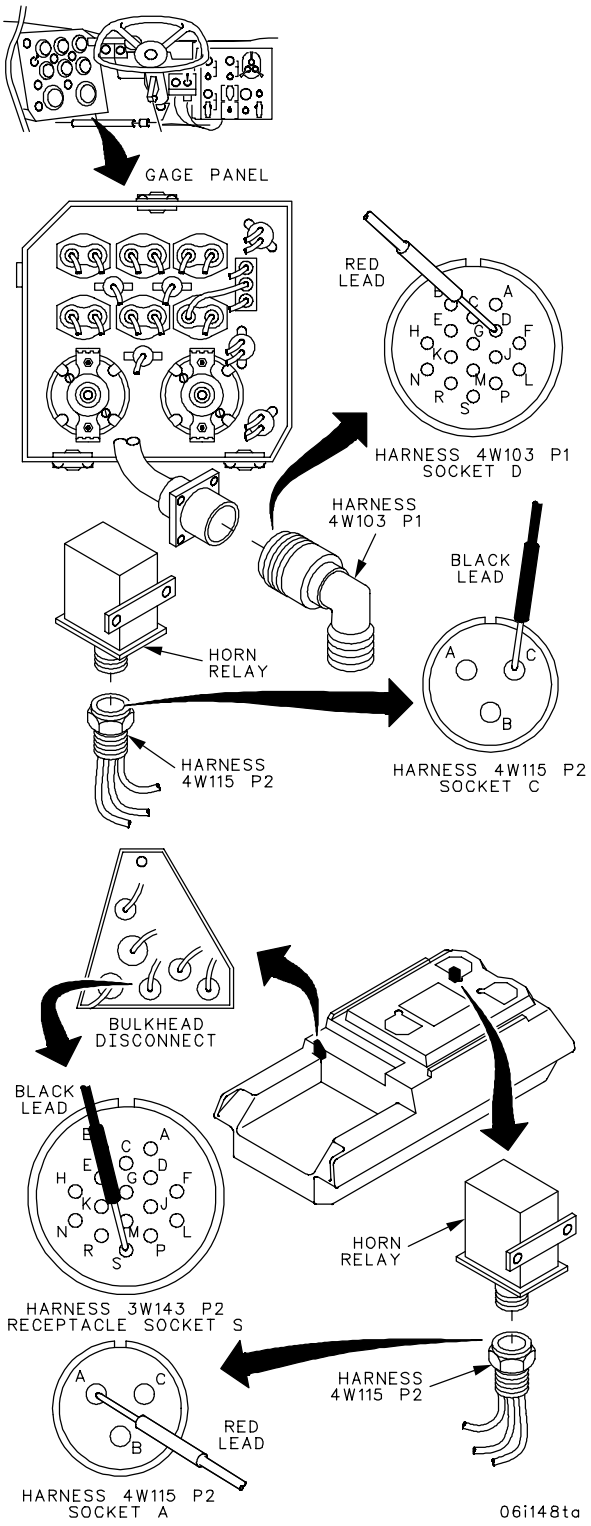
Is continuity present?

yes

Go to WP 0083 00.

no

Repair (WP 0290 00) or replace (WP 0321 00) harness 4W115. Verify fault is corrected.



END OF TASK

SYSTEM WARNING LIGHT DOES NOT GO OUT AFTER ENGINE IS STARTED. 0173 00

THIS WORK PACKAGE COVERS:

System Warning Light Does Not Go Out After Engine Is Started

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Forward air intake grilles open (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 3W202 connector from engine low oil pressure switch.
2. Turn MASTER switch ON and start engine (TM 9-2350-292-10). Watch warning light.
3. Shut down engine and turn MASTER switch OFF (TM 9-2350-292-10).

Did warning light remain lit after engine was started?

yes

no

Replace engine low engine oil pressure switch (WP 0284 00). Verify fault is corrected.

B

1. Reconnect harness 3W202 to engine low oil pressure switch.
2. Disconnect harness 3W202 connector from engine high oil temperature switch.
3. Turn MASTER switch ON and start engine (TM 9-2350-292-10). Watch warning light.
4. Shut down engine and turn MASTER switch OFF (TM 9-2350-292-10).

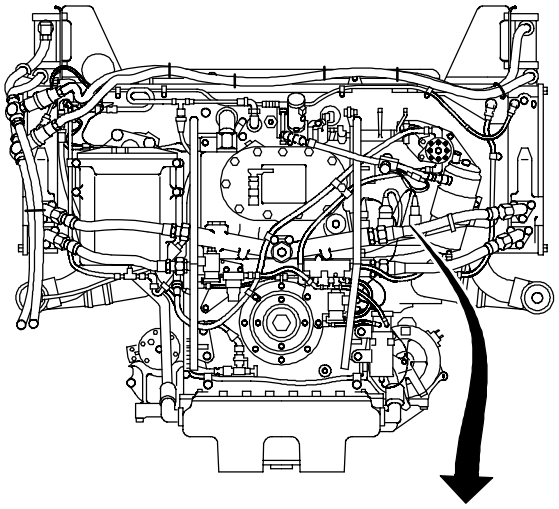
Did warning light remain lit while MASTER switch was on?

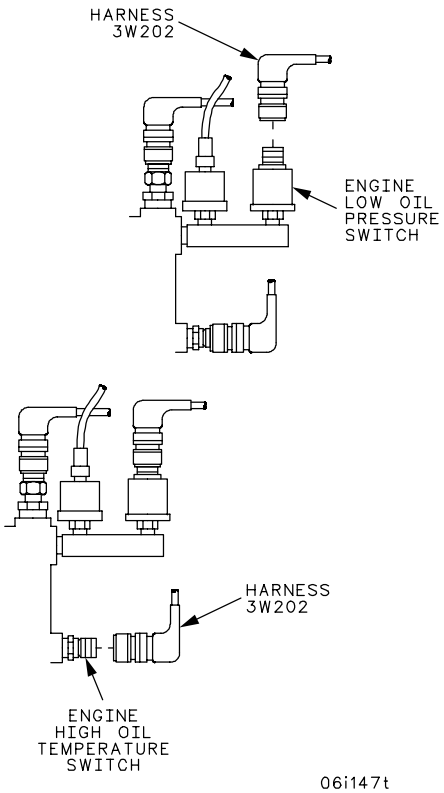
yes

no

Replace engine high oil temperature switch (WP 0284 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE





SYSTEM WARNING LIGHT DOES NOT GO OUT AFTER ENGINE IS STARTED - CONTINUED 0173 00

CONTINUED FROM STEP B

C

1. Reconnect harness 3W202 connector to engine high oil temperature switch.
2. Disconnect harness 3W202 connector from transmission high oil temperature switch.
3. Turn MASTER switch ON and start engine (TM 9-2350-292-10). Watch warning light.
4. Shut down engine and turn MASTER switch OFF (TM 9-2350-292-10).

Did warning light remain lit after engine was started?

yes

no

Replace transmission high oil temperature switch (WP 0349 00). Verify fault is corrected.

D

1. Reconnect harness 3W202 connector to transmission high oil temperature switch.
2. Open air intake grilles above battery compartment (TM 9-2350-292-10).
3. Disconnect harness 3W143 P2 from bulkhead disconnect bracket.
4. Turn MASTER switch ON and start engine (TM 9-2350-292-10). Watch warning light.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Did warning light remain lit after engine was started?

yes

no

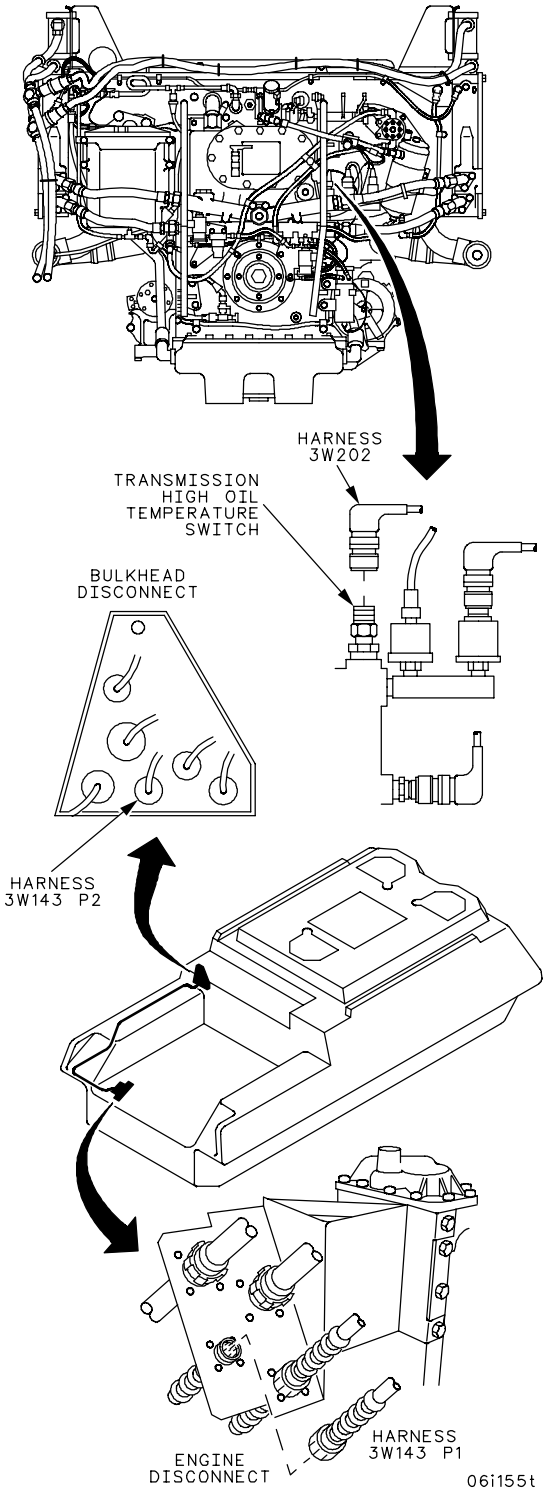
Repair (WP 0290 00) or replace (WP 0316 00) harness 4W103. Verify fault is corrected.

E

1. Reconnect harness 3W143 P2 to bulkhead disconnect bracket.
2. Disconnect harness 3W143 P1 from engine disconnect bracket.
3. Turn MASTER switch ON and start engine (TM 9-2350-292-10). Watch warning light.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Did warning light remain lit after engine was started?

CONTINUED ON NEXT PAGE



SYSTEM WARNING LIGHT DOES NOT GO OUT AFTER ENGINE IS STARTED - CONTINUED 0173 00

CONTINUED FROM STEP E

yes / no

Repair (WP 0290 00) or replace (WP 0295 00) harness 3W143. Verify fault is corrected.

F

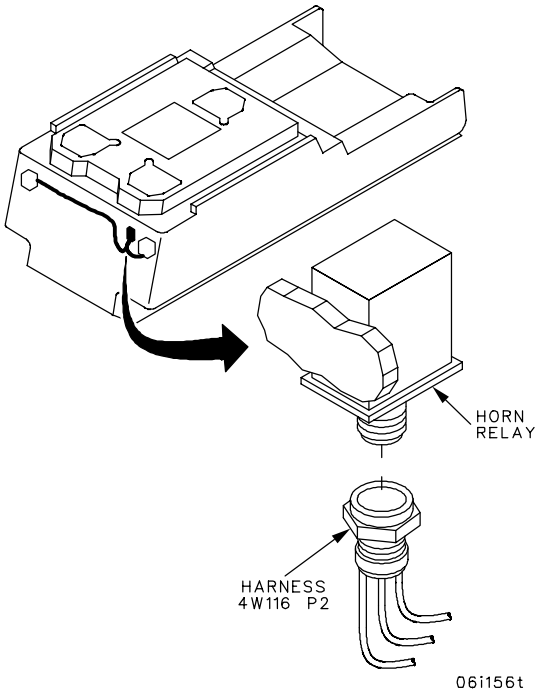
1. Reconnect harness 3W143 P1 to engine disconnect bracket.
2. Disconnect harness 4W116 P2 from horn relay.
3. Turn MASTER switch ON and start engine (TM 9-2350-292-10). Watch warning light.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Did warning light remain lit after engine was started?

yes / no

Replace low brake pressure relay K2 in accessory control panel (WP 0244 00). Verify fault is corrected.

Replace horn relay (WP 0286 00). Verify fault is corrected.



END OF TASK

LOW BRAKE PRESSURE WARNING LIGHT DOES NOT LIGHT WHEN BRAKE PRESSURE IS BELOW 450 PSI (OLD CONFIGURATION) OR 525 PSI (NEW CONFIGURATION WITH BRAKE MODULATION) 0174 00

THIS WORK PACKAGE COVERS:

Low Brake Pressure Warning Light Does Not Light When Brake Pressure Is Below 450 PSI (Old Configuration) Or 525 PSI (New Configuration With Brake Modulation)

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
LED has been replaced
Subfloor plates 13 and 16 removed (WP 0454 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect lead 48 from low brake pressure switch.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in lead 48 connector socket and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

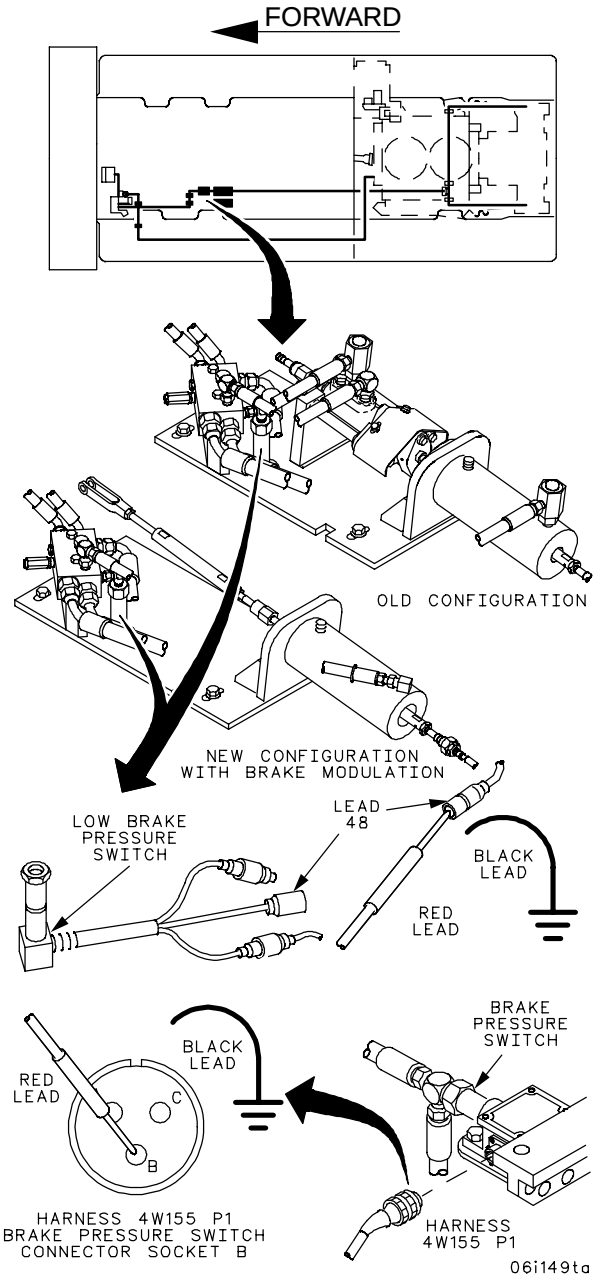
Go to Step C.

B

1. Reconnect lead 48 to low brake pressure switch.
2. Disconnect harness 4W155 P1 from brake pressure switch.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W155 P1 socket B and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

CONTINUED ON NEXT PAGE



LOW BRAKE PRESSURE WARNING LIGHT DOES NOT LIGHT WHEN BRAKE PRESSURE IS BELOW 450 PSI (OLD CONFIGURATION) OR 525 PSI (NEW CONFIGURATION WITH BRAKE MODULATION) - CONTINUED 0174 00

CONTINUED FROM STEP B

yes

Repair (WP 0290 00) or replace (WP 0328 00) lead 48 of harness 4W155. Verify fault is corrected.

no

Go to WP 0036 00 Step I.

CONTINUED FROM STEP A

C

1. Disconnect lead 591 from low brake pressure switch.
2. Place one multimeter lead on low brake pressure switch lead 48 receptacle pin and other lead in low brake pressure switch lead 591 receptacle socket. Check for continuity.

Is continuity present?

yes

D

1. Reconnect lead 48 to low brake pressure switch.
2. Disconnect harness 4W618 P2 from harness 4W617 J1.
3. Place one multimeter lead on lead 591 low brake pressure switch connector socket and other lead in harness 4W618 P2 pin G. Check for continuity.

Is continuity present?

yes

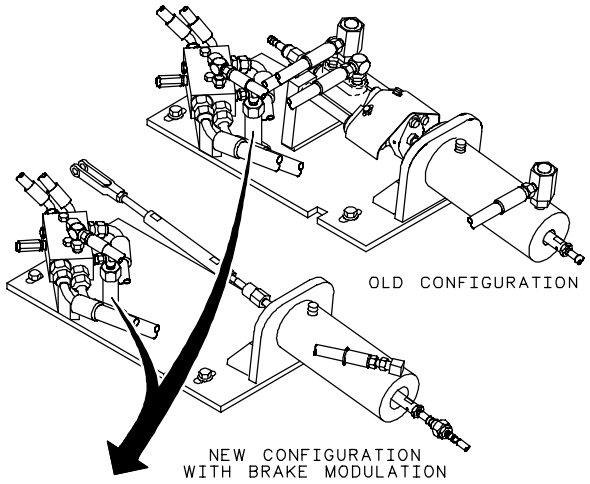
Fault corrected.

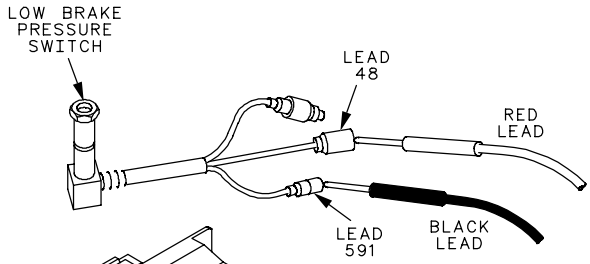
no

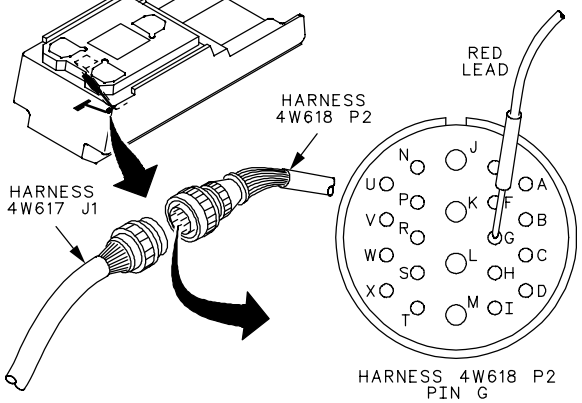
Repair (WP 0290 00) or replace (WP 0331 00) harness 4W618. Verify fault is corrected.

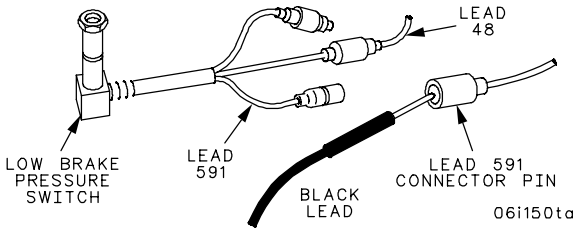
no

Replace low brake pressure switch (WP 0378 00 or WP 0379 00). Verify fault is corrected.









END OF TASK

VEHICLE HORN FAILS TO OPERATE. 0175 00

THIS WORK PACKAGE COVERS:

Vehicle Horn Fails To Operate.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

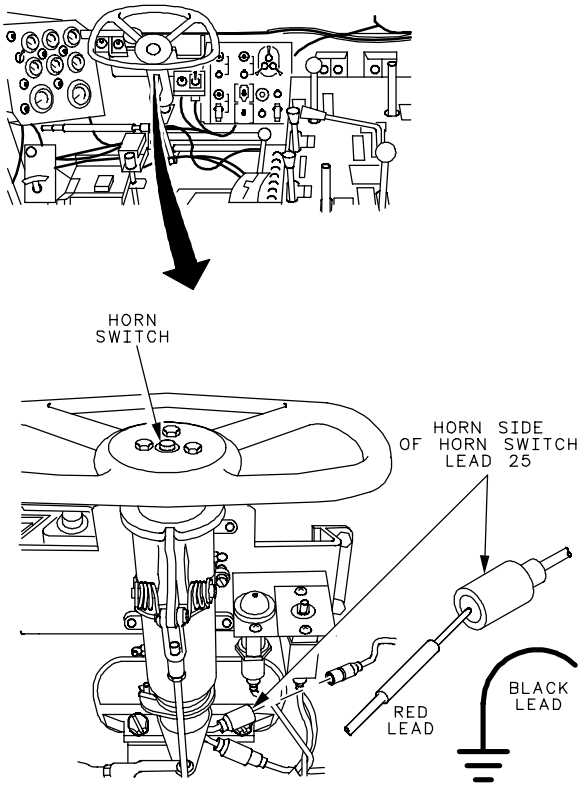
1. Disconnect lead 25 from horn side of horn switch.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on lead 25 horn switch connector pin and black lead to ground. Press horn switch and check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Go to Step D.

no



06i154td

CONTINUED ON NEXT PAGE

VEHICLE HORN FAILS TO OPERATE - CONTINUED 0175 00

CONTINUED FROM STEP A

B

1. Remove switch panel from bracket and reconnect ground strap to switch panel (WP 0242 00).
2. Disconnect lead 10 of harness 4W151 from CB6.
3. Disconnect harness 4W105 P1 from switch panel.
4. Place one multimeter lead in harness 4W151 J4 pin N and other lead in lead 10 CB6 connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151 lead 10 to CB6. Verify fault is corrected.

C

1. Disconnect lead 25/27 of harness 4W151 from other side of CB6.
2. Place one multimeter lead on each circuit breaker connector pin. Check for continuity.

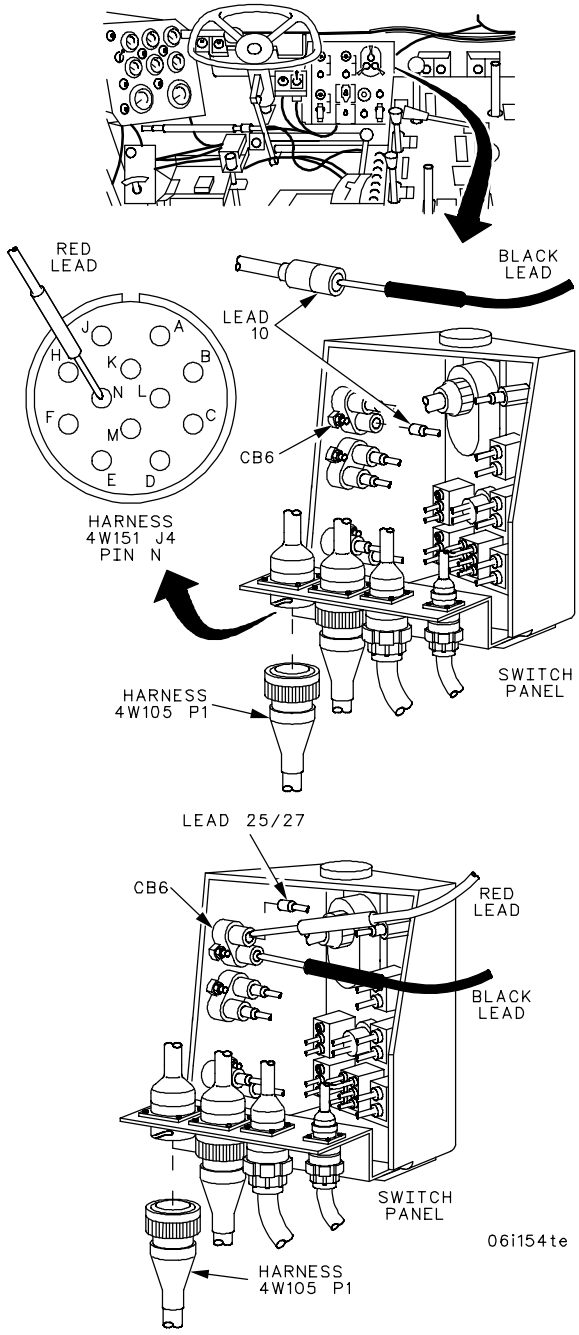
Is continuity present?

yes

no

Replace CB6 (WP 0242 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



VEHICLE HORN FAILS TO OPERATE - CONTINUED 0175 00

CONTINUED FROM STEPS A AND C

D

1. Reconnect lead 25 to horn switch.
2. Disconnect lead 25 from horn.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in lead 25 horn connector socket and black lead to ground. Press horn switch and check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Go to Step F.

E

1. Reconnect lead 25 to horn.
2. Disconnect ground lead from horn.
3. Place one multimeter lead in ground lead socket and other lead to ground. Check for continuity.

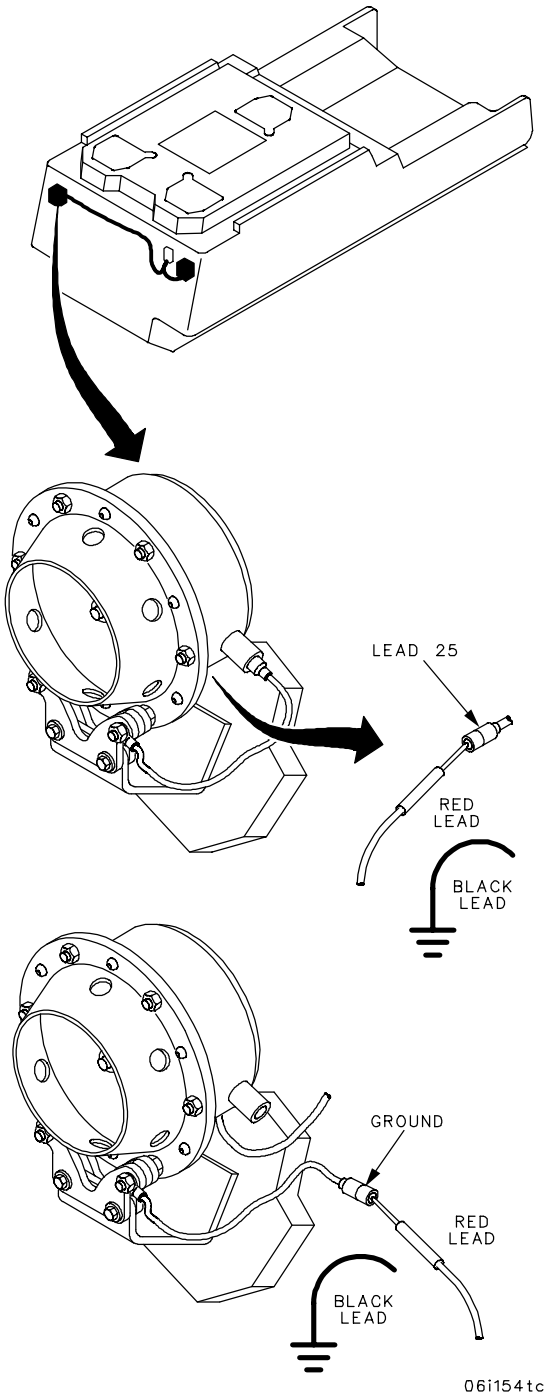
Is continuity present?

yes

Replace vehicle horn (WP 0286 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0286 00) ground lead. Verify fault is corrected.



CONTINUED ON NEXT PAGE

VEHICLE HORN FAILS TO OPERATE - CONTINUED 0175 00

CONTINUED FROM STEP D

F

1. Disconnect harness 4W105 lead 25 from switch panel side of horn switch.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in lead 25 connector socket and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Go to Step H.

no

G

1. Disconnect harness 4W105 P1 from switch panel.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead on harness 4W105 P1 socket N and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

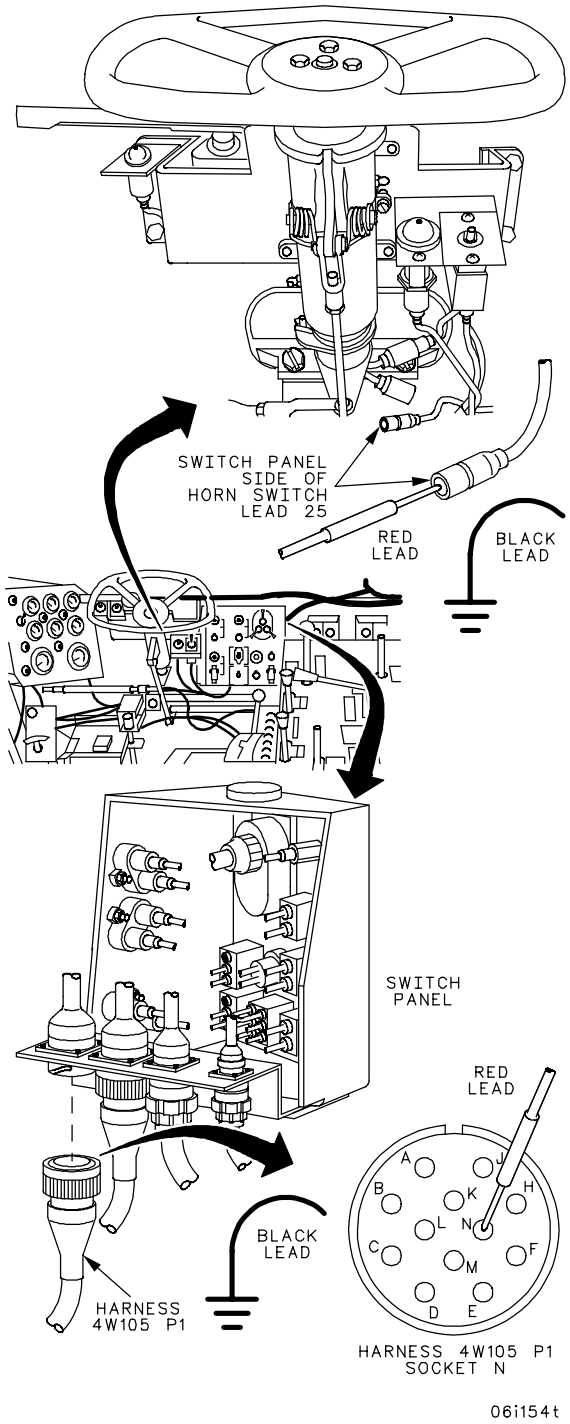
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0314 00) harness 4W100. Verify fault is corrected.

CONTINUED ON NEXT PAGE



VEHICLE HORN FAILS TO OPERATE - CONTINUED 0175 00

CONTINUED FROM STEPS H AND G

H

1. Disconnect lead 25/27 to CB6.
2. Place one multimeter lead in lead 25/27 connector to CB6 and other lead in harness 4W151 J4 pin F. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0242 00) harness 4W151 lead 25/27 from CB6 to harness 4W151 J1. Verify fault is corrected.

I

1. Reconnect lead 25/27 to CB6.
2. Place one multimeter lead on harness 4W105 P1 socket F and other lead in lead 25 horn switch connector socket. Check for continuity.

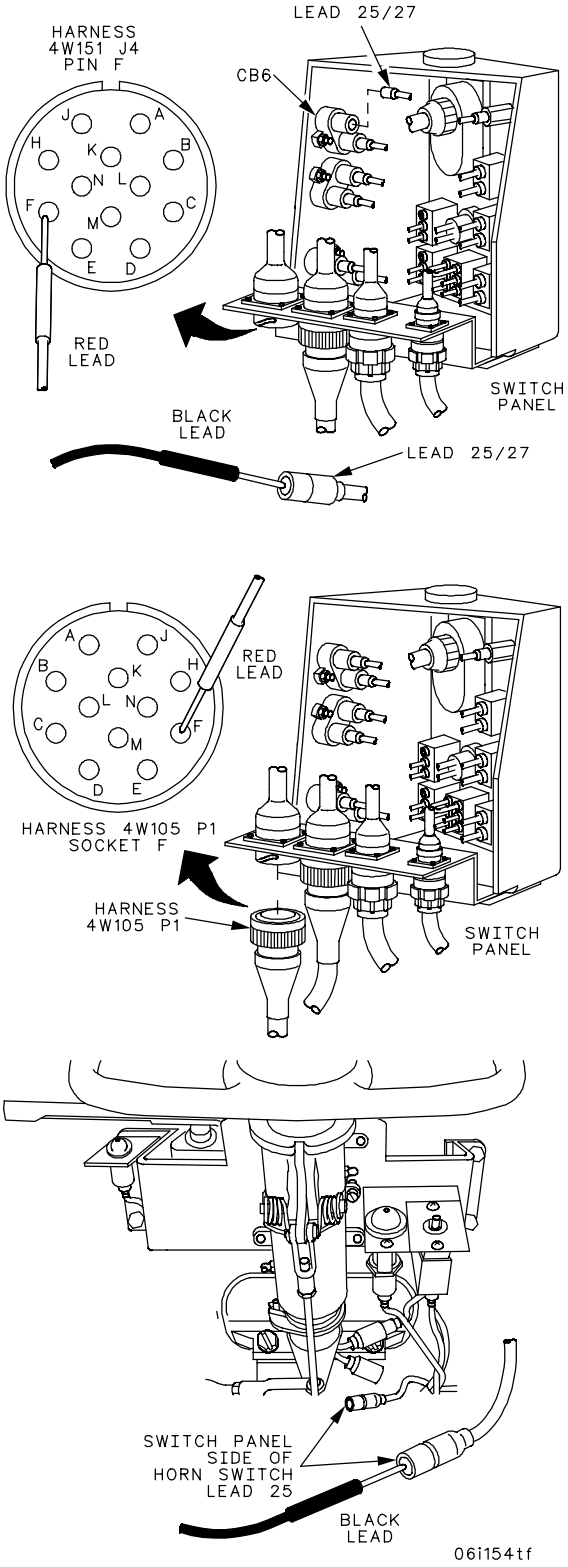
Is continuity present?

yes

no

Replace horn switch (WP 0286 00). Verify fault is corrected.

Repair (WP 0290 00) or replace (WP 0317 00) harness 4W105. Verify fault is corrected.



END OF TASK

SYSTEM WARNING INDICATOR WILL NOT COME ON WHEN ACTIVATING WINCH TEST SWITCH. 0176 00

THIS WORK PACKAGE COVERS:

System Warning Indicator Will Not Come On When Activating Winch Test Switch.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Disconnect harness 4W617 lead 10 from winch test switch (WP 0330 00).
2. Turn vehicle MASTER switch ON (TM 9-2350-292-10).
3. Place red multimeter lead in harness 4W617 lead 10 connector and black multimeter lead to ground. Check for voltage.
4. Turn vehicle MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no — Go to Step G.

B

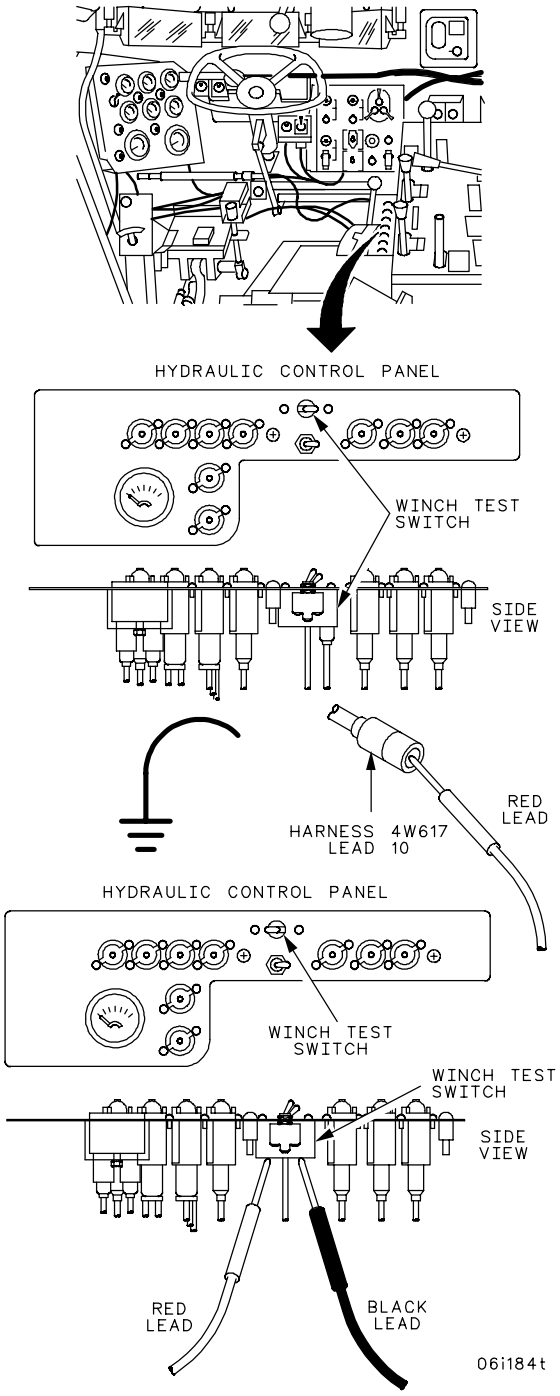
1. Disconnect harness 4W617 lead 359 from winch test switch (WP 0330 00).
2. Hold winch test switch in the ON position (TM 9-2350-292-10) and place one multimeter lead on each winch test switch connector. Check for continuity.
3. Release winch test switch.

Is continuity present?

yes

no — Replace winch test switch (WP 0245 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



SYSTEM WARNING INDICATOR WILL NOT COME ON WHEN ACTIVATING WINCH TEST SWITCH - CONTINUED. 0176 00

CONTINUED FROM STEP B

C

1. Disconnect harness 4W618 connector P2 from harness 4W617 connector J1 (WP 0331 00).
2. Place one multimeter lead in harness 4W617 lead 359 connector and other multimeter lead in harness 4W617 connector J1 socket J. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0330 00) harness 4W617. Verify fault is corrected.

D

1. Disconnect harness 4W618 connector P1 from PTO/accessory panel (WP 0331 00).
2. Place one multimeter lead on harness 4W618 connector P2 pin J and other lead in harness 4W618 connector P1 socket 8. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0331 00) harness 4W618. Verify fault is corrected.

E

1. Open PTO/accessory panel (WP 0244 00).
2. Place one multimeter lead on panel connector J2 pin 8 and other lead on terminal board T14 terminal A. Check for continuity.

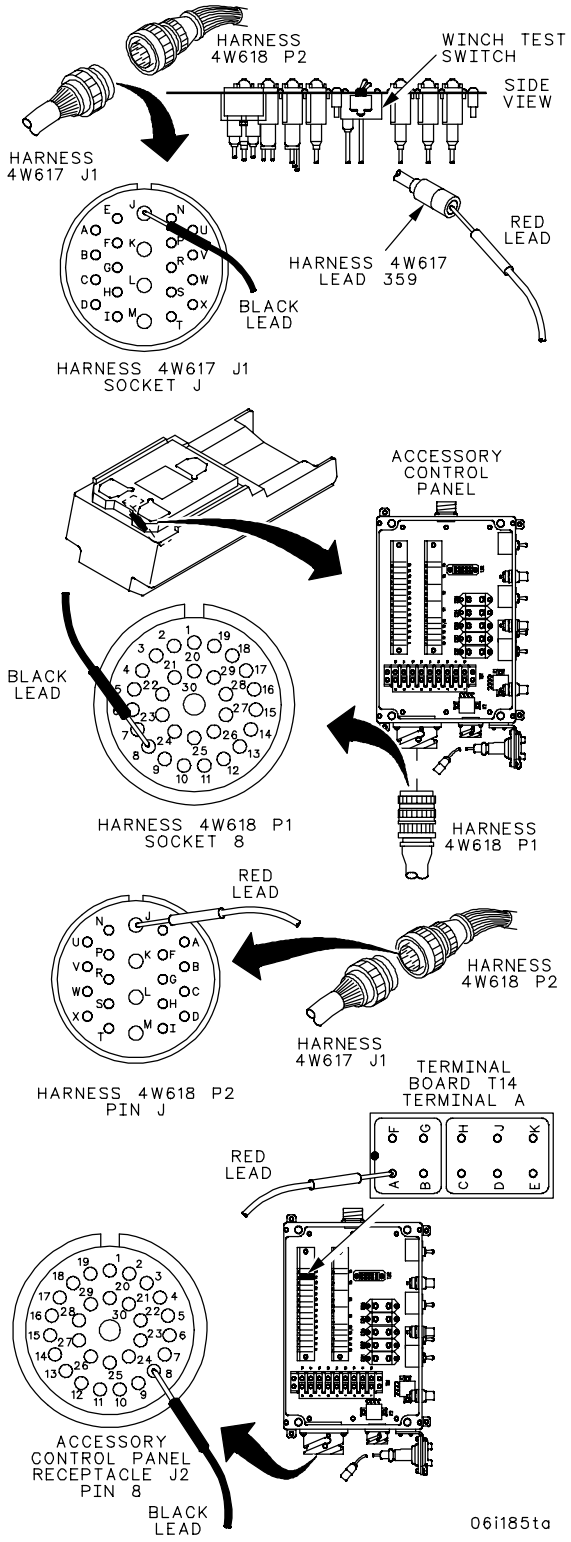
Is continuity present?

yes

no

Replace lead 359 from connector J2 pin 8 to terminal board T14 terminal A (WP 0244 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



SYSTEM WARNING INDICATOR WILL NOT COME ON WHEN ACTIVATING WINCH TEST SWITCH - CONTINUED. 0176 00

CONTINUED FROM STEP E

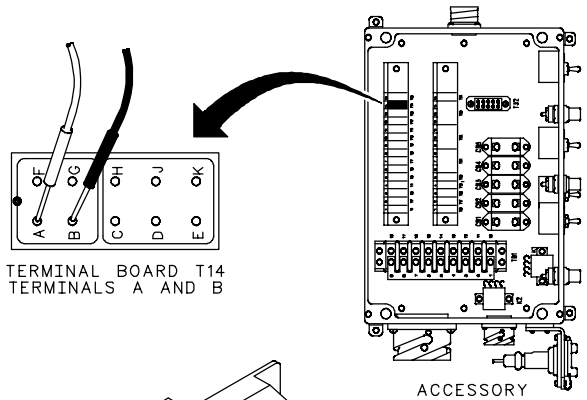
F Place one multimeter lead on terminal board T14 terminal A and other multimeter lead on terminal board T14 terminal B. Check for continuity.

Is continuity present?

yes

no

Replace terminal board T14 (WP 0244 00). Verify fault is corrected.



CONTINUED FROM STEP A

G

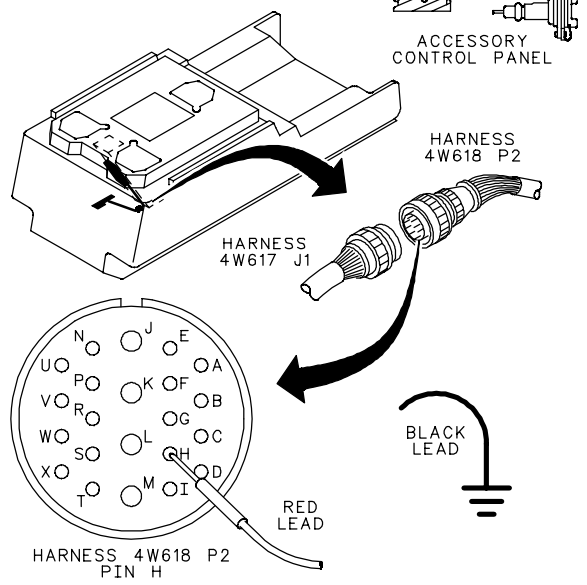
1. If not disconnected, disconnect harness 4W618 connector P2 from harness 4W617 connector J1 (WP 0331 00).
2. Turn vehicle MASTER switch ON (TM 9-2350-292-10).
3. Place red multimeter lead on harness 4W618 connector P2 pin H and black multimeter lead to ground. Check for voltage.
4. Turn vehicle MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0330 00) harness 4W617. Verify fault is corrected.



H

1. If not disconnected, disconnect harness 4W618 connector P1 from PTO/accessory panel (WP 0331 00).
2. Turn vehicle MASTER switch ON (TM 9-2350-292-10).
3. Place red multimeter lead on PTO/accessory panel connector J2 pin 18 and black multimeter lead to ground. Check for voltage.
4. Turn vehicle MASTER switch OFF (TM 9-2350-292-10).

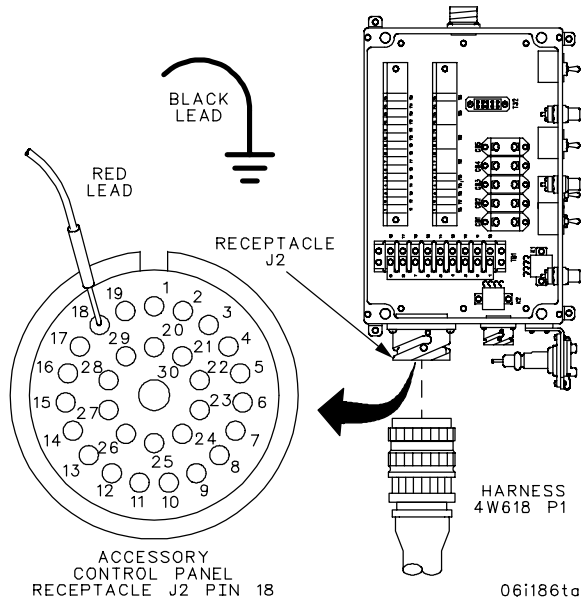
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0331 00) harness 4W618. Verify fault is corrected.

CONTINUED ON NEXT PAGE



SYSTEM WARNING INDICATOR WILL NOT COME ON WHEN ACTIVATING WINCH TEST SWITCH - CONTINUED. 0176 00

CONTINUED FROM STEP H

I

1. Open PTO/accessory panel (WP 0244 00).
2. Place one multimeter lead on PTO/accessory panel connector J2 pin 18 and other multimeter lead on terminal board T22 terminal A. Check for continuity.

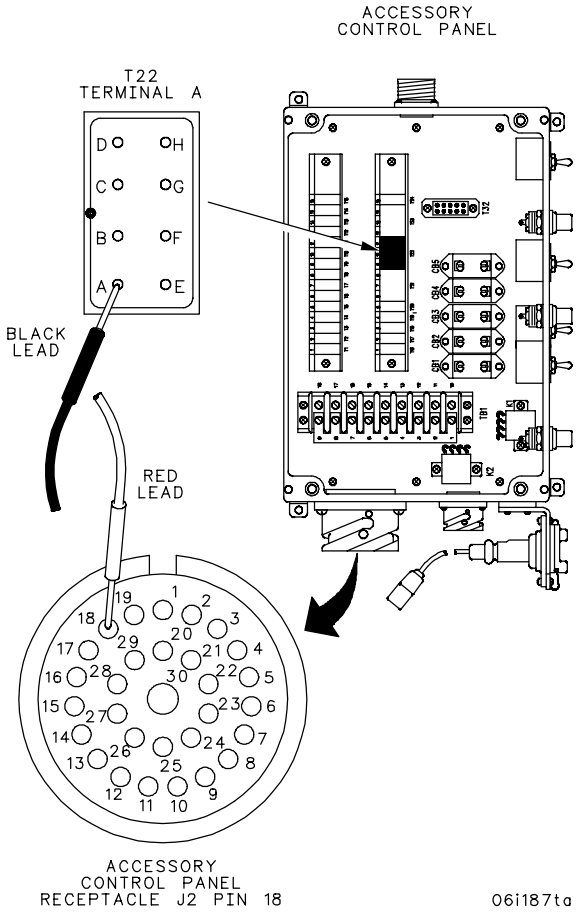
Is continuity present?

yes

Replace terminal board T22 (WP 0224 00). Verify fault is corrected.

no

Replace lead 10 from PTO/accessory panel pin 18 to terminal board T22 terminal A (WP 0244 00). Verify fault is corrected.



END OF TASK

LOW BRAKE PRESSURE WARNING LIGHT COMES ON AND WARNING HORN SOUNDS. 0177 00

THIS WORK PACKAGE COVERS:

Low Brake Pressure Warning Light Comes On And Warning Horn Sounds.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)
Reducer (item 95, WP 0716 00)
Plug, 1/2 inch (2) (item 69, WP 0716 00)
0-4000 psi testing gauge assembly (item 82, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Subfloor plate 13 removed (WP 0454 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Pump brake pedal several times (TM 9-2350-292-10).
2. Read brake pressure gauge on power boost manifold.
3. Turn vehicle MASTER switch OFF (TM 9-2350-292-10).

Did pressure gauge 500 psi (old configuration) or 550 psi (new configuration with brake modulation?

yes

no

Go to Step F.

B

1. Disconnect harness 4W155 lead 48 from low brake pressure warning switch (WP 0328 00).
2. Disconnect harness 2W601 lead 591 from low brake pressure warning switch (WP 0291 00).
3. Place one multimeter lead in low brake pressure warning switch lead 48 connector and place other multimeter lead in low brake pressure warning switch lead 591. Check for continuity.

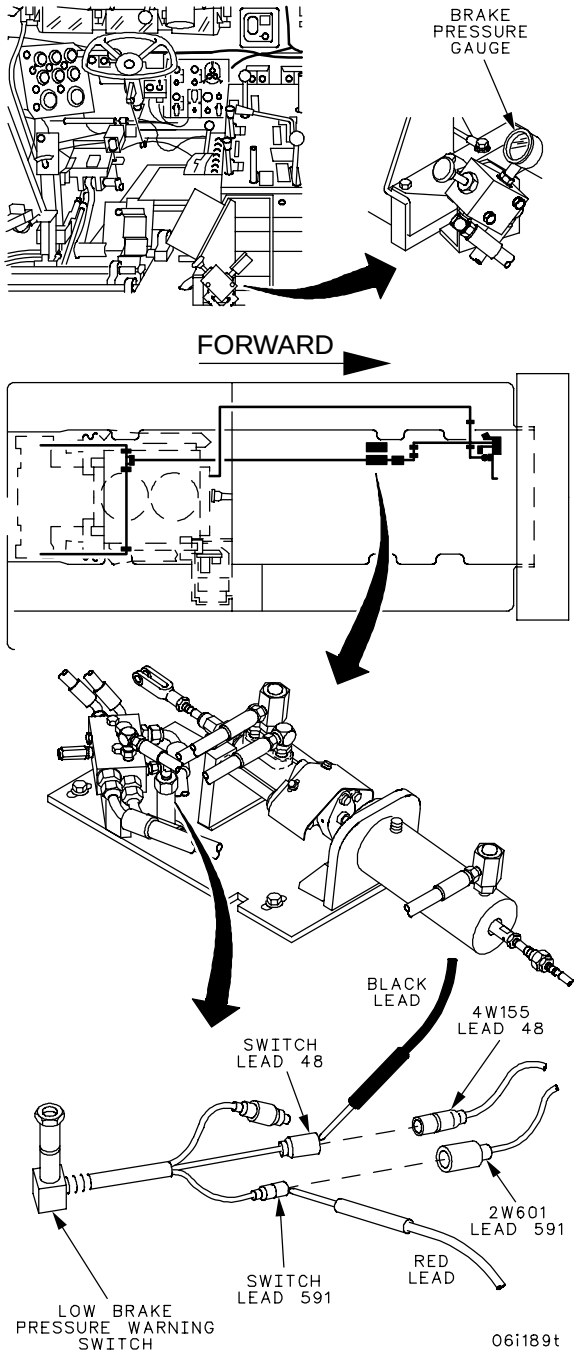
Is continuity present?

yes

no

Replace low brake pressure warning switch (WP 0378 00 or WP 0379 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



LOW BRAKE PRESSURE WARNING LIGHT COMES ON AND WARNING HORN SOUNDS - CONTINUED 0177 00

CONTINUED FROM STEP B

C

1. Disconnect harness 2W601 connector P1 from PTO/accessory panel (WP 0291 00).
2. Place one multimeter lead in harness 2W601 connector P1 socket D and place other multimeter lead in harness 2W601 lead 591 connector. Check for resistance.

Is approximately 0 ohms resistance present?

yes

no

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.

D

1. Open PTO/accessory panel (WP 0244 00).
2. Place one multimeter lead on PTO/accessory panel connector J1 pin D and other lead on diode terminal T3 terminal D. Check for resistance.

Is approximately 0 ohms resistance present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 591 from PTO/accessory panel connector J1 to diode terminal T3 terminal D. Verify fault is corrected.

E

Place one multimeter lead on relay K2 terminal A2 and place other multimeter lead on relay K2 terminal A1. Check for continuity.

Is continuity present?

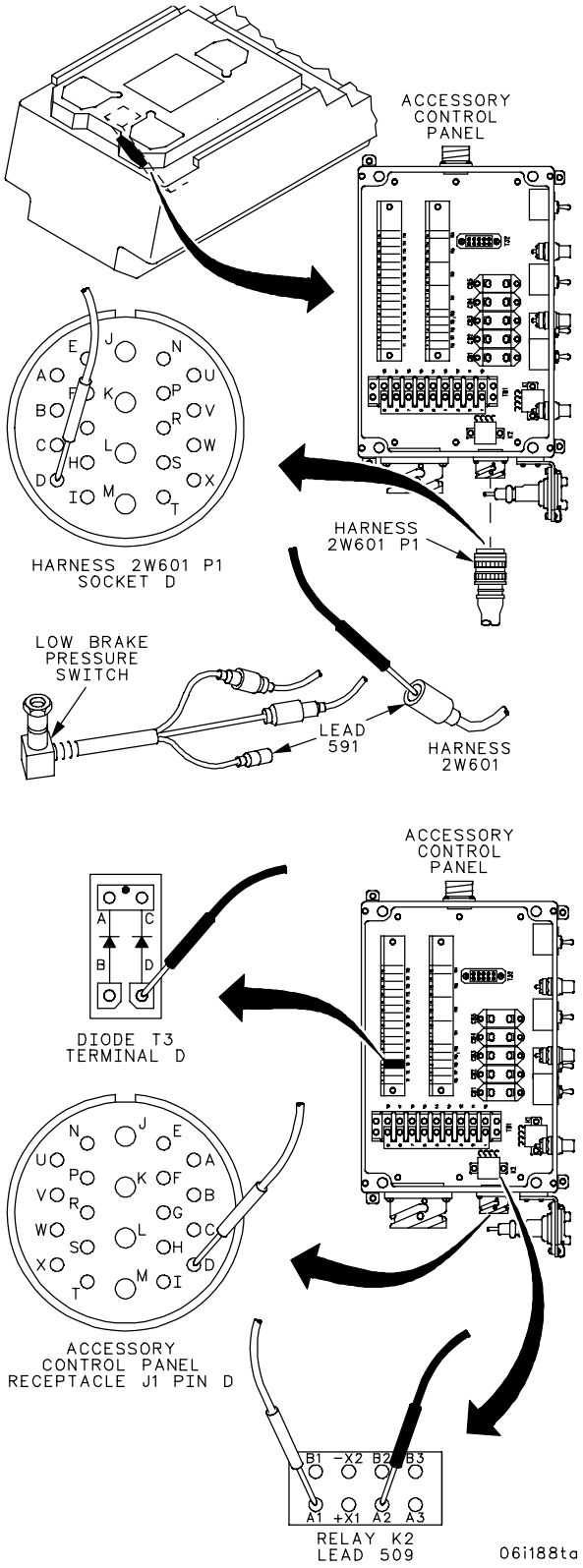
yes

no

Replace relay K2 (WP 0244 00). Verify fault is corrected.

Replace terminal board T20 (WP 0244 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



LOW BRAKE PRESSURE WARNING LIGHT COMES ON AND WARNING HORN SOUNDS - CONTINUED 0177 00

CONTINUED FROM STEP A



F Check brake system for damage or leaking hoses and fittings (WP 0355 00 through WP 0384 00).

Are all hoses and fittings free of damage and leaks?

yes

no

Repair or replace damaged or leaking hoses and fittings (WP 0355 00 through WP 0384 00). Verify fault is corrected.

G

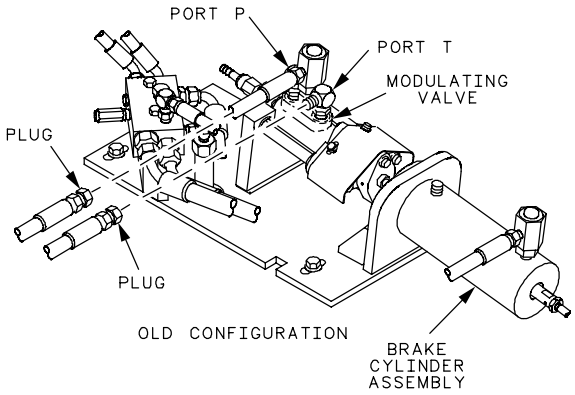
1. Disconnect hose from port P of brake modulating valve (WP 0360 00 or WP 0361 00 or WP 0362 00). Plug hose.
2. Disconnect hose from port T of brake modulating valve (WP 0360 00 or WP 0361 00 or WP 0362 00). Plug hose.
3. Turn vehicle MASTER switch ON (TM 9-2350-292-10).
4. Read brake pressure gauge on power boost manifold.
5. Turn vehicle MASTER switch OFF (TM 9-2350-292-10).

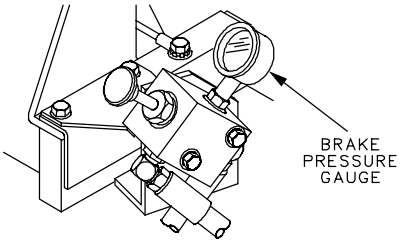
Did brake pressure gauge read 500 psi (old configuration) or 550 psi (new configuration with brake modulation) or greater?

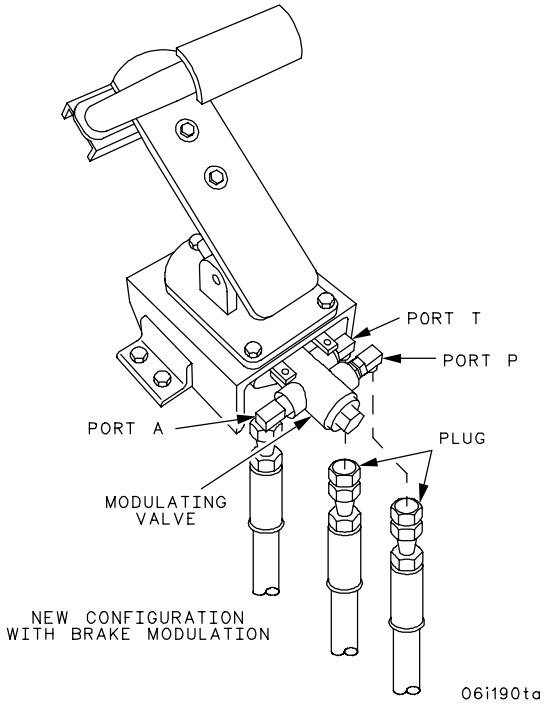
yes

no

Replace brake modulating valve (WP 0376 00 or WP 0377 00). Verify fault is corrected.







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LOW BRAKE PRESSURE WARNING LIGHT COMES ON AND WARNING HORN SOUNDS - CONTINUED 0177 00

CONTINUED FROM STEP G

H

1. Remove plugs from hoses and reconnect hoses to brake modulating valve ports P and T (WP 0360 00, WP 0361 00, or WP 0362 00).
2. Disconnect brake manifold supply hose at brake pump and motor (WP 0360 00, WP 0361 00 or WP 0362 00).
3. Install 0-4000 psi testing gauge assembly with reducer in brake pump and motor.
4. Turn vehicle MASTER switch ON (TM 9-2350-292-10).
5. Read test gauge assembly installed on brake pump and motor.
6. Turn vehicle MASTER switch OFF (TM 9-2350-292-10).

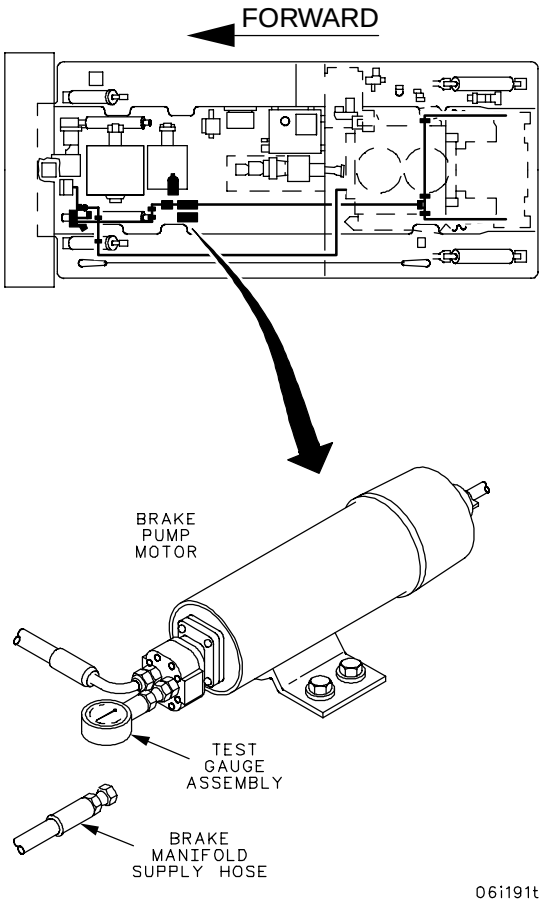
Did test gauge assembly read 500 psi (old configuration) or 550 psi (new configuration with brake modulation) or greater?

yes

Replace brake manifold (WP 0374 00 or WP 0375 00). Verify fault is corrected.

no

Replace brake pump and motor (WP 0381 00). Verify fault is corrected.



END OF TASK

WINCH ELECTRICAL SYSTEM OVERVIEW AND DIAGRAMS. 0178 00

THIS WORK PACKAGE COVERS:

Winch Electrical System Overview And Diagrams

The electrical system for the main winch consists of a 20-amp circuit breaker, two level winder warning switches, two winch drum warning switches, a payout limit warning switch, a payin solenoid valve, a WINCH OVERRIDE switch, A LEVEL WINDER MALFUNCTION indicator, a WINCH DRUM MALFUNCTION indicator, a PAYOUT LIMIT indicator, seven diodes, a 15-amp circuit breaker, and related electrical wiring. With the main engine running and the MASTER switch set to ON, system power (+28 V dc) is supplied to the winch electrical circuits in the hydraulic control panel. and through a 20-amp circuit breaker in the switch panel to warning switches on the winch.

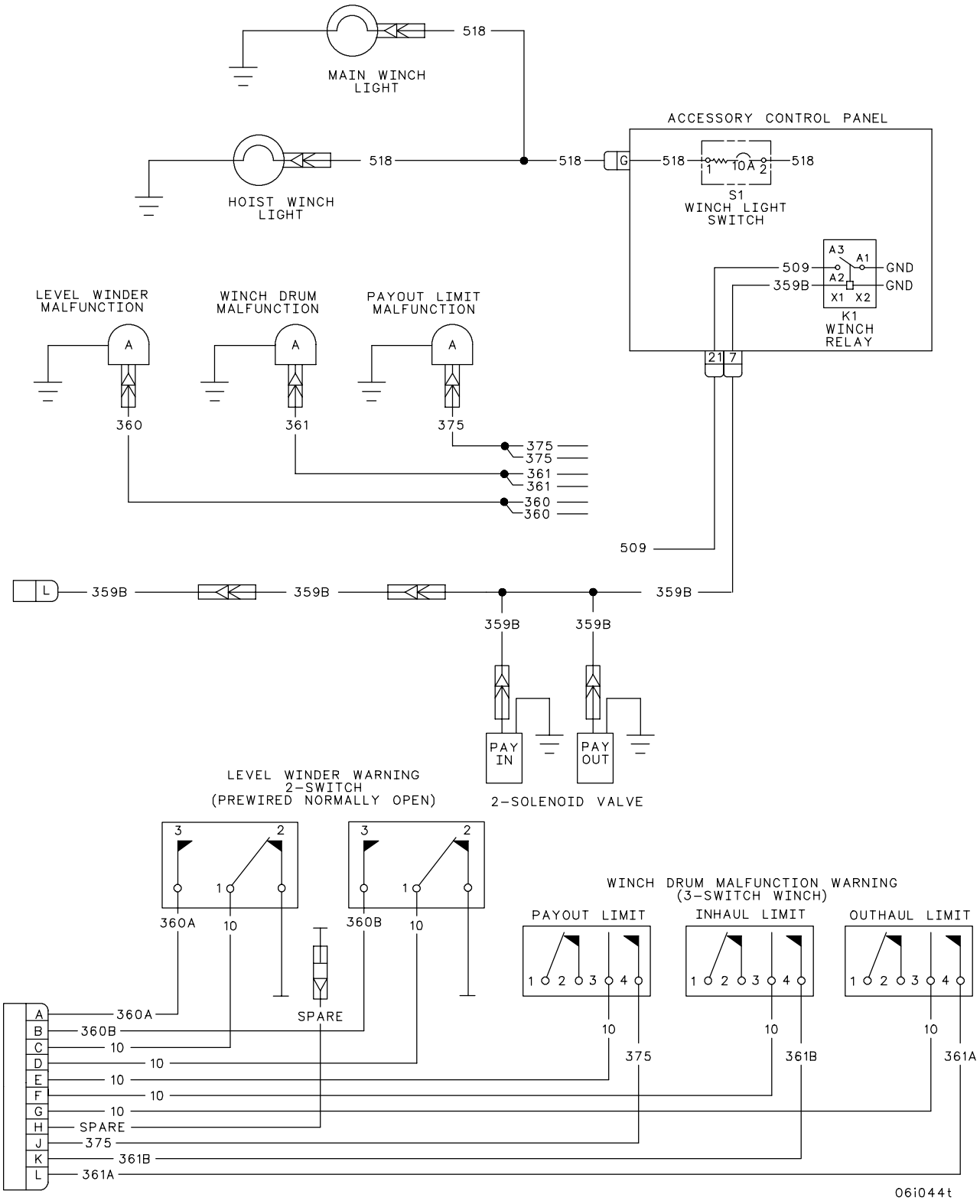
The winch electrical system detects level winder drum malfunctions and the payout limit of the main winch wire rope. The LEVEL WINDER MALFUNCTION indicator lights if an improper alinement of the wire rope is detected. Likewise, the WINCH DRUM MALFUNCTION indicator lights if an irregular wrapping sequence onto the winch drum is detected. The PAYOUT LIMIT indicator lights if less than four wraps of the wire rope remain of the main winch drum. When any of these conditions are detected, main winch operation is automatically shut down and the SYSTEM WARNING indicator is lit. If the main engine is running, the warning horn will also sound.

The WINCH TEST switch is used to check the automatic shut down procedure. When the switch is held in the TEST position, solenoid valves are engaged to stop main winch operation and light the SYSTEM WARNING indicator.

The WINCH OVERRIDE switch temporarily restores winch operation after an automatic shut down to permit the operator to payin or payout the wire rope to correct the malfunction and complete winching operation.

The relationship of the winch electrical components is shown in the following diagram.

WINCH ELECTRICAL SYSTEM OVERVIEW AND DIAGRAMS - CONTINUED 0178 00



END OF TASK

LEVEL WINDER MALFUNCTION INDICATOR FAILS TO LIGHT WHEN LEVEL WINDER MALFUNCTIONS. 0179 00

THIS WORK PACKAGE COVERS:

Level Winder Malfunction Indicator Fails To Light When Level Winder Malfunctions

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Main winch and spade assembly removed from vehicle (WP 0497 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Check level wind guide to make sure warning switches make contact with winder roller guide.

Do switches make contact?

yes

no

Adjust level winder warning switch (WP 0509 00). Verify fault is corrected.

B

1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Press and hold lamp test switch on accessory control panel in the TEST position.
3. Turn MASTER switch OFF (TM 9-2350-292-10).

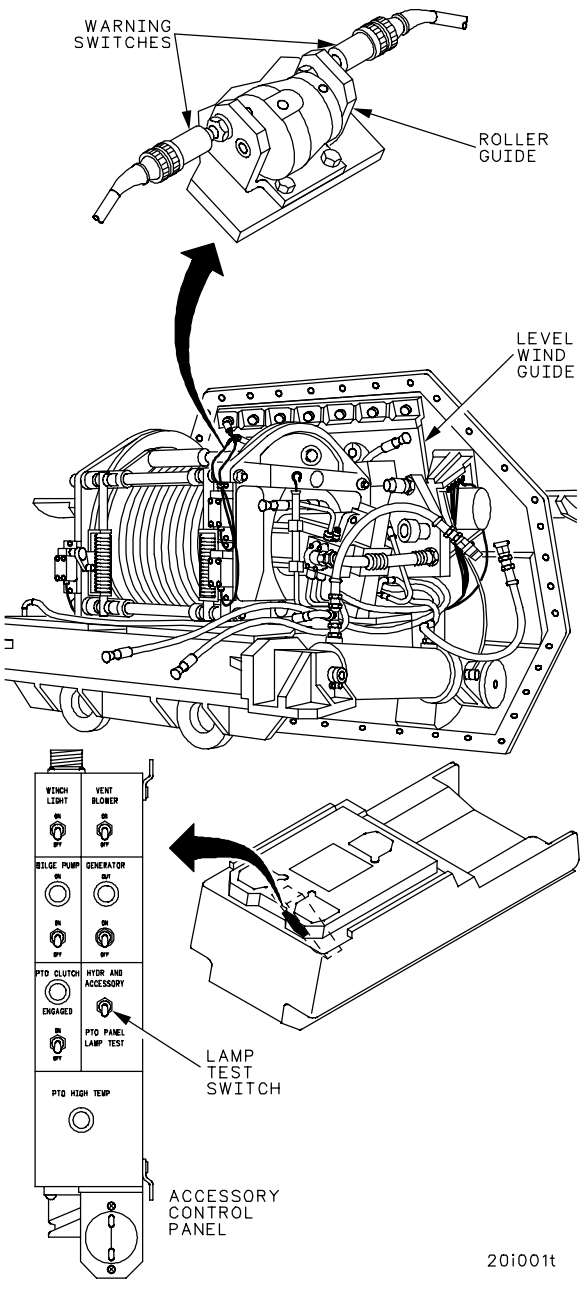
Does LEVEL WINDER MALFUNCTION indicator light?

yes

no

Replace indicator lamp (WP 0244 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



LEVEL WINDER MALFUNCTION INDICATOR FAILS TO LIGHT WHEN LEVEL WINDER MALFUNCTIONS - CONTINUED 0179 00

CONTINUED FROM STEP B

C

1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Place multimeter red lead on accessory control panel receptacle J1 pin S and H (one at a time) while holding black lead to ground. Check for voltage.
3. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present at both checks?

yes

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.

no

D

1. Disconnect harness 2W601 J1 from harness 2W602 P1.
2. Reconnect harness 2W601 P1 to accessory control panel.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place red multimeter lead on harness 2W601 J1 socket C and D (one at a time) while holding black lead to ground. Check for voltage.
5. Turn MASTER swtich OFF (TM 9-2350-292-10).

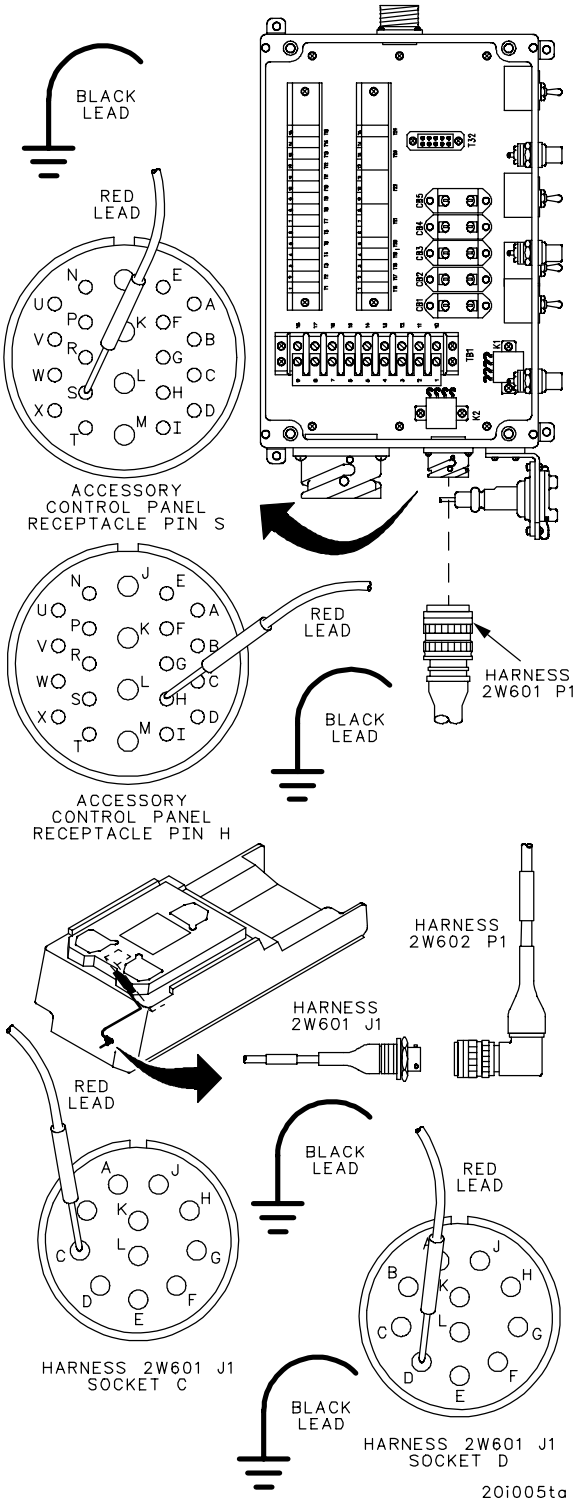
Is 24 V dc present at both checks?

yes

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.

no

CONTINUED ON NEXT PAGE



LEVEL WINDER MALFUNCTION INDICATOR FAILS TO LIGHT WHEN LEVEL WINDER MALFUNCTIONS - CONTINUED 0179 00

CONTINUED FROM STEP D

E

1. Disconnect harness 2W602 P2 and 2W602 P3 from level winder warning switches.
2. Place one multimeter lead in harness 2W602 P2 socket B and other lead on harness 2W602 P1 pin D. Check continuity. Place one multimeter lead in harness 2W602 P3 socket B and other lead on harness 2W602 P1 pin C. Check for continuity.

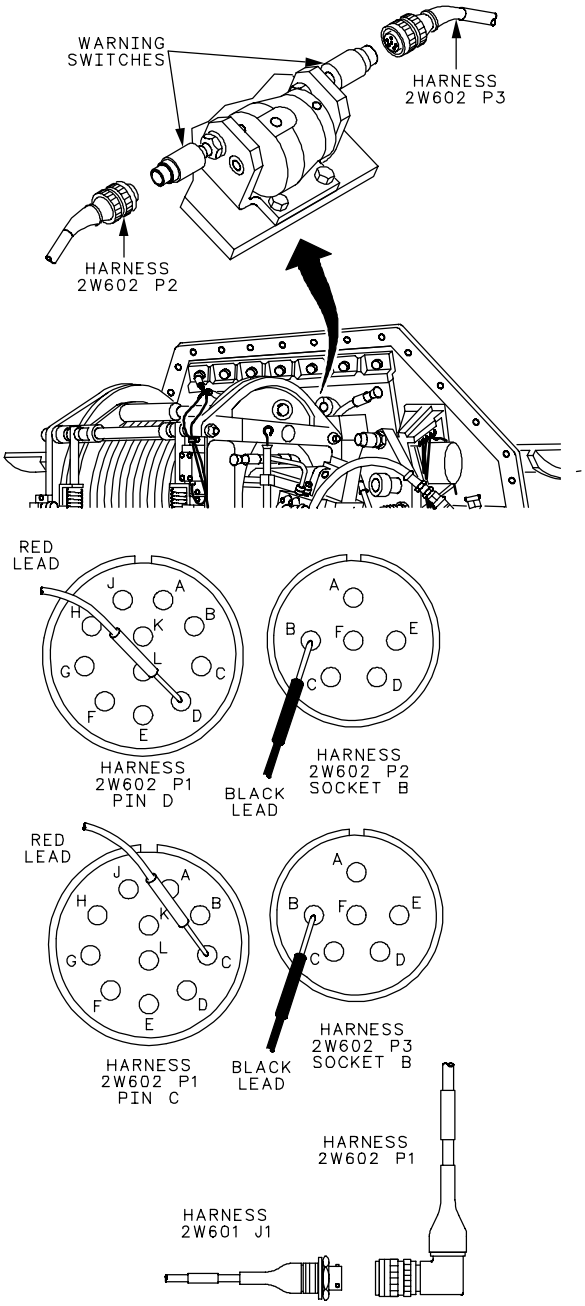
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0292 00) harness 2W602. Verify fault is corrected.

CONTINUED ON NEXT PAGE



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LEVEL WINDER MALFUNCTION INDICATOR FAILS TO LIGHT WHEN LEVEL WINDER MALFUNCTIONS - CONTINUED 0179 00

CONTINUED FROM STEP E

F

1. Place one multimeter lead on harness 2W602 P1 socket A and other lead on harness 2W602 P3 socket A. Check for continuity.
2. Place one multimeter lead on harness 2W602 P1 socket B and other lead on harness 2W602 P2 socket A. Check for contunuity.

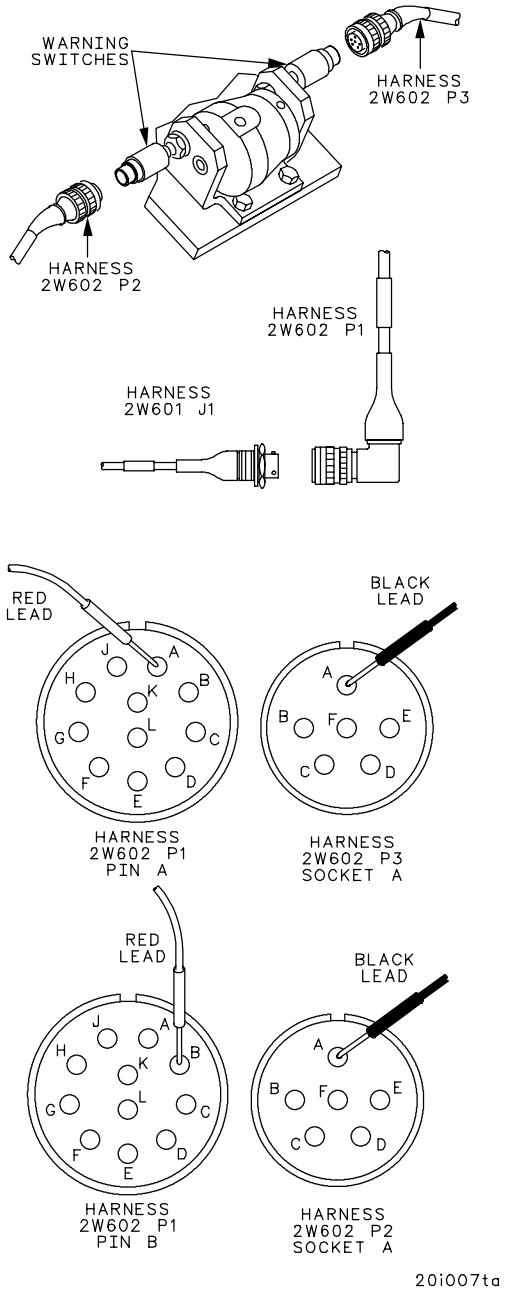
Is continuity present?

yes

Replace level winder warning switch (WP 0251 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0292 00) harness 2W602. Verify fault is corrected.



END OF TASK

WINCH DRUM MALFUNCTION INDICATOR FAILS TO LIGHT WHEN WINCH DRUM MALFUNCTIONS. 0180 00

THIS WORK PACKAGE COVERS:

Winch Drum Malfunction Indicator Fails To Light When Winch Drum Malfunctions

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

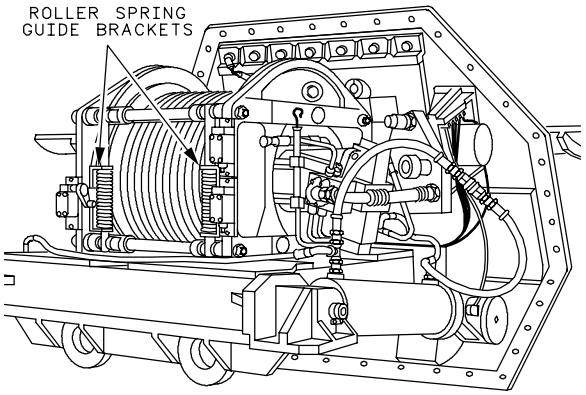
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Main winch and spade assembly removed from vehicle (WP 0497 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



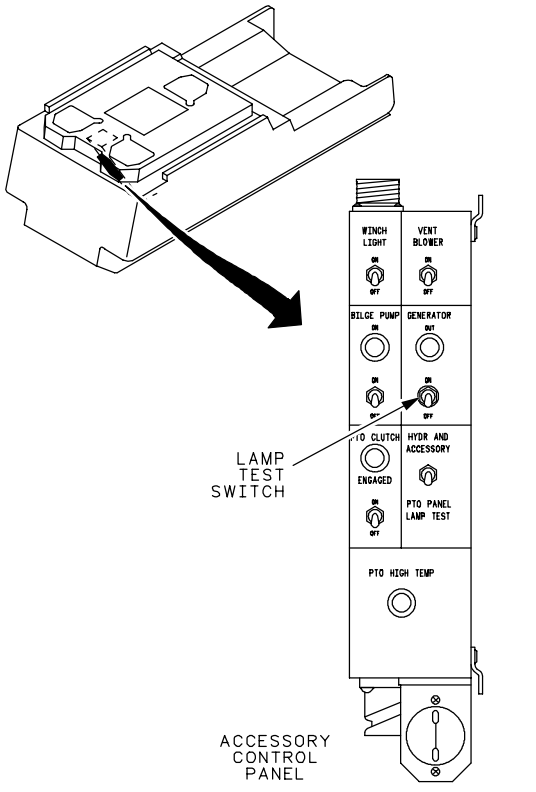
A Check winch roller spring guide brackets to make sure they make contact with the winch layer limit switches.

Do switches make contact?

yes

no

Adjust layer limit switches (WP 0503 00). Verify fault is corrected.



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B

1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Hold the LAMP TEST switch on the accessory control panel in the TEST position.
3. Release the lamp test switch.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Does WINCH DRUM MALFUNCTION indicator light?

yes

no

Replace indicator lamp (WP 0244 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE

WINCH DRUM MALFUNCTION INDICATOR FAILS TO LIGHT WHEN WINCH DRUM MALFUNCTIONS - CONTINUED 0180 00

CONTINUED FROM STEP B

C

1. Disconnect harness 2W602 lead 10 connectors from winch warning limit switches.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 2W602 lead 10 connector (one at a time) while holding black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present at both checks?

yes → Go to Step G.

no →

D

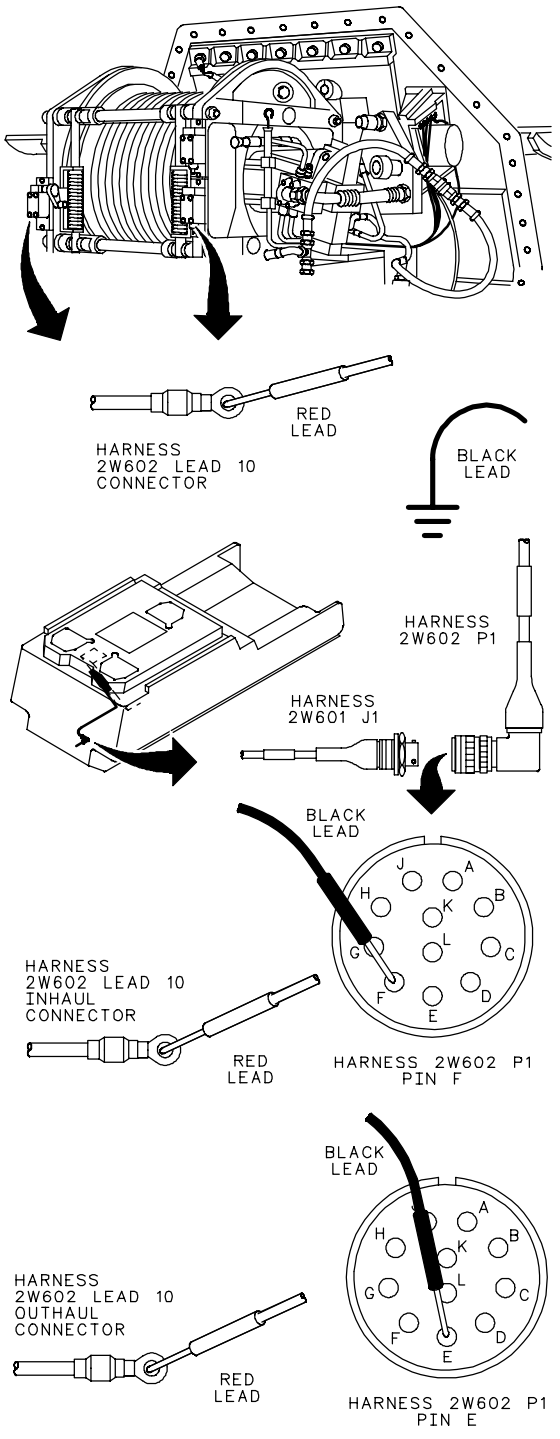
1. Disconnect harness 2W602 P1 from harness 2W601 J1.
2. Place one multimeter lead in inhaul switch lead 10 connector and other lead on harness 2W602 P1 pin F.
3. Place one multimeter lead in outhaul switch lead 10 connector and other lead on harness 2W602 P1 pin E. Check for continuity.

Is continuity present at both checks?

yes →

no → Repair (WP 0290 00) or replace (WP 0292 00) harness 2W602. Verify fault is corrected.

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WINCH DRUM MALFUNCTION INDICATOR FAILS TO LIGHT WHEN WINCH DRUM MALFUNCTIONS - CONTINUED 0180 00

CONTINUED FROM STEP D

E

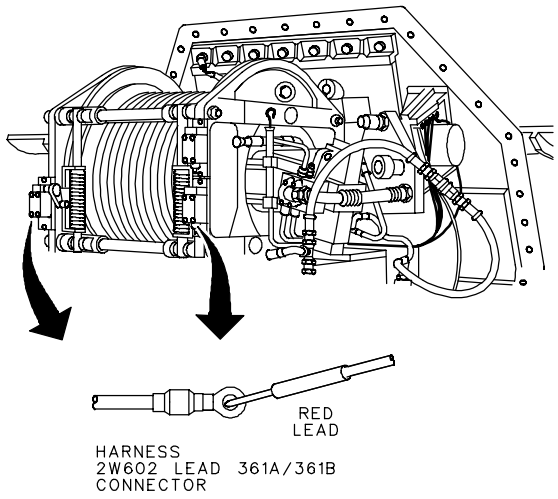
1. Disconnect lead 361A and 361B from outhaul and inhaul switches.
2. Place one multimeter lead on harness 2W602 P1 pin L and other lead on outhaul switch lead 361A connector.
3. Place one multimeter lead on harness 2W602 P1 pin K and other lead on inhaul switch lead 361B connector. Check for continuity.

Is continuity present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0292 00) harness 2W602. Verify fault is corrected.



F

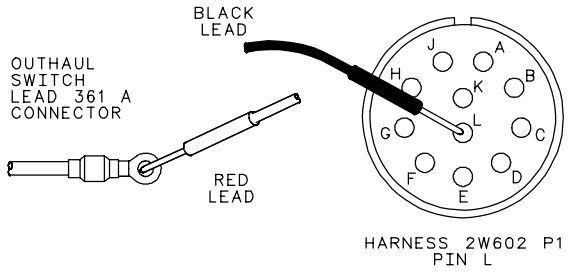
Place one multimeter lead on switch terminal 3 connector and other lead on switch terminal 4 connector of each switch. Check for continuity.

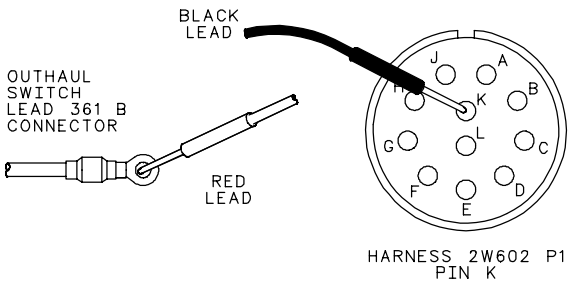
Is continuity present at both checks?

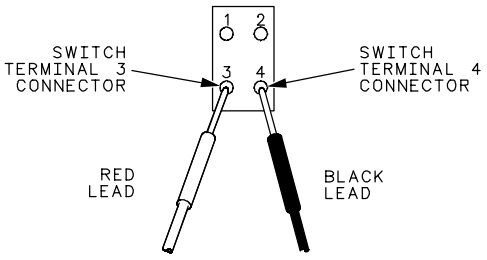
yes

no

Replace winch drum warning switch (WP 0501 00). Verify fault is corrected.







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WINCH DRUM MALFUNCTION INDICATOR FAILS TO LIGHT WHEN WINCH DRUM MALFUNCTIONS - CONTINUED 0180 00

CONTINUED FROM STEP C AND F

G

1. Reconnect lead 10 connectors and lead 361A and 361B connectors of harness 2W602 to warning switches.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 2W601 J1 sockets E and F (one at a time) while holding black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.

H

1. Disconnect harness 2W601 P1 from accessory control panel bracket.
2. Place one multimeter lead in socket L of harness 2W601 J1 and other lead in harness 2W601 P1 socket R. Check for continuity.
3. Place one multimeter lead in socket K of harness 2W601 J1 and other lead in harness 2W601 P1 socket X. Check for continuity.

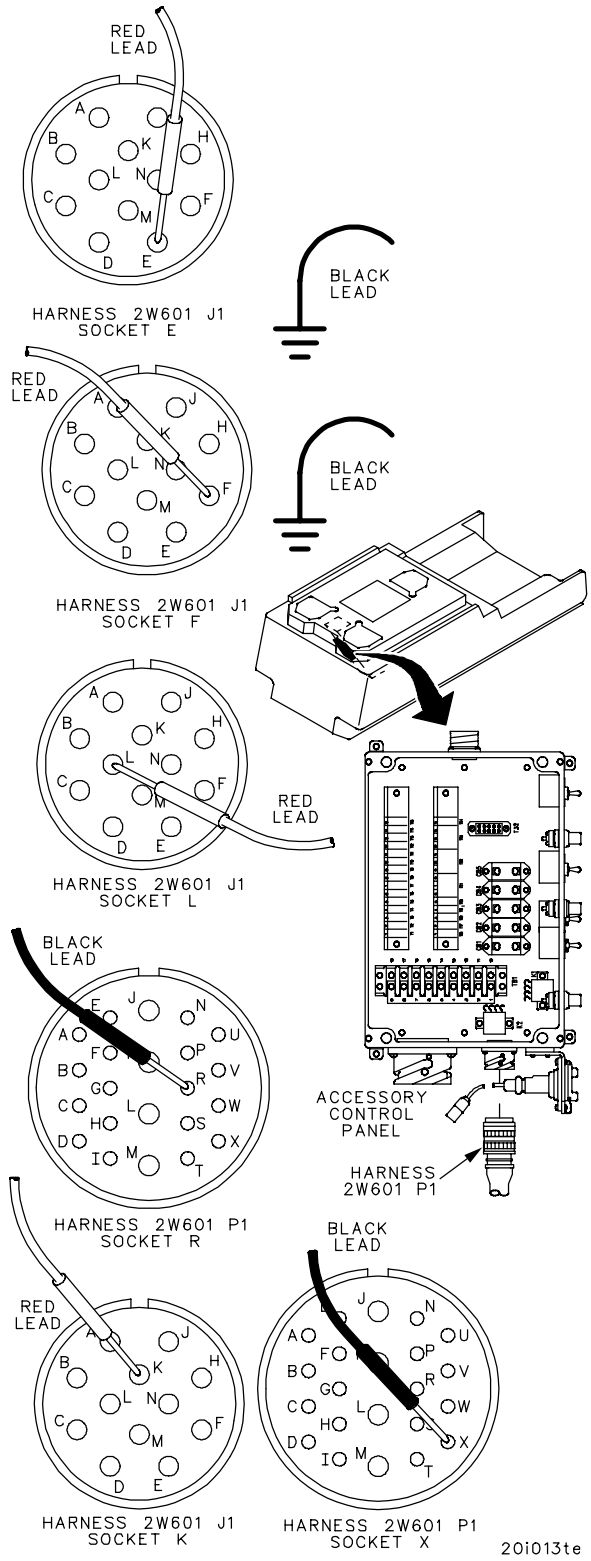
Is continuity present at both checks?

yes

no

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.

CONTINUED ON NEXT PAGE



WINCH DRUM MALFUNCTION INDICATOR FAILS TO LIGHT WHEN WINCH DRUM MALFUNCTIONS - CONTINUED

0180 00

CONTINUED FROM STEP H

I

1. Open accessory control panel (WP 0244 00).
2. Place one multimeter lead on accessory control panel receptacle J1 pin R and other lead on terminal junction T13 terminal J. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 361A from receptacle J1 to terminal junction T13. Verify fault is corrected.

J

Place one multimeter lead on accessory control panel receptacle J1 pin X and other lead on terminal junction T13 terminal H. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 361B from receptacle J1 to terminal junction T13. Verify fault is corrected.

K

Place one multimeter lead on terminal junction T13 terminal E and other lead on diode T9 terminal D. Check for continuity.

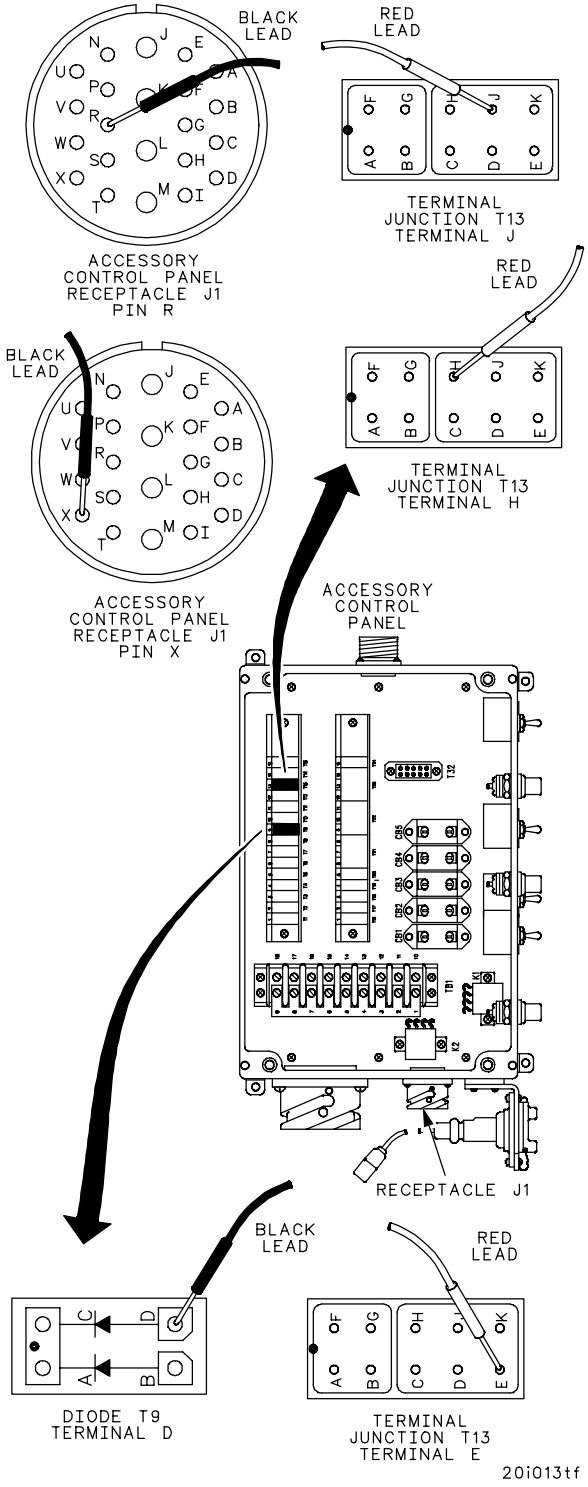
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0224 00) lead 361 from terminal junction T13 terminal E to diode T9. Verify fault is corrected.

CONTINUED ON NEXT PAGE



WINCH DRUM MALFUNCTION INDICATOR FAILS TO LIGHT WHEN WINCH DRUM MALFUNCTIONS - CONTINUED 0180 00

CONTINUED FROM STEP K

L

1. Place red multimeter lead on terminal D of diode T9 and black lead on terminal C of diode T9. Check resistance.
2. Place red multimeter lead on terminal C of diode T9 and black lead on terminal D of diode T9. Check resistance.

Is resistance low with red lead on terminal D and high with red lead on terminal C?

yes

no

Replace diode (WP 0244 00). Verify fault is corrected.

M

1. Disconnect harness 4W618 P1 from accessory control panel receptacle J2.
2. Place one multimeter lead on diode T9 terminal A and other lead on receptacle J2 pin 1. Check for continuity.

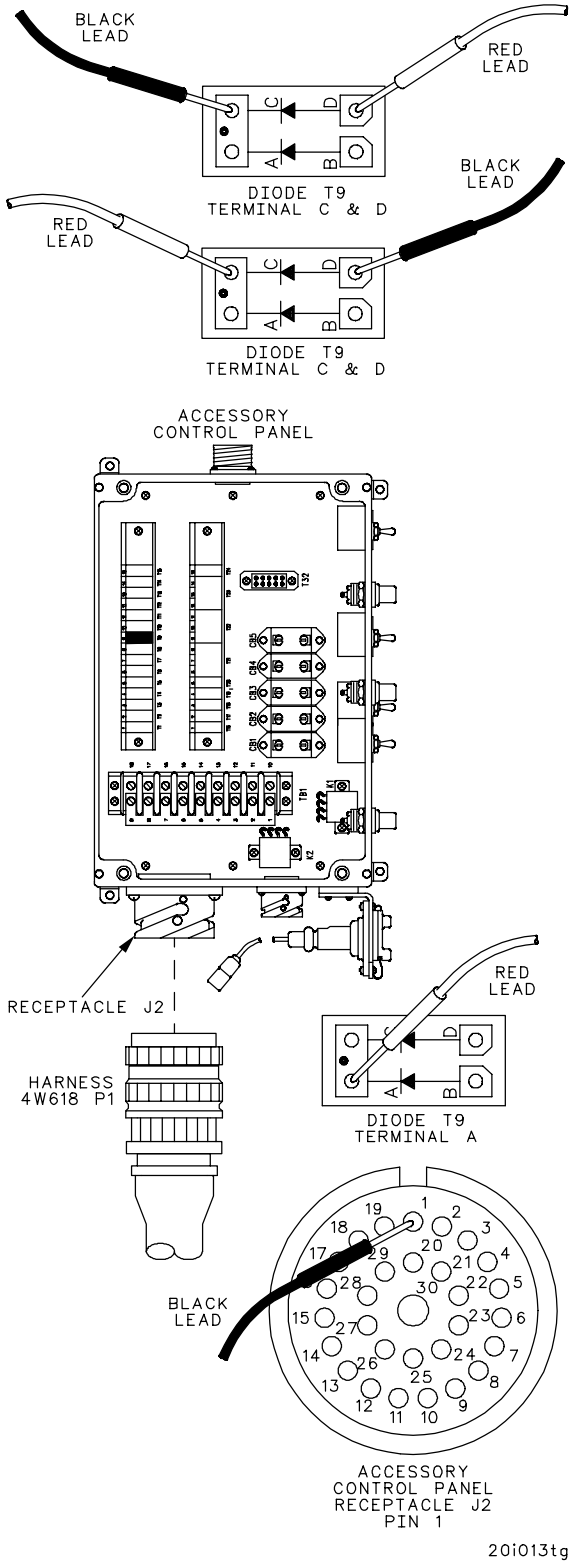
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 361 from diode T9 to receptacle J2. Verify fault is corrected.

CONTINUED ON NEXT PAGE



WINCH DRUM MALFUNCTION INDICATOR FAILS TO LIGHT WHEN WINCH DRUM MALFUNCTIONS - CONTINUED 0180 00

CONTINUED FROM STEP M

N

1. Disconnect harness 4W618 P2 from harness 4W617 J1.
2. Place one multimeter lead on harness 4W618 P2 pin A and other lead in harness 4W618 P1 socket 1. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0331 00) harness 4W618. Verify fault is corrected.

O

1. Disconnect harness 4W617 lead 361 from winch malfunction indicator.
2. Place one multimeter lead in lead 361 connector and other lead in harness 4W617 J1 socket A. Check for continuity.

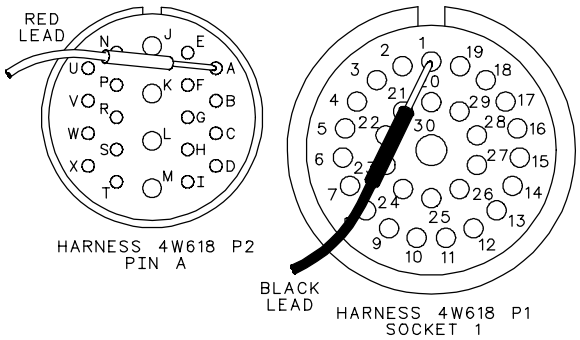
Is continuity present?

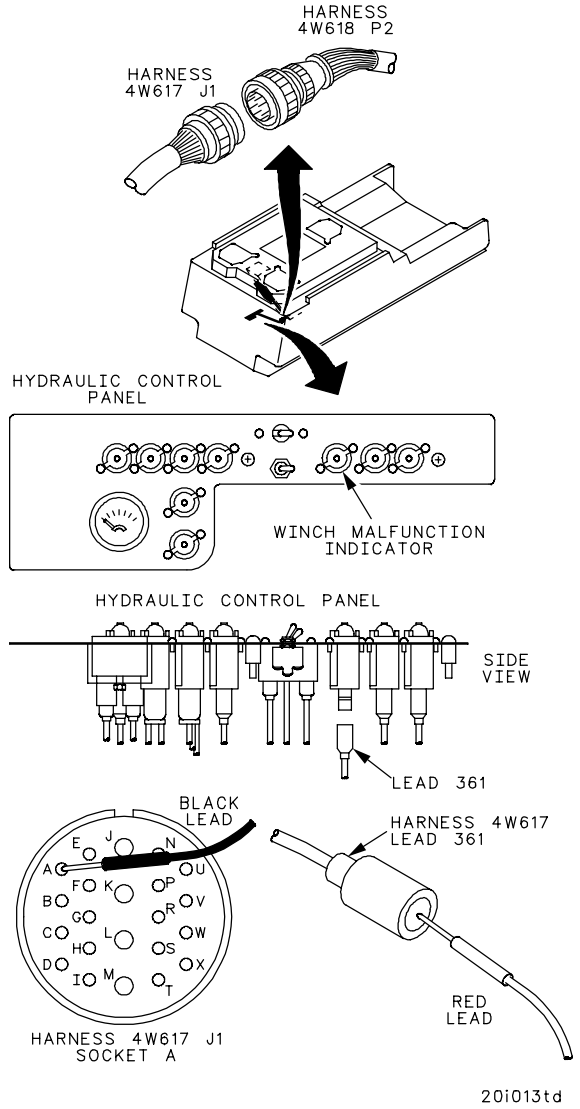
yes

no

Replace indicator (WP 0244 00). Verify fault is corrected.

Replace diode (WP 0244 00). Verify fault is corrected.





20i013td

END OF TASK

PAYOUT LIMIT INDICATOR FAILS TO LIGHT WHEN LESS THAN FOUR WRAPS OF WIRE ROPE ARE LEFT ON DRUM. 0181 00

THIS WORK PACKAGE COVERS:

Payout Limit Indicator Fails To Light When Less Than Four Wraps Of Wire Rope Are Left On Drum.

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

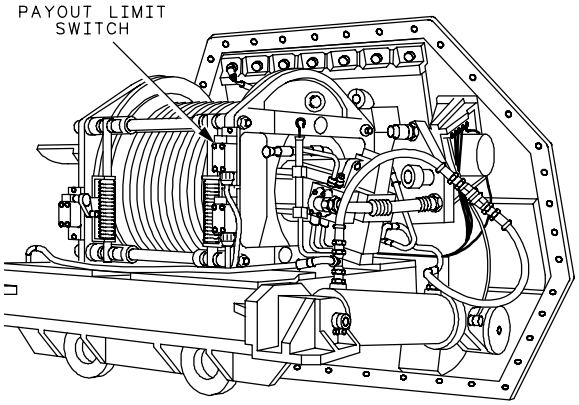
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Vehicle nose piece removed (WP 0497 00)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

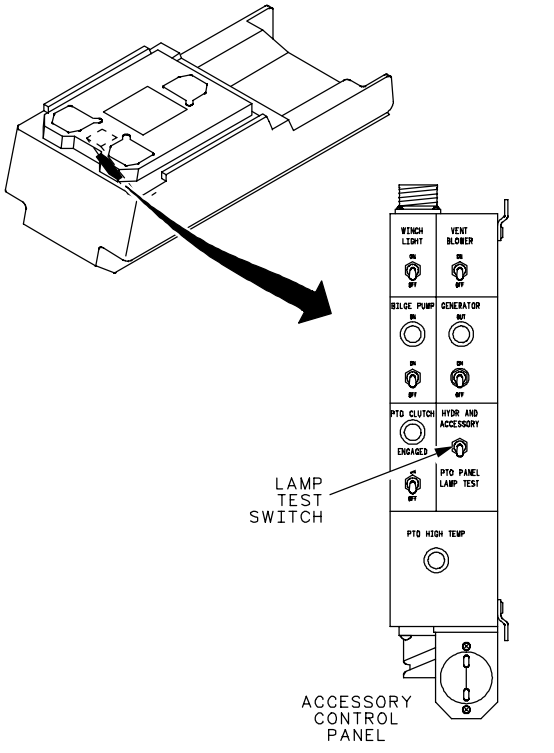


A Check the payout limit switch assembly to make sure it makes contact with the upper roller spring guide bracket.

Does switch make contact?

yes

no — Adjust payout limit switch (WP 0502 00). Verify fault is corrected.



B

1. Turn MASTER switch ON (TM 9-2350-292-10).
2. Hold LAMP TEST switch on accessory control panel in the TEST position.
3. Release LAMP TEST switch and turn MASTER switch OFF (TM 9-2350-292-10).

Does PAYOUT LIMIT indicator light?

yes

no — Replace PAYOUT LIMIT indicator lamp (WP 0244 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE

PAYOUT LIMIT INDICATOR FAILS TO LIGHT WHEN LESS THAN FOUR WRAPS OF WIRE ROPE ARE LEFT ON DRUM - CONTINUED

0181 00

CONTINUED FROM STEP B

C

1. Disconnect harness 2W602 lead 10 from payout limit switch connector.
2. Turn MASTER switch ON (TM 9-2350-292-10).
3. Place multimeter red lead in harness 2W602 lead 10 connector and black lead to ground. Check for voltage.
4. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

yes

Go to Step G.

no

D

1. Disconnect harness 2W602 P1 from harness 2W601 J1.
2. Place one multimeter lead in harness 2W602 lead 10 connector to limit switch and other lead on harness 2W602 P1 pin G. Check for continuity.

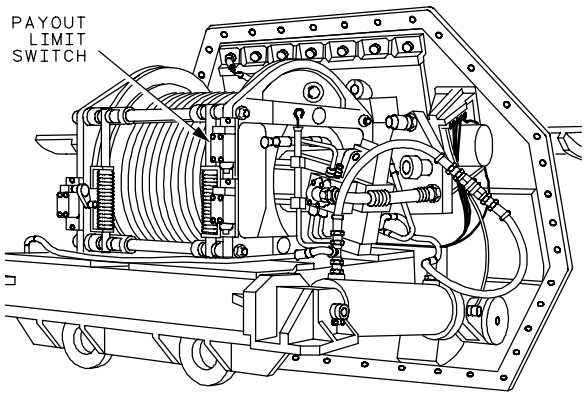
Is continuity present?

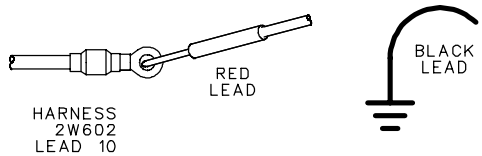
yes

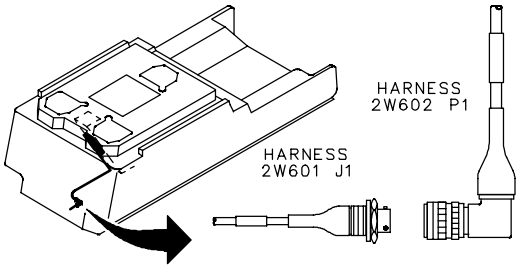
no

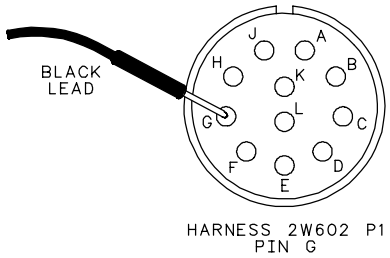
Repair (WP 0290 00) or replace (WP 0292 00) harness 2W602. Verify fault is corrected.

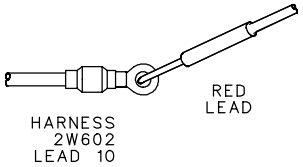
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20i004t

PAYOUT LIMIT INDICATOR FAILS TO LIGHT WHEN LESS THAN FOUR WRAPS OF WIRE ROPE ARE LEFT ON DRUM - CONTINUED 0181 00

CONTINUED FROM STEP D

E

1. Disconnect harness 2W602 lead 375 from payout limit switch.
2. Place one multimeter lead on harness 2W602 lead 375 connector and other lead on harness 2W602 P1 pin J. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0292 00) harness 2W602. Verify fault is corrected.

F

1. Disconnect harness 2W601 P1 from accessory control panel.
2. Place one multimeter lead on harness 2W601 J1 socket J and other lead on harness 2W601 P1 socket W. Check for continuity.

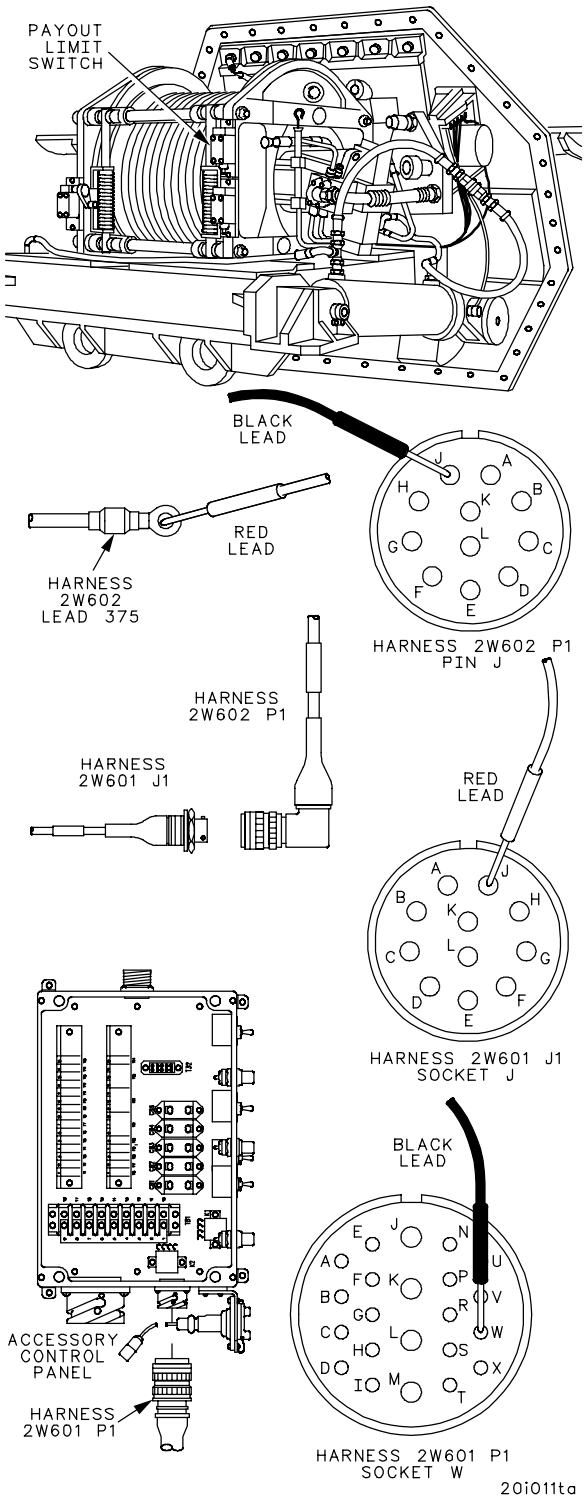
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.

CONTINUED ON NEXT PAGE



PAYOUT LIMIT INDICATOR FAILS TO LIGHT WHEN LESS THAN FOUR WRAPS OF WIRE ROPE ARE LEFT ON DRUM - CONTINUED 0181 00

CONTINUED FROM STEP C AND F

G Place one multimeter lead on payout limit switch terminal 3 connector and other lead on payout limit switch terminal 4 connector. Check for continuity.

Is continuity present?

yes

no

Replace payout limit switch (WP 0501 00). Verify fault is corrected.

H Place one multimeter lead on accessory control panel receptacle J1 pin W and other lead on terminal junction T13 terminal G. Check for continuity.

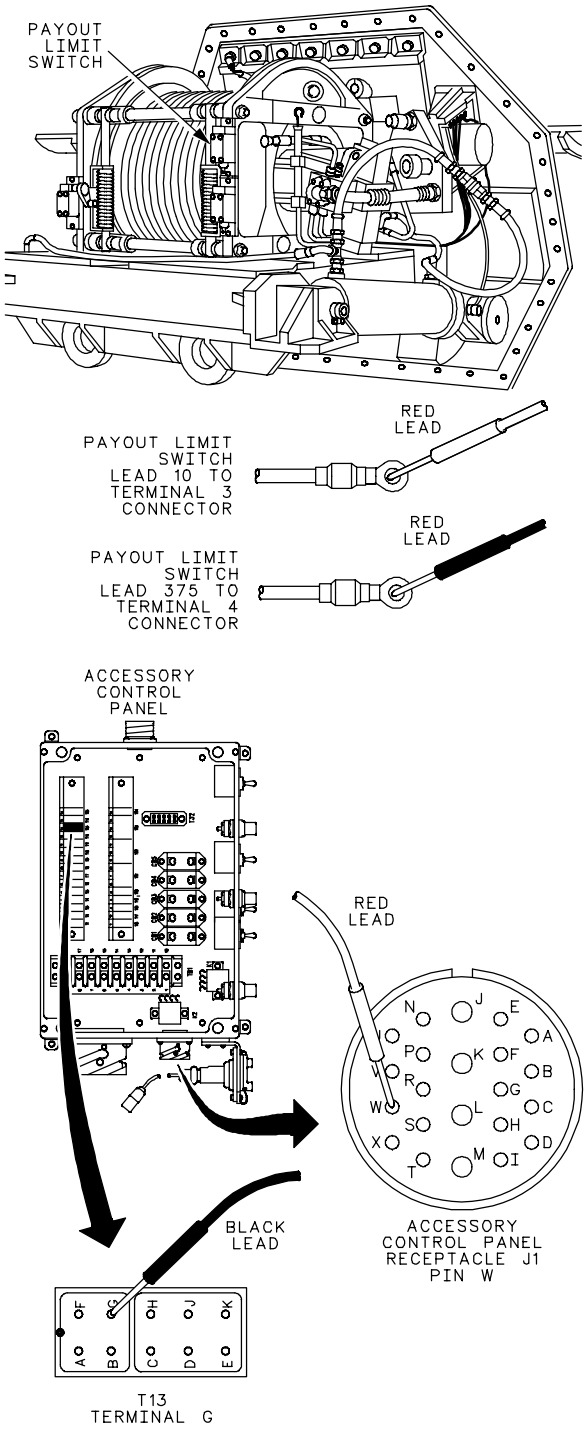
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 375 from receptacle to terminal junction T13 terminal G. Verify fault is corrected.

CONTINUED ON NEXT PAGE



20i014ta

PAYOUT LIMIT INDICATOR FAILS TO LIGHT WHEN LESS THAN FOUR WRAPS OF WIRE ROPE ARE LEFT ON DRUM - CONTINUED

0181 00

CONTINUED FROM STEP H

I Place one multimeter lead on terminal junction T13 terminal G and other lead on terminal junction T13 terminal B. Check for continuity.

Is continuity present?

yes

no

Replace terminal junction T13 (WP 0244 00). Verify fault is corrected.

J Place one multimeter lead on terminal junction T13 terminal B and other lead on diode T7 terminal D. Check continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 375 from terminal junction to diode. Verify fault is corrected.

K

1. Place red multimeter lead on diode T7 terminal D and black lead on diode T7 terminal A. Check resistance.
2. Place red multimeter on diode T7 terminal A and black led on diode T7 terminal D. Check resistance.

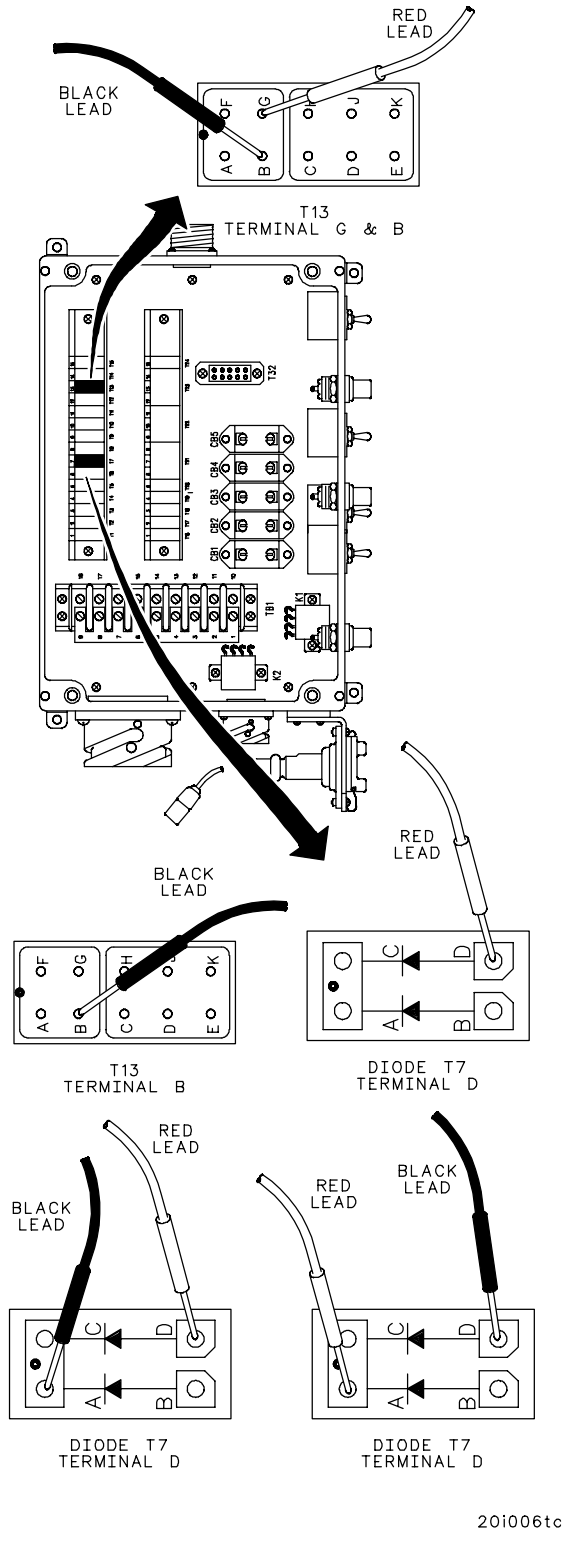
Is resistance low with red lead on terminal D and high with red lead on terminal A?

yes

no

Replace diode T7 (WP 0244 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



PAYOUT LIMIT INDICATOR FAILS TO LIGHT WHEN LESS THAN FOUR WRAPS OF WIRE ROPE ARE LEFT ON DRUM - CONTINUED 0181 00

CONTINUED FROM STEP K

L

1. Disconnect harness 4W618 P1 from accessory control panel.
2. Place one multimeter lead on diode T7 terminal A and other lead on accessory control panel receptacle J2 pin 3. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 375 from receptacle to diode T7. Verify fault is corrected.

M

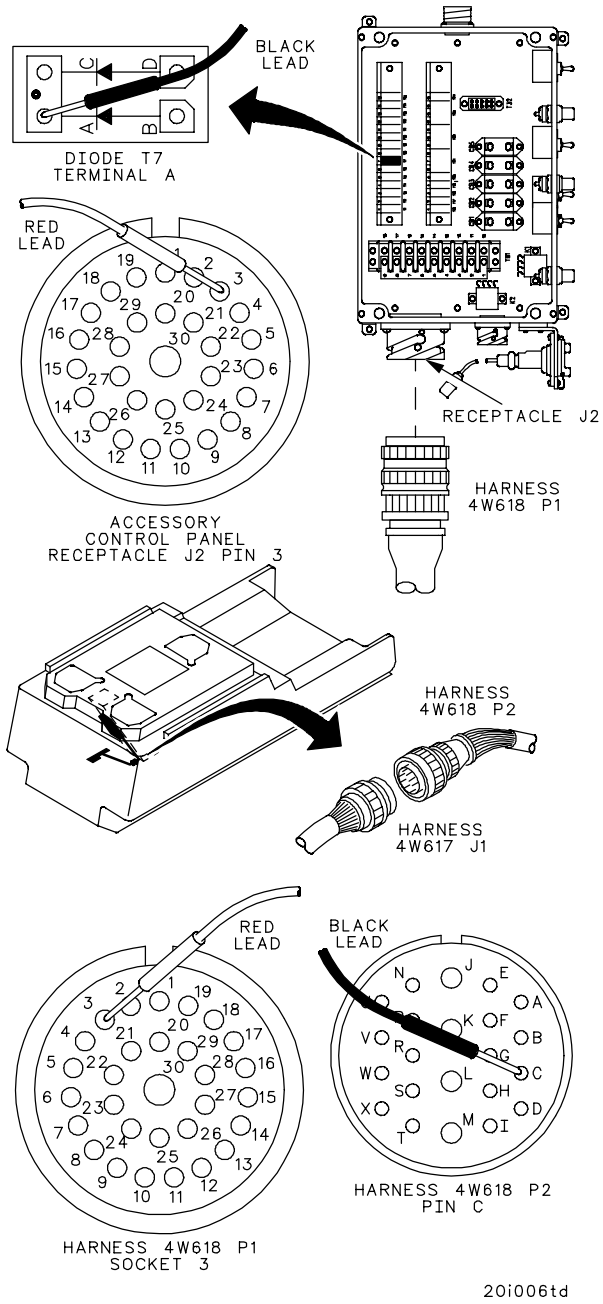
1. Disconnect harness 4W618 P2 from harness 4W617 J1.
2. Place one multimeter lead in harness 4W618 P1 socket 3 and other lead on harness 4W618 P2 pin C. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0331 00) harness 4W618. Verify fault is corrected.



CONTINUED ON NEXT PAGE

PAYOUT LIMIT INDICATOR FAILS TO LIGHT WHEN LESS THAN FOUR WRAPS OF WIRE ROPE ARE LEFT ON DRUM - CONTINUED

0181 00

CONTINUED FROM STEP M

N

1. Disconnect harness 4W617 lead 375 from payout limit malfunction indicator.
2. Place one multimeter lead in harness 4W617 J1 socket C and other lead in lead 375 connector socket to indicator. Check for continuity.

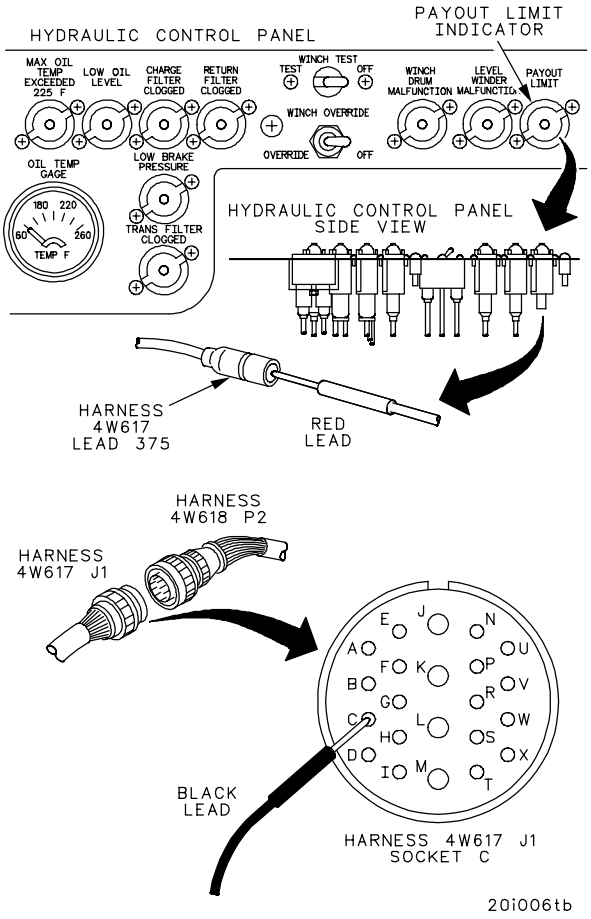
Is continuity present?

yes

Replace indicator (WP 0244 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0330 00) harness 4W617. Verify fault is corrected.



END OF TASK

MAIN WINCH FAILS TO SHUT DOWN DURING A MALFUNCTION. 0182 00

THIS WORK PACKAGE COVERS:

Main Winch Fails To Shut Down During A Malfunction

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Hydraulic system operating (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Hold WINCH TEST switch on hydraulic control panel in the TEST position and hold MAIN WINCH control lever at hydraulic control valve panel momentarily in the INHAUL position. Watch main winch. Release switch and lever.

Does main winch operate?

yes → Go to WP 0183 00.

no

B Hold WINCH TEST switch in the TEST position and hold MAIN WINCH control lever momentarily in the PAYOUT position. Watch main winch. Release switch and lever.

Does main winch operate?

yes → Go to WP 0183 00.

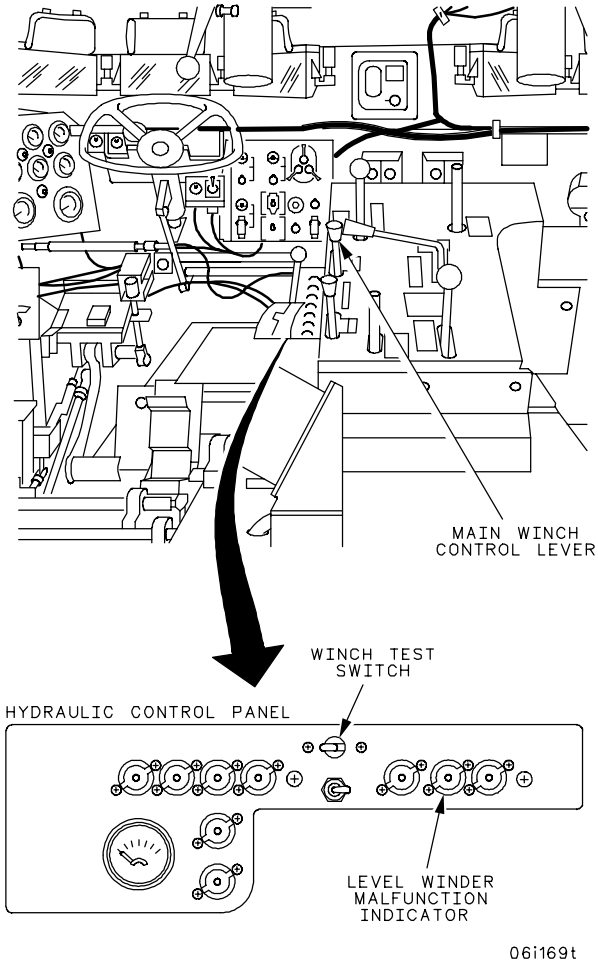
no

C

1. Shut down hydraulics system and main engine (TM 9-2350-292-10).
2. Turn MASTER switch ON (TM 9-2350-292-10) and watch LEVEL WINDER MALFUNCTION indicator.
3. Turn MASTER switch OFF (TM 9-2350-292-10).

Does indicator light?

CONTINUED ON NEXT PAGE



MAIN WINCH FAILS TO SHUT DOWN DURING MALFUNCTION - CONTINUED 0182 00

CONTINUED FROM STEP C

yes

no

Go to Step F.

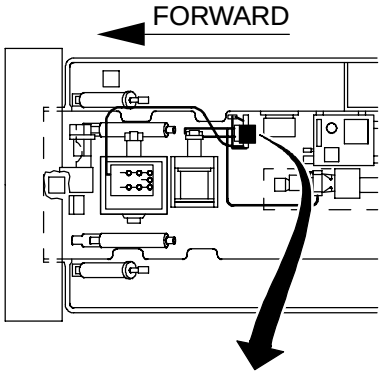
D Is vehicle equipped with main winch power reduction manifold?

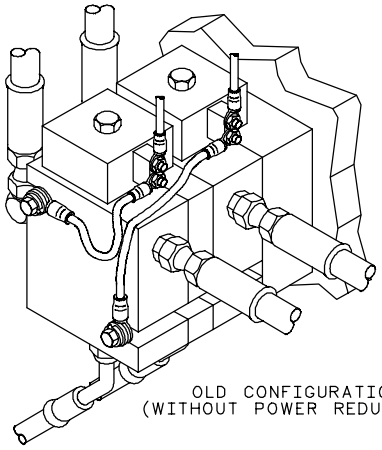
yes

no

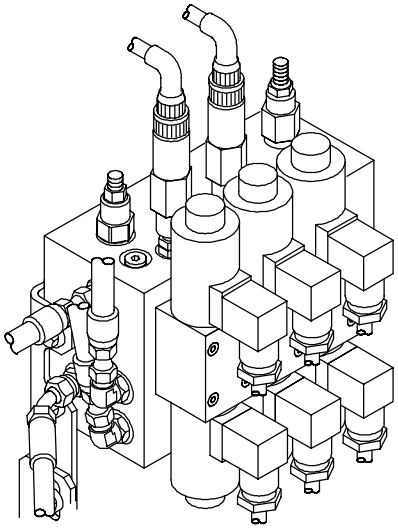
Go to Step G.

Go to Step E.





OLD CONFIGURATION
(WITHOUT POWER REDUCTION)



NEW CONFIGURATION
(WITH POWER REDUCTION)

06i210te

CONTINUED ON NEXT PAGE

MAIN WINCH FAILS TO SHUT DOWN DURING MALFUNCTION - CONTINUED 0182 00

CONTINUED FROM STEP D

E

1. Remove subfloor plate 18 (WP 0454 00).
2. Disconnect harness 2W601 lead 359B from main winch safety valves.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead on harness 2W601 lead 359B of each main winch safety valve connector and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present at both checks?

yes

CONTINUED FROM STEP C

F Place one multimeter lead on each main winch safety valve solenoid ground lead and other lead to ground. Check continuity.

Is continuity present at both checks?

yes

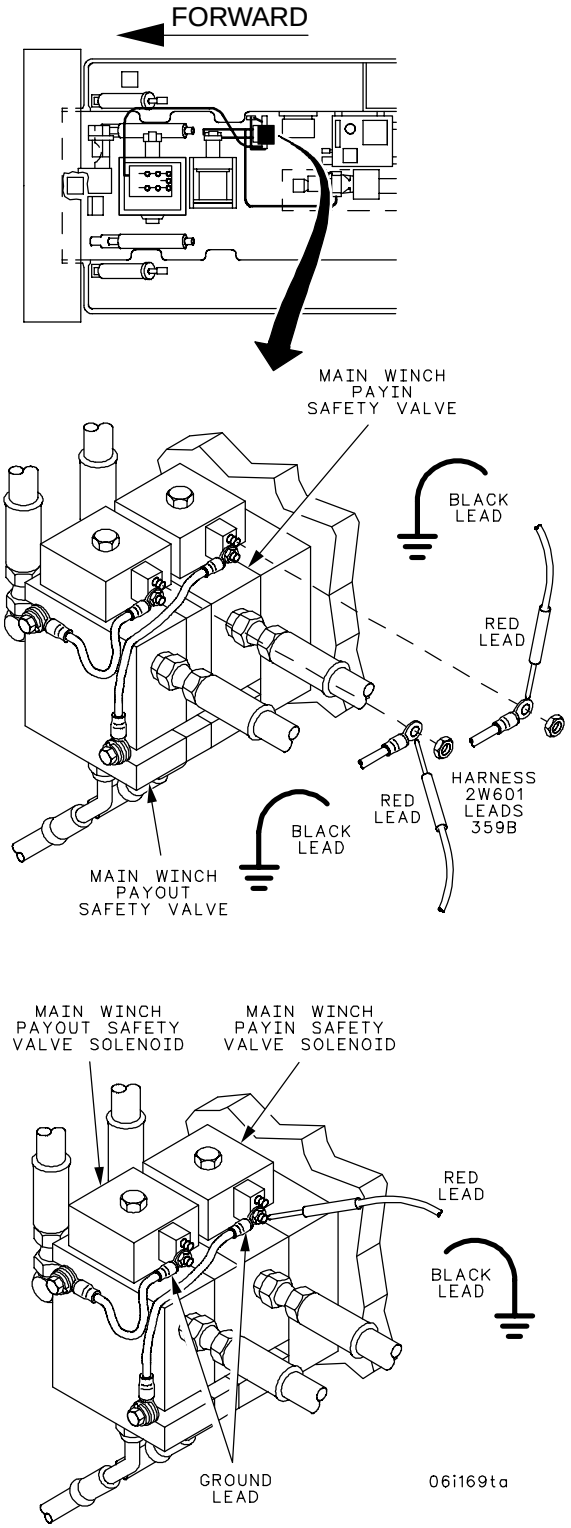
Replace main winch payin and/or payout safety valves (WP 549). Verify fault is corrected.

no

Replace ground lead(s) (WP 0291 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.



CONTINUED ON NEXT PAGE

MAIN WINCH FAILS TO SHUT DOWN DURING MALFUNCTION - CONTINUED 0182 00

CONTINUED FROM STEP D

G

1. Remove subfloor plate 18 (WP 0454 00).
2. Disconnect harness 2W612 connectors P1 and P2 from main winch power reduction manifold.
3. Turn MASTER switch ON and hold WINCH TEST switch in the TEST position (TM 9-2350-292-10).
4. Place multimeter red lead on harness 2W612 connectors P1 and P2 socket 1 (one at a time) and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present at both checks?

yes

H Place one multimeter lead on wiring harness 2W612 connectors P1 and P2 socket 2 (one at a time) and other lead to ground. Check continuity.

Is continuity present at both checks?

yes

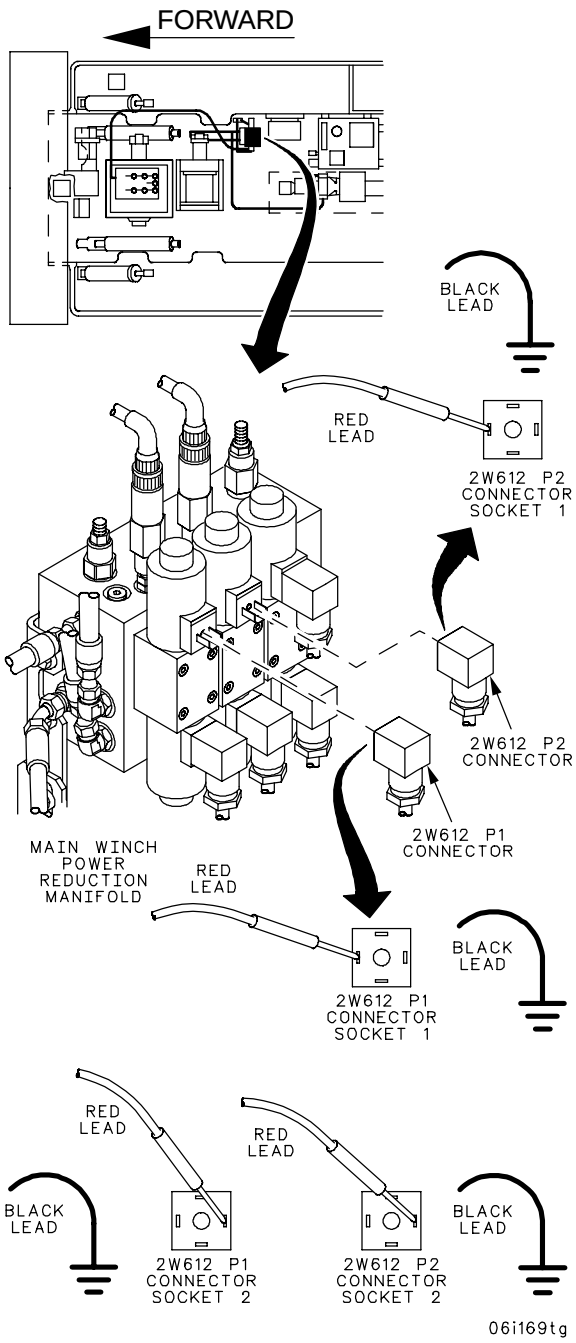
Replace main winch power reduction manifold (WP 0557 00). Verify fault is corrected.

no

Repair (WP 0290 00) or replace wiring harness 2W612 (WP 0292 01). Verify fault is corrected.

no

Repair (WP 0290 00) or replace (WP 0292 01) harness 2W612. Verify fault is corrected.



END OF TASK

MAIN WINCH FAILS TO SHUT DOWN WHEN WINCH TEST SWITCH IS HELD IN TEST POSITION. 0183 00

THIS WORK PACKAGE COVERS:

Main Winch Fails To Shut Down When Winch Test Switch Is Held In Test Position

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Hydraulic system operating (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A Check winch indicators on hydraulic control panel.

Is either the LEVEL WINDER MALFUNCTION, WINCH DRUM MALFUNCTION, or PAYOUT LIMIT indicators lit?

yes — Go to Step H.

no

B Hold WINCH TEST switch in the TEST position and watch SYSTEM WARNING indicator on gauge panel.

Does indicator light?

yes — Go to Step P

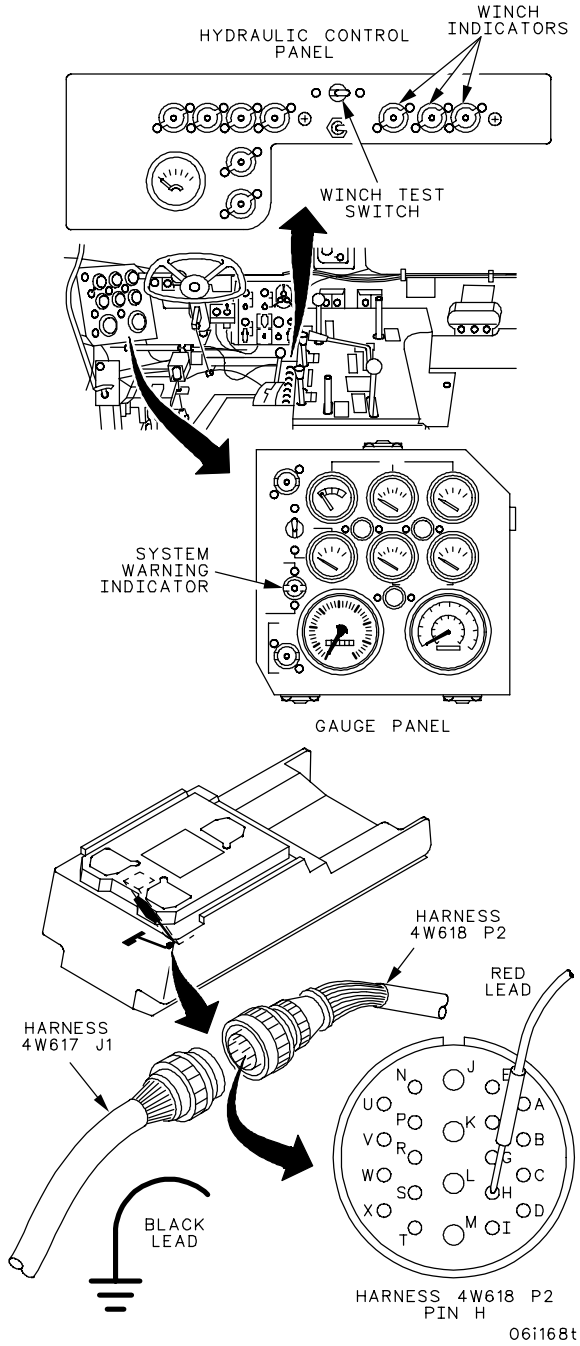
no

C

1. Shut down hydraulics system, main engine and MASTER switch (TM 9-2350-292-10).
2. Disconnect harness 4W618 P2 from harness 4W617 J1.
3. Turn MASTER switch ON (TM 9-2350-292-10).
4. Place multimeter red lead in harness 4W618 P2 pin H and black lead to ground. Check for voltage.
5. Turn MASTER switch OFF (TM 9-2350-292-10).

Is 24 V dc present?

CONTINUED ON NEXT PAGE



MAIN WINCH FAILS TO SHUT DOWN WHEN WINCH TEST SWITCH IS HELD IN TEST POSITION - CONTINUED 0183 00

CONTINUED FROM STEP C

yes / no

Repair (WP 0290 00) or replace (WP 0331 00) harness 4W618. Verify fault is corrected.

D

1. Disconnect harness 4W618 P1 from accessory control panel.
2. Place one multimeter lead in harness 4W618 P1 socket 9 and other lead on harness 4W618 P2 pin H. Check for continuity.

Is continuity present?

yes / no

Repair (WP 0290 00) or replace (WP 0331 00) harness 4W618. Verify fault is corrected.

E

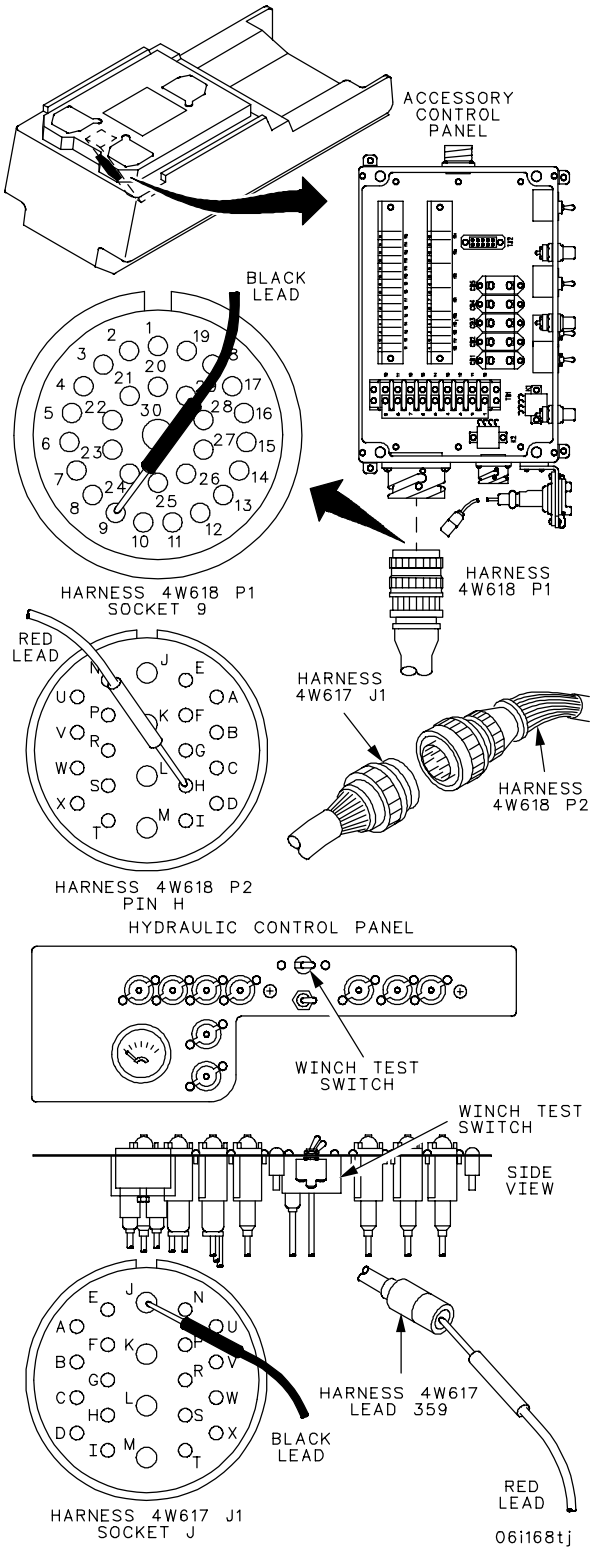
1. Disconnect harness 4W617 lead 359 from winch test switch.
2. Place one multimeter lead in harness 4W617 J1 socket J and other lead in lead 359 switch connector socket. Check for continuity.

Is continuity present?

yes / no

Repair (WP 0290 00) or replace (WP 0330 00) harness 4W617. Verify fault is corrected.

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MAIN WINCH FAILS TO SHUT DOWN WHEN WINCH TEST SWITCH IS HELD IN TEST POSITION - CONTINUED 0183 00

CONTINUED FROM STEP E

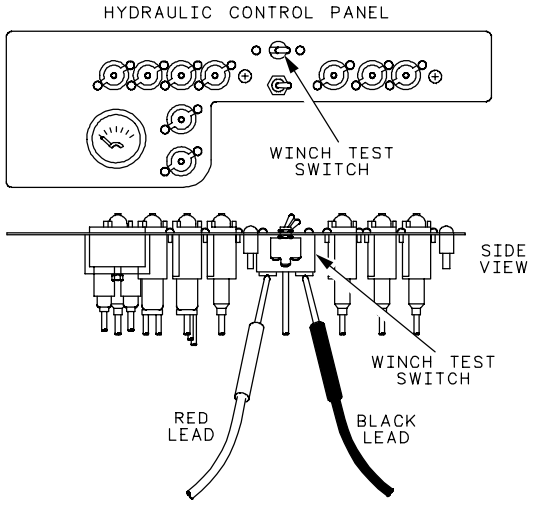
F Place one multimeter lead on each connector pin of WINCH TEST switch and hold switch in TEST position. Check for continuity.

Is continuity present?

yes

no

Replace WINCH TEST switch (WP 0245 00). Verify fault is corrected.



G
1. Disconnect harness 4W617 lead 359 from WINCH OVERRIDE switch.
2. Place one multimeter lead in harness 4W617 lead 359 WINCH TEST switch connector socket and other lead on harness 4W617 lead 359 WINCH OVERRIDE switch connector pin. Check for continuity.

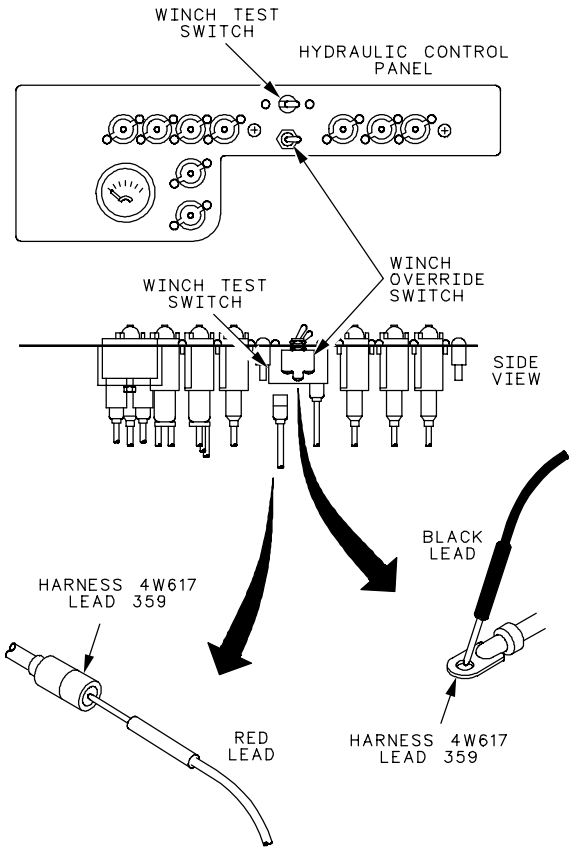
Is continuity present?

yes

no

Go to Step I.

Repair (WP 0290 00) or replace (WP 0330 00) harness 4W617. Verify fault is corrected.



06i168tb

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MAIN WINCH FAILS TO SHUT DOWN WHEN WINCH TEST SWITCH IS HELD IN TEST POSITION - CONTINUED 0183 00

CONTINUED FROM STEP A

H

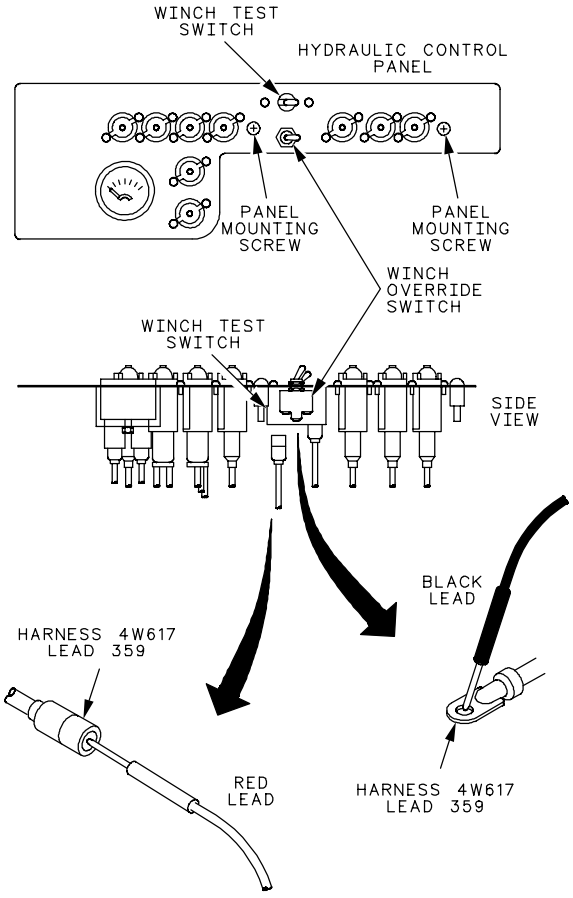
1. Shut down hydraulics system, main engine and turn MASTER switch OFF (TM 9-2350-292-10).
2. Remove hydraulic control panel (WP 0245 00).
3. Remove clamp securing harness 4W618 (WP 0331 00).
4. Disconnect harness 4W617 lead 359 from WINCH TEST and WINCH OVERRIDE switches.
5. Place one multimeter lead in harness 4W617 lead 359 connector socket to WINCH TEST switch and other lead on harness 4W617 lead 359 connector to WINCH OVERRIDE switch. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0330 00) harness 4W617. Verify fault is corrected.



CONTINUED FROM STEP G

I

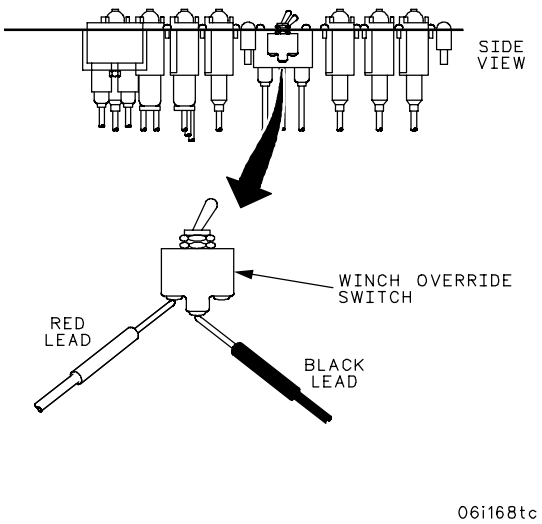
1. Disconnect harness 4W617 lead 359B from WINCH OVERRIDE switch.
2. Place one multimeter lead on each WINCH OVERRIDE switch connector terminal.
3. Place WINCH OVERRIDE switch in the OFF position and check for continuity.

Is continuity prersent?

yes

no

Replace WINCH OVERRIDE switch (WP 0245 00). Verify fault is corrected.



06i168tc

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MAIN WINCH FAILS TO SHUT DOWN WHEN WINCH TEST SWITCH IS HELD IN TEST POSITION - CONTINUED 0183 00

CONTINUED FROM STEP I

J

1. Disconnect harness 4W618 P2 from harness 4W617 J1.
2. Place one multimeter lead on harness 4W617 lead 359B connector terminal to WINCH OVERRIDE switch and other lead on harness 4W617 J1 socket D. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0330 00) harness 4W617. Verify fault is corrected.

K

1. Open accessory control panel (WP 0290 00).
2. Disconnect harness 4W618 P1 from accessory control panel.
3. Place one multimeter lead on harness 4W618 P2 pin D and other lead on harness 4W618 P1 socket 7. Check for continuity.

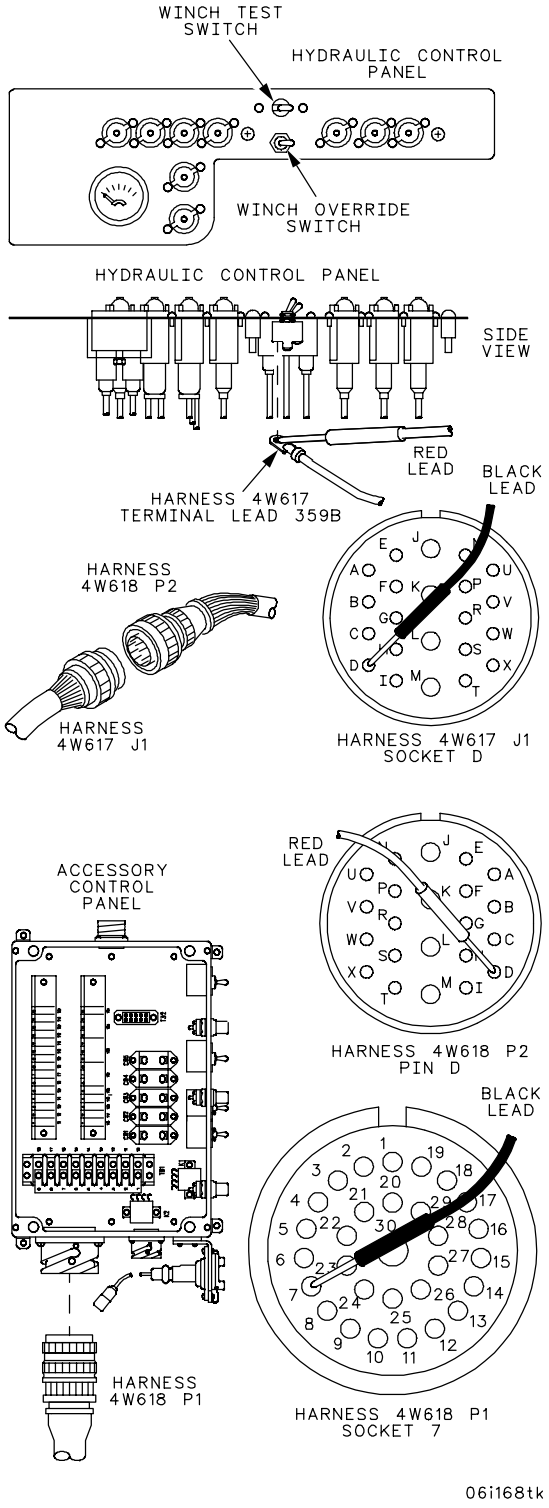
Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0331 00) harness 4W618. Verify fault is corrected.

CONTINUED ON NEXT PAGE



MAIN WINCH FAILS TO SHUT DOWN WHEN WINCH TEST SWITCH IS HELD IN TEST POSITION - CONTINUED 0183 00

CONTINUED FROM STEP K

L Place one multimeter lead on accessory control panel receptacle J2 pin 7 and other lead to terminal junction T21 terminal F. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 359B from receptacle J2 to terminal junction T21. Verify fault is corrected.

M Place one multimeter lead on terminal junction T21 terminal F and other lead on terminal junction T21 terminal B. Check for continuity.

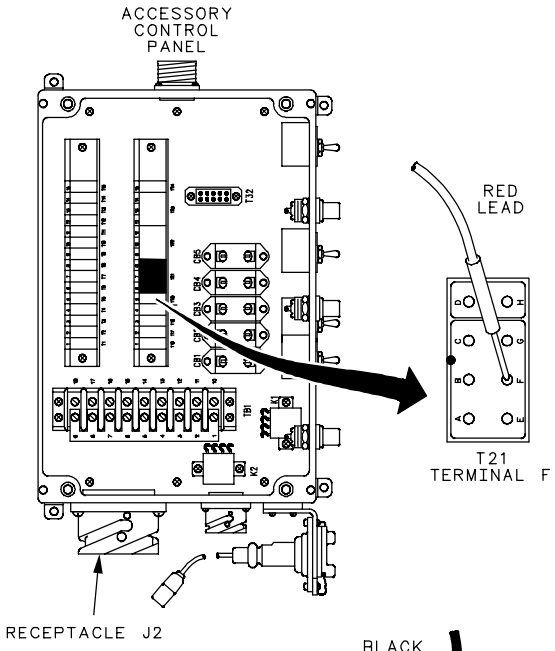
Is continuity present?

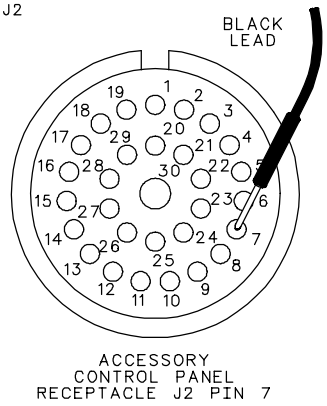
yes

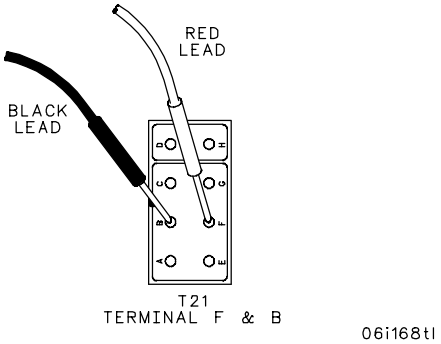
no

Repair or replace terminal junction T21 (WP 0244 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE







MAIN WINCH FAILS TO SHUT DOWN WHEN WINCH TEST SWITCH IS HELD IN TEST POSITION - CONTINUED 0183 00

CONTINUED FROM STEP M

N Place one multimeter lead on terminal junction T21 terminal B and other lead on winch warning relay K1 terminal XI. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0244 00) lead 359B from terminal junction T21 to relay K1. Verify fault is corrected.

O Place one multimeter lead on relay K1 terminal X2 and other lead on terminal junction T32 terminal C. Check for continuity.

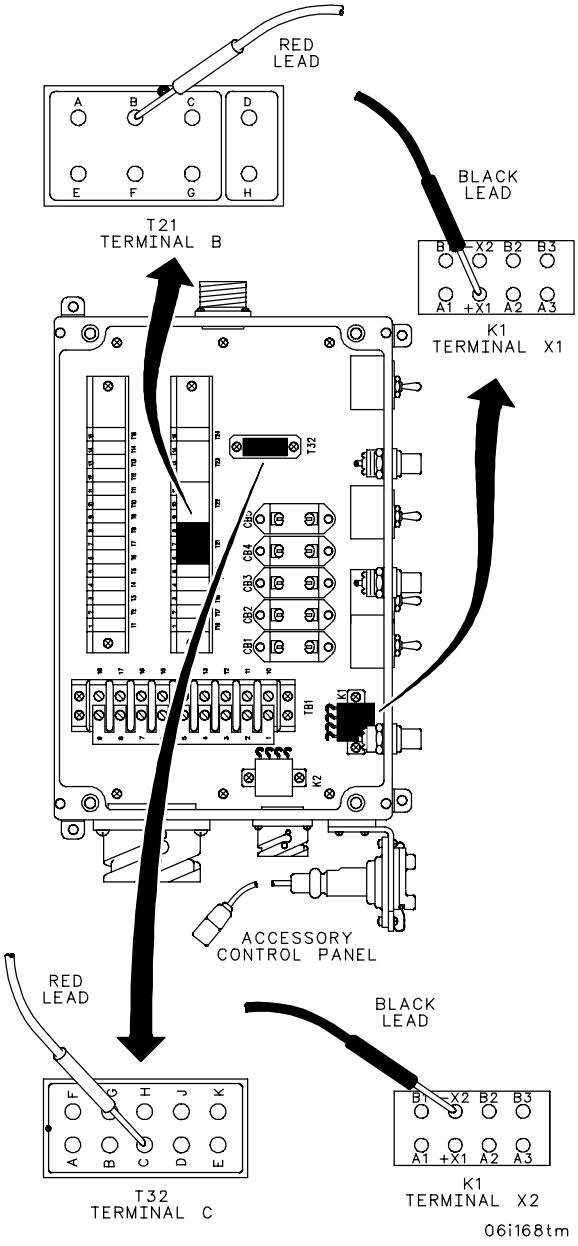
Is continuity present?

yes

no

Replace relay K1 (WP 0244 00). Verify fault is corrected.

Replace ground lead from relay K1 to terminal junction T32 (WP 0244 00). Verify fault is corrected.



CONTINUED ON NEXT PAGE

MAIN WINCH FAILS TO SHUT DOWN WHEN WINCH TEST SWITCH IS HELD IN TEST POSITION - CONTINUED 0183 00

CONTINUED FROM STEP B

P Is vehicle equipped with main winch power reduction manifold?

yes / no

Go to WP 0185 00.

Q

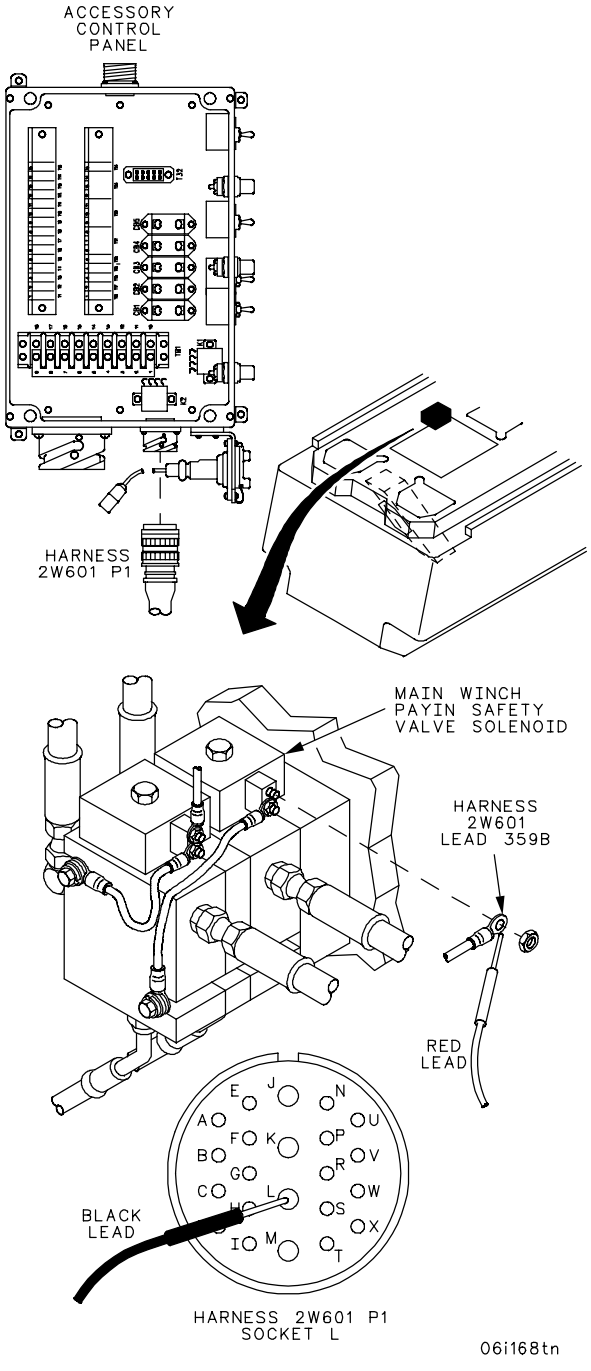
1. Shut down hydraulics system, main engine and turn MASTER switch OFF (TM 9-2350-292-10).
2. Disconnect harness 2W601 P1 from accessory control panel.
3. Remove subfloor plate 18 (WP 0454 00).
4. Disconnect harness 2W601 P1 lead 359B from main winch payin safety valve.
5. Place one mulitmeter lead in harness 2W601 P1 socket L and other lead on harness lead 359B main winch payin safety valve connector socket. Check for continuity.

Is continuity present?

yes / no

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.

CONTINUED ON NEXT PAGE



MAIN WINCH FAILS TO SHUT DOWN WHEN WINCH TEST SWITCH IS HELD IN TEST POSITION - CONTINUED 0183 00

CONTINUED FROM STEP Q

R

1. Disconnect harness 2W601 lead 359B from main winch payout safety valve.
2. Place one multimeter lead in harness 2W601 P1 socket L and other lead in harness 2W601 lead 359B main winch payout safety valve connector socket. Check for continuity.

Is continuity present?

yes

no

Repair (WP 0290 00) or replace (WP 0291 00) harness 2W601. Verify fault is corrected.

S

1. Reconnect harness 2W601 P1 to accessory control panel.
2. Reconnect both leads 359B to main winch payin and payout safety valves.
3. Start main engine and activate hydraulic system (TM 9-2350-292-10).
4. Hold WINCH TEST switch in the TEST position and hold main winch control lever in the INHAUL position (TM 9-2350-292-10). Watch main winch.

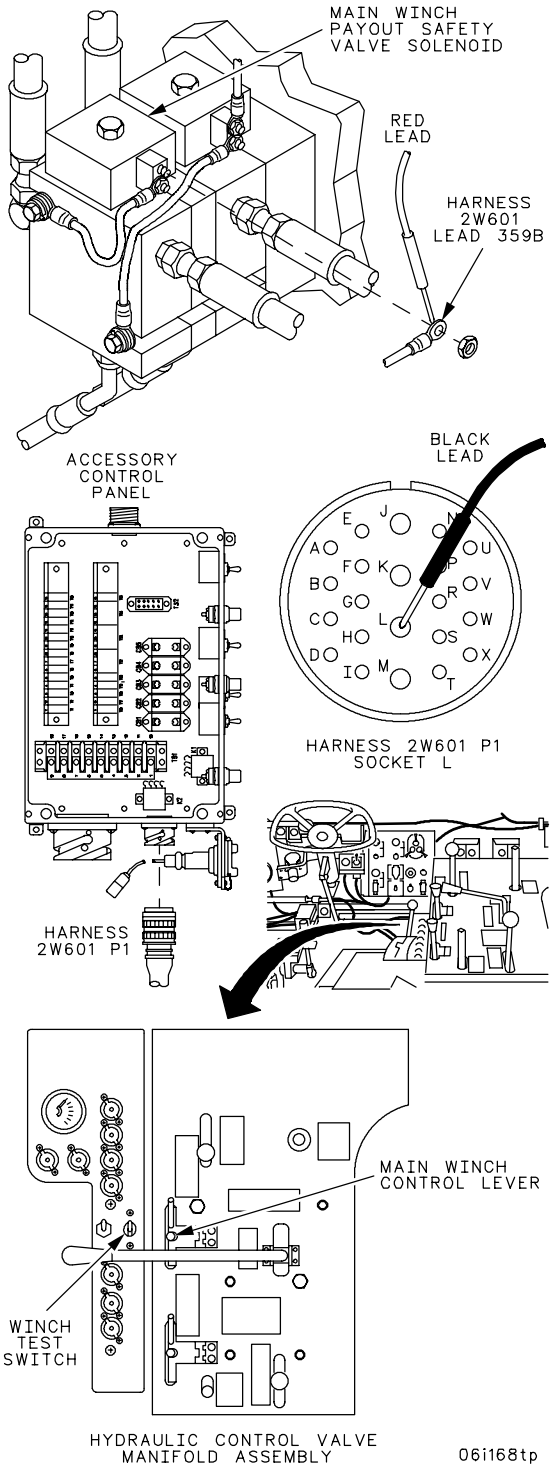
Does main winch operate?

yes

no

Replace main winch payin safety valve (WP 0549 00). Verify fault is corrected.

Replace main winch payout safety valve (WP 0549 00). Verify fault is corrected.



END OF TASK

MAIN WINCH DOES NOT OPERATE WITH THE OVERRIDE SWITCH HELD IN THE OVERRIDE POSITION. 0184 00

THIS WORK PACKAGE COVERS:

Main Winch Does Not Operate With The Override Switch Held In The Override Position

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Equipment Conditions

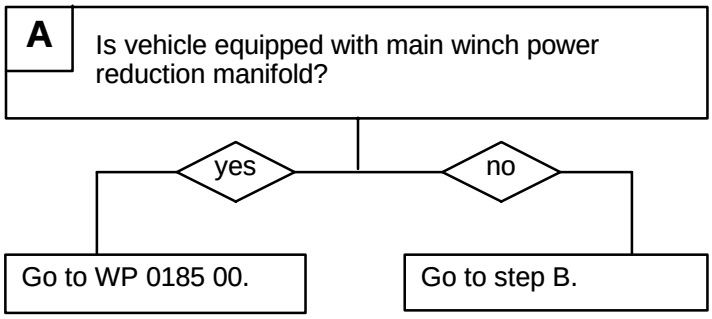
Vehicle engine running (TM 9-2350-292-10)
Hydraulic system oprating (TM 9-2350-292-10)
Main winch automatically shutdown (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.



CONTINUED ON NEXT PAGE

MAIN WINCH DOES NOT OPERATE WITH THE OVERRIDE SWITCH HELD IN THE OVERRIDE POSITION - CONTINUED 0184 00

CONTINUED FROM STEP A

B

1. Hold WINCH OVERRIDE switch in the OVERRIDE position.
2. Alternate position of MAIN WINCH control lever between INHAUL and PAYOUT while watching main winch.

Does main winch operate with control lever in either position?

yes

no

Replace WINCH OVERRIDE switch (WP 0245 00). Verify fault is corrected.

C

Place MAIN WINCH control lever in the INHAUL position and watch main winch.

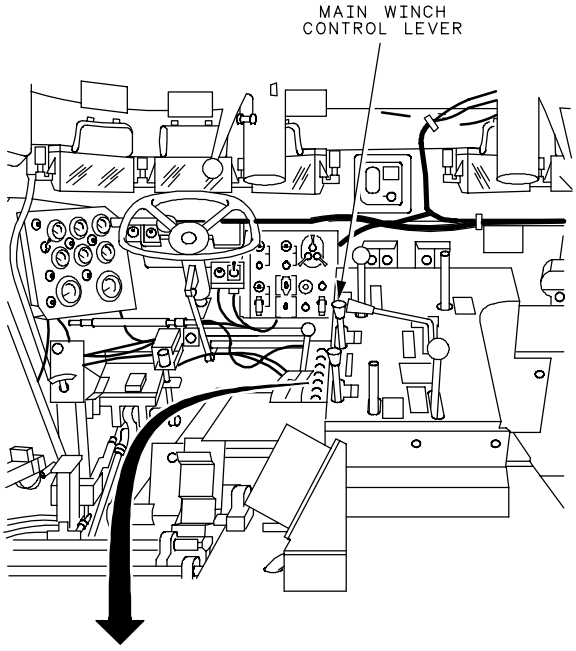
Does main winch operate with control lever in INHAUL position?

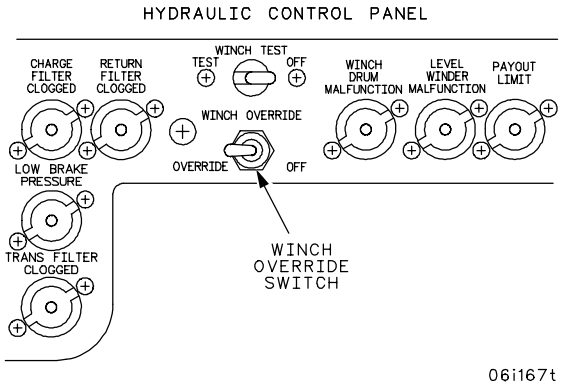
yes

no

Replace main winch payout safety (WP 0549 00). Verify fault is corrected.

Replace main winch payin safety valve (WP 0549 00). Verify fault is corrected.





END OF TASK

MAIN WINCH POWER IS NOT REDUCED WHEN OVERRIDE SWITCH IS IN OVERRIDE POSITION. 0185 00

THIS WORK PACKAGE COVERS:

Main Winch Power Is Not Reduced When Override Switch Is In Override Position

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)
Jumper wires

Equipment Conditions

Vehicle engine shut down (TM 9-2350-292-10)

Personnel Required

Two

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on any vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

A

1. Remove subfloor plate 18 (WP 0454 00).
2. Inspect all electrical connections to main winch power reduction manifold (WP 0292 01).

Are all wiring harness connectors properly connected?

yes

no

Tighten electrical connector to main winch power reduction manifold (WP 0292 01). Verify fault is corrected.

B

1. Remove hydraulic control panel (WP 0245 00).
2. Remove wiring harness 2W612 lead 359B from override switch (WP 0292 00).
3. Place one multimeter lead on terminal 2 of override switch and other lead on terminal 3 of override switch.
4. Move WINCH OVERRIDE switch to OVERRIDE and hold (TM 9-2350-292-10). Check for continuity.
5. Release override switch (TM 9-2350-292-10).

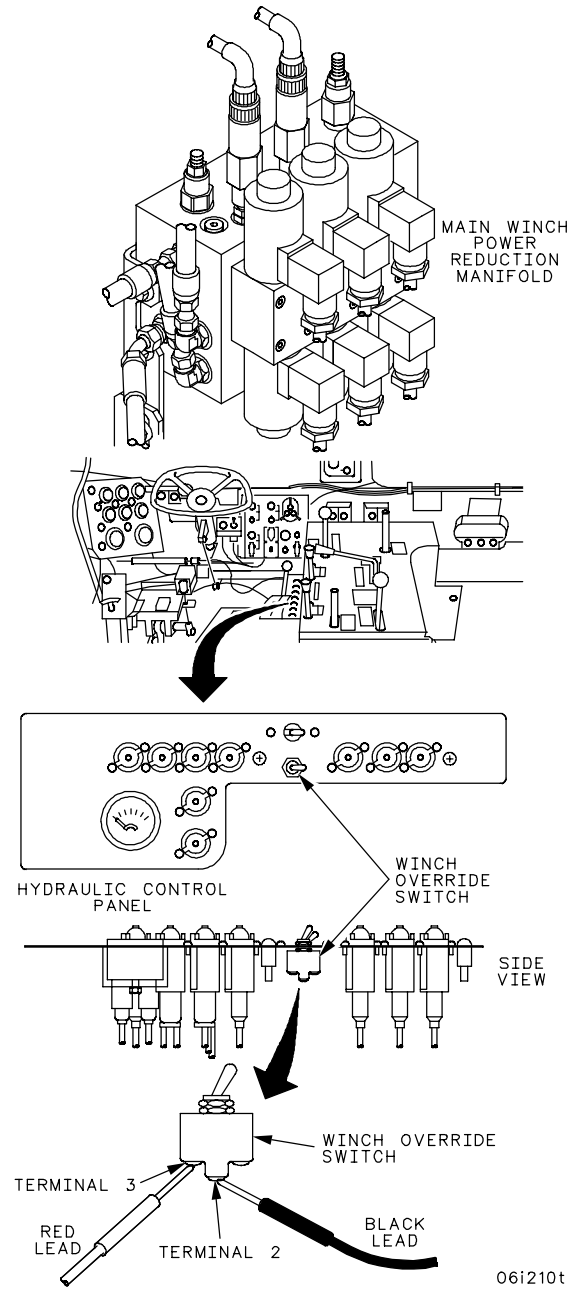
Is continuity present?

yes

no

Replace winch override switch (WP 0335 00). Verify fault is corrected.

CONTINUED ON NEXT PAGE



MAIN WINCH POWER IS NOT REDUCED WHEN OVERRIDE SWITCH IS IN OVERRIDE POSITION - CONTINUED 0185 00

CONTINUED FROM STEP B

C

1. Reconnect wiring harness 2W612 lead 359B to winch override switch terminal 3.
2. Disconnect wiring harness 2W612 connector P8 from PMO pressure switch on power reduction manifold.
3. Turn MASTER switch ON and move WINCH OVERRIDE switch to OVERRIDE and WINCH TEST switch to TEST position and hold.
4. Place multimeter red lead in socket B of wiring harness 2W612 connector P8 and black lead to ground. Check for voltage.
5. Release WINCH TEST and WINCH OVERRIDE switches and turn MASTER switch OFF (TM 9-2359-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0292 01) wiring harness 2W612. Verify fault is corrected.

D

1. Reconnect wiring harness 2W612 connector P8 to PMO pressure switch.
2. Disconnect wiring harness 2W612 connector P7 from pressure switch on power reduction manifold.
3. Turn MASTER switch ON, move WINCH OVERRIDE switch to OVERRIDE and WINCH TEST switch to TEST position and hold (TM 9-2350-292-10).
4. Place multimeter red lead in socket B of wiring harness 2W612 connector P7 and black lead to ground. Check for voltage.
5. Release WINCH OVERRIDE and WINCH TEST switches and turn MASTER switch OFF (TM 92350-292-10).

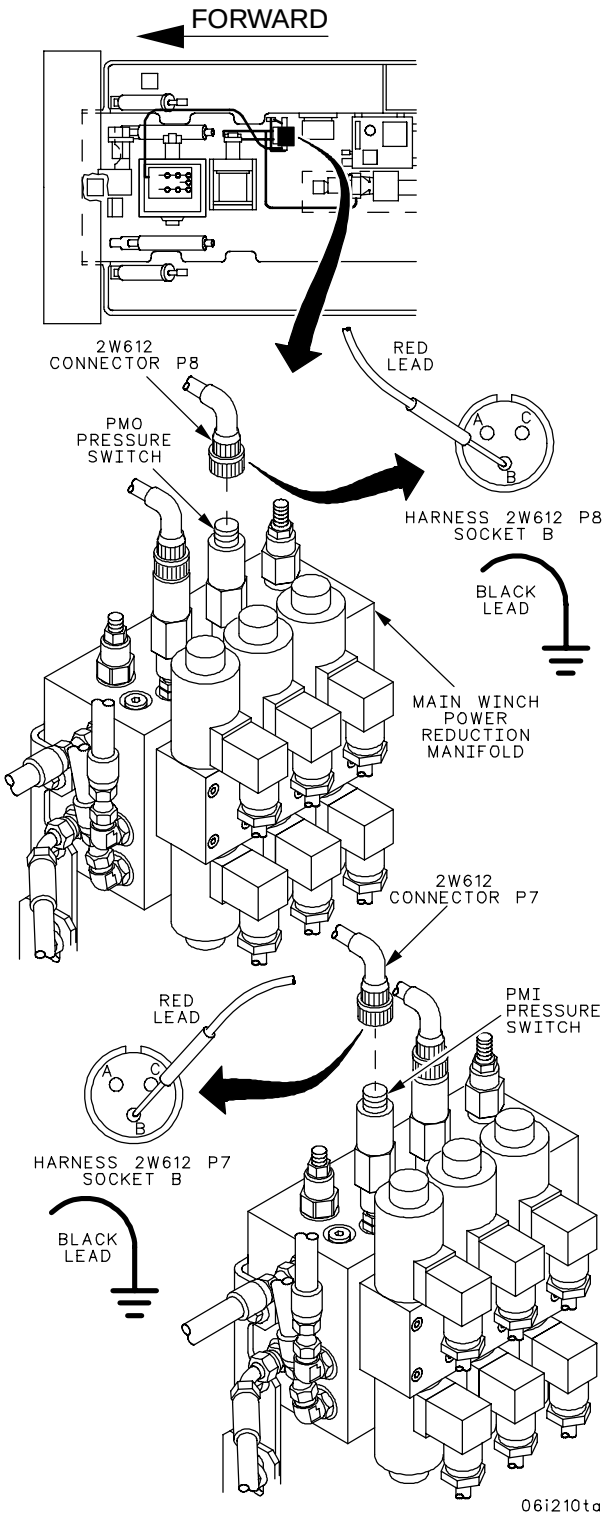
Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0292 01) wiring harness 2W612. Verify fault is corrected.

CONTINUED ON NEXT PAGE



MAIN WINCH POWER IS NOT REDUCED WHEN OVERRIDE SWITCH IS IN OVERRIDE POSITION - CONTINUED 0185 00

CONTINUED FROM STEP D

E

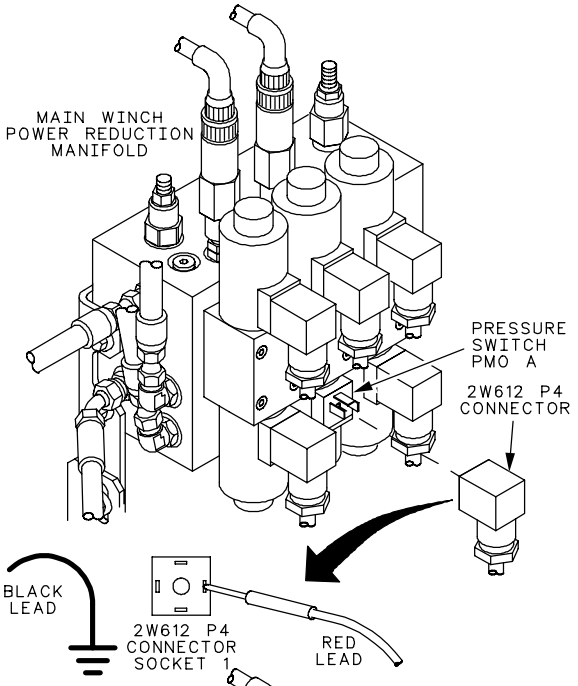
1. Reconnect wiring harness 2W612 connector P7 to PMI pressure switch.
2. Disconnect wiring harness 2W612 connector P4 from pressure switch PMO A on power reduction manifold.
3. Turn MASTER switch ON, move WINCH OVERRIDE switch to OVERRIDE and WINCH TEST switch to TEST position and hold.
4. Place multimeter red lead in socket I of wiring harness 2W612 connector P4 and black lead to ground. Check for voltage.
5. Release WINCH OVERRIDE and WINCH TEST switches and turn MASTER switch OFF (TM 92350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0292 01) wiring harness 2W612. Verify fault is corrected.



F

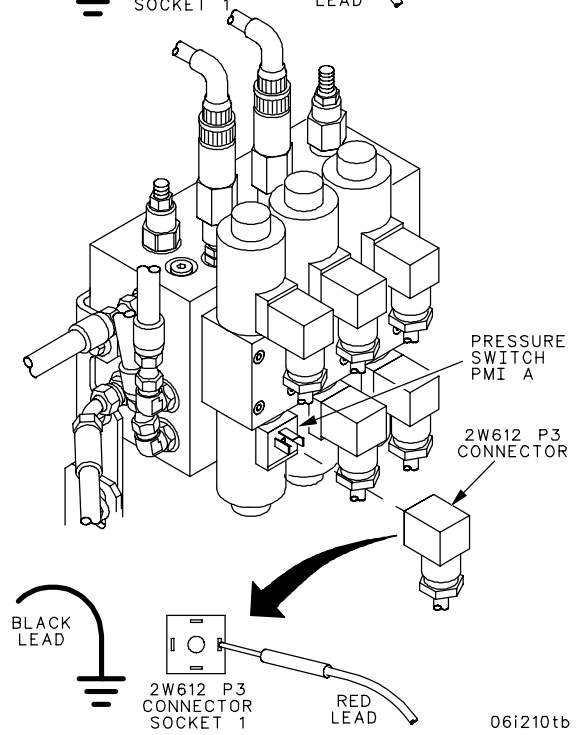
1. Reconnect wiring harness 2W612 connector P4 to PMO pressure switch A.
2. Disconnect wiring harness 2W612 connector P3 from PM1 pressure switch A on power reduction manifold.
3. Turn MASTER switch ON, move WINCH OVERRIDE switch to OVERRIDE and WINCH TEST switch to TEST position and hold.
4. Place multimeter red lead in socket 1 of wiring harness 2W612 connector P3 and black lead to ground. Check for voltage.
5. Release WINCH OVERRIDE and WINCH TEST switches and turn MASTER switch OFF (TM 92350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0292 01) wiring harness 2W612. Verify fault is corrected.



CONTINUED ON NEXT PAGE

MAIN WINCH POWER IS NOT REDUCED WHEN OVERRIDE SWITCH IS IN OVERRIDE POSITION - CONTINUED 0185 00

CONTINUED FROM STEP F

G

1. Reconnect wiring harness 2W612 connector P3 to PMI pressure switch A.
2. Disconnect wiring harness 2W612 connector P8 from PMO pressure switch.
3. Place a jumper wire between connector P8 socket B and socket C.
4. Disconnect wiring harness 2W612 connector P6 from PMO safety valve A.
5. Turn MASTER switch ON, move WINCH OVERRIDE switch to OVERRIDE and WINCH TEST to TEST position and hold.
6. Place multimeter red lead in socket 1 of connector P6 and black lead to ground. Check for voltage.
7. Release WINCH OVERRIDE and WINCH TEST switches and turn MASTER switch OFF (TM 92350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0292 01) wiring harness 2W612. Verify fault is corrected.

H

Place one multimeter lead in connector P6 socket 2 and the other lead to ground. Check for continuity.

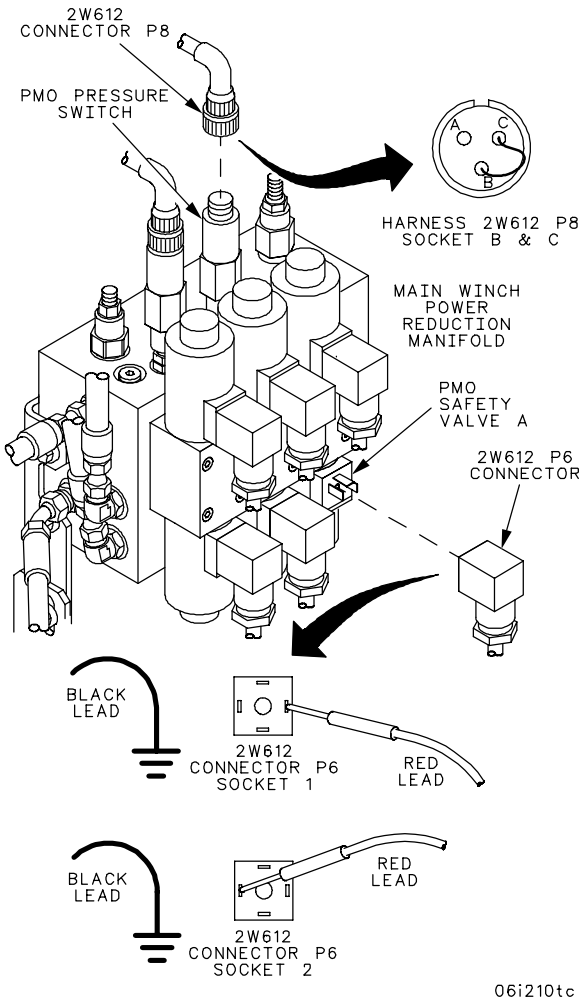
Is continuity present?

yes

no

Clean wiring harness 2W612 grounding surface and ensure proper grounding (WP 0292 01). If proper ground cannot be obtained, repair (WP 0290 00) or replace (WP 0292 01) wiring harness 2W612. Verify fault is corrected.

CONTINUED ON NEXT PAGE



MAIN WINCH POWER IS NOT REDUCED WHEN OVERRIDE SWITCH IS IN OVERRIDE POSITION - CONTINUED 0185 00

CONTINUED FROM STEP H

I

1. Reconnect wiring harness 2W612 connector P8 to PMO pressure switch.
2. Reconnect wiring harness 2W612 connector P6 from PMO safety valve A.
3. Disconnect wiring harness 2W612 connector P5 from PMI safety valve B.
4. Disconnect wiring harness 2W612 connector P7 from PMI pressure switch.
5. Place a jumper wire between socket B and C of connector P7.
6. Turn MASTER switch ON, move WINCH OVERRIDE switch to OVERRIDE and WINCH TEST to TEST position and hold.
7. Place multimeter red lead in socket 1 of connector P5 and black lead to ground. Check for voltage.
8. Release WINCH OVERRIDE and WINCH TEST switches and turn MASTER switch OFF (TM 92350-292-10).

Is 24 V dc present?

yes

no

Repair (WP 0290 00) or replace (WP 0292 01) wiring harness 2W612. Verify fault is corrected.

J

1. Reconnect wiring harness 2W612 connector P7 to PMI pressure switch.
2. Place one multimeter lead in socket 2 of wiring harness 2W612 connector P5 and the other lead to ground.
3. Check for continuity.

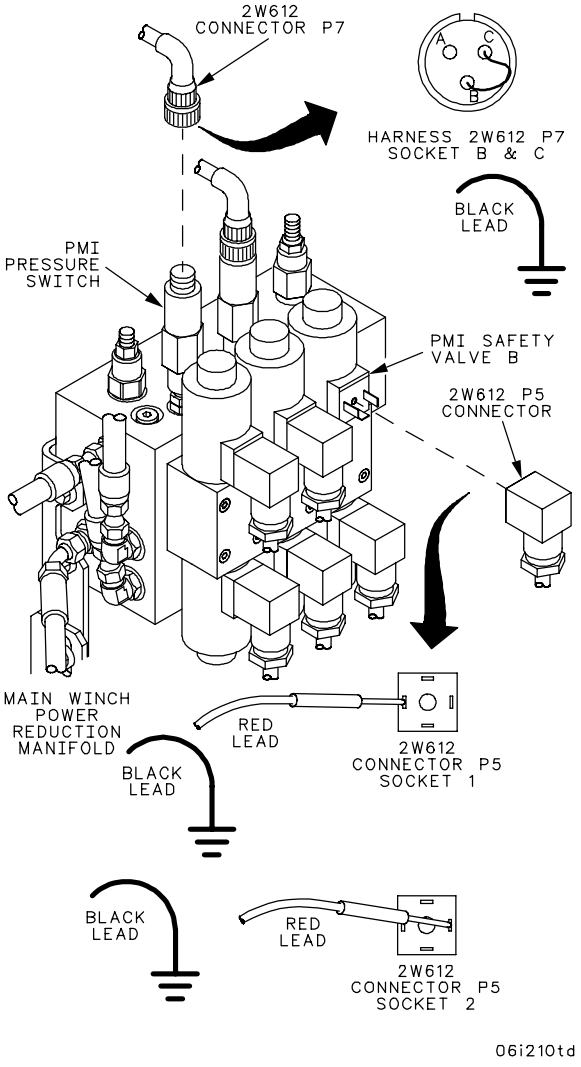
Is continuity present?

yes

no

Replace main winch power reduction manifold (WP 0557 00). Verify fault is corrected.

Clean wiring harness 2W612 grounding surface (WP 0292 01). If proper ground cannot be obtained, repair (WP 0290 00) or replace (WP 0292 01) wiring harness 2W612. Verify fault is corrected.



END OF TASK

CHAPTER 3

GENERAL MAINTENANCE INSTRUCTIONS

SERVICE UPON RECEIPT 0186 00

THIS WORK PACKAGE COVERS:

Initial Procedures, Preoperational Procedures, Operational Procedures, Equipment Faults

NOTE

If the vehicle has been shipped by rail, unblock and unload the equipment according WP 0712 00.

INITIAL PROCEDURES

Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF Form 364, Report of Deficiency.

Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions on DA PAM 738–750.

Check whether the equipment has been modified. Reference shall be made to the authorized equipment configuration change list when applicable.

Deprocessing Unpacked Equipment

Clean all tools and equipment.

Store all basic issue items in their respective vehicle storage facility as indicated in TM 9–2350–292–10.

Clean the vehicle as follows:



WARNING

Remove any rust–preventive compound from exterior surfaces with dry–cleaning solvent (item 1, WP 0716 00). Whenever possible, the vehicle crew will help in cleaning.

Armament parts are coated with rust–preventive compound when received from storage. Clean these parts thoroughly with rags or a brush saturated with dry–cleaning solvent (item 1, WP 0716 00). After complete removal of the rust–preventive compound, lubricate as specified in WP 0187 00.

Component parts of each weapon should be cleaned separately where possible. Component parts are interchangeable; however, the parts originally assembled work best together.

Assembly of Equipment

The M88A2 HRV equipment and systems are shipped as assembled units. Assembly is not required.

SERVICE UPON RECEIPT - CONTINUED 0186 00

Equipment Installation Instructions

Installation instructions for the M88A2 HRV installation of on-board vehicle equipment and stowage of equipment are shown in Chapter 16.

Follow all precautions on DD Form 1397 (Processing and Deprocessing Record for Shipment, Storage and Issue of Vehicles and Spare Engines). One tag will be with the Records Book and one in an envelope attached to the vehicle.

PREOPERATIONAL PROCEDURES

Inspect all wires/hydraulic lines/connectors, electrical connectors, welds, bolts and seals.

Installation of Batteries

Service batteries in accordance with TM 9-6140-200-14.

Install batteries in accordance with WP 0288 00.

Checking Vehicle Systems

Check for the following:

a. ENGINE OIL: Check level (TM 9-2350-292-10).

b. FUEL: Fuel vehicle (TM 9-2350-292-10).

c. TRANSMISSION OIL: Check level (TM 9-2350-292-10).

d. FIRE EXTINGUISHER BOTTLES: Check valve safety wires and seals (TM 9-2350-292-10).

SERVICE UPON RECEIPT - CONTINUED 0186 00

OPERATIONAL PROCEDURES

Initial Starting and Break-in

NOTE

Engine may contain preservative oil upon receipt. Preservative engine oils PE1 and PE2 are identical to engine oils OE-10 and OE-30, except that they contain a preservative additive. PE1 and PE2 will be used in the same manner as the regularly used engine oils OE-10 and OE-30 until the first oil change.

Start and run engine (TM 9-2350-292-10) until preservative oil is out of combustion chambers and engine is operating smoothly. Check for fuel and oil leaks immediately.

NOTE

Due to international processing, engine may be hard to start and may smoke and run rough. Let it run for 5 minutes and see if it improves. Perform troubleshooting procedures if engine fails to develop full power after 5 minutes.

Perform complete annual PMCS (Table 4, WP 0187 00).

Operational Test

Test vehicle systems for proper operation (TM 9-2350-292-10).

Road Test

Road test vehicle to check and qualify all operational systems (TM 9-2350-292-10).

EQUIPMENT FAULTS

Equipment faults disclosed during preliminary inspection and servicing or during break-in period will be corrected by the using unit or support maintenance.

Serious equipment faults which appear to involve unsatisfactory design or material will be reported on SF 368, Quality Deficiency Report (Category II), as prescribed in DA PAM 738-750.

END OF TASK

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS

0187 00

THIS WORK PACKAGE COVERS:

General Information 0187 00-1
Procedures for PMCS Services 0187 00-4
Hourly Or On-Condition (Table 1) 0187 00-7
Monthly (Table 2) 0187 00-43
Semiannually (Table 3) 0187 00-75
Annually (Table 4) 0187 00-165

INITIAL SETUP:

Personnel Required
Three

References
DD Form 314
DA Form 2404
DA PAM 738-750
TM 9-2350-292-10

GENERAL INFORMATION

This section contains Unit preventive maintenance checks and services.

Preventive maintenance is the step-by-step care, inspection and service of equipment to maintain it in good condition and to find problems before extensive and time-consuming repairs or replacements are needed. Refer to DA PAM 738-750 for instructions on use of forms for preventive maintenance services.

Intervals

The preventive maintenance checks and services listed in this work package are to be performed at Unit level at intervals determined by whichever comes first:

a. On-condition or Hourly
b. Monthly
c. Semiannually
d. Annually

The preventive maintenance checks and services listed in this work package are to be scheduled on DD Form 314 in accordance with DA PAM 738-750.

After operation in water, mud, dust or loose sand, the vehicle should be cleaned as soon as possible. Lubricate without waiting for the next scheduled service.

Lubrication Instructions

Detailed lubrication steps and instructions covering locations, intervals and lubricants for M88A2 HRV vehicles are listed in this work package.

Lubrication instructions are to be performed by Unit Maintenance personnel.

Intervals (on-condition or hard time) are based on normal operation. 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 your lubricants are contaminated or if you are operating the equipment under adverse operating conditions, including longer than usual operating hours. The hard time interval may be extended during periods of low activity. If extended, adequate preservation precautions must be taken. Hard time intervals will be applied in the event AOAP laboratory support is not available.

Engine oil/transmission oil/hydraulic fluids must be sampled as prescribed by DA PAM 738-750.

When AOAP analysis is available, change oil and filters at the direction of the AOAP laboratory.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED 0187 00

Lubrication Instructions - Continued

When AOAP analysis is not available and OE/HDO is used, change engine oil and filters at 150 hours or 1500 miles (2413 km) of operation, or Semiannually (whichever comes first). If Engine Oil, Arctic (OEA) is used, change engine oil and filters at 75 hours or 750 miles (1207 km) of operation (whichever comes first).

When AOAP analysis is not available, change transmission oil and filters at 150 hours or 1500 miles (2413 km) of operation, or Semiannually (whichever comes first).

Always use the Expected Temperature Lubrication Table to determine seasonal lubrication requirements. When changing engine and transmission oil due to seasonal requirements, always change the oil filters.

Sound maintenance practice dictates that AOAP is not a maintenance substitute, but is used as an effective maintenance diagnostic tool. Therefore, if 12 months have elapsed since the last AOAP or seasonally directed oil and filter change, the oil and filters will be changed.



WARNING

Clean parts with SOLVENT, DRY-CLEANING (P-D-680) (item 1, WP 0716 00).

Before you start your lube service, observe the following:

NEVER

a. Use wrong type lubricant.

b. Use too much lubricant.

ALWAYS

a. Clean grease fittings before lubrication.

b. Use these lubrication instructions as a guide.

c. Check for lubricant and fuel leaks along with daily services.

d. Check for clogged/unserviceable lubrication fitting if lubricant is not visible after attempting to service. If lubrication fitting is clogged/unserviceable, replace fitting and repeat service.

After water fording, you must lubricate.

Make sure vehicle is level when checking oil levels: If it isn't, you'll get incorrect readings on dipsticks and sight gauges.

Oil filters shall be serviced/cleaned/changed as applicable, when:

a. They are known to be contaminated or clogged.

b. Service is recommended by AOAP laboratory analysis, or

c. At prescribed hardtime intervals.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

0187 00

Lubrication Instructions - Continued

Abbreviation	Term
CAT-10	Lubricating Oil, Transmission Drive Train
CW	Lubricating Oil, Chain, Wire Rope, Exposed Gear(W-L-751)
FRH	Hydraulic Fluid, Fire Retardant (MIL-H-46170)
GAA	Grease, Automotive and Artillery (MIL-G-10924)
GO	Lubrication Oil, Gear, Multi-purpose (MIL-L-2105)
OEA	Lubricating Oil, Internal Combustion Engine, Arctic (MIL-L-46167)
OE/HDO	Lubricating Oil, Tactical Service (MIL-L-2104)
PL-S	Lubricating Oil, General Purpose Preservative (VV-L-800)

Procedures

(1) Routine applications. TM 9-2350-292-20-1 and 20-2 contains maintenance instructions which the Unit mechanic must use to perform his duties.

(2) Crew participation. The crew will accompany the vehicle and help the Unit mechanics perform the Unit Services.

(3) Vehicle cleanliness. The crew should bring a clean vehicle to a scheduled preventive maintenance service. It should be dry and not caked with mud. Washing the vehicle should not be done just before an inspection. Some defects, such as loose parts and oil leaks, may not be noticed immediately after washing.

Services

Unit level services. Defined by and limited to, the following general procedures. Approval to perform higher level services must be given by the supporting maintenance unit.

(1) Adjustment. Make all needed adjustments using instructions in this TM and/or technical bulletins.

(2) Cleaning. Clean the unit to remove old lubricant, dirt and other foreign matter. Special cleaning instructions are given as needed.

(3) Special lubrication. Applies either to lubrication operations that do not appear in the Lubrication Instructions or to items that do appear, but which should be done with the annual service.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED 0187 00

Services - Continued

(4) Service. Servicing covers operations such as adding battery water, draining and refilling units with oil and changing or cleaning the oil filters, fuel filters and air cleaners.

(5) Tightening. All tightening operations should be done according to specified torque readings where noted in this manual. When specific torque limits are not indicated in the maintenance procedure, use the general torque limits that are given in WP 0720 00.

When torque values are not specified in the maintenance procedure, care should be taken not to strip or distort threads by over tightening. Prior to tightening, clean the screw holes to remove lubricant, dirt, fluids and other foreign matter. Tightening includes the correct installing of lockwasher, nut, lockwire or cotter pin needed to secure the tightened nut or bolt in place.

General torque limits in WP 0720 00 cannot be applied to screws that retain rubber components. The rubber components may be damaged before the correct torque limit is reached. If a special torque limit is not given in the maintenance instructions for rubber component, tighten the screw or nut until it touches the metal, then tighten it one more turn.

(6) Repair. Restore an item to serviceable condition. This includes, but is not limited to, inspection, cleaning, preserving, adjusting, replacing, welding, riveting and strengthening.

PROCEDURES FOR PMCS SERVICES

DA Form 2404, Equipment Inspection and Maintenance Worksheet, is used by the mechanic to record periodic maintenance services performed and faults corrected. The item number on DA Form 2404 must correspond to the item number of the preventive maintenance check.

Specified items to be checked are found in Table 1 through Table 4. Before you begin to check specific items, remember to check things common in all areas.

NOTE

Perform Unit Maintenance level repair or replacement as authorized. Report faulty equipment which is beyond Unit Maintenance as prescribed in DA PAM 738-750.

Electrical Wires and Connectors

Electrical wiring should be checked for cracks due to aging and for exposed wires which cause electrical shorts. Repair with electrical tape or replace. Check connectors and tighten if loose (complete wiring diagram, harnesses and detail in Chapter 8 and electrical schematics (FP-1 through FP-22) of this manual). Notify support maintenance if further repair is required.

Welds

Many items are attached to the vehicle with welds. Check for damaged welds by looking for chipped paint or oxidation. Notify support maintenance if further repair is required.

Seals

Check for leaks around seals. Check gasket material. Check door and hatch seals. Check for deterioration, cracks and tears.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

Bolts

Check for loose bolts. A loose bolt can be difficult to spot without actually applying a wrench. You can often tell by loose or chipped paint around the bolt head and bare metal or oxidation present at the base of the bolt head.

Hoses and Fluid Lines and Fittings

Check all hoses and lines for signs of wear (deterioration or cracks), leaks, loose clamps and loose fittings. A stain around a fitting is a sign of a leak. Tighten, repair or replace hoses and fittings. After completing a repair or replacement of hydraulic components, always start up the hydraulic system, pressurize the repaired/replaced components and check for leaks in the pertinent fittings. Tighten as required.

Inserts

If inserts are damaged when removing a component, notify support maintenance.

Corrosion Prevention and Control

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items. Refer to WP 0001 00 for more information on Unit level CPC.

Classification of Fluid Leaks

CAUTION

Equipment operation is allowable with minor leakage (Class I or II). Consideration must be given to the fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor. When operating with Class I or II leaks, continue to check fluid levels as required in your PMCS. Class III leaks should be reported to unit maintenance supervisor.

Class I: Seepage of fluid (indicated by wetness or discoloration) not great enough to form drops.

Class I: Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.

Class III: Leakage of fluid great enough to form drops that fall from item being checked/inspected.

Warnings and Cautions

Always observe the WARNINGS, WARNING ICONS and CAUTIONS in your PMCS table. WARNINGS, WARNING ICONS and CAUTIONS appear before applicable procedures. You must observe these WARNINGS, WARNING ICONS and CAUTIONS to prevent serious injury to yourself and others or prevent equipment from being damaged.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED 0187 00

Explanation of Table Entries

(1) Item Number Column. Numbers in this column are for reference. When completing DA Form 2404 (Equipment Inspection and Maintenance Worksheet), include item number for the check/service indicating a fault. Item numbers also appear in the order that you must do the checks.

(2) Interval Column. This column tells you when you must do the procedure listed in the procedure column.

(3) Location, Item to Check/Service Column. This column provides the location and the item to be checked or serviced. The item location is underlined.

(4) Procedure. This column gives the procedure you must do to check or service the item listed in the Check/Service 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.

(5) Not Fully Mission Capable if : column. Information in this column tells you what faults will keep your equipment from being capable of performing its primary mission. If you make check and service procedures that show faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failure.

END OF TASK

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED 0187 00

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 000717 00)
Jack screws (item 80, WP 0717 00) **(for engine oil filter cover)**
Oil filter removal tool (item 87, WP 0717 00) **(for APU oil filter)**
Suitable container (1 gal. minimum) **(for APU crankcase oil)**
Suitable container (1.5 gal. minimum) **(for APU crankcase oil)**
Suitable container (20 gal. minimum) **(for transmission or engine oil)**
Suitable container (85 gal. minimum) (for hydraulic fluid)
Torque wrench (item 2, WP 0717 00) **(for transmission oil filter covers)**
Torque wrench (item 2, WP 0717 00) **(for engine oil filter covers)**
Offset Funnel (item 130, WP 0717 00) **(for engine oil fill)**
Measure and fill utility jug (item 131, WP 0717 00) **(for engine oil fill)**

Materials/Parts

Lubricant (item 94, WP 0716 00)
Lubricant (item 31, WP 0716 00)
Wiping rags (item 7, WP 0716 00
For oil sampling:
Oil sampling bottle (8125-01-082-09697)
Oil sampling pump (4930-01-119-4030)
Plastic bag (item 48, WP 0716 00)
Shipping sack (8105-00-290-0340)

Materials/Parts - Continued

For APU chaincase oil change:
Gasket (item 142, WP 0178 00)
For ONAN APU crankcase oil change:
Filter element (item 250, WP 0718 00)
For HATZ APU crankcase oil change:
Filter element (item 252, WP 0718 00)
For transmission and output reduction drive oil change:
Lockwashers (18) (item 65, WP 0718 00)
Gasket (item 238, WP 0718 00)
Transmission oil filter kit (Right) (item 399, WP 0718 00)
Transmission oil filter kit (Left) (item 400, WP 0718 00)
For main engine crankcase oil change:
Engine oil filter kit (item 253, WP 0718 00)
Lockwashers (6) (item 65, WP 0718 00)
Gasket (item 327, WP 0718 00)
Self-locking nuts (10) (item 251, WP 0718 00)
For hydraulic reservoir fluid change:
Hhydraulic fluid filter kit (item 296, WP 0718 00)

Personnel Required

Three

References

WP 0717 00
WP 0596 00
WP 0597 00
WP 0453 00
WP 0434 00
WP 0716 00
WP 0718 00
WP 0353 00
WP 0196 00
WP 0454 00
WP 0554 00

NOTE

Refer to PMCS temperature chart for proper lubricants to use at different temperature ranges.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

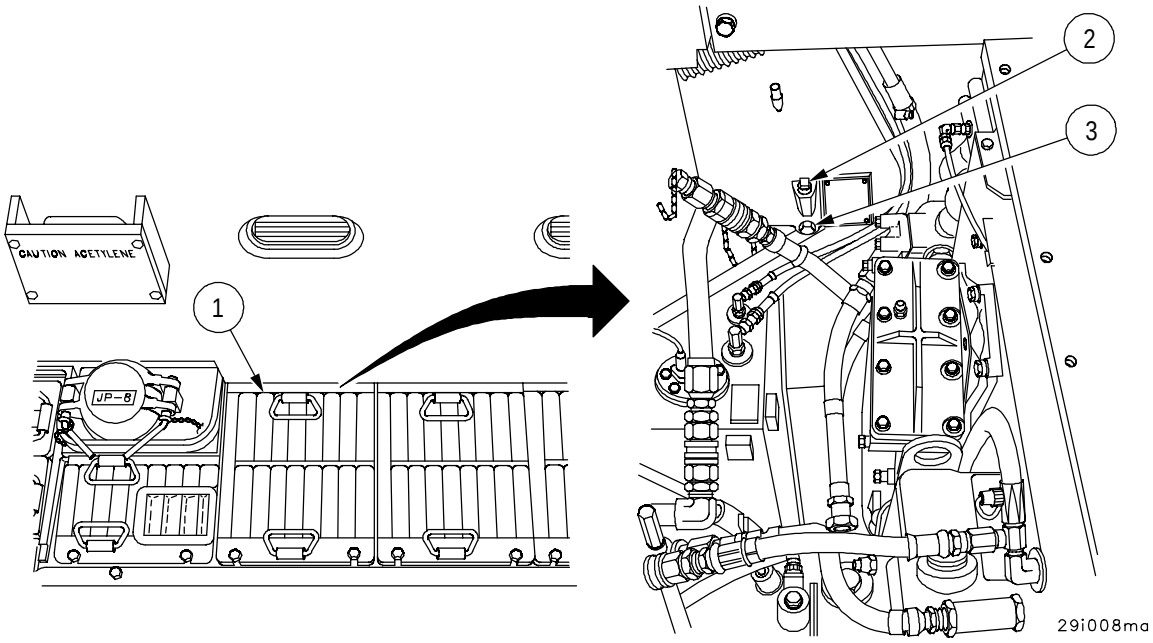
TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
1	100 H	Auxiliary Power Unit Chaincase Oil Change	**WARNING** Auxiliary power unit (APU) engine is hot after operation. Use caution when reaching into the APU compartment. Skin contact with hot surface could cause severe burns. Hot oil can cause severe burns. APU chaincase oil is hot after operation. Use caution when draining oil. Injury may occur to personnel if hot oil gets on clothing or skin.	Any Class III leaks.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

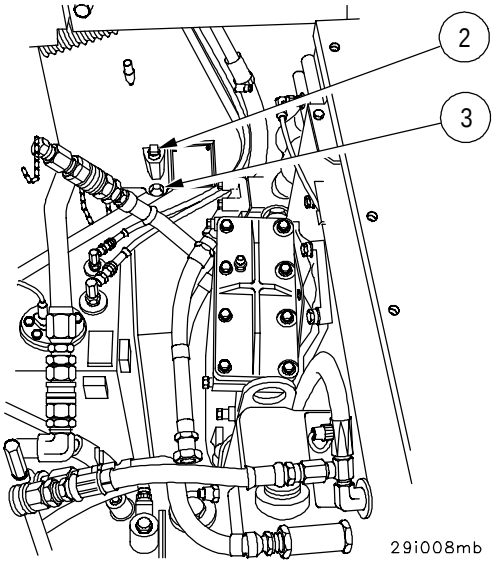
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
1	100 H	Auxiliary Power Unit Chaincase Oil Change - Continued	**NOTE** Drain oil only when hot after operation. Coordinate any seasonal change of oil weight with this service. a. Park vehicle on level surface (TM 9-2350-292-10). b. Remove front engine deck grilles (1) (TM 9-2350-292-10). c. Open hull rear drain (TM 9-2350-292-10). Position suitable container (1.5-quart minimum capacity) under hull rear drain. d. Remove chaincase filler plug (2). e. Remove chaincase drain plug (3) and drain oil into suitable container. Discard drain plug gasket.	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
1	100 H	Auxiliary Power Unit Chaincase Oil Change - Continued	f. Clean chaincase drain plug (3) and filler plug (2) with clean rag (item 7, WP 0716 00). g. Install chaincase drain plug (3) with new gasket (item 142, WP 0716 00) in chaincase.	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

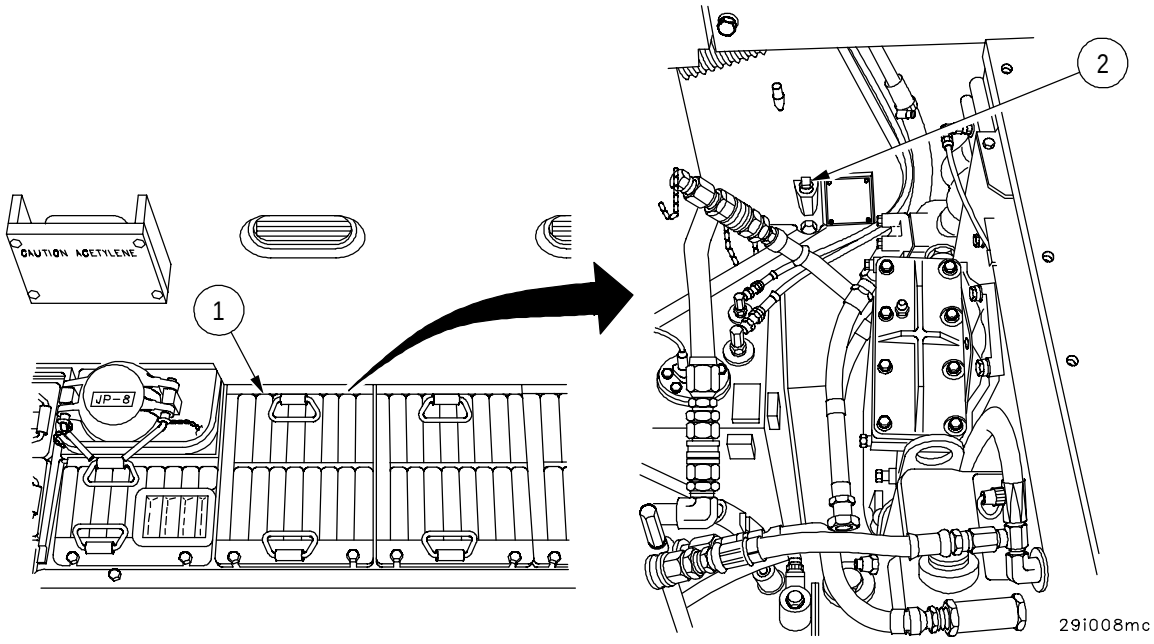
TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
1	100 H	Auxiliary Power Unit Chaincase Oil Change - Continued		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
OIL: Lubricating Oil, OE/HDO MIL-L-2104 or OEA MIL-L-46167	1 qt (0.95 L)	15 W40 or OE/HDO-30 (0-237)	OE/HDO-10 (0-237)	OEA (0-183)

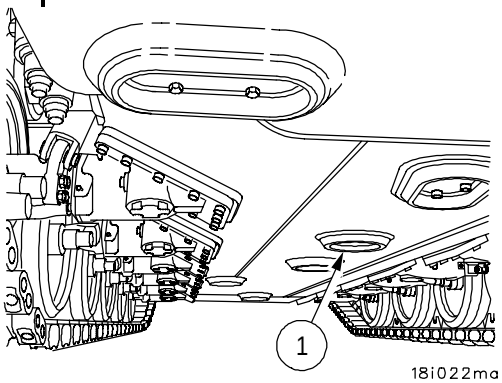
*For Arctic Operation, refer to FM 9-207

h. Fill chaincase with proper grade oil until oil level reaches bottom of fill hole. Install filler plug (2).
i. Install front engine deck grilles (1) (TM 9-2350-292-10).
j. Close hull rear drain (TM 9-2350-292-10).



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

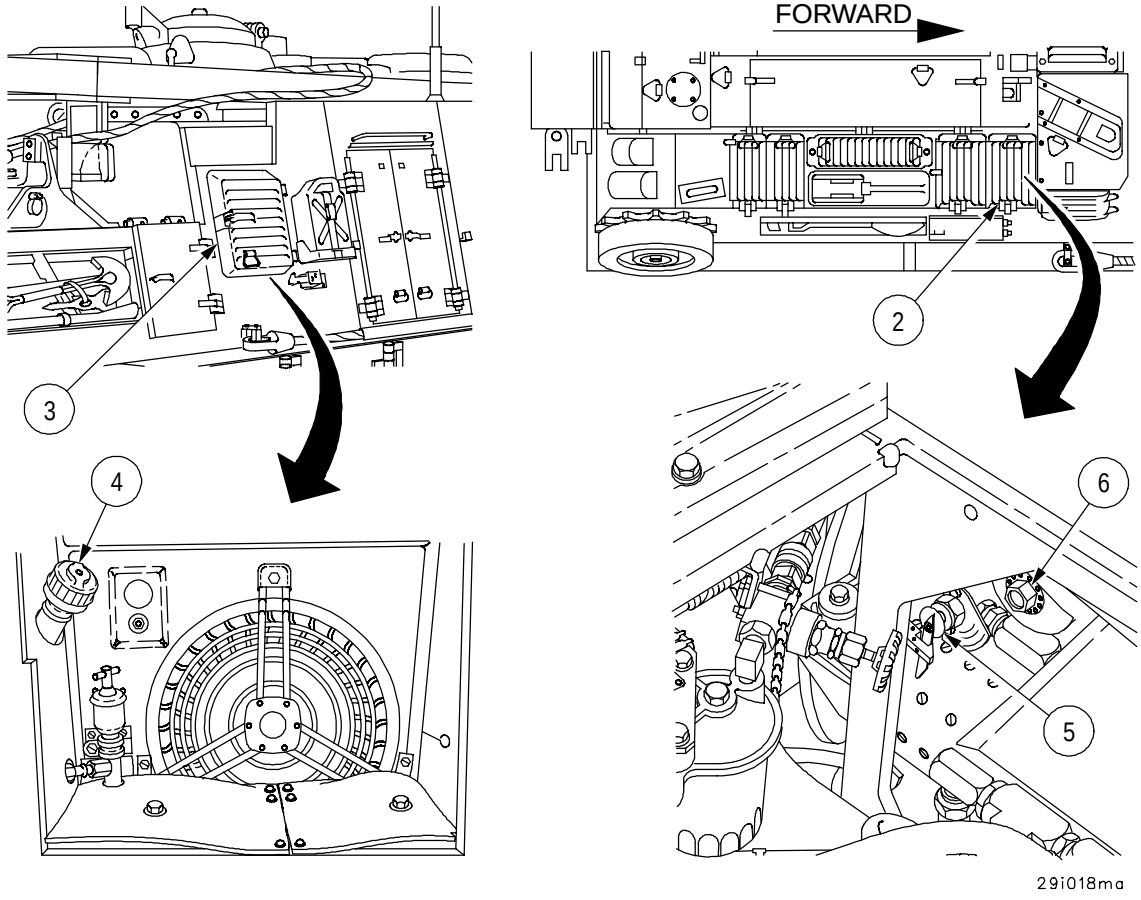
TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
2	100 H	Auxiliary Power Unit Crankcase Oil Change (ONAN)	**WARNING** Auxiliary power unit (APU) engine is hot after operation. Use caution when reaching into the APU compartment. Skin contact with hot surface could cause severe burns. Hot oil can cause severe burns. APU engine oil is hot after operation. Use caution when draining oil. Injury may occur to personnel if hot oil gets on clothing or skin. **NOTE** Drain oil only when hot after operation. Coordinate any seasonal change of oil weight with this service. Coordinate APU engine oil filter change with this procedure. a. Park vehicle on a level surface (TM 9-2350-292-10). b. Open hull drain valve (1) (TM 9-2350-292-10).  18i022ma	Oil level below Add mark, above Full mark. Class III oil leaks.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
2	100 H	Auxiliary Power Unit Crankcase Oil Change (ONAN)- Continued	c. Open right front engine deck access doors (2) and APU compartment access door (3) (TM 9-2350-292-10). d. Place suitable container (1-gallon minimum capacity) under rear hull drain. e. Remove oil filler cap (4). f. Open APU crankcase drain valve (5) and allow oil to drain into suitable container. Close APU crankcase drain valve (5). g. Change APU engine oil filter (6) (WP 0596 00).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

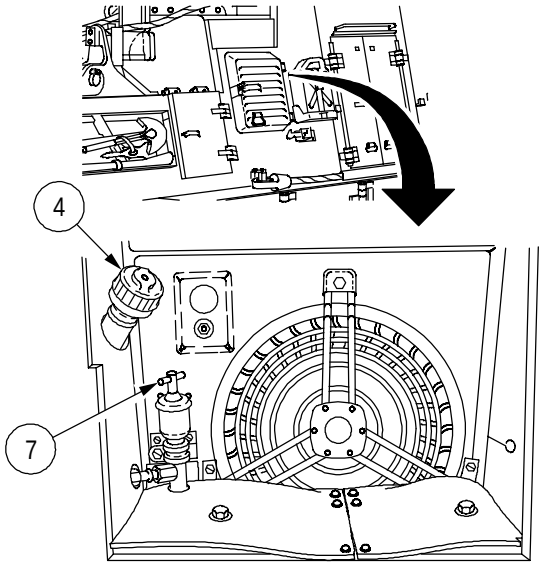
TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
2	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
	100 H	Auxiliary Power Unit Crankcase Oil Change (ONAN)- Continued		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
OIL: Lubricating Oil, OE/HDO MIL-L-2104 or OEA MIL-L-46167	3.5 qt (3.31 L)	15 W40 or OE/HDO-30 (0-237)	OE/HDO-10 (0-237)	OEA (0-183)

*For Arctic Operation, refer to FM 9-207

h. Fill crankcase with proper grade of oil.
i. Remove bayonet gauge (7) and check that oil level reaches FULL mark. If required, add additional oil.
j. Insert bayonet gauge (7) and oil filler cap (4).
k. Start APU and operate for three to five minutes (TM 9-2350-292-10).



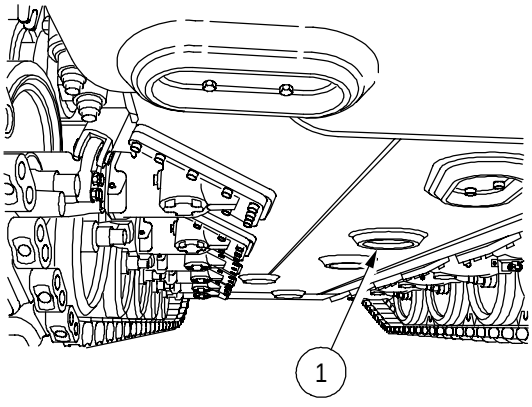
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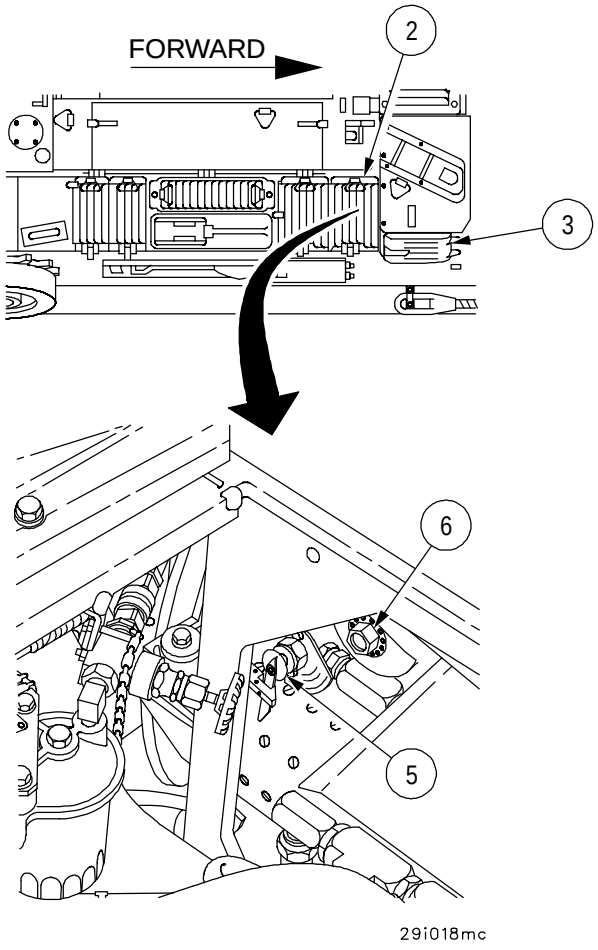
PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

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TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

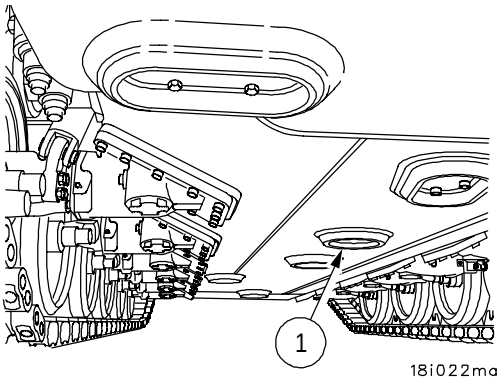
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
2	100 H	Auxiliary Power Unit Crankcase Oil Change (ONAN) - Continued	l. Check for leaks at filter (6) and APU crankcase drain valve (5). m. Shut down APU (TM 9-2350-292-10) and perform steps i and j. n. Close APU access door (3) and hull drain valve (1) (TM 9-2350-292-10). o. Close right front engine deck access doors (2) (TM 9-2350-292-10).	





PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

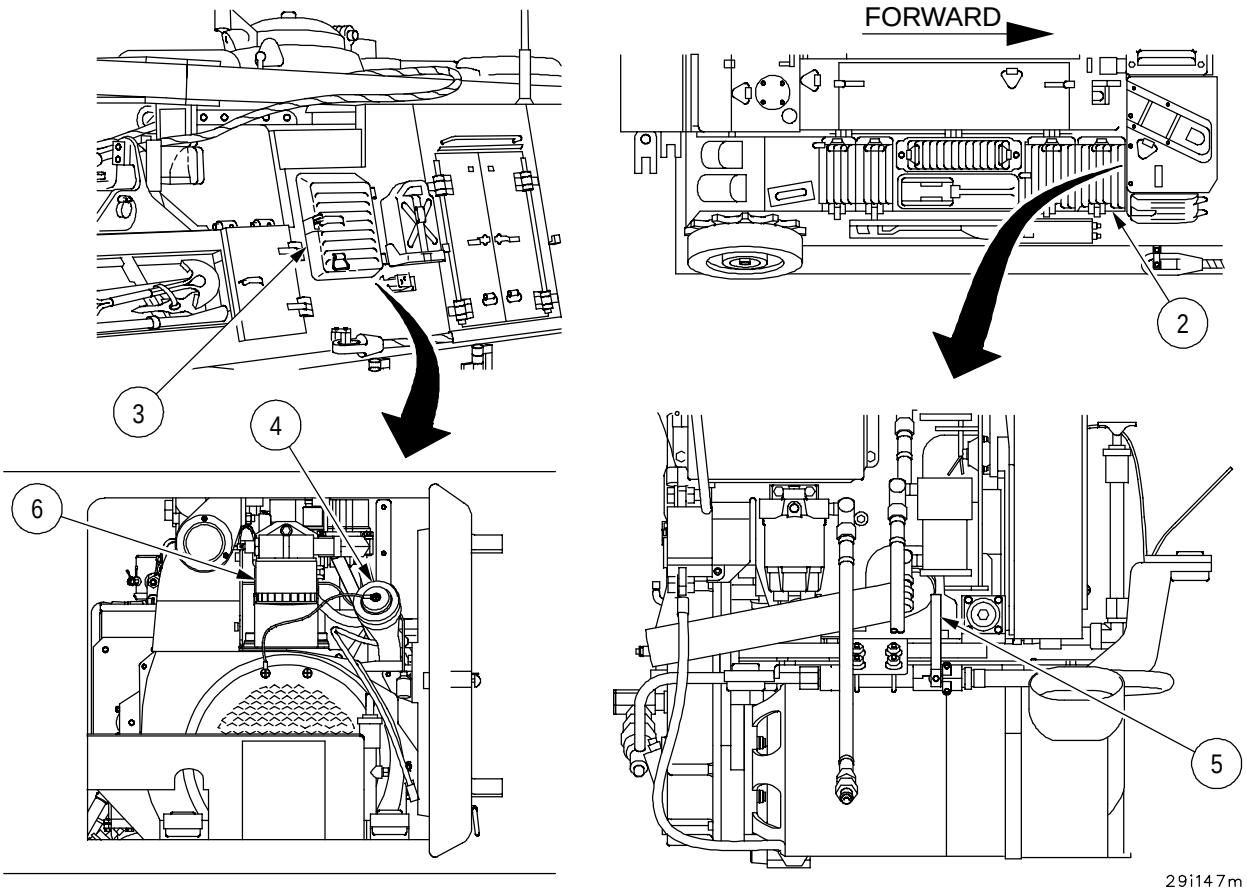
TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
3	100 H	Auxiliary Power Unit Crankcase Oil Change (HATZ)	**WARNING** Auxiliary power unit (APU) engine is hot after operation. Use caution when reaching into the APU compartment. Skin contact with hot surface could cause severe burns. Hot oil can cause severe burns. APU engine oil is hot after operation. Use caution when draining oil. Injury may occur to personnel if hot oil gets on clothing or skin. **NOTE** Drain oil only when hot after operation. Coordinate any seasonal change of oil weight with this service. Coordinate APU engine oil filter change with this procedure. a. Park vehicle on a level surface (TM 9-2350-292-10). b. Open hull drain valve (1) (TM 9-2350-292-10).  18i022ma	Oil level below Add mark, above Full mark. Class III oil leaks.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
3	100 H	Auxiliary Power Unit Crankcase Oil Change (HATZ)-Continued	c. Open right front engine deck access doors (2) and APU compartment access door (3) (TM 9-2350-292-10). d. Place suitable container (1-gallon minimum capacity) under rear hull drain. e. Remove oil filler cap (4). f. Open APU crankcase drain valve (5) and allow oil to drain into suitable container. Close APU crankcase drain valve (5). g. Change APU engine oil filter (6) (WP 0597 00).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

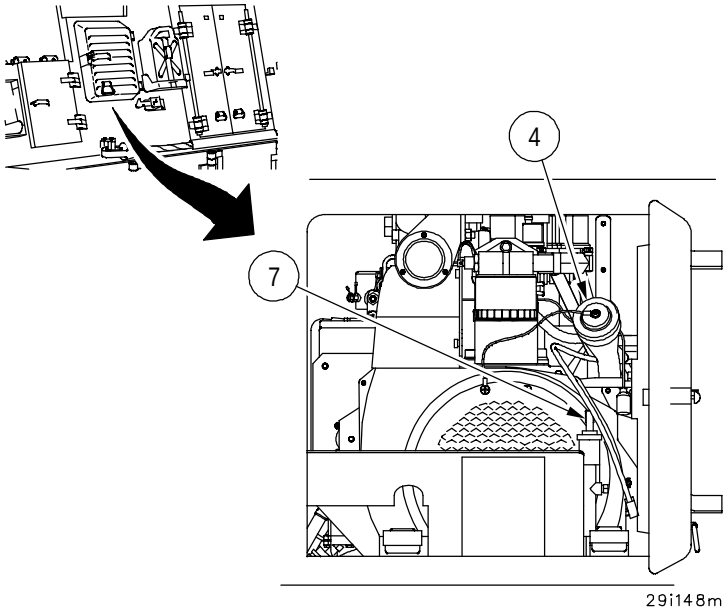
TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
3	100 H	Auxiliary Power Unit Crankcase Oil Change (HATZ) - Continued		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
OIL: Lubricating Oil, OE/HDO MIL-L-2104 or OEA MIL-L-46167	3.17 qt (3 L)	15 W40 or OE/HDO-30 (0-237)	OE/HDO-10 (0-237)	OEA (0-183)

*For Arctic Operation, refer to FM 9-207

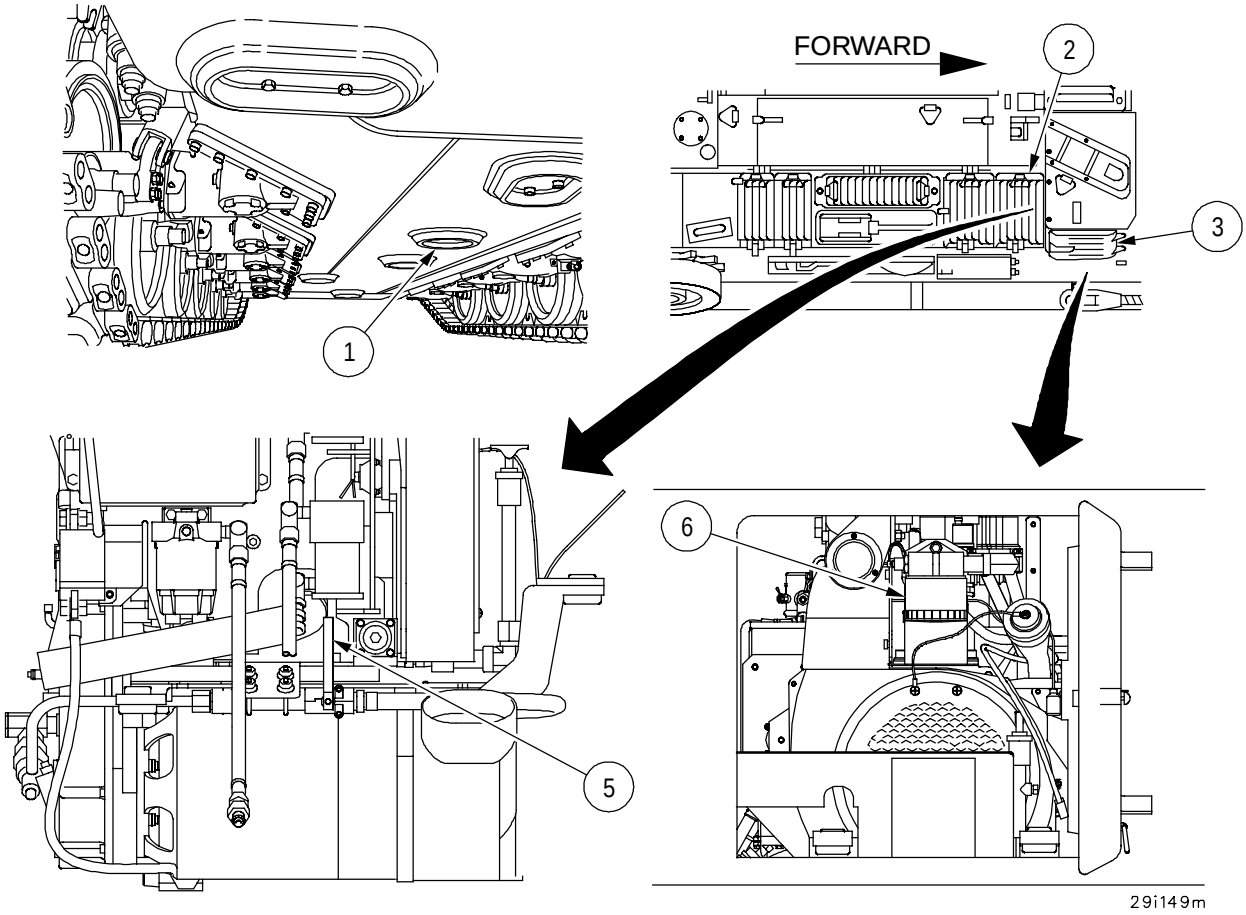
h. Fill crankcase with proper grade of oil.
i. Remove saber gauge (7) and check that oil level reaches FULL mark. If required, add additional oil.
j. Insert saber gauge (7) and oil filler cap (4).
k. Start APU and operate for three to five minutes (TM 9-2350-292-10).



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
3	100 H	Auxiliary Power Unit Crankcase Oil Change (HATZ) - Continued	l. Check for leaks at filter (6) and APU crankcase drain valve (5). m. Shut down APU (TM 9-2350-292-10) and perform steps i and j. n. Close APU access door (3) and hull drain valve (1) (TM 9-2350-292-10). o. Close right front engine deck access doors (2) (TM 9-2350-292-10).	

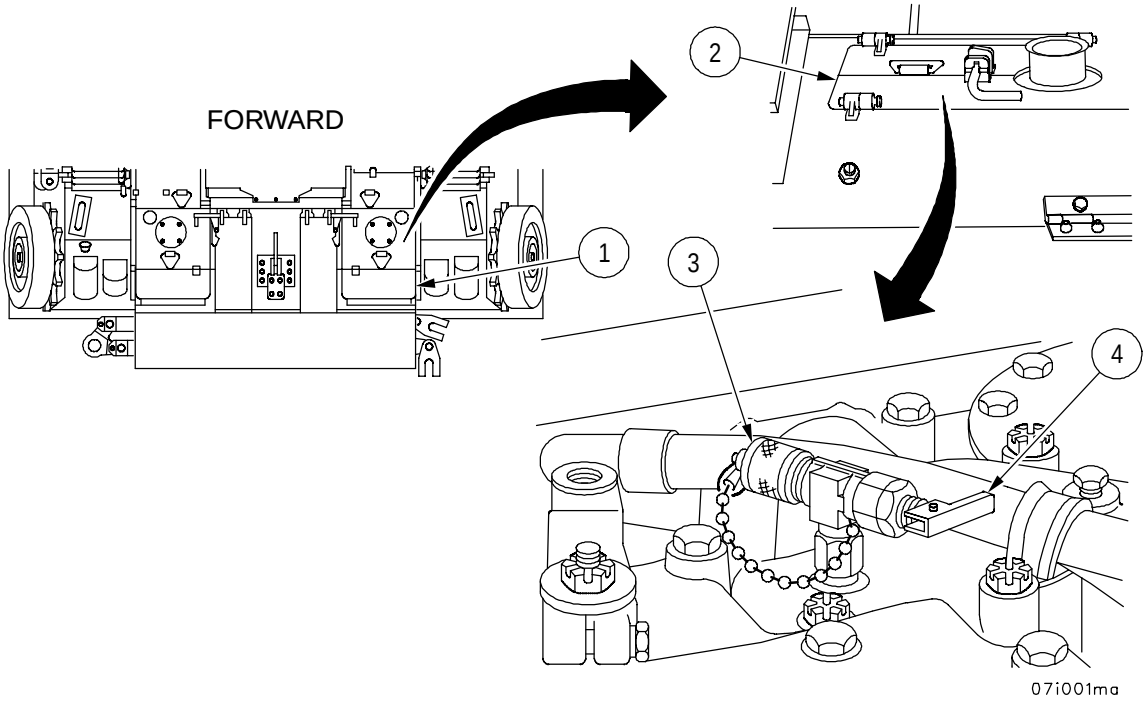


PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

0187 00

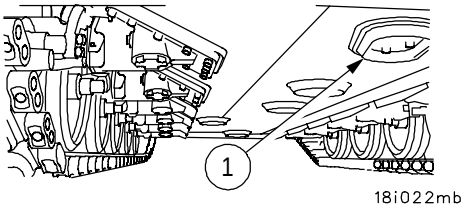
TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
4	OC	Transmission AOAP Sampling	**NOTE** Refer to Army Oil Analysis Program (AOAP) TB 43-0210. a. Park vehicle on level surface (TM 9-2350-292-10). b. Open engine exhaust grille door (1) and exhaust pipe door (2) (TM 9-2350-292-10). c. Start engine and bring to operating temperature (TM 9-2350-292-10). d. Remove protective cap (3) from sampling valve (4). Position sample collection bottle under sampling valve (4). Lift sampling valve (4) control handle and fill bottle to required level. Install protective cap (3). e. Close exhaust pipe door (2) and engine exhaust grille door (1) (TM 9-2350-292-10).	Does not pass oil analysis test or if metal flakes or other contaminants are visible or any Class III leaks.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

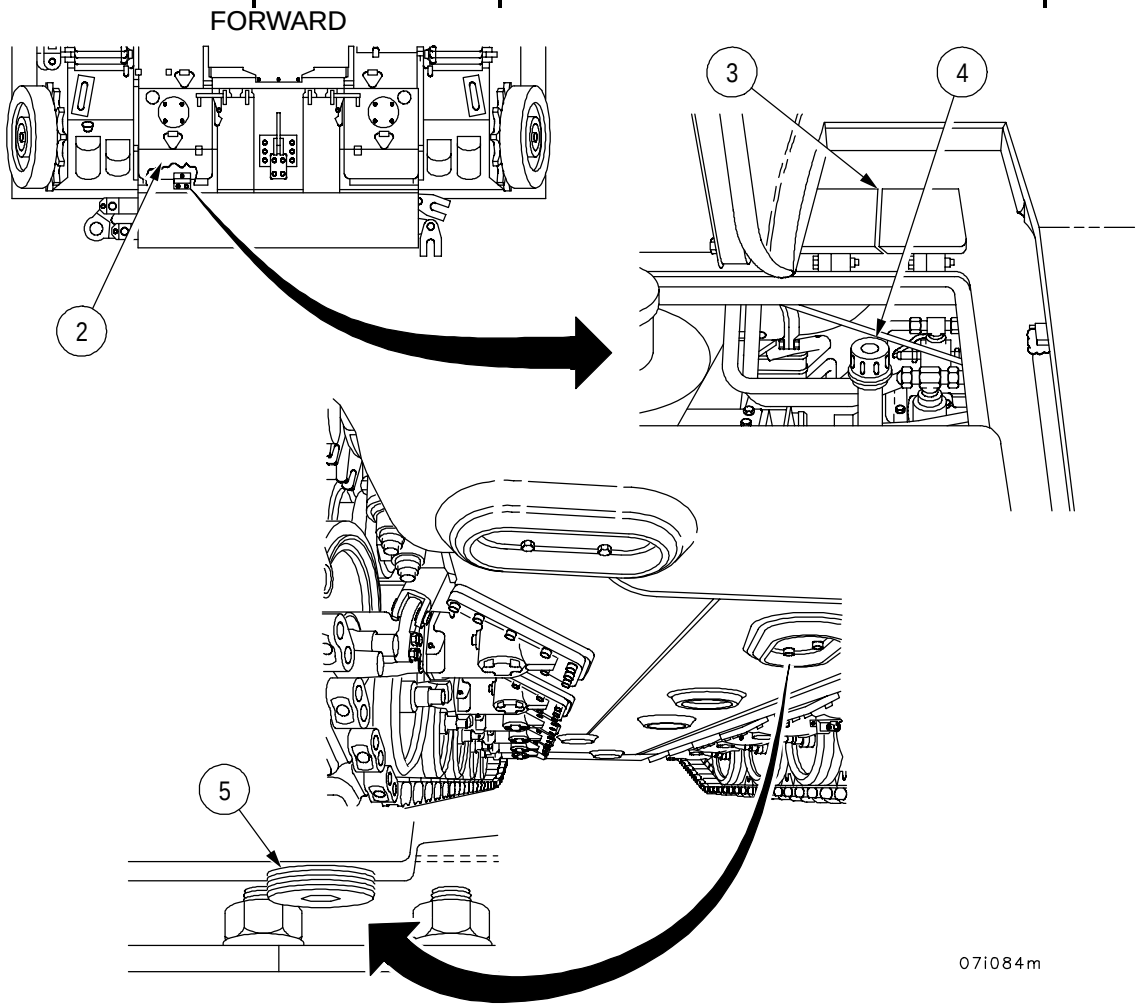
TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
5	OC	Transmission and Output Reduction Drive Oil Change	**WARNING** Hot oil can cause severe burns. Transmission oil is hot after operation of vehicle. Use caution when draining oil. Injury may occur to personnel if hot oil gets on clothing or skin. **NOTE** Drain only when hot after operation. Refer to Army Oil Analysis Program (AOAP) TB 43-0210. Coordinate any seasonal change of oil weight with this service. Coordinate transmission oil filter change with this procedure. a. Park vehicle on level surface. b. Remove transmission drain access cover (1) (WP 0453 00).  18i022mb	Class III leaks or signs of contaminants, low oil level, oil level over filled.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

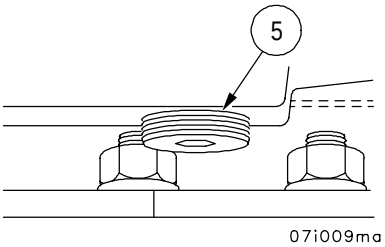
TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
5	OC	Transmission and Output Reduction Drive Oil Change - Continued	c. Place suitable container (20 gallon minimum capacity) under transmission drain. d. Open engine exhaust grille door (2) and exhaust pipe doors (3). (TM 9-2350-292-10). e. Remove oil filler tube cap and gauge rod (4). f. Remove transmission oil drain plug (5) and allow oil to drain into container.	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

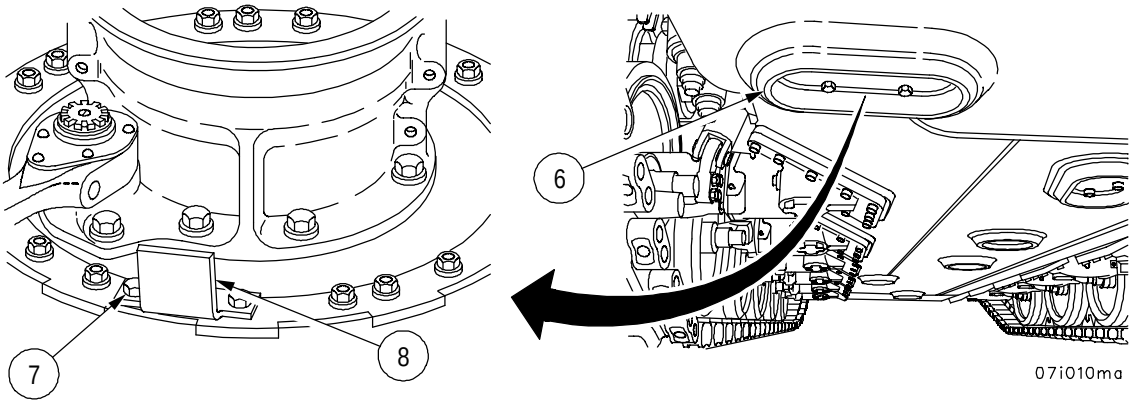
TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
5	OC	Transmission and Output Reduction Drive Oil Change - Continued	g. Clean drain plug (5) with clean rag (item 7, WP 0716 00). h. Install drain plug (5) in transmission.  07i009ma	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
5	OC	Transmission and Output Reduction Drive Oil Change - Continued	**NOTE** Steps i through l apply to either output reduction drives. i. Remove output reduction drive access cover (6) (WP 0434 00). j. Place suitable container (20 gallon minimum capacity) under output reduction drive drain. k. Remove bolt (7) securing end of brake stop (8) and drain oil into suitable container. l. Clean bolt (7) with clean rag (item 7, WP 0716 00) and install bolt (7) in output reduction drive. m. Change transmission oil filters (WP 0353 00).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

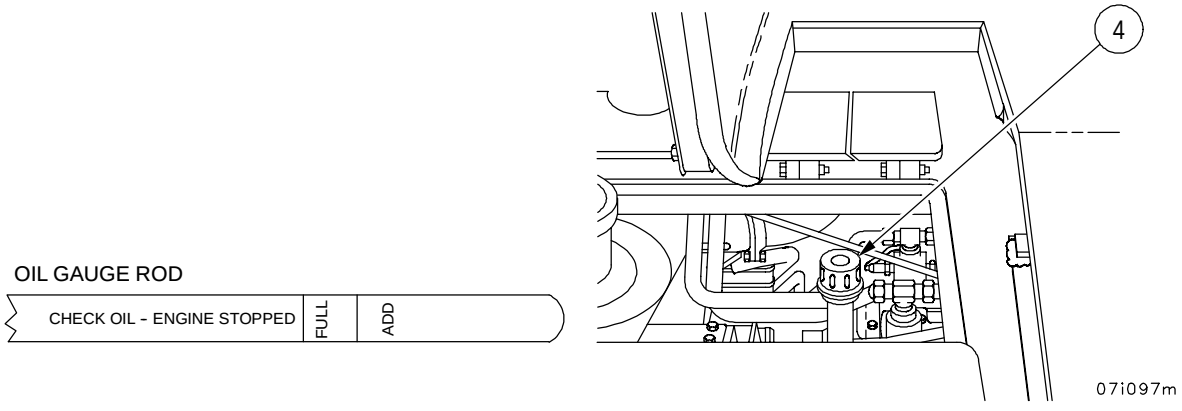
TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
5	OC	Transmission and Output Reduction Drive Oil Change - Continued	**CAUTION** Transmission oil level must be checked prior to starting vehicle engine to ensure that sufficient oil is present to permit starting. If vehicle is operated with transmission oil level below ADD mark on the oil level gauge rod, reliability and durability of transmission may be reduced.	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
Oil: Lubricating Oil, TDTO, TO-4 (CAT 10) OR MIL-L-46167	17.0 gal (64.35L)	CAT 10 (10W)	CAT 10 (10W)	OEA

*For Arctic Operation, refer to FM 9-207

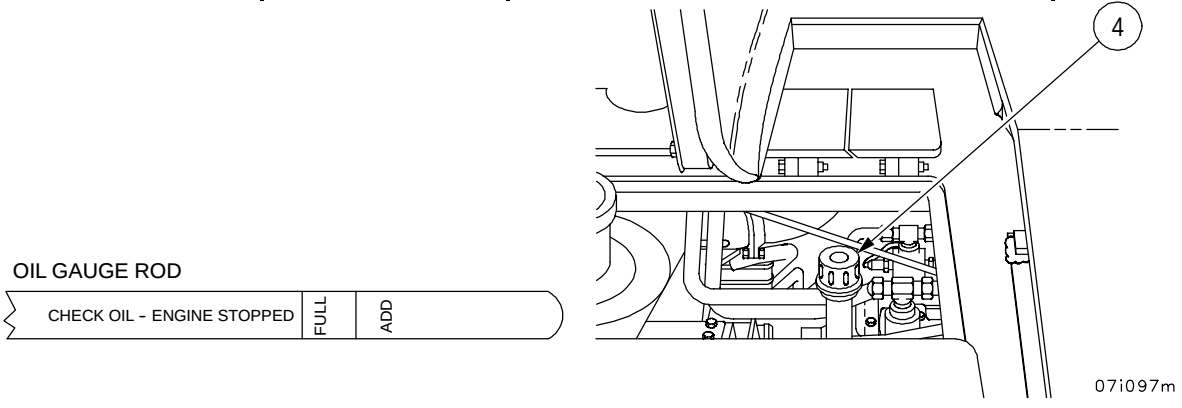
n. Fill transmission with proper grade oil until oil level is indicated just below ADD mark on oil filler tube cap and gauge rod (4).



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
5	OC	Transmission and Output Reduction Drive Oil Change - Continued	o. Remove, clean and install oil filler tube cap and gauge rod (4) onto transmission oil filler tube. p. Remove oil filler tube cap and gauge rod (4) and verify that oil level is present below the ADD mark on oil filler tube cap and gauge rod (4). Install oil filler tube cap and gauge rod (4) onto oil filler tube. **NOTE** Excess oil may be removed from transmission using the AOAP valve. q. If indicated oil level is <u>above</u> FULL mark on the oil filler tube cap and gauge rod (4), start engine (TM 9-2350-292-10) and remove excess oil from transmission until oil level is indicated just below the ADD mark on oil filler tube cap and gauge rod (4). **NOTE** The transmission oil level is now adequate to permit the engine to be started. However, this does not verify that oil level is adequate for vehicle operation.	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
5	OC	Transmission and Output Reduction Drive Oil Change - Continued	 **WARNING**  **WARNING**  **WARNING** **WARNING** If vehicle is operated with transmission oil level above the FULL mark on oil gauge rod, smoke and fire may occur in vehicle exhaust system, resulting in damage to equipment or death to personnel. **CAUTION** If vehicle is operated with transmission oil level below ADD mark, reliability and durability of transmission may be reduced. **NOTE** The transmission assembly includes several compartments that contain oil. The transmission assembly also includes several pumps that transfer oil between these compartments.	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

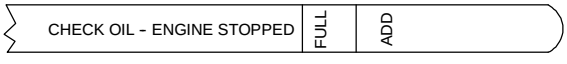
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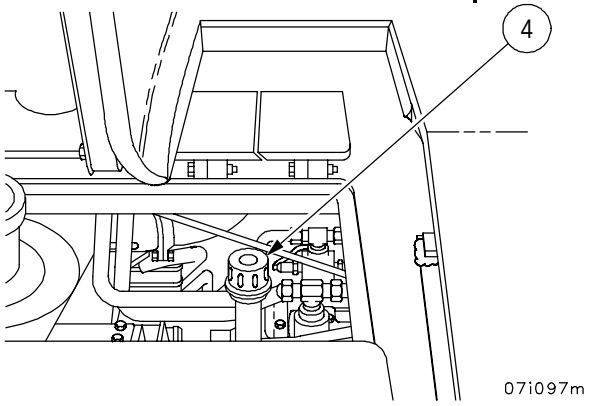
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
5	OC	Transmission and Output Reduction Drive Oil Change - Continued	r. Operate engine (TM 9-2350-292-10) and warm transmission oil to a temperature between 180_ to 200_F (82_ to 93_C). To reach desired transmission oil temperature it may be necessary to perform high range stall. To perform high range stall: depress and hold brake pedal in applied position, place transmission in 3rd range and run engine at full throttle for not longer than 30 seconds. Return engine speed to idle. If required, repeat procedure after 60 seconds of idling to attain proper transmission oil temperature. s. Shut down engine (TM 9-2350-292-10). **CAUTION** To verify that proper transmission oil level is present, it is very important that transmission oil is correct temperature and that correct amount of time (3 to 5 minutes) has passed before reading oil gauge rod. Failure to comply may result in an inaccurate oil level reading. If the vehicle is operated with transmission oil level below ADD mark, reliability and durability of the transmission assembly may be reduced.	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
5	OC	Transmission and Output Reduction Drive Oil Change - Continued	t. Remove oil filler tube cap and gauge rod (4) from oil filler tube. Clean oil gauge rod. Install oil filler tube cap and gauge rod (4) into transmission oil filler tube. Remove oil filler tube cap and gauge rod (4) and verify that transmission oil level is between ADD and FULL marks on oil filler tube cap and gauge rod (4). **NOTE** Excess oil may be removed from transmission using the AOAP valve. u. If indicated oil level is above FULL mark on the oil filler tube cap and gauge rod (4), remove excess oil from transmission until oil level is indicated between ADD and FULL mark on oil filler tube cap and gauge rod (4). **NOTE** 1/2 inch (12.7 mm) on oil gauge rod equals about one gallon of oil. v. If indicated oil level is below ADD mark on oil filler tube cap and gauge rod (4), add enough proper grade oil (WP 0187 00-25) to transmission to bring oil level between ADD and FULL marks on oil filler tube cap and gauge rod (4).	





PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

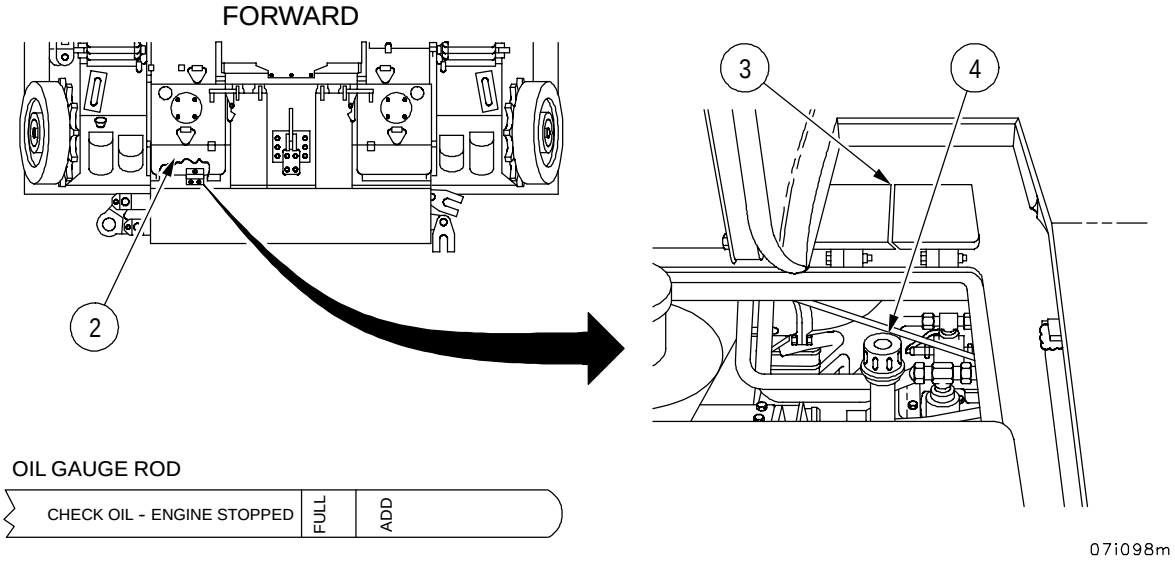
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
5	OC	Transmission and Output Reduction Drive Oil Change - Continued	w. Operate engine (TM 9-2350-292-10) and warm transmission oil to a temperature between 180_ to 200_F (82_ to 93_C). To reach desired transmission oil temperature it may be necessary to perform high range stall. To perform high range stall: depress and hold brake pedal in applied position, place transmission in 3rd range and run engine at full throttle for not longer than 30 seconds. Return engine speed to idle. If required, repeat procedure after 60 seconds of idling to attain proper transmission oil temperature. x. Shut down engine (TM 9-2350-292-10). **CAUTION** To verify that proper transmission oil level is present, it is very important that transmission oil is at correct temperature and that correct amount of time (3 to 5 minutes) has passed before reading oil gauge rod. Failure to comply may result in an inaccurate oil level reading. If vehicle is operated with transmission oil level below ADD mark, reliability and durability of the transmission assembly may be reduced.	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

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TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

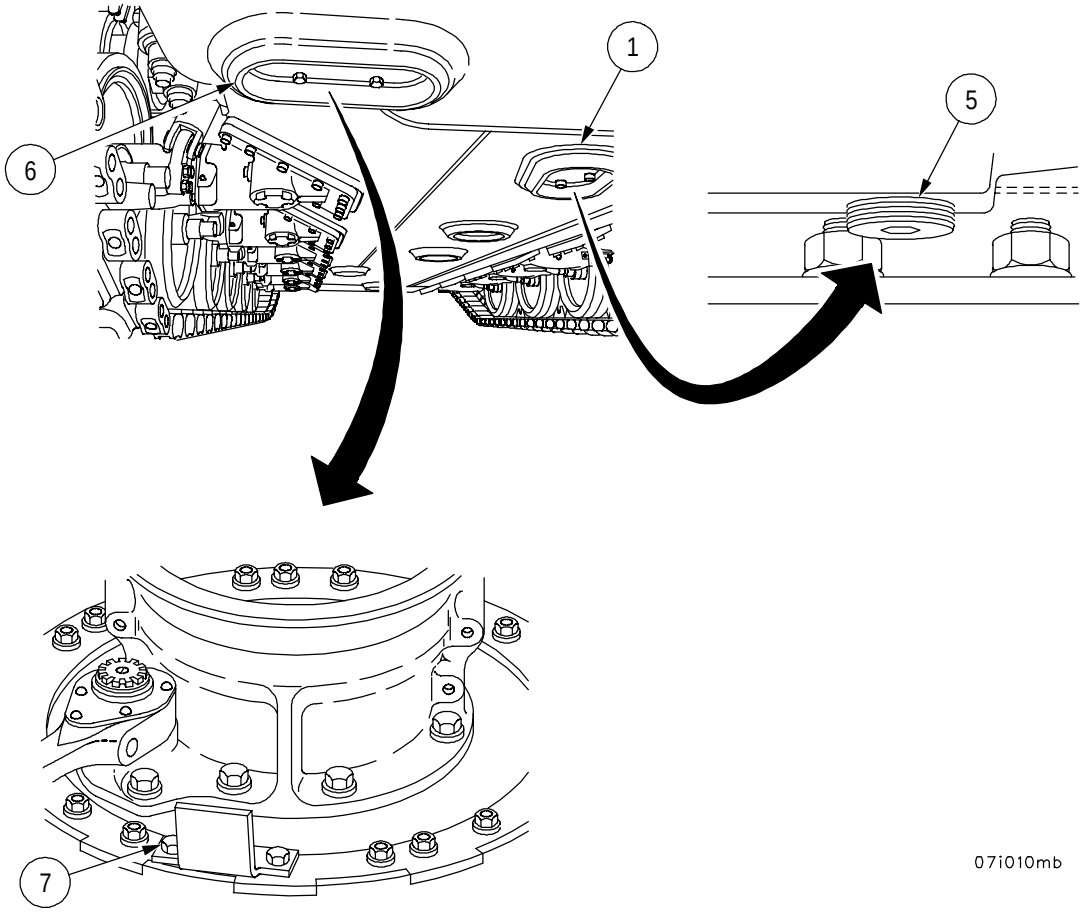
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
5	OC	Transmission and Output Reduction Drive Oil Change - Continued	y. Remove oil filler tube cap and gauge rod (4) from oil filler tube. Clean oil gauge rod. Install oil filler tube cap and gauge rod (4) into transmission oil filler tube. Remove oil filler tube cap and gauge rod (4) and verify that transmission oil level is between ADD and FULL marks on oil filler tube cap and gauge rod (4). z. Install oil filler tube and gauge rod (4) onto transmission oil filler tube. aa. Close exhaust pipe doors (3) and exhaust grille door (2) (TM 9-2350-292-10).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

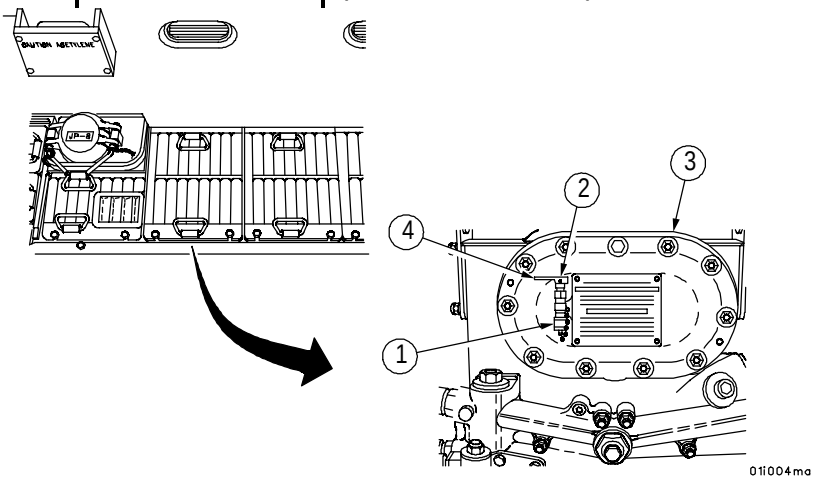
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
5	OC	Transmission and Output Reduction Drive Oil Change - Continued	ab. Check that no oil seeps around transmission drain plug (5) or left and right output reduction drives drain bolts (7). ac. Install transmission drain access cover (1) and left and right output reduction drives access covers (6) (WP 0453 00 and WP 0434 00).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

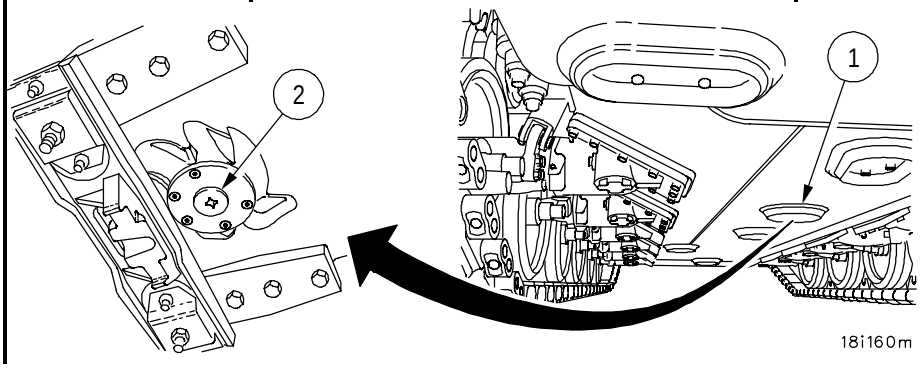
TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
6	HOURLY (H) OR ON-CONDITION (OC) 25 H OR OC	BATTERY OR ENGINE COMPARTMENT Engine AOAP Sampling	**NOTE** Refer to Army Oil Analysis Program (AOAP) TB 43-0210. a. Park vehicle on a level surface. b. Remove front engine deck grilles (TM 9-2350-292-10). c. Start engine bring to operating temperature (TM 9-2350-292-10). **CAUTION** Make sure oil sampling valve lever is parallel to oil filter cover and that protective cap is installed and secure on sampling valve. Failure to properly position oil sampling valve lever and secure protective cap may result in loss of engine oil and equipment damage. d. Remove protective cap (1) from sampling valve (2) on oil filter cover (3). Position sample collection bottle under sampling valve (2). Lift sampling valve control (4) and fill bottle to required level. Install protective cap (1) on sampling valve (2). e. Install front engine deck grilles (TM 9-2350-292-10).	Does not pass oil analysis. Any sign of metal flakes or other contaminants. Class III leaks.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

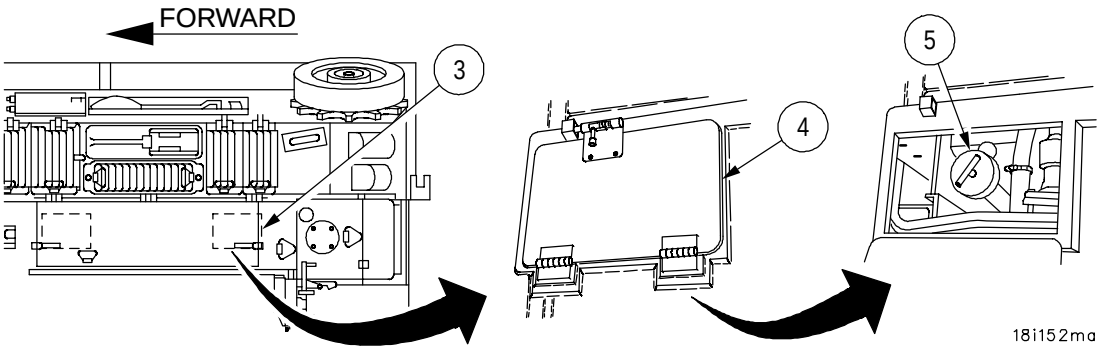
TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
7	OC	Main Engine Crankcase Oil Change	**WARNING** Hot oil can cause severe burns. Engine oil is hot after operation of vehicle. Use caution when draining oil. Injury may occur to personnel if hot oil gets on clothing or skin. **NOTE** Drain oil only when hot after operation. Refer to Army Oil Analysis Program (AOAP) TB 43-0210. Coordinate any seasonal change of oil weight with this service. Coordinate main engine oil filter change with this procedure. a. Park vehicle on level surface to allow access to bottom of vehicle hull. b. Remove drain covers (1) from hull (WP 0453 00). c. Place suitable container (20 gallon minimum capacity) under main engine drain plug (2). 	Class III leaks, high or low oil level or signs of contamination.

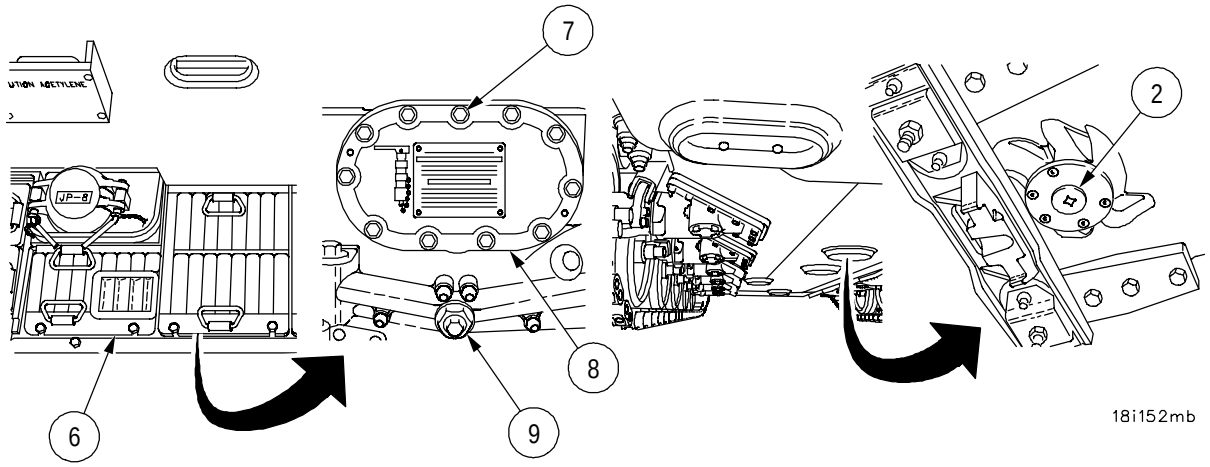
PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
7	OC	Main Engine Crankcase Oil Change - Continued	d. Open engine deck door (3) (TM 9-2350-292-10). e. Open engine oil fill access door (4) (TM 9-2350-292-10) and open oil filler tube cap (5).	



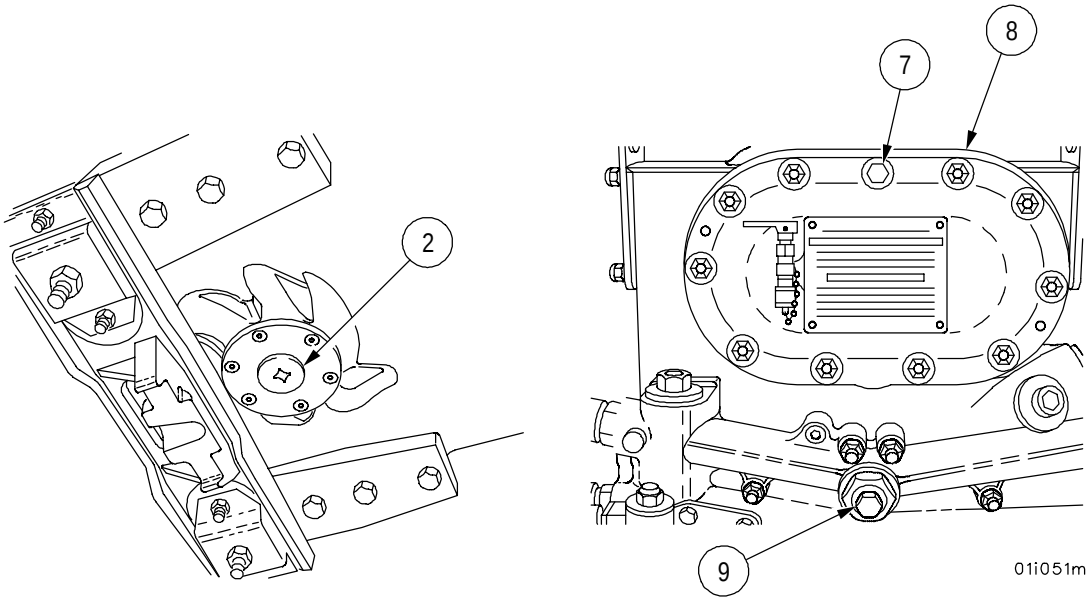
			f. Remove front engine deck grille (6) (TM 9-2350-292-10). g. Remove oil filter vent capscrew (7) in oil filter housing (8) and open oil filter drain valve (9) six full turns. h. Remove main engine drain plug (2).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
7	OC	Main Engine Crankcase Oil Change - Continued	i. Clean drain plug (2) with clean rag (item 7, WP 0716 00, install drain plug (2) after all oil has drained from engine. j. Change engine oil filters (WP 0196 00). k. Close oil filter drain valve (9). Torque oil filter drain valve (9) to 150 lb-in (16.95 NSm) with torque wrench (item 21, WP 0717 00). Install oil filter vent capscrew (7) in oil filter housing (8).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

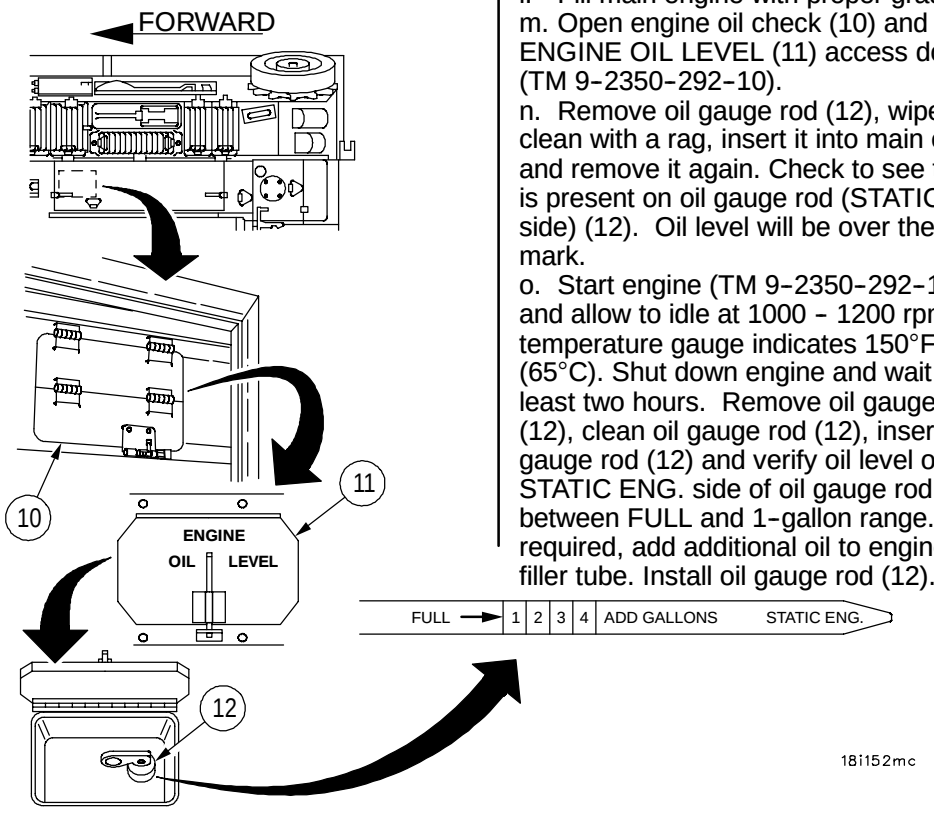
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TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT	**WARNING**	
7	OC	Main Engine Crankcase Oil Change - Continued	Engine oil can be ignited by hot engine surfaces. To avoid engine fire, use offset funnel (item 130, WP 0717 00) and utility jug (item 131, WP 0717 00) to add engine oil. Clean oil from around oil filler tube area with wiping rags (item 7, WP 0716 00) after filling. Make sure engine oil filler tube cap is tight and engine oil fill access door is closed and latched.	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
Oil: Lubricating Oil, OE/HDO MIL-L-2104 or OEA MIL-L-46167	18.5 gal (70.02 L)	15W40 or OE/ HDO-30 (0-237)	OE/HDO-10 (0-237)	OEA (0-183)

*For Arctic Operation, refer to FM 9-207

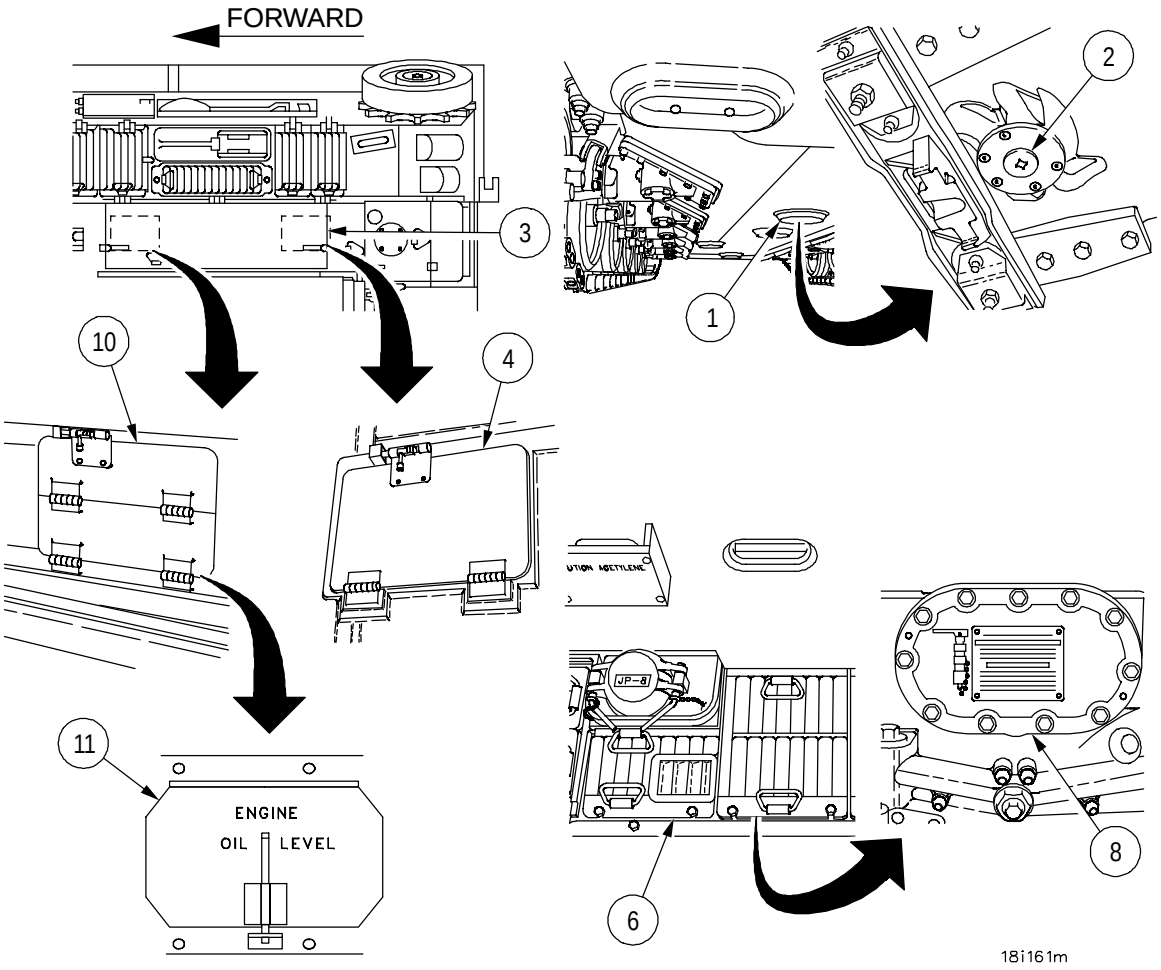


l. Fill main engine with proper grade oil.
m. Open engine oil check (10) and ENGINE OIL LEVEL (11) access doors (TM 9-2350-292-10).
n. Remove oil gauge rod (12), wipe it clean with a rag, insert it into main engine and remove it again. Check to see that oil is present on oil gauge rod (STATIC ENG. side) (12). Oil level will be over the FULL mark.
o. Start engine (TM 9-2350-292-10) and allow to idle at 1000 - 1200 rpm until temperature gauge indicates 150°F (65°C). Shut down engine and wait at least two hours. Remove oil gauge rod (12), clean oil gauge rod (12), insert oil gauge rod (12) and verify oil level on STATIC ENG. side of oil gauge rod (12) is between FULL and 1-gallon range. If required, add additional oil to engine oil filler tube. Install oil gauge rod (12).

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	BATTERY OR ENGINE COMPARTMENT		
7	OC	Main Engine Crankcase Oil Change - Continued	p. Close engine oil check (10), ENGINE OIL LEVEL (11), engine oil fill (4) access doors, and engine deck door (3) (TM 9-2350-292-10). Check that no oil seeps around engine drain plug (2). Install hull drain covers (1) (WP 0453 00). q. Check that no oil seeps around oil filter housing (8), install front engine deck grille (6) (TM 9-2350-292-10).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

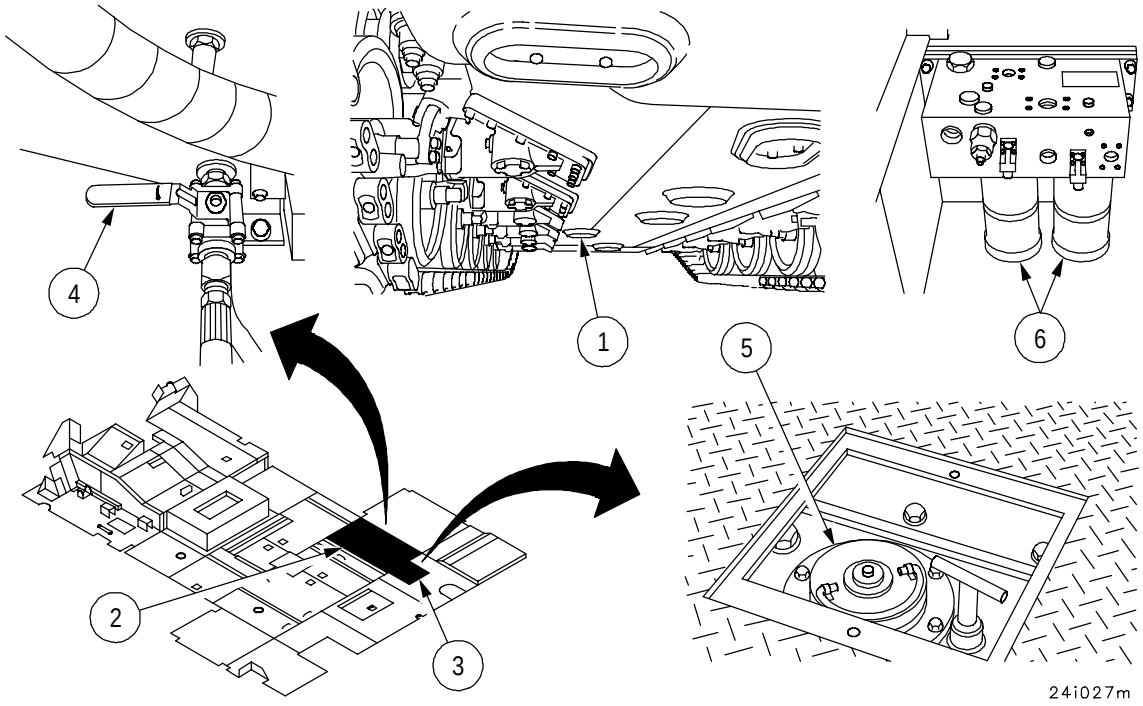
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	INTERIOR		
8	OC	Hydraulic Reservoir Fluid Change	 **WARNING** **CAUTION** Do not overfill hydraulic reservoir with boom in down position. When boom is raised, hydraulic fluid will overflow out of the bayonet gauge neck. Overfilling may cause damage to equipment. a. Park vehicle on a level surface (TM 9-2350-292-10). b. Start engine (TM 9-2350-292-10). Allow to idle at 825 - 900 rpm. c. Engage electromagnetic clutch (PTO) for five minutes to warm hydraulic fluid. Disengage electromagnetic clutch (PTO). Shut down engine (TM 9-2350-292-10).	Signs of contamination. High or low oil level. Any Class III oil leaks.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

0187 00

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	INTERIOR		
8	OC	Hydraulic Reservoir Fluid Change - Continued	d. Place suitable container(s) (85 gallons minimum capacity) under hull drain valves (1). e. Open hull drain valves (1) (TM 9-2350-292-10). f. Open subfloor plate #22 (2) and remove subfloor plate #28 (3) to gain access to reservoir drain valve (4) and fill cap (5) (WP 0454 00). g. Remove hydraulic reservoir fill cap (5) and open hydraulic reservoir drain valve (4). h. Drain all oil from hydraulic reservoir, close hydraulic reservoir drain valve (4). i. Change hydraulic filters (6) (WP 0554 00).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	INTERIOR		
8	OC	Hydraulic Reservoir Fluid Change - Continued		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
Oil: Fire Retardant Hydraulic Oil MIL-H-46170	80 gal (302.80 L)	**ALL TEMPERATURES** (H-544)		

*For Arctic Operation, refer to FM 9-207

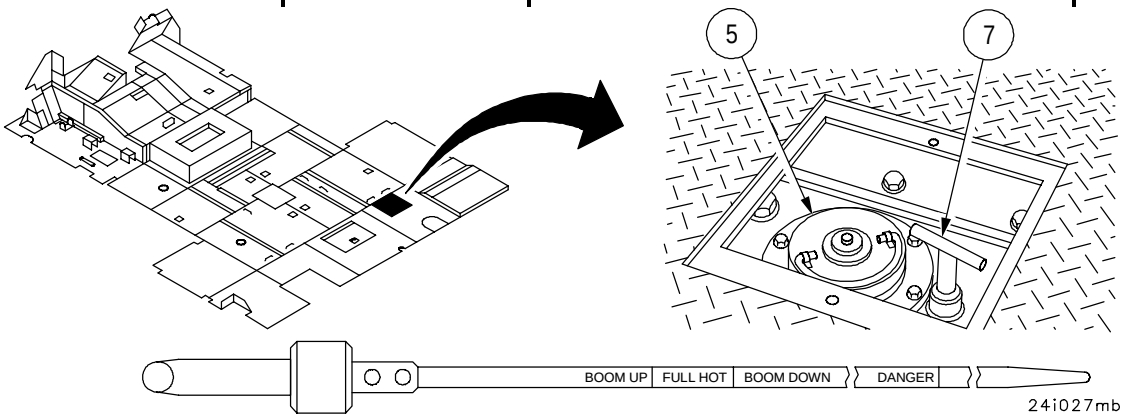
j. Fill hydraulic reservoir with proper grade oil until it reads above DANGER mark on bayonet gauge (7).

k. Start engine and operate hydraulic system until oil reaches operating temperature (TM 9-2350-292-10).

l. Shut down engine (TM 9-2350-292-10).

m. Remove, wipe clean, then re-insert bayonet gauge (7). Then remove bayonet gauge (7) and verify oil level is at lower FULL mark with boom down or upper FULL mark with boom up. If required, add additional oil to bring level to FULL mark.

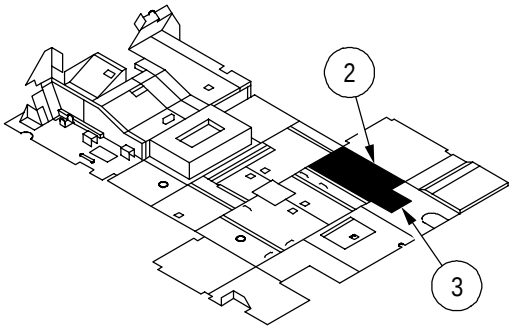
n. Install hydraulic fill cap (5) and bayonet gauge (7).

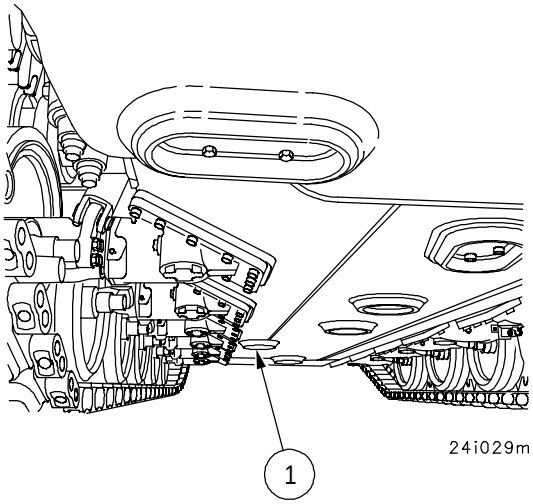


PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, HOURLY OR ON-CONDITION - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	HOURLY (H) OR ON-CONDITION (OC)	INTERIOR		
8	OC	Hydraulic Reservoir Fluid Change - Continued	o. Close subfloor plate #22 (2) and install subfloor plate #28 (3) (WP 0454 00). p. Close hull drain valves (1) (TM 9-2350-292-10).	





END OF TASK

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lubricant (item 3, WP 0716 00)
Wiping rags (item 7, WP 0716 00
Kit, Monthly, PMCS (item 489, WP 0718 00)

Personnel Required
Three

References
WP 0716 00
WP 0717 00
TM 9-2350-292-10
WP 0718 00
WP 0454 00
WP 0434 00
WP 0276 00
WP 0355 00
WP 0356 00
WP 0357 00

NOTE

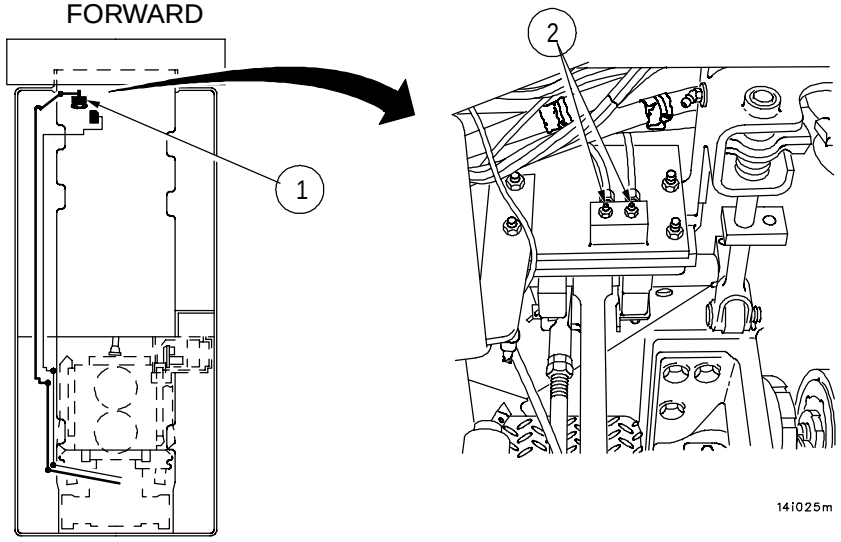
Refer to PMCS temperature chart for proper lubricants to use at different temperature ranges.

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
1	MONTHLY	INTERIOR Steering Linkage		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

PROCEDURE	NOT FULLY MISSION CAPABLE IF:
a. Lubricate steering linkage (1) with GAA through two fittings (2) until grease is visible at bearing. b. Wipe excess grease with rag (WP 0716 00).	Missing, clogged or broken grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

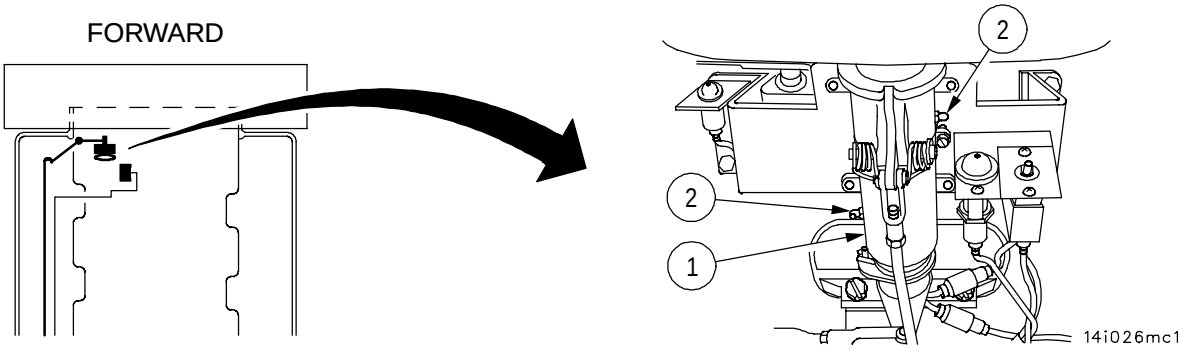
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
2	MONTHLY	INTERIOR Steering Control Assembly		

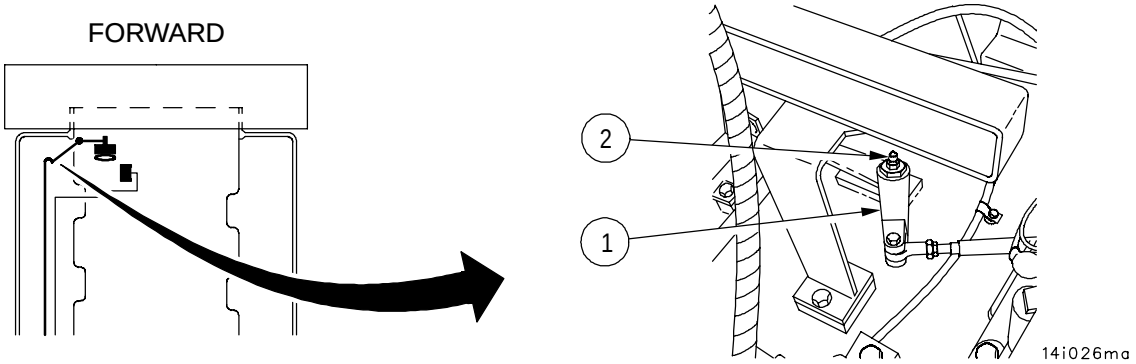
LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
		ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

			a. Lubricate steering control assembly (1) with GAA through two fittings (2) until grease is visible. b. Wipe excess grease with rag (item 7, WP 0716 00).	Clogged, damaged or missing grease fittings.



3		Steering Linkage Bellcrank	a. Lubricate bellcrank (1) with GAA through fitting (2) until grease is visible. b. Wipe excess grease with rag (item 7, WP 0716 00).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

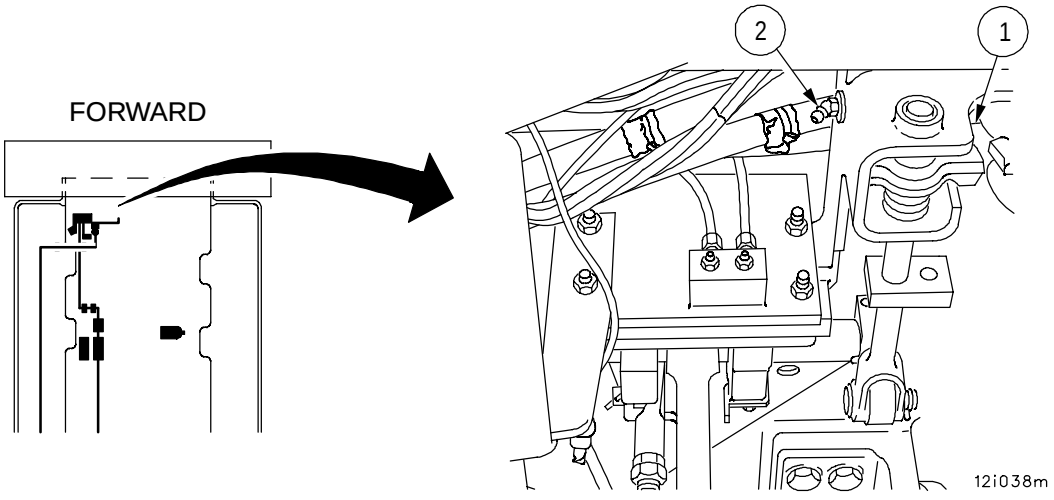
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
4	MONTHLY	INTERIOR Service Brake Shaft		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

PROCEDURE	NOT FULLY MISSION CAPABLE IF:
a. Lubricate shaft (1) with GAA through two fittings (2) (one fitting on each end of shaft) until grease is visible. b. Wipe excess grease with rag (item 7, WP 0716 00).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
5	MONTHLY	INTERIOR Service Brake Pedal and Linkage		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

a. Lubricate brake pedal (1) (old configuration) or lever assembly (2) (new configuration with brake modulation) with GAA through fitting (3) until grease is visible.

b. Wipe excess grease with rag (item 7, WP 0716 00).

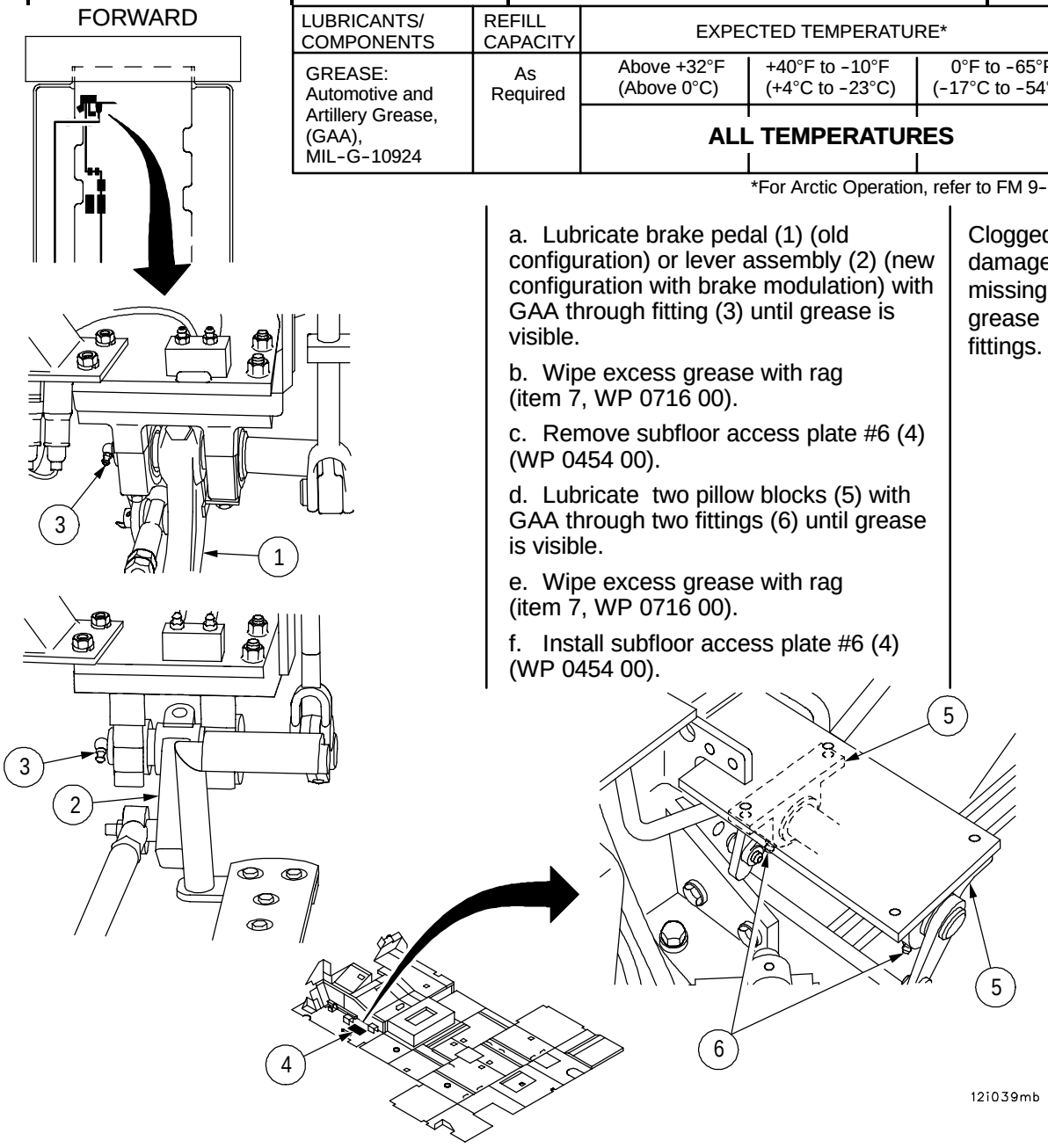
c. Remove subfloor access plate #6 (4) (WP 0454 00).

d. Lubricate two pillow blocks (5) with GAA through two fittings (6) until grease is visible.

e. Wipe excess grease with rag (item 7, WP 0716 00).

f. Install subfloor access plate #6 (4) (WP 0454 00).

Clogged, damaged or missing grease fittings.



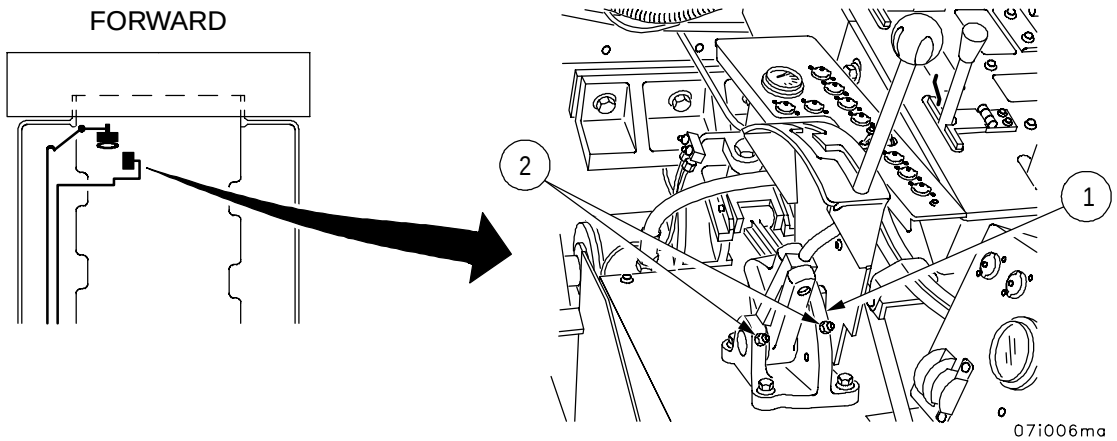
PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
6	MONTHLY	INTERIOR Transmission Shift Control Assembly	a. Lubricate shift control assembly (1) with GAA through two fittings (2) until grease is visible. b. Wipe excess grease with rag (item 7, WP 0716 00).	Clogged, damaged or missing grease fittings.

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

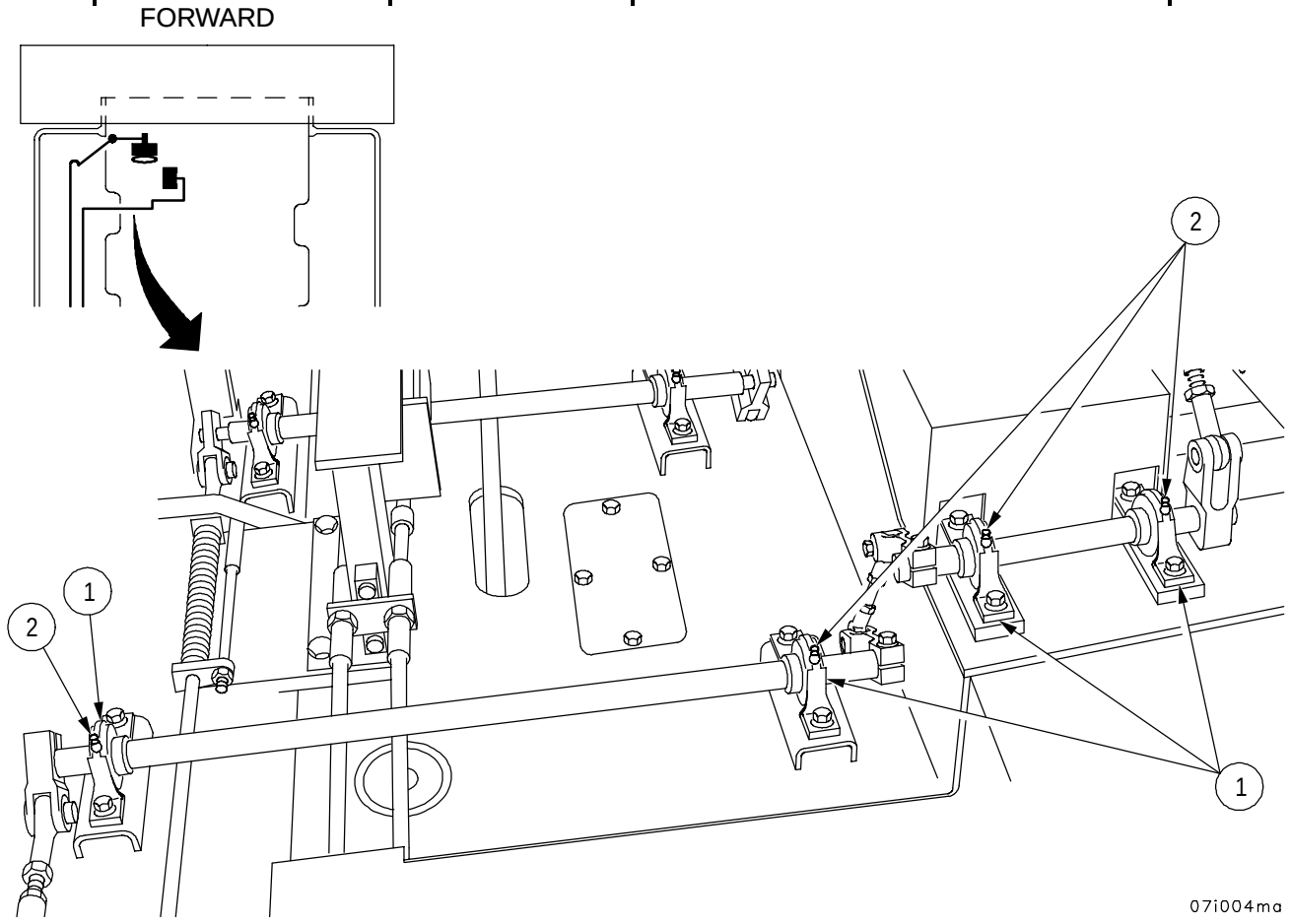
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
7	MONTHLY	INTERIOR Shift Linkage Pillow Blocks		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

a. Lubricate four shift linkage pillow blocks (1) with GAA through four fittings (2) until grease is visible. b. Wipe excess grease with rag (item 7, WP 0716 00).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

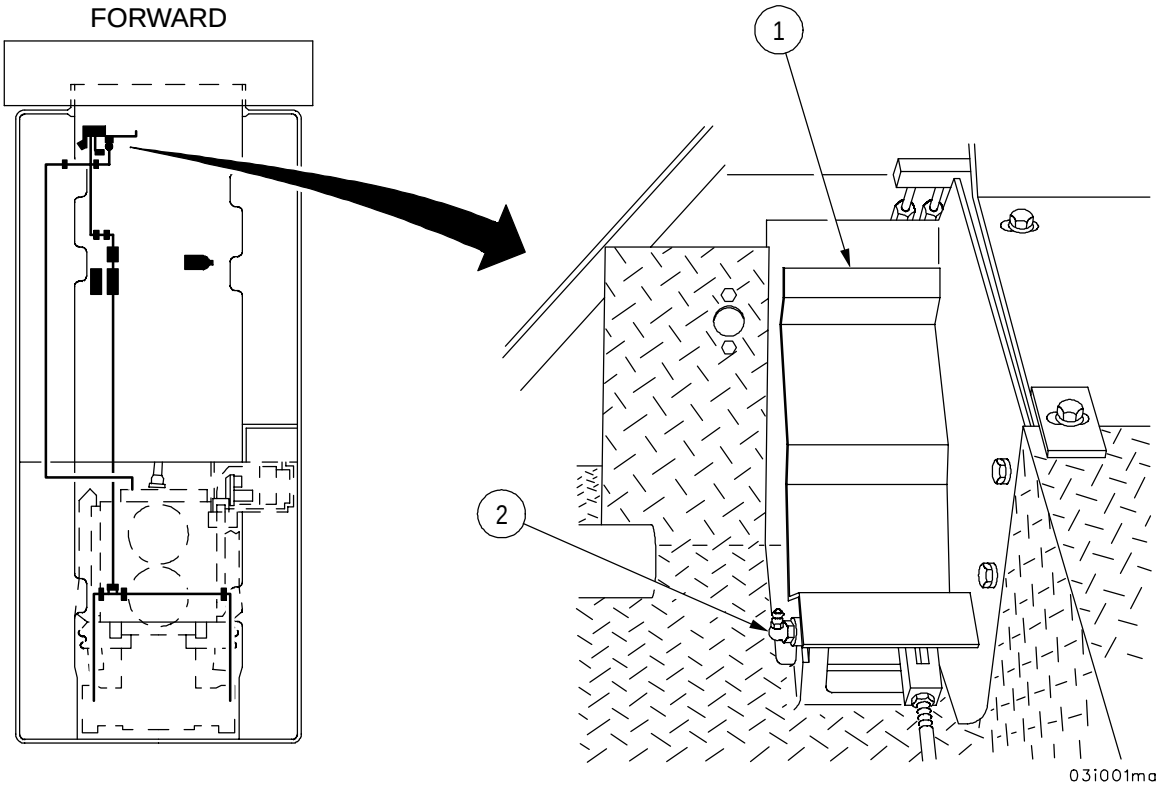
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
8	MONTHLY	INTERIOR Accelerator Pedal Assembly		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

PROCEDURE	NOT FULLY MISSION CAPABLE IF:
a. Lubricate accelerator pedal (1) with GAA through fitting (2) until grease is visible. b. Wipe excess grease with rag (item 7, WP 0716 00).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

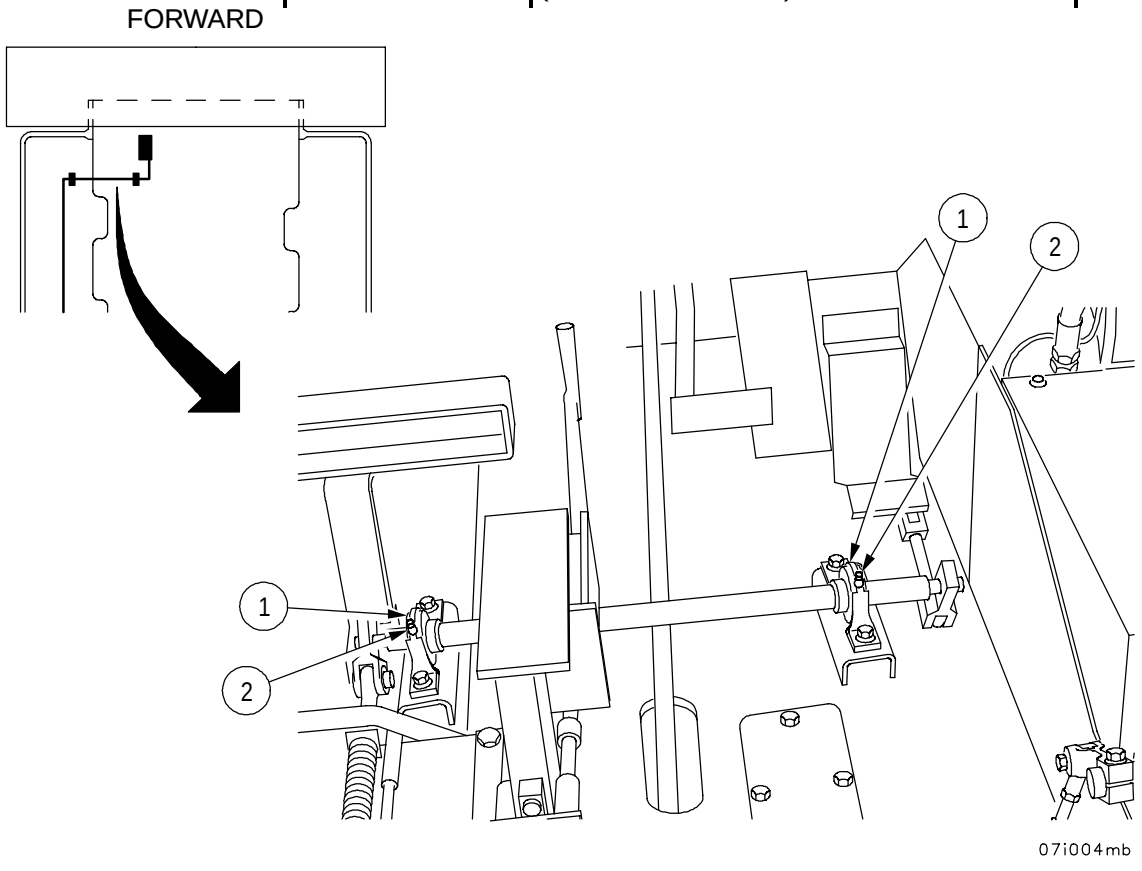
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
9	MONTHLY	INTERIOR Accelerator Linkage Pillow Blocks		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

PROCEDURE	NOT FULLY MISSION CAPABLE IF:
a. Lubricate two pillow blocks (1) with GAA through two fittings (2) until grease is visible. b. Wipe excess grease with rag (item 7, WP 0716 00).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

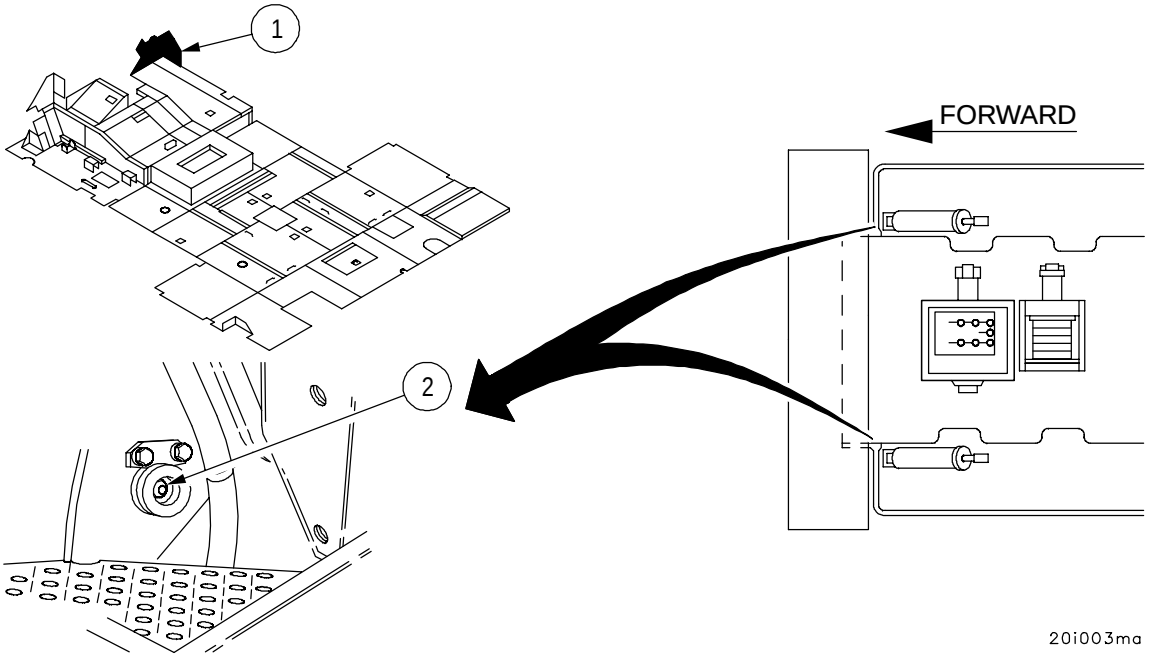
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
10	MONTHLY	INTERIOR Boom Cylinder Pins	**NOTE** Perform steps a through d when lubricating right boom cylinder pin. Perform step b and c when lubricating left boom cylinder pin. a. Remove subfloor plate #12 (1) (WP 0454 00).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

			b. Lubricate with GAA through two fittings (2) until grease is visible. c. Wipe excess grease with rag (item 7, WP 0716 00). d. Install subfloor plate #12 (1) (WP 0454 00).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

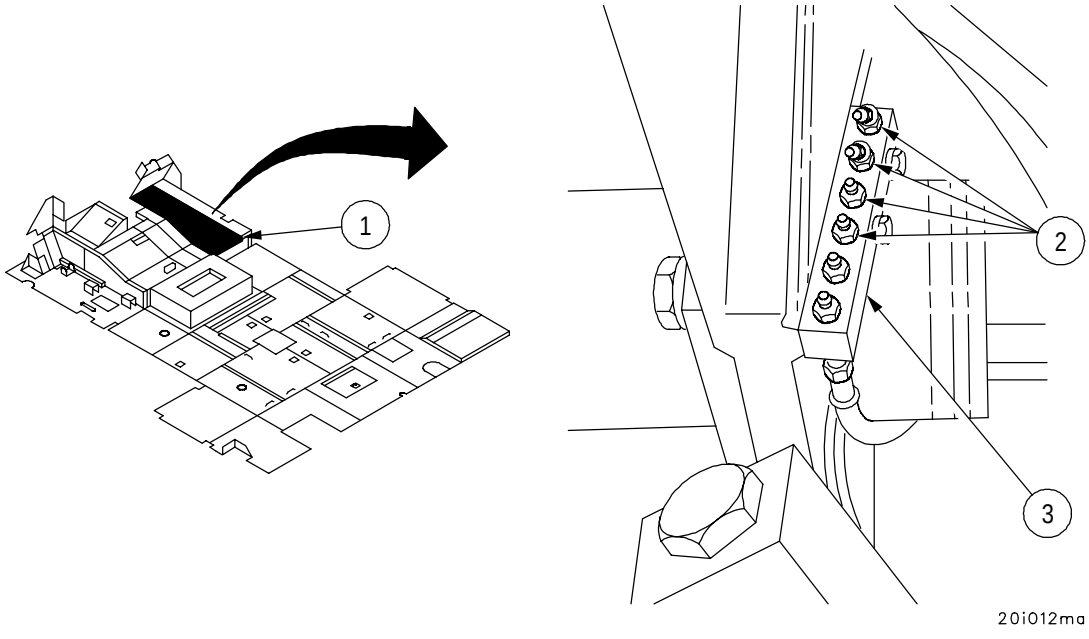
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
11	MONTHLY	INTERIOR Spade Link Lube Fitting Bank	a. Remove subfloor plate #10 (1) (WP 0454 00).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

			b. Lubricate with GAA through four fittings (2) on lube fitting bank (3) until grease is visible. c. Wipe excess grease with rag (item 7, WP 0716 00). d. Install subfloor plate #10 (1) (WP 0454 00).	Clogged, damaged or missing hoses or grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

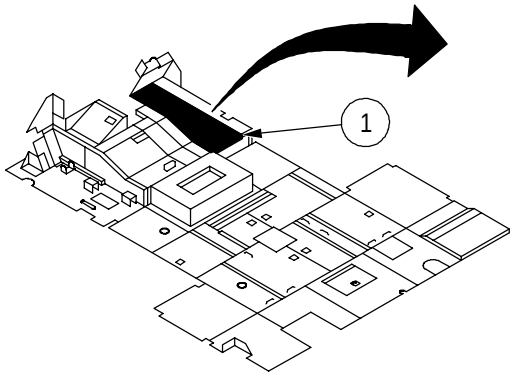
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

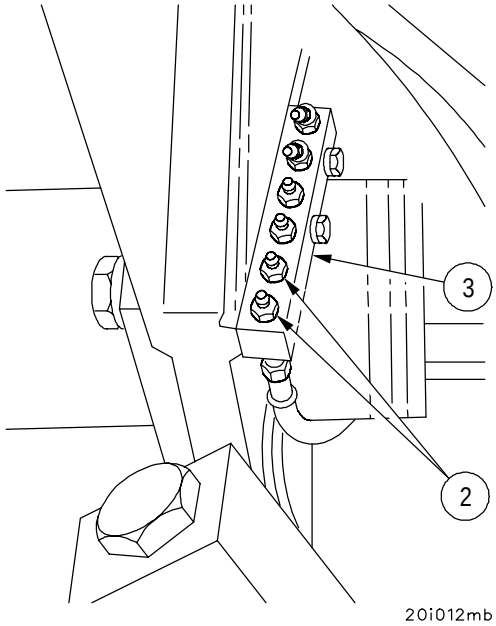
ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
12	MONTHLY	INTERIOR Front Spade Cylinder Pins	a. Remove subfloor plate #10 (1) (WP 0454 00).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

			b. Lubricate with GAA through two fittings (2) on lube fitting bank (3) until grease is visible. c. Wipe excess grease with rag (item 7, WP 0716 00). d. Install subfloor plate #10 (1) (WP 0454 00).	Clogged, damaged or missing grease fittings.





PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

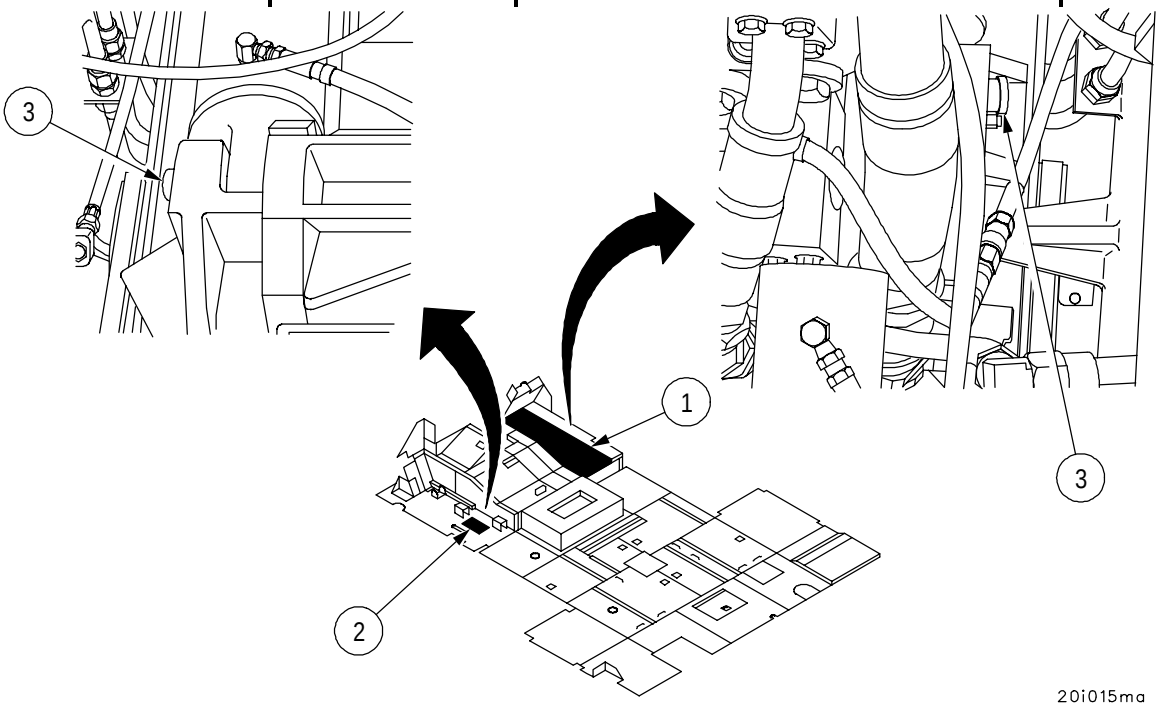
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
13	MONTHLY	INTERIOR / Rear Spade Cylinder Pins	a. Dump driver's and mechanic's seats (TM 9-2350-292-10). b. Remove subfloor plate #10 (1) (WP 0454 00).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

			c. Remove subfloor plate #6 (2) (WP 0454 00). d. Lubricate with GAA through two fittings (3) until grease is visible. e. Wipe excess grease with rag (item 7, WP 0716 00). f. Install subfloor plate #6 (2) (WP 0454 00). g. Install subfloor plate #10 (1) (WP 0454 00).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

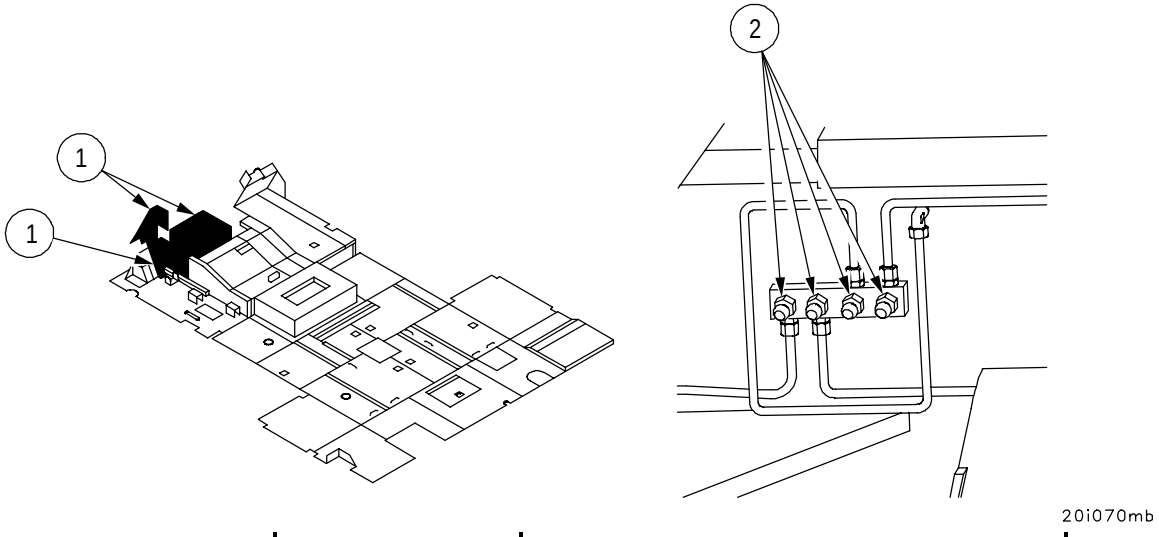
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
14	MONTHLY	INTERIOR Bearing Plate Lube Fitting Bank	a. Remove subfloor plates #2, #3 and #4 (1) (WP 0454 00).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

			b. Lubricate with GAA through four fittings (2) until grease is visible. c. Wipe excess grease with rag (item 7, WP 0716 00). d. Install subfloor plates #2, #3 and #4 (1) (WP 0454 00).	Clogged, damaged or missing grease fittings.



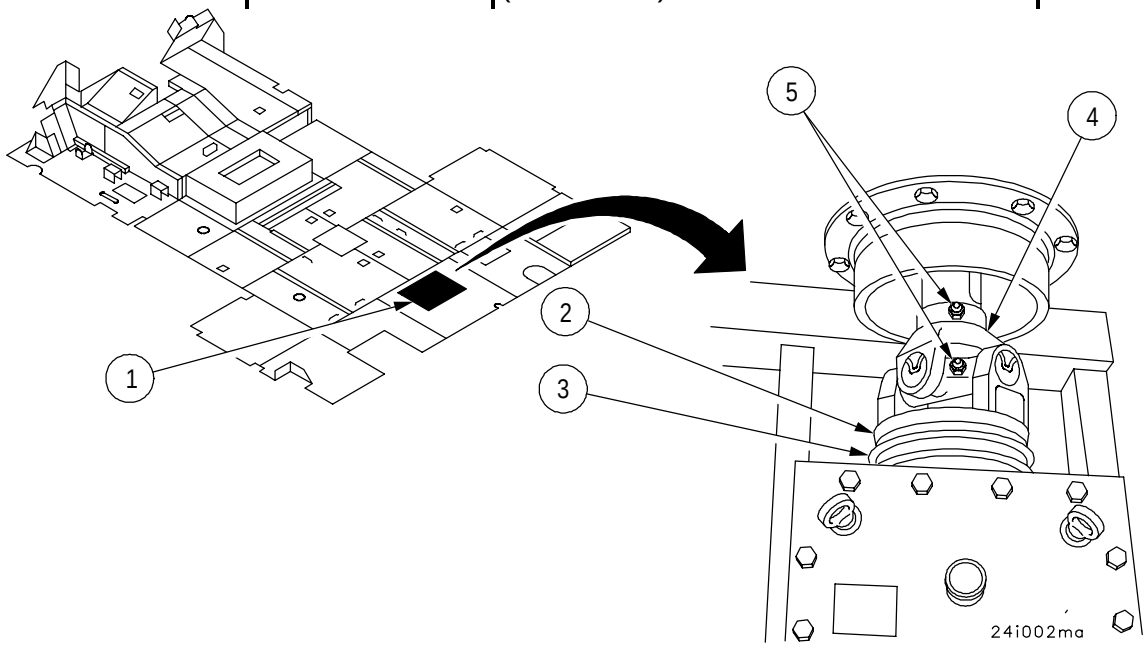
PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
15	MONTHLY	INTERIOR Power Takeoff (PTO) Shaft and Universal Joint	a. Open subfloor plate #27 (1) (WP 0454 00). b. Loosen boot clamp (2), pull boot (3) back to gain access to universal joint (4). c. Pull and hold manual fuel shutoff lever and bump starter button (TM 9-2350-292-10). Rotate universal joint (4) to gain access to two fittings (5). d. Lubricate with GAA through two fittings (5) until grease is visible. e. Wipe excess grease with rag (item 7, WP 0716 00). f. Install boot (3) over universal joint (4) and secure with clamp (2). g. Close subfloor plate #27 (1) (WP 0454 00).	Clogged, damaged or missing grease fittings or boot.

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

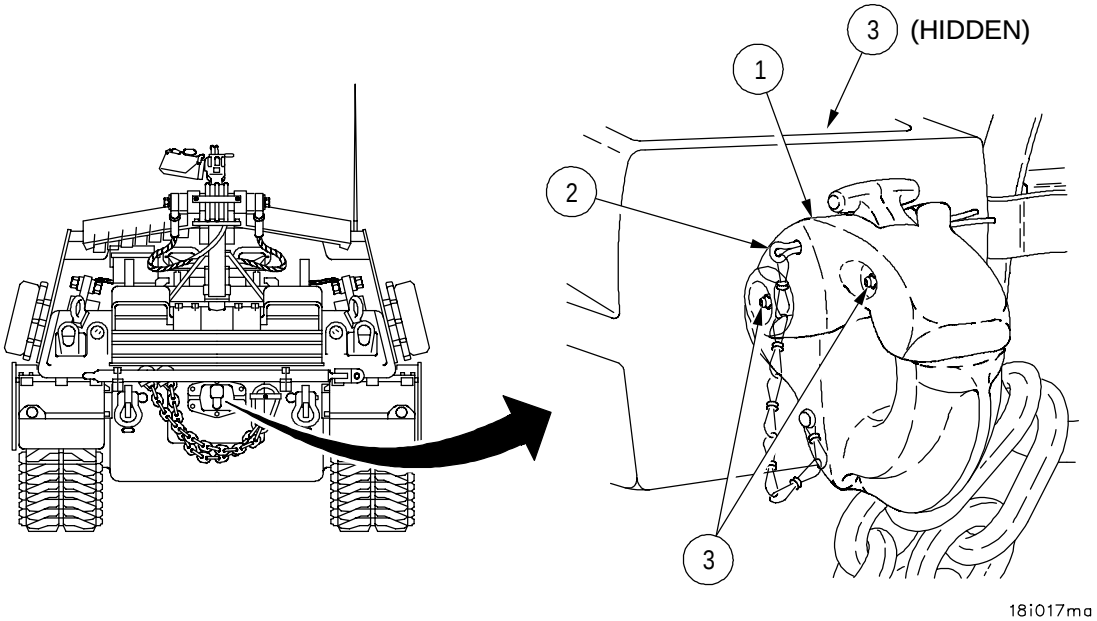
ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	MONTHLY	EXTERIOR		
16		Tow Pintle	a. Check tow pintle (1) for looseness, bends or breaks. Check tow pintle hook for cracks. b. Check for missing or damaged retaining pin (2). Replace retaining pin (2) if damaged or missing.	Clogged, damaged or missing grease fittings or retaining pin. Cracked or loose tow pintle.

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

c. Lubricate towing pintle (1) with GAA through three fittings (3) until grease is visible.

d. Wipe excess grease with rag (item 7, WP 0716 00).



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

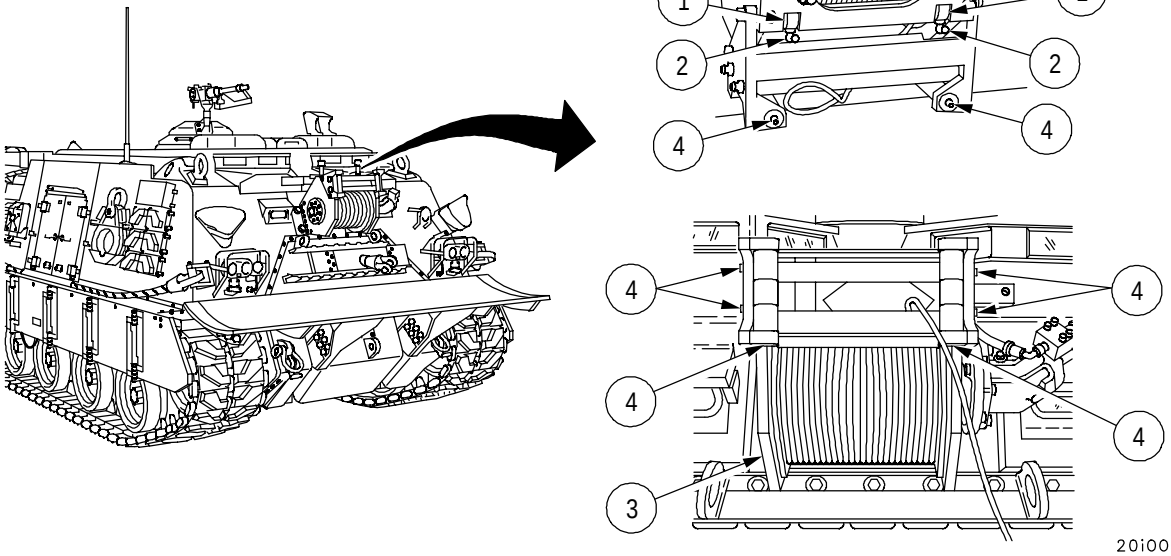
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
17	MONTHLY	EXTERIOR Auxiliary Winch and Spooling Roller	a. Lubricate spooling roller (1) with GAA through two fittings (2) until grease is visible. b. Lubricate auxiliary winch (3) with GAA through eight fittings (4) until grease is visible. c. Wipe excess grease with rag (item 7, WP 0716 00).	Clogged, damaged or missing grease fittings.

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

AUXILIARY WINCH SHIELD REMOVED FOR CLARITY



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

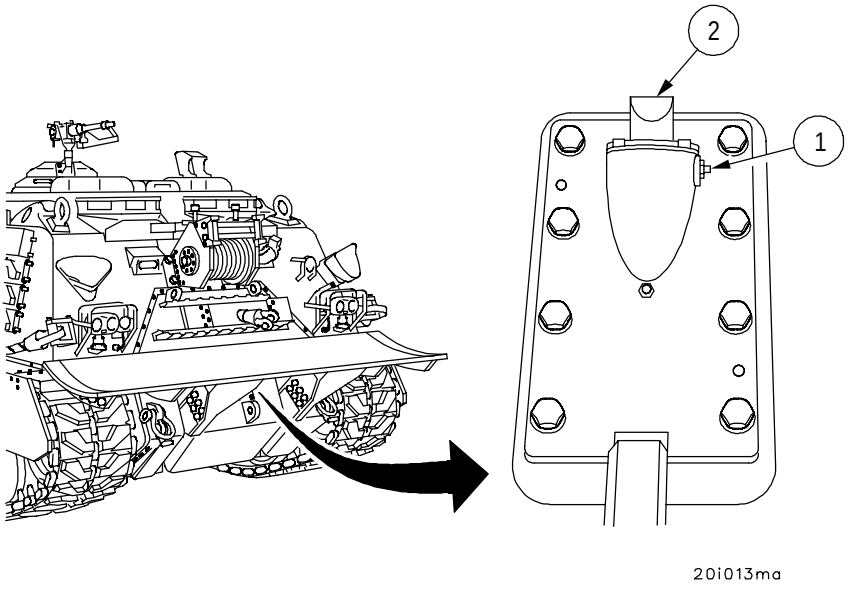
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
18	MONTHLY	EXTERIOR Spade Release Mechanism		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

PROCEDURE	NOT FULLY MISSION CAPABLE IF:
a. Lubricate with GAA through fitting (1) until GAA is visible around seal base of spade lockpin (2). b. Clean exposed part of spade lockpin (2) and lubricate with GAA. c. Wipe excess grease with rag (item 7, WP 0716 00).	Clogged, damaged or missing grease fittings. Rusted or dirty lock pin.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

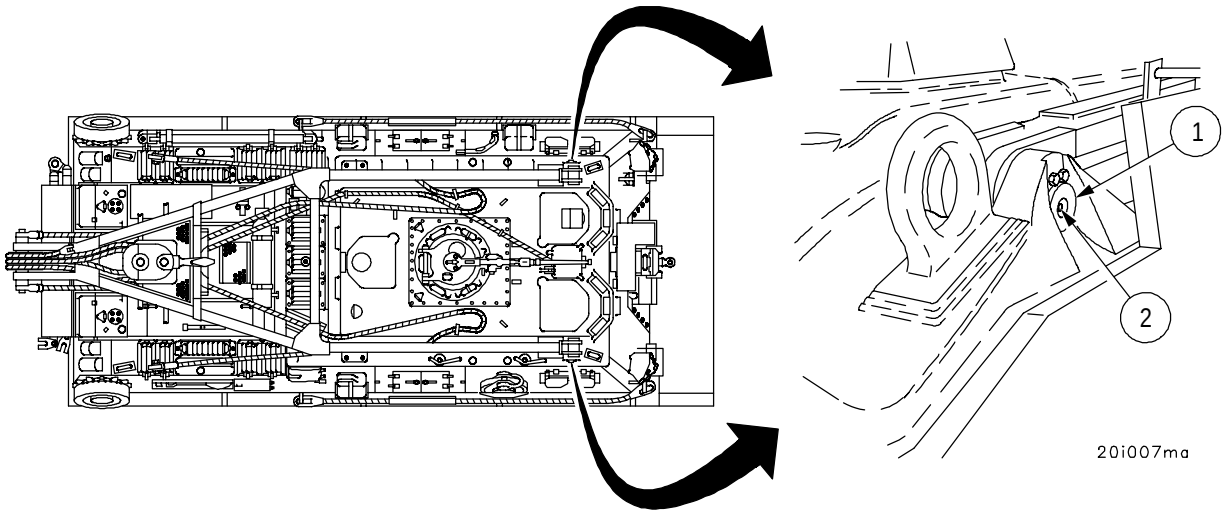
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
19	MONTHLY	EXTERIOR Boom Pivot Pins		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

			a. Lubricate two boom pivot pins (1) with GAA through two fittings (2) until grease is visible. b. Wipe excess grease with rag (item 7, WP 0716 00).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

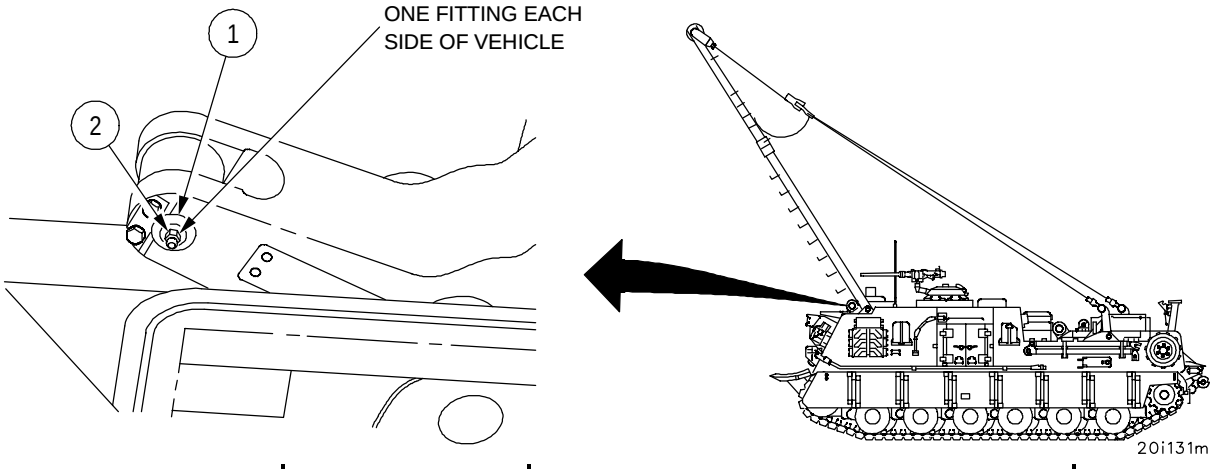
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
20	MONTHLY	EXTERIOR Boom Foot Pivot Pins	a. Raise boom (TM 9-2350-292-10).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

			b. Lubricate two boom foot pivot pins (1) with GAA through two fittings (2) until grease is visible. c. Wipe excess grease with rag (item 7, WP 0716 00). d. Lower boom (TM 9-2350-292-10).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

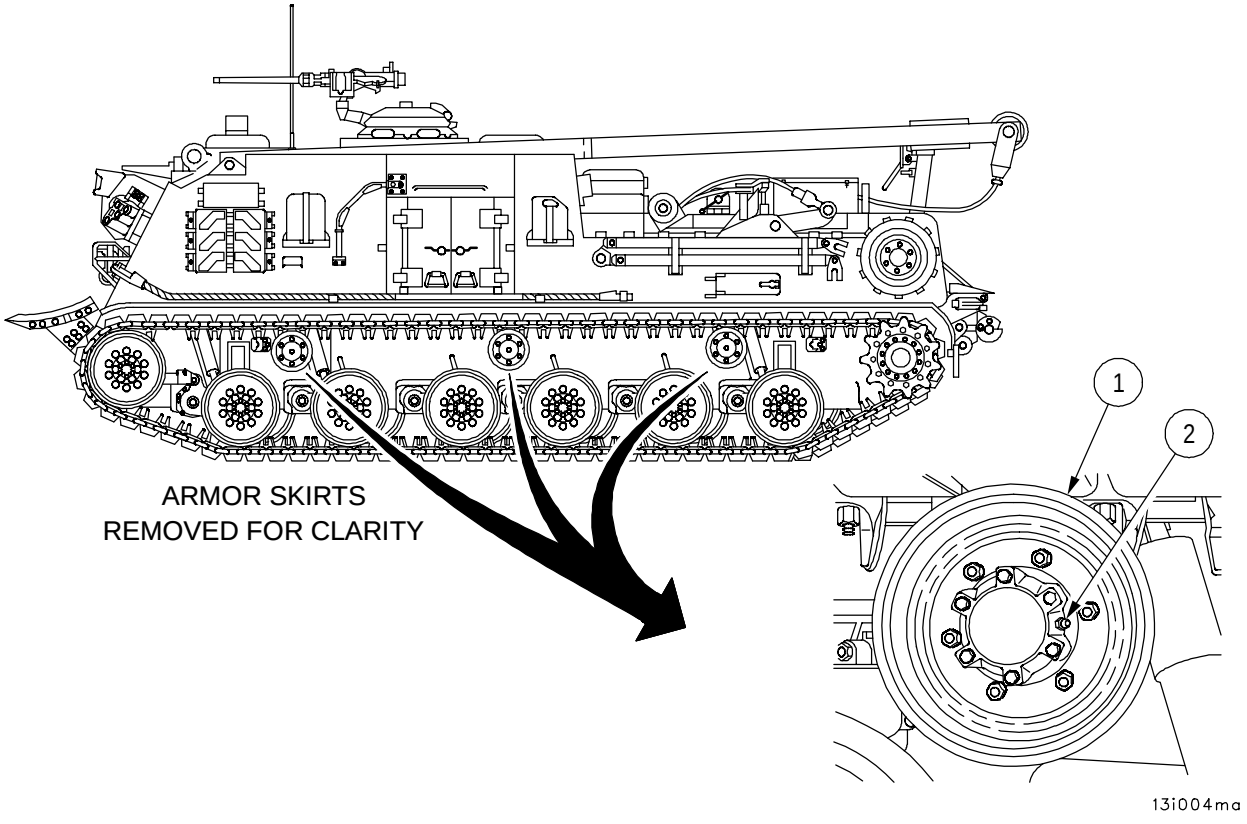
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
21	MONTHLY	EXTERIOR Track Support Rollers	a. Open armor skirt panels #2, #4 and #6 (TM 9-2350-292-10).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

			b. Lubricate six track support rollers (1) with GAA through six fittings (2) until grease exits at seals (one fitting on each track support roller). c. Wipe excess grease with rag (item 7, WP 0716 00). d. Close armor skirt panels #2, #4 and #6 (TM 9-2350-292-10).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
22	MONTHLY	EXTERIOR Compensating Idler Wheels and Arms	a. Open armor skirt panel #1 (TM 9-2350-292-10).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

CAUTION

Do not lubricate compensating idler wheels using air pressure exceeding 15 psi (103.35 kPa). Failure to comply may result in blown seals and damage to equipment.

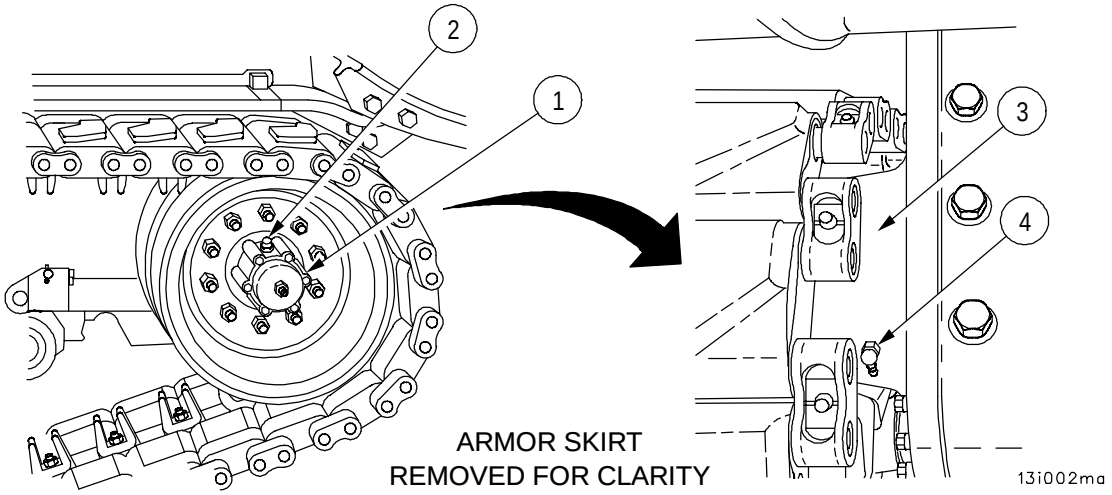
b. Lubricate two compensating idler wheels (1) with GAA through two fittings (2) until safety relief valve opens.

c. Lubricate two idler arm bearings (3) with GAA through two fittings (4) until grease is visible.

d. Wipe excess grease with rag (item 7, WP 0716 00).

e. Close armor skirt panel #1 (TM 9-2350-292-10).

Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
23	MONTHLY	EXTERIOR Roadwheel Hub Bearings and Pivot Arm Assembly		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

CAUTION

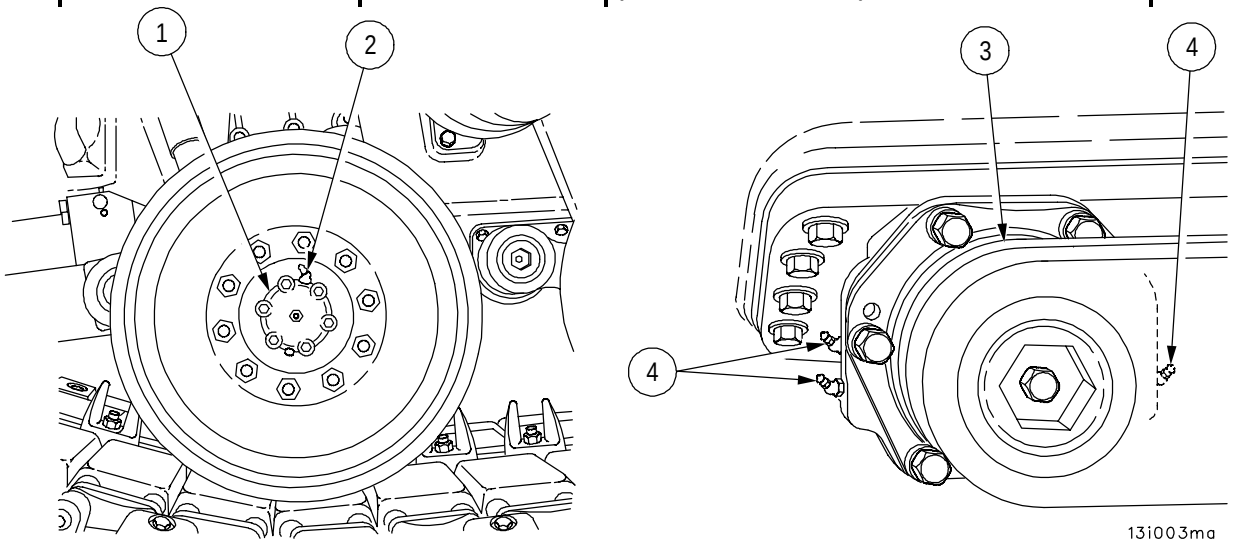
Do not lubricate roadwheel hub bearings using air pressure exceeding 15 psi (103.35 kPa). Failure to comply may result in blown seals and damage to equipment.

a. Lubricate roadwheel hub bearings (1) with GAA through 12 fittings (2) (one on each roadwheel hub) until safety relief valve opens.

b. Lubricate pivot arm assembly (3) with GAA through 30 fittings (4) until grease is visible.

c. Wipe excess grease with rag (item 7, WP 0716 00).

Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

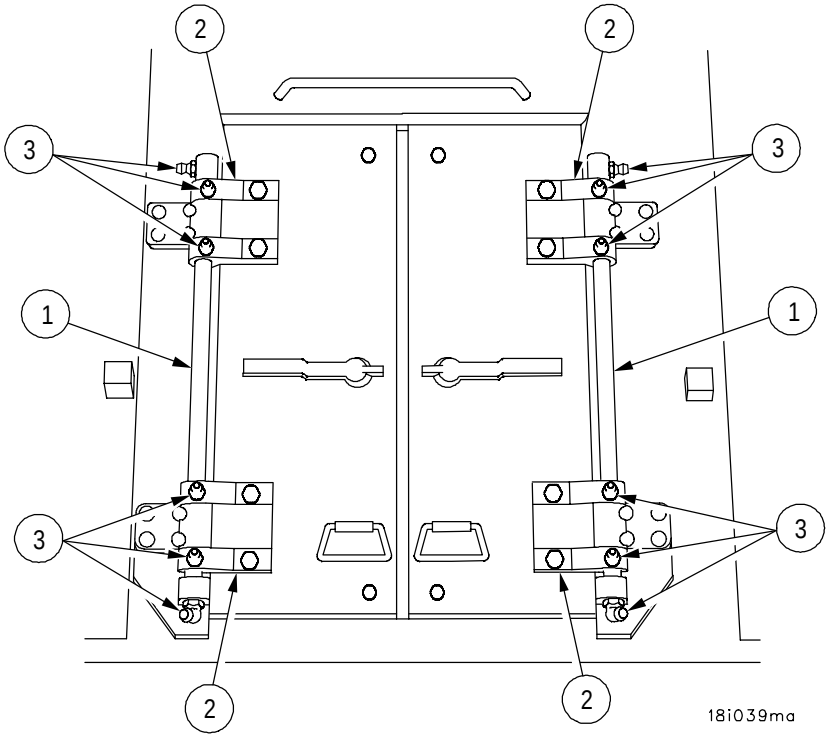
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
24	MONTHLY	EXTERIOR Personnel Doors Torsion Bars	a. Open personnel doors (TM 9-2350-292-10).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

			b. On each side of vehicle, lubricate two torsion bars (1) and four hinges (2) through 12 lubrication fittings (3), until grease is visible. c. Wipe excess grease with rag (item 7, WP 0716 00). d. Close personnel doors (TM 9-2350-292-10).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

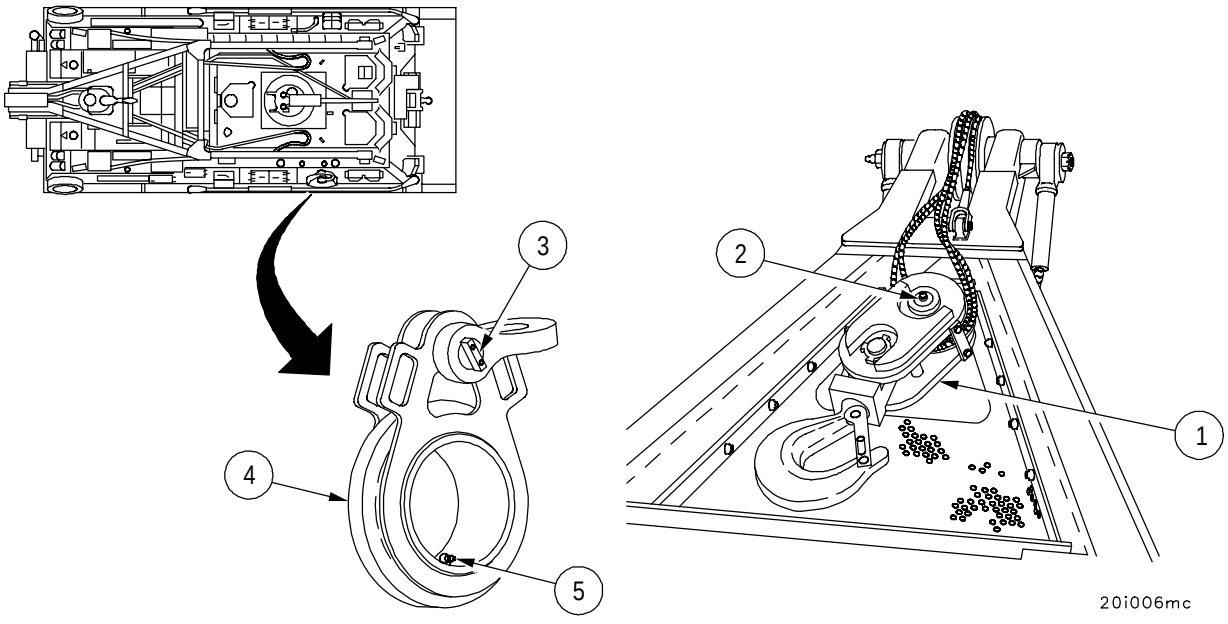
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
25	MONTHLY	EXTERIOR 35-ton Hook and 140-ton Snatch Blocks		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

PROCEDURE	NOT FULLY MISSION CAPABLE IF:
a. Lubricate 35-ton hook block (1) with GAA through fitting (2) until grease is visible. b. Remove pin (3) from 140-ton snatch block (4). Lubricate pin (3) with GAA. c. Install pin (3) in 140-ton snatch block (4). d. Lubricate 140-ton snatch block (4) through fitting (5) until grease is visible. e. Wipe off excess grease with rag (item 7, WP 0716 00).	Clogged, damaged or missing grease fittings or rusted or frozen pin.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
26	MONTHLY	EXTERIOR Boom Pulley Shaft		

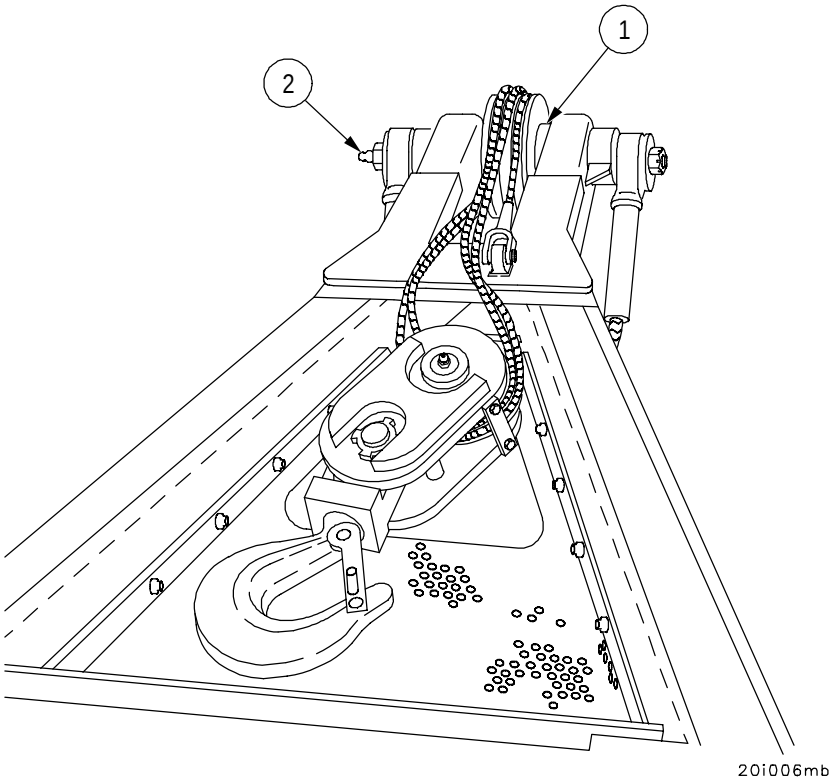
LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

a. Lubricate pulley shaft (1) with GAA through fitting (2) until grease is visible.

b. Wipe excess grease with rag (item 7, WP 0716 00).

Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

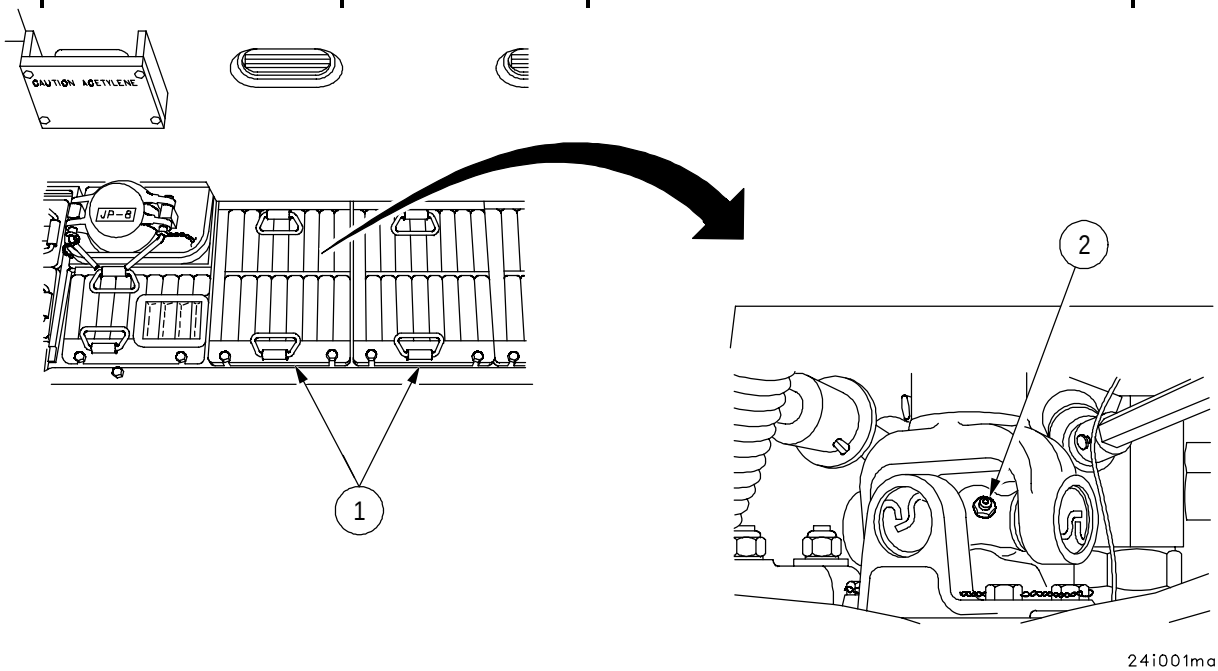
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	MONTHLY	BATTERY AND ENGINE COMPARTMENT		
27		Power Takeoff Shaft Universal Joint (PTO)	a. Remove front engine deck grilles (1) (TM 9-2350-292-10).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

			b. Pull and hold manual fuel shutoff and bump start button until fitting (2) can be accessed. c. Lubricate with GAA through fitting (2) until grease is visible. d. Wipe excess grease with rag (item 7, WP 0716 00). e. Install front engine deck grilles (1) (TM 9-2350-292-10).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

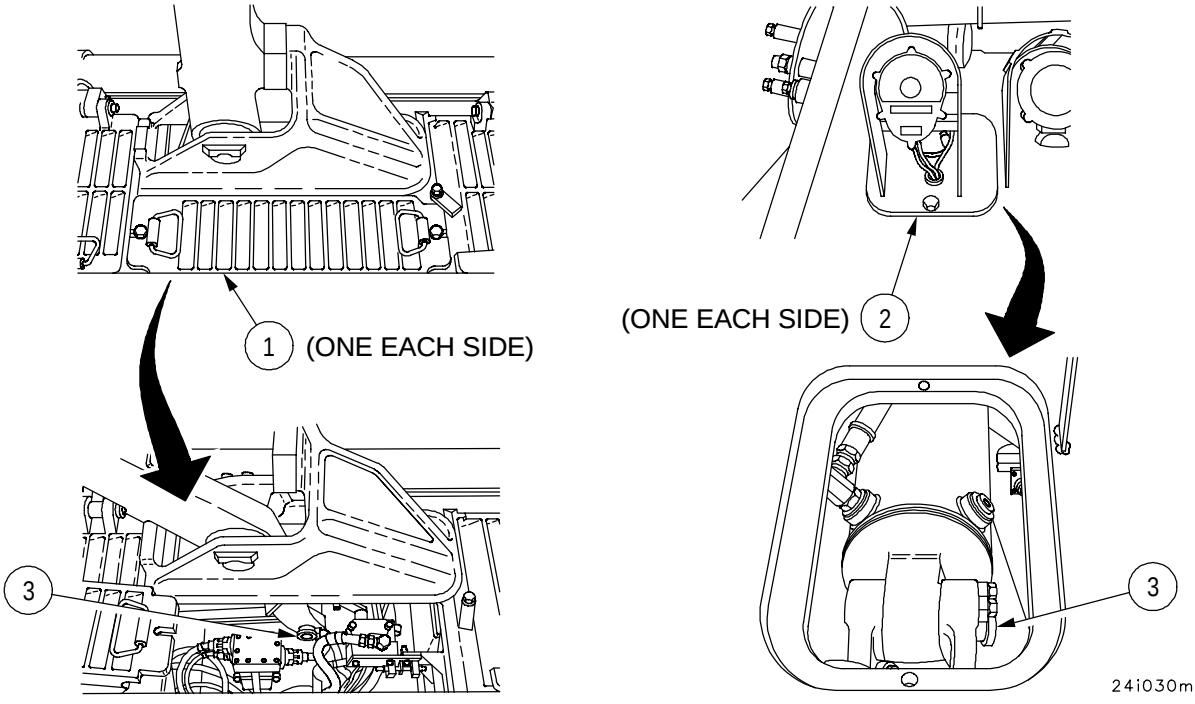
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
28	MONTHLY	BATTERY AND ENGINE COMPARTMENT / Rear Boom Lever Cylinder Pins	a. Remove two engine deck grilles (1) (TM 9-2350-292-10) and two stayline cylinder access covers (2) (WP 0275 00).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

			b. Lubricate with GAA through four fittings (3) until grease is visible. c. Wipe excess grease with rag (item 7, WP 0716 00). d. Install two stayline cylinder access covers (2) (WP 0275 00) and two engine deck grilles (1) (TM 9-2350-292-10).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

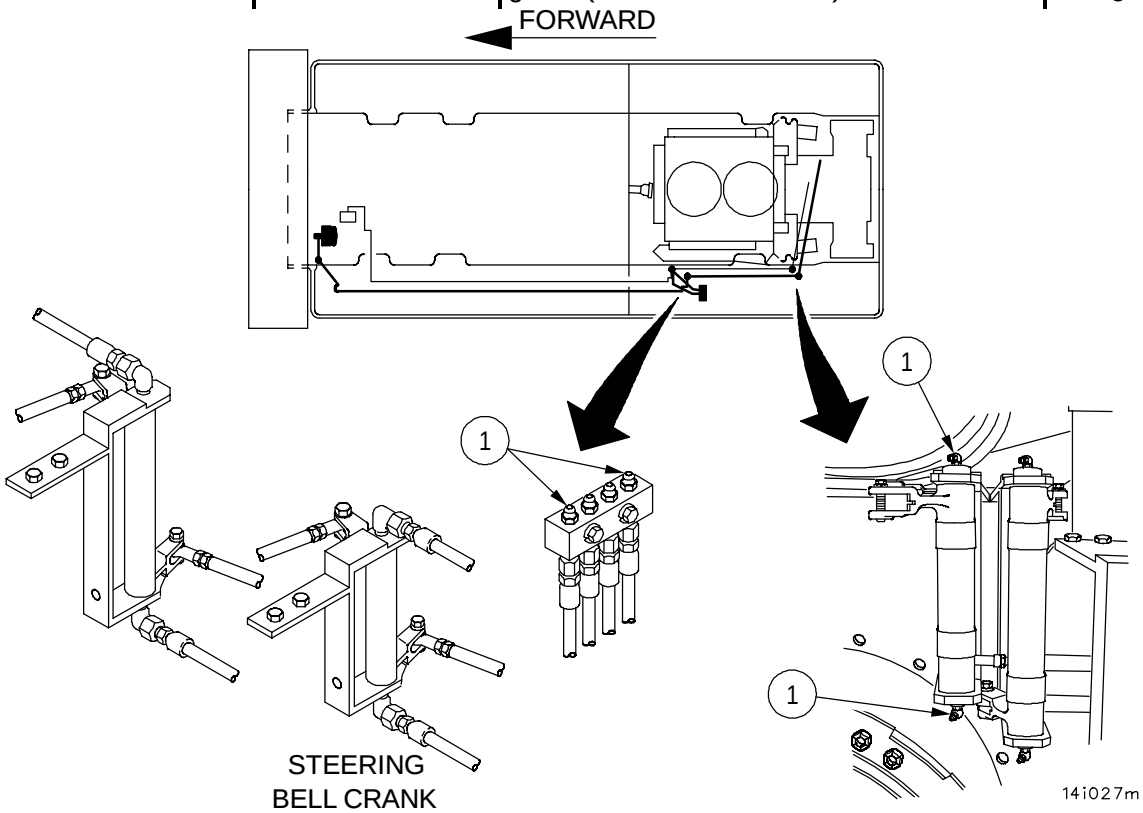
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
29	MONTHLY	BATTERY AND ENGINE COMPARTMENT / Steering Linkage Bellcranks	a. Remove left side engine deck grille and open rear engine deck grilles (TM 9-2350-292-10).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

			b. Lubricate with GAA through four fittings (1) until grease is visible. c. Wipe excess grease with rag (item 7, WP 0716 00). d. Install left side and rear engine deck grilles (TM 9-2350-292-10).	Clogged, damaged or missing hoses or grease fittings.



STEERING BELL CRANK

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

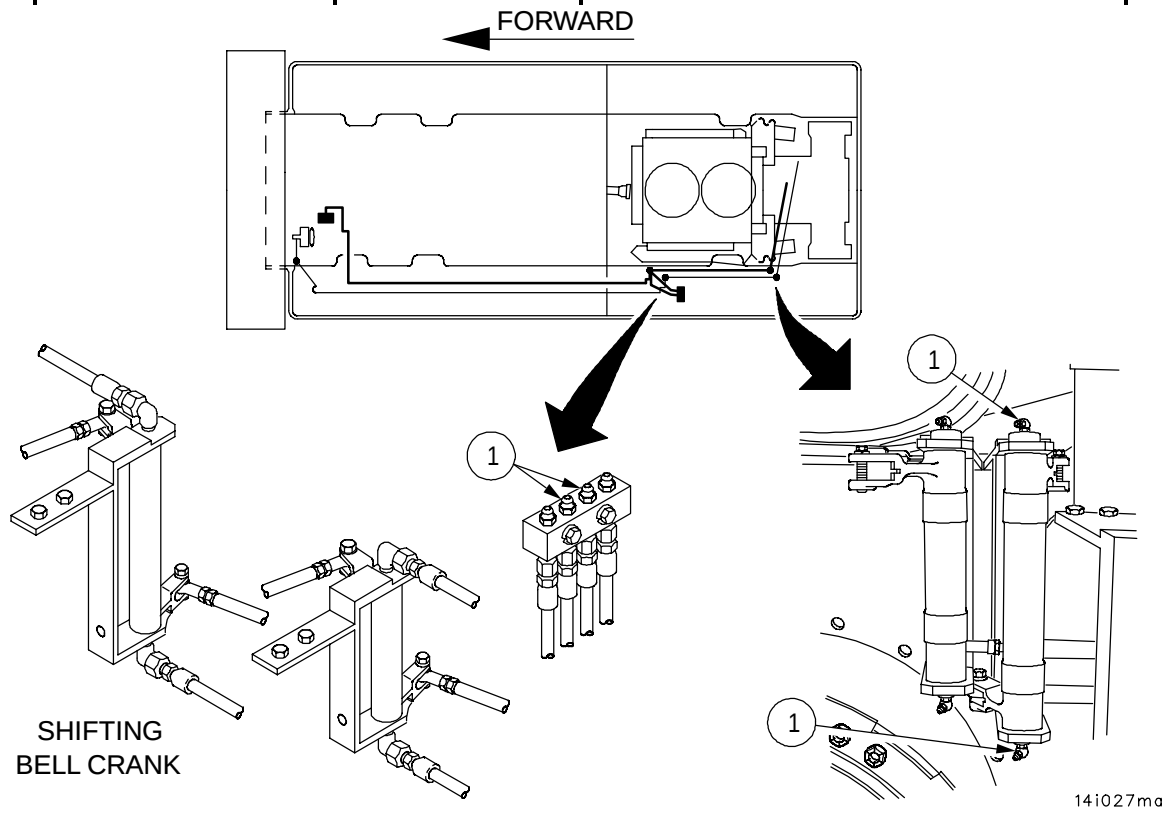
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
30	MONTHLY	BATTERY AND ENGINE COMPARTMENT / Shift Linkage Bell Cranks	a. Remove left side engine deck grille and open rear engine deck grilles (TM 9-2350-292-10).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

			b. Lubricate with GAA through four fittings (1) until grease is visible. c. Wipe excess grease with rag (item 7, WP 0716 00). d. Install left side and rear engine deck grilles (TM 9-2350-292-10).	Clogged, damaged or missing grease fittings or hoses.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

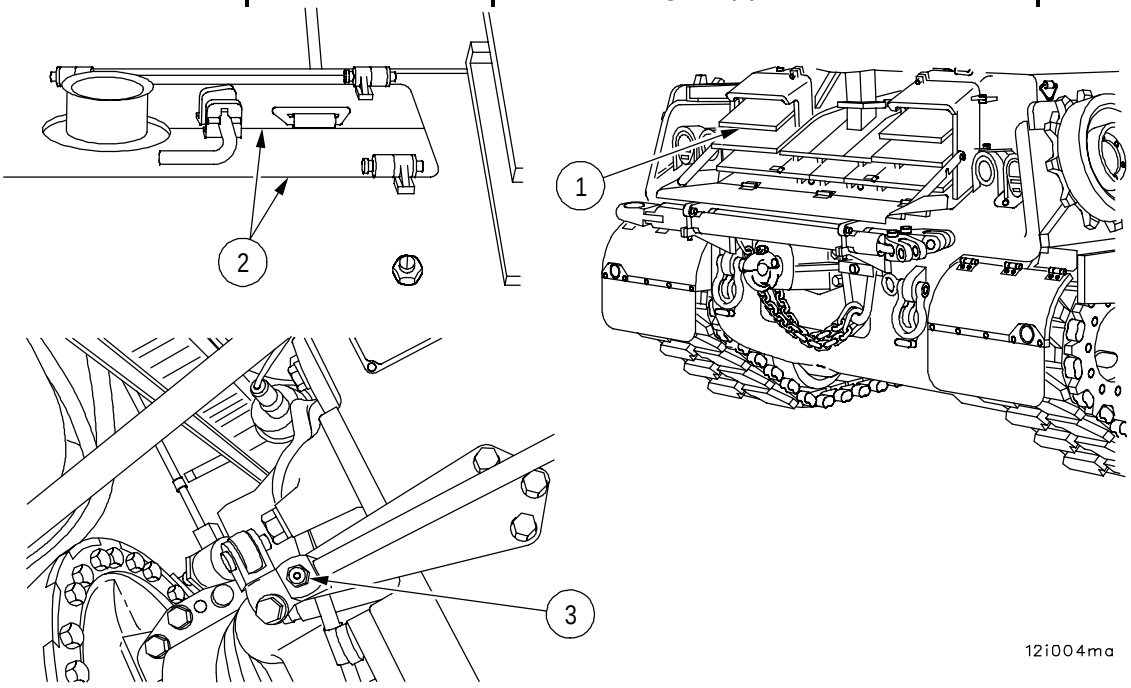
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	MONTHLY	BATTERY AND ENGINE COMPARTMENT		
31		Brake Air Valve Linkage Bracket	a. Open left side engine deck exhaust deflector and grille (1). b. Open transmission oil filler tube access doors (2).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

			c. Lubricate with GAA through fitting (3) until grease is visible. d. Wipe excess grease with rag (item 7, WP 0716 00). e. Close transmission oil filler tube access doors (2). f. Close left side engine deck exhaust deflector and grille (1).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

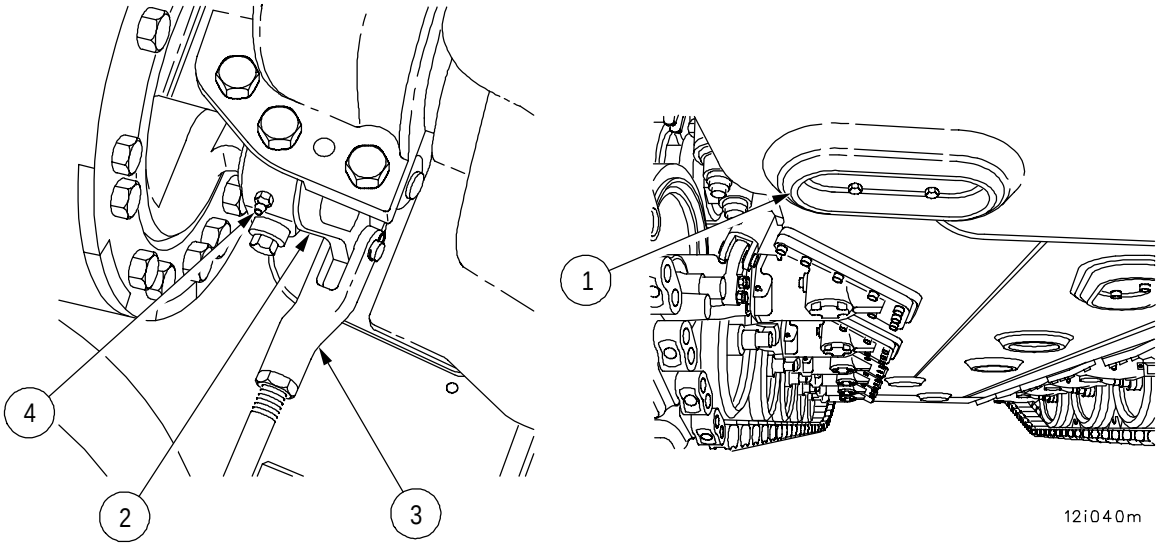
TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	MONTHLY	BATTERY AND ENGINE COMPARTMENT		
32		Brake Slack Adjuster and Brake Rod Clevis	a. Remove drain covers (brake adjustment access covers) (1) (WP 0434 00).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

			b. Lubricate two brake slack adjusters (2) and two brake rod clevis (3) with GAA through four fittings (4) until grease is visible. c. Wipe excess grease with rag (item 7, WP 0716 00). d. Install drain covers (1) (WP 0434 00).	Clogged, damaged or missing grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, MONTHLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	MONTHLY	INTERIOR		
33		Service Brakes	Accelerate vehicle (TM 9-2350-292-10) to 20 mph (32 km/h) and do the following: (1) Release accelerator and apply brakes. (2) Observe if vehicle stops effectively without pulling to one side. If vehicle pulls to one side, perform brake alignment (WP 0355 00 (old configuration) or WP 0356 00 (new configuration)). (3) Observe that vehicle stops within 35 ft (10.6 m) when stopping from 20 mph (32 km/h). If vehicle does not stop within 35 ft (10.6 m), perform brake adjustment (WP 0355 00 (old configuration) or WP 0357 00 (new configuration with brake modulation)).	Vehicle pulls to one side or does not stop within 35 ft (10.6 m).

END OF TASK

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Adjustable wrench (item 22, WP 0717 00)
Air filtration kit (item 116, WP 0717 00)
Combination wrench (item 30, WP 0717 00)
Crowbar (item 52, WP 0717 00)
Drain tool assembly (item 115, WP 0717 00)
End connector wear gauge (item 63, WP 0717 00)
Engine groundhop kit (item 14, WP 0717 00)
Hoisting beam (item 64, WP 0717 00)
Jack screws (item 80, WP 0717 00)
Multimeter (item 84, WP 0717 00)
Oil cooler cleaning tool (item 117, WP 0717 00)
Oil filter removal tool (item 87, WP 0717 00)
Pipe wrench (item 100, WP 0717 00)
Tanker bar (BII)
Torque wrench (item 2, WP 0717 00)
Torque wrench (item 21, WP 0717 00)
Torque wrench (item 9, WP 0717 00)
Transmission parts kit (item 65, WP 0717 00)
Wire-twister pliers (item 67, WP 0717 00)

Materials/Parts

Semiannual kit, PMCS (item 490, WP 0718 00)
Cleaning cloth (item 59, WP 0716 00)
Dry-cleaning (item 1, WP 0716 00)
Grease (GAA) (item 3, WP 0716 00)
Lubricant (item 51, WP 0716 00)
Lubricant (item 85, WP 0716 00)
Lubricating oil (item 43, WP 0716 00)
Lubricating oil (item 87, WP 0716 00)
Lubricating oil (item 58, WP 0716 00)
Marker tags (item 49, WP 0716 00)
Nonelectrical wire (item 40, WP 0716 00)
Safety goggles (item 93, WP 0716 00)
Wiping rags (item 7, WP 0716 00)

Personnel Required

Three

References

WP 0716 00
WP 0717 00
WP 0718 00
WP 0457 00
WP 0461 00
WP 0462 00
WP 0699 00
WP 0703 00
WP 0454 00
WP 0373 00
WP 0401 00
WP 0402 00
WP 0403 00
WP 0404 00
WP 0405 00
WP 0406 00
WP 0407 00
WP 0408 00
WP 0554 00
WP 0568 00
WP 0499 00
WP 0534 00
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WP 0229 00

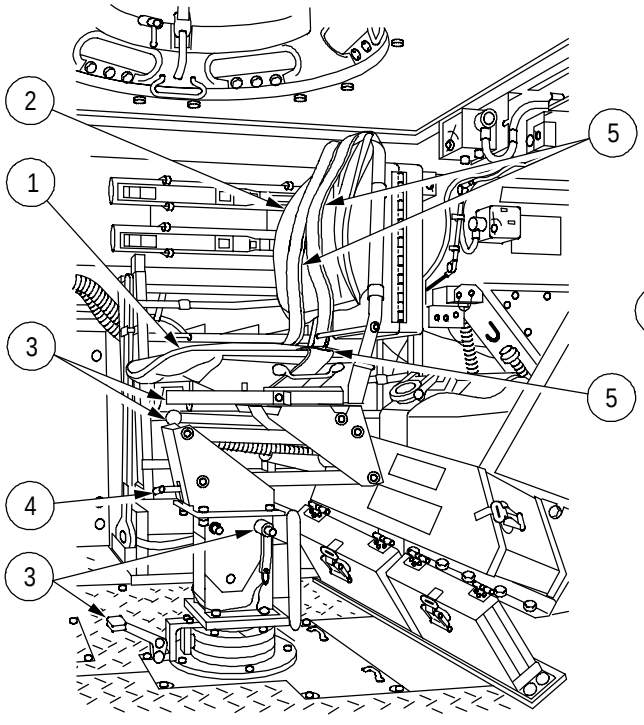
NOTE

Refer to PMCS temperature chart for proper lubricants to use at different temperature ranges.

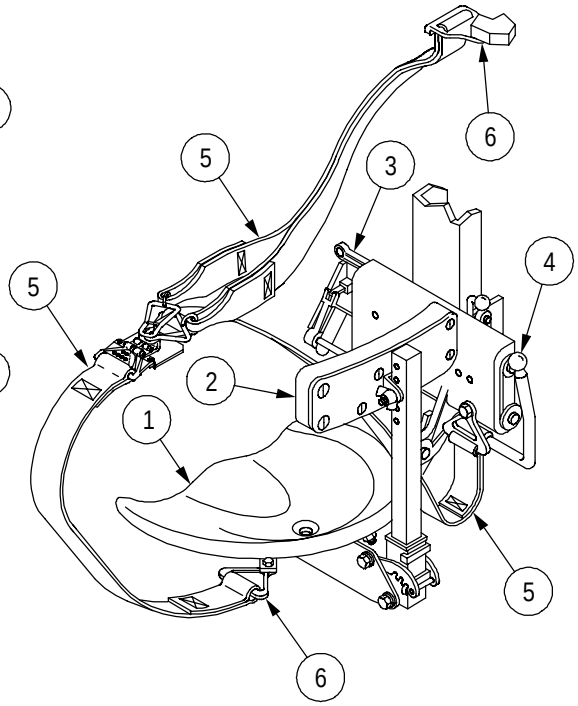
PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
1		Seats	a. Inspect commander's, driver's and mechanic's seats for torn cushions (1) and backrests (2). Repair as necessary (WP 0457 00 and WP 0461 00). b. Check adjusting mechanisms (3) and trip lever (4) for smooth operation. Repair as necessary (WP 0457 00 and WP 0461 00). c. Inspect seat belts and shoulder harness (5) for deterioration. Ensure that seat belts mounting brackets (6) are securely attached and that buckle/end plate engages securely. Repair as necessary (WP 0457 00 and WP 0462 00).	Seat belts damaged. Loose mounting hardware. Adjusting mechanism does not work.



COMMANDER'S SEAT



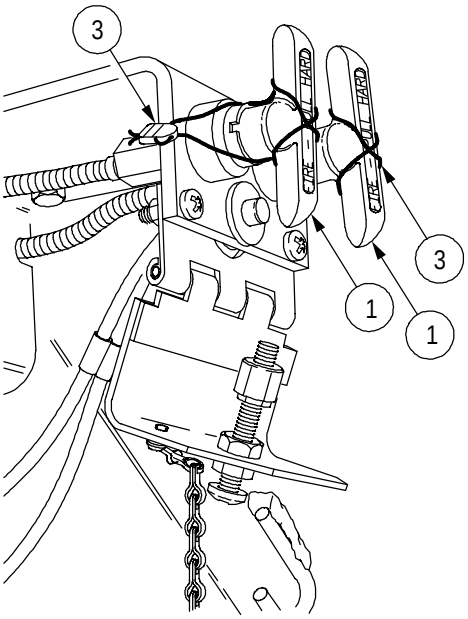
DRIVER'S AND MECHANIC'S SEAT

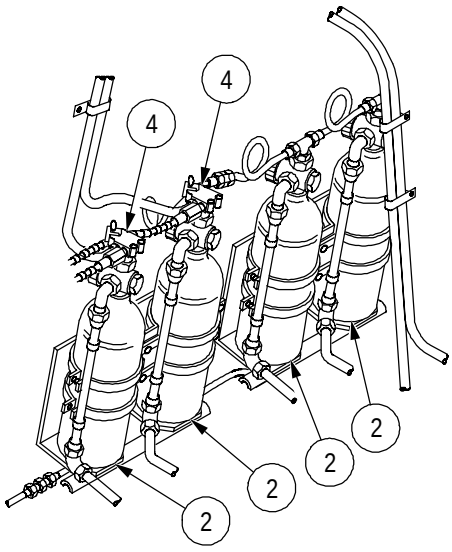
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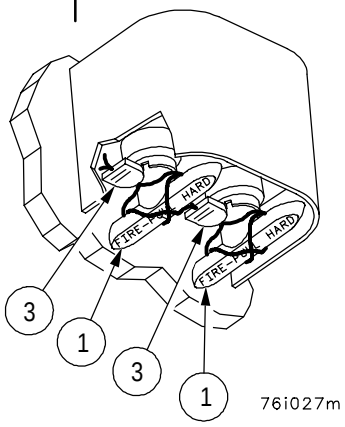
PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
2	SEMIANNUALLY	INTERIOR Fire Extinguishers (Fixed)	**WARNING** Fire extinguishers must not be dropped, struck or exposed to temperatures above +140° F (60°C). An explosion may result causing severe injury or death. **NOTE** A cylinder must be recharged or replaced if its weight loss exceeds 10 percent of difference between full and empty marked on cylinder a. Disconnect handle actuator cable assemblies (1) from cylinders (2) (WP 0699 00). b. Operate discharge handles (1) to ensure cable does not bind. Install new seal (3) on control valves (4) and discharge handles (1). c. Remove fixed fire extinguisher cylinders (2) (WP 0703 00). Take fire extinguisher cylinders (2) to appropriate maintenance activity IAW local SOP for serviceability determination.	Cable corroded, seals broken or missing. Pull handle does not work. Unserviceable fire extinguisher.



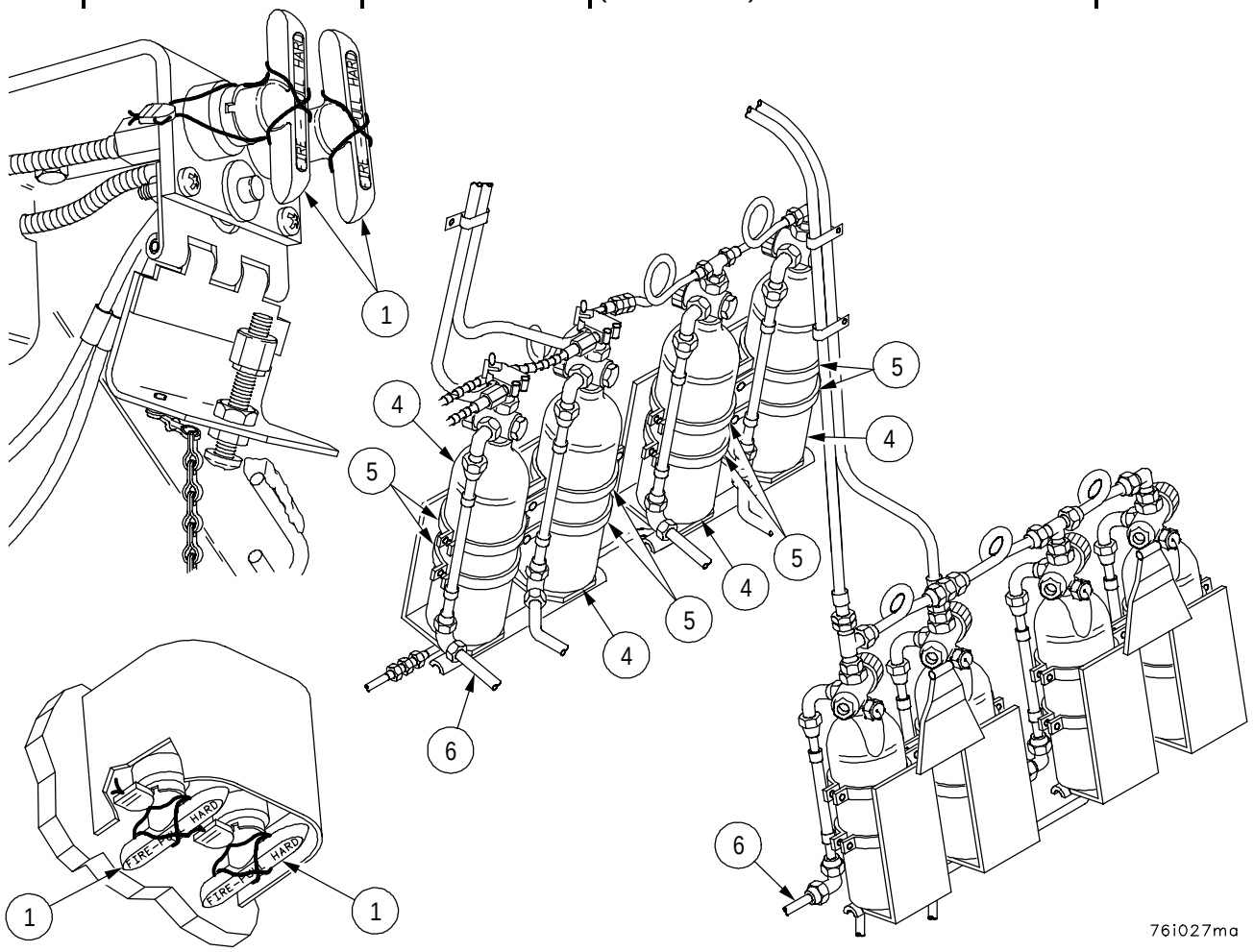




PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

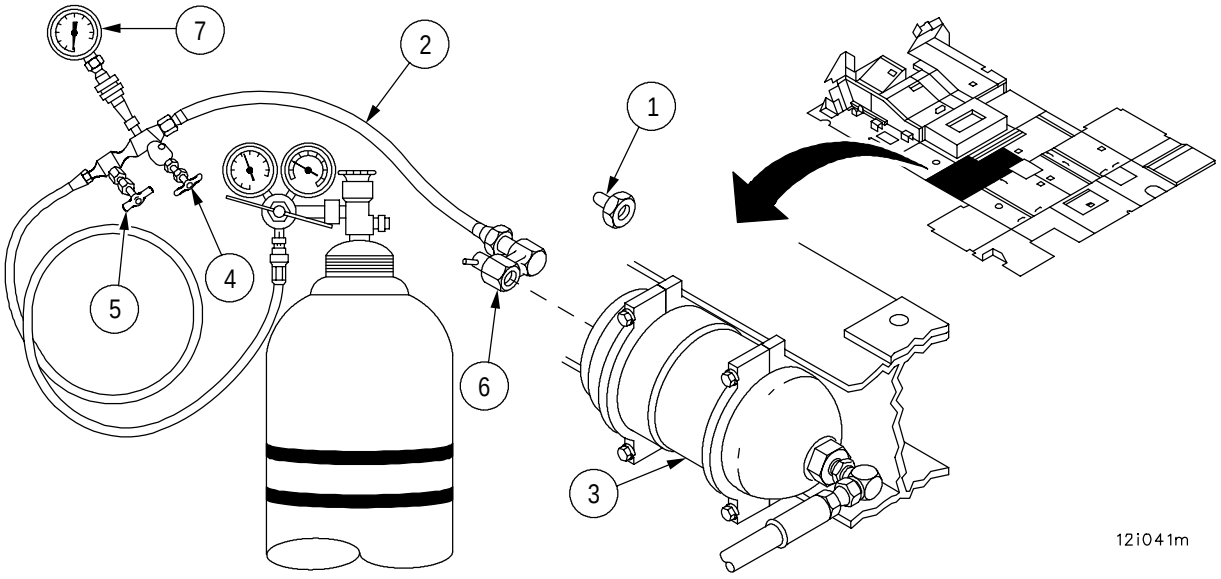
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
2	SEMIANNUALLY	INTERIOR Fire Extinguishers (Fixed) - Continued	d. Install fixed fire extinguisher cylinders (4) (WP 0702 00). Make sure bottle hold down brackets (5) are properly latched. **NOTE** Whenever powerpack or nose piece is removed check all distribution lines for loose fittings, loose mountings and cracks. e. Check distribution lines (6) for loose fittings, loose mountings and cracks. f. Connect handle actuator cable assemblies (1) to cylinders (4) (WP 0699 00).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

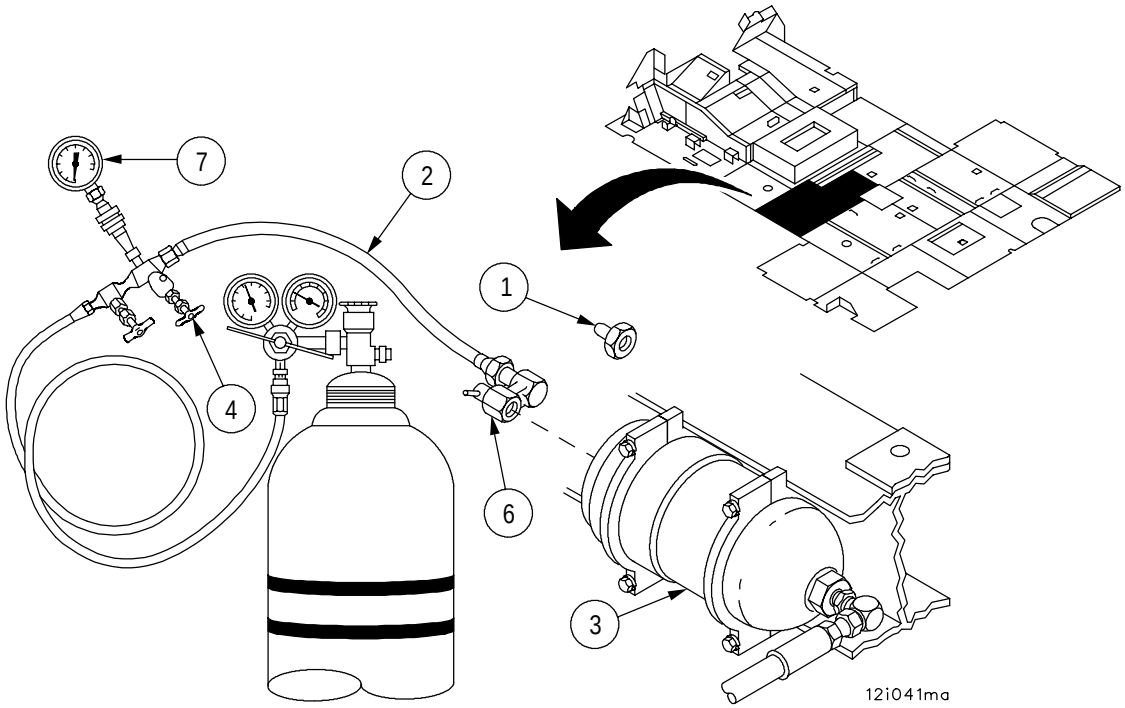
ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
3		Brakes	Service accumulator: a. Remove subfloor plate #16 (WP 0454 00). **WARNING** b. Remove nitrogen valve cap (1) and attach accumulator charging device (2) to accumulator (3). c. Close valves (4 and 5) on charging device (2). d. Pump brake pedal (approximately 25 times) with MASTER switch OFF until hydraulic pressure is depleted to zero pressure. e. Turn valve (6) clockwise and take pressure reading on gauge (7). **NOTE** Operating pressure for accumulator is 325± 5 psi at 70°F (21°C). Refer to Temperature Vs. Pressure chart (WP 0373 00).	Low nitrogen pressure, missing valve cap or other components.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

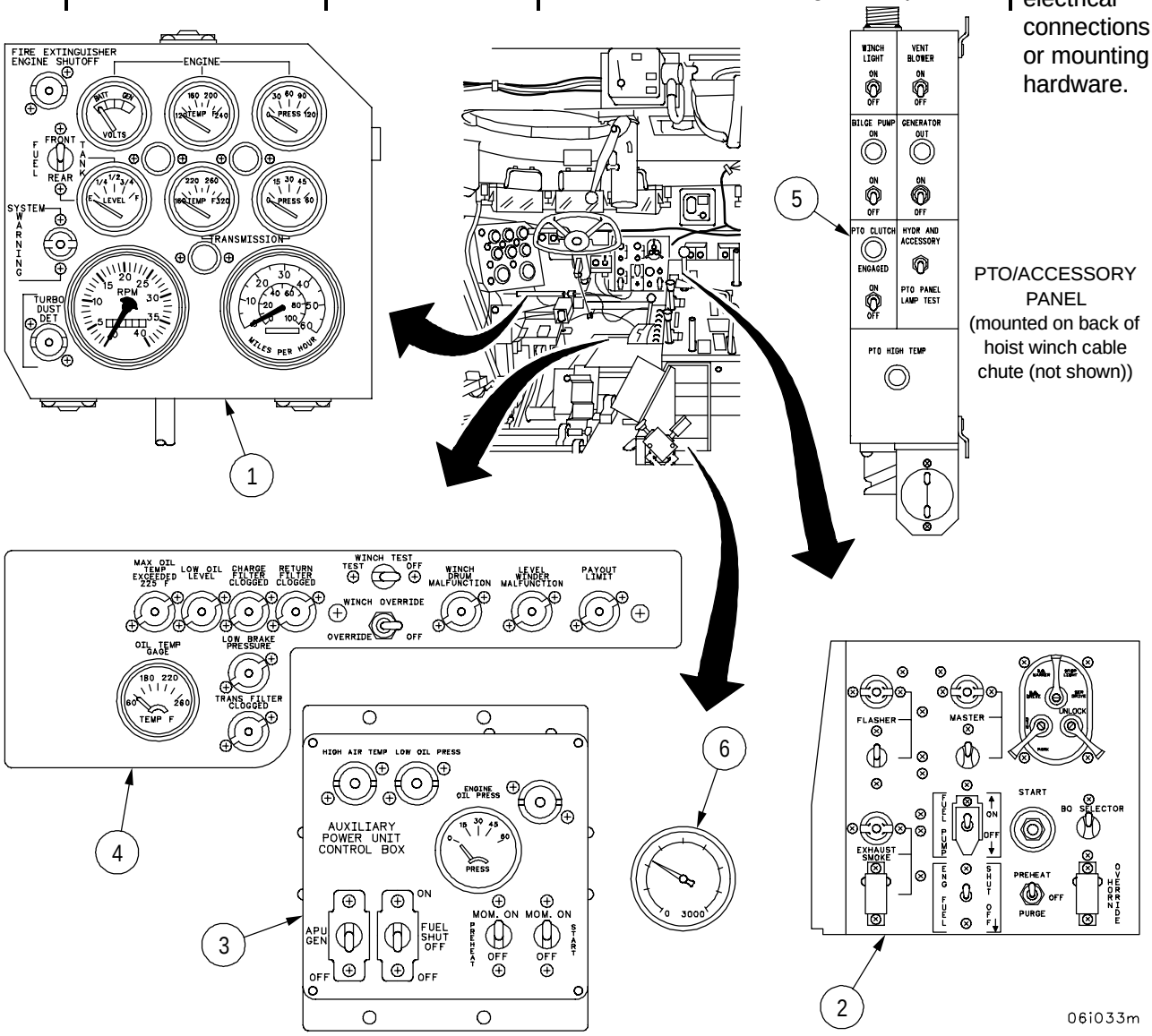
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
3		Brakes - Continued	f. If accumulator charge pressure reading when shown on gauge (7) is in operation range, turn valve (6) counterclockwise to seal accumulator (3) input port. If accumulator pressure reads below operational range found in Temperature Vs. Pressure chart, refer to WP 0373 00 for system charging. g. Open bleeder valve (4) to bleed hoses on charging device (2). h. Disconnect charging device (2) from accumulator (3), then replace nitrogen valve cap (1) on accumulator (3). i. Install subfloor plate #16 (WP 0454 00).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

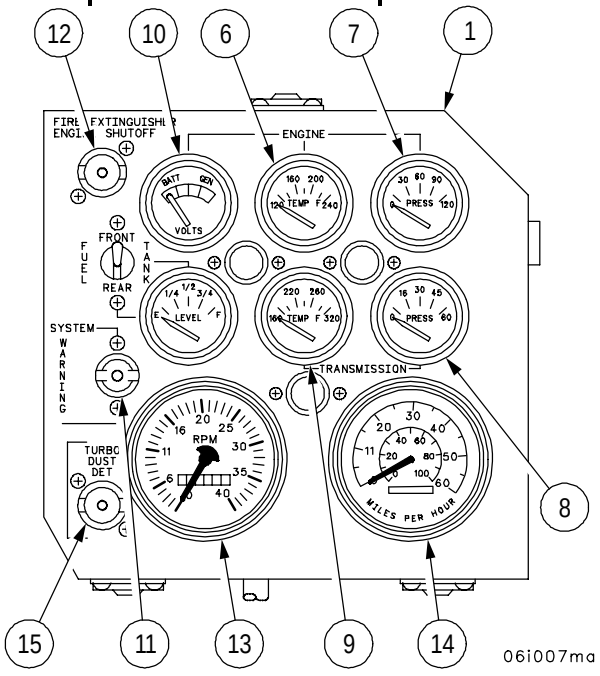
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
4		Instrument Gauges and Warning Lights	a. Inspect gauge panel (1), MAIN switch panel (2), APU panel (3), hydraulic control panel (4), PTO/accessory panel (5) and brake pressure gauge (6). Repair or replace any broken instruments, gauges and warning lights. b. Inspect and tighten loose electrical connections and mountings as required.	Any damaged, missing or non-operating gauge, or warning lights loose or damaged electrical connections or mounting hardware.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

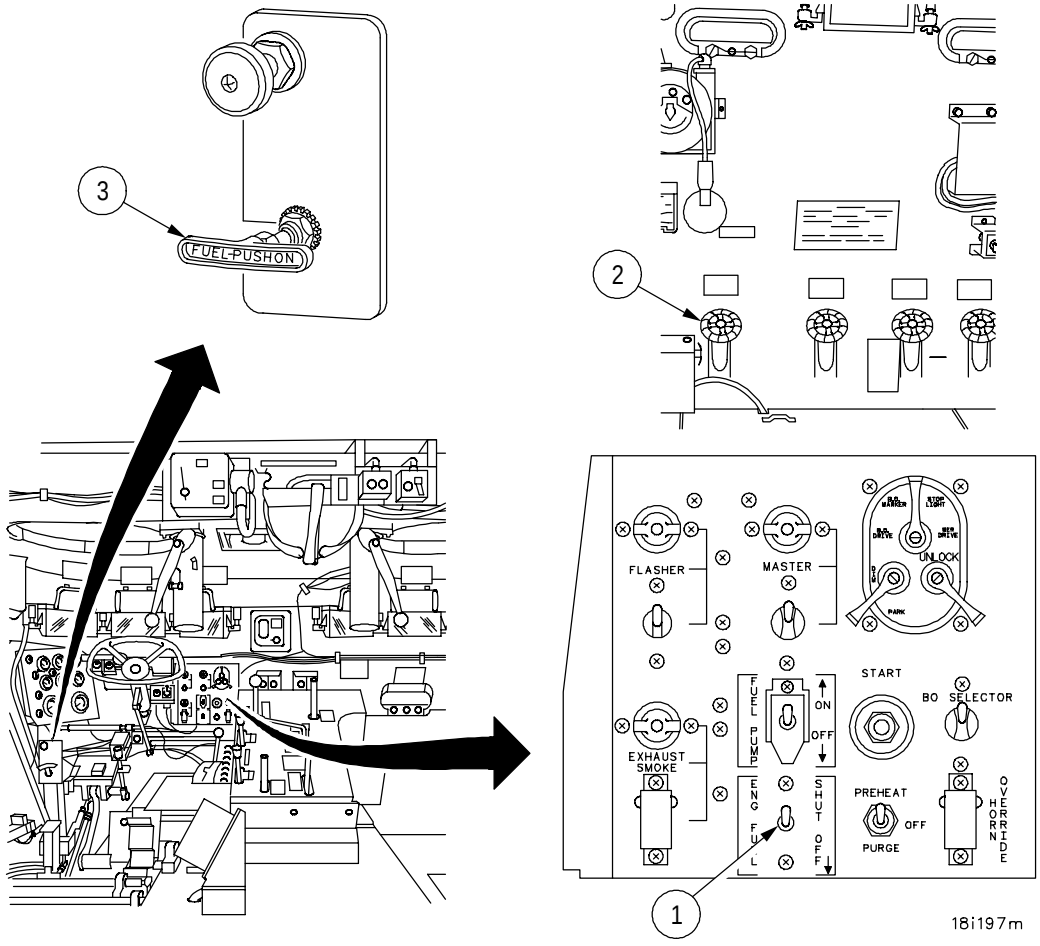
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
4		Instrument Gauges and Warning Lights - Continued	c. Start engine (TM 9-2350-292-10) and perform the following: d. Check instruments, gauges and warning lights on gauge panel (1) for normal indications as listed below. (1) Engine oil temperature gauge (6) normal temperature range 120-240°F. (2) Engine oil pressure gauge (7) normal pressure 40-90 psi at 2400 rpm and 180°F oil temperature. (3) Transmission oil pressure gauge (8) normal pressure range 12-30 psi. (4) Transmission oil temperature gauge (9) normal temperature range 160°F-260°F. (5) Battery-generator indicator (10) normal reading in green zone, when engine is running. (6) SYSTEM warning light (11) illuminates when MASTER switch is set to ON position and goes off once system is started or MASTER switch is set to OFF position. (7) FIRE EXTINGUISHER ENGINE SHUTOFF indicator (12) illuminates when fire extinguisher system pull handle latch is open or the ENGINE FUEL SHUTOFF switch is moved to OFF. (8) Tachometer (13) and speedometer (14) should operate without excessive fluctuation or unusual noises. (9) TURBO DUST (DET) indicator (15) is off.	High or low temperature, pressure or voltage indication.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

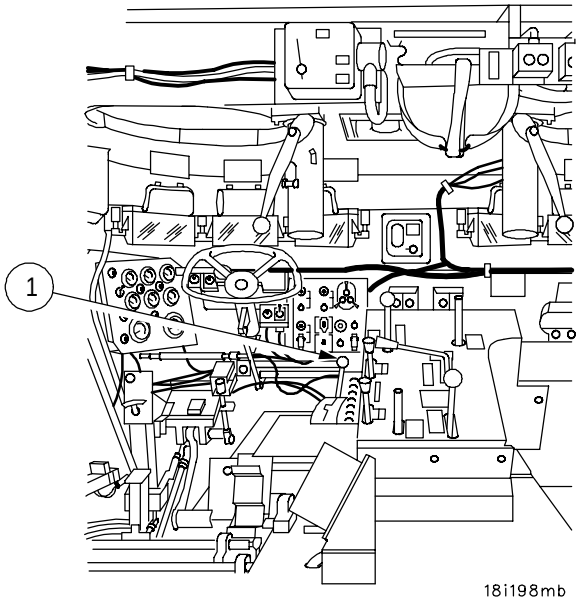
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
5		Engine Fuel Shutoff and Accelerator Controls	a. Listen for unusual noises, hesitations, and varying idle speed. b. Check throttle and accelerator controls for smooth operation. c. Check operation of fuel shutoff switch (1), manual control fuel shutoff valve (2) and fuel shutoff handle (3).	Unusual noises. Rough operation of controls. Inoperational switch or missing components.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

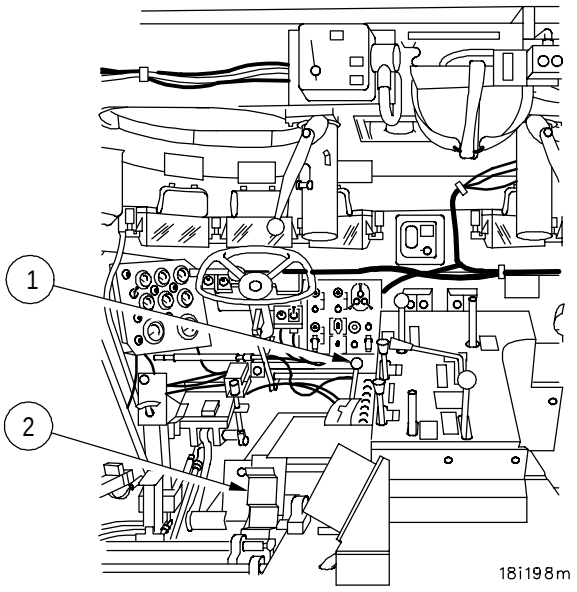
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
6		Idle Test	a. Start engine (TM 9-2350-292-10). b. Run engine until normal operating temperature (engine oil at 140°F (60°C) to 240°F (116°C), transmission oil at 160°F (72°C) to 280°F (138°C) are reached. c. With transmission lever (1) in neutral position, engine should idle smoothly at 825 - 875 rpm.	Engine does not run smoothly at 825-875 rpm or operates above 875 rpm or below 825 rpm.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

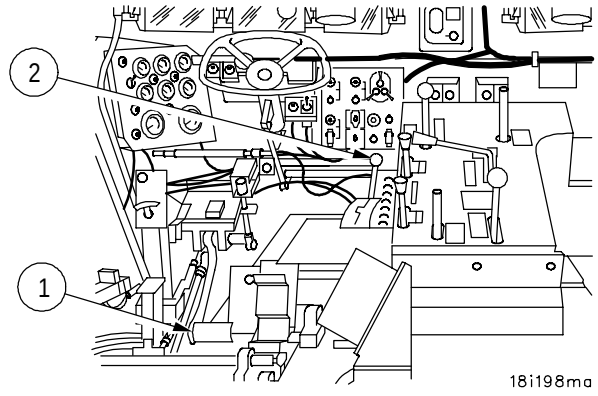
ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
7		Governor No Load Test	**CAUTION** Engine speed must not exceed 2660 rpm for more than 2 or 3 seconds if governor malfunctions. With transmission lever (1) in neutral, gradually open the throttle until accelerator pedal (2) is fully depressed. Engine speed will generally exceed 2640 rpm momentarily. Then speed will stabilize between 2400 and 2660 rpm. If governor repeatedly cuts in and out or surges, notify support maintenance.	If engine exceeds 2660 rpm for more than 3 seconds.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
8	SEMIANNUALLY	INTERIOR / Stall Test	**CAUTION** Do not stall test engine for more than 30 seconds. Vehicle brake will release when transmission shift control lever is moved from PARK position. Vehicle may move even with brakes in the locked position. Perform stall test: a. Depress brake (1) and hold in applied position, place transmission (2) in high range and run engine at full throttle for a maximum of 30 seconds. b. If engine speed is below 1800 rpm, it indicates that engine is not operating properly. Notify support maintenance activity that a check of engine performance is required. c. If the engine speed exceeds 1950 rpm, there is a clutch slippage in transmission. Notify support maintenance.	If engine rpm is below 1800 or above 1950.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

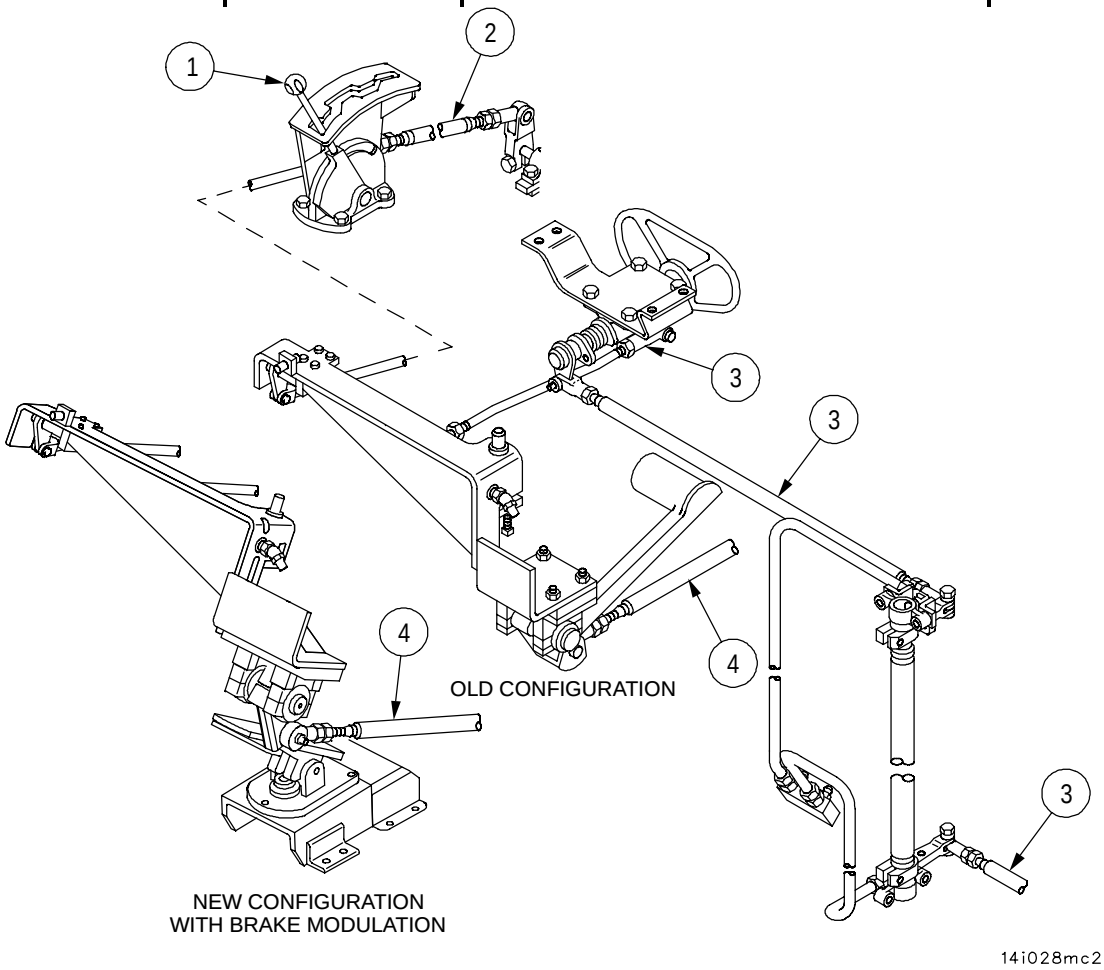
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
9		Acceleration and Pulling Power Test	Test for normal acceleration and pulling power in each transmission range. a. While testing in low range, accelerate with wide-open throttle from low to top speed. Governed speed under load should reach 1875 rpm, but not exceed 2660 rpm. b. Listen for unusual noises that might indicate loose, damaged, excessively worn parts or loose mountings.	If governed speed does not reach 1875 rpm or exceeds 2660 rpm. Any unusual noises.
10		Initial Road Test	Take vehicle on a short road test, approximately 5 miles (8 km) and perform tasks 12 and 13.	
11		Steering	a. Move steering wheel through its entire range and observe if steering response is satisfactory. b. With vehicle operating at moderate speed and steering control centered, check for any tendency to wander or pull to one side. If either of these conditions exist, check steering controls and linkage adjustment (Chapter 13)	Any binding or excessive looseness is detected.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
12		Transmission	a. Move transmission shift control (1) through all forward and reverse speed ranges and notice if transmission shifts smoothly, without excessive vibration or unusual noises and that response is satisfactory. If unusual noises or excessive vibration occurs, notify support maintenance.	Any unusual noises, damage or worn components.
			b. Inspect shifting linkages (2), steering linkages (3) and brake linkages (4) for bent, missing or improperly adjusted components. Replace broken, kinked or missing linkage (WP 0401 00 through WP 0408 00.	Any improperly adjusted components.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
13	SEMIANNUALLY	INTERIOR Hydraulic System	 **WARNING**	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
OIL: Fire Retardant Hydraulic Oil MIL-H-46170	80 gal (302.80L)	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

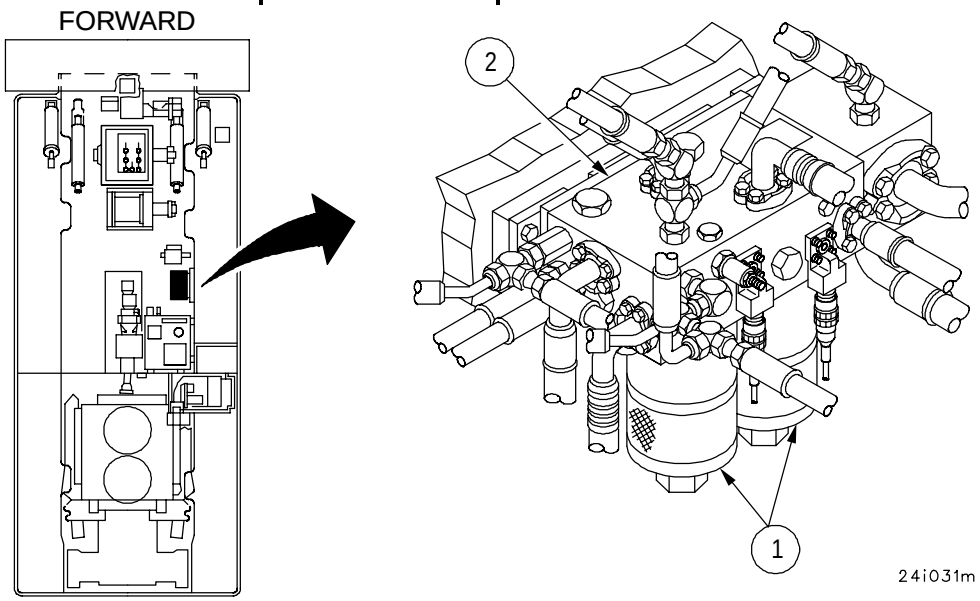
a. Replace hydraulic system oil filter elements (1) (WP 0554 00). Add oil, if required.

b. Inspect hydraulic lines, hoses and fittings for leaks, damage and deterioration (para 0568 00).

c. Operate system and check for unusual noises or other defects.

d. Inspect hydraulic filter valve manifold assembly (2) for leaks and damage.

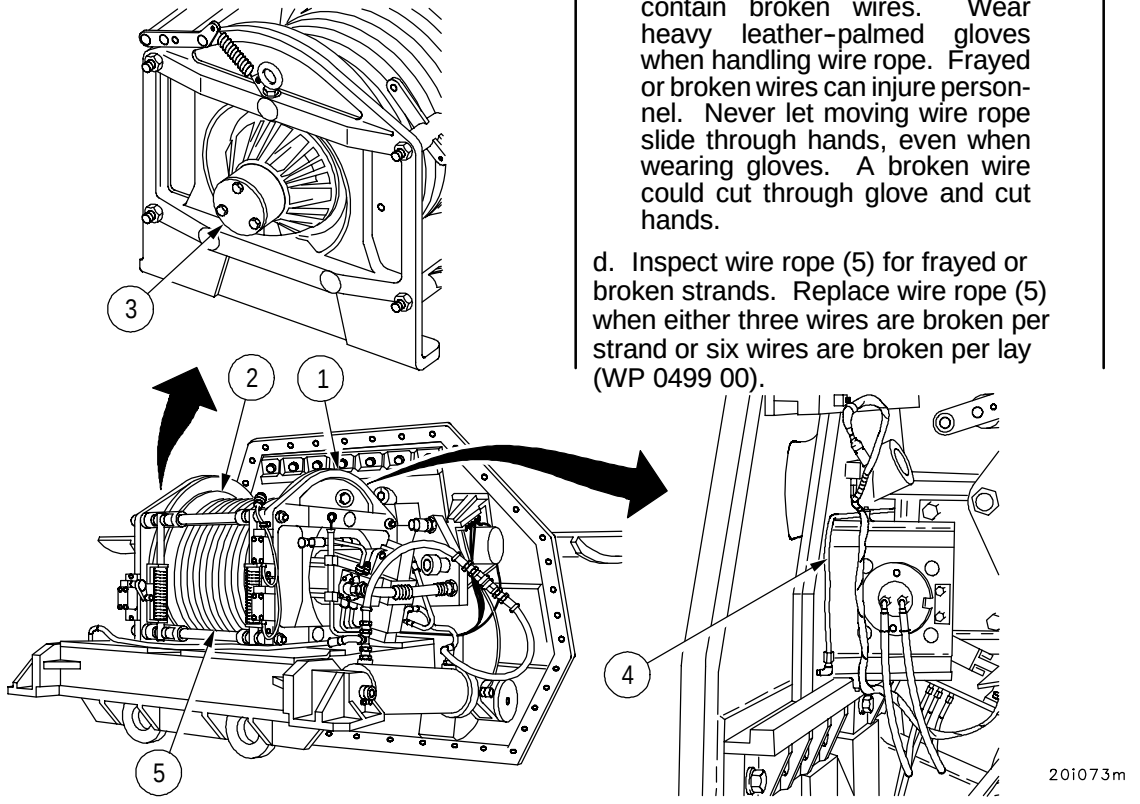
Any Class III leaks, damaged or missing components.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
14	SEMIANNUALLY	INTERIOR Main Winch	a. Park vehicle on level surface (TM 9-2350-292-10). **CAUTION** Always keep tension on wire rope when paying main winch out. Slack in wire rope may damage equipment. b. Operate winch (1) and check operation of winch drum (2), brake (3) and level winder (4). c. If wire rope (5) does not spool evenly and fully across the winch drum (2), check for kinks or warping of wire rope (5). If kinks or warping of wire rope (5) is evident, replace wire rope (5) (WP 0499 00). **WARNING** Wire ropes can become frayed or contain broken wires. Wear heavy leather-palmed gloves when handling wire rope. Frayed or broken wires can injure personnel. Never let moving wire rope slide through hands, even when wearing gloves. A broken wire could cut through glove and cut hands. d. Inspect wire rope (5) for frayed or broken strands. Replace wire rope (5) when either three wires are broken per strand or six wires are broken per lay (WP 0499 00).	Winch does not operate properly. Does not spool evenly. Wire rope unserviceable. Class III leaks. Loose mounting hardware.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

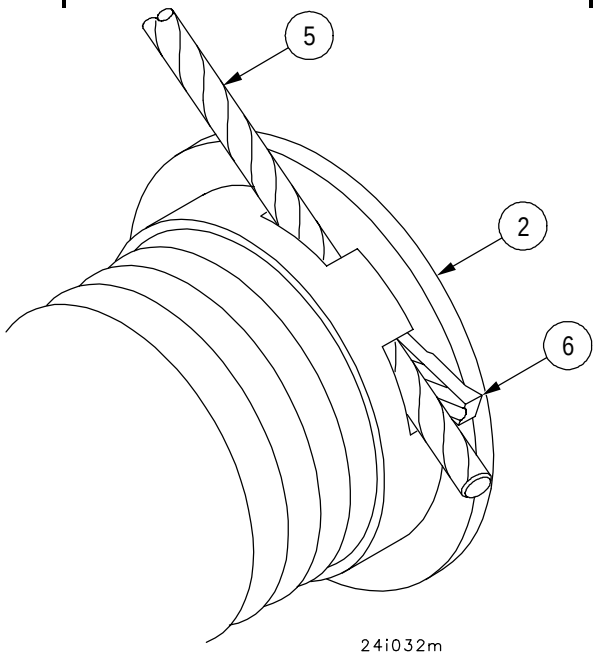
ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
14	SEMIANNUALLY	INTERIOR Main Winch - Continued	e. Check to ensure wire rope wedge (6) is properly installed in drum (2).  **WARNING** f. Clean wire rope (5) with dry-cleaning solvent (item 1, WP 0716 00).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
OIL: Lubricating Oil, OE/HDO MIL-L-21024	As Required	Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
		ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

g. Lubricate wire rope (5) with OE/HDO and allow to drain.

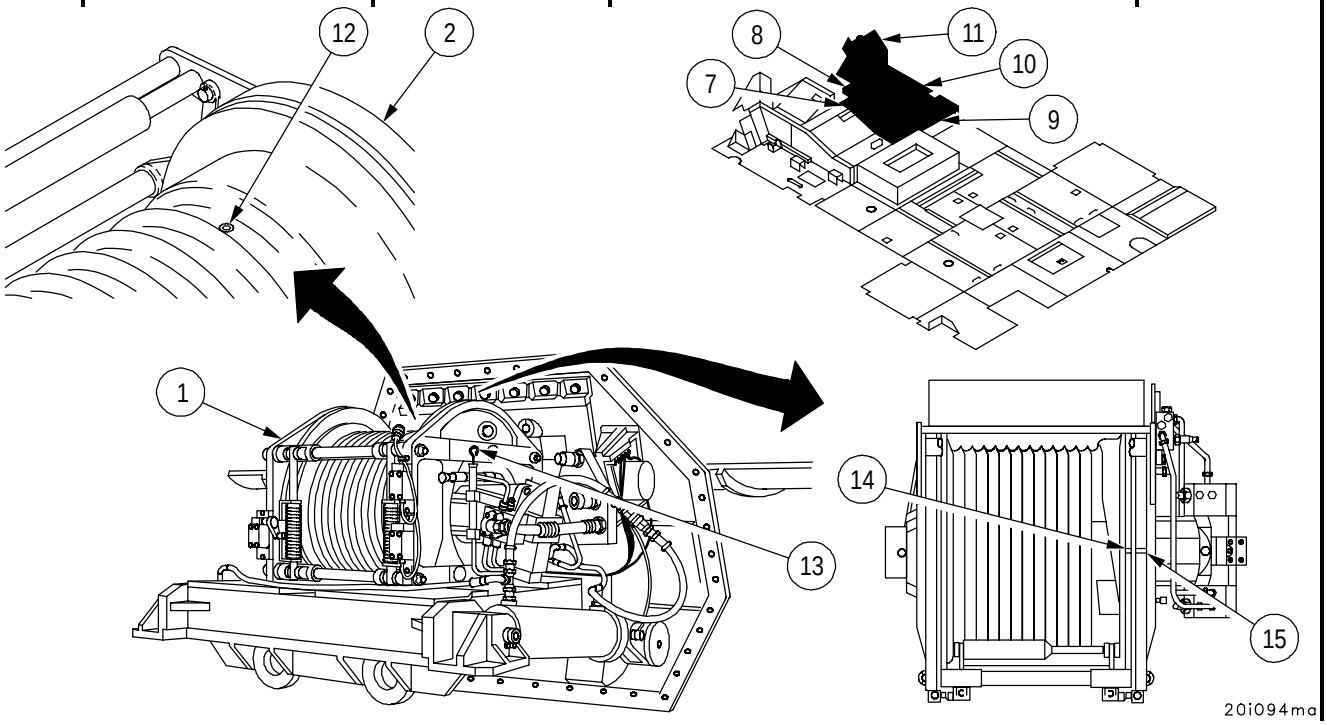
h. Tighten any loose mounting screws and hydraulic lines.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
14	SEMIANNUALLY	INTERIOR Main Winch - Continued	i. Remove subfloor plates #8 (7), #9 (8), #10 (9), #11 (10) and #12 (11) (WP 0454 00). j. Operate main winch (1) until fill/drain plug (12) is visible on main winch drum (2). k. Remove main winch drum fill/drain plug (12) and bayonet gauge (13). l. Place a suitable container (15 gallon capacity minimum) under hull drain. m. Open hull drain (TM 9-2350-292-10). n. Operate main winch (1) until timing marks on the drum flange (14) and motor end winch housing (15) align to allow main winch drum (2) to drain completely into hull. o. After all the oil has drained operate the main winch (1) until main winch fill/drain plug (12) hole is on top of the main winch drum (2).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

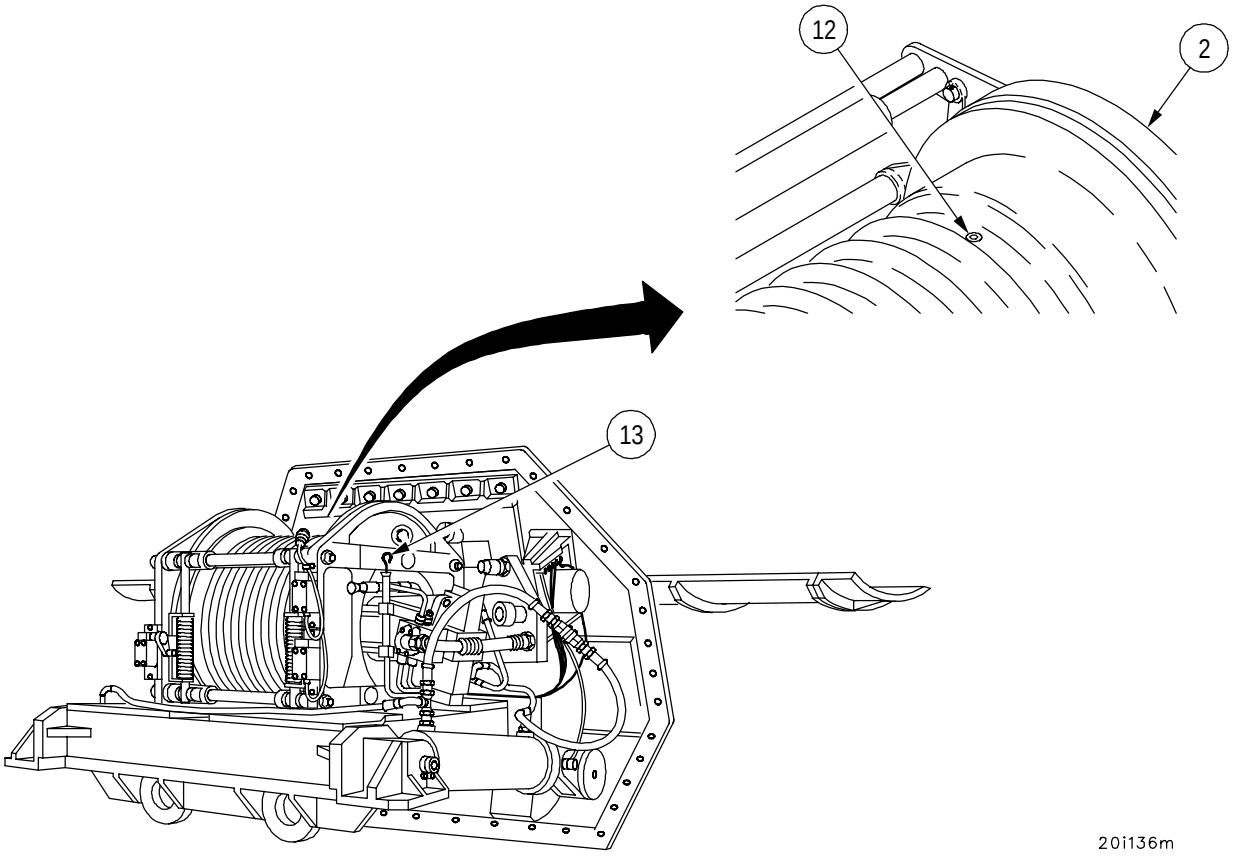
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
14	SEMIANNUALLY	INTERIOR Main Winch - Continued	p. Clean the main winch fill/drain plug (12) with clean rag (item 7, WP 0716 00). q. Install bayonet gauge (13).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +80°F (Above +27°C)	+95°F to -10°F (+35°C to -23°C)	Below - 10°F (Below - 23°C)
OIL: Lubricating Oil, GO MIL-L-2105	9.5 gals (36.0 L)	GO-85/140 (0-228)	GO-80/90 (0-226)	GO-75 or GO-80 (0-186)

*For Arctic Operation, refer to FM 9-207

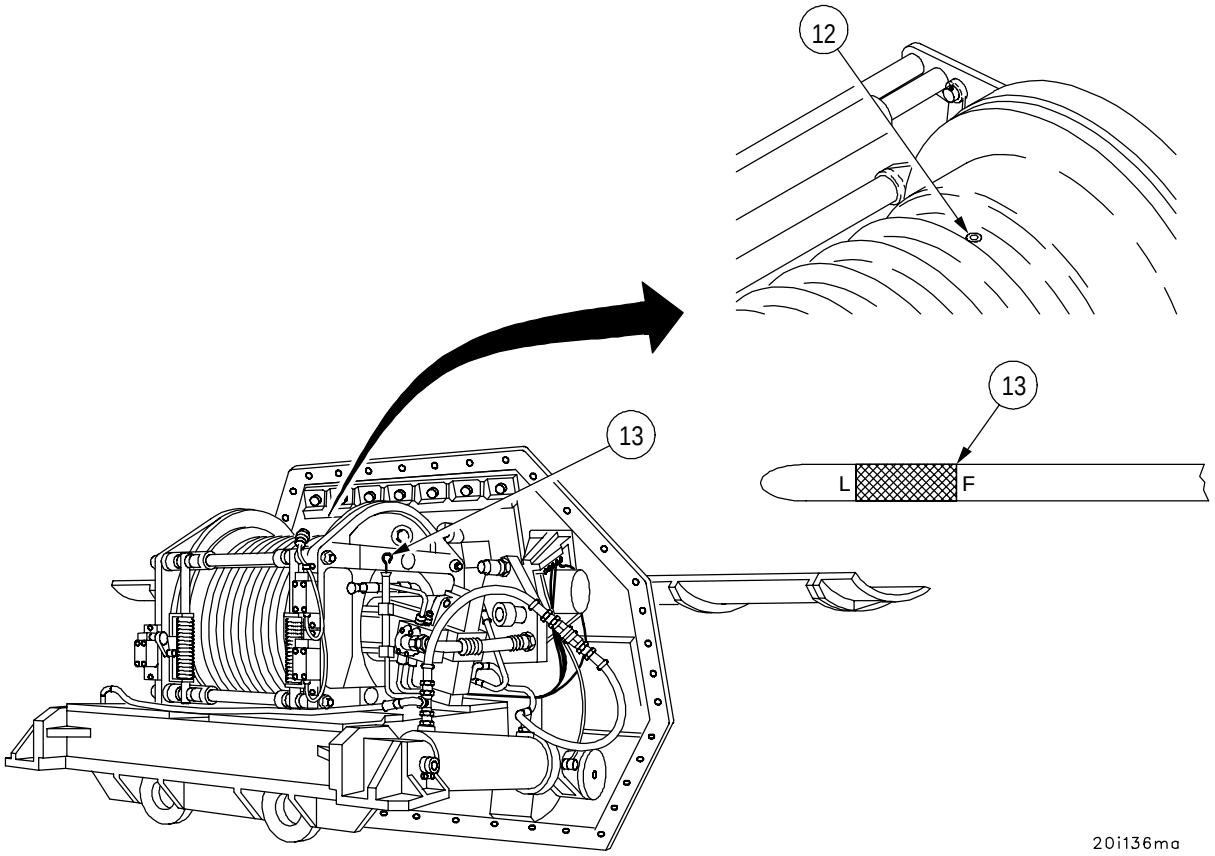
r. Fill main winch drum (2) with approximately 9.5 gallons proper grade oil through main winch fill/drain plug (12) hole while checking bayonet gauge (13). Do not overfill.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
14		Main Winch - Continued	s. Add oil until oil reaches FULL mark on bayonet gauge (13). t. Install main winch drum fill/drain plug (12). u. Close hull drains (TM 9-2350-292-10).	Oil level below LOW mark. Oil level above FULL mark.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

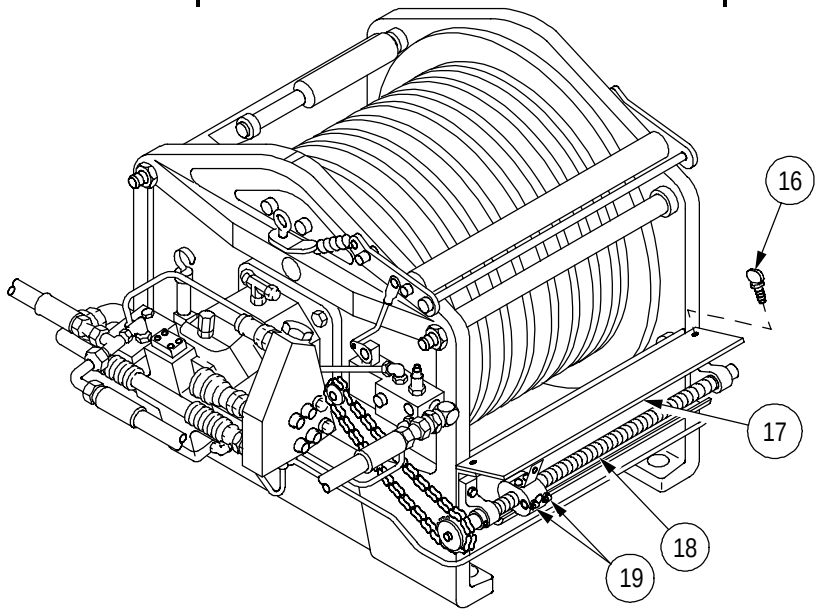
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
14	SEMIANNUALLY	INTERIOR Main Winch - Continued	v. Remove two thumbscrews (16) and raise diamondscrew cover (17).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

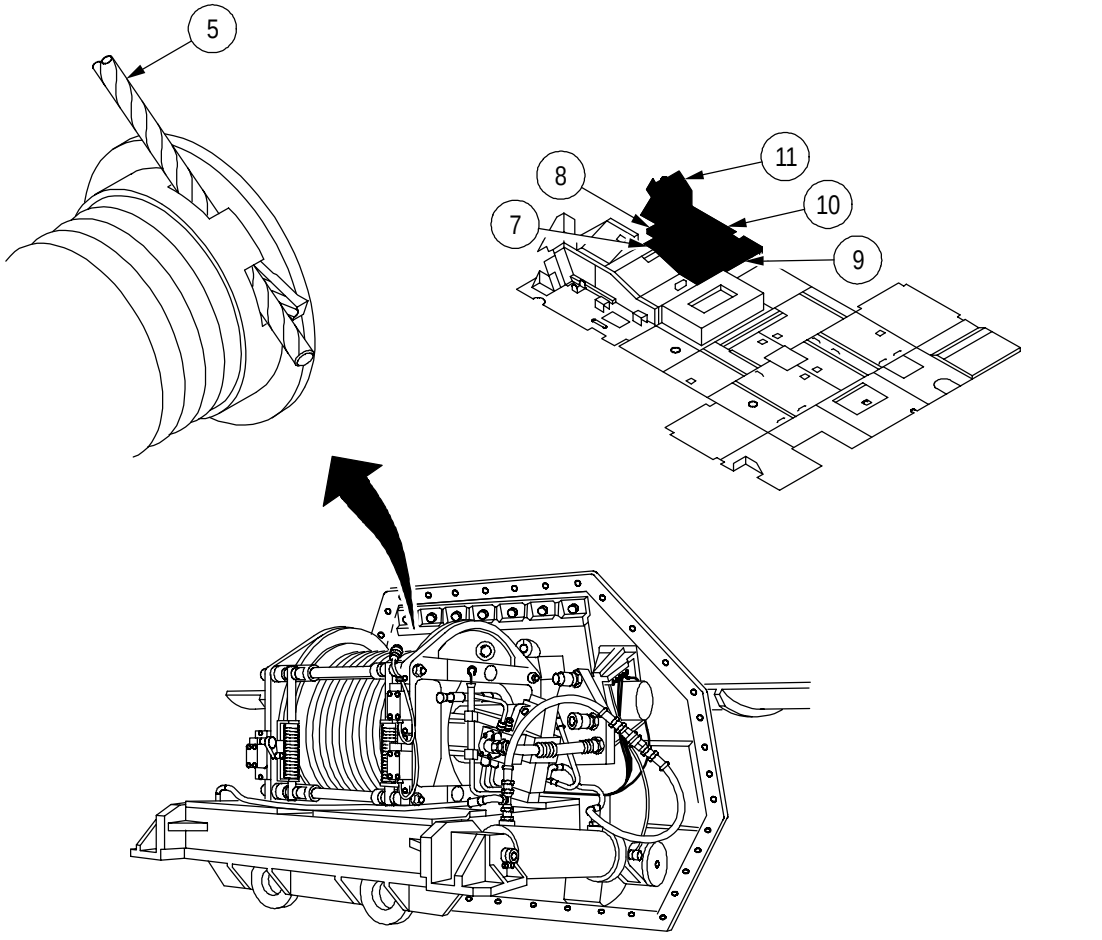
w. Lubricate diamond screw (18) through two fittings (19) with GAA until grease is visible.	Clogged, damaged or missing grease fittings.
x. Operate main winch (TM 9-2350-292-10) to exercise diamond screw (18) until a coating of grease is distributed evenly over the diamond screw (18). Repeat lubrication as required.	Diamond screw is not properly lubricated.
y. Close diamond screw cover (17) and secure with two thumbscrews (16).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
14		Main Winch - Continued	z. Rewind main winch wire rope (5) (TM 9-2350-292-10). aa. Install subfloor plates #8 (7), #9 (8), #10 (9), #11 (10) and #12 (11) (WP 0454 00).	



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PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

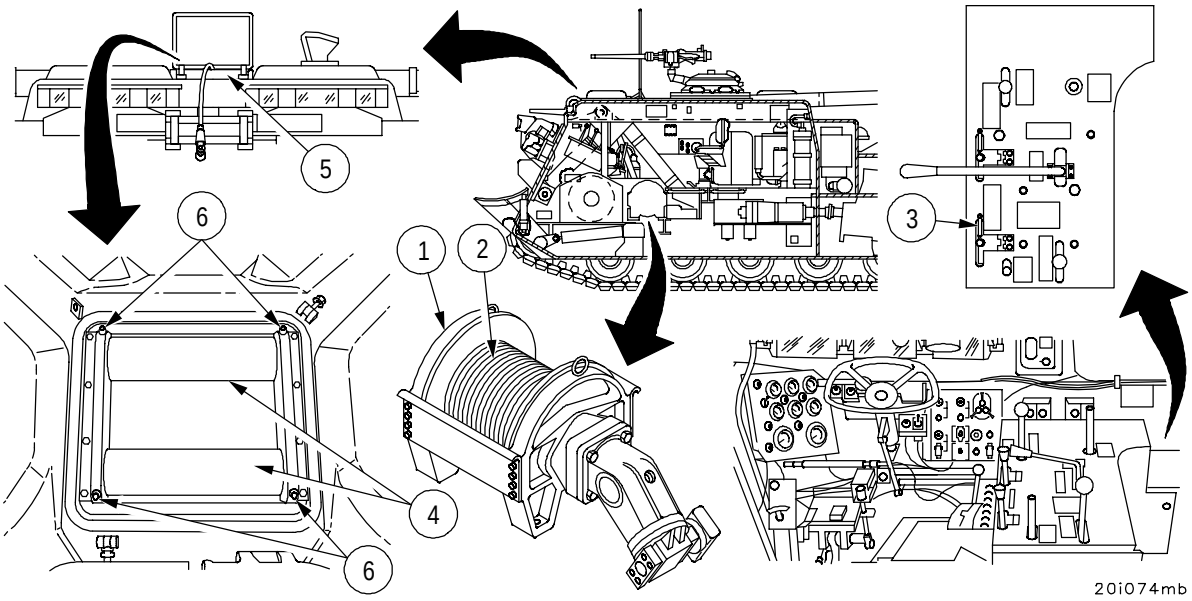
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
15		Hoist Winch	a. Park vehicle on a level surface (TM 9-2350-292-10). **CAUTION** Always keep tension on wire rope when paying hoist winch out. Slack in wire rope may damage equipment. b. Operate hoist winch (1) and check action of winch drum (2) and controls (3). c. Check that rollers (4) on top of cable chute (5) turn smoothly.	Winch does not operate properly. Loose or damaged components. Clogged or missing grease fittings. Class III leaks.

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

d. Lubricate rollers (4) with GAA through four fittings (6) until grease is visible.

e. Wipe excess grease with rag (item 7, WP 0716 00).



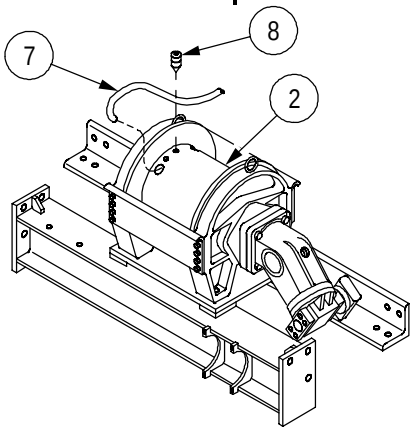
PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
15	SEMIANNUALLY	INTERIOR Hoist Winch - Continued	**WARNING** Wire ropes can become frayed or contain broken wires. Wear heavy leather-palmed gloves when handling wire rope. Frayed or broken wires can injure personnel. Never let moving wire rope slide through hands, even when wearing gloves. A broken wire could cut through glove and cut hands. f. Payout and inspect wire rope (7) for frayed or broken ends (TM 9-2350-292-10). g. Check to ensure that wire rope wedge (8) is properly installed in winch drum (2).  **WARNING** h. Clean wire rope (7) with dry-cleaning solvent (item 1, WP 0716 00).	Damaged wire rope. Loose wedge.

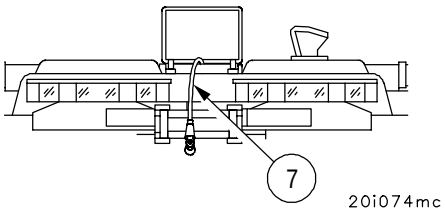
LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
OIL: OE/HDO MIL-L-2104	As Required	Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
		ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207



i. Lubricate wire rope (7) with OE/HDO and allow to drain.

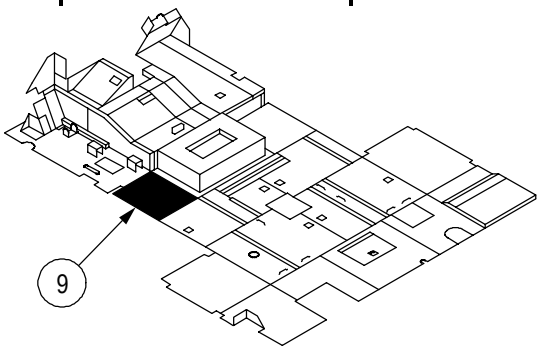
j. Tighten loose mounting screws and hydraulic lines.

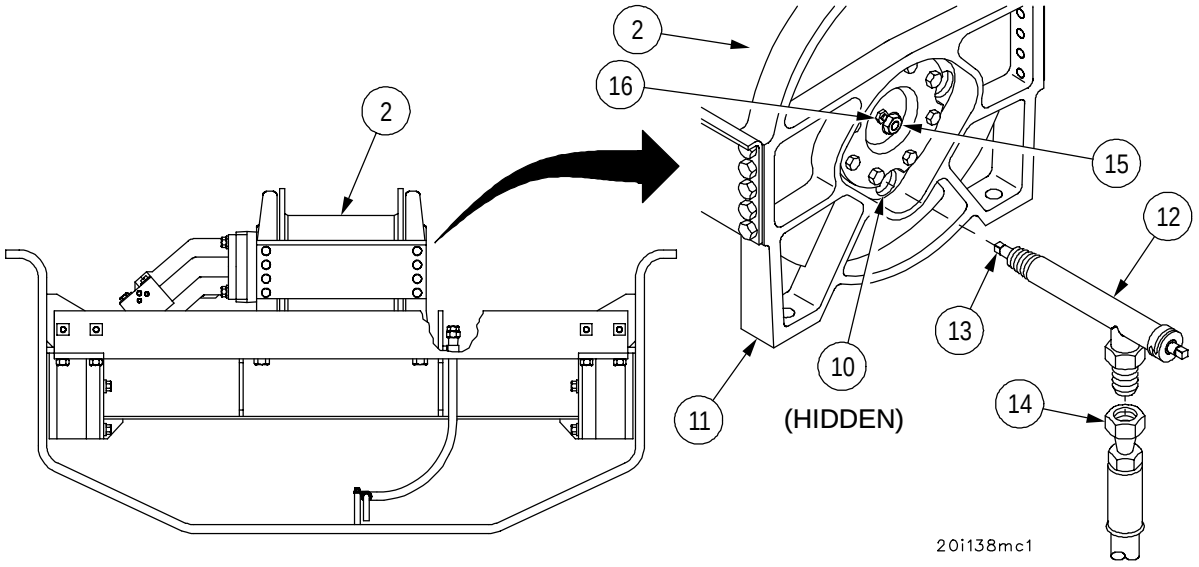


PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
15		Hoist Winch - Continued	k. Remove subfloor plate #13 (9) (WP 0454 00). l. Open hull drains (TM 9-2350-292-10). Place suitable container (5 gallon capacity minimum) under drain hull. m. Rotate hoist winch drum (2) until oil drain plug (10) in winch drum (2) is aligned with hole in support end plate (11). **NOTE** Connection points for drain tool assembly should be hand-tightened only. n. Install drain tool assembly (item 115, WP 0717 00) (12) in large threaded hole of hoist winch drum (2). Ensure that shaft (13) engages oil drain plug (10). o. Connect drain tool assembly (12) to hull drain hose (14). p. Rotate oil drain tool assembly shaft (13) until oil drains into suitable container. q. Remove sight gauge (15) and vent/fill plug (16).	

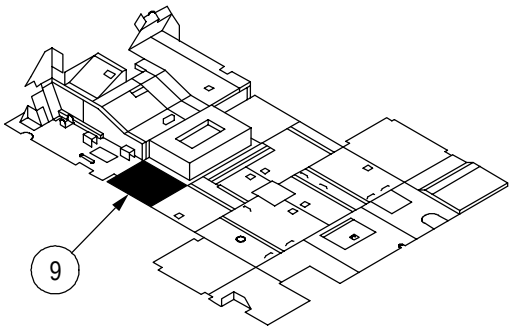




PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
15	SEMIANNUALLY	INTERIOR Hoist Winch - Continued	r. Clean vent/fill plug (16) and sight gauge (15) with clean rag (item 7, WP 0716 00).	



NOTE

Oil drain plug can only be inspected and cleaned if oil drain assembly tool is removed.

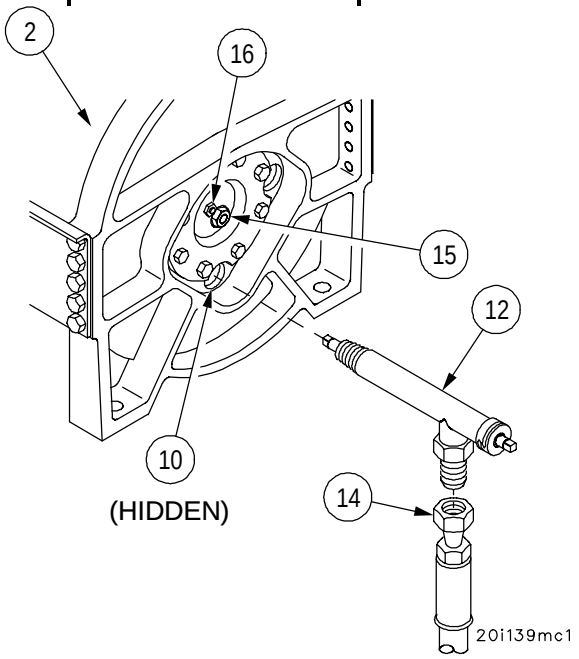
s. After all oil has drained, install oil drain plug (10) using oil drain tool assembly (12).

t. Remove oil drain tool assembly (12) from hoist winch drum (2) and hull drain hose (14).

u. Install sight gauge (15).

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
OIL: Lubricating Oil, GO MIL-L-2105	9.5 pints (4.23 L)	Above +80°F (Above +27°C)	+95°F to -10°F (+35°C to -23°C)	Below - 10°F (Below - 23°C)
		GO-85/140 (0-228)	GO-80/90 (0-226)	GO-75 (0-186)

*For Arctic Operation, refer to FM 9-207



NOTE

Do not fill above top of sight gauge, as correct oil level cannot be determined.

v. Fill hoist winch drum (2) with proper grade oil through vent/fill plug (16) hole until oil level is between the middle and top of sight gauge (15).

w. Install vent/fill plug (16).

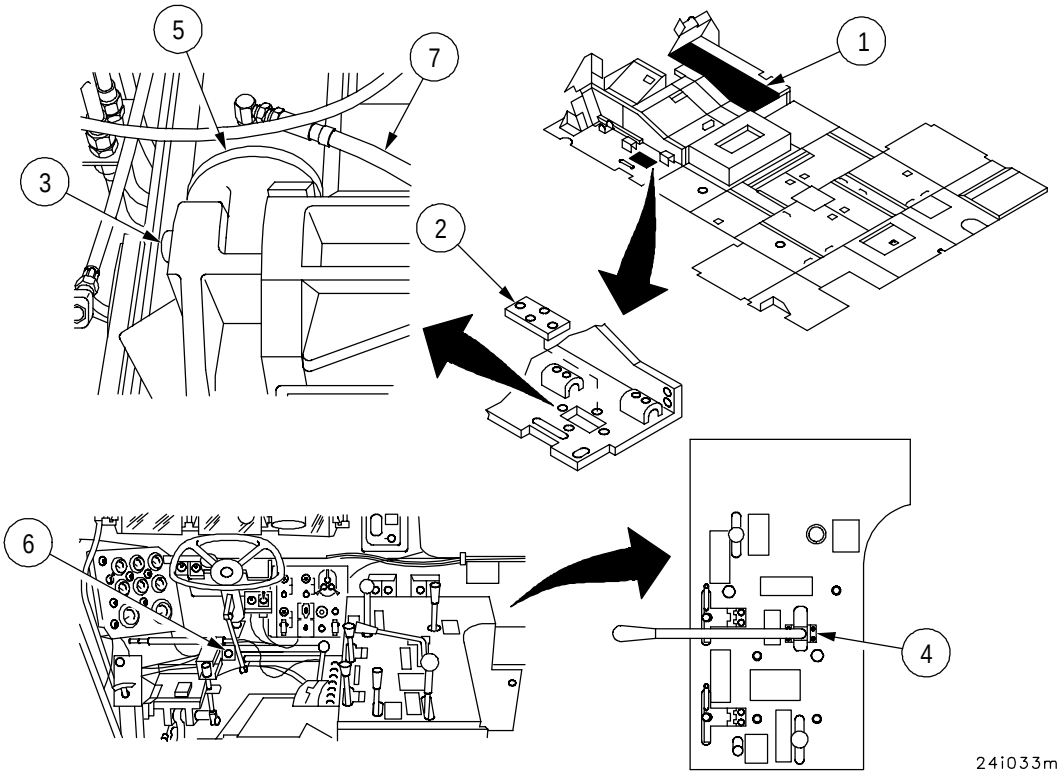
x. Close hull drains (TM 9-2350-292-10). Rerig wire rope. Rewind hoist winch wire rope (TM 9-2350-292-10), if required.

y. Install subfloor plate #13 (9) (WP 0454 00).

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

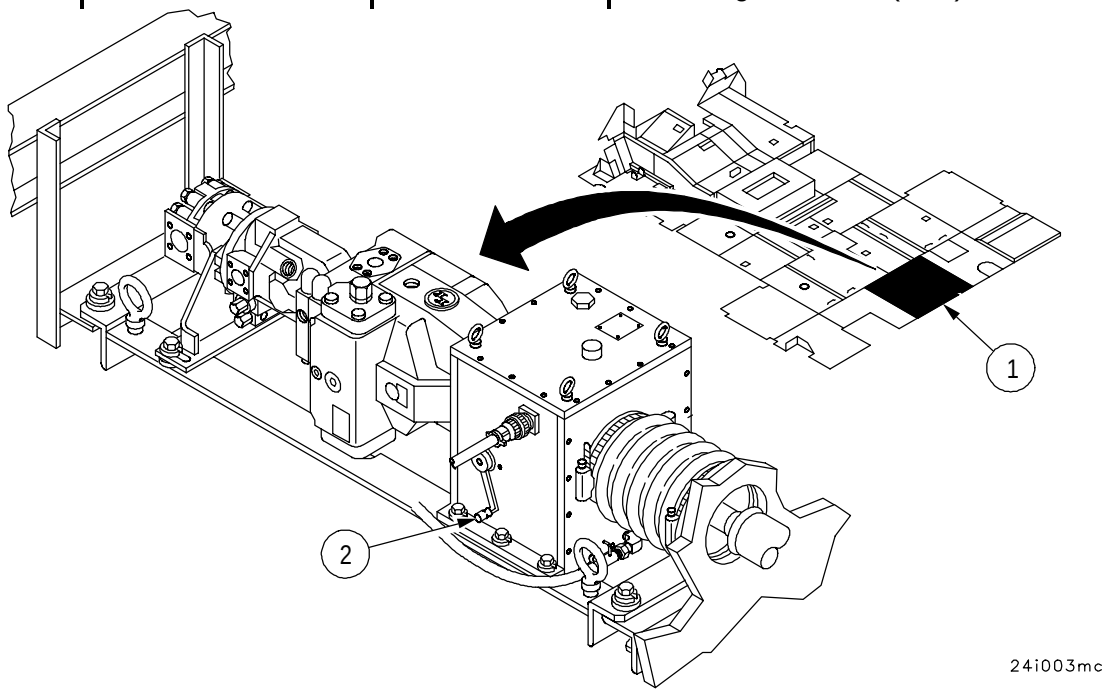
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
16		Spade	a. Remove subfloor plate #10 (1) and #6 (2) (WP 0454 00). b. Inspect spade assembly (3) for damage and operation (TM 9-2350-292-10). c. Operate controls (4) and observe operation of hydraulic cylinders (5) (TM 9-2350-292-10). d. Check operation of spade lock (6) (TM 9-2350-292-10). e. Examine cylinders (5) and lines (7) for evidence of leakage. f. Install subfloor plate #6 (2) and #10 (1) (WP 0454 00).	Spade does not operate or operates eratically. Loose or missing components. Class III leaks.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

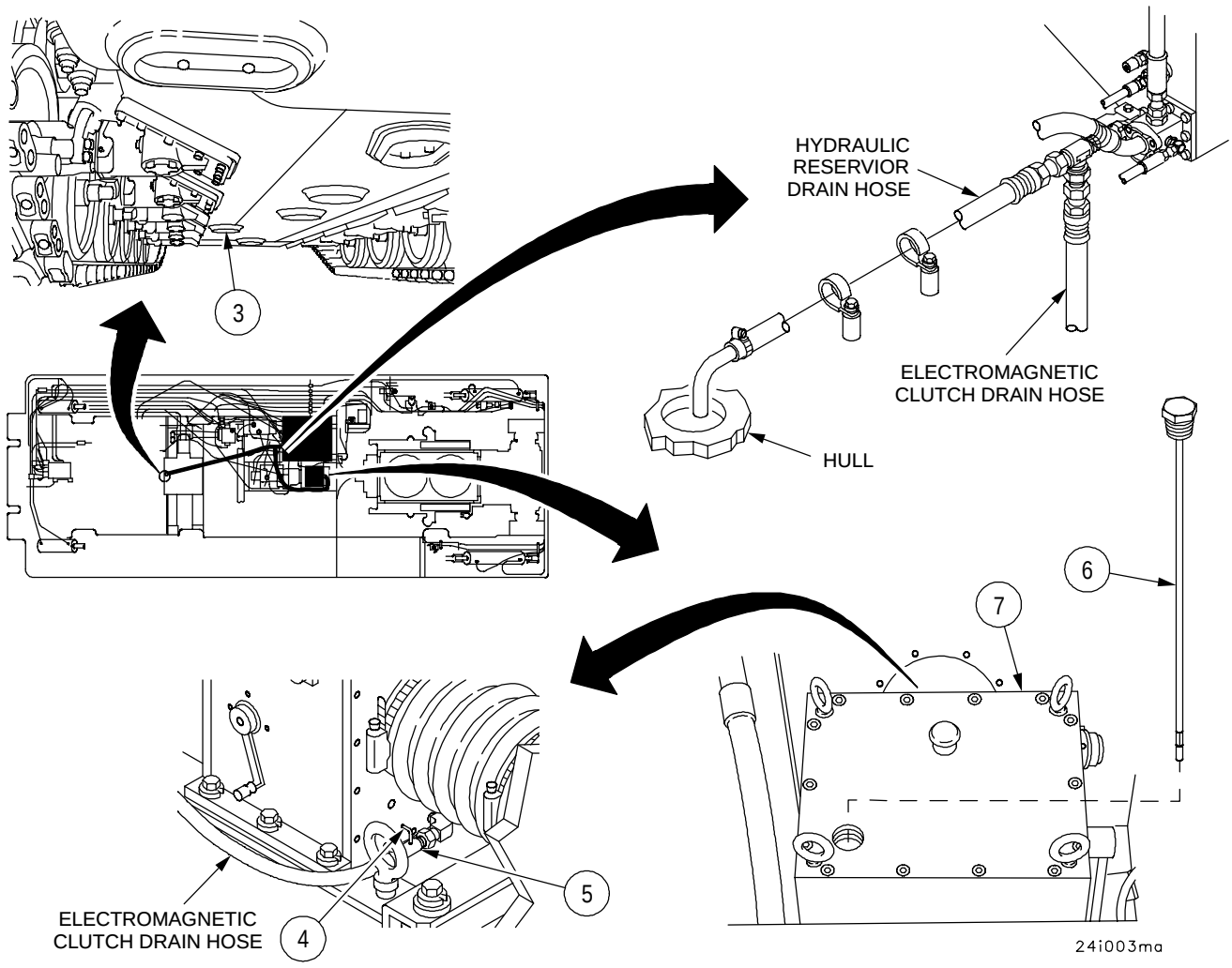
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
17	SEMIANNUALLY	INTERIOR Electromagnetic Clutch (PTO) and PTO Shaft	a. Park vehicle on level surface (TM 9-2350-292-10). b. Remove subfloor plate #27 (1) (WP 0454 00). **WARNING** Manual clutch lock lever is under heavy tension. Maintain tension on manual lock lever at all times while disengaging/engaging PTO clutch to avoid a rapid manual lock lever rotation. Failure to comply may result in injury to personnel. c. Engage electromagnetic clutch (PTO) (TM 9-2350-292-10). d. Listen for unusual noises that might indicate loose, damaged, excessively worn parts or loose mountings. e. Operate electromagnetic clutch (PTO) manual lever (2) to ensure manual engagement and disengagement of electromagnetic clutch (PTO).	Clutch does not engage manually. Any unusual noises. Any loose, damaged or missing components.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
17		Electromagnetic Clutch (PTO) and PTO Shaft - Continued	f. Place suitable container (2 gal. minimum capacity) under hull drain valves (3). g. Open hull drain valves (3) (TM 9-2350-292-10). h. Rotate drain handle (4) until handle (4) aligns with spout (5) and allow oil to drain. i. Remove oil dipstick (6) from reservoir (7).	



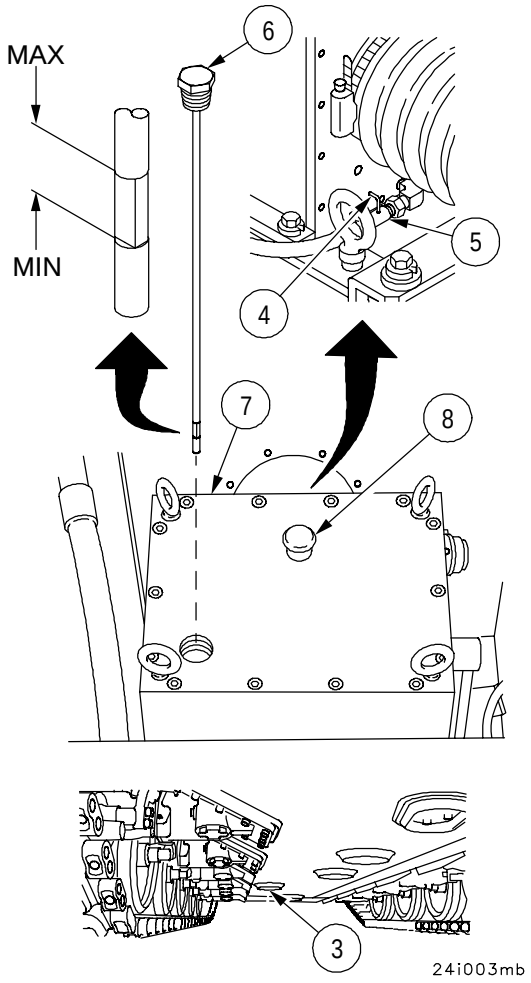
PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
17	SEMIANNUALLY	INTERIOR Electromagnetic Clutch (PTO) and PTO Shaft - Continued	j. Clean oil dipstick (6) and vent (8) with clean rag (item 7, WP 0716 00). k. Rotate drain handle (4) to closed position.	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
OIL: Lubricating Oil, OE/HDO MIL-L-2104 or OEA MIL-L-46167	5.2 qt (10W) (4.94 L)	OE/HDO-10 (0-237)	OE/HDO-10 (0-237)	OEA (0-183)

*For Arctic Operation, refer to FM 9-207



l. Add approximately 4.5 qts. (4.25 L) of proper grade oil to reservoir (7) through oil dipstick (6) hole.

m. Install oil dipstick (6) in reservoir (7) finger-tight.

n. Remove oil dipstick (6) and verify that oil level is between maximum and minimum marks on oil dipstick (6). Tighten oil dipstick (6) securely.

o. Start main engine and operate hydraulic system (TM 9-2350-292-10) for 5 minutes.

p. Shut-down main engine (TM 9-2350-292-10).

q. After 5 minutes, remove oil dipstick (6), wipe clean and reinsert dipstick finger-tight in reservoir (7).

r. Remove oil dipstick (6) and verify that oil is above the minimum mark and below the maximum mark on the oil dipstick (6). If required, add additional oil. Do not overfill.

s. Insert oil dipstick (6) in reservoir (7) and secure.

t. Install subfloor plate #27 (1) (WP 0454 00).

u. Close hull drain valves (3) (TM 9-2350-292-10).

Oil level above full mark.

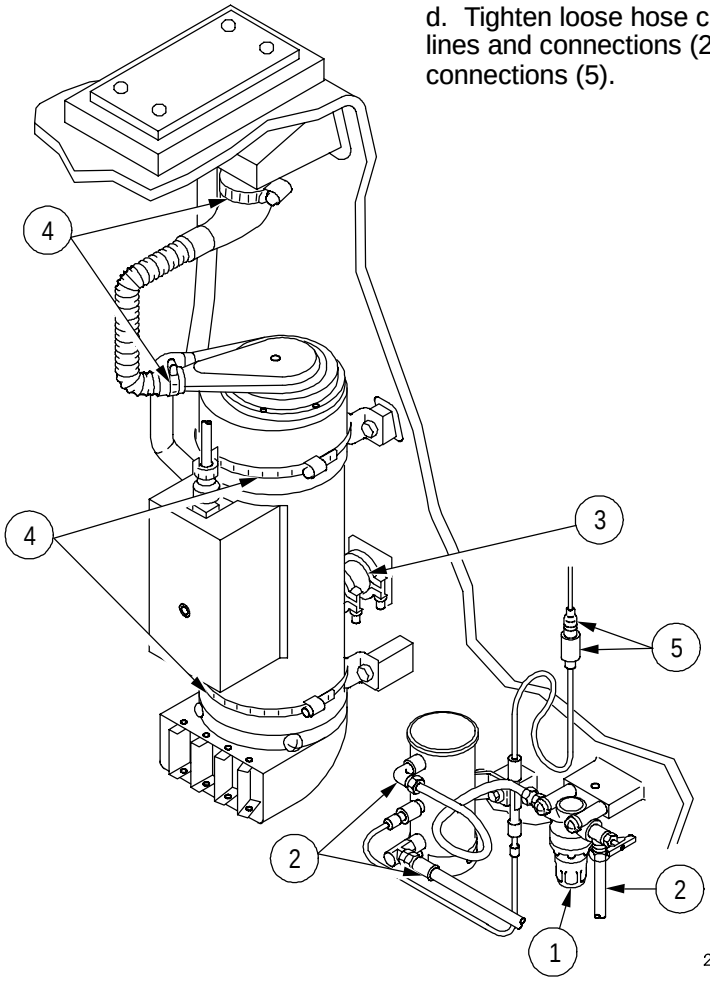
Oil level below low mark.

Any Class III leaks.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

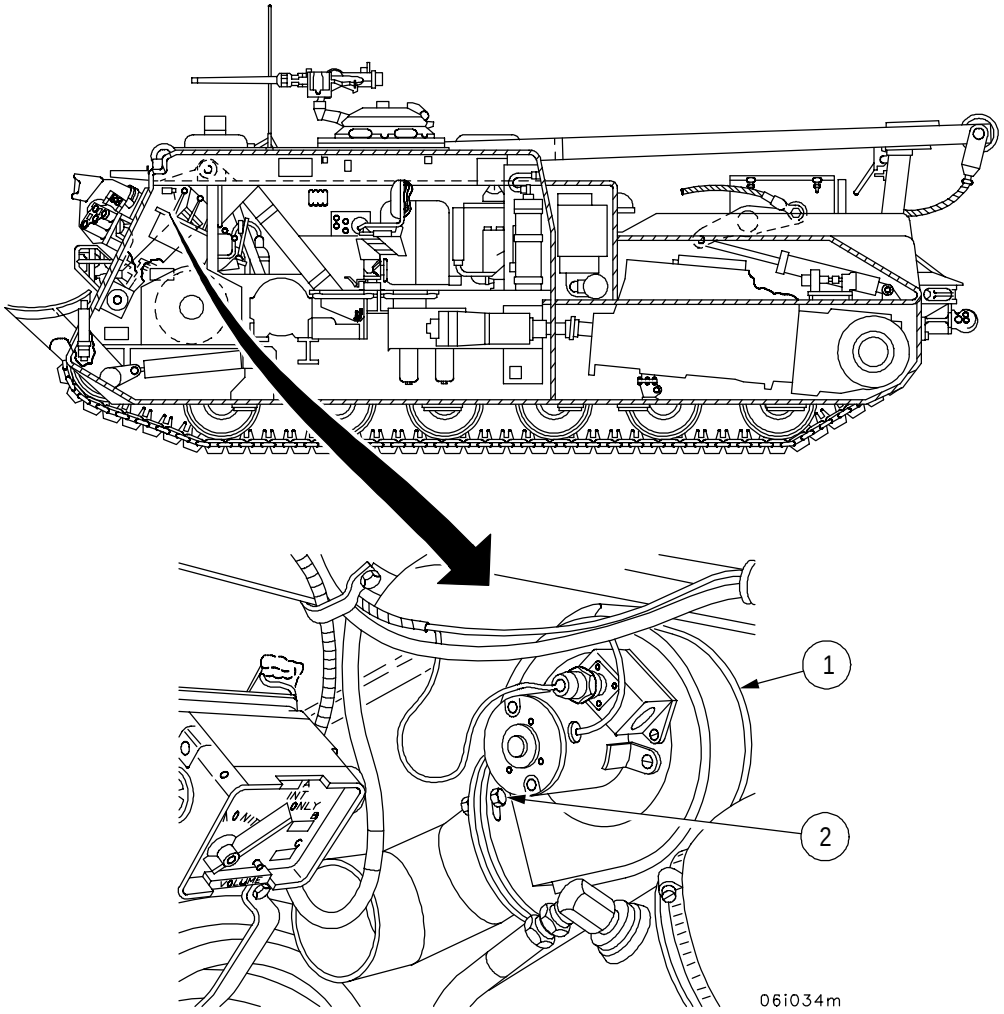
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
18		Personnel Heater	a. Service fuel filter (1) (WP 0534 00). **WARNING** Do not operate personnel heater with any evidence of a fuel leak. b. Check operation (TM 9-2350-292-10). c. Inspect heater fuel lines and connections (2) and exhaust (3) for leakage. d. Tighten loose hose clamps (4), fuel lines and connections (2) and electrical connections (5).	Any leaks. Heater does not operate. Any loose or missing components.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

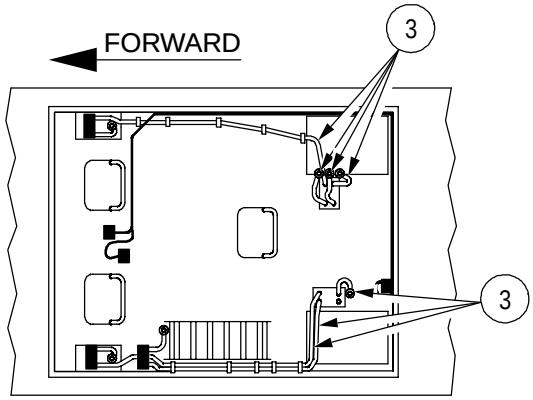
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
19		Ventilating Blower	a. Check operation of ventilating blower (1) (TM 9-2350-292-10). b. Tighten loose mounting screws (2).	Blower does not operate or any loose or missing components.

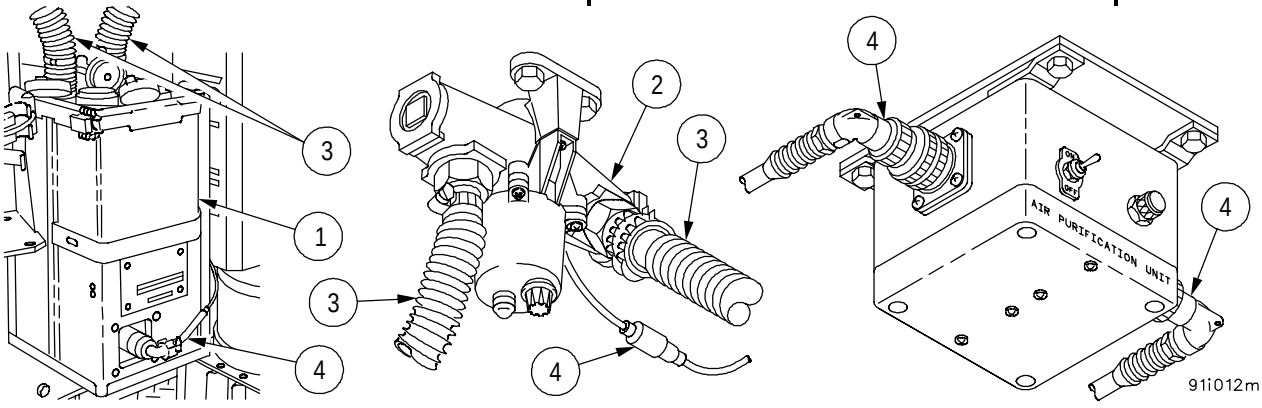


PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

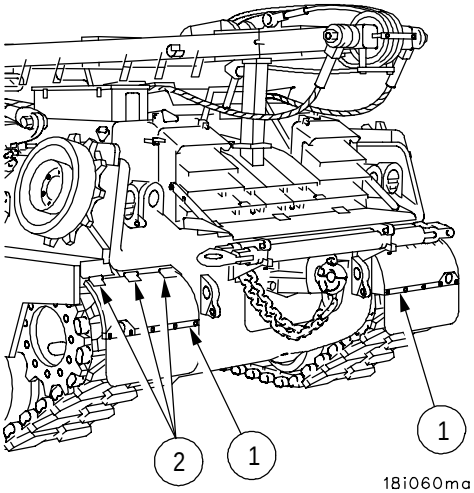
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
20		Gas Particulate Filter Units and M3 Air Heaters	**WARNING** a. Inspect gas particulate filter units (1) and M3 air heaters (2) for dents, loose connections and missing parts. b. Inspect hose assemblies (3) for loose or missing mounting hardware, damage and deterioration. c. Inspect cable assemblies (4) for loose connections, damaged insulation and broken or damaged terminals. **NOTE** M3 heaters must operate for 10-15 minutes before warm air is felt at stations. d. Operate gas particulate filter units (1) and M3 air heaters (2) (TM 9-2350-292-10). e. Check air flow at each station. f. Check for warm air at each station. g. Shut off gas particulate filter units (1) and turn M3 air heaters (2) switch to off (TM 9-2350-292-10).	Gas particulate filter does not operate. M3 heater produces heat before 10 minutes of operation, does not produce heat at all stations, any damaged, worn or missing components.





PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

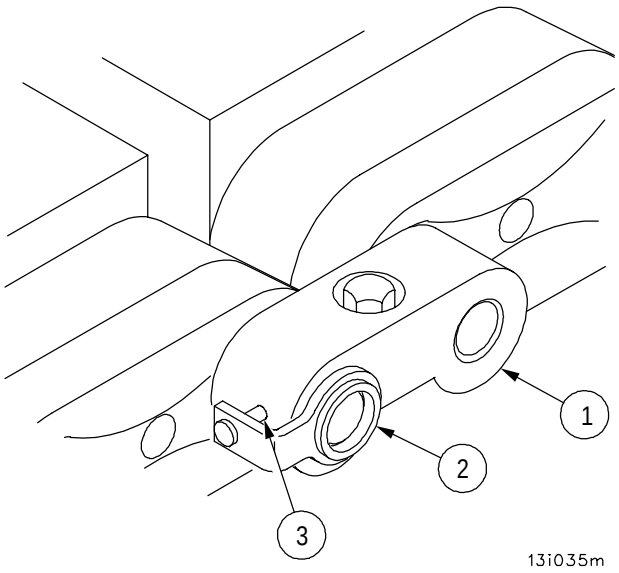
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
21		Enhanced Diagnostics System	Calibrate Enhanced Diagnostic System transducers (if vehicle is equipped with Enhanced Diagnostic System) (WP 0692 00).	
	SEMIANNUALLY	EXTERIOR		
22		Fenders	Inspect fenders (1) and hinges (2) for dents, cracks, breaks or other damage. 	Any loose, damaged or missing components.
23		Tracks	a. Open all armor skirt panels (TM 9-2350-292-10). b. Adjust track tension as necessary (TM 9-2350-292-10).	Loose tracks. Out of adjustment, worn, loose or missing components. Dead track shoes.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

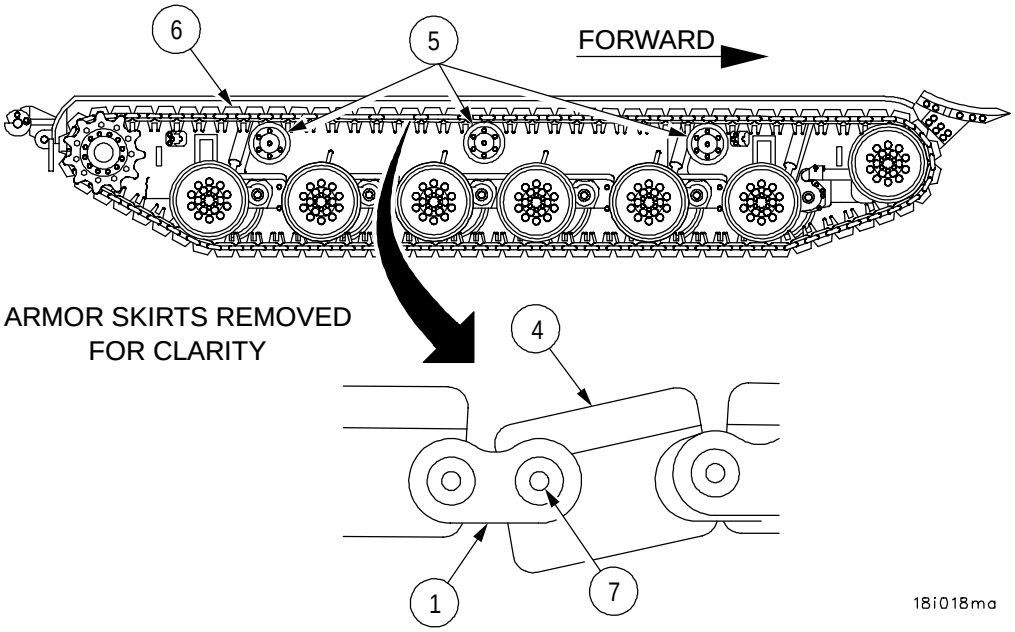
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
23		Tracks - Continued	c. Check end connectors (1) using end connector wear gauge (2) (item 63, WP 0717 00). (1) Place end connector wear gauge (2) inside end of end connector (1). (2) Depress gauge pin (3) of gauge (2) and observe whether pin (3) touches end connector (1). (3) Rotate gauge (2) around end surface of end connector (1) and measure wear in various locations. (4) If end of gauge pin (3) fails to touch surface of end connector (1) at any point when gauge pin (3) is fully depressed, end connector (1) is excessively worn and must be replaced (WP 0398 00).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

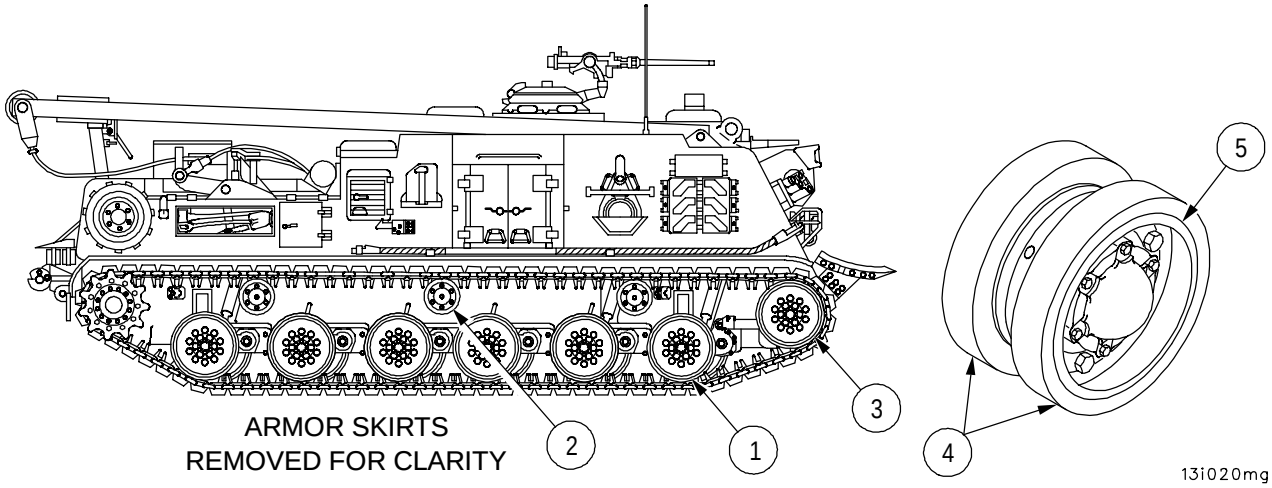
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
23		Tracks - Continued	d. Check for dead track shoes (4). These can be located between the support rollers (5) on top of track (6), while vehicle is being moved slowly. (1) Dead track shoes (4) will appear out of line, indicating a dead track shoe (4), damaged track pin bushing (7) or damaged track shoe end connector (1). (2) Replace dead track shoes (4) (WP 0398 00).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

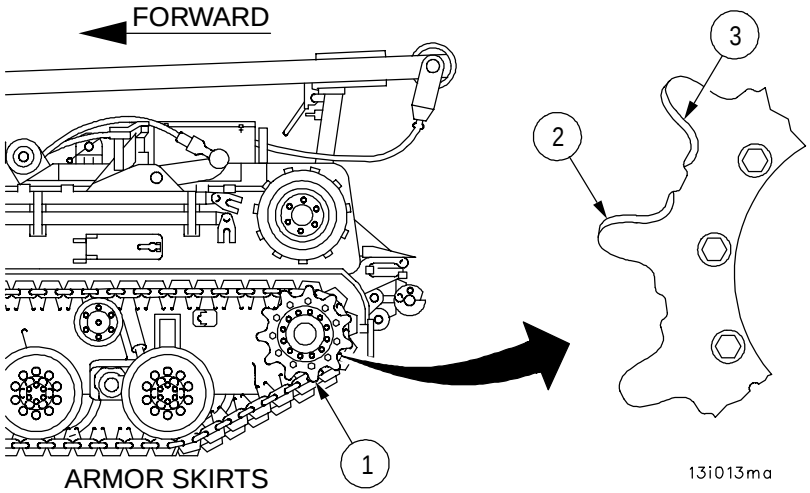
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
24		Roadwheels, Track Support Roller Wheels And Compensating Idler Wheels	a. Visually inspect roadwheels (1), track support roller wheels (2) and compensating idler wheels (3) for separation of rubber from metal, elongation of mounting holes and other defects. b. Replace wheels (1, 2 and 3) (WP 0386 00) and (WP 0391 00) that have the following defects: (1) Base separation of rubber tire (4) from metal wheel (5) of one-half width of original contact around entire wheel (1, 2 and 3). (2) Sufficient damage to rubber tire (4) to cause thumping during use. (3) Elongated mounting holes. c. Tighten loose track support roller wheel (2) retaining bolts 110-130 lb-ft with torque wrench (item 2, WP 0717 00) (433.9-474.6 N•m); and roadwheel (1) and compensating idler wheel (3) retaining nuts 350-400 lb-ft (475-542 N•m) with torque wrench (item 9, WP 0717 00).	Worn, damaged, loose or missing components.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

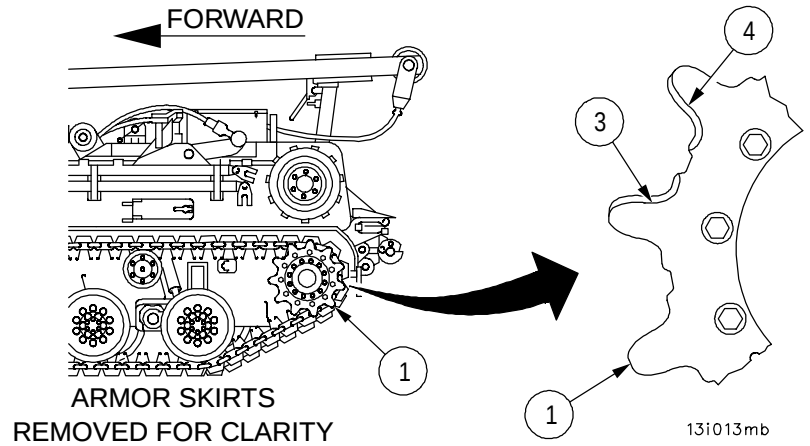
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
25		Sprockets	a. Inspect sprockets (1) for cracks and breaks. Replace as required (WP 0397 00). b. Check sprocket teeth (2) for wear. Reverse or replace sprockets (1) (WP 0397 00) as required when any of the following conditions exist: **NOTE** There are two wear marks on each drive sprocket. To determine which is the forward mark on each drive sprocket, move vehicle so that drive sprocket with wear marks is free of track assembly. Wear indicator contour must be visible. Bottom of wear indicator indicates limit of wear allowed. (1) Check wear marks (3) on inner and outer drive sprockets (1).  ARMOR SKIRTS REMOVED FOR CLARITY	Any worn, loose, damaged or missing components.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
25	SEMIANNUALLY	EXTERIOR Sprockets - Continued	**NOTE** Sprocket/hub assemblies can be installed on either side of vehicle. Moving sprocket/hub assembly to opposite side of vehicle changes direction of wear on sprocket. (2) If inner and outer drive sprockets (1) are worn down to forward wear marks (3) on sprocket/hub assemblies on both sides of vehicle, switch left and right sprocket/hub assemblies to opposite sides of vehicle. (3) If both inner and outer drive sprockets (1) are worn down on forward wear marks (3), reverse inner and outer drive sprockets (1) on the drive hub. (4) If both inner and outer drive sprockets (1) are worn down on forward and reverse wear marks (4), replace both inner and outer drive sprockets (1). c. Close all skirt panels (TM 9-2350-292-10).	Worn or damaged sprockets.

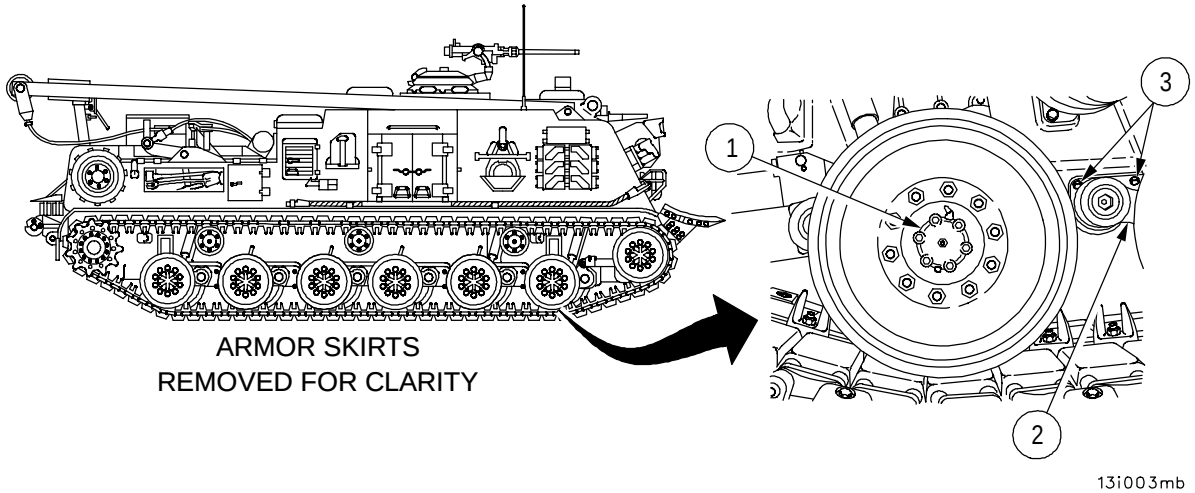


ARMOR SKIRTS REMOVED FOR CLARITY

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

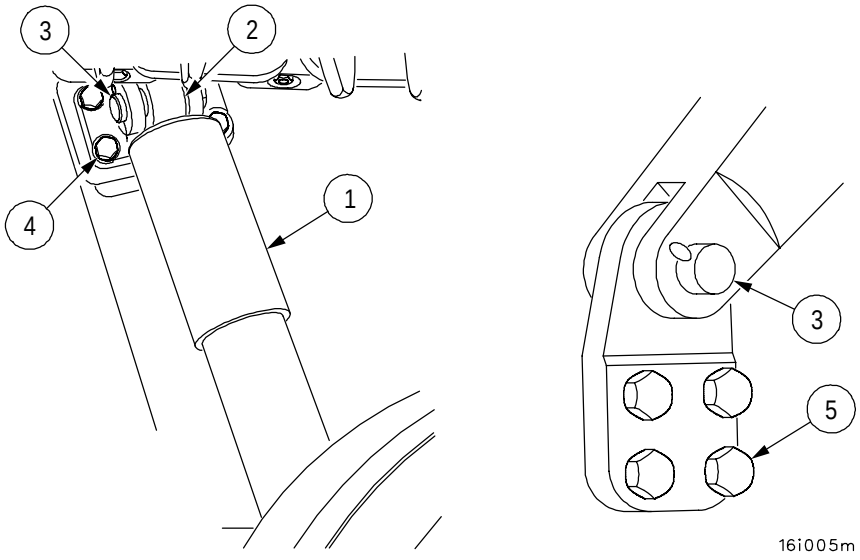
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
26		Wheels, Arms and Hubs	a. Open armor skirt panels (TM 9-2350-292-10). **WARNING** **NOTE** Prior to performing this check, vehicle must be operated for 5-10 minutes. b. Immediately after vehicle operation, feel all wheel hubs (1) cautiously for noticeable variations of temperature between like components. An overheated hub indicates maladjustment, inadequate lubrication or damaged bearing. c. Visually inspect arms (2) and hubs (1) for lubricant leaks. Replace seals and/or gaskets where leaks are evident (WP 0388 00, WP 0395 00, WP 0387 00 and WP 0394 00). d. Check for loose or missing mounting screws (3). Replace missing mounting screws (3). Torque mounting screws (3) to 245-270 lb-ft (334-366 N•m) with torque wrench (item 9, WP 0717 00).	Any overheated wheel hubs, lubricant leaks, loose or missing mounting hardware.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

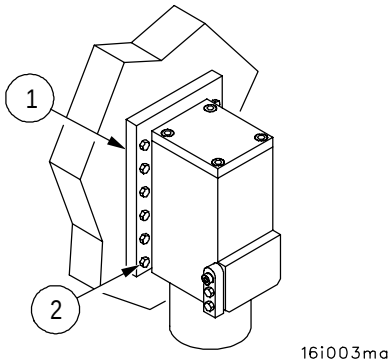
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
27	SEMIANNUALLY	EXTERIOR Shock Absorbers	**WARNING** **NOTE** Prior to performing this check, vehicle must be operated for 5-10 minutes. a. Immediately after vehicle operation, feel all shock absorbers (1). Presence of heat indicates that shock absorbers (1) are functioning properly. A defective shock absorber (1) will be colder than hull. b. Check for leaks. Replace leaking shock absorbers (WP 0412 00). c. Attempt to move shock absorbers (1) from side to side. If movement is present, shock absorber bearing (2) or pin (3) is defective and must be replaced (WP 0412 00). d. Tighten loose mounting bolts (4 and 5). Torque upper bracket bolts (4) to 145-175 lb-ft (197-237 N•m) with torque wrench (item 2, WP 0717 00) and lower bracket mounting bolts (5) to 300-340 lb-ft (407-461 N•m) with torque wrench (item 9, 0717 00).	No heat present, loose, damaged or worn bearings. Any leaks.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

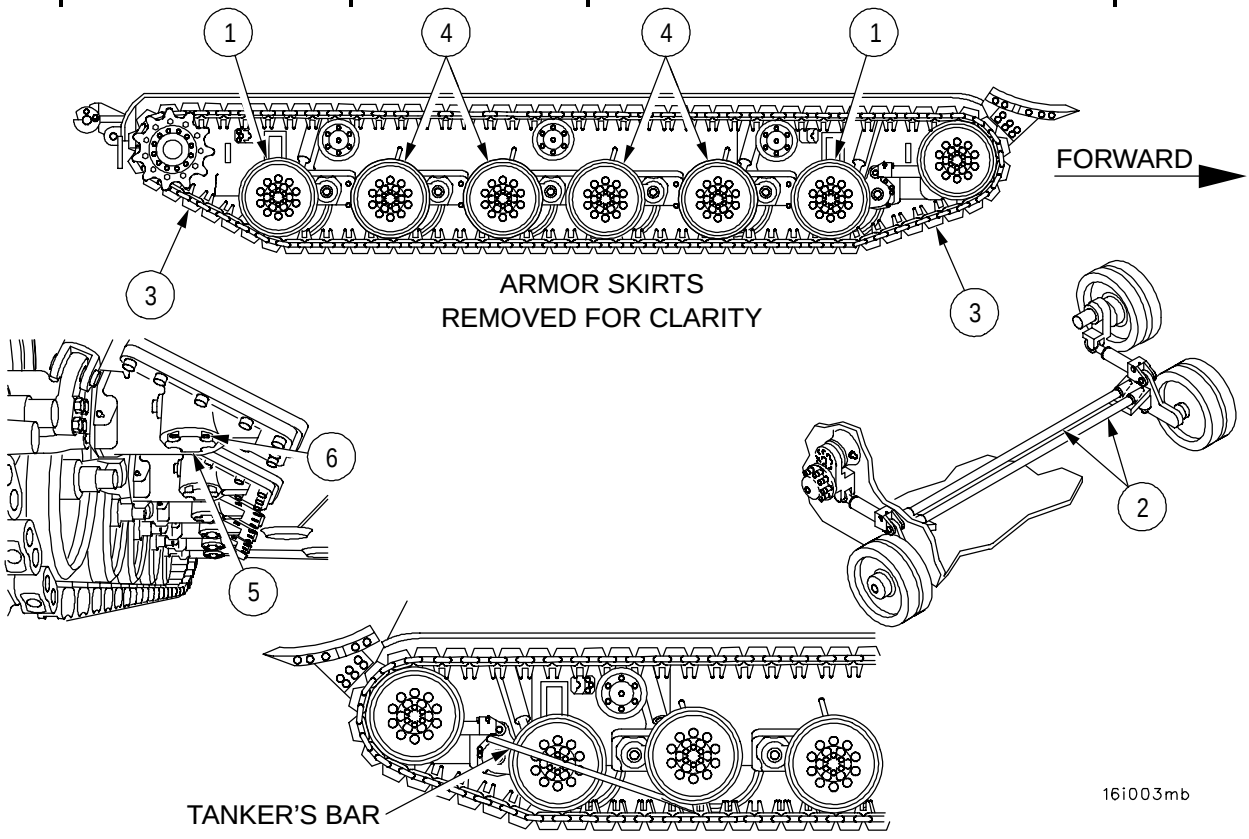
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
28		Bumper Assembly	a. Visually inspect for broken, cracked or compressed bumper assembly (1). Refer to WP 0411 00 for removal and installation. b. Tighten loose mounting screws (2). Torque mounting screws (2) to 85-95 lb-ft (115-129 N•m) with torque wrench (item 2, WP 0717 00). 	Any damaged, worn, loose or missing components.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

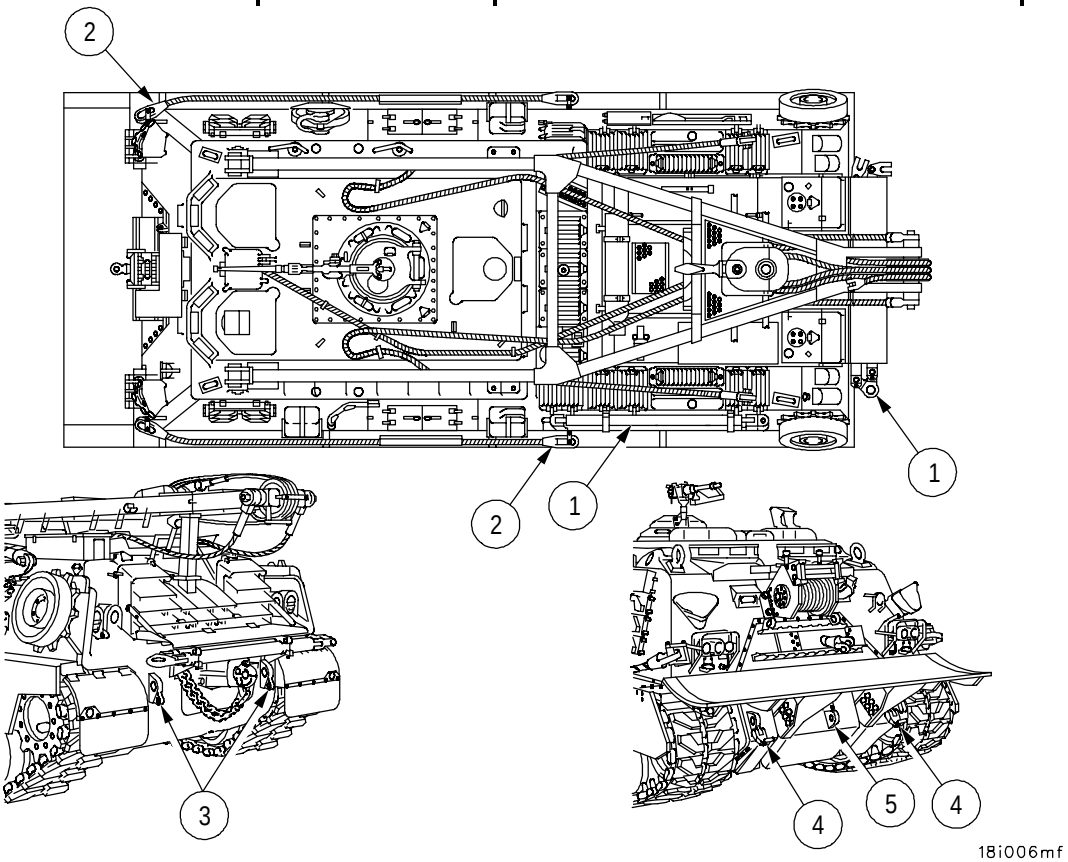
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
29		Torsion Bars	a. On roadwheels 1 and 6 (1), check for broken torsion bars (2) by observing angle of track (3). b. On roadwheels 2 through 5 (4), check for broken torsion bars by moving vehicle to hard surface and check for broken torsion bars by attempting to pry up roadwheels (4) using tanker's bar. c. Visually inspect torsion bar anchor covers (5) to ensure that torsion bar anchor covers (5) are fully seated and retaining screws (6) are in place and secured. Torque screws (6) to 40-50 lb-ft (54-68 N•m) with torque wrench (item 2, WP 0717 00). d. Close all armor skirt panels (TM 9-2350-292-10).	Any broken torsion bars. Any loose or missing components.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

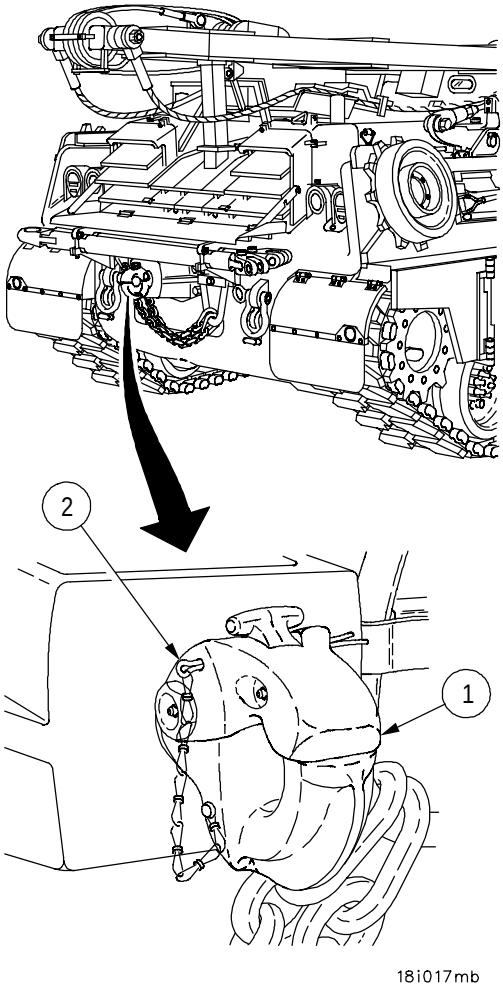
ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
30	SEMIANNUALLY	EXTERIOR / Tow Bars and Tow Cables	a. Inspect tow bars (1) and tow bar brackets for cracks, bends and distortion. Replace missing or damaged parts (WP 0486 00). b. Inspect towing cables (2), retainers, clamps and brackets for broken strands and cracked eyes. If damaged, notify support maintenance. **NOTE** Shackles and hooks are stored in subfloor storage compartments. c. Inspect shackles and hooks (TM 9-2350-292-10). Replace missing or damaged parts. d. Inspect towing eyes (3), towing lugs (4) and rigging eye (5) for cracks, bends and distortion. If damaged, notify support maintenance.	Any damaged, worn or missing components.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

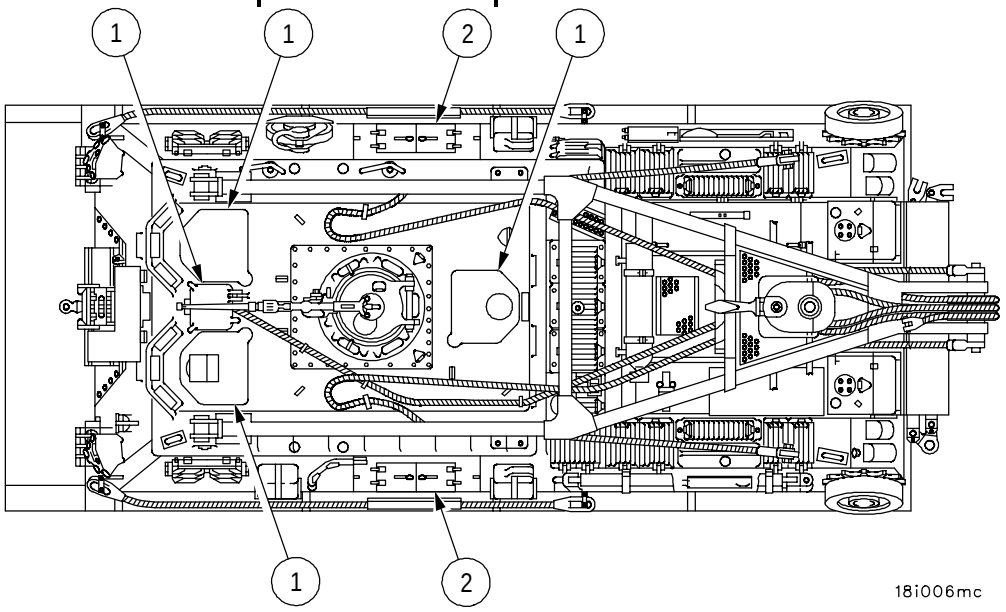
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
31		Tow Pintle	a. Check tow pintle (1) for looseness, bends or breaks. Check tow pintle hook for cracks. b. Check for missing or damaged retaining pin (2). Replace retaining pin (2) if damaged or missing (WP 0410 00).	Any damaged, worn, loose or missing components.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
32		Decals, Stencils, Markings and Paint	a. Replace decals (WP 0535 00) that are not legible. **NOTE** Refer to TM 43-0139 for painting information and procedures. b. Restencil markings that are not legible (WP 0536 00). c. Clean and paint bare spots on painted surfaces that might permit reflections, rust or corrosion.	
33		Access Covers, Seals, Racks, Straps and Clamps	a. Check for loose or missing parts. b. Replace defective seals. c. Replace defective straps and retaining clamps.	Any loose, damaged or worn seals, crash pads or missing mounting hardware.
34		Hatches and Personnel Side Doors	a. Inspect hatches (1) and personnel side doors (2) for loose, damaged or deteriorated door seals or crash pads. b. Check hatches (1) and personnel side doors (2) lock securely in open and closed positions.	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

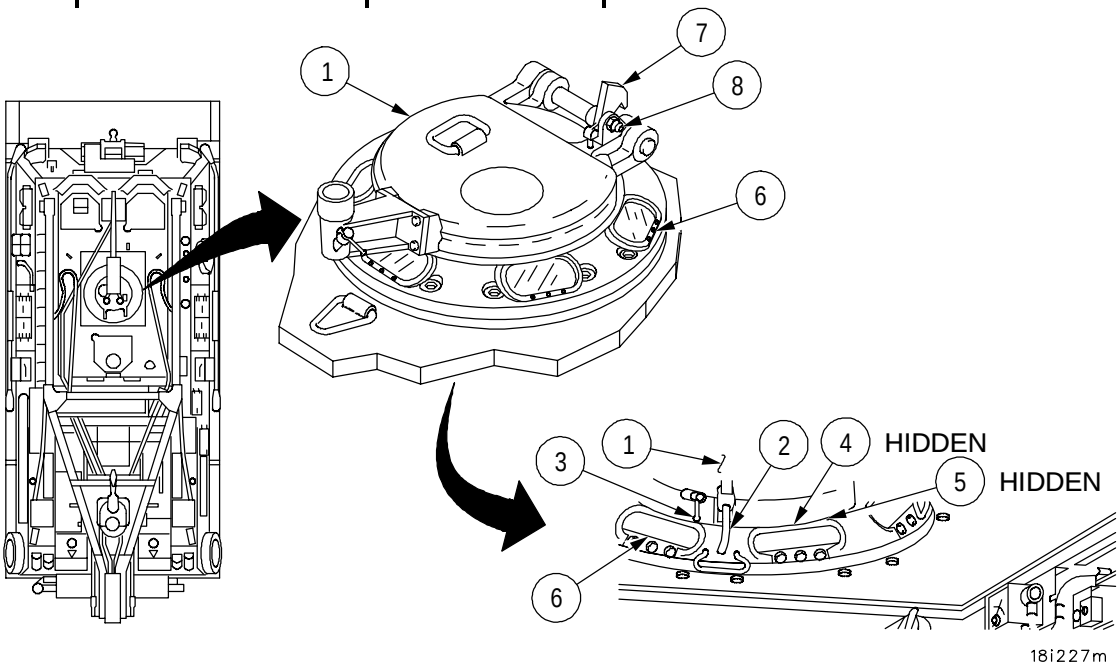
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
35		Commander's Cupola	a. Rotate commander's cupola (1) to ensure that ring does not bind. b. Operate cupola door latch (2) and lock (3) in open and closed positions to ensure ease of operation. c. Check seals (4) and crash pads (5) for tears and deterioration. d. Check that vision blocks (6) are free of fungus growth, chips, fractures and separation that would interfere with vision.	Any missing, loose, damaged seals, crash pads or mounting hardware. Cupola does not rotate smoothly.

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

			e. Lubricate commander's cupola hatch hold open latch (7) with GAA through fitting (8) until grease is visible. f. Wipe excess grease with rag (item 7, WP 0716 00).	Any clogged, missing or damaged grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

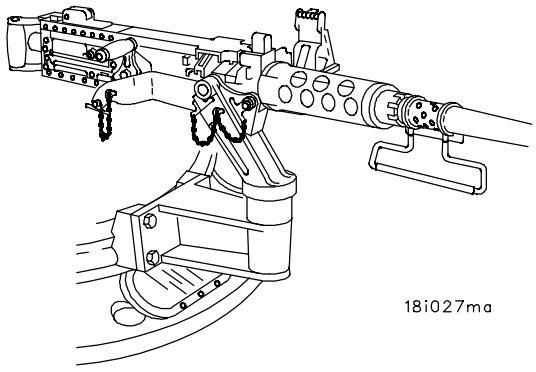
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
36	SEMIANNUALLY	EXTERIOR Machine Gun Mount	a. Inspect mount for completeness. b. Check for rust, cracks or other damage. c. With machine gun installed, elevate and depress mount to full range (93° elevation and 21° depression) (TM 9-105-213-10).  **WARNING** d. Clean machine gun mount with dry-cleaning solvent (item 1, WP 0716 00).	Any missing, worn or damaged components. If mount does not operate within elevation and depression ranges.

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
PL-SVV-L800 Oil: Lubricating Oil, General Purpose Preservative	As Required	PL Medium	PL Special	PL Special

*For Arctic Operation, refer to FM 9-207

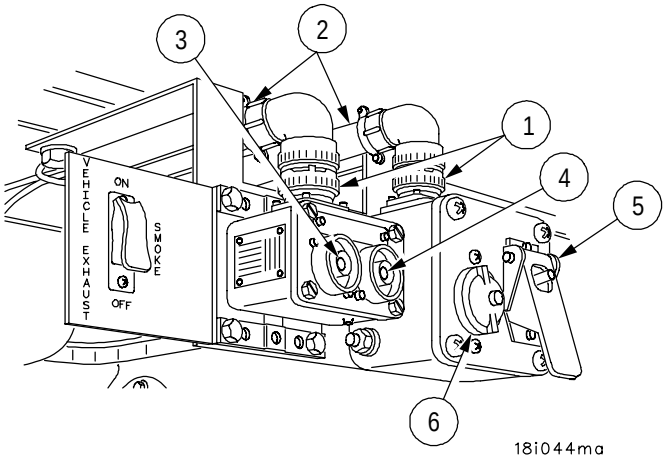
e. Lubricate all moving parts.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

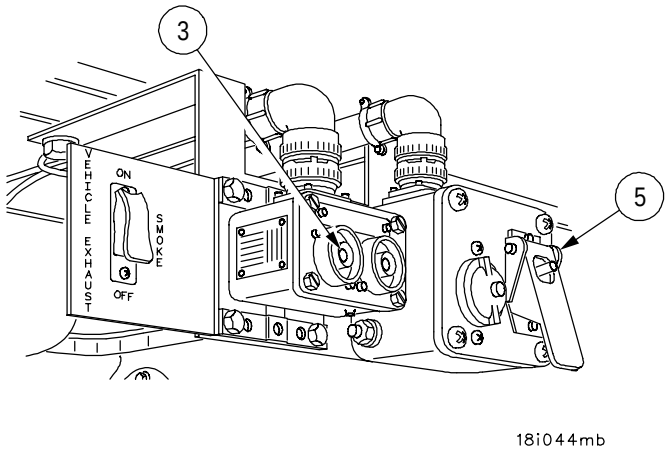
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
37	SEMIANNUALLY	EXTERIOR Smoke Grenade Launcher System M239	**WARNING** Before performing checks on smoke grenade launcher system, visually confirm that no smoke grenades are in launcher tubes. Failure to comply may result in severe injury or death to personnel. a. Check tightness of all connectors (1). b. Inspect condition of cables (2) for fraying, broken wires and for tightness of fit in connectors (1). c. Check spring return action of pushbutton firing switches (3 and 4) switching action of power (arming) switch assembly (5). d. Check light bulb (6) in power (arming) switch assembly (5).	Any loose connectors, cracked or fraying cables; any inoperative switches; burned out lamp.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

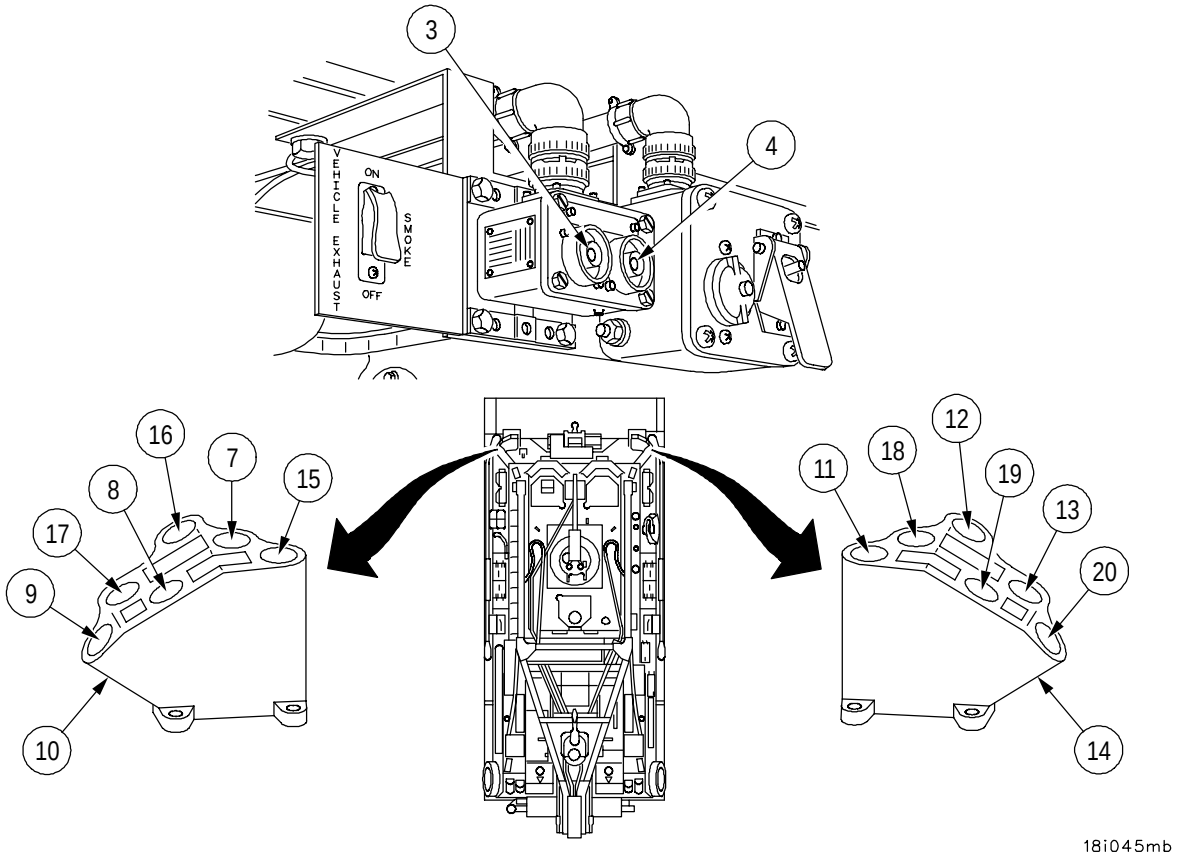
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	INTERIOR		
37		Smoke Grenade Launcher System M239 - Continued	e. Perform continuity checks on system as follows: (1) Place MASTER switch in ON position (TM 9-2350-292-10). (2) Place power (arming) switch assembly (5) in ON position. (3) Depress and hold L hand pushbutton (3).  18i044mb	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

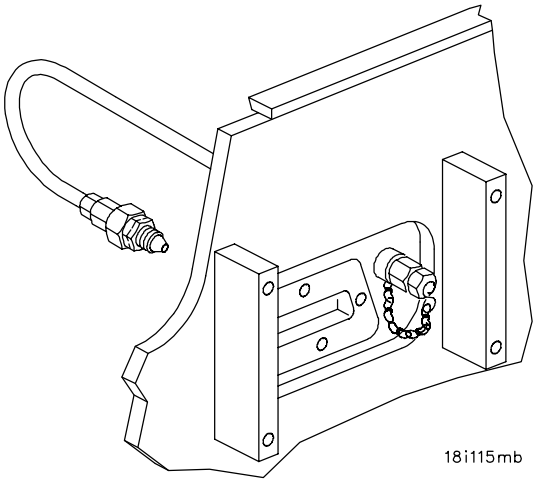
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
37		Smoke Grenade Launcher System M239 - Continued	(4) Using multimeter (item 84, WP 0717 00), check to see if approximately 24-volts exist on plug pins in tubes 5 (7), 2 (8) and 1 (9) on left discharger (10), and tubes 3 (11), 6 (12) and 4 (13) on right discharger (14). No voltage should exist on any other plug pins. (5) Release L hand pushbutton (3), depress and hold R hand pushbutton (4). (6) Check to see if approximately 24-volts exist on plug pins in tubes 3 (15), 6 (16) and 4 (17) on left discharger (10), and 5 (18), 2 (19) and 1 (20) on right discharger (14). No voltage should exist on any other plug pins.	

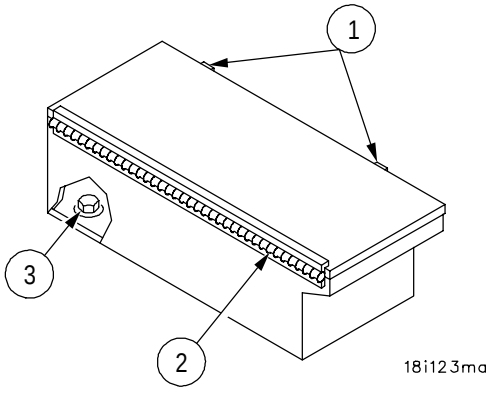


PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
38		Acetylene Hose and Adapter	Inspect acetylene hose, adapter and related parts for leaks and damage. Replace defective parts (WP 0693 00).	Any leaks, damaged or missing components.
39		Tool Box	a. Inspect and repair locks (1) and hinges (2). b. Tighten loose mounting bolts (3).	

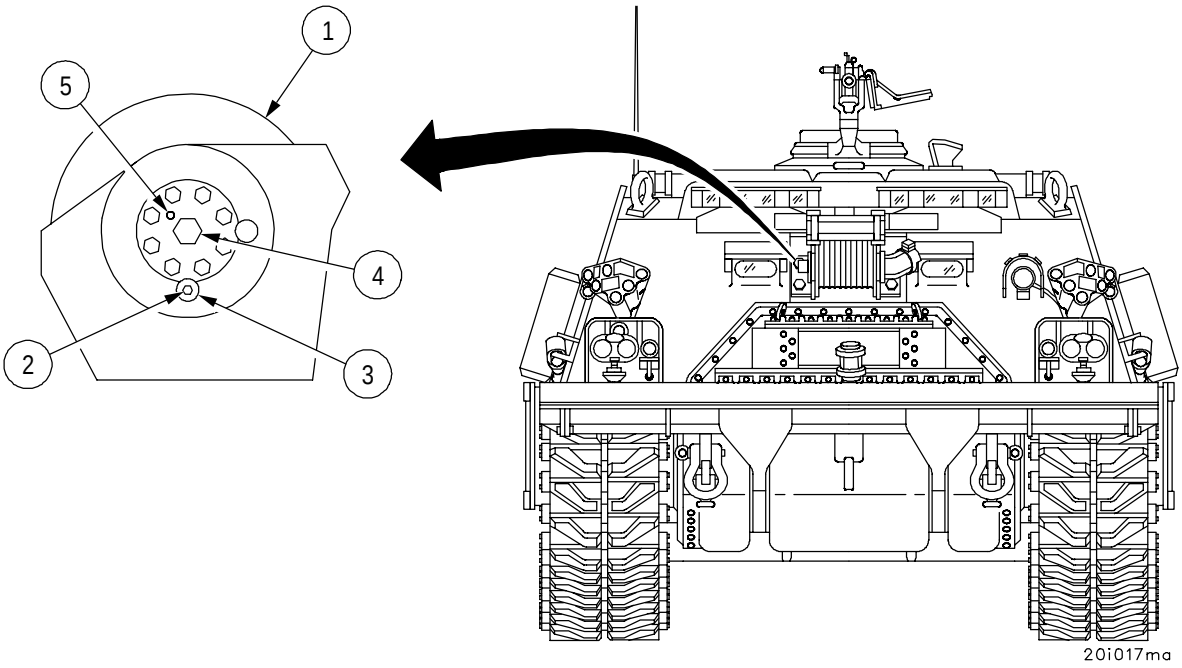




PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
40		Auxiliary Winch	a. Park vehicle on a level surface. Operate auxiliary winch (1) until drain plug (2) is visible through side access plate lower access hole (3) (TM 9-2350-292-10). b. Position suitable container (three gallons minimum) under right side of auxillary winch (1). Remove drain plug (2), oil level check/fill plug (4) and vent plug (5). Allow oil to drain into container. c. Clean drain plug (2), oil level check/fill plug (4) and vent plug (5) with clean rag (item 7, WP 0716 00).	Any Class III leaks, damaged, missing, loose or inoperative components. Frayed or broken wire rope. High/low oil level.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

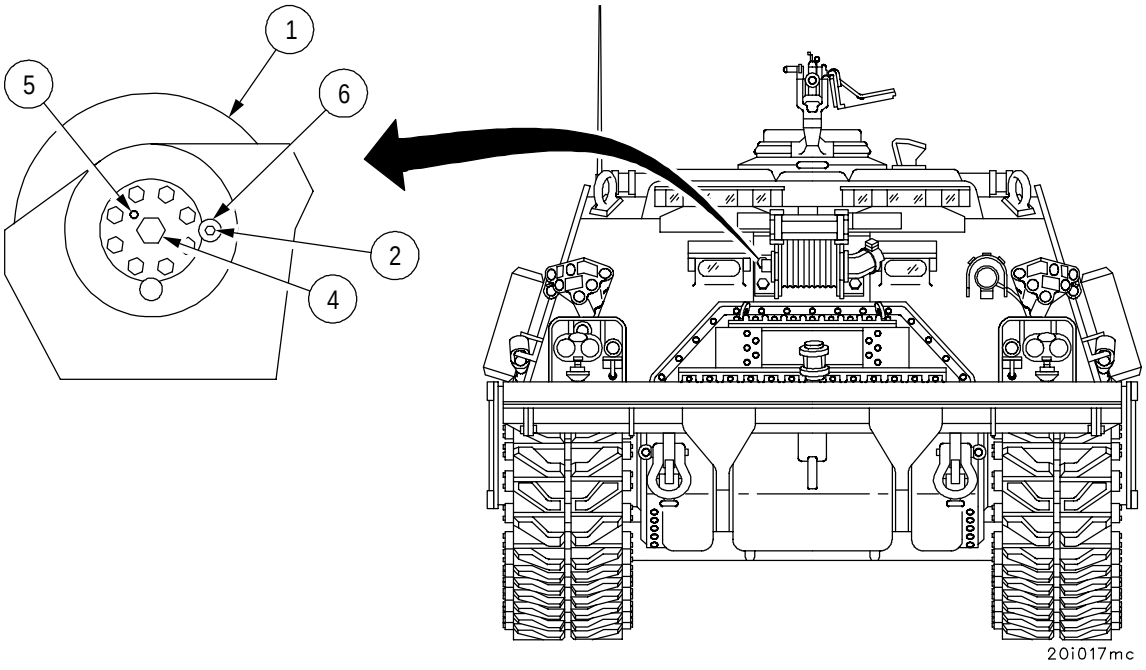
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
40	SEMIANNUALLY	EXTERIOR Auxiliary Winch - Continued	d. Install vent plug (5). e. Operate auxiliary winch (1) until drain plug (2) hole is visible through side access plate upper hole (6).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +80°F (Above +27°C)	+95°F to -10°F (+35°C to -23°C)	Below-10°F (Below-23°C)
OIL: Lubricating Oil, GO MIL-L-2105	6 pints (2.82L)	GO-85/140 (0-228)	GO-80/-90 (0-226)	GO-75 (0-186)

*For Arctic Operation, refer to FM 9-207

f. Fill auxiliary winch (1) with oil through drain plug (2) hole until oil level reaches bottom of oil level check/fill plug (4) hole.
g. Install oil level check/fill plug (4) and drain plug (2).



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
40		Auxiliary Winch - Continued	h. Payout auxiliary winch wire rope (7) from auxiliary winch (1) (TM 9-2350-292-10).	



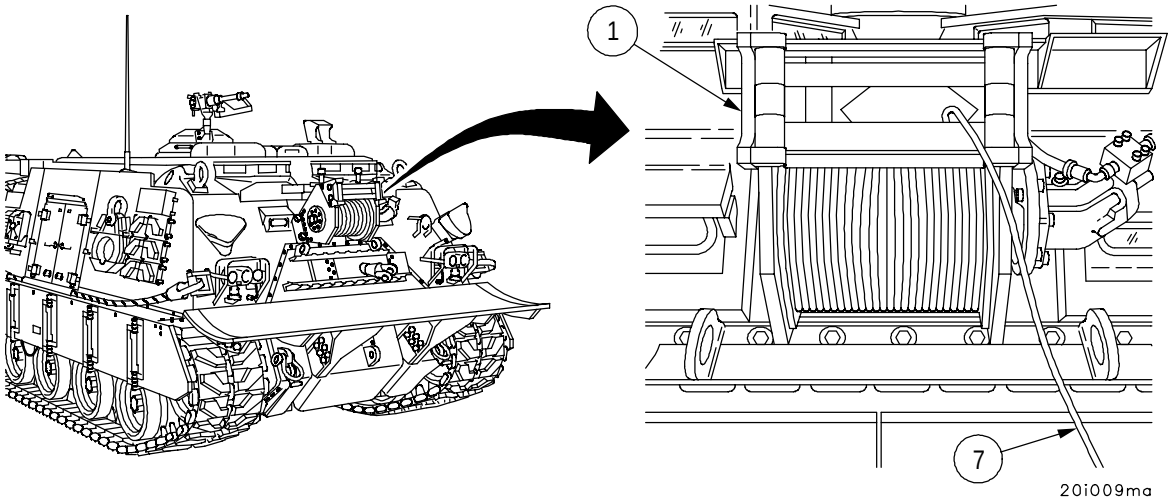
WARNING

i. Clean wire rope (1) with dry-cleaning solvent (item 1, WP 0704 00).

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
OIL: Lubricating Oil, OE/HDO MIL-L-21024	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

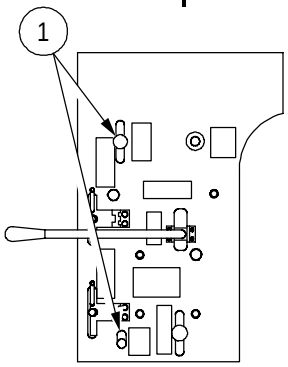
j. Lubricate wire rope (7) with OE/HDO and allow to drain.
k. Rewind wire rope (7) onto auxiliary winch (1) (TM 9-2350-292-10).



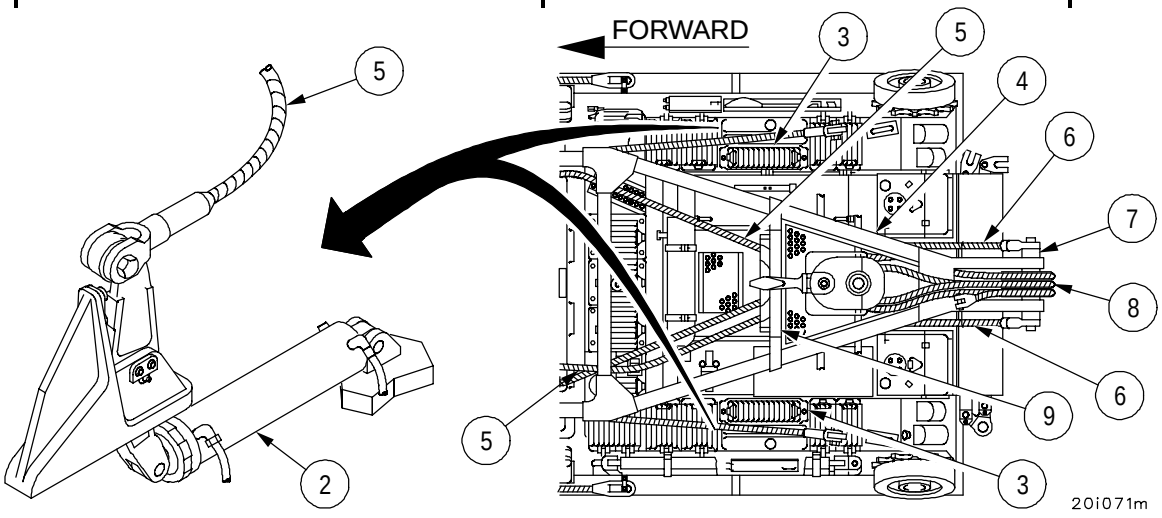
PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
41		Hoist Boom and Deck Attachments	a. Operate controls (1) and check operation of boom cylinders (2). b. Remove engine deck grilles (3) (TM 9-2350-292-10). c. Examine cylinders (2) and lines for evidence of leaks. **WARNING** Wire rope can become frayed or contain broken wires. Wear heavy leather-palmed gloves when handling wire rope. Frayed or broken wires can injure personnel. Never let moving wire rope slide through hands, even when wearing gloves. A broken wire could cut through glove and cut hands. d. Inspect hoisting boom (4) and boom stayline wire rope (5), stayline wire rope (6), rollers (7), pulleys (8) and supports (9) for cracks, bends, twists, frays and other damage. e. Inspect wire rope (5 and 6) for frayed or broken strands. Replace wire rope (5) or (6) when either three wires are broken per strand or six wires are broken per lay (WP 0493 00).	Boom does not operate or operates eratically. Any leaks, worn, loose, damaged or missing components. Boom travel lock out of adjustment.



LOCATED TO RIGHT OF DRIVER'S SEAT



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

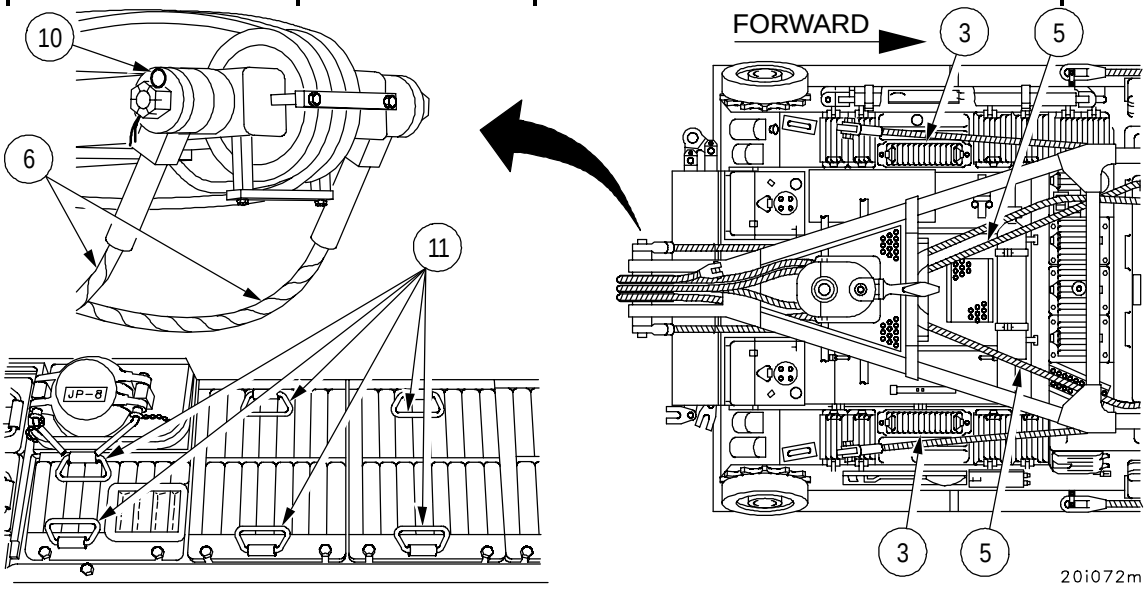
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
41	SEMIANNUALLY	EXTERIOR Hoist Boom and Deck Attachments - Continued	 **WARNING** f. Clean boom stayline wire rope (5) and stayline rope (6) with dry-cleaning solvent (item 1, WP 0716 00).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
GREASE: Wire Rope Grease MIL-G-18458	As Required	Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
		ALL TEMPERATURES		

*For Arctic Operation, refer to FM 9-207

g. Lubricate boom stayline wire rope (5) and stayline wire rope (6) with grease.
h. Replace damaged or missing boom cotter pins (10).
i. Repair bent engine deck grille and engine deck access door handles (11).
j. Install engine deck grilles (3) (TM 9-2350-292-10).



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

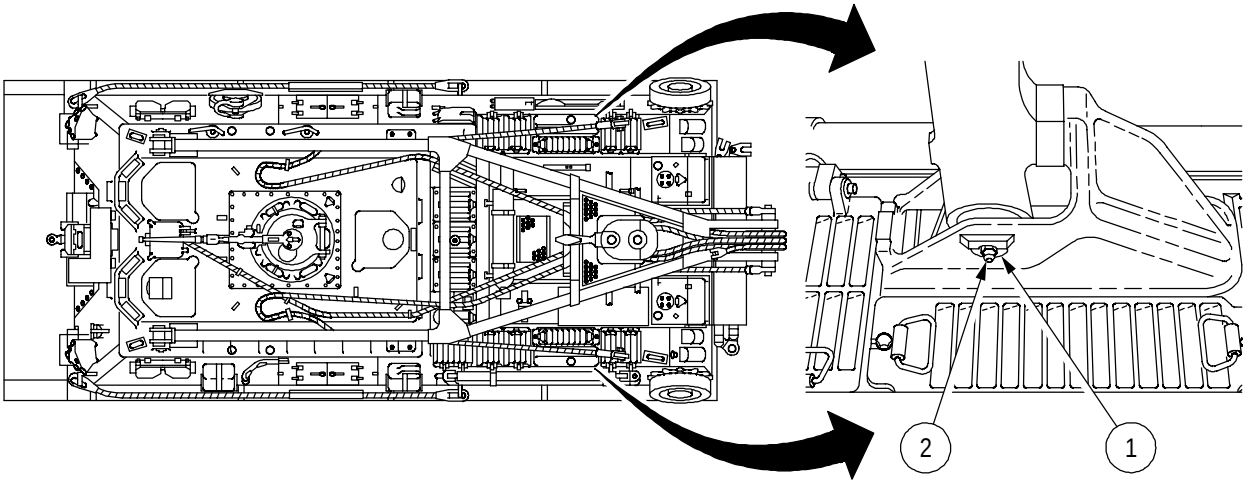
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
42	SEMIANNUALLY	EXTERIOR Stayline Pins		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

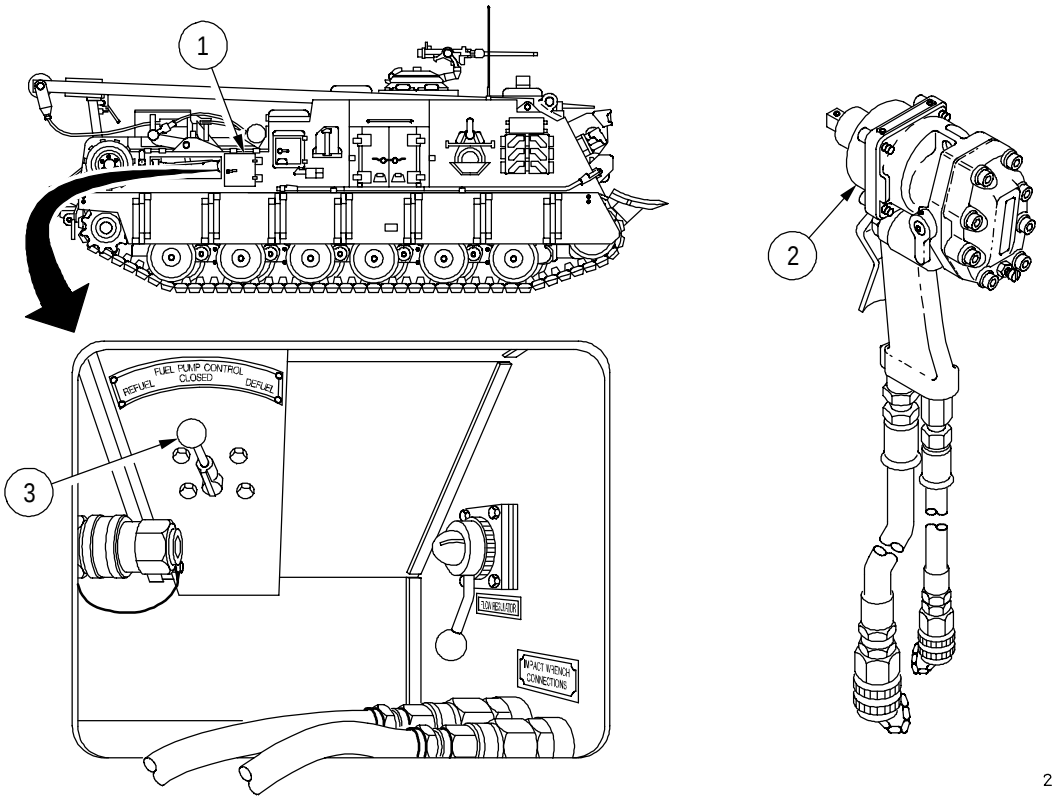
	a. Lubricate two stayline pins (1) with GAA through two fittings (2) until grease is visible. b. Wipe excess grease with clean rag (item 7, WP 0716 00).	Any clogged, missing or damaged grease fittings.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

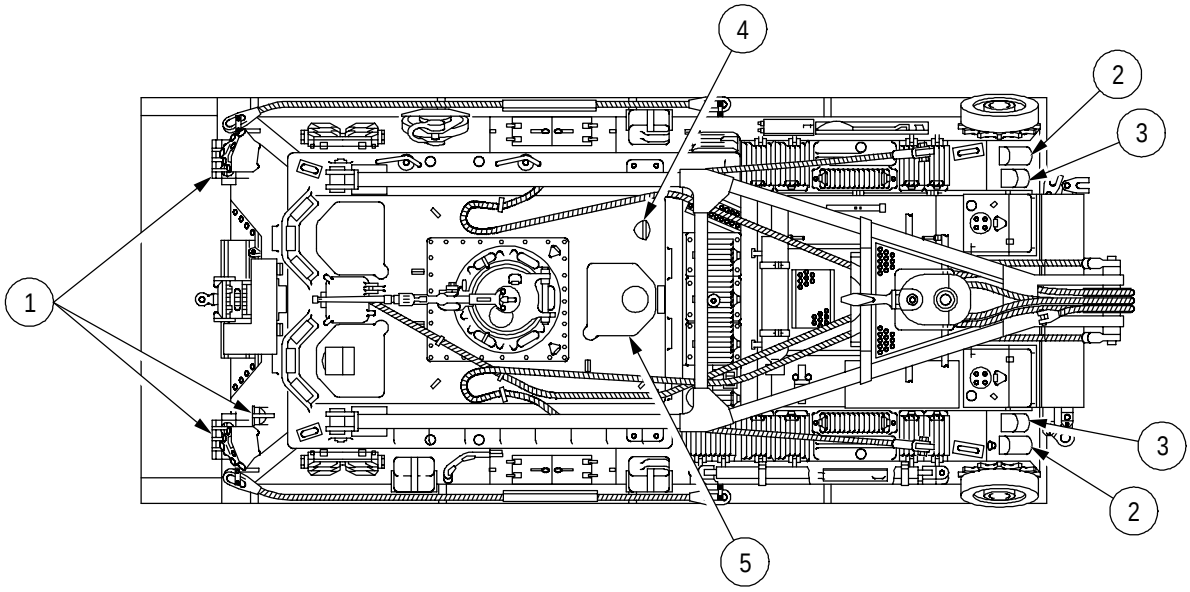
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
43		Hydraulic Wrench and Fuel Transfer Pump	a. Open right side stowage door (1) (TM 9-2350-292-10). b. Start auxiliary power unit (TM 9-2350-292-10). c. Operate hydraulic wrench (2) and fuel transfer pump (3) (TM 9-2350-292-10). d. Inspect for leakage and proper operation. e. Close right side stowage door (1) (TM 9-2350-292-10).	Any leaks, damaged, loose or missing components. Hydraulic wrench or fuel transfer pump does not operate properly.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
44		Lights	a. Inspect front headlights cluster, flasher light and signal (1), rear taillights, B.O. marker light and signal lights (2), work lights (3), spotlight (4), winch compartment and dome lights (5). b. Test operation of lights. c. Repair or replace broken, cracked and discolored lenses and lamps (WP 0273 00, WP 0275 00, WP 0276 00, WP 0277 00, WP 0278 00, WP 0279 00, WP 0281 00, WP 0282 00, WP 0283 00).	Any damaged, missing or inoperative lights.



DOME LIGHTS, CREW COMPARTMENT LIGHTS AND TROUBLE LIGHT NOT SHOWN

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PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
45		Tow Cables	a. Remove two tow cables (1) from vehicle (2) (TM 9-2350-292-10).	Missing, kinks, bends, or broken/ frayed wire ropes, eyelet cracked.



WARNING

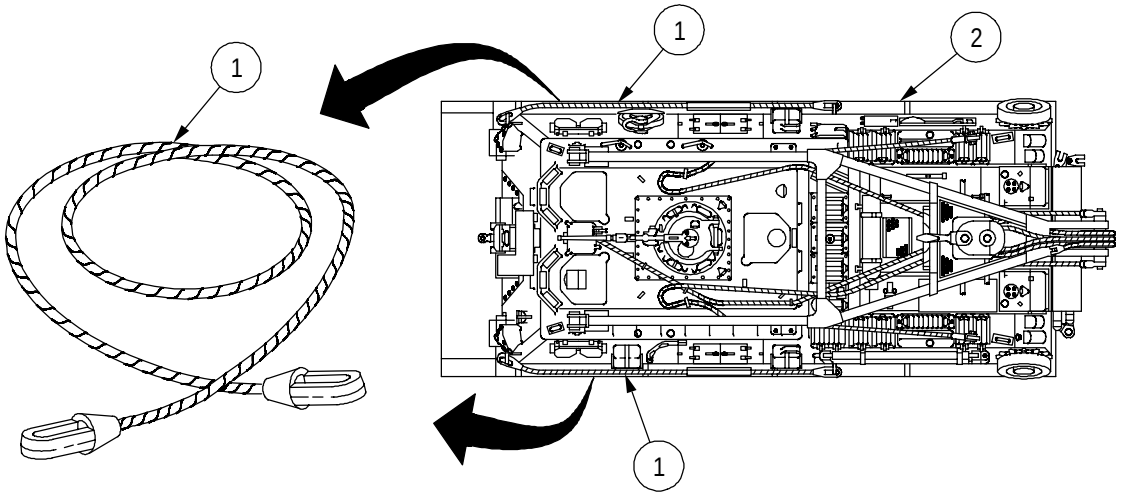
b. Clean two tow cables (1) with dry-cleaning solvent (item 1, WP 0716 00).

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Wire Rope Grease MIL-G-18458	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

c. Lubricate two tow cables (1) with grease.

d. Install two tow cables (1) on vehicle (2) (TM 9-2350-292-10).



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TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
46		Powerpack	**WARNING** The presence of fuel or oil on components or on the hull floor could indicate a leak. Fuel, hydraulic fluid or oil leaks in the engine compartment could cause a fire resulting in personnel injury and equipment damage. **NOTE** When removing powerpack, inspect all fuel and hydraulic quick-disconnects for signs of leaking. Record all signs of leaking. Repair or replace any defective or damaged items or components as required. If replacement or repair is beyond the scope of unit level maintenance, notify support maintenance. a. Remove powerpack (WP 0188 00). b. Inspect gaskets and covers for seepage of fuel and oil. c. Inspect for damaged, distorted or broken hoses, tube or line connectors, assemblies (nuts, adapters), reduction fittings and couplers.	Any Class III leak or damage that would prevent powerpack operations. Any damaged or distorted hoses, lines, tubes, or connector assemblies.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

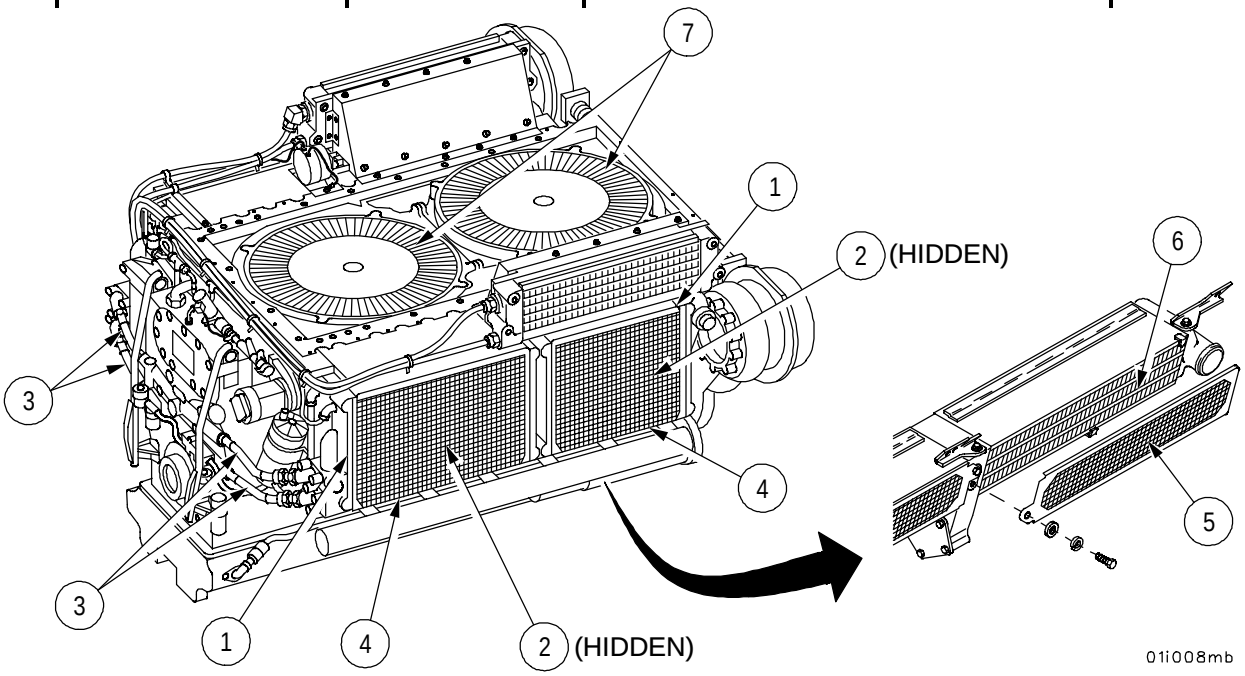
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
46		Powerpack - (Continued)	d. Inspect for stripped or damaged threads on connector assemblies and retaining bolts, nuts or studs. Repair threads or replace components/items as appropriate.	Any damaged bolts, connector assemblies, studs or nuts.
			e. Inspect electrical wires, leads and connectors for cracked insulation, oil or grease on cables/connectors. Clean or replace components as appropriate.	Any damaged wiring leads, cables or connectors.
			f. Inspect for damage, burrs, pitted or gummed-up seals, gaskets or preformed packings. Clean and remove burrs or replace components as required.	Any damaged seals, gaskets or preformed packings.
			g. Inspect engine compartment for pools of oil or fuel. Clean as required.	
			h. Inspect the fire extinguisher nozzles in engine compartment.	Any nozzle broken or missing.
			i. Inspect transmission output drives, engine mounting and connections to determine if items are serviceable. Repair as required. Report repair beyond unit level to support unit.	Any damaged, worn, missing or unservice-able components.
			j. Clean and flush engine compartment prior to installation of powerpack.	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

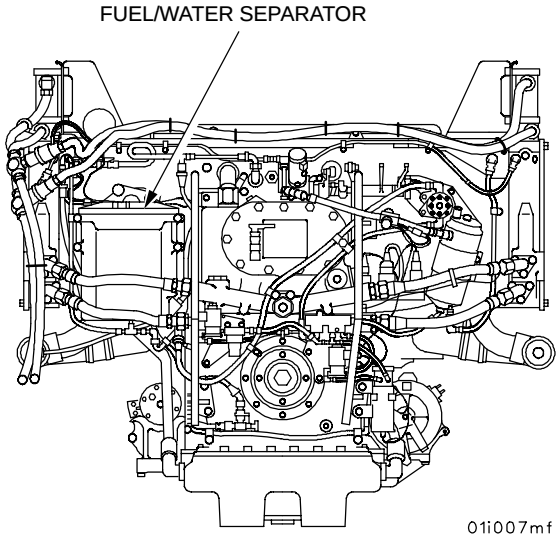
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
47		Oil Coolers	a. Inspect oil coolers (1) for leaks or dirty fins (2). Repair any leaks authorized. **WARNING** b. Clean dirty fins (2) with low pressure air or oil cooler cleaning tool (item 117, WP 0717 00). Inspect oil cooler lines (3) for holes, rips and tears. Replace oil cooler lines (3) as necessary (WP 0230 00). c. Inspect oil cooler screens (4) for clogs or holes.	Any Class III leaks, dirty or damaged components.
48		After Coolers	Inspect after cooler screens (5) for dirty fins (6). Clean dirty fins (6) with low pressure air. Report damaged screens to direct support maintenance.	Damaged or missing components.
49		Cooling Fans	Inspect cooling fans (7) for damage.	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

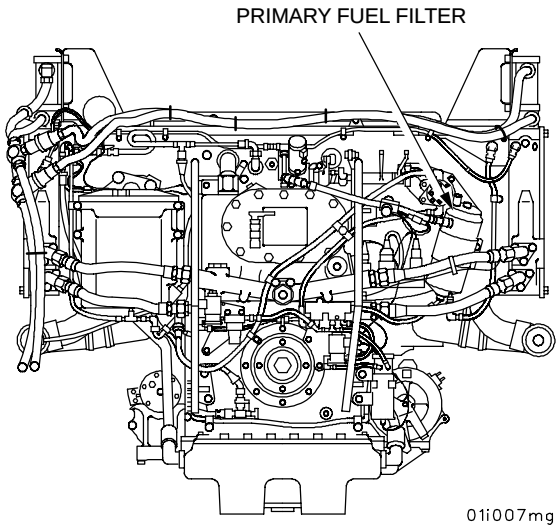
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
50	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT Fuel/Water Separator	**CAUTION** Drain fuel/water separator prior to disturbing final (center) filter element. Residue or water left in fuel/water separator will transfer directly to fuel injector pump when final filter is disturbed. This could cause severe damage to engine. Perform fuel/water separator operational test in accordance with WP 0221 00.	Fuel/water separator does not operate properly or any fuel leaks.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
51		Fuel Filter	Service primary fuel filter (WP 0222 00).	Any leaks or damaged components.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

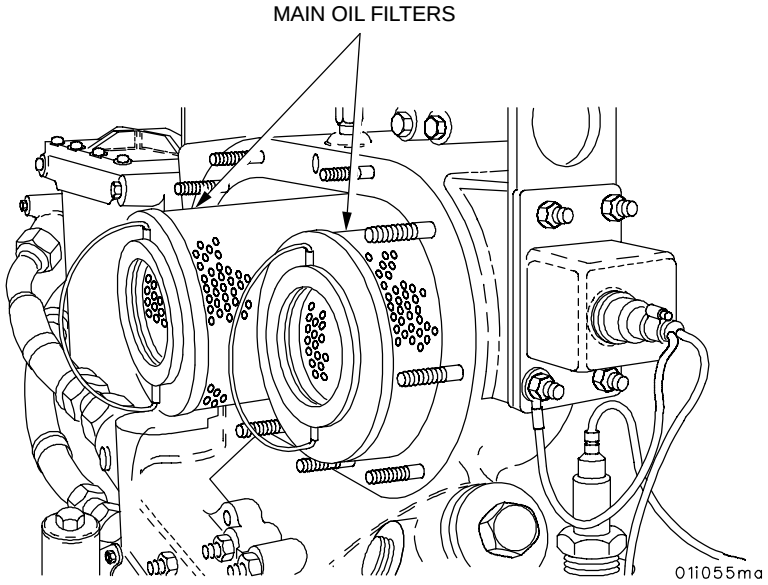
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
52	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT Main Engine Oil Filters	Service main engine oil filters (WP 0196 00). Add proper grade oil, if required (TM 9-2350-292-10).	Any metal flakes or other contamination in oil.

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
OIL: Lubricating Oil, OE/HDO MIL-L-2104 or OEA MIL-L-46167	18.5 gal. (70.02 L)	15W40 or OE/HDO-30 (0-237)	OE/HDO-10 (0-237)	OEA (0-183)

*For Arctic Operation, refer to FM 9-207

FILTER COVER REMOVED FOR CLARITY



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

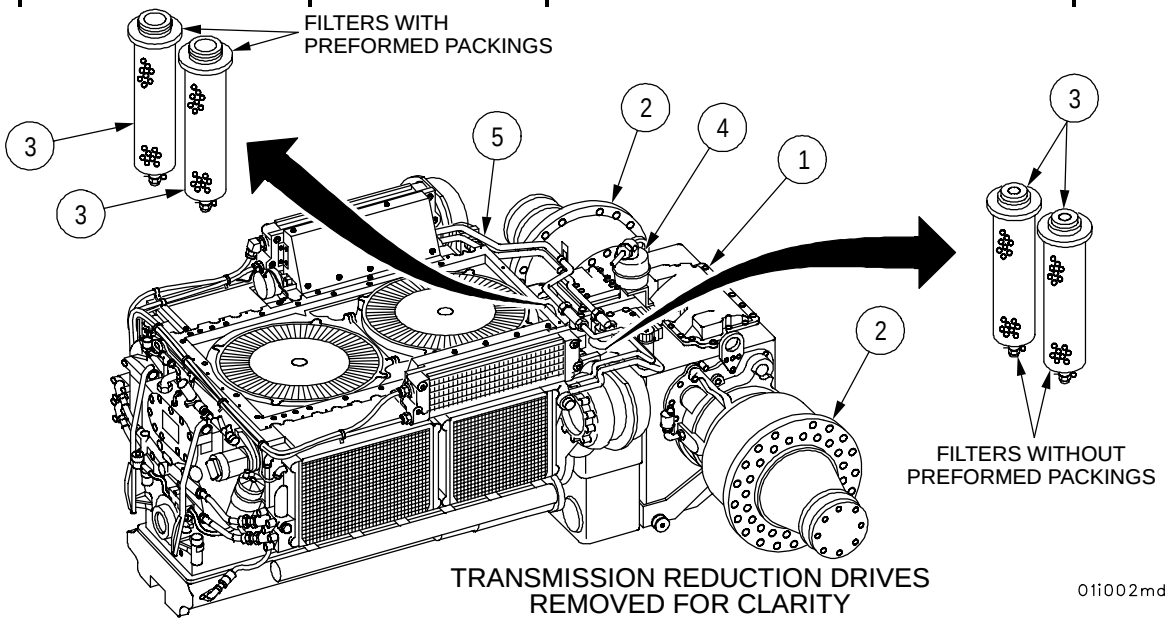
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
53		Transmission	a. Inspect transmission (1) and transmission reduction drives (2) for leaks and loose or missing mounting bolts.	Any Class III leaks or loose or missing mounting bolts.

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
OIL: Lubricating TDTO, TO-4 (CAT 10) or MIL-L-46167	17 gal. (64.35L)	CAT 10 (10W)	CAT 10 (10W)	OEA

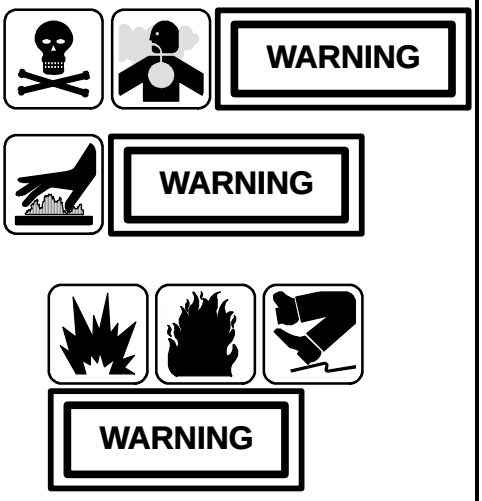
*For Arctic Operation, refer to FM 9-207

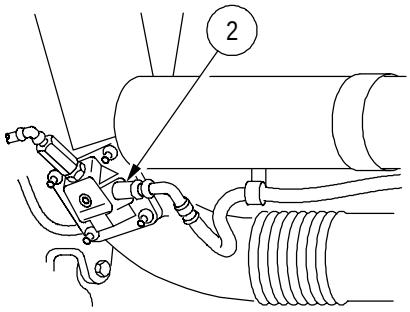
			b. Replace transmission oil filters (3) (WP 0353 00). Check transmission oil level (TM 9-2350-292-10).	
			c. Inspect transmission breather assembly (4) for damage or blockage.	Any damage or blockage.
			d. Inspect transmission oil cooler lines (5) for damage and leaks.	Any Class III leaks or damaged lines.

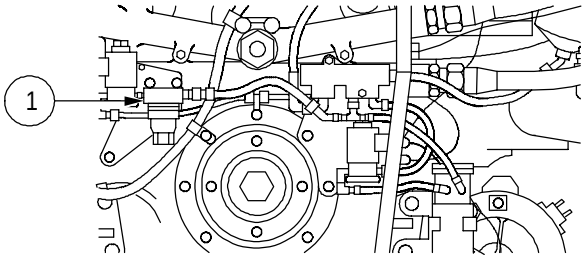


PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
54	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT Manifold Heaters Fuel Filter and Spark Plug	 a. Service manifold heater fuel filter (1) (WP 0223 00).  b. Inspect and service manifold heater spark plug (2) (WP 0224 00 and WP 0225 00).	Any fuel leaks, damage or missing parts.





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PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

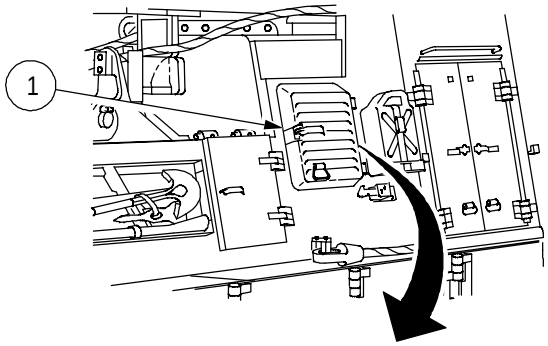
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

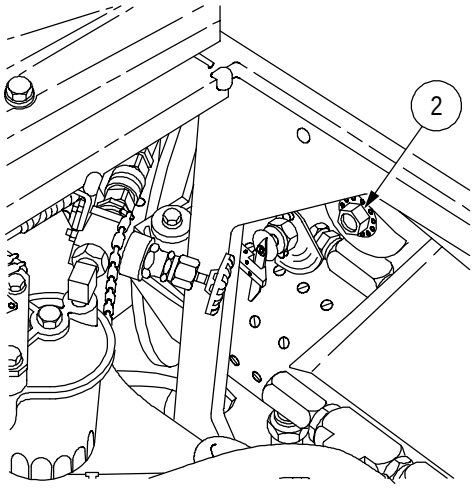
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
55	SEMIANNUALLY	EXTERIOR Auxiliary Power Unit (ONAN)	a. Open auxiliary power unit access door (1) (TM 9-2350-292-10).	

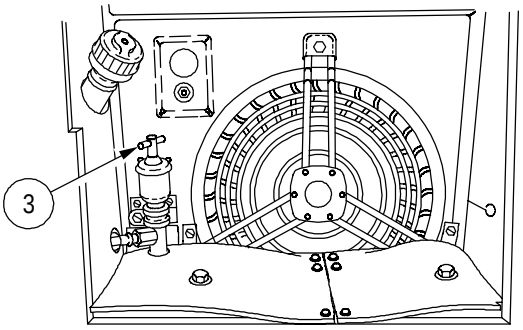
LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
OIL: Lubricating Oil, OE/HDO MIL-L-2104 or OEA MIL-L-46167	3.5 qt (3.31L)	15 W40 or OE/HDO-30 (0-237)	OE/HDO-10 (0-237)	OEA (0-183)

*For Arctic Operation, refer to FM 9-207

			b. Replace oil filter (2) (WP 0596 00). Check engine oil level gauge (3), which should indicate full. Add oil as required.	Any Class III leak or low engine oil level.





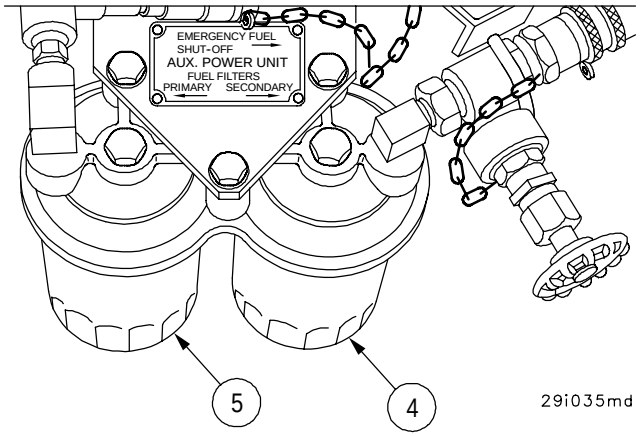


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PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
55		Auxiliary Power Unit (ONAN) - Continued	c. Replace primary fuel filter (4) (WP 0609 00).	Any fuel leaks.
			d. Replace secondary fuel filter (5) (WP 0609 00).	
			e. Tighten fuel and oil connections that leak.	
			f. Inspect air system components; replace if damaged or deteriorated.	
			g. Service air cleaner. Check for cleanliness and obstructions. Replace filter if damaged (WP 0608 00). Clean if dirty (TM 9-2350-292-10).	Dirty or obstructed air cleaner.
			h. Start APU engine (TM 9-2350-292-10). Listen for unusual noises in engine and generator which might indicate improper operation.	Any unusual noises.
			i. Observe warning lights and oil pressure gauge to see if unit is functioning properly (TM 9-2350-292-10). Oil pressure gauge should indicate approximately 30 to 45 psi (207 to 310 kPa).	Malfunctioning lights or low pressure.
			j. Shut off APU engine (TM 9-2350-292-10).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

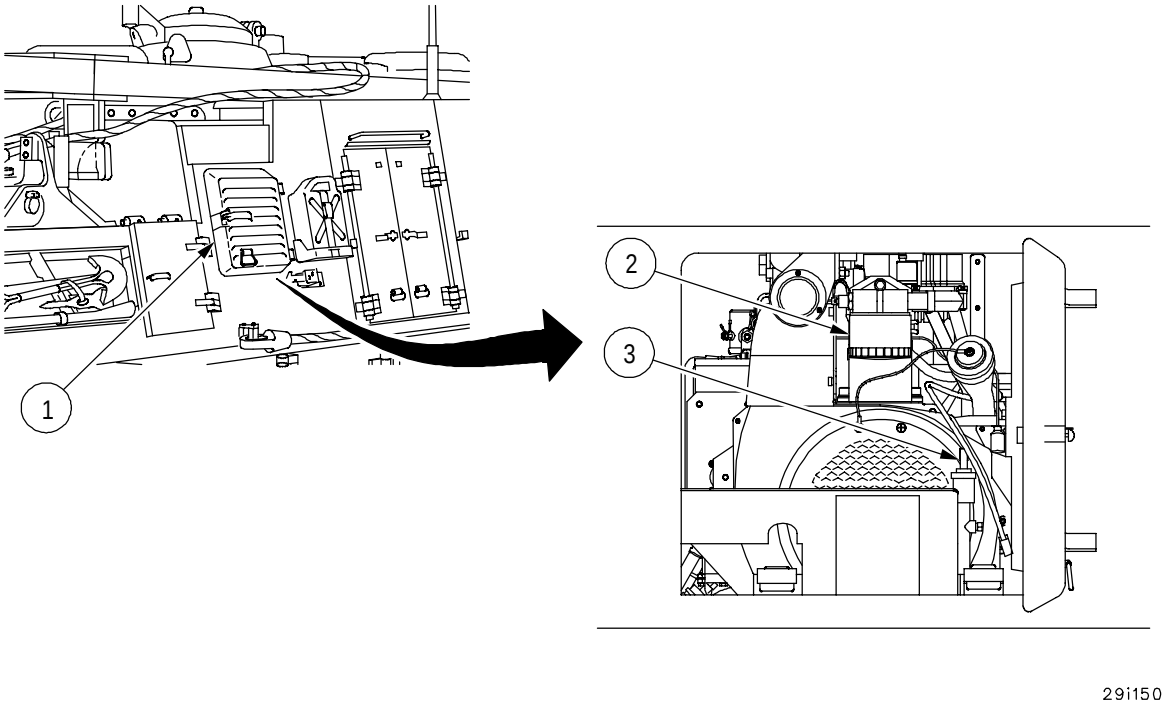
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
56	SEMIANNUALLY	EXTERIOR Auxiliary Power Unit (HATZ)	a. Open auxiliary power unit access door (1) (TM 9-2350-292-10).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
OIL: Lubricating Oil, OE/HDO MIL-L-2104 or OEA MIL-L-46167	3.17 qt (3 L)	15 W40 or OE/HDO-30 (0-237)	OE/HDO-10 (0-237)	OEA (0-183)

*For Arctic Operation, refer to FM 9-207

			b. Replace oil filter (2) (WP 0597 00). Check engine oil level gauge (3), which should indicate full. Add oil as required.	Any Class III leak or low engine oil level.

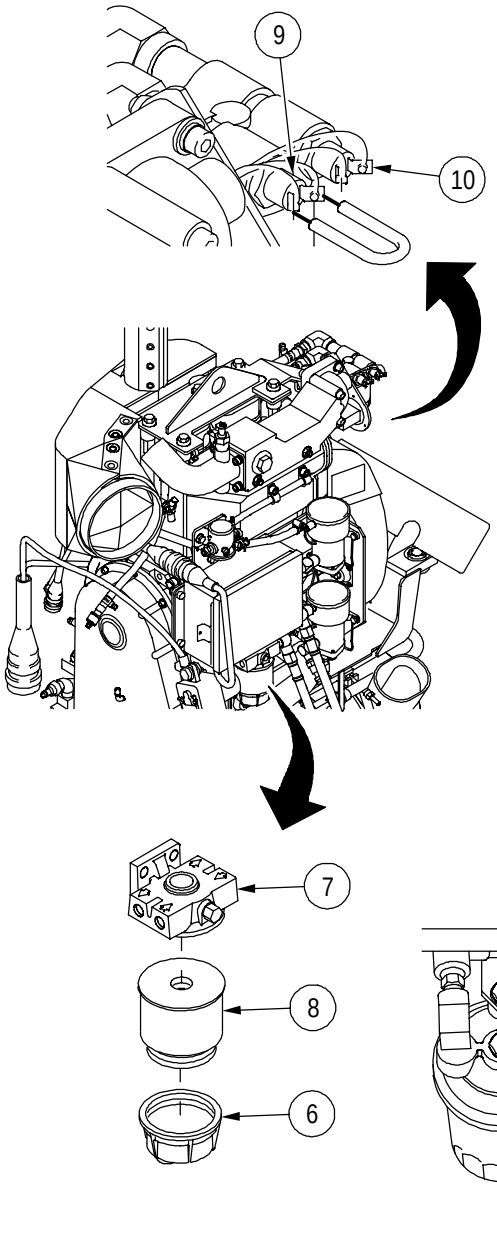


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PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

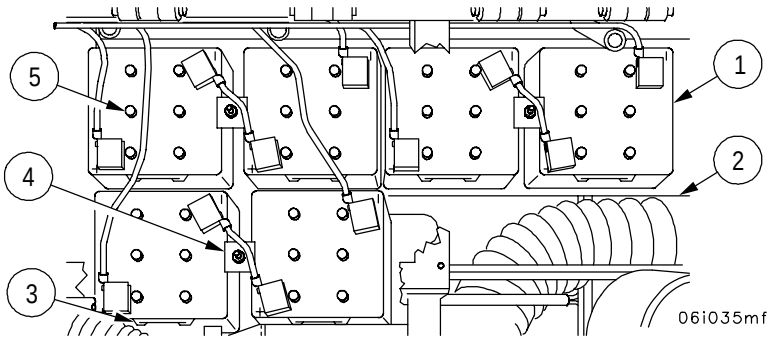
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
56		Auxiliary Power Unit (HATZ) - Continued	c. Replace primary fuel filter (4) (WP 0609 00). d. Replace secondary fuel filter (5) (WP 0609 00). e. Remove bottom cap (6) of fuel/water separator (7) then remove and replace fuel/water separator filter element (8) and install bottom cap (6). f. Tighten fuel and oil connections that leak. g. Inspect air system components; replace if damaged or deteriorated. h. Service air cleaner. Check for cleanliness and obstructions. Replace filter if damaged (WP 0608 00)). Clean if dirty (TM 9-2350-292-10). i. Start APU engine (TM 9-2350-292-10). Listen for unusual noises in engine and generator which might indicate improper operation. j. Observe warning lights and oil pressure gauge to see if unit is functioning properly (TM 9-2350-292-10). Oil pressure gauge should indicate approximately 55 to 80 psi (368 to 551 kPa). Shut off engine. k. Remove adhesive from thermostatic switch S1 (9). Using a jumper wire, short the terminals of thermostatic switch S1 (9) and observe the sump fan operation. Apply adhesive (item 25, WP 0716 00) to exposed terminals of switch S1 (9). l. Remove adhesive from thermostatic switch S2 (10). Using a jumper wire, short the terminals of thermostatic switch S2 (10) and observe the door fan operation. Apply adhesive (item 25, WP 0716 00) to exposed terminals of switch S2 (10).	Any fuel leaks. Dirty or obstructed air cleaner. Any unusual noises. Malfunctioning lights or low pressure. Door fan or sump fan does not operate.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION / ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
57	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT / Batteries	 **WARNING** a. Remove batteries (WP 0288 00). b. Thoroughly clean batteries (1), trays (2), supports (3) and retainers (4). c. If supports (3), trays (2) and/or retainers (4) are corroded, paint with acid-resistant paint (item 62, WP 0716 00). d. Repair or replace bent or broken trays (2), supports (3) and retainers (4). e. Replace batteries (1) that have cracked cases (WP 0288 00). f. Remove battery caps (5) and clean vents. g. Check that electrolyte level of each battery (1) is up to split ring. h. Test specific gravity of battery electrolyte. Specific gravity shall be a minimum of 1.225 under normal operating conditions and 1.180 under tropical conditions (TM 9-6140-200-14). If specific gravity is unsatisfactory, charge or replace batteries (1) (WP 0288 00). 	Any damaged batteries or batteries with low specific gravity readings.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

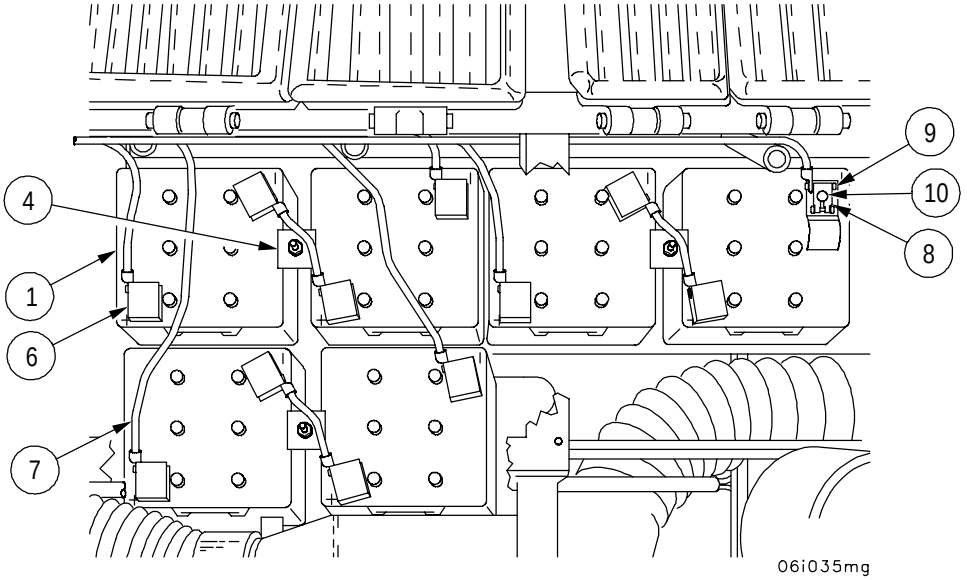
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
57		Batteries - Continued	i. Inspect battery terminal covers (6) for tears and deterioration. j. Clean cable (7), terminals (8), screws (9) and posts (10). k. Tighten terminals (8) and retainers (4) carefully to avoid damage to batteries (1).	

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease (GAA) MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

l. Lubricate terminals (8) lightly with GAA.

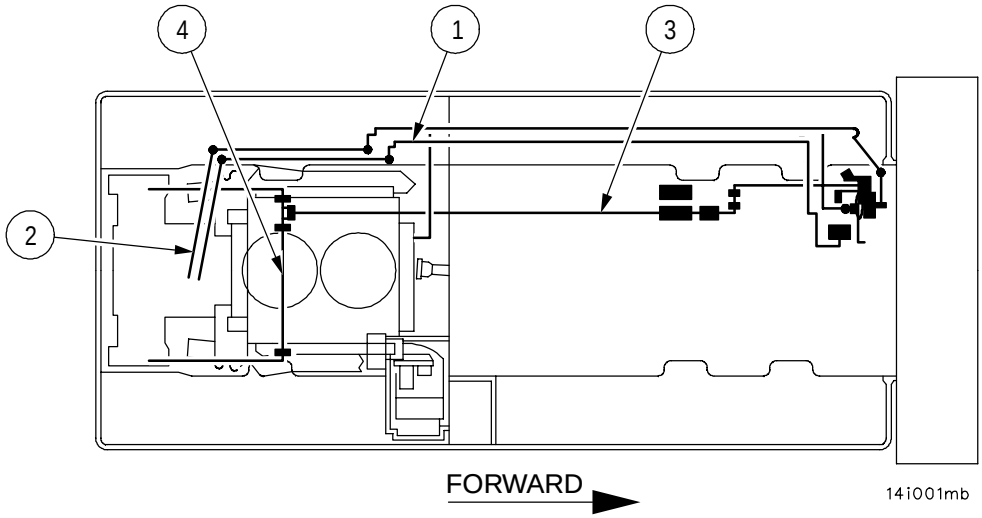
m. Check that battery cables (7) are securely attached to battery terminals (8).



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
58		Brake, Cable, Steering, Shifting and Brake Linkage	Inspect shifting linkages (1), steering linkages (2), brake cable (3) and brake linkages (4) for bent, missing or improperly adjusted components. Straighten bent linkage, replace broken, kinked or missing linkage.	Any damaged or improperly adjusted component.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

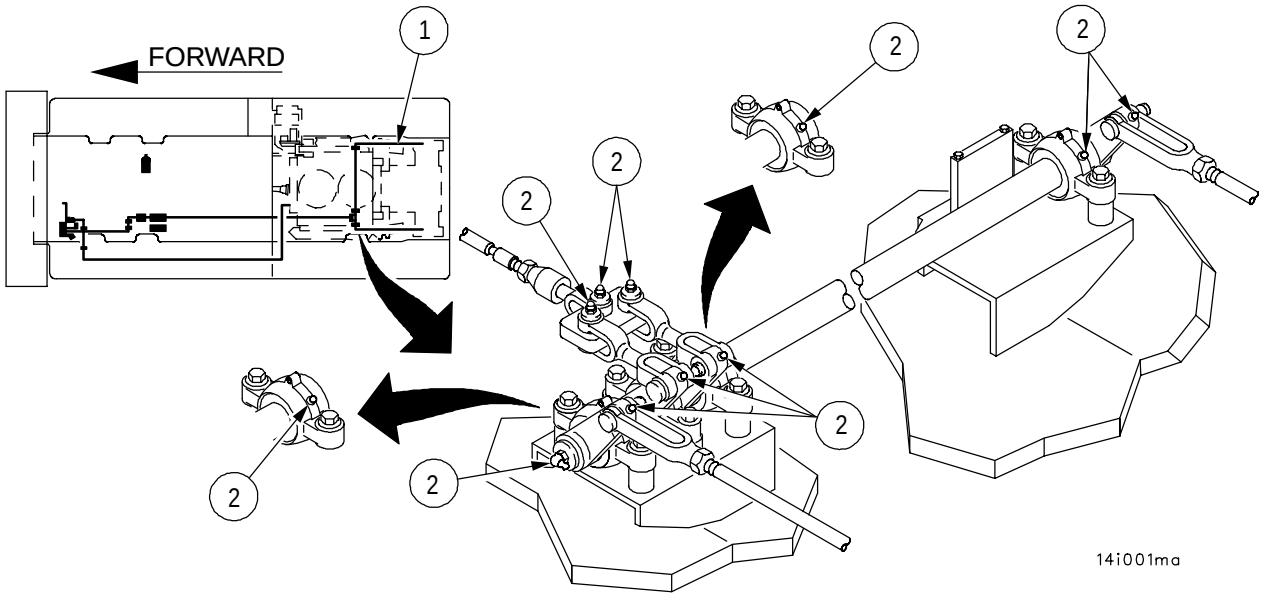
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
59	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT Brake Linkage		

LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

			a. Lubricate linkage (1) through 11 fittings (2) with GAA until grease is visible. b. Wipe excess grease with rag (item 7, WP 0716 00).	Any clogged, damaged, loose or missing components. Brake adjustment indicates out of alignment.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
60	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT Fuel Transfer Pump		

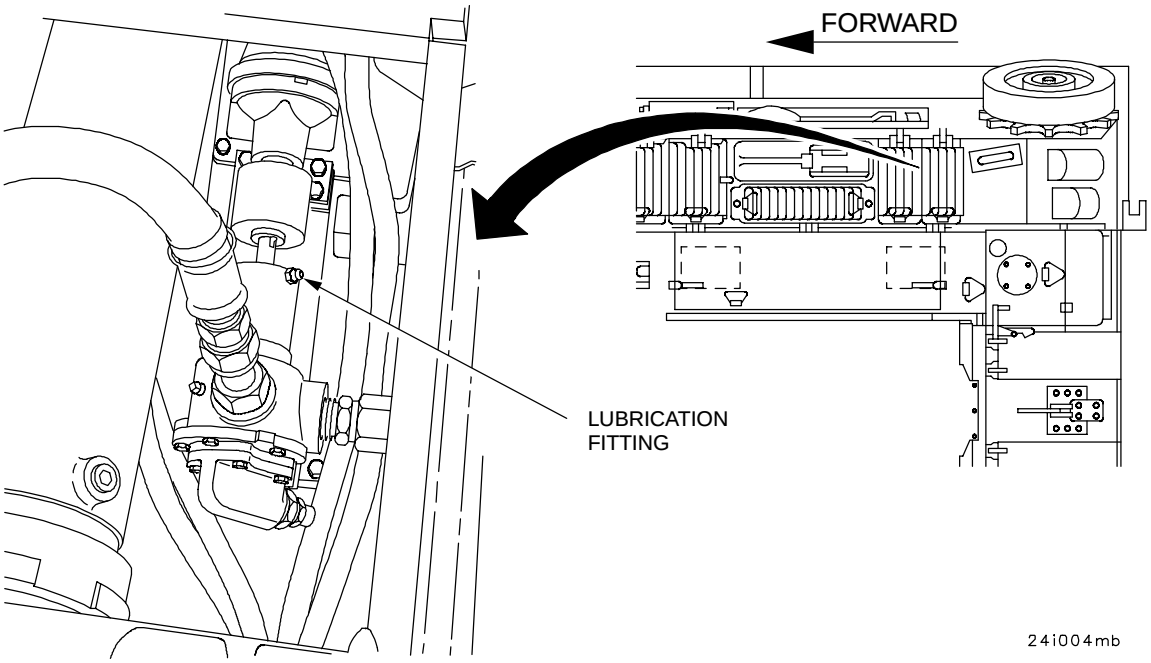
LUBRICANTS/ COMPONENTS	REFILL CAPACITY	EXPECTED TEMPERATURE*		
		Above +32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-17°C to -54°C)
GREASE: Automotive and Artillery Grease, (GAA), MIL-G-10924	As Required	**ALL TEMPERATURES**		

*For Arctic Operation, refer to FM 9-207

a. Lubricate with GAA through fitting until grease is visible.

b. Wipe excess grease with rag (item 7, WP 0716 00).

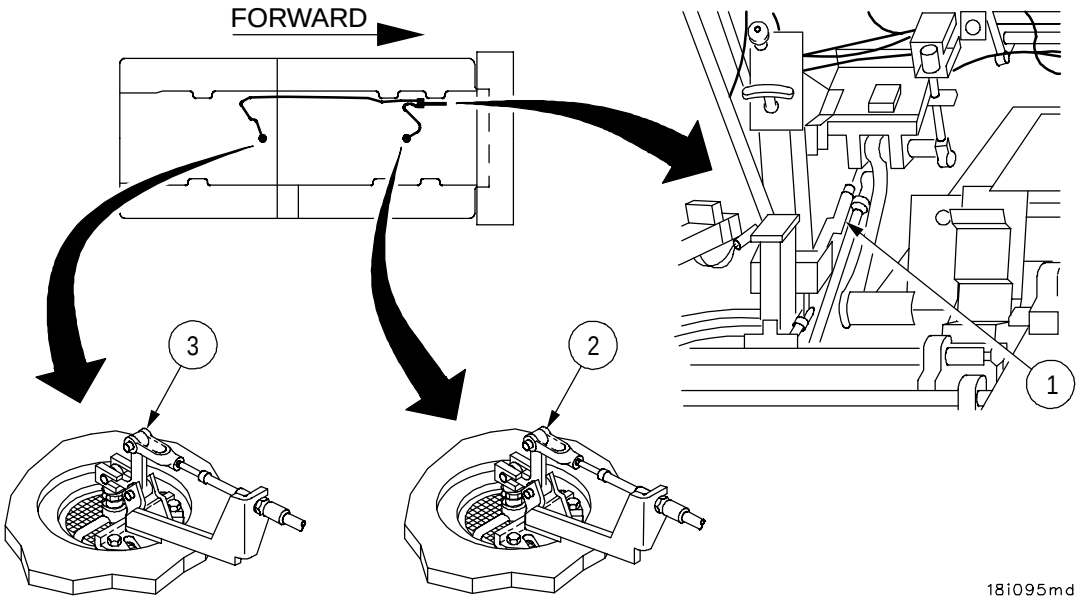
Any clogged, damaged or missing components.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	EXTERIOR		
61		Drain Valves and Drain Valve Seals	a. Operate drain valve lever (1) (TM 9-2350-292-10) to ensure free operation of two drain valves (2 and 3) (located at front and rear of underside of hull). Drain valves (2 and 3) should seal completely when closed. b. Inspect drain valves (2 and 3) bearing surfaces for nicks, dents, scored bearing surface and out of roundness. **NOTE** Whenever nose piece is removed, clean front drain valve screen. c. Clean drain valves (2 and 3) screens.	Any improperly sealed or damaged drain valve or components.

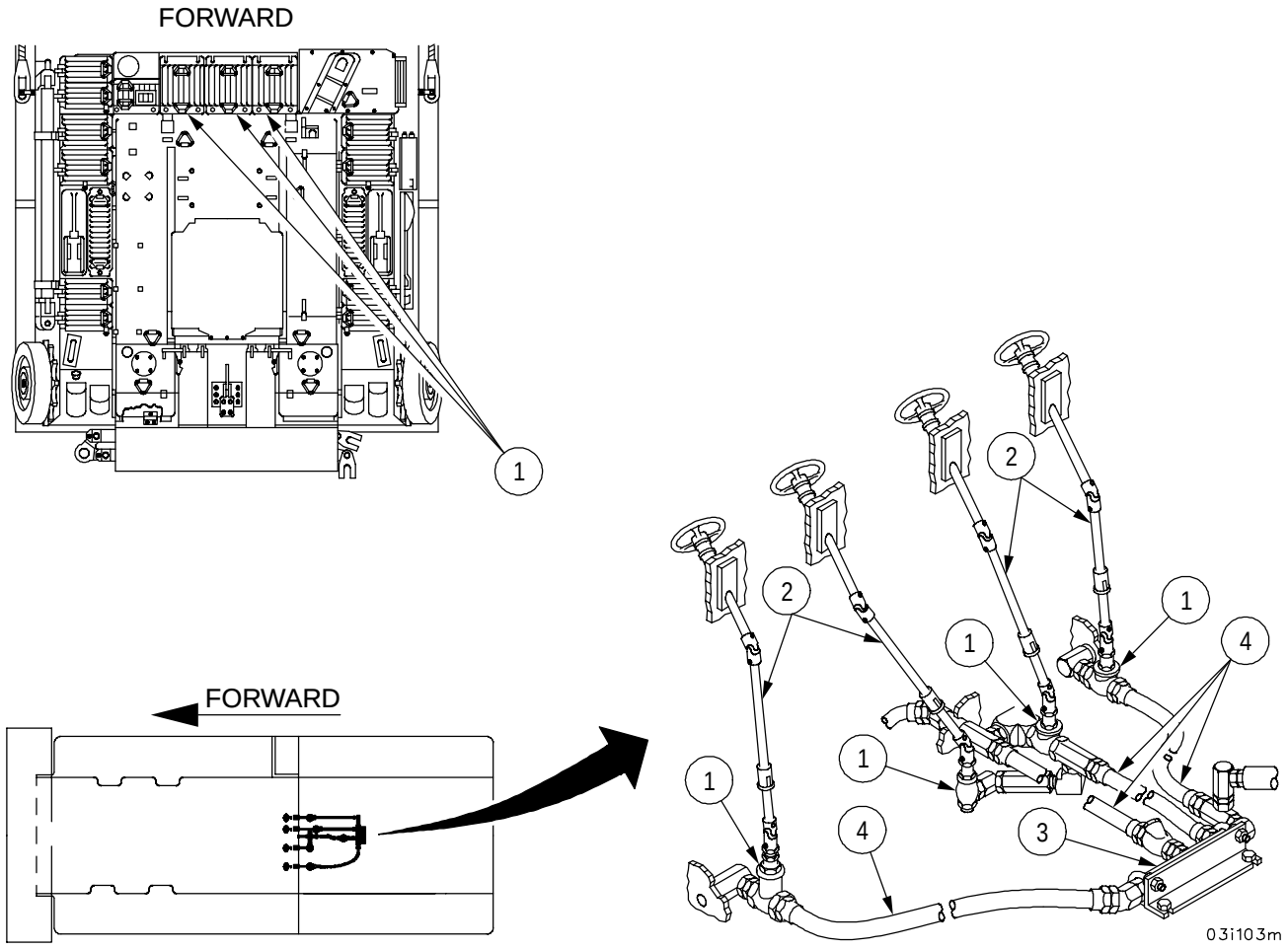


PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

0187 00

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
62		Manual Fuel Control Valve Linkage Arm Manifolds	a. Inspect manual fuel control valves (1) for leaks. b. Inspect manual fuel control valves linkage (2) for proper operation. c. Inspect fuel manual control valves manifold (3) and hoses (4) for leaks, deterioration or improper operation.	Any inoperable, damaged or missing components.

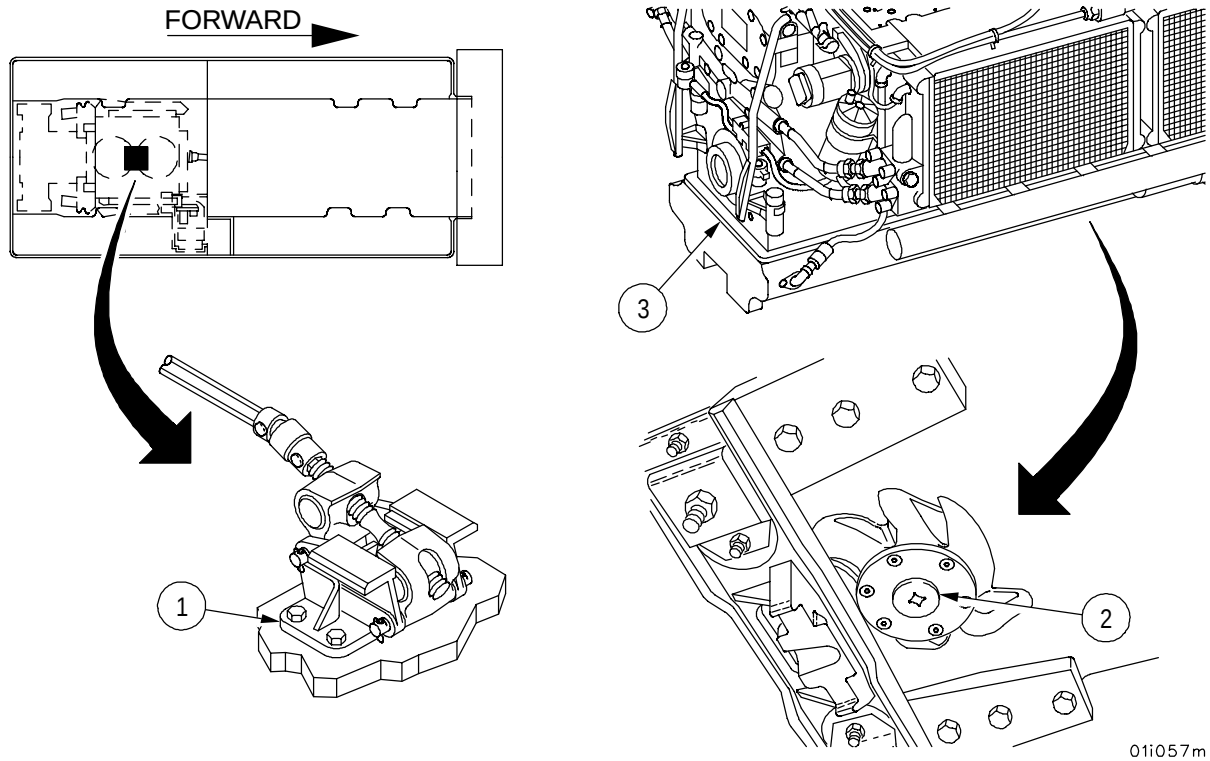


PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

0187 00

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
63		Engine Rear Mount, Oil Pan Plug and Gasket	a. Check engine rear mount and base assembly (1) for damage. b. Check oil pan plug (2) and gasket (3) for leaks.	Damaged engine rear mount or any Class III leaks.

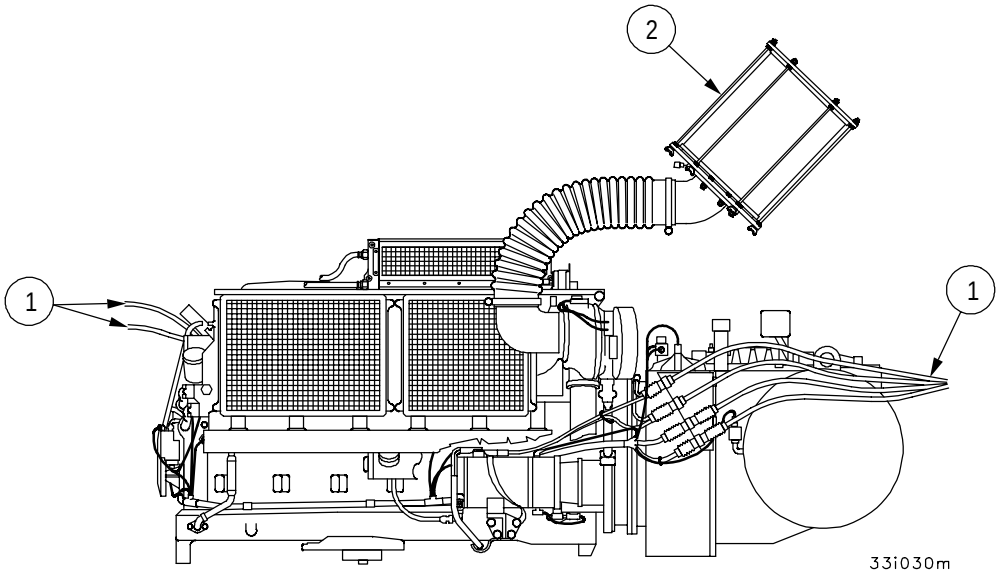


PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

0187 00

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
64		Engine Ground Hop Kit and Air Filter Kit	Install ground hop kit (1) and air filter kit (2) (WP 0189 00).	

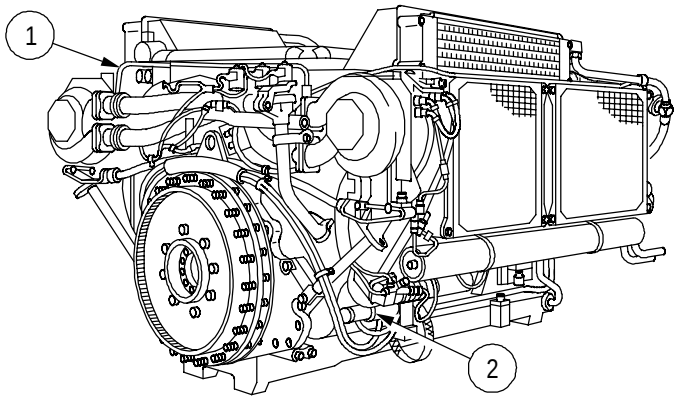
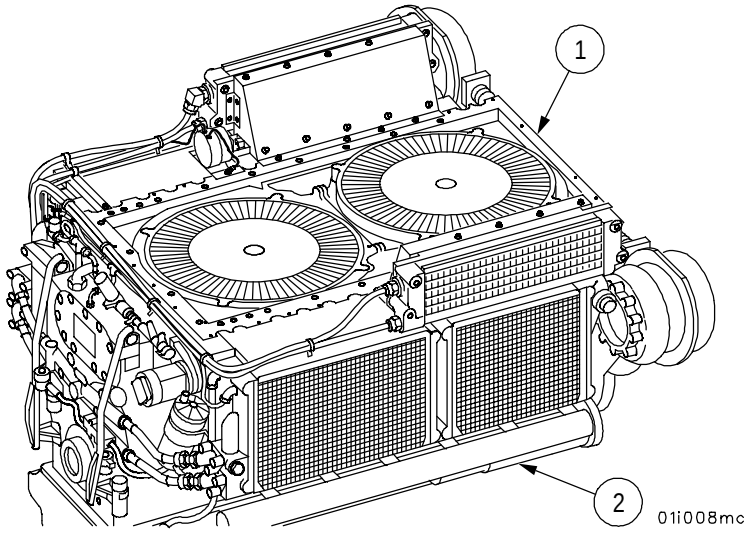


NOTE

The following tasks are performed during engine ground hop operations.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

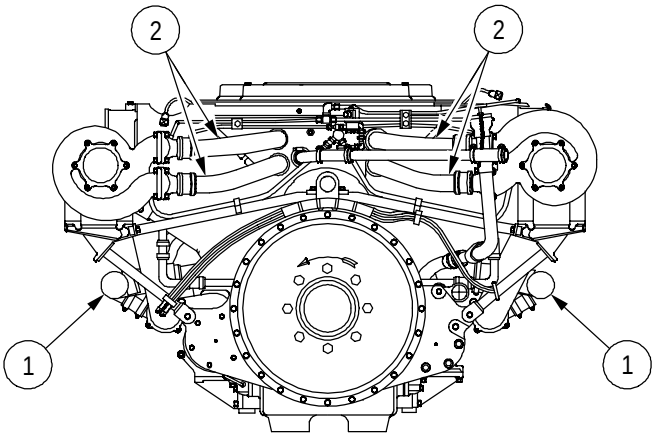
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
65		Starter	While starting engine (1) (TM 9-2350-292-10), listen for unusual noises and difficult cranking of starter (2).	Any unusual noises or improperly operating starter.
				
66		Generator	a. Listen for unusual noises in engine (1) and generator (2) which might indicate improper operation. b. Stop engine (1) before operating temperature is reached (TM 9-2350-292-10).	Any unusual noises or improperly operating generator.
				

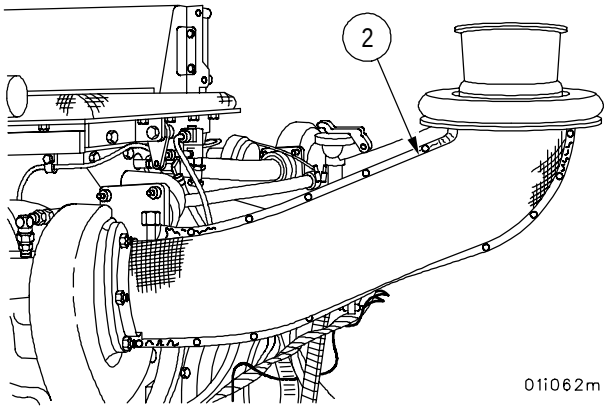
PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

0187 00

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
67		Manifold Heaters	**WARNING** a. Using extreme caution, run hand along each intake manifold (1) to check for heat generated by manifold heaters. b. If heaters are operative, heat will be felt.	Any inoperative heater or fuel leaks.
68		Exhaust System	**WARNING** Inspect exhaust system (2) for damage or deteriorated components. Tighten loose clamps, self-locking nuts and insulation cover screws (WP 0228 00 and WP 0229 00).	Leaks or loose or missing mounting hardware.

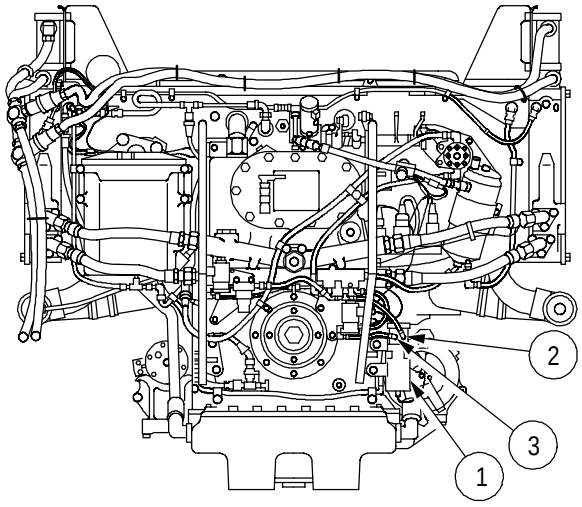




PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

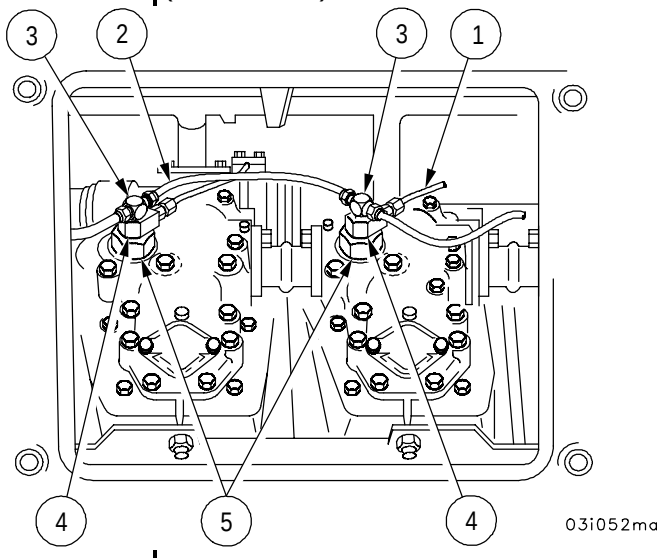
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
69		Purge Pump	Check purge pump (1) connections (2 and 3) for evidence of leakage.	Any fuel leaks.



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PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

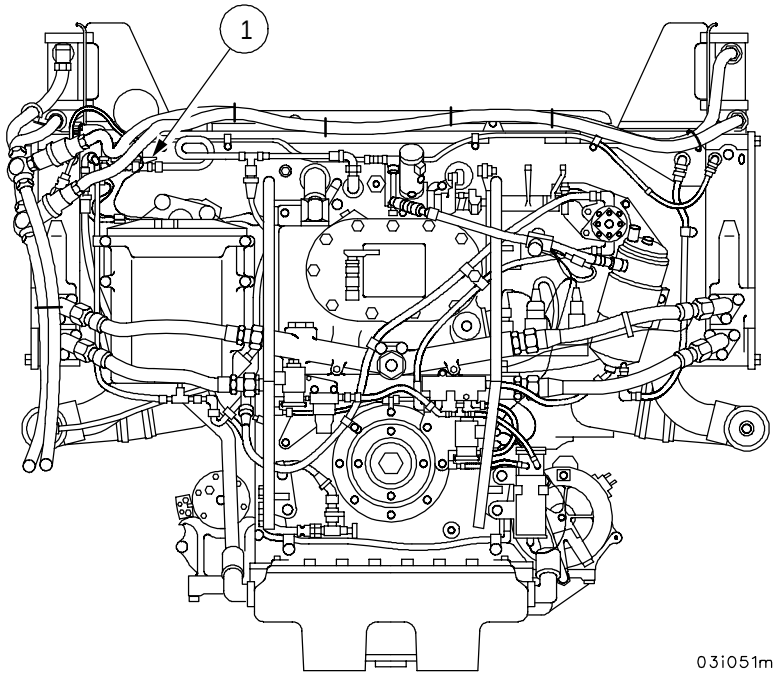
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
70	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT Fuel Injector Lines, Fuel Return Lines and Related Parts	**WARNING** **WARNING** a. Remove top housing assembly (WP 0232 00). b. Start engine (TM 9-2350-292-10). c. Inspect fuel injector lines (1), fuel return lines (2), fuel injectors (3) and holder assemblies (4) for leakage. d. Check to make sure there is no movement of nozzle head (5) inside fuel injector assembly (3). This inspection can be done by placing hand between the nozzle head (5) and top of holder (4) before engine temperature rises. If movement is felt, notify support maintenance. e. Stop engine (TM 9-2350-292-10). f. Install top housing assembly (WP 0232 00). 	Any Class III leaks. There is movement of nozzle head inside fuel injector assembly.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

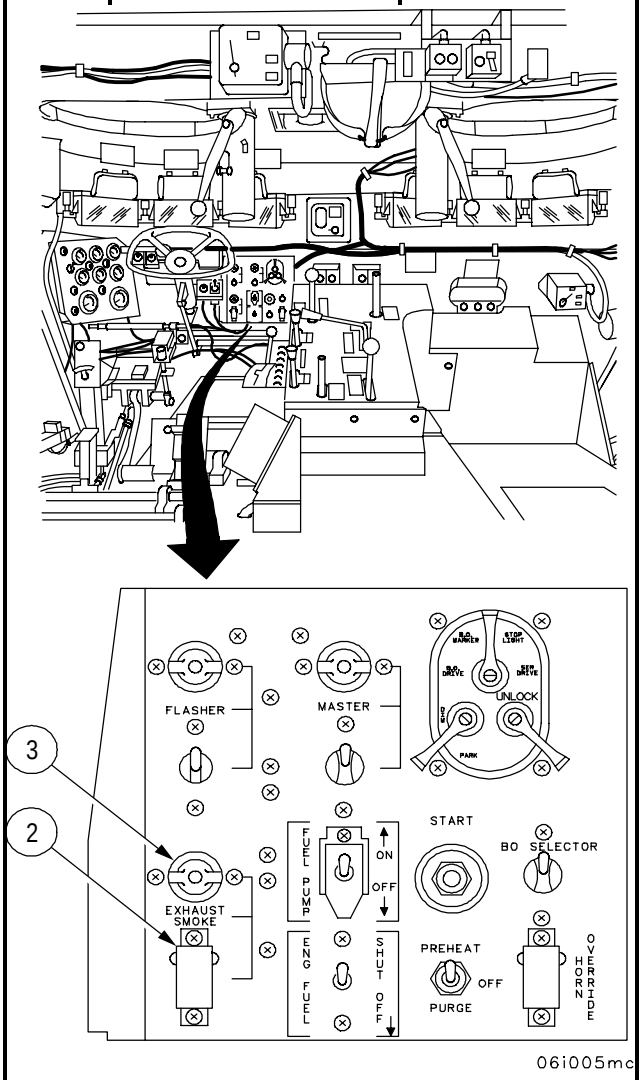
ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
71		Exhaust Smoke Generating System	**NOTE** Exhaust smoke generating system will not operate if vehicle is fueled with JP8. a. If vehicle is fueled with JP8, check that shut-off valve (1) is closed and lockwired, then skip next item. b. Open fuel shutoff valve (1) (TM 9-2350-292-10). c. Check tightness of all electrical connectors. d. Inspect for evidence of leakage and tighten fuel connections as necessary.	Smoke generating system does not work. Any fuel leaks.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION: ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
71	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT: Exhaust Smoke Generating System - Continued	**WARNING** **CAUTION** Do not activate smoke generating system when engine is idling. Engine speed must be at least 1600 rpms. e. Start engine (TM 9-2350-292-10) and activate smoke generating system as follows: **NOTE** Exhaust smoke generating system will not operate if vehicle is fueled with JP8. A heavy gray-white smoke should be observed within 10 seconds after exhaust smoke switch is placed to ON. (1) Place driver's compartment EXHAUST SMOKE activating switch (2) to ON. (2) Check that EXHAUST SMOKE indicator (3) is lit while system is activated. **NOTE** A light white smoke is normally emitted from the left and right exhaust pipes while engine is running with exhaust smoke generating system off. (3) Place driver's compartment EXHAUST SMOKE activating switch (2) to OFF. The heavy gray-white smoke should stop and normal exhaust should be observed. EXHAUST SMOKE indicator (3) should be off.	

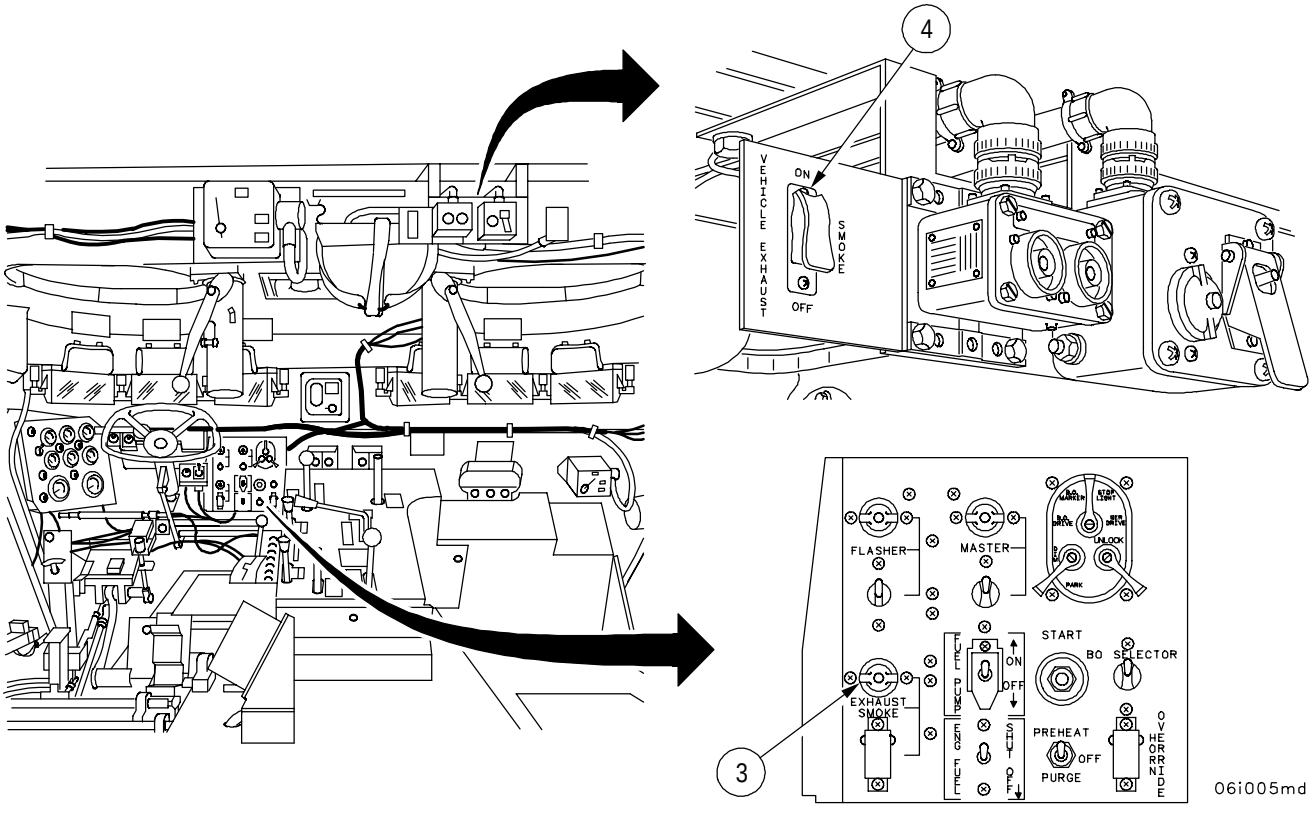


PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

0187 00

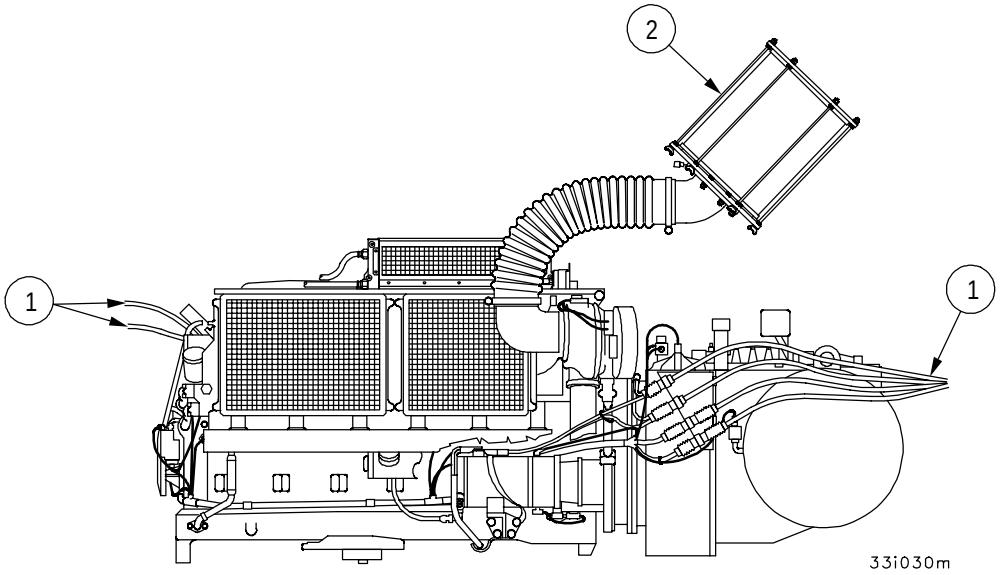
TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
71		Exhaust Smoke Generating System - Continued	(4) Place commander's VEHICLE EXHAUST SMOKE activating switch (4) to ON. EXHAUST SMOKE indicator (3) should be lit. (5) Place commander's VEHICLE EXHAUST SMOKE activating switch (4) to OFF. Observe if heavy white exhaust smoke stops coming from exhaust pipes. A normal exhaust should be observed. EXHAUST SMOKE indicator (3) should be off. (6) Stop engine (TM 9-2350-292-10). (7) Close and lockwire fuel shutoff valve (1) (TM 9-2350-292-10).	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 3 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, SEMIANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	SEMIANNUALLY	BATTERY AND ENGINE COMPARTMENT		
72		Engine Ground Hop Kit and Engine Air Filter Kit	Remove engine ground hop kit (1) and engine air filter kit (2) (WP 0189 00).	
73		Powerpack	Install powerpack (WP 0188 00).	
74		Turbocharger Dust Detector System	Perform turbocharger dust detector system operational test (WP 0213 00).	Turbocharger dust detector inoperable.
				
75		Final Road Test	After all services, inspections, and repairs have been completed, take vehicle on short road test (approximately 5 miles (8 km)) to be sure that equipment faults have been corrected.	

END OF TASK

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 4 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, ANNUALLY

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Wiping rags (item 7, WP 0716 00)
For oil sampling:
Oil sampling bottle (8125-01-082-09697)
Oil sampling pump (4930-01-119-4030)
Plastic bag (item 48, WP 0716 00)
Shipping sack (8105-00-290-0340)

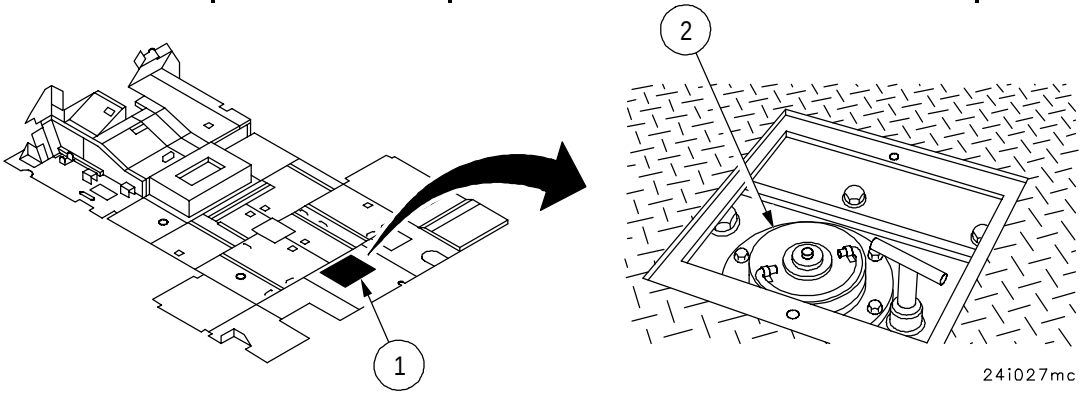
Personnel Required
Three

References
WP 0716 00
WP 0717 00
WP 0454 00
TM 9-2350-292-34

NOTE

Refer to PMCS temperature chart for proper lubricants to use at different temperature ranges.

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	ANNUALLY	INTERIOR		
1		Hydraulic Reservoir AOAP Sampling	 **WARNING** a. Park vehicle on a level surface (TM 9-2350-292-10). b. Open subfloor plate #28 (1) (WP 0454 00). c. Remove hydraulic reservoir fill cap (2) (TM 9-2350-292-10). d. Insert tube, suction enough hydraulic fluid to fill sampling bottle. e. Install hydraulic reservoir fill cap (2) (TM 9-2350-292-10). f. Close subfloor plate #28 (1) (WP 0454 00).	Any metal flakes or other contaminants are seen. Oil does not pass laboratory testing.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

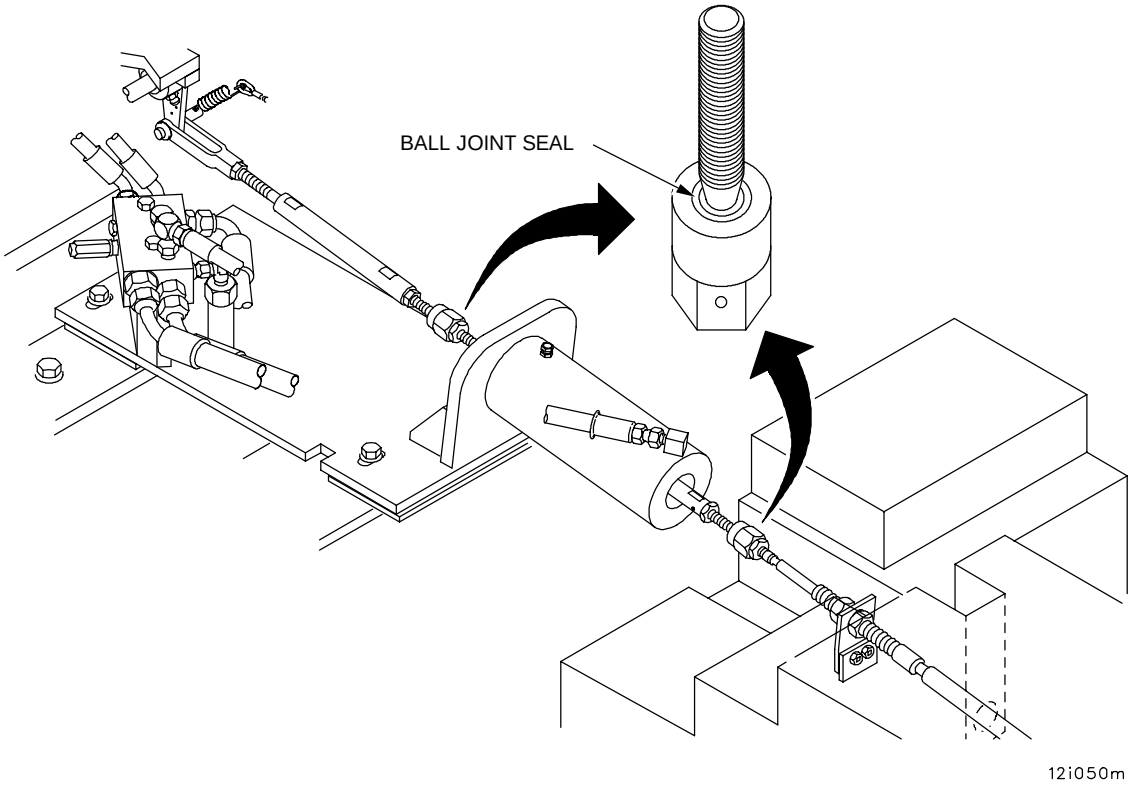
TABLE 4 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, ANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	ANNUALLY			
2		Hoist Winch Load Test	Check documentation to ensure that hoist has been load tested within the last 12 month period, or after replacement of any major component of the hoist winch/hoist boom assembly, including hydraulic control valve assembly and hoist winch wire rope assembly. Notify support maintenance. (Hoist winch/hoist boom assembly must be load tested IAW TM 9-2350-292-34).	If hoist winch has not been load tested within the last 12 months or relacement of a major component of hoist winch.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS - CONTINUED

TABLE 4 PREVENTIVE MAINTENANCE CHECKS AND SERVICES INCLUDING LUBRICATION INSTRUCTIONS, ANNUALLY - CONTINUED

ITEM NO.	INTERVAL	LOCATION ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
	ANNUALLY	INTERIOR		
3		Brake Ball Joint Assembly	Remove subfloor plates #13 and #16 (WP 0454 00). Inspect two ball joint seals for cracks.	Cracks are present on the ball joint seal.



END OF TASK

CHAPTER 4

POWERPACK MAINTENANCE

POWERPACK ASSEMBLY REPLACEMENT 0188 00

THIS WORK PACKAGE COVERS:

Removal, Inspection, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Hoisting beam (item 64, WP 0717 00)
Suitable lifting device (15,000 lbs (6,810 Kg) min cap)
Transmission parts kit (item 65, WP 0717 00)
Crowbar (item 52, WP 0717 00)
Wire-twister pliers (item 67, WP 0717 00)
Torque wrench (item 2, WP 0717 00)
Final drive sleeve tool (item 132, WP 0717 00)
Torque wrench adapter (item 127, WP 0717 00)

Materials/Parts

Nonelectrical wire (item 40, WP 0716 00)
Lockwashers (4) (item 2, WP 0718 00)
Cotter pins (2) (item 17, WP 0718 00)
Lockwashers (6) (item 12, WP 0718 00)
Self-locking nut (item 155, WP 0718 00)
Cotter pin (item 15, WP 0718 00)

Materials/Parts-Continued

Dry-cleaning solvent (item 1, WP 0716 00)
Tiedown strap (AR) (item 205, WP 0718 00)
Preformed packings (4) (item 230, WP 0718 00)
Adhesive (item 25, WP 0716 00)

Equipment Conditions

Battery power disconnected (WP 0256 00)
APU cover assembly removed (WP 0413 00)
Engine deck assembly removed (WP 0417 00)
STE/ICE pulse tachometer disconnected (WP 0695 00)

Personnel Required

Three

WARNING

Tracks must be blocked so that the vehicle will not roll out of control. When powerpack is disconnected, vehicle is without brakes. Failure to securely block vehicle tracks may result in severe injury or death to personnel or equipment damage.

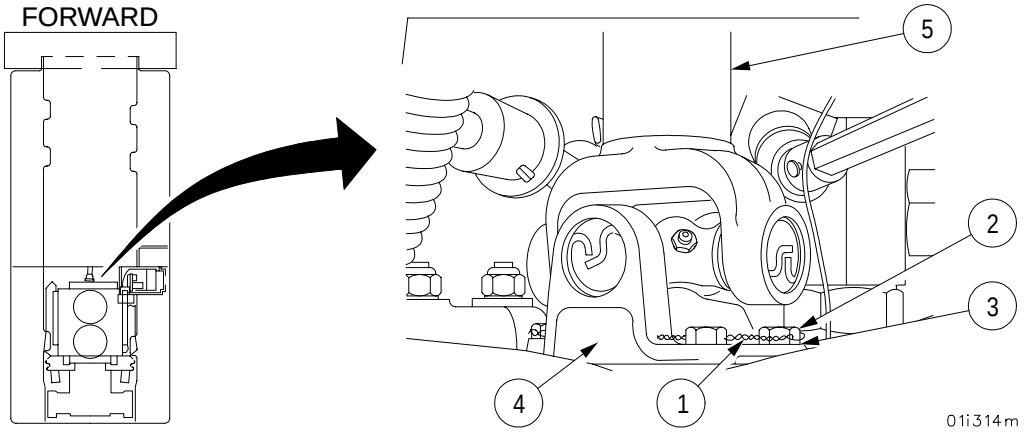
POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

Removal

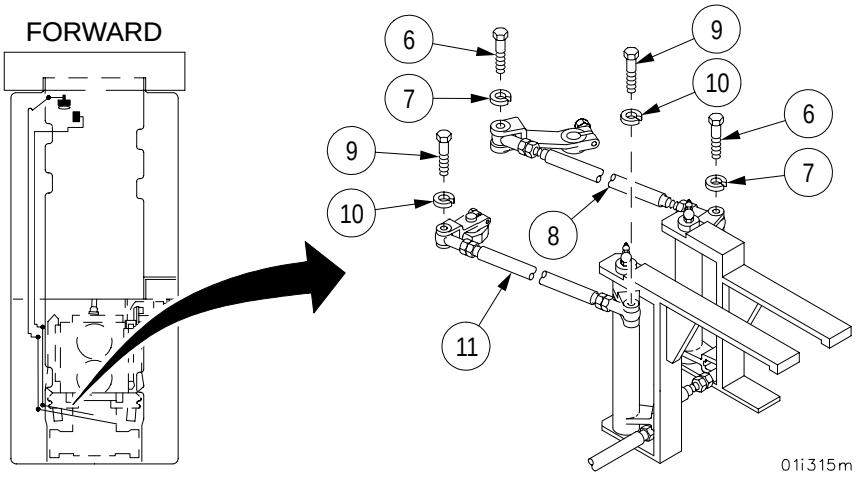
NOTE

If necessary to turn propeller shaft to access screws, connect battery power and turn vehicle MASTER switch to ON position. Hold FUEL SHUTOFF switch in OFF position and touch STARTER switch. When screws are in position for removal, turn vehicle MASTER switch to OFF position and disconnect battery power.

1. Cut nonelectrical wire (1) and remove from screws (2). Discard nonelectrical wire.
2. Remove four screws (2) and four flat washers (3) from power takeoff coupling (4).
3. Slide propeller shaft (5) toward bulkhead.



4. Remove two screws (6), two lockwashers (7) and transmission steering rod (8). Discard lockwashers.
5. Remove two screws (9), two lockwashers (10) and transmission shifting rod (11). Discard lockwashers.



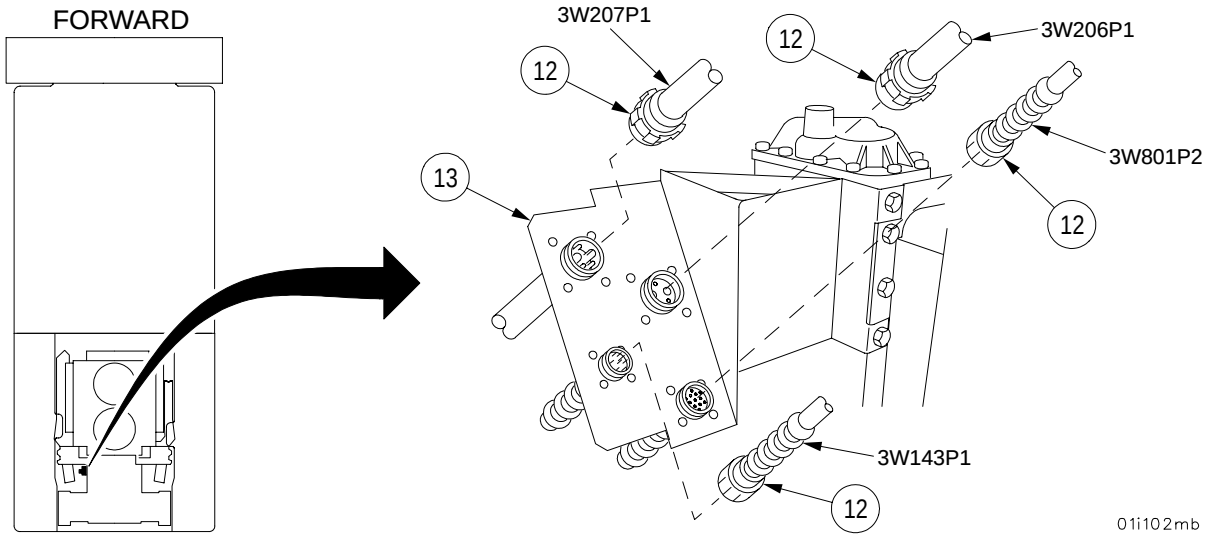
POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

Removal-Continued

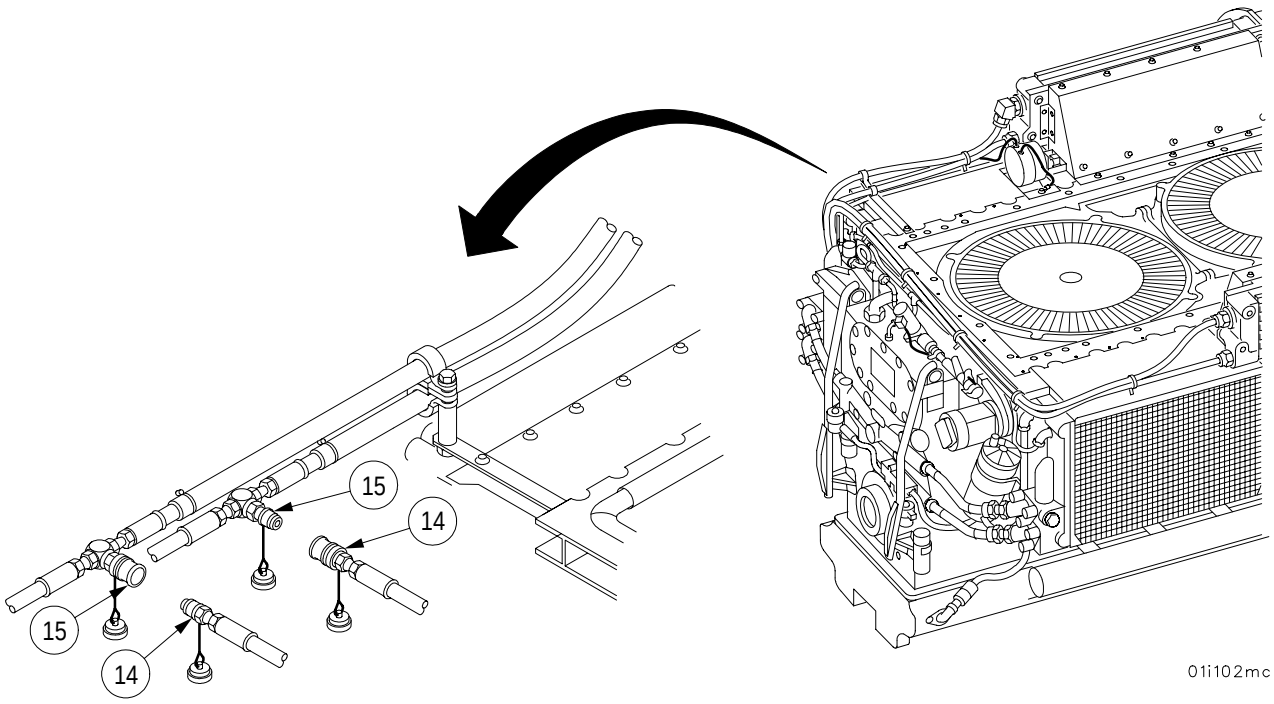
NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

6. Disconnect four wiring harnesses (12) from electrical connector panel bracket (13).



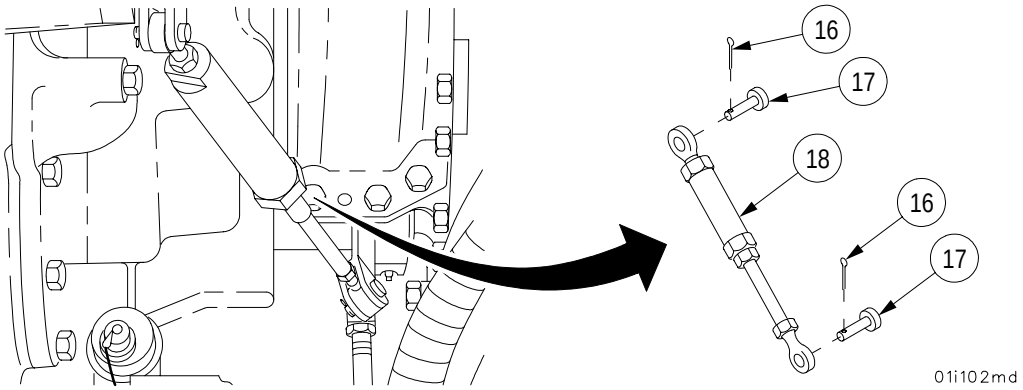
7. Disconnect two hydraulic oil cooler bulkhead hoses (14) at quick-disconnects (15).



POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

Removal-Continued

8. Remove two cotter pins (16), two headed pins (17) and brake air valve linkage (18). Discard cotter pins.



CAUTION

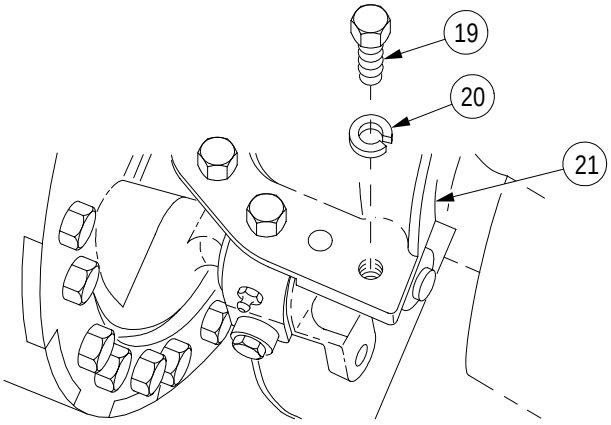
Do not scratch or damage saddle caps. A defective cap may cause oil leaks after installation. Remove nicks and burrs prior to installation.

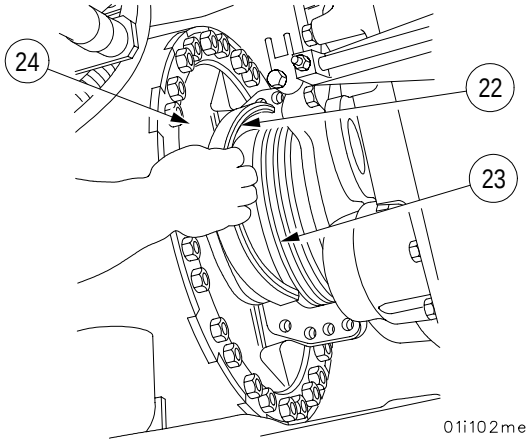
NOTE

There are left and right output drive saddle caps and retainers. The procedures are the same for both saddle caps and retainers.

9. Remove six screws (19), six lockwashers (20), output drive saddle cap (21) and retainer (22). Discard lockwashers.

10. Pry couplings (23) out of transmission assembly into reduction drives (24).

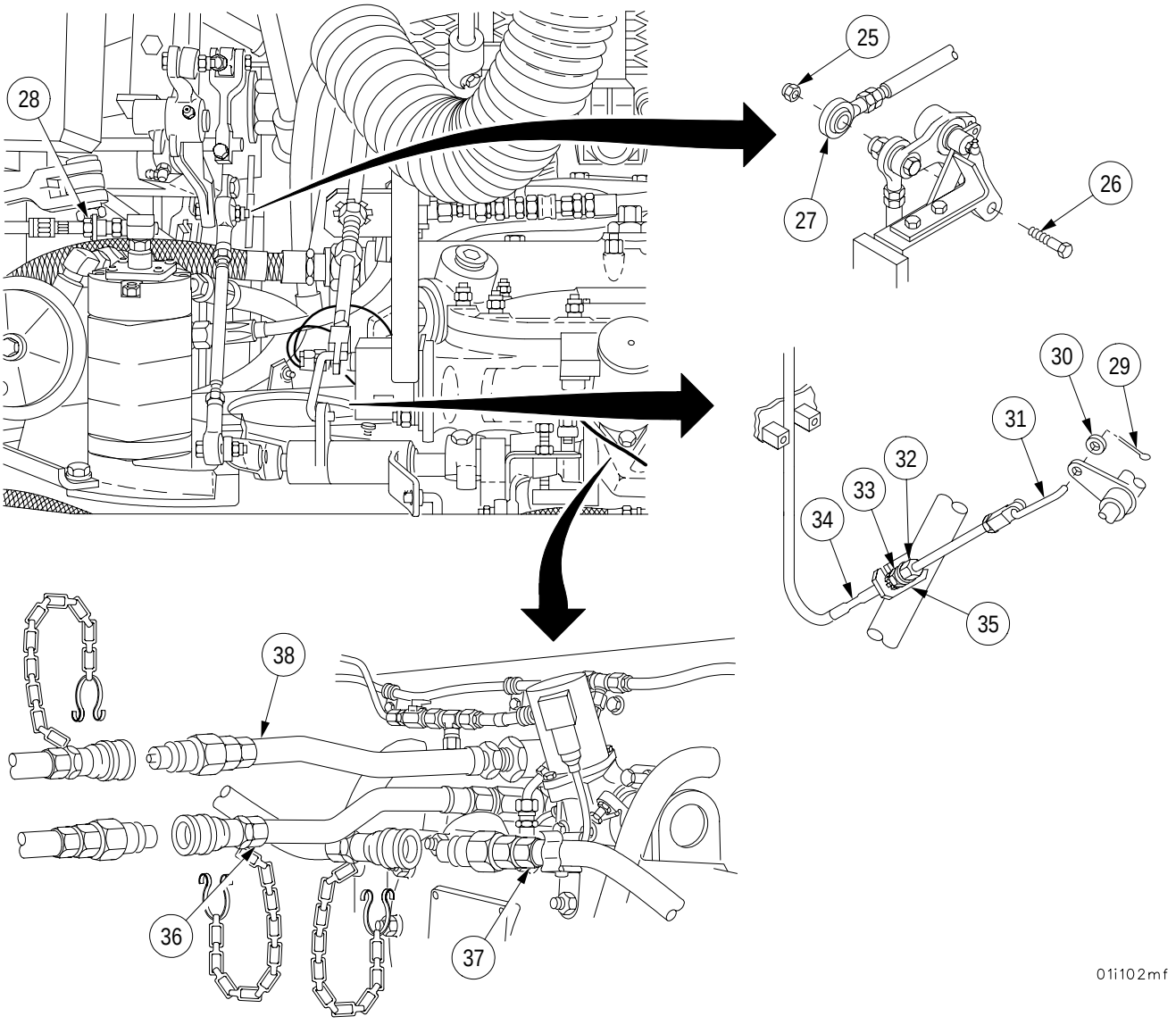




POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

Removal-Continued

11. Remove self-locking nut (25), screw (26) and disconnect throttle linkage (27). Discard self-locking nut.
12. Disconnect tachometer cable (28).
13. Remove cotter pin (29), flat washer (30) and disconnect manual fuel shutoff connecting link (31). Discard cotter pin.
14. Loosen jam nut (32) and nut (33). Remove manual fuel shutoff control assembly (34) from engine guide (35).
15. Unclip connecting rings and disconnect fuel return hose (36), main fuel hose (37) and fire extinguisher line (38).



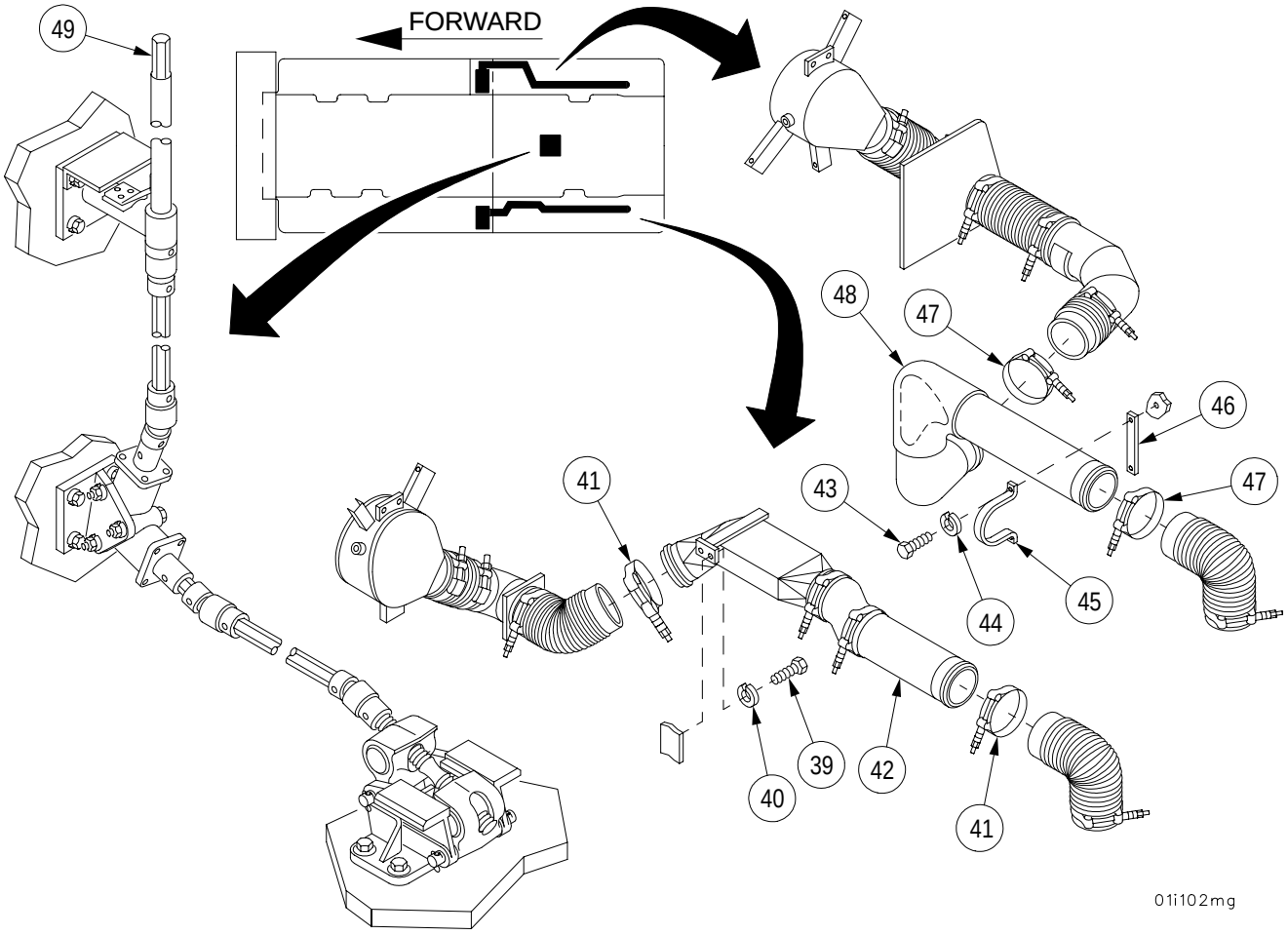
POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

Removal-Continued

CAUTION

Cover turbosupercharger openings with tape or caps after removal of air ducts. Cover or cap all air ducts and air induction system openings to prevent dust and foreign material from entering the air induction system. Failure to comply can result in major engine damage.

16. Remove two screws (39), two lockwashers (40) and loosen two hose clamps (41) and remove vehicle left side air duct (42) and two hose clamps (41). Discard lockwashers.
17. Remove two screws (43), two lockwashers (44), strap (45), bar (46) and loosen two hose clamps (47) and remove vehicle right side air duct (48) and two hose clamps (47). Discard lockwashers.
18. Turn engine mount release rod (49) counterclockwise as far as possible.



POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

Removal-Continued

19. Using tiedown straps, secure the throttle linkage, line retaining clips or other loose or dangling items to the powerpack.

CAUTION

To avoid damage to the powerpack, ensure all attaching powerpack parts are clear of vehicle structure when lifting powerpack out of vehicle.

NOTE

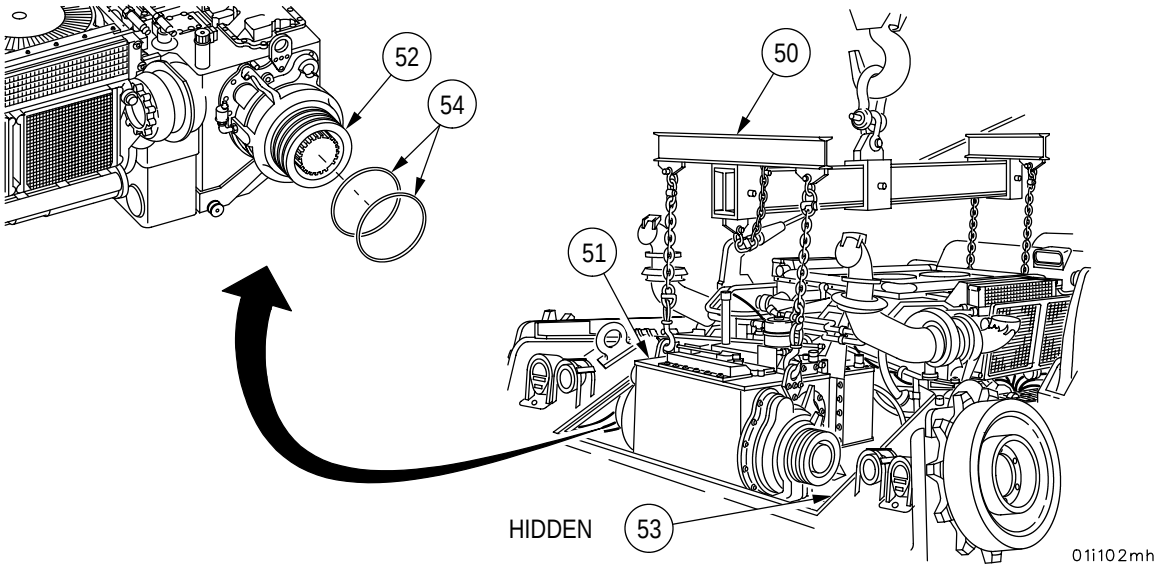
Hoisting beam is marked POWERPACK M88A2 to aid in rigging to powerpack.

20. Attach hoisting beam (50) to powerpack (51) and lift powerpack (51) so that powerpack clears the vehicle hull.
21. Install final drive sleeve tool on final drive shaft to prevent shaft from sliding into final drives.
22. Install transmission parts kit on both transmission output housings (52).

CAUTION

Never set powerpack directly on ground. Engine or transmission components could be damaged.

23. Remove powerpack (51) from vehicle and set on wooden blocks on a solid surface. Cover ends of final drive output drives (53), ports and connection points with a suitable waterproof material.
24. Remove two preformed packings (54) from inner and middle grooves on both transmission output housings (52). Discard preformed packings.



POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

Inspection

Powerpack should be given a general inspection in the following areas whenever the powerpack is removed from the vehicle:

NOTE

Replace or repair any defective or damaged item or component as required. If replacement or repair is beyond scope of unit level maintenance, notify support maintenance.

1. Check gaskets, seals and covers for seepage of fuel and oil.
2. Check for damaged, distorted or broken hose, tube or line connector assemblies (nuts, adapters, reduction fittings and couplers).
3. Check fuel hoses, tubes and connectors for cracks, leaks and/or seepage of fuel (WP 0217 00).
4. Check oil/hoses, tubes and connectors for cracks, leaks and/or seepage of oil (WP 0199 00 and WP 0200 00).
5. Check for stripped or damaged threads on connector assemblies and retaining bolts, nuts or studs. Repair threads or replace components/items as appropriate.
6. Check electrical wires, leads and connectors for cracked insulation, oil and grease on cables/connectors.
7. Check for broken screws or bolts. Replace broken screws or bolts.
8. Check for damaged, burred, pitted or gummed-up seals, gaskets or preformed packings. Clean, remove burrs or replace components as required.
9. Check hull engine compartment for pools of oil/fuel.
10. Check oil filters (WP 0196 00) and fuel filters (WP 0222 00) for collection of sediment on filter elements.
11. Inspect and adjust the fire extinguisher nozzles in engine compartment.
12. Check transmission output drives, engine mountings and connections in engine compartment to determine if items are serviceable and positioned to receive powerpack.
13. Clean/flush engine compartment prior to installation of powerpack.
14. Perform necessary engine compartment lubricating procedures (WP 0187 00).
15. Perform engine ground hop (WP 0189 00) and check operation of powerpack and components.

Operation of the powerpack outside the vehicle lets maintenance personnel inspect control and drive components of the powerpack unit by hand-operating control linkages on the transmission. Components can be checked for proper functioning and performance with powerpack unit outside of the vehicle without harm to the unit.

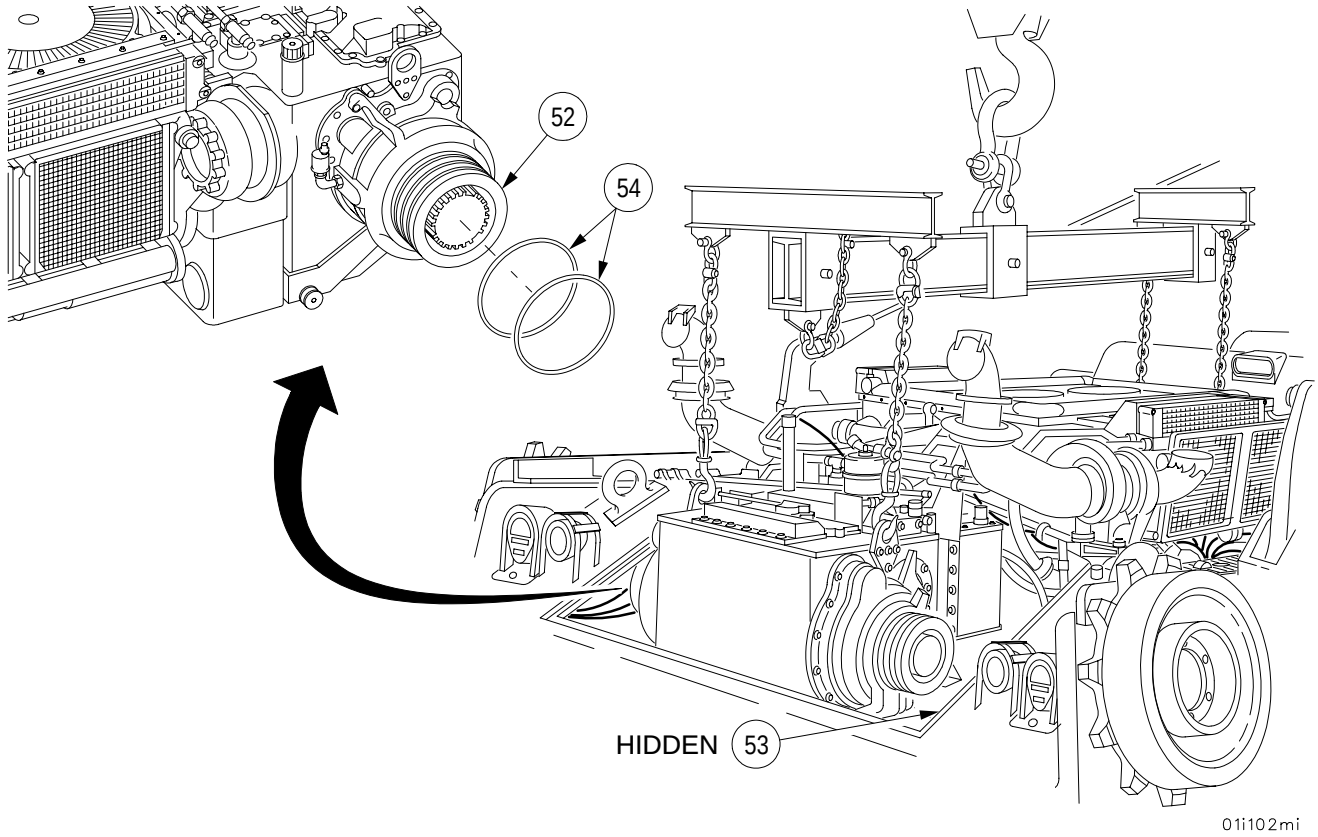
POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

Installation

CAUTION

Make sure battery power is disconnected to avoid equipment damage when installing the powerpack.

1. Remove transmission parts kit from both transmission output housings (52) and coverings over ends of output drives (53) in hull.
2. Verify that alignment half ring (not shown) in right output drive saddle is securely in groove of saddle with ends flush with saddle flanges (Chapter 10).
3. Install two new preformed packings (54) in inner and middle grooves on each side of transmission output housings (52).



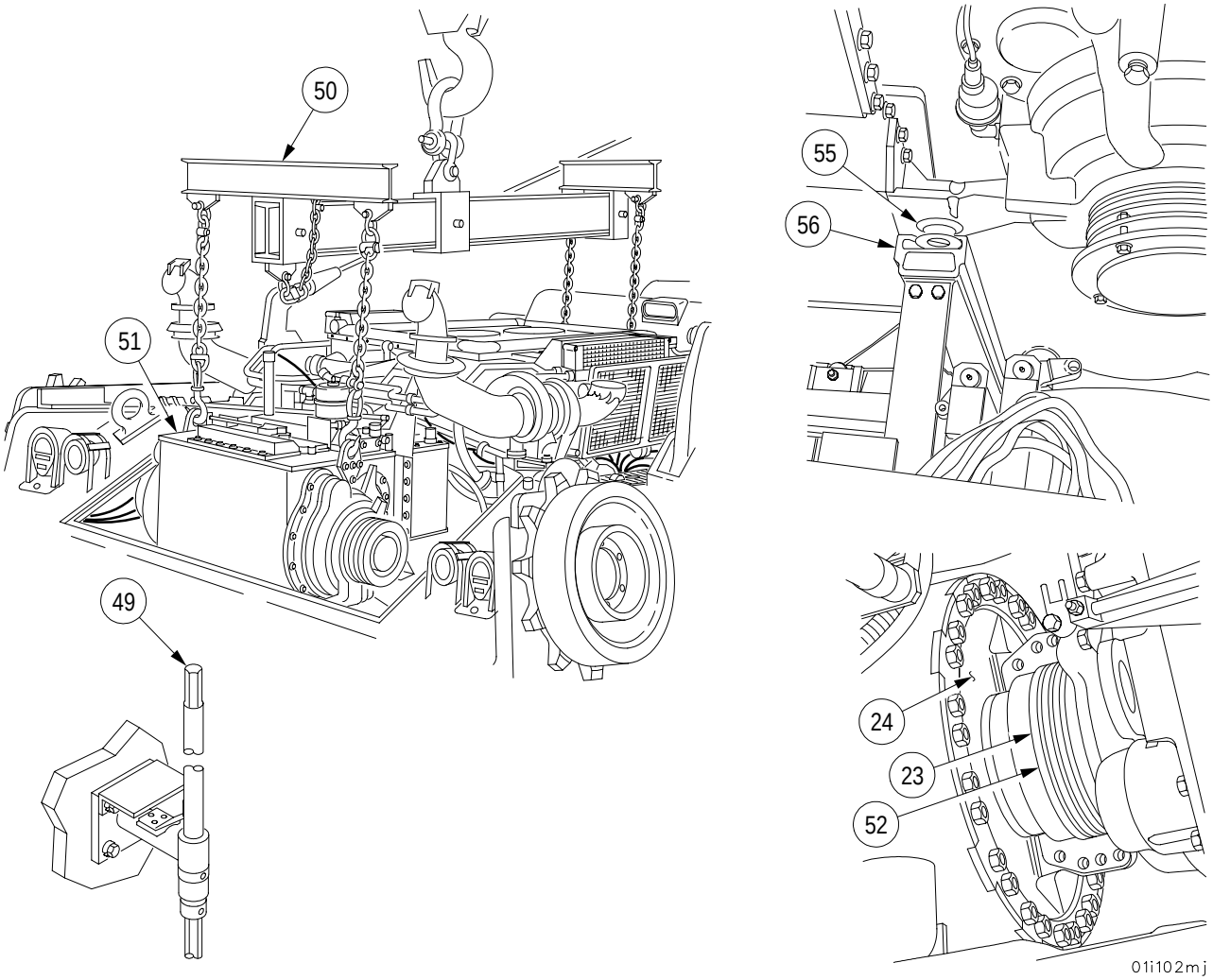
POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

Installation-Continued

CAUTION

When installing powerpack, be sure that half ring in right output drive saddle fits in outermost groove of transmission output housing.

4. Position powerpack (51) in hull using hoisting beam (50) and suitable lifting device. Be sure that transmission guide rollers (55) are inserted in hull guide rails (56).
5. Remove final drive sleeve tool from final drive shaft.
6. Turn engine mount release rod (49) clockwise as far as possible to secure engine to hull, remove hoisting beam (50).
7. Pry drive output couplings (23) out of reduction drives (24) and into transmission output housings (52) as far as possible.



POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

Installation-Continued

8. Remove access plug (57) from left steer clutch housing (58).

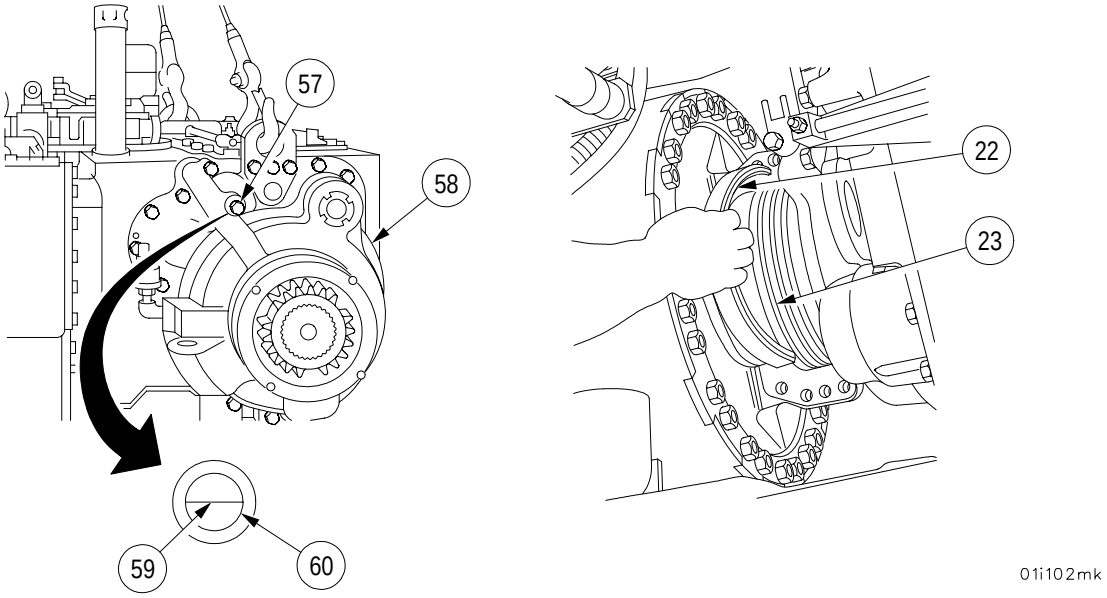
CAUTION

Be sure to use a heavy-duty screwdriver to turn steer tie shaft. Shaft resistance could break a light-duty screwdriver shaft inside transmission, which would require replacement of entire transmission assembly.

NOTE

Coupling alignment requires one person on each side of transmission. Left shaft is turned to help align right output drive coupling and vice versa Tie shafts are difficult to move and may require use of a wrench on screwdriver to turn shaft. Couplings also have some vertical movement possible to help align parts.

9. Insert screwdriver in hole and engage slot (59) in left steer tie shaft (60).
10. Have an assistant with second screwdriver pry right drive coupling toward transmission housing while you turn left steer tie shaft (60) until coupling and transmission output gears mesh. Slide coupling (23) into transmission as far as possible and install coupling retainer (22).
11. Remove screwdrivers and install access plug (57) in left steer clutch housing (58).
12. Repeat steps 7 through 10 for right steer clutch housing and left coupling.



POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

Installation-Continued



WARNING

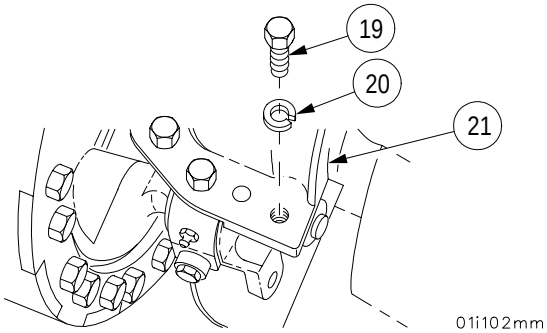
CAUTION

Do not scratch or damage saddle caps. A defective cap may cause oil leaks after installation. Remove nicks and burrs prior to installation.

13 Clean saddle cap (21) and screws (19) using dry-cleaning solvent.

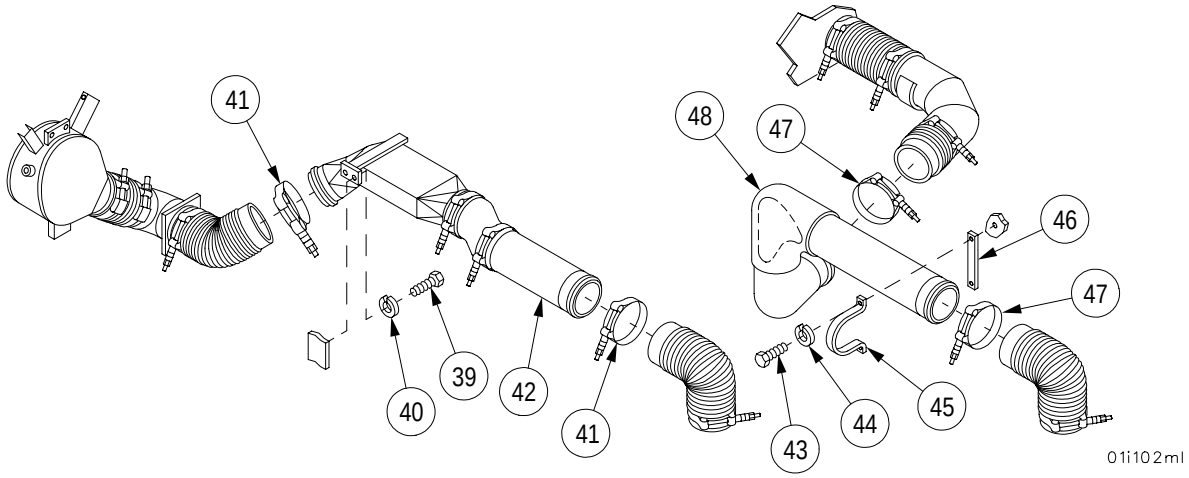
14 Apply adhesive uniformly on saddle cap (21) flanges and mounting screws (19).

15 Install saddle caps (21) on both output drives using six screws (19) and six new lockwashers (20). Torque screws to 83-100 lb-ft (113-136 N$m).



16 Install bar (46), air duct (48) with two screws (43) and two new lockwashers (44). Slide hose ends on duct, tighten two hose clamps (47).

17 Install left air duct (42) and two hose clamps (41) with two screws (39) and two new lockwashers (40). Slide hose ends on duct, tighten two hose clamps (41).



POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

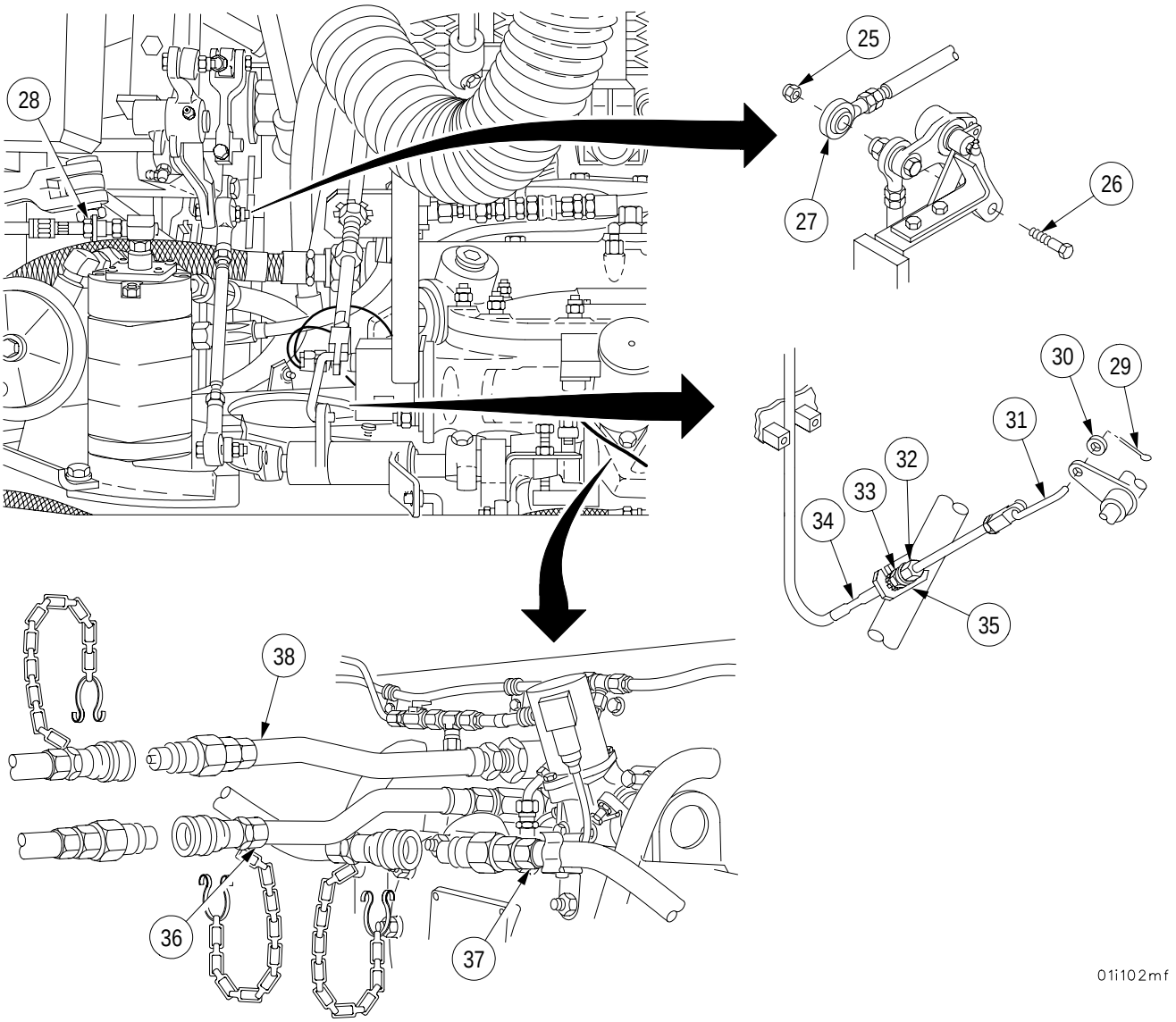
Installation-Continued

18. Connect fire extinguisher line (38), main fuel line (37) and fuel return hose (36). Secure with connecting ring.

NOTE

Make sure manual fuel control assembly connecting linkage aligns with hole in throttle linkage before securing nut and jam nut on engine guide.

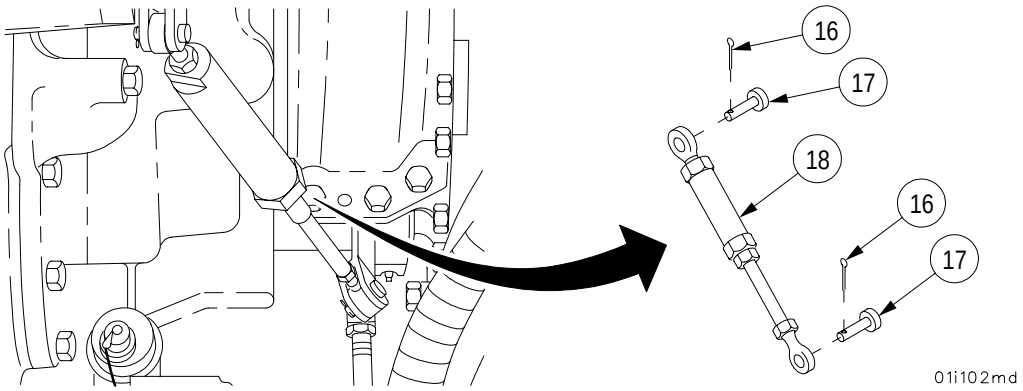
19. Install manual fuel shutoff control assembly (34) on engine guide (35) with nut (33) and jam nut (32).
20. Connect manual fuel shutoff connecting link (31) with flat washer (30) and new cotter pin (29).
21. Connect tachometer cable (28).
22. Connect throttle linkage (27) with screw (26) and new self-locking nut (25).



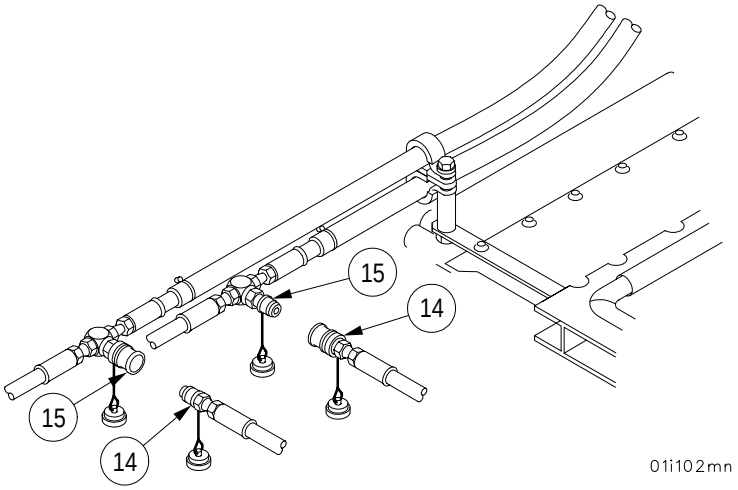
POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

Installation-Continued

23. Install brake air valve linkage (18) with two headed pins (17) and two new cotter pins (16).



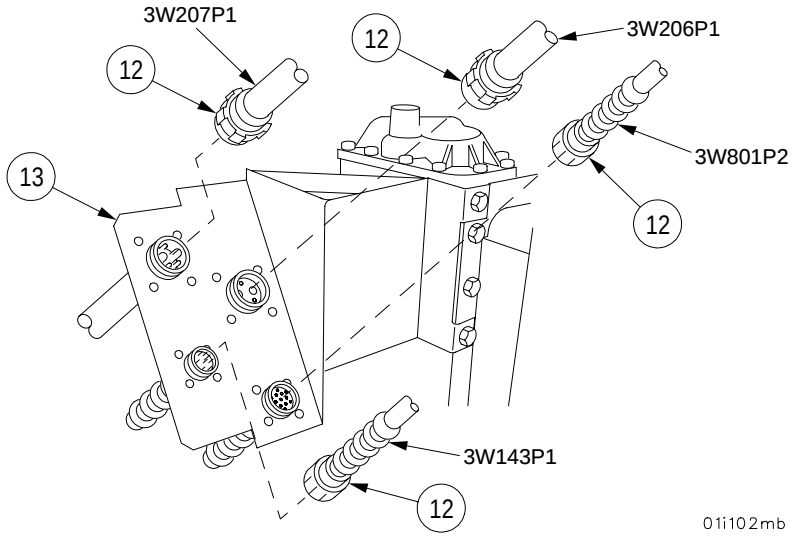
24. Connect two hydraulic oil cooler bulkhead hoses (14) at two quick-disconnects (15).



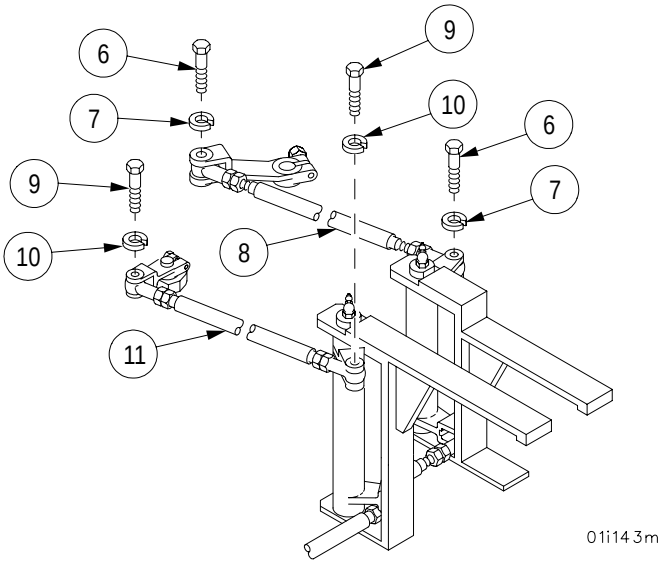
POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

Installation-Continued

25. Connect four cables (12) to electrical connector panel bracket (13).



26. Connect transmission shifting rod (11) with two screws (9) and two new lockwashers (10).
27. Connect transmission steering rod (8) with two screws (6) and two new lockwashers (7).



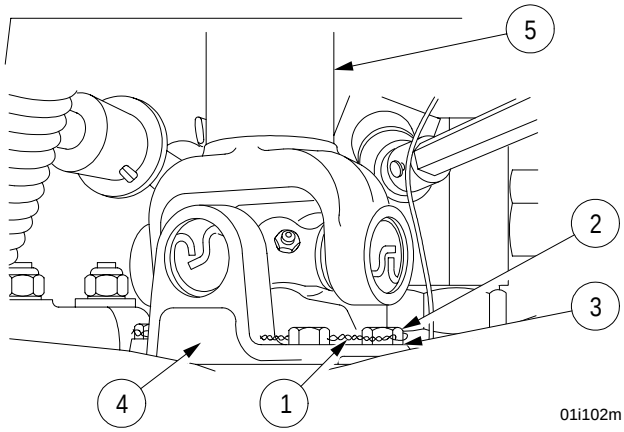
POWERPACK ASSEMBLY REPLACEMENT - CONTINUED 0188 00

Installation-Continued

NOTE

If necessary to turn propeller shaft to align screw holes, connect battery power and turn vehicle MASTER switch to ON position. Hold FUEL SHUTOFF switch in OFF position and touch STARTER switch. When holes are in position for installation, turn vehicle MASTER switch to OFF position and disconnect battery power.

28. Slide propeller shaft (5) into position on power takeoff coupling (4), secure with four flat washers (3) and four screws (2). Using torque wrench adapter (item 127, WP 0717 00) and torque wrench, torque screws (2) to 97-116 lb-ft (132-157 N•m). Secure screws (2) with new nonelectrical wire (1) using double-twist method.



NOTE

FOLLOW-ON MAINTENANCE:
Connect STE/ICE pulse tachometer (WP 0695 00)
Install engine deck assembly (WP 0417 00)
Install APU cover assembly (WP 0413 00)
Connect battery power (WP 0256 00)

END OF TASK

ENGINE GROUND HOP KIT AND GROUND HOP AIR FILTRATION KIT 0189 00

THIS WORK PACKAGE COVERS:

Installation of Engine Ground Hop Kit, Removal of Engine Ground Hop Kit, Installation of Air Filtration Kit, Removal of Air Filtration Kit

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Engine ground hop kit (item 14, WP 0717 00)
Air filtration kit (item 116, WP 0717 00)
Torque wrench (item 21, WP 0717 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Powerpack removed (WP 0188 00)

References

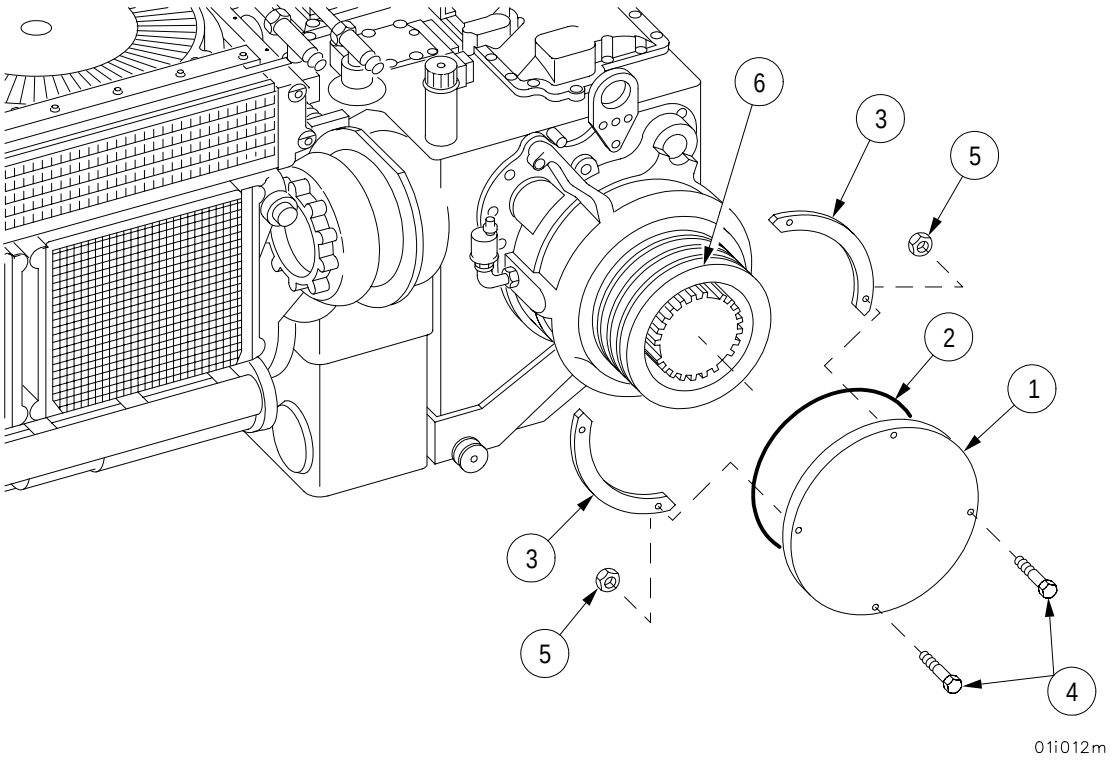
TM 9-2350-292-10

Installation of Engine Ground Hop Kit

CAUTION

Install transmission parts kit to prevent oil loss during engine operation outside of vehicle. Failure to install kit could result in equipment damage.

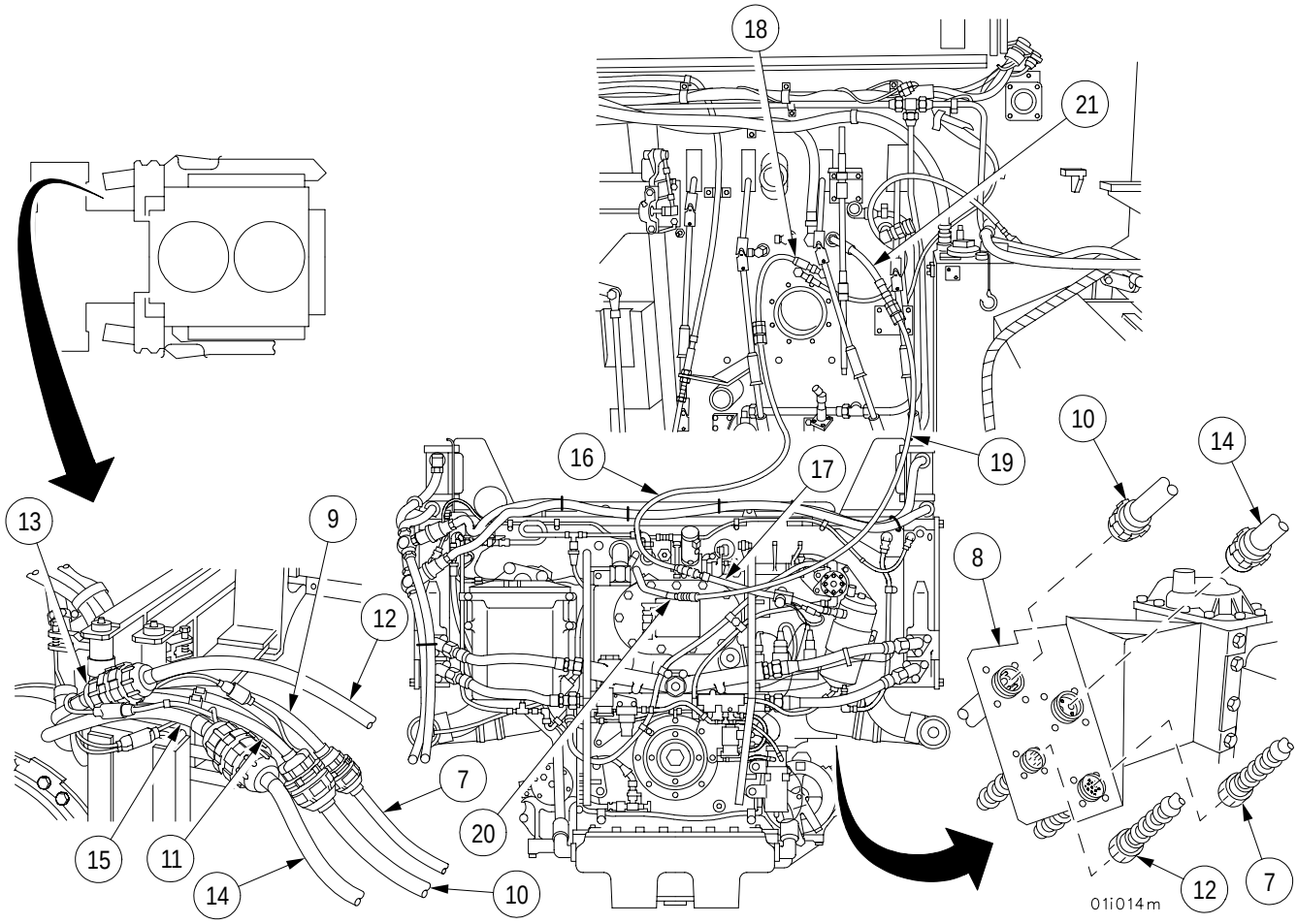
1. Install two plates (1), two seals (2), four retainers (3), eight screws (4) and eight nuts (5) on two output reduction housings (6).



ENGINE GROUND HOP KIT AND GROUND HOP AIR FILTRATION KIT - CONTINUED 0189 00

Installation of Engine Ground Hop Kit - Continued

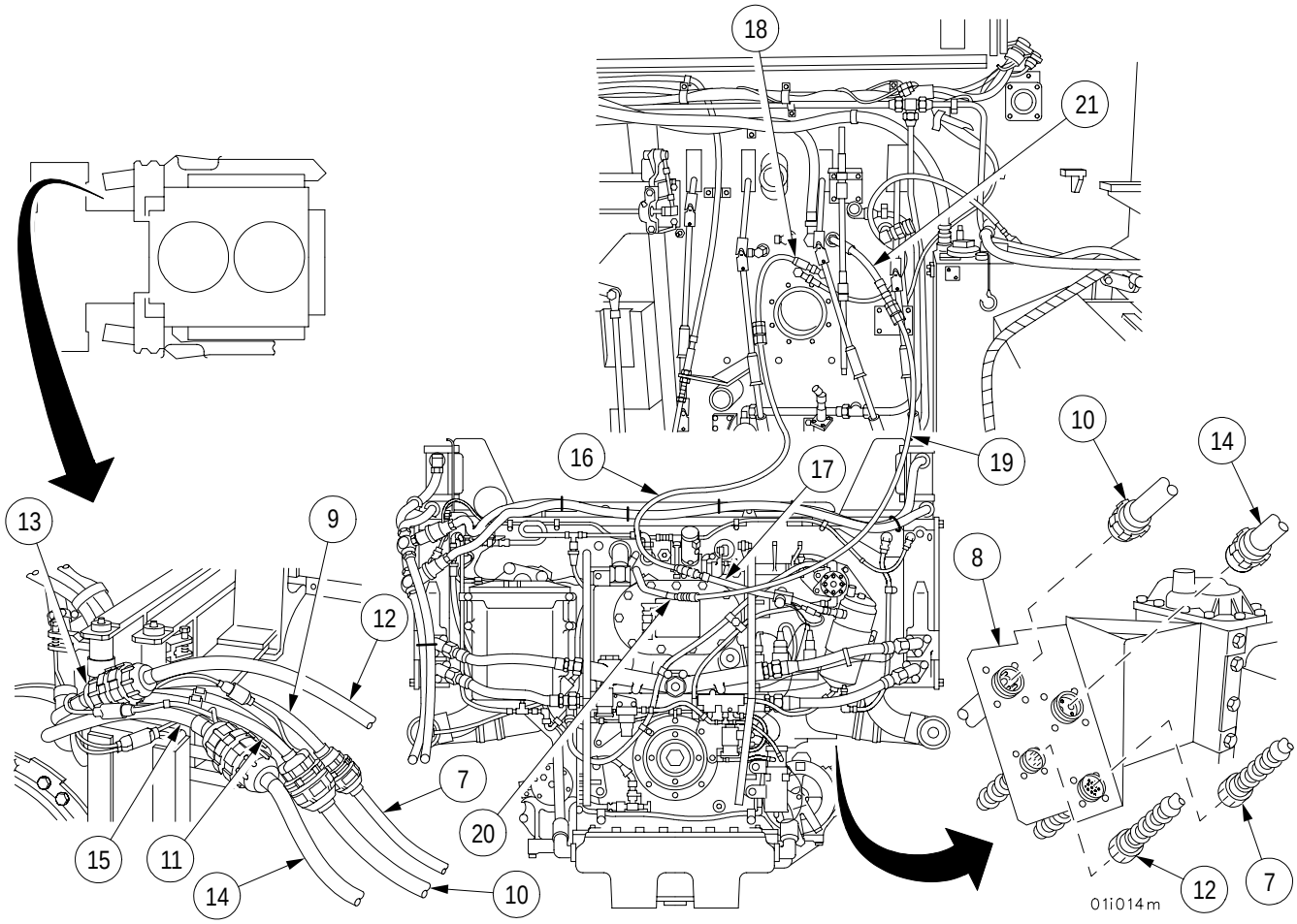
2. Connect wiring harness 5W905 (7) to engine disconnect bracket (8) and wiring harness 3W801 (9).
3. Connect wiring harness 5W903 (10) to engine disconnect bracket (8) and wiring harness 3W207 (11).
4. Connect wiring harness 5W904 (12) to engine disconnect bracket (8) and wiring harness 3W143 (13).
5. Connect wiring harness 5W902 (14) to engine disconnect bracket (8) and wiring harness 3W206 (15).
6. Connect hose assembly (16)-12365740 to fuel filter inlet hose assembly (17) and main fuel supply hose assembly (18).
7. Connect hose assembly (19)-12365740 to engine fuel return hose assembly (20) and fuel return hose assembly (21).
8. Install ground hop air filtration kit in accordance with WP 0189 00-6.



ENGINE GROUND HOP KIT AND GROUND HOP AIR FILTRATION KIT - CONTINUED 0189 00

Removal of Engine Ground Hop Kit

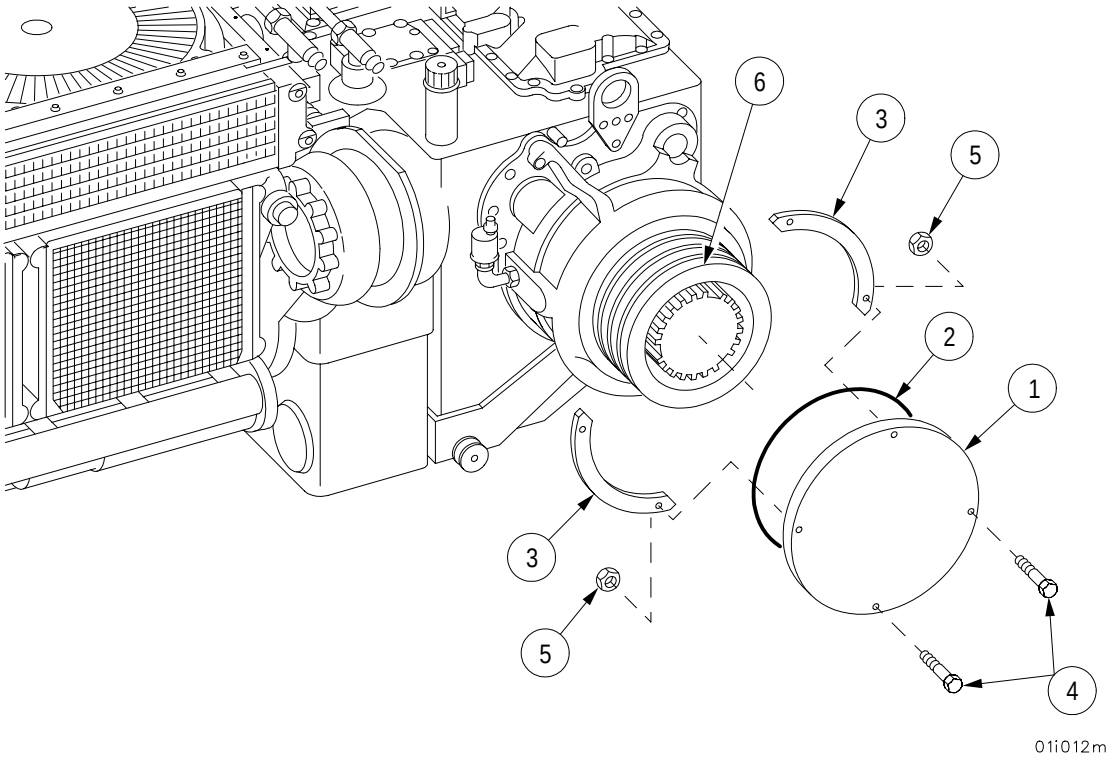
1. Remove ground hop air filtration kit in accordance with WP 0189 00-6.
2. Disconnect hose assembly (19)-12365740 from engine fuel return hose assembly (20) and fuel return hose assembly (21).
3. Disconnect hose assembly (16)-12365740 from fuel filter inlet hose assembly (17) and main fuel supply hose assembly (18).
4. Disconnect wiring harness 5W902 (14) from engine disconnect bracket (8) and wiring harness 3W206 (15).
5. Disconnect wiring harness 5W904 (12) from engine disconnect bracket (8) and wiring harness 3W143 (13).
6. Disconnect wiring harness 5W903 (10) from engine disconnect bracket (8) and wiring harness 3W207 (11).
7. Disconnect wiring harness 5W905 (7) from engine disconnect bracket (8) and wiring harness 3W801 (9).



ENGINE GROUND HOP KIT AND GROUND HOP AIR FILTRATION KIT - CONTINUED 0189 00

Removal of Engine Ground Hop Kit - Continued

8. Remove eight nuts (5), eight screws (4), two plates (1), two seals (2) and four retainers (3) from two output reduction housings (6).



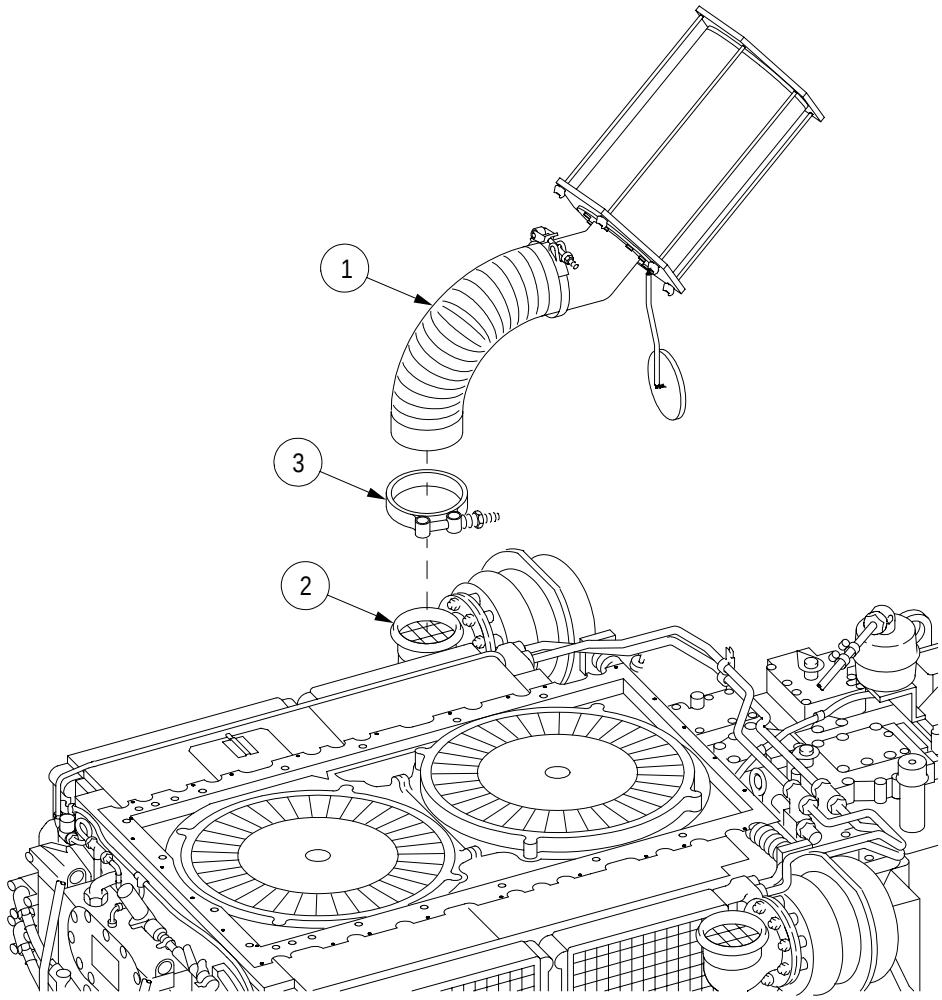
ENGINE GROUND HOP KIT AND GROUND HOP AIR FILTRATION KIT - CONTINUED 0189 00

Installation of Air Filtration Kit

NOTE

There are two air filtration filters. Both air filtration filters are installed in the same manner. This task installs only one air filtration filter.

Install hose (1) onto intake elbow (2) with clamp (3). Torque clamp (3) to 25-35 lb-ins (2.8-3.9 NSm).



HYDRAULIC OIL COOLERS REMOVED FOR CLARITY

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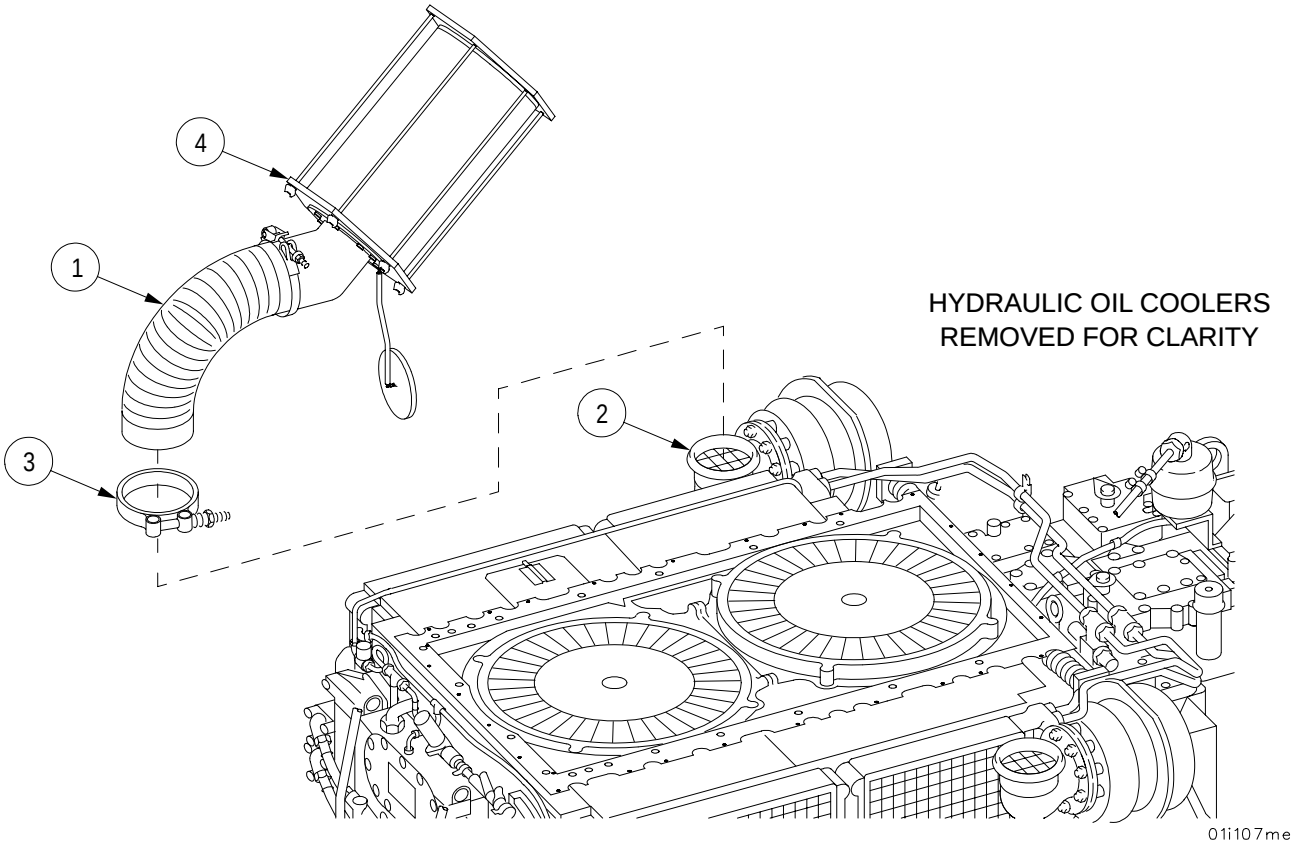
ENGINE GROUND HOP KIT AND GROUND HOP AIR FILTRATION KIT - CONTINUED 0189 00

Removal of Air Filtration Kit

NOTE

There are two air filtration filters. Both air filtration filters are removed in the same manner. This task removes only one air filtration filter.

1. Loosen clamp (3) and remove hose (1) from intake elbow (2).
2. Clean filter element (4) and hose (1). Cover open end of hose (1) to prevent contaminants from entering filter element (4).
3. Remove powerpack ground hop kit in accordance with WP 0189 00-3.



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

END OF TASK

ENGINE SHROUD SEALS REPLACEMENT 0190 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Engine deck assembly removed (WP 0417 00)

Materials/Parts
Lockwashers (28) (item 2, WP 0718 00)

NOTE

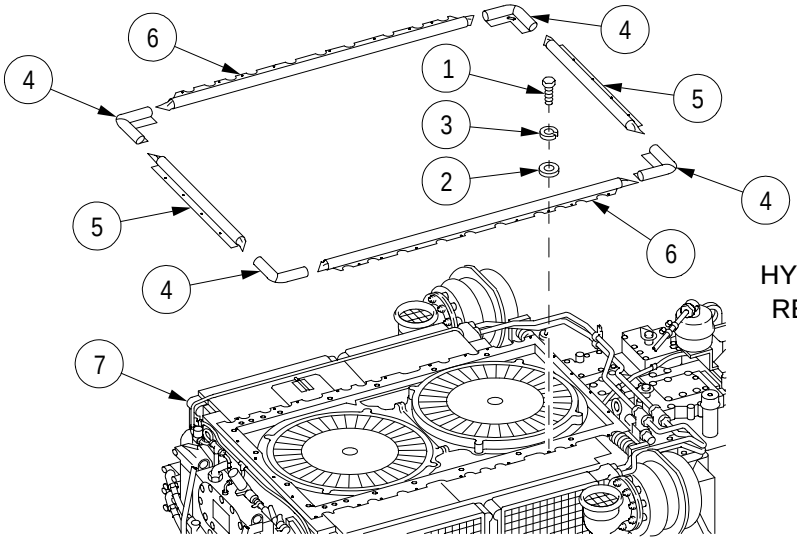
This task covers complete replacement of all engine shroud seals. Perform only those steps necessary to replace the defective parts.

