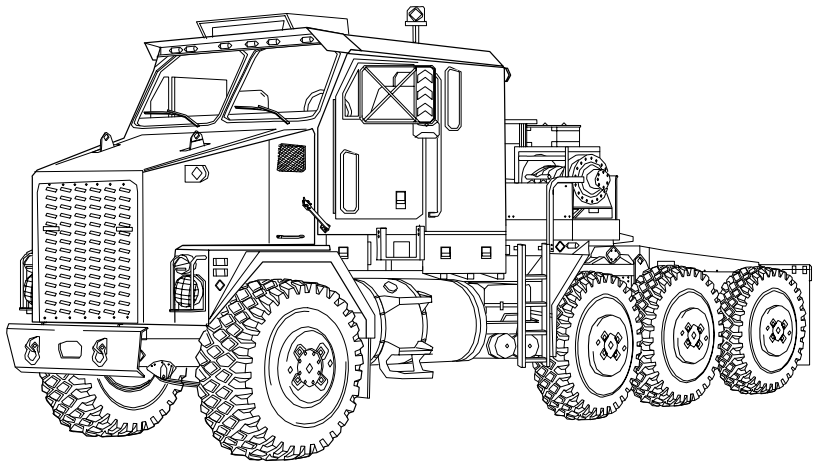
*TM 9-2320-360-20-2

VOLUME NO. 2

TECHNICAL MANUAL
UNIT MAINTENANCE



TRUCK, TRACTOR, M1070, 8 X 8,
HEAVY EQUIPMENT TRANSPORTER (HET)
NSN 2320-01-318-9902
EIC: B5C

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*Supersedes TM 9-2320-360-20-2 dated 31 March 1994.

HEADQUARTERS, DEPARTMENT OF THE ARMY

May 2007

WARNING

CARBON MONOXIDE (EXHAUST GAS) CAN KILL YOU

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

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

- DO NOT operate personnel heater or engine of vehicle in enclosed area without adequate ventilation.
- DO NOT idle engine for long periods without ventilator blower operation. If tactical situation permits, open hatches.
- DO NOT drive any vehicle with inspection plates, cover plates, or engine compartment doors removed unless necessary for maintenance purposes.
- NEVER sleep in a vehicle when the heater is operating or the engine is idling.
- BE ALERT at all times during vehicle operation for exhaust odors or exposure symptoms. If either are present, IMMEDIATELY EVACUATE AND VENTILATE the area. Affected personnel treatment shall be: expose to fresh air; keep warm; DO NOT PERMIT PHYSICAL EXERCISE; if necessary, give artificial respiration as described in FM 4-25.11 and get medical attention.
- BE AWARE; neither the gas particulate filter unit nor field mask for nuclear, biological, and chemical protection will protect you from carbon monoxide poisoning.

THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS GOOD VENTILATION.

WARNING

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

WARNING

Wear eye protection and use care when replacing snap rings and retaining rings. Snap/retaining rings are under spring tension and can act as projectiles when released and may cause severe eye injury.

WARNING

Fuel and oil are slippery and can cause falls. To avoid injury, wipe up spilled fuel or oil with rags.

WARNING

- Adhesive -sealants 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 sealing compound gets on skin or clothing, wash immediately with soap and water.
- Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use in well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush eyes with water for 15 minutes and get immediate medical attention.
- On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.

WARNING

SOLVENT CLEANING COMPOUND (DRY CLEANING SOLVENT)

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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

- **The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).**
- **Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.**
- **Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.**
- **Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.**
- **Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.**

WARNING

When servicing this vehicle, performing maintenance, or disposing of materials such as engine coolant, transmission fluid, lubricants, batteries, battery acid or CARC paint, consult your Unit/local hazardous waste disposal center or safety office for local regulatory guidance. If further information is needed, please contact the Army environmental hotline at 1-800-872-3845. Improper disposal of this material may result in damage to environment or injury to personnel.

WARNING

Observe the following precautions when working on or around engine/transmission components.

- **Ensure engine is cool before performing maintenance. Failure to comply may result in severe burns.**
- **Use caution when draining hot oil. Oil may burn exposed skin and cause injury to personnel. If injured, seek medical attention immediately.**
- **Never use magnetic plug in center of engine oil pan to drain oil. Failure to comply may result in injury to personnel and could cause oil to drain on vehicle components.**
- **When working on a running engine, use caution around rotating parts. Tools, clothing, and hands may get caught causing serious injury or death to personnel.**
- **Use caution when working near hood mounting bracket that extends beyond firewall. Failure to comply may result in injury to personnel.**
- **Parking brake must be applied, with transmission range selector and transfer case in neutral before starting DDR cylinder cutout test. Failure to comply may result in vehicle moving unexpectedly and injury to personnel.**

WARNING

Observe the following precautions when working around fuel.

- **Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire 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. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.**
- **Never use fuel to clean parts. Fuel is highly flammable. Serious personnel injury could result if fuel ignites during cleaning.**
- **Starting fluid is toxic and highly flammable. Container is pressurized. Never heat container or discharge starting fluid in confined areas or near open flame. Failure to comply may result in injury to personnel. If injured, seek immediate medical attention.**
- **Ether is very flammable and could explode causing serious injury or death. Keep ether cylinders away from heat and open flame.**

WARNING

Observe the following precautions when working on or around exhaust system components.

- **Ensure exhaust pipe, tube, and muffler are cool before performing maintenance. Failure to comply may result in serious personal injury.**
- **Do not operate HET Tractor with muffler removed. Toxic exhaust fumes may enter cab, resulting in injury or death to personnel.**
- **Muffler weighs 91 lb (41 kg). Assistant is required when replacing muffler. Failure to comply may result in injury to personnel.**
- **Support tail pipe guards when replacing mounting hardware to prevent from falling, possibly causing injury to personnel.**

WARNING

Observe the following precautions when working on or around cooling system components.

- **Coolant and radiator may be very hot and under pressure from engine operation. Ensure engine and radiator are cool before performing maintenance. Failure to comply may cause serious injury.**
- **Keep out from under radiator while supported by lifting device to prevent serious injury.**
- **Keep out from under fan while removing it to prevent serious injury.**

WARNING

Observe the following precautions when working on or around electrical system components.

- **Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Batteries can explode from a spark. Battery acid is harmful to skin and eyes. Always wear eye protection when working with batteries.**
- **Batteries must be disconnected before checking cables and wires on starter or tightening any connections. Failure to comply may result in injury to personnel.**
- **Battery acid (electrolyte) is extremely harmful. Always wear safety goggles and rubber gloves and do not smoke when performing maintenance on batteries. Injury will result if acid contacts skin or eyes. Wear rubber apron to prevent clothing being damaged.**
- **Never use open flame to apply heat to heatshrink tubing. Failure to comply may result in injury to personnel.**
- **Allow solder to cool before handling. Failure to comply may result in injury to personnel.**
- **Allow heatshrink tubing to cool before handling. Failure to comply may result in injury to personnel.**
- **Starter weighs 72 lb (33 kg) and is difficult to handle. To prevent injury, use caution when removing.**

WARNING

Support propeller shaft while performing maintenance. Personnel may be injured if propeller shaft falls.

WARNING

Observe the following precautions when working on or around brake system components.

- **Brake shoes may be coated with dust. Breathing dust may be harmful to personnel. Wear filter mask approved for use against brake dust.**
- **Do not allow grease or oil to contact brake linings. Linings can absorb grease and oil, causing early glazing and very poor brake action. Failure to comply may result in serious injury or death to personnel.**

WARNING

Observe the following precautions when working on or around brake system components (cont)

- **All brakes must be adjusted when performing brake adjustment procedure. Failure to comply may cause improper braking and result in injury to personnel .**
- **Brake shoes are installed with strong spring tension. Keep hands clear when installing parts to prevent serious injury.**
- **Brake drum weighs 135 lb (61 kg). Assistance is required when replacing brake drum. Failure to comply may result in injury to personnel.**
- **When replacing brake shoes, all four shoes on an axle must be replaced at the same time. Failure to comply may result in improper brake operation and injury to personnel.**
- **Never attempt to remove upper spring brake clamp ring. Failure to comply will result in personnel injury or death.**
- **Never try to repair rear brake chamber. High spring tension makes repair dangerous. Severe injury or death may result.**
- **When working on parking brake control system vehicle may roll. Vehicle must be parked on level ground. Wheel chocks must be positioned in front of and behind one of the rear wheels to keep it from rolling. Failure to comply may result in injury or death to personnel.**

WARNING

Observe the following precautions when working on or around wheels and tires.

- **Hydraulic jack and jackstands must be positioned on flat surface. Placing jack or jackstands on unlevel or soft surface may result in truck falling and cause injury or death to personnel.**
- **If any loose or broken bolts are found after removing the wheel cover, deflate the tire completely before attempting to loosen lug nuts. Failure to comply may result in injury to personnel.**
- **Tire must be completely deflated before attempting to loosen nuts if any bolts are found loose or broken after removing wheel cover. Failure to comply may result in injury to personnel.**
- **High pressure air will be released from valve stem when core is removed. Stay clear of valve stem after core is removed. Failure to comply may result in personnel injury.**
- **Keep hands and fingers from between tire and bead lock. Failure to comply may result in injury to personnel.**
- **Tire may explode and cause serious injury or death. Place wheel and tire in safety cage before inflating. Stay back 10 ft (0.3 m) from cage when inflating. Minimum hose length is 10 ft (0.3 m).**
- **When conducting wheel runout check or wheel bearing check, HET Tractor must be on level ground and wheels must be chocked before parking brake is released. Otherwise, HET Tractor may roll and cause personnel injury.**
- **Wheel assembly weighs 523 lb (237 kg). Use caution when handling wheel. Failure to comply may result in serious injury or death to personnel.**

WARNING

Observe the following precautions when working on or around steering components.

- **Steering reservoir is heavy. Support steering reservoir while performing maintenance. Steering reservoir could fall resulting in injury to personnel.**
- **Support tee gear box before removing mounting screws to prevent injury.**
- **Tie rod end must be threaded into tie rod so that threads are beyond slot under clamp. Failure to comply may result in tie rod end separating from tie rod resulting in injury to personnel and loss of vehicle control.**

WARNING

Observe the following precautions when working on or around cab and frame components.

- **Hood springs may be under tension. Use care when replacing springs to prevent injury.**
- **Do not use hood as a work platform. Using hood as a work platform may result in injury to personnel and/or equipment damage.**
- **Hood weighs 235 lb (107 kg). Keep out from under hood. Hood could fall causing serious injury.**
- **Door is very heavy. If dropped, door may cause serious injury.**
- **Keep out from under spare wheel/tire carrier while supported by lifting device to prevent injury.**

WARNING

Observe the following precautions when working on or around fifth wheel.

- **Improper adjustment of fifth wheel may cause trailer to become uncoupled during operation. Serious injury or death may result.**
- **Fifth wheel plate must be secure before performing maintenance. Failure to do so may result in injury to personnel.**
- **Fifth wheel weighs 925 lb (420 kg). Use suitable lifting device to prevent injury to personnel.**
- **Ramp weighs 237 lb (108 kg). Keep out from under heavy parts. Falling parts may cause serious injury or death.**

WARNING

Observe the following precautions when working on or around suspension system components.

- **Air suspension will lower when air line/hoses are removed. To avoid injury, stay clear of HET Tractor frame until air suspension is completely lowered.**
- **Do not attempt to inflate air spring when it is removed from vehicle. Failure to comply may result in serious injury to personnel.**
- **Air suspension system may still be pressurized even though air pressure gage reads 0 psi. Remove air line slowly to allow air to escape. Failure to comply may result in air line blowing off causing serious injury to personnel.**

WARNING

Observe the following precautions when working on or around winch system components.

- **Always wear heavy duty gloves when handling winch cable. Never let cable run through hands. Frayed cable can cut hands severely.**
- **Use care when removing winch cable from drum. End of cable can spring up causing injury to personnel.**
- **Do not operate winch without guard in place.**
- **Do not place hands or feet near winch during operation.**
- **Auxiliary winch weighs approximately 130 lb (59 kg). Use lifting device to replace auxiliary winch. Failure to comply may result in injury to personnel.**
- **Control console panels are heavy. Use care when removing screws to avoid injury to personnel.**

WARNING

Polyurethane Coating (CARC)

Eye and hearing protection must be worn at all times when using power tools for grinding, cutting, sawing and drilling. Failure to do so may result in injury to personnel. Chemical Agent Resistant Coating (CARC) paint contains isocyanate which is highly irritating to skin and respiratory system. High concentrations of isocyanate can produce symptoms of itching and reddening of skin, a burning sensation in the throat and nose, and watering of the eyes. In extreme concentrations, isocyanate can cause cough, shortness of breath, pain during respiration, increased sputum production, and chest tightness. 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.

The following precautions must be taken whenever using CARC paint:

- **Protective equipment (gloves, goggles, ventilation mask) must be worn when using CARC paint.**
- **NEVER cut CARC-coated materials without high-efficiency, air-purifying respirators in use.**
- **DO NOT grind or sand painted equipment without high-efficiency, air-purifying respirators in use.**
- **BE AWARE of CARC paint exposure symptoms; symptoms can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.**
- **Use only in well-ventilated areas. Check with local environmental office for methods and locations approved for painting in accordance with local and state environmental regulations.**
- **ALWAYS use air line respirators when using CARC paint unless air sampling shows exposure to be below standards. Use chemical cartridge respirator if air sampling is below standards.**

WARNING

After Nuclear, Biological, or Chemical (NBC) exposure of vehicle, all air filters shall be handled with extreme caution. Unprotected personnel may experience injury or death if residual toxic agents or radioactive material are present. If vehicle is exposed to chemical or biological agents, servicing personnel shall wear protective mask, hood, protective overgarments, and chemical protective gloves and boots in accordance with FM 3-11.4. All contaminated air filters shall be placed in double-lined plastic **bags and moved swiftly to a segregation area away from the worksite. The same procedure applies** for **radioactive dust contamination. The Company NBC team should measure radiation prior to filter removal to determine extent of safety procedures required per the NBC Annex to the unit Standard Operating Procedures (SOP). The segregation area in which the contaminated air filters are temporarily stored shall be marked with appropriate NBC placards. Final disposal of contaminated air filters shall be in accordance with local SOP. Decontamination operation shall be in accordance with FM 3-11.5** and **local SOP.**

See FM 4-25.11 for additional first aid data.

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Technical Manual
TM 9-2320-360-20-2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 31 MAY 2007

UNIT MAINTENANCE

TRUCK, TRACTOR, M1070, 8 X 8, HEAVY EQUIPMENT TRANSPORTER (HET)

(NSN 2320-01-318-9902)
EIC:B5C

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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CHAPTER 3
ENGINE MAINTENANCE

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Section I. INTRODUCTION

3-1. INTRODUCTION

This chapter contains instructions for replacement and repair of engine components at the Unit maintenance level. Some parts must be removed before engine components can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

3-2. ROCKER COVER REPAIR

This task covers:

a. Removal
b. Disassembly
c. Cleaning/Inspection
d. Assembly
e. Installation
f. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions

Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air intake hose removed (left rocker cover only) (para 4-4).
Batteries disconnected (right rocker cover only) (para 7-61).
Exhaust pipe removed (right rocker cover only) (para 5-2).

Tools and Special Tools

Tool Kit, Genl Mech (Item 54, Appendix F)
Socket Set, 3/8 In. Drive (Item 45, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts

Rags (Item 28, Appendix C)
Cleaning Compound, Solvent (Item 31, Appendix C)
Tie, Cable, Plastic (Item 34, Appendix C)
Clamps (2) (Item 13, Appendix G)
Gasket (Item 36, Appendix G)
Gasket (Item 37, Appendix G)
Locknuts (2) (Item 58, Appendix G)
Locknut (Item 72, Appendix G)
Lockwashers (2) (Item 104, Appendix G)
Lockwasher (Item 103, Appendix G)
Seal (Item 162, Appendix G)

NOTE

Both rocker covers are replaced in a similar manner. Right cover is shown.

a. Removal

WARNING

- **Ensure engine is cool before performing maintenance. Failure to comply may result in severe burns.**
- **Use caution when working near hood mounting bracket that extends beyond firewall. Failure to comply may result in injury to personnel.**

CAUTION

Clean around rocker cover before removing each cover from engine. This will keep dust or dirt from entering cylinder heads. Failure to comply will result in damage to equipment.

NOTE

Do steps (1) thru (8) for right rocker cover only.

(1) Remove two nuts (1), lockwashers (2), screws (3), and lower band (4) from steering reservoir (5). Discard lockwashers.

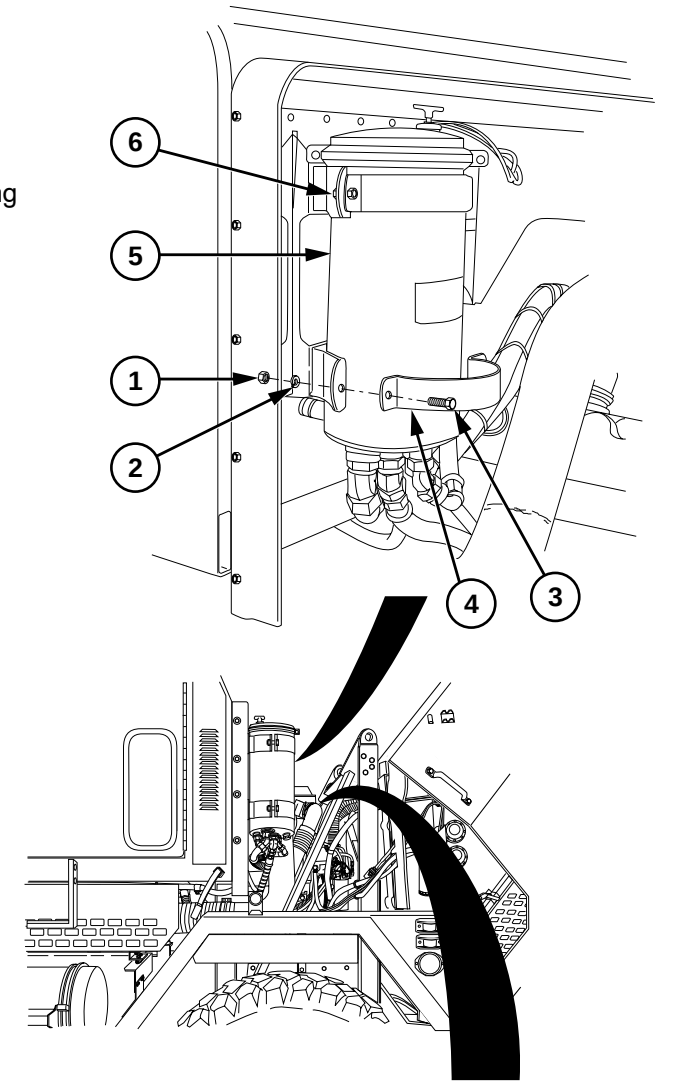
WARNING

Support steering reservoir before loosening band. Failure to comply may result in injury to personnel.

(2) Loosen two nuts (6).

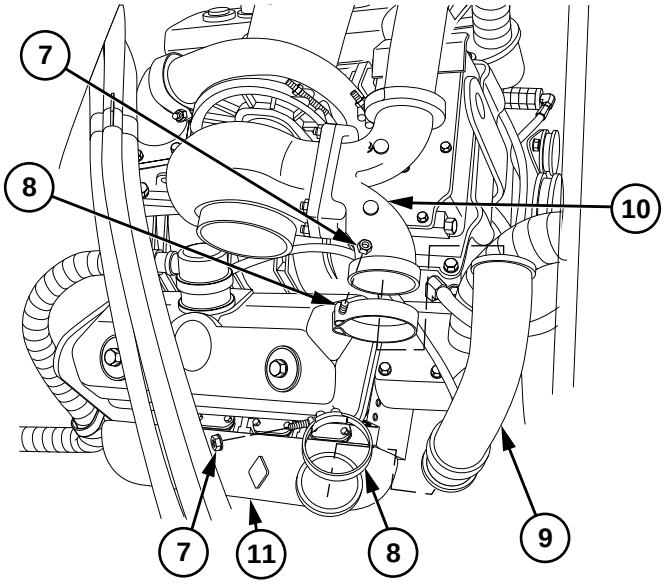
(3) Raise steering reservoir (5) about 5 in. (13 cm) and support.

(4) Tighten two nuts (6).

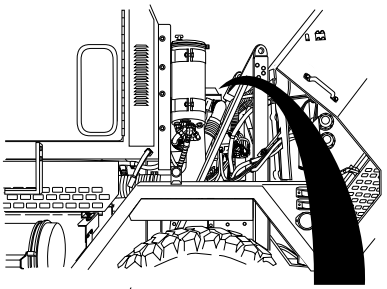


(5) Remove two locknuts (7) and clamps (8) from exhaust tube (9). Discard locknuts and clamps.

(6) Remove exhaust tube (9) from turbocharger (10) and exhaust manifold (11).

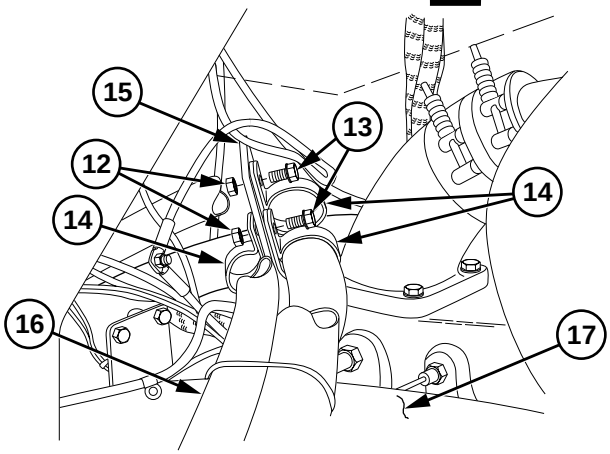


3-2. ROCKER COVER REPAIR (CONT)



(7) Remove two locknuts (12), screws (13), and three clips (14) from bracket (15). Discard locknuts.

(8) Secure power steering hoses (16) away from rocker cover (17).



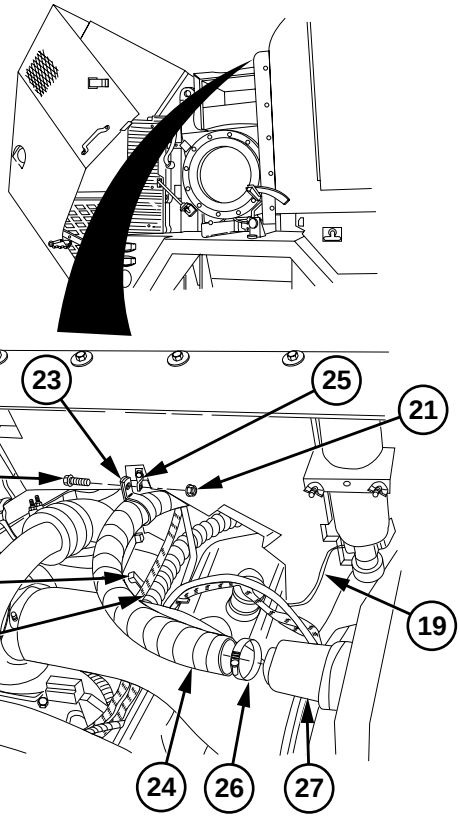
NOTE

- Location of plastic cable tie should be marked before removal.
- Do steps (9) thru (11) for left rocker cover only.

(9) Remove plastic cable tie (18) securing ether start hose (19) to breather tube (20).

(10) Remove locknut (21), screw (22), clip (23), and air aspiration hose no. 2938 (24) from standoff bracket (25). Discard locknut.

(11) Loosen clamp (26) and remove air aspiration hose no. 2938 (24) from air cleaner assembly (27).



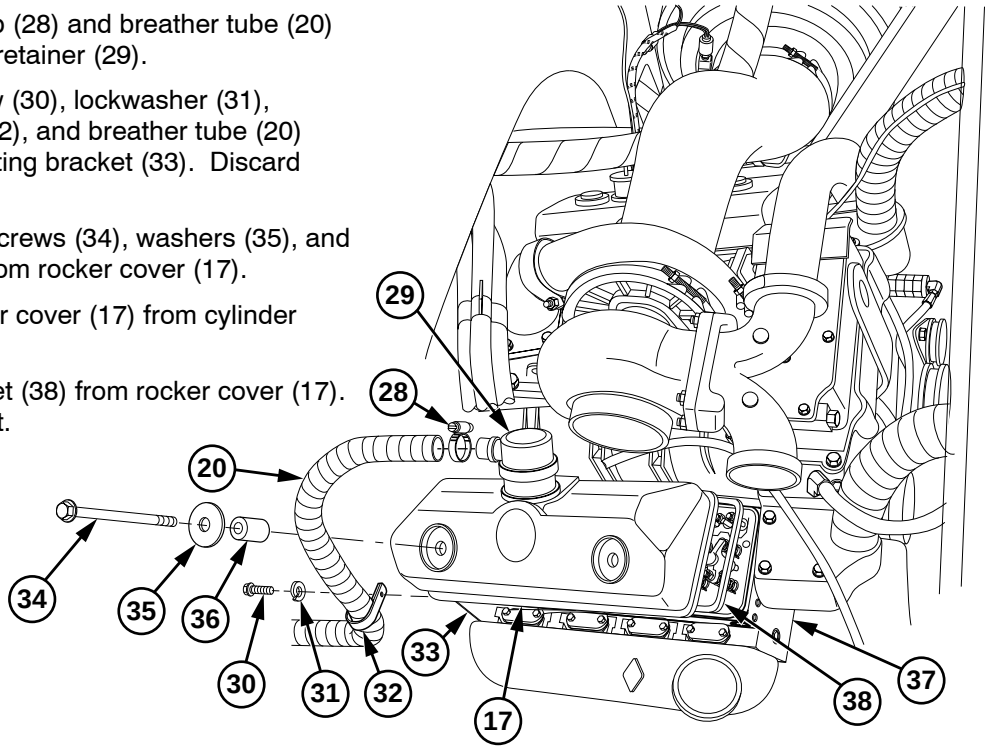
(12) Remove clamp (28) and breather tube (20) from breather retainer (29).

(13) Remove screw (30), lockwasher (31), cushion clip (32), and breather tube (20) from engine lifting bracket (33). Discard lockwasher.

(14) Remove two screws (34), washers (35), and mounts (36) from rocker cover (17).

(15) Remove rocker cover (17) from cylinder head (37).

(16) Remove gasket (38) from rocker cover (17). Discard gasket.



b. Disassembly

NOTE

- Both rocker covers are disassembled in a similar manner. Left rocker cover is shown.
- Fill plug is located on left rocker cover.

(1) Remove three screws (1) and retainer (2) from rocker cover (3).

(2) Remove filtering disk (4) and seal (5) from breather retainer (6).

(3) Remove breather retainer (6) and seal (7) from rocker cover (3). Discard seal.

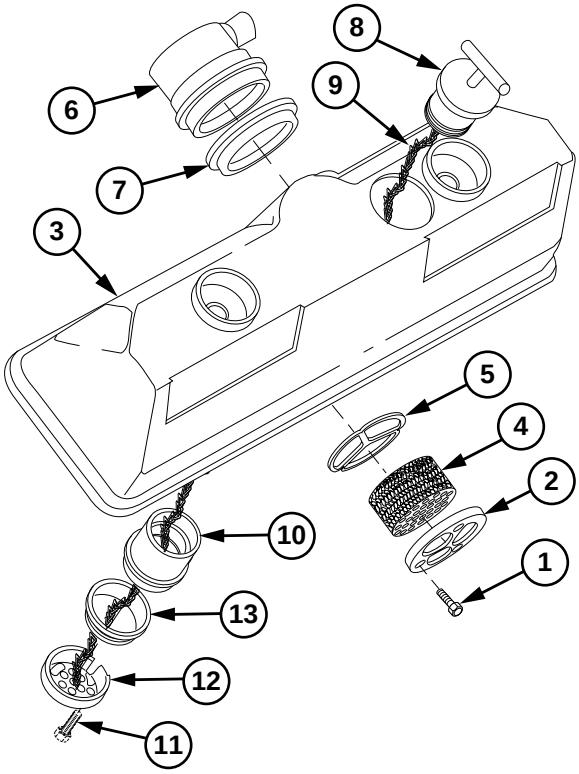
NOTE

Do steps (4) thru (6) for left valve cover only.

(4) Remove filler opening cap (8) and chain hook (9) from oil filler tube (10).

(5) Remove three screws (11) from strainer element (12).

(6) Remove strainer element (12), oil filler tube (10), and gasket (13) from rocker cover (3). Discard gasket.



3-2. ROCKER COVER REPAIR (CONT)

c. Cleaning/Inspection

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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

•The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).
•Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.
•Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.
•Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.
•Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.

(1) Clean metal parts with solvent cleaning compound.
(2) Dry metal parts with rags.
(3) Inspect all parts for cracks, pitting, or distortion.
(4) Replace damaged parts.

d. Assembly

NOTE

- Both rocker covers are assembled in a similar manner. Left rocker cover is shown.
- Fill plug is located on left rocker cover.

(1) Install new seal (1) on rocker cover (2).
(2) Install breather retainer (3) on seal (1) with stub (4) toward rear of engine.

NOTE

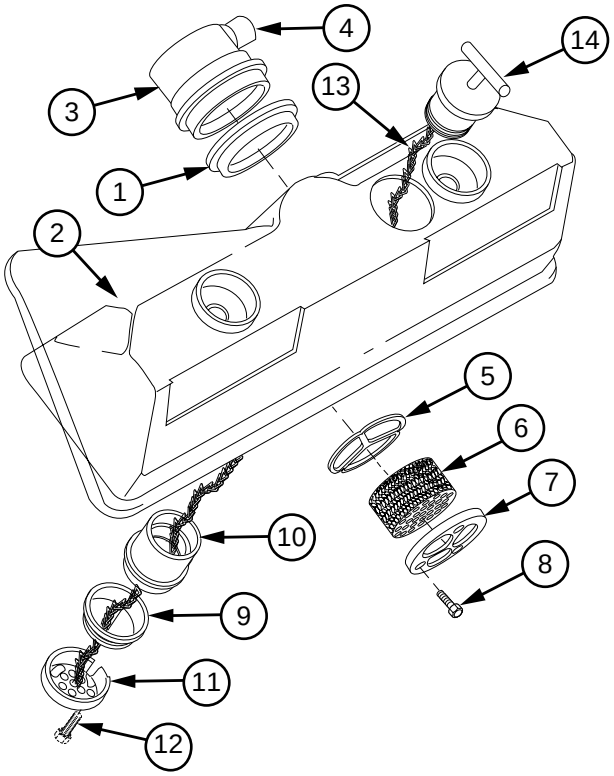
Some engines have high profile breather assemblies and some have low profile breather assemblies. High and low profile breathers can be used on the same engine. However high profile breathers use filtering disc PN 5101760, low profile breathers use filtering disc PN 8927797.

(3) Install seal (5) and filtering disk (6) on breather retainer (3).
(4) Place retainer (7) over filtering disk (6). Install three screws (8).

NOTE

Do steps (5) thru (7) for left valve cover only.

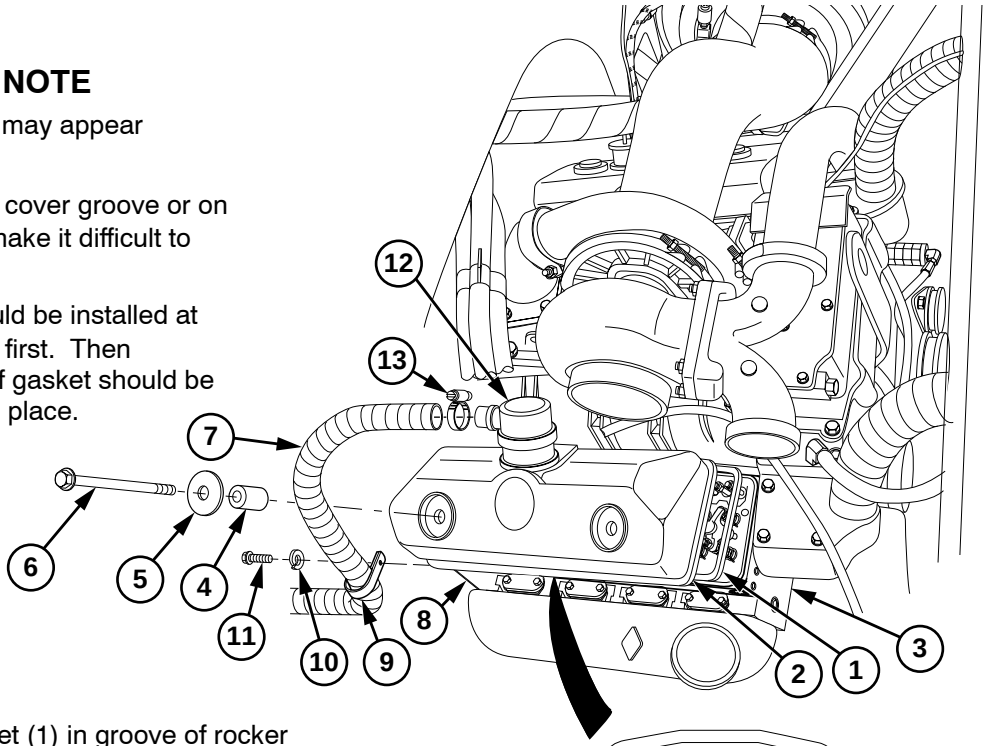
(5) Install new gasket (9), oil filler tube (10), and strainer element (11) on rocker cover (2) with three screws (12).
(6) Install chain hook (13) on filler opening cap (14). Crimp chain hook (13) to close gap.
(7) Install filler opening cap (14) in oil filler tube (10).

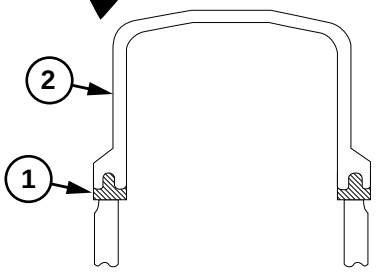


e. Installation

NOTE

- New gasket may appear oversized.
- Oil in rocker cover groove or on gasket will make it difficult to install.
- Gasket should be installed at four corners first. Then remainder of gasket should be pressed into place.





(1) Install new gasket (1) in groove of rocker cover (2).

(2) Install rocker cover (2) on cylinder head (3).

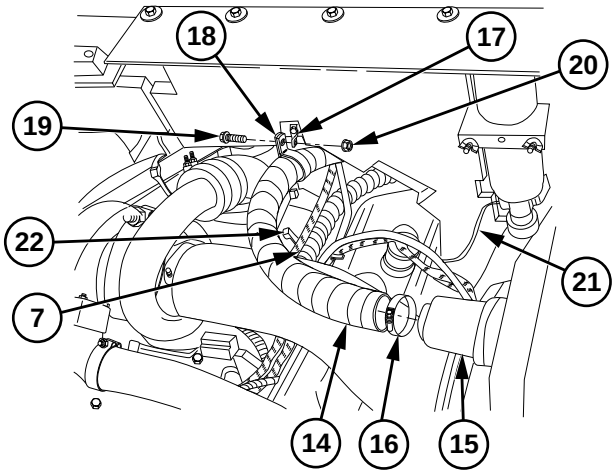
(3) Install two mounts (4), washers (5), and screws (6). Torque to 15–20 lb–ft (20.3–27.1 N·m).

(4) Install breather tube (7) on engine lifting bracket (8) with clip (9), new lockwasher (10), and screw (11). Torque to 41–47 lb–ft (56–64 N·m).

(5) Install breather tube (7) on breather retainer (12) with clamp (13).

NOTE

Do steps (6) thru (8) for left rocker cover only.



(6) Install air aspiration hose no. 2938 (14) on air cleaner assembly (15) with clamp (16). Torque to 60 lb–in. (6.7 N·m).

(7) Secure air aspiration hose no. 2938 (14) on standoff bracket (17) with clip (18), screw (19), and new locknut (20).

NOTE

Plastic cable tie should be positioned in location marked during removal.

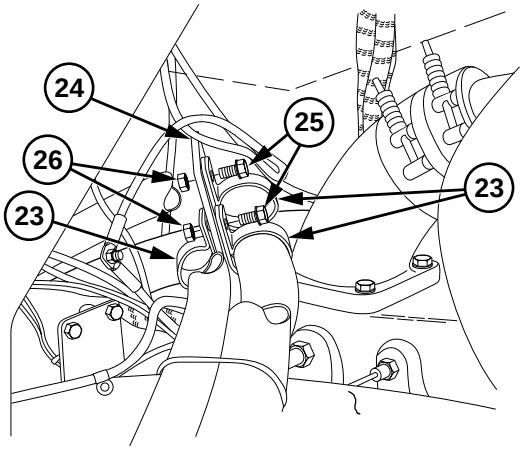
(8) Secure ether start hose (21) to breather tube (7) with plastic cable tie (22).

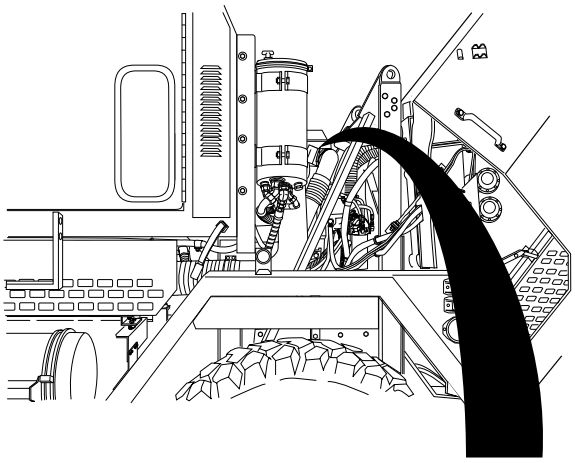
3-2. ROCKER COVER REPAIR (CONT)

NOTE

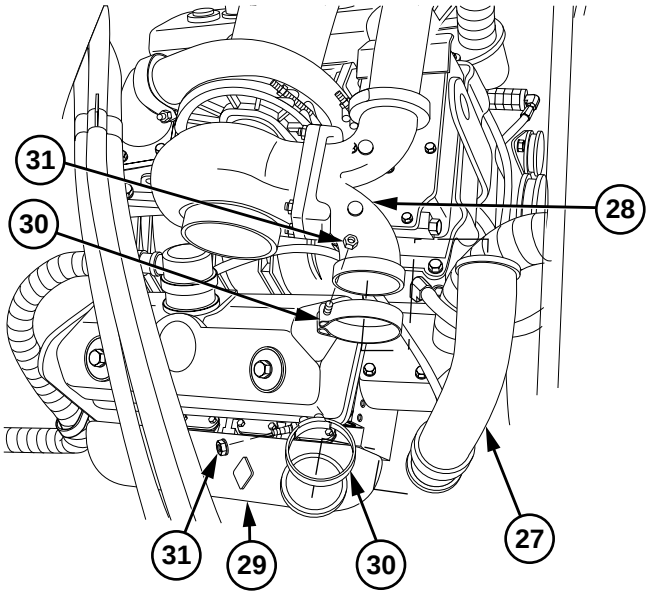
Do steps (9) thru (15) for right rocker cover only.

(9) Install three clips (23) on bracket (24) with two screws (25) and new locknuts (26).

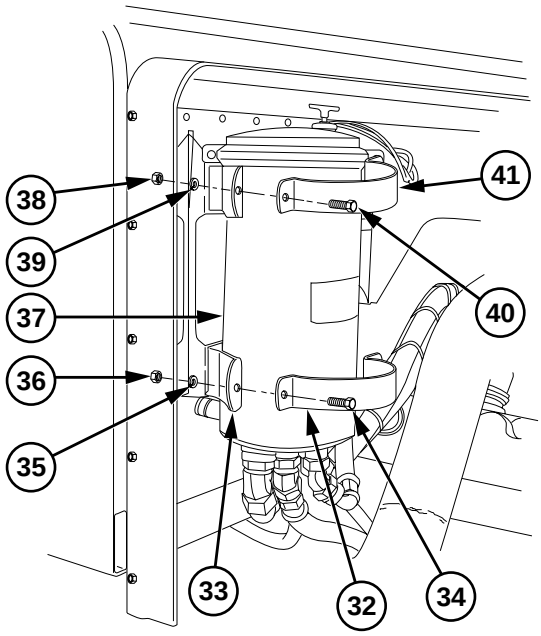




(10) Install exhaust tube (27) on turbocharger (28) and exhaust manifold (29) with two new clamps (30) and new locknuts (31).



(11) Position lower band (32) on bracket (33) with two screws (34), new lockwashers (35), and nuts (36). Do not tighten.



WARNING

Support steering reservoir. Failure to comply may result in injury to personnel.

NOTE

Ensure 0.5 in. (13 mm) of clearance is maintained between top of upper rear bracket and bottom of cover band clamp.

(12) Lower steering reservoir (37) into lower band (32).

(13) Tighten two nuts (36) to 30 lb-ft (41 N·m).

(14) Remove two nuts (38), lockwashers (39), and screws (40) from upper band (41). Discard lockwashers.

(15) Install two screws (40), new lockwashers (39), and nuts (38) on upper band (41). Torque to 30 lb-ft (41 N·m).

f. Follow-On Maintenance

(1) Install exhaust pipe (para 5-2).

(2) Install air intake hose (para 4-4).

(3) Connect batteries (para 7-61).

(4) Start engine (TM 9-2320-360-10).

(5) Check for leaks around rocker cover gasket.

(6) Shut off engine (TM 9-2320-360-10).

(7) Remove wheel chocks.

3-3. ENGINE OIL FILTER ELEMENT REPLACEMENT

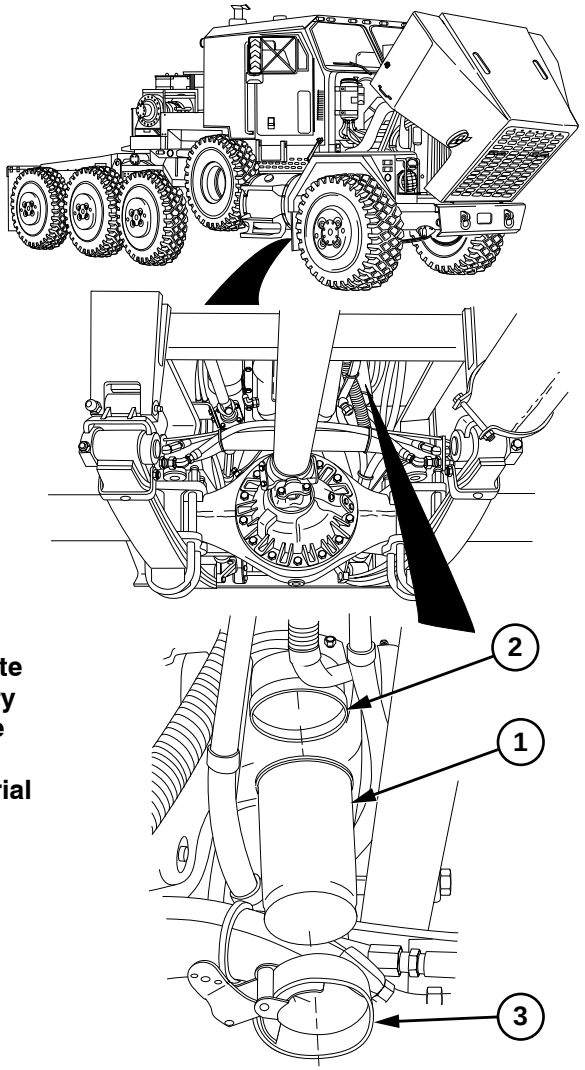
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Engine hood opened (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Oil, Lubricating (Item 25, Appendix C)
Rags, (Item 28, Appendix C)
Element, Filter (Item 23, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)
Wrench, Oil Filter (Item 67, Appendix F)



a. Removal

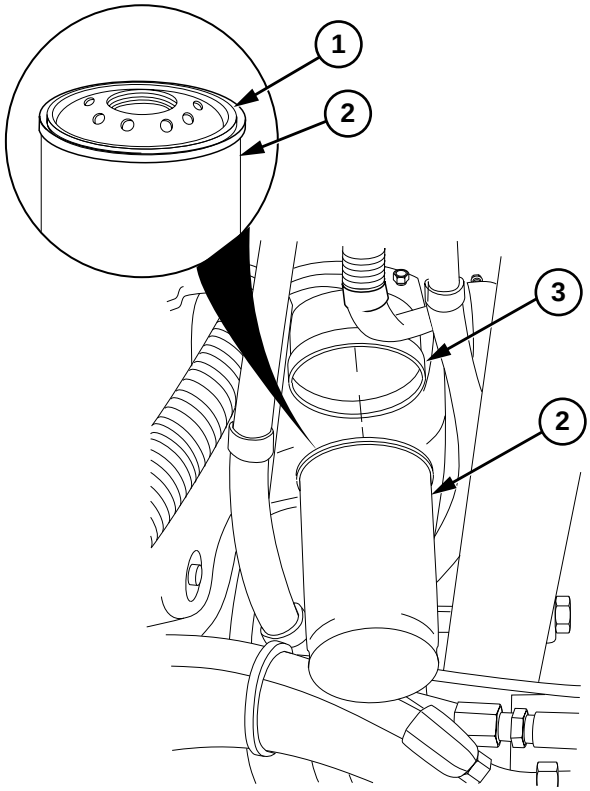
(1) Place drain pan under oil filter element (1).

WARNING

- **Use caution when draining hot oil. Oil may burn exposed skin and cause injury to personnel. If injured, seek medical attention immediately.**
- **When servicing this vehicle, performing maintenance, or disposing of materials such as engine oil, consult your Unit/local hazardous waste disposal center or safety office for local regulatory guidance. If further information is needed, please contact the Army environmental hotline at 1-800-872-3845. Improper disposal of this material may result in damage to environment or injury to personnel.**

(2) Remove oil filter element (1) with gasket from fluid filter head (2) by turning counterclockwise using oil filter wrench (3). Discard filter element.

(3) Clean fluid filter head (2) with lint-free cloth.



b. Installation

(1) Coat new gasket (1) with clean oil.

(2) Fill new oil filter element (2) with oil 2/3 full.

CAUTION

Do not install oil filter element with oil filter wrench. Hand-tighten only. Damage to oil filter element may result.

(3) Install new oil filter element (2) on fluid filter head (3) by turning clockwise.

(4) Turn clockwise until gasket (1) touches fluid filter head (3). Tighten additional 2/3 turn.

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check for oil leaks (TM 9-2320-360-10).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check oil level (TM 9-2320-360-10).

(5) Close engine hood (TM 9-2320-360-10).

(6) Remove wheel chocks.

