

***ARMY TM 9-2355-335-23-2
AIR FORCE TO 36A12-1C-2700-2-2**

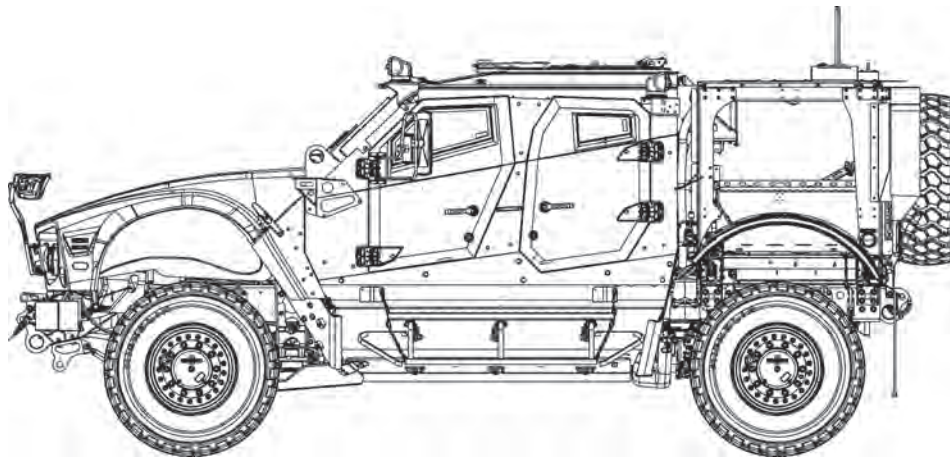
**MAINTENANCE MANUAL
COMMERCIAL-OFF-THE-SHELF (COTS)**

**FOR
MINE RESISTANT AMBUSH PROTECTED
ALL TERRAIN VEHICLE (M-ATV)**

**M1240
NSN: 2355-01-575-9632 (EIC 1UT)**

**M1240A1
NSN: 2355-01-596-1330 (EIC 1ZW)**

**M1245
NSN: 2355-01-586-8070 (EIC 1VE)**



*This manual supersedes TM 9-2355-335-23-2, dated 15 June 2011.

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HEADQUARTERS, DEPARTMENT OF THE ARMY

28 FEBRUARY 2013

SAFETY SUMMARY

This list summarizes critical warnings and cautions in this technical manual. They are listed here for summary purposes and to represent their significance. Study these warnings and cautions carefully. They can save your life and the lives of personnel you work with, as well as preventing damage to equipment. If there is any doubt or questions, contact your Supervisor.

WARNING

395/85R20 tire weighs 380 lbs (172. kg). Do not lift or move 395/85R20 tire without the aid of two assistants and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

5th seat weighs 80 lbs (37 kg). Do not attempt to remove 5th seat from vehicle without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Adequate ventilation shall be provided while using solvents and cleaners. Prolonged breathing of vapors should be avoided. Do not use near heat or open flame. Avoid prolonged contact with skin. Use of rubber gloves conforming to FED SPEC ZZ-G-281, face shield conforming to L-F-36, and other protective equipment are required according to OSHA Standard. Failure to comply may result in injury or death to personnel.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water. Failure to comply may result in injury or death to personnel.

WARNING

Air compressor weighs 50 lbs (23 kg). Do not lift or move air compressor without the aid of an assistant. Failure to comply may result in injury or death to personnel.

WARNING

Air lines may be under extreme pressure. Ensure all personnel wear protective goggles when working around compressed air. Failure to comply may result in injury or death to personnel.

WARNING

Air lines under pressure will move violently when removed. Ensure air system is drained prior to removing air lines. Failure to comply may result in injury or death to personnel.

WARNING

Air system must be drained prior to removing air dryer filter. Failure to comply may result in injury or death to personnel.

WARNING

Air system must be drained prior to removing air system components. Failure to comply may result in injury or death to personnel.

WARNING

All batteries must be disconnected prior to performing battery isolator removal. Failure to comply may result in injury or death to personnel.

WARNING

Allow heat shrink tubing to cool before handling. Failure to comply may result in injury to personnel.

WARNING

Allow solder to cool before handling. Failure to comply may result in injury to personnel.

WARNING

Alternator weighs 115 lbs (52 kg). Do not lift or move alternator without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Always wear heavy leather gloves when handling winch cable. Never let cable run through hands. Broken wires will cause injury to personnel.

WARNING

Antenna platform weighs 200 lbs (91 kg). Do not attempt to lift or move antenna platform without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Anti-corrosion compound is toxic. Use only in well-ventilated area. Use NIOSH/MSHA-approved respirator with dual organic vapor/mist and particulate cartridge. Do not get in eyes; wear chemical safety goggles and full face shield when using. Avoid contact with skin and wear rubber or plastic, solvent-resistant gloves. In case of contact, remove contaminated clothing and immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention. If swallowed, do not induce vomiting; contact a physician immediately. Failure to comply may result in injury or death to personnel.

WARNING

Avoid electrolyte contact with skin and eyes. Failure to comply may result in injury or death to personnel.

WARNING

Ballistic glass may become very hot when exposed to sun or when in a hot environment. Avoid contacting hot ballistic glass with hands or skin. Failure to comply may result in injury to personnel.

WARNING

Battery acid is harmful to skin and eyes. Always wear safety goggles, acid-proof gloves, and a rubber apron when performing battery maintenance. Failure to comply may result in injury or death to personnel.

WARNING

Be careful not to short out battery terminal. Do not smoke or use open flame near batteries. Batteries may explode from spark. Failure to comply may result in injury or death to personnel.

WARNING

Brake drum weighs 116 lbs (53 kg). Do not lift or move brake drum without the aid of an assistant and a lifting device. Failure to comply may result in injury to personnel.

WARNING

Brake shoes and inside surface of brake drum may be coated with dust. Breathing dust may be harmful to your health. Do not use compressed air to clean brake drum. Using the wet method, spray down brake drum and brake shoes with water to remove dust residue. Failure to comply may result in injury or death to personnel.

WARNING

Brake spring is under extreme tension and can act as projectile when being installed. Ensure all personnel wear protective goggles. Failure to comply may result in injury to personnel.

WARNING

Cable can become frayed or contain broken wires. Wear heavy leather-palmed gloves when handling cable. Never let moving cable slide through hands, even when wearing gloves. Failure to comply may result in injury or death to personnel.

WARNING

Cable ties must be removed from shoulder belts or shoulder belts will not function properly. Failure to comply may result in injury or death to personnel.

WARNING

Capsule doors weigh 276 to 298 lbs (125 to 135 kg). Do not attempt to lift or move capsule doors without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Capsule doors weigh 280 lbs (127 kg). Do not attempt to lift or move capsule doors without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Capsule interior fire suppression system activation rapidly release highly pressurized gas. Never put fingers inside of or look directly into fire suppression cylinder. Do not leave equipment or other objects near the cylinder. Failure to comply may result in injury to personnel.

WARNING

Capsule interior fire suppression system uses optical fire detectors. Do not smoke or have open flame inside the capsule, as fire suppression system may activate. Failure to comply may result in injury to personnel.

WARNING

Capsule windshields weigh 210 lbs (95 kg). Do not attempt to lift or move capsule windshield without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Cargo deck litter door frame weighs 55 lbs (25 kg). Do not move cargo deck litter door frame without the aid of an assistant. Failure to comply may result in injury to personnel.

WARNING

Cargo deck quick lock floor weighs approximately 80 lbs (36 kg). Do not lift or move hood without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Cargo deck side wall and dyneema panels weigh 90 lbs (41 kg). Do not move or lift side wall or dyneema panel without the aid of an assistant. Failure to comply may result in injury to personnel.

WARNING

Cargo deck weighs 1950 lbs (885 kg). Do not lift or move cargo body without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Cargo deck weighs 660 lbs (300 kg). Do not attempt to lift or move cargo deck without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Center belly deflector panel weighs 420 lbs (191 kg). Do not attempt to lift or move center belly deflector panel without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Center lifting fixture weighs 100 lbs (45 Kg). Do not attempt to lift or move center lifting fixture without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Clean up all fluid spills to prevent slip and fire hazards. Dispose of material in accordance with local hazardous waste disposal procedures. Failure to comply may result in injury to personnel and damage to the environment.

WARNING

Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facility's procedures. Failure to comply may result in injury to personnel.

WARNING

Coil spring is under extreme spring tension and can act as a projectile when installed. Raise the lower control arm very slowly to keep spring from releasing uncontrollably. Failure to comply may result in injury or death to personnel.

WARNING

Coil spring weighs 110 lbs (50 kg). Do not lift or move coil spring without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Combined weight of steering gear tray and steering gears is 319 lbs (145 kg). Do not lift or move steering gear tray and steering gears without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personnel protective equipment (goggles/shield, gloves, etc). Failure to comply may result in injury to personnel.

WARNING

Connector lubricant is harmful to skin. Prolonged or repeated contact with skin or contact with eyes may cause irritation. If eyes are contacted, rinse thoroughly and contact physician if irritation persists. If skin is contacted, wash thoroughly with soap and water. Failure to comply may result in injury or death to personnel.

WARNING

Coolant may splash during hose removal. Ensure personnel wear protective goggles. Failure to comply may result in injury to personnel.

WARNING

Cooling system assembly weighs approximately 400 lbs (182 kg). Do not attempt to lift or move cooling system assembly without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Crossmember weighs 113 lbs (51 kg). Do not attempt to lift or move crossmember without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Depending on GFE on CVRJ box shelf, weight may vary. A lifting device may be required to aid in installation. Failure to comply may result in injury or death to personnel.

WARNING

Differential assembly weighs 250 lbs (113 kg). Do not lift differential assembly without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Disconnecting the rear capsule door hardware allows the doors to move freely. Keep hands away from pinch point areas of the rear capsule door assembly, hands and fingers could get crushed or pinched. Failure to comply may result in injury to personnel.

WARNING

Do not adjust front poppet screw beyond flush with steering gear cover. Failure to comply may result in damage to equipment or injury to personnel.

WARNING

Do not attempt to pressure or leak test refrigerant R-134A air conditioning systems with compressed air. Combustible mixtures of air and R-134A may form, resulting in a fire or explosion. Failure to comply may result in injury or death to personnel.

WARNING

Do not exceed 600 lbs (272.4 kg) weight capacity of winch assembly. Failure to comply may result in injury or death to personnel.

WARNING

Do not lower jack completely until tightening sequence is complete. Failure to comply may result in injury or death to personnel.

WARNING

Do not place hand or fingers between bracket and frame when removing mounting cushions. Failure to comply may result in injury or death to personnel.

WARNING

Do not remove clamp from brake chamber. Failure to comply may result in injury or death to personnel and damage to equipment.

WARNING

Do not remove nut until lower control arm is separated from knuckle. Failure to comply may result in injury or death to personnel.

WARNING

Do not smoke, have open flame, or cause sparks near batteries. Batteries may explode. Failure to comply may result in injury or death to personnel.

WARNING

Do not use improper cleaning methods or unauthorized cleaning solvents. Failure to comply may result in injury or death to personnel and damage to equipment.

WARNING

Do not wear watches or other jewelry when working on winch cable. Jewelry can catch on equipment. Failure to comply may result in injury to personnel.

WARNING

Drilling and grinding operations are hazardous to the eyes. Eye protection is required. Failure to comply may result in injury to personnel.

WARNING

Driver side belly deflector panel weighs 364 lbs (165 kg). Do not attempt to lift or move driver side belly deflector panel without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Driver side door assembly weighs 185 lbs (84 kg) and passenger side door assembly weighs 170 lbs (77 kg). Do not attempt to lift or move assemblies without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

During normal vehicle operation, cooling system can become very hot. Allow cooling system to cool prior to servicing cooling system. Failure to comply may result in injury or death to personnel.

WARNING

During normal vehicle operation, cooling system components can become very hot. Allow cooling system to cool prior to servicing. Wear face shield and use extreme care when removing surge tank cap. Sudden release of pressure can cause a steam flash. Slowly loosen surge tank cap to the first stop to relieve pressure before removing surge tank cap completely. Use a clean, thick waste cloth or like material to remove surge tank cap. Avoid using gloves. If hot coolant soaks through gloves, personnel could be burned. Failure to comply may result in injury or death to personnel.

WARNING

During vehicle operation exhaust system can become very hot. Do not touch exhaust system components with bare hands, or allow your body to come in contact with exhaust system components. Failure to comply may result in injury to personnel.

WARNING

Engine belly deflector panel weighs 60 lbs (27 kg). Do not attempt to lift or move engine belly deflector panel without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Engine components become hot during normal operation. Allow engine to cool completely prior to performing this task. Failure to comply may result in injury or death to personnel.

WARNING

Engine must be shut down prior to working on hydraulic components to drop hydraulic pressure to zero. Potential trapped pressure may be present. Loosen couplings slowly to relieve any remaining hydraulic pressure. Failure to comply may result in injury or death to personnel.

WARNING

Ensure air system is drained prior to working on air system components. Failure to comply may result in injury or death to personnel.

WARNING

Ensure all test equipment is properly connected. Failure to comply may result in injury or death to personnel.

WARNING

Ensure batteries and undercarriage controller connector are disconnected prior to replacing sensor lines. Failure to comply may result in injury or death to personnel.

WARNING

Ensure batteries are disconnected when performing maintenance on or near batteries or electrical systems. Always remove negative battery terminals first. When reconnecting, always connect negative terminals last to avoid arcing or sparks that could cause an explosion.

WARNING

Ensure battery disconnect switch is in OFF position. Failure to comply may result in injury or death to personnel.

WARNING

Ensure blue caps are removed from aerosol generators after installation. If blue caps remain installed, aerosol generators may fail to discharge. Failure to comply may result in injury or death to personnel.

WARNING

Ensure engine oil and filter are cool prior to removal. Failure to comply may result in injury to personnel.

WARNING

Ensure fire suppression cylinder valves are in OFF position. Failure to comply may result in discharge of cylinder or injury to personnel.

WARNING

Ensure fire suppression system cylinders are in the OFF position first, then relieve pressure in sensor line system prior to replacing any sensor lines, or accidental discharge may occur. Failure to comply may result in injury or death to personnel.

WARNING

Ensure personnel wear protective goggles when removing air lines. Failure to comply may result in injury or death to personnel.

WARNING

Ensure pressure indication on gauge for sensor line system is in green arc prior to moving valve on fire suppression system cylinders to ON position. Fire suppression system cylinders could discharge when valve is moved to ON position if sensor line pressure is not in the green arc on pressure gauge. Failure to comply may result in injury or death to personnel.

WARNING

Ensure pressure is 0 psi in sensor line system prior to sensor line replacement. Failure to comply may result in injury to personnel.

WARNING

Ensure skid plate is supported during removal to avoid pinching and binding. Failure to comply may result in injury or death to personnel.

WARNING

Ensure transmission oil is cool prior to draining transmission oil. Failure to comply may result in injury to personnel.

WARNING

Ensure valve knob on inflation tool is fully closed (OUT) before proceeding. Failure to comply may result in injury or death to personnel.

WARNING

Ensure valve knob on inflation tool is fully closed (turned out counterclockwise) prior to installation. Failure to comply may result in injury or death to personnel.

WARNING

Ensure vehicle battery disconnect switch is in OFF position before inspecting fire suppression system. Failure to comply may result in injury or death to personnel.

WARNING

Exhaust pipe may be hot. Do not touch hot exhaust pipe. Failure to comply may result in injury to personnel.

WARNING

Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may be present. Failure to comply may result in injury or death to personnel.

WARNING

Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to comply may result in injury or death to personnel.

WARNING

Front differential housing weighs 250 lbs (113 kg) and rear differential housing weighs 280 lbs (127 kg). Do not lift or move differential housing without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Front seat weighs 112 lbs (51 kg). Do not attempt to move seat without the aid of an assistant and a suitable lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Front windows weigh 122 lbs (55 kg). Do not attempt to lift or move front windows without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Fuel is flammable and can explode. Keep fuel away from open flame and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. Smoking is prohibited while working with fuel. Failure to comply may result in injury or death to personnel.

WARNING

Fuel is flammable and can explode. Keep fuel away from open flame and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. Smoking is prohibited while working with fuel. Failure to comply may result in injury or death to personnel.

WARNING

Fuel tank is awkward. Do not attempt to lift or move fuel tank without the aid of an assistant and/or lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Halfshaft weighs 50 lbs (23 kg). Do not lift or move halfshaft without the aid of an assistant. Failure to comply may result in injury or death to personnel.

WARNING

Hood assembly weighs 158 lbs (72 kg). Do not lift or move hood assembly without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Hub assembly weighs 60 lbs (27 kg). Do not lift or move hub assembly without the aid of an assistant. Failure to comply may result in injury or death to personnel.

WARNING

HVAC assembly and HVAC tray weighs 60 lbs (27.2 kg). Do not move or lift HVAC assembly and HVAC tray without the aid of an assistant. Failure to comply may result in injury or death to personnel.

WARNING

Hydraulic jack is intended only for lifting vehicle, not for supporting vehicle while performing maintenance. Do not get under vehicle after vehicle has been raised, unless vehicle is properly supported with jack stands. Failure to comply may result in injury or death to personnel.

WARNING

If 395/85/20 tire was installed, configure vehicle in accordance with spare tire limp home procedure (TM 9-2355-335-10) prior to operating vehicle. Failure to comply may result in injury or death to personnel.

WARNING

If measurement does not meet acceptable minimum or maximum tolerance, pitman arm and steering gear output shaft must be replaced. Failure to take measurement or replace worn part could result in pitman arm becoming loose, causing injury or death to personnel.

WARNING

If pitman arm is not tightened to proper specifications, pitman arm could work loose or lose its attachment, causing an accident. If pitman arm is found loose, replace pitman arm and steering gear output shaft. Never weld pitman arm or steering gear output shaft. Failure to comply may result in injury or death to personnel.

WARNING

If welding, brazing, grinding, or open flame operations have been performed, any components subject to these operations must be allowed to cool before enabling automatic fire suppression system. Failure to comply may result in injury to personnel.

WARNING

Installing rear capsule door locking assembly allows the doors to move freely. Keep hands away from pinch point areas of the rear capsule door assembly, hands and fingers could get crushed or pinched. Failure to comply may result in injury to personnel.

WARNING

Keep cargo deck rear doors closed and locked at all times during spare tire stow/unstow operation. Failure to comply may result in injury to personnel.

WARNING

Keep hands and fingers away from pinch point areas of cargo quick lock floor. Failure to comply may result in injury to personnel.

WARNING

Keep hands and fingers away from pinch point areas of litter doors. Hands and fingers could get pinched or crushed. Failure to comply may result in injury to personnel.

WARNING

Keep hands and fingers away from pinch point areas of the cargo deck assembly. Hands and fingers could get crushed. Failure to comply may result in injury to personnel.

WARNING

Keep hands and fingers away from winch assembly when operating winch. Failure to comply may result in injury or death to personnel.

WARNING

Keep hands away from pinch point area of the assembly when swinging spare tire assembly. Hands and fingers could get crushed. Failure to comply may result in injury to personnel.

WARNING

Keep hands away from pinch point areas of the tire carrier assembly. Hands and fingers could get crushed. Failure to comply may result in injury to personnel.

WARNING

Keep out from under spare tire when lowering and raising spare tire. Spare tire can slip or fall. Failure to comply may result in injury or death to personnel.

WARNING

Ladder panel weighs approximately 800 lbs (363 kg). Do not attempt to lift or move ladder panel without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Lead-acid batteries contain sulfuric acid, which can cause severe burns. Avoid contact with skin, eyes, or clothing. Wear safety goggles and gloves. If battery electrolyte is spilled, take immediate action to stop its corrosive (burning) effects. If battery acid is spilled on clothing or vehicle, wash immediately with cold water. Neutralize with baking soda or household ammonia solution. If battery acid comes in contact with skin, flush with cold water to remove acid. If eyes are contacted, flush with cold water for at least 15 minutes. Seek immediate medical attention. If swallowed, drink large amounts of water or milk, follow with milk of magnesia, beaten egg, or vegetable oil. Seek immediate medical attention. Failure to comply may result in injury or death to personnel.

WARNING

Litter door and dyneema panel assembly weigh 142 lbs (65 kg). Do not move or lift litter door or dyneema panel without the aid of an assistant and a lifting device. Failure to comply may result in injury to personnel.

WARNING

Loosening of the crossbrace hardware is necessary to prevent binding of the gunner's platform while height adjustment is being made. Ensure crossbrace hardware is tight prior to using gunner's platform. Failure to comply may result in injury or death to personnel.

WARNING

Lower control arm weighs 90 lbs (41 kg). Do not attempt to lift or move upper control arm without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

M-ATV is equipped with a capsule interior automatic fire suppression system. Before performing any welding, brazing, grinding, or using open flame in capsule, batteries must be disconnected. In addition, the maintenance circuit breaker located to the right of the main circuit breaker in the dash must be pulled out to prevent accidental activation of automatic fire suppression system in the capsule. System components must also be covered. Failure to comply may result in injury to personnel.

WARNING

M-ATV is equipped with an engine compartment fire suppression system. Before performing any welding, brazing, grinding operation, or using open flame in engine compartment, batteries must be disconnected. In addition, the automatic fire suppression system for the engine compartment must be disabled to prevent accidental activation of automatic fire suppression system. System components must also be covered. Failure to comply may result in injury to personnel.

WARNING

M-ATV is equipped with an engine compartment fire suppression system. Before performing any welding, brazing, grinding operation, or using open flame in engine compartment, batteries must be disconnected. In addition, the automatic fire suppression system for the engine compartment must be disabled to prevent accidental activation of automatic fire suppression system. System components must also be covered. Failure to comply may result in injury to personnel. If welding, brazing, grinding, or open flame operations have been performed, any components subject to these operations must be allowed to cool before enabling automatic fire suppression system. Failure to comply may result in injury to personnel.

WARNING

M-ATV is equipped with an undercarriage fire suppression system designed to extinguish fires in all wheel wells and in fuel tank area. Before performing any welding, brazing, grinding operation, or using open flame in or around the wheel well/fuel tank areas, batteries must be disconnected. In addition, the automatic fire suppression system for the undercarriage must be disabled to prevent accidental activation of automatic fire suppression system system. Care must be taken to prevent damage to any of the fire suppression sensor lines which, if damaged, may trigger automatic fire suppression system upon system being enabled. Undercarriage fire suppression system is triggered by loss of pressure in sensor lines. Failure to comply may result in injury to personnel.

WARNING

Never apply load on winch with cable fully extended. Keep at least three full turns of cable on the reel. Failure to comply may result in injury or death to personnel.

WARNING

Never use fuel to clean parts. Fuel is highly flammable. Fuel may ignite during cleaning. Failure to comply may result in injury or death to personnel.