Removal

1. Remove 28 screws (1), 28 flat washers (2), 28 lockwashers (3), four seals (4), two seals (5) and two seals (6) from engine (7). Discard lockwashers.
2. Inspect parts for damage and replace as required.

Installation

Install two seals (6), two seals (5) and four seals (4) on engine (7) with 28 screws (1), 28 new lockwashers (3) and 28 flat washers (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install engine deck assembly (WP 0417 00)

END OF TASK

ENGINE AIR INTAKE ELBOW REPLACEMENT 0191 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Multimeter (item 84, WP 0717 00)

Materials/Parts
Lockwashers (8) (item 10, WP 0718 00)
Gasket (item 233, WP 0718 00)

Equipment Conditions
Engine deck assembly removed (WP 0417 00)

Personnel Required
Two

NOTE

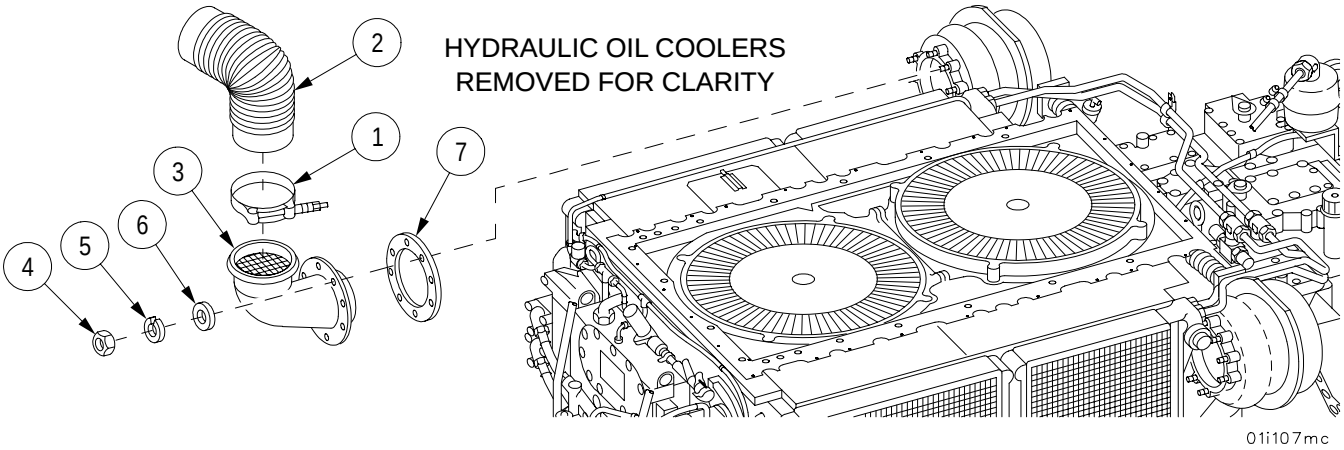
The procedures are the same for both left and right air intake elbows.

Removal

1. Remove clamp (1) and air intake hose (2) from elbow (3).
2. Remove eight nuts (4), eight lockwashers (5), eight flat washers (6), elbow (3) and gasket (7). Discard lockwashers and gasket.
3. Inspect parts for damage and replace as required.

Installation

1. Install elbow (3) and new gasket (7) with eight flat washers (6), eight new lockwashers (5) and eight nuts (4).
2. Install air intake hose (2) on elbow (3) with clamp (1).



NOTE

FOLLOW-ON MAINTENANCE:
Install engine deck assembly (WP 0417 00)

END OF TASK

ENGINE MOUNT ASSEMBLY REPAIR 0192 00

THIS WORK PACKAGE COVERS:
Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Torque wrench (item 9, WP 0717 00)
Socket wrench socket (item 29, WP 0717 00)

Materials/Parts
Self-locking nuts (8) (item 231, WP 0718 00)
Self-locking nuts (4) (item 235, WP 0718 00)

Equipment Conditions
Powerpack removed (WP 0188 00)

Removal

Remove six self-locking nuts (1), six flat washers (2), six screws (3) and mount assembly (4). Discard self-locking nuts.

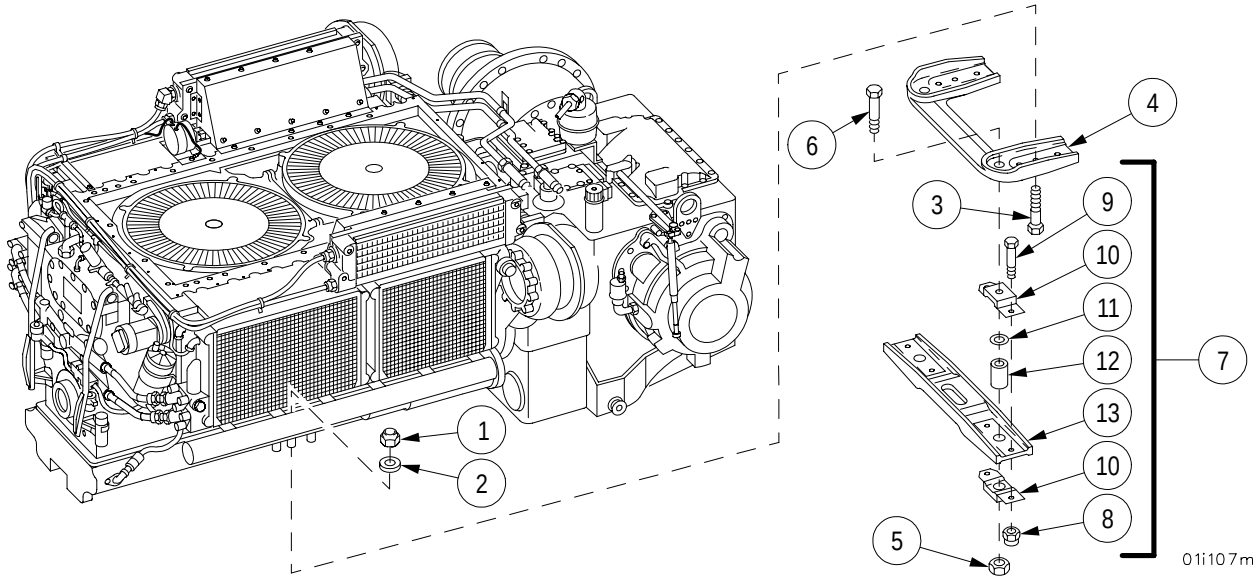
Disassembly

1. Remove two self-locking nuts (5), two screws (6) and saddle assembly (7). Discard self-locking nuts.

NOTE

Note the quantity and position of shim(s) being removed to ensure shim(s) are installed in the same position.

2. Remove two self-locking nuts (8), two screws (9), two resilient mounts (10), shim(s) (11) and spacer sleeve (12) from each end of saddle (13). Discard lockwashers.
3. Inspect parts for damage and replace as required.



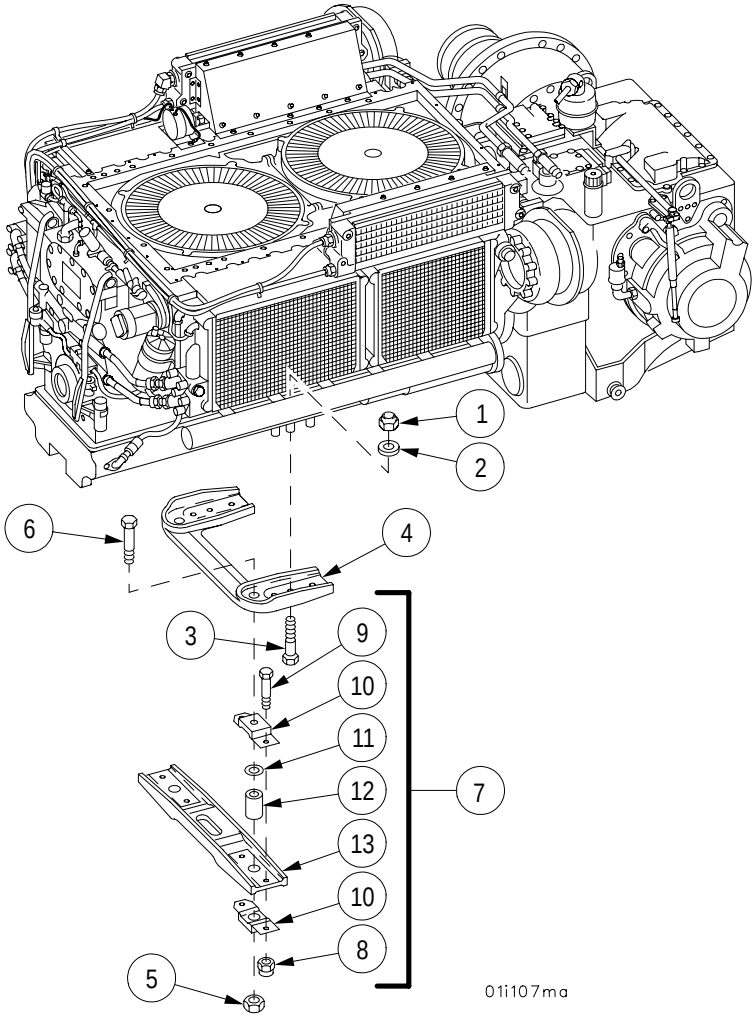
ENGINE MOUNT ASSEMBLY REPAIR - CONTINUED 0192 00

Assembly

1. Install spacer sleeve (12), shim(s) (11), two resilient mounts (10), two screws (9) and two new self-locking nuts (8) on each end of saddle (13).
2. Install saddle assembly (7) with two screws (6) and two new self-locking nuts (5).

Installation

Install mount assembly (4) with six screws (3), six flat washers (2) and six new self-locking nuts (1). Torque screws to 250-280 lb-ft (339-379.7 NSm).



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

END OF TASK

ENGINE REAR MOUNT AND BASE ASSEMBLY REPAIR 0193 00

THIS WORK PACKAGE COVERS:

Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions

Powerpack removed (WP 0188 00)

Materials/Parts

Cotter pins (8) (item 15, WP 0718 00)
Cotter pins (4) (item 51, WP 0718 00)
Lockwashers (3) (item 9, WP 0718 00)
Lockwashers (8) (item 2, WP 0718 00)
Lockwashers (4) (item 84, WP 0718 00)

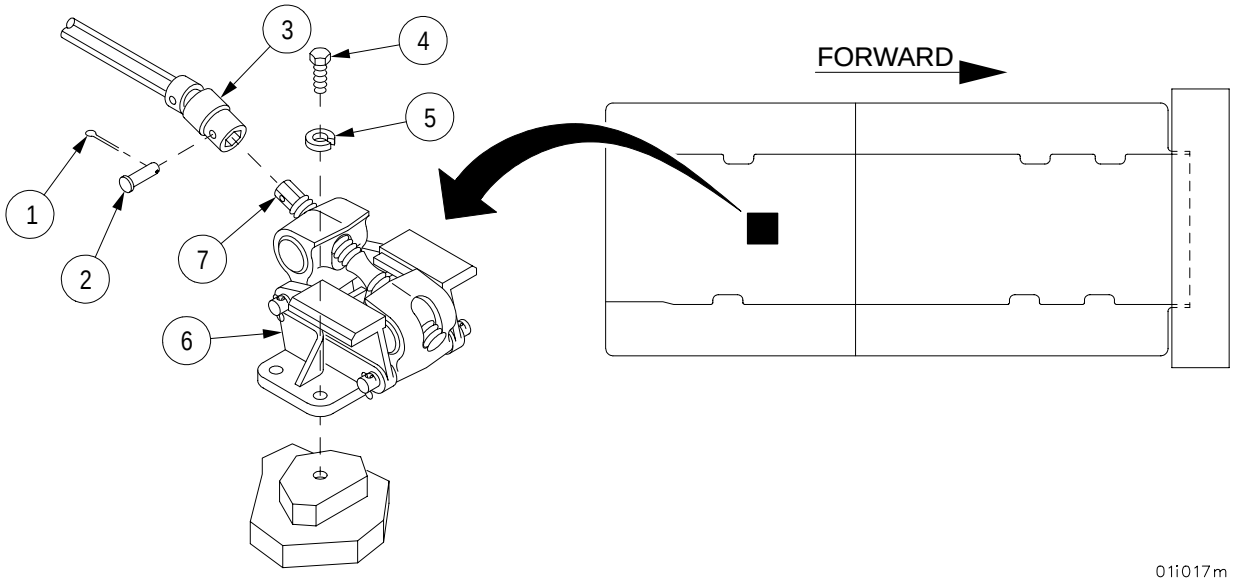
NOTE

Perform Removal steps 1, 2, 3 and Disassembly step 4 and Installation steps 14, 15 and 16 for replacement of base assembly.

Perform Disassembly steps 1 through 4 and Assembly steps 1 through 3 for maintenance of base assembly.

Removal

1. Remove cotter pin (1) and straight headed pin (2) from universal joint (3). Discard cotter pin.
2. Remove four screws (4) and four lockwashers (5) from base assembly (6). Discard lockwashers.
3. Slide tension bolt (7) out of universal joint (3) and remove base assembly (6) from vehicle hull.



ENGINE REAR MOUNT AND BASE ASSEMBLY REPAIR - CONTINUED 0193 00

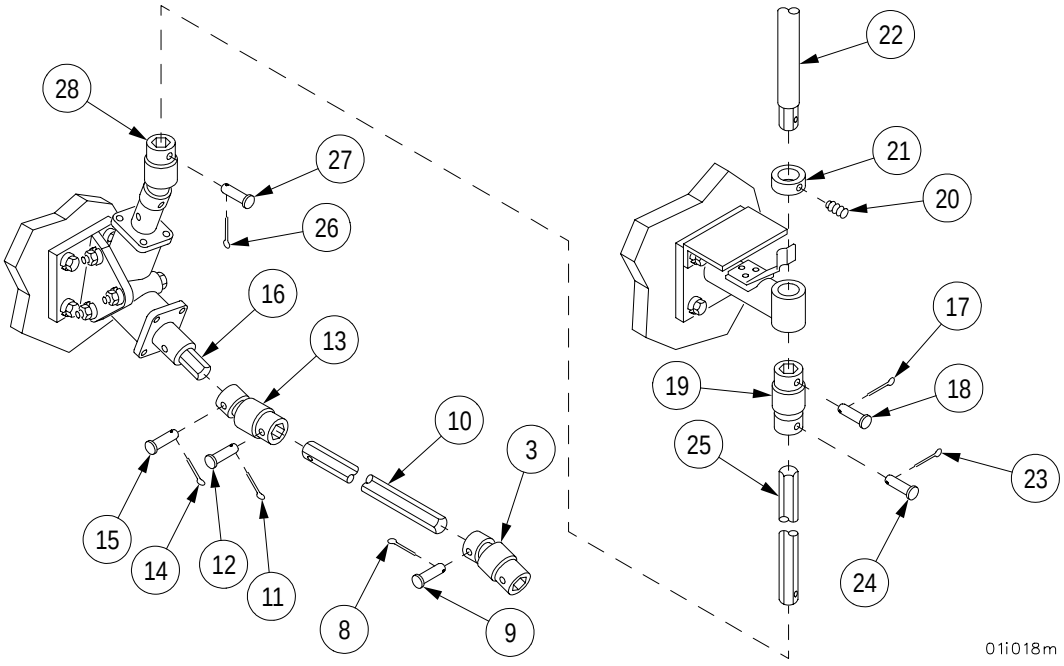
Removal-Continued

4. Remove cotter pin (8), straight headed pin (9) and universal joint (3) from straight shaft (10). Discard cotter pin.
5. Remove cotter pin (11), straight headed pin (12) and straight shaft (10) from universal joint (13). Discard cotter pin.
6. Remove cotter pin (14), straight headed pin (15) and universal joint (13) from coupling shaft (16). Discard cotter pin.

CAUTION

Shaft collar and upper vertical shaft may be difficult to remove. Do not use excessive force to try and loosen parts. Use penetrating oil as necessary to loosen parts. Failure to comply may result in equipment damage.

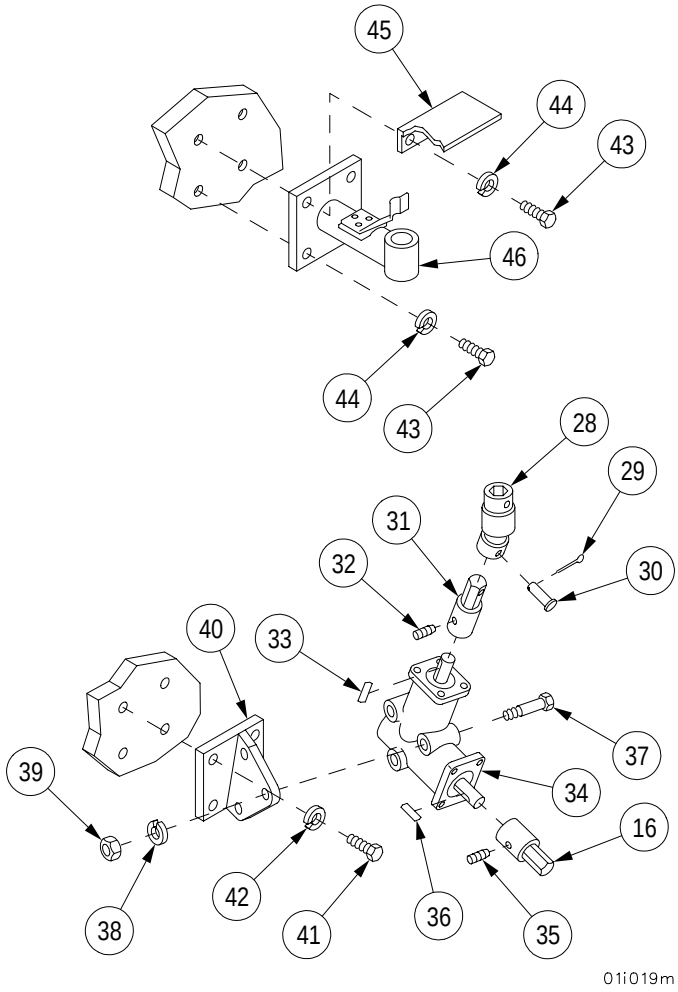
7. Remove cotter pin (17) and straight headed pin (18) from universal joint (19). Discard cotter pin.
8. Loosen set screw (20) on shaft collar (21) and remove upper vertical shaft (22) and collar (21) while holding universal joint (19).
9. Remove cotter pin (23), straight headed pin (24) and universal joint (19) from lower vertical shaft (25). Discard cotter pin.
10. Remove cotter pin (26), straight headed pin (27) and lower vertical shaft (25) from universal joint (28). Discard cotter pin.



ENGINE REAR MOUNT AND BASE ASSEMBLY REPAIR - CONTINUED 0193 00

Removal-Continued

11. Remove cotter pin (29), straight headed pin (30) and universal joint (28) from coupling shaft (31). Discard cotter pin.
12. Loosen set screw (32), remove coupling shaft (31) and machine key (33) from gear assembly (34).
13. Loosen set screw (35), remove coupling shaft (16) and machine key (36) from gear assembly (34).
14. Remove three screws (37), three lockwashers (38), three nuts (39) and gear assembly (34) from bracket (40). Discard lockwashers.
15. Remove four screws (41), four lockwashers (42) and bracket (40) from bulkhead. Discard lockwashers.
16. Remove four screws (43), four lockwashers (44), instruction plate (45) and shaft adapter bracket (46). Discard lockwashers.



ENGINE REAR MOUNT AND BASE ASSEMBLY REPAIR - CONTINUED 0193 00

Disassembly

NOTE

Front and rear barrel nuts are threaded in opposite directions. Keep nuts separated to ensure proper placement during reassembly.

1. Remove four cotter pins (47) and two headless pins (48) from base (49). Discard cotter pins.
2. Remove tension bolt (7), two jaws (50), front barrel nut (51) and rear barrel nut (52) as an assembly from base (49).
3. Remove two jaws (50), front barrel nut (51) and rear barrel nut (52) from tension bolt (7).
4. Inspect parts for damage and replace as required.

Assembly

NOTE

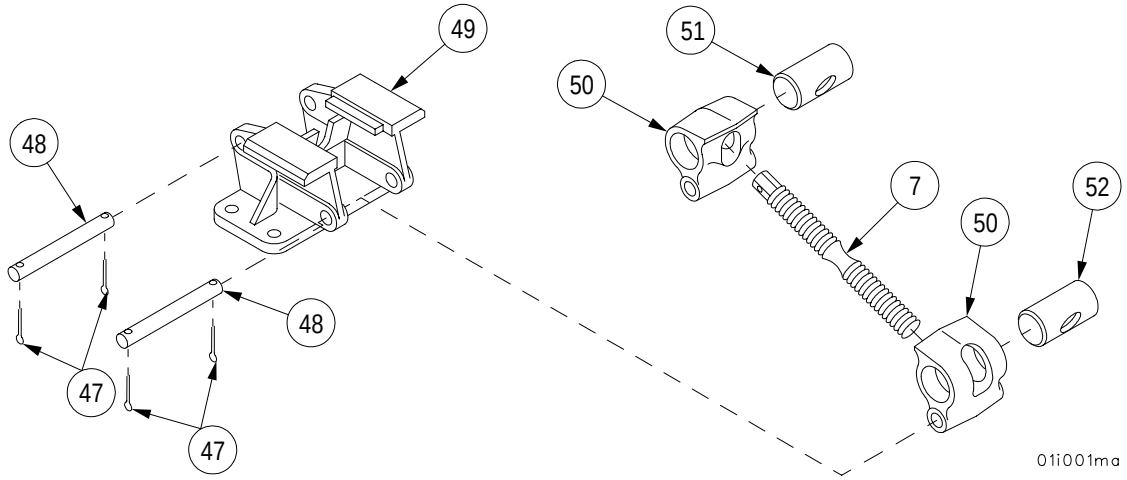
Front and rear barrel nuts are threaded in opposite directions. Ensure proper placement during assembly.

1. Install rear barrel nut (52), front barrel nut (51) and two jaws (50) on tension bolt (7).

CAUTION

Make sure jaws are spaced evenly on tension bolt. Equipment damage may occur if jaws are not adjusted properly prior to installation.

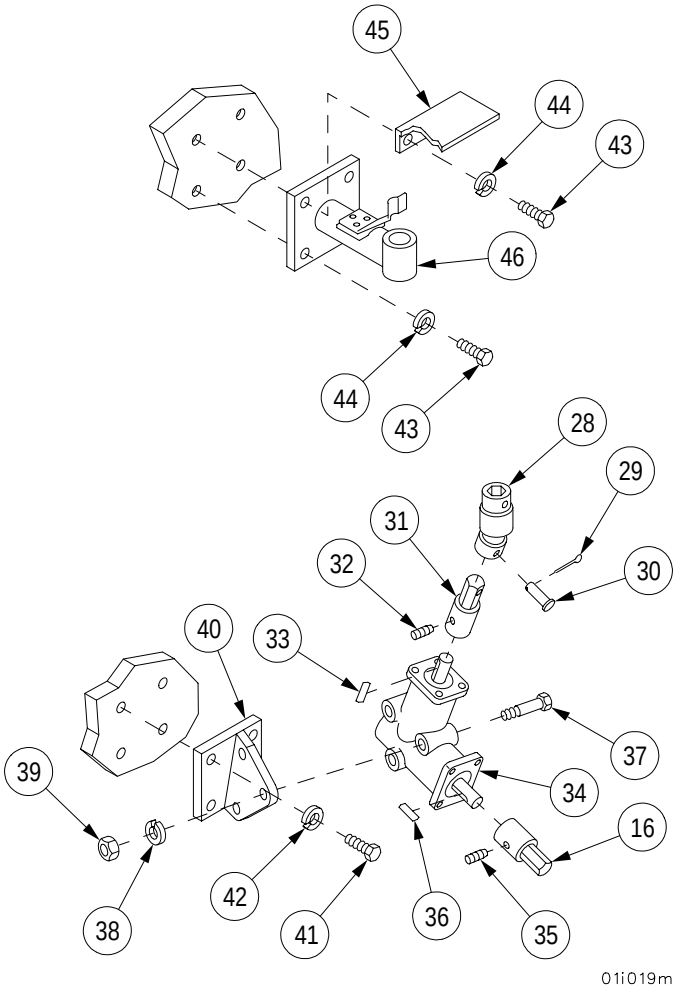
2. Install tension bolt (7), two jaws (50), front barrel nut (51) and rear barrel nut (52) as an assembly in base (49).
3. Install two headless pins (48) in base (49) and through two jaws (50). Install four new cotter pins (47) in two headless pins (48).



ENGINE REAR MOUNT AND BASE ASSEMBLY REPAIR - CONTINUED 0193 00

Installation

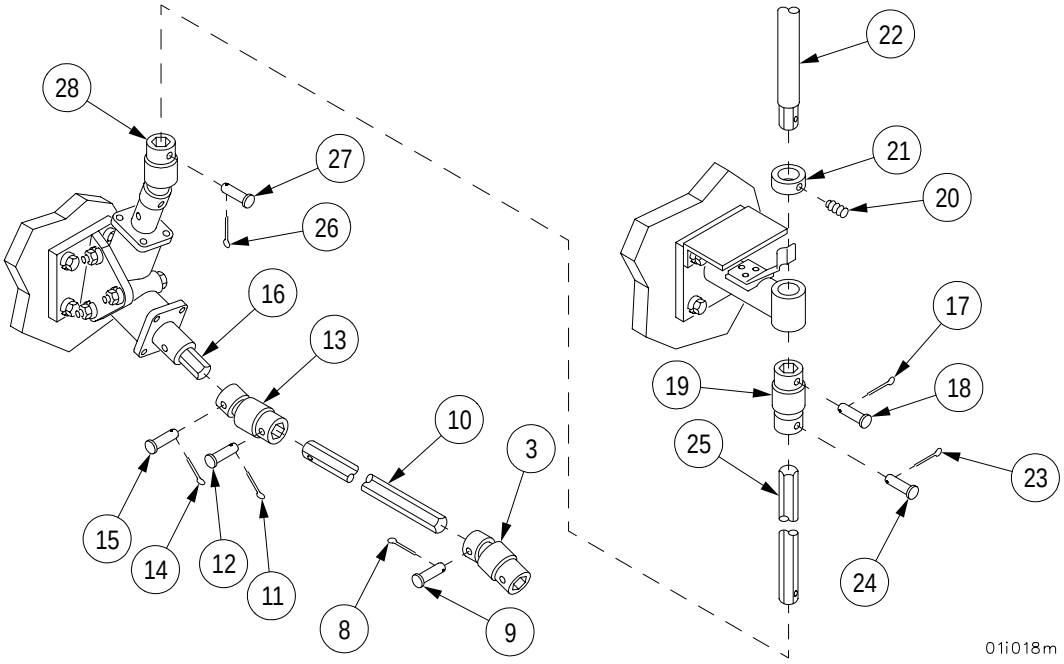
1. Install shaft adapter bracket (46) and instruction plate (45) in vehicle hull with four screws (43) and four new lockwashers (44).
2. Install bracket (40) on bulkhead with four screws (41) and four new lockwashers (42).
3. Install gear assembly (34) on bracket (40) with three screws (37), three new lockwashers (38) and three nuts (39).
4. Install machine key (36) and coupling shaft (16) on gear assembly (34). Tighten set screw (35) in coupling shaft (16).
5. Install machine key (33) and coupling shaft (31) on gear assembly (34). Tighten set screw (32) in coupling shaft (31).
6. Install universal joint (28) on coupling shaft (31) with straight headed pin (30) and new cotter pin (29).



ENGINE REAR MOUNT AND BASE ASSEMBLY REPAIR - CONTINUED 0193 00

Installation-Continued

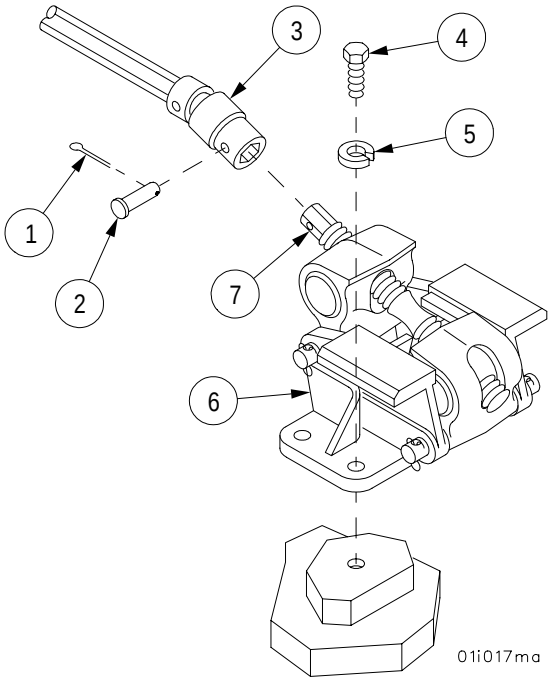
7. Install lower vertical shaft (25) in universal joint (28) with straight headed pin (27) and new cotter pin (26).
8. Install lower vertical shaft (25) in universal joint (19) with straight headed pin (24) and new cotter pin (23).
9. Position shaft collar (21) on upper vertical shaft (22), install upper vertical shaft (22) in universal joint (19).
10. Install straight headed pin (18) and new cotter pin (17) in universal joint (19). Tighten set screw (20) in shaft collar (21).
11. Install universal joint (13) on coupling shaft (16) with straight headed pin (15) and new cotter pin (14).
12. Install straight shaft (10) in universal joint (13) with straight headed pin (12) and new cotter pin (11).
13. Install universal joint (3) on straight shaft (10) with straight headed pin (9) and new cotter pin (8).



ENGINE REAR MOUNT AND BASE ASSEMBLY REPAIR - CONTINUED 0193 00

Installation-Continued

14. Insert end of tension bolt (7) in universal joint (3).
15. Secure base assembly (6) to vehicle hull with four screws (4) and four new lockwashers (5).
16. Secure universal joint (3) to tension bolt (7) with straight headed pin (2) and new cotter pin (1).



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

END OF TASK

ENGINE FUEL LINE QUICK-DISCONNECTS AND RELATED COMPONENTS REPLACEMENT 0194 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

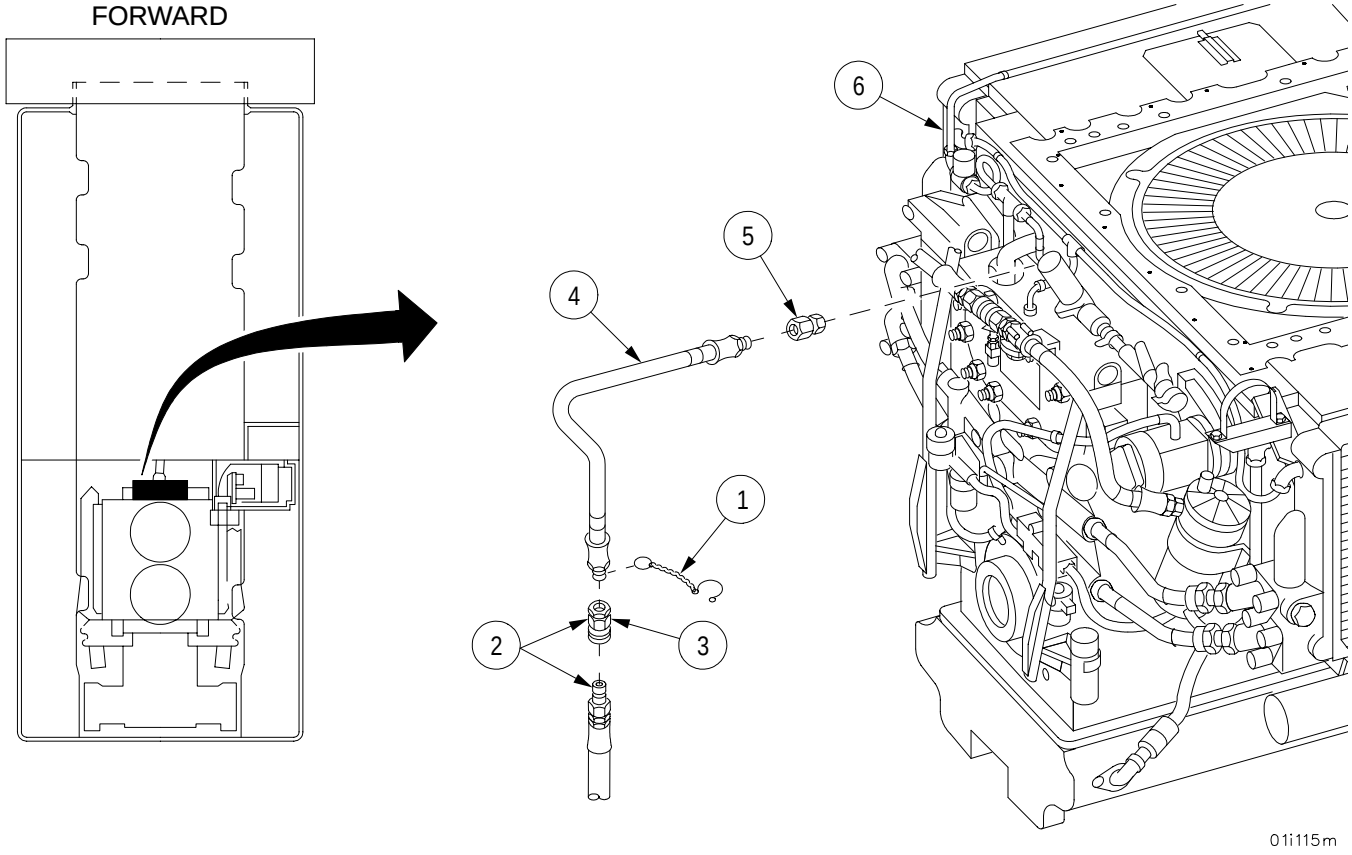
Equipment Conditions
Engine deck grilles removed (TM 9-2350-292-10)

Materials/Parts
Self-locking nut (item 251, WP 0718 00)

References
TM 9-2350-292-10

Removal

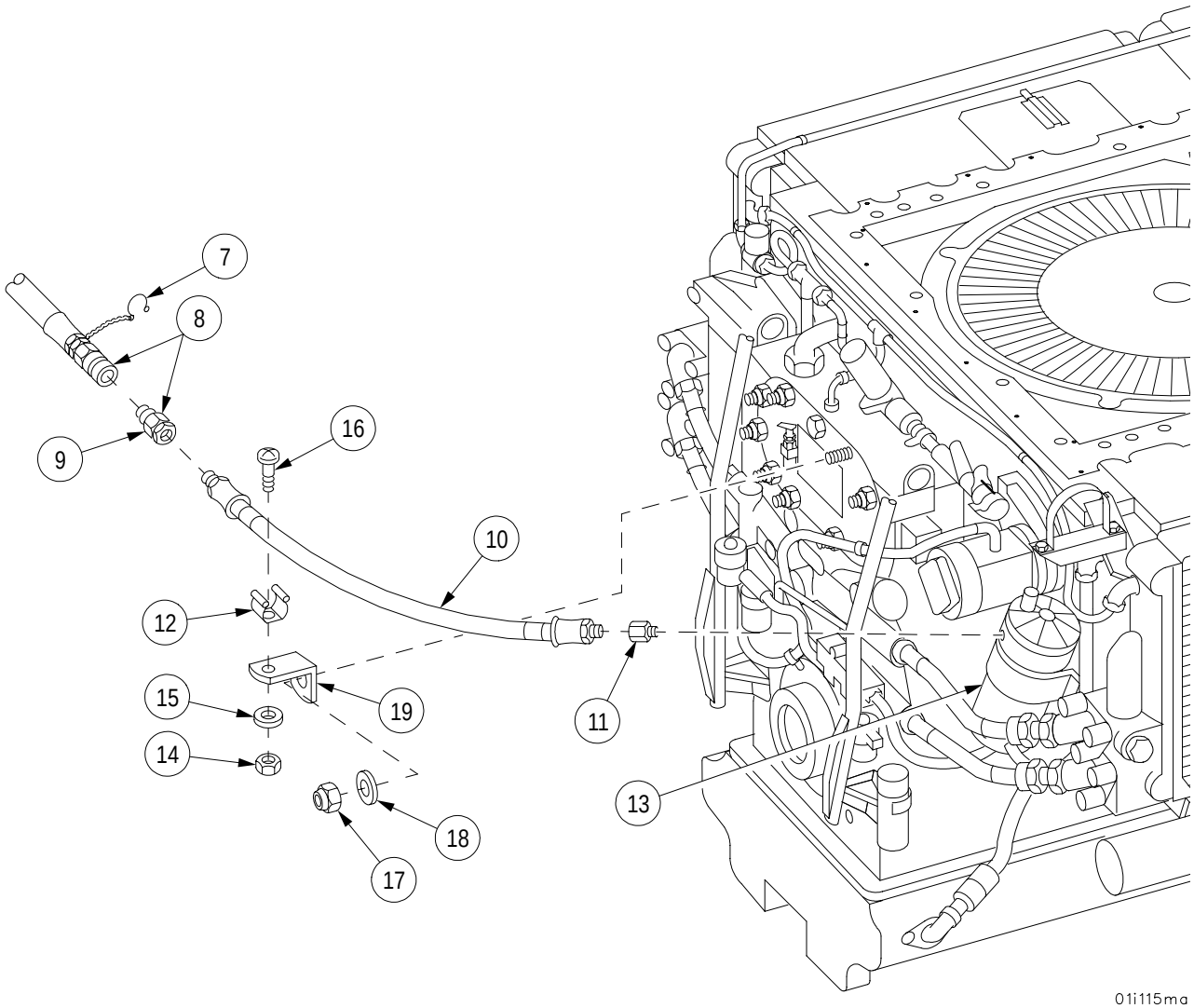
1. Unclip connecting ring (1), disconnect fuel return hose quick-disconnect coupling (2).
2. Remove coupling half (3) and connecting ring (1) from fuel return hose (4).
3. Remove fuel return hose (4) from adapter (5).
4. Remove adapter (5) from engine (6).



ENGINE FUEL LINE QUICK-DISCONNECTS AND RELATED COMPONENTS REPLACEMENT - CONTINUED 0194 00

Removal-Continued

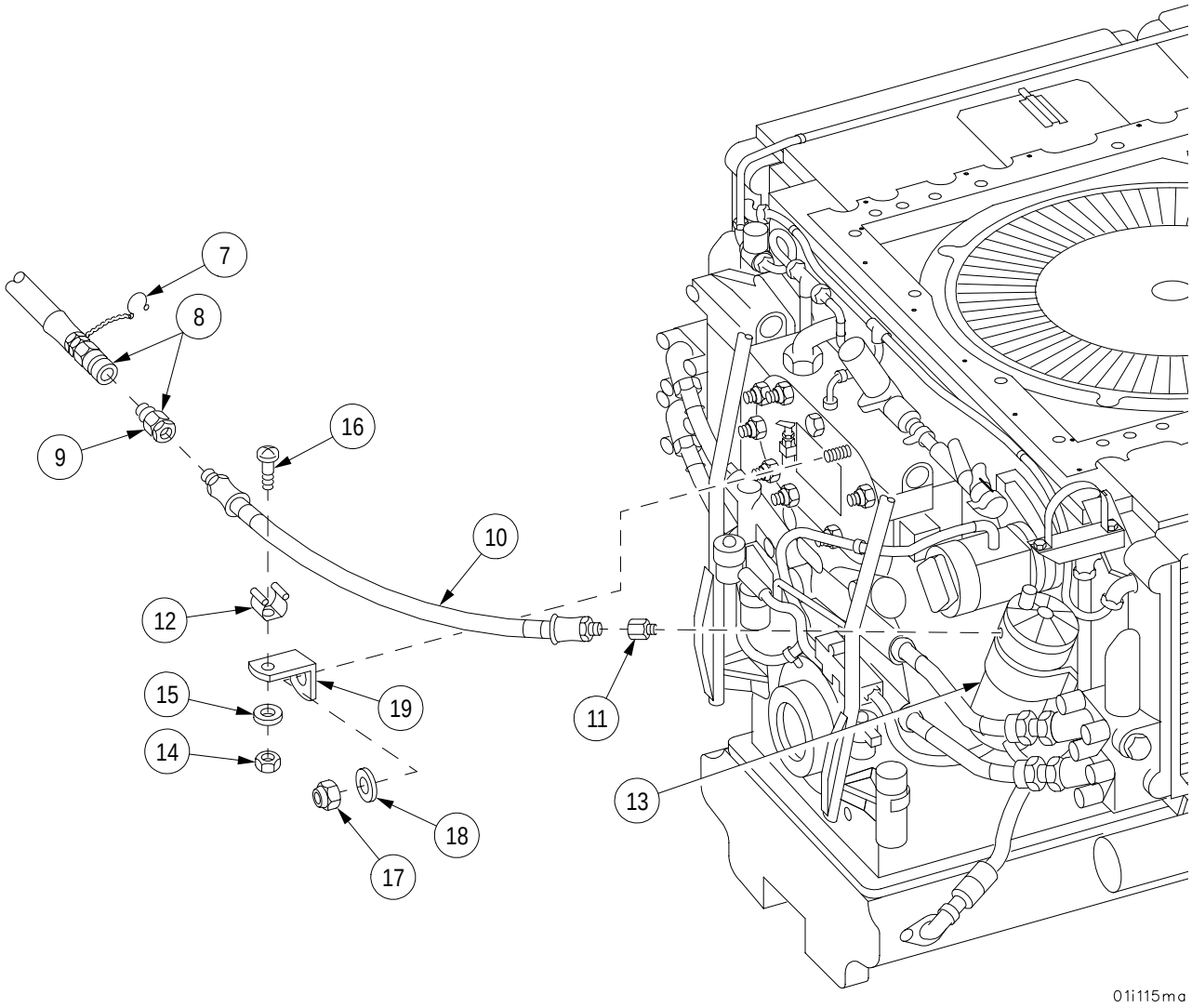
5. Unclip connecting ring (7), disconnect primary fuel filter quick-disconnect coupling (8).
6. Remove coupling half (9) from primary fuel filter hose (10).
7. Remove primary fuel filter hose (10) from bushing (11) and retaining clip (12).
8. Remove bushing (11) from primary fuel filter (13).
9. Remove nut (14), flat washer (15), screw (16) and retaining clip (12).
10. Remove self-locking nut (17), flat washer (18) and retaining clip mounting bracket (19). Discard self-locking nut.
11. Inspect parts for damage and replace as required.



ENGINE FUEL LINE QUICK-DISCONNECTS AND RELATED COMPONENTS REPLACEMENT - CONTINUED 0194 00

Installation

1. Install retaining clip mounting bracket (19) with flat washer (18) and new self-locking nut (17).
2. Install retaining clip (12) with screw (16), flat washer (15) and nut (14).
3. Install bushing (11) on primary fuel filter (13).
4. Install primary fuel filter hose (10) on bushing (11) and retaining clip (12).
5. Install coupling half (9) on primary fuel filter hose (10).
6. Connect primary fuel filter quick-disconnect coupling (8) and reconnect clip ring (7).



ENGINE FUEL LINE QUICK-DISCONNECTS AND RELATED COMPONENTS REPLACEMENT - CONTINUED 0194 00

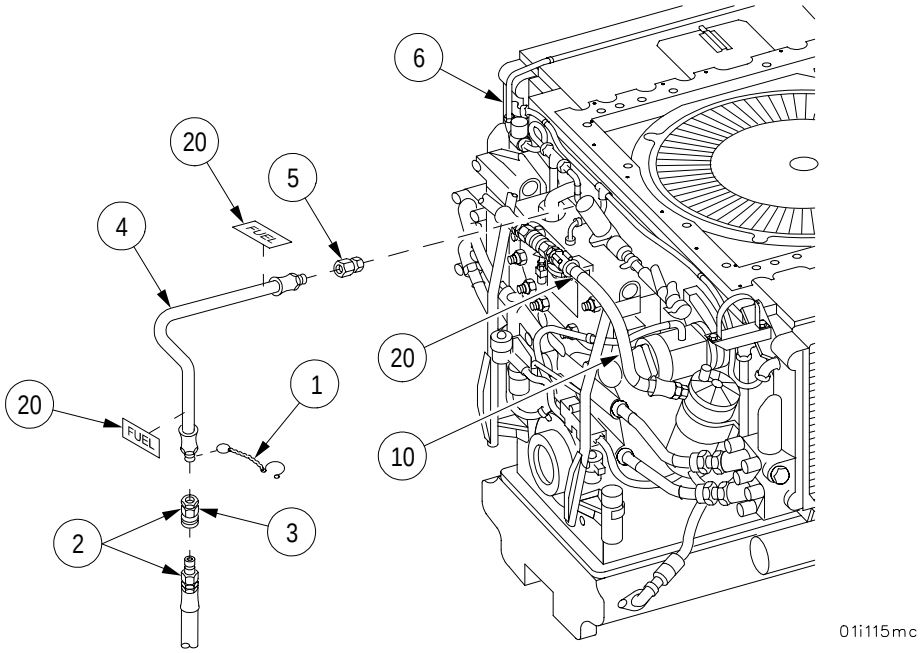
Installation-Continued

7. Install adapter (5) on engine (6).

NOTE

A minimum of two decals shall be applied to the hose assembly. A decal shall be wrapped around the hose assembly within 5.00 inches (127.00 mm) of each end. The maximum allowable distance between decals shall be 36.00 inches (0.91 m). The word “FUEL” shall be visible after application.

8. Install decals (20), if missing or damaged, on two hoses (4 and 10).
9. Install fuel return hose (4) on adapter (5).
10. Install coupling half (3) and connecting ring (1) on fuel return hose (4).
11. Connect fuel return hose quick-disconnect coupling (2) and secure with connecting ring (1) clip.



NOTE

FOLLOW-ON MAINTENANCE:
Install engine deck grilles (TM 9-2350-292-10)

END OF TASK

ENGINE OIL SAMPLING VALVE REPLACEMENT 0195 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Engine oil drained (WP 0187 00)

Removal

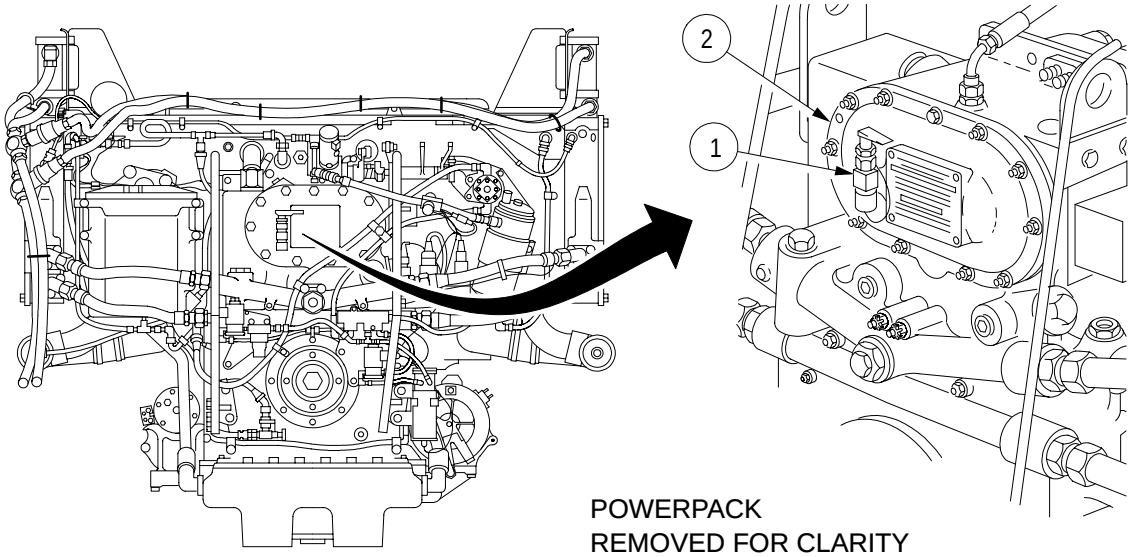
1. Remove oil sampling valve (1) from cover (2).
2. Inspect parts for damage and replace as required.

Installation

CAUTION

Make sure oil sampling valve lever is parallel to oil filter cover and that protective cap is installed and secured on sampling valve. Failure to properly position oil sampling valve lever and secure protective cap may result in loss of engine oil and equipment damage.

Install oil sampling valve (1) in cover (2).



NOTE

FOLLOW-ON MAINTENANCE:
Fill engine with oil (WP 0187 00)

END OF TASK

ENGINE OIL FILTERS REPLACEMENT 0196 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Jackscrews (2) (item 80, WP 0717 00)
Suitable container (1.0 gal. min. (3.8 L))
Torque wrench (item 21, WP 0717 00)

Materials/Parts
Self-lockign nuts (10) (item 251, WP 0718 00)
Cleaning cloth (item 59, WP 0716 00)
Lubricant (item 94, WP 0716 00)
Engine oil filter kit (item 253, WP 0718 00)

Equipment Conditions
Engine deck grilles removed (TM 9-2350-292-10)

References
TM 9-2350-292-10

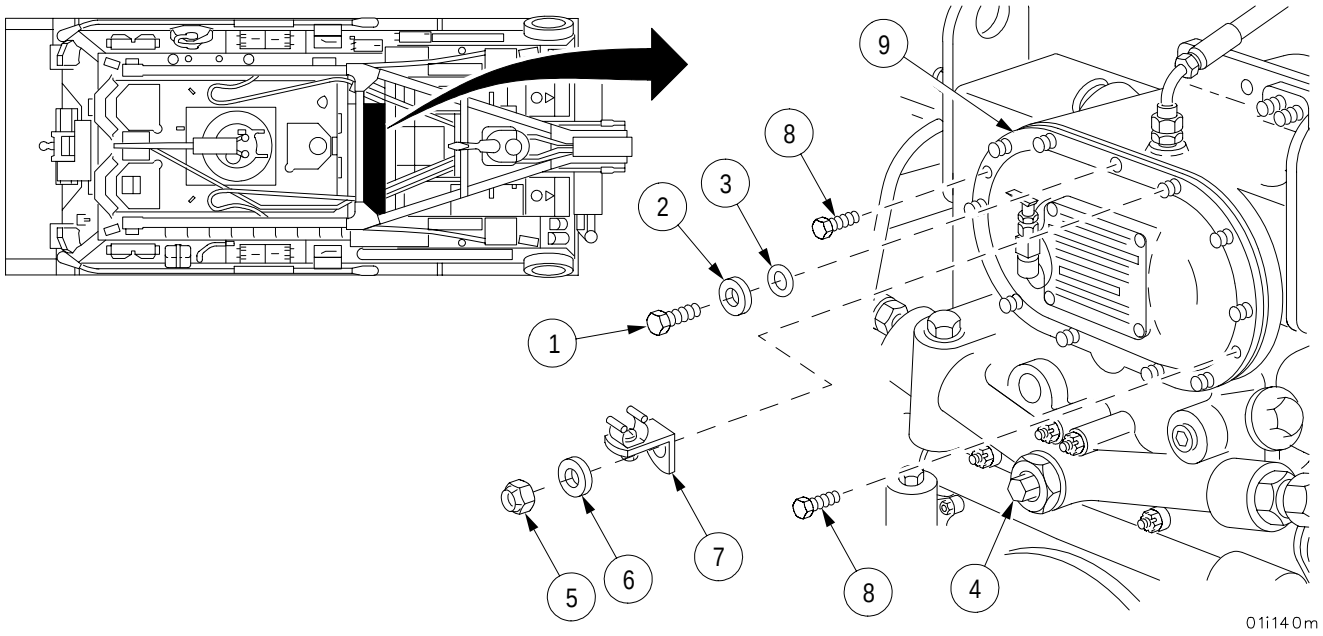
Removal

1. Remove oil vent screw (1), flat washer (2) and preformed packing (3). Discard preformed packing.

NOTE

Do not loosen oil drain valve adapter.

2. Loosen oil drain valve plug (4) six complete turns and allow oil to drain into engine crankcase.
3. Remove 10 self-locking nuts (5), 10 flat washers (6) and retaining clip mounting bracket (7). Discard self-locking nuts.
4. Install two 3/8-24 UNF x 1-1/2 jackscrews (8) in oil filter cover (9).



ENGINE OIL FITLERS REPLACEMENT - CONTINUED 0196 00

Removal-Continued

5. Remove oil filter cover (9) using two jackscrews (8) for support. Remove jackscrews (8).
6. Remove gasket (10). Discard gasket.
7. Remove two oil filter elements (11) from oil filter housing (12). Discard oil filter elements.
8. Inspect parts for damage and replace as required.

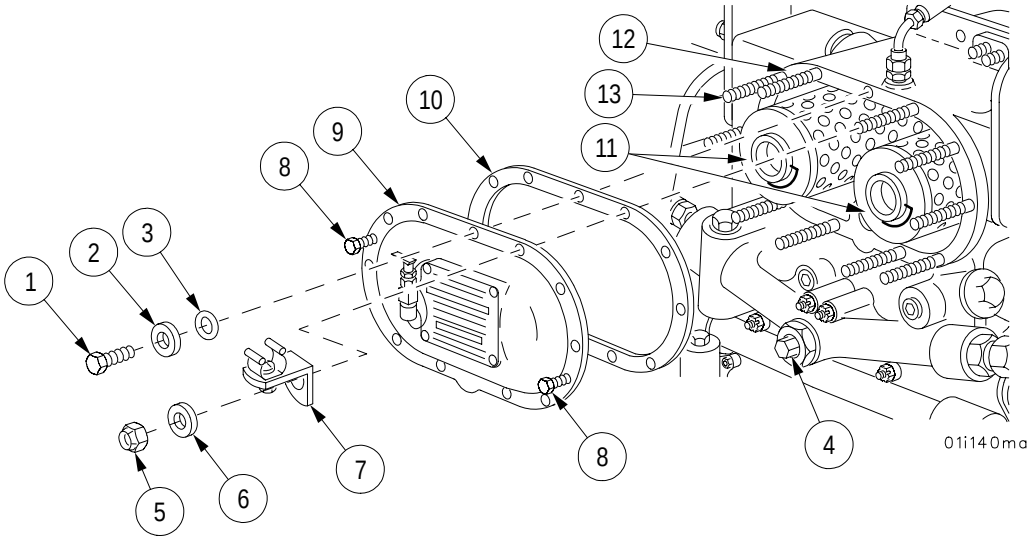
Installation

1. Clean oil filter housing (12) with cleaning cloth.
2. Install two new oil filter elements (11) into oil filter housing (12).
3. Install new gasket (10) under oil filter cover (9).
4. Apply lubricant to threads of 10 studs (13).
5. Secure cover (9) with 10 flat washers (6), 10 new self-locking nuts (5) and retaining clip mounting bracket (7). Torque self-locking nuts (5) to 125-150 lb-in (14.13-16.95 NSm).

CAUTION

Do not tighten drain valve plug above specified torque value. Failure to tighten drain valve plug until plug bottoms will result in loss of engine oil pressure. Failure to comply could result in damage to engine.

6. Apply lubricant to threads of drain valve plug (4), torque drain valve plug (4) to 150 lb-in (16.95 NSm).
7. Apply lubricant to threads of oil vent screw (1) and install oil vent screw (1) with flat washer (2) and new preformed packing (3). Torque oil vent screw (1) to 125-150 lb-in (14.13-16.95 NSm).
8. Fill engine with oil in accordance with WP 0187 00.



NOTE

FOLLOW-ON MAINTENANCE:
Install engine deck grilles (TM 9-2350-292-10)

END OF TASK

DAMPER AND OIL FILTER HOUSING RELATED PARTS REPLACEMENT 0197 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Retaining pliers set (item 15, WP 0717 00)

Materials/Parts
Retaining rings (2) (item 255, WP 0718 00)
Packing retainers (2) (item 256, WP 0718 00)
Gaskets (4) (item 257, WP 0718 00)
Sealing compound (item 16, WP 0716 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Powerpack removed (WP 0188 00)
Oil drained (WP 0187 00)

Equipment Conditions-Continued
Oil filter elements removed (WP 0196 00)
For maintenance of fluid filter body
Oil pressure or temperature switch removed (WP 0289 00)
For maintenance of adapter
Oil lines at elbows, adapters or reducers disconnected as required (WP 0199 00)
Front cooling fan removed (WP 0235 00)

NOTE

Perform only those steps necessary to replace the defective parts.

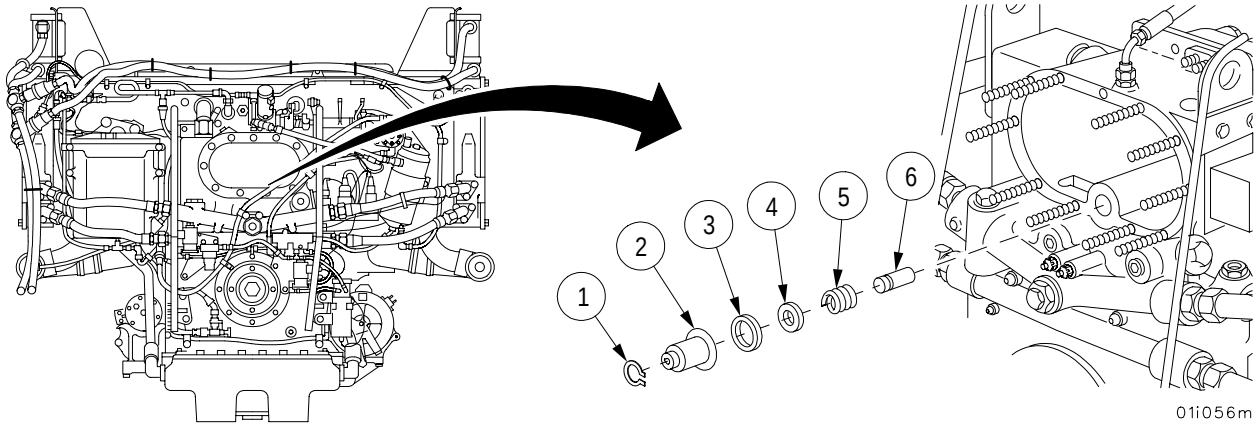
Tag all hoses, connectors, tubes and adapters prior to removal to aid in installation.

There are two oil filter supports. The replacement procedures are the same for both.

Removal

WARNING

1. Remove retaining ring (1), filter body (2), two packing retainers (3), flat washer (4), spring (5) and filter support (6). Discard retaining ring and packing retainers.



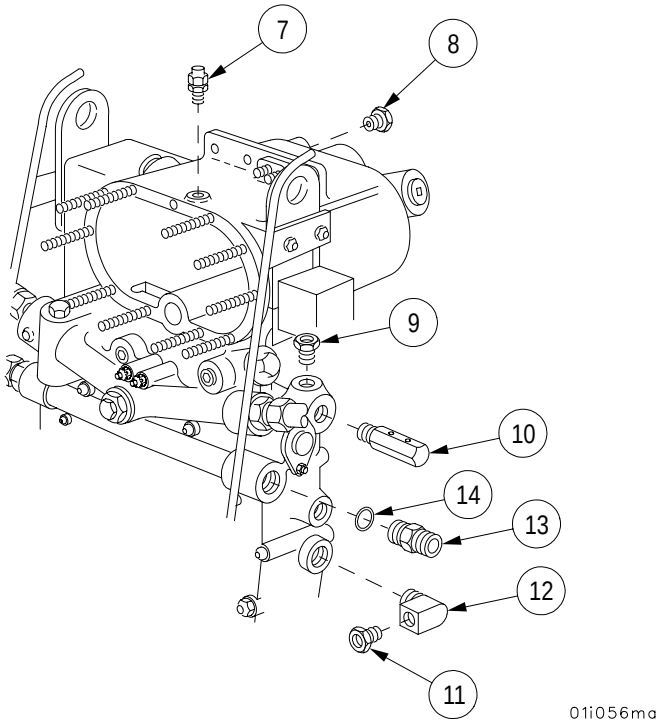
DAMPER AND OIL FILTER HOUSING RELATED PARTS REPLACEMENT - CONTINUED 0197 00

Removal-Continued

2. Remove adapter (7) and pipe reducer (8).
3. Remove oil temperature pipe reducer (9).
4. Remove oil temperature switch adapter (10).
5. Remove oil pressure switch pipe bushing (11) and pipe elbow (12).
6. Remove four adapters (13) and four gaskets (14). Discard gaskets.
7. Inspect parts for damage and replace as required.

Installation

1. Install four new gaskets (14) and four adapters (13).
2. Apply sealing compound to all pipe threads prior to installation.
3. Install pipe elbow (12) and oil pressure switch pipe bushing (11).
4. Install oil temperature switch adapter (10).
5. Install oil temperature pipe reducer (9).
6. Install pipe reducer (8) and adapter (7).

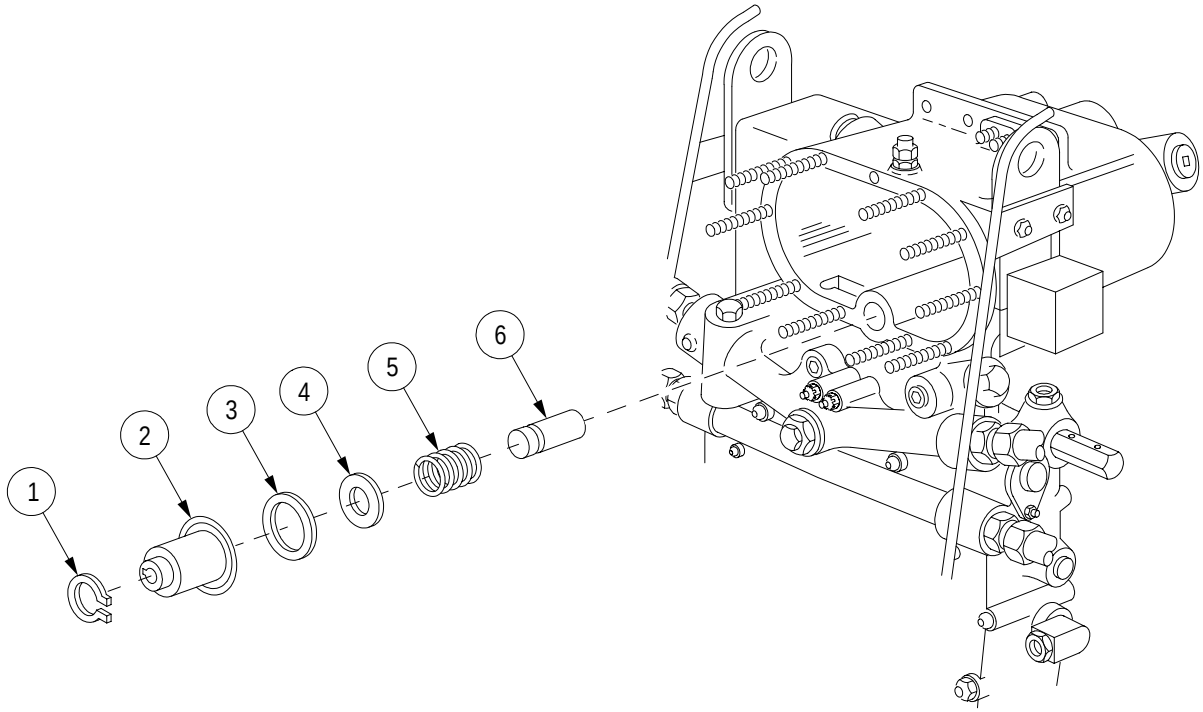


DAMPER AND OIL FILTER HOUSING RELATED PARTS REPLACEMENT - CONTINUED 0197 00

Installation-Continued

WARNING

7. Install filter support (6), spring (5), flat washer (4), two new packing retainers (3), filter body (2) and new retaining ring (1).



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NOTE

FOLLOW-ON MAINTENANCE:
Install front cooling fan (WP 0235 00)
Connect oil lines at elbows, adapters or reducers as required (WP 0199 00)
Install oil pressure or temperature switch, if removed (WP 0284 00)
Install oil filter elements, if removed (WP 0196 00)
Fill engine with oil (WP 0187 00)
Install powerpack (WP 0188 00)

END OF TASK

ENGINE OIL LEVEL GAUGE ROD AND FILLER TUBE REPLACEMENT 0198 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Self-locking nuts (2) (item 378, WP 0718 00)
Self-locking nuts (2) (item 120, WP 0718 00)

Materials/Parts-Continued
Self-locking nuts (3) (item 248, WP 0718 00)
Preformed packing (item 379, WP 0718 00)
Gasket (item 280, WP 0718 00)

Equipment Conditions
Engine oil cooler removed (WP 0231 00)
For maintenance of engine oil level gauge rod
Engine oil cooler support assembly removed (between #2 and #3 cylinder-left bank) (WP 0233 00)

NOTE

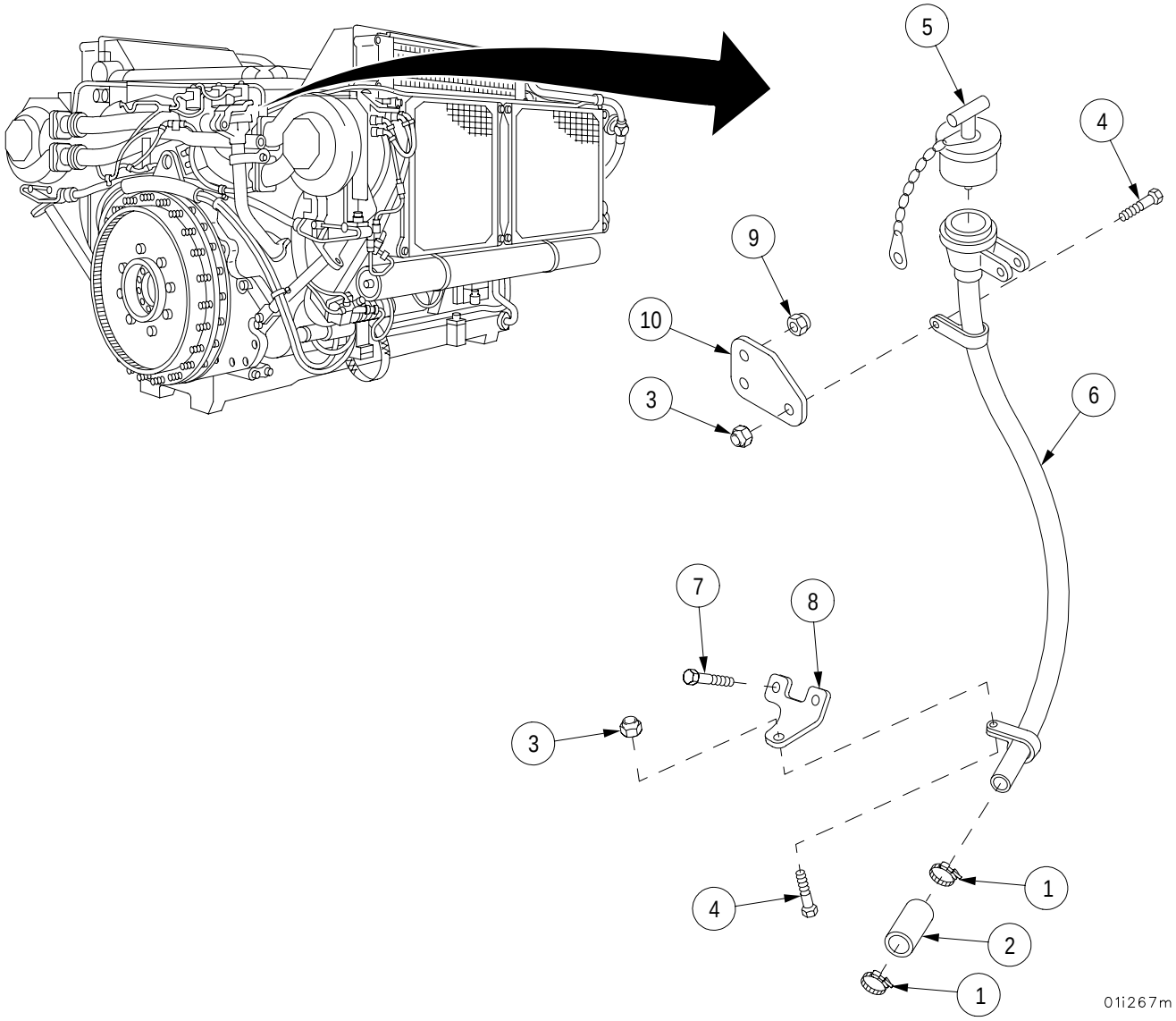
Perform Removal steps 1 through 4 and 9 and Installation steps 5 through 9 for maintenance of engine oil filler tube.

Perform Removal steps 5 through 9 and Installation steps 1 through 4 for maintenance of engine oil level gauge rod and tube.

ENGINE OIL LEVEL GAUGE ROD AND FILLER TUBE REPLACEMENT - CONTINUED 0198 00

Removal

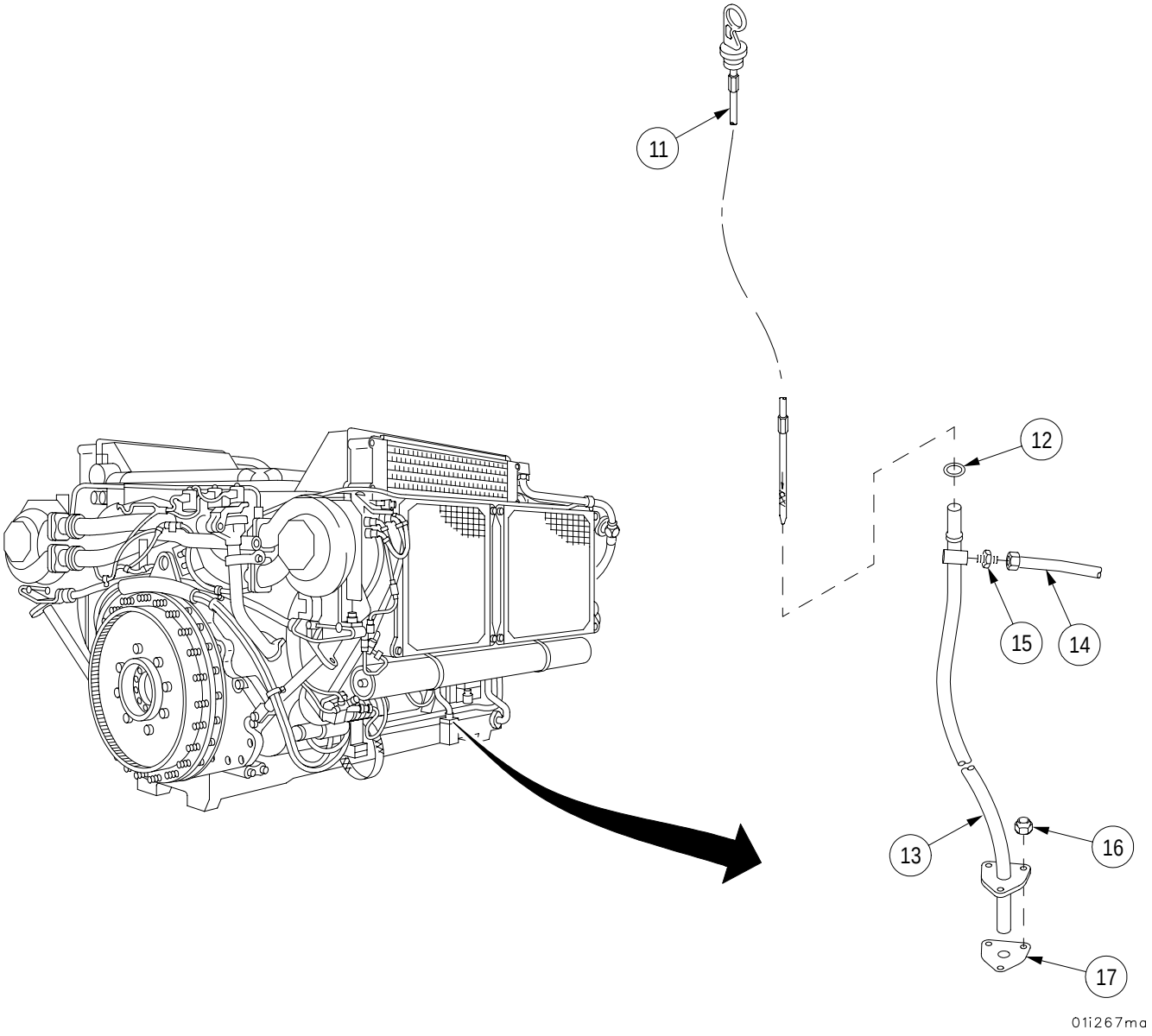
1. Remove two hose clamps (1) from hose (2).
2. Remove two self-locking nuts (3), two screws (4), oil filler cap with retaining chain (5), oil filler assembly (6) and hose (2) from engine. Discard self-locking nuts.
3. Remove two screws (7) and plate (8) from engine.
4. Remove two self-locking nuts (9) and plate (10) from engine. Discard self-locking nuts.



ENGINE OIL LEVEL GAUGE ROD AND FILLER TUBE REPLACEMENT - CONTINUED 0198 00

Removal-Continued

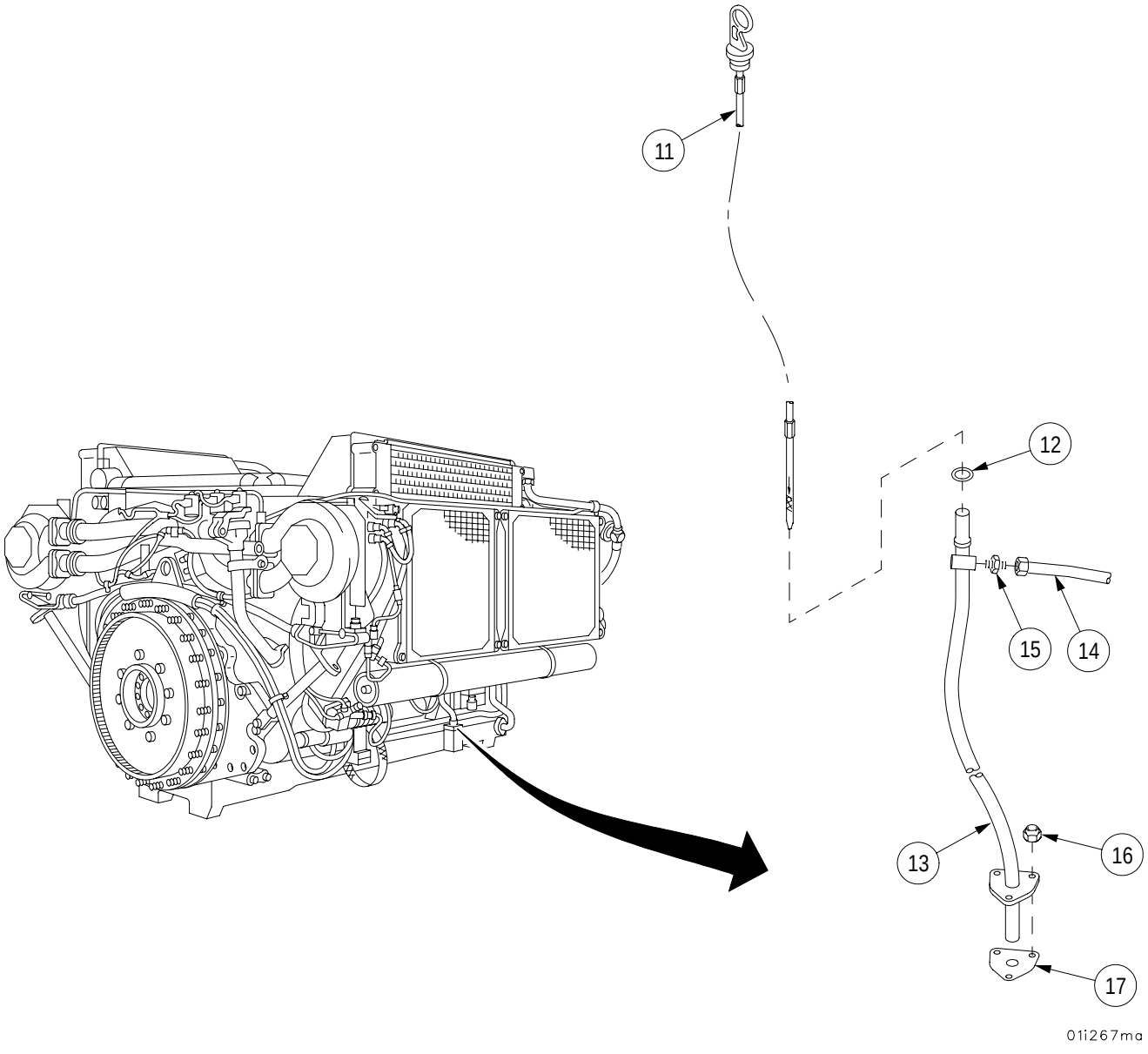
5. Remove oil level gauge rod (11) from engine.
6. Remove preformed packing (12) from tube assembly (13). Discard preformed packing.
7. Remove oil breather hose (14) and adapter (15) from tube assembly (13).
8. Remove three self-locking nuts (16), tube assembly (13) and gasket (17) from engine. Discard self-locking nuts and gasket.
9. Inspect parts for damage and replace as required.



ENGINE OIL LEVEL GAUGE ROD AND FILLER TUBE REPLACEMENT - CONTINUED 0198 00

Installation

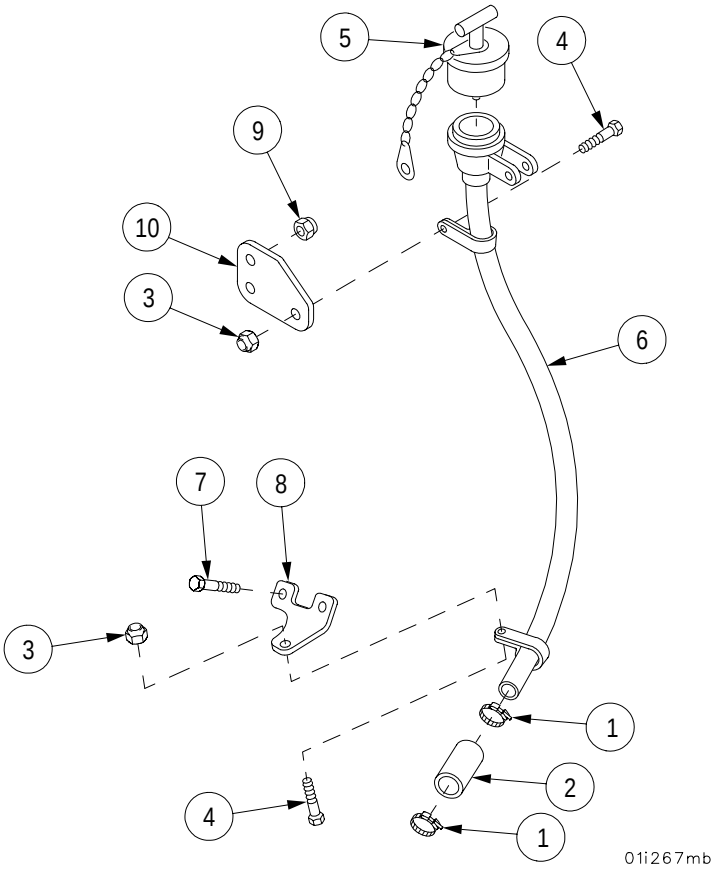
1. Install tube assembly (13) and new gasket (17) on engine with three new self-locking nuts (16).
2. Install oil breather hose (14) and adapter (15) on tube assembly (13).
3. Install new preformed packing (12) on tube assembly (13).
4. Install oil level gauge rod (11) on engine.



ENGINE OIL LEVEL GAUGE ROD AND FILLER TUBE REPLACEMENT - CONTINUED 0198 00

Installation-Continued

5. Install plate (10) on engine with two new self-locking nuts (9).
6. Install plate (8) on engine with two screws (7).
7. Install oil filler assembly (6) and hose (2) on engine.
8. Secure oil filler assembly (6) and oil filler cap with retaining chain (5) to plates (8 and 10) with two screws (4) and two new self-locking nuts (3).
9. Install two hose clamps (1) on hose (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install engine oil cooler support assembly (WP 0233 00)
Install engine oil cooler, if removed (WP 0231 00)

END OF TASK

CYLINDER HEAD OIL DRAIN TUBES REPLACEMENT 0199 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Torque wrench (item 113, WP 0717 00)

Materials/Parts
Gaskets (4) (item 258, WP 0718 00)
Lockwashers (8) (item 10, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Engine oil drained (WP 0187 00)
Engine and transmission oil coolers removed (WP 0231 00)
Generator removed (WP 0237 00)
Starter removed (WP 0240 00)
Primary fuel filter removed (WP 0222 00)
Fuel/water separator removed (WP 0219 00)
Engine oil cooler frames removed (WP 0233 00)

NOTE

Perform only those steps necessary to replace the defective parts. Use legend reference guide.

Tag all hoses, tubes and tube assemblies prior to removal to aid in installation.

Note hose and tube routing to aid in installation.

Removal

1. Remove clamps and attaching hardware securing hoses, tubes and tube assemblies to powerpack as shown in legend and illustration. Discard gaskets.
2. Remove hoses, tubes, tube assemblies and fittings in accordance with the following legend and illustration.
3. Inspect parts for damage and replace as required.

Installation

1. Install hoses, tubes, tube assemblies and fittings in accordance with the following legend and illustration.
2. Secure hoses, tubes and tube assemblies to powerpack with clamps, attaching hardware and new gaskets as shown in legend and illustration
3. Torque fluid passage bolts (7) to 275-300 lb-in (32-34 N$m).

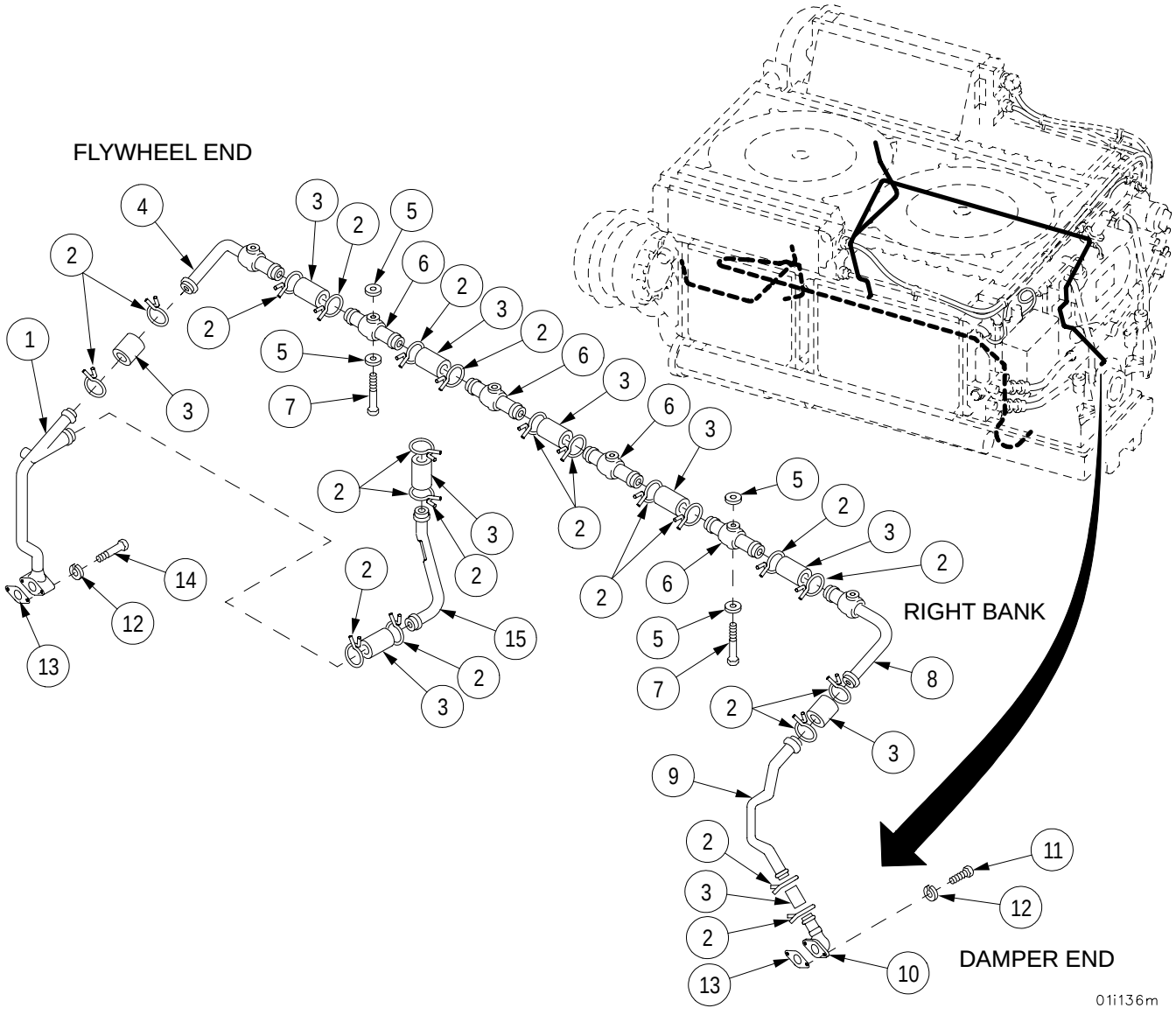
NOTE

FOLLOW-ON MAINTENANCE:
Install fuel water separator (WP 0219 00)
Install primary fuel filter (WP 0222 00)
Install starter (WP 0240 00)
Install generator (WP 0237 00)
Install engine oil cooler frames (WP 0233 00)
Install engine and transmission oil coolers (WP 0231 00)
Fill engine with oil (WP 0187 00)

CYLINDER HEAD OIL DRAIN TUBES REPLACEMENT - CONTINUED 0199 00

Legend:

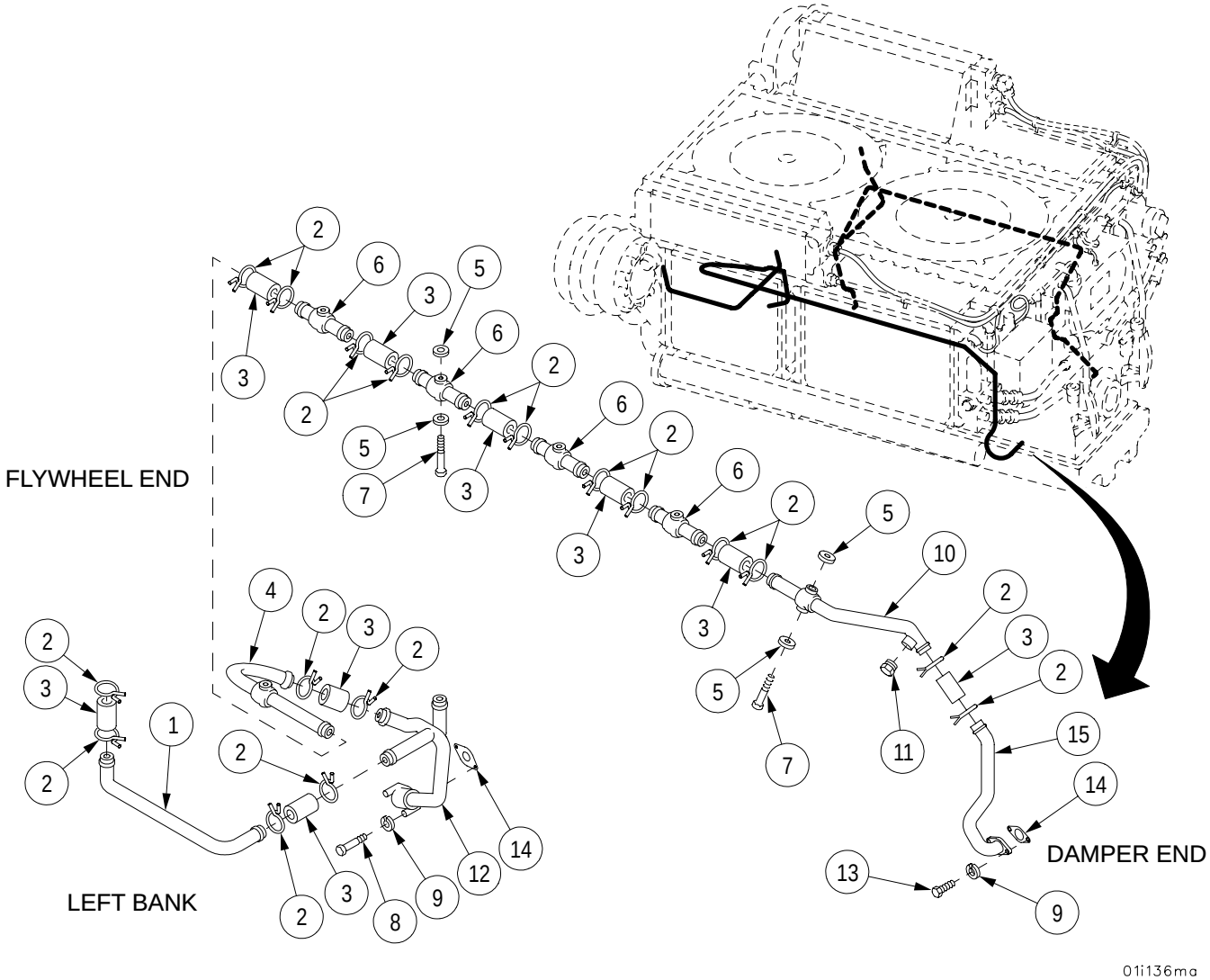
1. Tube assembly, right
2. Hose clamps (20)
3. Hoses (10)
4. Tube
5. Flat washers (12)
6. Tube assemblies (4)
7. Fluid passage bolts (6)
8. Tube assembly
9. Tube
10. Elbow, flange to hose
11. Screws (2)
12. Lockwashers (4)
13. Gaskets (2)
14. Screws (2)
15. Tube



CYLINDER HEAD OIL DRAIN TUBES REPLACEMENT - CONTINUED 0199 00

Legend:

1. Tube
2. Hose clamps (18)
3. Hoses (9)
4. Tube assembly
5. Flat washers (12)
6. Tube assemblies (4)
7. Fluid passage bolts (6)
8. Screws (2)
9. Lockwashers (4)
10. Tube assembly
11. Pipe plug
12. Tube assembly
13. Screws (2)
14. Gaskets (2)
15. Tube assembly, left



END OF TASK

ENGINE OIL HOSE ASSEMBLIES, TUBE ASSEMBLIES AND RELATED PARTS REPLACEMENT 0200 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Preformed packings (2) (item 43, WP 0718 00)
Preformed packings (2) (item 311, WP 0718 00)
Gaskets (2) (item 281, WP 0718 00)
Lockwashers (2) (item 10, WP 0718 00)
Pressure sensitive tape (item 41, WP 0716 00)
Assembled-washer screws (4) (item 420, WP 0718 00)
Self-locking nut (item 248, WP 0718 00)
Marker tags (item 49, WP 0716 00)
Wiping rags (item 7, WP 0716 00)
Tiedown strap (item 382, WP 0718 00)
Self-locking nuts (2) (item 385, WP 0718 00)

Equipment Conditions
Powerpack removed (WP 0188 00)
Engine oil drained (WP 0187 00)
Engine and transmission oil cooler access covers removed (WP 0233 00)
Engine cooling fans and housings removed (WP 0235 00)

NOTE

Perform only those steps necessary to replace the defective parts. Use legend reference guide.

Tag all parts prior to removal to aid in installation.

Place rags under hose connections to catch any oil that spills during maintenance. Dispose of rags in accordance with standard operating procedure.

Note hose and tube routing to aid in installation.

Removal

1 Remove clamps and attaching hardware securing hose assemblies, tube assemblies and fittings as shown in legend and illustration. Discard lockwashers, self-locking nut and assembled-washer screws.

2 Remove hose assemblies, tube assemblies and fittings in accordance with the following legend and illustration. Discard preformed packings and gaskets.

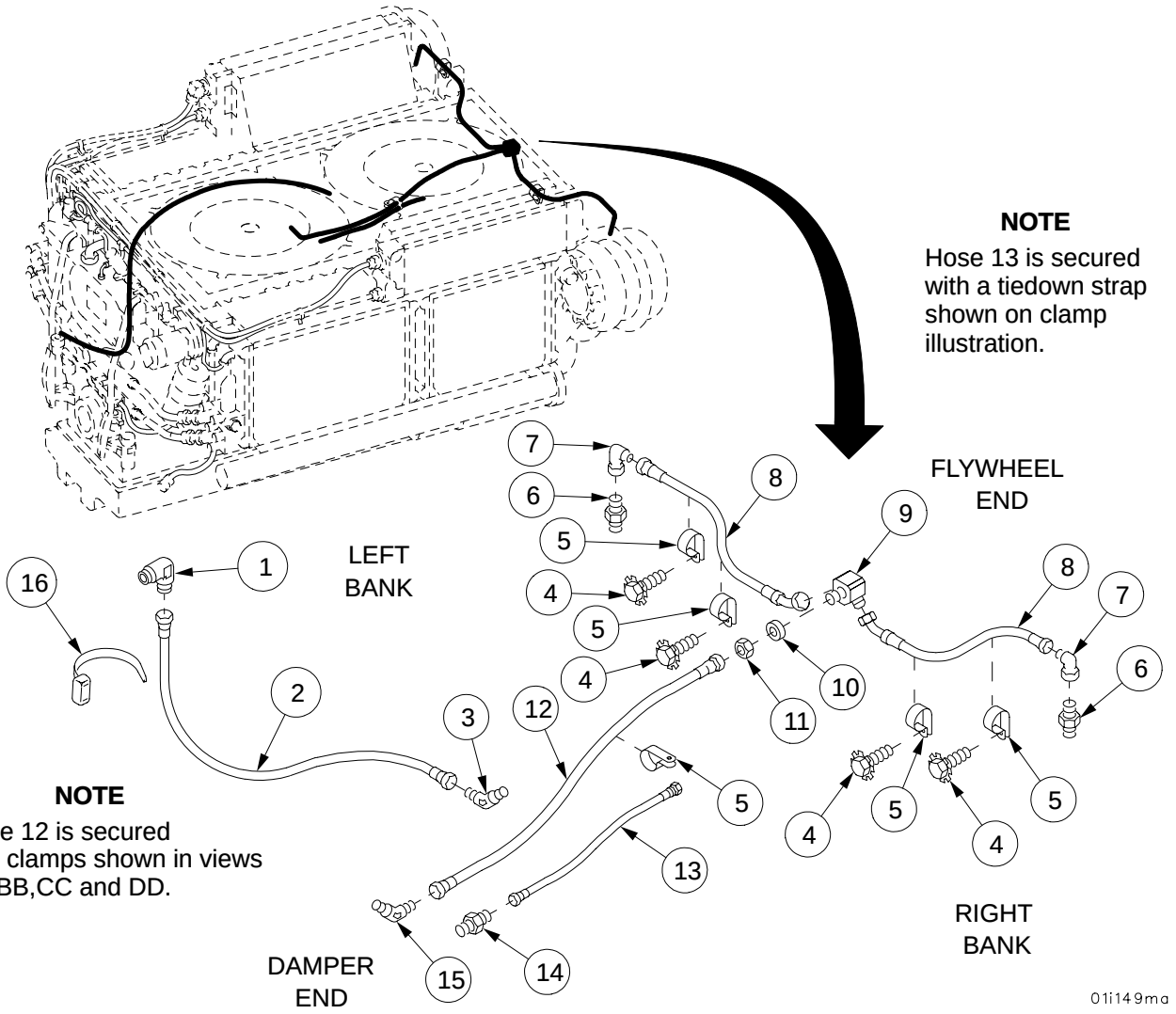
3. Inspect parts for damage and replace as required.

ENGINE OIL HOSE ASSEMBLIES, TUBE ASSEMBLIES AND RELATED PARTS REPLACEMENT - CONTINUED

0200 00

LEGEND:

1. Elbow
2. Hose assembly
3. Elbow
4. Assembled-washer screws (4)
5. Clamps (5)
6. Adapters (2)
7. Elbows (2)
8. Hose assemblies (2)
9. Elbow
10. Flat washer
11. Nut
12. Hose assembly
13. Hose assembly
14. Adapter
15. Elbow
16. Tiedown strap



ENGINE OIL HOSE ASSEMBLIES, TUBE ASSEMBLIES AND RELATED PARTS REPLACEMENT - CONTINUED

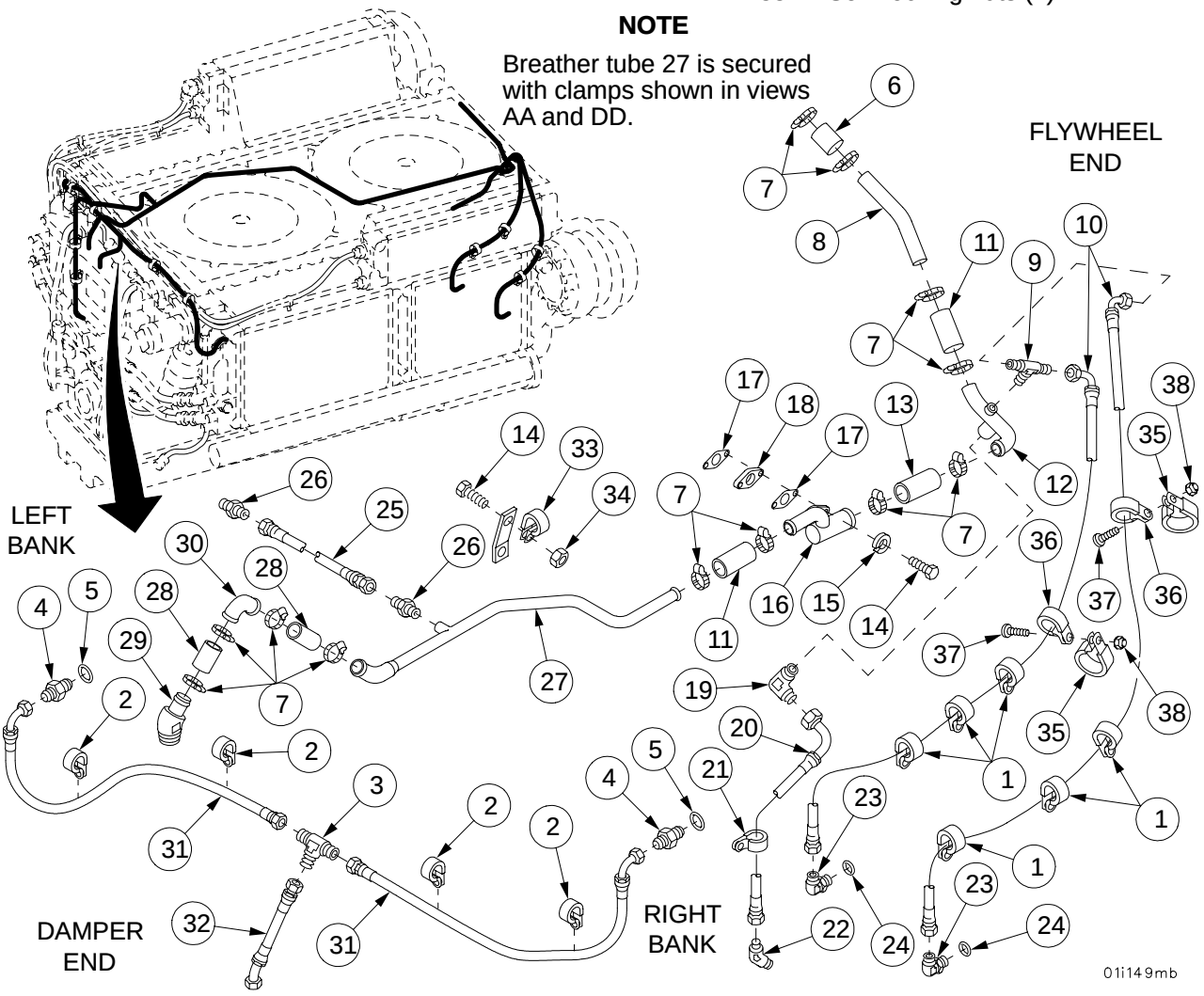
0200 00

LEGEND:

1. Clamps (6)
2. Clamps (4)
3. Tee
4. Adapters (2)
5. Preformed packings (2)
6. Hose
7. Clamps (12)
8. Tube
9. Tee
10. Hose assemblies (2)
11. Hose (2)
12. Tube
13. Hose
14. Screws (3)
15. Lockwashers (2)
16. Tube
17. Gaskets (2)
18. Spacer plate
19. Elbow
20. Hose assembly
21. Clamp
22. Elbow
23. Elbows (2)
24. Preformed packings (2)
25. Hose assembly
26. Adapters (2)
27. Breather tube
28. Hoses (2)
29. Elbow
30. Elbow
31. Hose assemblies (2)
32. Hose assembly
33. Loop clamp
34. Self-locking nut
35. Loop clamps (2)
36. Loop clamps (2)
37. Screws (2)
38. Self-locking nuts (2)

NOTE

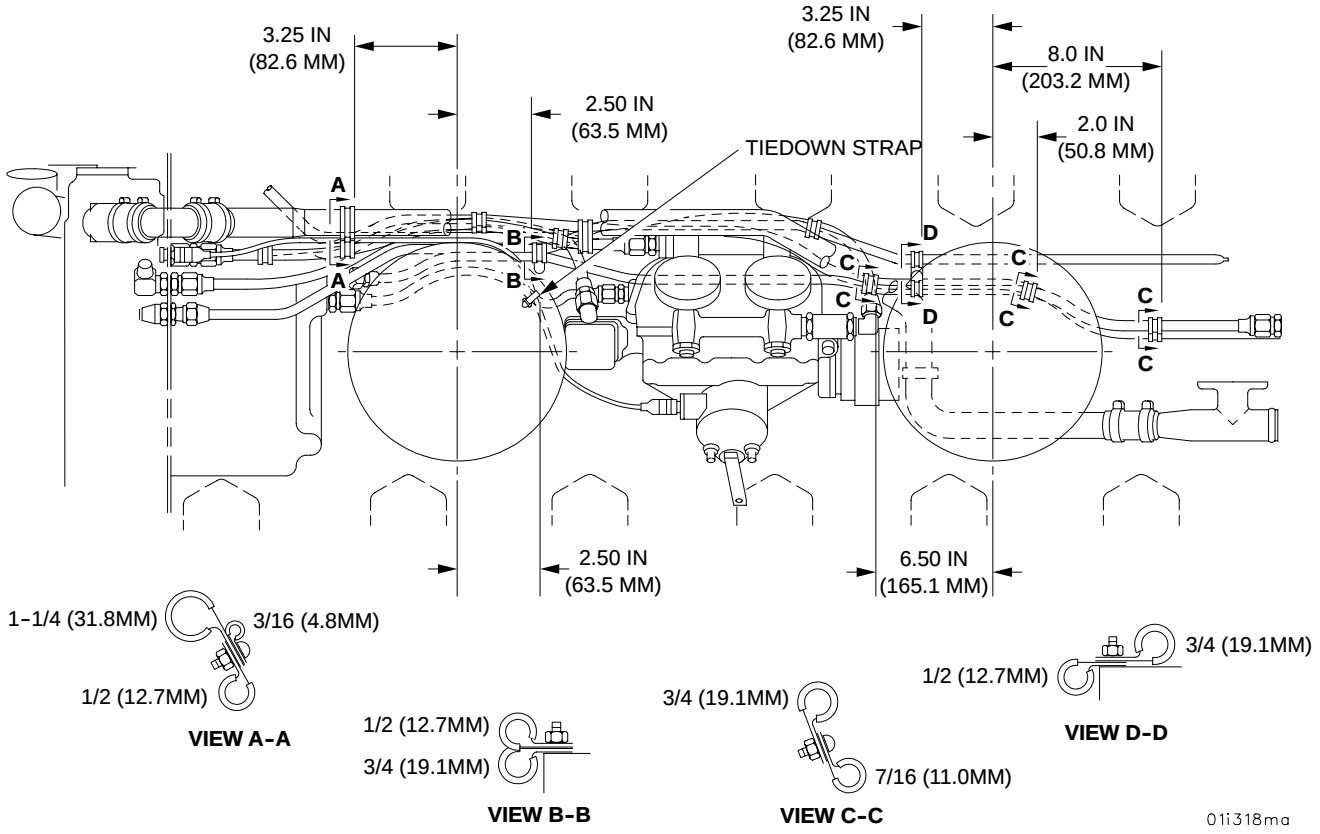
Breather tube 27 is secured with clamps shown in views AA and DD.



ENGINE OIL HOSE ASSEMBLIES, TUBE ASSEMBLIES AND RELATED PARTS REPLACEMENT - CONTINUED 0200 00

Installation

1. Apply pressure sensitive tape to all male pipe threads.
2. Install hose assemblies, tube assemblies and fittings with new gaskets and new preformed packings in accordance with the following legend and illustration.
3. Secure hose assemblies, tube assemblies and fittings with clamps, attaching hardware, new lockwashers, new self-locking nut, and new assembled washer screws.



NOTE

FOLLOW-ON MAINTENANCE:
Fill engine with oil (WP 0187 00)
Install engine cooling fans and housings (WP 0235 00)
Install engine and transmission oil cooler access covers (WP 0233 00)
Install powerpack (WP 0188 00)

CHAPTER 5

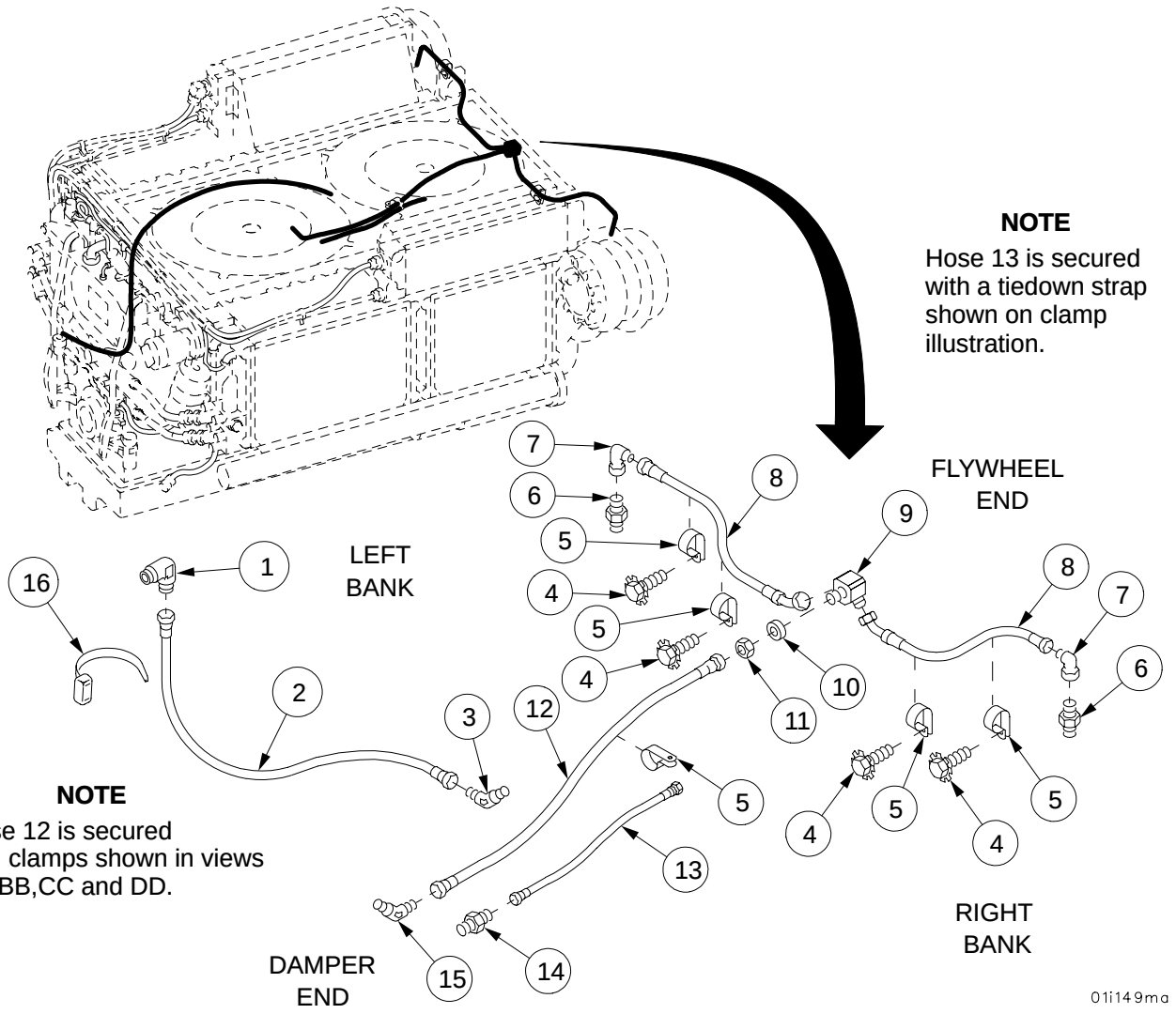
FUEL SYSTEM MAINTENANCE

ENGINE OIL HOSE ASSEMBLIES, TUBE ASSEMBLIES AND RELATED PARTS REPLACEMENT - CONTINUED

0200 00

LEGEND:

1. Elbow
2. Hose assembly
3. Elbow
4 Assembled-washer screws (4)
5. Clamps (3)
6. Adapters (2)
7. Elbows (2)
8. Hose assemblies (2)
9. Elbow
10. Flat washer
11. Nut
12. Hose assembly
13. Hose assembly
14. Adapter
15. Elbow
16. Tiedown strap



ENGINE OIL HOSE ASSEMBLIES, TUBE ASSEMBLIES AND RELATED PARTS REPLACEMENT - CONTINUED

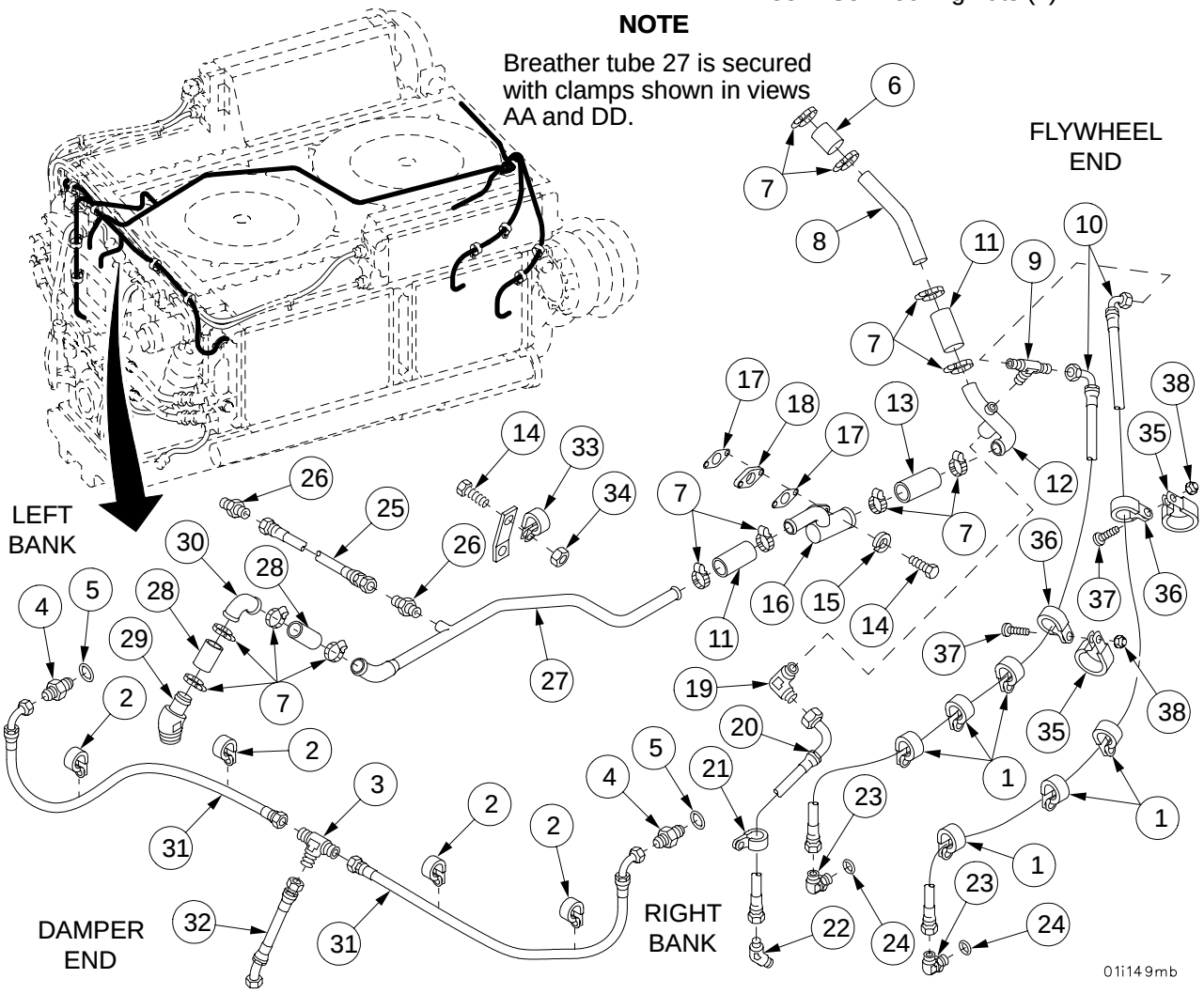
0200 00

LEGEND:

1. Clamps (5)
2. Clamps (4)
3. Tee
4. Adapters (2)
5. Preformed packings (2)
6. Hose
7. Clamps (12)
8. Tube
9. Tee
10. Hose assemblies (2)
11. Hoses (2)
12. Tube
13. Hose
14. Screws (3)
15. Lockwashers (2)
16. Tube
17. Gaskets (2)
18. Spacer plate
19. Elbow
20. Hose assembly
21. Clamp
22. Elbow
23. Elbows (2)
24. Preformed packings (2)
25. Hose assembly
26. Adapters (2)
27. Breather tube
28. Hoses (2)
29. Elbow
30. Elbow
31. Hose assemblies (2)
32. Hose assembly
33. Loop clamp
34. Self-locking nut
35. Loop clamps (2)
36. Loop clamps (2)
37. Screws (2)
38. Self-locking nuts (2)

NOTE

Breather tube 27 is secured with clamps shown in views AA and DD.



END OF TASK

ELECTRIC FUEL PUMP AND MOUNT ASSEMBLY REPAIR 0201 00

THIS WORK PACKAGE COVERS:

Removal, Disassembly, Assembly, Installation, Testing

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Torque wrench (item 21, WP 0717 00)
Utility pail (item 27, WP 0717 00)
Wire twister pliers (item 67, WP 0717 00)

Materials/Parts

Nonelectrical wire (item 349, WP 0718 00)
Lockwashers (12) (item 10, 0718 00)
Lockwashers (3) (item 105, 0718 00)
Seal (item 104, 0718 00)
Gasket (item 109, 0718 00)
Sealing compound (item 16, 0716 00)
Dry-cleaning solvent (item 1, 0716 00)
Gasket (item 448, 0718 00)

Equipment Conditions

Vehicle's MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Forward fuel tank control valve closed (TM 9-2350-292-10)
Subfloor plate #19 removed (WP 0454 00)
Front engine deck grilles removed (TM 9-2350-292-10)

Personnel Required

Two (Testing only)

References

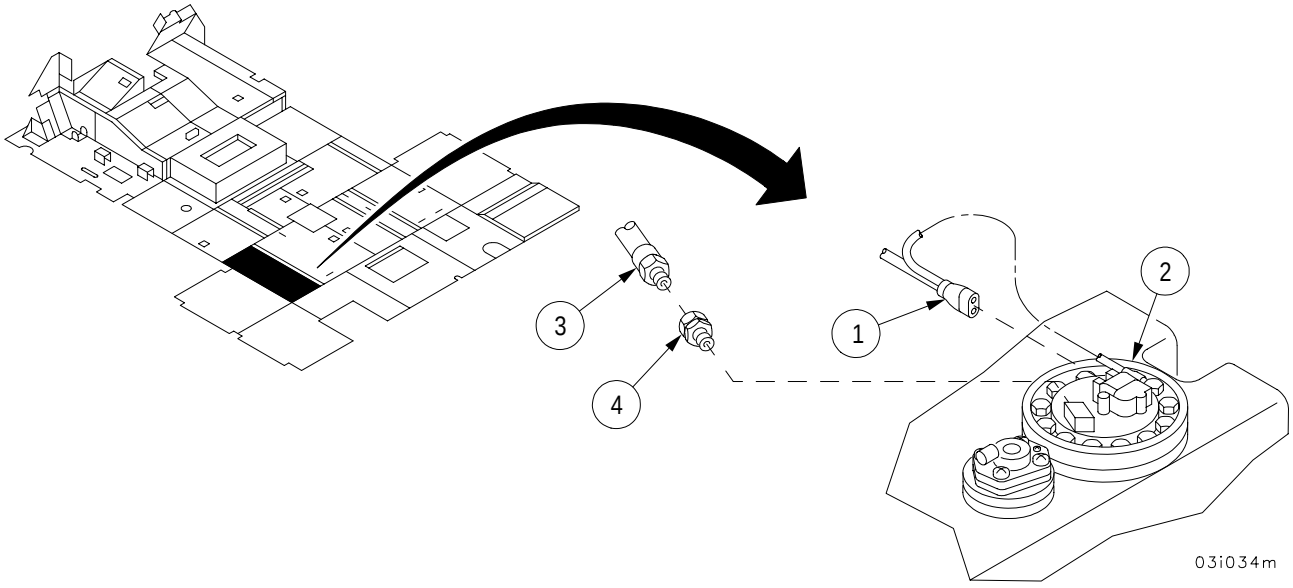
TM 9-2350-292-10



WARNING

Removal

1. Disconnect wiring harness 4W101 connector P5 (1) from pump and mount assembly (2).
2. Disconnect hose assembly (3) and adapter union (4) from pump and mount assembly (2).



ELECTRIC FUEL PUMP AND MOUNT ASSEMBLY REPAIR - CONTINUED 0201 00

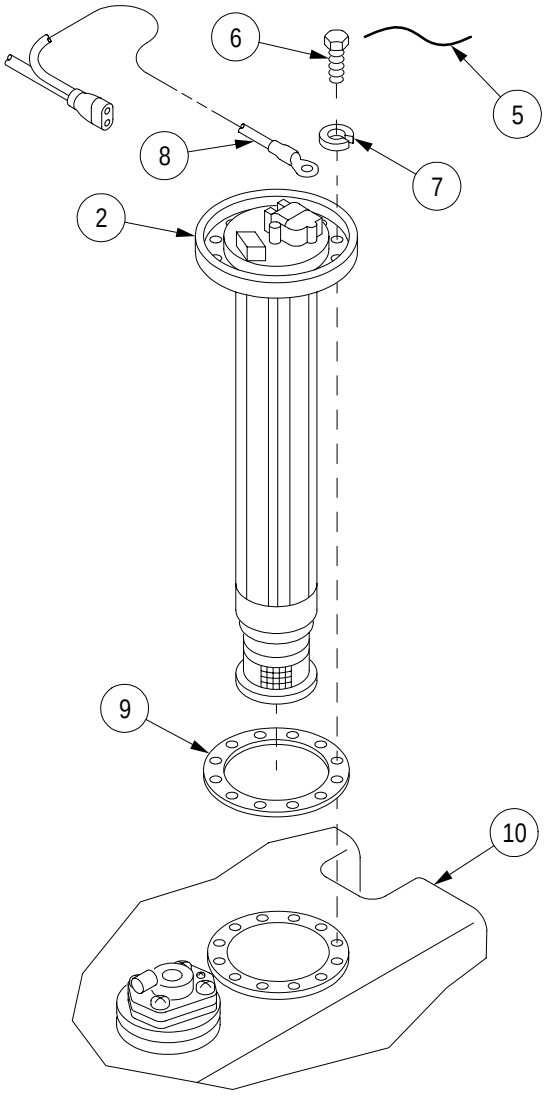
Removal-Continued

3. Remove nonelectrical wire (5) from 12 screws (6). Discard nonelectrical wire.

CAUTION

Debris may fall into opening in front fuel tank. Cover hole in front fuel tank if left unattended. Do not use rags. Failure to comply may cause equipment damage.

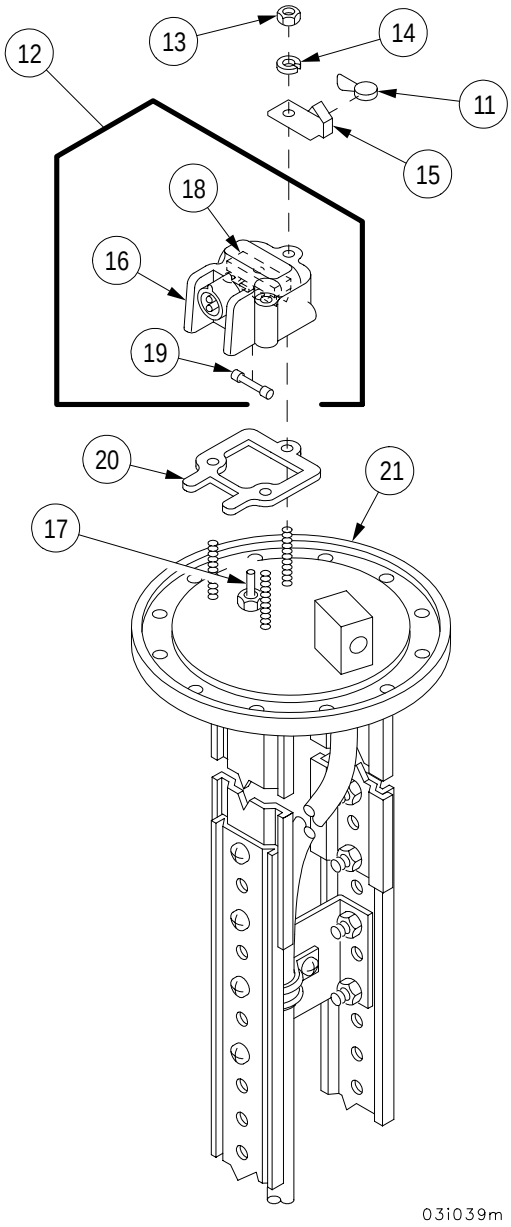
4. Remove 12 screws (6), 12 lockwashers (7), wiring harness 4W101 terminal GND (8), pump and mount assembly (2) and gasket (9) from front fuel tank (10). Discard lockwashers and gasket.



ELECTRIC FUEL PUMP AND MOUNT ASSEMBLY REPAIR - CONTINUED 0201 00

Disassembly

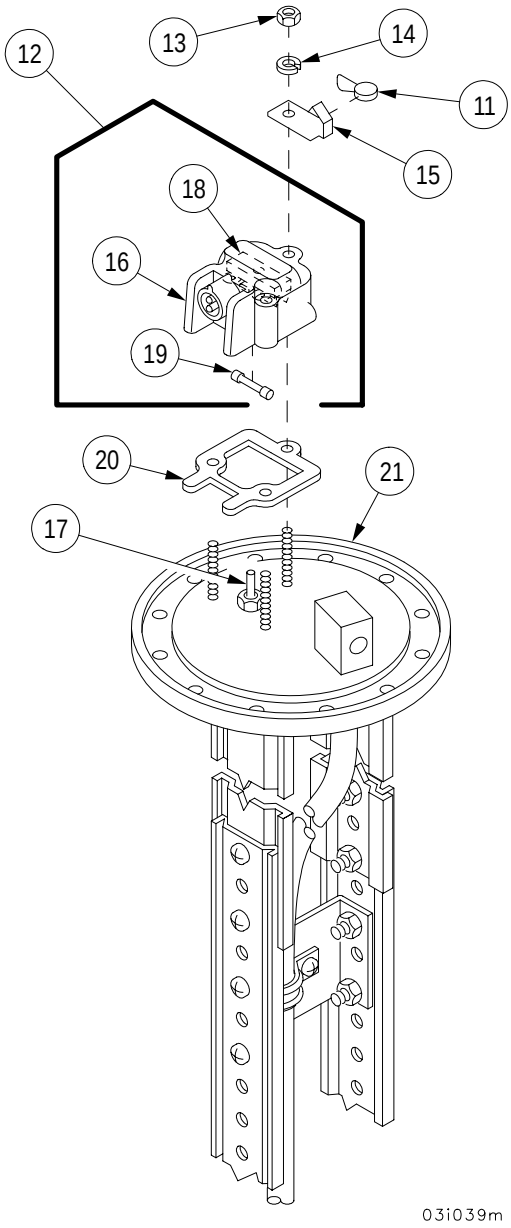
1. Remove seal (11) from terminal assembly (12). Discard seal.
2. Remove three nuts (13), three lockwashers (14) and retainer (15) from terminal assembly (12). Discard lockwashers.
3. Lift housing connector (16) and disconnect electrical wire (17) from fuse block (18).
4. Remove fuse (19) from fuse block (18).
5. Remove gasket (20) from fuel pump (21). Discard gasket.
6. Inspect parts for damage and replace as required.



ELECTRIC FUEL PUMP AND MOUNT ASSEMBLY REPAIR - CONTINUED 0201 00

Assembly

1. Install new gasket (20) on fuel pump (21).
2. Install fuse (19) on fuse block (18).
3. Connect electrical wire (17) to fuse block (18).
4. Install retainer (15), three new lockwashers (14) and three nuts (13) on terminal assembly (12).
5. Install new seal (11) on terminal assembly (12).



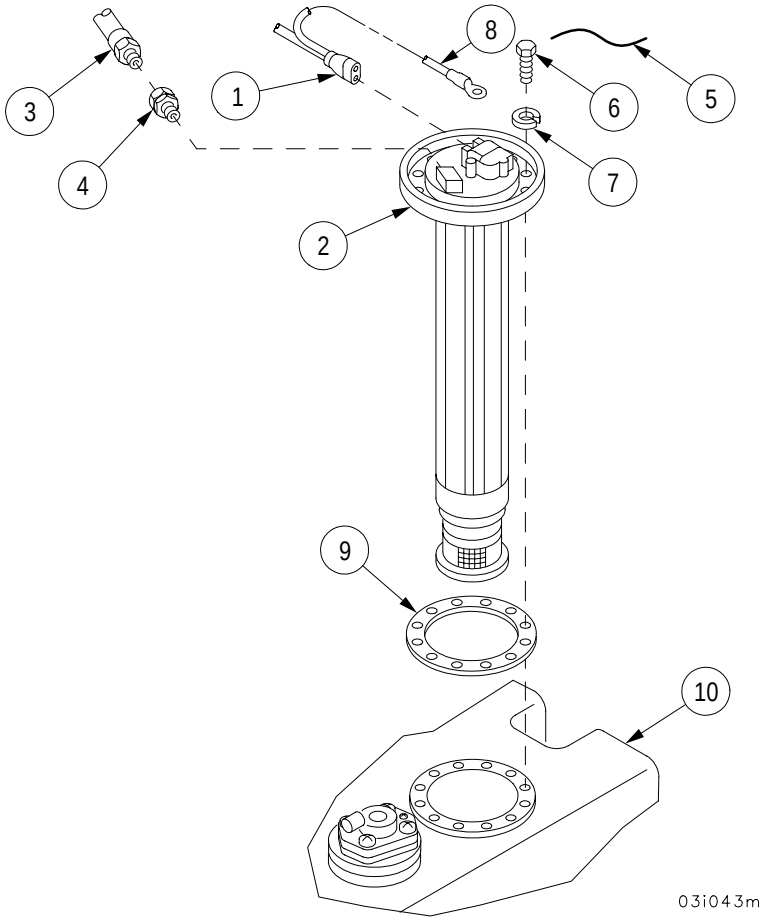
ELECTRIC FUEL PUMP AND MOUNT ASSEMBLY REPAIR - CONTINUED 0201 00

Installation

1. Install new gasket (9), pump and mount assembly (2) and wiring harness 4W101 terminal GND (8) in front fuel tank (10) with 12 screws (6) and 12 new lockwashers (7). Torque screws 36-48 lb-in. (4.0-5.4 N•m).
2. Install new nonelectrical wire (5) on 12 screws (6) using double-twist method.



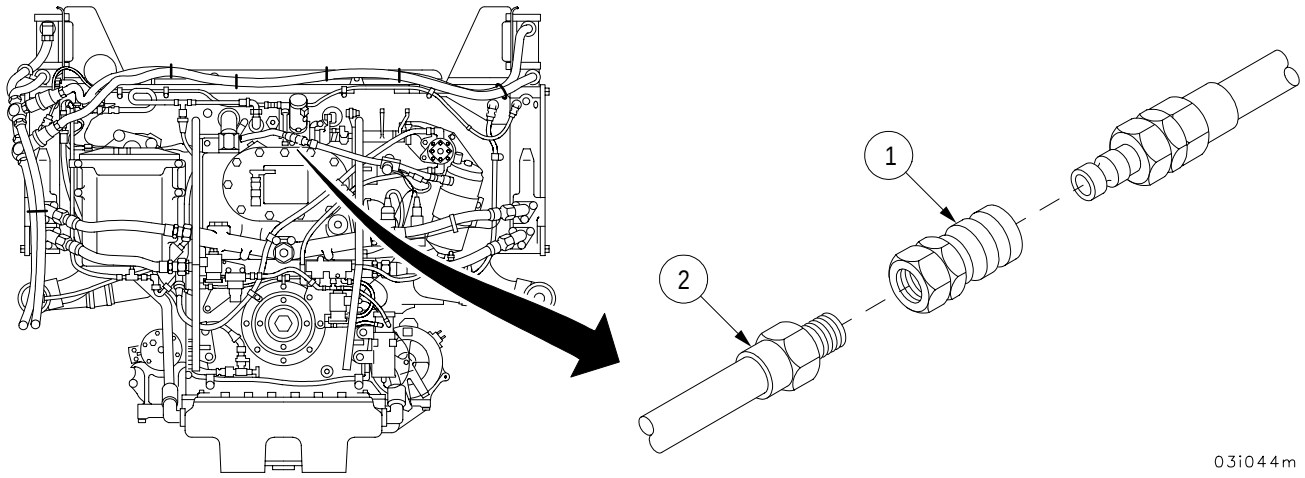
3. Apply sealing compound to all male pipe threads.
4. Install adapter union (4) and hose assembly (3) on pump and mount assembly (2).
5. Connect wiring harness 4W101 connector P5 (1) to pump and mount assembly (2).
6. Connect battery power (WP 0256 00).



ELECTRIC FUEL PUMP AND MOUNT ASSEMBLY REPAIR - CONTINUED 0201 00

Testing

1. Disconnect quick-disconnect coupling half (1) on hose assembly (2) from engine.
2. Remove quick-disconnect coupling half (1) from hose assembly (2).
3. Place hose assembly (2) in three-gallon container to collect fuel.
4. Turn front fuel tank control valve to ON (TM 9-2350-292-10).
5. Turn vehicle MASTER switch to ON (TM 9-2350-292-10).
6. Turn vehicle FUEL PUMP switch to ON and time fuel flow into three-gallon container for 30 seconds, then turn vehicle's FUEL PUMP switch to OFF (TM 9-2350-292-10).



ELECTRIC FUEL PUMP AND MOUNT ASSEMBLY REPAIR - CONTINUED 0201 00

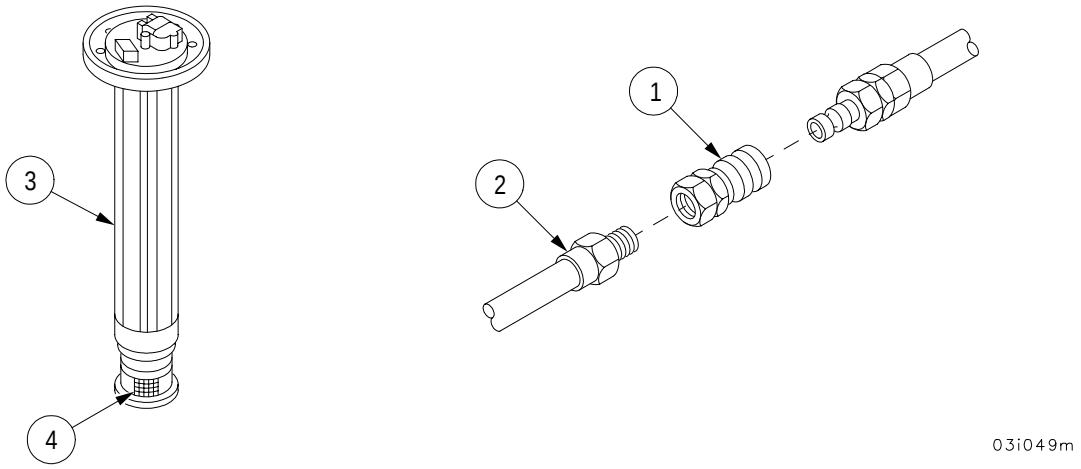
Testing-Continued

7. Turn vehicle MASTER switch to OFF (TM 9-2350-292-10).
8. Measure the amount of fuel pumped into a three-gallon container. One and a half gallons of fuel (container half full), which is equal to a flow rate of three gallons per minute, is satisfactory. If flow rate is satisfactory, go to step 11.



WARNING

9. Remove fuel pump assembly (3) in accordance with this work package and inspect screens (4), if clogged, clean with dry-cleaning solvent.
10. Repeat steps 5 through 8 above. If rate of flow is less than three gallons per minute, notify Direct Support maintenance.
11. Install quick-disconnect coupling half (1) on hose assembly (2).
12. Connect quick-disconnect coupling half (1) on hose assembly (2) to engine.



NOTE

FOLLOW-ON MAINTENANCE:
Install front engine deck grilles
(TM 9-2350-292-10)
Install subfloor plate #19 (WP 0454 00)

END OF TASK

FUEL TRANSFER PUMP HOSE ASSEMBLIES AND FITTINGS REPLACEMENT

0202 00

THIS WORK PACKAGE COVERS:

Removal, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Automotive adjustable wrenches (2) (item 92, WP 0717 00)
Suitable container (1.0 gal (3.8 l) min cap)

Materials/Parts

Lockwashers (9) (item 9, WP 0718 00)
Sealing compound (item 16, WP 0716 00)
Marker tags (item 49, WP 0716 00)
Wiping rags (item 7, WP 0716 00)

Equipment Conditions

Powerpack removed (WP 0188 00)
Defuel access door opened (TM 9-2350-292-10)
Fuel shut-off valves closed (TM 9-2350-292-10)

References

TM 9-2350-292-10



WARNING

NOTE

Place rags under hose connections to catch any fuel that spills during maintenance. Dispose of rags in accordance with standing operating procedure.

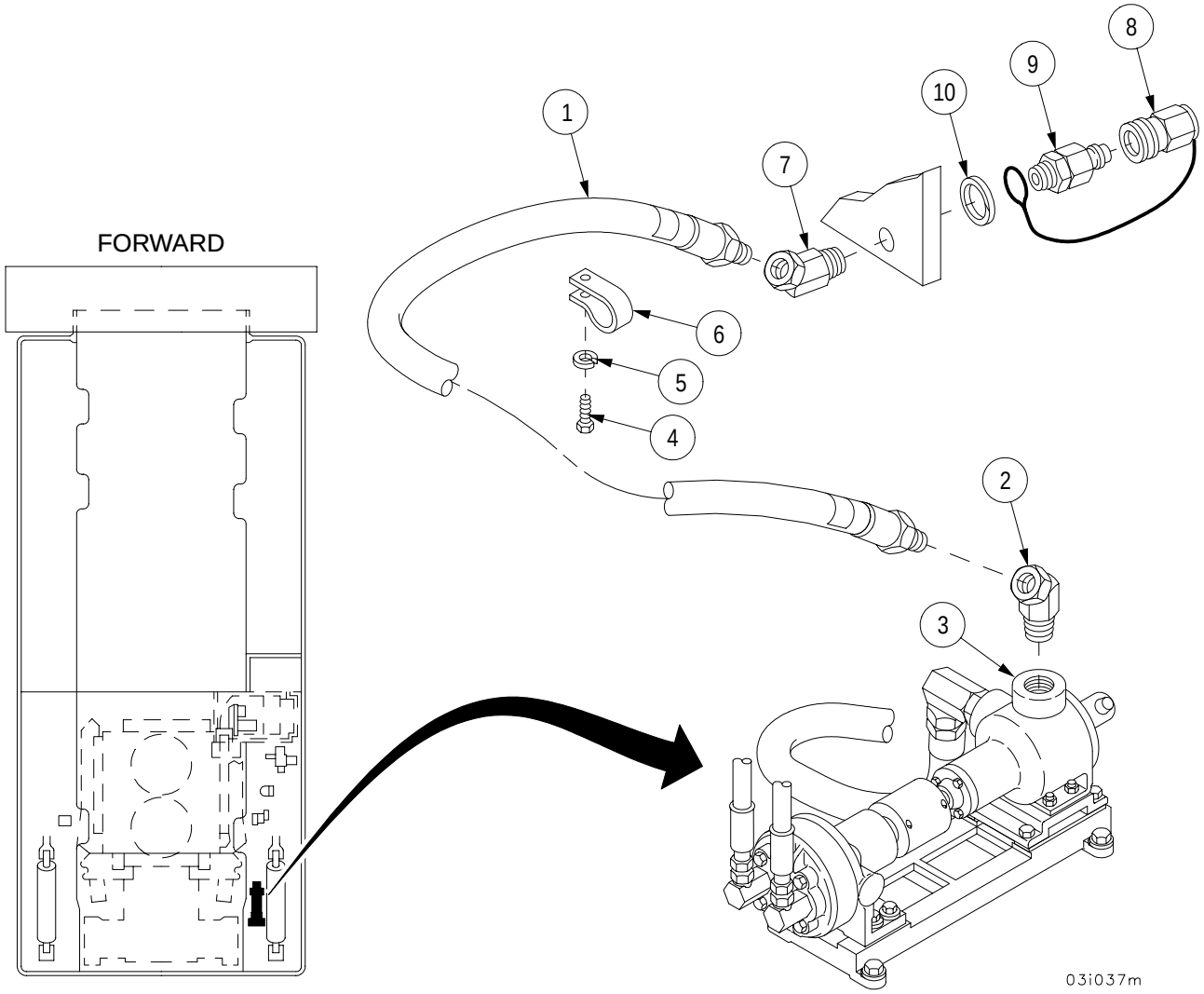
Identify and tag hoses before disconnecting for proper connection during installation.

FUEL TRANSFER PUMP HOSE ASSEMBLIES AND FITTINGS REPLACEMENT - CONTINUED

0202 00

Removal

1. Remove one end of hose assembly (1) and pipe elbow (2) from fuel transfer pump assembly (3).
2. Remove screw (4), lockwasher (5) and loop clamp (6) from hose assembly (1). Discard lockwasher.
3. Remove other end of hose assembly (1) and pipe elbow (7) from bulkhead.
4. Disconnect quick-disconnect cap (8) from quick-disconnect coupling half (9).
5. Remove quick-disconnect coupling half (9), quick-disconnect cap (8) and retaining ring (10) from bulkhead.

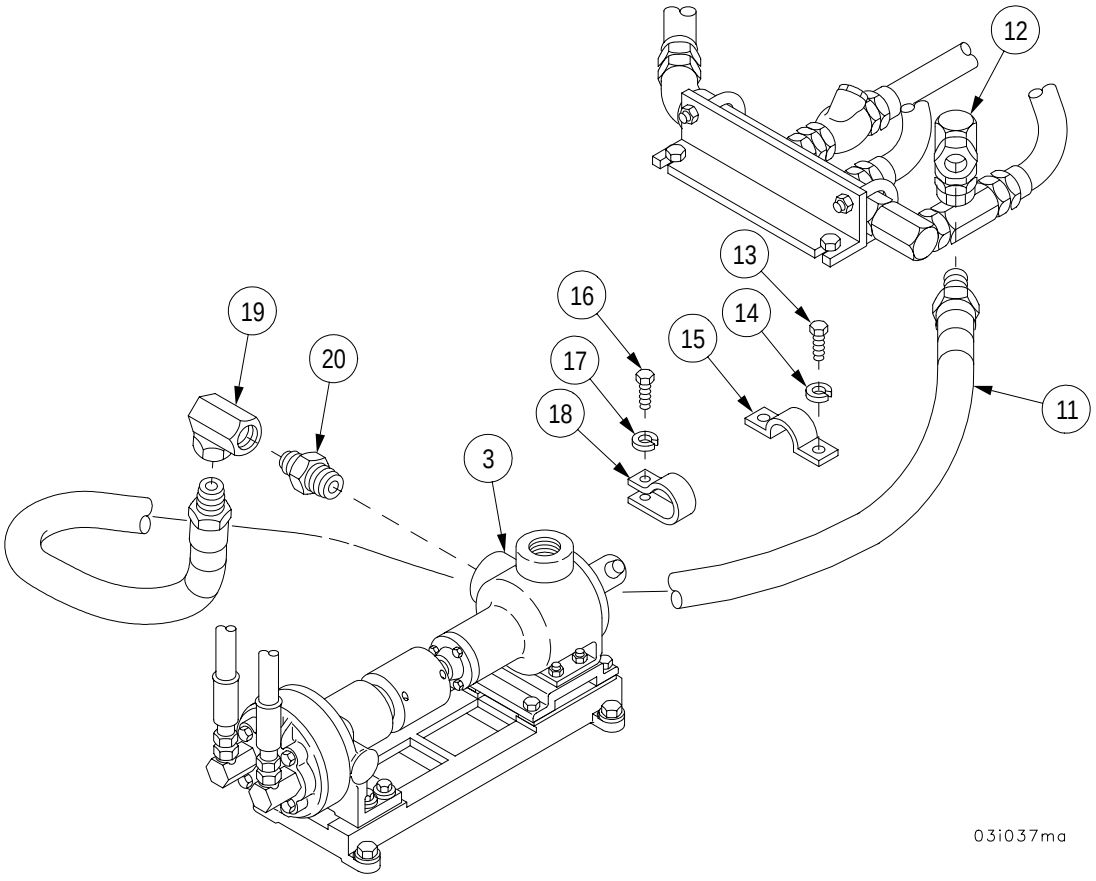


FUEL TRANSFER PUMP HOSE ASSEMBLIES AND FITTINGS REPLACEMENT - CONTINUED

0202 00

Removal-Continued

6. Remove one end of hose assembly (11) from pipe elbow (12).
7. Remove two screws (13), two lockwashers (14) and retaining strap (15) from hose assembly (11). Discard lockwashers.
8. Remove screw (16), lockwasher (17) and loop clamp (18) from hose assembly (11). Discard lockwasher.
9. Remove other end of hose assembly (11), pipe elbow (19) and pipe nipple (20) from fuel transfer pump assembly (3).
10. Inspect parts for damage and replace as required.

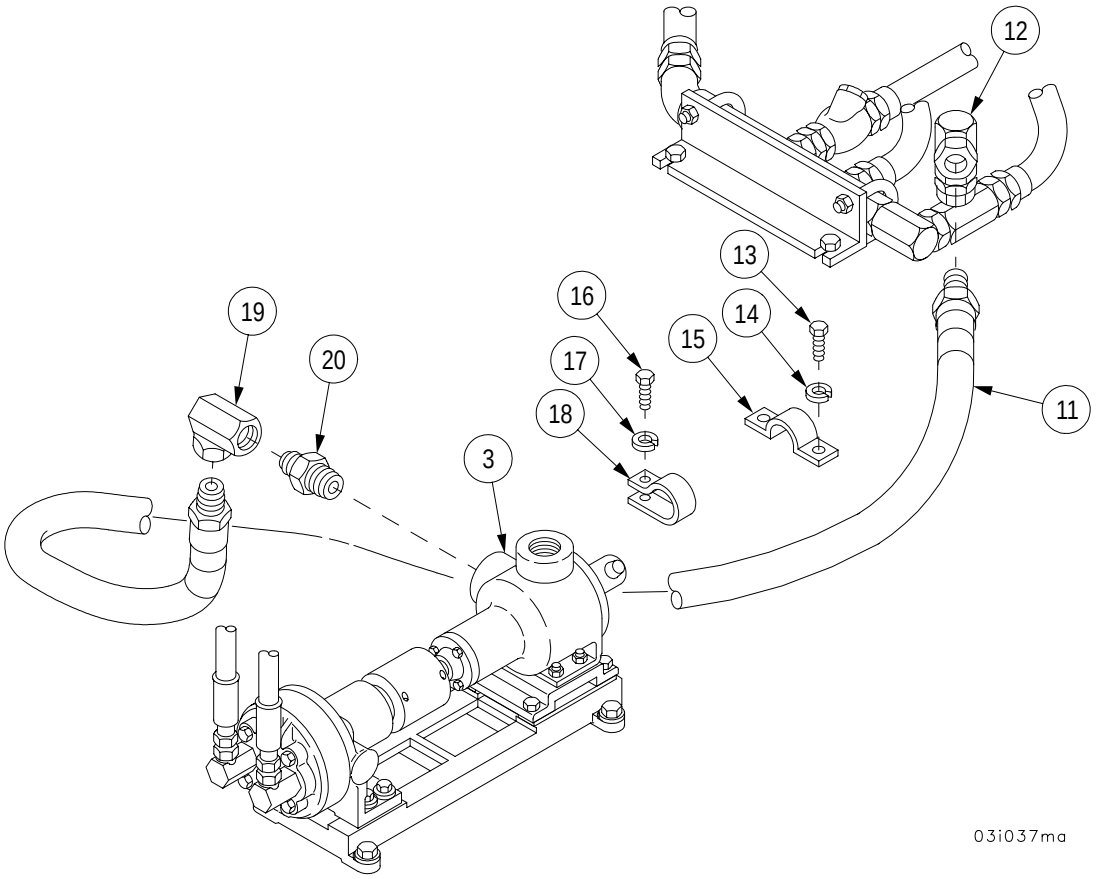


FUEL TRANSFER PUMP HOSE ASSEMBLIES AND FITTINGS REPLACEMENT - CONTINUED

0202 00

Installation

1. Apply sealing compound to all male pipe threads.
2. Install pipe nipple (20), pipe elbow (19) and one end of hose assembly (11) on fuel transfer pump assembly (3).
3. Install loop clamp (18), new lockwasher (17) and screw (16) on hose assembly (11).
4. Install retaining strap (15), two new lockwashers (14) and two screws (13) on hose assembly (11).
5. Install other end of hose assembly (11) on pipe elbow (12).



FUEL TRANSFER PUMP HOSE ASSEMBLIES AND FITTINGS REPLACEMENT - CONTINUED 0202 00

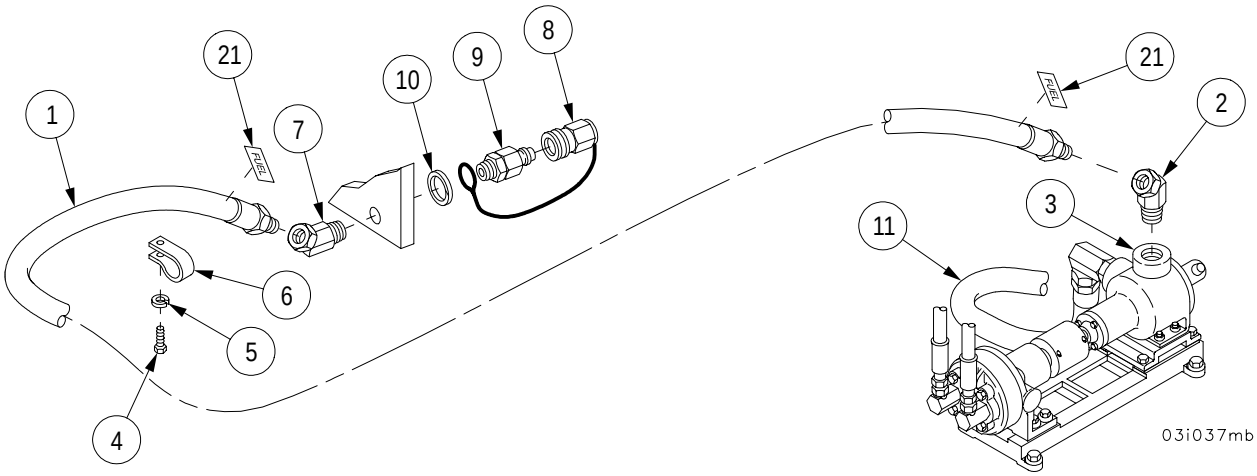
Installation-Continued

6. Install retaining ring (10), quick-disconnect coupling half (9) and quick-disconnect cap (8) on bulkhead.
7. Connect quick-disconnect cap (8) on quick-disconnect coupling half (9).

NOTE

A minimum of two decals shall be applied to the hose assembly. A decal shal be wrapped around the hose assembly within 5.00 inches (127.00 mm) of each end. The maximum allowable distance between decals shall be 36.00 inches (0.91 m). The word “FUEL” shall be visible after application.

8. Install decals (21) on two hose assemblies (1 and 11), if damaged or missing.
9. Install pipe elbow (7) and one end of hose assembly (1) on bulkhead.
10. Install loop clamp (6), new lockwasher (5) and screw (4) on hose assembly (1).
11. Install pipe elbow (2) and other end of hose assembly (1) on fuel transfer pump assembly (3).



NOTE

FOLLOW-ON MAINTENANCE:
Close defuel access door (TM 9-2350-292-10)
Install powerpack (WP 0188 00)
Open fuel shut-off valves (TM 9-2350-292-10)

END OF TASK

FUEL TRANSFER PUMP REPLACEMENT 0203 00

THIS WORK PACKAGE COVERS:

Removal, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Mechanical puller (item 43, WP 0717 00)

Materials/Parts

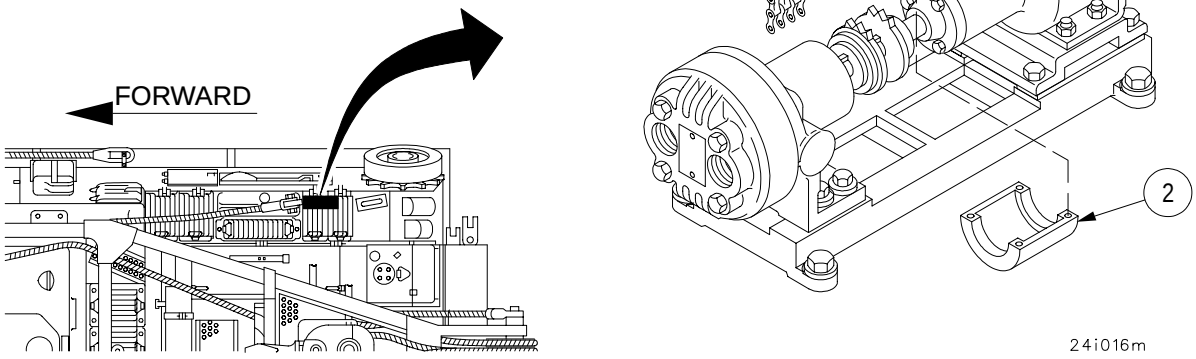
Lockwashers (8) (item 10, WP 0718 00)
Gaskets (2) (item 79, WP 0718 00)
Gasket (item 80, WP 0718 00)
Woodruff key (item 60, WP 0718 00)
Cotter pin (item 408, WP 0718 00)

Equipment Conditions

Fuel transfer pump hose assemblies and fittings removed (WP 0202 00)

Removal

1. Remove four screws (1), two coupling shaft covers (2) and two gaskets (3) from pump and motor assembly (4). Discard gaskets
2. Remove cotter pin (5), headed pin (6) and chain (7) from sprockets of fuel transfer pump and motor assembly (4). Discard cotter pin.



FUEL TRANSFER PUMP REPLACEMENT - CONTINUED 0203 00

Removal-Continued

NOTE

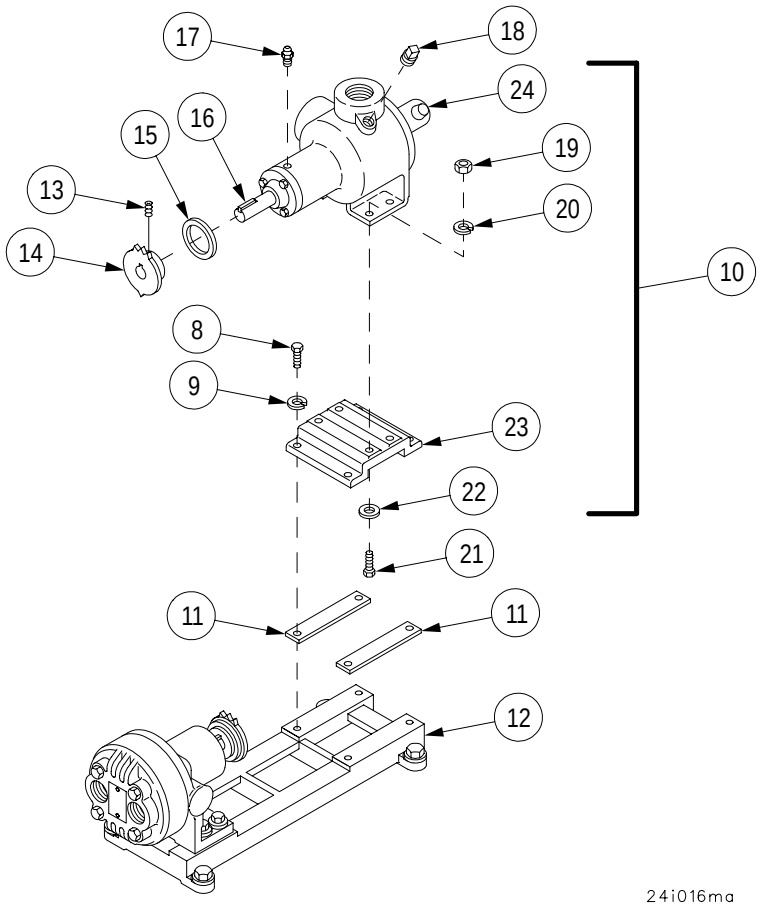
Note the quantity and position of shim(s) being removed to ensure shim(s) are installed in the same position.

3. Remove four screws (8), four lockwashers (9), fuel transfer pump assembly (10) and shim(s) (11) from motor and pump base assembly (12). Discard lockwashers.
4. Remove setscrew (13), sprocket (14), gasket (15), woodruff key (16), lubrication fitting (17) and two plugs (18) from shaft of fuel transfer pump assembly (10). Discard gasket and woodruff key.

NOTE

Note the quantity and position of shim(s) being removed to ensure shim(s) are installed in the same position.

5. Remove four nuts (19), four lockwashers (20), four screws (21), shim(s) (22) and adapter (23) from fuel transfer pump (24). Discard lockwashers.
6. Inspect parts for damage and replace as required.



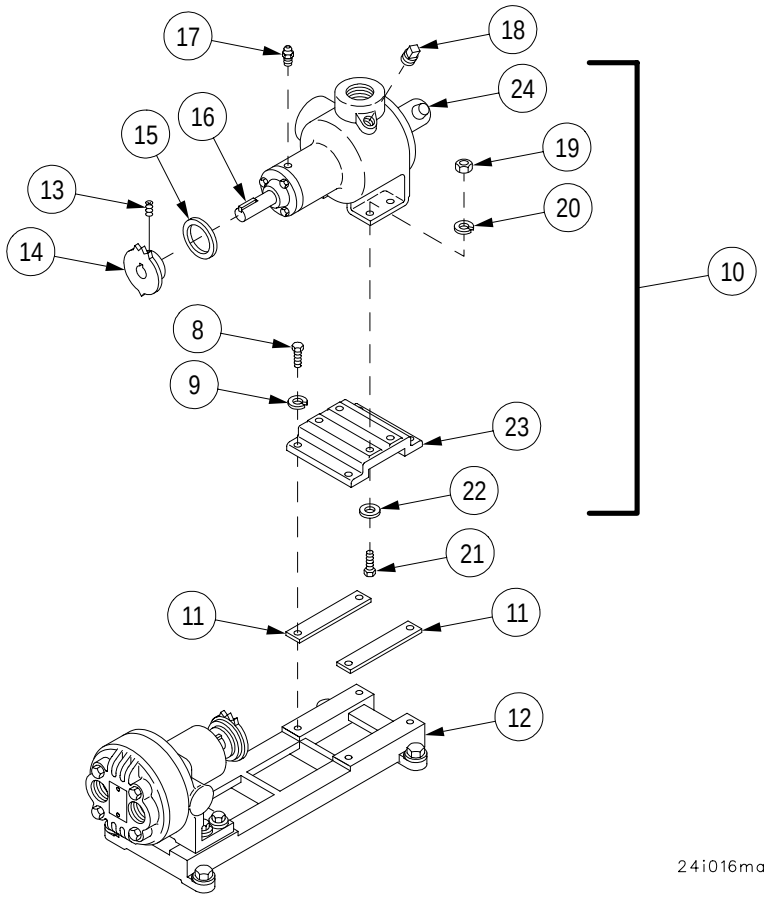
FUEL TRANSFER PUMP REPLACEMENT - CONTINUED 0203 00

Installation

NOTE

Apply a maximum of 2 shims under head of each screw to permit good access to screw head.

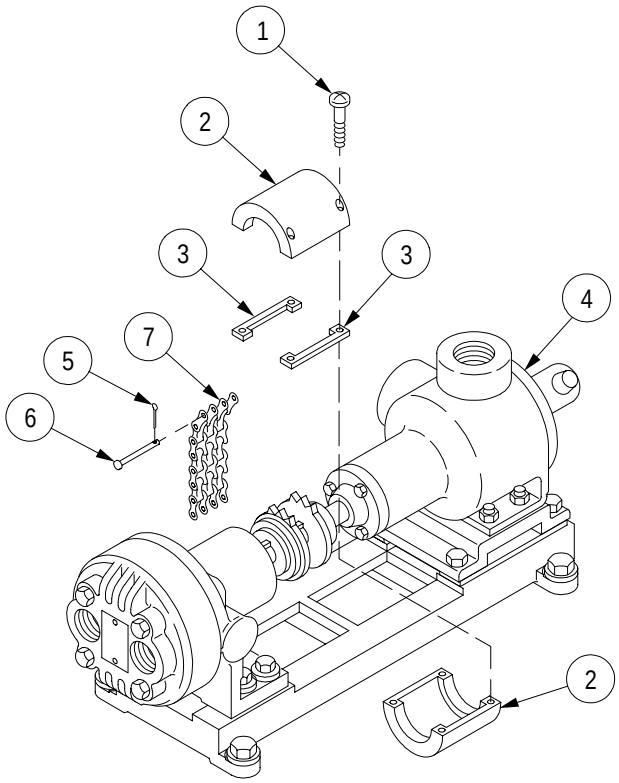
1. Install adapter (23) on fuel transfer pump (24) with four screws (21), shim(s) (22), four new lockwashers (20) and four nuts (19).
2. Install two plugs (18), lubrication fitting (17), new woodruff key (16), new gasket (15) and sprocket (14) on shaft of fuel transfer pump assembly (10).
3. Install setscrew (13) in sprocket (14).
4. Install fuel transfer pump assembly (10) on motor and pump base assembly (12) with shim(s) (11), four screws (8) and four new lockwashers (9).



FUEL TRANSFER PUMP REPLACEMENT - CONTINUED 0203 00

Installation-Continued

5. Install chain (7) on sprockets of fuel transfer pump and motor assembly (4) with headed pin (6) and new cotter pin (5).
6. Install two coupling shaft covers (2) and two new gaskets (3) on fuel transfer pump and motor assembly (4) with four screws (1).



NOTE

FOLLOW-ON MAINTENANCE:
Install fuel transfer pump hose assemblies and fittings (WP 0202 00)

END OF TASK

FUEL INJECTOR TUBE BRACKETS REPLACEMENT 0204 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Engine top housing assembly removed (WP 0232 00)

Materials/Parts
Self-locking nuts (54) (item 234, WP 0718 00)
Self-locking screws (2) (item 247, WP 0718 00)
Marker tags (item 49, WP 0716 00)
Wiping rags (item 7, WP 0716 00)

NOTE

Remove only those parts which must be replaced.

Tag all parts prior to removal to aid in installation.

Place rags under hose connections to catch any fuel that spills during maintenance. Dispose of rags in accordance with standard operating procedure.

Removal

1. Remove attaching hardware securing straps, brackets and spacers as shown in legend and illustration. Discard self-locking nuts and self-locking screws.
2. Remove straps, brackets and spacers in accordance with the following legend and illustration.
3. Inspect parts for damage and replace as required.

Installation

1. Install straps, brackets and spacers in accordance with the following legend and illustration.
2. Secure straps, brackets and spacers with attaching hardware and new self-locking nuts and new self-locking screws as shown in legend and illustration.

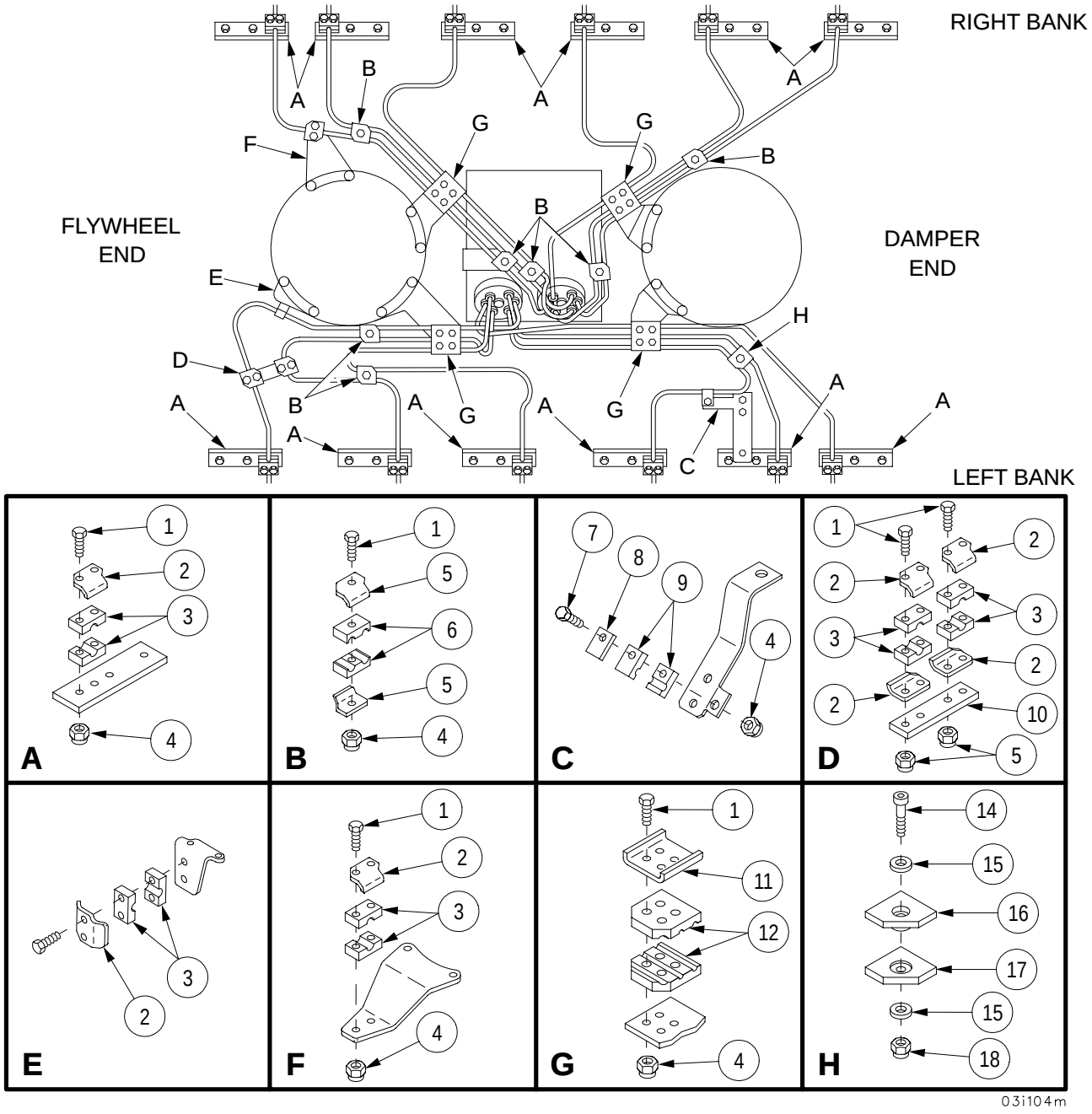
NOTE

FOLLOW-ON MAINTENANCE:
Install engine top housing assembly (WP 0232 00)

FUEL INJECTOR TUBE BRACKETS REPLACEMENT - CONTINUED 0204 00

LEGEND:

1.	Screws (53)	7.	Screw	13.	Self-locking screws (2)
2.	Retaining straps (18)	8.	Plate spacer	14.	Screw
3.	Fairlead halves (32)	9.	Retaining straps (2)	15.	Flat washers (2)
4.	Self-locking nuts (54)	10.	Plate spacer	16.	Clamp upper half
5.	Retaining straps (14)	11.	Retaining straps (8)	17.	Clamp lower half
6.	Fairlead halves (14)	12.	Fairlead halves (8)	18.	Self-locking nut



END OF TASK

FUEL INJECTOR NOZZLE RETURN HOSES AND RELATED PARTS REPLACEMENT 0205 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Torque wrench (item 21, WP 0717 00)

Materials/Parts
Lockwasher (item 58, WP 0718 00)
Self-locking nut (item 234, WP 0718 00)
Lockwasher (item 10, WP 0718 00)
Flat washers (24) (item 409, 0718 00)
Marker tags (item 49, 0716 00C)
Wiping rags (item 7, WP 0716 00C)
Lockwasher (item 202, WP 0718 00)

Equipment Conditions
Engine top housing assembly removed (WP 0232 00)
Engine oil hose assemblies, tube assemblies and related parts removed (WP 0200 00)

NOTE

Remove only those parts which must be replaced.

Tag all parts prior to removal to aid in installation.

Place rags under hose connections to catch any fuel that spills during maintenance. Dispose of rags in accordance with standard operating procedure.

Removal

1. Remove clamps and attaching hardware securing hose assemblies, tube assemblies and fittings as shown in legend and illustration. Discard self-locking nut, lockwashers and copper flat washers.
2. Remove hose assemblies, tube assemblies and fittings in accordance with the following legend and illustration.
3. Inspect parts for damage and replace as required.

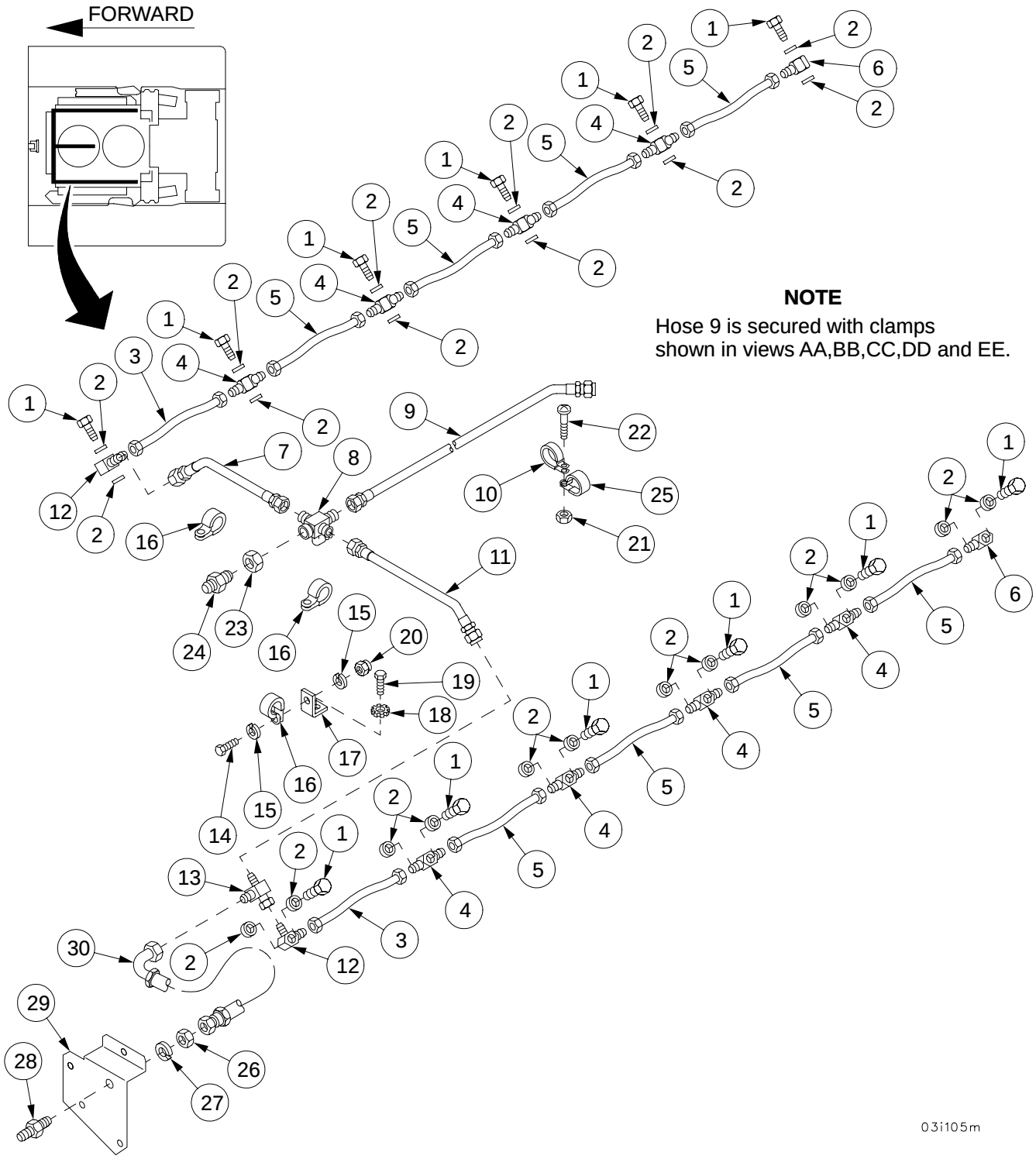
LEGEND:

1.	Screws (12)	11.	Hose assembly	21.	Nut
2.	Flat washers (24)	12.	Connectors (2)	22.	Bolt
3.	Hose assemblies (10)	13.	Swivel tee	23.	Nut
4.	Connectors (8)	14.	Screw	24.	Adapter
5.	Hose assembly (8)	15.	Lockwashers (2)	25.	Loop clamp
6.	Tee (2)	16.	Loop clamps (3)	26.	Locknut
7.	Hose assembly	17.	Bracket	27.	Lockwasher
8.	Cross tube	18.	Lockwasher	28.	Tube nipple
9.	Hose assembly	19.	Screw	29.	Access cover (WP 0233 00)
10.	Clamp	20.	Self-locking nut	30.	Hose assembly

FUEL INJECTOR NOZZLE RETURN HOSES AND RELATED PARTS REPLACEMENT - CONTINUED

0205 00

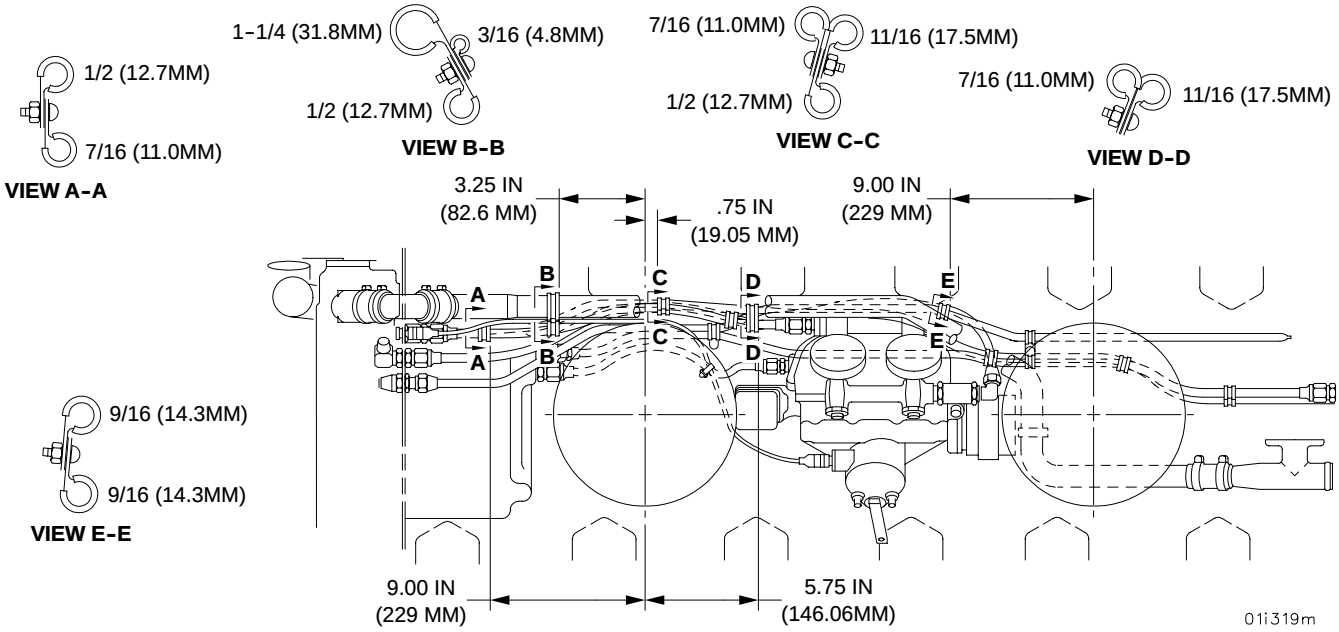
Removal - Continued



FUEL INJECTOR NOZZLE RETURN HOSES AND RELATED PARTS REPLACEMENT - CONTINUED 0205 00

Installation

1. Install hose assemblies, tube assemblies and fittings in accordance with the following legend and illustrations.
2. Secure hose assemblies, tube assemblies and fittings with clamps, attaching hardware and new self-locking nut, new lockwashers and new copper flat washers as shown in legend and illustrations.



3. Torque 12 screws (1) to 135 lb-in (15 NSm).

LEGEND:

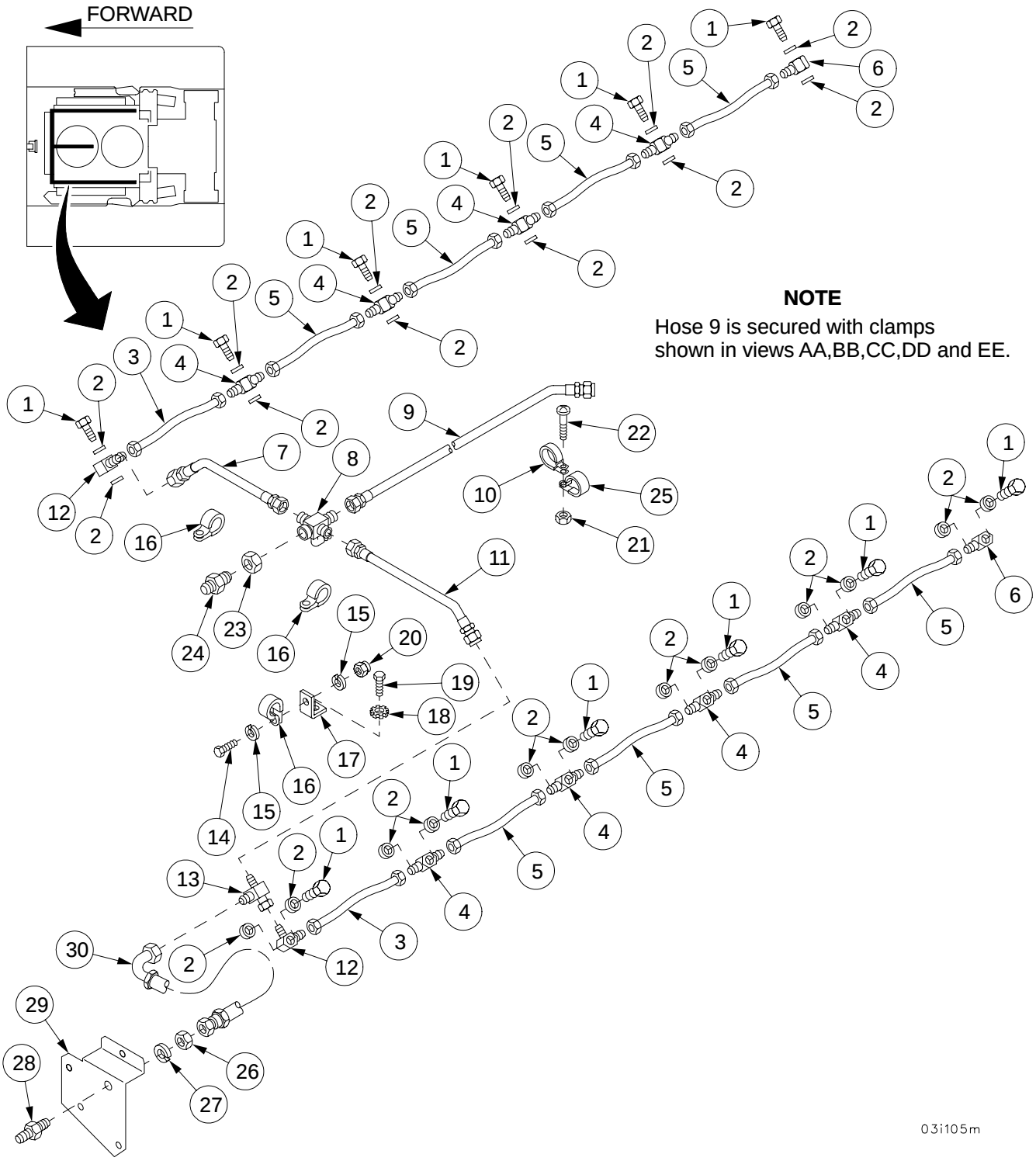
1.	Screws (12)	11.	Hose assembly	21.	Nut
2.	Flat washers (24)	12.	Connectors (2)	22.	Bolt
3.	Hose assemblies (10)	13.	Swivel tee	23.	Nut
4.	Connectors (8)	14.	Screw	24.	Adapter
5.	Hose assembly (8)	15.	Lockwashers (2)	25.	Loop clamp
6.	Tee (2)	16.	Loop clamps (3)	26.	Locknut
7.	Hose assembly	17.	Bracket	27.	Lockwasher
8.	Cross tube	18.	Lockwasher	28.	Tube nipple
9.	Hose assembly	19.	Screw	29.	Access cover (WP 0233 00)
10.	Clamp	20.	Self-locking nut	30.	Hose assembly

NOTE

FOLLOW-ON MAINTENANCE:
Install engine top housing assembly (WP 0232 00)
Install engine oil hose assemblies, tube assemblies and related parts (WP 0200 00)

FUEL INJECTOR NOZZLE RETURN HOSES AND RELATED PARTS REPLACEMENT - CONTINUED 0205 00

Installation - Continued



END OF TASK

ENGINE FUEL PUMP REPLACEMENT 0206 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

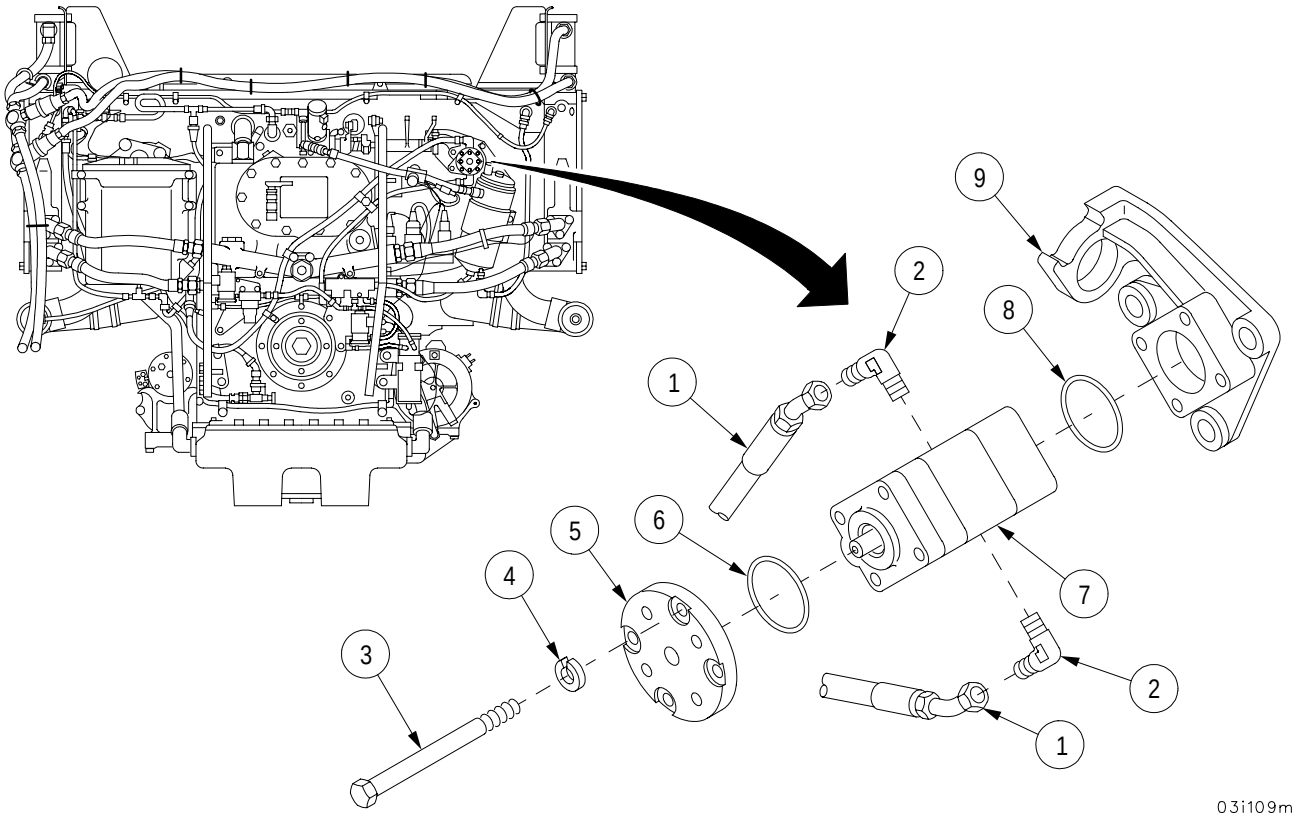
Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Suitable container (1.0 gal. (3.8 l) min cap)

Materials/Parts
Lockwashers (4) (item 10, WP 0718 00)
Preformed packings (2) (item 360, WP 0718 00)

Equipment Conditions
Powerpack removed (WP 0188 00)
Mechanical tachometer drive adapter removed (WP 0695 00)

Removal

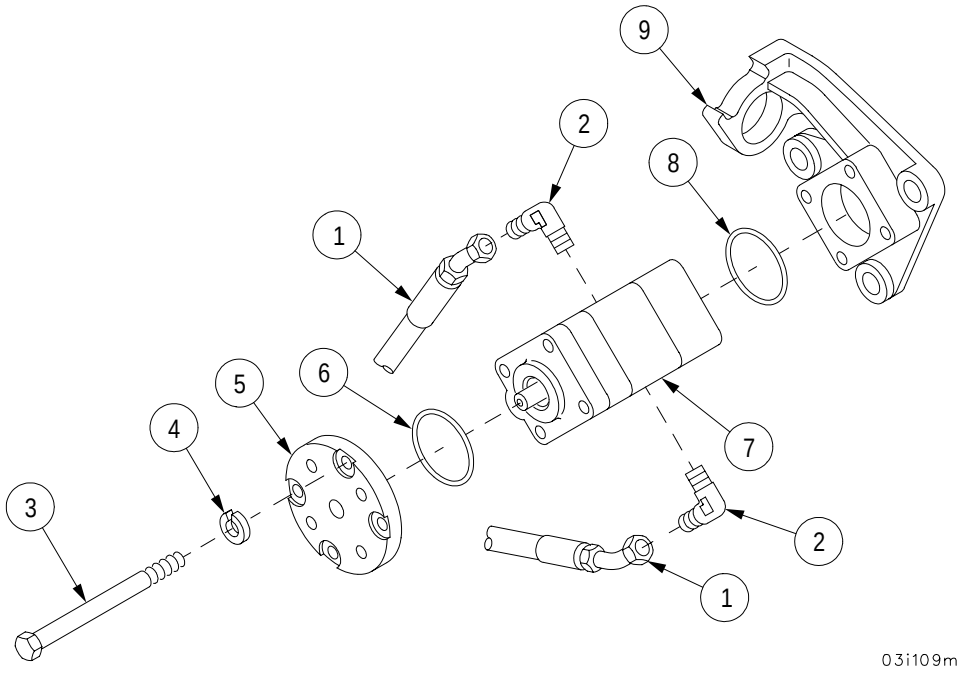
1. Disconnect two hoses (1) from two elbows (2). Catch fuel draining from lines in suitable container.
2. Remove four screws (3), four lockwashers (4), engine fuel pump adapter plate (5), preformed packing (6), fuel pump (7) and preformed packing (8) from adapter assembly (9). Discard lockwashers and preformed packings.
3. Remove two elbows (2) from fuel pump (7).
4. Inspect parts for damage and replace as required.



ENGINE FUEL PUMP REPLACEMENT - CONTINUED 0206 00

Installation

1. Install two elbows (2) in fuel pump (7).
2. Install new preformed packing (8), fuel pump (7), new preformed packing (6) and engine fuel pump adapter plate (5) on adapter assembly (9) with four screws (3) and four new lockwashers (4).
3. Connect two hoses (1) to two elbows (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install mechanical tachometer drive adapter (WP 0695 00)
Install powerpack (WP 0188 00)

END OF TASK

FUEL BACKFLOW VALVE AND RELATED PARTS REPLACEMENT 0207 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (4) (item 9, WP 0718 00)
Lockwasher (item 273, WP 0718 00)
Self-locking nuts (2) (item 274, WP 0718 00)
Pressure sensitive tape (item 41, WP 0716 00)
Marker tags (item 49, WP 0716 00)
Wiping rags (item 7, WP 0716 00)
Self-locking nut (item 175, WP 0718 00)

Equipment Conditions
Fuel/water separator drained (WP 0220 00)
Primary fuel filter drained (WP 0222 00)
Fuel line from back flow valve to tee at preheat fuel filter and to manifold heater fuel pump removed (WP 0224 00)
Cooling fans removed (WP 0235 00)
Engine top housing assembly removed (WP 0232 00)
For maintenance of items #12, #13, #14, #15 and #16



WARNING

NOTE

Remove only those parts which must be replaced.

Tag all parts prior to removal to aid in installation.

Place rags under hose connections to catch any fuel that spills during maintenance. Dispose of rags in accordance with standard operating procedure.

Removal

1. Remove clamps and attaching hardware securing hose assemblies, tube assemblies and brackets as shown in legend and illustration. Discard lockwashers and self-locking nuts.
2. Remove hose assemblies, tube assemblies, brackets and fittings in accordance with the following legend and illustration.
3. Inspect parts for damage and replace as required.

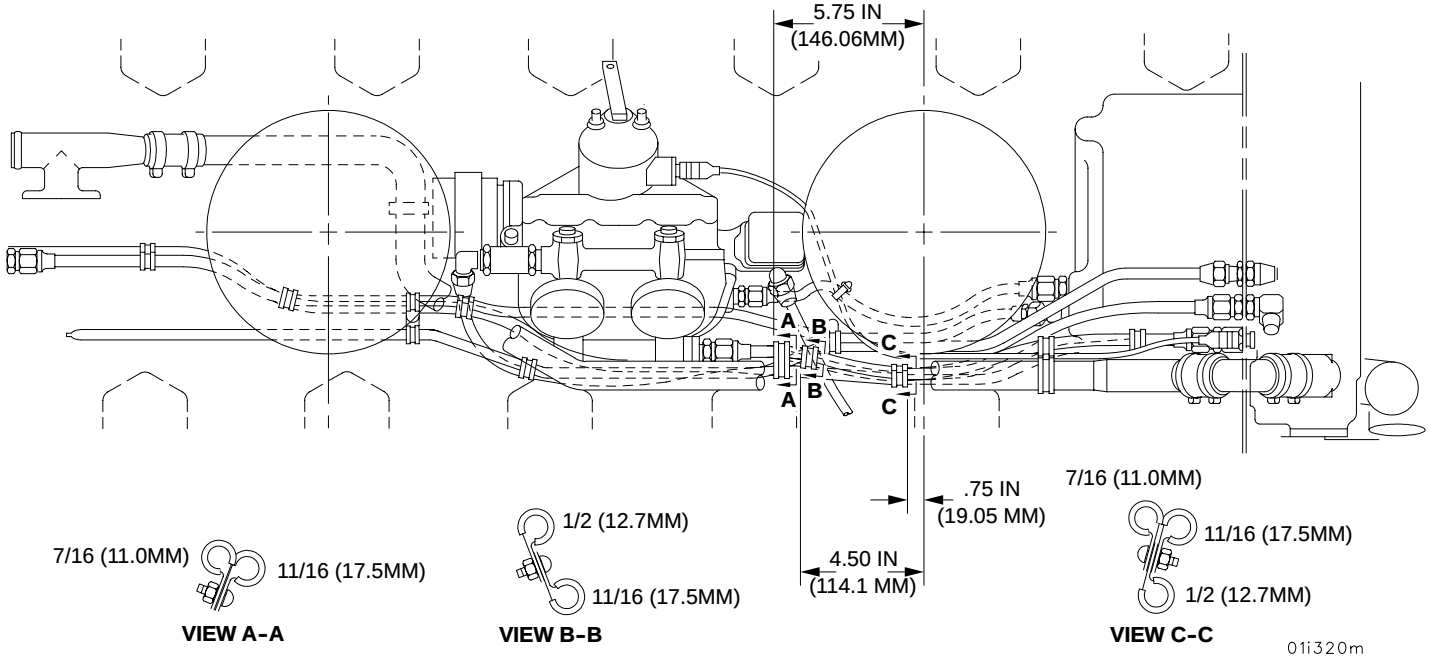
Installation

1. Apply pressure sensitive tape to all male pipe threads.
2. Install hose assemblies, tube assemblies, brackets and fittings in accordance with the following legend and illustration.
3. Secure hose assemblies, tube assemblies and brackets with clamps, attaching hardware and new lockwashers and self-locking nuts as shown in legend and illustration.

FUEL BACKFLOW VALVE AND RELATED PARTS REPLACEMENT - CONTINUED 0207 00

LEGEND:

1. Plate assembly
2. Hose assembly
3. Loop clamps (2)
4. Lockwashers (4)
5. Screws (2)
6. Hose assembly
7. Pipe elbow
8. Tee
9. Hose assembly
10. Loop clamps (2)
11. Elbow
12. Flat washer
13. Lockwasher
14. Nut
15. Loop clamp
16. Tube assembly
17. Hose assembly
18. Adapter
19. Elbow
20. Mounting bracket
21. Flat washers (2)
22. Self-locking nuts (2)
23. Backflow valve
24. Flat washers (2)
25. Screws (2)
26. Elbows (2)
27. Tube assembly
28. Fuel pump
29. Hose assembly
30. Hose assembly
31. Elbow
32. Tee
33. Tube reducer body
34. Tube coupling nut
35. Adapter
36. Mounting bracket
37. Tee
38. Elbows (2)
39. Fuel/water separator (WP 0220 00)
40. Primary fuel filter (WP 0222 00)
41. Pipe reducer
42. Hose assembly
43. Self-locking nut
44. Flat washer
45. Loop clamp
46. Angle bracket
47. Spring tension clip
48. Machine screw
49. Quick-disconnect coupling half
50. Adapter
51. Hose assembly
52. Loop clamps (2)

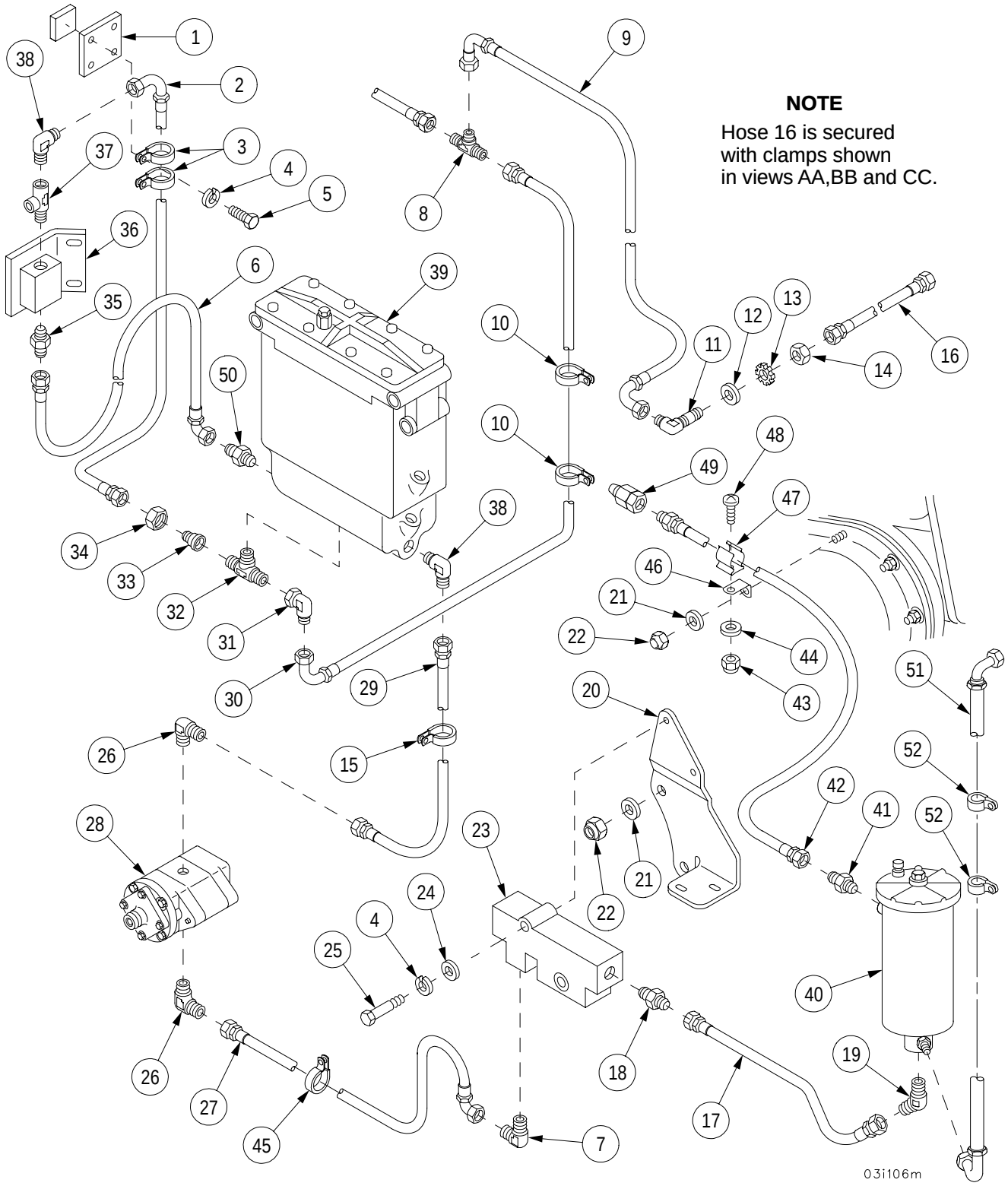


NOTE

FOLLOW-ON MAINTENANCE:

Install engine top housing assembly, if removed (WP 0232 00)
Install cooling fans (WP 0235 00)
Connect fuel line from check valve to tee at preheat fuel filter and to manifold heater fuel pump (WP 0224 00)

FUEL BACKFLOW VALVE AND RELATED PARTS REPLACEMENT - CONTINUED 0207 00



END OF TASK

ENGINE AIR CLEANER ASSEMBLY REPLACEMENT 0208 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (7) (item 2, WP 0718 00)
Lockwashers (3) (item 9, WP 0718 00)
Round rubber section (item 36, WP 0718 00)

Equipment Conditions
Engine air cleaner filter element removed (TM 9-2350-292-10)

References
TM 9-2350-292-10
FM 3-5

WARNING

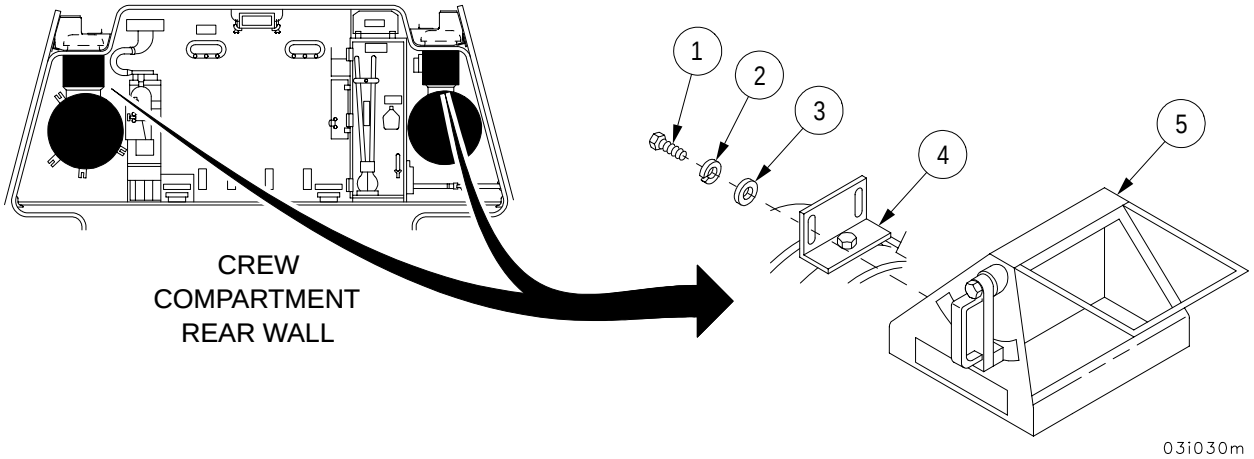
NBC contaminated filters must be handled using adequate precautions (FM 3-5) and must be disposed of by trained personnel. Failure to do so may result in injury or death of personnel from NBC contamination.

NOTE

Left and right air cleaners are removed and installed the same way.

Removal

1. Remove two screws (1), two lockwashers (2) and two flat washers (3) securing bracket (4) to damper housing (5). Discard lockwashers.



ENGINE AIR CLEANER ASSEMBLY REPLACEMENT 0208 00

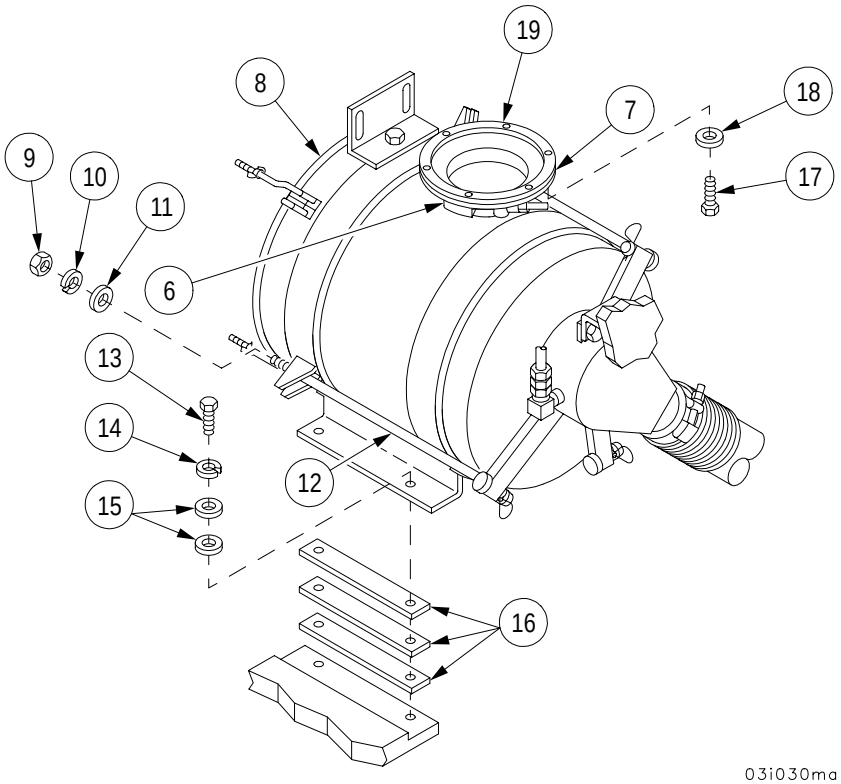
Removal-Continued

2. Loosen clamp (6) securing collar (7) to air cleaner (8).
3. Remove three nuts (9), three lockwashers (10), and three flat washers (11) from three retaining rods (12). Discard lockwashers.
4. Remove four screws (13), four lockwashers (14) and eight flat washers (15) securing air cleaner (8) to mounting bracket. Discard lockwashers.

NOTE

Quantity of shims may vary. Note quantity and location of shims to aid in installation.

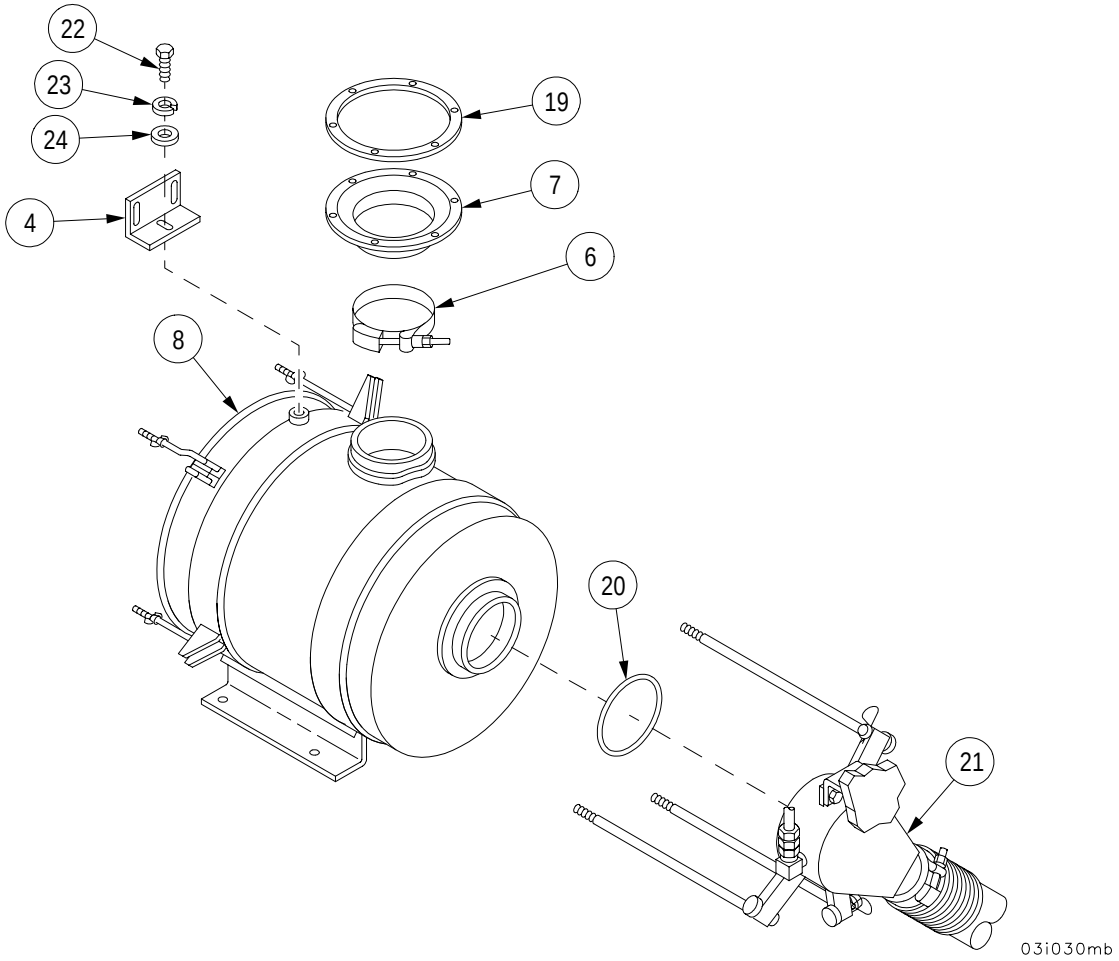
5. Remove air cleaner (8) and shims (16).
6. Remove six screws (17) and six flat washers (18) securing collar (7) and flange (19).



ENGINE AIR CLEANER ASSEMBLY REPLACEMENT 0208 00

Removal-Continued

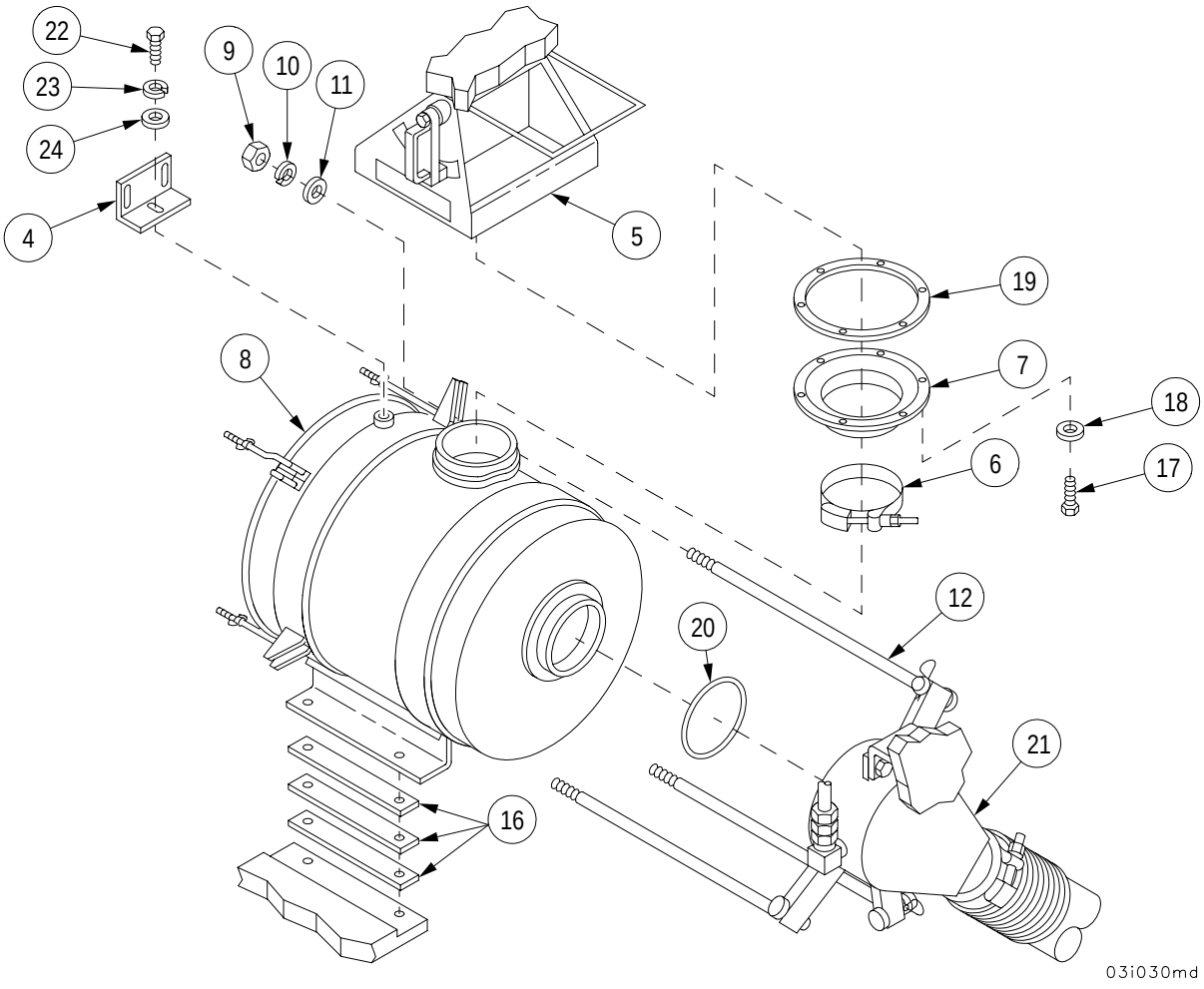
7. Remove round rubber section (20) between air cleaner (8) and air duct (21). Discard round rubber section.
8. Remove flange (19), collar (7) and clamp (6) from air cleaner (8).
9. Remove screw (22), lockwasher (23), flat washer (24) and bracket (4) from air cleaner (8) housing. Discard lockwasher.
10. Inspect parts for damage and replace as required.



ENGINE AIR CLEANER ASSEMBLY REPLACEMENT 0208 00

Installation

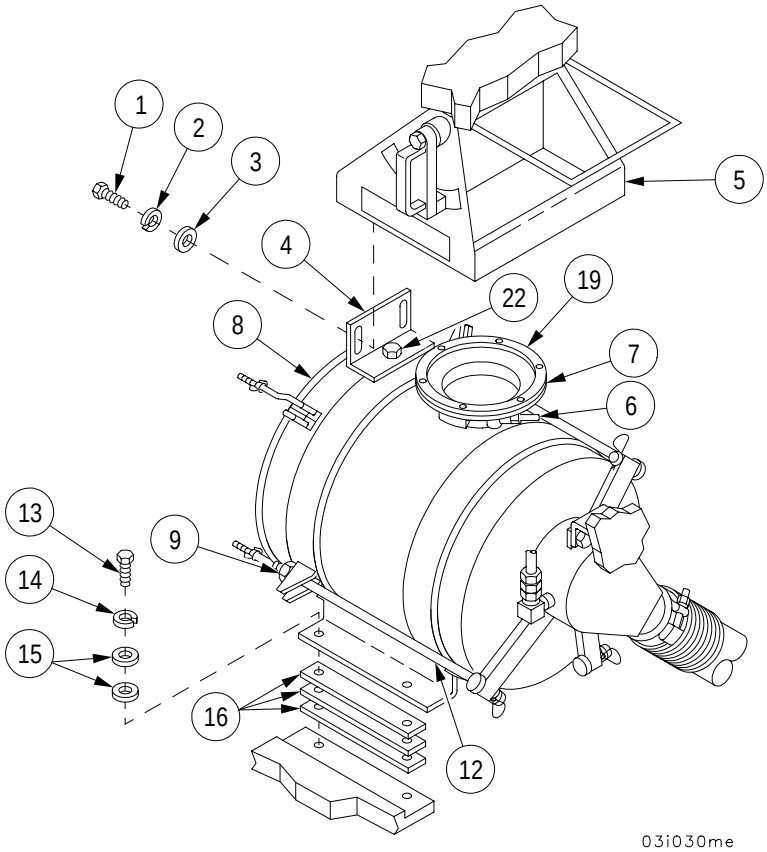
1. Install bracket (4) on air cleaner (8) housing with screw (22), new lockwasher (23) and flat washer (24). Do not fully tighten screw.
2. Install new round rubber section (20) on air cleaner (8).
3. Install clamp (6) and collar (7) on air cleaner (8). Do not tighten clamp.
4. Install air cleaner (8) with new round rubber section (20) on air duct (21).
5. Install three flat washers (11), three new lockwashers (10) and three nuts (9) on three retaining rods (12). Do not fully tighten nuts.
6. Secure collar (7) to flange (19) with six screws (17) and six flat washers (18).
7. Install shims (16) until holes in bracket (4) align with holes in damper housing (5).



ENGINE AIR CLEANER ASSEMBLY REPLACEMENT 0208 00

Installation-Continued

8. Install two screws (1), two new lockwashers (2) and two flat washers (3) attaching bracket (4) to damper housing (5). Do not fully tighten screws.
9. Install four screws (13), four new lockwashers (14) and eight flat washers (15) attaching air cleaner (8) to mounting bracket. Do not fully tighten screws.
10. Tighten clamp (6) securing collar (7) to air cleaner (8).
11. Tighten two screws (1) securing bracket (4) to damper housing (5).
12. Tighten screw (22) securing bracket (4) to air cleaner (8).
13. Tighten three nuts (9) securing three retaining rods (12) to air cleaner (8).
14. Tighten four screws (13) securing air cleaner (8) to mounts.
15. Ensure air cleaner (8) is sealed at upper and rear connections. Adjust with shims (16) as necessary.
16. Service air cleaner assembly (TM 9-2350-292-10).
17. Install air cleaner filter element (TM 9-2350-292-10).



END OF TASK

AIR CLEANER RESTRICTION GAUGE AND HOSE ASSEMBLY REPLACEMENT

0209 00

THIS WORK PACKAGE COVERS:
Removal, Installation

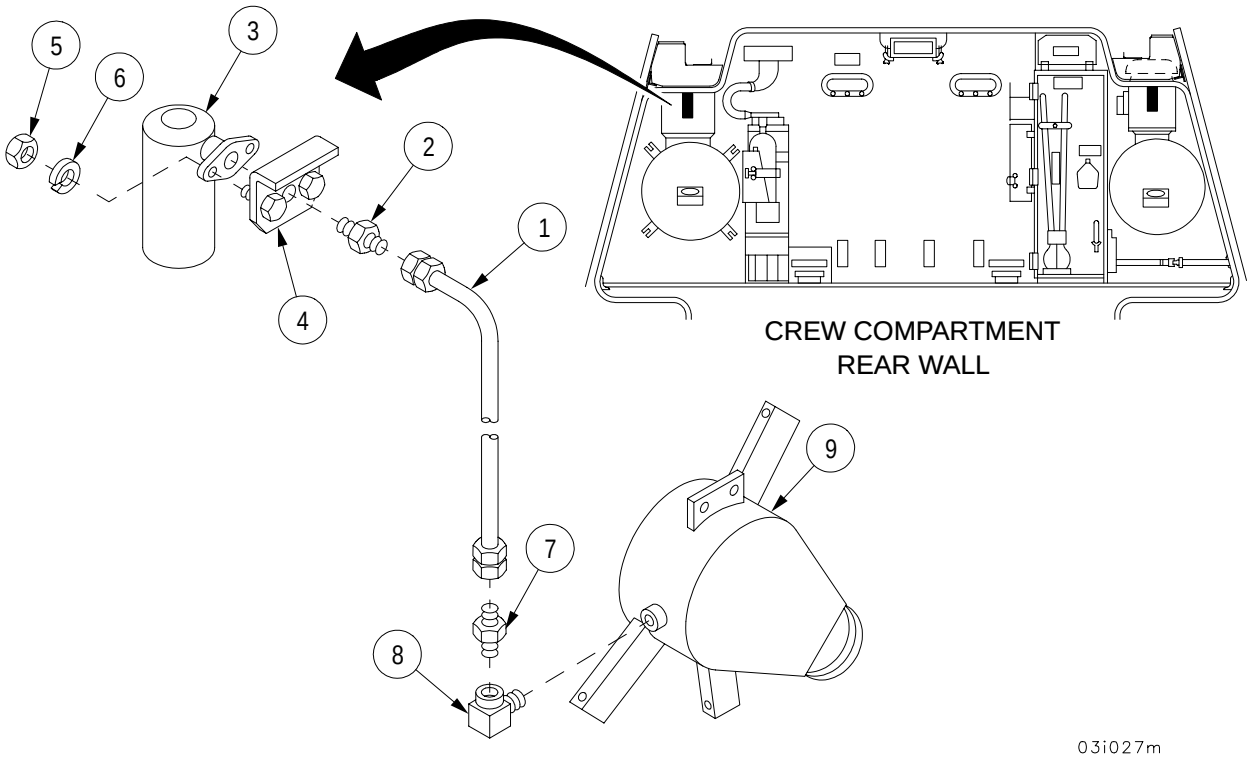
INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 9, WP 0718 00)

Removal

1. Remove hose assembly (1) from adapter (2).
2. Remove adapter (2) from indicator (3) and bracket (4).
3. Remove two nuts (5), two lockwashers (6) and indicator (3) from bracket (4). Discard lockwashers.
4. Remove hose assembly (1) from adapter (7).
5. Remove adapter (7) and elbow (8) from air duct assembly (9).
6. Inspect parts for damage and replace as required.

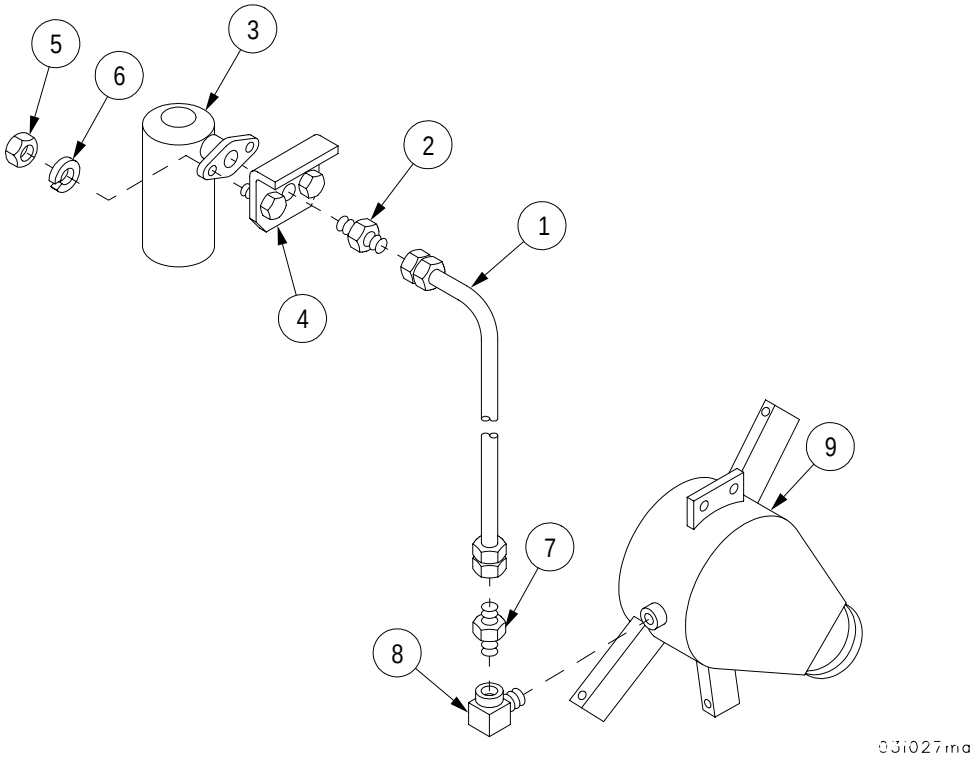


AIR CLEANER RESTRICTION GAUGE AND HOSE ASSEMBLY REPLACEMENT - CONTINUED

0209 00

Installation

1. Install elbow (8) and adapter (7) on air duct assembly (9).
2. Install hose assembly (1) on adapter (7).
3. Install indicator (3) on bracket (4) with two new lockwashers (6) and two nuts (5).
4. Install adapter (2) on indicator (3) and bracket (4).
5. Install hose assembly (1) on adapter (2).



END OF TASK

AIR CLEANER DAMPER, HANDLE AND SEALS REPLACEMENT 0210 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Rubber seals (2) (item 46, WP 0718 00)
Rubber seal (item 47, WP 0718 00)
Rubber seal (item 48, WP 0718 00)

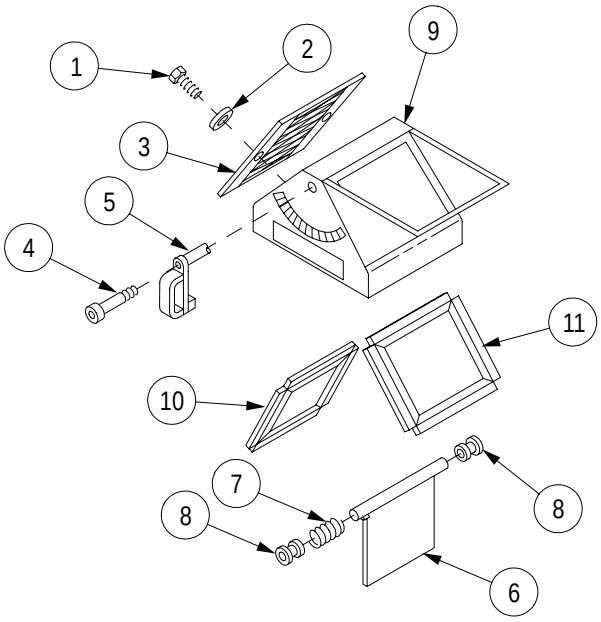
Materials/Parts - Continued
Dry-cleaning solvent (item 1, WP 0716 00)
Adhesive (item 15, WP 0716 00)
Adhesive (item 82, WP 0716 00)

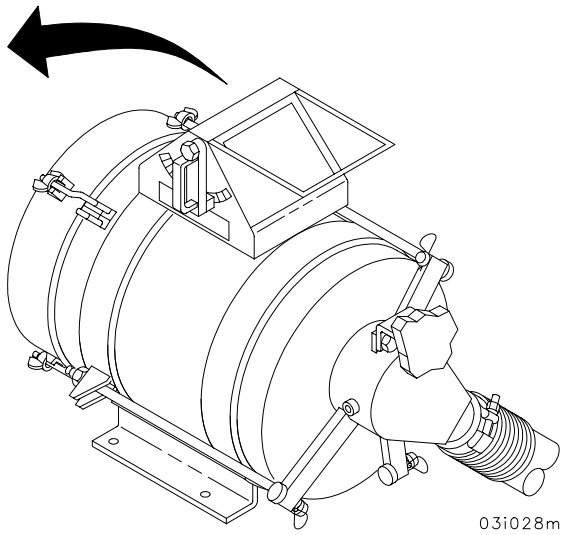
Removal

NOTE

The left damper requires different front and rear seals.

1. Remove two screws (1), two flat washers (2) and guard (3).
2. Remove socket head screw (4) and damper handle (5).
3. Remove damper (6), spring (7) and two bearings (8) from damper housing (9).
4. Remove seals (10 and 11) from damper housing (9). Discard seals.
5. Inspect parts for damage and replace as required.





AIR CLEANER DAMPER, HANDLE AND SEALS REPLACEMENT - CONTINUED 0210 00

Installation



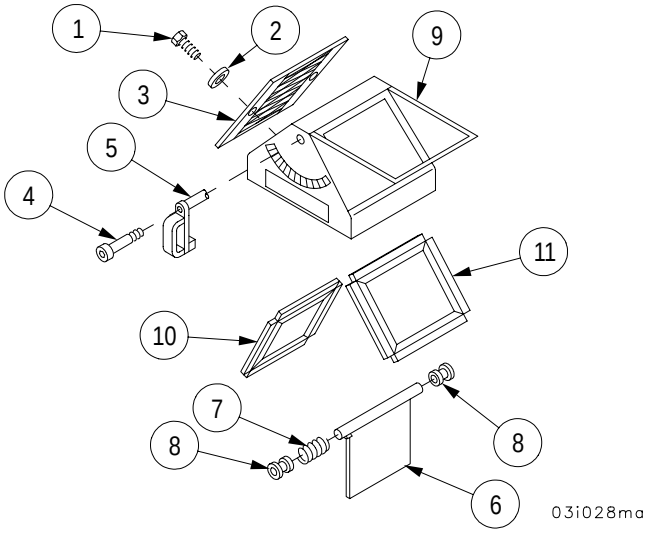
WARNING

1. Clean sealing surface of damper (6) and seal mounting edges of damper housing (9) with dry-cleaning solvent.

NOTE

Damper seals are rubber strips that fit over lip edges of housing. Beveled notches are cut at specific points to fit seals around corners. Test fit seals before applying adhesive to be sure of correct length and orientation.

2. Apply adhesive (item 15, WP 0716 00) to lip edges of damper housing (9).
3. Apply adhesive (item 82, WP 0716 00) to new seals (10 and 11) and install new seals (10 and 11) on damper housing (9).
4. Apply adhesive (item 82, WP 0716 00) to bearings (8) and install spring (7), two bearings (8) and damper (6) inside damper housing (9). Position spring (7) on handle end of damper (6).
5. Install damper handle (5) with socket head screw (4). Be sure handle (5) engages properly with damper (6).
6. Install guard (3) with two screws (1) and two flat washers (2).



END OF TASK

AIR CLEANER AIR DUCT ASSEMBLY AND RETAINING ROD REPLACEMENT 0211 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Air cleaner assembly removed (WP 0208 00)

Materials/Parts
Lock pins (3) (item 45, WP 0718 00)
Lockwashers (2) (item 9, WP 0718 00)

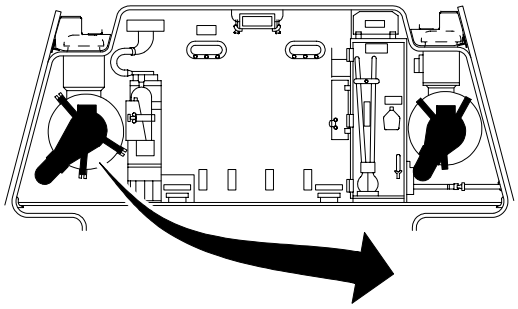
NOTE

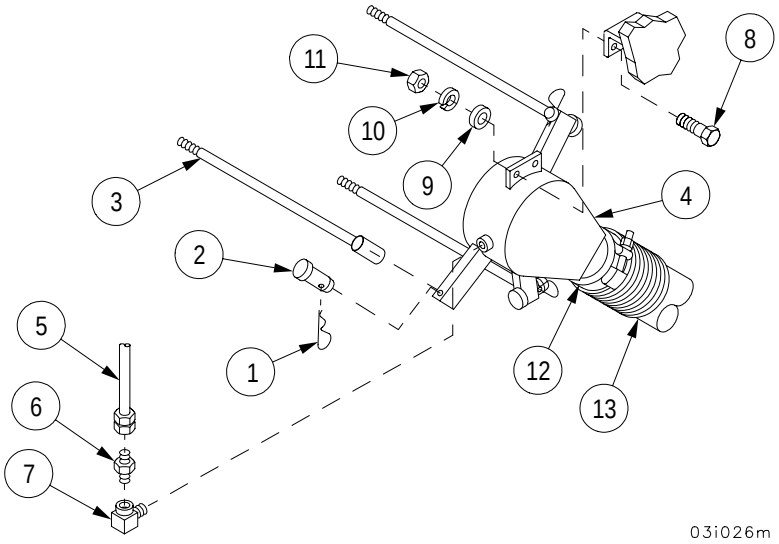
There are three retaining rods. This task removes/installs only one retaining rod.

Depending on which retaining rod needs replaced, it may or may not be necessary to remove air cleaner assembly to access retaining rod.

Removal

1. Remove lock pin (1), straight headed pin (2) and retaining rod (3) from air duct assembly (4). Discard lock pin.
2. Remove hose assembly (5), adapter (6) and elbow (7) from air duct assembly (4).
3. Remove two screws (8), two flat washers (9), two lockwashers (10) and two nuts (11). Discard lockwashers.
4. Loosen clamp (12) on hose (13) and remove air duct assembly (4).
5. Inspect parts for damage and replace as required.

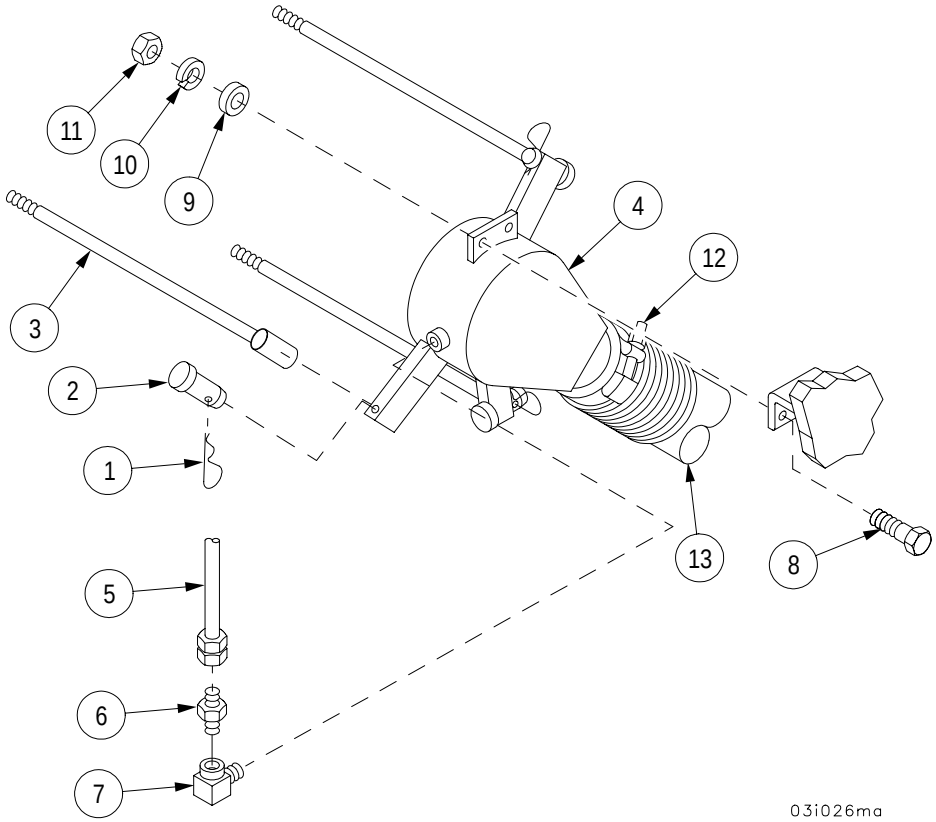




AIR CLEANER AIR DUCT ASSEMBLY AND RETAINING ROD REPLACEMENT - CONTINUED 0211 00

Installation

1. Install air duct assembly (4) in hose (13) with clamp (12).
2. Secure air duct assembly (4) to bulkhead with two screws (8), two flat washers (9), two new lockwashers (10) and two nuts (11).
3. Install elbow (7), adapter (6) and hose assembly (5) on air duct assembly (4).
4. Install retaining rod (3) on air duct assembly (4) with straight headed pin (2) and new lock pin (1).



NOTE

FOLLOW-ON MAINTENANCE:
Install air cleaner assembly (WP 0208 00)

END OF TASK

AIR CLEANER AIR INTAKE HOSES AND TUBE ASSEMBLIES REPLACEMENT 0212 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (4) (item 2, WP 0718 00)
Lockwashers (4) (item 9, WP 0718 00)
Lockwashers (2) (item 12, WP 0718 00)
Round rubber sections (2) (item 36, WP 0718 00)

NOTE

Remove only those hoses and tube assemblies which must be replaced.

Tag all hoses, tubes, brackets and clamps prior to removal to aid in installation.

Removal

1. Remove engine air cleaner assembly (WP 0208 00), if required.
2. Remove APU assembly (WP 0586 00 or WP 0587 00), if required.
3. Remove engine deck (WP 0417 00), if required.
4. Remove hoses, clamps and tube assemblies in accordance with the following legend and illustration.
5. Remove mounting hardware securing hoses, clamps and tube assemblies from vehicle as shown in legend and illustration. Discard lockwashers and round rubber sections.
6. Inspect parts for damage and replace as required.

AIR CLEANER AIR INTAKE HOSES AND TUBE ASSEMBLIES REPLACEMENT - CONTINUED 0212 00

Installation

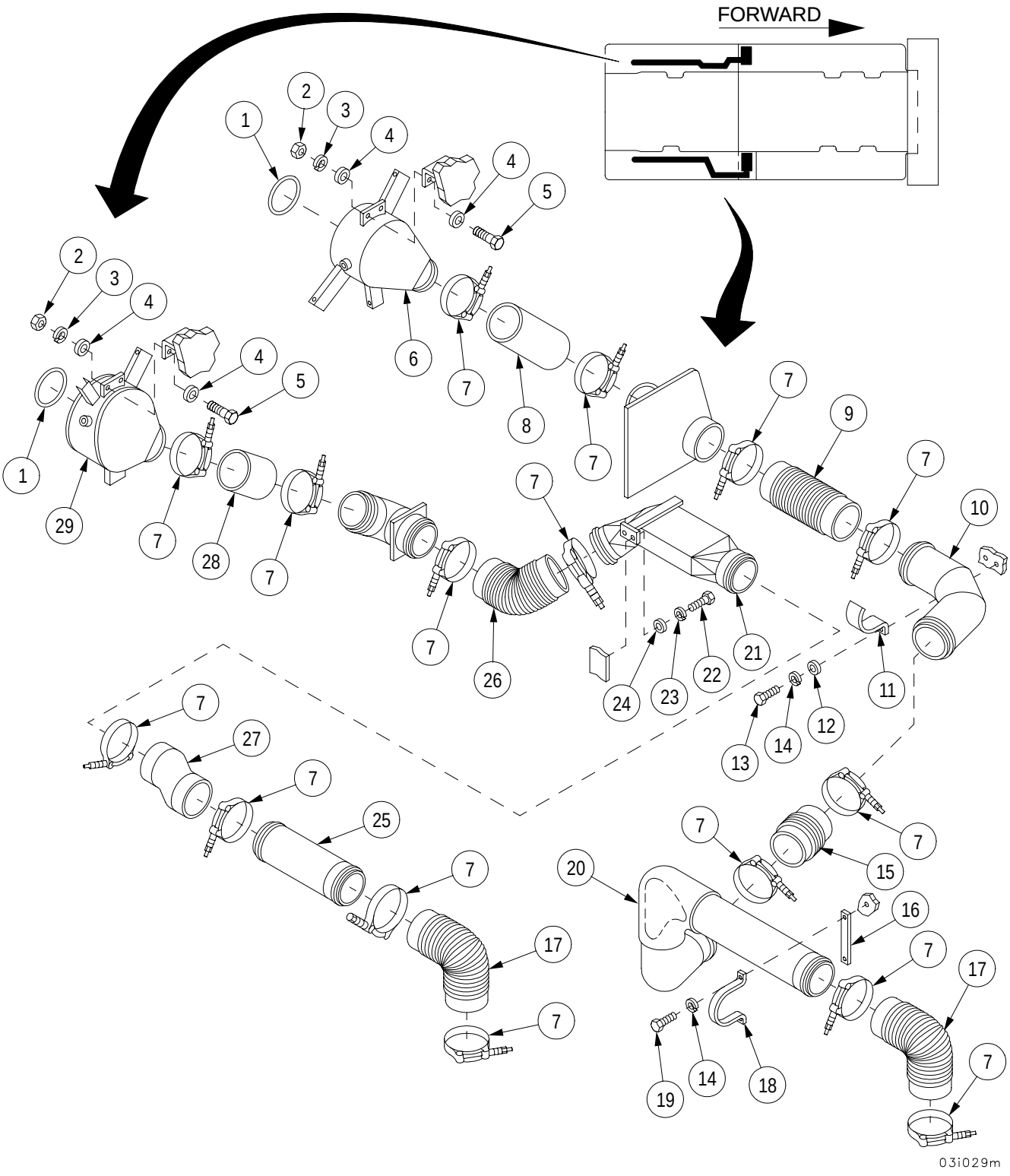
1. Install hoses, clamps and tube assemblies in accordance with the following legend and illustration.
2. Secure hoses, clamps and tube assemblies on vehicle using attaching hardware, new lockwashers and new round rubber sections as shown in legend and illustration.
3. Install engine deck (WP 0417 00), if required.
4. Install APU assembly (WP 0586 00 or WP 0587 00), if required.
5. Install air cleaner assembly (WP 0208 00), if required.

LEGEND:

1. Round rubber sections (2)
2. Nuts (4)
3. Lockwashers (4)
4. Flat washers (8)
5. Screws (4)
6. Air duct assembly
7. Hose clamps (16)
8. Air duct hose
9. Preformed hose
10. Air duct elbow
11. Spring tension clip
12. Flat washers (2)
13. Screws (2)
14. Lockwashers (4)
15. Air duct hose
16. Plate spacer
17. Preformed hoses (2)
18. Retaining strap
19. Screws (2)
20. Air cleaner pipe
21. Tube assembly
22. Screws (2)
23. Lockwashers (2)
24. Flat washers (2)
25. Air tube assembly
26. Performed hose
27. Air duct hose
28. Air duct hose
29. Air duct assembly

AIR CLEANER AIR INTAKE HOSES AND TUBE ASSEMBLIES REPLACEMENT - CONTINUED

0212 00



END OF TASK

TURBOCHARGER DUST DETECTOR SYSTEM REPLACEMENT 0213 00

THIS WORK PACKAGE COVERS:
Removal, Installation, Operational Test

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Engine deck assembly removed (WP 0417 00)

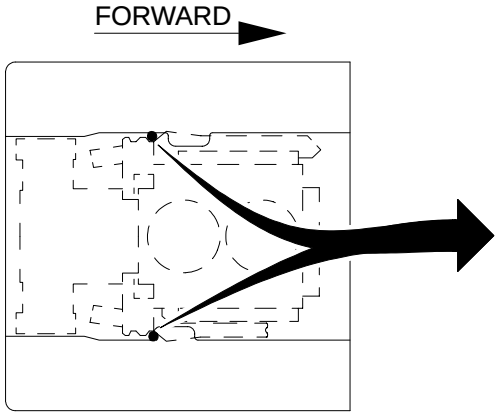
Materials/Parts
Preformed packing (item 43, WP 0718 00)
Preformed packing (item 381, WP 0718 00)
Lockwashers (3) (item 9, WP 0718 00)
Screw (item 387, WP 0718 00)
Electrical tiedown straps (AR) (item 382, WP 0718 00)

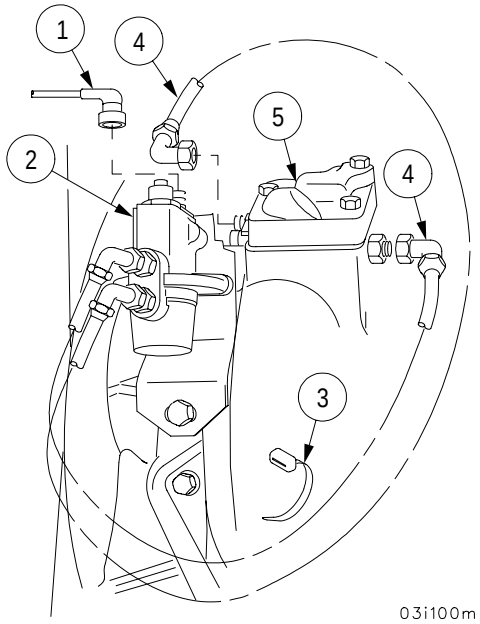
NOTE

Dust detectors are mounted to the right and left turbochargers. Both dust detectors are replaced in the same manner. This task replaces the left turbocharger dust detector system.

Removal

1. Disconnect wiring harness 3W202 connector 510L/GND (1) from pressure switch (2).
2. Remove electrical tiedown straps (3) from two hose assemblies (4). Discard electrical tiedown straps.
3. Remove two hose assemblies (4) from turbocharger (5).





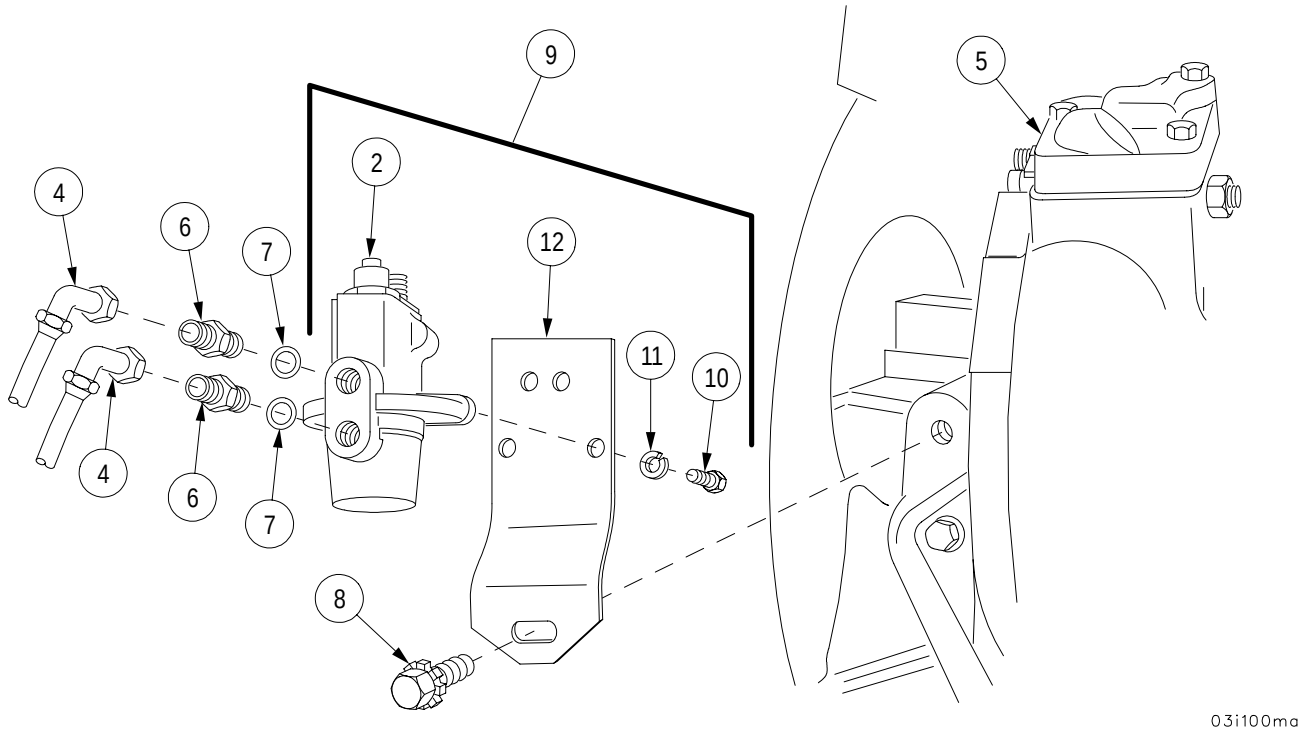
TURBOCHARGER DUST DETECTOR SYSTEM REPLACEMENT - CONTINUED 0213 00

Removal-Continued

4. Remove two hose assemblies (4) from two adapters (6).
5. Remove two adapters (6) and two preformed packings (7) from pressure switch (2). Discard preformed packings.
6. Remove screw (8) and pressure switch assembly (9) from turbocharger (5). Discard screw.
7. Remove three screws (10), three lockwashers (11) and plate (12) from pressure switch (2). Discard lockwashers.
8. Inspect parts for damage and replace as required.

Installation

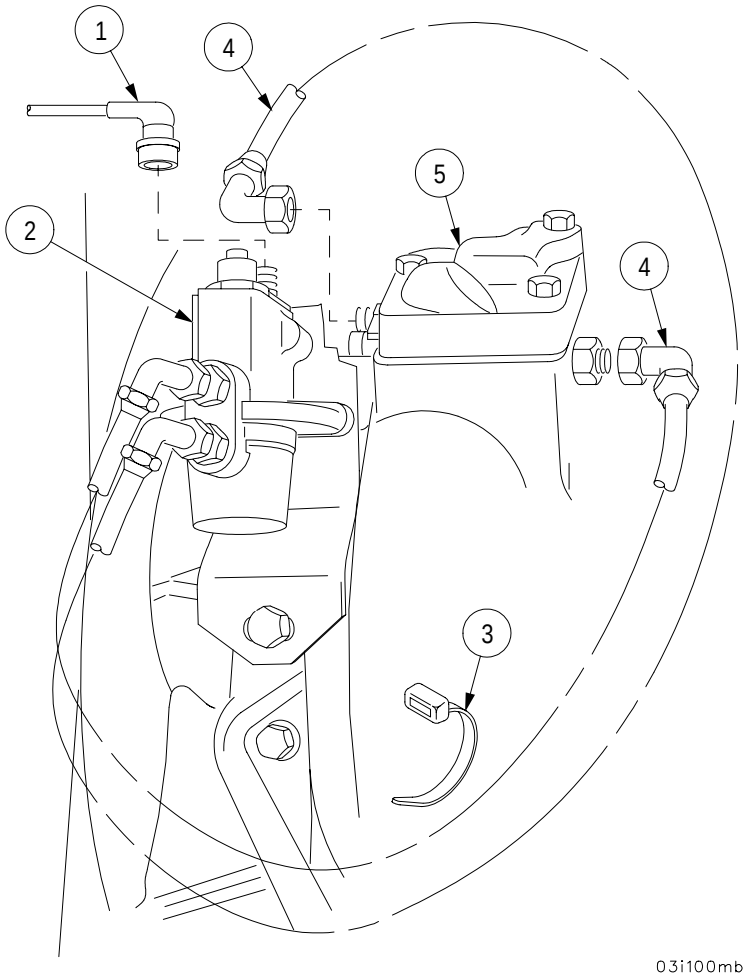
1. Install plate (12) on pressure switch (2) with two screws (10) and two new lockwashers (11).
2. Install pressure switch assembly (9) on turbocharger (5) with new screw (8).
3. Install two adapters (6) with two new preformed packings (7) in pressure switch (2).
4. Install two hose assemblies (4) on two adapters (6).



TURBOCHARGER DUST DETECTOR SYSTEM REPLACEMENT - CONTINUED 0213 00

Installation-Continued

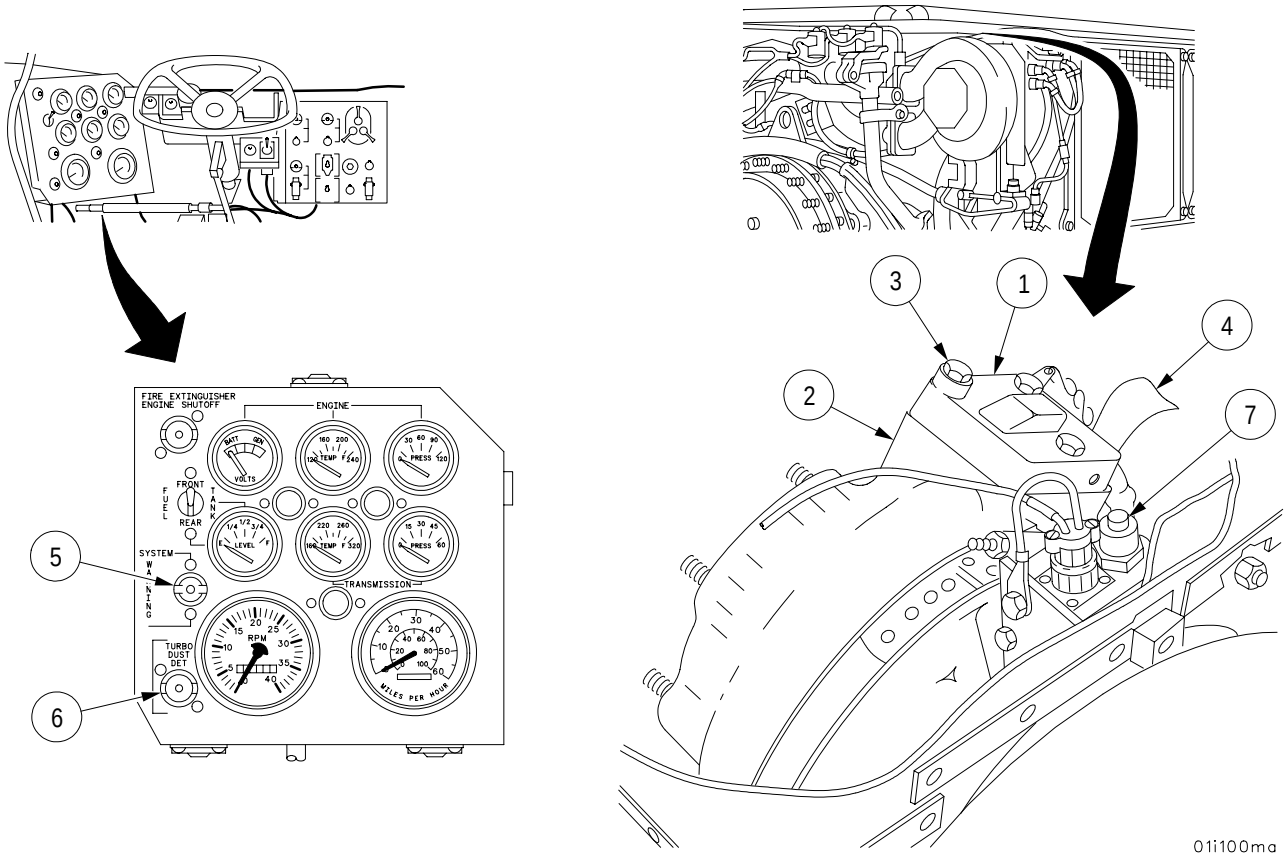
5. Install two hose assemblies (4) on turbocharger (5).
6. Install new electrical tiedown straps (3) on two hose assemblies (4).
7. Connect wiring harness 3W202 connector 510L/GND (1) to pressure switch (2).



TURBOCHARGER DUST DETECTOR SYSTEM REPLACEMENT - CONTINUED 0213 00

Operational Test

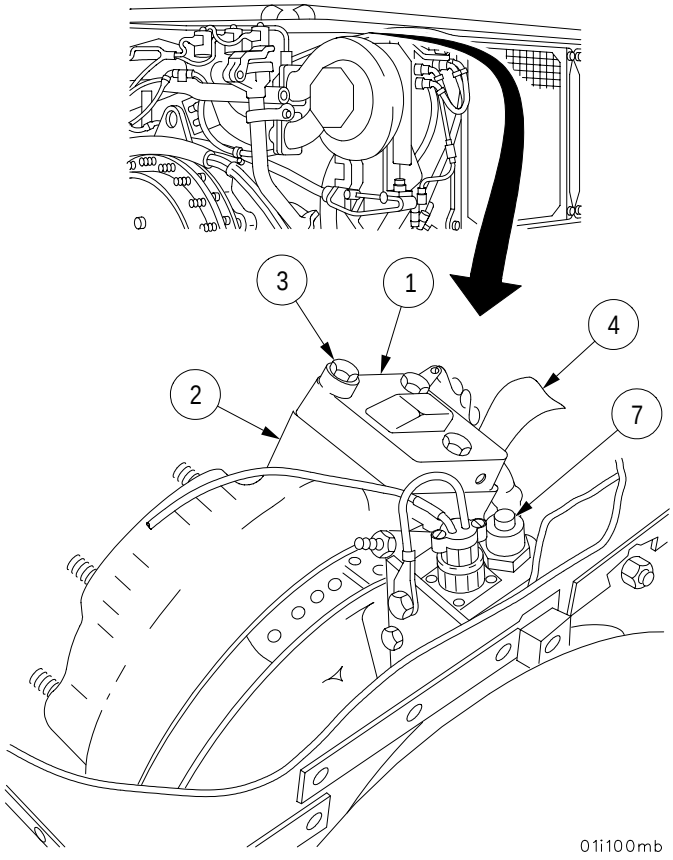
1. Remove dust and dirt from filter strip cover (1) and compressor housing (2).
2. Loosen three captive screws (3) securing filter strip cover (1) to compressor housing (2). Do not remove cover (1).
3. Insert 1-in. wide (25.4 mm) strip of nonporous material (plastic, celluloid, etc) over filter strip (4).
4. Tighten three captive screws (3).
5. Start engine (TM 9-2350-292-10). Apply vehicle brakes. Place transmission in high gear. Operate engine at 1800 to 1900 rpm for no more than 30 seconds. Observe SYSTEM WARNING lamp (5) and TURBO DUST DETector warning lamp (6).
6. If SYSTEM WARNING (5) and TURBO DUST DETector (6) warning lamps light, system is operational. If SYSTEM WARNING (5) and TURBO DUST DETector (6) warning lamps do not light, check to see if dust detector pressure switch (7) (red plunger visible through plastic cover on pressure switch) tripped. If pressure switch (7) is tripped, perform Troubleshooting (WP 0131 00). If pressure switch (7) did not trip, repeat step 5 to verify. If pressure switch (7) still does not trip, replace dust detector pressure switch (7).



TURBOCHARGER DUST DETECTOR SYSTEM REPLACEMENT - CONTINUED 0213 00

Operational Test - Continued

7. Stop engine (TM 9-2350-292-10).
8. Loosen three captive screws (3) securing filter strip cover (1) to compressor housing (2), remove nonporous material from over filter strip (4).
9. Tighten three captive screws (3) securing filter strip cover (1).
10. Press plunger to reset dust detector pressure switch (7).



NOTE

FOLLOW-ON MAINTENANCE:
Install engine deck assembly (WP 0417 00)

END OF TASK

FILLER TUBE AND STRAINER ASSEMBLY REPLACEMENT 0214 00

THIS WORK PACKAGE COVERS:
Removal, Cleaning, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (12) (item 9, WP 0718 00)
Gaskets (2) (item 412, WP 0718 00)
Gasket (item 123, WP 0718 00)
Sealing compound (item 16, WP 0716 00)
Dry-cleaning solvent (item 1, WP 0716 00)

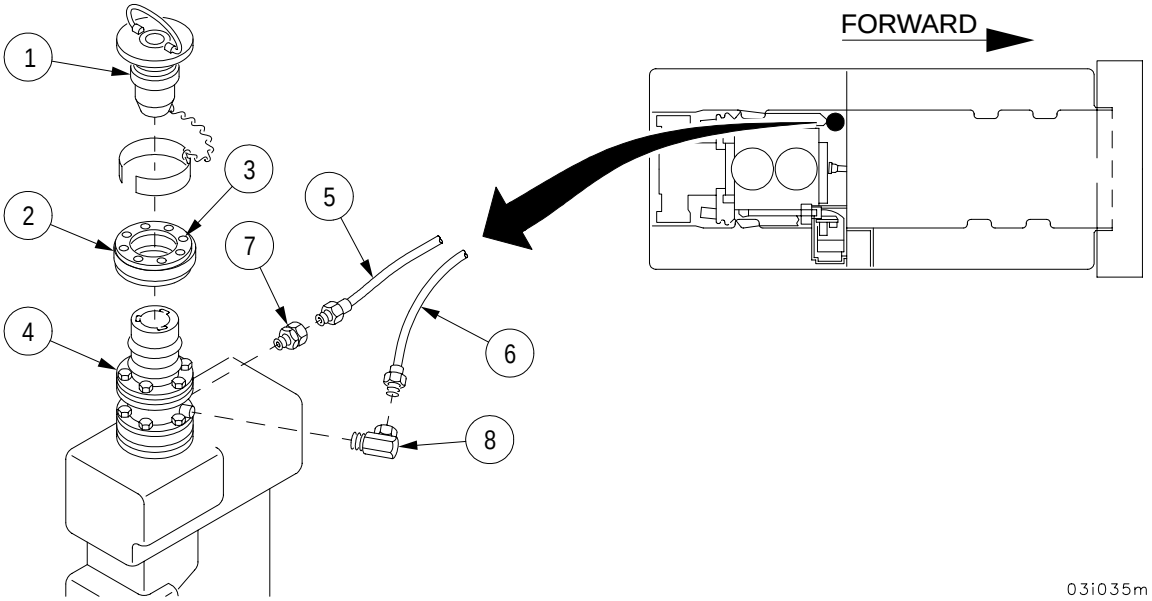
Equipment Conditions
Engine deck assembly removed (WP 0417 00)
Tank filler access cover opened (TM 9-2350-292-10)



WARNING

Removal

1. Remove filler opening cap (1) from grommet assembly (2).
2. Loosen eight screws (3), remove grommet assembly (2) from filler neck (4).
3. Disconnect two vent hoses (5 and 6) from adapters (7 and 8).
4. Remove two adapters (7 and 8).



FILLER TUBE AND STRAINER ASSEMBLY REPLACEMENT - CONTINUED 0214 00

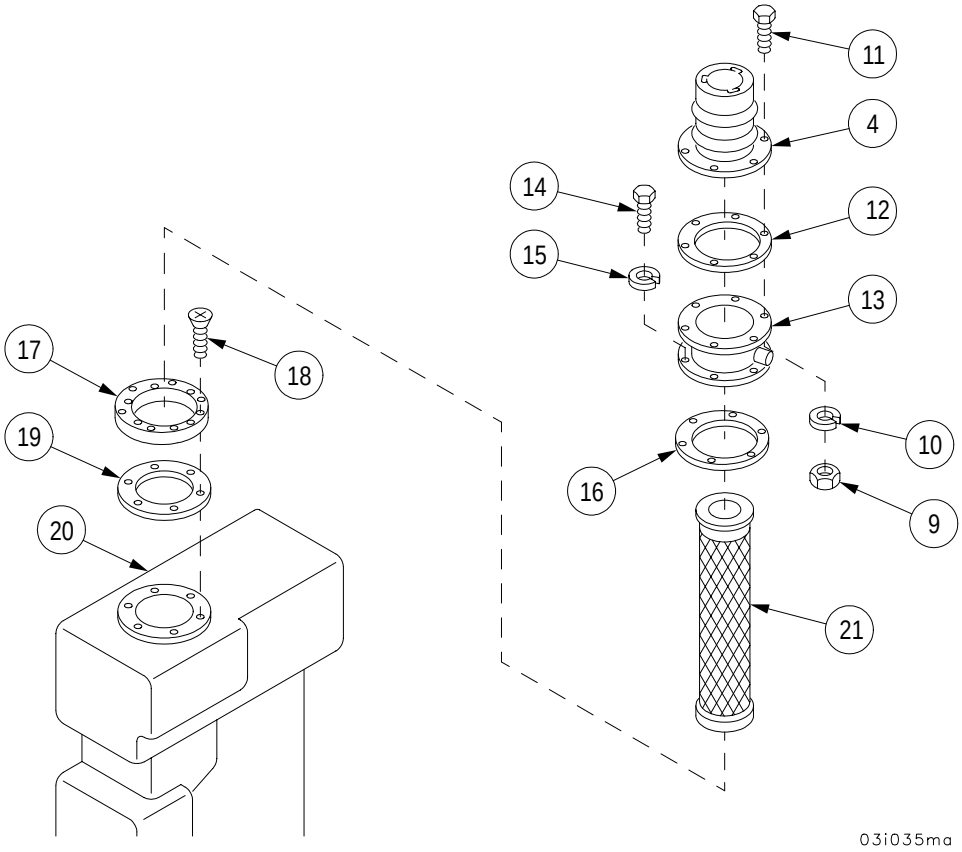
Removal-Continued

5. Remove six nuts (9), six lockwashers (10), six screws (11), filler neck (4) and gasket (12) from filler adapter (13). Discard lockwashers and gasket.
6. Remove six screws (14), six lockwashers (15), filler adapter (13) and gasket (16) from eccentric spacer (17). Discard lockwashers and gasket.
7. Remove six screws (18), eccentric spacer (17) and gasket (19) from left fuel tank (20). Discard gasket.

CAUTION

Debris may fall into opening in left fuel tank. Cover hole in left fuel tank if left unattended. Failure to comply may cause equipment damage.

8. Remove strainer element (21) from left fuel tank (20).
9. Inspect parts for damage and replace as required.



FILLER TUBE AND STRAINER ASSEMBLY REPLACEMENT - CONTINUED 0214 00

Cleaning

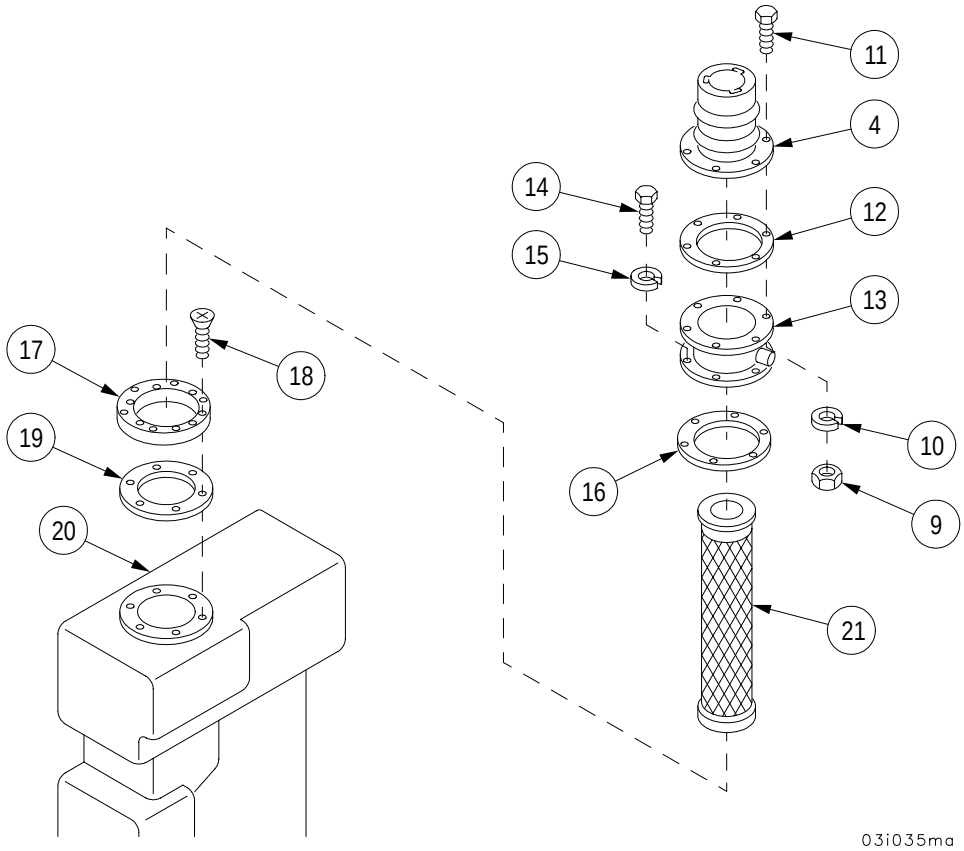


WARNING

Clean strainer element (21) and all serviceable parts with dry-cleaning solvent.

Installation

1. Install strainer element (21) in left fuel tank (20).
2. Install new gasket (19) and eccentric spacer (17) on left fuel tank (20) with six screws (18).
3. Install new gasket (16) and filler adapter (13) on eccentric spacer (17) with six screws (14) and six new lockwashers (15).
4. Install new gasket (12) and filler neck (4) on filler adapter (13) with six screws (11), six new lockwashers (10) and six nuts (9).



FILLER TUBE AND STRAINER ASSEMBLY REPLACEMENT - CONTINUED 0214 00

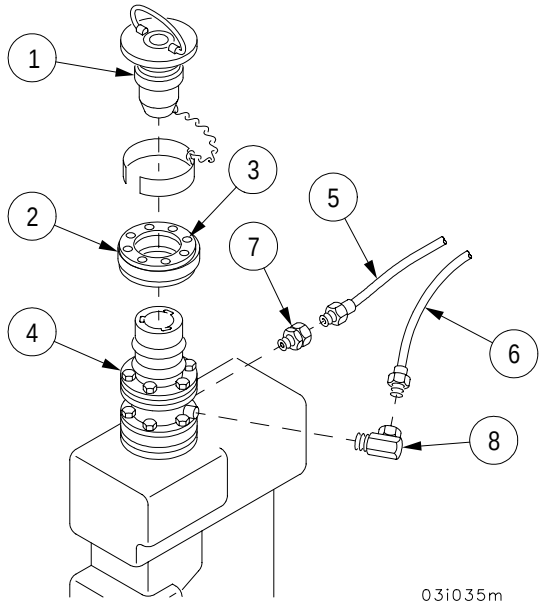
Installation-Continued

5. Apply sealing compound to male pipe threads of adapters (7 and 8). Install adapters (7 and 8).
6. Connect two vent hoses (6 and 5) to adapters (7 and 8).

NOTE

Adjust the inner and outer grommets of the grommet assembly to fill the opening between the hull and filler neck. A 1/2-in. (12.7 mm) eccentric adjustment is possible.

7. Install grommet assembly (2) on filler neck (4), tighten eight screws (3).
8. Install filler opening cap (1) on grommet assembly (2).



NOTE

FOLLOW-ON MAINTENANCE:
Close tank filler access cover
(TM 9-2350-292-10)
Install engine deck assembly (WP 0417 00)

END OF TASK

FUEL LEVEL TRANSMITTER AND FRONT FUEL TANK DRAIN PLUG REPLACEMENT 0215 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (6) (item 9, WP 0718 00)
Gasket (item 81, WP 0718 00)

Equipment Conditions
Fuel tanks drained (TM 9-2350-292-10)
Subfloor plate #20 door opened (TM 9-2350-292-10)
For access to front fuel tank fuel level transmitter
Engine deck grilles removed (TM 9-2350-292-10)
For access to right fuel tank fuel level transmitter
Drain cover removed (WP 0453 00)
For access to front fuel tank drain plug
APU hydraulic fluid supply line disconnected (WP 0581 00 or WP 0582 00)

References
TM 9-2350-292-10



WARNING

NOTE

This procedure can be used for both the front and right side fuel tank fuel level transmitters. Only the front fuel tank is shown.

Perform Removal steps 1, 2 and 5 and Installation steps 3 and 4 for maintenance of fuel level transmitter.

Perform Removal steps 1, 3 and 5 and Installation steps 2 and 4 for gaining access to interior of fuel tank or replacement of gasket.

Wiring harness 4W103 wire 30 connects to the front fuel tank fuel level transmitter.

Wiring harness 3W143 wire 31 connects to the right fuel tank fuel level transmitter.

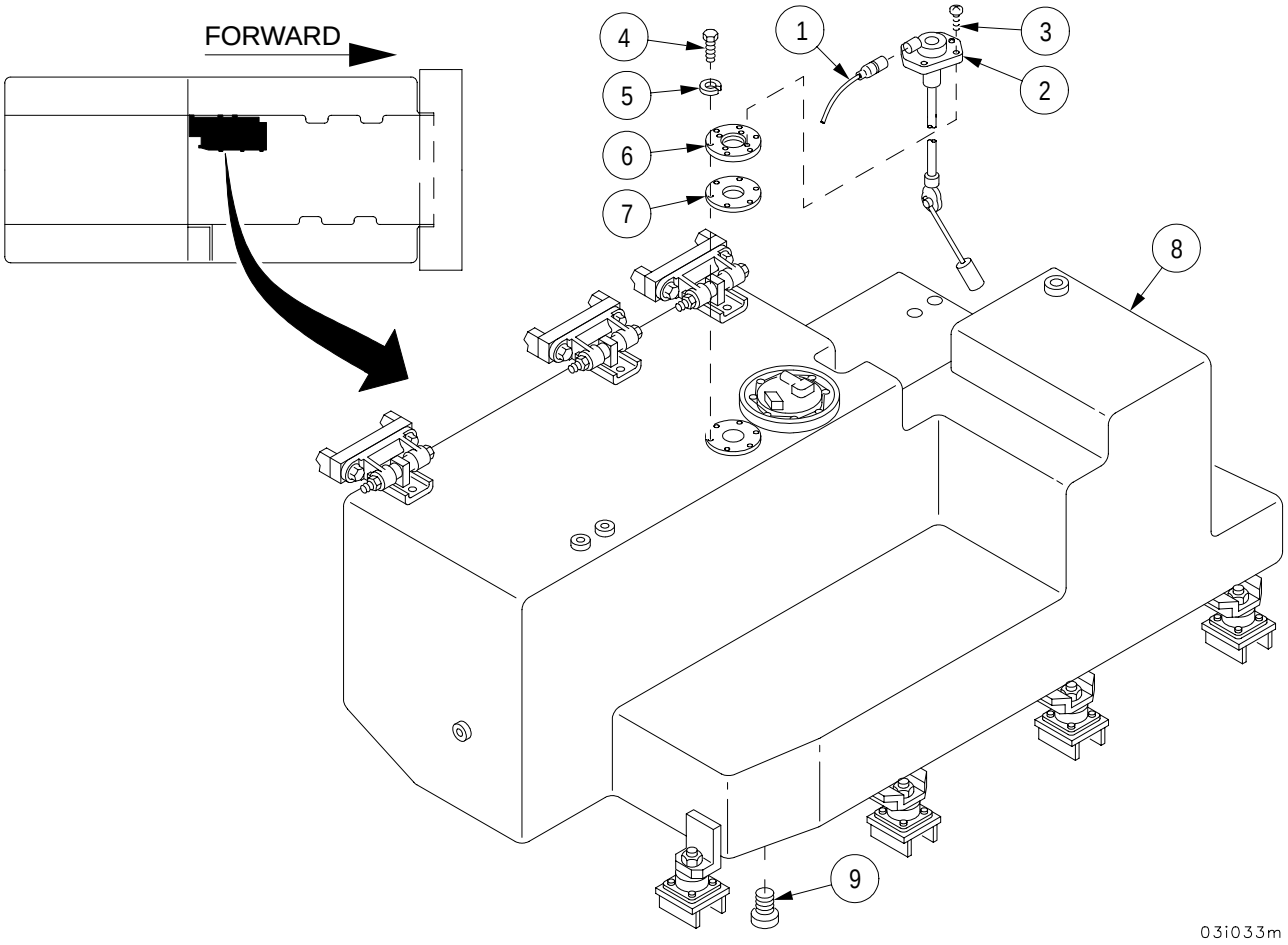
FUEL LEVEL TRANSMITTER AND FRONT FUEL TANK DRAIN PLUG REPLACEMENT - CONTINUED 0215 00

Removal

CAUTION

Debris may fall into opening in front fuel tank. Cover hole in front fuel tank if left unattended. Failure to comply may cause equipment damage.

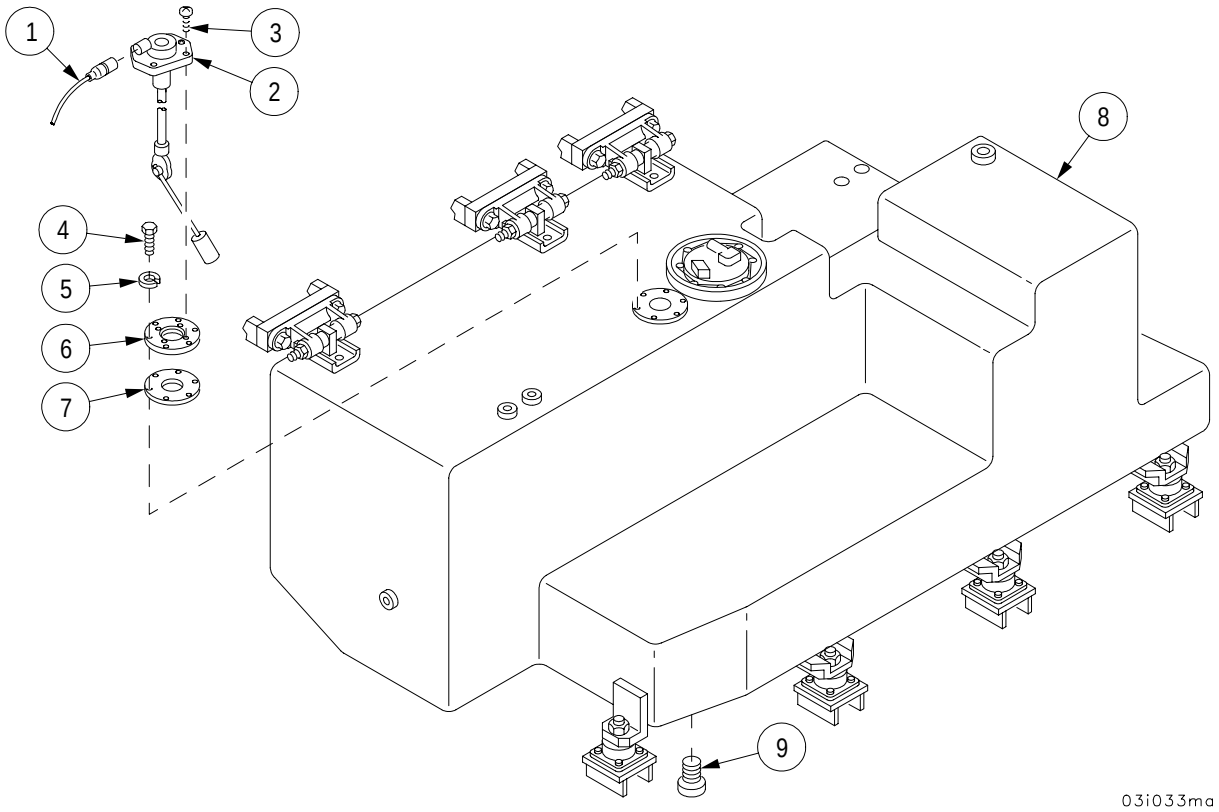
1. Disconnect wiring harness 4W103 wire 30 (1) from connector socket of fuel level transmitter assembly (2).
2. Remove four screws (3) and fuel level transmitter assembly (2).
3. Remove six screws (4), six lockwashers (5), adapter (6) and gasket (7) from fuel tank (8). Discard lockwashers and gasket.
4. Remove pipe plug (9) from front fuel tank (8).
5. Inspect parts for damage and replace as required.



FUEL LEVEL TRANSMITTER AND FRONT FUEL TANK DRAIN PLUG REPLACEMENT - CONTINUED 0215 00

Installation

1. Install pipe plug (9) in front fuel tank (8).
2. Install adapter (6) and new gasket (7) with six screws (4) and six new lockwashers (5).
3. Install fuel level transmitter assembly (2) with four screws (3).
4. Connect wiring harness 4W103 wire 30 (1) to connector socket of fuel level transmitter assembly (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect APU hydraulic fluid supply line
(WP 0581 00 or WP 0582 00)
Install drain cover, if removed (WP 0453 00)
Install engine deck grilles, if removed
(TM 9-2350-292-10)
Close subfloor door #20, if opened
(TM 9-2350-292-10)
Fill fuel tanks (TM 9-2350-292-10)

END OF TASK

MANUAL FUEL SHUT-OFF CONTROL ASSEMBLY REPLACEMENT 0216 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools
General mechanic's tool kit
(item 1, WP 0717 00)

Materials/Parts
Lockwashers (8) (item 9, WP 0718 00)
Lockwasher (item 58, WP 0718 00)
Lockwashers (4) (item 88, WP 0718 00)
Cotter pins (2) (item 15, WP 0718 00)
Grommet (item 89, WP 0718 00)
Adhesive (item 15, WP 0716 00)

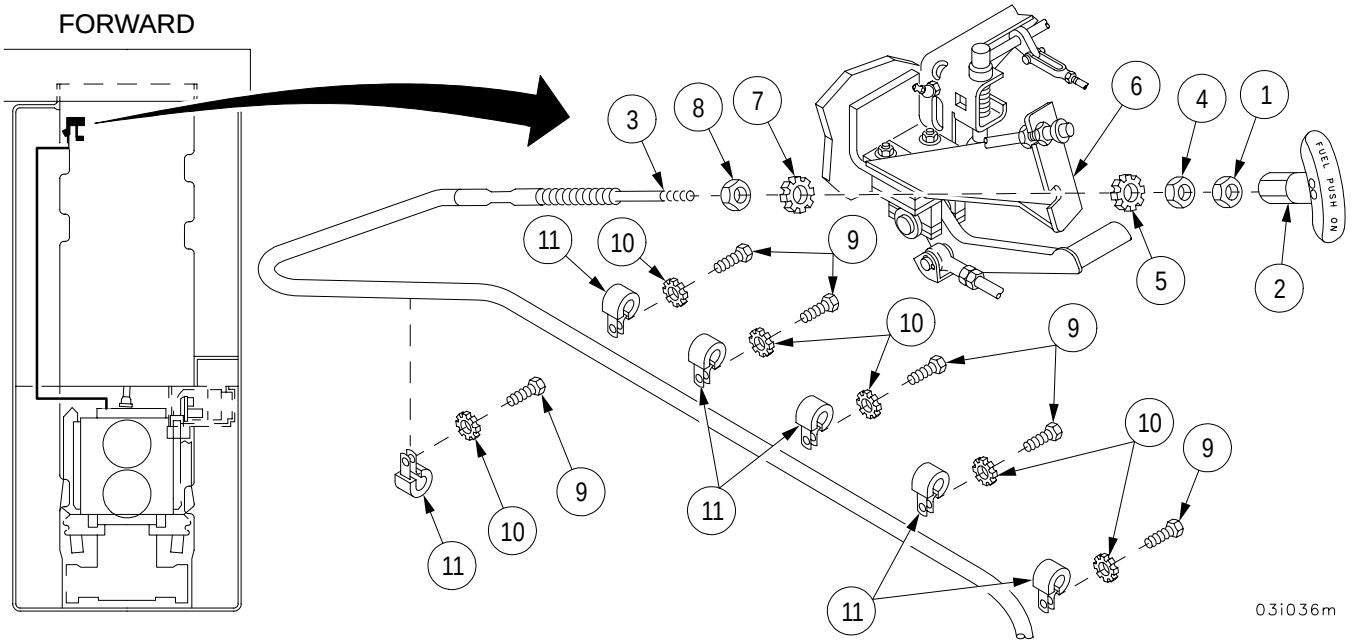
Equipment Conditions
Engine deck assembly removed
(WP 0417 00)
Left side engine deck access door opened
(TM 9-2350-292-10)
Left side engine air cleaner assembly removed
(WP 0208 00)
Gauge panel removed (WP 0243 00)

Personnel Required
Two

References
TM 9-2350-292-10

Removal

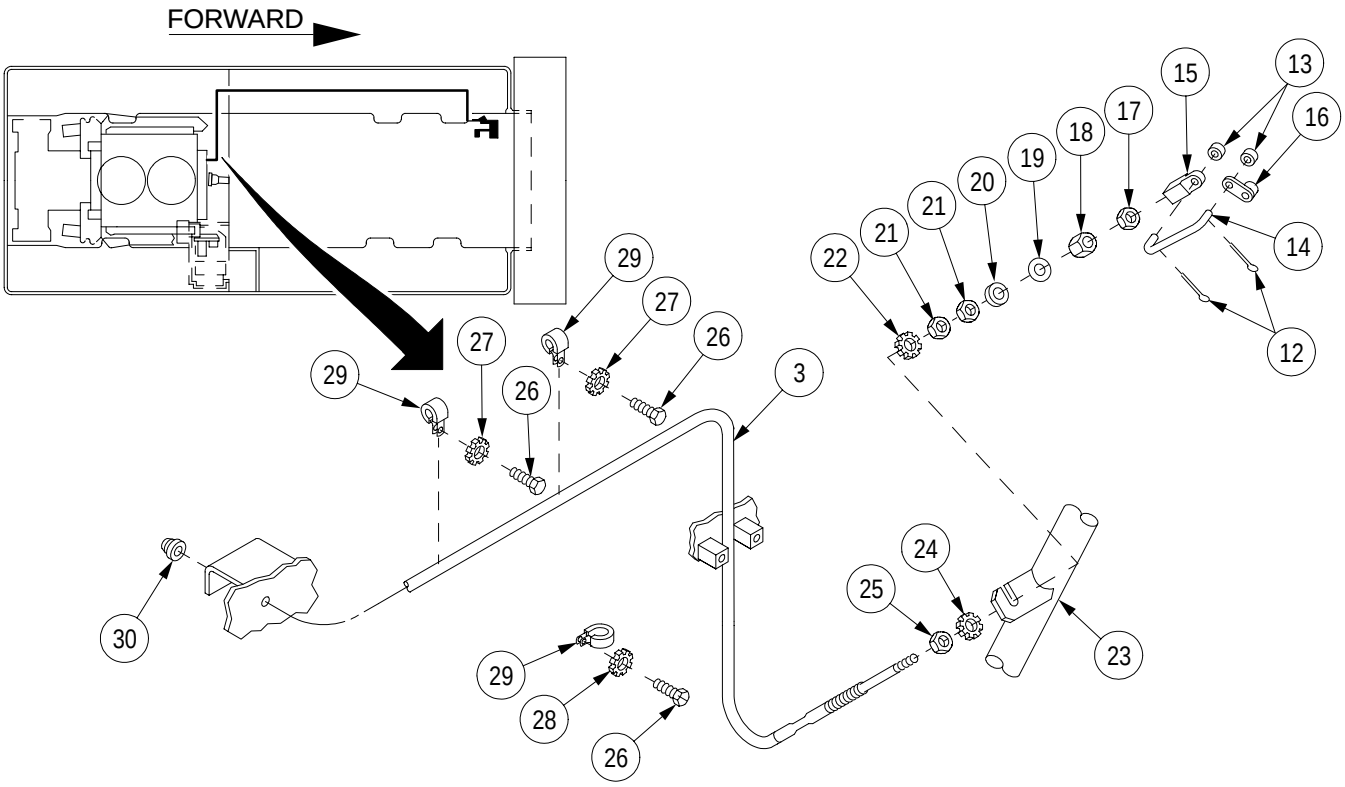
1. Loosen nut (1), remove handle assembly (2) and nut (1) from control assembly (3).
2. Remove nut (4) and lockwasher (5) to release control assembly (3) from bracket (6), remove control assembly (3). Discard lockwasher.
3. Remove lockwasher (7) and nut (8) from control assembly (3). Discard lockwasher.
4. Remove six screws (9), six lockwashers (10) and six loop clamps (11) securing control assembly (3) to hull. Discard lockwashers.



MANUAL FUEL SHUT-OFF CONTROL ASSEMBLY REPLACEMENT - CONTINUED 0216 00

Removal-Continued

5. Remove two cotter pins (12), two flat washers (13) and connecting link (14) from connector (15) and shut-off lever (16). Discard cotter pins.
6. Loosen nut (17), remove connector (15) and nut (17) from control assembly (3).
7. Remove nut (18), preformed packing (19), flat washer (20), two nuts (21), lockwasher (22) and control assembly (3) from engine guide (23). Discard preformed packing and lockwasher.
8. Remove lockwasher (24) and nut (25) from control assembly (3). Discard lockwasher.
9. Remove three screws (26), two lockwashers (27), lockwasher (28) and three loop clamps (29) securing control assembly (3) to hull. Discard lockwashers.
10. Pull control assembly (3) through bulkhead and grommet (30). Remove control assembly (3) from vehicle.
11. Remove grommet (30) from bulkhead. Discard grommet.
12. Inspect parts for damage and replace as required.



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MANUAL FUEL SHUT-OFF CONTROL ASSEMBLY REPLACEMENT - CONTINUED 0216 00

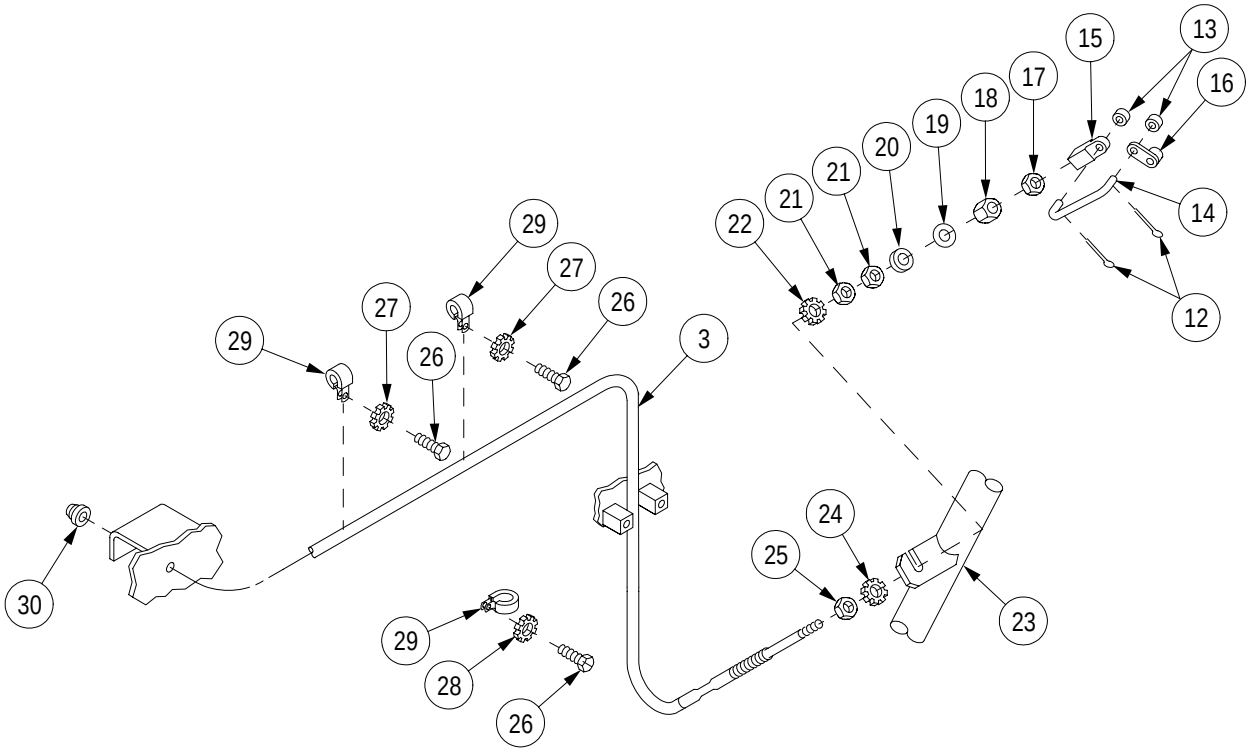
Installation

1. Apply adhesive to new grommet (30). Install grommet (30) in bulkhead.
2. Pull control assembly (3) through bulkhead and grommet (30).
3. Secure control assembly (3) to hull with three loop clamps (29), two new lockwashers (27), new lockwasher (28) and three screws (26).
4. Install nut (25) and new lockwasher (24) on control assembly (3).

NOTE

Make sure connecting link aligns with hole in fuel shut-off lever before securing control assembly to engine guide.

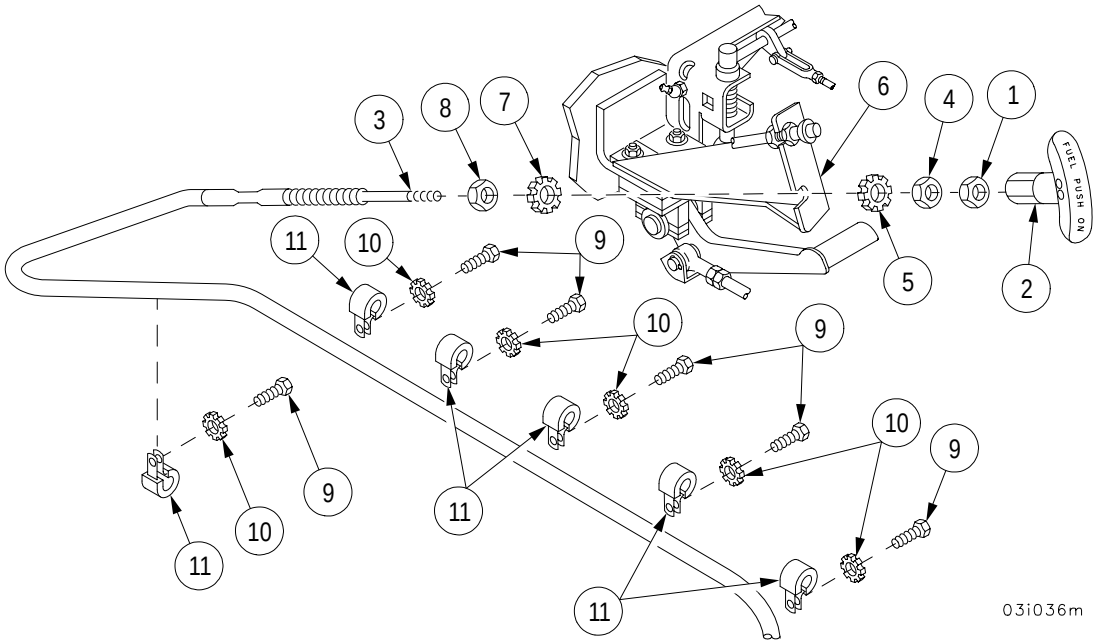
5. Install control assembly (3) on engine guide (23), then install new lockwasher (22), two nuts (21), flat washer (20), new preformed packing (19) and nut (18).
6. Install nut (17) and connector (15) on control assembly (3). Tighten nut (17) against connector (15).
7. Install connecting link (14) in connector (15) and shut-off lever (16).
8. Install two flat washers (13) and two new cotter pins (12) in connecting link (14).



MANUAL FUEL SHUT-OFF CONTROL ASSEMBLY REPLACEMENT - CONTINUED 0216 00

Installation-Continued

9. Secure control assembly (3) to hull with six loop clamps (11), six new lockwashers (10) and six screws (9).
10. Install nut (8) and new lockwasher (7) on control assembly (3).
11. Install control assembly (3) on bracket (6) with new lockwasher (5) and nut (4).
12. Install nut (1) and handle assembly (2) on control assembly (3). Tighten nut (1) against handle assembly (2).
13. Pull out handle assembly (2) to full shut-off position and adjust control assembly (3) until fuel shut-off level on engine has rotated to its full downward position (shut-off). Tighten nuts (21 and 25) against engine guide (23) to secure control assembly (3).
14. Start engine (TM 9-2350-292-10) and test manual fuel shut-off to insure proper adjustment.



NOTE

FOLLOW-ON MAINTENANCE:
Install engine deck assembly (WP 0417 00)
Close left side engine deck access door (TM 9-2350-292-10)
Install left side engine air cleaner assembly (WP 0208 00)
Install gauge panel (WP 0243 00)

END OF TASK

FUEL HOSE ASSEMBLIES, FITTINGS AND VALVES REPLACEMENT 0217 00

THIS WORK PACKAGE COVERS:

Removal, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Adjustable wrenches (2) (item 22, WP 0717 00)

Materials/Parts

Sealing compound (item 16, WP 0716 00)
Lockwashers (2) (item 2, WP 0718 00)
Lockwashers (5) (item 9, WP 0718 00)
Lockwashers (2) (item 12, WP 0718 00)
Lockwasher (item 58, WP 0718 00)
Marker tags (item 49, WP 0716 00)
Wiping rags (item 7, WP 0716 00)

Equipment Conditions

Powerpack removed (WP 0188 00)
For access to parts in engine compartment
Subfloor plates removed (WP 0454 00)
For access to parts under subfloor
Fuel valve control rods removed (WP 0218 00)
For replacing control valves
Fuel tanks drained (TM 9-2350-292-10)
Main hydraulic pumps and PTO clutch assemblies removed (WP 0545 00)

References

TM 9-2350-292-10



WARNING

NOTE

Remove only those parts which must be replaced.

Tag all parts prior to removal to aid in installation.

Place rags under hose connections to catch any fuel that spills during maintenance. Dispose of rags in accordance with standard operating procedure.

Removal

1. Remove clamps and attaching hardware securing hose assemblies, tubes and brackets to vehicle as shown in legend and illustration. Discard lockwashers.
2. Remove hose assemblies, tubes, brackets and fittings in accordance with the following legend and illustration.
3. Inspect parts for damage and replace as required.

FUEL HOSE ASSEMBLIES, FITTINGS AND VALVES REPLACEMENT - CONTINUED 0217 00

Installation

1. Apply sealing compound to all male pipe threads.

NOTE

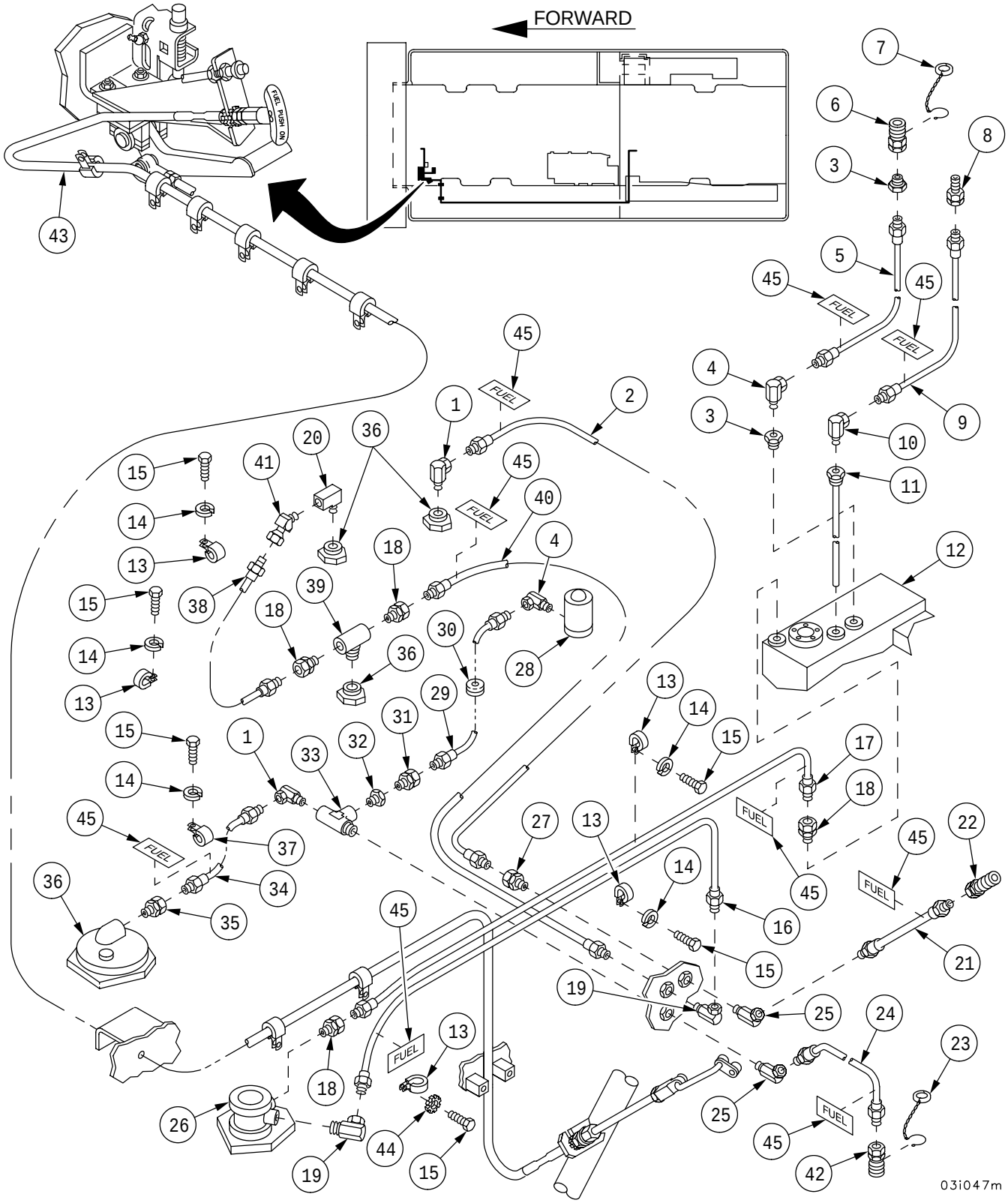
A minimum of two decals shall be applied to the hose assembly. A decal shall be wrapped around the hose assembly within 5.00 inches (127.00 mm) of each end. The maximum allowable distance between decals shall be 36.00 inches (0.91 m). The word “FUEL” shall be visible after application.

2. Install decals (45) on hose assemblies 5, 9, 17, 16, 21, 24, 2, 34 and 40, if damaged or missing.
3. Install hose assemblies, tubes, brackets and fittings in accordance with the following legend and illustration.
4. Secure hose assemblies, tubes and brackets to vehicle with clamps, attaching hardware and new lockwashers as shown in legend and illustration.

LEGEND:

1. Adapter unions (2)
2. Hose assembly
3. Pipe bushings (2)
4. Pipe elbows (2)
5. Hose assembly
6. Quick-disconnect coupling half
7. Round connecting ring
8. Quick-disconnect coupling half
9. Hose assembly
10. Pipe elbow
11. Metal tube assembly
12. Right fuel tank
13. Loop clamps (5)
14. Lockwashers (5)
15. Screws (6)
16. Hose assembly
17. Hose assembly
18. Pipe couplings (4)
19. Adapter unions (2)
20. Pipe elbow
21. Hose assembly
22. Quick-disconnect coupling half
23. Round connecting ring
24. Hose assembly
25. Pipe elbows (2)
26. Left fuel tank
27. Pipe coupling
28. Personnel heater (WP 0529 00)
29. Hose assembly
30. Grommet
31. Pipe coupling
32. Pipe bushing
33. Pipe tee
34. Hose assembly
35. Pipe reducer
36. Front fuel tank
37. Loop clamp
38. Hose assembly
39. Tee
40. Hose assembly
41. Adapter
42. Quick-disconnect coupling half
43. Manual fuel shut-off control assembly (WP 0216 00)
44. Lockwasher
45. Decal (As Required)

FUEL HOSE ASSEMBLIES, FITTINGS AND VALVES REPLACEMENT - CONTINUED 0217 00



FUEL HOSE ASSEMBLIES, FITTINGS AND VALVES REPLACEMENT - CONTINUED 0217 00

LEGEND:

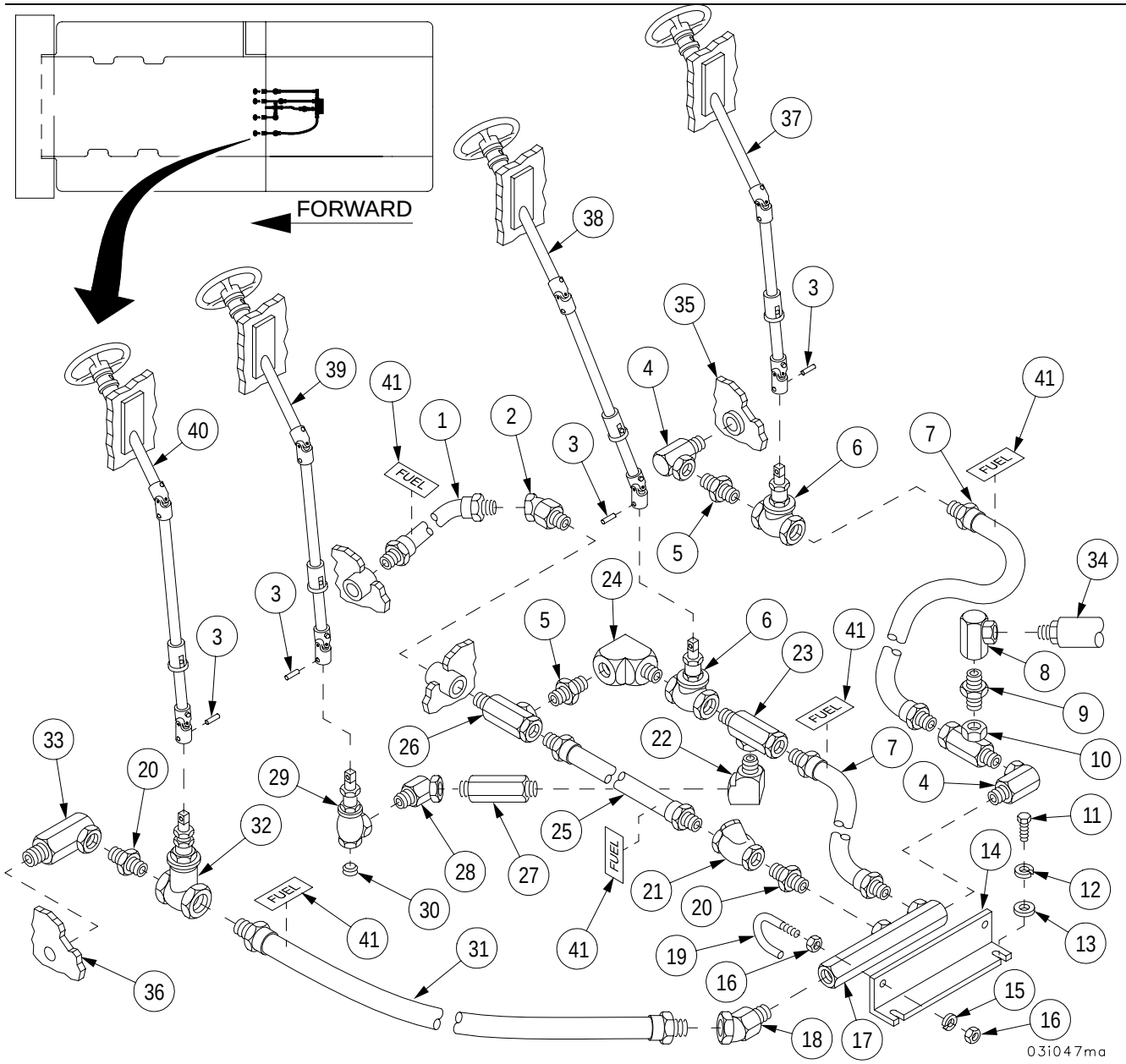
NOTE

A minimum of two decals shall be applied to the hose assembly. A decal shall be wrapped around the hose assembly within 5.00 inches (127.00 mm) of each end. The maximum allowable distance between decals shall be 36.00 inches (0.91 m). The word “FUEL” shall be visible after application.

Install decals (41) on hose assemblies 1, 7, 25 and 31, if damaged or missing.

1. Hose assembly
2. Pipe elbow
3 Spring pins (4)
4. Pipe elbows (2)
5. Pipe nipples (2)
6. Gate valves (2)
7. Hose assemblies (2)
8. Pipe elbow
9. Nipple
10 Adapter union
11. Screws (2)
12. Lockwashers (2)
13. Flat washers (2)
14. Bracket
15. Lockwashers (2)
16. Nuts (4)
17. Adapter union
18. Adapter union
19. J-bolts (2)
20. Pipe nipples (2)
21. Check valve
22. Street elbow
23. Pipe tee
24. Pipe elbow
25. Hose assembly
26. Pipe tee
27. Pipe nipple
28. Pipe elbow
29. Angle valve
30. Pipe plug
31. Hose assembly
32. Gate valve
33. Pipe elbow
34. Hose assembly (fuel transfer pump) (WP 0202 00)
35. Right fuel tank
36. Left fuel tank
37. Fuel control valve rod assembly (Right) (WP 0218 00)
38. Fuel control valve rod assembly (Front) (WP 0218 00)
39. Fuel control valve rod assembly (Drain) (WP 0218 00)
40. Fuel control valve rod assembly (Left) (WP 0218 00)
41. Decals (As Required)

FUEL HOSE ASSEMBLIES, FITTINGS AND VALVES REPLACEMENT - CONTINUED 0217 00



NOTE

FOLLOW-ON MAINTENANCE:
Install main hydraulic pumps and PTO clutch assemblies (WP 0545 00)
Install fuel valve control rods, if removed (WP 0218 00)
Install subfloor plates, if removed (WP 0454 00)
Install powerpack, if removed (WP 0188 00)
Fill fuel tanks (TM 9-2350-292-10)

END OF TASK

FUEL VALVE CONTROL RODS AND HANDWHEEL REPLACEMENT 0218 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Powerpack removed (WP 0188 00)

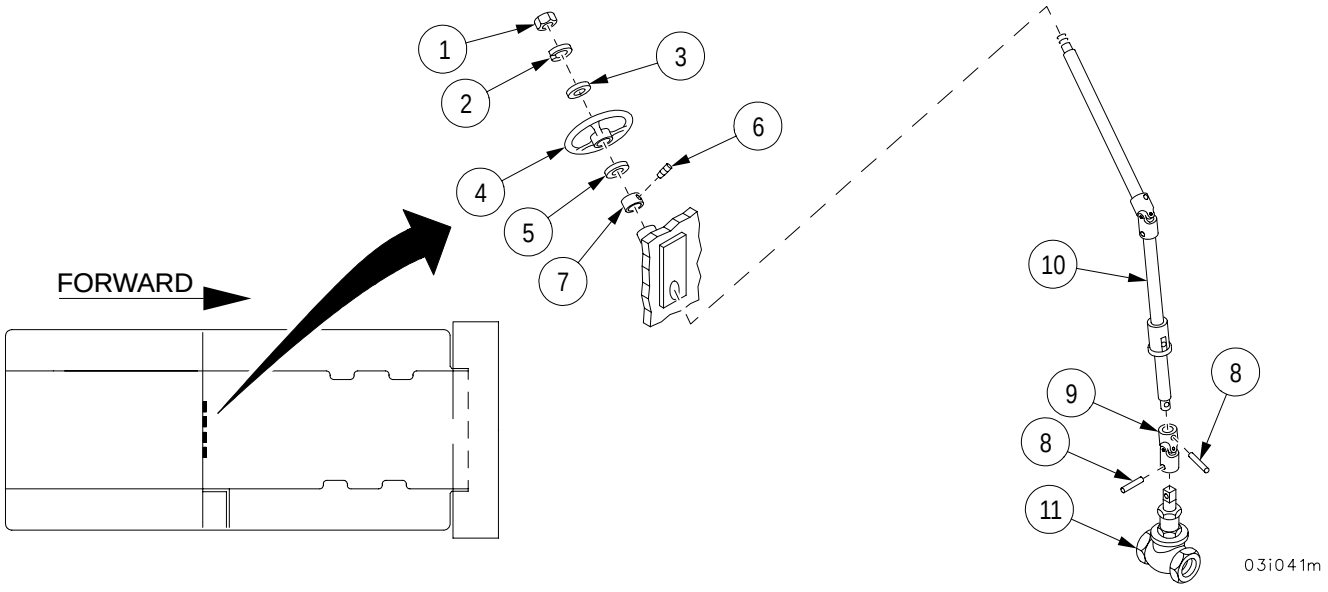
Materials/Parts
Spring pins (16) (item 96, WP 0718 00)
Spring pins (4) (item 97, WP 0718 00)
Lockwashers (4) (item 10, WP 0718 00)
Seals (4) (item 98, WP 0718 00)

NOTE

This procedure is the same for all four valve control rods and handwheel assemblies, including left fuel tank control which does not use a flat washer under the nut and lockwasher securing handwheel.

Removal

1. Remove nut (1), lockwasher (2), flat washer (3), handwheel (4) and flat washer (5). Discard lockwasher.
2. Loosen socket head setscrew (6) and remove collar (7).
3. Remove two spring pins (8) from universal joint (9). Discard spring pins.
4. Remove control rod assembly (10) and universal joint (9) from control valve (11) and bulkhead rod opening.



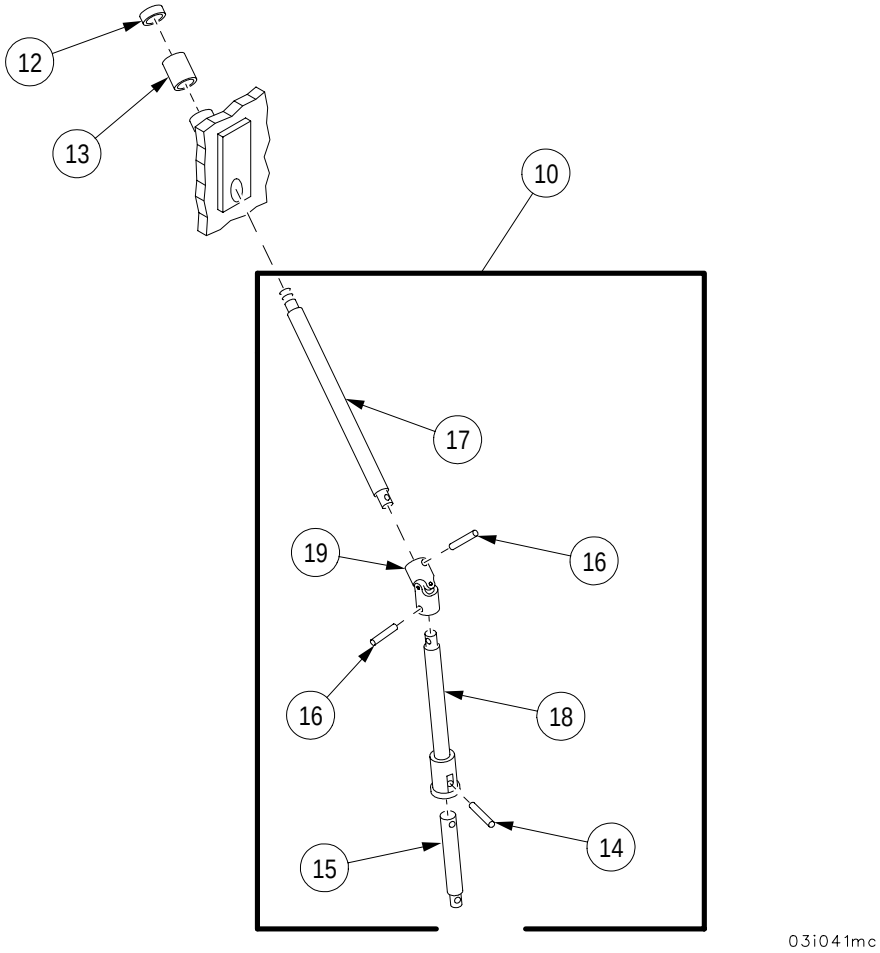
FUEL VALVE CONTROL RODS AND HANDWHEEL REPLACEMENT - CONTINUED 0218 00

Removal-Continued

5. Remove seal (12) and bushing (13) from bulkhead rod opening. Discard seal.
6. Remove spring pin (14) and shoulder rod pin (15) from control rod assembly (10). Discard spring pin.
7. Remove two spring pins (16), shaft rod (17) and control rod (18) from universal joint (19). Discard spring pins.
8. Inspect parts for damage and replace as required.

Installation

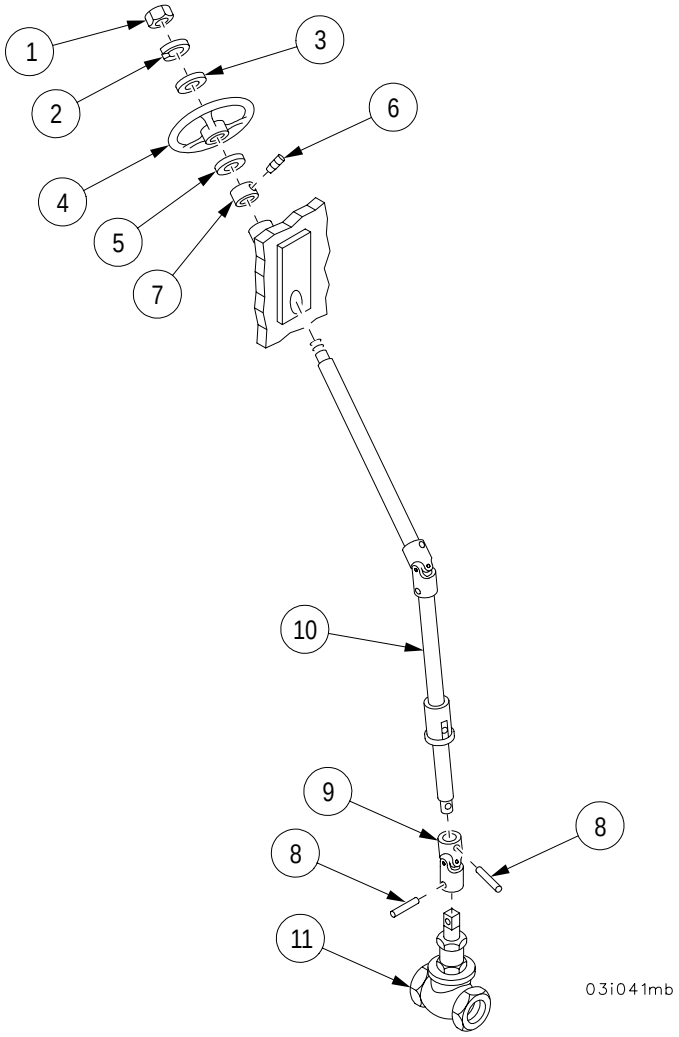
1. Install shaft rod (17) and control rod (18) on universal joint (19) with two new spring pins (16).
2. Install shoulder rod pin (15) in control rod assembly (10) with new spring pin (14).
3. Install new seal (12) and bushing (13) in bulkhead rod opening.
4. Install control rod assembly (10) in bulkhead rod opening.



FUEL VALVE CONTROL RODS AND HANDWHEEL REPLACEMENT - CONTINUED 0218 00

Installation-Continued

5. Install universal joint (9) between control valve (11) and control rod assembly (10) with two new spring pins (8).
6. Install collar (7) on control rod assembly (10). Tighten socket head setscrew (6).
7. Install flat washer (5), handwheel (4), flat washer (3), new lockwasher (2) and nut (1) on control rod assembly (10).



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

END OF TASK

FUEL/WATER SEPARATOR AUTOMATIC DRAIN SYSTEM AND WIRING HARNESS E2CA128-006 REPLACEMENT

0219 00

THIS WORK PACKAGE COVERS:

Removal, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Slip joint pliers (item 88, WP 0717 00)

Materials/Parts

Lockwashers (3) (item 10, WP 0718 00)
Lockwashers (4) (item 127, WP 0718 00)
Lockwasher (item 202, WP 0718 00)
Self-locking nuts (2) (item 251, WP 0718 00)
Pressure sensitive tape (item 41, WP 0716 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions

Powerpack removed (WP 0188 00)
Fuel/water separator drained (WP 0220 00)



WARNING

NOTE

This task provides for a complete automatic drain system replacement. Perform only those steps necessary for maintenance or replacement of defective parts.

Perform Removal steps 1 through 4 and 18 and Installation steps 14 through 16 for maintenance of control module.

Perform Removal steps 5 through 8 and 18 and Installation steps 2 and 10 through 13 for maintenance of solenoid valve.

Perform Removal steps 10 through 16 and 18 and Installation steps 1 through 8 for maintenance of drain cock mounting bracket.

Perform Removal steps 2, 4, 5 and 18 and Installation steps 13, 14 and 15 for maintenance of wiring harness E2CA128-006.

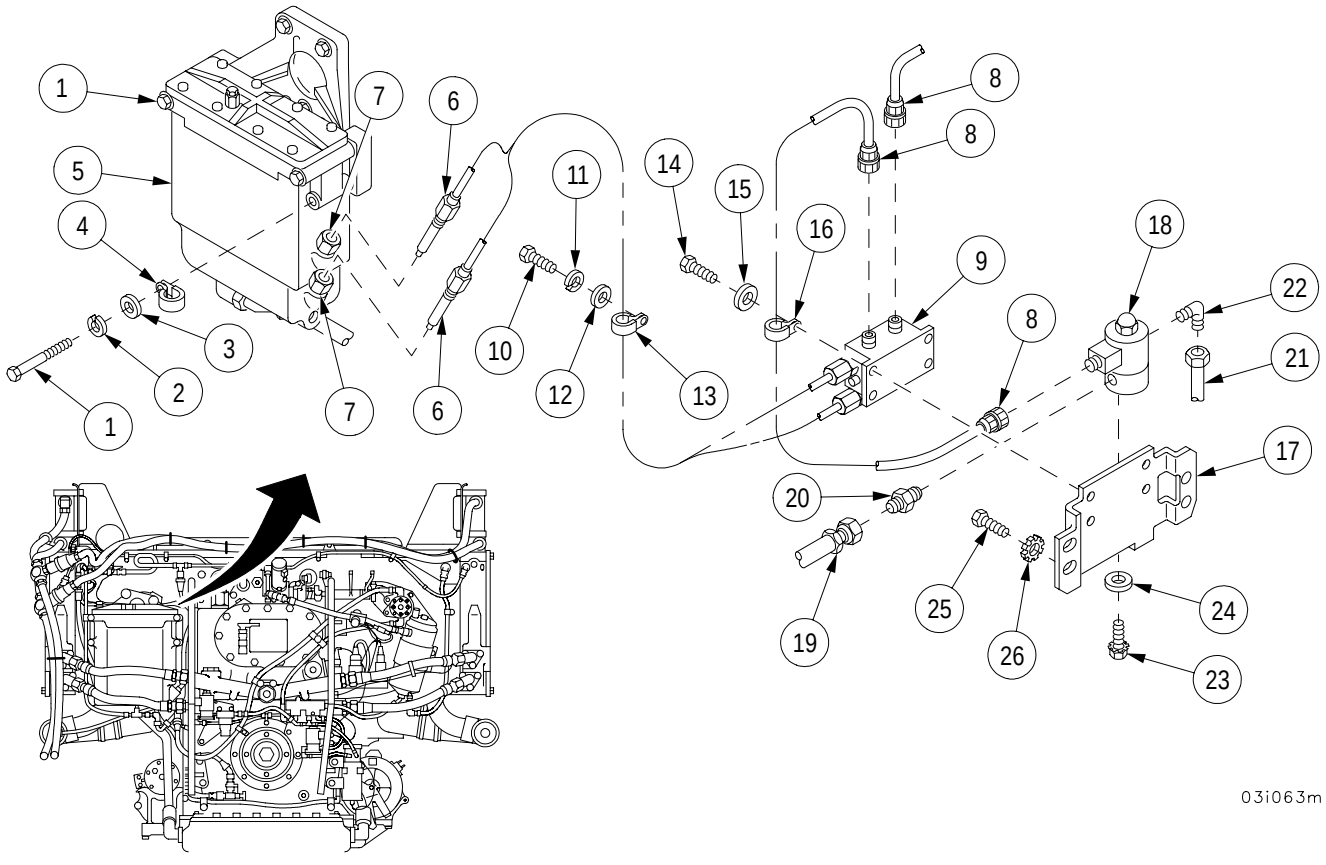
Tag upper water sensor probe prior to removal, so that it can be installed in same port during installation.

Tag all electrical components and electrical leads prior to removal to aid in installation.

FUEL/WATER SEPARATOR AUTOMATIC DRAIN SYSTEM AND WIRING HARNESS E2CA128-006 REPLACEMENT - CONTINUED 0219 00

Removal

1. Remove screw (1), lockwasher (2), flatwasher (3) and clamp (4) from fuel/water separator (5). Discard lockwasher.
2. Loosen three screws (1) and disconnect upper and lower water sensor probes with leads (6) from two adapters (7).
3. Disconnect two wiring harness connectors (8) from control module (9).
4. Remove screws (10), lockwashers (11), flat washers (12) and clamps (13) securing two water sensor probe leads (6). Discard lockwasher.
5. Remove four screws (14), four flat washers (15), wiring harness clamp (16) and control module (9) with water sensor probe leads (6) from mounting bracket (17).
6. Disconnect wiring harness connector (8) from solenoid valve (18).
7. Remove drain hose (19) and adapter (20) from solenoid valve (18).
8. Remove drain tube (21) and elbow (22) from solenoid valve (18).
9. Remove two assembled washer screws (23), two flat washers (24) and solenoid valve (18) from mounting bracket (17).
10. Remove four screws (25), four lockwashers (26) and mounting bracket (17) from engine. Discard lockwashers.



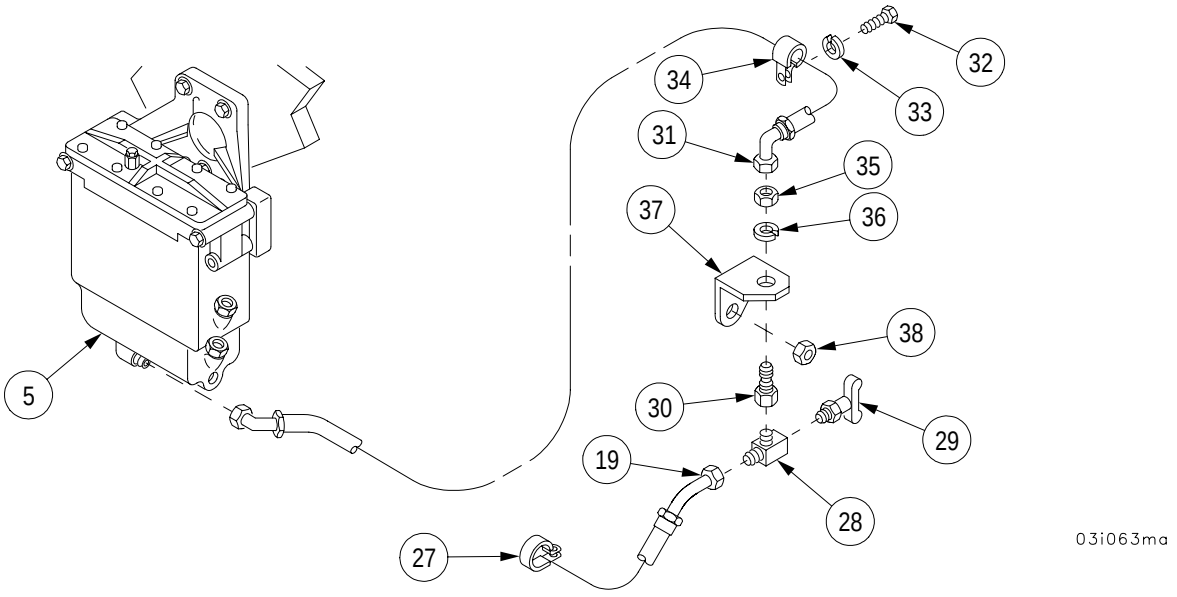
FUEL/WATER SEPARATOR AUTOMATIC DRAIN SYSTEM AND WIRING HARNESS E2CA128-006 REPLACEMENT - CONTINUED 0219 00

Removal-Continued

11. Remove clamp (27) and remove drain hose (19) from tee (28).
12. Remove drain cock (29) from tee (28).
13. Remove tee (28) from adapter (30).
14. Disconnect hose (31) from fuel/water separator (5) and adapter (30).
15. Remove screw (32), lockwasher (33), clamp (34) and hose (31). Discard lockwasher.
16. Remove nut (35), lockwasher (36) and adapter (30) from bracket (37). Discard lockwasher.
17. Remove two self-locking nuts (38) and bracket (37) from engine. Discard self-locking nuts.
18. Inspect parts for damage and replace as required.

Installation

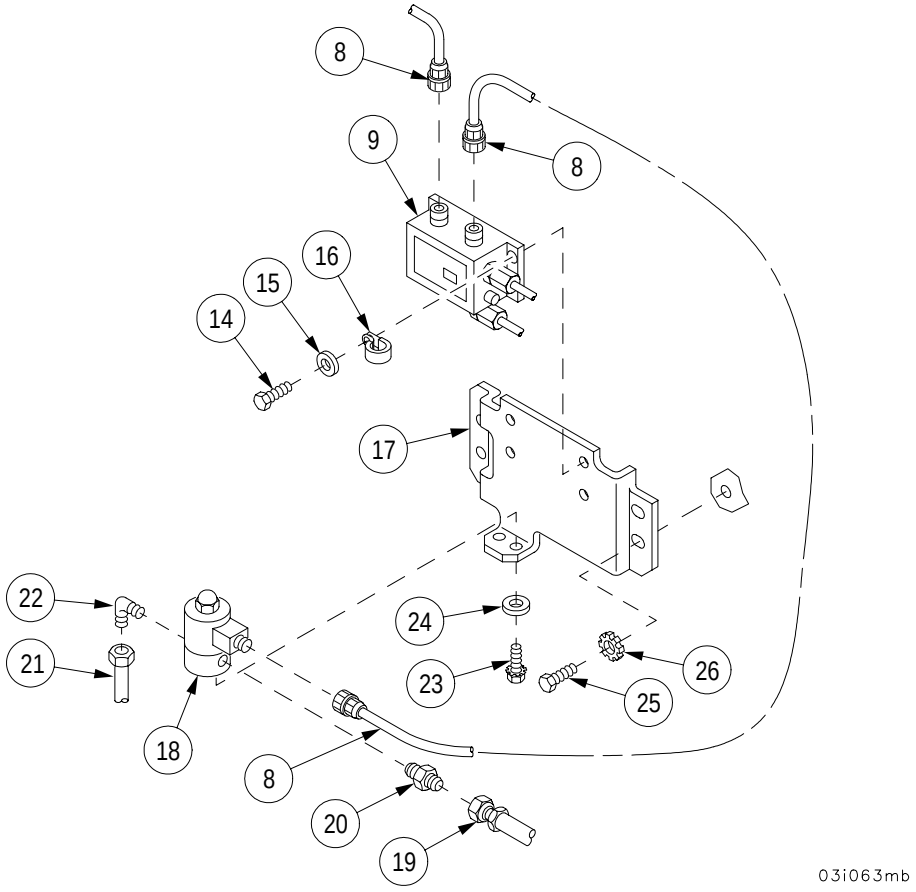
1. Install bracket (37) with two new self-locking nuts (38) on engine.
2. Apply pressure sensitive tape to all threaded pipe and hose fittings.
3. Install adapter (30) on bracket (37) with new lockwasher (36) and nut (35).
4. Connect hose (31) to fuel/water separator (5) and adapter (30).
5. Secure hose (31) with clamp (34), new lockwasher (33) and screw (32).
6. Install tee (28) on adapter (30).
7. Install drain cock (29) on tee (28).
8. Connect drain hose (19) on tee (28). Secure drain hose (19) with clamp (27) on second oil pan mounting bolt on front left bank.



FUEL/WATER SEPARATOR AUTOMATIC DRAIN SYSTEM AND WIRING HARNESS E2CA128-006 REPLACEMENT - CONTINUED 0219 00

Installation-Continued

9. Install mounting bracket (17) on engine with four screws (25) and four new lockwashers (26).
10. Install solenoid valve (18) on mounting bracket (17) with two flat washers (24) and two assembled washer screws (23).
11. Install elbow (22) in output side of solenoid valve (18), connect drain tube (21) to elbow (22).
12. Install adapter (20) in input side of solenoid valve (18), connect drain hose (19) to adapter (20).
13. Connect wiring harness connector (8) to solenoid valve (18).
14. Install control module (9) and wiring harness clamp (16) on mounting bracket (17) with four screws (14) and four flat washers (15).
15. Connect two wiring harness connectors (8) to control module (9).



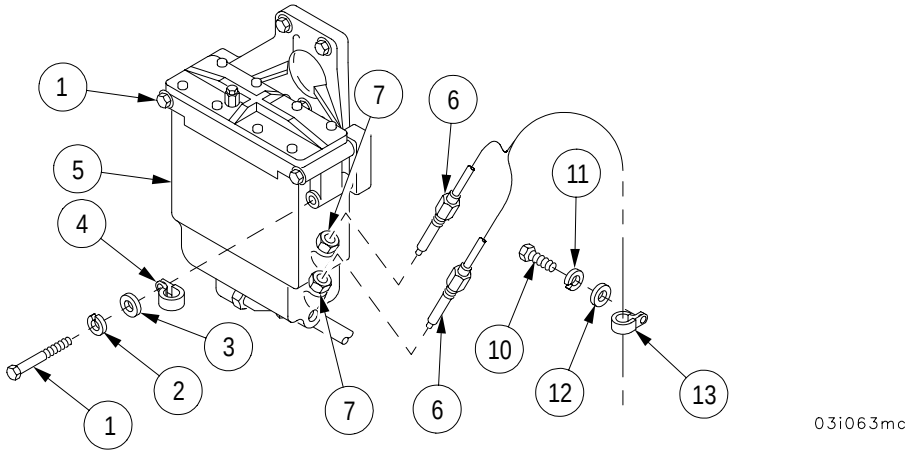
FUEL/WATER SEPARATOR AUTOMATIC DRAIN SYSTEM AND WIRING HARNESS E2CA128-006 REPLACEMENT - CONTINUED 0219 00

Installation-Continued

CAUTION

Be sure to install probes in proper separator ports. Probe with lead attached to side of control module is installed in upper port. Failure to comply may result in damage.

16. Connect upper and lower water sensor probes with leads (6) to two adapters (7).
17. Secure upper water sensor probe (6) with screw (10), new lockwasher (11), flat washer (12) and clamp (13).
18. Secure lower water sensor probe (6) with screw (1), new lockwasher (2), flatwasher (3) and clamp (4). Tighten three remaining screws (1).



NOTE

FOLLOW-ON MAINTENANCE:
Bleed fuel/water separator (WP 0220 00)
Install powerpack (WP 0188 00)

END OF TASK

FUEL/WATER SEPARATOR FILTERS REPAIR 0220 00

THIS WORK PACKAGE COVERS:

Removal, Disassembly, Cleaning/Inspecting, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Suitable container (2.0 gal. (7.5 l min cap))
Torque wrench (item 21, WP 0717 00)

Materials/Parts

Parts kit, filter (item 270, WP 0718 00)
Lockwashers (3) (item 10, WP 0718 00)
Lockwashers (7) (item 9, WP 0718 00)
Dry-cleaning solvent (item 1, WP 0716 00)
Pressure sensitive tape (item 41, WP 0716 00)

Equipment Conditions

Control module leads and probes removed from fuel/water separator filter (WP 0219 00)
Wiring harness 3W202 removed from top of fuel/water separator filter (WP 0300 00)

References

TM 9-2350-292-10



WARNING

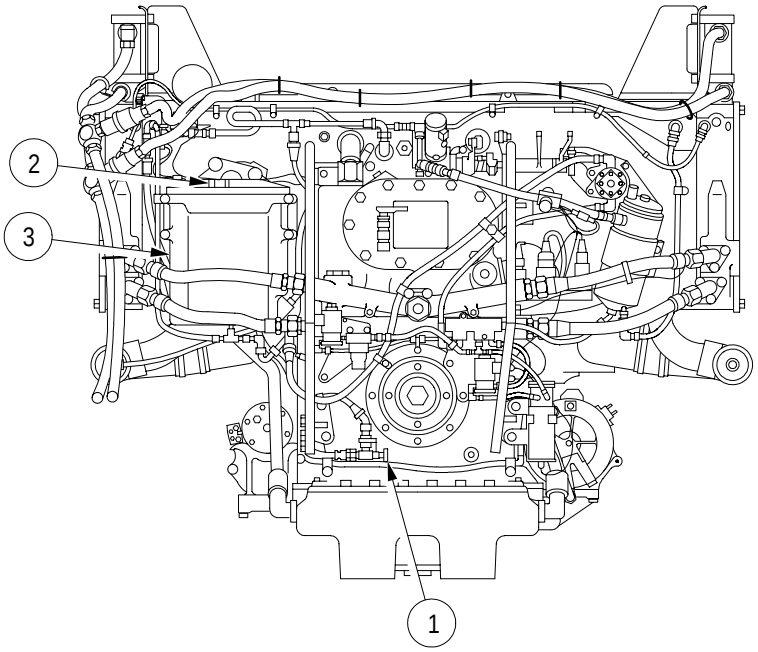
CAUTION

Separator must be removed from engine to thoroughly clean or replace parts not otherwise accessible. Never clean inside of separator when connected to fuel lines. Unseen particles could enter fuel lines and damage pumps and injectors. Cap fuel lines when removed from separator.

FUEL/WATER SEPARATOR FILTERS REPAIR - CONTINUED 0220 00

Removal

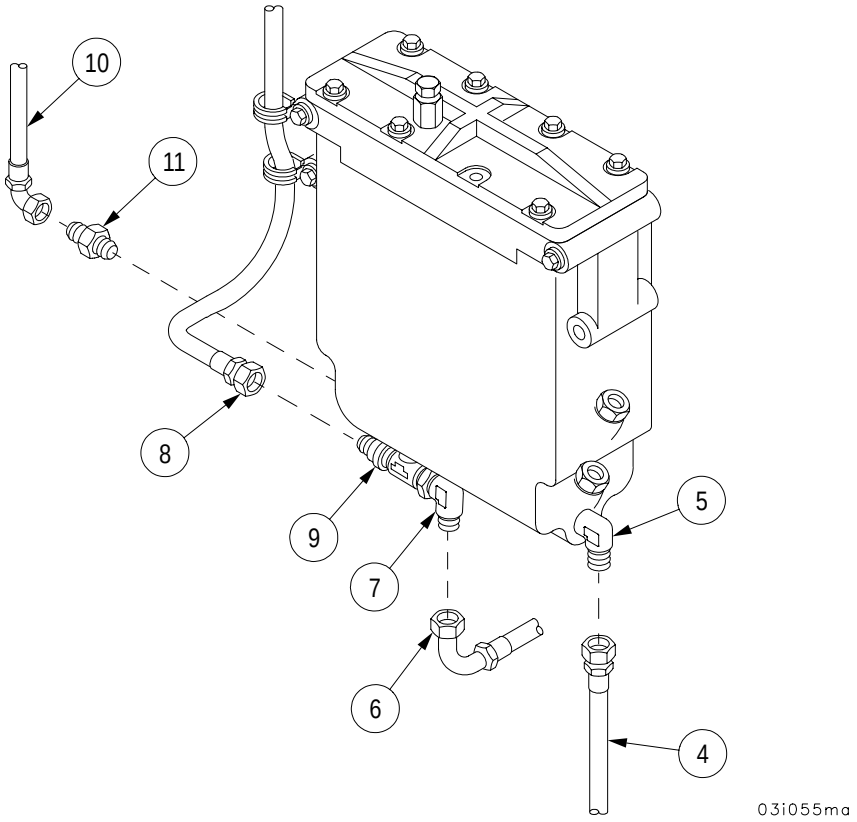
1. Place a suitable container under drain cock (1). Open drain cock (1), loosen screw-in bleeder valve (2) to drain fuel/water separator filter (3). Close drain cock, remove drain container.



FUEL/WATER SEPARATOR FILTERS REPAIR - CONTINUED 0220 00

Removal-Continued

2. Disconnect fuel inlet hose (4) from elbow (5).
3. Disconnect fuel outlet hose (6) from elbow (7).
4. Disconnect pressure switch hose (8) from adapter (9).
5. Disconnect pressure switch hose (10), remove adapter (11).



FUEL/WATER SEPARATOR FILTERS REPAIR - CONTINUED 0220 00

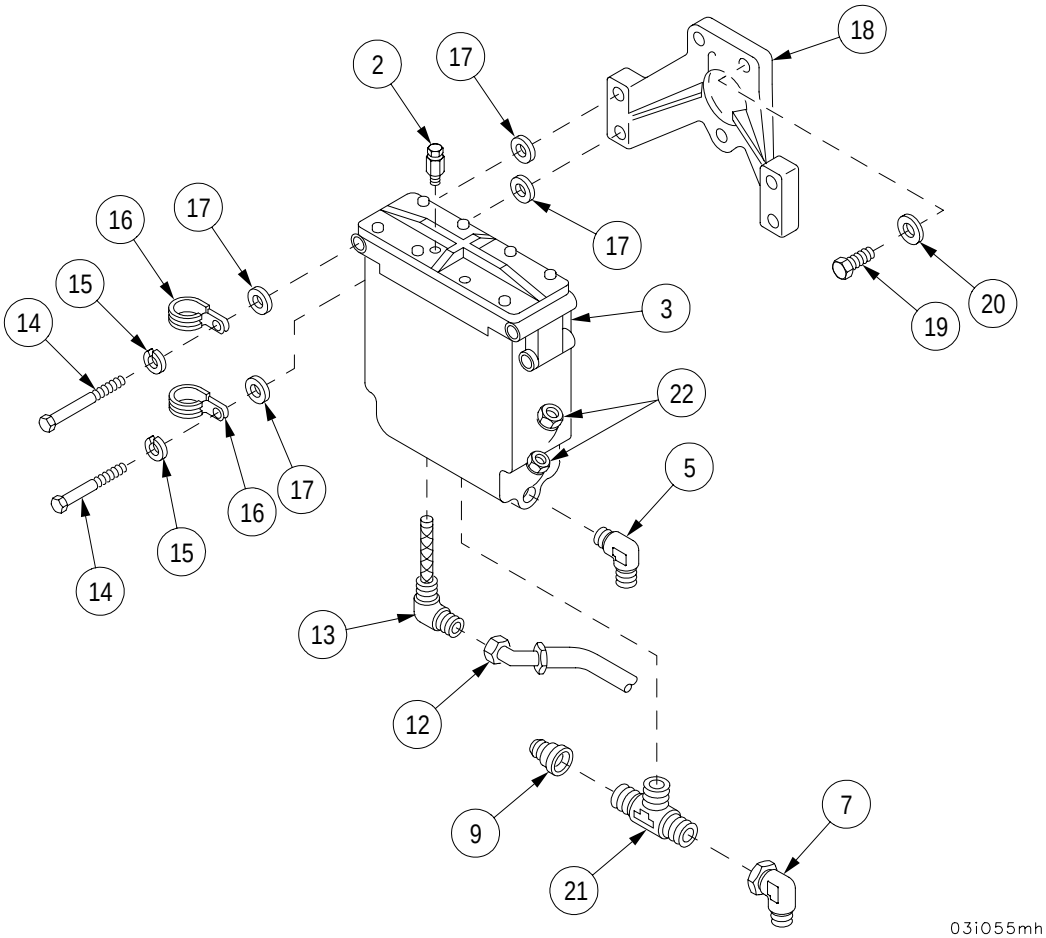
Removal-Continued

6. Remove drain hose (12) and elbow/filter (13).
7. Remove three screws (14), three lockwashers (15), two clamps (16), six flat washers (17) and fuel/water separator filter (3) from bracket (18). Discard lockwashers.

NOTE

The following steps provide for a complete removal of related components of the fuel/water separator. Perform only those steps necessary for maintenance or replacement of defective parts.

8. Remove three screws (19), three flat washers (20) and bracket (18) from engine.
9. Remove adapter (9), elbow (7), tee (21) and elbow (5) from fuel/water separator filter (3).
10. Remove two adapters (22) from fuel/water separator filter (3).
11. If new separator is installed, remove bleeder valve (2) for installation in new unit.



FUEL/WATER SEPARATOR FILTERS REPAIR - CONTINUED 0220 00

Disassembly

1. Remove seven screws (23), seven lockwashers (24), seven flat washers (25), cover (26) and gasket (27) from fuel/water separator filter (3). Discard lockwashers and gasket.
2. Remove two outer elements (28) and inner element (29). It may be necessary to turn elements while removing to get them out easily. Discard outer elements.
3. Remove bleeder valve (2) from cover (26).

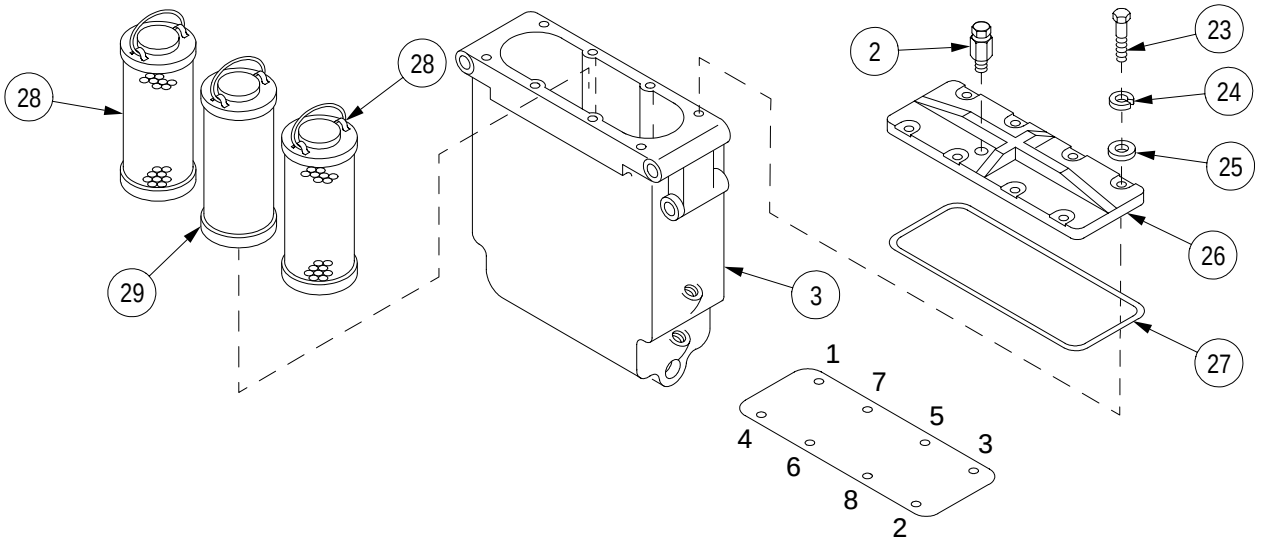
Cleaning/Inspecting



1. Clean all metal parts, fittings, hose ends, separator (3), bleeder valve (2), cover (26) and inner element (29) with dry-cleaning solvent. Remove sludge and gum with scraper or stiff brush.
2. Inspect all parts for cracks or damage. Replace any defective parts.
3. Check bleeder valve (2) and attachment point for it in cover (26) to be sure that there is no blockage.

Assembly

1. Install bleeder valve (2) in cover (26).
2. Install inner element (29) and two new outer elements (28).
3. Install new gasket (27) and cover (26) with seven screws (23), seven new lockwashers (24) and seven flat washers (25) on fuel/water separator filter (3). Torque screws to 144.0 lb-in (16.27 NSm) in accordance with torque sequence diagram.



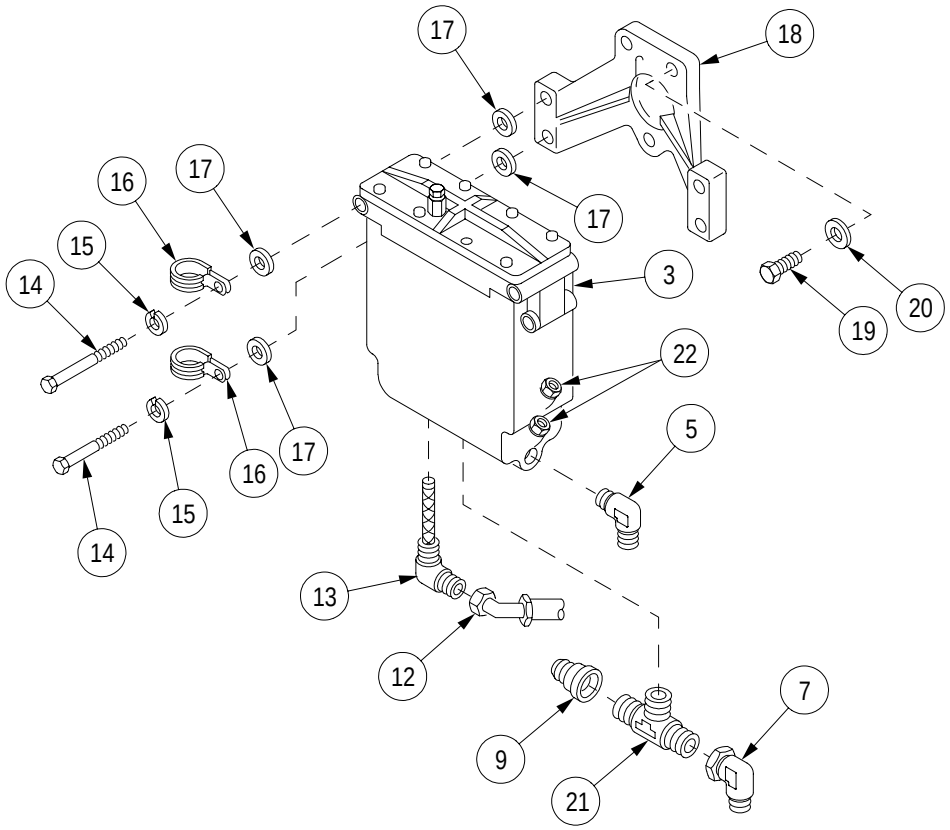
TORQUE SEQUENCE DIAGRAM

03i055mc

FUEL/WATER SEPARATOR FILTERS REPAIR - CONTINUED 0220 00

Installation

1. Apply pressure sensitive tape to all threaded pipe and hose fittings.
2. Install two adapters (22).
3. Install elbow (5), tee (21), adapter (9) and elbow (7).
4. Install bracket (18) on engine with three screws (19) and three flat washers (20).
5. Install fuel/water separator filter (3) and two fuel line clamps (16) on bracket (18) with three screws (14), three new lockwashers (15) and six flat washers (17).
6. Install elbow/filter (13) and drain hose (12).

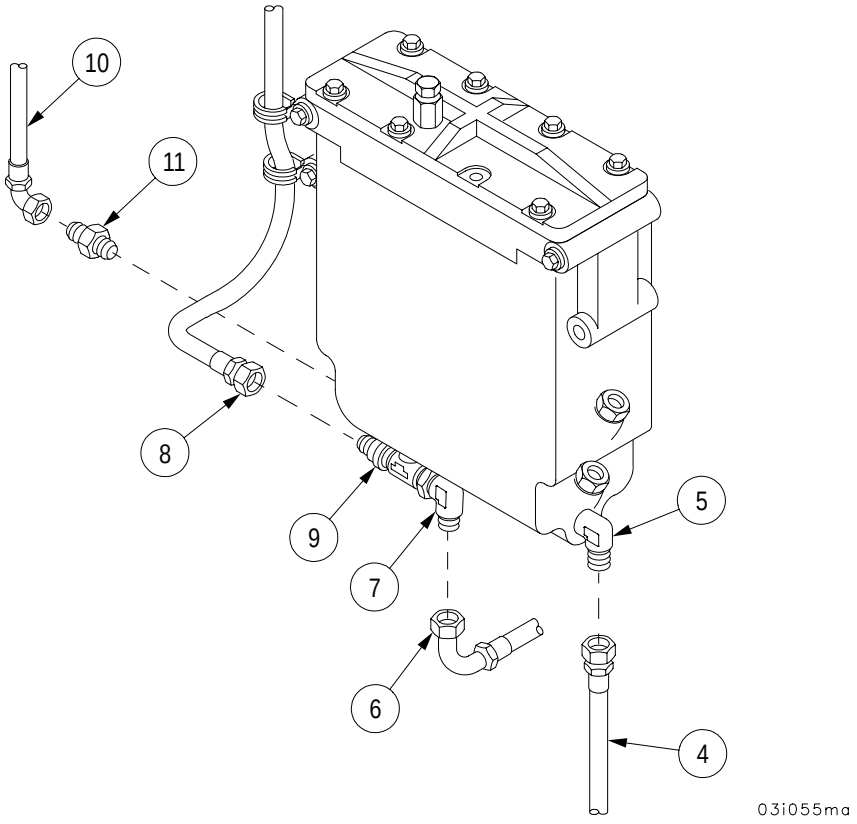


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FUEL/WATER SEPARATOR FILTERS REPAIR - CONTINUED 0220 00

Installation-Continued

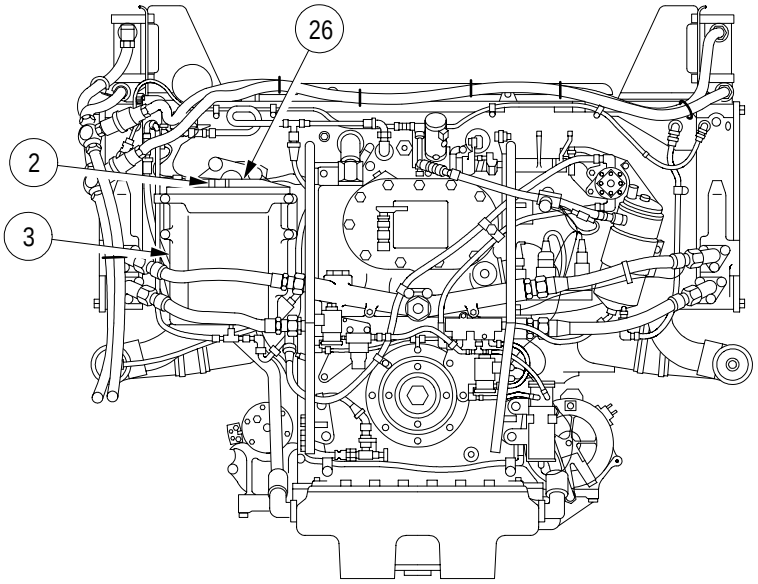
7. Install adapter (11), connect pressure switch hose (10).
8. Connect pressure switch hose (8) to adapter (9).
9. Connect fuel outlet hose (6) to elbow (7).
10. Connect fuel inlet hose (4) to elbow (5).