3-4. ENGINE OIL DRAIN/FILL

This task covers:
a. Drain
b. Fill
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).

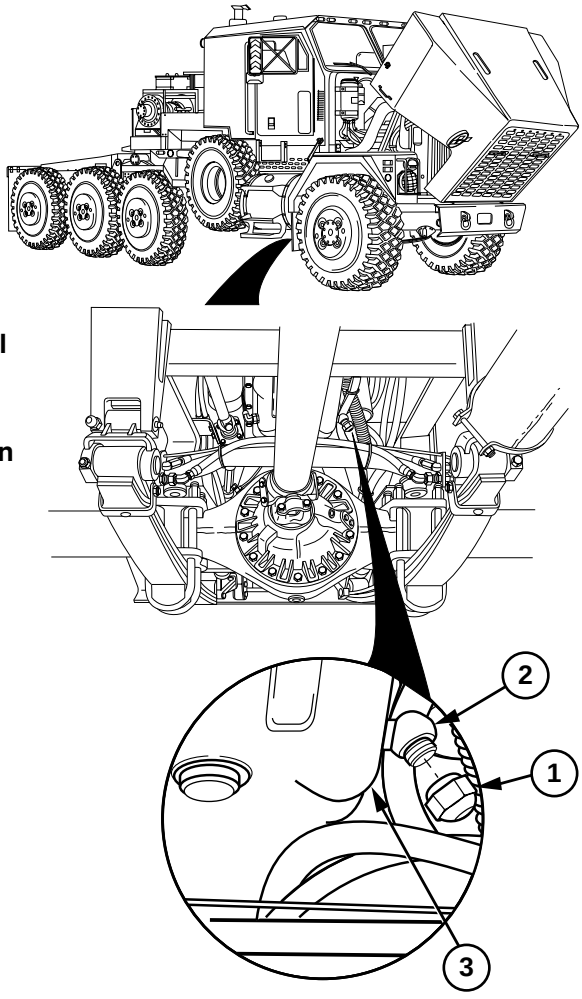
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Funnel (Item 11, Appendix F)

Materials/Parts
Rags (Item 28, Appendix C)

a. Drain

WARNING

- **Use caution when draining hot oil. Oil may burn exposed skin and cause injury to personnel. If injured, seek medical attention immediately.**
- **When servicing this vehicle, performing maintenance, or disposing of materials such as engine oil, consult your Unit/local hazardous waste disposal center or safety office for local regulatory guidance. If further information is needed, please contact the Army environmental hotline at 1-800-872-3845. Improper disposal of this material may result in damage to environment or injury to personnel.**
- **Never use magnetic plug in center of oil pan to drain oil. Failure to comply may result in injury to personnel and could cause oil to drain on vehicle components.**



NOTE

- Engine oil capacity is approximately 23.5 qts (22.2 l).
- Drain engine oil when hot.

(1) Place drain pan under cap nut.

(2) Remove cap nut (1) from elbow (2) on engine oil pan (3) and completely drain engine oil.

NOTE

Oil filter should be changed (para 3-3) while engine oil is drained.

(3) Install cap nut (1) on elbow (2).

b. Fill

CAUTION

Do not overfill engine with oil. Serious damage to engine may occur.

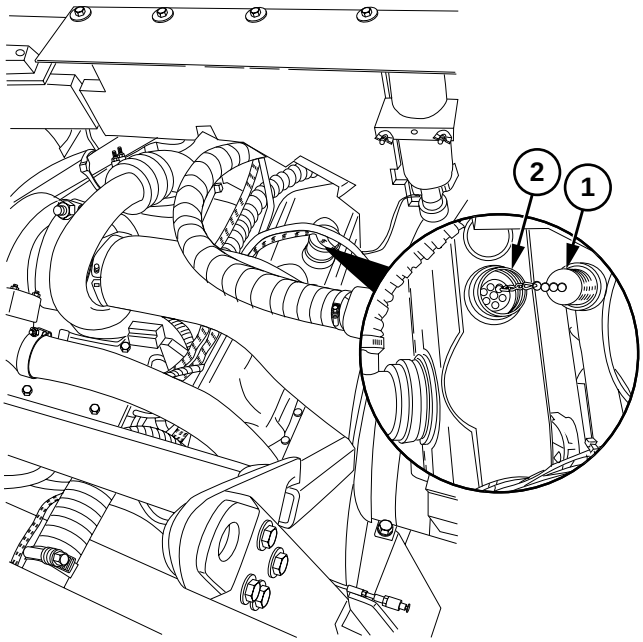
(1) Remove oil filler cap (1) from rocker cover (2).

(2) Place funnel in rocker cover (2).

(3) Fill engine with clean engine oil through rocker cover (2).

(4) Start engine (TM 9-2320-360-10) and let run for approximately 10 minutes.

(5) Shut off engine (TM 9-2320-360-10).



NOTE

Let engine sit for approximately 15 minutes before checking oil level.

(6) Turn dipstick handle (3) counterclockwise and remove dipstick (4) from dipstick tube (5).

(7) Wipe off dipstick (4) with clean rag.

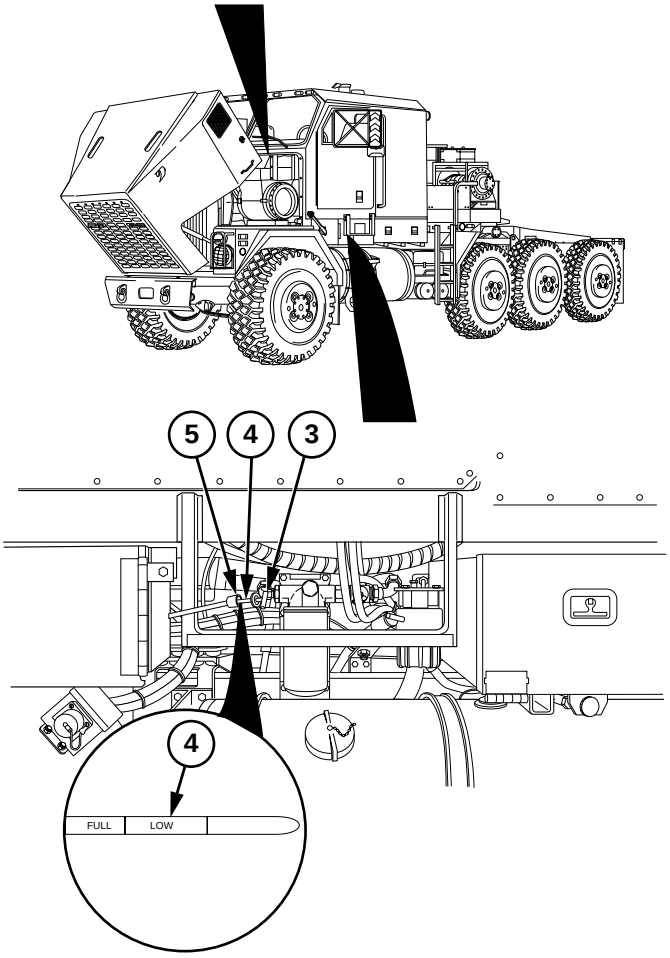
(8) Install dipstick (4) completely into dipstick tube (5) and remove from dipstick tube.

(9) Check oil level on dipstick (4).

(10) Install dipstick (4) in dipstick tube (5) and turn handle (3) clockwise to secure.

(11) Add oil as necessary.

(12) Repeat steps (6) thru (11) until oil is at proper level.



c. Follow-On Maintenance

(1) Check for leaks.

(2) Close engine hood (TM 9-2320-360-10).

(3) Remove wheel chocks.

3-5. OIL FILTER ADAPTER REPAIR

This task covers:

a. Removal
b. Disassembly
c. Cleaning/Inspection
d. Assembly
e. Installation
f. Follow-On Maintenance

INITIAL SETUP

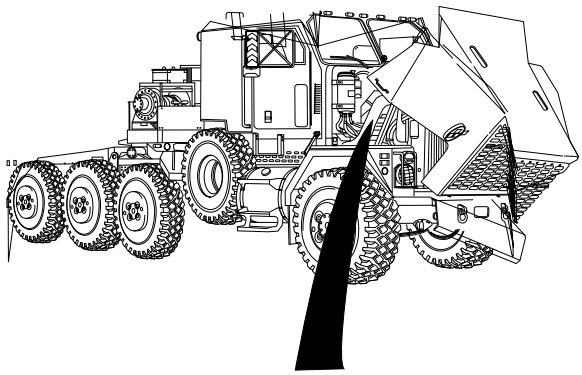
Equipment Conditions
Engine oil filter element removed (para 3-3).
Inner fender removed (right side only) (para 16-34).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Compressor Unit, Air (Item 3, Appendix F)
Goggles, Industrial (Item 14, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Cleaning Compound, Solvent (Item 31, Appendix C)
Gasket (Item 40, Appendix G)
Lockwashers (6) (Item 96, Appendix G)

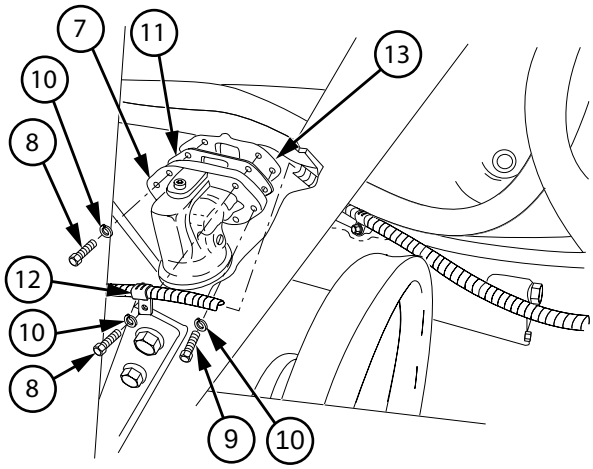
a. Removal

(1) Deleted.



(2) Place drain pan under engine fluid filter head (7).

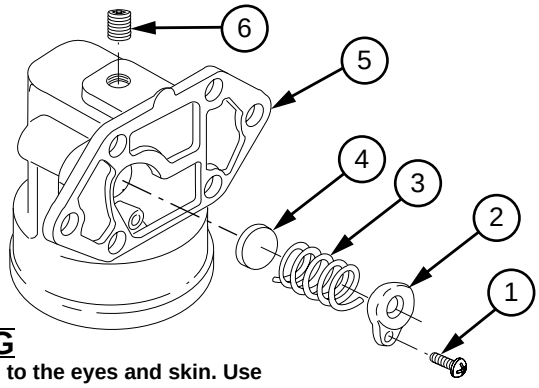
(3) Remove four screws (8), two screws (9), six lockwashers (10), fluid filter head (7), gasket (11), and wiring harness clip (12) from mounting plate (13). Discard lockwashers and gasket.



b. Disassembly

(1) Remove screw (1), retainer (2), spring (3), and valve disk (4) from fluid filter head (5).

(2) Remove pipe plug (6) from fluid filter head (5).



c. Cleaning/Inspection

(1) Scrape gasket material off mounting surfaces.

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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

•The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).
•Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.
•Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.
•Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.
•Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.

(2) Clean all metal parts with solvent cleaning compound.

3-5. OIL FILTER ADAPTER REPAIR (CONT)

WARNING

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

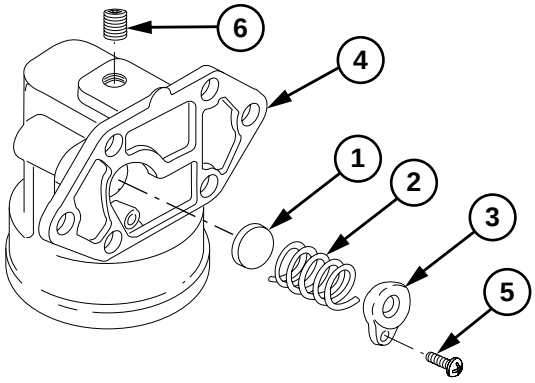
(3) Dry parts with compressed air.

(4) Inspect parts for damage and wear.

(5) Replace damaged or worn parts.

d. Assembly

(1) Install valve disk (1), spring (2), and retainer (3) on fluid filter head (4) with screw (5).

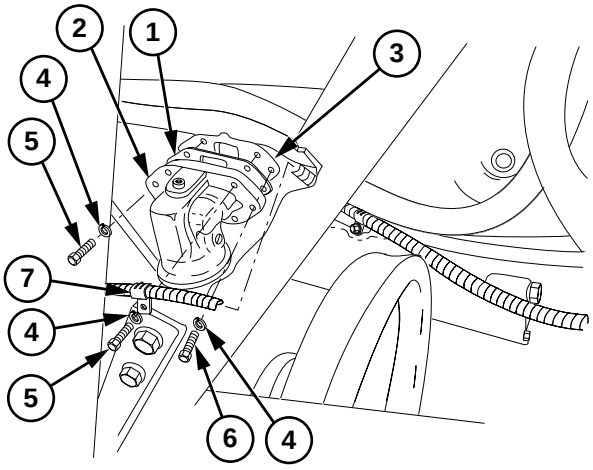


WARNING

Pipe thread sealing compounds can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(2) Coat threads of pipe plug (6) with pipe thread sealing compound.

(3) Install pipe plug (6) on fluid filter head (4).



e. Installation

(1) Install new gasket (1) and fluid filter head (2) on mounting plate (3) with six new lockwashers (4), four screws (5), two screws (6) and wiring harness clip (7). Torque to 30–35 lb–ft (41–47 N·m).

(2) Deleted.

f. Follow-On Maintenance

(1) Install engine oil filter element (para 3-3).

(2) Install inner fender (para 16-34).

3-6. ENGINE DIPSTICK TUBE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Front wheels turned full right.
Batteries disconnected (para 7-60).
Engine hood opened (TM 9-2320-360-10).
Engine dipstick removed (TM 9-2320-360-10).
Inner fender removed (left side only). (para 16-34)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

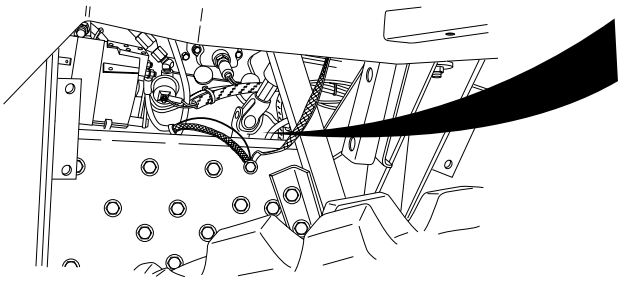
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (2) (Item 34, Appendix C)
Locknuts (2) (Item 58, Appendix G)
Lockwasher (Item 115, Appendix G)
Lockwasher (Item 121, Appendix G)
Washer, Copper (Item 164.1, Appendix G)

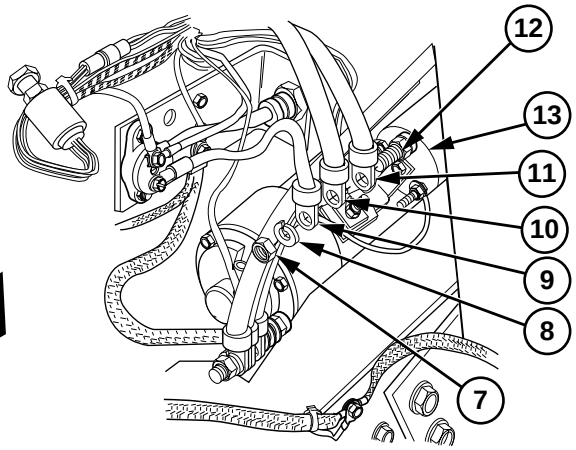
a. Removal

(1) Deleted.

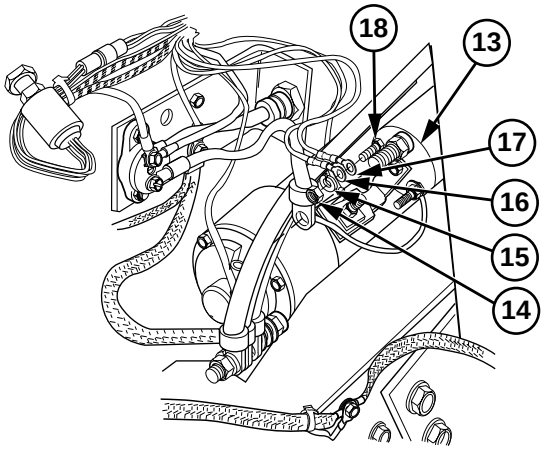
NOTE
Tag and mark cables before removal.

(2) Remove nut (7), lockwasher (8), positive (+) cable no. 1139 (9), positive (+) cable no. 1274 (10), and positive (+) cable no. 1139 (11) from positive (+) terminal (12) of starter (13). Discard lockwasher.





STEERING COLUMN REMOVED FOR CLARITY

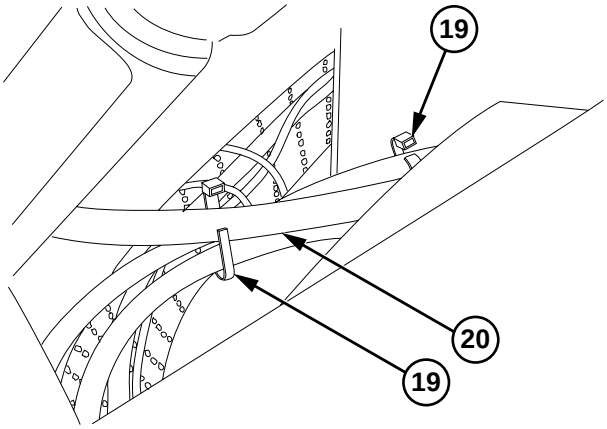


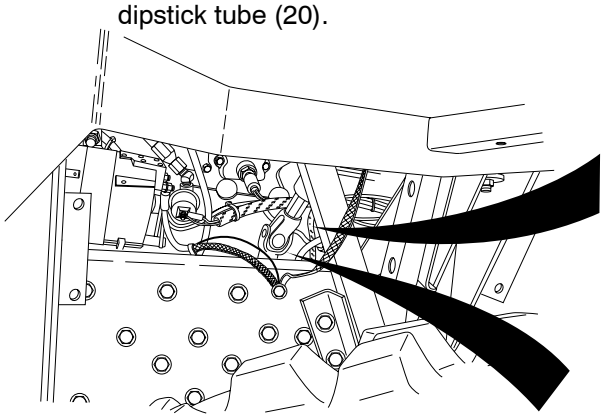
(3) Remove nut (14), lockwasher (15), wire no. 1816 (16), and wire no. 1045 (17) from terminal (18) of starter (13). Discard lockwasher.

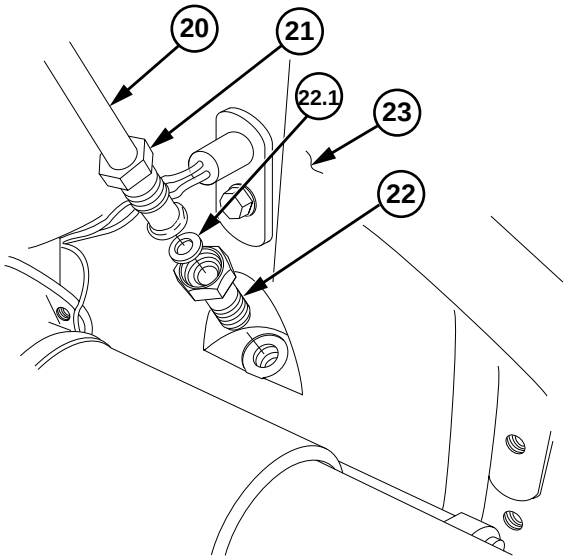
NOTE

Location of plastic cable ties should be marked before removal.

(4) Remove two plastic cable ties (19) from dipstick tube (20).







(5) Loosen collar (21) and remove dipstick tube (20) from adapter (22).

NOTE

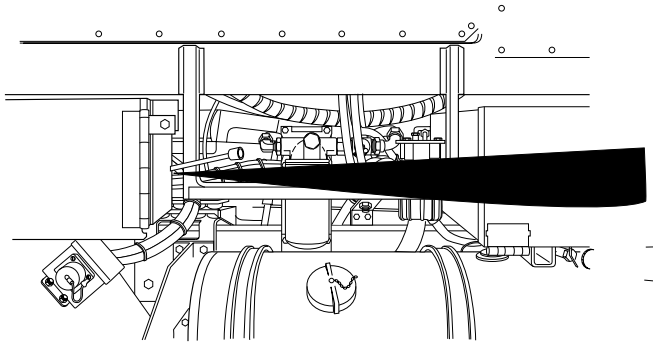
Some engines do not have copper washer.

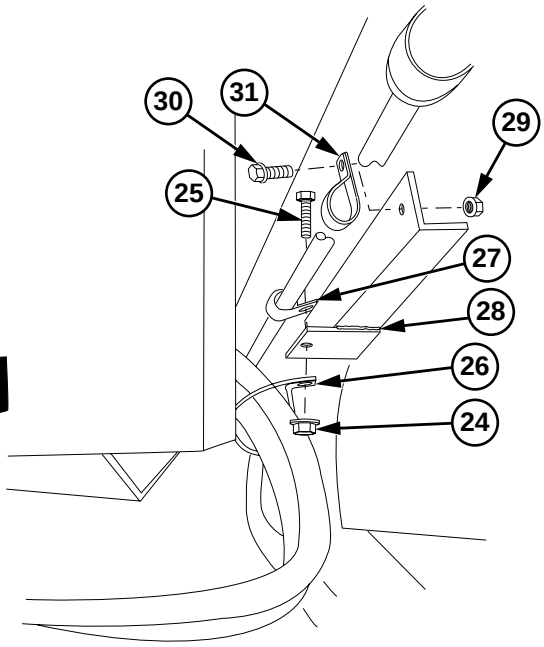
(6) Remove adapter (22) and copper washer (22.1) from engine block (23). Discard washer.

3-6. ENGINE DIPSTICK TUBE REPLACEMENT (CONT)

(7) Remove locknut (24), screw (25), cushion clip (26), and cushion clip (27) from bracket (28). Discard locknut.

(7.1) Remove locknut (29), screw (30), and cushion clip (31) from bracket (28). Discard locknut.



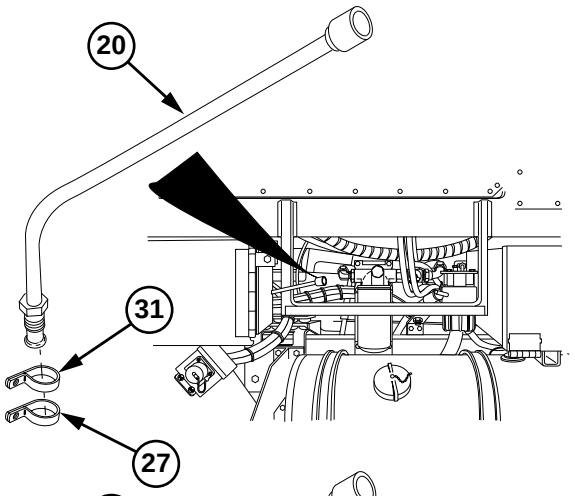


NOTE

Dipstick tube is pulled out from left side of HET Tractor.

(8) Remove dipstick tube (20) from HET Tractor.

(9) Remove cushion clips (27 and 31) from dipstick tube (20).



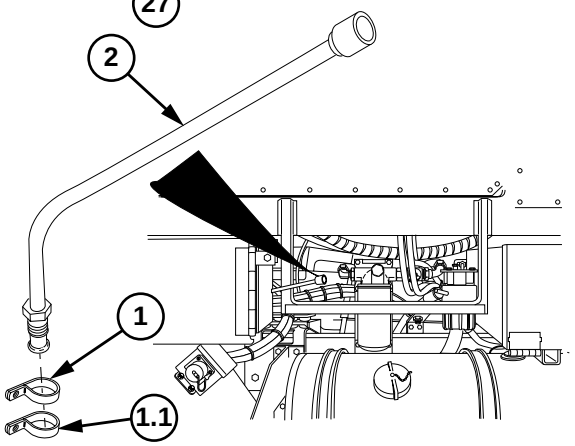
b. Installation

(1) Install cushion clips (1 and 1.1) on dipstick tube (2).

NOTE

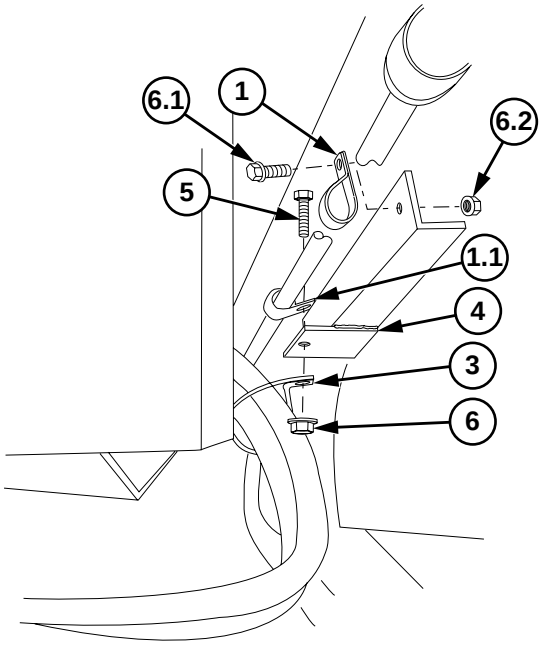
Dipstick tube is routed in from left side of HET Tractor.

(2) Position dipstick tube (2) on HET Tractor.



(3) Install cushion clip (1.1) and cushion clip (3) on bracket (4) with screw (5) and new locknut (6). Do not tighten.

(3.1) Install cushion clip (1) on bracket (4) with screw (6.1) and new locknut (6.2). Do not tighten.



WARNING

Pipe thread sealing compounds can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

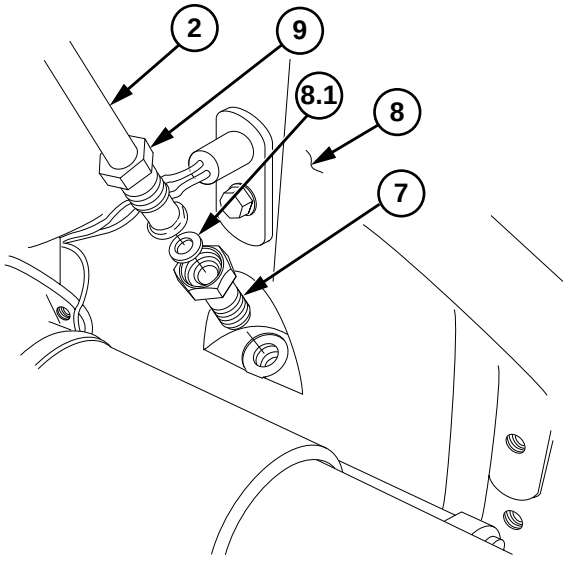
(4) Coat threads of adapter (7) with pipe thread sealing compound.

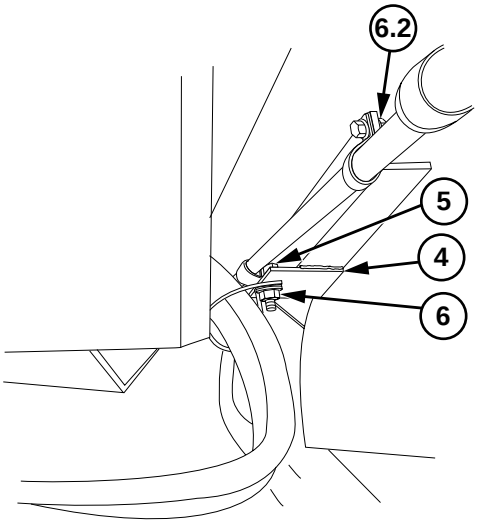
(5) Install adapter (7) on engine block (8).

NOTE

Some engines did not have copper washer. Copper washer can be installed on all engines to reduce oil seepage.

(6) Install dipstick tube (2) and new copper washer (8.1) on adapter (7) and tighten collar (9).

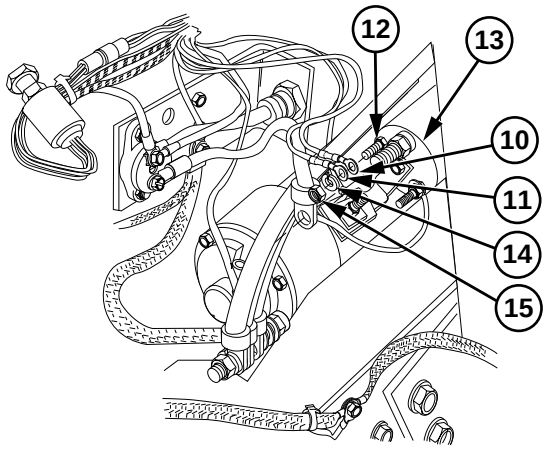




(7) Tighten locknuts (6 and 6.2) on bracket (4).

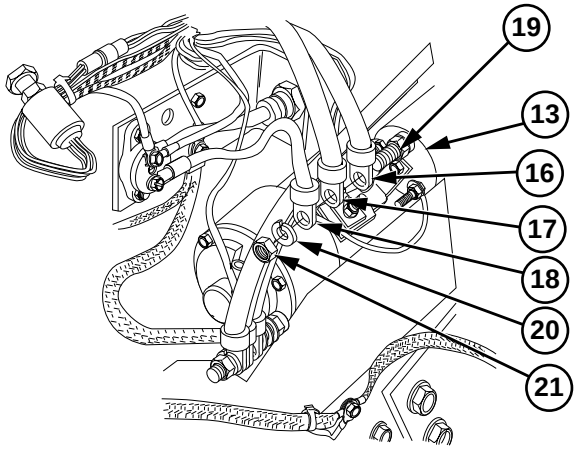
3-6. ENGINE DIPSTICK TUBE REPLACEMENT (CONT)

(8) Install wire no. 1045 (10) and wire no. 1816 (11) on terminal (12) of starter (13) with new lockwasher (14) and nut (15).



STEERING COLUMN REMOVED FOR CLARITY

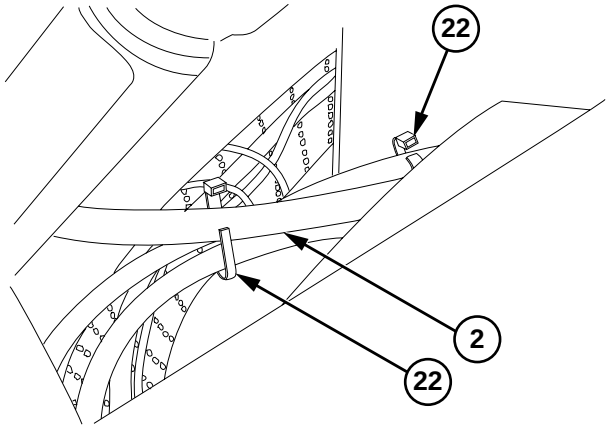
(9) Install positive (+) cable no. 1139 (16), positive (+) cable no. 1274 (17), and positive (+) cable no. 1139 (18) on positive (+) terminal (19) of starter (13) with new lockwasher (20) and nut (21).



NOTE

Plastic cable ties should be positioned in locations marked during removal.

(10) Install two new plastic cable ties (22) on dipstick tube (2).



(11) Deleted.

c. Follow-On Maintenance

(1) Install engine dipstick (TM 9-2320-360-10).

(2) Connect batteries (para 7-60).

(3) Close engine hood (TM 9-2320-360-10).

(4) Install inner fender (para 16-34).

3-7. ENGINE AOAP SAMPLING VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Oil pressure switch removed (para 7-78).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Locknut (Item 72, Appendix G)
Tie, Cable, Plastic (Item 34, Appendix C)

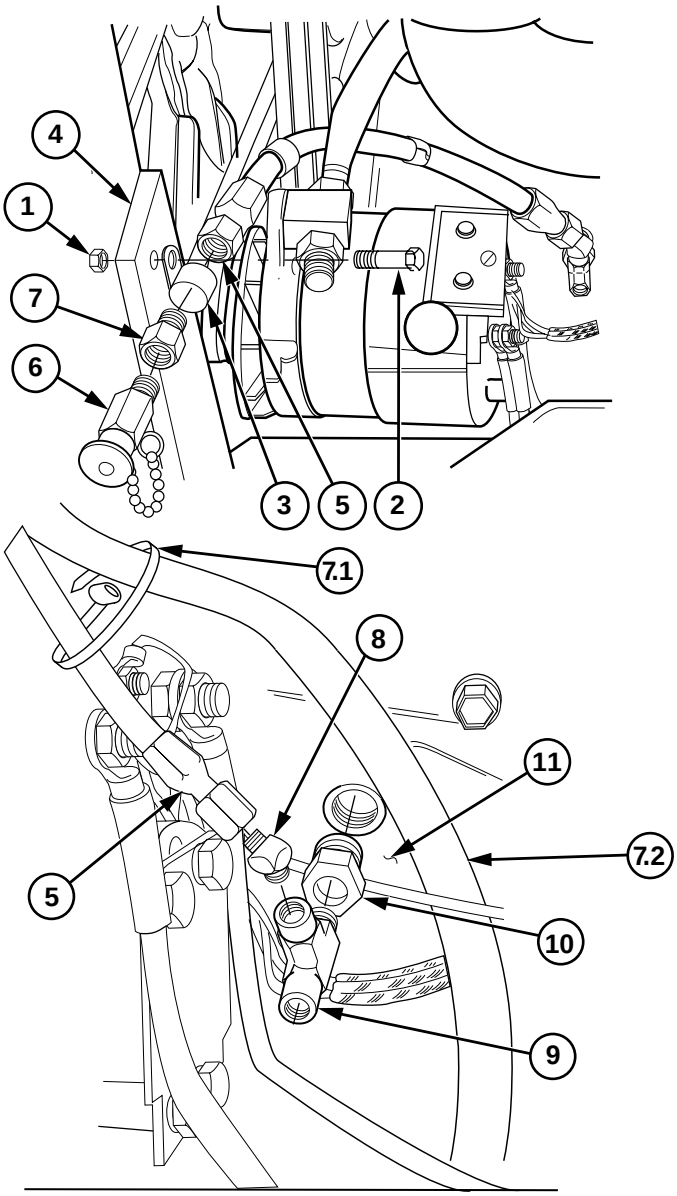
a. Removal

(1) Remove locknut (1), screw (2), and clip (3) from hardlift bracket (4). Discard locknut.

(2) Remove clip (3) from hose no. 2682 (5).

(3) Remove AOAP sampling valve (6) from fitting (7).

(4) Remove fitting (7) from hose no. 2682 (5).



NOTE
Location of plastic cable ties should be marked before removal.

(4.1) Remove plastic cable tie (7.1) from hose no. 2682 (5) and hose no. 2761 (7.2).

(5) Remove hose no. 2682 (5) from elbow (8).

(6) Remove elbow (8) from tee (9).

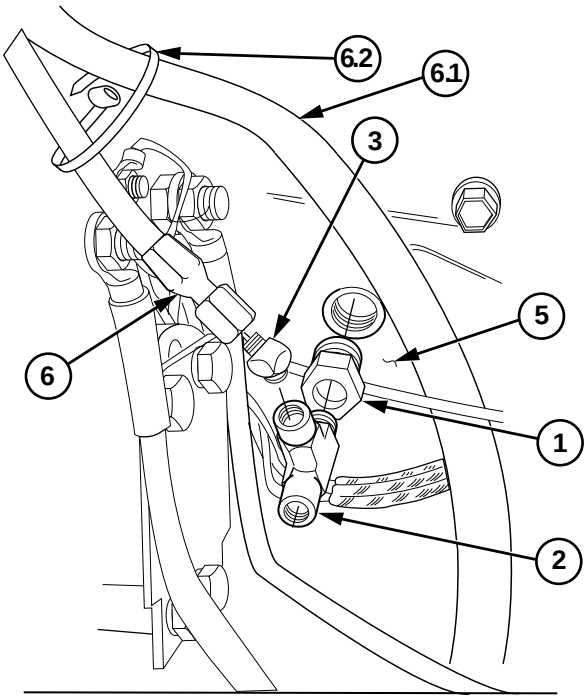
(7) Remove tee (9) from fitting (10).

(8) Remove fitting (10) from engine block (11).

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



(1) Coat threads of fitting (1), tee (2), elbow (3), and AOAP sampling valve (4) with pipe thread sealing compound.

(2) Install fitting (1) on engine block (5).

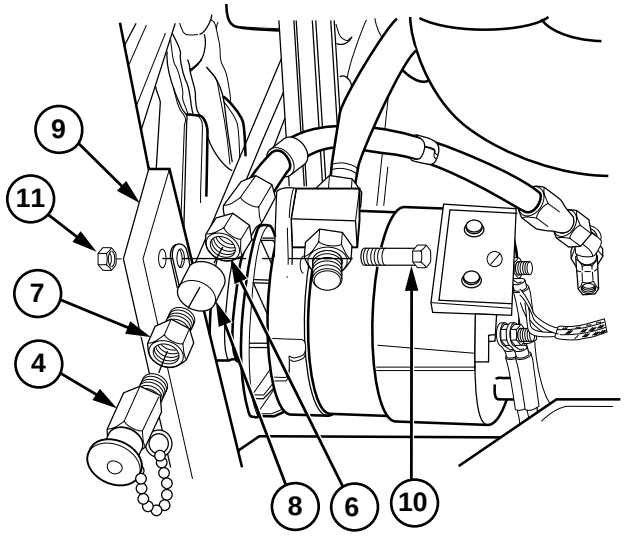
NOTE

Rotate tee to provide a minimum of 3 in. (7.62 cm) clearance between hose and back of alternator studs.

(3) Install tee (2) on fitting (1).

(4) Install elbow (3) on tee (2).

(5) Install hose no. 2682 (6) on elbow (3).



NOTE

Plastic cable ties should be positioned in location marked during removal.

(5.1) Route hose no. 2682 (6) over hose no. 2761 (6.1) and secure with plastic cable tie (6.2).

(6) Install fitting (7) on hose no. 2682 (6).

(7) Install AOAP sampling valve (4) on fitting (7).

(8) Install clip (8) on hose no. 2682 (6).

(9) Install clip (8) on hardlift bracket (9) with screw (10) and new locknut (11).

c. Follow-On Maintenance

Install oil pressure switch (para 7-78).

CHAPTER 4
FUEL SYSTEM MAINTENANCE

Contents

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Left Fuel Tank Repair	4-6	4-15
Right Fuel Tank Repair	4-7	4-22
Fuel Tank Bracket Replacement	4-8	4-27
Hoses No. 2320/2261/2919/2922/2921/2260/2920/2259/Vent Hose and Fittings Replacement	4-9	4-29
Engine Fuel Lines/Return Block Replacement	4-10	4-42
Fuel/Water Separator Service	4-11	4-53
Fuel/Water Separator Repair	4-12	4-55
Secondary Fuel Filter Replacement	4-13	4-60
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Section I. INTRODUCTION

4-1. INTRODUCTION

This chapter contains instructions for service, replacement, and repair of fuel system components at the Unit maintenance level. Some parts must be removed before fuel system parts can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

4-2. AIR CLEANER ASSEMBLY SERVICE

This task covers:
a. Removal
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Engine hood opened (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

Materials/Parts
Rags (Item 28, Appendix C)
Element, Air Cleaner (Item 21, Appendix G)
Gasket (Item 31, Appendix G)

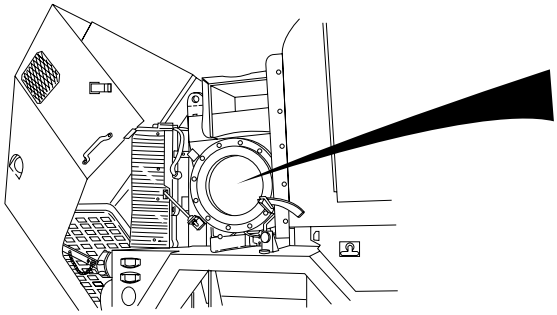
WARNING

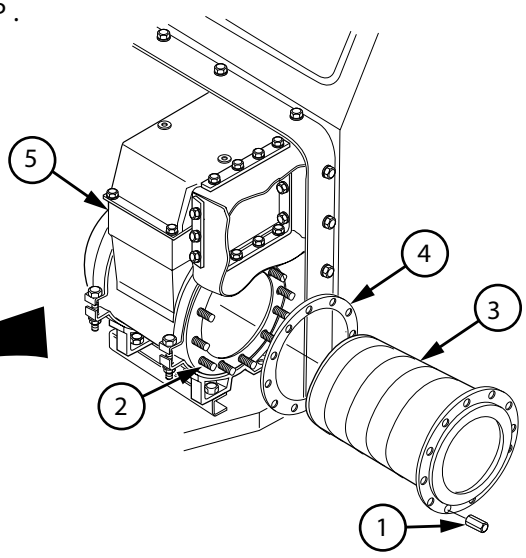
After Nuclear, Biological, or Chemical (NBC) exposure of vehicle, all air filters shall be handled with extreme caution. Unprotected personnel may experience injury or death if residual toxic agents or radioactive material are present. If vehicle is exposed to chemical or biological agents, servicing personnel shall wear protective mask, hood, protective overgarments, and chemical protective gloves and boots in accordance with FM 3-11.4. All contaminated air filters shall be placed in double-lined plastic bags and moved swiftly to a segregation area away from the worksite. The same procedure applies for radioactive dust contamination. The Company NBC team should measure radiation prior to filter removal to determine extent of safety procedures required per the NBC Annex to the unit Standard Operating Procedures (SOP). The segregation area in which the contaminated air filters are temporarily stored shall be marked with appropriate NBC placards. Final disposal of contaminated air filters shall be in accordance with local SOP. Decontamination operation shall be in accordance with FM 3-11.5 and local SOP.

a. Removal

(1) Remove 12 nuts (1) from studs (2).

(2) Remove air cleaner element (3) and gasket (4) from air cleaner housing (5). Discard element and gasket.

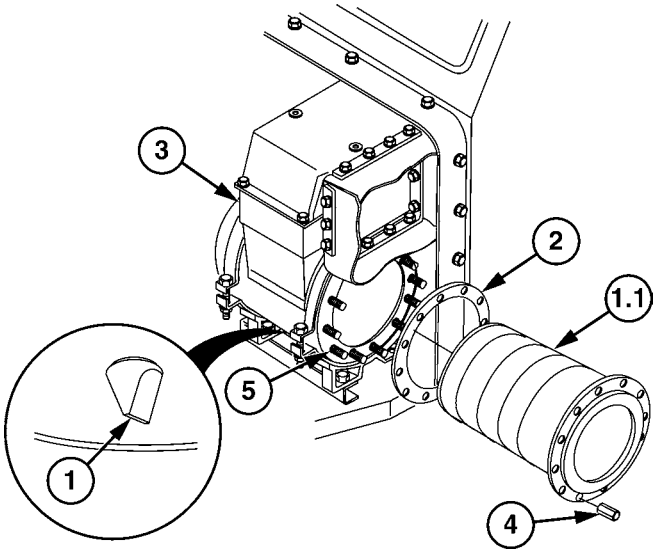




b. Cleaning/Inspection

(1) Wipe inside of air cleaner housing with damp cloth to remove contaminants.

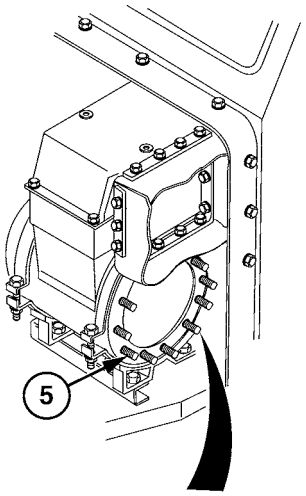
(2) Check rubber drain valve (1) for blockage. Clean if necessary.



(3) Check for broken studs (5). if any studs are broken, replace studs as follows:

CAUTION

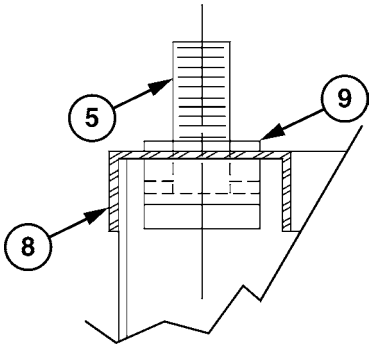
Air intake tube must be protected against contamination. Failure to comply may result in damage to engine.



(a). Grind or file off broken stud (5) flush with air cleaner housing end cap (8).

(b). Drill a 0.313 in. (7.95 mm) hole thru broken stud (5).

(c). Insert replacement stud (5) thru underside of drilled hole and secure with retaining ring (9).

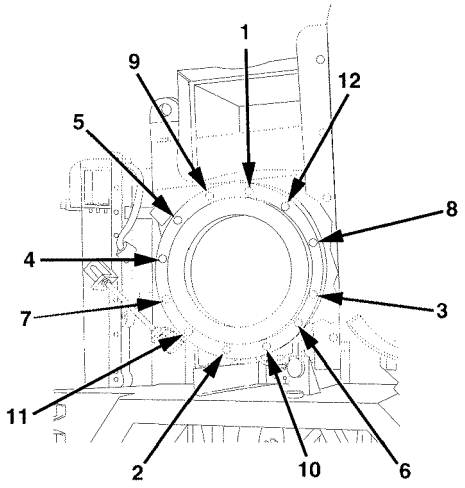


4-3. AIR CLEANER ASSEMBLY REPAIR (CONT)

c. Installation

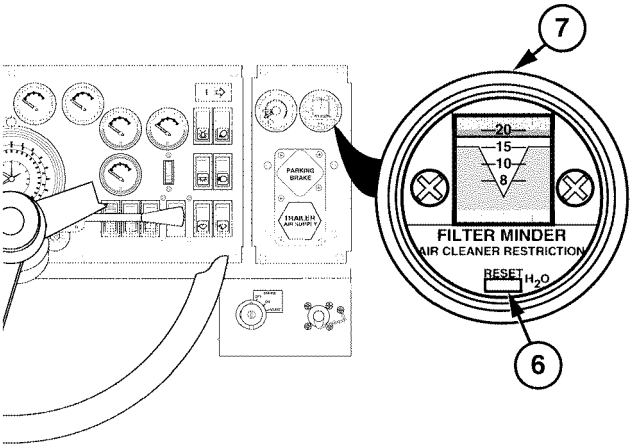
(1) Install new air cleaner element (1.1) and new gasket (2) in air cleaner housing (3).

(2) Install 12 nuts (4) on studs (5). Do not tighten.



(3) Tighten 12 nuts (4) to 90–110 lb-in. (10.1–12.4 N·m) in sequence shown.