WARNING

Never use open flame to apply heat to heat shrink tubing. Heat shrinking tubing may catch fire using open flame. Failure to comply may result in injury to personnel.

WARNING

Nitrogen lines under pressure will move violently when removed. Ensure nitrogen supply is shut off prior to removing air lines. Failure to comply may result in injury or death to personnel.

WARNING

On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. Avoid prolonged contact with skin. Failure to comply may result in injury or death to personnel.

WARNING

Once tab lock retainer is locked into place, do not retighten. Constant retightening of retainer could cause pitman arm to loosen or retainer to fail, causing an accident at a later date. Failure to comply may result in injury or death to personnel.

WARNING

Once top screws are removed from rear seat mount, the seat will pivot forward. Do not sit in seat after screws are removed. Failure to comply may result in injury or death to personnel.

WARNING

Panel assemblies for cargo body weigh 90 lbs (41 kg). Do not attempt to lift or move assemblies without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Passenger side belly deflector panel weighs 353 lbs (160 kg). Do not attempt to lift or move passenger side belly deflector panel without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Pitman arm will be extremely tight. Do not pound on pitman arm or apply any source of heat, as damage to pitman arm or output shaft can cause an accident at a later date. Failure to comply may result in injury or death to personnel.

WARNING

Place a jackstand on each side of lifting device centered on ladder panel in case of transmission jack failure. Failure to comply may result in injury or death to personnel.

WARNING

Powertrain weighs 2,300 lbs (1 044 kg). Do not attempt to lift or move powertrain without the aid of two assistants and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Pressure wash area to remove discharged fire suppression chemicals prior to maintenance or service. Ensure fire suppression cylinder valves are in OFF position. Failure to comply may result in discharge of cylinder or injury to personnel.

WARNING

Pressure wash area to remove discharged fire suppression chemicals prior to maintenance or service. Ensure batteries are disconnected. Failure to comply may result in discharge of cylinder or injury to personnel.

WARNING

Primary steering gear weighs 75 lbs (34 kg). Do not lift or move primary steering gear without the aid of an assistant. Failure to comply may result in injury to personnel.

WARNING

Prolonged contact with lubricating oil may cause skin rash. Immediately wash skin and clothing that come in contact with lubricating oil and remove saturated clothing. Keep area well-ventilated to keep fumes at a minimum. Failure to comply may result in injury or death to personnel.

WARNING

Propeller shaft is awkward. Do not lift or move propeller shaft without the aid of an assistant and/or a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Propeller shaft weighs 60 lbs (27 kg). Do not lift or move propeller shaft without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Propeller shaft weighs 88 lbs (40 kg). Do not lift or move propeller shaft without the aid of an assistant. Failure to comply may result in injury or death to personnel.

WARNING

Push bumper is 310 lbs (140 kg). Do not attempt to lift or move push bumper without aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Radiator and transmission oil cooler weigh 65 lbs (29 kg). Do not lift or move radiator and transmission oil cooler without the aid of an assistant. Failure to comply may result in injury or death to personnel.

WARNING

Rear crossmember weights 110 lbs (50 kg). Do not attempt to lift or move rear crossmember without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Rear seat weighs 83 lbs (38 kg). Do not attempt to move seat without the aid of an assistant and suitable lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Rear wall and dyneema panels weigh 90 lbs (41 kg). Do not move or lift rear wall or dyneema panel without the aid of an assistant. Failure to comply may result in injury to personnel.

WARNING

Rear wall assemblies for cargo deck weigh 90 lbs (41 kg). Do not attempt to lift or move assemblies without the aid of an assistant. Failure to comply may result in injury or death to personnel.

WARNING

Rear windows weigh 46 lbs (21 kg). Do not attempt to lift or move rear window without the aid of an assistant. Failure to comply may result in injury or death to personnel.

WARNING

Refrigerant R-134a air conditioning systems should not be pressured-tested or leak-tested with compressed air. Combustible mixtures of air and R-134a may form. Failure to comply may result in injury or death to personnel.

WARNING

Remove all jewelry, such as rings, dog tags, bracelets, etc. If jewelry contacts battery terminal or positive electrical circuit, a direct short may result in instant heating of tools, injury or death to personnel, or damage to equipment.

WARNING

Removing rear capsule door locking assembly allows the doors to move freely. Keep hands away from pinch point areas of the rear capsule door assembly, hands and fingers could get crushed or pinched. Failure to comply may result in injury to personnel.

WARNING

Secondary steering gear weighs 70 lbs (32 kg). Do not lift or move secondary steering gear without the aid of an assistant. Failure to comply may result in injury to personnel.

WARNING

Secure transfer case to transmission jack with ratchet strap. Failure to comply may result in injury or death to personnel.

WARNING

Shock absorbers are filled with high pressure gas. Service shock absorbers with adequate ventilation. Do not use or store cylinder near heat or open flame. Cylinder temperature should not exceed 125°F (52°C). Use with equipment rated for cylinder pressure. Open valve slowly. Close valve after each use and in storage. Use in accordance with Material Safety Data Sheet for Nitrogen. If inhaled, move to area with fresh air. Failure to comply may result in injury or death to personnel.

WARNING

Side lifting fixture weighs 95 lbs (43 Kg). Do not attempt to lift or move side lifting fixture without the aid of an assistant and a lifting device. Failure to comply may result in injury of death to personnel.

WARNING

Skid plate weighs 53 lbs (24 kg). Do not lift or move skid plate without the aid of an assistant. Failure to comply may result in injury or death to personnel.

WARNING

Solvent cleaning compound MIL-PRF-680 Type II and III may be irritating to the eyes and skin. Use protective gloves and goggles. Use in well-ventilated areas. Use respirator as needed. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If symptoms persist, seek medical attention. Keep away from open flames and other flames and other sources of ignition. Failure to follow this warning may result in injury or death to personnel.

WARNING

Solvents used with a spray gun must be used in a spray booth with filter. Face shield must be used by personnel operating spray gun. Failure to comply may result in injury to personnel.

WARNING

Spare tire weighs 380 lbs (172. kg). Do not attempt to lift or move spare tire without the aid of two assistants and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

SPARK bar weighs 97 lbs (44 kg). Do not lift or move SPARK bar without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Spindle may become loose when removing spider. Support spindle when removing spider. Failure to comply may result in injury to personnel.

WARNING

Spring brake chamber contains a spring under great pressure. Never work directly behind spring brake chamber. Failure to comply may result in injury or death to personnel and damage to equipment.

WARNING

Spring may come free from vehicle while lowering jack. Spring may have to be rotated to aid in removal. Failure to comply may result in injury or death to personnel.

WARNING

Springs and retaining rings are under extreme tension and can act as projectiles when being installed. Ensure all personnel wear protective goggles. Failure to comply may result in injury to personnel.

WARNING

Stand clear of vehicle while wheels are turned. Failure to comply may result in injury or death to personnel.

WARNING

Standard M1240A1 tire assembly weighs 600 lbs (272.4 kg). Do not attempt to lift or move tire assembly without the aid of an assistant and a suitable lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Starter weighs 50 lbs (23kg). Do not lift or move starter without the aid of an assistant. Failure to comply may result in injury to personnel.

WARNING

Steam cleaning creates hazardous noise levels and severe burn potential. Eye, skin, and ear protection are required. Failure to comply may result in injury to personnel.

WARNING

The flashpoint for Type II solvent cleaning compound is 141 to 198°F (61 to 92°C) and Type III is 200 to 241°F (93 to 116°C).

WARNING

Tip of removal tool is very sharp. Use caution when using tool. Failure to comply may result in injury to personnel.4

WARNING

To prevent arcing, do not allow tools to contact batteries or other battery terminals. Failure to comply may result in injury or death to personnel.

WARNING

Transfer case weighs 312 lbs (142 kg). Do not lift or move transfer case without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Transmission holding bracket weighs 93 lbs (42 kg). Do not attempt to lift or move transmission holding bracket without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Transmission weighs 700 lbs (318 kg). Do not lift or move transmission without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Turn cap on coolant reservoir bottle one half turn and stop prior to removing cap completely. Pressure must be relieved from coolant reservoir bottle prior to removal of cap or injury to personnel may occur.

WARNING

Underbody improvement panel weighs 1,000 lbs (454 kg). Do not attempt to lift or move center deflector panel without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Upon removal of terminal clamps, avoid accidental contact between terminal clamps and battery terminals. This will prevent accidental shorting, arching, or sparks. Secure terminal clamps, cables, and wires away from battery terminals with cable ties as required. Failure to comply may result in injury or death to personnel.

WARNING

Upon removal of wires and cables, ensure no contact is made with battery terminals or other wires and cables. Secure wires and cables away from battery terminals and other wires and cables as required. Failure to comply may result in injury or death to personnel or damage to equipment.

WARNING

Upper control arm weighs 80 lbs (36 kg). Do not attempt to lift or move upper control arm without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Use care to prevent refrigerant from touching skin or eyes. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Failure to comply may result in injury or death to personnel.

WARNING

Use extreme care not to short out battery terminals. Remove all jewelry such as rings, ID tags, bracelets, etc. prior to working on or around vehicle. Jewelry and tools can catch on equipment, contact positive electrical circuits, and cause severe burns or electrical shock. Failure to comply may result in injury or death to personnel.

WARNING

Vehicle must not be driven with brake chambers caged. Caging brakes renders brakes inoperative. Failure to comply may result in injury or death to personnel.

WARNING

Wear proper eye protection and nonleather gloves when servicing air conditioner. Failure to comply may result in injury or death to personnel.

WARNING

Wear proper eye protection and use care when removing or installing springs, retaining rings, and snap rings. Springs, retaining rings, and snap rings are under spring tension and can act as projectiles when released. Spring must be compressed during assembly. Failure to comply may result in injury to personnel.

WARNING

Wear proper eye protection and use care when removing or installing springs, retaining rings, and snap rings. Springs, retaining rings, and snap rings are under spring tension and can act as projectiles when released. Valve is spring loaded. Spring must be compressed during assembly. Failure to comply may result in injury to personnel.

WARNING

Wheel end assembly weighs 550 lbs (249 kg). Do not remove lower and upper control arm ball joints at the same time. Failure to comply may result in injury or death to personnel.

WARNING

Wheel well deflector panel weighs 54 lbs (24.5 kg). Do not attempt to lift or move wheel well deflector panel without the aid of an assistant. Failure to comply may result in injury or death to personnel.

WARNING

Wheel well deflector panel weighs 60 lbs (27 kg). Do not attempt to lift or move wheel well deflector panel without the aid of an assistant. Failure to comply may result in injury or death to personnel.

WARNING

When removing air lines, loosen couplings slowly to bleed off air pressure in air lines. Ensure personnel wear protective goggles when removing air lines. Failure to comply may result in injury or death to personnel.

WARNING

When removing relief valves, loosen relief valves slowly to bleed off any trapped pressure that might be present. Ensure personnel wear protective goggles when removing relief valves. Failure to comply may result in injury or death to personnel.

WARNING

When tightening castle nut, do not loosen castle nut to install cotter pin. Continue to tighten castle nut until cotter pin can be installed. Failure to comply may result in injury or death to personnel.

WARNING

When using a punch and ball peen hammer, always wear safety glasses. Never use a punch that is damaged. Failure to comply may result in injury or death to personnel.

WARNING

While engine is running, transmission **MUST** be in N (neutral), **PARKING BRAKE** must be set and properly engaged, and wheels **MUST** be chocked. Failure to comply may result in injury or death to personnel.

WARNING

Winch and front crossmember are removed/installed as an assembly. Winch and front crossmember weigh 214 lbs (97 kg). Do not lift or move winch and crossmember without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Winch and winch bracket are removed as an assembly. Winch and winch bracket weigh 167 lbs (76 kg). Do not lift or move winch bracket without the aid of an assistant and/or a lifting device. Failure to comply may result in injury or death to personnel.

WARNING

Winch is NOT to be used for lifting or moving of persons. Failure to comply may result in injury or death to personnel.

WARNING

Winch is only to be used to stow/unstow spare tire. Winch is not to be used to lift other components or material. Failure to comply may result in injury or death to personnel.

WARNING

Winch weighs 119 lbs (54 kg). Do not lift or move winch without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

CAUTION

A bearing is located directly behind seal in spindle. When prying seal from spindle, do not damage bearing. Failure to comply may result in damage to equipment.

CAUTION

A resistance load of 175 lbs (79 kg) must be applied to wire rope to overcome internal resistance and operate winch brake properly. Turning winch handle counterclockwise will remove winch handle from drive shaft and reel will not turn. Failure to comply may result in damage to equipment.

CAUTION

After charging, allow charge to set 10 to 15 minutes. This allows time for the gas temperature to stabilize. Failure to comply may result in damage to equipment.

CAUTION

After powertrain is lifted up, front rubber mounts and washers may need to be removed for oil pan clearance. Failure to comply may result in damage to equipment.

CAUTION

All air cleaner element maintenance must be performed above temperatures of -10°F (-23°C). Failure to comply may result in damage to equipment.

CAUTION

Avoid excess removal of surface finish to adjacent area. Failure to comply may result in damage to equipment.

CAUTION

Blower motor cover should be reinstalled prior to HVAC assembly removal to prevent damage to HVAC internal wiring harness and /or components. Failure to comply may result in damage to equipment.

CAUTION

Boot damage will result if hammer is allowed to strike soft boot material. Strike only the metal boot band. Failure to comply may result in damage to equipment.

CAUTION

Butt splice connector sizes vary by wire diameter. To ensure secure repair, use only butt splice connector size specified for the wire being repaired. Do not modify butt splice connector to fit. Failure to comply may result in damage to equipment.

CAUTION

Care must be used when installing 395/85R20 tire on tire carrier. Air valve on 395/85R20 tire is inserted through top driver side slot of tire carrier. Ensure spacer is aligned properly to avoid damage to CTIS valve. Failure to comply may result in damage to equipment.

CAUTION

Cargo deck side wall panel must be placed on a soft, flat surface before removing dyneema panel. Failure to comply may result in damage to equipment.

CAUTION

Caution must be used when installing spare tire on tire carrier. Air valve on spare tire is inserted through top driver side slot of tire carrier. Failure to comply may result in damage to equipment.

CAUTION

Caution must be used when removing spare tire from tire carrier. Air valve on spare tire is inserted through top driver side slot of tire carrier. Failure to comply may result in damage to equipment.

CAUTION

Charge air cooler is cumbersome. It should be installed with the aid of an assistant. Failure to comply may result in damage to equipment.

CAUTION

Charge air cooler is cumbersome. It should be removed with the aid of an assistant. Failure to comply may result in damage to equipment.

CAUTION

Clamp belt above retractor prior to removal to prevent belt from retracting completely. Failure to comply may result in damage to equipment.

CAUTION

CTIS controller and CTIS dash panel must be kept together before CTIS controller connector is connected and during installation in dash. Failure to comply may result in damage to equipment.

CAUTION

CTIS controller and CTIS dash panel must be kept together during removal until CTIS controller connector is removed. Failure to comply may result in damage to equipment.

CAUTION

Cutout for retractor is not centered on mat. Align cutout in mat with cutout in gunner's platform and check for proper positioning prior to cutting. Failure to comply may result in damage to equipment.

CAUTION

Differential housing must be secured to transmission jack with strap. Failure to comply may result in damage to equipment.

CAUTION

Do not allow slip yoke to come off propeller shaft. Failure to comply may result in misalignment of propeller shaft yokes and could cause damage to equipment.

CAUTION

Do not apply excessive heat to heat shrink tubing. Excessive heat may cause heat shrink tubing to split or melt. Failure to comply may result in damage to equipment.

CAUTION

Do not bend locking tabs in pitman arm slots. Failure to comply may result in damage to equipment.

CAUTION

Do not clean tires, rubber hoses, or electrical components with solvent mixture. Failure to comply may result in damage to equipment.

CAUTION

Do not fill ball joint boot with too much grease. If boot is bulging when installed, squeeze out excess grease. Failure to comply may result in damage to equipment.

CAUTION

Do not hold steering wheel at full left or full right for longer than 10 seconds. Oil overheating may occur. Failure to comply may result in damage to equipment.

CAUTION

Do not lubricate A/C system O-rings. O-ring material is only compatible with air conditioning type lubricants. Failure to comply may result damage to equipment.

CAUTION

Do not open cover for farther than is required to disconnect connector. Failure to comply may result in damage to equipment.

CAUTION

Do not operate vehicle system with the panel high-side valve in open position. Failure to comply may result in damage to equipment.

CAUTION

Do not over tighten threaded insert. Failure to comply may result in damage to equipment.

CAUTION

Do not overcharge system. The system is fully charged with 3.5 lbs (1.59 kg) of refrigerant. Failure to comply may result in damage to equipment.

CAUTION

Do not overtighten clamp on heater control valve. Failure to comply may result in damage to equipment.

CAUTION

Do not overtighten locknuts. Failure to comply may result in damage to hood.

CAUTION

Do not overtighten nuts (14). Failure to comply may result in damage to receiver/dryer, loss of refrigerant, and damage to equipment.

CAUTION

Do not overtighten screw. Failure to comply may result in damage to equipment.

CAUTION

Do not permit dirt, dust, or grit to enter transmission filler tube. Thoroughly clean dipstick handle and end of filler tube. Failure to comply may result in damage to equipment.

CAUTION

Do not shorten springs on CTIS seals. Failure to comply may result in damage to equipment.

CAUTION

Do not spray cleaning solvent on the front of the dash panels or gauges. This can cause discoloration and clouding of dash panels and gauges. Failure to comply may result in damage to equipment.

CAUTION

Do not use a hammer to pound halfshaft into wheel end. Failure to comply may result in damage to equipment.

CAUTION

Do not use a removal tool to aid in removal of tie rod from pitman arm. Failure to comply may result in damage to dust cover.

CAUTION

Do not use a removal tool to aid in removal of toe control link from steering arm. Failure to comply may result in damage to dust cover.

CAUTION

Do not use a wrench to tighten oil filter housing. Failure to comply may result in damage to equipment.

CAUTION

Do not use an abrasive brush to wash vehicle. Failure to comply may result in damage to equipment.

CAUTION

Do not use cool water when cleaning hot ballistic glass. Putting cool water on hot ballistic glass may cause window to crack or delaminate. Failure to comply may result in damage to equipment.

CAUTION

Do not use mounting screws to draw filter cover to the sump. Failure to comply may result in damage to cover, seals, or sump.

CAUTION

Do not use soap or alkalies for cleaning tank interiors. Failure to comply may result in damage to equipment.

CAUTION

Do not use wrench to tighten fuel filter. Failure to comply may result in damage to equipment.

CAUTION

Drain plug is magnetized and can not be exchanged with fill plug. Failure to comply may result in damage to equipment.

CAUTION

During installation of bottom brake shoe, an assistant is required to support brake shoe until springs are installed. Failure to comply may result in damage to equipment.

CAUTION

Ensure all connectors and wiring are free before lifting hood from vehicle. Failure to comply may result in damage to equipment.

CAUTION

Ensure all connectors remain disconnected while performing Steps (11) through (22). Failure to comply may result in damage to equipment.

CAUTION

Ensure all GFE cables, wire harnesses, fire suppression lines, and connectors are away from antenna platform. Remove antenna platform slowly from vehicle. Failure to comply may result in damage to equipment.

CAUTION

Ensure all GFE is disconnected prior to removal of GFE wire bundles. Failure to comply may result in damage to equipment.

CAUTION

Ensure all hoses, lines, harnesses, cables, and wires are clear of powertrain installation path. Failure to comply may result in damage to equipment.

CAUTION

Ensure all hoses, lines, harnesses, cables, and wires are not attached to powertrain. Failure to comply may result in damage to equipment.

CAUTION

Ensure all wires and cables are clear of HVAC installation path. Failure to comply may result in damage to equipment.

CAUTION

Ensure all wires and cables are clear of HVAC removal path. Failure to comply may result in damage to equipment.

CAUTION

Ensure any open tube, line, or fitting on the turbocharger and its related systems are capped and plugged. Failure to comply may result in damage to equipment.

CAUTION

Ensure assistant is holding knuckle securely. Failure to comply may result in damage to equipment.

CAUTION

Ensure batteries are disconnected. Batteries will discharge during storage if not disconnected. Failure to comply may result in damage to equipment.

CAUTION

Ensure battery disconnect switch is turned OFF prior to performing battery maintenance. Failure to comply may result in damage to equipment.

CAUTION

Ensure cables and hoses are positioned above transmission during installation. Failure to comply may result in damage to equipment.

CAUTION

Ensure cables and hoses are positioned above transmission during removal. Failure to comply may cause damage to equipment.

CAUTION

Ensure cables are installed correctly on NATO slave receptacle. Terminal assembly is offset from center of receptacle. Positive terminal (red cable) is closest to the center of receptacle. Negative (black cable) is farther away from center of receptacle. Failure to comply may result in damage to equipment.

CAUTION

Ensure connectors are completely seated. Failure to comply may result in damage to equipment.

CAUTION

Ensure correct oil level. Low level causes lack of lubrication and reduces durability. High level causes splashing and leads to overheating of transfer case.

CAUTION

Ensure engine is full of oil prior to starting engine. Failure to comply may result in damage to equipment.

CAUTION

Ensure longer bolt is installed in top position. Failure to comply may result in damage to equipment.

CAUTION

Ensure mating surfaces of differential lock chamber, shim plates, and differential assembly are clean to prevent differential leaks. Failure to comply may result in damage to equipment.

CAUTION

Ensure pilot is installed on base prior to removal. Failure to comply may result in damage to equipment.

CAUTION

Ensure retractor straps are secured prior to removing retractors. Failure to comply may result in damage to equipment.

CAUTION

Ensure setscrews are recessed no further than past side belly deflector panel or crossmember will not be held in place and may come off with panel. Failure to comply may result in damage to equipment.

CAUTION

Ensure spline cover is completely covering spindle splines and threads when installing hub assembly. Failure to comply may result in damage to equipment.

CAUTION

Ensure the rear light wire harness, fire suppression sensor wires, fire suppression lines, and Check-6 cables are properly routed prior to installing cargo deck on vehicle. Failure to comply may result in damage to equipment.

CAUTION

Ensure tires are not resting on surface containing grease or oil. Failure to comply may result in damage to equipment.

CAUTION

Ensure transmission oil level is at normal operating range. Failure to comply may result in damage to transmission.

CAUTION

Ensure wires, harnesses, lines, and hoses are clear from back of power steering reservoir during installation. Failure to comply may result in damage to equipment.

CAUTION

Excess sensor cable must be secured to air line to prevent it from contacting propeller shaft. Failure to comply may result in damage to equipment.

CAUTION

Failure to perform Step (1) may result in damage to equipment.

CAUTION

Failure to perform Step (3) may result in damage to equipment.

CAUTION

Fan shroud housing and fan are difficult to install. Use care not to damage radiator. Install with the aid of an assistant. Failure to comply may result in damage to equipment.