FUEL/WATER SEPARATOR FILTERS REPAIR - CONTINUED 0220 00

Installation-Continued

11. If installing new separator, remove plug from new separator cover (26), install bleeder valve (2) removed from old separator cover (26). Install plug in old cover (26).
12. Install control module leads and probes in fuel/water separator filter (3) (WP 0219 00).
13. Install wiring harness 3W202 on fuel/water separator filter (3) (WP 0300 00).
14. Bleed air from filter and lines by running electric fuel pump until fuel flows from bleeder valve (2). Tighten bleeder valve (2) (TM 9-2350-292-10).
15. Check for leaks at all connections, turn off fuel pump (TM 9-2350-292-10).



03i055mi

END OF TASK

FUEL/WATER SEPARATOR OPERATION TESTS 0221 00

THIS WORK PACKAGE COVERS:

Manual Drain Test, Automatic Drain Test, 15–second Drain Test, Sequential Drain Test

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Suitable metal containers (2) (1.0 gal (3.8 l min cap))
24 V dc power source
Multimeter (item 84, WP 0717 00)
Fuel/water separator test harness (item 119, WP 0717 00)

Tools - Continued

Fuel/water separator jumper wire (item 120, WP 0717 00)
Hex screws (2) (item 121, WP 0717 00)

Materials/Parts

Wiping rags (item 7, WP 0716 00)
Lockwashers (3) (item 10, WP 0718 00)

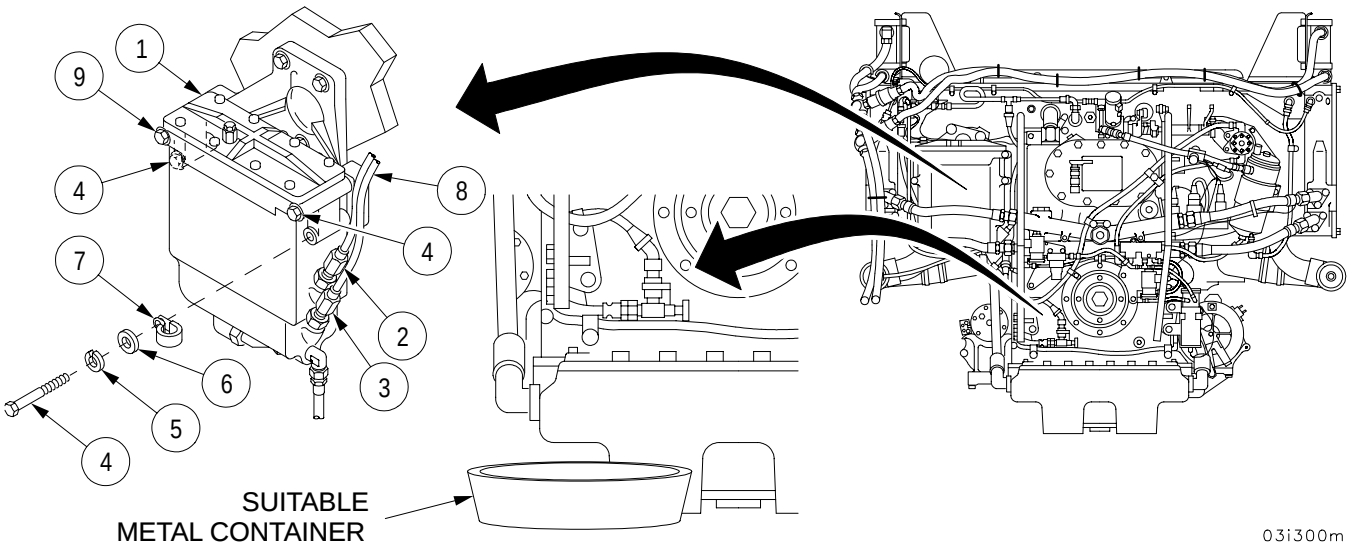
NOTE

To verify that the fuel/water separator is functioning properly, all operational tests must be performed and in the sequence listed.

All tests must be performed with fuel/water separator in normal position on mounting bracket.

Manual Drain Test

1. Place suitable metal container under fuel/water separator (1) and upper and lower sensor probes (2 and 3).
2. Remove three screws (4), three lockwashers (5), three flat washers (6) and clamp (7) securing fuel/water separator (1) to powerpack. Discard lockwashers.
3. Remove clamp (7) from sensor probe wires (8).
4. Loosen screw (9) to provide movement of fuel/water separator (1).



FUEL/WATER SEPARATOR OPERATION TESTS - CONTINUED 0221 00

Manual Drain Test-Continued

NOTE

Be careful not to disturb center filter element during test. Center filter element must be replaced if disturbed in any way.

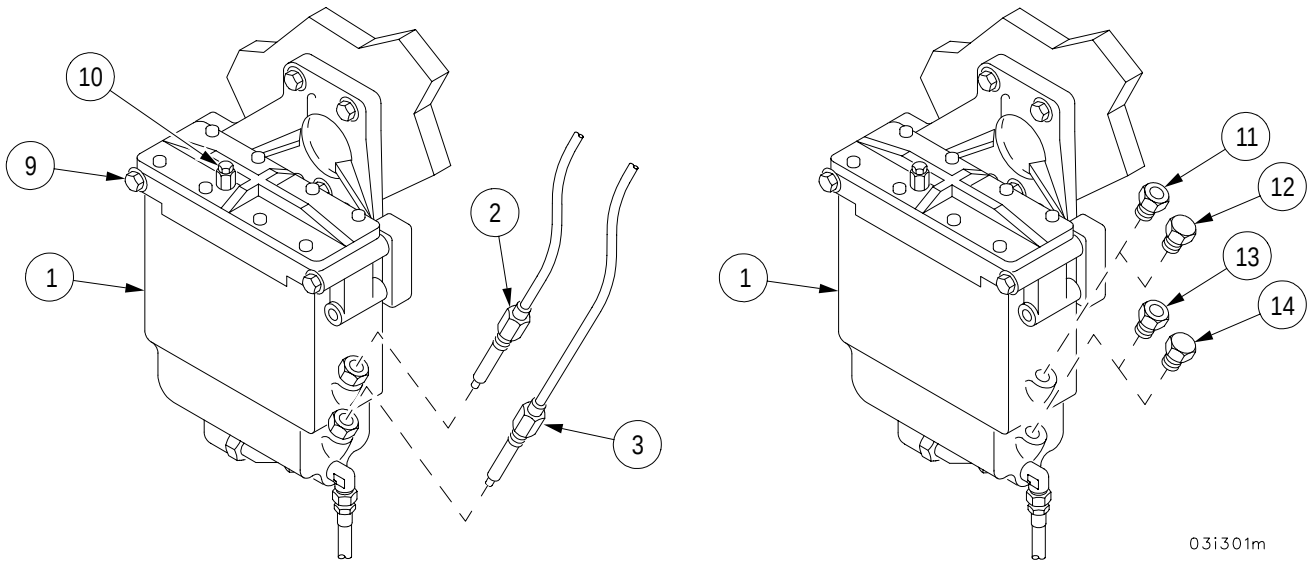
It may be necessary to unseat sensor probes by tapping upward on edge of sensor retaining nut.

5. Remove upper sensor probe (2) from fuel/water separator (1).
6. Open and close bleed cap (10). Check to see if fluid level is above upper sensor probe (2) hole by noting leakage from upper sensor probe (2) hole when bleed cap (10) is opened.
7. Remove upper sensor retaining nut (11) and install screw (12) into upper sensor probe (2) hole.

NOTE

It may be necessary to remove screw (9) and move fuel/water separator prior to removing lower sensor probe. If screw is removed, reinstall screw (9) after removing probe.

8. Remove lower sensor probe (3) from fuel/water separator (1).
9. Remove lower sensor retaining nut (13) and install screw (14) into lower sensor probe (3) hole.
10. If fuel did not leak from upper sensor probe (2) hole, remove screw (12) from upper sensor probe (2) hole and proceed to step 11. If fuel did leak from upper sensor probe (2) hole, proceed to step 14.



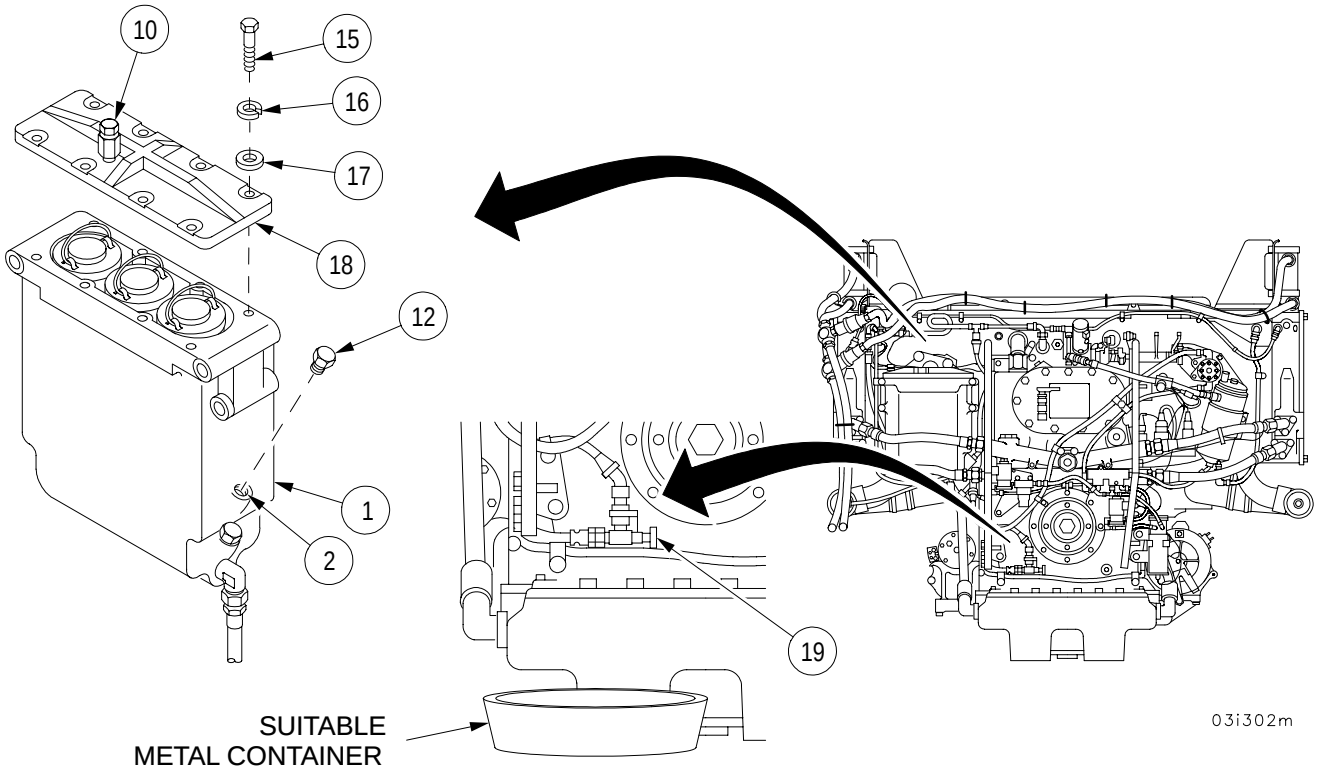
FUEL/WATER SEPARATOR OPERATION TESTS - CONTINUED 0221 00

Manual Drain Test-Continued

CAUTION

Do not damage fuel/water separator gasket when removing cover. Failure to comply will result in leaks to the fuel/water separator.

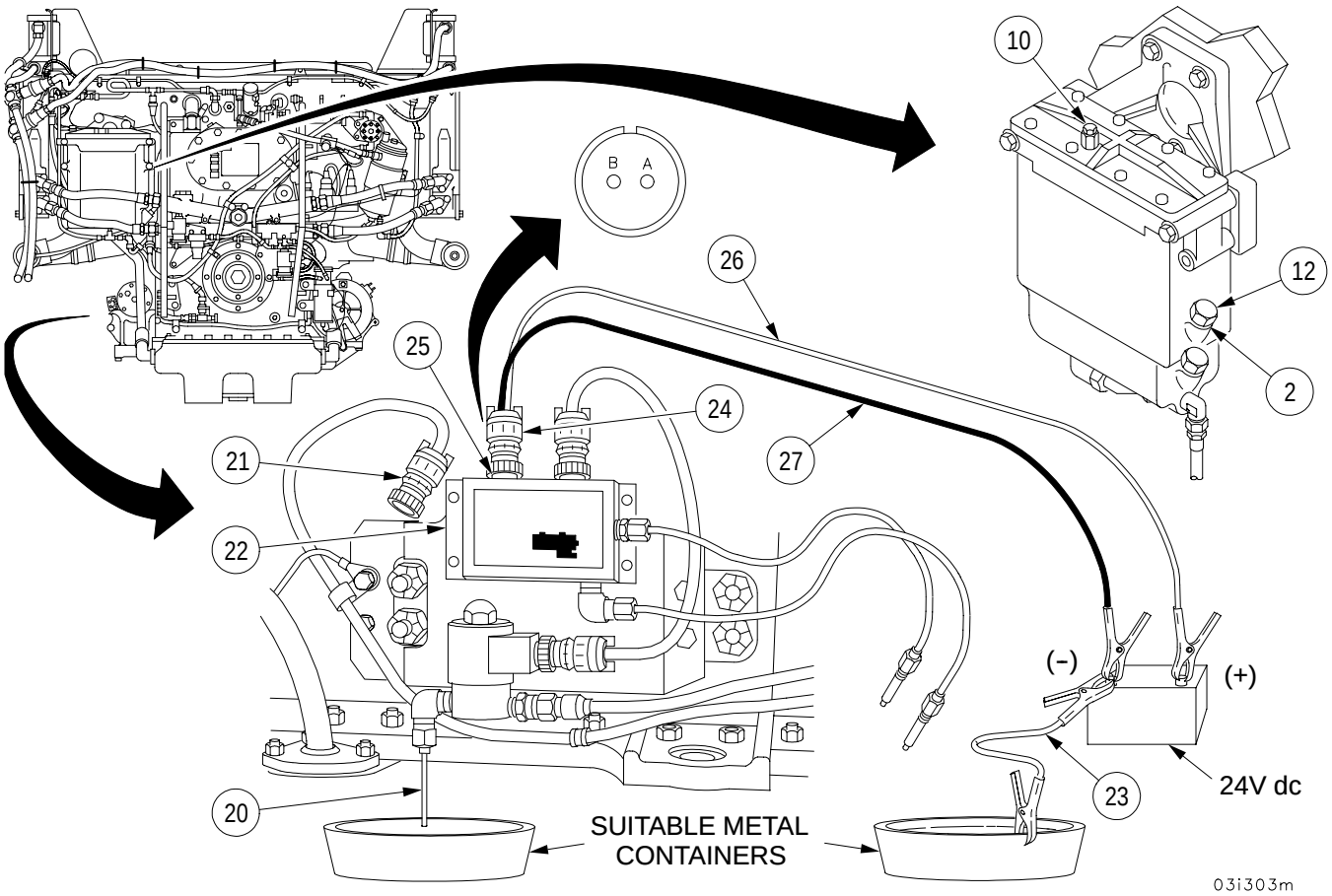
11. Remove eight screws (15), eight lockwashers (16), eight flat washers (17) and fuel/water separator cover (18).
12. Add fuel to fuel/water separator (1) until fuel leaks from upper sensor probe (2) hole. Install screw (12).
13. Install fuel/water separator cover (18) with eight screws (15), eight lockwashers (16) and eight flat washers (17).
14. Open bleed cap (10).
15. Place suitable metal container under manual drain outlet (19), open manual drain valve and allow a small amount of fluid to drain into container.
16. If fluid does not drain, check drain valve and lines for obstructions. Remove obstructions or repair damaged drain lines or drain valve (WP 0219 00). Repeat Manual Drain Test.
17. If fluid does drain, perform Automatic Drain Test.



FUEL/WATER SEPARATOR OPERATION TESTS - CONTINUED 0221 00

Automatic Drain Test

1. Place suitable metal container under fuel/water separator solenoid drain valve tube (20).
2. Disconnect engine electrical harness (21) connector from fuel/water separator control box (22).
3. Fill suitable metal container with water.
4. Connect jumper wire (23) from suitable metal container to negative (-) side of 24 V dc power source.
5. Connect fuel/water separator test harness connector (24) to control box receptacle (25).
6. Connect red wire (+) (26) to positive (+) side of 24 V dc power source.
7. Connect black wire (-) (27) to negative (-) side of 24 V dc power source.
8. Loosen screw (12) in upper sensor probe (2) hole, loosen bleed cap (10) and check to see if fuel leaks from upper sensor probe (2) hole.
9. If fuel did not leak from upper sensor probe (2) hole, remove screw (12) from upper sensor probe (2) hole and proceed to step 10**.** If fuel did leak from upper sensor probe (2) hole, proceed to step 13.



FUEL/WATER SEPARATOR OPERATION TESTS - CONTINUED 0221 00

Automatic Drain Test-Continued

CAUTION

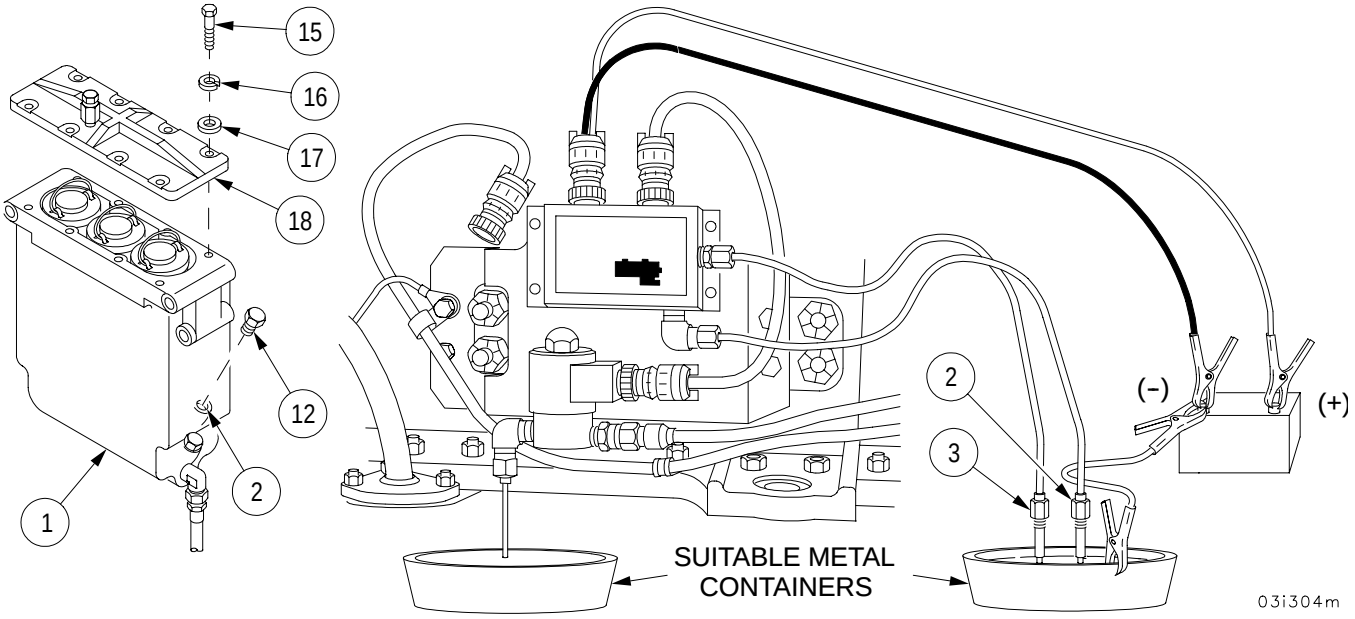
Do not damage fuel/water separator gasket when removing cover. Failure to comply will result in leaks to the fuel/water separator.

10. Remove eight screws (15), eight lockwashers (16), eight flat washers (17) and fuel/water separator cover (18).
11. Add fuel to fuel/water separator (1) until fuel leaks from upper sensor probe (2) hole. Install screw (12).
12. Install fuel/water separator cover (18) with eight screws (15), eight lockwashers (16) and eight flat washers (17).

WARNING

Do not allow upper and lower sensor probes to come in contact with each other or with metal container. Do not touch probes. Failure to comply may result in electrical shock, inaccurate test results or damage to equipment.

13. Hold tips of upper and lower sensor probes (2 and 3) in water in suitable metal container.



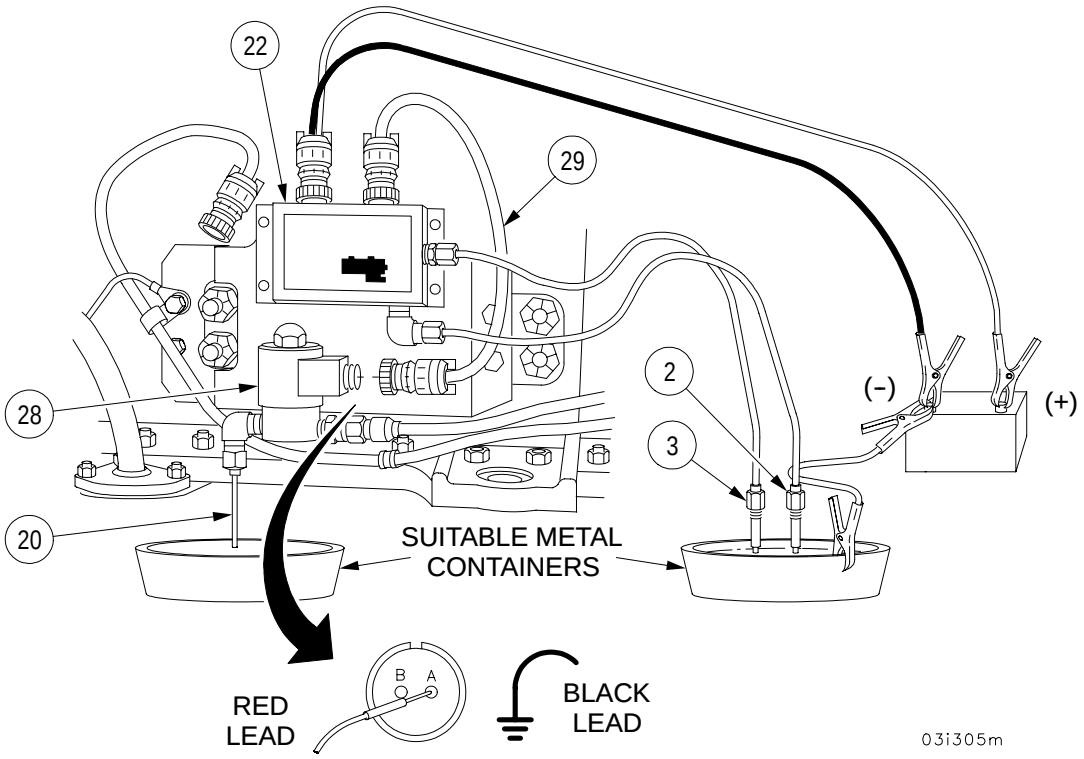
FUEL/WATER SEPARATOR OPERATION TESTS - CONTINUED 0221 00

Automatic Drain Test-Continued

NOTE

Remove upper and lower sensor probes from suitable metal container as soon as fluid begins draining from drain valve tube.

14. Listen for solenoid drain valve (28) to click and fluid begins to drain from solenoid drain valve tube (20).
15. If click is heard and fluid does not drain, check solenoid drain valve (28) and lines for obstructions (WP 0219 00).
16. If click is heard and fluid does drain, perform 15-second Drain Test.
17. If click is not heard and fluid fails to drain:
    a. Disconnect harness (29) from solenoid drain valve (28).
    b. Place red multimeter in socket A of harness (29) and black lead to ground. Hold sensor probes (2 and 3) in water in suitable container. Check for voltage.Remove sensor probes (2 and 3) from water.
    c. If 24 V dc is present, replace solenoid drain valve (28) (WP 0219 00). If 24 V dc is not present, replace fuel/water separator control box (22) (WP 0219 00).



FUEL/WATER SEPARATOR OPERATION TESTS - CONTINUED 0221 00

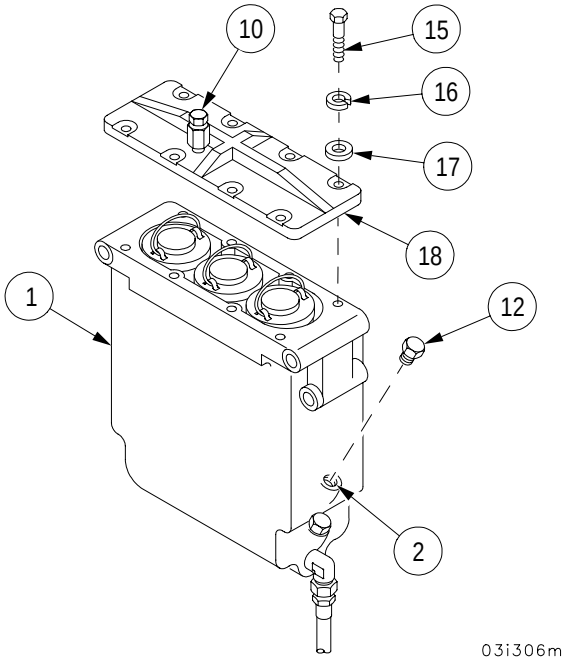
15-Second Drain Test

1. Loosen screw (12) in upper sensor probe (2) hole, loosen bleed cap (10) and check to see if fuel leaks from upper sensor probe (2) hole.
2. If fuel did not leak from upper sensor probe (2) hole, remove screw (12) from upper sensor probe (2) hole and proceed to step 3**.** If fuel did leak from upper sensor probe (2) hole, proceed to step 6.

CAUTION

Do not damage fuel/water separator gasket when removing cover. Failure to comply will result in leaks to the fuel/water separator.

3. Remove eight screws (15), eight lockwashers (16), eight flat washers (17) and fuel/water separator cover (18).
4. Add fuel to fuel/water separator (1) until fuel leaks from upper sensor probe (2) hole. Install screw (12).
5. Install fuel/water separator cover (18) with eight screws (15), eight lockwashers (16) and eight flat washers (17).



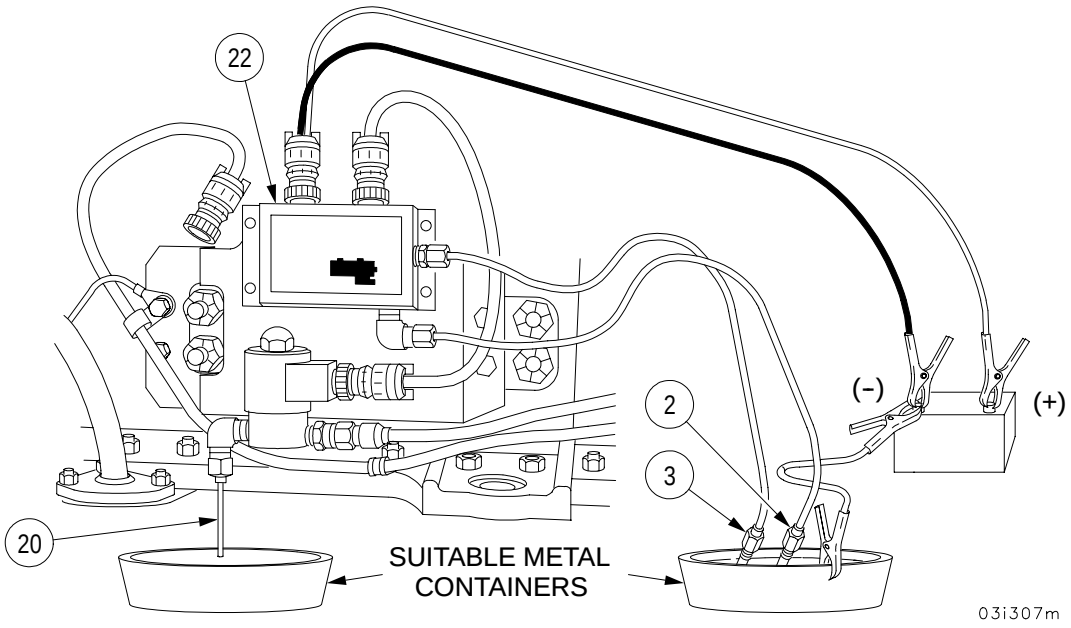
FUEL/WATER SEPARATOR OPERATION TESTS - CONTINUED 0221 00

15-Second Drain Test-Continued

WARNING

Do not allow upper and lower sensor probes to come in contact with each other or with metal container. Do not touch probes. Failure to comply may result in electrical shock, inaccurate test results or damage to equipment.

6. Hold tips of upper and lower sensor probes (2 and 3) in water in suitable metal container until fluid stops draining from solenoid drain valve tube (20).
7. If fluid does not stop draining in 15 to 20 seconds, replace fuel/water separator control box (22) (WP 0219 00). Repeat 15-second Drain Test.
8. If fluid does stop draining in 15 to 20 seconds, remove upper and lower sensor probes (2 and 3) from suitable metal container and perform Sequential Drain Test.



FUEL/WATER SEPARATOR OPERATION TESTS - CONTINUED 0221 00

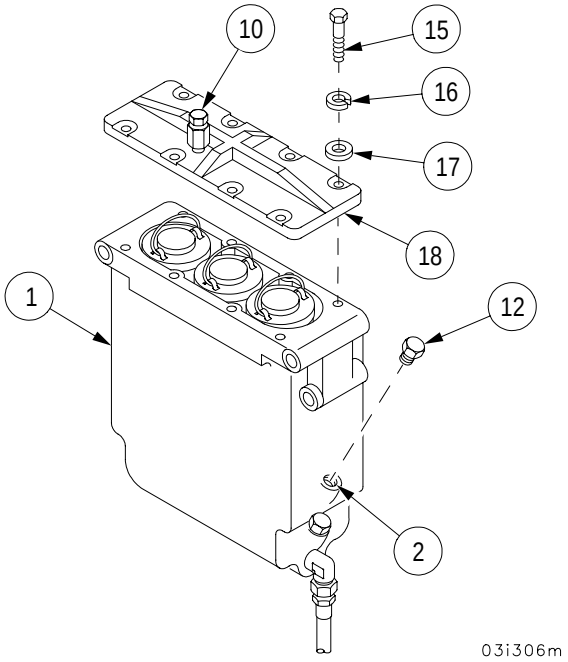
Sequential Drain Test

1. Loosen screw (12) in upper sensor probe (2) hole, loosen bleed cap (10) and check to see if fuel leaks from upper sensor probe (2) hole.
2. If fuel did not leak from upper sensor probe (2) hole, remove screw (12) from upper sensor probe (2) hole and proceed to step 3**.** If fuel did leak from upper sensor probe (2) hole, proceed to step 6.

CAUTION

Do not damage fuel/water separator gasket when removing cover. Failure to comply will result in leaks to the fuel/water separator.

3. Remove eight screws (15), eight lockwashers (16), eight flat washers (17) and fuel/water separator cover (18).
4. Add fuel to fuel/water separator (1) until fuel leaks from upper sensor probe (2) hole. Install screw (12).
5. Install fuel/water separator cover (18) with eight screws (15), eight lockwashers (16) and eight flat washers (17).



FUEL/WATER SEPARATOR OPERATION TESTS - CONTINUED 0221 00

Sequential Drain Test-Continued

WARNING

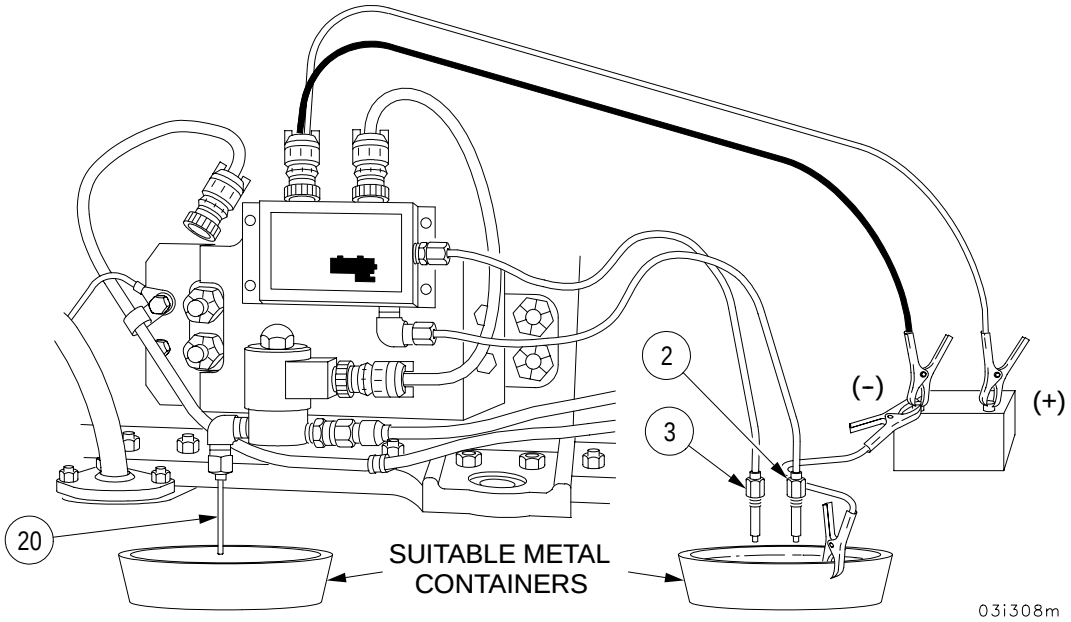
Do not allow upper and lower sensor probes to come in contact with each other or with metal container. Do not touch probes. Failure to comply may result in electrical shock, inaccurate test results or damage to equipment.

6. Hold tip of lower sensor probe (3) in water in suitable metal container.

NOTE

Steps 7 through 10 must be completed within 15 seconds.

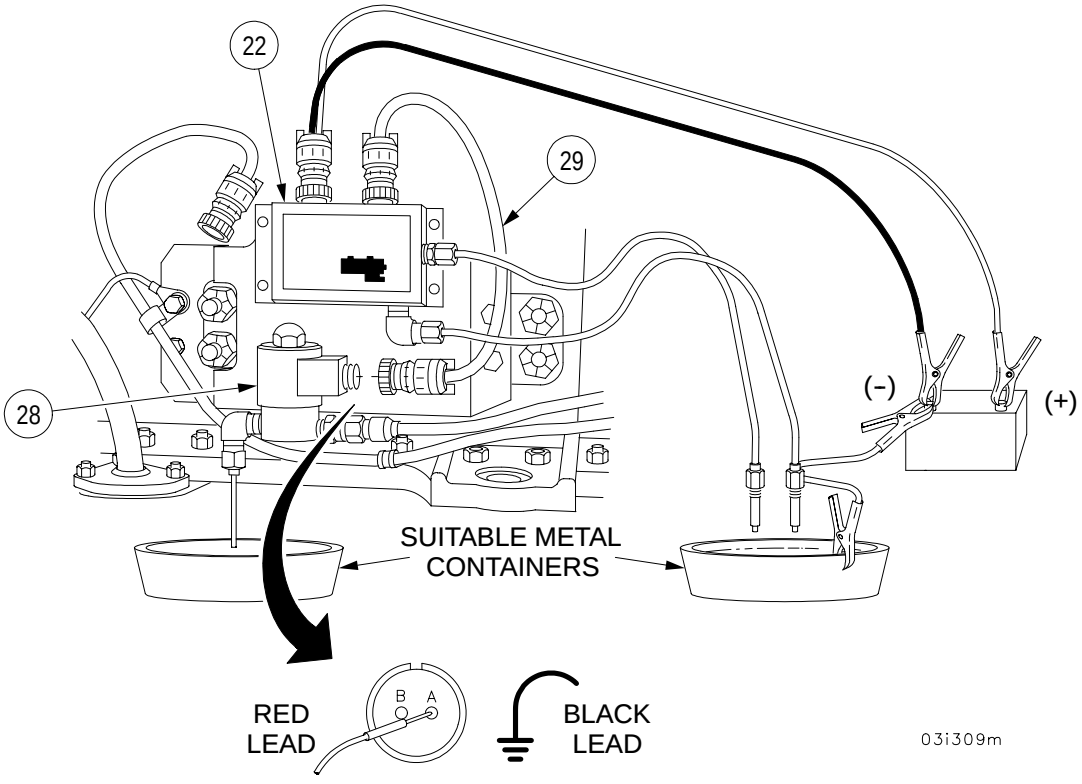
7. Hold tip of upper sensor probe (2) in water in suitable metal container and check if fluid starts draining from solenoid drain valve tube (20).
8. Remove tip of upper sensor probe (2) from water in suitable metal container and check if fluid keeps draining from solenoid drain valve tube (20).
9. Remove tip of lower sensor probe (3) from water in suitable metal container before 15 seconds have gone by from time of placing the probe in water and check if fluid stops draining from solenoid drain valve tube (20).



FUEL/WATER SEPARATOR OPERATION TESTS - CONTINUED 0221 00

Sequential Drain Test-Continued

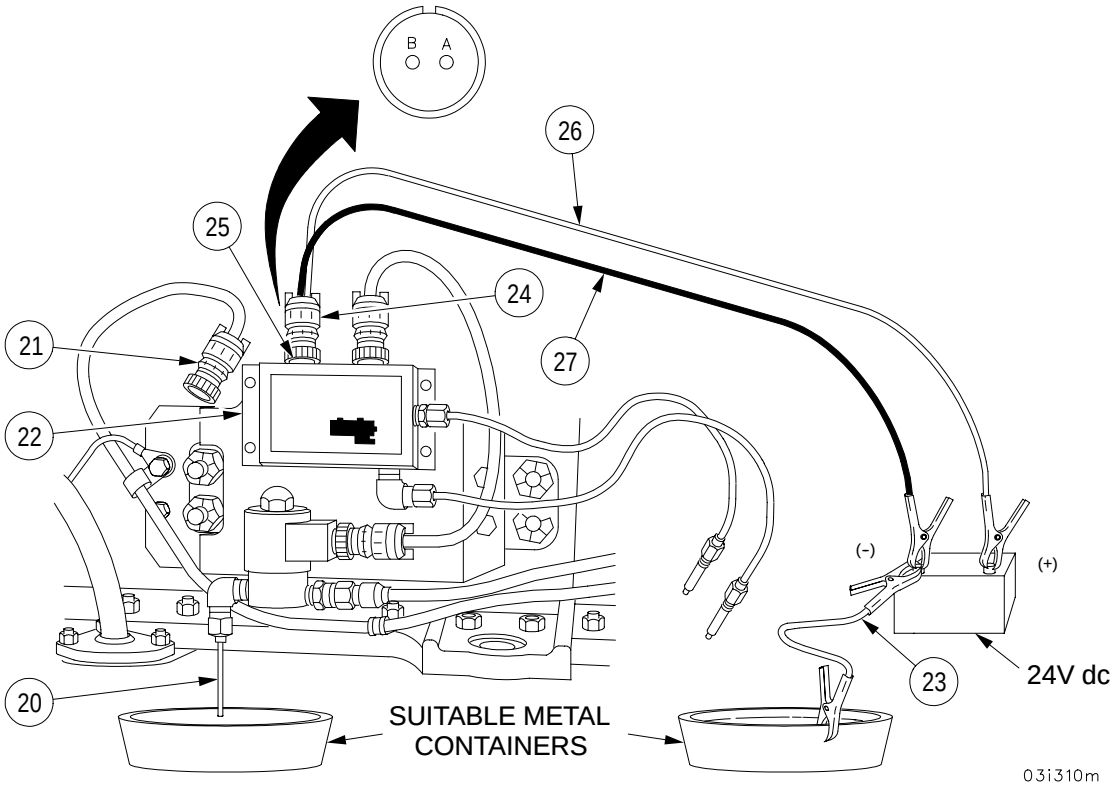
10. If fluid does not start draining, does not keep draining or does not stop draining:
    a. Disconnect power source from fuel/water separator control box (22).
    b. Disconnect harness (29) from solenoid drain valve (28).
    c. Place red multimeter in socket A of harness (29) and black lead to ground. Reconnect power source to fuel/water separator control box (22). Check for voltage.
    d. If voltage returns to zero within 15-seconds, replace solenoid drain valve (28) (WP 0219 00). If voltage does not return to zero within 15-seconds, replace fuel/water separator control box (22) (WP 0219 00).



FUEL/WATER SEPARATOR OPERATION TESTS - CONTINUED 0221 00

Sequential Drain Test-Continued

11. Disconnect black wire (-) (27) and red wire (+) (26) from positive (+) and negative (-) terminals of 24 V dc power source.
12. Disconnect fuel/water separator test harness connector (24) from left control box receptacle (25) at fuel/water separator control box (22).
13. Disconnect jumper wire (23) from negative (-) side of 24 V dc power source and from suitable metal container.
14. Remove suitable metal container from under solenoid drain valve tube (20).
15. Connect engine electrical harness (21) connector to fuel/water separator control box (22).



FUEL/WATER SEPARATOR OPERATION TESTS - CONTINUED 0221 00

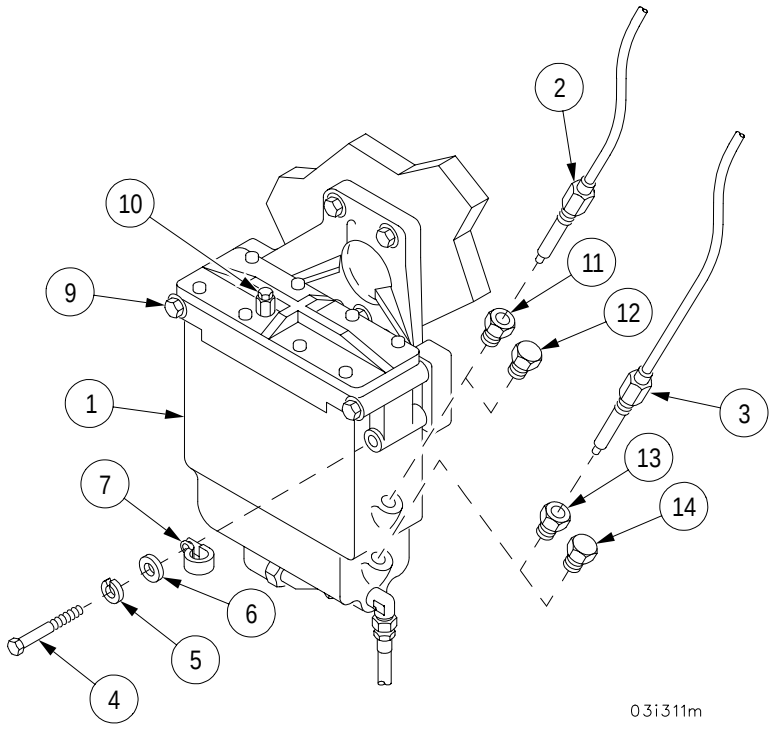
Sequential Drain Test-Continued

16. Close bleed cap (10).
17. Remove screw (12) from upper sensor probe (2) hole.

NOTE

Sensor probes are of different lengths. Upper sensor probe is longer than lower sensor probe.

18. Install upper sensor probe retaining nut (11) and upper sensor probe (2) into fuel/water separator (1).
19. Remove screw (14) from lower sensor probe (3) hole.
20. Install lower sensor probe retaining nut (13) and lower sensor probe (3) into fuel/water separator (1).
21. Install clamp (7), three screws (4), three new lockwashers (5) and three flat washers (6) on fuel/water separator (1).
22. Tighten screw (9).
23. Service fuel/water separator (1) (WP 0220 00).



END OF TASK

PRIMARY FUEL FILTER REPAIR 0222 00

THIS WORK PACKAGE COVERS:

Removal, Disassembly, Cleaning/Inspecting, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Suitable container (1.0 gal. (3.8 l) min cap)
Torque wrench (item 21, WP 0717 00)

Materials/Parts

Parts kit, filter (item 269, WP 0718 00)
Self-locking nuts (2) (item 234, WP 0718 00)
Dry-cleaning solvent (item 1, WP 0716 00)
Pressure sensitive tape (item 41, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Front engine deck grilles removed (TM 9-2350-292-10)

References

TM 9-2350-292-10



WARNING

CAUTION

Filter must be removed from engine to thoroughly clean or replace parts not otherwise accessible. Never clean inside of filter when connected to fuel lines. Unseen particles could enter fuel lines and damage pumps and injectors.

PRIMARY FUEL FILTER REPAIR - CONTINUED 0222 00

Removal

1. Place suitable container under fuel filter body (1). Remove nonmetallic hose assembly (2) and loosen screw in bleeder valve (3) to drain filter body (1).

NOTE

When performing this task with engine in vehicle, it is easier to remove outlet hose from top of fuel check valve (next part down line from filter), take out filter with hose attached, then remove hose. Installation should be done in similar way.

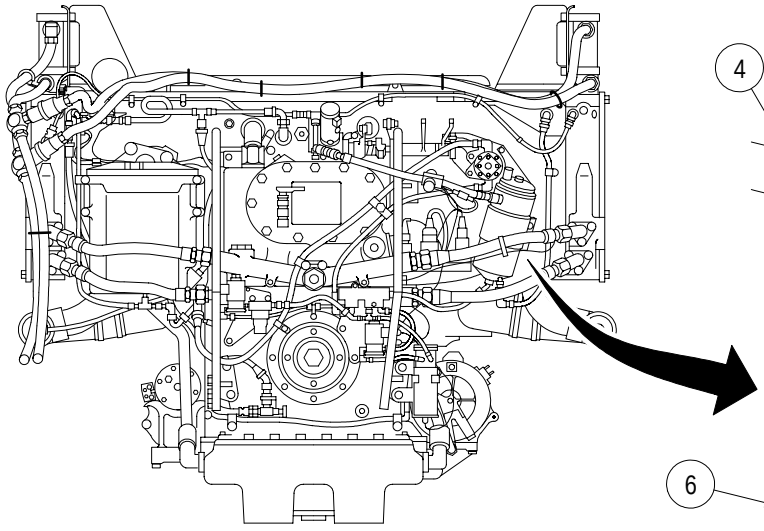
2. Disconnect fuel filter inlet hose (4) and outlet hose (5).

CAUTION

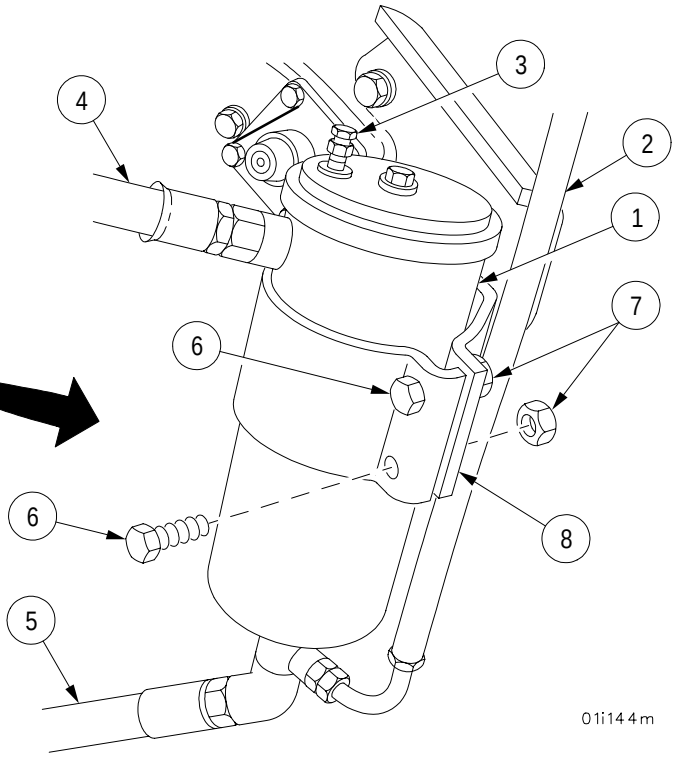
When removing or installing filter body, be sure to avoid damaging fluid filter line fitting. Turn filter body so fitting will slide through bracket channel where screws and nuts are located.

3. Remove two screws (6), two self-locking nuts (7) and slide filter body (1) out of bracket (8). Discard self-locking nuts.

4. If new filter body (1) will be installed, remove bleeder valve (3) for installation in new unit.



POWERPACK
REMOVED FOR CLARITY



PRIMARY FUEL FILTER REPAIR - CONTINUED 0222 00

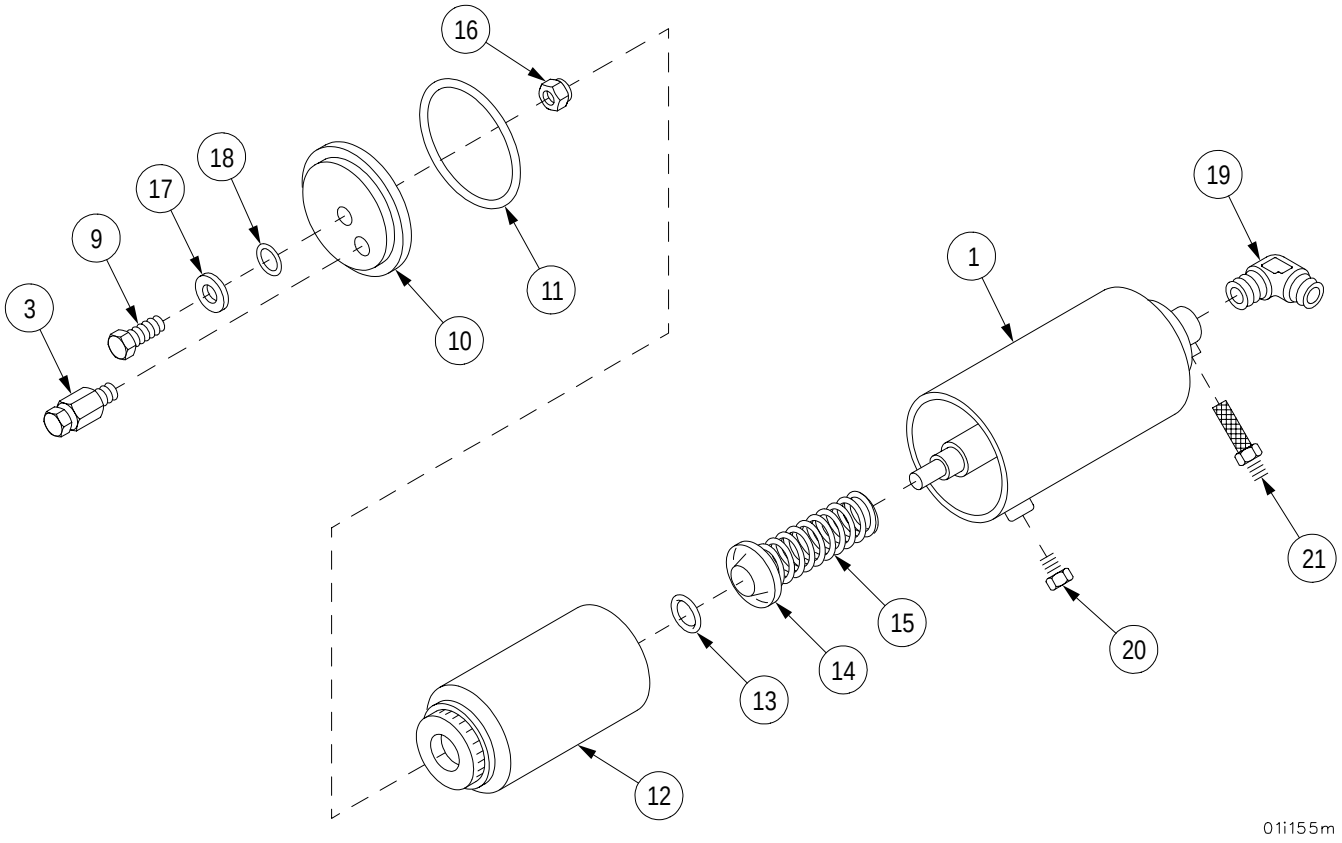
Disassembly

NOTE

The following steps provide for a complete disassembly/assembly of the fuel filter. Perform only those steps necessary for maintenance or replacement of defective parts.

Do not completely remove screw in center of filter head until later. Screw is secured by a locknut under head. After screw and filter head are loose, turn screw and head together to remove as an assembly.

1. Loosen screw (9), remove filter head (10) and gasket (11). Discard gasket.
2. Remove filter element (12), preformed packing (13), element retainer (14) and helical spring (15) from inside filter body (1). Discard filter element and preformed packing.
3. Remove locknut (16), screw (9), flat washer (17), gasket (18) and bleeder valve (3). Discard gasket.
4. Remove elbow (19), connector (20) and fluid filter (21) from filter body (1).



PRIMARY FUEL FILTER REPAIR - CONTINUED 0222 00

Cleaning/Inspecting



1. Clean all metal filter parts, elbow (19), connector (20), fluid filter (21), inside filter body (1) and head (10) with dry-cleaning solvent. Remove sludge and gum with scraper or stiff brush.
2. Inspect all parts for cracks or damage. Replace any defective parts.
3. Check fluid filter (21) and attachment point in filter body (1) to be sure that there is no blockage.

Assembly

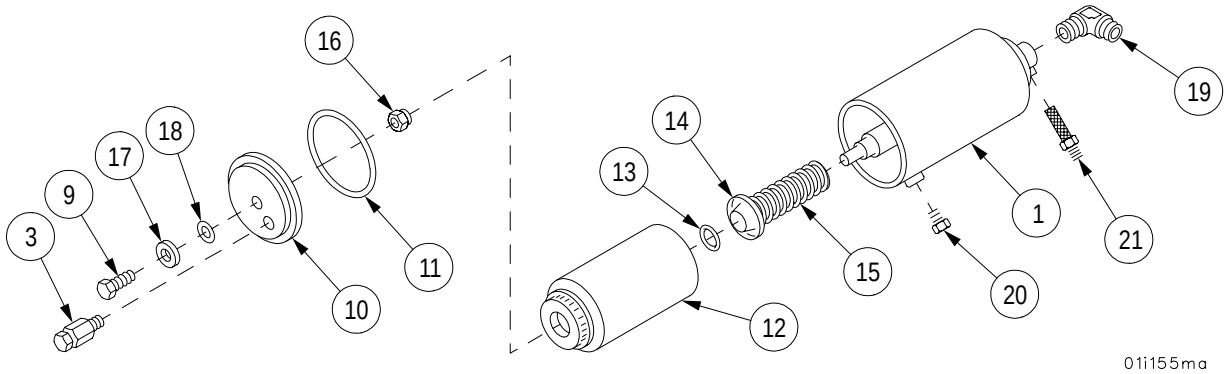
1. Install helical spring (15), element retainer (14), new preformed packing (13) and new filter element (12) inside filter body (1).

NOTE

Do not tighten locknut on filter head screw. It should be just snug enough to hold screw yet still allow screw to turn to secure filter head.

Use pressure sensitive tape on all threaded fittings except filter head screw.

2. Install bleeder valve (3), new gasket (18), flat washer (17), screw (9) and locknut (16) to filter head (10).
3. Install new gasket (11) and filter head (10) to filter body (1).
4. Torque screw (9) to 85-95 lb-in. (9.7-10.7 N•m).
5. Install elbow (19), connector (20) and fluid filter (21) on filter body (1).

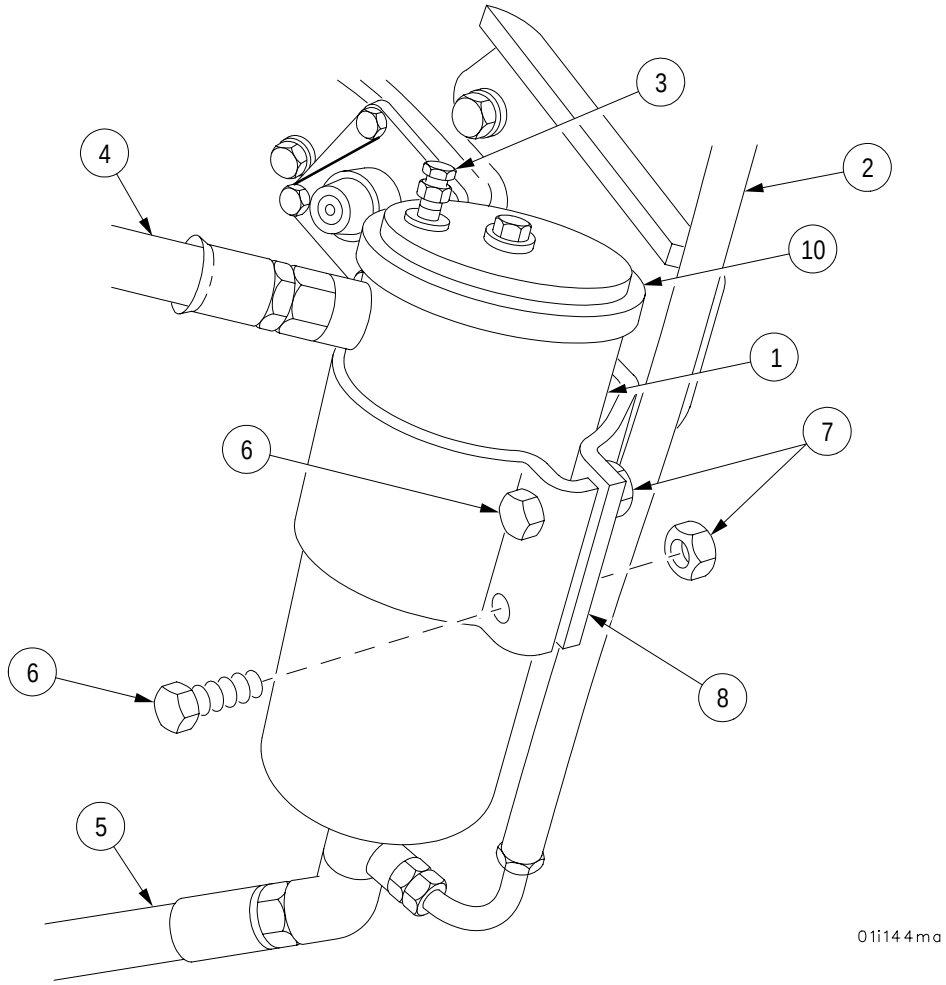


01i

PRIMARY FUEL FILTER REPAIR - CONTINUED 0222 00

Installation

1. Slide filter body (1) in bracket (8), install two screws (6) and two new self-locking nuts (7).
2. Connect fuel filter inlet hose (4) and outlet hose (5) to filter body (1).
3. Install nonmetallic hose assembly (2) to bottom of filter body (1).
4. If installing new filter body, remove plug from new filter head (10) and install bleeder valve (3) previously removed from old filter. Install plug in old filter body head (10).
5. Bleed air from filter and lines by running electric fuel pump until fuel flows from bleeder valve (3). Tighten bleeder valve screw.
6. Check for leaks at all connections, turn off fuel pump.



NOTE

FOLLOW-ON MAINTENANCE:
Install front engine deck grilles
(TM 9-2350-292-10)

END OF TASK

MANIFOLD HEATER FUEL FILTER AND SOLENOID REPLACEMENT 0223 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 18, WP 0718 00)
Lockwashers (2) (item 58, WP 0718 00)
Pressure sensitive tape (item 41, WP 0716 00)
Dry-cleaning solvent (item 1, WP 0716 00)

Equipment Conditions
Front engine deck grilles removed (TM 9-2350-292-10)
For maintenance of manifold heater fuel filter
Powerpack removed (WP 0188 00)

References
TM 9-2350-292-10



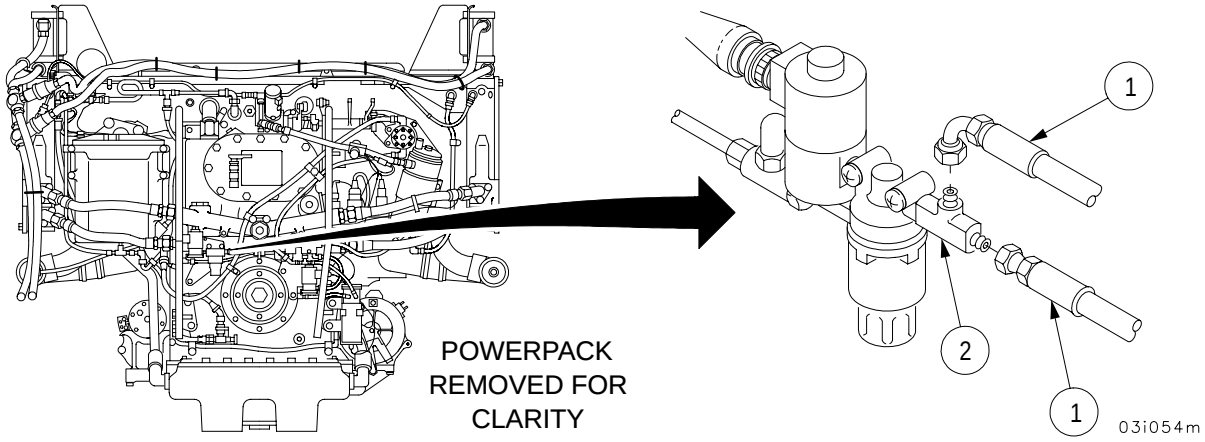
WARNING

NOTE

The following steps provide for a complete replacement of the manifold heater fuel filter and solenoid. Perform only those steps necessary for maintenance of defective parts.

Removal

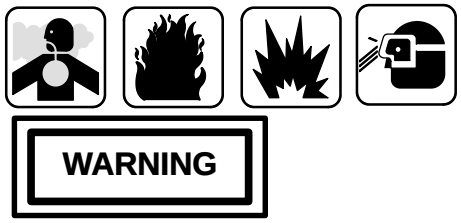
1. Disconnect two fuel lines (1) from tee (2).



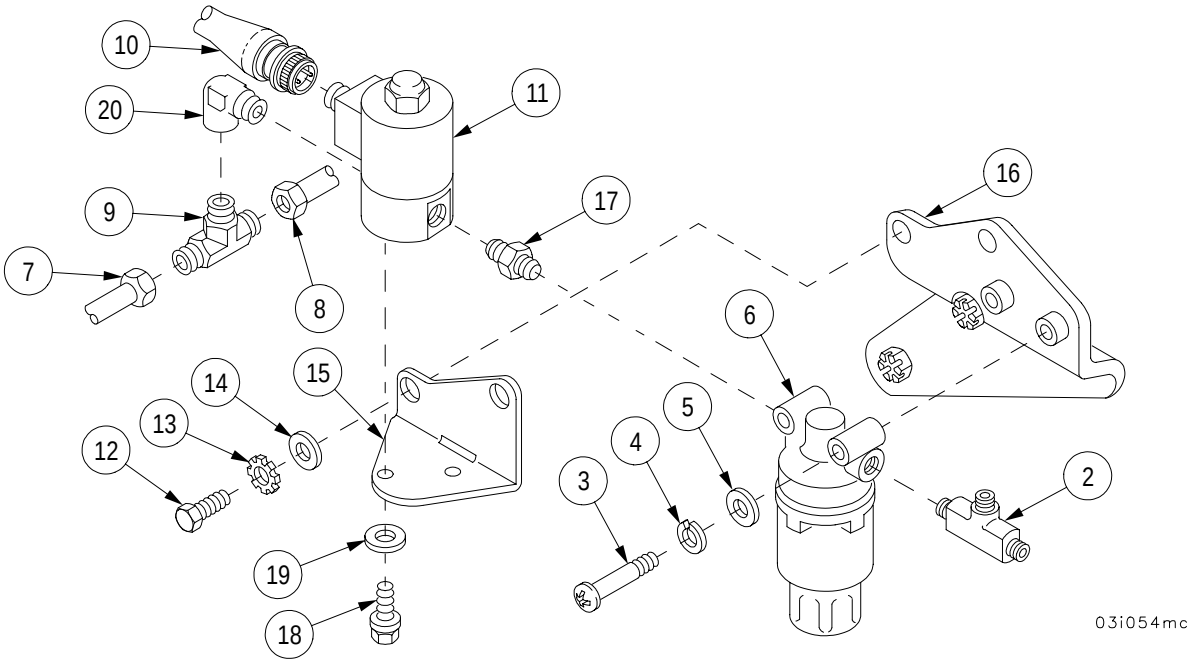
MANIFOLD HEATER FUEL FILTER AND SOLENOID REPLACEMENT - CONTINUED 0223 00

Removal-Continued

2. Remove two screws (3), two lockwashers (4) and two flat washers (5) from fuel filter (6). Discard lockwashers.
3. Remove tube (7) and tube (8) from tee (9).
4. Remove electrical connector (10) from solenoid valve (11).
5. Remove two screws (12), two lockwashers (13), two flat washers (14) and bracket (15) from bracket (16). Discard lockwashers.
6. Remove solenoid valve (11) from fitting (17).
7. Remove fitting (17) from fuel filter (6).
8. Remove tee (2) from fuel filter (6).
9. Remove two screws (18), two flat washers (19) and solenoid valve (11) from bracket (15).
10. Remove tee (9) and elbow (20) from solenoid valve (11), separate tee (9) from elbow (20).



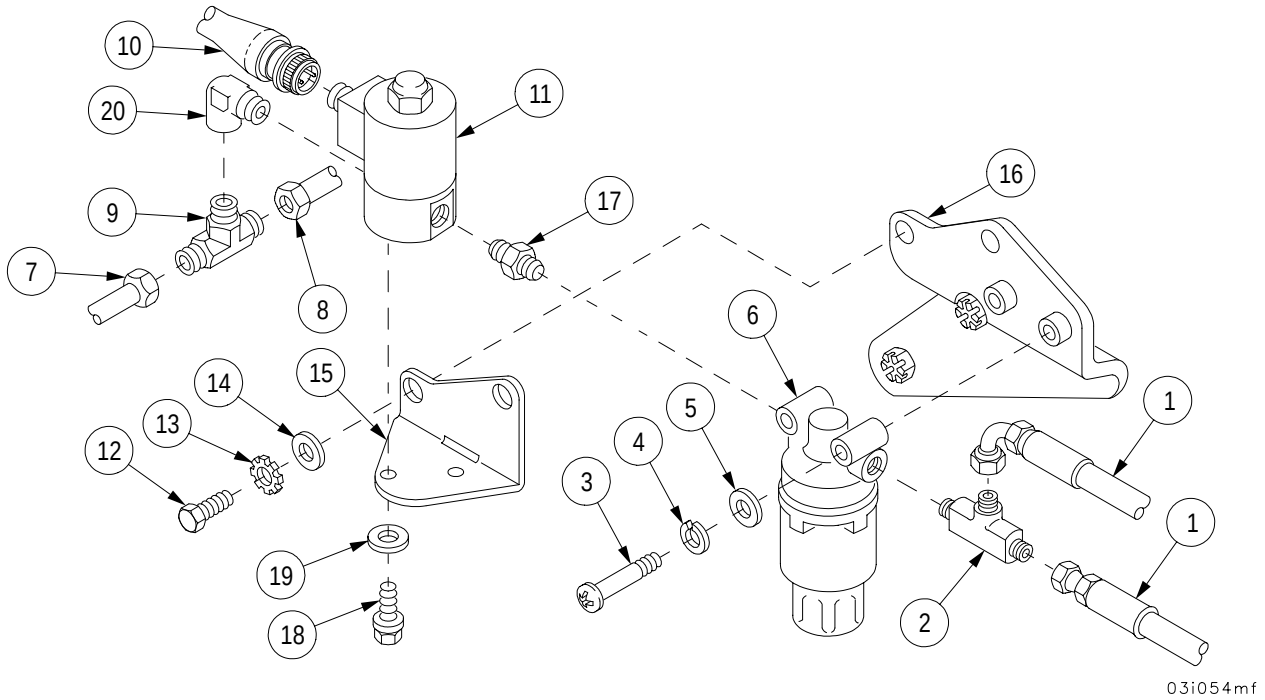
11. Clean all metal parts with dry-cleaning solvent. Remove sludge and gum with scraper or stiff brush.
12. Inspect all parts for cracks or damage. Replace any defective parts.



MANIFOLD HEATER FUEL FILTER AND SOLENOID REPLACEMENT - CONTINUED 0223 00

Installation

1. Apply pressure sensitive tape to all threaded pipe and hose fittings.
2. Install tee (2) on fuel filter (6).
3. Install fitting (17) on fuel filter (6).
4. Install solenoid valve (11) on fitting (17).
5. Install elbow (20) on solenoid valve (11) and tee (9) on elbow (20).
6. Install bracket (15), two flat washers (14), two new lockwashers (13) and two screws (12) on bracket (16).
7. Install solenoid valve (11) on bracket (15) with two screws (18) and two flat washers (19).
8. Install electrical connector (10) on solenoid valve (11).
9. Install tube (8) and tube (7) on tee (9).
10. Install fuel filter (6), two flat washers (5), two new lockwashers (4) and two screws (3) on bracket (16).
11. Connect two fuel lines (1) to tee (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack, if removed (WP 0188 00)
Install front engine deck grilles, if removed (TM 9-2350-292-10)

END OF TASK

MANIFOLD HEATER FUEL FILTER AND SOLENOID REPLACEMENT 0223 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 18, WP 0718 00)
Lockwashers (2) (item 58, WP 0718 00)
Pressure sensitive tape (item 41, WP 0716 00)
Dry-cleaning solvent (item 1, WP 0716 00)

Equipment Conditions
Front engine deck grilles removed (TM 9-2350-292-10)
For maintenance of manifold heater fuel filter
Powerpack removed (WP 0188 00)

References
TM 9-2350-292-10



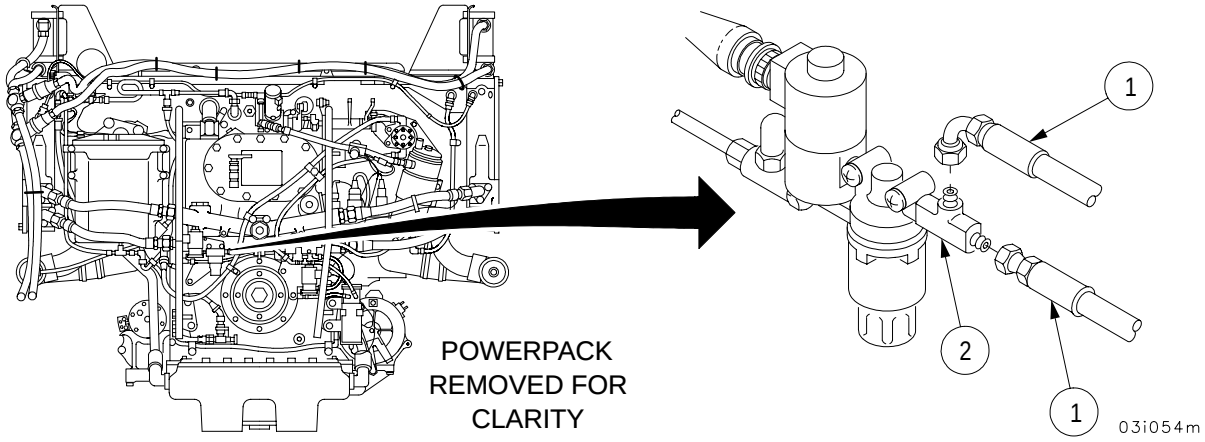
WARNING

NOTE

The following steps provide for a complete replacement of the manifold heater fuel filter and solenoid. Perform only those steps necessary for maintenance of defective parts.

Removal

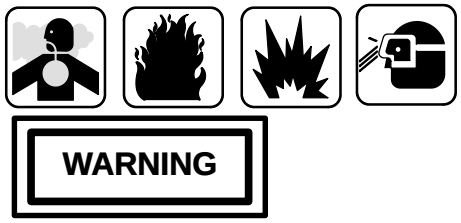
1. Disconnect two fuel lines (1) from tee (2).



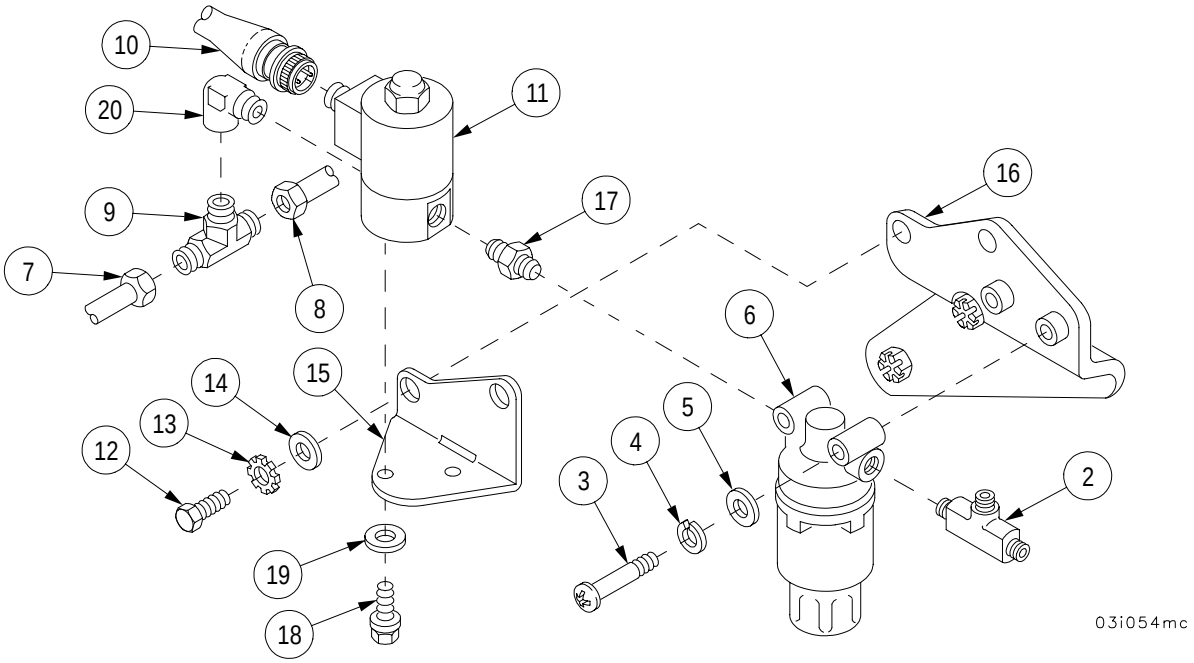
MANIFOLD HEATER FUEL FILTER AND SOLENOID REPLACEMENT - CONTINUED 0223 00

Removal-Continued

2. Remove two screws (3), two lockwashers (4) and two flat washers (5) from fuel filter (6). Discard lockwashers.
3. Remove tube (7) and tube (8) from tee (9).
4. Remove electrical connector (10) from solenoid valve (11).
5. Remove two screws (12), two lockwashers (13), two flat washers (14) and bracket (15) from bracket (16). Discard lockwashers.
6. Remove solenoid valve (11) from fitting (17).
7. Remove fitting (17) from fuel filter (6).
8. Remove tee (2) from fuel filter (6).
9. Remove two screws (18), two flat washers (19) and solenoid valve (11) from bracket (15).
10. Remove tee (9) and elbow (20) from solenoid valve (11), separate tee (9) from elbow (20).



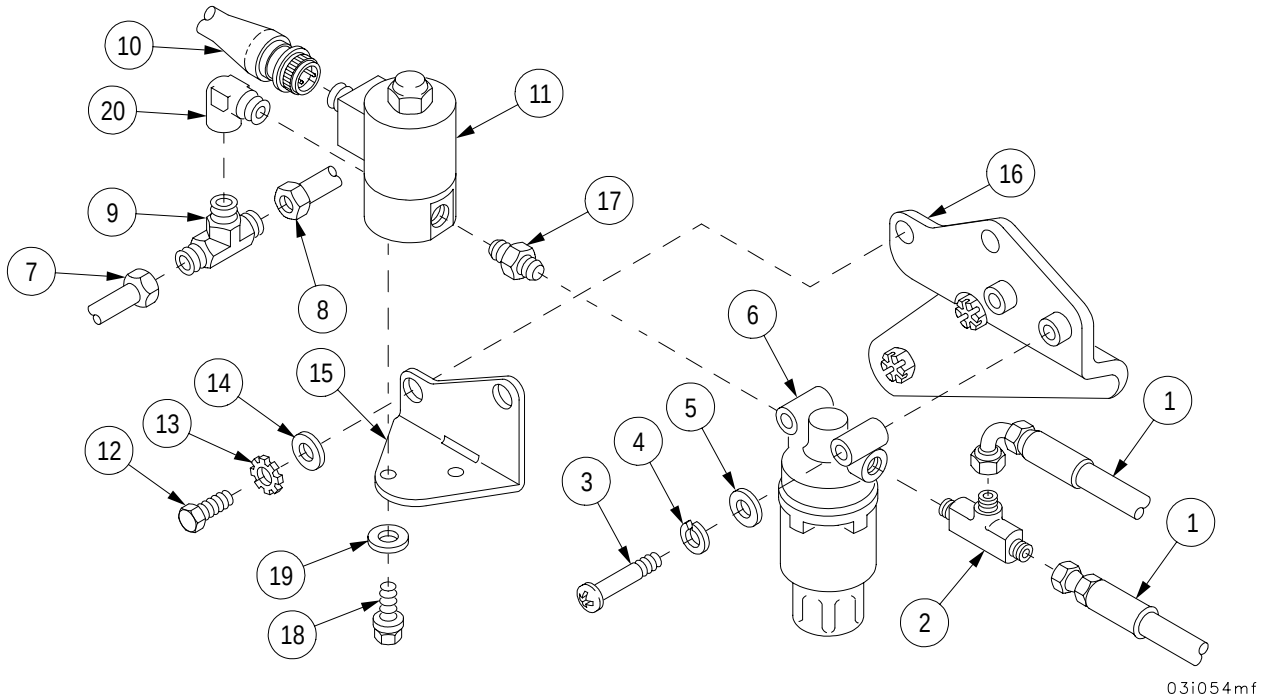
11. Clean all metal parts with dry-cleaning solvent. Remove sludge and gum with scraper or stiff brush.
12. Inspect all parts for cracks or damage. Replace any defective parts.



MANIFOLD HEATER FUEL FILTER AND SOLENOID REPLACEMENT - CONTINUED 0223 00

Installation

1. Apply pressure sensitive tape to all threaded pipe and hose fittings.
2. Install tee (2) on fuel filter (6).
3. Install fitting (17) on fuel filter (6).
4. Install solenoid valve (11) on fitting (17).
5. Install elbow (20) on solenoid valve (11) and tee (9) on elbow (20).
6. Install bracket (15), two flat washers (14), two new lockwashers (13) and two screws (12) on bracket (16).
7. Install solenoid valve (11) on bracket (15) with two screws (18) and two flat washers (19).
8. Install electrical connector (10) on solenoid valve (11).
9. Install tube (8) and tube (7) on tee (9).
10. Install fuel filter (6), two flat washers (5), two new lockwashers (4) and two screws (3) on bracket (16).
11. Connect two fuel lines (1) to tee (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack, if removed (WP 0188 00)
Install front engine deck grilles, if removed (TM 9-2350-292-10)

END OF TASK

LEFT MANIFOLD HEATER ASSEMBLY AND RELATED PARTS REPLACEMENT 0224 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Self-locking nuts (5) (item 276, WP 0718 00)
Self-locking nuts (4) (item 248, WP 0718 00)
Self-locking nuts (2) (item 234, WP 0718 00)
Gasket (item 275, WP 0718 00)
Sealant tape (item 41, WP 0716 00)
Tiedown strap (item 382, WP 0718 00)

Equipment Conditions
Powerpack removed (WP 0188 00)
Engine cooling fans and housings removed (0235 00)
Engine top housing assembly removed (0232 00)
For maintenance of items 10 and 12



WARNING

NOTE

Remove only those parts which must be replaced.

Tag all parts prior to removal to aid in installation.

Place rags under hose connections to catch any fuel that spills during maintenance. Dispose of rags in accordance with standard operating procedure.

Removal

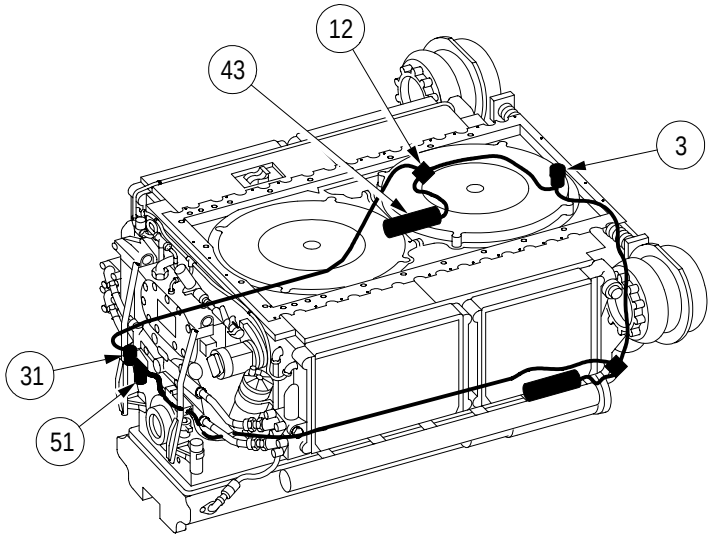
1. Remove clamps and attaching hardware securing hose assemblies, tubes, brackets, solenoid valve, spark plug assembly and nozzle as shown in legend and illustration. Discard self-locking nuts and lockwashers.
2. Remove hose assemblies, tubes, brackets, solenoid valve, spark plug assembly and nozzle in accordance with the following legend and illustration. Discard gasket.
3. Inspect parts for damage and replace as required.

LEFT MANIFOLD HEATER ASSEMBLY AND RELATED PARTS REPLACEMENT - CONTINUED 0224 00

Removal - Continued

LEGEND:

1. Clamps (2)
2. Elbow pipe
3. Solenoid valve
4. Pipe coupling
5. Elbows (3)
6. Tee
7. Bolt assembled washer (3)
8. Flat washers (4)
9. Bolt assembled washer (4)
10. Hose assembly
11. Grommet
12. Heater assembly
13. Nozzle assembly
14. Housing
15. Gasket
16. Spark plug assembly
17. Elbow
18. Pipe housing
19. Check valve
20. Adapter
21. Hose assembly
22. Self-locking nuts (8)
23. Clamps (7)
24. Clamps (5)
25. Screws (8)
26. Clamps (2)
27. Screws (2)
28. Lockwashers (2)
29. Flat washers (2)
30. Tee
31. Solenoid valve
32. Nipple
33. Bracket
34. Gasket
35. Lead conduit
36. Self-locking nuts (2)
37. Flat washer (8)
38. Self-locking nuts (4)
39. Hose assembly
40. Bracket
41. Clamps (2)
42. Screws (2)
43. Ignition unit
44. Tiedown strap
45. Tube assembly
46. Tube nipple
47. Elbow
48. Check valve
49. Bracket
50. Elbow
51. Manifold heater fuel filter (WP 0222 00)

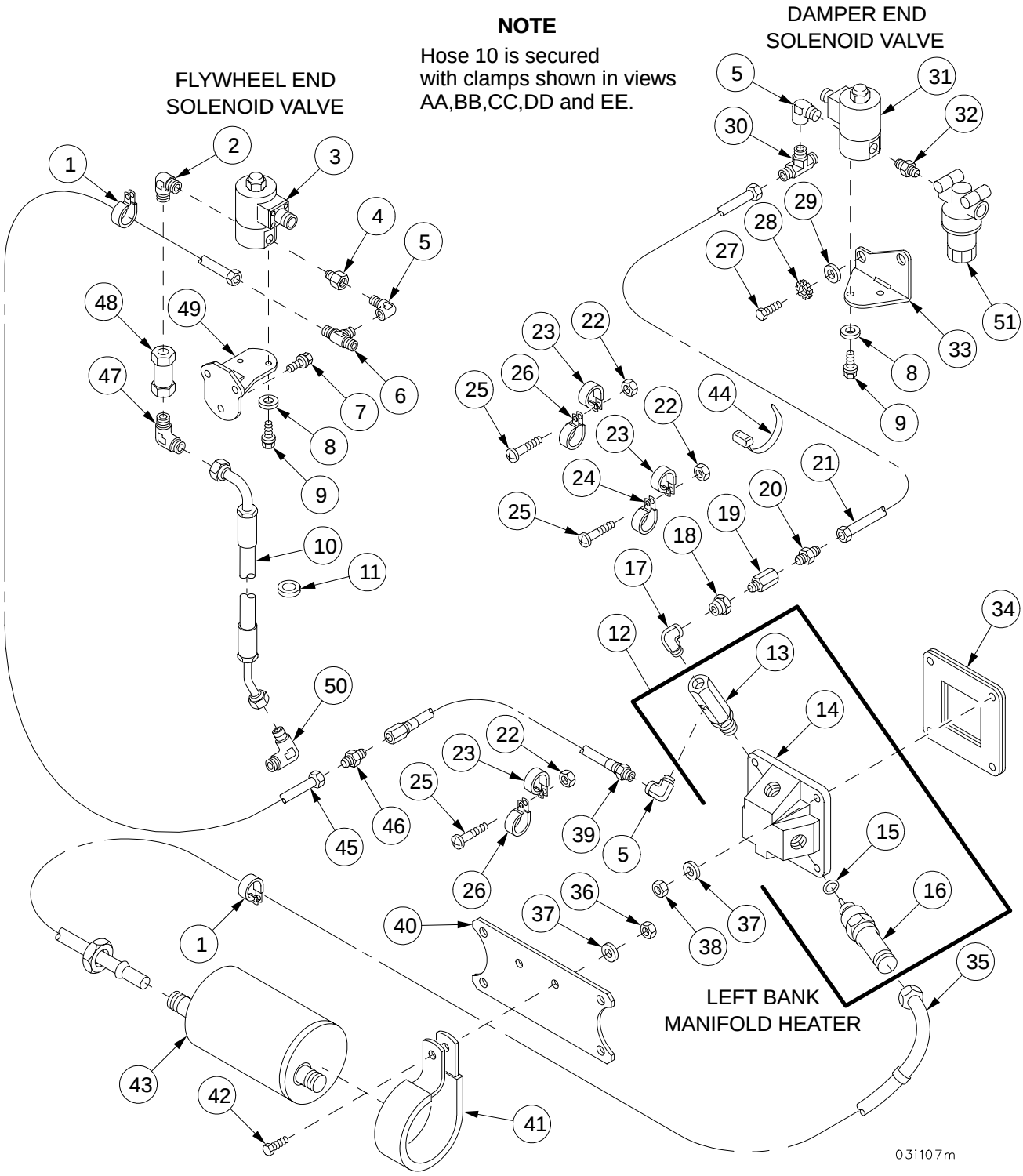


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LEFT MANIFOLD HEATER ASSEMBLY AND RELATED PARTS REPLACEMENT - CONTINUED

0224 00

Removal - Continued



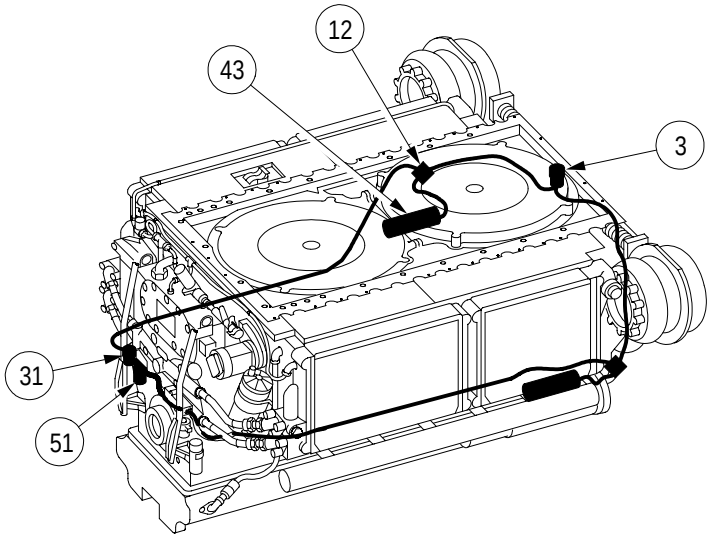
LEFT MANIFOLD HEATER ASSEMBLY AND RELATED PARTS REPLACEMENT - CONTINUED 0224 00

Installation

1. Set spark plug gap at 0.094 to 0.114 in. (2.39–2.90 mm).
2. Apply sealant tape to all male pipe threads.
3. Install hose assemblies, tubes, brackets, solenoid valve, spark plug assembly, nozzle and new gasket in accordance with the following legend and illustration.
4. Secure hose assemblies, tubes, brackets, solenoid valve, spark plug assembly and nozzle as shown in legend and illustration with clamps and attaching hardware and new self–locking nuts and new lockwashers.

LEGEND:

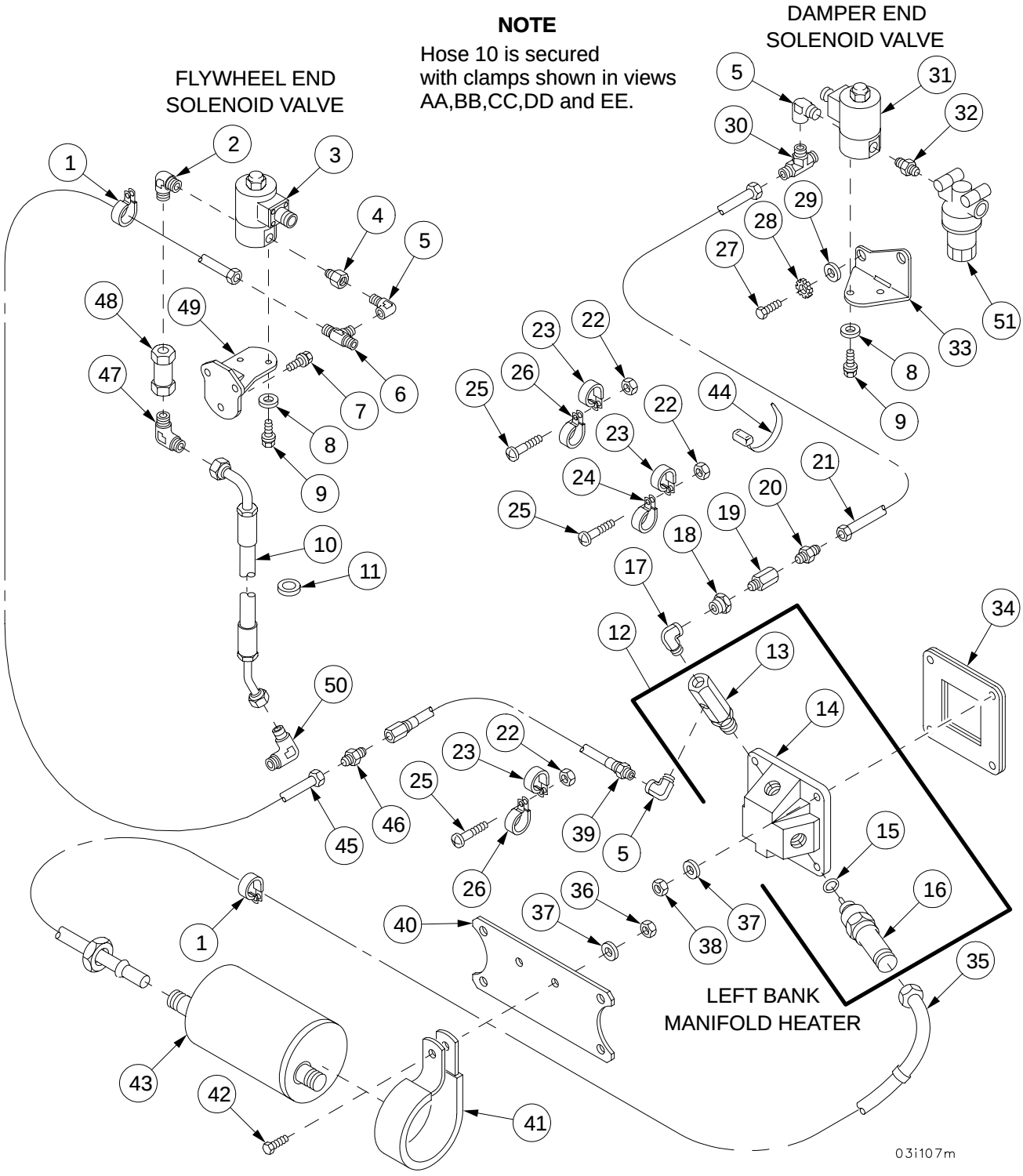
1. Clamps (2)
2. Elbow pipe
3. Solenoid valve
4. Pipe coupling
5. Elbows (3)
6. Tee
7. Bolt assembled washer (3)
8. Flat washers (4)
9. Bolt assembled washer (4)
10. Hose assembly
11. Grommet
12. Heater assembly
13. Nozzle assembly
14. Housing
15. Gasket
16. Spark plug assembly
17. Elbow
18. Pipe housing
19. Check valve
20. Adapter
21. Hose assembly
22. Self–locking nuts (8)
23. Clamps (7)
24. Clamps (5)
25. Screws (8)
26. Clamps (2)
27. Screws (2)
28. Lockwashers (2)
29. Flat washers (2)
30. Tee
31. Solenoid valve
32. Nipple
33. Bracket
34. Gasket
35. Lead conduit
36. Self–locking nuts (2)
37. Flat washer (8)
38. Self–locking nuts (4)
39. Hose assembly
40. Bracket
41. Clamps (2)
42. Screws (2)
43. Ignition unit
44. Tiedown strap
45. Tube assembly
46. Tube nipple
47. Elbow
48. Check valve
49. Bracket
50. Elbow
51. Manifold heater fuel filter (WP 0222 00)



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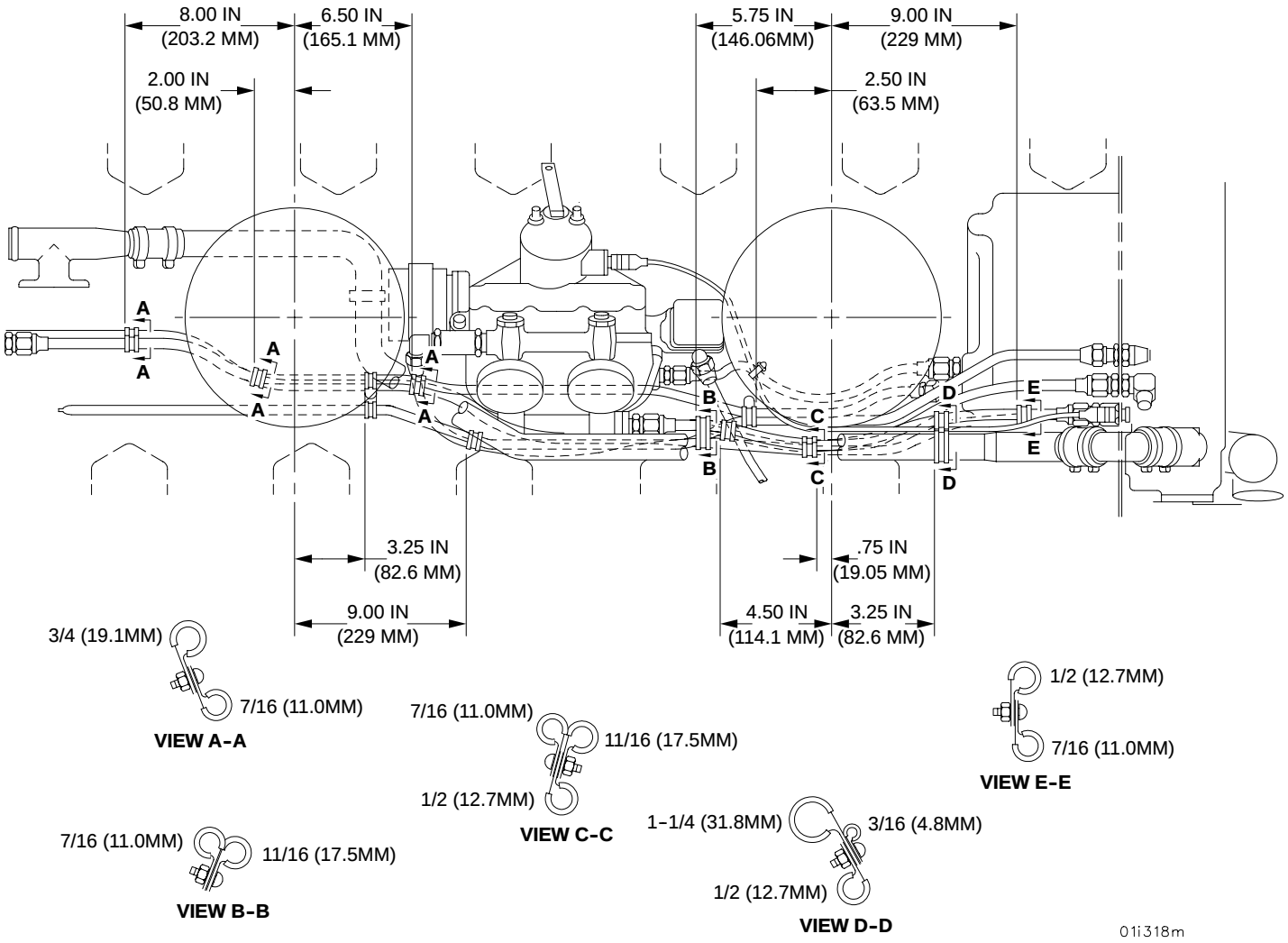
LEFT MANIFOLD HEATER ASSEMBLY AND RELATED PARTS REPLACEMENT - CONTINUED 0224 00

Installation - Continued



LEFT MANIFOLD HEATER ASSEMBLY AND RELATED PARTS REPLACEMENT - CONTINUED 0224 00

Installation - Continued



NOTE

FOLLOW-ON MAINTENANCE:

Install engine top housing assembly, if removed (WP 0232 00)

Install engine cooling fans and housings (WP 0235 00)

Install powerpack (WP 0188 00)

END OF TASK

RIGHT MANIFOLD HEATER ASSEMBLY AND RELATED PARTS REPLACEMENT

0225 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Self-locking nuts (4) (item 276, WP 0718 00)
Self-locking nuts (4) (item 248, WP 0718 00)
Self-locking nuts (2) (item 234, WP 0718 00)
Electrical tiedown strap (item 382, WP 0718 00)
Marker tags (item 49, WP 0716 00)
Wiping rags (item 7, WP 0716 00)

Materials/Parts-Continued
Gasket (item 275, WP 0718 00)
Lockwashers (2) (item 58, WP 0718 00)
Pressure sensitive tape (item 41, WP 0716 00)

Equipment Conditions
Powerpack removed (WP 0188 00)



WARNING

NOTE

Remove only those parts which must be replaced.

Tag all parts prior to removal to aid in installation.

Place rags under hose connections to catch any fuel that spills during maintenance. Dispose of rags in accordance with standard operating procedure.

Removal

1. Remove clamps, electrical tiedown strap and attaching hardware securing hose assemblies, tubes, brackets, solenoid valve, spark plug assembly and nozzle as shown in legend and illustration. Discard self-locking nuts.
2. Remove hose assemblies, tubes, brackets, solenoid valve, spark plug assembly and nozzle in accordance with the following legend and illustration. Discard gasket.
3. Inspect parts for damage and replace as required.

Installation

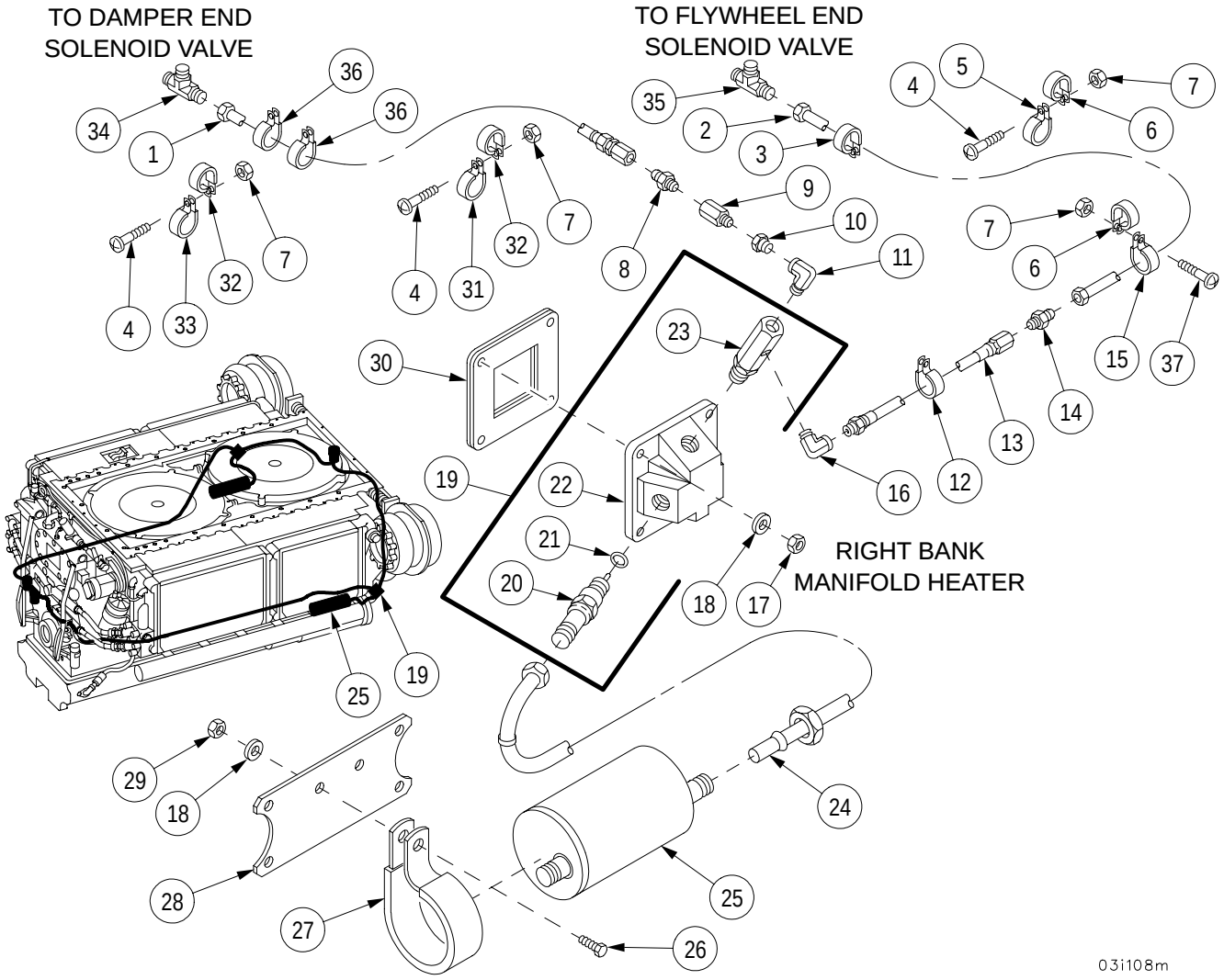
1. Set spark plug gap at 0.094 to 0.114 in. (2.35 -2.85 mm).
2. Apply pressure sensitive tape to all male pipe threads.
3. Install hose assemblies, tubes, brackets, solenoid valve, spark plug assembly, nozzle and new gasket in accordance with the following legend and illustration.
4. Secure hose assemblies, tubes, brackets, solenoid valve, spark plug assembly and nozzle as shown in legend and illustration with clamps and attaching hardware, electrical tiedown strap and new self-locking nuts.

RIGHT MANIFOLD HEATER ASSEMBLY AND RELATED PARTS REPLACEMENT - CONTINUED

0225 00

LEGEND:

1. Tube assembly
2. Hose assemby
3. Clamp
4. Screws (7)
5. Clamps (5)
6. Clamps (6)
7. Self-locking nuts (8)
8. Adapter straight
9. Check valve
10. Pipe bushing
11. Elbow
12. Clamp
13. Hose assembly
14. Nipple
15. Clamp
16. Elbow
17. Self-locking nuts (4)
18. Flat washers (6)
19. Heater assembly
20. Spark plug
21. Gasket
22. Housing
23. Nozzle assembly
24. Lead and conduit
25. Ignition unit
26. Screws (2)
27. Clamps (2)
28. Bracket
29. Self-locking nuts (2)
30. Gasket
31. Clamp
32. Clamps (2)
33. Clamp
34. Tee (WP 0223 00)
35. Tee (WP 0223 00)
36. Clamps (2)
37. Screw

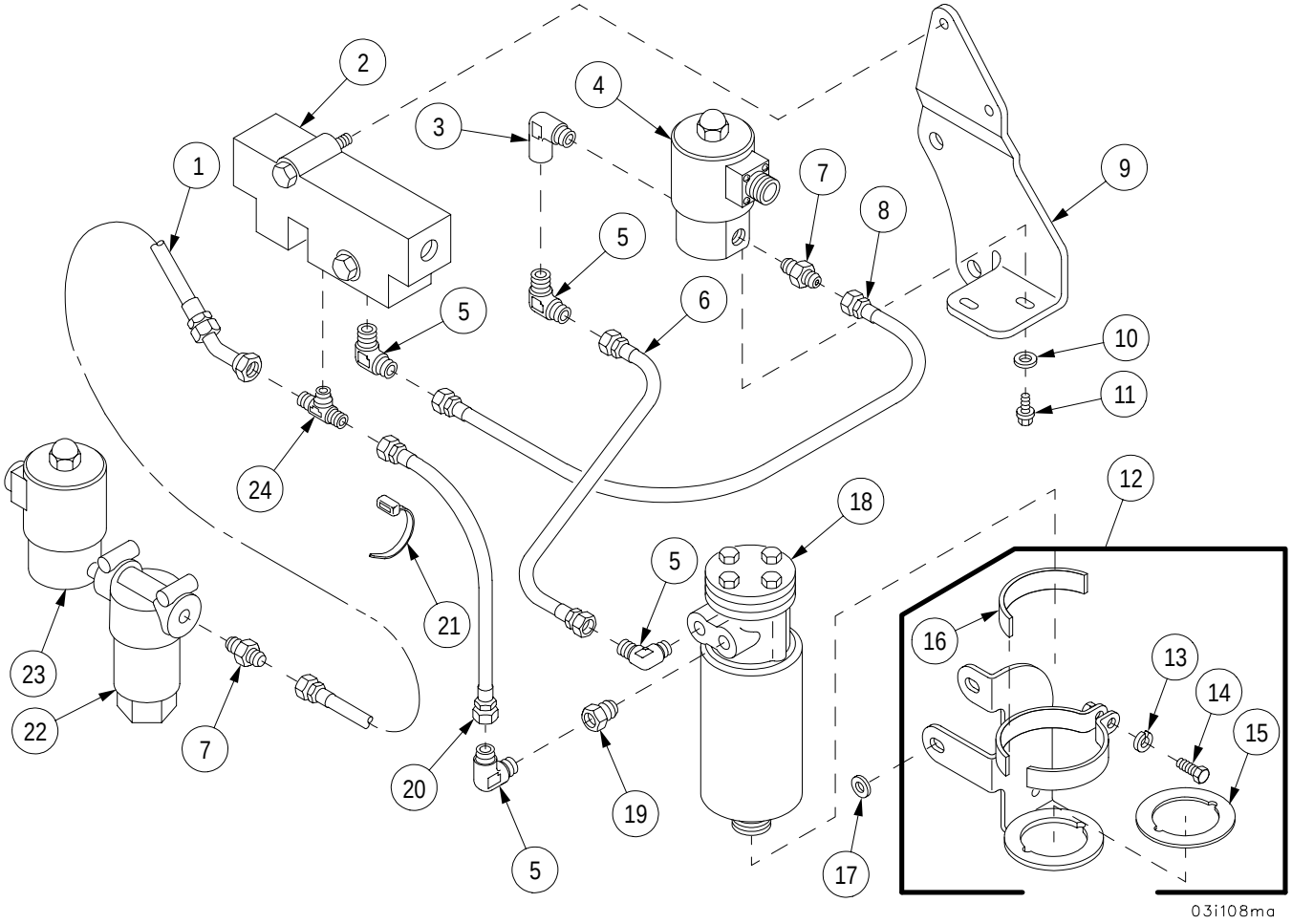


RIGHT MANIFOLD HEATER ASSEMBLY AND RELATED PARTS REPLACEMENT - CONTINUED

0225 00

LEGEND:

1. Hose assembly
2. Back flow valve (WP 0207 00)
3. Elbow
4. Solenoid valve
5. Elbows (4)
6. Hose assembly
7. Straight adapters (2)
8. Hose assembly
9. Solenoid bracket
10. Flat washers (2)
11. Assembled bolt
12. Bracket assembly
13. Lockwashers (2)
14. Screws (2)
15. Cushion
16. Cushions (2)
17. Flat washers (2)
18. Manifold pump
19. Pipe coupling
20. Hose assembly
21. Electrical tiedown strap
22. Manifold heater fuel filter (WP 0222 00)
23. Solenoid valve (WP 0223 00)
24. Tee pipe to tube



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

END OF TASK

ACCELERATOR CONTROLS AND LINKAGE REPAIR 0226 00

THIS WORK PACKAGE COVERS:

Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Retaining pliers set (item 15, WP 0717 00)

Materials/Parts

Lubricant (item 3, WP 0716 00)
Dry-cleaning solvent (item 1, WP 0716 00)
Adhesive (item 6, WP 0716 00)
Self-locking nuts (3) (item 155, WP 0718 00)
Lockwashers (7) (item 9, WP 0718 00)
Retaining ring (item 131, WP 0718 00)
Lockwashers (19) (item 2, WP 0718 00)
Lockwashers (9) (item 12, WP 0718 00)
Cotter pins (3) (item 19, WP 0718 00)
Preformed packing (4) (item 20, WP 0718 00)

Equipment Conditions

Subfloor plates #19 and #24 removed (WP 0454 00)
Engine deck grilles removed (TM 9-2350-292-10)
Engine deck removed (WP 0417 00)
Air cleaner intake hoses removed (WP 0212 00)
Vehicular tool box rack and oddment tray assembly removed (WP 0480 00)

References

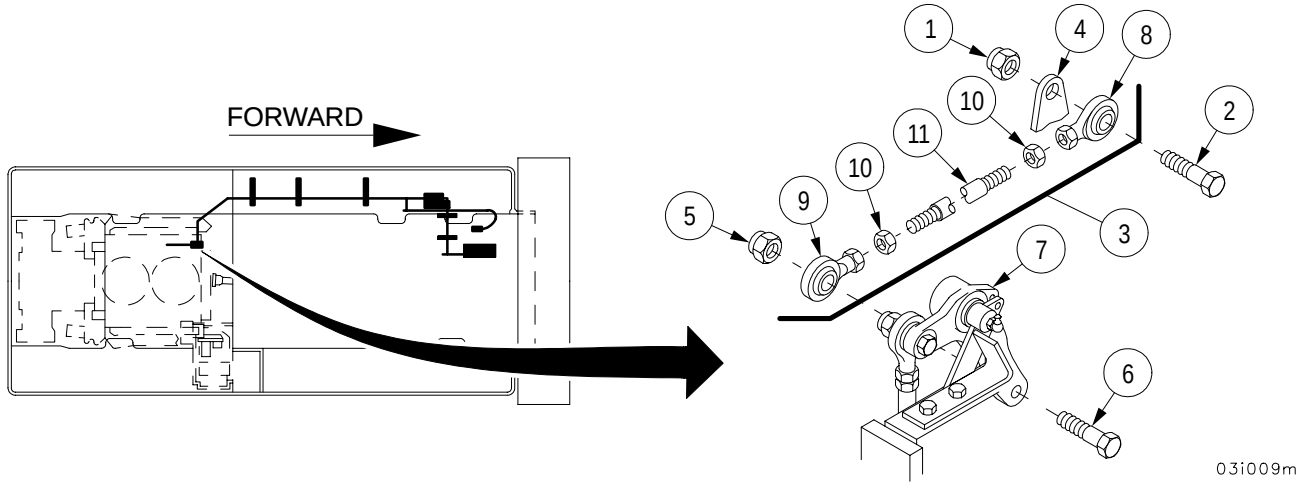
TM 9-2350-292-10

NOTE

This task covers complete removal and installation of all accelerator controls and linkages. Perform only those steps necessary to replace the defective parts.

Removal

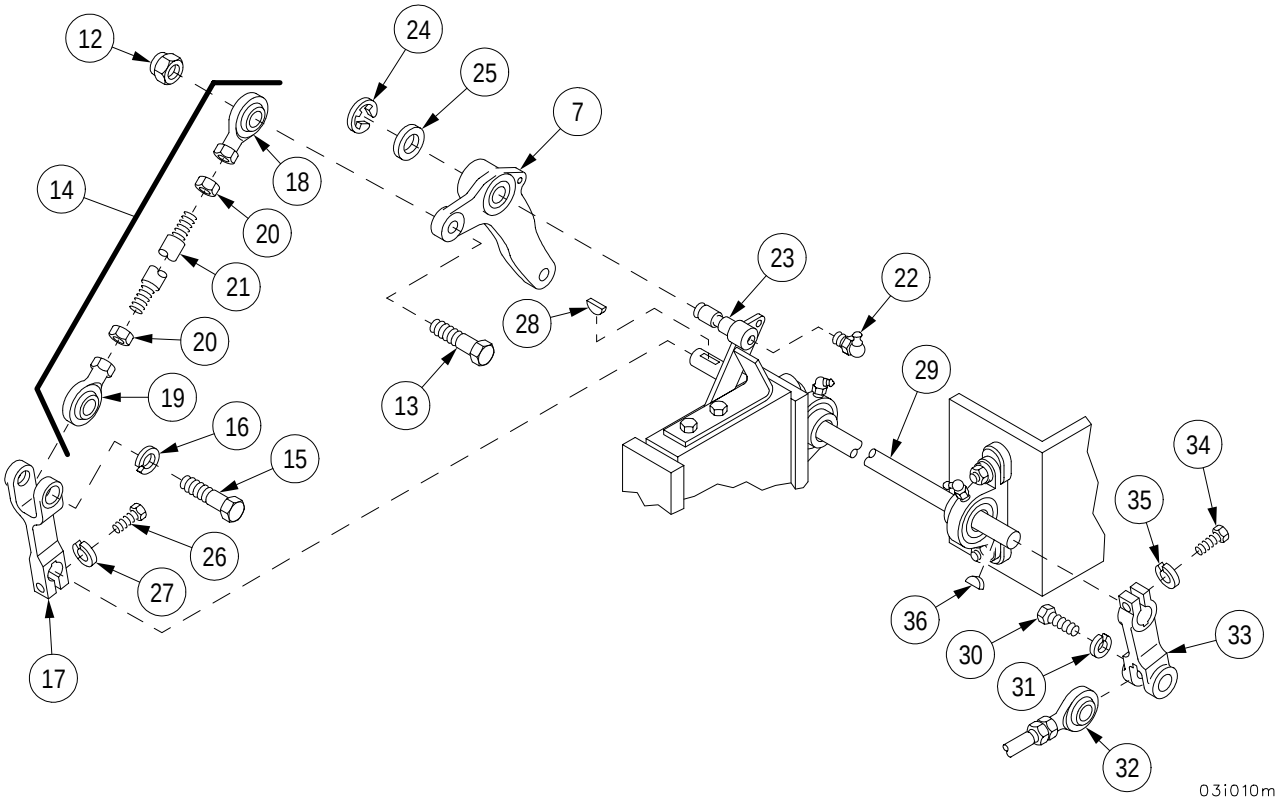
1. Remove self-locking nut (1), screw (2) and rod assembly (3) from engine throttle lever (4). Discard self-locking nut.
2. Remove self-locking nut (5), screw (6) and rod assembly (3) from bell crank (7). Discard self-locking nut.
3. Remove two rod ends (8 and 9) and two nuts (10) from rod (11).



ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

Removal-Continued

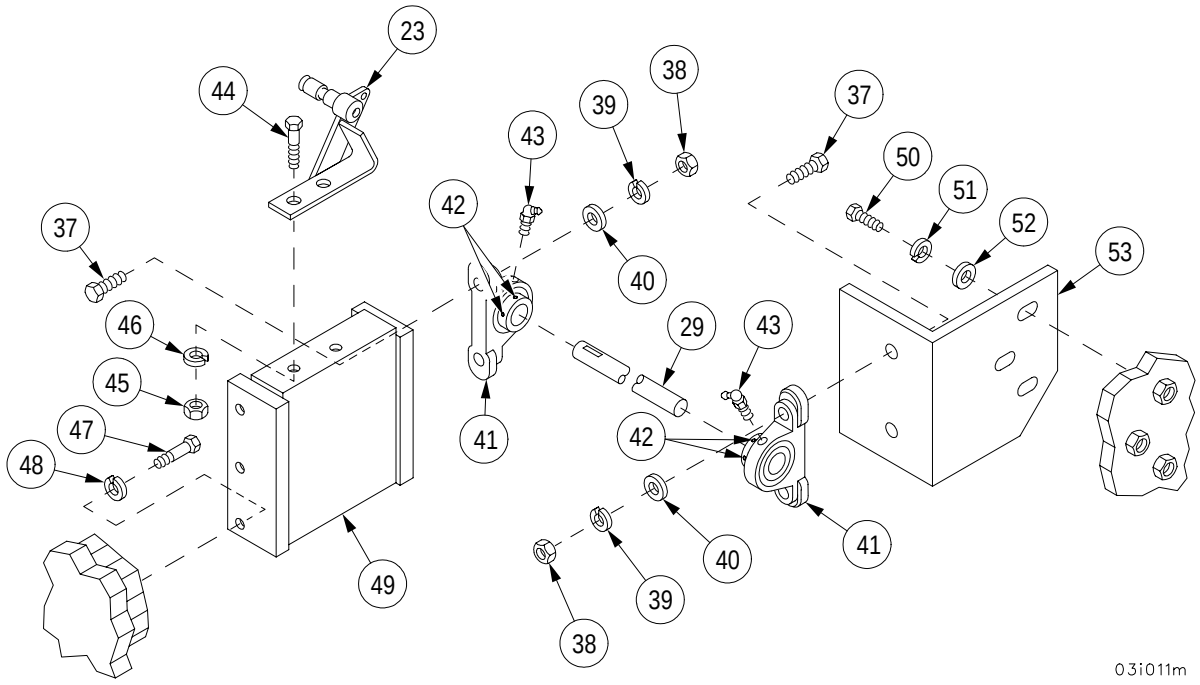
4. Remove self-locking nut (12), screw (13) and rod assembly (14) from bell crank (7). Discard self-locking nut.
5. Remove screw (15), lockwasher (16) and rod assembly (14) from clevis (17). Discard lockwasher.
6. Remove two rod ends (18 and 19) and two nuts (20) from rod (21).
7. Remove lubrication fitting (22) from bracket assembly (23).
8. Remove retaining ring (24), flat washer (25) and bell crank (7) from bracket assembly (23). Discard retaining ring.
9. Remove screw (26) and lockwasher (27) from clevis (17). Discard lockwasher.
10. Remove clevis (17) and woodruff key (28) from shaft (29).
11. Remove screw (30), lockwasher (31) and rod assembly (32) from lever (33). Discard lockwasher.
12. Remove screw (34) and lockwasher (35) from lever (33). Discard lockwasher.
13. Remove lever (33) and woodruff key (36) from shaft (29).



ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

Removal-Continued

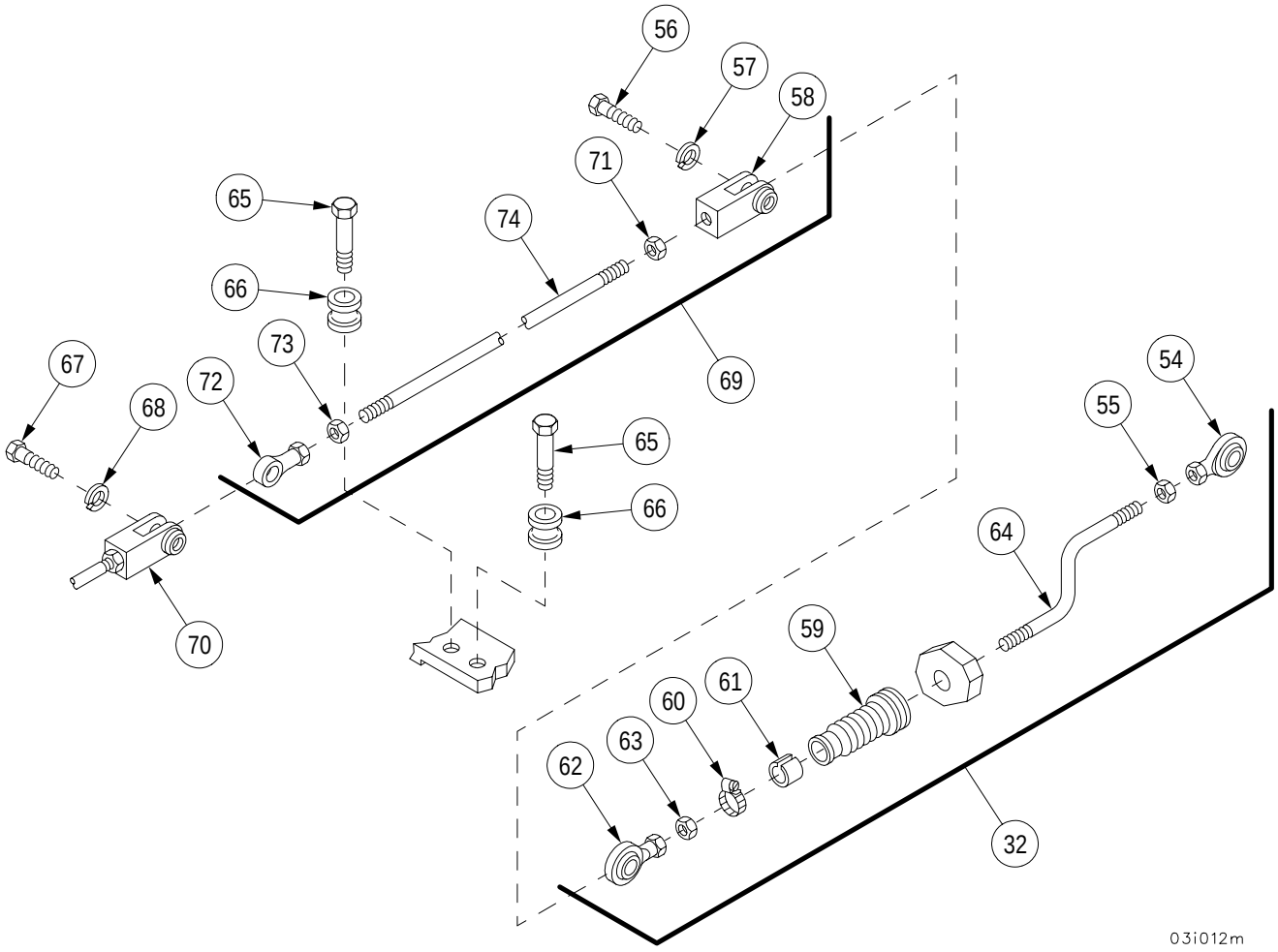
14. Remove four screws (37), four nuts (38), four lockwashers (39), four flat washers (40), two pillow blocks (41) and shaft (29). Discard lockwashers.
15. Loosen two setscrews (42) on each of two pillow blocks (41).
16. Remove shaft (29) from two pillow blocks (41).
17. Remove two lubrication fittings (43) from two pillow blocks (41).
18. Remove two screws (44), two nuts (45), two lockwashers (46) and bracket assembly (23). Discard lockwashers.
19. Remove three screws (47), three lockwashers (48) and bracket (49). Discard lockwashers.
20. Remove three screws (50), three lockwashers (51), three flat washers (52) and angle (53). Discard lockwashers.



ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

Removal-Continued

21. Remove rod end (54) and nut (55) from rod assembly (32).
22. Remove screw (56), lockwasher (57) and rod assembly (32) from clevis (58). Discard lockwashers.
23. Pry boot (59) away from bulkhead, remove rod assembly (32) from bulkhead.
24. Remove clamp (60) securing boot (59) to bushing (61) on rod assembly (32).
25. Remove boot (59) from rod assembly (32).
26. Remove rod end (62), nut (63) and bushing (61) from rod (64).
27. Remove six screws (65) and six rollers (66).
28. Remove screw (67), lockwasher (68) and rod assembly (69) from clevis (70). Discard lockwasher.
29. Remove clevis (58) and nut (71) from rod assembly (69).
30. Remove rod end (72) and nut (73) from rod (74).



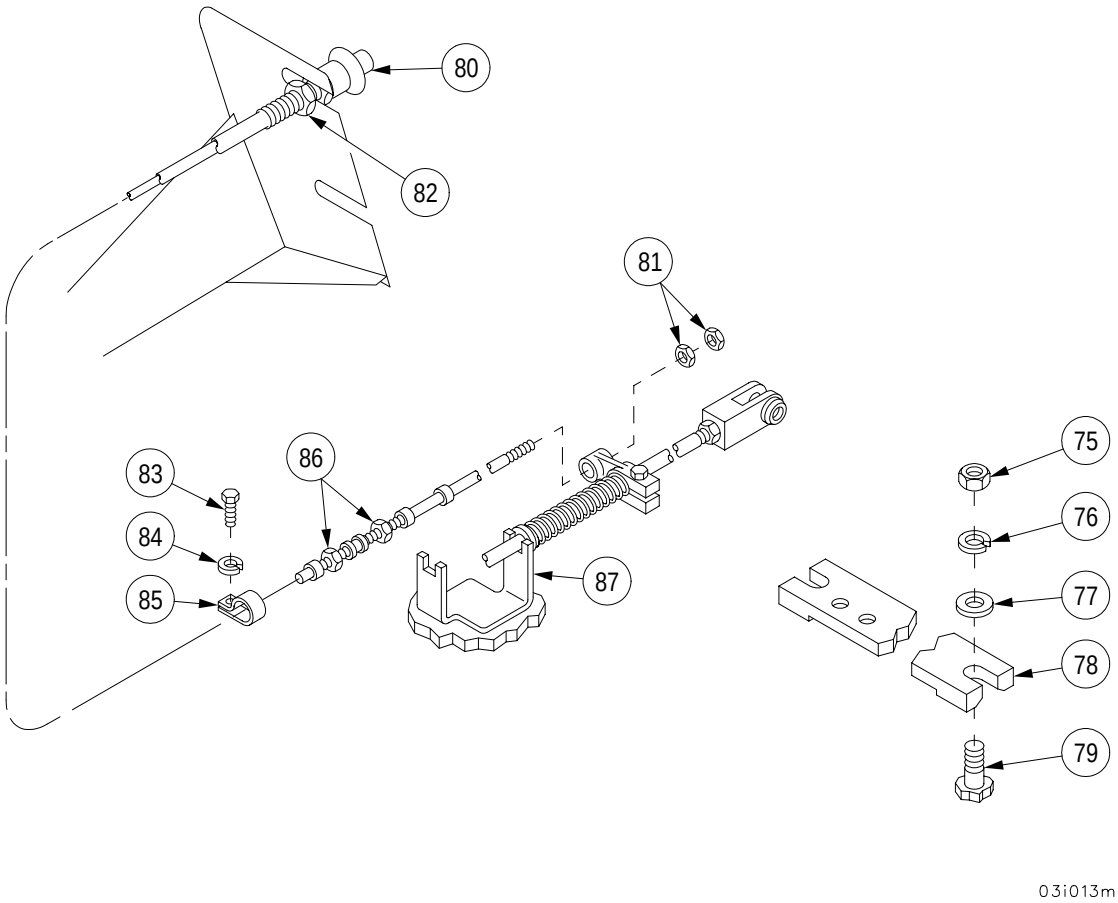
ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

Removal-Continued

NOTE

To remove brackets, steering, shifting and brake linkage rollers must be removed.

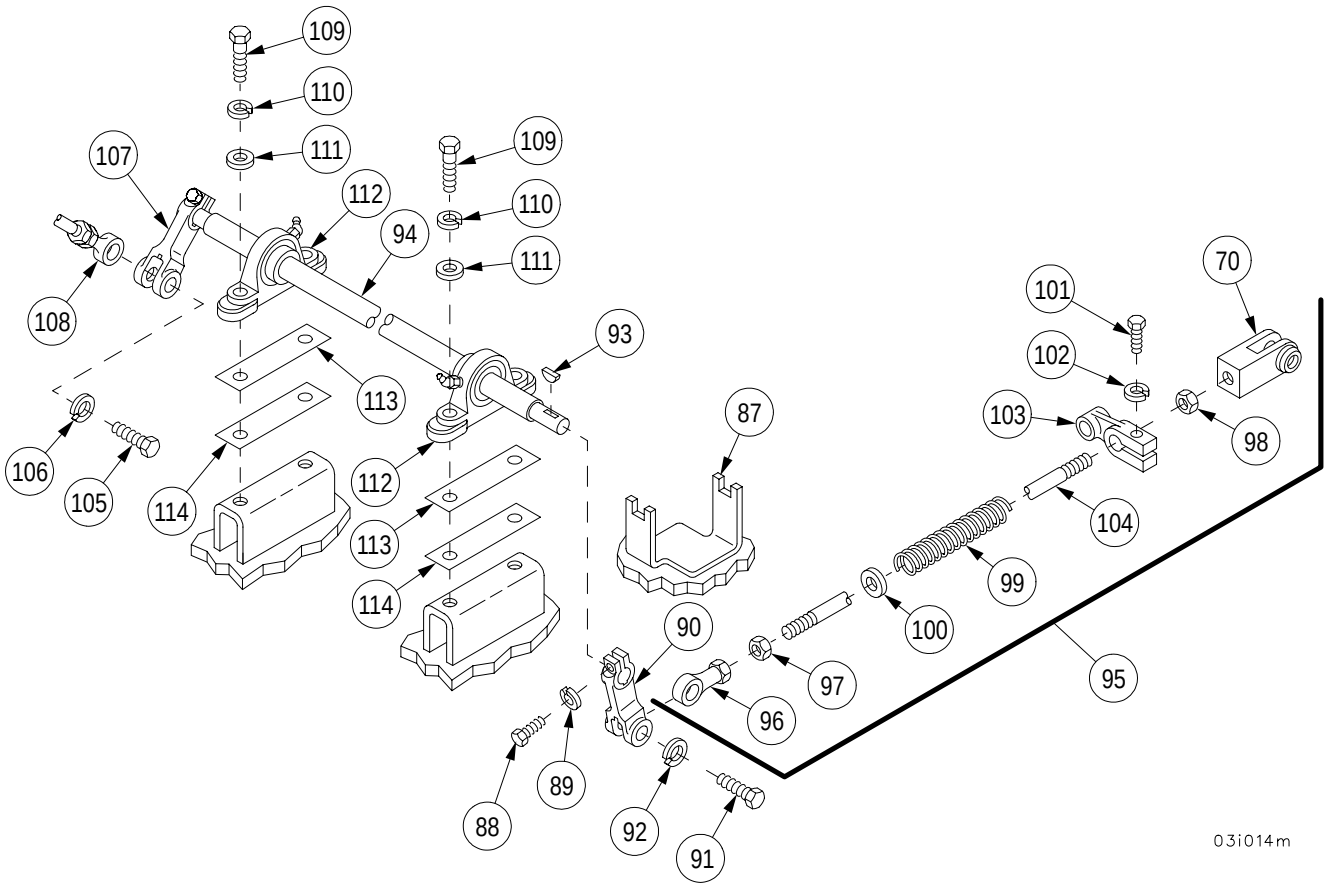
31. Remove six nuts (75), six lockwashers (76), six flat washers (77) and three brackets (78) from six studs (79). Discard lockwashers.
32. Push throttle control assembly handle (80) in.
33. Remove two nuts (81) from end of throttle control assembly (80).
34. Loosen nut (82) from throttle control assembly (80).
35. Remove screw (83), lockwasher (84) and clamp (85) attaching throttle control assembly (80) to hull. Discard lockwasher.
36. Loosen two nuts (86) attaching throttle control assembly (80) to hull bracket (87).
37. Remove throttle control assembly (80).



ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

Removal-Continued

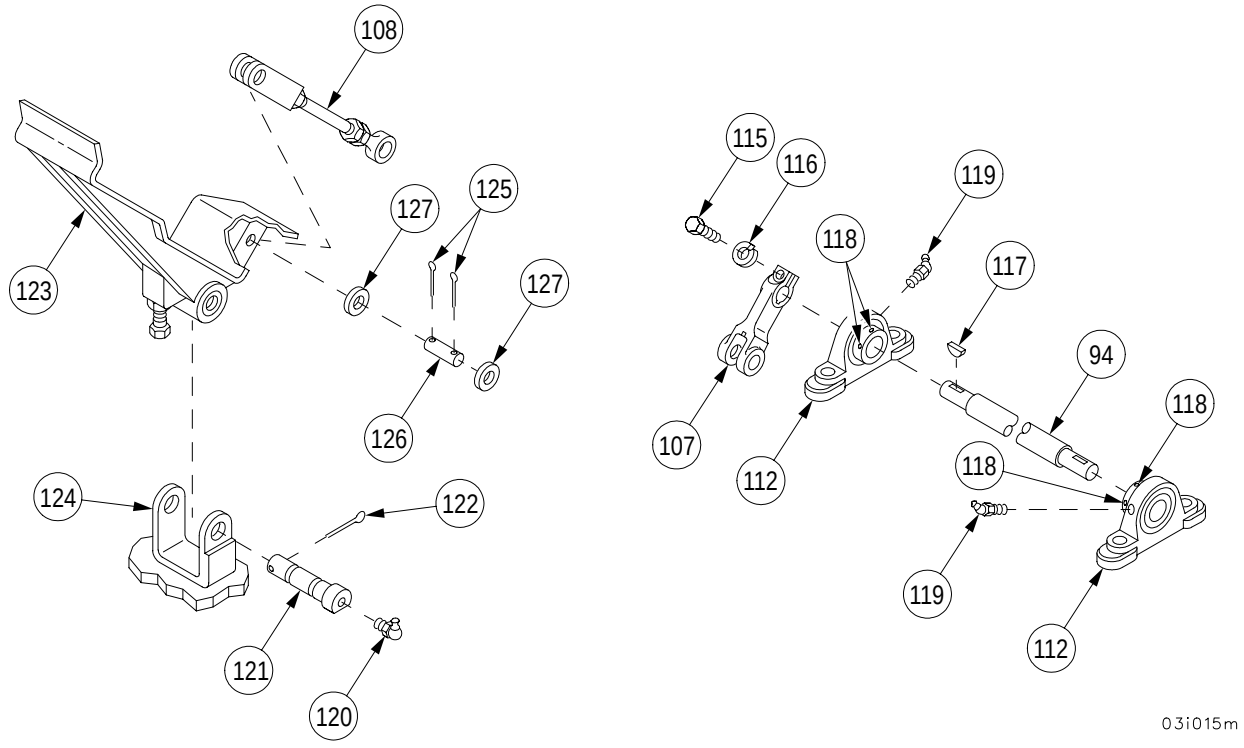
38. Remove screw (88) and lockwasher (89) from lever (90). Discard lockwasher.
39. Remove screw (91) and lockwasher (92) from lever (90). Discard lockwasher.
40. Remove lever (90) and woodruff key (93) from shaft (94).
41. Remove rod assembly (95) from hull bracket (87).
42. Remove rod end (96), clevis (70), two nuts (97 and 98), spring (99) and flat washer (100) from rod assembly (95).
43. Remove screw (101), lockwasher (102) and lever (103) from rod (104). Discard lockwasher.
44. Remove screw (105), lockwasher (106) and lever (107) from rod assembly (108). Discard lockwasher.
45. Remove four screws (109), four lockwashers (110) and four flat washers (111) securing two pillow blocks (112) and shims (113 and 114). Discard lockwashers and locknuts.
46. Remove shaft (94) with two pillow blocks (112), lever (107) and shims (113 and 114).



ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

Removal-Continued

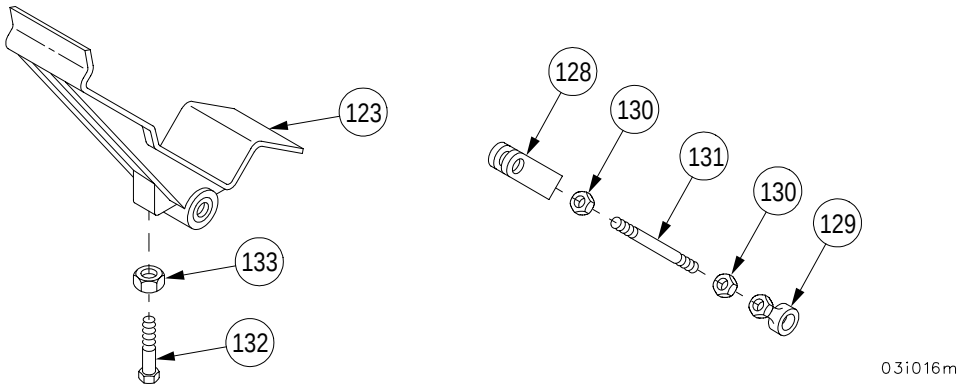
47. Remove screw (115), lockwasher (116), lever (107) and woodruff key (117) from shaft (94). Discard lockwasher.
48. Loosen two set screws (118) in each of two pillow blocks (112).
49. Remove shaft (94) from two pillow blocks (112).
50. Remove two lubrication fittings (119) from two pillow blocks (112).
51. Remove lubrication fitting (120) from pin (121).
52. Remove cotter pin (122) from pin (121). Discard cotter pin.
53. Remove pin (121) attaching pedal assembly (123) to floor bracket (124).
54. Remove pedal assembly (123) with rod assembly (108) attached.
55. Remove two cotter pins (125) from pin (126). Discard cotter pins.
56. Remove two flat washers (127) and pin (126) and separate rod assembly (108) from pedal assembly (123).



ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

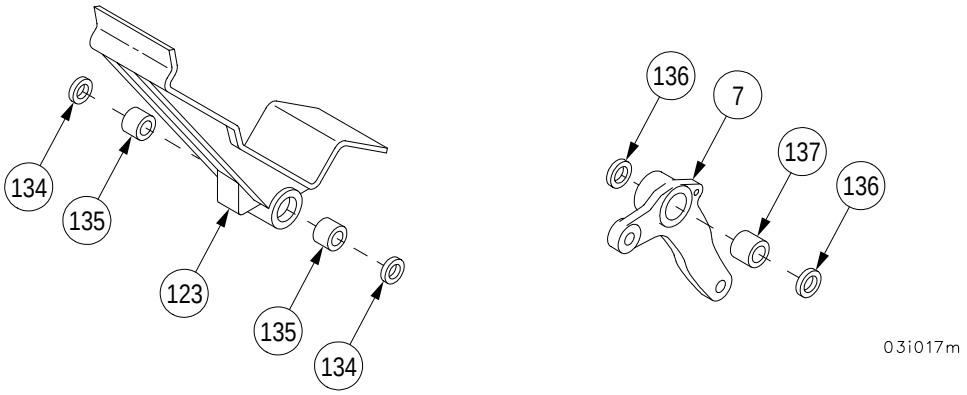
Removal-Continued

57. Remove clevis (128), rod end (129) and two nuts (130) from rod (131).
58. Remove screw (132) and nut (133) from pedal assembly (123).



Disassembly

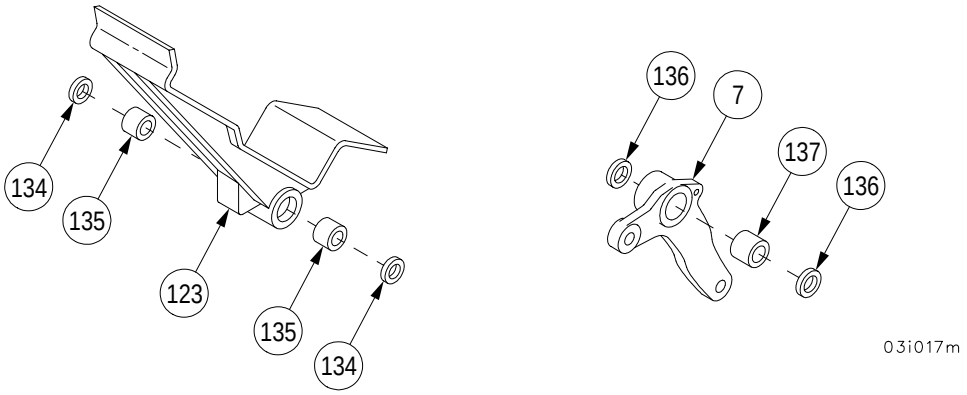
1. Remove two preformed packings (134) and two roller bearings (135) from pedal assembly (123). Discard preformed packings.
2. Remove two preformed packings (136) and sleeve bearing (137) from bell crank (7). Discard preformed packings.
3. Inspect parts for damage and replace as required.



ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

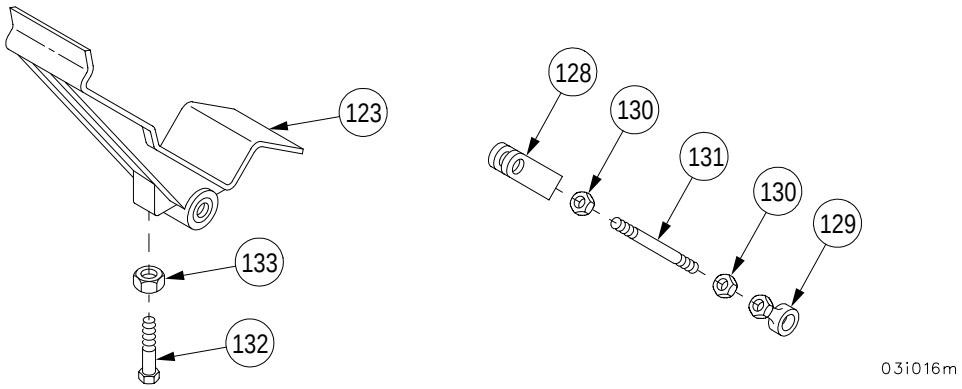
Assembly

1. Install sleeve bearing (137) and two new preformed packings (136) into bell crank (7).
2. Install two roller bearings (135) and two new preformed packings (133) in pedal assembly (123).



Installation

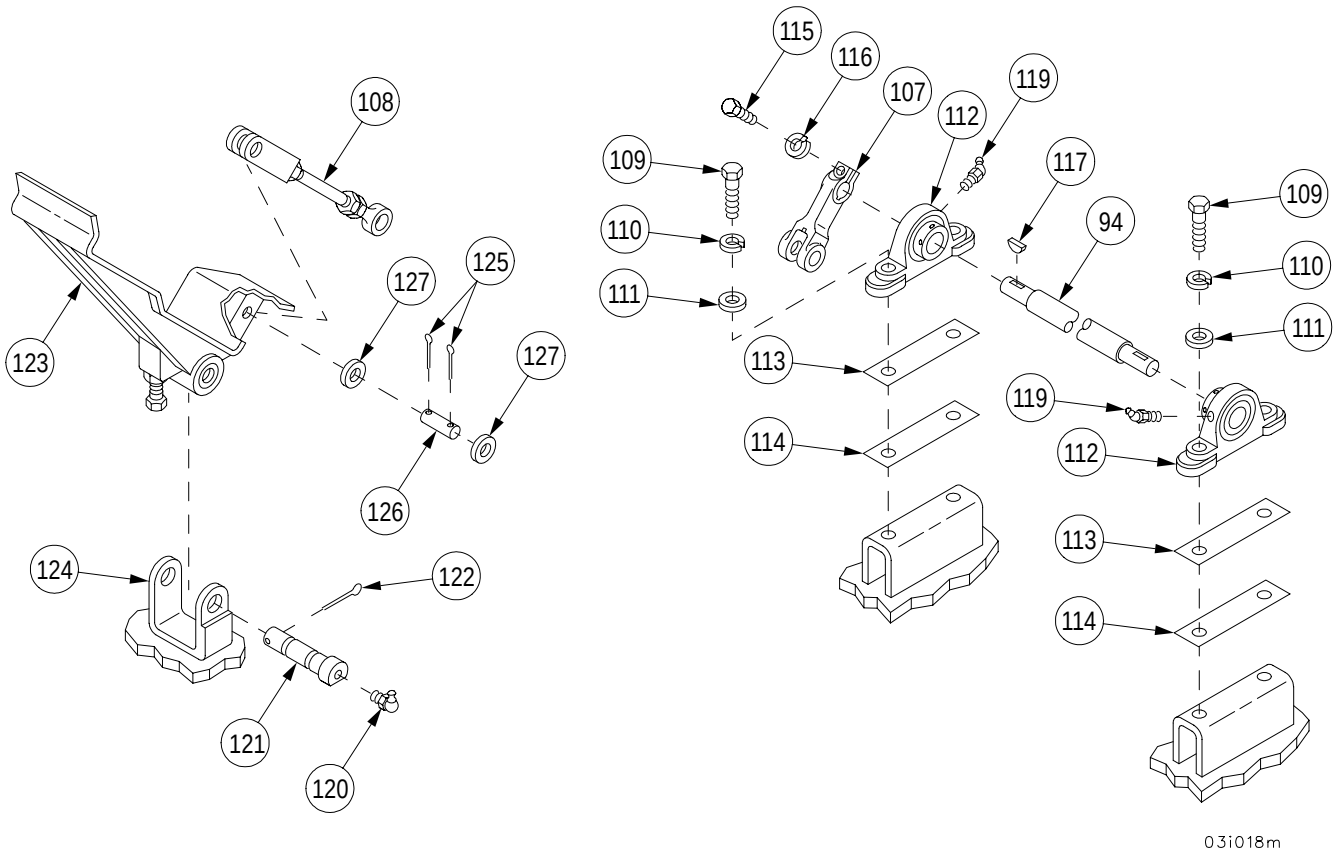
1. Loosely install screw (132) and nut (133) into pedal assembly (123).
2. Install two nuts (130), clevis (128) and rod end (129) on rod (131).



ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

Installation-Continued

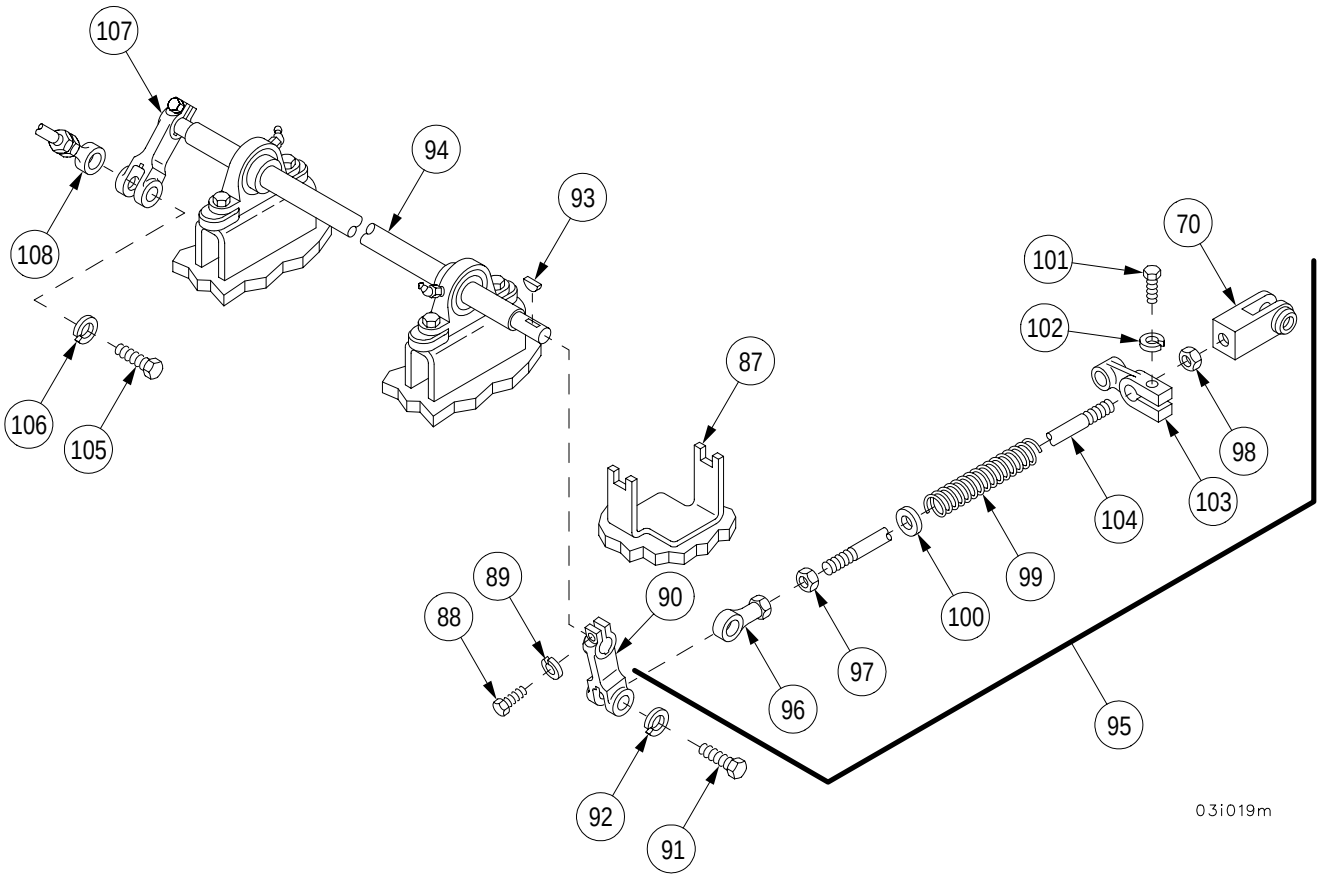
3. Install rod assembly (108) on pedal assembly (123) with pin (126).
4. Install two flat washers (127) and two new cotter pins (125) on pin (126).
5. Install lubrication fitting (120) in pin (121).
6. Apply lubricant to pin (121).
7. Install pedal assembly (123) on floor bracket (124) with pin (121).
8. Install new cotter pin (122) on pin (121).
9. Install two lubrication fittings (119) in two pillow blocks (112).
10. Install two pillow blocks (112) on shaft (94).
11. Install shims (113 and 114) and two pillow blocks (112) using four screws (109), four new lockwashers (110) and four flat washers (111). Tighten four screws (109) after ensuring alignment of pillow blocks allows easy shaft rotation.
12. Install lever (107) on shaft (94) with woodruff key (117), screw (115) and new lockwasher (116).



ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

Installation-Continued

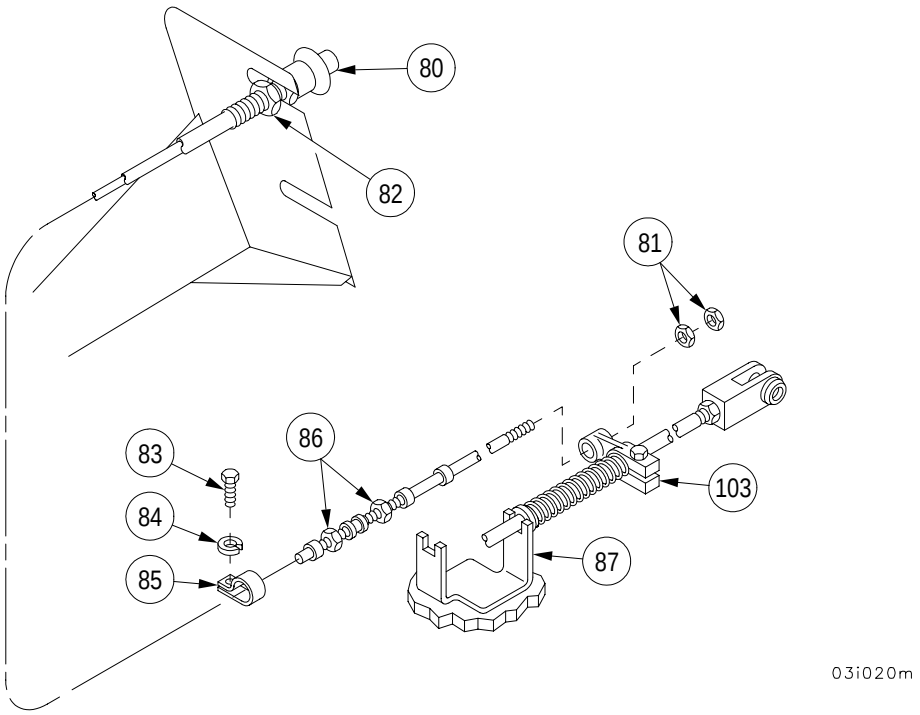
13. Install lever (107) on rod assembly (108) with screw (105) and new lockwasher (106).
14. Install lever (90) on shaft (94) with woodruff key (93), screw (88) and new lockwasher (89).
15. Install lever (103) on rod (104) with screw (101) and new lockwasher (102).
16. Install spring (99) on rod assembly (95).
17. Install flat washer (100) against spring (99) on rod assembly (95).
18. Install nut (97) and rod end (96) on rod assembly (95).
19. Install nut (98) and clevis (70) on end of rod assembly (95).
20. Install rod assembly (95) into hull bracket (87).
21. Install rod assembly (95) into lever (90) with screw (91) and new lockwasher (92).



ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

Installation-Continued

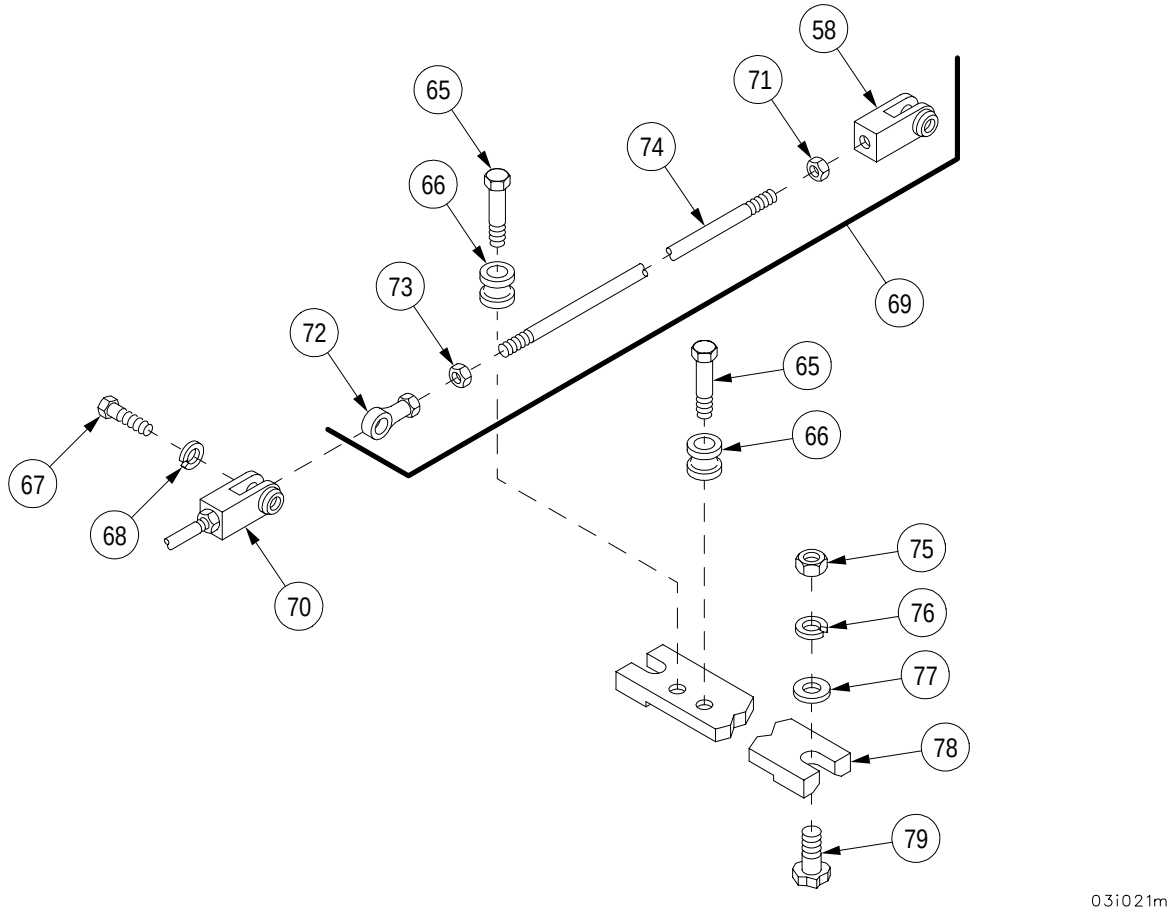
22. Install the handle end of the throttle control assembly (80) on bracket with nut (82).
23. Install the other end of the throttle control assembly (80) in bracket (87) and through lever (103) and secure with two nuts (86).
24. Install clamp (85) securing throttle control assembly (80) to hull with screw (83) and new lockwasher (84).
25. Secure lever (103) on throttle control assembly (80) using two nuts (81).



ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

Installation-Continued

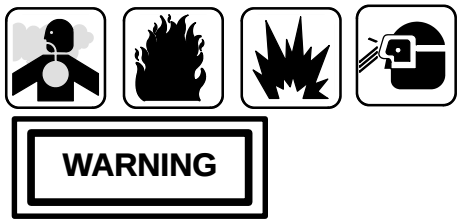
26. Install nut (73) and rod end (72) on rod (74).
27. Install nut (71) and clevis (58) on rod assembly (69).
28. Install three brackets (78) on six studs (79) with six flat washers (77), six new lockwashers (76) and six nuts (75).
29. Install rod assembly (69) on floor with six rollers (66) and six screws (65).
30. Install screw (67) and new lockwasher (68) attaching rod assembly (69) to clevis (70).



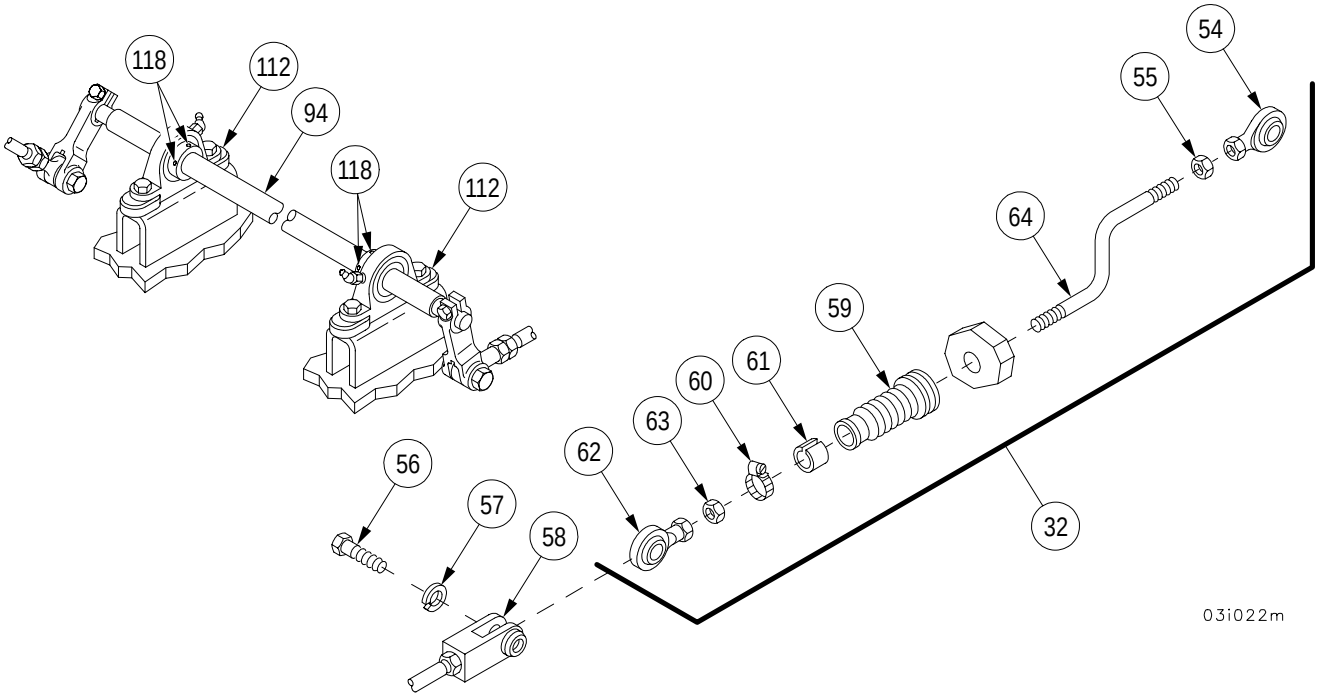
ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

Installation-Continued

31. Move shaft (94) left or right until pedal linkage and linkage to rear of shaft is parallel and will not binHold shaft (94) in position and tighten set screws (118) on two pillow blocks (112).



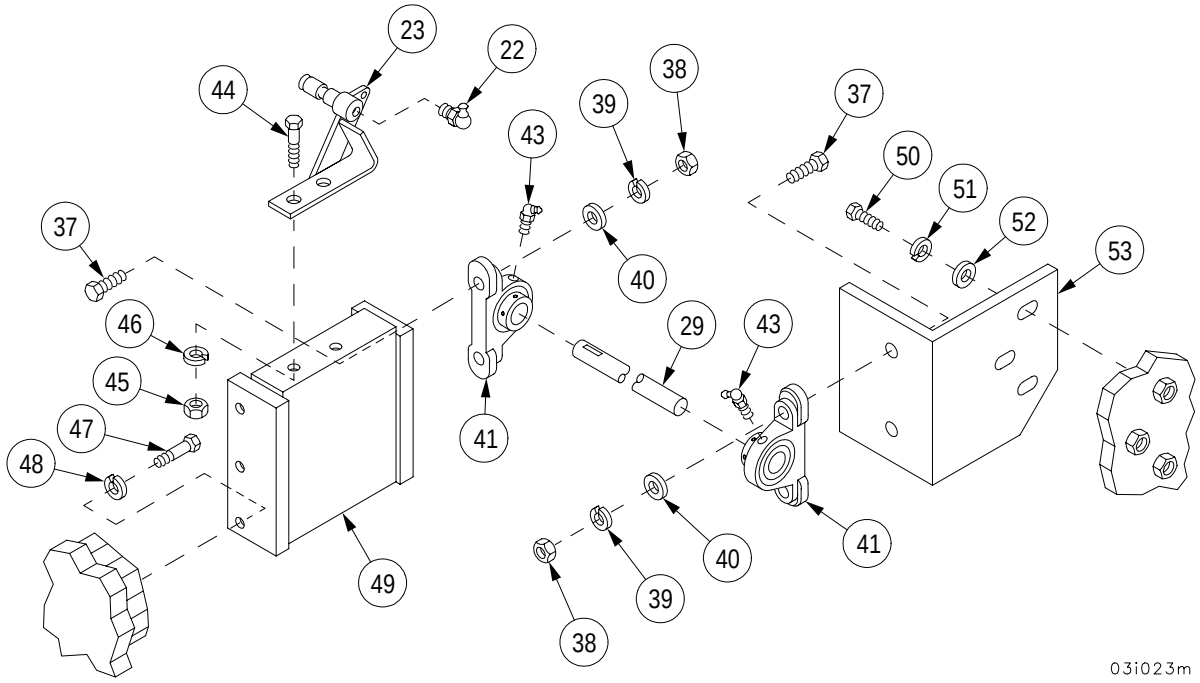
32. Clean hole in bulkhead for linkage using rags and dry cleaning solvent.
33. Install boot (59), bushing (61) and clamp (60) on rod (64).
34. Install nut (63) and rod end (62) on rod assembly (32).
35. Install rod assembly (32) through hole in bulkhead.
36. Install screw (56) and new lockwasher (57) attaching rod assembly (32) to clevis (58).
37. Apply a small amount of adhesive to groove in boot (59) and the hole in bulkhead.
38. Install the boot (59) into bulkhead hole and allow to dry for five minutes.
39. Install nut (55) and rod end (54) on rod assembly (32).



ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

Installation-Continued

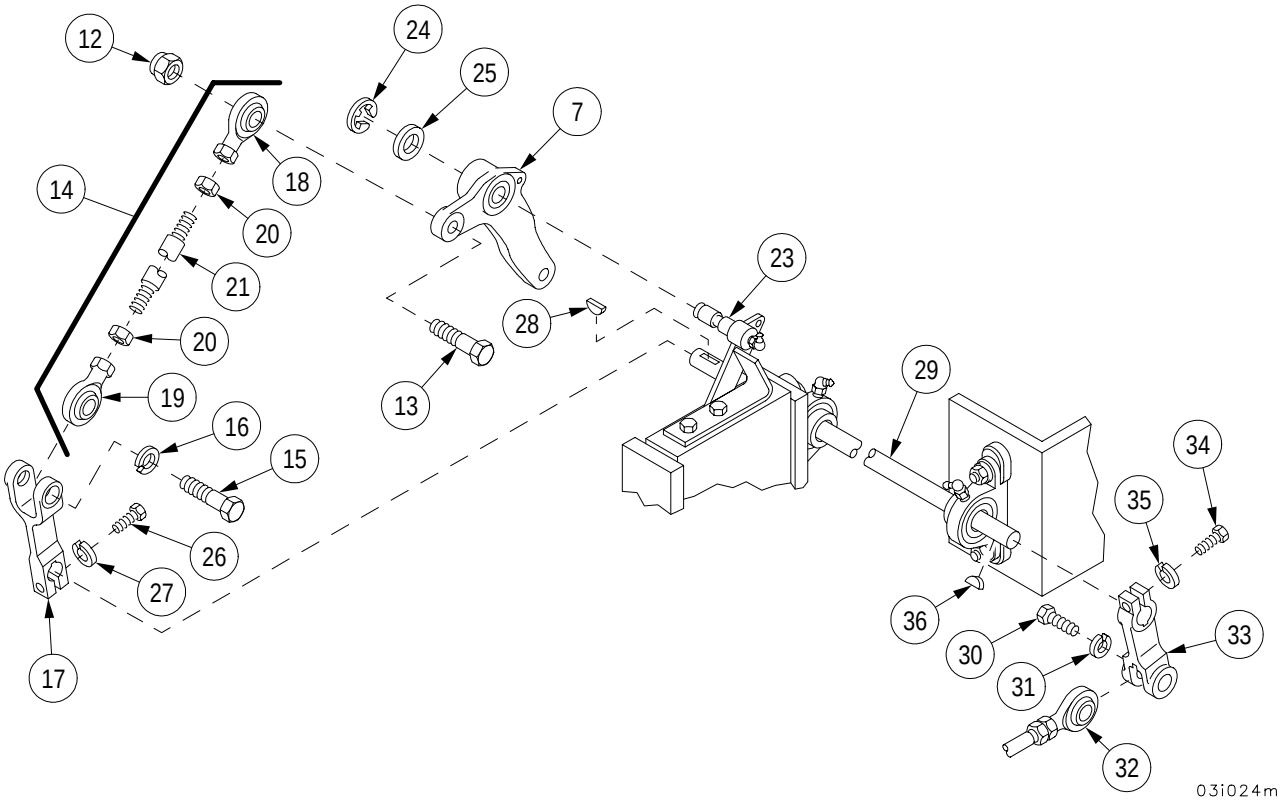
40. Install angle (53) on mounts with three screws (50), three new lockwashers (51) and three flat washers (52).
41. Install bracket (49) with three screws (47) and three new lockwashers (48).
42. Install lubrication fitting (22) in bracket assembly (23).
43. Install bracket assembly (23) with two screws (44), two new lockwashers (46) and two nuts (45).
44. Install two lubrication fittings (43) in two pillow blocks (41).
45. Install two pillow blocks (41) on shaft (29).
46. Install two pillow blocks (41) and shaft (29) with four screws (37), four flat washers (40), four new lockwashers (39) and four nuts (38).



ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

Installation-Continued

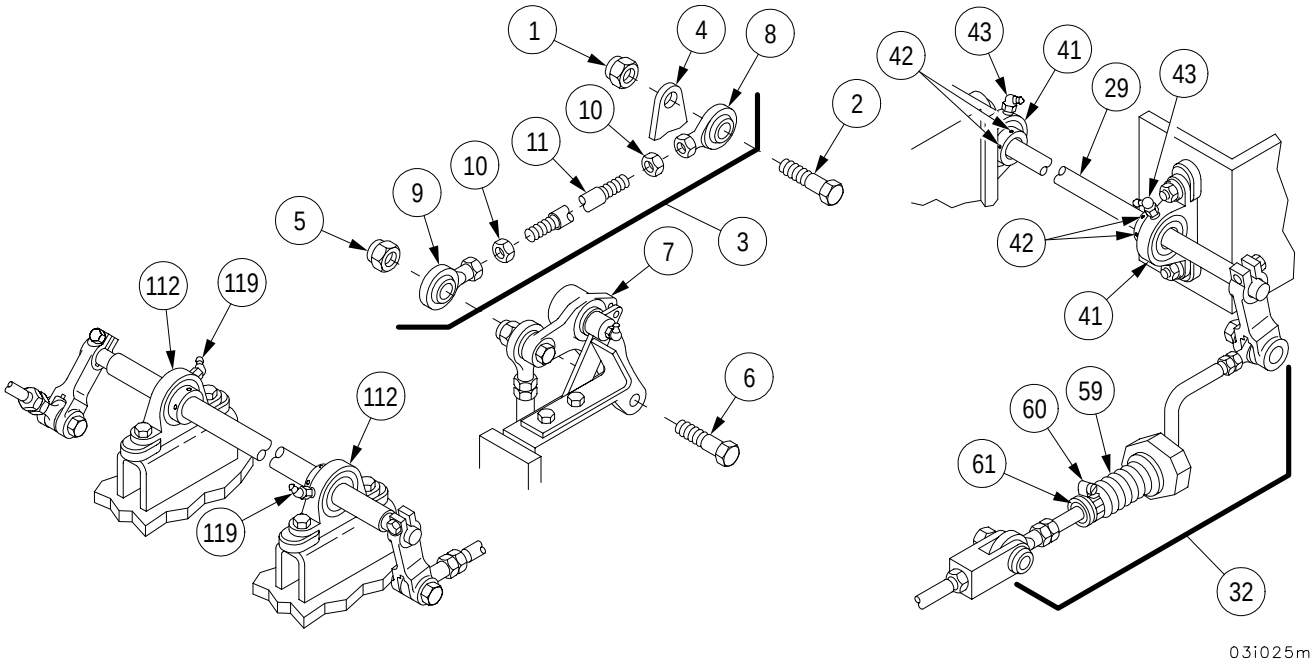
47. Install lever (33) with woodruff key (36) on shaft (29).
48. Install screw (34) and new lockwasher (35) in lever (33).
49. Install screw (30) and new lockwasher (31) securing rod assembly (32) to lever (33).
50. Install clevis (17) on shaft (29) with woodruff key (28).
51. Install screw (26) and new lockwasher (27) in clevis (17).
52. Install bell crank (7) on bracket assembly (23).
53. Install flat washer (25) and new retaining ring (24) on bracket assembly (23).
54. Install two nuts (20) and two rod ends (18 and 19) on rod (21).
55. Install rod assembly (14) to clevis (17) using screw (15) and new lockwasher (16).
56. Attach rod assembly (14) to bell crank (7) with screw (13) and new self-locking nut (12).



ACCELERATOR CONTROLS AND LINKAGE REPAIR - CONTINUED 0226 00

Installation-Continued

57. Install two nuts (10) and two rod ends (8 and 9) on rod (11).
58. Attach rod assembly (3) to bell crank (7) with screw (6) and new self locking nut (5).
59. Attach rod assembly (3) to engine throttle lever (4) with screw (2) and new self-locking nut (1).
60. Move the shaft (29) left or right until the linkage on both sides is perpendicular to the shaft (29) and will operate without binding.
61. Hold shaft (29) in position and tighten setscrews (42) on pillow blocks (41).
62. Lubricate four pillow blocks (41 and 112) through four lubrication fittings (43 and 119) (WP 0187 00).
63. Align and adjust accelerator and hand throttle controls (WP 0227 00).
64. Tighten clamp (60) securing boot (59) and bushing (61) on rod assembly (32).



NOTE

FOLLOW-ON MAINTENANCE:
Install vehicular tool box rack and oddment tray assembly (WP 0480 00)
Install air cleaner intake hoses (WP 0212 00)
Install engine deck (WP 0417 00)
Install engine deck grilles (TM 9-2350-292-10)
Install subfloor plates #19 and #24 (WP 0454 00)

END OF TASK

ALIGNMENT/ADJUSTMENT OF ACCELERATOR CONTROLS AND LINKAGE 0227 00

THIS WORK PACKAGE COVERS:

Alignment, Adjustment (full throttle), Adjustment (hand throttle)

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts

Welding electrodes (AR) (item 9, WP 0716 00)

Equipment Conditions

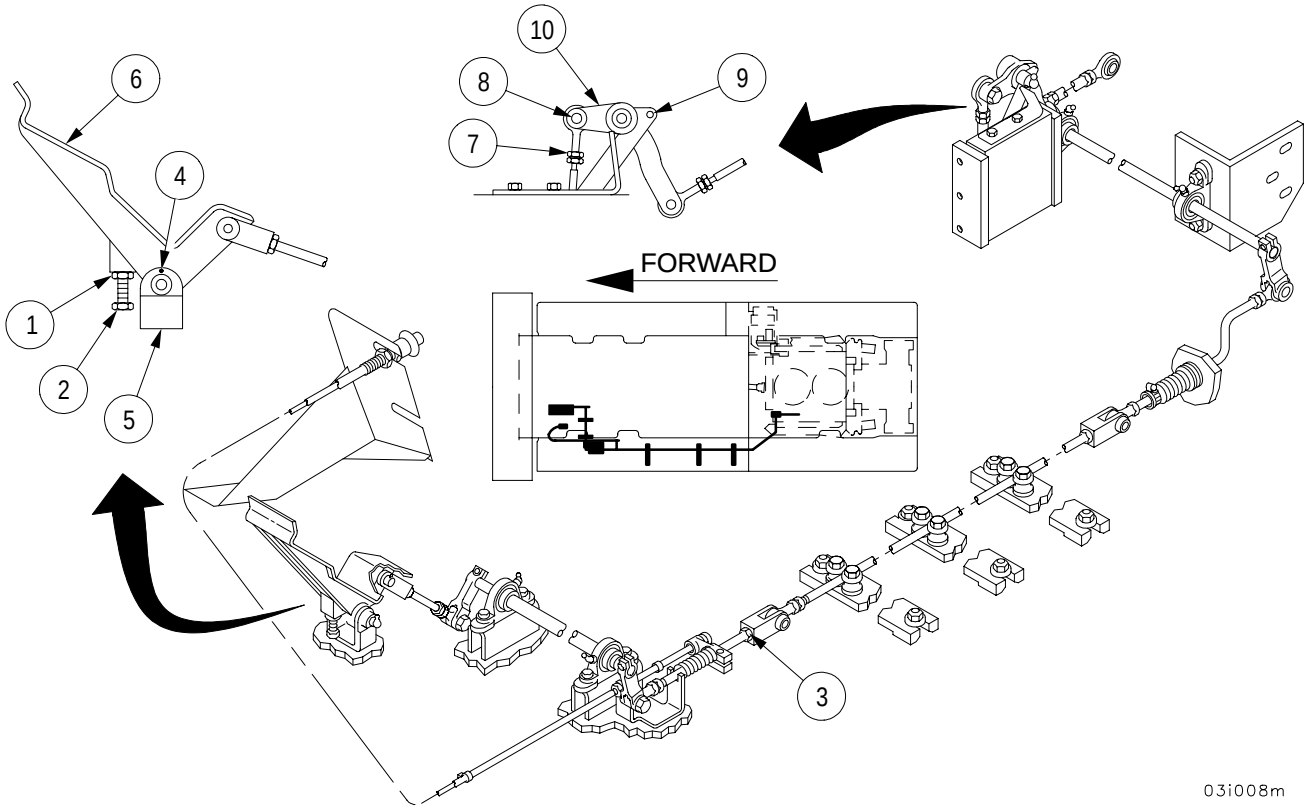
Engine deck grilles removed (TM 9-2350-292-10)
Linkage disconnected from engine throttle lever (alignment only) (WP 0226 00)
Vehicular tool box rack and oddment tray assembly removed (WP 0480 00)

References

TM 9-2350-292-10

Alignment

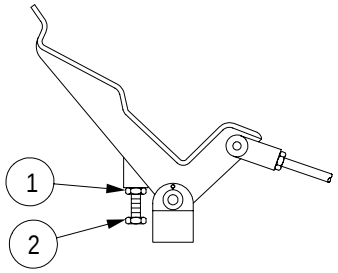
1. Loosen locknut (1) on throttle stop screw (2) and locknut (3).
2. Insert 1/8-in. welding electrode (4) in bracket (5) and pedal (6).
3. Loosen locknut (7) and adjust linkage (8) until 1/8 inch welding electrode (9) can be inserted in bell crank (10).
4. Tighten locknuts (1, 3 and 7), remove welding electrodes (4 and 9) and connect linkage to engine throttle lever (WP 0226 00).



ALIGNMENT/ADJUSTMENT OF ACCELERATOR CONTROLS AND LINKAGE - CONTINUED 0227 00

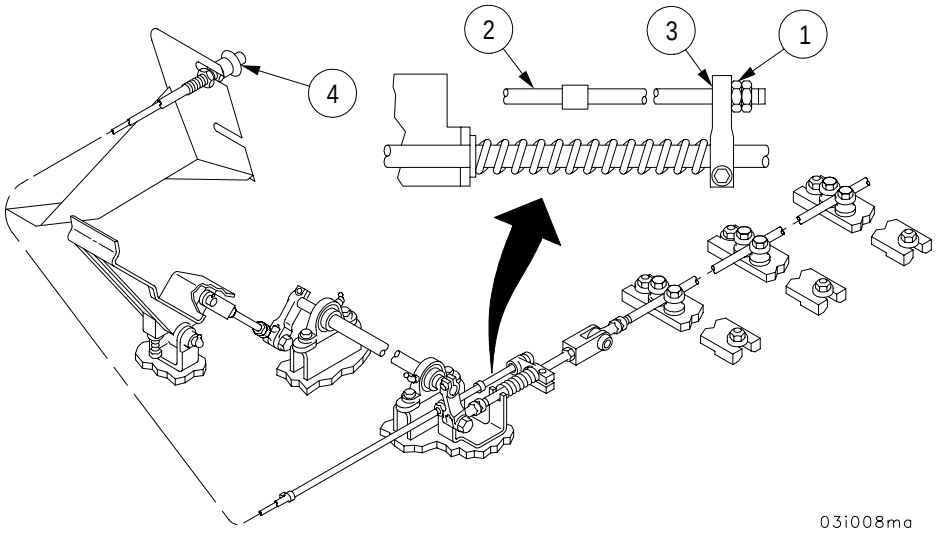
Adjustment (full throttle)

1. Loosen locknut (1) and adjust throttle stop screw (2) as required to obtain full throttle acceleration.
2. Tighten locknut (1).



Adjustment (hand throttle)

1. Loosen two locknuts (1) on throttle control cable (2) at accelerator connecting lever (3). Push in throttle control handle (4) all the way.
2. Adjust two locknuts (1) until a 3/16-in. (4.76 mm) movement of throttle control handle (4) causes an increase in engine speed with engine operating at idle.



NOTE

FOLLOW-ON MAINTENANCE:
Install engine deck grilles (TM 9-2350-292-10)
Install vehicular tool box rack and oddment tray assembly (WP 0480 00)

END OF TASK

CHAPTER 6

EXHAUST SYSTEM MAINTENANCE

ENGINE EXHAUST PIPES AND INSULATION COVERS REPLACEMENT 0228 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (15) (item 236, WP 0718 00)
Self-locking nuts (6) (item 298, 0718 00)

Materials/Parts-Continued
Gasket (item 237, Appx G)
Preformed packing (item 299, WP 0718 00)

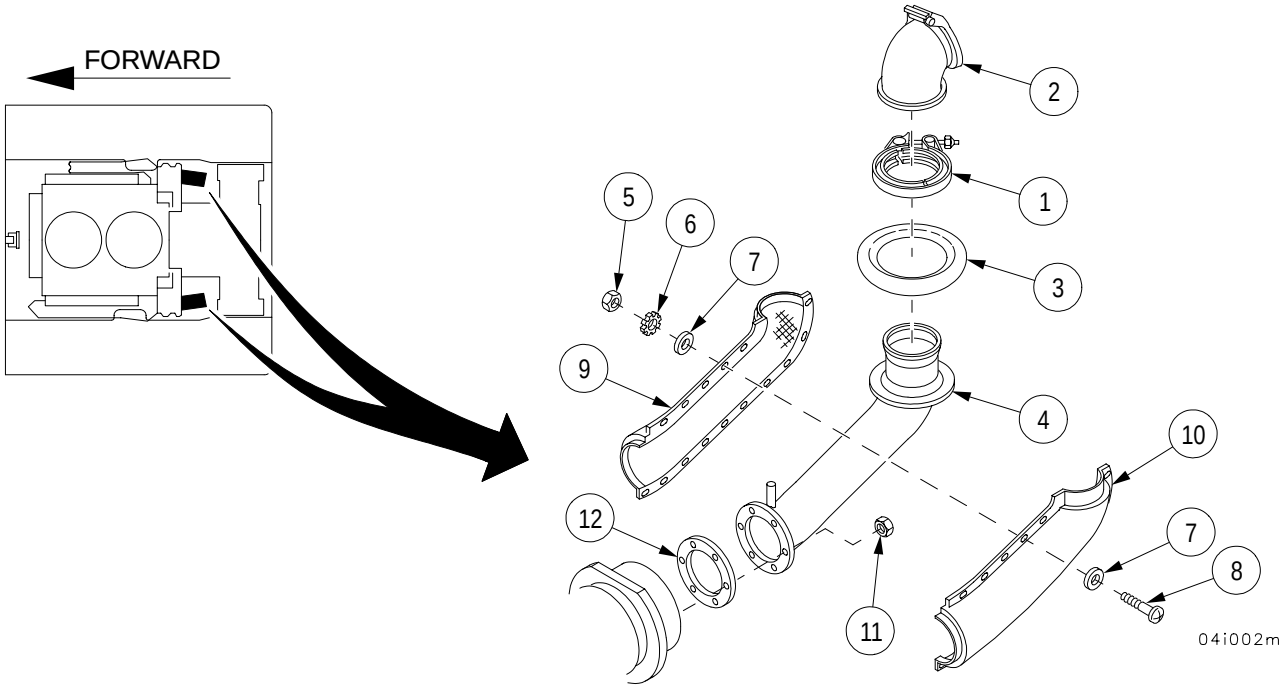
Equipment Conditions
Engine deck assembly removed (WP 0417 00)
Transmission breather tube removed (WP 0351 00)
For left exhaust pipe
Crankcase breather tube removed (WP 0200 00)
For right exhaust pipe

NOTE

Left and right engine exhaust pipes are replaced in the same manner. Left side exhaust shown.

Removal

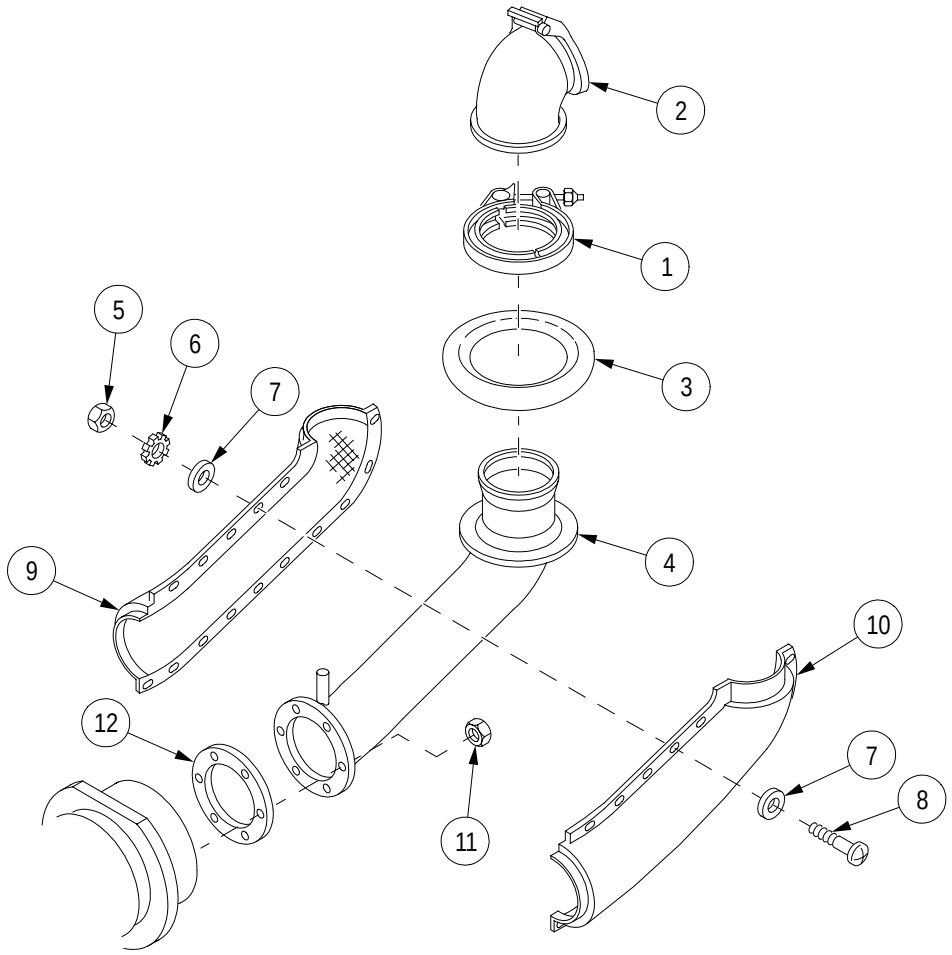
1. Remove clamp (1) and exhaust pipe cap assembly (2).
2. Remove preformed packing (3) from engine exhaust pipe (4). Discard preformed packing.
3. Remove 15 nuts (5), 15 lockwashers (6), 30 flat washers (7), 15 screws (8) and two covers (9 and 10). Discard lockwashers.
4. Remove six self-locking nuts (11), engine exhaust pipe (4) and gasket (12). Discard self-locking nuts and gasket.
5. Inspect parts for damage and replace as required.



ENGINE EXHAUST PIPES AND INSULATION COVERS REPLACEMENT - CONTINUED 0228 00

Installation

1. Install exhaust pipe (4) and new gasket (12) with six new self-locking nuts (11).
2. Install two covers (10 and 9) on exhaust pipe (4) with 15 screws (8), 30 flat washers (7), 15 new lockwashers (6) and 15 nuts (5).
3. Install exhaust pipe cap (2) and new preformed packing (3) on exhaust pipe (4) with clamp (1).



NOTE

FOLLOW-ON MAINTENANCE:
Install transmission breather tube, if removed (WP 0351 00)
Install crankcase breather tube, if removed (WP 0200 00)
Install engine deck assembly (WP 0417 00)

END OF TASK

TURBOCHARGER AND EXHAUST MANIFOLD COVERS REPLACEMENT 0229 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Nonelectrical wire (AR) (item 49, WP 0718 00)

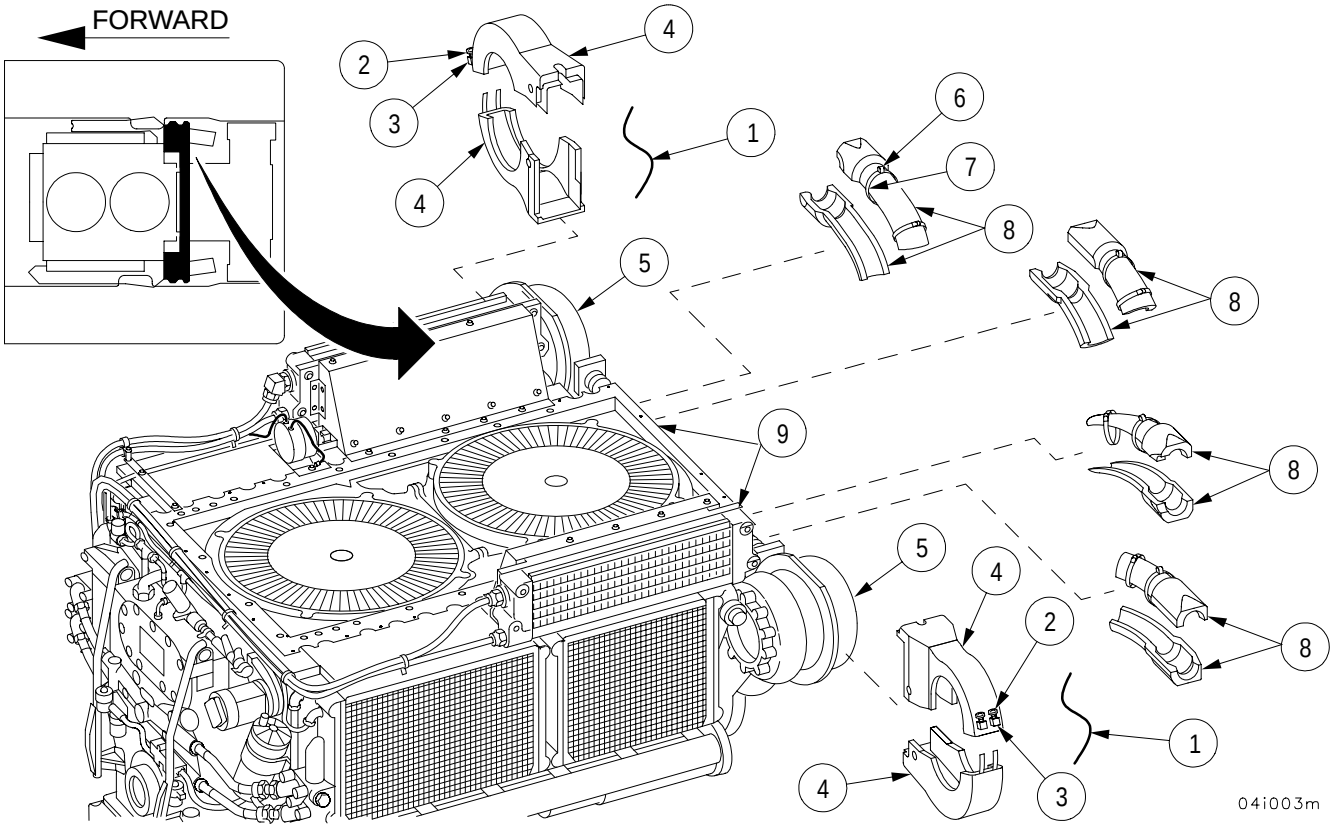
Equipment Conditions
Hydraulic oil cooler hydraulic lines removed (WP 0230 00)

NOTE

Clamps and attaching hardware are furnished with turbocharger and exhaust manifold coversRemoval.

Removal

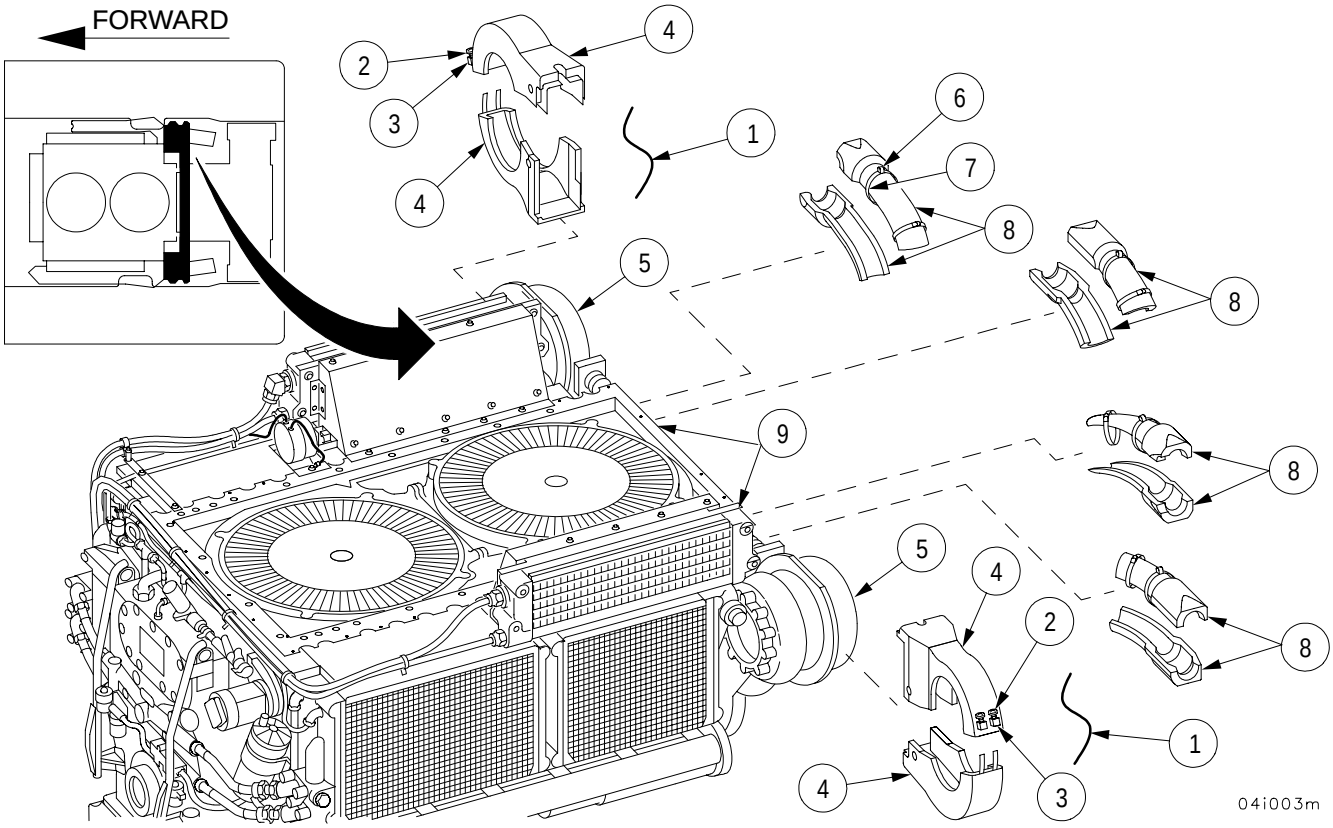
1. Remove nonelectrical wire (1), loosen four screws (2) in four clamps (3) securing two sets of turbocharger insulation covers (4) to two turbochargers (5). Discard nonelectrical wire.
2. Remove two sets of turbocharger insulation covers (4) from two turbochargers (5).
3. Loosen four screws (6) in four clamps (7), remove four sets of exhaust manifold insulation covers (8) from exhaust manifold (9).
4. Inspect parts for damage and replace as required.



TURBOCHARGER AND EXHAUST MANIFOLD COVERS REPLACEMENT - CONTINUED 0229 00

Installation

1. Position four sets of exhaust manifold insulation covers (8) on exhaust manifold (9).
2. Tighten four screws (6) in four clamps (7) securing four sets of exhaust manifold insulation covers (8) to exhaust manifold (9).
3. Position two sets of turbocharger insulation covers (4) around two turbochargers (5).
4. Tighten four screws (2) in four clamps (3), install new nonelectrical wire (1) securing turbocharger insulation covers (4) to two turbochargers (5).



NOTE

FOLLOW-ON MAINTENANCE:
Install hydraulic oil cooler hydraulic lines (WP 0230 00)

END OF TASK

CHAPTER 7

COOLING SYSTEM MAINTENANCE

HYDRAULIC OIL COOLER AND RELATED PARTS REPAIR 0230 00

THIS WORK PACKAGE COVERS:

Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Open-end wrench (item 77, 0717 00)
Suitable container (2.0 gal. min (7.5L))

Materials/Parts

Lockwashers (20) (item 14, WP 0718 00)
Lockwashers (4) (item 52, WP 0718 00)
Gasket (item 203, WP 0718 00)
Preformed packings (2) (item 204, WP 0718 00)
Lockwashers (21) (item 2, WP 0718 00)
Electrical tiedown straps (4) (item 77, WP 0718 00)
Electrical tiedown straps (AR) (item 205, WP 0718 00)
Adhesive (item 25, WP 0716 00)
Sealant (item 37, WP 0716 00)
Safety goggles (item 93, WP 0716 00)

Equipment Conditions

Engine deck assembly removed (WP 0417 00)
Battery power disconnected (WP 0256 00)
Hydraulic system pressure discharged (WP 0545 00)

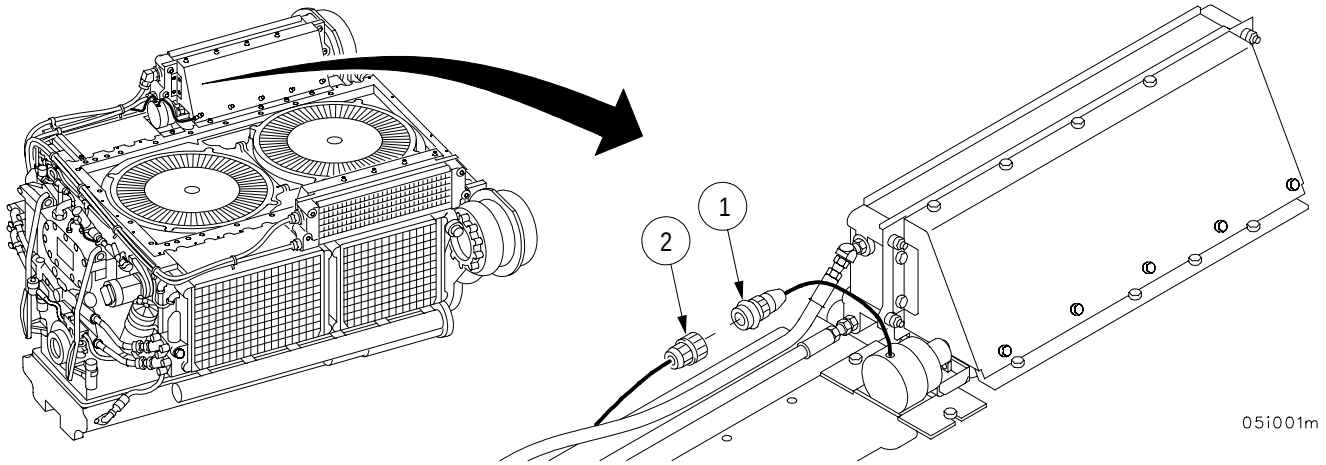
NOTE

Perform only those steps necessary to replace the defective parts.

The procedures for the left and right hydraulic oil cooler assemblies are similar. The following procedures, except where noted, are for the right hydraulic oil cooler assembly.

Removal

1. Disconnect rotary solenoid wire (1) from wiring harness 3W202 wire 627 connector (2).



HYDRAULIC OIL COOLER AND RELATED PARTS REPAIR - CONTINUED 0230 00

Removal-Continued



Hydraulic system pressure is rated 4450 psi. Do not torque hydraulic fittings or perform removal procedures when hydraulic system is pressurized. Discharging system before performing any maintenance procedures will prevent injury to personnel.

2. Disconnect two hydraulic line quick-disconnect couplings (3).

NOTE

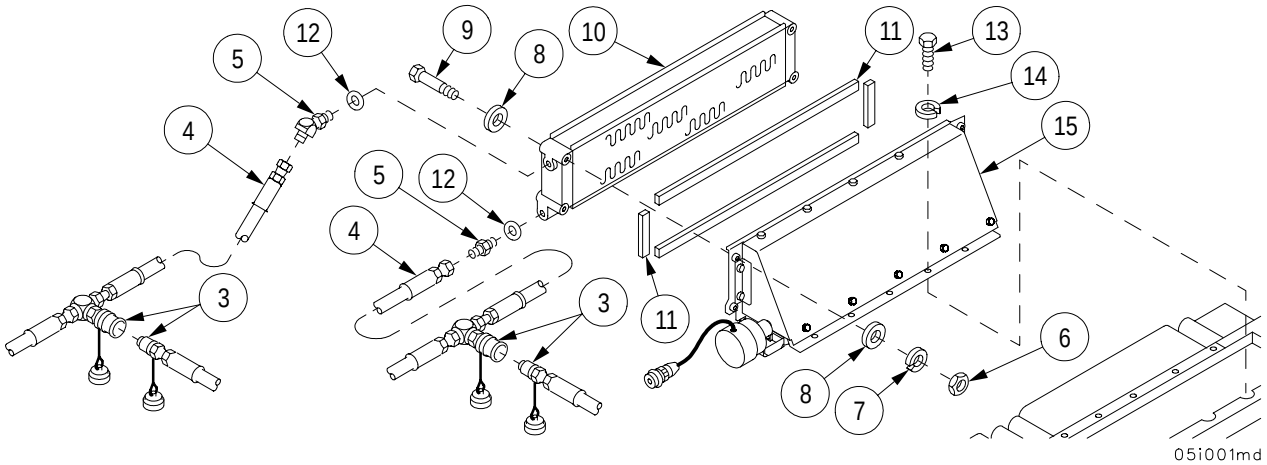
Cap all hydraulic lines and plug all hydraulic ports to prevent contamination. Place suitable container under connections to catch spillage.

3. Disconnect two hydraulic lines (4) at adapters (5).
4. Remove four nuts (6), four lockwashers (7), eight flat washers (8), four screws (9), oil cooler (10) and gasket (11). Discard lockwashers and gasket.
5. Remove two adapters (5) and two preformed packings (12) from oil cooler (10). Discard packings.

NOTE

There are only nine screws, nine lockwashers securing the left cooler hood assembly.

6. Remove 10 screws (13), 10 lockwashers (14) and cooler hood assembly (15). Discard lockwashers.



HYDRAULIC OIL COOLER AND RELATED PARTS REPAIR - CONTINUED 0230 00

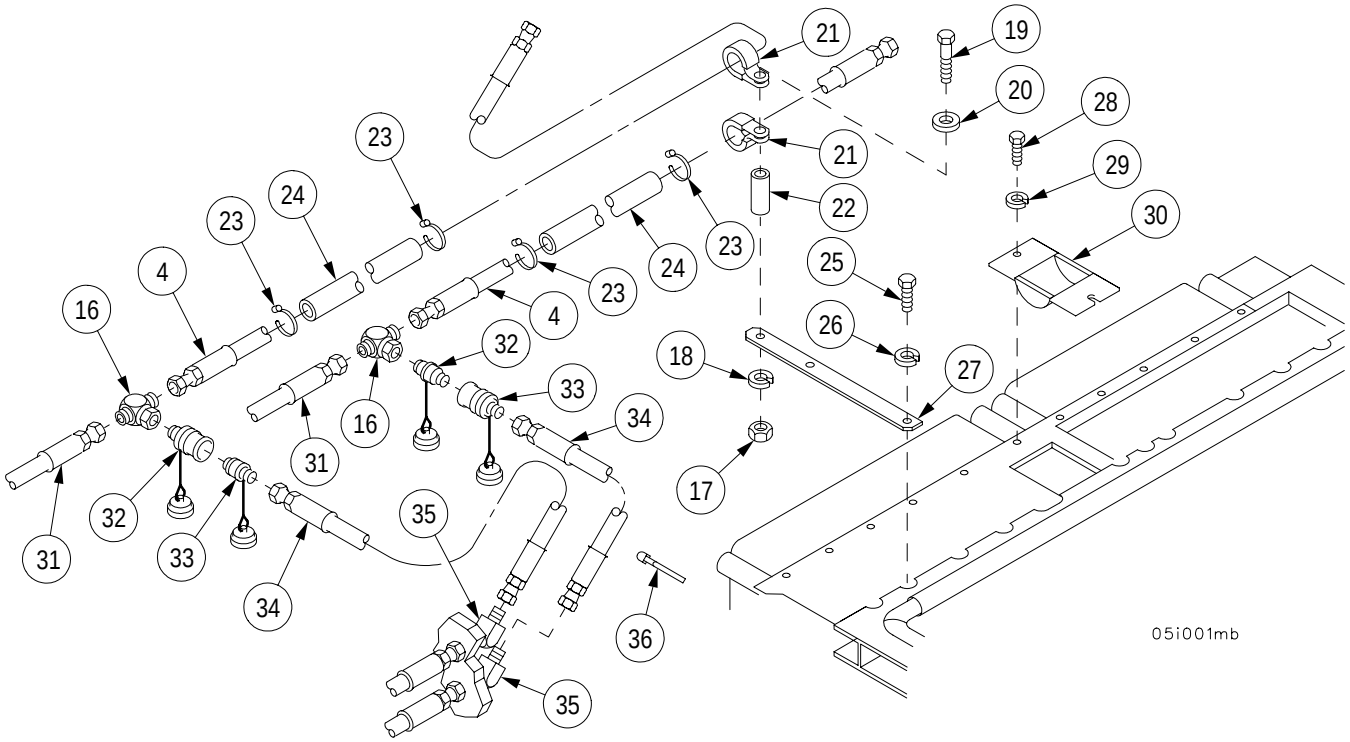
Removal-Continued

7. Disconnect two hydraulic lines (4) at tees (16).
8. Remove nut (17), lockwasher (18), screw (19), flat washer (20), two clamps (21) and spacer (22) securing two hydraulic lines (4). Discard lockwasher.
9. Cut four electrical tiedown straps (23) and remove two hydraulic lines (4) and two hose sleeves (24). Discard electrical tiedown straps.
10. Remove two screws (25), two lockwashers (26) and bracket (27). Discard lockwashers.

NOTE

Left heat shield is secured with one screw and one lockwasher.

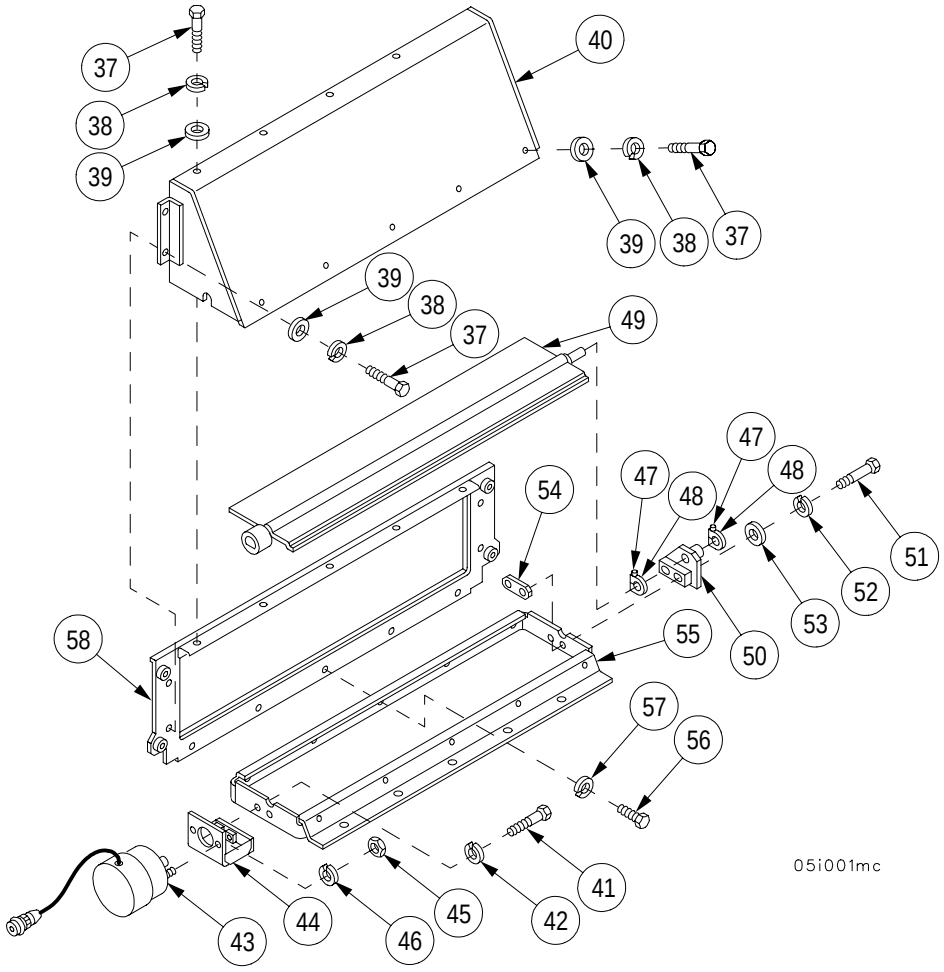
11. Remove two screws (28), two lockwashers (29) and right heat shield (30). Discard lockwashers.
12. Disconnect two hydraulic lines (31) at tees (16).
13. Remove two quick-disconnect couplings (32) from tees (16).
14. Remove two quick-disconnect couplings (33) from two hydraulic lines (34).
15. Disconnect two hydraulic lines (34) from bulkhead adapters (35).
16. Cut electrical tiedown straps (36) as required and remove two hydraulic lines (34). Discard electrical tiedown straps.



HYDRAULIC OIL COOLER AND RELATED PARTS REPAIR - CONTINUED 0230 00

Disassembly

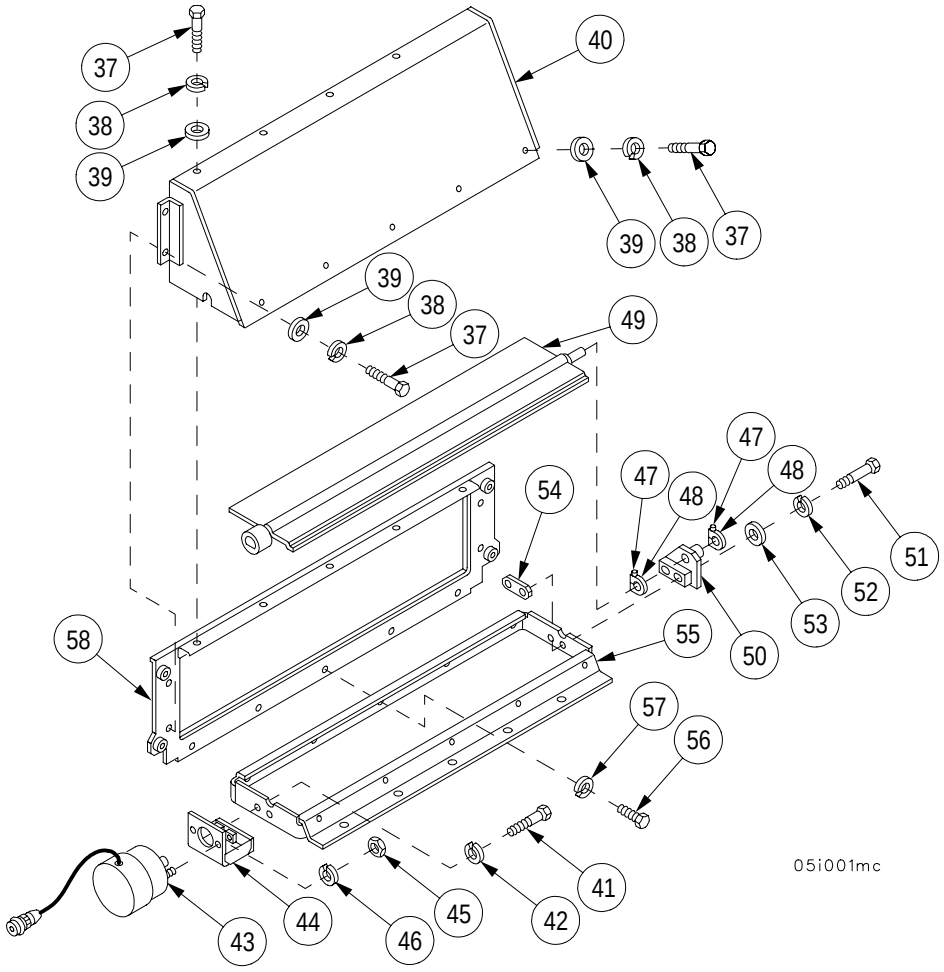
1. Remove 13 screws (37), 13 lockwashers (38), 13 flat washers (39) and hood (40). Discard lockwashers.
2. Remove two screws (41), two lockwashers (42) and rotary solenoid (43) and mount (44). Discard lockwashers.
3. Remove two nuts (45), two lockwashers (46) and rotary solenoid (43) from mount (44). Discard lockwashers.
4. Loosen two screws (47) securing two clamps (48).
5. Remove hydraulic cooler door (49) and two clamps (48) from rod mount (50).
6. Remove two screws (51), two lockwashers (52), two flat washers (53), rod mount (50) and mounting block (54) from shroud base (55). Discard lockwashers.
7. Remove five screws (56), five lockwashers (57) and cooler support (58) from shroud base (55). Discard lockwashers.
8. Inspect parts for damage and replace as required.



HYDRAULIC OIL COOLER AND RELATED PARTS REPAIR - CONTINUED 0230 00

Assembly

1. Install cooler support (58) onto shroud base (55) with five new lockwashers (57) and five screws (56).
2. Install mounting block (54) and rod mount (50) onto shroud base (55) with two flat washers (53), two new lockwashers (52) and two screws (51).
3. Position hydraulic cooler door (49) and two clamps (48) into rod mount (50).
4. Apply sealant to two screws (47).
5. Secure hydraulic cooler door (49) in rod mount (50) with two clamps (48) and two screws (47).
6. Install rotary solenoid (43) on solenoid mount (44) with two new lockwashers (46) and two nuts (45).
7. Install rotary solenoid (43) and solenoid mount (44) on shroud base (55) with two new lockwashers (42) and two screws (41).
8. Install hood (40) with 13 flat washers (39), 13 new lockwashers (38) and 13 screws (37).



HYDRAULIC OIL COOLER AND RELATED PARTS REPAIR - CONTINUED 0230 00

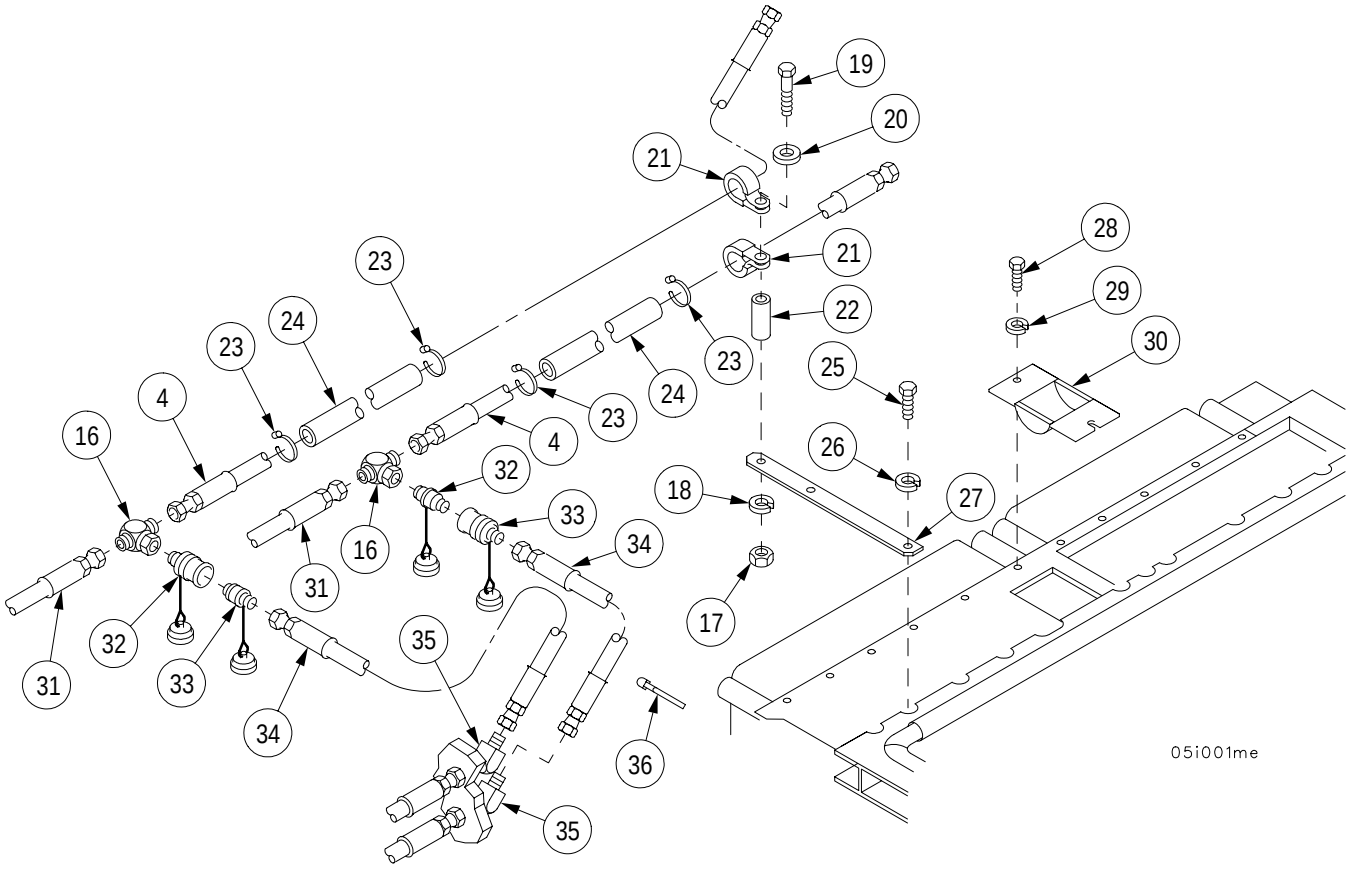
Installation

1. Connect two hydraulic lines (34) onto bulkhead adapters (35).
2. Secure two hydraulic lines (34) with new electrical tiedown straps (36) as required.
3. Install two quick-disconnect couplings (33) onto two hydraulic lines (34).
4. Install two quick-disconnect couplings (32) onto tees (16).
5. Connect two hydraulic lines (31) onto tees (16).

NOTE

Left heat shield is installed with one new lockwasher and one screw.

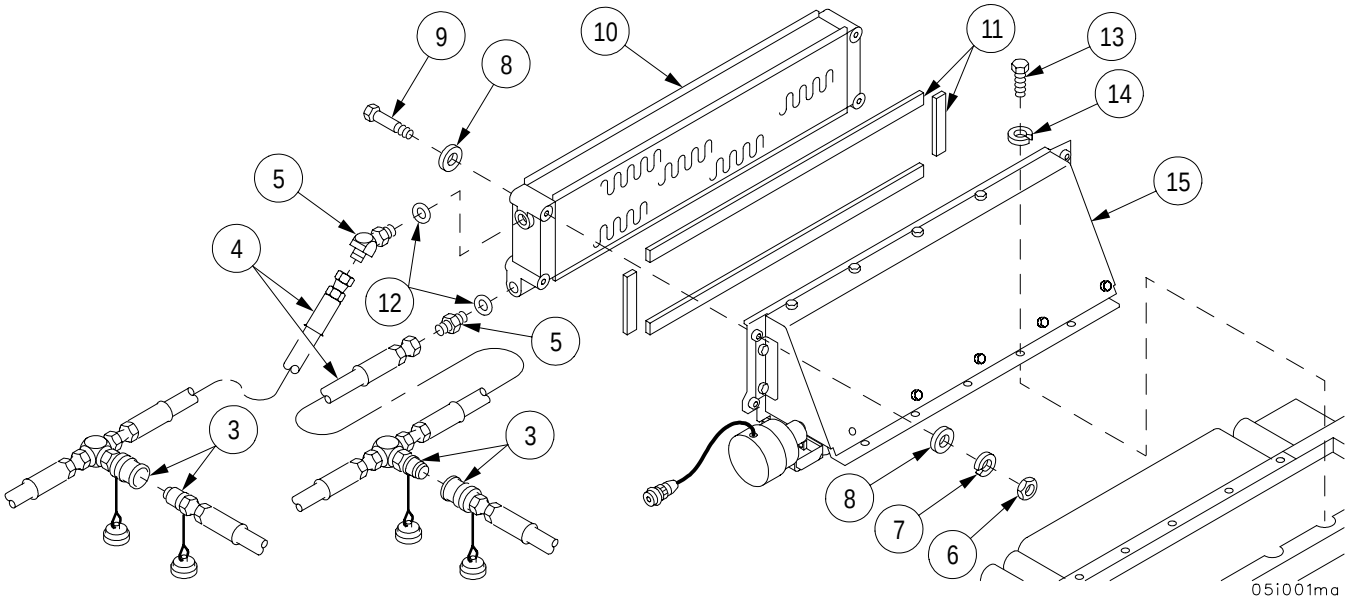
6. Install right heat shield (30) with two new lockwashers (29) and two screws (28).
7. Install bracket (27) with two new lockwashers (26) and two screws (25).
8. Connect two hydraulic lines (4) onto tees (16).
9. Secure two hydraulic lines (4) and two hose sleeves (24) with two clamps (21), flat washer (20), new lockwasher (18), screw (19), nut (17) and four new electrical tiedown straps (23).



HYDRAULIC OIL COOLER AND RELATED PARTS REPAIR - CONTINUED 0230 00

Installation-Continued

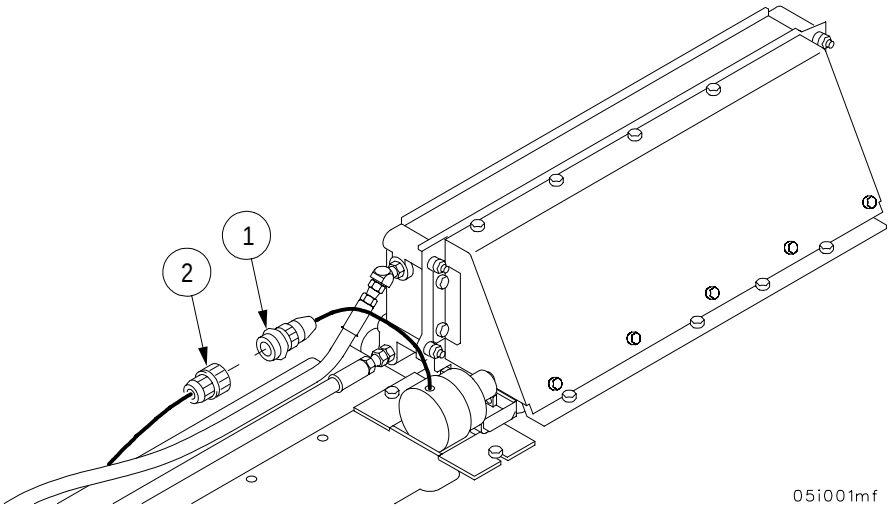
10. Install cooler hood assembly (15) with 10 new lockwashers (14) and 10 screws (13).
11. Install two adapters (5) with two new preformed packings (12) onto oil cooler (10).
12. Apply adhesive to new gasket (11).
13. Install new gasket (11) and oil cooler (10) with four screws (9), eight flat washers (8), four new lockwashers (7) and four nuts (6).
14. Connect two hydraulic lines (4) onto adapters (5).
15. Connect two hydraulic line quick-disconnect couplings (3).



HYDRAULIC OIL COOLER AND RELATED PARTS REPAIR - CONTINUED 0230 00

Installation-Continued

16. Connect rotary solenoid wire (1) to wiring harness 3W202 wire 627 connector (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)
Install engine deck assembly (0417 00)

END OF TASK

ENGINE AND TRANSMISSION OIL COOLER REPLACEMENT 0231 00

THIS WORK PACKAGE COVERS:

Removal, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Suitable container (2.0 gal. min. (7.5 L))
Automotive adjustable wrench (item 22, WP 0717 00)

Materials/Parts

Lockwashers (2) (item 356, WP 0718 00)
Lockwashers (6) (item 2, WP 0718 00)
Gaskets (2) (item 384, WP 0718 00)
Preformed packings (2) (item 311, WP 0718 00)
Gaskets (2) (item 383, WP 0718 00)
Self-locking nut (item 283, WP 0718 00)
Parts kit (item 423, WP 0718 00)

Equipment Conditions

Powerpack removed (WP 0188 00)
Engine oil cooler vent hoses removed (WP 0200 00)
For maintenance of engine oil cooler
Transmission oil cooler lines removed (WP 0345 00)
For maintenance of transmission oil cooler
Wiring harness 3W202 wire 530B disconnected from manifold heater fuel solenoid (WP 0300 00)
Air intake elbows removed (WP 0191 00)

Personnel Required

Two

NOTE

There is a left and a right side engine and transmission oil cooler. Both are replaced in the same manner. This task replaces only the right side engine and transmission oil cooler.

Perform Removal steps 1 through 9 and 15 and Installation steps 6 through 14 for maintenance of left or right engine oil cooler.

Perform Removal steps 10 through 15 and Installation steps 1 through 5 for maintenance of left or right transmission oil cooler.

ENGINE AND TRANSMISSION OIL COOLER REPLACEMENT - CONTINUED 0231 00

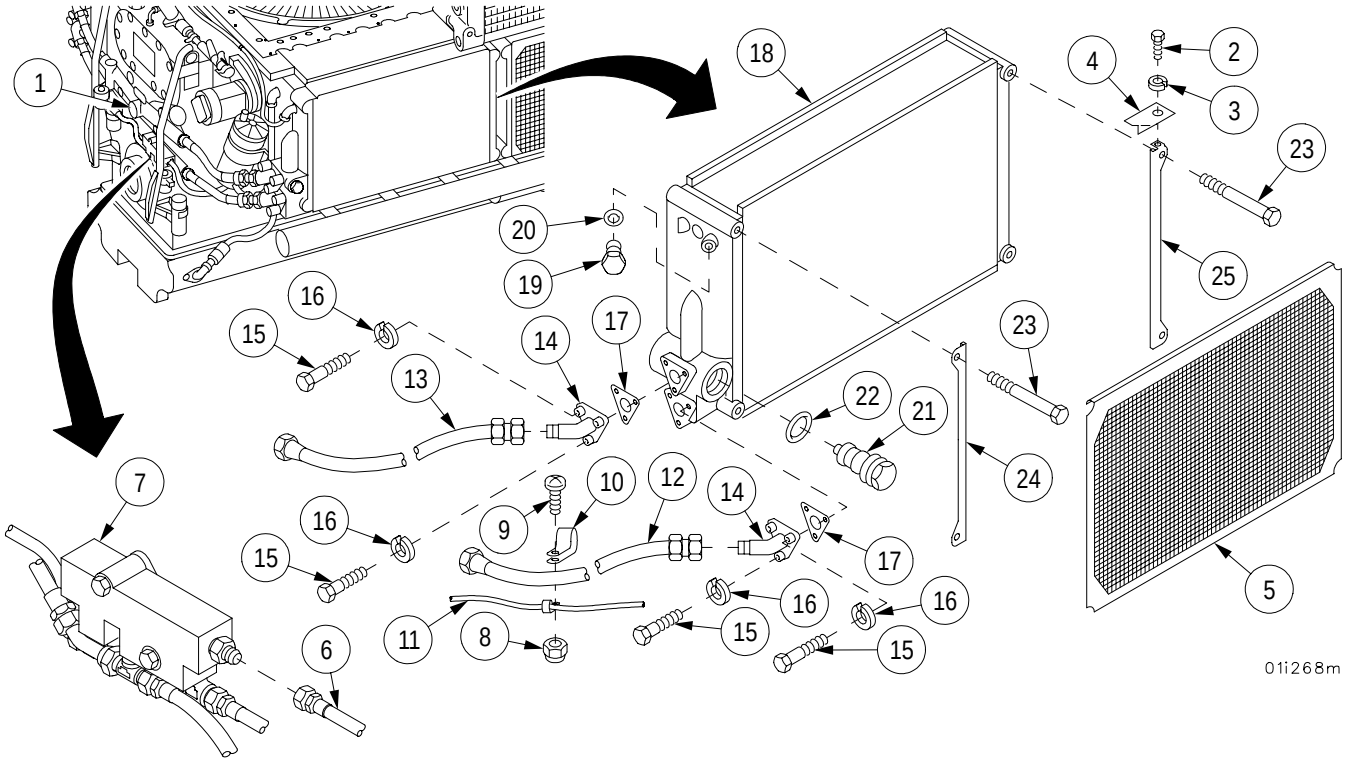
Removal

1. Loosen engine oil drain valve plug (1) five complete turns.
2. Remove screw (2), lockwasher (3), stop tab (4) and engine oil cooler screen (5) from engine. Discard lockwasher.

NOTE

Place container under hose connections to catch any oil still remaining in the oil cooler or hoses.

3. Remove fuel hose (6) from top of back-flow valve (7).
4. Remove self-locking nut (8), screw (9) and clamp (10) securing intake manifold heater hose (11) to hose (12). Discard self-locking nut.
5. Remove two hoses (12 and 13) from engine and two connectors (14).
6. Remove six screws (15), six lockwashers (16), two connectors (14) and two gaskets (17) from engine oil cooler (18). Discard lockwashers and gaskets.
7. Remove plug (19) and preformed packing (20) from engine oil cooler (18). Discard preformed packing.
8. Remove flow control thermostat (21) and spacer ring (22) from engine oil cooler (18). Discard spacer ring.
9. Remove four screws (23), two cooler screen frames (24 and 25) and engine oil cooler (18) from engine.



ENGINE AND TRANSMISSION OIL COOLER REPLACEMENT - CONTINUED 0231 00

Removal-Continued

NOTE

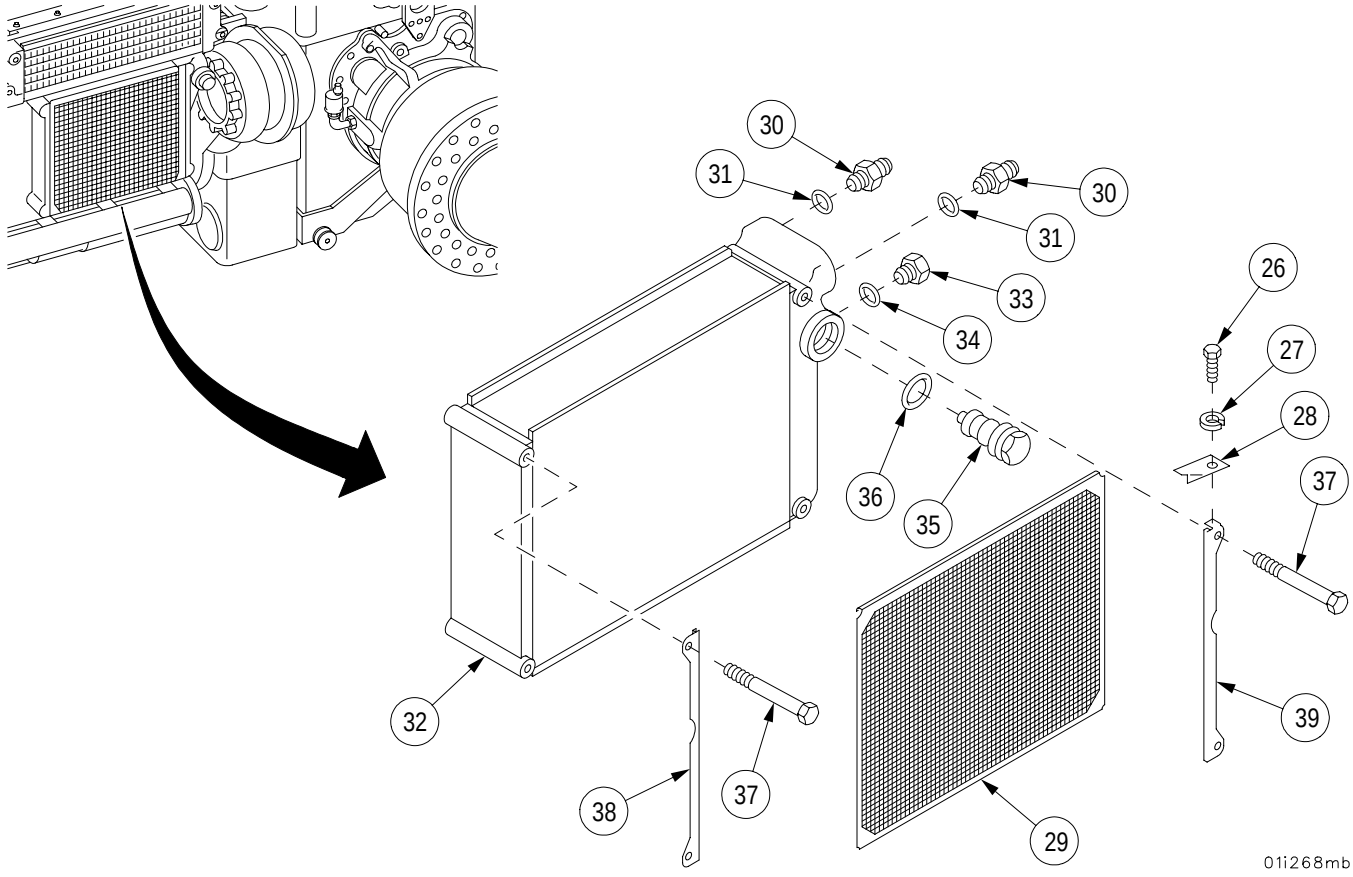
Transmission oil cooler contains residual oil.

10. Remove screw (26), lockwasher (27), stop tab (28) and transmission oil cooler screen (29) from engine. Discard lockwasher.

NOTE

Place container under hose connections to catch any oil still remaining in the oil cooler or hoses.

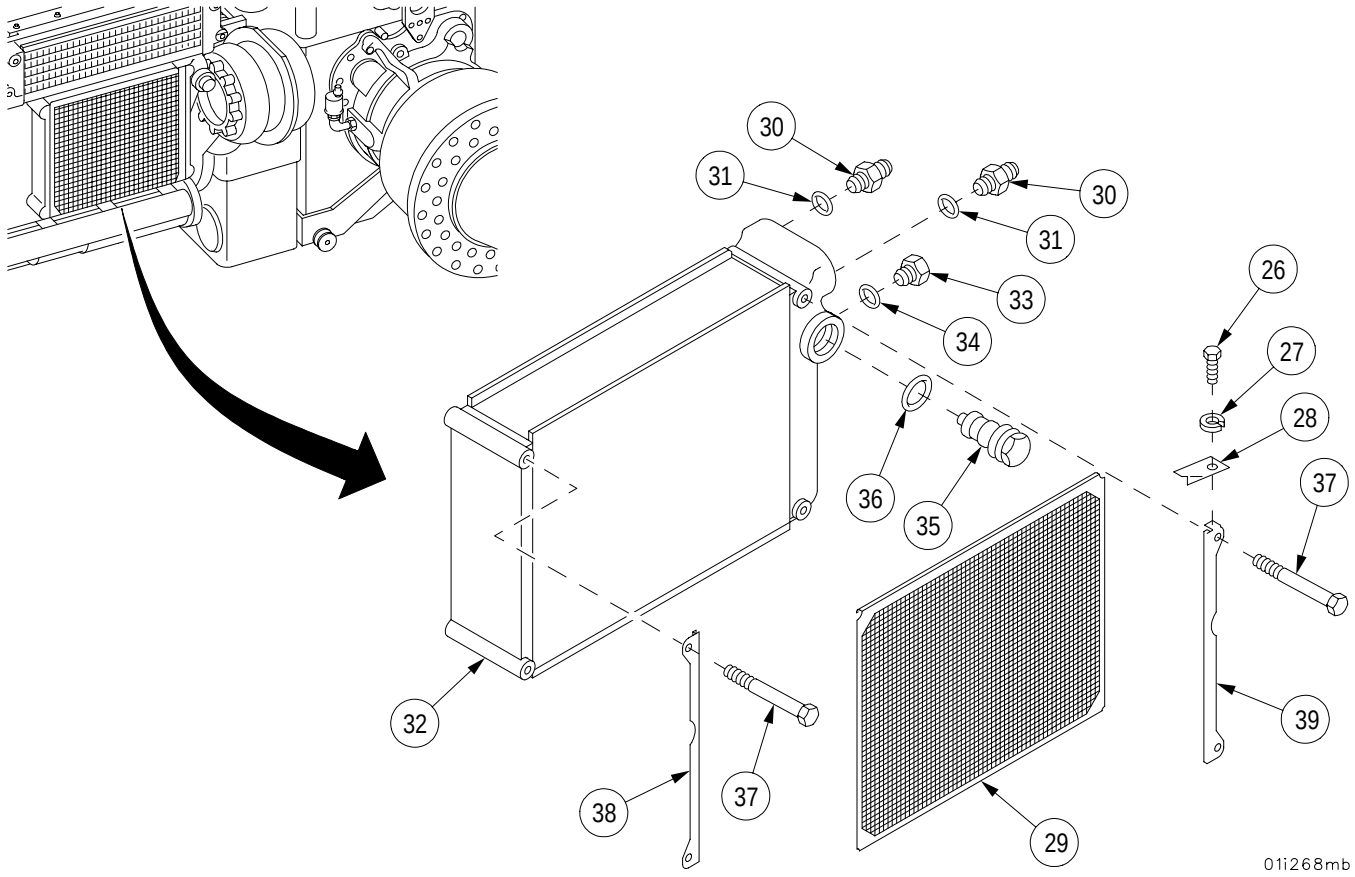
11. Remove two adapters (30) and two gaskets (31) from transmission oil cooler (32). Discard gaskets.
12. Remove plug (33) and preformed packing (34) from transmission oil cooler (32). Discard preformed packing.
13. Remove flow control thermostat (35) and spacer ring (36) from transmission oil cooler (32). Discard spacer ring.
14. Remove four screws (37), two cooler screen frames (38 and 39) and transmission oil cooler (32) from engine.
15. Inspect parts for damage and replace as required.



ENGINE AND TRANSMISSION OIL COOLER REPLACEMENT - CONTINUED 0231 00

Installation

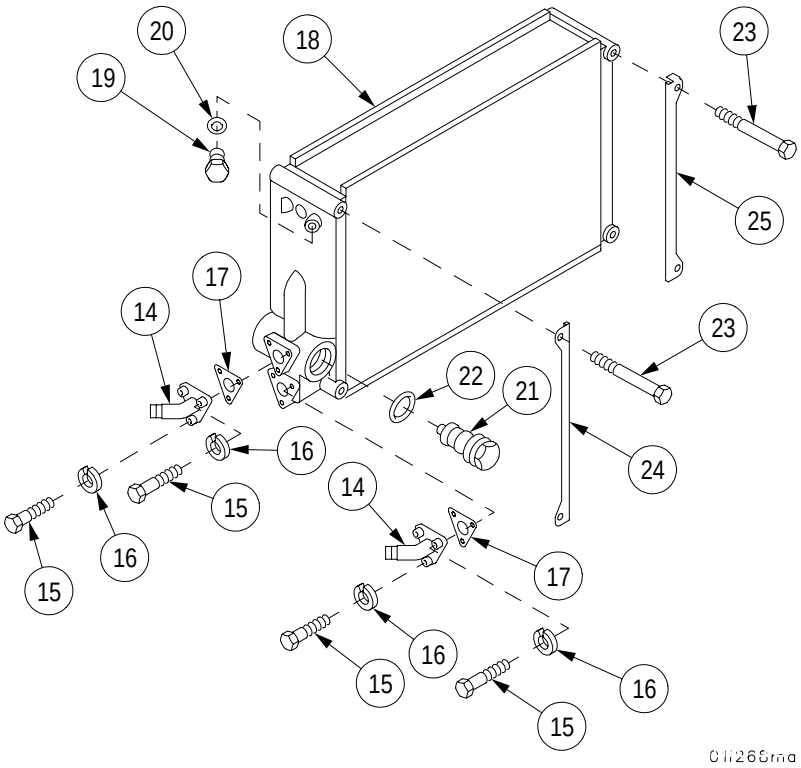
1. Install transmission oil cooler (32) and two cooler screen frames (38 and 39) on engine with four screws (37).
2. Install flow control thermostat (35) and new spacer ring (36) in transmission oil cooler (32).
3. Install plug (33) and new preformed packing (34) in transmission oil cooler (32).
4. Install two adapters (30) and two new gaskets (31) in transmission oil cooler (32).
5. Install transmission oil cooler screen (29) on engine with screw (26), new lockwasher (27) and stop tab (28).



ENGINE AND TRANSMISSION OIL COOLER REPLACEMENT - CONTINUED 0231 00

Installation-Continued

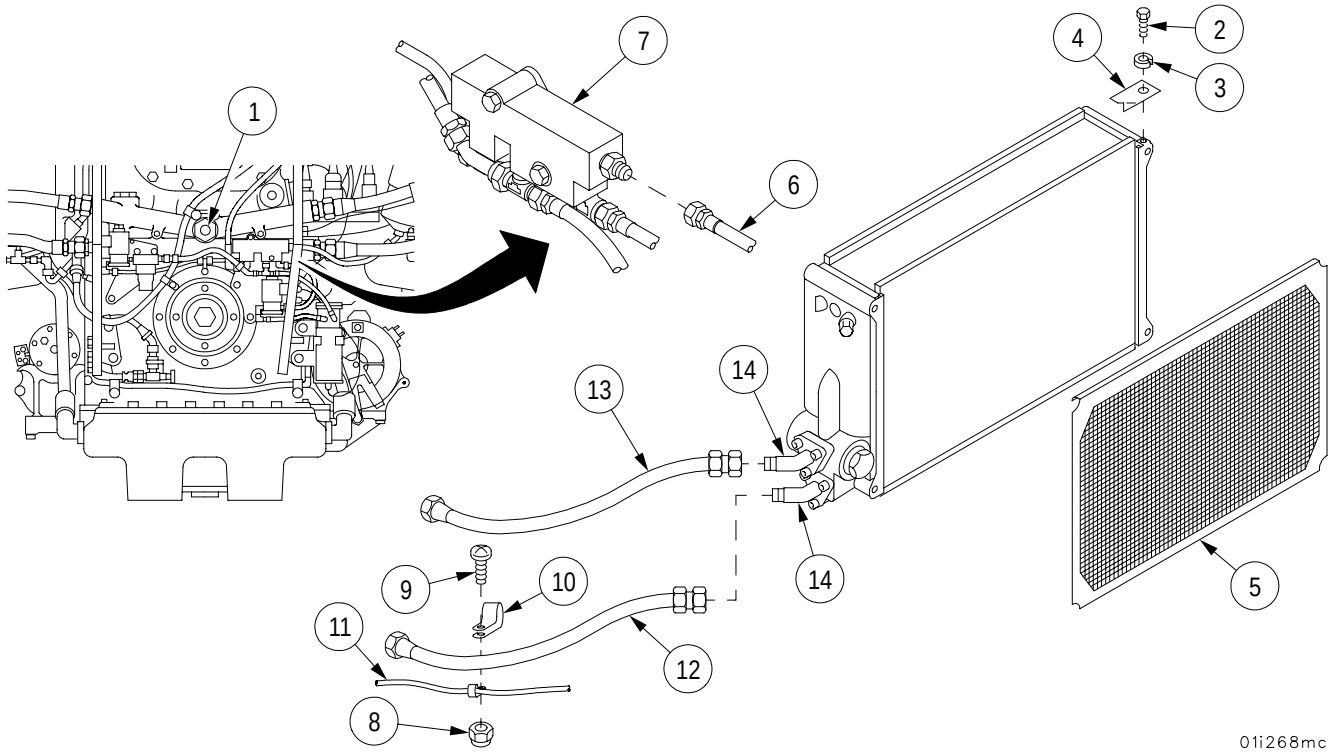
6. Install engine oil cooler (18) and two cooler screen frames (24 and 25) on engine with four screws (23).
7. Install flow control thermostat (21) and new spacer ring (22) on engine oil cooler (18).
8. Install plug (19) and new preformed packing (20) on engine oil cooler (18).
9. Install two connectors (14) and two new gaskets (17) on engine oil cooler (18) with six screws (15) and six new lockwashers (16).



ENGINE AND TRANSMISSION OIL COOLER REPLACEMENT - CONTINUED 0231 00

Installation-Continued

10. Install two hoses (12 and 13) on two connectors (14) and engine.
11. Secure intake manifold heater hose (11) to hose (12) with screw (9), clamp (10) and new self-locking nut (8).
12. Install fuel hose (6) on top of back-flow valve (7).
13. Install engine oil cooler screen (5) on engine with screw (2), new lockwasher (3) and stop tab (4).
14. Close engine oil drain valve plug (1).



NOTE

FOLLOW-ON MAINTENANCE:
Connect wiring harness 3W202 wire 530B to manifold heater fuel solenoid (WP 0300 00)
Install engine oil cooler vent hoses, if removed (WP 0200 00)
Install air intake elbows (WP 0191 00)
Install powerpack (WP 0188 00)
Install transmission oil cooler lines, if removed (WP 0345 00)
Fill transmission with oil, if drained (WP 0187 00)
Fill engine with oil, if drained (WP 0187 00)

END OF TASK

ENGINE TOP HOUSING ASSEMBLY AND MOUNTING BRACKET REPLACEMENT

0232 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

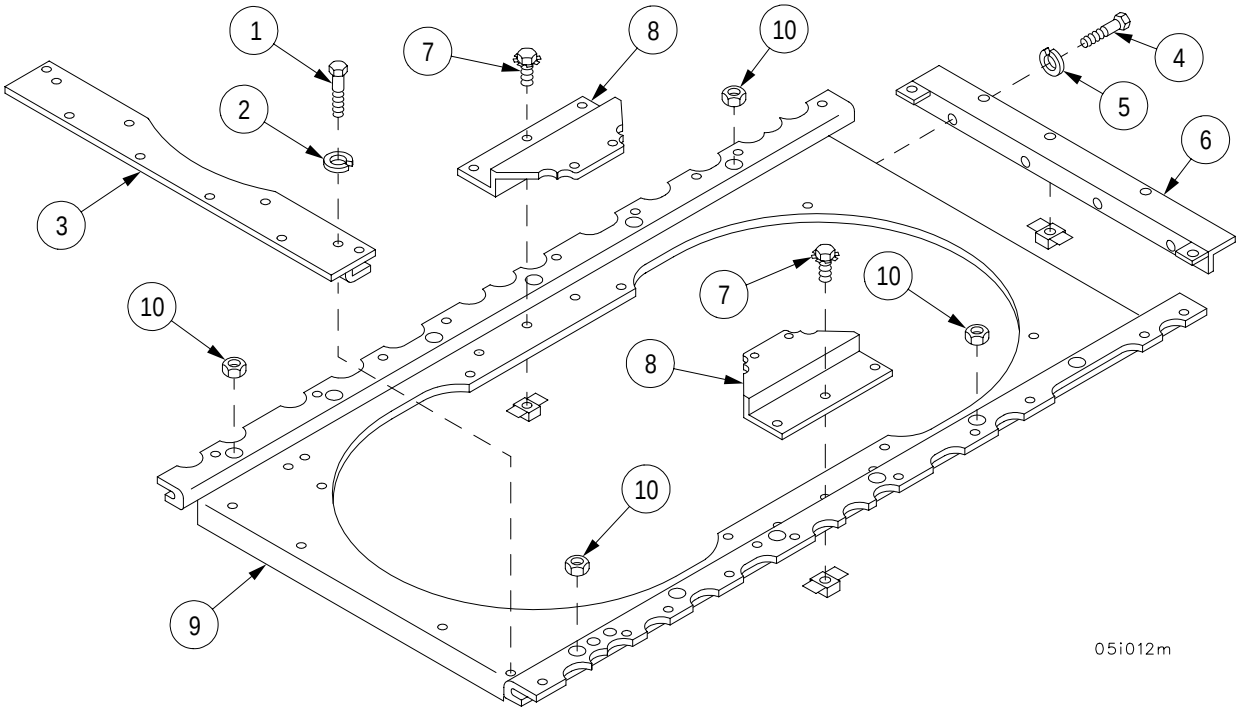
Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (8) (item 2, WP 0718 00)
Assembled-washer screws (10) (item 419, WP 0718 00)
Self-locking nuts (12) (item 248, WP 0718 00)

Equipment Conditions
Engine deck assembly removed (WP 0417 00)
Cooling fans and housings removed (WP 0235 00)
Seals removed (WP 0190 00)
Hydraulic oil coolers removed (WP 0230 00)

Removal

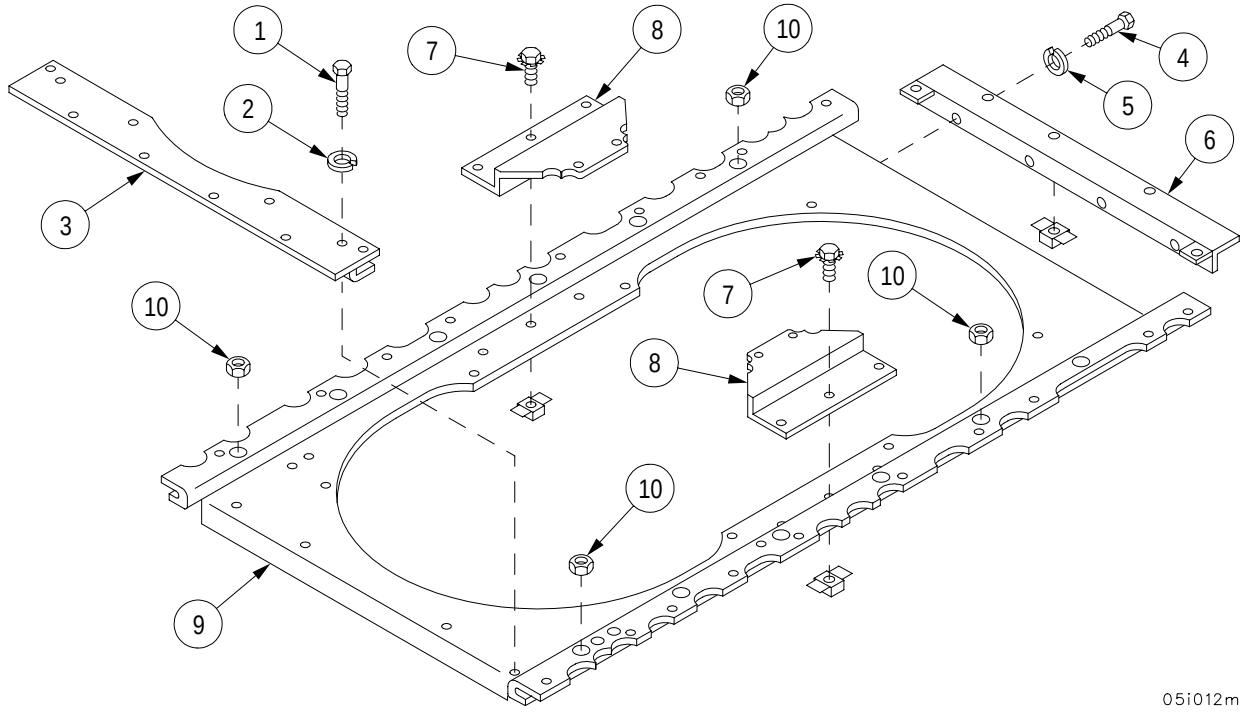
1. Remove four screws (1), four lockwashers (2) and bracket assembly (3) from engine. Discard lockwashers.
2. Remove four screws (4), four lockwashers (5) and lever link bracket (6) from engine. Discard lockwashers.
3. Remove 10 assembled-washer screws (7) and two access covers (8) from housing assembly (9). Discard assembled-washer screws.
4. Remove 12 self-locking nuts (10) and housing assembly (9) from engine. Discard self-locking nuts.
5. Inspect parts for damage and replace as required.



ENGINE TOP HOUSING ASSEMBLY AND MOUNTING BRACKET REPLACEMENT- CONTINUED 0232 00

Installation

1. Install housing assembly (9) on engine with 12 new self-locking nuts (10).
2. Install two access covers (8) to housing assembly (9) with 10 new assembled-washer screws (7).
3. Install lever link bracket (6) on engine with four screws (4) and four new lockwashers (5).
4. Install bracket assembly (3) on engine with four screws (1) and four new lockwashers (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install hydraulic oil coolers (WP 0230 00)
Install seals (WP 0190 00)
Install cooling fans and housings (WP 0235 00)
Install engine deck assembly (WP 0417 00)

END OF TASK

ENGINE AND TRANSMISSION OIL COOLER ACCESS COVERS AND FRAMES REPLACEMENT

0233 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools
General mechanic's tool kit (item 1, WP 0717 00)
Welding shop trailer mounted (item 71, WP 0717 00)

Materials/Parts
Self-locking nuts (4) (item 248, WP 0718 00)
Self-locking nuts (4) (item 251, WP 0718 00)
Self-locking nuts (36) (item 207, WP 0718 00)
Lockwashers (2) (item 9, WP 0718 00)
Lockwashers (2) (item 10, WP 0718 00)
Assembled-washer screws (20) (item 424, WP 0718 00)
Assembled-washer screws (10) (item 421, WP 0718 00)
Safety goggles (item 93, WP 0716 00)

Equipment Conditions
Hydraulic oil cooler removed (WP 0230 00)
Baffle screens removed (WP 0234 00)

References
TC 9-237

NOTE

Perform only those steps necessary to replace the defective parts. Use legend reference guide only.

Removal

1. Remove attaching hardware securing covers, brackets and frames to engine as shown in legend and illustration. Discard self-locking nuts, assembled-washer screws and lockwashers.
2. Remove covers, brackets and frames in accordance with the following legend and illustration.
3. Plate nuts (5 or 32) may be replaced by bending ears (30 or 33) open and replacing plate nuts (5 or 32).
4. Inspect parts for damage and replace as required.

Installation

1. Install covers, brackets and frames in accordance with the following legend and illustration.
2. Secure covers, brackets and frames to engine as shown in legend and illustration with attaching hardware, new self-locking nuts, new assembled-washer screws and new lockwashers.

WARNING

Unsafe welding practices can cause serious injury from fire, explosions, or harmful agents. Allow only authorized personnel to weld or cut metals. Follow safety precautions in TC 9-237. Protective clothing and goggles must be worn, adequate protective equipment used, a suitable fire extinguisher kept nearby and requirements of TC 9-237 strictly followed.

3. If ears (30 or 33) are damaged, plate nuts (5 or 32) must be chiseled from adapter assembly (4) or frame (9) and a new plate nut spot welded in place.

NOTE

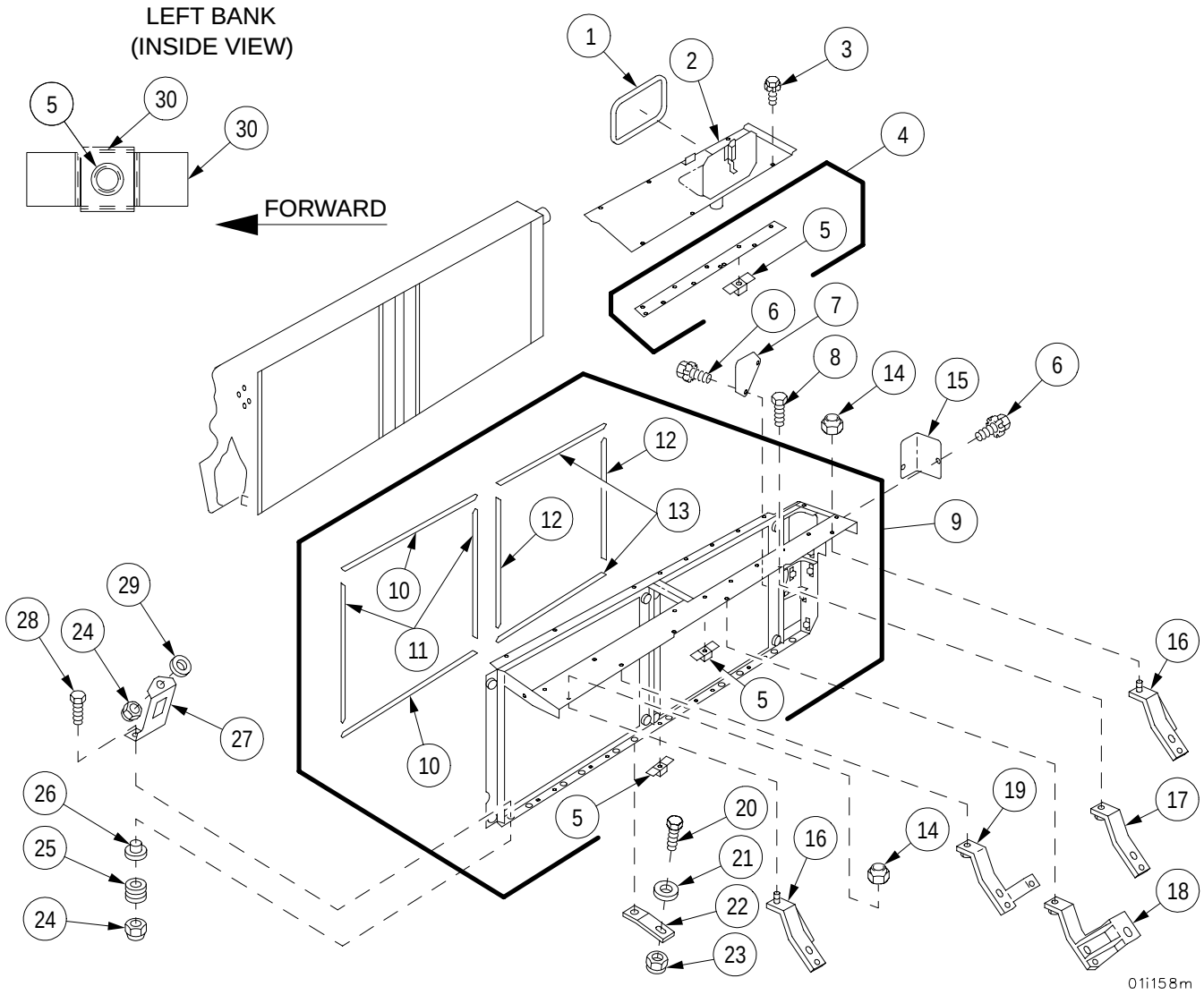
FOLLOW-ON MAINTENANCE:
Install baffle screens (WP 0234 00)
Install hydraulic oil cooler (WP 0230 00)

ENGINE AND TRANSMISSION OIL COOLER ACCESS COVERS AND FRAMES REPLACEMENT - CONTINUED

0233 00

LEGEND:

1. Gasket
2. Access cover
3. Assembled-washer screws (13)
4. Adapter assembly
5. Plate nuts (5)
6. Assembled-washer screws (4)
7. Access cover
8. Screws (4)
9. Frame
10. Seals (2)
11. Seals (2)
12 Seals (2)
13. Seals (2)
14 Self-locking nuts (2)
15. Access cover
16. Fan brackets (2)
17. Fan brackets (2)
18. Fan bracket
19. Fan bracket (WP 0204 00)
20. Screws (2)
21 Flat washers (2)
22. Bracket (2)
23. Self-locking nuts (2)
24. Self-locking nuts (18)
25. Grommets (12)
26. Sleeve spacers (12)
27. Supports (6)
28. Screws (12)
29. Flat washers (6)

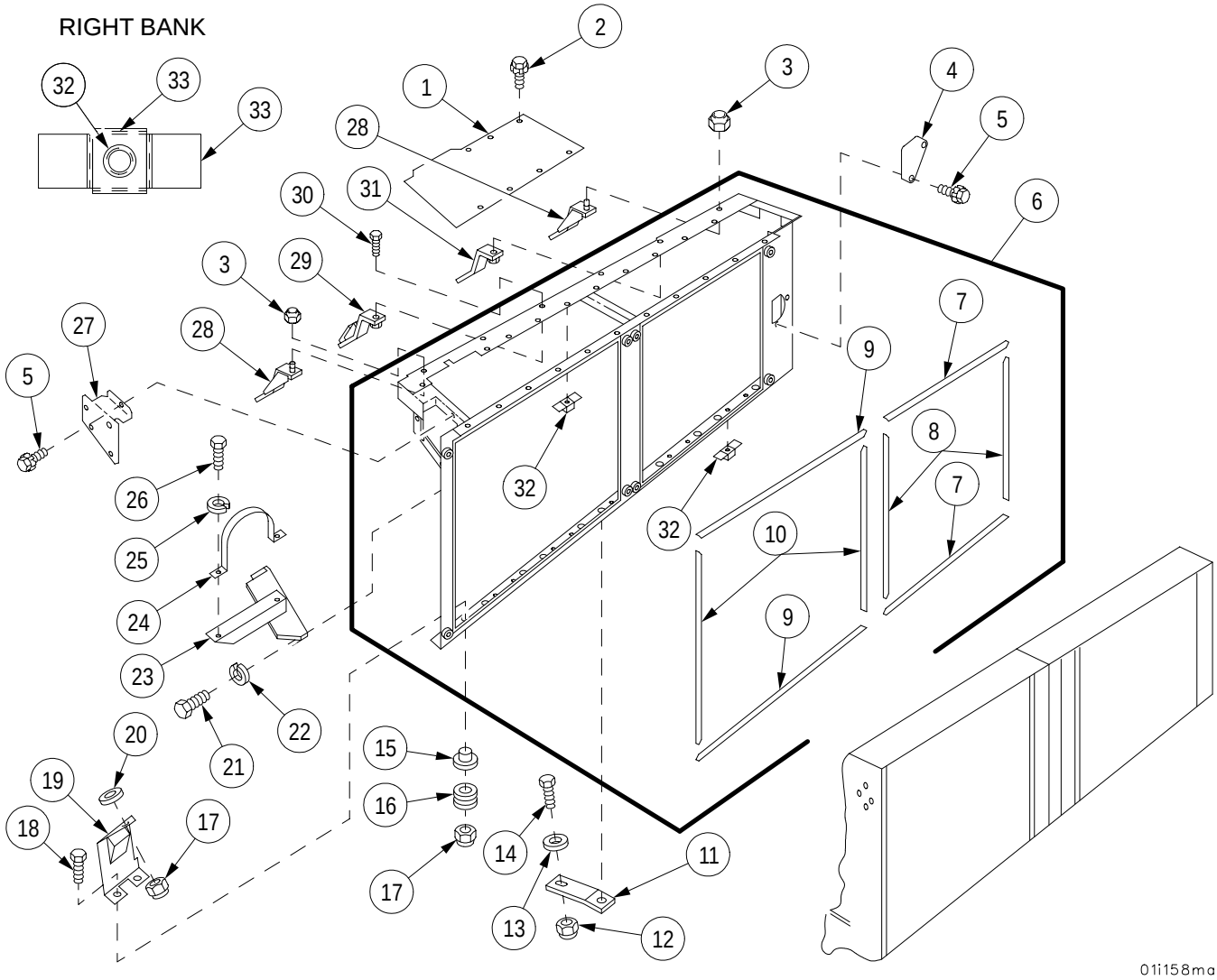


ENGINE AND TRANSMISSION OIL COOLER ACCESS COVERS AND FRAMES REPLACEMENT - CONTINUED

0233 00

LEGEND:

1. Access cover
2. Assembled-washer screws (7)
3. Self-locking nuts (2)
4. Access cover
5. Assembled-washer screws (6)
6. Frame
7. Seals (2)
8. Seals (2)
9. Seals (2)
10. Seals (2)
11. Brackets (2)
12. Self-locking nuts (2)
13. Flat washers (2)
14. Screws (2)
15. Sleeve spacers (12)
16. Grommets (12)
17. Self-locking nuts (18)
18. Screws (12)
19. Supports (6)
20. Flat washers (6)
21. Screws (2)
22. Lockwashers (2)
23. Bracket
24. Clamp
25. Lockwashers (2)
26. Screws (2)
27. Access cover
28. Fan brackets (2)
29. Fan brackets (2)
30. Screws (4)
31. Fan brackets (3)
32. Plate nuts (5)



END OF TASK

BAFFLE SCREEN REPLACEMENT 0234 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Assembled-washer screws (20) (item 420, WP 0718 00)

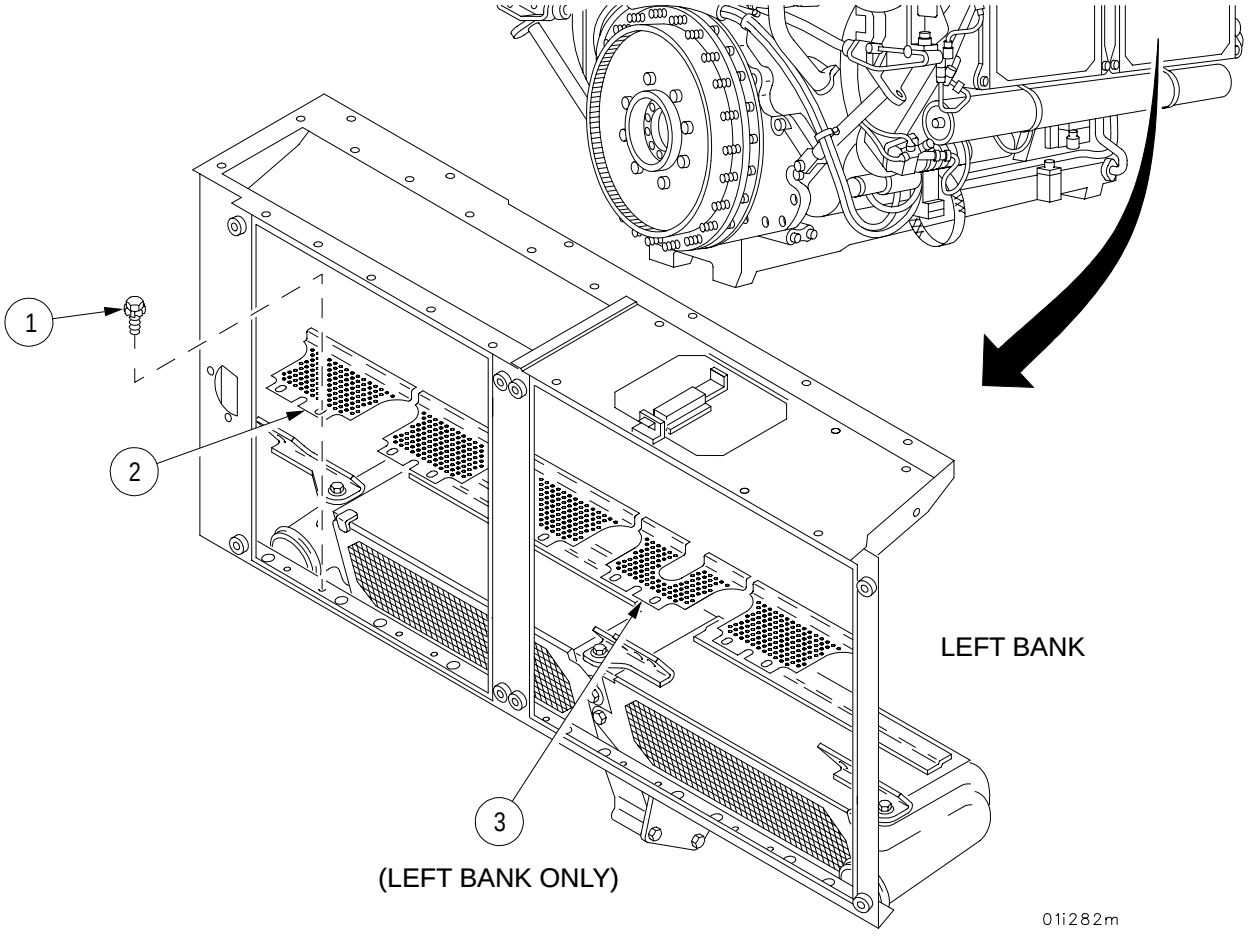
Equipment Conditions
Engine and transmission oil coolers removed (WP 0231 00)

NOTE

Left and right baffle screens are replaced in the same manner. This task replaces the left bank only.

Removal

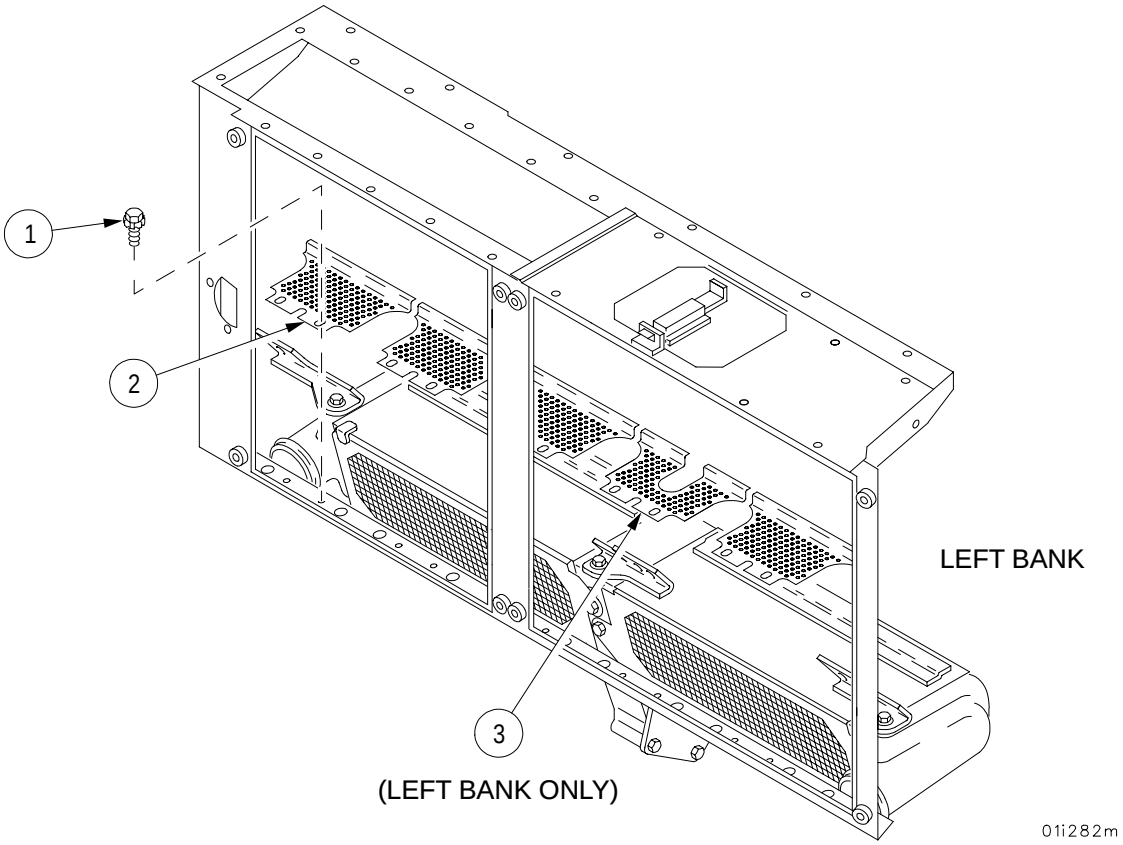
1. Remove 20 assembled-washer screws (1), nine baffle screens (2) and baffle screen (3). Discard assembled-washer screws.
2. Inspect parts for damage and replace as required.



BAFFLE SCREEN REPLACEMENT - CONTINUED 0234 00

Installation

Install baffle screen (3) and nine baffle screens (2) with 20 new assembled-washer screws (1).



NOTE

FOLLOW-ON MAINTENANCE:
Install engine and transmission oil coolers (WP 0231 00)

END OF TASK

ENGINE COOLING FANS AND HOUSINGS REPLACEMENT 0235 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Torque wrench (item 2, WP 0717 00)
Fan rotor gauge (item 114, WP 0717 00)

Materials/Parts
Lockwashers (6) (item 2, WP 0718 00)
Cotter pin (item 30, WP 0718 00)
Cotter pins (16) (item 15, WP 0718 00)

Materials/Parts - Continued
Gasket (item 358, WP 0718 00)
Seal (item 359, WP 0718 00)
Assembled-washer screws (10) (item 419, WP 0718 00)

Equipment Conditions
Engine deck assembly removed (WP 0417 00)

NOTE

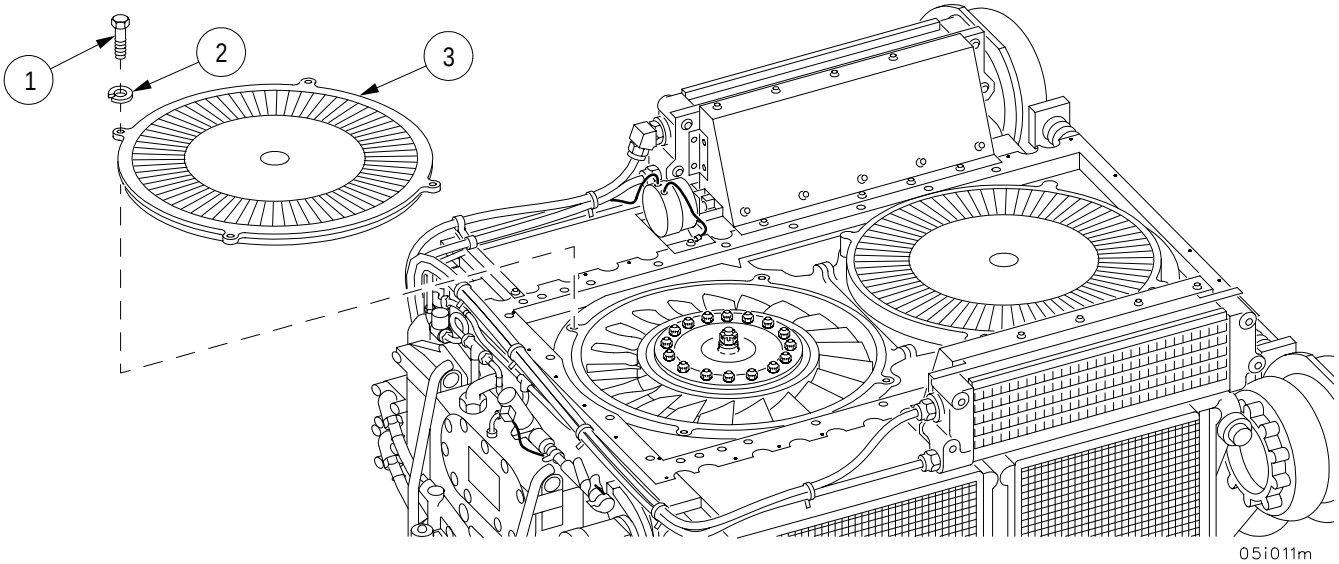
There are two engine cooling fans and centrifugal housings on the engine. Both are replaced in the same manner. One of the cooling fans' centrifugal housings is mounted to the radiator fan shroud, the other to the mounting bracket. The radiator fan shroud and mounting bracket are replaced in the same manner. This task replaces one cooling fan, one centrifugal housing and the radiator fan shroud.

Removal

NOTE

Three different length screws secure the centrifugal housing to the radiator fan shroud or mounting bracket. Mark each screw during removal and note the location to aid in proper placement during installation.

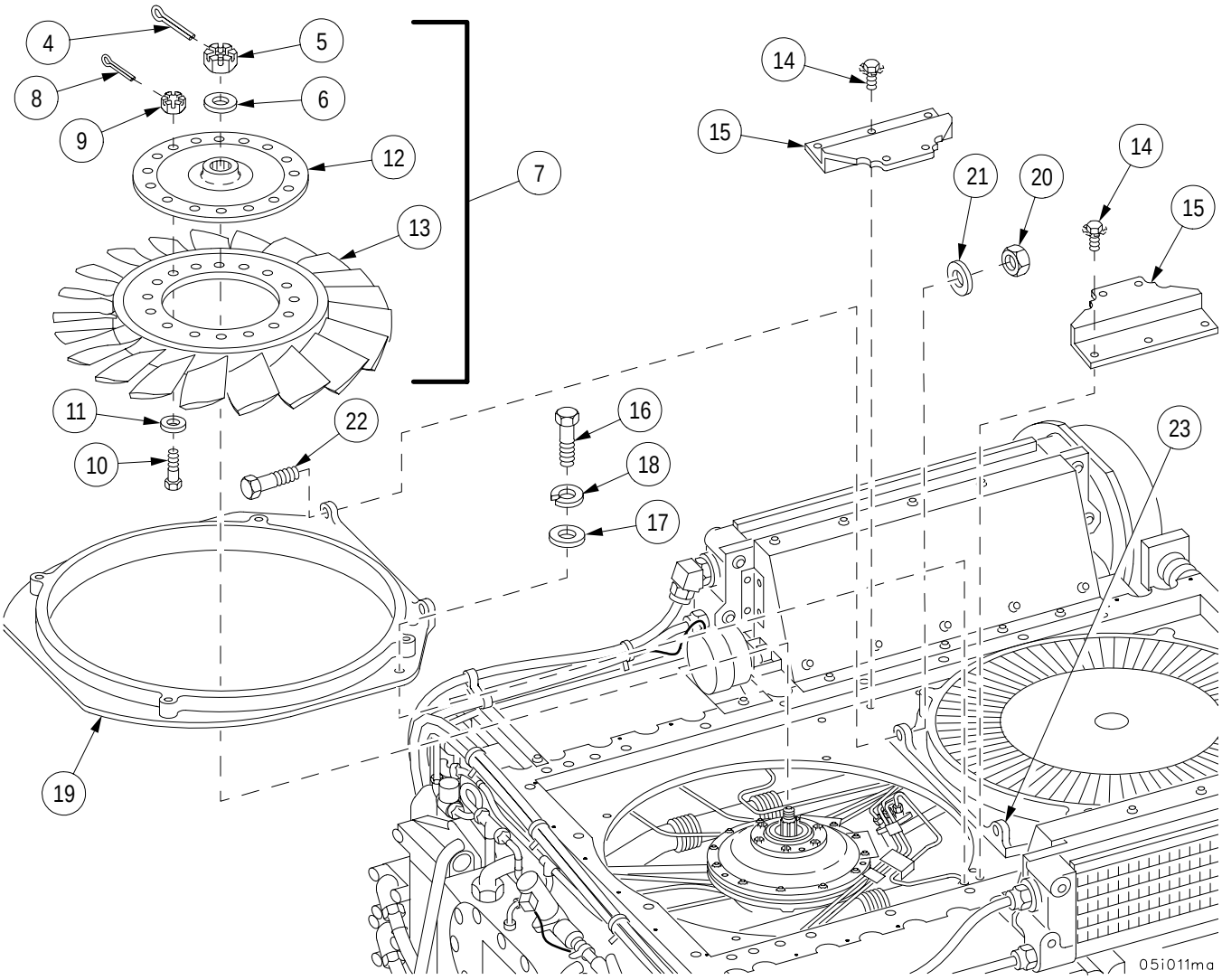
1. Remove four screws (1), four lockwashers (2) and centrifugal housing (3) from engine. Discard lockwashers.



ENGINE COOLING FANS AND HOUSINGS REPLACEMENT - CONTINUED 0235 00

Removal-Continued

2. Remove cotter pin (4), slotted nut (5), flat washer (6) and axial fan assembly (7) from engine. Discard cotter pin.
3. Remove 16 cotter pins (8), 16 slotted nuts (9), 16 screws (10), 16 flat washers (11) and engine cooling adapter (12) from axial fan (13). Discard cotter pins.
4. Remove 10 assembled-washer screws (14) and two access plates (15). Discard assembled-washer screws.
5. Remove two screws (16), two flat washers (17) and two lockwashers (18) from radiator fan shroud (19). Discard lockwashers.
6. Remove two nuts (20), two flat washers (21), two screws (22) and radiator fan shroud (19) from mounting bracket (23).



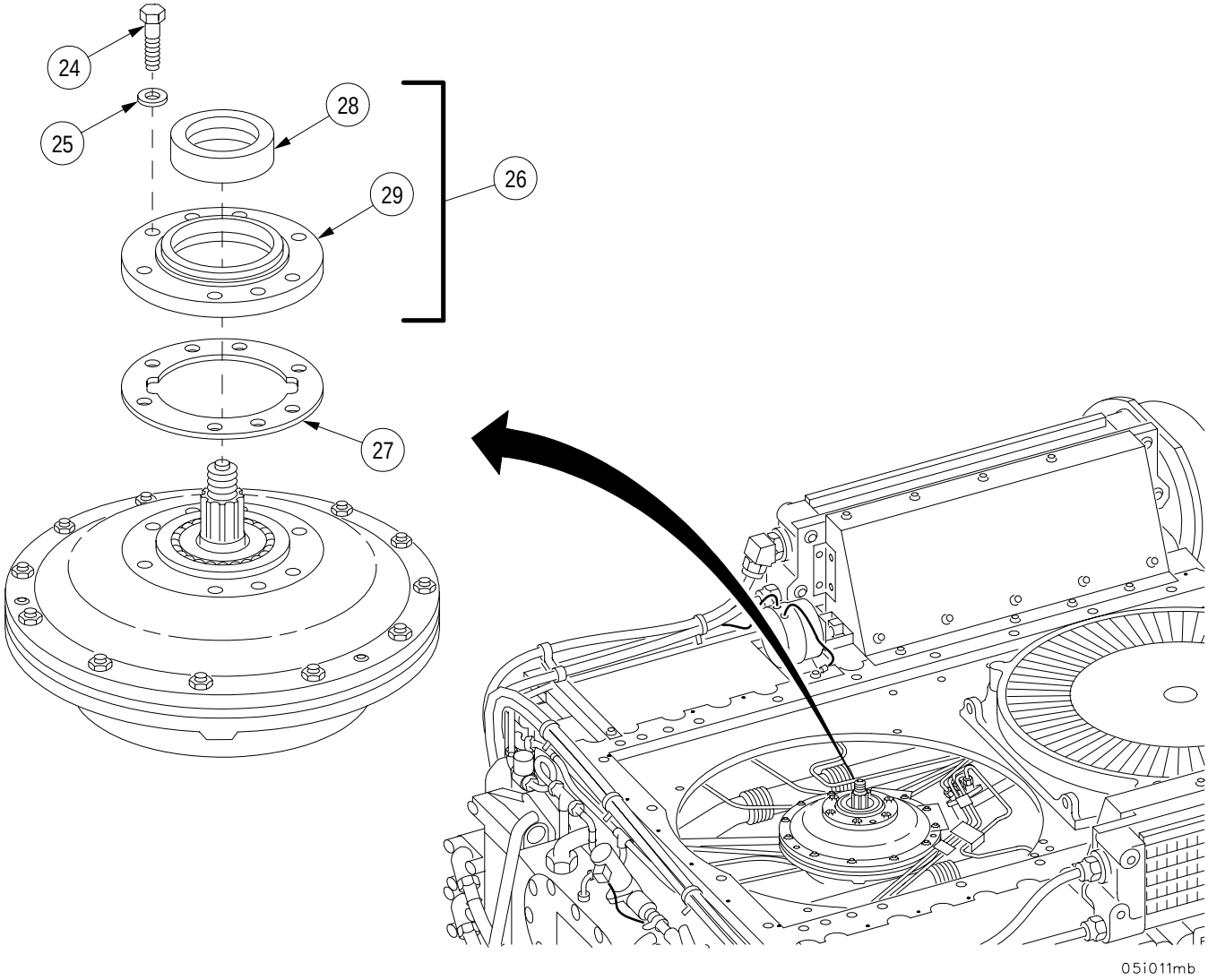
ENGINE COOLING FANS AND HOUSINGS REPLACEMENT - CONTINUED 0235 00

Removal-Continued

7. Remove six screws (24), six flat washers (25), seal retaining plate (26) and gasket (27) from engine. Discard gasket.
8. Remove seal (28) from housing (29). Discard seal.
9. Inspect parts for damage and replace as required.

Installation

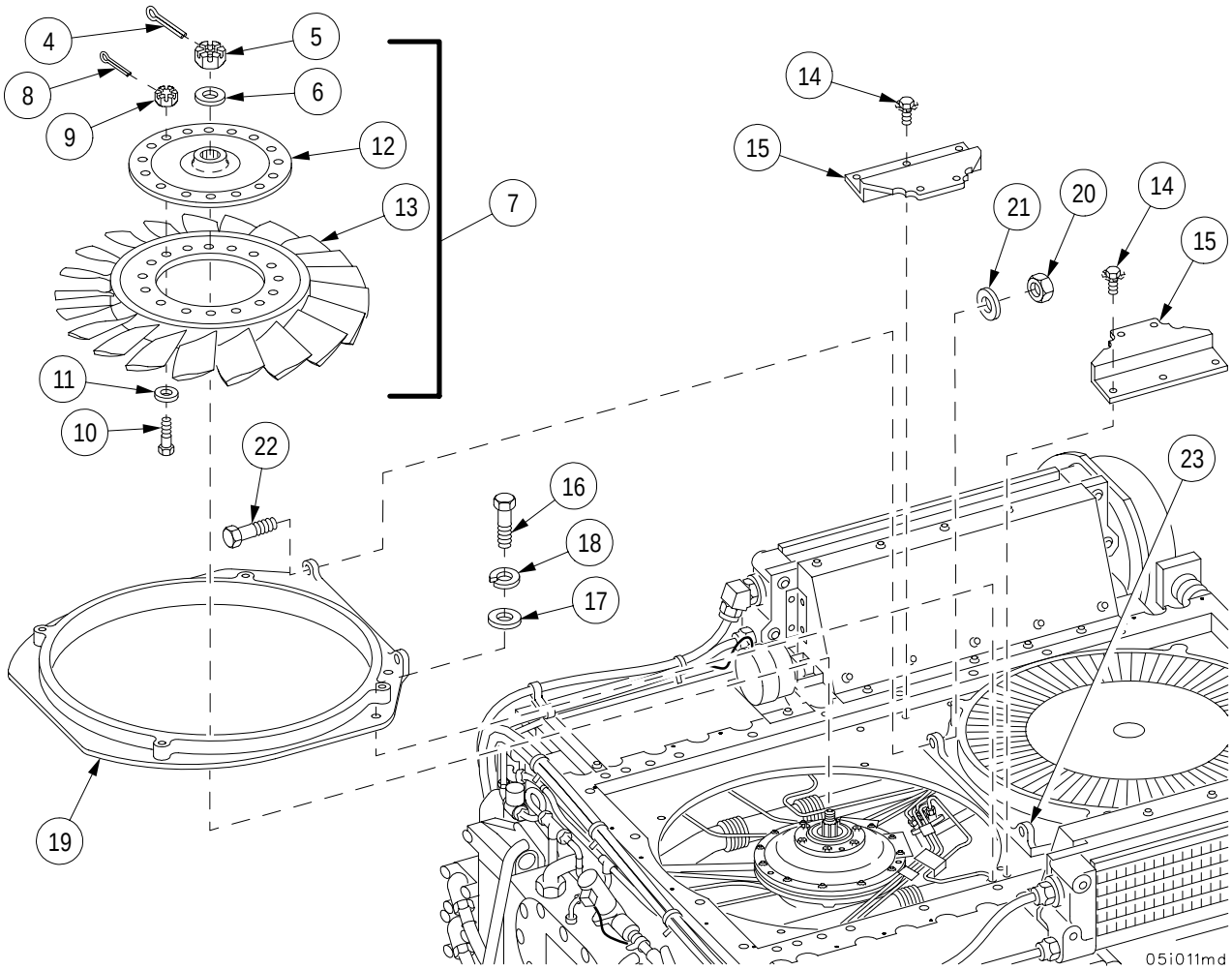
1. Install new seal (28) in housing (29).
2. Install seal retaining plate (26) and new gasket (27) on engine with six screws (24) and six flat washers (25).



ENGINE COOLING FANS AND HOUSINGS REPLACEMENT - CONTINUED 0235 00

Installation-Continued

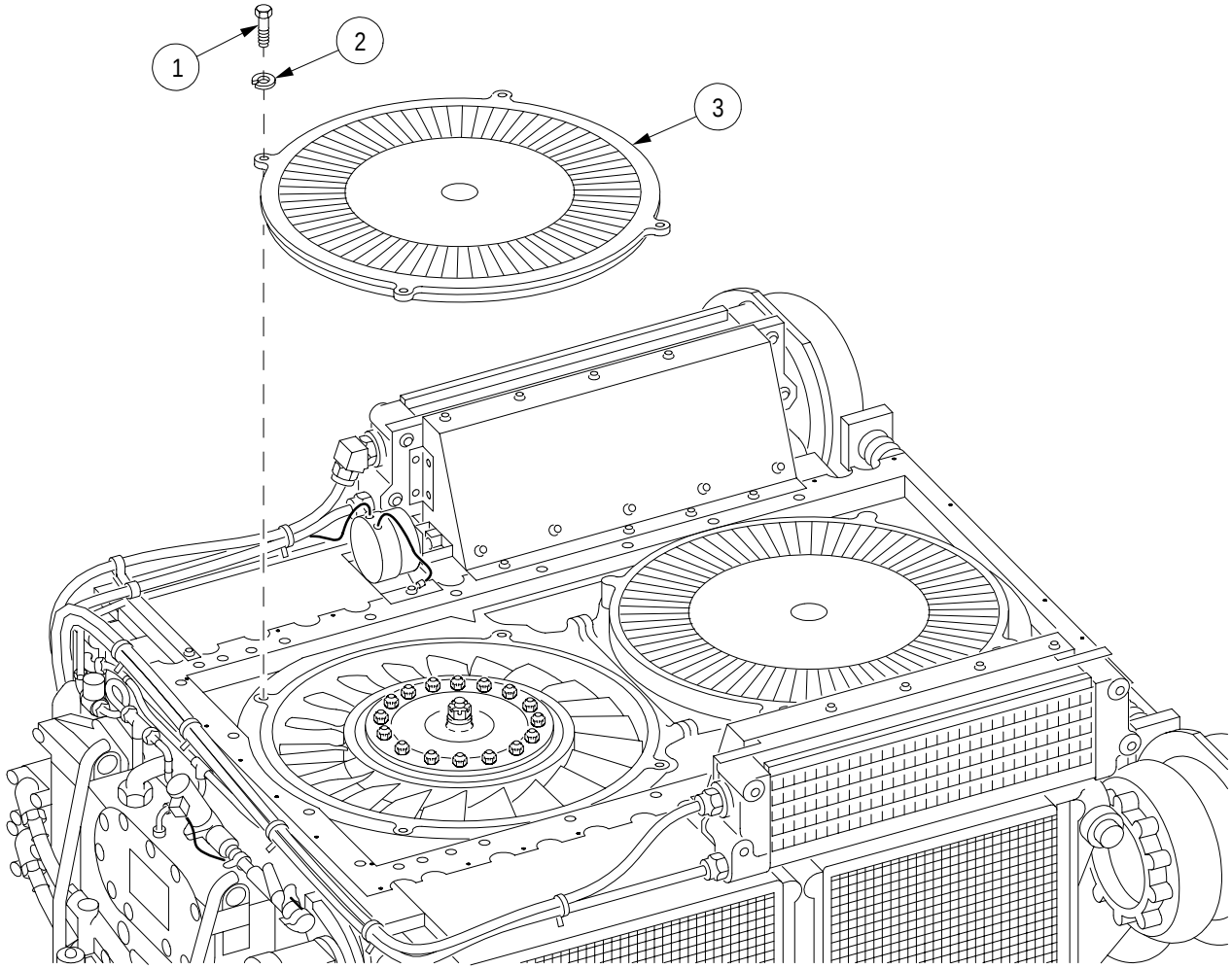
3. Install radiator fan shroud (19) to mounting bracket (23) with two screws (22), two flat washers (21) and two nuts (20). Do not tighten screws and nuts.
4. Install two screws (16), two flat washers (17) and two new lockwashers (18) in radiator fan shroud (19). Do not tighten screws.
5. Install engine cooling adapter (12) on axial fan (13) with 16 screws (10), 16 flat washers (11), 16 slotted nuts (9) and 16 new cotter pins (8).
6. Install axial fan assembly (7) on engine with flat washer (6) and slotted nut (5).
7. Torque nut (5) to 117-121 lb-ft. (158.6-164 N•m) and install new cotter pin (4).
8. Check clearance between end of axial fan (13) blade-end and rim of radiator fan shroud (19) housing with fan rotor gauge at four equal positions. If clearance is not established, shift radiator fan shroud housing (19) as necessary until clearance is obtained. Tighten screws (16 and 22) and nuts (20).
9. Install two access plates (15) on radiator fan shroud (19) with 10 new assembled-washer screws (14).



ENGINE COOLING FANS AND HOUSINGS REPLACEMENT - CONTINUED 0235 00

Installation-Continued

10. Install centrifugal housing (3) on engine with four screws (1) and four new lockwashers (2).



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NOTE

FOLLOW-ON MAINTENANCE:
Install engine deck assembly (WP 0417 00)

END OF TASK

ENGINE GENERATOR OIL COOLING SYSTEM LINES AND FITTINGS REPLACEMENT 0236 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Suitable container

Materials/Parts
Preformed packing (item 41, WP 0718 00)
Marker tags (item 49, WP 0716 00)
Tiedown straps (2) (item 382, WP 0718 00)

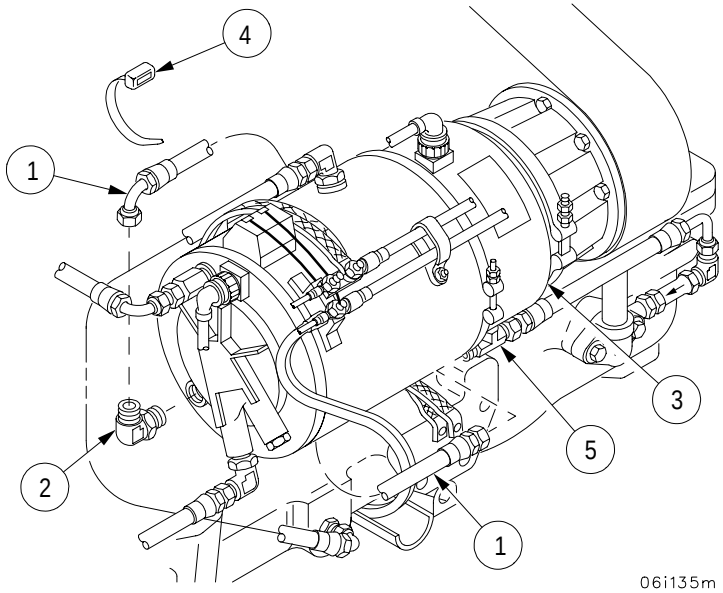
Equipment Conditions
Powerpack removed (WP 0188 00)

Removal

NOTE

Tag all lines and fittings prior to removal to aid in installation.

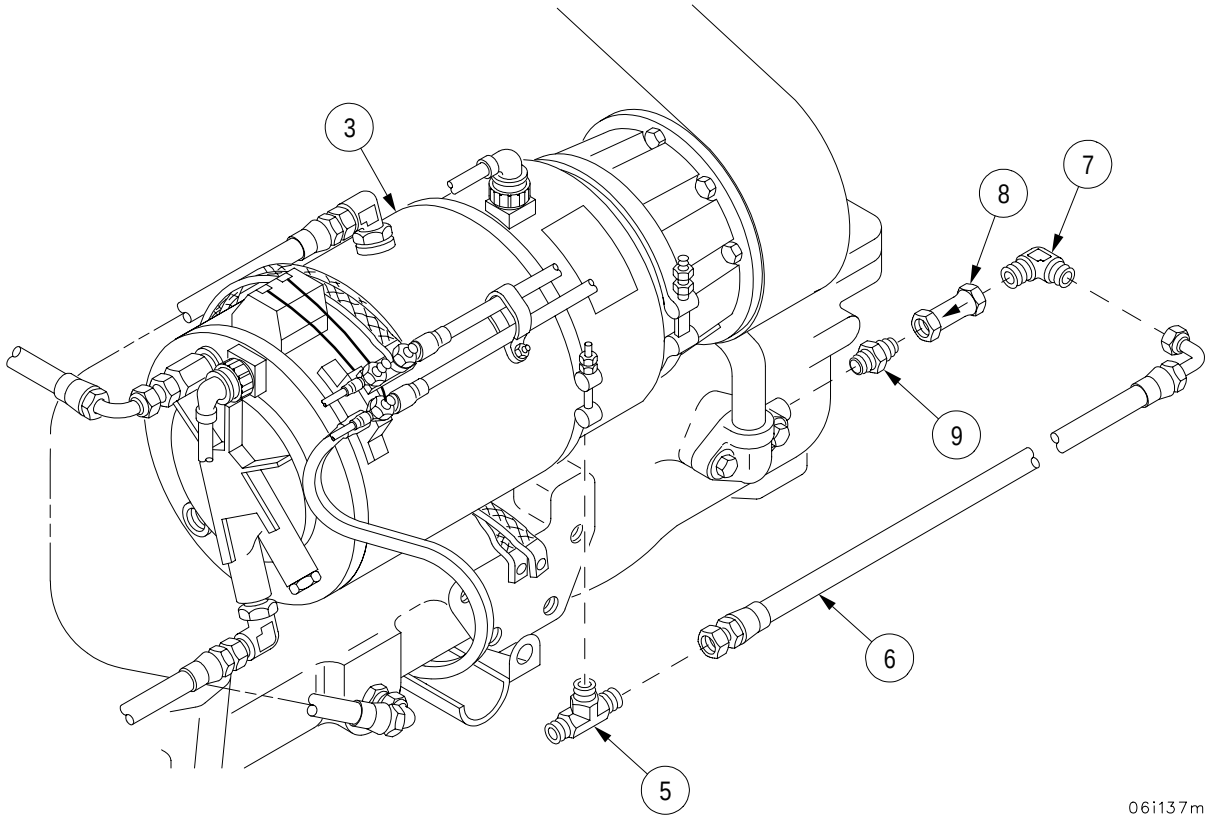
1. Remove hose (1) from elbow (2). Allow hose to drain into suitable container.
2. Remove elbow (2) from engine generator (3).
3. Remove two tiedown straps (4) from hose (1). Discard tiedown straps.
4. Remove hose (1) from tee connector (5).



ENGINE GENERATOR OIL COOLING SYSTEM LINES AND FITTINGS REPLACEMENT - CONTINUED 0236 00

Removal-Continued

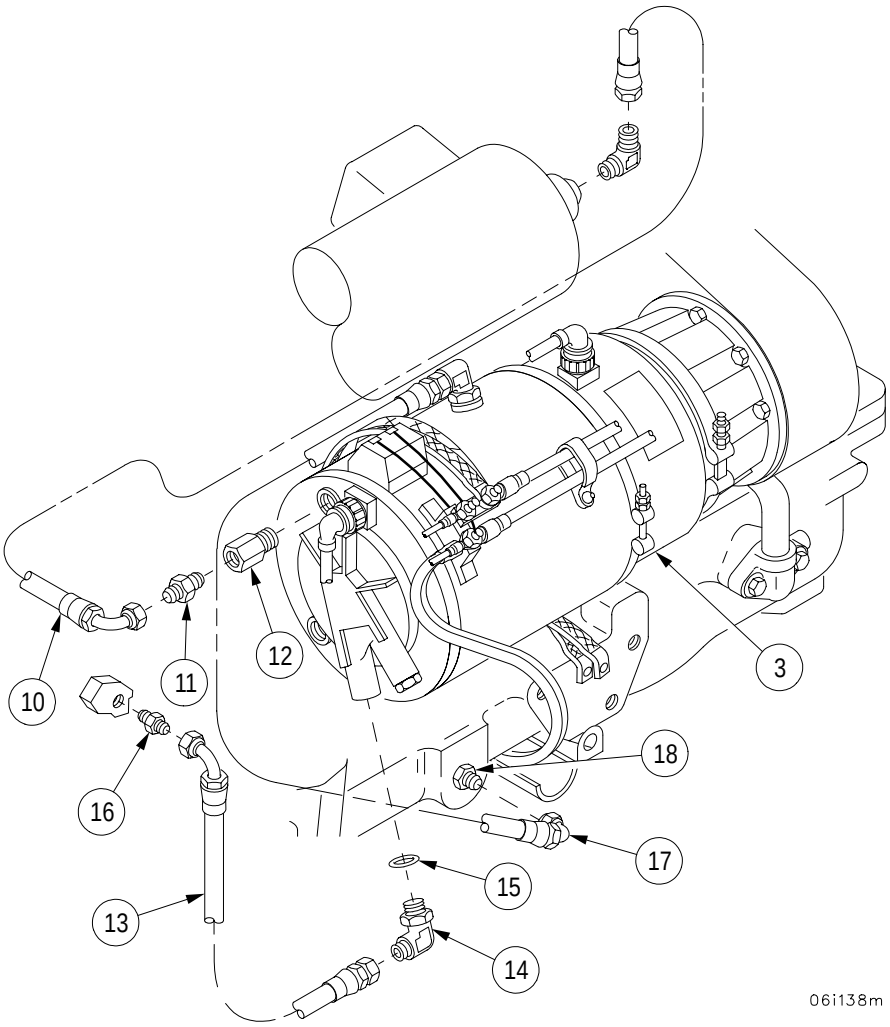
5. Remove hose (6) from tee connector (5). Allow hose to drain into suitable container.
6. Remove tee connector (5) from bottom of engine generator (3).
7. Remove hose (6) from elbow (7).
8. Remove elbow (7) from check valve (8).
9. Remove check valve (8) from adapter (9).
10. Remove adapter (9) from engine.



ENGINE GENERATOR OIL COOLING SYSTEM LINES AND FITTINGS REPLACEMENT - CONTINUED 0236 00

Removal-Continued

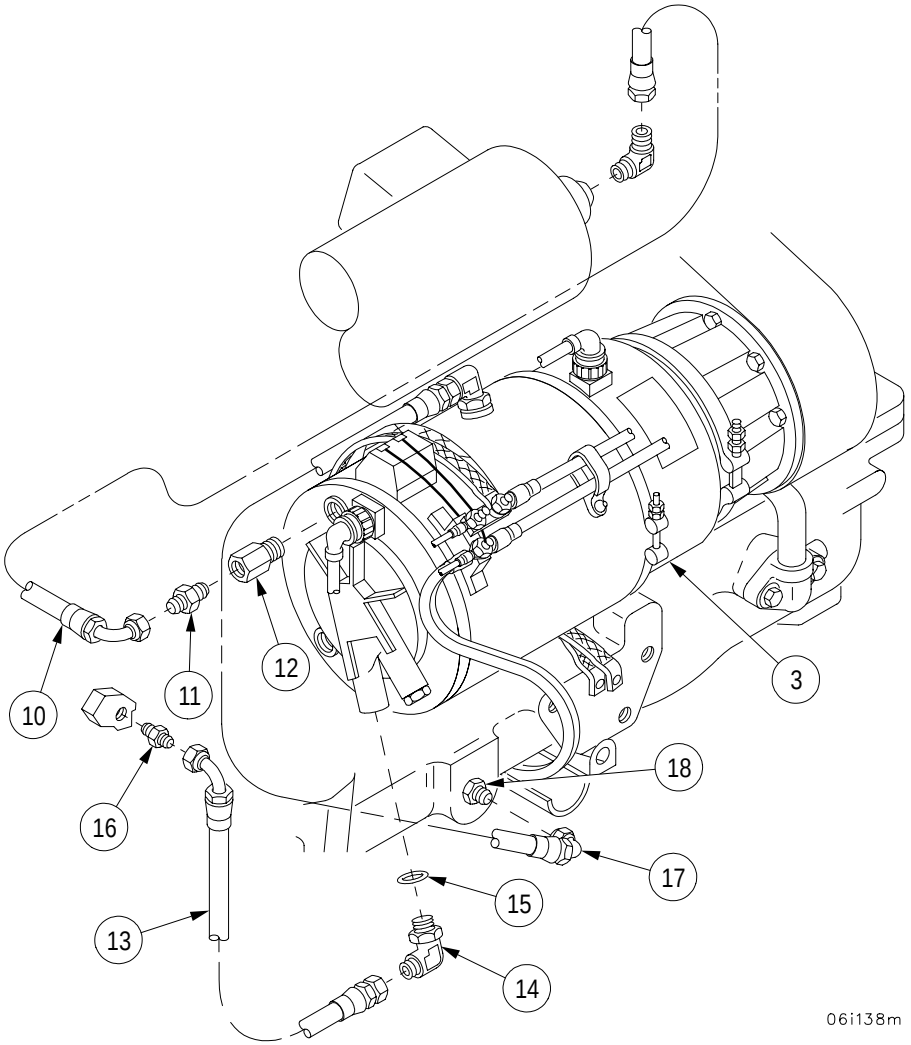
11. Remove hose (10) from adapter (11). Allow hose to drain into suitable container.
12. Remove adapter (11) from adapter (12).
13. Remove adapter (12) from engine generator (3).
14. Remove hose (10) from air intake manifold.
15. Remove hose (13) from elbow (14). Allow hose to drain into suitable container.
16. Remove elbow (14) and preformed packing (15) from engine generator (3). Discard preformed packing.
17. Remove hose (13) from adapter (16).
18. Remove adapter (16) from engine block.
19. Remove hose (17) from adapter (18). Allow hose to drain into suitable container.
20. Remove hose (17) from generator (3) (WP 0237 00).
21. Inspect parts for damage and replace as required.



ENGINE GENERATOR OIL COOLING SYSTEM LINES AND FITTINGS REPLACEMENT - CONTINUED 0236 00

Installation

1. Install hose (17) to generator (3) (WP 0237 00).
2. Install hose (17) to adapter (18).
3. Install adapter (16) to engine block.
4. Install hose (13) to adapter (16).
5. Install new preformed packing (15) and elbow (14) to engine generator (3).
6. Install hose (13) to elbow (14).
7. Install hose (10) to air intake manifold.
8. Install adapter (12) to engine generator (3).
9. Install adapter (11) to adapter (12).
10. Install hose (10) to adapter (11).



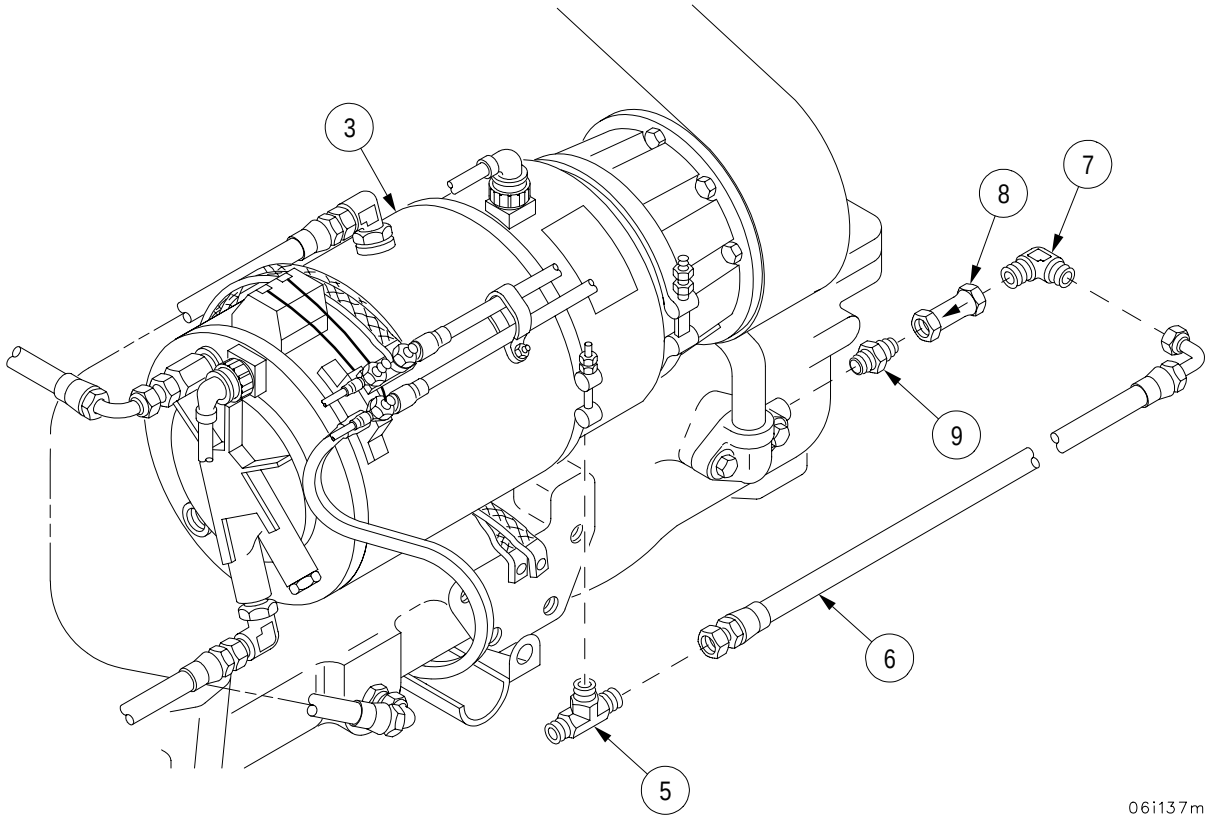
ENGINE GENERATOR OIL COOLING SYSTEM LINES AND FITTINGS REPLACEMENT - CONTINUED 0236 00

11. Install adapter (9) to engine.

CAUTION

Make sure arrow on check valve is pointed towards adapter. Failure to comply will result in damage to equipment.

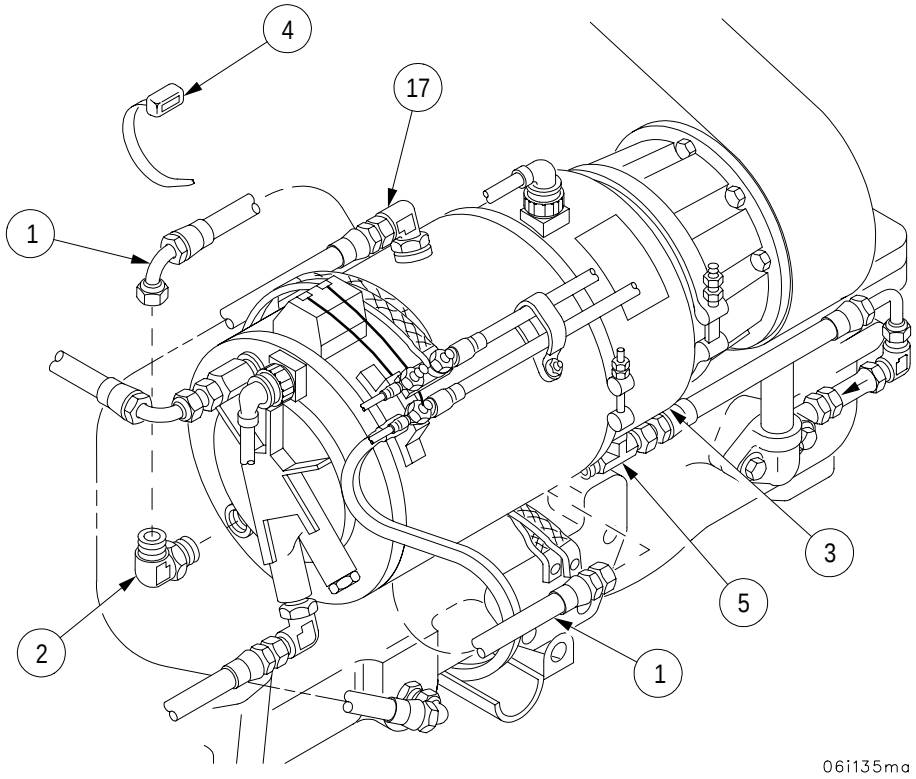
12. Install check valve (8) to adapter (9).
13. Install elbow (7) to check valve (8).
14. Install hose (6) to elbow (7).
15. Install tee connector (5) to bottom of engine generator (3).
16. Install hose (6) to tee connector (5).



ENGINE GENERATOR OIL COOLING SYSTEM LINES AND FITTINGS REPLACEMENT - CONTINUED 0236 00

Installation-Continued

17. Install hose (1) to tee connector (5).
18. Install elbow (2) to engine generator (3).
19. Install hose (1) to elbow (2).
20. Secure hoses (1) and (17) to aftercooler support with two new tiedown straps (4).



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)
Check engine oil level, fill as required (WP 0187 00)

END OF TASK

CHAPTER 8

ELECTRICAL SYSTEM MAINTENANCE

ENGINE GENERATOR REPLACEMENT 0237 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Gasket (item 427, WP 0718 00)
Gasket (item 428, WP 0718 00)
Preformed packing (item 74, WP 0718 00)

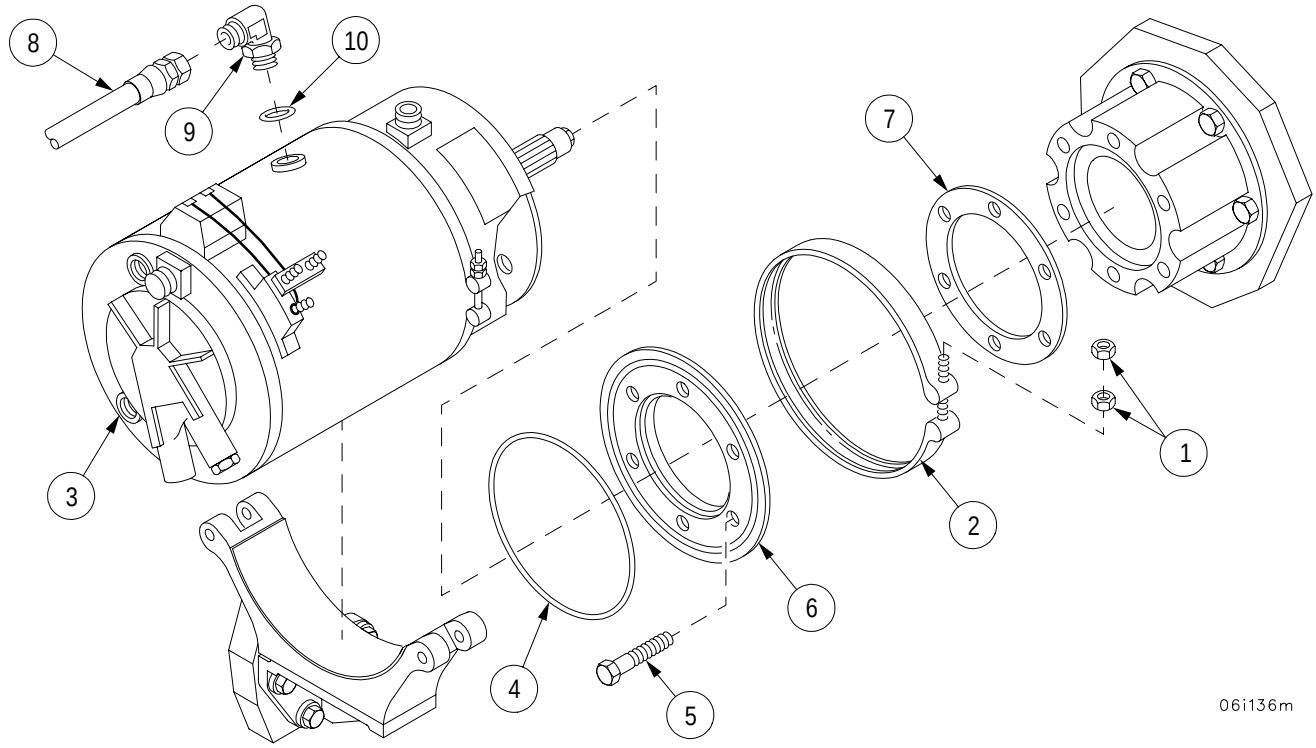
Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Wiring harness 3W203 disconnected from generator (WP 0301 00)
Wiring harness 3W202 disconnected from generator (WP 0300 00)

Equipment Conditions-Continued
Wiring harness 3W201 disconnected from generator (WP 0299 00)
Wiring harness 3W200 disconnected from generator (WP 0298 00)
Ground straps disconnected from generator (WP 0341 00)
Generator oil cooling system lines and fittings removed (WP 0236 00)

Personnel Required
Two

Removal

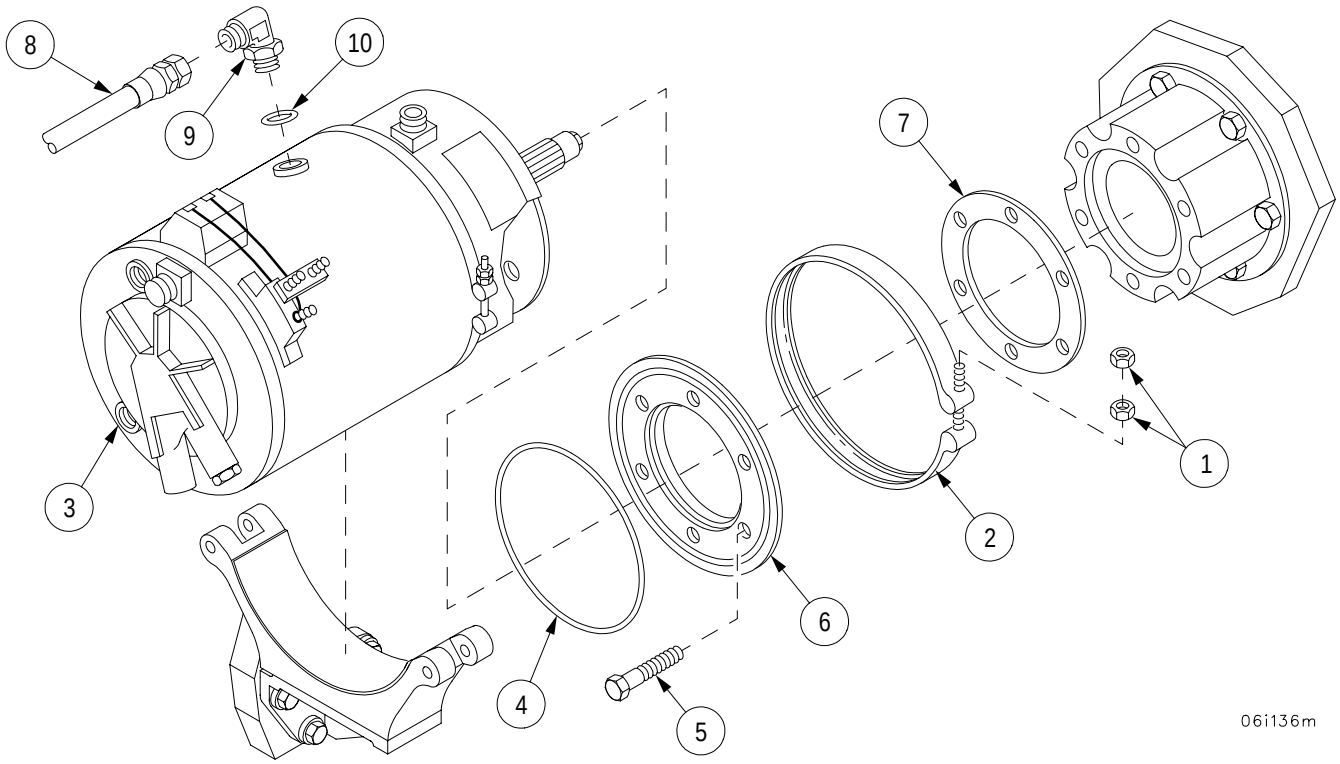
1. Remove two nuts (1), clamp (2), engine generator (3) and gasket (4) from engine. Discard gasket.
2. Remove six screws (5), plate (6) and gasket (7) from engine. Discard gasket.
3. Remove hose (8) from elbow (9).
4. Remove elbow (9) and preformed packing (10) from generator (3). Discard preformed packing.
5. Inspect parts for damage and replace as required.



ENGINE GENERATOR REPLACEMENT - CONTINUED 0237 00

Installation

1. Install new preformed packing (10) and elbow (9) to engine generator (3).
2. Install hose (8) to elbow (9).
3. Install new gasket (7), plate (6) and six screws (5) to engine.
4. Install new gasket (4), engine generator (3), clamp (2) and two nuts (1) to engine.



NOTE

FOLLOW-ON MAINTENANCE:

Install engine generator oil cooling system lines and fittings (WP 0236 00)
Connect generator ground straps (WP 0341 00)
Connect wiring harness 3W200 (WP 0298 00)
Connect wiring harness 3W201 (WP 0299 00)
Connect wiring harness 3W202 (WP 0300 00)
Connect wiring harness 3W203 (WP 0301 00)

END OF TASK

ENGINE GENERATOR CRADLE AND BRACKET REPLACEMENT 0238 00

THIS WORK PACKAGE COVERS:
Removal, Installation

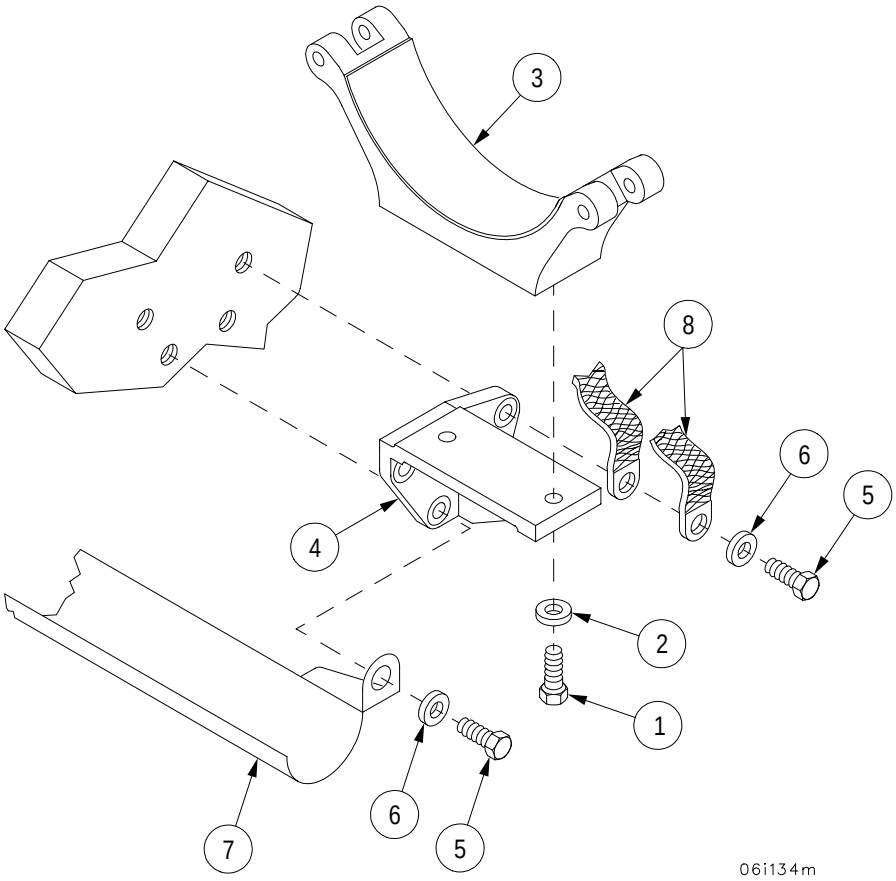
INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Engine generator removed (WP 0237 00)

Removal

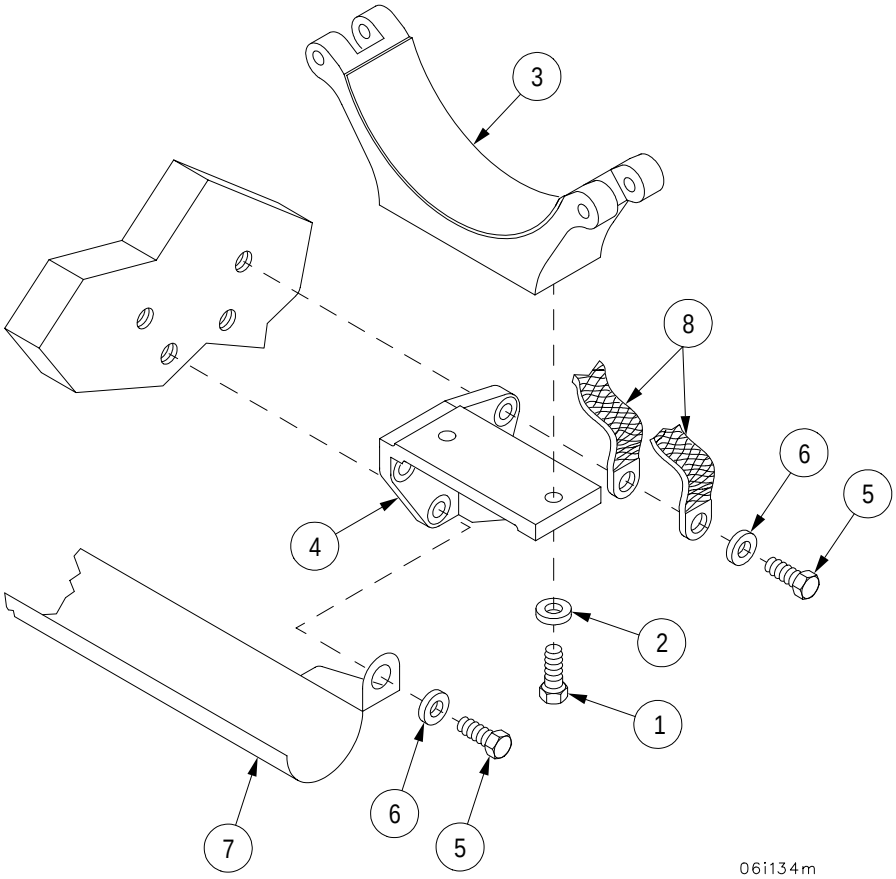
1. Remove two screws (1), two flat washers (2) and cradle (3) from bracket (4).
2. Remove four screws (5), four flat washers (6), wiring harness bracket (7), two ground straps (8) and bracket (4) from engine.
3. Inspect parts for damage and replace as required.



ENGINE GENERATOR CRADLE AND BRACKET REPLACEMENT - CONTINUED 0238 00

Installation

1. Install bracket (4), two ground straps (8), wiring harness bracket (7), four flat washers (6) and four screws (5) to engine.
2. Install cradle (3), two flat washers (2) and two screws (1) to bracket (4).



NOTE

FOLLOW-ON MAINTENANCE:
Install engine generator (WP 0237 00)

END OF TASK

APU VOLTAGE REGULATOR, MAIN ENGINE VOLTAGE REGULATOR, LEAD ASSEMBLY 3W193 AND RELATED COMPONENTS REPLACEMENT

0239 00

THIS WORK PACKAGE COVERS:

Removal, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts

Lockwashers (14) (item 9, WP 0718 00)
Lockwashers (4) (item 110, WP 0718 00)
Lockwasher (item 353, WP 0718 00)
Lockwasher (item 336, WP 0718 00)
Insulating sleeving (item 337, WP 0718 00)
Lockwashers (4) (item 2, WP 0718 00)
Assembled-washer screw (item 426, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References

TM 9-2350-292-10

NOTE

Perform Removal steps 1, 4, 5, 6, 10 and 15 and Installation steps 5, 9, 10, 11 and 14 for maintenance of APU voltage regulator.

Perform Removal steps 1, 7, 8, 11 and 15 and Installation steps 4, 7, 8 and 14 for maintenance of main engine voltage regulator.

Perform Removal steps 1, 2, 3 and 15 and Installation steps 12, 13 and 14 for maintenance of relay.

Perform Removal steps 1, 7, 14 and 15 and Installation steps 1 and 8 for maintenance of lead assembly 3W193.

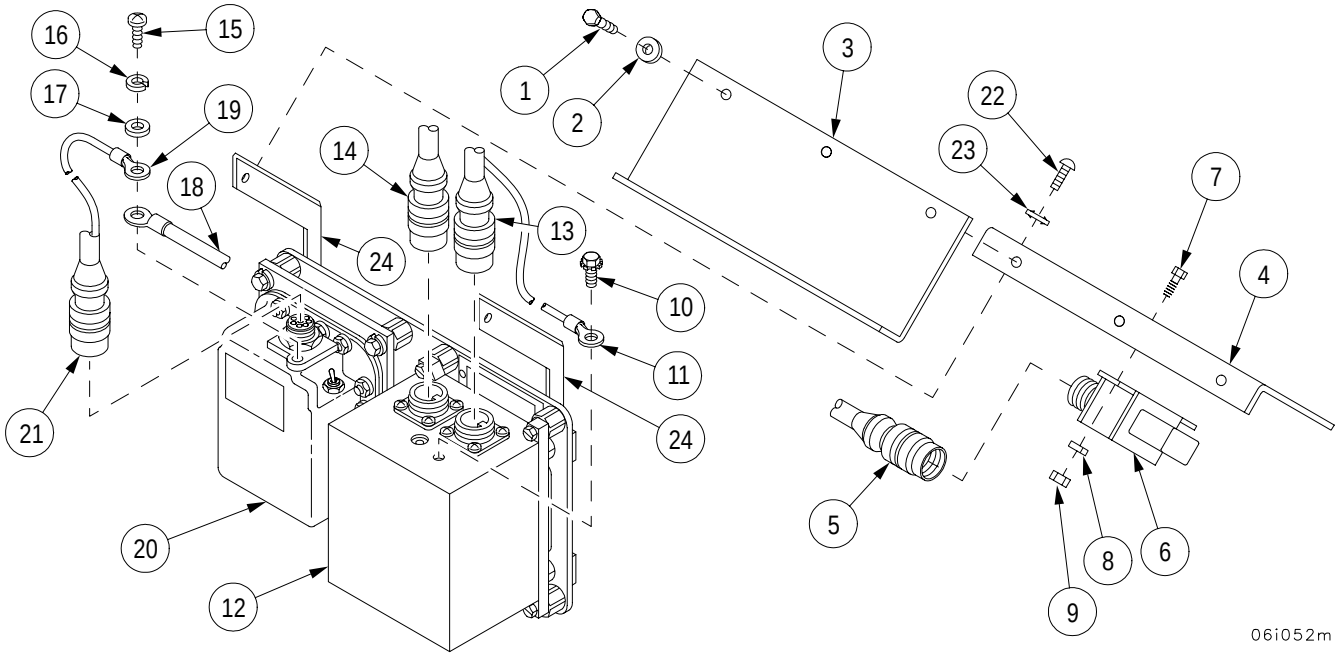
Tag all electrical connections and electrical leads prior to removal to aid in installation.

APU VOLTAGE REGULATOR, MAIN ENGINE VOLTAGE REGULATOR, LEAD ASSEMBLY 3W193 AND RELATED COMPONENTS REPLACEMENT - CONTINUED 0239 00

Removal

WARNING

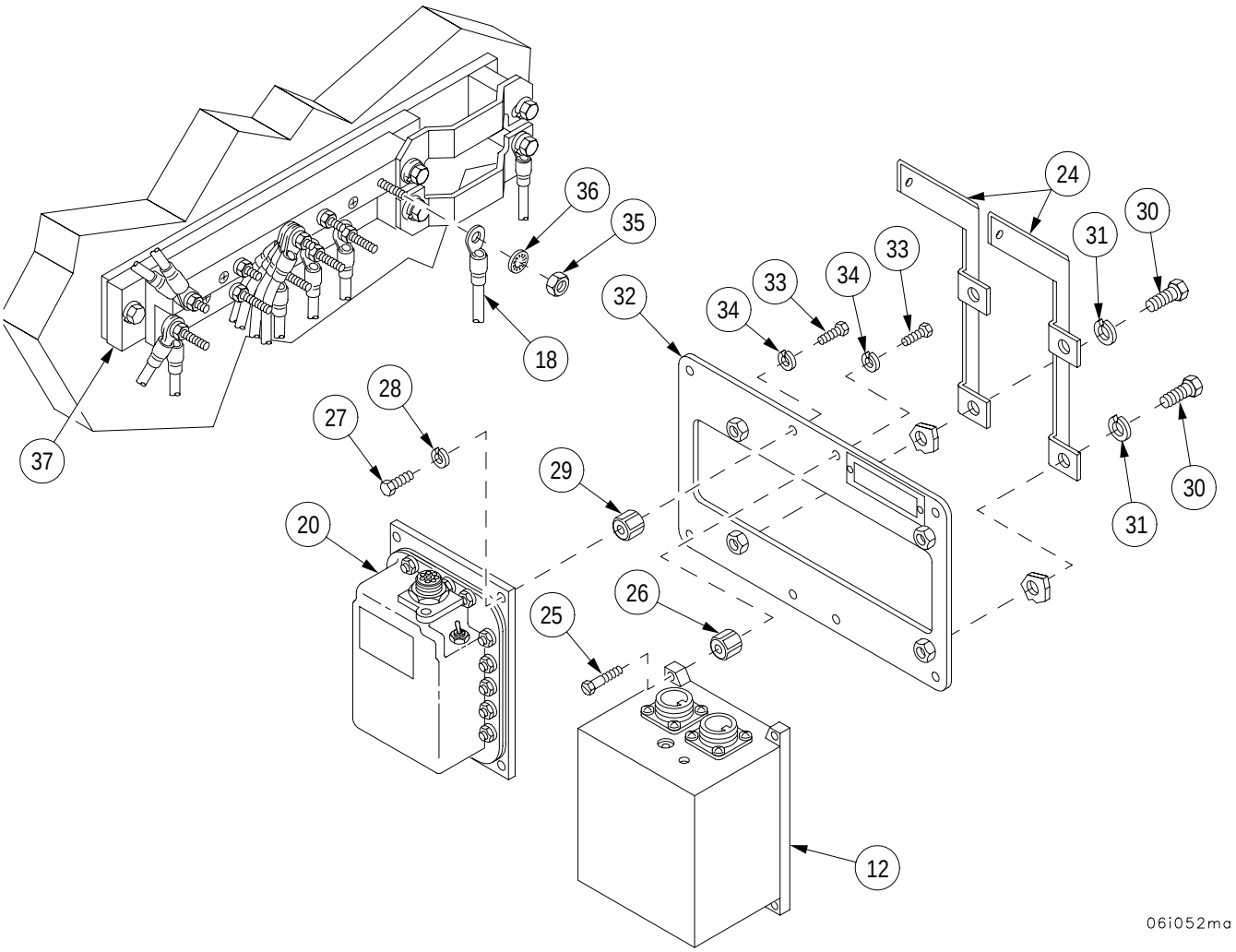
1. Remove three screws (1), three flat washers (2) and cover (3) from cover (4).
2. Disconnect wiring harness 3W180 connector P3 (5) from relay (6).
3. Remove two screws (7), two lockwashers (8), two nuts (9) and relay (6) from cover (4). Discard lockwashers.
4. Remove assembled-washer screw (10) and wiring harness 3W710 wire GND (11) from APU voltage regulator (12). Discard screw.
5. Disconnect wiring harness 3W710 connector P1 (13) from APU voltage regulator (12).
6. Disconnect wiring harness 3W702 connector P2 (14) from APU voltage regulator (12).
7. Remove screw (15), lockwasher (16), flat washer (17), lead assembly 3W193 (18) and wiring harness 3W180 wire GND (19) from main engine voltage regulator (20). Discard lockwasher.
8. Disconnect wiring harness 3W180 connector P1 (21) from main engine voltage regulator (20).
9. Remove four screws (22), four lockwashers (23) and cover (4) from two angle brackets (24). Discard lockwashers.



APU VOLTAGE REGULATOR, MAIN ENGINE VOLTAGE REGULATOR, LEAD ASSEMBLY 3W193 AND RELATED COMPONENTS REPLACEMENT - CONTINUED 0239 00

Removal-Continued

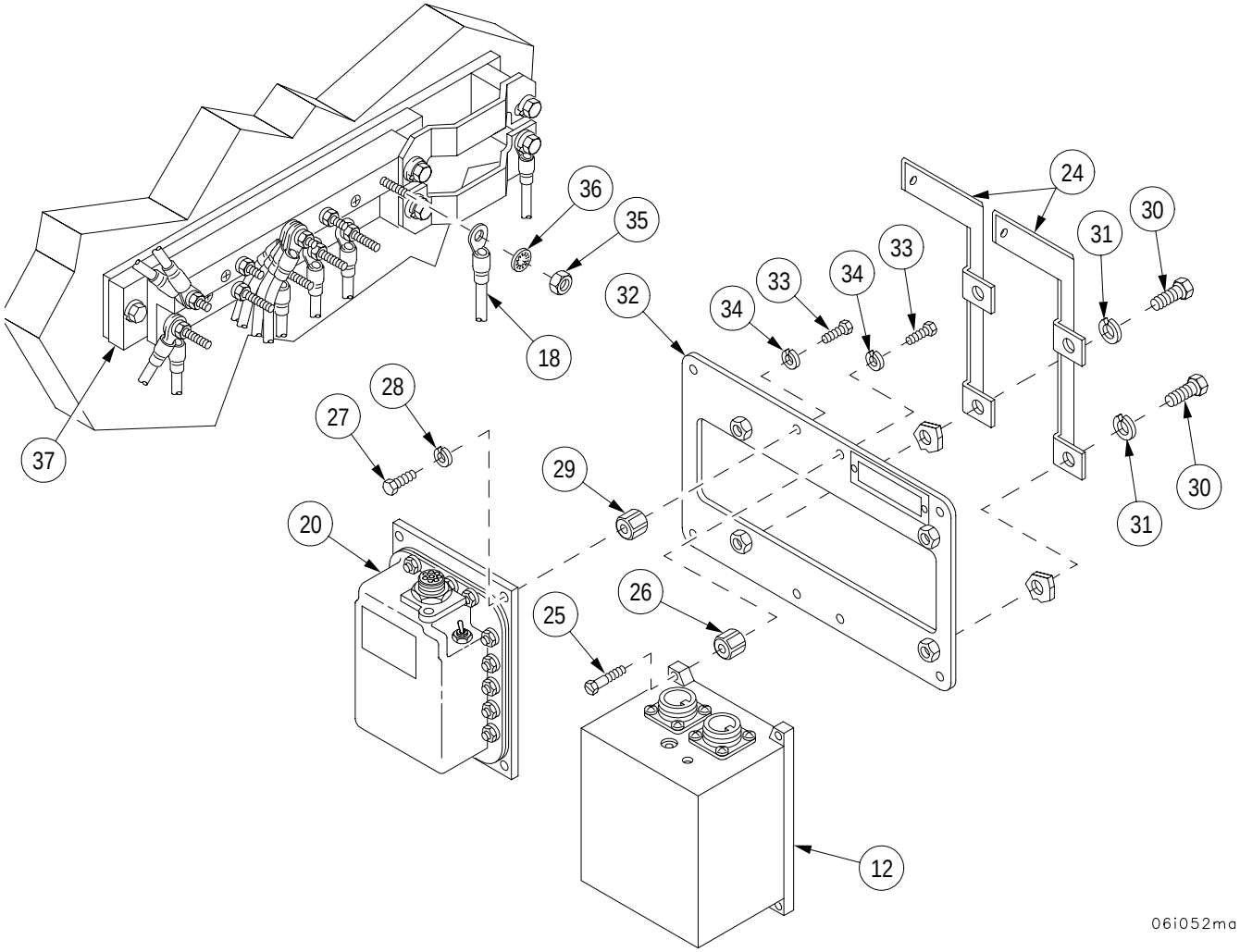
10. Remove four screws (25) and APU voltage regulator (12) from four insulators (26).
11. Remove four screws (27), four lockwashers (28) and main engine regulator (20) from four insulators (29). Discard lockwashers.
12. Remove four screws (30), four lockwashers (31), two angle brackets (24) and mounting plate (32). Discard lockwashers.
13. Remove eight screws (33), eight lockwashers (34), four insulators (26) and four insulators (29) from mounting plate (32). Discard lockwashers.
14. Remove nut (35), lockwasher (36) and lead assembly 3W193 (18) from negative bus bar (37). Discard lockwasher.
15. Inspect parts for damage and replace as required.



APU VOLTAGE REGULATOR, MAIN ENGINE VOLTAGE REGULATOR, LEAD ASSEMBLY 3W193 AND RELATED COMPONENTS REPLACEMENT - CONTINUED 0239 00

Installation

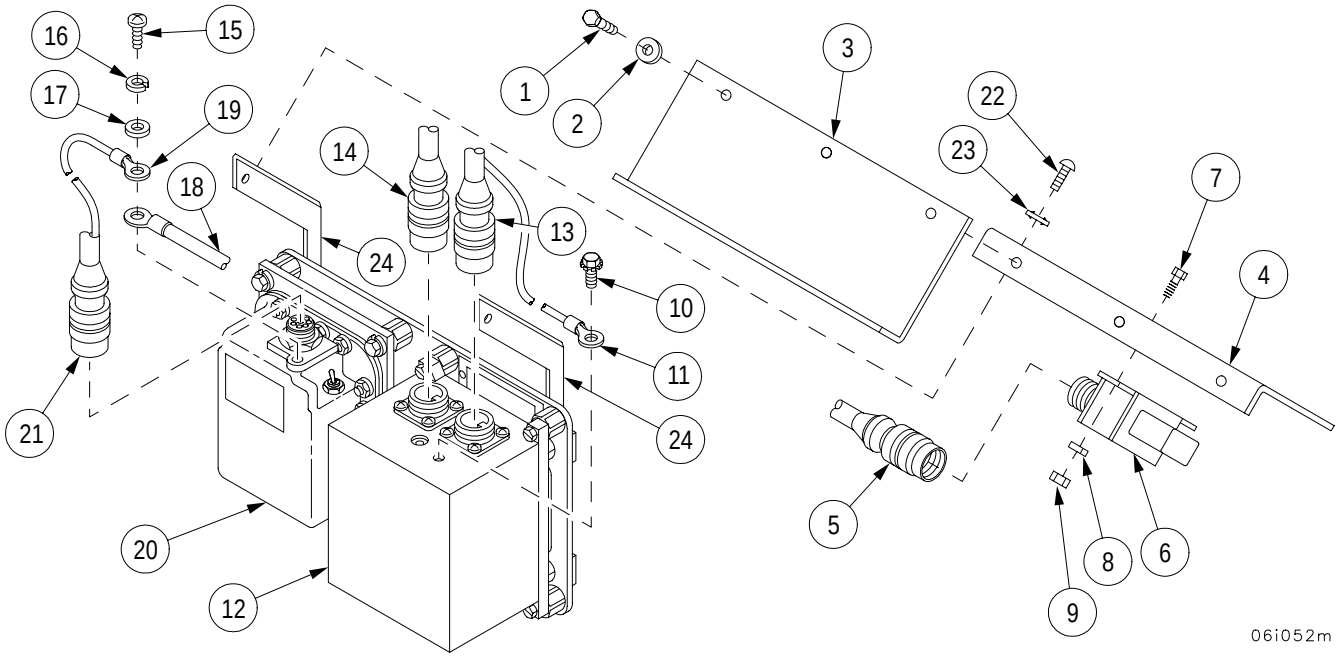
1. Install lead assembly 3W193 (18) on negative bus bar (37) with nut (35) and new lockwasher (36).
2. Install four insulators (26) and four insulators (29) on mounting plate (32) with eight screws (33) and eight new lockwashers (34).
3. Install mounting plate (32) and two angle brackets (24) on vehicle with four screws (30) and four new lockwashers (31).
4. Install main engine voltage regulator (20) on four insulators (29) with four screws (27) and four new lockwashers (28).
5. Install APU voltage regulator (12) on four insulators (26) with four screws (25).



APU VOLTAGE REGULATOR, MAIN ENGINE VOLTAGE REGULATOR, LEAD ASSEMBLY 3W193 AND RELATED COMPONENTS REPLACEMENT - CONTINUED 0239 00

Installation-Continued

6. Install cover (4) on two angle brackets (24) with four screws (22) and four new lockwashers (23).
7. Connect wiring harness 3W180 connector P1 (21) to main engine voltage regulator (20).
8. Connect lead assembly 3W193 (18) and wiring harness 3W180 wire GND (19) to main engine voltage regulator (20) with screw (15), new lockwasher (16) and flat washer (17).
9. Connect wiring harness 3W702 connector P2 (14) to APU voltage regulator (12).
10. Connect wiring harness 3W710 connector P1 (13) to APU voltage regulator (12).
11. Connect wiring harness 3W710 wire GND (11) to APU voltage regulator (12) with new assembled-washer screw (10).
12. Install relay (6) on cover (4) with two screws (7), two new lockwashers (8) and two nuts (9).
13. Connect wiring harness 3W180 connector P3 (5) to relay (6).
14. Install cover (3) on cover (4) with three screws (1) and three flat washers (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

ENGINE STARTER, CRADLE AND BRACKET REPLACEMENT 0240 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Self-locking nuts (3) (item 259, WP 0718 00)
Gasket (item 260, WP 0718 00)
Hardwood lumber (item 5, WP 0716 00)
Silicone adhesive (item 81, WP 0716 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Powerpack removed (WP 0188 00)

Personnel Required
Two

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Large gauge black wire from starter solenoid to starter motor ground terminal is part of starter assembly and should not be removed.

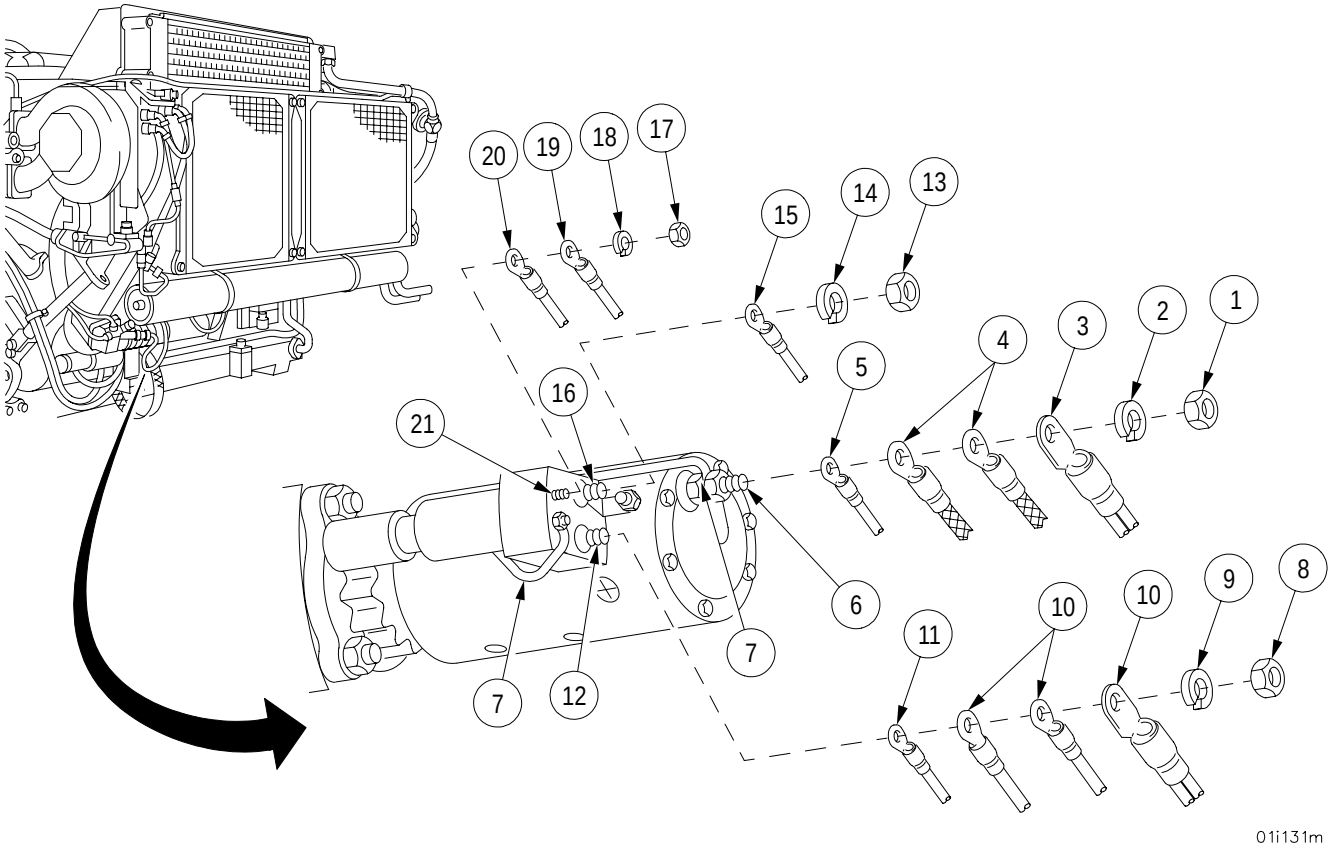
Install nuts and lockwashers on starter terminals after removal of wires. New starters are supplied with new nuts and lockwashers.

Removal

1. Remove nut (1), lockwasher (2), terminal lug (3) for two GND wires, two ground straps (4) and terminal lug (5) wire M from starter motor ground terminal (6). Do not remove terminal lug (7) of black wire connected from starter solenoid.
2. Remove nut (8), lockwasher (9), three terminal lugs (10) for four no. 82 wires and terminal lug (11) of wire 14B from starter solenoid battery (BAT) terminal (12).
3. Remove nut (13), lockwasher (14) and terminal lug (15) of wire T from starter solenoid motor (MTR) terminal (16) (with buss bar to starter motor).
4. Remove nut (17), lockwasher (18) and two terminal lugs (19 and 20) for wires 14D and S from starter solenoid switch (S) terminal (21).