(4) Press RESET button (6) on AIR CLEANER RESTRICTION indicator (7).



d. Follow-On Maintenance

(1) Close engine hood (TM 9-2320-360-10).

(2) Remove wheel chocks.

4-3. AIR CLEANER ASSEMBLY REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

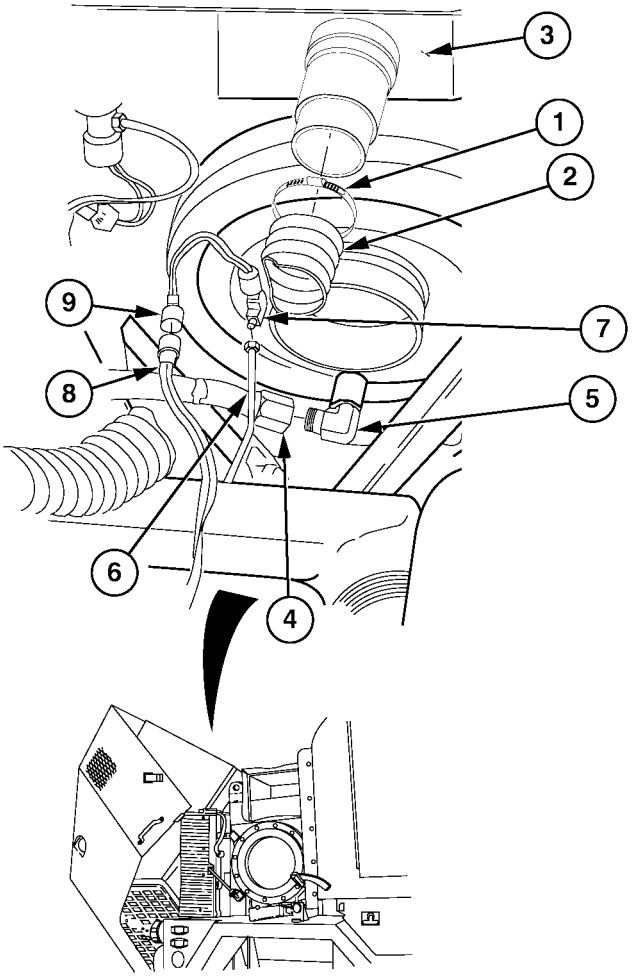
INITIAL SETUP

Equipment Conditions
Air intake hose removed (para 4-4).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Combination, 1-1/2 In. (Item 63, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Gasket (Item 33, Appendix G)
Locknuts (13) (Item 72, Appendix G)
Locknuts (9) (Item 58, Appendix G)
Locknuts (2) (Item 51, Appendix G)
Lockwashers (2) (Item 102, Appendix G)
Washers, Rubber (4) (Item 180, Appendix G)

Personnel Required
Two



a. Removal

(1) Loosen clamp (1) and remove air aspiration hose no. 2938 (2) from air cleaner (3).

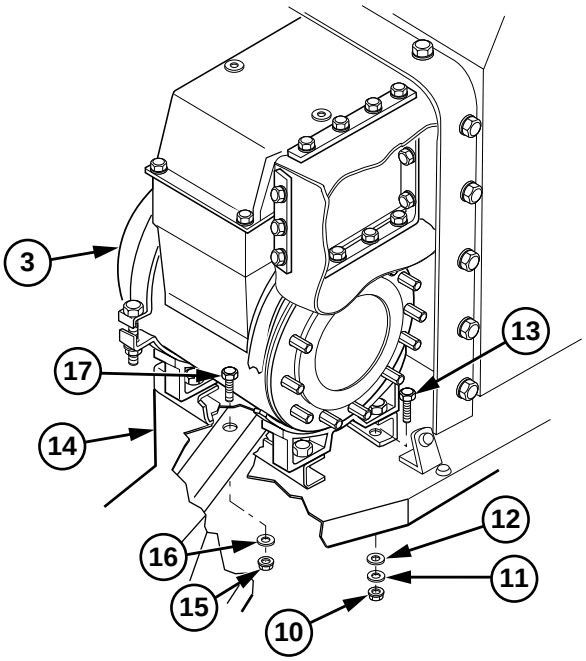
(2) Remove hose no. 2600 (4) from elbow (5).

(3) Remove air restriction hose no. 2381 (6) from fitting (7).

(4) Disconnect wiring harness (8) from STE/ICE sensor connector (9).

(5) Remove four locknuts (10), washers (11), rubber washers (12), and screws (13) from air cleaner (3) and fender (14). Discard locknuts and rubber washers.

(6) Remove locknut (15), washer (16), screw (17), and air cleaner (3) from fender (14) with aid of assistant. Discard locknut.



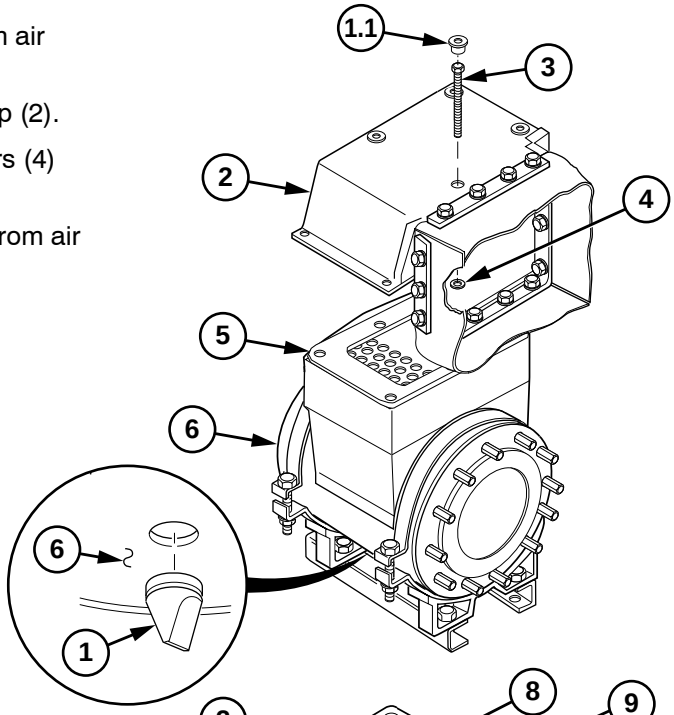
b. Disassembly

(1) Remove rubber drain valve (1) from air cleaner (6).

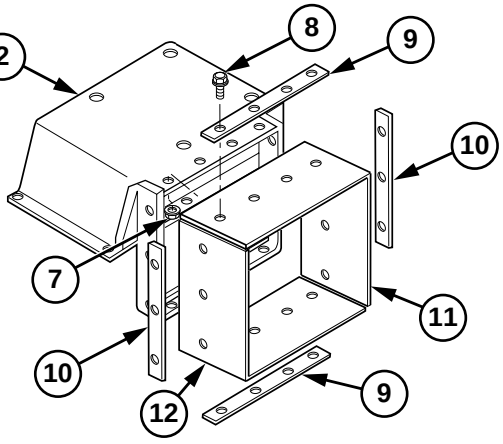
(1.1) Remove four plugs (1.1) from scoop (2).

(2) Remove six screws (3) and washers (4) from scoop (2).

(3) Remove scoop (2) and gasket (5) from air cleaner (6). Discard gasket.



(4) Remove 13 locknuts (7), screws (8), 2 plates (9), plates (10), seal (11), and seal (12) from scoop (2). Discard locknuts.



4-3. AIR CLEANER ASSEMBLY REPAIR (CONT)

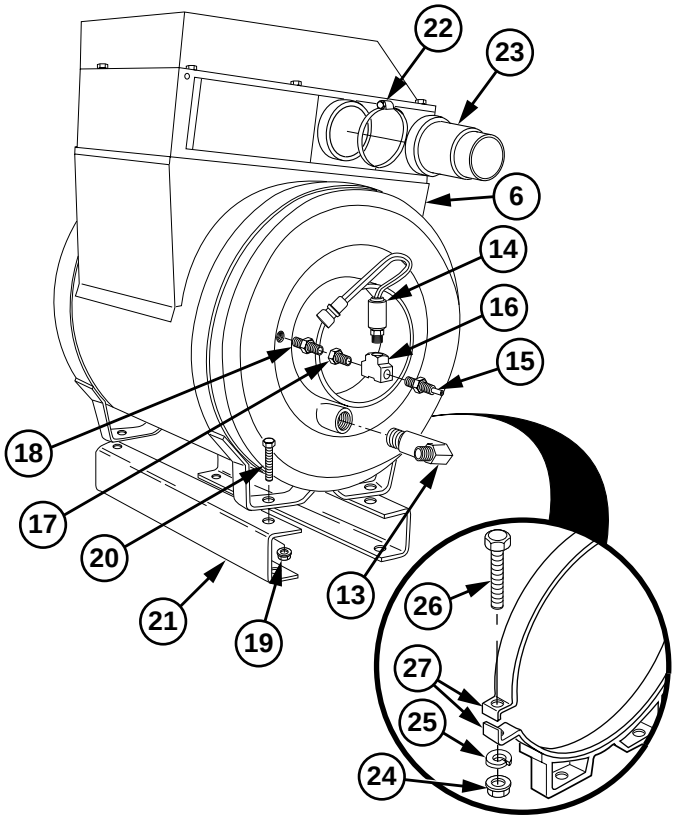
(5) Remove elbow (13) from air cleaner (6).

(6) Remove STE/ICE sensor (14), fitting (15), tee (16), reducer (17), and nipple (18) from air cleaner (6).

(7) Remove four locknuts (19), screws (20), and two mounting rails (21) from air cleaner (6). Discard locknuts.

(8) Remove clamp (22) and dust cup (23) from air cleaner (6).

(9) Remove two locknuts (24), lockwashers (25), screws (26), and mounting brackets (27) from air cleaner (6). Discard locknuts and lockwashers.

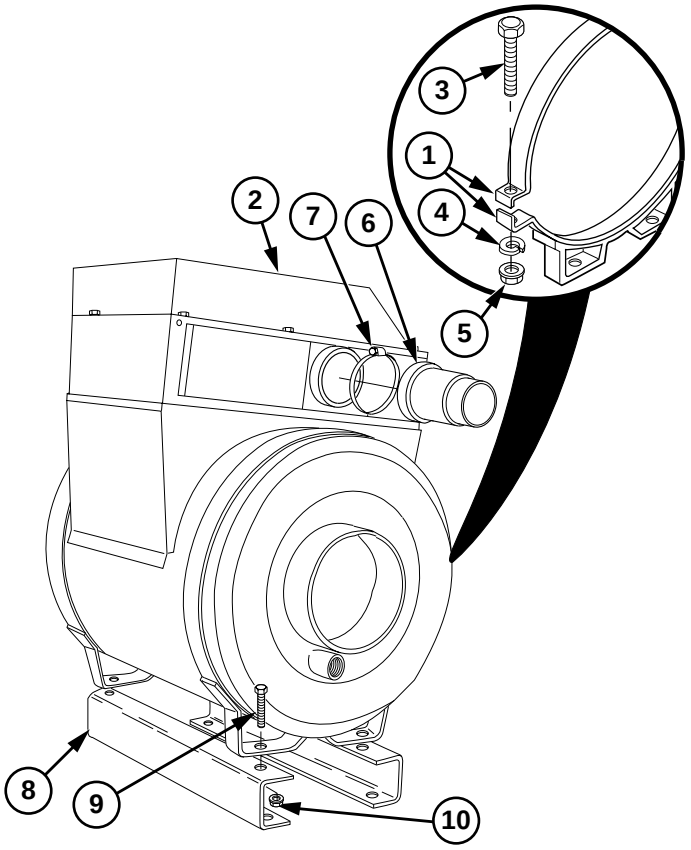


c. Assembly

(1) Install two mounting brackets (1) on air cleaner (2) with two screws (3), new lockwashers (4), and new locknuts (5).

(2) Install dust cup (6) on air cleaner (2) with clamp (7).

(3) Install two mounting rails (8) on air cleaner (2) with four screws (9) and new locknuts (10).

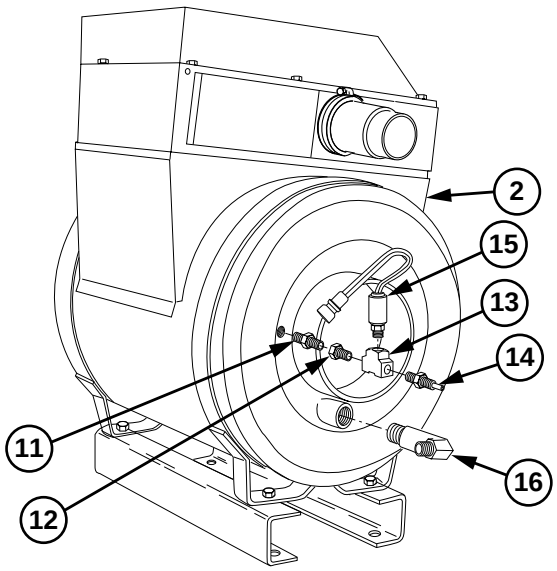


WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

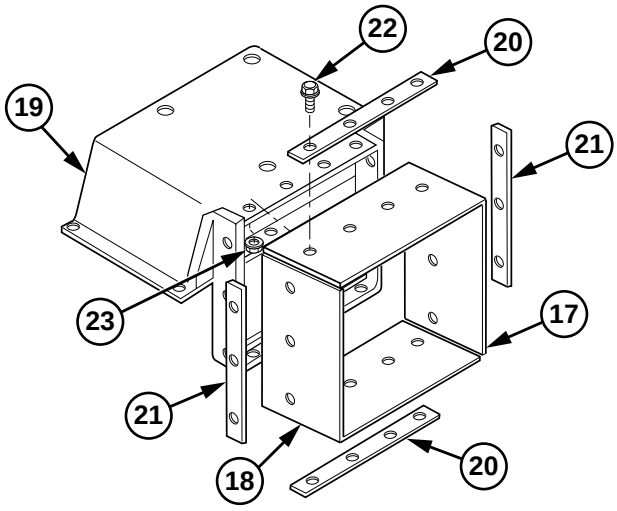
Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(4) Coat threads of nipple (11), reducer (12), tee (13), and fitting (14) with pipe thread sealing compound.

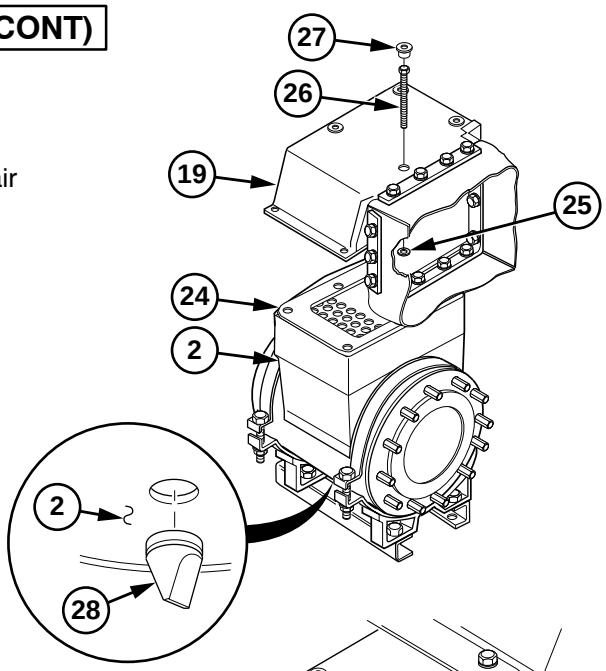
(5) Install nipple (11), reducer (12), tee (13), fitting (14), and STE/ICE sensor (15) on air cleaner (2).

(6) Install elbow (16) on air cleaner (2).



(7) Install seal (17) and seal (18) on scoop (19) with 2 plates (20), plates (21), 13 screws (22), and new locknuts (23).

4-3. AIR CLEANER ASSEMBLY REPAIR (CONT)



(8) Install new gasket (24) and scoop (19) on air cleaner (2).

(9) Install six washers (25) and screws (26) on scoop (19). Torque to 20–25 lb–in. (2.3–2.8 N·m).

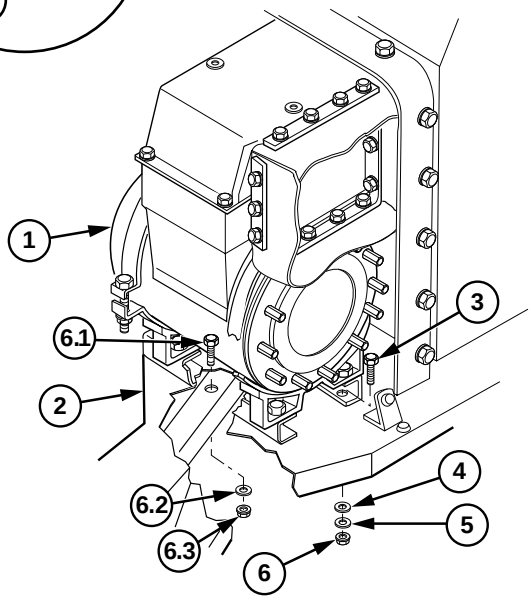
(10) Install four plugs (27) in scoop (19).

(11) Install rubber drain valve (28) on air cleaner (2).

d. Installation

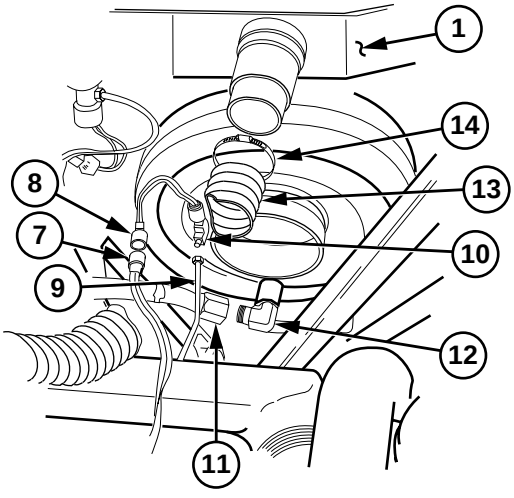
CAUTION

Do not allow rubber washer to turn with locknut when installing air cleaner. Failure to comply may cause damage to rubber washer.



(1) Install air cleaner (1) on fender (2) with four screws (3), new rubber washers (4), washers (5), and new locknuts (6) with aid of assistant. Torque to 95 lb–in. (11 N·m).

(1.1) Install screw (6.1) on air cleaner (1) and fender (2) with washer (6.2) and new locknut (6.3). Torque to 95 lb–in. (11 N·m).



(2) Connect wiring harness (7) to STE/ICE sensor connector (8).

(3) Install air restriction hose no. 2381 (9) on fitting (10).

(4) Install hose no. 2600 (11) on elbow (12).

(5) Install air aspiration hose no. 2938 (13) on air cleaner (1) with clamp (14). Torque to 60 lb–in. (6.7 N·m).

e. Follow-On Maintenance

Install air intake hose (para 4–4).

4-4. AIR INTAKE HOSE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque 0-200-Lb-in.

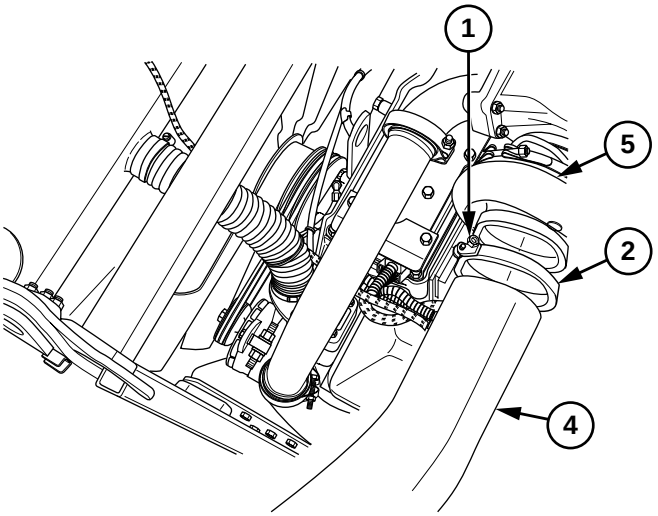
Materials/Parts
Ties, Cable, Plastic (Item 34, Appendix C)
Clamp (Item 14, Appendix G)
Clamp (Item 15, Appendix G)

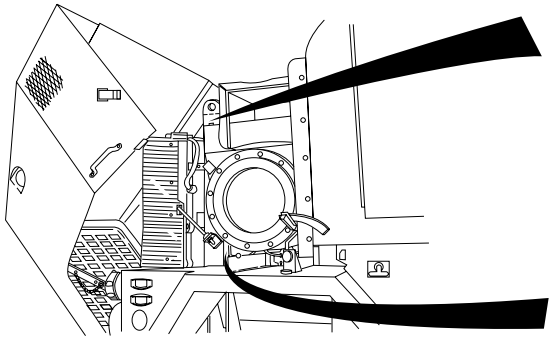
a. Removal

WARNING

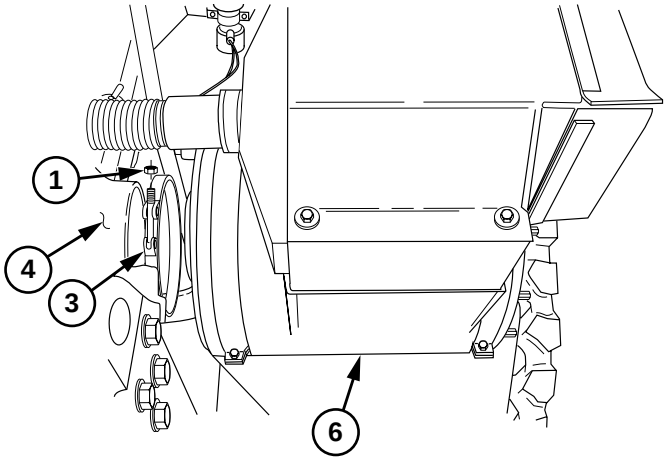
Engine must be cool before performing maintenance. Failure to comply may result in serious injury.

(1) Remove two locknuts (1), clamp (2), and clamp (3) from hose (4). Discard locknuts and clamps.





(2) Remove hose (4) from turbocharger (5) and air cleaner assembly (6).

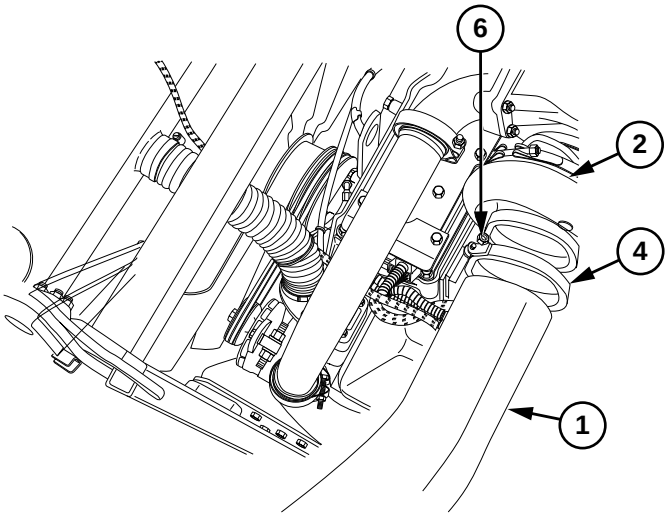


4-4. AIR INTAKE HOSE REPLACEMENT (CONT)

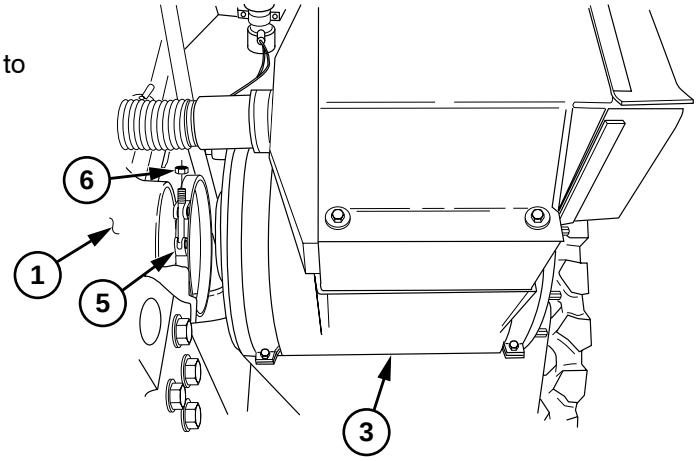
b. Installation

NOTE
Ensure proper engagement on both ends of hose.

(1) Install hose (1) on turbocharger (2) and air cleaner assembly (3).



(2) Install new clamp (4), new clamp (5), and two new locknuts (6) on hose (1). Torque to 75–80 lb-in. (8.4–9.0 N·m).



c. Follow-On Maintenance

(1) Close engine hood (TM 9-2320-360-10).

(2) Remove wheel chocks.

4-5. AIR ASPIRATION HOSE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Muffler removed (para 5-3).

Materials/Parts
Locknuts (4) (Item 72, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-75 Lb-In. (Item 71, Appendix F)

a. Removal

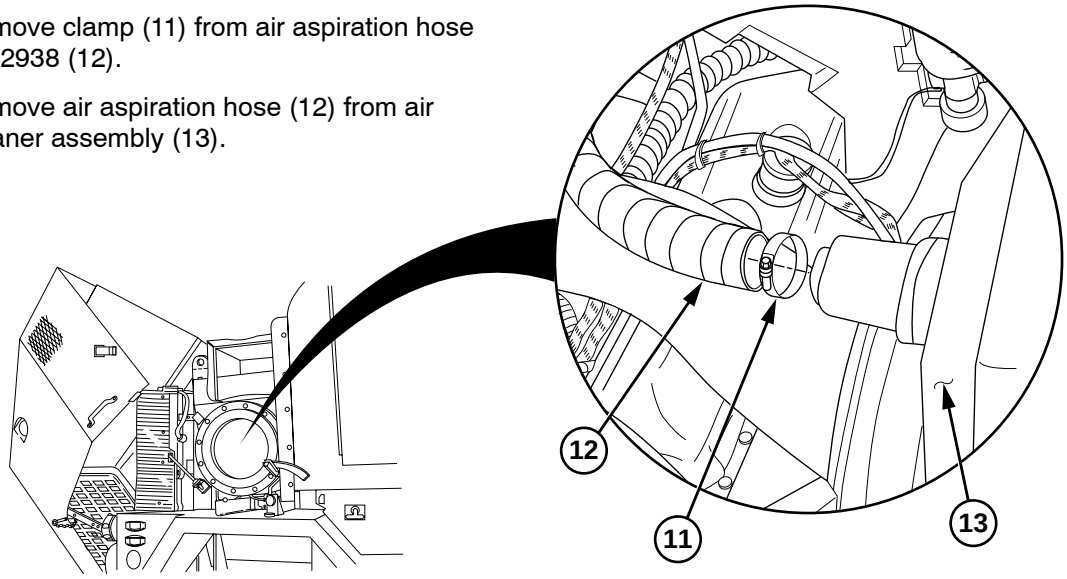
(1) Deleted.

(2) Deleted.

4-5. AIR ASPIRATION HOSE REPLACEMENT (CONT)

(3) Remove clamp (11) from air aspiration hose no. 2938 (12).

(4) Remove air aspiration hose (12) from air cleaner assembly (13).



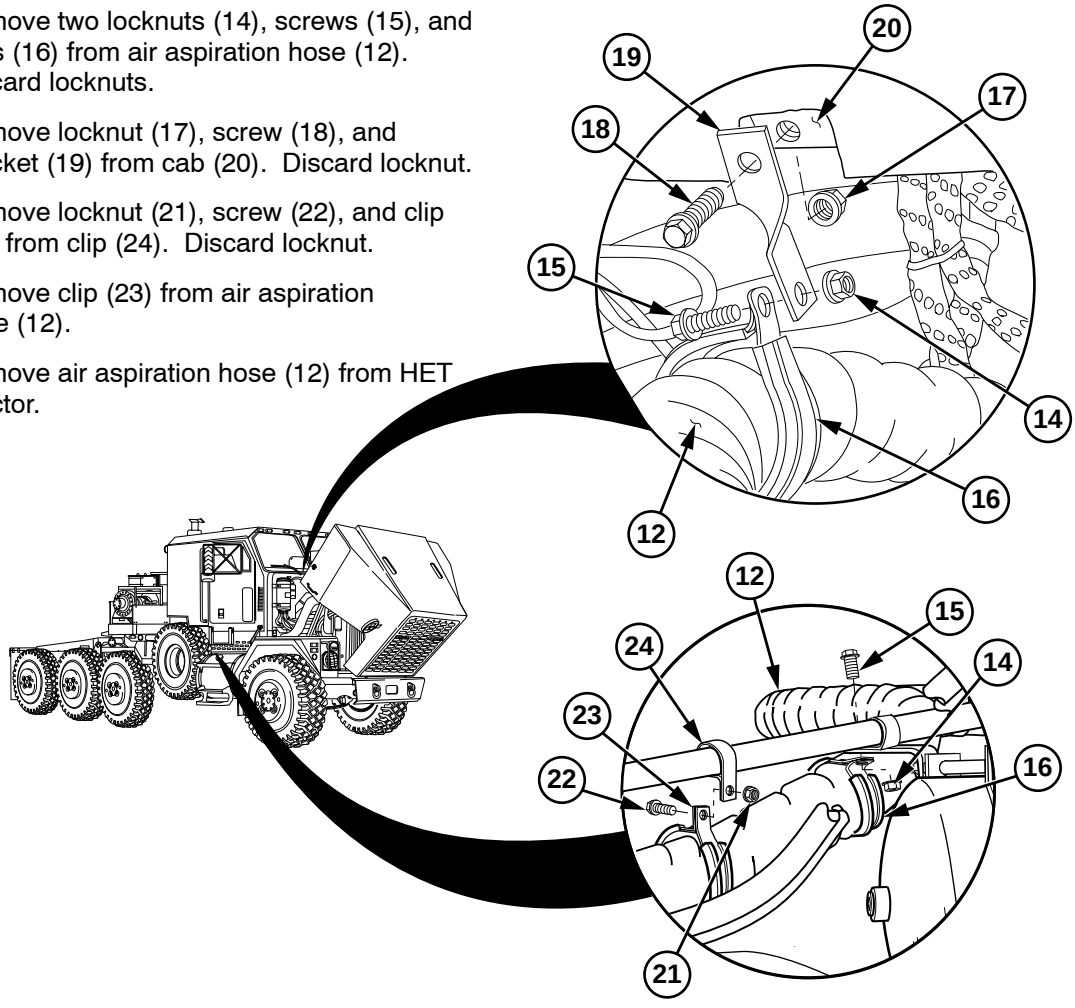
(5) Remove two locknuts (14), screws (15), and clips (16) from air aspiration hose (12). Discard locknuts.

(6) Remove locknut (17), screw (18), and bracket (19) from cab (20). Discard locknut.

(6.1) Remove locknut (21), screw (22), and clip (23) from clip (24). Discard locknut.

(6.2) Remove clip (23) from air aspiration hose (12).

(7) Remove air aspiration hose (12) from HET Tractor.



b. Installation

(1) Route air aspiration hose no. 2938 (1) from muffler location to air cleaner assembly (2).

CAUTION

Air aspiration hose should not contact air compressor discharge line.

(2) Install air aspiration hose (1) and clamp (3) on air cleaner assembly (2). Torque to 60 lb-in. (6.7 N·m).

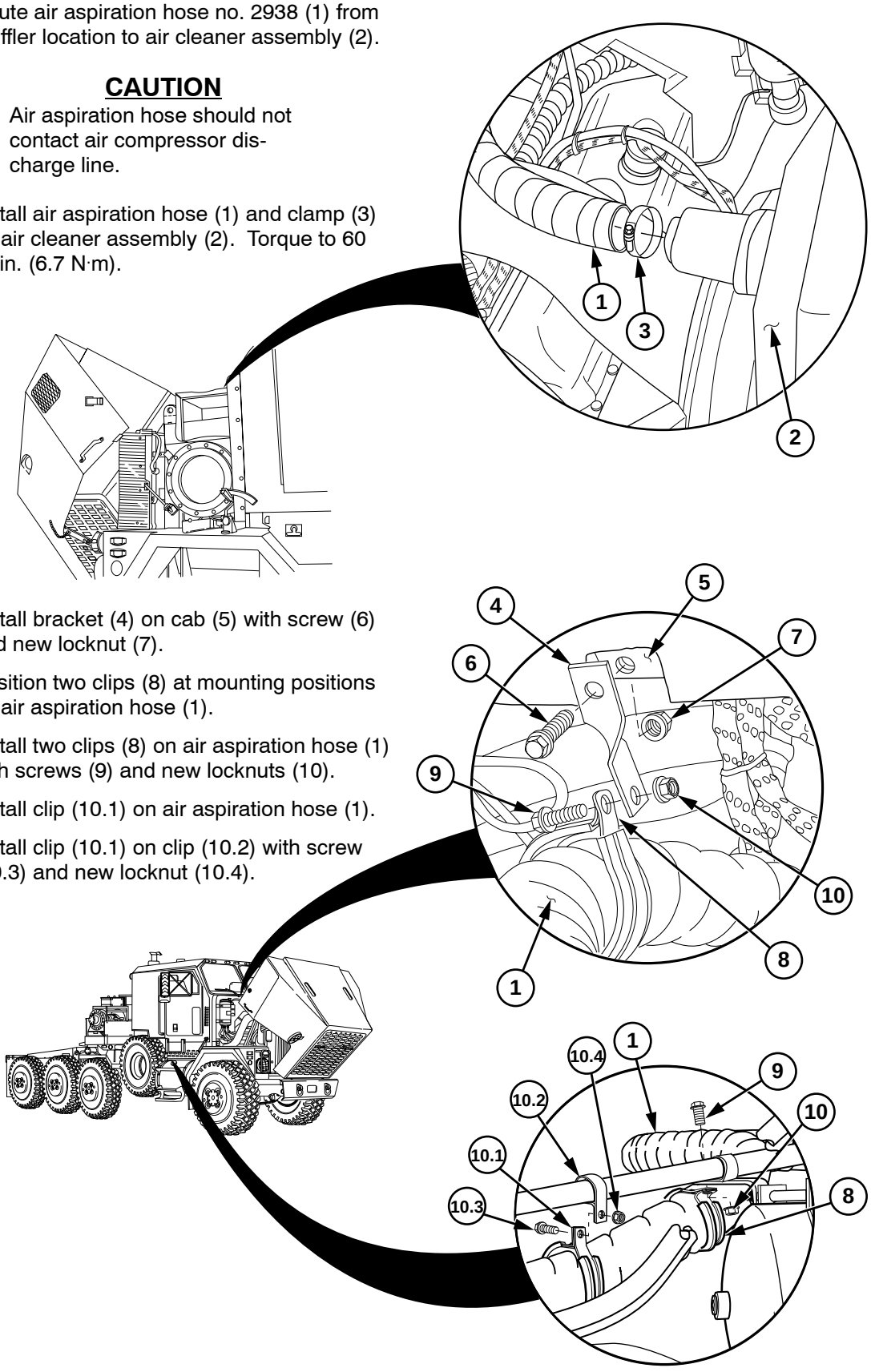
(3) Install bracket (4) on cab (5) with screw (6) and new locknut (7).

(4) Position two clips (8) at mounting positions on air aspiration hose (1).

(5) Install two clips (8) on air aspiration hose (1) with screws (9) and new locknuts (10).

(5.1) Install clip (10.1) on air aspiration hose (1).

(5.2) Install clip (10.1) on clip (10.2) with screw (10.3) and new locknut (10.4).



4-5. AIR ASPIRATION HOSE REPLACEMENT (CONT)

(6) Deleted.

(7) Deleted.

c. Follow-On Maintenance

Install muffler (para 5-3).

4-6. LEFT FUEL TANK REPAIR

This task covers:
a. Removal
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

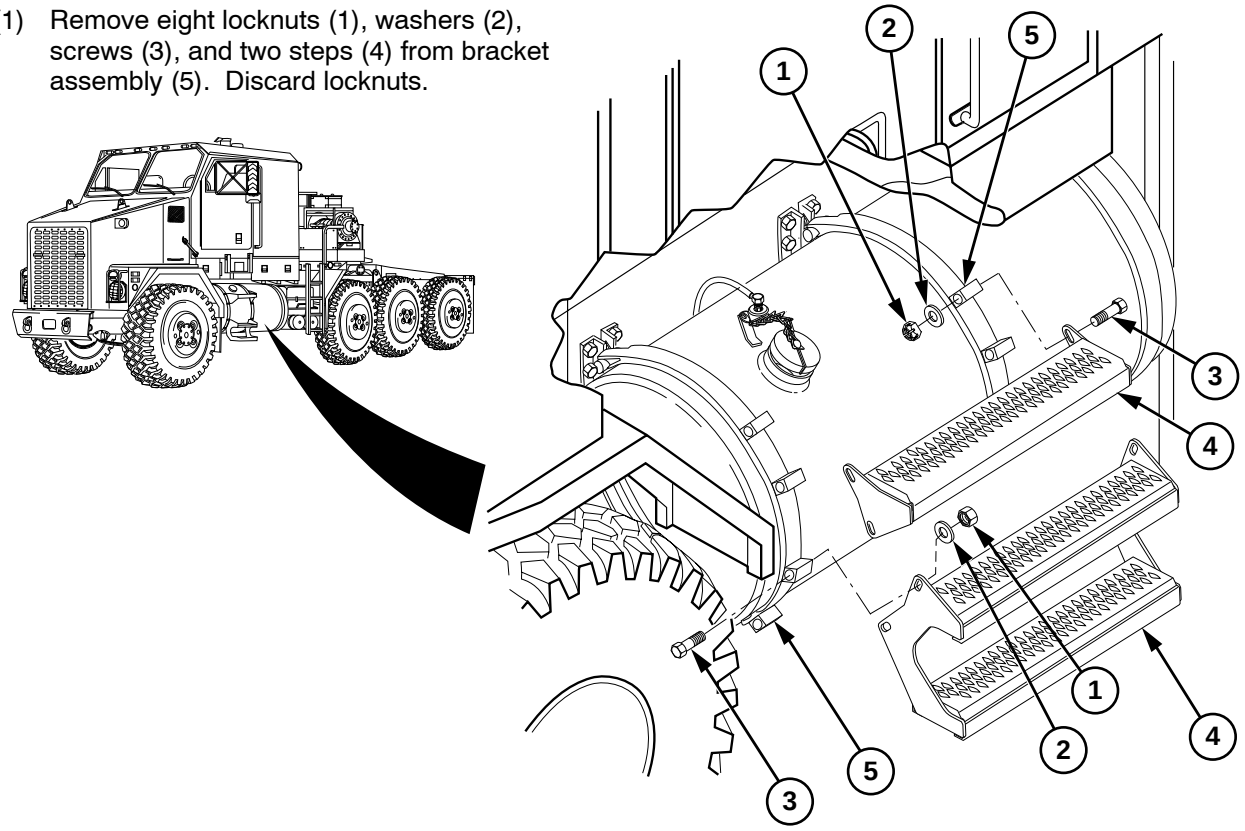
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Chips, Soap (Item 13, Appendix C)
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Rags (Item 28, Appendix C)
Tags, Identification (Item 32, Appendix C)
Gasket (Item 38, Appendix G)
Locknuts (8) (Item 54, Appendix G)
Locknuts (3) (Item 49.1, Appendix G)
Lockwasher (Item 99, Appendix G)

Personnel Required
Two

a. Removal

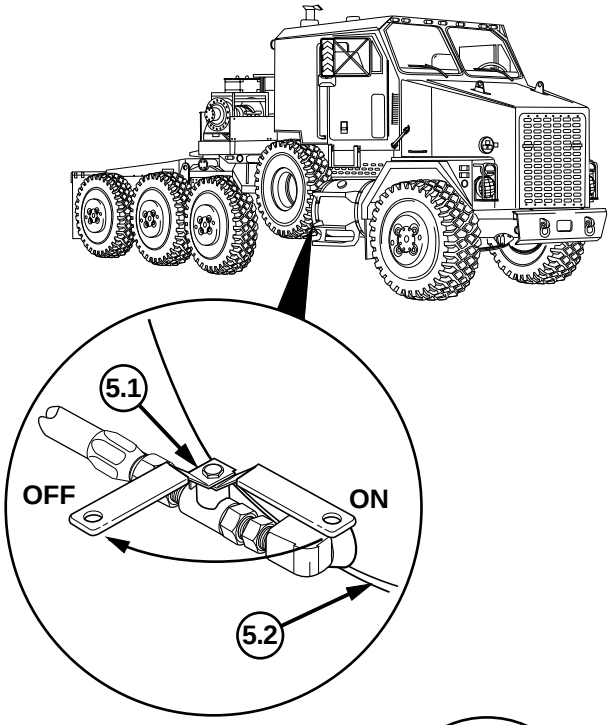
(1) Remove eight locknuts (1), washers (2), screws (3), and two steps (4) from bracket assembly (5). Discard locknuts.



4-6. LEFT FUEL TANK REPAIR (CONT)

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire 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. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.

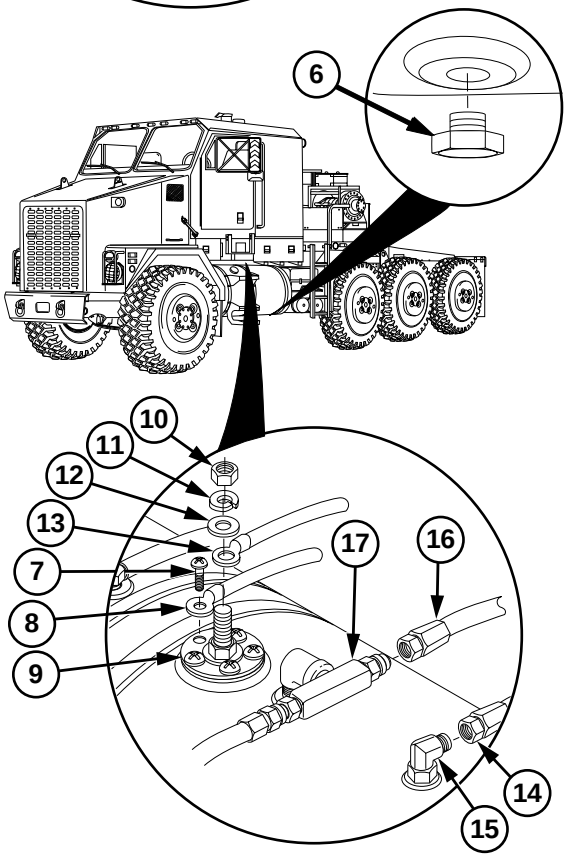


(1.1) Turn shutoff valve (5.1) on right fuel tank (5.2) clockwise to off position.

NOTE

Left fuel tank capacity is 150 gal (568 L).

(2) Remove plug (6) and drain fuel into suitable container.



(3) Remove screw (7) and wire no. 1435 (8) from sending unit (9).

(4) Remove nut (10), lockwasher (11), washer (12), and wire no. 1318 (13) from sending unit (9). Discard lockwasher.

NOTE

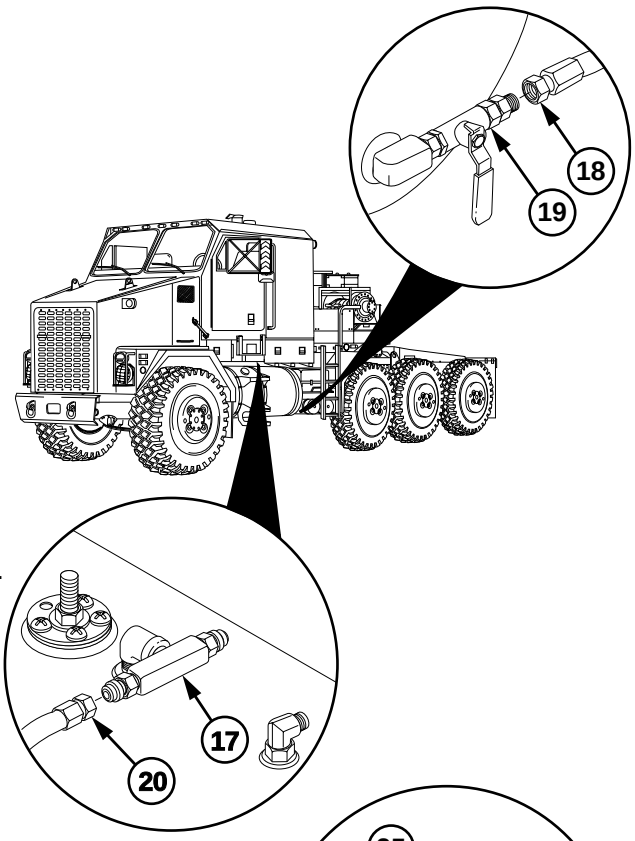
Tag and mark hoses before removal.

(5) Place drain pans under fuel hoses as required.

(6) Remove fuel hose no. 2260 (14) from elbow (15).

(7) Remove fuel hose no. 2259 (16) from tee (17).

(8) Disconnect fuel hose no. 2320 (18) from shutoff valve (19).



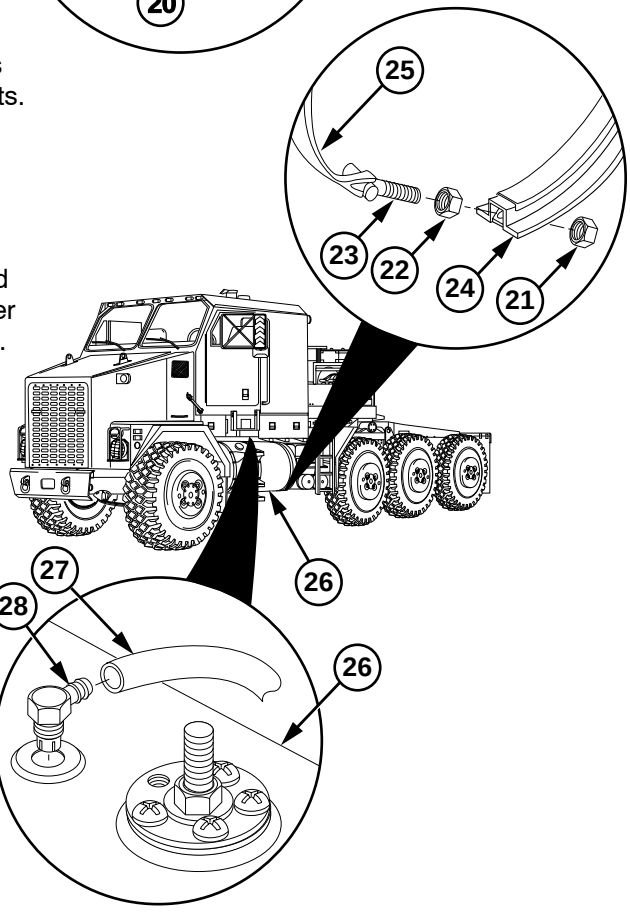
(9) Remove hose no. 2919 (20) from tee (17).