CAUTION

Fan shroud housing and fan are difficult to remove. Remove with the aid of an assistant and use care not to damage radiator. Failure to comply may result in damage to equipment.

CAUTION

Fill fuel filter with clean fuel before installing. Failure to comply may result in damage to equipment.

CAUTION

Fill shock slowly. Failure to comply may result in damage to equipment.

CAUTION

For installation of differential in housing, install 3/8 x 1/2 inch screw into differential lock-up screw hole prior to installing differential assembly into housing. Failure to comply may result in damage to equipment.

CAUTION

For removal of differential from housing, install 3/8 x 1/2 in. screw into differential assembly lock-up screw hole prior to removing inner shaft. Failure to comply may result in damage to equipment.

CAUTION

Front and rear brake drums are not interchangeable. Ensure brake drums are not switched during removal and installation. Failure to comply may result in damage to equipment.

CAUTION

Front rubber mounts may need to remain uninstalled until oil pan has cleared front mounting position. Failure to comply may result in damage to equipment.

CAUTION

Have an assistant monitor powertrain-to-chassis clearance during installation. Failure to comply may result in damage to equipment.

CAUTION

Have an assistant monitor powertrain-to-chassis clearance during removal. Failure to comply may result in damage to equipment.

CAUTION

HVAC hose needs at least one inch (2.54 cm) clearance from drive belt. Failure to comply may result in damage to equipment.

CAUTION

If coolant is being replaced, mix coolant into 50/50 mixture of coolant and distilled water. Do not have more than 60% coolant in mixture. Failure to comply may result in damage to equipment.

CAUTION

If tabs and notches do not line up, tighten beyond specified torque value until two tabs align. Never back off the retainer to align restraining tabs. Failure to comply may result in damage to equipment.

CAUTION

Install same number of shim plates as was removed. Failure to comply may result in damage to equipment.

CAUTION

Ladder structure panel utilizes foam inserts on underside. Ensure panel is supported in a way which protects the foam inserts while lifting into place on vehicle. Failure to comply may result in damage to equipment.

CAUTION

Ladder structure panel utilizes foam inserts on underside. Ensure panel is supported in a way which protects the foam inserts while removing from vehicle. Failure to comply may result in damage to equipment.

CAUTION

Litter door must be placed on a soft, flat surface before removing dyneema panel. Failure to comply may result in damage to equipment.

CAUTION

Loosen jam nut prior to removal of setscrew from differential lock chamber. Failure to comply may result in damage to equipment.

CAUTION

Only remove hood support bracket far enough away from capsule for access of remaining hardware. Failure to comply may result in damage to equipment.

CAUTION

Overtightening will cause deformation of the pipe fitting and damage to the joining fitting, flange, or component. Failure to comply may result in damage to equipment.

CAUTION

Perform Steps (5) through (8) for operation checks. Failure to comply may cause damage to vehicle.

CAUTION

Position tire assembly so that CTIS hole in tire assembly is aligned with CTIS port. Damage to CTIS system may result if tire assembly is not correctly installed. Failure to comply may result in damage to equipment.

CAUTION

Powertrain must be installed carefully with a combination of downward and rearward movements. Failure to comply may result in damage to equipment.

CAUTION

Powertrain must be removed carefully with a combination of forward and upward movements. Failure to comply may result in damage to equipment.

CAUTION

Prior to installing and adjusting setscrew, air system must be charged. Failure to comply may result in damage to equipment.

CAUTION

Prior to performing the installation process, ensure inside of canister and housing are clean. Place clean cloth on hard surface. Failure to comply may result in damage to equipment.

CAUTION

Prior to removing sensor, carefully remove sealant from cable and knuckle. Failure to comply may result in damage to equipment.

CAUTION

Raise transmission only enough to release pressure on spring support. Failure to comply will result in damage to equipment.

CAUTION

Rear cargo door must be placed on a soft, flat surface before removing dyneema panel. Failure to comply may result in damage to equipment.

CAUTION

Rear wall panel must be placed on a soft, flat surface before removing dyneema panel. Failure to comply may result in damage to equipment.

CAUTION

Remove old sealing remainders from threads on the shift cylinder cover, adjustment screw, and locknut. Failure to comply may result in damage to equipment.

CAUTION

Remove remaining gasket remnants from top surface of thermostat housing and bottom surface of thermostat outlet weldment. Prepare both surfaces for new gasket. Failure to comply may result in damage to equipment.

CAUTION

Retaining springs may fit loosely in seals. Ensure retaining springs are installed during installation of seals. Failure to comply may result in damage to equipment.

CAUTION

Small piece of tape wound around end of cable will aid in installation.

CAUTION

Strip wire after placing it through seal to prevent damage to individual wire strands. Failure to comply may result in damage to equipment.

CAUTION

Support ignition relay during installation to prevent relay from hanging by wires. Failure to comply may result in damage to equipment.

CAUTION

Support ignition relay during removal to prevent relay from hanging by wires. Failure to comply may result in damage to equipment.

CAUTION

Support power steering reservoir during front bracket removal. Power steering reservoir could shift when front bracket is removed. Failure to comply may result in damage to equipment.

CAUTION

Support power steering reservoir until mounting bracket is secured. Failure to comply may result in damage to equipment.

CAUTION

Take care to prevent kinks from forming in cable, as this will weaken cable. Failure to comply may result in damage to equipment.

CAUTION

Take care when removing brackets from hood. Hood will no longer be secured if removing both brackets. Failure to comply may result in damage to equipment.

CAUTION

Tension rods are loosened and not removed in Step (1). Failure to comply may result in damage to equipment.

CAUTION

Terminals come in different styles and sizes. To prevent damage, be sure to use only the exact replacements. Do not attempt to modify terminal to fit. Failure to comply may result in damage to equipment.

CAUTION

The life of a cable directly relates to its use and to the care it receives. A cable must be “stretched” or spooled onto the drum under a load of at least 500 lbs (227 kg). The objective of “stretching” is to produce tight, even wraps on the inner and outer layers of the cable, thus preventing binding or kinking. Failure to comply may result in damage to equipment.

CAUTION

The transmission must not be operated for extended periods of time until a hot check has verified proper oil level. Do not operate transmission for extended periods at improper oil level conditions. Failure to comply may result in damage to equipment.

CAUTION

Tighten screws in a crisscross pattern. Failure to comply may result in damage to equipment.

CAUTION

Torque adapter must be 90° to torque wrench. Failure to comply may result in damage to equipment.

CAUTION

Tube must be fully removed from tie down pass through prior to lifting cargo deck. Failure to comply may result in damage to equipment.

CAUTION

Turn battery disconnect switch to the OFF position prior to inspecting and/or disconnecting any electrical connector for the fire suppression system. Failure to comply may result in damage to equipment.

CAUTION

Use brass drift to tap in bearing cups. Failure to comply may result in damage to equipment.

CAUTION

Use care not to damage components while prying apart. Failure to comply may result in damage to equipment.

CAUTION

Use care when connecting connectors. Failure to comply may result in damage to equipment.

CAUTION

Use care when installing new bearing, to prevent accidental damage to bearing. Failure to comply may result in damage to equipment.

CAUTION

Use care when installing screws into threaded blocks for front seat. If a threaded block is loosened, removal of belly armor is required to properly secure the seat.

CAUTION

Use care when installing wheel/tire assembly. Dragging wheel/tire assembly across studs may result in damage to studs. Failure to comply may result in damage to equipment.

CAUTION

Use caution when inserting tension rods through vehicle. Ensure tension rods do not contact air lines, hydraulic hoses, or wire harnesses. Failure to comply may result in damage to equipment.

CAUTION

Use caution when removing tension rods from vehicle. Ensure tension rods do not contact air lines, hydraulic hoses, or wire harnesses. Failure to comply may result in damage to equipment.

CAUTION

Use caution while installing cargo deck on vehicle. Ensure nothing becomes caught or bound during installation. Failure to comply may result in damage to equipment.

CAUTION

Use caution while removing cargo deck from vehicle. Ensure wire harness, fire suppression sensor wires, fire suppression lines, and Check-6 cables do not become caught or bound during removal. Failure to comply may result in damage to equipment.

CAUTION

Vehicle armor is threaded; do not attempt to force screw out. Screw must be turned out. Failure to comply may result in damage to equipment.

CAUTION

Vehicles must not have ballistic glass cleaned with solvent or other strong cleaning compounds. Ballistic glass must only be cleaned with a lint-free cloth and a mild solution of warm water and soap. Failure to comply may result in damage to equipment.

CAUTION

Washer (5) and washer (8) are not interchangeable. Note their location. Failure to comply may result in damage to equipment.

CAUTION

Washers (5 and 8) are not interchangeable. Switching washers during installation may cause damage to equipment.

CAUTION

When drilling out threaded insert, do not enlarge existing hole. The new threaded insert will not seat properly if hole is enlarged. Failure to comply may result in damage to equipment.

CAUTION

When installing hub assembly on spindle, install hub assembly in one straight, smooth, continuous process. Do not stop during process and relax hub assembly on CTIS seals. Use care not to drag hub assembly along spindle shaft. Failure to comply may result in damage to equipment.

CAUTION

When installing pitman arm, timing marks on pitman arm and steering output shaft must be aligned as noted prior to removal. Failure to comply may result in damage to equipment.

CAUTION

When installing propeller shaft on yoke, ensure bearing caps remain on universal joint. Failure to comply may result in lost or damaged needle bearings.

CAUTION

When one brake shoe needs to be replaced, all brake shoes for that axle must be replaced. Failure to comply may result in damage to equipment.

CAUTION

When removing and installing battery terminals and cables from batteries, ensure they are removed and installed in proper sequence as described below. Failure to comply may result in damage to equipment.

CAUTION

When removing differential lock chamber from differential assembly, note number of shims removed. Same number of shims must be used when installing lock chamber. Failure to comply may result in damage to equipment.

CAUTION

When removing propeller shaft from yokes, ensure bearing caps remain on universal joint. Failure to comply may result in lost or damaged needle bearings.

CAUTION

When removing seal from spindle, do not damage spindle bore where seal is seated. Failure to comply may result in damage to equipment.

CAUTION

When removing washer from sun gear, do not damage surface of sun gear. Failure to comply may result in damage to equipment.

CAUTION

When tightening A/C hoses and fittings, always use a backup wrench. Failure to comply may result in damage to equipment.

CAUTION

When using a pressure washer to clean capsule interior, do not allow stream to contact dash, dash components, or other electrical components. Failure to comply may result in damage to equipment.

CAUTION

When using a pressure washer to clean capsule interior, keep nozzle of pressure washer away from vehicle or components a distance of 5 ft. (1.5 m) or more. Failure to comply may result in damage to equipment.

CAUTION

When using a pressure washer to clean vehicle, do not allow water stream to contact dash, dash components, or other electrical components. Failure to comply may result in damage to equipment.

CAUTION

While tightening nuts, hold screws with wrench. Failure to comply may result in damage to equipment.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: This manual supersedes TM 9-2355-335-23-2 dated 15 June 2011. Zero in the "Change No." column indicates an original page or work package.

Date of issue for the original manual is:

Original 28 February 2013

IN VOLUME 2, THE TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 158 AND TOTAL NUMBER OF WORK PACKAGES IS 114 , CONSISTING OF THE FOLLOWING:

Page/WP No.	Change No.	Page/WP No.	Change No.
Volume 2			
Cover0	WP 0214 (10 pgs)	0
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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 28 February 2013

MAINTENANCE MANUAL
COMMERCIAL-OFF-THE-SHELF (COTS)
for
MINE RESISTANT AMBUSH PROTECTED
ALL TERRAIN VEHICLE (M-ATV)

M1240
NSN: 2355-01-575-9632 (EIC 1UT)

M1240A1
NSN: 2355-01-596-1330 (EIC 1ZW)

M1245
NSN: 2355-01-586-8070 (EIC 1VE)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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*This manual supersedes TM 9-2355-335-23-2, dated 15 June 2011.

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12-VOLT POWER CONVERTOR REPLACEMENT

Preconditions

Park vehicle
 Engine OFF
 Wheels chocked
 Batteries disconnected (M1240/M1240A1)
 (WP 0186)
 Batteries disconnected (M1245) (WP 0187)

Materials/Parts

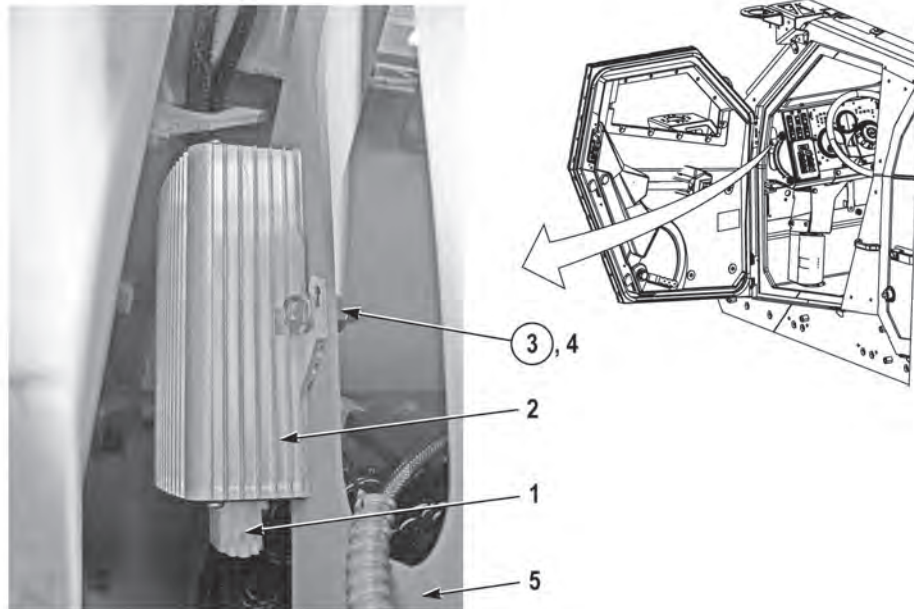
Locknuts (2) (Item 3)

Follow-On Maintenance

Connect batteries (M1240/1240A1) (WP 0186)
 Connect batteries (M1245) (WP 0187)
 Remove and stow wheel chocks

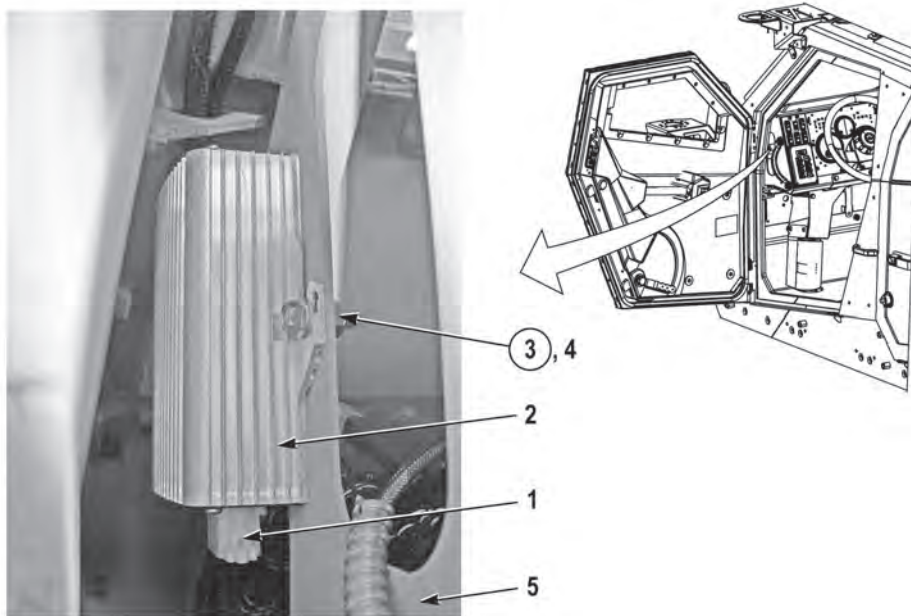
Tools and Special Tools

Tool Kit, General Mechanic's: Automotive

REMOVAL

1. Disconnect connector (1) from 12-volt converter (2).
2. Remove two locknuts (3), screws (4), and 12-volt converter (2) from dash (5). Discard locknuts (3).

END OF TASK

INSTALLATION

1. Install 12-volt converter (2) on dash (5) with two screws (4) and new locknuts (3).
2. Connect connector (1) to 12-volt converter (2).
3. Perform all Follow-On Maintenance tasks.

END OF TASK**END OF WORK PACKAGE**

ALTERNATOR REPLACEMENT

Preconditions

Park vehicle
Engine OFF
Wheels chocked
Hood opened and secured
Alternator drive belt removed (WP 0221)
Air cleaner assembly removed (WP 0257)
Charge air cooler inlet hoses removed (M1240/
M1245) (WP 0260)
Charger air cooler inlet hoses removed
(M1240A1) (WP 0261)

Tools and Special Tools

Lifting Device
Tool Kit, General Mechanic's: Automotive
Wrench, Torque, 250 ft-lb

Materials/Parts

Lockwasher (4) (Item 2, 7, 13, 17)
Lockwasher (2) (Item 21)

Materials/Parts (continued)

Locknut (Item 25)
Compound, Sealing, Novagard 200-257
Tags, Identification
Ties, Cable

Personnel Required

Three

Follow-On Maintenance

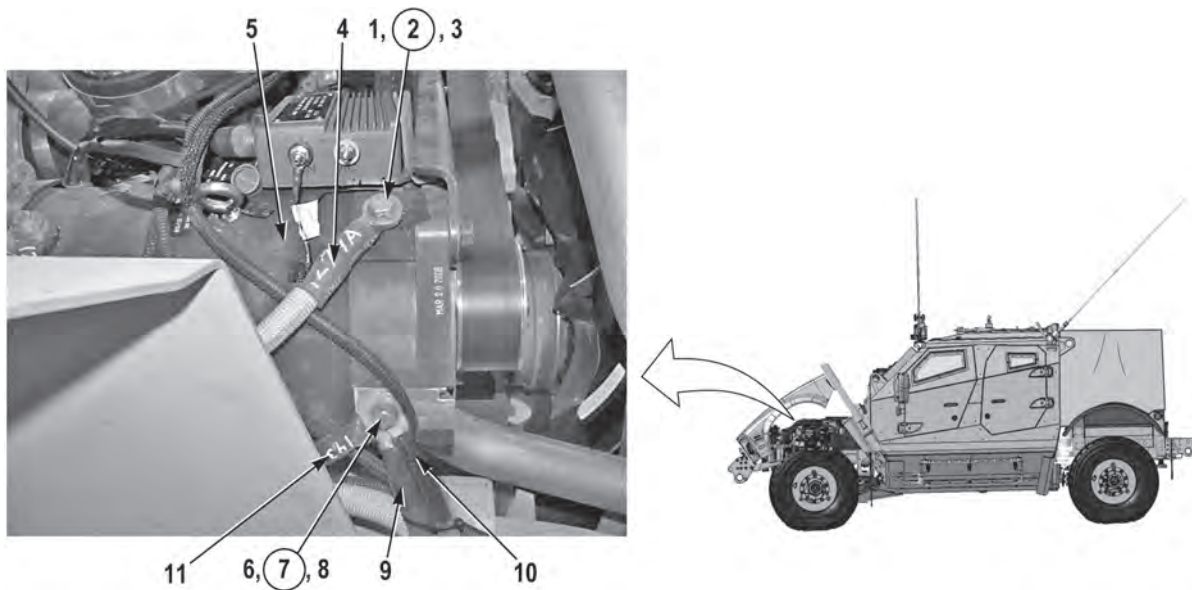
Install charge air cooler inlet hoses (M1240/
M1245) (WP 0260)
Install charge air cooler inlet hoses (M1240A1)
(WP 0261)
Install air cleaner assembly (WP 0257)
Install alternator drive belt (WP 0221)
Close hood and secure
Remove and stow wheel chocks

REMOVAL**WARNING**

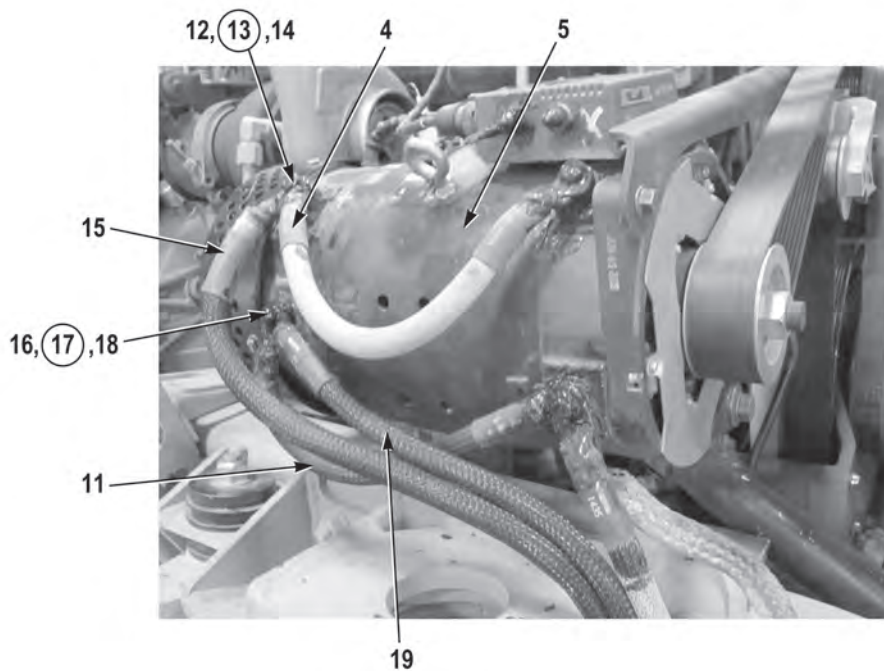
Engine components become hot during normal operation. Allow engine to cool completely prior to performing this task. Failure to comply may result in injury to personnel.

NOTE

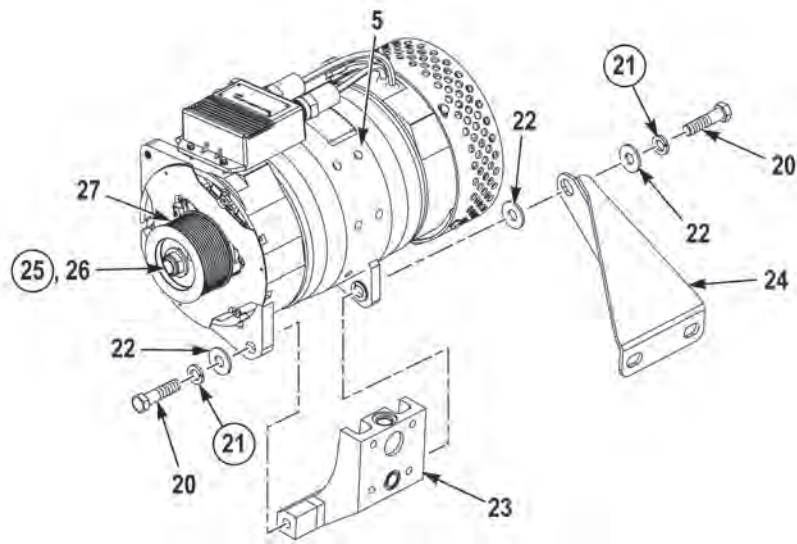
- Tag and mark cables and wires prior to removal to ensure proper installation.
- Remove cable ties as required.