ENGINE STARTER, CRADLE AND BRACKET REPLACEMENT - CONTINUED 0240 00

Removal-Continued



ENGINE STARTER, CRADLE AND BRACKET REPLACEMENT - CONTINUED 0240 00

Removal-Continued

NOTE

Keep cradle attached to starter motor to provide extra support while disengaging starter from powerpack.

5. Remove four screws (22) and four flat washers (23) from cradle (24).
6. Remove three self-locking nuts (25) from adapter bolts (26). Discard self-locking nuts.



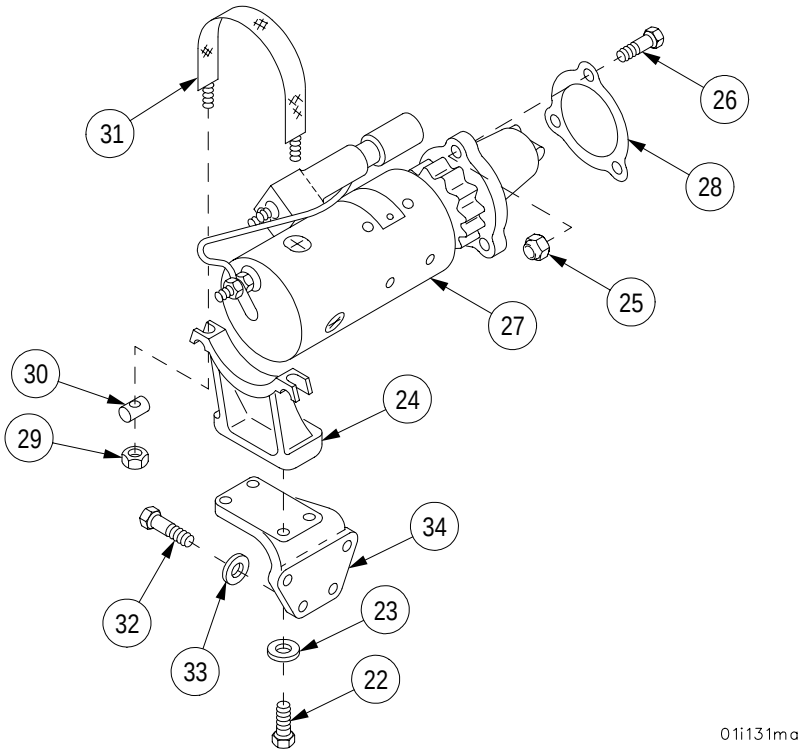
WARNING

7. Position suitable wooden blocks under starter (27) assembly for support.
8. Remove starter (27) and mounting gasket (28) from starter adapter. Discard gasket.

CAUTION

Use care in removing cradle to avoid damaging black solenoid to motor ground wire.

9. Remove two nuts (29), two clamping bars (30), U-bolt (31) and cradle (24).
10. Remove four screws (32), four flat washers (33) and angle bracket (34) from powerpack.
11. Inspect parts for damage and replace as required.



ENGINE STARTER, CRADLE AND BRACKET REPLACEMENT - CONTINUED 0240 00

Installation

1. Install starter (27) with new mounting gasket (28) on adapter bolts (26) and place cradle (24) on angle bracket (34) on engine. Adjust cradle (24) until it sits flat on angle bracket (34) and screw holes in cradle (24) and angle bracket (34) align. Install three new self-locking nuts (25) on adapter bolts (26).
2. Install angle bracket (34) on powerpack with four screws (32) and four flat washers (33).

NOTE

When attaching cradle to starter, tighten U-bolt just enough to hold cradle in position while starter is installed. Cradle position will be adjusted later.

3. Position cradle (24) on new starter (27) in about same position as old starter (27), install U-bolt (31), with two clamping bars (30) and two nuts (29). Feed starter solenoid wire (6) through cradle (24).

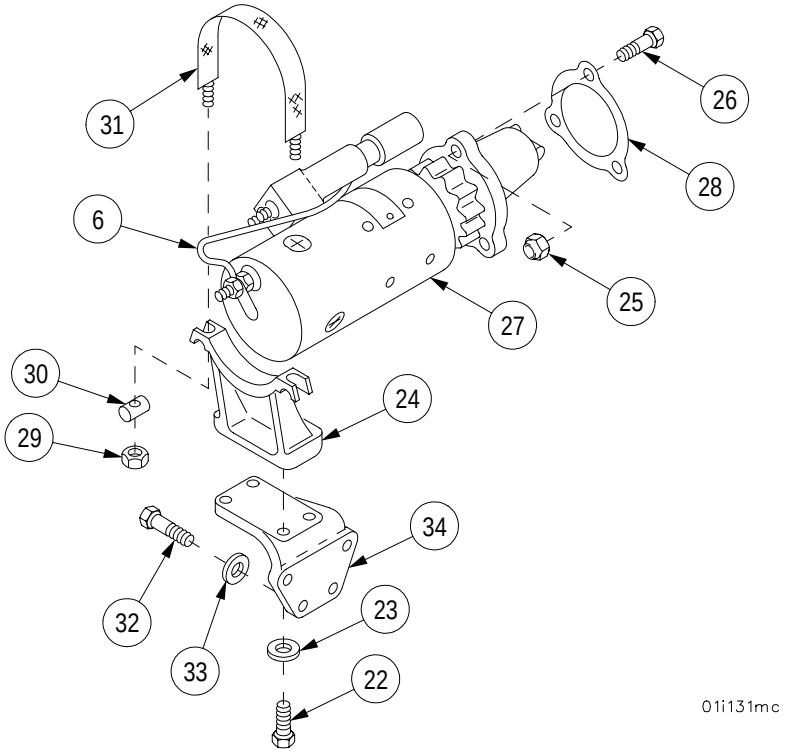


WARNING

CAUTION

Use care in installing cradle to avoid damaging black solenoid to motor ground wire.

4. Position suitable wooden blocks under starter assembly for support.
5. Secure cradle (24) to angle bracket (34) with four flat washers (23) and four screws (22).



ENGINE STARTER, CRADLE AND BRACKET REPLACEMENT - CONTINUED 0240 00

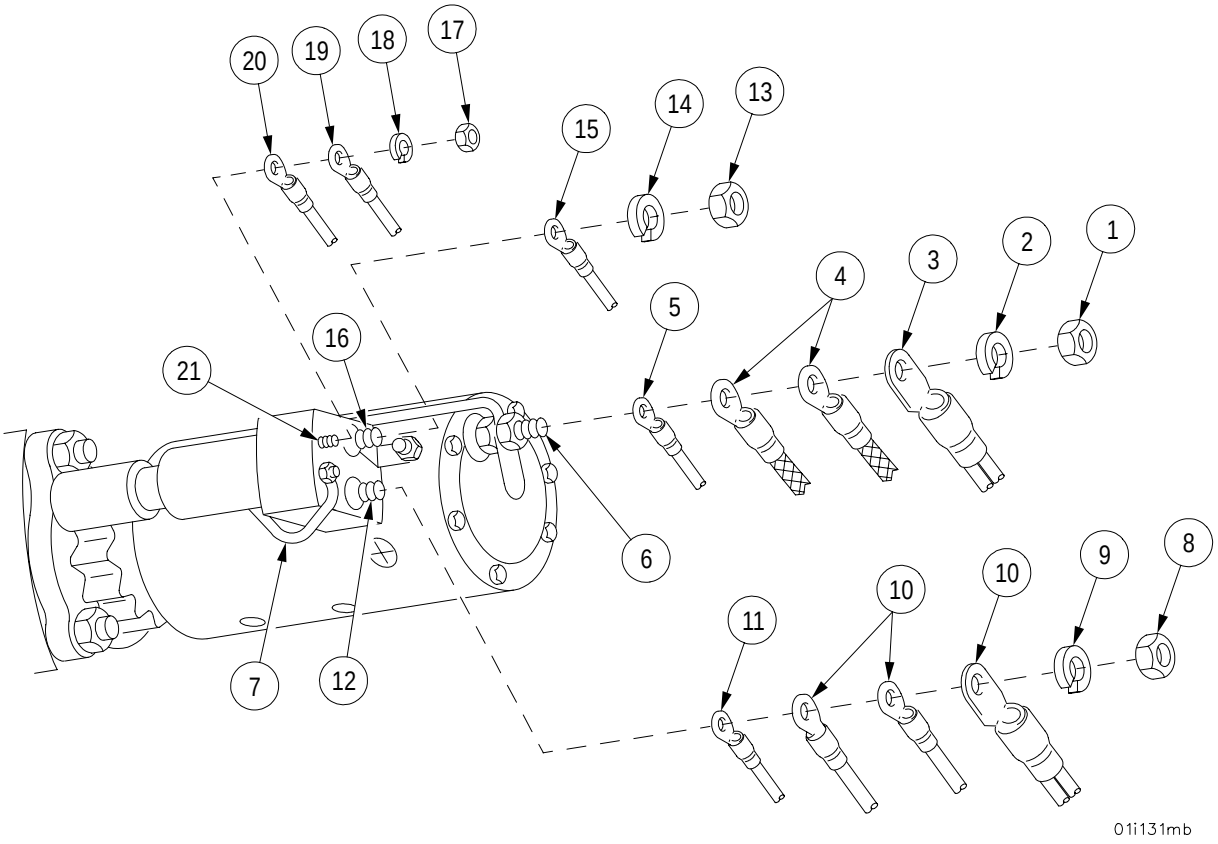
Installation-Continued

6. Install two terminal lugs (19 and 20) for wires 14D and S on starter solenoid switch (S) terminal (21) with nut (17) and lockwasher (18).
7. Install terminal lug (15) of wire T on starter solenoid motor (MTR) terminal (16) with nut (13) and lockwasher (14).
8. Install terminal lug (11) of wire 14B, three terminal lugs (10) for four no. 82 wires on starter solenoid battery (BAT) terminal (12) with nut (8) and lockwasher (9).
9. Install terminal lug (5) for wire M, two ground straps (4) and terminal lug (3) for two GND wires on starter motor ground terminal (6) with nut (1) and lockwasher (2).

CAUTION

Use only silicone adhesive listed in initial setup. Other products could cause damage to equiipment.

10. Apply silicone adhesive to exposed terminals.



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

END OF TASK

LOW VOLTAGE STARTER PROTECTION MODULE REPLACEMENT 0241 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 85, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Powerpack removed (WP 0188 00)

References
TM 9-2350-292-10

Removal

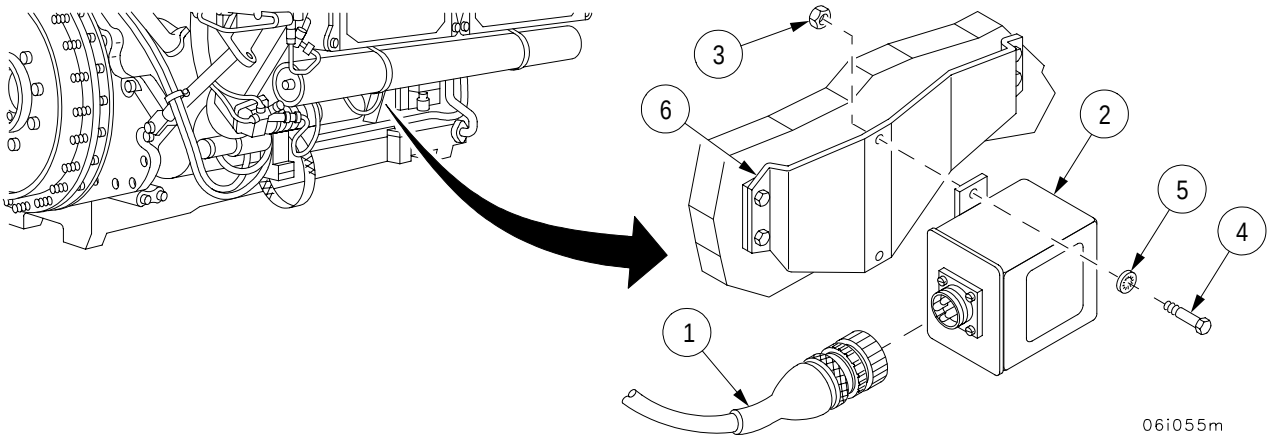
NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

1. Disconnect wiring harness 3W202 connector (1) from low voltage starter protection module (2).
2. Remove two nuts (3), two screws (4), two lockwashers (5) and low voltage starter protection module (2) from engine mounting plate (6). Discard lockwashers.
3. Inspect parts for damage and replace as required.

Installation

1. Install low voltage starter protection module (2) on engine mounting plate (6) with two screws (4), two new lockwashers (5) and two nuts (3).
2. Connect wiring harness 3W202 connector (1) to low voltage starter protection module (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

END OF TASK

MAIN SWITCH PANEL ASSEMBLY REPAIR 0242 00

THIS WORK PACKAGE COVERS:

Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools

General mechanic's tool kit (item 1, WP 0717 00)
Hand riveter (item 66, WP 0717 00)

Materials/Parts

Lockwashers (2) (item 286, WP 0718 00)
Lockwasher (item 352, WP 0718 00)
Lockwashers (20) (item 90, WP 0718 00)
Lockwashers (8) (item 86, WP 0718 00)
Gaskets (3) (item 91, WP 0718 00)
Lockwashers (8) (item 390, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Materials/Parts-Continued

Gaskets (3) (item 92, WP 0718 00)
Lockwashers (3) (item 93, WP 0718 00)
Lockwasher (item 434, WP 0718 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References

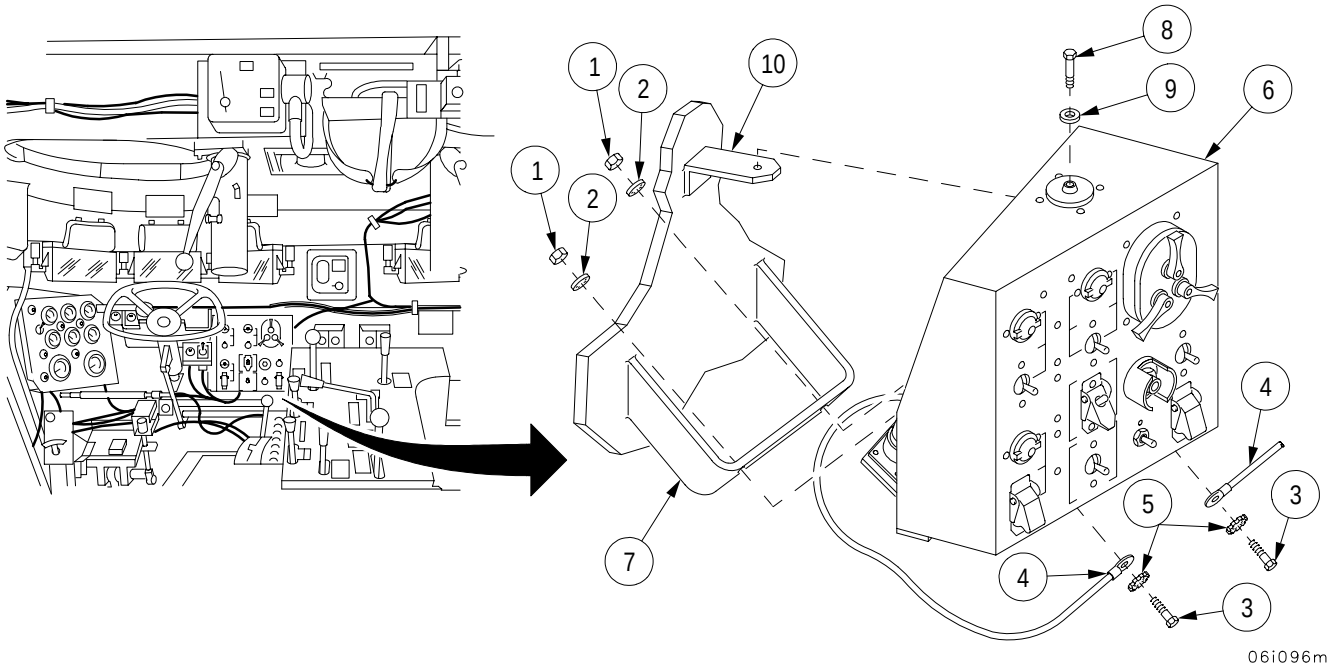
TM 9-2350-292-10

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

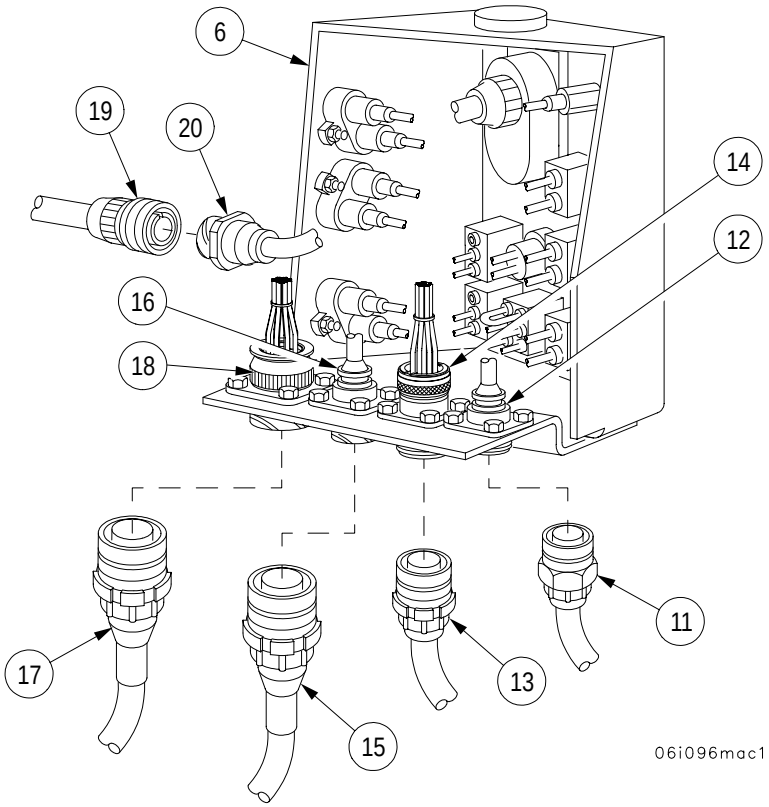
1. Remove two nuts (1), two lockwashers (2), two screws (3), one end of the two ground wires (4) and lockwashers (5) securing main switch panel assembly (6) to mounting bracket (7). Discard lockwashers.
2. Remove screw (8) and flat washer (9) securing main switch panel assembly (6) to mounting bracket (10).



MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Removal-Continued

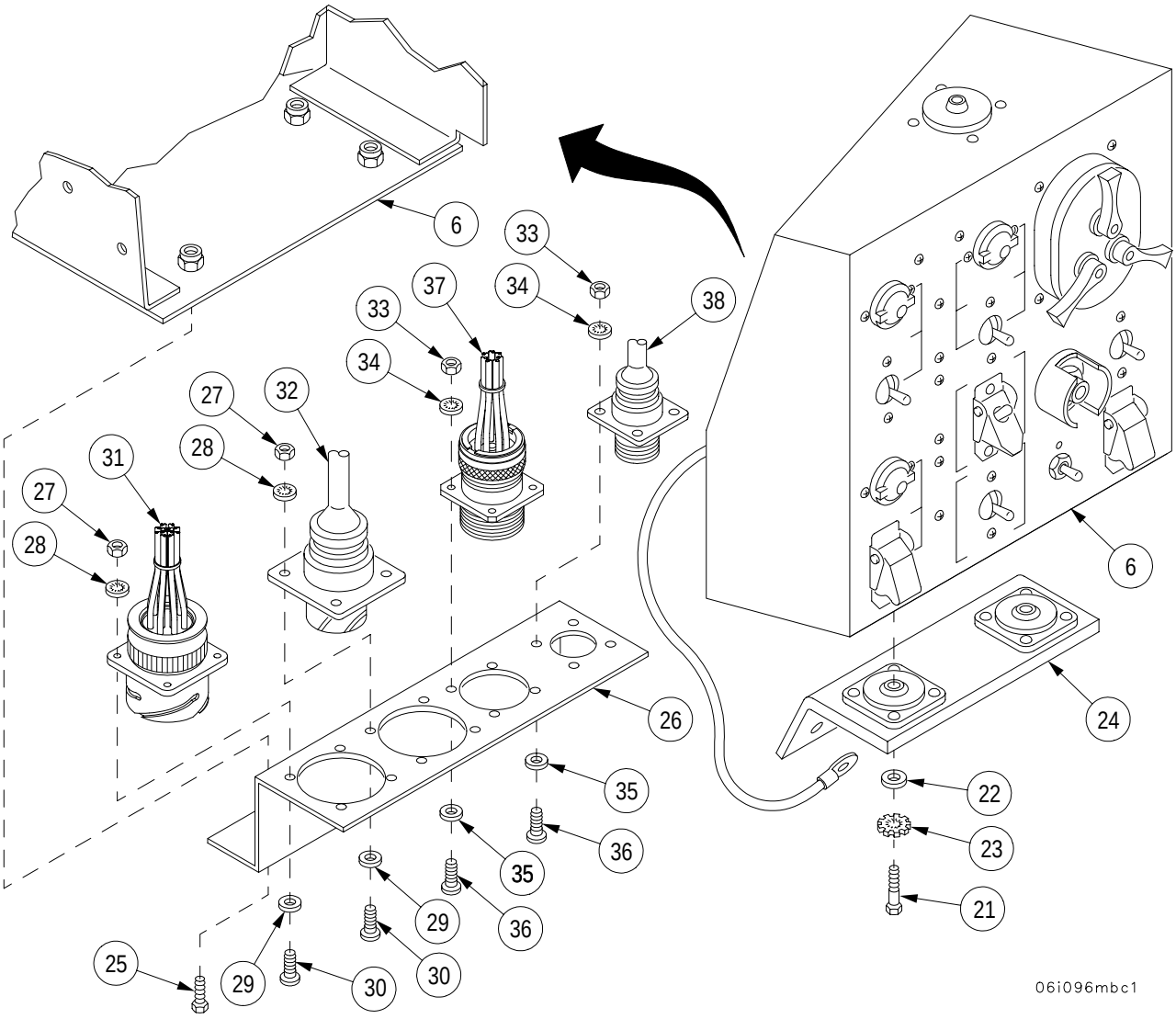
3. Pull main switch panel assembly (6) away from hull and disconnect wiring harness 4W106 connector P1 (11) from connector J1 (12) of main switch panel assembly (6).
4. Disconnect wiring harness 4W127 connector P2 (13) from connector J2 (14) of main switch panel assembly (6).
5. Disconnect wiring harness 4W101 connector P1 (15) from connector J3 (16) of main switch panel assembly (6).
6. Disconnect wiring harness 4W105 connector P1 (17) from connector J4 (18) of main switch panel assembly (6).
7. Disconnect wiring harness 4W116 connector P1 (19) from wiring harness 4W117 connector J5 (20) of main switch panel assembly (6).



MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Disassembly

1. Remove two screws (21), two flat washers (22), lockwasher (23) and mount (24) from main switch panel assembly (6). Discard lockwasher.
2. Remove two screws (25) and panel (26) with wiring harnesses attached, from main switch panel assembly (6).
3. Remove eight nuts (27), eight lockwashers (28), eight flat washers (29), eight screws (30), wiring harness 4W151 J2 (31) from panel (26) J4 and 4W109 J1 (32) from panel (26) J3. Discard lockwashers.
4. Remove eight nuts (33), eight lockwashers (34), eight flatwashers (35), eight screws (36), wiring harness 4W151 J1 (37) from panel (26) J2 and 4W118 J1 (38) from panel (26) J1. Discard lockwashers.

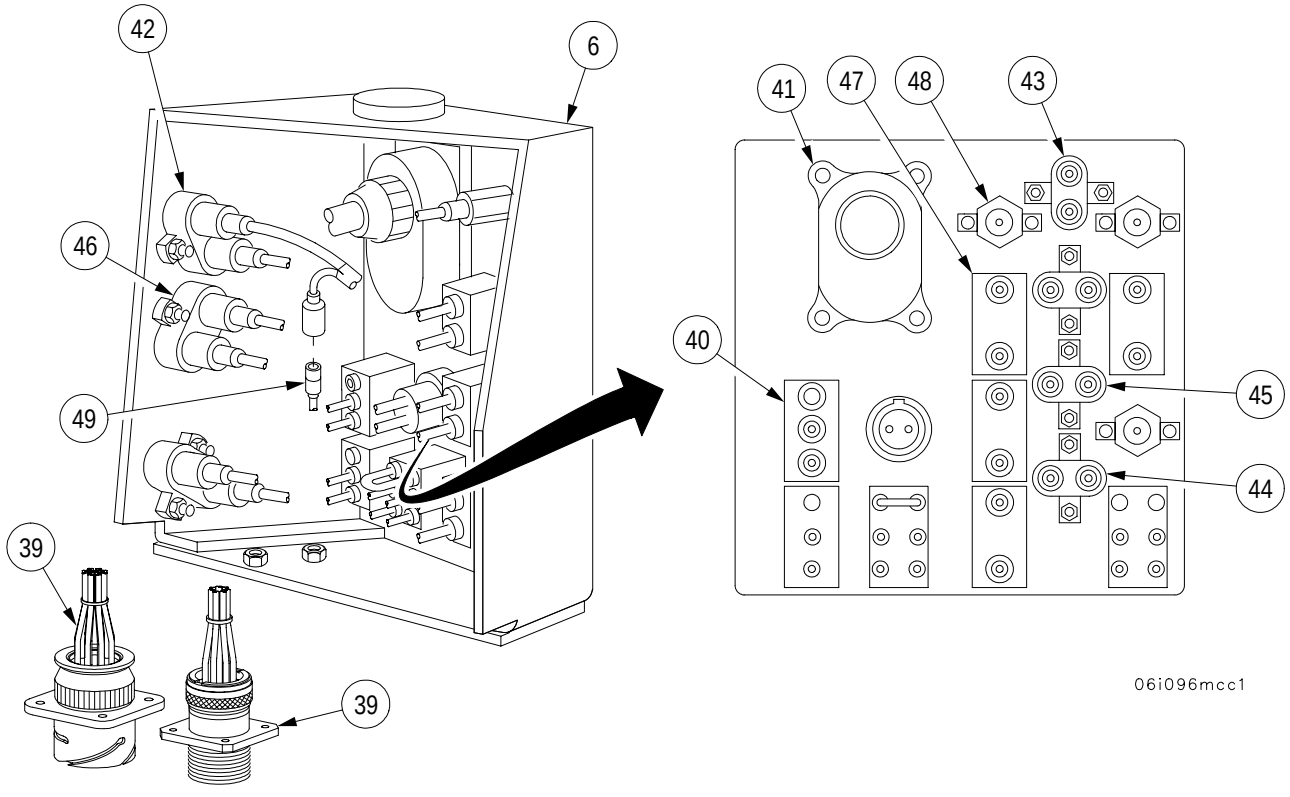


MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Disassembly-Continued

5. Disconnect wiring harness 4W151 (39) from the following components and remove from main switch panel assembly (6):

4W151 Connector/Lead/Wire	Disconnect From
Wire 19	Blackout switch (40)
Wire 520	Blackout switch (40)
Connector P1	Service lights switch (41)
Wire 10	Gauge panel/horn circuit breaker (42) Passive night viewer circuit breaker (43) Fuel shutoff circuit breaker (44) Fuel pump circuit breaker (45) Starter circuit breaker (46)
Wire 25/27	Gauge panel/horn circuit breaker (42)
Wire 38/999	Passive night viewer circuit breaker (43)
Wire 459	Master power switch (47) Master power lamp (48)
Wire 459B	Master power switch (47)
Wire 27A	Wiring harness 4W118 wire 27A (49)

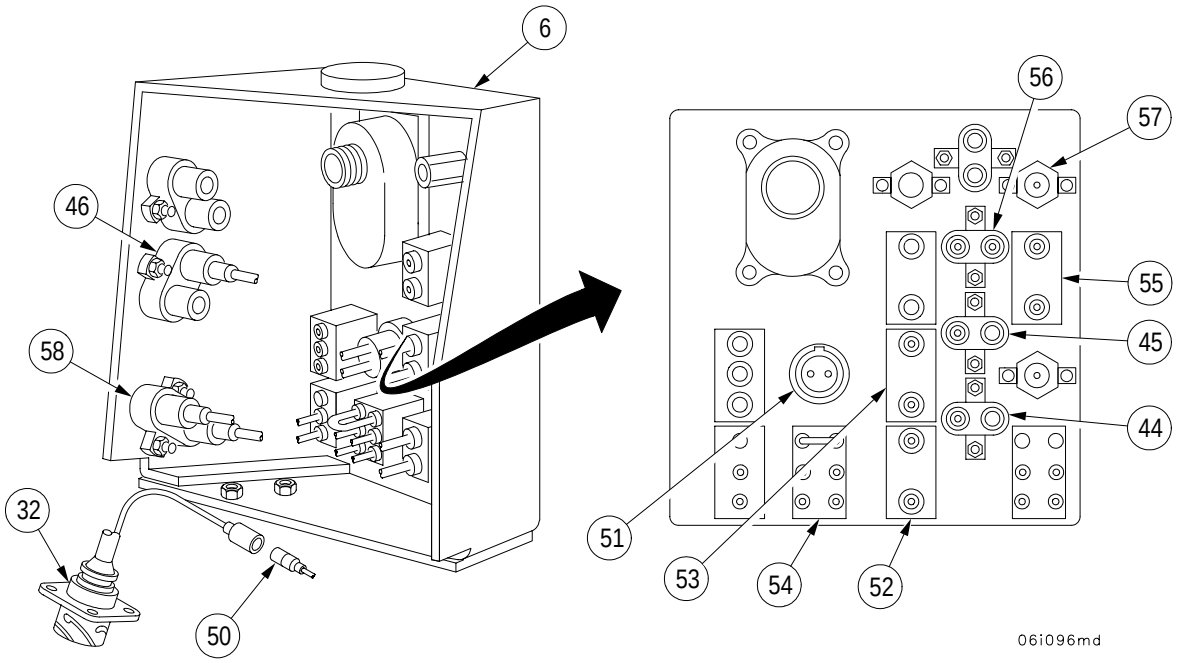


MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Disassembly-Continued

6. Disconnect wiring harness 4W109 (32) from the following components and remove from main switch panel assembly (6):

4W109 Connector/Lead/Wire	Disconnect From
Wire T	Wiring harness 4W118 wire T (50)
Wire 14	Two from starter switch (51) One from starter circuit breaker (46)
Wire 54	Two from fuel shutoff switch (52) One from fuel shutoff circuit breaker (44)
Wire 76/1A	Fuel pump switch (53)
Wire 76	Fuel pump switch (53) Fuel pump circuit breaker (45)
Wire 530A	Preheat switch (54) pins 1 and 5
Wire 530B	Preheat switch (54) pin 4
Wire 325	Two from flasher switch (55) One from flasher circuit breaker (56)
Wire 10	Flasher circuit breaker (56)
Wire 325C	Flasher lamp (57)
Wire 530	Two from preheat circuit breaker (58) One from preheat switch (54) pin 2



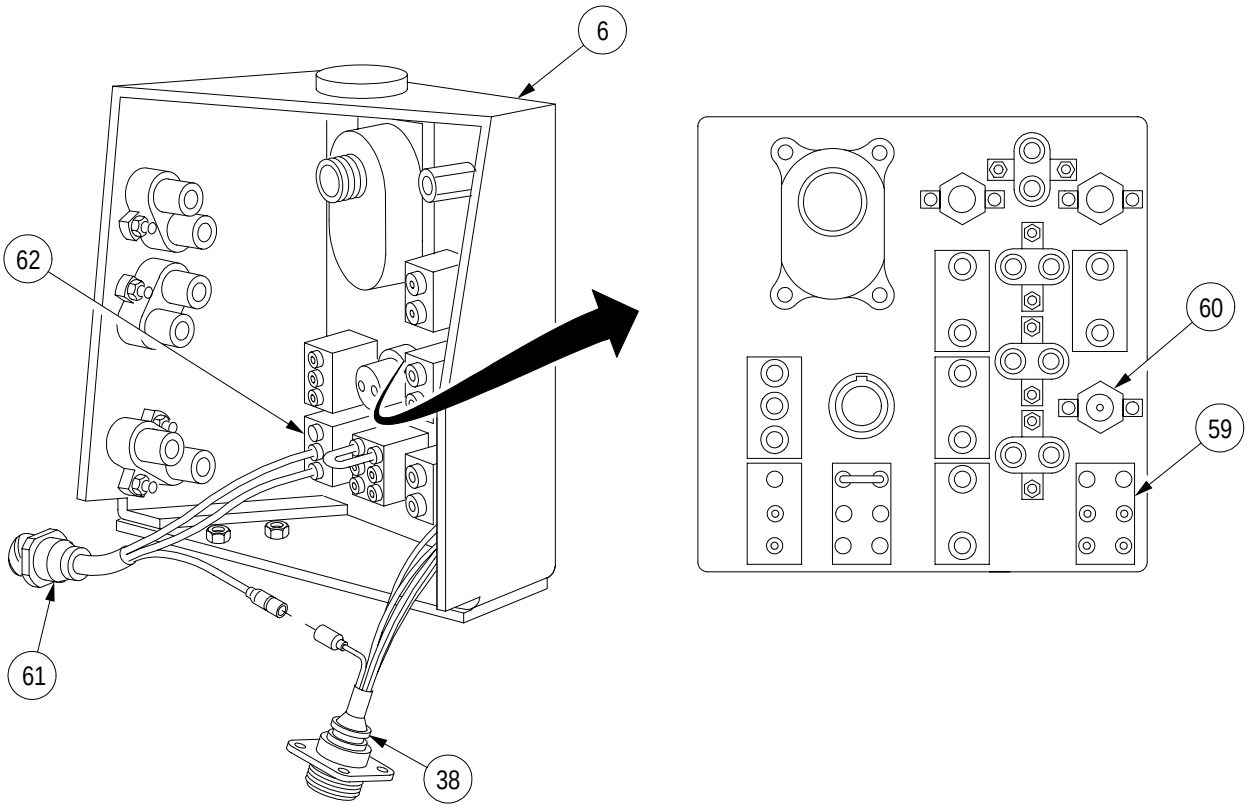
MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Disassembly-Continued

7. Disconnect wiring harness 4W118 (38) from the following components and remove from main switch panel assembly (6):

4W118 Connector/Lead/Wire	Disconnect From
Wire T	Exhaust smoke switch (59) pin 2
Wire T1	Exhaust smoke switch (59) pin 5 Exhaust smoke lamp (60)
Wire 27A	Exhaust smoke switch (59) pin 6
Wire 26B	Exhaust smoke switch (59) pin 3 Wiring harness 4W117 (61) wire 26B

8. Disconnect wiring harness 4W117 (61) wire 26A from horn override switch (62) pins 2 and 3 and remove from main switch panel assembly (6).



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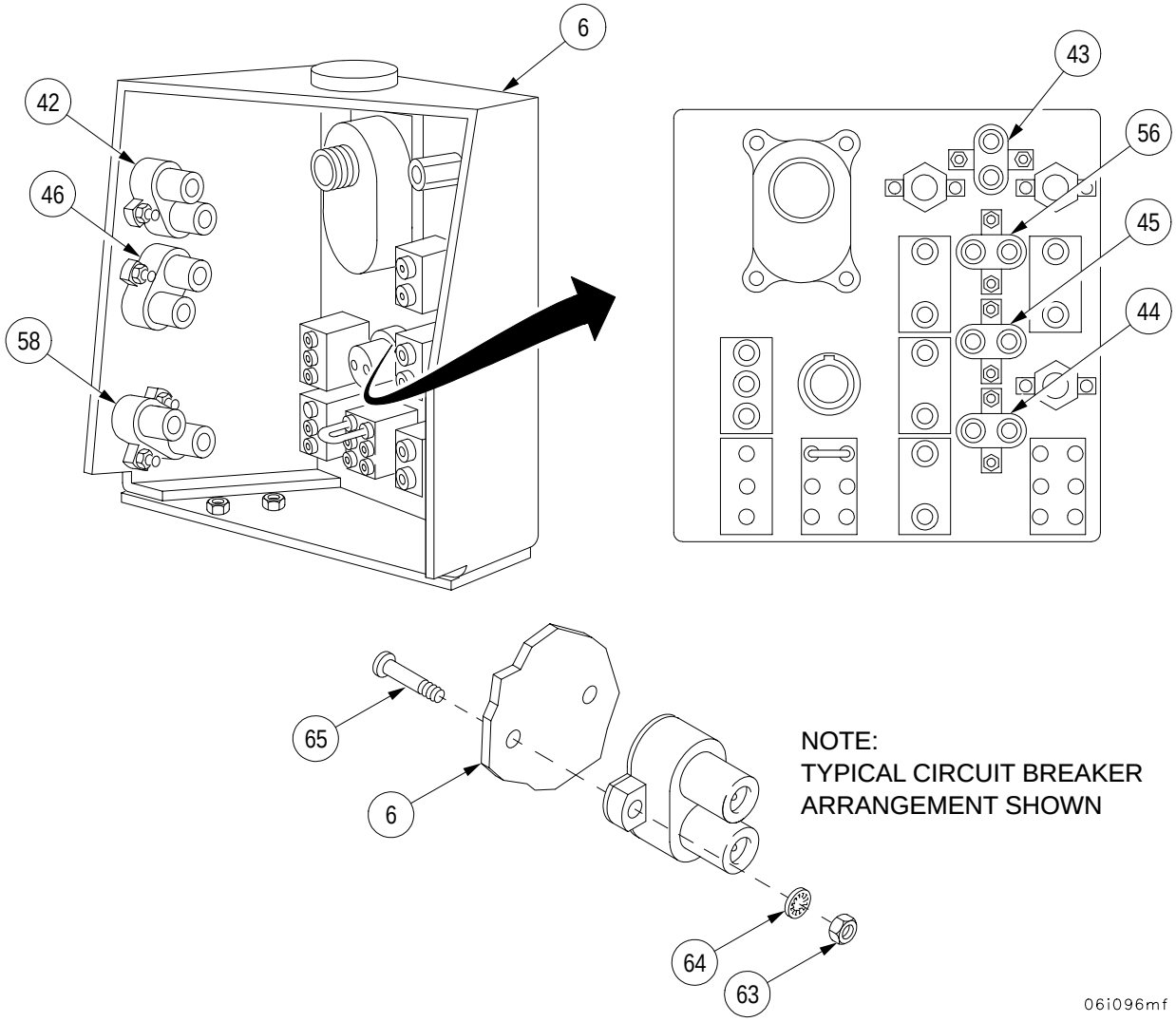
MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Disassembly-Continued

NOTE

There are seven circuit breakers in the main switch panel assembly. There are two 20-amp and five 15-amp circuit breakers. All seven are removed in the same manner. Perform step 9 to remove one circuit breaker.

9. Remove two nuts (63), two lockwashers (64), two screws (65) and circuit breaker (42, 43, 44, 45, 46, 56, or 58) from main switch panel assembly (6). Discard lockwashers.



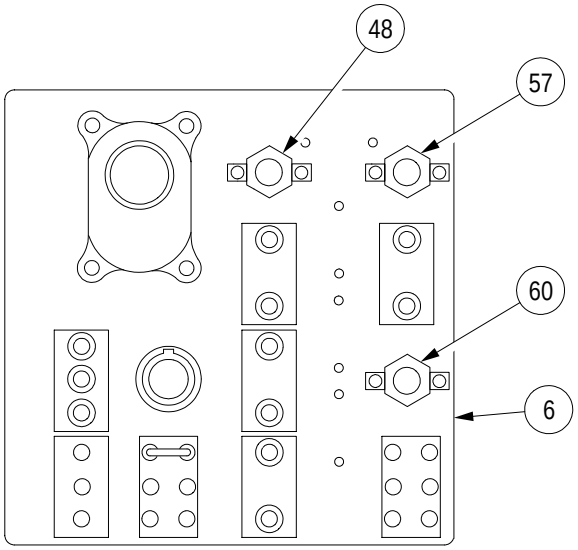
MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

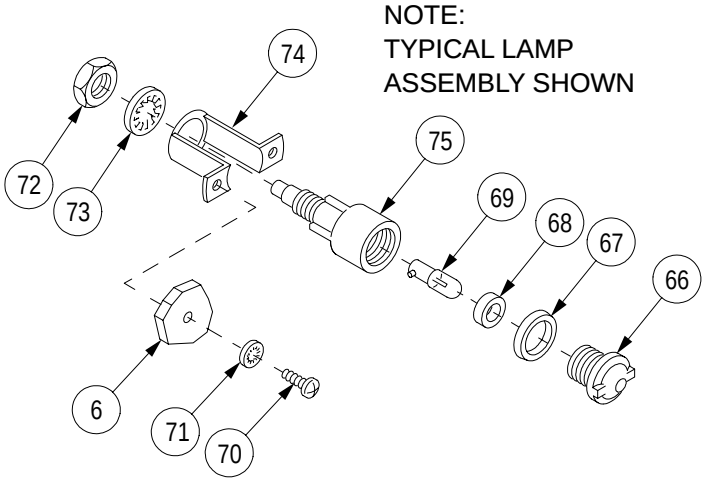
Disassembly-Continued

NOTE

There are three indicator lamp assemblies in the main switch panel assembly. All three are removed in the same manner. Perform steps 10 and 11 to remove one lamp assembly.

10. Remove lens (66), gasket (67), gasket (68), lamp (69), two screws (70), two lockwashers (71) and indicator lamp assembly (48, 57 or 60) from main switch panel assembly (6). Discard gaskets and lockwashers.
11. Remove nut (72), lockwasher (73) and retaining strap (74) from lamp body (75). Discard lockwasher.





MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

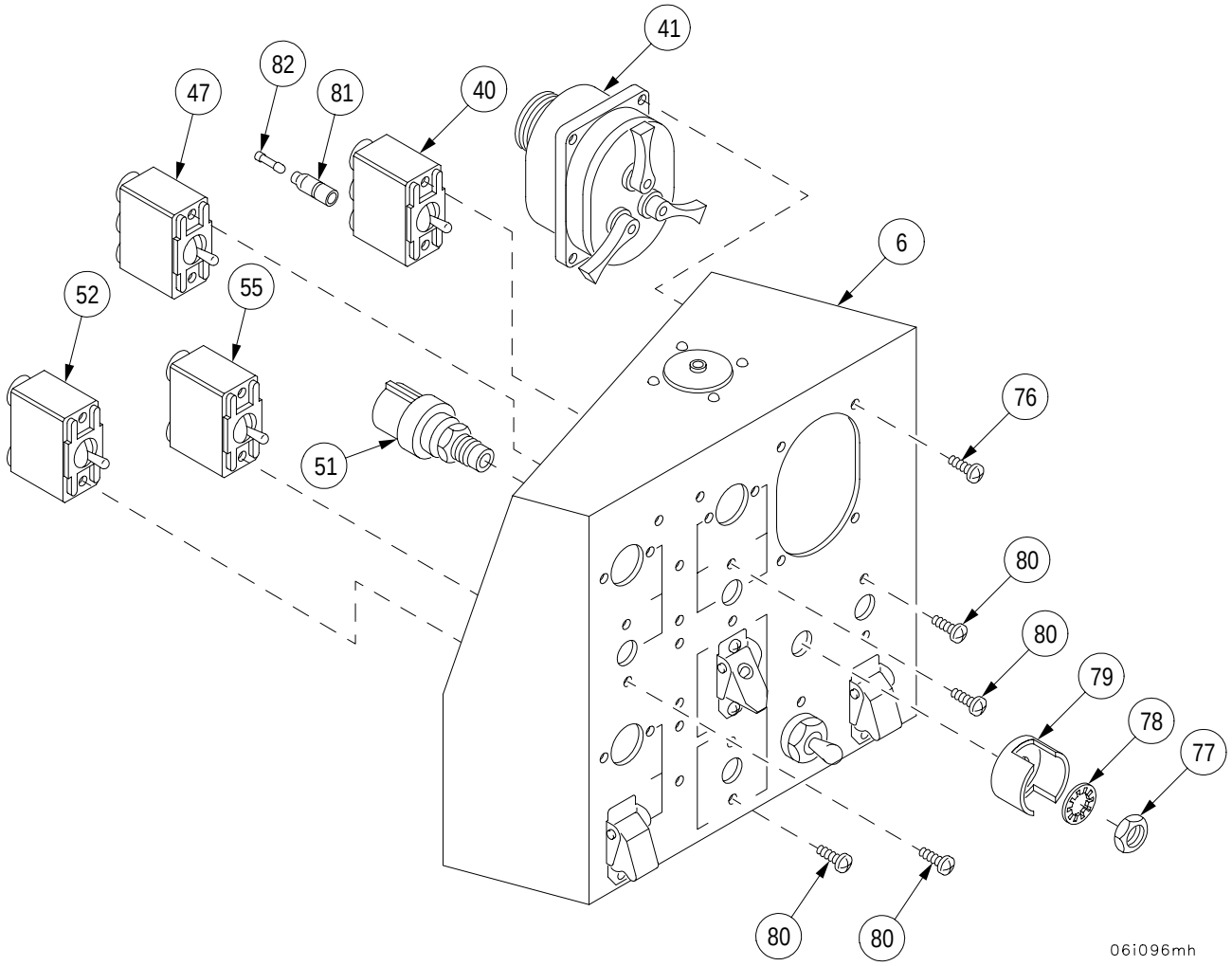
Disassembly-Continued

12. Remove four screws (76) and service lights switch (41) from main switch panel assembly (6).
13. Remove nut (77), lockwasher (78), switch guard (79) and starter switch (51) from main switch panel assembly (6).

NOTE

The blackout, master, flasher and fuel shutoff toggle switches are all removed in the same manner. Perform step 14 to remove one toggle switch.

14. Remove two screws (80) and toggle switch (40, 47, 52, or 55) from main switch panel assembly (6).
15. Remove shell (81) and plug (82) from blackout toggle switch (40).



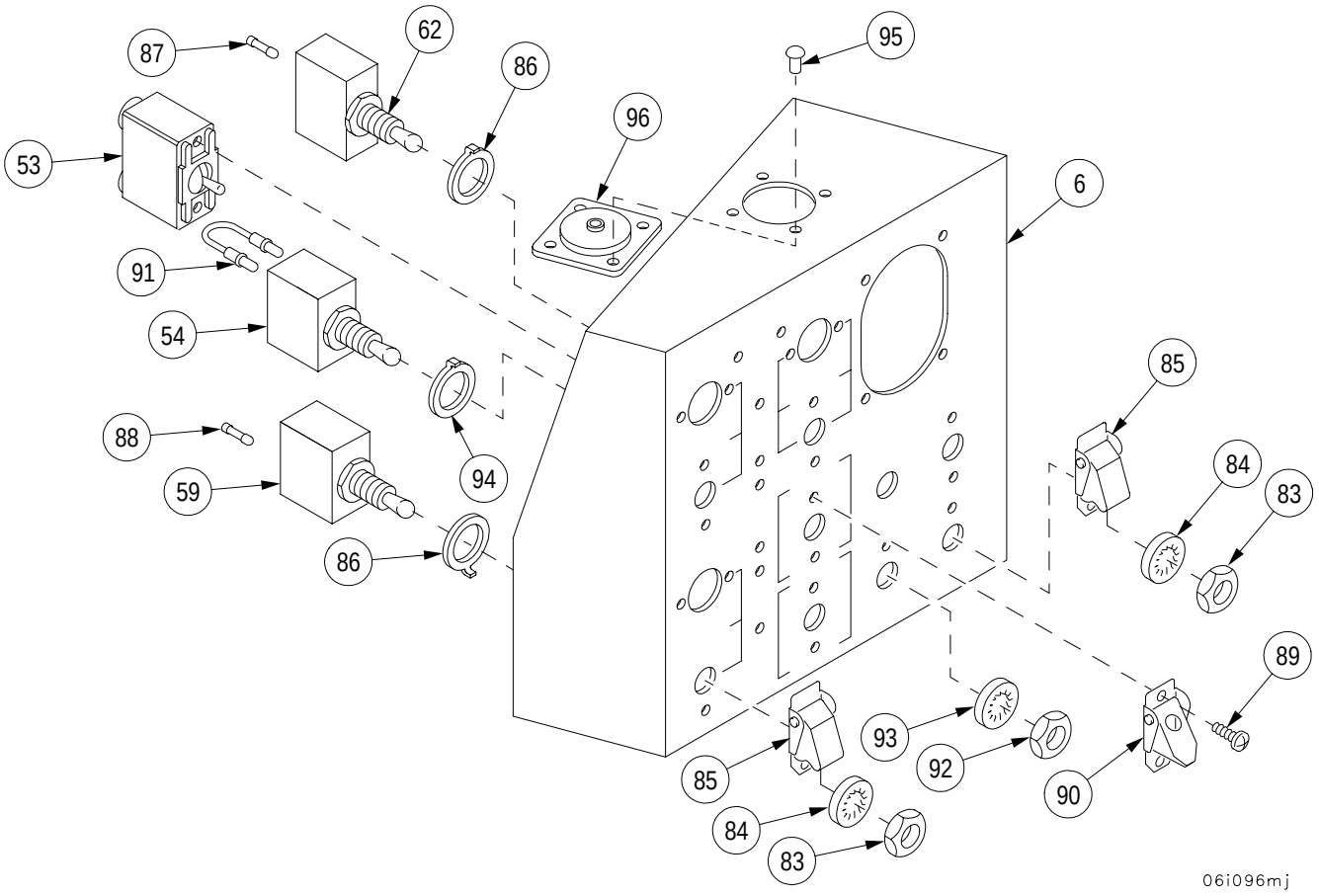
MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Disassembly-Continued

NOTE

The horn override and exhaust smoke toggle switches are removed in the same manner. Perform step 16 to remove one toggle switch.

16. Remove nut (83), lockwasher (84), switch guard (85), toggle switch (59 or 62) and key washer (86) from switch panel assembly (6).
17. Remove plug (87) from toggle switch (62) and two plugs (88) from toggle switch (59).
18. Remove two screws (89), switch guard (90) and fuel pump toggle switch (53) from switch panel assembly (6).
19. Remove lead (91) from rear of preheat toggle switch (54).
20. Remove nut (92), lockwasher (93), preheat toggle switch (54) and key washer (94) from switch panel assembly (6).
21. Remove four rivets (95) and cushion (96) from panel (6).
22. Inspect parts for damage and replace as required.



MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

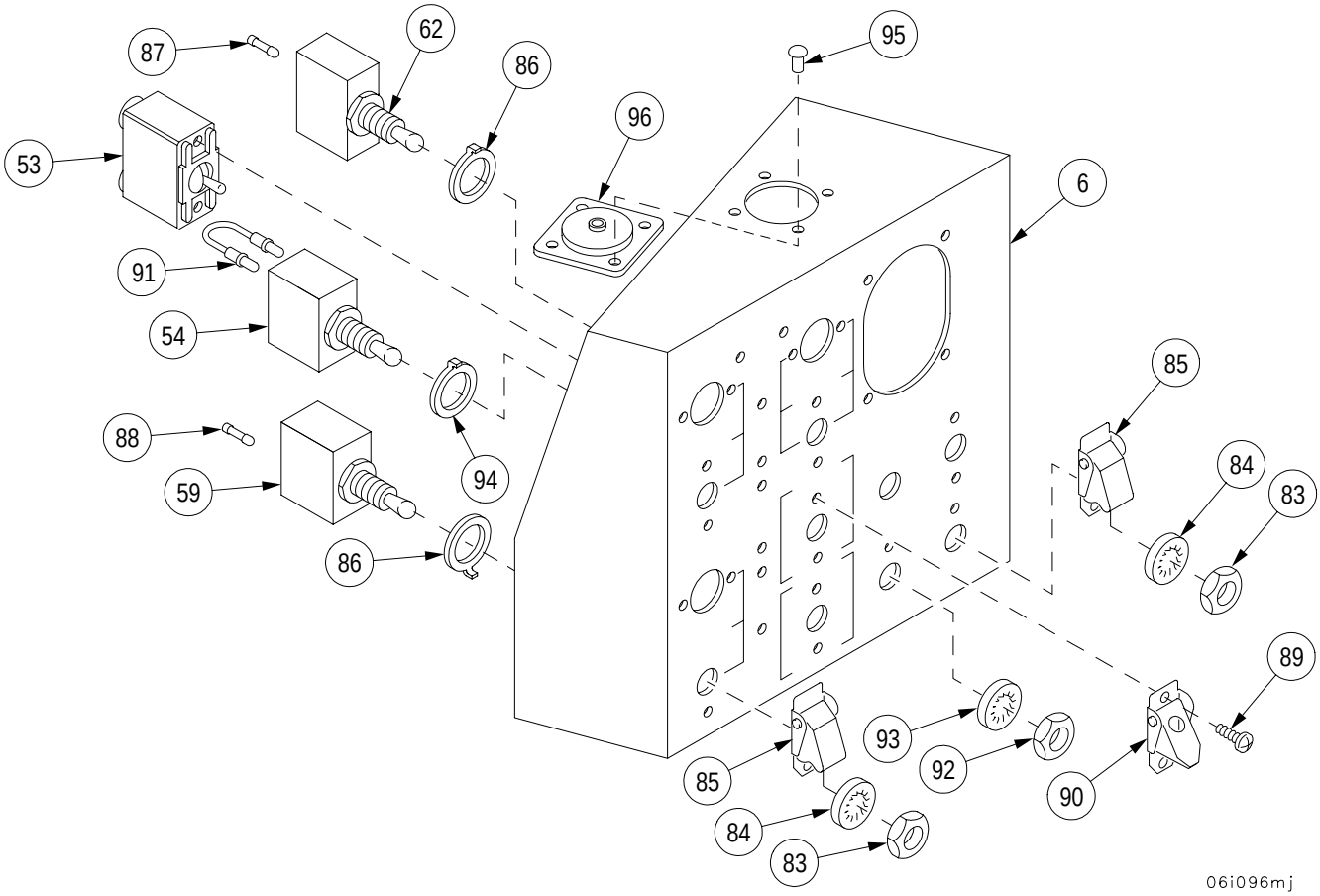
Assembly

1. Install cushion (96) on panel (6) with four new rivets (95).
2. Install preheat toggle switch (54) and key washer (94) on switch panel assembly (6) with lockwasher (93) and nut (92).
3. Install lead (91) on rear of preheat toggle switch (54) between pins 3 and 6.
4. Install switch guard (90) and fuel pump toggle switch (53) on switch panel assembly (6) with two screws (89).
5. Install plug (87) in toggle switch (62) pin 1 and two plugs (88) in toggle switch (59) pins 1 and 4.

NOTE

The horn override and exhaust smoke toggle switches are installed in the same manner. Perform step 6 to install one toggle switch.

6. Install toggle switch (59 or 62) on switch panel assembly (6) with key washer (86), switch guard (85), lockwasher (84) and nut (83).



MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

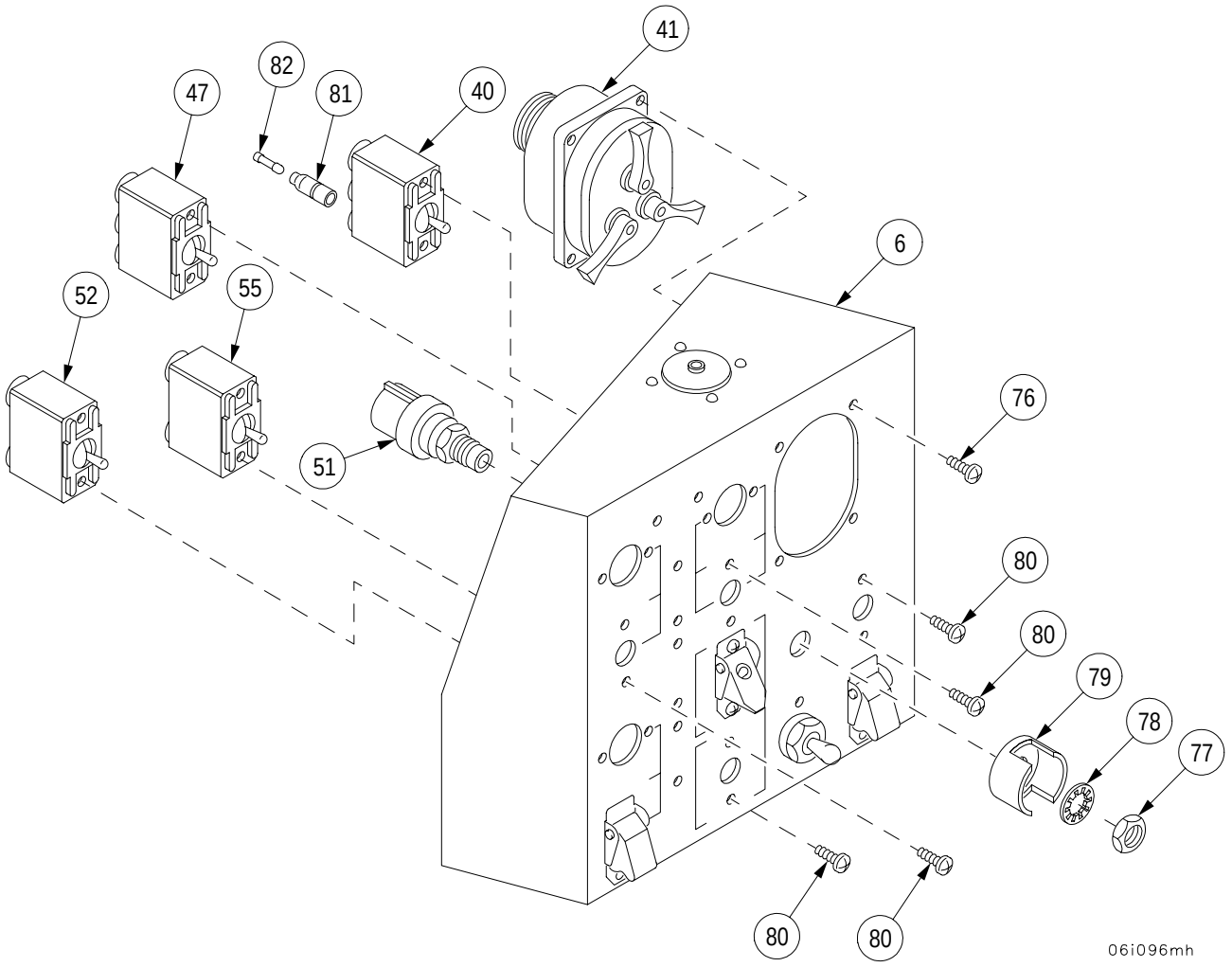
Assembly-Continued

7. Install shell (81) and plug (82) on blackout toggle switch (40) pin 1.

NOTE

The master and flasher switches are installed with lever ON position up (pin 1 at the top); the fuel shutoff switch with lever MOM ON position down (pin 1 at the bottom). The blackout switch is installed with lever ON (A position) up and lever ON (C position) down (pin 1 at the top and pin 2 at the bottom). Perform step 8 to install each toggle switch.

8. Install toggle switch (40, 47, 52, or 55) on main switch panel assembly (6) with two screws (80).
9. Install switch guard (79) and starter switch (51) on main switch panel assembly (6) with lockwasher (78) and nut (77).
10. Install service lights switch (41) on main switch panel assembly (6) with four screws (76).



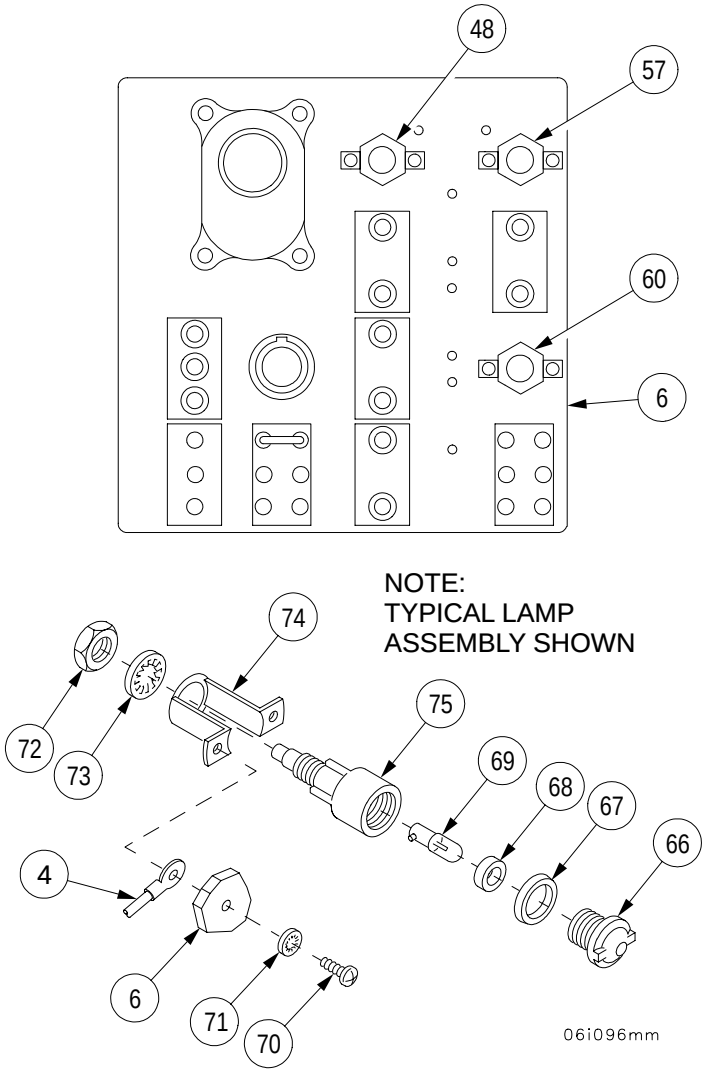
MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Assembly-Continued

NOTE

There are three indicator lamp assemblies in the main switch panel assembly. All three are installed in the same manner. Perform steps 11 through 13 to install one lamp assembly.

11. Install retaining strap (74), new lockwasher (73) and nut (72) on lamp body (75).
12. Install indicator lamp assembly (48, 57 or 60) and ground wire (4) on main switch panel assembly (6) with two new lockwashers (71) and two screws (70).
13. Install lamp (69), new gasket (68), new gasket (67) and lens (66) in indicator lamp assembly (48, 57 or 60).



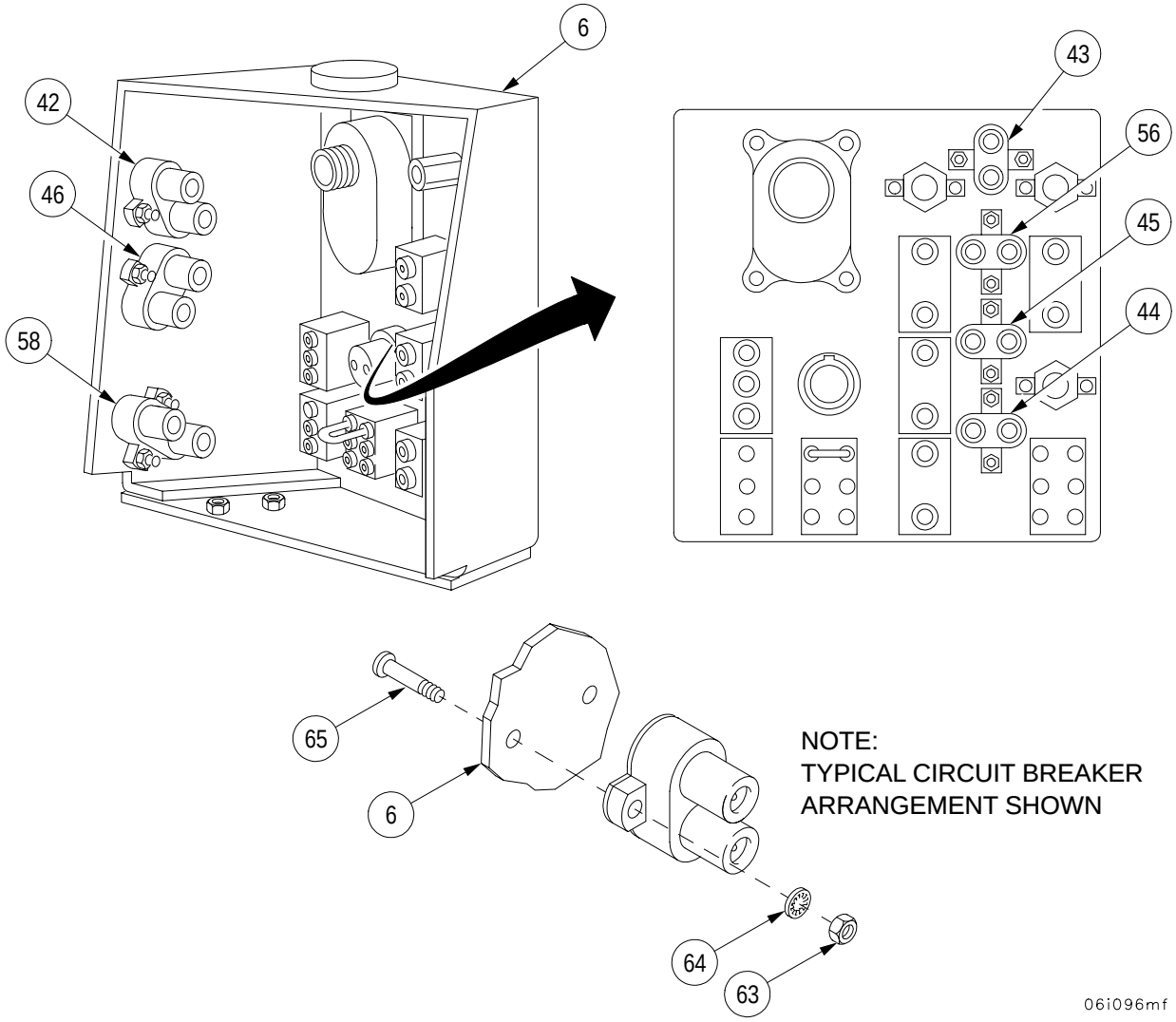
MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Assembly-Continued

NOTE

There are seven circuit breakers in the main switch panel assembly. There are two 20-amp and five 15-amp circuit breakers. All seven are installed in the same manner. Perform step 14 to install one circuit breaker.

14. Install circuit breaker (42, 43, 44, 45, 46, 56, or 58) in main switch panel assembly (6) with two screws (65), two new lockwashers (64) and two nuts (63).

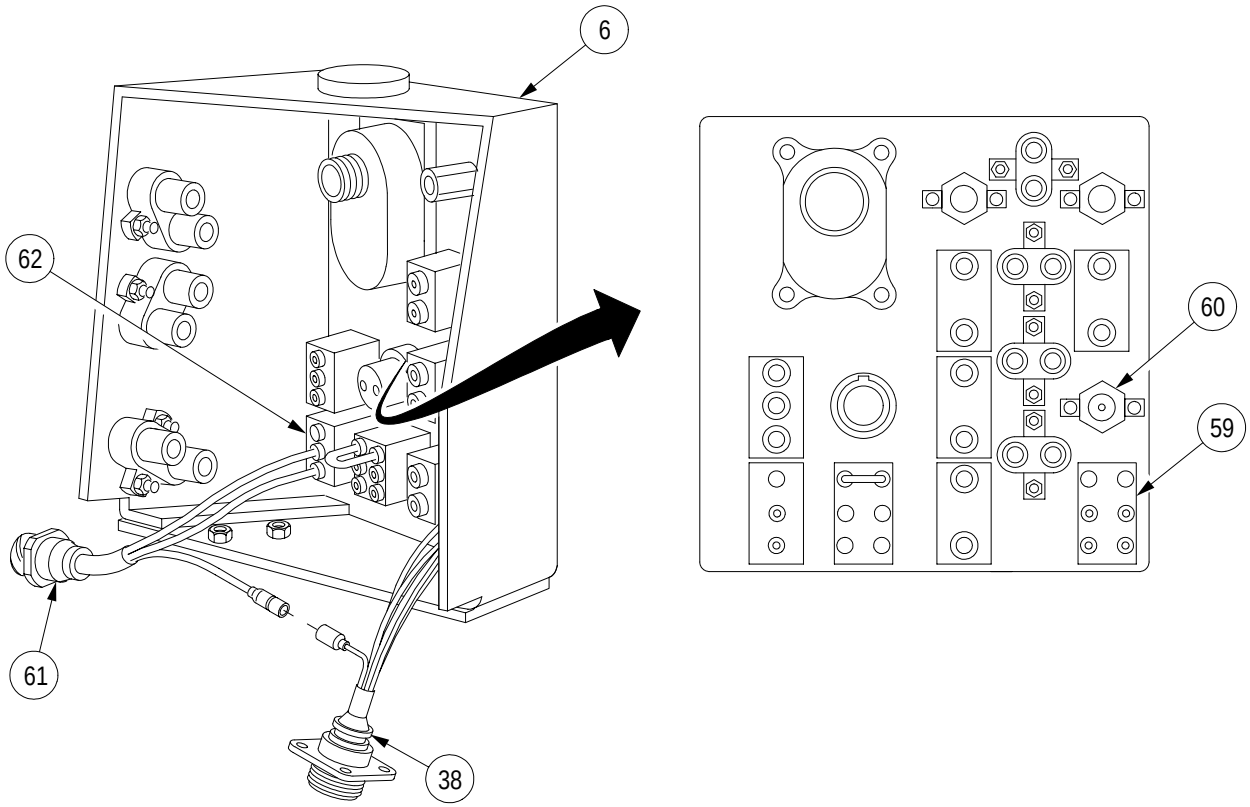


MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Assembly-Continued

15. Connect wiring harness 4W117 (61) wire 26A to pins 2 and 3 of horn override switch (62).
16. Connect wiring harness 4W118 (38) to the following components in the main switch panel assembly (6):

4W118 Connector/Lead/Wire	Connect To
Wire 26B	Exhaust smoke switch (59) pin 3 Wiring harness 4W117 (61) wire 26B
Wire 27A	Exhaust smoke switch (59) pin 6
Wire T1	Exhaust smoke switch (59) pin 5 Exhaust smoke lamp (60)
Wire T	Exhaust smoke switch (59) pin 2



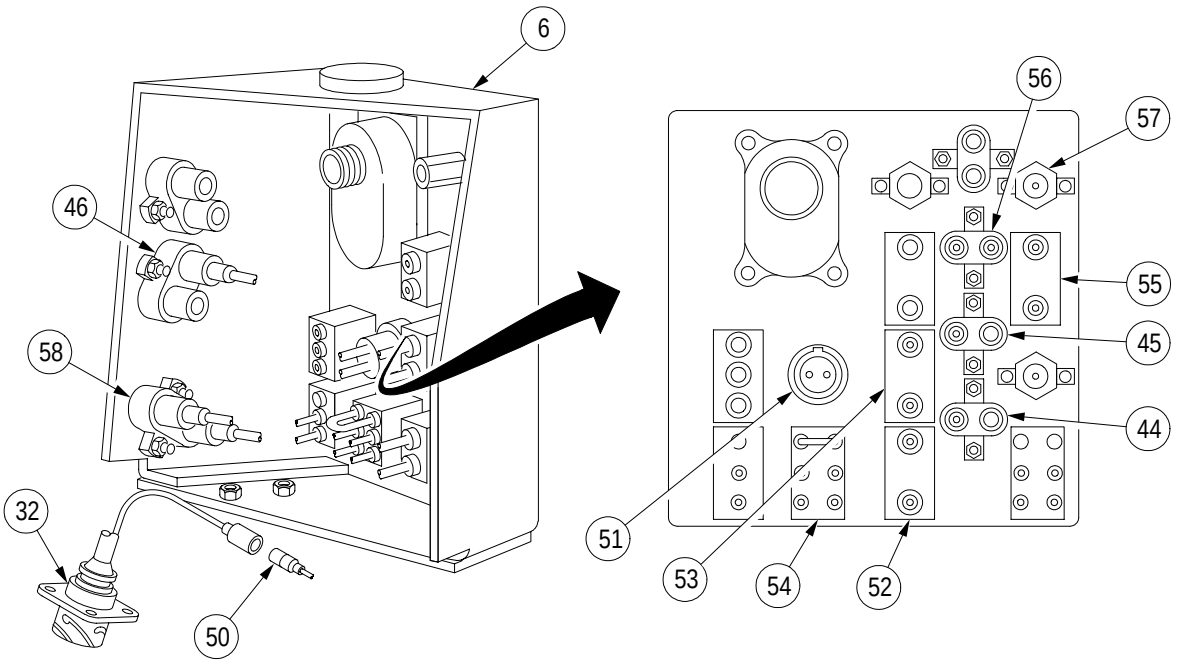
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MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Assembly-Continued

17. Connect wiring harness 4W109 (32) to the following components in the main switch panel assembly (6):

4W109 Connector/Lead/Wire	Connect To
Wire 530	Two to preheat circuit breaker (58) One to preheat switch (54) pin 2
Wire 325C	Flasher lamp (57)
Wire 10	Flasher circuit breaker (56)
Wire 325	Two to flasher switch (55) One to flasher circuit breaker (56)
Wire 530B	Preheat switch (54) pin 4
Wire 530A	Preheat switch (54) pins 1 and 5
Wire 76	Fuel pump switch (53) Fuel pump circuit breaker (45)
Wire 76/1A	Fuel pump switch (53)
Wire 54	Two to fuel shutoff switch (52) One to fuel shutoff circuit breaker (44)
Wire 14	Two to starter switch (51) One to starter circuit breaker (46)
Wire T	Wiring harness 4W118 wire T (50)

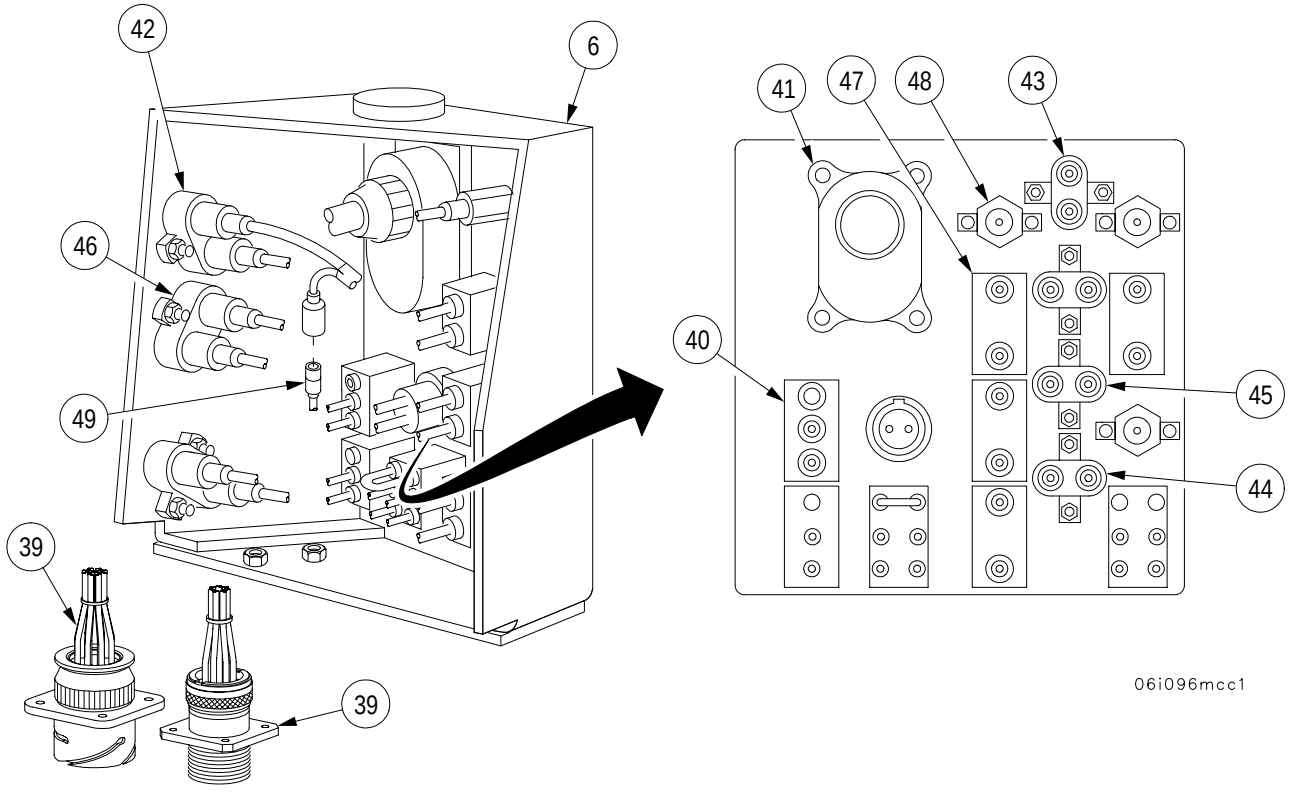


MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Assembly-Continued

18. Connect wiring harness 4W151 (39) to the following components in the main switch panel assembly (6):

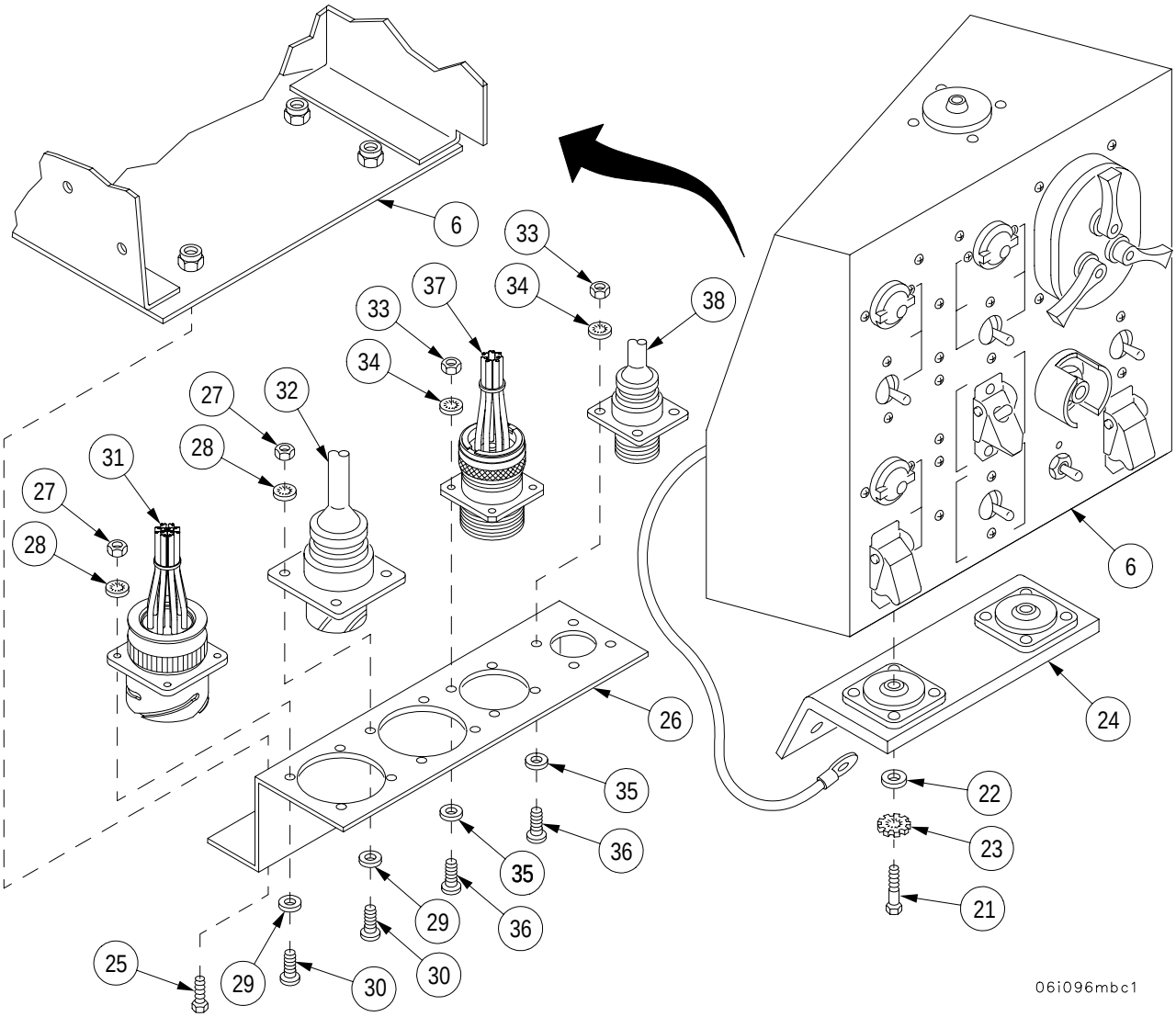
4W151 Connector/Lead/Wire	Connect To
Wire 27A	Wiring harness 4W118 wire 27A (49)
Wire 459B	Master power switch (47)
Wire 459	Master power switch (47) Master power lamp (48)
Wire 38/999	Passive night viewer circuit breaker (43)
Wire 25/27	Gauge panel/horn circuit breaker (42)
Wire 10	Gauge panel/horn circuit breaker (42) Passive night viewer circuit breaker (43) Fuel shutoff circuit breaker (44) Fuel pump circuit breaker (45) Starter circuit breaker (46)
Connector P1	Service lights switch (41)
Wire 520	Blackout switch (40)
Wire 19	Blackout switch (40)



MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Assembly-Continued

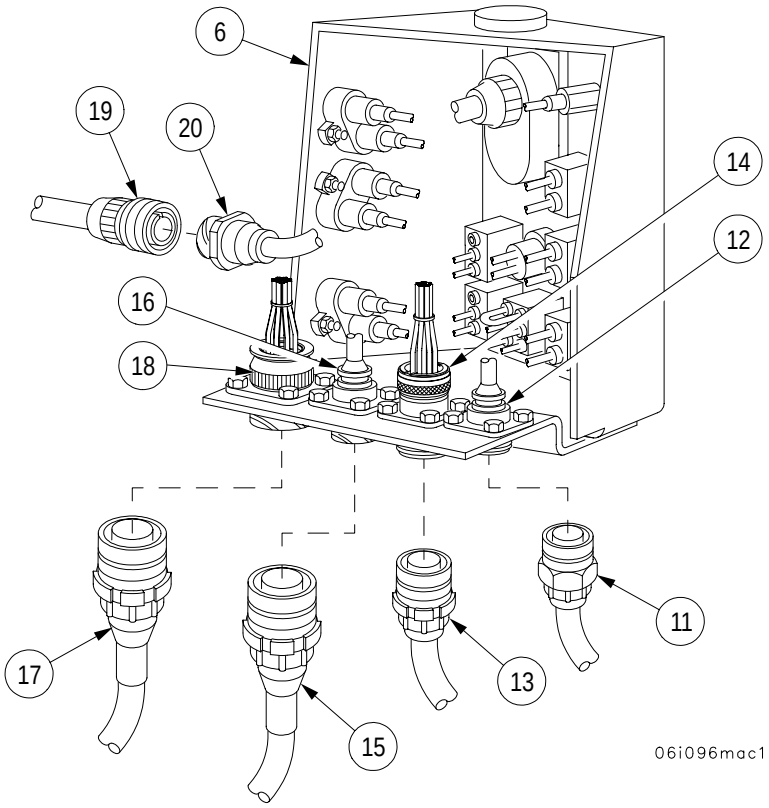
19. Install wiring harness 4W118 J1 (38) to panel (26) J1 and wiring harness 4W151 J1 (37) to panel (26) J2 with eight screws (36), eight new lockwashers (34), eight flat washers (35) and eight nuts (33).
20. Install wiring harness 4W151 J2 (31) to panel (26) J4 and wiring harness 4W109 J1 (32) to panel (26) J3 with eight screws (20), eight new lockwashers (28), eight flat washers (29) and eight nuts (27).
21. Install panel (26) with wiring harnesses attached, on main switch panel assembly (6) with two screws (25).
22. Install mount (24) on main switch panel assembly (6) with new lockwasher (23), two flat washers (22) and two screws (21).



MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Installation

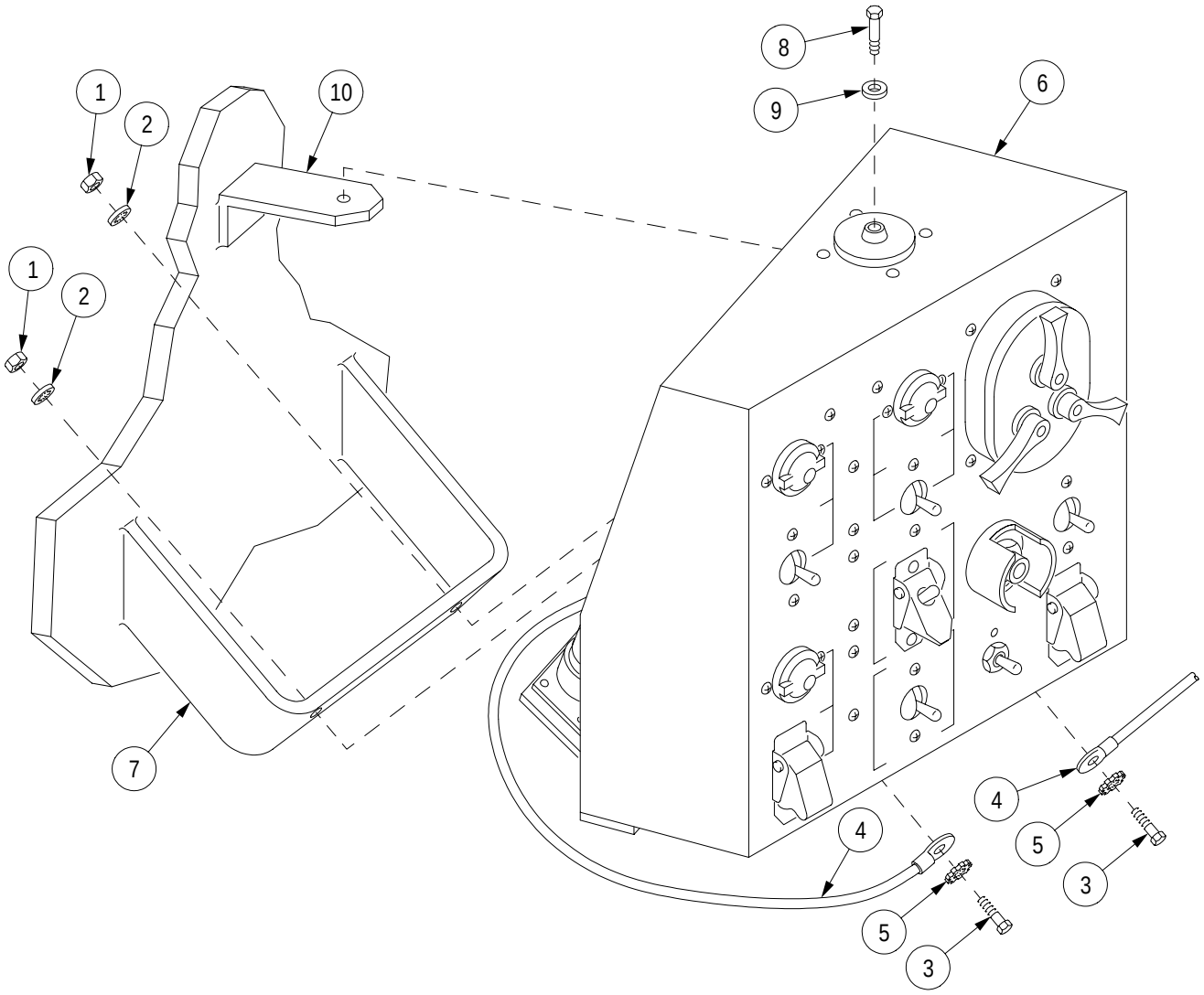
1. Connect wiring harness 4W116 connector P1 (19) to wiring harness 4W117 connector J5 (20) on main switch panel assembly (6).
2. Connect wiring harness 4W105 connector P1 (17) to connector J4 (18) on main switch panel assembly (6).
3. Connect wiring harness 4W101 connector P1 (15) to connector J3 (16) on main switch panel assembly (6).
4. Connect wiring harness 4W127 connector P2 (13) to connector J2 (14) on main switch panel assembly (6).
5. Connect wiring harness 4W106 connector P1 (11) to connector J1 (12) on main switch panel assembly (6).



MAIN SWITCH PANEL ASSEMBLY REPAIR - CONTINUED 0242 00

Installation-Continued

6. Install screw (8) and flat washer (9) securing main switch panel assembly (6) to mounting bracket (10).
7. Secure main switch panel assembly (6) and the end of the two ground wires (4) to mounting bracket (7) with two screws (3), new lockwasher (5), two new lockwashers (2) and two nuts (1).



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NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR

0243 00

THIS WORK PACKAGE COVERS:

Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools

General mechanic's tool kit (item 1, WP 0717 00)
Blind hand riveter (item 66, WP 0717 00)

Materials/Parts

Lockwashers (3) (item 2, WP 0718 00)
Lockwashers (4) (item 86, WP 0718 00)
Lockwashers (4) (item 85, WP 0718 00)
Lockwashers (3) (item 9, WP 0718 00)
Lockwashers (14) (item 90, WP 0718 00)
Lockwashers (4) (item 93, WP 0718 00)
Lockwashers (12) (item 18, WP 0718 00)
Marker tags (item 49, WP 0716 00)
Lockwashers (2) (item 38, WP 0718 00)

Materials/Parts-Continued

Gaskets (6) (item 91, WP 0718 00)
Gaskets (4) (item 92, WP 0718 00)
Rivets (12) (item 345, WP 0718 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References

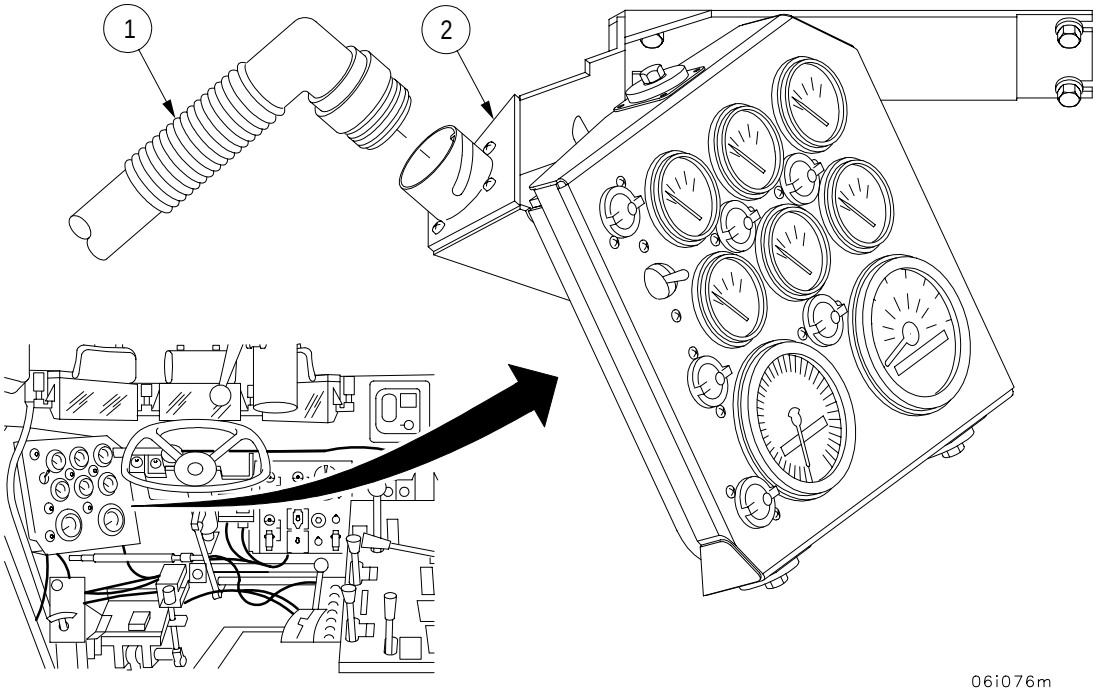
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

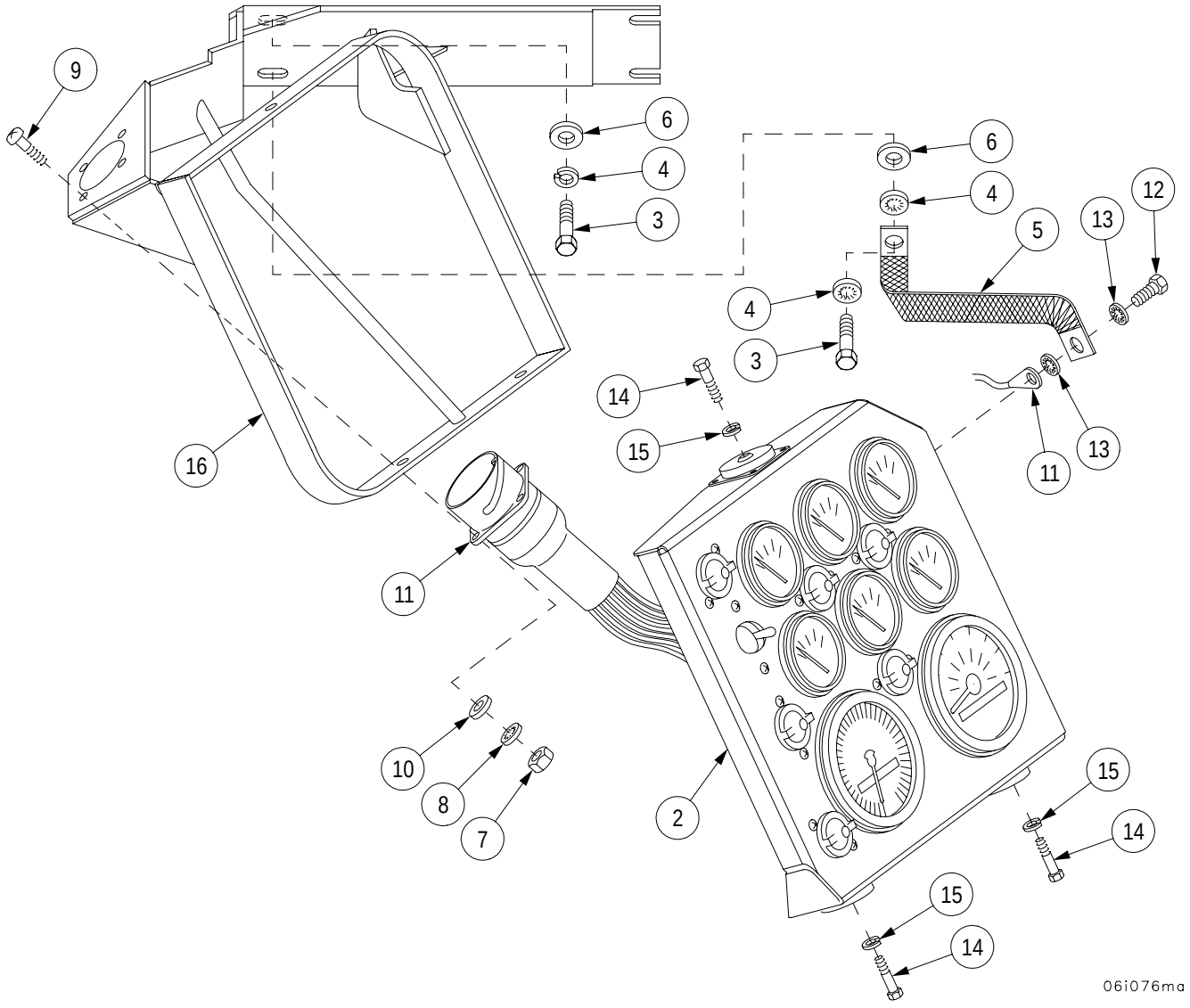
1. Disconnect wiring harness 4W103 connector P1 (1) from gauge panel assembly (2).



GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR - CONTINUED 0243 00

Removal-Continued

2. Remove four screws (3), five lockwashers (4), ground strap (5), four flat washers (6) and gauge panel assembly (2) from hull. Discard lockwashers.
3. Remove four nuts (7), four lockwashers (8), four screws (9), four flat washers (10) and wiring harness 4W152 (11) connector J1. Discard lockwashers.
4. Remove screw (12), two lockwashers (13), ground strap (5) and ground lead of wiring harness 4W152 (11) from gauge panel assembly (2). Discard lockwashers.
5. Remove three screws (14), three lockwashers (15) and support (16) from gauge panel assembly (2). Discard lockwashers.
6. Remove speedometer (WP 0694 00) and tachometer (WP 0695 00).

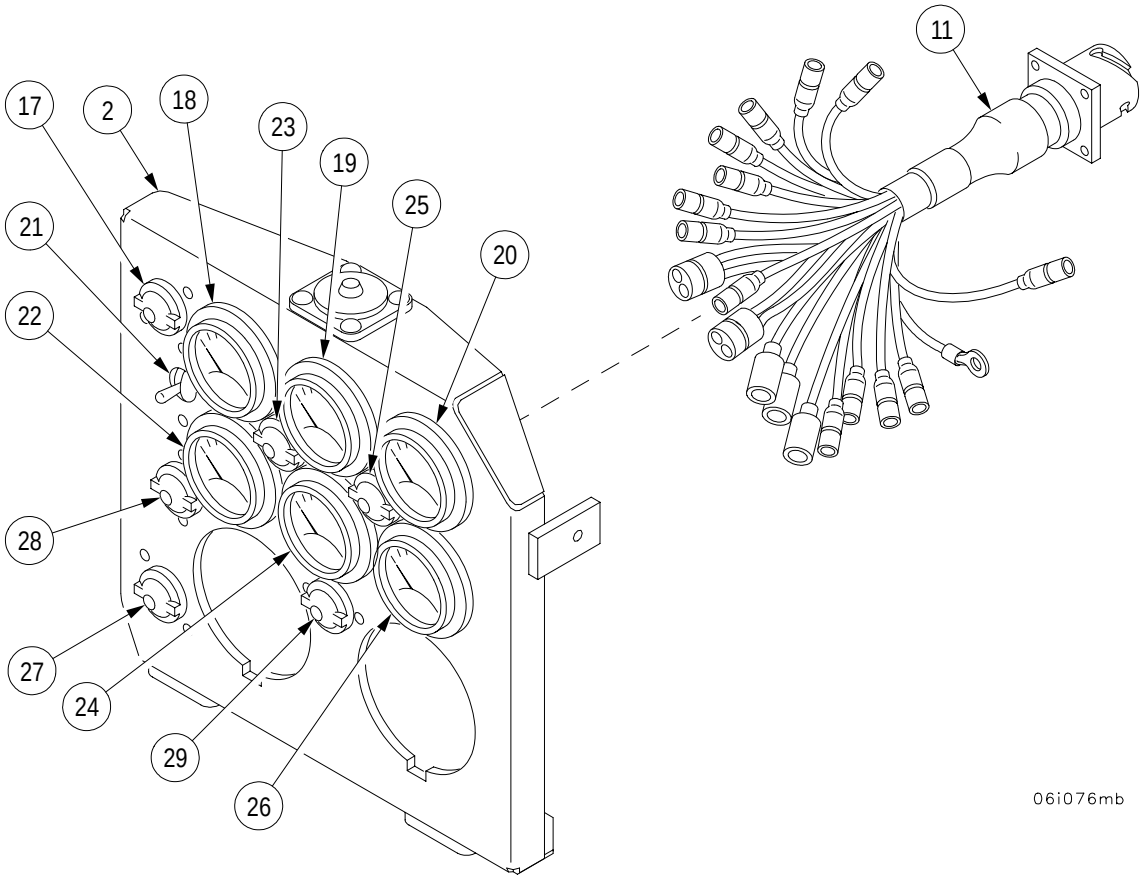


GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR - CONTINUED 0243 00

Disassembly

1. Disconnect the following wiring harness 4W152 (11) connectors from the gauge panel assembly (2):

Wiring Harness 4W152 Wire	Disconnect From Backside Of
54	Fire Extinguisher Engine Shutoff Light (17)
27	Generator Indicator Gauge (18)
27/33	Engine Oil Temperature Gauge (19)
27/36	Engine Oil Pressure Gauge (20)
30/31	Fuel Tank Toggle Switch (21)
27	Fuel Gauge (22)
40	Panel Light (23)
27 and 324	Transmission Oil Temperature Gauge (24)
40	Panel Light (25)
27 and 321	Transmission Oil Pressure Gauge (26)
27/510	Turbo Dust Detector Light (27)
27/509	System Warning Light (28)
40	Panel Light (29)



GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR - CONTINUED

0243 00

Disassembly-Continued

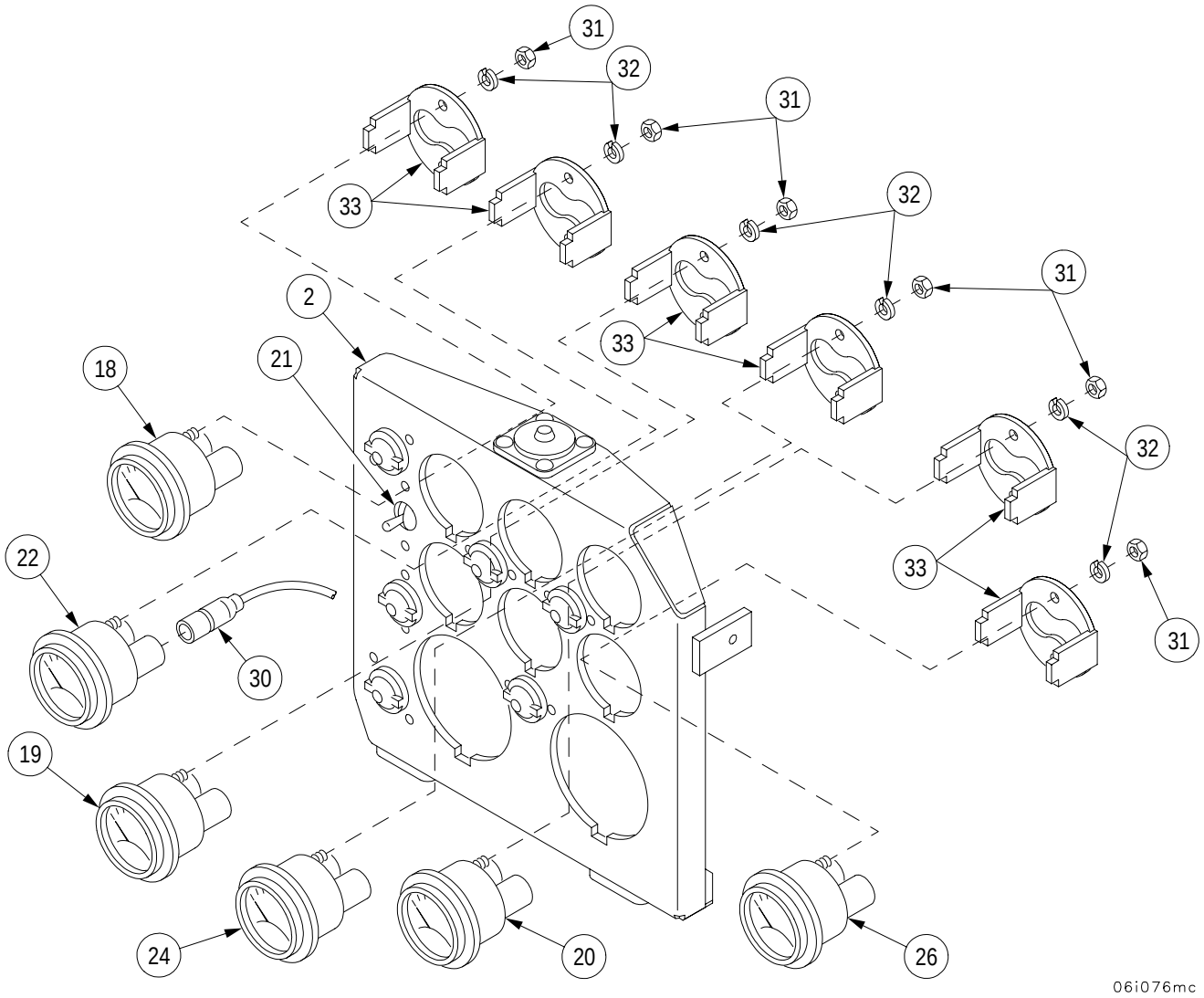
2. Disconnect lead (30) from fuel shutoff toggle switch (21) and from fuel gauge (22).

NOTE

There are six gauges in the gauge panel assembly. All gauges are removed in the same manner. Perform step 3 to remove one gauge.

Retain gauge mounting hardware for use during installation.

3. Remove two nuts (31), two lockwashers (32), retaining strap (33) and gauge (18, 19, 20, 22, 24 or 26) from gauge panel assembly (2). Discard lockwashers.

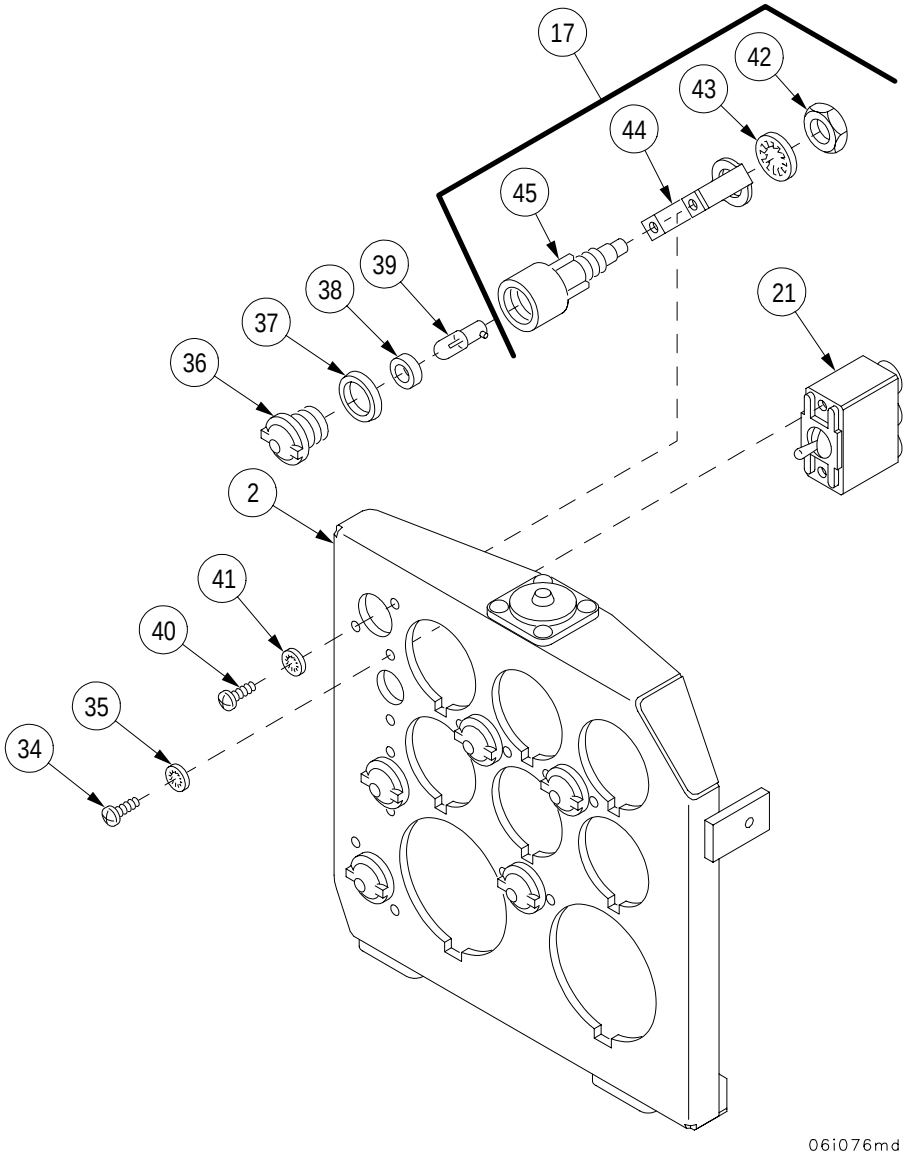


GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR - CONTINUED

0243 00

Disassembly-Continued

4. Remove two screws (34), two lockwashers (35) and fuel tank toggle switch (21) from gauge panel assembly (2). Discard lockwashers.
5. Remove lens (36), gasket (37), gasket (38), lamp (39), two screws (40), two lockwashers (41) and fire extinguisher engine shutoff indicator light (17) from gauge panel assembly (2). Discard gaskets and lockwashers.
6. Remove nut (42), lockwasher (43) and retaining strap (44) from indicator light body (45). Discard lockwasher.



GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR - CONTINUED

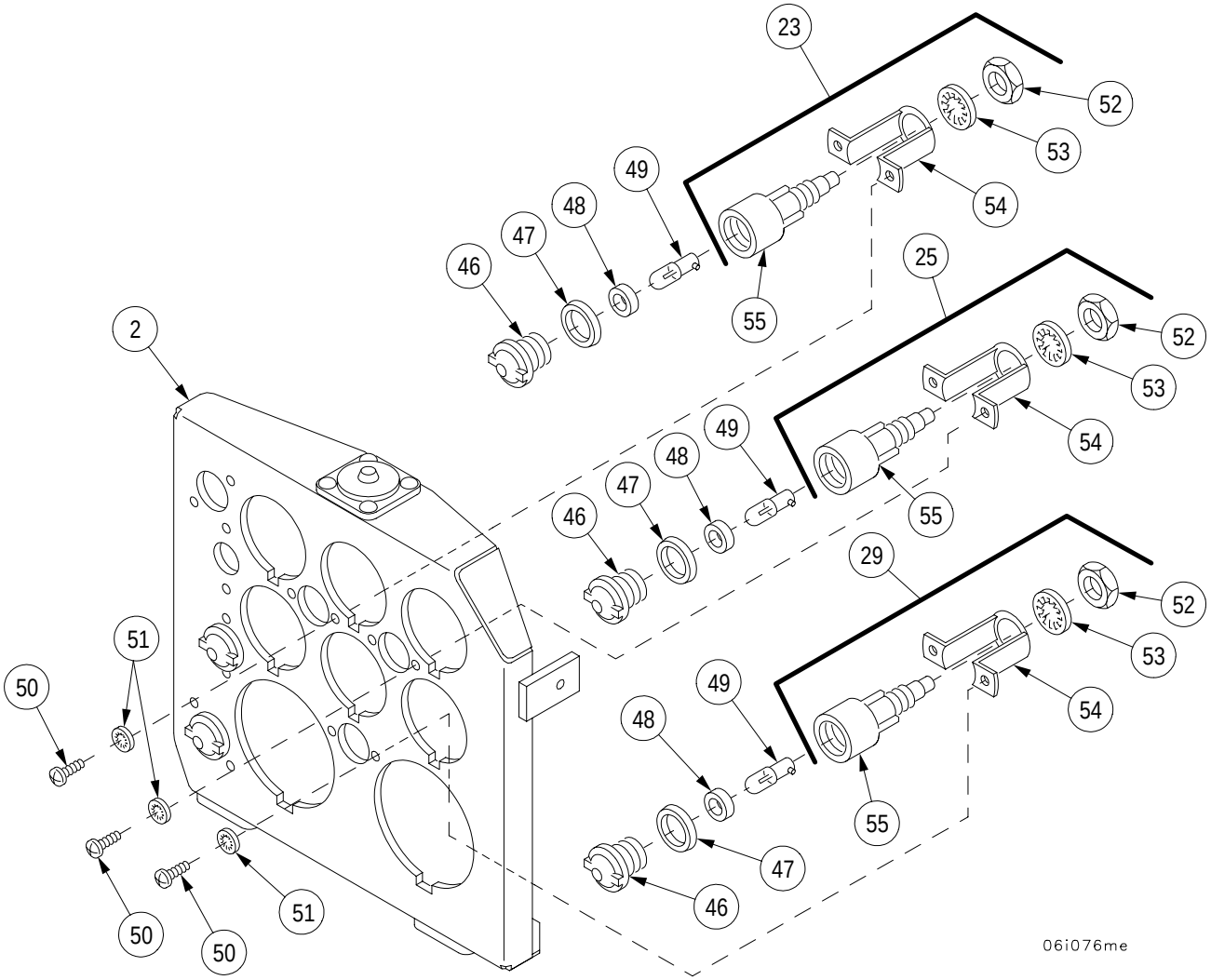
0243 00

Disassembly-Continued

NOTE

There are three panel lights in the gauge panel assembly. All panel lights are removed in the same manner. Perform steps 7 and 8 to remove and disassemble one panel light.

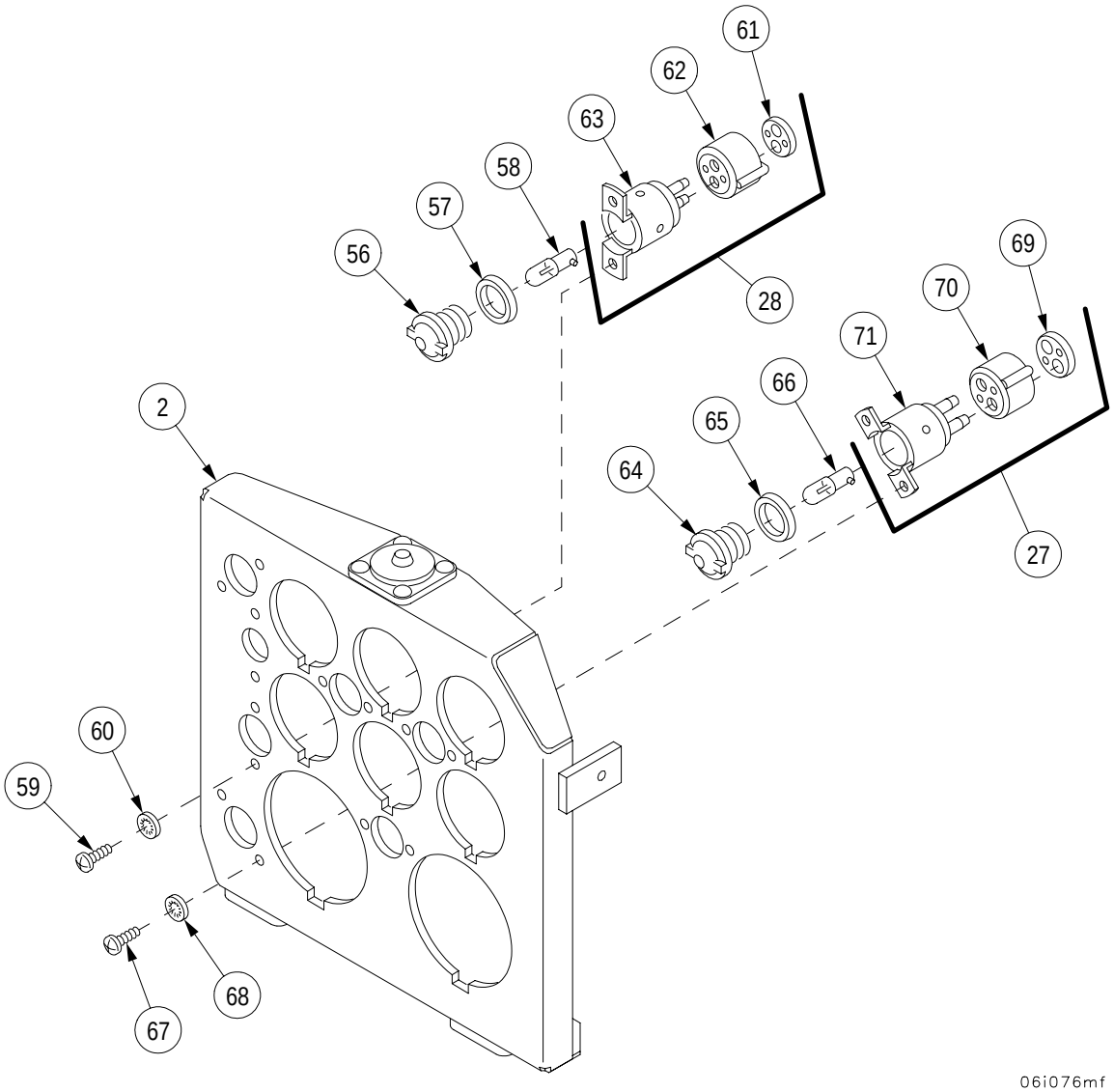
7. Remove lens (46), gasket (47), gasket (48), lamp (49), two screws (50), two lockwashers (51) and panel light (23, 25 or 29) from gauge panel assembly (2). Discard gaskets and lockwashers.
8. Remove nut (52), lockwasher (53) and retaining strap (54) from panel light body (55). Discard lockwasher.



GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR - CONTINUED 0243 00

Disassembly-Continued

9. Remove lens (56), gasket (57), lamp (58), two screws (59), two lockwashers (60) and system warning indicator light (28) from gauge panel assembly (2). Discard gaskets and lockwashers.
10. Remove retainer (61) and receptacle shell (62) from indicator light body (63).
11. Remove lens (64), gasket (65), lamp (66), two screws (67), two lockwashers (68) and turbo dust detector indicator light (27) from gauge panel assembly (2). Discard gaskets and lockwashers.
12. Remove retainer (69) and receptacle shell (70) from indicator light body (71).



GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR - CONTINUED

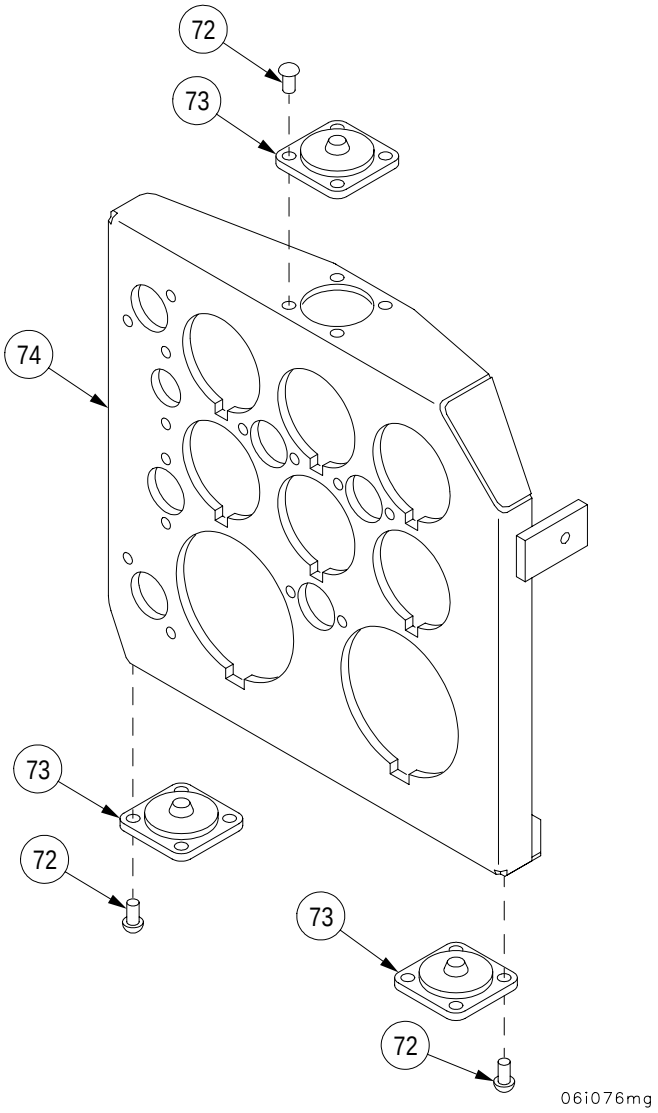
0243 00

Disassembly-Continued

13. Remove 12 rivets (72) and three cushions (73) from panel (74). Discard rivets.
14. Inspect parts for damage and replace as required.

Assembly

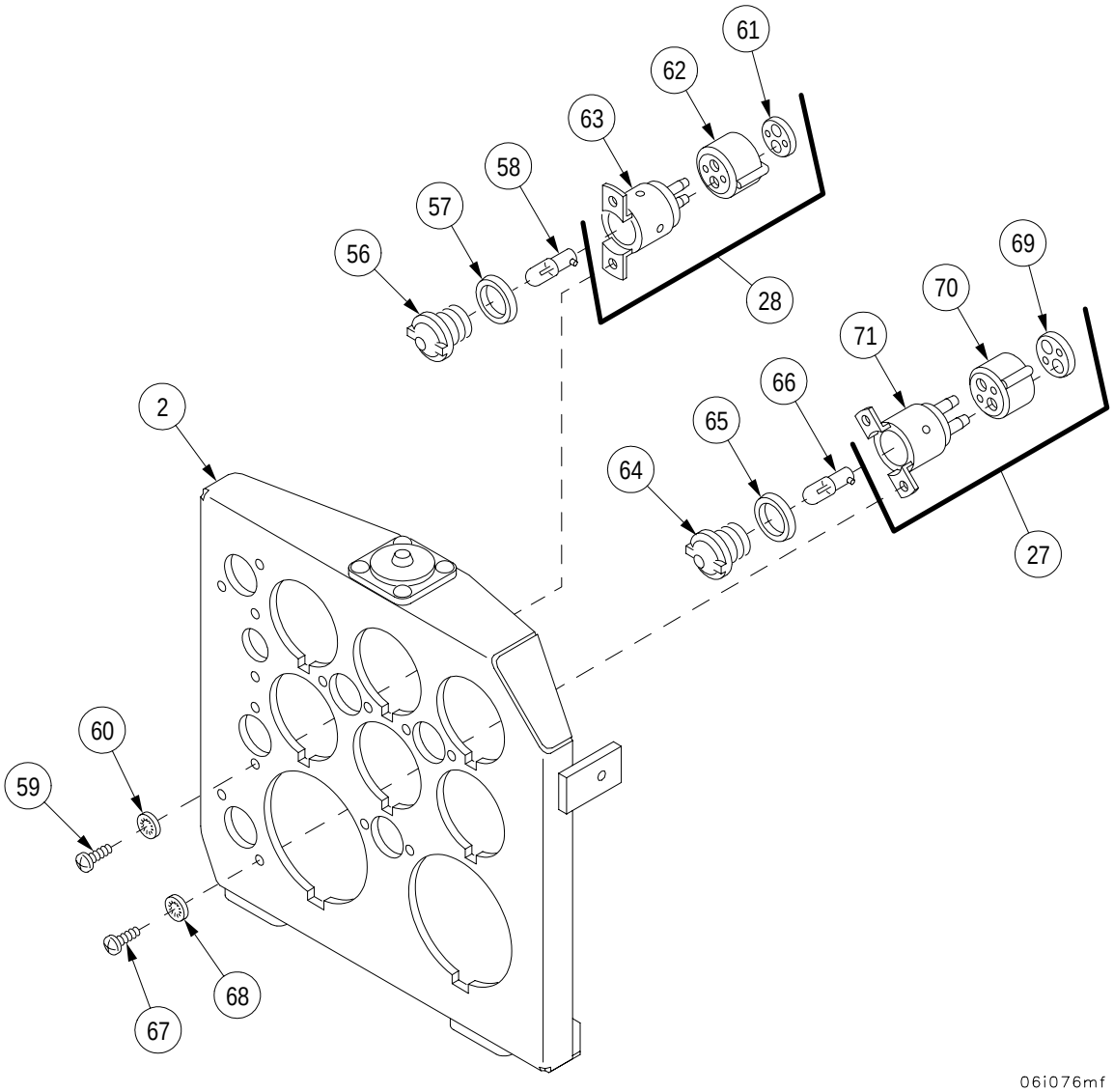
1. Install three cushions (73) on panel (74) with 12 new rivets (72).



GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR - CONTINUED 0243 00

Assembly-Continued

2. Install receptacle shell (70) and retainer (69) on indicator light body (71).
3. Install turbo dust detector indicator light (27) in gauge panel assembly (2) with two screws (67) and two new lockwashers (68); then install lamp (66), new gasket (65) and lens (64).
4. Install receptacle shell (62) and retainer (61) on indicator light body (63).
5. Install system warning indicator light (28) in gauge panel assembly (2) with two screws (59) and two new lockwashers (60); then install lamp (58), new gasket (57) and lens (56).



GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR - CONTINUED

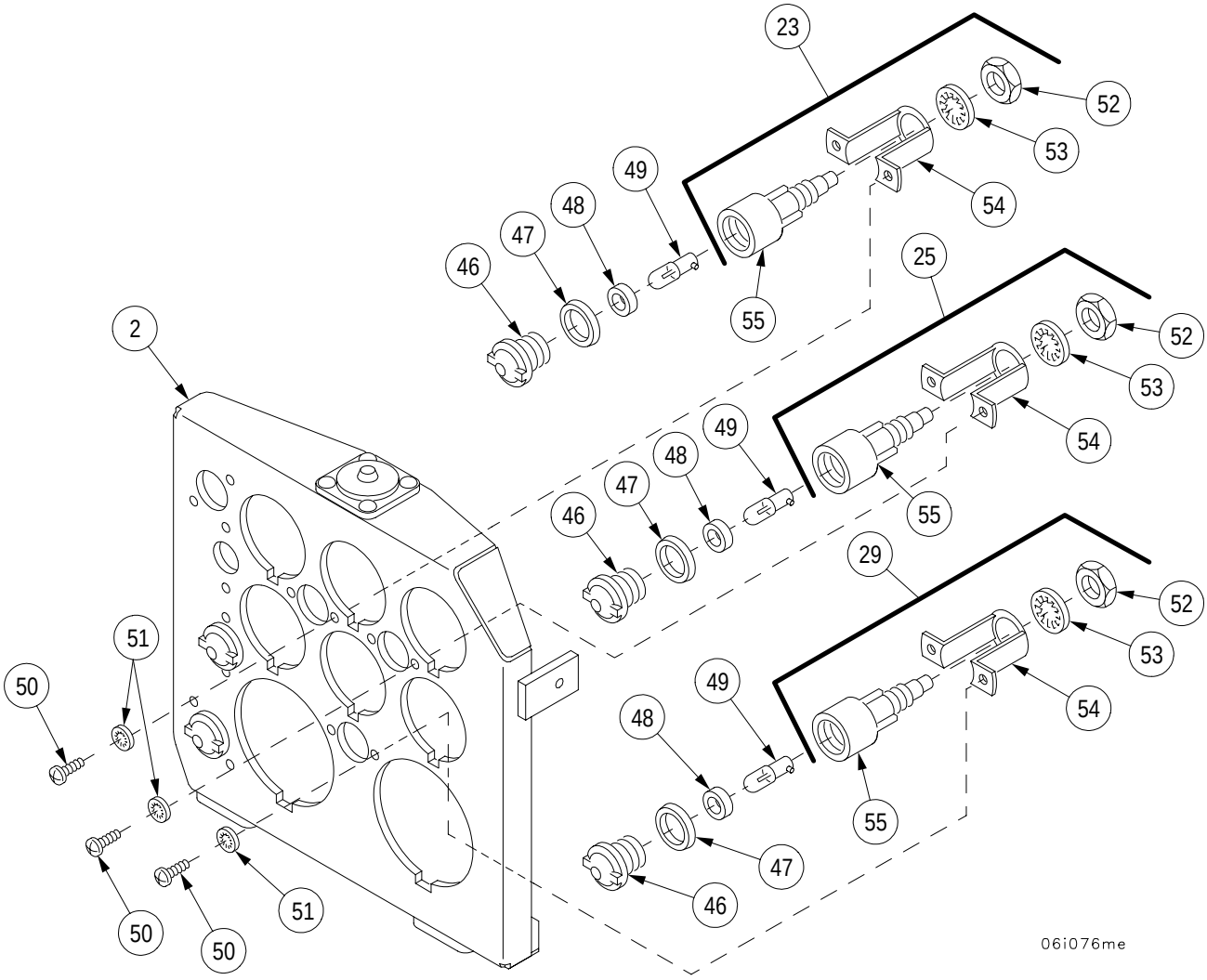
0243 00

Assembly-Continued

NOTE

There are three panel lights in the gauge panel assembly. All panel lights are installed in the same manner. Perform steps 6 and 7 to assemble and install one panel light.

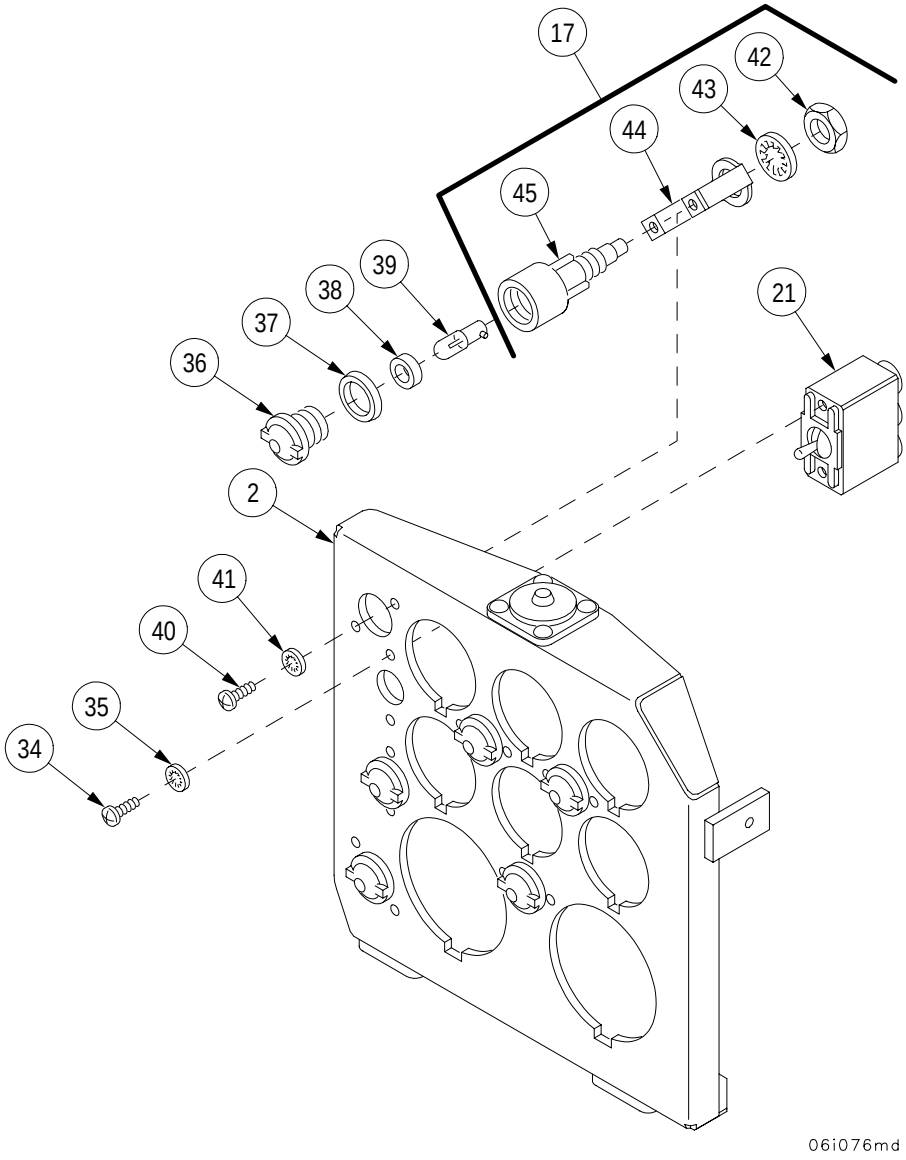
6. Install retaining strap (54), new lockwasher (53) and nut (52) on panel light body (55).
7. Install panel light (23, 25 or 29) in gauge panel assembly (2) with two screws (50) and two new lockwashers (51); then install lamp (49), new gasket (48), new gasket (47) and lens (46).



GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR - CONTINUED 0243 00

Assembly-Continued

8. Install retaining strap (44), new lockwasher (43) and nut (42) on indicator light body (45).
9. Install fire extinguisher engine shutoff indicator light (17) in gauge panel assembly (2) with two screws (40) and two new lockwashers (41); then install lamp (39), new gasket (38), new gasket (37) and lens (36).
10. Install fuel tank toggle switch (21) in gauge panel assembly (2) with two screws (34) and two new lockwashers (35).



GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR - CONTINUED

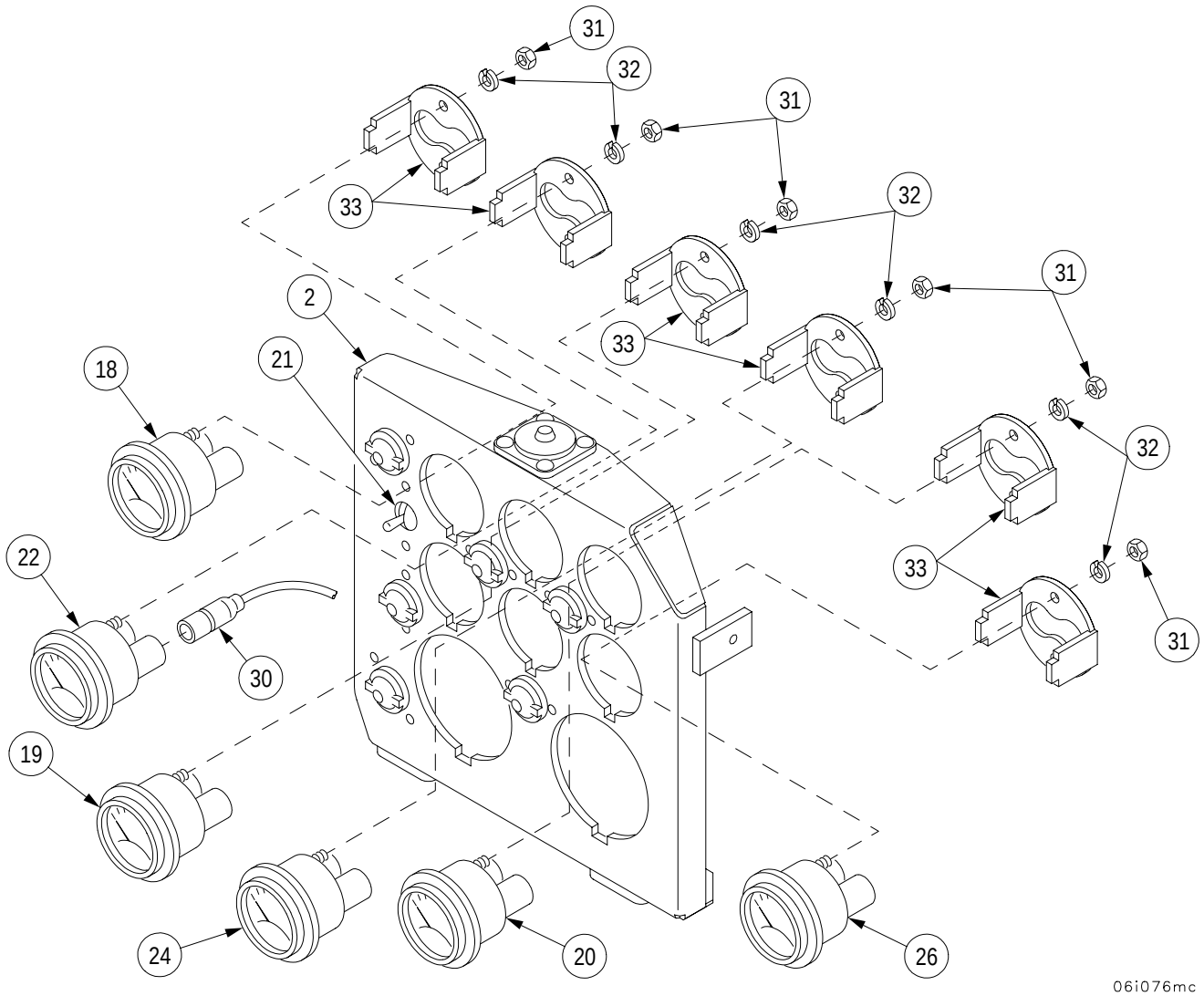
0243 00

Assembly-Continued

NOTE

There are six gauges in the gauge panel assembly. All gauges are installed in the same manner. Perform step 11 to install one gauge.

11. Install gauge (18, 19, 20, 22, 24 or 26) in gauge panel assembly (2) with retaining strap (33), two new lockwashers (32) and two nuts (31).
12. Connect lead (30) to fuel shutoff toggle switch (21) and to fuel gauge (22).



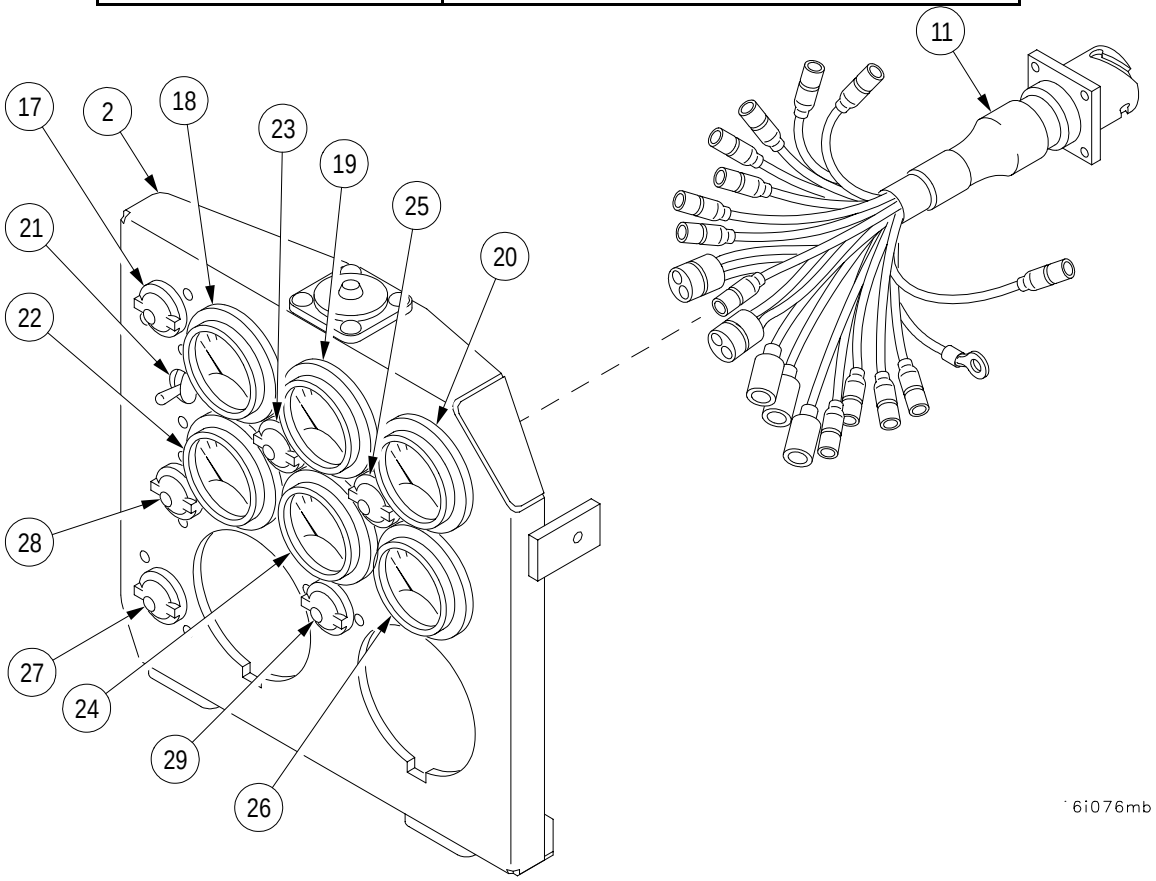
GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR - CONTINUED

0243 00

Assembly-Continued

13. Connect wiring harness 4W152 (11) connectors to the following places on gauge panel assembly (2):

Wiring Harness 4W152 Wire	Connect To Backside Of
54	Fire Extinguisher Engine Shutoff Light (17)
27	Generator Indicator Gauge (18)
27/33	Engine Oil Temperature Gauge (19)
27/36	Engine Oil Pressure Gauge (20)
30/31	Fuel Tank Toggle Switch (21)
27	Fuel Gauge (22)
40	Panel Light (23)
27 and 324	Transmission Oil Temperature Gauge (24)
40	Panel Light (25)
27 and 321	Transmission Oil Pressure Gauge (26)
27/510	Turbo Dust Detector Light (27)
27/509	System Warning Light (28)
40	Panel Light (29)



GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR - CONTINUED 0243 00

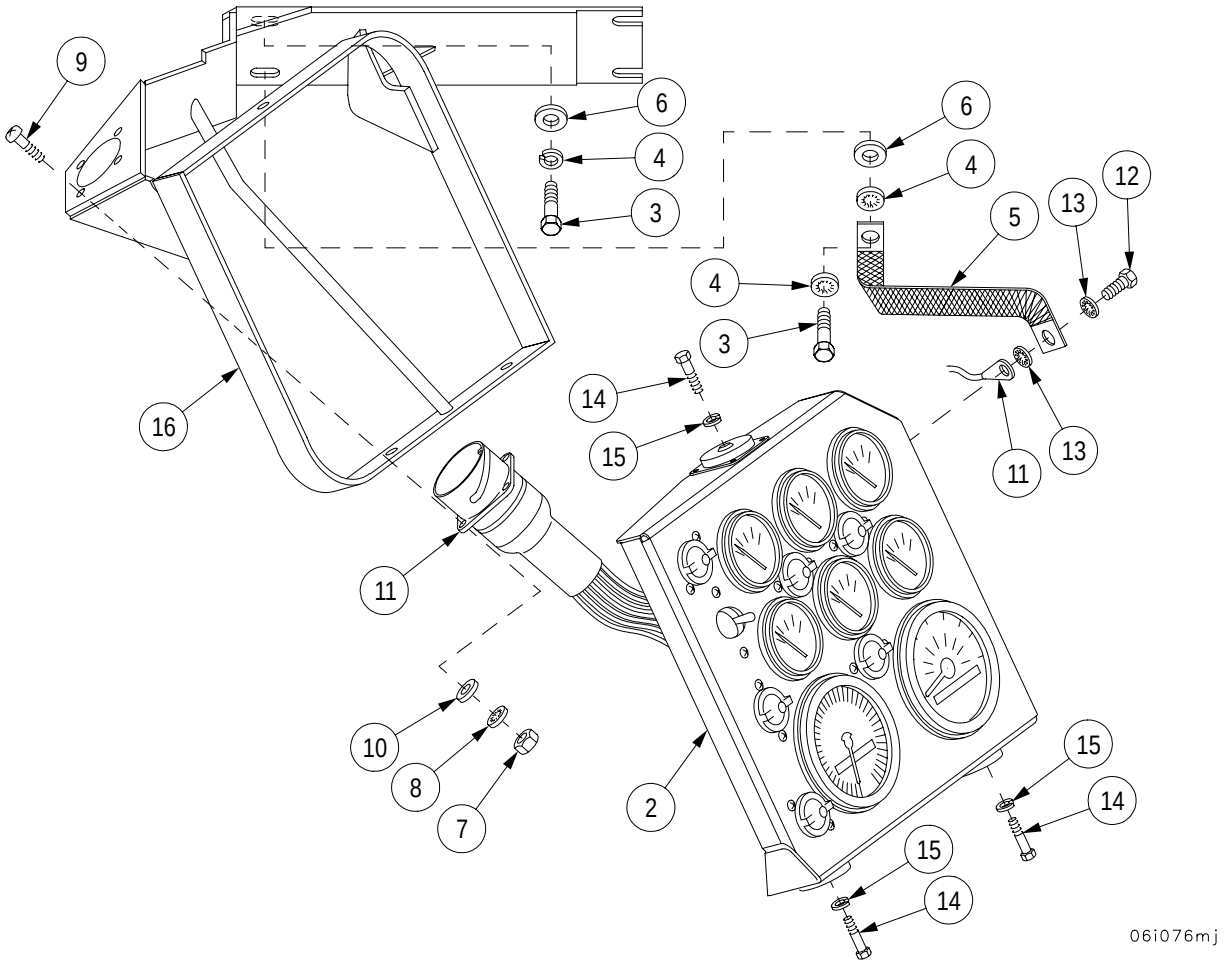
Installation

1. Install speedometer (WP 0694 00) and tachometer (WP 0695 00).
2. Install support (16) on gauge panel assembly (2) with three screws (14) and three new lockwashers (15).
3. Install ground strap (5) and ground lead of wiring harness 4W152 (11) on gauge panel assembly (2) with screw (12) and two new lockwashers (13).
4. Install wiring harness 4W152 (11) connector J1 in support (16) with four screws (9), four flat washers (10), four new lockwashers (8) and four nuts (7).

NOTE

Location of gauge panel assembly must be adjusted via slots on gauge panel mounting bracket such that: A: Full operation and movement of boom cylinder is possible. B: Driver's legs do not contact bottom of gauge panel in normal seated position.

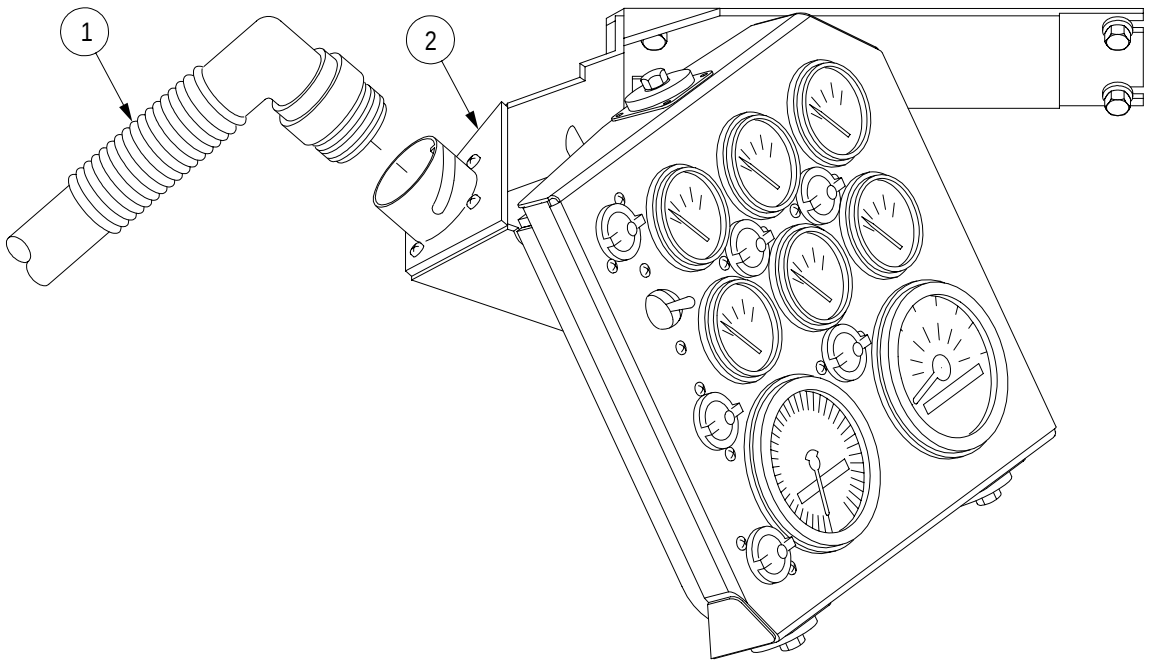
5. Secure ground strap (5) and gauge panel assembly (2) to hull with four screws (3), five new lockwashers (4) and four flat washers (6).



GAUGE PANEL ASSEMBLY, SUPPORT AND WIRING HARNESS 4W152 REPAIR - CONTINUED 0243 00

Installation-Continued

6. Connect wiring harness 4W103 connector P1 (1) to gauge panel assembly (2).



06i076mh

NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

PTO/ACCESSORY PANEL REPAIR 0244 00

THIS WORK PACKAGE COVERS:

Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts

Lockwashers (10) (item 86, WP 0718 00)
Lockwashers (8) (item 58, WP 0718 00)
Lockwashers (10) (item 139, WP 0718 00)
Lockwashers (8) (item 390, WP 0718 00)
Electrical tiedown strap (AR) (item 388, WP 0718 00)
Gasket (item 389, WP 0718 00)
Gasket (item 391, WP 0718 00)
Gasket (item 392, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Wiring harness 2W601 disconnected from PTO/accessory panel (WP 0291 00)
Wiring harness 4W618 disconnected from PTO/accessory panel (0331 00)
Wiring harness 4W153 disconnected from PTO/accessory panel (WP 0327 00)

References

TM 9-2350-292-10

WARNING

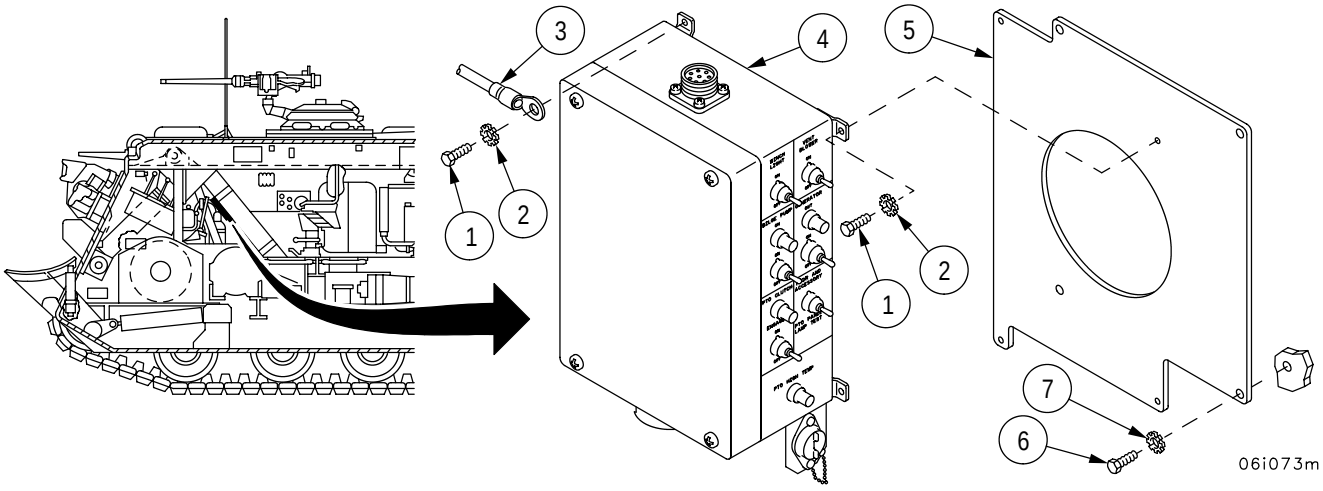
NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Perform only those steps required to complete the repair.

Removal

1. Remove four screws (1), four lockwashers (2), ground wire (3) and PTO/accessory panel assembly (4) from mounting plate (5). Discard lockwashers.
2. Remove four screws (6), four lockwashers (7) and mounting plate (5) from chute. Discard lockwashers.



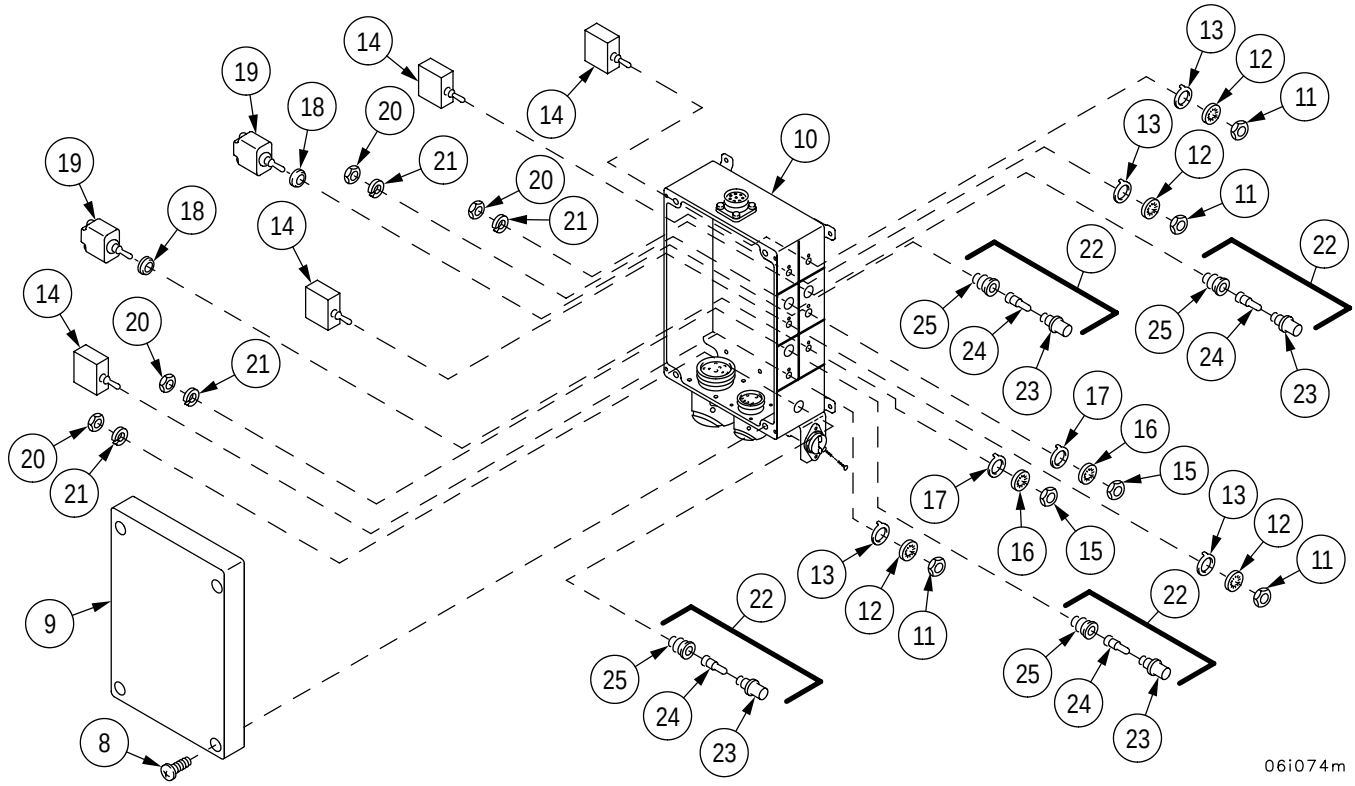
PTO/ACCESSORY PANEL REPAIR - CONTINUED 0244 00

1. Remove four screws (8) and cover (9) from enclosure (10).
2. Remove PTO/accessory panel's internal wiring in accordance with Electrical Schematic (FP-17) and remove from enclosure (10). Discard electrical tiedown straps.
3. Remove four nuts (11), four lockwashers (12), four key washers (13) and four toggle switches (14) from enclosure (10). Retain attaching hardware for installation.
4. Remove two nuts (15), two lockwashers (16), two key washers (17), two switch boots (18) and two toggle switches (19) from the enclosure (10). Retain attaching hardware for installation.

NOTE

There are four indicator light assemblies on the PTO/accessory panel. All four are removed and disassembled in the same manner. Perform steps 5 and 6 for removal and disassembly of these light assemblies.

5. Remove nut (20), lockwasher (21) and indicator light holder (22) from enclosure (10). Retain attaching hardware for installation.
6. Remove lens (23) and LED (24) from socket (25).



PTO/ACCESSORY PANEL REPAIR - CONTINUED 0244 00

Disassembly-Continued

NOTE

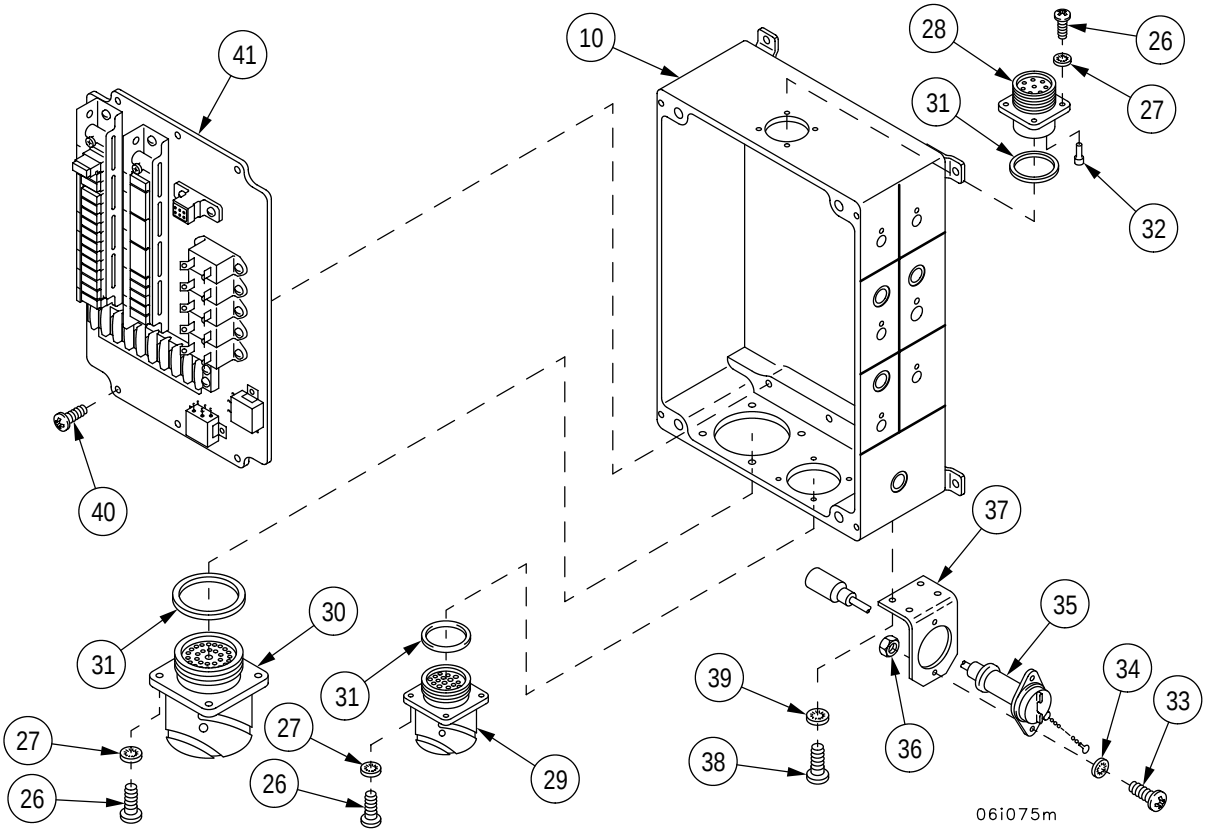
There are three connector assemblies on the PTO/accessory panel. All three are removed in the same manner. Perform step 7 to remove these connector assemblies.

7. Remove four screws (26), four lockwashers (27), connector (28, 29 or 30) and sealing gasket (31) from enclosure (10). Discard lockwashers and gasket.

NOTE

Note location of plugs to aid in installation of new connector.

8. Remove sealing plugs (32) from connector (28) as required.
9. Remove two screws (33), two lockwashers (34), utility outlet (35) and two nuts (36) from bracket (37). Discard lockwashers.
10. Remove four screws (38), four lockwashers (39) and bracket (37) from enclosure (10). Discard lockwashers.
11. Remove six screws (40) and mounting panel assembly (41) from enclosure (10).



PTO/ACCESSORY PANEL REPAIR - CONTINUED 0244 00

Disassembly-Continued

NOTE

There are five circuit breakers on the mounting panel. All five are removed in the same manner. Perform step 12 to remove these circuit breakers.

12. Remove two screws (42), two lockwashers (43) and circuit breaker (44) from mounting panel (45). Discard lockwashers.

NOTE

There are two relays on the mounting panel. Both are removed in the same manner. Perform step 13 to remove either of these relays.

13. Remove two screws (46) and relay (47) from mounting panel (46).

NOTE

There are two rack assemblies on the mounting panel. Both are removed and disassembled in the same manner. Perform steps 14 and 15 for removal and disassembly of either rack assembly.

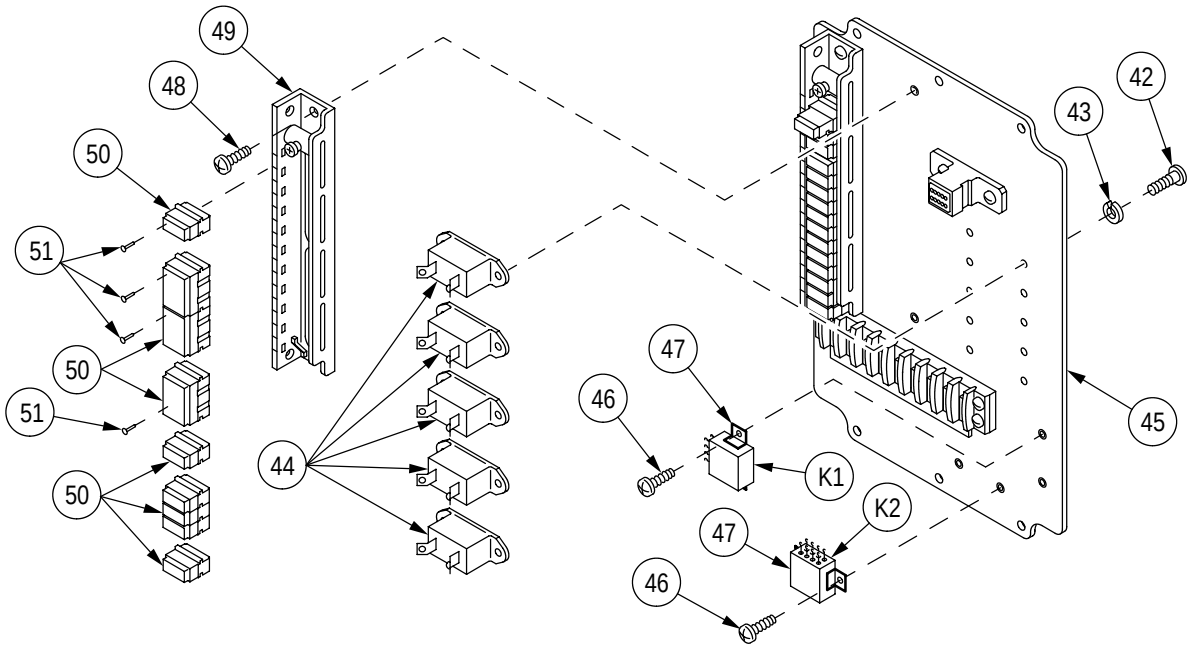
Note placement of terminal junctions on rack assembly (49) prior to disassembly.

14. Remove two screws (48) and rack assembly (49) from mounting panel (45).
15. Remove terminal junctions (50) from rack assembly (49).

NOTE

Note location of plugs to aid in installation of new terminal junctions.

16. Remove sealing plugs (51) from terminal junctions (50) as required.



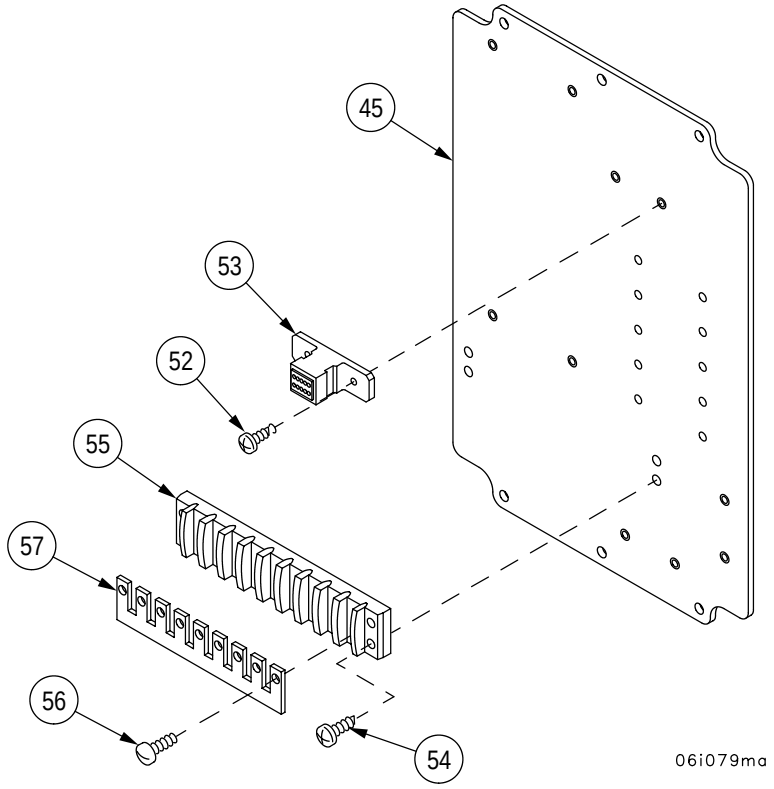
PTO/ACCESSORY PANEL REPAIR - CONTINUED 0244 00

Disassembly-Continued

17. Remove two screws (52) and ground junction (53) from mounting panel (45).
18. Remove four screws (54) and terminal block (55) from mounting panel (45).
19. Remove nine screws (56) and bus jumper (57) from terminal block (55).
20. Inspect parts for damage and replace as required.

Assembly

1. Install bus jumper (57) on terminal block (55) with nine screws (56).
2. Install terminal block (55) on mounting panel (45) with four screws (54).
3. Install ground junction (53) on mounting panel (45) with two screws (52).



PTO/ACCESSORY PANEL REPAIR - CONTINUED 0244 00

Assembly-Continued

4. Install sealing plugs (51) in terminal junctions (50) as required in locations previously noted.

NOTE

There are two rack assemblies on the mounting panel. Both are assembled and installed in the same manner. Perform steps 5 and 6 to assemble and install either rack assembly.

5. Install terminal junctions (50) on rack assembly (49).
6. Install rack assembly (49) on mounting panel (45) with two screws (48).

NOTE

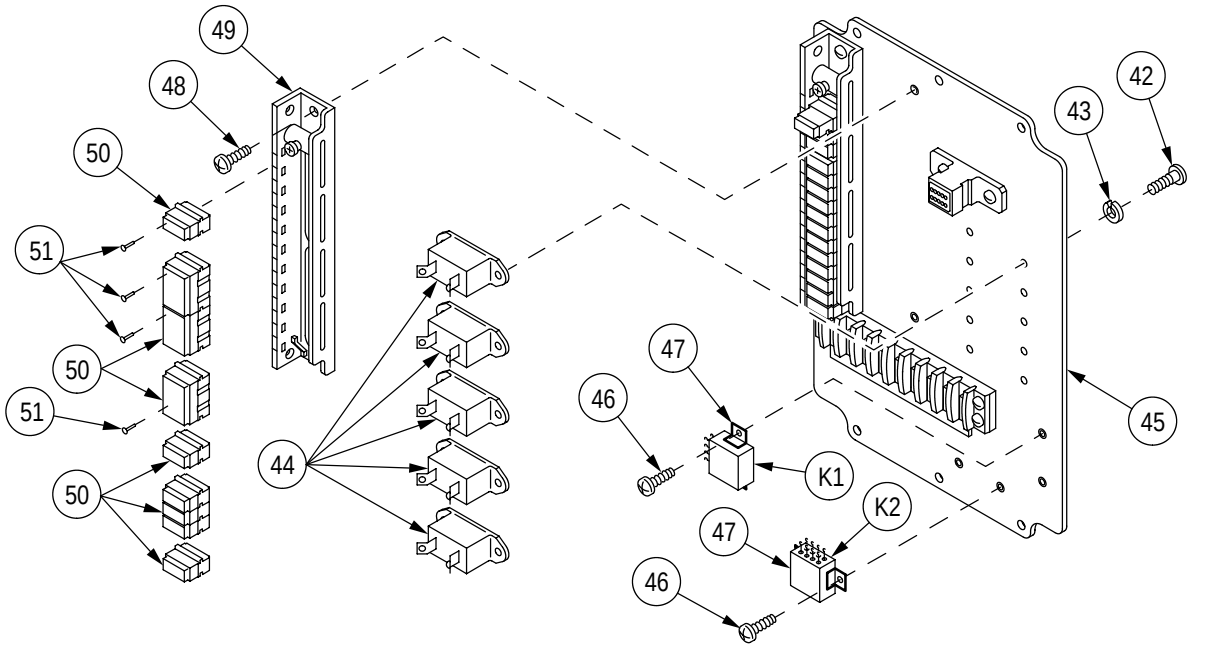
There are two relays on the mounting panel. Both relays are installed in the same manner. Perform step 7 to install either of these relays.

7. Install relay (47) on mounting panel (45) with two screws (46).

NOTE

There are five circuit breakers on the mounting panel. All five are installed in the same manner. Perform step 8 to install these circuit breakers.

8. Install circuit breaker (44) on mounting panel (45) with two screws (42) and two new lockwashers (43).



PTO/ACCESSORY PANEL REPAIR - CONTINUED 0244 00

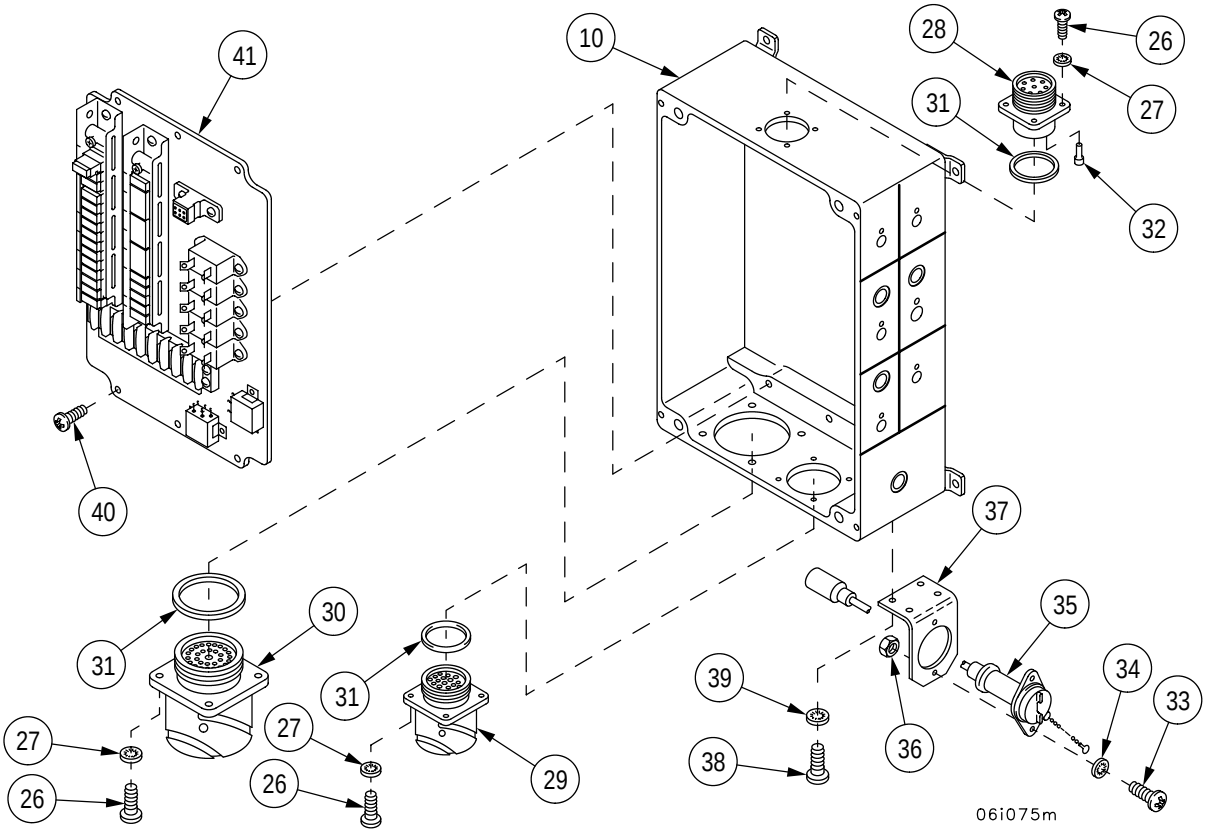
Assembly-Continued

9. Install mounting panel assembly (41) in enclosure (10) with six screws (40).
10. Install bracket (37) on enclosure (10) with four screws (38) and four new lockwashers (39).
11. Install utility outlet (35) in bracket (37) with two screws (33), two new lockwashers (34) and two nuts (36).

NOTE

There are three connector assemblies on the PTO/accessory panel. All three are installed in the same manner. Perform steps 12 and 13 to install these connector assemblies.

12. Install sealing plugs (32) in connector (28) as required in locations previously noted.
13. Install connectors (28, 29 or 30) with new sealing gasket (31) in enclosure (10) with four screws (26) and four new lockwashers (27).



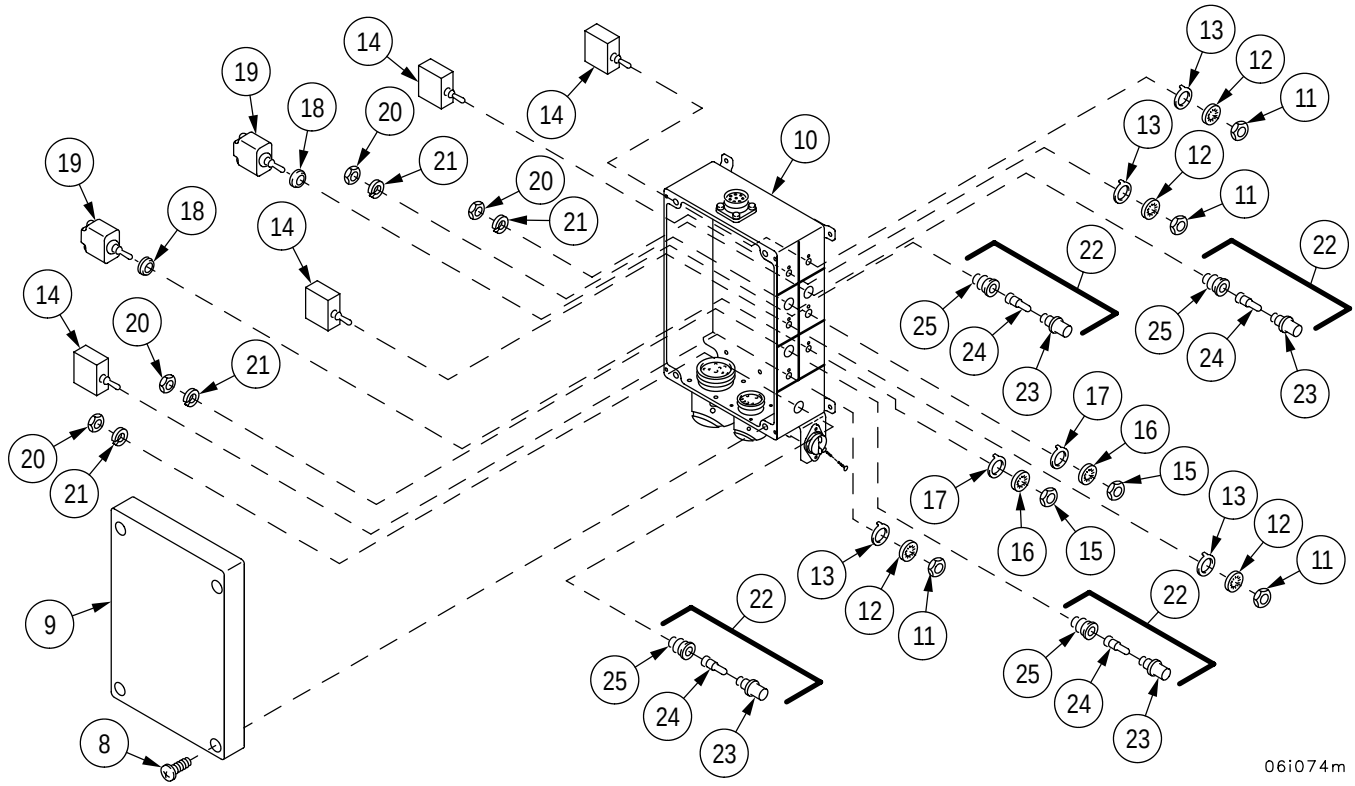
PTO/ACCESSORY PANEL REPAIR - CONTINUED 0244 00

Assembly-Continued

NOTE

There are four indicator light assemblies on the PTO/accessory panel. All four are assembled and installed in the same manner. Perform steps 14 and 15 to assemble and install these light assemblies.

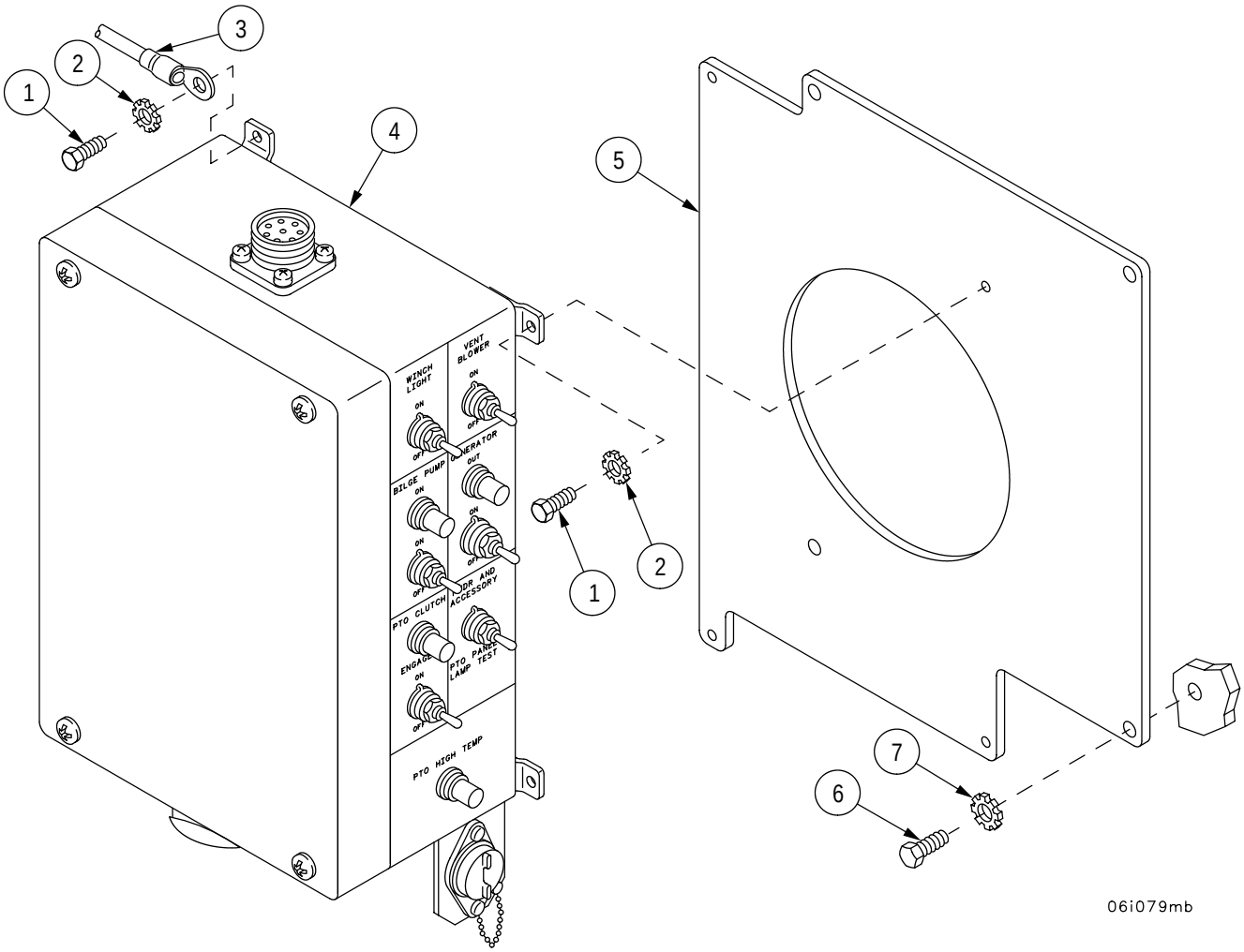
14. Install LED (24) and lens (23) in socket (25).
15. Install indicator light holder (22) on enclosure (10) with lockwasher (21) and nut (20).
16. Install two toggle switches (19) and two switch boots (18) in enclosure (10) with two key washers (17), two lockwashers (16) and two nuts (15).
17. Install four toggle switches (14) in enclosure (10) with four key washers (13), four lockwashers (12) and four nuts (11).
18. Install PTO/accessory panel's internal wiring in accordance with Electrical Schematic (FP-17) into enclosure (10), using new electrical tiedown straps as required to secure wiring in place.
19. Install cover (9) on enclosure (10) with four screws (8).



PTO/ACCESSORY PANEL REPAIR - CONTINUED 0244 00

Installation

1. Install mounting plate (5) with four screws (6) and four new lockwashers (7).
2. Install PTO/accessory panel assembly (4) on mount with four screws (1), four new lockwashers (2) and ground wire (3).



NOTE

FOLLOW-ON MAINTENANCE:
Connect wiring harness 4W153 to PTO/accessory panel (WP 0327 00)
Connect wiring harness 4W618 to PTO/accessory panel (WP 0331 00)
Connect wiring harness 2W601 to PTO/accessory panel (WP 0291 00)

END OF TASK

HYDRAULIC CONTROL PANEL REPAIR 0245 00

THIS WORK PACKAGE COVERS:
Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 112, WP 0718 00)
Lockwashers (18) (item 90, WP 0718 00)
Lockwashers (7) (item 93, WP 0718 00)
Gaskets (9) (item 91, WP 0718 00)
Gaskets (7) (item 92, WP 0718 00)
Marker tags (item 49, WP 0716 00)
Lockwashers (2) (item 58, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Wiring harness 4W617 disconnected from wiring harness 4W618 (WP 0331 00)
Hydraulic control panel ground wire disconnected from main switch panel mounting bracket (WP 0242 00)

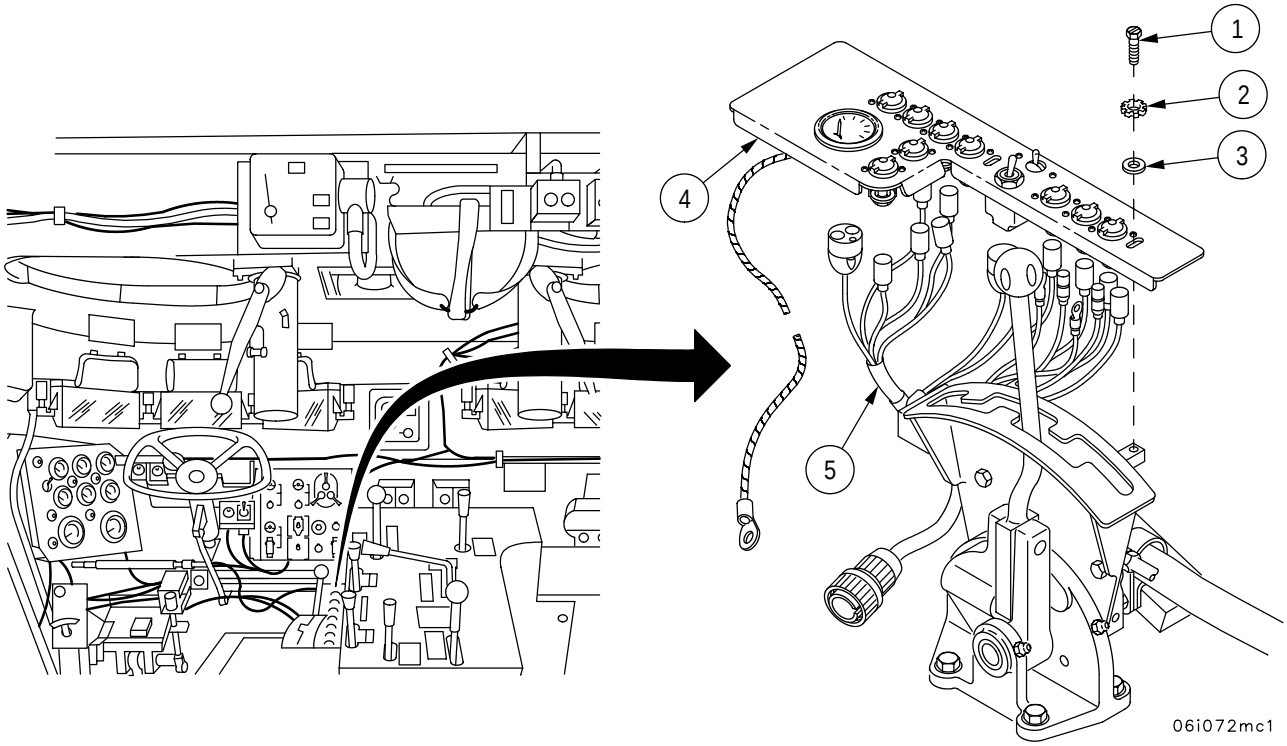
References
TM 9-2350-292-10

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

1. Remove two screws (1), two lockwashers (2), two flat washers (3) and hydraulic control panel assembly (4) from mount. Discard lockwashers.
2. Remove wiring harness 4W617 (5) from hydraulic control panel assembly (4) (WP 0330 00).



HYDRAULIC CONTROL PANEL REPAIR - CONTINUED 0245 00

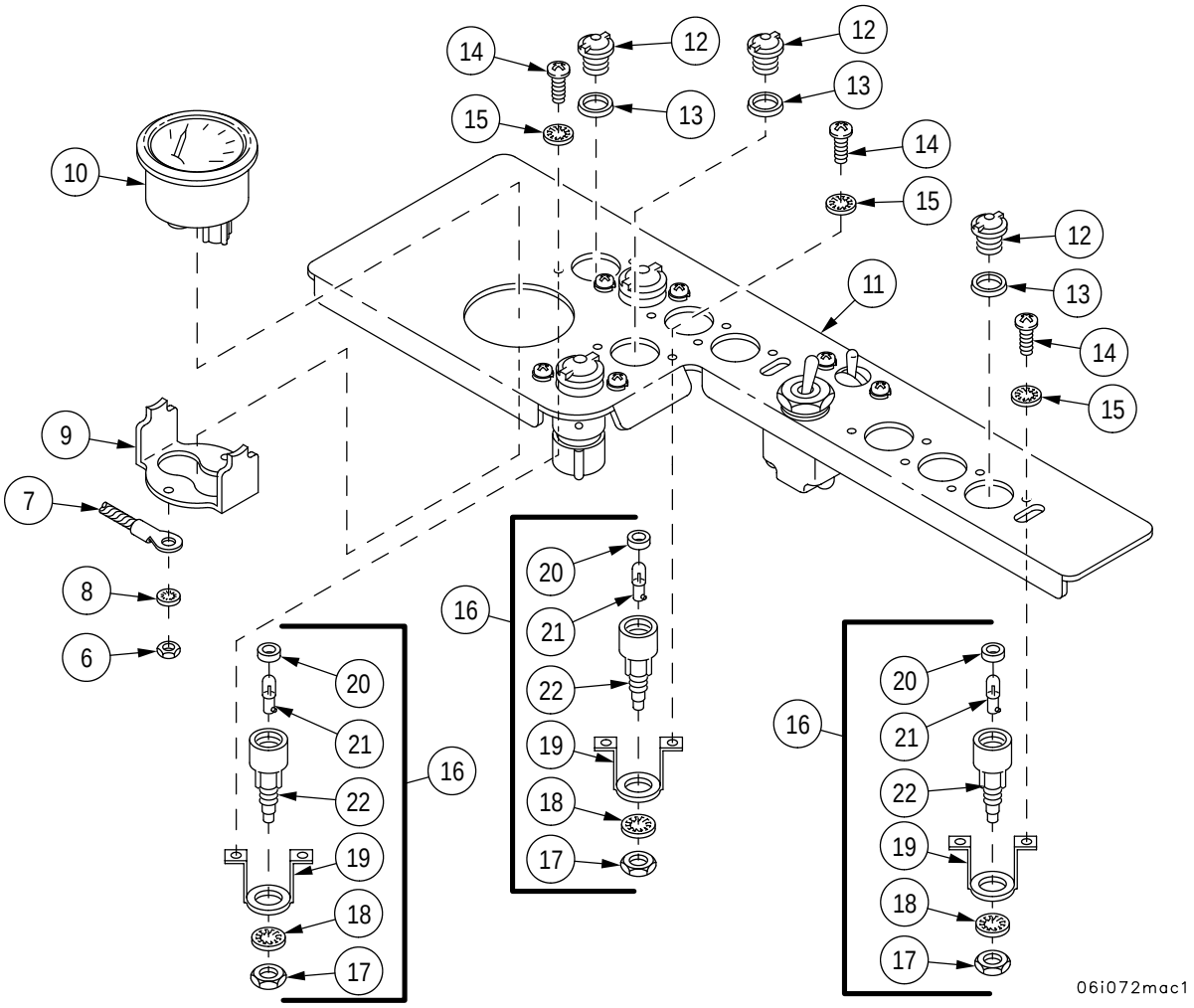
Disassembly

1. Remove two nuts (6), ground wire (7), two lockwashers (8), temperature indicator bracket (9) and temperature indicator (10) from hydraulic control panel (11). Retain attaching hardware for installation.

NOTE

There are nine indicator lights on the hydraulic control panel. Seven are removed and disassembled in the same manner. Perform steps 2 and 3 for removal and disassembly of these indicator lights.

2. Remove lens (12), gasket (13), two screws (14), two lockwashers (15) and indicator light assembly (16) from hydraulic control panel (11). Discard lockwashers and gasket.
3. Remove electrical bondnut (17), lockwasher (18), retaining strap (19), gasket (20) and LED (21) from socket (22). Discard lockwasher and gasket.



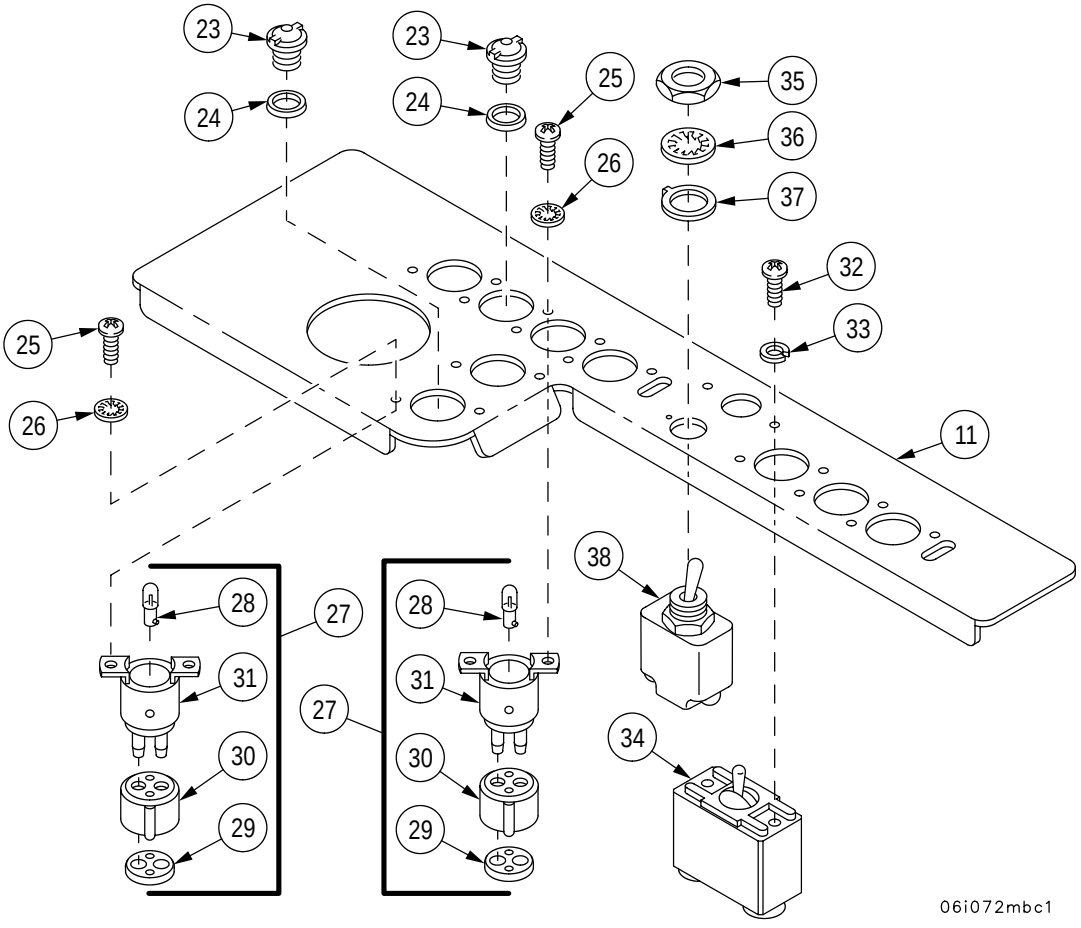
HYDRAULIC CONTROL PANEL REPAIR - CONTINUED 0245 00

Disassembly-Continued

NOTE

There are nine indicator lights on the hydraulic control panel. Two are removed and disassembled in the same manner. Perform steps 4 and 5 for removal and disassembly of these indicator lights.

4. Remove lens (23), gasket (24), two screws (25), two lockwashers (26) and indicator light assembly (27) from hydraulic control panel (11). Discard lockwashers and gasket.
5. Remove lamp (28), retaining plate (29) and shell receptacle (30) from socket (31).
6. Remove two screws (32), two lockwashers (33) and toggle switch (34) from hydraulic control panel (11). Discard lockwashers.
7. Remove nut (35), lockwasher (36), key washer (37) and toggle switch (38) from hydraulic control panel (11). Retain attaching hardware for installation.
8. Inspect parts for damage and replace as required.



HYDRAULIC CONTROL PANEL REPAIR - CONTINUED 0245 00

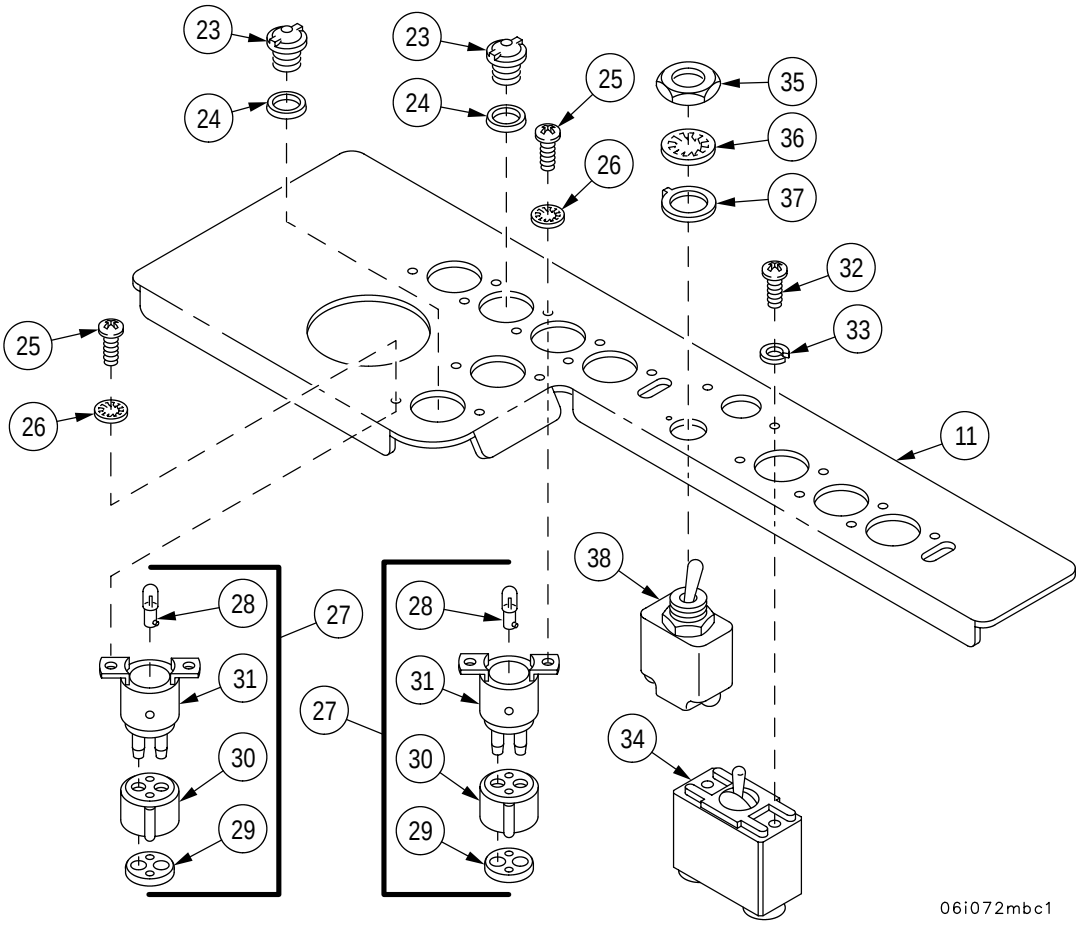
Assembly

1. Install toggle switch (38) on hydraulic control panel (11) with key washer (37), lockwasher (36) and nut (35).
2. Install toggle switch (34) on hydraulic control panel (11) with two screws (32) and two new lockwashers (33).

NOTE

There are nine indicator lights on the hydraulic control panel. Two are assembled and installed in the same manner. Perform steps 3 and 4 for assembly and installation of these indicator lights.

3. Install shell receptacle (30), retaining plate (29) and lamp (28) in socket (31).
4. Install indicator light assembly (27), new gasket (24) and lens (23) on hydraulic control panel (11) with two screws (25) and two new lockwashers (26).



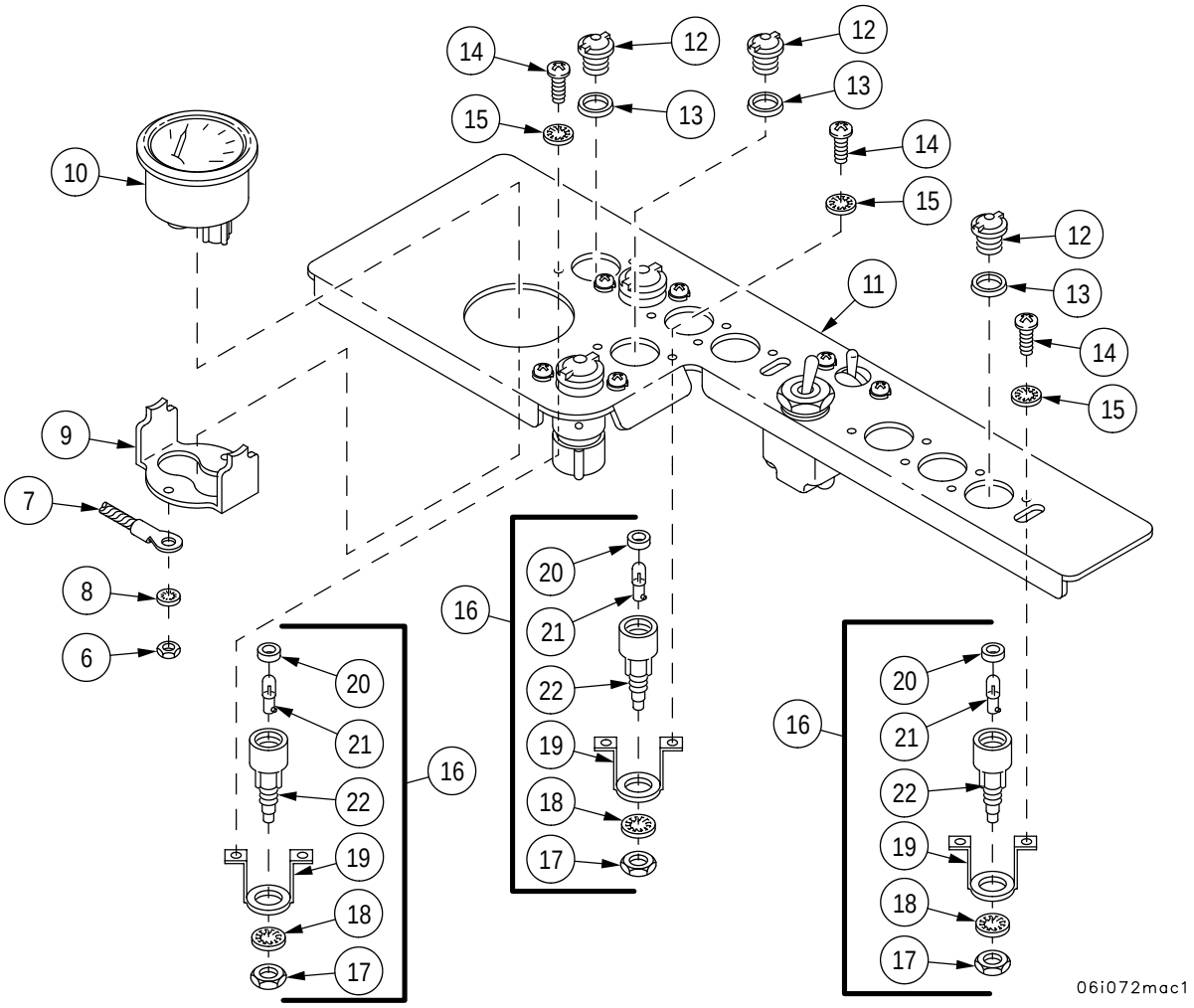
HYDRAULIC CONTROL PANEL REPAIR - CONTINUED 0245 00

Assembly-Continued

NOTE

There are nine indicator lights on the hydraulic control panel. Seven are assembled and installed in the same manner. Perform steps 5 and 6 for assembly and installation of these indicator lights.

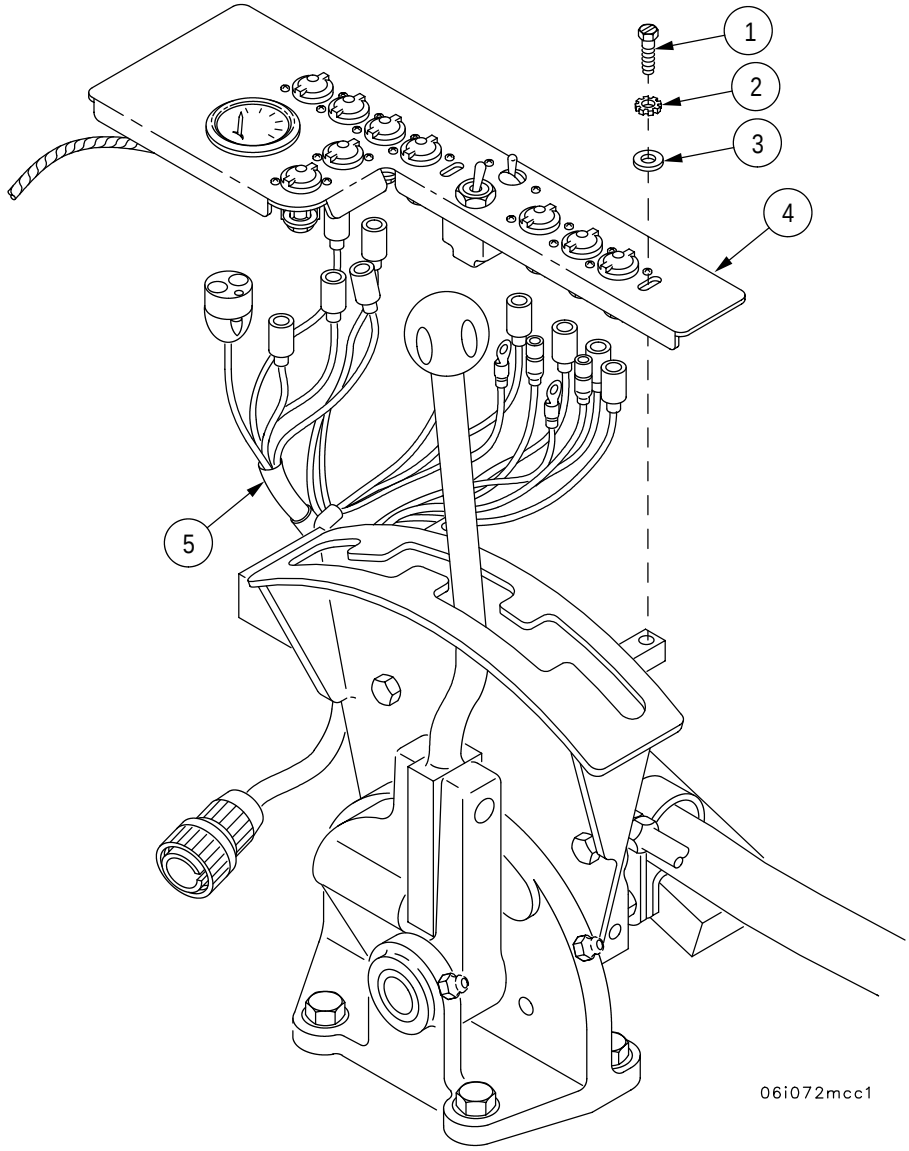
5. Install LED (21), new gasket (20), retaining strap (19), new lockwasher (18) and electrical bondnut (17) on socket (22).
6. Install indicator light assembly (16), new gasket (13) and lens (12) on hydraulic control panel (11) with two screws (14) and two new lockwashers (15).
7. Install temperature indicator (10) and temperature indicator bracket (9) on hydraulic control panel (11) with two lockwashers (8), ground wire (7) and two nuts (6).



HYDRAULIC CONTROL PANEL REPAIR - CONTINUED 0245 00

Installation

1. Install wiring harness 4W617 (5) on hydraulic control panel assembly (4) (WP 0330 00).
2. Install hydraulic control panel assembly (4) on mount with two screws (1), two new lockwashers (2) and two flat washers (3).



NOTE

FOLLOW-ON MAINTENANCE:
Connect wiring harness 4W617 to wiring harness 4W618 (WP 0331 00)
Connect hydraulic control panel ground wire to main switch panel mounting bracket (WP 0242 00).

END OF TASK

HARNESS BRACKET REPLACEMENT 0246 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

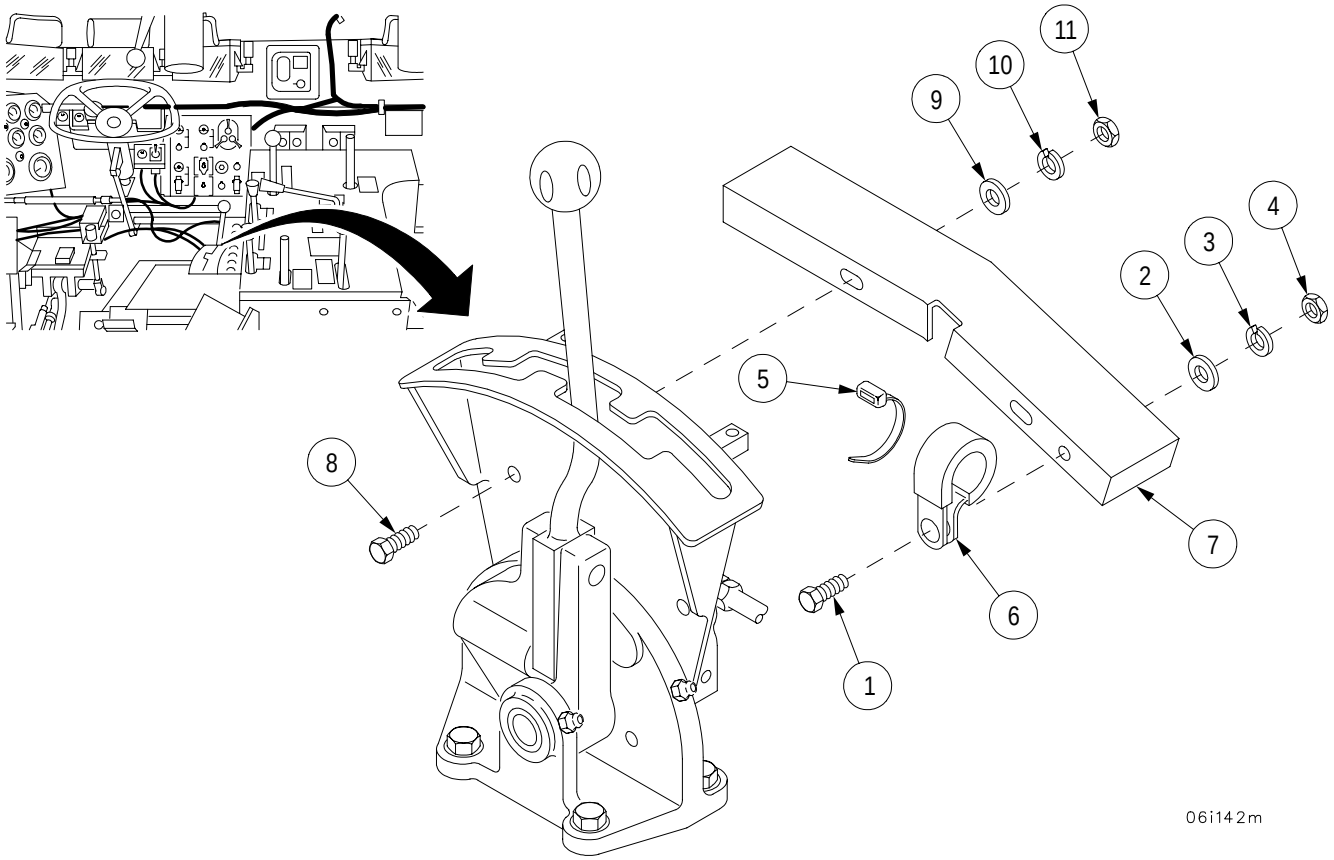
Materials/Parts
Lockwashers (3) (item 9, WP 0718 00)
Electrical tiedown strap (item 205, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Hydraulic control panel removed (WP 0245 00)

References
TM 9-2350-292-10

Removal

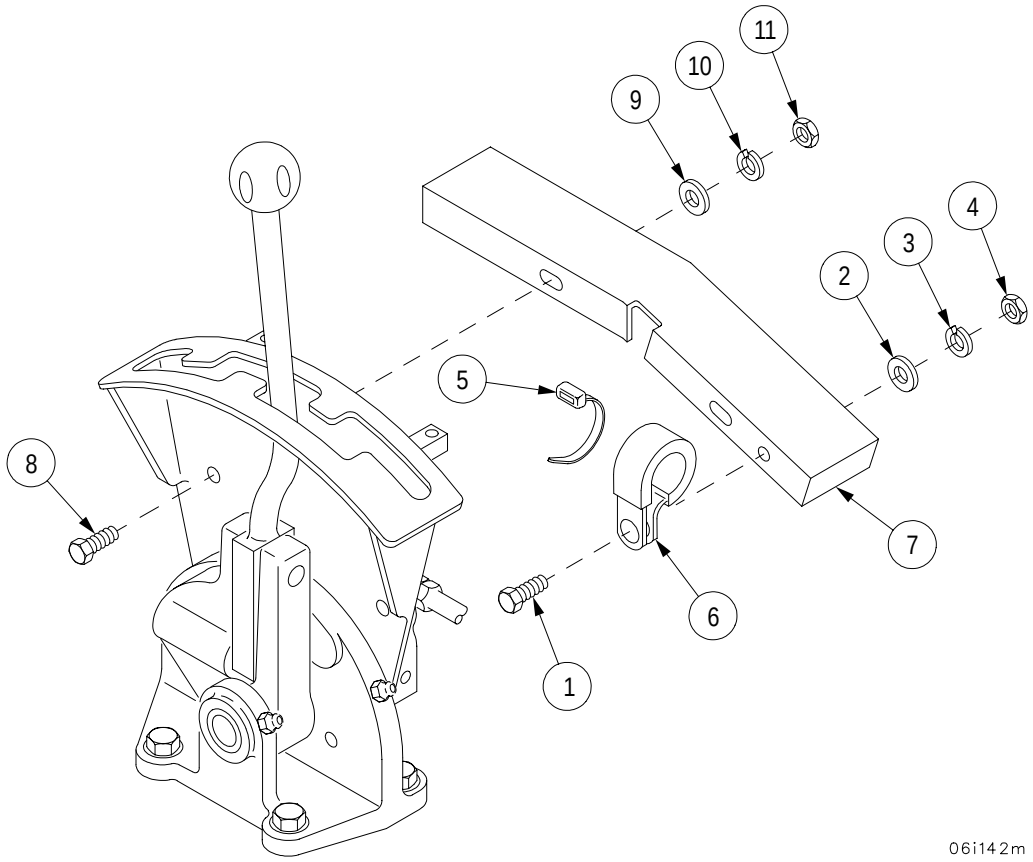
1. Remove screw (1), flat washer (2), lockwasher (3), nut (4), electrical tiedown strap (5) and clamp (6) from harness bracket (7). Discard lockwasher and electrical tiedown strap.
2. Remove two screws (8), two flat washers (9), two lockwashers (10), two nuts (11) and harness bracket (7). Discard lockwashers.
3. Inspect parts for damage and replace as required.



HARNESS BRACKET REPLACEMENT - CONTINUED 0246 00

Installation

1. Install harness bracket (7) with two screws (8), two flat washers (9), two new lockwashers (10) and two nuts (11).
2. Install electrical tiedown strap (5) and clamp (6) on harness bracket (7) with screw (1), flat washer (2), new lockwasher (3) and nut (4).



NOTE

FOLLOW-ON MAINTENANCE:
Install hydraulic control panel (WP 0245 00)

END OF TASK

APU CONTROL BOX AND APU CONTROL BOX BRACKET REPAIR 0247 00

THIS WORK PACKAGE COVERS:

Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts

Lockwashers (4) (item 85, WP 0718 00)
Lockwashers (6) (item 58, WP 0718 00) (old configuration)
Lockwashers (4) (item 58, WP 0718 00) (new configuration)
Lockwashers (12) (item 112, WP 0718 00)
Lockwashers (11) (item 90, WP 0718 00)
Lockwashers (5) (item 9, WP 0718 00)
Lockwasher (item 93, WP 0718 00)
Lockwashers (4) (item 390, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Materials/Parts-Continued

Gasket (item 92, WP 0718 00)
Gaskets (2) (item 91, WP 0718 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Bleed valve manifold angle bracket and brace removed, if installed (WP 0361 00 or WP 0362 00)

References

TM 9-2350-292-10

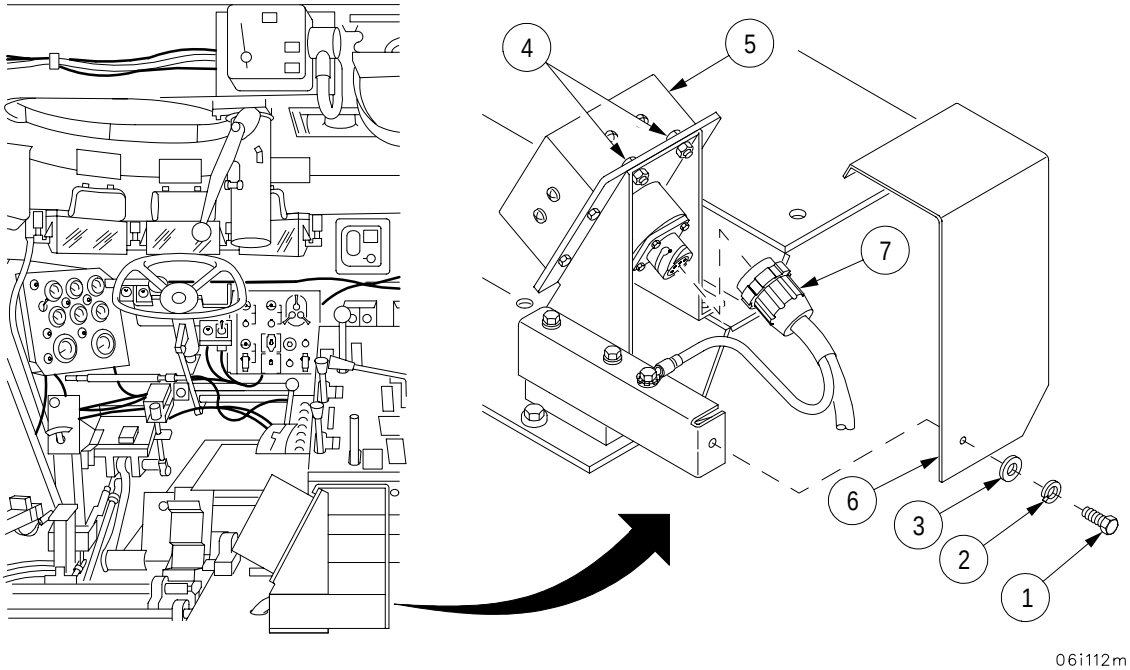
Removal

NOTE

Some vehicles may be equipped with a bleed valve manifold and gauge which must be removed prior to performing this task.

Tag all electrical connections and electrical leads prior to removal to aid in installation.

1. Remove screw (1), lockwasher (2), flat washer (3) and loosen two screws (4) at top of control box assembly (5). Remove cover (6). Discard lockwasher.
2. Disconnect wiring harness 4W700 connector P1 (7) from APU control box assembly (5).



APU CONTROL BOX AND APU CONTROL BOX BRACKET REPAIR - CONTINUED 0247 00

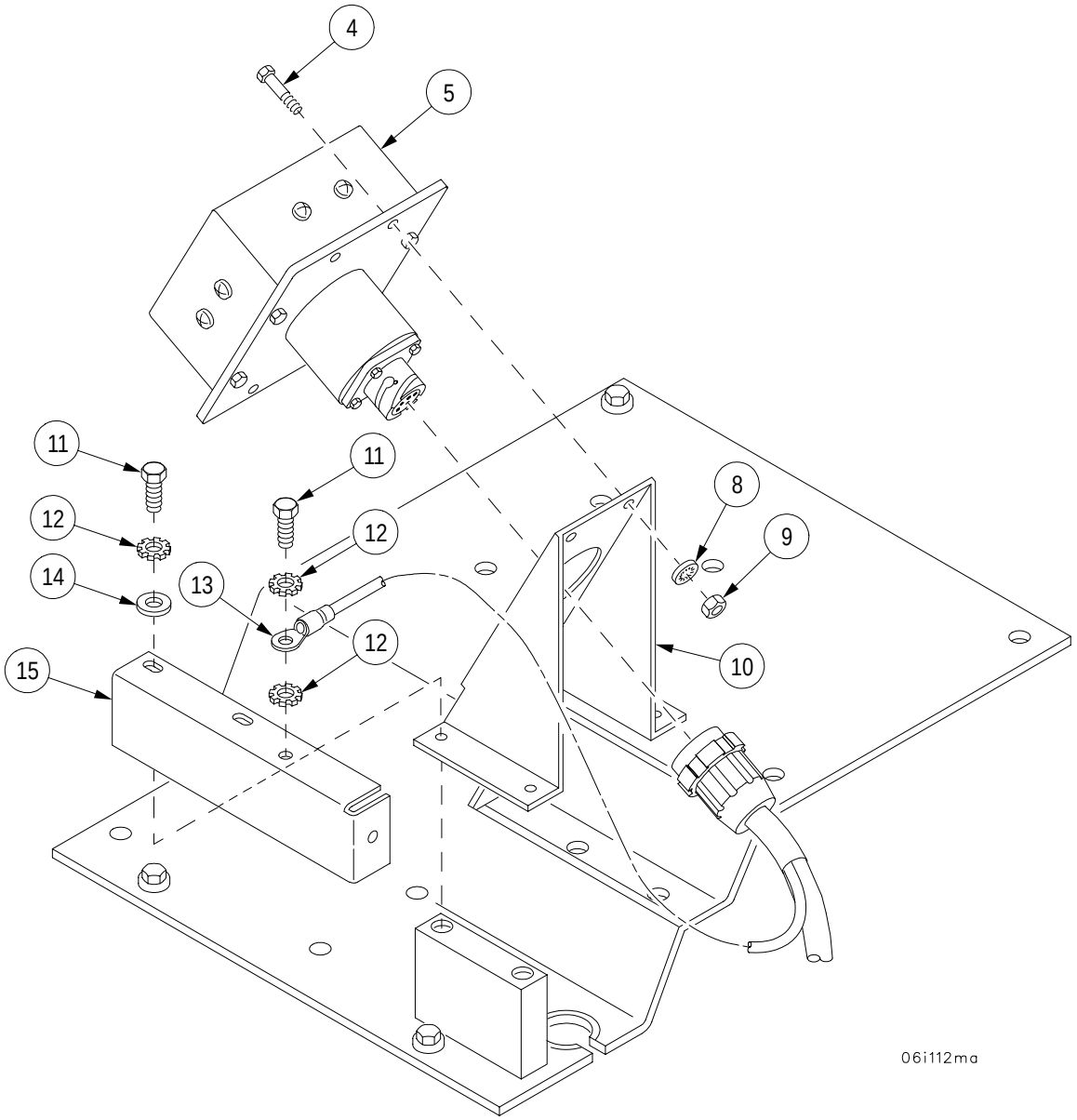
Removal-Continued

3. Remove four screws (4), four lockwashers (8), four nuts (9) and APU control box assembly (5) from control box bracket (10). Discard lockwashers.

NOTE

Note quantity and attaching hardware configuration prior to removal to aid in installation.

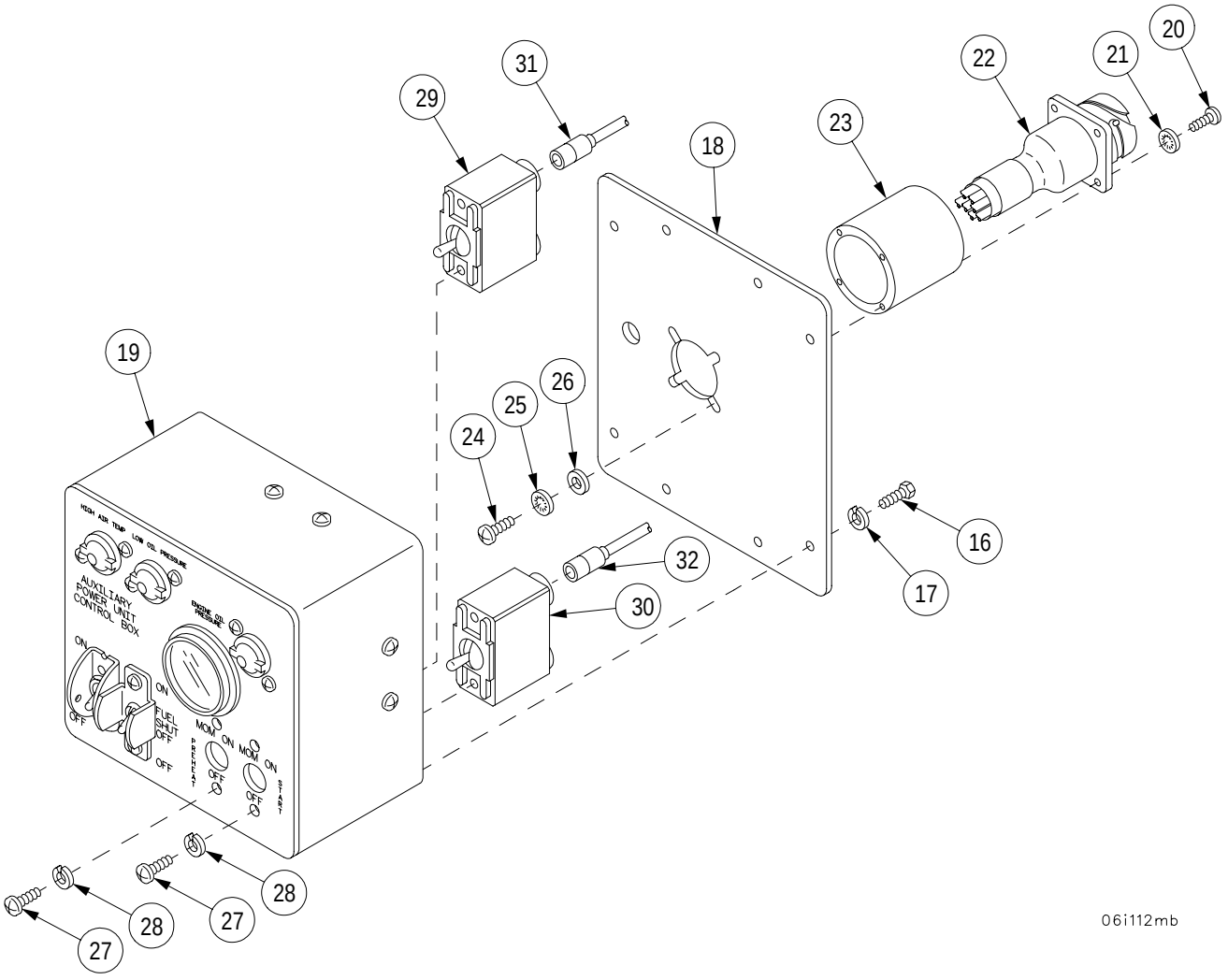
4. Remove screws (11), lockwashers (12), terminal lug (13), flat washers (14) (if installed), angle (15) and control box bracket (10). Discard lockwashers.



APU CONTROL BOX AND APU CONTROL BOX BRACKET REPAIR - CONTINUED 0247 00

Disassembly

1. Remove four screws (16), four lockwashers (17) and lift rear panel (18) gently from enclosure assembly (19). Discard lockwashers.
2. Remove four screws (20), four lockwashers (21) and wiring harness 4W725 (22) from extension (23) on rear panel (18). Discard lockwashers.
3. Disconnect wiring harness 4W725 (22) connectors from enclosure assembly (19) in accordance with Electrical Schematic (FP-7) and remove from enclosure assembly (19).
4. Remove four screws (24), four lockwashers (25), four flat washers (26) and extension (23) from rear panel (18).
5. Remove four screws (27), four lockwashers (28) and two toggle switches (29 and 30) from enclosure assembly (19). Discard lockwashers.
6. Remove lead assembly 4W123-1 (31) from preheat switch (29) and lead assembly 4W123-2 (32) from start switch (30).



APU CONTROL BOX AND APU CONTROL BOX BRACKET REPAIR - CONTINUED 0247 00

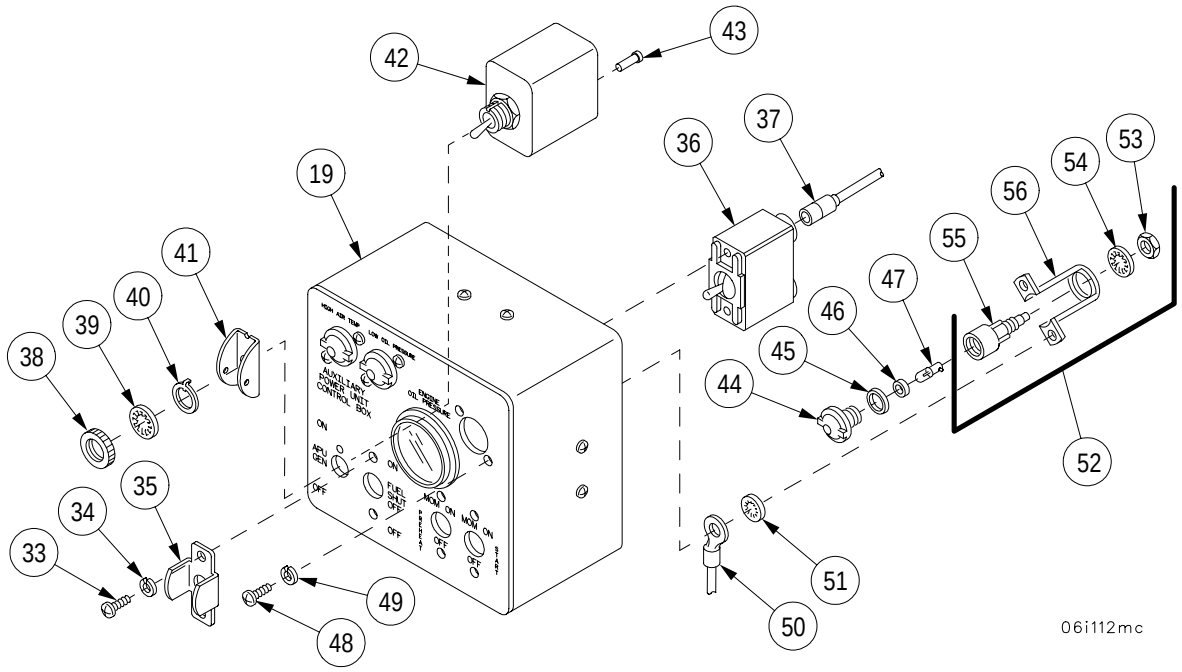
Disassembly-Continued

7. Remove two screws (33), two lockwashers (34), switch guard (35) and fuel shutoff switch (36) from enclosure assembly (19). Discard lockwashers.
8. Remove lead assembly 4W123-3 (37) from fuel shutoff switch (36).
9. Remove nut (38), lockwasher (39), tanged washer (40), switch guard (41) and switch assembly (42) from enclosure assembly (19). Do not discard lockwasher unless replacing switch assembly.
10. Remove two plugs (43) from switch assembly (42).

NOTE

Wiring harness 4W725 GND is secured to light assembly. If wiring harness 4W725 has been removed, only one screw and lockwasher are required to remove light assembly.

11. Remove lens (44), gasket (45), gasket (46), lamp (47), two screws (48), two lockwashers (49), terminal (50), lockwasher (51) and light socket assembly (52) from enclosure assembly (19). Discard lockwashers and gaskets.
12. Remove electrical bond nut (53), lockwasher (54) and socket (55) from retaining strap (56). Discard lockwasher.



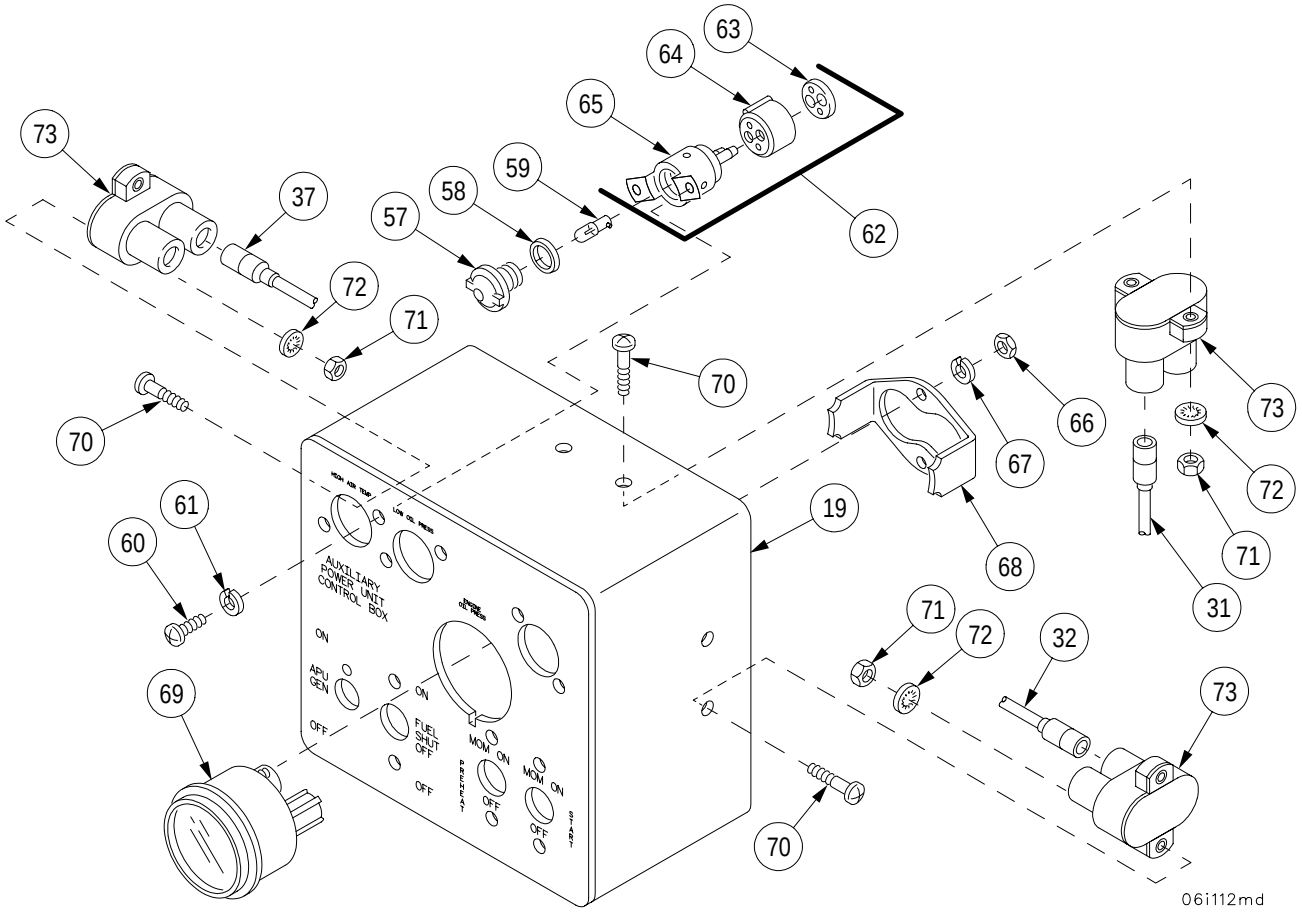
APU CONTROL BOX AND APU CONTROL BOX BRACKET REPAIR - CONTINUED 0247 00

Disassembly-Continued

NOTE

There are two warning light assemblies. Perform steps 13 and 14 to disassemble one warning light assembly.

13. Remove lens (57), gasket (58), lamp (59), two screws (60), two lockwashers (61) and warning light socket assembly (62) from enclosure assembly (19). Discard lockwashers and gasket.
14. Remove retainer (63) and shell receptacle (64) from warning light socket (65).
15. Remove two nuts (66), two lockwashers (67), pressure indicator mount (68) and pressure indicator (69) from enclosure assembly (19). Retain attaching hardware for installation.
16. Remove six screws (70), six nuts (71), six lockwashers (72), lead assembly 4W123-2 (32), lead assembly 4W123-1 (31), lead assembly 4W123-3 (37) and three circuit breakers (73) from enclosure assembly (19). Discard lockwashers.
17. Inspect parts for damage and replace as required.



APU CONTROL BOX AND APU CONTROL BOX BRACKET REPAIR - CONTINUED 0247 00

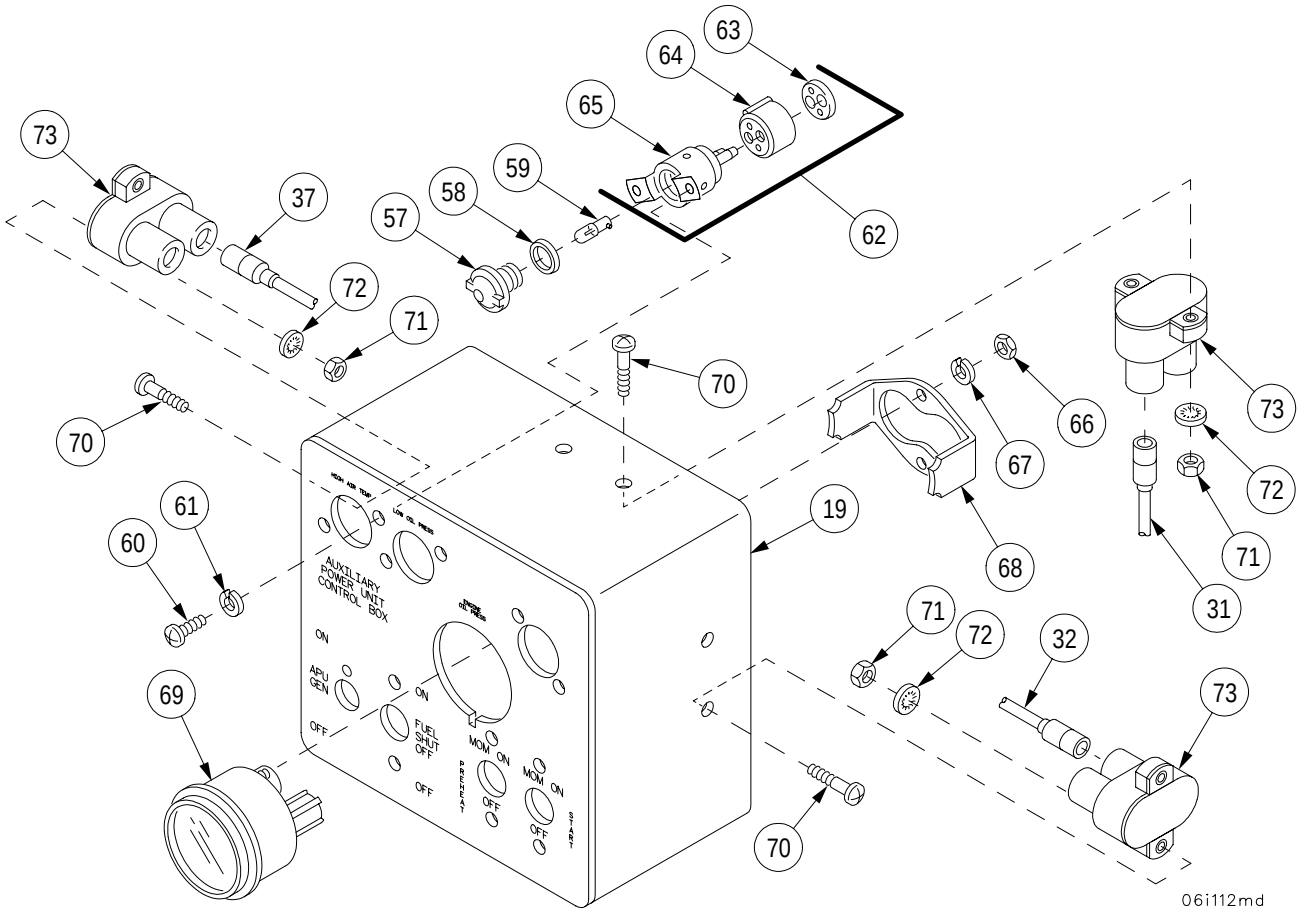
Assembly

1. Install three circuit breakers (73), lead assembly 4W123-3 (37), lead assembly 4W123-1 (31), and lead assembly 4W123-2 (32), six new lockwashers (72), six nuts (71) and six screws (70) to enclosure assembly (19).
2. Install pressure indicator (69), pressure indicator mount (68), two lockwashers (67) and two nuts (66) to enclosure assembly (19).

NOTE

There are two warning light assemblies. Perform steps 3 and 4 to assemble one warning light assembly.

3. Install shell receptacle (64) and retainer (63) on warning light socket (65).
4. Install warning light socket assembly (62) on enclosure assembly (19) with two screws (60), two new lockwashers (61), lamp (59), new gasket (58) and lens (57).



APU CONTROL BOX AND APU CONTROL BOX BRACKET REPAIR - CONTINUED 0247 00

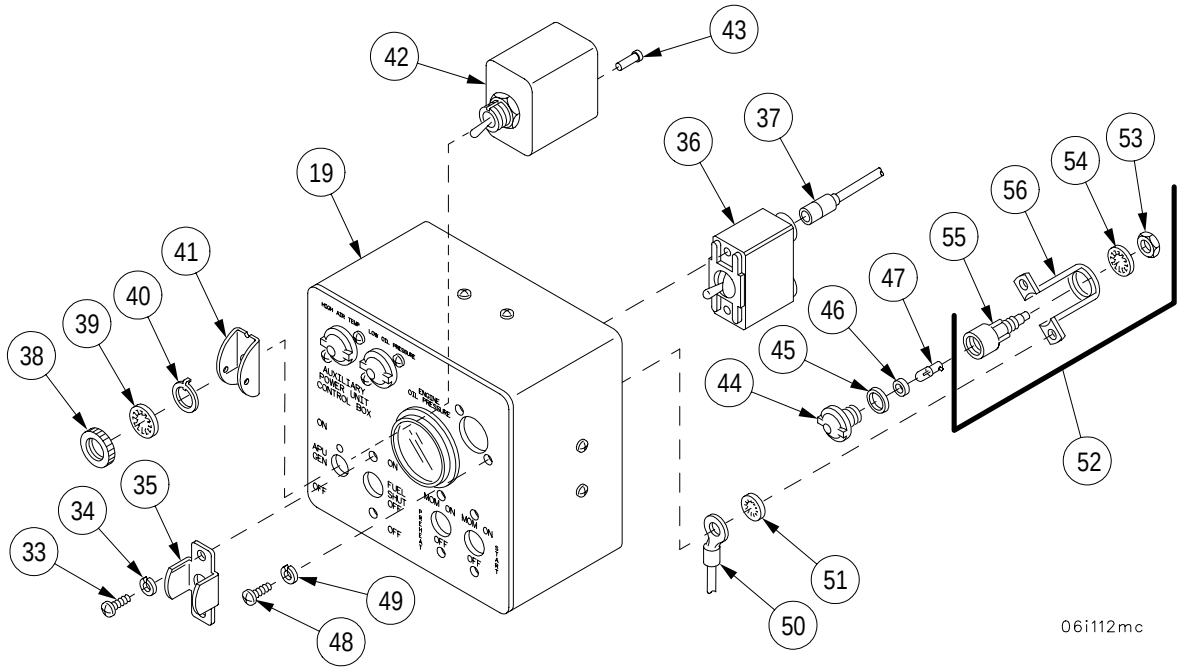
Assembly-Continued

5. Install socket (55), new lockwasher (54) and electrical bond nut (53) to retaining strap (56).

NOTE

Wiring harness 4W725 GND is secured to light assembly. If wiring harness 4W725 is installed, only one screw and lockwasher are required to install light assembly.

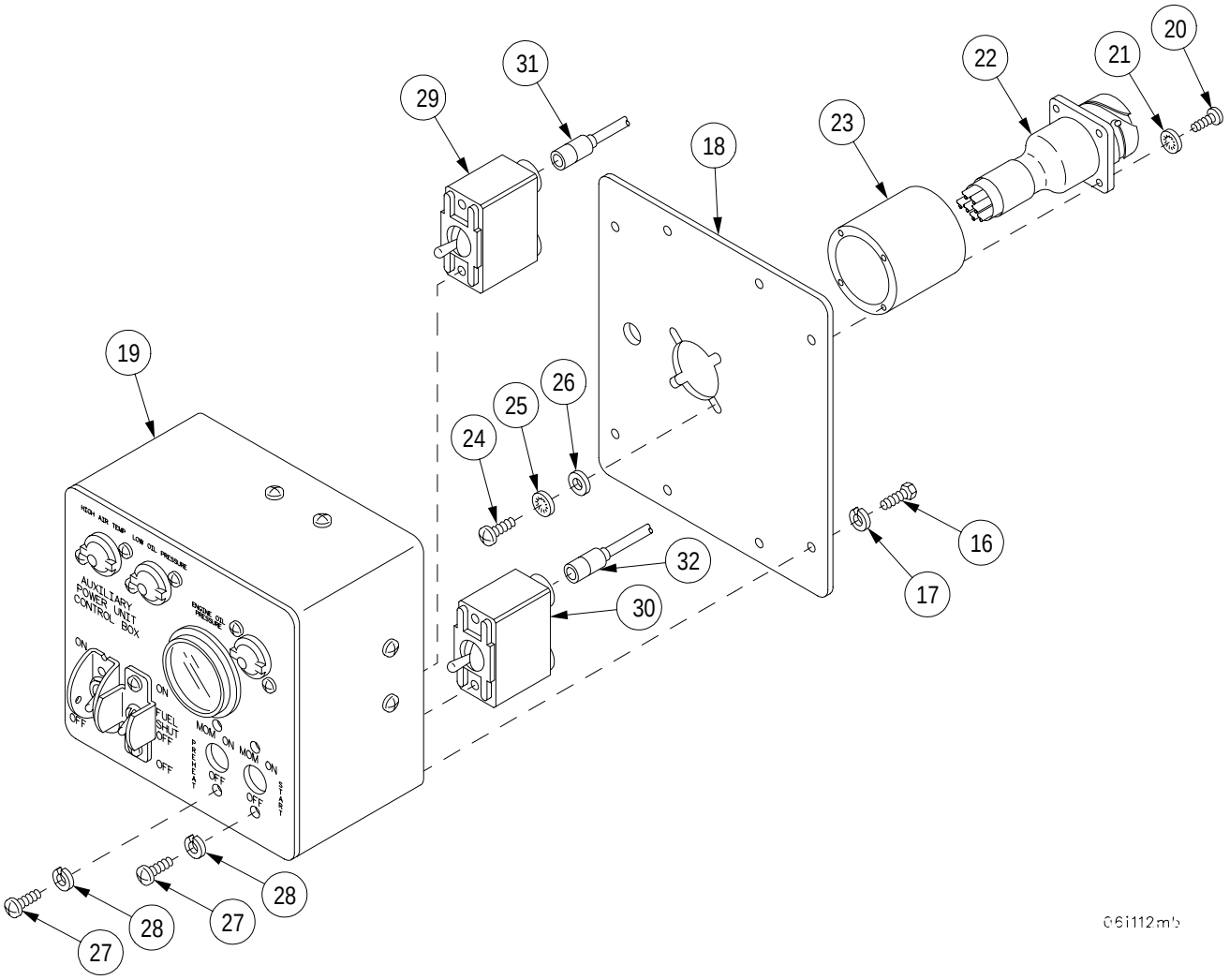
6. Install light socket assembly (52) on enclosure assembly (19) with new lockwasher (51), terminal (50), two screws (48) and two new lockwashers (49), lamp (47), new gasket (46), new gasket (45) and lens (44).
7. Install two plugs (43) in switch assembly (42).
8. Install switch assembly (42), switch guard (41), tanged washer (40), lockwasher (39) and nut (38) on enclosure assembly (19).
9. Install lead assembly 4W123-3 (37) to fuel shutoff switch (36).
10. Install fuel shutoff switch (36) on enclosure assembly (19) with switch guard (35), two screws (33) and two new lockwashers (34).



APU CONTROL BOX AND APU CONTROL BOX BRACKET REPAIR - CONTINUED 0247 00

Assembly-Continued

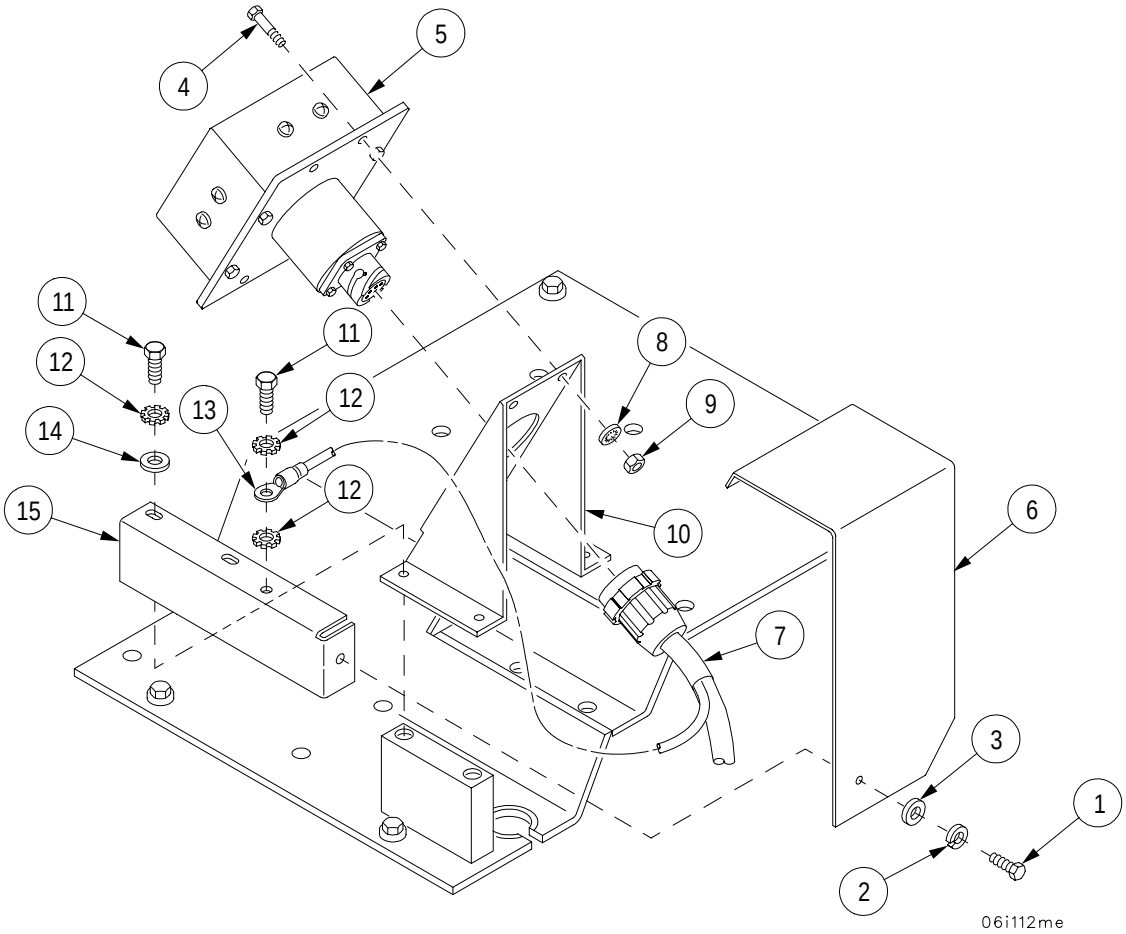
11. Install lead assemblies 4W123-2 (32) to start switch (30) and 4W123-1 (31) to preheat switch (29).
12. Install two toggle switches (29 and 30) on enclosure assembly (19) with four screws (27) and four new lockwashers (28).
13. Install extension (23) on rear panel (18) with four screws (24), four new lockwashers (25) and four flat washers (26).
14. Connect wiring harness 4W725 (22) connectors to enclosure assembly (19) in accordance with Electrical Schematic (FP-7).
15. Install wiring harness 4W725 (22) to extension (23) on rear panel (18) with four screws (20) and four new lockwashers (21).
16. Install rear panel (18) on enclosure assembly (19) with four screws (16) and four new lockwashers (17).



APU CONTROL BOX AND APU CONTROL BOX BRACKET REPAIR - CONTINUED 0247 00

Installation

1. Install control box bracket (10), angle (15), flat washers (14) (if installed), terminal lug (13) with screws (11) and new lockwashers (12).
2. Install control box assembly (5) on control box bracket (10) with four screws (4), four new lockwashers (8) and four nuts (9). Do not tighten screws (4).
3. Connect wiring harness 4W700 connector P1 (7) to APU control box assembly (5).
4. Install cover (6) on control box assembly (5) with screw (1), new lockwasher (2) and flat washer (3). Tighten four screws (4).



NOTE

FOLLOW-ON MAINTENANCE:
Install bleed valve manifold bracket and brace, if removed (WP 0361 00)
Connect battery power (WP 0256 00)

END OF TASK

PERSONNEL HEATER CONTROL BOX ASSEMBLY REPAIR 0248 00

THIS WORK PACKAGE COVERS:
Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (7) (item 319, WP 0718 00)
Lockwashers (2) (item 58, WP 0718 00)
Lockwashers (2) (item 85, WP 0718 00)
Grommet (item 338, WP 0718 00)
Insulating varnish (item 80, WP 0716 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

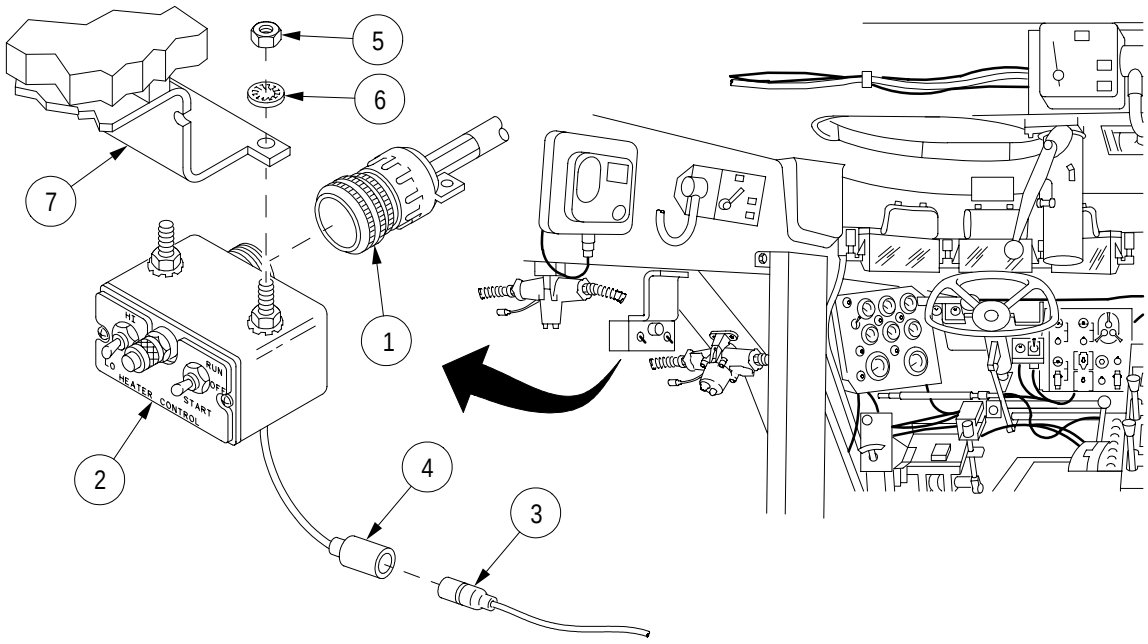
References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

1. Disconnect wiring harness 4W124 connector P1 (1) from heater control box assembly (2).
2. Disconnect wiring harness 4W127 wire 400 (3) from wire 400 (4) of heater control box assembly (2).
3. Remove two nuts (5), two lockwashers (6) and heater control box assembly (2) from mounting plate (7). Discard lockwashers.

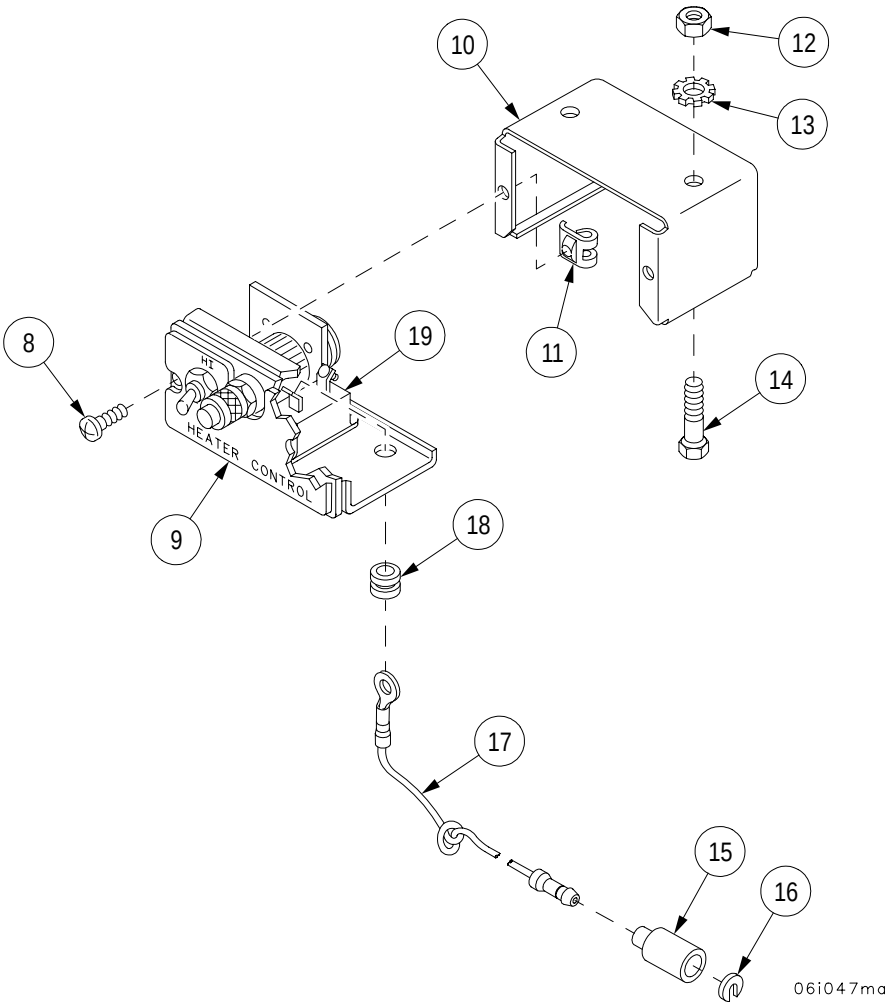


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PERSONNEL HEATER CONTROL BOX ASSEMBLY REPAIR - CONTINUED 0248 00

Disassembly

1. Remove two screws (8), slide heater control box assembly lower half (9) out of heater control box case assembly (10).
2. Remove two nuts (11), two nuts (12), two lockwashers (13) and two screws (14) from heater control box case assembly (10). Discard lockwashers.
3. Remove shell (15) and washer (16) from cable assembly (17). Refer to WP 0290 00, Wiring Harness and Cable Repair.
4. Pull cable assembly (17) through grommet (18), remove grommet (18) from heater control box assembly lower half (9). Discard grommet.
5. Disconnect cable assembly (17) from pin 16 of circuit breaker (19) and remove.



PERSONNEL HEATER CONTROL BOX ASSEMBLY REPAIR - CONTINUED 0248 00

Disassembly-Continued

6. Remove two screws (20), two lockwashers (21), four nuts (22), four screws (23) and four lockwashers (24) from wiring harness 4W146 (25). Discard lockwashers.

NOTE

Retain wire attaching hardware. Hardware is part of component and required for installation.

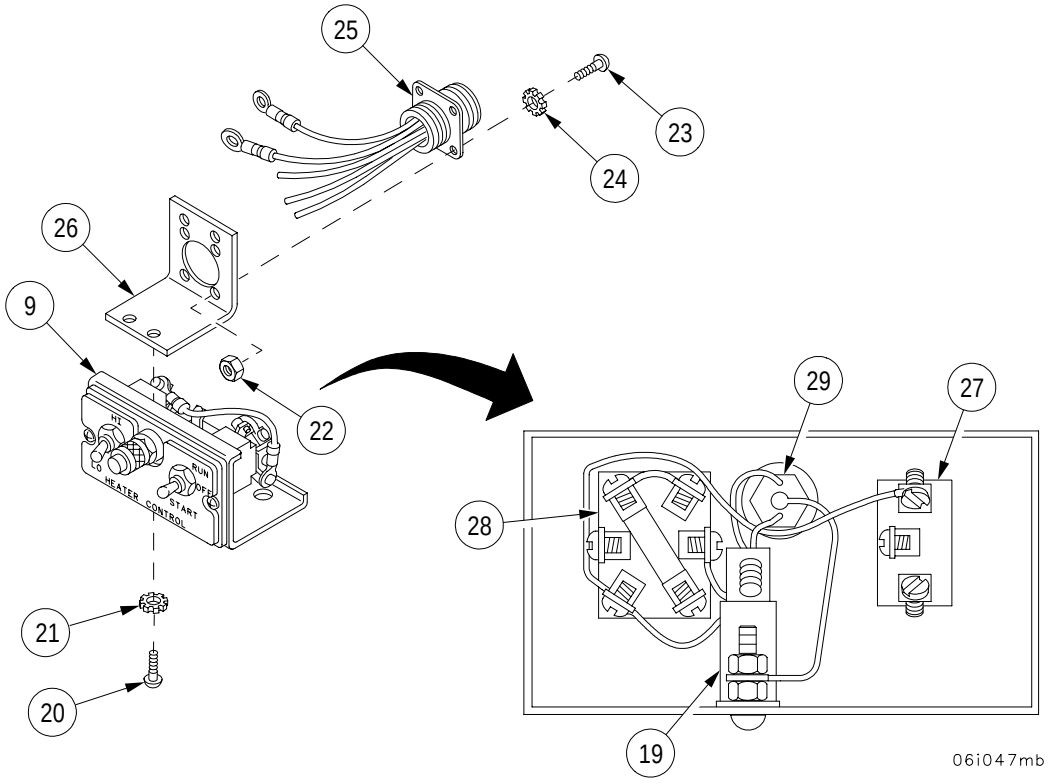
Refer to electrical schematic (FP-5) for internal wiring of personnel heater control box assembly.

7. Disconnect wiring harness 4W146 (25) from the following places, then remove wiring harness 4W146 (25) and bracket (26) from heater control box lower half (9).

4W146 Wire	Disconnect From Component
401	Pin 12 of Heater Switch (27)
402	Pin 14 of Heater Control Switch (28)
403	Pin 20 of Heater Control Switch (28)
405	Pin 17 of Circuit Breaker (19)
407	Pin 19 of Heater Control Switch (28)

8. Disconnect indicator lamp assembly (29) from the following places:

4W191 Wire	Disconnect From Component
405	Pin 17 of Circuit Breaker (19)
407	Pin 19 of Heater Control Switch (28)



PERSONNEL HEATER CONTROL BOX ASSEMBLY REPAIR - CONTINUED 0248 00

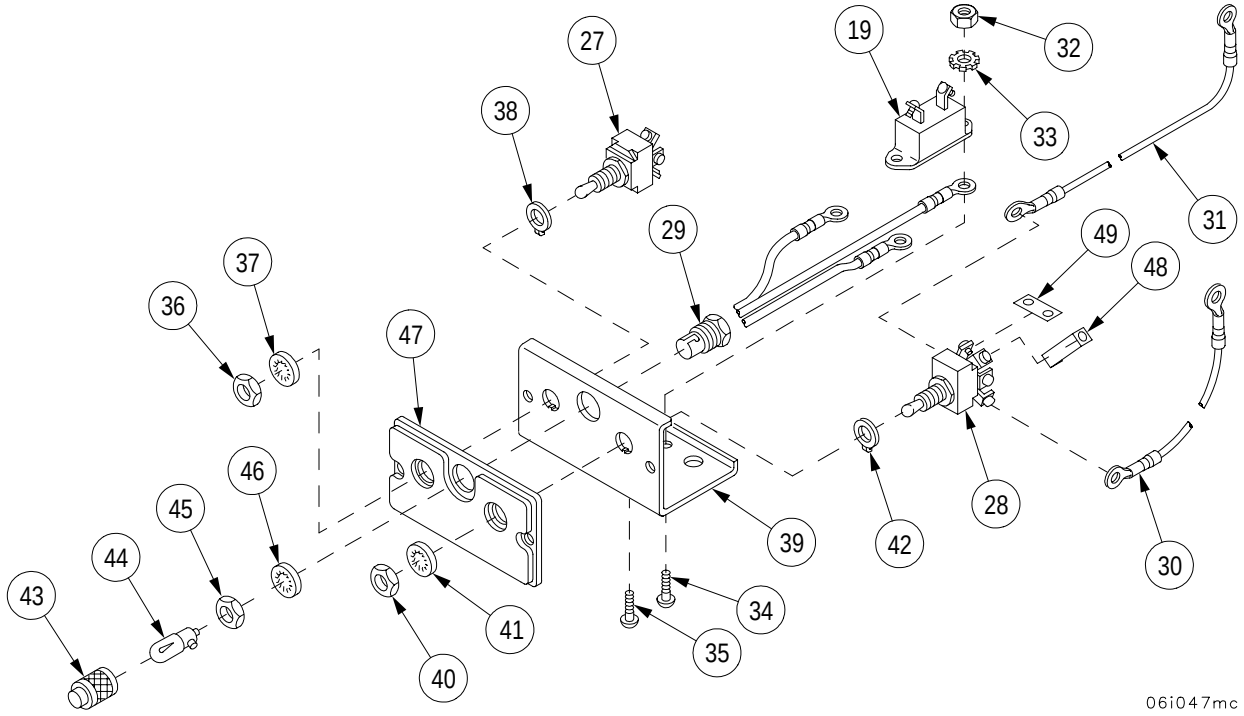
Disassembly-Continued

9. Disconnect one end of cable assembly 4W147-2 (30) from pin 13 of heater switch (27), the other end from pin 19 of heater control switch (28) and remove.
10. Disconnect one end of cable assembly 4W147-1 (31) from pin 17 of circuit breaker (19), the other end from pin 15 of heater control switch (28) and remove.
11. Remove nut (32), lockwasher (33), ground wire of indicator lamp assembly (29), screw (34), screw (35) and circuit breaker (19). Discard lockwasher.

NOTE

Retain switch and indicator lamp assembly mounting hardware. Hardware is part of component and required for installation.

12. Remove nut (36), lockwasher (37), key washer (38) and heater switch (27) from panel (39).
13. Remove nut (40), lockwasher (41), key washer (42) and heater control switch (28) from panel (39).
14. Remove lens (43), lamp (44), nut (45), lockwasher (46), indicator lamp assembly (29) and face plate panel (47) from panel (39).
15. Remove jumper (48) between pins 21 and 18 of heater control switch (28).
16. Remove jumper (49) between pins 21 and 14 of heater control switch (28).
17. Inspect parts for damage and replace as required.



PERSONNEL HEATER CONTROL BOX ASSEMBLY REPAIR - CONTINUED 0248 00

Assembly

NOTE

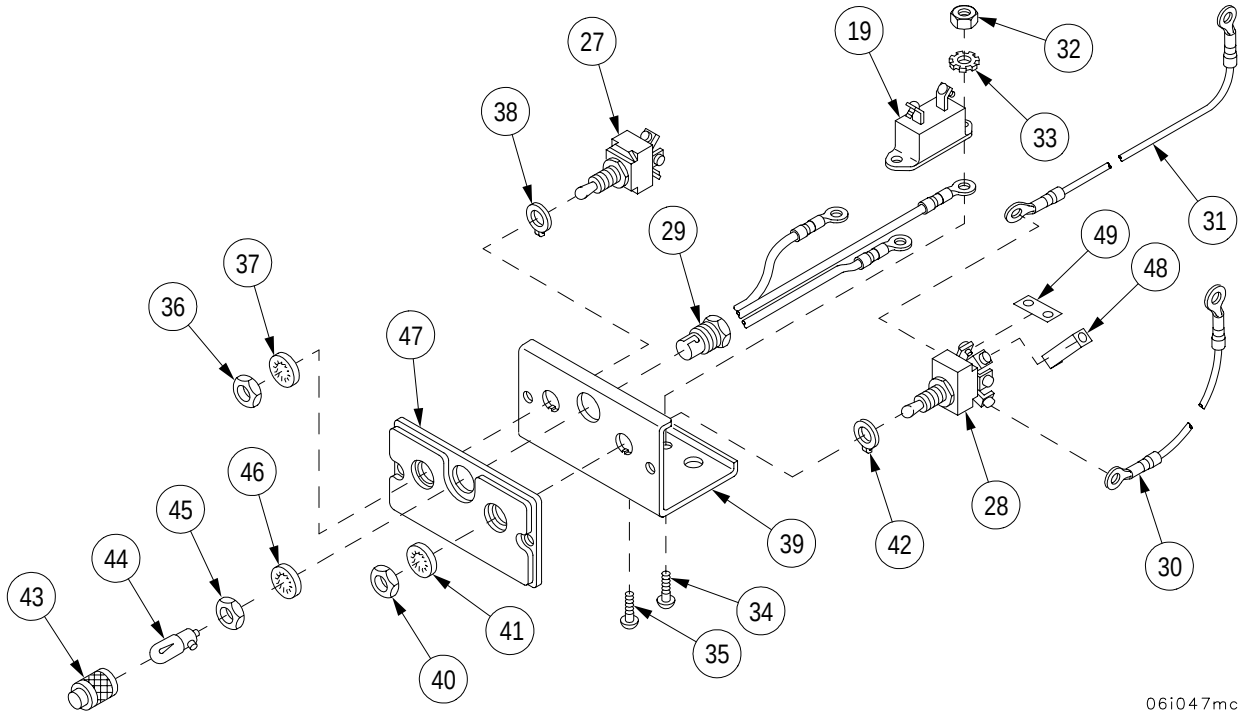
Refer to electrical schematic (FP-5) for internal wiring of personnel heater control box assembly.

1. Install jumper (49) between pins 21 and 14 of heater control switch (28).
2. Install jumper (48) between pins 21 and 18 of heater control switch (28).
3. Install indicator lamp assembly (29) in face plate panel (47) and panel (39) with lockwasher (46), nut (45), lamp (44) and lens (43).
4. Install heater control switch (28) in panel (39) with key washer (42), lockwasher (41) and nut (40).
5. Install heater switch (27) in panel (39) with key washer (38), lockwasher (37) and nut (36).

NOTE

After assembly, apply insulating varnish to all exposed metal where wires attach to screw terminals to protect against moisture and fungus growth.

6. Install circuit breaker (19) and ground wire of indicator lamp assembly (29) with screw (35), screw (34), new lockwasher (33) and nut (32).
7. Connect cable assembly 4W147-1 (31) to pin 17 of circuit breaker (19) and pin 15 of heater control switch (28).
8. Connect cable assembly 4W147-2 (30) to pin 13 of heater switch (27) and pin 19 of heater control switch (28).



PERSONNEL HEATER CONTROL BOX ASSEMBLY REPAIR - CONTINUED 0248 00

Assembly-Continued

9. Connect indicator lamp assembly (29) to the following places:

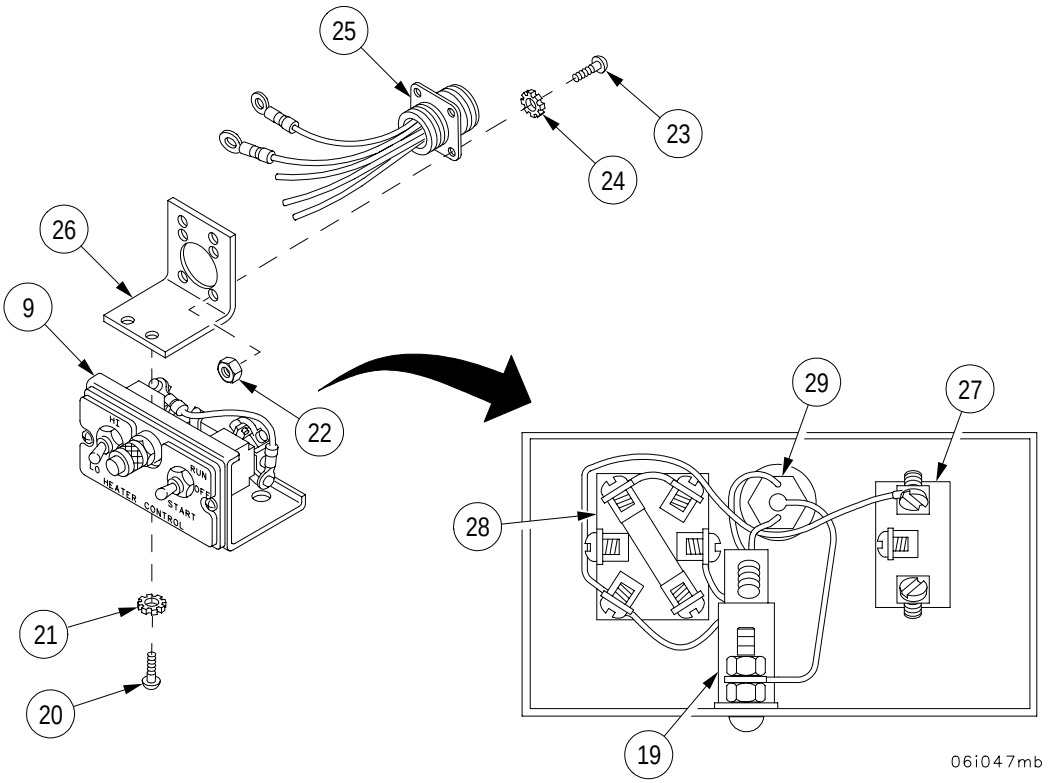
4W191 Wire	Connect to Component
405	Pin 17 of Circuit Breaker (19)
407	Pin 19 of Heater Control Switch (28)

10. Install wiring harness 4W146 (25) in bracket (26) with four screws (23), four new lockwashers (24) and four nuts (22).

11. Connect wiring harness 4W146 (25) to the following places:

4W146 Wire	Connect to Component
401	Pin 12 of Heater Switch (27)
402	Pin 14 of Heater Control Switch (28)
403	Pin 20 of Heater Control Switch (28)
405	Pin 17 of Circuit Breaker (19)
407	Pin 19 of Heater Control Switch (28)

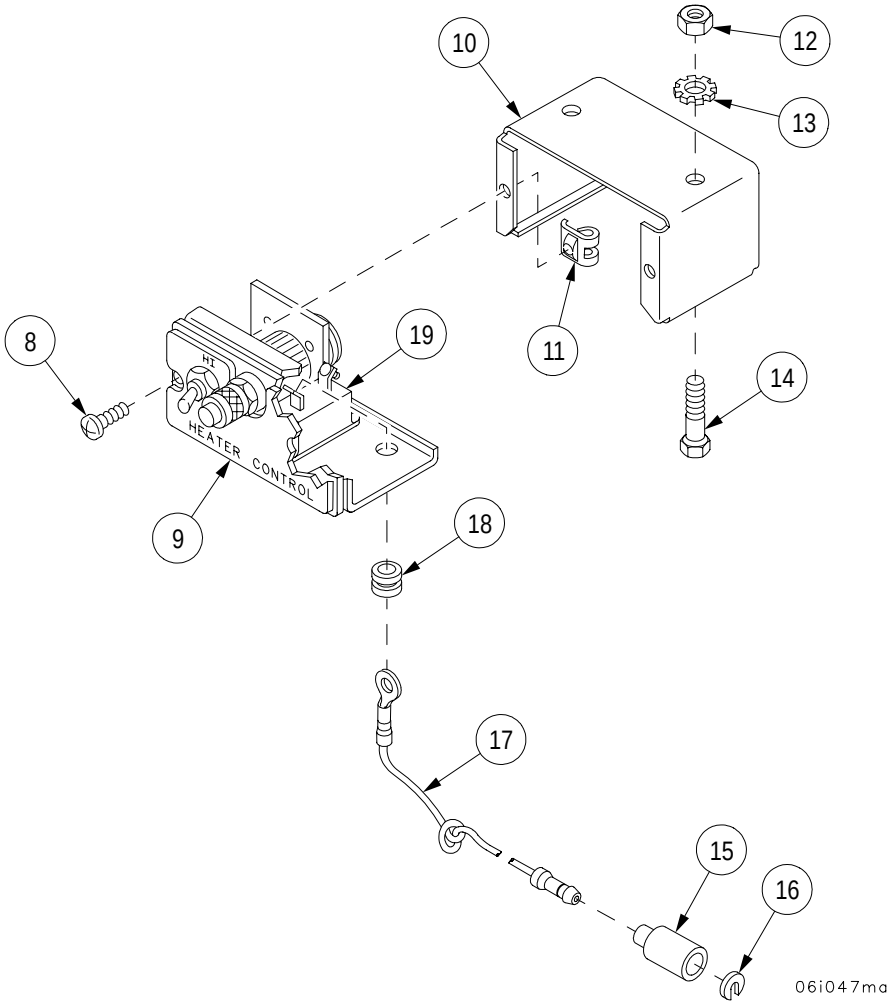
12. Install bracket (26) and wiring harness 4W146 (25) on heater control box assembly lower half (9) with two screws (20) and two new lockwashers (21).



PERSONNEL HEATER CONTROL BOX ASSEMBLY REPAIR - CONTINUED 0248 00

Assembly-Continued

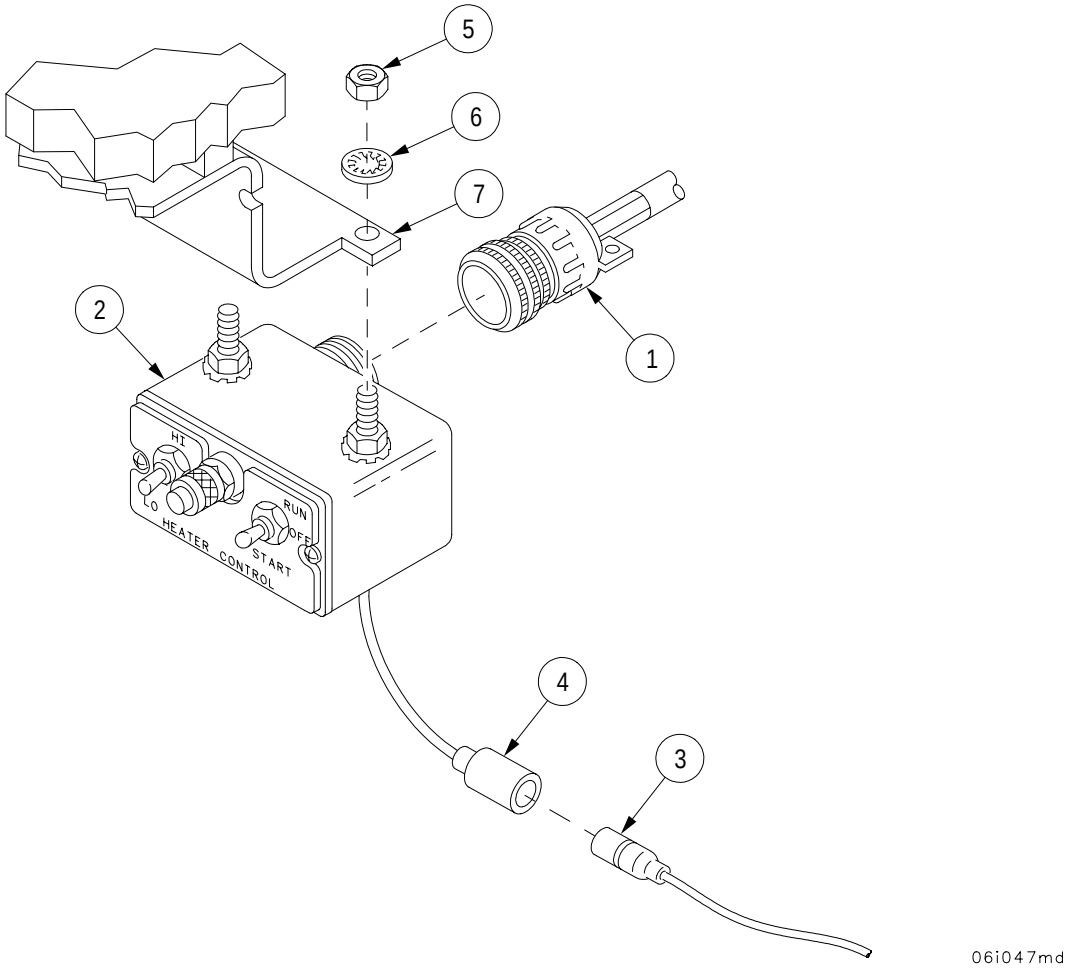
13. Connect cable assembly (17) to pin 16 of circuit breaker (19).
14. Install new grommet (18) in heater control box assembly lower half (9).
15. Push cable assembly (17) through new grommet (18).
16. Install shell (15) and washer (16) on cable assembly (17). Refer to WP 0290 00 Wiring Harness and Cable Repair.
17. Install two nuts (11), two screws (14), two new lockwashers (13) and two nuts (12) on heater control box case assembly (10).
18. Slide heater control box assembly lower half (9) into heater control box case assembly (10), secure with two screws (8).



PERSONNEL HEATER CONTROL BOX ASSEMBLY REPAIR - CONTINUED 0248 00

Installation

1. Install heater control box assembly (2) on mounting plate (7) with two new lockwashers (6) and two nuts (5).
2. Connect wiring harness 4W127 wire 400 (3) to wire 400 (4) of heater control box assembly (2).
3. Connect wiring harness 4W124 connector P1 (1) to heater control box assembly (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

HIGH BEAM INDICATOR ASSEMBLY AND BRACKET REPAIR 0249 00

THIS WORK PACKAGE COVERS:
Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 90, WP 0718 00)
Gasket (item 91, WP 0718 00)
Lockwashers (2) (item 9, WP 0718 00)

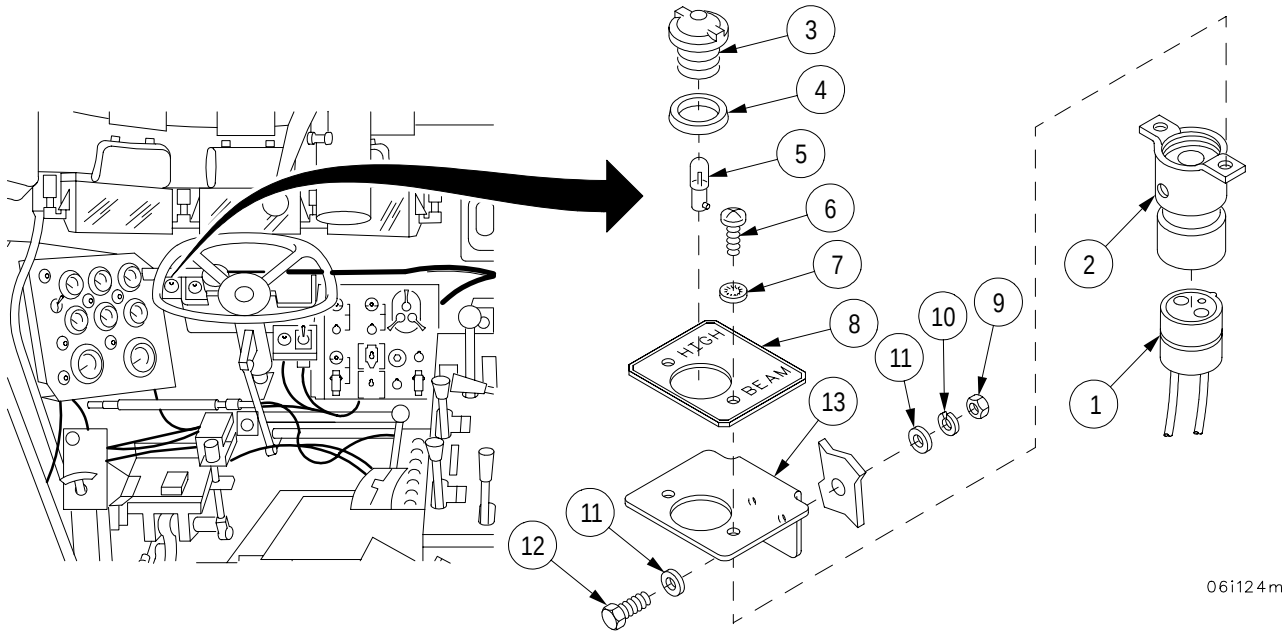
Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

Personnel Required
Two

References
TM 9-2350-292-10

Removal

1. Disconnect wiring harness 4W107 connector P3 (1) from connector socket J1 of high beam indicator (2).
2. Remove lens (3), gasket (4) and bulb (5). Discard gasket.
3. Remove two screws (6), two lockwashers (7), plate (8) and remainder of indicator (2). Discard lockwashers.
4. Remove two nuts (9), two lockwashers (10), four flat washers (11), two screws (12) and bracket (13) from vehicle. Discard lockwashers.



HIGH BEAM INDICATOR ASSEMBLY AND BRACKET REPAIR - CONTINUED 0249 00

Disassembly

NOTE

Perform Disassembly and Assembly procedures to complete repair of the indicator.

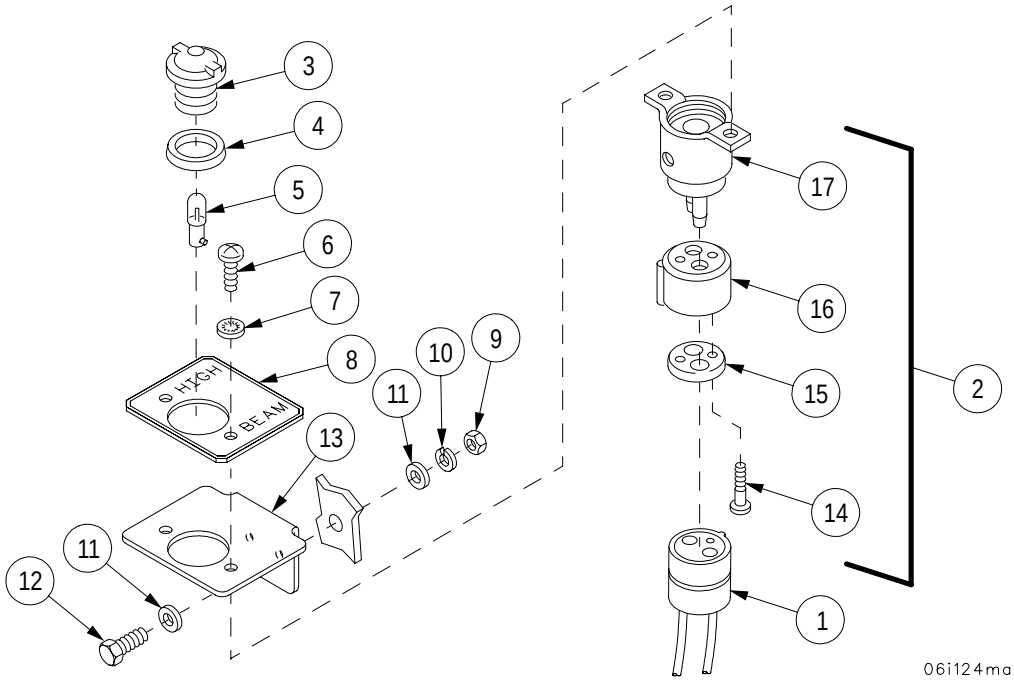
1. Remove two screws (14), retaining plate (15) and shell receptacle (16) from lamp body (17).
2. Inspect parts for damage and replace as required.

Assembly

Install shell receptacle (16) and retaining plate (15) to lamp body (17) with two screws (14).

Installation

1. Install bracket (13) on vehicle with two screws (12), four flat washers (11), two new lockwashers (10) and two nuts (9).
2. Install plate (8) and indicator (2) with two screws (6) and two new lockwashers (7).
3. Install bulb (5), new gasket (4) and lens (3).
4. Connect wiring harness 4W107 connector P3 (1) to connector socket J1 of high beam indicator (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

BRAKE STOP LIGHT SWITCH AND EXTENSION REPLACEMENT 0250 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 58, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle parked on level surface with tracks blocked and brakes released (TM 9-2350-292-10)
Subfloor plate #16 removed (WP 0454 00)
Battery power disconnected (WP 0256 00)

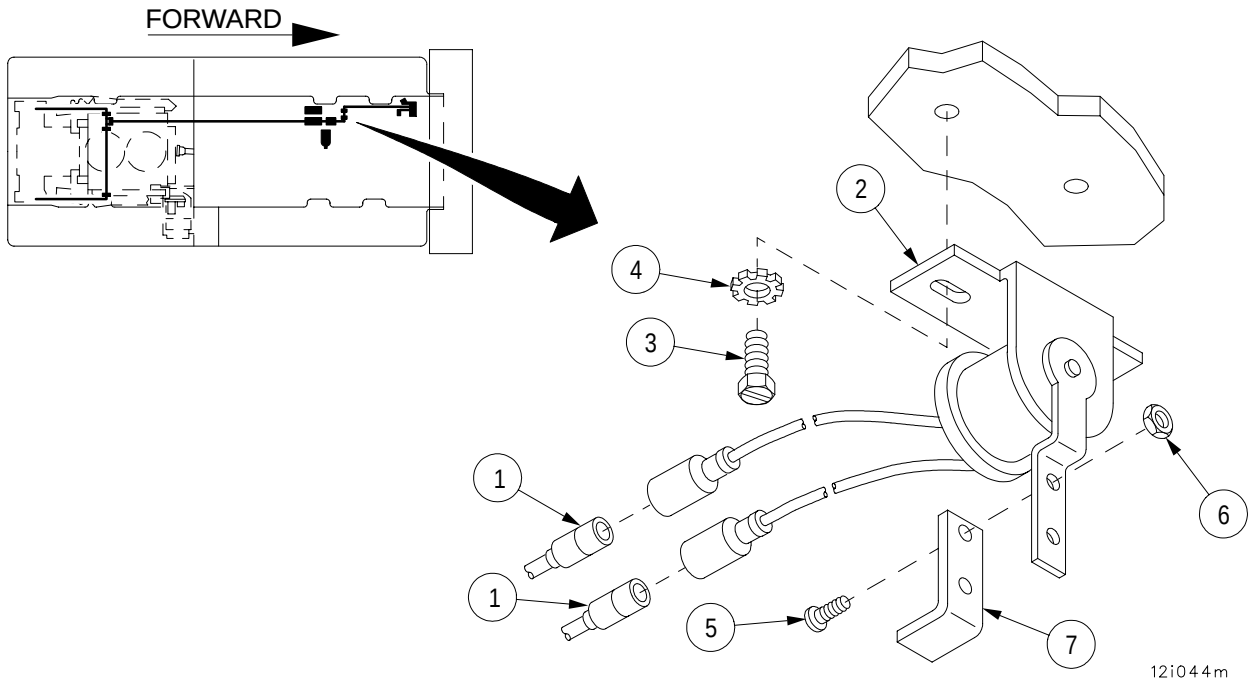
References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

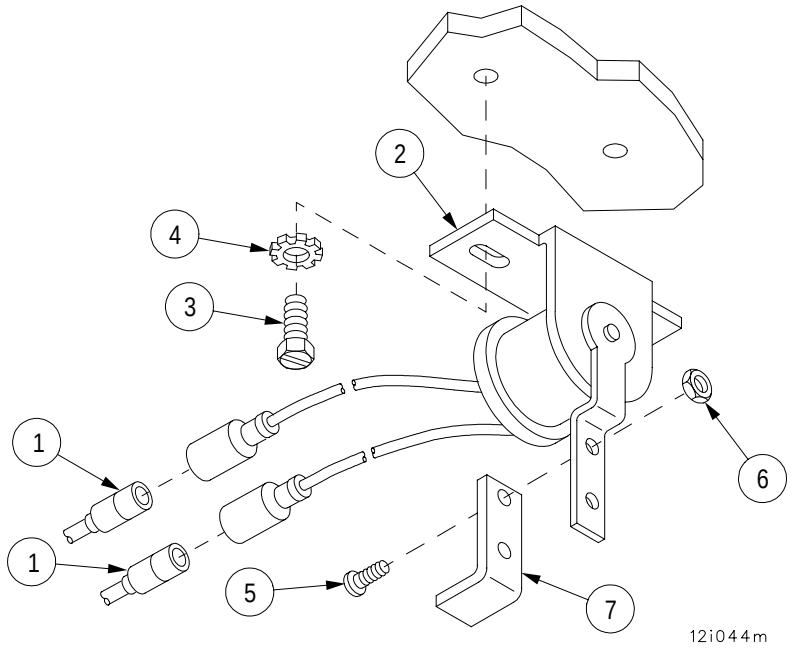
1. Disconnect two circuit no. 75 wires (1) of wiring harness 4W105 from brake stop light switch (2).
2. Remove two screws (3), two lockwashers (4) and brake stop light switch (2). Discard lockwashers.
3. Remove two screws (5), two nuts (6) and extension (7).
4. Inspect parts for damage and replace as required.



BRAKE STOP LIGHT SWITCH AND EXTENSION REPLACEMENT - CONTINUED 0250 00

Installation

1. Install extension (7) on brake stop light switch (2) with two screws (5) and two nuts (6).
2. Install brake stop light switch (2) with two screws (3) and two new lockwashers (4).
3. Connect two circuit no. 75 wires (1) of wiring harness 4W105 to brake stop light switch (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install subfloor plate #16 (WP 0454 00)
Connect battery power (WP 0256 00)

END OF TASK

LEVEL WIND LIMIT SWITCHES REPLACEMENT 0251 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Level winder guard removed (WP 0507 00)

References
TM 9-2350-292-10

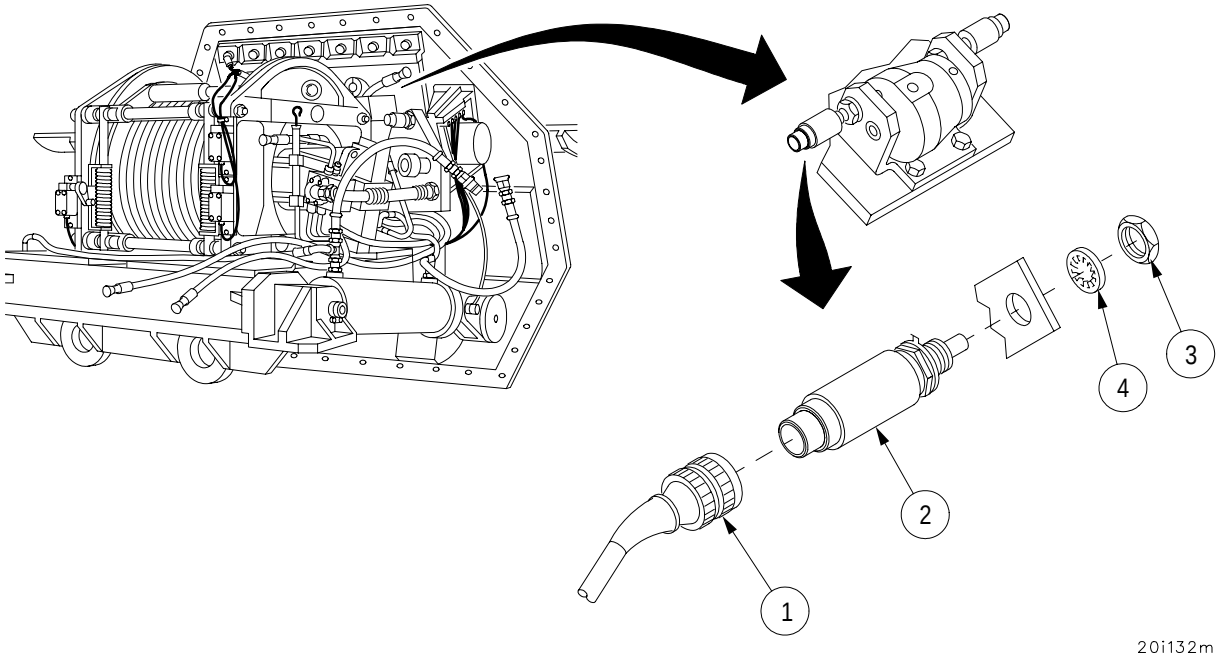
NOTE

There are two level wind limit switches. Both limit switches are replaced in the same manner. This task replaces only one level wind limit switch.

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

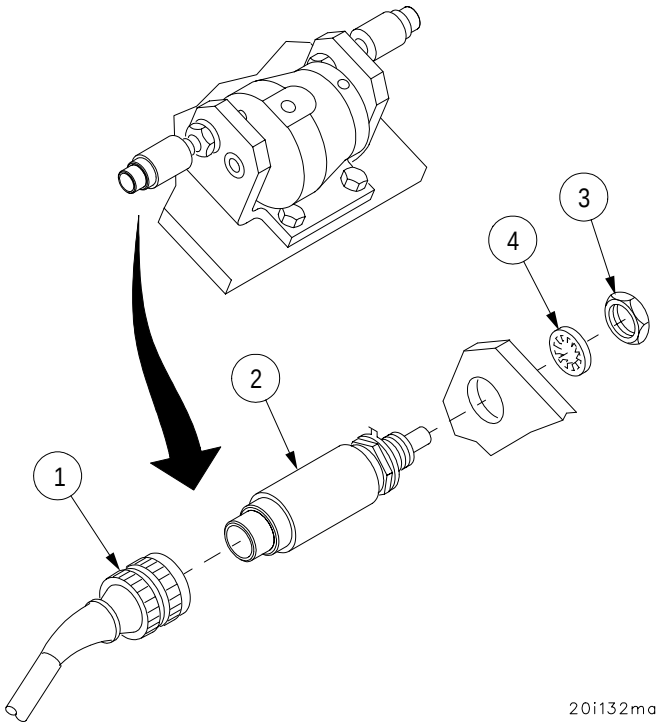
1. Disconnect wiring harness 2W602 connector P2 or 2W602 connector P3 (1) from limit switch (2).
2. Remove nut (3), lockwasher (4) and limit switch (2). Retain attaching hardware for installation.
3. Inspect parts for damage and replace as required.



LEVEL WIND LIMIT SWITCHES REPLACEMENT - CONTINUED 0251 00

Installation

1. Install limit switch (2) with nut (3) and lockwasher (4).
2. Connect wiring harness 2W602 connector P2 or 2W602 connector P3 (1) to limit switch (2).
3. Adjust the level wind limit switches (2) (WP 0509 00).



NOTE

FOLLOW-ON MAINTENANCE:
Install level winder guard (WP 0507 00)
Connect battery power (WP 0256 00)

END OF TASK

NEUTRAL SAFETY SWITCH REPLACEMENT 0252 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (4) (item 18, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Transmission shift control lever in PARK (P) (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Flasher assembly removed (WP 0253 00)
Main switch panel removed (WP 0242 00)

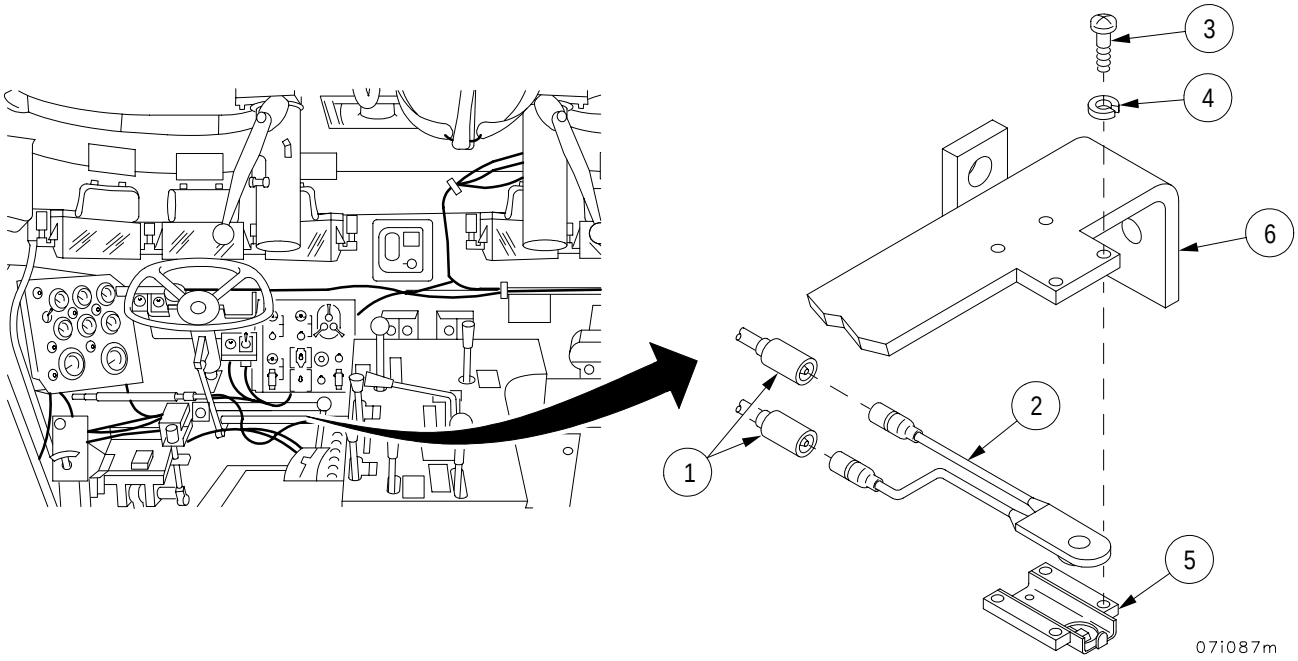
References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

1. Disconnect two circuit no. 14 wires (1) of wiring harness 4W101 from neutral safety switch (2).
2. Remove four screws (3) and four lockwashers (4), gently slide neutral safety switch housing (5) and neutral safety switch (2) from bracket (6). Discard lockwashers.
3. Separate neutral safety switch (2) from neutral safety switch housing (5).
4. Inspect parts for damage and replace as required.



NEUTRAL SAFETY SWITCH REPLACEMENT - CONTINUED 0252 00

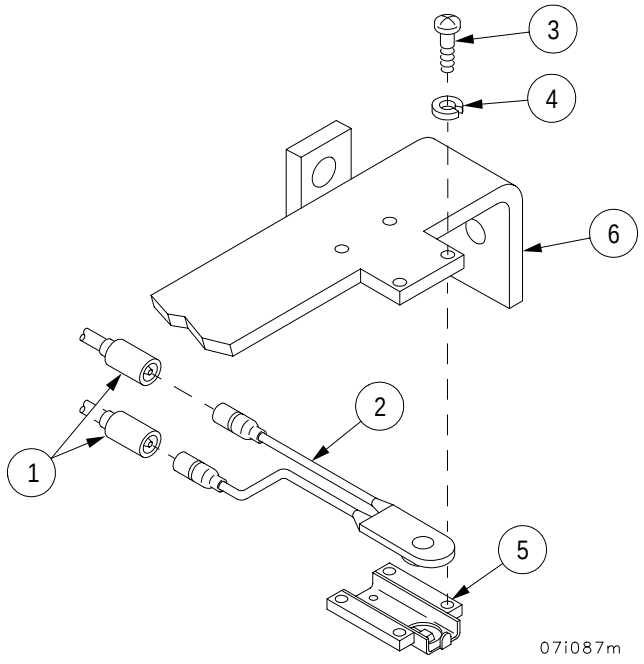
Installation

1. Place neutral safety switch (2) in neutral safety switch housing (5). Make sure neutral safety switch (2) is seated with switch actuating area centered in opening of neutral safety switch housing (5).

NOTE

If step 2 cannot be performed, neutral safety switch adjustment screw may require adjustment. Refer to WP 0358 00 or WP 0359 00 for neutral safety switch adjustment procedure.

2. Install neutral safety switch housing (5) and neutral safety switch (2) on bracket (6) with four screws (3) and four new lockwashers (4).
3. Connect two circuit no. 14 wires (1) of wiring harness 4W101 to neutral safety switch (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install main switch panel (WP 0242 00)
Install flasher assembly (WP 0253 00)
Connect battery power (WP 0256 00)

END OF TASK

FLASHER (FLASHING LIGHT) ASSEMBLY REPLACEMENT 0253 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 18, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
APU control box and control box bracket removed (WP 0247 00)

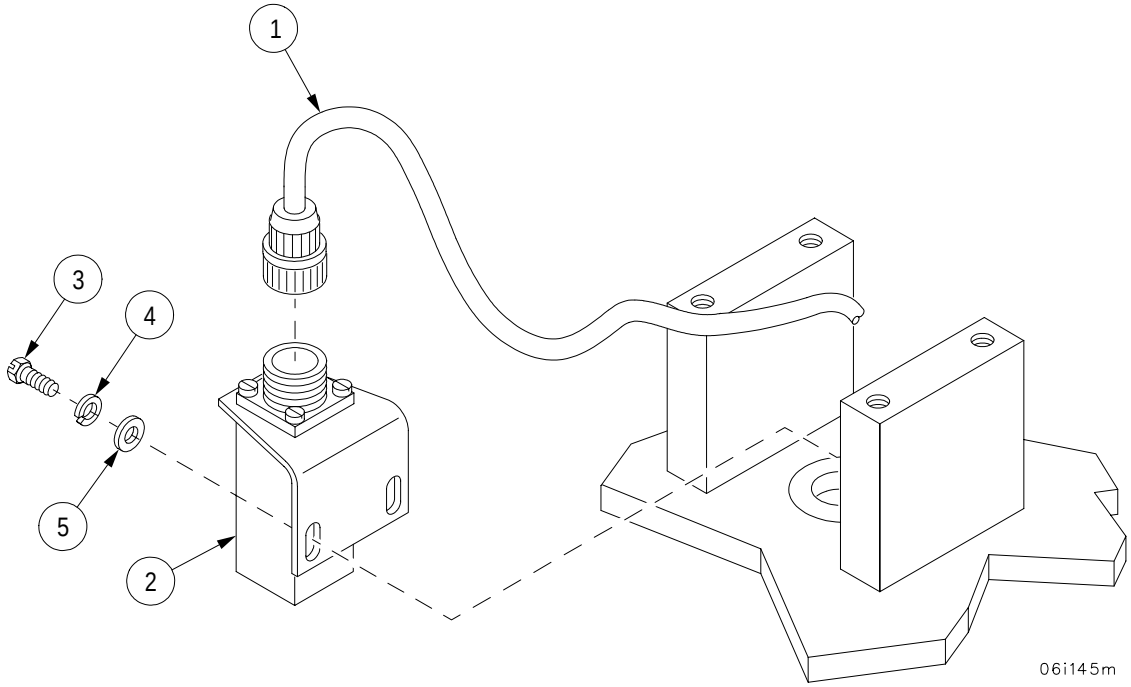
References
TM 9-2350-292-10

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

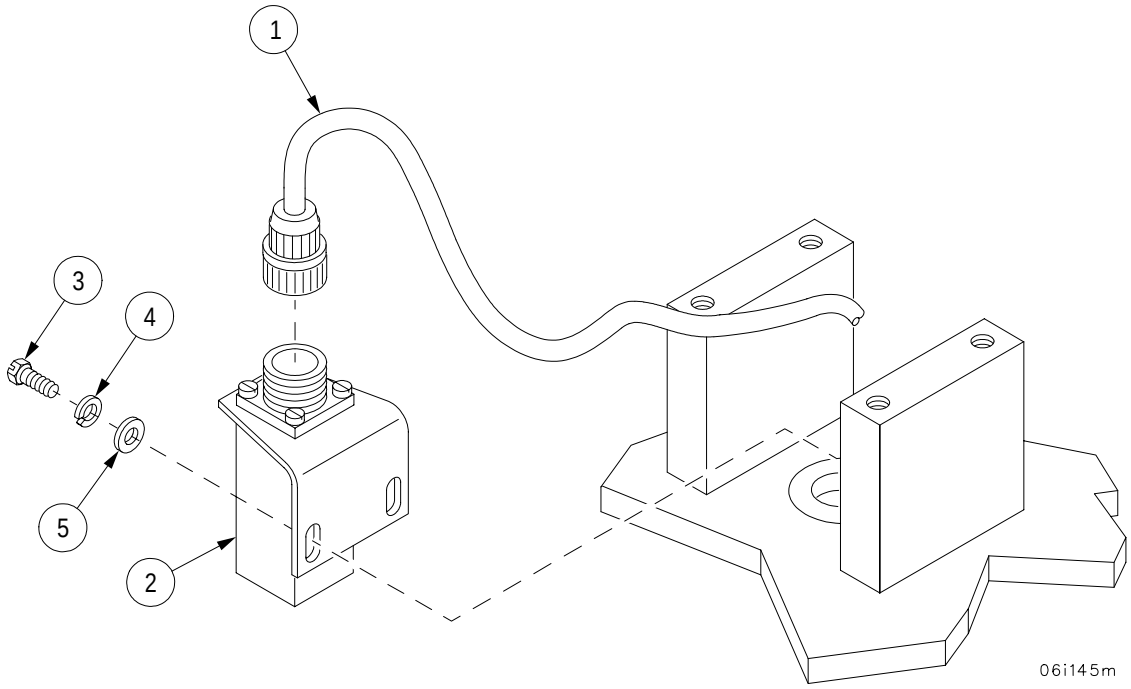
1. Disconnect wiring harness 4W101 connector P2 (1) from flasher assembly (2).
2. Remove two screws (3), two lockwashers (4), two flat washers (5) and flasher assembly (2). Discard lockwashers.
3. Inspect parts for damage and replace as required.



FLASHER (FLASHING LIGHT) ASSEMBLY REPLACEMENT - CONTINUED 0253 00

Installation

1. Install flasher assembly (2) with two screws (3), two new lockwashers (4) and two flat washers (5).
2. Connect wiring harness 4W101 connector P2 (1) to flasher assembly (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install APU control box and control box bracket
(WP 0247 00)

END OF TASK

STE-ICE RESISTOR BOX AND BRACKET REPLACEMENT 0254 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

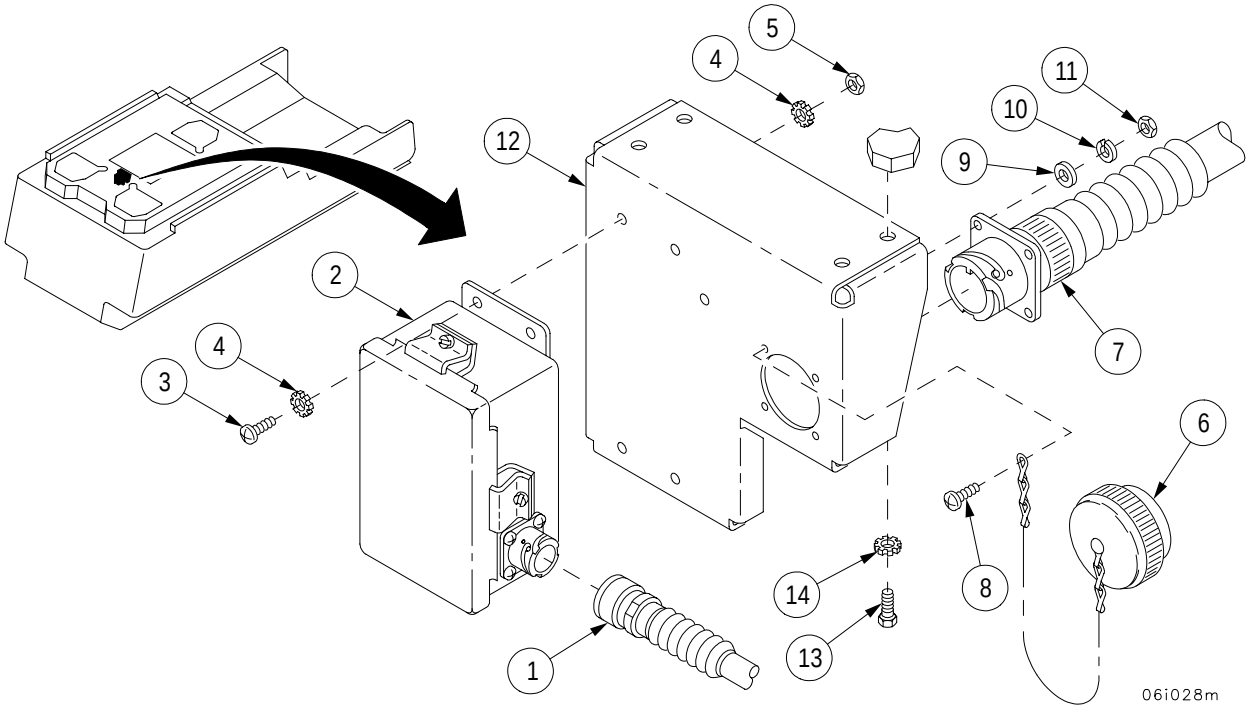
Materials/Parts
Lockwashers (12) (item 58, WP 0718 00)
Lockwashers (4) (item 112, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Air purifier control unit enclosure assembly and bracket removed (WP 0707 00)
For bracket replacement only

References
TM 9-2350-292-10

Removal

1. Disconnect wiring harness 4W800 connector P2 (1) from resistor box (2) receptacle.
2. Remove four screws (3), eight lockwashers (4) and four nuts (5) from resistor box (2). Discard lockwashers.
3. Disconnect cap (6) from wiring harness 4W800 DCA connector J1 (7).
4. Remove four screws (8), four flat washers (9), four lockwashers (10), four nuts (11), cap (6) and wiring harness 4W800 DCA connector J1 (7) from bracket (12). Discard lockwashers.
5. Remove four screws (13), four lockwashers (14) and bracket (12). Discard lockwashers.
6. Inspect parts for damage and replace as required.



STE-ICE RESISTOR BOX AND BRACKET REPLACEMENT - CONTINUED 0254 00

Installation

NOTE

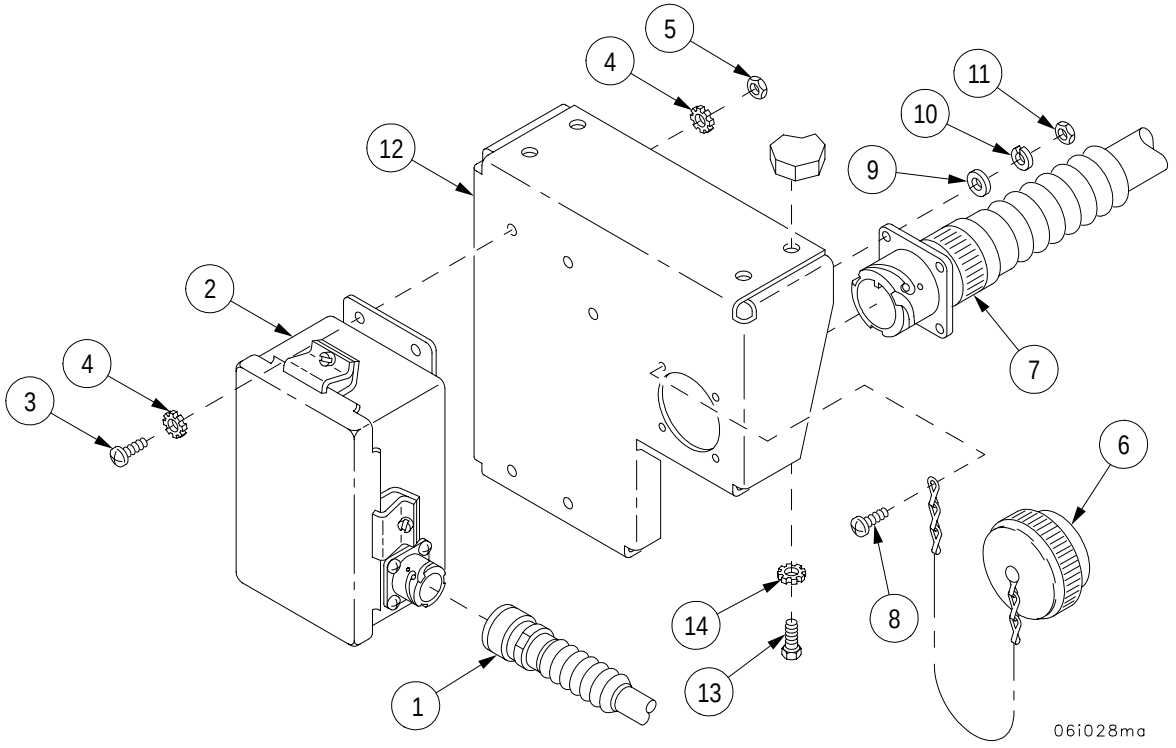
Make sure screws are tightened sufficiently to cause external tooth lockwasher to cut through paint to make electrical contact.

1. Install bracket (12) with four screws (13) and four new lockwashers (14).
2. Install wiring harness 4W800 DCA connector J1 (7) and cap (6) on bracket (12) with four screws (8), four flat washers (9), four new lockwashers (10) and four nuts (11).
3. Install cap (6) on wiring harness 4W800 DCA connector J1 (7).

NOTE

Use one external lockwasher next to head of screws and one external tooth lockwasher next to nut.

4. Install resistor box (2) with four screws (3), eight new lockwashers (4) and four nuts (5).
5. Connect wiring harness 4W800 connector P2 (1) to resistor box (2) receptacle.



NOTE

FOLLOW-ON MAINTENANCE:
Install air purifier control unit enclosure assembly and bracket, if removed (WP 0707 00)
Connect battery power (WP 0256 00)

END OF TASK

CURRENT SHUNT REPLACEMENT 0255 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (4) (item 9, WP 0718 00)
Lockwashers (4) (item 121, WP 0718 00)
Lockwashers (2) (item 122, WP 0718 00)
Insulating compound (item 26, WP 0716 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10



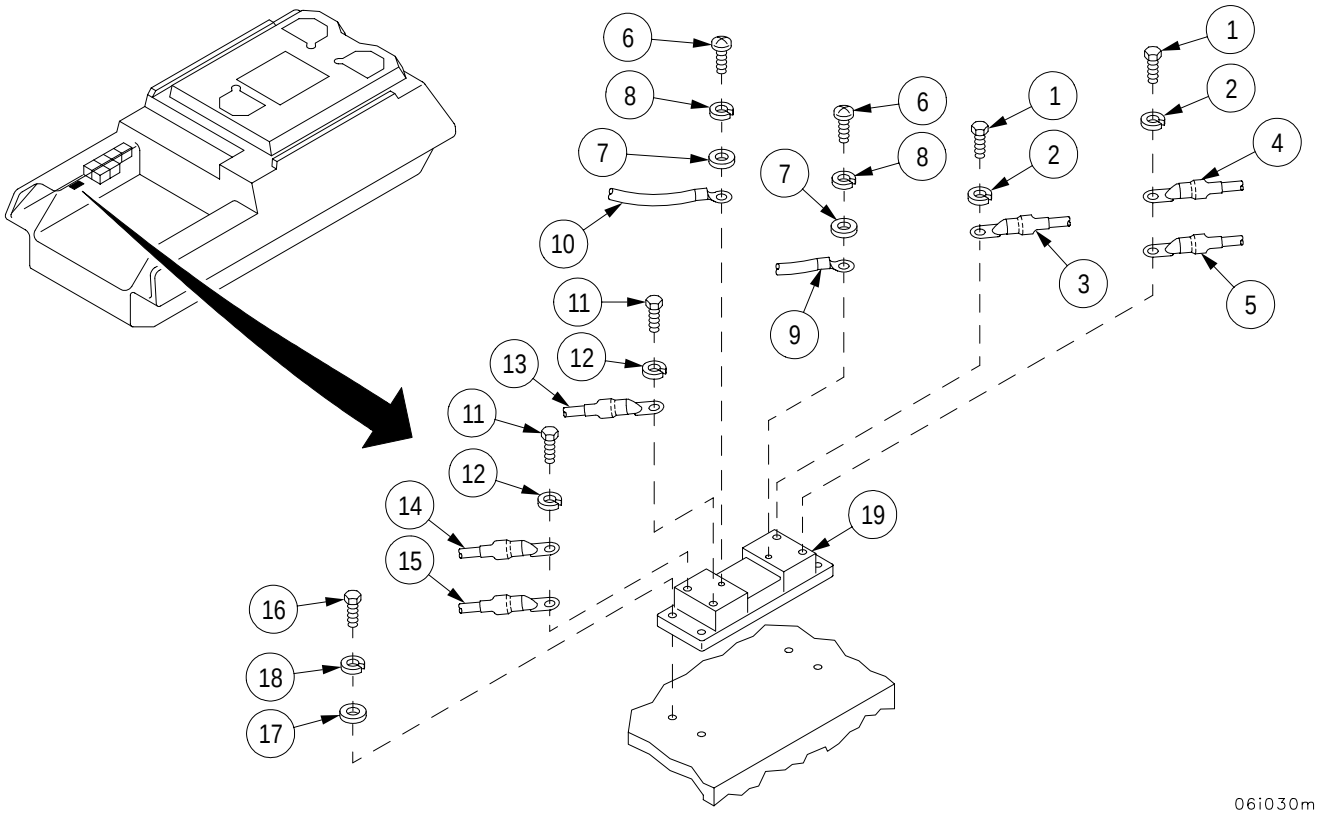
CURRENT SHUNT REPLACEMENT - CONTINUED 0255 00

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

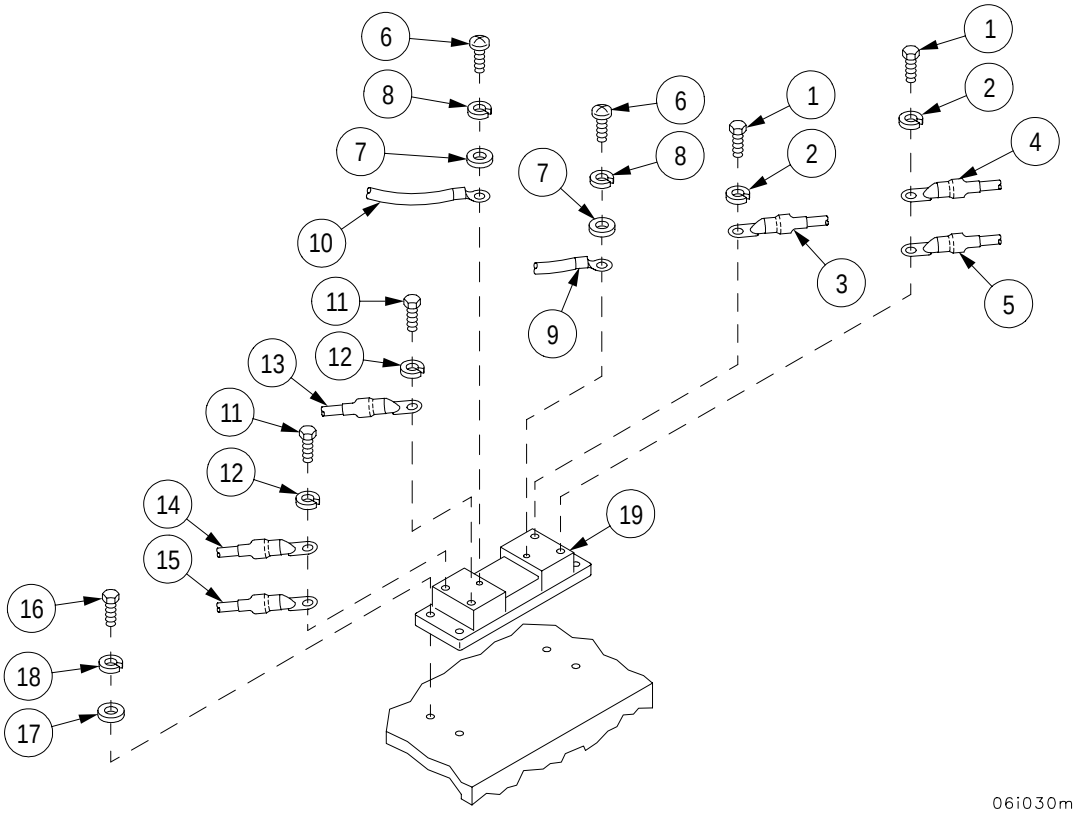
1. Remove two screws (1), two lockwashers (2) and three lead assemblies 3W209 (3, 4 and 5). Discard lockwashers.
2. Remove two screws (6), two flat washers (7), two lockwashers (8) and wiring harness 3W801 wires X and Y (9 and 10). Discard lockwashers.
3. Remove two screws (11), two lockwashers (12) and three lead assemblies 3W210-1, -2 and -3 (13, 14 and 15). Discard lockwashers.
4. Remove four screws (16), four flat washers (17), four lockwashers (18) and shunt (19). Discard lockwashers.
5. Inspect parts for damage and replace as required.



CURRENT SHUNT REPLACEMENT - CONTINUED 0255 00

Installation

1. Install shunt (19) with four screws (16), four new lockwashers (18) and four flat washers (17).
2. Install three lead assemblies 3W209 (3, 4 and 5) with two screws (1) and two new lockwashers (2).
3. Install wiring harness 3W801 wires X and Y (9 and 10) with two screws (6), two new lockwashers (8) and two flat washers (7).
4. Install three lead assemblies 3W210-1, -2 and -3 (13, 14 and 15) with two screws (11) and two new lockwashers (12).
5. Apply insulating compound to shunt (19) connection points.



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

POSITIVE BUS BAR REPLACEMENT 0256 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (6) (item 2, WP 0718 00)
Lockwashers (8) (item 350, WP 0718 00)
Lockwashers (2) (item 394, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Boom raised (TM 9-2350-292-10)
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Left side engine deck access doors opened and left engine deck side grille removed (TM 9-2350-292-10)

Personnel Required
Two

References
TM 9-2350-292-10



NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Perform Removal steps 1 through 5 and 15 to disconnect battery power from the vehicle. Perform Installation steps 10 through 14 to reconnect battery power to the vehicle after repair has been completed.

Perform Removal steps 6 through 15 and Installation steps 1 through 9 for replacement of the positive bus bar or related parts.

POSITIVE BUS BAR REPLACEMENT - CONTINUED 0256 00

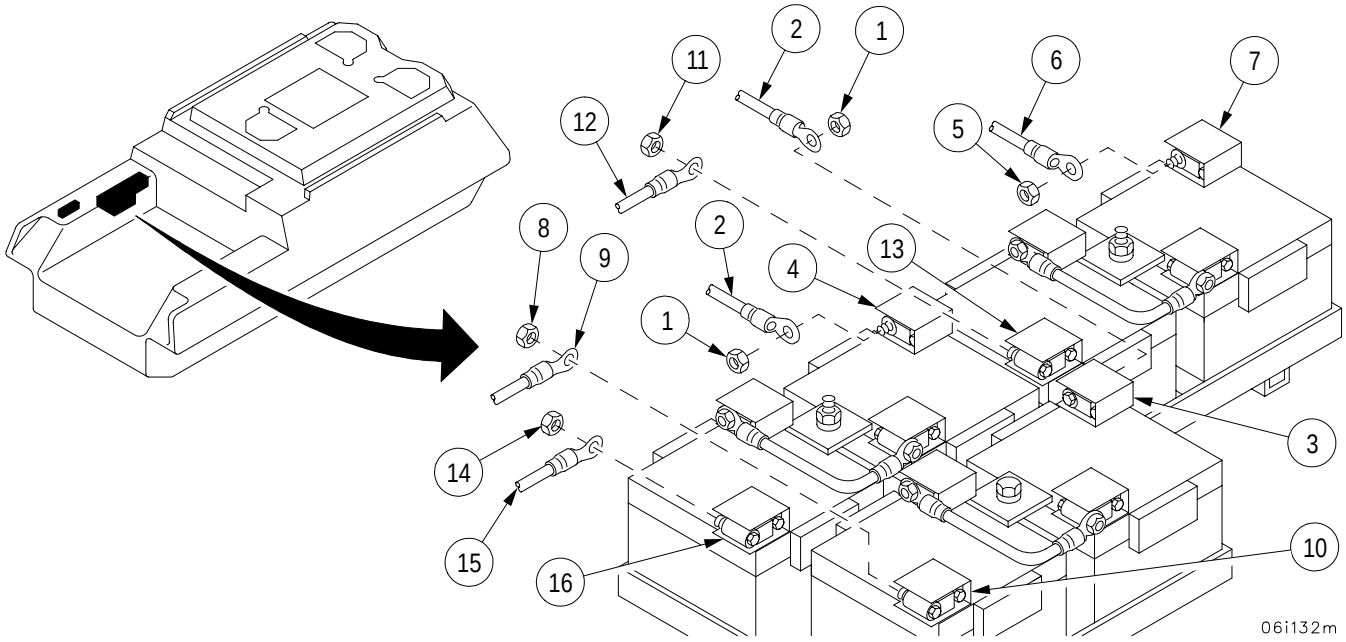
Removal

WARNING

To prevent personnel injury or equipment damage, steps 1 through 5 are performed to remove battery power from the vehicle prior to repair of the positive bus bar.

To prevent personnel injury or equipment damage when disconnecting lead assemblies from batteries, prevent loose wires, tools or other conductive materials from touching or shorting across battery terminals.

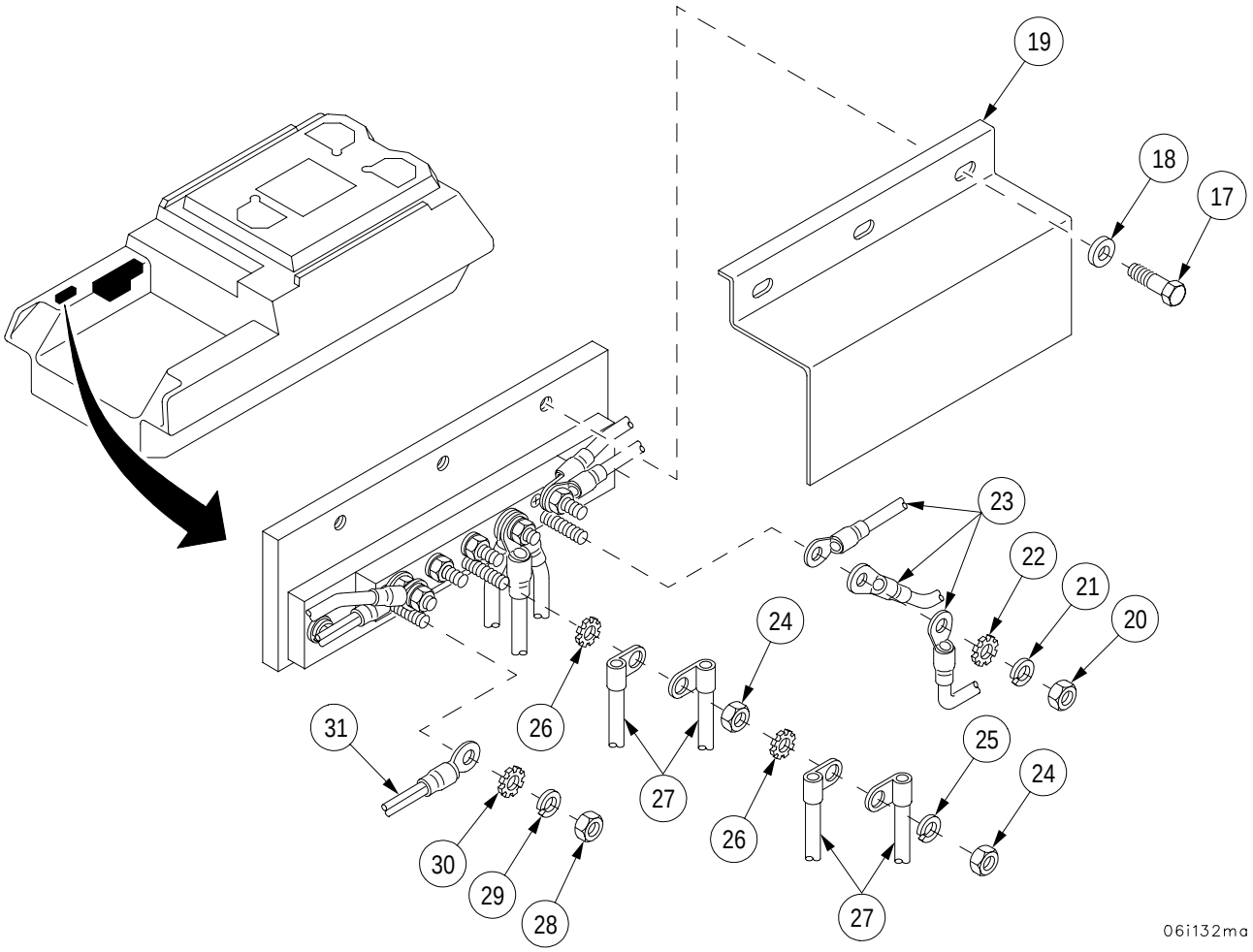
1. Remove two nuts (1) and two terminal lugs (2) of two lead assemblies 3W210-2 at battery negative (-) terminal posts (3) and (4).
2. Remove nut (5) and terminal lug (6) of lead assembly 3W210-1 at battery negative (-) terminal post (7).
3. Remove nut (8) and terminal lug (9) of lead assembly 3W212-2 at battery positive (+) terminal post (10).
4. Remove nut (11) and terminal lug (12) of lead assembly 3W212-1 at battery positive (+) terminal post (13).
5. Remove nut (14) and terminal lug (15) of lead assembly 3W212-3 at battery positive (+) terminal post (16).



POSITIVE BUS BAR REPLACEMENT - CONTINUED 0256 00

Removal-Continued

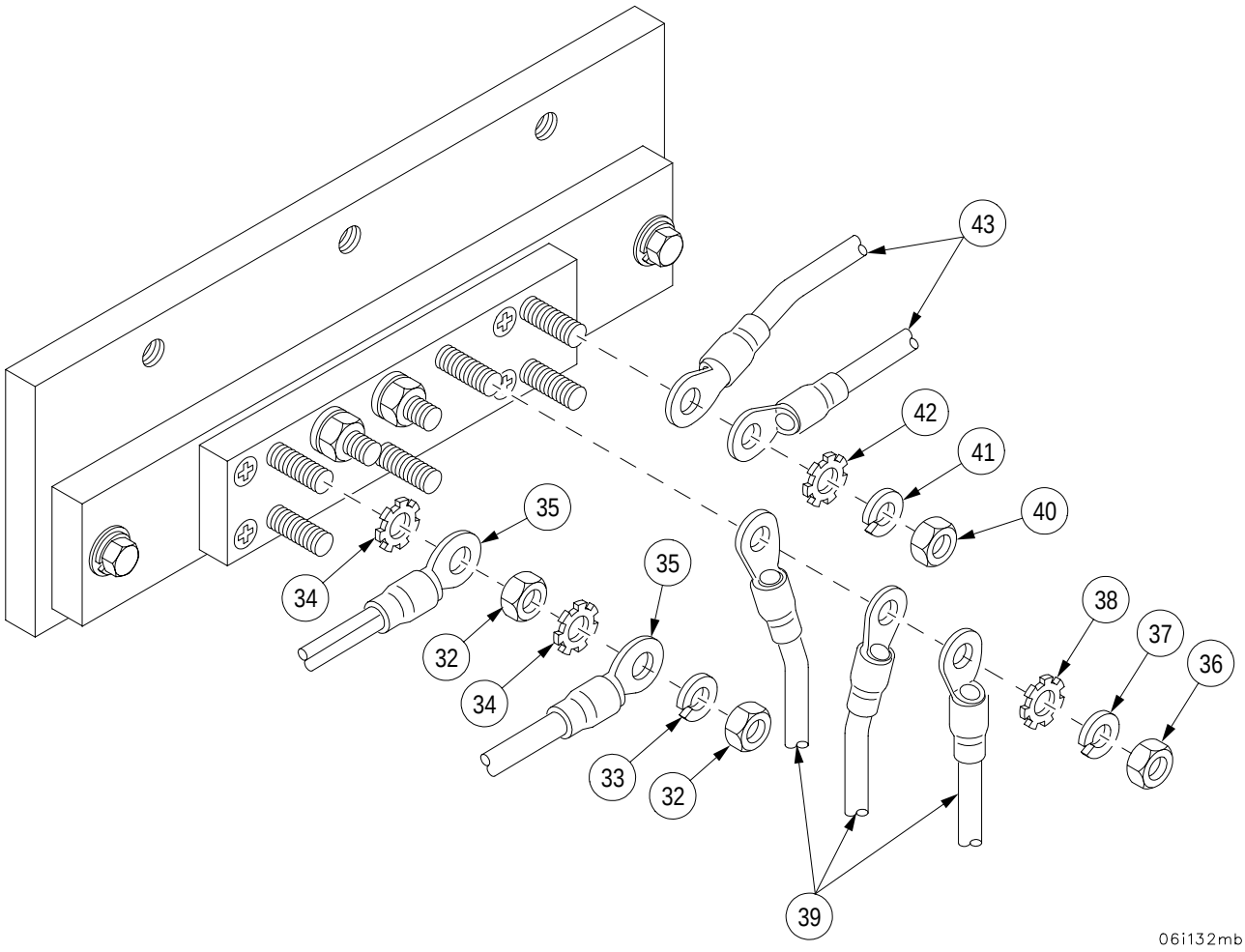
6. Remove three screws (17), three flat washers (18) and positive bus bar cover (19).
7. At terminal E1, remove nut (20), lockwasher (21), external tooth lockwasher (22), 3W212-3 T2 and two 3W215-T1 wire lugs (23). Discard lockwashers.
8. At terminal E2, remove two nuts (24), lockwasher (25), two external tooth lockwashers (26) and four 3W207 wire lugs (27). Discard lockwashers.
9. At terminal E3, remove nut (28), lockwasher (29), external tooth lockwasher (30) and 3W214-1 T2 wire lug (31). Discard lockwashers.



POSITIVE BUS BAR REPLACEMENT - CONTINUED 0256 00

Removal-Continued

10. At terminal E4, remove two nuts (32), lockwasher (33), two external tooth lockwashers (34), 3W710-T1 and 3W214-2 T2 wire lugs (35). Discard lockwashers.
11. At terminal E7, remove nut (36), lockwasher (37), external tooth lockwasher (38), 3W218, 3W801-V and 3W801-E wire lugs (39). Discard lockwashers.
12. At terminal E8, remove nut (40), lockwasher (41), external tooth lockwasher (42), 3W212-1 T2 and 3W212-2 T2 wire lugs (43). Discard lockwashers.



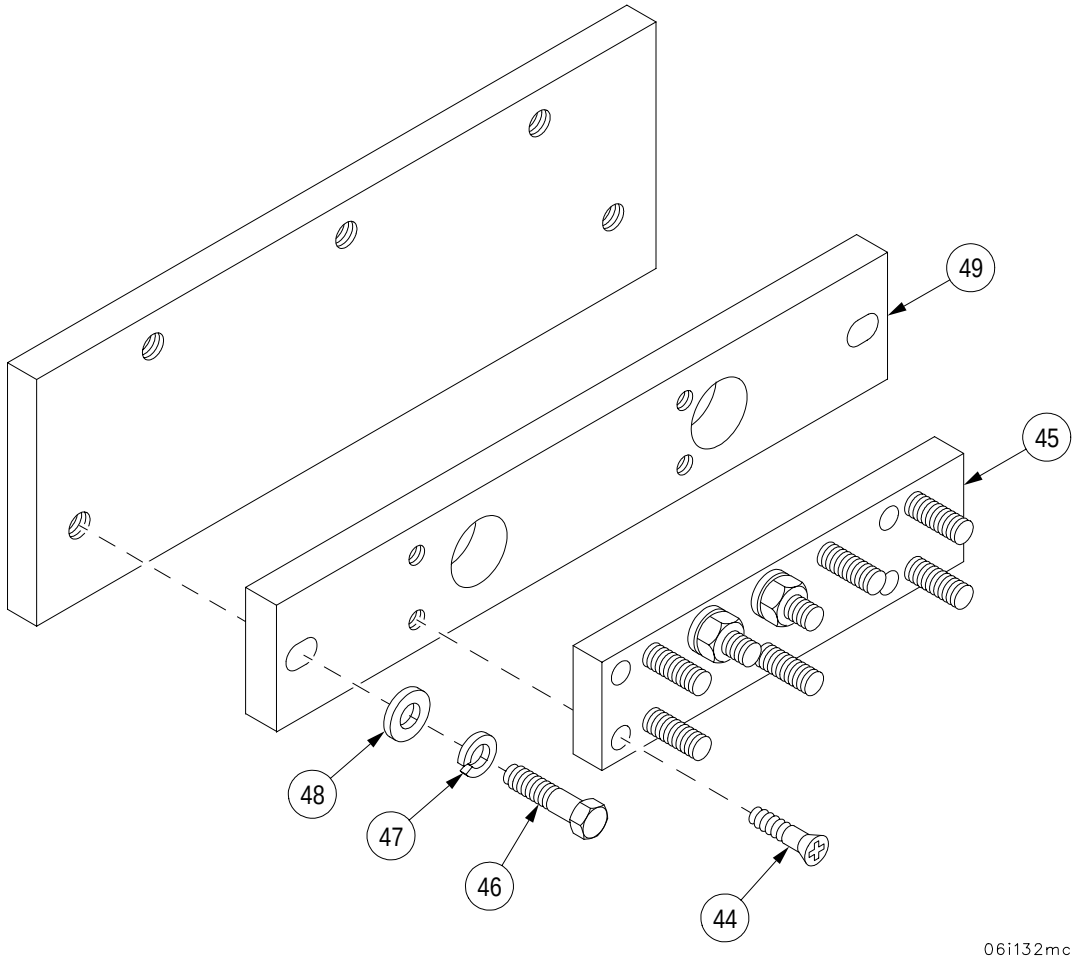
POSITIVE BUS BAR REPLACEMENT - CONTINUED 0256 00

Removal-Continued

13. Remove four screws (44) and positive bus bar (45).
14. Remove two screws (46), two lockwashers (47), two flat washers (48) and insulator (49). Discard lockwashers.
15. Inspect parts for damage and replace as required.

Installation

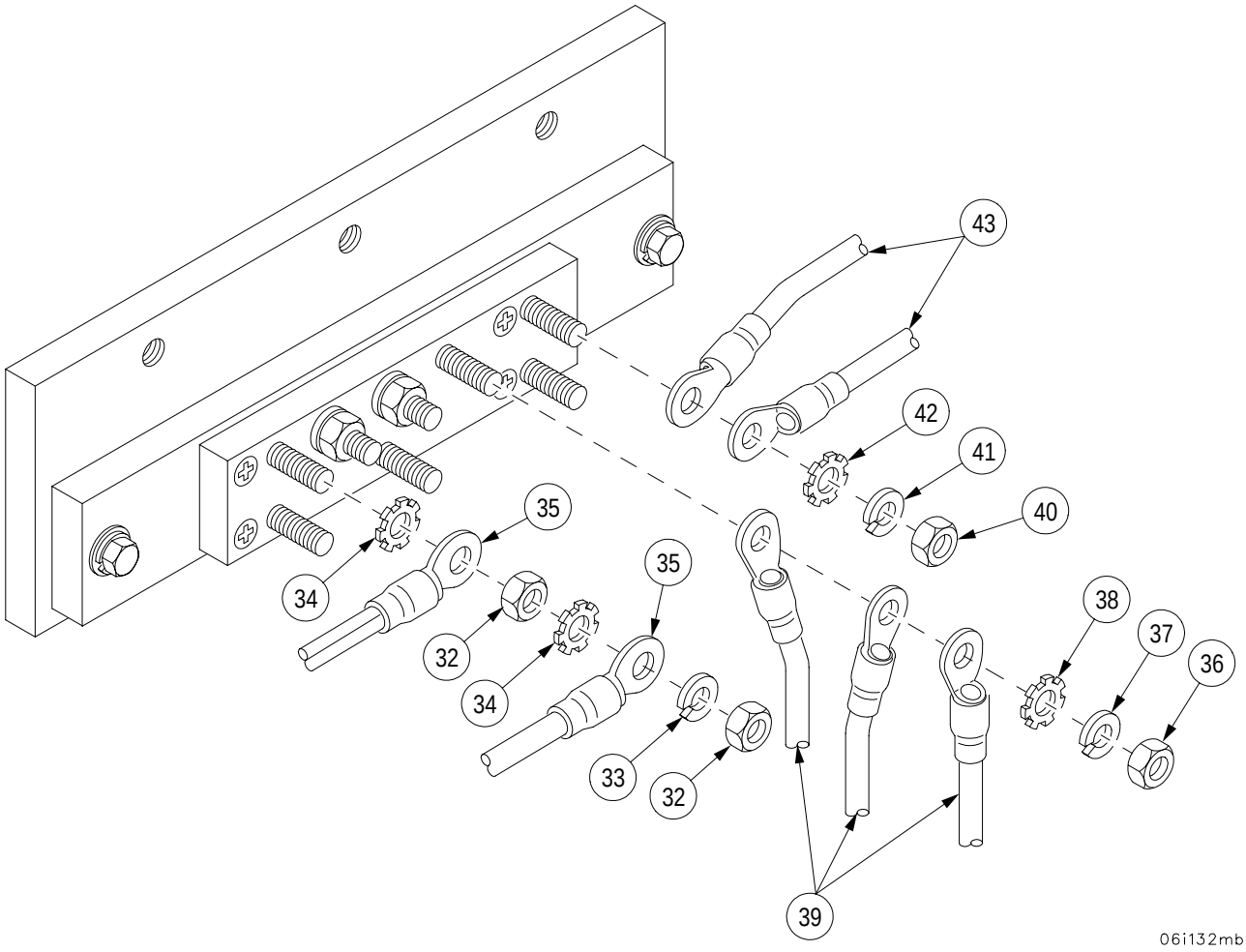
1. Install insulator (49) with two screws (46), two new lockwashers (47) and two flat washers (48).
2. Install positive bus bar (45) with four screws (44).



POSITIVE BUS BAR REPLACEMENT - CONTINUED 0256 00

Installation-Continued

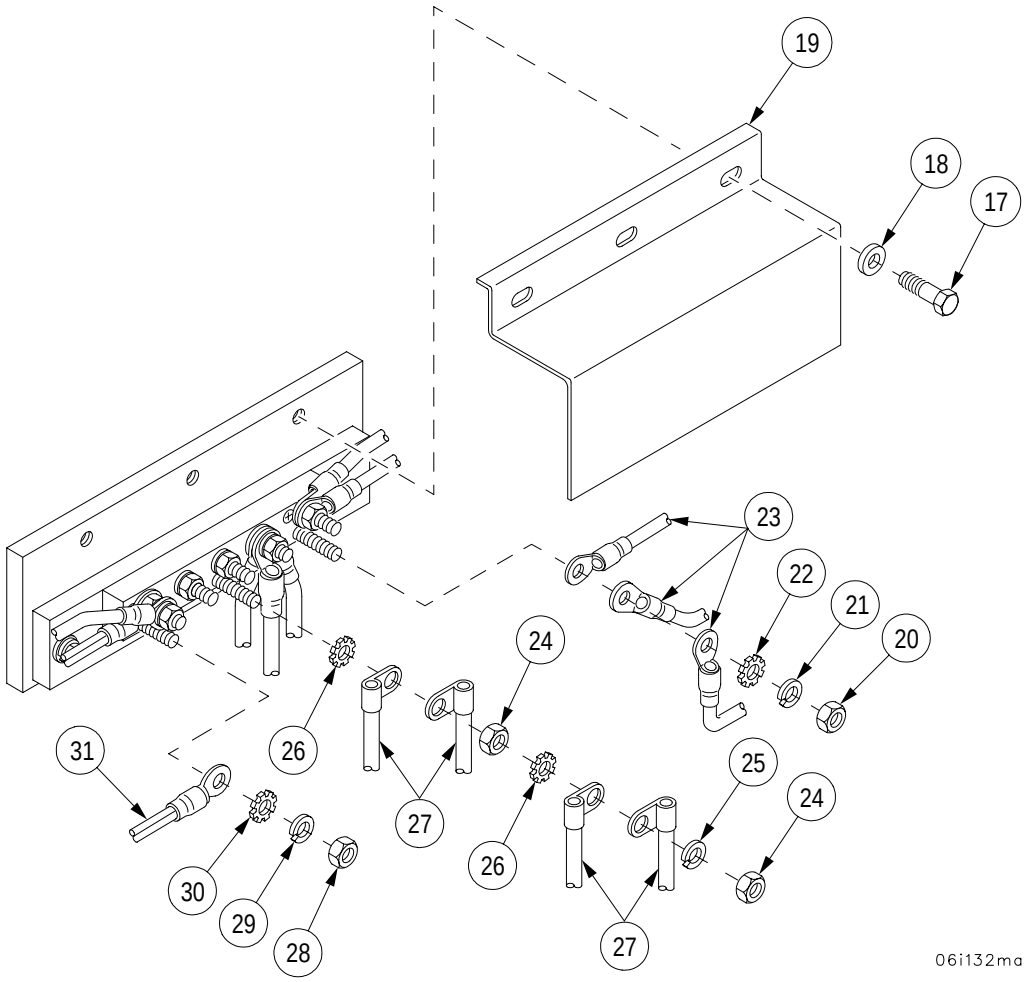
3. Install two 3W212-1 T2 and 3W212-2 T2 wire lugs (43), on terminal E8 with new external tooth lockwasher (42), new lockwasher (41) and nut (40).
4. Install 3W801-V, 3W801-E and 3W218 wire lugs (39) on terminal E7 with new external tooth lockwasher (38), new lockwasher (37) and nut (36).
5. Install 3W710-T1 and 3W214-2 T2 wire lugs (35) on terminal E4 with two new external tooth lockwashers (34), new lockwasher (33) and two nuts (32).



POSITIVE BUS BAR REPLACEMENT - CONTINUED 0256 00

Installation-Continued

6. Install 3W214-1 T2 wire lug (31) on terminal E3 with new external tooth lockwasher (30), new lockwasher (29) and nut (28).
7. Install four 3W207 wire lugs (27) on terminal E2 with two new external tooth lockwashers (26), new lockwasher (25) and two nuts (24).
8. Install two 3W215-T1 and 3W212-3 T2 wire lugs (23) on terminal E1 with new external tooth lockwasher (22), new lockwasher (21) and nut (20).
9. Install positive bus bar cover (19) with three screws (17) and three flat washers (18).