(10) Remove three locknuts (21) and jam nuts (22) from T-screws (23). Discard locknuts.

NOTE

Rotate top of fuel tank inward to aid with removal.

(11) Separate fuel tank bracket halves (24 and 25) and, using suitable lifting device, lower fuel tank (26) to floor with aid of assistant.



(12) Remove hose no. 2394 (27) from elbow (28).

(13) Remove elbow (28) from fuel tank (26).

4-6. LEFT FUEL TANK REPAIR (CONT)

(14) Remove adapter (29), shutoff valve (19), pipe nipple (30), and elbow (31) from fuel tank (26).

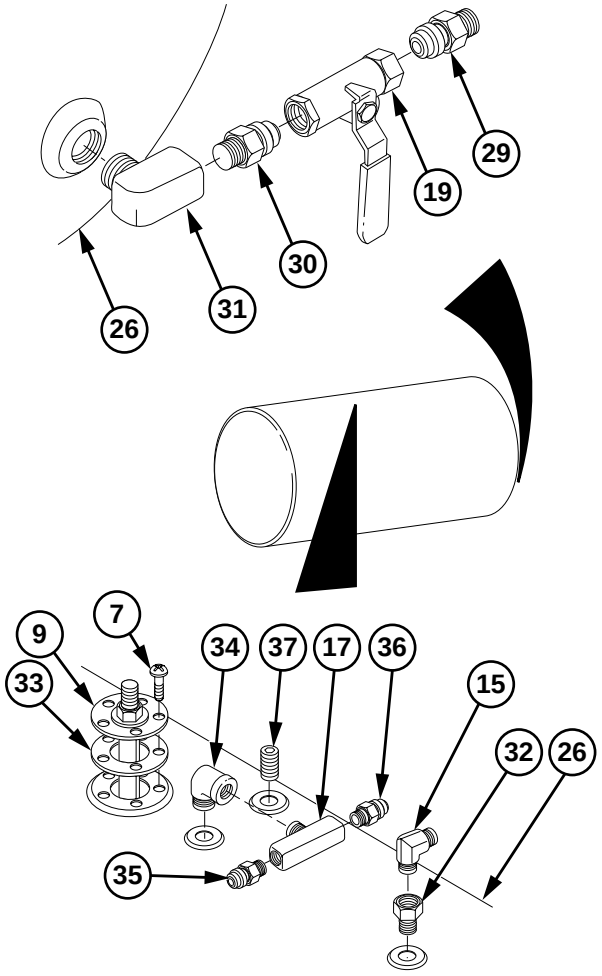
(15) Remove elbow (15) and reducer (32) from fuel tank (26).

(16) Remove four remaining screws (7) from sending unit (9).

(17) Remove sending unit (9) and gasket (33) from fuel tank (26). Discard gasket.

(18) Remove elbow (34), tee (17), adapter (35), and reducer (36) from fuel tank (26).

(19) Remove plug (37) from fuel tank (26).



b. Cleaning/Inspection

(1) Purge and clean fuel tank (TB 43-0212).

(2) Inspect fuel tank for cracks, broken welds, and stripped threads.

(3) Inspect hoses for damage and leaks.

c. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

NOTE

Remove shipping plugs if installing new fuel tank.

(1) Coat threads of plug (1), elbows (2, 3, 4, and 5), tee (6), adapters (7 and 8), pipe nipple (9), and reducers (10 and 11) with pipe thread sealing compound.

(2) Install plug (1) on fuel tank (12).

(3) Install elbow (3) on tee (6).

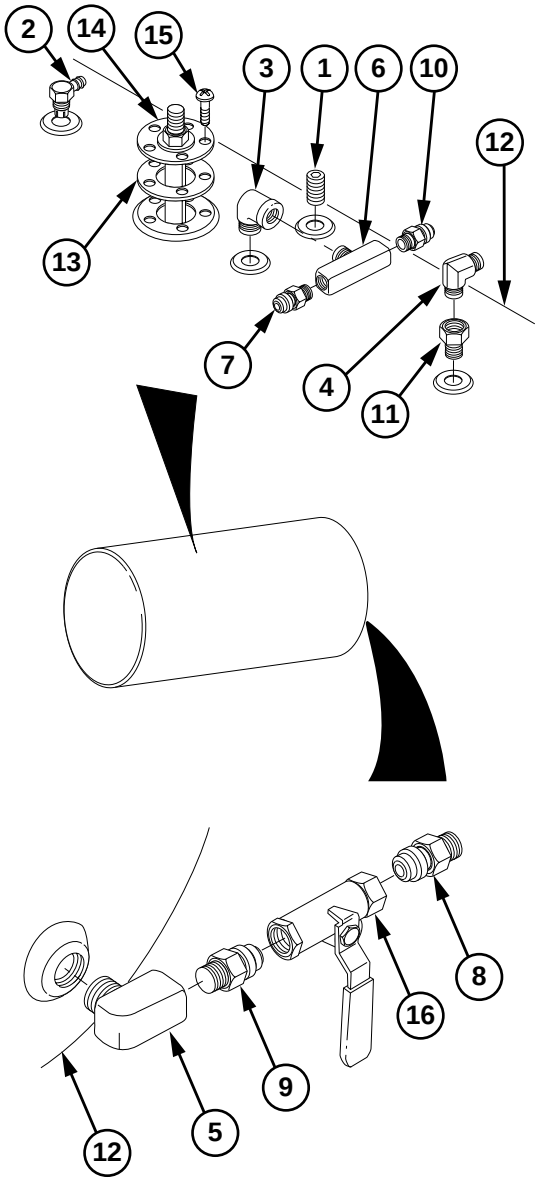
(4) Install tee (6), adapter (7), and reducer (10) on fuel tank (12).

(4.1) Coat top and bottom of gasket (13) with pipe thread sealing compound.

(5) Install new gasket (13) and sending unit (14) on fuel tank (12) with four screws (15).

(6) Install elbow (4) and reducer (11) on fuel tank (12).

(7) Install elbow (5), pipe nipple (9), shutoff valve (16), and adapter (8) on fuel tank (12).



4-6. LEFT FUEL TANK REPAIR (CONT)

(8) Install elbow (2) on fuel tank (12).

(9) Install hose no. 2394 (17) on elbow (2).

(10) Lubricate liners (18) with soap solution.

(11) Install fuel tank (12) in bracket halves (19 and 20) with aid of assistant and suitable lifting device.

(12) Install three jam nuts (21) all the way on T-screws (22).

NOTE

Do not tighten to final torque until steps are installed.

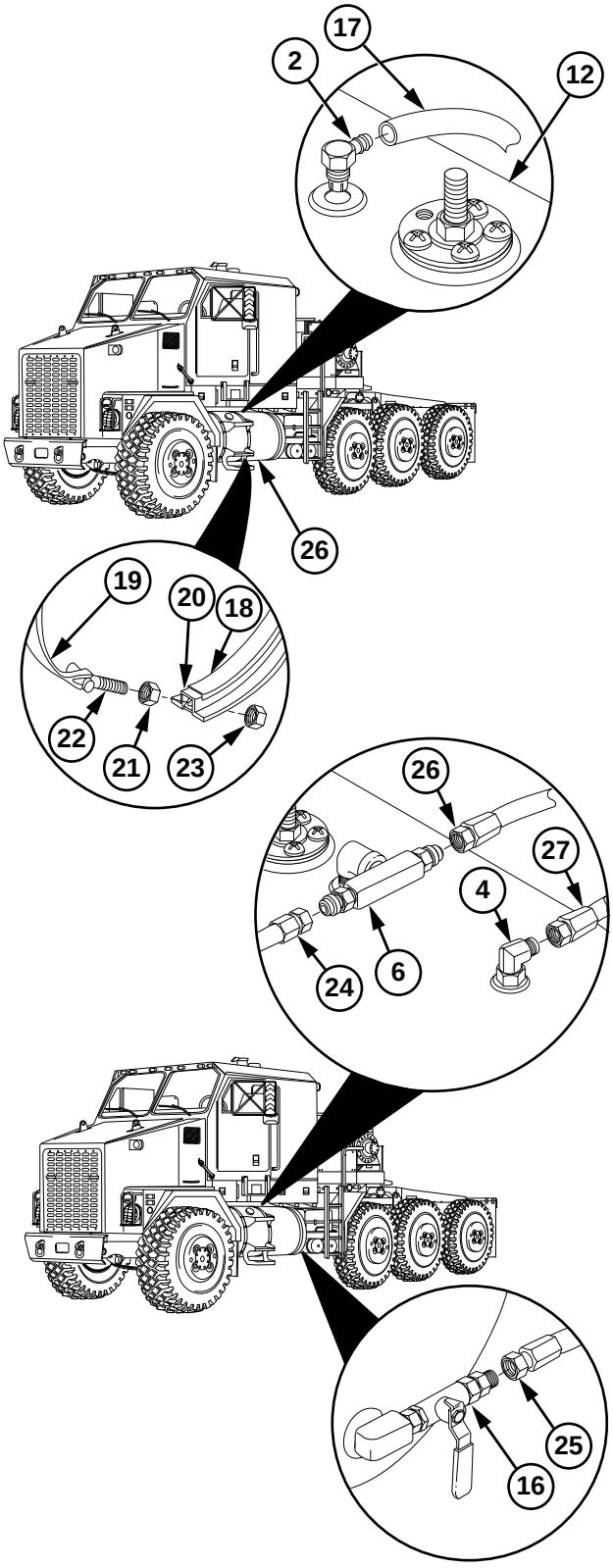
(13) Install three new locknuts (23) on T-screws (22). Do not tighten.

(14) Install hose no. 2919 (24) on tee (6).

(15) Connect fuel hose no. 2320 (25) to shutoff valve (16).

(16) Connect fuel hose no. 2259 (26) to tee (6).

(17) Connect fuel hose no. 2260 (27) to elbow (4).

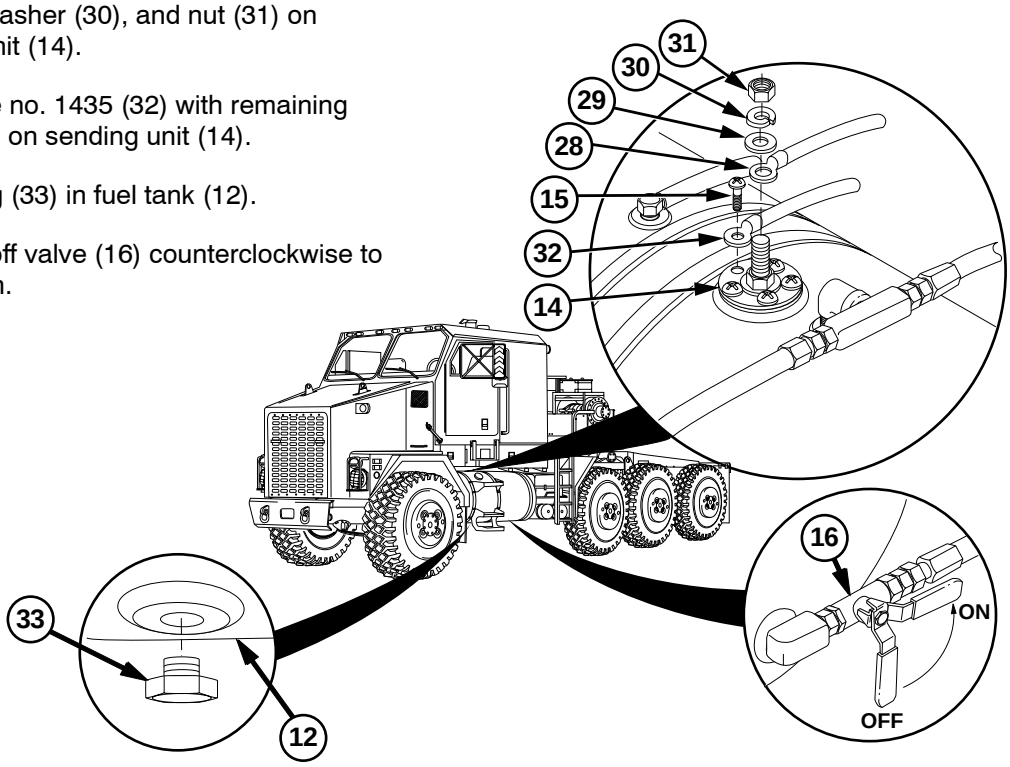


(18) Install wire no. 1318 (28) with washer (29), new lockwasher (30), and nut (31) on sending unit (14).

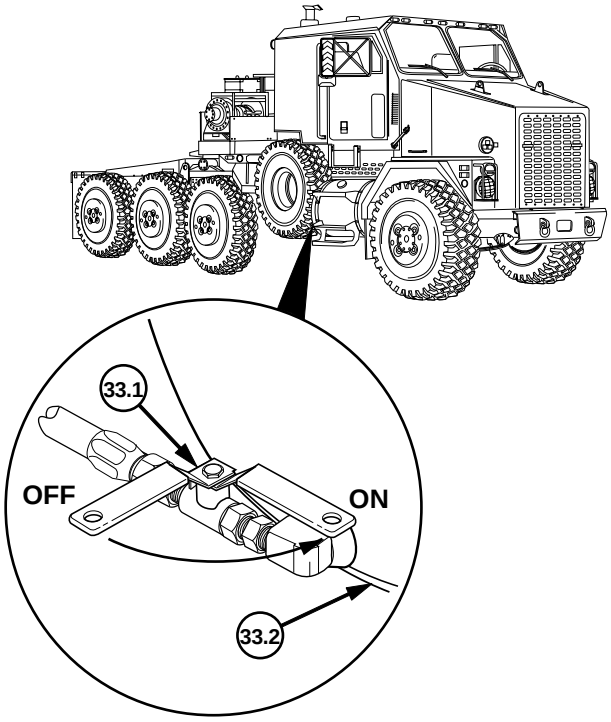
(19) Install wire no. 1435 (32) with remaining screw (15) on sending unit (14).

(20) Install plug (33) in fuel tank (12).

(21) Turn shutoff valve (16) counterclockwise to on position.

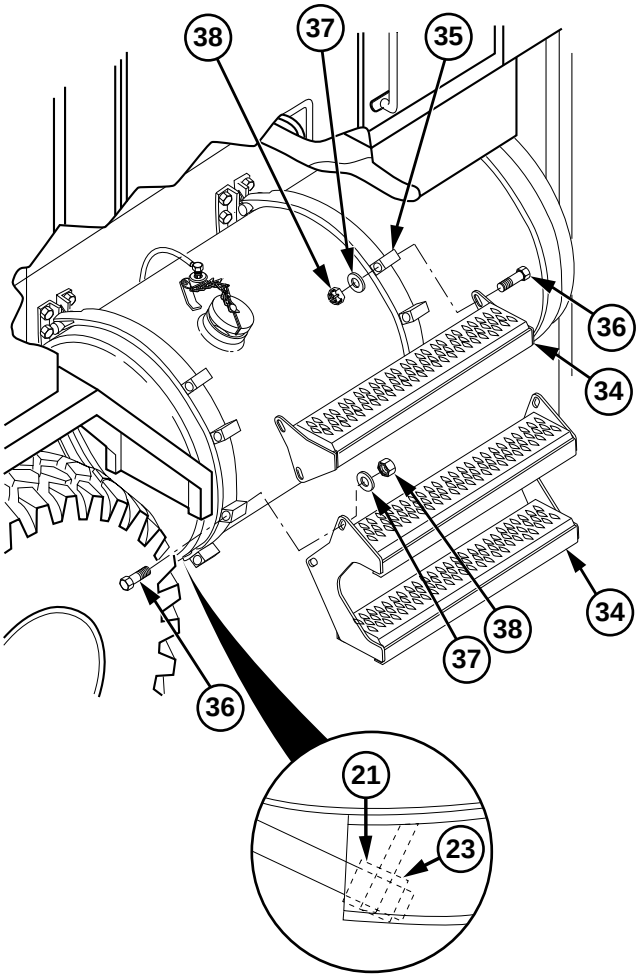


(21.1) Turn shutoff valve (33.1) on right fuel tank (33.2) counterclockwise to on position.



4-6. LEFT FUEL TANK REPAIR (CONT)

(22) Install two steps (34) on bracket assembly (35) with eight screws (36), washers (37), and new locknuts (38).



(23) Tighten three locknuts (23) to 50 lb-ft (68 N·m).

(24) Tighten three jam nuts (21).

c. Follow-On Maintenance

(1) Fill fuel tank with fuel (TM 9-2320-360-10).

(2) Prime hand priming pump (TM 9-2320-360-10).

(3) Start engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Shut off engine (TM 9-2320-360-10).

(6) Remove wheel chocks.

4-7. RIGHT FUEL TANK REPAIR

This task covers:
a. Removal
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

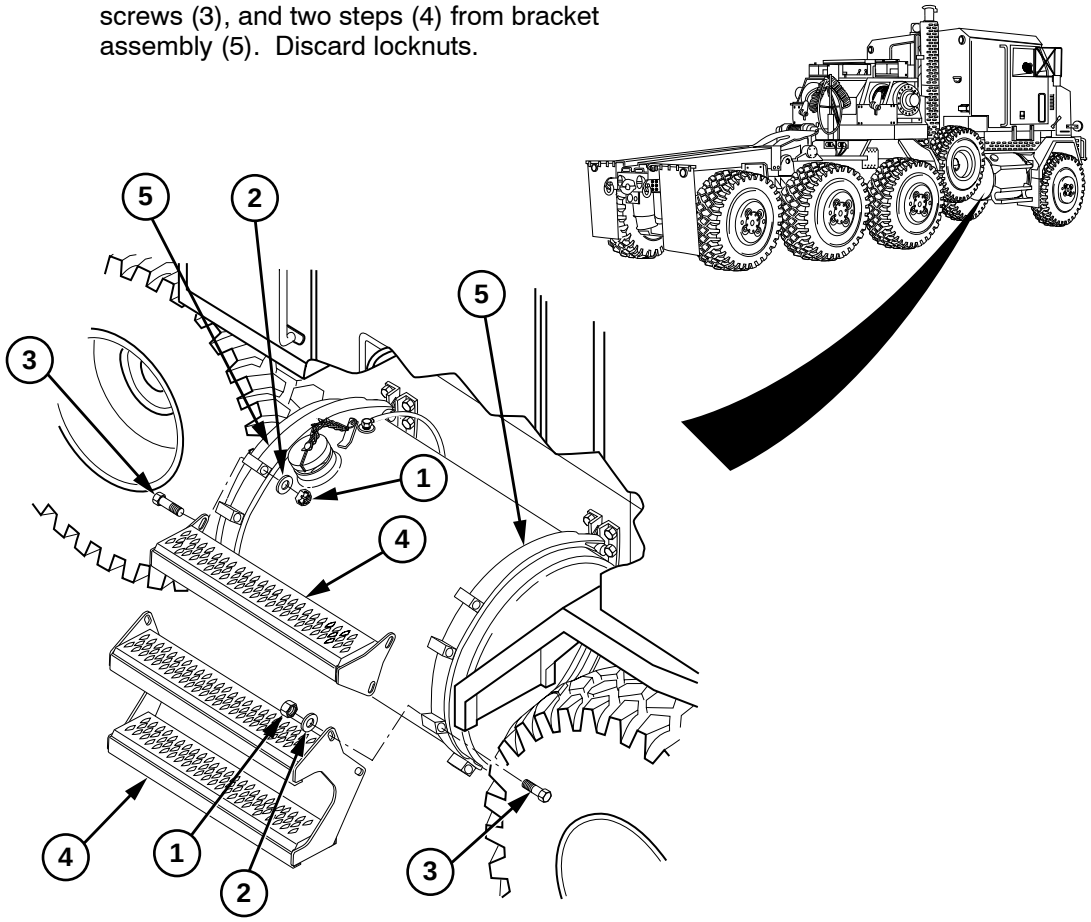
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Chips, Soap (Item 13, Appendix C)
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Rags (Item 28, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (8) (Item 54, Appendix G)
Locknuts (2) (Item 49.1, Appendix G)

Personnel Required
Two

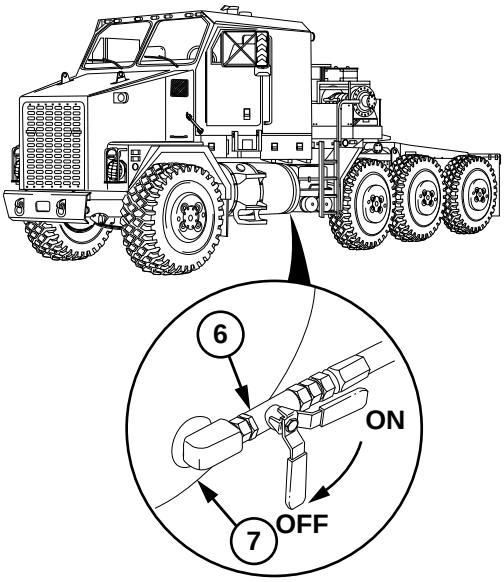
a. Removal

(1) Remove eight locknuts (1), washers (2), screws (3), and two steps (4) from bracket assembly (5). Discard locknuts.



WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire 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. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.

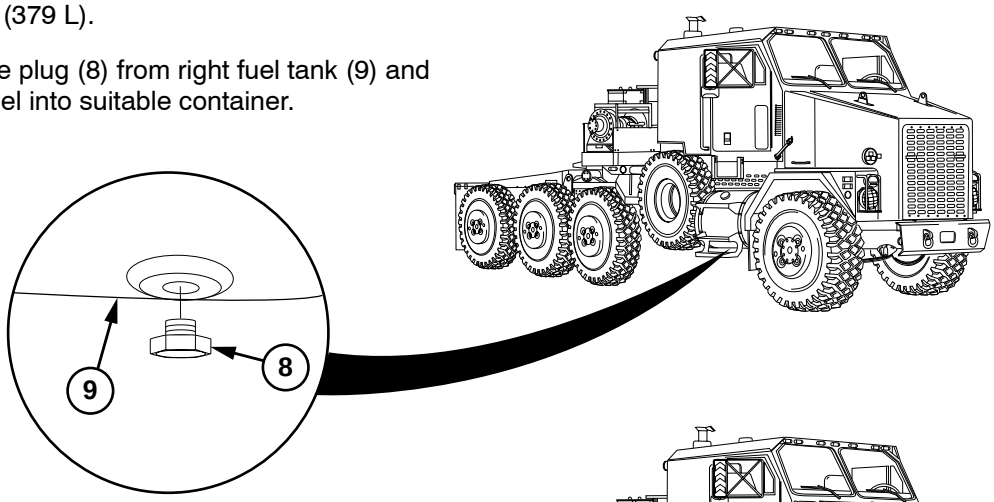


(2) Turn shutoff valve (6) on left fuel tank (7) clockwise to off position.

NOTE

Right fuel tank capacity is 100 gal (379 L).

(3) Remove plug (8) from right fuel tank (9) and drain fuel into suitable container.

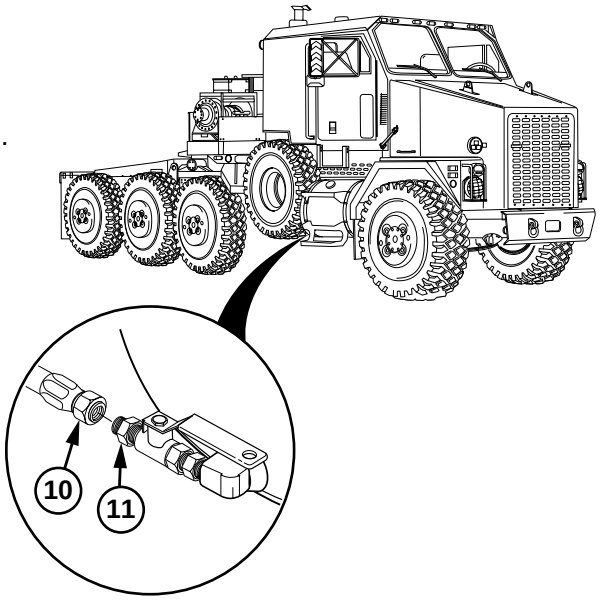


(4) Place drain pan under hose no. 2320 (10).

NOTE

Tag and mark hoses before removal.

(5) Remove hose no. 2320 (10) from adapter (11).



4-7. RIGHT FUEL TANK REPAIR (CONT)

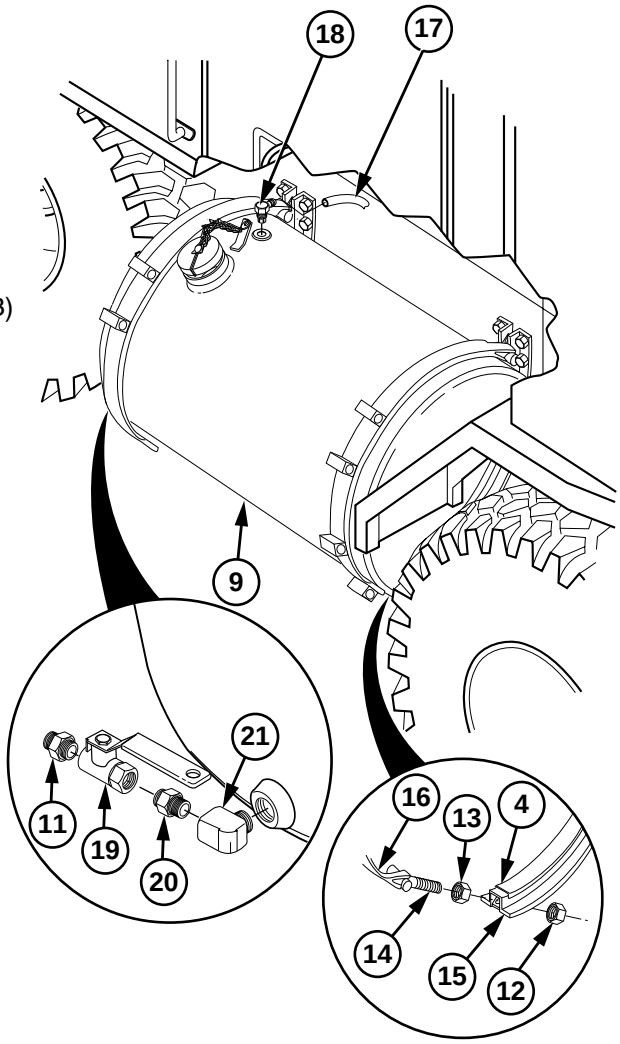
(6) Remove two locknuts (12) and jam nuts (13) from T-screws (14). Discard locknuts.

(7) Separate fuel tank bracket halves (15 and 16) and, using suitable lifting device, lower right fuel tank (9) to floor with aid of assistant.

(8) Remove hose no. 2394 (17) from elbow (18).

(9) Remove elbow (18) from fuel tank (9).

(10) Remove adapter (11), shutoff valve (19), nipple (20), and elbow (21) from fuel tank (9).



b. Cleaning/Inspection

(1) Purge and clean fuel tank (TB 43-0212).

(2) Inspect fuel tank for cracks, broken welds, and stripped threads.

(3) Inspect hoses for leaks and damage.

c. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

NOTE

Remove shipping plugs if installing new fuel tank.

(1) Coat threads of elbows (1 and 2), nipple (2.1), shutoff valve (2.2), and adapter (2.3) with pipe thread sealing compound.

(2) Install elbow (2), nipple (2.1), shutoff valve (2.2), and adapter (2.3) on fuel tank (3).

(3) Install elbow (1) on fuel tank (3).

(4) Lubricate liners (4) with soap solution.

(5) Install fuel tank (3) in bracket halves (5 and 6) with aid of assistant and suitable lifting device.

(6) Install two jam nuts (7) all the way on T-screws (8).

NOTE

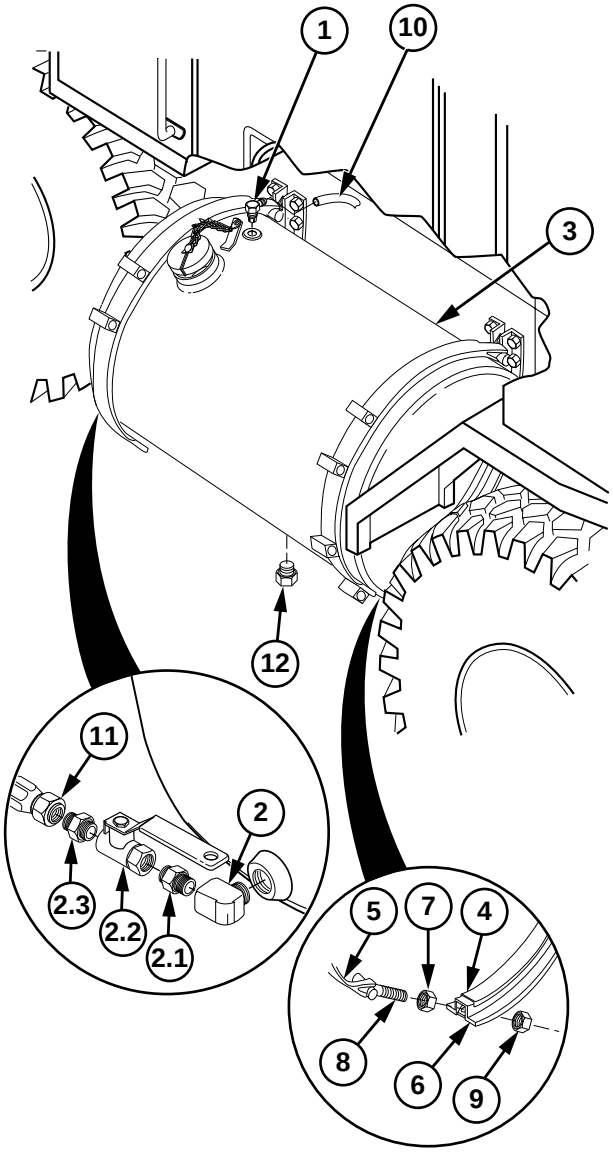
Do not tighten to final torque until steps are installed.

(7) Install two new locknuts (9) on T-screws (8). Do not tighten.

(8) Install hose no. 2394 (10) on elbow (1).

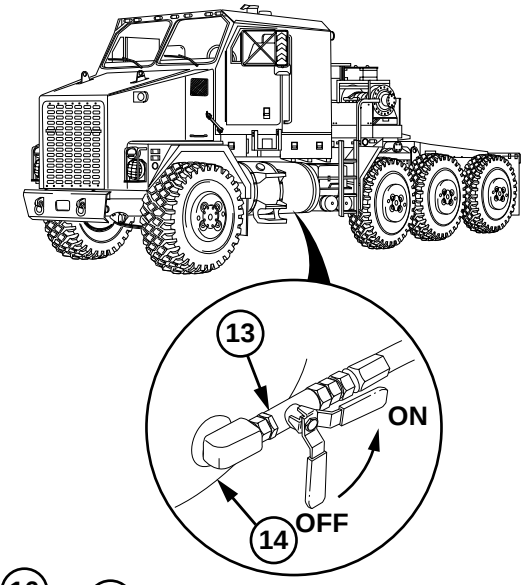
(9) Install hose no. 2320 (11) on adapter (2.3).

(10) Install plug (12) on fuel tank (3).

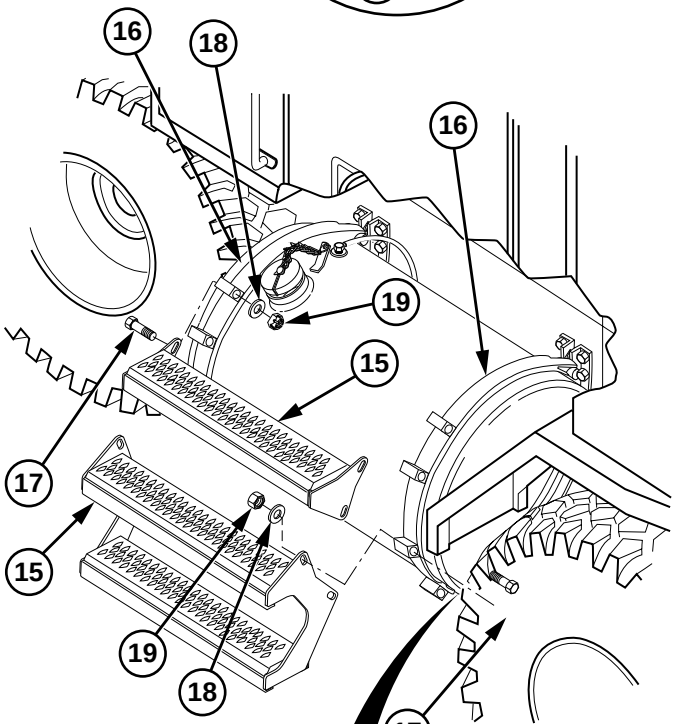


4-7. RIGHT FUEL TANK REPAIR (CONT)

(11) Turn shutoff valve (13) on left fuel tank (14) counterclockwise to on position.

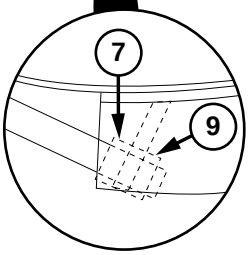


(12) Install two steps (15) on bracket assembly (16) with eight screws (17), washers (18), and new locknuts (19).



(13) Tighten two locknuts (9) to 50 lb-ft (68 N·m).

(14) Tighten two jam nuts (7).



d. Follow-On Maintenance

(1) Fill fuel tank with fuel (TM 9-2320-360-10).

(2) Prime hand priming pump (TM 9-2320-360-10).

(3) Start engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Shut off engine (TM 9-2320-360-10).

(6) Remove wheel chocks.

4-8. FUEL TANK BRACKET REPLACEMENT

This task covers:
a. Removal
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Fuel tank removed (para 4-6 or 4-7).
No. 1 air reservoir removed (para 11-19) (for left fuel tank brackets).
No. 2 air reservoir removed (para 11-20) (for right fuel tank brackets).

Materials/Parts
Cement, General Purpose (Item 12, Appendix C)
Chips, Soap (Item 13, Appendix C)
Rags (Item 28, Appendix C)
Cleaning Compound, Solvent (Item 31, Appendix C)
Locknuts (7) (Item 49.1, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Brush, Wire (Item 2, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Personnel Required
Two

a. Removal

WARNING

Allow muffler to cool before working on right fuel tank and brackets. Failure to do so may result in serious personal injury.

NOTE

Procedure is the same for left and right fuel tanks. Left fuel tank has three brackets; right fuel tank has two.

(1) Remove six locknuts (1), screws (2), bracket (3), and strap (4) from frame (5) with aid of assistant. Discard locknuts.

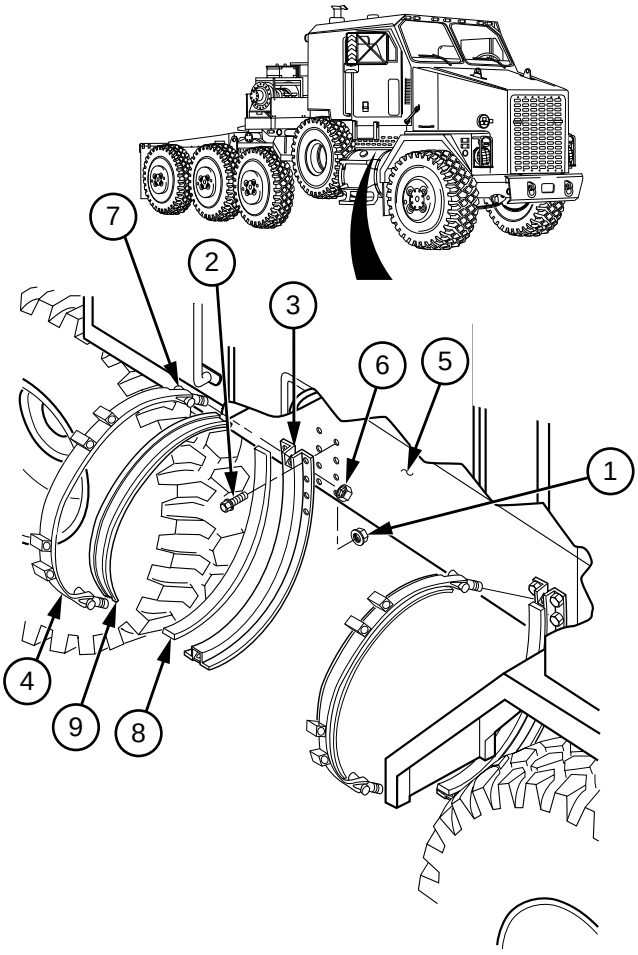
(2) Remove locknut (6) from T-screw (7). Discard locknut.

(3) Separate bracket (3) from strap (4).

(4) Remove bracket liner (8) from bracket (3).

(5) Remove strap liner (9) from strap (4).

(6) Repeat steps (1) thru (5) for each remaining bracket.



4-8. FUEL TANK BRACKET REPLACEMENT (CONT)

b. Cleaning/Inspection

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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

•The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).
•Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.
•Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.
•Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.
•Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.

(1) Clean fuel tank straps and brackets with solvent cleaning compound, wire brush, and rags.
(2) Clean liners with soapy water. Rinse liners clean with clear water.
(3) Inspect fuel tank brackets and straps for damage and badly rusted areas.
(4) Inspect bracket liners for damage.

c. Installation

NOTE

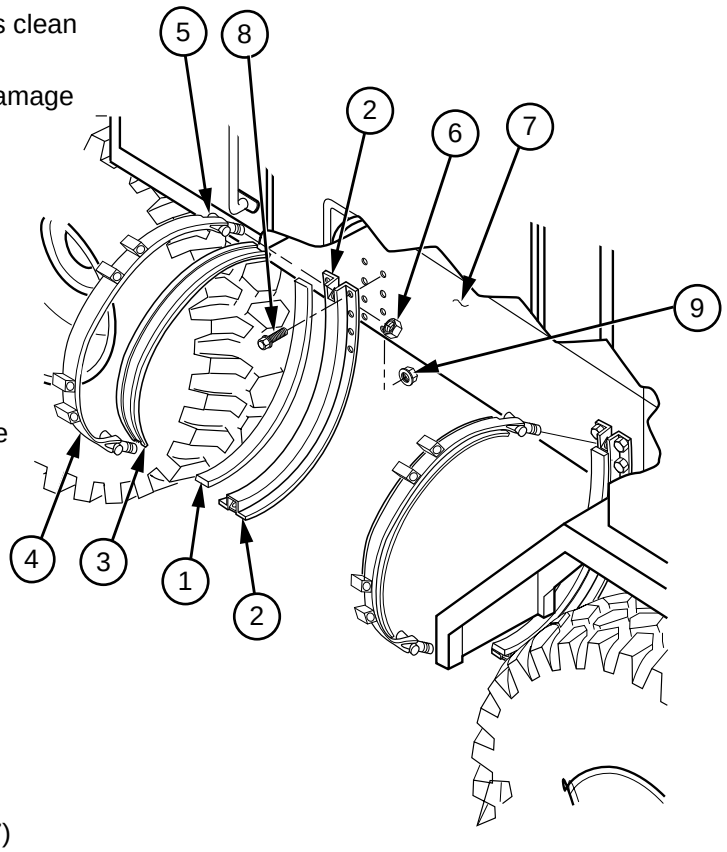
All fuel tank brackets and straps are installed the same way. Right fuel tank brackets are shown.

(1) Coat bracket liner (1) with general purpose cement.
(2) Install bracket liner (1) on bracket (2).
(3) Install strap liner (3) on strap (4).

NOTE

Ensure step mounts on strap are in proper position when installing T-screw in bracket.

(4) Insert T-screw (5) in bracket (2).
(5) Install new locknut (6) about 1 in. (2.5 cm) on T-screw (5).
(6) Install bracket (2) and strap (4) on frame (7) with six screws (8) and new locknuts (9) with aid of assistant. Torque to 107 lb-ft (145 N·m).
(7) Repeat steps (1) thru (6) for each remaining bracket.



d. Follow-On Maintenance

(1) Install fuel tank (para 4-6 or 4-7).
(2) Install no. 1 air reservoir (para 11-19) (for left fuel tank brackets).
(3) Install no. 2 air reservoir (para 11-20) (for right fuel tank brackets).

4-9. HOSES NO. 2320/2261/2919/2922/2921/2260/2920/2259/VENT HOSE AND FITTINGS REPLACEMENT

This task covers:
- Removal
- Installation
- Cleaning/Inspection
- Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
- Front wheels turned full left (TM 9-2320-360-10).
- Lower engine access panel removed (para 16-2).
- Inner fender removed (hose no. 2261 only) (right side only) (para 16-34).

Tools and Special Tools
- Tool Kit, Genl Mech (Item 54, Appendix F)
- Compressor Unit, Air (Item 3, Appendix F)
- Goggles, Industrial (Item 14, Appendix F)
- Socket Wrench Set, 3/8 In. Drive (Item 45, Appendix F)
- Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

Materials/Parts
- Rags (Item 28, Appendix C)
- Cleaning Compound, Solvent (Item 31, Appendix C)
- Tags, Identification (Item 32, Appendix C)
- Ties, Cable Plastic (Item 34, Appendix C)
- Locknut (Item 58, Appendix G)
- Lockwasher (Item 101, Appendix G)

WARNING

- **Wear proper eye protection when working under HET Tractor to prevent personal injury.**
- **Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire 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. When working with fuel, post signs that read: NO SMOKING WITHIN 50 FEET OF VEHICLE.**

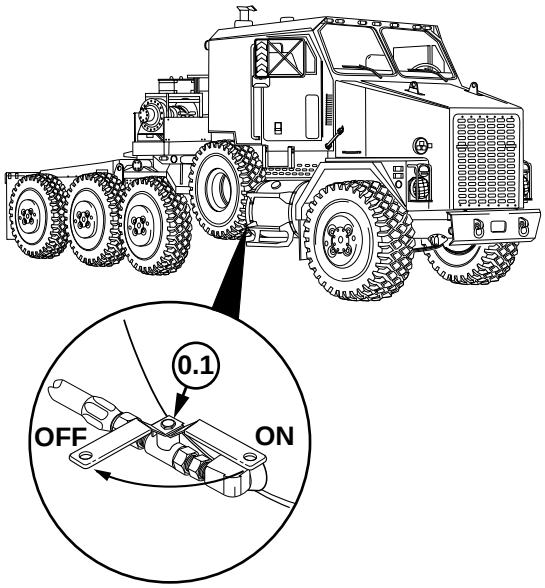
NOTE

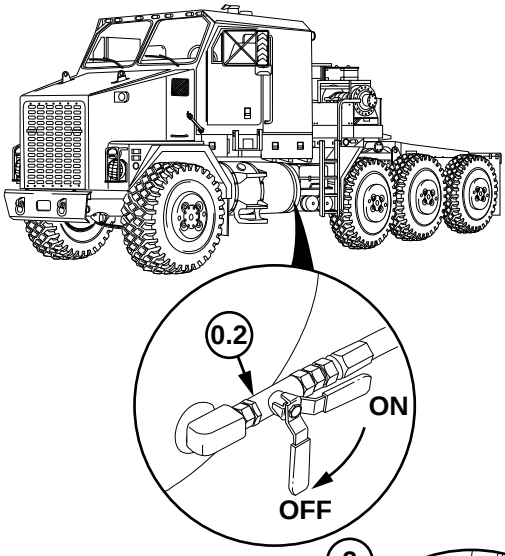
Tag and mark all hoses before removal.

4-9. HOSES NO. 2320/2261/2919/2922/2921/2260/2920/2259/VENT HOSE AND FITTINGS REPLACEMENT (CONT)

a. Hose No. 2320 Removal

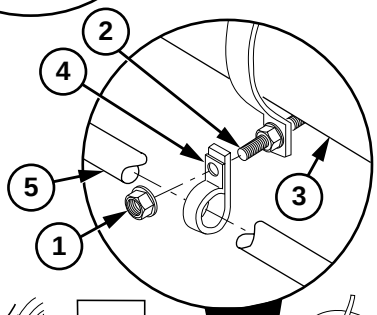
(1) Turn shutoff valves (0.1 and 0.2) clockwise to off position.

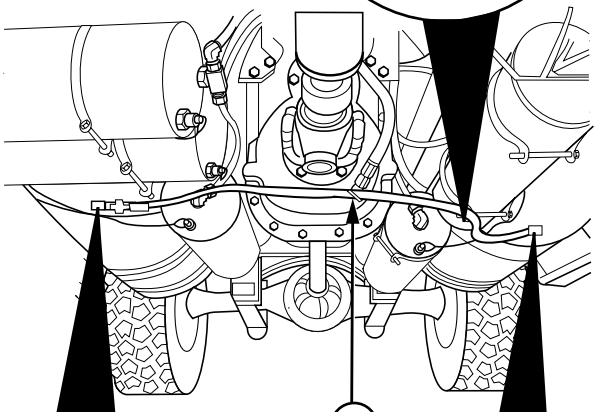




(1.1) Remove locknut (1) from screw (2) mounted on air reservoir (3). Discard locknut.

(2) Remove clip (4) from screw (2) and hose no. 2320 (5).





(3) Disconnect hose no. 2320 (5) from adapter (6).

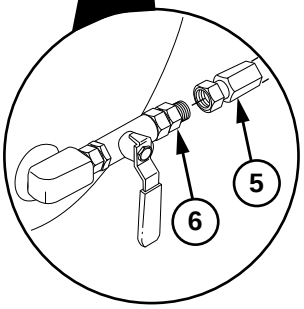
(4) Disconnect hose no. 2320 (5) from adapter (7).

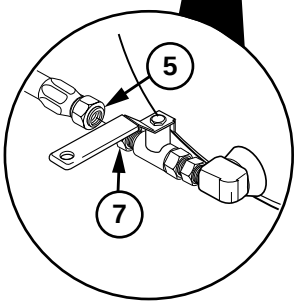
NOTE

Location of plastic cable ties should be marked before removal.

(5) Remove plastic cable ties (8) from hose no. 2320 (5) as required.