1. Remove screw (1), lockwasher (2), washer (3), and cable (4) from alternator (5). Discard lockwasher (2).
2. Remove screw (6), lockwasher (7), washer (8), ground strap (9), and two negative cables (10 and 11) from alternator (5). Discard lockwasher (7).



3. Remove screw (12), lockwasher (13), washer (14), and two cables (4 and 15) from alternator (5). Discard lockwasher (13).
4. Remove screw (16), lockwasher (17), washer (18), and cables (11 and 19) from alternator (5). Discard lockwasher (17).



5. Remove support bracket from alternator and engine (WP 0217).

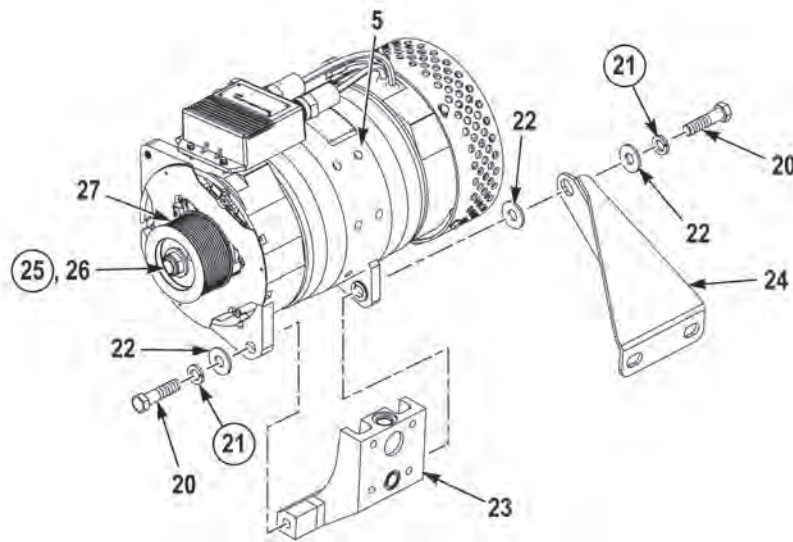
WARNING

Alternator weighs 115 lbs (52 kg). Do not lift or move alternator without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

6. With the aid of an assistant and lifting device, remove two screws (20), lockwashers (21), three washers (22), and alternator (6) from two mounting brackets (23 and 24). Discard lockwashers (21).
7. Remove locknut (25), washer (26), and pulley (27) from alternator (6). Discard locknut (25).

END OF TASK

INSTALLATION

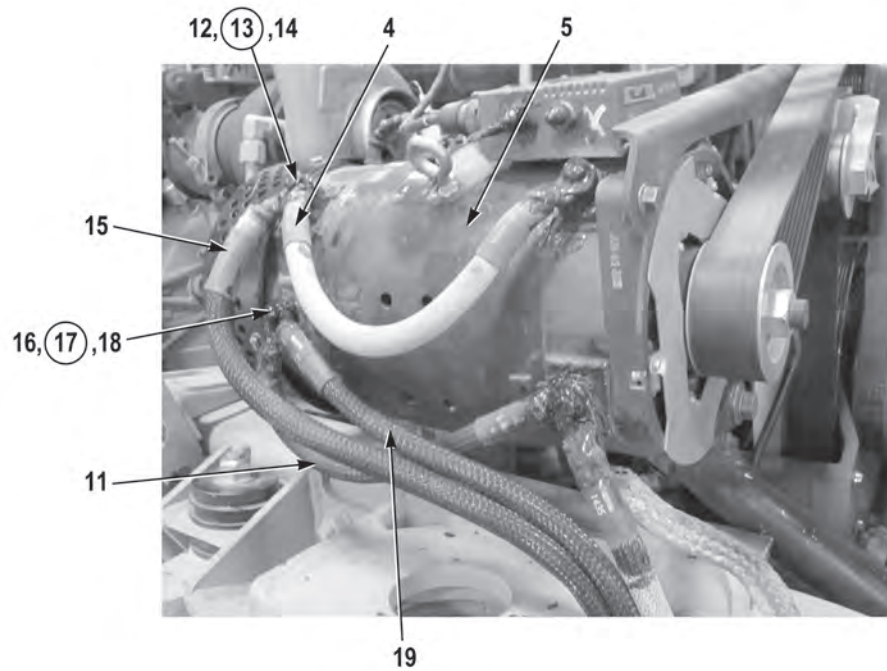


1. Install pulley (27) on alternator (5) with washer (26) and new locknut (25).

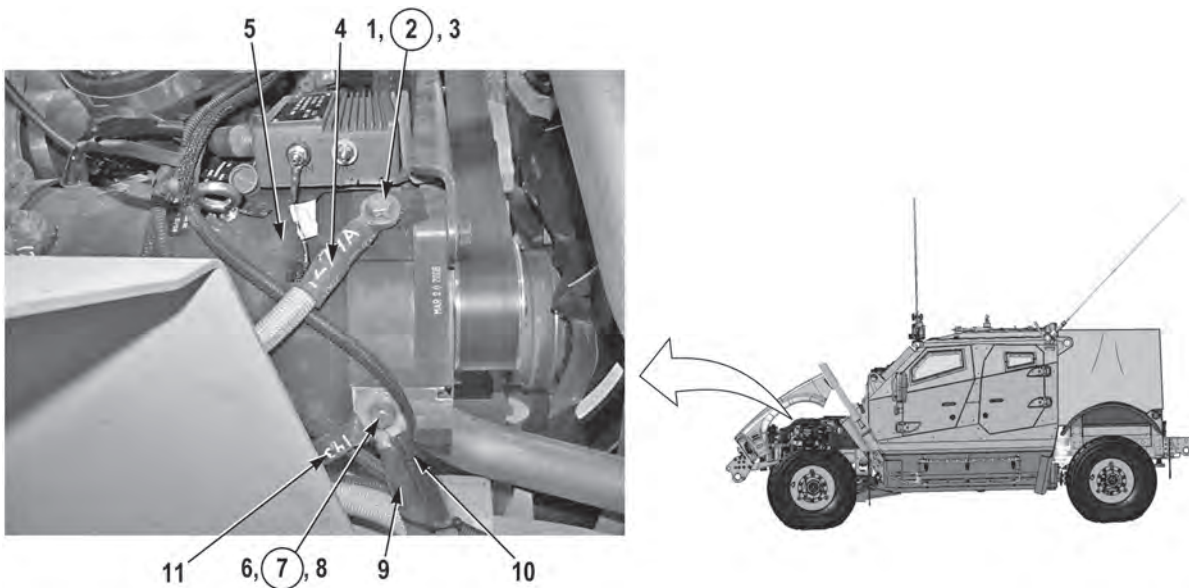
WARNING

Alternator weighs 115 lbs (52 kg). Do not lift or move alternator without the aid of an assistant and lifting device. Failure to comply may result in injury or death to personnel.

2. With the aid of two assistants and a lifting device, install alternator (5) on two mounting brackets (23 and 24) with three washers (22), two new lockwashers (21), and screws (20). Do not tighten screws.
3. Install support bracket on engine and alternator (WP 0217).
4. Tighten two screws (20) to 110 lb-ft (149 N•m).



5. Install cables (19 and 11) on alternator (5) with washer (14), new lockwasher (13), and screw (12).
6. Install two cables (15 and 4) on alternator (5) with washer (18), new lockwasher (17), and screw (16).



7. Install two negative cables (11 and 10) and ground strap (9) on alternator (5) with washer (8), new lockwasher (7), and screw (6).

NOTE

Install cable ties as required.

8. Install cable (4) on alternator (5) with washer (3), new lockwasher (2), and screw (1).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water. Failure to comply may result in injury or death to personnel.

9. Apply sealing compound, Novagard 200-257, to four screws (1, 6, 12, and 16), lockwashers (2, 7, 13, and 17), washers (3, 8, 14, and 18), five cables (4, 10, 11, 15, and 19) and ground strap (9).
10. Perform all Follow-On Maintenance tasks.

END OF TASK

END OF WORK PACKAGE

BATTERIES DISCONNECT/CONNECT (M1240/M1240A1)

Preconditions

Park vehicle
Engine OFF
Wheels chocked

Materials/Parts

Cable Ties, Plastic
Connector, Lubricant

Tools and Special Tools

Crowfoot, Flare Nut, 3/8 Dr., 1/2 in.
Puller, Cable Clamp
Tool Kit, General Mechanic's: Automotive
Wrench, Torque, 0 to 300 in-lb

Follow-On Maintenance

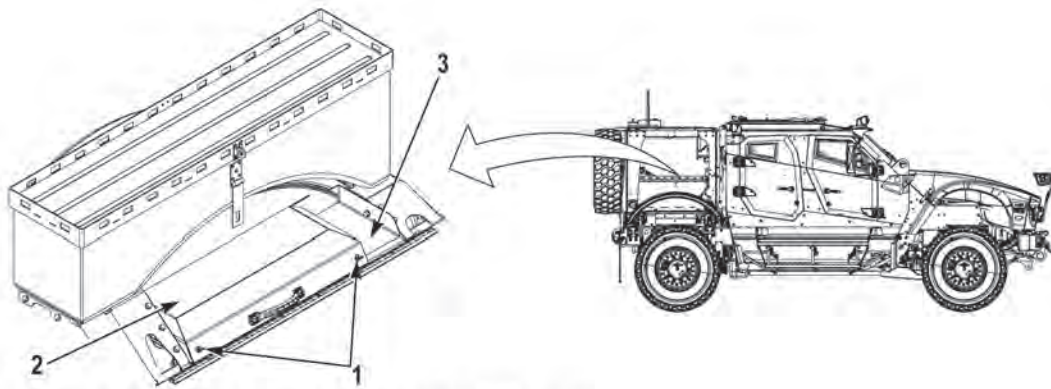
Remove and stow wheel chocks

DISCONNECT BATTERY**WARNING**

- **Use extreme care not to short out battery terminals. Remove all jewelry such as rings, ID tags, bracelets, etc. prior to working on or around vehicle. Jewelry and tools can catch on equipment, contact positive electrical circuits, and cause severe burns or electrical shock. Failure to comply may result in injury or death to personnel.**
- **Do not smoke, have open flame, or cause sparks near batteries. Batteries may explode. Failure to comply may result in injury or death to personnel.**
- **Battery acid is harmful to skin and eyes. Always wear safety goggles, acid-proof gloves, and a rubber apron when performing battery maintenance. Failure to comply may result in injury or death to personnel.**
- **Avoid electrolyte contact with skin and eyes. Failure to comply may result in injury or death to personnel.**

NOTE

- Two batteries are located in the cargo deck, on the driver side, used to start vehicle.
- Two batteries are located in the cargo deck, on the passenger side, used to power GFE in silent watch operations.
- The battery cases are marked with a (+) positive and a (-) negative to help identify battery polarity.

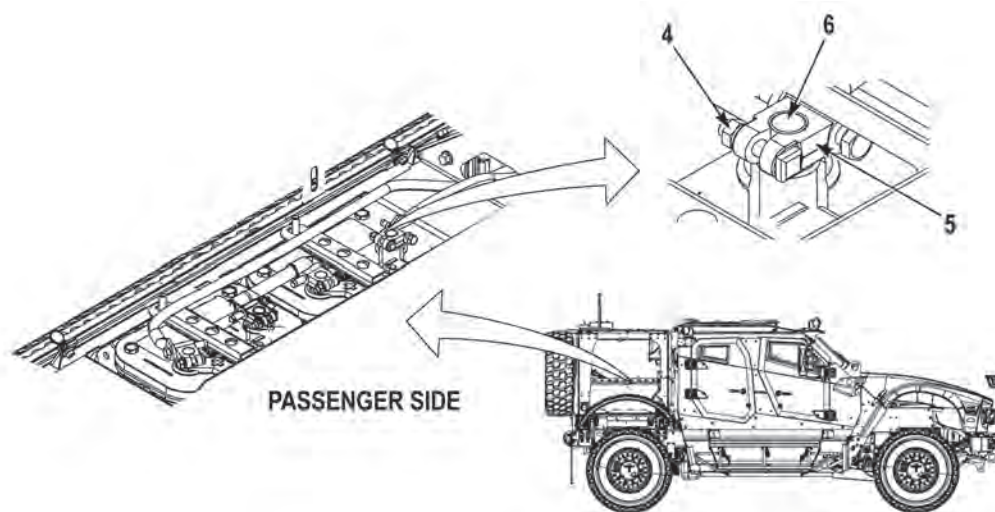


ANTENNA PLATFORM SHOWN REMOVED FOR CLARITY

NOTE

- When removing terminal clamps from battery terminals, note position and location of connections prior to removal to ensure proper installation.
- Remove negative terminal clamp from front driver side and front passenger side battery only.
- Driver side and passenger side terminal clamps are disconnected the same way. Front passenger side shown.

1. Remove two thumbscrews (1) and battery cover (2) from cargo deck (3).



WARNING

Upon removal of terminal clamps, avoid accidental contact between terminal clamps and battery terminals. This will prevent accidental shorting, arcing, or sparks. Secure terminal clamps, cables, and wires away from battery terminals with cable ties as required. Failure to comply may result in injury or death to personnel.

2. Loosen nut (4) on terminal clamp (5).

3. Using cable clamp puller, remove terminal clamp (5) from negative battery terminal (6).
4. Repeat Steps (1) through (3) for driver side.

END OF TASK

CONNECT BATTERY

WARNING

- Use extreme care not to short out battery terminals. Remove all jewelry such as rings, ID tags, bracelets, etc. prior to working on or around vehicle. Jewelry and tools can catch on equipment, contact positive electrical circuits, and cause severe burns or electrical shock. Failure to comply may result in injury or death to personnel.
- Do not smoke, have open flame, or cause sparks near batteries. Batteries may explode. Failure to comply may result in injury or death to personnel.
- Battery acid is harmful to skin and eyes. Always wear safety goggles, acid-proof gloves, and a rubber apron when performing battery maintenance. Failure to comply may result in injury or death to personnel.
- Avoid electrolyte contact with skin and eyes. Failure to comply may result in injury or death to personnel.

CAUTION

While tightening nuts, hold screws with wrench. Failure to comply may result in damage to equipment.

1. Install terminal clamp (5) on negative battery terminal (6) and tighten nut (4). Tighten nut (4) to 84 to 96 lb-in (9.5 to 10.8 N•m).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water. Failure to comply may result in injury or death to personnel.

2. Apply connector lubricant to battery terminals and terminal clamps.
3. Install battery cover (2) on cargo deck (3) with two thumbscrews (1).
4. Repeat Steps (1) through (3) for driver side.
5. Perform all Follow-On Maintenance tasks.

END OF TASK

END OF WORK PACKAGE

BATTERIES DISCONNECT/CONNECT (M1245)

Preconditions

Park Vehicle
Engine OFF
Wheels Chocked

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
Wrench, Torque, 0 - 300 in-lb.

Materials/Parts

Lubricant, Connector
Lockwasher (4) (Item 2)

Follow-On Maintenance

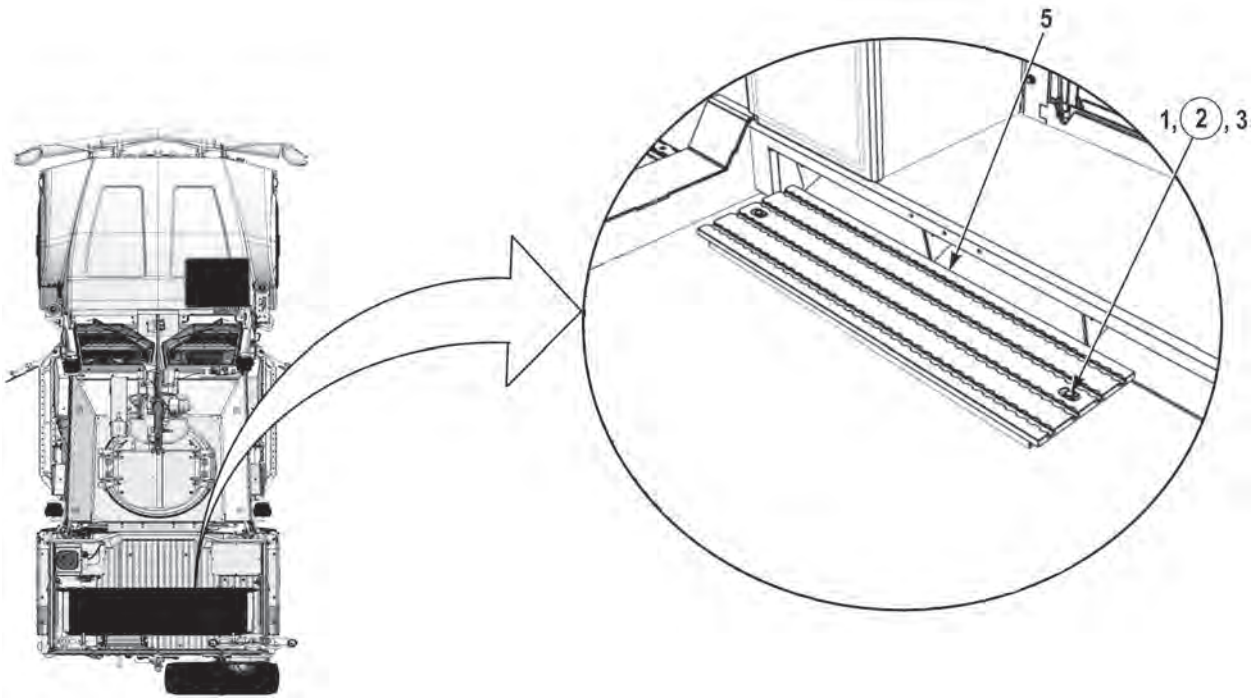
Remove and Stow Wheel Chocks

DISCONNECT**WARNING**

- Be careful not to short out battery terminal. Do not smoke or use open flame near batteries. Batteries may explode from spark. Failure to comply may result in injury or death to personnel.
- Lead-acid batteries contain sulfuric acid, which can cause severe burns. Avoid contact with skin, eyes, or clothing. Wear safety goggles and gloves. If battery electrolyte is spilled, take immediate action to stop its corrosive (burning) effects. If battery acid is spilled on clothing or vehicle, wash immediately with cold water. Neutralize with baking soda or household ammonia solution. If battery acid comes in contact with skin, flush with cold water to remove acid. If eyes are contacted, flush with cold water for at least 15 minutes. Seek immediate medical attention. If swallowed, drink large amounts of water or milk, follow with milk of magnesia, beaten egg, or vegetable oil. Seek immediate medical attention. Failure to comply may result in injury or death to personnel.
- Remove all jewelry, such as rings, dog tags, bracelets, etc. If jewelry contacts battery terminal or positive electrical circuit, a direct short may result in instant heating of tools, injury or death to personnel, or damage to equipment.
- To prevent arcing, do not allow tools to contact batteries or other battery terminals. Failure to comply may result in injury or death to personnel.
- Upon removal of wires and cables, ensure no contact is made with battery terminals or other wires and cables. Secure wires and cables away from battery terminals and other wires and cables as required. Failure to comply may result in injury or death to personnel or damage to equipment.
- Ensure batteries are disconnected when performing maintenance on or near batteries or electrical systems. Always remove negative battery terminals first. When reconnecting, always connect negative terminals last to avoid arcing or sparks that could cause an explosion.

DISCONNECT – CONTINUED**NOTE**

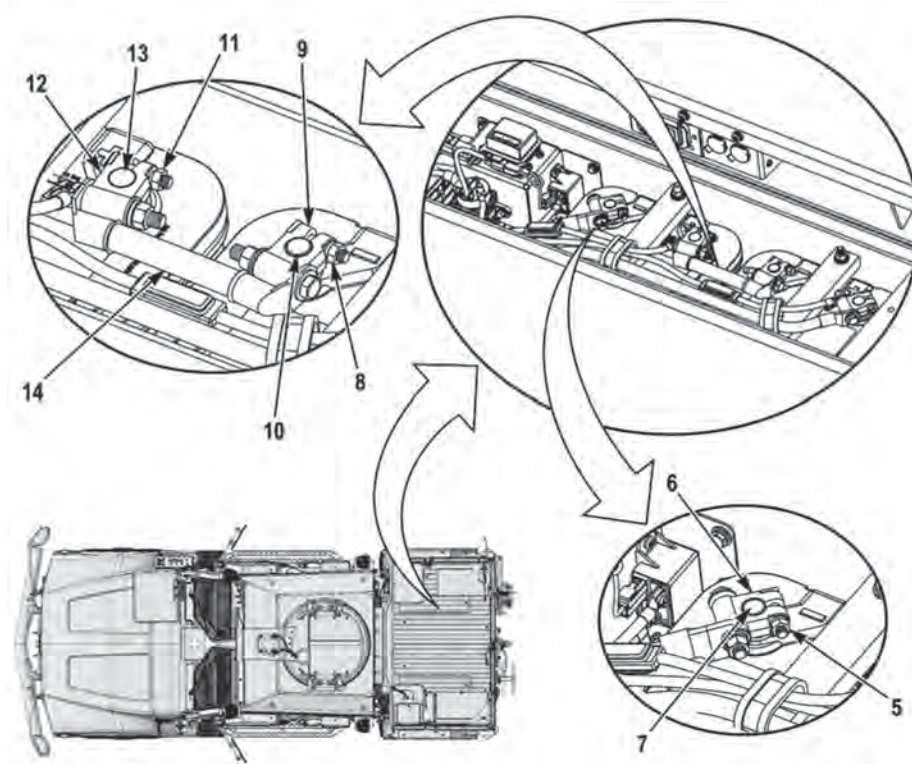
- Two batteries are located in the cargo deck, on the driver side, and are used to start the vehicle.
- Two batteries are located in the cargo deck, on the passenger side, and are used to power Government Furnished Equipment.
- The battery cases are marked with a (+) positive and a (-) negative to identify battery polarity.