POSITIVE BUS BAR REPLACEMENT - CONTINUED 0256 00

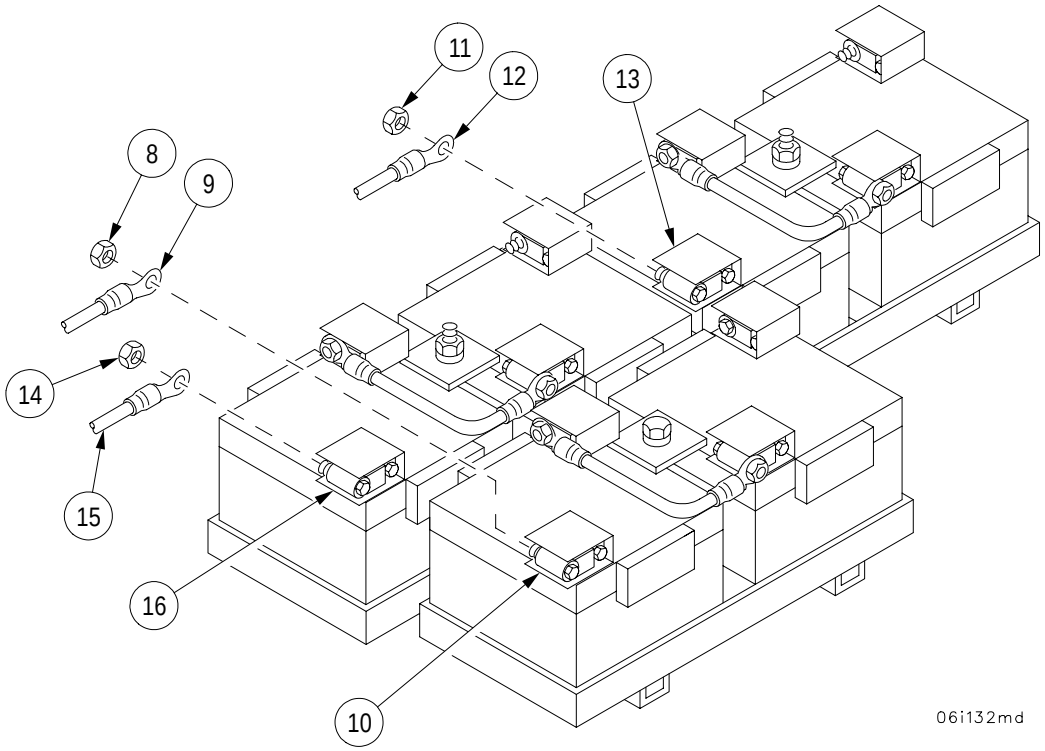
Installation-Continued

WARNING

To prevent personnel injury or equipment damage when connecting lead assemblies to batteries, prevent loose wires, tools or other conductive materials from touching or shorting across battery terminals.

When connecting lead assemblies to battery terminals, failure to observe proper battery polarity can cause a short circuit and possible battery explosion resulting in personnel injury and equipment damage.

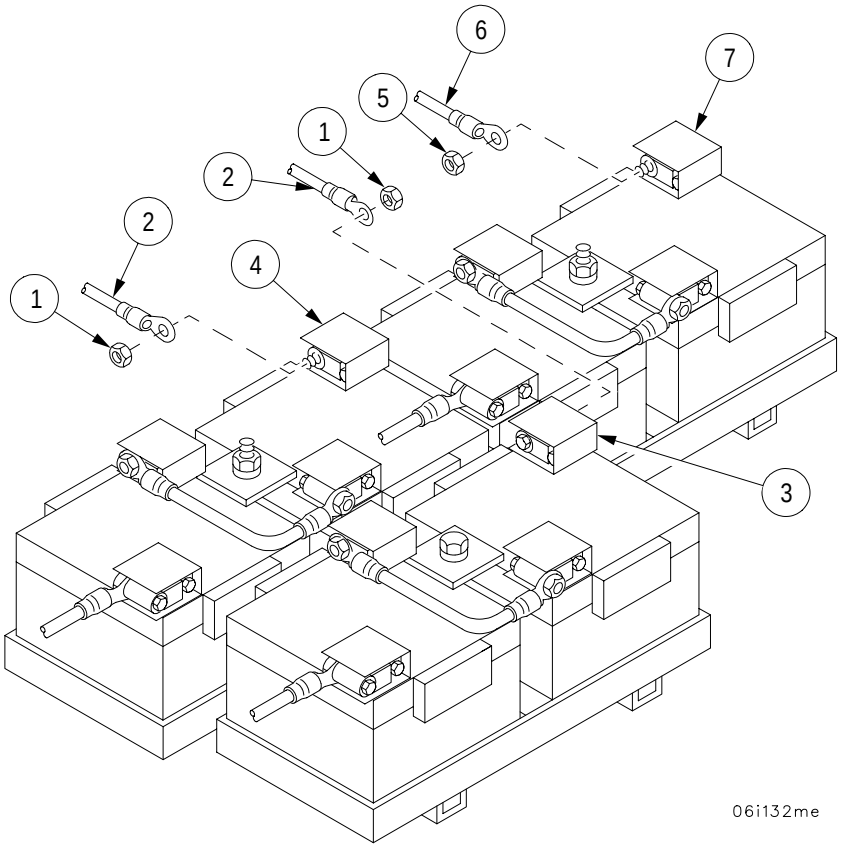
10. At battery positive (+) terminal post (16), install terminal lug (15) of lead assembly 3W212-3 with nut (14).
11. At battery positive (+) terminal post (13), install terminal lug (12) of lead assembly 3W212-1 with nut (11).
12. At battery positive (+) terminal post (10), install terminal lug (9) of lead assembly 3W212-2 with nut (8).



POSITIVE BUS BAR REPLACEMENT - CONTINUED 0256 00

Installation-Continued

13. At battery negative (-) terminal post (7), install terminal lug (6) of lead assembly 3W210-1 with nut (5).
14. At battery negative (-) terminal posts (3 and 4), install two terminal lugs (2) of two lead assemblies 3W210-2 with two nuts (1).



NOTE

FOLLOW-ON MAINTENANCE:
Close left side rear engine deck access doors and install left engine deck side grille (TM 9-2350-292-10)
Lower boom (TM 9-2350-292-10)

END OF TASK

NEGATIVE BUS BAR REPLACEMENT 0257 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (6) (item 394, WP 0718 00)
Lockwashers (7) (item 353, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Left rear stoplight and stayline cylinder access cover removed (WP 0276 00)

Personnel Required
Two

References
TM 9-2350-292-10

WARNING

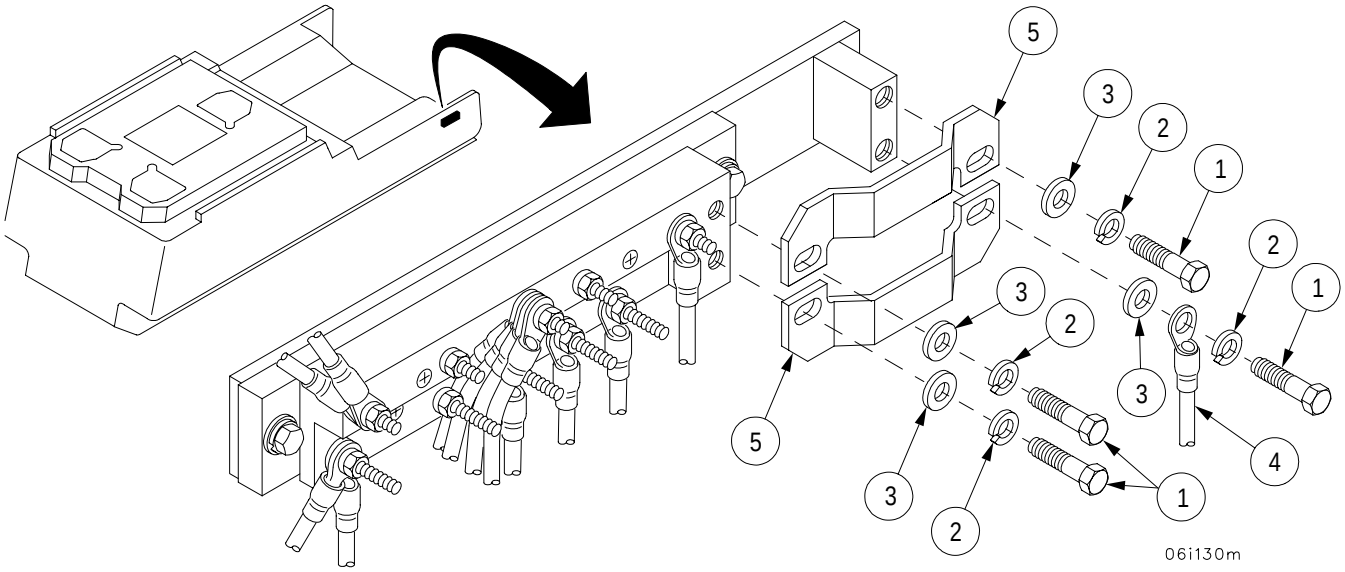
To prevent personnel injury or equipment damage, ensure battery power is disconnected prior to repair of the negative bus bar.

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

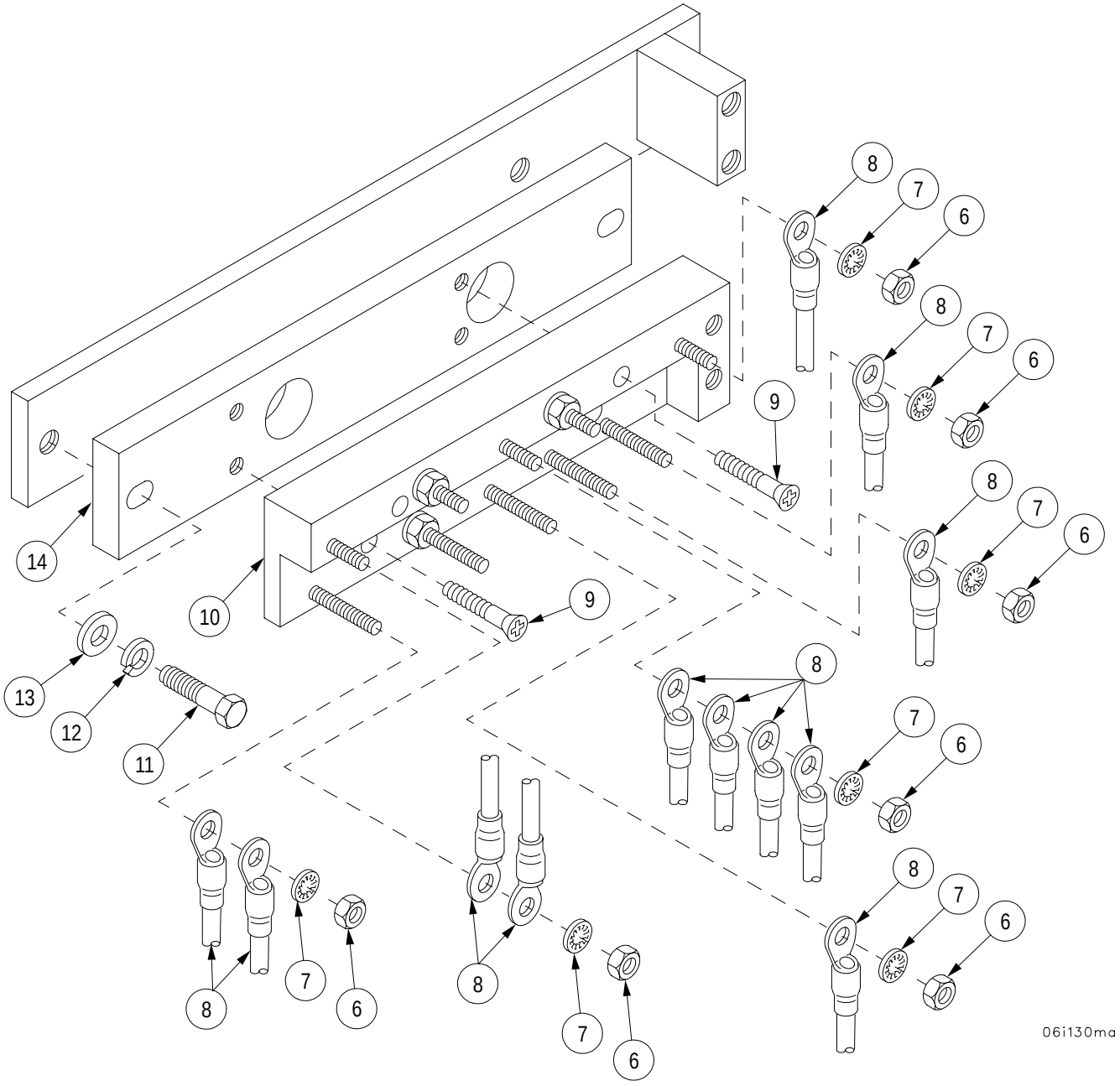
1. Remove four screws (1), four lockwashers (2), four flat washers (3), lead assembly 3W801F (4) and two bus bar straps (5). Discard lockwashers.



NEGATIVE BUS BAR REPLACEMENT - CONTINUED 0257 00

Removal-Continued

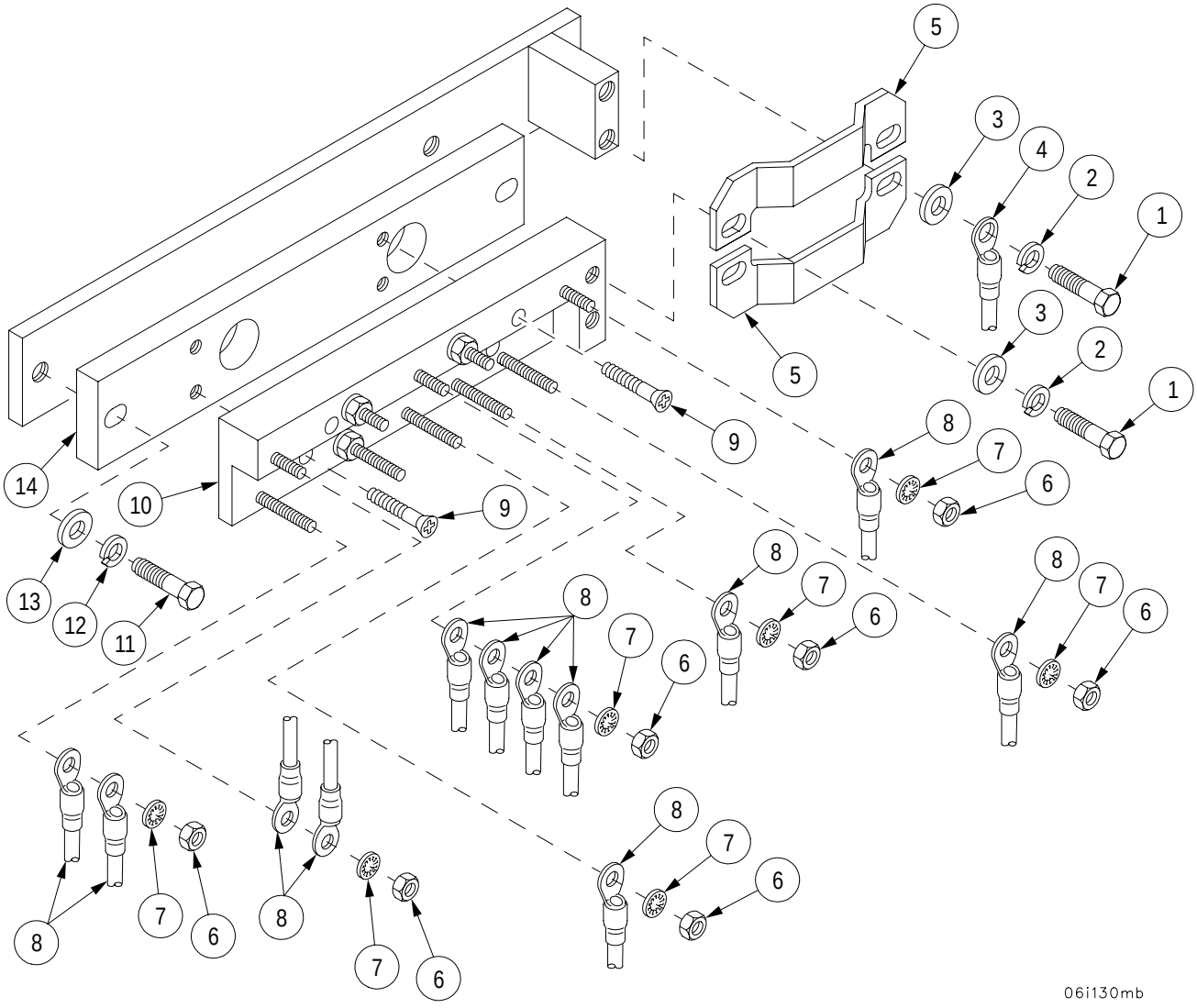
2. At each terminal, remove nut (6), lockwasher (7) and wire lug(s) (8). Discard lockwashers.
3. Remove four screws (9) and negative bus bar (10).
4. Remove two screws (11), two lockwashers (12), two flat washers (13) and insulator (14). Discard lockwashers.
5. Inspect parts for damage and replace as required.



NEGATIVE BUS BAR REPLACEMENT - CONTINUED 0257 00

Installation

1. Install insulator (14) with two screws (11), two new lockwashers (12) and two flat washers (13).
2. Install negative bus bar (10) with four screws (9).
3. Install wire lug(s) (8) with new lockwasher (7) and nut (6).
4. Install two bus bar straps (5) and lead assembly 3W801F (4) with four screws (1), four new lockwashers (2) and four flat washers (3).



NOTE

FOLLOW-ON MAINTENANCE:
Install left rear stoplight and stayline cylinder access cover (WP 0276 00)

END OF TASK

ELECTRICAL BULKHEAD CONNECTORS REPLACEMENT 0258 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (12) (item 132, WP 0718 00)
Lockwashers (8) (item 111, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Engine air cleaner assembly removed (WP 0208 00)

References
TM 9-2350-292-10

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

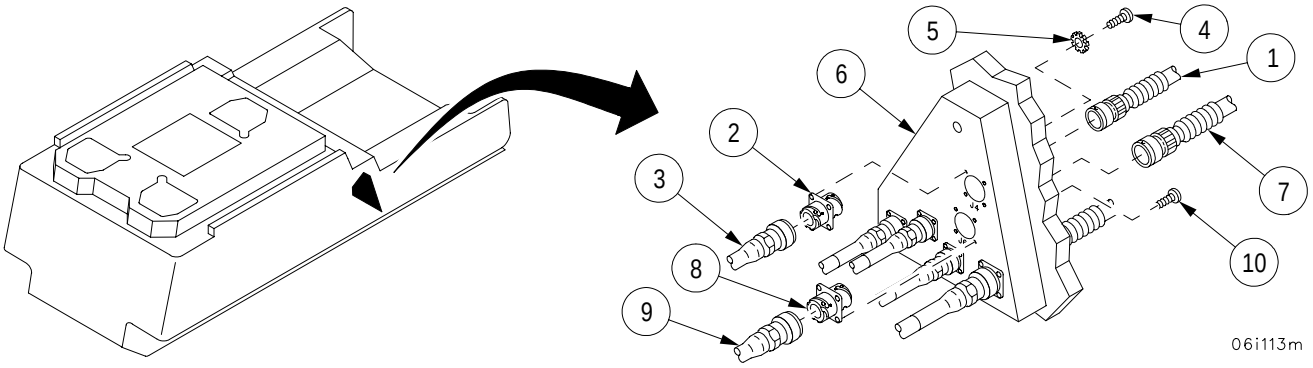
Perform Removal steps 1, 2, 3 and 7 and Installation steps 4, 5 and 6 for maintenance of bulkhead connectors J1 thru J5.

Perform Removal steps 4, 5, 6 and 7 and Installation steps 1, 2 and 3 for maintenance of bulkhead connector J6.

Additional wiring harnesses may need to be removed to access faulty electrical bulkhead connector.

Removal

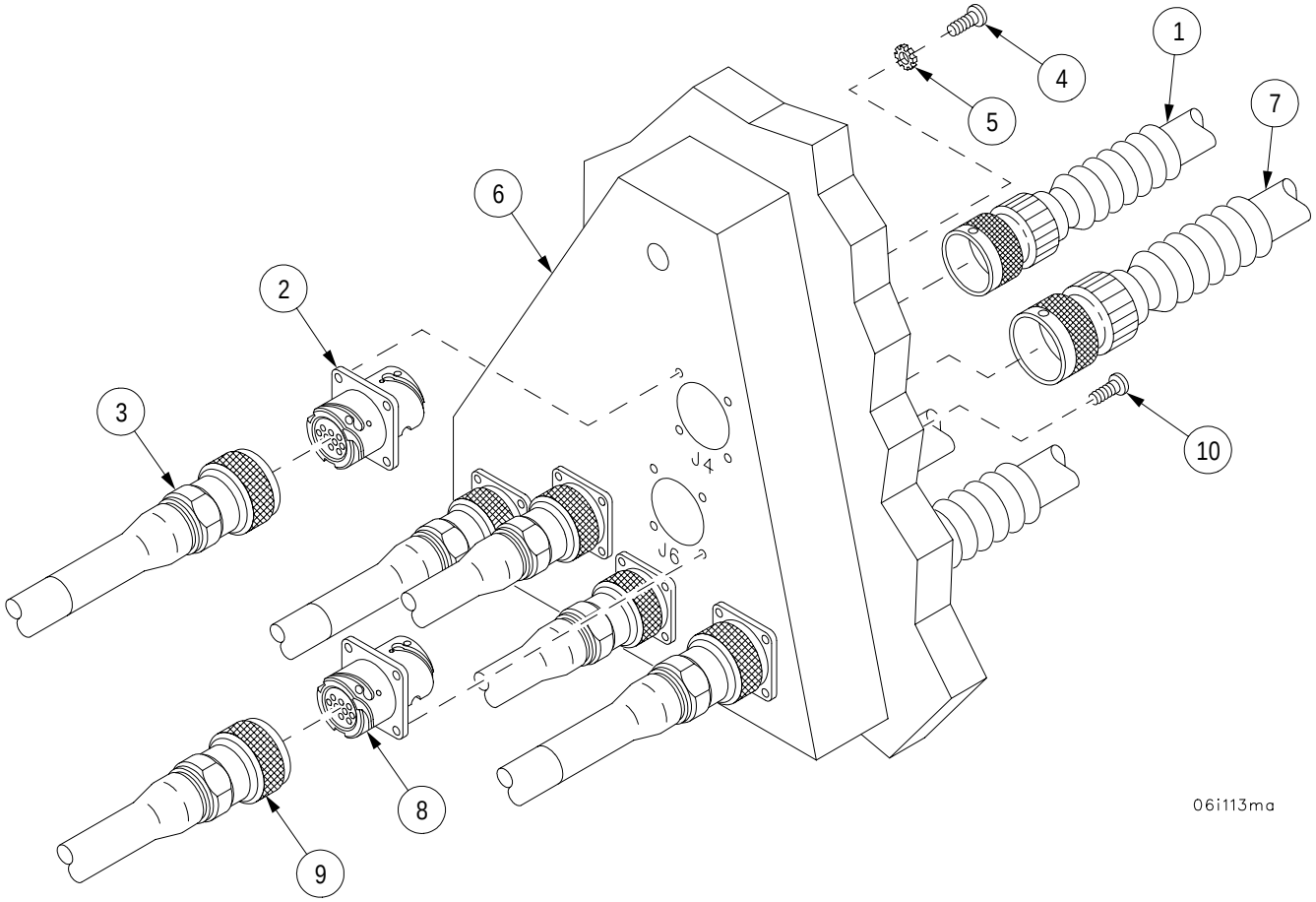
1. Disconnect wiring harness connector (1) from electrical bulkhead connector (2) in engine compartment.
2. Disconnect wiring harness connector (3) from electrical bulkhead connector (2) in crew compartment.
3. Remove four screws (4), four lockwashers (5) and electrical bulkhead connector (2) from electrical bulkhead (6). Discard lockwashers.
4. Disconnect wiring harness connector (7) from electrical bulkhead connector (8) in engine compartment.
5. Disconnect wiring harness connector (9) from electrical bulkhead connector (8) in crew compartment.
6. Remove four screws (10) and electrical bulkhead connector (8) from electrical bulkhead (6).
7. Inspect parts for damage and replace as required.



ELECTRICAL BULKHEAD CONNECTORS REPLACEMENT - CONTINUED 0258 00

Installation

1. Install electrical bulkhead connector (8) in electrical bulkhead (6) with four screws (10).
2. Connect wiring harness connector (9) to electrical bulkhead connector (8) in crew compartment.
3. Connect wiring harness connector (7) to electrical bulkhead connector (8) in engine compartment.
4. Install electrical bulkhead connector (2) in electrical bulkhead (6) with four screws (4) and four new lockwashers (5).
5. Connect wiring harness connector (3) to electrical bulkhead connector (2) in crew compartment.
6. Connect wiring harness connector (1) to electrical bulkhead connector (2) in engine compartment.



NOTE

FOLLOW-ON MAINTENANCE:
Install engine air cleaner assembly (WP 0208 00)
Connect battery power (WP 0256 00)

END OF TASK

EXHAUST SMOKE SWITCH AND SWITCH PLATE ASSEMBLY REPAIR 0259 00

THIS WORK PACKAGE COVERS:
Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (4) (item 85, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

NOTE

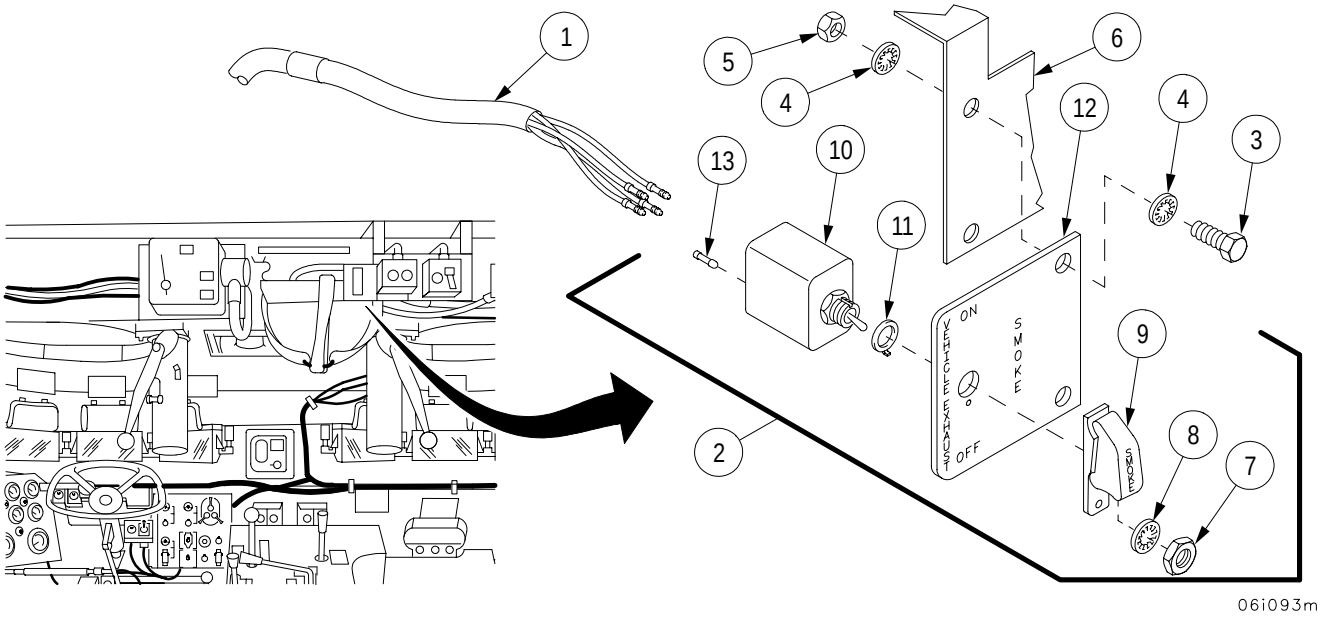
Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

1. Disconnect wiring harness 4W106 (1) from switch plate assembly (2) (WP 0318 00).
2. Remove two screws (3), four lockwashers (4), switch plate assembly (2) and two nuts (5) from mounting bracket (6). Discard lockwashers.

Disassembly

1. Remove nut (7), lockwasher (8), switch guard (9), switch assembly (10) and key washer (11) from switch plate (12). Retain attaching hardware to aid in installation.
2. Remove two plugs (13) from switch assembly (10).
3. Inspect parts for damage and replace as required.



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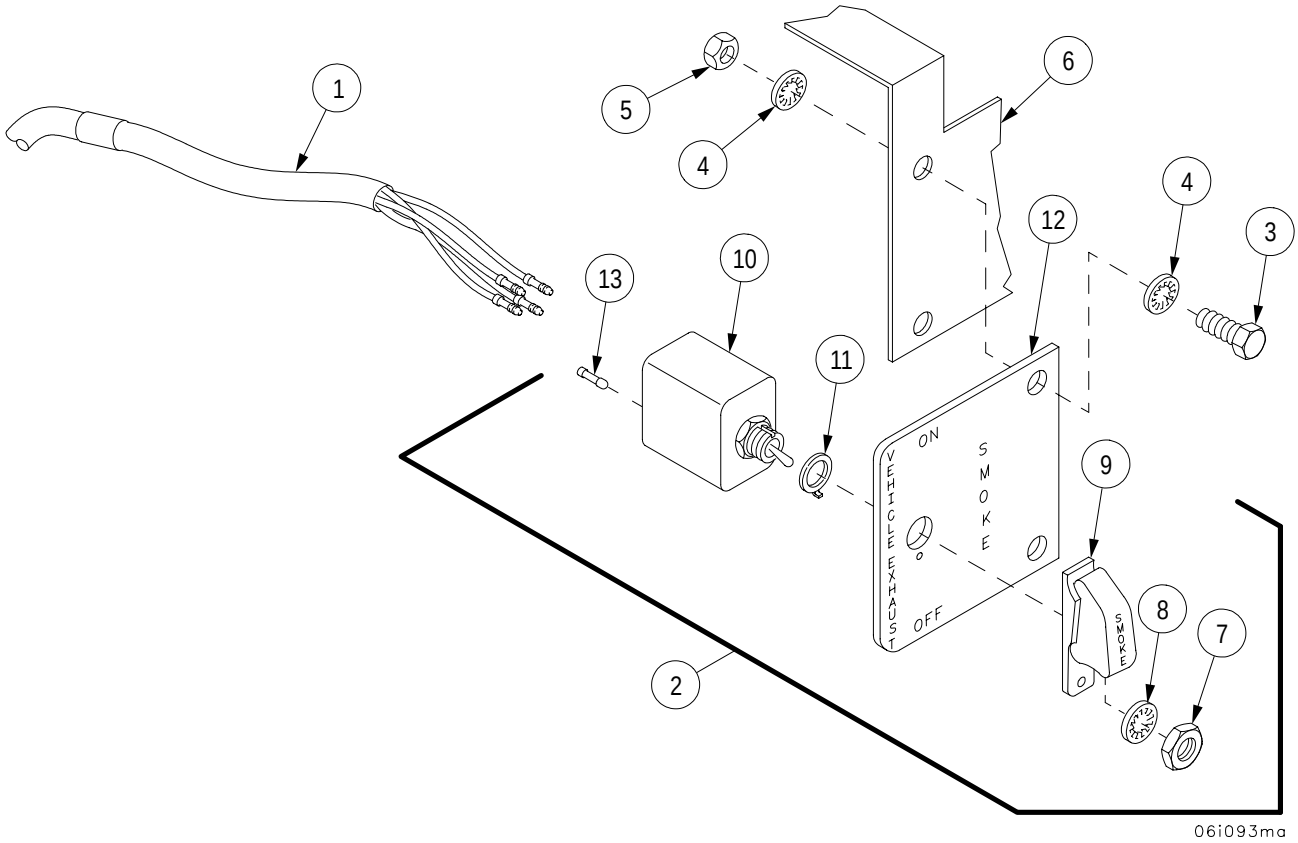
EXHAUST SMOKE SWITCH AND SWITCH PLATE ASSEMBLY REPAIR - CONTINUED 0259 00

Assembly

1. Install two plugs (13) in switch assembly (10).
2. Install switch assembly (10), key washer (11) and switch guard (9) on switch plate (12) with lockwasher (8) and nut (7).

Installation

1. Install switch plate assembly (2) on mounting bracket (6) with two screws (3), four new lockwashers (4) and two nuts (5).
2. Connect wiring harness 4W106 (1) to switch plate assembly (2) (WP 0318 00).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

HEADLIGHT DIMMER SWITCH REPLACEMENT (OLD CONFIGURATION) 0260 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (3) (item 85, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

NOTE

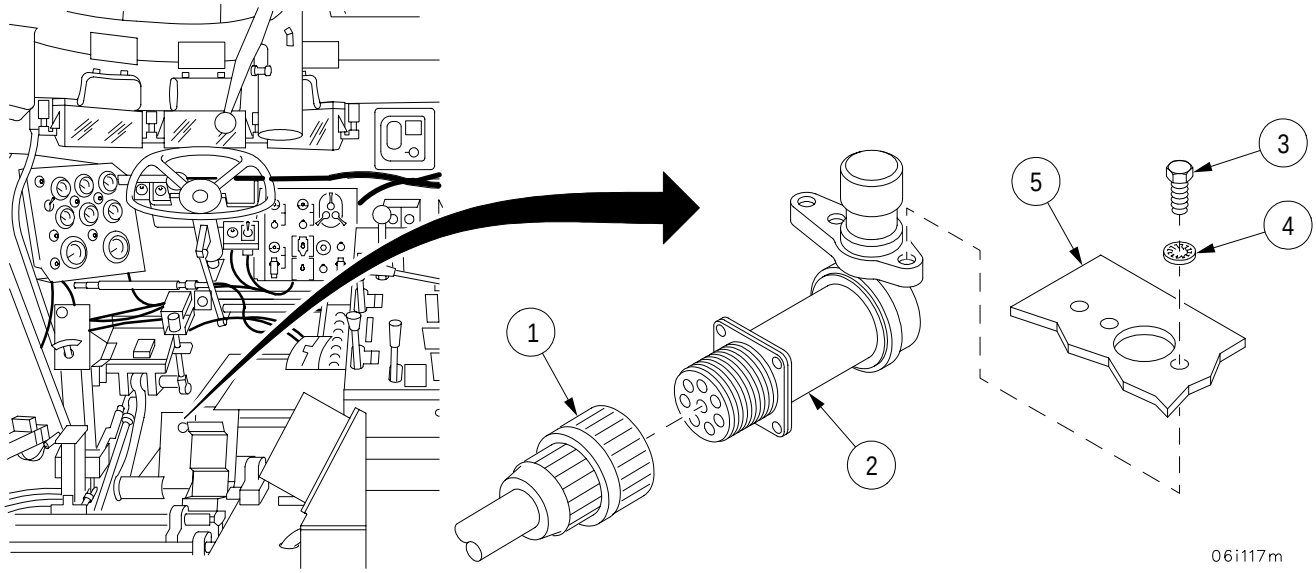
Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

1. Disconnect wiring harness 4W107 connector P1 (1) from dimmer switch (2).
2. Remove three screws (3), three lockwashers (4) and dimmer switch (2) from subfloor plate #7 (5). Discard lockwashers.
3. Inspect parts for damage and replace as required.

Installation

1. Install dimmer switch (2) on subfloor plate #7 (5) with three screws (3) and three new lockwashers (4).
2. Connect wiring harness 4W107 connector P1 (1) to dimmer switch (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

HEADLIGHT DIMMER SWITCH REPLACEMENT (NEW CONFIGURATION WITH BRAKE MODULATION) 0261 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (3) (item 85, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

NOTE

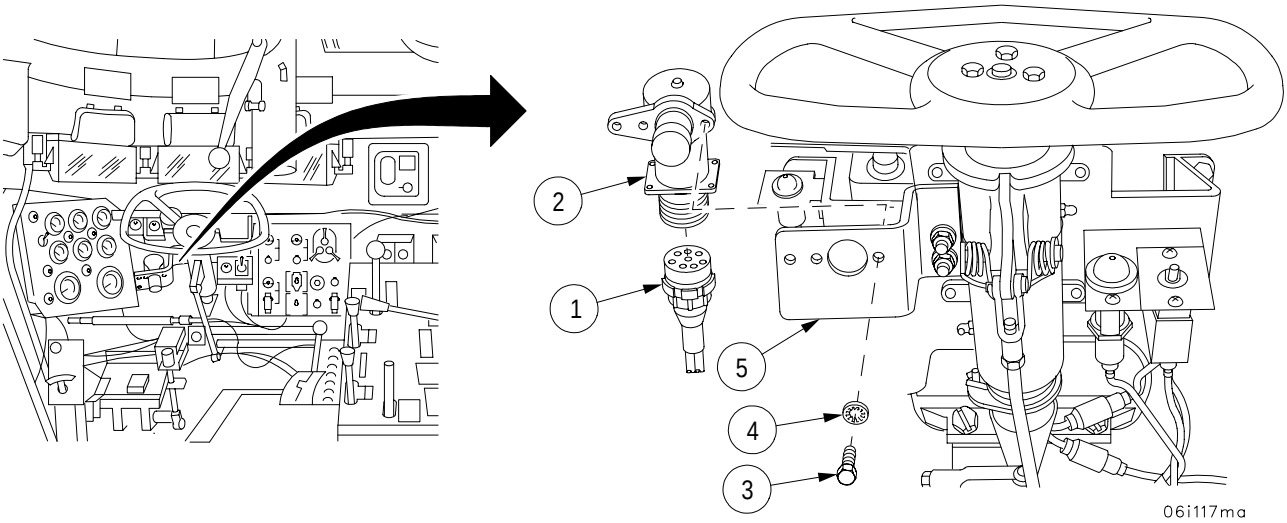
Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

1. Disconnect wiring harness 4W107 connector P1 (1) from dimmer switch (2).
2. Remove three screws (3), three lockwashers (4) and dimmer switch (2) from bracket (5). Discard lockwashers.
3. Inspect parts for damage and replace as required.

Installation

1. Install dimmer switch (2) on bracket (5) with three screw0261 00s (3) and three new lockwashers (4).
2. Connect wiring harness 4W107 connector P1 (1) to dimmer switch (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

REAR SERVICE LIGHTS TOGGLE SWITCH AND IDENTIFICATION PLATE REPLACEMENT 0262 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 111, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

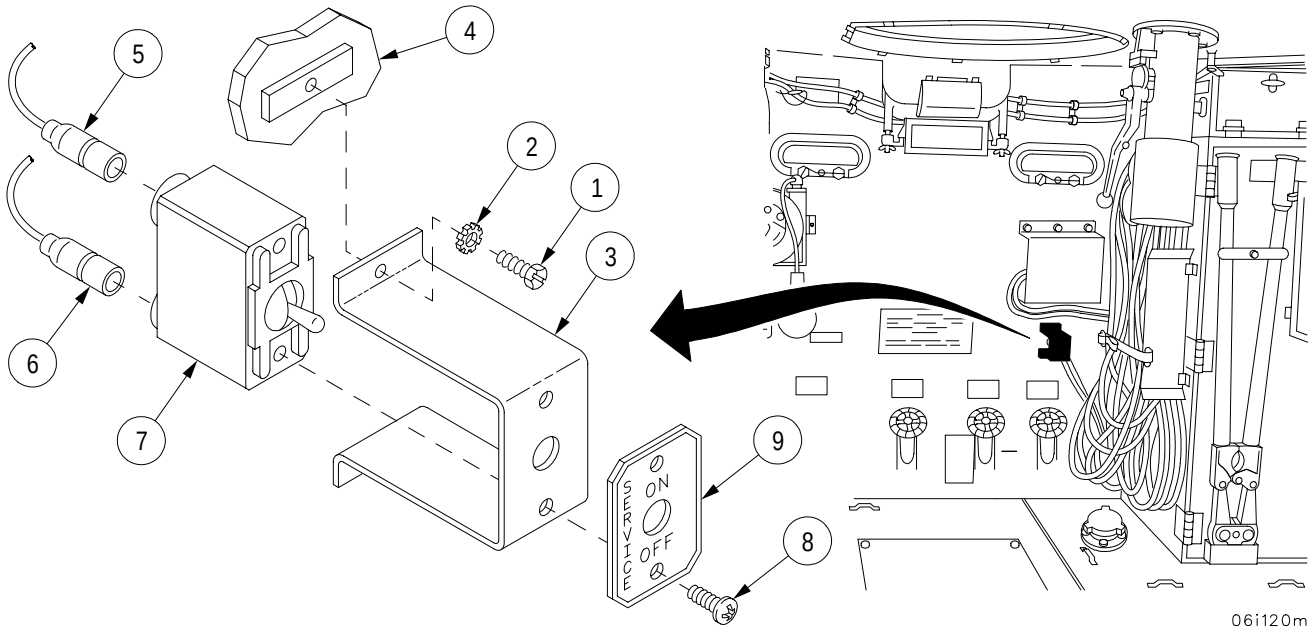
References
TM 9-2350-292-10

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

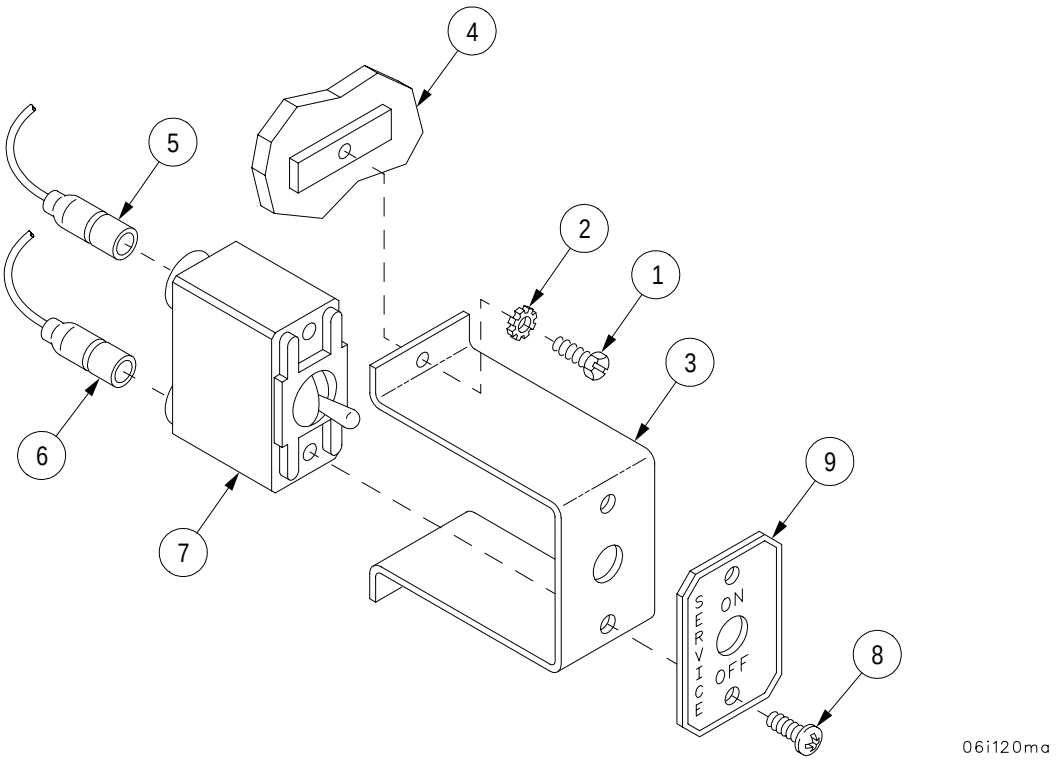
1. Remove two screws (1), two lockwashers (2) and electrical retainer (3) from main bulkhead (4). Discard lockwashers.
2. Disconnect wiring harness 4W105 wire 16 (5) and wiring harness 4W700 wire 17 (6) from toggle switch (7).
3. Remove two screws (8), identification plate (9) and toggle switch (7) from electrical retainer (3).
4. Inspect parts for damage and replace as required.



REAR SERVICE LIGHTS TOGGLE SWITCH AND IDENTIFICATION PLATE REPLACEMENT - CONTINUED 0262 00

Installation

1. Install toggle switch (7) and identification plate (9) to electrical retainer (3) with two screws (8).
2. Connect wiring harness 4W105 wire 16 (5) and wiring harness 4W700 wire 17 (6) to toggle switch (7).
3. Install electrical retainer (3) to main bulkhead (4) with two screws (1) and two new lockwashers (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

BRAKE RELAY, CIRCUIT BREAKER AND BRAKE RELAY COVER REPLACEMENT 0263 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (5) (item 132, WP 0718 00)
Lockwashers (3) (item 9, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

NOTE

Perform Removal steps 1, 5, 6 and 7 and Installation steps 1, 2 and 6 for maintenance of circuit breaker.

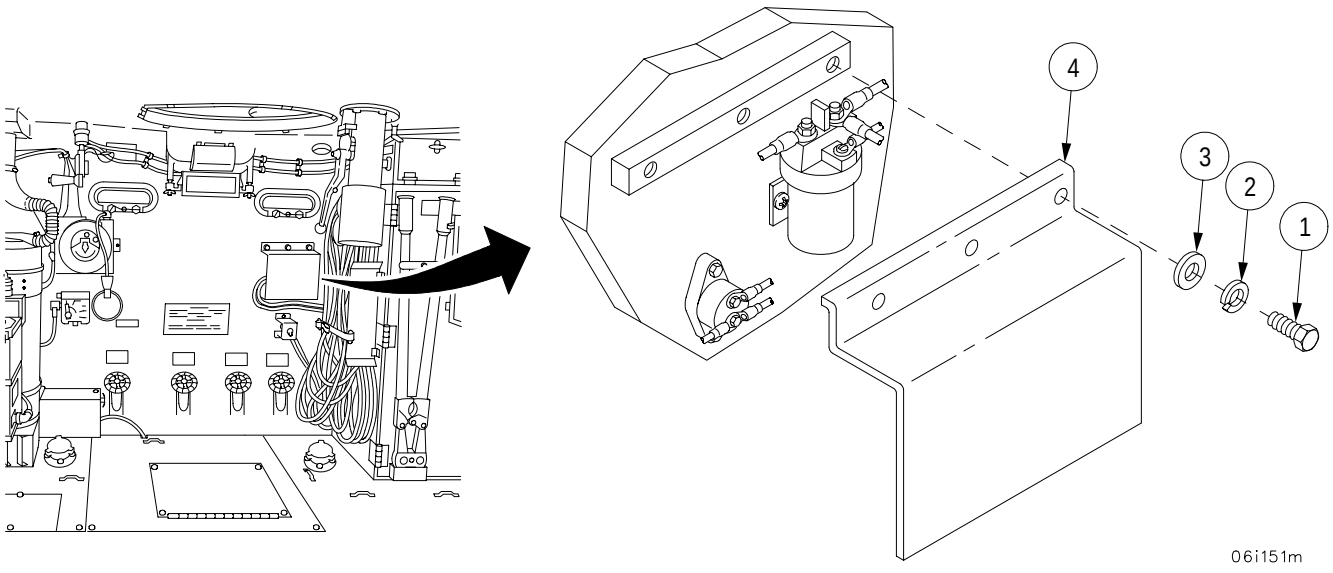
Perform Removal steps 1 through 4 and 7 and Installation steps 3 through 6 for maintenance of brake relay.

Tag all electrical connections and electrical leads prior to removal to aid in the installation.

If brake relay or circuit breaker is replaced, discard terminal hardware. If wiring harness 4W155, 4W305 or 4W110 is being disconnected from brake relay or circuit breaker, retain terminal hardware for installation.

Removal

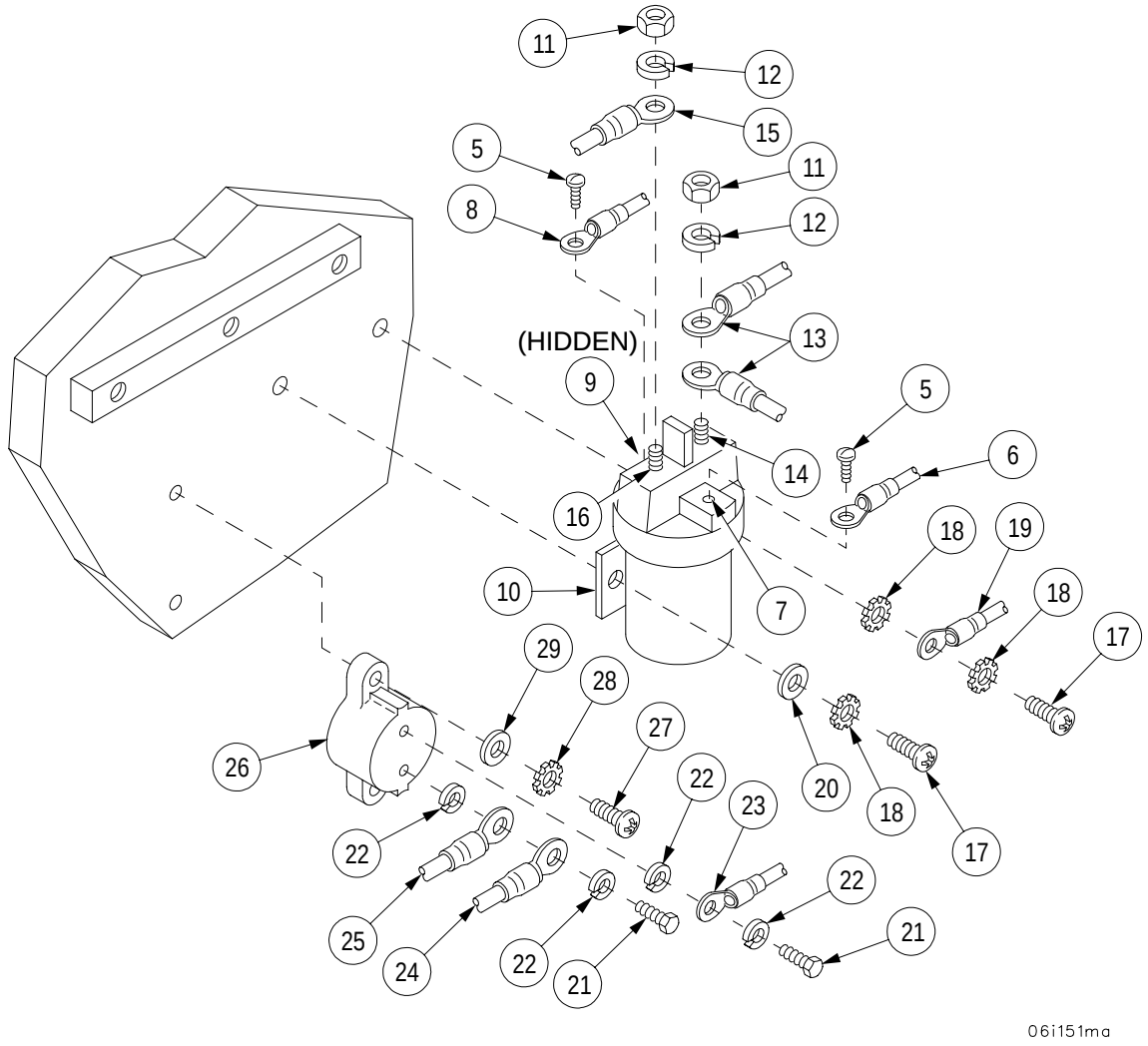
1. Remove three screws (1), three lockwashers (2), three flat washers (3) and brake relay cover (4) from vehicle. Discard lockwashers.



BRAKE RELAY, CIRCUIT BREAKER AND BRAKE RELAY COVER REPLACEMENT - CONTINUED 0263 00

Removal-Continued

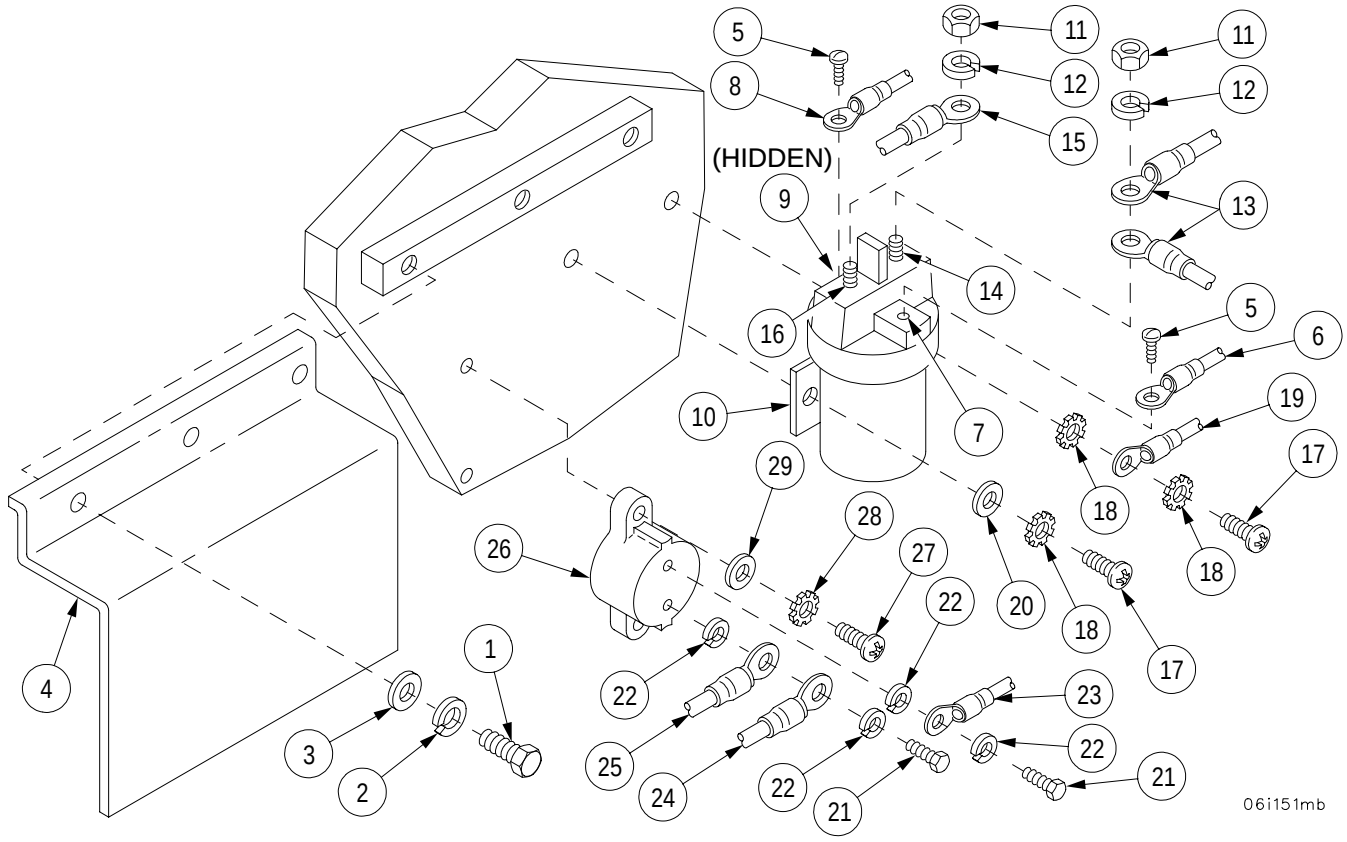
2. Remove two screws (5) and wiring harness 4W155 wire 578 (6) from terminal 85 (7) and wire 590 (8) from terminal 86 (9) of brake relay (10).
3. Remove two nuts (11), two lockwashers (12), two wiring harness 4W155 wires 48 (13) from terminal 88A (14) and wiring harness 4W110 wire 589 (15) from terminal 88 (16) of brake relay (10). Retain attaching hardware for installation.
4. Remove two screws (17), three lockwashers (18), wiring harness 4W155 wire 578 (19), flat washer (20) and brake relay (10). Discard lockwashers.
5. Remove two screws (21), four lockwashers (22), wiring harness 4W155 wire 48 (23), wiring harness 4W305 terminal lug T1/T2 (24) and wiring harness 4W100 wire 48 (25) from circuit breaker (26). Retain attaching hardware for installation.
6. Remove two screws (27), two lockwashers (28), two flat washers (29) and circuit breaker (26). Discard lockwashers.
7. Inspect parts for damage and replace as required.



BRAKE RELAY, CIRCUIT BREAKER AND BRAKE RELAY COVER REPLACEMENT - CONTINUED 0263 00

Installation

1. Install circuit breaker (26) with two screws (27), two new lockwashers (28) and two flat washers (29).
2. Install wiring harness 4W155 wire 48 (23), wiring harness 4W305 terminal lug T1/T2 (24) and wiring harness 4W100 wire 48 (25) to circuit breaker (26) with two screws (21) and four lockwashers (22).
3. Install brake relay (10) and wiring harness 4W155 wire 578 (19) with two screws (17), three new lockwashers (18) and flat washer (20).
4. Install wiring harness 4W110 wire 589 (15) on terminal 88 (16) and two wiring harness 4W155 wires 48 (13) on terminal 88A (14) of brake relay (10) with two nuts (11) and two lockwashers (12).
5. Install wiring harness 4W155 wire 590 (8) on terminal 86 (9) and wire 578 (6) on terminal 85 (7) of brake relay (10) with two screws (5).
6. Install brake relay cover (4) with three screws (1), three new lockwashers (2) and three flat washers (3).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

BILGE PUMP POWER LOAD RELAY, CIRCUIT BREAKER AND MOUNTING PLATE REPLACEMENT 0264 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (4) (item 58, WP 0718 00)
Lockwashers (2) (item 132, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

NOTE

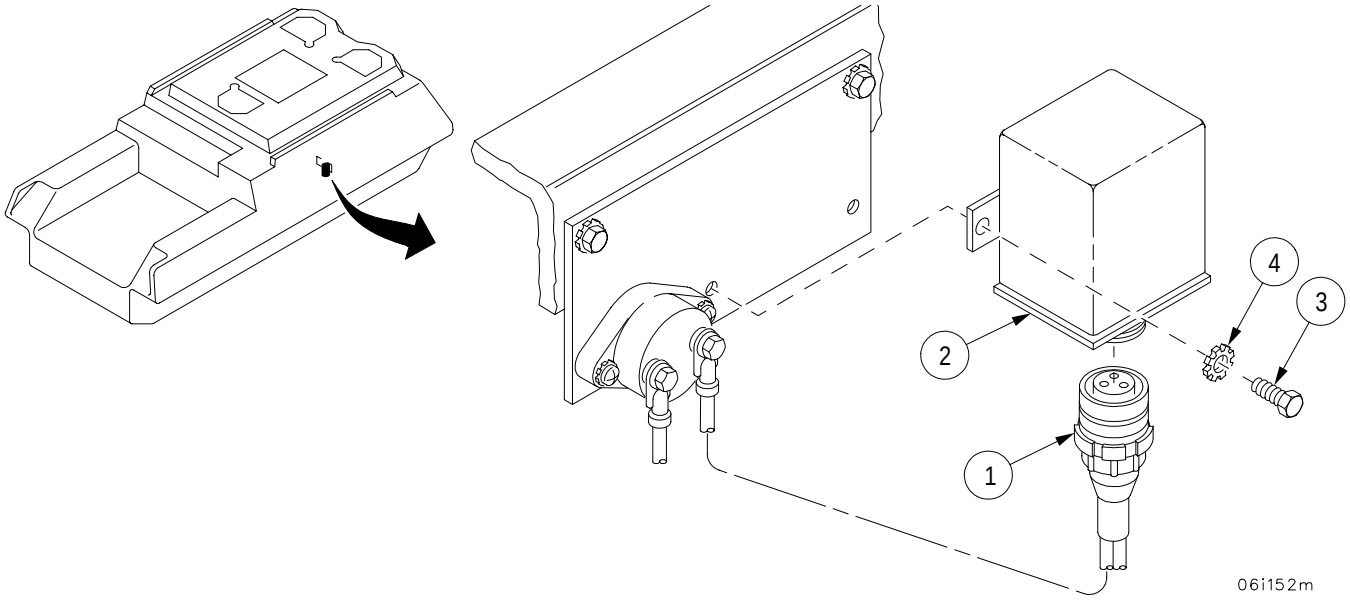
Perform Removal steps 1, 2 and 6 and Installation steps 4 and 5 for maintenance of bilge pump power load relay.

Perform Removal steps 3, 4 and 6 and Installation steps 2 and 3 for maintenance of circuit breaker.

Tag all electrical connections and electrical leads prior to removal to aid in the installation.

Removal

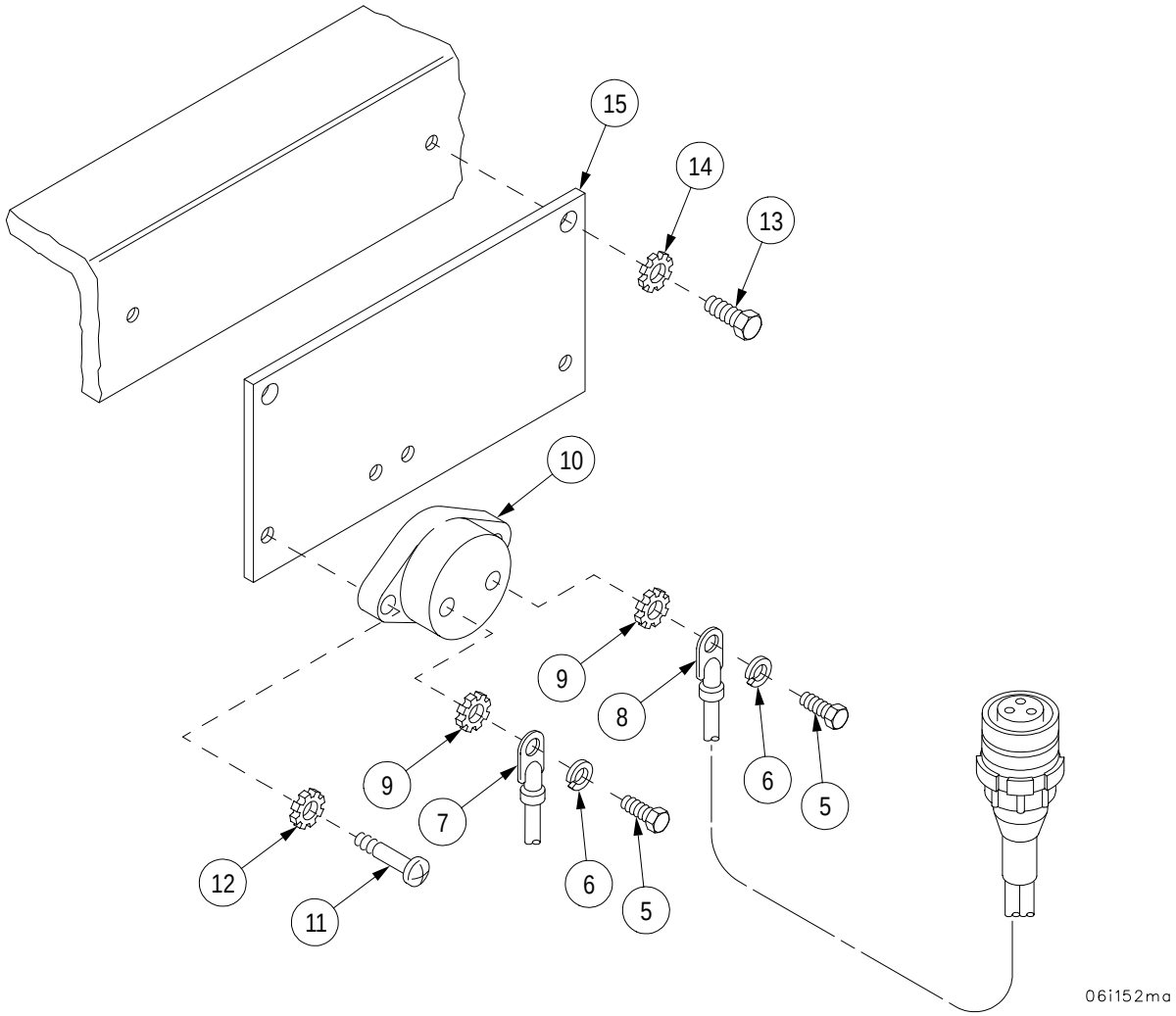
1. Disconnect wiring harness 4W136 connector P2 (1) from bilge pump relay (2).
2. Remove two bolts (3), two lockwashers (4) and bilge pump relay (2). Discard lockwashers.



BILGE PUMP POWER LOAD RELAY, CIRCUIT BREAKER AND MOUNTING PLATE REPLACEMENT - CONTINUED 0264 00

Removal-Continued

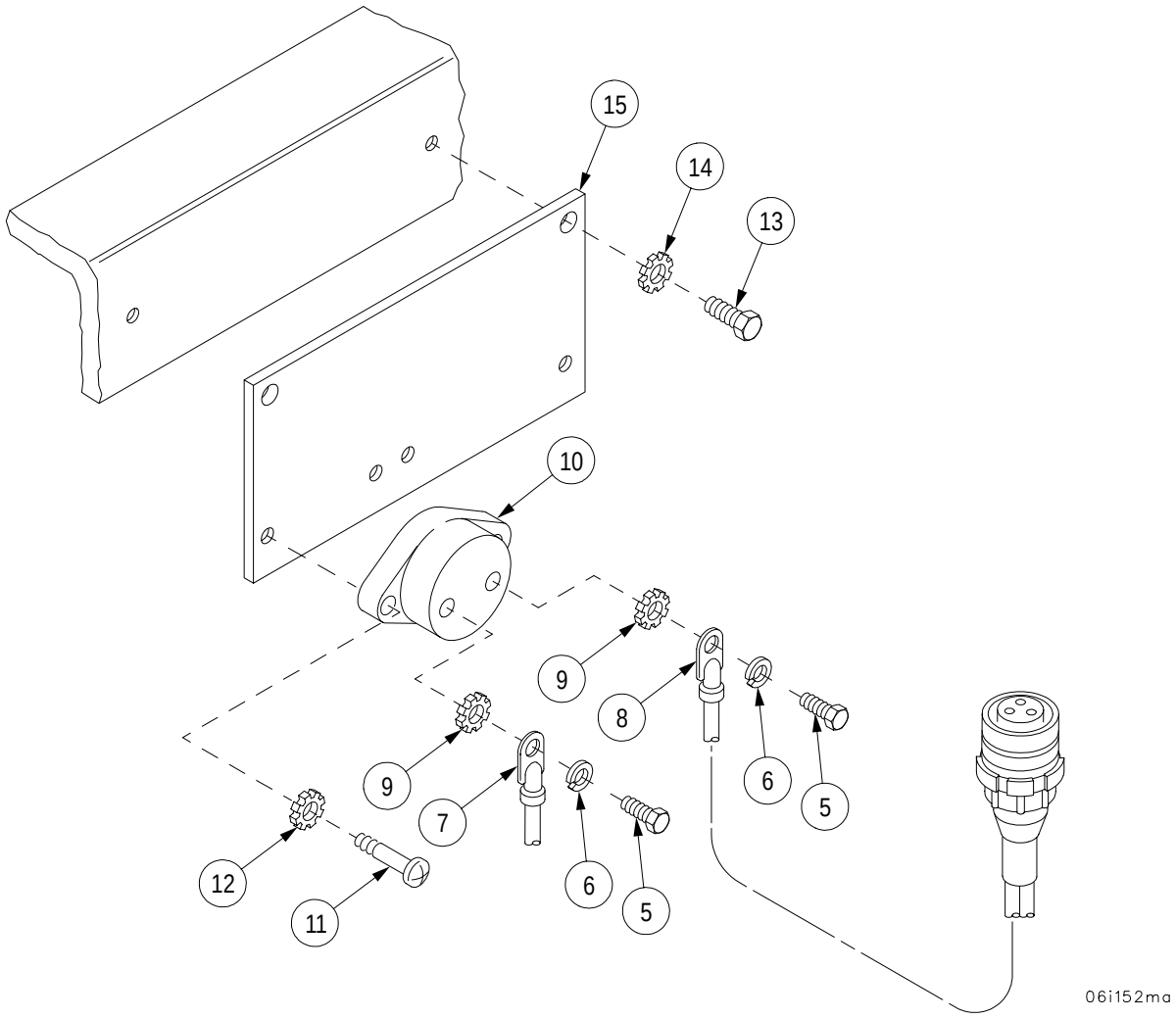
3. Remove two screws (5), two lockwashers (6), lead assembly 4W140 wire 450A (7), wiring harness 4W136 terminal T1 (8) and two lockwashers (9) from bilge pump circuit breaker (10). Retain attaching hardware for installation.
4. Remove two screws (11), two lockwashers (12) and bilge pump circuit breaker (10). Discard lockwashers.
5. Remove two screws (13), two lockwashers (14) and mounting plate (15). Discard lockwashers.
6. Inspect parts for damage and replace as required.



BILGE PUMP POWER LOAD RELAY, CIRCUIT BREAKER AND MOUNTING PLATE REPLACEMENT - CONTINUED 0264 00

Installation

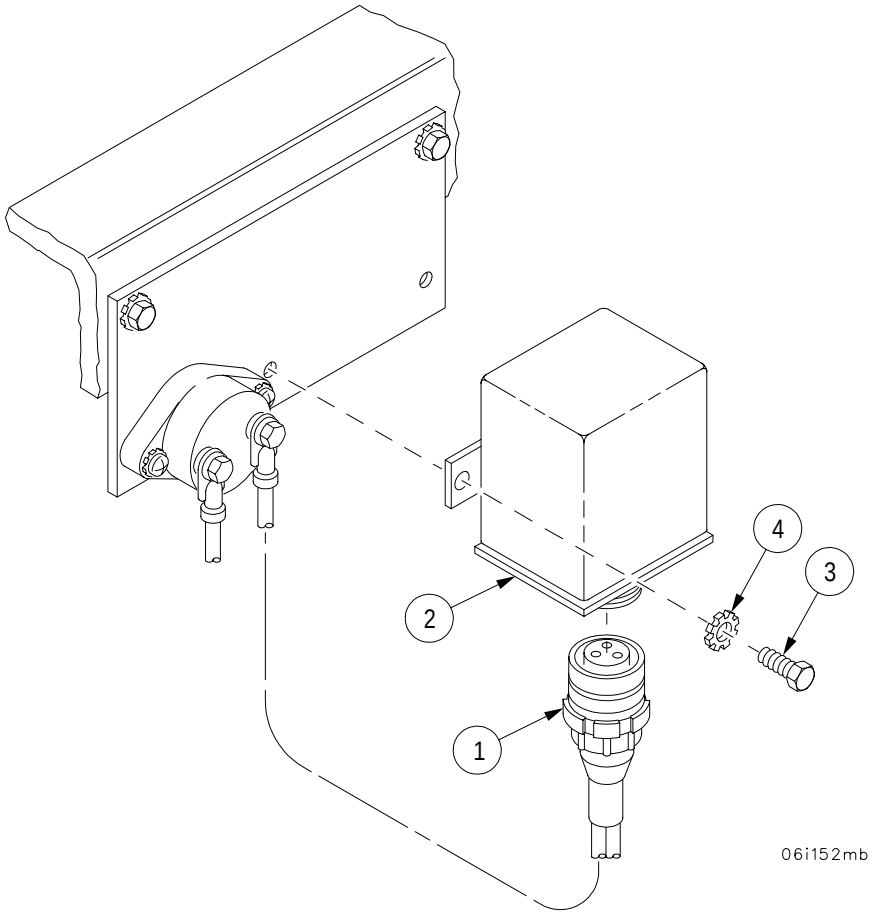
1. Install mounting plate (15) with two screws (13) and two new lockwashers (14).
2. Install bilge pump circuit breaker (10) with two screws (11) and two new lockwashers (12).
3. Install wiring harness 4W136 terminal T1 (8) and lead assembly 4W140 wire 450A (7) on bilge pump circuit breaker (10) with two lockwashers (6), two screws (5) and two lockwashers (9).



BILGE PUMP POWER LOAD RELAY, CIRCUIT BREAKER AND MOUNTING PLATE REPLACEMENT - CONTINUED 0264 00

Installation-Continued

4. Install bilge pump relay (2) with two screws (3) and two new lockwashers (4).
5. Connect wiring harness 4W136 connector P2 (1) to bilge pump relay (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

PASSIVE NIGHT VIEWER DUMMY CONNECTOR REPLACEMENT 0265 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (4) (item 390, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Wiring harness connector 4W105-P4 removed from dummy connector (WP 0317 00)

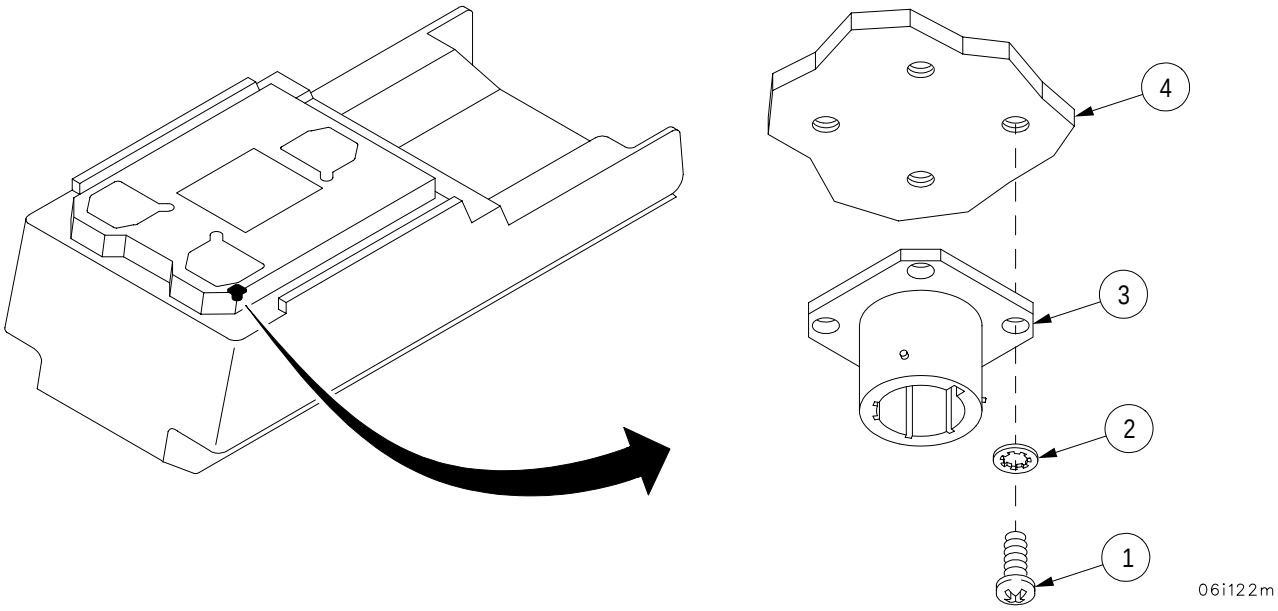
References
TM 9-2350-292-10

Removal

1. Remove four screws (1), four lockwashers (2) and connector (3) from hull (4). Discard lockwashers.
2. Inspect parts for damage and replace as required.

Installation

Install connector (3) in hull (4) with four screws (1) and four new lockwashers (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install wiring harness connector 4W105-P4 in dummy connector (WP 0317 00)
Connect battery power (WP 0256 00)

END OF TASK

PASSIVE NIGHT VIEWER SWITCH AND INDICATOR ASSEMBLY REPAIR 0266 00

THIS WORK PACKAGE COVERS:
Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 90, WP 0718 00)
Lockwasher (item 93, WP 0718 00)
Gasket (item 91, WP 0718 00)
Gasket (item 92, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

Personnel Required
Two

References
TM 9-2350-292-10

NOTE

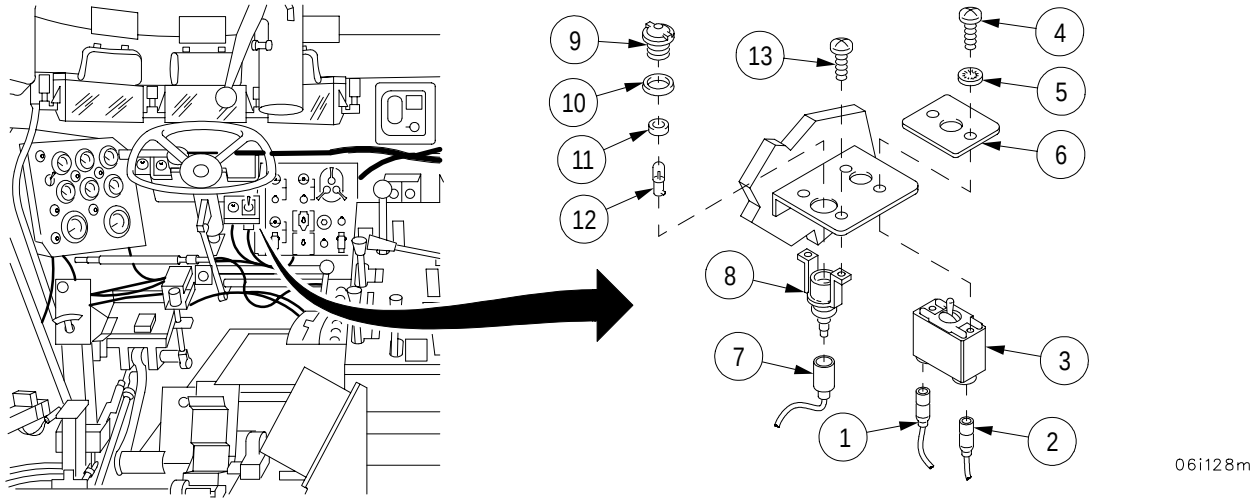
Perform Removal steps 1 and 2 and Disassembly step 2 and Installation steps 4 and 5 to replace passive night viewer switch.

Perform Removal steps 3 through 5 and Disassembly step 2 and Installation steps 1 through 3 to replace passive night viewer indicator assembly.

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

1. Disconnect wiring harness 4W105 wire 999A (1) and wire 999B (2) from switch (3).
2. Remove two screws (4), two lockwashers (5), plate (6) and switch (3). Discard lockwashers.
3. Disconnect wiring harness 4W105 wire 516 (7) from indicator assembly (8).
4. Remove lens (9), gasket (10), gasket (11) and bulb (12). Discard gaskets.
5. Remove two screws (13) and indicator assembly (8).



PASSIVE NIGHT VIEWER SWITCH AND INDICATOR ASSEMBLY REPAIR - CONTINUED 0266 00

Disassembly

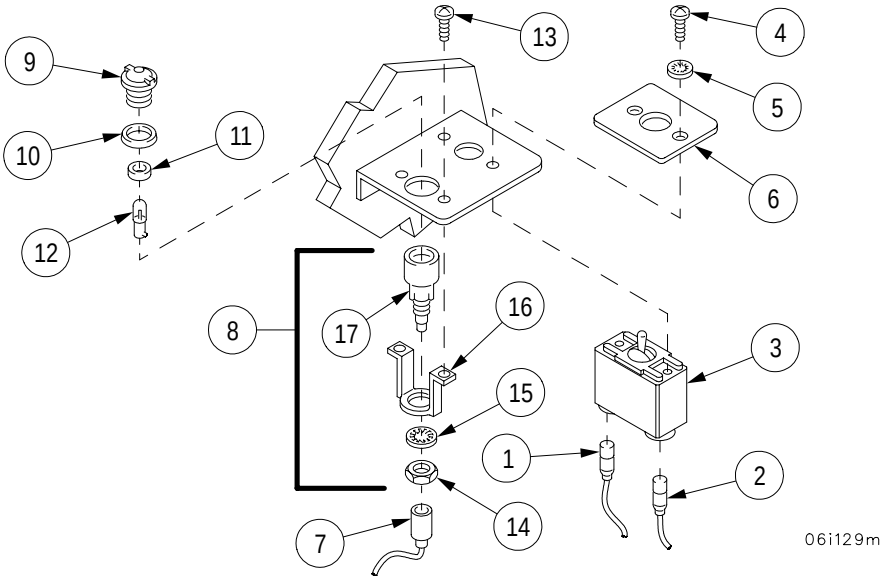
1. Remove nut (14), lockwasher (15) and bracket (16) from lamp body (17). Discard lockwasher.
2. Inspect parts for damage and replace as required.

Assembly

Install nut (14), new lockwasher (15) and bracket (16) to lamp body (17).

Installation

1. Install indicator assembly (8) with two screws (13).
2. Install bulb (12), new gasket (11), new gasket (10) and lens (9) on indicator assembly (8).
3. Connect wiring harness 4W105 wire 516 (7) to indicator assembly (8).
4. Install plate (6) and switch (3) with two screws (4) and two new lockwashers (5).
5. Connect wiring harness 4W105 wire 999B (2) and wire 999A (1) to switch (3).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

DIRECTIONAL SIGNAL CONTROL SWITCH AND BRACKET REPLACEMENT (OLD CONFIGURATION) 0267 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 9, WP 0718 00)

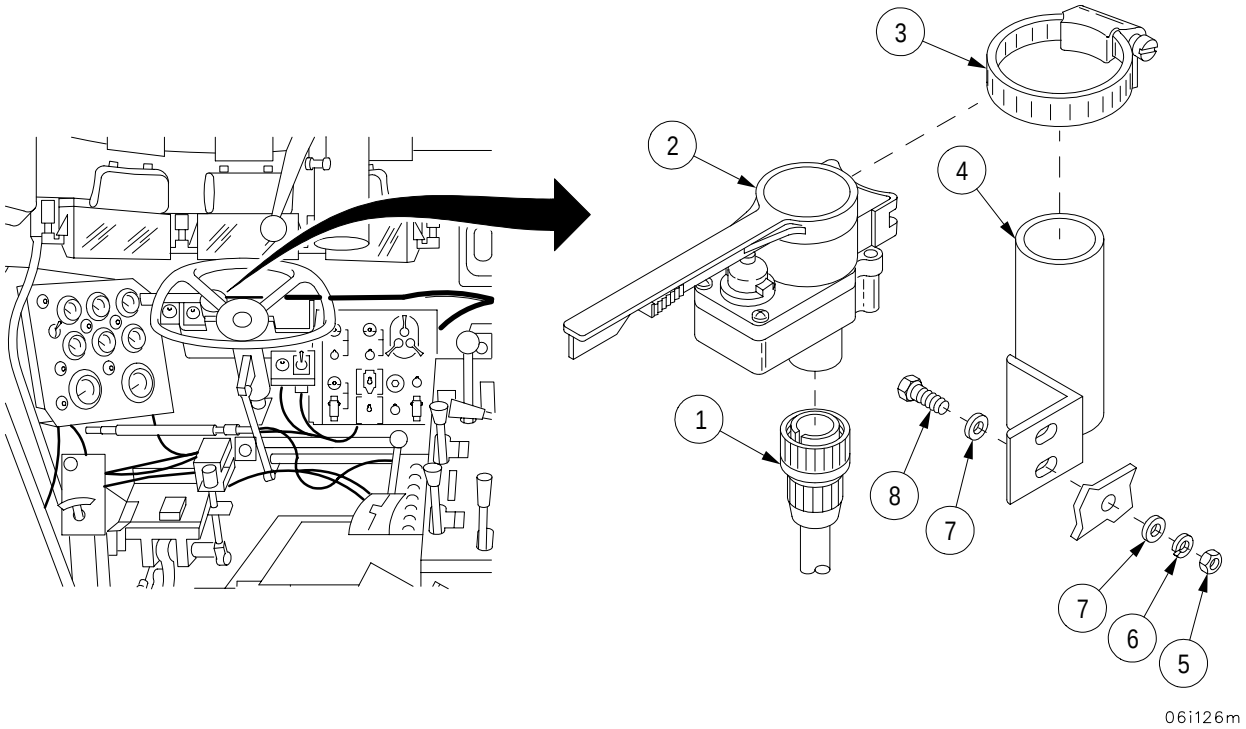
Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

Personnel Required
Two

References
TM 9-2350-292-10

Removal

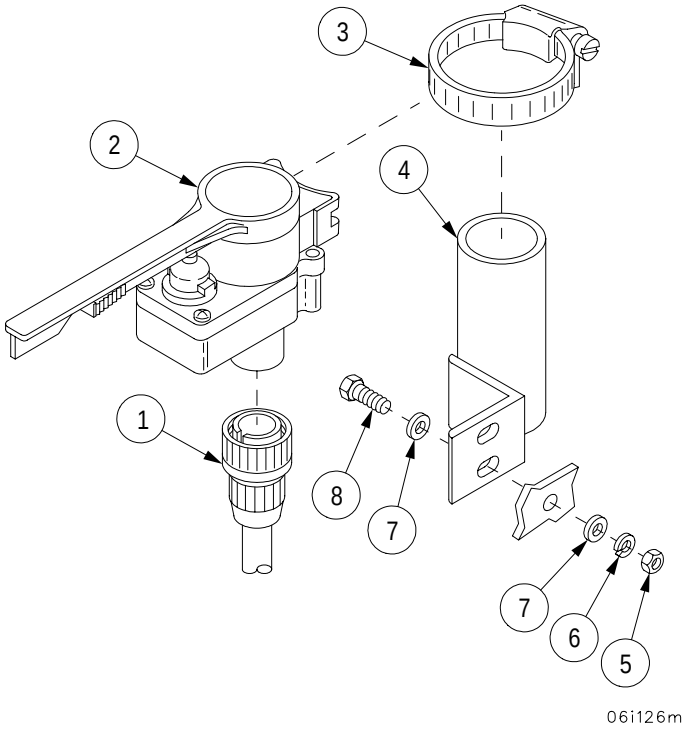
1. Disconnect wiring harness 4W127 connector P2 (1) from connector J2 on directional signal control switch (2).
2. Remove clamp (3) and directional signal control switch (2) from bracket (4).
3. Remove two nuts (5), two lockwashers (6), four flat washers (7), two screws (8) and bracket (4) from vehicle. Discard lockwashers.
4. Inspect parts for damage and replace as required.



DIRECTIONAL SIGNAL CONTROL SWITCH AND BRACKET REPLACEMENT (OLD CONFIGURATION) - CONTINUED 0267 00

Installation

1. Install bracket (4) on vehicle with two screws (8), four flat washers (7), two new lockwashers (6) and two nuts (5).
2. Install directional signal control switch (2) on bracket (4) with clamp (3).
3. Connect wiring harness 4W127 connector P2 (1) to connector J2 on directional signal control switch (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

DIRECTIONAL SIGNAL CONTROL SWITCH, DIMMER SWITCH AND BRACKET REPLACEMENT (NEW CONFIGURATION WITH BRAKE MODULATION) 0268 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 9, WP 0718 00)

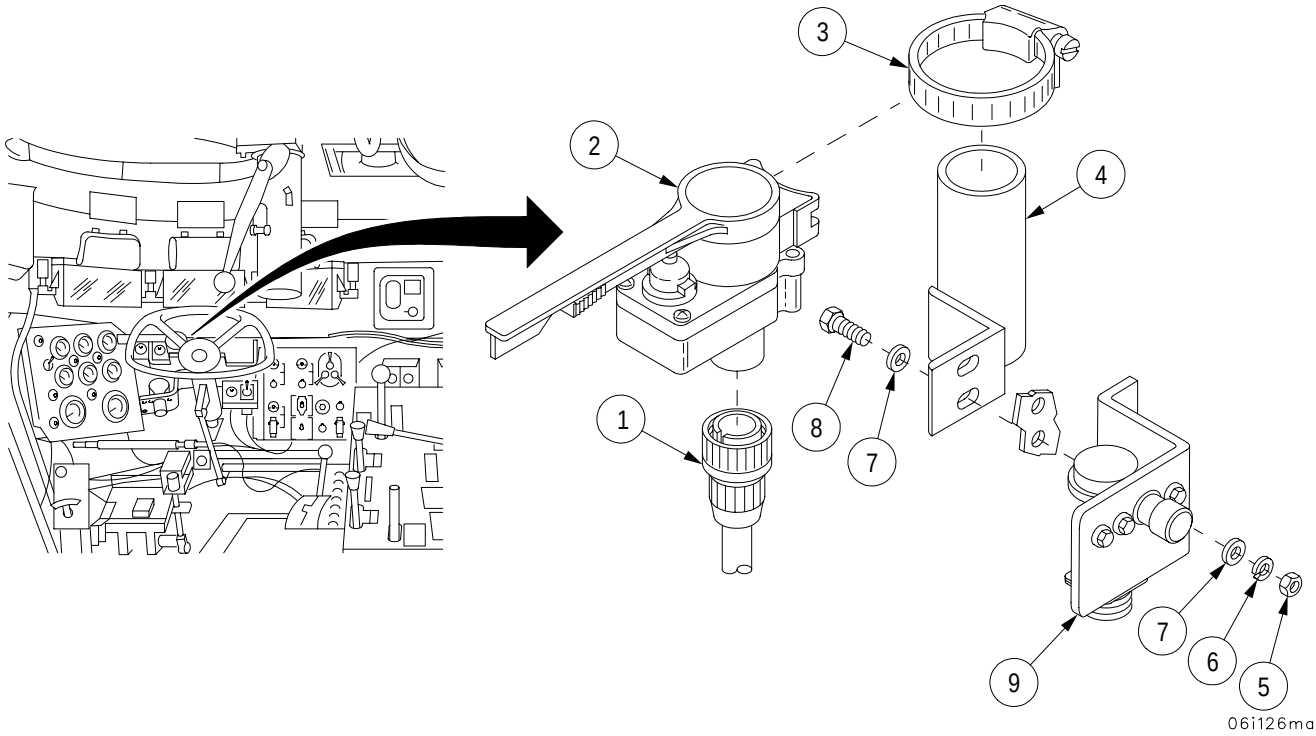
Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

Personnel Required
Two

References
TM 9-2350-292-10

Removal

1. Disconnect wiring harness 4W127 connector P2 (1) from connector J2 on directional signal control switch (2).
2. Remove clamp (3) and directional signal control switch (2) from bracket (4).
3. Remove two nuts (5), two lockwashers (6), four flat washers (7), two screws (8), bracket (4) and dimmer switch bracket (9) from vehicle. Discard lockwashers.
4. Inspect parts for damage and replace as required.

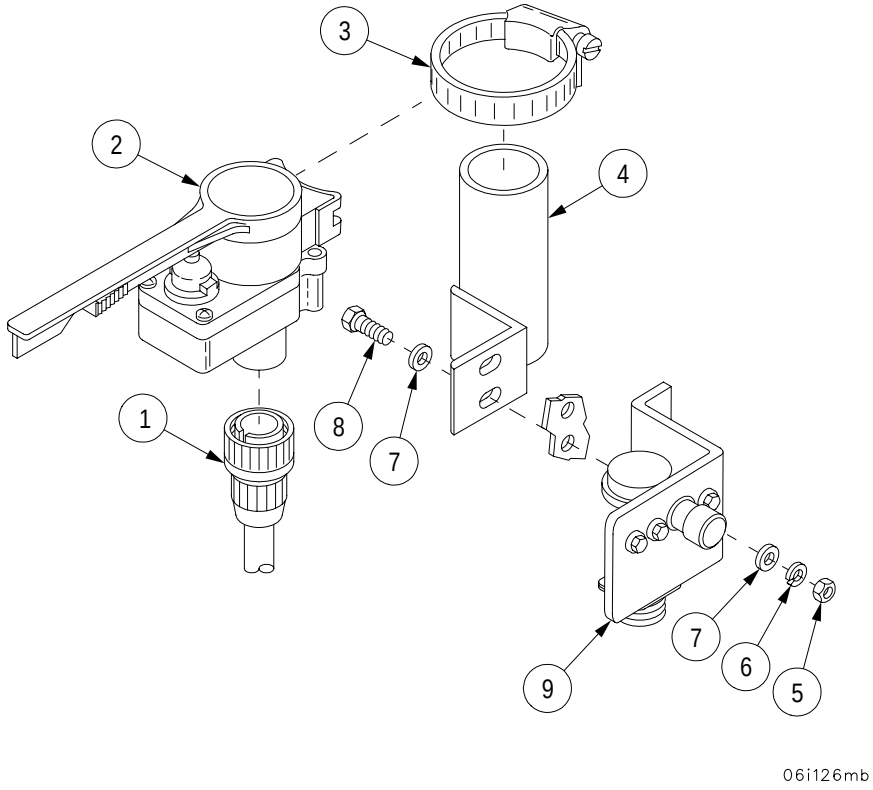


DIRECTIONAL SIGNAL CONTROL SWITCH, DIMMER SWITCH AND BRACKET REPLACEMENT (NEW CONFIGURATION WITH BRAKE MODULATION) - CONTINUED

0268 00

Installation

1. Install bracket (4) and dimmer switch bracket (9) on vehicle with two screws (8), four flat washers (7), two new lockwashers (6) and two nuts (5).
2. Install directional signal control switch (2) on bracket (4) with clamp (3).
3. Connect wiring harness 4W127 connector P2 (1) to connector J2 on directional signal control switch (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

FLASHER (DIRECTIONAL SIGNAL CONTROL) AND MOUNTING PLATE ASSEMBLY REPLACEMENT 0269 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 58, WP 0718 00)
Lockwashers (3) (item 132, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Warning horn relay removed (WP 0286 00)

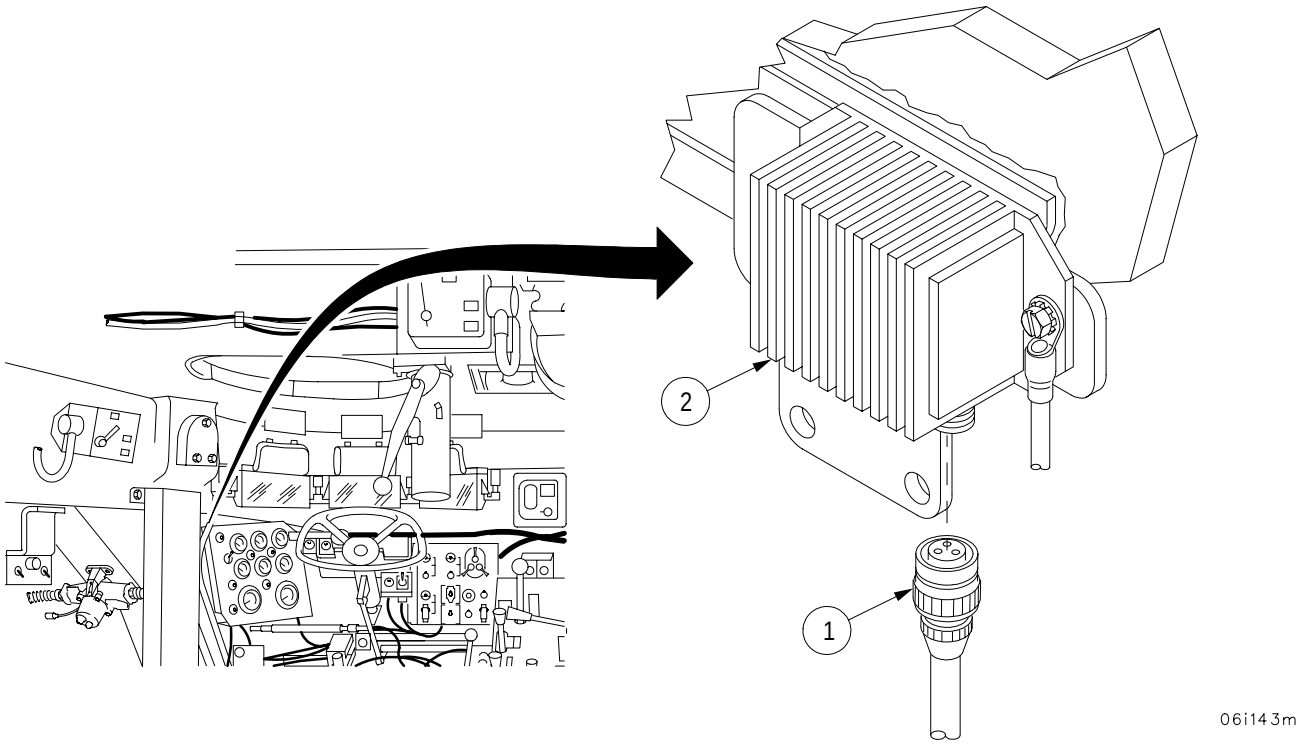
References
TM 9-2350-292-10

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

1. Disconnect wiring harness 4W127 connector P3 (1) from flasher assembly (2).



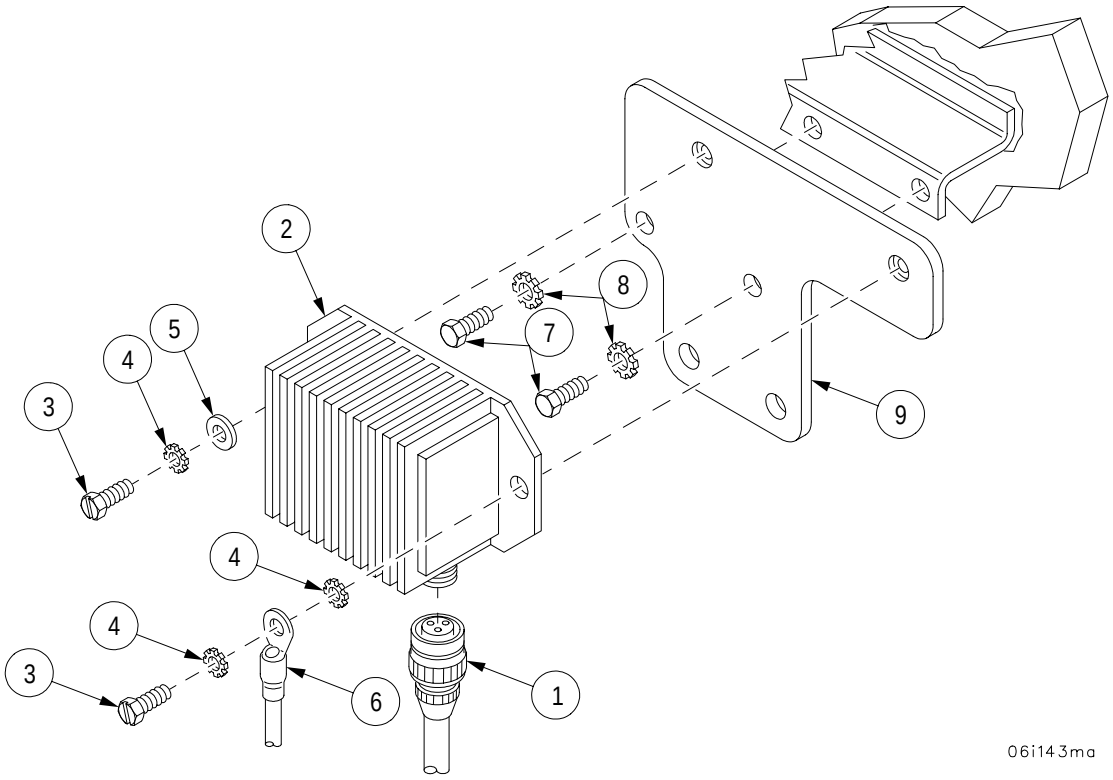
FLASHER (DIRECTIONAL SIGNAL CONTROL) AND MOUNTING PLATE ASSEMBLY REPLACEMENT - CONTINUED 0269 00

Removal-Continued

2. Remove two screws (3), three lockwashers (4), flat washer (5), wiring harness 4W127 ground lead (6) and flasher (2) from vehicle. Discard lockwashers.
3. Remove two screws (7), two lockwashers (8) and mounting plate (9) from vehicle. Discard lockwashers.
4. Inspect parts for damage and replace as required.

Installation

1. Install mounting plate (9) on vehicle with two screws (7) and two new lockwashers (8).
2. Install flasher (2) and loose end of wiring harness 4W127 ground lead (6) on mounting plate (9) with two screws (3), three new lockwashers (4) and flat washer (5).
3. Connect wiring harness 4W127 connector P3 (1) to flasher assembly (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install warning horn relay (WP 0286 00)

END OF TASK

MASTER POWER CIRCUIT BREAKER REPLACEMENT 0270 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

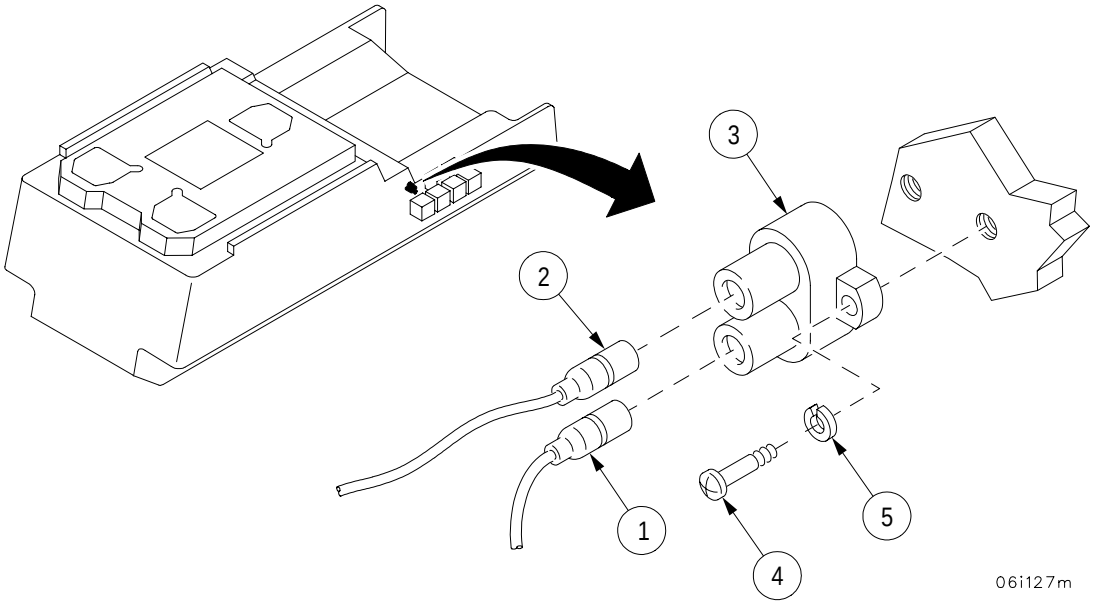
Materials/Parts
Lockwashers (2) (item 112, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

Removal

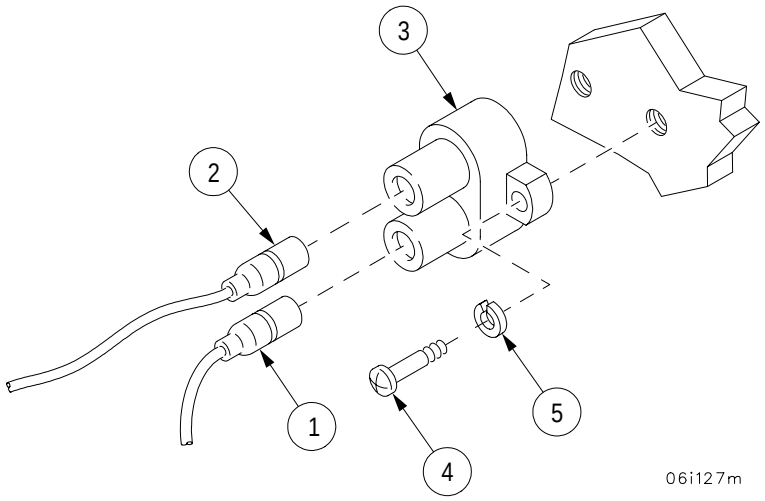
1. Disconnect wiring harness 3W142 wire 400/459B (1) and wiring harness 3W218 wire 400/459B (2) from circuit breaker (3).
2. Remove two screws (4), two lockwashers (5) and circuit breaker (3). Discard lockwashers.
3. Inspect parts for damage and replace as required.



MASTER POWER CIRCUIT BREAKER REPLACEMENT - CONTINUED 0270 00

Installation

1. Install circuit breaker (3) with two screws (4) and two new lockwashers (5).
2. Connect wiring harness 3W218 wire 400/459B (2) and wiring harness 3W142 wire 400/459B (1) to circuit breaker (3).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

MASTER RELAY, MOUNTING BRACKET AND COVER REPLACEMENT 0271 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 2, WP 0718 00)
Lockwashers (3) (item 11, WP 0718 00)
Spring tension washers (2) (item 61, WP 0718 00)
Lockwashers (4) (item 9, WP 0718 00)
Lockwashers (2) (item 10, WP 0718 00)
Lockwasher (item 414, WP 0718 00)
Lockwasher (item 12, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

NOTE

Perform Removal steps 1 and 8 and Installation step 7 for maintenance of master relay cover.

Perform Removal steps 1 through 6 and 8 and Installation steps 2 through 7 for maintenance of master relay.

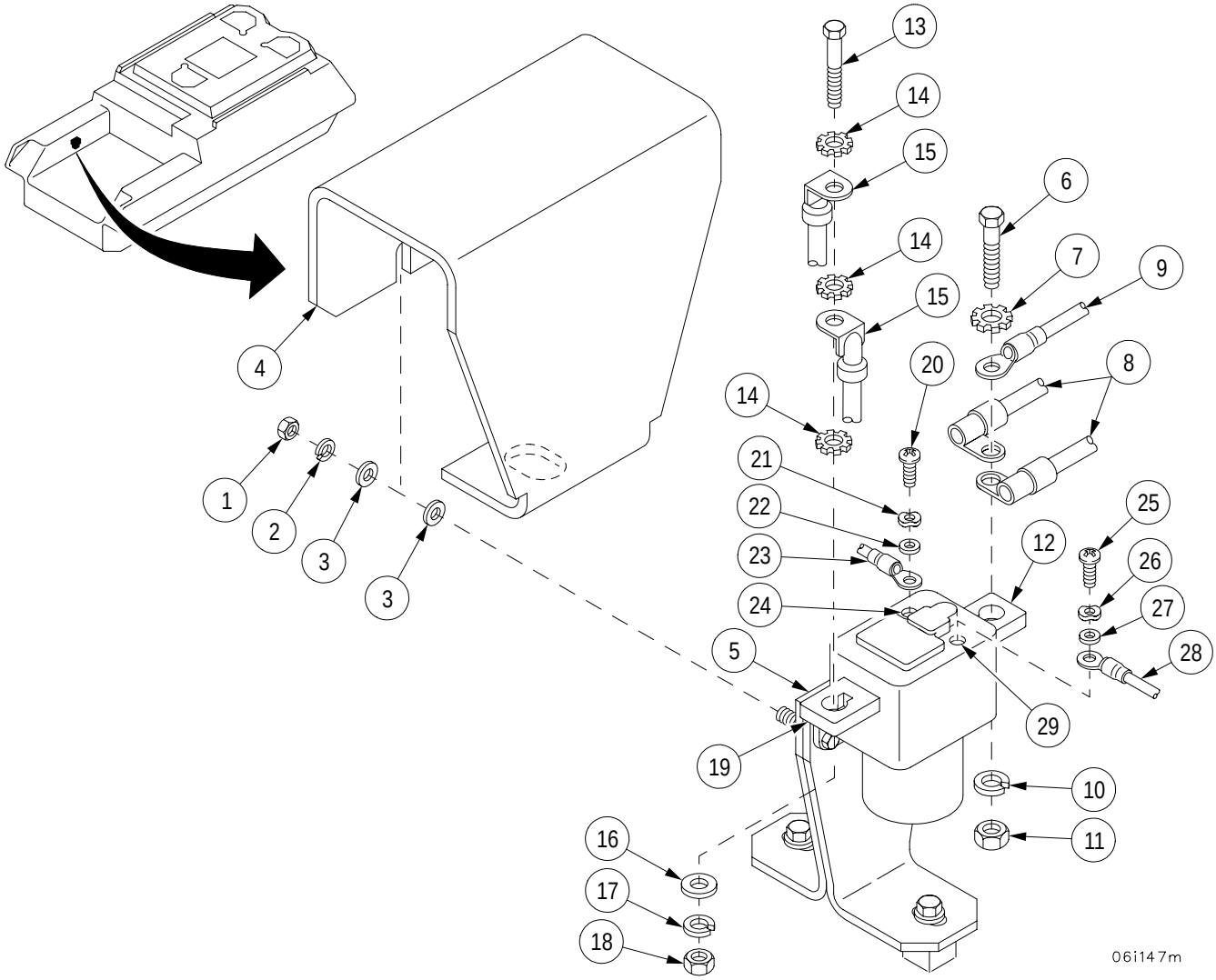
Perform Removal steps 1 through 8 and Installation steps 1 through 7 for maintenance of master relay mounting bracket.

Tag all electrical connections and electrical leads prior to removal to aid in installation.

MASTER RELAY, MOUNTING BRACKET AND COVER REPLACEMENT - CONTINUED 0271 00

Removal

1. Remove two nuts (1), two lockwashers (2), four flat washers (3) and master relay cover (4) from mounting bracket (5). Discard lockwashers.
2. Remove screw (6), lockwasher (7), wiring harness 3W217 terminals T1 and T2 (8), wiring harness 3W702 wire 66 (9), lockwasher (10) and nut (11) from master relay terminal A2 (12). Discard lockwashers.
3. Remove screw (13), three lockwashers (14), two lead assemblies 3W215 terminals T2 (15), flat washer (16), lockwasher (17) and nut (18) from master relay terminal A1 (19). Discard lockwashers.
4. Remove screw (20), spring tension washer (21), flat washer (22) and wiring harness 3W142 wire 459B (23) from master relay terminal X1 (24). Discard spring tension washer.
5. Remove screw (25), spring tension washer (26), flat washer (27) and lead assembly 3W174 wire GND (28) from master relay terminal X2 (29). Discard spring tension washer.



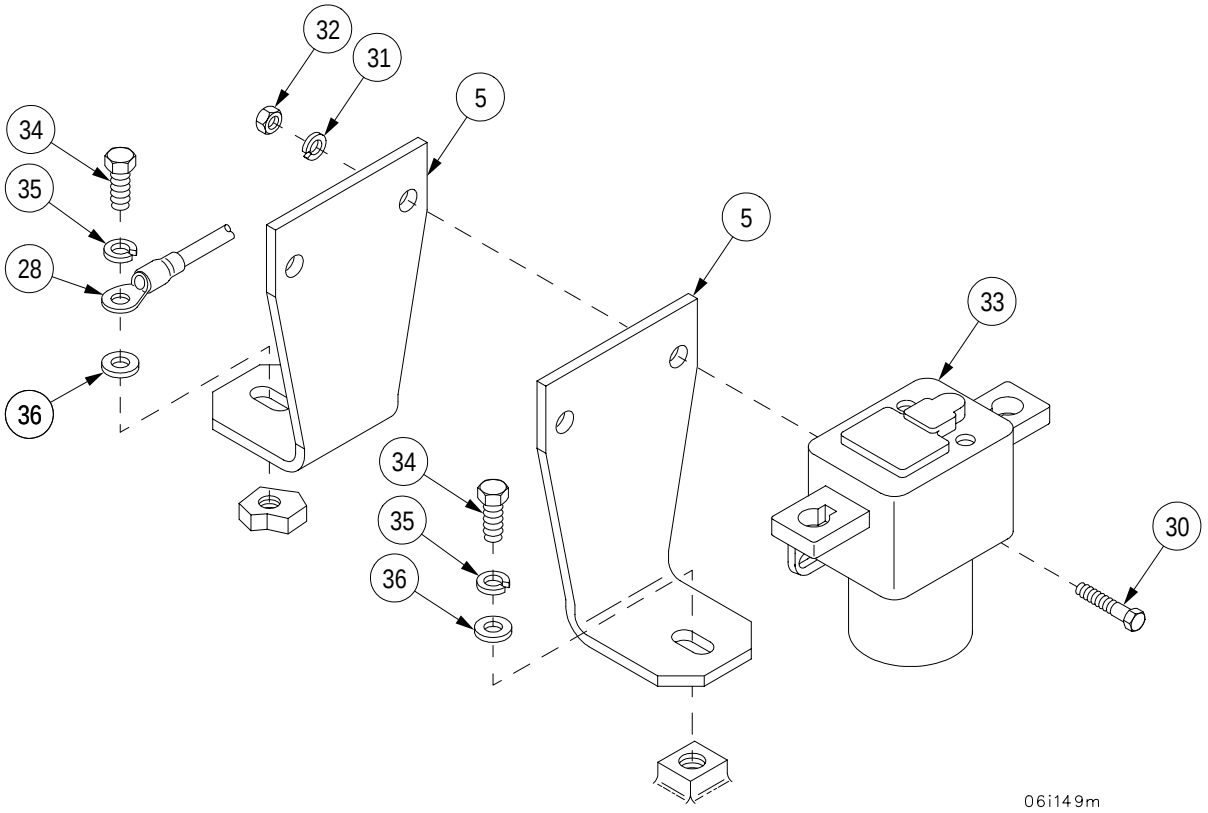
MASTER RELAY, MOUNTING BRACKET AND COVER REPLACEMENT - CONTINUED 0271 00

Removal-Continued

6. Remove two screws (30), two lockwashers (31), two nuts (32) and master relay (33) from mounting brackets (5). Discard lockwashers.
7. Remove two screws (34), two lockwashers (35), two flat washers (36), lead assembly 3W174 wire GND (28) and two mounting brackets (5). Discard lockwashers.
8. Inspect parts for damage and replace as required.

Installation

1. Install two mounting brackets (5) with two screws (34), two new lockwashers (35) and two flat washers (36) and lead assembly 3W174 wire GND (28) .
2. Install master relay (33) on mounting brackets (5) with two screws (30), two new lockwashers (31) and two nuts (32).



MASTER RELAY, MOUNTING BRACKET AND COVER REPLACEMENT - CONTINUED 0271 00

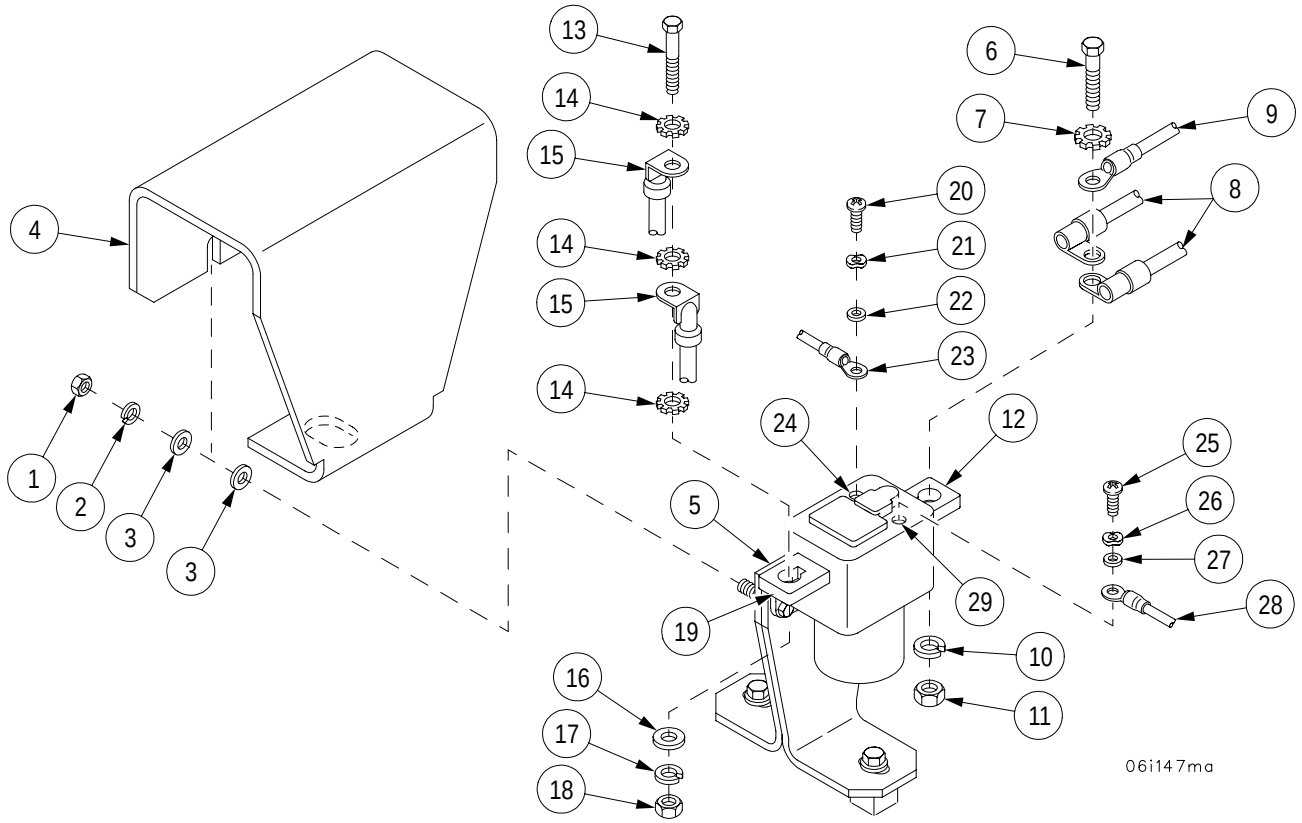
Installation-Continued

3. Install lead assembly 3W174 wire GND (28) on master relay terminal X2 (29) with screw (25), new spring tension washer (26) and flat washer (27).
4. Install wiring harness 3W142 wire 459B (23) on master relay terminal X1 (24) with screw (20), new spring tension washer (21) and flat washer (22).
5. Install two lead assemblies 3W215 terminals T2 (15)) on master relay terminal A1 (19) with screw (13), three new lockwashers (14), flat washer (16), new lockwasher (17) and nut (18).
6. Install wiring harness 3W217 terminals T1 and T2 (8) and wiring harness 3W702 wire 66 (9) on master relay terminal A2 (12) with screw (6), new lockwasher (7), new lockwasher (10) and nut (11).

CAUTION

Make sure cover is fully seated before tightening mounting hardware. Failure to comply could result in equipment damage.

7. Install master relay cover (4) on mounting bracket (5) with four flat washers (3), two new lockwashers (2) and two nuts (1).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

ANTENNA BASE ACCESS COVER REPLACEMENT 0272 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Materials/Parts
Gasket (item 416, WP 0718 00)
Lockwashers (4) (item 2, WP 0718 00)

References
TM 9-2350-292-10

NOTE

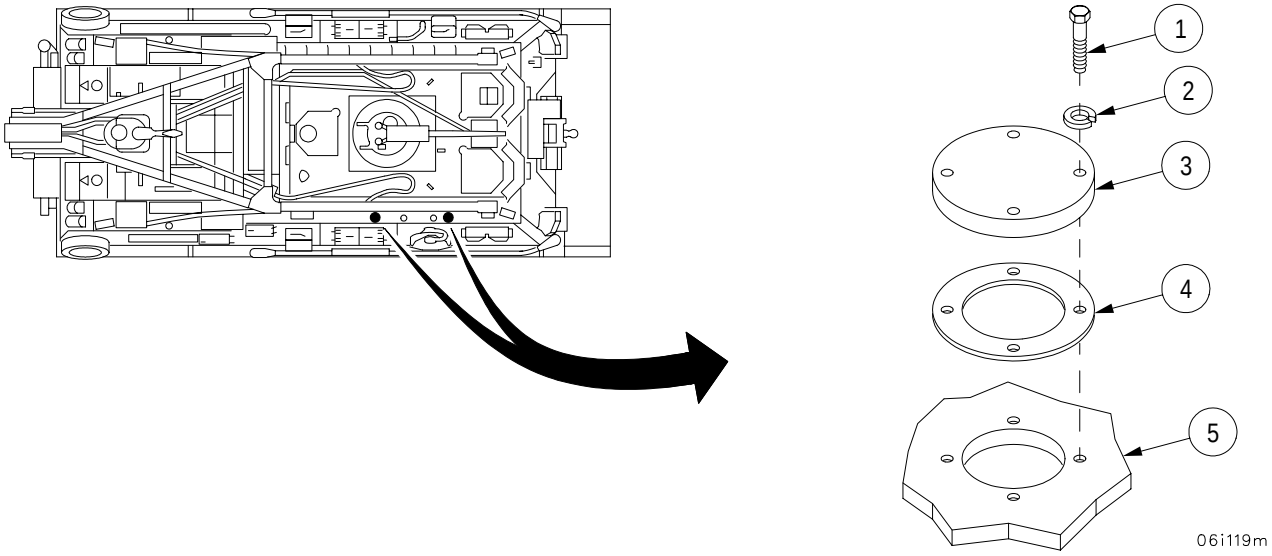
There are two identical antenna base access covers.
This task replaces one antenna base access cover.

Removal

1. Remove four screws (1), four lockwashers (2), antenna base access cover (3) and gasket (4) from hull (5). Discard lockwashers and gasket.
2. Inspect parts for damage and replace as required.

Installation

Install antenna base access cover (3) on hull (5) with four screws (1), four new lockwashers (2), and new gasket (4).



END OF TASK

HEADLIGHT ASSEMBLY REPAIR 0273 00

THIS WORK PACKAGE COVERS:

Removal, Disassembly, Assembly, Installation, Alignment, Adjustment

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts

Lockwashers (2) (item 86, WP 0718 00)
Lockwashers (3) (item 111, WP 0718 00)
Lockwashers (3) (item 137, WP 0718 00)
Lockwashers (4) (item 361, WP 0718 00)
Lockwashers (2) (item 362, WP 0718 00)
Grommet assemblies (4) (item 367, WP 0718 00)
Nonmetallic grommet (item 371, WP 0718 00)
Gasket (item 364, WP 0718 00)
Gaskets (2) (item 365, WP 0718 00)
Gasket (item 369, WP 0718 00)
Gasket (item 370, WP 0718 00)
Gaskets (2) (item 374, WP 0718 00)
Round rubber seal (item 372, WP 0718 00)
Rubber seals (2) (item 373, WP 0718 00)
Rubber seal (item 375, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Materials/Parts-Continued

Rubber strip seal (item 363, WP 0718 00)
Solid rivet (item 366, WP 0718 00)
Spring pin (item 377, WP 0718 00)
Sealing compound (item 82, WP 0716 00)
Adhesive (item 83, WP 0716 00)
Dry-cleaning solvent (item 1, WP 0716 00)

Equipment Conditions

Vehicle parked on level surface, measure distance 25 feet from headlights to wall, torsion bar axis parallel to wall (alignment and adjustment)
Main light switch off (TM 9-2350-292-10)
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (0256 00)

References

TM 9-2350-292-10

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Both left and right headlamp assemblies are removed, disassembled, assembled, installed, aligned and adjusted using the same procedure.

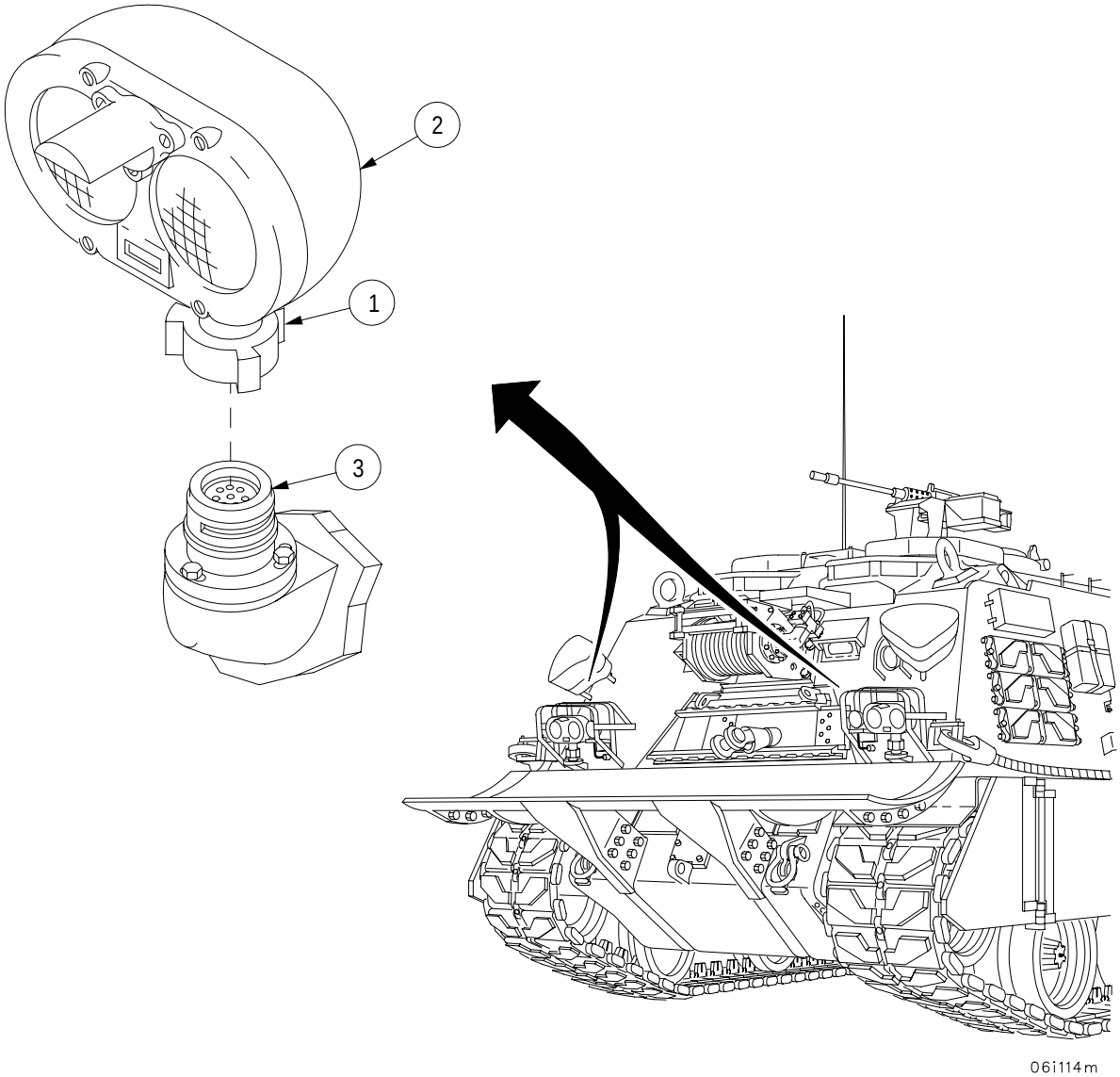
HEADLIGHT ASSEMBLY REPAIR - CONTINUED 0273 00

Removal

CAUTION

Do not twist headlight assembly during removal or installation. Damage to connectors may result.

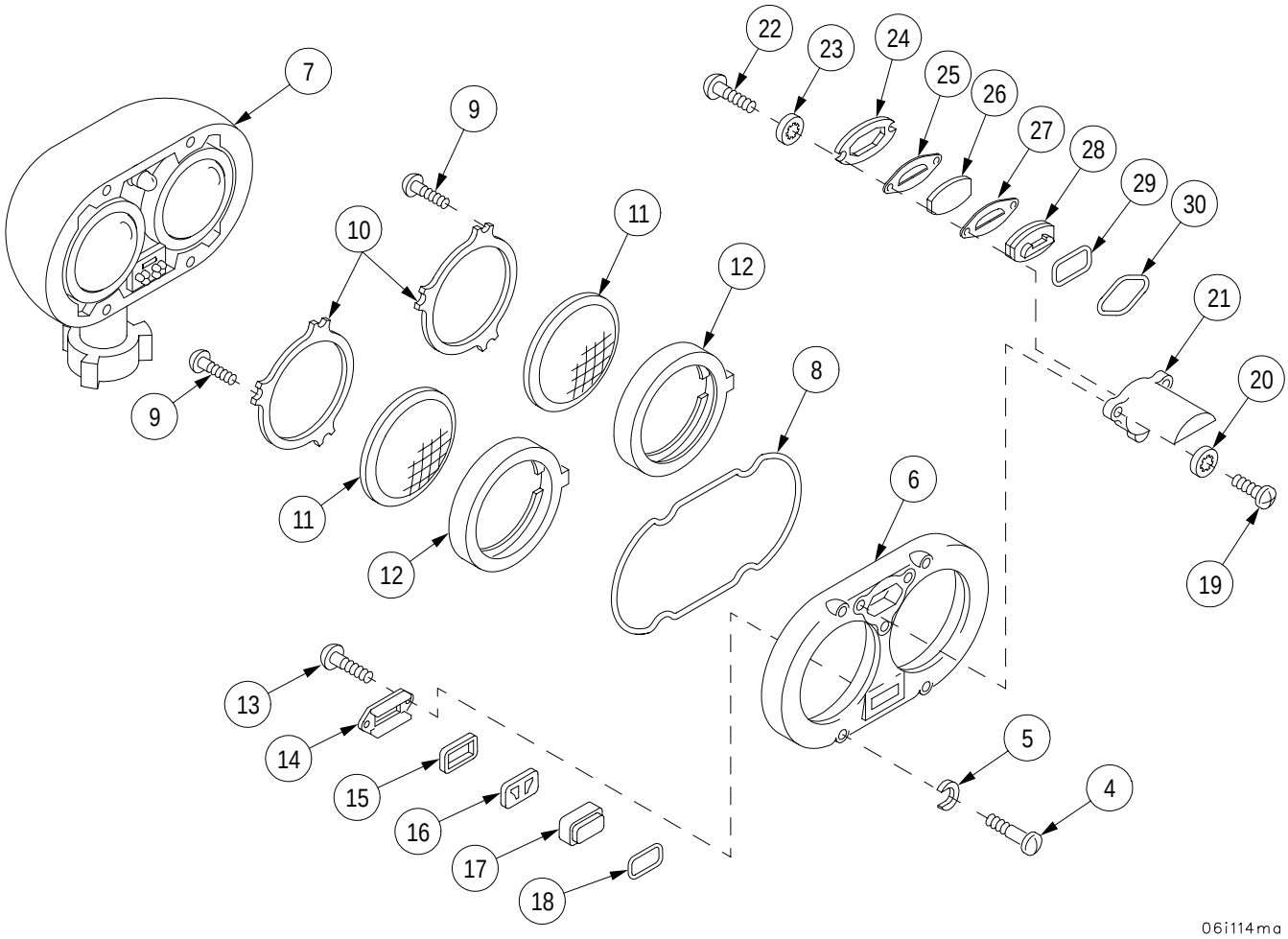
1. Turn adjustment nut (1) securing headlight assembly (2) to socket (3).
2. Remove headlight assembly (2) from socket (3).



HEADLIGHT ASSEMBLY REPAIR - CONTINUED 0273 00

Disassembly

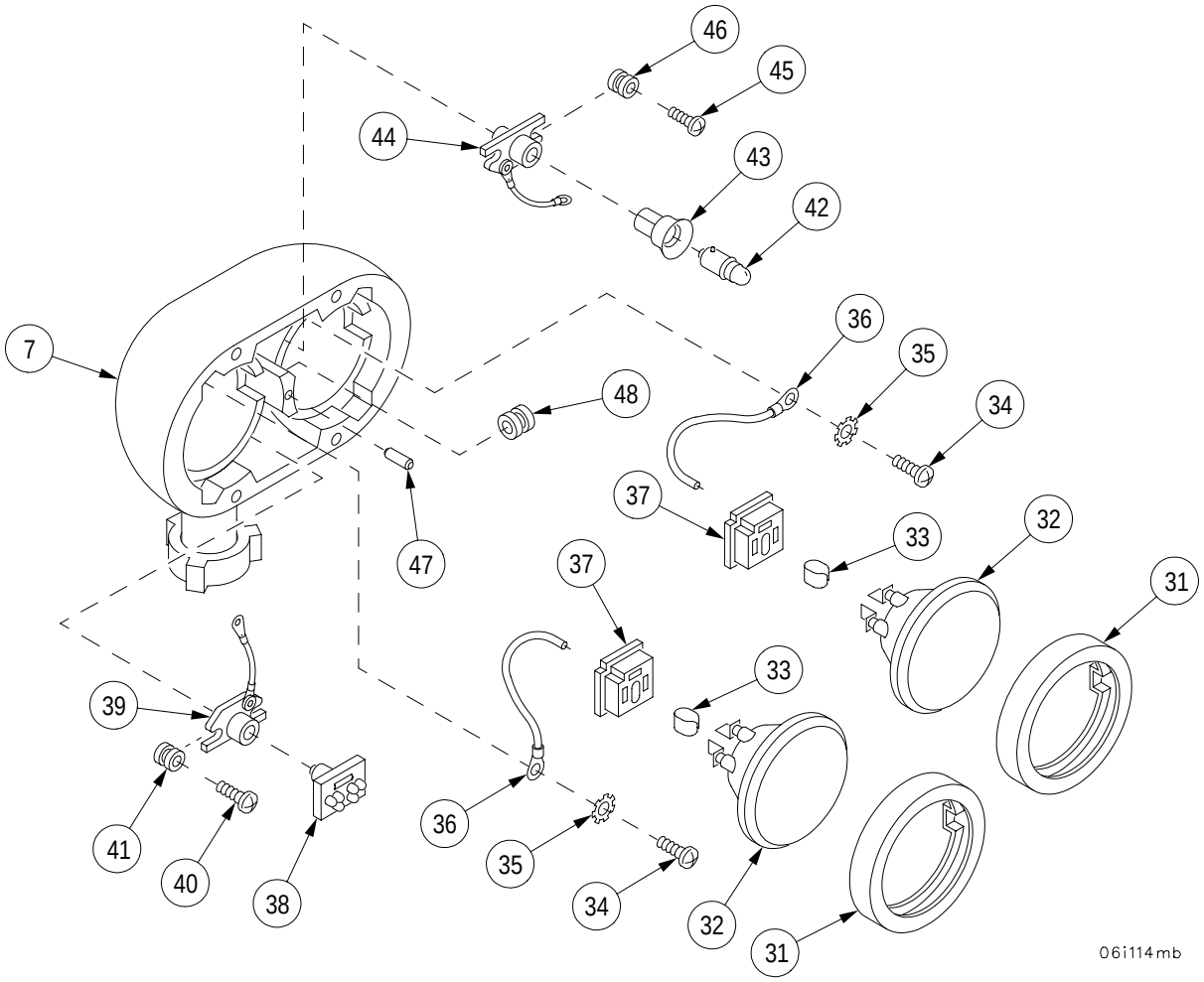
1. Remove four screws (4), four lockwashers (5) and cover (6) from headlight body (7). Discard lockwashers.
2. Remove seal (8) from cover (6). Discard seal.
3. Remove six screws (9), two lens retainers (10), two lenses (11) and two seals (12) from cover (6). Discard seals.
4. Remove two screws (13), retainer (14), gasket (15), blackout lamp filter (16), lens (17) and gasket (18) from cover (6). Discard gaskets.
5. Remove three screws (19), three lockwashers (20) and light shield (21) from cover (6). Discard lockwashers.
6. Remove two screws (22), two lockwashers (23), headlight retainer (24), gasket (25), filter (26), gasket (27), lens (28), gasket (29) and round rubber seal (30) from light shield (21). Discard lockwashers, gaskets and round rubber seal.



HEADLIGHT ASSEMBLY REPAIR - CONTINUED 0273 00

Disassembly-Continued

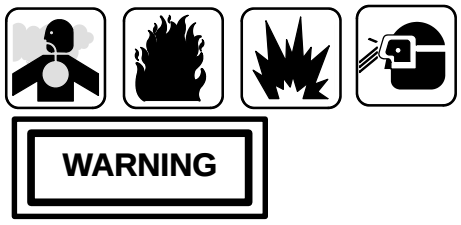
7. Remove two gaskets (31), two lamps (32) and six electrical clips (33) from headlight body (7). Discard gaskets.
8. Remove two screws (34), two lockwashers (35), two cable assemblies (36) and two electrical inserts (37) from headlight body (7). Discard lockwashers.
9. Remove marker assembly (38) from socket assembly (39).
10. Remove two screws (40), two grommet assemblies (41) and socket assembly (39) from headlight body (7). Discard grommet assemblies.
11. Remove halogen lamp (42) and reflector assembly (43) from socket assembly (44).
12. Remove two screws (45), two grommet assemblies (46) and socket assembly (44) from headlight body (7). Discard grommet assemblies.
13. Remove spring pin (47) and grommet (48) from headlight body (7). Discard grommet and spring pin.



HEADLIGHT ASSEMBLY REPAIR - CONTINUED 0273 00

Disassembly-Continued

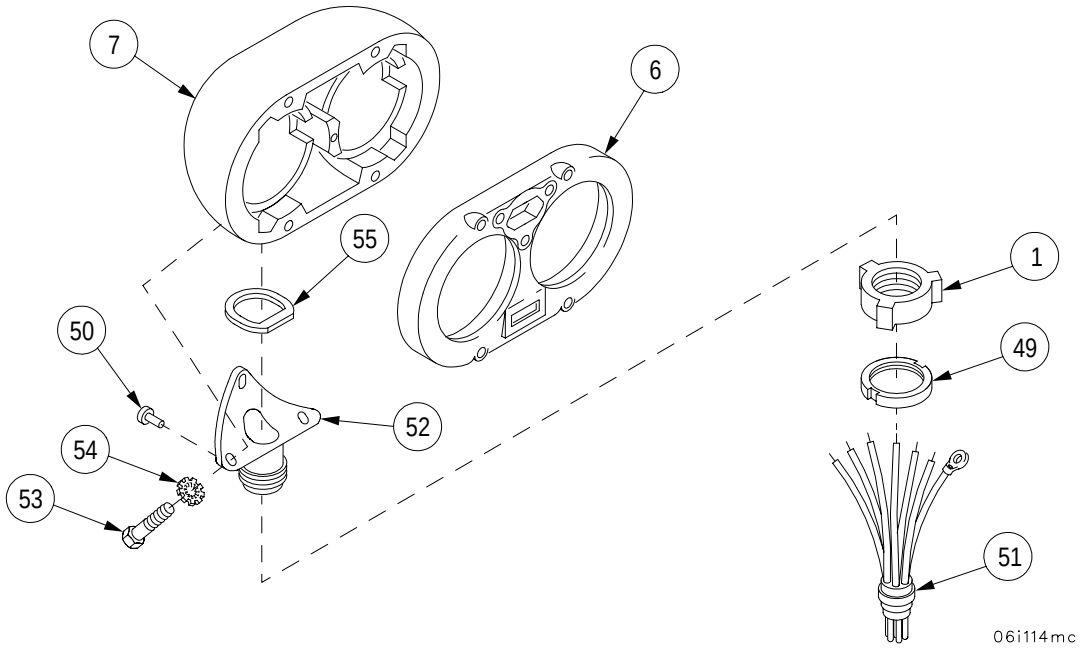
14. Remove headlight ring (49), adjustment nut (1), rivet (50) and harness assembly (51) from headlight holder (52). Discard rivet.
15. Remove three screws (53), three lockwashers (54), headlight holder (52) and seal (55) from headlight body (7). Discard lockwashers and seal.



16. Remove all sealing compound or adhesive from mating surfaces of cover (6), headlight body (7), headlight ring (49) and headlight holder (52) with dry-cleaning solvent.
17. Inspect parts for damage and replace as required.

Assembly

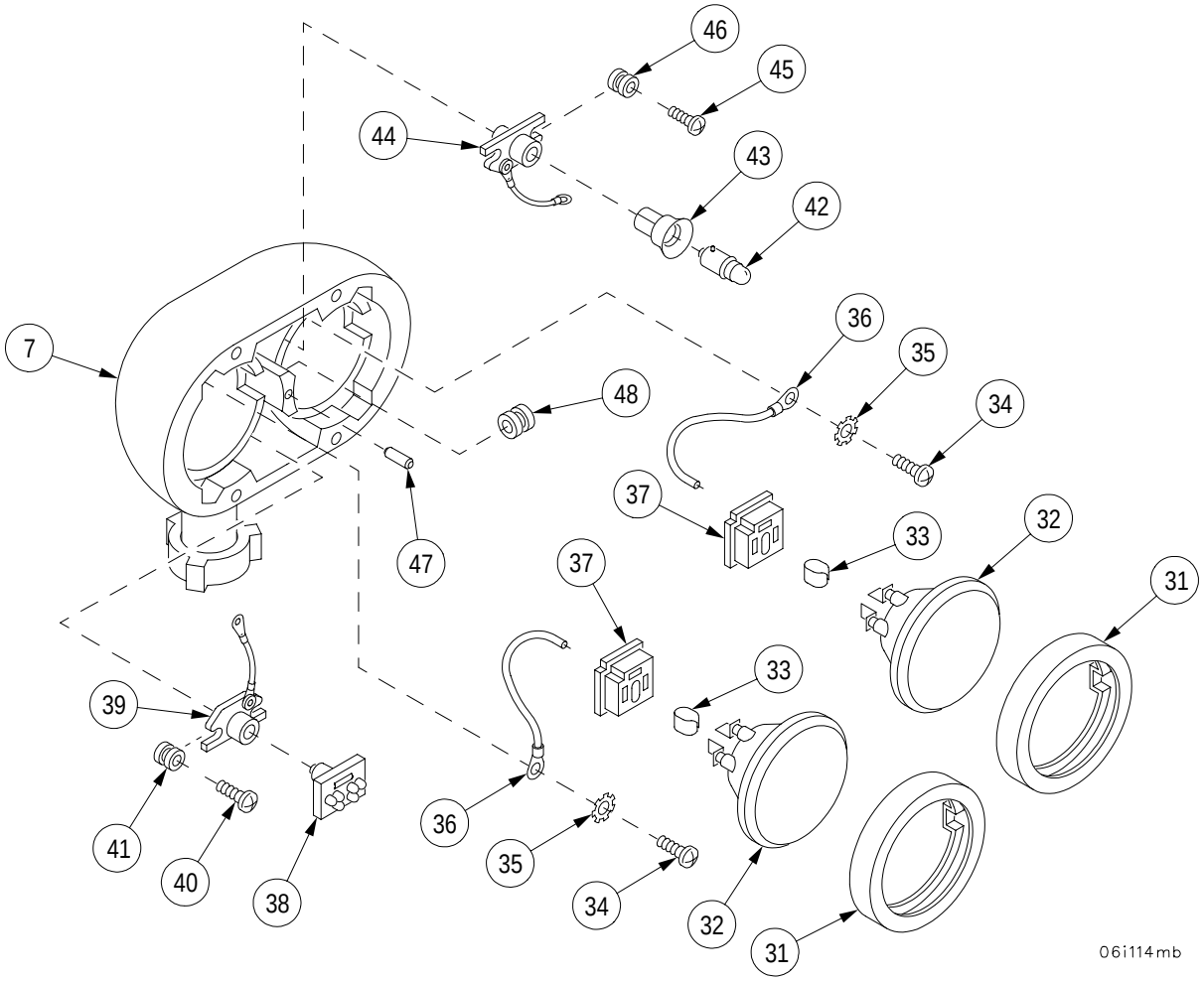
1. Apply adhesive to surface of new seal (55) where it mates with headlight holder (52).
2. Install headlight holder (52) and new seal (55) on headlight body (7) with three screws (53) and three new lockwashers (54). Do not tighten screws (53).
3. Apply sealing compound to mating surfaces of headlight holder (52) and headlight ring (49).
4. Install harness assembly (51), new rivet (50), adjustment nut (1) and headlight ring (49) on headlight holder (52).



HEADLIGHT ASSEMBLY REPAIR - CONTINUED 0273 00

Assembly-Continued

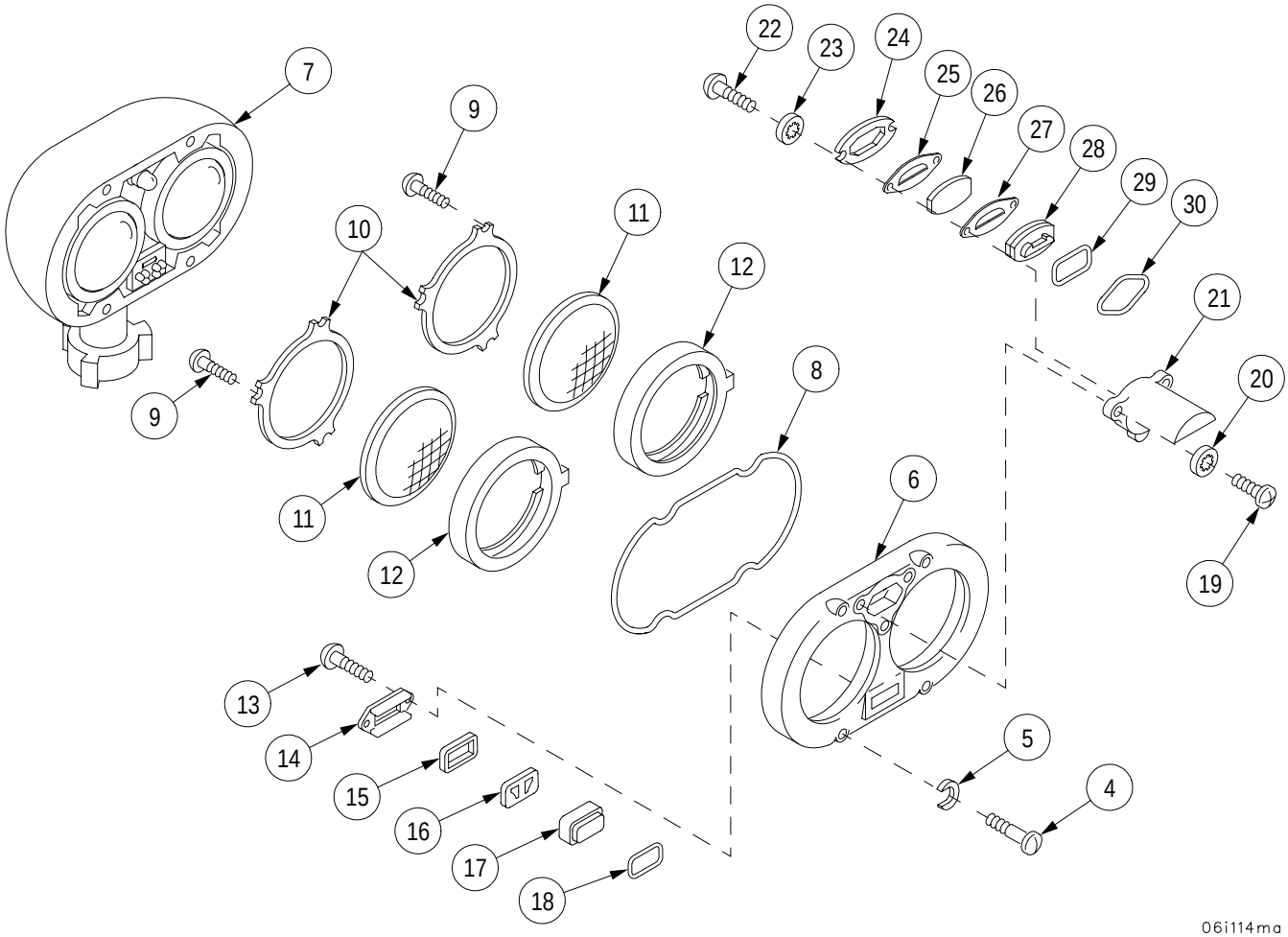
5. Install new grommet (48) and new spring pin (47) in headlight body (7).
6. Install socket assembly (44), two new grommet assemblies (46) and two screws (45) in headlight body (7).
7. Install reflector assembly (43) and halogen lamp (42) in socket assembly (44).
8. Install socket assembly (39), two new grommet assemblies (41) and two screws (40) in headlight body (7).
9. Install marker assembly (38) in socket assembly (39).
10. Install two electrical inserts (37) and two cable assemblies (36) in headlight body (7) with two screws (34) and two new lockwashers (35).
11. Install six electrical clips (33), two lamps (32) and two new gaskets (31) in headlight body (7).



HEADLIGHT ASSEMBLY REPAIR - CONTINUED 0273 00

Assembly-Continued

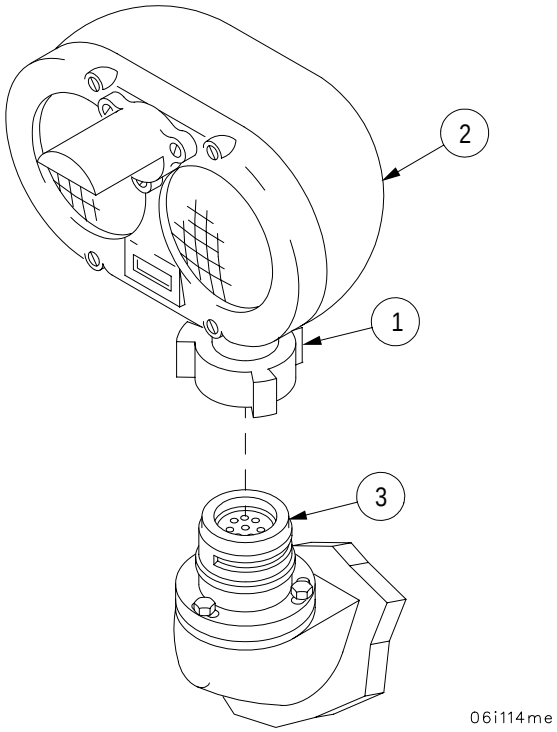
12. Install new round rubber seal (30), new gasket (29), lens (28), new gasket (27), filter (26), new gasket (25), headlight retainer (24), two new lockwashers (23) and two screws (22).
13. Install light shield (21) on cover (6) with three screws (19) and three new lockwashers (20).
14. Install new gasket (18), lens (17), blackout lamp filter (16), new gasket (15), retainer (14) and two screws (13) on cover (6).
15. Install two new seals (12), two lenses (11), two lens retainers (10) and six screws (9) on cover (6).
16. Apply adhesive to face of new seal (8) mating to cover (6).
17. Install new seal (8) on cover (6).
18. Install cover (6) on headlight body (7) with four screws (4) and four new lockwashers (5).



HEADLIGHT ASSEMBLY REPAIR - CONTINUED 0273 00

Installation

1. Install headlight assembly (2) in socket (3), turn adjustment nut (1) until firmly attached to vehicle.
2. Connect battery power (WP 0256 00).



HEADLIGHT ASSEMBLY REPAIR - CONTINUED 0273 00

Alignment

NOTE

Alignment of lights should be performed in shaded or dimly lit areas. Aim with low beam only.

1. Measure distance from center of sealed lamp unit (service side, clear) to ground. Duplicate this measurement on wall, drawing a horizontal centerline (56) of lamp unit.
2. Draw a line (57) parallel to and 27-1/4 inches (69.2 cm) below, line.
3. Turn lights on low beam. Center of right and left beam should be on lower line (57). Adjust, if necessary.

Adjustment

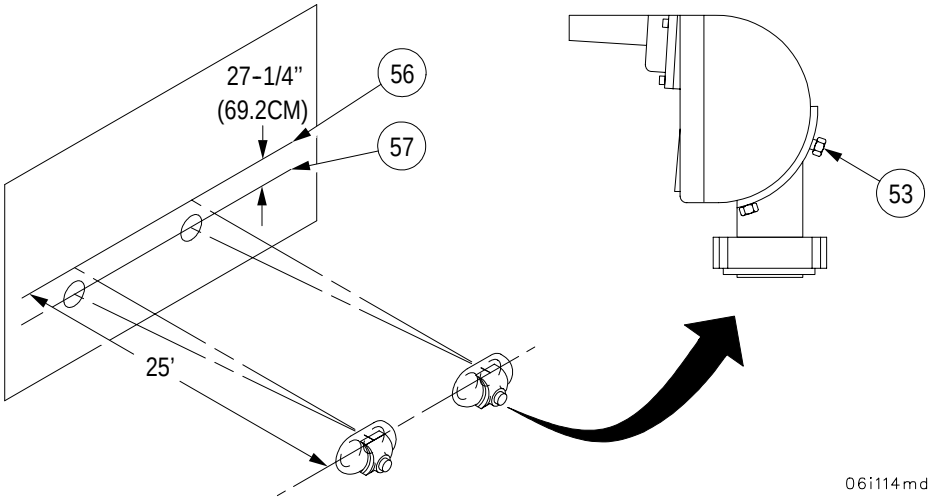
NOTE

Perform steps 1 through 3 if performing headlight adjustment when headlight has been replaced or headlight is out of adjustment.

Perform steps 2 and 3 if performing headlight adjustment when headlight has been disassembled/assembled.

Mounting base must be parallel to horizontal plane in order to achieve accurate headlight adjustment.

1. Loosen three screws (53).
2. Manually adjust headlight assembly up or down until center of low beam is on lower line (57).
3. Tighten three screws (53).



END OF TASK

HEADLIGHT BASE ASSEMBLY 4W159 REPAIR 0274 00

THIS WORK PACKAGE COVERS:
Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Gasket (item 407, WP 0718 00)
Gasket (item 404, WP 0718 00)
Lockwashers (2) (item 110, WP 0718 00)
Lockwashers (3) (item 9, WP 0718 00)
Assembled-washer screws (2) (item 101, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Headlight removed (WP 0273 00)

References
TM 9-2350-292-10

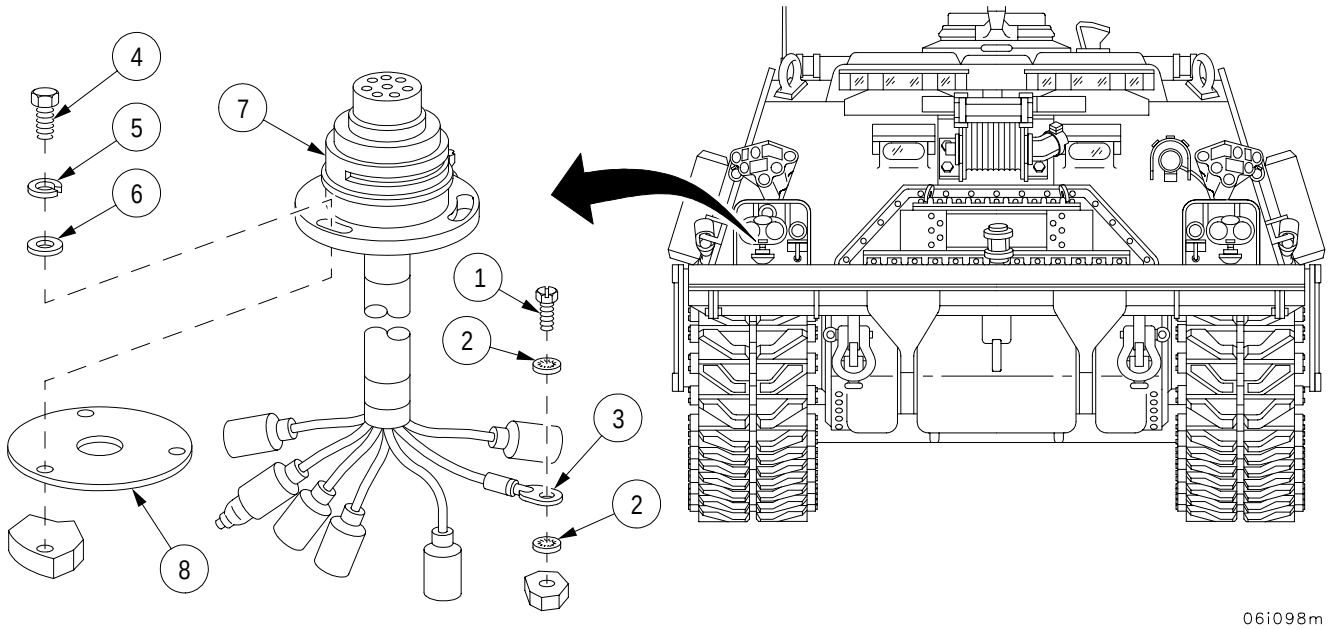
NOTE

Right and left headlight base assemblies are repaired in the same manner except as noted. This task repairs the right headlight base assembly.

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

1. Remove screw (1), two lockwashers (2) and terminal lug (3) from hull. Discard lockwashers.
2. Remove three screws (4), three lockwashers (5), three flat washers (6), headlight base assembly (7) and gasket (8) from hull. Discard lockwashers and gasket.



HEADLIGHT BASE ASSEMBLY 4W159 REPAIR - CONTINUED 0274 00

Disassembly

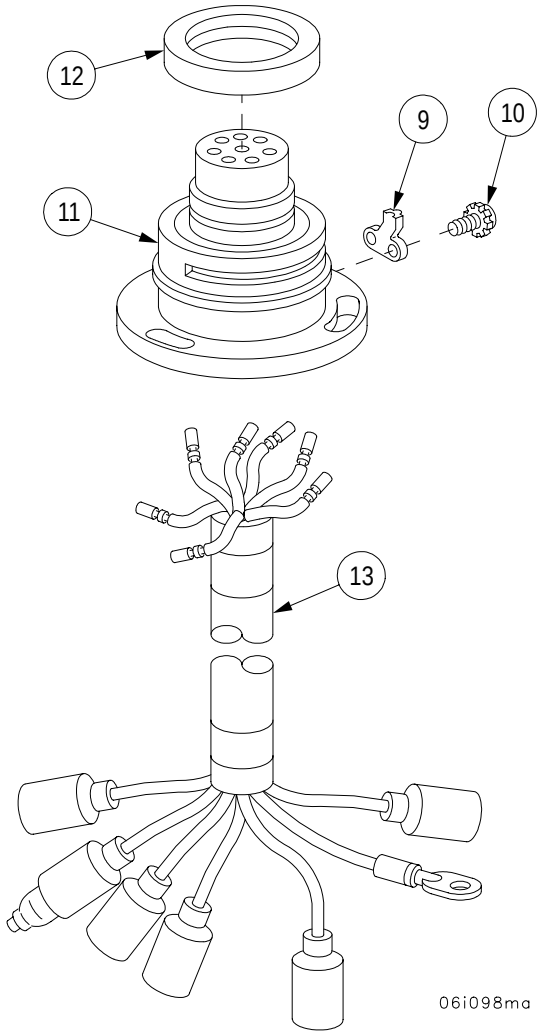
1. Remove spring (9) and two assembled-washer screws (10) from base (11). Discard screws.
2. Remove gasket (12) from base (11). Discard gasket.
3. Carefully remove wiring harness 4W159 (13) from base (11) in accordance with Electrical Schematic FP-1.
4. Inspect parts for damage and replace as required.

Assembly

NOTE

Lead 19 of base assembly is not used. Seal off using shell and plug (right side only).

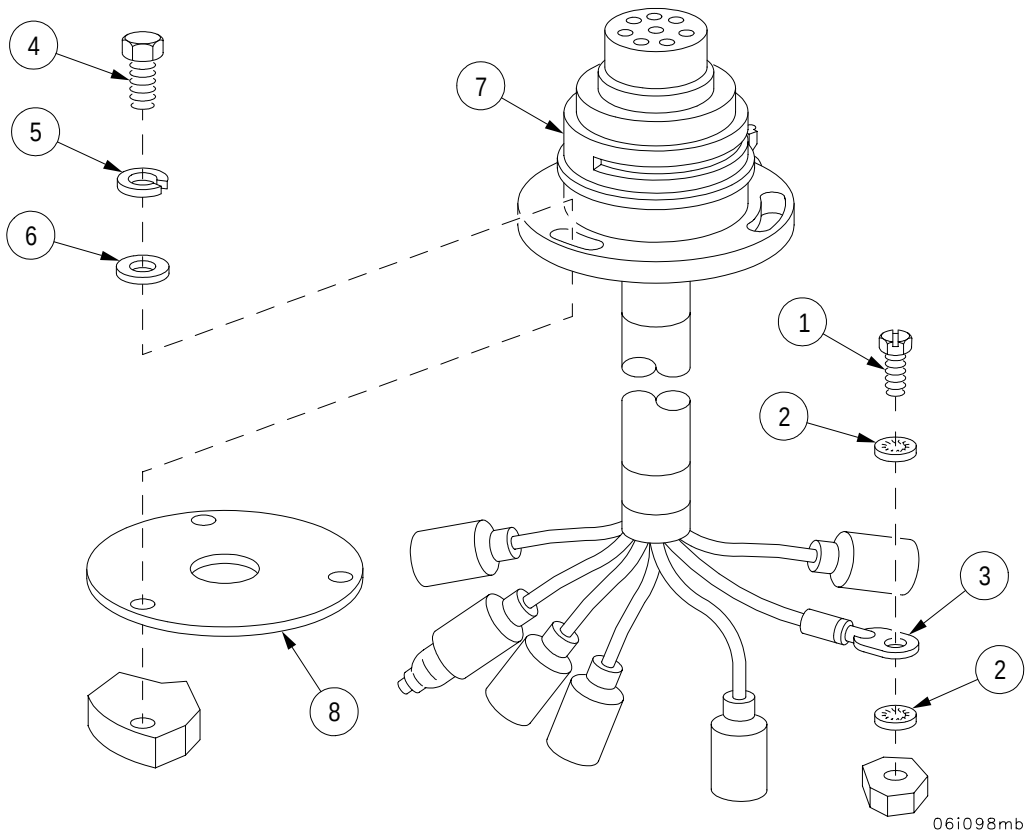
1. Carefully install wiring harness 4W159 (13) into base (11) in accordance with Electrical Schematic FP-1.
2. Install new gasket (12) on base (11).
3. Install spring (9) and two new assembled-washer screws (10) on base (11).



HEADLIGHT BASE ASSEMBLY 4W159 REPAIR - CONTINUED 0274 00

Installation

1. Install headlight base assembly (7) and new gasket (8) on hull with three screws (4), three new lockwashers (5) and three flat washers (6).
2. Install terminal lug (3) on hull with screw (1) and two new lockwashers (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install headlight (WP 0273 00)

END OF TASK

HEADLIGHT SEALED-BEAM, MARKER ASSEMBLY AND INCANDESCENT LAMPS REPLACEMENT 0275 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Main light switch OFF (TM 9-2350-292-10)

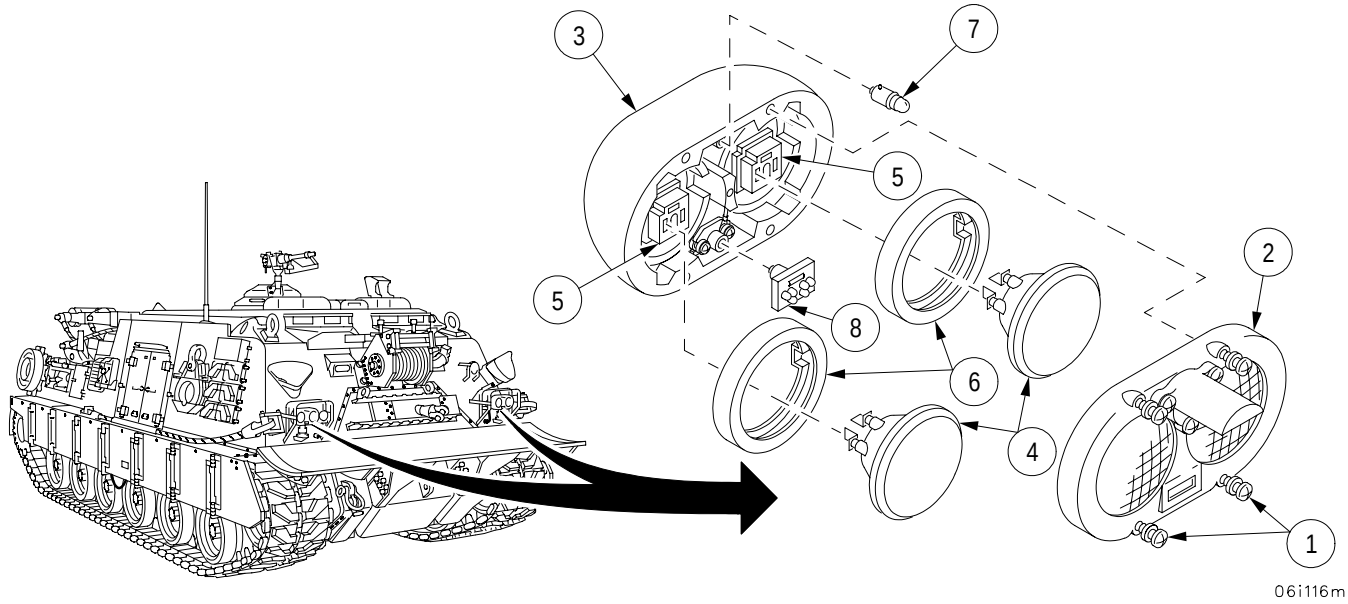
References
TM 9-2350-292-10

NOTE

IR headlights are non-operational and may be used as spare service headlights.

Removal

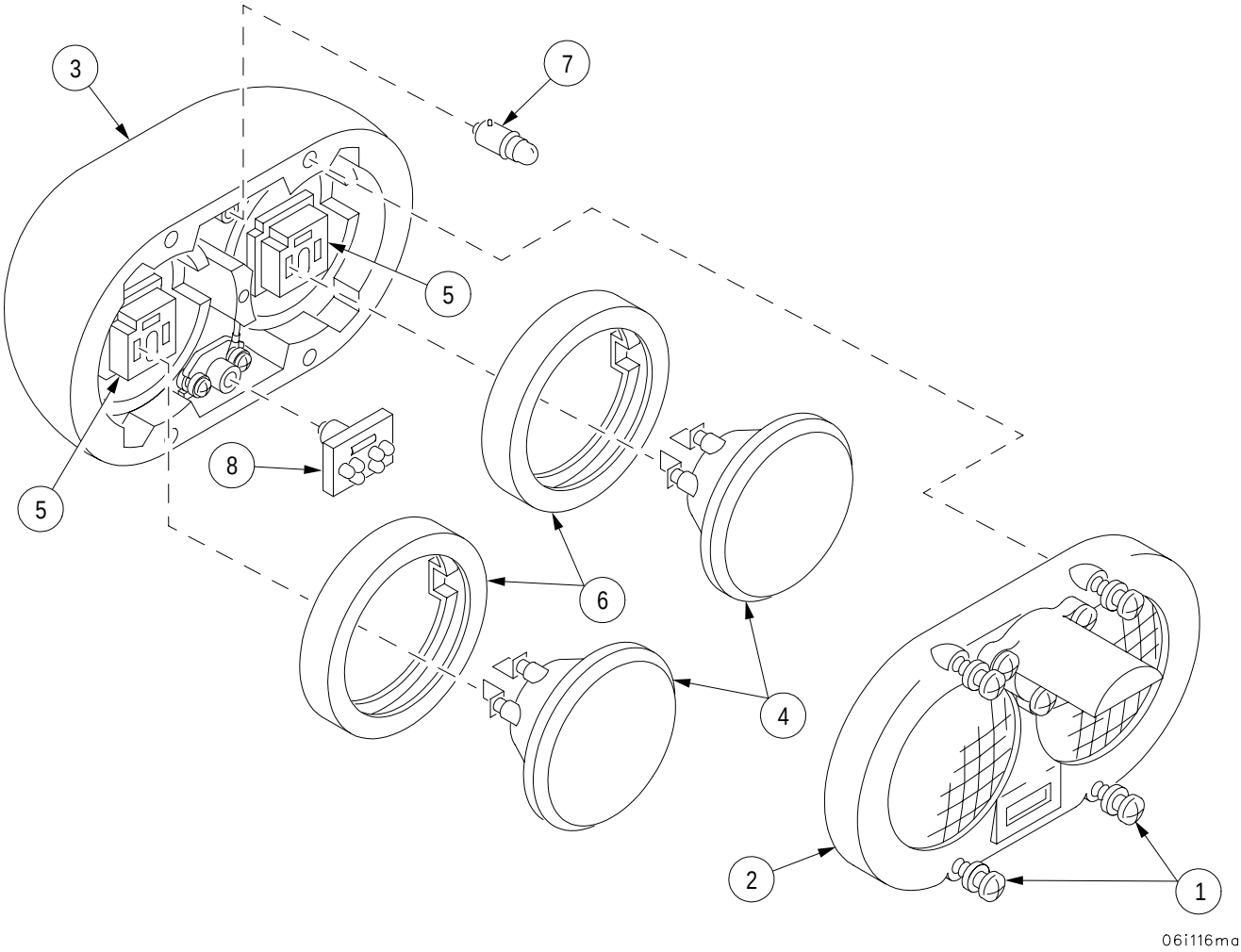
1. Loosen four screws (1) and remove cover (2) from headlight body (3).
2. Remove two sealed-beam units (4) from headlight body (3).
3. Disconnect two electrical connectors (5) from two sealed-beam units (4).
4. Remove two gaskets (6) from two sealed-beam units (4).
5. Remove lamp (7) and marker assembly (8) from headlight body (3).
6. Inspect parts for damage and replace as required.



HEADLIGHT SEALED-BEAM, MARKER ASSEMBLY AND INCANDESCENT LAMPS REPLACEMENT - CONTINUED 0275 00

Installation

1. Install marker assembly (8) and lamp (7) in headlight body (3).
2. Install two gaskets (6) on two sealed-beam units (4).
3. Connect two electrical connectors (5) to two sealed-beam units (4) and install two sealed-beam units (4) in headlight body (3).
4. Install cover (2) on headlight body (3) and secure with four screws (1).



NOTE

FOLLOW-ON MAINTENANCE:
Main light switch ON to test headlights
(TM 9-2350-292-10)

END OF TASK

RIGHT AND LEFT REAR STOP LIGHTS AND STAYLINE CYLINDER ACCESS COVERS REPAIR 0276 00

THIS WORK PACKAGE COVERS:
Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Torque wrench (item 21, WP 0717 00)

Materials/Parts
Lockwashers (4) (item 85, WP 0718 00)
Lockwashers (4) (item 58, WP 0718 00)
Lockwashers (4) (item 11, WP 0718 00)
Gaskets (2) (item 395, WP 0718 00)
Nonmetallic grommets (2) (item 348, WP 0718 00)
Sleeve bushings (4) (item 396, WP 0718 00)
Nonmetallic grommets (4) (item 397, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Materials/Parts-Continued
Dry-cleaning solvent (item 1, WP 0716 00)
Sealing compound (item 16, WP 0716 00)
Lockwashers (4) (item 12, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF
(TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

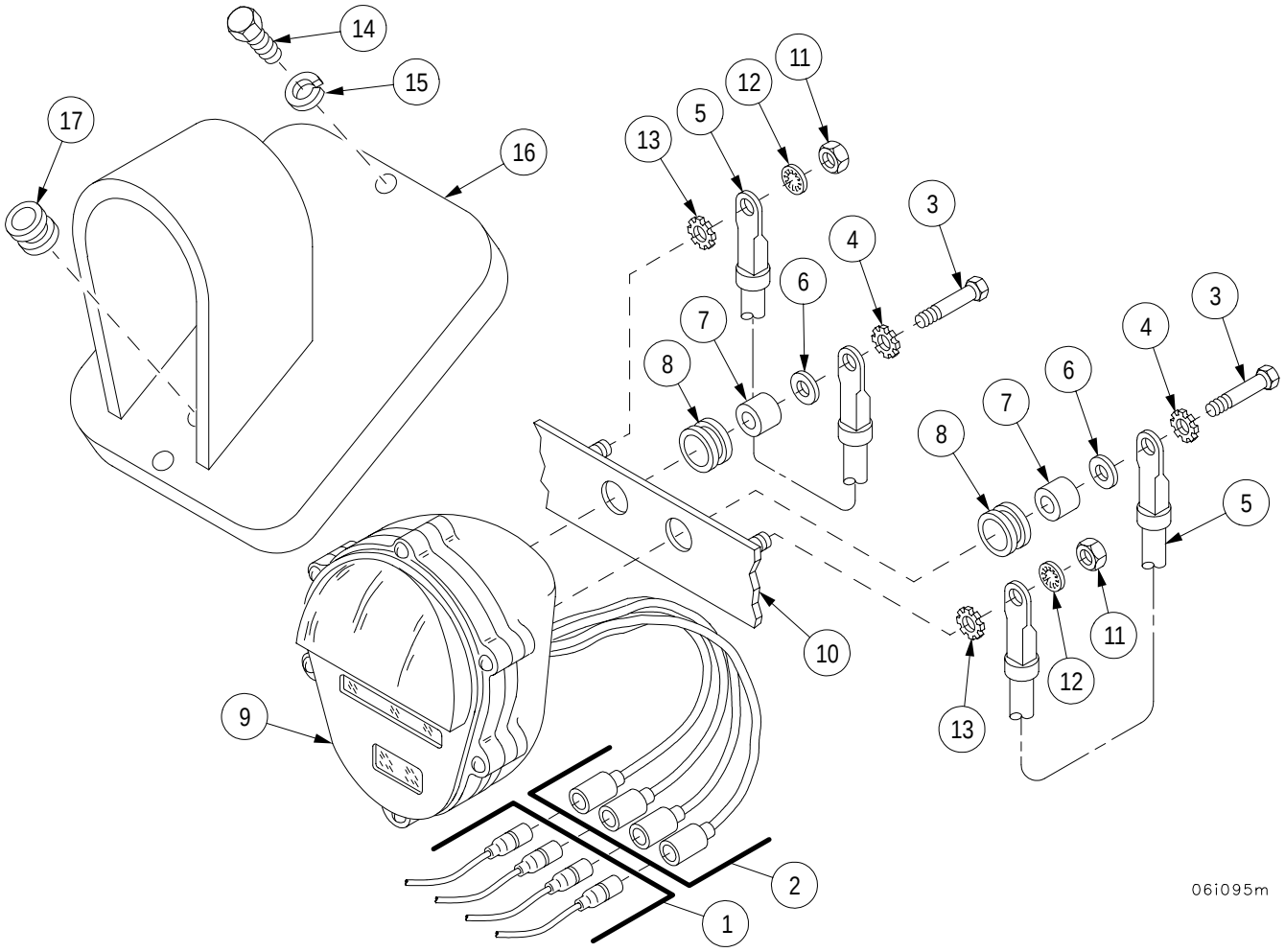
Although the taillights are differentiated for the right and left sides of the vehicle, the Removal and Installation of both are identical. Internal components and procedures for Disassembly and Assembly are the same also.

Perform Removal steps 1 and 5 and installation steps 2 and 6 to access stayline cylinder pins.

RIGHT AND LEFT REAR STOP LIGHTS AND STAYLINE CYLINDER ACCESS COVERS REPAIR - CONTINUED 0276 00

Removal

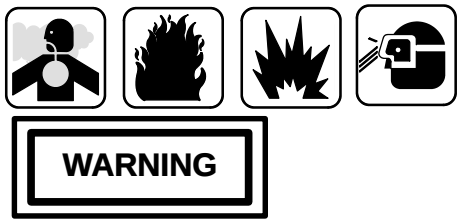
1. Disconnect wiring harness 3W142 wires 24, 23, 21, 22/460 or 22/461 (1) from taillight electrical connectors (2).
2. Remove two screws (3), two lockwashers (4), two lead assemblies 1W134 GND (5), two flat washers (6), two bushings (7), two grommets (8) and taillight assembly (9) from mounting bracket (10). Discard lockwashers, bushings and grommets.
3. Remove two nuts (11), two lockwashers (12), two lead assemblies 1W134 GND (5) and two lockwashers (13) from mounting bracket (10). Discard lockwashers.
4. Remove four screws (14), four lockwashers (15) and two access plates (16) from vehicle. Discard lockwashers.
5. Remove two grommets (17) from two access plates (16). Discard grommets.



RIGHT AND LEFT REAR STOP LIGHTS AND STAYLINE CYLINDER ACCESS COVERS REPAIR - CONTINUED 0276 00

Disassembly

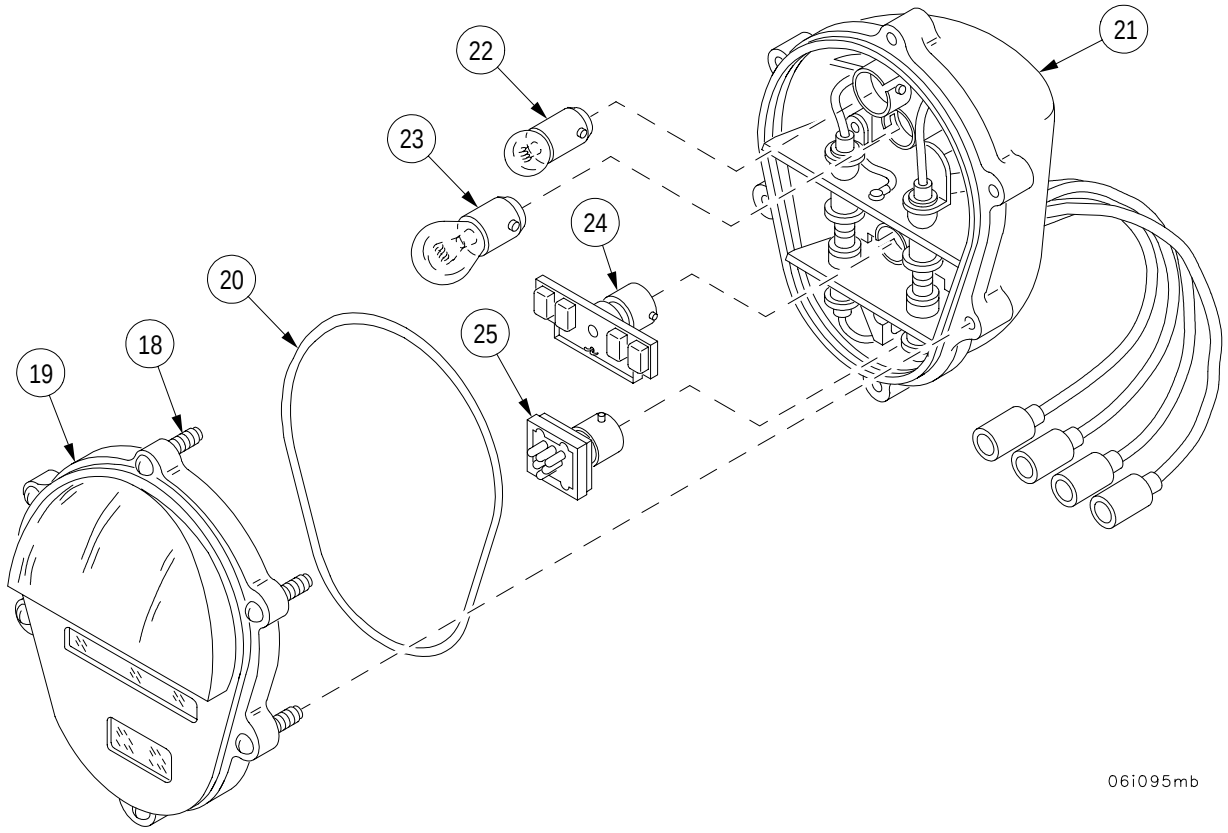
1. Remove six screws (18), door assembly (19) and gasket (20) from body assembly (21). Discard gasket.
2. Remove lamp (22), lamp (23), lamp (24) and lamp (25) from body assembly (21).



3. Clean sealing compound off six screws (18) using dry-cleaning solvent.
4. Inspect parts for damage and replace as required.

Assembly

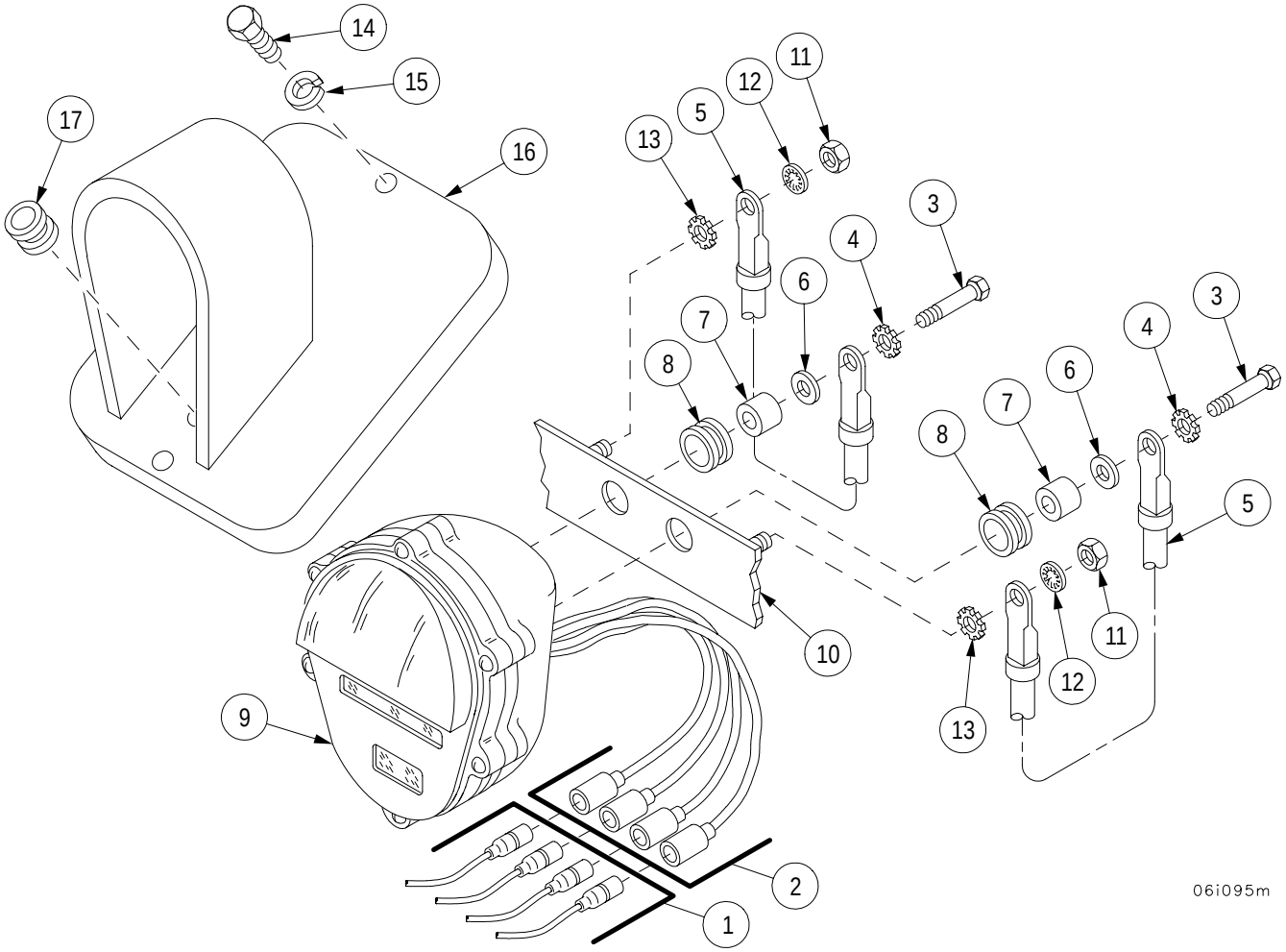
1. Install lamp (25), lamp (24), lamp (23) and lamp (22) to body assembly (21).
2. Apply sealing compound to six screws (18), install door assembly (19) and new gasket (20) on body assembly (21) with six screws (18). Torque screws to 20-25 lb-in (22-28 NSm).



RIGHT AND LEFT REAR STOP LIGHTS AND STAYLINE CYLINDER ACCESS COVERS REPAIR - CONTINUED 0276 00

Installation

1. Install two new grommets (17) in two access plates (16).
2. Install two access plates (16) on vehicle with four screws (14) and four new lockwashers (15).
3. Install two new lockwashers (13), two lead assemblies 1W134 GND (5), two new lockwashers (12) and two nuts (11) on mounting bracket (10).
4. Install taillight assembly (9), two new grommets (8), two new bushings (7), two flat washers (6), two lead assemblies 1W134 GND (5), two new lockwashers (4) and two screws (3) on mounting bracket (10).
5. Connect wiring harness 3W142 wires 24, 23, 21, 22/460 or 22/461 (1) to taillight electrical connectors (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

EMERGENCY FLASHER LAMP ASSEMBLY REPAIR 0277 00

THIS WORK PACKAGE COVERS:

Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts

Lockwasher (item 339, WP 0718 00)
Finishing washer (item 340, WP 0718 00)
Retaining rings (2) (item 341, WP 0718 00)
Electrical contact (item 342, WP 0718 00)
Electrical connector (item 343, WP 0718 00)
Nonmetallic grommet (item 344, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References

TM 9-2350-292-10

NOTE

Perform Disassembly steps 1 through 5 and 7 and Assembly steps 2 through 6 for replacement of headlight only.

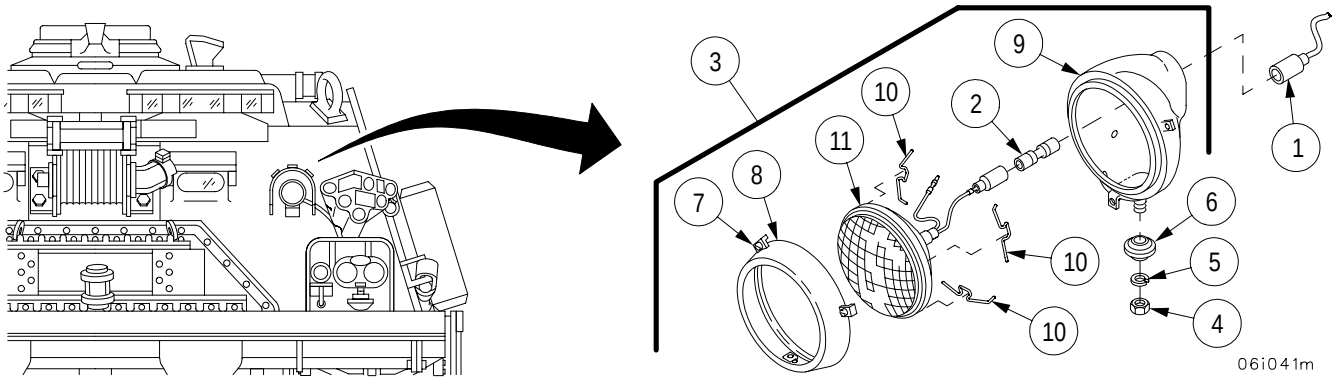
Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

1. Disconnect wiring harness 4W101 wire 325A (1) from electrical connector (2) on rear of lamp assembly (3).
2. Remove nut (4), lockwasher (5), finishing washer (6) and lamp assembly (3) from vehicle. Discard lockwasher and finishing washer.

Disassembly

1. Loosen three screws (7), remove lens retainer (8) from light housing (9).
2. Remove three retaining clips (10) securing headlight (11) in lens retainer (8).



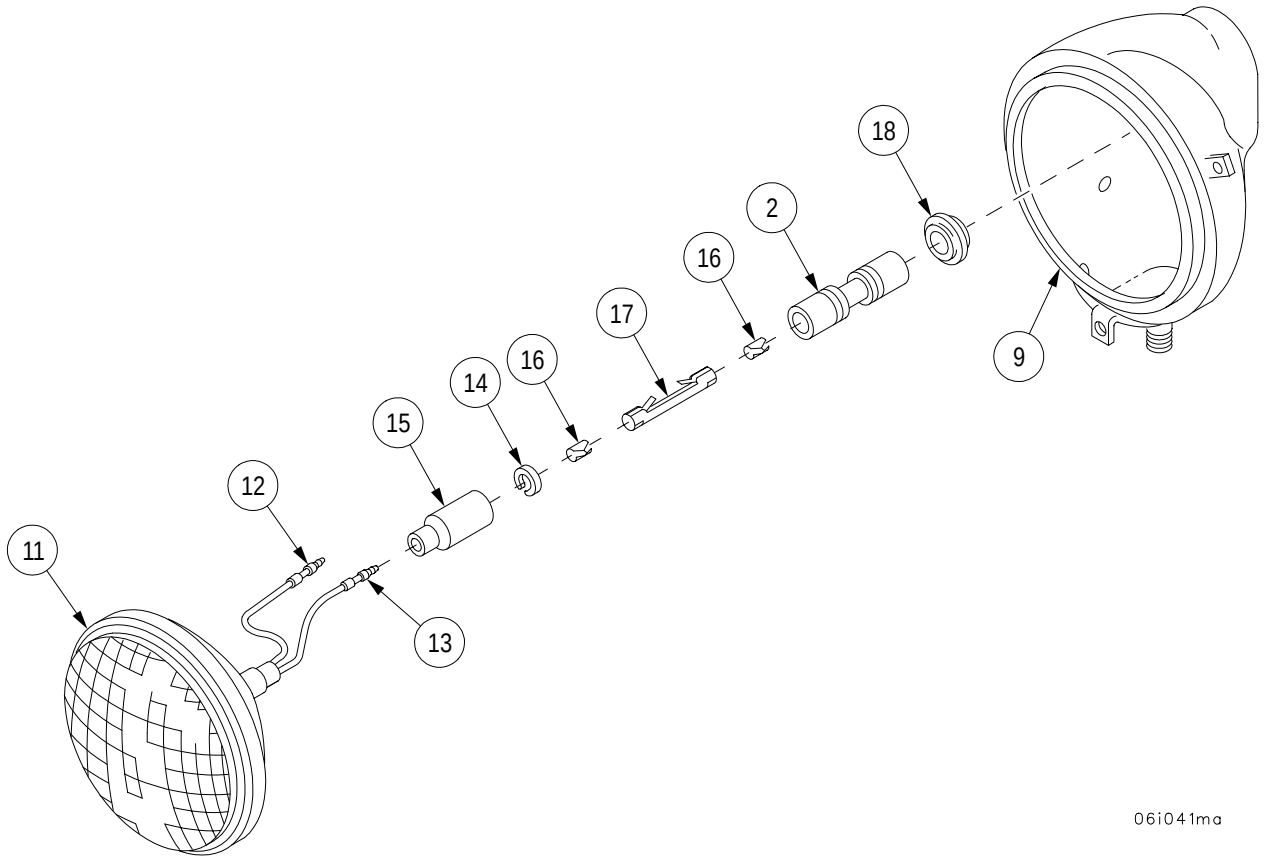
EMERGENCY FLASHER LAMP ASSEMBLY REPAIR - CONTINUED 0277 00

Disassembly-Continued

3. Disconnect lead (12) from light housing (9) ground.
4. Disconnect lead (13) from electrical connector (2), remove headlight (11) from light housing (9).
5. Remove slotted washer (14) and electrical shell (15) from lead (13).
6. Remove two retaining rings (16), electrical contact (17), electrical connector (2) and nonmetallic grommet (18) from rear of light housing (9). Discard retaining rings, electrical contact, electrical connector and nonmetallic grommet.
7. Inspect parts for damage and replace as required.

Assembly

1. Install new nonmetallic grommet (18), new electrical connector (2), two new retaining rings (16) and new electrical contact (17) in rear of light housing (9).
2. Install electrical shell (15) on lead (13) with slotted washer (14).
3. Connect lead (12) to light housing (9) ground.



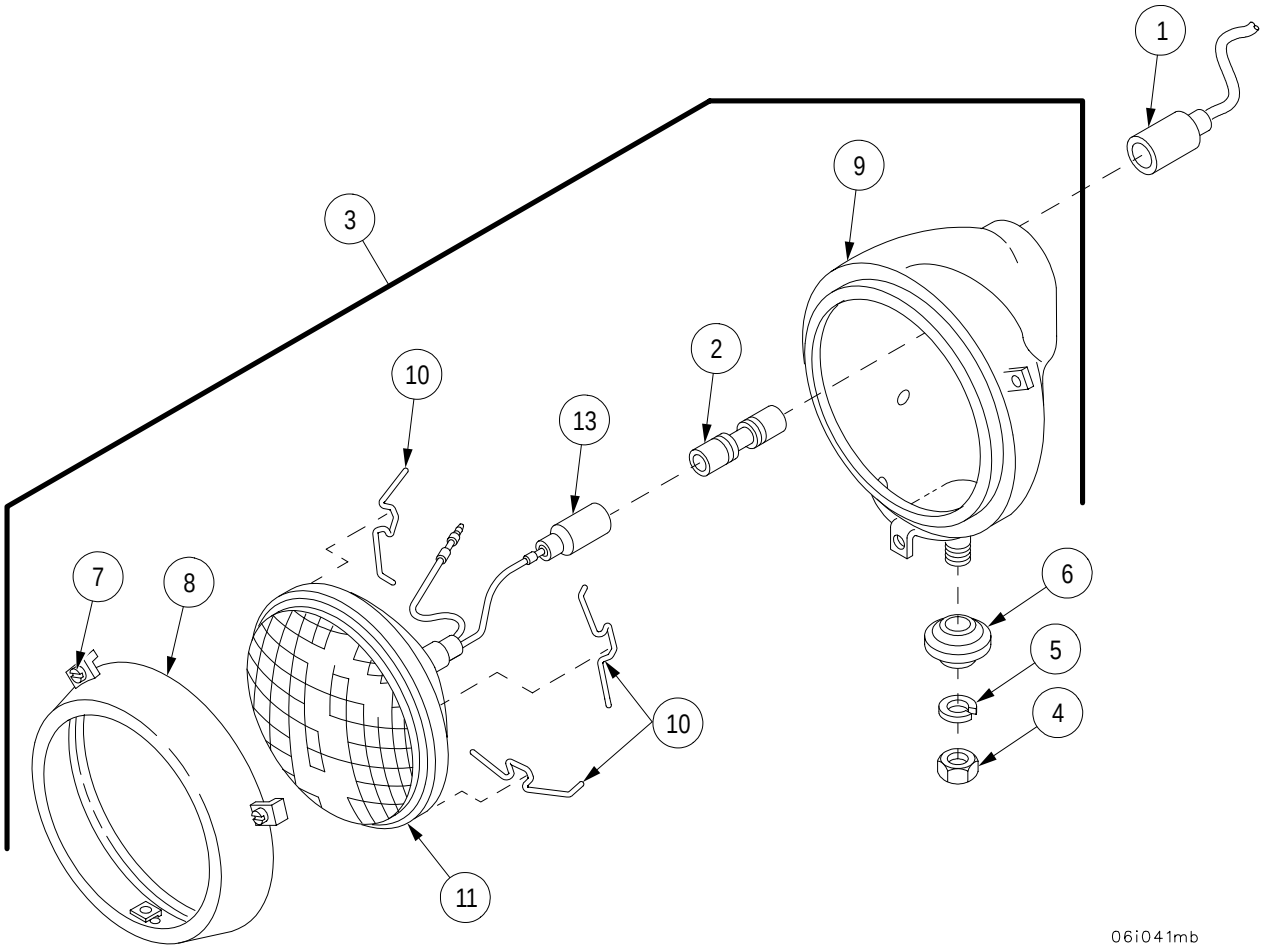
EMERGENCY FLASHER LAMP ASSEMBLY REPAIR - CONTINUED 0277 00

Assembly-Continued

4. Connect lead (13) to electrical connector (2).
5. Install headlight (11) in lens retainer (8) with three retaining clips (10).
6. Install lens retainer (8) on light housing (9) with three screws (7).

Installation

1. Install lamp assembly (3) in vehicle with new finishing washer (6), new lockwasher (5) and nut (4).
2. Connect wiring harness 4W101 wire 325A (1) to electrical connector (2) in rear of light assembly (3).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

TURN SIGNAL LAMP ASSEMBLY REPAIR 0278 00

THIS WORK PACKAGE COVERS:
Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 334, WP 0718 00)
Lockwasher (item 10, WP 0718 00)
Gasket (item 333, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

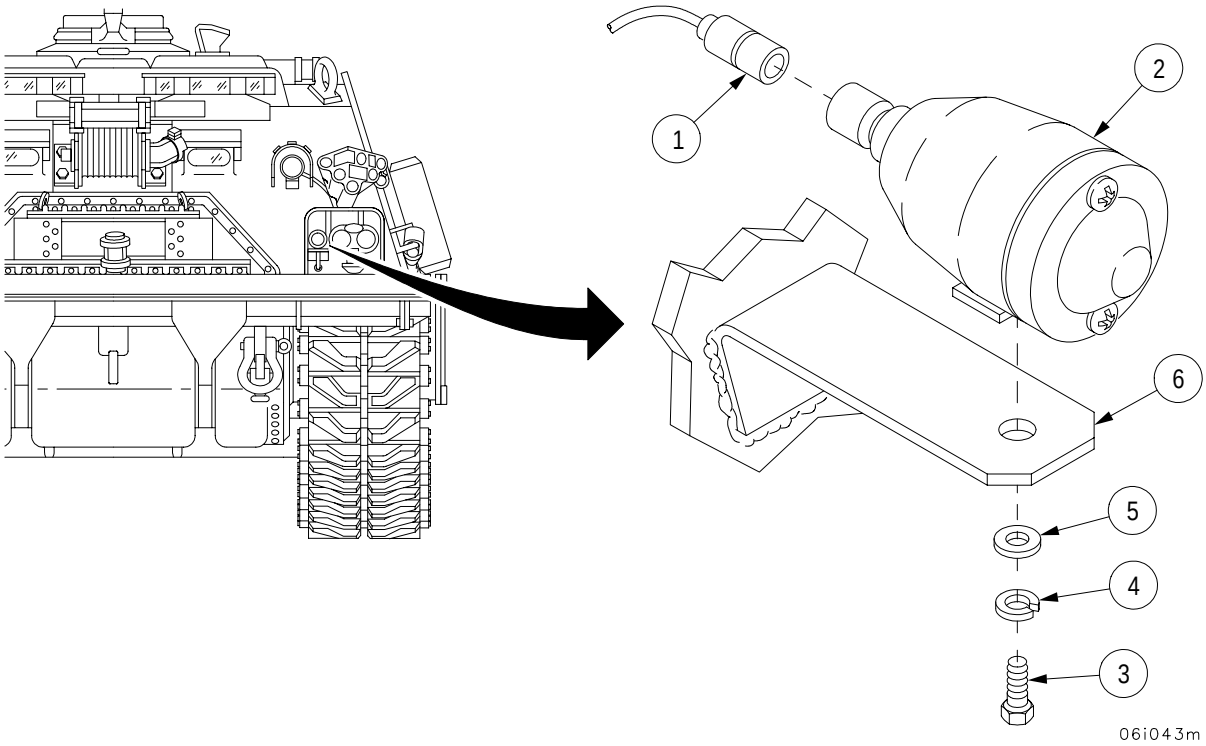
References
TM 9-2350-292-10

NOTE

There are both left and right side turn signal lamp assemblies. This task repairs only one turn signal lamp assembly.

Removal

1. Disconnect wiring harness 4W127 wire 460 or wire 461 (1) from turn signal lamp assembly (2).
2. Remove screw (3), lockwasher (4), flat washer (5) and turn signal lamp assembly (2) from mounting bracket (6). Discard lockwasher.



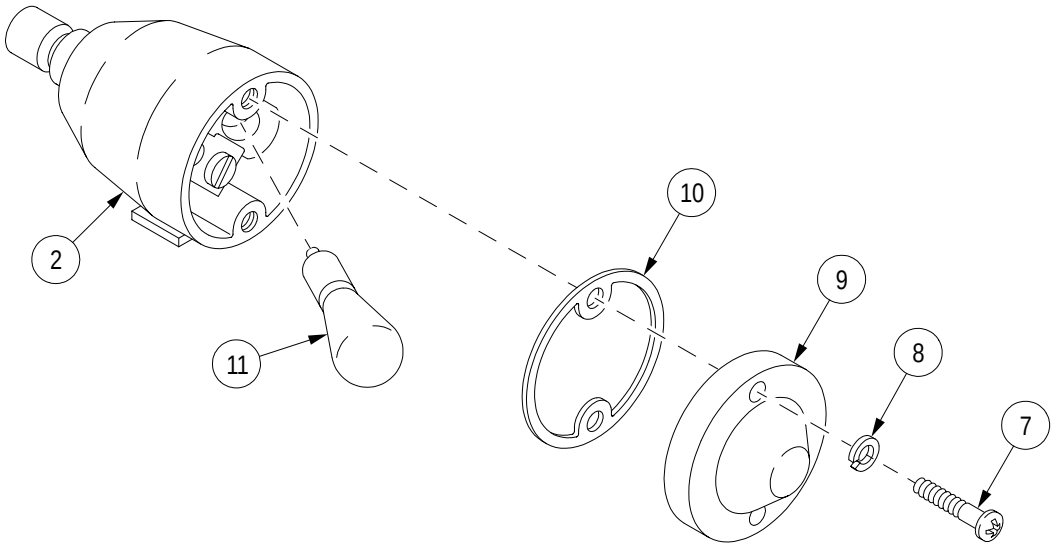
TURN SIGNAL LAMP ASSEMBLY REPAIR - CONTINUED 0278 00

Disassembly

1. Remove two screws (7), two lockwashers (8), lens (9) and gasket (10) from turn signal lamp assembly (2). Discard lockwashers and gasket.
2. Remove lamp (11) from turn signal lamp assembly (2).
3. Inspect parts for damage and replace as required.

Assembly

1. Install lamp (11) in turn signal lamp assembly (2).
2. Install lens (9) and new gasket (10) on turn signal lamp assembly (2) with two screws (7) and two new lockwashers (8).

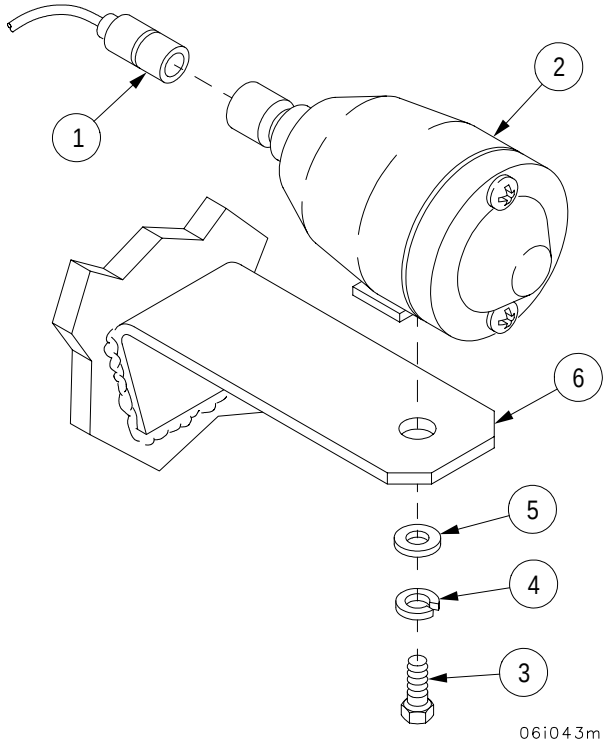


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TURN SIGNAL LAMP ASSEMBLY REPAIR - CONTINUED 0278 00

Installation

1. Install turn signal lamp assembly (2) on mounting bracket (6) with screw (3), new lockwasher (4) and flat washer (5).
2. Connect wiring harness 4W127 wire 460 or 461 (1) to turn signal lamp assembly (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

REAR SERVICE LIGHT REPAIR 0279 00

THIS WORK PACKAGE COVERS:
Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 202, WP 0718 00)
Preformed packing (item 328, WP 0718 00)
Gasket (item 329, WP 0718 00)
Preformed packings (2) (item 330, WP 0718 00)
Lockwasher (item 90, WP 0718 00)
Grommet (item 348, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

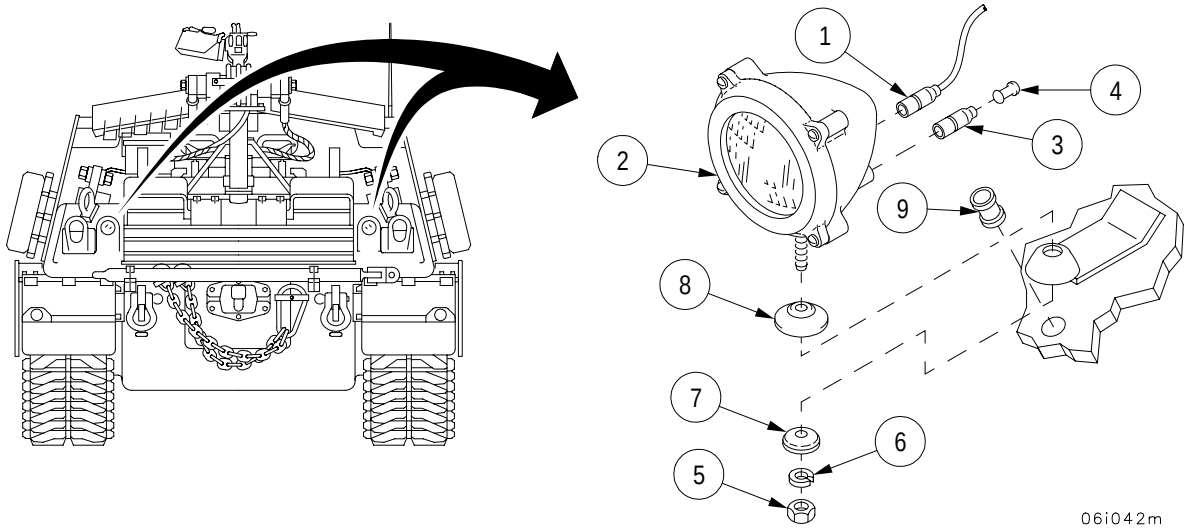
References
TM 9-2350-292-10

Removal

NOTE

There are two service lights on the rear of the vehicle.
This procedure applies to either service light.

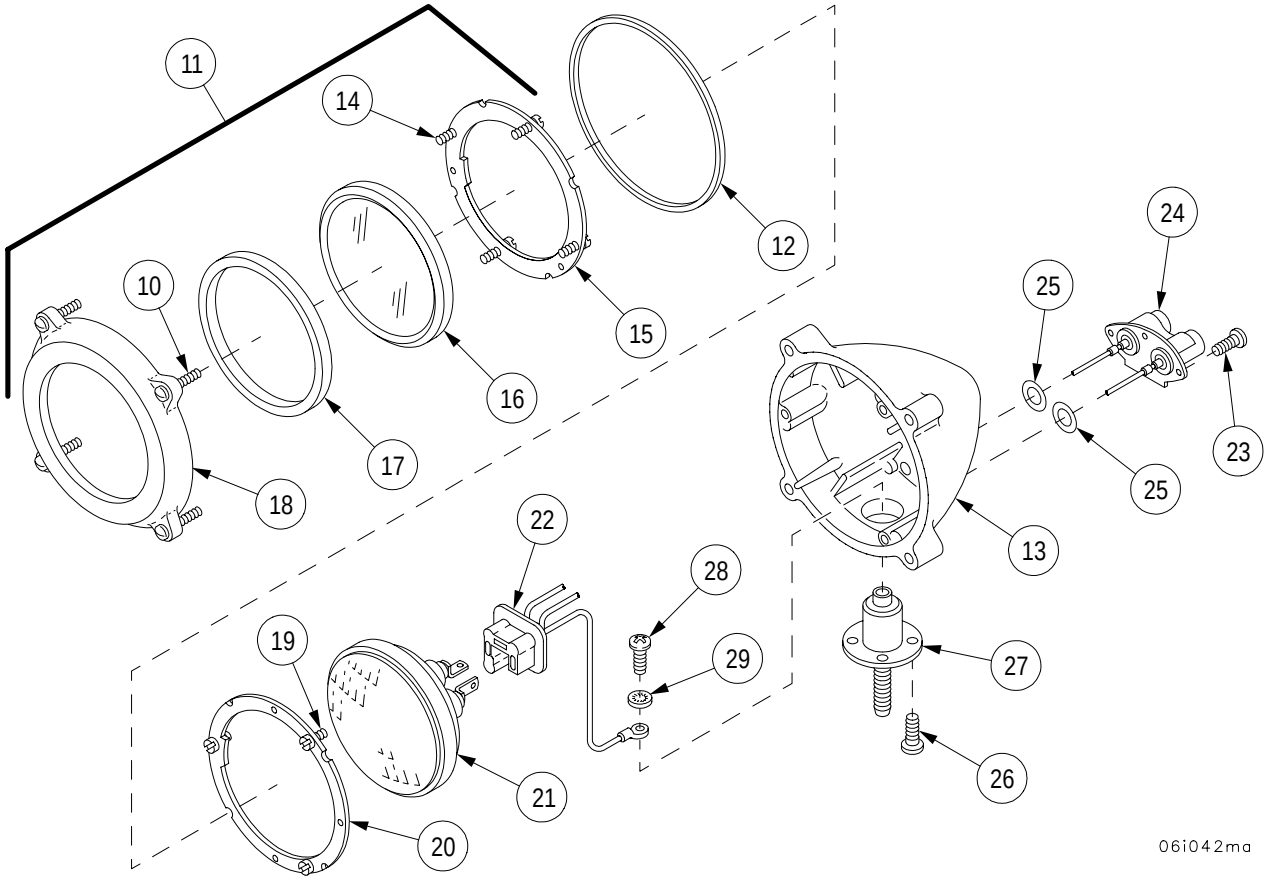
1. Remove wiring harness 3W702 wire 17 (1) from service light assembly (2).
2. Remove connector (3) from service light assembly (2).
3. Remove dummy connector plug (4) from connector (3).
4. Remove nut (5), lockwasher (6), finishing washer (7), recessed washer (8) and service light assembly (2) from vehicle. Discard lockwasher.
5. Remove grommet (9) from vehicle hull. Discard grommet.



REAR SERVICE LIGHT REPAIR - CONTINUED 0279 00

Disassembly

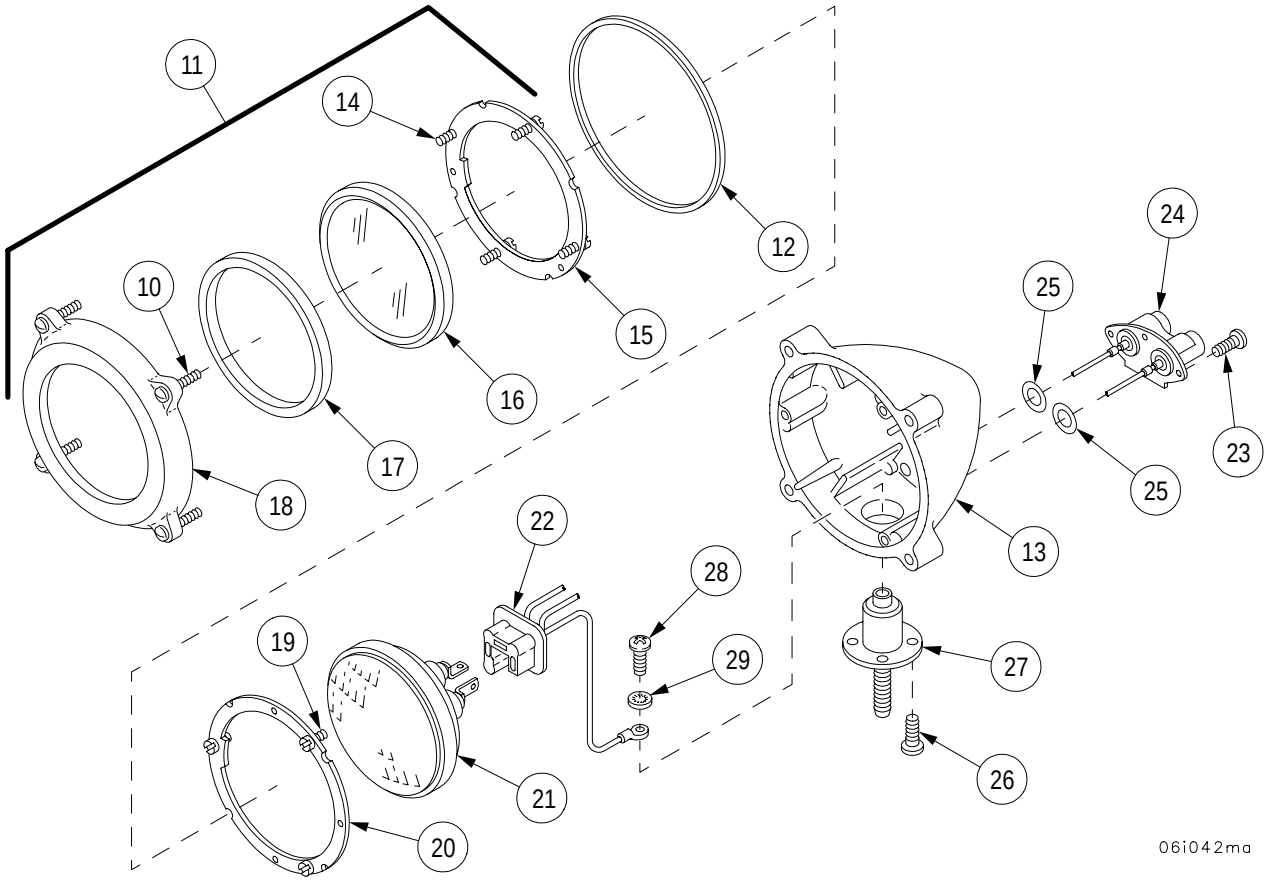
1. Loosen four captive screws (10), remove lens assembly (11) and preformed packing (12) from body (13). Discard preformed packing.
2. Loosen four captive screws (14), remove plate assembly (15), lens (16) and gasket (17) from door assembly (18). Discard gasket.
3. Loosen three captive screws (19), remove plate assembly (20) from body (13).
4. Remove lamp (21) from connector assembly (22).
5. Remove two screws (23) securing connector plate assembly (24) to body (13).
6. Pull connector plate assembly (24) away from body (13), disconnect two leads of connector assembly (22) from connector plate assembly (24) and remove two preformed packings (25). Discard preformed packings.
7. Remove four screws (26) securing mount (27) to body (13).
8. Pull mount (27) out of body (13), remove screw (28), lockwasher (29) and ground lead of connector assembly (22) from mount (27). Discard lockwasher.
9. Inspect parts for damage and replace as required.



REAR SERVICE LIGHT REPAIR - CONTINUED 0279 00

Assembly

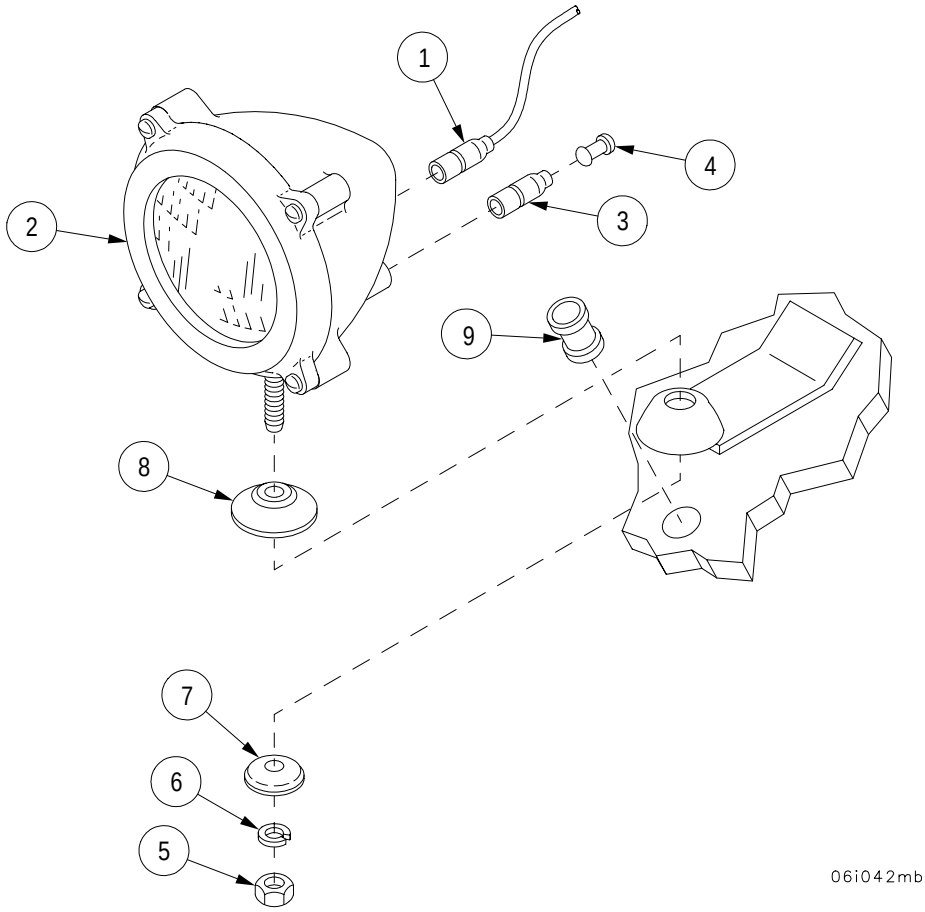
1. Push ground lead of connector assembly (22) through hole in bottom of body (13) and connect to mount (27) with screw (28) and new lockwasher (29).
2. Install four screws (26) securing mount (27) to body (13).
3. Push two leads of connector assembly (22) through holes in rear of body (13), install two new preformed packings (25) and connect leads to connector plate assembly (24).
4. Install connector plate assembly (24) on body (13) with two screws (23).
5. Install lamp (21) in connector assembly (22).
6. Install plate assembly (20) on body (13), tighten three captive screws (19).
7. Install new gasket (17), lens (16) and plate assembly (15) on door assembly (18), tighten four captive screws (14).
8. Install lens assembly (11) and new preformed packing (12) on body (13), tighten four captive screws (10).



REAR SERVICE LIGHT REPAIR - CONTINUED 0279 00

Installation

1. Install new grommet (9) in vehicle hull.
2. Install service light assembly (2) on vehicle with recessed washer (8), finishing washer (7), new lock washer (6) and nut (5).
3. Install dummy connector plug (4) in connector (3).
4. Connect connector (3) to service light assembly (2).
5. Connect wiring harness 3W702 wire 17 (1) to service light assembly (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

TROUBLE LIGHT ASSEMBLY REPAIR 0280 00

THIS WORK PACKAGE COVERS:
Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools
General mechanic's tool kit (item 1, WP 0717 00)
Electrical heat gun (item 34, WP 0717 00)
Soldering gun (item 111, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 38, WP 0718 00)
Lockwasher (item 405, WP 0718 00)
Lockwashers (6) (item 406, WP 0718 00)
Adhesive (item 25, WP 0716 00)
Heat shrink insulation tubing
Solder (item 8, WP 0716 00)
Soldering flux (item 63, WP 0716 00)

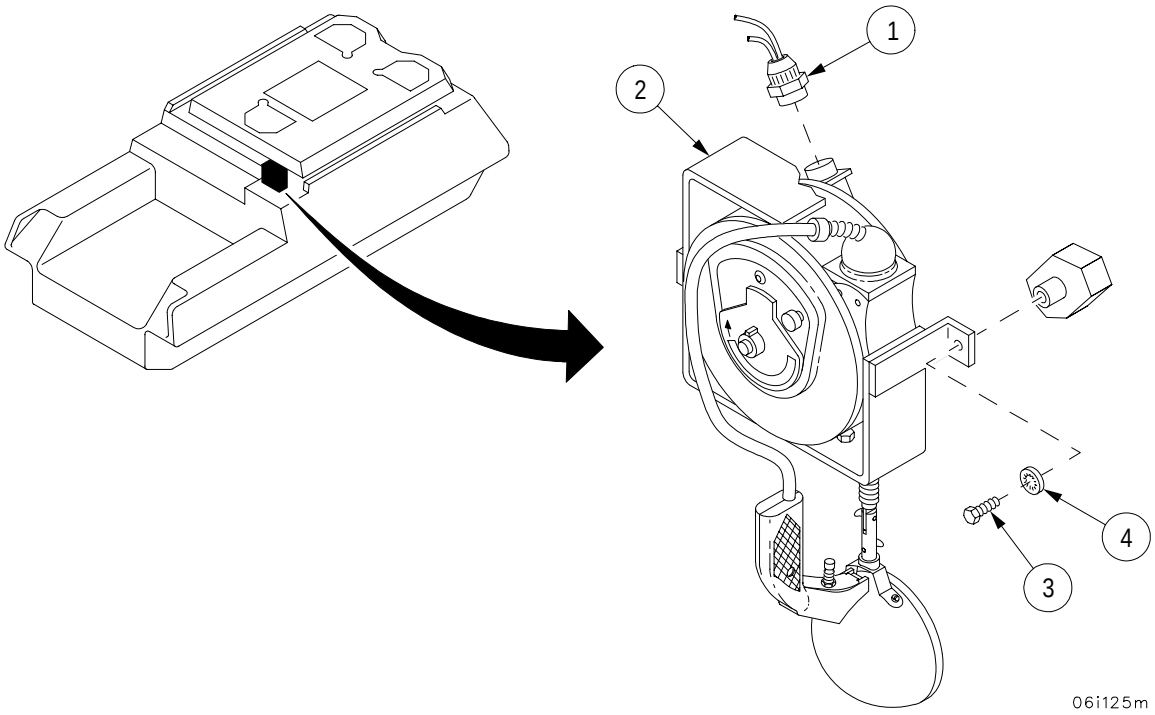
Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

Personnel Required
Two

References
TM 9-2350-292-10
TB-SIG 222

Removal

1. Disconnect wiring harness 4W153 connector P3 (1) from J1 on trouble light assembly (2).
2. Remove two screws (3), two lockwashers (4) and trouble light assembly (2). Discard lockwashers. Ground wire (not shown) from 4W153 connector P3 is installed under one of the two screws (3). Disconnect ground wire when applicable screw is removed and tag to aid in installation.



TROUBLE LIGHT ASSEMBLY REPAIR - CONTINUED 0280 00

Disassembly

NOTE

Perform Disassembly steps 1 through 3 and 14 and Assembly steps 13 through 15 to repair trouble light assembly.

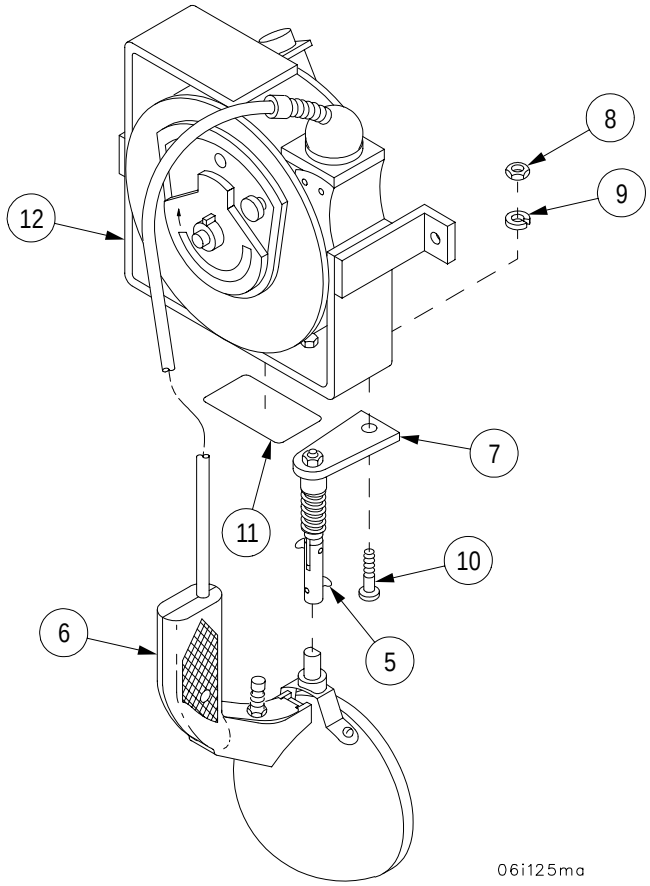
Perform Disassembly steps 4 through 14 and Assembly steps 1 through 12 to repair pistol grip light assembly.

1. Loosen thumbscrew (5) to release pistol grip light (6) from spring bracket assembly (7).
2. Remove nut (8), lockwasher (9), screw (10) and spring bracket assembly (7). Discard lockwasher.

NOTE

Perform step 3 only if nameplate is being replaced.

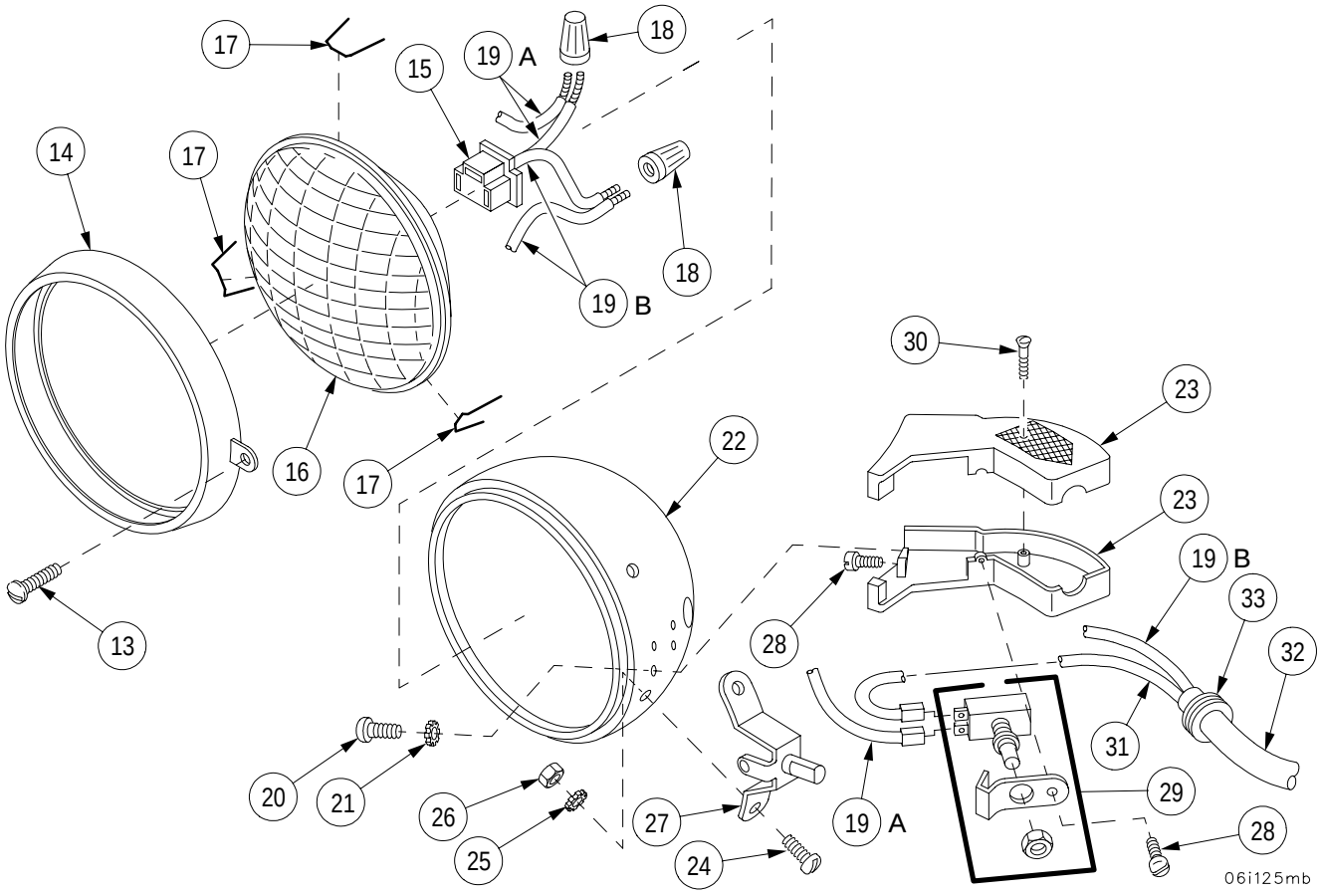
3. Remove nameplate (11) from cord reel (12).



TROUBLE LIGHT ASSEMBLY REPAIR - CONTINUED 0280 00

Disassembly-Continued

4. Remove screw (13) and loosen metal molding (14).
5. Disconnect lamp socket (15) from lamp (16).
6. Remove three wire clips (17) securing lamp (16) into metal molding (14). Separate lamp (16) from metal molding (14).
7. Disconnect wire splices (18) from wires (19). Separate wires and tag individual wires to aid assembly. Remove lamp socket (15).
8. Remove four screws (20) and four lockwashers (21) from shell (22). Thread disconnected wires (19) through shell (22) and separate shell from pistol grip handle (23). Discard lockwashers.
9. Remove two screws (24), two lockwashers (25), two nuts (26) and saddle bracket assembly (27). Discard lockwashers.
10. Remove two screws (28) to loosen switch and bracket assembly (29).
11. Remove screw (30) and separate pistol grip handle (23).
12. Unsolder, remove and tag wires (31) and (19) attached to switch. Remove switch and bracket assembly (29).
13. If necessary, remove cord reel cable (32) with attached cable retainer (33) from pistol grip handle (23).
14. Inspect parts for damage and replace as required.



TROUBLE LIGHT ASSEMBLY REPAIR - CONTINUED 0280 00

Assembly

NOTE

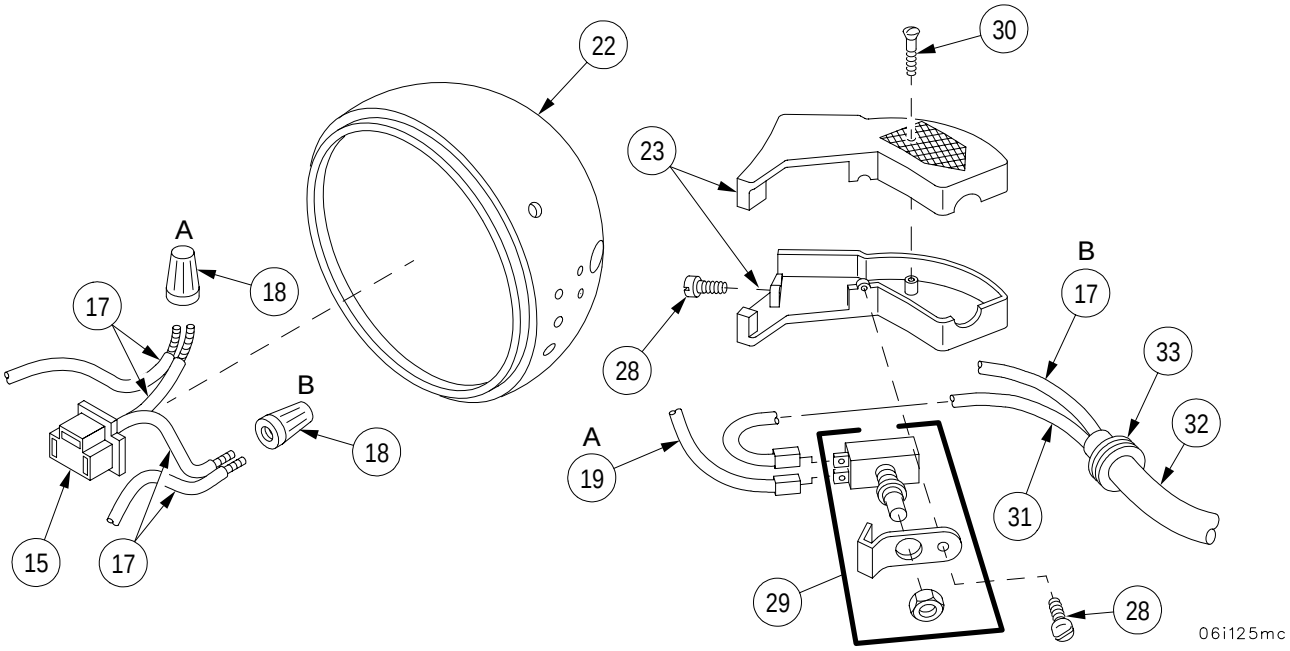
Before proceeding, see detailed instructions on soldering and solder (TB SIG 222).

1. If previously removed, install cable retainer (33) on cord reel cable (32).
2. Install shrink tubing in accordance with WP 0290 00.
3. Solder one wire (31) of cord reel cable (32) to switch terminal of switch and bracket assembly (29). Solder second wire (19) from wire splice A (18) in shell (22) to other switch terminal.
4. Install switch and bracket assembly (29) to bottom half of pistol grip handle (23) with two screws (28).
5. Lay cord reel cable (32) with cable retainer (33) on inside of bottom half of handle (23). Ensure remaining wire of cord reel cable is of sufficient length to reach through the handle to wire splice B (18) in shell (22).

CAUTION

Do not pinch wires during handle assembly.

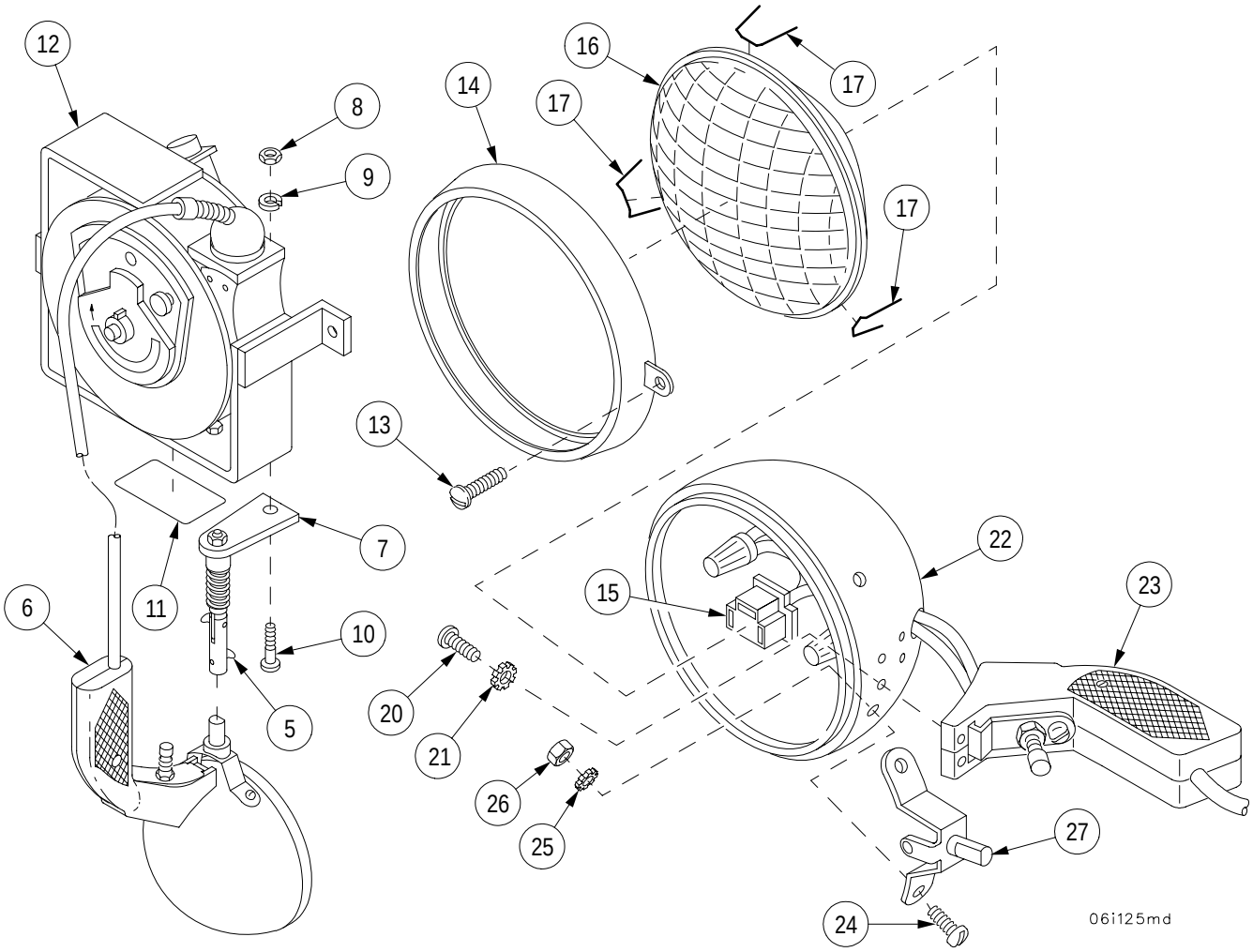
6. Position top half of pistol grip handle (23) over bottom half of handle and fasten together with screw (30).
7. Feed wires from handle through large hole in shell (22) and together with wires from lamp socket (15) connect wires (19) with wire splices (18). Connect wires according to tags previously attached during disassembly.



TROUBLE LIGHT ASSEMBLY REPAIR - CONTINUED 0280 00

Assembly-Continued

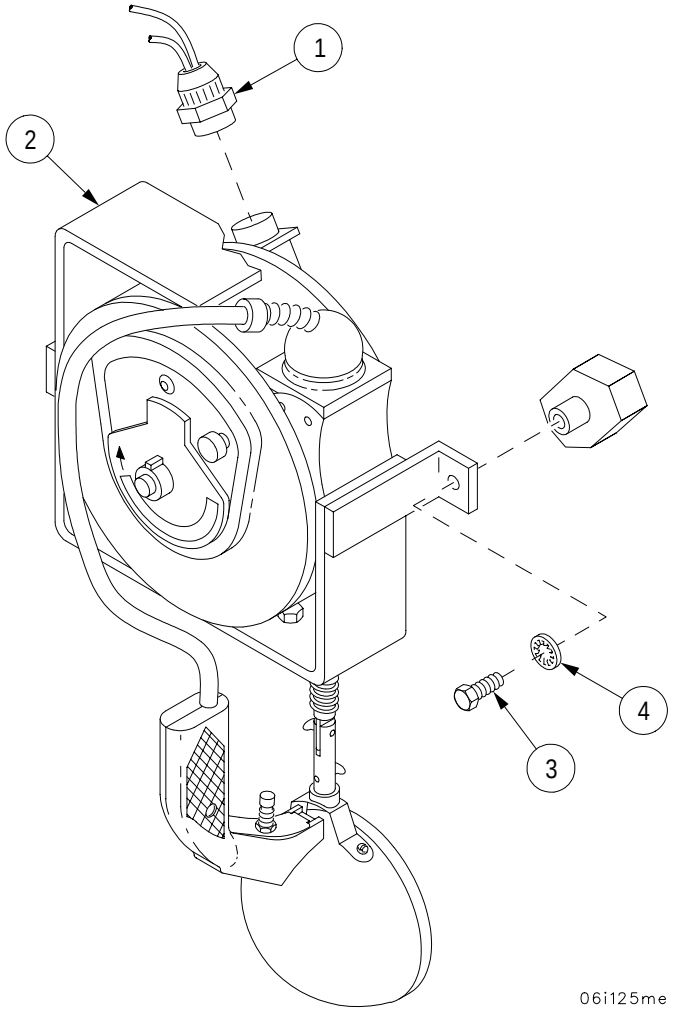
8. Install shell (22) to pistol grip handle (23) with four screws (20) and four new lockwashers (21).
9. Install saddle bracket assembly (27) to shell (22) with two screws (24), two new lockwashers (25) and two nuts (26).
10. Position lamp (16) in metal molding (14) and secure with three wire clips (17).
11. Connect lamp socket (15) to lamp (16) in metal molding (14).
12. Install metal molding (14) to shell (22) with screw (13).
13. If previously removed, attach nameplate (11) in same location on cord reel (12) as before. Use adhesive to fasten nameplate (11) to cord reel (12).
14. Install spring bracket assembly (7) with screw (10), new lockwasher (9) and nut (8).
15. Position pistol grip light (6) on spring bracket assembly (7) and fasten with thumbscrew (5).



TROUBLE LIGHT ASSEMBLY REPAIR - CONTINUED 0280 00

Installation

1. Install trouble light assembly (2) with two screws (3) and two new lockwashers (4). Install ground wire (tagged during removal) under applicable screw.
2. Connect wiring harness 4W153 connector P3 (1) to J1 on trouble light assembly (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

SPOTLIGHT REPAIR 0281 00

THIS WORK PACKAGE COVERS:
Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Torque wrench (item 2, WP 0717 00)
Torque wrench (item 21, WP 0717 00)

Materials/Parts
Lockwasher (item 410, WP 0718 00)
Headless grooved pin (item 411, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

NOTE

Perform Disassembly steps 1 through 4 and 10 and Assembly steps 6 through 9 for maintenance of bulb.

Removal

1. Disconnect spotlight connector (1) from wiring harness 4W153 wire 138 (2).
2. Loosen wedge screw (3) from wedge bushing (4), remove handle (5) from long housing and tube assembly (6).
3. Loosen packing nut (7) and bushing (8) from nut (9), carefully slide long housing and tube assembly (6) out through tube mounting bracket (10) in crew compartment overhead.

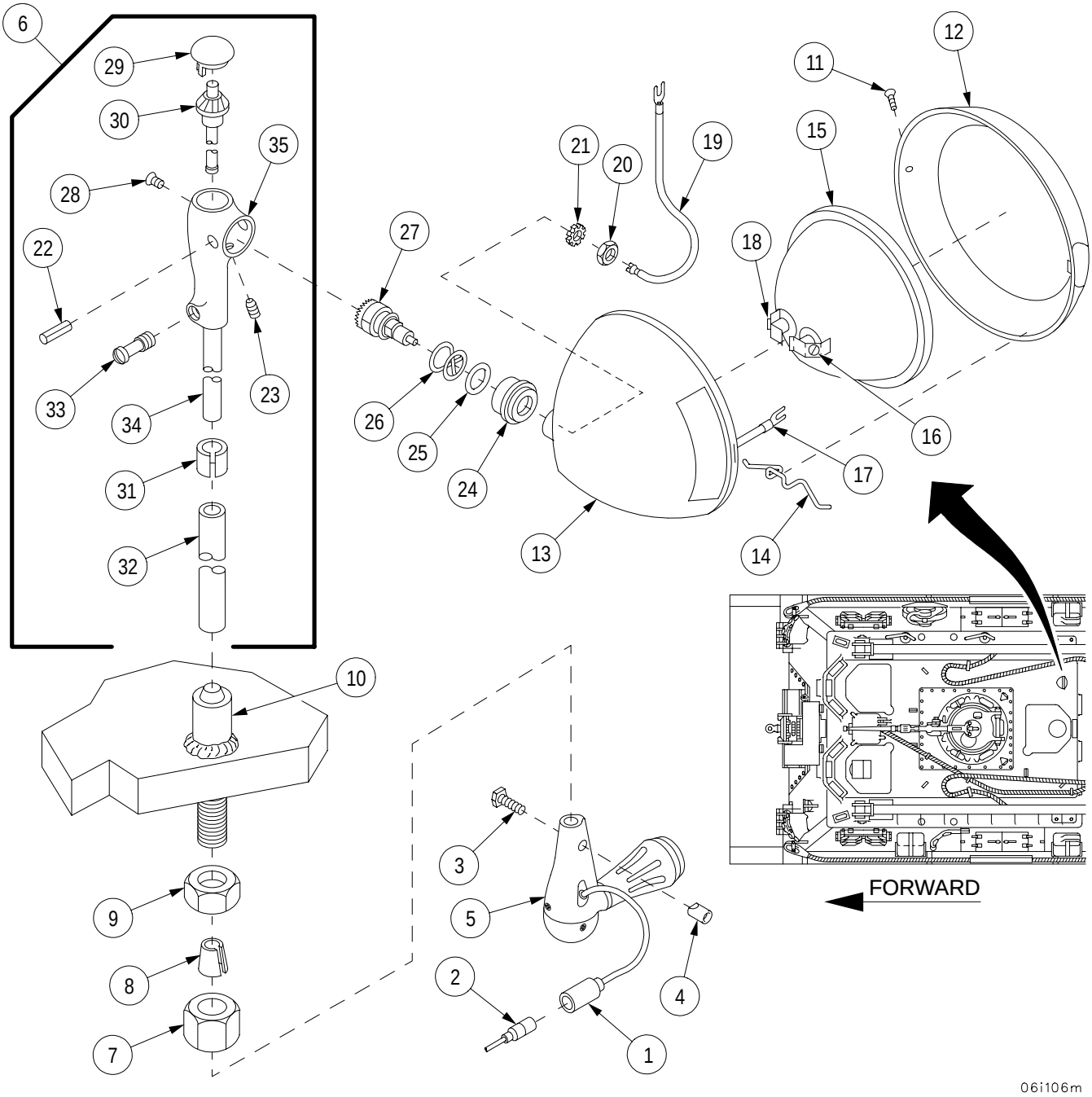
Disassembly

1. Remove screw (11) and ring (12) from shell (13).
2. Remove four springs (14) and bulb (15) from shell (13).
3. Loosen screw (16), remove ground wire (17) from bulb (15).
4. Loosen screw (18), remove wire lead (19) from bulb (15).
5. Remove nut (20), lockwasher (21) and shell (13) from long housing and tube assembly (6). Discard lockwasher.
6. Remove headless grooved pin (22), set screw (23), head post bushing (24), shim washer (25), spring (26) and head post (27) from long housing and tube assembly (6). Discard headless grooved pin.
7. Remove screw (28), cap (29) and inner tube assembly (30).

SPOTLIGHT REPAIR - CONTINUED 0281 00

Disassembly-Continued

8. Remove bushing (31) from tube (32).
9. Loosen screw (33), remove tube (32) and outside tube (34) from housing (35).
10. Inspect parts for damage and replace as required.



SPOTLIGHT REPAIR - CONTINUED 0281 00

Assembly

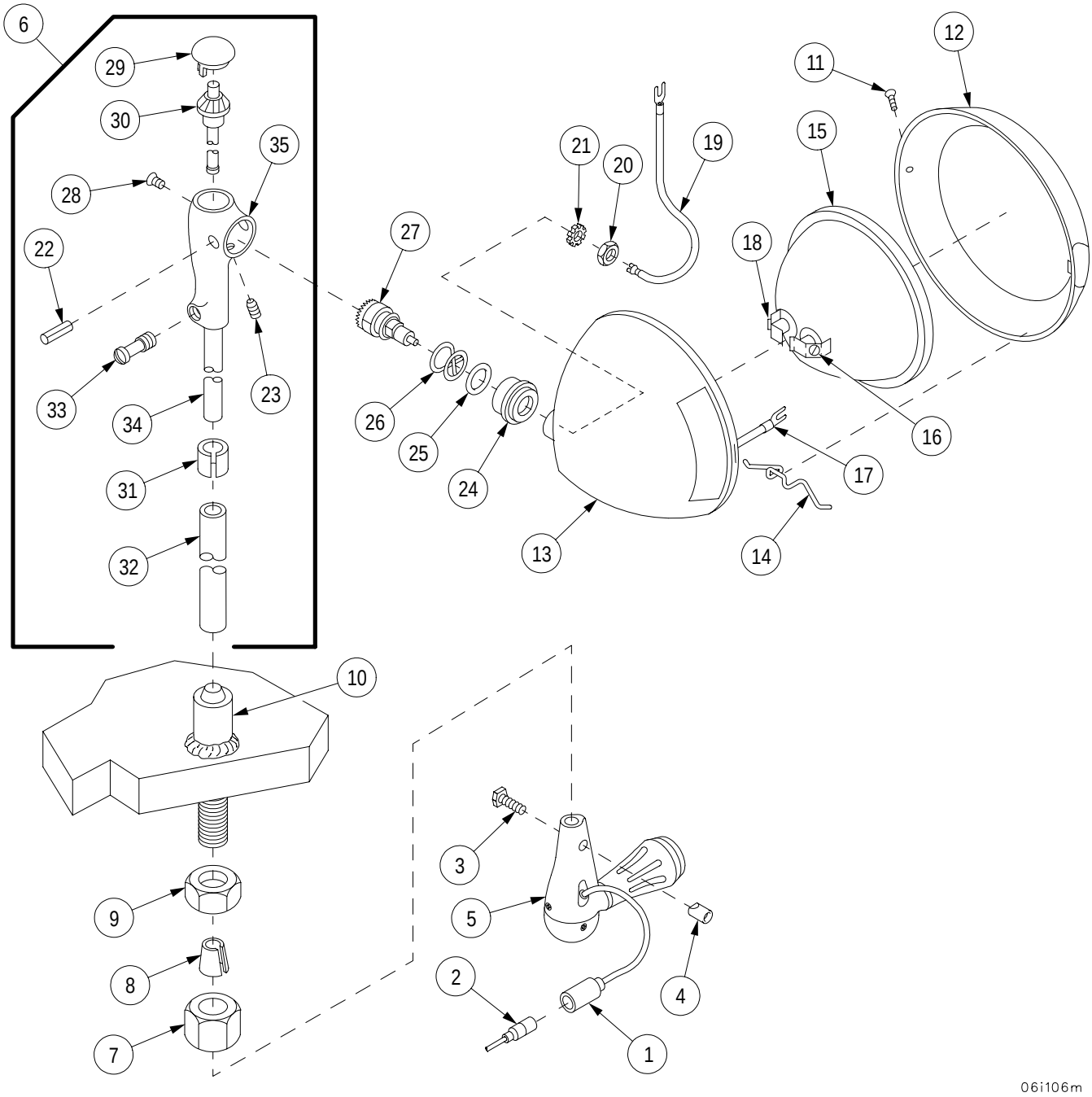
1. Install tube (32) and outside tube (34) in housing (35). Tighten screw (33) until secure. Do not overtighten.
2. Place bushing (31) on tube (32).
3. Install inner tube assembly (30), cap (29) and screw (28) in outside tube (34).
4. Install head post (27), spring (26), shim washer (25), head post bushing (24), set screw (23) and new headless grooved pin (22) in long housing and tube assembly (6).
5. Install shell (13), new lockwasher (21) and nut (20) on long housing and tube assembly (6).
6. Install end of wire lead (19) to bulb (15). Tighten screw (18).
7. Install ground wire (17) to bulb (15). Tighten screw (16).
8. Install bulb (15) and four springs (14) in shell (13).
9. Install ring (12) and screw (11) on shell (13).

Installation

1. Install long housing and tube assembly (6) in mounting bracket (10), tighten packing nut (7) and bushing (8) to nut (9). Torque nut (7) to 43 to 53 lb-ft (58.3 to 71.9 NSm).
2. Install handle (5) on long housing and tube assembly (6), tighten wedge screw (3) and wedge bushing (4). Torque wedge screw (3) to 55 lb-in (6.2 NSm).
3. Attach spotlight connector (1) to wiring harness 4W153 wire 138 (2).

SPOTLIGHT REPAIR - CONTINUED 0281 00

Installation-Continued



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

WINCH ILLUMINATION LAMP ASSEMBLY REPAIR 0282 00

THIS WORK PACKAGE COVERS:

Removal, Disasembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts

Lockwasher (item 339, WP 0718 00)
Finishing washer (item 340, WP 0718 00)
Retaining rings (2) (item 341, WP 0718 00)
Electrical contact (item 342, WP 0718 00)
Electrical connector (item 343, WP 0718 00)
Nonmetallic grommet (item 344, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References

TM 9-2350-292-10

NOTE

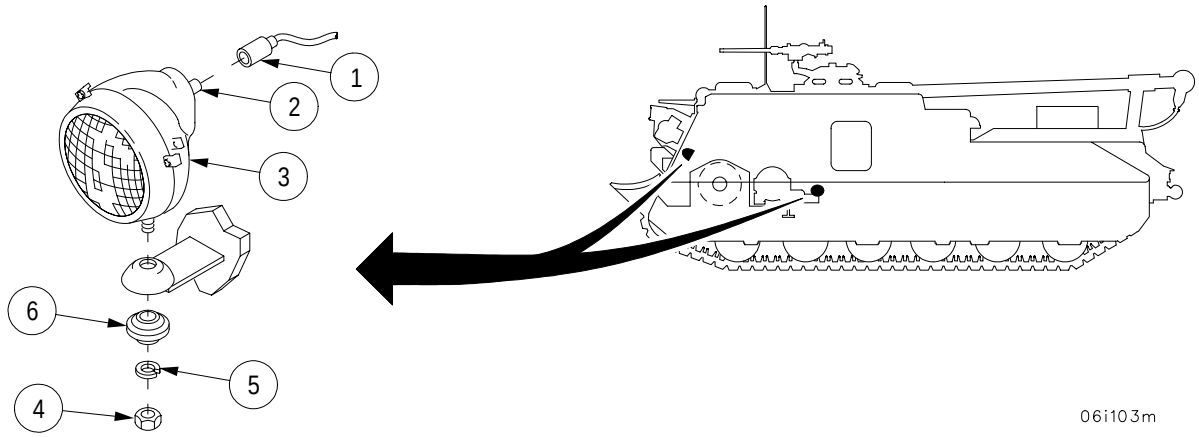
Perform Disassembly steps 1 through 5 and 7 and Assembly steps 2 through 6 for replacement of headlight only.

Tag all electrical connections and electrical leads prior to removal to aid in installation.

There are two winch lights, one each for the main winch and the hoist winch. Both are removed, disassembled/assembled and installed in the same manner.

Removal

1. Disconnect wiring harness 4W153 wire 518 (1) from electrical connector (2) on rear of lamp assembly (3).
2. Remove nut (4), lockwasher (5), finishing washer (6) and lamp assembly (3) from vehicle. Discard lockwasher and finishing washer.



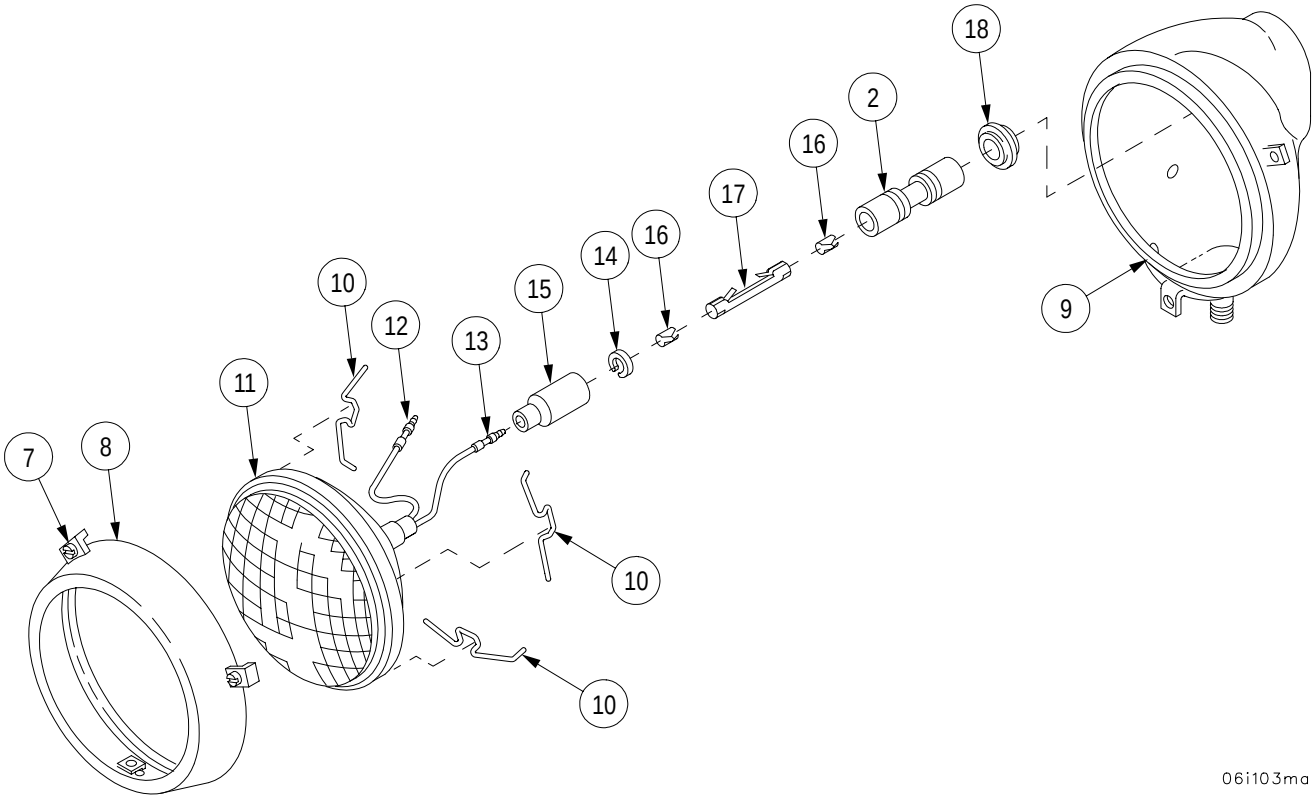
WINCH ILLUMINATION LAMP ASSEMBLY REPAIR - CONTINUED 0282 00

Disassembly

1. Loosen three screws (7), remove lens retainer (8) from light housing (9).
2. Remove three retaining clips (10) securing headlight (11) in lens retainer (8).
3. Disconnect lead (12) from light housing (9) ground.
4. Disconnect lead (13) from electrical connector (2), remove headlight (11) from light housing (9).
5. Remove slotted washer (14) and electrical shell (15) from lead (13).
6. Remove two retaining rings (16), electrical contact (17), electrical connector (2) and nonmetallic grommet (18) from rear of light housing (9). Discard retaining rings, electrical contact, electrical connector and nonmetallic grommet.
7. Inspect parts for damage and replace as required.

Assembly

1. Install new nonmetallic grommet (18), new electrical connector (2), two new retaining rings (16) and new electrical contact (17) in rear of light housing (9).
2. Install electrical shell (15) on lead (13) with slotted washer (14).
3. Connect lead (12) to light housing (9) ground.



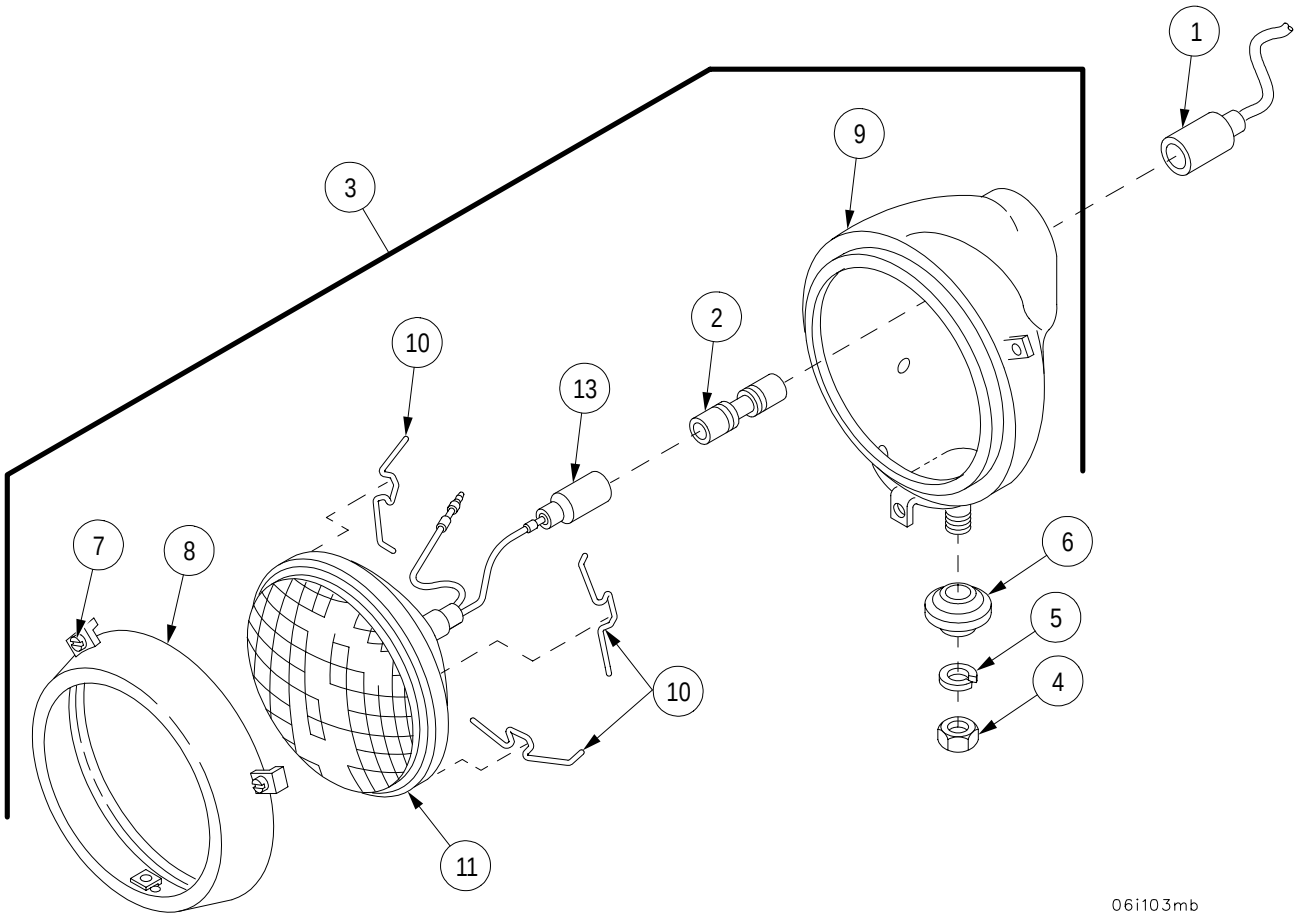
WINCH ILLUMINATION LAMP ASSEMBLY REPAIR - CONTINUED 0282 00

Assembly-Continued

4. Connect lead (13) to electrical connector (2).
5. Install headlight (11) in lens retainer (8) with three retaining clips (10).
6. Install lens retainer (8) on light housing (9) with three screws (7).

Installation

1. Install lamp assembly (3) in vehicle with new finishing washer (6), new lockwasher (5) and nut (4).
2. Connect wiring harness 4W153 wire 518 (1) to electrical connector (2) in rear of light assembly (3).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

DOME LIGHT ASSEMBLY REPAIR 0283 00

THIS WORK PACKAGE COVERS:

Removal, Disassembly, Assembly, Installation

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts

Lockwashers (4) (item 85, WP 0718 00)
Lockwashers (5) (item 312, WP 0718 00)
Gasket (item 320, WP 0718 00)
Nonmetallic seal (item 321, WP 0718 00)
Lockwashers (2) (item 322, WP 0718 00)
Nonmetallic seal (item 323, WP 0718 00)
Gasket (item 324, WP 0718 00)
Preformed packing (item 325, WP 0718 00)
Sealing compound (item 78, WP 0716 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions

Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References

TM 9-2350-292-10

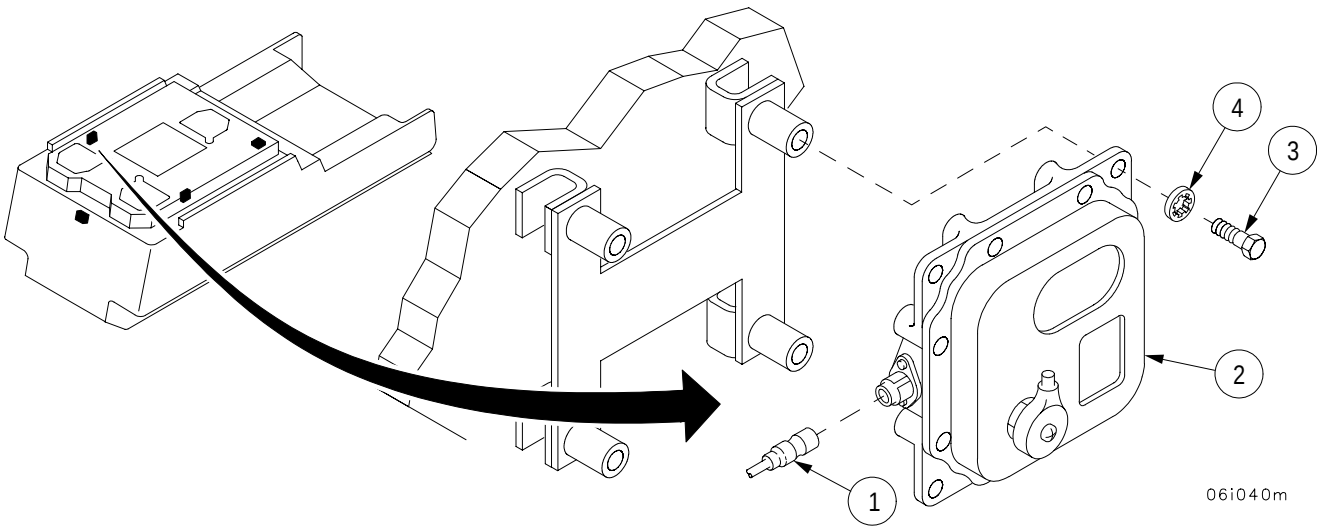
NOTE

There are four dome light assemblies. This task repairs only one dome light assembly.

Tag all electrical components and all electrical leads prior to removal to aid in installation.

Removal

1. Disconnect wiring harness lead (1) from dome light assembly (2).
2. Remove four screws (3) and four lockwashers (4) securing dome light assembly (2) to vehicle. Discard lockwashers.



DOME LIGHT ASSEMBLY REPAIR - CONTINUED 0283 00

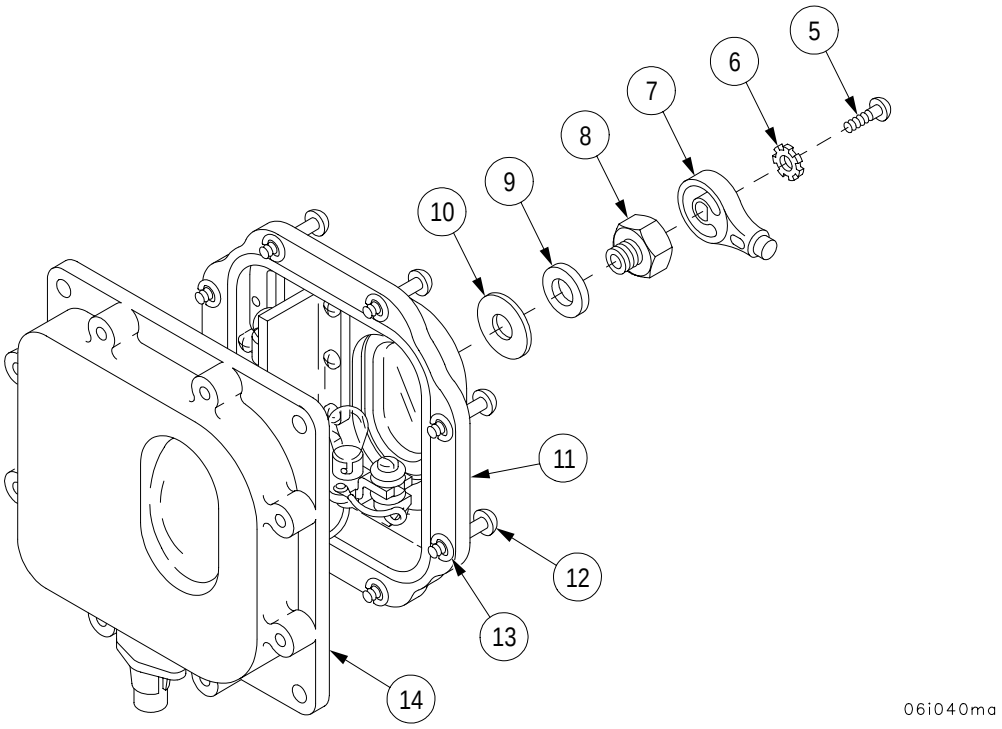
Disassembly

1. Remove screw (5), lockwasher (6), switch knob (7), nut (8), flat washer (9) and gasket (10) from lens retainer (11). Discard lockwasher and gasket.

NOTE

Do not remove retaining clips from screws unless retaining clips are damaged.

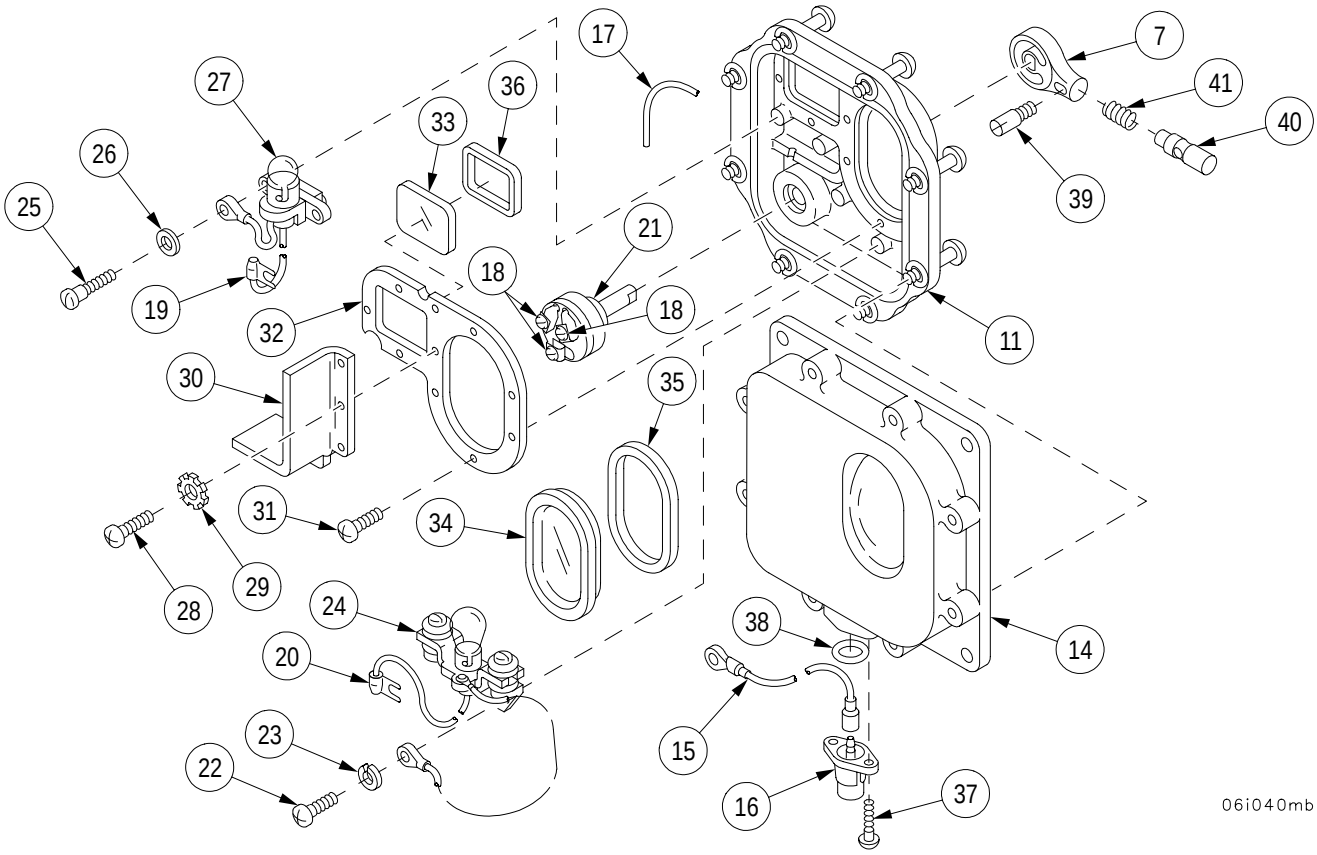
2. Loosen eight screws (12) with retaining clips (13).
3. Separate lens retainer (11) from access cover (14).



DOME LIGHT ASSEMBLY REPAIR - CONTINUED 0283 00

Disassembly-Continued

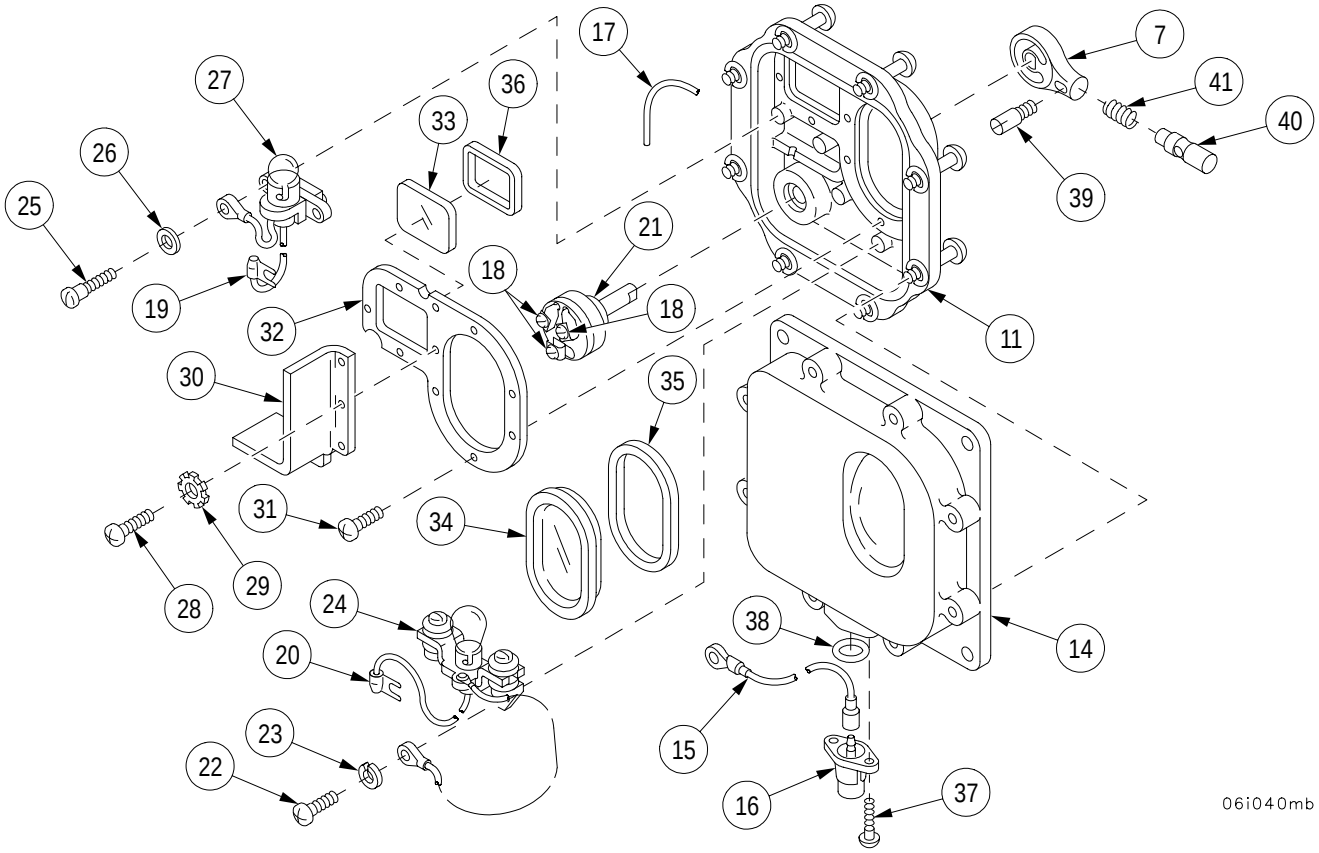
4. Disconnect electrical lead (15) at connector (16). Remove lens retainer (11) from access cover (14).
5. Remove nonmetallic seal (17) from lens retainer (11). Discard seal.
6. Loosen three screws (18), remove three electrical leads (15, 19 and 20) at switch (21). Remove switch (21) from lens retainer (11).
7. Remove two screws (22), two lockwashers (23) and lamp assembly (24) from lens retainer (11). Discard lockwashers.
8. Remove two screws (25), two flat washers (26) and lamp assembly (27) from lens retainer (11).
9. Remove four screws (28), four lockwashers (29) and partition (30) from lens retainer (11). Discard lockwashers.
10. Remove seven screws (31), retaining plate (32), two lenses (33 and 34), nonmetallic seal (35) and gasket (36) from lens retainer (11). Discard seal and gasket.
11. Remove two screws (37), connector (16) and preformed packing (38) from access cover (14). Discard preformed packing.
12. Remove setscrew (39), push button (40) and spring (41) from switch knob (7).
13. Inspect parts for damage and replace as required.



DOME LIGHT ASSEMBLY REPAIR - CONTINUED 0283 00

Assembly

1. Install spring (41), push button (40) and setscrew (39) in switch knob (7).
2. Install connector (16) in access cover (14) with new preformed packing (38) and two screws (37).
3. Install new gasket (36), new nonmetallic seal (35), two lenses (33 and 34) and retaining plate (32) in lens retainer (11) with seven screws (31).
4. Install partition (30) in lens retainer (11) with four screws (28) and four new lockwashers (29).
5. Install lamp assembly (27) in lens retainer (11) with two screws (25) and two flat washers (26).
6. Install lamp assembly (24) in lens retainer (11) with two screws (22) and two new lockwashers (23).
7. Connect three electrical leads (15, 19 and 20) to switch (21) with three screws (18). Install switch (21) in lens retainer (11).
8. Connect electrical lead (15) to connector (16) in access cover (14).
9. Install new nonmetallic seal (17) in groove of lens retainer (11).



DOME LIGHT ASSEMBLY REPAIR - CONTINUED 0283 00

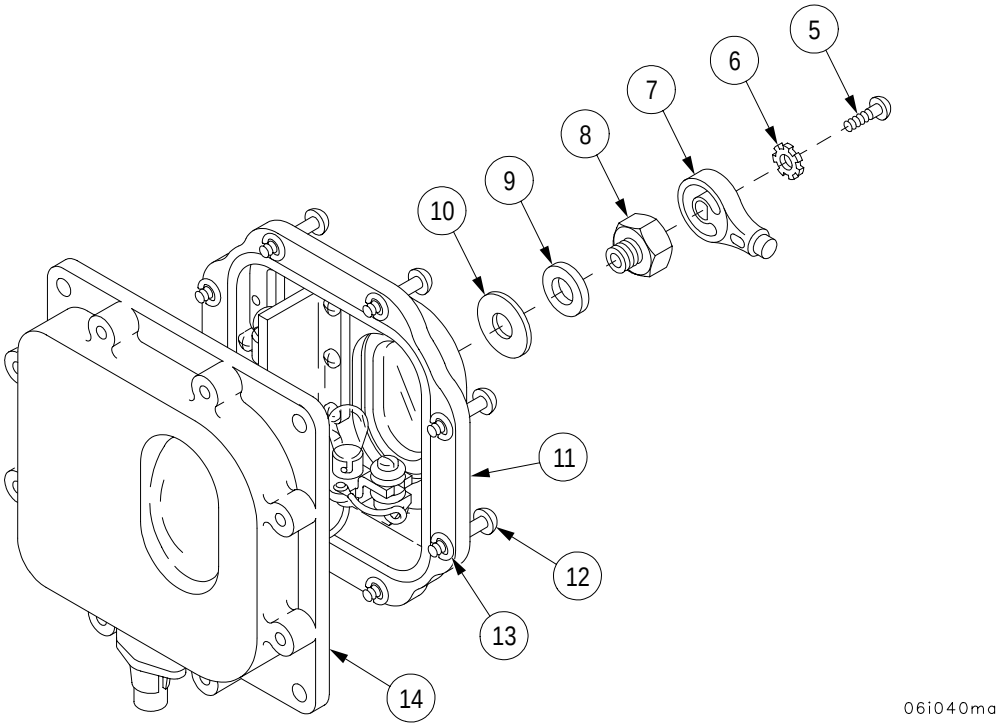
Assembly-Continued

10. Install lens retainer (11) on access cover (14) with eight screws (12) and retaining clips (13)



WARNING

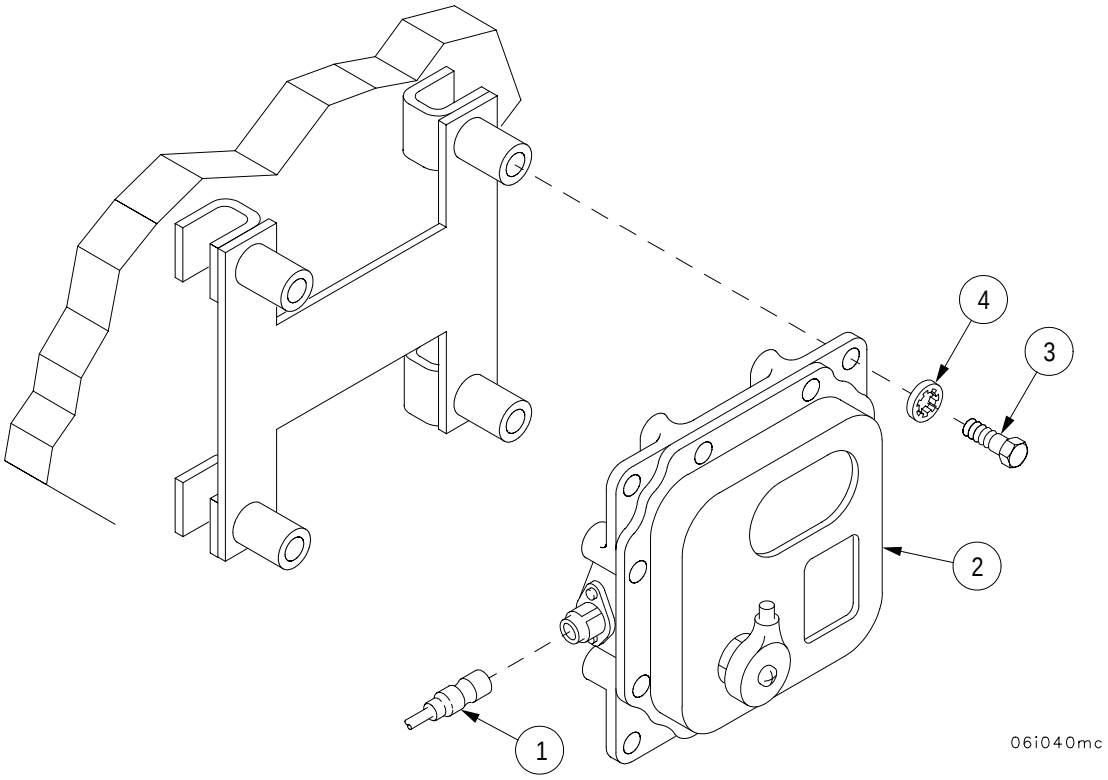
11. Apply sealing compound to threads of screw (5).
12. Install new gasket (10), flat washer (9), nut (8), switch knob (7), new lockwasher (6) and screw (5) on lens retainer (11).



DOME LIGHT ASSEMBLY REPAIR - CONTINUED 0283 00

Installation

1. Install dome light assembly (2) in vehicle with four screws (3) and four new lockwashers (4).
2. Connect wiring harness lead (1) to dome light assembly (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

ENGINE OIL PRESSURE, LOW OIL PRESSURE AND TEMPERATURE SENDING UNITS AND HIGH TEMPERATURE SWITCH REPLACEMENT

0284 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Powerpack removed (WP 0188 00)

References
TM 9-2350-292-10

NOTE

Tag all electrical connections to aid in proper connection during installation.

Perform Removal steps 1, 2 and 6 and Installation steps 4 and 5 for maintenance of engine high temperature switch.

Perform Removal steps 1, 3 and 6 and Installation steps 3 and 5 for maintenance of oil pressure sending unit.

Perform Removal steps 1, 4 and 6 and Installation steps 2 and 5 for maintenance of engine low oil pressure sending unit.

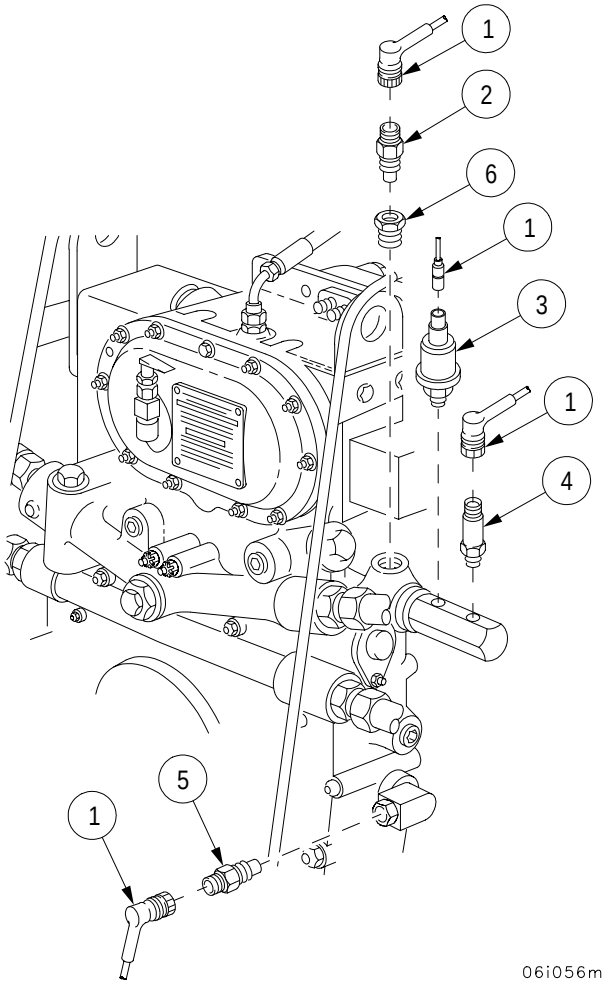
Perform Removal steps 1, 5 and 6 and Installation steps 1 and 5 for maintenance of engine temperature sending unit.

ENGINE OIL PRESSURE, LOW OIL PRESSURE AND TEMPERATURE SENDING UNITS AND HIGH TEMPERATURE SWITCH REPLACEMENT - CONTINUED

0284 00

Removal

1. Disconnect wiring harness 3W202 connector (1) from engine high temperature switch (2) and sending unit (3, 4 or 5).
2. Remove engine high temperature switch (2) and pipe bushing (6) from engine.
3. Remove engine oil pressure sending unit (3) from engine.
4. Remove engine low oil pressure sending unit (4) from engine.
5. Remove engine temperature sending unit (5) from engine.
6. Inspect parts for damage and replace as required.

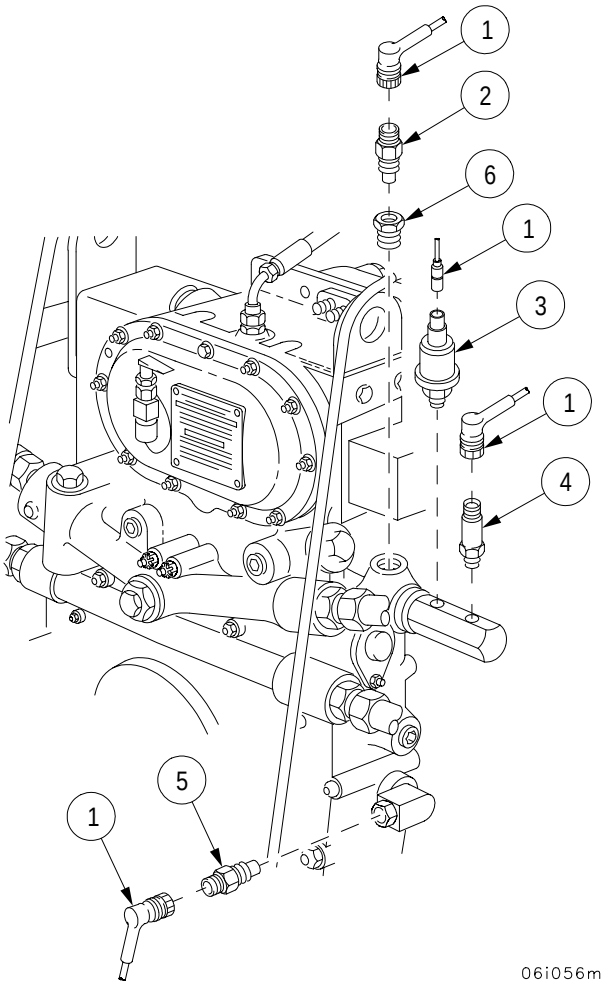


ENGINE OIL PRESSURE, LOW OIL PRESSURE AND TEMPERATURE SENDING UNITS AND HIGH TEMPERATURE SWITCH REPLACEMENT - CONTINUED

0284 00

Installation

1. Install engine temperature sending unit (5) on engine.
2. Install engine low oil pressure sending unit (4) on engine.
3. Install engine oil pressure sending unit (3) on engine.
4. Install pipe bushing (6) and engine high temperature switch (2) on engine.
5. Connect wiring harness 3W202 connector (1) to engine high temperature switch (2) and sending unit (3, 4 or 5).



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

END OF TASK

TURBOCHARGER PRESSURE TRANSDUCER DCA REPLACEMENT 0285 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 10, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Powerpack removed (WP 0188 00)

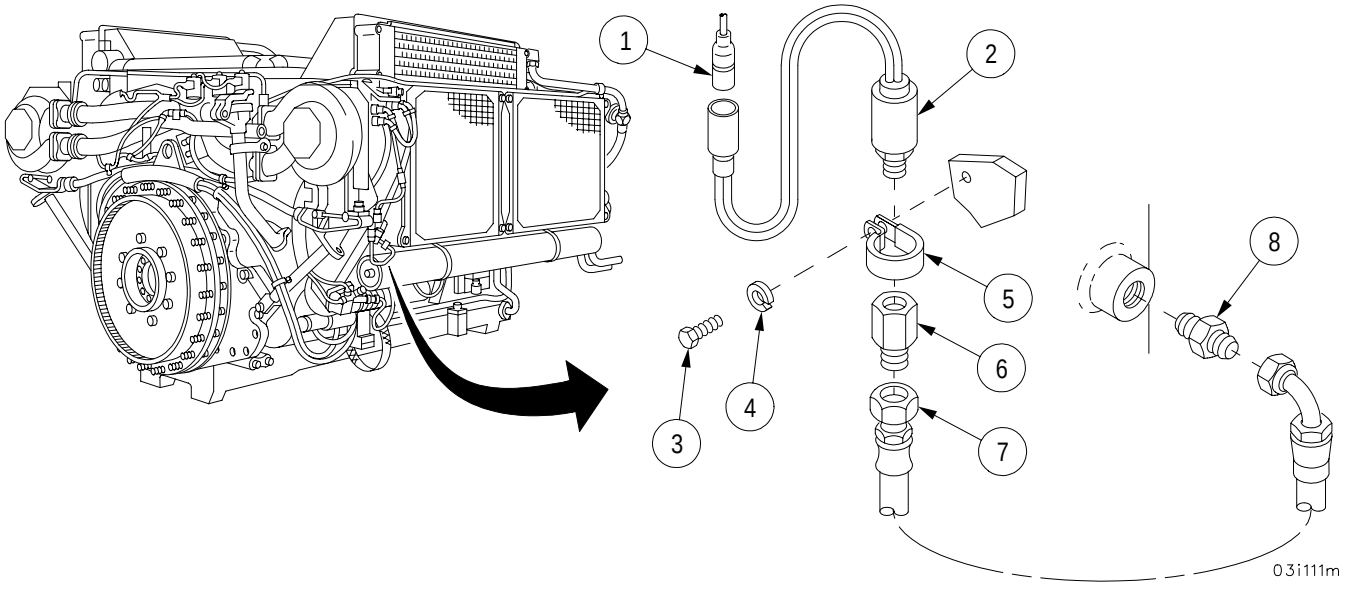
NOTE

There are two turbocharger pressure transducer DCAs. This task replaces only one transducer.

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

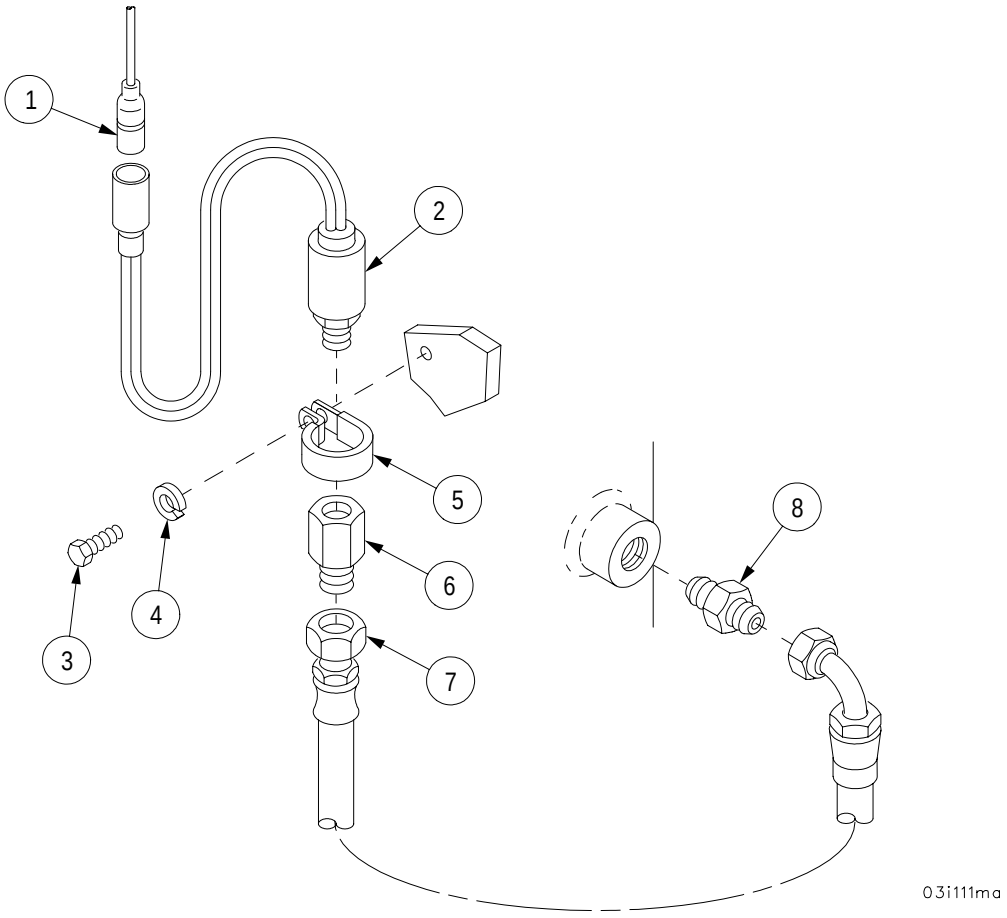
1. Disconnect wiring harness 3W202 connector (1) from turbocharger pressure transducer DCA (2).
2. Remove screw (3), lockwasher (4), loop clamp (5) and turbocharger pressure transducer DCA (2) from engine. Discard lockwasher.
3. Remove turbocharger pressure transducer DCA (2) from adapter (6).
4. Remove adapter (6) from hose assembly (7).
5. Remove hose assembly (7) from adapter (8); remove adapter (8) from turbocharger.
6. Inspect parts for damage and replace as required.



TURBOCHARGER PRESSURE TRANSDUCER DCA REPLACEMENT - CONTINUED 0285 00

Installation

1. Install adapter (8) to turbocharger.
2. Install hose assembly (7) to adapter (8).
3. Install adapter (6) to hose assembly (7).
4. Install turbocharger pressure transducer DCA (2) to adapter (6).
5. Install turbocharger pressure transducer DCA (2), loop clamp (5), new lockwasher (4) and screw (3) to engine.
6. Install wiring harness 3W202 connector (1) to turbocharger pressure transducer DCA (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

END OF TASK

WARNING HORN, WARNING HORN RELAY, AUTOMOTIVE HORN AND LEAD ASSEMBLIES 4W156 REPLACEMENT 0286 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (4) (item 85, WP 0718 00)
Lockwashers (2) (item 58, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Gauge panel removed (WP 0243 00)
For maintenance of warning horn, warning horn relay and warning horn lead assembly 4W156

References
TM 9-2350-292-10

NOTE

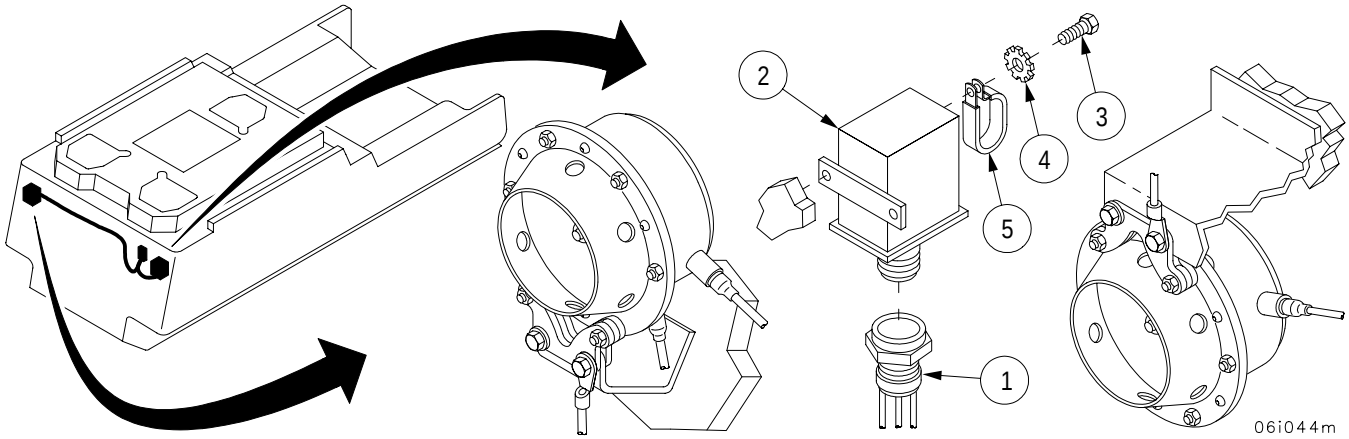
Perform Removal steps 1, 2 and 9 and Installation steps 7 and 8 for maintenance of warning horn relay.

Perform Removal steps 3, 4, 5 and 9 and Installation steps 4, 5 and 6 for maintenance of warning horn and warning horn lead assembly 4W156.

Perform Removal steps 6, 7, 8 and 9 and Installation steps 1, 2 and 3 for maintenance of automotive horn and automotive horn lead assembly 4W156.

Removal

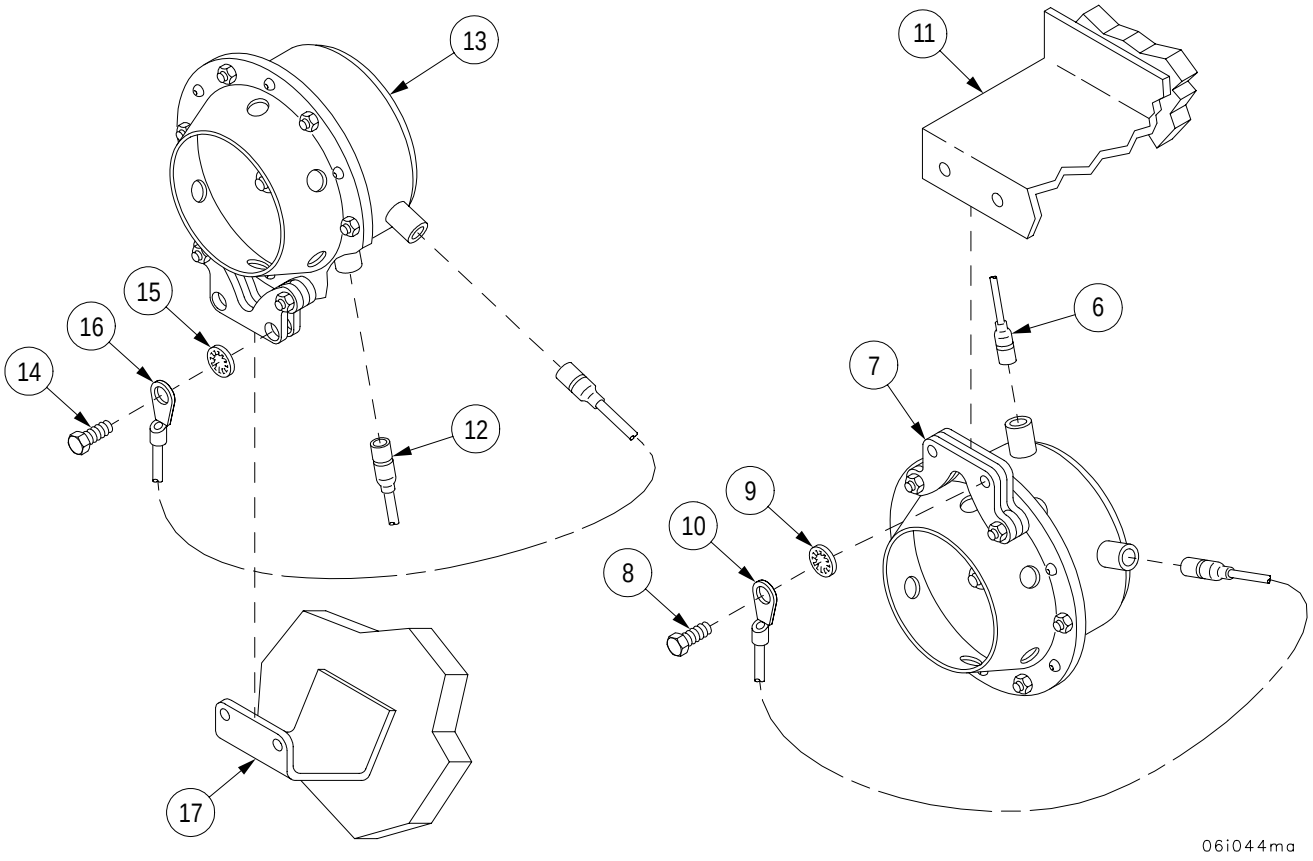
1. Disconnect wiring harness 4W116 connector P2 (1) from warning horn relay (2).
2. Remove two screws (3), two lockwashers (4), clamp (5) and warning horn relay (2) from vehicle. Discard lockwashers.



WARNING HORN, WARNING HORN RELAY, AUTOMOTIVE HORN AND LEAD ASSEMBLIES 4W156 REPLACEMENT - CONTINUED 0286 00

Removal-Continued

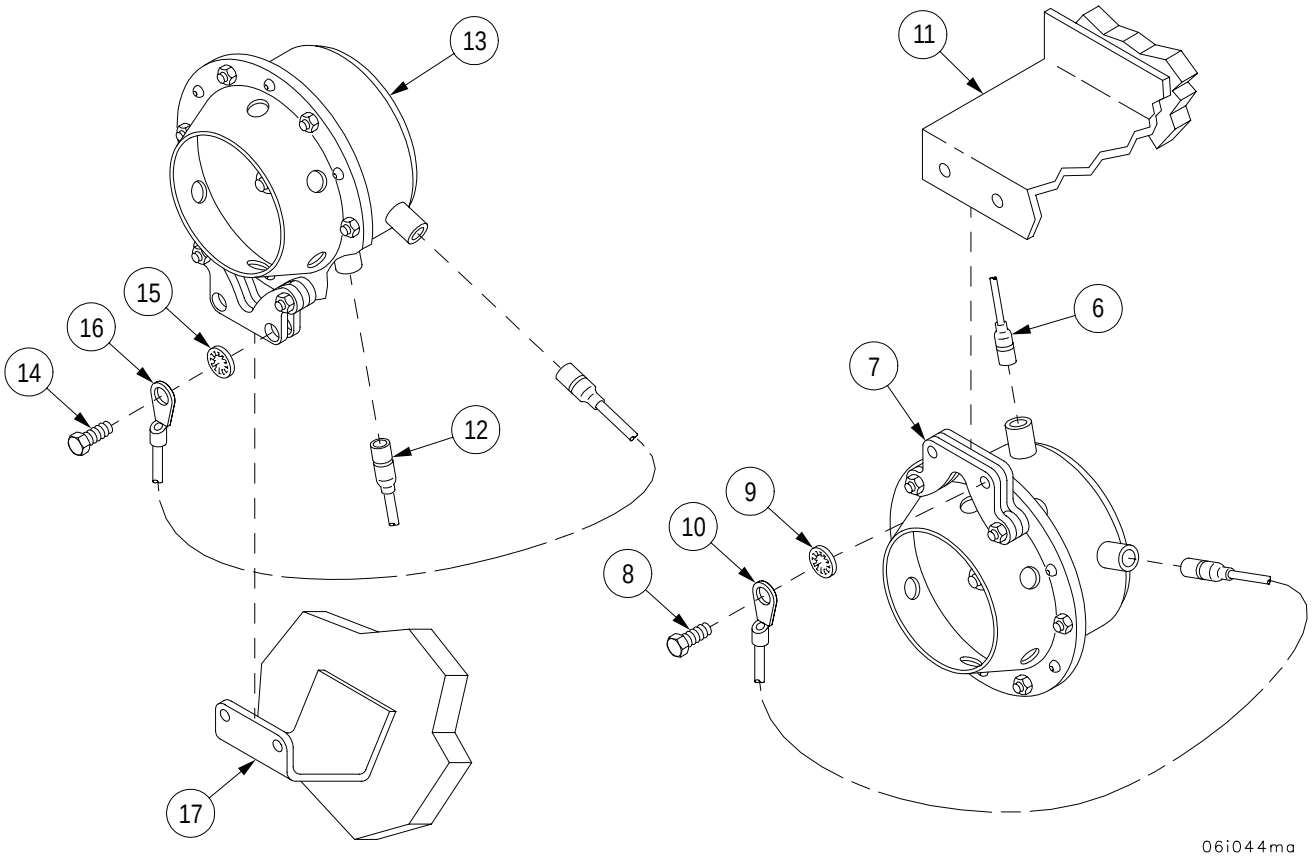
3. Disconnect wiring harness 4W116 wire 26A (6) from warning horn (7).
4. Remove two screws (8), two lockwashers (9), lead assembly 4W156 (10) and warning horn (7) from bracket (11). Discard lockwashers.
5. Disconnect lead assembly 4W156 (10) from warning horn (7).
6. Disconnect lead assembly 4W158 wire 25 (12) from automotive horn (13).
7. Remove two screws (14), two lockwashers (15), automotive horn (13) and lead assembly 4W156 (16) from bracket (17). Discard lockwashers.
8. Disconnect lead assembly 4W156 (16) from automotive horn (13).
9. Inspect parts for damage and replace as required.



WARNING HORN, WARNING HORN RELAY, AUTOMOTIVE HORN AND LEAD ASSEMBLIES 4W156 REPLACEMENT - CONTINUED 0286 00

Installation

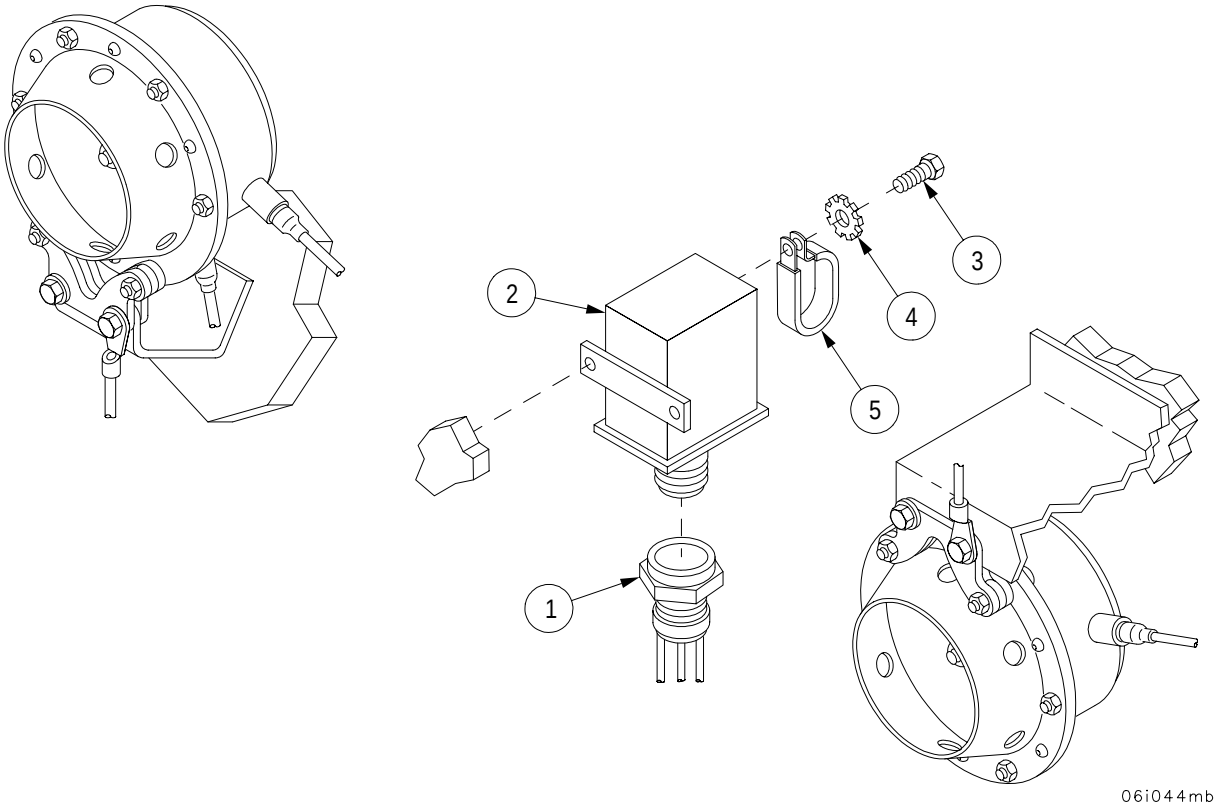
1. Connect lead assembly 4W156 (16) to automotive horn (13).
2. Install automotive horn (13) and loose end of lead assembly 4W156 (16) on bracket (17) with two screws (14) and two new lockwashers (15).
3. Connect lead assembly 4W158 wire 25 (12) to automotive horn (13).
4. Connect lead assembly 4W156 (10) to warning horn (7).
5. Install warning horn (7) and loose end of lead assembly 4W156 (10) on bracket (11) with two screws (8) and two new lockwashers (9).
6. Connect wiring harness 4W116 wire 26A (6) to warning horn (7).



WARNING HORN, WARNING HORN RELAY, AUTOMOTIVE HORN AND LEAD ASSEMBLIES 4W156 REPLACEMENT - CONTINUED 0286 00

Installation-Continued

7. Install warning horn relay (2) and clamp (5) on vehicle with two screws (3) and two new lockwashers (4).
8. Connect wiring harness 4W116 connector P2 (1) to warning horn relay (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install gauge panel, if removed (WP 0243 00)
Connect battery power (WP 0256 00)

END OF TASK

PROXIMITY SWITCH REPLACEMENT 0287 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Adhesive (item 102, WP 0716 00)
Lockwasher (3) (item 9, WP 0718 00)
Marker tags (item 49, WP 0716 00)
Sealing compound (item 78, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Steering control assembly removed (WP 0401 00)

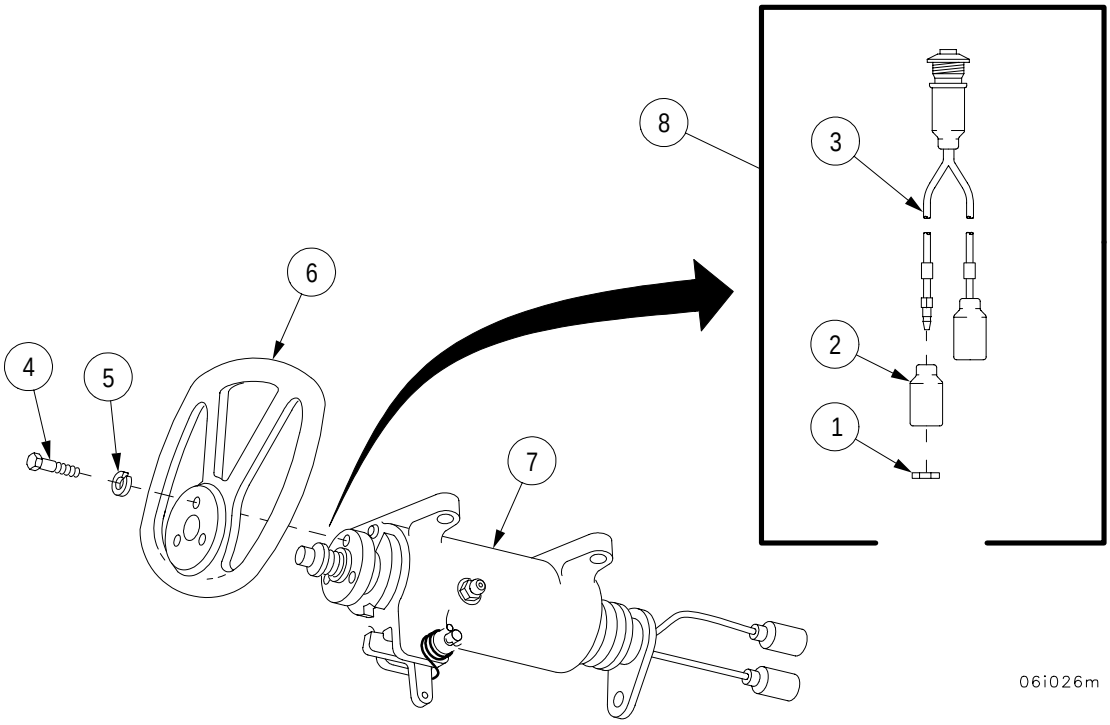
References
TM 9-2350-292-10

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

1. Remove two slotted washers (1) and two shells (2) from two leads (3).
2. Remove three screws (4), three lockwashers (5) and steering wheel (6) from steering control assembly (7). Discard lockwashers.
3. Remove proximity switch assembly (8) from steering control assembly (7).
4. Inspect parts for damage and replace as required.



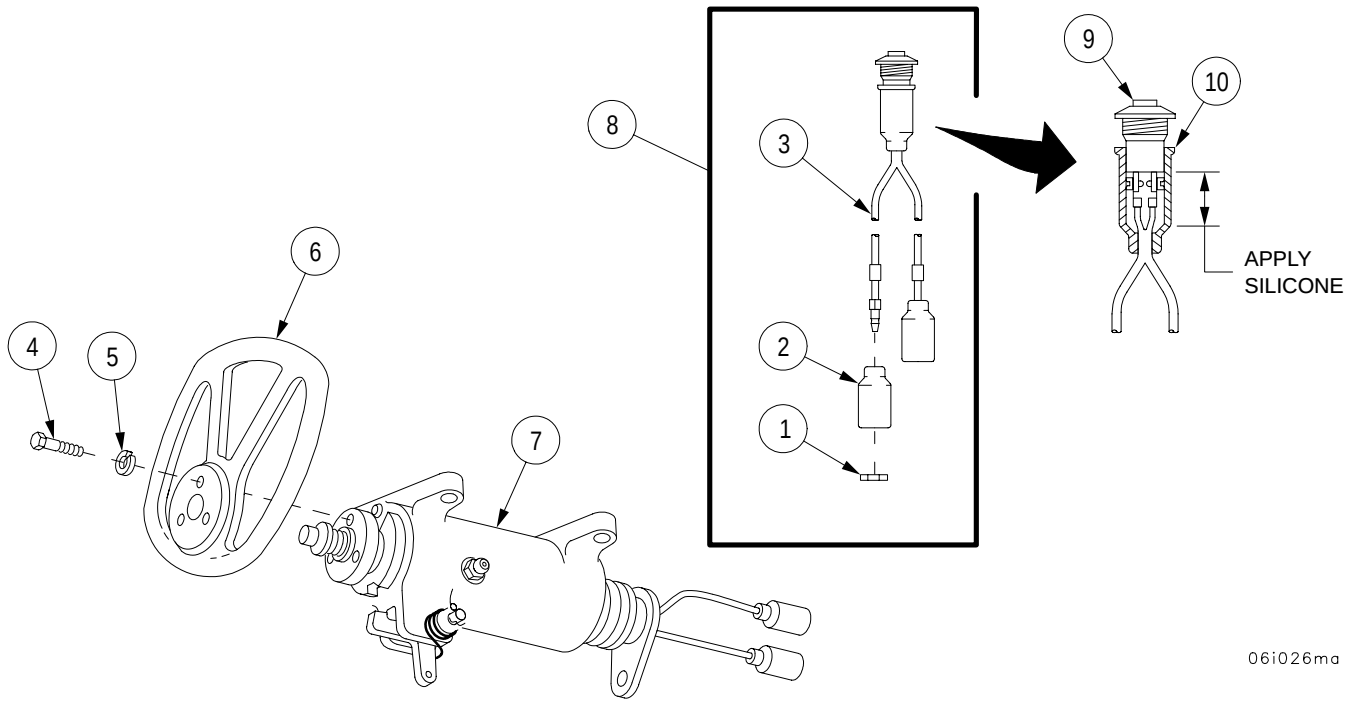
PROXIMITY SWITCH REPLACEMENT - CONTINUED 0287 00

Installation

NOTE

If a new proximity switch assembly is being installed perform steps 1 through 6. If the proximity switch that was removed is being reinstalled perform steps 2 through 6.

1. Remove two slotted washers (1) and two shells (2) from two leads (3) on new proximity switch assembly (8).
2. Apply adhesive between switch (9) and shell (10).
3. Install proximity switch assembly (8) into steering control assembly (7).
4. Apply sealing compound to threads of three screws (4).
5. Install steering wheel (6) on steering control assembly (7) with three screws (4) and three new lockwashers (5).
6. Install two shells (1) and two slotted washers (2) on two leads (3).



NOTE

FOLLOW-ON MAINTENANCE:
Install steering control assembly (WP 0401 00)

END OF TASK

BATTERY, BATTERY TRAY AND BATTERY TERMINAL REPLACEMENT 0288 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)
Battery terminal puller (item 93, WP 0717 00)
Storage battery carrier (item 94, WP 0717 00)

Materials/Parts
Lockwashers (12) (item 2, WP 0718 00)
Lockwasher (item 202, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

Personnel Required
Two

References
TM 9-2350-292-10



NOTE

Perform Removal steps 1 through 7 and 10 and Installation steps 3 through 9 for battery replacement.

Perform Removal steps 1, 2 and 10 and Installation steps 6 through 9 for battery terminal replacement.

Perform all Removal and Installation steps for replacement of battery trays.

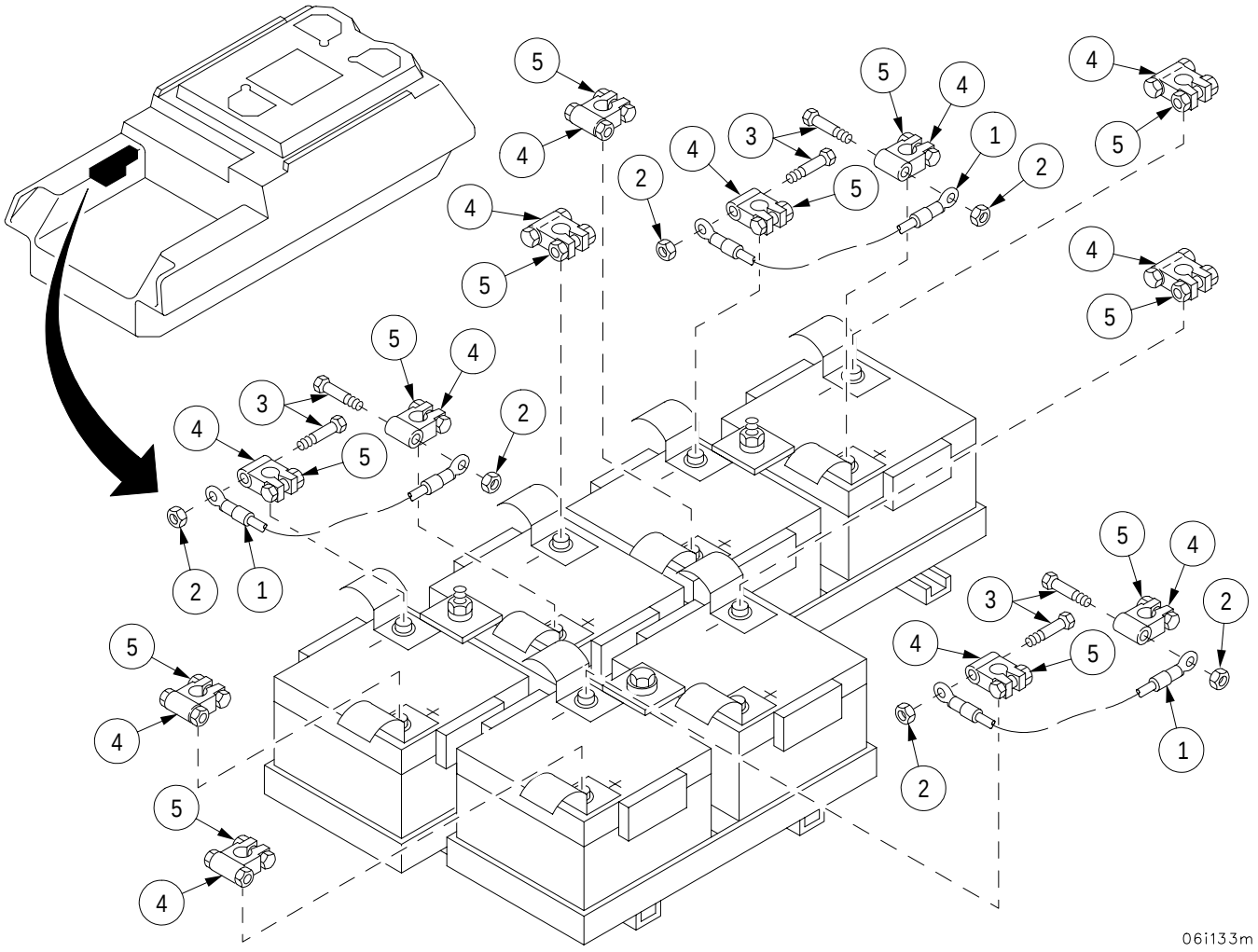
BATTERY, BATTERY TRAY AND BATTERY TERMINAL REPLACEMENT - CONTINUED 0288 00

Removal

WARNING

To prevent personnel injury or equipment damage, ensure battery power is disconnected from vehicle prior to battery, battery terminal or battery tray removal.

1. At each of the three lead assemblies 3W266 (1), remove nut (2) and screw (3) securing lead assembly (1) to battery terminal (4). Remove three lead assemblies (1). Reassemble nut (2) and screw (3) on battery terminals (4) for use in installation.
2. Loosen collared nut (5) on each of 12 terminals (4). Pry open terminals (4) or use battery terminal puller to loosen and remove battery terminals (4) from battery posts.



BATTERY, BATTERY TRAY AND BATTERY TERMINAL REPLACEMENT - CONTINUED 0288 00

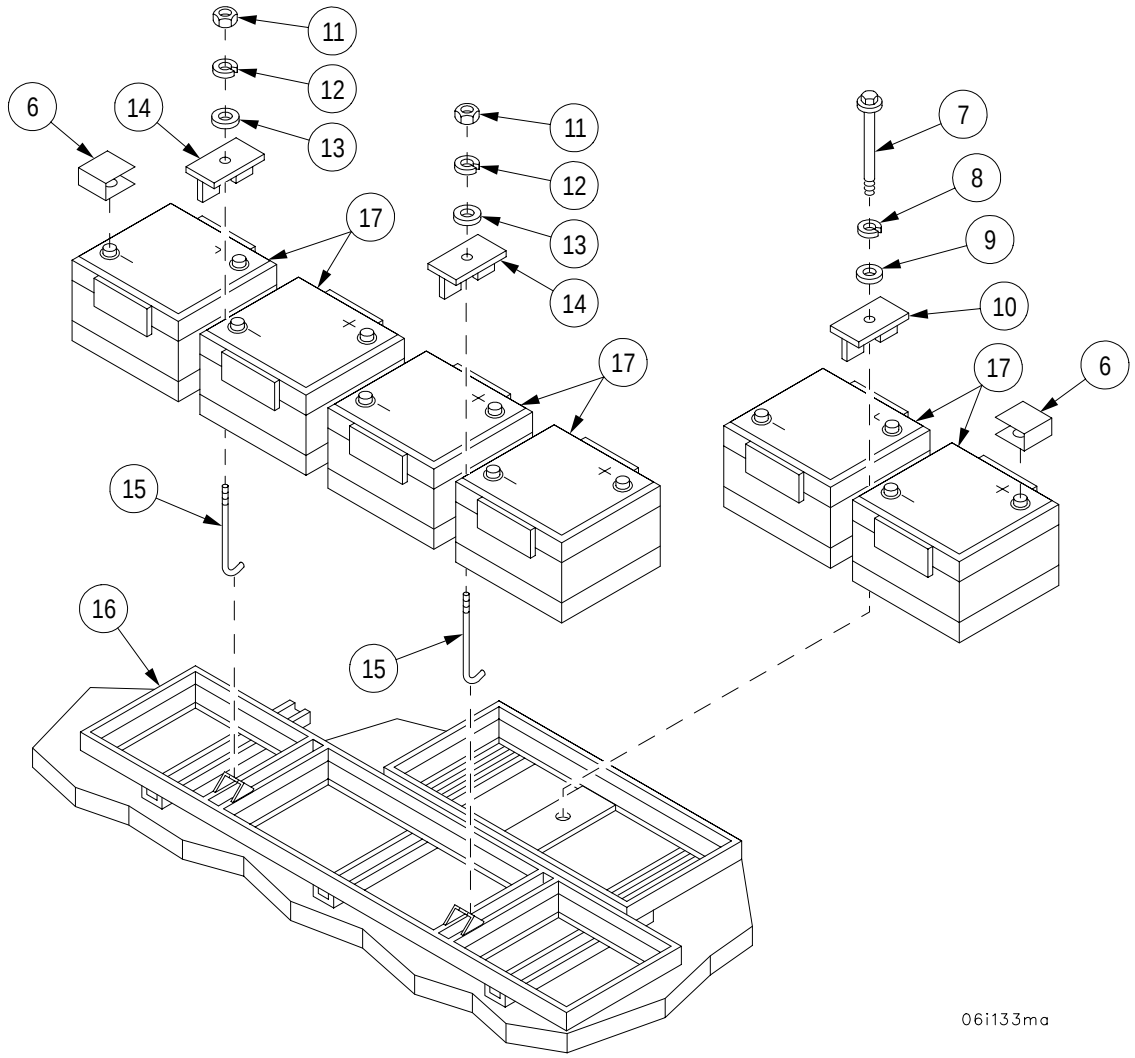
Removal-Continued

3. Remove 12 terminal covers (6) from battery posts.
4. Remove screw (7), lockwasher (8), flat washer (9) and battery clamp (10). Discard lockwasher.
5. Remove two nuts (11), two lockwashers (12), two flat washers (13) and two battery clamps (14). Discard lockwashers.
6. Unhook and remove two screws (15) from battery tray (16).

NOTE

Use storage battery carrier to aid in transporting batteries.

7. Remove six batteries (17) from vehicle.



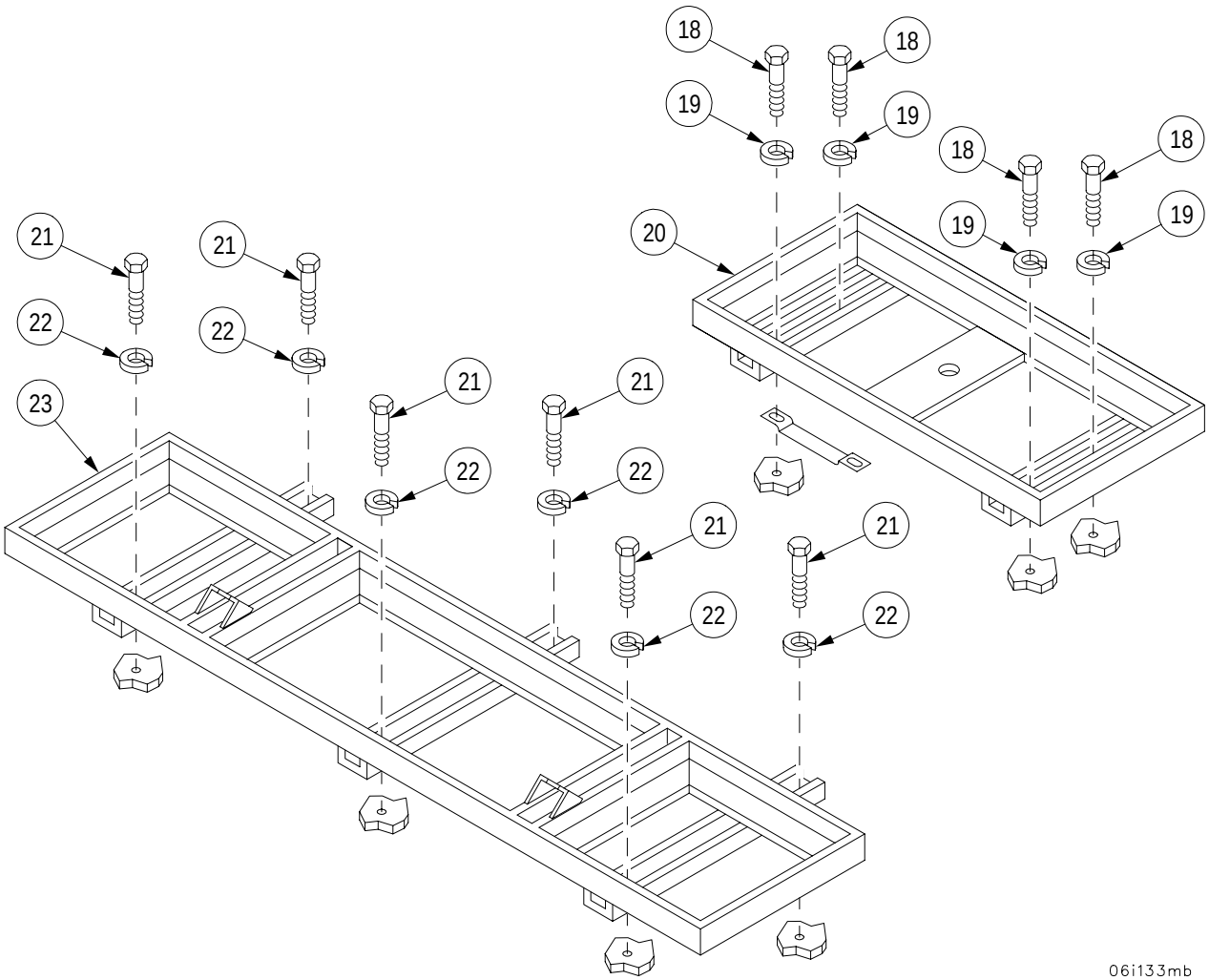
BATTERY, BATTERY TRAY AND BATTERY TERMINAL REPLACEMENT - CONTINUED 0288 00

Removal-Continued

8. Remove four screws (18), four lockwashers (19) and two battery trays (20). Discard lockwashers.
9. Remove six screws (21), six lockwashers (22) and four battery trays (23). Discard lockwashers.
10. Inspect parts for damage and replace as required.

Installation

1. Install four battery trays (23) with six screws (21) and six new lockwashers (22).
2. Install two battery trays (20) with four screws (18) and four new lockwashers (19).



BATTERY, BATTERY TRAY AND BATTERY TERMINAL REPLACEMENT - CONTINUED 0288 00

Installation-Continued

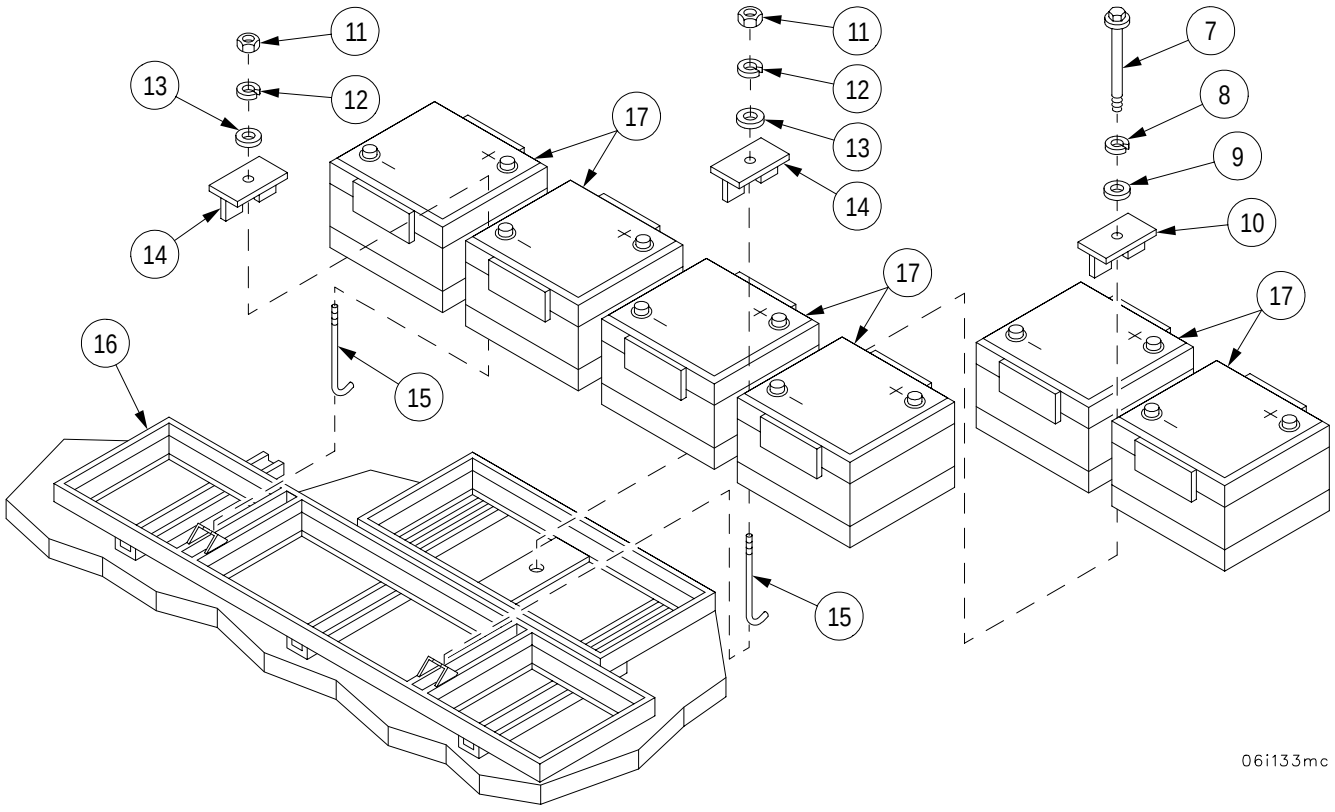
WARNING

When installing batteries, failure to observe proper battery polarity can cause a short circuit and possible battery explosion resulting in injury to personnel and damage to equipment.

NOTE

Use storage battery carrier to aid in transporting batteries.

3. Install six batteries (17) on two battery trays. Place batteries as shown in illustration with positive (+) and negative (-) posts at indicated positions.
4. Hook two screws (15) on battery tray (16) and install two battery clamps (14), two flat washers (13), two new lockwashers (12) and two nuts (11).
5. Install battery clamp (10) with screw (7), new lockwasher (8) and flat washer (9).



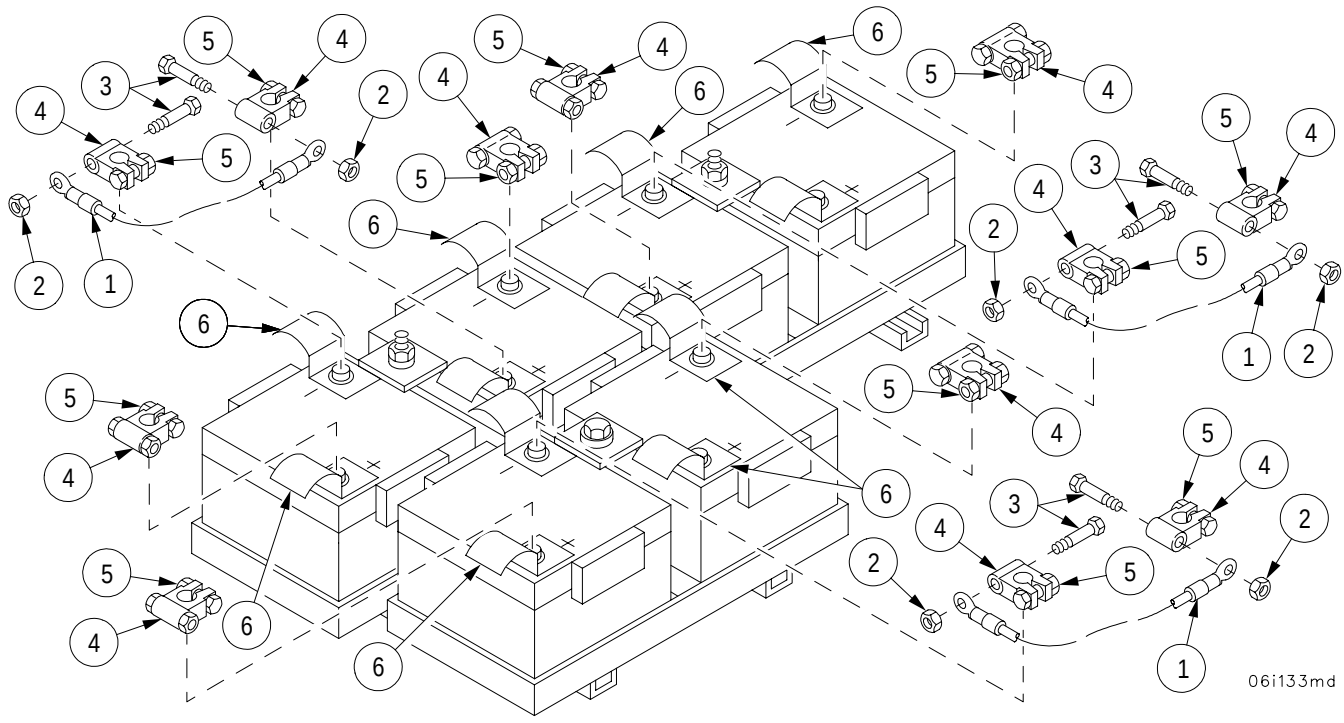
BATTERY, BATTERY TRAY AND BATTERY TERMINAL REPLACEMENT - CONTINUED 0288 00

Installation-Continued

NOTE

Ensure battery terminals are installed with identification markings (P or +) or (N or –) facing up. Terminals with the P or + marking are installed on the positive (+) battery posts and terminals with the N or – marking are installed on the negative (–) battery posts.

6. Install 12 terminal covers (6) on battery posts.
7. Install six positive (P or +) battery terminals (4) on six positive (+) battery posts. Install six negative (N or –) battery terminals (4) on six negative (–) battery posts. Position battery terminals (4) as shown in illustration to permit fastening all lead assemblies when reconnecting battery power.
8. When terminals (4) are properly positioned, tighten collared nut (5) until terminals (4) are secured to posts.
9. Connect three lead assemblies 3W266 (1) by inserting screw (3) through battery terminal (4). Install lead assembly (1) over screw (3) and tighten securely with nut (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

BATTERY TRAY CLEANING TUBES REPLACEMENT 0289 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (8) (item 9, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

Personnel Required
Two

References
TM 9-2350-292-10

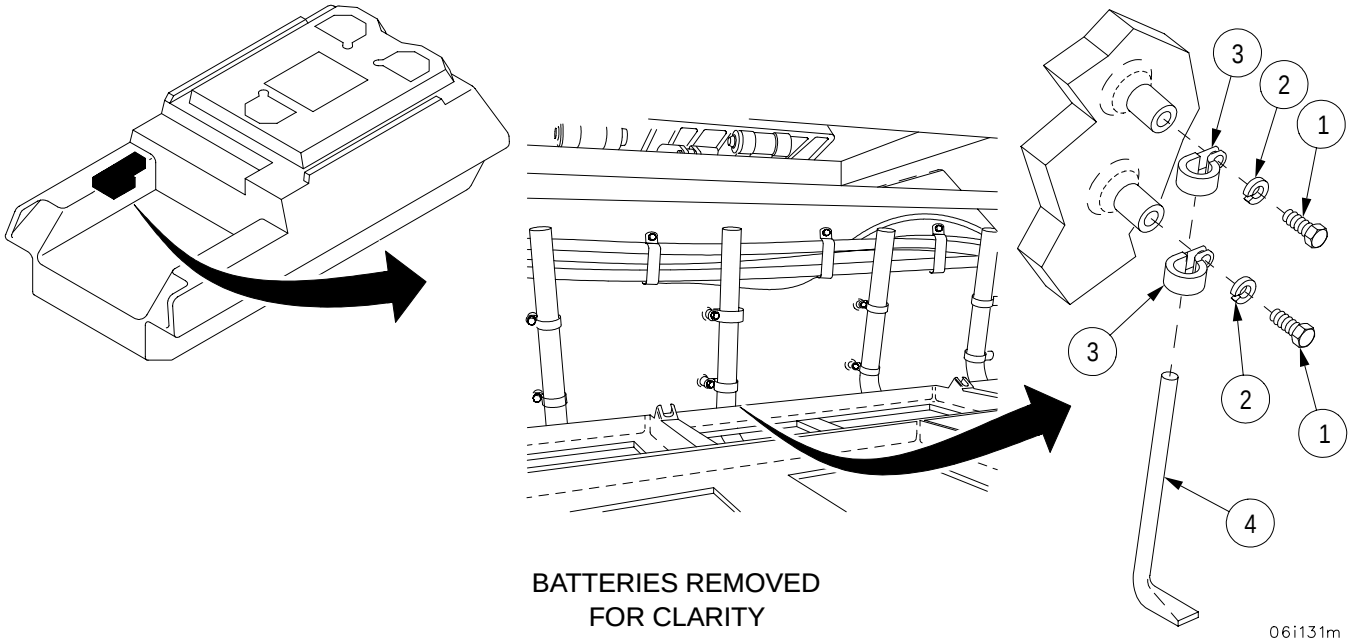
NOTE

Procedures to remove and install either of the four cleaning tubes are identical.

If necessary, remove battery opposite cleaning tube to gain access to cleaning tube mounting hardware.

Removal

1. Remove two screws (1), two lockwashers (2), two clamps (3) and tube (4). Discard lockwashers.
2. Inspect parts for damage and replace as required.

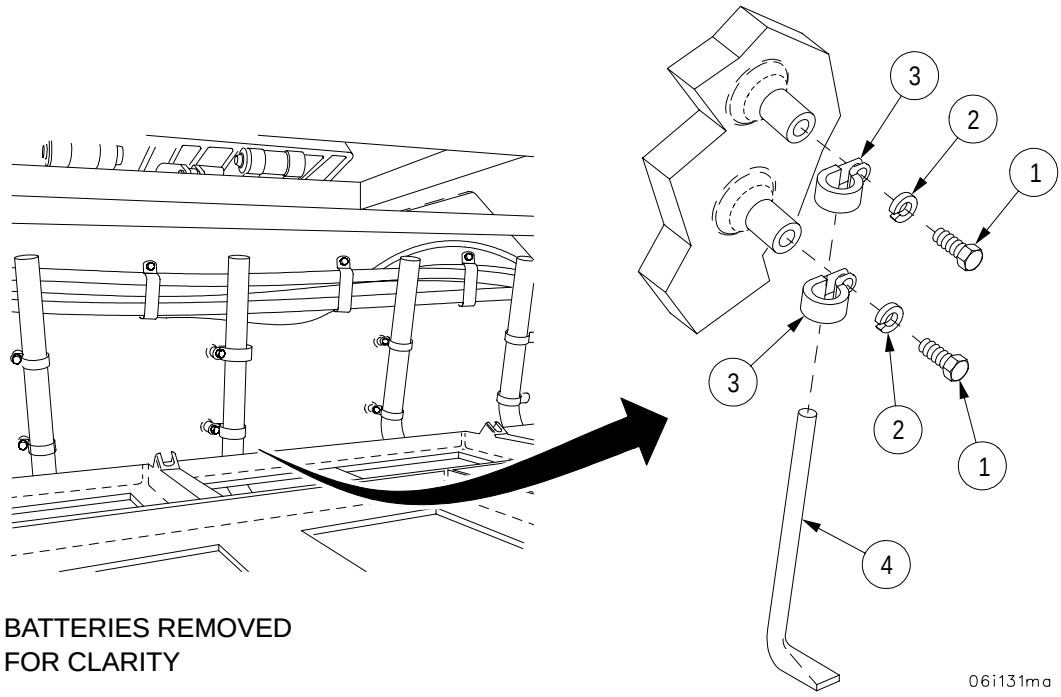


BATTERIES REMOVED FOR CLARITY

BATTERY TRAY CLEANING TUBES REPLACEMENT - CONTINUED 0289 00

Installation

Install tube (4) and two clamps (3) with two screws (1) and two new lockwashers (2).



BATTERIES REMOVED
FOR CLARITY

NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS AND CABLE REPAIR 0290 00

THIS WORK PACKAGE COVERS:

Disassembly, Assembly

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0717 00)
Electrical maintenance kit (item 112, WP 0717 00)
Electrical heat gun (item 34, WP 0717 00)
Soldering gun (item 111, WP 0717 00)
Multimeter (item 84, WP 0717 00)

References

TB-SIG 222

Materials/Parts

Electrical connectors
Heat shrink insulation tubing
Insulation tape (item 27, WP 0716 00)
Solder (item 8, WP 0716 00)
Soldering flux (item 63, WP 0716 00)
Adhesive (item 64, WP 0716 00)
Epoxy (item 89, WP 0716 00)
Adhesive (item 104, WP 0716 00)
Sealing compound (item 105, WP 0716 00)
Insulation sleeveing (item 106, WP 0716 00)

NOTE

When removing more than one wire from a multiple wire receptacle, record which wire was removed from which pin hole.

Before proceeding, see detailed instructions on soldering and solder (TB SIG 222).

Cable identifiers are attached to cables. These tags are embossed with the cable identification number. Cable identifier numbers are shown on the systems wiring diagram.

Wire identifiers are embossed with the same individual wire number. Wire identifier numbers are also shown on systems wiring diagram.

If cable or wires are replaced, remove tags from old wire and place them on new wire.

All pins (male connectors) and sockets (female connectors) are alphabetically coded. Coded identification starts at connector key or groove.

Male connectors' identifying letters run clockwise.

Female connectors' identifying letters run counterclockwise.

Do continuity checks upon completion of cable or harness repair.

When replacing connectors or gaskets on wiring harnesses 3W180, 3W702, 3W704, 3W710, 3W711 or 4W136 refer to instructions and tabulation matrix.

WIRING HARNESS AND CABLE REPAIR - CONTINUED 0290 00

HEAT SHRINK INSULATION SLEEVING

Disassembly

Cut and discard insulation sleeving.

Assembly

NOTE

Insulation sleeving tubing should be twice the diameter of the part over which it will be shrunk.

1. Slide sleeving over wire and terminal.

NOTE

Remove thermal heat gun from sleeving as soon as sleeving forms to shape of wire and terminal.

2. Hold thermal heat gun 4 or 5 inches (101.6 - 127.0 mm) away from sleeving and apply heat for about 30 seconds.
3. Let sleeving cool 30 seconds before handling.

WIRE CONTACTS

Disassembly

1. Cut and discard contacts.
2. Strip about 1/2 inch (12.7 mm) of insulation from end of the wire.

Assembly

NOTE

Color bands on contacts indicate wire size. For example, contacts with green color bands are for 22-gauge to 26-gauge wire. Contacts with red color bands are for 20-gauge to 24-gauge wire.

1. Place contacts in the crimping tool with the color band toward the rear.
2. Place bare wire in the contact and squeeze the crimping tool.
3. Remove crimped contact out of the tool and check the crimp by looking in the inspection hole. Verify the end of the bare wire is visible.

CRIMPED TERMINALS

Disassembly

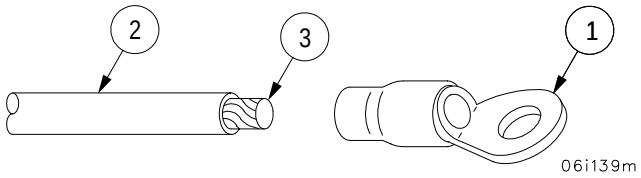
Cut and discard terminal (1).