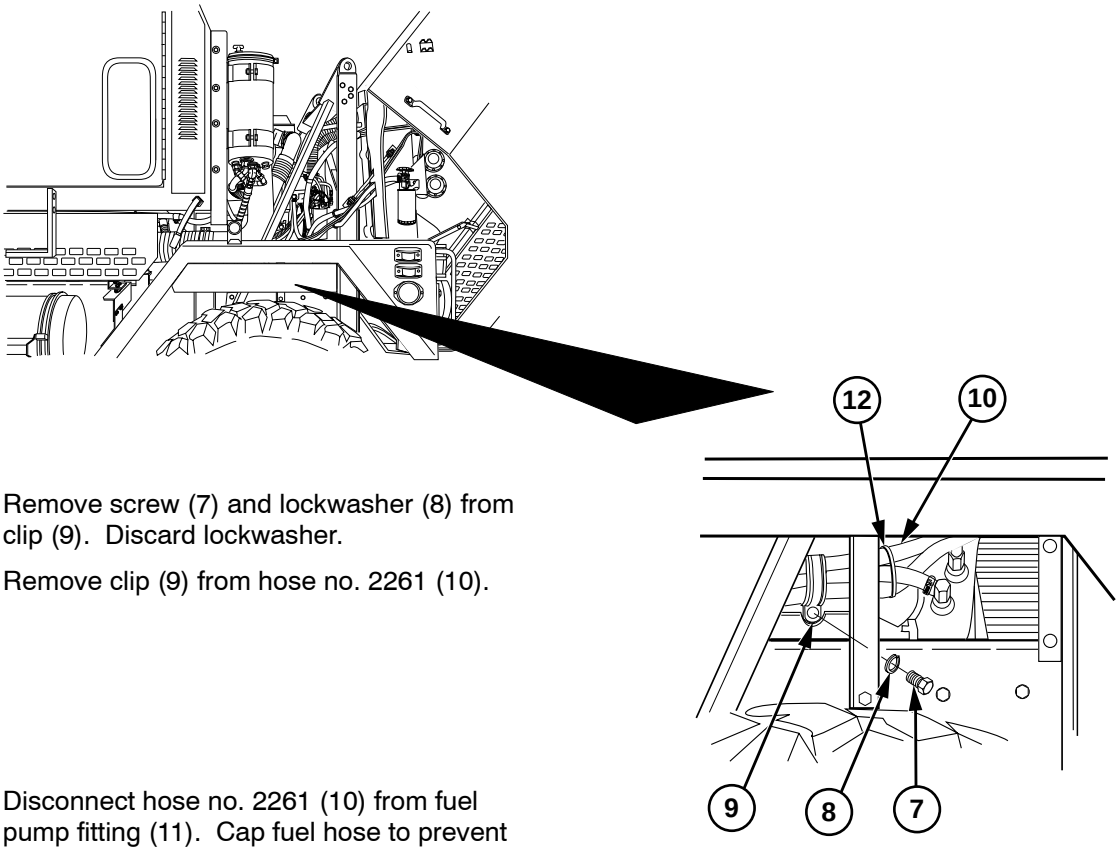
(6) Remove hose no. 2320 (5) from under HET Tractor.





b. Hose No. 2261 Removal

(1) Deleted.



(2) Remove screw (7) and lockwasher (8) from clip (9). Discard lockwasher.

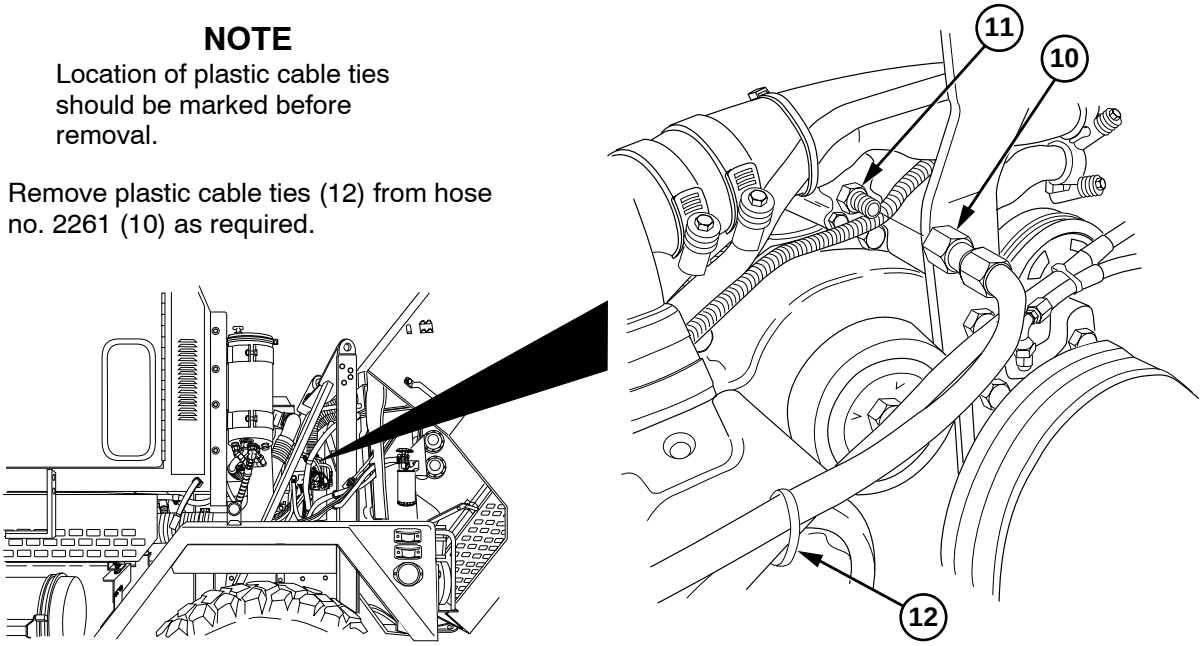
(3) Remove clip (9) from hose no. 2261 (10).

(4) Disconnect hose no. 2261 (10) from fuel pump fitting (11). Cap fuel hose to prevent leakage.

NOTE

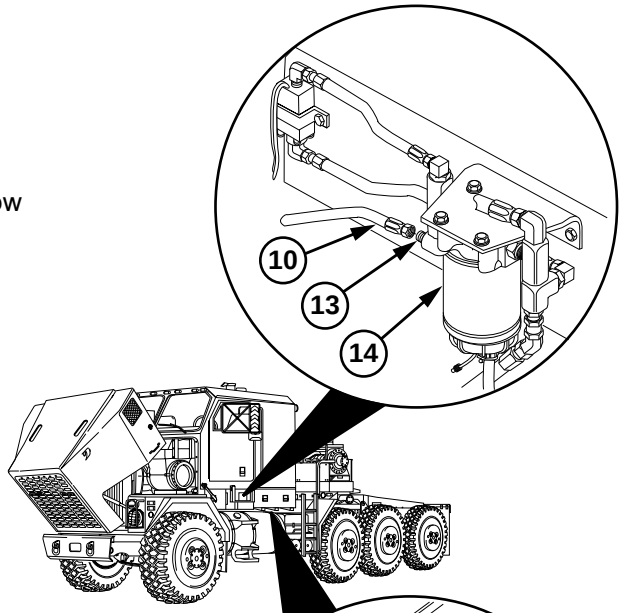
Location of plastic cable ties should be marked before removal.

(5) Remove plastic cable ties (12) from hose no. 2261 (10) as required.



4-9. HOSES NO. 2320/2261/2919/2922/2921/2260/2920/2259/VENT HOSE AND FITTINGS REPLACEMENT (CONT)

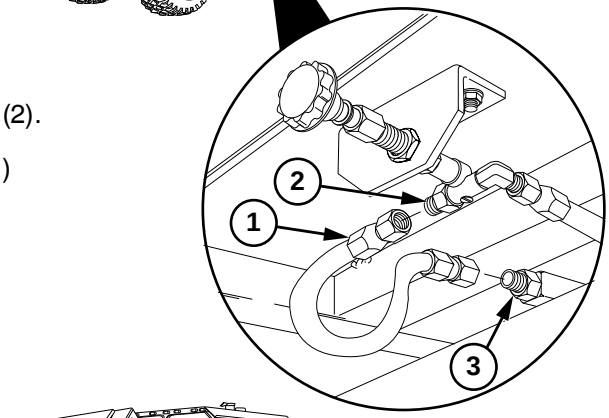
(6) Disconnect hose no. 2261 (10) from elbow (13) on fuel/water separator (14).



c. Hose No. 2919 Removal

(1) Disconnect hose no. 2919 (1) from fitting (2).

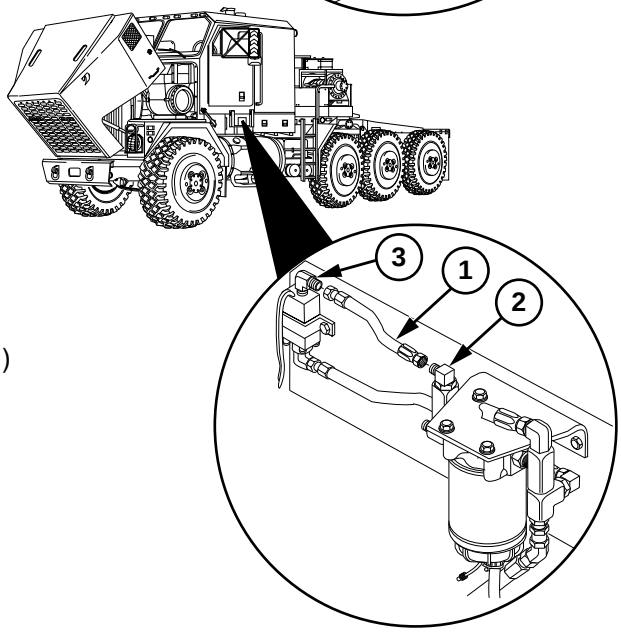
(2) Disconnect and remove hose no. 2919 (1) from tee (3).



d. Hose No. 2922 Removal

(1) Disconnect hose no. 2922 (1) from elbow (2).

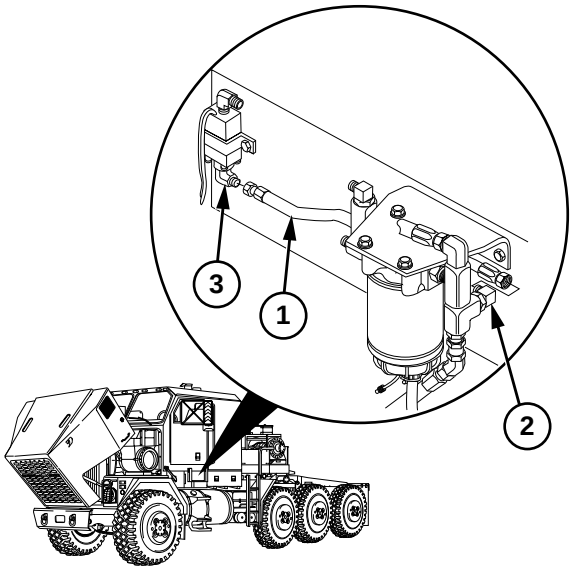
(2) Disconnect and remove hose no. 2922 (1) from elbow (3).



e. Hose No. 2921 Removal

(1) Disconnect hose no. 2921 (1) from elbow (2).

(2) Disconnect and remove hose no. 2921 (1) from elbow (3).



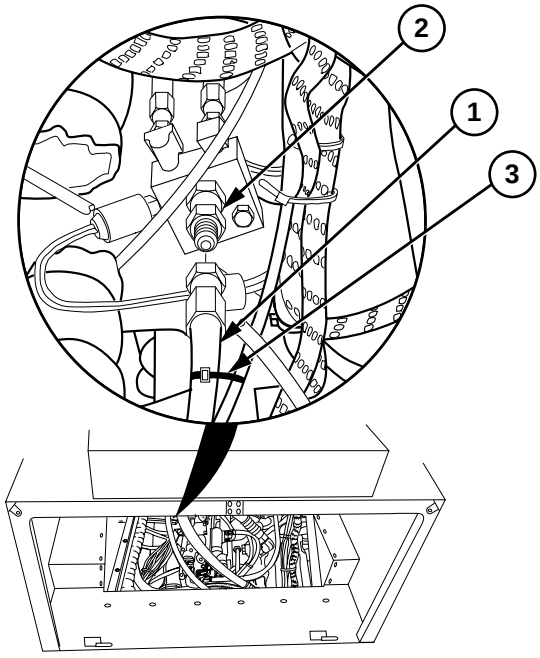
f. Hose No. 2260 Removal

(1) Disconnect hose no. 2260 (1) from check valve (2).

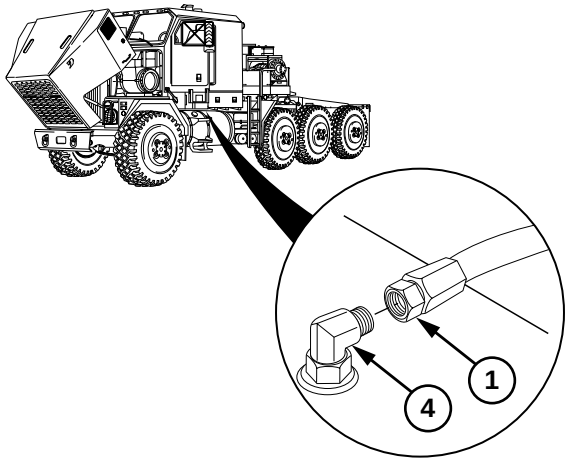
NOTE

Location of plastic cable ties should be marked before removal.

(2) Remove plastic cable ties (3) from hose no. 2260 (1) as required.



(3) Disconnect hose no. 2260 (1) from elbow (4).

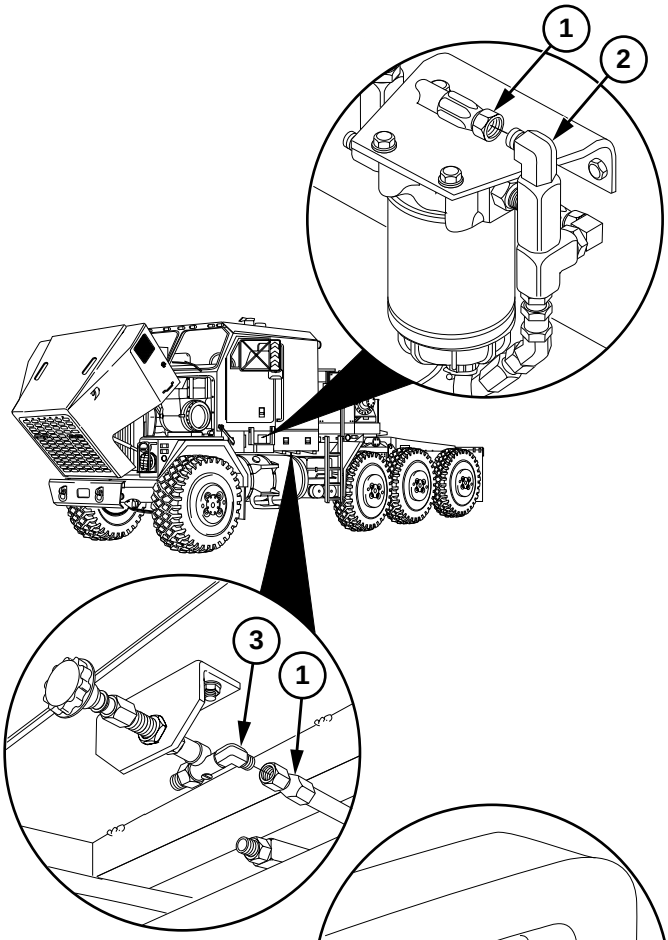


4-9. HOSES NO. 2320/2261/2919/2922/2921/2260/2920/2259/VENT HOSE AND FITTINGS REPLACEMENT (CONT)

g. Hose No. 2920 Removal

(1) Disconnect hose no. 2920 (1) from elbow (2).

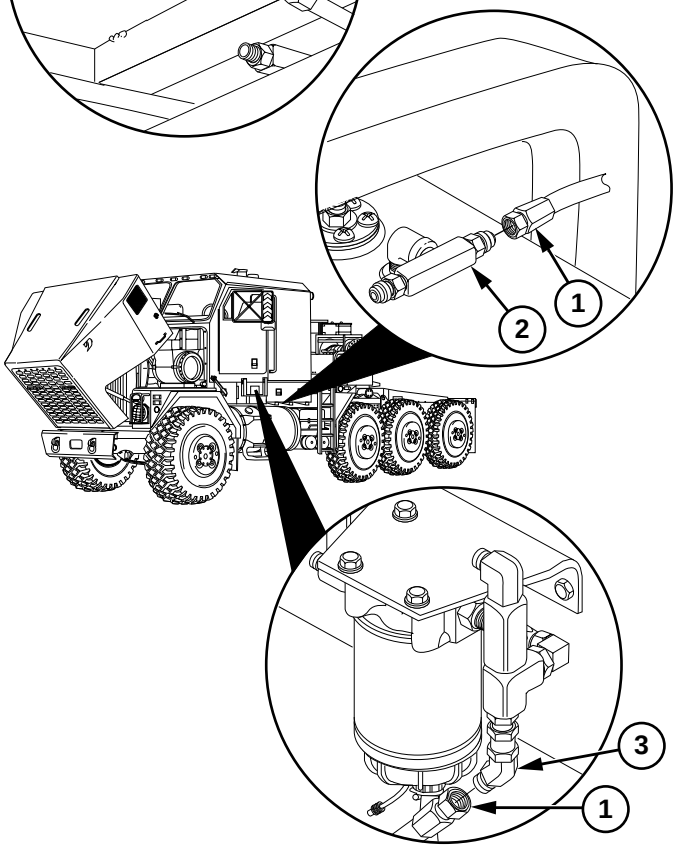
(2) Disconnect and remove hose no. 2920 (1) from elbow (3).



h. Hose No. 2259 Removal

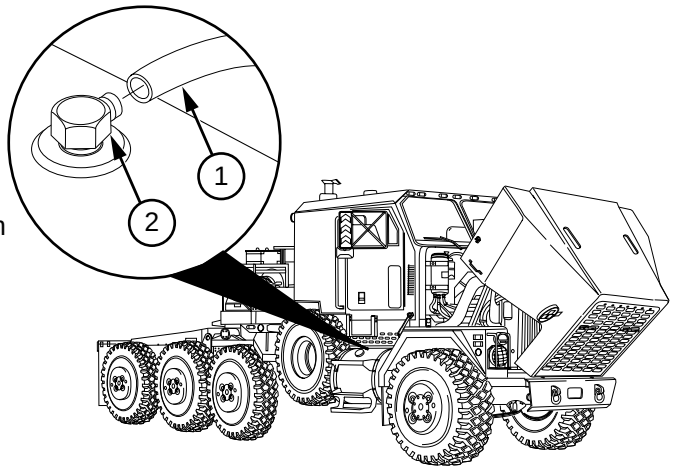
(1) Disconnect hose no. 2259 (1) from tee (2).

(2) Disconnect and remove hose no. 2259 (1) from elbow (3).

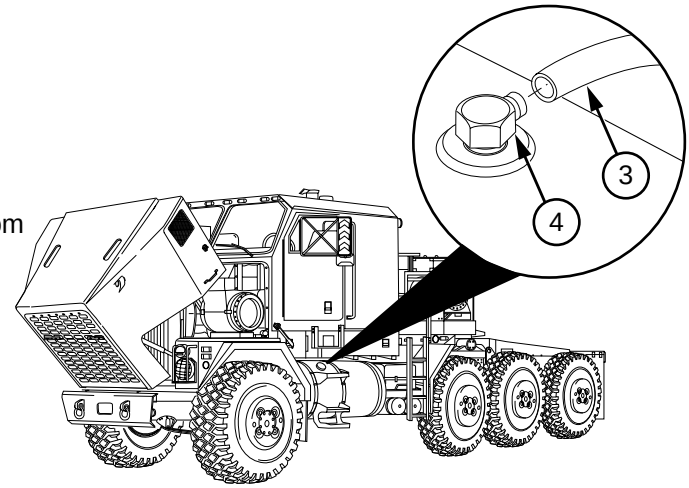


i. Vent Hose Removal

(1) Disconnect and remove vent hose (1) from vent valve (2) on right fuel tank.



(2) Disconnect and remove vent hose (3) from vent valve (4) on left fuel tank.



j. Cleaning/Inspection

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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

•The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).
•Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.
•Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.
•Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.
•Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.

(1) Clean all metal parts with solvent cleaning compound.

WARNING

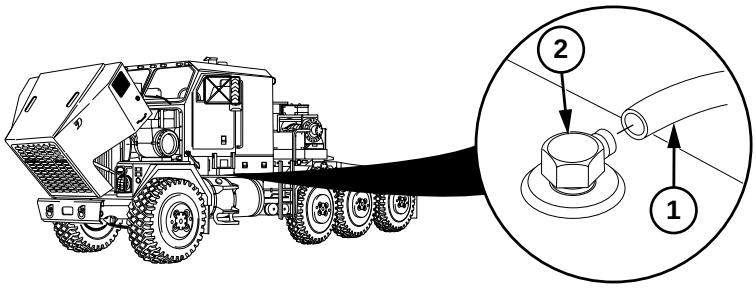
Compressed air for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

(2) Dry parts with compressed air.
(3) Inspect hoses for cracks and damage.
(4) Inspect all parts for damage. Replace all damaged parts.

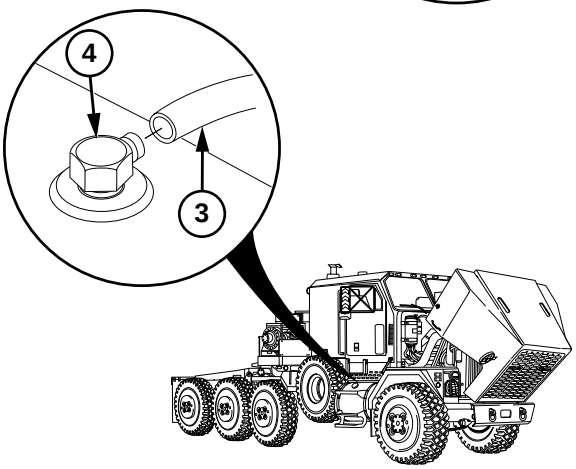
4-9. HOSES NO. 2320/2261/2919/2922/2921/2260/2920/2259/VENT HOSE AND FITTINGS REPLACEMENT (CONT)

k. Vent Hose Installation

(1) Connect vent hose (1) to vent valve (2) on left fuel tank.



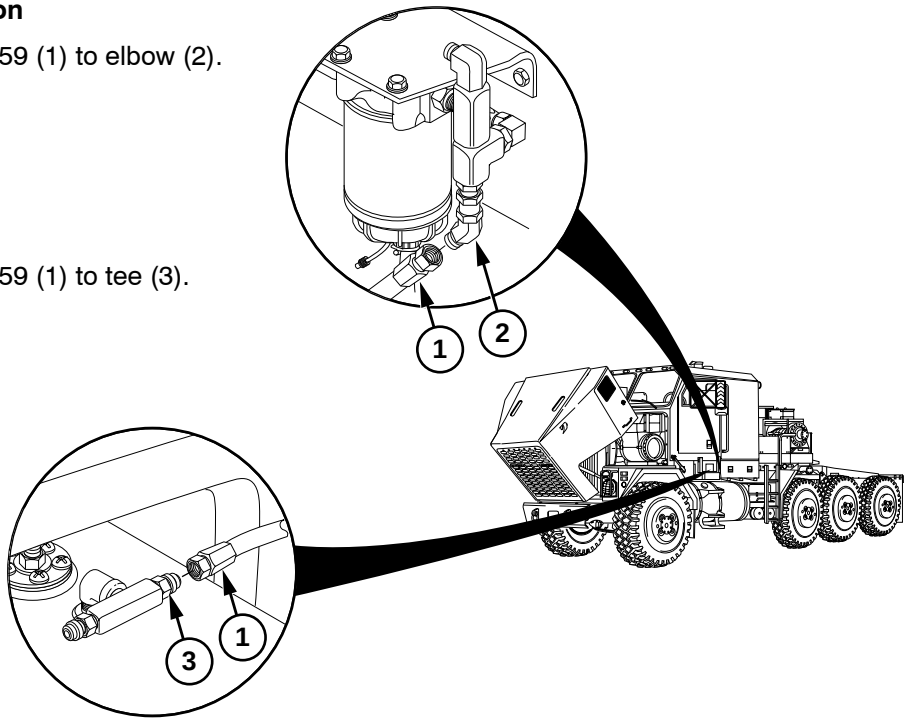
(2) Connect vent hose (3) to vent valve (4) on right fuel tank.



l. Hose No. 2259 Installation

(1) Connect hose no. 2259 (1) to elbow (2).

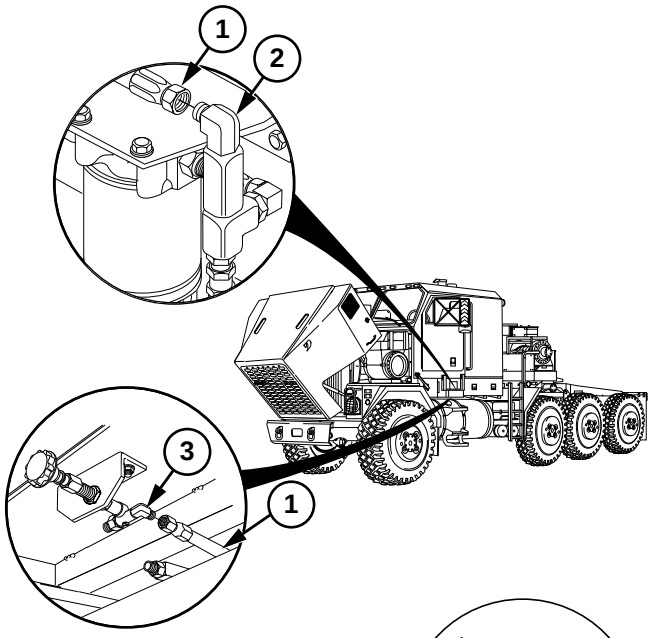
(2) Connect hose no. 2259 (1) to tee (3).



m. Hose No. 2920 Installation

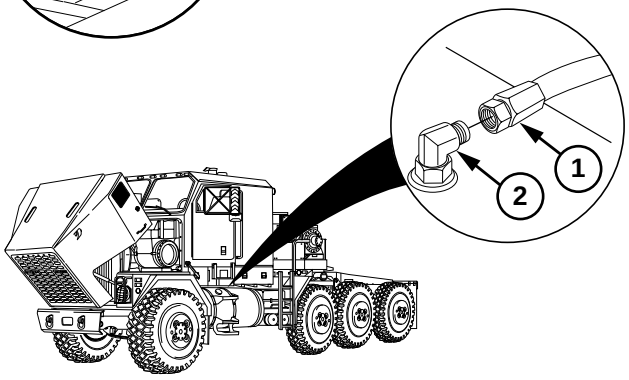
(1) Connect hose no. 2920 (1) to elbow (2).

(2) Connect hose no. 2920 (1) to elbow (3).



n. Hose No. 2260 Installation

(1) Connect hose no. 2260 (1) to elbow (2).

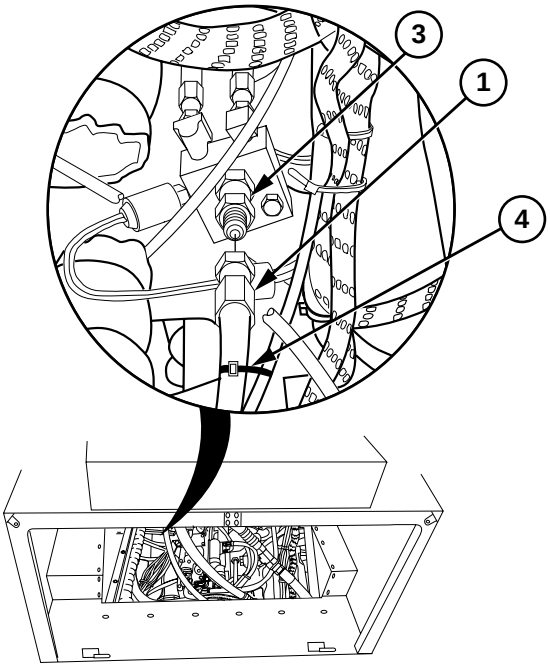


(2) Connect hose no. 2260 (1) to check valve (3).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(3) Secure hose no. 2260 (1) with plastic cable ties (4).

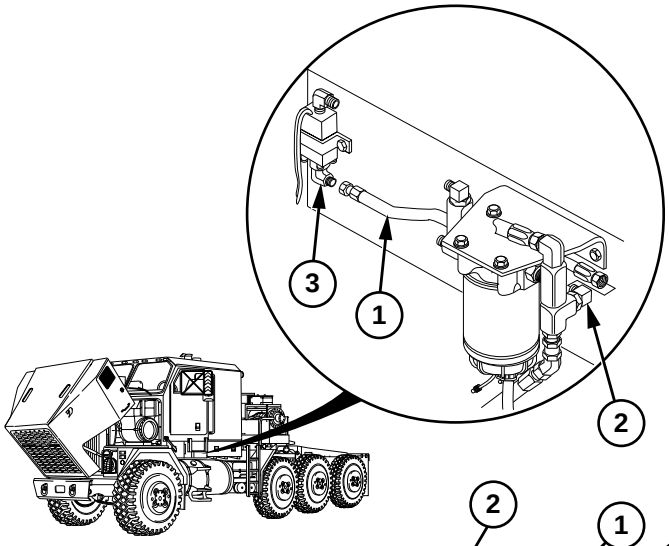


4-9. HOSES NO. 2320/2261/2919/2922/2921/2260/2920/2259/VENT HOSE AND FITTINGS REPLACEMENT (CONT)

o. Hose No. 2921 Installation

(1) Connect hose no. 2921 (1) to elbow (2).

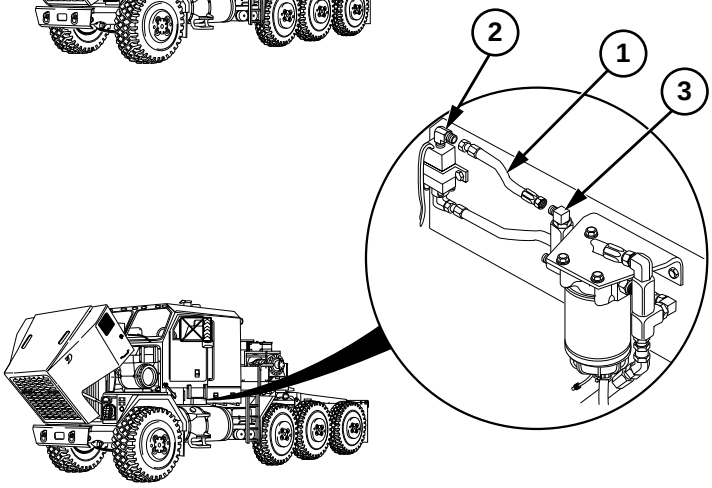
(2) Connect hose no. 2921 (1) to elbow (3).



p. Hose No. 2922 Installation

(1) Connect hose no. 2922 (1) to elbow (2).

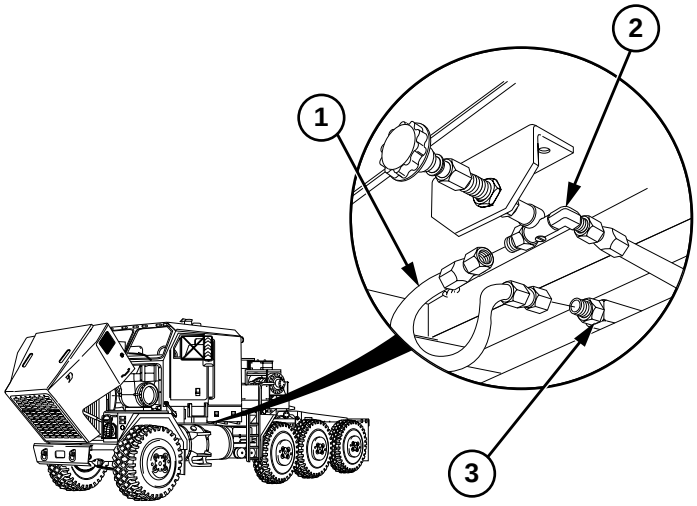
(2) Connect hose no. 2922 (1) to elbow (3).



q. Hose No. 2919 Installation

(1) Connect hose no. 2919 (1) to tee (2).

(2) Connect hose no. 2919 (1) to fitting (3).



r. Hose No. 2261 Installation

CAUTION

Hose no. 2261 (1) must be correctly routed behind filter. Failure to comply may result in damage to equipment.

(1) Connect hose no. 2261 (1) to elbow (2).

(2) Route hose no. 2261 (1) from elbow (2) to fuel pump fitting (3).

(3) Connect hose no. 2261 (1) to fuel pump fitting (3).

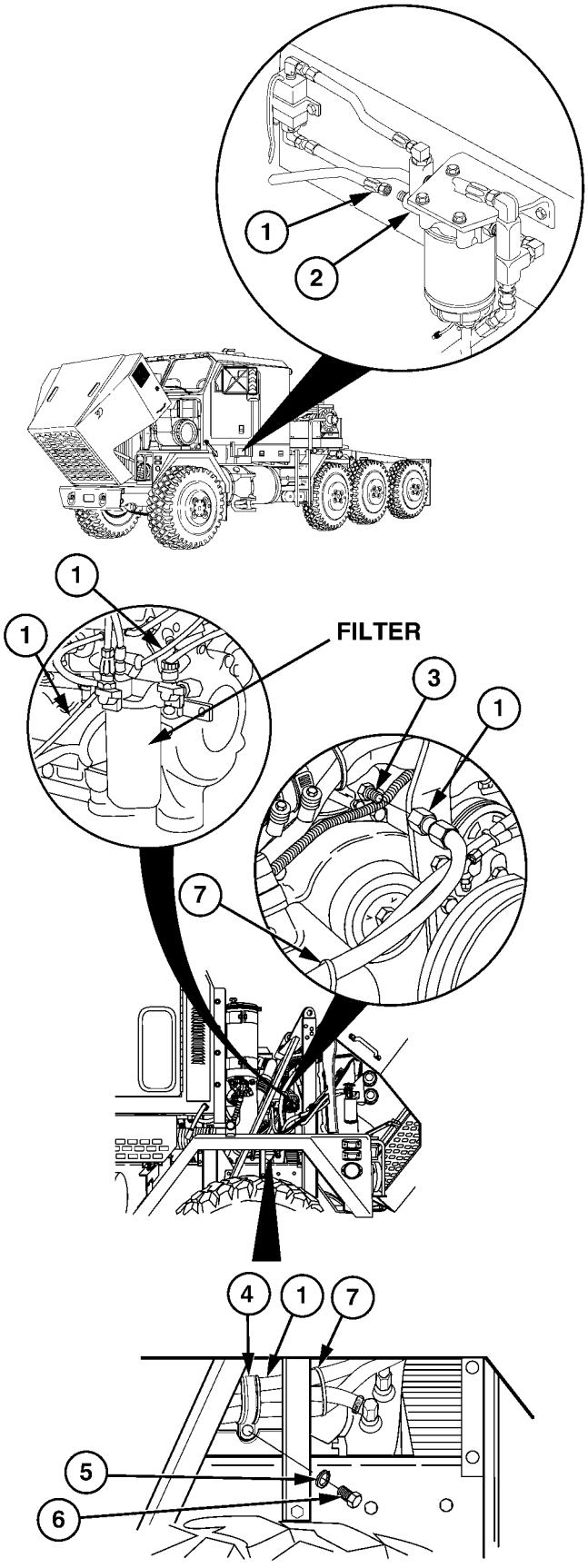
(4) Install clip (4) on hose no. 2261 (1). Position clips at mounting location on hose.

(5) Install clip (4) with new lockwasher (5) and screw (6). Torque to 156–204 lb–in (18–23 N·m).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(6) Secure hose no. 2261 (1) with plastic cable ties (7).



4-9. HOSES NO. 2320/2261/2919/2922/2921/2260/2920/2259/VENT HOSE AND FITTINGS REPLACEMENT (CONT)

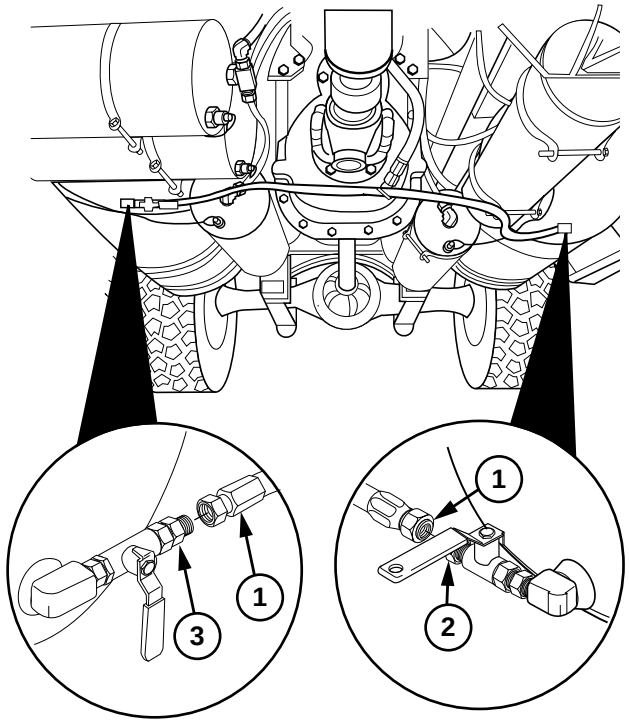
(7) Deleted.

s. Hose No. 2320 Installation

(1) Route hose no. 2320 (1) under HET Tractor from adapter (2) to adapter (3).

(2) Connect hose no. 2320 (1) to adapter (2).

(3) Connect hose no. 2320 (1) to adapter (3).



(4) Install clip (4) on hose no. 2320 (1).

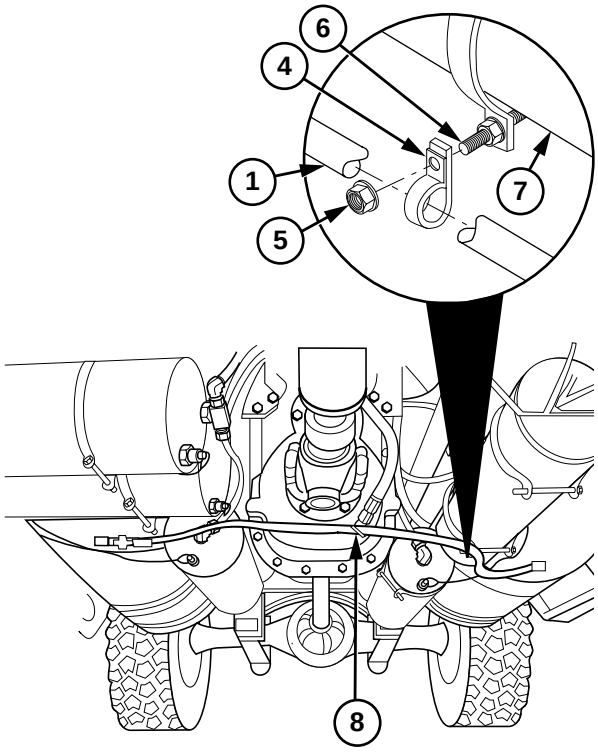
(5) Install clip (4) with new locknut (5) on screw (6) on air reservoir (7).

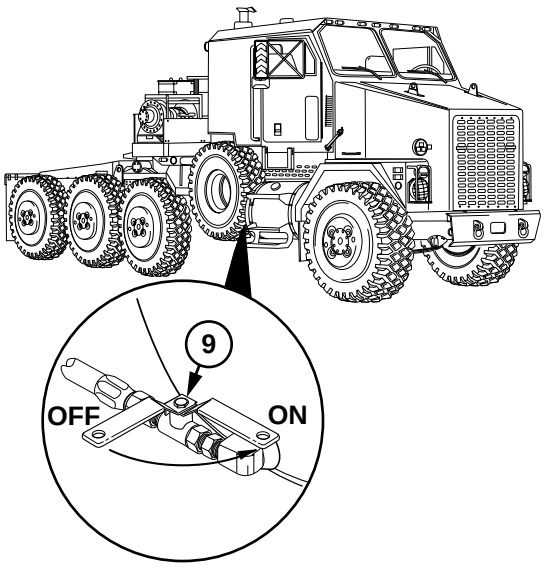
NOTE

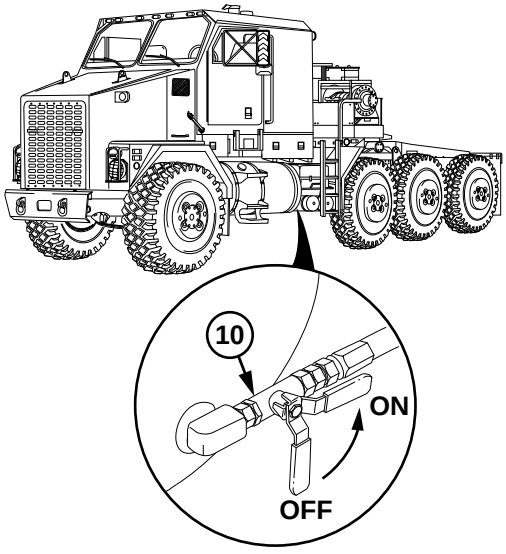
Plastic cable ties should be positioned in locations marked during removal.

(6) Secure hose no. 2320 (1) with plastic cable ties (8).

(7) Turn shutoff valves (9 and 10) counterclockwise to on position.







t. Follow-On Maintenance

(1) Install lower engine access panel (para 16-2).

(2) Deleted.

(3) Start engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Shut off engine (TM 9-2320-360-10).

(6) Install inner fender (para 16-34).

4-10. ENGINE FUEL LINES/RETURN BLOCK REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

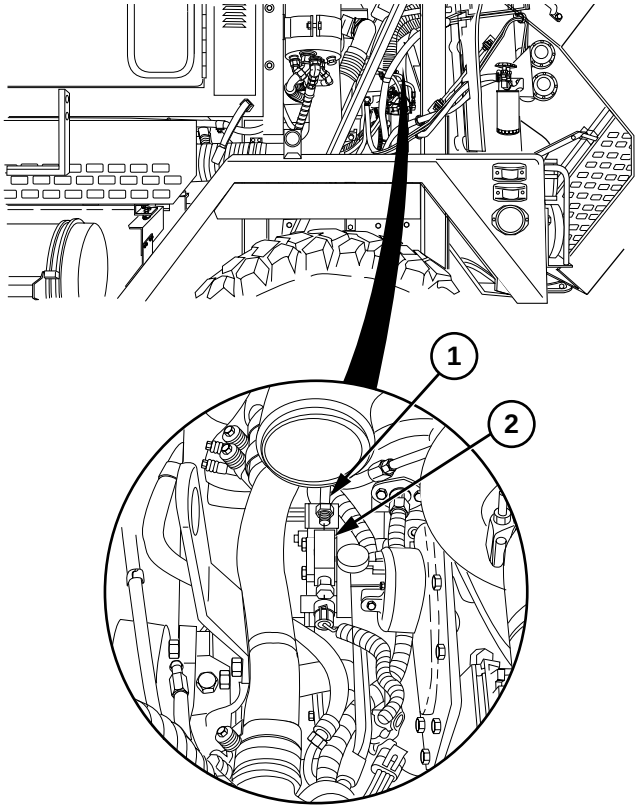
Equipment Conditions
Batteries disconnected (para 7-61).
12-Volt engine circuit breaker bracket removed (para 7-79) (Fuel block to left cylinder head fuel line only).
ECM removed (para 7-29 or para 7-29.1) (fuel pump to ECM fuel line, left cylinder head to right cylinder head fuel line, left cylinder head to secondary fuel filter fuel line, right cylinder head to secondary fuel filter fuel line only).
Left thermostat removed (para 6-5) (left cylinder head to right cylinder head fuel line only).
STE/ICE fuel return pressure transducer removed (para 7-85) (fuel return block only).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Lockwashers (3) (Item 103, Appendix G)
Lockwashers (2) (Item 96, Appendix G)
Lockwasher (Item 102, Appendix G)

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire 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. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.



a. Fuel Pump to ECM Fuel Line Removal

Remove fuel line (1) from fuel pump (2).

b. Fuel Pump to ECM Fuel Line Installation

Install fuel line (1) on fuel pump (2).

c. ECM to Secondary Fuel Filter Fuel Line Removal

(1) Remove fuel line (1) from ECM (2).

NOTE

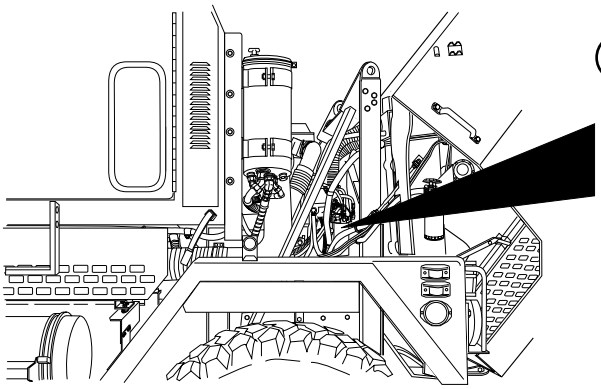
Location of plastic cable ties should be marked before removal.

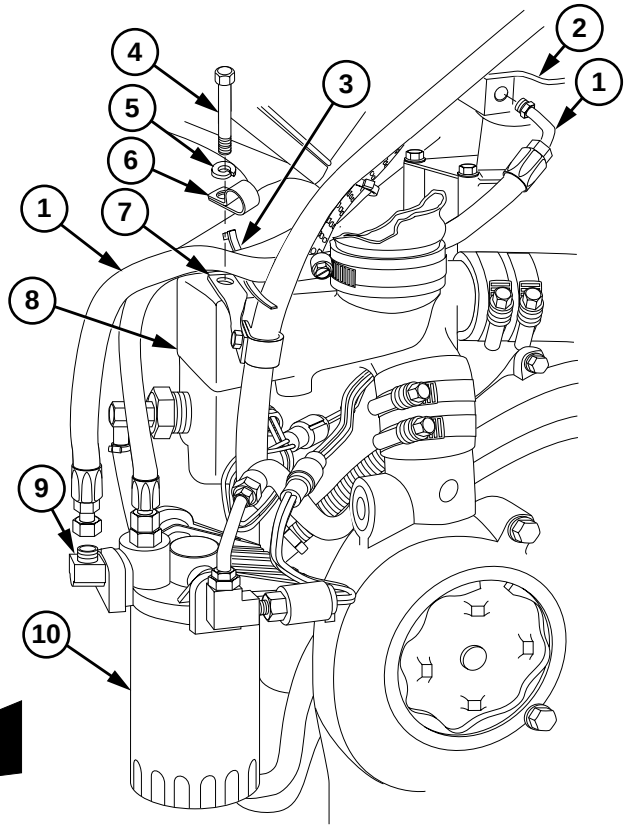
(2) Remove plastic cable tie (3) from fuel line (1) as required.