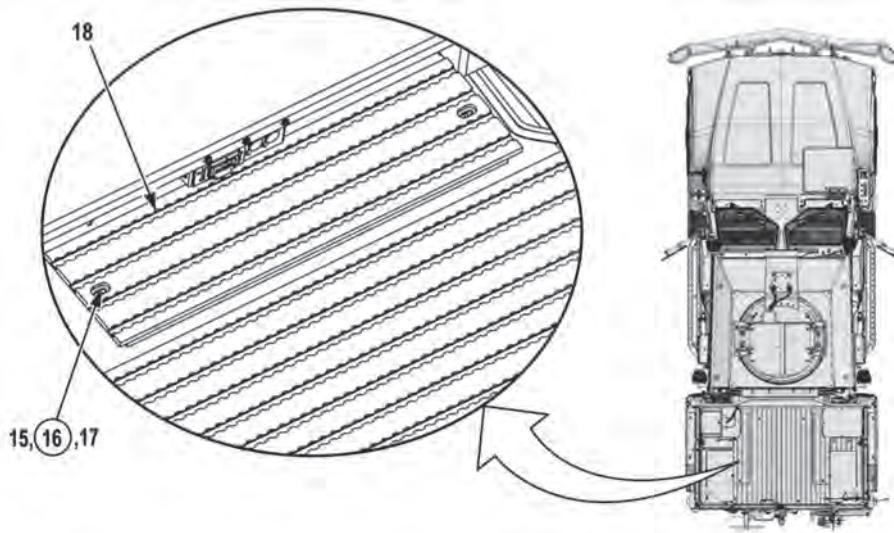
1. Remove two screws (1), two lockwashers (2), two washers (3), and passenger side battery box cover (4). Discard lockwashers (2).

DISCONNECT – CONTINUED**NOTE**

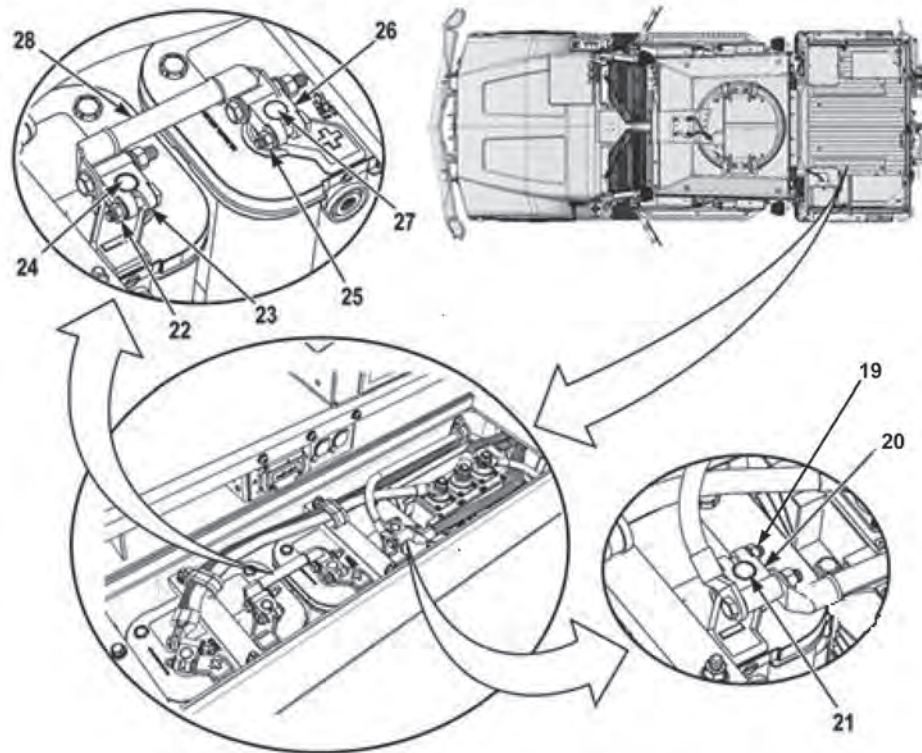
- When removing terminal clamps from battery terminals, note position and location of connections prior to removal to ensure proper installation.
- All battery terminal clamps are disconnected the same way.



2. Loosen nut (5) on negative battery clamp (6).
3. Remove negative battery clamp (6) from negative battery terminal (7).
4. Loosen nut (8) on negative battery clamp (9).
5. Remove negative battery clamp (9) from negative battery terminal (10).
6. Loosen nut (11) on positive battery clamp (12).
7. Remove positive battery clamp (12) from positive battery terminal (13).
8. Remove center battery connecting cable (14) from battery compartment.

DISCONNECT – CONTINUED

9. Remove two screws (15), two lockwashers (16), two washers (17), and driver side battery box cover (18). Discard lockwashers (16).

DISCONNECT – CONTINUED

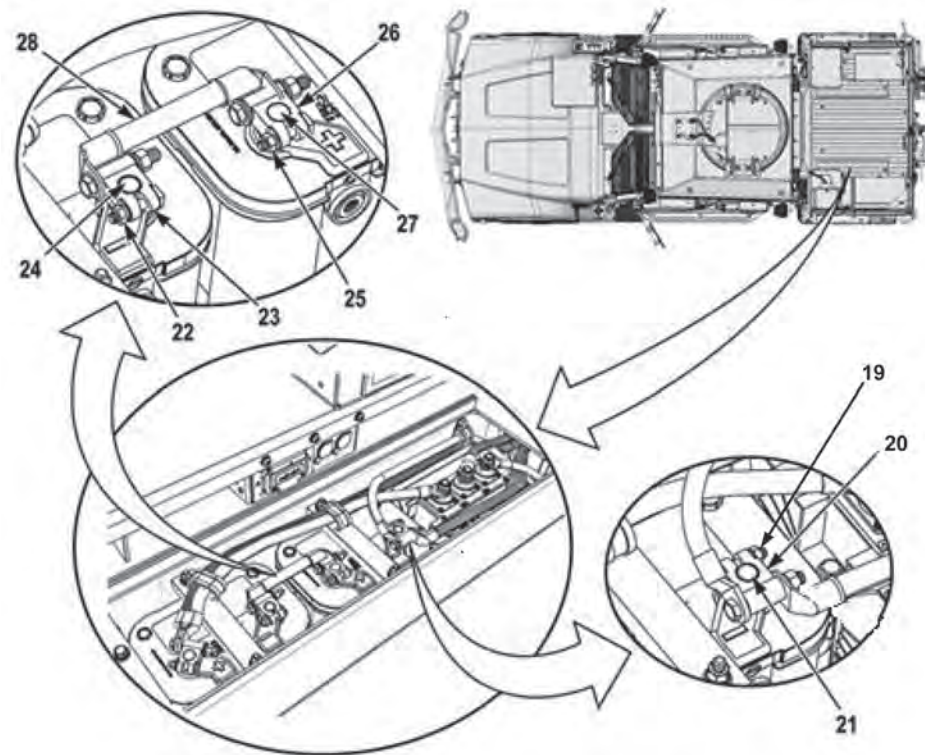
10. Loosen nut (19) on negative battery clamp (20).
11. Remove negative battery clamp (20) from negative battery terminal (21).
12. Loosen nut (22) on negative battery clamp (23).
13. Remove negative battery clamp (23) from negative battery terminal (24).
14. Loosen nut (25) on positive battery clamp (26).
15. Remove positive battery clamp (26) from positive battery terminal (27).
16. Remove center battery connecting cable (28) from battery compartment.

END OF TASK

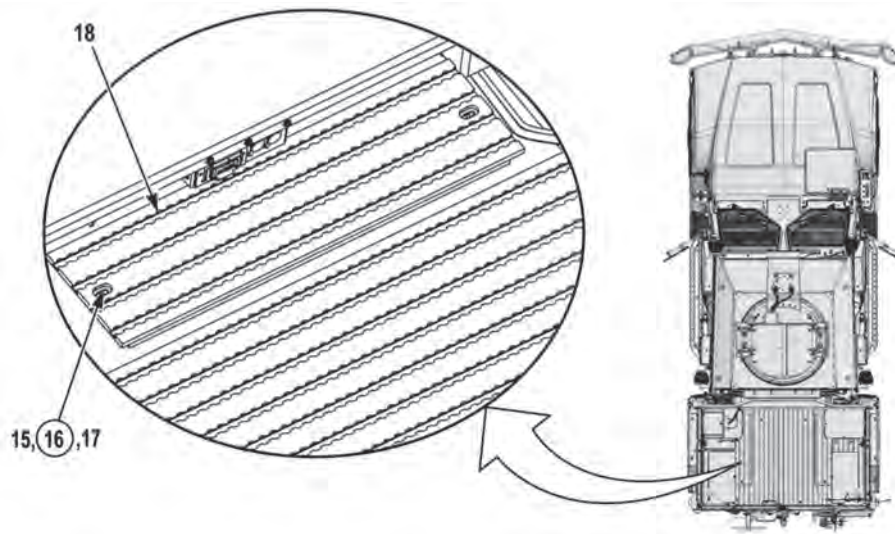
CONNECT**WARNING**

- **Be careful not to short out battery terminal. Do not smoke or use open flame near batteries. Batteries may explode from spark. Failure to comply may result in injury or death to personnel.**
- **Lead-acid batteries contain sulfuric acid, which can cause severe burns. Avoid contact with skin, eyes, or clothing. Wear safety goggles and gloves. If battery electrolyte is spilled, take immediate action to stop its corrosive (burning) effects. If battery acid is spilled on clothing or vehicle, wash immediately with cold water. Neutralize with baking soda or household ammonia solution. If battery acid comes in contact with skin, flush with cold water to remove acid. If eyes are contacted, flush with cold water for at least 15 minutes. Seek immediate medical attention. If swallowed, drink large amounts of water or milk, follow with milk of magnesia, beaten egg, or vegetable oil. Seek immediate medical attention. Failure to comply may result in injury or death to personnel.**
- **Remove all jewelry, such as rings, dog tags, bracelets, etc. If jewelry contacts battery terminal or positive electrical circuit, a direct short may result in instant heating of tools, injury or death to personnel, or damage to equipment.**
- **To prevent arcing, do not allow tools to contact batteries or other battery terminals. Failure to comply may result in injury or death to personnel.**
- **Ensure batteries are disconnected when performing maintenance on or near batteries or electrical systems. Always remove negative battery terminals first. When reconnecting, always connect negative terminals last to avoid arcing or sparks that could cause an explosion.**

CONNECT – CONTINUED

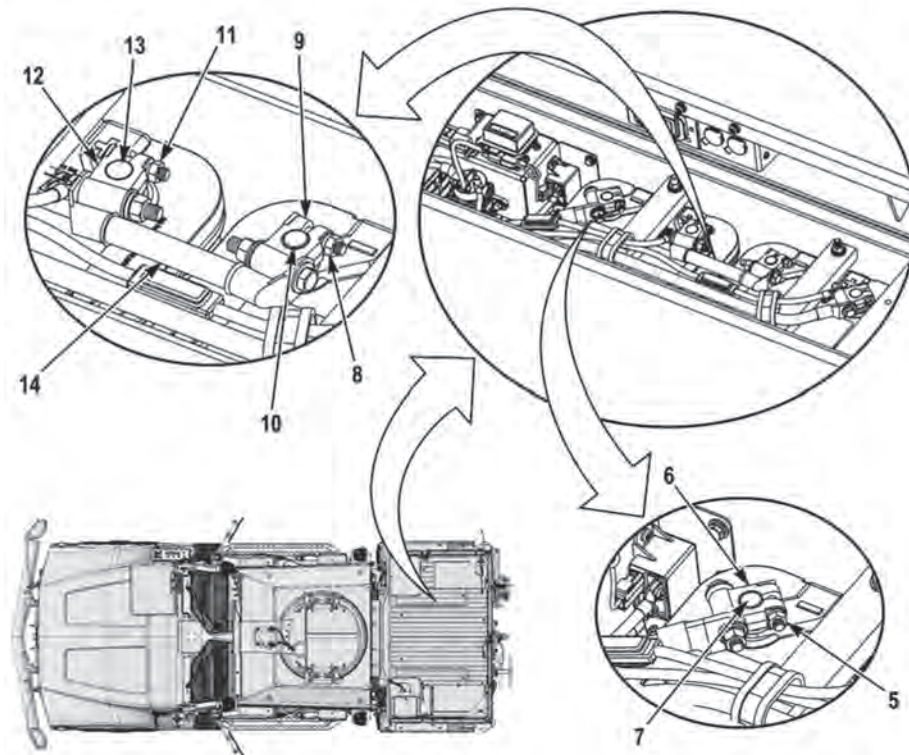
**NOTE**

- When installing terminal clamps on battery terminals, install as noted prior to removal to ensure proper installation.
 - All battery terminal clamps are connected the same way.
1. Position center battery connecting cable (28) in driver side battery compartment and connect positive battery clamp (26) on positive terminal (27) of front battery.
 2. Install rear battery negative clamp (23) on negative battery terminal (24).
 3. Tighten nuts (22 and 25) on battery clamps (23 and 26) to 84 – 96 lb-in (9.5 – 10.8 N·m).
 4. Install front battery negative clamp (20) on negative battery terminal (21).
 5. Tighten nut (19) on battery clamp (20) to 84 – 96 lb-in (9.5 – 10.8 N·m).
 6. Apply connector lubricant to battery terminals (21, 24, and 27) and battery clamps (20, 23, and 26).

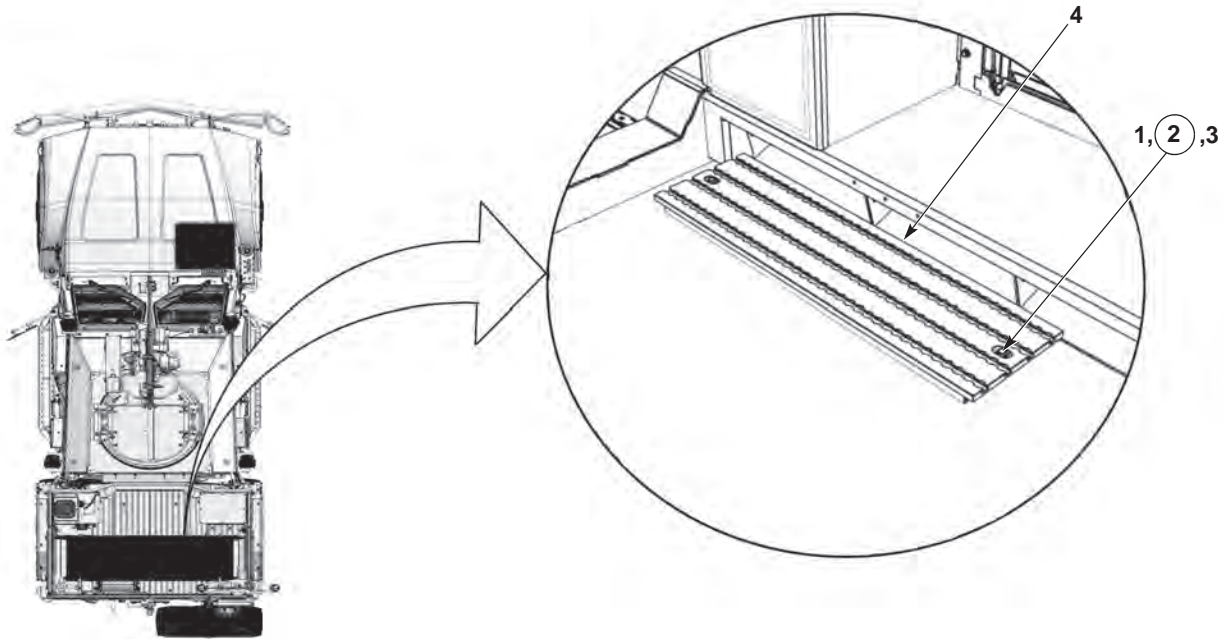
CONNECT – CONTINUED

7. Position driver side battery box cover (18) on cargo deck. Install two washers (17), two new lockwashers (16), and two screws (15).

CONNECT – CONTINUED



8. Position center battery connecting cable (14) in passenger side battery compartment and connect positive battery clamp (12) on positive terminal (13) of front battery.
9. Install rear battery negative clamp (9) on negative battery terminal (10).
10. Tighten nuts (8 and 11) on battery clamps (9 and 12) to 84 – 96 lb-in (9.5 – 10.8 N·m).
11. Install front battery negative clamp (6) on negative battery terminal (7).
12. Tighten nut (5) on battery clamp (6) to 84 – 96 lb-in (9.5 – 10.8 N·m).
13. Apply connector lubricant to battery terminals (7, 10, and 13) and battery clamps (6, 9, and 12).

CONNECT – CONTINUED

14. Position passenger side battery box cover (4) on cargo deck. Install two washers (3), two new lockwashers (2), and two screws (1).
15. Perform all Follow-On Maintenance Tasks.

END OF TASK**END OF WORK PACKAGE**

BATTERY DISCONNECT SWITCH REPLACEMENT

Preconditions

Park vehicle
 Engine OFF
 Wheels chocked
 Batteries disconnected (M1240/M1240A1)
 (WP 0186)
 Batteries disconnected (M1245) (WP 0187)

Tools and Special Tools

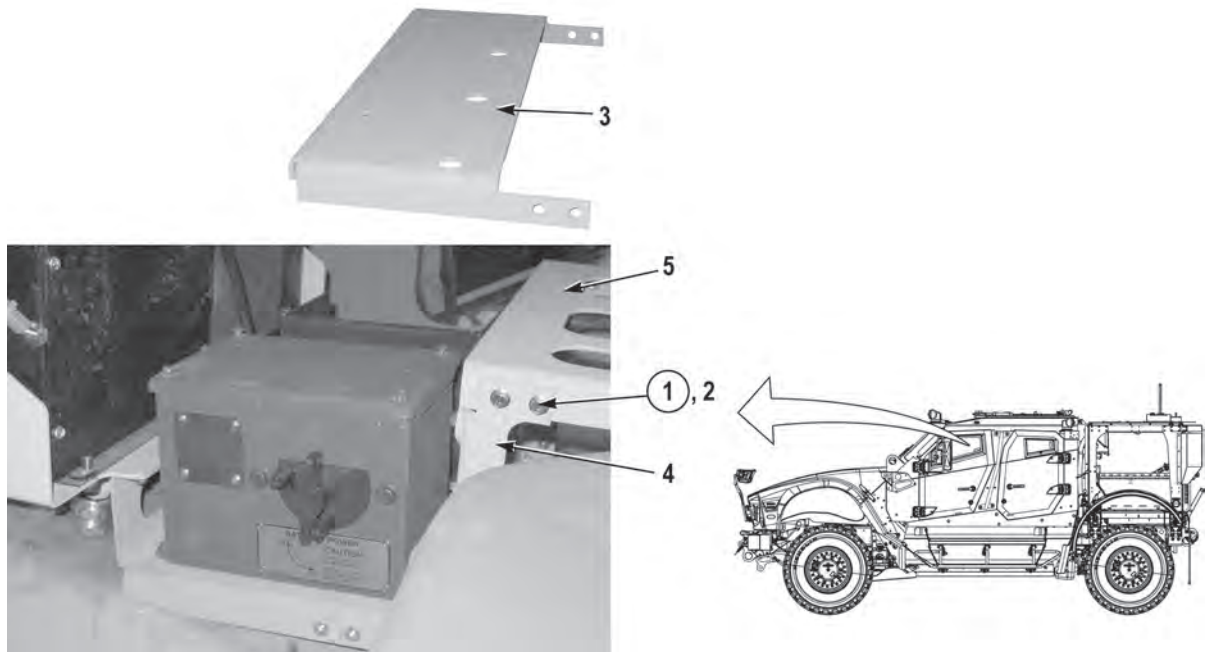
Tool Kit, General Mechanic's: Automotive
 Wrench, Torque, 40 to 200 in-lb

Materials/Parts

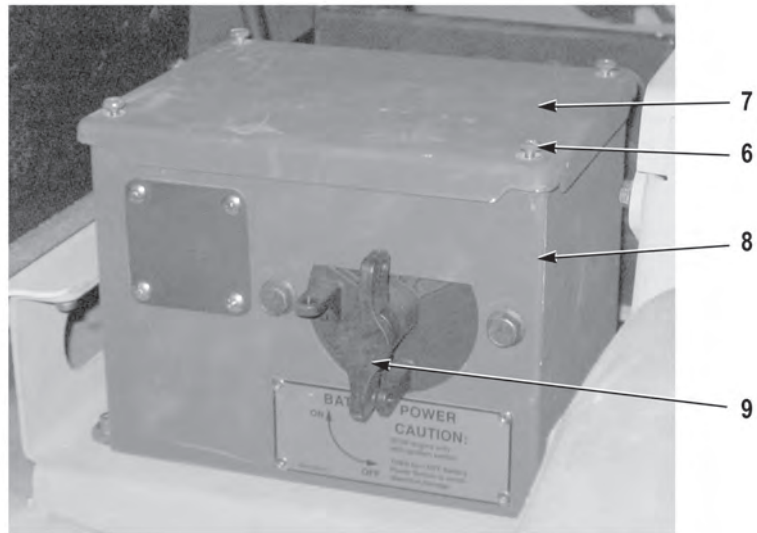
Locknut (4) (Item 1)
 Lockwasher (3) (Item 12, 16, and 19)
 Locknut (2) (Item 22)
 Tags, Identification

Follow-On Maintenance

Connect batteries (M1240/M1240A1) (WP 0186)
 Connect batteries (M1245) (WP 0187)
 Remove and stow wheel chocks

REMOVAL

1. Remove four locknuts (1), screws (2), and platform (3) from two brackets (4) and platform (5). Discard locknuts (1).

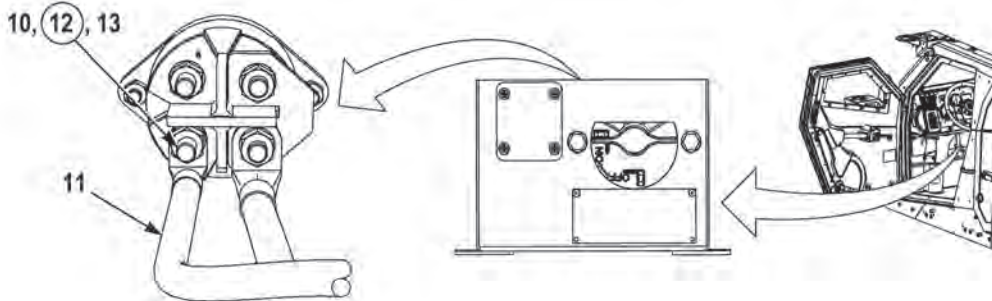


- Remove four screws (6) and cover (7) from enclosure (8).

NOTE

Note position of switch in relation to ON/OFF decal.