WIRING HARNESS AND CABLE REPAIR - CONTINUED 0290 00

CRIMPED TERMINALS - CONTINUED

Assembly

1. Strip cable insulation equal to depth of terminal (1) well.
2. Push cable (2) against end of terminal (1) well and crimp.
3. Apply epoxy to exposed end of wire (3)



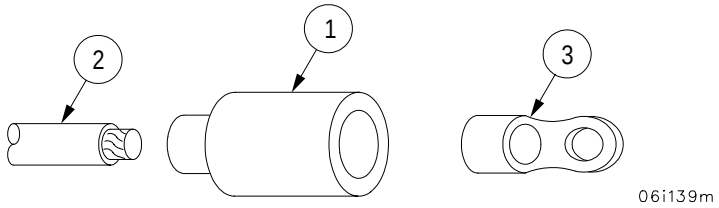
TERMINAL TYPE CABLE CONNECTORS

Disassembly

Cut and discard connector.

Assembly

1. Strip cable insulation equal to depth of terminal well.
2. Slide insulator (1) over cable (2).
3. Insert cable (2) into terminal (3) well and crimp.
4. Slide insulator (1) over crimped end of terminal (3).



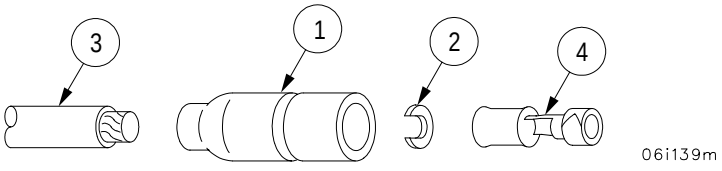
FEMALE CABLE CONNECTOR WITH WASHER

Disassembly

Cut and discard connector.

Assembly

1. Strip cable insulation approximately 1/8 inch (3.2 mm).
2. Slide shell (1) and washer (2) over cable (3).
3. Place cable (3) in cylinder end of terminal (4).
4. Slide shell (1) and washer (2) over terminal (4).



WIRING HARNESS AND CABLE REPAIR - CONTINUED 0290 00

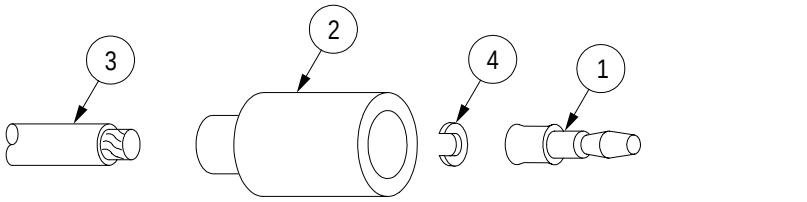
MALE CABLE CONNECTOR WITH WASHER

Disassembly

Cut and discard connector.

Assembly

1. Strip cable insulation equal to depth of terminal (1) well.
2. Slide shell (2) over cable (3).
3. Insert cable (3) into terminal (1) well and crimp.
4. Place C-washer (4) over cable (3) at crimped junction and slide shell (2) over C-washer (4) and terminal (1).



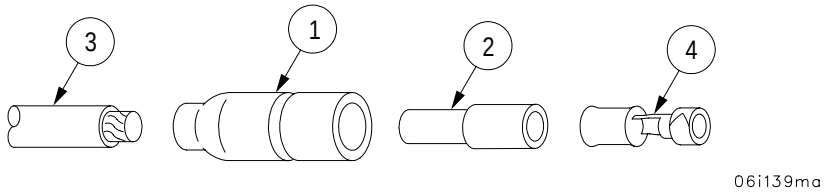
FEMALE CABLE CONNECTOR WITH SLEEVE

Disassembly

Cut and discard connector.

Assembly

1. Strip cable insulation approximately 1/8 inch (3.2 mm).
2. Slide shell (1) and sleeve (2) over cable (3).
3. Place cable (3) in cylinder end of terminal (4) and crimp.
4. Slide shell (1) and sleeve (2) over terminal (4).



WIRING HARNESS AND CABLE REPAIR - CONTINUED 0290 00

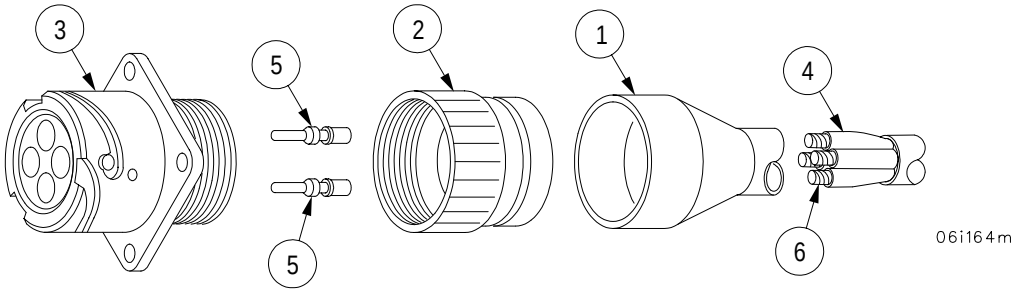
TYPICAL MALE-TYPE PANEL MOUNTING RECEPTACLE

Disassembly

1. Heat and remove boot (1) from rear of nut (2).
2. Remove nut (2) from shell (3) and slide nut (2) over cable (4).
3. Drive pin contacts (5) out through rear of shell (3) with pin extractors.
4. Unsolder or cut pin contacts (5) from cable leads (6).

Assembly

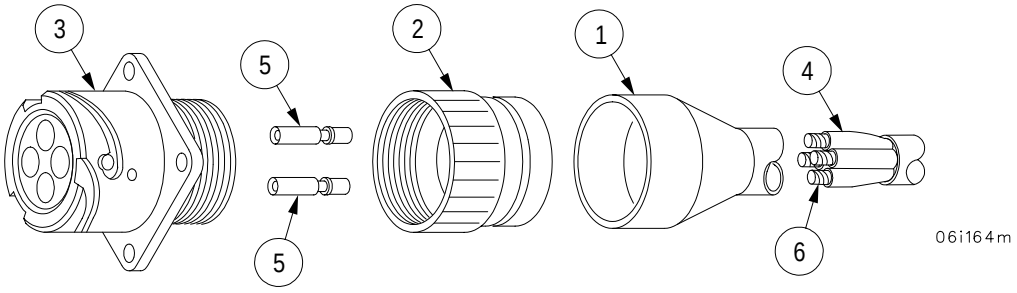
1. Strip leads (6) insulation equal to depth of wells in pin contacts (5).
2. Insert leads (6) into wells in pin contacts (5) and solder or crimp leads (6) to pin contacts (5).
3. Push pin contacts (5) into shell (3) from rear until seated.
4. Install nut (2) on shell (3).
5. Apply a thin coat of adhesive to boot (1).
6. Install boot (1) on nut (2).



TYPICAL FEMALE-TYPE PANEL MOUNTING RECEPTACLE

Disassembly

1. Heat and remove boot (1) from rear of nut (2).
2. Remove nut (2) from shell (3) and slide nut (2) over cable (4).
3. Drive socket contacts (5) out through rear of shell (3) with socket extractors.
4. Unsolder or cut socket contacts (5) from cable leads (6).

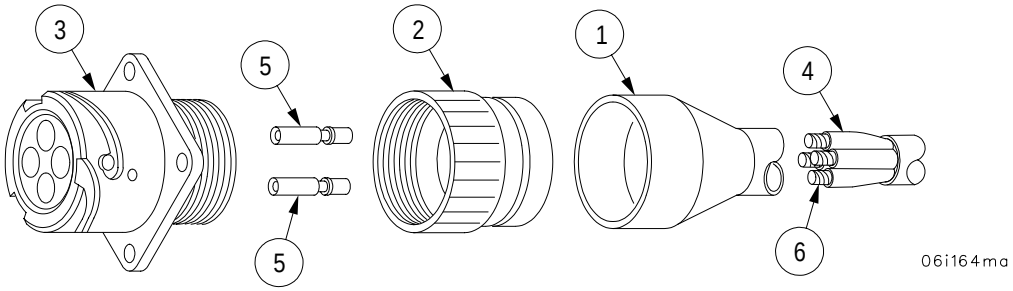


WIRING HARNESS AND CABLE REPAIR - CONTINUED 0290 00

TYPICAL FEMALE-TYPE PANEL MOUNTING RECEPTACLE - CONTINUED

Assembly

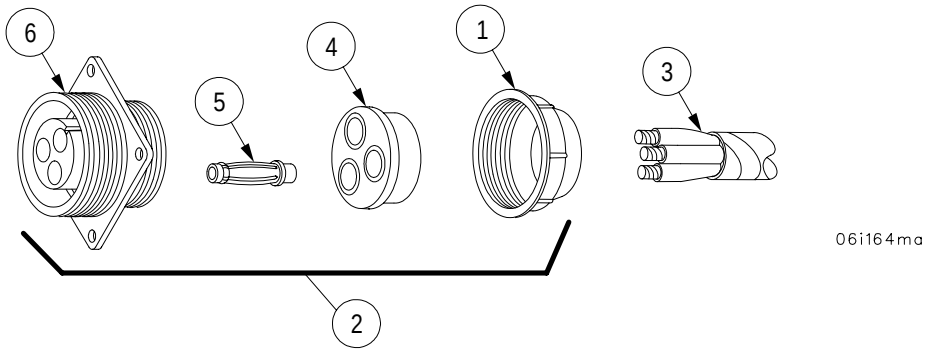
1. Strip leads (6) insulation equal to depth of wells in socket contacts (5).
2. Insert leads (6) into wells in socket contacts (5) and solder or crimp leads (6) to contacts (5).
3. Push socket contacts (5) into shell (3) from rear until seated.
4. Install nut (2) on shell (3).
5. Apply a thin coat of adhesive to boot (1).
6. Install boot (1) on nut (2).



TYPICAL FEMALE-TYPE PANEL MOUNTING RECEPTACLE WITH RIDGED LOCKING NUT

Disassembly

1. Unscrew nut (1) from shell assembly (2) and slide back on cable (3).
2. Slide grommet (4) back on cable (3) leads.
3. Drive socket contacts (5) out through rear of shell (6) with socket extractors.
4. Unsolder leads from socket contacts (5).

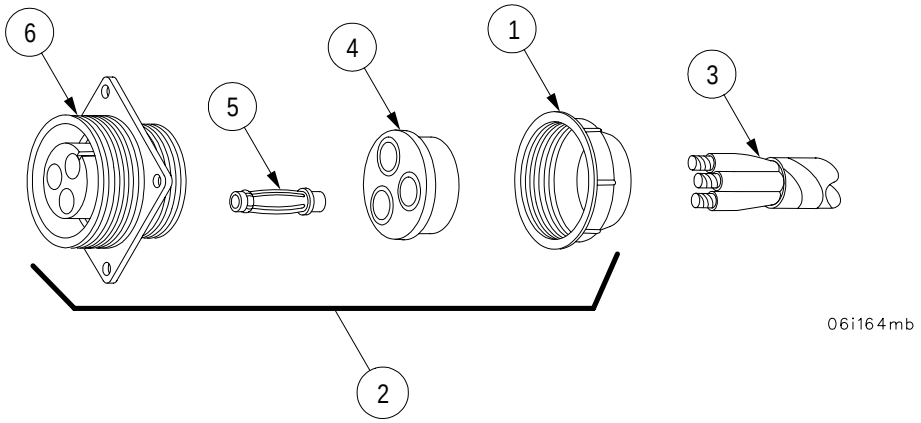


WIRING HARNESS AND CABLE REPAIR - CONTINUED 0290 00

TYPICAL FEMALE-TYPE PANEL MOUNTING RECEPTACLE WITH RIDGED LOCKING NUT - CONTINUED

Assembly

1. Strip cable (3) insulation equal to depth of wells in socket contacts (5).
2. Slide nut (1) onto cable (3).
3. Slide grommet (4) over cable (3) leads.
4. Insert cable (3) leads into wells of socket contacts (5) and solder.
5. Push socket contacts (5) into shell (6) from rear until seated.
6. Push grommet (4) down cable (3) leads and over wells of socket contacts (5).
7. Screw nut (1) onto shell assembly (2).



WIRING HARNESS AND CABLE REPAIR - CONTINUED 0290 00

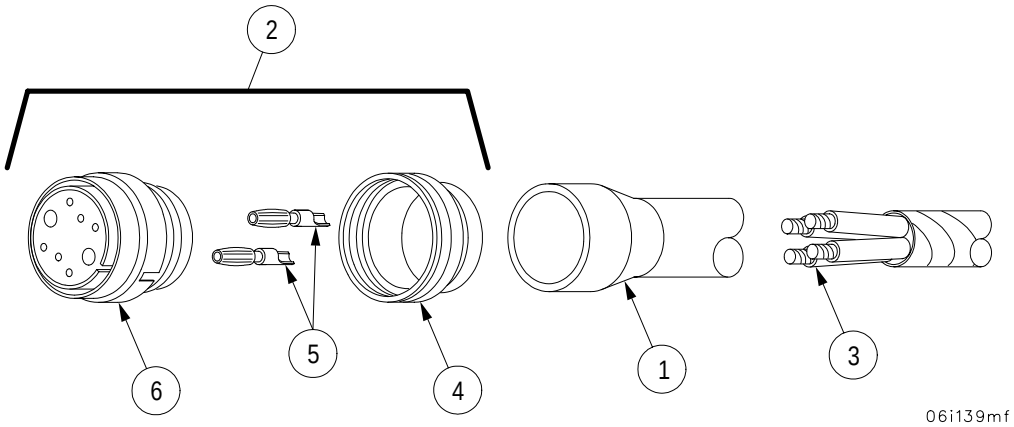
TYPICAL FEMALE-TYPE PLUG WITH RIDGED LOCKING NUT

Disassembly

1. Heat boot (1) on shell assembly (2) and roll back on cable (3).
2. Unscrew nut (4) from shell assembly (2) and slide back on cable (3).
3. Drive socket contacts (5) out through rear of shell (6) with socket extractors.
4. Unsolder or cut leads from socket contacts (5).

Assembly

1. Strip cable (3) insulation equal to depth of wells in socket contacts (5).
2. Slide nut (4) onto cable (3).
3. Insert cable (3) leads into wells of socket contacts (5) and solder or crimp.
4. Push socket contacts (5) into shell (6) from rear until seated.
5. Screw nut (4) onto shell assembly (2).
6. Apply a thin even layer of adhesive to shell assembly (2) and roll boot (1) onto shell assembly (2).



WIRING HARNESS AND CABLE REPAIR - CONTINUED 0290 00

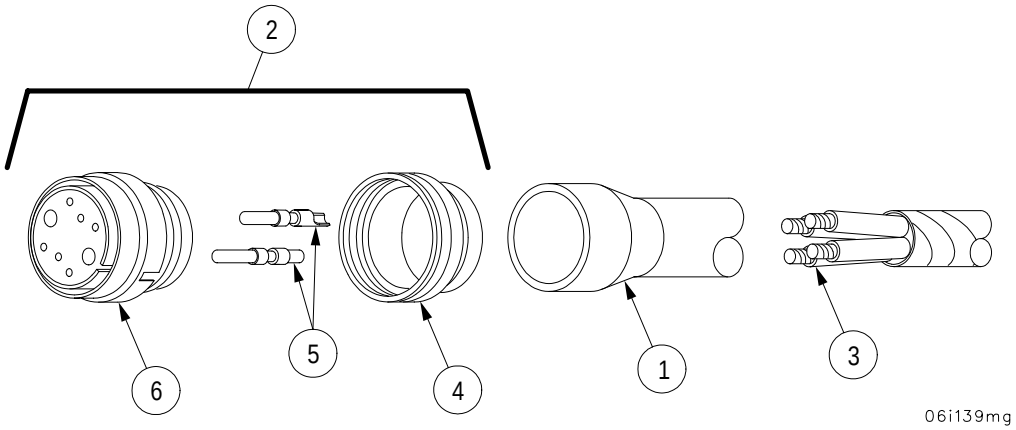
TYPICAL MALE-TYPE PLUG WITH RIDGED LOCKING NUT

Disassembly

1. Heat boot (1) on shell assembly (2) and roll back on cable (3).
2. Unscrew nut (4) from shell assembly (2) and slide back on cable (3).
3. Drive pin contacts (5) out through rear of shell (6) with pin extractors.
4. Unsolder or cut cable (3) leads from pin contacts (5).

Assembly

1. Strip cable (3) insulation equal to depth of wells in pin contacts (5).
2. Insert cable (3) leads into wells of pin contacts (5) and solder or crimp.
3. Push pin contacts (5) into shell (6) from rear until seated.
4. Screw nut (4) onto shell assembly (2).
5. Apply a thin even layer of adhesive to shell assembly (2) and roll boot (1) onto shell assembly (2).



WIRING HARNESS AND CABLE REPAIR - CONTINUED 0290 00

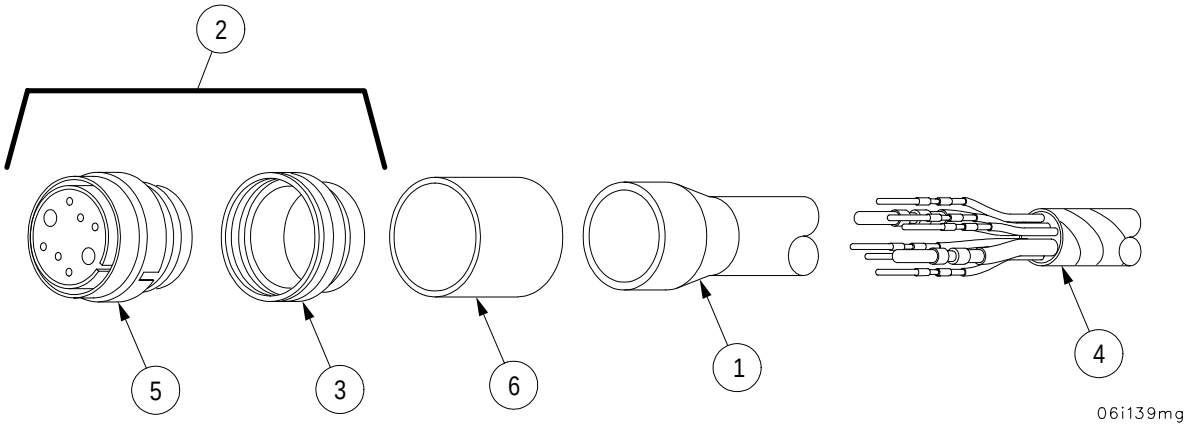
WATERPROOFING CONNECTORS ON WIRING HARNESSES 3W200, 3W201, 3W206, 3W207, 5W902 AND 5W903

Disassembly

1. Heat boot (1) on shell assembly (2) and roll back on cable (4).
2. Unscrew nut (3) from connector (5) and slide back on cable (4).

Assembly

1. Apply sealing compound on threads of shell assembly (27).
2. Screw nut (3) onto connector (5).
3. Apply an even layer of adhesive (item 103, WP 0716 00) on the shell assembly (2) and roll boot (1) onto the shell assembly (2). Ensure the cavity between shell assembly (2) and boot (1) is filled with adhesive (item 103, WP 0716 00).
4. Place a three-inch heat shrinkable sleeving (6) over at least a quarter of nut (3) to half way down the boot assembly (1).
5. Using a heat gun, heat sleeving (6) until a water tight fit is achieved. Shim sleeving as needed to attain a water tight fit.



WIRING HARNESS AND CABLE REPAIR - CONTINUED 0290 00

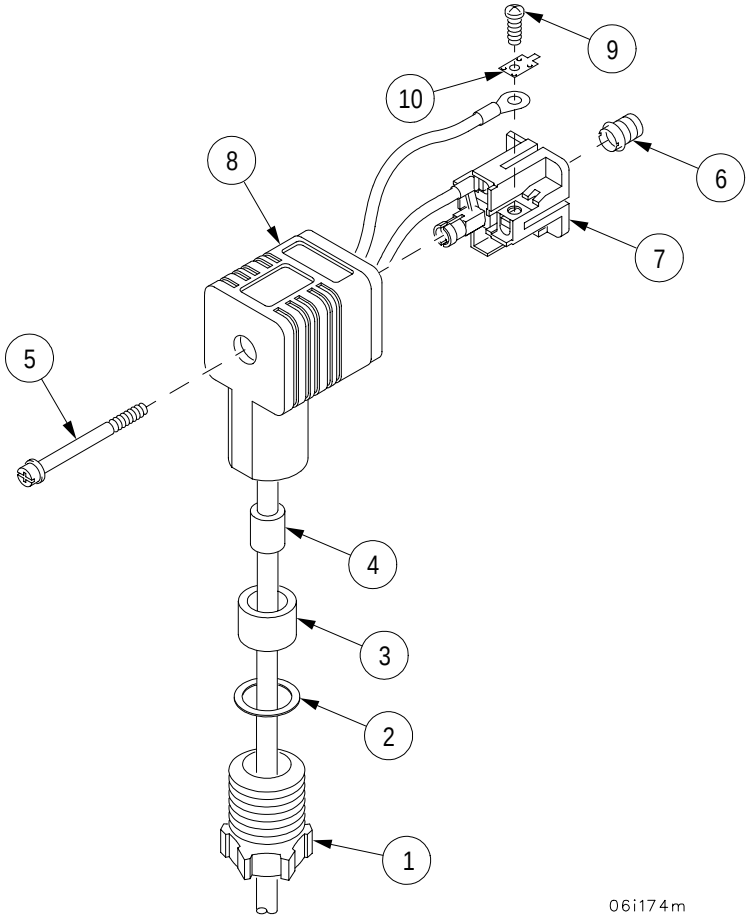
CONNECTOR REPAIR INSTRUCTIONS FOR CONNECTOR 12477603

Disassembly

1. Unscrew retaining plug (1) and slide plug (1), washer (2) and rubber gaskets (3 and 4) back about 6 inches on the cable lead.
2. Remove screw (5) and nut (6).
3. Slide connector body (7) out of connector housing (8) until terminals are exposed.
4. Remove screw (9) and washer (10) to remove connector leads.

Assembly

1. Install connector leads on terminals with washer (10) and screw (9).
2. Slide terminals into connector body (7) and secure connector body to connector housing with screw (5) and nut (6).
3. Slide cable leads into rubber gaskets (3 and 4) and install washer (2) into retaining plug (1).



END OF TASK

WIRING HARNESS 2W601 REPLACEMENT (OLD CONFIGURATION) 0291 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (21) (item 58, WP 0718 00)
Lockwashers (9) (item 9, WP 0718 00)
Grommet (item 348, WP 0718 00)
Lockwashers (2) (item 11, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Crew compartment subfloor plates #8, #9, #10, #11, #13, #14, #15, #18, #22, #27 and #29 removed (WP 0454 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

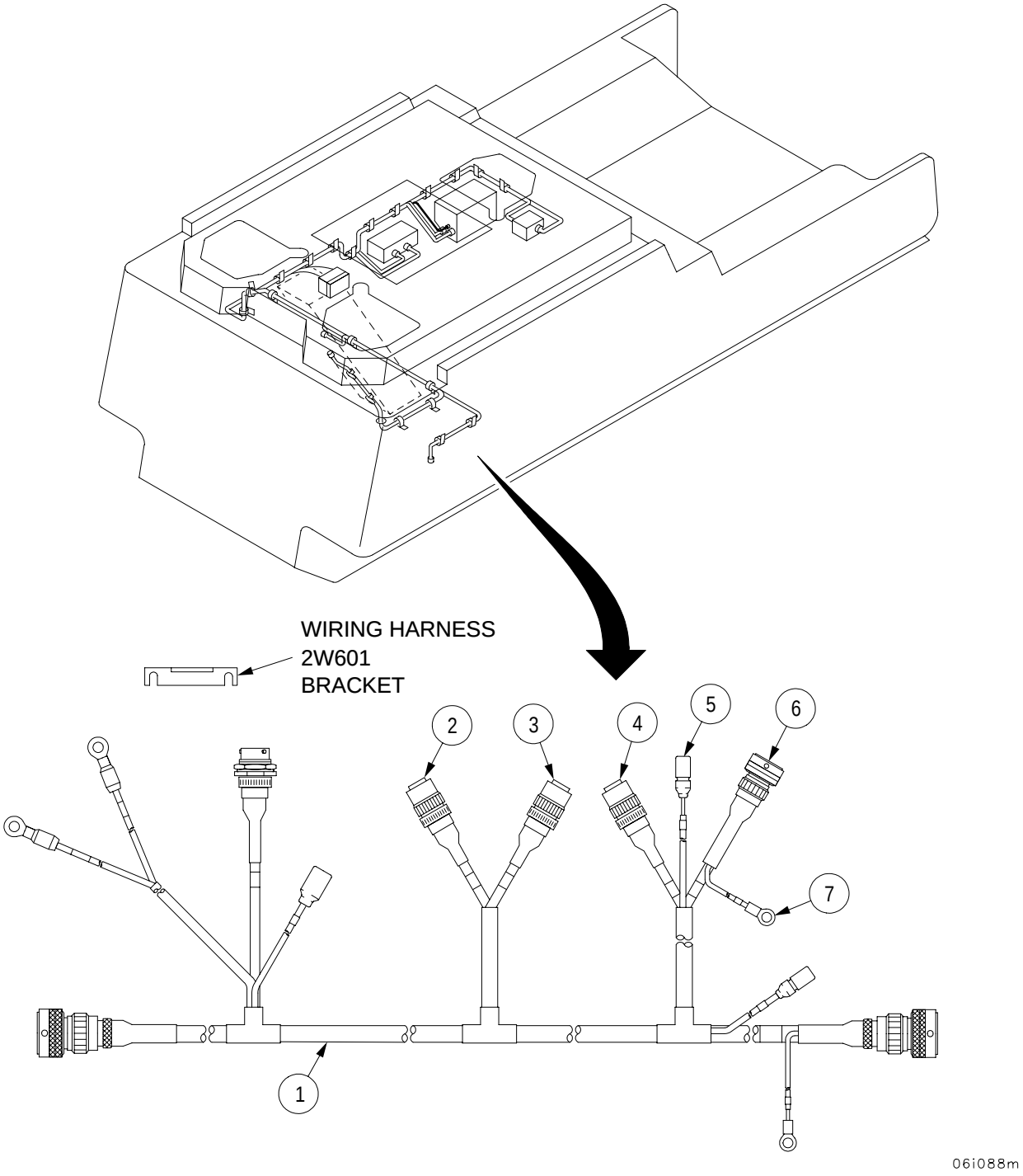
Retain attaching hardware securing wires 359B to pay-out and pay-in solenoid valves for installation.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	2W601 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P3	Return Filter	Hydraulic Filter Manifold (Below Subfloor Plates-Near Hydraulic Reservoir)
3	Connector P4	Charge Filter	Hydraulic Filter Manifold (Below Subfloor Plates-Near Hydraulic Reservoir)
4	Connector P5	Hydraulic Reservoir Oil Temperature Switch	Hydraulic Reservoir (Below Subfloor Plates)
5	Wire 664	Hydraulic Reservoir Oil Temperature Sensor	Hydraulic Reservoir) (Below Subfloor Plates)
6	Connector P6	Hydraulic Reservoir Liquid Level Sensor	Hydraulic Reservoir) (Below Subfloor Plates)
7	Terminal GND	Hydraulic Reservoir Liquid Level Sensor Ground	Hydraulic Reservoir) (Below Subfloor Plates)

WIRING HARNESS 2W601 REPLACEMENT (OLD CONFIGURATION) - CONTINUED 0291 00

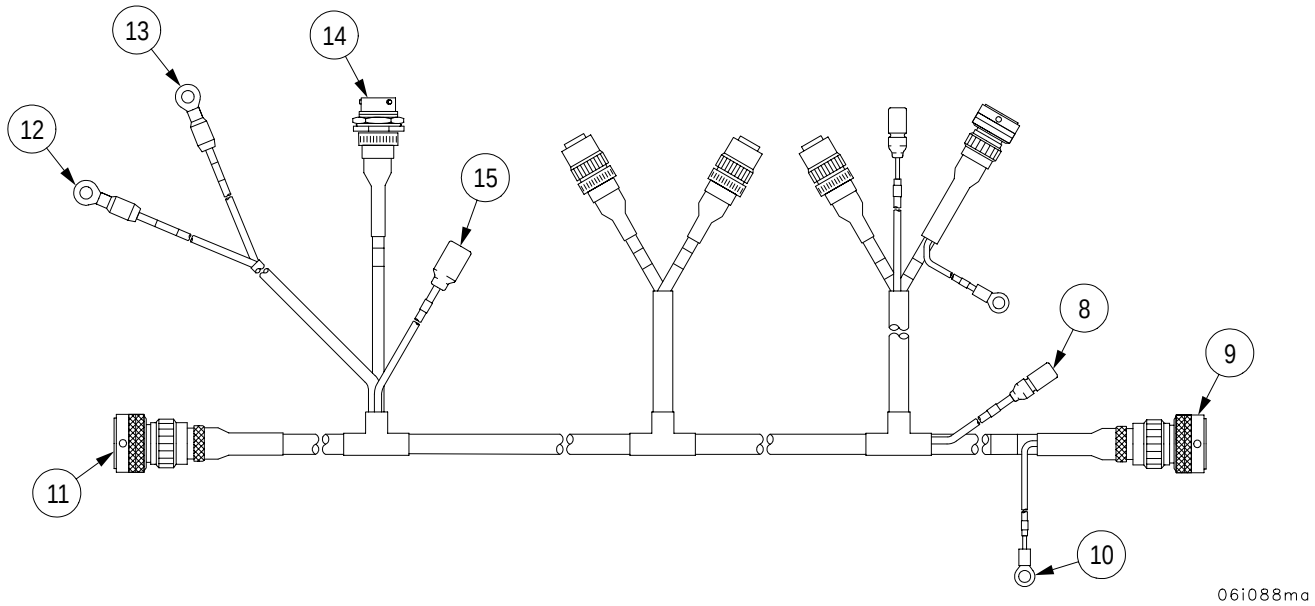
Removal-Continued



WIRING HARNESS 2W601 REPLACEMENT (OLD CONFIGURATION) - CONTINUED 0291 00

Removal-Continued

Item No.	2W601 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
8	Wire 525	PTO High Temperature Switch	Electromagnetic Clutch Power Takeoff (Below Subfloor Plates)
9	Connector P2	Electromagnetic Clutch Power Takeoff	Crew Compartment (Below Subfloor Plates)
10	Terminal GND	Electromagnetic Clutch Power Takeoff Ground	Crew Compartment (Below Subfloor Plates)
11	Connector P1	PTO/Accessory Panel	Crew Compartment (Next To Hydraulic Control Panel)
12	Terminal 359B	Pay-In Solenoid Valve	Crew Compartment (Below Subfloor Plates)
13	Terminal 359B	Pay-Out Solenoid Valve	Crew Compartment (Below Subfloor Plates)
14	Connector J1	Wiring Harness 2W602 Connector P1	Crew Compartment (Below Subfloor Plates)
15	Wire 591	Low Brake Pressure Warning Switch	Crew Compartment (Below Subfloor Plates)



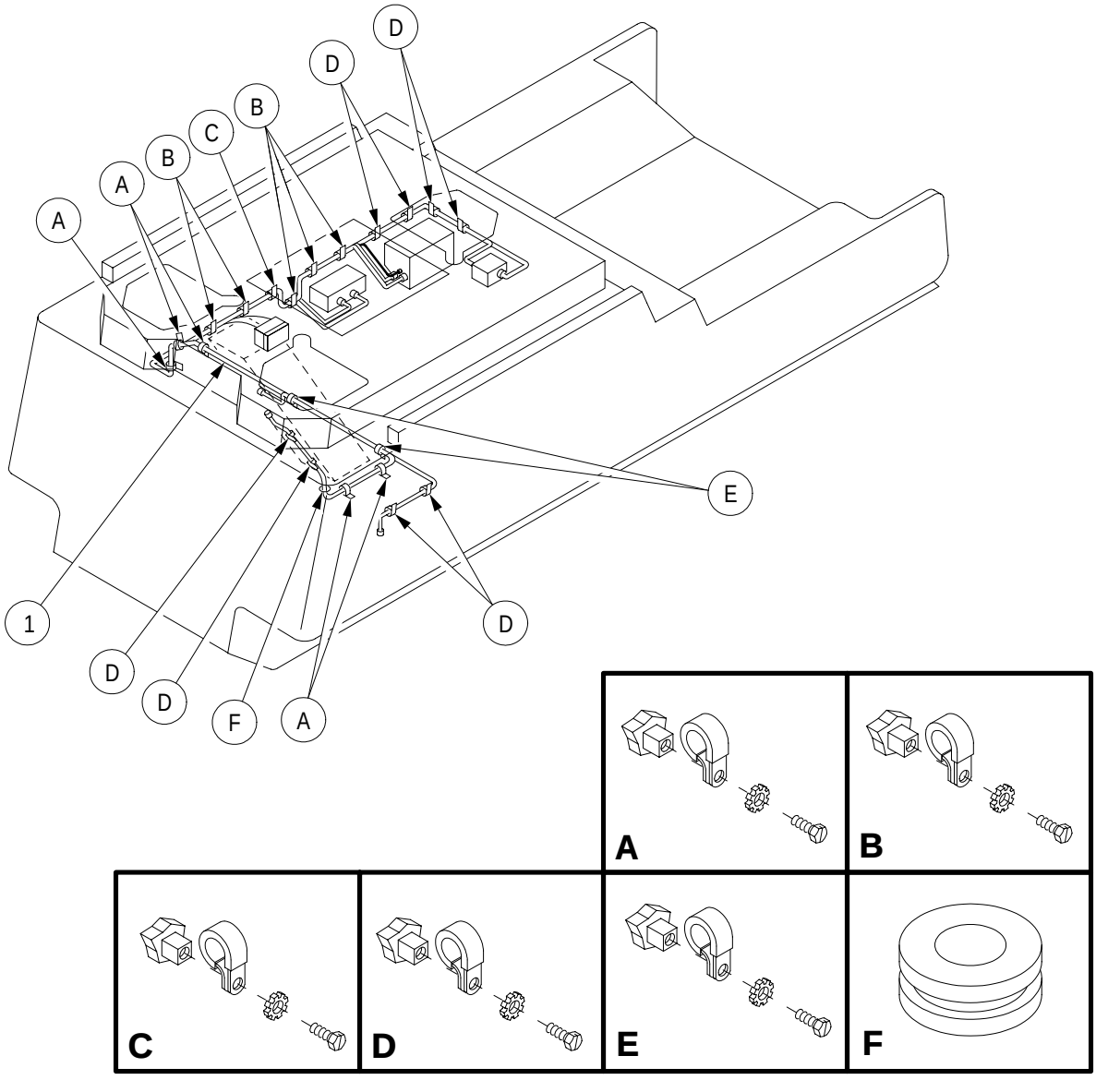
WIRING HARNESS 2W601 REPLACEMENT (OLD CONFIGURATION) - CONTINUED 0291 00

Removal-Continued

2. Remove grommet, straps, clamps, attaching hardware and lockwashers (A through F), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers and grommet.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with new grommet, straps, clamps, attaching hardware and new lockwashers (A through F), as shown in illustration.



WIRING HARNESS 2W601 REPLACEMENT (OLD CONFIGURATION) - CONTINUED 0291 00

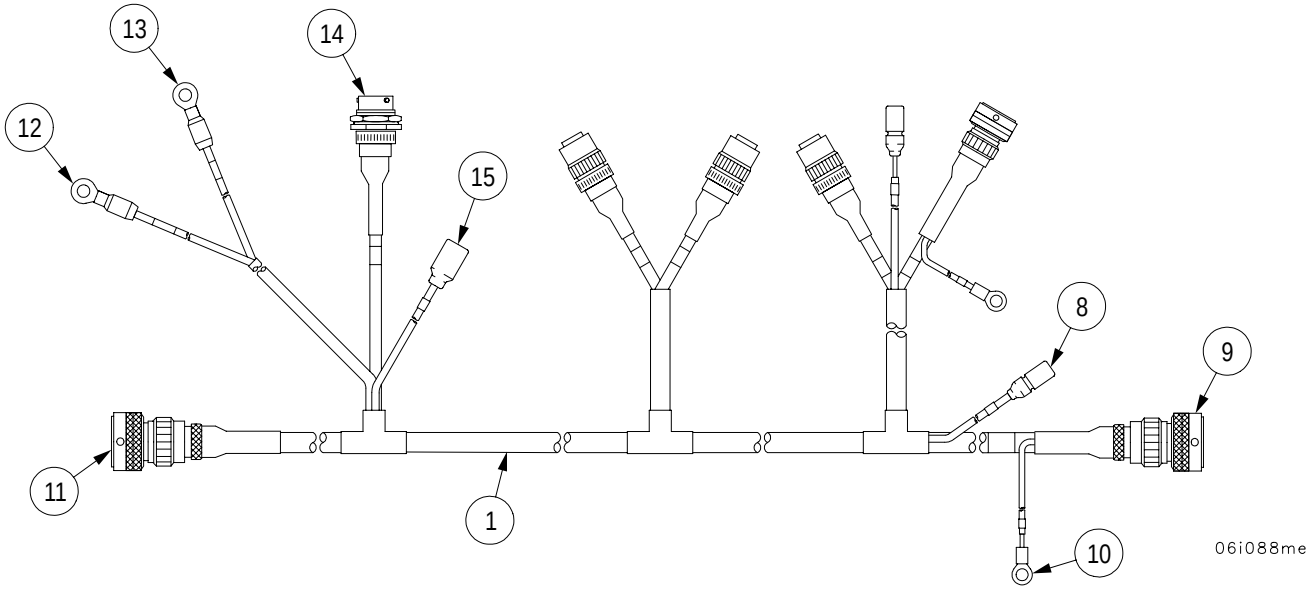
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

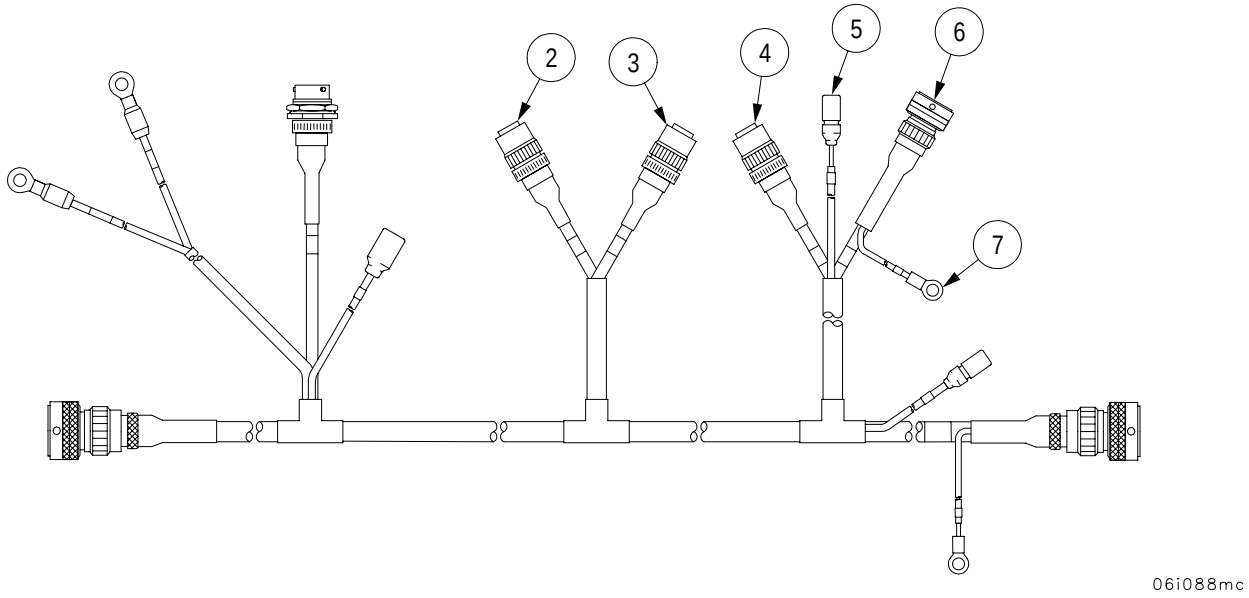
Item No.	2W601 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
15	Wire 591	Low Brake Pressure Warning Switch	Crew Compartment (Below Subfloor Plates)
14	Connector J1	Wiring Harness 2W602 Connector P1	Crew Compartment (Below Subfloor Plates)
13	Terminal 359B	Pay-Out Solenoid Valve	Crew Compartment (Below Subfloor Plates)
12	Terminal 359B	Pay-In Solenoid Valve	Crew Compartment (Below Subfloor Plates)
11	Connector P1	PTO/Accessory Panel	Crew Compartment (Next to Hydraulic Control Panel)
10	Terminal GND	Electromagnetic Clutch Power Takeoff Ground	Crew Compartment (Below Subfloor Plates)
9	Connector P2	Electromagnetic Clutch Power Takeoff	Crew Compartment (Below Subfloor Plates)
8	Wire 525	PTO High Temperature Switch	Electromagnetic Clutch Power Takeoff (Below Subfloor Plates)



WIRING HARNESS 2W601 REPLACEMENT (OLD CONFIGURATION) - CONTINUED 0291 00

Installation-Continued

Item No.	2W601 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
7	Terminal GND	Hydraulic Reservoir Liquid Level Sensor Ground	Hydraulic Reservoir (Below Subfloor Plates)
6	Connector P6	Hydraulic Reservoir Liquid Level Sensor	Hydraulic Reservoir (Below Subfloor Plates)
5	Wire 664	Hydraulic Reservoir Oil Temperature Sensor	Hydraulic Reservoir (Below Subfloor Plates)
4	Connector P5	Hydraulic Reservoir Oil Temperature Switch	Hydraulic Reservoir (Below Subfloor Plates)
3	Connector P4	Charge Filter	Hydraulic Filter Manifold (Below Subfloor Plates-Near Hydraulic Reservoir)
2	Connector P3	Return Filter	Hydraulic Filter Manifold (Below Subfloor Plates-Near Hydraulic Reservoir)



NOTE

FOLLOW-ON MAINTENANCE:
Install crew compartment
subfloor plates #8, #9, #10, #11, #13, #14, #15, #18, #22, #27 and #29 (WP 0454 00)
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 2W601 REPLACEMENT (OVERRIDE MODIFICATION) 0291 01

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (21) (item 58, WP 0718 00)
Lockwashers (9) (item 9, WP 0718 00)
Grommet (item 348, WP 0718 00)
Lockwashers (2) (item 11, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Crew compartment subfloor plates #8, #9, #10, #11, #13, #14, #15, #18, #22, #27 and #29 removed (WP 0454 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

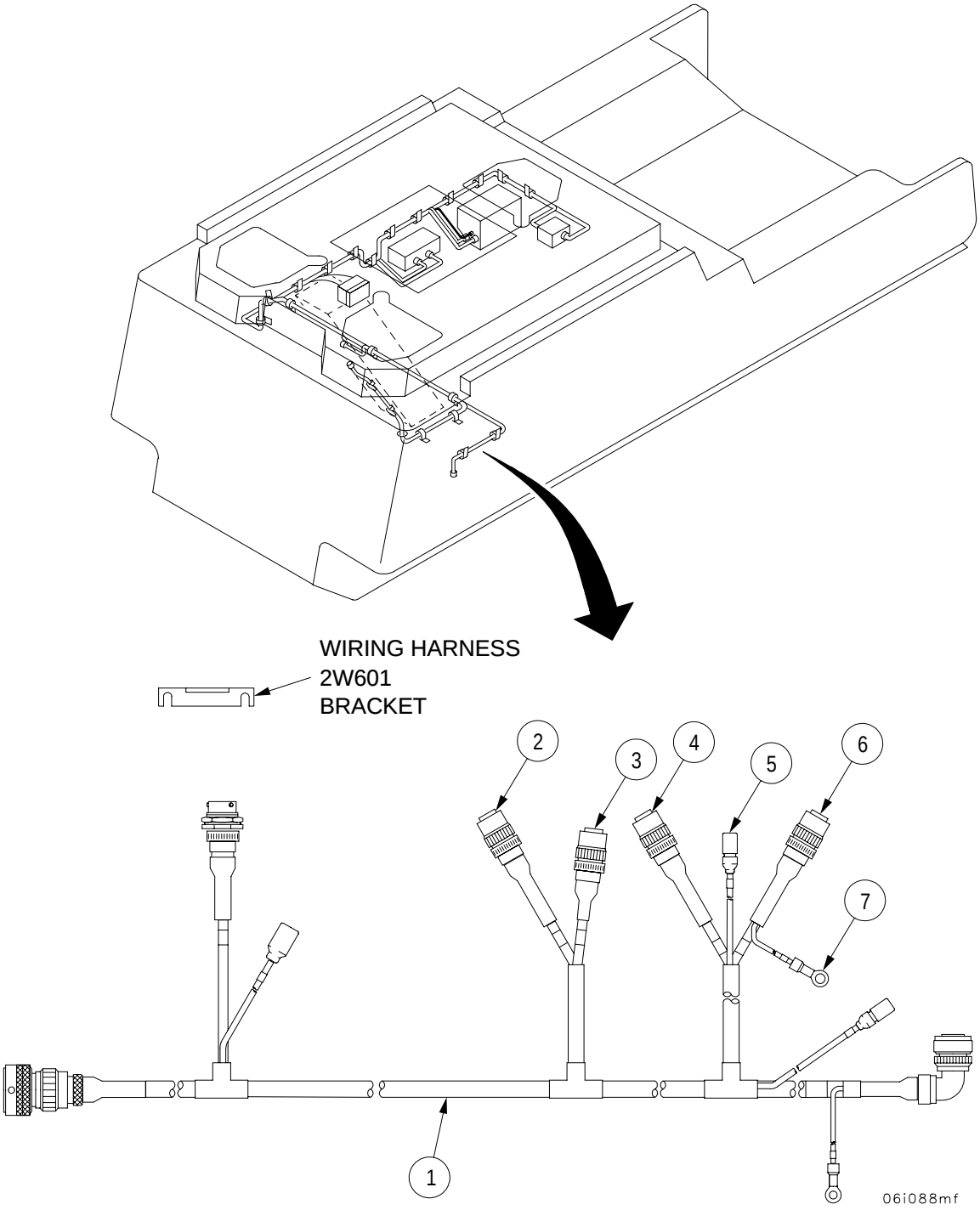
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	2W601 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P3	Return Filter	Hydraulic Filter Manifold (Below Subfloor Plates-Near Hydraulic Reservoir)
3	Connector P4	Charge Filter	Hydraulic Filter Manifold (Below Subfloor Plates-Near Hydraulic Reservoir)
4	Connector P5	Hydraulic Reservoir Oil Temperature Switch	Hydraulic Reservoir (Below Subfloor Plates)
5	Wire 664	Hydraulic Reservoir Oil Temperature Sensor	Hydraulic Reservoir (Below Subfloor Plates)
6	Connector P6	Hydraulic Reservoir Liquid Level Sensor	Hydraulic Reservoir (Below Subfloor Plates)
7	Terminal GND	Hydraulic Reservoir Liquid Level Sensor Ground	Hydraulic Reservoir (Below Subfloor Plates)

WIRING HARNESS 2W601 REPLACEMENT (OVERRIDE MODIFICATION) - CONTINUED 0291 01

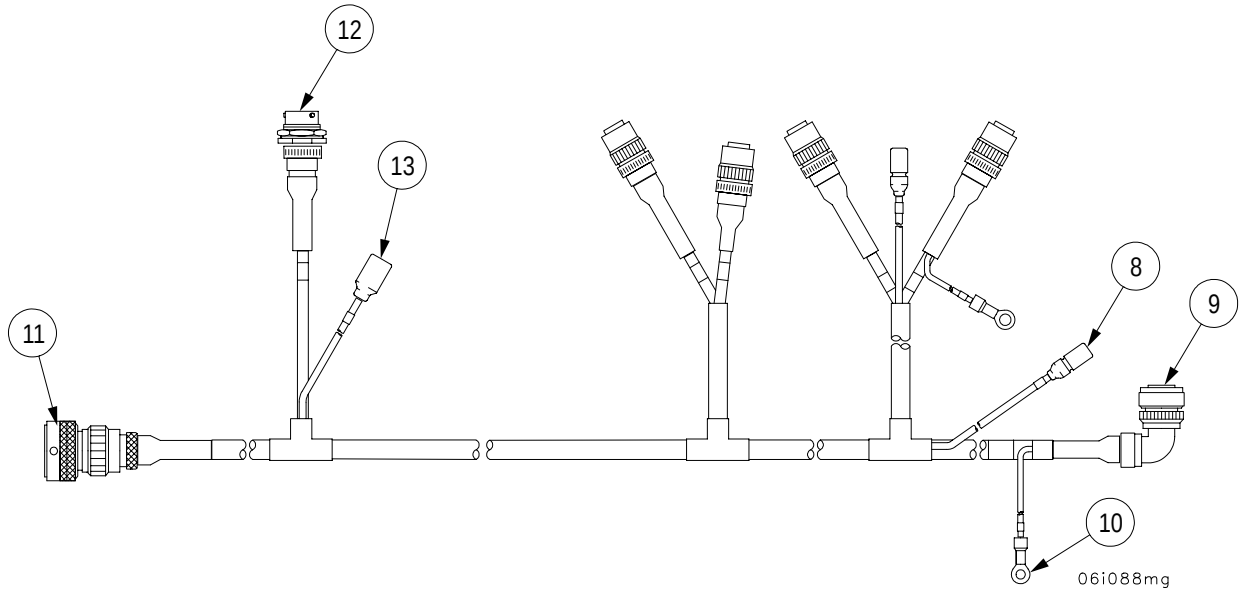
Removal-Continued



WIRING HARNESS 2W601 REPLACEMENT (OVERRIDE MODIFICATION) - CONTINUED 0291 01

Removal-Continued

Item No.	2W601 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
8	Wire 525	PTO High Temperature Switch	Electromagnetic Clutch Power Takeoff (Below Subfloor Plates)
9	Connector P2	Electromagnetic Clutch Power Takeoff	Crew Compartment (Below Subfloor Plates)
10	Terminal GND	Electromagnetic Clutch Power Takeoff Ground	Crew Compartment (Below Subfloor Plates)
11	Connector P1	PTO/Accessory Panel	Crew Compartment (Next to Hydraulic Control Panel)
12	Connector J1	Wiring Harness 2W602 Connector P1	Crew Compartment (Below Subfloor Plates)
13	Wire 591	Low Brake Pressure Warning Switch	Crew Compartment (Below Subfloor Plates)



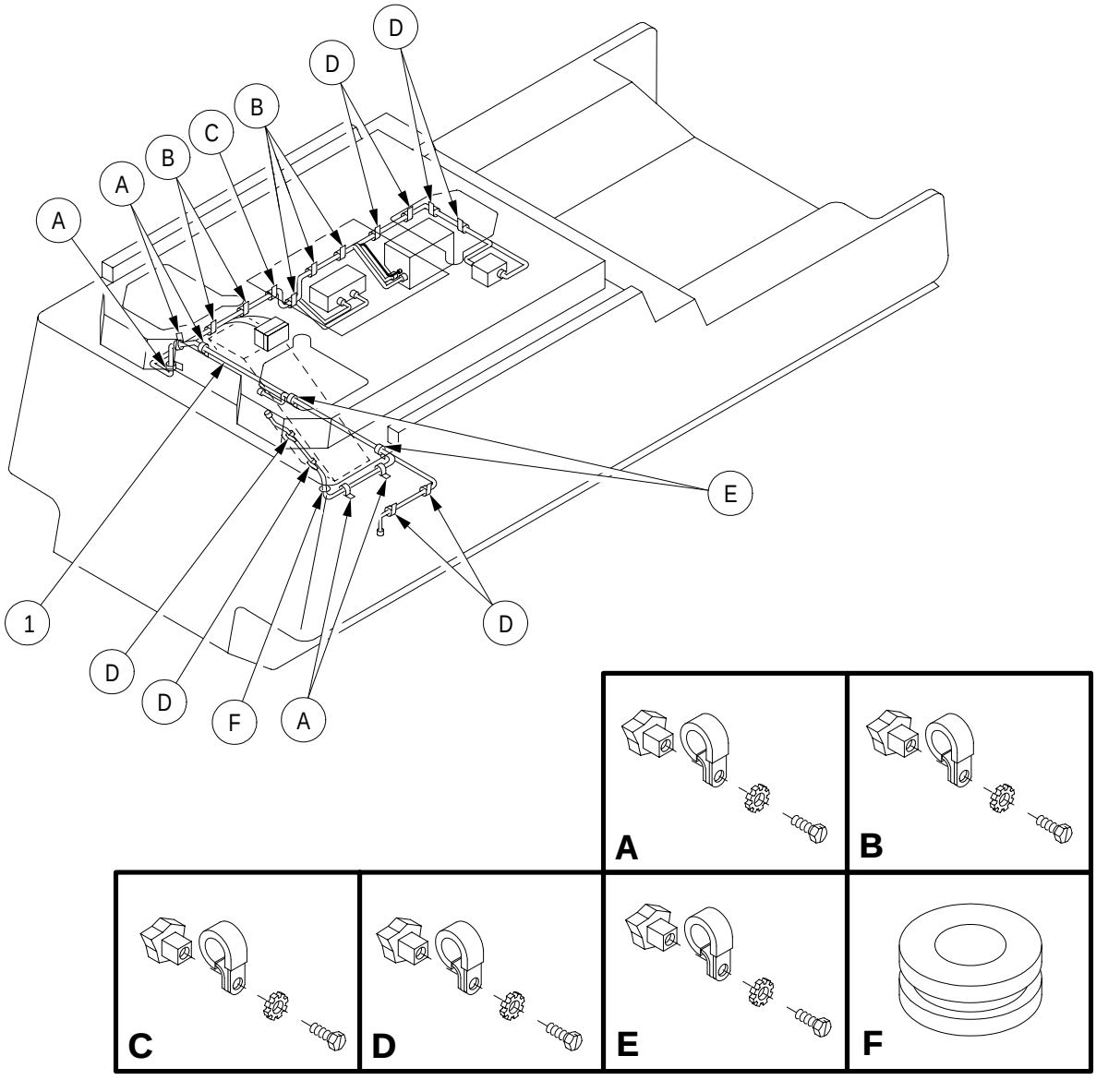
WIRING HARNESS 2W601 REPLACEMENT (OVERRIDE MODIFICATION) - CONTINUED 0291 01

Removal-Continued

2. Remove grommet, straps, clamps, attaching hardware and lockwashers (A through F), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers and grommet.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with new grommet, straps, clamps, attaching hardware and new lockwashers (A through F), as shown in illustration.



WIRING HARNESS 2W601 REPLACEMENT (OVERRIDE MODIFICATION) - CONTINUED 0291 01

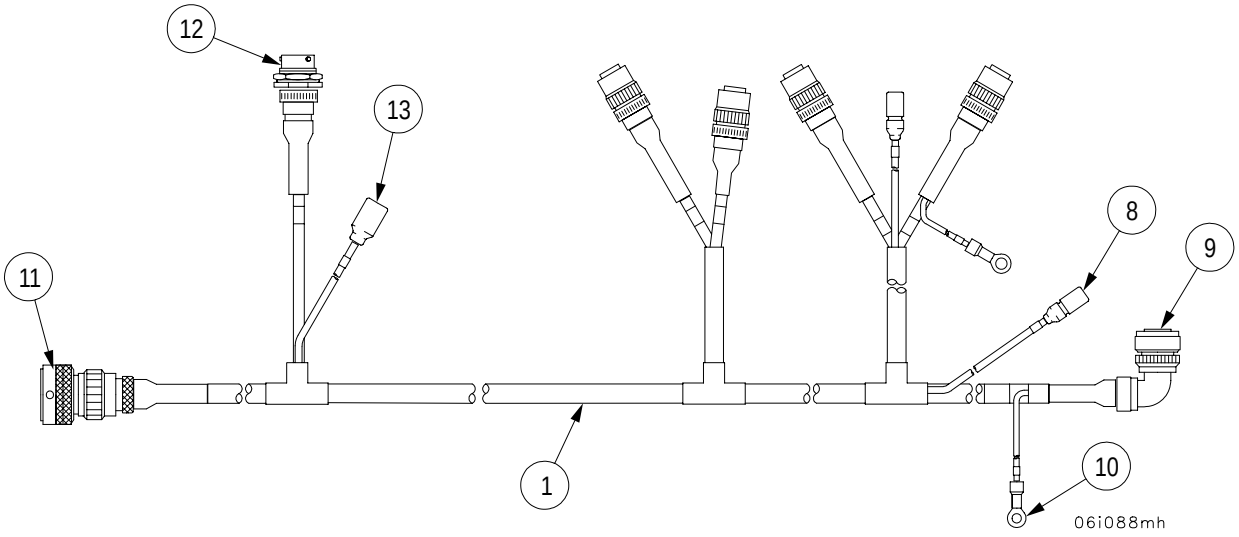
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

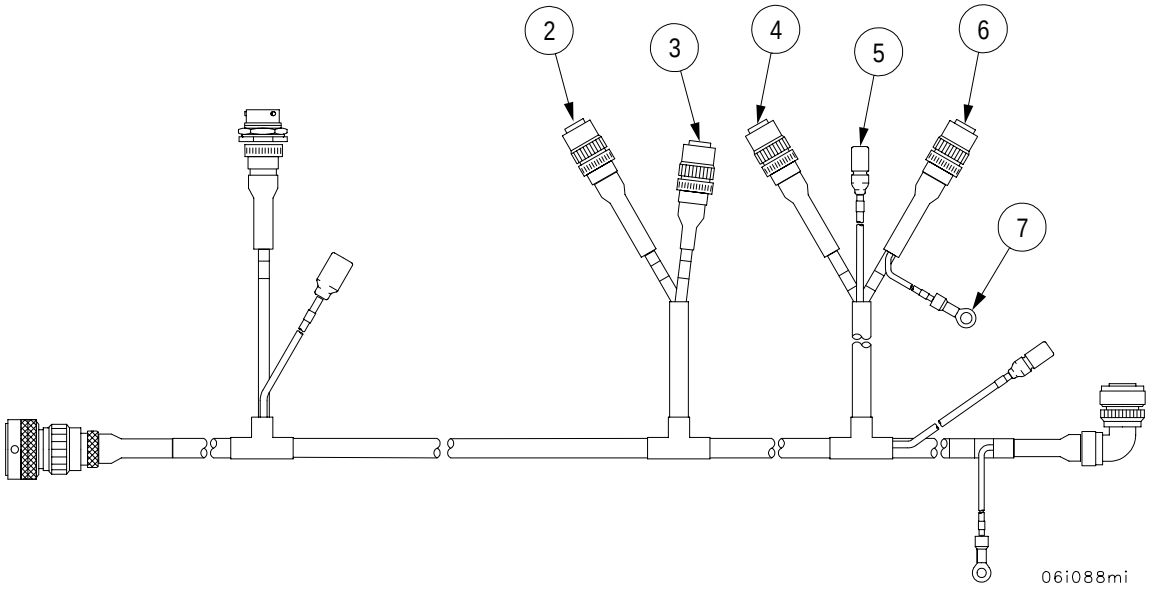
Item No.	2W601 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
13	Wire 591	Low Brake Pressure Warning Switch	Crew Compartment (Below Subfloor Plates)
12	Connector J1	Wiring Harness 2W602 Connector P1	Crew Compartment (Below Subfloor Plates)
11	Connector P1	PTO/Accessory Panel	Crew Compartment (Next to Hydraulic Control Panel)
10	Terminal GND	Electromagnetic Clutch Power Takeoff Ground	Crew Compartment (Below Subfloor Plates)
9	Connector P2	Electromagnetic Clutch Power Takeoff	Crew Compartment (Below Subfloor Plates)
8	Wire 525	PTO High Temperature Switch	Electromagnetic Clutch Power Takeoff (Below Subfloor Plates)



WIRING HARNESS 2W601 REPLACEMENT (OVERRIDE MODIFICATION) - CONTINUED 0291 01

Installation-Continued

Item No.	2W601 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
7	Terminal GND	Hydraulic Reservoir Liquid Level Sensor Ground	Hydraulic Reservoir (Below Subfloor Plates)
6	Connector P6	Hydraulic Reservoir Liquid Level Sensor	Hydraulic Reservoir (Below Subfloor Plates)
5	Wire 664	Hydraulic Reservoir Oil Temperature Sensor	Hydraulic Reservoir (Below Subfloor Plates)
4	Connector P5	Hydraulic Reservoir Oil Temperature Switch	Hydraulic Reservoir (Below Subfloor Plates)
3	Connector P4	Charge Filter	Hydraulic Filter Manifold (Below Subfloor Plates-Near Hydraulic Reservoir)
2	Connector P3	Return Filter	Hydraulic Filter Manifold (Below Subfloor Plates-Near Hydraulic Reservoir)



NOTE

FOLLOW-ON MAINTENANCE:
Install crew compartment
subfloor plates #8, #9, #10, #11, #13, #14, #15, #18, #22, #27 and #29 (WP 0454 00)
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 2W602 REPLACEMENT 0292 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 58, WP 0718 00)
Lockwashers (4) (item 9, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Wiring harness wires 361A, 361B, 375 and wire 10 disconnected from two layer limit switches and payout limit switch (WP 0501 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

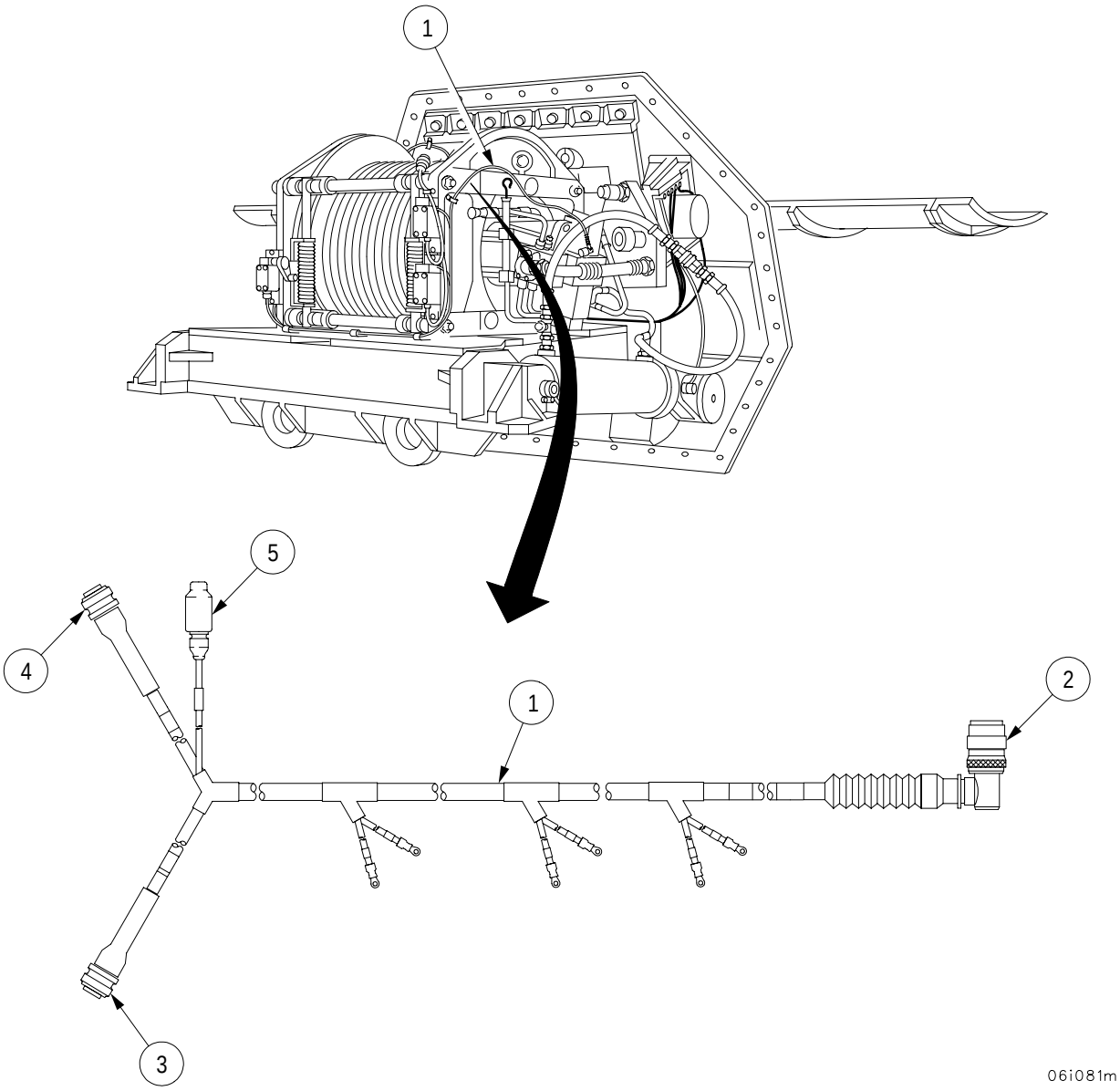
Retain attaching hardware securing wiring harness 2W602 to switches to aid in installation.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	2W602 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	2W601 Connector J1	Main Winch
3	Connector P2	Level Winder Limit Switch	Main Winch
4	Connector P3	Level Winder Limit Switch	Main Winch
5	Wire Spare	No Connection	Main Winch

WIRING HARNESS 2W602 REPLACEMENT - CONTINUED 0292 00

Removal-Continued



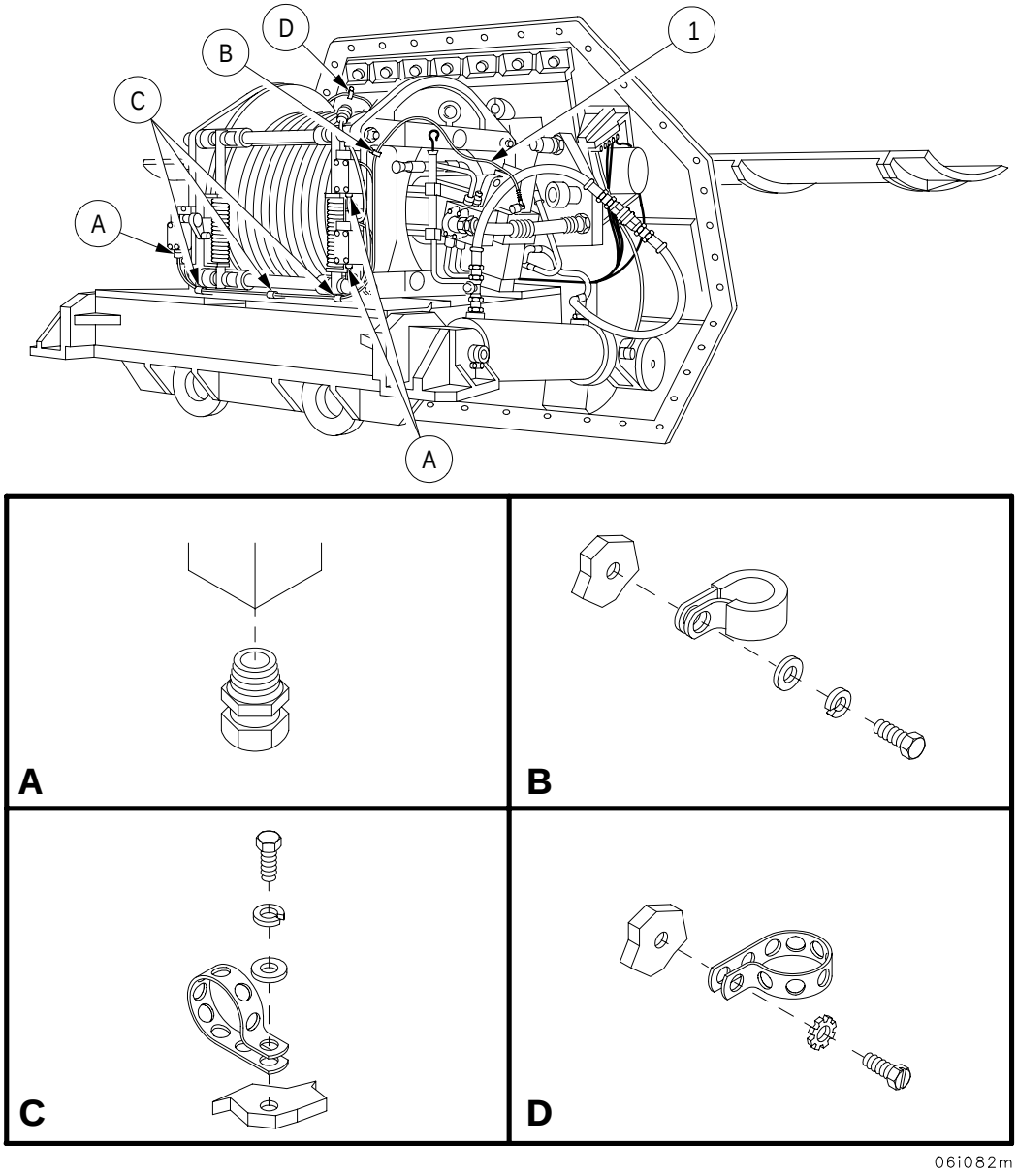
WIRING HARNESS 2W602 REPLACEMENT - CONTINUED 0292 00

Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through D), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through D), as shown in illustration.



WIRING HARNESS 2W602 REPLACEMENT - CONTINUED 0292 00

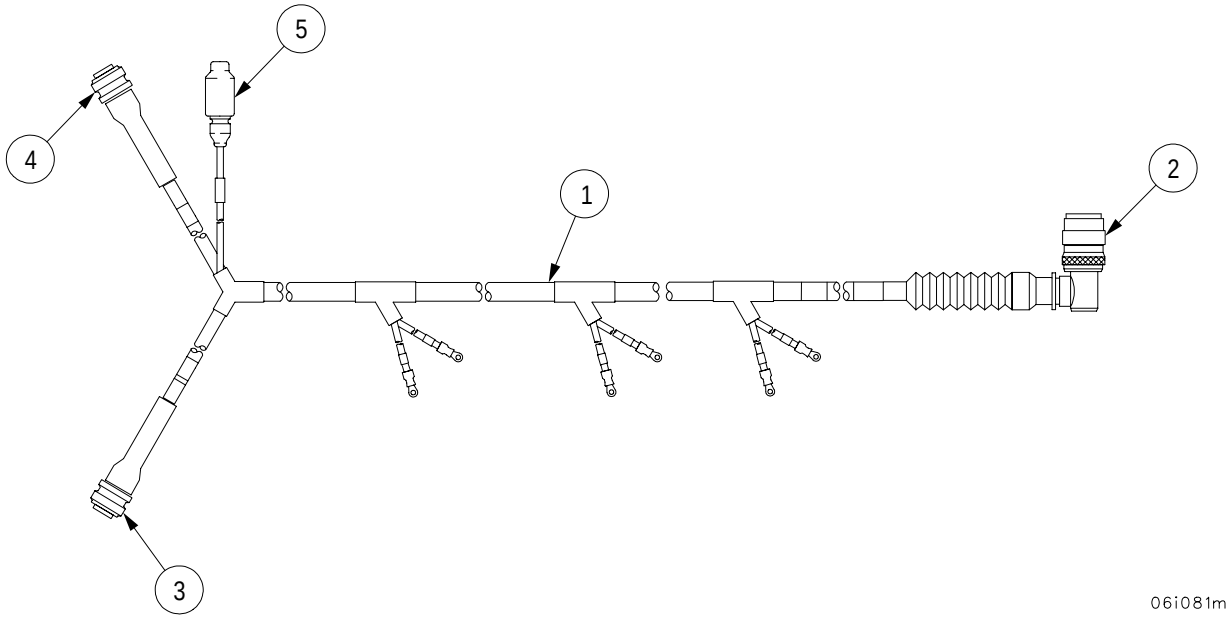
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	2W602 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
5	Wire Spare	No Connection	Main Winch
4	Connector P3	Level Winder Limit Switch	Main Winch
3	Connector P2	Level Winder Limit Switch	Main Winch
2	Connector P1	2W601 Connector J1	Main Winch



NOTE

FOLLOW-ON MAINTENANCE:
Connect wiring 2W602 wires 361A, 361B, 375 and wire 10 to two layer limit switches and payout limit switch (WP 0501 00).

END OF TASK

WIRING HARNESS 2W612 REPLACEMENT (OVERRIDE MODIFICATION) 0292 01

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (21) (item 58, WP 0718 00)
Lockwashers (9) (item 9, WP 0718 00)
Grommet (item 348, WP 0718 00)
Lockwashers (2) (item 11, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Crew compartment subfloor plates #8, #9, #10, #11, #13, #14, #15, #18, #22, #27 and #29 removed (WP 0454 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

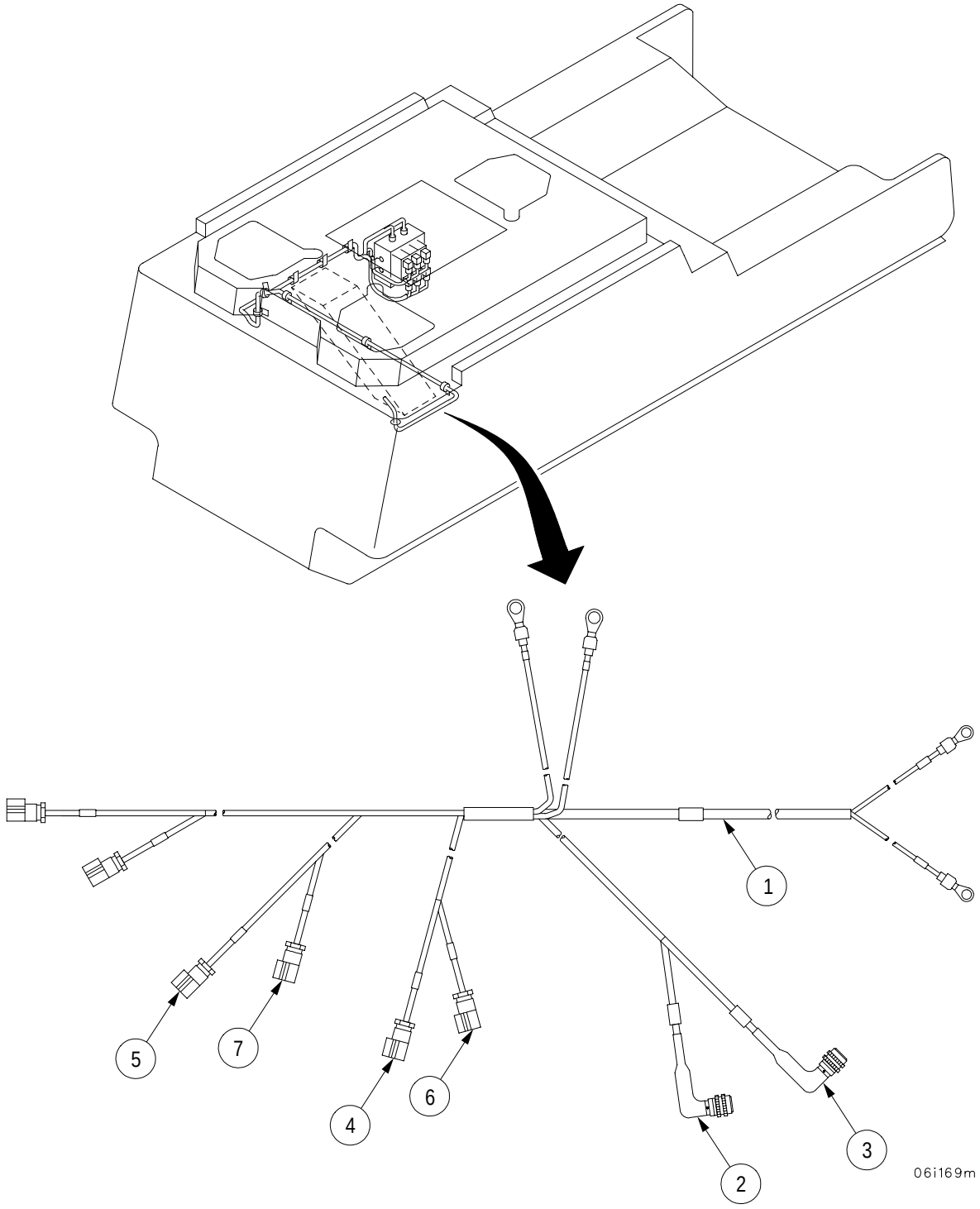
Retain attaching hardware securing wires 359A, 359B and ground wire for installation.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	2W612 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P7	PMI Pressure Switch	Main Winch Power Reduction Manifold (below subfloor plates)
3	Connector P8	PMO Pressure Switch	Main Winch Power Reduction Manifold (below subfloor plates)
4	Connector P1	PMI-b Safety Valve	Main Winch Power Reduction Manifold (below subfloor plates)
5	Connector P2	PMO-b Safety Valve	Main Winch Power Reduction Manifold (below subfloor plates)
6	Connector P3	PMI-a Safety Valve	Main Winch Power Reduction Manifold (below subfloor plates)
7	Connector P4	PMO-a Safety Valve	Main Winch Power Reduction Manifold (below subfloor plates)

WIRING HARNESS 2W612 REPLACEMENT (OVERRIDE MODIFICATION) - CONTINUED 0292 01

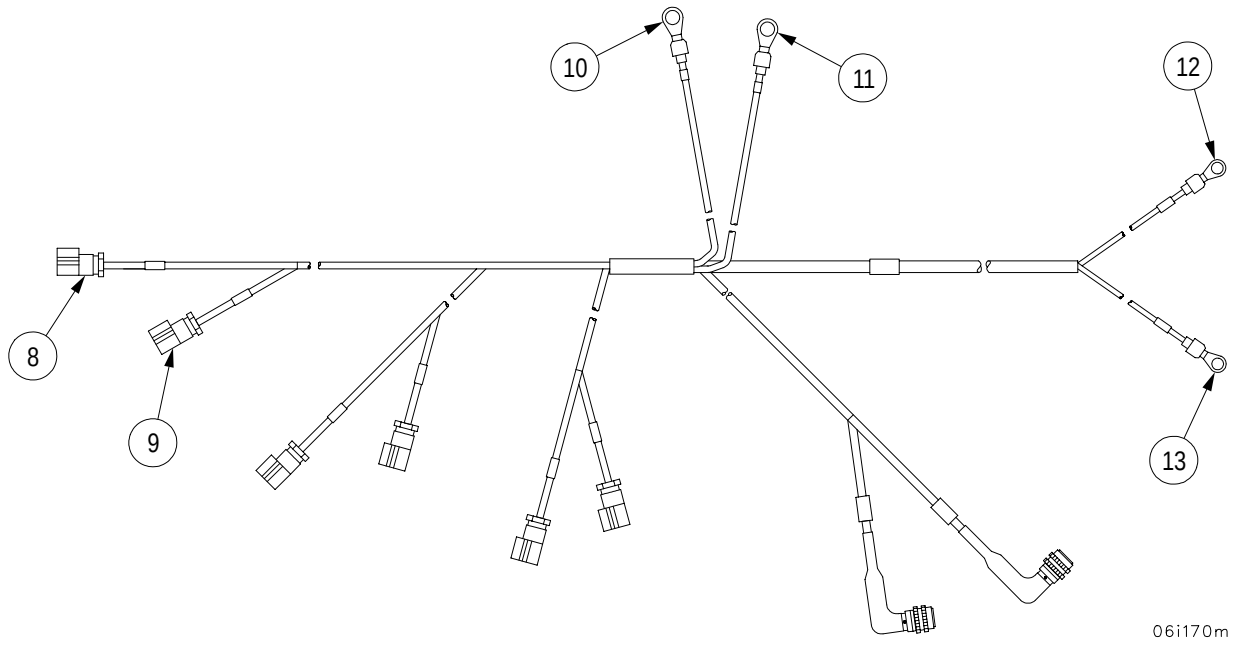
Removal-Continued



WIRING HARNESS 2W612 REPLACEMENT (OVERRIDE MODIFICATION) - CONTINUED 0292 01

Removal-Continued

Item No.	2W612 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
8	Connector P5	MWLS-b Directional Control Valve	Main Winch Power Reduction Manifold (below subfloor plates)
9	Connector P6	MWLS-a Directional Control Valve	Main Winch Power Reduction Manifold (below subfloor plates)
10	Terminal GND		Main Winch Power Reduction Manifold (below subfloor plates)
11	Terminal GND		Main Winch Power Reduction Manifold (below subfloor plates)
12	Terminal 359B	OVERRIDE switch Terminal-3	Hydraulic Control Panel
13	Terminal 359A	OVERRIDE switch Terminal-1	Hydraulic Control Panel



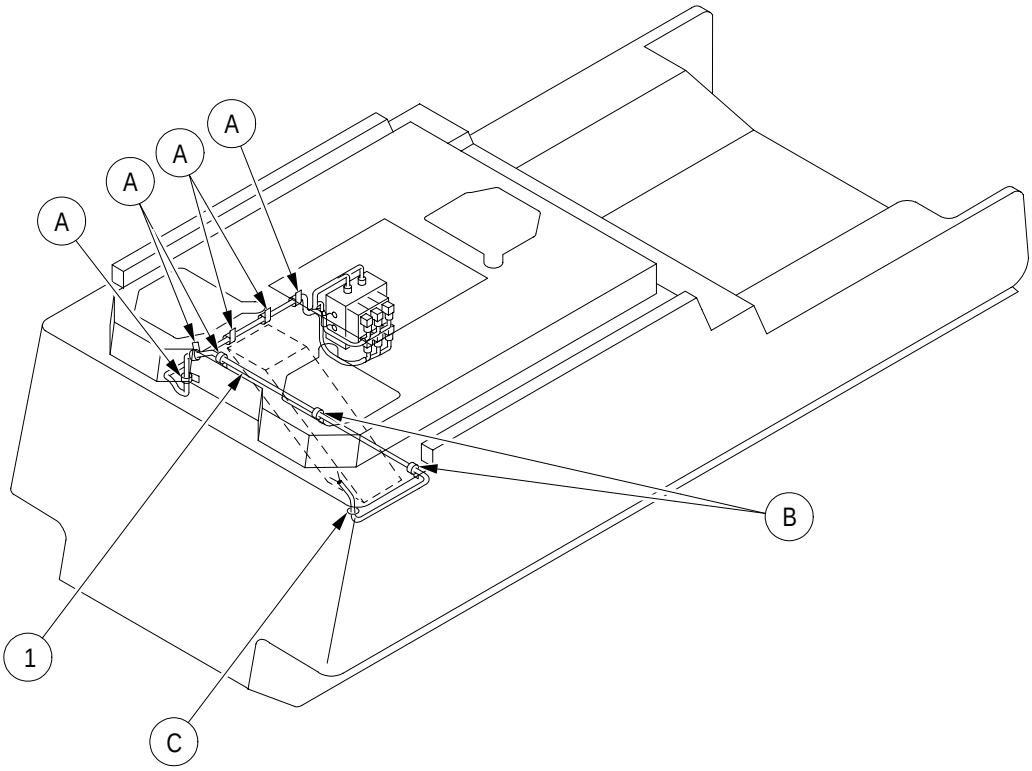
WIRING HARNESS 2W612 REPLACEMENT (OVERRIDE MODIFICATION) - CONTINUED 0292 01

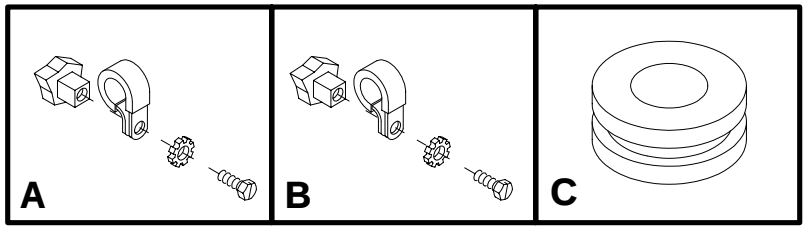
Removal-Continued

2. Remove grommet, straps, clamps, attaching hardware and lockwashers (A through F), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers and grommet.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with new grommet, straps, clamps, attaching hardware and new lockwashers (A through F), as shown in illustration.





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WIRING HARNESS 2W612 REPLACEMENT (OVERRIDE MODIFICATION) - CONTINUED 0292 01

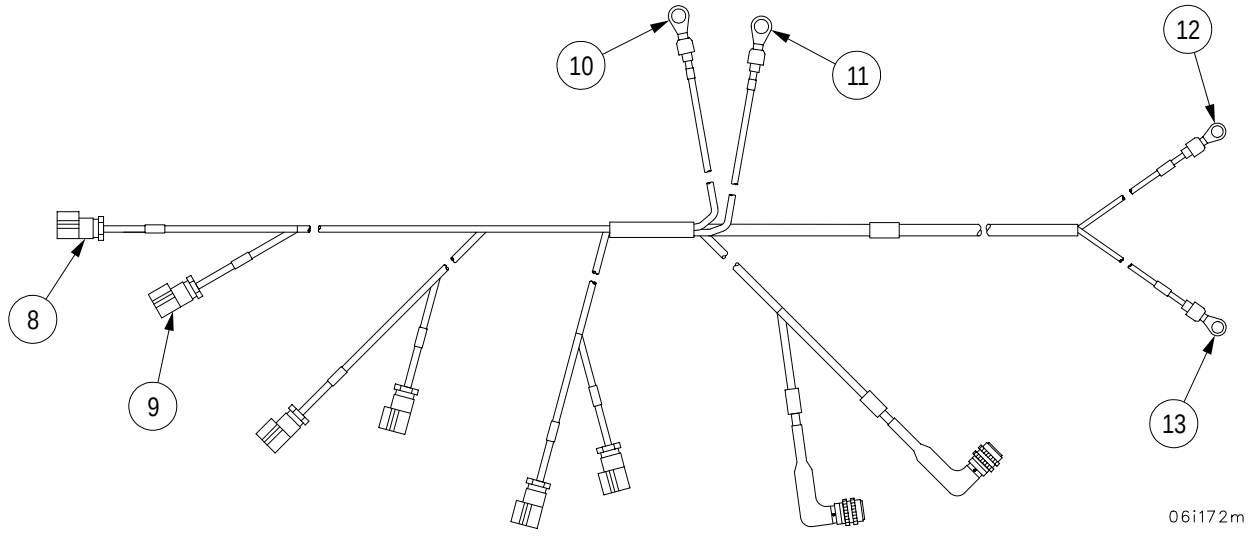
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

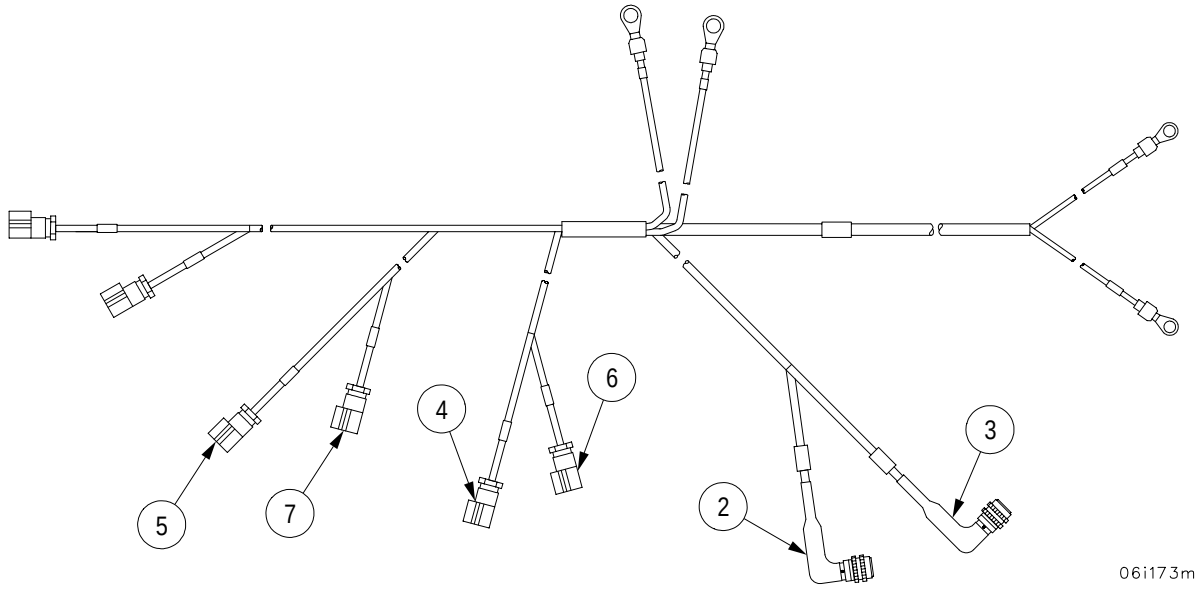
Item No.	2W612 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
13	Terminal 359A	OVERRIDE switch terminal -1	Hydraulics Control Panel
12	Terminal 359B	OVERRIDE switch terminal -3	Hydraulics Control Panel
11	Terminal GND		Main Winch Power Reduction Manifold Bracket (below sub-floor plates)
10	Terminal GND		Main Winch Power Reduction Manifold Bracket (below sub-floor plates)
9	Connector P6	MWLS-a Directional Control Valve	Main Winch Power Reduction Manifold (below subfloor plates)
8	Connector P5	MWLS-b Directional Control Valve	Main Winch Power Reduction Manifold (below subfloor plates)



WIRING HARNESS 2W612 REPLACEMENT (OVERRIDE MODIFICATION) - CONTINUED 0292 01

Installation-Continued

Item No.	2W612 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
7	Connector P4	PMO-a Safety Valve	Main Winch Power Reduction Manifold (below subfloor plates)
6	Connector P3	PMI-a Safety Valve	Main Winch Power Reduction Manifold (below subfloor plates)
5	Connector P2	PMO-b Safety Valve	Main Winch Power Reduction Manifold (below subfloor plates)
4	Connector P1	PMI-b Safety Valve	Main Winch Power Reduction Manifold (below subfloor plates)
3	Connector P8	PMO Pressure Switch	Main Winch Power Reduction Manifold (below subfloor plates)
2	Connector P7	PMI Pressure Switch	Main Winch Power Reduction Manifold (below subfloor plates)



NOTE

FOLLOW-ON MAINTENANCE:

Install crew compartment
subfloor plates #8, #9, #10, #11, #13, #14, #15, #18, #22, #27 and #29 (WP 0454 00)
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 3W132 REPLACEMENT 0293 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (4) (item 351, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

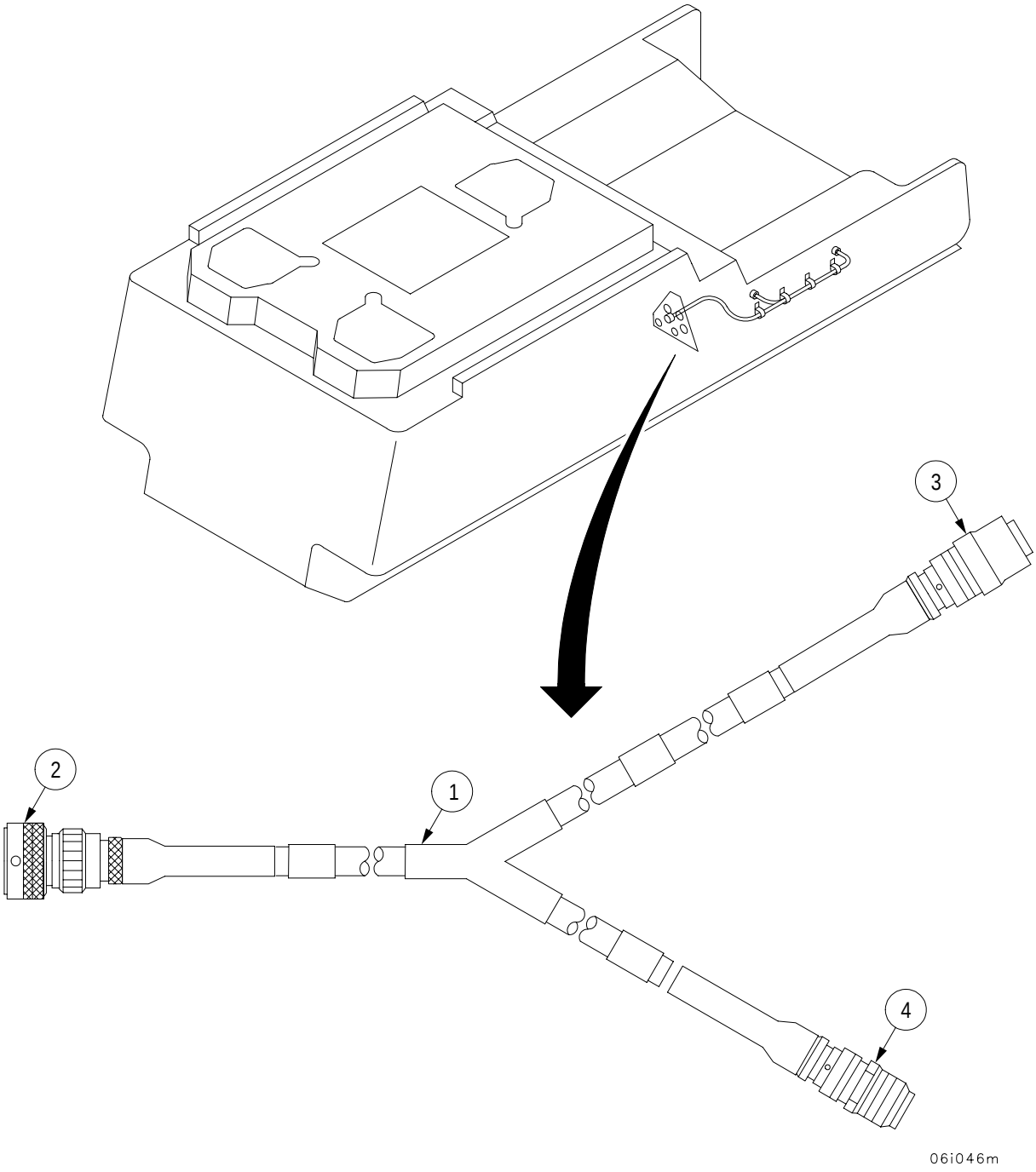
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	3W132 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Electrical Bulkhead Connector J5	Engine Compartment (Left Front)
3	Connector P2	3W143 Connector J2	Engine Compartment (Left Side)
4	Connector J1	3W702 Connector P4	Engine Compartment (Left Side)

WIRING HARNESS 3W132 REPLACEMENT - CONTINUED 0293 00

Removal-Continued



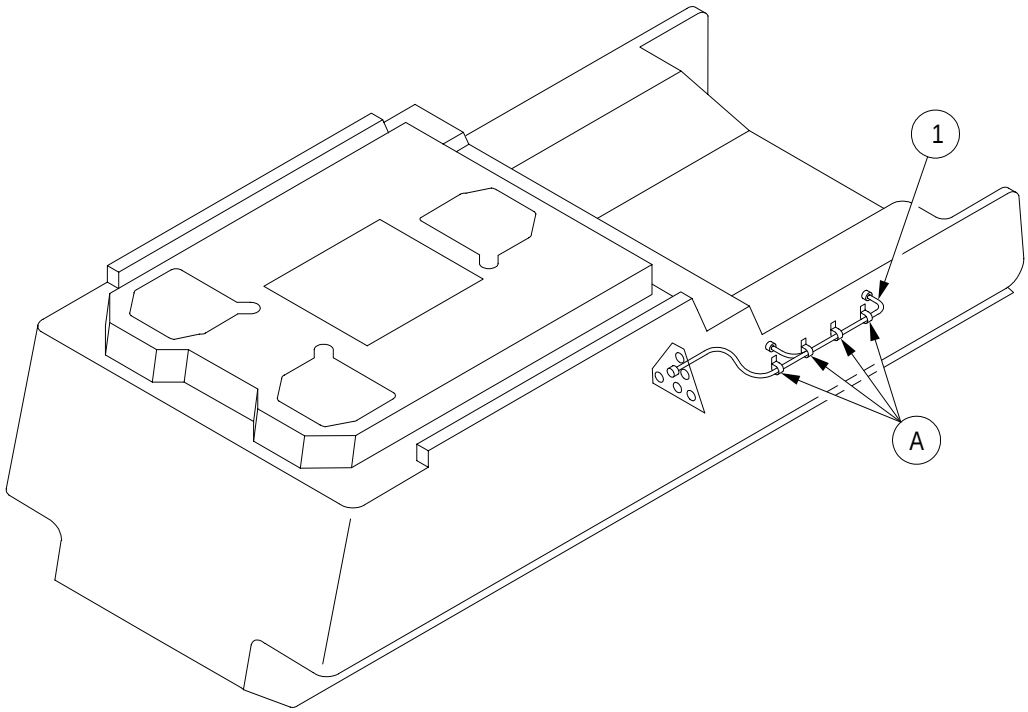
WIRING HARNESS 3W132 REPLACEMENT - CONTINUED 0293 00

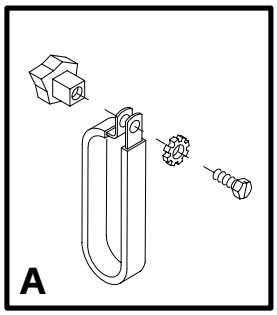
Removal-Continued

2. Remove clamps, attaching hardware and lockwashers (A), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle with clamps, attaching hardware and new lockwashers (A), as shown in illustration.





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WIRING HARNESS 3W132 REPLACEMENT - CONTINUED 0293 00

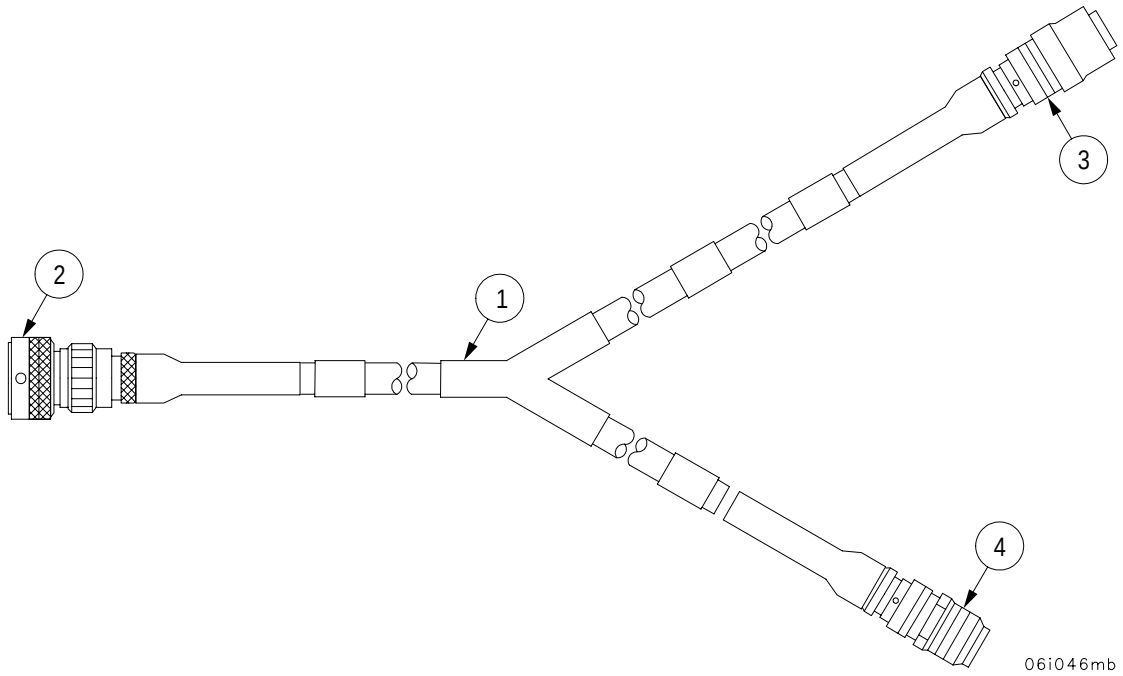
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	3W132 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
4	Connector J1	3W702 Connector P4	Engine Compartment (Left Side)
3	Connector P2	3W143 Connector J2	Engine Compartment (Left Side)
2	Connector P1	Electrical Bulkhead Connector J5	Engine Compartment (Left Front)



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 3W142 REPLACEMENT 0294 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (16) (item 58, WP 0718 00)
Spring tension washer (item 61, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Engine deck assembly removed (WP 0417 00)
Master relay cover removed (WP 0271 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

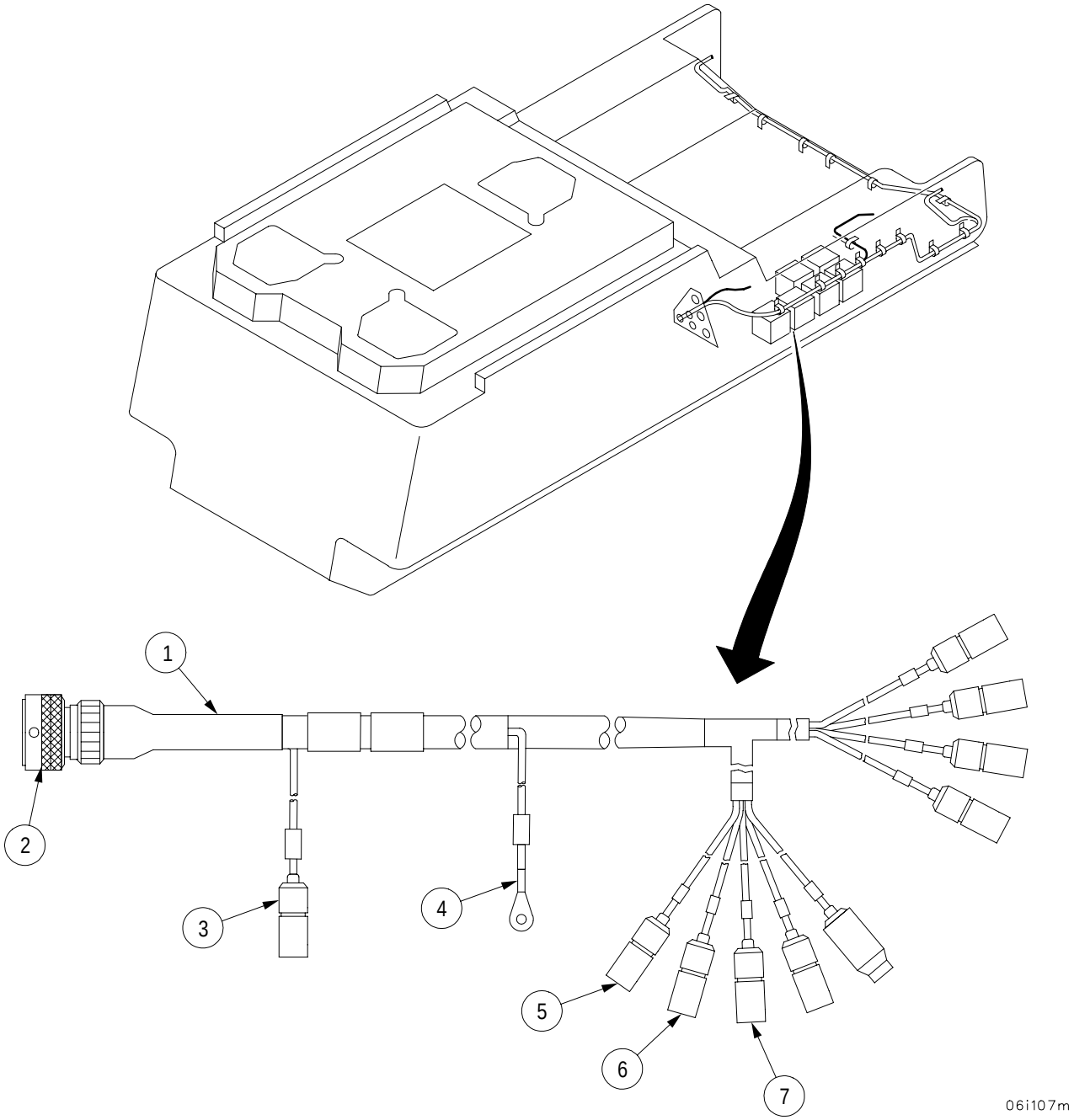
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	3W142 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Bulkhead Connector J1	Engine Compartment (Left Front)
3	Wire 400/459B	Circuit Breaker	Engine Compartment (Left Side)
4	Wire 459	Master Relay Terminal X1	Engine Compartment (Left Side)
5	Wire 22/461	Left Tail Light	Engine Compartment (Left Side)
6	Wire 24	Left Tail Light	Engine Compartment (Left Side)
7	Wire 23	Left Tail Light	Engine Compartment (Left Side)

WIRING HARNESS 3W142 REPLACEMENT - CONTINUED 0294 00

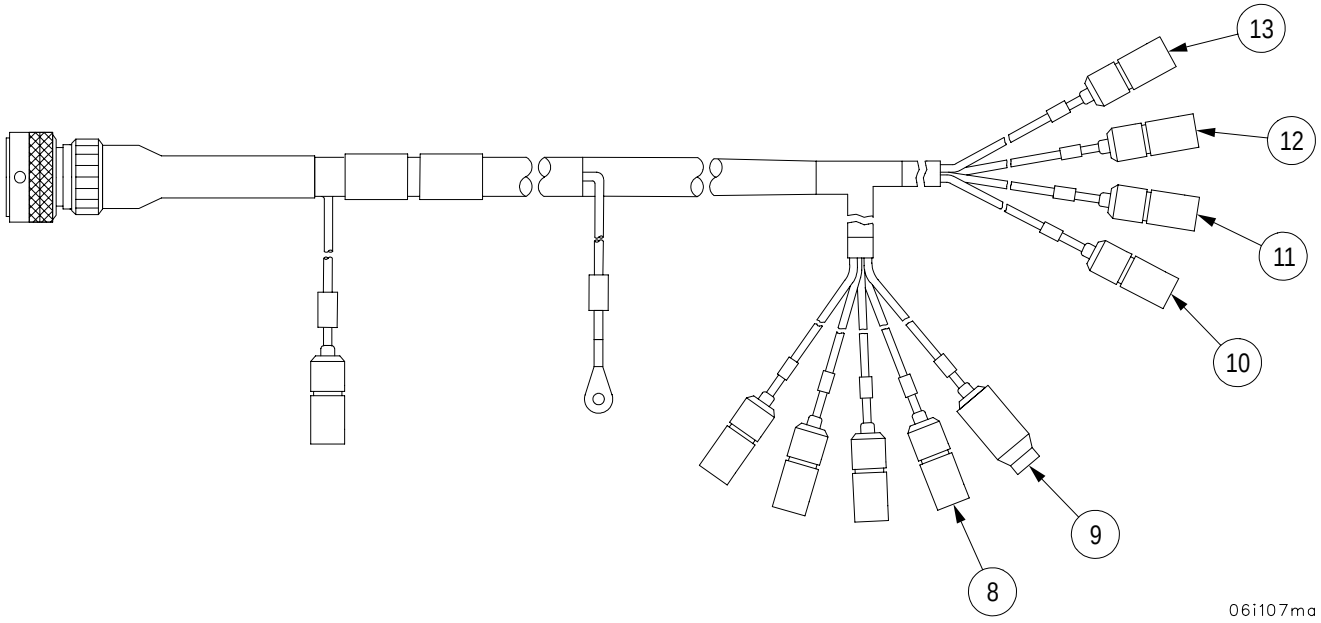
Removal-Continued



WIRING HARNESS 3W142 REPLACEMENT - CONTINUED 0294 00

Removal-Continued

Item No.	3W142 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
8	Wire 21	Left Tail Light	Engine Compartment (Left Side)
9	Wire 523	Spare (no connection)	Engine Compartment (Left Side)
10	Wire 24	Right Tail Light	Engine Compartment (Right Side)
11	Wire 23	Right Tail Light	Engine Compartment (Right Side)
12	Wire 21	Right Tail Light	Engine Compartment (Right Side)
13	Wire 22/460	Right Tail Light	Engine Compartment (Right Side)



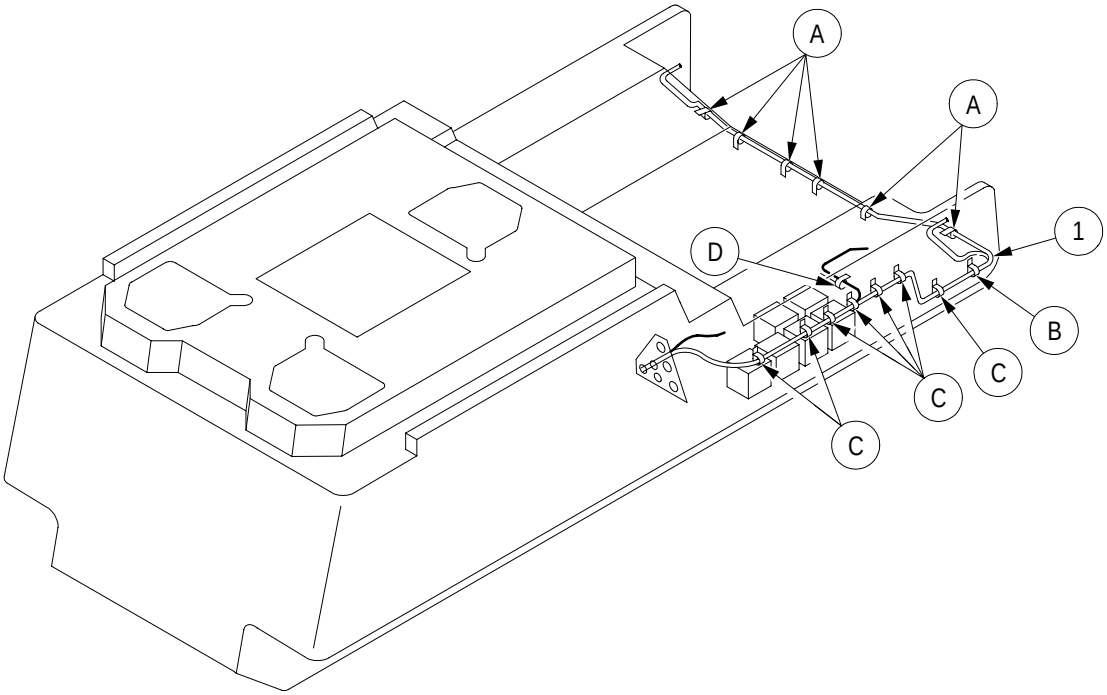
WIRING HARNESS 3W142 REPLACEMENT - CONTINUED 0294 00

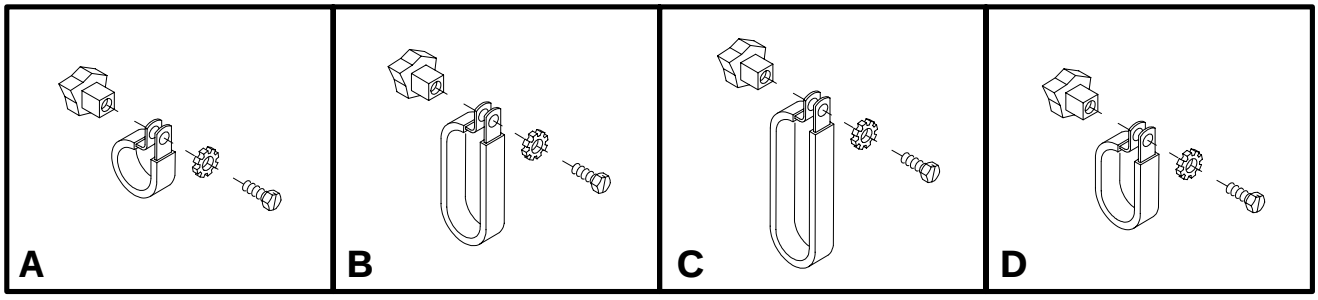
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through D), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through D), as shown in illustration.





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WIRING HARNESS 3W142 REPLACEMENT - CONTINUED 0294 00

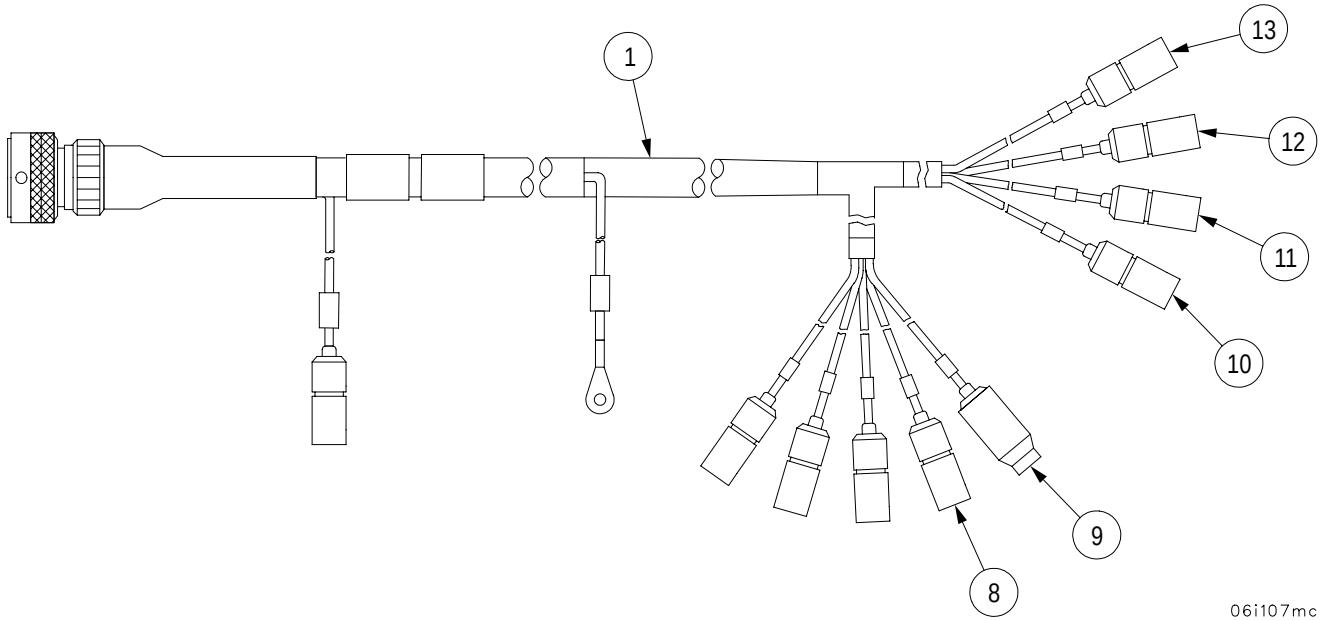
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

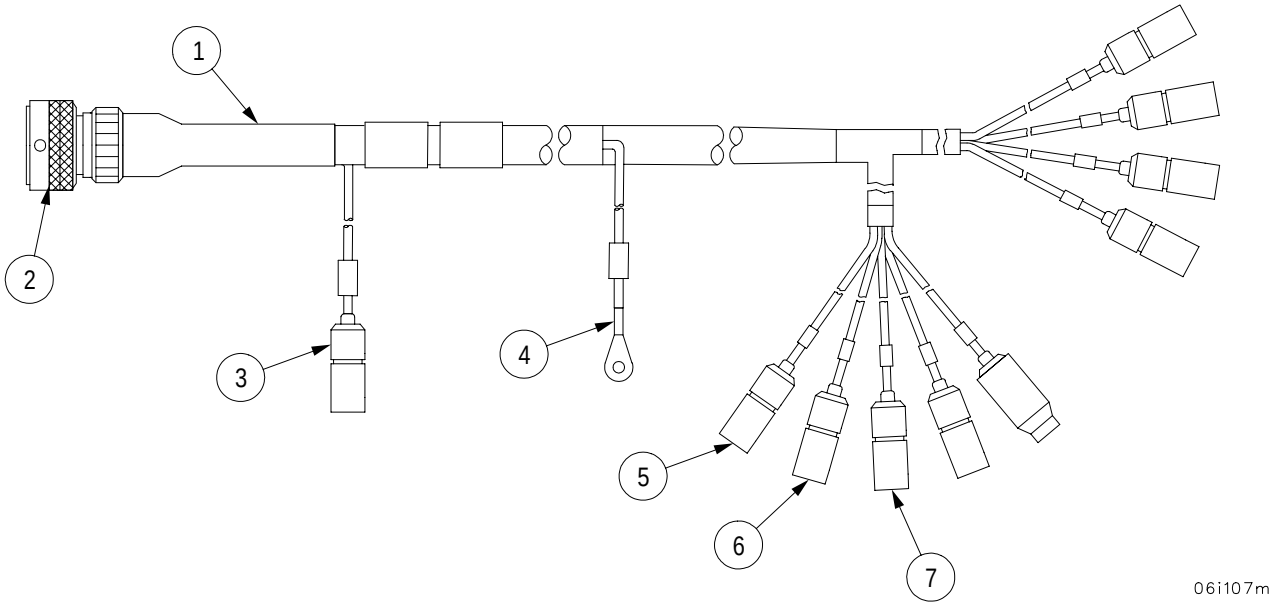
Item No.	3W142 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
13	Wire 22/460	Right Tail Light	Engine Compartment (Right Side)
12	Wire 21	Right Tail Light	Engine Compartment (Right Side)
11	Wire 23	Right Tail Light	Engine Compartment (Right Side)
10	Wire 24	Right Tail Light	Engine Compartment (Right Side)
9	Wire 523	Spare (no connection)	Engine Compartment (Left Side)
8	Wire 21	Left Tail Light	Engine Compartment (Left Side)



WIRING HARNESS 3W142 REPLACEMENT - CONTINUED 0294 00

Installation-Continued

Item No.	3W142 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
7	Wire 23	Left Tail Light	Engine Compartment (Left Side)
6	Wire 24	Left Tail Light	Engine Compartment (Left Side)
5	Wire 22/461	Left Tail Light	Engine Compartment (Left Side)
4	Wire 459	Master Relay Terminal X1	Engine Compartment (Left Side)
3	Wire 400/459B	Circuit Breaker	Engine Compartment (Left Side)
2	Connector P1	Bulkhead Connector J1	Engine Compartment (Left Front)



NOTE

FOLLOW-ON MAINTENANCE:
Install master relay cover (WP 0271 00)
Install engine deck assembly (WP 0417 00)
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 3W143 REPLACEMENT 0295 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (16) (item 58, WP 0718 00)
Lockwasher (item 38, WP 0718 00)
Lockwashers (2) (item 11, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Engine deck assembly removed (WP 0417 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

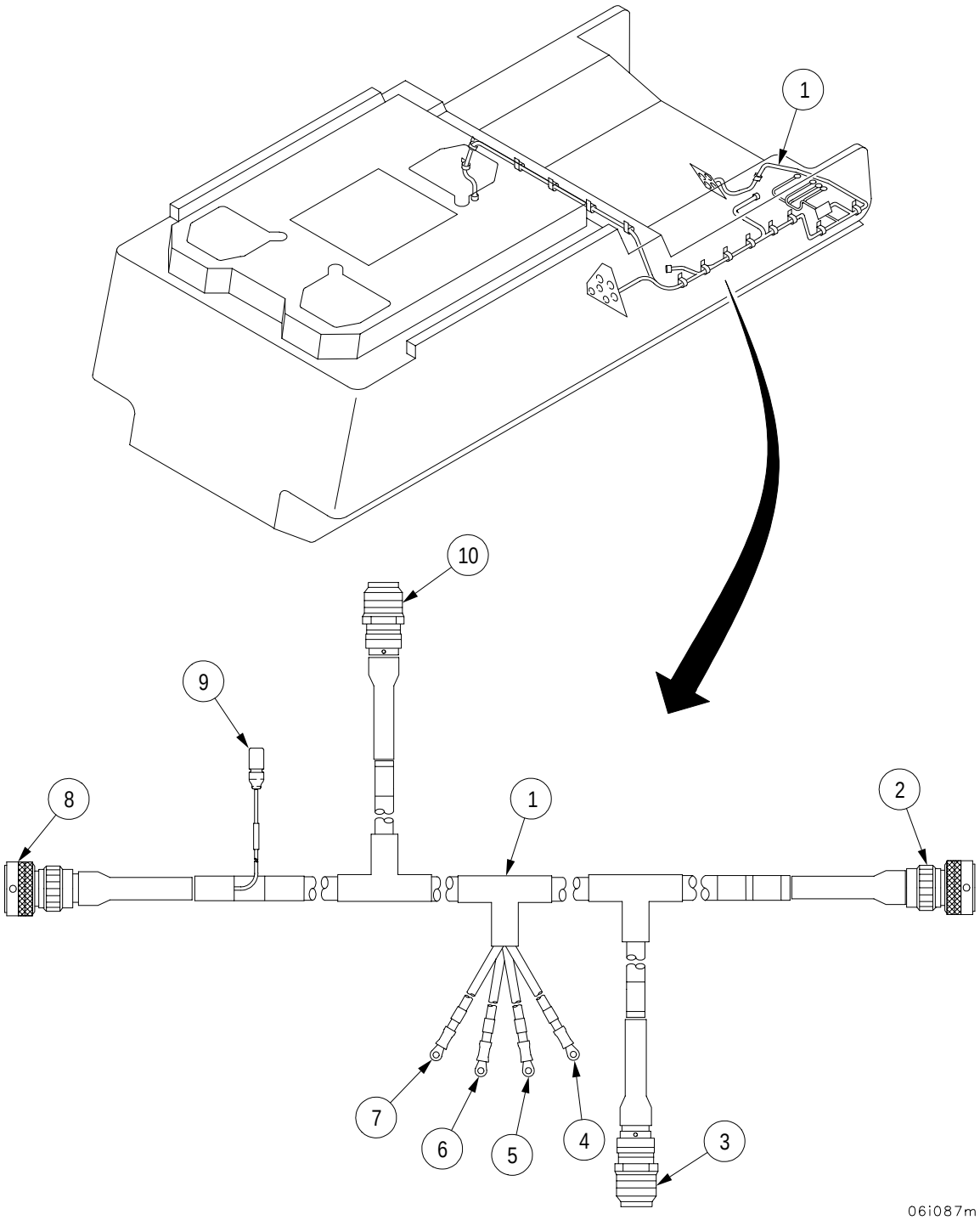
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	3W143 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Engine Disconnect Bracket	Engine Compartment (Left Side)
3	Connector J1	3W180 Connector P2	Engine Compartment (Near APU Regulator)
4	3W143 GND	Negative Bus E-3	Engine Compartment (Left Side)
5	3W143 GND	Negative Bus E-3	Engine Compartment (Left Side)
6	3W143 GND	Negative Bus E-3	Engine Compartment (Left Side)
7	3W143 GND	Negative Bus E-3	Engine Compartment (Left Side)
8	Connector P2	Bulkhead Connector J2	Engine Compartment (Left Side)
9	Wire 31	Fuel Level Sensor	Engine Compartment (Right Side, Near Bulkhead)
10	Connector J2	3W132 Connector P2	Engine Compartment (Left Side, Near Bulkhead)

WIRING HARNESS 3W143 REPLACEMENT - CONTINUED 0295 00

Removal-Continued



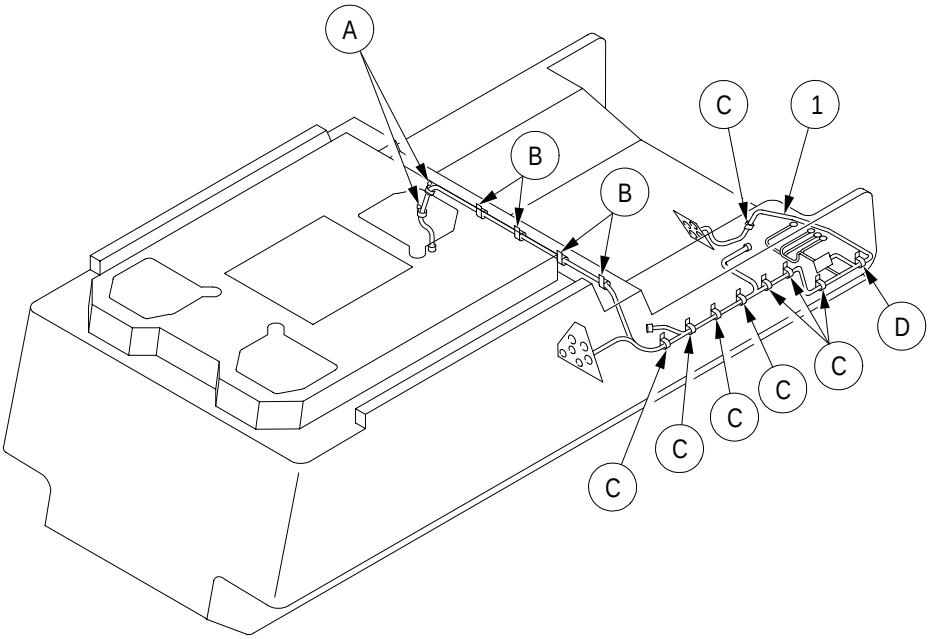
WIRING HARNESS 3W143 REPLACEMENT - CONTINUED 0295 00

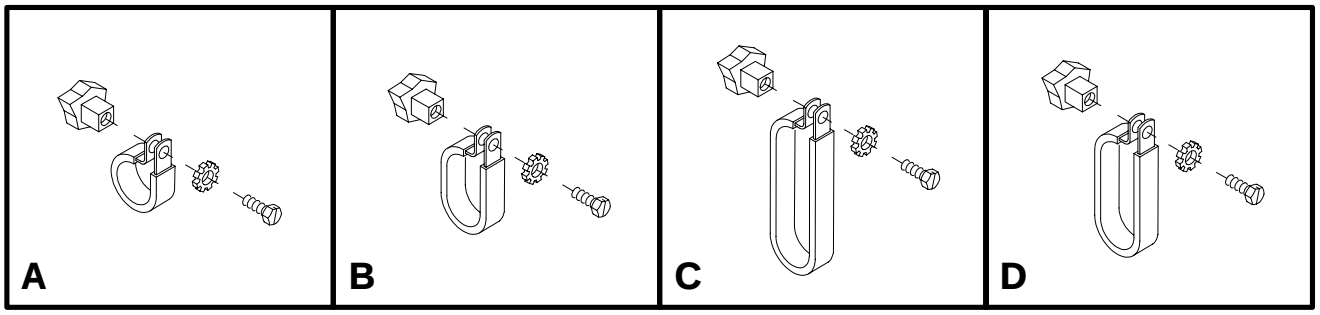
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through D), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwasher.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through D), as shown in illustration.





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WIRING HARNESS 3W143 REPLACEMENT - CONTINUED 0295 00

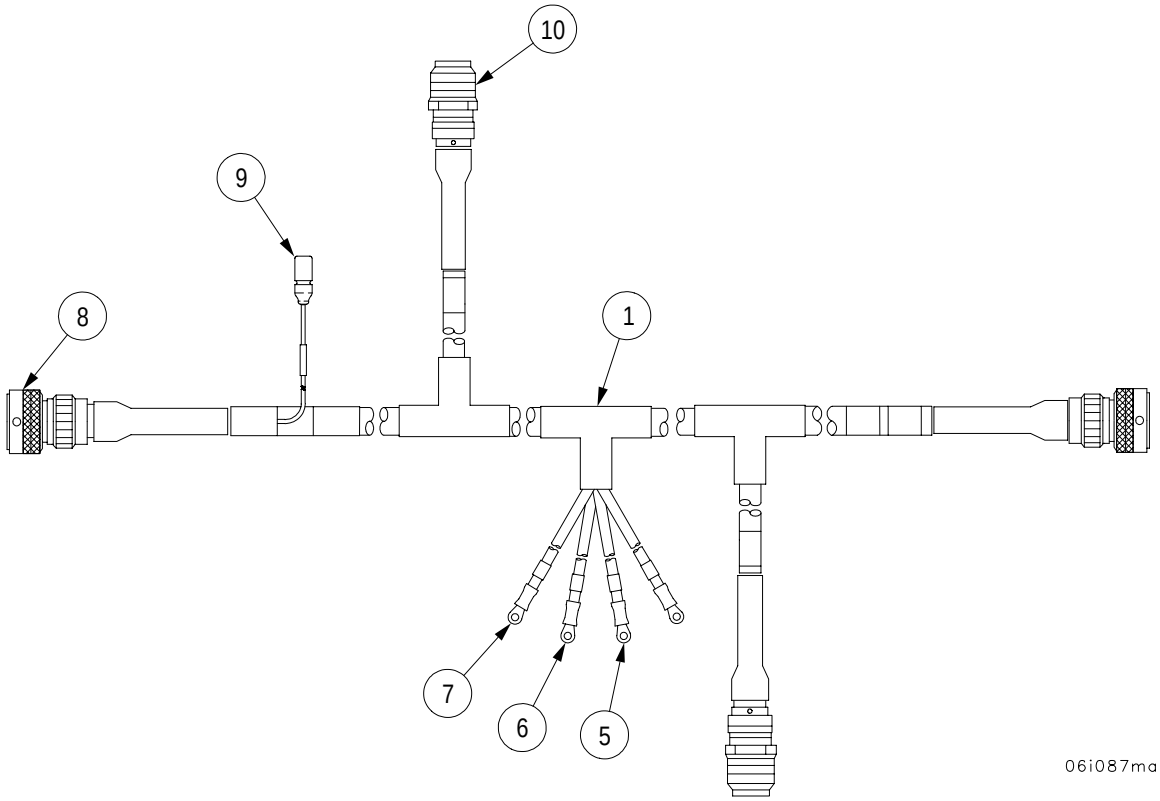
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

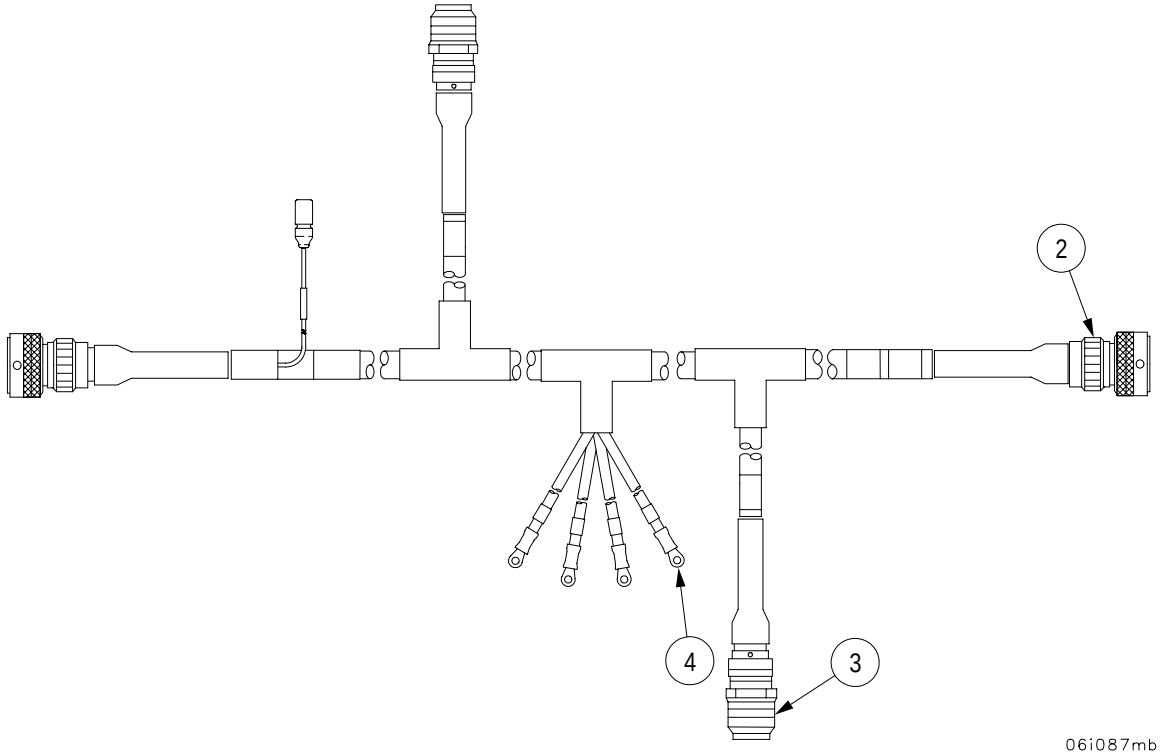
Item No.	3W143 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
10	Connector J2	3W132 Connector P2	Engine Compartment (Left Side, Near Bulkhead)
9	Wire 31	Fuel Level Sensor	Engine Compartment (Right Side, Near Bulkhead)
8	Connector P2	Bulkhead Connector J2	Engine Compartment (Left Side)
7	3W143 GND	Negative Bus E-3	Engine Compartment (Left Side)
6	3W143 GND	Negative Bus E-3	Engine Compartment (Left Side)
5	3W143 GND	Negative Bus E-3	Engine Compartment (Left Side)



WIRING HARNESS 3W143 REPLACEMENT - CONTINUED 0295 00

Installation-Continued

Item No.	3W143 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
4	3W143 GND	Negative Bus E-3	Engine Compartment (Left Side)
3	Connector J1	3W180 Connector P2	Engine Compartment (Near APU Regulator)
2	Connector P1	Engine Disconnect Bracket	Engine Compartment (Left Side)



NOTE

FOLLOW-ON MAINTENANCE:
Install engine deck assembly (WP 0417 00)
Connect battery power ((WP 0256 00)

END OF TASK

LEAD ASSEMBLY 3W174 REPLACEMENT 0296 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 10, WP 0718 00)
Spring tension washer (item 61, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Master relay cover removed (WP 0271 00)

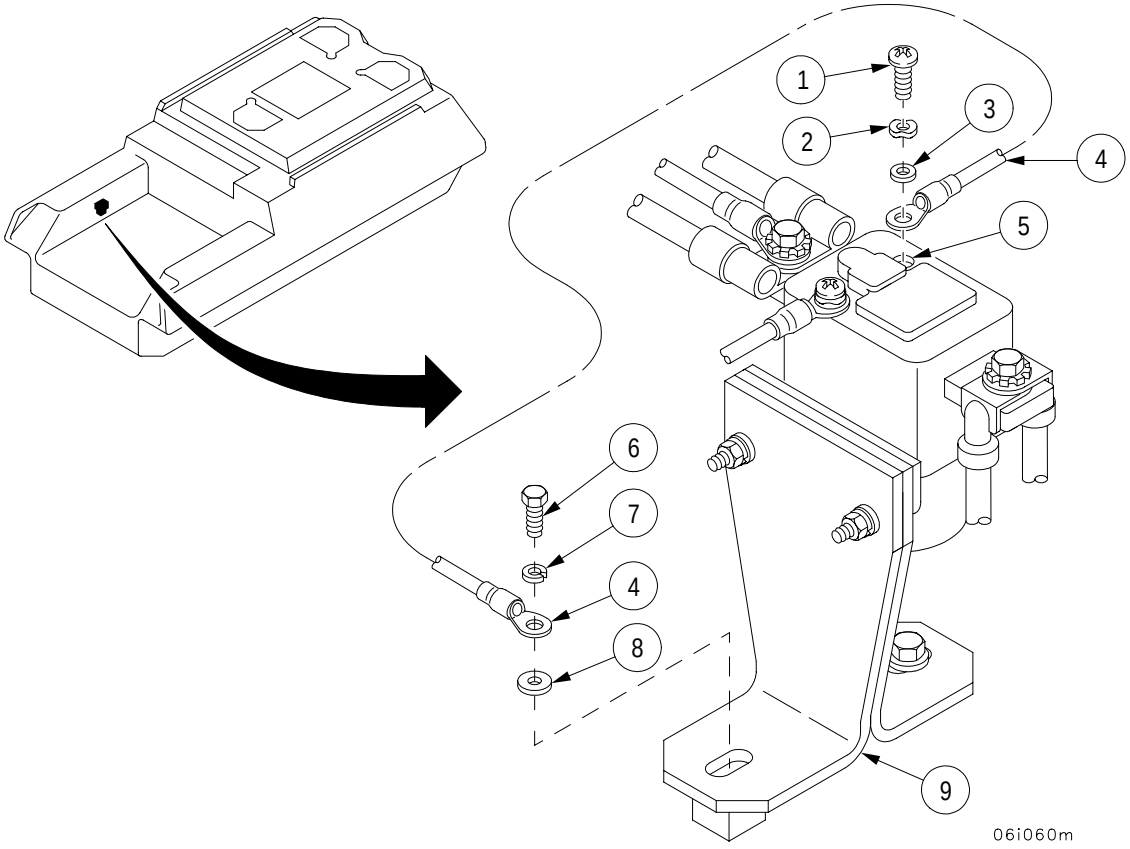
References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

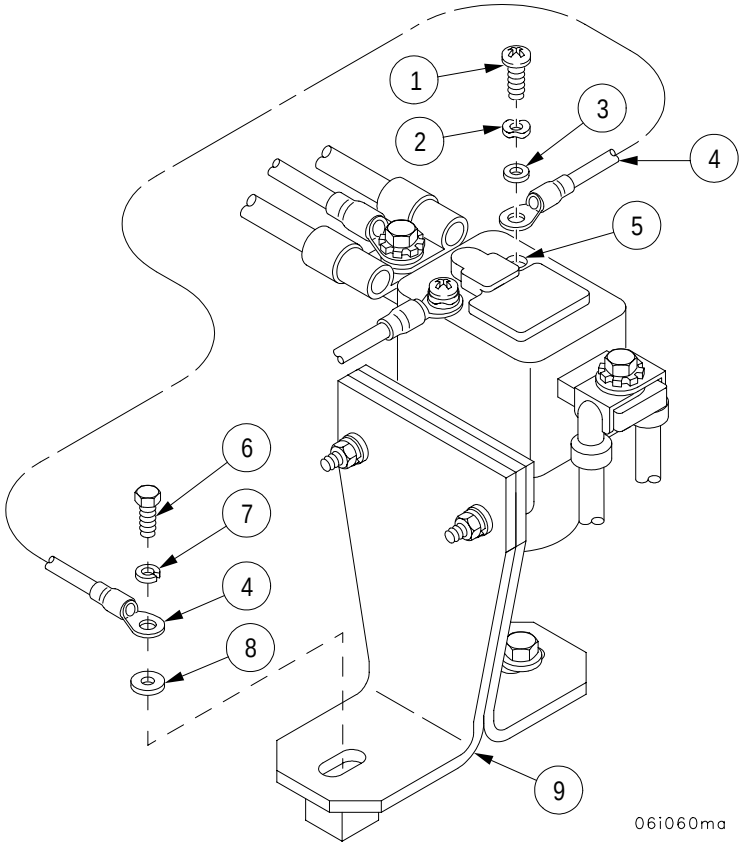
1. Remove screw (1), spring tension washer (2), flat washer (3) and lead assembly 3W174 (4) from master relay terminal X2 (5). Discard lockwasher.
2. Remove screw (6), lockwasher (7), flat washer (8) and lead assembly 3W174 lead (4) from master relay terminal mounting bracket (9). Discard lockwasher.
3. Remove lead assembly (4).
4. Inspect parts for damage and replace as required.



LEAD ASSEMBLY 3W174 REPLACEMENT - CONTINUED 0296 00

Installation

1. Connect lead assembly 3W174 (4) to master relay terminal mounting bracket (9) with screw (6), new lockwasher (7) and flat washer (8).
2. Connect lead assembly 3W174 (4) to master relay terminal X2 (5) with screw (1), new spring tension washer (2) and flat washer (3).



NOTE

FOLLOW-ON MAINTENANCE:
Install master relay cover (WP 0271 00)
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 3W180 REPLACEMENT 0297 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 336, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Voltage regulator cover removed (WP 0239 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

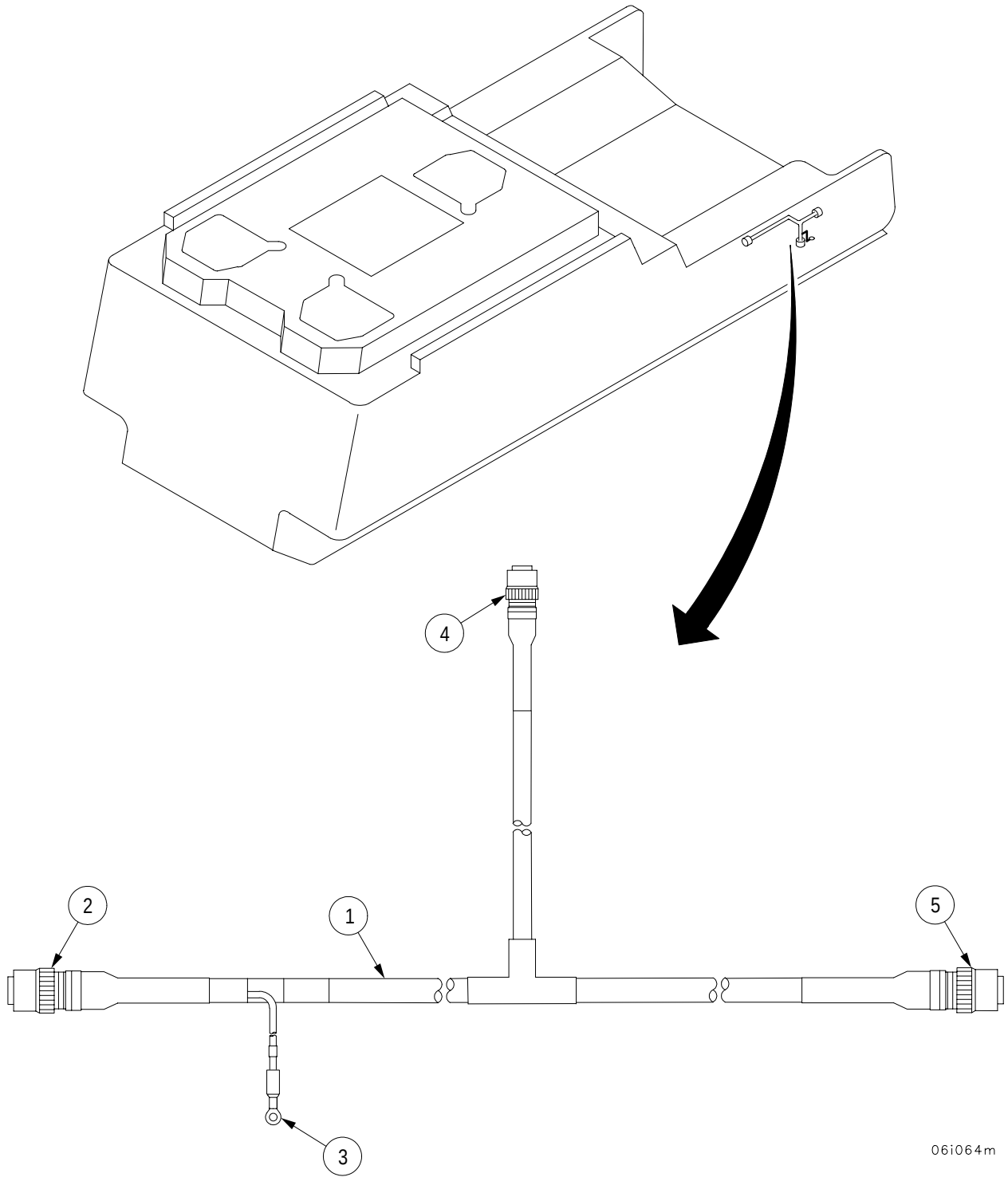
1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	3W180 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Main Engine Voltage Regulator Connector J1	Engine Compartment (Left Side)
3	Wire GND	Main Engine Voltage Regulator	Engine Compartment (Left Side)
4	Connector P2	Wiring Harness 3W143 Connector J1	Engine Compartment (Left Side)
5	Connector P3	Relay Connector J1	Engine Compartment (Left Side)

2. Inspect parts for damage and replace as required.

WIRING HARNESS 3W180 REPLACEMENT - CONTINUED 0297 00

Removal-Continued



WIRING HARNESS 3W180 REPLACEMENT - CONTINUED 0297 00

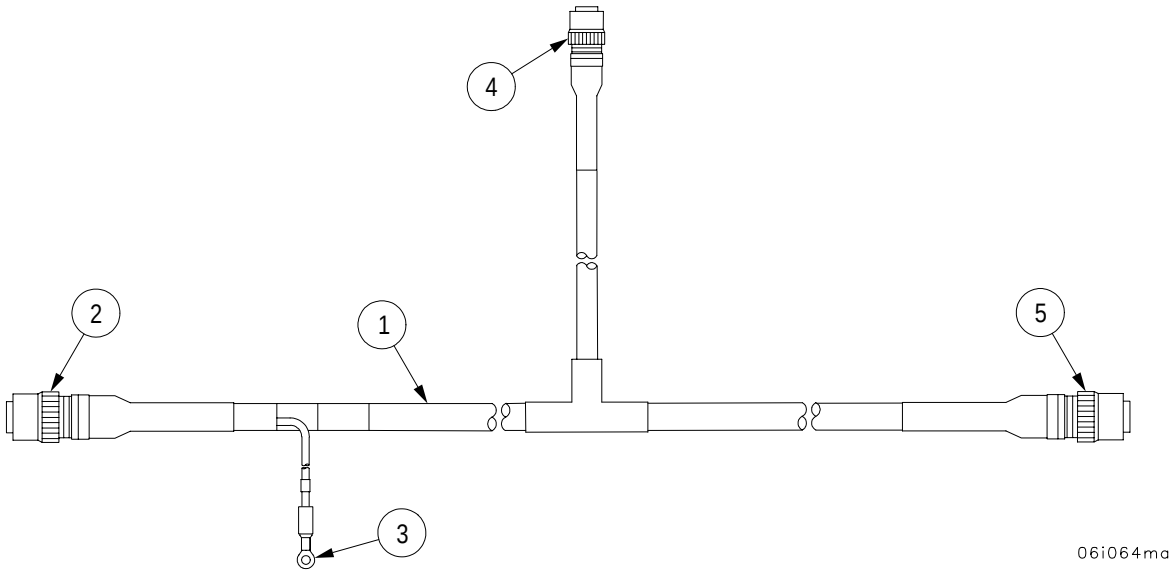
Installation

NOTE

The following legend identifies attachment points for each connection.

Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	3W180 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
5	Connector P3	Relay Connector J1	Engine Compartment (Left Side)
4	Connector P2	Wiring Harness 3W143 Connector J1	Engine Compartment (Left Side)
3	Wire GND	Main Engine Voltage Regulator	Engine Compartment (Left Side)
2	Connector P1	Main Engine Voltage Regulator Connector J1	Engine Compartment (Left Side)



NOTE

FOLLOW-ON MAINTENANCE:
Install voltage regulator cover (WP 0239 00)
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 3W200 REPLACEMENT 0298 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (4) (item 112, WP 0718 00)
Lockwashers (2) (item 18, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Materials/Parts-Continued
Lockwasher (item 10, WP 0718 00)
Self-locking nut (item 251, WP 0718 00)
Electrical tiedown straps (8) (item 386, WP 0718 00)
Silicone adhesive (item 81, WP 0716 00)

Equipment Conditions
Powerpack removed (WP 0188 00)

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

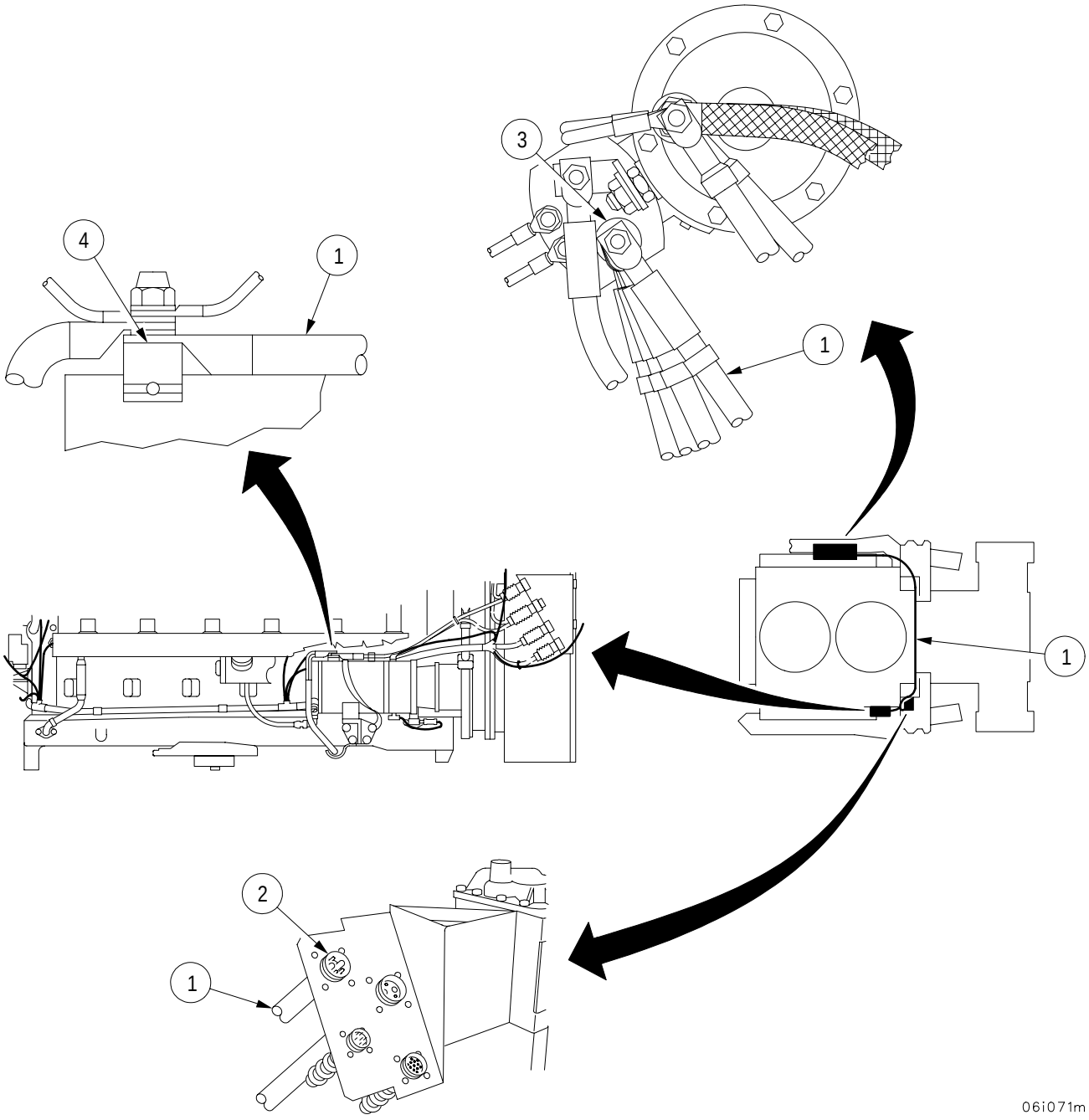
Do not discard attaching nut and lockwasher on starter.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	3W200 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector J1	Engine Disconnect Bracket Connector J1	Right Side of Transmission
3	Connector T1	Positive Starter Terminal (+)	Lower Left Side of Engine
4	Connector T2	Generator Terminal (B+)	Lower Right Side of Engine

WIRING HARNESS 3W200 REPLACEMENT - CONTINUED 0298 00

Removal-Continued



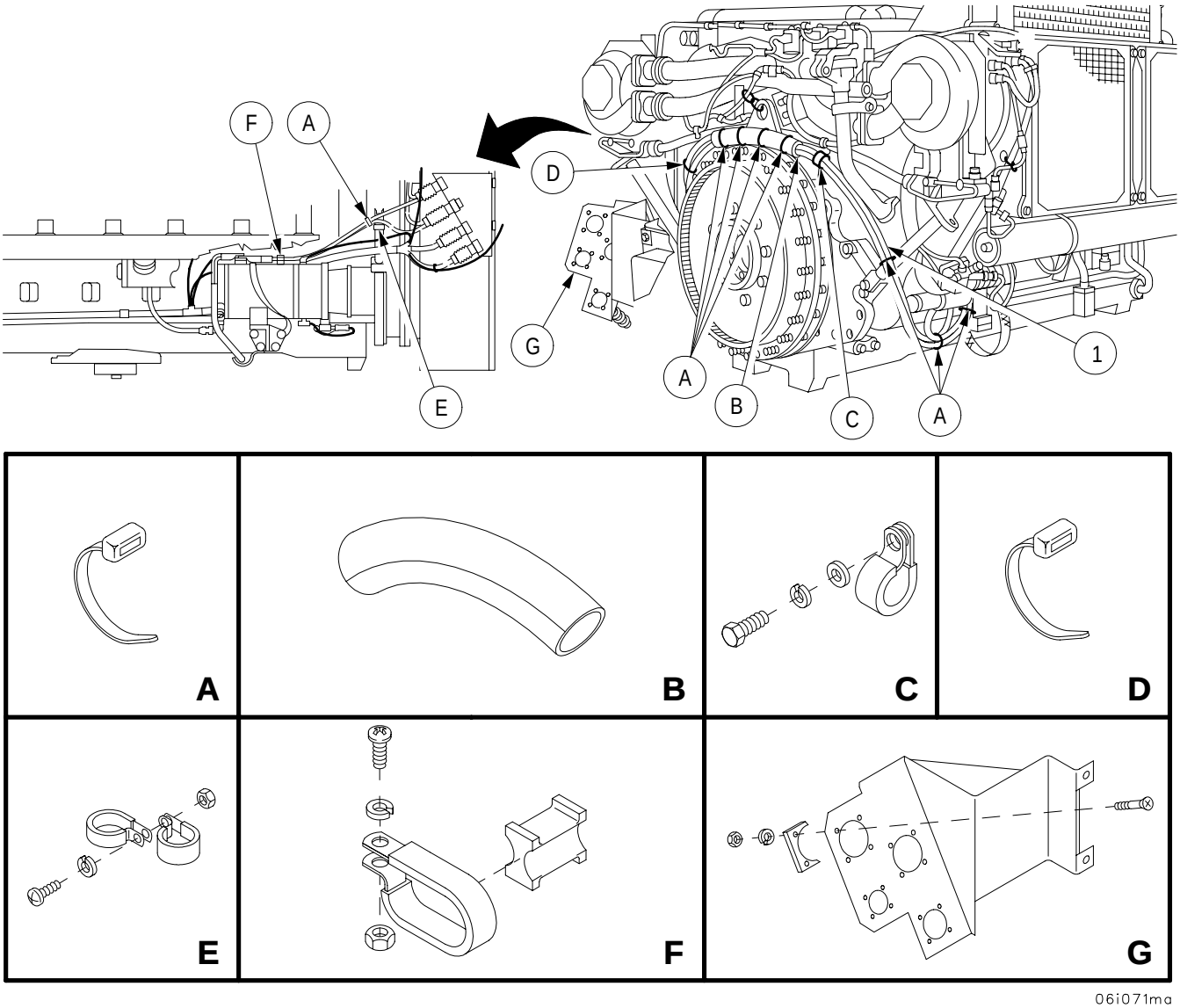
WIRING HARNESS 3W200 REPLACEMENT - CONTINUED 0298 00

Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through G), securing wiring harness (1) to engine, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) on engine, with straps, clamps, attaching hardware and new lockwashers (A through G), as shown in illustration.



WIRING HARNESS 3W200 REPLACEMENT - CONTINUED 0298 00

Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

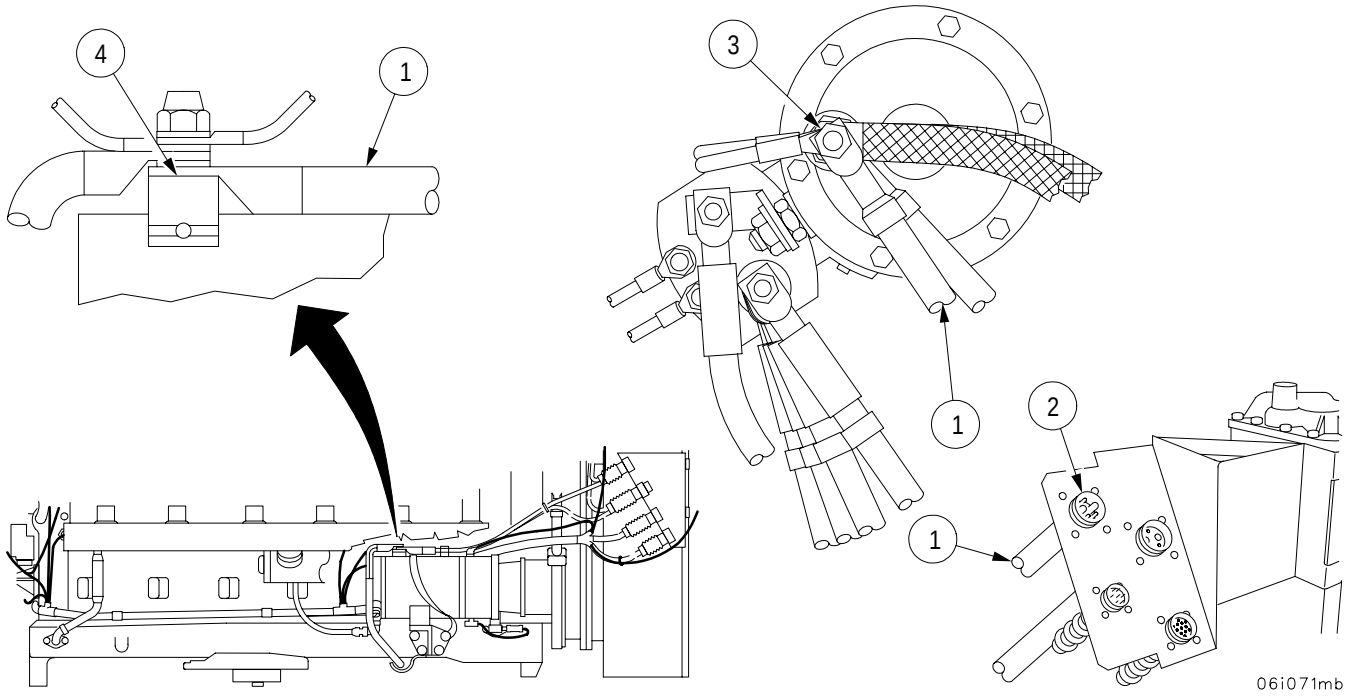
CAUTION

Use only silicone adhesive listed in initial setup. Other products could cause damage to equipment.

NOTE

Coat exposed electrical terminals with silicone adhesive to protect from moisture.

Item No.	3W200 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
4	Connector T2	Generator Terminal (B+)	Lower Right Side of Engine
3	Connector T1	Positive Starter Terminal (+)	Lower Left Side of Engine
2	Connector J1	Engine Disconnect Bracket Connector J1	Right Side of Transmission



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

END OF TASK

WIRING HARNESS 3W201 REPLACEMENT 0299 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (4) (item 112, WP 0718 00)
Lockwashers (2) (item 18, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Materials/Parts-Continued
Lockwasher (item 10, WP 0718 00)
Self-locking nut (item 251, WP 0718 00)
Electrical tiedown straps (8) (item 386, WP 0718 00)
Silicone adhesive (item 81, WP 0716 00)

Equipment Conditions
Powerpack removed (WP 0188 00)

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

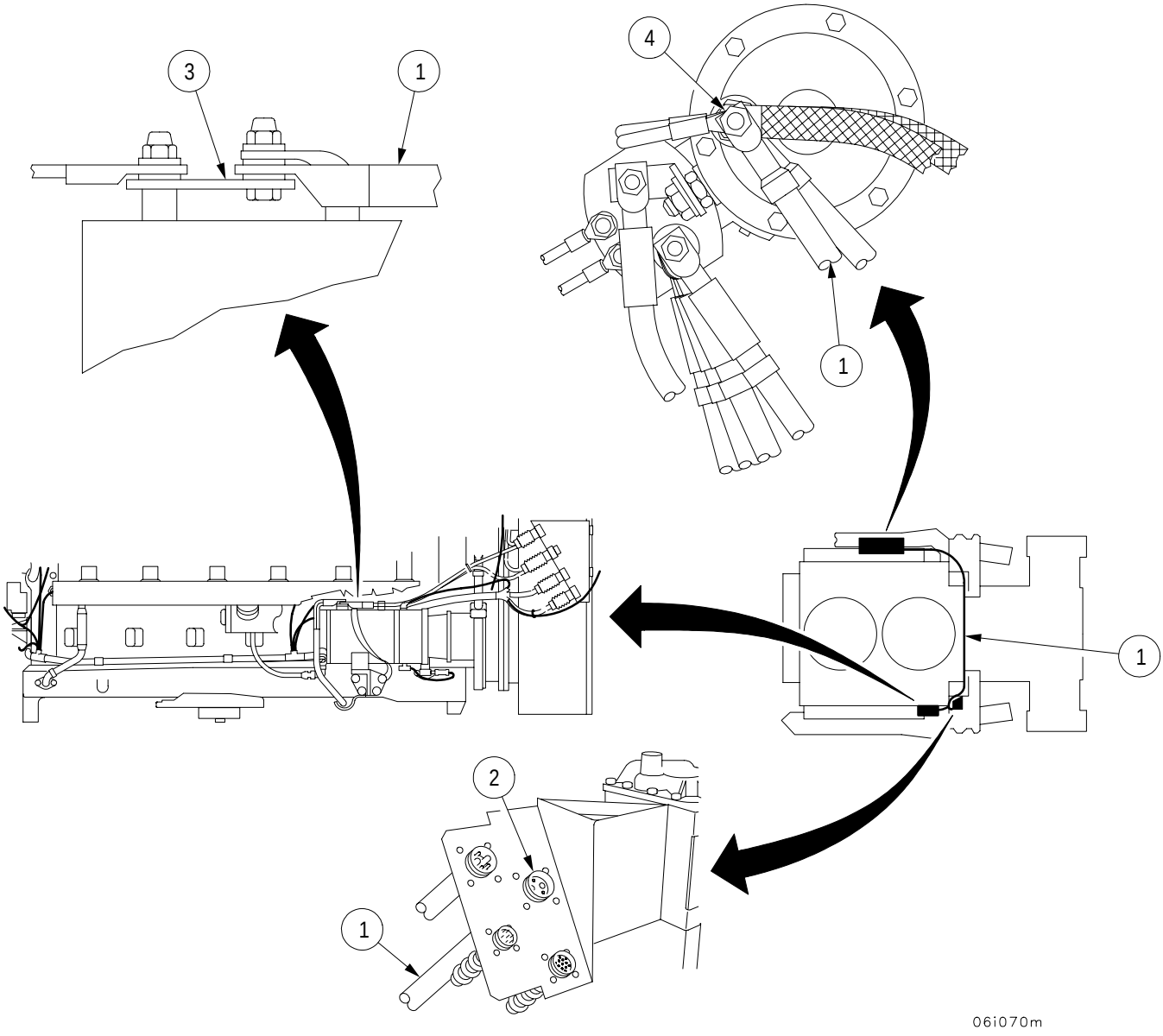
Do not discard attaching nut and lockwasher on starter.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	3W201 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector J1	Engine Disconnect Bracket Connector J2	Right Side of Transmission
3	Connector T1	Generator Terminal E-	Lower Right Side of Engine
4	Connector T2	Negative Starter Terminal (-)	Lower Left Side of Engine

WIRING HARNESS 3W201 REPLACEMENT - CONTINUED 0299 00

Removal-Continued



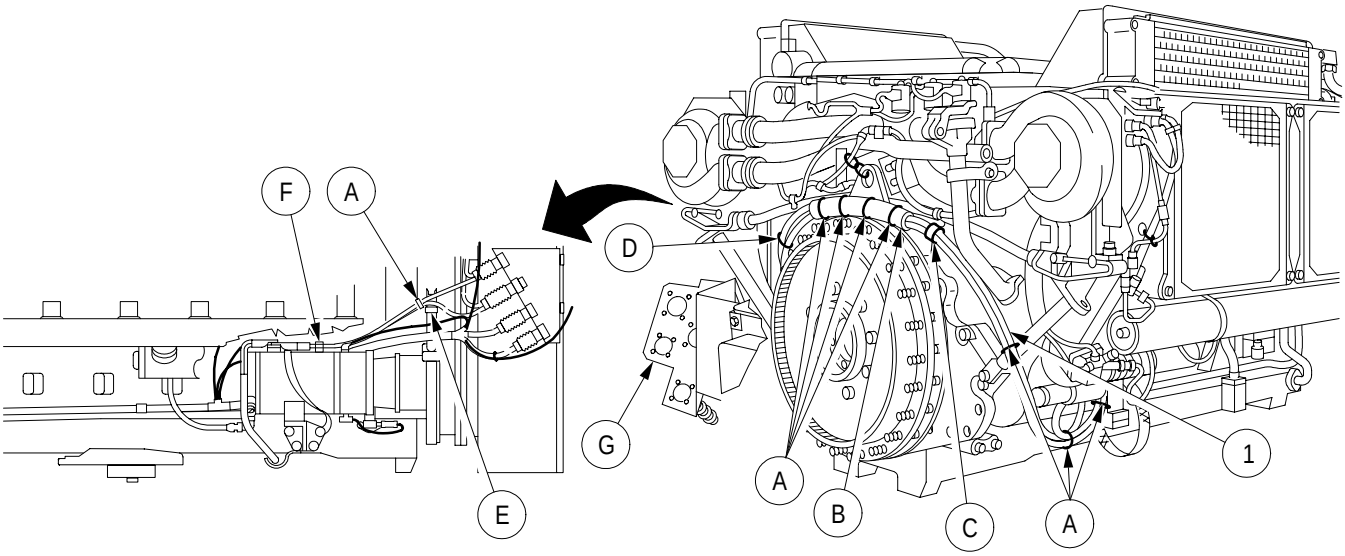
WIRING HARNESS 3W201 REPLACEMENT - CONTINUED 0299 00

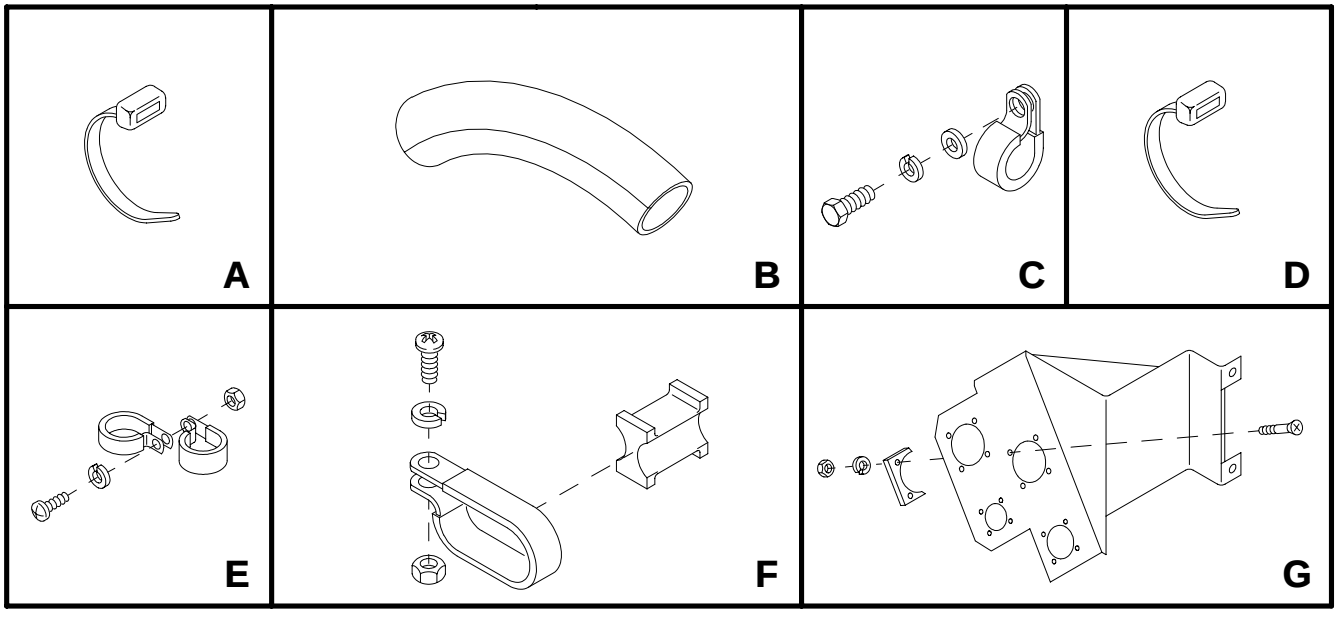
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through G), securing wiring harness (1) to engine, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) on engine, with straps, clamps, attaching hardware and new lockwashers (A through G), as shown in illustration.





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WIRING HARNESS 3W201 REPLACEMENT - CONTINUED 0299 00

Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

CAUTION

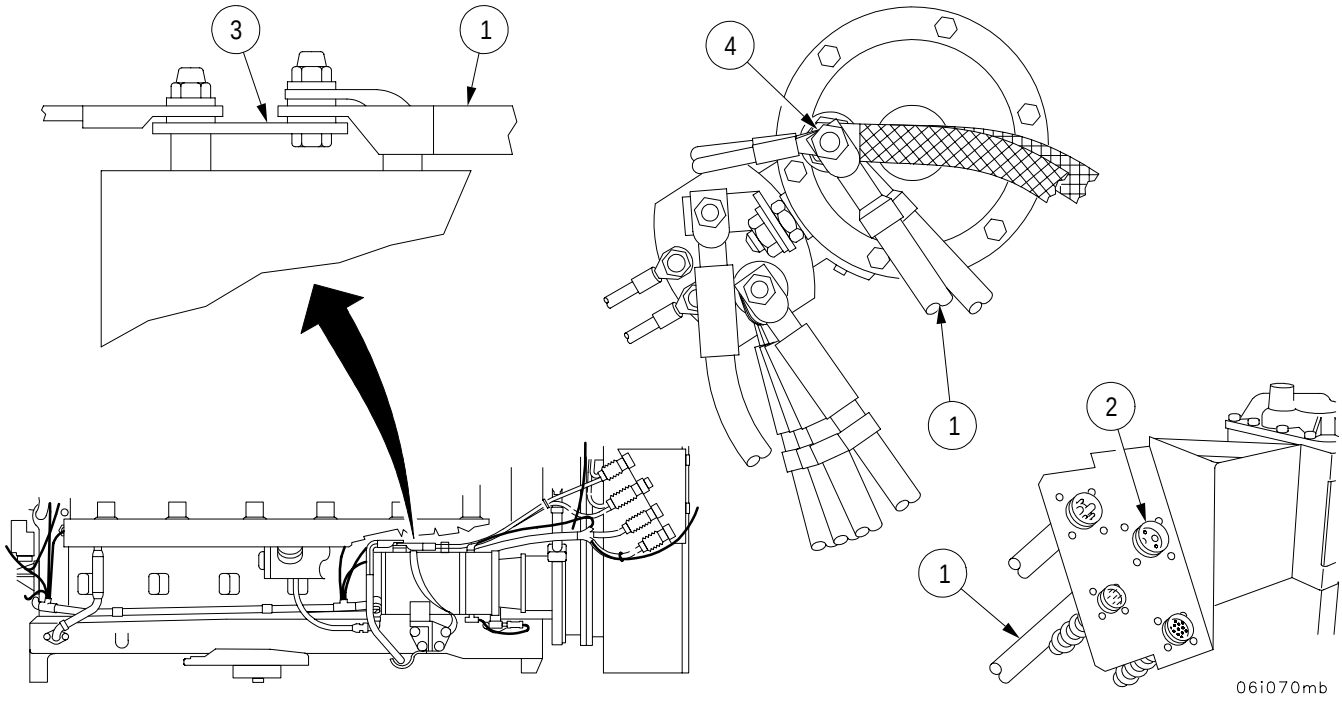
Use only silicone adhesive listed in initial setup. Other products could cause damage to equipment.

NOTE

Torque attaching hardware for connector T1 to 14-16 lb-ft (19-21.7 NSm).

Coat exposed electrical terminals with silicone adhesive to protect from moisture.

Item No.	3W201 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
4	Connector T2	Negative Starter Terminal (-)	Lower Left Side of Engine
3	Connector T1	Generator Terminal E-	Lower Right Side of Engine
2	Connector J1	Engine Disconnect Bracket Connector J2	Right Side of Transmission



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

END OF TASK

WIRING HARNESS 3W202 REPLACEMENT 0300 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Assembled washer screws (3) (item 424, WP 0718 00)
Self-locking nuts (6) (item 274, WP 0718 00)
Self-locking nut (item 120, WP 0718 00)
Lockwasher (item 127, WP 0718 00)
Silicone adhesive (item 81, WP 0716 00)
Self-locking nut (item 251, WP 0718 00)

Materials/Parts-Continued
Lockwasher (item 18, WP 0718 00)
Electrical tiedown strap (item 382, WP 0716 00)
Marker tags (item 49, WP 0716 00)
Lockwasher (item 9, WP 0718 00)
Lockwasher (item 10, WP 0718 00)
Lockwashers (5) (item 78, WP 0718 00)

Equipment Conditions
Powerpack removed (WP 0188 00)

Personnel Required
Two

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each harness connector, wire connector or wire terminal lug.

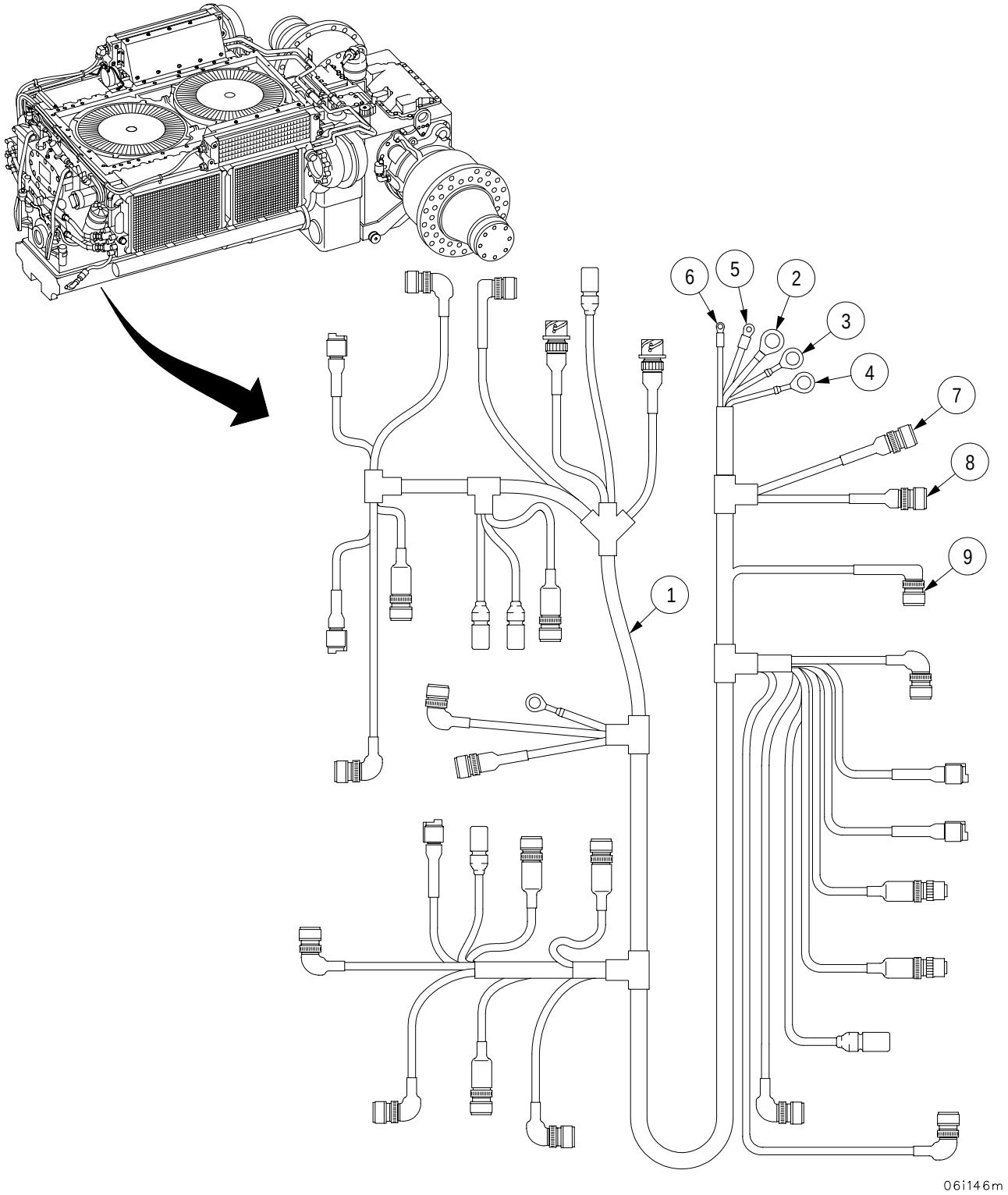
1. Remove wiring harness (1) and attaching hardware at the following attachment points: Retain attaching hardware for installation.

WIRING HARNESS 3W202 ATTACHMENT POINTS

Item No.	Connector Plug/ Wire Connector/ Wire Terminal Lug	From Connector/Lead/Wire Component	Engine Location
2	Wire T terminal lug	Starter solenoid motor terminal	Left side near starter motor
3	Wire M terminal lug	Starter motor ground terminal	Left side at starter motor
4	Wire 14B terminal lug	Starter solenoid B+ terminal	Left side near starter motor
5	Wire 14D terminal lug	Starter solenoid switch terminal	Left side near starter motor
6	Wire S terminal lug	Starter solenoid switch terminal	Left side near starter motor
7	Connector plug	Low voltage protection module receptacle	Left side in front of starter motor
8	Connector plug	Left manifold pre-heat coil receptacle	Lower left side
9	Connector plug	Fuel water separator control receptacle	Left side in front of low voltage protection module

WIRING HARNESS 3W202 REPLACEMENT - CONTINUED 0300 00

Removal-Continued



WIRING HARNESS 3W202 REPLACEMENT - CONTINUED 0300 00

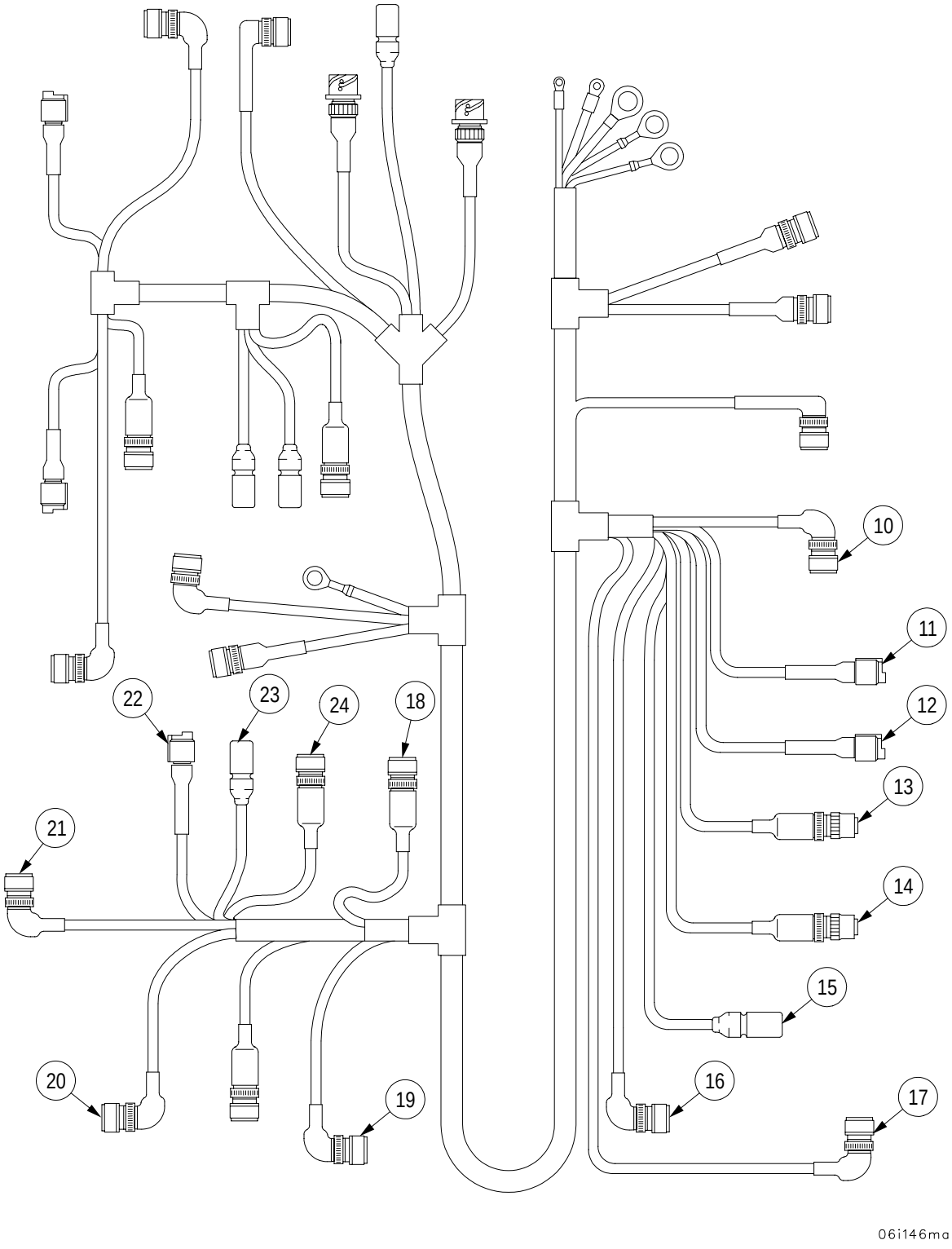
Removal-Continued

WIRING HARNESS 3W202 ATTACHMENT POINTS-CONTINUED

Item No.	Connector Plug/ Wire Connector/ Wire Terminal Lug	From Connector/Lead/Wire Component	Engine Location
10	Wire ST connector plug	Fuel shut off solenoid receptacle	Front
11	Wire V connector plug	Differential fuel pressure switch DCA receptacle	Front
12	Connector plug	Fuel pressure transducer DCA receptacle	Front
13	Connector plug	Left bank rotary solenoid receptacle	Top left side
14	Connector plug	Right bank rotary solenoid receptacle	Top right side
15	Wire 627 connector	Governor solenoid wire connector	Upper left front
16	Wire 522 connector plug	Smoke generator receptacle	Upper left front
17	Wire 54 connector plug	Fuel solenoid receptacle	Front
18	Wire 530A connector plug	Purge pump solenoid receptacle	Front
19	Wire 530A connector plug	Purge pump fuel solenoid receptacle	Front
20	Wire 33 connector plug	Engine oil temperature transmitter receptacle	Front
21	Wire 26 connector plug	Hour meter receptacle	Right side
22	Wire CD connector plug	Tachometer transducer DCA receptacle	Upper right front
23	Wire 36 connector plug	Engine oil pressure transmitter receptacle	Right side
24	Wire 509 connector plug	Engine low oil pressure switch receptacle	Right side

WIRING HARNESS 3W202 REPLACEMENT - CONTINUED 0300 00

Removal-Continued



WIRING HARNESS 3W202 REPLACEMENT - CONTINUED 0300 00

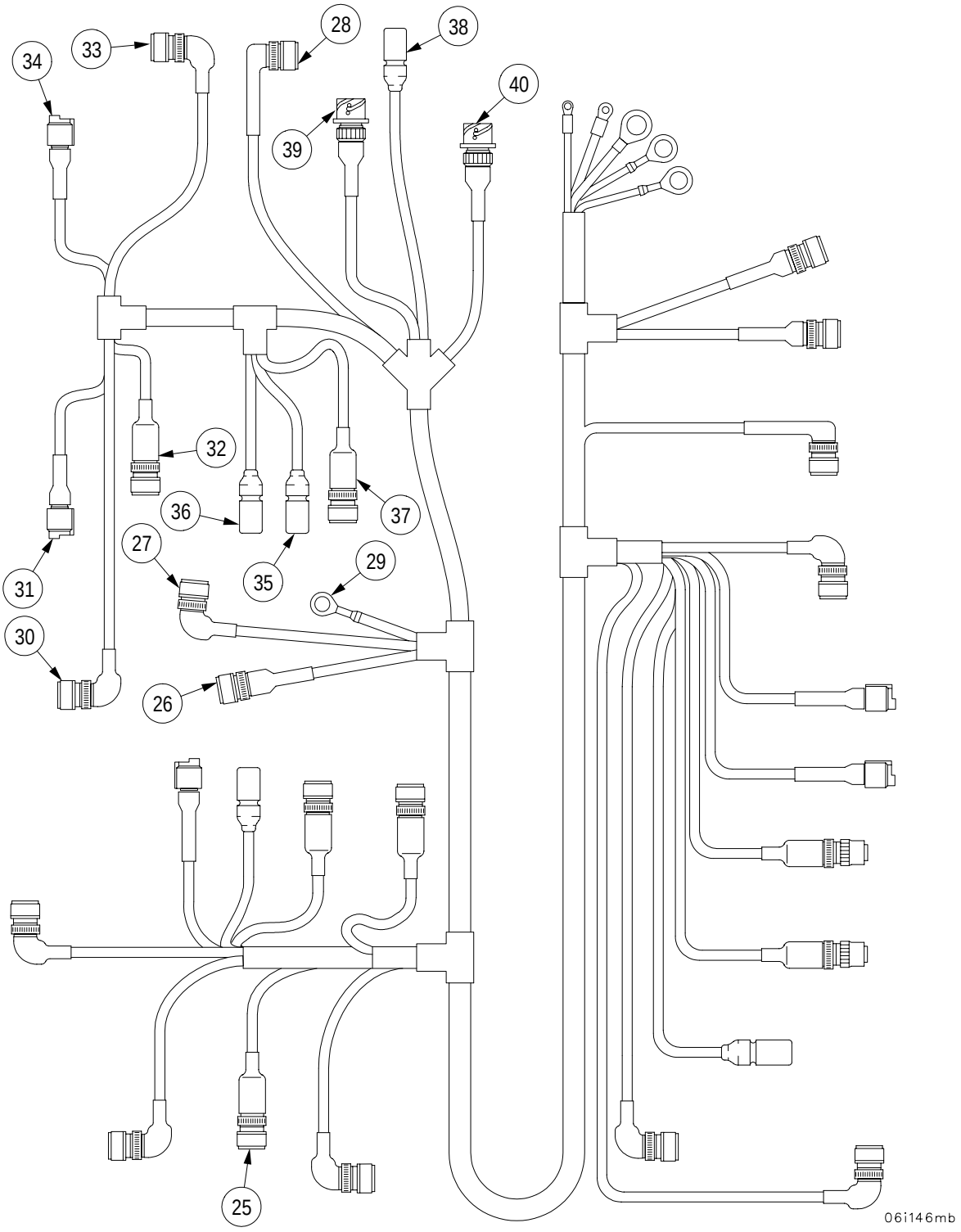
Removal-Continued

WIRING HARNESS 3W202 ATTACHMENT POINTS - CONTINUED

Item No.	Connector Plug/ Wire Connector/ Wire Terminal Lug	From Connector/Lead/Wire Component	Engine Location
25	Wire 509 connector plug	Engine high oil temperature switch receptacle	Right side
26	Wire 530B connector plug	Right manifold pre-heat coil receptacle	Lower right side
27	Wires 533 and 534 connector plug	Alternator receptacle J1	Right side at alternator
28	Wire T connector plug	Alternator receptacle J2	Right side at alternator
29	Wire 26A terminal lug	Alternator terminal B+	Right side at alternator
30	Wire 510R connector plug	Right bank dust detector receptacle	Right side at turbocharger
31	Wire XW connector plug	Right bank turbo pressure DCA receptacle	Right side at turbocharger
32	Wire 530B connector plug	Fuel solenoid receptacle	Rear
33	Wire 510L connector plug	Left bank dust detector receptacle	Left side at turbocharger
34	Wire YZ connector plug	Left bank turbo pressure DCA receptacle	Left side at turbocharger
35	Wire 324 connector	Transmission oil temperature transmitter wire connector	Rear of engine at transmission
36	Wire 509 connector	Transmission high oil temperature switch wire connector	Rear of engine at transmission
37	Wire 310 connector plug	Transmission filter switch receptacle	Rear of engine at transmission
38	Wire 321 connector	Transmission oil pressure transmitter wire connector	Rear of engine at transmission
39	Connector receptacle J3	Quick-disconnect bracket connector	Harness mounting bracket on right side of engine
40	Connector receptacle J4	Quick-disconnect bracket connector	Harness mounting bracket on right side of engine

WIRING HARNESS 3W202 REPLACEMENT - CONTINUED 0300 00

Removal-Continued



WIRING HARNESS 3W202 REPLACEMENT - CONTINUED 0300 00

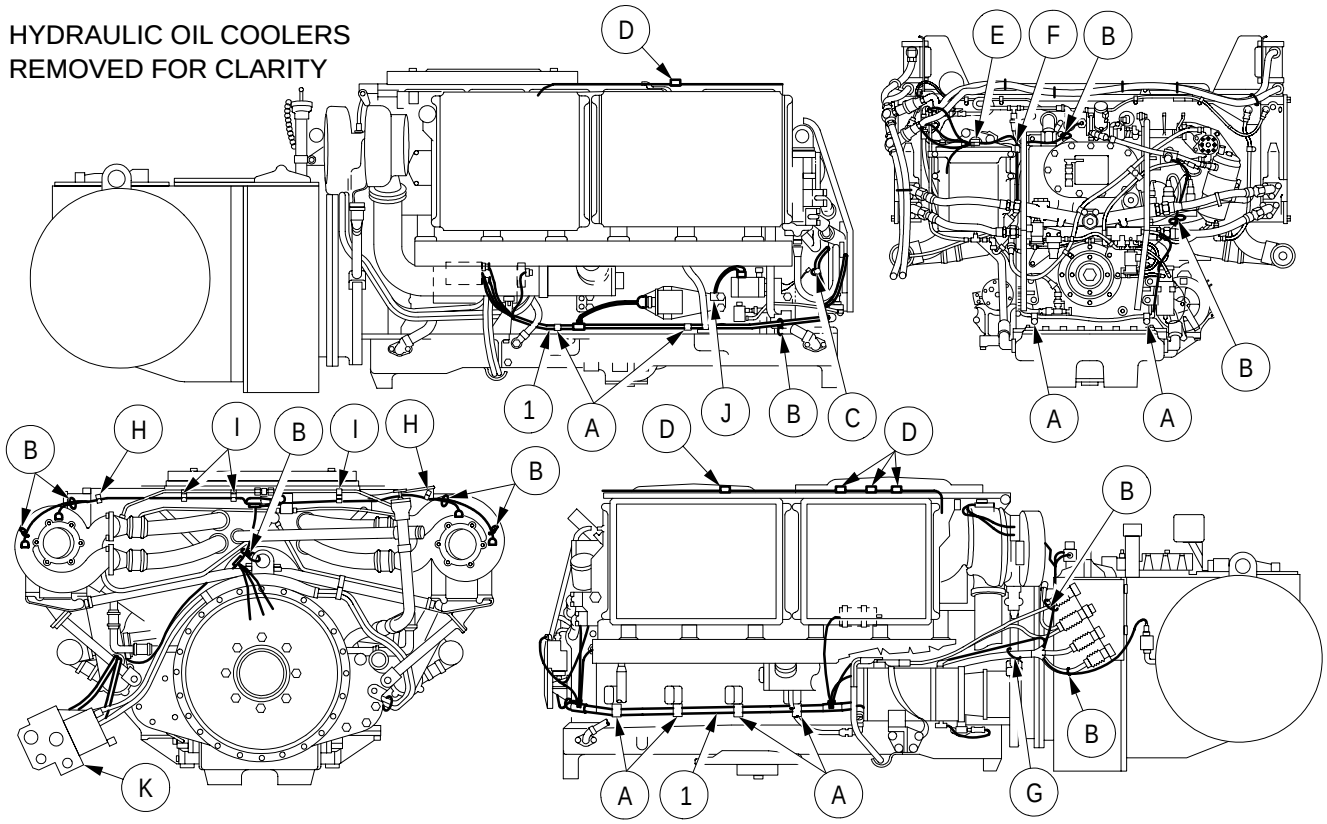
Removal-Continued

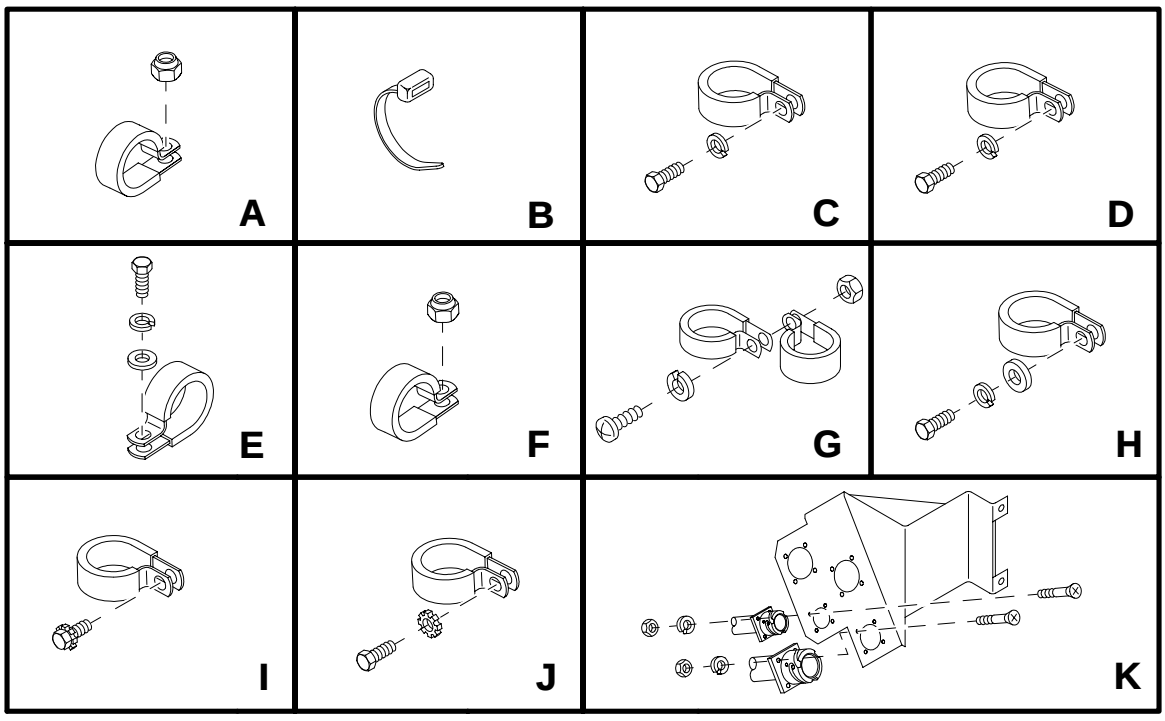
2. Remove straps, clamps, attaching hardware and lockwashers (A through K) securing wiring harness (1) to vehicle as shown in illustration. Discard lockwashers, self-locking nuts and assembled screws.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) with straps, clamps and attaching hardware (A through K) as shown in illustration. Use new lockwashers, self-locking nuts and assembled screws.

WIRING HARNESS 3W202 REPLACEMENT - CONTINUED 0300 00





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WIRING HARNESS 3W202 REPLACEMENT - CONTINUED 0300 00

Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

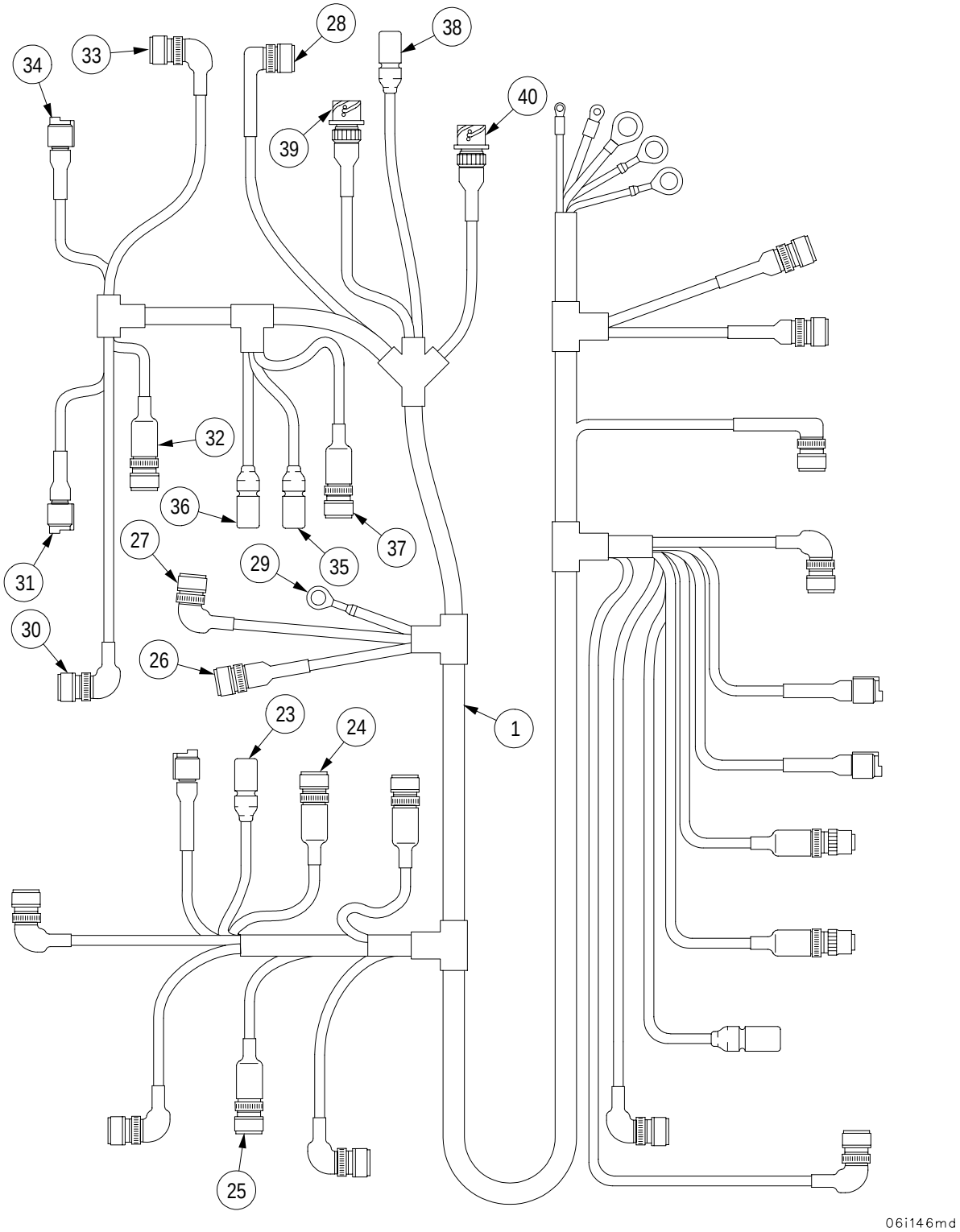
2. Install wiring harness (1) with attaching hardware, at the following attachment points:

WIRING HARNESS 3W202 ATTACHMENT POINTS - CONTINUED

Item No.	Connector Plug/ Wire Connector/ Wire Terminal Lug	To Connector/Lead/Wire Component	Engine Location
40	Connector receptacle J4	Quick-disconnect bracket connector	Harness mounting bracket on right side of engine
39	Connector receptacle J3	Quick-disconnect bracket connector	Harness mounting bracket on right side of engine
38	Wire 321 connector	Transmission oil pressure transmitter wire connector	Rear of engine at transmission
37	Wire 310 connector plug	Transmission filter switch receptacle	Rear of engine at transmission
36	Wire 509 connector	Transmission high oil temperature switch wire connector	Rear of engine at transmission
35	Wire 324 connector	Transmission oil temperature transmitter wire connector	Rear of engine at transmission
34	Wire YZ connector plug	Left bank turbo pressure DCA receptacle	Left side at turbocharger
33	Wire 510L connector plug	Left bank dust detector receptacle	Left side at turbocharger
32	Wire 530B connector plug	Fuel solenoid receptacle	Rear
31	Wire XW connector plug	Right bank turbo pressure DCA receptacle	Right side at turbocharger
30	Wire 510R connector plug	Right bank dust detector receptacle	Right side at turbocharger
29	Wire 26A terminal lug	Alternator terminal B+	Right side at alternator
28	Wire T connector plug	Alternator receptacle J2	Right side at alternator
27	Wire 533 and 534 connector plug	Alternator receptacle J1	Right side at alternator
26	Wire 530B connector plug	Right manifold pre-heat coil receptacle	Lower right side
25	Wire 509 connector plug	Engine high oil temperature switch receptacle	Right side
24	Wire 509 connector plug	Engine low oil pressure switch receptacle	Right side
23	Wire 36 connector plug	Engine oil pressure transmitter receptacle	Right side

WIRING HARNESS 3W202 REPLACEMENT - CONTINUED 0300 00

Installation-Continued



WIRING HARNESS 3W202 REPLACEMENT - CONTINUED 0300 00

Installation-Continued

WIRING HARNESS 3W202 ATTACHMENT POINTS-CONTINUED

Item No.	Connector Plug/ Wire Connector/ Wire Terminal Lug	To Connector/Lead/Wire Component	Engine Location
22	Wire CD connector plug	Tachometer transducer DCA receptacle	Upper right front
21	Wire 26 connector plug	Hour meter receptacle	Right side
20	Wire 33 connector plug	Engine oil temperature transmitter receptacle	Front
19	Wire 530A connector plug	Purge pump fuel solenoid receptacle	Front
18	Wire 530A connector plug	Purge pump solenoid receptacle	Front
17	Wire 54 connector plug	Fuel solenoid receptacle	Front
16	Wire 522 connector plug	Smoke generator receptacle	Upper left front
15	Wire 627 connector	Governor solenoid wire connector	Upper left front
14	Connector plug	Right bank rotary solenoid receptacle	Top right side
13	Connector plug	Left bank rotary solenoid receptacle	Top left side
12	Connector plug	Fuel pressure transducer DCA receptacle	Front
11	Wire V connector plug	Differential fuel pressure switch DCA receptacle	Front
10	Wire ST connector plug	Fuel shut off solenoid receptacle	Front
9	Connector plug	Fuel water separator control receptacle	Left side in front of low voltage protection module
8	Connector plug	Left manifold pre-heat coil receptacle	Lower left side
7	Connector plug	Low voltage protection module receptacle	Left side in front of starter motor
6	Wire S terminal lug	Starter solenoid switch terminal	Left side near starter motor
5	Wire 14D terminal lug	Starter solenoid switch terminal	Left side near starter motor
4	Wire 14B terminal lug	Starter solenoid B+ terminal	Left side near starter motor
3	Wire M terminal lug	Starter motor ground terminal	Left side at starter motor
2	Wire T terminal lug	Starter solenoid motor terminal	Left side near starter motor

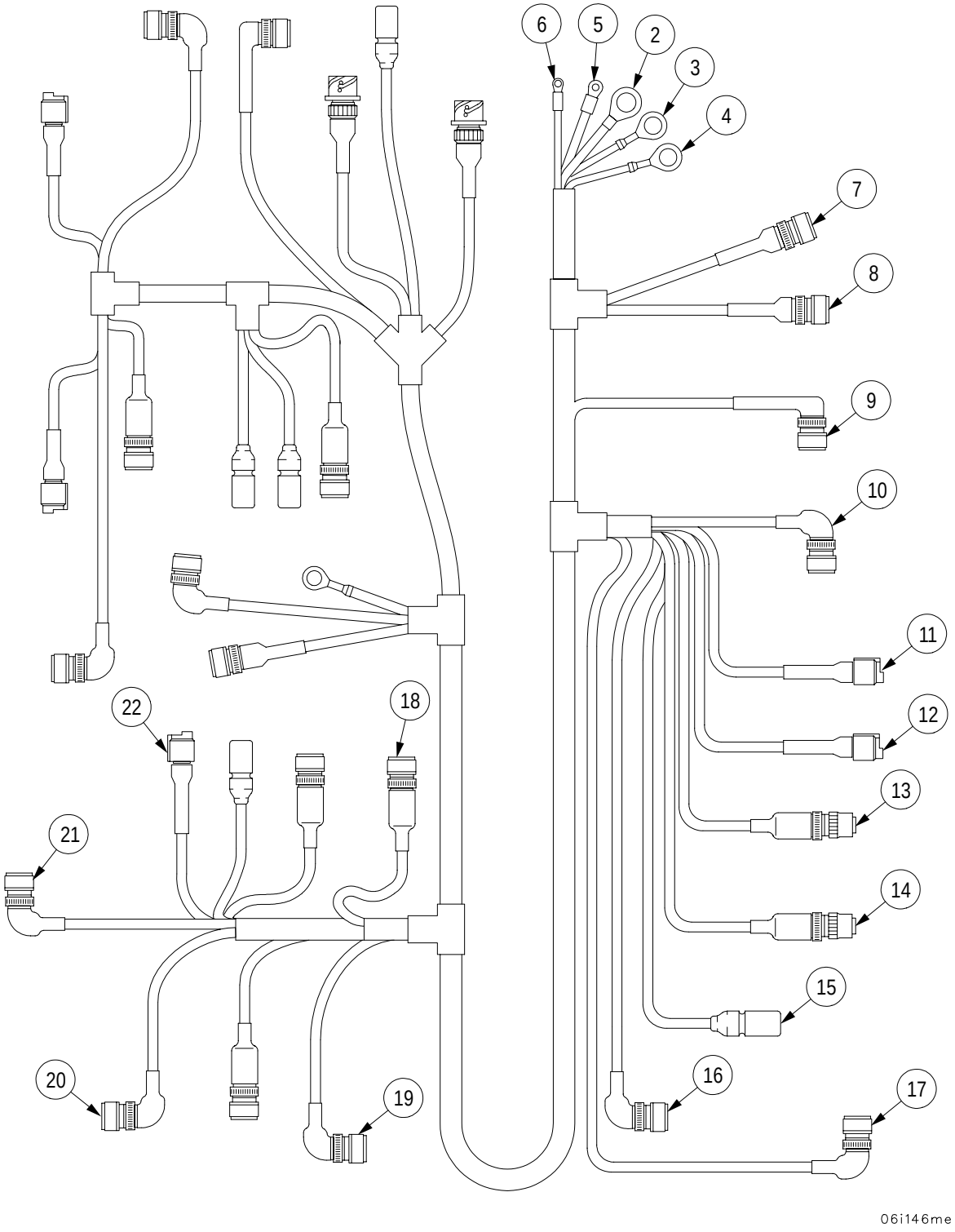
3. Apply silicone adhesive to all exposed electrical terminals after installation.

NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

WIRING HARNESS 3W202 REPLACEMENT - CONTINUED 0300 00

Installation-Continued



END OF TASK

WIRING HARNESS 3W203 REPLACEMENT 0301 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Powerpack removed (WP 0188 00)

Materials/Parts
Silicone adhesive (item 81, WP 0716 00)
Marker tags (item 49, WP 0716 00)

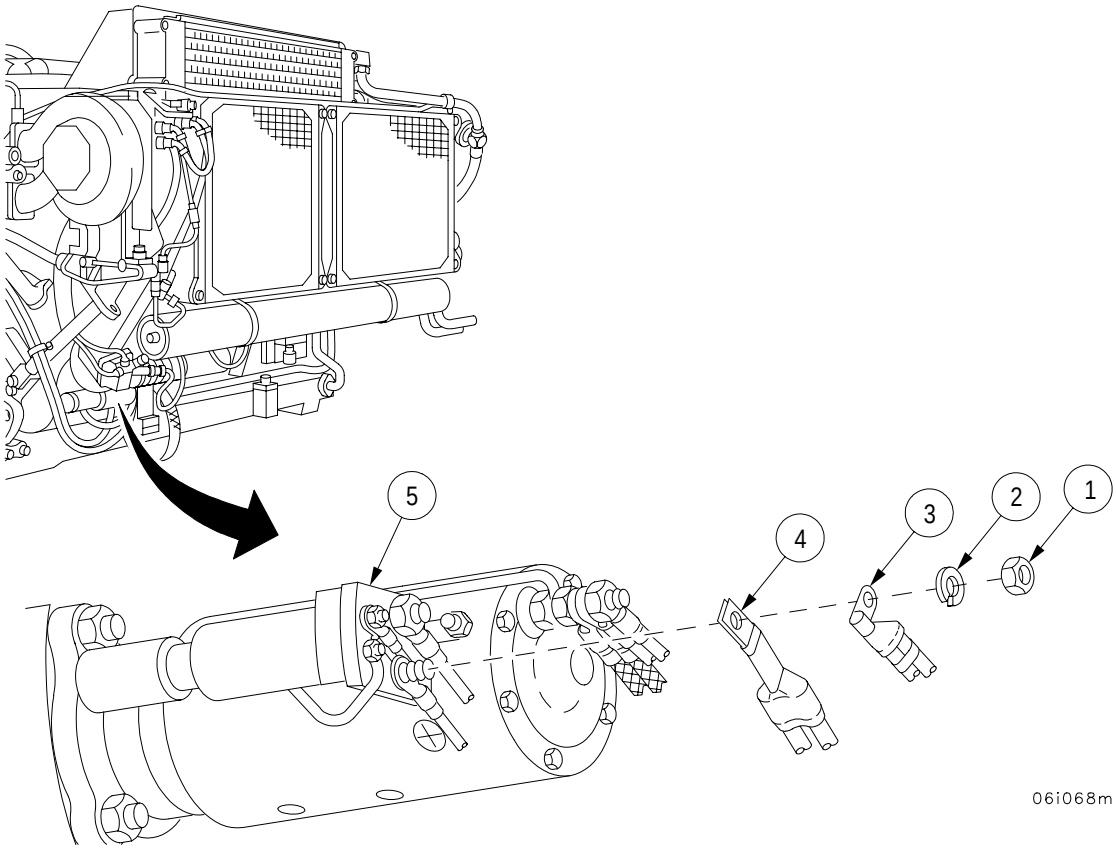
Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Do not discard attaching nut and lockwasher on starter.

1. Remove nut (1), lockwasher (2), wiring harness 3W200 terminal T1 (3) and wiring harness 3W203 (4) terminals T1 and T3 from positive (+) terminal of starter (5).



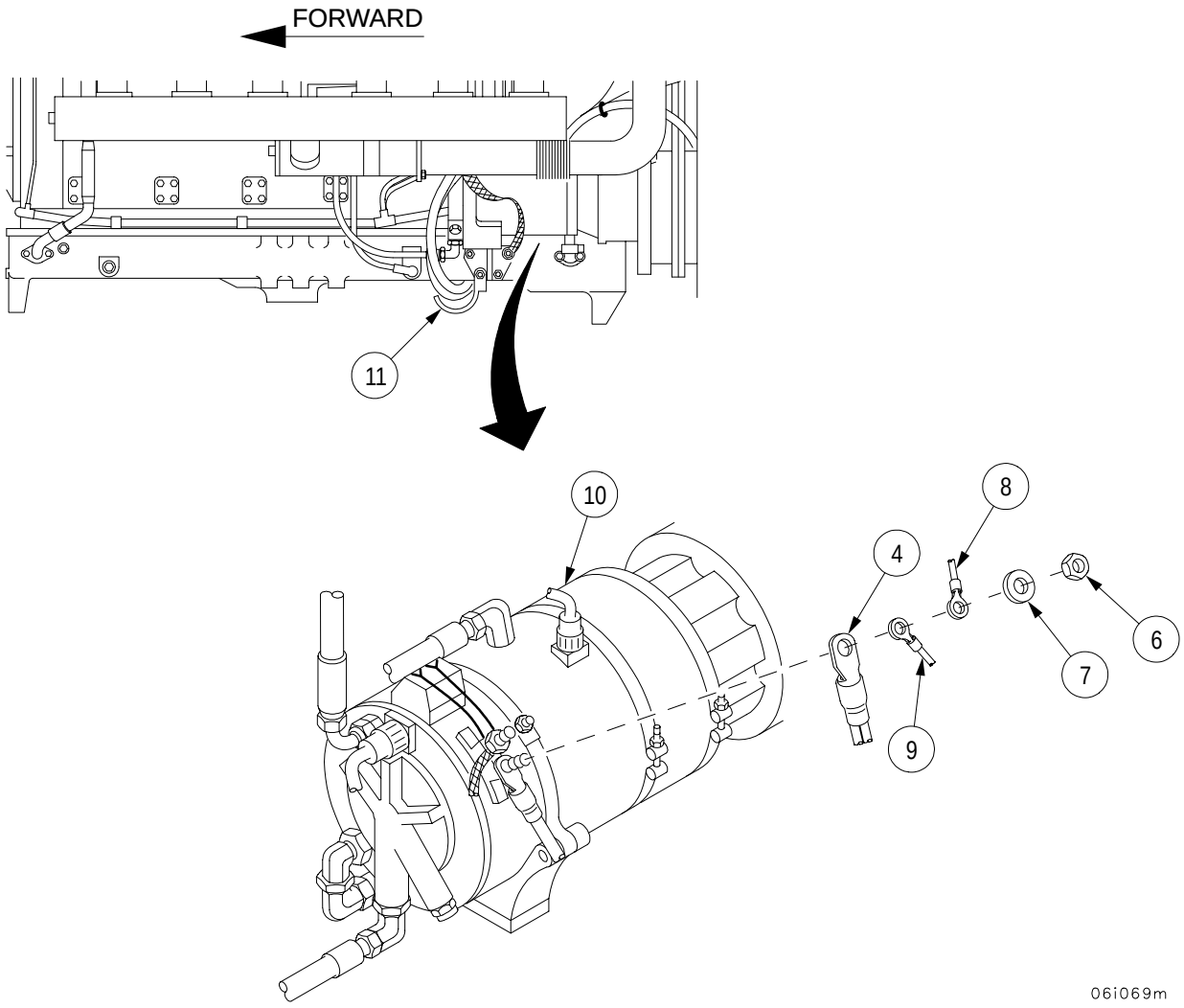
WIRING HARNESS 3W203 REPLACEMENT - CONTINUED 0301 00

Removal-Continued

2. Remove nut (6), flat washer (7), capacitor lead (8), wiring harness 3W202 wire 26 (9) and wiring harness 3W203 (4) terminal T2 from B+ terminal of generator (10).
3. Remove wiring harness 3W203 (4) from engine cable bracket (11) and engine.
4. Inspect parts for damage and replace as required.

Installation

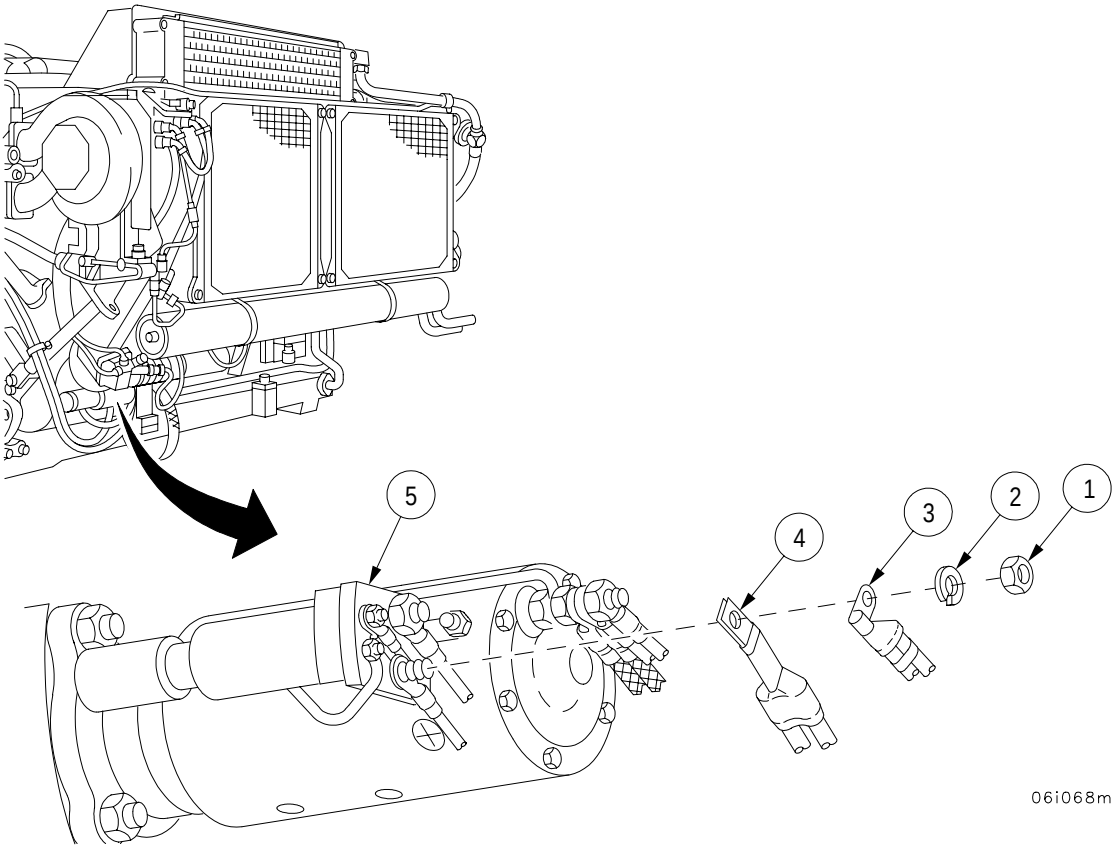
1. Thread wiring harness 3W203 (4) through engine cable bracket (11) so that terminal T2 is on the generator side of the engine.
2. Install wiring harness 3W203 (4) terminal T2, wiring harness 3W202 wire 26 (9) and capacitor lead (8) on B+ terminal of generator (10) with flat washer (7) and nut (6).



WIRING HARNESS 3W203 REPLACEMENT - CONTINUED 0301 00

Installation-Continued

3. Install wiring harness 3W203 (4) terminals T1, T3 and wiring harness 3W200 connector T1 (3) on positive (+) terminal of starter (5) with lockwasher (2) and nut (1).
4. Apply silicone adhesive to all exposed terminals.



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

END OF TASK

WIRING HARNESS 3W206 REPLACEMENT 0302 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 58, WP 0718 00)
Lockwashers (4) (item 353, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Engine deck assembly removed (WP 0417 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

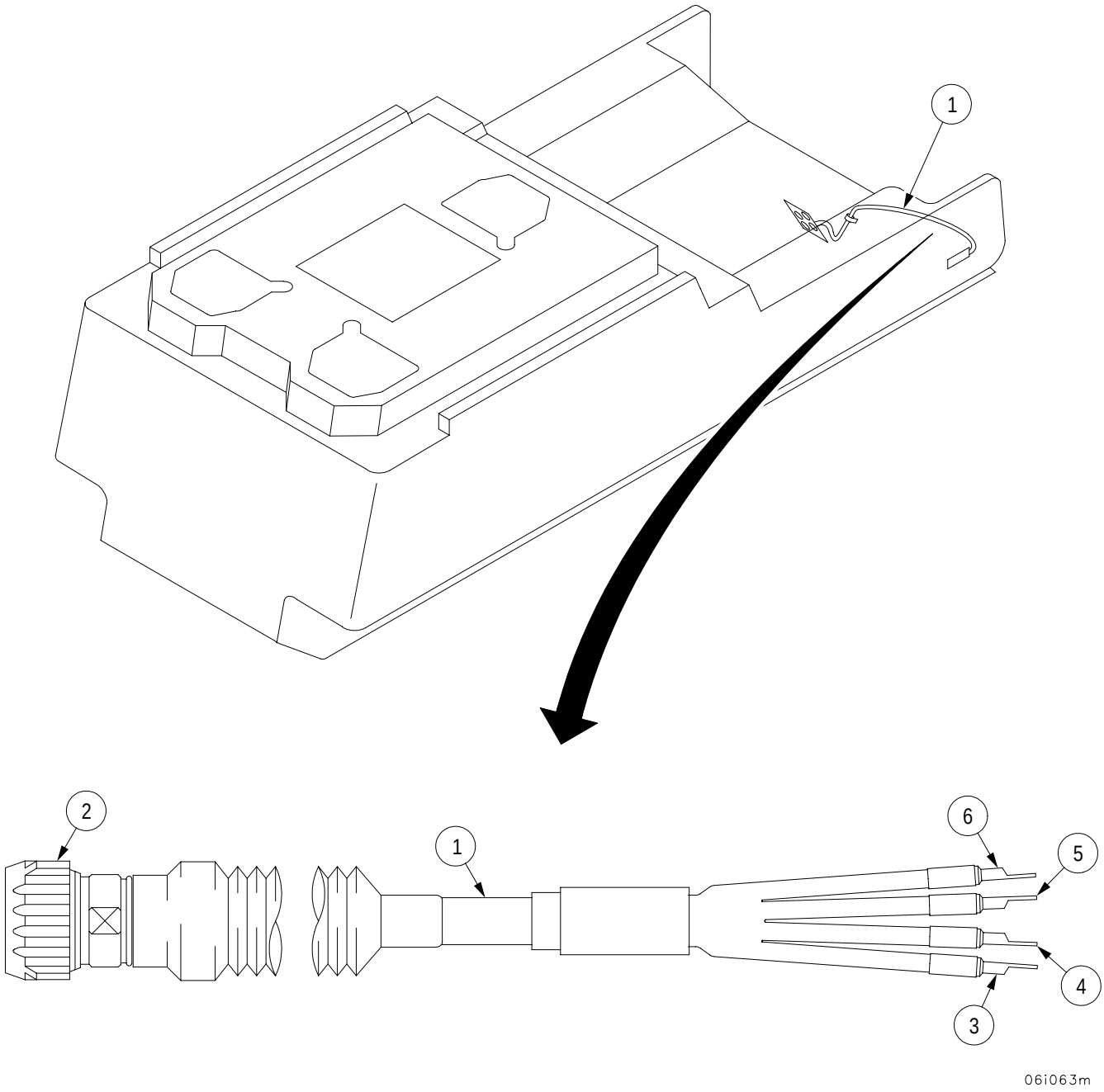
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1), attaching hardware, and discard lockwashers from the following attachment points:

Item No.	3W206 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Engine Disconnect Bracket Connector J2	Rear of Engine, near Turbo-charger
3	Terminal T1/GND	Negative Bus Bar Terminal E5	Engine Compartment (Left Side)
4	Terminal T2/GND	Negative Bus Bar Terminal E5	Engine Compartment (Left Side)
5	Terminal T3/GND	Negative Bus Bar Terminal E10	Engine Compartment (Left Side)
6	Terminal T4/GND	Negative Bus Bar Terminal E10	Engine Compartment (Left Side)

WIRING HARNESS 3W206 REPLACEMENT - CONTINUED 0302 00

Removal-Continued



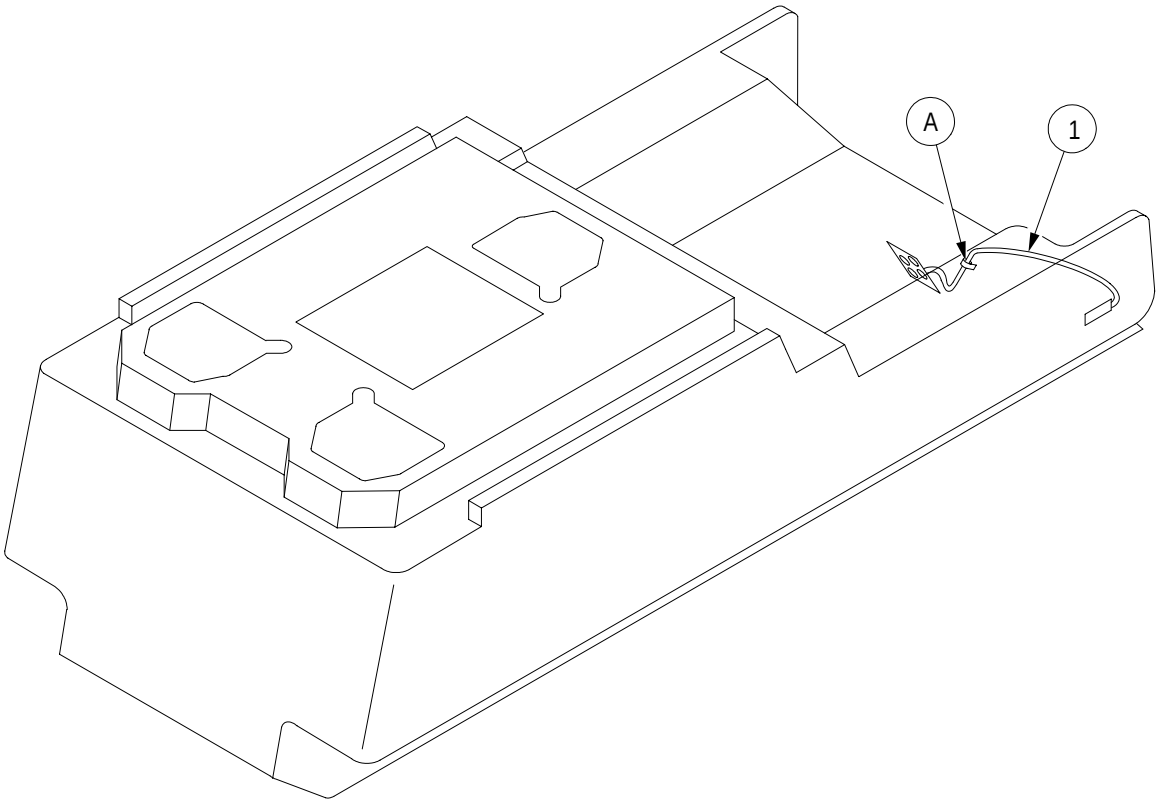
WIRING HARNESS 3W206 REPLACEMENT - CONTINUED 0302 00

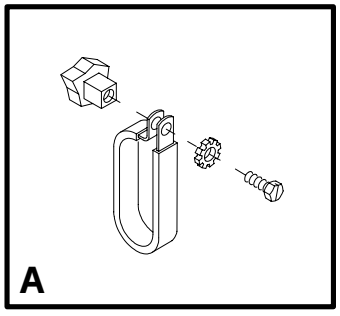
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwasher (A), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwasher.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwasher (A), as shown in illustration.





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WIRING HARNESS 3W206 REPLACEMENT - CONTINUED 0302 00

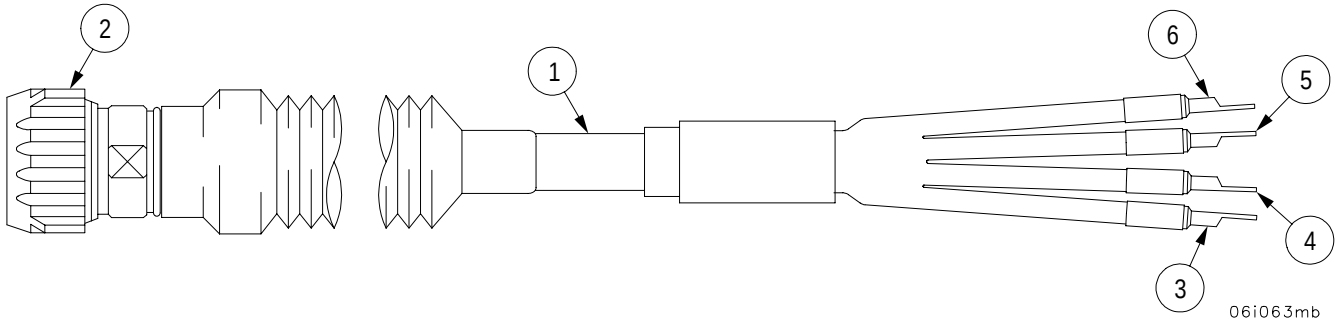
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware and new lockwashers, at the following attachment points:

Item No.	3W206 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
6	Terminal T4/GND	Negative Bus Bar Terminal E10	Engine Compartment (Left Side)
5	Terminal T3/GND	Negative Bus Bar Terminal E10	Engine Compartment (Left Side)
4	Terminal T2/GND	Negative Bus Bar Terminal E5	Engine Compartment (Left Side)
3	Terminal T1/GND	Negative Bus Bar Terminal E5	Engine Compartment (Left Side)
2	Connector P1	Engine Disconnect Bracket Connector J2	Rear of Engine, near Turbo-charger



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)
Install engine deck assembly (WP 0417 00)

END OF TASK

WIRING HARNESS 3W207 REPLACEMENT 0303 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 58, WP 0718 00)
Lockwashers (2) (item 350, WP 0718 00)
Lockwasher (item 2, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Engine deck assembly removed (WP 0417 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

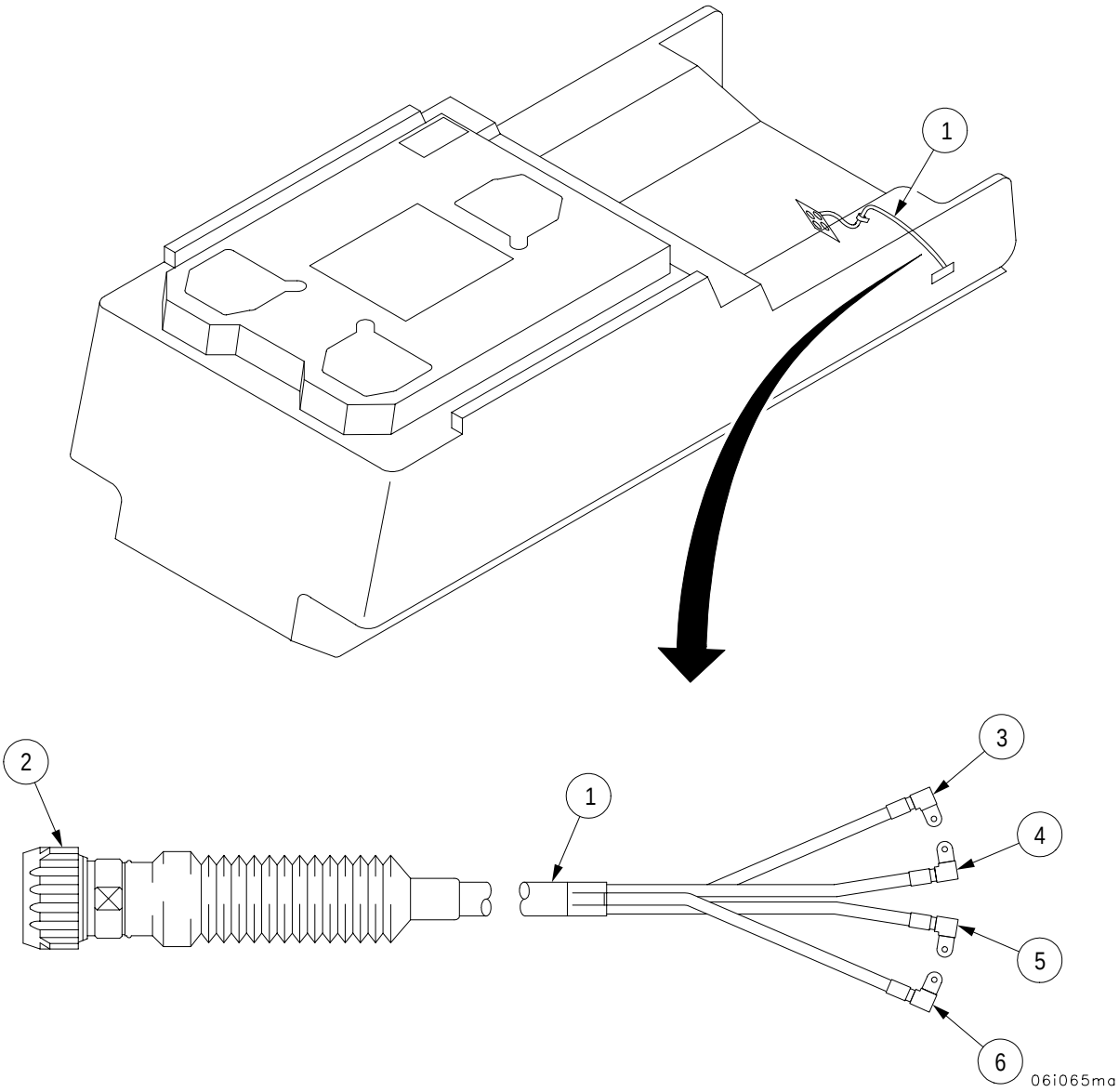
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	3W207 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Engine Disconnect Bracket Connector J1	Rear of Engine (Near Turbocharger)
3	Terminal T1	Positive Bus Terminal E2	Engine Compartment (Left Side)
4	Terminal T2	Positive Bus Terminal E2	Engine Compartment (Left Side)
5	Terminal T3	Positive Bus Terminal E2	Engine Compartment (Left Side)
6	Terminal T4	Positive Bus Terminal E2	Engine Compartment (Left Side)

WIRING HARNESS 3W207 REPLACEMENT - CONTINUED 0303 00

Removal-Continued



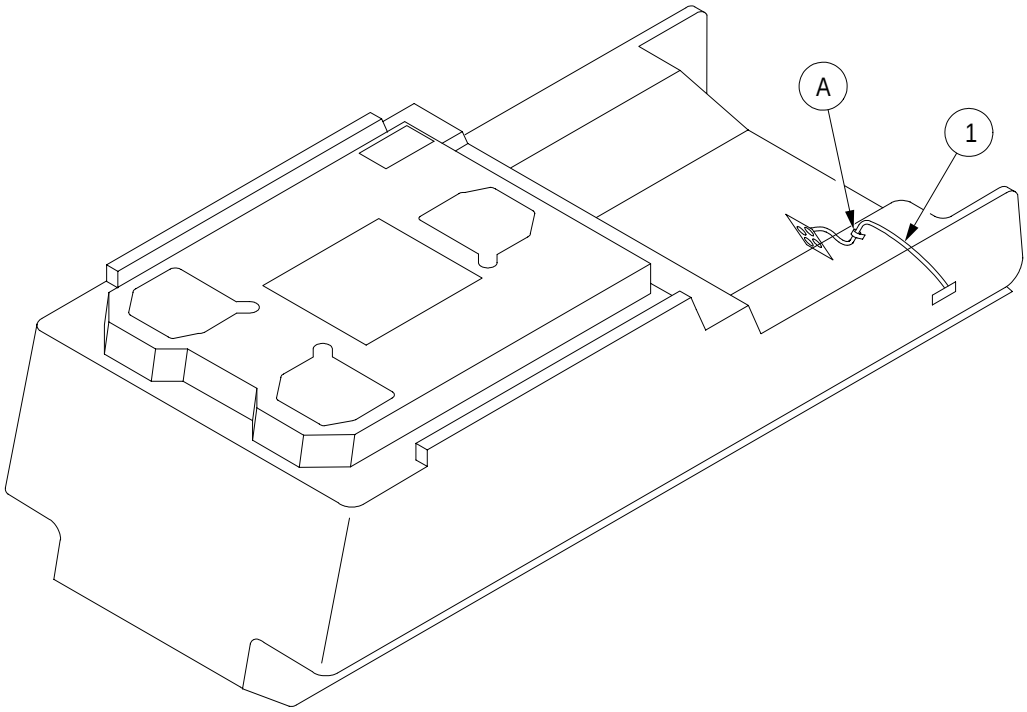
WIRING HARNESS 3W207 REPLACEMENT - CONTINUED 0303 00

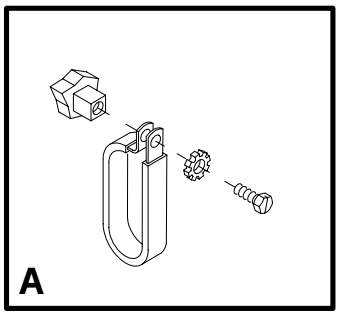
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwasher (A), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwasher (A), as shown in illustration.





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WIRING HARNESS 3W207 REPLACEMENT - CONTINUED 0303 00

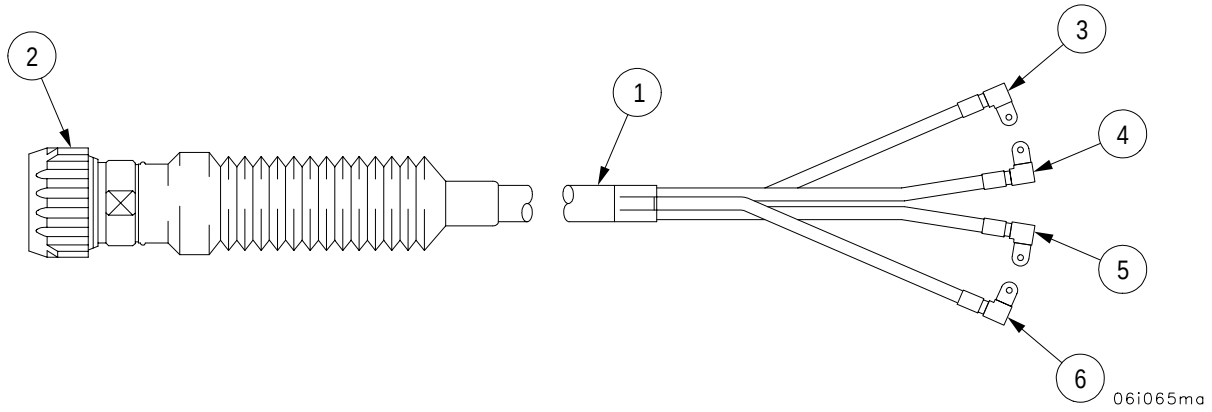
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	3W207 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
6	Terminal T4	Positive Bus Terminal E2	Engine Compartment (Left Side)
5	Terminal T3	Positive Bus Terminal E2	Engine Compartment (Left Side)
4	Terminal T2	Positive Bus Terminal E2	Engine Compartment (Left Side)
3	Terminal T1	Positive Bus Terminal E2	Engine Compartment (Left Side)
2	Connector P1	Engine Disconnect Bracket Connector J1	Rear of Engine (Near Turbocharger)



NOTE

FOLLOW-ON MAINTENANCE:
Install engine deck assembly (wp 0417 00)
Connect battery power (WP 0256 00)

END OF TASK

LEAD ASSEMBLY 3W209 REPLACEMENT 0304 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (3) (item 351, WP 0718 00)
Lockwashers (3) (item 353, WP 0718 00)
Lockwashers (2) (item 121, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Engine deck assembly removed (WP 0417 00)
Shunt cover removed (WP 0255 00)

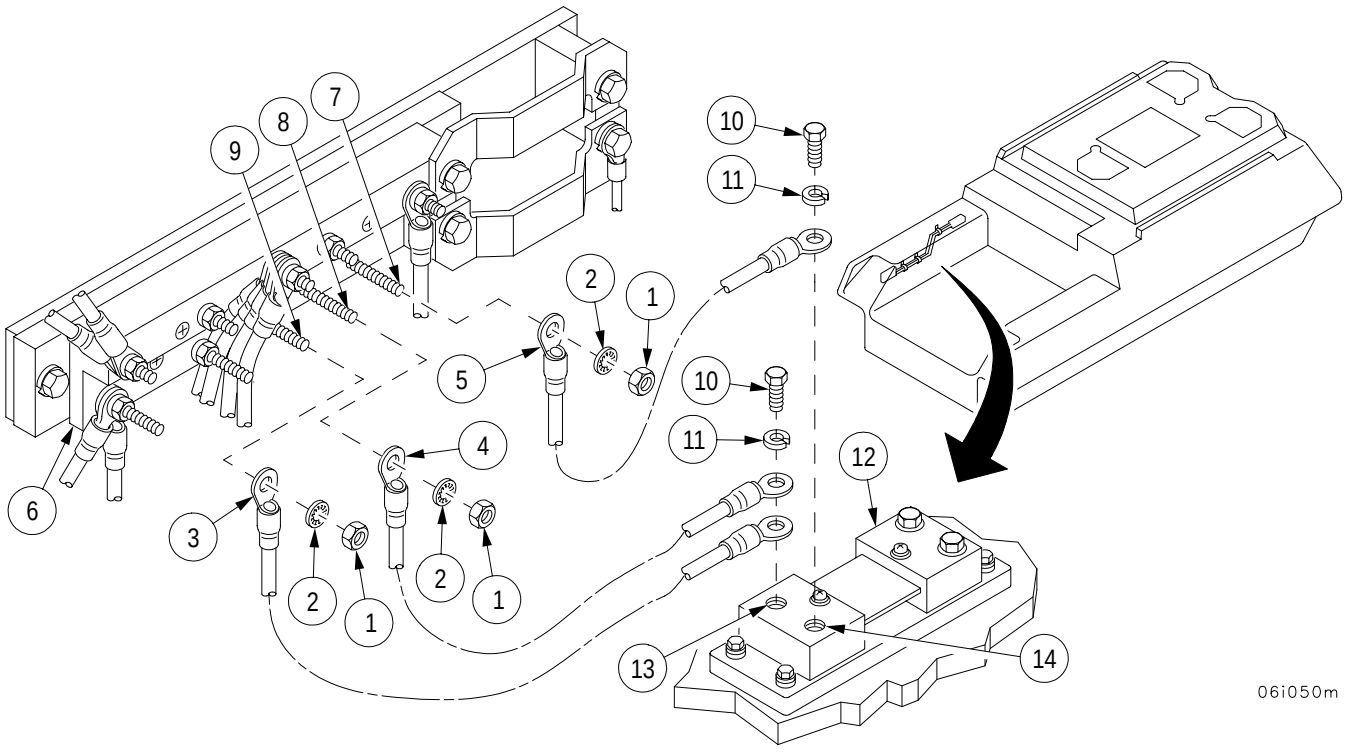
References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

1. Remove three nuts (1), three lockwashers (2) and three lead assemblies 3W209 (3, 4 and 5) from three negative bus (6) terminals E9 (7), E10 (8) and E8 (9). Discard lockwashers.
2. Remove two screws (10), two lockwashers (11) and three lead assemblies 3W209 (3, 4 and 5) from two shunt (12) terminals (13 and 14). Discard lockwashers.



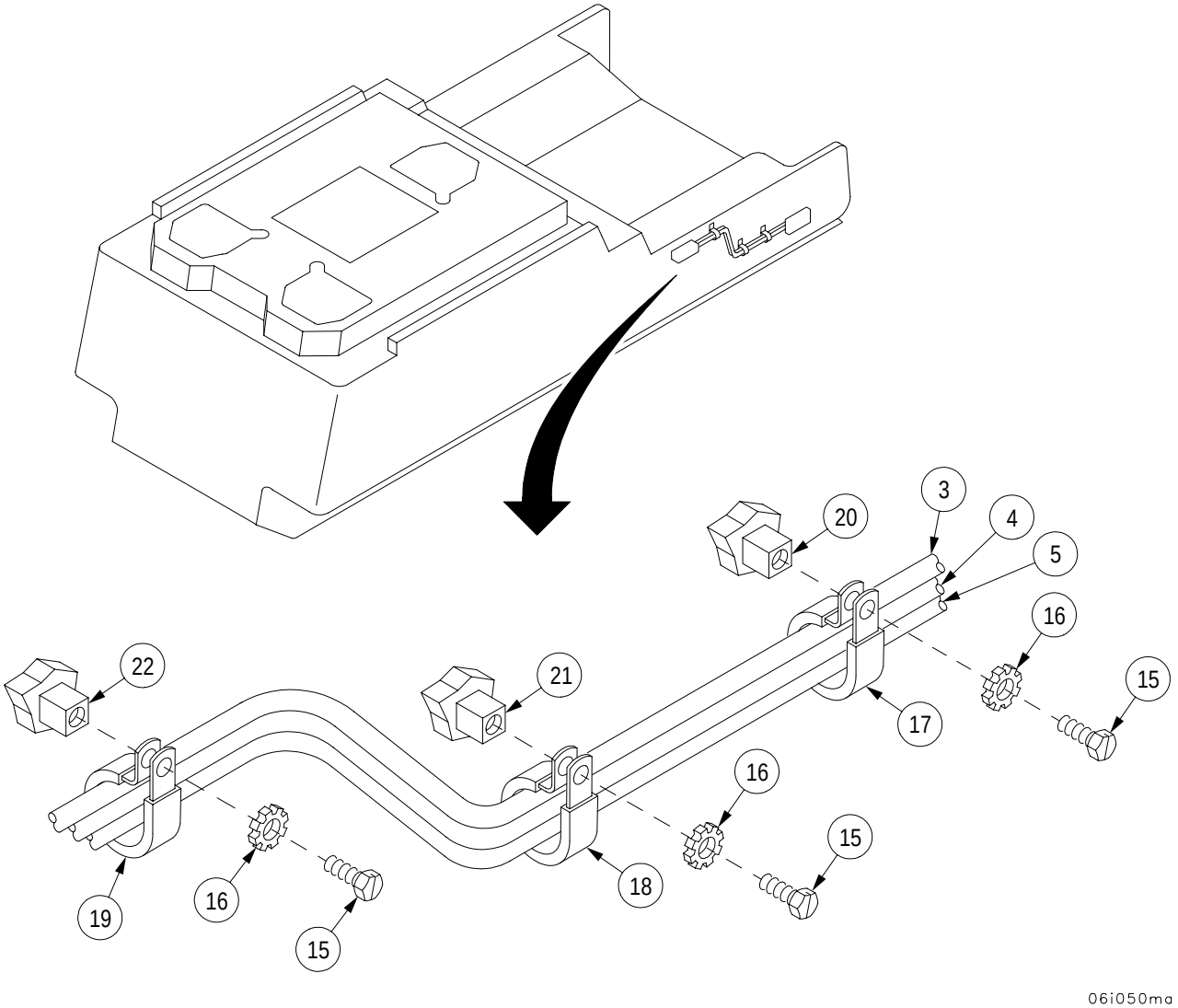
LEAD ASSEMBLY 3W209 REPLACEMENT - CONTINUED 0304 00

Removal-Continued

3. Remove three screws (15), three lockwashers (16) and three clamps (17, 18 and 19) from clamp mounts (20, 21 and 22). Discard lockwashers.
4. Remove three lead assemblies 3W209 (3, 4 and 5) from vehicle.
5. Inspect parts for damage and replace as required.

Installation

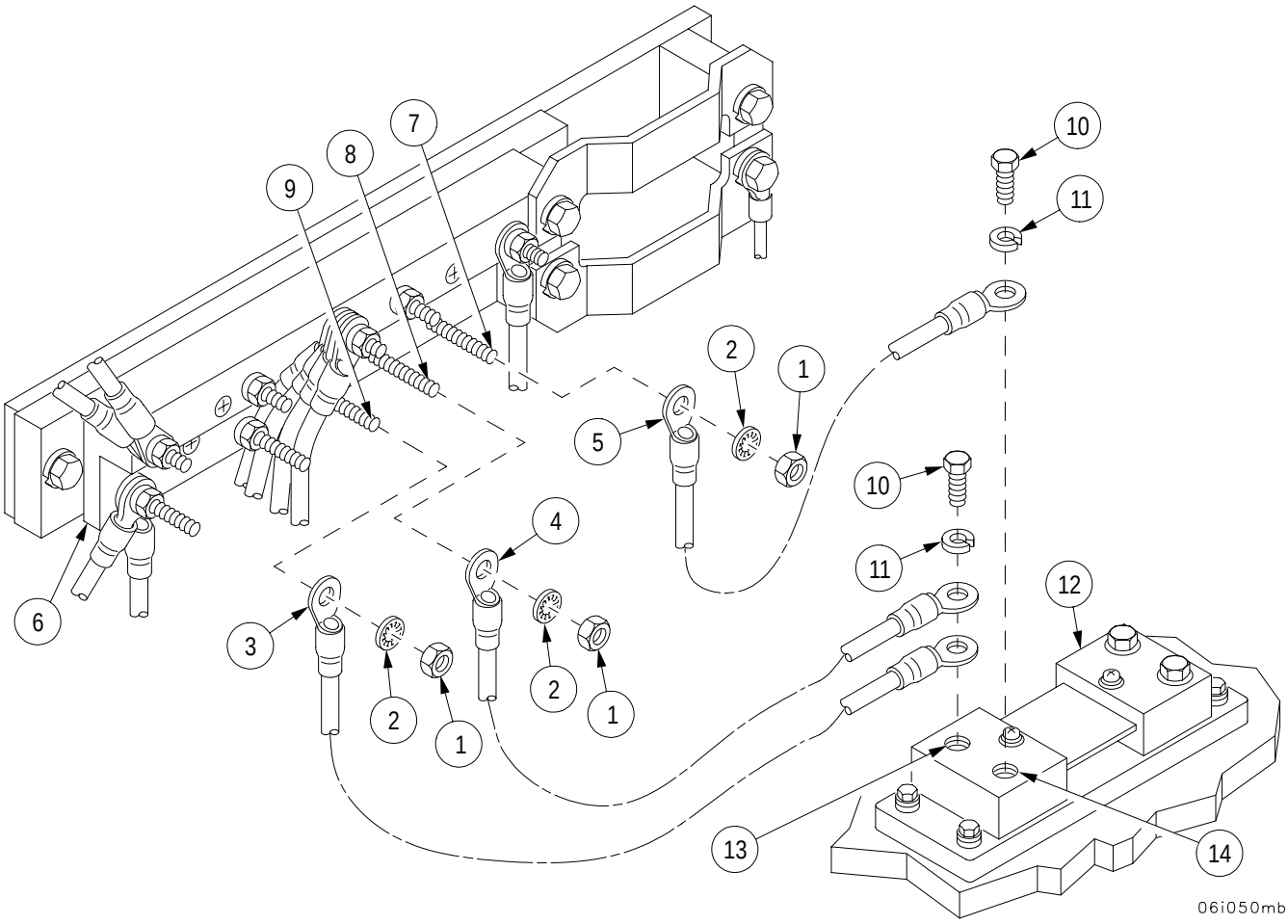
1. Position three lead assemblies 3W209 (3, 4 and 5) in vehicle.
2. Install three lead assemblies 3W209 (3, 4 and 5) on three clamp mounts (20, 21 and 22) with three clamps (17, 18 and 19), three screws (15) and three new lockwashers (16).



LEAD ASSEMBLY 3W209 REPLACEMENT - CONTINUED 0304 00

Installation-Continued

3. Install three lead assemblies 3W209 (3, 4 and 5) on three negative bus (6) terminals E9 (7), E10 (8) and E8 (9) with three new lockwashers (2) and three nuts (1).
4. Install two lead assemblies 3W209 (3) and (4) on shunt (12) terminal (13) with screw (10) and new lockwasher (11).
5. Install lead assembly 3W209 (5) on shunt (12) terminal (14) with screw (10) and new lockwasher (11).



NOTE

FOLLOW-ON MAINTENANCE:
Install shunt cover (WP 0255 00)
Install engine deck assembly (WP 0417 00)
Connect battery power (WP 0256 00)

END OF TASK

LEAD ASSEMBLY 3W210 REPLACEMENT 0305 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 403, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

References
TM 9-2350-292-10

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Remove STE/ICE harnesses as necessary. Note location and position of these leads to aid in installation.

There are three similar lead assemblies, running from the negative terminals of three of the batteries to the negative terminals of the shunt.

3W210-1 runs from the forward pair of batteries to the shunt. Perform Removal steps 1 through 3 and 10 and Installation steps 5 and 6 for replacement of lead assembly 3W210-1.

3W210-2 runs from the inside rear pair of batteries to the shunt. Perform Removal steps 4 through 6 and 10 and Installation steps 3 and 4 for replacement of lead assembly 3W210-2.

3W210-2 runs from the outside rear pair of batteries to the shunt. Perform Removal steps 7 through 10 and Installation steps 1 and 2 for replacement of lead assembly 3W210-2.

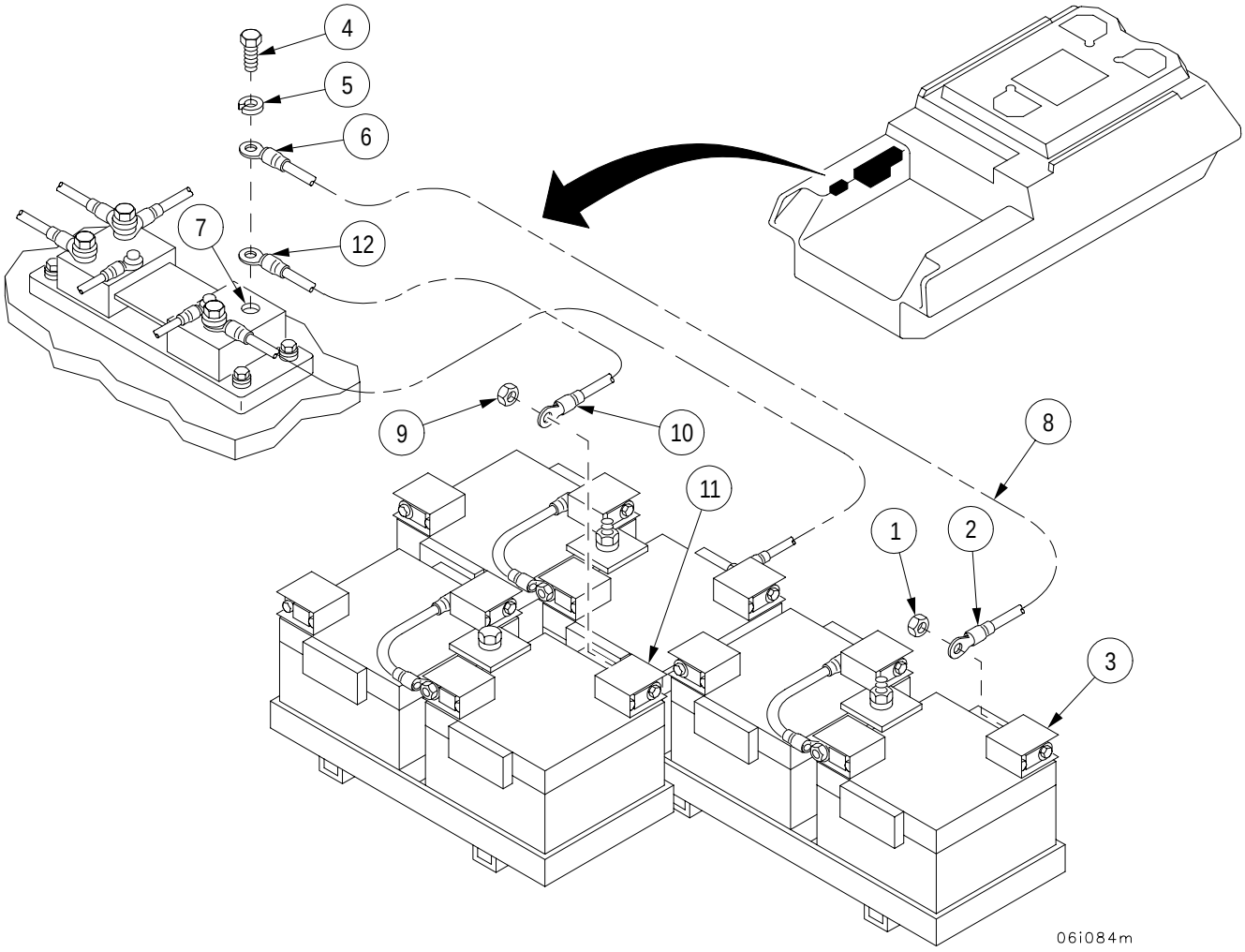
LEAD ASSEMBLY 3W210 REPLACEMENT - CONTINUED 0305 00

Removal

NOTE

Lead assemblies 3W210-1 and 3W210-2 are attached to the shunt on the same terminal. Remove only the lead assembly required, replacing the remaining lead assembly.

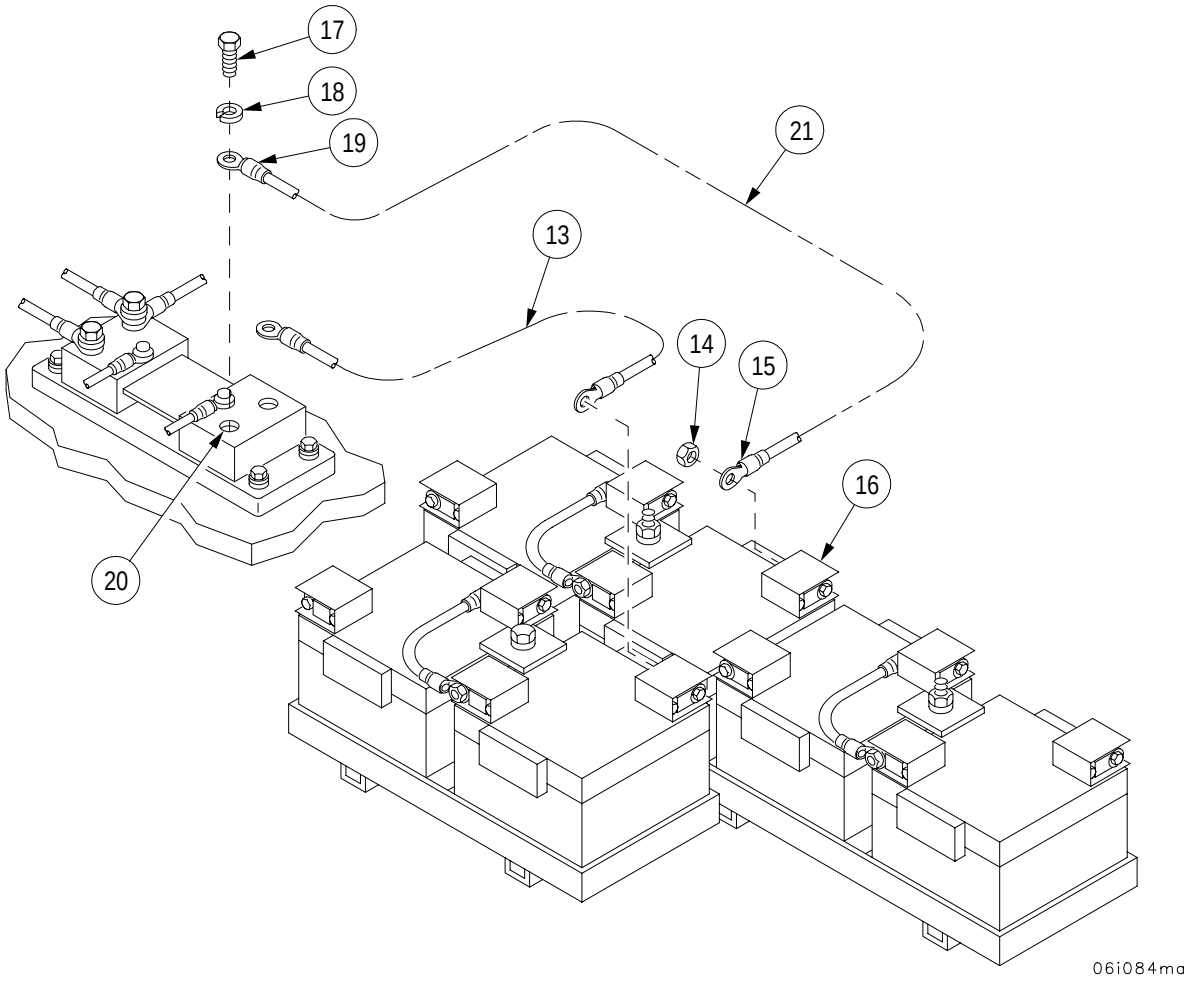
1. Remove nut (1) and lead assembly 3W210-1 terminal (2) from battery terminal (3).
2. Remove screw (4), lockwasher (5) and lead assembly 3W210-1 terminal (6) from negative shunt terminal (7). Discard lockwasher.
3. Remove lead assembly 3W210-1 (8) from vehicle.
4. Remove nut (9) and lead assembly 3W210-2 terminal (10) from battery terminal (11).
5. Remove screw (4), lockwasher (5) and lead assembly 3W210-2 terminal (12) from negative shunt terminal (7). Discard lockwasher.



LEAD ASSEMBLY 3W210 REPLACEMENT - CONTINUED 0305 00

Removal-Continued

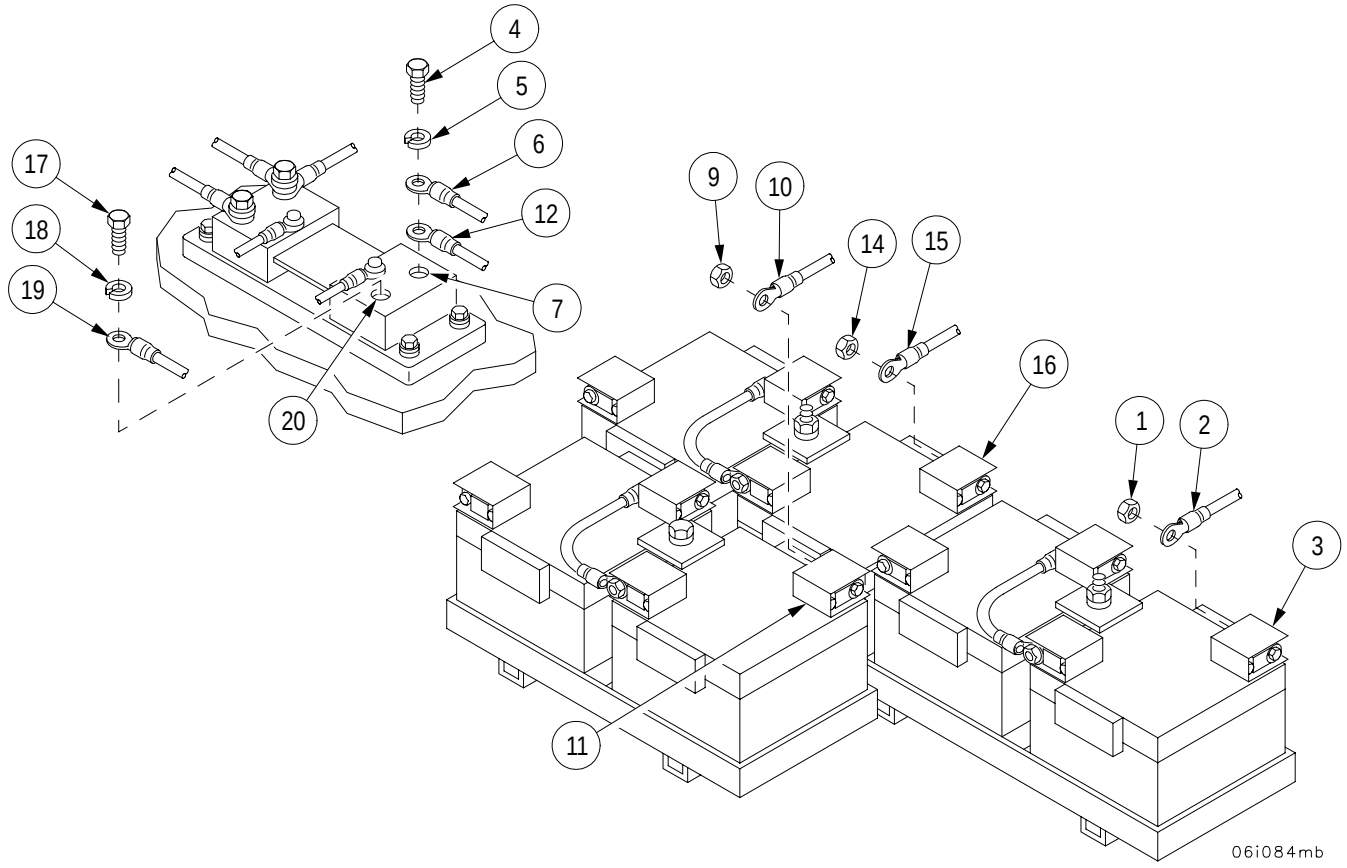
6. Remove lead assembly 3W210-2 (13) from vehicle.
7. Remove nut (14) and lead assembly terminal 3W210-2 terminal (15) from battery terminal (16).
8. Remove screw (17), lockwasher (18) and lead assembly 3W210-2 terminal (19) from negative shunt terminal (20). Discard lockwasher.
9. Remove lead assembly 3W210-2 (21) from vehicle.
10. Inspect parts for damage and replace as required.



LEAD ASSEMBLY 3W210 REPLACEMENT - CONTINUED 0305 00

Installation

1. Install lead assembly 3W210–2 terminal (19) on negative shunt terminal (20) with screw (17) and new lockwasher (18).
2. Install lead assembly 3W210–2 terminal (15) on battery terminal (16) with nut (14).
3. Install lead assembly 3W210–2 terminal (12) on negative shunt terminal (7) with screw (4) and new lockwasher (5).
4. Install lead assembly 3W210–2 terminal (10) on battery terminal (11) with nut (9).
5. Install lead assembly 3W210–1 terminal (6) on negative shunt terminal (7) with screw (4) and new lockwasher (5).
6. Install lead assembly 3W210–1 terminal (2) on battery terminal (3) with nut (1).



END OF TASK

LEAD ASSEMBLY 3W212 REPLACEMENT 0306 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (2) (item 2, WP 0718 00)
Lockwasher (2) (item 350, WP 0718 00)
Lockwashers (6) (item 58, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

There are three similar lead assemblies running from the positive terminals of the three batteries to the E1 terminal of the positive bus bar.

3W212-1 runs from the forward pair of batteries to the positive bus bar. Perform Removal steps 1 through 3, 10 and 11 and Installation steps 1, 6 and 7 for replacement of lead assembly 3W212-1.

3W212-2 runs from the inside rear pair of batteries to the positive bus bar. Perform Removal steps 4 through 6, 10 and 11 and Installation steps 1, 4 and 5 for replacement of lead assembly 3W212-2.

3W212-3 runs from the outside rear pair of batteries to the positive bus bar. Perform Removal steps 7 through 11 and Installation steps 1 through 3 for replacement of lead assembly 3W212-3.

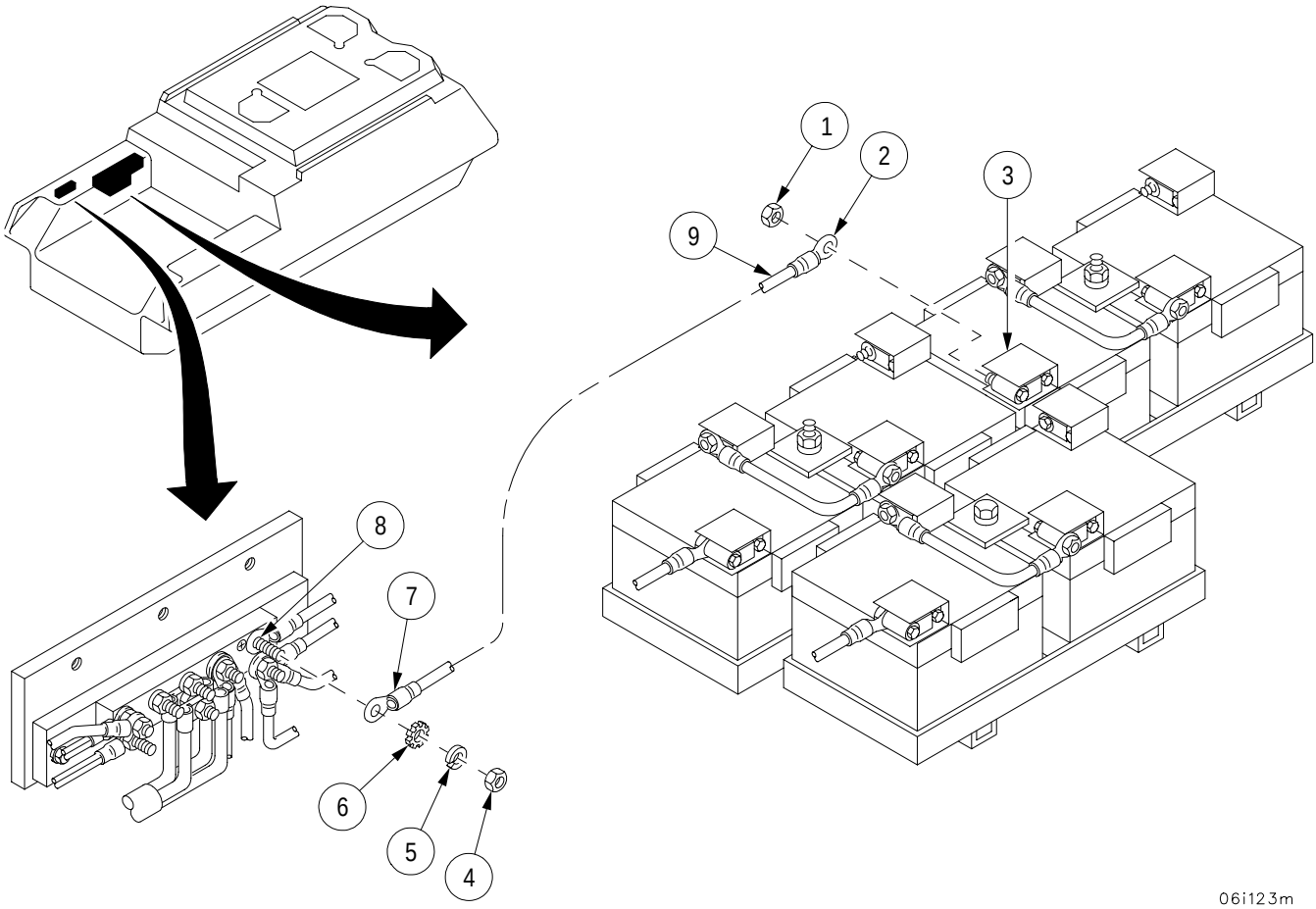
LEAD ASSEMBLY 3W212 REPLACEMENT - CONTINUED 0306 00

Removal

NOTE

Lead assemblies 3W212-1 and 3W212-2 are attached to the positive bus bar on the same terminal. Remove only the lead assembly required, replacing the remaining lead assemblies.

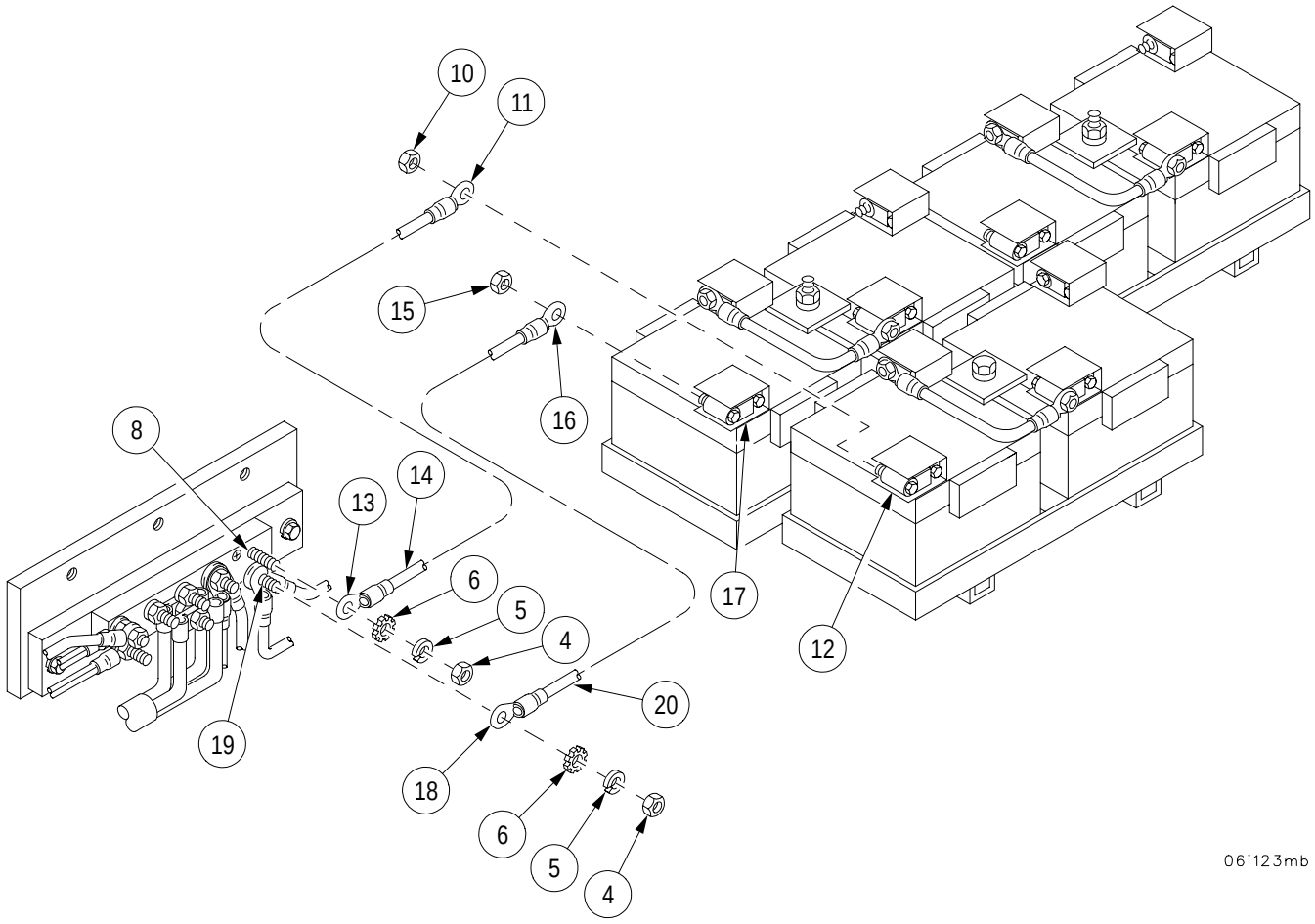
1. Remove nut (1) and lead assembly 3W212-1 terminal (2) from battery terminal (3).
2. Remove nut (4), lockwashers (5 and 6) and lead assembly 3W212-1 terminal (7) from positive bus bar terminal E8 (8). Discard lockwashers.
3. Remove lead assembly 3W212-1 (9) from vehicle.



LEAD ASSEMBLY 3W212 REPLACEMENT - CONTINUED 0306 00

Removal-Continued

4. Remove nut (10) and lead assembly 3W212-2 terminal (11) from battery terminal (12).
5. Remove nut (4), lockwashers (5 and 6) and lead assembly 3W212-2 terminal (13) from positive bus bar terminal E8 (8). Discard lockwashers.
6. Remove lead assembly 3W212-2 (14) from vehicle.
7. Remove nut (15) and lead assembly terminal 3W212-3 terminal (16) from battery terminal (17).
8. Remove nut (4), lockwashers (5 and 6) and lead assembly 3W212-3 terminal (18) from positive bus bar terminal E1 (19). Discard lockwashers.
9. Remove lead assembly 3W212-3 (20) from vehicle.



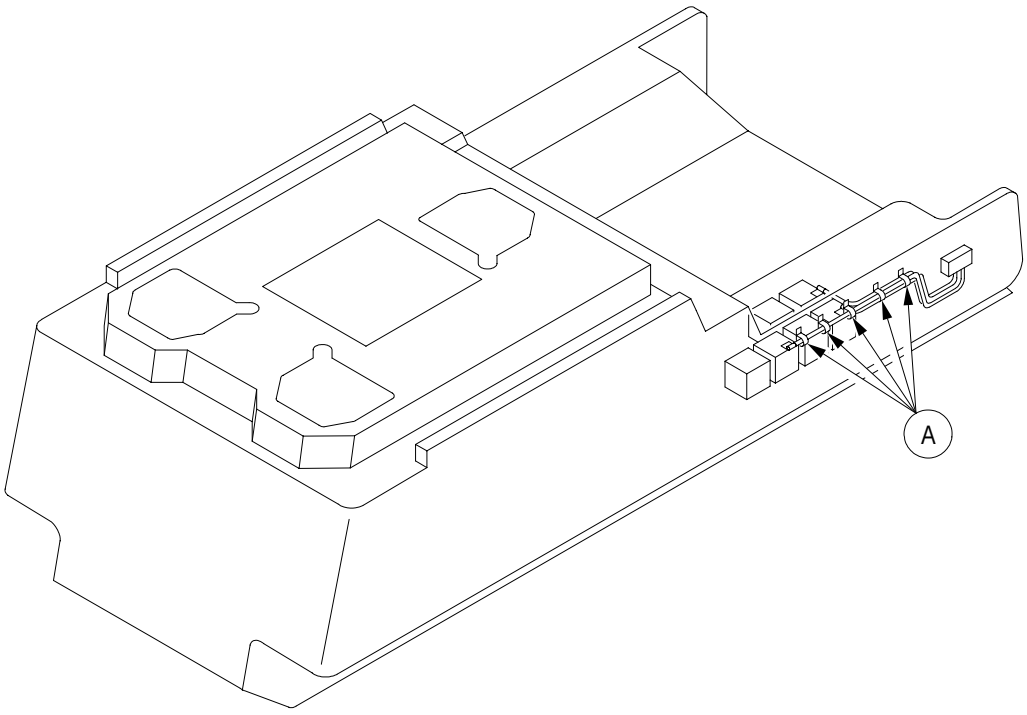
LEAD ASSEMBLY 3W212 REPLACEMENT - CONTINUED 0306 00

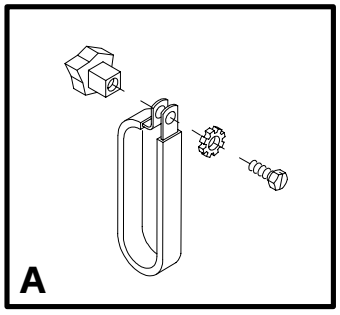
Removal-Continued

10. Remove straps, clamps, attaching hardware and lockwashers (A) securing lead assemblies, as shown in illustration. Discard lockwashers.
11. Inspect parts for damage and replace as required.

Installation

1. Install straps, clamps, attaching hardware and new lockwashers (A) securing lead assemblies, as shown in illustration.



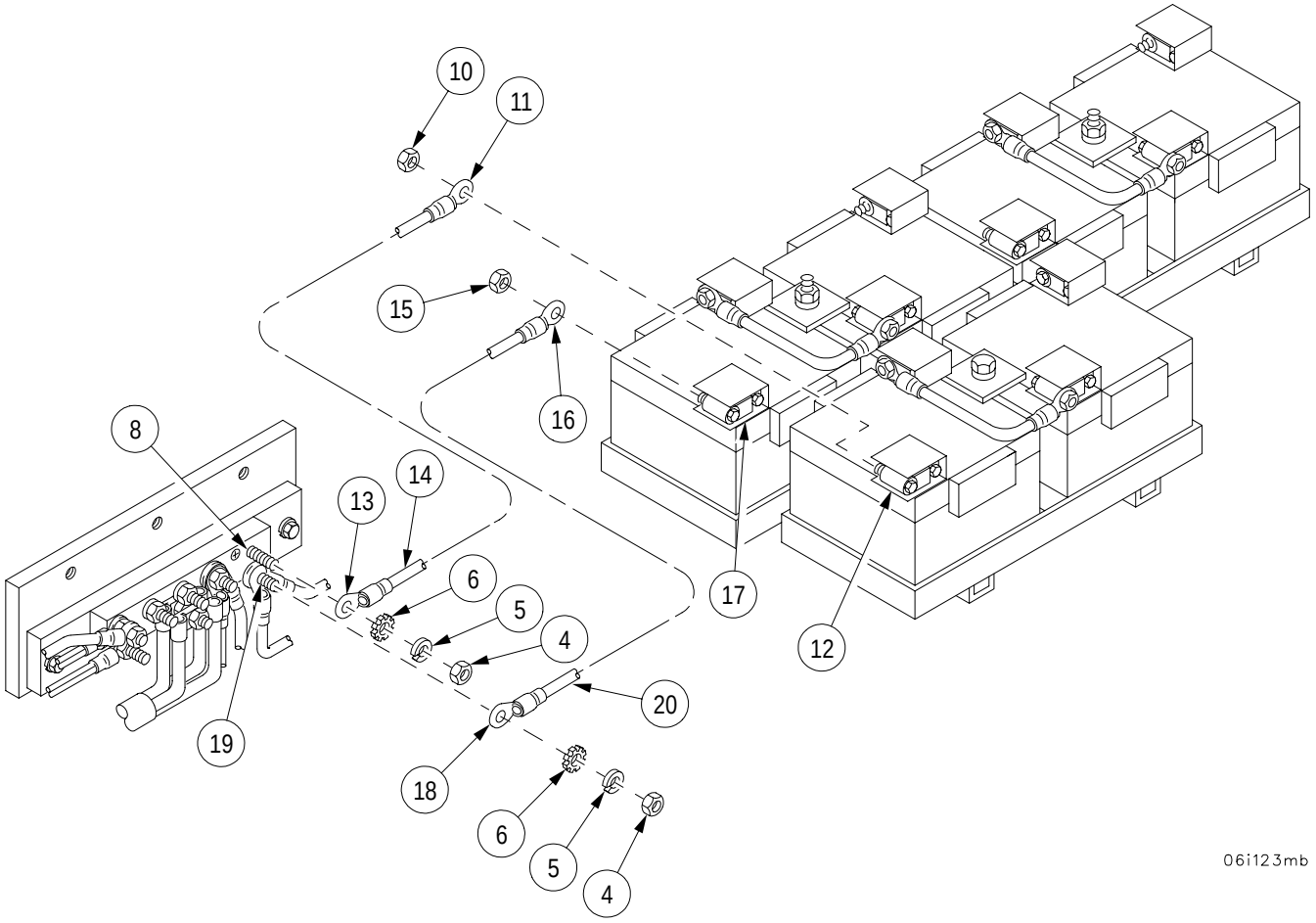


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LEAD ASSEMBLY 3W212 REPLACEMENT - CONTINUED 0306 00

Installation-Continued

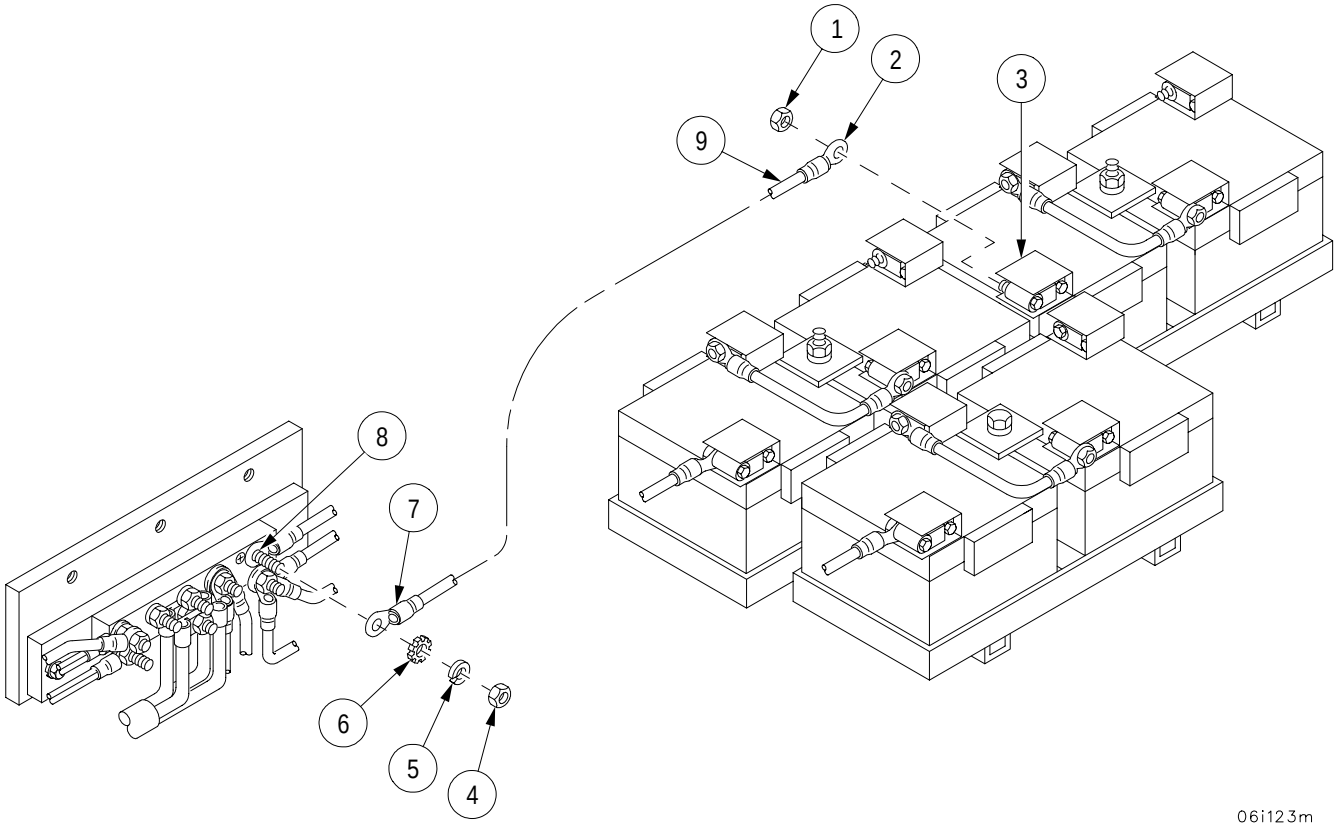
2. Install lead assembly 3W212-3 (20) by connecting terminal (18) on positive bus bar terminal E1 (19) with new lockwashers (5 and 6) and nut (4).
3. Install lead assembly 3W212-3 terminal (16) on battery terminal (17) with nut (15).
4. Install lead assembly 3W212-2 (14) by connecting terminal (13) on positive bus bar terminal E8 (8) with new lockwashers (5 and 6) and nut (4).
5. Install lead assembly 3W212-2 terminal (11) on battery terminal (12) with nut (10).



LEAD ASSEMBLY 3W212 REPLACEMENT - CONTINUED 0306 00

Installation-Continued

6. Install lead assembly 3W212-1 terminal (7) on positive bus bar terminal E8 (8) with new lockwashers (5 and 6) and nut (4).
7. Install lead assembly 3W212-1 (9) by connecting terminal (2) on battery terminal (3) with nut (1).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

SLAVE RECEPTACLE, WIRING HARNESS 3W213 AND WIRING HARNESS 3W214 REPLACEMENT

0307 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (5) (item 38, WP 0718 00)
Lockwashers (4) (item 110, WP 0718 00)
Lockwasher (item 12, WP 0718 00)
Lockwashers (3) (item 350, WP 0718 00)
Lockwashers (2) (item 2, WP 0718 00)
Lockwashers (2) (item 11, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Engine deck assembly removed (WP 0417 00)

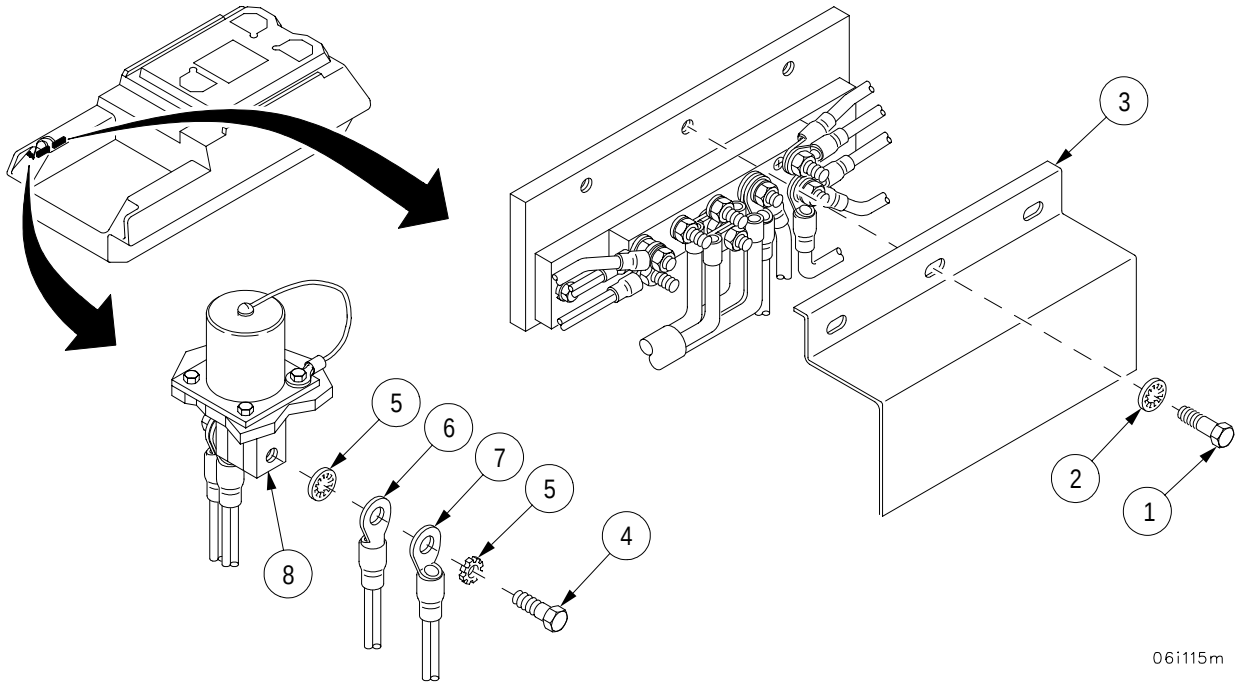
References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

1. Remove three screws (1), three lockwashers (2) and positive bus cover (3). Discard lockwashers.
2. Remove screw (4), two lockwashers (5) and two lead assemblies 3W213 (6 and 7) from slave receptacle (8). Discard lockwashers.

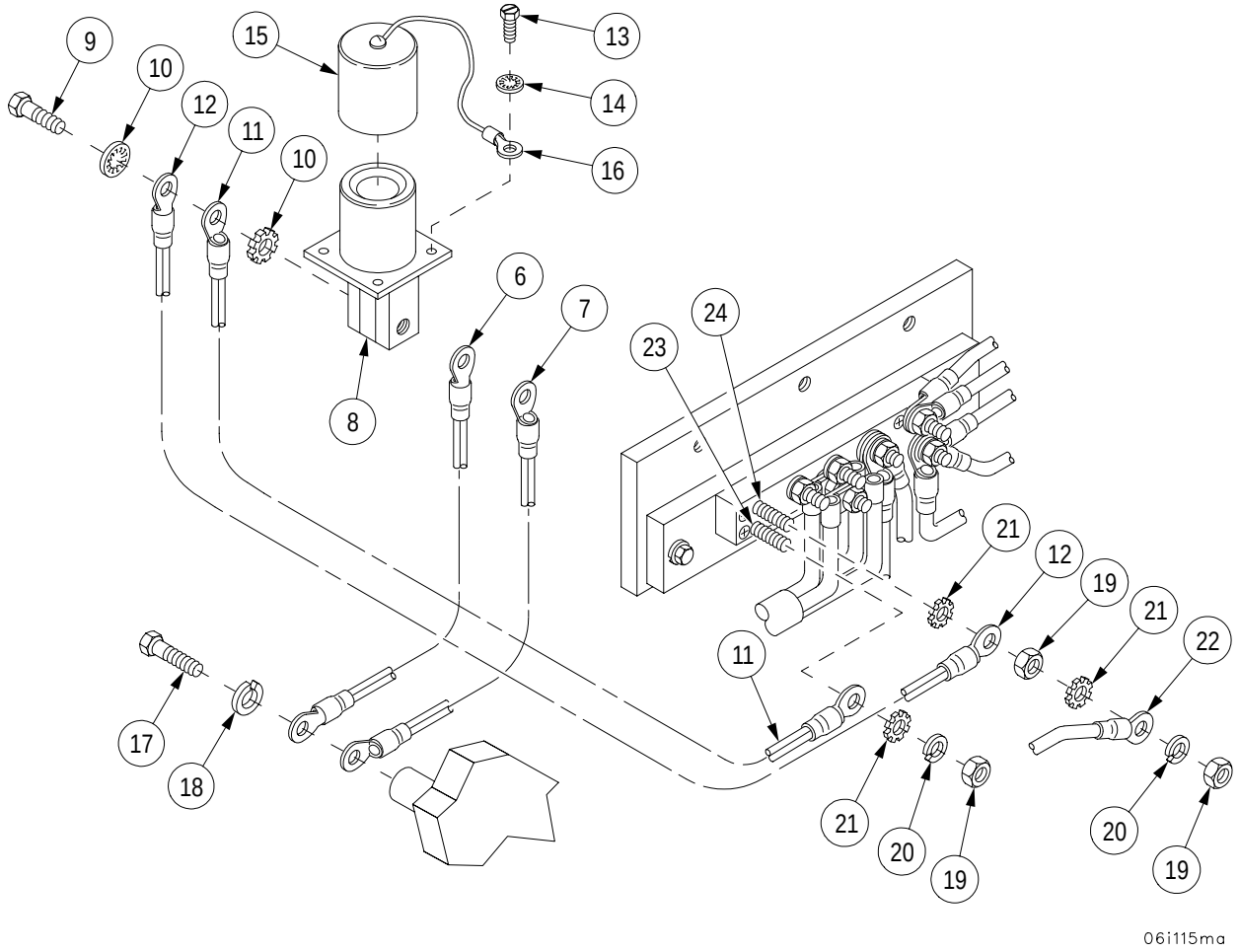


SLAVE RECEPTACLE, WIRING HARNESS 3W213 AND WIRING HARNESS 3W214 REPLACEMENT - CONTINUED

0307 00

Removal-Continued

3. Remove screw (9), two lockwashers (10) and two lead assemblies 3W214-1 (11) and 3W214-2 (12) from slave receptacle (8). Discard lockwashers.
4. Remove four screws (13), four lockwashers (14), protective cover (15), cord assembly (16) and slave receptacle (8) from vehicle. Discard lockwashers.
5. Remove screw (17), lockwasher (18) and two lead assemblies 3W213 (6 and 7) from boss on framework. Discard lockwasher.
6. Remove three nuts (19), five lockwashers (20 and 21) and three lead assemblies 3W710 (22), 3W214-1 (11) and 3W214-2 (12) from two positive bus bar terminals E3 (23) and E4 (24). Discard lockwashers.
7. Inspect parts for damage and replace as required.

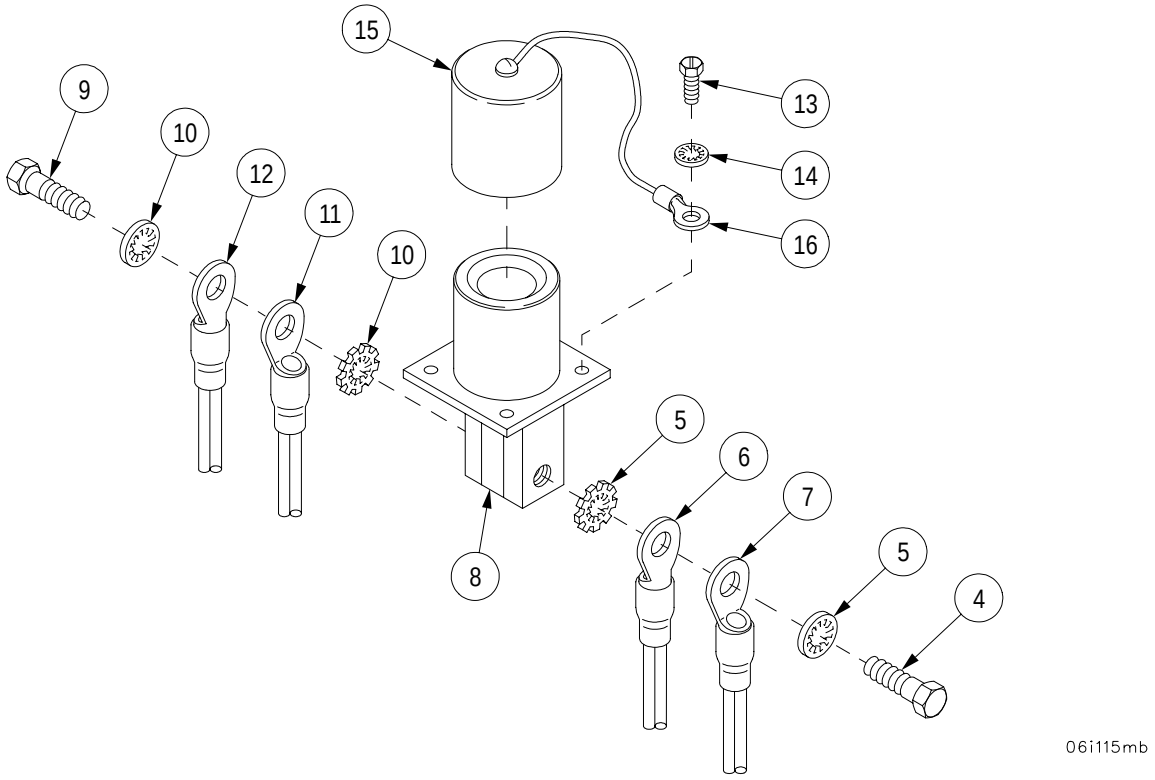


SLAVE RECEPTACLE, WIRING HARNESS 3W213 AND WIRING HARNESS 3W214 REPLACEMENT - CONTINUED

0307 00

Installation

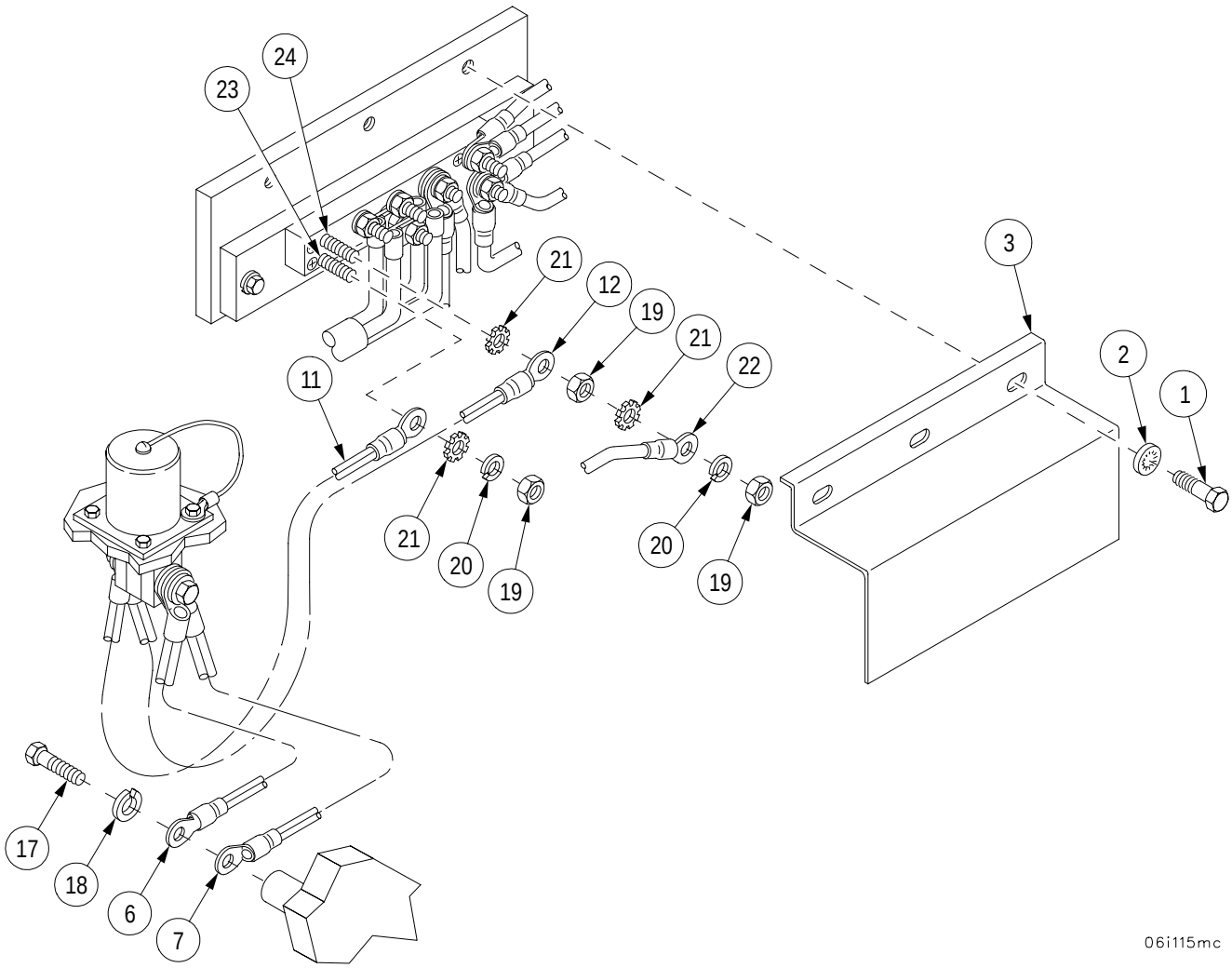
1. Place protective cover (15) on slave receptacle (8).
2. Install slave receptacle (8) and cord assembly (16) on vehicle with four screws (13) and four new lockwashers (14).
3. Install two lead assemblies 3W213 (6 and 7) on slave receptacle (8) with screw (4) and two new lockwashers (5).
4. Install two lead assemblies 3W214-1 (11) and 3W214-2 (12) on slave receptacle (8) with screw (9) and two new lockwashers (10).



SLAVE RECEPTACLE, WIRING HARNESS 3W213 AND WIRING HARNESS 3W214 REPLACEMENT - CONTINUED 0307 00

Installation-Continued

5. Install two lead assemblies 3W213 (6 and 7) to boss on framework with new lockwasher (18) and screw (17).
6. Install three lead assemblies 3W214-1 (11), 3W214-2 (12) and 3W710 (22) on two positive bus terminals E3 (23) and E4 (24) with five new lockwashers (20 and 21) and three nuts (19).
7. Install positive bus cover (3) with three screws (1) and three new lockwashers (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install engine deck assembly (WP 0417 00)
Connect battery power (WP 0256 00)

END OF TASK

LEAD ASSEMBLY 3W215 REPLACEMENT 0308 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 2, WP 0718 00)
Lockwasher (item 12, WP 0718 00)
Lockwasher (item 414, WP 0718 00)
Lockwasher (item 350, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Master relay cover removed (WP 0271 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

1. Remove screw (1), nut (2), lockwasher (3), lockwasher (4) and two lead assemblies 3W215 T2 (5) from master relay terminal A1 (6). Discard lockwashers.
2. Remove nut (7), lockwasher (8), lockwasher (9) and two lead assemblies 3W215 T1 (5) from positive bus bar terminal E1 (10). Discard lockwashers.
3. Remove two lead assemblies 3W215 (5).
4. Inspect parts for damage and replace as required.

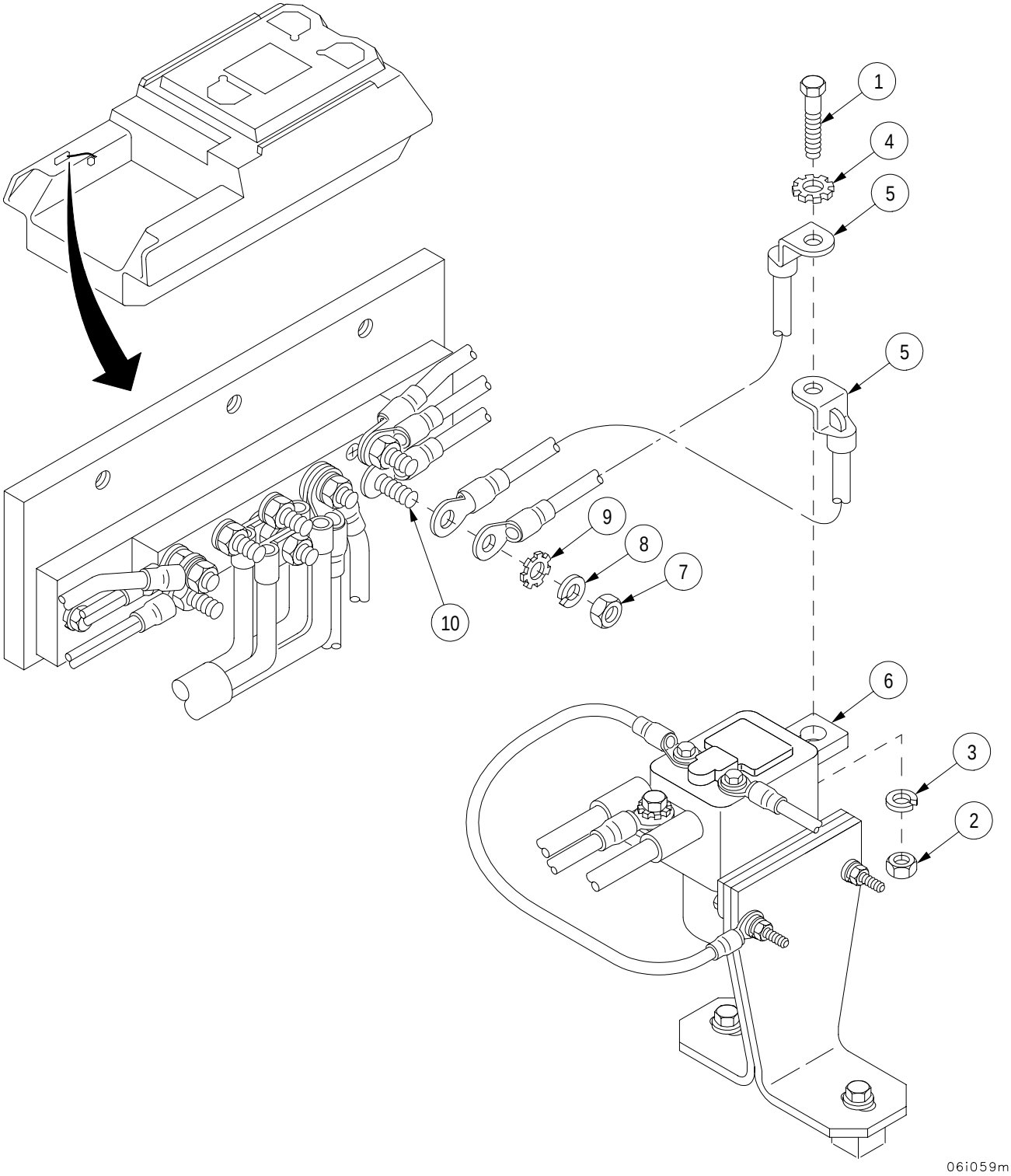
Installation

1. Connect two lead assemblies 3W215 T1 (5) to positive bus bar terminal E1 (10) with new lockwasher (9), new lockwasher (8) and nut (7).
2. Connect two lead assemblies 3W215 T2 (5) to master relay terminal A1 (6) with screw (1), new lockwasher (4), new lockwasher (3) and nut (2).

NOTE

FOLLOW-ON MAINTENANCE:
Install master relay cover (WP 0271 00)
Connect battery power (WP 0256 00)

LEAD ASSEMBLY 3W215 REPLACEMENT - CONTINUED 0308 00



END OF TASK

WIRING HARNESS 3W217 REPLACEMENT 0309 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (5) (item 58, WP 0718 00)
Lockwasher (item 2, WP 0718 00)
Lockwasher (item 11, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Forward battery removed (WP 0256 00)
Master relay cover removed (WP 0271 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

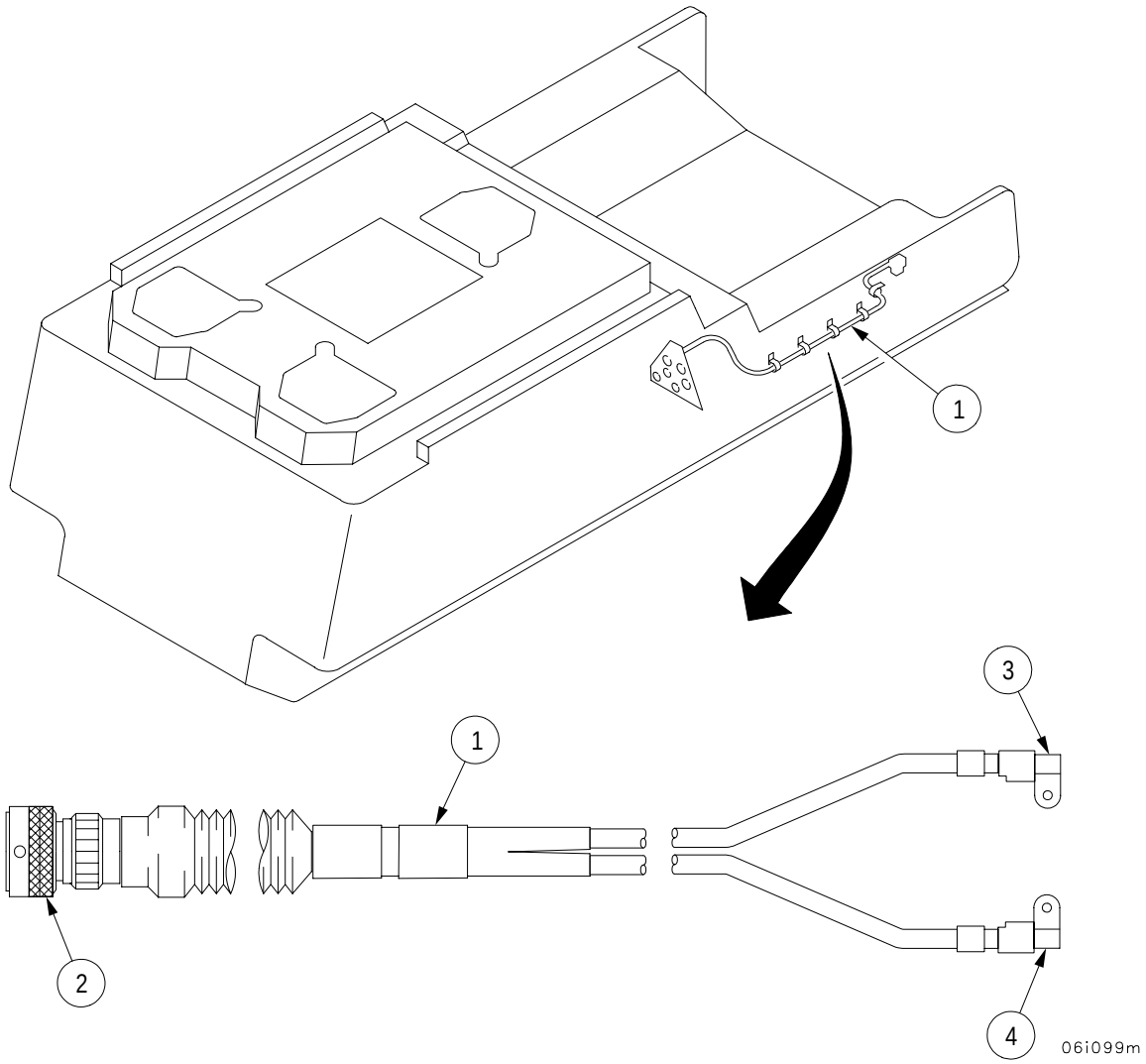
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	3W217 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Bulkhead Connector J6	Engine Compartment (Main Bulkhead)
3	Terminal T1	Master Relay Terminal A2	Engine Compartment (Left Side)
4	Terminal T2	Master Relay Terminal A2	Engine Compartment (Left Side)

WIRING HARNESS 3W217 REPLACEMENT - CONTINUED 0309 00

Removal-Continued



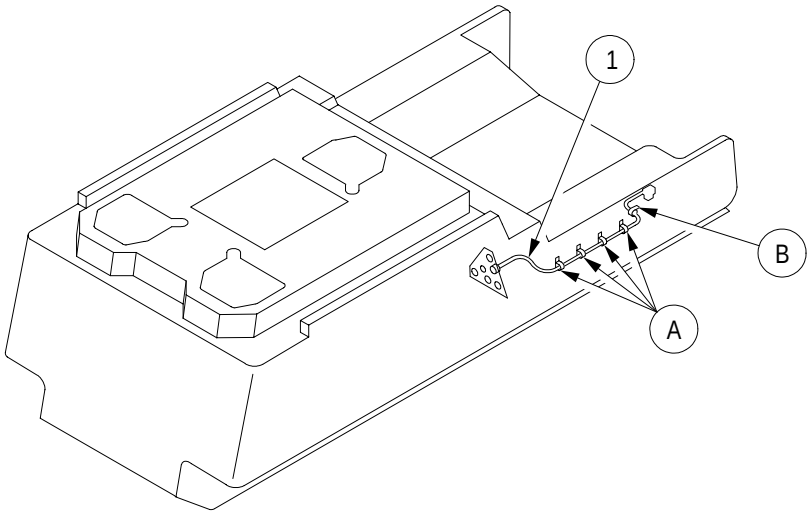
WIRING HARNESS 3W217 REPLACEMENT - CONTINUED 0309 00

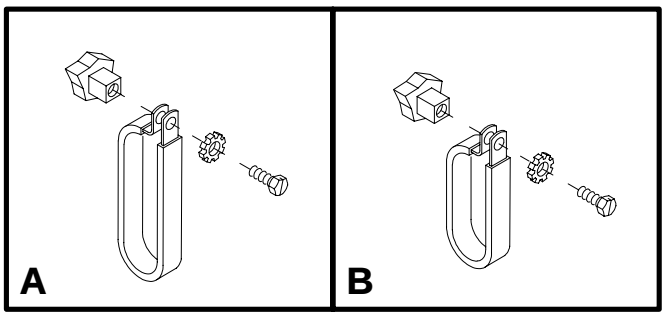
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers securing wiring harness (1) to vehicle, (A and B) as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A and B) as shown in illustration.





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WIRING HARNESS 3W217 REPLACEMENT - CONTINUED 0309 00

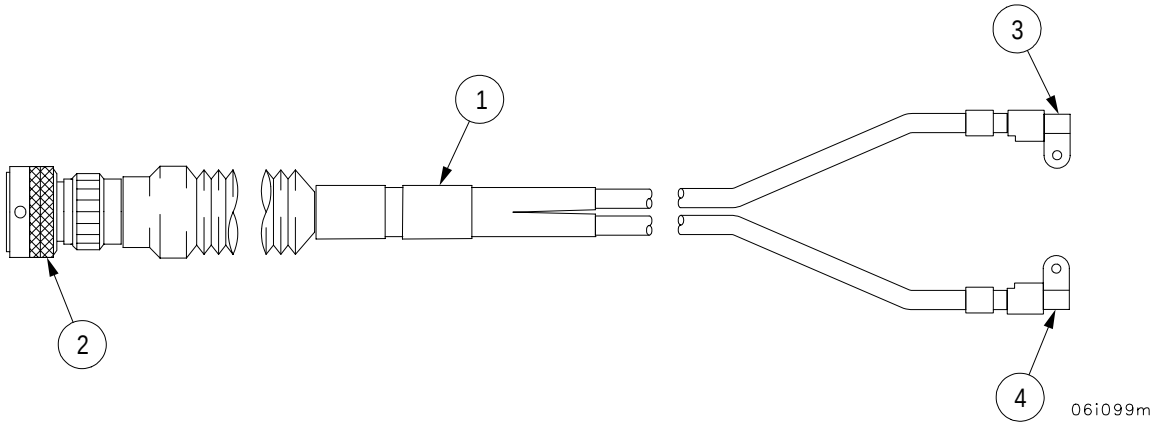
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	3W217 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
4	Terminal T2	Master Relay Terminal A2	Engine Compartment (Left Side)
3	Terminal T1	Master Relay Terminal A2	Engine Compartment (Left Side)
2	Connector P1	Bulkhead Connector J6	Engine Compartment (Main Bulkhead)



NOTE

FOLLOW-ON MAINTENANCE:
Install master relay cover (WP 0271 00)
Install forward battery (WP 0256 00)

END OF TASK

LEAD ASSEMBLY 3W218 REPLACEMENT 0310 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (3) (item 58, WP 0718 00)
Lockwasher (item 2, WP 0718 00)
Lockwasher (item 350, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Left side engine deck grilles removed and engine deck access doors opened (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

Removal

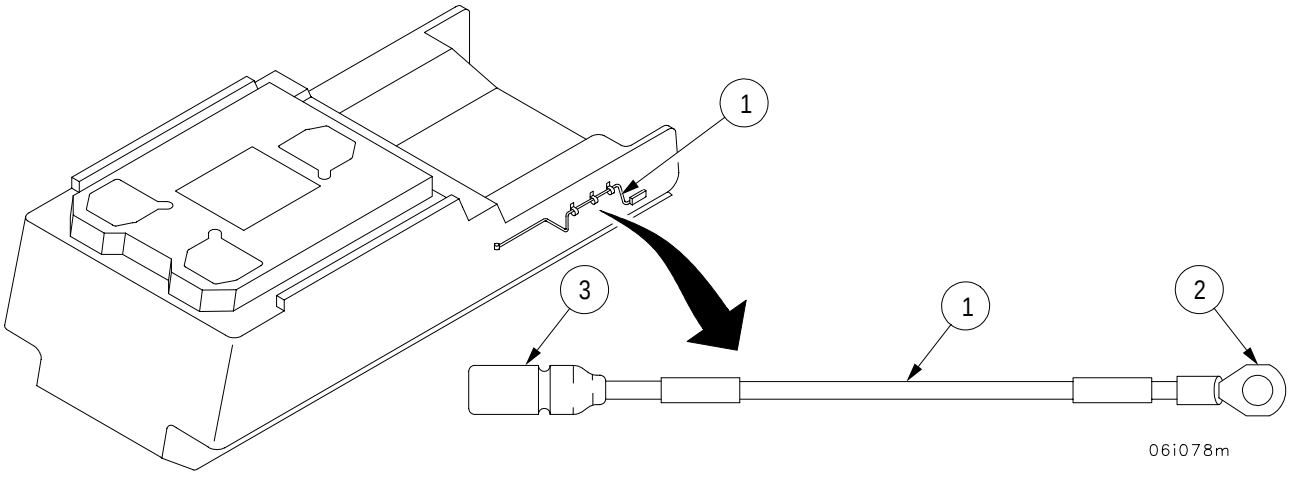
NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

1. Remove lead assembly (1) and attaching hardware, at the following attachment points:

Item No.	3W218 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Terminal E2	Positive Bus Bar Terminal E7	Engine Compartment (Left Side)
3	Wire 400	Circuit Breaker	Engine Compartment (Left Side)



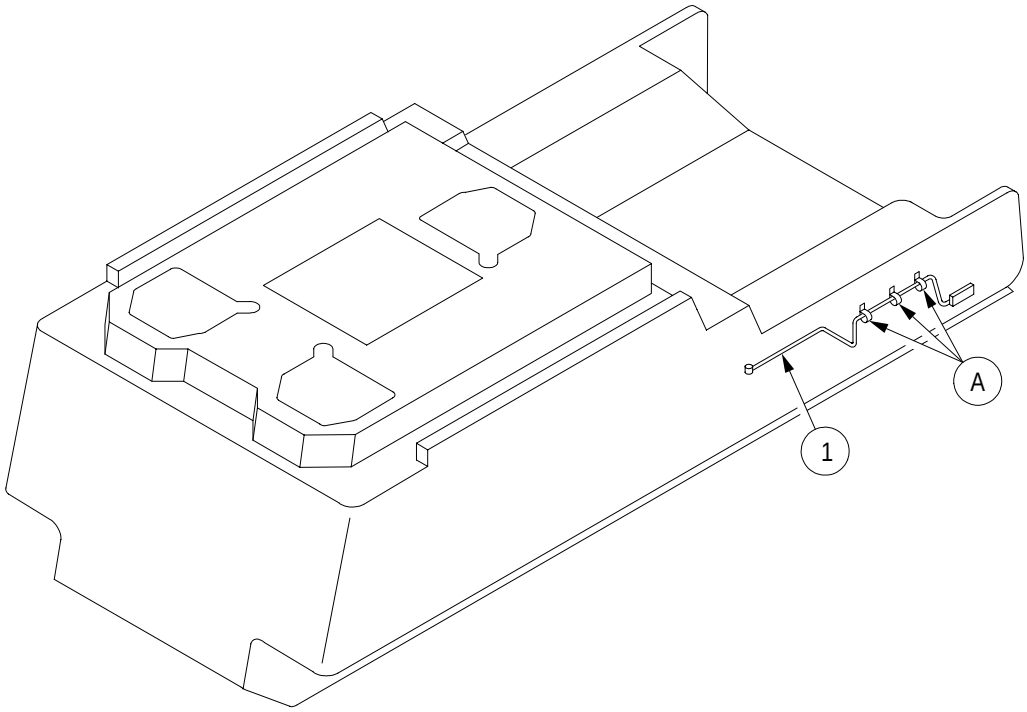
LEAD ASSEMBLY 3W218 REPLACEMENT - CONTINUED 0310 00

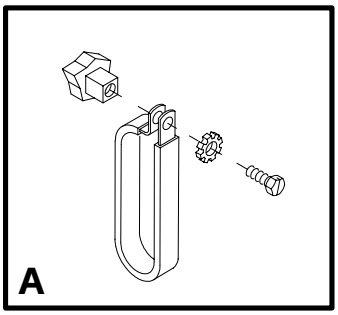
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A), securing lead assembly (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove lead assembly (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install lead assembly (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A), as shown in illustration.





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LEAD ASSEMBLY 3W218 REPLACEMENT - CONTINUED 0310 00

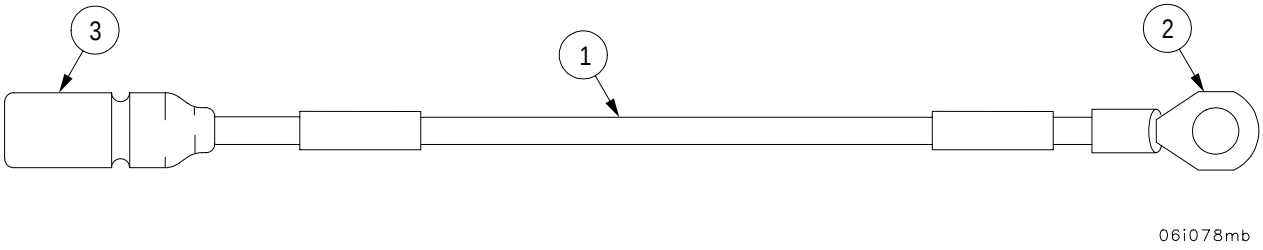
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install lead assembly (1) with attaching hardware, at the following attachment points:

Item No.	3W218 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
3	Wire 400	Circuit Breaker	Engine Compartment (Left Side)
2	Terminal E2	Positive Bus Bar Terminal E7	Engine Compartment (Left Side)



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)
Install left side engine deck grilles and close engine deck access doors (TM 9-2350-292-10)

END OF TASK

WIRING HARNESS 3W702 REPLACEMENT 0311 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (19) (item 58, WP 0718 00)
Lockwasher (item 414,WP 0718 00)
Lockwashers (4) (item 390, WP 0718 00)
Lockwashers (4) (item 90, WP 0718 00)
Lockwasher (item 12, WP 0718 00)
Electrical tiedown strap (item 205, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Voltage regulator cover removed (WP 0239 00)
Engine deck assembly removed (WP 0417 00)
Master relay cover removed (WP 0271 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

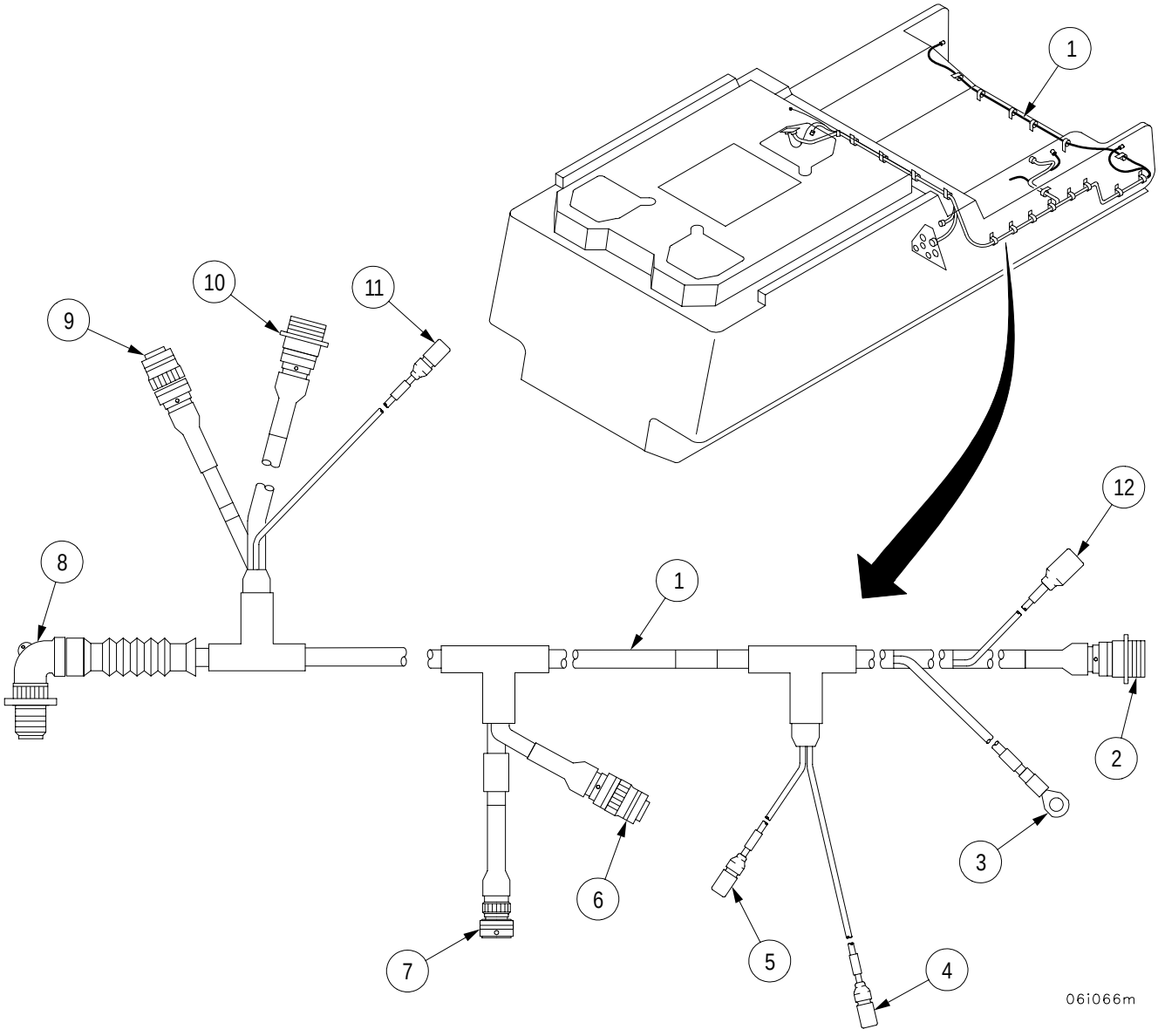
1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	3W702 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P2	APU Voltage Regulator	Engine Compartment (Left Side)
3	Terminal T1	Master Relay Terminal A2	Engine Compartment (Left Side)
4	Wire 17	Left Service Light	External Hull (Next to Exhaust Grille)
5	Wire 17	Right Service Light	External Hull (Next to Exhaust Grille)
6	Connector P4	3W132 Connector J1	Engine Compartment (Near APU)
7	Connector P1	Bulkhead Connector J4	Front of Engine Compartment (Left Side)
8	Connector J1	3W711 Connector P1	Engine Compartment (On APU)
9	Connector P3	Hydraulic Pressure Switch Connector J1	Engine Compartment (Near APU)

WIRING HARNESS 3W702 REPLACEMENT - CONTINUED 0311 00

Removal-Continued

Item No.	3W702 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
10	Connector J2	3W704 Connector P1	Engine Compartment (On APU)
11	Wire GND	3W711 GND	Engine Compartment (On APU)
12	Wire GND	3W710 GND	Engine Compartment (Left Side)



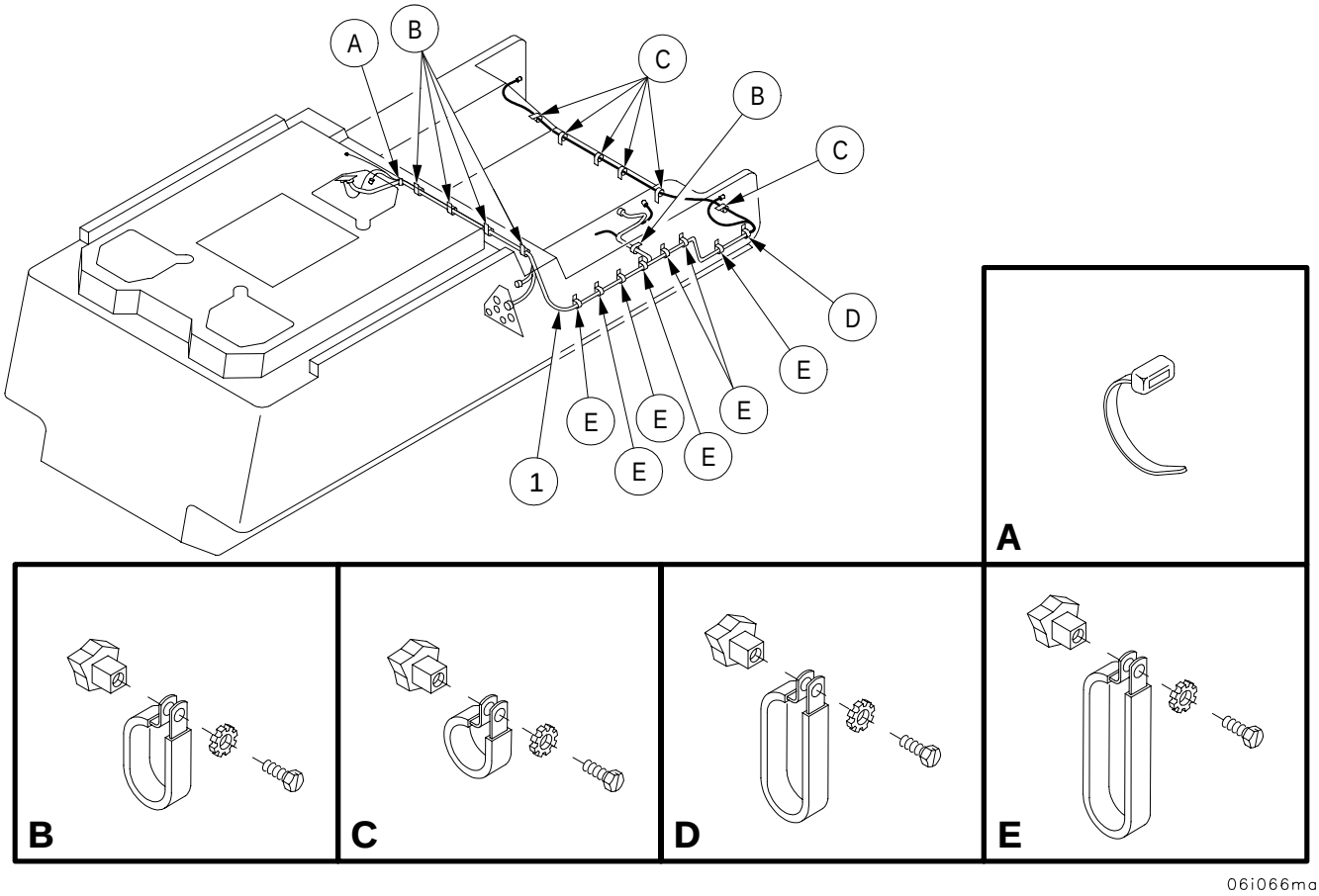
WIRING HARNESS 3W702 REPLACEMENT - CONTINUED 0311 00

Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through E), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through E), as shown in illustration.



WIRING HARNESS 3W702 REPLACEMENT - CONTINUED 0311 00

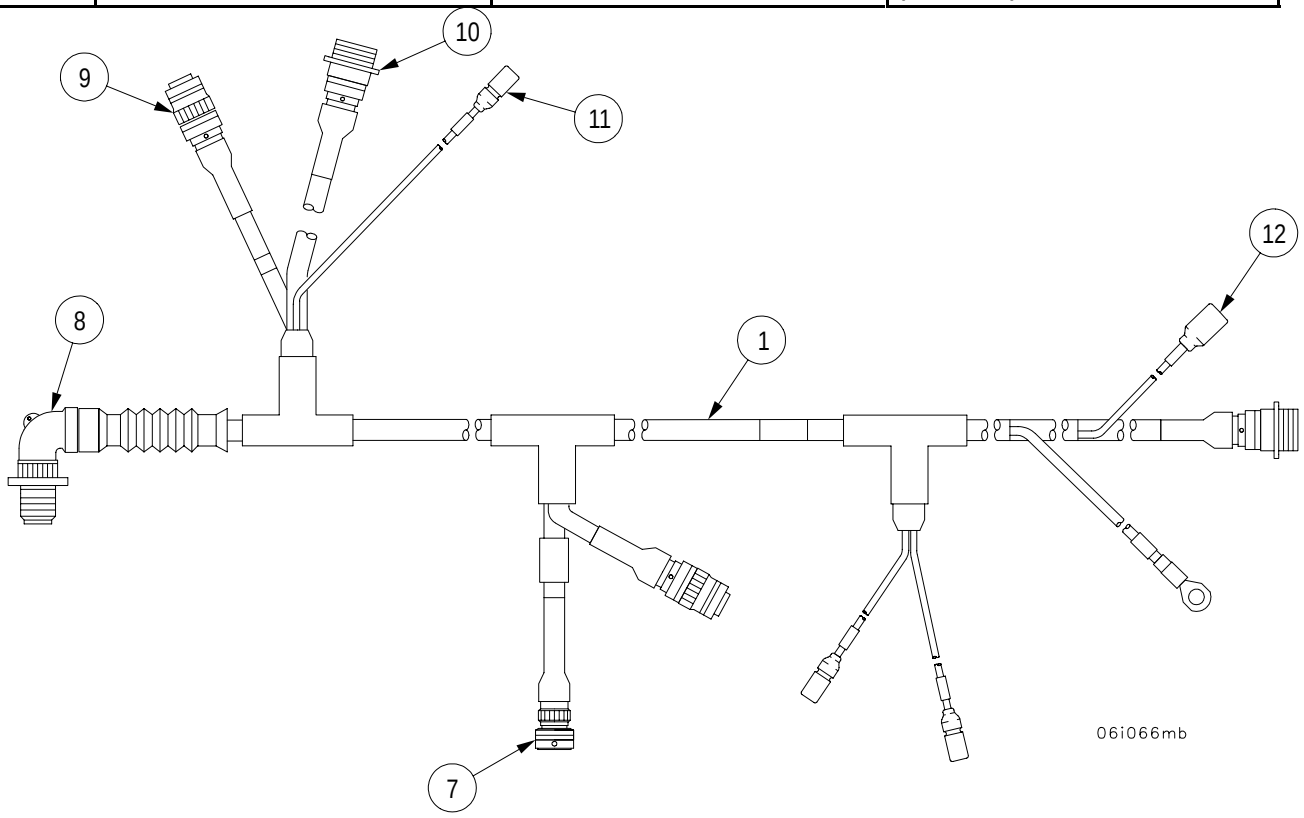
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

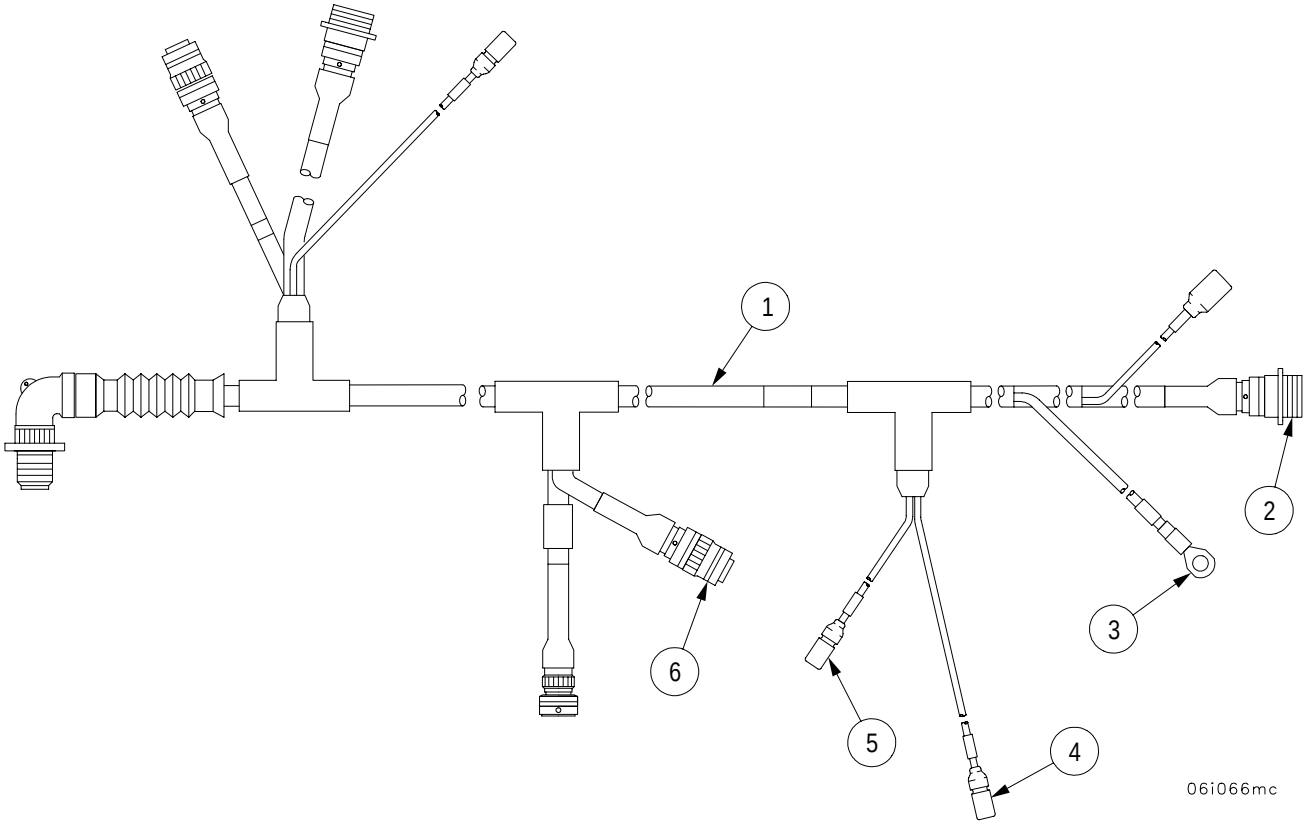
Item No.	3W702 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
12	Wire GND	3W710 GND	Engine Compartment (Left Side)
11	Wire GND	3W711 GND	Engine Compartment (On APU)
10	Connector J2	3W704 Connector P1	Engine Compartment (On APU)
9	Connector P3	Hydraulic Pressure Switch Connector J1	Engine Compartment (Near APU)
8	Connector J1	3W711 Connector P1	Engine Compartment (On APU)
7	Connector P1	Bulkhead Connector J4	Front of Engine Compartment (Left Side)



WIRING HARNESS 3W702 REPLACEMENT - CONTINUED 0311 00

Installation-Continued

Item No.	3W702 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
6	Connector P4	3W132 Connector J1	Engine Compartment (Near APU)
5	Wire 17	Right Service Light	External Hull (Next to Exhaust Grille)
4	Wire 17	Left Service Light	External Hull (Next to Exhaust Grille)
3	Terminal T1	Master Relay Terminal A2	Engine Compartment (Left Side)
2	Connector P2	APU Voltage Regulator	Engine Compartment (Left Side)



NOTE

FOLLOW-ON MAINTENANCE:
Install master relay cover (WP 0271 00)
Install engine deck assembly (WP 0417 00)
Install voltage regulator cover (0239 00)

END OF TASK

WIRING HARNESS 3W710 REPLACEMENT 0312 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 2, WP 0718 00)
Lockwasher (item 350, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Voltage regulator cover removed (WP 0239 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

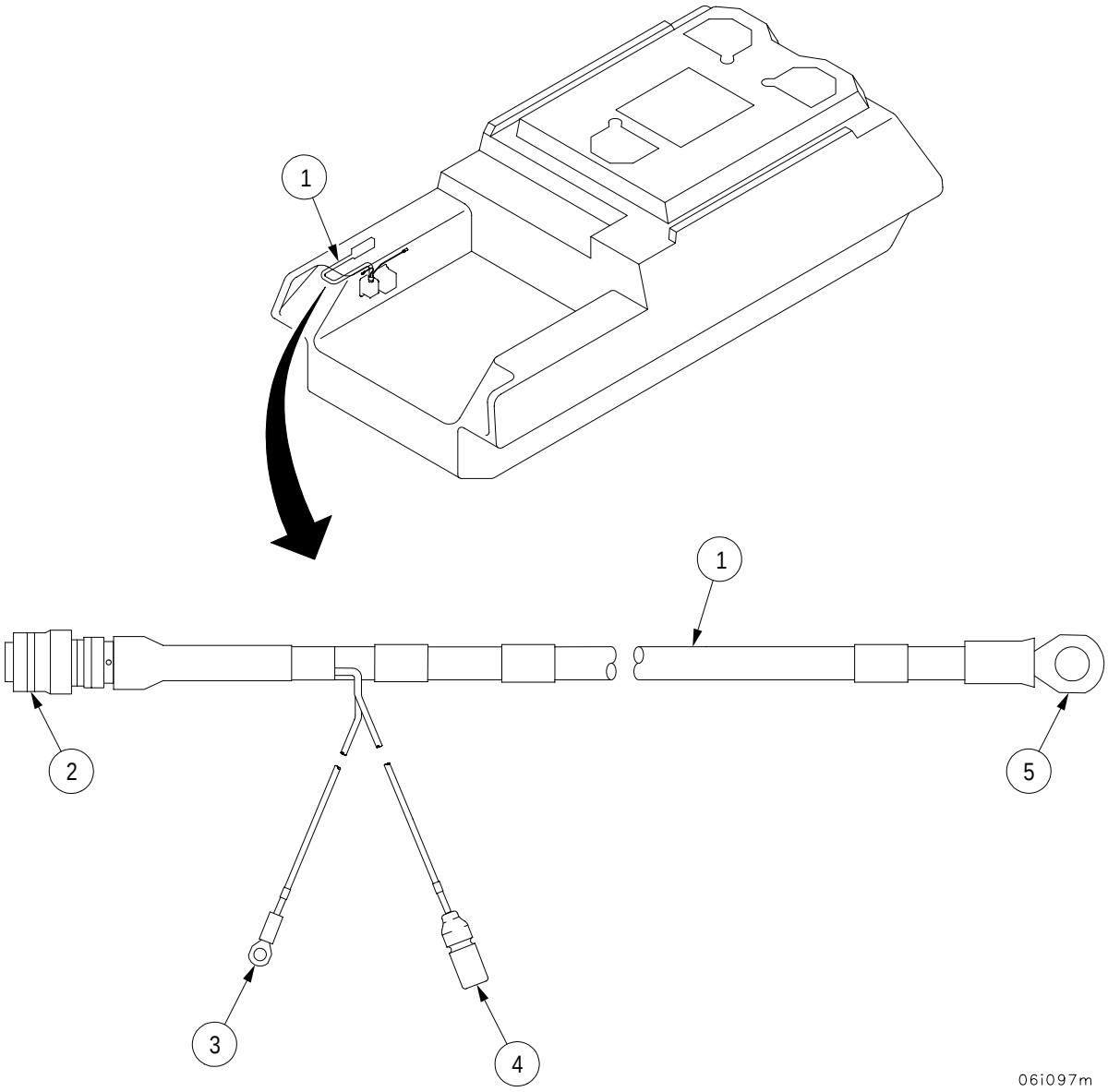
1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	3W710 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	APU Voltage Regulator	Engine Compartment (Left Side)
3	Terminal GND	APU Voltage Regulator	Engine Compartment (Left Side)
4	Wire GND	Wiring Harness 3W702 Wire GND	Engine Compartment (Left Side)
5	Terminal T1	Positive Bus Terminal E4	Engine Compartment (Left Side)

2. Inspect parts for damage and replace as required.

WIRING HARNESS 3W710 REPLACEMENT - CONTINUED 0312 00

Removal-Continued



WIRING HARNESS 3W710 REPLACEMENT - CONTINUED 0312 00

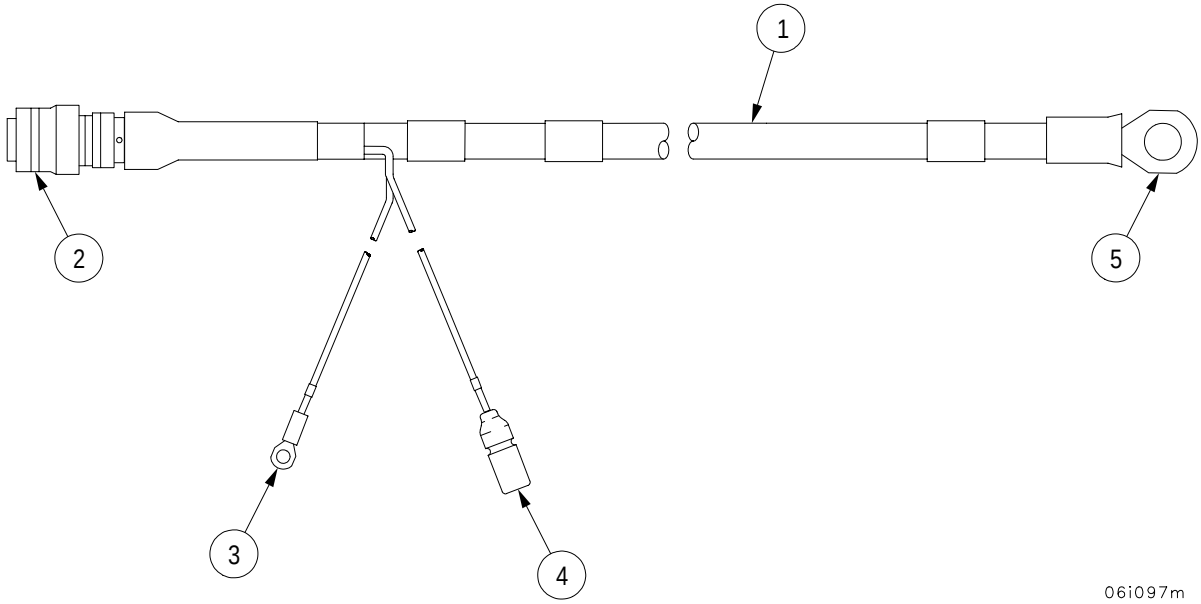
Installation

NOTE

The following legend identifies attachment points for each connection.

Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	3W710 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
5	Terminal T1	Positive Bus Terminal E4	Engine Compartment (Left Side)
4	Wire GND	Wiring Harness 3W702 Wire GND	Engine Compartment (Left Side)
3	Terminal GND	APU Voltage Regulator	Engine Compartment (Left Side)
2	Connector P1	APU Voltage Regulator	Engine Compartment (Left Side)



NOTE

FOLLOW-ON MAINTENANCE:
Install voltage regulator cover (WP 0239 00)

END OF TASK

WIRING HARNESS 3W801 REPLACEMENT 0313 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 2, WP 0718 00)
Lockwasher (item 350, WP 0718 00)
Lockwashers (2) (item 122, WP 0718 00)
Lockwasher (item 353, WP 0718 00)
Lockwasher (item 394, WP 0718 00)
Lockwashers (10) (item 58, WP 0718 00)
Insulating compound (item 26, WP 0716 00)
Marker tags (item 49, WP 0716 00)
Lockwashers (3) (item 38, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Engine deck assembly removed (WP 0417 00)

References
TM 9-2350-292-10

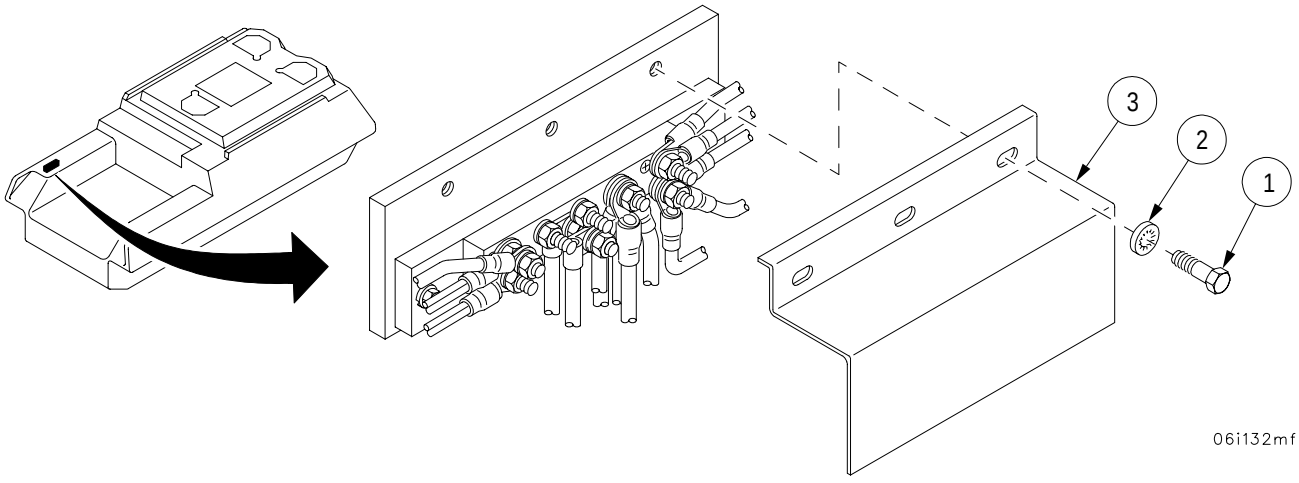


NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

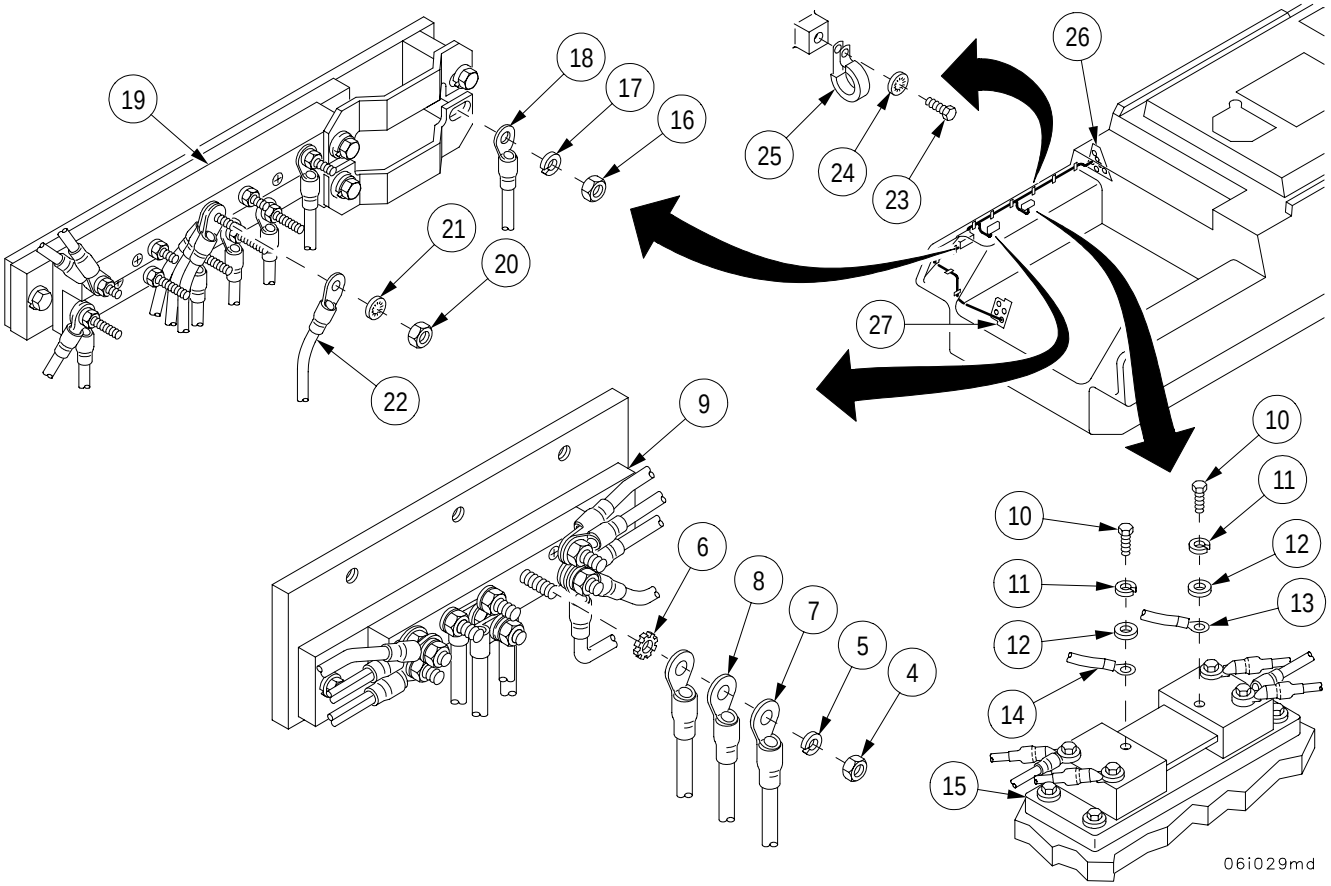
1. Remove three screws (1), three lock washers (2) and positive bus bar cover (3). Discard lockwashers.



WIRING HARNESS 3W801 REPLACEMENT - CONTINUED 0313 00

Removal-Continued

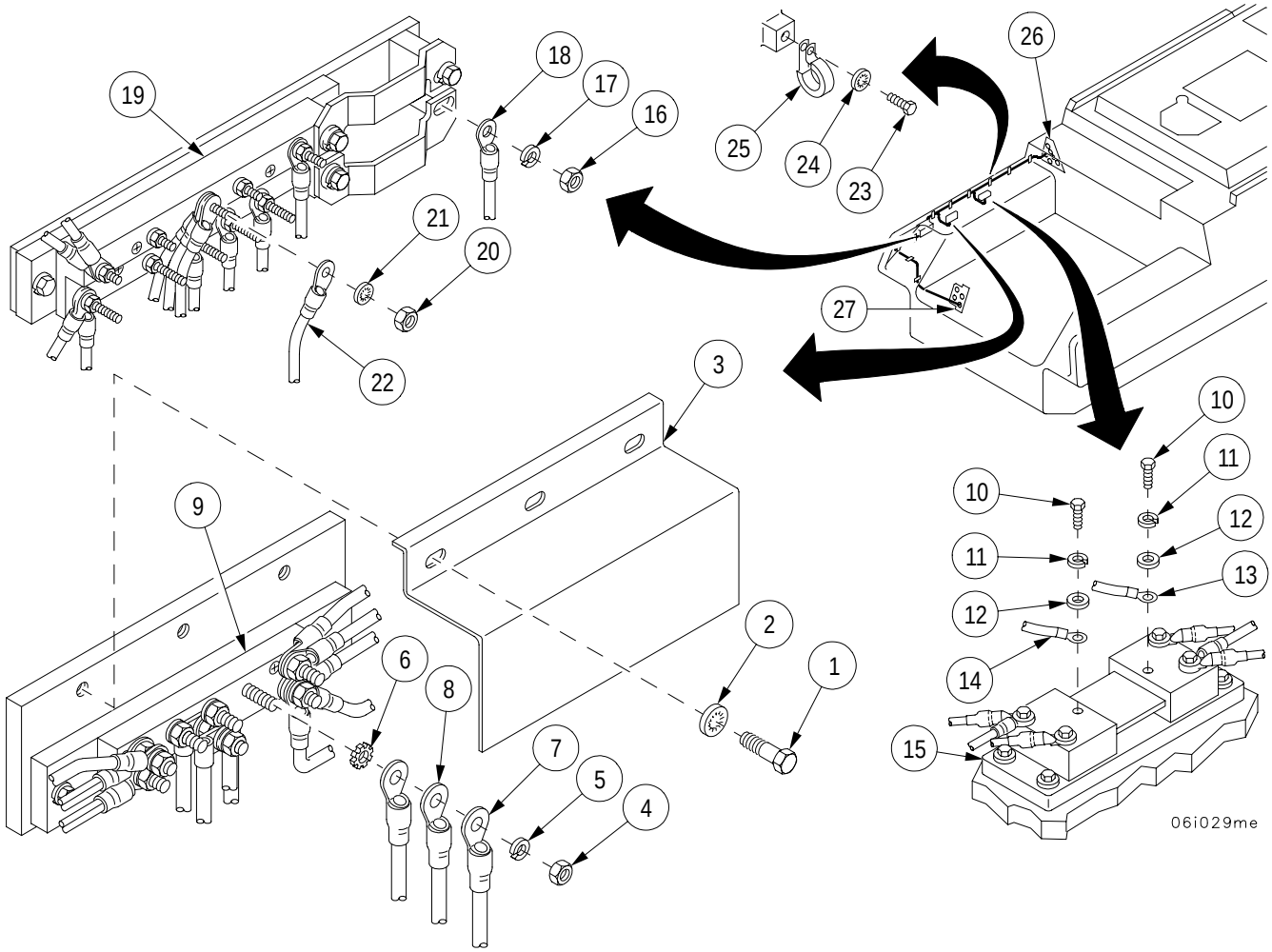
2. Remove nut (4), lockwasher (5), lockwasher (6) and two wiring harness leads E and V (7 and 8) from positive bus bar (9). Discard lockwashers.
3. Remove two screws (10), two lockwashers (11), two flat washers (12) and two wiring harness leads X and Y (13 and 14) from shunt (15). Discard lockwashers.
4. Remove screw (16), lockwasher (17) and wiring harness lead F (18) from negative bus bar (19). Discard lockwasher.
5. Remove nut (20), lockwasher (21) and wiring harness lead W (22) from negative bus bar (19). Discard lockwasher.
6. Remove 10 screws (23), 10 lockwashers (24) and 10 clamps (25) as necessary. Discard lockwashers.
7. Disconnect wiring harness 3W801 connector P1 at bulkhead disconnect (26) and wiring harness 3W801 connector P2 at engine disconnect bracket (27). Remove wiring harness from engine compartment.
8. Inspect parts for damage and replace as required.



WIRING HARNESS 3W801 REPLACEMENT - CONTINUED 0313 00

Installation

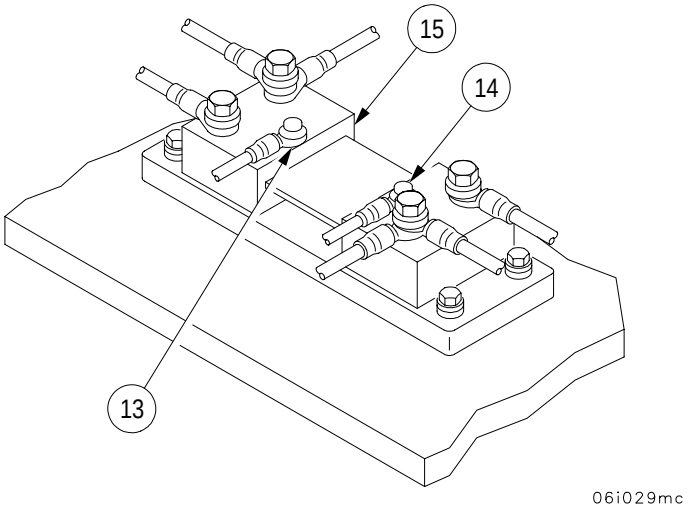
1. Position wiring harness in vehicle.
2. Connect wiring harness 3W801 connector P2 to engine disconnect bracket (27) and wiring harness 3W801 connector P1 to bulkhead disconnect (26).
3. Secure wiring harness to vehicle hull with 10 clamps (25), 10 new lockwashers (24) and 10 screws (23).
4. Connect wiring harness lead W (22) to negative bus bar (19) with new lockwasher (21) and nut (20).
5. Connect wiring harness lead F (18) to negative bus bar (19) with new lockwasher (17) and screw (16).
6. Connect two wiring harness leads X and Y (13 and 14) to shunt (15) with two screws (10), two new lockwashers (11) and two flat washers (12).
7. Connect two wiring harness leads E and V (7 and 8) to positive bus bar (9) with new lockwasher (6), new lockwasher (5) and nut (4).
8. Install positive bus bar cover (3) with three screws (1) and three new lockwashers (2).



WIRING HARNESS 3W801 REPLACEMENT - CONTINUED 0313 00

Installation-Continued

9. Apply insulating compound to shunt (15) connection points and leads X and Y (13 and 14).



NOTE

FOLLOW-ON MAINTENANCE:
Install engine deck assembly (WP 0417 00)
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 4W100 REPLACEMENT 0314 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (4) (item 9, WP 0718 00)
Lockwashers (27) (item 58, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Subfloor plates #24, #25, #27, #19 and #20 removed (WP 0454 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

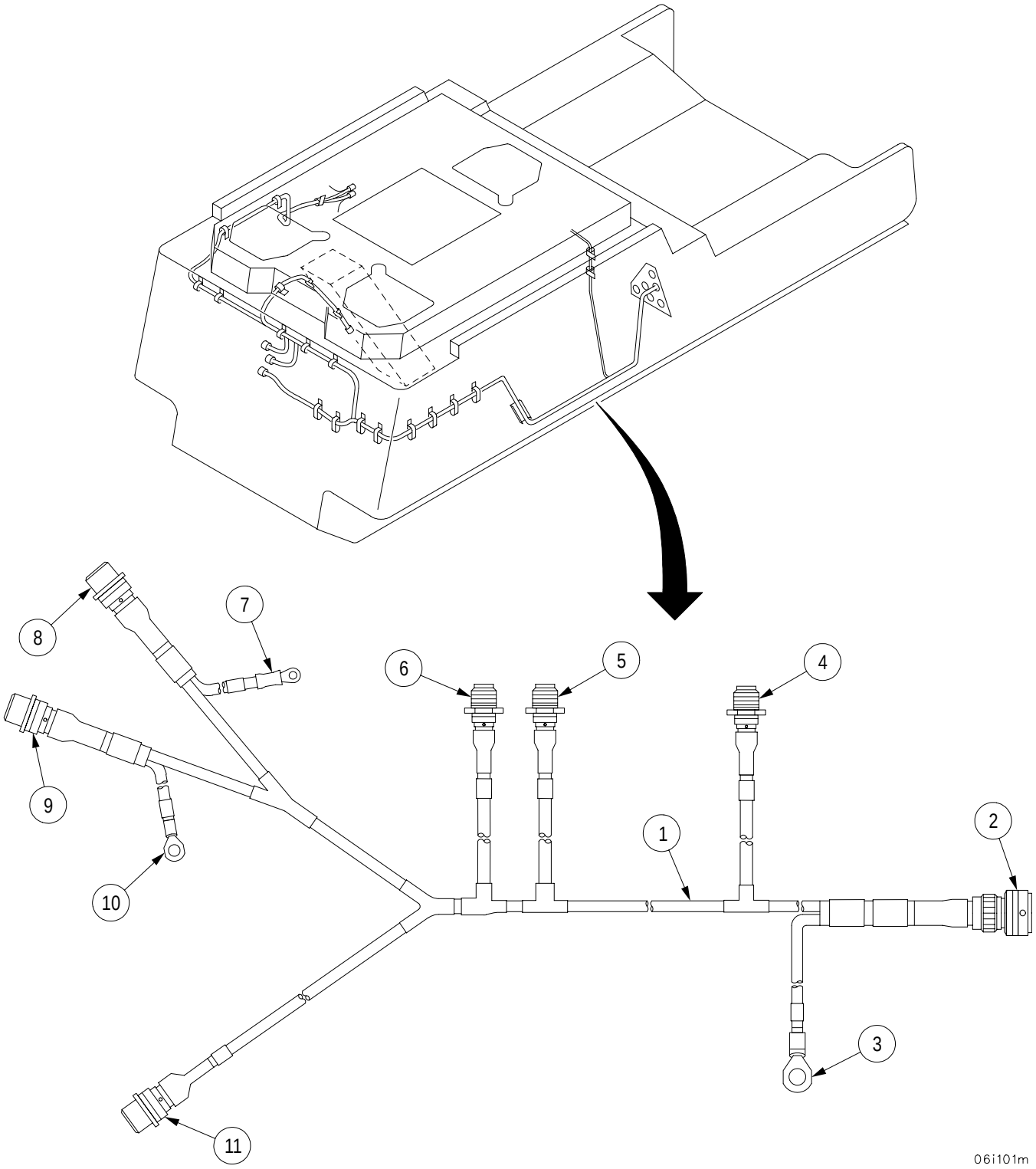
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W100 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Rear Bulkhead Connector J6	Crew Compartment (Rear Bulkhead)
3	Terminal T1	Circuit Breaker	Crew Compartment (Rear Bulkhead)
4	Connector J6	Wiring Harness 4W618 Connector P3	Crew Compartment (Near Switch Panel)
5	Connector J3	Wiring Harness 4W101 Connector P4	Crew Compartment (Driver's Station – Behind Switch Panel)
6	Connector J5	Wiring Harness 4W105 Connector P2	Crew Compartment (Near Switch Panel)
7	Terminal GND	Mounting Flange	Crew Compartment (Right Side Wall)
8	Connector J4	Communication System	Crew Compartment (Right Side Wall)
9	Connector J1	Communication System	Crew Compartment (Right Side Wall)
10	Terminal GND	Mounting Flange	Crew Compartment (Right Side Wall)
11	Connector J2	Wiring Harness 4W140 Connector P1	Crew Compartment (Near Cable Chute)

WIRING HARNESS 4W100 REPLACEMENT - CONTINUED 0314 00

Removal-Continued



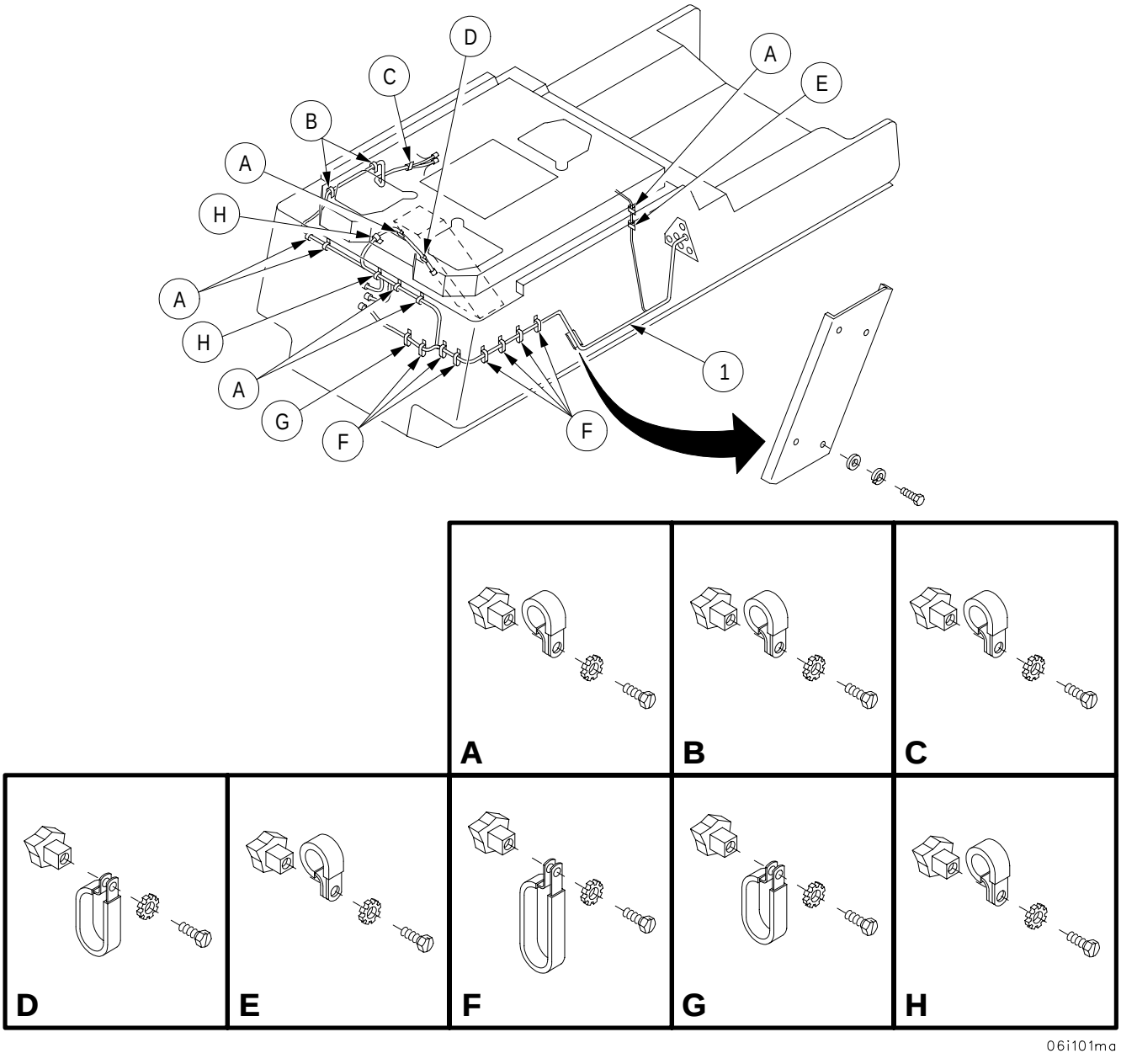
WIRING HARNESS 4W100 REPLACEMENT - CONTINUED 0314 00

Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through H), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through H), as shown in illustration.



WIRING HARNESS 4W100 REPLACEMENT - CONTINUED 0314 00

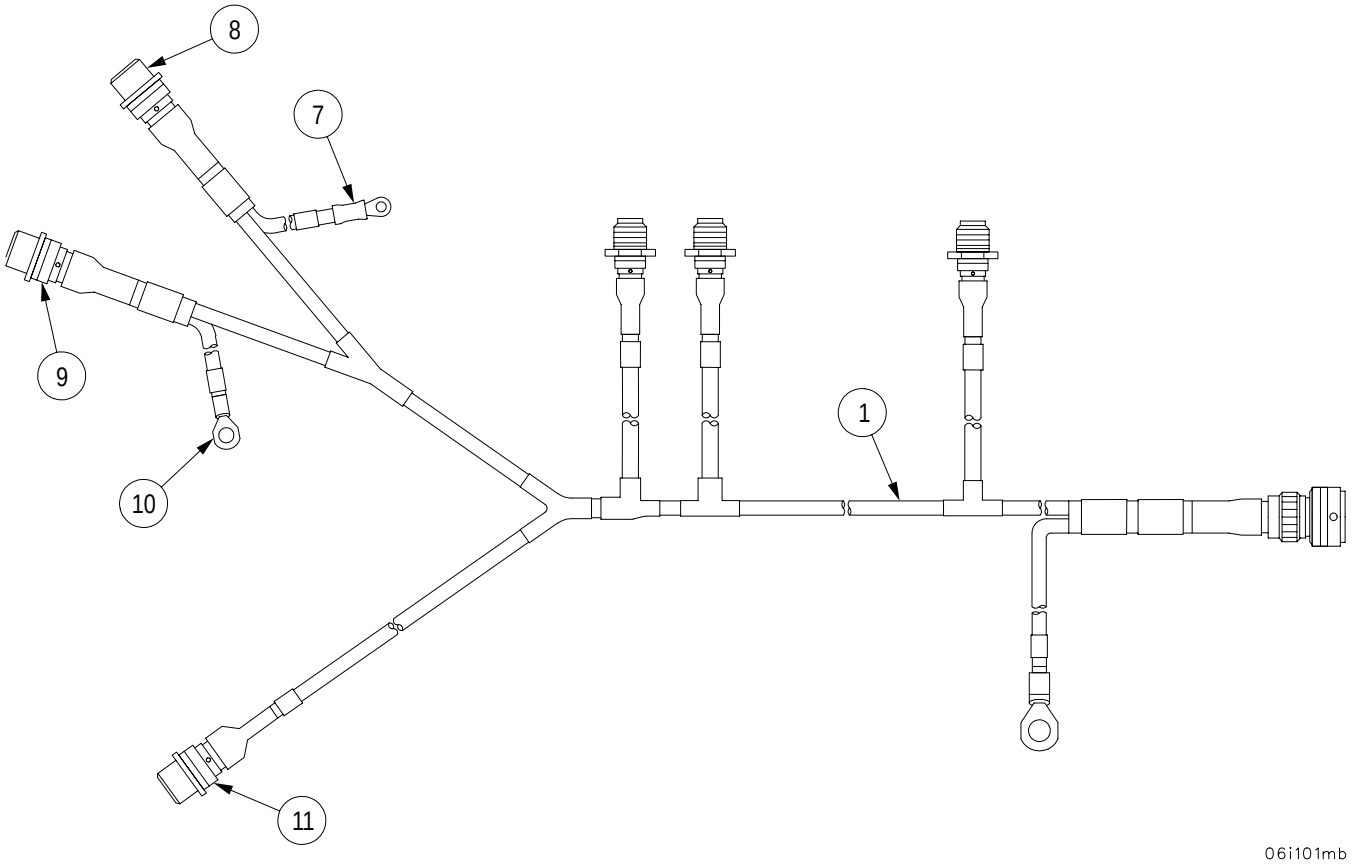
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

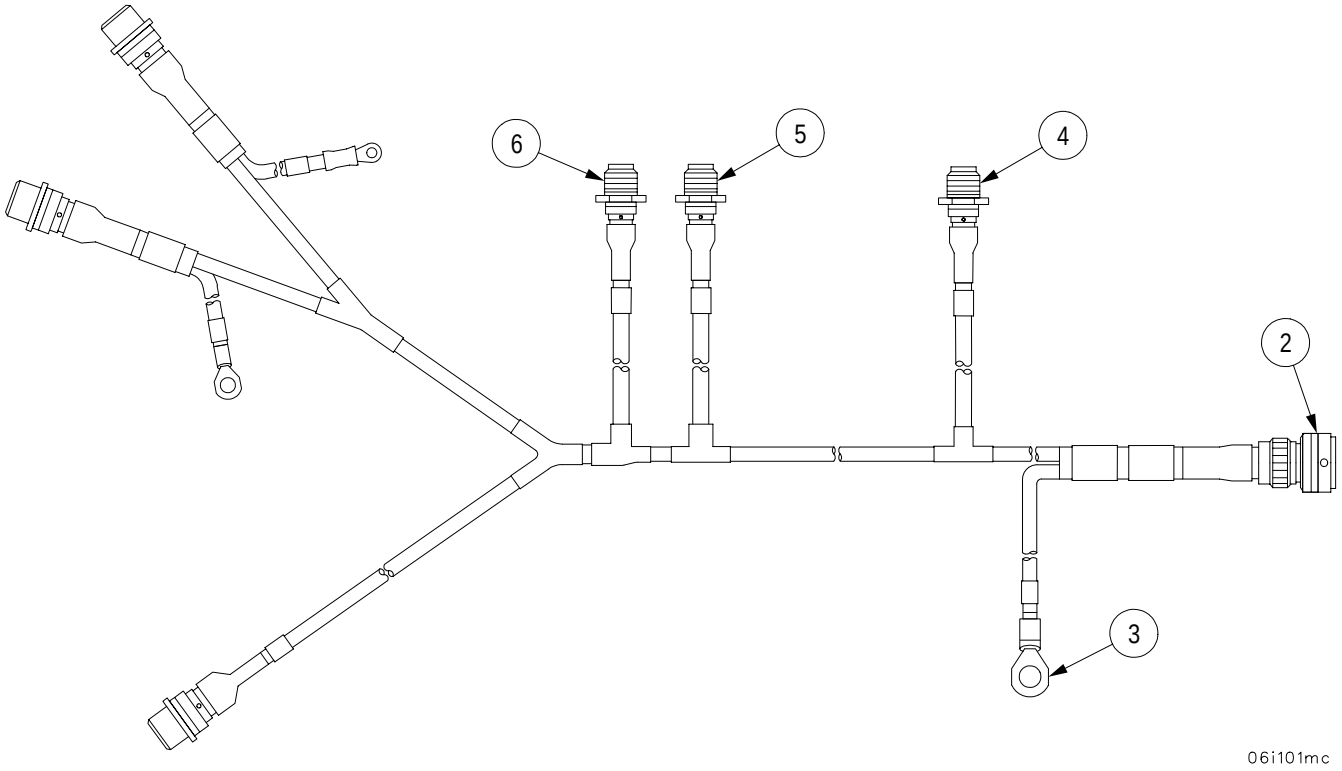
Item No.	4W100 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
11	Connector J2	Wiring Harness 4W140 Connector P1	Crew Compartment (Near Cable Chute)
10	Terminal GND	Mounting Flange	Crew Compartment (Right Side Wall)
9	Connector J1	Communication System	Crew Compartment (Right Side Wall)
8	Connector J4	Communication System	Crew Compartment (Right Side Wall)
7	Terminal GND	Mounting Flange	Crew Compartment (Right Side Wall)



WIRING HARNESS 4W100 REPLACEMENT - CONTINUED 0314 00

Installation-Continued

Item No.	4W100 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
6	Connector J5	Wiring Harness 4W105 Connector P2	Crew Compartment (Near Switch Panel)
5	Connector J3	Wiring Harness 4W101 Connector P4	Crew Compartment (Driver's Station - Behind Switch Panel)
4	Connector J6	Wiring Harness 4W618 Connector P3	Crew Compartment (Near Switch Panel)
3	Terminal T1	Circuit Breaker	Crew Compartment (Rear Bulkhead)
2	Connector P1	Rear Bulkhead Connector J6	Crew Compartment (Rear Bulkhead)



NOTE

FOLLOW-ON MAINTENANCE:
Install subfloor plates #24, #25, #27, #19 and #20 (WP 0454 00)
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 4W101 REPLACEMENT 0315 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (19) (item 58, WP 0718 00)
Lockwasher (item 10,WP 0718 00)
Marker tags (item 49, WP 0716 00)
Lockwashers (4) (item 9, WP 0718 00)
Electrical tiedown strap (item 205, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Gauge panel removed (WP 0243 00)
Air cleaner assembly removed (WP 0208 00)
Subfloor plates #19, #20 and #24 removed (WP 0454 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

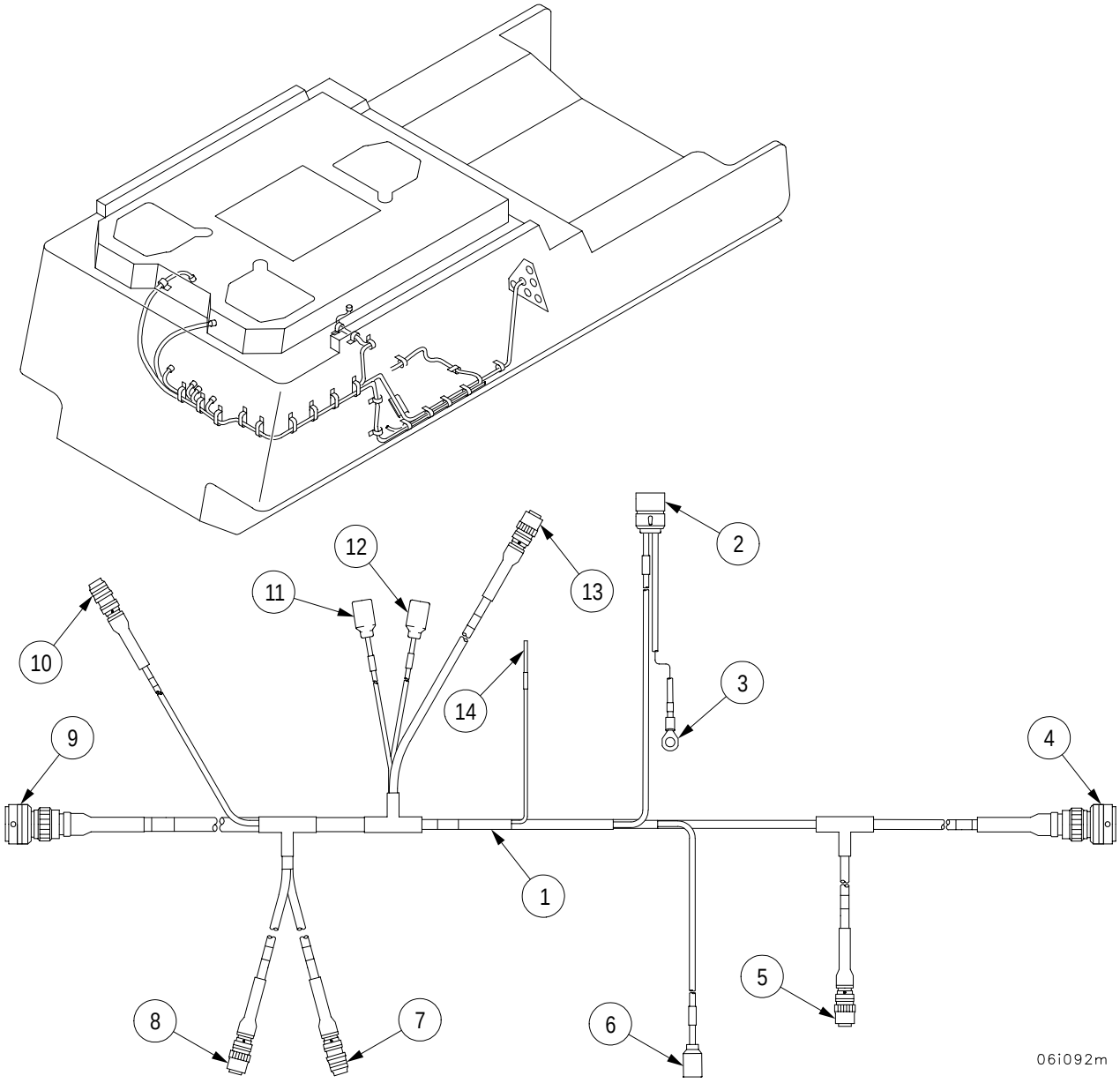
1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W101 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P5	Electric Fuel Pump	Fuel Tank (Under Subfloor)
3	Terminal GND	Electric Fuel Pump	Fuel Tank (Under Subfloor)
4	Connector P6	Rear Bulkhead	Crew Compartment (Rear)
5	Connector P3	Wiring Harness 4W700 Connector J1	Crew Compartment (Under Subfloor – Near Bulkhead)
6	Wire 54A	Fire Extinguisher/Engine Shut Off Switch	Crew Compartment (Driver's Station)
7	Connector J2	Wiring Harness 4W103 Connector P2	Crew Compartment (Driver's Station)
8	Connector P4	Wiring Harness 4W100 Connector J3	Crew Compartment (Driver's Station)
9	Connector P1	Main Switch Panel Connector J3	Crew Compartment (Driver's Station)
10	Connector J1	Wiring Harness 4W153 Connector P2	Crew Compartment (Driver's Station)
11	Wire 14	Neutral Start Switch	Crew Compartment (Driver's Station)

WIRING HARNESS 4W101 REPLACEMENT - CONTINUED 0315 00

Removal-Continued

Item No.	4W101 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
12	Wire 14	Neutral Start Switch	Crew Compartment (Driver's Station)
13	Connector P2	Flasher Unit	Crew Compartment (Driver's Station)
14	Wire 325A	Flasher Lamp	Crew Compartment (Driver's Station)



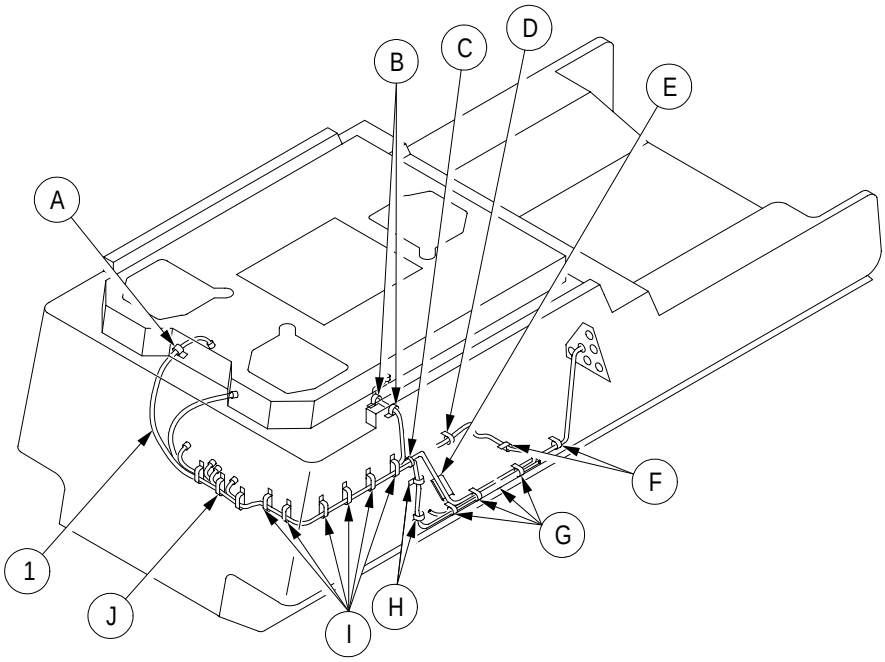
WIRING HARNESS 4W101 REPLACEMENT - CONTINUED 0315 00

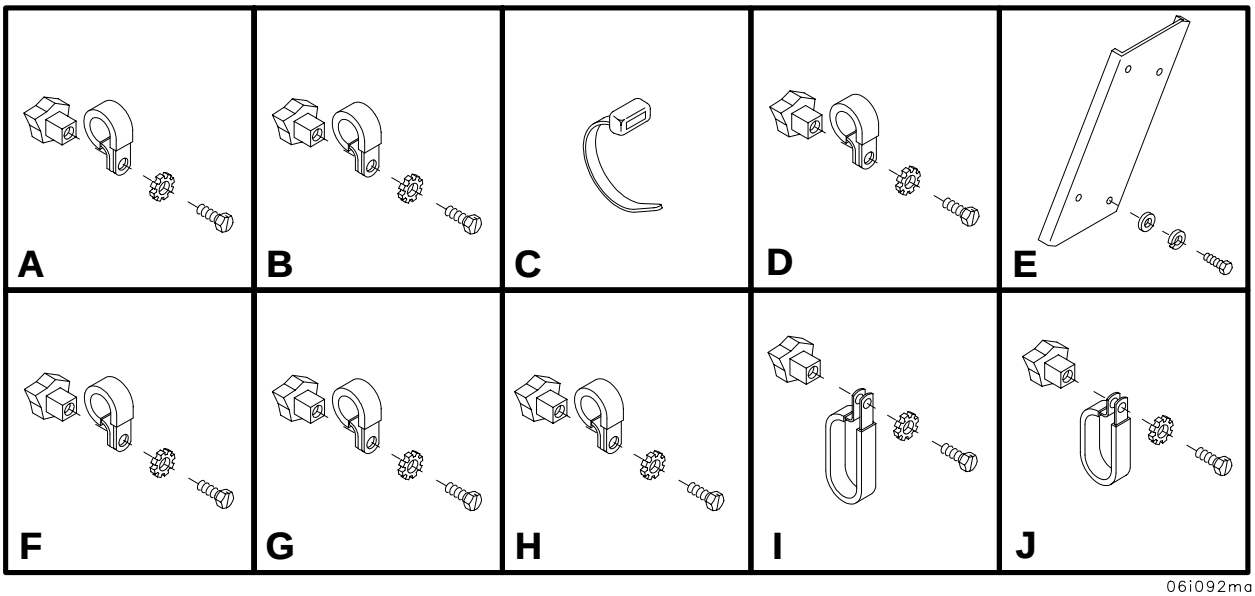
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through J), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through J), as shown in illustration.





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WIRING HARNESS 4W101 REPLACEMENT - CONTINUED 0315 00

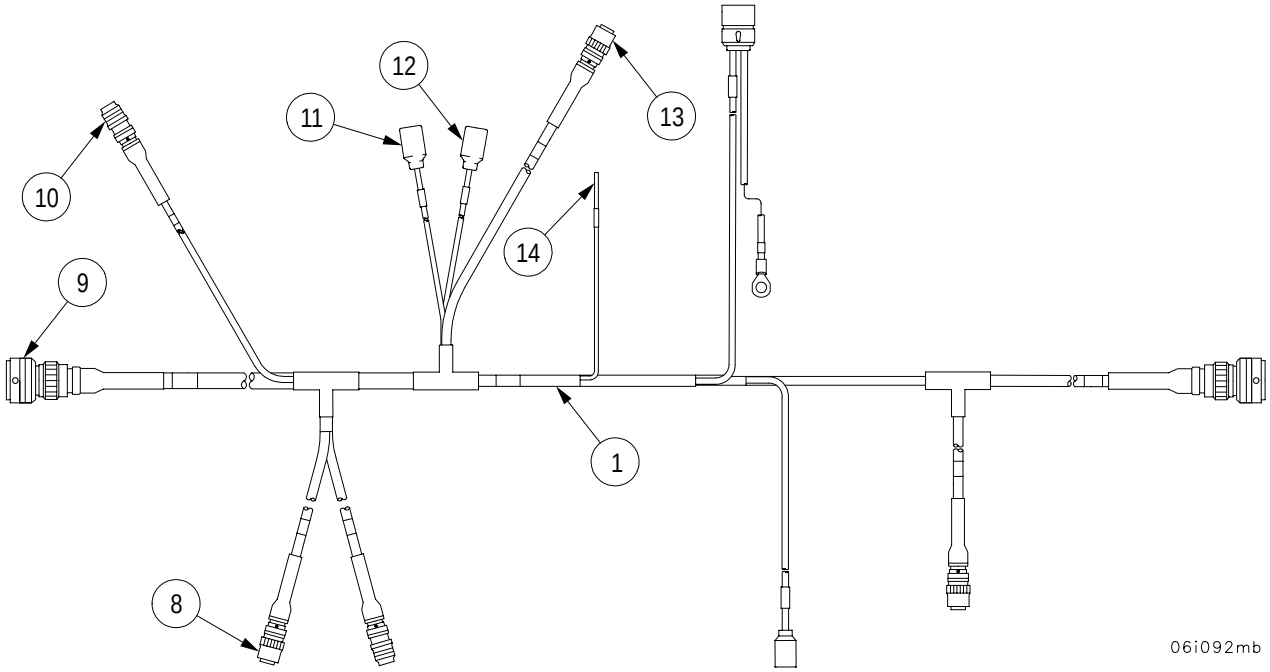
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

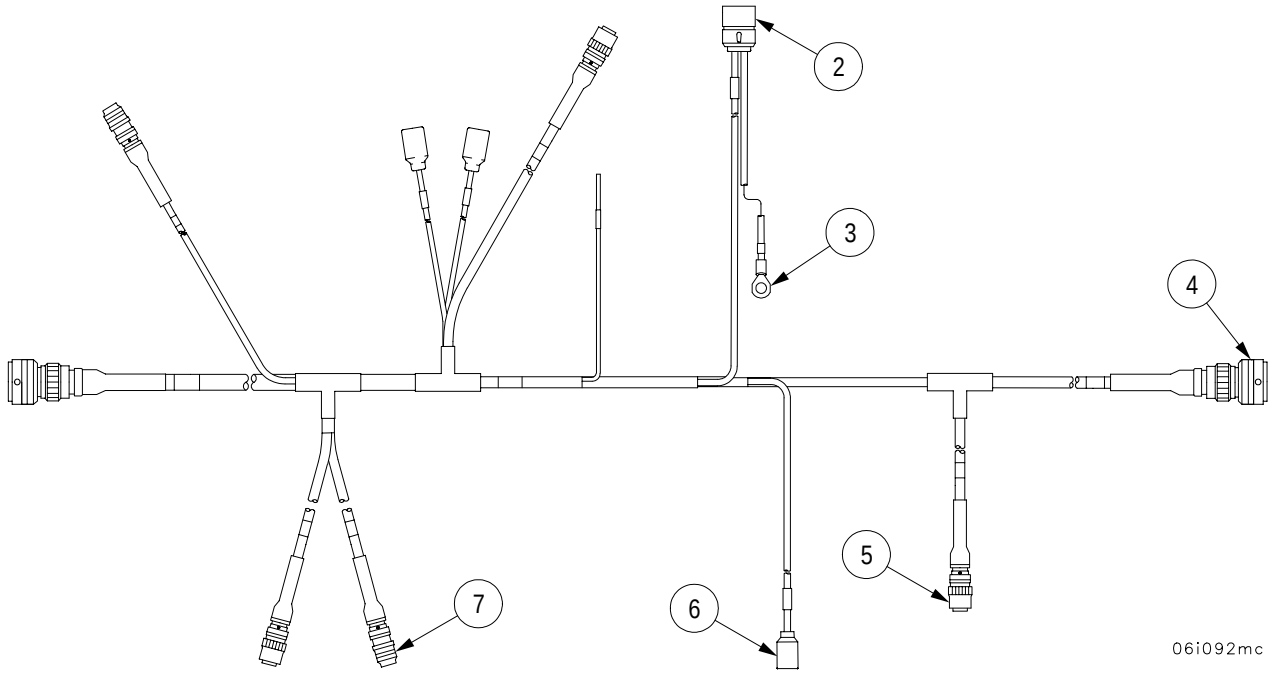
Item No.	4W101 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
14	Wire 325A	Flasher Lamp	Crew Compartment (Driver's Station)
13	Connector P2	Flasher Unit	Crew Compartment (Driver's Station)
12	Wire 14	Neutral Start Switch	Crew Compartment (Driver's Station)
11	Wire 14	Neutral Start Switch	Crew Compartment (Driver's Station)
10	Connector J1	Wiring Harness 4W153 Connector P2	Crew Compartment (Driver's Station)
9	Connector P1	Main Switch Panel Connector J3	Crew Compartment (Driver's Station)
8	Connector P4	Wiring Harness 4W100 Connector J3	Crew Compartment (Driver's Station)



WIRING HARNESS 4W101 REPLACEMENT - CONTINUED 0315 00

Installation-Continued

Item No.	4W101 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
7	Connector J2	Wiring Harness 4W103 Connector P2	Crew Compartment (Driver's Station)
6	Wire 54A	Fire Extinguisher/Engine Shut Off Switch	Crew Compartment (Driver's Station)
5	Connector P3	Wiring Harness 4W700 Connector J1	Crew Compartment (Under Subfloor - Near Bulkhead
4	Connector P6	Rear Bulkhead	Crew Compartment (Rear)
3	Terminal GND	Electric Fuel Pump	Fuel Tank (Under Subfloor)
2	Connector P5	Electric Fuel Pump	Fuel Tank (Under Subfloor)



NOTE

FOLLOW-ON MAINTENANCE:
Install subfloor plates #19, #20 and #24 (WP 0454 00)
Install air cleaner assembly (WP 0208 00)
Install gauge panel (WP 0243 00)

END OF TASK

WIRING HARNESS 4W103 REPLACEMENT 0316 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (23) (item 58, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Subfloor plates #13, #16, #19 and #20 opened or removed (WP 0454 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

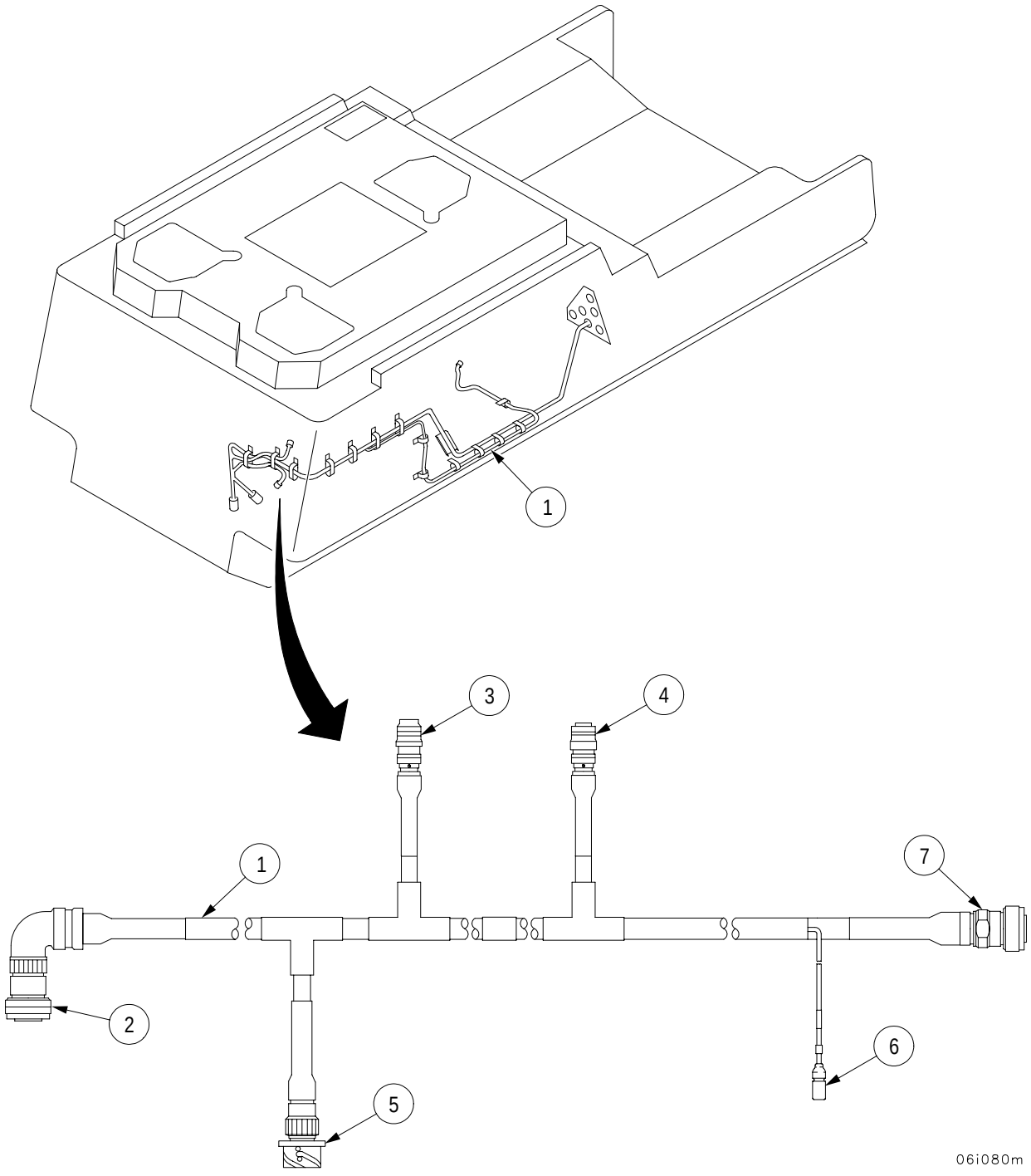
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W103 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Gauge Panel Assembly	Front Of Crew Compartment (Left Side-Driver)
3	Connector J2	4W115 Connector P3	Front Of Crew Compartment (Left Side)
4	Connector P2	4W101 Connector J2	Front Of Crew Compartment (Left Side)
5	Connector J1	4W105 Connector P3	Front Of Crew Compartment (Left Side)
6	Wire 30	Fuel Tank Transmitter	Fuel Tank
7	Connector P3	Bulkhead Connector J2	Crew Compartment (Rear Bulkhead)

WIRING HARNESS 4W103 REPLACEMENT - CONTINUED 0316 00

Removal-Continued



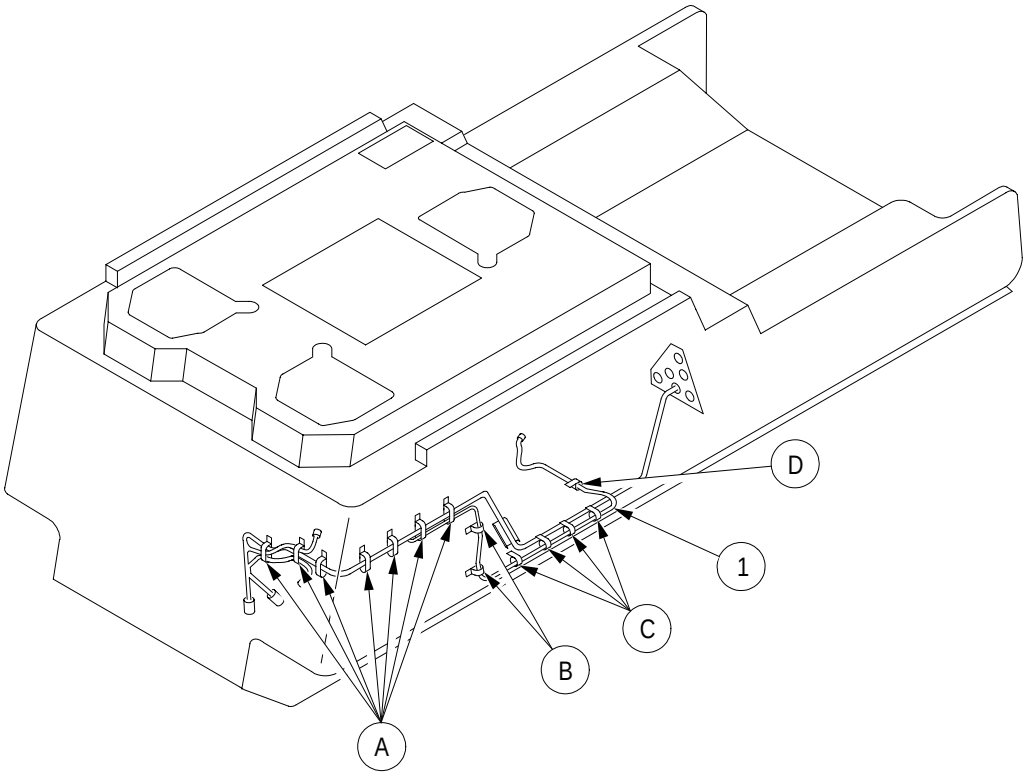
WIRING HARNESS 4W103 REPLACEMENT - CONTINUED 0316 00

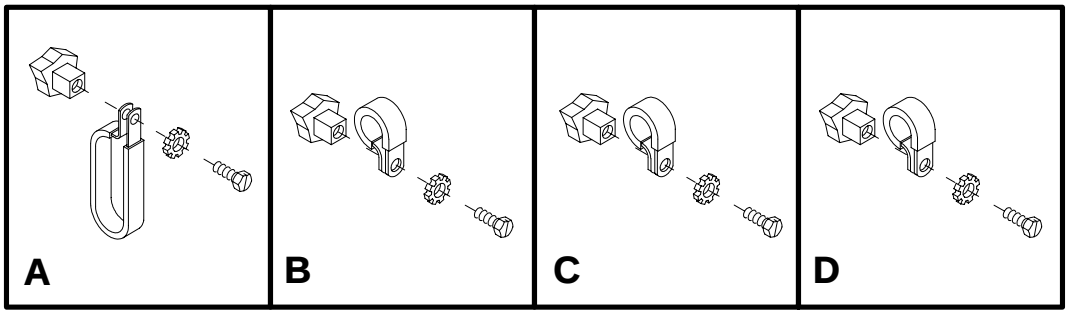
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through D), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through D), as shown in illustration.





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WIRING HARNESS 4W103 REPLACEMENT - CONTINUED 0316 00

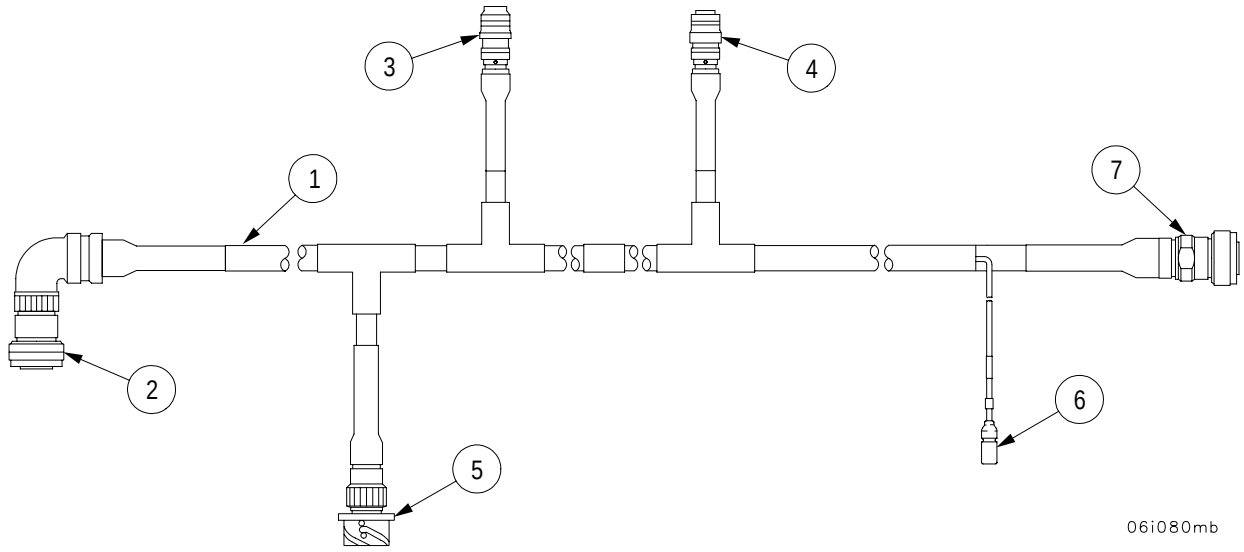
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	4W103 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
7	Connector P3	Bulkhead Connector J2	Crew Compartment (Rear Bulkhead)
6	Wire 30	Fuel Tank Transmitter	Fuel Tank
5	Connector J1	4W105 Connector P3	Front Of Crew Compartment (Left Side)
4	Connector P2	4W101 Connector J2	Front Of Crew Compartment (Left Side)
3	Connector J2	4W115 Connector P3	Front Of Crew Compartment (Left Side)
2	Connector P1	Gauge Panel Assembly	Front Of Crew Compartment (Left Side-Driver)



NOTE

FOLLOW-ON MAINTENANCE:
Close or install subfloor plates #13, #16, #19 and #20 (WP 0454 00)
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 4W105 REPLACEMENT 0317 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (34) (item 58, WP 0718 00)
Lockwasher (item 9, WP 0718 00)
Electrical tiedown strap (item 205, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

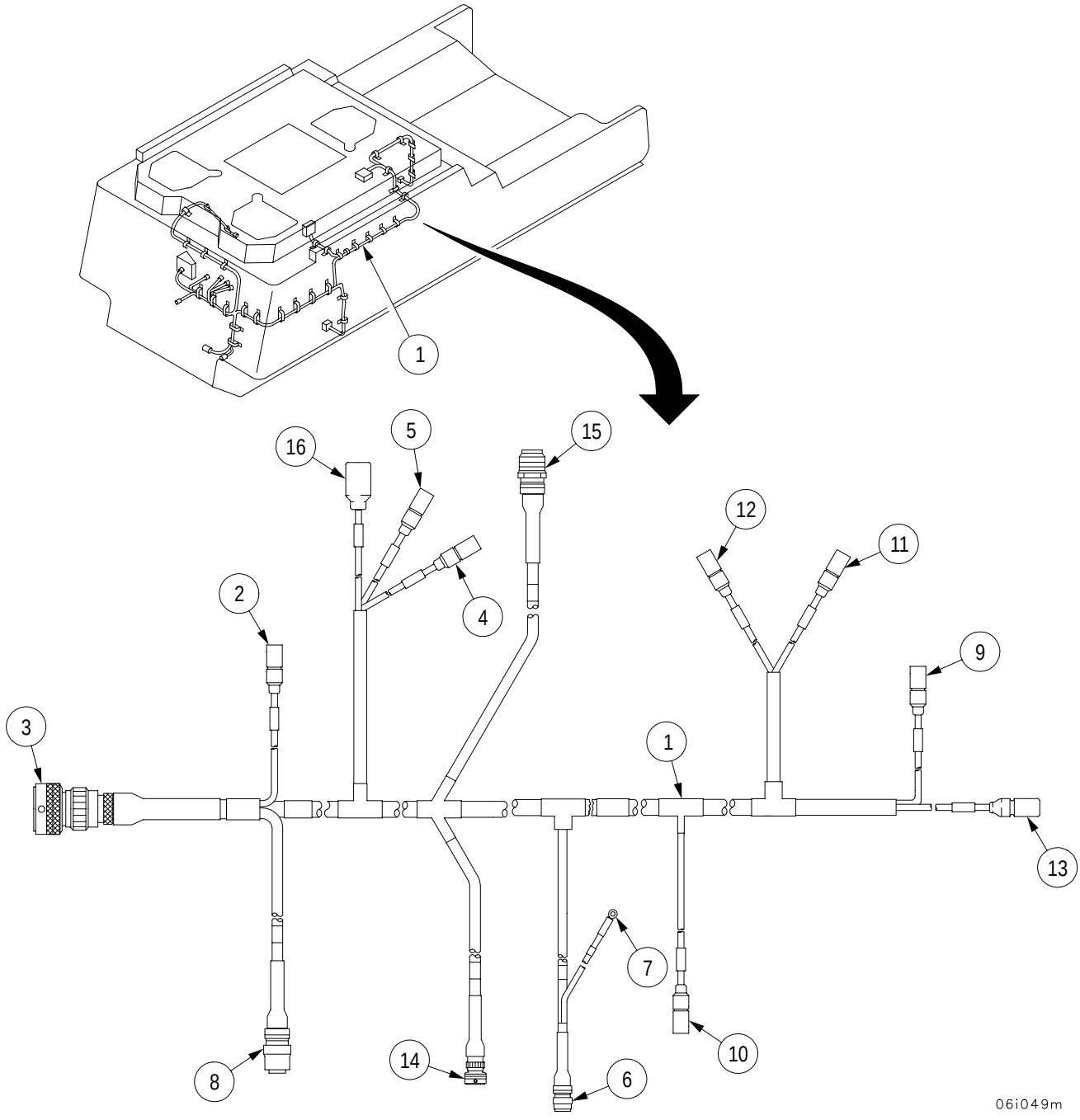
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W105 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Wire 25	Proximity Switch	Steering Wheel (Horn)
3	Connector P1	Switch Panel Connector J4	Driver's Area
4	Wire 999A	Passive Night Viewer Switch	Driver's Area
5	Wire 999	Passive Night Viewer Switch	Driver's Area
6	Connector P4	Passive Night Viewer Connector J1 Or Dummy Connector	Driver's Area
7	4W105 GND	Chassis Ground Terminal	Driver's Area
8	Connector P2	4W100 Connector J5	Driver's Area (Near Switch Panel)
9	Wire 38	Dome Light	Crew Compartment Ceiling
10	Wire 38	Dome Light	Crew Compartment Ceiling
11	Wire 75	Brake Light Switch	Driver's Area
12	Wire 75/16	Brake Light Switch	Driver's Area
13	Wire 16/75	Service Lights Switch	Crew Compartment Rear Bulkhead
14	Connector P3	4W103 Connector J1	Driver's Area
15	Connector J1	4W107 Connector P2	Driver's Area
16	Wire 516	Passive Night Viewer Lamp	Driver's Area

WIRING HARNESS 4W105 REPLACEMENT - CONTINUED 0317 00

Removal-Continued



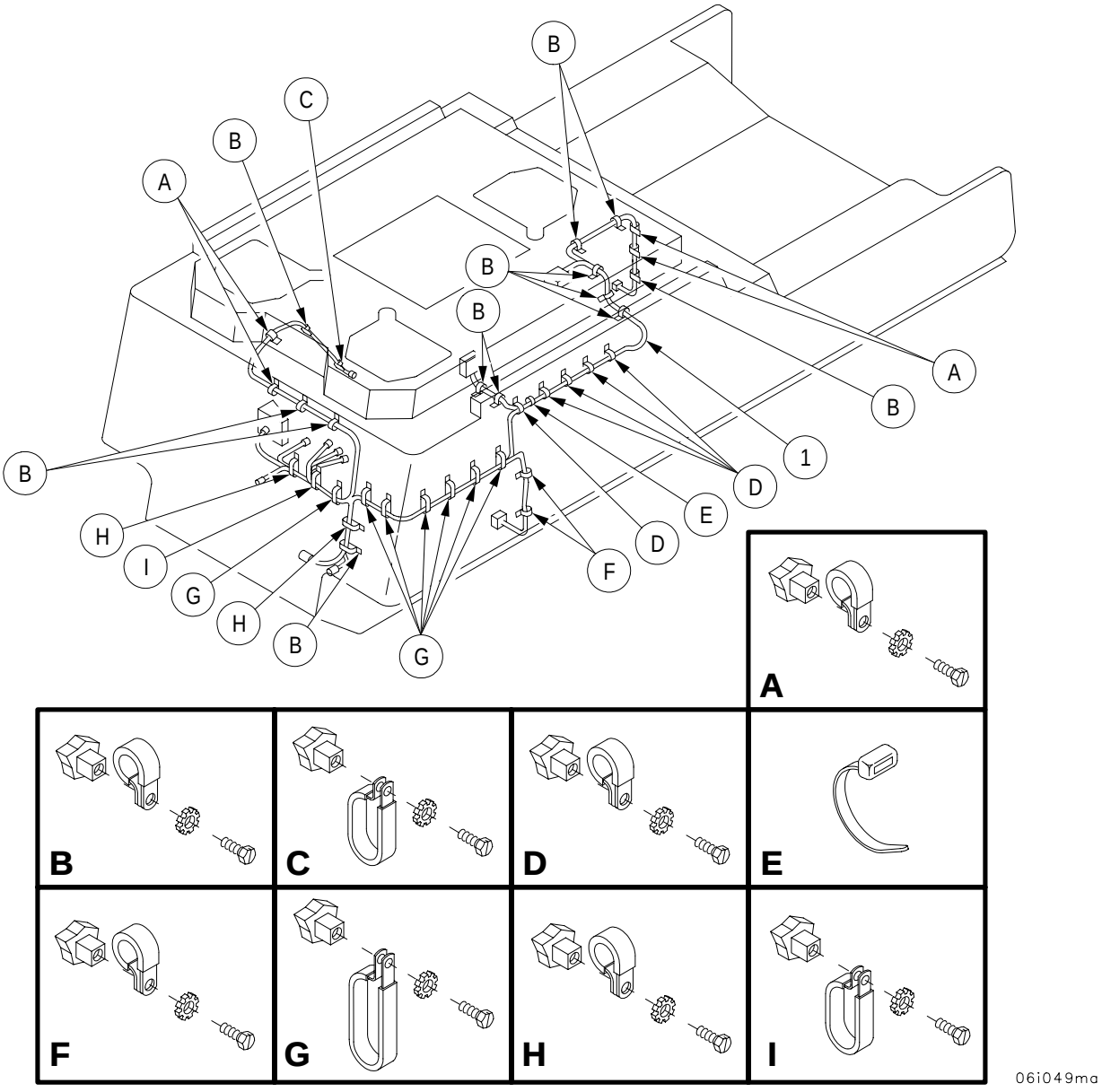
WIRING HARNESS 4W105 REPLACEMENT - CONTINUED 0317 00

Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through I), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through I), as shown in illustration.



WIRING HARNESS 4W105 REPLACEMENT - CONTINUED 0317 00

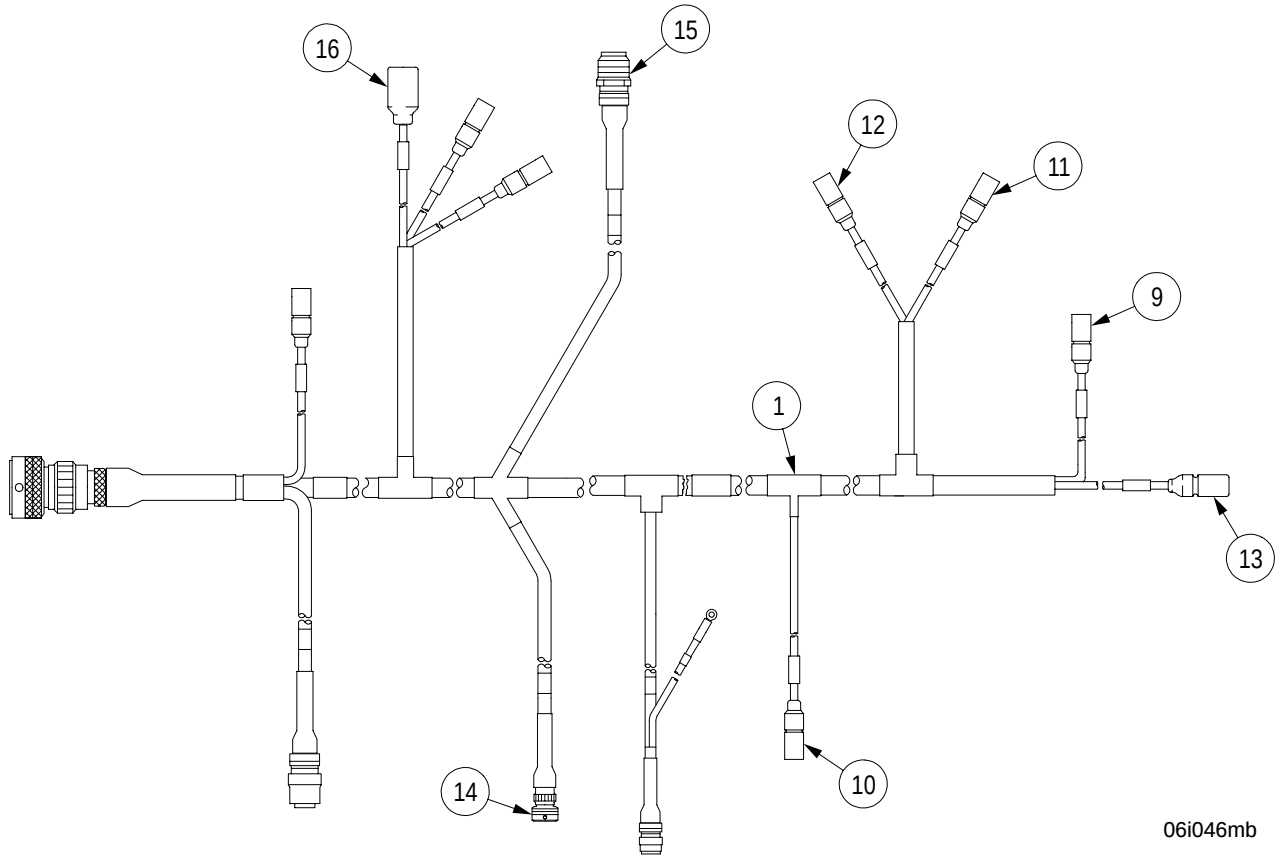
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

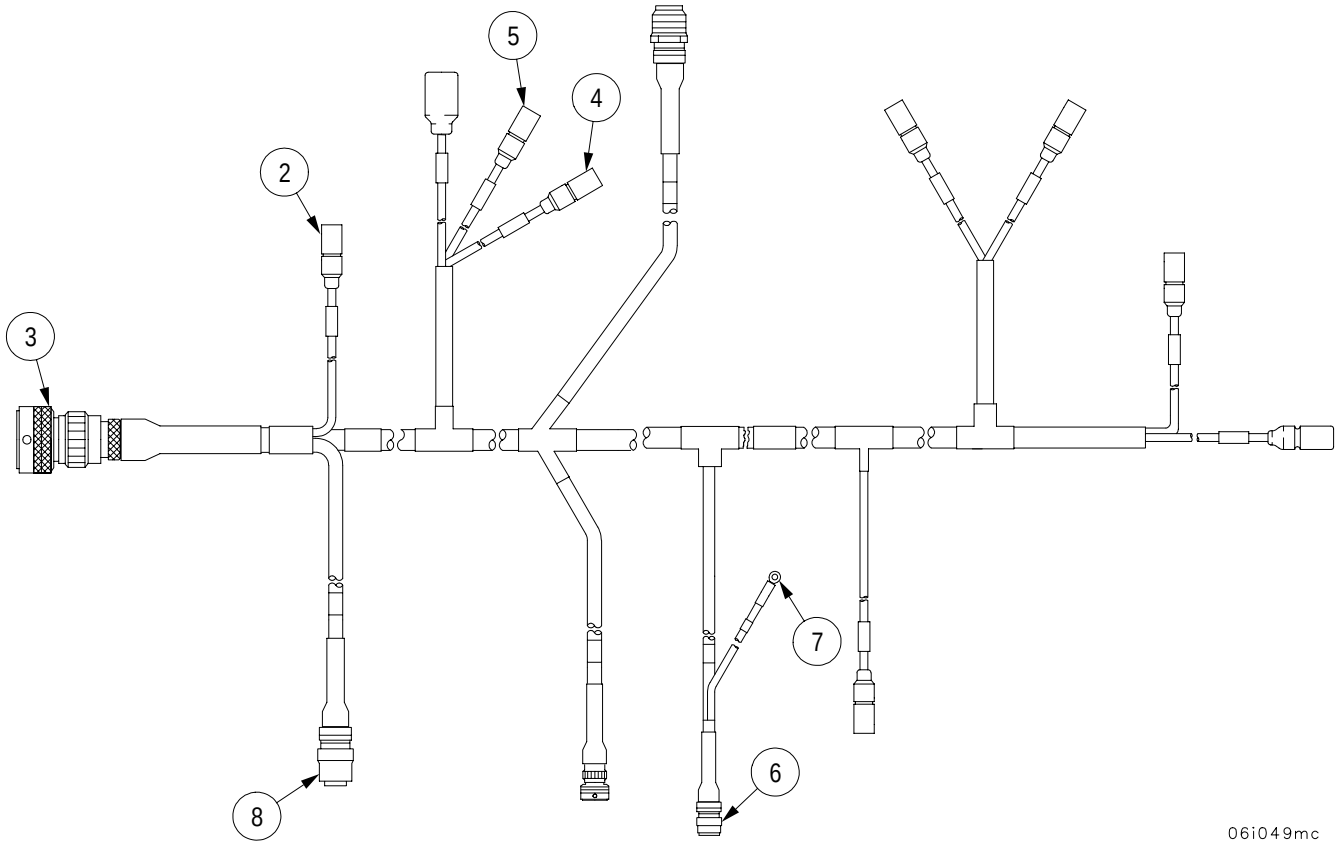
Item No.	4W105 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
16	Wire 516	Passive Night Viewer Lamp	Driver's Area
15	Connector J1	4W107 Connector P2	Driver's Area
14	Connector P3	4W103 Connector J1	Driver's Area
13	Wire 16/75	Service Lights Switch	Crew Compartment Rear Bulkhead
12	Wire 75/16	Brake Light Switch	Driver's Area
11	Wire 75	Brake Light Switch	Driver's Area
10	Wire 38	Dome Light	Crew Compartment Ceiling
9	Wire 38	Dome Light	Crew Compartment Ceiling



WIRING HARNESS 4W105 REPLACEMENT - CONTINUED 0317 00

Installation-Continued

Item No.	4W105 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
8	Connector P2	4W100 Connector J5	Driver's Area (Near Switch Panel)
7	4W105 GND	Chassis Ground Terminal	Driver's Area
6	Connector P4	Passive Night Viewer Connector J1 Or Dummy Connector	Drivers Area
5	Wire 999	Passive Night Viewer Switch	Driver's Area
4	Wire 999A	Passive Night Viewer Switch	Driver's Area
3	Connector P1	Switch Panel Connector J4	Driver's Area Switch Panel
2	Wire 25	Proximity Switch	Steering Wheel (Horn)



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 4W106 REPLACEMENT 0318 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (13) (item 58, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Main switch panel removed (WP 0242 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

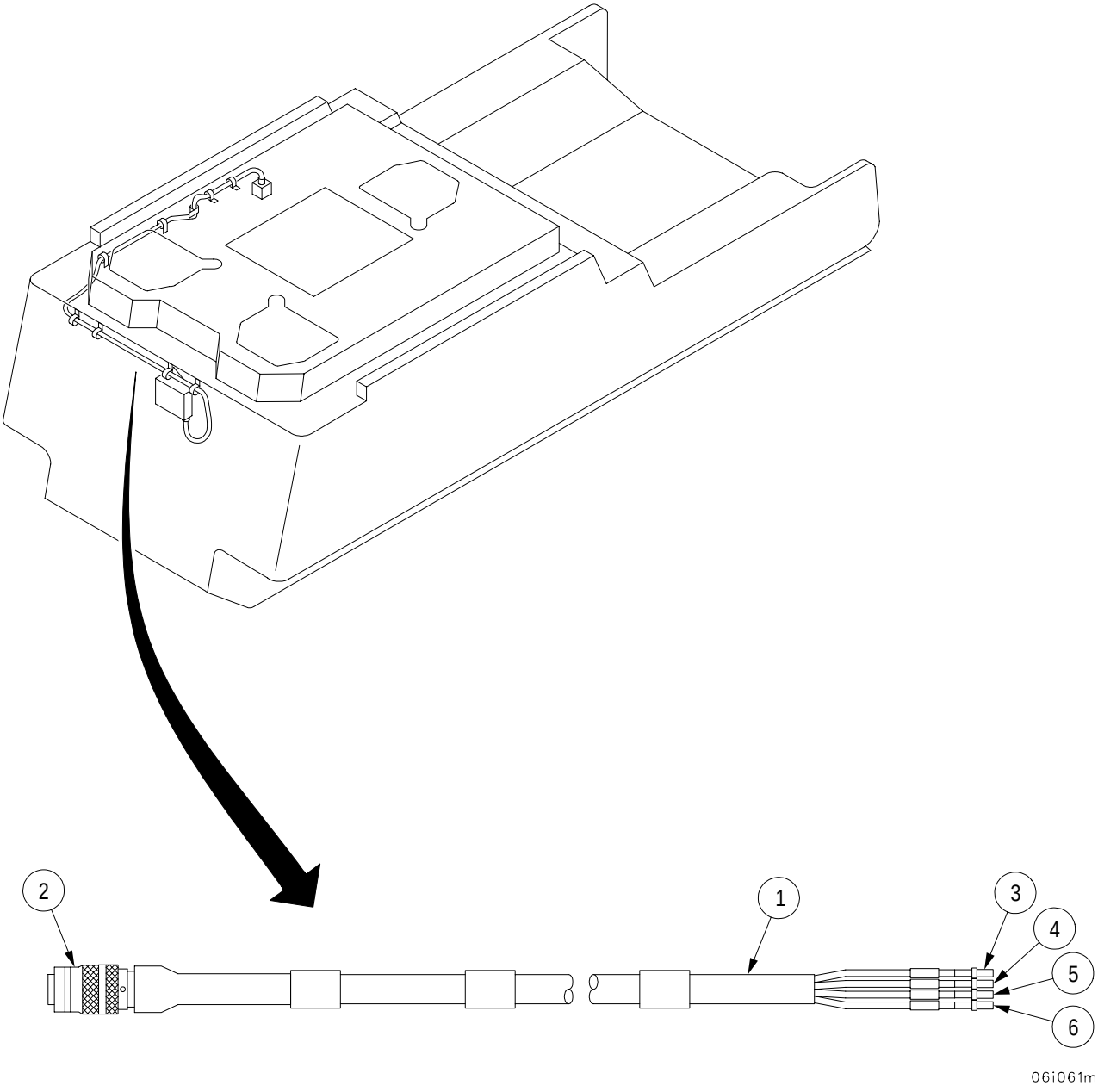
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W106 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Switch Panel Connector J1	Crew Compartment (Center Front)
3	Wire T	Exhaust Smoke Switch Terminal E2	Crew Compartment (Right Side)
4	Wire 26B	Exhaust Smoke Switch Terminal E3	Crew Compartment (Right Side)
5	Wire 27A	Exhaust Smoke Switch Terminal E6	Crew Compartment (Right Side)
6	Wire T1	Exhaust Smoke Switch Terminal E5	Crew Compartment (Right Side)

WIRING HARNESS 4W106 REPLACEMENT - CONTINUED 0318 00

Removal-Continued



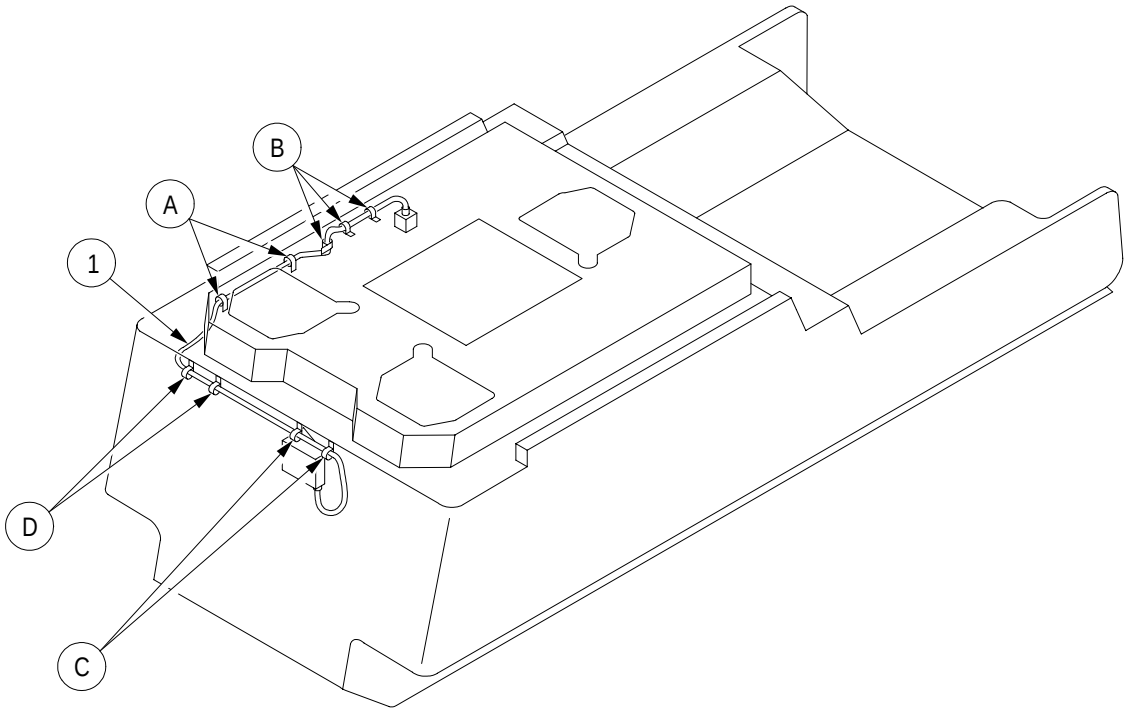
WIRING HARNESS 4W106 REPLACEMENT - CONTINUED 0318 00

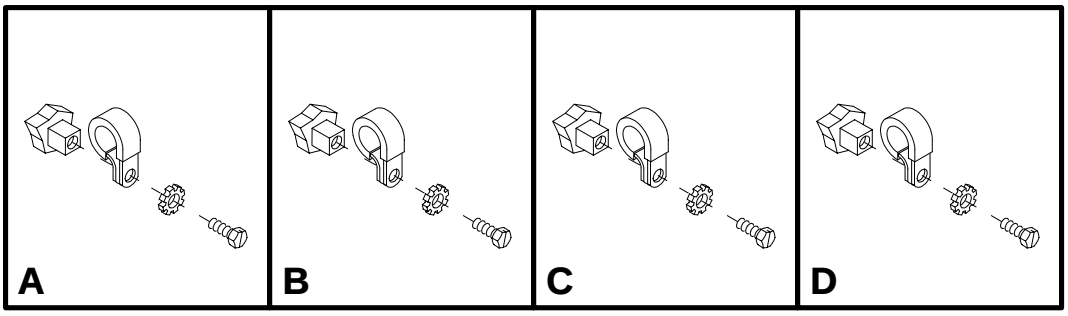
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through D), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through D), as shown in illustration.





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WIRING HARNESS 4W106 REPLACEMENT - CONTINUED 0318 00

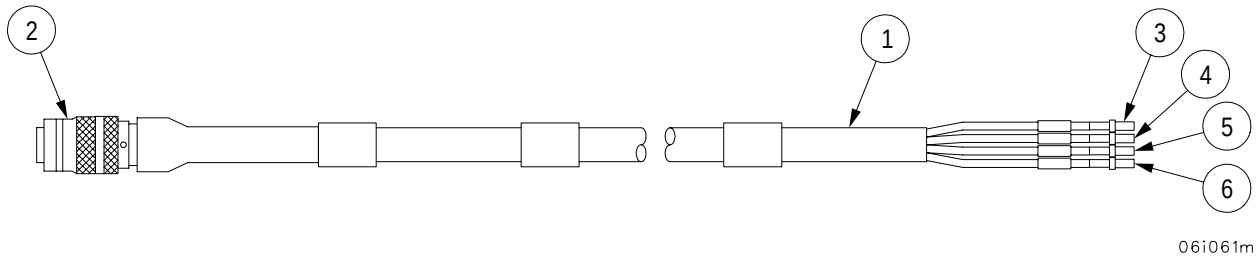
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	4W106 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
6	Wire T1	Exhaust Smoke Switch Terminal E5	Crew Compartment (Right Side)
5	Wire 27A	Exhaust Smoke Switch Terminal E6	Crew Compartment (Right Side)
4	Wire 26B	Exhaust Smoke Switch Terminal E3	Crew Compartment (Right Side)
3	Wire T	Exhaust Smoke Switch Terminal E2	Crew Compartment (Right Side)
2	Connector P1	Switch Panel Connector J1	Crew Compartment (Center Front)



NOTE

FOLLOW-ON MAINTENANCE:
Install main switch panel (WP 0242 00)

END OF TASK

WIRING HARNESS 4W107 REPLACEMENT 0319 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (10) (item 58, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

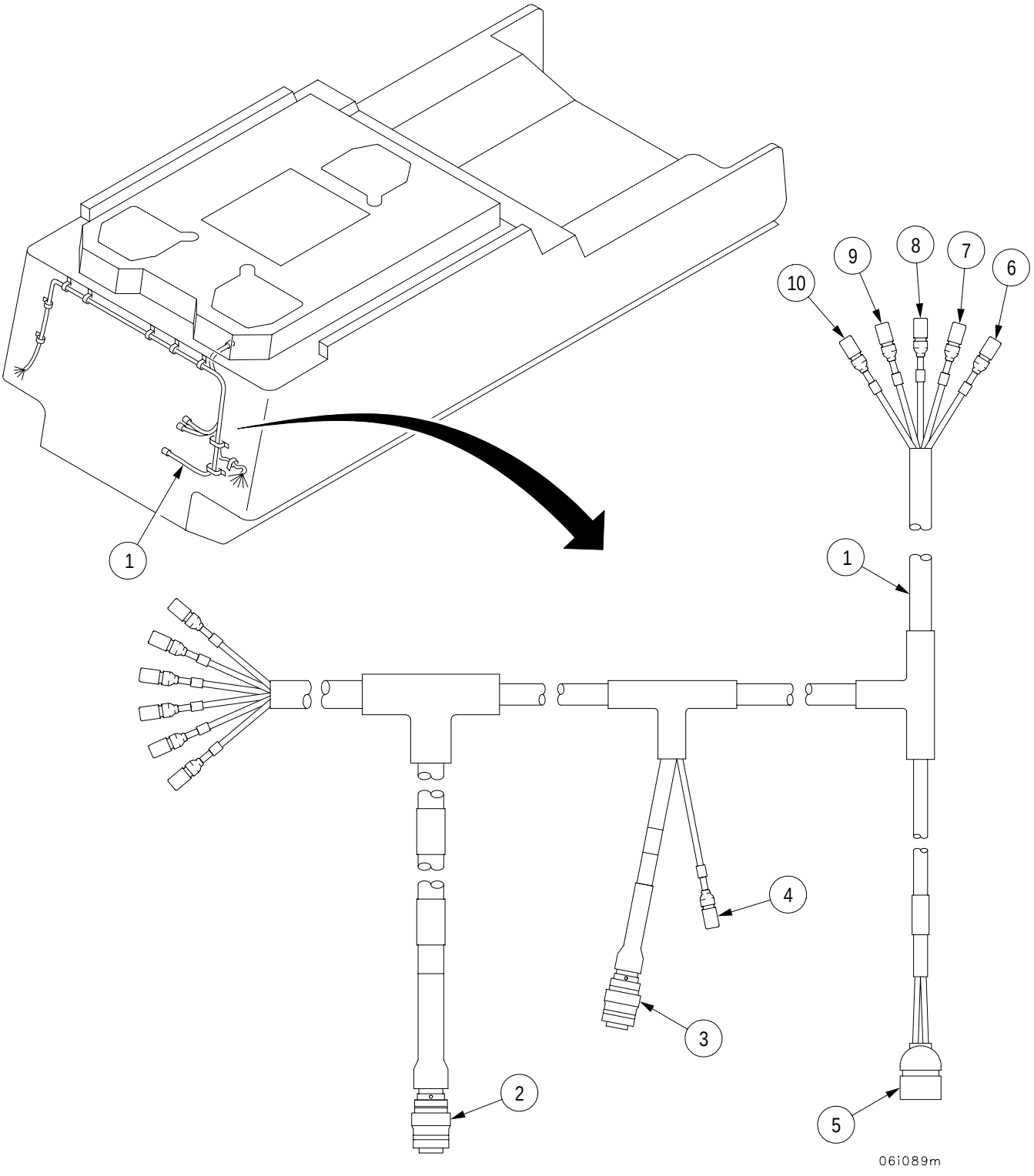
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W107 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Driver Dimmer Switch Connector J1	Crew Compartment (Driver's Area)
3	Connector P2	Wiring Harness 4W105 Connector J1	Crew Compartment (Driver's Area)
4	Wire 20	Wiring Harness 4W127 Wire 20	Crew Compartment (Driver's Area)
5	Connector P3	High Beam Indicator Lamp Connector J1	Crew Compartment (Driver's Area)
6	Wire 515	Wiring Harness 4W159-2 Wire 515	External Hull (Right Head Lamp)
7	Wire 514	Wiring Harness 4W159-2 Wire 514	External Hull (Right Head Lamp)
8	Wire 18	Wiring Harness 4W159-2 Wire 18	External Hull (Right Head Lamp)
9	Wire 17	Wiring Harness 4W159-2 Wire 17	External Hull (Right Head Lamp)
10	Wire 20	Wiring Harness 4W159-2 Wire 20	External Hull (Right Head Lamp)

WIRING HARNESS 4W107 REPLACEMENT - CONTINUED 0319 00

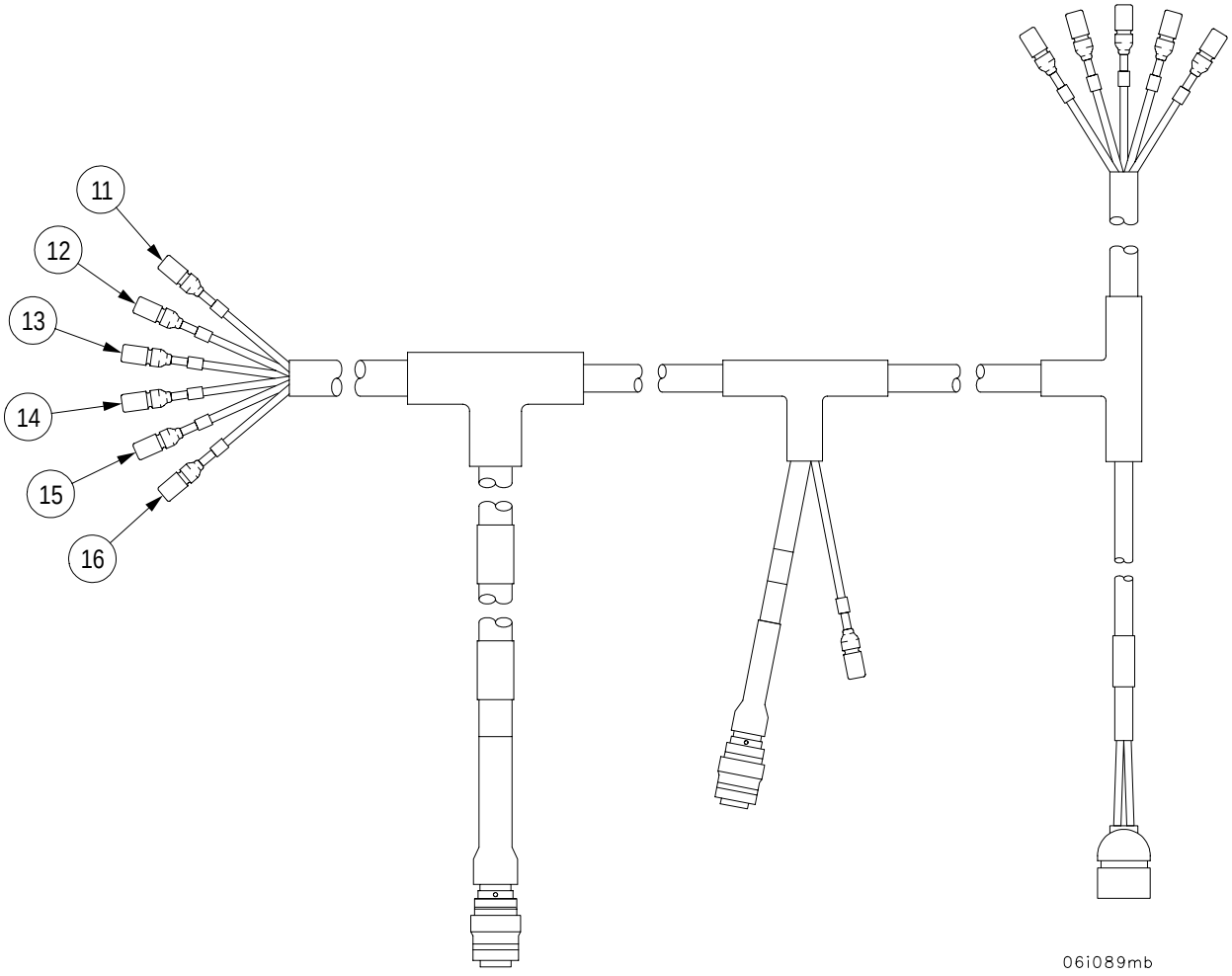
Removal-Continued



WIRING HARNESS 4W107 REPLACEMENT - CONTINUED 0319 00

Removal-Continued

Item No.	4W107 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
11	Wire 19	Wiring Harness 4W159-2 Wire 19	External Hull (Left Head Lamp)
12	Wire 20	Wiring Harness 4W159-2 Wire 20	External Hull (Left Head Lamp)
13	Wire 17	Wiring Harness 4W159-2 Wire 17	External Hull (Left Head Lamp)
14	Wire 18	Wiring Harness 4W159-2 Wire 18	External Hull (Left Head Lamp)
15	Wire 514	Wiring Harness 4W159-2 Wire 514	External Hull (Left Head Lamp)
16	Wire 515	Wiring Harness 4W159-2 Wire 515	External Hull (Left Head Lamp)



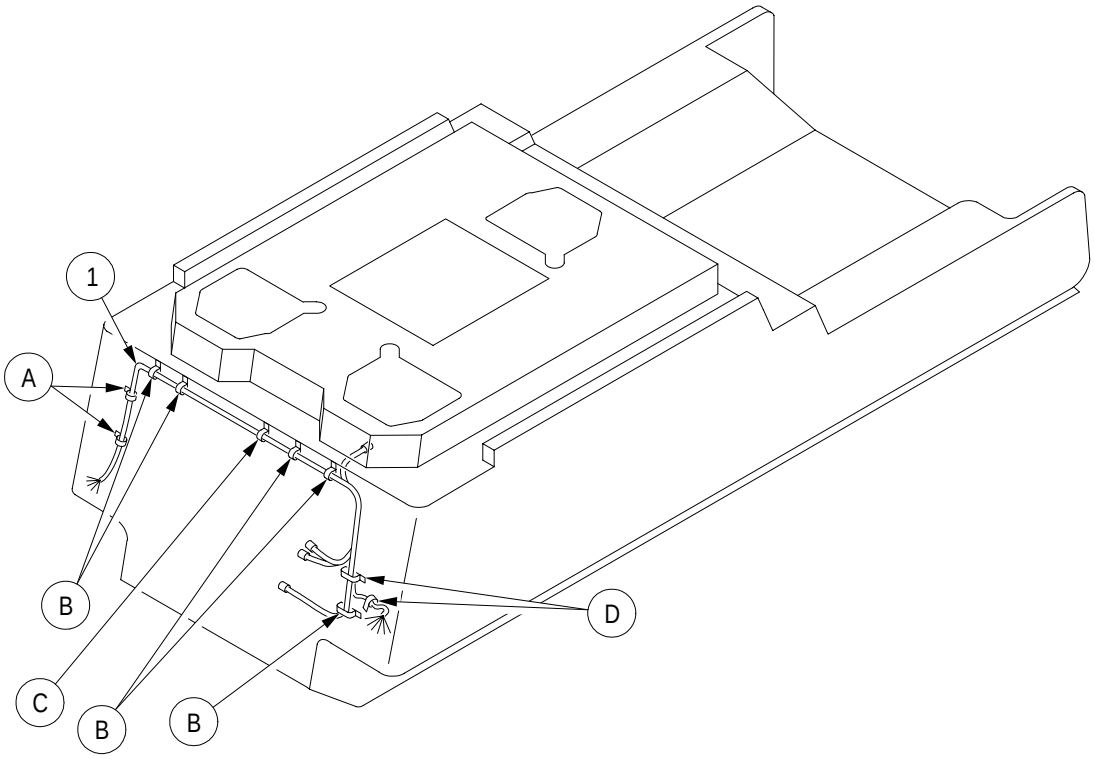
WIRING HARNESS 4W107 REPLACEMENT - CONTINUED 0319 00

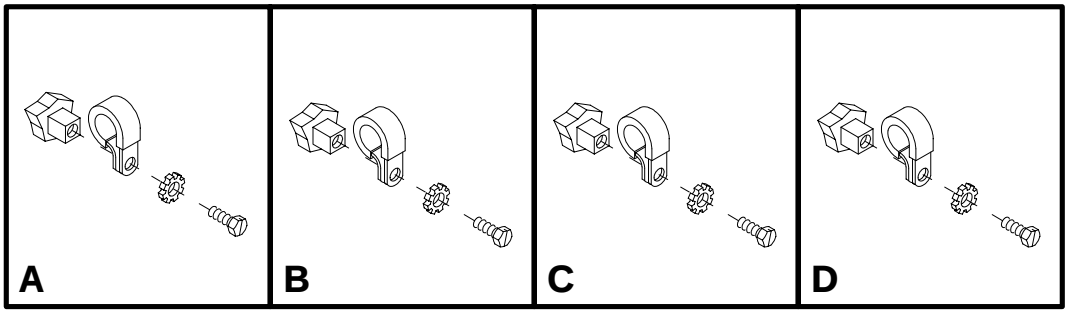
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through D), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through D), as shown in illustration.





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WIRING HARNESS 4W107 REPLACEMENT - CONTINUED 0319 00

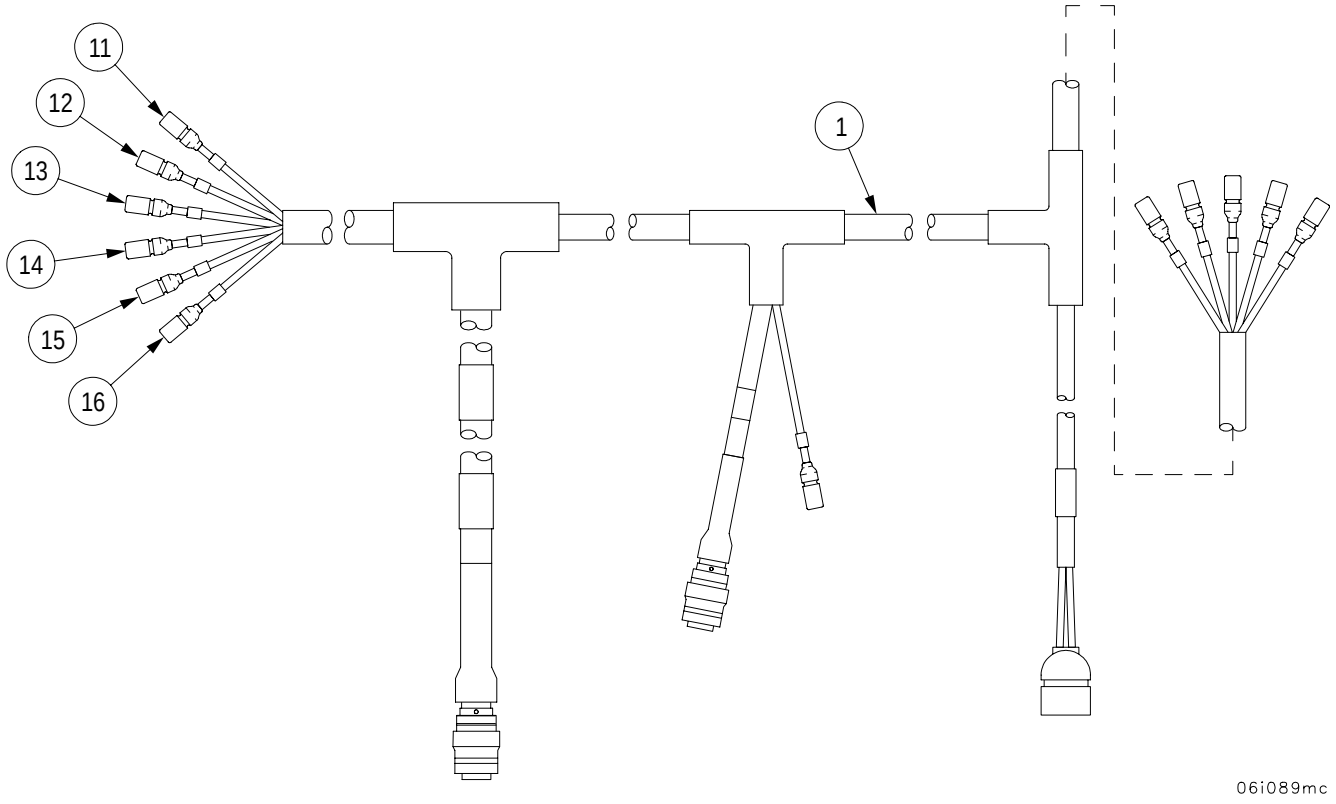
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

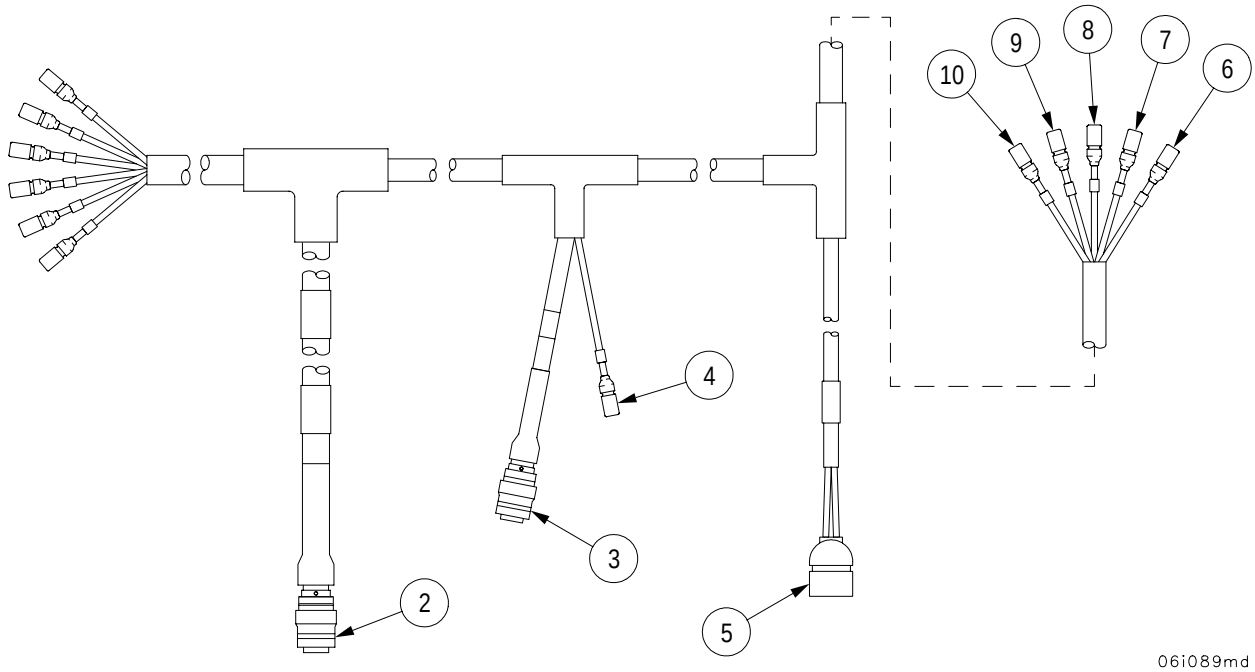
Item No.	4W107 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
16	Wire 515	Wiring Harness 4W159-2 Wire 515	External Hull (Left Head Lamp)
15	Wire 514	Wiring Harness 4W159-2 Wire 514	External Hull (Left Head Lamp)
14	Wire 18	Wiring Harness 4W159-2 Wire 18	External Hull (Left Head Lamp)
13	Wire 17	Wiring Harness 4W159-2 Wire 17	External Hull (Left Head Lamp)
12	Wire 20	Wiring Harness 4W159-2 Wire 20	External Hull (Left Head Lamp)
11	Wire 19	Wiring Harness 4W159-2 Wire 19	External Hull (Left Head Lamp)



WIRING HARNESS 4W107 REPLACEMENT - CONTINUED 0319 00

Installation-Continued

Item No.	4W107 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
10	Wire 20	Wiring Harness 4W159-2 Wire 20	External Hull (Right Head Lamp)
9	Wire 17	Wiring Harness 4W159-2 Wire 17	External Hull (Right Head Lamp)
8	Wire 18	Wiring Harness 4W159-2 Wire 18	External Hull (Right Head Lamp)
7	Wire 514	Wiring Harness 4W159-2 Wire 514	External Hull (Right Head Lamp)
6	Wire 515	Wiring Harness 4W159-2 Wire 515	External Hull (Right Head Lamp)
5	Connector P3	High Beam Indicator Lamp Connector J1	Crew Compartment (Driver's Area)
4	Wire 20	Wiring Harness 4W127 Wire 20	Crew Compartment (Driver's Area)
3	Connector P2	Wiring Harness 4W105 Connector J1	Crew Compartment (Driver's Area)
2	Connector P1	Driver Dimmer Switch Connector J1	Crew Compartment (Driver's Area)



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 4W110 REPLACEMENT 0320 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (3) (item 58, WP 0718 00)
Lockwasher (item 10, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Brake relay and circuit breaker cover removed (WP 0263 00)
Subfloor plate #16 removed (WP 0454 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

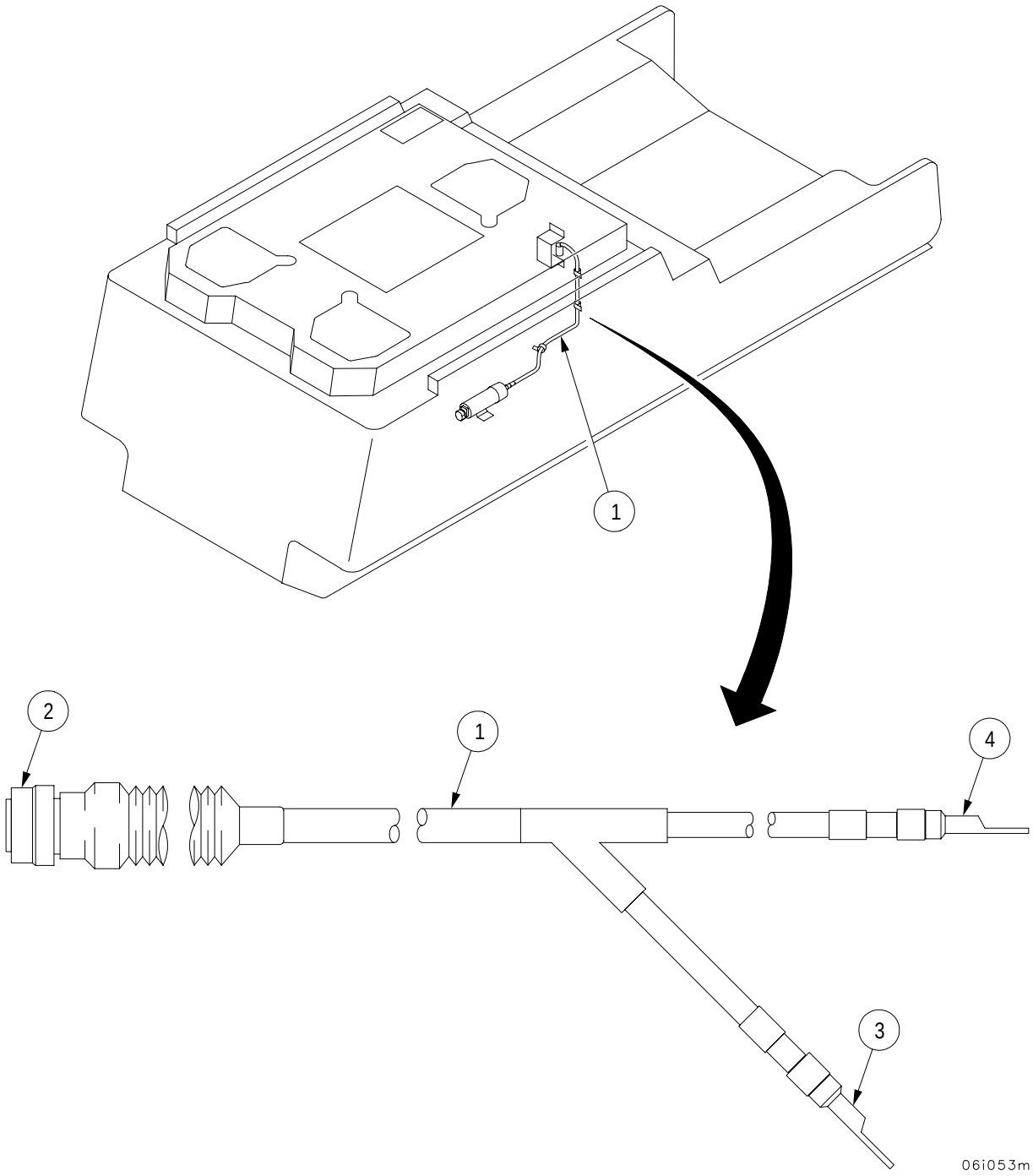
Retain attaching hardware securing 4W110 wire 589 to brake relay.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W110 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Brake Pump and Motor Connector J1	Left Rear Crew Compartment (Under Subfloor)
3	Wire GND	Brake Pump Mounting Flange	Left Rear Crew Compartment (Under Subfloor)
4	Wire 589	Brake Relay	Crew Compartment) (Rear Bulkhead)

WIRING HARNESS 4W110 REPLACEMENT - CONTINUED 0320 00

Removal-Continued



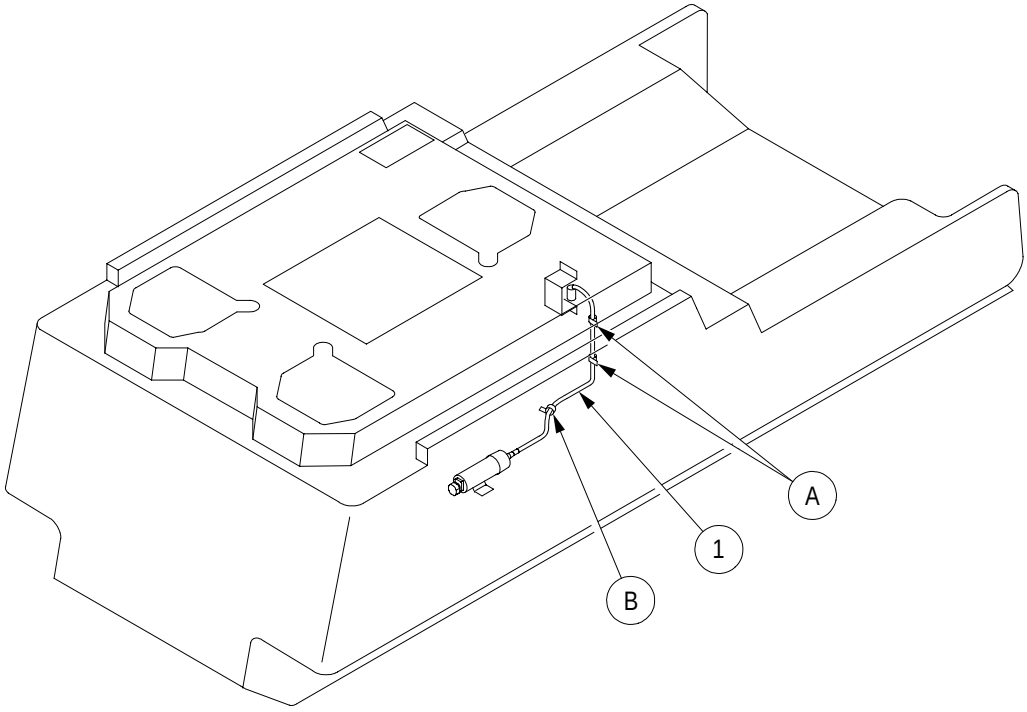
WIRING HARNESS 4W110 REPLACEMENT - CONTINUED 0320 00

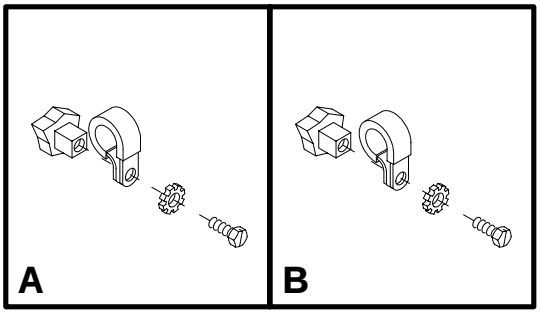
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A and B), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A and B), as shown in illustration.





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WIRING HARNESS 4W110 REPLACEMENT - CONTINUED 0320 00

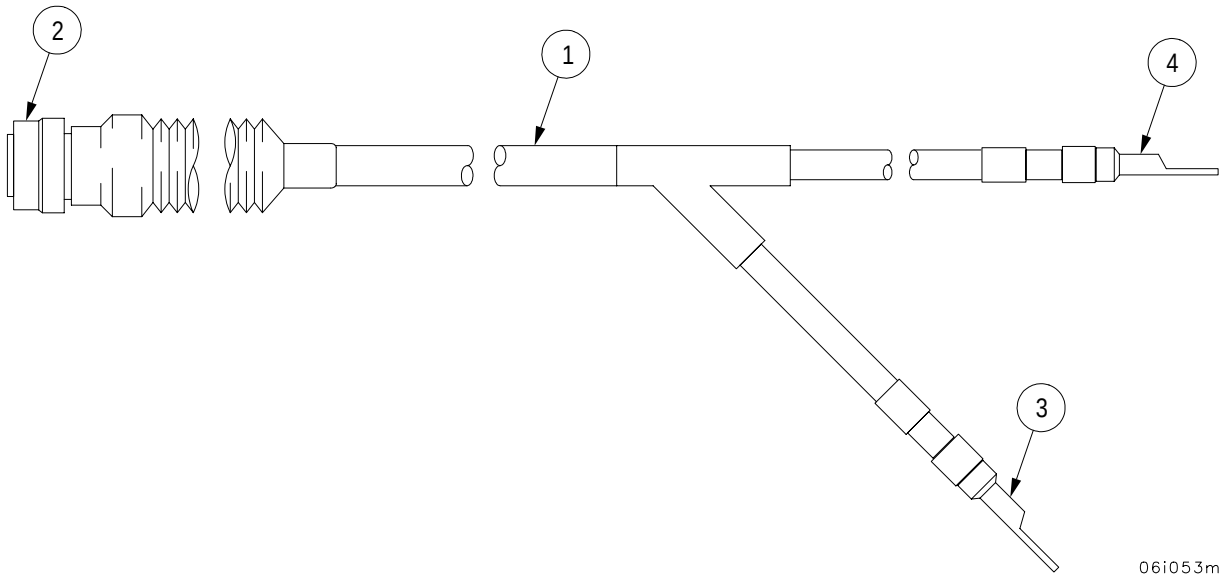
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	4W110 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
4	Wire 589	Brake Relay	Crew Compartment) (Rear Bulkhead)
3	Wire GND	Brake Pump Mounting Flange	Left Rear Crew Compartment (Under Subfloor)
2	Connector P1	Brake Pump and Motor Connector J1	Left Rear Crew Compartment (Under Subfloor)



NOTE

FOLLOW-ON MAINTENANCE:
Install subfloor plate #16 (WP 0454 00)
Install brake relay and circuit breaker cover (WP 0263 00)

END OF TASK

WIRING HARNESS 4W115 REPLACEMENT 0321 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (6) (item 58, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Gauge panel removed (WP 0243 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

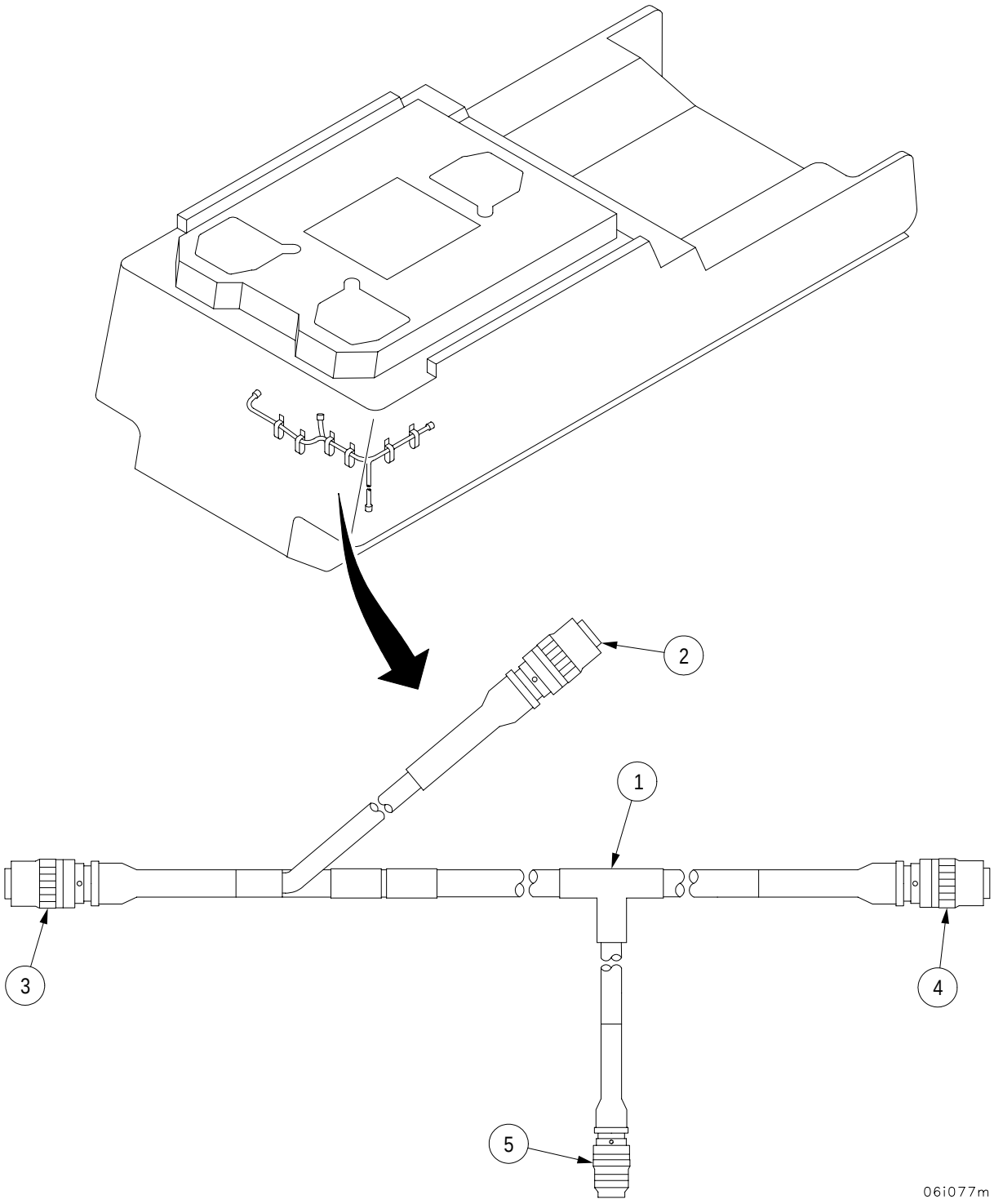
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W115 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Wiring Harness 4W116 Connector J1	Crew Compartment (Driver's Side)
3	Connector P2	Warning Horn Relay Connector J1	Crew Compartment (Driver's Side)
4	Connector P3	Wiring Harness 4W103 Connector J2	Crew Compartment (Driver's Side)
5	Connector J1	Wiring Harness 4W618 Connector P4	Crew Compartment (Driver's Side)

WIRING HARNESS 4W115 REPLACEMENT - CONTINUED 0321 00

Removal-Continued



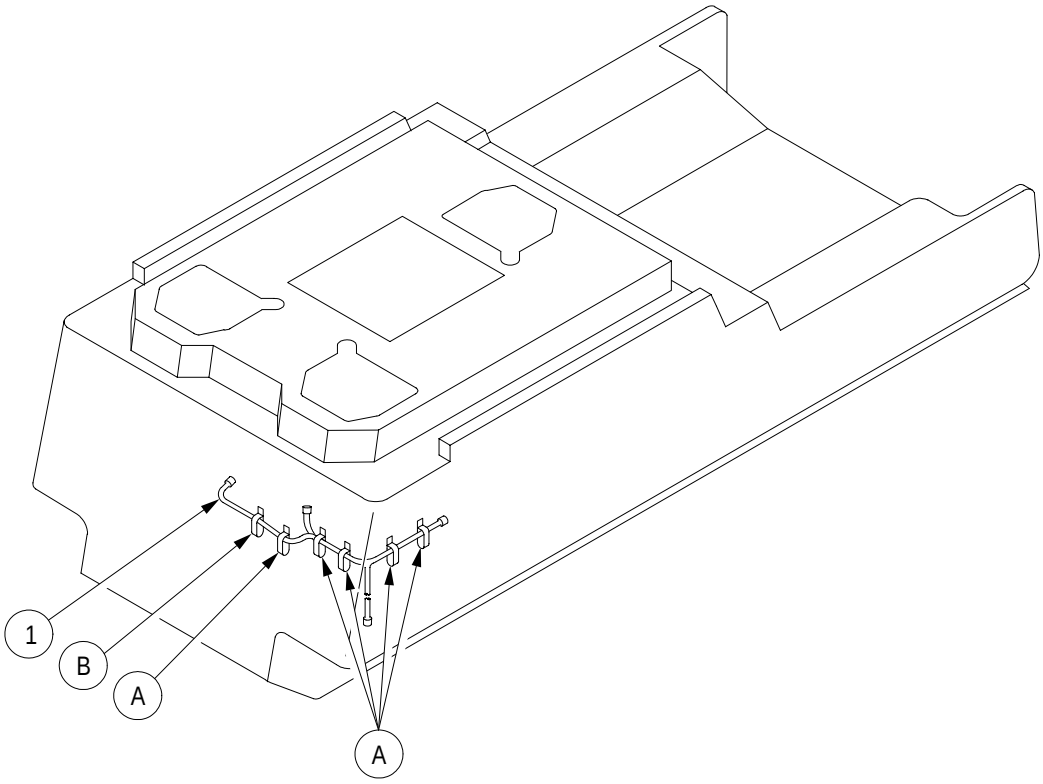
WIRING HARNESS 4W115 REPLACEMENT - CONTINUED 0321 00

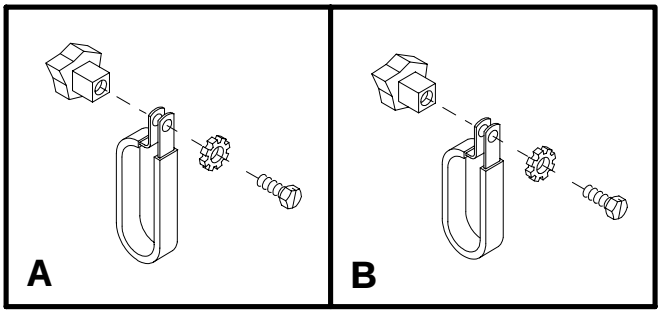
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A and B), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A and B), as shown in illustration.





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WIRING HARNESS 4W115 REPLACEMENT - CONTINUED 0321 00

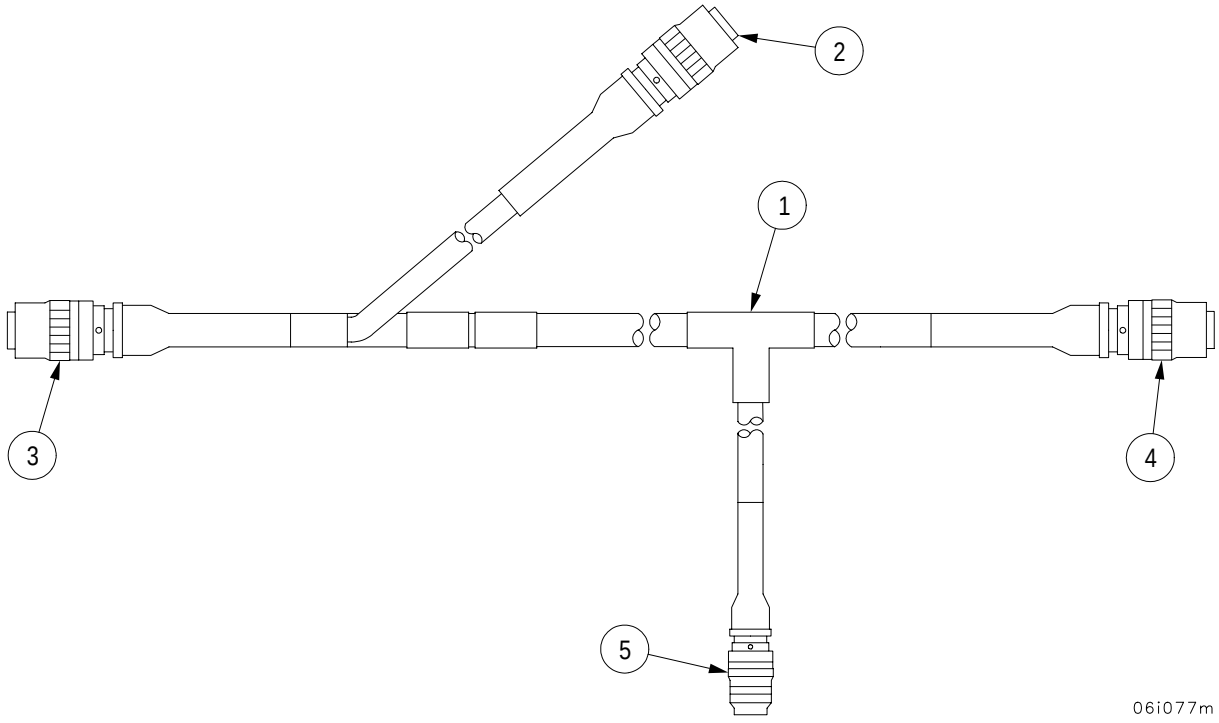
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	4W115 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
5	Connector J1	Wiring Harness 4W618 Connector P4	Crew Compartment (Driver's Side)
4	Connector P3	Wiring Harness 4W103 Connector J2	Crew Compartment (Driver's Side)
3	Connector P2	Warning Horn Relay Connector J1	Crew Compartment (Driver's Side)
2	Connector P1	Wiring Harness 4W116 Connector J1	Crew Compartment (Driver's Side)



NOTE

FOLLOW-ON MAINTENANCE:
Install gauge panel (WP 0243 00)

END OF TASK

WIRING HARNESS 4W116 REPLACEMENT 0322 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (4) (item 58, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Gauge panel removed (WP 0243 00)
Main switch panel removed (WP 0242 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

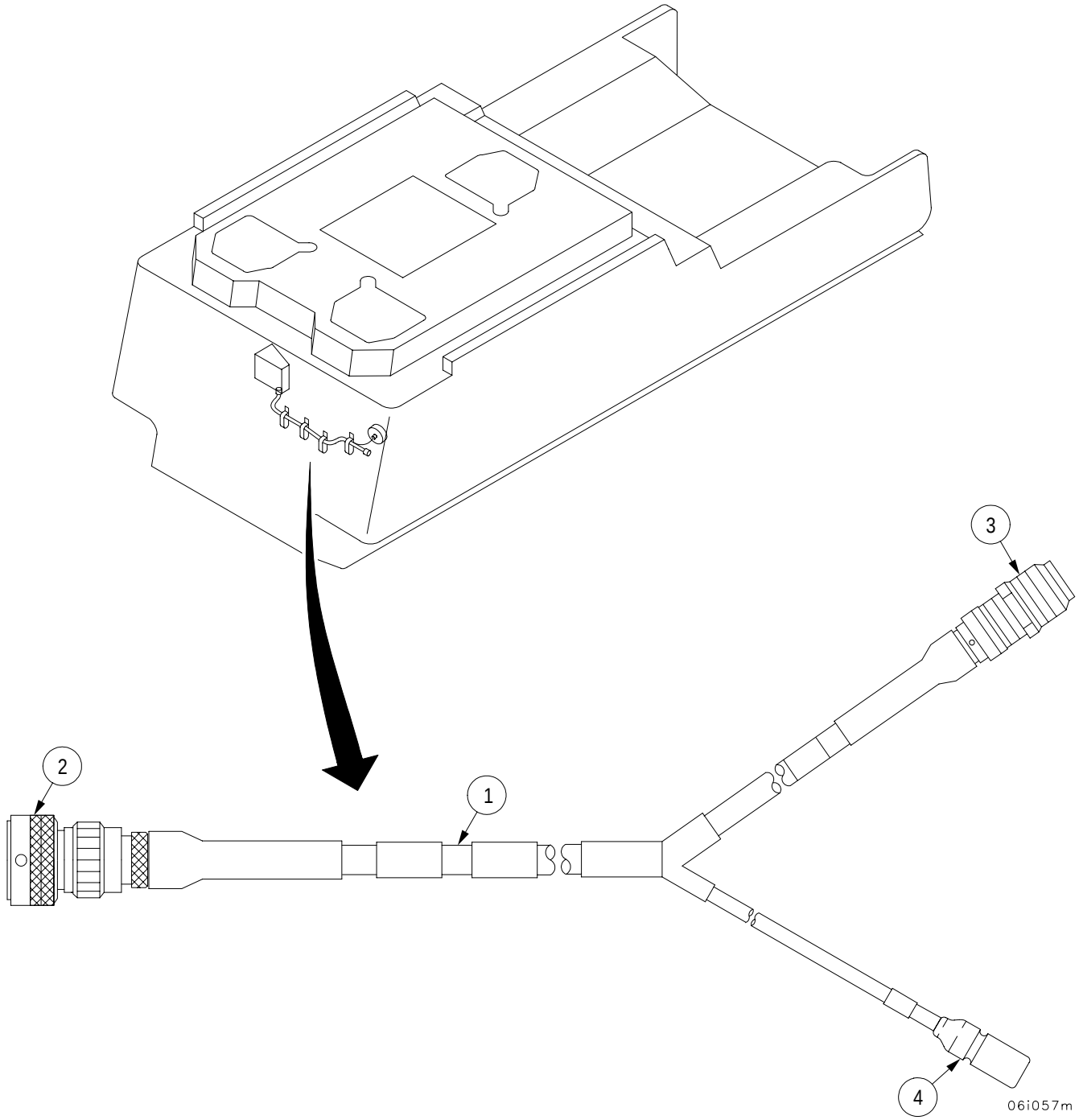
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W116 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Main Switch Panel Connector J5	Crew Compartment (Driver's Station)
3	Connector J1	Wiring Harness 4W115 Connector P1	Crew Compartment (Driver's Station)
4	Wire 26A	Warning Horn	Crew Compartment (Driver's Station)

WIRING HARNESS 4W116 REPLACEMENT - CONTINUED 0322 00

Removal-Continued



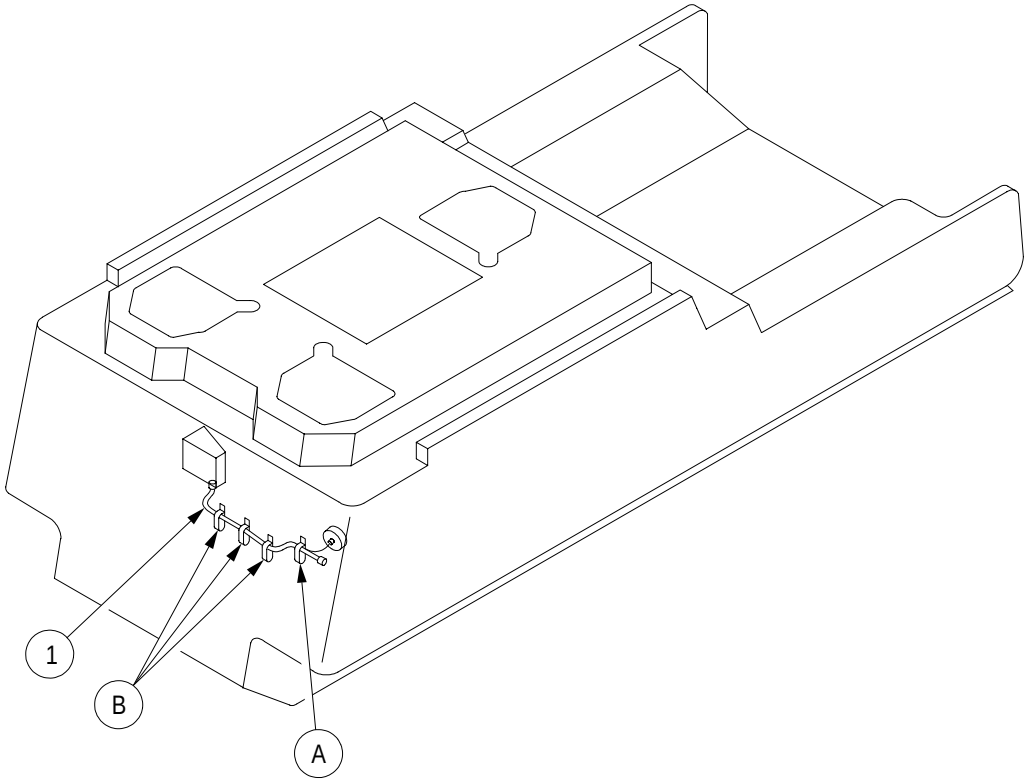
WIRING HARNESS 4W116 REPLACEMENT - CONTINUED 0322 00

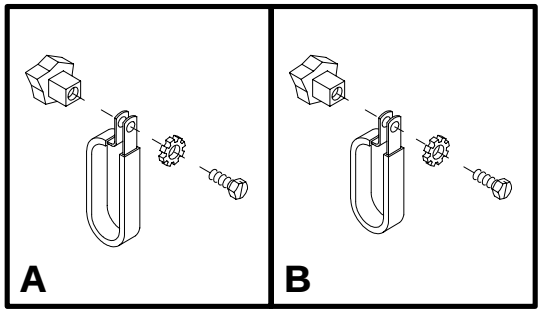
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A and B), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A and B), as shown in illustration.





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WIRING HARNESS 4W116 REPLACEMENT - CONTINUED 0322 00

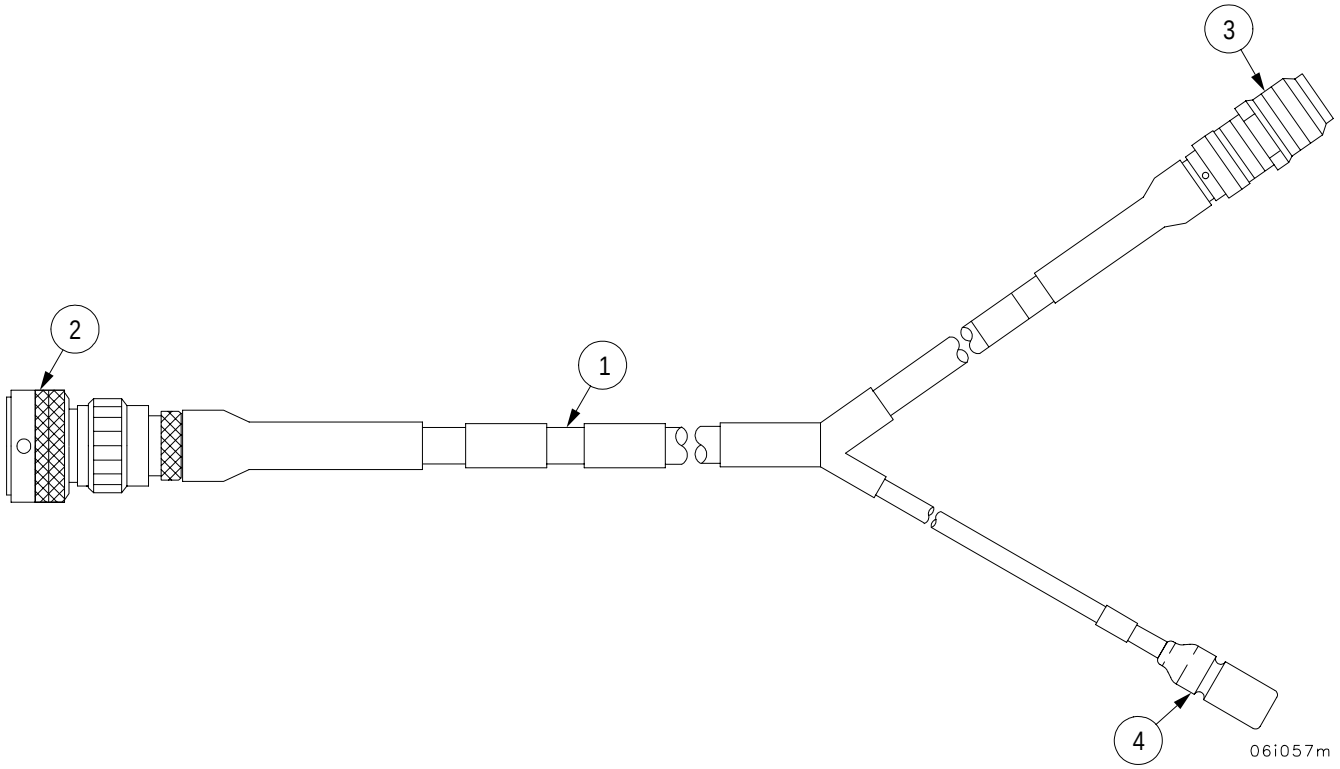
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	4W116 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
4	Wire 26A	Warning Horn	Crew Compartment (Driver's Station)
3	Connector J1	Wiring Harness 4W115 Connector P1	Crew Compartment (Driver's Station)
2	Connector P1	Main Switch Panel Connector J5	Crew Compartment (Driver's Station)



NOTE

FOLLOW-ON MAINTENANCE:
Install main switch panel (WP 0242 00)
Install gauge panel (WP 0243 00)

END OF TASK

WIRING HARNESS 4W124 REPLACEMENT 0323 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (20) (item 58, WP 0718 00)
Lockwasher (item 9, WP 0718 00)
Electrical tiedown strap (item 205, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

Removal

NOTE

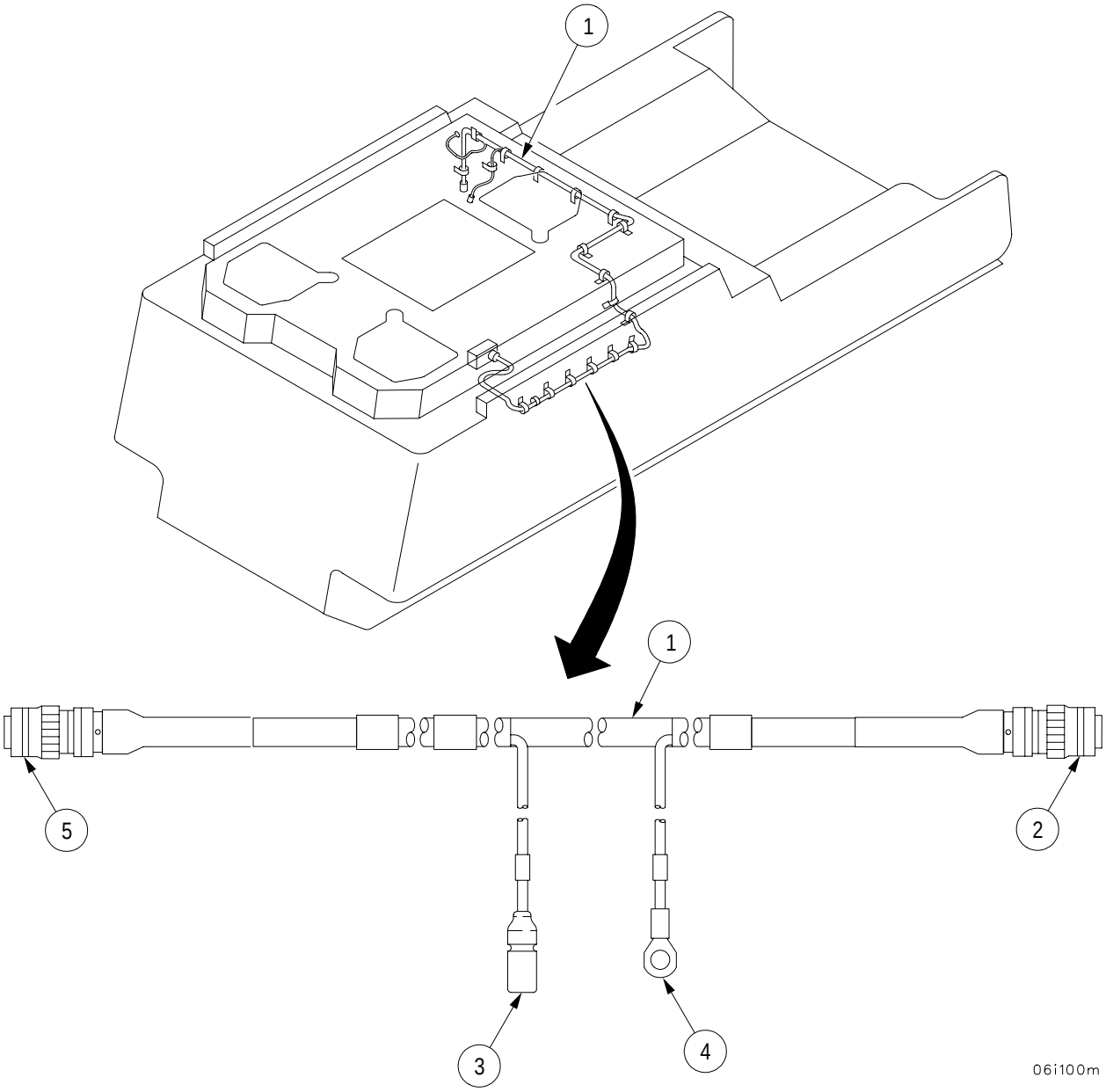
Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W124 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P2	Personnel Heater Connector J1	Crew Compartment (Right Side)
3	Wire 402	Personnel Heater Fuel Pump	Crew Compartment (Right Side)
4	Terminal GND	Bulkhead Ground	Crew Compartment (Right Side)
5	Connector P1	Heater Control Box Connector J1	Crew Compartment (Left Side)

WIRING HARNESS 4W124 REPLACEMENT - CONTINUED 0323 00



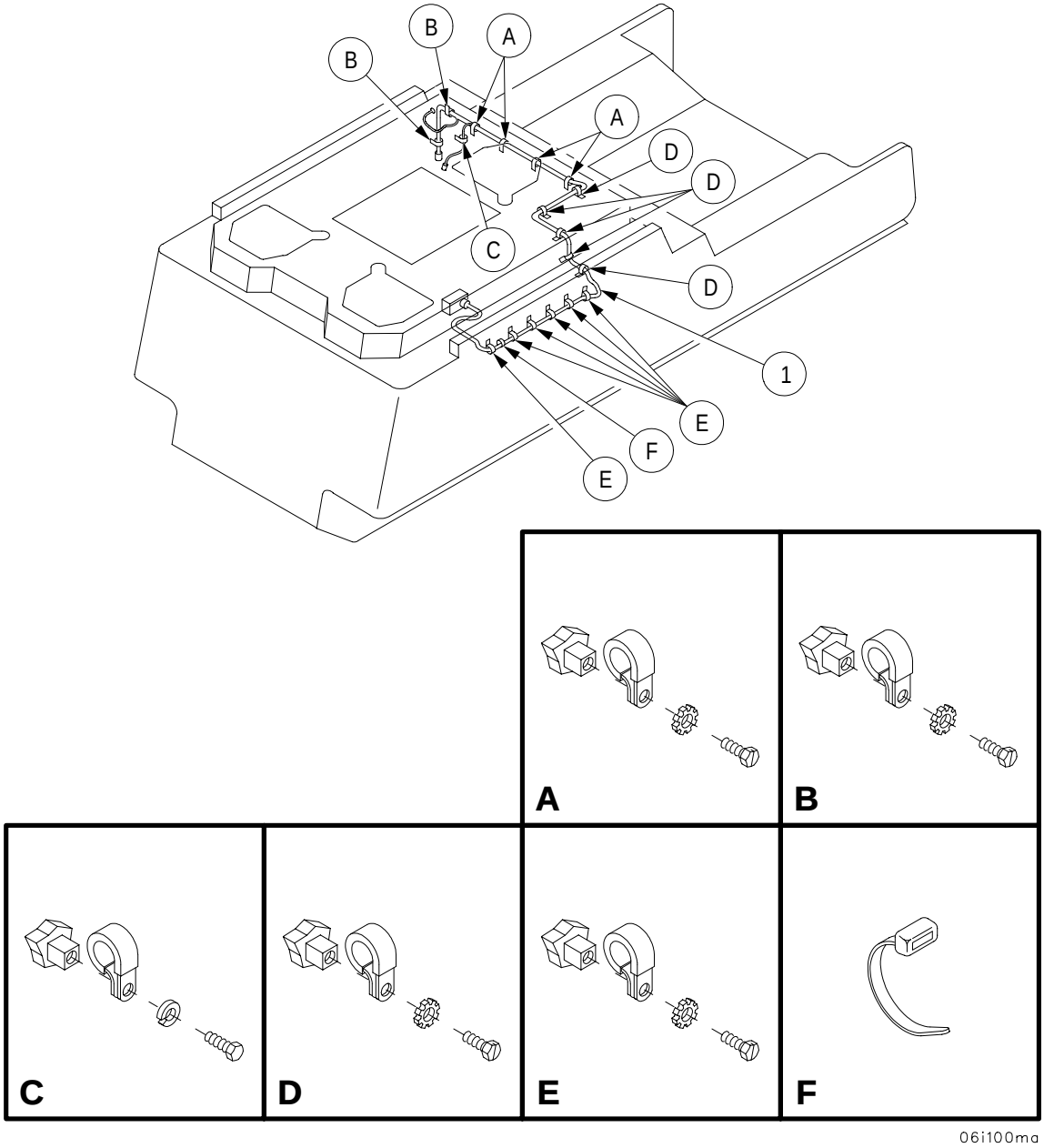
WIRING HARNESS 4W124 REPLACEMENT - CONTINUED 0323 00

Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through F), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through F), as shown in illustration.



WIRING HARNESS 4W124 REPLACEMENT - CONTINUED 0323 00

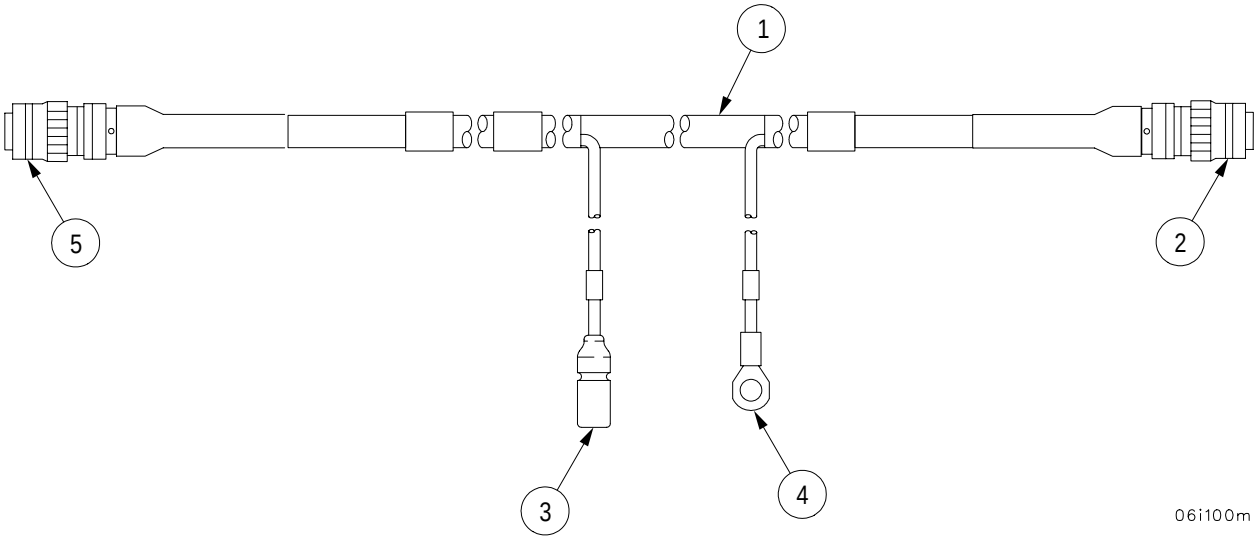
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	4W124 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
5	Connector P1	Heater Control Box Connector J1	Crew Compartment (Left Side)
4	Terminal GND	Bulkhead Ground	Crew Compartment (Right Side)
3	Wire 402	Personnel Heater Fuel Pump	Crew Compartment (Right Side)
2	Connector P2	Personnel Heater Connector J1	Crew Compartment (Right Side)



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 4W127 REPLACEMENT 0324 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (27) (item 58, WP 0718 00)
Lockwashers (2) (item 132, WP 0718 00)
Marker tags (item 49, WP 0716 00)
Adhesive (item 6, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Gauge panel removed (WP 0243 00)
Main switch panel removed (WP 0242 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

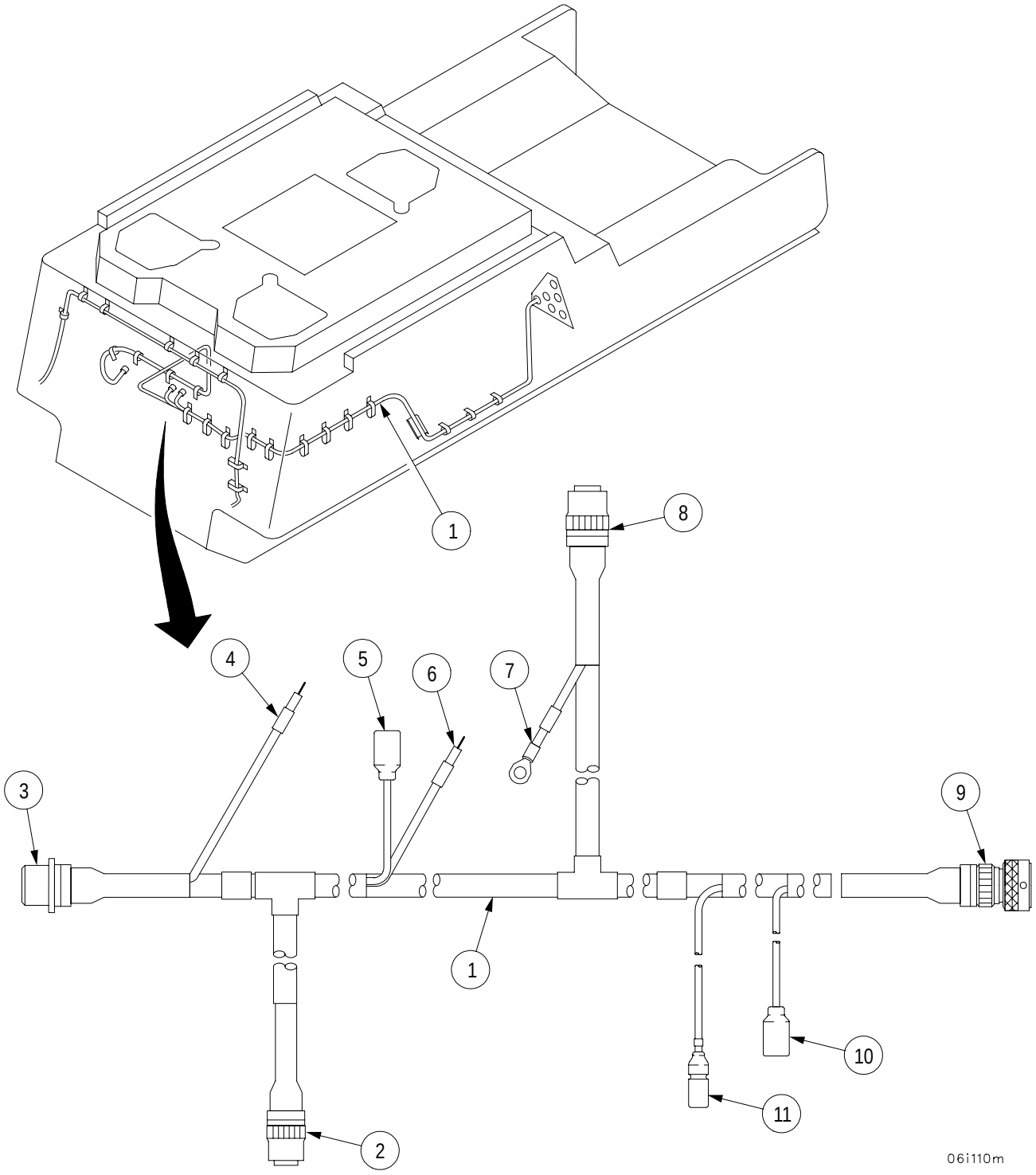
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W127 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Directional Signal Control Assembly	Crew Compartment (Driver's Area)
3	Connector P2	Switch Panel Assembly	Crew Compartment (Driver's Area)
4	Wire 460	Turn Signal Lamp Assembly	Front of Vehicle (Mechanic's Side)
5	Wire 20	Wiring Harness 4W107 Wire 20	Crew Compartment (Driver's Area)
6	Wire 461	Turn Signal Lamp Assembly	Front of Vehicle (Driver's Side)
7	Wire GND	Flasher Mount	Crew Compartment (Behind Gauge Panel)
8	Connector P3	Flasher	Crew Compartment (Behind Gauge Panel)
9	Connector P4	Rear Bulkhead Connector J1	Crew Compartment (Rear Bulkhead)
10	Wire 54A	Fire Extinguisher Engine Shutoff Switch	Crew Compartment (Above Personnel Heater Control Box Assembly)
11	Wire 400	Personnel Heater Control Box Assembly	Crew Compartment (Above Oddment Tray)

WIRING HARNESS 4W127 REPLACEMENT - CONTINUED 0324 00

Removal-Continued



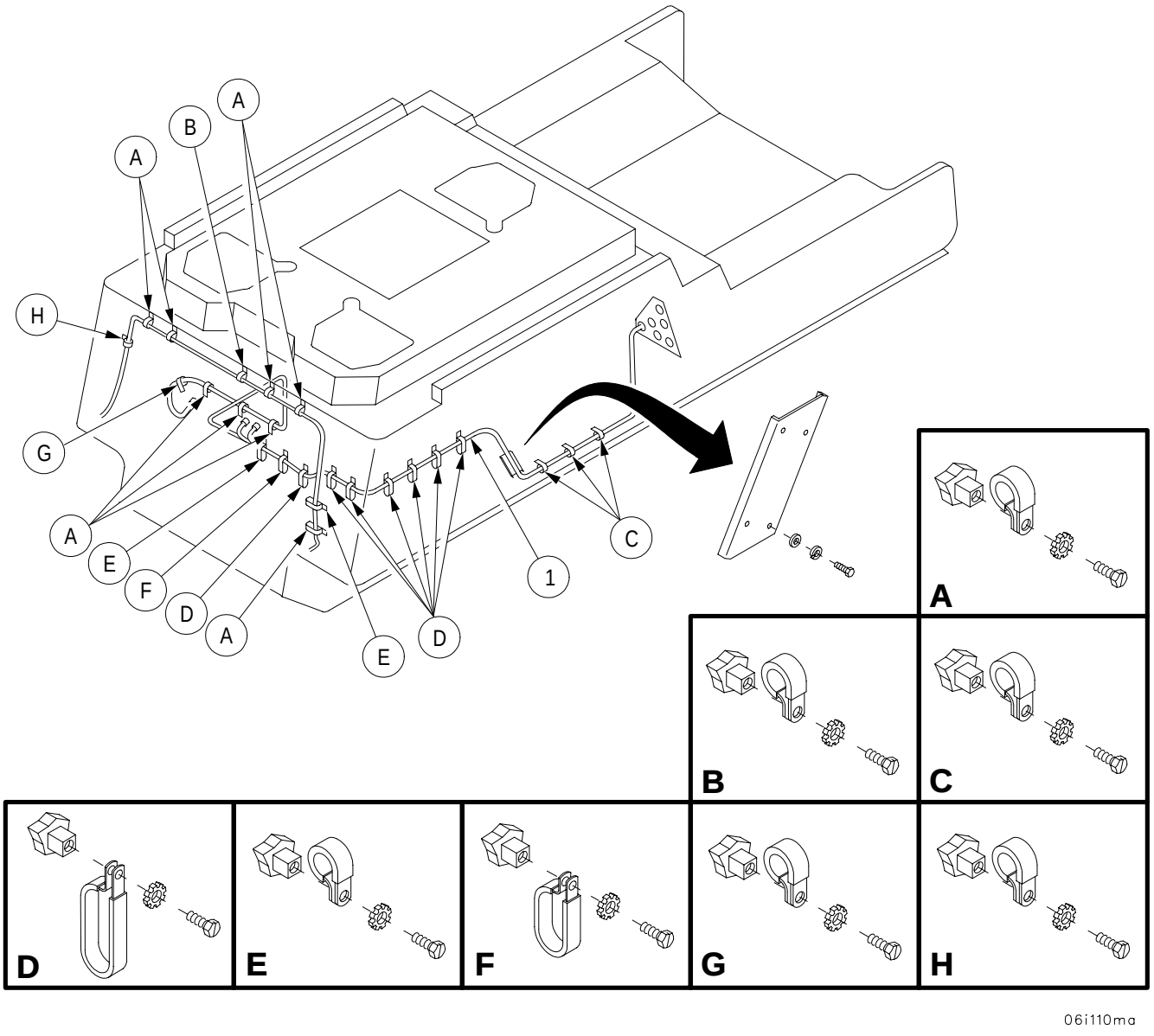
WIRING HARNESS 4W127 REPLACEMENT - CONTINUED 0324 00

Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through H), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through H), as shown in illustration.



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WIRING HARNESS 4W127 REPLACEMENT - CONTINUED 0324 00

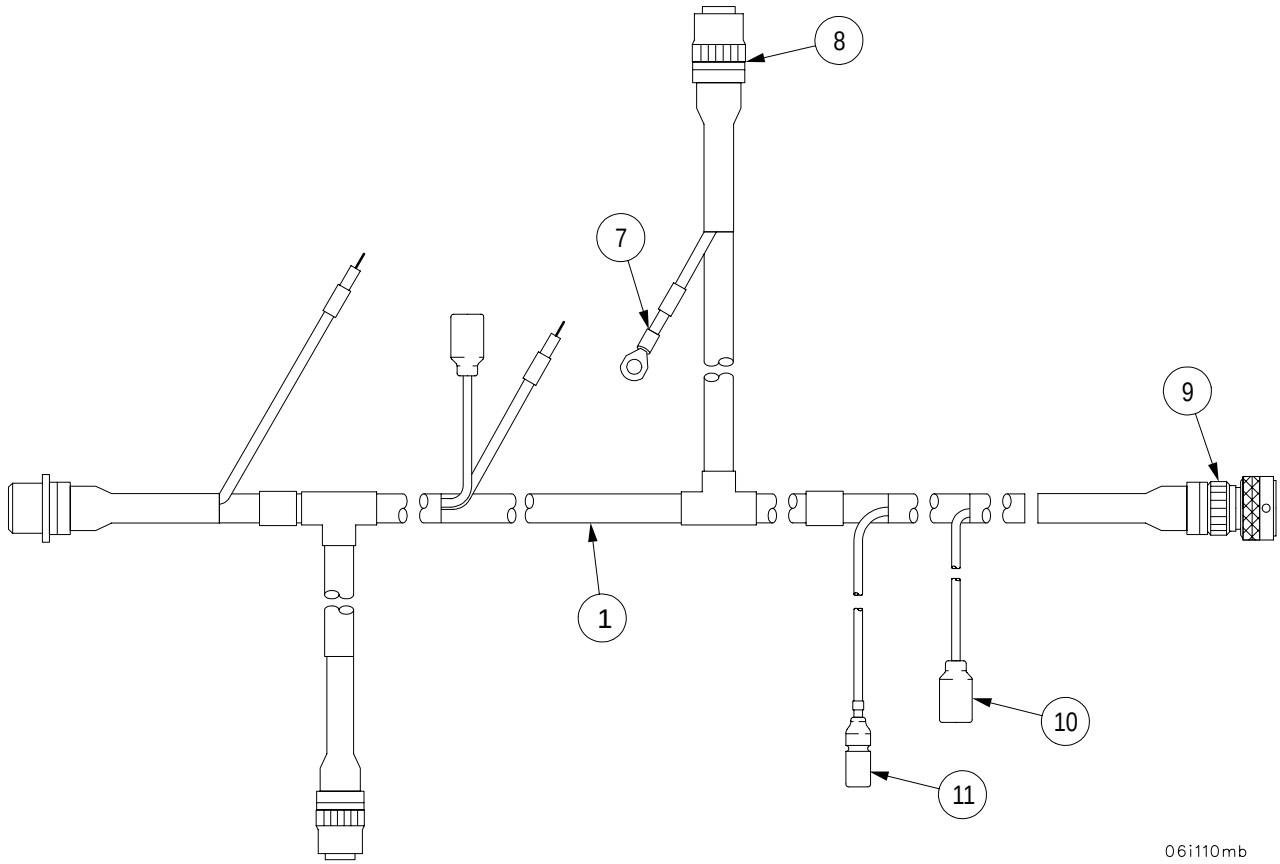
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	4W127 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
11	Wire 400	Personnel Heater Control Box Assembly	Crew Compartment (Above Oddment Tray)
10	Wire 54A	Fire Extinguisher Engine Shutoff Switch	Crew Compartment (Above Personnel Heater Control Box Assembly)
9	Connector P4	Rear Bulkhead Connector J1	Crew Compartment (Rear Bulkhead)
8	Connector P3	Flasher	Crew Compartment (Behind Gauge Panel)
7	Wire GND	Flasher Mount	Crew Compartment (Behind Gauge Panel)

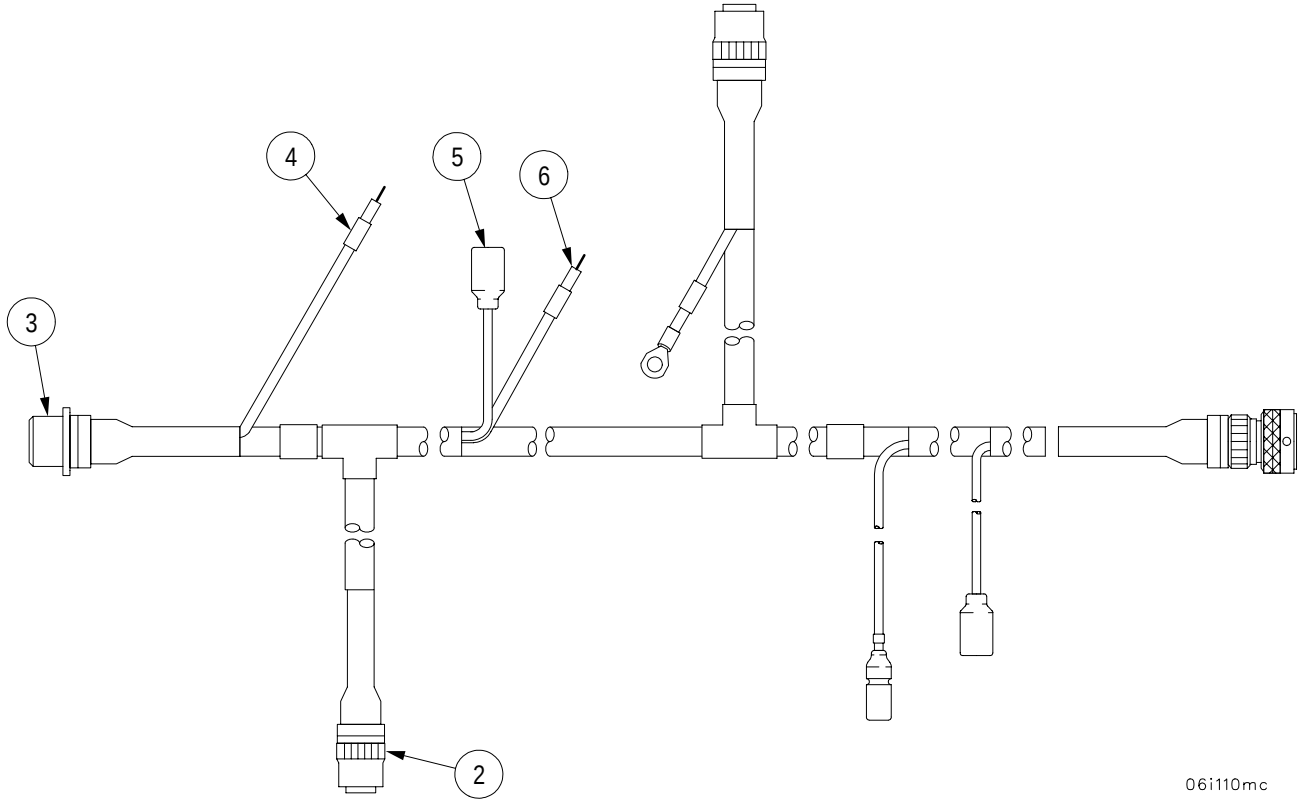


WIRING HARNESS 4W127 REPLACEMENT - CONTINUED 0324 00

Installation-Continued

3. After installation of items 4 and 6, apply adhesive into their cavity.

Item No.	4W127 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
6	Wire 461	Turn Signal Lamp Assembly	Front of Vehicle (Driver's Side)
5	Wire 20	Wiring Harness 4W107 Wire 20	Crew Compartment (Driver's Area)
4	Wire 460	Turn Signal Lamp Assembly	Front of Vehicle (Mechanic's Side)
3	Connector P2	Switch Panel Assembly	Crew Compartment (Driver's Area)
2	Connector P1	Directional Signal Control Assembly	Crew Compartment (Driver's Area)



NOTE

FOLLOW-ON MAINTENANCE:
Install main switch panel (WP 0242 00)
Install gauge panel (WP 0243 00)

END OF TASK

WIRING HARNESS 4W136 REPLACEMENT 0325 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools
General mechanic's tool kit
(item 1, WP 0717 00)

Materials/Parts
Lockwashers (7) (item 58, WP 0718 00)
Grommet (item 331, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF
(TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Subfloor plates #13, #16 and #17 opened or removed (WP 0454 00)
Stowage baskets removed from beneath subfloor plate #18 (WP 0465 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

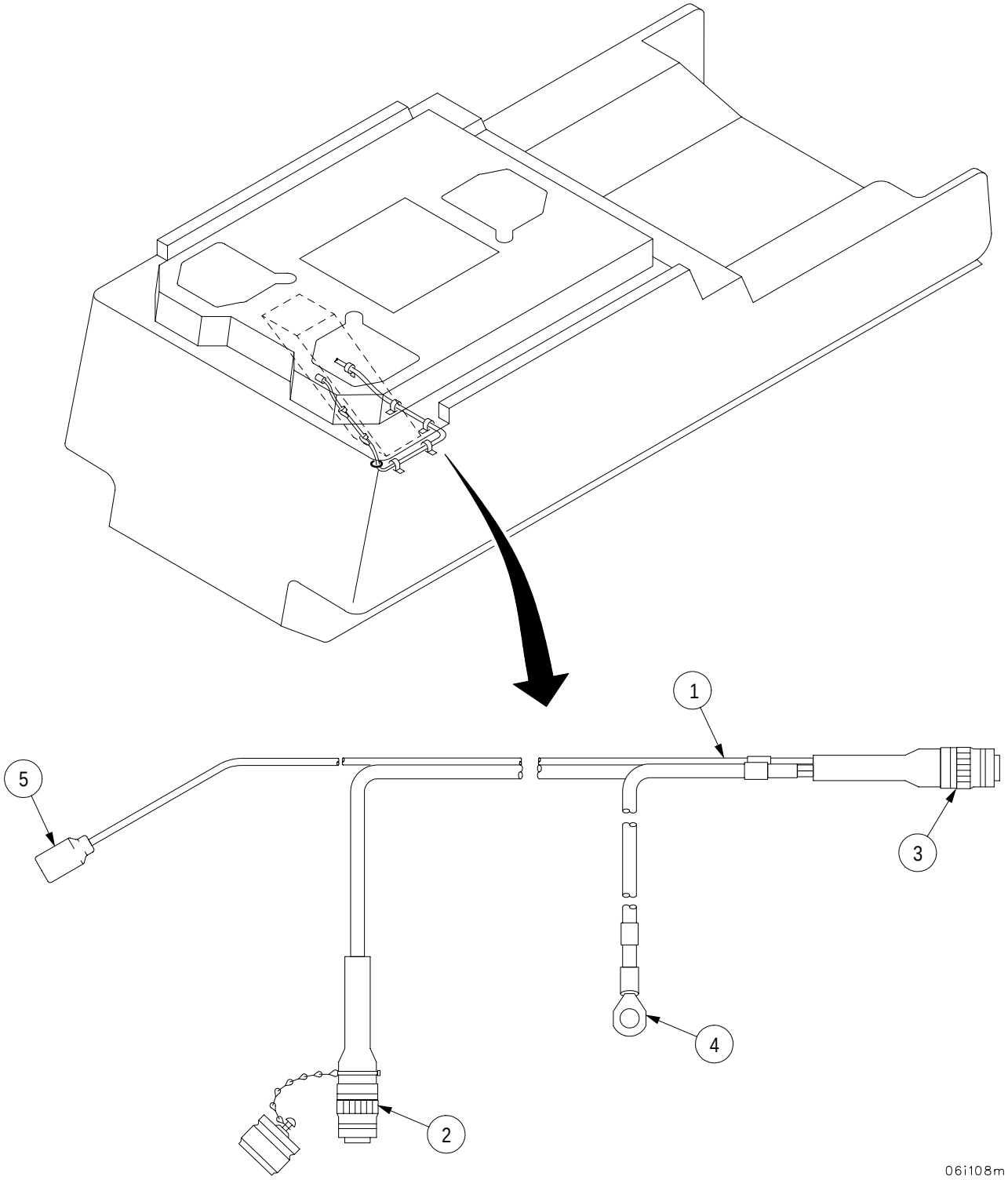
Retain attaching hardware securing terminal T1 to bilge pump circuit breaker.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W136 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Bilge Pump (If Deep Water Fording Kit Is Installed)	Beneath Subfloor
3	Connector P2	Bilge Pump Relay	Beneath Subfloor
4	Terminal T1	Bilge Pump Circuit Breaker	Beneath Subfloor
5	Wire 450B	Wiring Harness 4W153 Wire 450B	Crew Compartment (Behind Switch Panel)

WIRING HARNESS 4W136 REPLACEMENT - CONTINUED 0325 00

Removal-Continued



WIRING HARNESS 4W136 REPLACEMENT - CONTINUED 0325 00

Removal-Continued

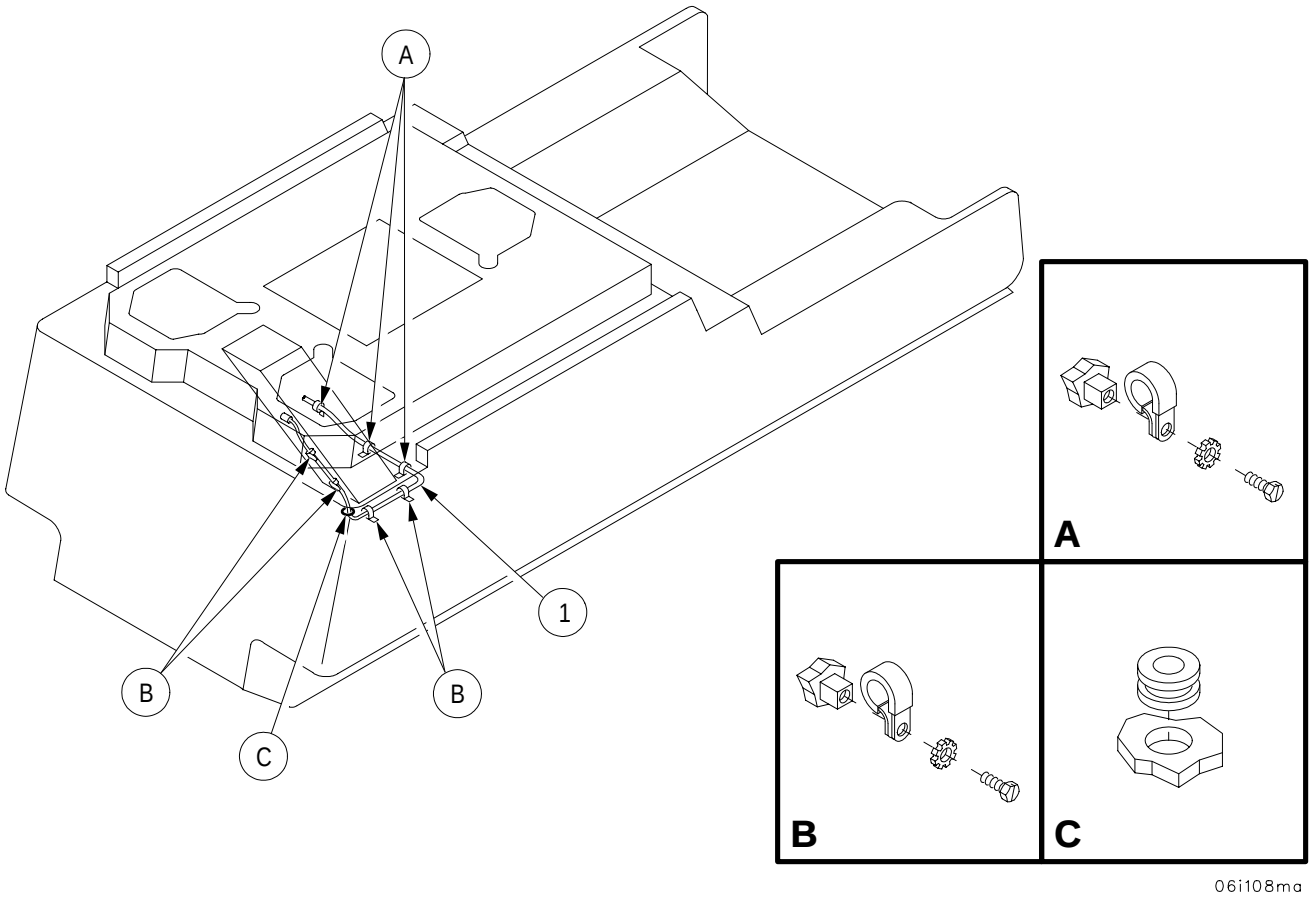
2. Remove straps, clamps, attaching hardware and lockwashers (A and B), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Remove and discard grommet (C).
5. Inspect parts for damage and replace as required.

Installation

NOTE

Replacement grommet may need to be split before installation.

1. Install new grommet (C) in subfloor plate.
2. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A and B), as shown in illustration.



WIRING HARNESS 4W136 REPLACEMENT - CONTINUED 0325 00

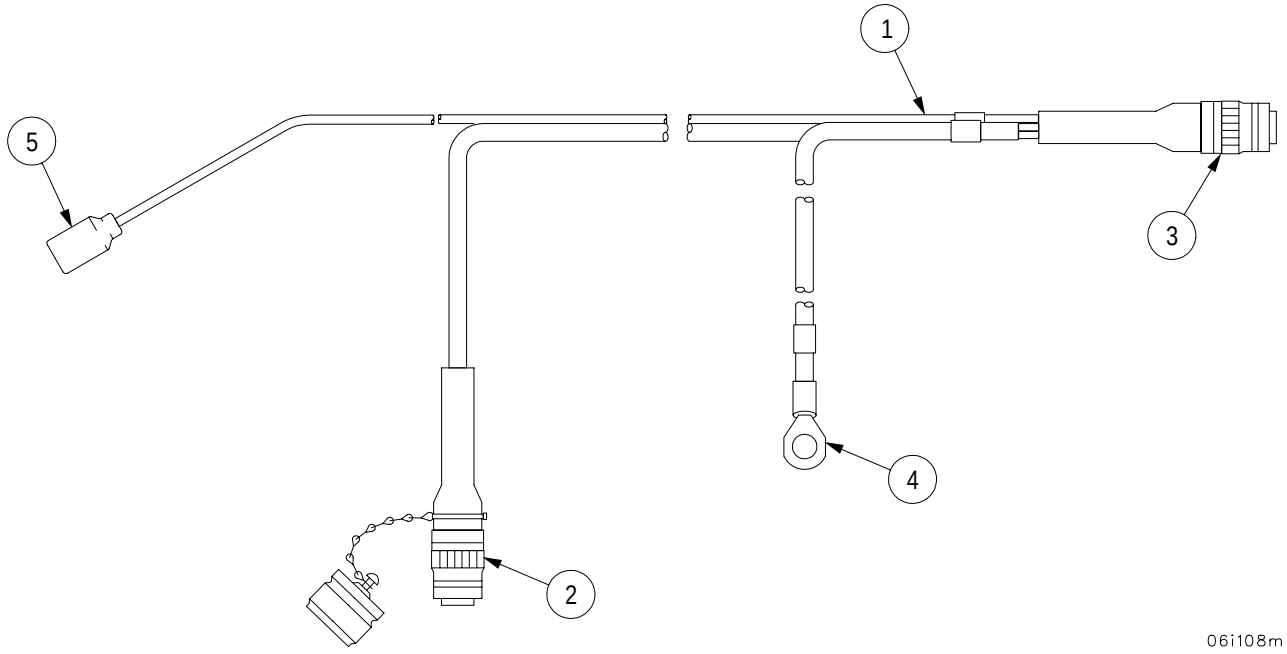
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

3. Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	4W136 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
5	Wire 450B	Wiring Harness 4W153 Wire 450B	Crew Compartment (Behind Switch Panel)
4	Terminal T1	Bilge Pump Circuit Breaker	Beneath Subfloor
3	Connector P2	Bilge Pump Relay	Beneath Subfloor
2	Connector P1	Bilge Pump (If Deep Water Fording Kit Is Installed)	Beneath Subfloor



NOTE

FOLLOW-ON MAINTENANCE:
Install stowage baskets beneath subfloor plate #18 (WP 0465 00)
Close or install subfloor plates #13, #16 and #17 (WP 0454 00)
Connect battery power (WP 0256 00)

END OF TASK

LEAD ASSEMBLY 4W140 REPLACEMENT 0326 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

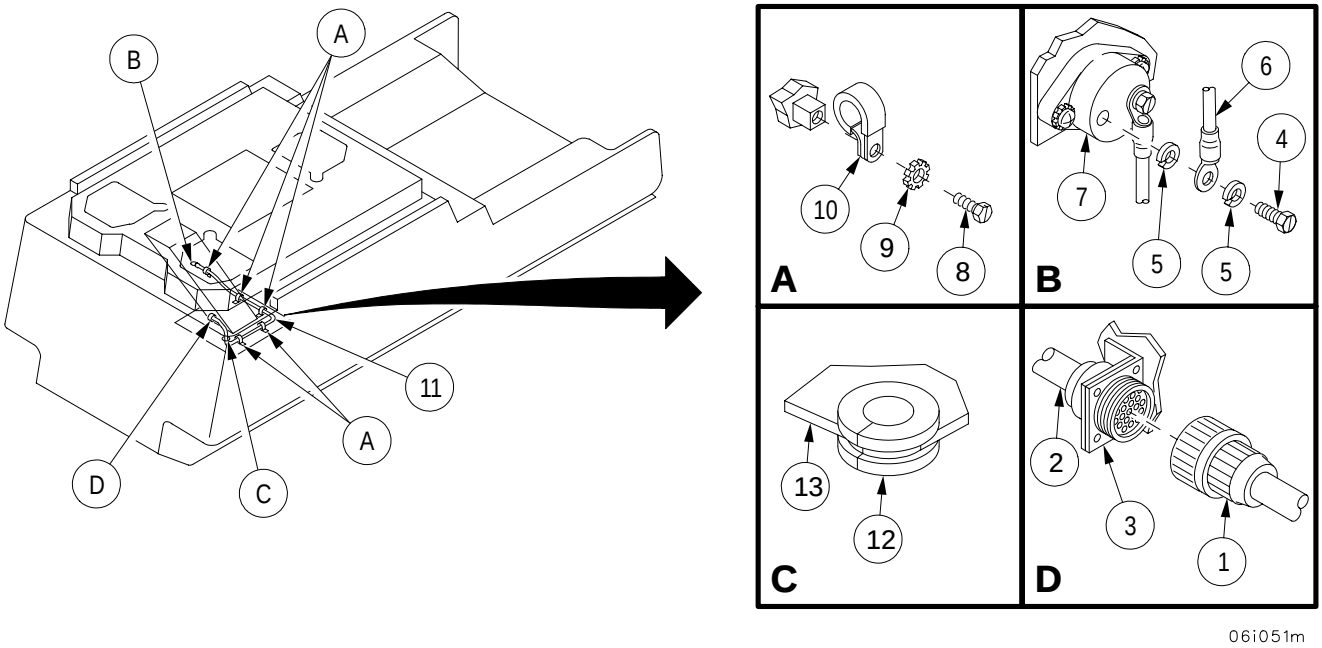
Materials/Parts
Lockwashers (3) (item 132, WP 0718 00)
Lockwashers (5) (item 58, WP 0718 00)
Grommet (item 331, WP 0718 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Subfloor plate #13 removed (WP 0454 00)
Subfloor plates #17 and #18 opened (WP 0454 00)
Stowage baskets #2, #6 and #7 removed (WP 0465 00)

References
TM 9-2350-292-10

Removal

1. Disconnect lead assembly 4W140 connector P1 (1) from wiring harness 4W100 connector J2 (2) at mounting bracket (3).
2. Remove screw (4), two lockwashers (5) and lead assembly 4W140 450A (6) from circuit breaker (7). Discard lockwashers.
3. Remove five screws (8), five lockwashers (9) and five cable clamps (10). Discard lockwashers.
4. Remove lead assembly 4W140 (11) and grommet (12) from the cable chute base subfloor plate (13). Discard grommet.
5. Inspect parts for damage and replace as required.



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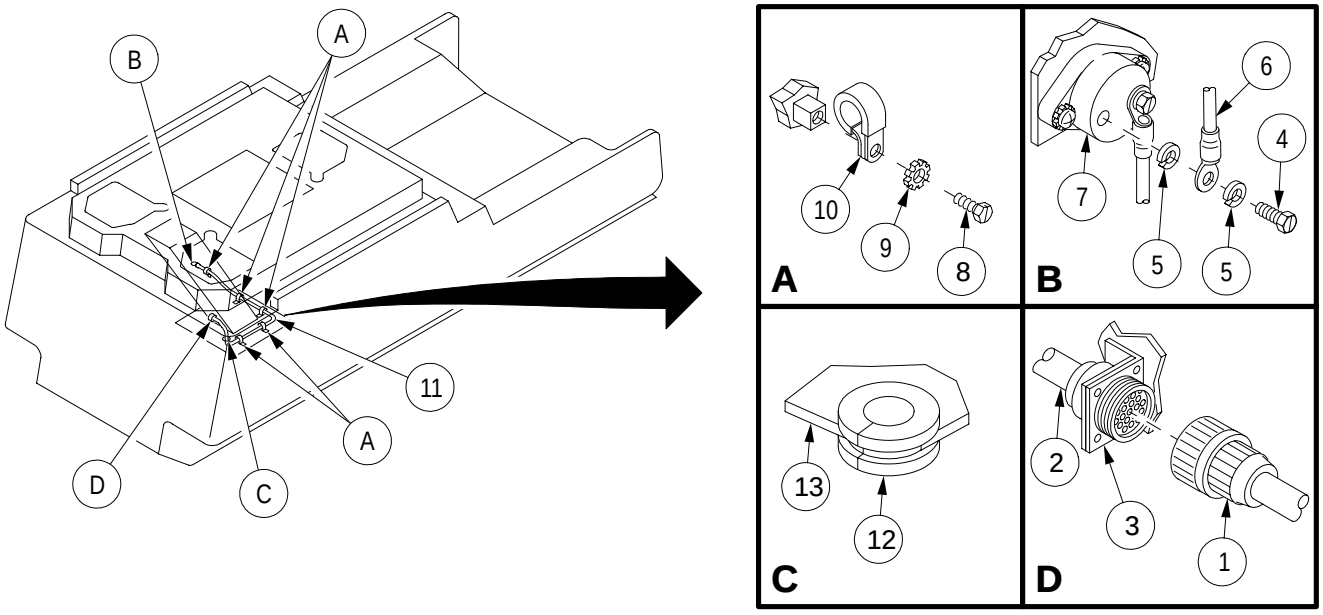
LEAD ASSEMBLY 4W140 REPLACEMENT - CONTINUED 0326 00

Installation

NOTE

Grommet may require splitting before installation.

1. Install new grommet (12) in cable chute base subfloor plate (13).
2. Place lead assembly 4W140 (11) into mounting position.
3. Connect lead assembly 4W140 450A (6) to circuit breaker (7) with screw (4) and two new lockwashers (5).
4. Connect lead assembly 4W140 connector P1 (1) to wiring harness 4W100 connector J2 (2) at mounting bracket (3).
5. Secure lead assembly 4W140 (11) with five cable clamps (10), five screws (8) and five new lockwashers (9).



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NOTE

FOLLOW-ON MAINTENANCE:
Install stowage baskets #2, #6 and #7 (WP 0465 00)
Install subfloor plates #13 (WP 0454 00)
Close subfloor plates #17 and #18 (WP 0454 00)
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 4W153 REPLACEMENT 0327 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (27) (item 58, WP 0718 00)
Lockwashers (3) (item 9, 0718 00)
Grommet (item 348, 0718 00)
Marker tags (item 49, 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Subfloor plate #18 removed (WP 0454 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

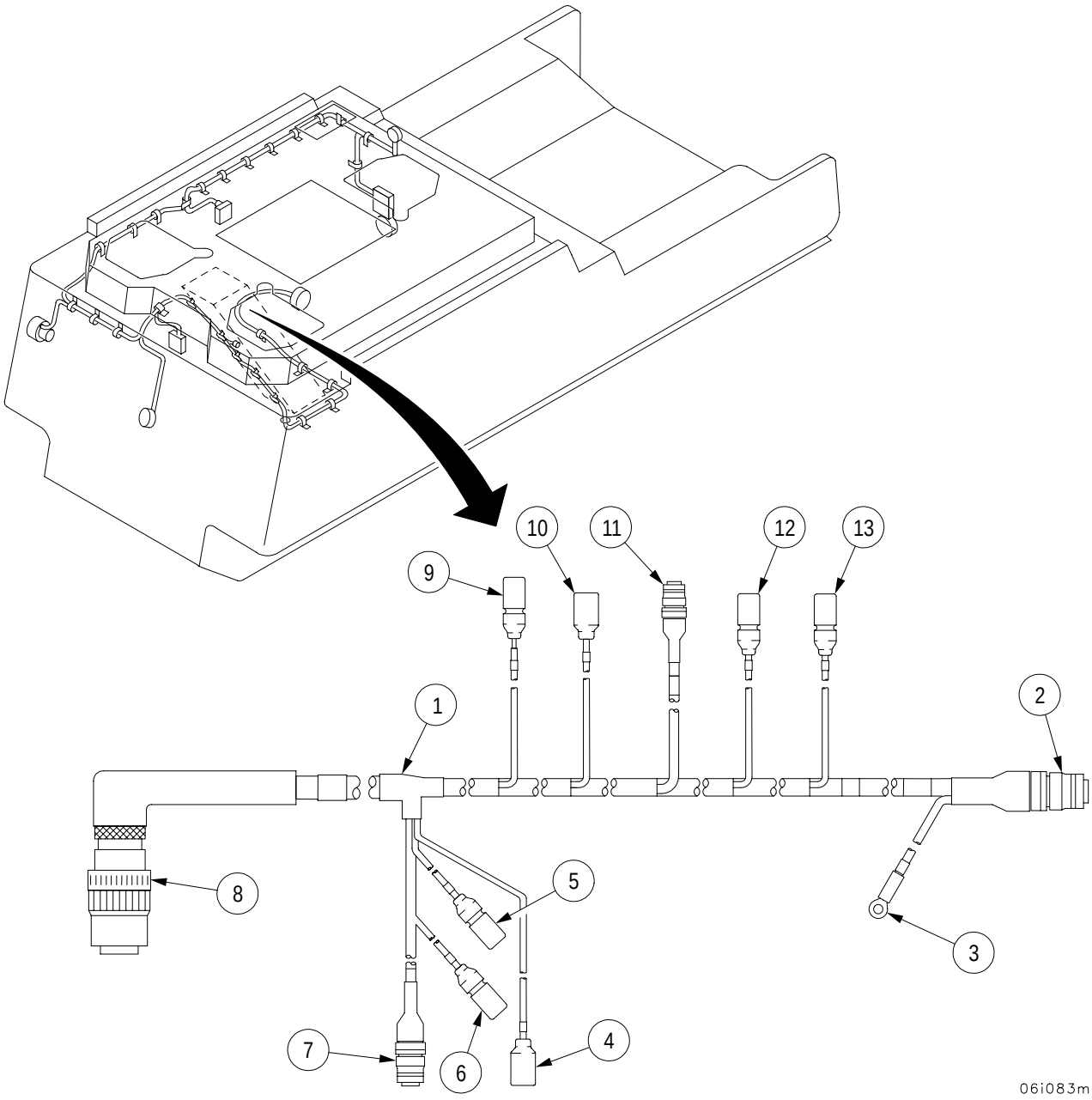
1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W153 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P3	Trouble Light	Crew Compartment (Rear Bulkhead)
3	4W153 GND	Chassis Ground	Crew Compartment (Rear Bulkhead)
4	Wire 518	Main Winch Light	Front of Crew Compartment (Above Main Winch)
5	Wire 450B	Bilge Pump Relay	Crew Compartment (Below Subfloor Plate #18)
6	Wire 10	Wiring Harness 4W108 Wire 10	Crew Compartment (Near PTO/Accessory Panel
7	Connector P2	4W101 Connector J1	Crew Compartment (Near PTO/Accessory Panel)
8	Connector P1	PTO/Accessory Panel	Crew Compartment (Next To Hydraulic Control Panel)
9	Wire 38	Dome Light	Crew Compartment Ceiling
10	Wire 518	Hoist Winch Light	Crew Compartment (Below Subfloor Plate #18)

WIRING HARNESS 4W153 REPLACEMENT - CONTINUED 0327 00

Removal-Continued

Item No.	4W153 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
11	Connector P4	Ventilator Blower Assembly	Crew Compartment (Near Right Side Boom Cylinder)
12	Connector 38	Dome Light	Crew Compartment Ceiling
13	Connector 138	Spot Light	Crew Compartment Ceiling



WIRING HARNESS 4W153 REPLACEMENT - CONTINUED 0327 00

Removal-Continued

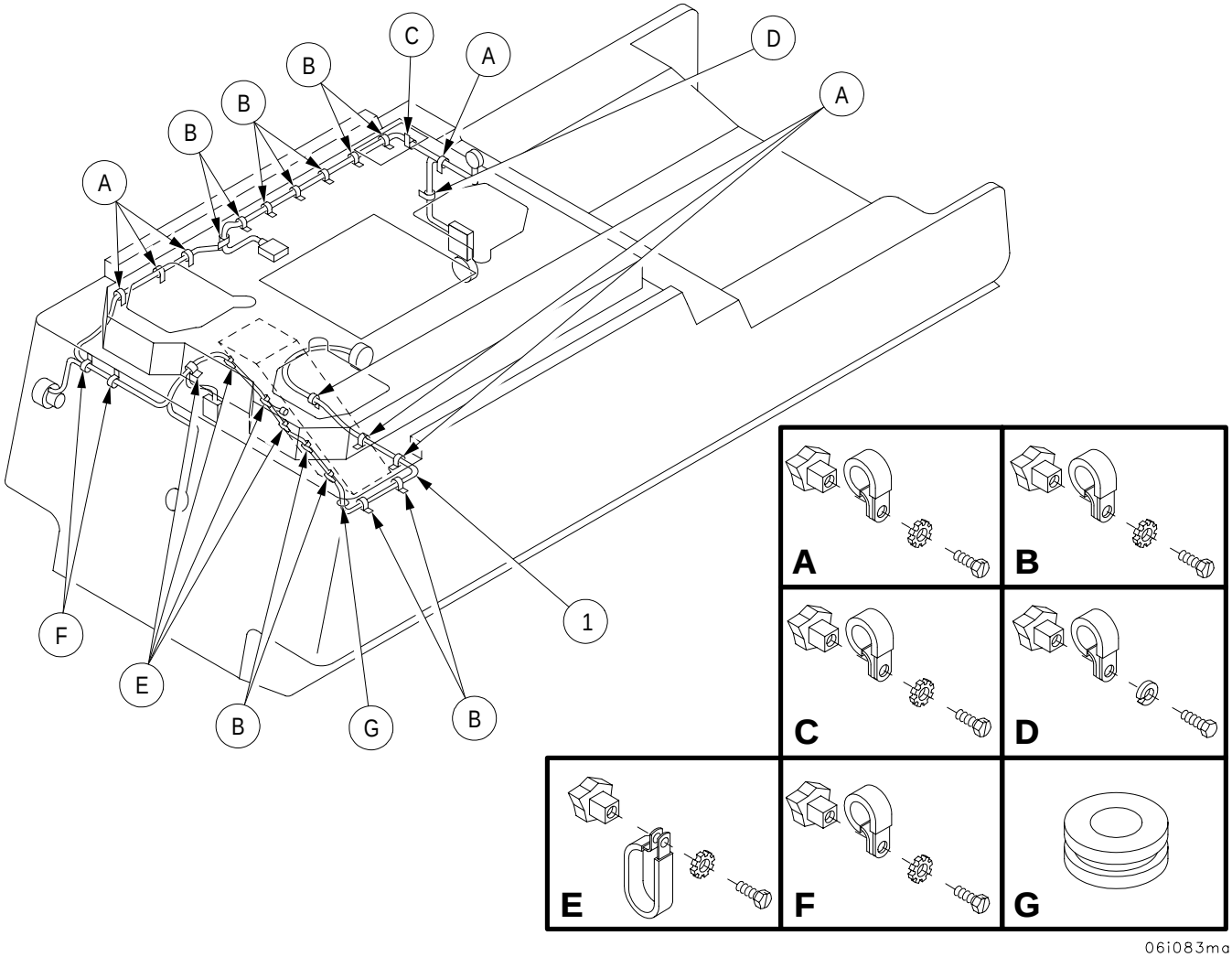
2. Remove grommet, straps, clamps, attaching hardware and lockwashers (A through G), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers and grommet.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

NOTE

Grommet may require splitting before installation.

1. Install wiring harness (1) in vehicle with new grommet, straps, clamps, attaching hardware and new lockwashers (A through G), as shown in illustration.



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WIRING HARNESS 4W153 REPLACEMENT - CONTINUED 0327 00

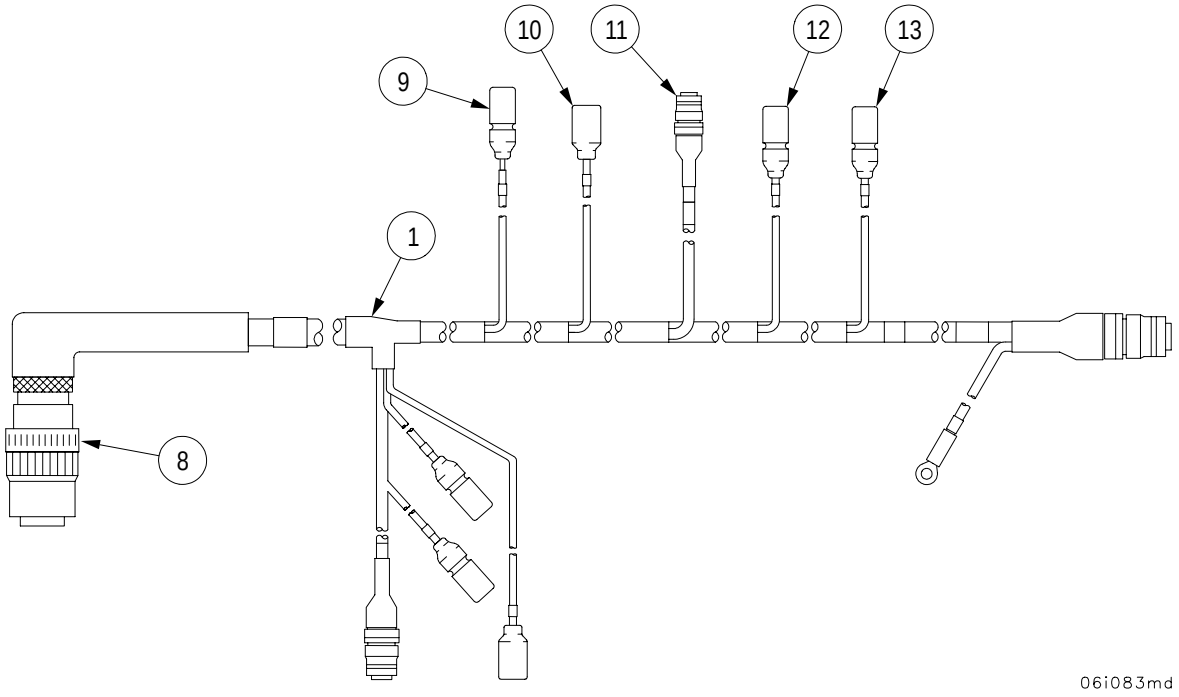
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

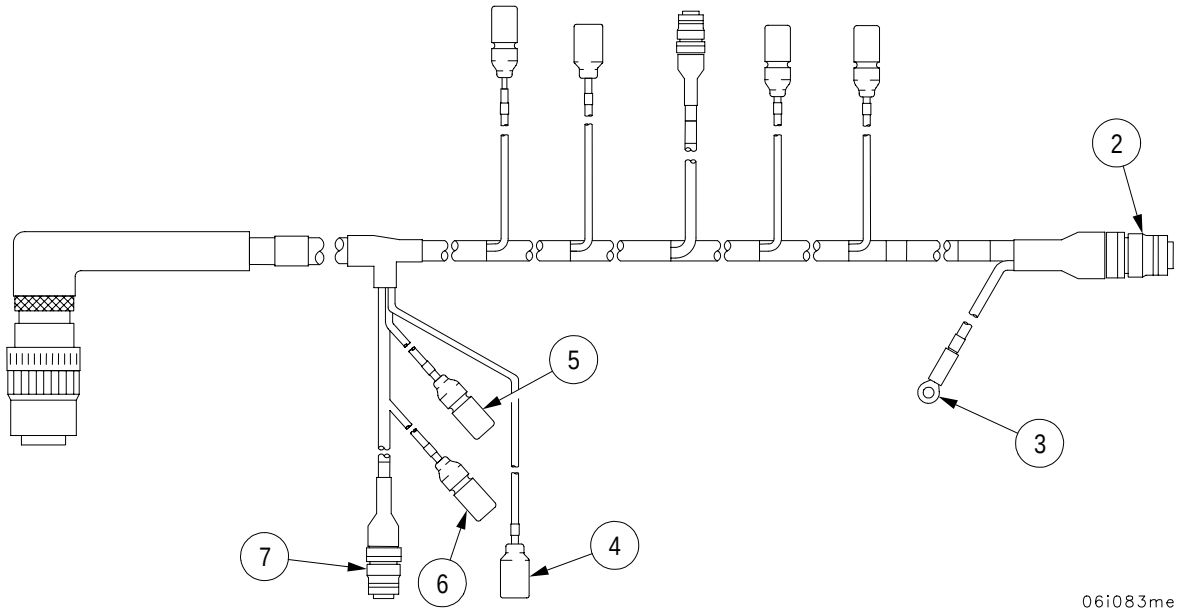
Item No.	4W153 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
13	Connector 138	Spot Light	Crew Compartment Ceiling
12	Connector 38	Dome Light	Crew Compartment Ceiling
11	Connector P4	Ventilator Blower Assembly	Crew Compartment (Near Right Side Boom Cylinder)
10	Wire 518	Hoist Winch Light	Crew Compartment (Below Subfloor Plate #18)
9	Wire 38	Dome Light	Crew Compartment Ceiling
8	Connector P1	PTO/Accessory Panel	Crew Compartment (Next To Hydraulic Control Panel)



WIRING HARNESS 4W153 REPLACEMENT - CONTINUED 0327 00

Installation-Continued

Item No.	4W153 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
7	Connector P2	4W101 Connector J1	Crew Compartment (Near PTO/Accessory Panel)
6	Wire 10	Wiring Harness 4W108 Wire 10	Crew Compartment (Near PTO/Accessory Panel)
5	Wire 450B	Bilge Pump Relay	Crew Compartment (Below Subfloor Plate #18)
4	Wire 518	Main Winch Light	Front of Crew Compartment (Above Main Winch)
3	4W153 GND	Chassis Ground	Crew Compartment (Rear Bulkhead)
2	Connector P3	Trouble Light	Crew Compartment (Rear Bulkhead)



NOTE

FOLLOW-ON MAINTENANCE:
Install subfloor plate #18 (WP 0454 00)
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 4W155 REPLACEMENT 0328 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (24) (item 58, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Subfloor plate #13 removed (WP 0454 00)
Subfloor plate #20 opened (WP 0454 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

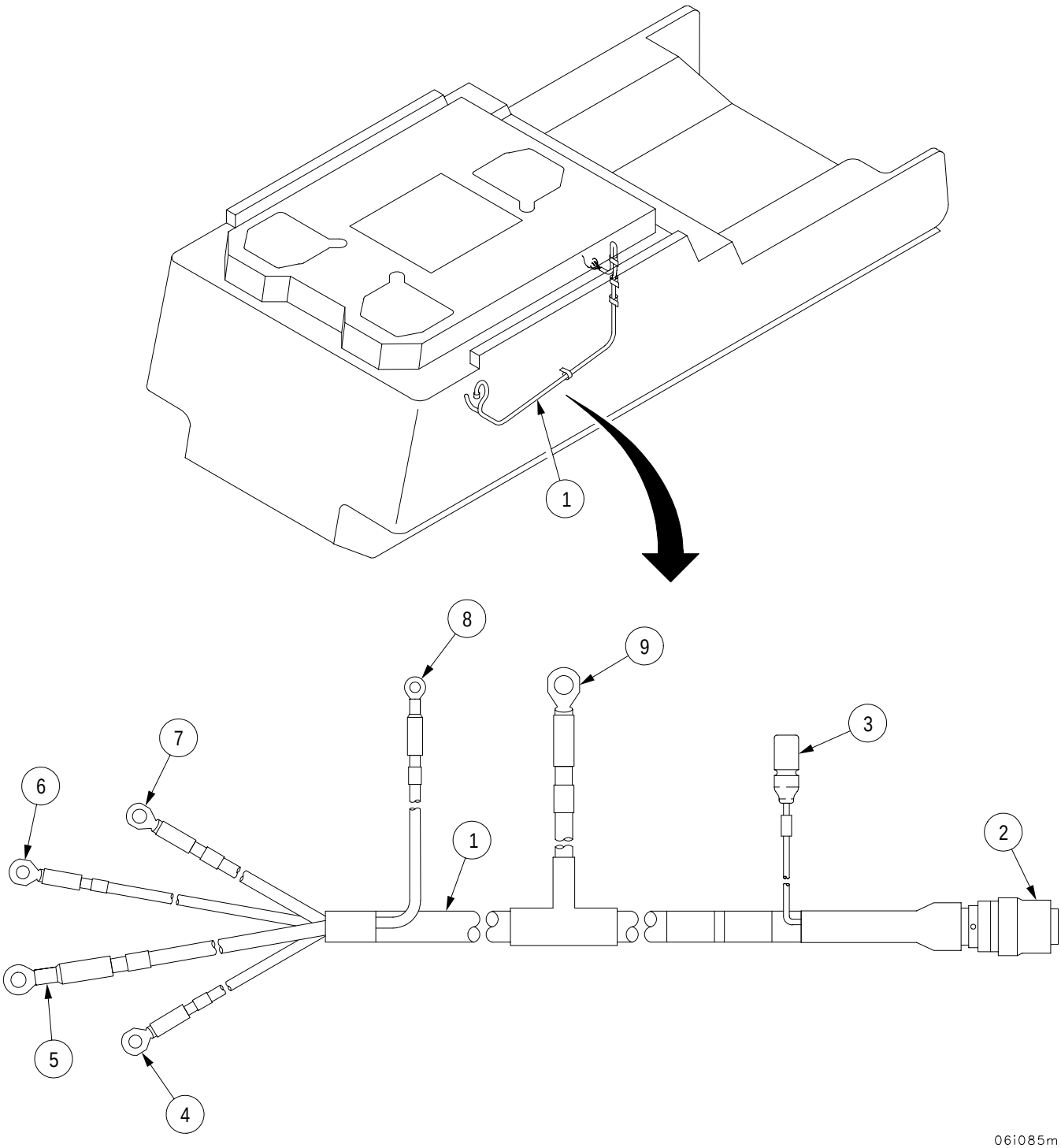
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W155 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Low Brake Pressure Switch	Crew Compartment (Below Subfloor Plate #13)
3	Wire 48	Low Break Pressure Warning Switch (Wire 48)	Crew Compartment (Below Subfloor Plate #13)
4	Wire 590	Brake Relay Terminal 86	Crew Compartment (Rear Bulkhead)
5	Wire 48	Brake Relay Terminal 88A	Crew Compartment (Rear Bulkhead)
6	Wire 578	Brake Relay Terminal 85	Crew Compartment (Rear Bulkhead)
7	Wire 48	Brake Relay Terminal 88A	Crew Compartment (Rear Bulkhead)
8	Wire 578	Chassis Ground	Crew Compartment (Rear Bulkhead)
9	Wire 48	Brake Relay Circuit Breaker (Top)	Crew Compartment (Rear Bulkhead)

WIRING HARNESS 4W155 REPLACEMENT - CONTINUED 0328 00

Removal-Continued



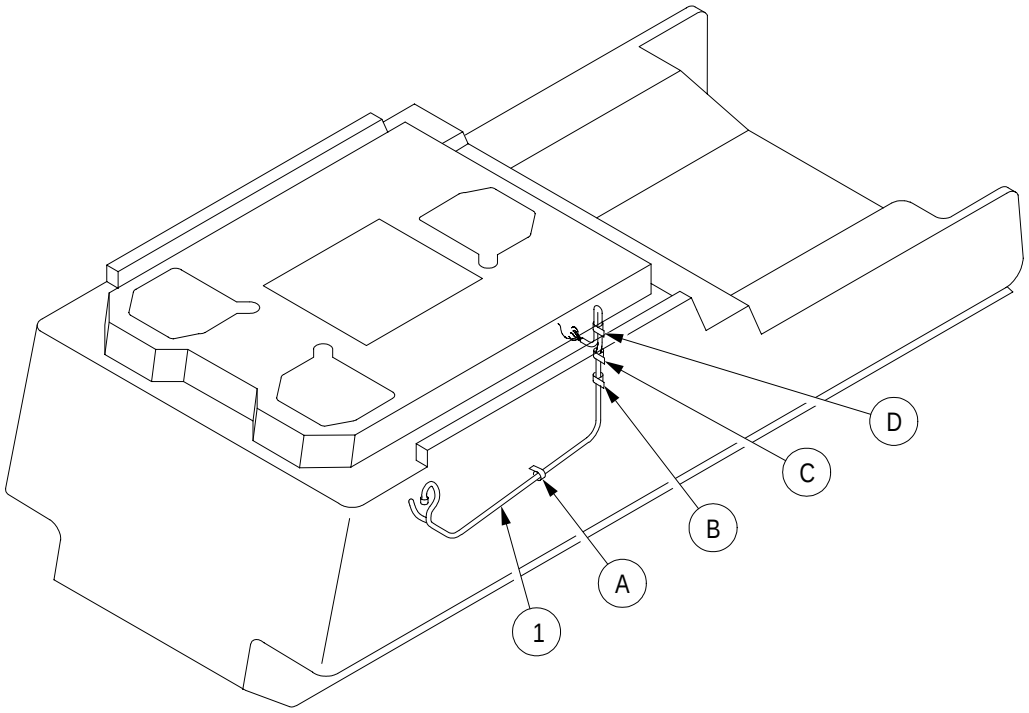
WIRING HARNESS 4W155 REPLACEMENT - CONTINUED 0328 00

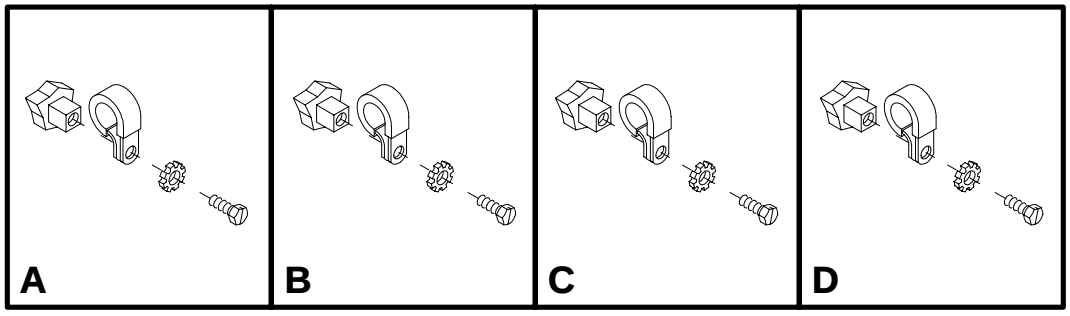
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through D), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through D), as shown in illustration.





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WIRING HARNESS 4W155 REPLACEMENT - CONTINUED 0328 00

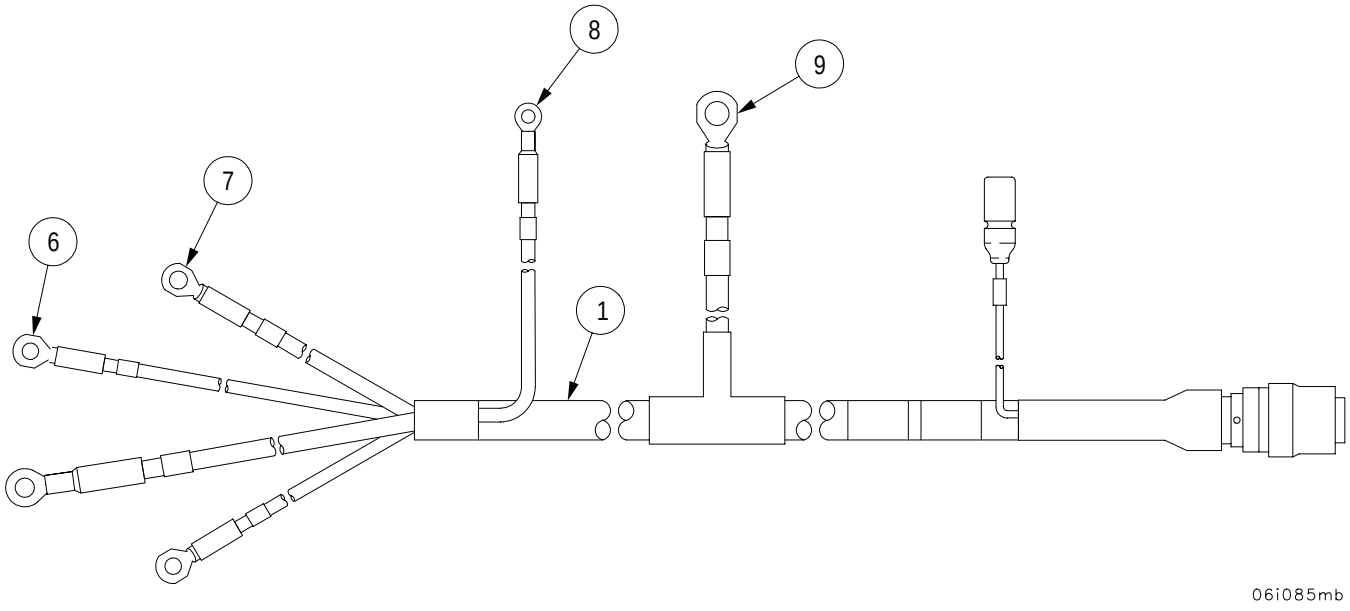
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

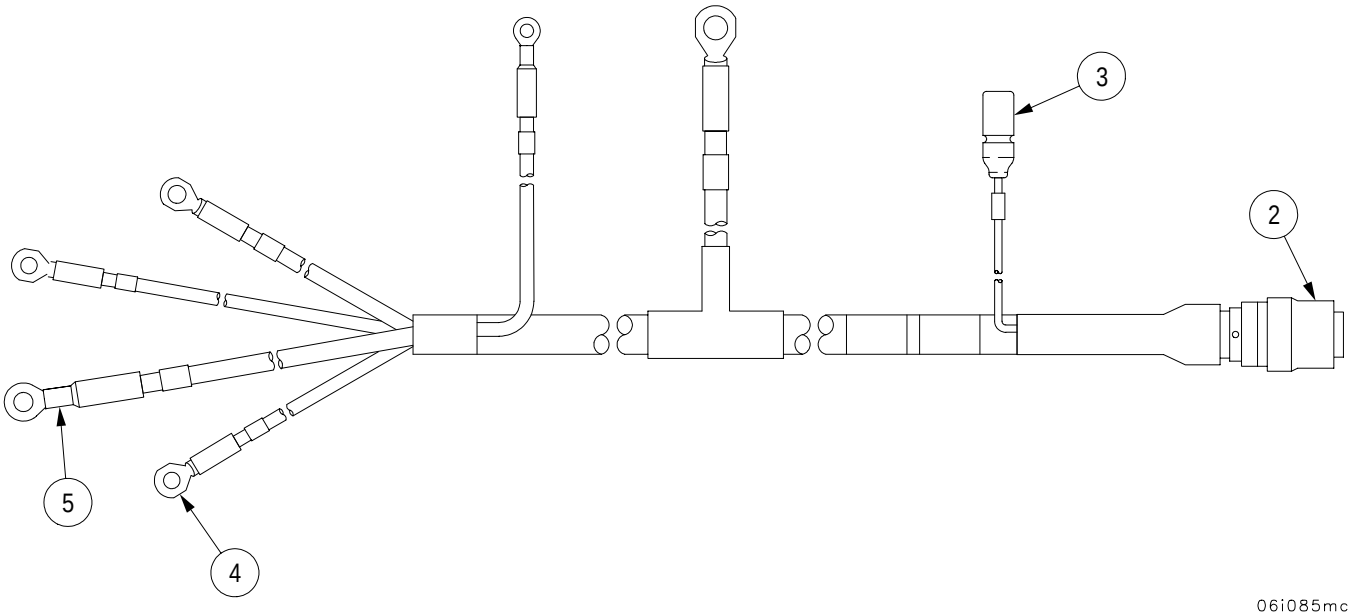
Item No.	4W155 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
9	Wire 48	Brake Relay Circuit Breaker (Top)	Crew Compartment (Rear Bulkhead)
8	Wire 578	Chassis Ground	Crew Compartment (Rear Bulkhead)
7	Wire 48	Brake Relay Terminal 88A	Crew Compartment (Rear Bulkhead)
6	Wire 578	Brake Relay Terminal 85	Crew Compartment (Rear Bulkhead)



WIRING HARNESS 4W155 REPLACEMENT - CONTINUED 0328 00

Installation-Continued

Item No.	4W155 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
5	Wire 48	Brake Relay Terminal 88A	Crew Compartment (Rear Bulkhead)
4	Wire 590	Brake Relay Terminal 86	Crew Compartment (Rear Bulkhead)
3	Wire 48	Low Break Pressure Warning Switch (Wire 48)	Crew Compartment (Below Subfloor Plate #13)
2	Connector P1	Low Brake Pressure Switch	Crew Compartment (Below Subfloor Plate #13)



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NOTE

FOLLOW-ON MAINTENANCE:
Install subfloor plate #13 (WP 0454 00)
Close subfloor plate #20 (WP 0454 00)
Connect battery power (WP 0256 00)

END OF TASK

LEAD ASSEMBLY 4W158 REPLACEMENT 0329 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (6) (item 58, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Main switch panel removed (WP 0242 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

1. Disconnect connector of wire 25 (1) from automotive horn (2). Cut off and discard wire connector (1) from lead assembly (3).
2. Remove screws (4) from cable clamp (5) to disconnect attached shield wires (6).
3. Loosen shell of cable clamp (5) from hull and slide loose end of lead assembly (3) through grommet of cable clamp (5).
4. Disconnect wire 25 (7) from horn button switch wire 25 (8).
5. Remove two screws (9), two lockwashers (10) and two clamps (11). Discard lockwashers.
6. Remove three screws (12), three lockwashers (13) and three clamps (14). Discard lockwashers.
7. Remove screw (15), lockwasher (16) and clamp (17). Discard lockwasher.
8. Inspect parts for damage and replace as required.

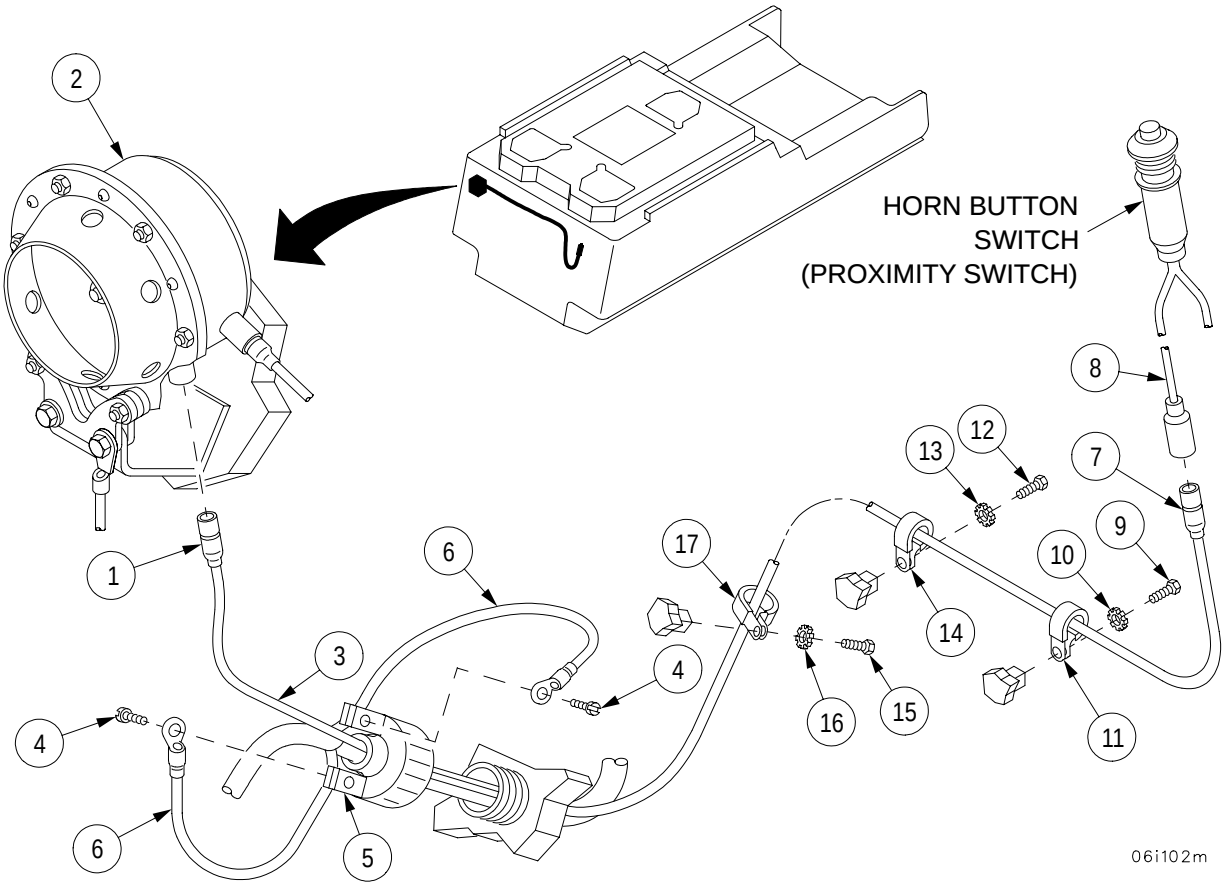
Installation

1. Install loose end of lead assembly (3) through grommet of cable clamp (5). Tighten shell of cable clamp (5) on hull. Install connector of wire 25 (1) on lead assembly (3) in accordance with Wiring Harness And Cable Repair (WP 0290 00).
2. Connect connector of wire 25 (1) to automotive horn (2).

LEAD ASSEMBLY 4W158 REPLACEMENT - CONTINUED 0329 00

Installation-Continued

3. Connect shield wires (6) to cable clamp (5) with two screws (4).
4. Install two clamps (11) with two screws (9) and two new lockwashers (10).
5. Install three clamps (14) with three screws (12) and three new lockwashers (13).
6. Install clamp (17) with screw (15) and new lockwasher (16).
7. Connect wire 25 (7) to horn button switch wire 25 (8).



NOTE

FOLLOW-ON MAINTENANCE:
Install main switch panel (WP 0242 00)

END OF TASK

WIRING HARNESS 4W617 REPLACEMENT 0330 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Hydraulic control panel removeD (WP 0245 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

The following legend identifies attachment points for each connection.

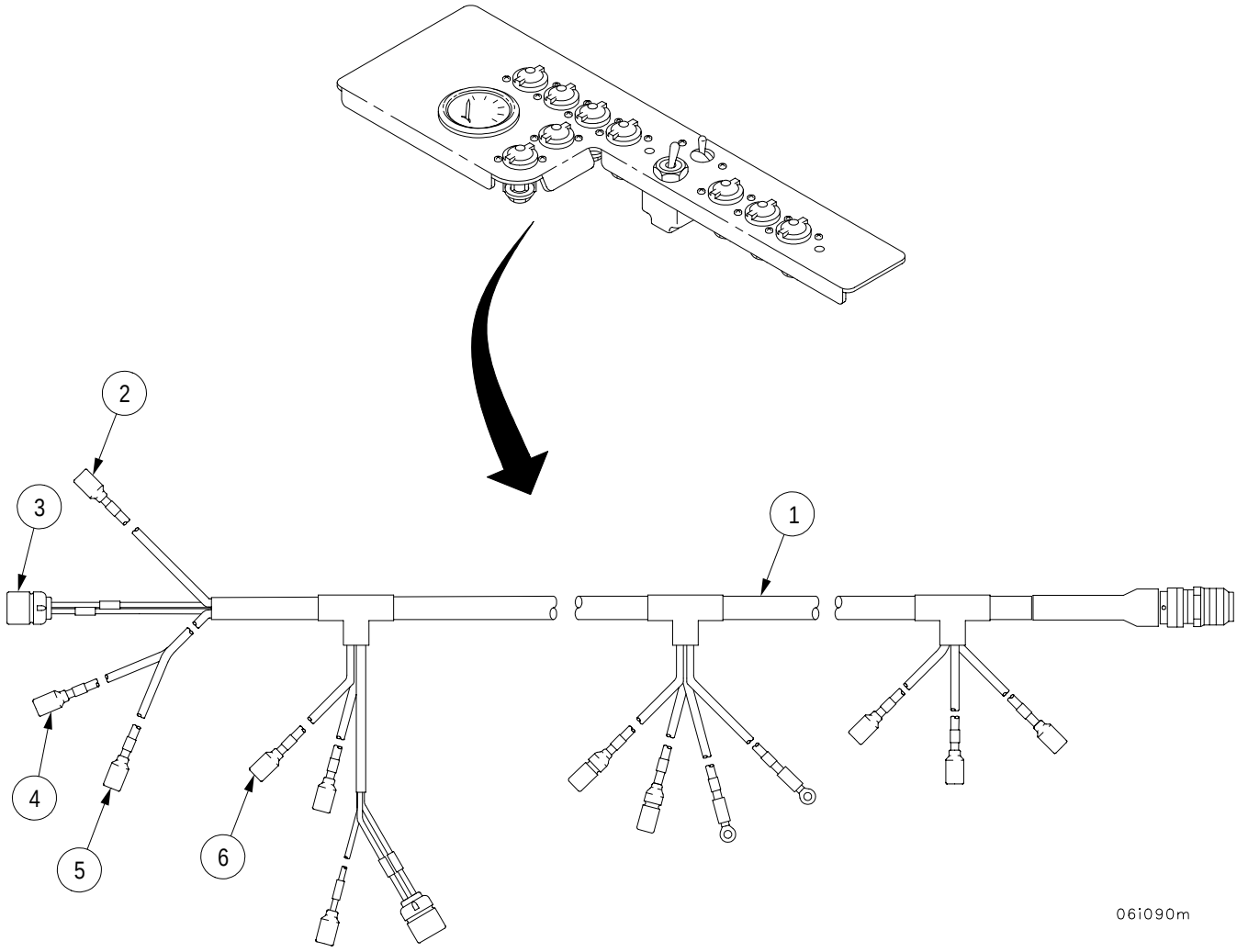
Retain attaching hardware for Winch Override switch to aid in installation.

1. Remove wiring harness (1) from hydraulic control panel, at the following attachment points:

Item No.	4W617 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Wire 663	Hydraulic Oil High Temperature Lamp Assembly	Hydraulic Control Panel
3	Wire 354/354A	Hydraulic Oil Low Level Warning Light	Hydraulic Control Panel
4	Wire 664	Hydraulic Oil Temperature Indicator (Right Side)	Hydraulic Control Panel
5	Wire 664A	Hydraulic Oil Temperature Indicator (Left Side)	Hydraulic Control Panel
6	Wire 357	Hydraulic Oil Charge Filter Lamp Assembly	Hydraulic Control Panel

WIRING HARNESS 4W617 REPLACEMENT - CONTINUED 0330 00

Removal-Continued

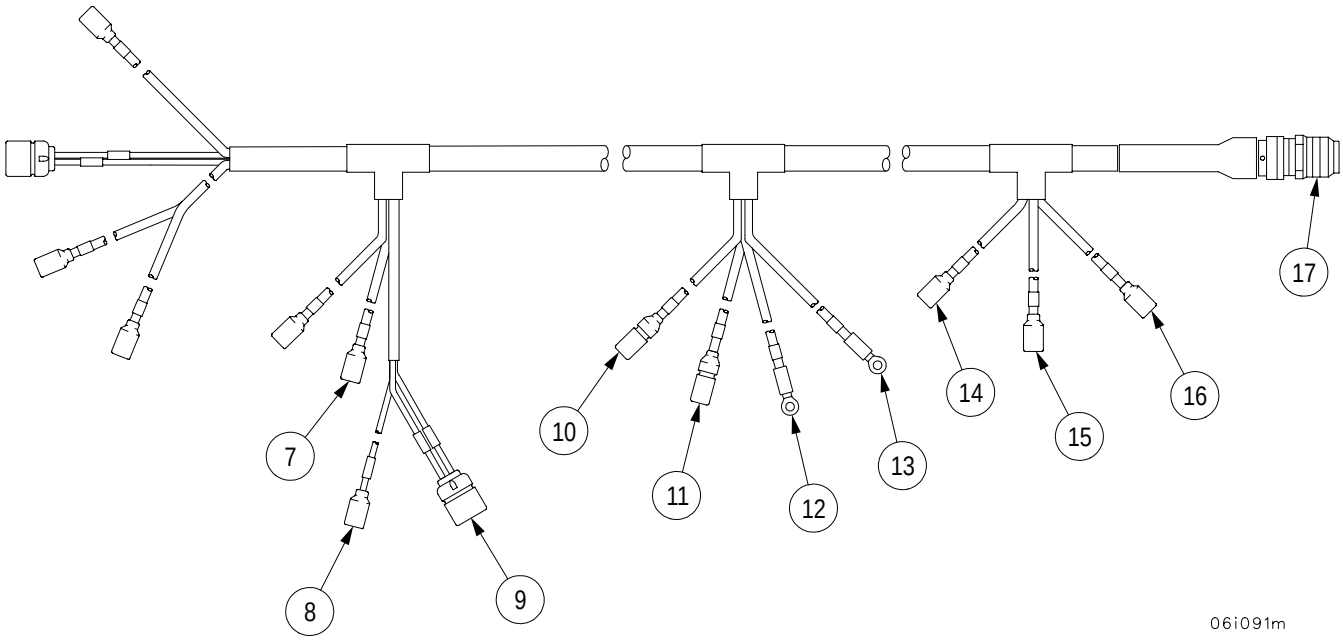


WIRING HARNESS 4W617 REPLACEMENT - CONTINUED 0330 00

Removal-Continued

Item No.	4W617 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
7	Wire 358	Hydraulic Oil Return Filter Lamp Assembly	Hydraulic Control Panel
8	Wire 591	Low Brake Pressure Warning Lamp Assembly	Hydraulic Control Panel
9	Wire 310/10	Transmission Filter Warning Light	Hydraulic Control Panel
10	Wire 10	Winch Test Switch Terminal 1	Hydraulic Control Panel
11	Wire 359	Winch Test Switch Terminal 2	Hydraulic Control Panel
12	Wire 359	Winch Override Switch	Hydraulic Control Panel
13	Wire 359B	Winch Override Switch	Hydraulic Control Panel
14	Wire 375	Payout Limit Malfunction Lamp Assembly	Hydraulic Control Panel
15	Wire 360	Level Winder Malfunction Lamp Assembly	Hydraulic Control Panel
16	Wire 361	Winch Drum Malfunction Lamp Assembly	Hydraulic Control Panel
17	J1 Connector	P2 Connector Wire 4W618	Hydraulic Control Panel

2. Inspect parts for damage and replace as required.



WIRING HARNESS 4W617 REPLACEMENT - CONTINUED 0330 00

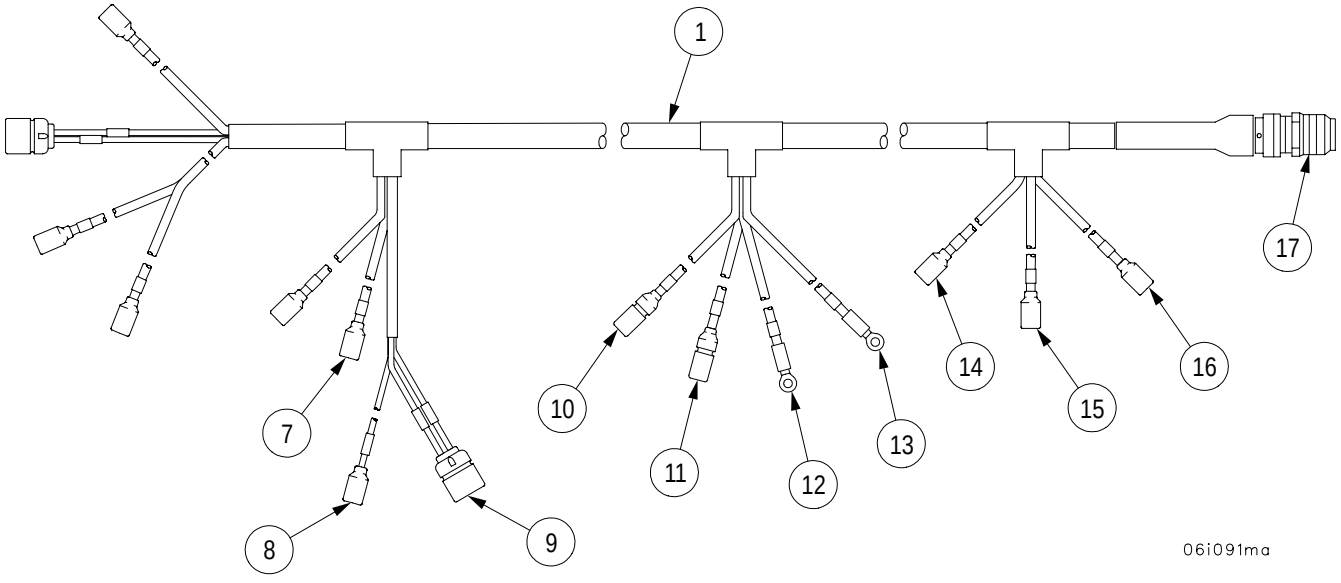
Installation

NOTE

The following legend identifies attachment points for each connection.

Install wiring harness (1) on hydraulic control panel, at the following attachment points:

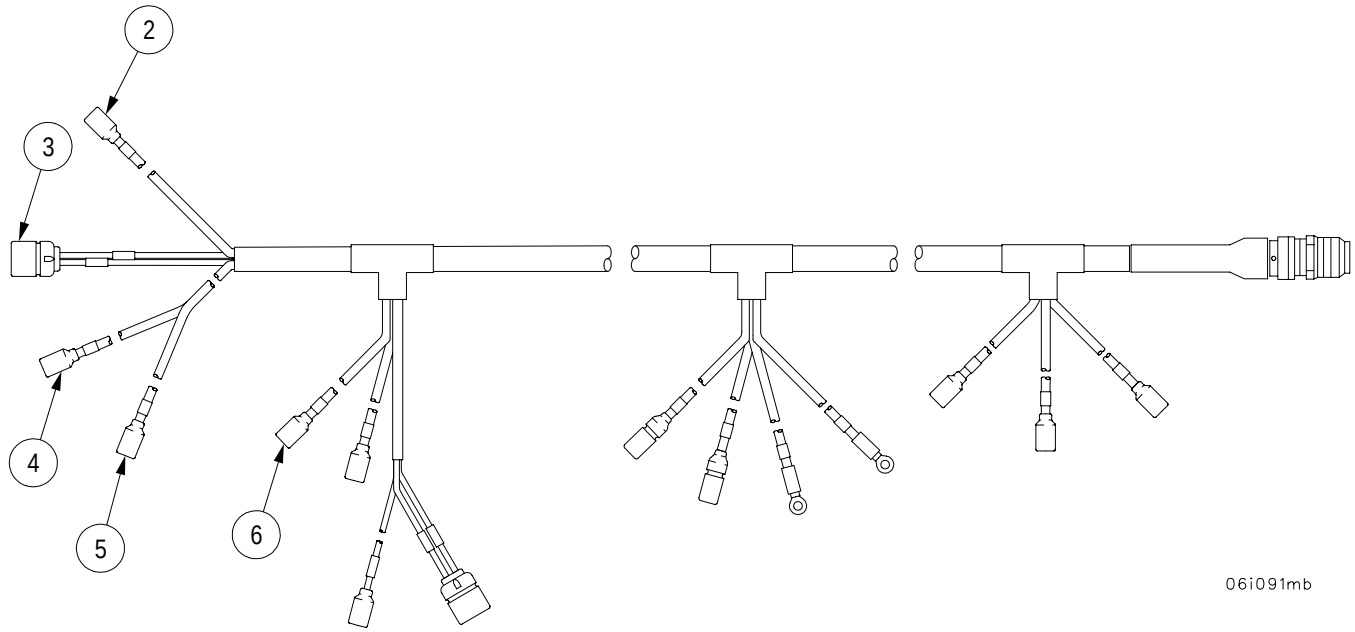
Item No.	4W617 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
17	J1 Connector	P2 Connector Wire 4W618	Hydraulic Control Panel
16	Wire 361	Winch Drum Malfunction Lamp Assembly	Hydraulic Control Panel
15	Wire 360	Level Winder Malfunction Lamp Assembly	Hydraulic Control Panel
14	Wire 375	Payout Limit Malfunction Lamp Assembly	Hydraulic Control Panel
13	Wire 359B	Winch Override Switch	Hydraulic Control Panel
12	Wire 359	Winch Override Switch	Hydraulic Control Panel
11	Wire 359	Winch Test Switch Terminal 2	Hydraulic Control Panel
10	Wire 10	Winch Test Switch Terminal 1	Hydraulic Control Panel
9	Wire 310/10	Transmission Filter Warning Light	Hydraulic Control Panel
8	Wire 591	Low Brake Pressure Warning Lamp Assembly	Hydraulic Control Panel
7	Wire 358	Hydraulic Oil Return Filter Lamp Assembly	Hydraulic Control Panel



WIRING HARNESS 4W617 REPLACEMENT - CONTINUED 0330 00

Installation-Continued

Item No.	4W617 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
6	Wire 357	Hydraulic Oil Charge Filter Lamp Assembly	Hydraulic Control Panel
5	Wire 664A	Hydraulic Oil Temperature Indicator (Left Side)	Hydraulic Control Panel
4	Wire 664	Hydraulic Oil Temperature Indicator (Right Side)	Hydraulic Control Panel
3	Wire 354/354A	Hydraulic Oil Low Level Warning Light	Hydraulic Control Panel
2	Wire 663	Hydraulic Oil High Temperature Lamp Assembly	Hydraulic Control Panel



NOTE

FOLLOW-ON MAINTENANCE:
Install hydraulic control panel (WP 0245 00)

END OF TASK

WIRING HARNESS 4W618 REPLACEMENT 0331 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (3) (item 58, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

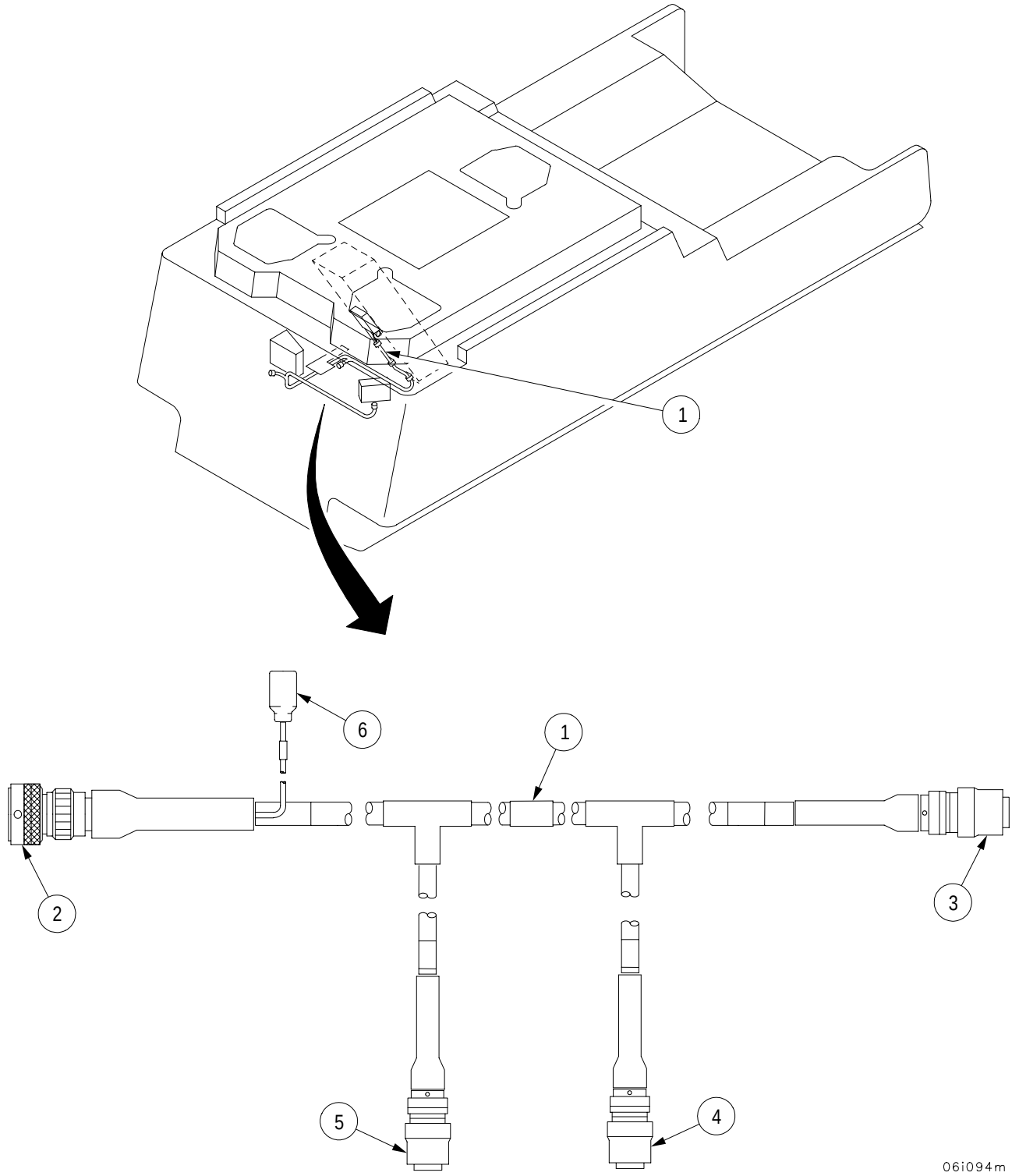
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W618 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Accessory Control Panel Connector J2	Crew Compartment (Accessory Control Panel)
3	Connector P2	Wiring Harness 4W617 Connector J1	Crew Compartment (Hydraulic Control Panel)
4	Connector P3	Wiring Harness 4W100 Connector J6	Crew Compartment (Switch Panel)
5	Connector P4	Wiring Harness 4W115 Connector J1	Crew Compartment (Behind Gauge Panel)
6	Wire 137	Accessory Control Panel Utility Outlet	Crew Compartment (Accessory Control Panel)

WIRING HARNESS 4W618 REPLACEMENT - CONTINUED 0331 00

Removal-Continued



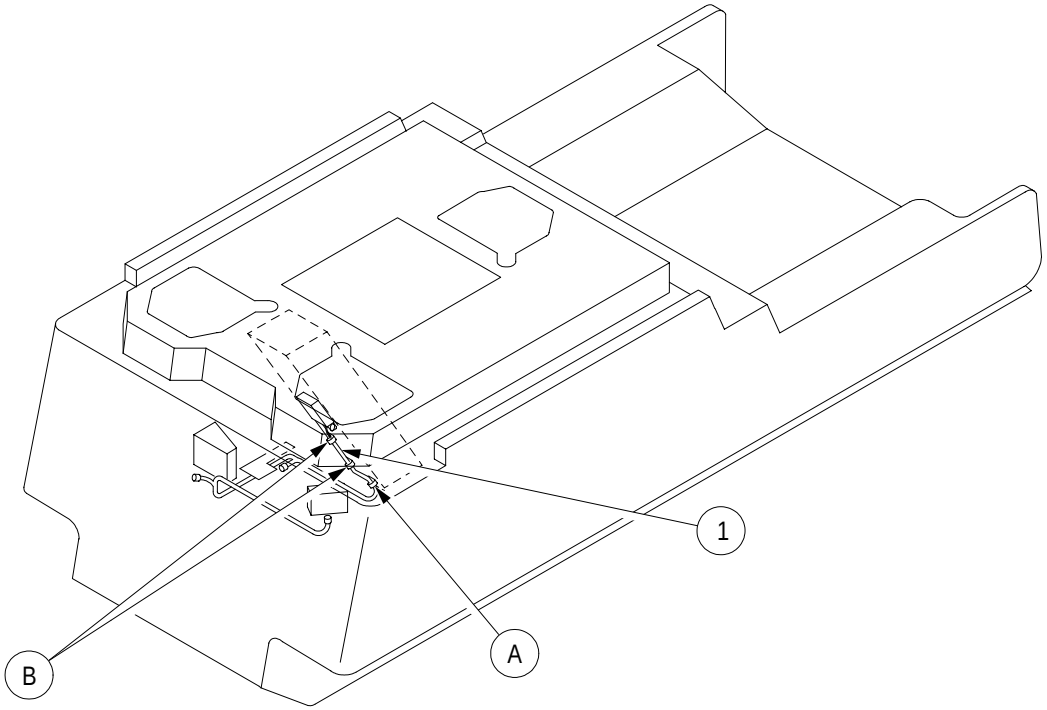
WIRING HARNESS 4W618 REPLACEMENT - CONTINUED 0331 00

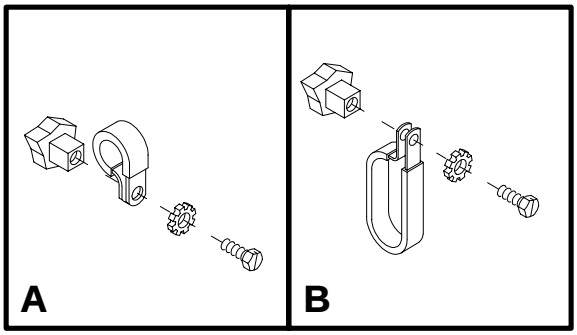
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A and B), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation.

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A and B), as shown in illustration.





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WIRING HARNESS 4W618 REPLACEMENT - CONTINUED 0331 00

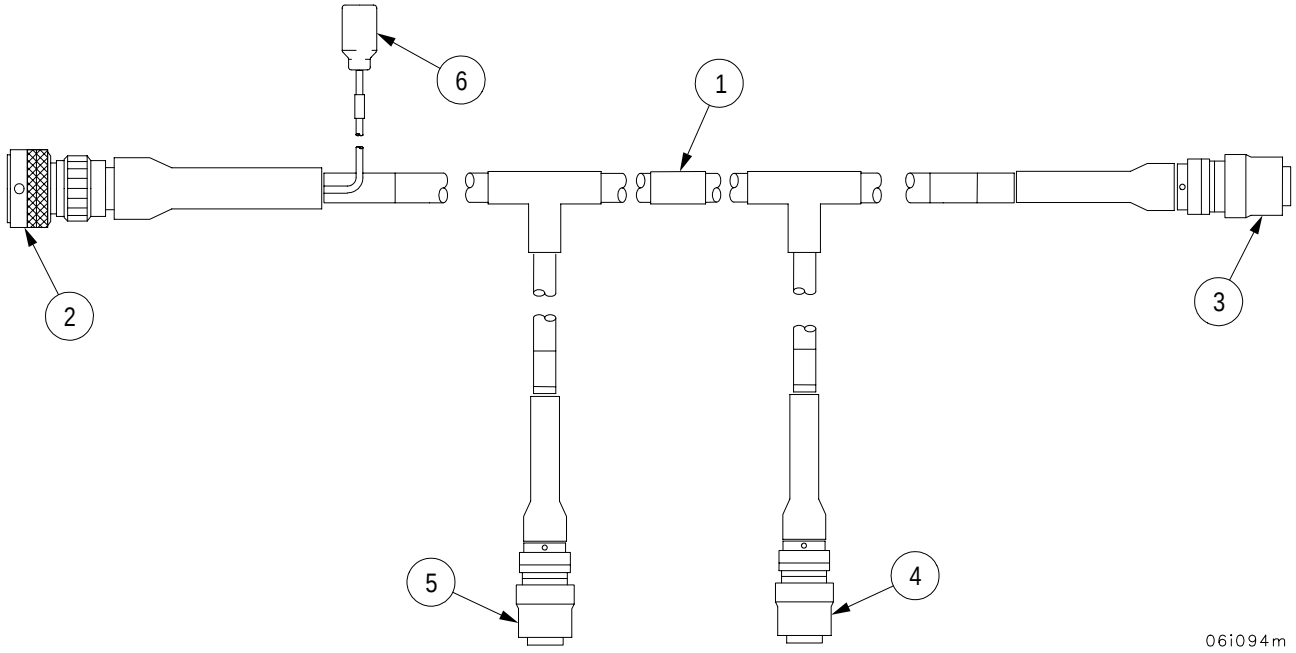
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	4W618 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
6	Wire 137	Accessory Control Panel Utility Outlet	Crew Compartment (Accessory Control Panel)
5	Connector P4	Wiring Harness 4W115 Connector J1	Crew Compartment (Behind Gauge Panel)
4	Connector P3	Wiring Harness 4W100 Connector J6	Crew Compartment (Switch Panel)
3	Connector P2	Wiring Harness 4W617 Connector J1	Crew Compartment (Hydraulic Control Panel)
2	Connector P1	Accessory Control Panel Connector J2	Crew Compartment (Accessory Control Panel)



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

WIRING HARNESS 4W700 REPLACEMENT 0332 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (22) (item 58, WP 0718 00)
Lockwasher (item 85, WP 0718 00)
Electrical tiedown straps (AR) (item 205, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Hydraulic control panel removed (WP 0245 00)
Left side air cleaner assembly removed (WP 0208 00)
Storage rack assembly removed (WP 0463 00)
Subfloor plates #19, #24 and #25 removed (WP 0454 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

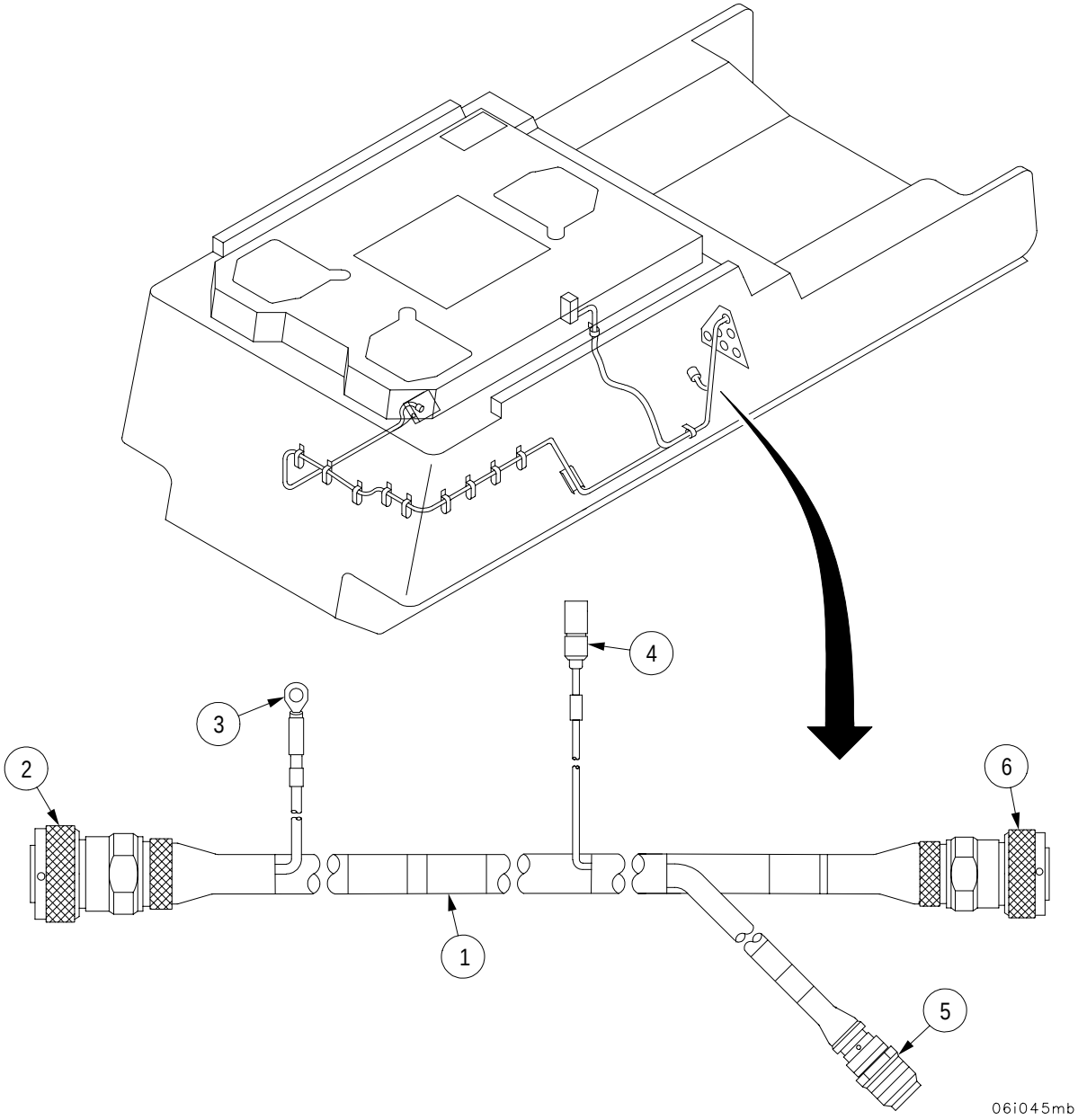
The following legend identifies attachment points for each connection.

1. Remove wiring harness 4W700 (1) and attaching hardware, at the following attachment points:

Item No.	4W700 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	APU Control Box	Crew Compartment (Near Hoist Winch Cable Chute)
3	Wire GND	APU Control Box Mounting Screw	Crew Compartment (Near Hoist Winch Cable Chute)
4	Wire 17	Riggers Light Switch	Crew Compartment (Rear Wall)
5	Connector J1	Wiring Harness 4W101 Connector P3	Crew Compartment (Rear Left Side)
6	Connector P2	Crew/Engine Compartment Bulkhead Connector J4	Crew Compartment (Rear Left Side)

WIRING HARNESS 4W700 REPLACEMENT - CONTINUED 0332 00

Removal-Continued



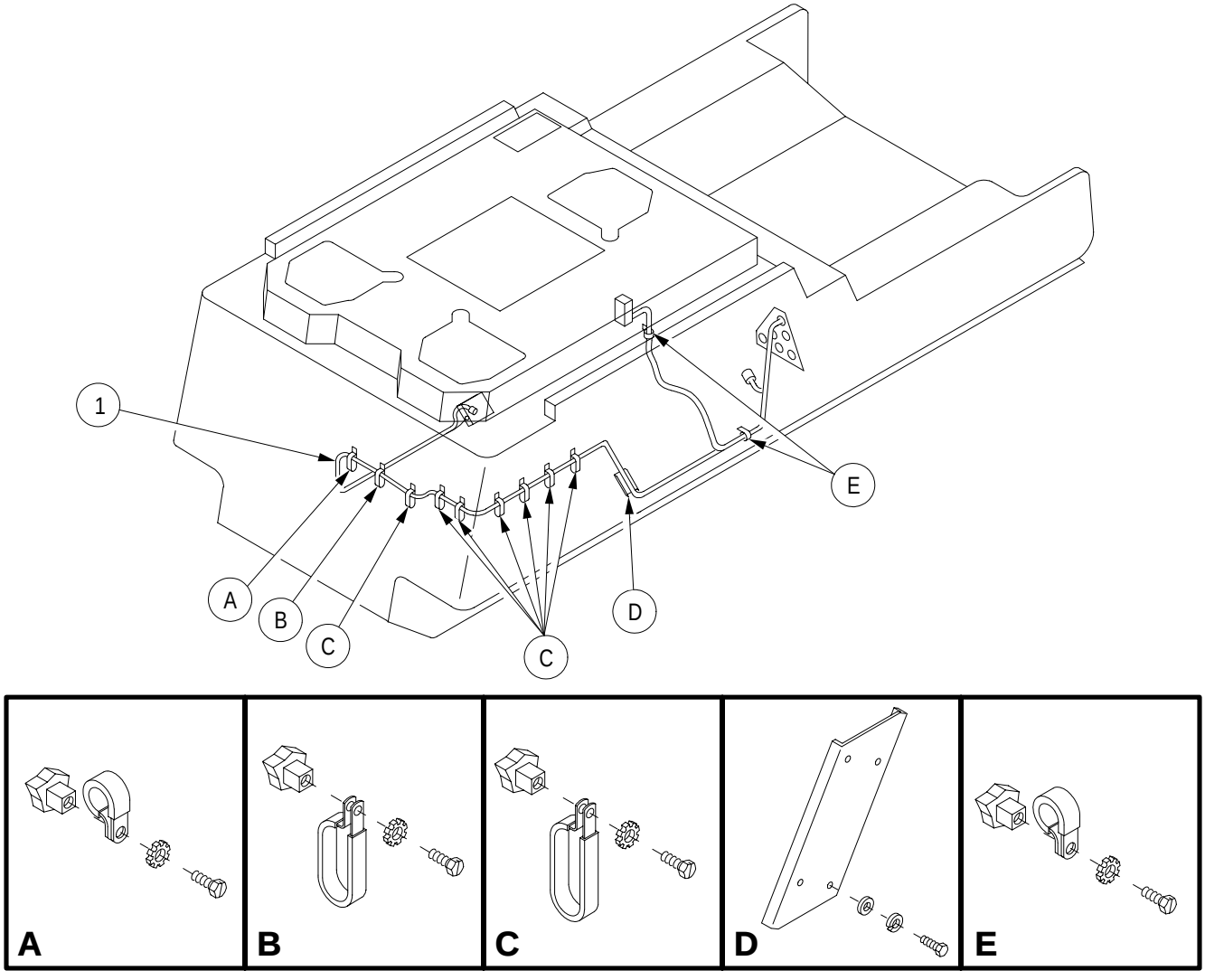
WIRING HARNESS 4W700 REPLACEMENT - CONTINUED 0332 00

Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through E), securing wiring harness 4W700 (1) to vehicle, as shown in illustration. Discard lockwashers.
3. Remove wiring harness 4W700 (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness 4W700 (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through E), as shown in illustration.



WIRING HARNESS 4W700 REPLACEMENT - CONTINUED 0332 00

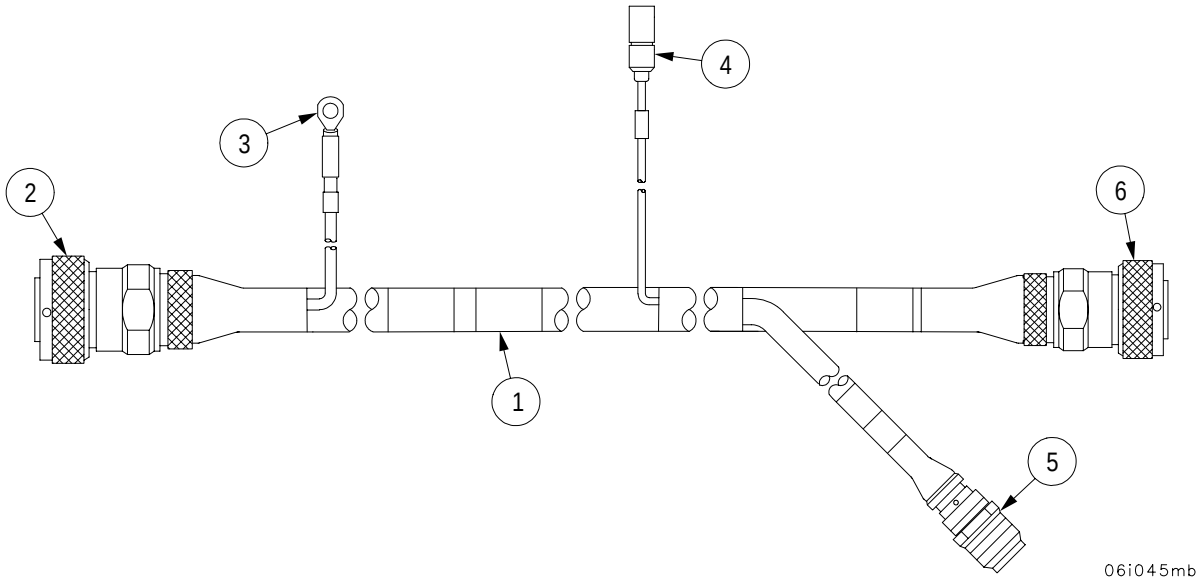
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness 4W700 (1) with attaching hardware, at the following attachment points:

Item No.	4W700 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
6	Connector P2	Crew/Engine Compartment Bulkhead Connector J4	Crew Compartment (Rear Left Side)
5	Connector J1	Wiring Harness 4W101 Connector P3	Crew Compartment (Rear Left Side)
4	Wire 17	Riggers Light Switch	Crew Compartment (Rear Wall)
3	Wire GND	APU Control Box Mounting Screw	Crew Compartment (Near Hoist Winch Cable Chute)
2	Connector P1	APU Control Box	Crew Compartment (Near Hoist Winch Cable Chute)



NOTE

FOLLOW-ON MAINTENANCE:
Install subfloor plates #19, #24 and #25 (WP 0454 00)
Install storage rack (WP 0463 00)
Install left side air cleaner (WP 0208 00)
Install hydraulic control panel (WP 0245 00)

END OF TASK

WIRING HARNESS 4W800 REPLACEMENT 0333 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (13) (item 58, WP 0718 00)
Lockwashers (4) (item 112, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Air cleaner assembly removed (WP 0208 00)
Subfloor plate #13 removed (WP 0454 00)

References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

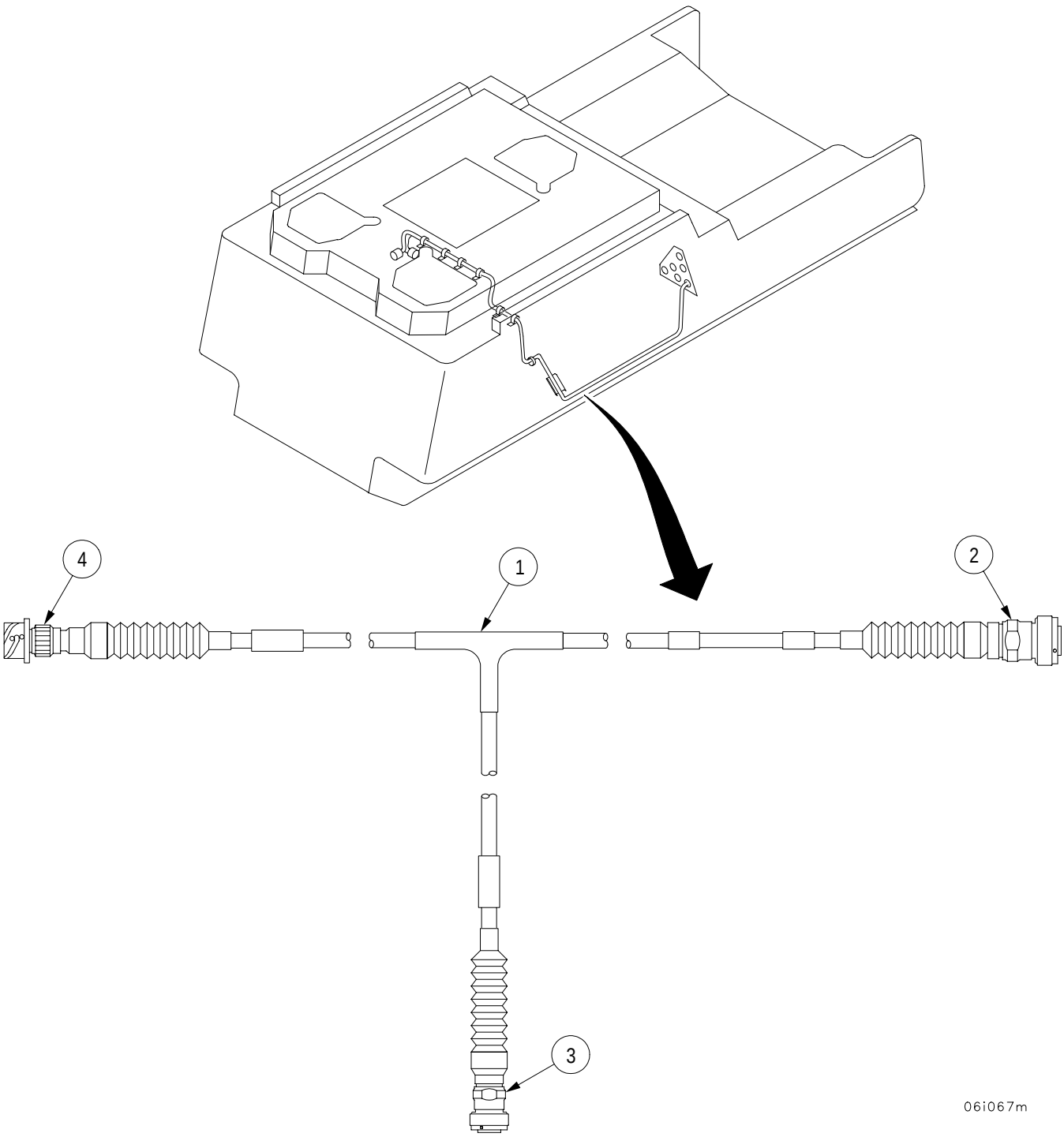
The following legend identifies attachment points for each connection.

1. Remove wiring harness (1) and attaching hardware, at the following attachment points:

Item No.	4W800 Connector/Lead/Wire	From Connector/Lead/Wire Component	Location
2	Connector P1	Bulkhead Connector J3	Crew Compartment Rear Bulkhead
3	Connector P2	STE-ICE Resistor Box Connector J1	Crew Compartment Ceiling
4	Connector J1	Mounting Bracket J1	Crew Compartment (Next to Resistor Box)

WIRING HARNESS 4W800 REPLACEMENT - CONTINUED 0333 00

Removal-Continued



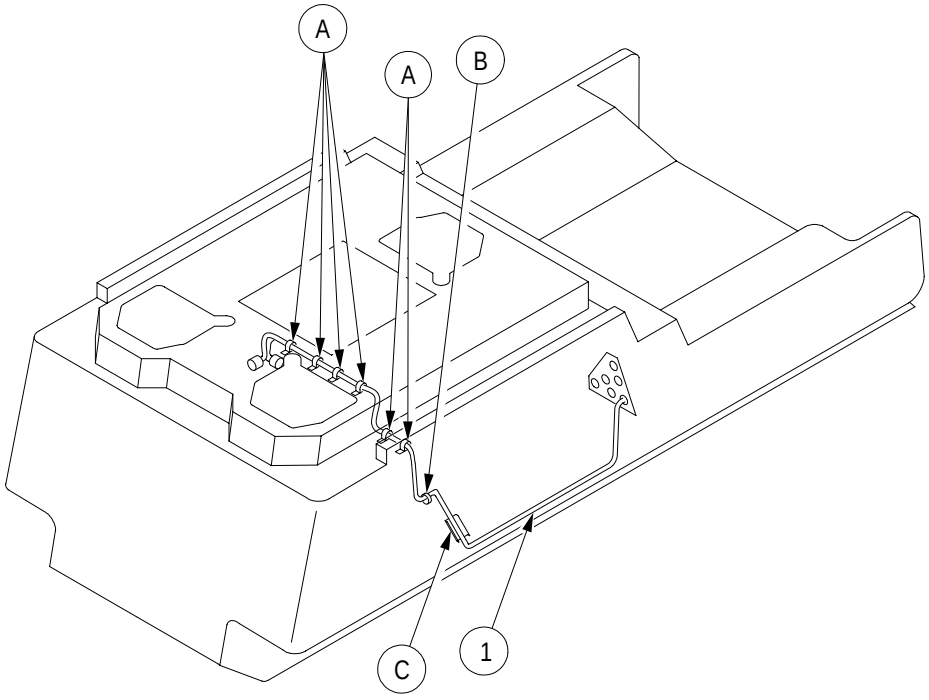
WIRING HARNESS 4W800 REPLACEMENT - CONTINUED 0333 00

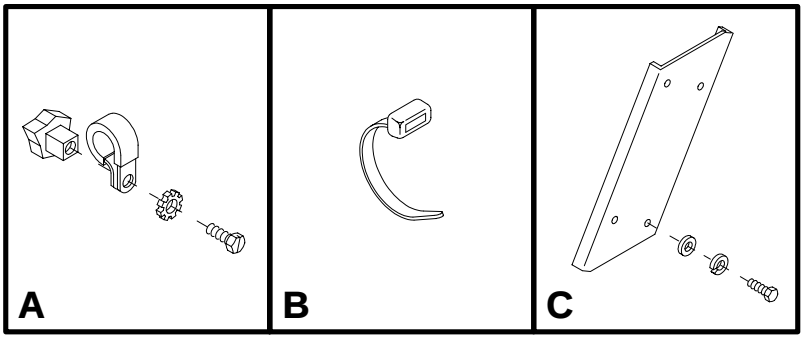
Removal-Continued

2. Remove straps, clamps, attaching hardware and lockwashers (A through C), securing wiring harness (1) to vehicle, as shown in illustration. Discard lockwasher.
3. Remove wiring harness (1).
4. Inspect parts for damage and replace as required.

Installation

1. Install wiring harness (1) in vehicle, with straps, clamps, attaching hardware and new lockwashers (A through C), as shown in illustration.





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WIRING HARNESS 4W800 REPLACEMENT - CONTINUED 0333 00

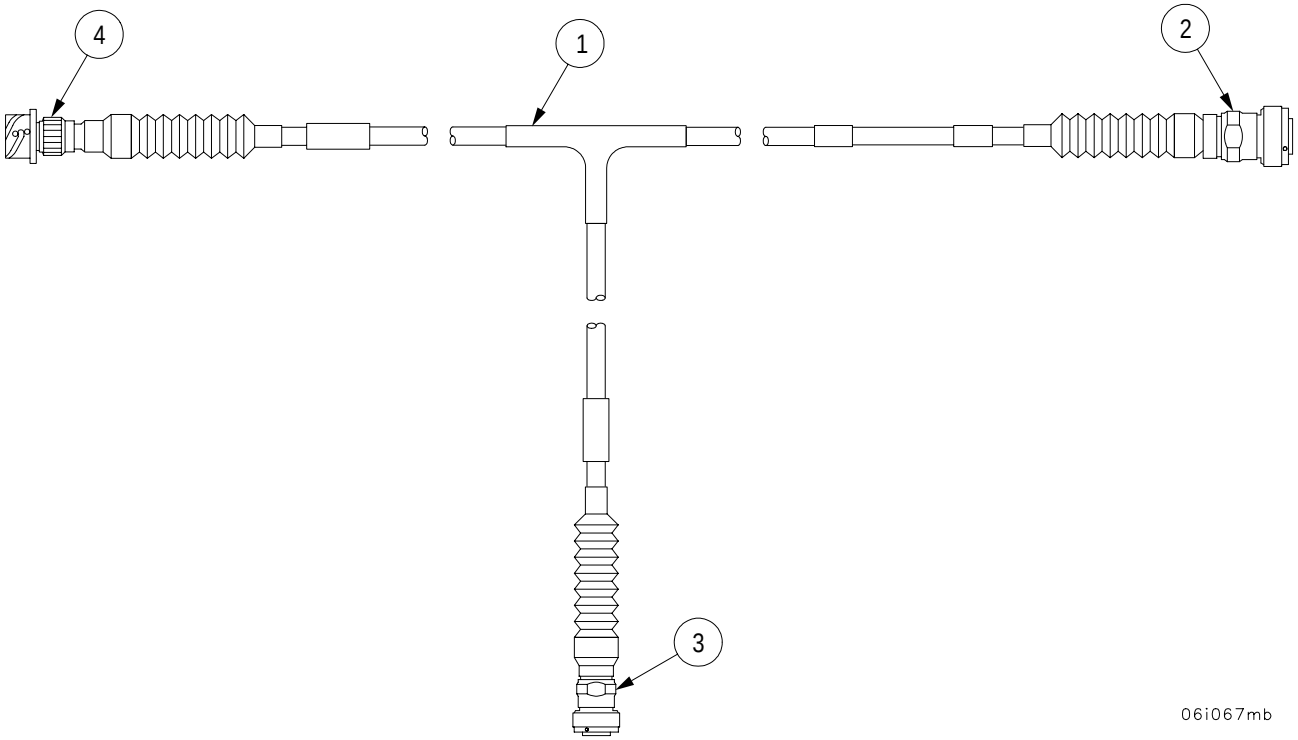
Installation-Continued

NOTE

The following legend identifies attachment points for each connection.

2. Install wiring harness (1) with attaching hardware, at the following attachment points:

Item No.	4W800 Connector/Lead/Wire	To Connector/Lead/Wire Component	Location
4	Connector J1	Mounting Bracket J1	Crew Compartment (Next to Resistor Box)
3	Connector P2	STE-ICE Resistor Box Connector J1	Crew Compartment Ceiling
2	Connector P1	Bulkhead Connector J3	Crew Compartment Rear Bulkhead



NOTE

FOLLOW-ON MAINTENANCE:
Install subfloor plate #13
(WP 0454 00)
Install air cleaner assembly (WP 0208 00)
Connect battery power (WP 0256 00)

END OF TASK

ENGINE DISCONNECT BRACKET REPLACEMENT 0334 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (2) (item 12, WP 0718 00)

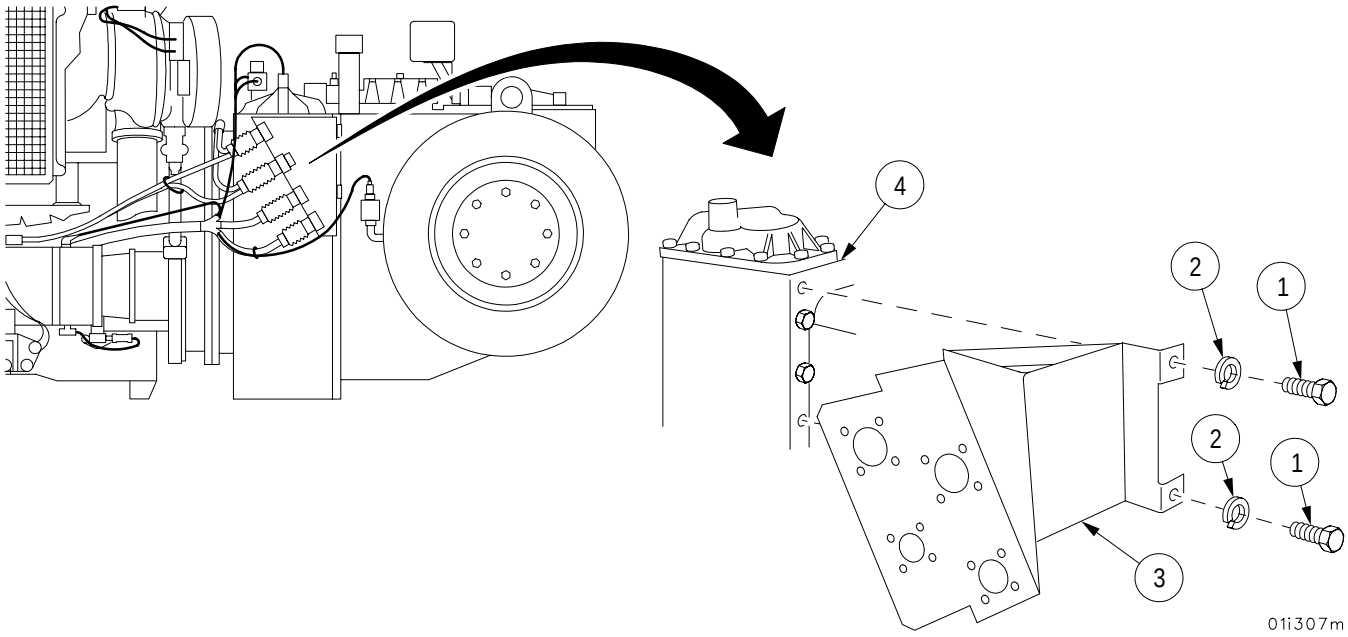
Equipment Conditions
Wiring harness 3W200 disconnected (WP 0298 00)
Wiring harness 3W201 disconnected (WP 0299 00)
Wiring harness 3W202 disconnected (WP 0300 00)

Removal

1. Remove two screws (1), two lockwashers (2) and engine disconnect bracket (3) from transmission (4).
2. Inspect parts for damage and replace as required.

Installation

Install engine disconnect bracket (3) on transmission (4) with two screws (1) and two new lockwashers (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install wiring harness 3W202 (WP 0300 00)
Install wiring harness 3W201 (WP 0299 00)
Install wiring harness 3W200 (WP 0298 00)

END OF TASK

ELECTRICAL CABLE CLAMPS REPLACEMENT 0335 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

References
TM 9-2350-292-10

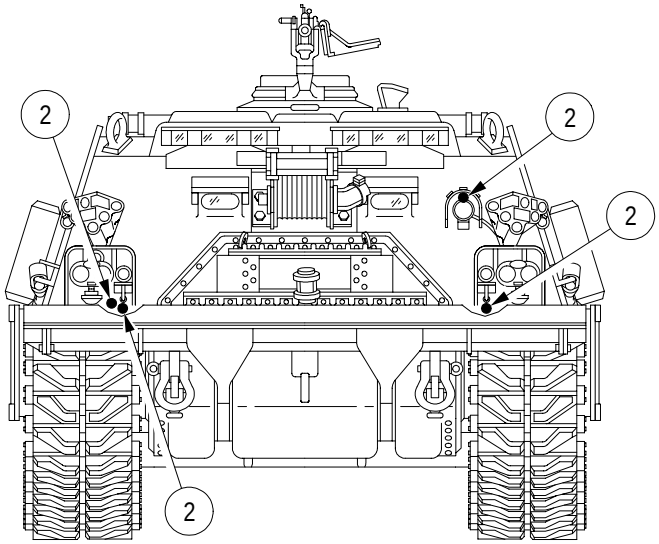
NOTE

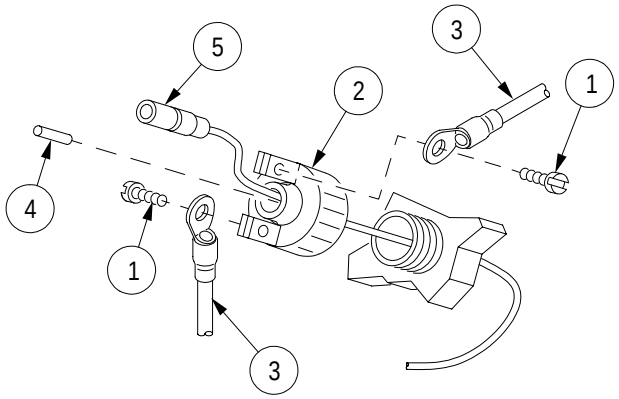
Tag all electrical connections and electrical leads prior to removal to aid in installation.

There are four electrical cable clamps on the vehicle. This task replaces only one cable clamp.

Removal

1. Remove two screws (1) in electrical cable clamp (2) and disconnect wires (3), if applicable.
2. Remove nonmetallic rod (4) from electrical cable clamp (2).
3. Remove wiring harness connector (5).
4. Remove electrical cable clamp (2) from vehicle.
5. Inspect parts for damage and replace as required.



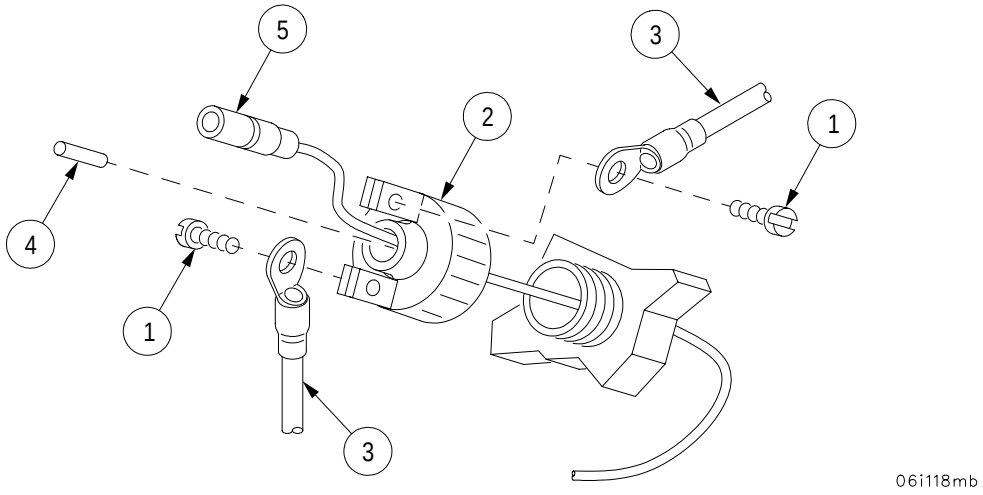


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ELECTRICAL CABLE CLAMPS REPLACEMENT - CONTINUED 0335 00

Installation

1. Install electrical cable clamp (2) on vehicle.
2. Install wiring harness connector (5).
3. Install nonmetallic rod (4) in electrical cable clamp (2).
4. Connect wires (3) to electrical cable clamp (2) with two screws (1), if applicable.



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

GROUND LEAD MS25083-7BC6 REPLACEMENT 0336 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 9, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Subfloor plate #18 removed (WP 0454 00)

References
TM 9-2350-292-10

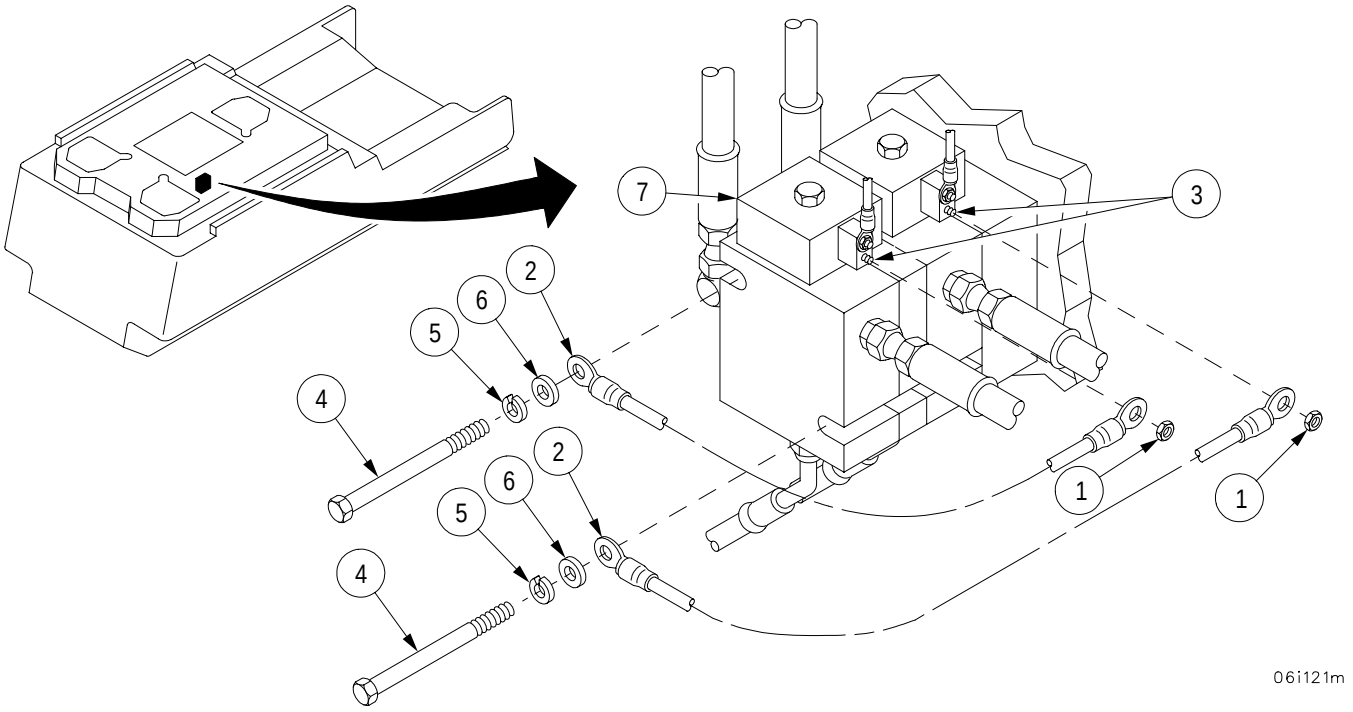
NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

There are two ground leads. This task replaces only one ground lead.

Removal

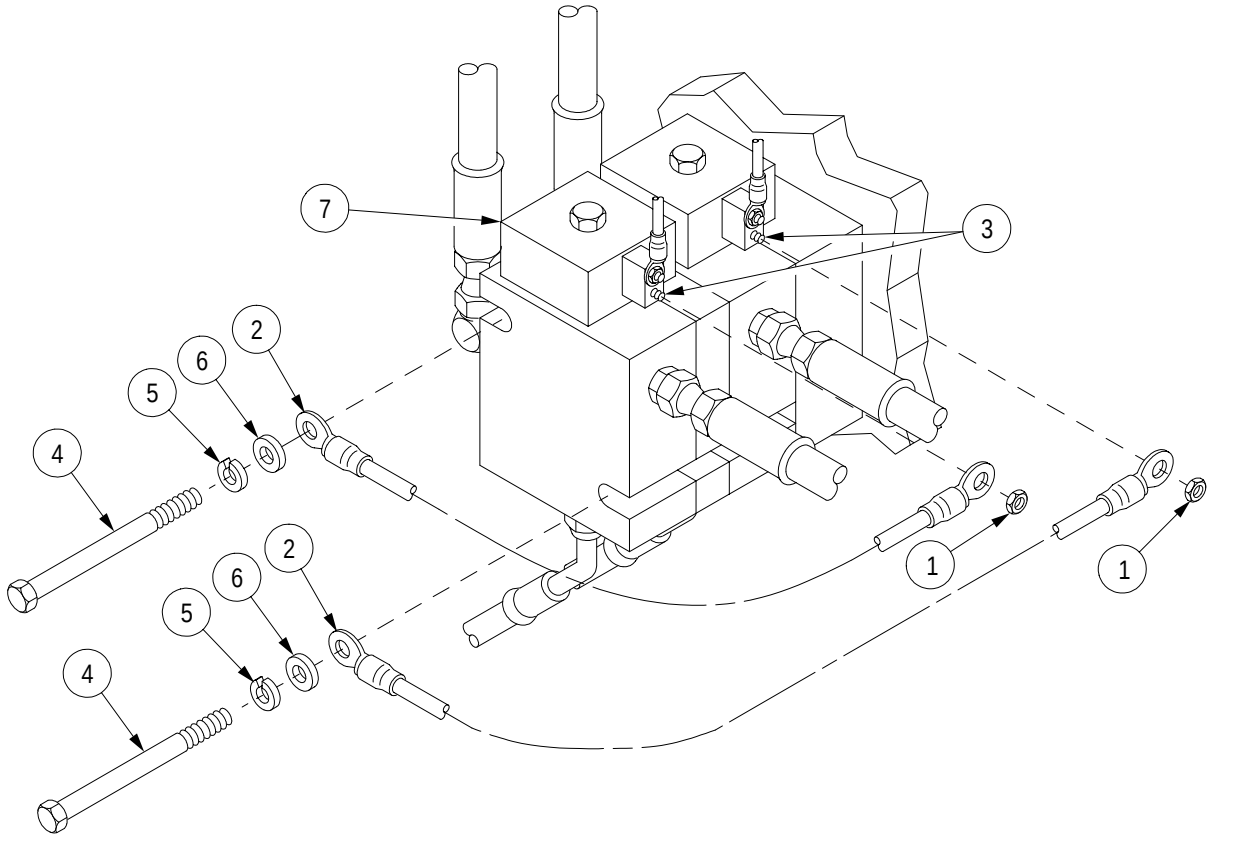
1. Remove locknut (1) and ground lead (2) from pay-in or pay-out solenoid valve threaded rod (3). Retain attaching hardware to aid in installation.
2. Remove screw (4), lockwasher (5), flat washer (6) and two ground leads (2) from manifold (7). Discard lockwasher.
3. Inspect parts for damage and replace as required.



GROUND LEAD MS25083-7BC6 REPLACEMENT - CONTINUED 0336 00

Installation

1. Install two ground leads (2) on manifold (7) with flat washer (6), new lockwasher (5) and screw (4).
2. Install ground lead (2) on pay-in or pay-out solenoid valve threaded rod (3) with locknut (1).



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NOTE

FOLLOW-ON MAINTENANCE:
Install subfloor plate #18 (WP 0454 00)
Connect battery power (WP 0256 00)

END OF TASK

FUEL SHUTOFF WIRING HARNESS REPLACEMENT 0337 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Self-locking nut (item 385, WP 0718 00)
Lockwashers (4) (item 425, WP 0718 00)
Electrical tiedown strap (item 382, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Engine deck assembly removed (WP 0417 00)
Front cooling fan removed (WP 0235 00)

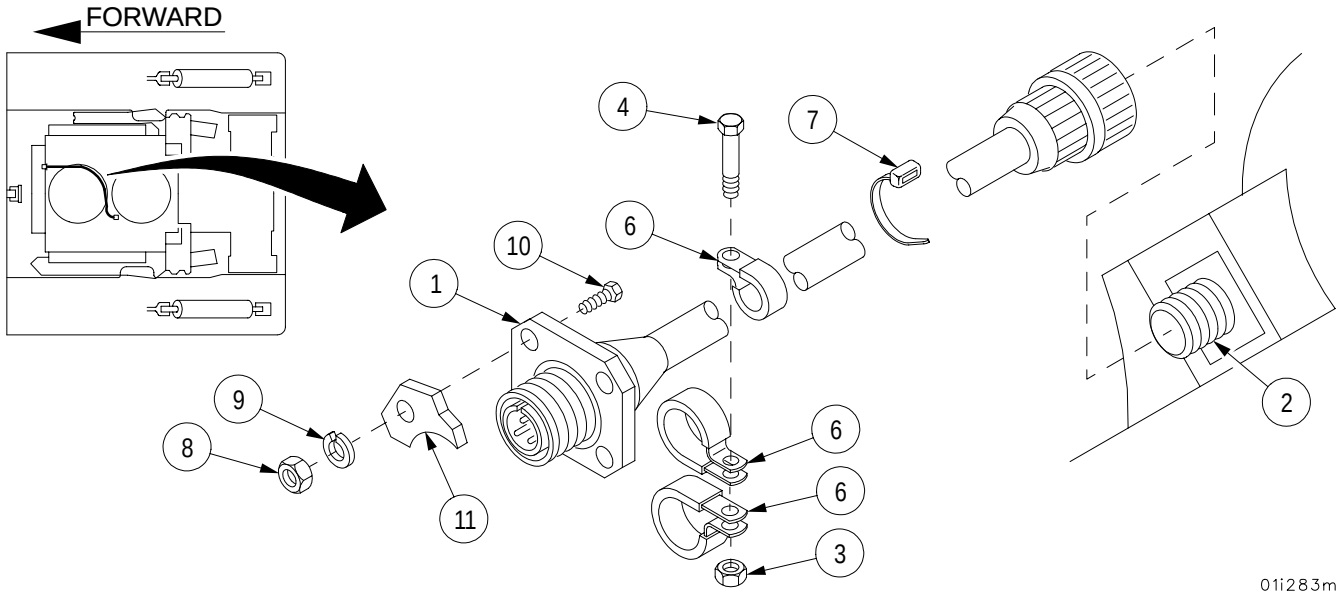
References
TM 9-2350-292-10

Removal

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

1. Disconnect fuel shutoff wiring harness (1) from fuel metering pump (2).
2. Remove self-locking nut (3) and screw (4) from three loop clamps (6). Discard self-locking nut.
3. Remove electrical tiedown strap (7) from fuel shutoff wiring harness (1). Discard electrical tiedown strap.
4. Remove four nuts (8), four lockwashers (9), four screws (10) and fuel shutoff wiring harness (1) from engine shroud (11). Discard lockwashers.
5. Inspect parts for damage and replace as required.



FUEL SHUTOFF WIRING HARNESS REPLACEMENT - CONTINUED 0337 00

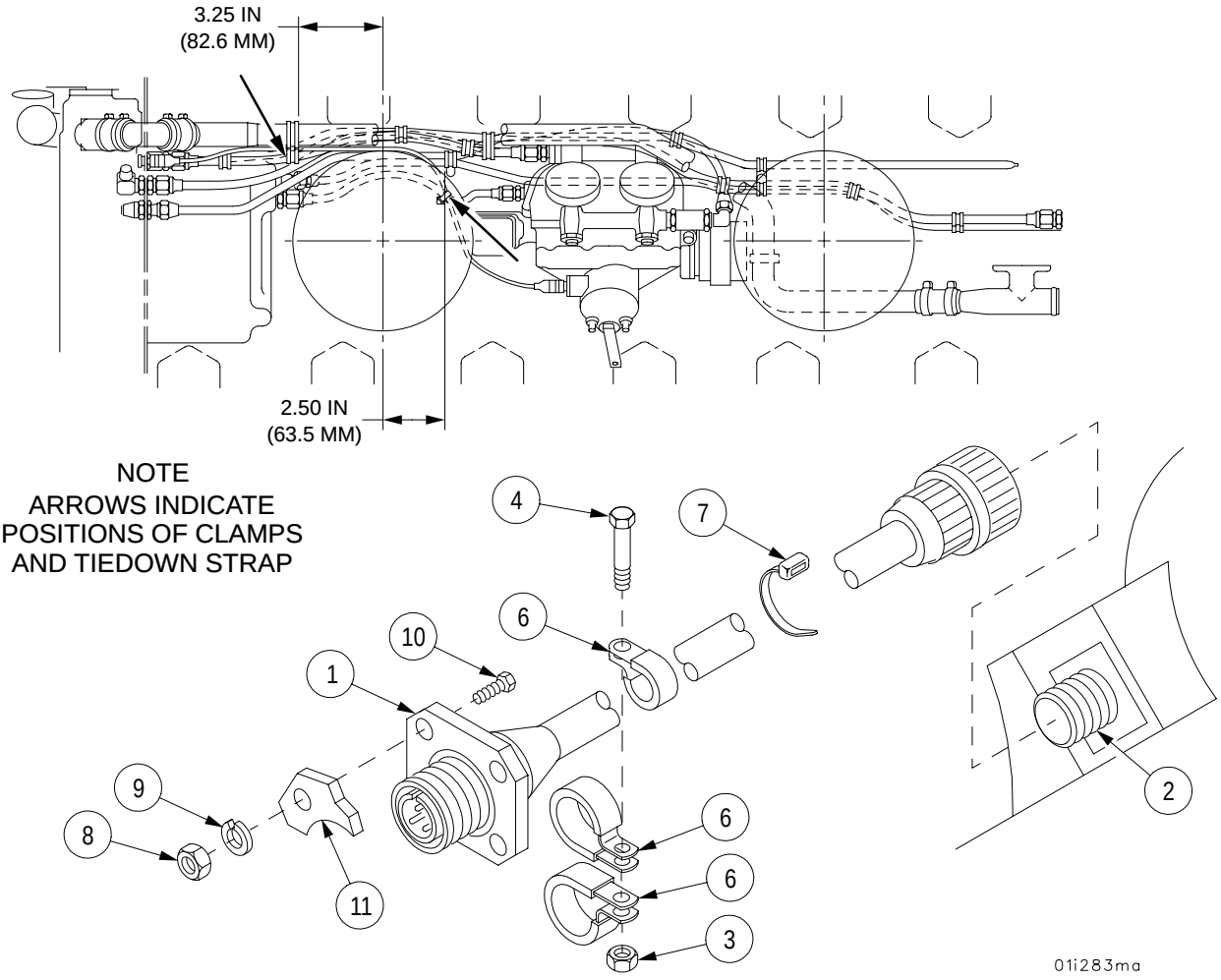
Installation

1 Install fuel shutoff wiring harness (1), four screws (10) four new lockwashers (9) and four nuts (8) to engine shroud (11).

2 Install new electrical tiedown strap (7) to fuel shutoff wiring harness (1).

3 Install screw (4) and new self-locking nut (3) to three loop clamps (6).

4 Install fuel shutoff wiring harness (1) to fuel metering pump (2).



NOTE

FOLLOW-ON MAINTENANCE:
Install front cooling fan (WP 0235 00)
Install engine deck assembly (WP 0417 00)
Connect battery power (WP 0256 00)

END OF TASK

FRONT FUEL TANK GROUND STRAP REPLACEMENT 0338 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 9, WP 0718 00)
Lockwasher (item 85, WP 0718 00)
Lockwasher (item 414, WP 0718 00)
Lockwasher (item 415, WP 0718 00)

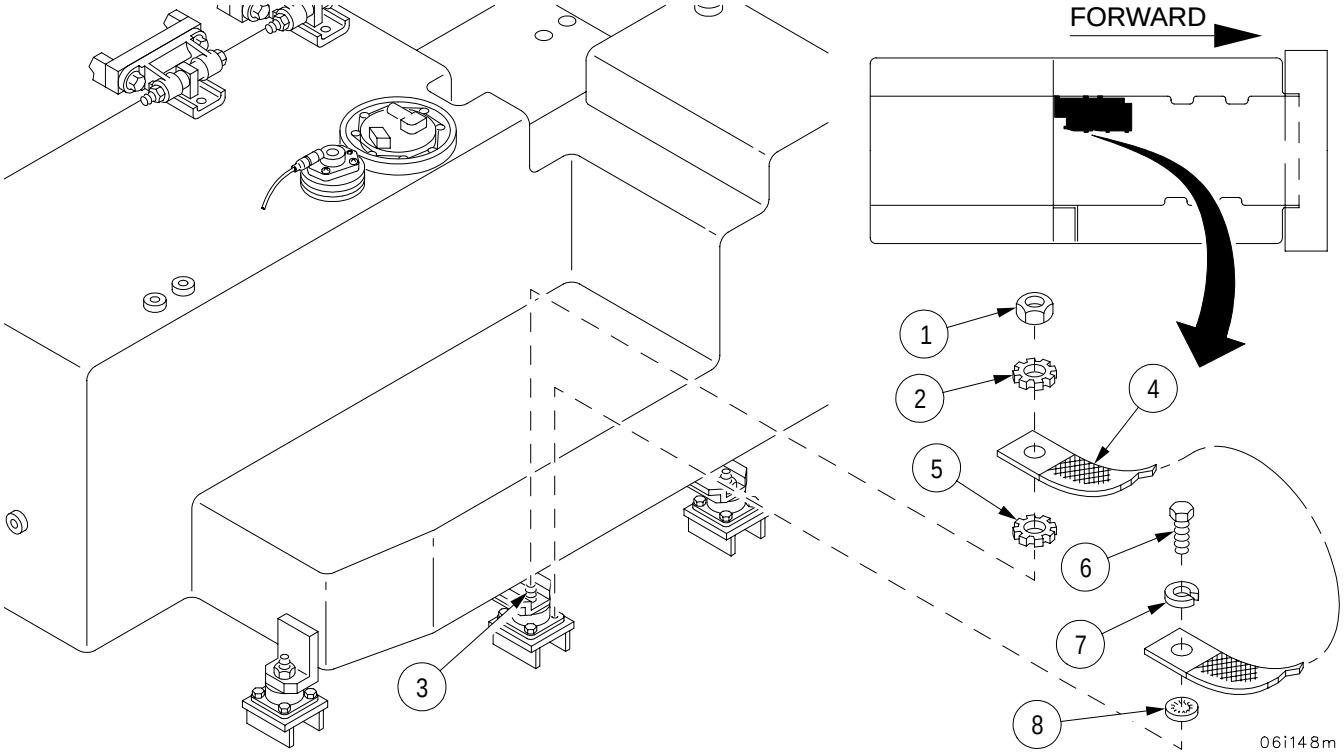
Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)
Commander's seat removed (WP 0457 00)
Subfloor plates #1, #2, #3 and #4 removed (WP 0454 00)

Personnel Required
Two

References
TM 9-2350-292-10

Removal

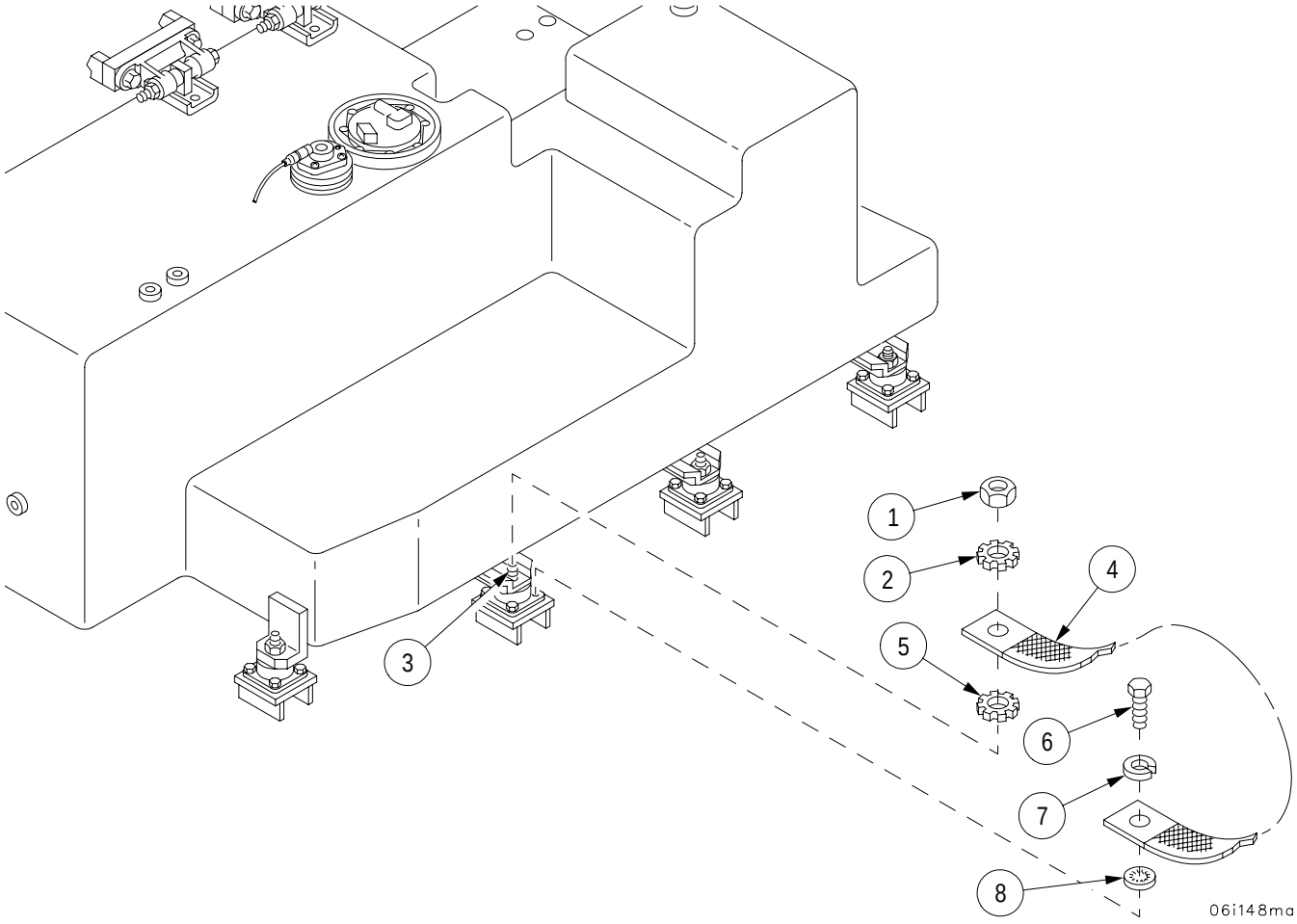
1. Remove nut (1) and lockwasher (2) from screw (3). Hold screw (3) in place and lift off ground strap (4) and second lockwasher (5). Temporarily install nut (1) back on screw (3). Discard lockwashers.
2. Remove screw (6), two lockwashers (7 and 8) and ground strap (4). Discard lockwashers.
3. Inspect parts for damage and replace as required.



FRONT FUEL TANK GROUND STRAP REPLACEMENT - CONTINUED 0338 00

Installation

1. Install one end of ground strap (4) with screw (6) and two new lockwashers (7 and 8).
2. Hold screw (3), remove nut (1) temporarily installed during removal procedures.
3. Install new lockwasher (5), other end of ground strap (4), new lockwasher (2) and nut (1). Securely tighten nut.



NOTE

FOLLOW-ON MAINTENANCE:
Install subfloor plates #1, #2, #3 and #4 (WP 0454 00)
Install commander's seat (WP 0457 00)
Connect battery power (WP 0256 00)

END OF TASK

RIGHT FUEL TANK GROUND STRAP REPLACEMENT 0339 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 9, WP 0718 00)
Lockwasher (item 85, WP 0718 00)
Lockwasher (item 414, WP 0718 00)
Lockwasher (item 415, WP 0718 00)

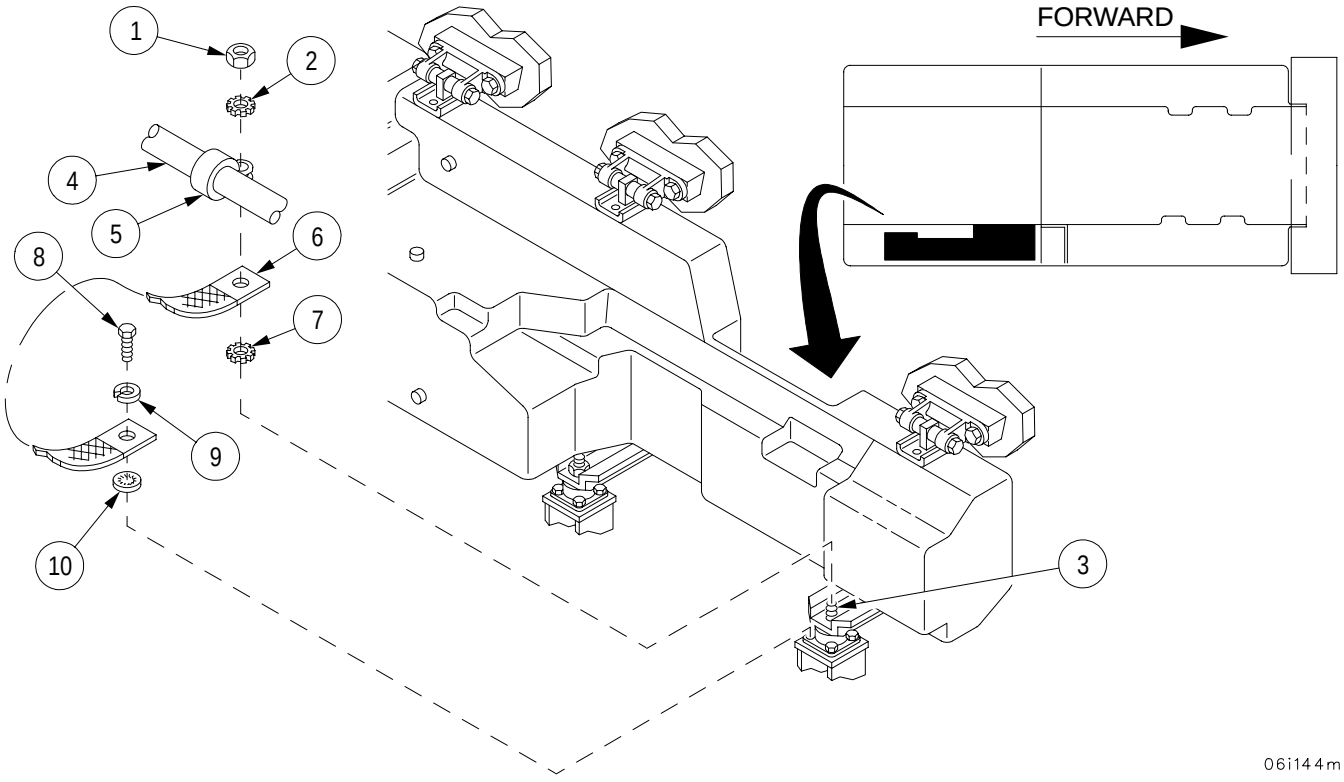
Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Powerpack removed (WP 0188 00)

Personnel Required
Two

References
TM 9-2350-292-10

Removal

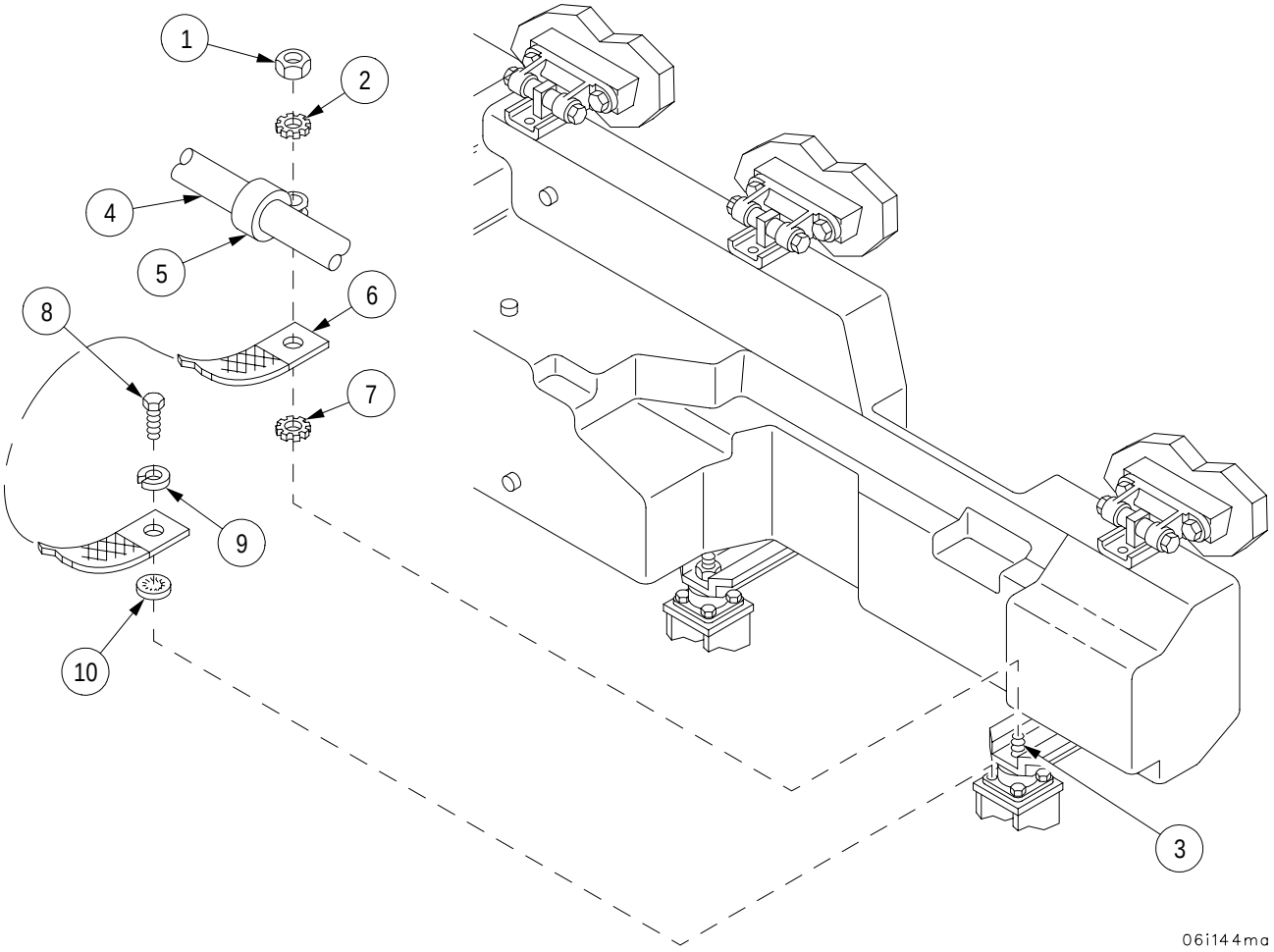
1. Remove nut (1) and lockwasher (2) from screw (3). Hold screw (3) in place and lift off hose (4) and clamp (5). Lift end of ground strap (6) and second lockwasher (7) off of screw (3). Temporarily install nut (1) back on screw (3). Discard lockwashers.
2. Remove screw (8), two lockwashers (9 and 10) and ground strap (6). Discard lockwashers.



RIGHT FUEL TANK GROUND STRAP REPLACEMENT - CONTINUED 0339 00

Installation

1. Install one end of ground strap (6) with screw (8) and two new lockwashers (9 and 10).
2. Hold screw (3), remove nut (1) temporarily installed during removal procedures.
3. Install new lockwasher (7), other end of ground strap (6), clamp (5) with hose (4), new lockwasher (2) and nut (1). Securely tighten nut.



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

END OF TASK

LEFT FUEL TANK GROUND STRAP REPLACEMENT 0340 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwasher (item 9, WP 0718 00)
Lockwasher (item 85, WP 0718 00)
Lockwasher (item 414, WP 0718 00)
Lockwasher (item 415, WP 0018 00)

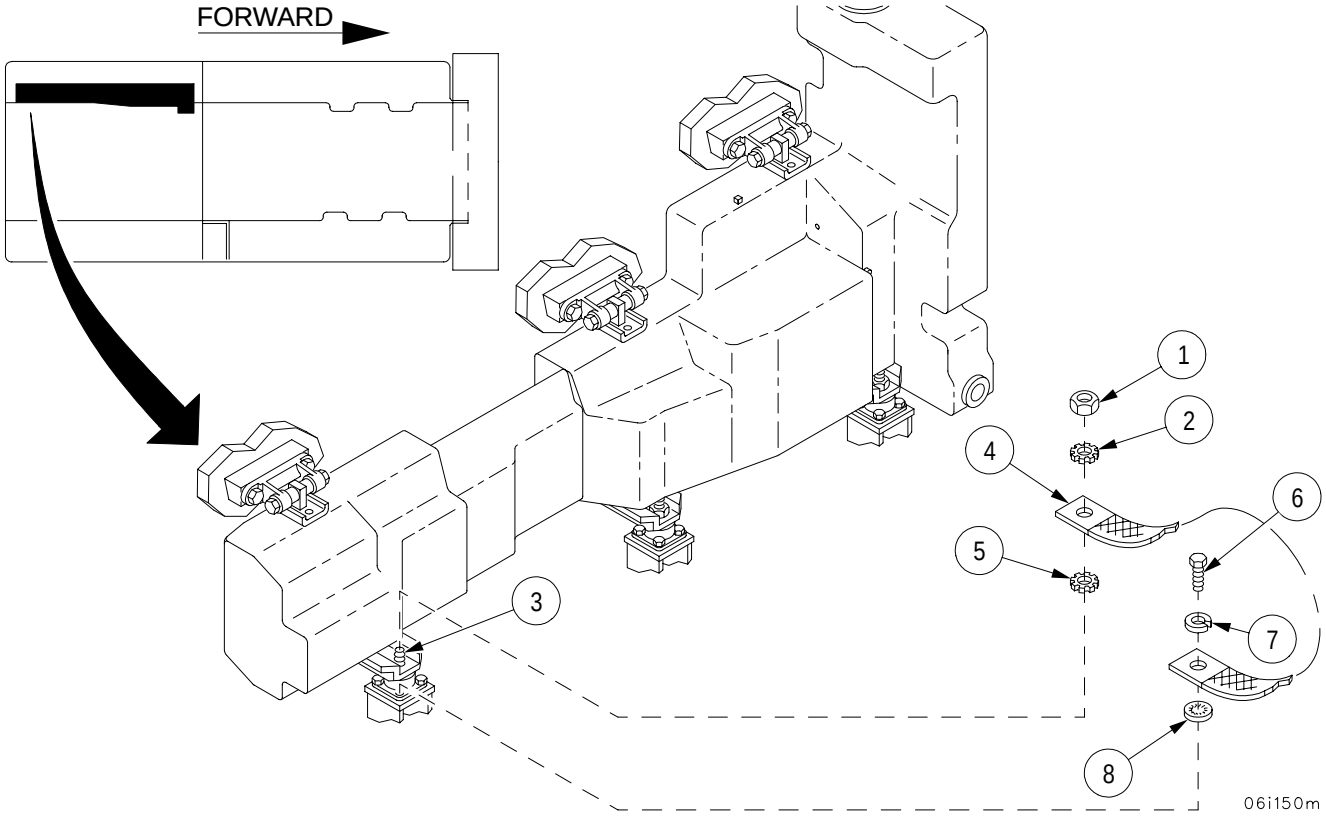
Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Powerpack removed (WP 0188 00)

Personnel Required
Two

References
TM 9-2350-292-10

Removal

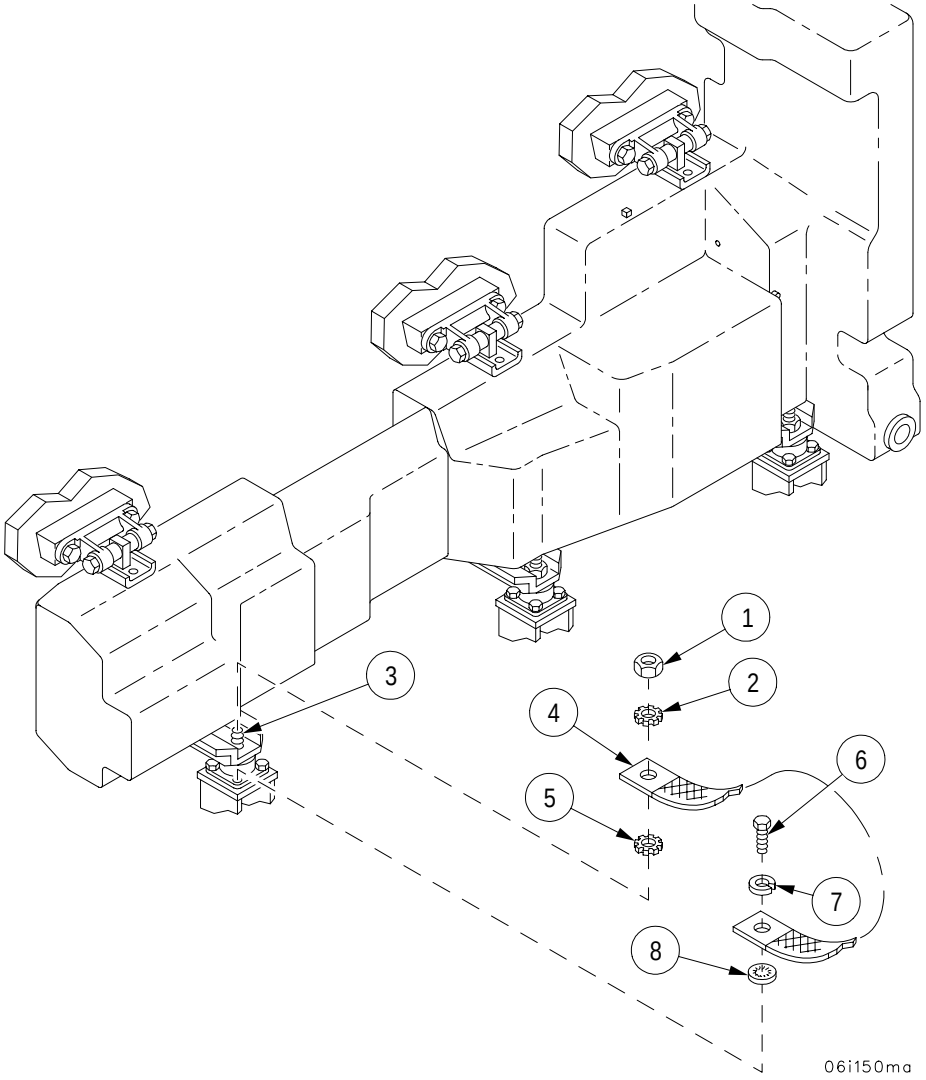
1. Remove nut (1) and lockwasher (2) from screw (3). Hold screw (3) in place and lift off ground strap (4) and second lockwasher (5). Temporarily install nut (1) back on screw (3). Discard lockwashers.
2. Remove screw (6), two lockwashers (7 and 8) and ground strap (4). Discard lockwashers.
3. Inspect parts for damage and replace as required.



LEFT FUEL TANK GROUND STRAP REPLACEMENT - CONTINUED 0340 00

Installation

1. Install one end of ground strap (4) with screw (6) and two new lockwashers (7 and 8).
2. Hold screw (3), remove nut (1) temporarily installed during removal procedures.
3. Install new lockwasher (5), other end of ground strap (4), new lockwasher (2) and nut (1). Securely tighten nut.



NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

END OF TASK

GENERATOR GROUND STRAP REPLACEMENT 0341 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Self-locking nut (item 251, WP 0718 00)
Lockwashers (3) (item 11, WP 0718 00)
Silicone adhesive (item 81, WP 0716 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Powerpack removed (WP 0188 00)

References
TM 9-2350-292-10

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Remove wiring harnesses as necessary to perform this task.

Removal

1. Remove screw (1), flat washer (2) and two ground straps (3) from generator cradle bracket (4).
2. Remove silicone adhesive from negative (ground) bus bar terminal (5), if previously applied.
3. Remove nut (6), three lockwashers (7), screw (8), two ground straps (3) and wiring harness 3W201 (9). Discard nut and lockwashers.
4. Inspect parts for damage and replace as required.

Installation

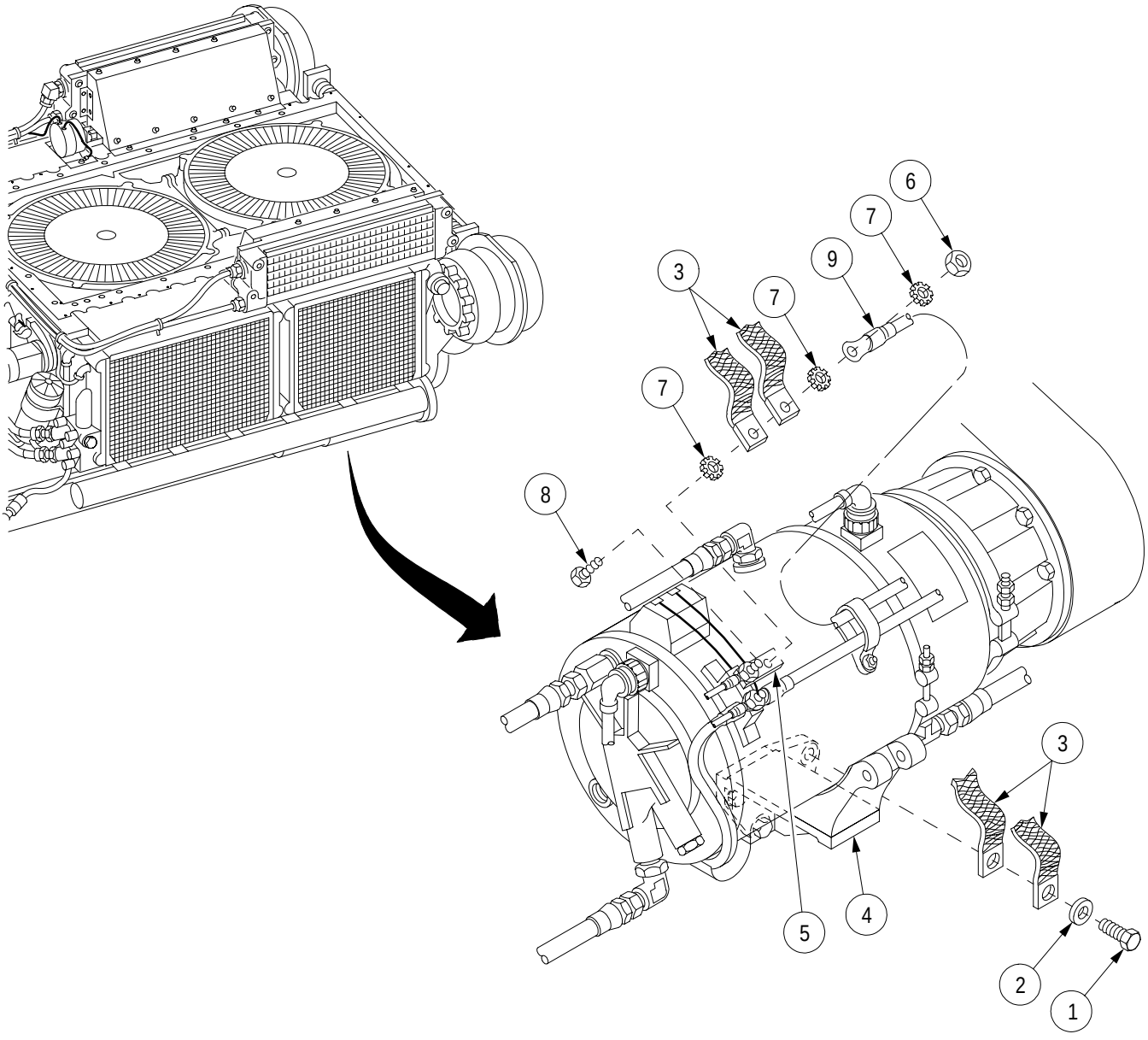


1. Install wiring harness 3W201 (9) and two ground straps (3) on generator negative bus bar (5) with screw (8), three new lockwashers (7) and new nut (6). Apply silicone adhesive to exposed terminals.
2. Install two ground straps (3) on generator cradle bracket (4) with screw (1) and flat washer (2).

NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

GENERATOR GROUND STRAP REPLACEMENT - CONTINUED 0341 00



END OF TASK

STARTER GROUND STRAP REPLACEMENT 0342 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Silicone adhesive (item 81, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Powerpack removed (WP 0188 00)

References
TM 9-2350-292-10

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Remove wiring harnesses as necessary to perform this task.

Removal

1. Remove nut (1), lockwasher (2), cable (3), two ground straps (4) and cable (5) from starter motor ground terminal stud (6). Retain attaching hardware to aid in installation.
2. Remove silicone adhesive from starter motor ground terminal stud (6), if previously applied.
3. Remove screw (7), flat washer (8) and two ground straps (4) from angle bracket (9).
4. Inspect parts for damage and replace as required.

Installation

1. Install two ground straps (4) on angle bracket (9) with flat washer (8) and screw (7).
2. Install cable (5), two ground straps (4) and cable (3) on starter motor ground terminal stud (6) with lockwasher (2) and nut (1).

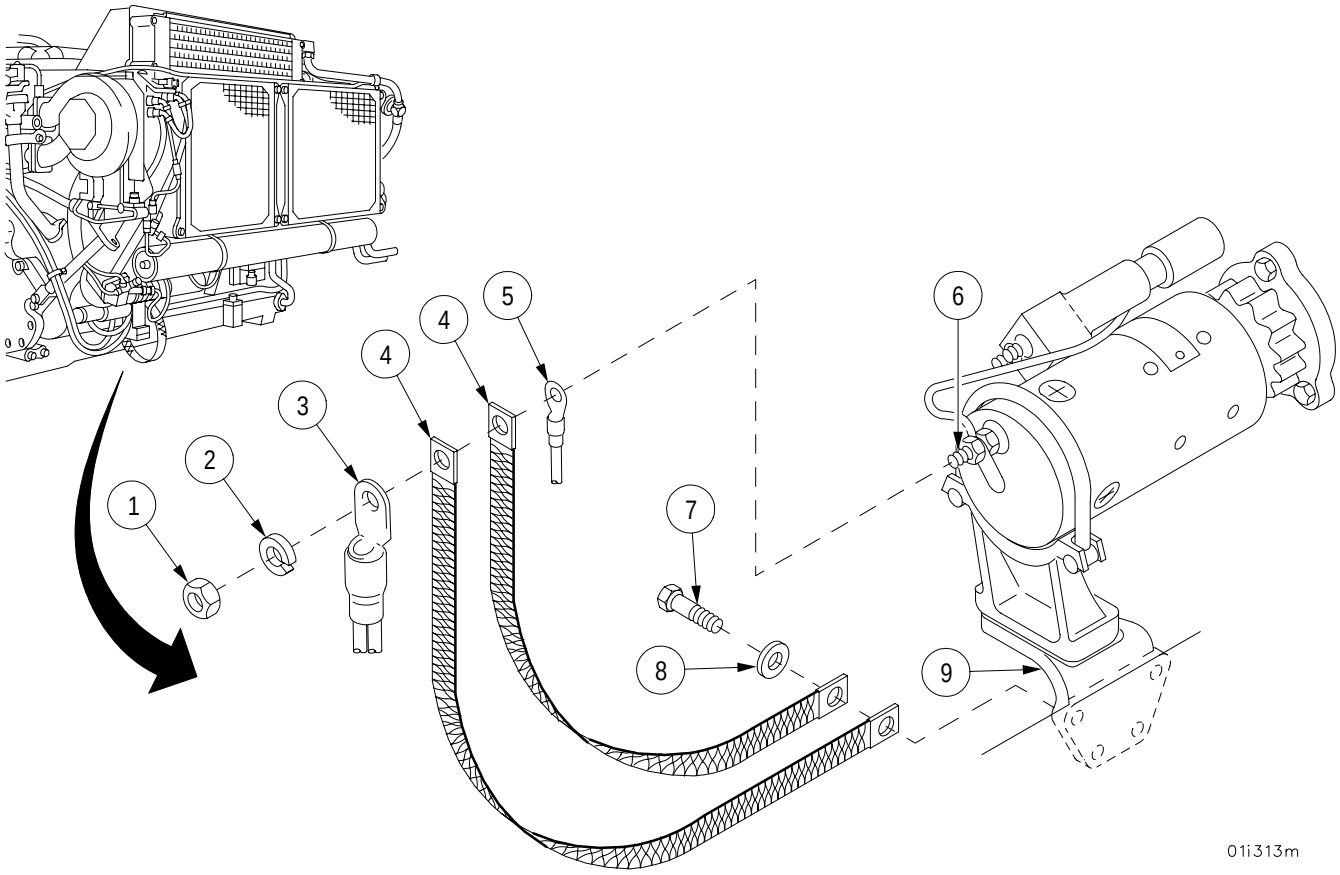


3. Apply silicone adhesive to starter motor ground terminal stud (6).

NOTE

FOLLOW-ON MAINTENANCE:
Install powerpack (WP 0188 00)

STARTER GROUND STRAP REPLACEMENT - CONTINUED 0342 00



END OF TASK

WIRING HARNESS GUARD REPLACEMENT 0343 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)

Materials/Parts
Lockwashers (4) (item 9, WP 0718 00)

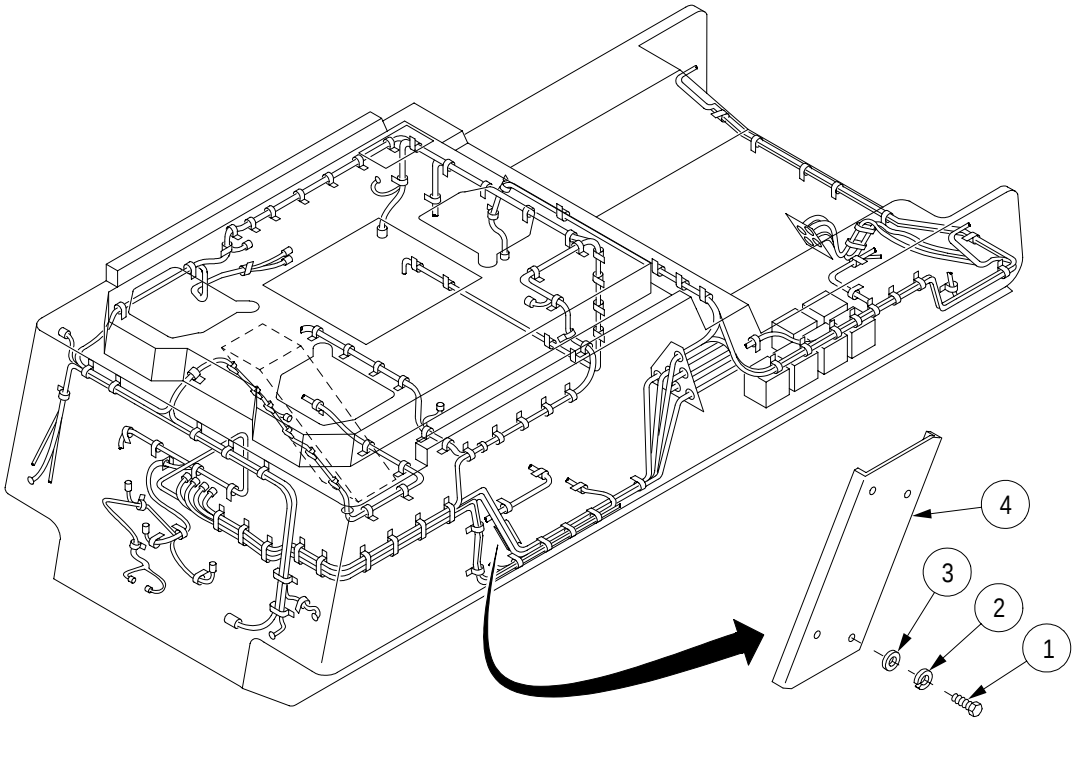
References
TM 9-2350-292-10

Removal

1. Remove four screws (1), four lockwashers (2), four flat washers (3) and wiring harness guard (4) from vehicle. Discard lockwashers.
2. Inspect parts for damage and replace as required.

Installation

Install wiring harness guard (4) on vehicle with four screws (1), four new lockwashers (2) and four flat washers (3).



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END OF TASK

VENTILATOR BLOWER ASSEMBLY REPLACEMENT 0344 00

THIS WORK PACKAGE COVERS:
Removal, Installation

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0717 00)

Materials/Parts
Lockwashers (3) (item 2, WP 0718 00)
Marker tags (item 49, WP 0716 00)

Equipment Conditions
Vehicle MASTER switch OFF (TM 9-2350-292-10)
Battery power disconnected (WP 0256 00)

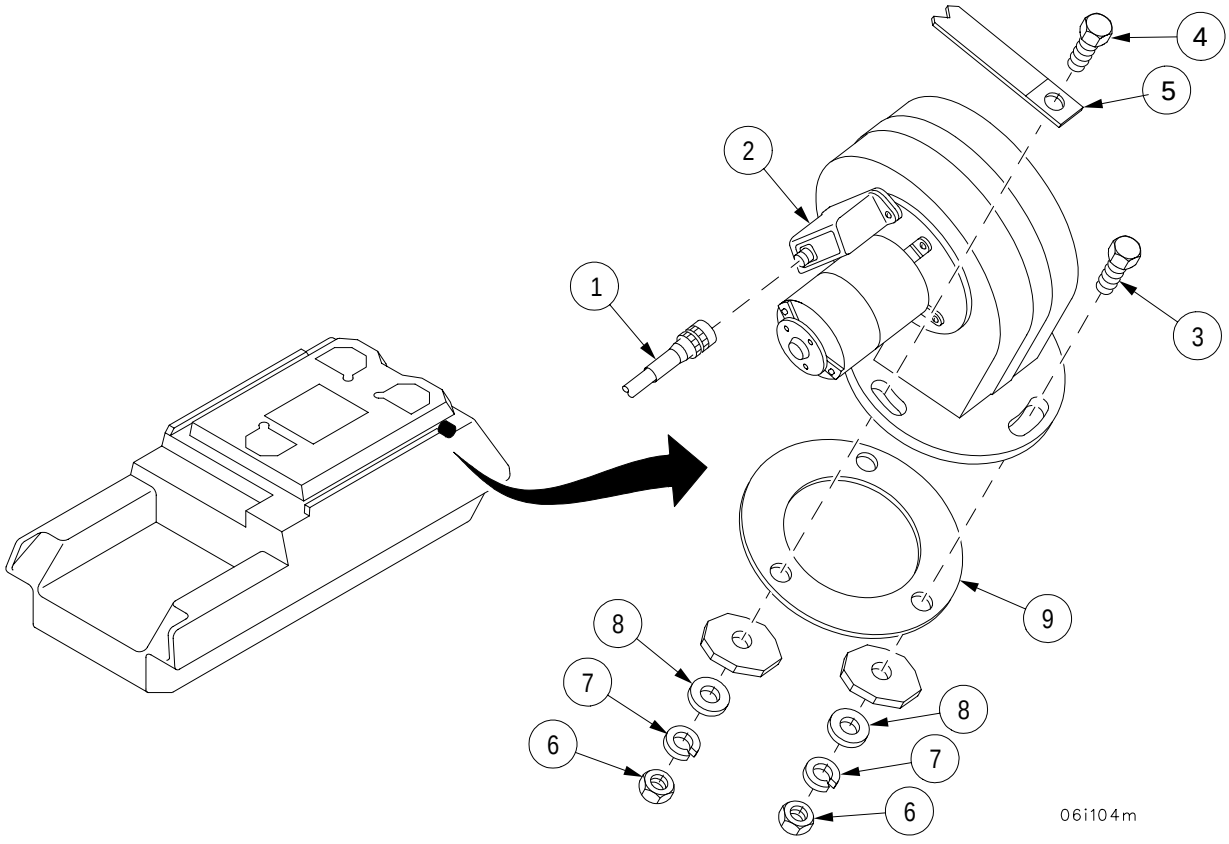
References
TM 9-2350-292-10

NOTE

Tag all electrical connections and electrical leads prior to removal to aid in installation.

Removal

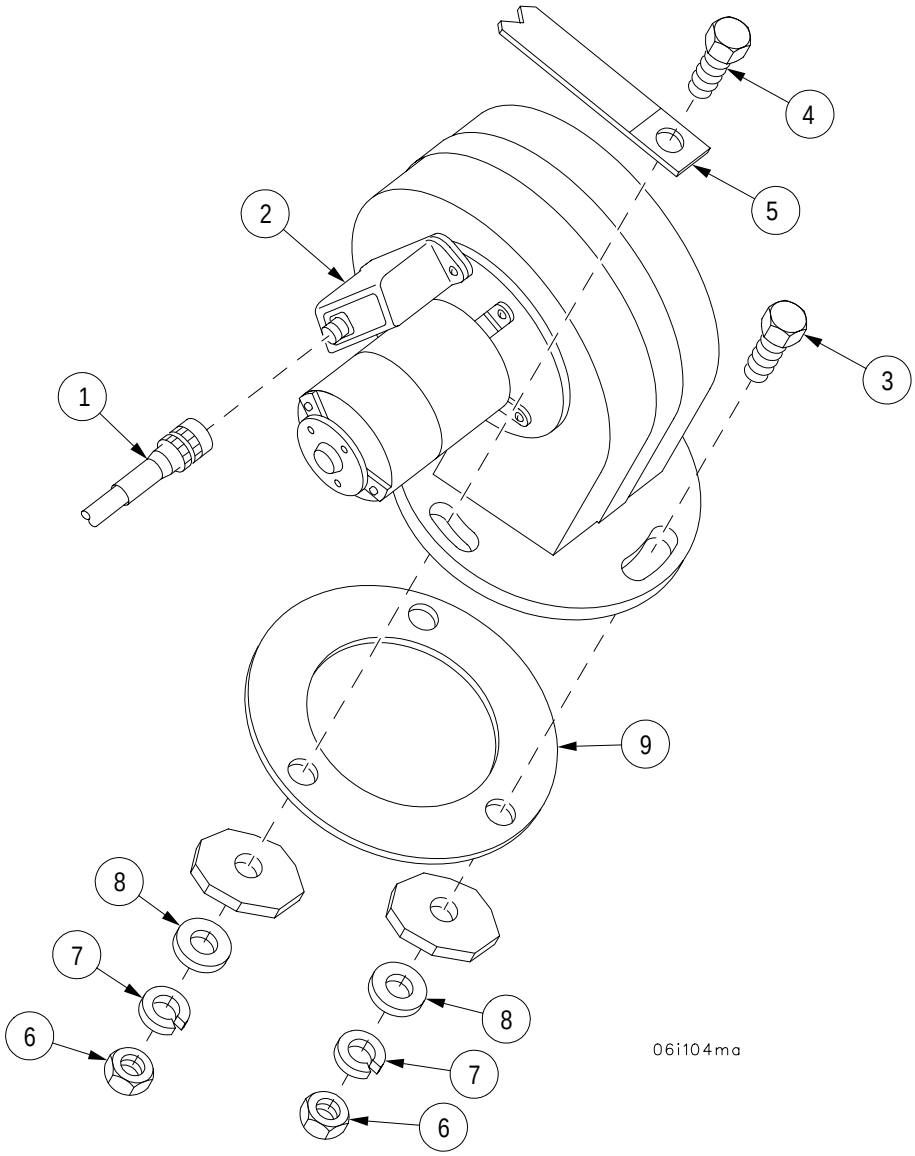
1. Disconnect wiring harness 4W153 connector P4 (1) from ventilator blower (2).
2. Remove two screws (3), screw (4), ground strap (5), three nuts (6), three lockwashers (7), three flat washers (8), ventilator blower (2) and shim (9). Discard lockwashers.
3. Inspect parts for damage and replace as required.



VENTILATOR BLOWER ASSEMBLY REPLACEMENT - CONTINUED 0344 00

Installation

1. Install ventilator blower (2) and shim (9) with two screws (3), screw (4), ground strap (5), three flat washers (8), three new lockwashers (7) and three nuts (6).
2. Connect wiring harness 4W153 connector P4 (1) to ventilator blower (2).



NOTE

FOLLOW-ON MAINTENANCE:
Connect battery power (WP 0256 00)

END OF TASK

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Winch Wire Rope Assembly Replacement, Auxiliary, 0515 00–1

Wire Rope Assembly Replacement, Auxiliary Winch, 0515 00–1

Wire Rope Assembly Replacement, Stayline Tree, 0527 00–1

Wiring Harness 2W505 Replacement, 0676 00–1

Wiring Harness 2W601 Replacement (Override Modification), 0291 01–1

Wiring Harness 2W612 Replacement (Override Modification), 0292 01–1

Wiring Harness 3W202 Replacement, 0300 00–1

Wiring Harness 3W213 And Wiring Harness 3W214 Replacement, Slave Receptacle, 0307 00–1

Wiring Harness 3W214 Replacement, Slave Receptacle, Wiring Harness 3W213 And, 0307 00–1

Wiring Harness 3W501 Replacement, Enhanced Diagnostics, 0677 00–1

ALPHABETICAL INDEX – CONTINUED

Wiring Harness 3W704 Replacement (HATZ), Auxiliary Power Unit, 0643 00–1

Wiring Harness 3W704 Replacement, Auxiliary Power Unit, 0642 00–1

Wiring Harness 3W711 Replacement (HATZ), Auxiliary Power Unit, 0649 00–1

Wiring Harness 3W711 Replacement, Auxiliary Power Unit, 0648 00–1

Wiring Harness 3W730 Replacement (HATZ), 0654 00–1

Wiring Harness 4W108 Replacement, Smoke Grenade Launcher, 0674 00–1

Wiring Harness 4W152 Repair, Gauge Panel Assembly, Support And, 0243 00–1

Wiring Harness 4W153 Replacement, 0327 00–1

Wiring Harness 4W155 Replacement, 0328 00–1

Wiring Harness 4W305 Replacement, 0709 00–1

Wiring Harness 4W306 Replacement, 0710 00–1

Wiring Harness 4W307 Replacement, 0711 00–1

Wiring Harness 4W502 Replacement, 0678 00–1

Wiring Harness 4W503 Replacement, 0679 00–1

Wiring Harness 4W504 Replacement, 0680 00–1

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Wiring Harness 4W507 Replacement, 0682 00–1

Wiring Harness 4W508 Replacement, 0683 00–1

Wiring Harness 4W617 Replacement, 0330 00–1

Wiring Harness 4W618 Replacement, 0331 00–1

Wiring Harness 4W700 Replacement, 0332 00–1

Wiring Harness 4W800 Replacement, 0333 00–1

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Wiring Harness Cable Clamps Replacement, Auxiliary Power Unit, 0592 00–1

Wiring Harness Guard Replacement, 0343 00–1

Wiring Harness Replacement, Fuel Shutoff, 0337 00–1

Wiring Harness Replacement, Guard, 0343 00–1

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:



JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0120611

DISTRIBUTION: To be distributed in accordance with the initial distribution number (IDN) 372406, requirements for TM 9-2350-292-20-1.

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25–30; the proponent agency is ODISC4.	Use Part II (*reverse)* for Repair Parts and Special Tools Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	Date
TO: (*Forward to proponent of publication or form) (Include ZIP Code)*	FROM: *(Activity and location) (include ZIP code)*	

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9–2350–292–20–1	January 01, 2002	Unit Maintenance Manual for M88A2 Heavy Recovery Vehicle

ITEM	PAGE	PARA	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON
	0188 00–2					In “INITIAL SETUP” change Lockwashers (6) (item 2, WP 0718 00) to Lockwashers (6) (item 37, WP 0718 00).

*Reference to line numbers within the paragraph or subparagraph.

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

DA FORM 2028 , FEB 74 REPLACES DA FORM 2028, 1 DEC 68, WHICH WILL BE USED. USAPPC V1.00

SAMPLE

TO: *(Forward direct to addressee listed in publication)*	FROM: *(Activity and location) (Include Zip Code)*	DATE

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE

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 *(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.)*

SAMPLE

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

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TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

CONVERSION TABLE

inch	decimal	mm
1/64	0.015625	0.3969
1/32	0.031250	0.7938
3/64	0.046875	1.1906
1/16	0.062500	1.5875
5/64	0.078125	1.9844
3/32	0.093750	2.3812
7/64	0.109375	2.7781
1/8	0.125000	3.1750
9/64	0.140625	3.5719
5/32	0.156250	3.9688
11/64	0.171875	4.3656
3/16	0.187500	4.7625
13/64	0.203125	5.1594
7/32	0.218750	5.5562
15/64	0.234375	5.9531
1/4	0.250000	6.3500
17/64	0.265625	6.7469
9/32	0.281250	7.1438
19/64	0.296875	7.5406
5/16	0.312500	7.9375
21/64	0.328125	8.3344
11/32	0.343750	8.7312

inch	decimal	mm
23/64	0.359375	9.1281
3/8	0.375000	9.5250
25/64	0.390625	9.9219
13/32	0.406250	10.3188
27/64	0.421875	10.7156
7/16	0.437500	11.1125
29/64	0.453125	11.5094
15/32	0.468750	11.9062
31/64	0.484375	12.3031
1/2	0.500000	12.7000
33/64	0.515625	13.0969
17/32	0.531250	13.4938
35/64	0.546875	13.8906
9/16	0.562500	14.2875
37/64	0.578125	14.6844
19/32	0.593750	15.0812
39/64	0.609375	15.4781
5/8	0.625000	15.8750
41/64	0.640625	16.2719
21/32	0.656250	16.6688
43/64	0.671875	17.0656
11/16	0.687500	17.4625

inch	decimal	mm
45/64	0.703125	17.8594
23/32	0.718750	18.2562
47/64	0.734375	18.6531
3/4	0.750000	19.050
49/64	0.765625	19.4469
25/32	0.781250	19.8437
51/64	0.796875	20.2406
13/16	0.812500	20.6375
53/64	0.828125	21.0344
27/32	0.843750	21.4312
55/64	0.859375	21.8281
7/8	0.875000	22.2250
57/64	0.890625	22.6219
29/32	0.906250	23.0188
59/64	0.921875	23.4156
15/16	0.937500	23.8125
61/64	0.953125	24.2094
31/32	0.96750	24.6062
63/64	0.984375	25.0031
1	1.000000	25.4000

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

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

SQUARE MEASURE

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

WEIGHTS

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

CUBIC MEASURE

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

LIQUID MEASURE

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

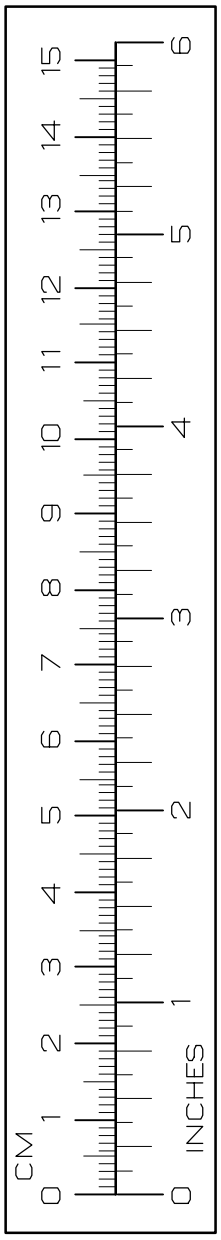
TEMPERATURE

5/9 (_F – 32) = _C
212_ Fahrenheit is equivilent to 100_ Celcius
90_ Fahrenheit is equivilent to 32.2_ Celcius
32_ Fahrenheit is equivilent to 0_ Celcius
(9/5 x _C) + 32 = _F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	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



PIN: 078531-000