(3) Remove screw (4), lockwasher (5), clip (6), and bracket (7) from right thermostat housing (8). Discard lockwasher.

(4) Remove clip (6) from fuel line (1).

(5) Remove fuel line (1) from elbow (9) on secondary fuel filter (10).





d. ECM to Secondary Fuel Filter Fuel Line Installation

(1) Install fuel line (1) on fitting (2) on secondary fuel filter (3).

(2) Install clip (4) on fuel line (1).

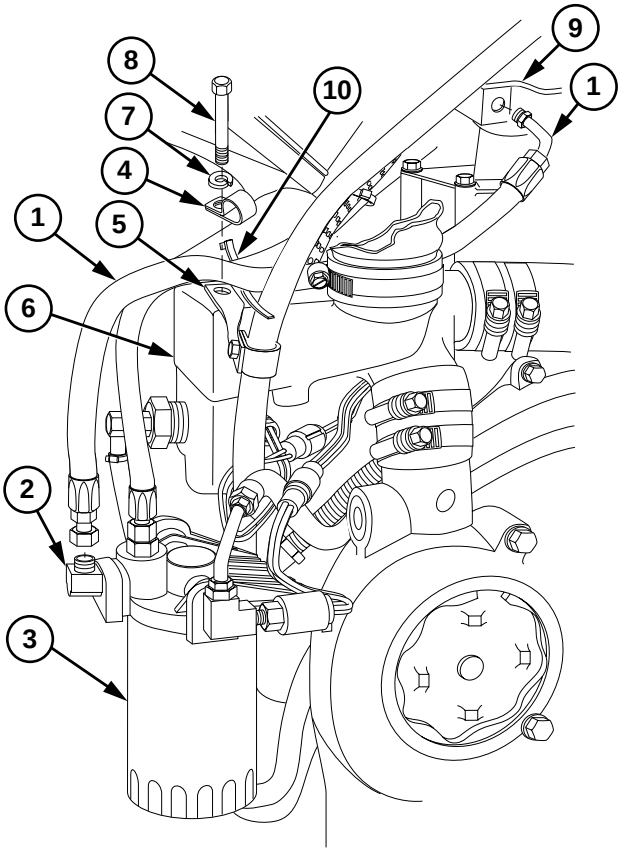
(3) Install bracket (5) and clip (4) on right thermostat housing (6) with new lockwasher (7) and screw (8).

(4) Install fuel line (1) on ECM (9).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(5) Secure fuel line (1) with plastic cable tie (10).



4-10. ENGINE FUEL LINES/RETURN BLOCK REPLACEMENT (CONT)

e. Secondary Fuel Filter to Fuel Block Fuel Line Removal

(1) Remove fuel line (1) from fitting (2) on secondary fuel filter (3).

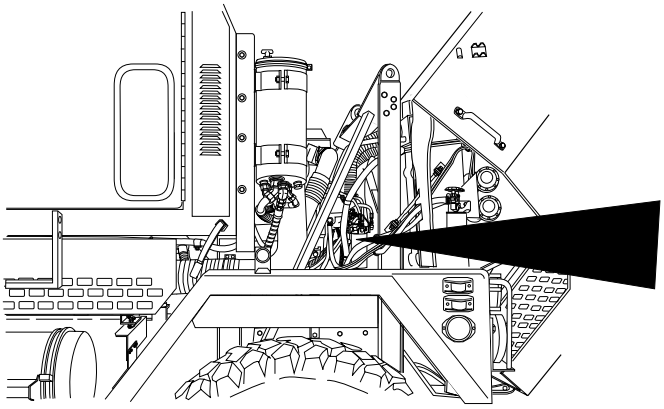
NOTE

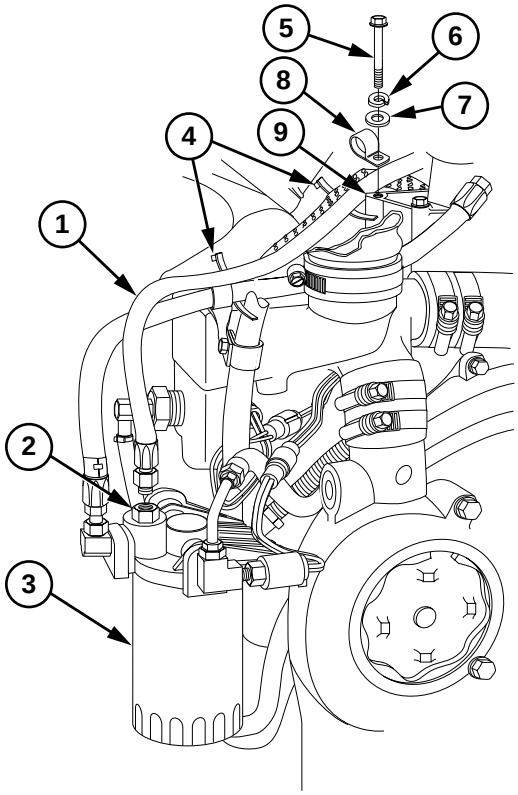
Location of plastic cable ties should be marked before removal.

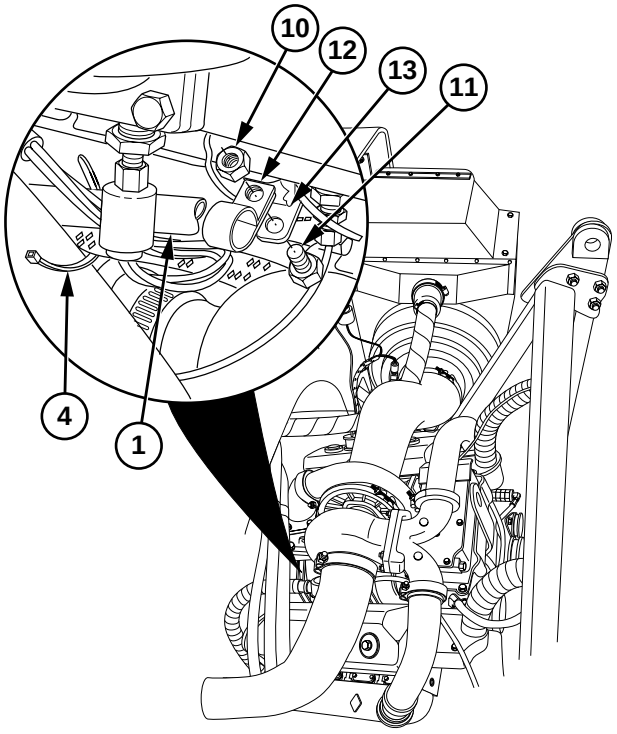
(2) Remove two plastic cable ties (4) from fuel line (1) as required.

(3) Remove screw (5), lockwasher (6), washer (7), and clip (8) from ECM bracket (9). Discard lockwasher.

(4) Remove clip (8) from fuel line (1).







(5) Remove nut (10), screw (11), and clip (12) from bracket (13).

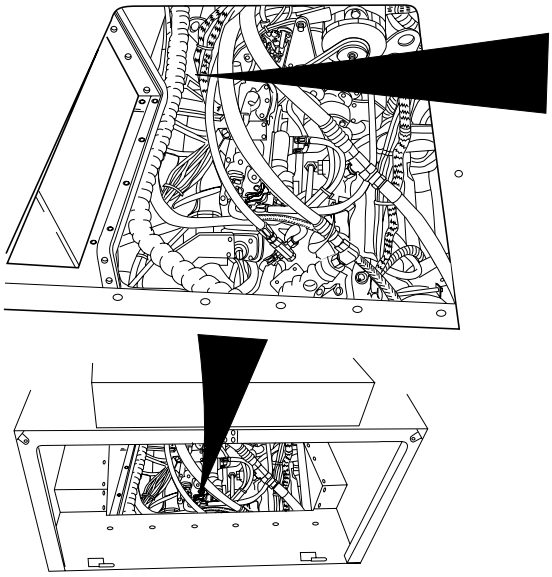
(6) Remove clip (12) from fuel line (1).

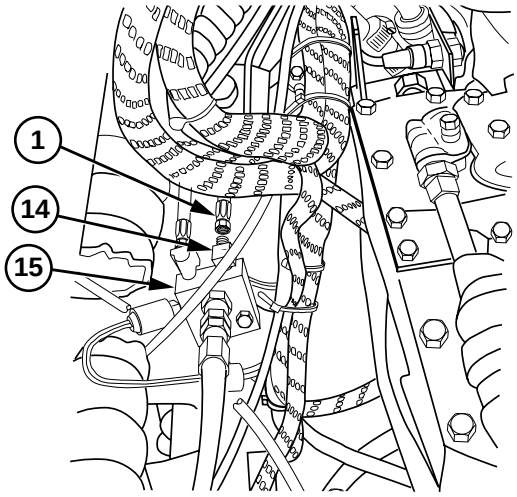
NOTE

Location of plastic cable ties should be marked before removal.

(7) Remove two plastic cable ties (4) from fuel line (1) as required.

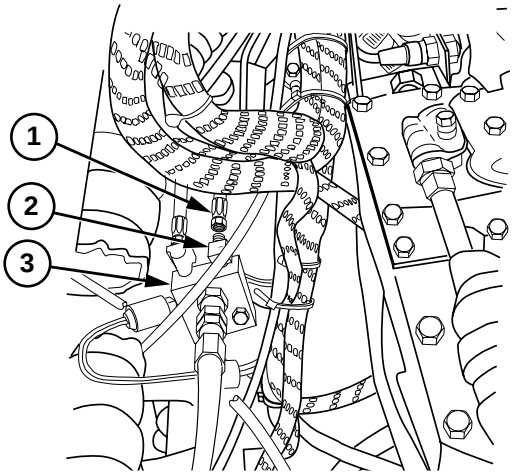
(8) Remove fuel line (1) from elbow (14) on fuel block (15).





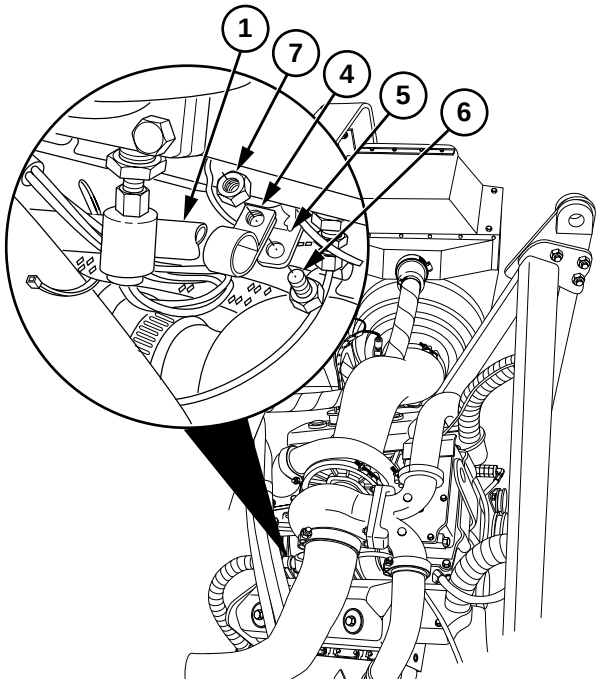
f. Secondary Fuel Filter to Fuel Block Fuel Line Installation

(1) Install fuel line (1) on elbow (2) on fuel block (3).



(2) Install clip (4) on fuel line (1).

(3) Install clip (4) on bracket (5) with screw (6) and nut (7).



4-10. ENGINE FUEL LINES/RETURN BLOCK REPLACEMENT (CONT)

(4) Install clip (8) on fuel line (1).

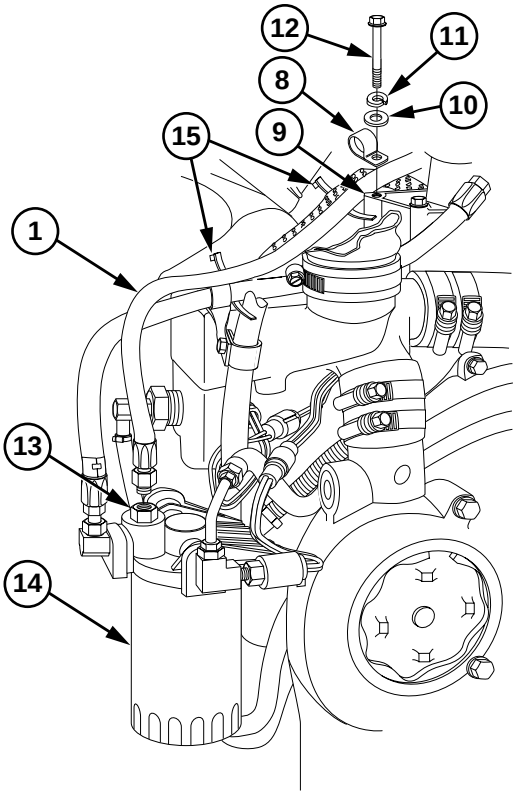
(5) Install clip (8) on ECM bracket (9) with washer (10), new lockwasher (11), and screw (12).

(6) Install fuel line (1) on fitting (13) on secondary fuel filter (14).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(7) Secure fuel line (1) with four plastic cable ties (15).



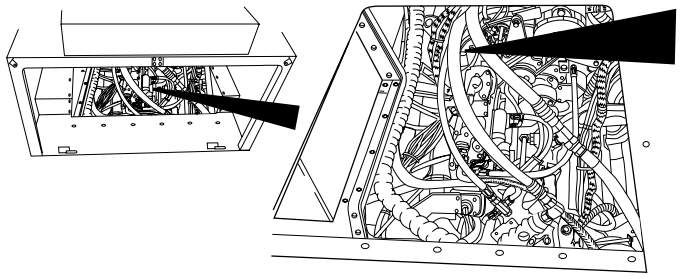
g. Fuel Block to Left Cylinder Head Fuel Line Removal

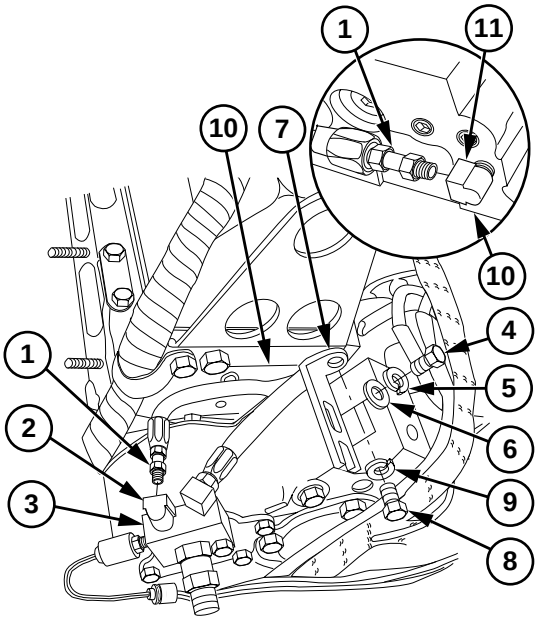
(1) Remove fuel line (1) from elbow (2) on fuel block (3).

(2) Remove two screws (4), washers (5), and lockwashers (6) from bracket (7). Discard lockwashers.

(3) Remove screw (8), lockwasher (9), and bracket (7) from cylinder head (10). Discard lockwasher.

(4) Remove fuel line (1) from elbow (11) on cylinder head (10).





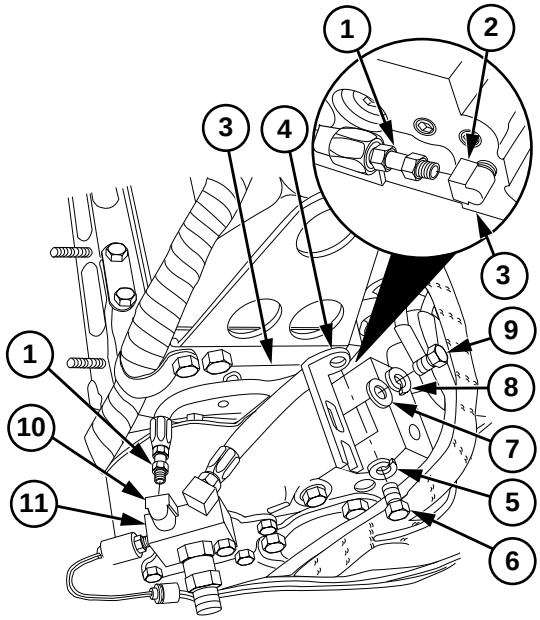
h. Fuel Block to Left Cylinder Head Fuel Line Installation

(1) Install fuel line (1) on elbow (2) on cylinder head (3).

(2) Install bracket (4) on cylinder head (3) with new lockwasher (5) and screw (6).

(3) Install two new lockwashers (7), washers (8), and screws (9) on bracket (4).

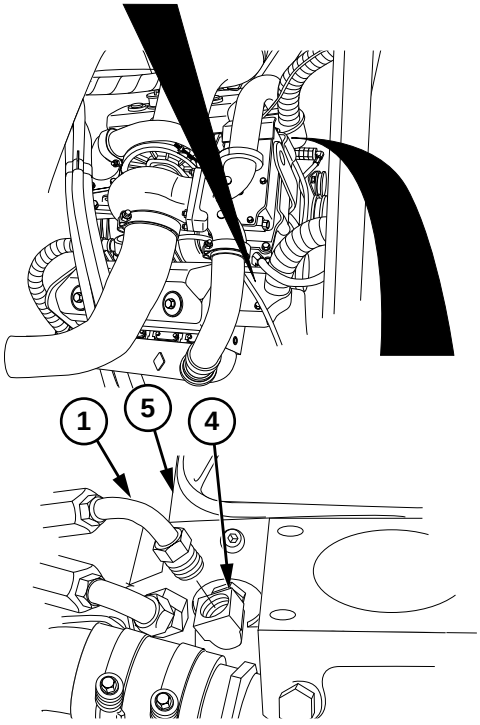
(4) Install fuel line (1) on elbow (10) on fuel block (11).



i. Left Cylinder Head to Right Cylinder Head Fuel Line Removal

(1) Remove fuel line (1) from elbow (2) on right cylinder head (3).

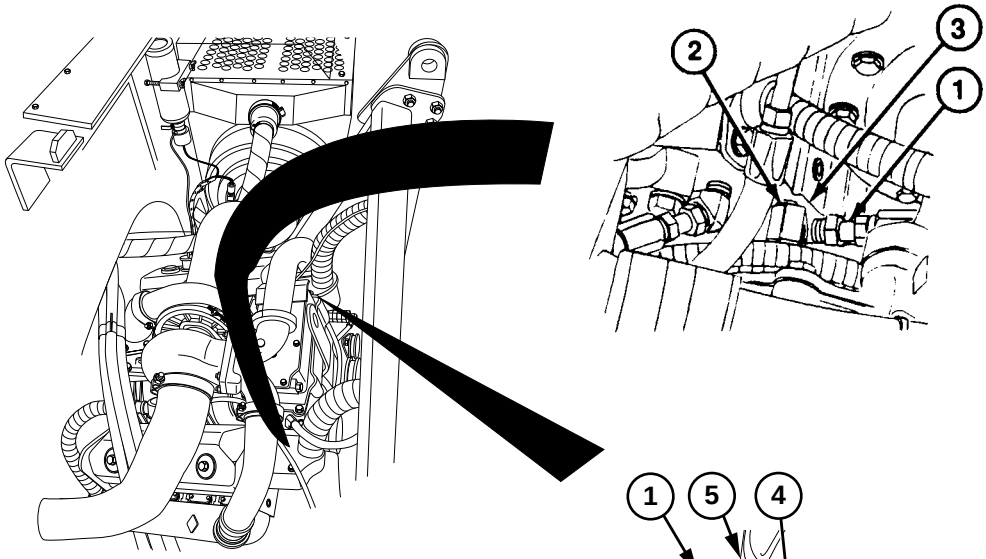
(2) Remove fuel line (1) from elbow (4) on left cylinder head (5).



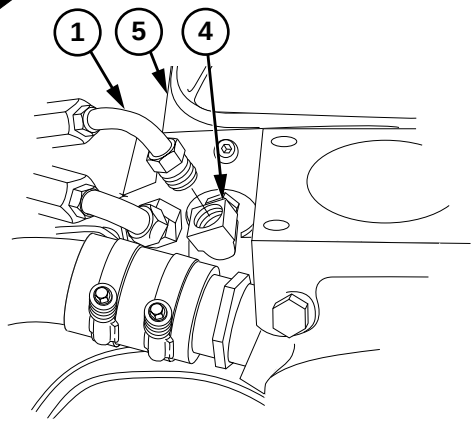
4-10. ENGINE FUEL LINES/RETURN BLOCK REPLACEMENT (CONT)

j. Left Cylinder Head to Right Cylinder Head Fuel Line Installation

(1) Install fuel line (1) on elbow (2) on right cylinder head (3).

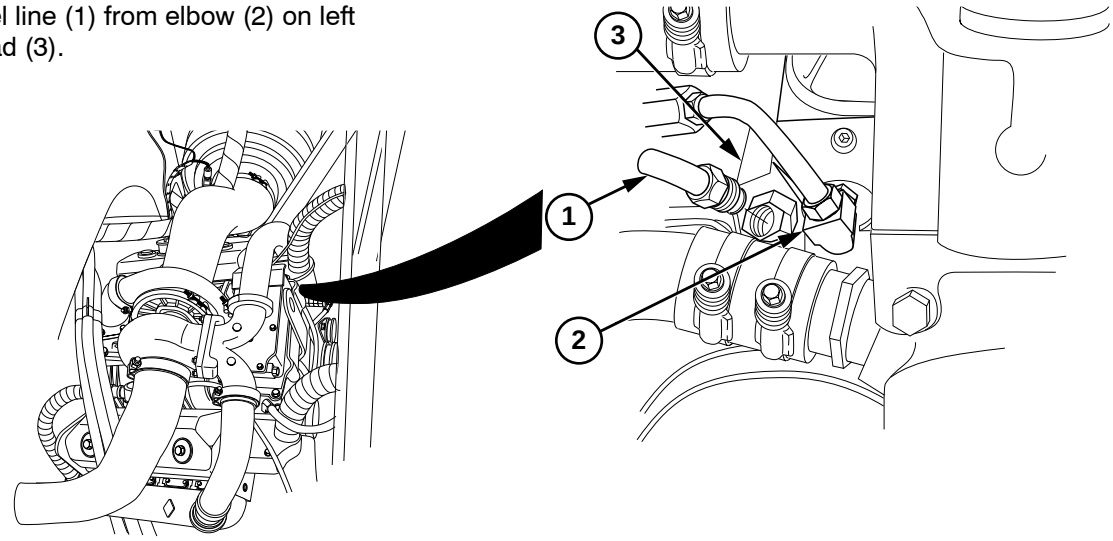


(2) Install fuel line (1) on elbow (4) on left cylinder head (5).

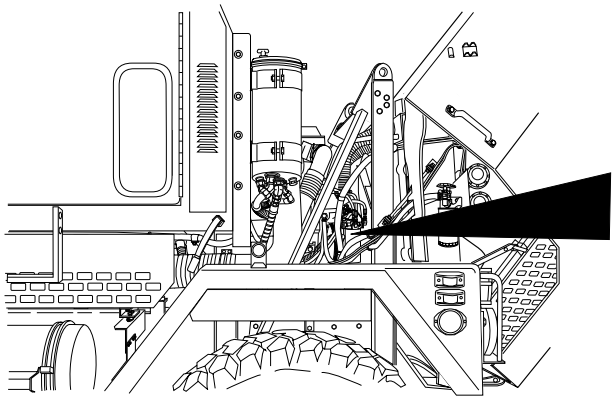


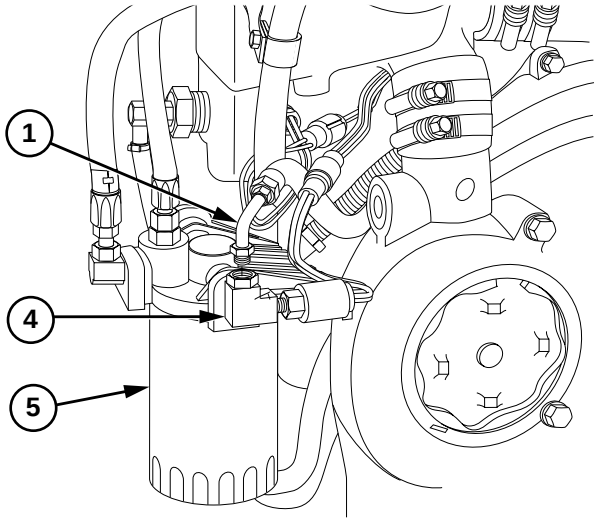
k. Left Cylinder Head to Secondary Fuel Filter Fuel Line Removal

(1) Remove fuel line (1) from elbow (2) on left cylinder head (3).



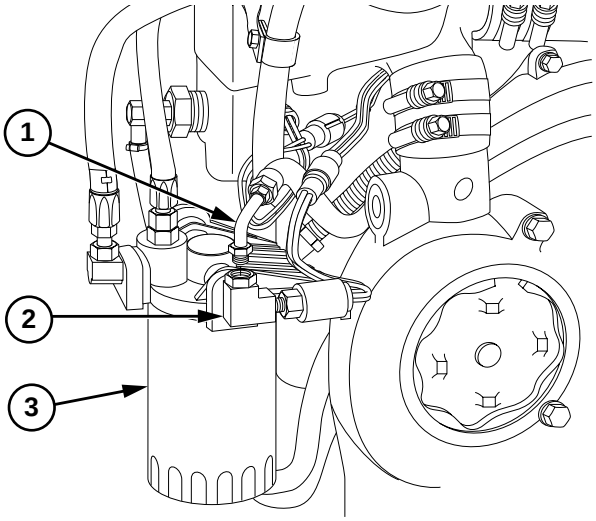
(2) Remove fuel line (1) from elbow (4) on secondary fuel filter (5).



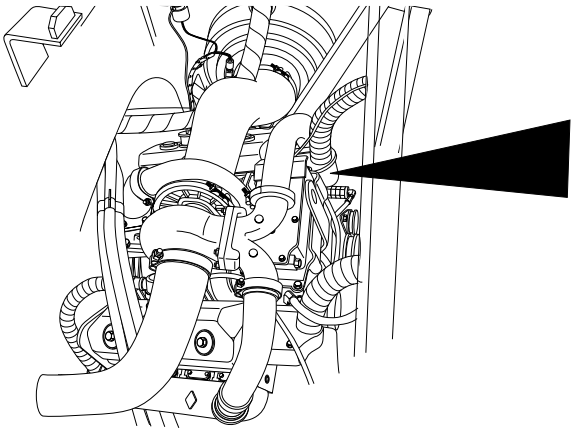


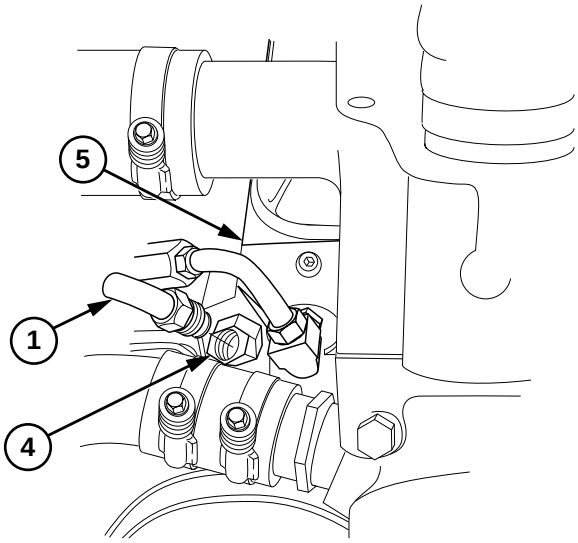
I. Left Cylinder Head to Secondary Fuel Filter Fuel Line Installation

(1) Install fuel line (1) on elbow (2) on secondary fuel filter (3).



(2) Install fuel line (1) on elbow (4) on left cylinder head (5).

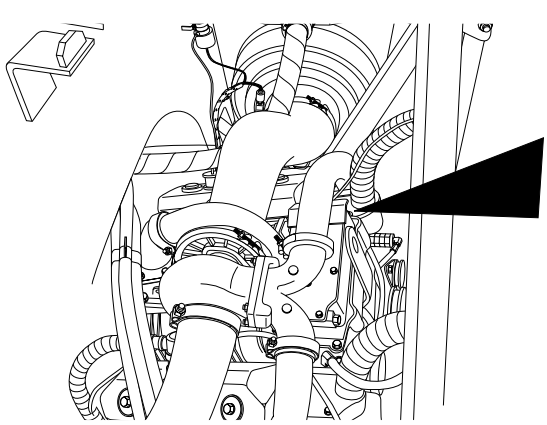


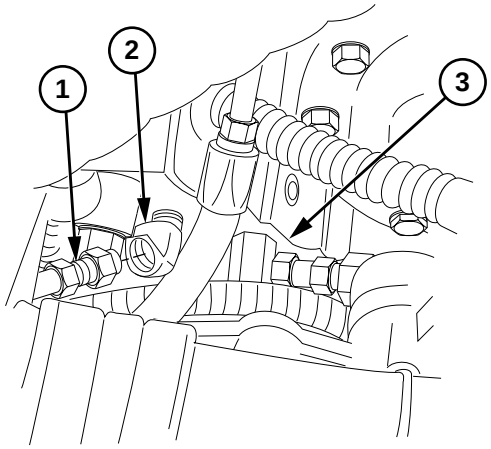


4-10. ENGINE FUEL LINES/RETURN BLOCK REPLACEMENT (CONT)

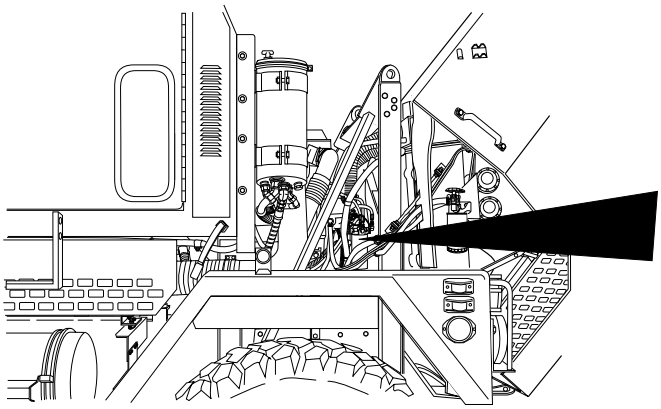
m. Right Cylinder Head to Secondary Fuel Filter Fuel Line Removal

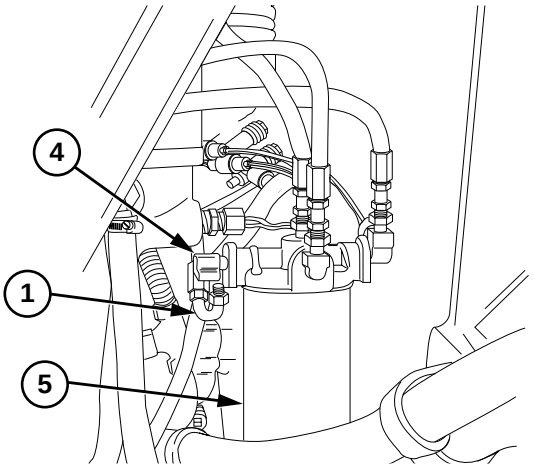
(1) Remove fuel line (1) from elbow (2) on right cylinder head (3).





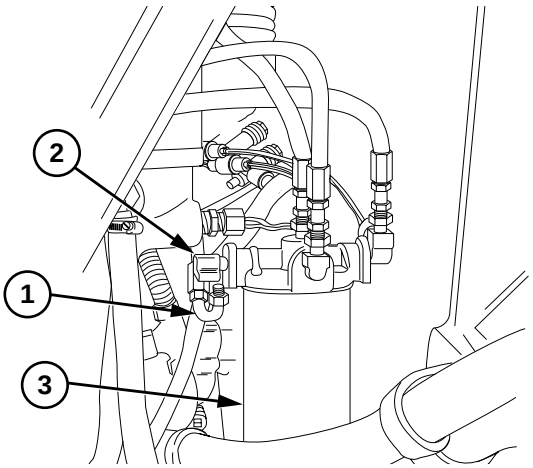
(2) Remove fuel line (1) from elbow (4) on secondary fuel filter (5).



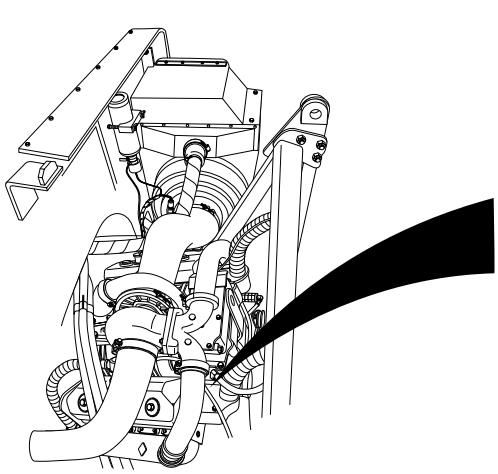


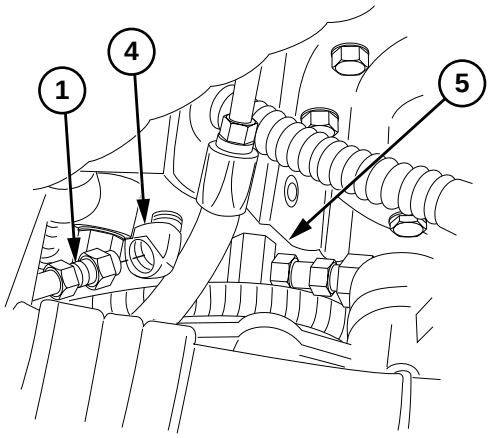
n. Right Cylinder Head to Secondary Fuel Filter Fuel Line Installation

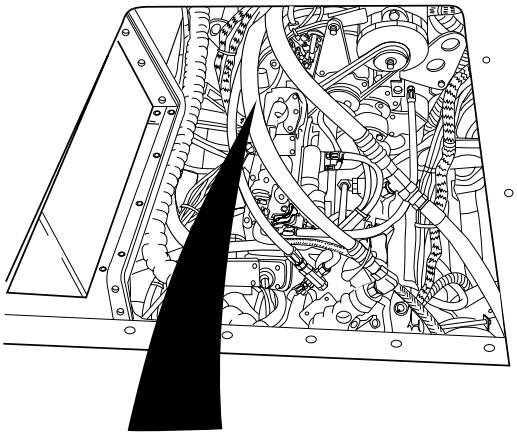
(1) Install fuel line (1) on elbow (2) on secondary fuel filter (3).



(2) Install fuel line (1) on elbow (4) on right cylinder head (5).







o. Fuel Return Block Removal

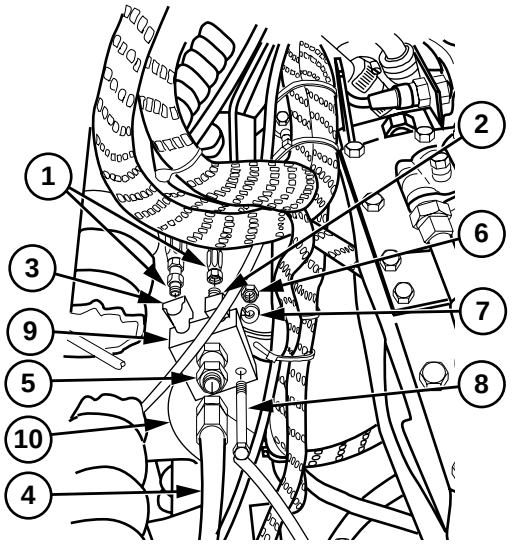
NOTE

Tag and mark fuel lines before removal.

(1) Remove two fuel lines (1) from elbow (2) and elbow (3).

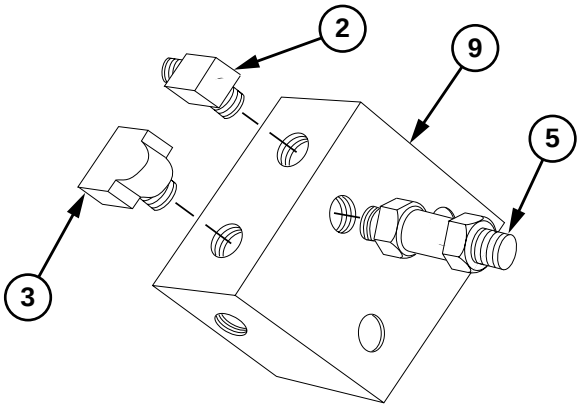
(2) Remove fuel return line no. 2260 (4) from check valve (5).

(3) Remove nut (6), lockwasher (7), screw (8), and fuel return block (9) from flywheel housing (10).



4-10. ENGINE FUEL LINES/RETURN BLOCK REPLACEMENT (CONT)

(4) Remove elbow (2), elbow (3), and check valve (5) from fuel return block (9).



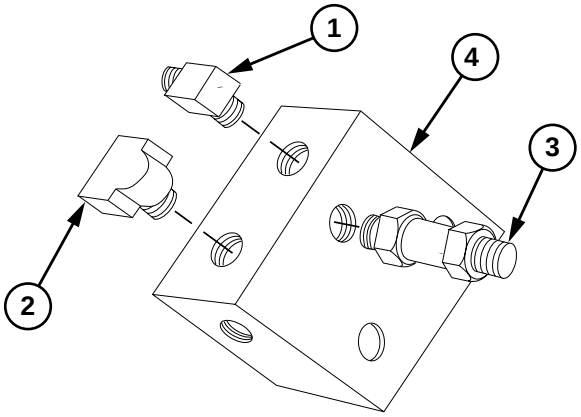
p. Fuel Return Block Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep compound away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of elbow (1), elbow (2), and check valve (3) with pipe thread sealing compound.

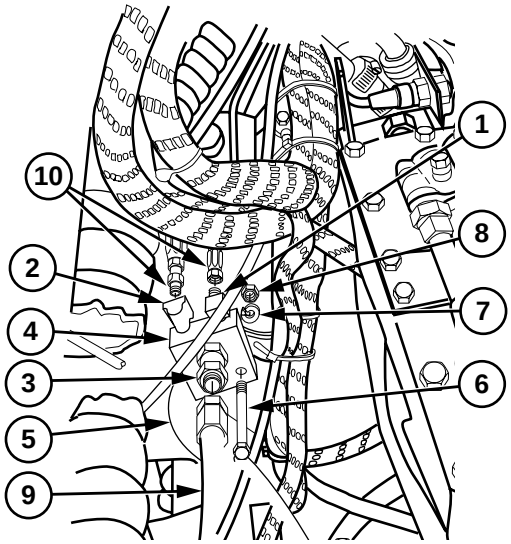
(2) Install elbow (1), elbow (2), and check valve (3) on fuel return block (4).



(3) Install fuel return block (4) on flywheel housing (5) with screw (6), new lockwasher (7), and nut (8).

(4) Install return fuel line no. 2260 (9) on check valve (3).

(5) Install two fuel lines (10) on elbow (1) and elbow (2).



q. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Install 12-volt engine circuit breaker bracket (para 7-79).

(3) Install ECM (para 7-29 or para 7-29.1).

(4) Install left thermostat (para 6-5).

(5) Install STE/ICE fuel return pressure transducer (para 7-85).

4-11. FUEL/WATER SEPARATOR SERVICE

This task covers:
a. Service
b. Follow-On Maintenance

INITIAL SETUP

Equipment ConditionsMaterials/Parts
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Oil, Lubricating (Item 26, Appendix C)
Rags (Item 28, Appendix C)
Element, Filter (Item 22, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)

a. Service

(1) Place drain pan under drain hose (1).

(2) Disconnect wire plug (2) from receptacle (3).

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire 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. When working with fuel, post signs that read: NO SMOKING WITHIN 50 FEET OF VEHICLE.

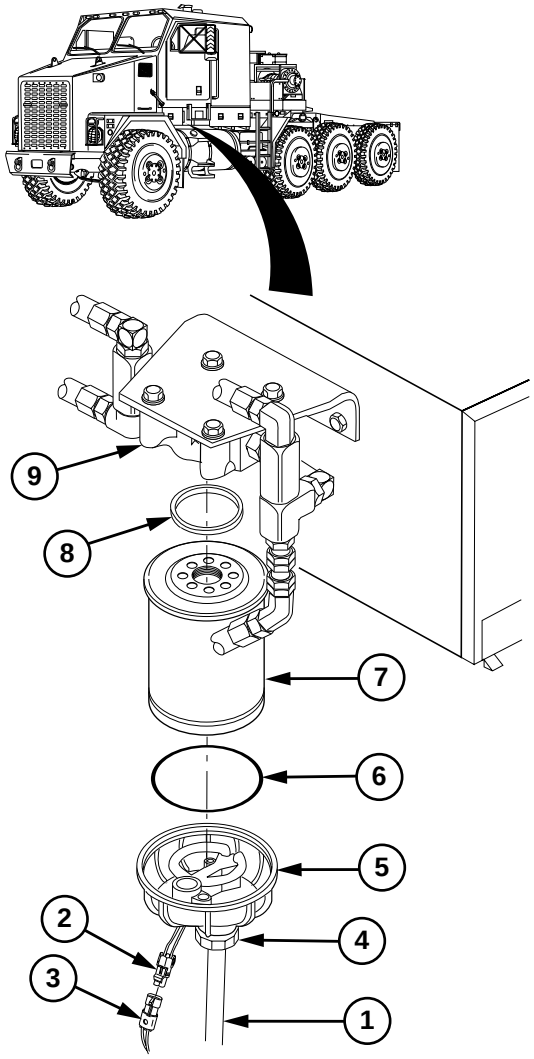
(3) Turn drain valve (4) two full turns and drain fuel from fuel/water separator.

(4) Close drain valve (4).

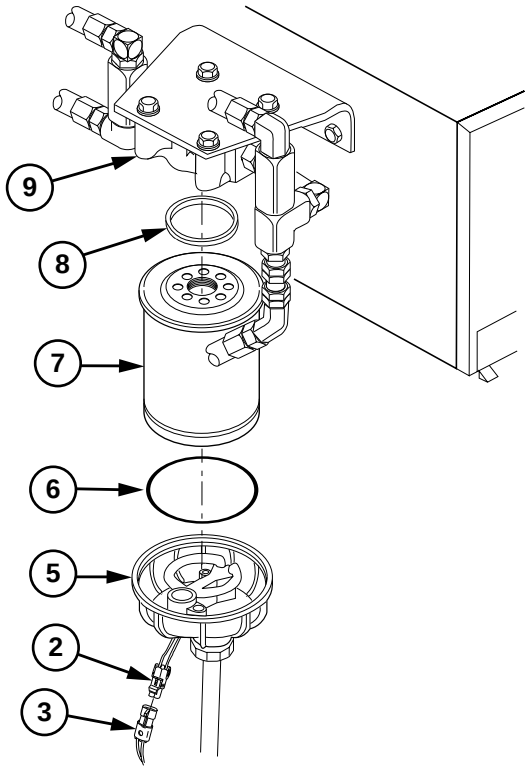
(5) Remove sediment bowl (5) and preformed packing (6) from filter element (7). Discard preformed packing.

(6) Remove filter element (7) and gasket (8) from fuel/water separator housing (9). Discard filter element and gasket.

(7) Clean foreign material from sediment bowl (5).



4-11. FUEL/WATER SEPARATOR SERVICE (CONT)



(8) Install sediment bowl (5) and new preformed packing (6) on new filter element (7).

(9) Fill filter element (7) and sediment bowl (5) with fuel.

(10) Coat new gasket (8) with lubricating oil.

(11) Install new gasket (8) on filter element (7).

(12) Install filter element (7) on fuel/water separator housing (9). Tighten 2/3 turn after gasket contacts housing.

(13) Connect wire plug (2) to receptacle (3).

b. Follow-On Maintenance

(1) Prime hand priming pump (TM 9-2320-360-10).

(2) Start engine (TM 9-2320-360-10).

(3) Check for leaks.

(4) Shut off engine (TM 9-2320-360-10).

(5) Remove wheel chocks.

4-12. FUEL/WATER SEPARATOR REPAIR

This task covers:
- a. Removal
- b. Disassembly
- c. Cleaning/Inspection
- d. Assembly
- e. Installation
- f. Follow-On Maintenance

INITIAL SETUP

Equipment ConditionsMaterials/Parts
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)

Adhesive-Sealant (Item 6, Appendix C)
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Oil, Lubricating (Item 26, Appendix C)
Rags (Item 28, Appendix C)
Tags, Identification (Item 32, Appendix C)
Element, Filter (Item 22, Appendix G)
Packings, Preformed (2) (Item 139, Appendix G)

a. Removal

(1) Place drain pan under drain hose (1).

(2) Disconnect wire plug (2) from receptacle (3).

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire 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. When working with fuel, post signs that read: NO SMOKING WITHIN 50 FEET OF VEHICLE.

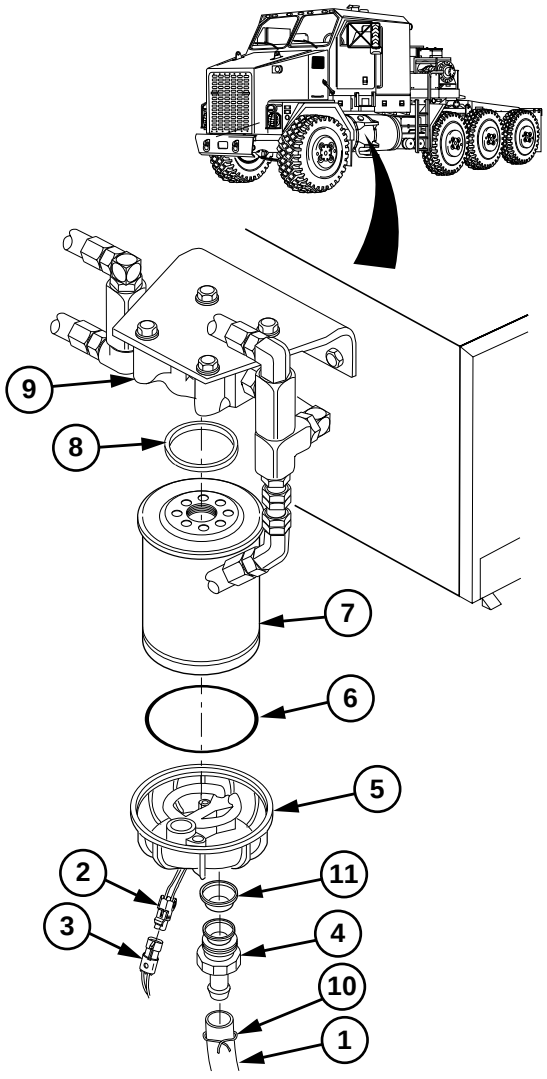
(3) Turn drain valve (4) two full turns and drain fuel from fuel/water separator.