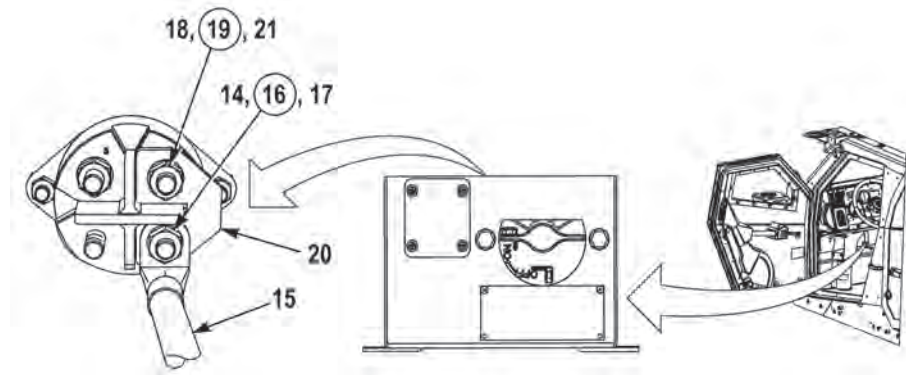
- Turn battery disconnect switch (9) to ON position.



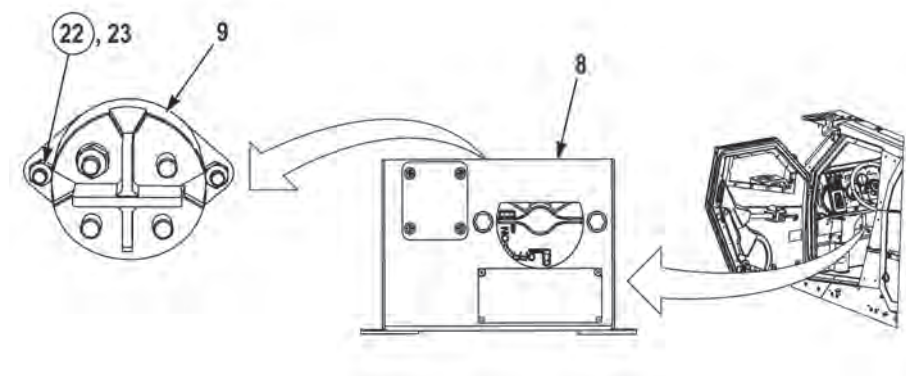
NOTE

- Tag and mark wires prior to removal to ensure proper installation.

- Remove nut (10), wire (11), and lockwasher (12) from stud (13). Discard lockwasher (12).



5. Remove nut (14), wire (15), and lockwasher (16) from stud (17). Discard lockwasher (16).
6. Remove nut (18), lockwasher (19), and busbar (20) from stud (21). Discard lockwasher (19).

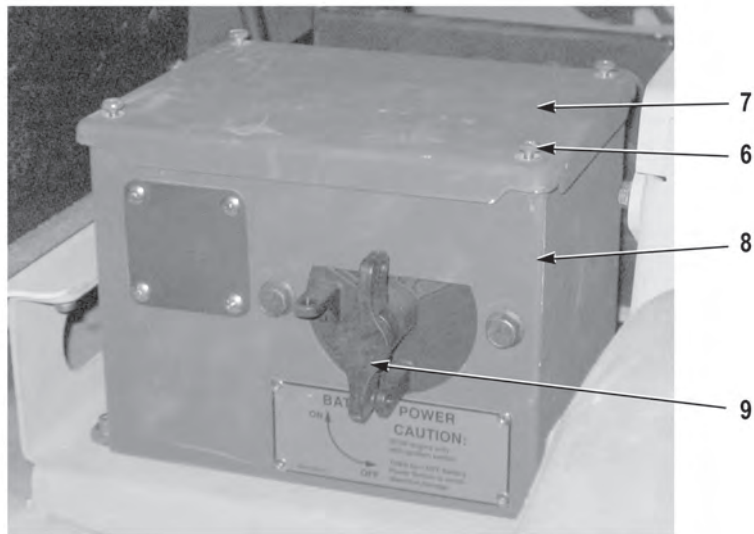


7. Remove two locknuts (22), screws (23), and battery disconnect switch (9) from enclosure (8). Discard locknuts (22).

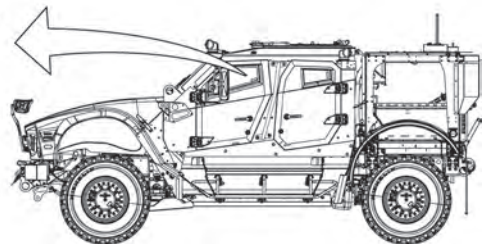
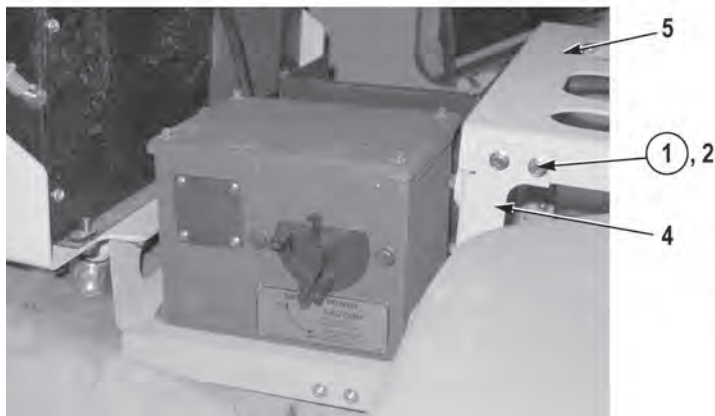
END OF TASK

INSTALLATION

1. Install battery disconnect switch (9) on enclosure (8) with two screws (23) and new locknuts (22).
2. Install busbar (20) on stud (21) with new lockwasher (19) and nut (18). Tighten nut (18) to 14 lb-ft (19 N•m).
3. Install wire (15) on stud (17) with new lockwasher (16) and nut (14). Tighten nut (14) to 14 lb-ft (19 N•m).
4. Install wire (11) on stud (13) with new lockwasher (12) and nut (10). Tighten nut (10) to 14 lb-ft (19 N•m).



5. Turn battery disconnect switch (9) to ON position.
6. Install cover (7) on enclosure (8) with four screws (6).



7. Install platform (3) on platform (5) and two brackets (4) with four screws (2) and new locknuts (1).
8. Perform all Follow-On Maintenance tasks.

END OF TASK

END OF WORK PACKAGE

BATTERY ISOLATOR REPLACEMENT

Preconditions

Park vehicle
 Engine OFF
 Wheels chocked
 Batteries disconnected (M1240/M1240A1)
 (WP 0186)
 Batteries disconnected (M1245) (WP 0187)

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
 Wrench, Torque, 0 to 300 in-lb

Materials/Parts

Lockwasher (3) (Item 2, 8, and 13)

Materials/Parts (continued)

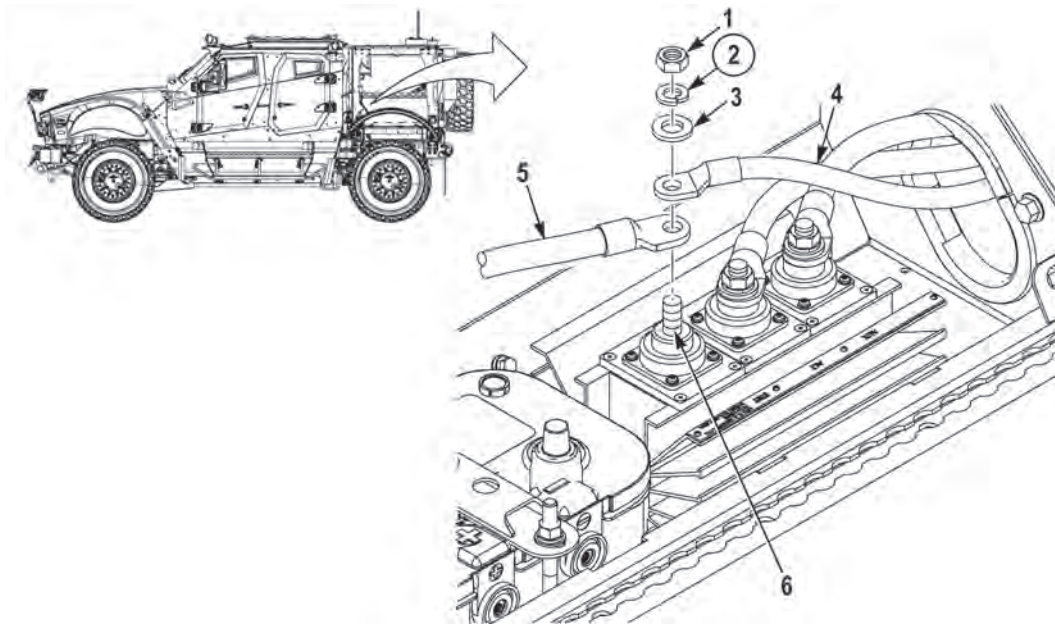
Locknut (2) (Item 17)
 Lockwasher (Item 23)
 Sealant, RTV
 Tags, Identification

Personnel Required

Two

Follow-On Maintenance

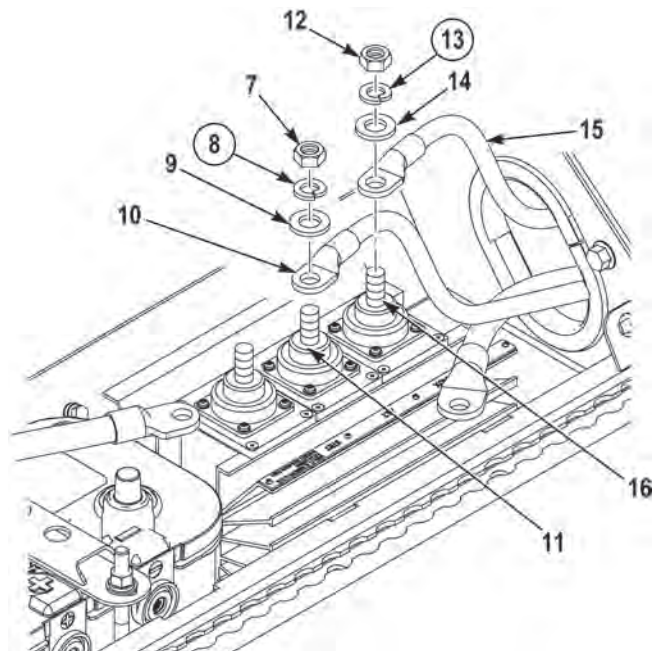
Connect batteries (M1240/M1240A1) (WP 0186)
 Connect batteries (M1245) (WP 0187)
 Remove and stow wheel chocks

REMOVAL**WARNING**

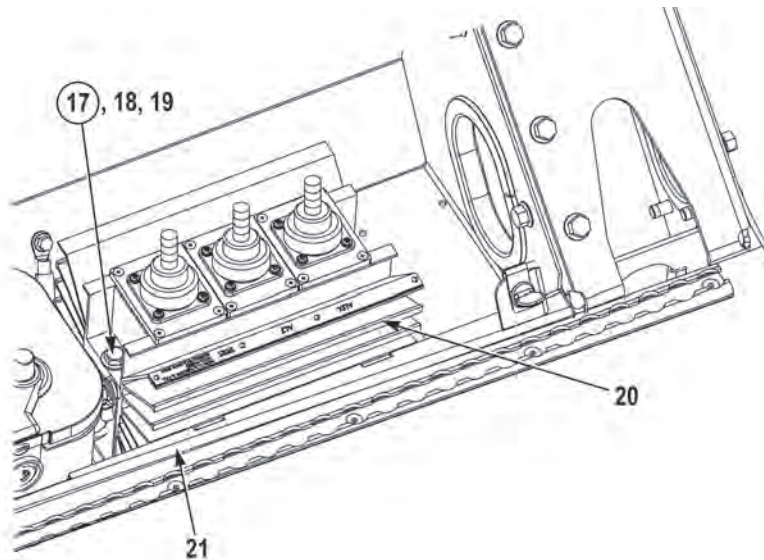
All batteries must be disconnected prior to performing battery isolator removal. Failure to comply may result in injury or death to personnel.

NOTE

- Tag and mark cables prior to removal to ensure proper installation.
 - Note position of cables prior to removal to ensure proper installation.
1. Remove nut (1), lockwasher (2), washer (3), cable (4), and cable (5) from STRT terminal (6). Discard lockwasher (2).

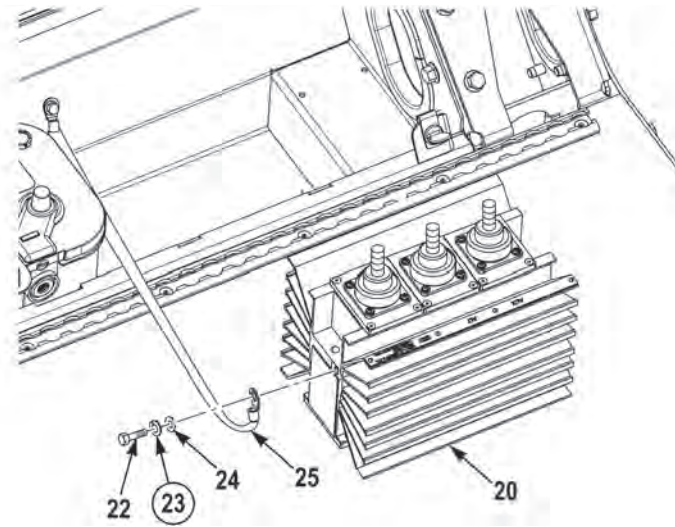


2. Remove nut (7), lockwasher (8), washer (9), and cable (10) from ALT terminal (11). Discard lockwasher (8).
3. Remove nut (12), lockwasher (13), washer (14), and cable (15) from AUX terminal (16). Discard lockwasher (13).



NOTE

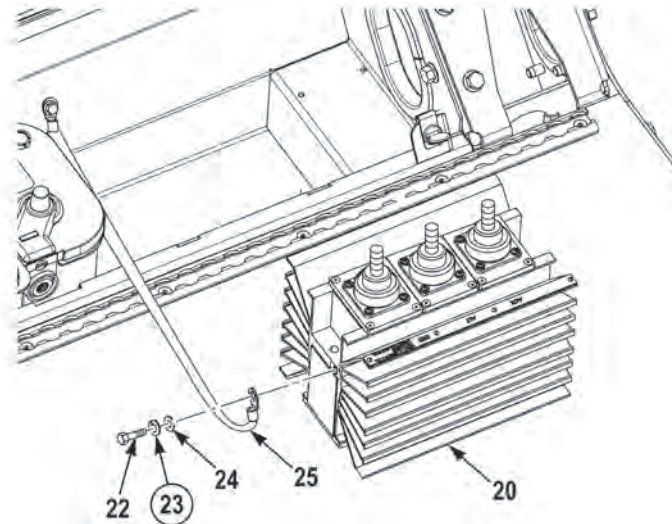
- Note position of battery isolator prior to removal to ensure proper installation.
 - Battery isolator is not being removed from the vehicle in Step (4).
4. With the aid of an assistant, remove two locknuts (17), screws (18), washers (19), and battery isolator (20) from battery box (21). Discard locknuts (17).



5. Remove screw (22), lockwasher (23), washer (24), and ground strap (25) from battery isolator (20). Discard lockwasher (23).
6. Remove battery isolator (20) from vehicle.

END OF TASK

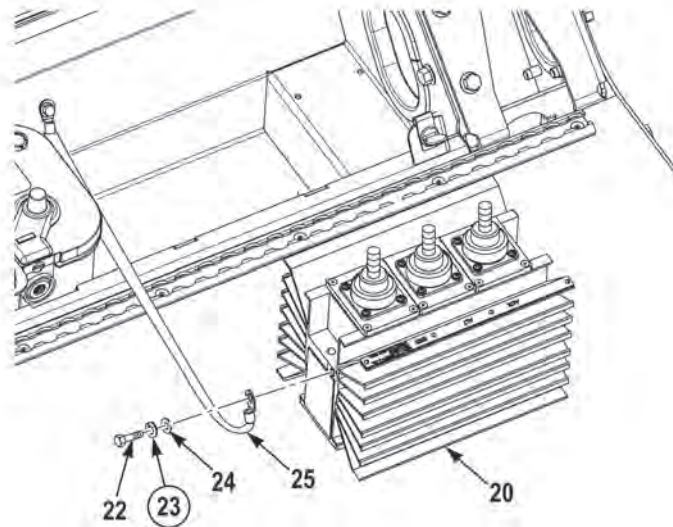
INSTALLATION



NOTE

Ensure mating surface of battery isolator and ground strap is clean, bare metal prior to installation.

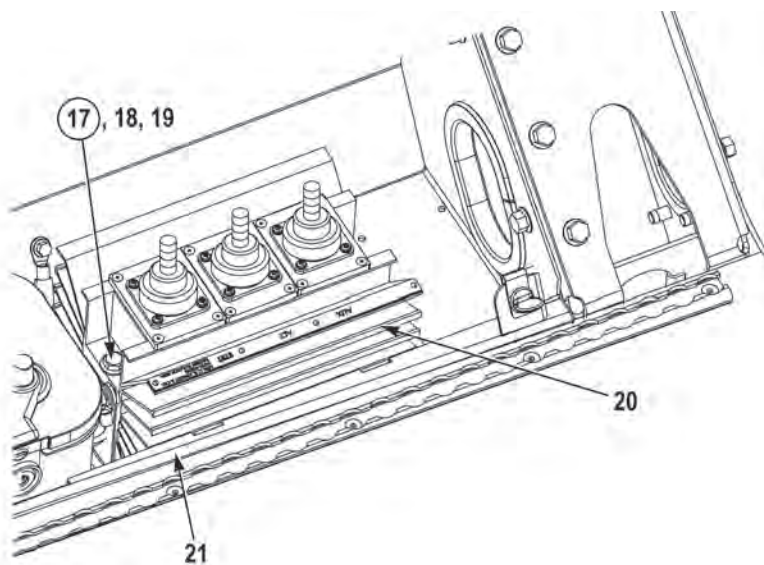
1. Install ground strap (25) on battery isolator (20) with washer (24), new lockwasher (23), and screw (22). Tighten screw (22) to 133 lb-in (15 N•m).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water. Failure to comply may result in injury or death to personnel.

2. Apply sealant RTV, to head of screw (22), new lockwasher (23), washer (24), and ground strap (25).

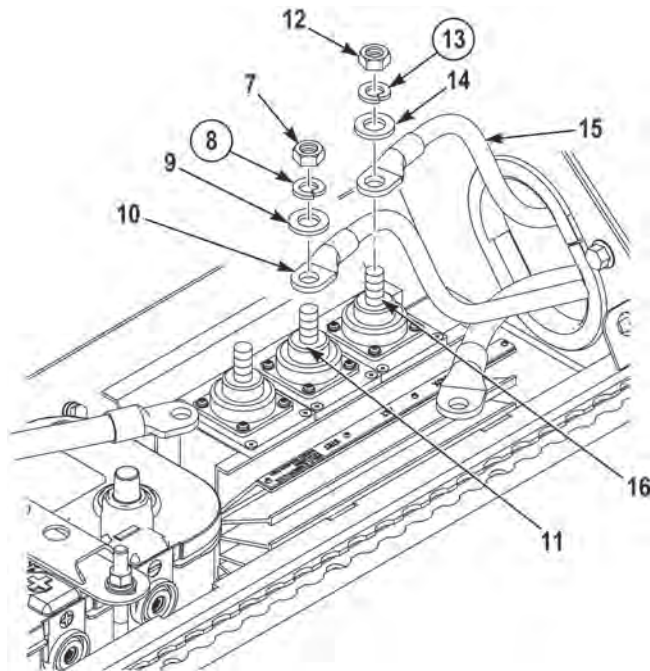


NOTE

Install battery isolator as noted prior to removal.

3. Position battery isolator (20) in battery box (21).

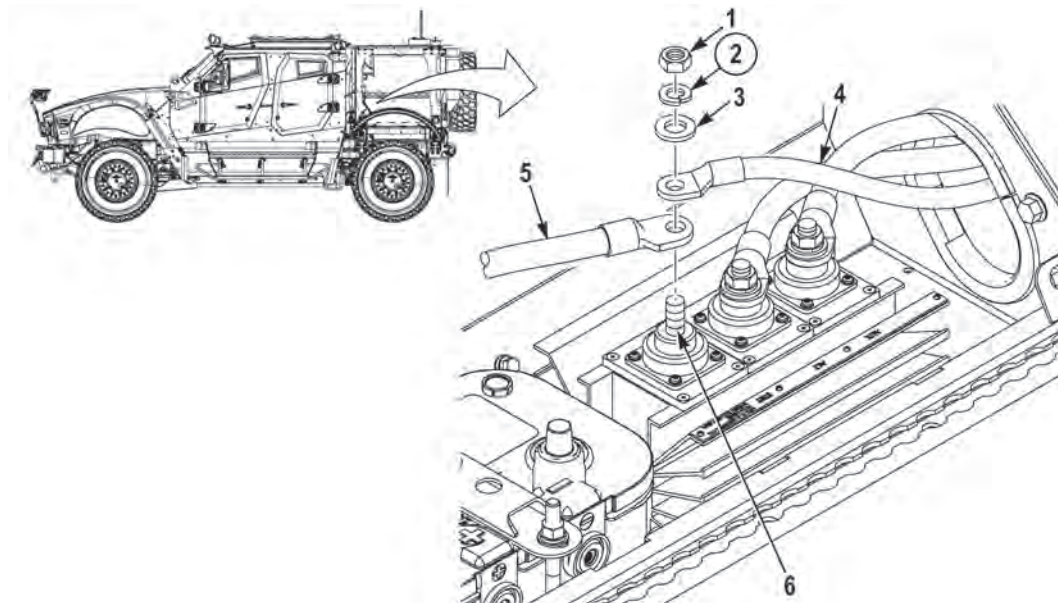
4. With the aid of an assistant, secure battery isolator (20) in battery box (21) with two washers (19), screws (18), and new locknuts (17).



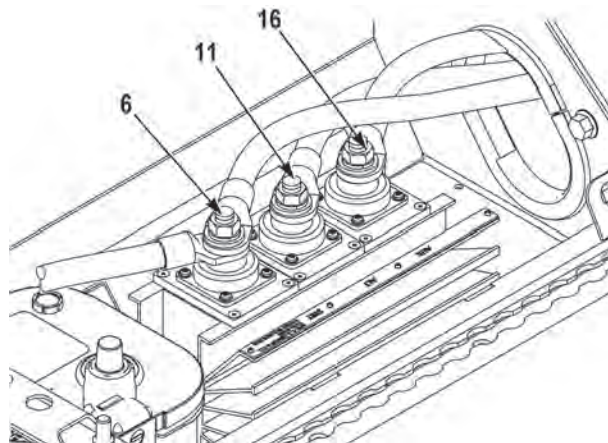
NOTE

Install cables as noted prior to removal.

5. Install cable (15) on AUX terminal (16) with washer (14), new lockwasher (13), and nut (12). Tighten nut (12) to 265 lb-in (30 N•m).
6. Install cable (10) on ALT terminal (11) with washer (9), new lockwasher (8), and nut (7). Tighten nut (7) to 265 lb-in (30 N•m).



7. Install cable (5) and cable (4) on STRT terminal (6) with washer (3), new lockwasher (2), and nut (1). Tighten nut (1) to 265 lb-in (30 N•m).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water. Failure to comply may result in injury or death to personnel.

8. Apply sealant RTV, to STRT terminal (6), ALT terminal (11), an AUX terminal (16).
9. Perform all Follow-On Maintenance tasks.

END OF TASK

END OF WORK PACKAGE

BATTERY PDU BOX REPLACEMENT (M1245)

Preconditions

Park Vehicle
 Engine OFF
 Wheels Chocked
 Batteries Disconnected (WP 0187)

Tools and Special Tools

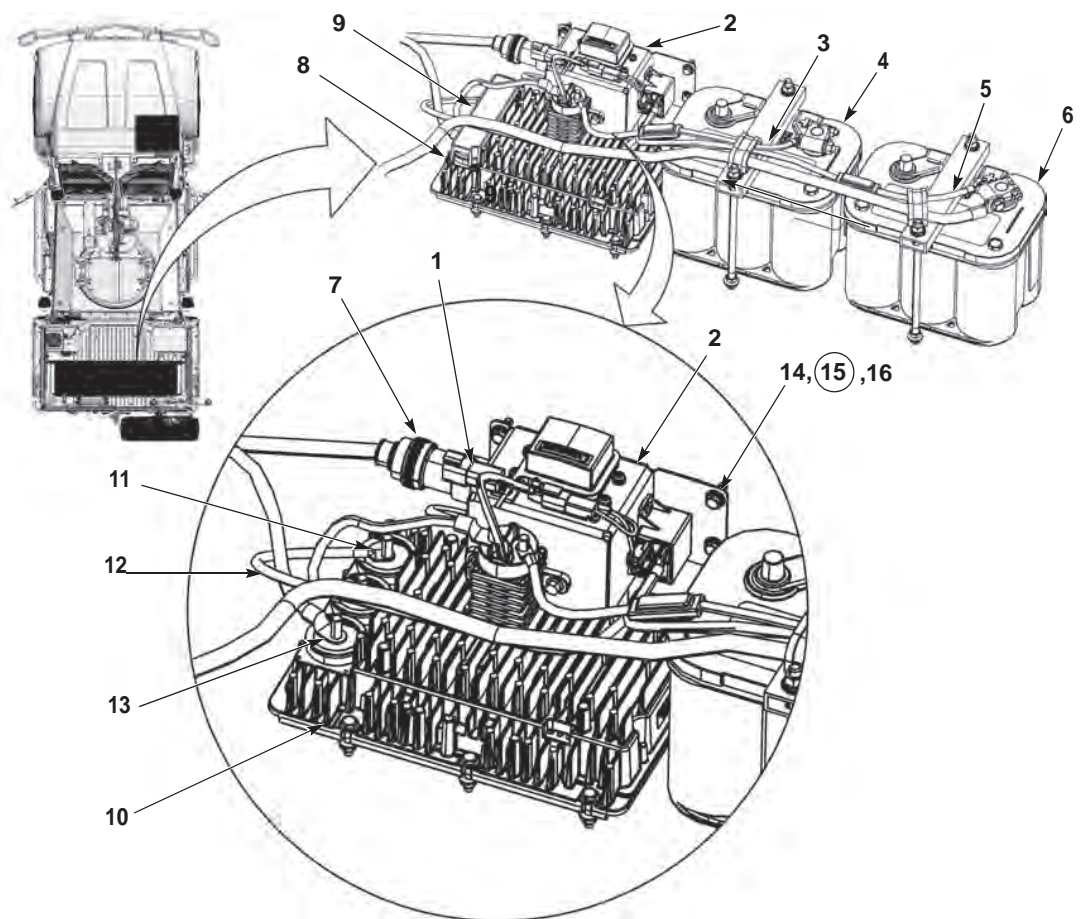
Tool Kit, General Mechanic's: Automotive

Materials/Parts

Adhesive - Sealant, Silicone, RTV
 Lockwasher (4) (Item 15)

Follow-On Maintenance

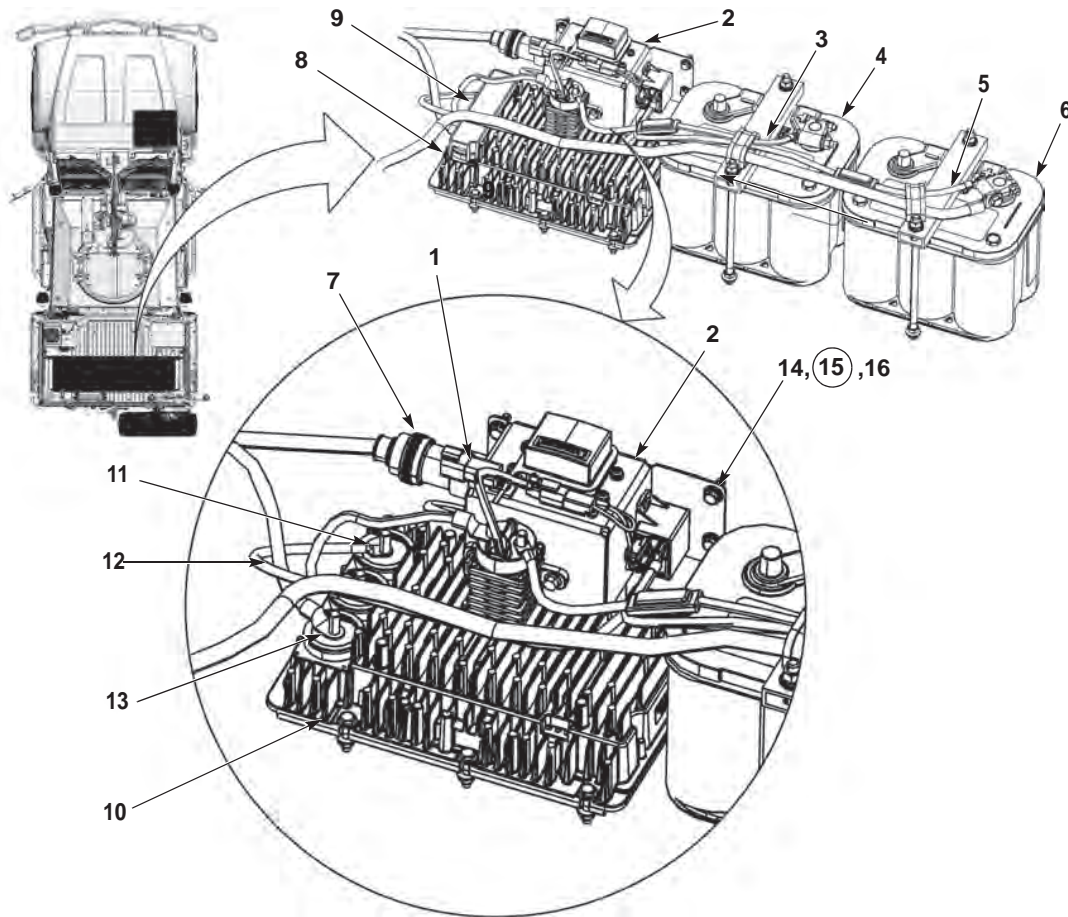
Connect batteries (WP 0187)
 Remove and Stow Wheel Chocks

REMOVAL**NOTE**

- Truck shown removed for clarity.
- Tag and mark wires and connectors and note all wire harness routing prior to removal to ensure proper installation.
- Remove cable ties as required

1. Disconnect electrical connector (1) from the PDU (2).

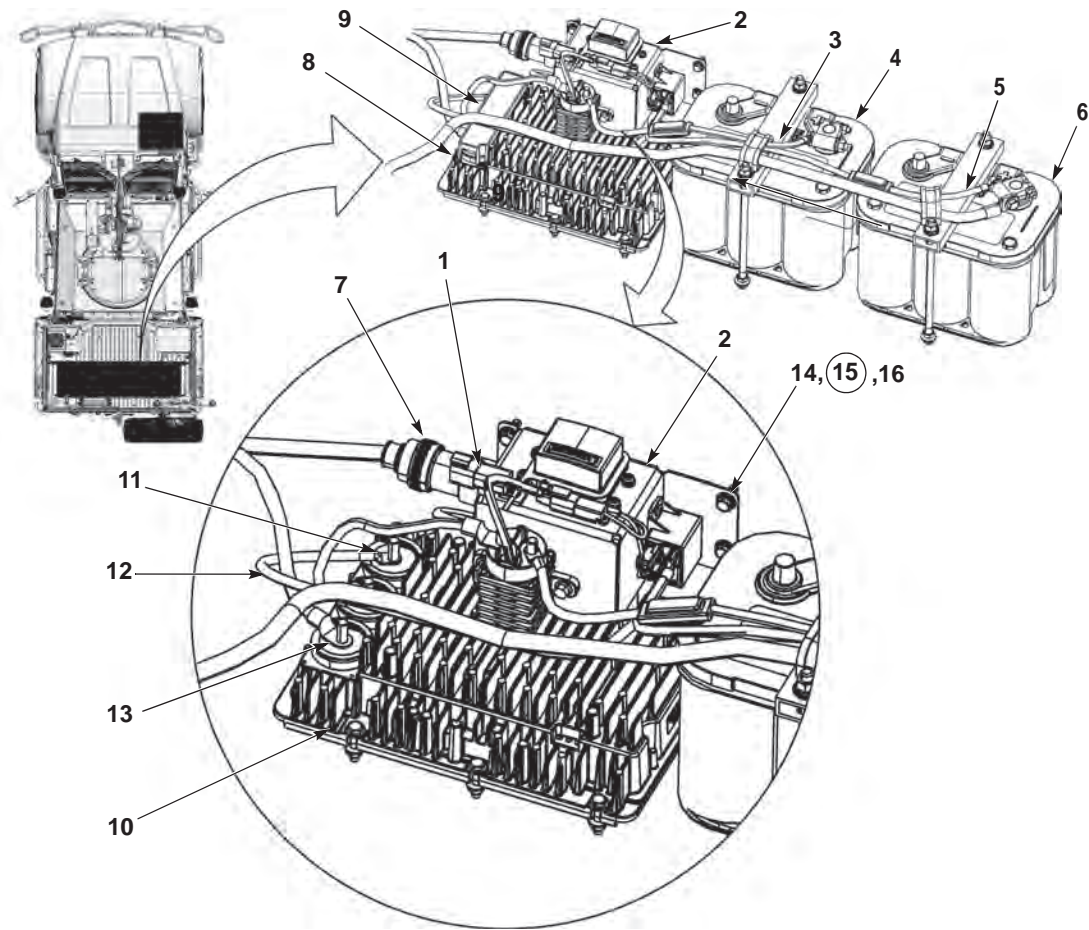
REMOVAL – CONTINUED



2. Disconnect cable 1973 (3) from the positive terminal of the forward battery (4).
3. Disconnect cable 1141 (5) from the positive terminal of the rear battery (6).
4. Disconnect the electrical connector (7) from the PDU (2).
5. Remove four screws (8) and remove cover (9) from equalizer (10).
6. Remove cables 1141A (11), 1973A (12) and BLK GND wire (13) from equalizer (10).
7. Remove four screws (14), four lockwashers (15), four washers (16) and remove PDU (2). Discard lockwashers (15).

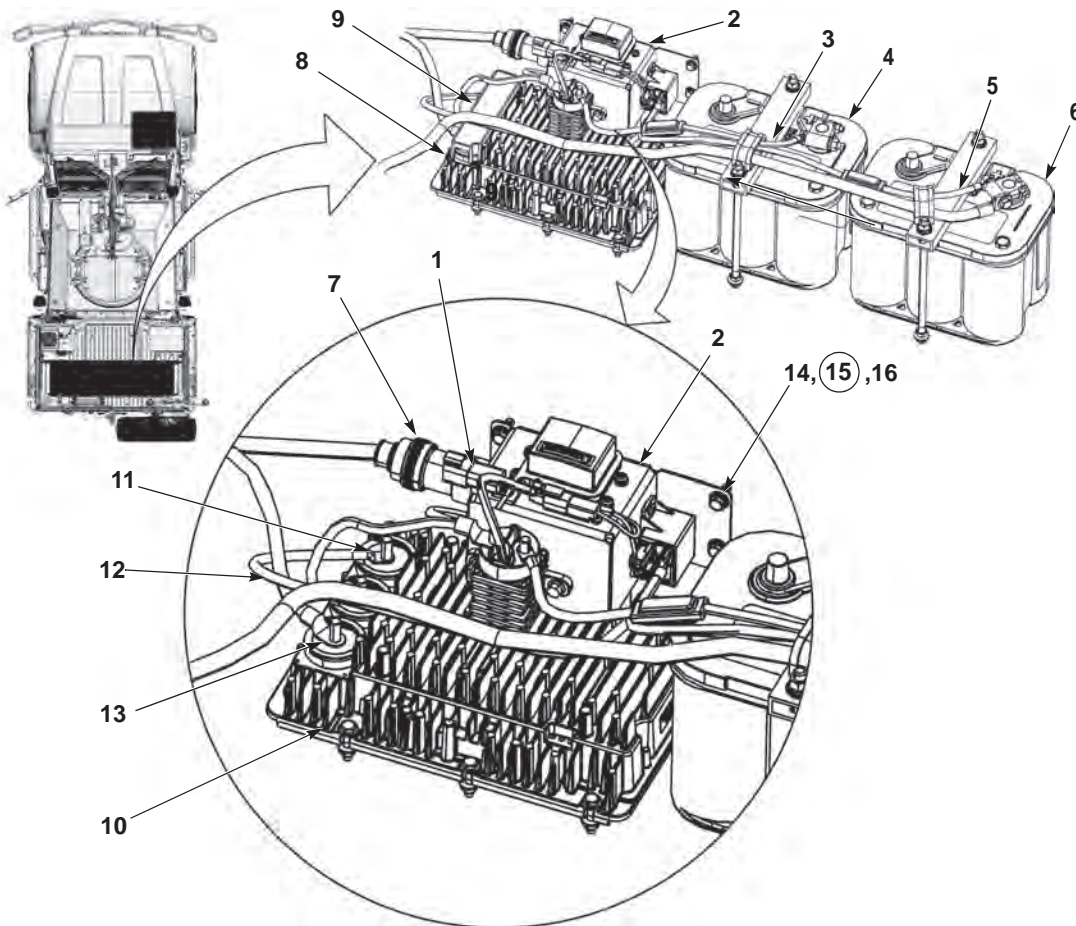
END OF TASK

INSTALLATION



NOTE

- Truck shown removed for clarity.
 - Install cable ties as required.
1. Position the battery PDU box (2) in passenger side battery compartment.
 2. Install four washers (16), four new lockwashers (15), and four screws (14).
 3. Connect cables 1141A (11), 1973A (12) and BLK GND wire (13) to equalizer (10).

INSTALLATION – CONTINUED**NOTE**

- Truck shown removed for clarity.
 - Install cable ties as required.
4. Apply RTV sealant to connectors for cables 1141A (11), 1973A (12) and BLK GND wire (13).
 5. Position cover (9) on equalizer (10) and install four screws (8).
 6. Connect electrical connector (7) to PDU (2).
 7. Connect cable 1141 (5) to positive terminal of rear battery (6).
 8. Connect cable 1973 (3) from the positive terminal of the forward battery (4).
 9. Connect electrical connector (1) to PDU (2).
 10. Perform all Follow-On Maintenance Tasks.

END OF TASK**END OF WORK PACKAGE**

BATTERY REPLACEMENT (M1240/M1240A1)

Preconditions

Park vehicle
Engine OFF
Wheels chocked

Tools and Special Tools

Crowfoot, Flare Nut, 3/8 Dr., 1/2 in.
Puller, Cable Clamp
Socket, Universal, 12P, 9/16 in., 3/8 Drive
Tool Kit, General Mechanic's: Automotive
Wrench, Torque, 0 to 300 in-lb

Materials/Parts

Lockwasher (Item 5)
Lockwasher (2) (Item 18)
Lubricant, Connector
Ties, Cable

Follow-On Maintenance

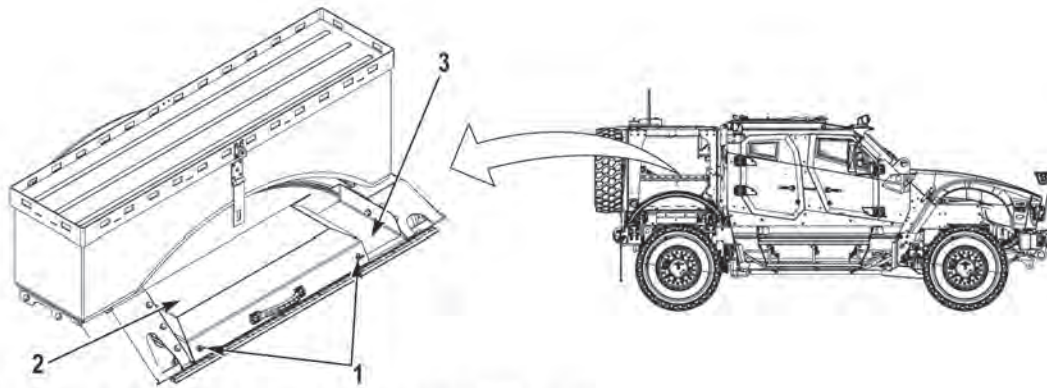
Remove and stow wheel chocks

REMOVAL**WARNING**

- Use extreme care not to short out battery terminals. Remove all jewelry such as rings, ID tags, bracelets, etc. prior to working on or around vehicle. Jewelry and tools can catch on equipment, contact positive electrical circuits, and cause severe burns or electrical shock. Failure to comply may result in injury or death to personnel.
- Upon removal of terminal clamps, avoid accidental contact between terminal clamps and battery terminals. This will prevent accidental shorting, arcing, or sparks. Secure terminal clamps, cables, and wires away from battery terminals with cable ties as required. Failure to comply may result in injury or death to personnel.
- Do not smoke, have open flame, or cause sparks near batteries. Batteries may explode. Failure to comply may result in injury or death to personnel.
- Battery acid is harmful to skin and eyes. Always wear safety goggles, acid-proof gloves, and a rubber apron when performing battery maintenance. Failure to comply may result in injury or death to personnel.
- Avoid electrolyte contact with skin and eyes. Failure to comply may result in injury or death to personnel.

CAUTION

- When removing and installing battery terminals and cables from batteries, ensure they are removed and installed in proper sequence as described below. Failure to comply may result in damage to equipment.
- Ensure battery disconnect switch is turned OFF prior to performing battery maintenance. Failure to comply may result in damage to equipment.

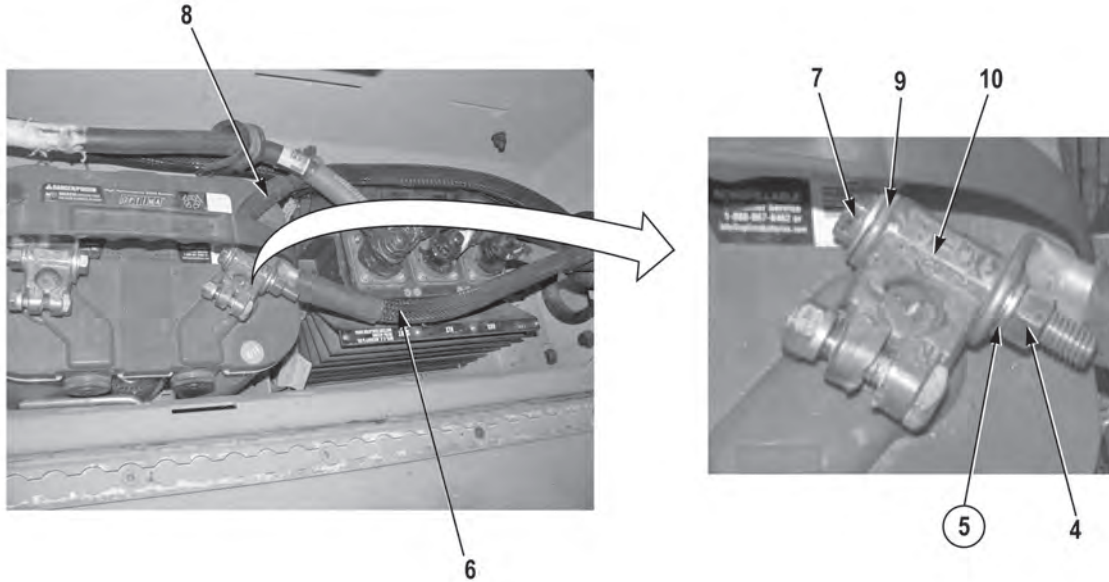


ANTENNA PLATFORM SHOWN REMOVED FOR CLARITY

NOTE

- Two batteries are located in the cargo deck, on the driver side, used to start vehicle.
- Two batteries are located in the cargo deck, on the passenger side, used to power GFE in silent watch operations.
- The battery cases are marked with a (+) positive and/or a (-) negative to help identify battery polarity.
- When removing terminal clamps, note position and location of connections prior to their removal to ensure proper installation.
- All battery terminal clamps are removed the same way except where noted. Passenger side shown.

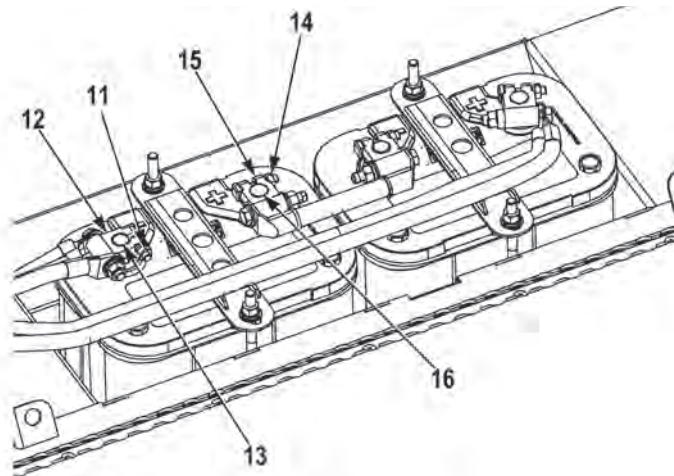
1. Remove two thumbscrews (1) and battery cover (2) from cargo deck (3).