(4) Remove sediment bowl (5) and preformed packing (6) from filter element (7). Discard preformed packing.

(5) Remove filter element (7) and gasket (8) from housing (9). Discard filter element and gasket.

(6) Remove clamp (10) and hose (1) from drain valve (4).

(7) Remove drain valve (4) and seal (11) from sediment bowl (5).



4-12. FUEL WATER/SEPARATOR REPAIR (CONT)

NOTE

Tag and mark hoses before removal.

(8) Remove hose no. 2922 (12) from elbow (13).

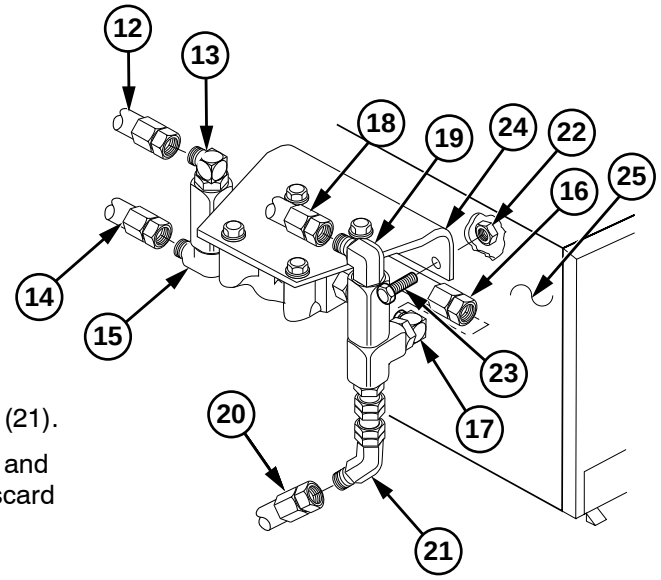
(9) Remove hose no. 2261 (14) from elbow (15).

(10) Remove hose no. 2921 (16) from elbow (17).

(11) Remove hose no. 2920 (18) from elbow (19).

(12) Remove hose no. 2259 (20) from elbow (21).

(13) Remove two locknuts (22), screws (23), and bracket (24) from stowage box (25). Discard locknuts.



b. Disassembly

(1) Remove four screws (1) and bracket (2) from housing (3).

(2) Place housing (3) in soft-jawed vise.

(3) Remove elbow (4) from reducer (5).

(4) Remove reducer (5) from tee (6).

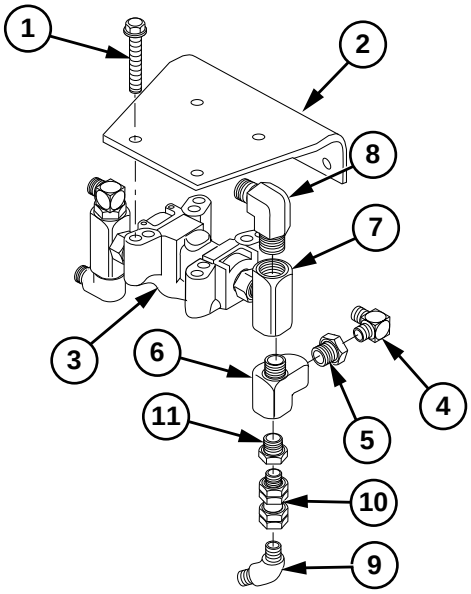
(5) Remove tee (6) from tee (7).

(6) Remove elbow (8) from tee (7).

(7) Remove elbow (9) from check valve (10).

(8) Remove check valve (10) from reducer (11).

(9) Remove reducer (11) from tee (6).



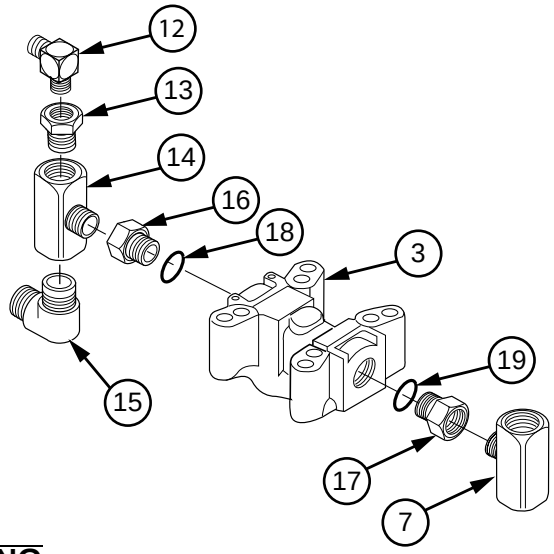
(10) Remove elbow (12) from reducer (13).

(11) Remove reducer (13) from tee (14).

(12) Remove elbow (15) from tee (14).

(13) Remove two tees (7 and 14) from adapters (16 and 17).

(14) Remove two adapters (16 and 17) and preformed packings (18 and 19) from housing (3). Discard preformed packings.



c. Cleaning/Inspection

WARNING

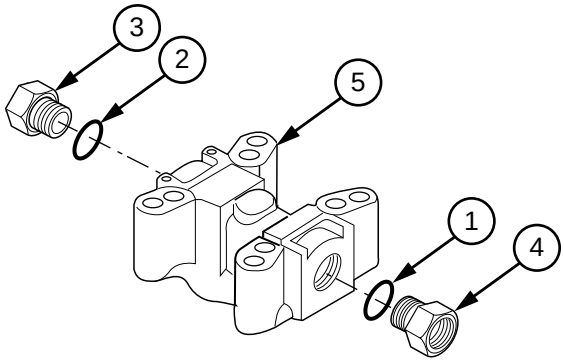
Solvent cleaning compound MIL-PRF-680 Type II and III may be irritating to the eyes and skin. Use protective gloves and goggles. Use in well-ventilated areas. Use respirator as needed. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous 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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

- **The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).**
- **Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.**
- **Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.**
- **Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.**
- **Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.**

(1) Clean all metal parts in solvent cleaning compound.
(2) Check threaded parts for crossed or stripped threads. Replace all damaged parts.
(3) Check all plastic parts for damage. Replace all damaged parts.

d. Assembly

(1) Install two new preformed packings (1 and 2) and adapters (3 and 4) on fuel/water separator housing (5).



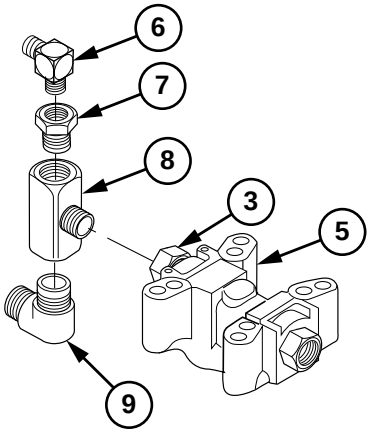
4-12. FUEL WATER/SEPARATOR REPAIR (CONT)

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(2) Coat threads of elbow (6), reducer (7), tee (8), and elbow (9) with pipe thread sealing compound.

NOTE

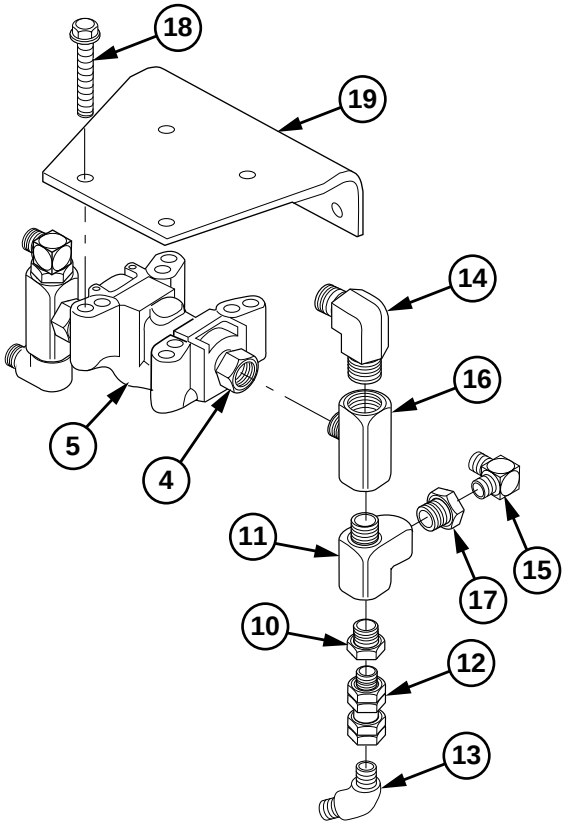
Direction of flow is marked by arrows on top of housing.

(3) Install tee (8) in adapter (3) on outlet side of housing (5).

(4) Install reducer (7) on tee (8).

(5) Install elbow (6) on reducer (7).

(6) Install elbow (9) on tee (8).



(7) Coat threads of reducer (10), tee (11), check valve (12), elbows (13, 14, and 15), tee (16), and reducer (17) with pipe thread sealing compound.

(8) Install tee (16) in adapter (4) on inlet side of housing (5).

(9) Install tee (11) on tee (16).

(10) Install reducer (10) on tee (11).

(11) Install check valve (12) on reducer (10).

(12) Install elbow (13) on check valve (12).

(13) Install elbow (14) on tee (16).

(14) Install reducer (17) on tee (11).

(15) Install elbow (15) on reducer (17).

(16) Coat threads of four screws (18) with adhesive-sealant.

(17) Install bracket (19) on housing (5) with four screws (18).

e. Installation

(1) Install bracket (1) on stowage box (2) with two screws (3) and new locknuts (4).

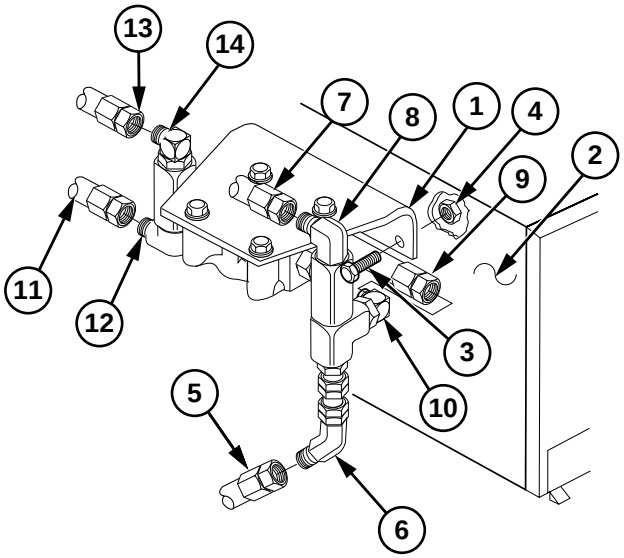
(2) Install hose no. 2259 (5) on elbow (6).

(3) Install hose no. 2920 (7) on elbow (8).

(4) Install hose no. 2921 (9) on elbow (10).

(5) Install hose no. 2261 (11) on elbow (12).

(6) Install hose no. 2922 (13) on elbow (14).

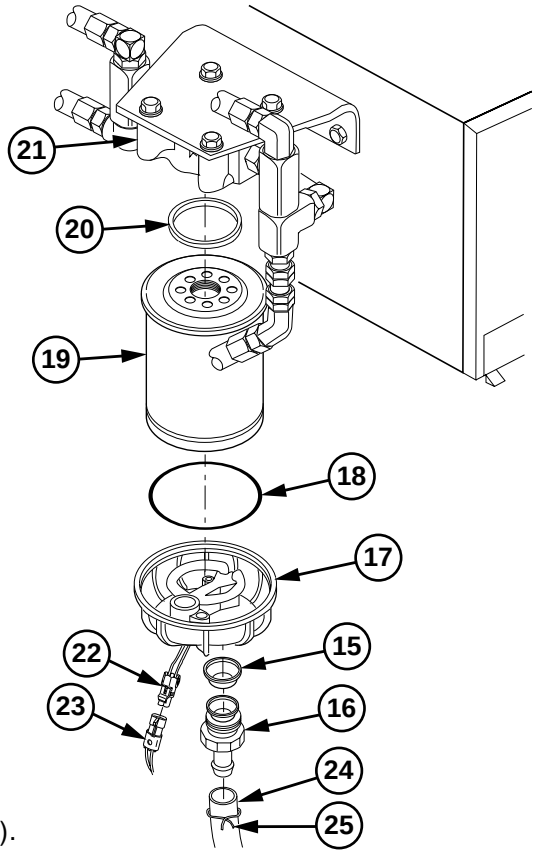


(7) Install seal (15) and drain valve (16) on sediment bowl (17).

(8) Install sediment bowl (17) and new preformed packing (18) on new filter element (19).

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire 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. When working with fuel, post signs that read: NO SMOKING WITHIN 50 FEET OF VEHICLE.



(9) Fill filter element (19) and sediment bowl (17) with fuel.

(10) Lubricate new gasket (20) with fuel. Install gasket (20) on filter element (19).

(11) Screw filter element (19), gasket (20), and sediment bowl (17) on housing (21). Tighten 2/3 turn after gasket contacts housing.

(12) Connect wire plug (22) to wire receptacle (23).

(13) Install hose (24) on drain valve (16) with clamp (25).

f. Follow-On Maintenance

(1) Prime hand priming pump (TM 9-2320-360-10).

(2) Start engine (TM 9-2320-360-10).

(3) Check for leaks.

(4) Shut off engine (TM 9-2320-360-10).

(5) Remove wheel chocks.

4-13. SECONDARY FUEL FILTER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment ConditionsMaterials/Parts
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Engine hood opened (TM 9-2320-360-10).
Wheels chocked.
Oil, Fuel, Diesel (Item 20, Appendix C)
Rags (Item 28, Appendix C)
Filter, Fuel (Item 29, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)

a. Removal

WARNING

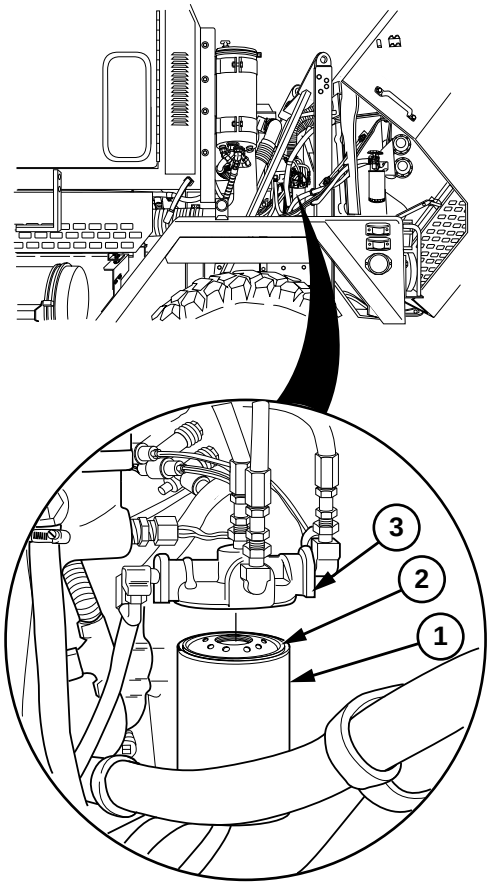
Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. When working with fuel, post signs that read: NO SMOKING WITHIN 50 FEET OF VEHICLE.

(1) Place drain pan under fuel filter (1).

NOTE
Fuel filter will be full of fuel.

(2) Remove fuel filter (1) with gasket (2) from housing (3) by turning counterclockwise. Discard fuel filter with gasket.

(3) Clean filter housing (3) with lint-free cloth.



b. Installation

(1) Fill new fuel filter (1) with clean diesel fuel oil.

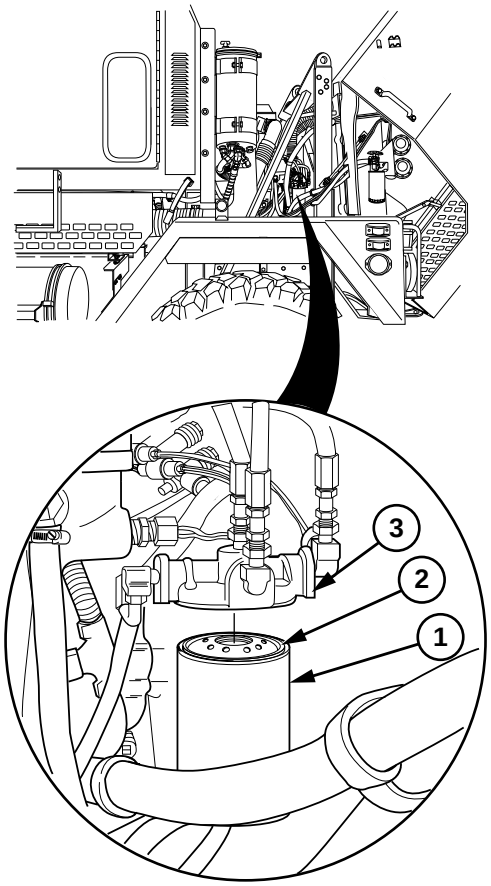
(2) Moisten new gasket (2) with diesel fuel oil.

CAUTION

Do not install secondary fuel filter with filter wrench. Hand-tighten only. Damage to filter may result.

(3) Install new fuel filter (1) on housing (3) by turning clockwise.

(4) Tighten until gasket (2) touches housing (3), then tighten additional 1/2 turn.



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check for leaks.

(3) Shut off engine (TM 9-2320-360-10).

(4) Close engine hood (TM 9-2320-360-10).

(5) Remove wheel chocks.

4-14. ETHER STARTING AID REPAIR

This task covers:
- a. Removal
- b. Disassembly
- c. Cleaning/Inspection
- d. Assembly
- e. Installation
- f . Follow-On Maintenance

INITIAL SETUP

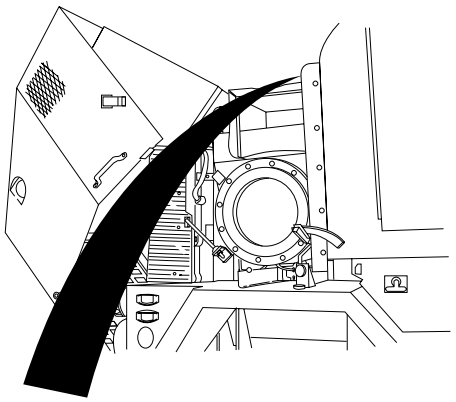
Equipment Conditions
Engine hood opened (TM 9-2320-360-10).
Inner fender removed (left side only) (para 16-34).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Compressor Unit, Air (Item 3, Appendix F)
Goggles, Industrial (Item 14, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Cleaning Compound, Solvent (Item 31, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Gasket (Item 32, Appendix G)
Lockwashers (4) (Item 101, Appendix G)
Lockwasher (Item 102, Appendix G)

WARNING

Starting fluid is toxic and highly flammable. Container is pressurized. Never heat container or discharge starting fluid in confined areas or near open flame. Failure to comply may result in injury to personnel. If injured, seek immediate medical attention.



a. Removal

NOTE
To service cylinder only, do steps (2) and (3).

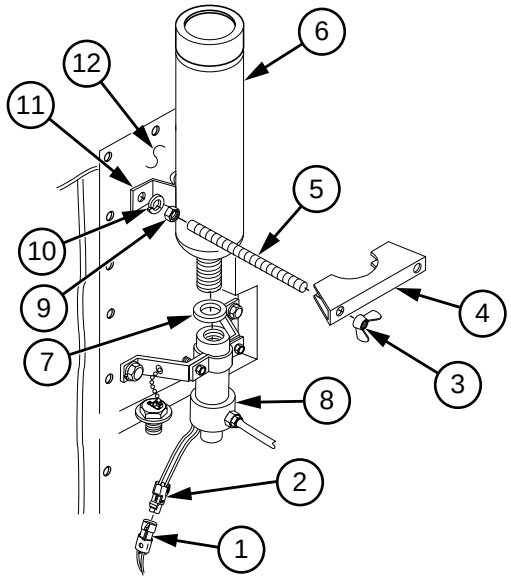
(1) Disconnect plug (1) from receptacle (2).

(2) Remove two wingnuts (3) and bracket (4) from studs (5).

NOTE
Cap should be installed on valve body whenever cylinder is not installed.

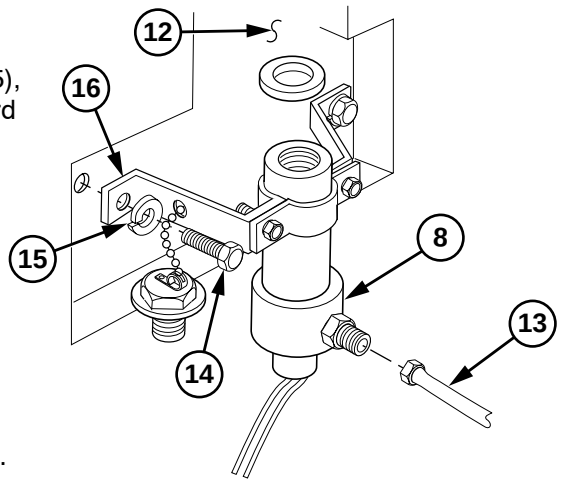
(3) Remove cylinder (6) and gasket (7) from valve (8) by turning counterclockwise. Discard gasket.

(4) Remove two studs (5), nuts (9), lockwashers (10), and bracket (11) from firewall (12). Discard lockwashers.



(5) Remove ether line (13) from valve (8).

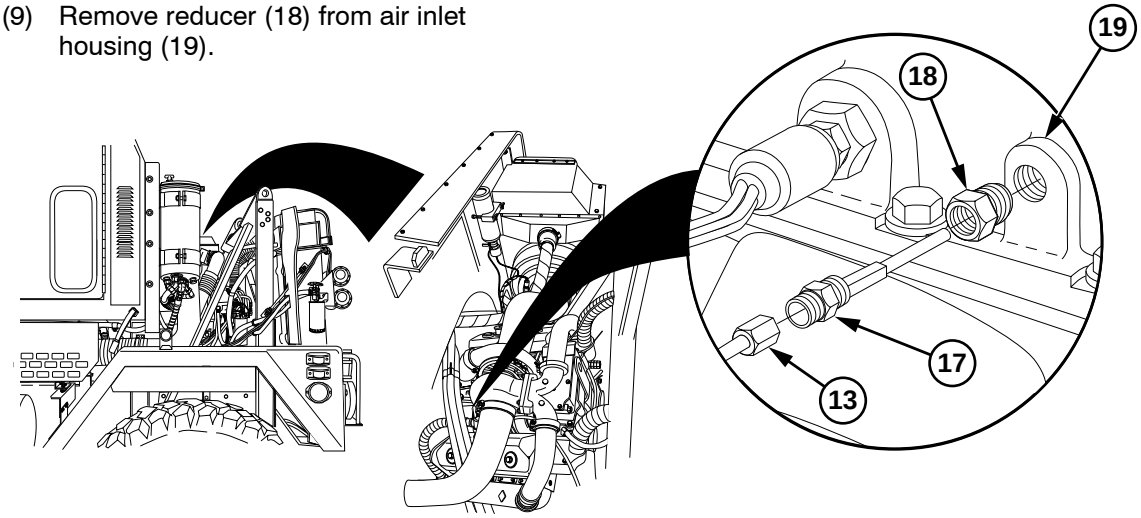
(6) Remove two screws (14), lockwashers (15), and bracket (16) from firewall (12). Discard lockwashers.



(7) Remove ether line (13) from atomizer (17).

(8) Remove atomizer (17) from reducer (18).

(9) Remove reducer (18) from air inlet housing (19).

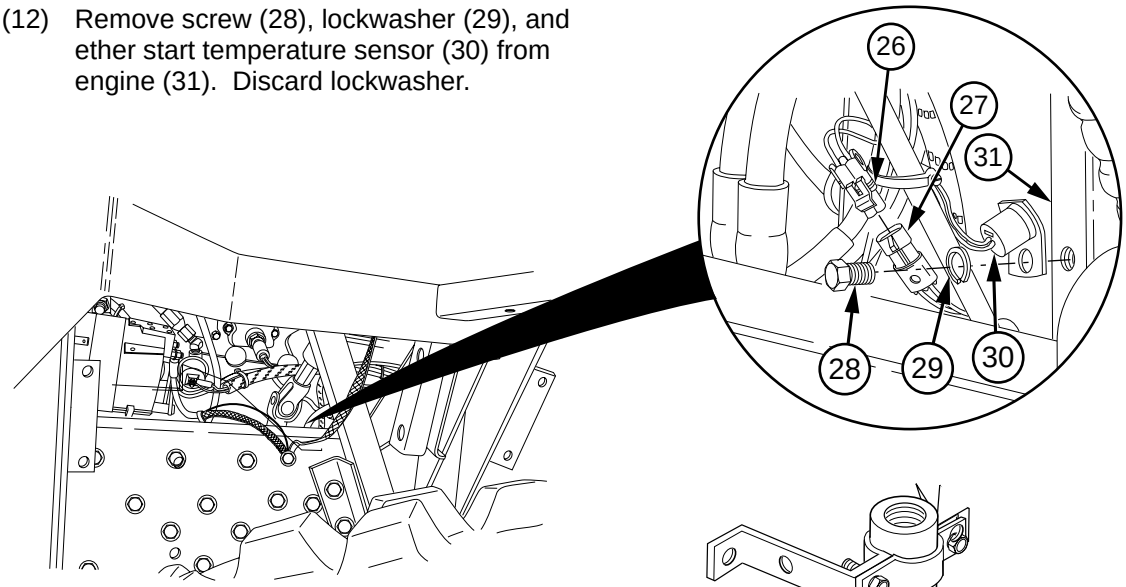


(10) Deleted.

4-14. ETHER STARTING AID REPAIR (CONT)

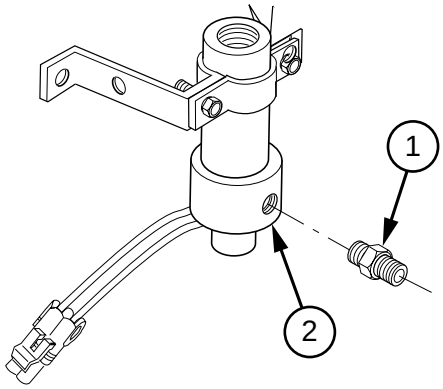
(11) Remove electrical connector (26) from electrical connector (27).

(12) Remove screw (28), lockwasher (29), and ether start temperature sensor (30) from engine (31). Discard lockwasher.



b. Disassembly

Remove fitting (1) from valve (2).



c. Cleaning/Inspection

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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

•The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).
•Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.
•Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.
•Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.
•Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.

(1) Clean metal parts with solvent cleaning compound.

WARNING

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

(2) Dry parts with compressed air.

(3) Inspect ether line for cracks or damage.

(4) Inspect parts for damage. Replace damaged parts.

d. Assembly

WARNING

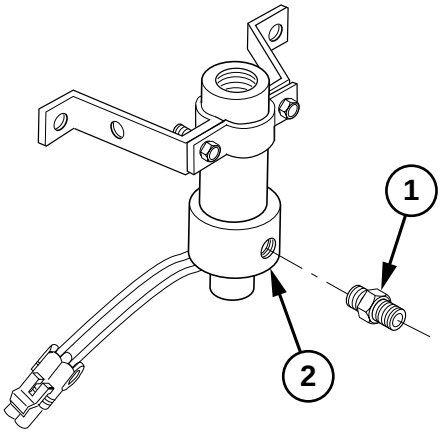
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(1) Coat threads of fitting (1) with pipe thread sealing compound.

(2) Install fitting (1) on valve body (2).



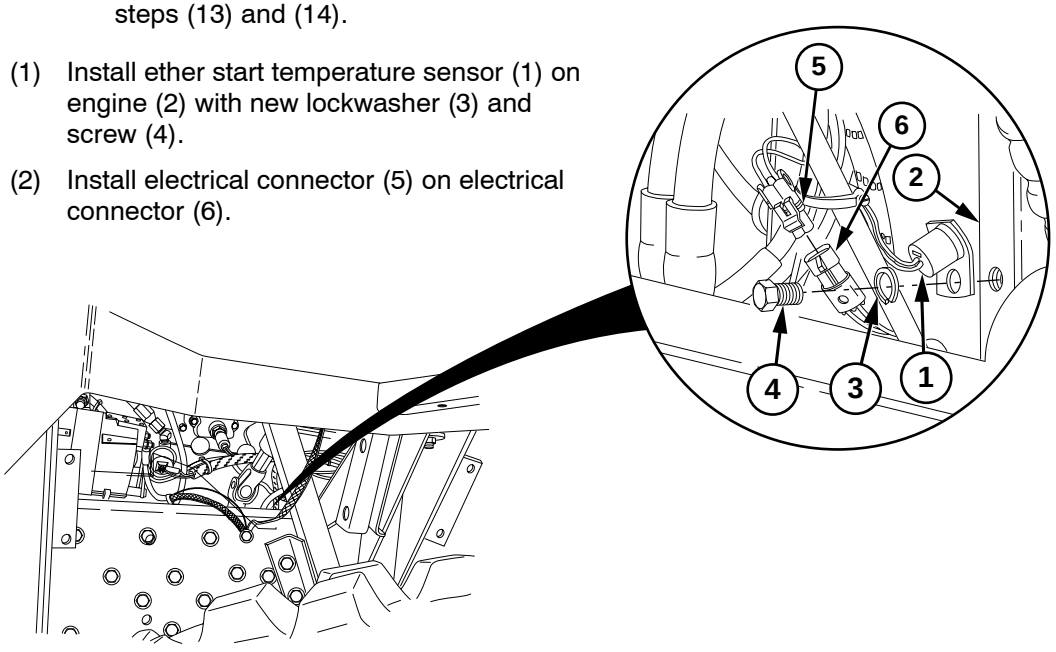
e. Installation

NOTE

To service cylinder only, do steps (13) and (14).

(1) Install ether start temperature sensor (1) on engine (2) with new lockwasher (3) and screw (4).

(2) Install electrical connector (5) on electrical connector (6).



4-14. ETHER STARTING AID REPAIR (CONT)

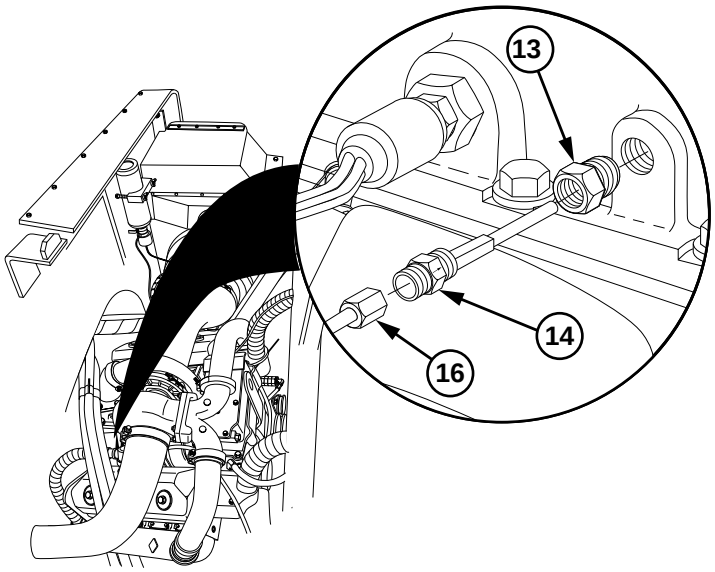
(3) Deleted.

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(4) Coat threads of reducer (13) and atomizer (14) with pipe thread sealing compound.

(5) Install reducer (13) in air inlet housing (15).

NOTE

Arrow stamped on atomizer should point up when installed.

(6) Install atomizer (14) in reducer (13).

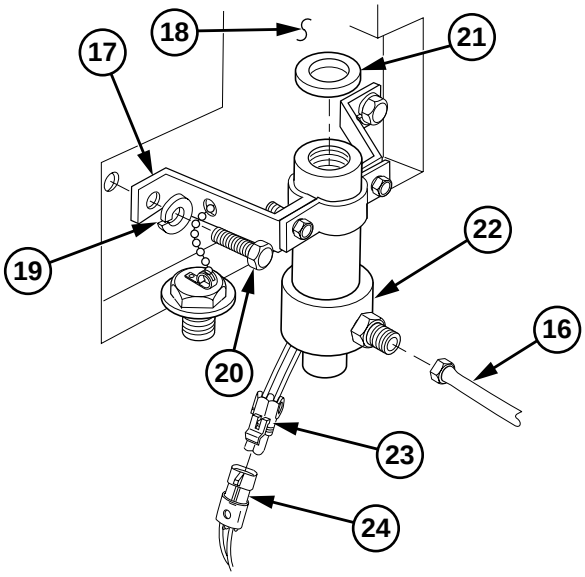
(7) Connect ether line (16) to atomizer (14).

(8) Install bracket (17) on firewall (18) with two new lockwashers (19) and screws (20).

(9) Install new gasket (21) on valve (22).

(10) Connect plug (23) to receptacle (24).

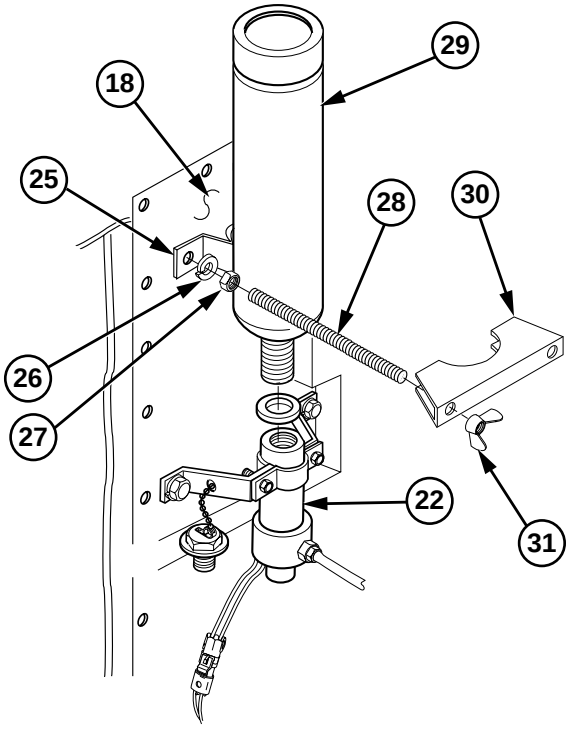
(11) Connect ether line (16) to valve body (22).



(12) Install bracket (25) on firewall (18) with two new lockwashers (26), nuts (27), and studs (28).

(13) Install new cylinder (29) on valve (22).

(14) Install bracket (30) on studs (28) with two wingnuts (31).



f. Follow-On Maintenance

(1) Check operation of ether starting aid (TM 9-2320-360-10).

(2) Close engine hood (TM 9-2320-360-10).

(2.1) Install inner fender (para 16-34).

(3) Remove wheel chocks.

4-15. HAND PRIMING PUMP REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Locknuts (2) (Item 68, Appendix G)

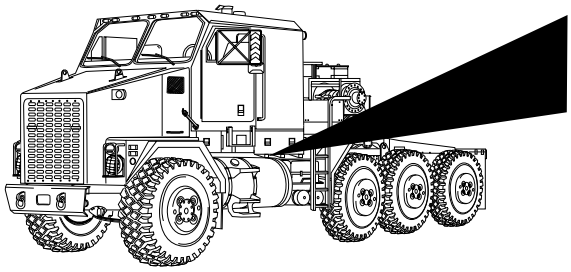
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

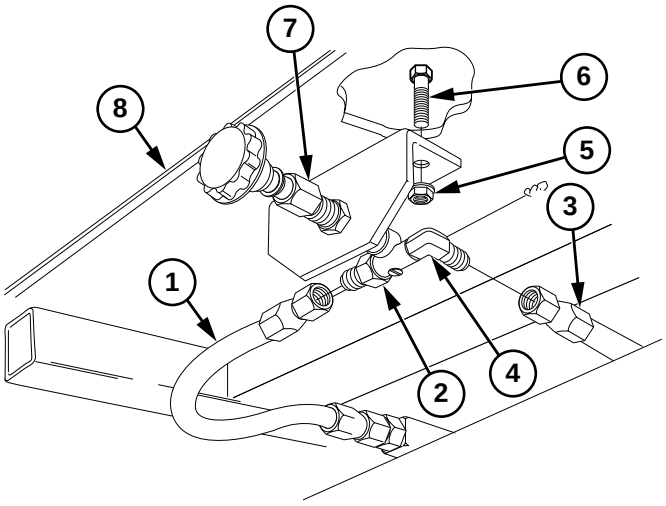
a. Removal

(1) Remove hose no. 2919 (1) from fitting (2).

(2) Remove hose no. 2920 (3) from elbow (4).

(3) Remove two locknuts (5), screws (6), and hand priming pump assembly (7) from stowage box (8). Discard locknuts.

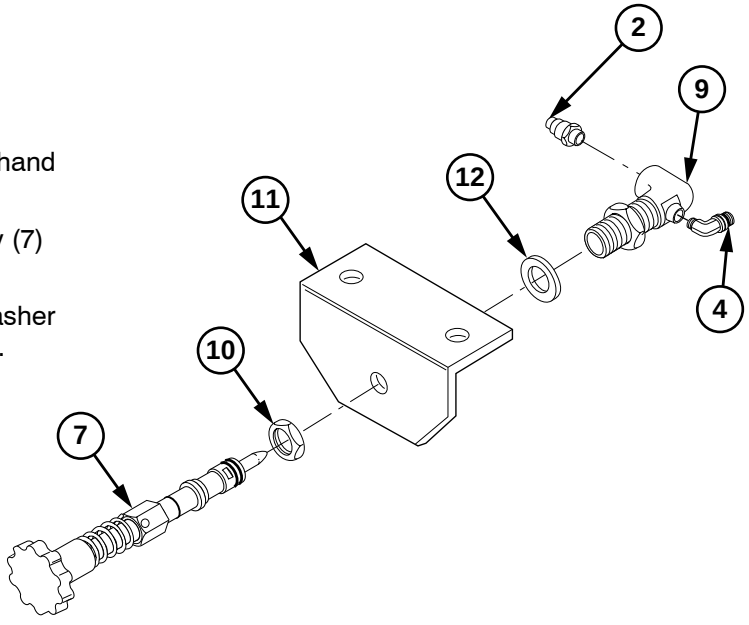




(4) Remove fitting (2) and elbow (4) from hand priming pump body (9).

(5) Remove hand priming pump assembly (7) from hand priming pump body (9).

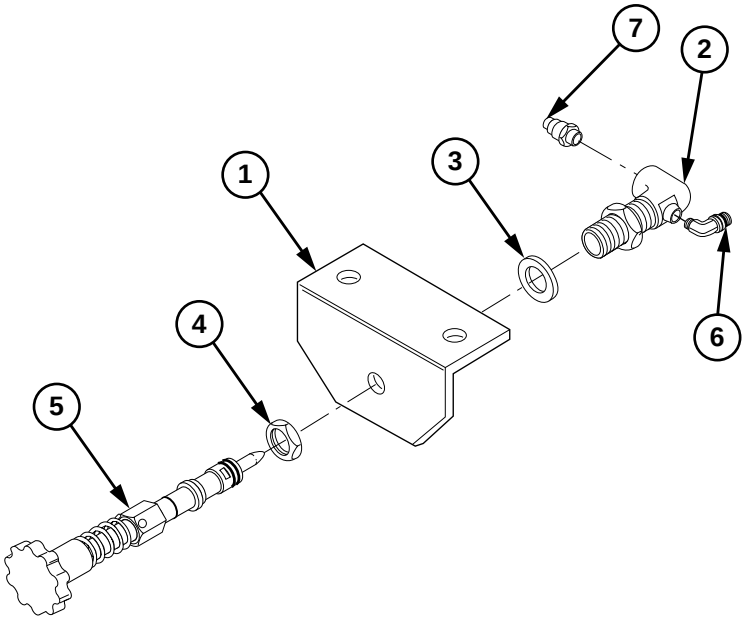
(6) Remove nut (10), bracket (11), and washer (12) from hand priming pump body (9).



b. Installation

(1) Install bracket (1) on hand priming pump body (2) with washer (3) and nut (4).

(2) Install hand priming pump assembly (5) on hand priming pump body (2).



WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

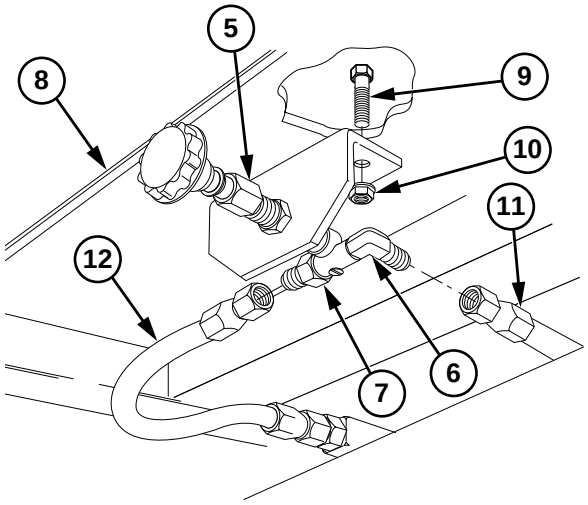
Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(3) Coat threads of elbow (6) and fitting (7) with pipe thread sealing compound.

NOTE

Fitting must be installed in inlet port of hand priming pump body.

(4) Install elbow (6) and fitting (7) on hand priming pump body (2).



(5) Install hand priming pump assembly (5) on stowage box (8) with two screws (9) and new locknuts (10).

(6) Install hose no. 2920 (11) on elbow (6).

(7) Install hose no. 2919 (12) on fitting (7).

c. Follow-On Maintenance

(1) Prime hand priming pump (TM 9-2320-360-10).

(2) Start engine (TM 9-2320-360-10).

(3) Check for leaks.

(4) Shut off engine (TM 9-2320-360-10).

(5) Remove wheel chocks.

4-16. FUEL LEVEL SENDER REPLACEMENT

This task covers:
a. Removal
b. Cleaning
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Stowage box removed (para 16-14).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Gasket (Item 38, Appendix G)
Lockwasher (Item 99, Appendix G)

Personnel Required
Two

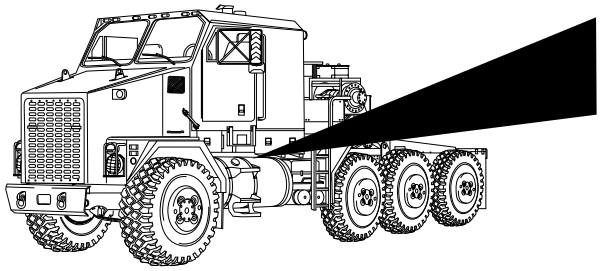
a. Removal

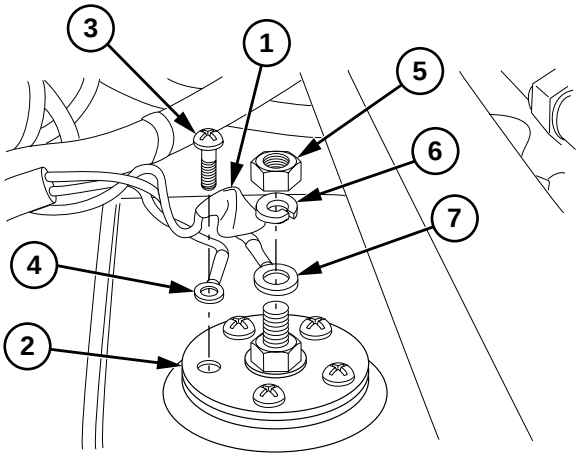
NOTE
Tag and mark wires before removal.

(1) Lift and slide boot (1) from sender (2).

(2) Remove screw (3) and wire no. 1435 (4) from sender (2).

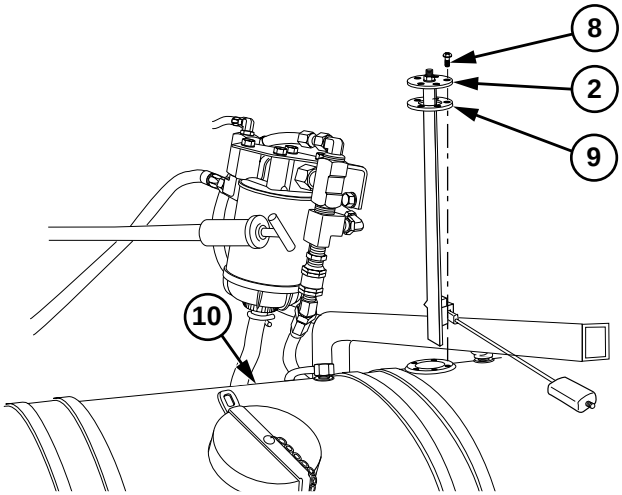
(3) Remove nut (5), lockwasher (6), and wire no. 1316 (7) from sender (2). Discard lockwasher.





CAUTION
- To prevent fuel contamination, avoid dropping gasket material into tank when removing.
- Use care when removing sender. Sender bends easily. Failure to comply may result in inaccurate fuel gage readings.

(4) Remove four screws (8), sender (2), and gasket (9) from fuel tank (10). Discard gasket.



b. Cleaning

Scrape any gasket residue from fuel tank opening.

c. Installation

WARNING

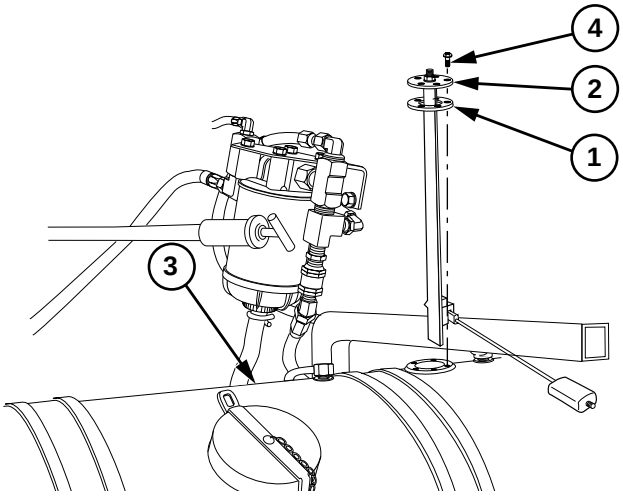
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat top and bottom of gasket (1) with pipe thread sealing compound.

CAUTION

Use care when installing sender. Sender bends easily. Failure to comply may result in inaccurate fuel gage readings.