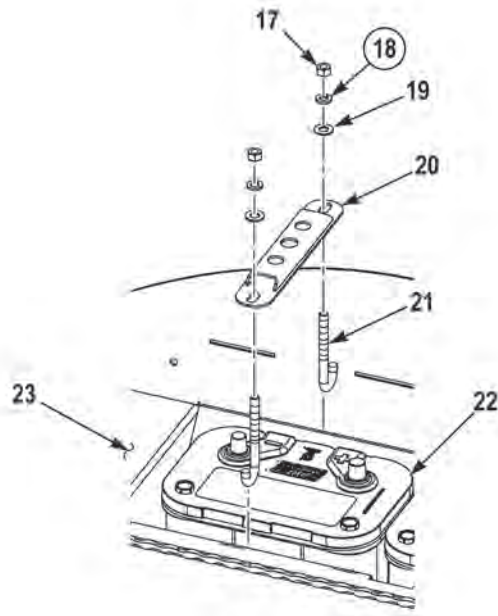
NOTE

Perform Step (2) if removing driver side front battery.

2. Remove nut (4), lockwasher (5), cable (6), screw (7), cable (8), and washer (9) from terminal clamp (10). Discard lockwasher (5).



3. Loosen nut (11) on terminal clamp (12).
4. Using cable clamp puller, remove terminal clamp (12) from negative battery terminal (13).
5. Loosen nut (14) on terminal clamp (15).
6. Using cable clamp puller, remove terminal clamp (15) from positive battery terminal (16).

**NOTE**

- Driver side batteries will have two cushion clips.
- Note position of cushion clips prior to removal to ensure proper installation.

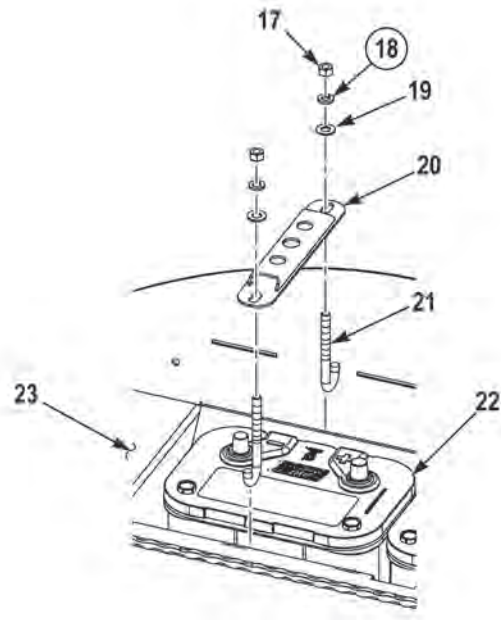
7. Remove two nuts (17), lockwashers (18), washers (19), and battery hold down bracket (20) from two J-hooks (21) and battery (22). Discard lockwashers (18).

NOTE

Note position of battery prior to removal to ensure proper installation.

8. Remove battery (22) from battery box (23).
9. Remove two J-hooks (21) from battery box (23).

END OF TASK

INSTALLATION

1. Position two J-hooks (21) in battery box (23).

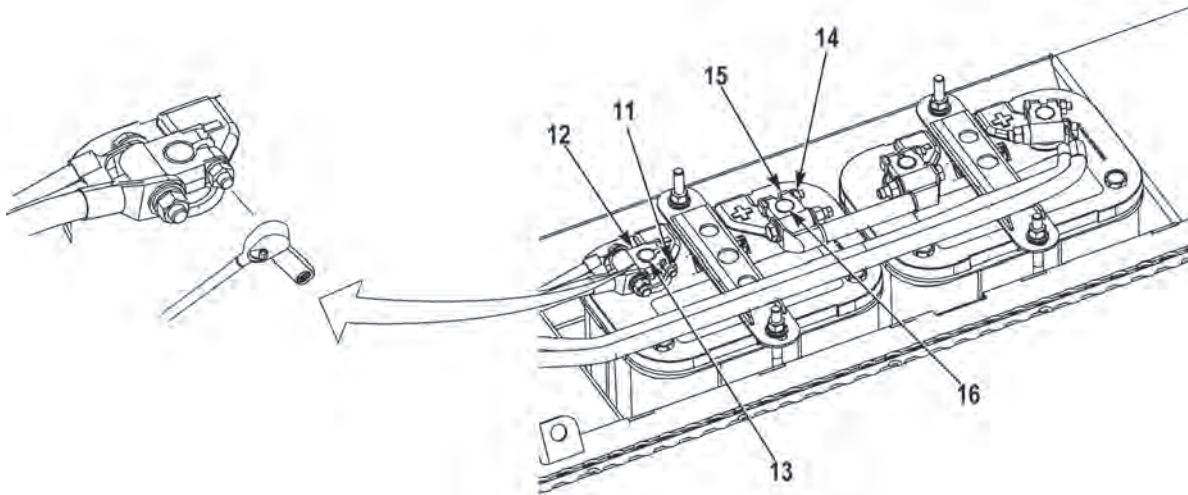
NOTE

Install battery as noted prior to removal.

2. Install battery (22) in battery box (23).

NOTE

- Driver side batteries will have two cushion clips.
 - Install cushion clips as noted prior to removal.
3. Secure battery (22) in battery box (23) with two J-hooks (21), battery hold down bracket (20), two washers (19), new lockwashers (18), and nuts (17). Tighten nuts (17) to 20 to 30 lb-in (2 to 3 N•m).



CAUTION

While tightening nuts, hold screws with wrench. Failure to comply may result in damage to equipment.

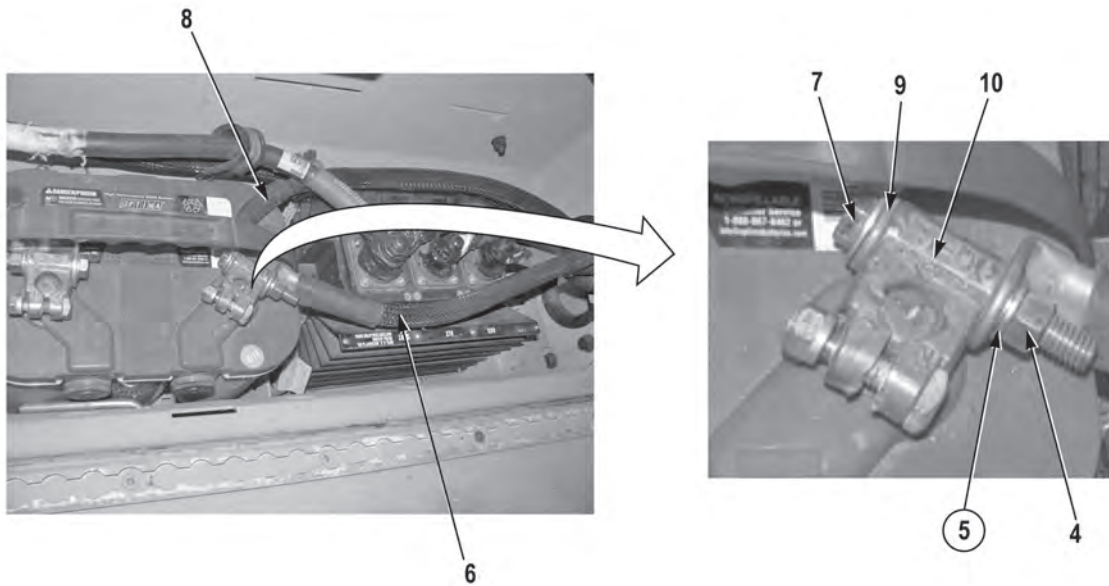
NOTE

- All battery terminals are connected the same way except where noted. Front passenger side shown.
 - Install terminal clamps as noted prior to removal.
 - Ensure torque wrench is 90° to crowfoot when torquing terminal clamps.
4. Install terminal clamp (15) on positive battery terminal (16) with nut (14). Tighten nut (14) to 84 to 96 lb-in (9 to 11 N•m).
 5. Install terminal clamp (12) on negative battery terminal (13) with nut (11). Tighten nut (11) to 84 to 96 lb-in (9 to 11 N•m).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water. Failure to comply may result in injury or death to personnel.

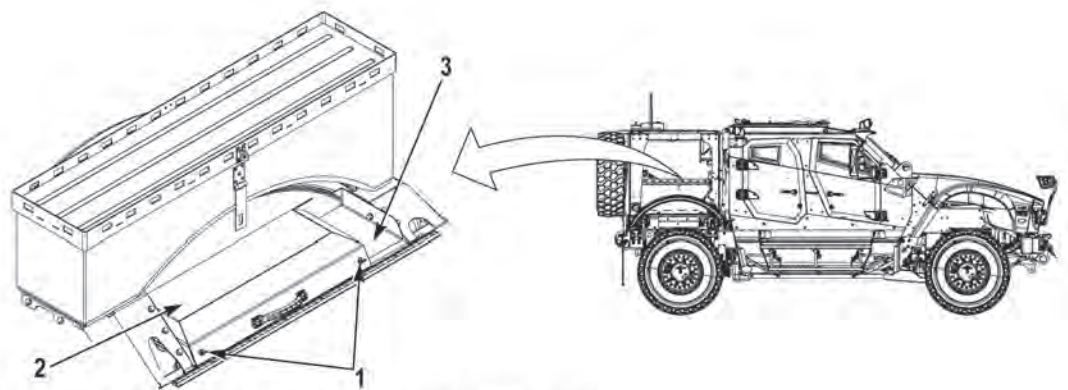
6. Apply connector lubricant to terminal clamp (15), positive battery terminal (16), terminal clamp (1), and negative battery terminal (12).



NOTE

Perform Step (7) if driver side front battery was removed.

7. Install washer (9), cable (8), screw (7), cable (6), new lockwasher (5), and nut (4) on terminal (10). Tighten nut (4) to 84 to 96 lb-in.



ANTENNA PLATFORM SHOWN REMOVED FOR CLARITY

8. Install battery cover (2) on cargo deck (3) with two thumbscrews (1).
9. Perform all Follow-On Maintenance tasks.

END OF TASK

END OF WORK PACKAGE

BLACKOUT DRIVELIGHT REPLACEMENT

Preconditions

Park vehicle
 Engine OFF
 Wheels chocked
 Batteries disconnected (M1240/1240A1)
 (WP 0186)
 Batteries disconnected (M1245) (WP 0187)

Tools and Special Tools

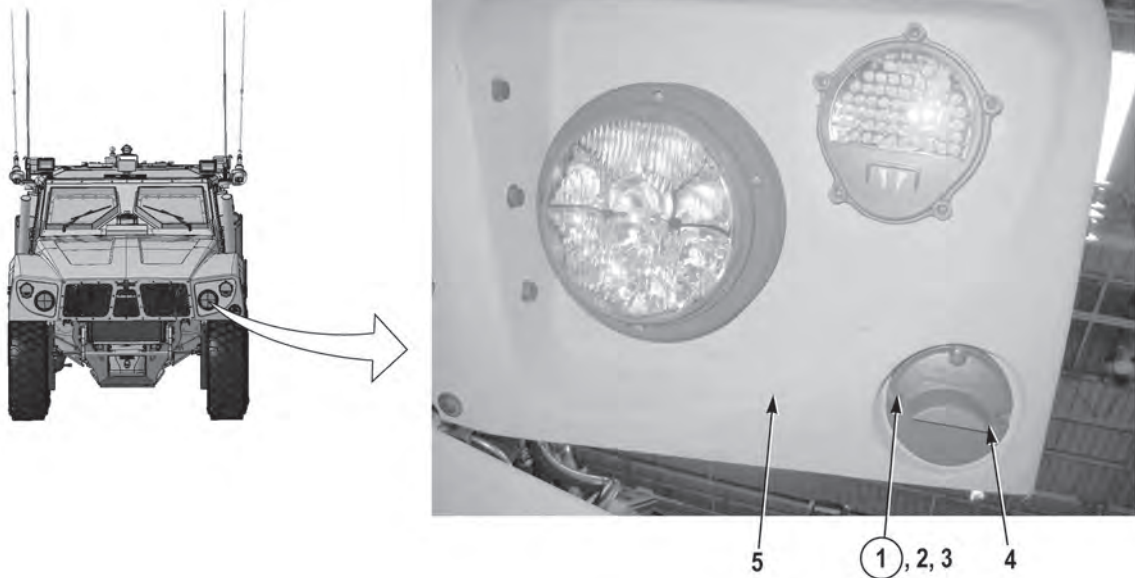
Tool Kit, General Mechanic's: Automotive

Materials/Parts

Locknut (3) (Item 1)
 Compound, Corrosion Preventive, Ultra Tef-Gel
 05SA2
 Lubricant, Connector, Nyogel 760G
 Tags, Identification

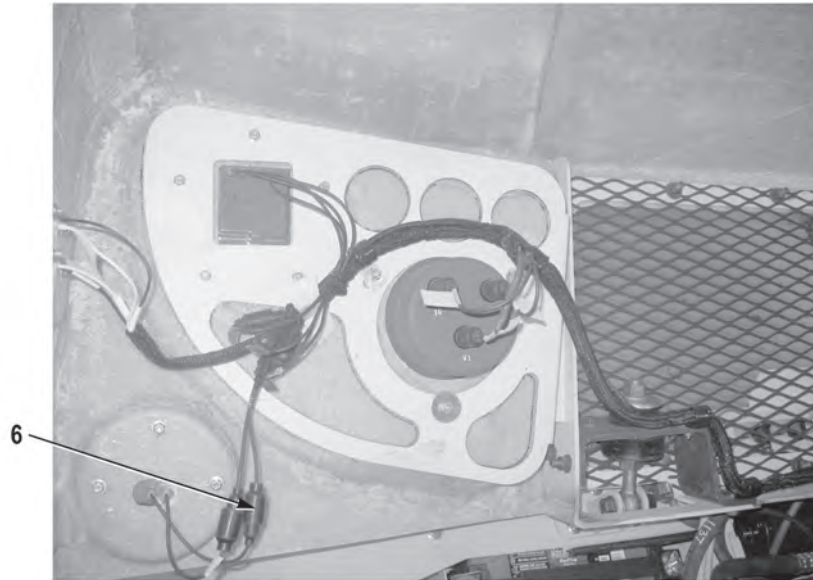
Follow-On Maintenance

Connect batteries (M1240/M1240A1) (WP 0186)
 Connect batteries (M1245) (WP 0187)
 Remove and stow wheel chocks

REMOVAL**NOTE**

Tag and mark wires prior to removal to ensure proper installation.

1. Remove three locknuts (1), screws (2), washers (3), and blackout drivelight (4) from hood (5). Discard locknuts (1).



2. Disconnect two connectors (6).

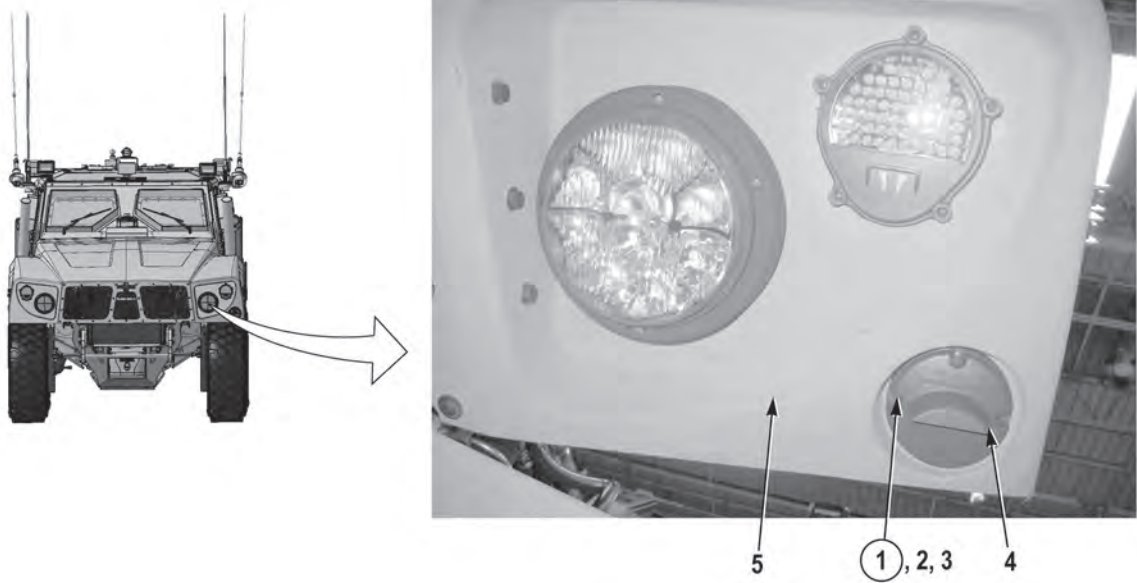
END OF TASK

INSTALLATION

NOTE

Install wires as noted prior to removal to ensure proper installation.

1. Connect two connectors (6).



2. Install blackout drivelight (4) on hood (5) with two screws (2), washers (3) and new locknuts (1).
3. Perform all Follow-On Maintenance tasks.

END OF TASK

END OF WORK PACKAGE

CHECK-6 REAR COMPOSITE LIGHT REPLACEMENT

Preconditions

Park vehicle
 Engine OFF
 Wheels chocked
 Batteries disconnected (M1240/M1240A1)
 (WP 0186)
 Batteries disconnected (M1245) (WP 0187)

Materials/Parts

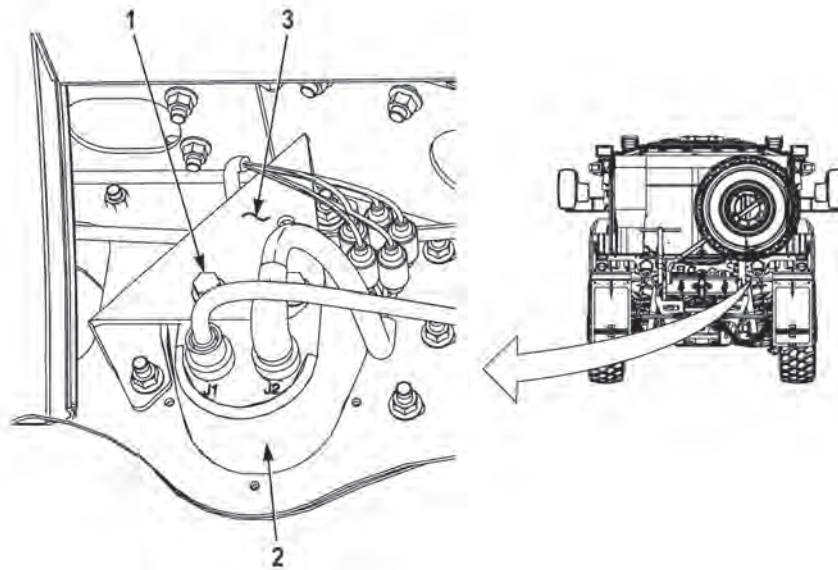
Tags, Identification

Follow-On Maintenance

Connect batteries (M1240/M1240A1) (WP 0186)
 Connect batteries (M1245) (WP 0187)
 Remove and stow wheel chocks

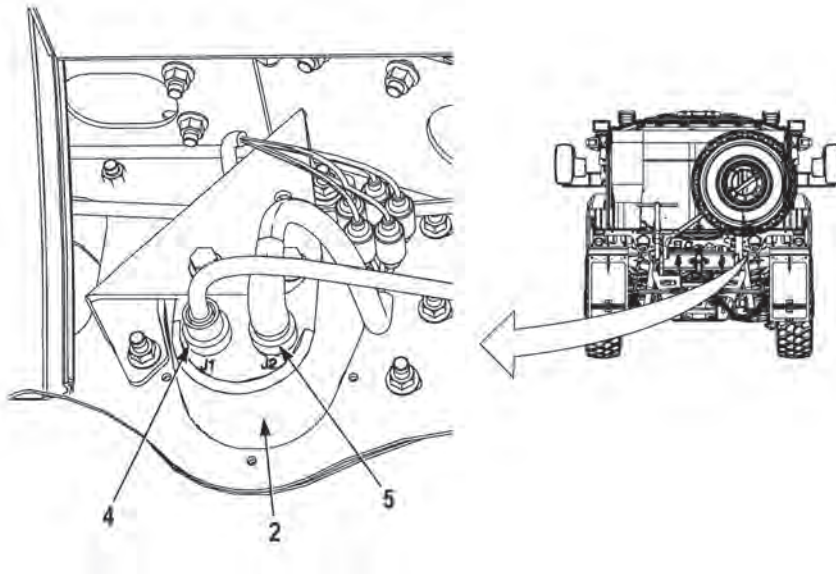
Tools and Special Tools

Tool Kit, General Mechanic's: Automotive

REMOVAL**NOTE**

- Driver side and passenger side Check-6 rear composite lights are removed the same way.
- Passenger side shown.
- Tag and mark connectors prior to removal to ensure proper installation.

1. Remove two screws (1) and Check-6 rear composite light (2) from bracket (3).



NOTE

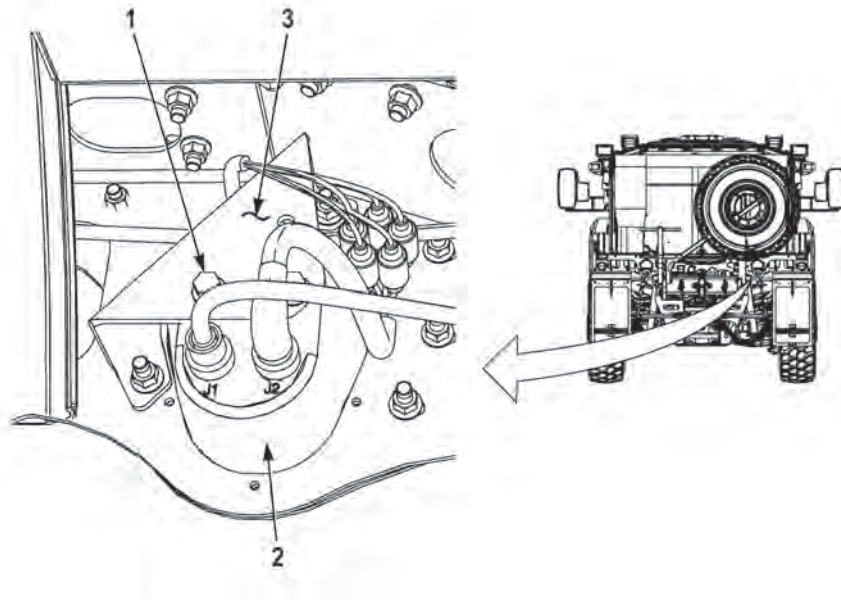
- Driver side and passenger side Check-6 rear composite lights are removed the same way.
- Passenger side shown.

2. Disconnect connector (4) from Check-6 rear composite light (2).
3. Disconnect connector (5) from Check-6 rear composite light (2).

END OF TASK

INSTALLATION

1. Connect connector (4) to Check-6 rear composite light (2).
2. Connect connector (5) to Check-6 rear composite light (2).



3. Install Check-6 rear composite light (2) on bracket (3) with two screws (1).
4. Perform all Follow-On Maintenance tasks.

END OF TASK

END OF WORK PACKAGE