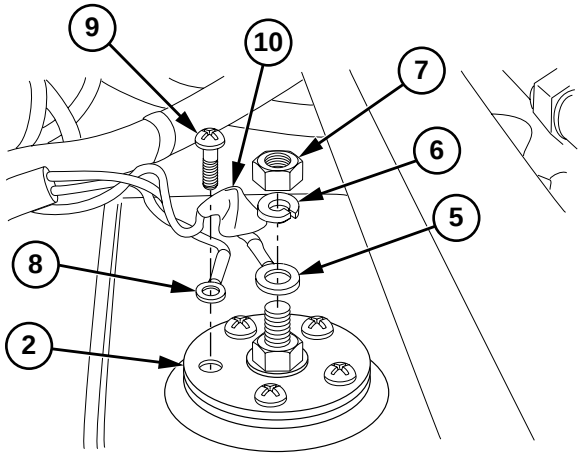
(1.1) Install new gasket (1) and sender (2) in fuel tank (3) with four screws (4).



(2) Install wire no. 1316 (5) on sender (2) with new lockwasher (6) and nut (7).

(3) Install wire no. 1435 (8) on sender (2) with screw (9).

(4) Slide boot (10) on sender (2).



c. Follow-On Maintenance

Install stowage box (para 16-14).

CHAPTER 5
EXHAUST SYSTEM MAINTENANCE

Contents

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Exhaust Pipe Replacement	5-2	5-2
Exhaust Heat Shields Replacement	5-2.1	5-4.1
Muffler Replacement	5-3	5-5
Tail Pipe Assembly Repair	5-4	5-10
Exhaust Tube Replacement	5-5	5-17
Ladder Support Repair	5-6	5-20

Section I. INTRODUCTION

5-1. INTRODUCTION

This chapter contains instructions for replacement and repair of exhaust system components at the Unit maintenance level. Some parts must be removed before exhaust system parts can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

5-2. EXHAUST PIPE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Exhaust heat shields removed (para 5-2.1).
Engine hood opened (TM 9-2320-360-10).

Materials/Parts
Clamps (2) (Item 16, Appendix G)
Clamp (Item 12, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Personnel Required
Two

a. Removal

(1) Deleted.

(2) Remove locknut (4) from clamp (5). Discard locknut.

(3) Remove clamp (5) and exhaust pipe (6) from turbocharger (7). Discard clamp.

(4) Remove two nuts (8), lockwashers (9), clamp (10), and spacer (11) from muffler (3). Discard clamp, spacer, lockwashers, and nuts.

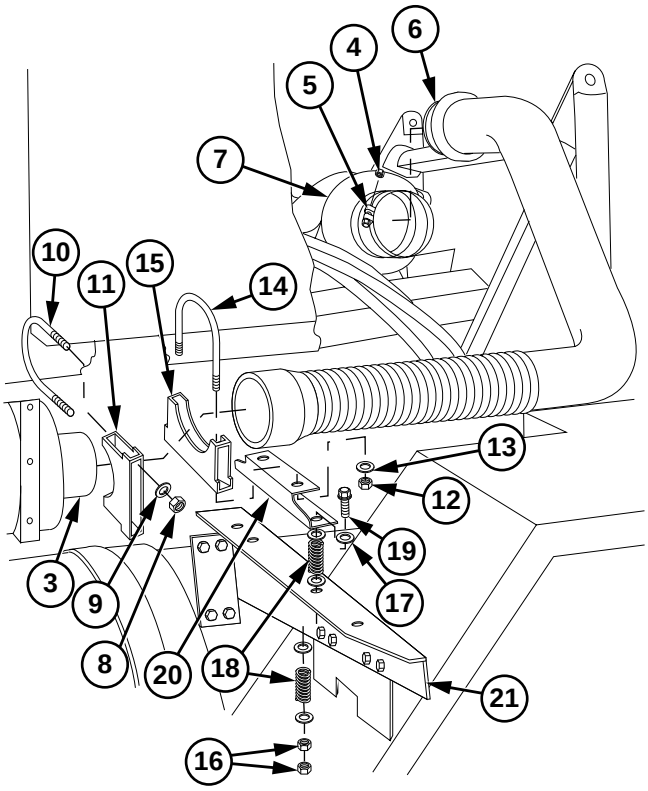
WARNING

Support muffler when removing spacer. Failure to comply may result in injury to personnel.

(5) Remove two nuts (12), lockwashers (13), clamp (14), and spacer (15) from muffler (3). Discard clamp, spacer, lockwashers, and nuts.

(6) Remove exhaust pipe (6) from muffler (3).

(7) Remove four nuts (16), ten washers (17), four springs (18), two screws (19), and muffler mount channel (20) from muffler support bracket (21).



b. Installation

NOTE

First nut should be tightened until there is 1.5 in (3.6 cm) between channel and bracket.

(1) Install muffler mount channel (1) on muffler support bracket (2) with two screws (3), four springs (4), ten washers (4.1) and four nuts (4.2).

NOTE

Exhaust pipe is mounted on inside of muffler.

(2) Install exhaust pipe (5) in muffler (6).

(3) Install new spacer (7) and new clamp (8) on muffler mount channel (1) with two new lockwashers (9) and new nuts (10).

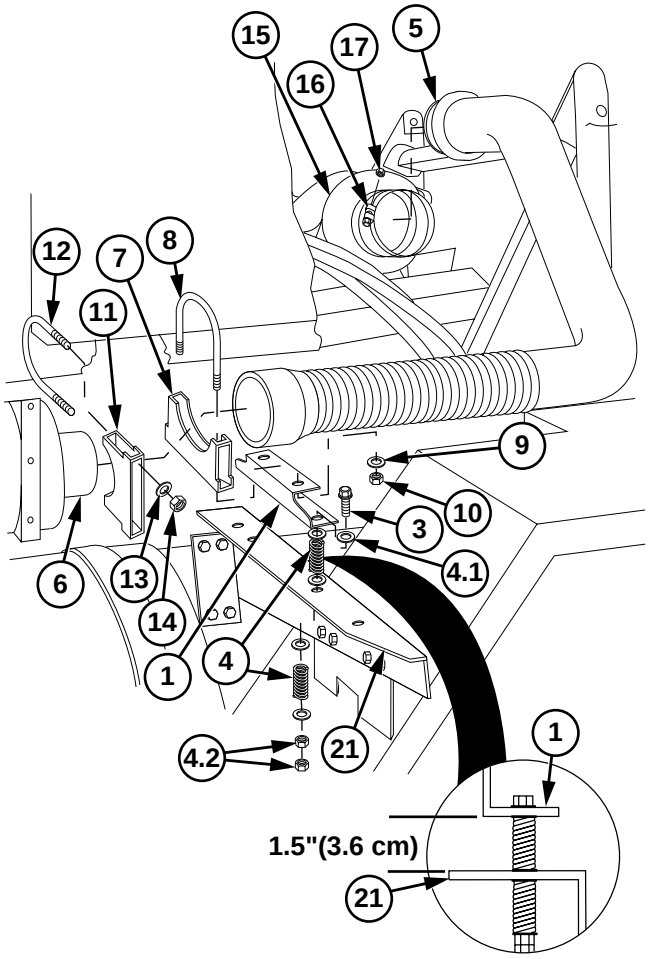
(4) Install new spacer (11) and new clamp (12) on muffler (6) with two new lockwashers (13) and new nuts (14).

NOTE

Clamp should be installed with ends facing away from HET Tractor.

(5) Install exhaust pipe (5) on turbocharger (15) with new clamp (16) and new locknut (17).

(6) Tighten four nuts (10 and 14).



5-2. EXHAUST PIPE REPLACEMENT (CONT)

(7) Deleted.

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check for exhaust leaks, excessive noise, and vibration.

(3) Shut off engine (TM 9-2320-360-10).

(3.1) Install exhaust heat shields (para 5-2.1).

(4) Remove wheel chocks.

5-2.1. EXHAUST HEAT SHIELDS REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Spare tire removed (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Lockwashers (9) Item 107, Appendix G)
Lockwashers (2) Item 101, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

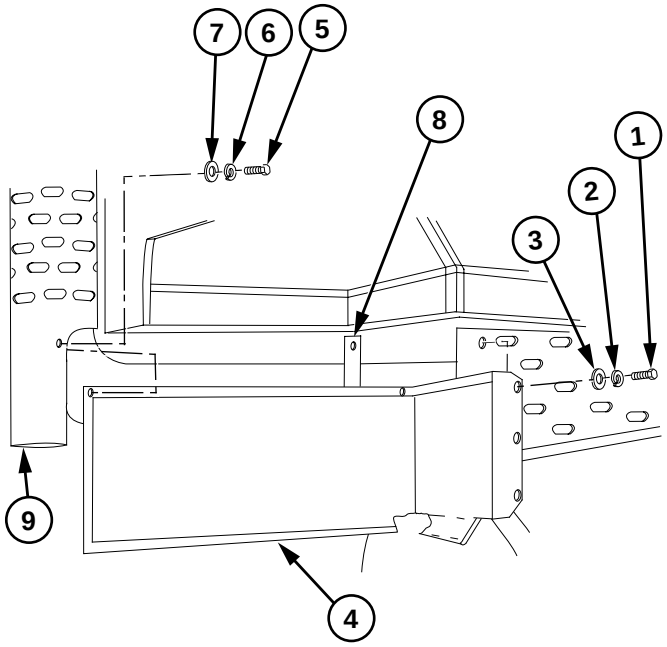
a. Removal

WARNING

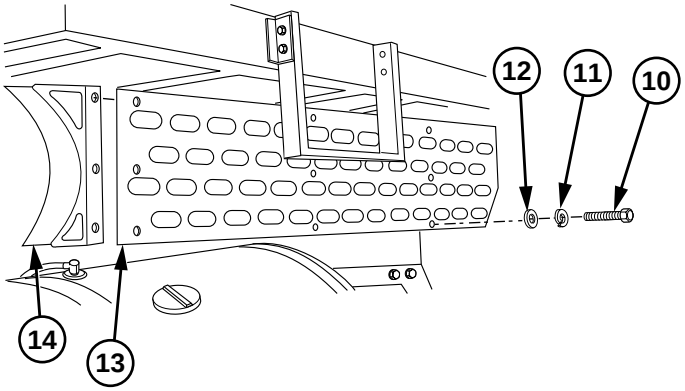
Ensure exhaust pipe and muffler are cool before performing maintenance. Failure to comply may result in injury to personnel.

(1) Remove three screws (1), lockwashers (2), and washers (3) from heat shield assembly (4). Discard lockwashers.

(2) Remove two screws (5), lockwashers (6), washers (7), and heat shield assembly (4) from bracket (8) and tailpipe lower guard (9). Discard lockwashers.

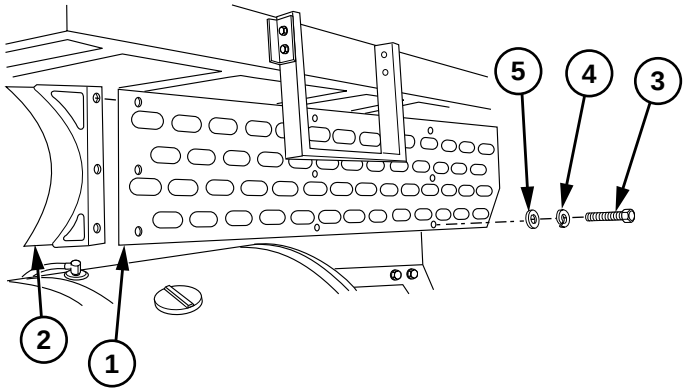


(3) Remove six screws (10), lockwashers (11), washers (12), and muffler shield (13) from muffler (14). Discard lockwashers.



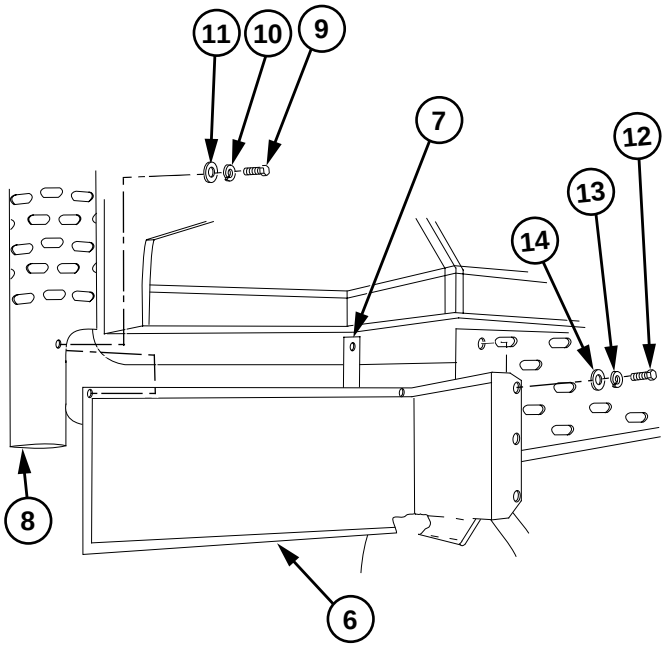
b. Installation

(1) Install muffler heat shield (1) on muffler (2) with six screws (3), new lockwashers (4), and washers (5).



(2) Install heat shield assembly (6) on bracket (7) and tailpipe lower guard (8) with two screws (9), new lockwashers (10), and washers (11).

(3) Install heat shield assembly (6) on muffler heat shield (1) with three screws (12), new lockwashers (13) and washers (14).



c. Follow-On Maintenance

Install spare tire (TM 9-2320-360-10).

5-3. MUFFLER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Exhaust pipe removed (para 5-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-75 Lb-In. (Item 71, Appendix F)

Materials/Parts
Clamps (4) (Item 16, Appendix G)
Locknuts (8) (Item 68, Appendix G)
Locknuts (4) (Item 58, Appendix G)
Locknuts (4) (Item 65, Appendix G)
Lockwashers (2) (Item 104, Appendix G)

Personnel Required
Two

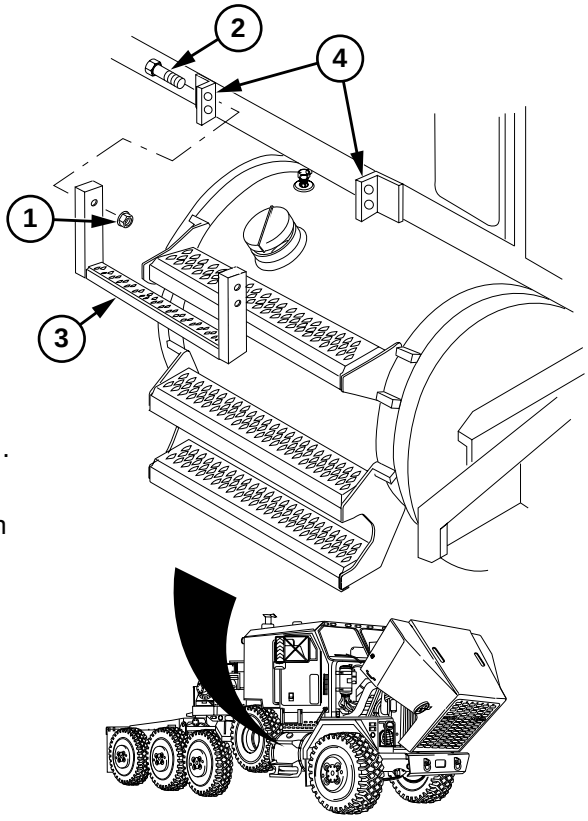
a. Removal

WARNING

Ensure exhaust pipe and muffler are cool before performing maintenance. Failure to comply may result in serious personal injury.

(1) Remove four locknuts (1) from screws (2). Discard locknuts.

(2) Remove four screws (2) and step (3) from step mounting brackets (4).



5-3. MUFFLER REPLACEMENT (CONT)

(3) Remove two nuts (5) and lockwashers (6) from clamp (7). Discard lockwashers and nuts.

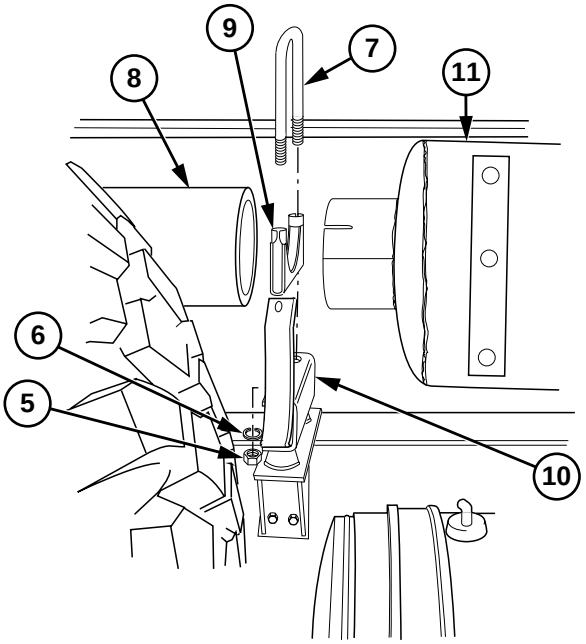
(4) Remove clamp (7) from tail pipe (8). Discard clamp.

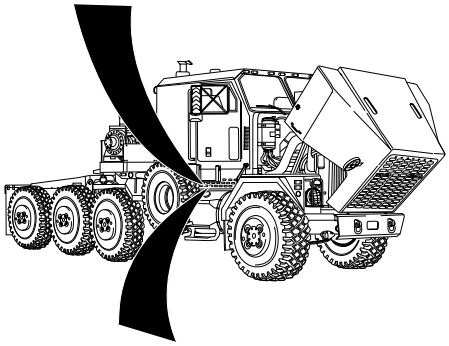
(5) Remove spacer (9) from rear muffler mounting bracket (10). Discard spacer.

CAUTION

Do not hit fuel breather line while removing muffler. Equipment damage may result.

(6) Remove muffler (11) from tail pipe (8).





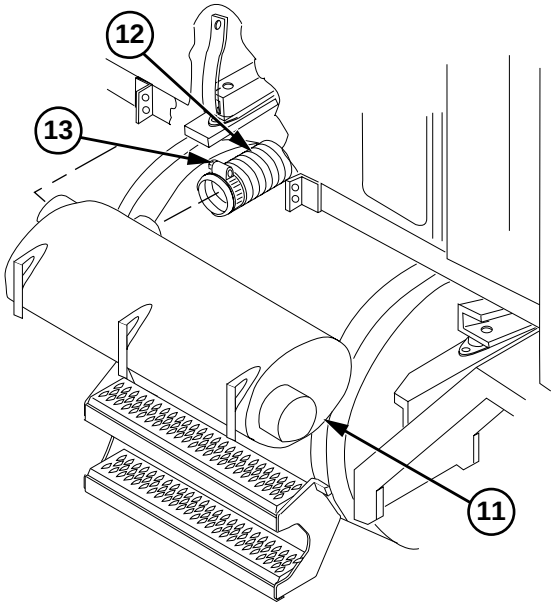
(7) Position muffler (11) to allow access to aspiration hose no. 2938 (12).

(8) Loosen clamp (13) and remove aspiration hose (12) from muffler (11).

WARNING

- **Do not operate HET Tractor with muffler removed. Toxic exhaust fumes may enter cab, resulting in injury or death to personnel.**
- **Muffler weighs 91 lb (41 kg). Assistant is required to remove muffler. Failure to comply may result in injury to personnel.**

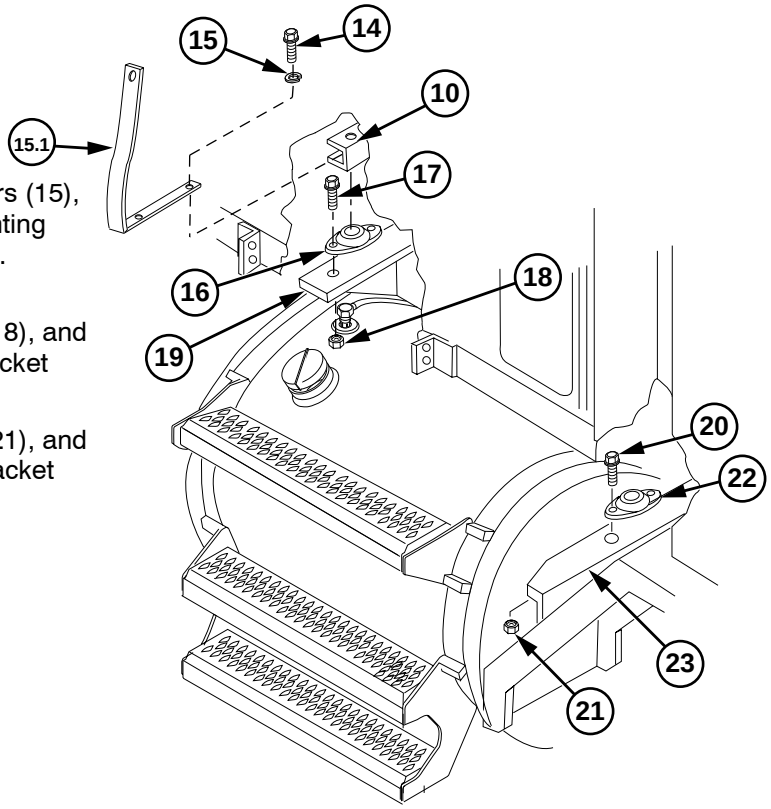
(9) Remove muffler (11) from HET Tractor with aid of assistant.



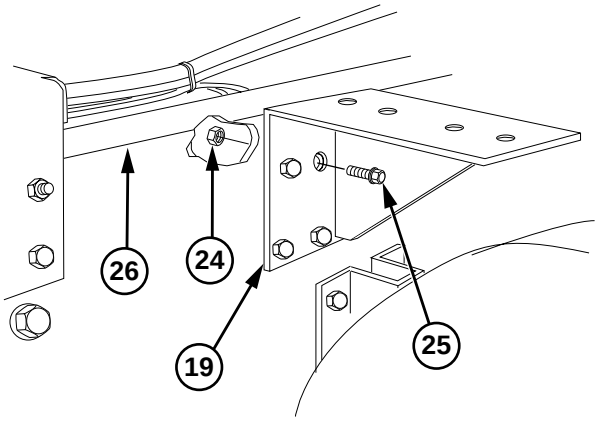
(10) Remove two screws (14), lockwashers (15), bracket (15.1), and rear muffler mounting bracket (10) from rubber mounts (16). Discard lockwashers.

(11) Remove four screws (17), locknuts (18), and two rubber mounts (16) from rear bracket (19). Discard locknuts.

(12) Remove four screws (20), locknuts (21), and two rubber mounts (22) from front bracket (23). Discard locknuts.

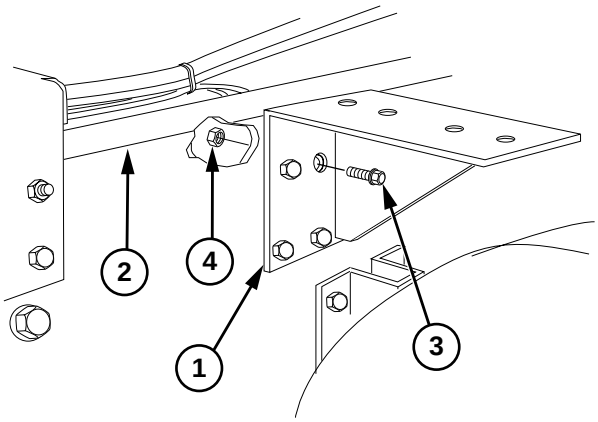


(13) Remove four locknuts (24), screws (25), and rear bracket (19) from frame (26) with aid of assistant. Discard locknuts.

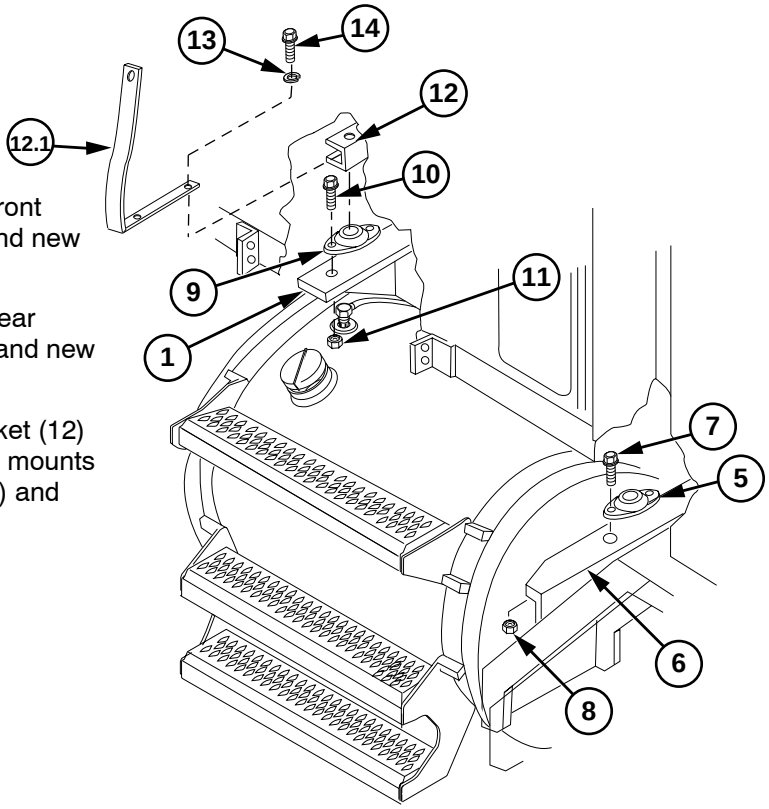


b. Installation

(1) Install rear muffler bracket (1) on frame (2) with four screws (3) and new locknuts (4) with aid of assistant.



5-3. MUFFLER REPLACEMENT (CONT)



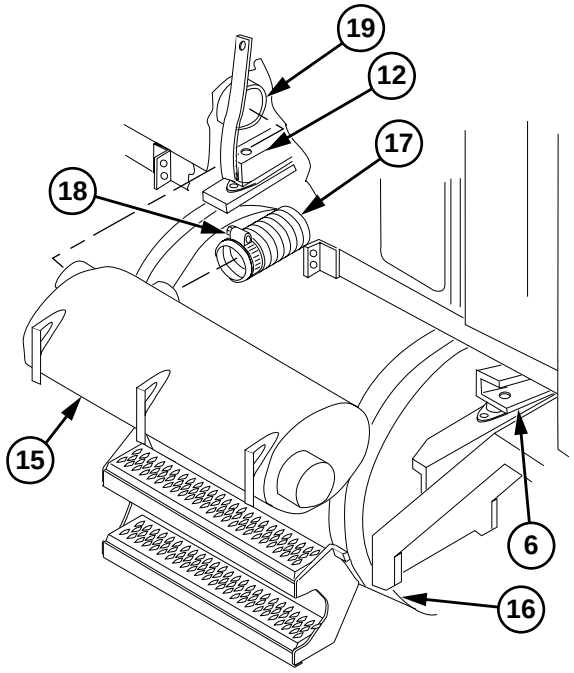
(2) Install two rubber mounts (5) on front bracket (6) with four screws (7) and new locknuts (8).

(3) Install two rubber mounts (9) on rear bracket (1) with four screws (10) and new locknuts (11).

(4) Install rear muffler mounting bracket (12) and bracket (12.1) on two rubber mounts (9) with two new lockwashers (13) and screws (14).

CAUTION

Do not hit fuel breather line while installing muffler. Equipment damage may result.



(5) Position muffler (15) on fuel tank (16) with aid of assistant to allow access to aspiration hose (17).

(6) Install aspiration hose no. 2938 (17) and clamp (18) on muffler (15). Torque to 60 lb-in. (6.7 N·m).

NOTE

Muffler is installed inside tail pipe.

(7) Install muffler (15) on tail pipe (19).

(8) Position muffler (15) so it is centered on front and rear muffler mounting brackets (6 and 12).

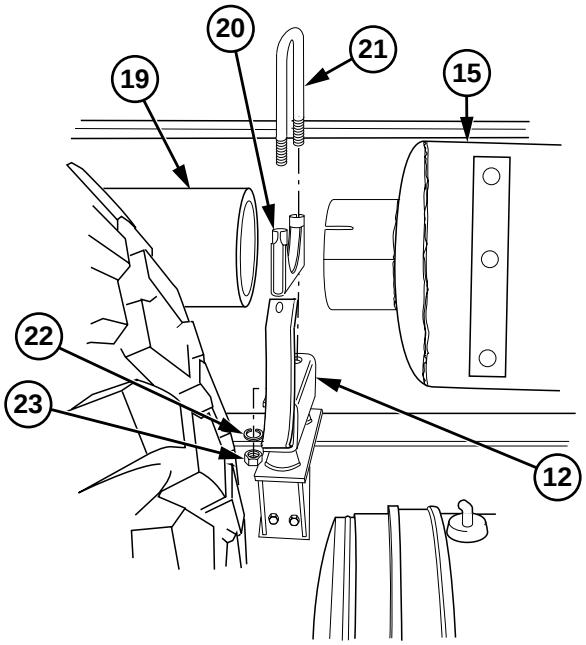
(9) Position new spacer (20) on rear muffler mounting bracket (12). Align holes.

NOTE

Clamp must be positioned evenly around tail pipe.

(10) Insert new clamp (21) through two holes in spacer (20) and rear muffler mounting bracket (12).

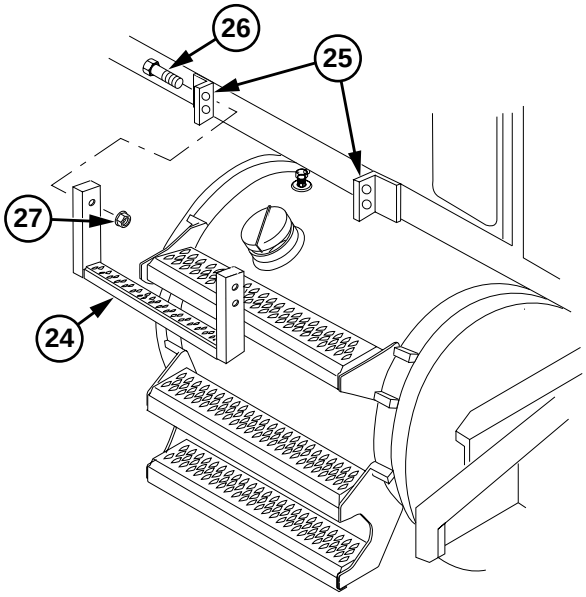
(11) Install two new lockwashers (22) and nuts (23) on clamp (21).



(12) Align four holes in step (24) with holes in step mounting brackets (25).

(13) Install four screws (26) in step mounting bracket (25) and step (24).

(14) Install four new locknuts (27) on screws (26).



c. Follow-On Maintenance

Install exhaust pipe (para 5-2).

5-4. TAIL PIPE ASSEMBLY REPAIR

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Exhaust heat shield removed (para 5-2.1).
Ladder support removed (para 5-6).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Clamps (3) (Item 16, Appendix G)
Locknuts (10) (Item 68, Appendix G)
Locknuts (8) (Item 61, Appendix G)

Personnel Required
Two

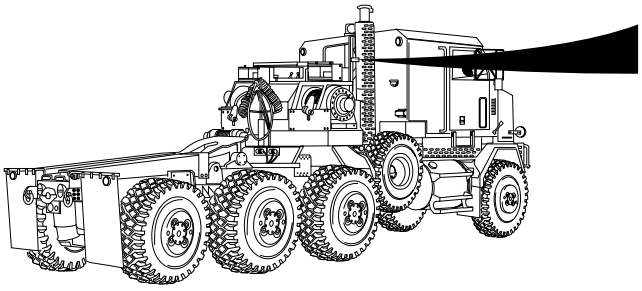
a. Tail Pipe Removal

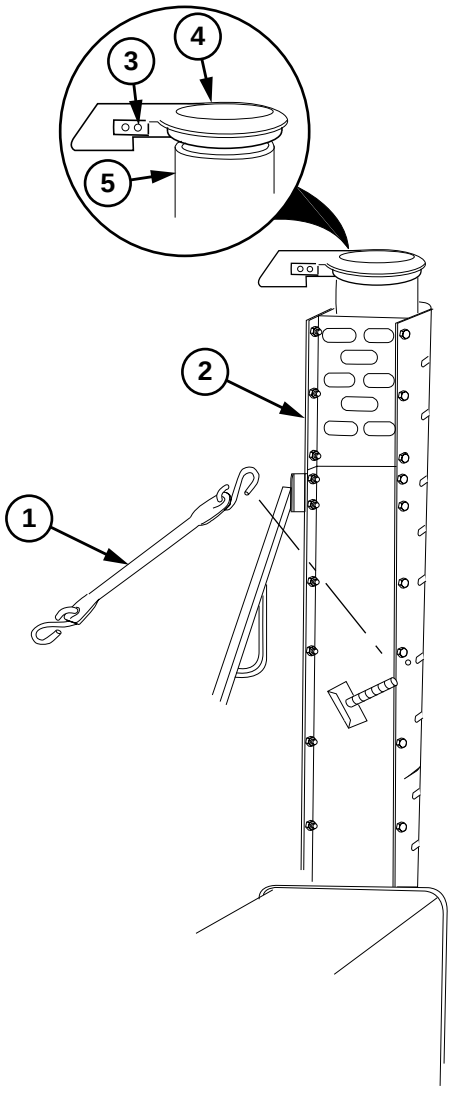
WARNING

Ensure tail pipe and muffler are cool before performing maintenance. Failure to comply may result in serious personal injury.

(1) Remove rubber strap (1) from upper tail pipe guard (2).

(2) Loosen nut (3). Remove rain cap (4) from tail pipe (5).





(3) Remove six locknuts (6), screws (7), and back tail pipe guard (8) from upper tail pipe guard (2). Discard locknuts.

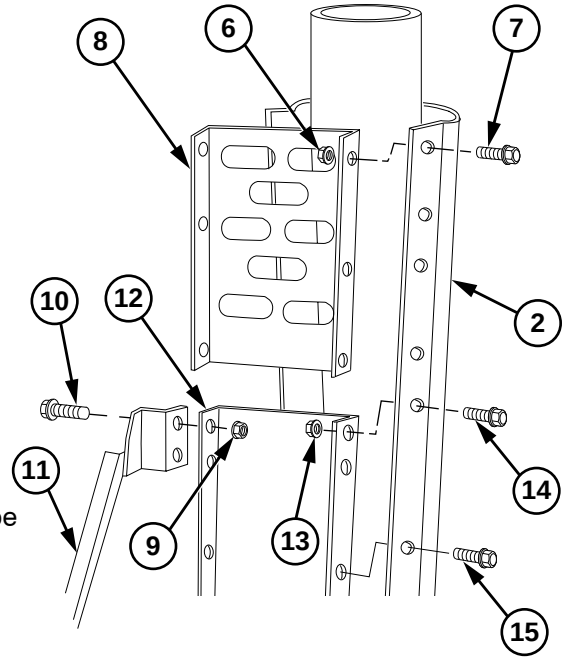
(4) Remove two locknuts (9) and screws (10) from exhaust support brace (11), upper tail pipe guard (2), and tail pipe assembly support (12). Discard locknuts.

(5) Remove two locknuts (13) and screws (14) from upper tail pipe guard (2) and tail pipe assembly support (12). Discard locknuts.

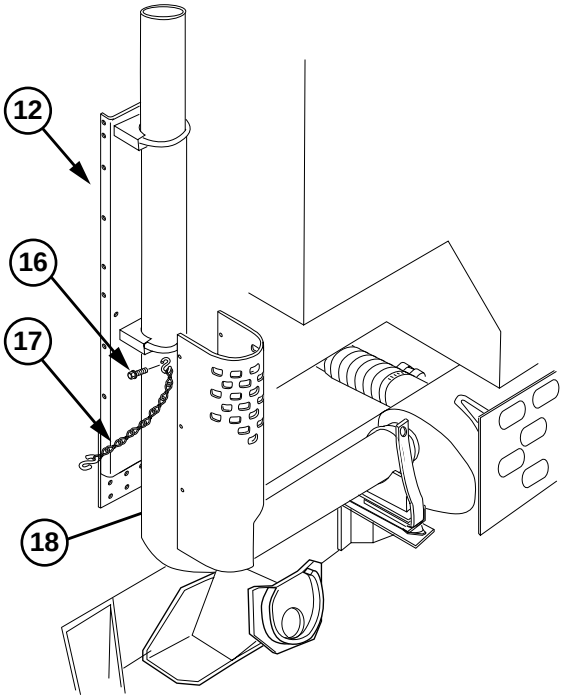
WARNING

Support tail pipe guards when removing screws to prevent from falling, possibly causing injury to personnel.

(6) Remove five screws (15) and upper tail pipe guard (2) from tail pipe assembly support (12).



(7) Remove seven screws (16), safety chain (17), and lower tail pipe guard (18) from tail pipe assembly support (12).



5-4. TAIL PIPE ASSEMBLY REPAIR (CONT)

(8) Remove two nuts (19) and lockwashers (20) from clamp (21). Discard nuts and lockwashers.

(9) Remove clamp (21) and clamp base (22) from rear muffler mounting bracket (23). Discard clamp.

(10) Remove two nuts (24) and lockwashers (25) from lower clamp (26). Discard clamps.

(11) Remove lower clamp (26) and clamp base (27) from tail pipe (5).

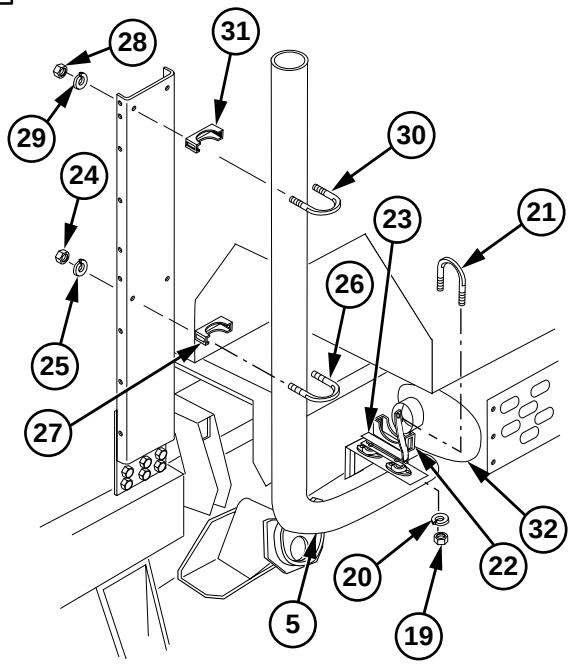
WARNING

Support tail pipe when removing mounting hardware to prevent from falling, possibly causing injury to personnel.

(12) Remove two nuts (28) and lockwashers (29) from upper clamp (30). Discard nuts and lockwashers.

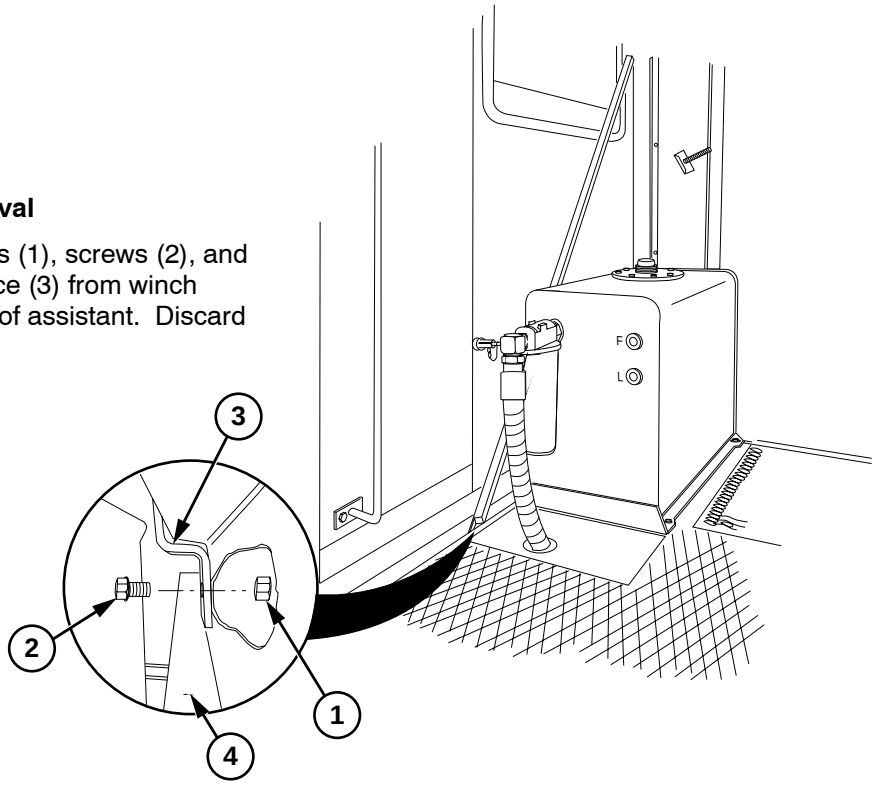
(13) Support tail pipe (5) with aid of assistant. Remove clamp (30) and clamp base (31) from tail pipe (5). Discard clamp.

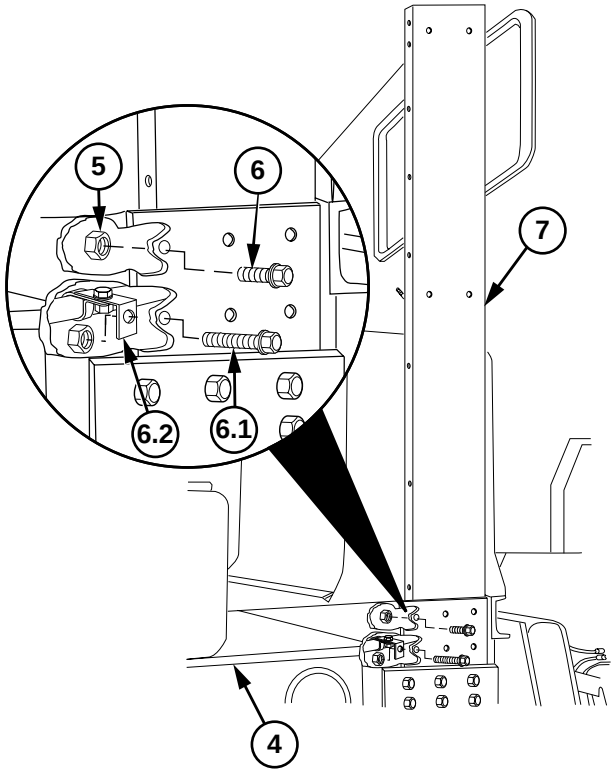
(14) Remove tail pipe (5) from muffler (32).



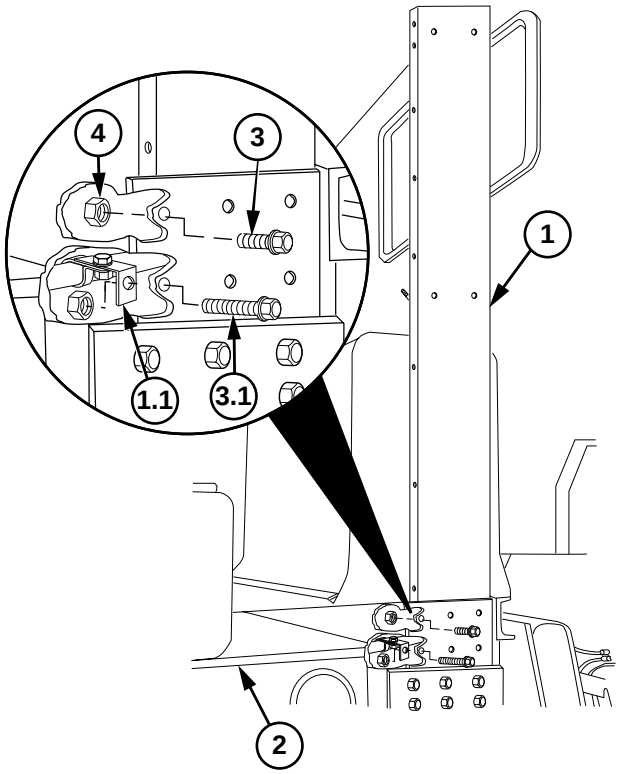
b. Tail Pipe Support Removal

(1) Remove two locknuts (1), screws (2), and exhaust support brace (3) from winch platform (4) with aid of assistant. Discard locknuts.





(2) Remove six locknuts (5), five screws (6), screw (6.1), bracket (6.2), and tail pipe assembly support (7) from winch platform (4) with aid of assistant. Discard locknuts.

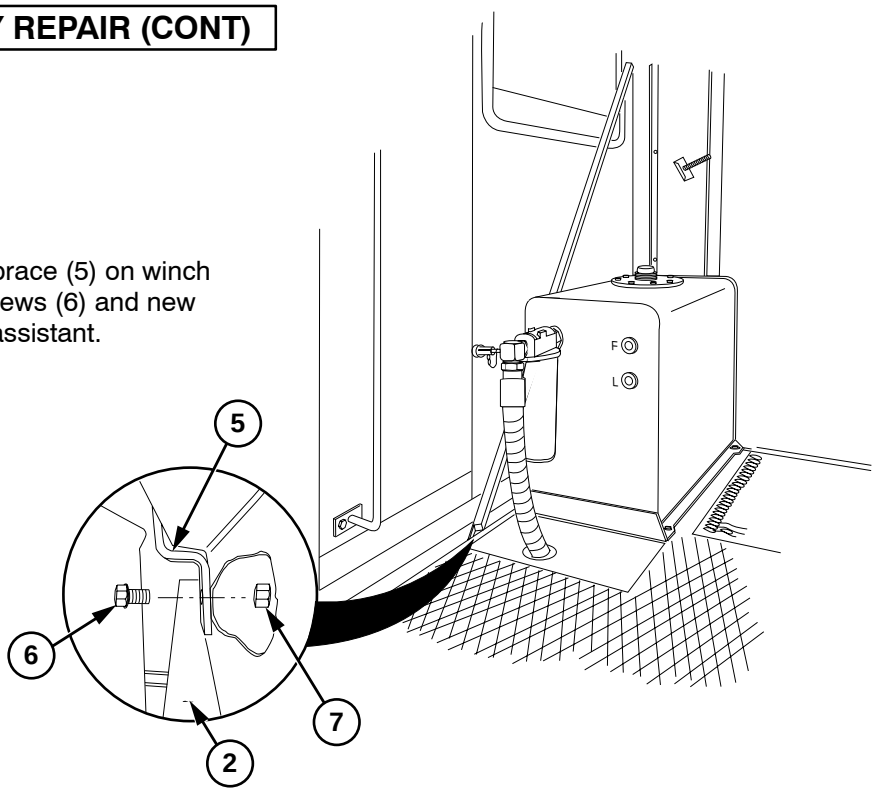


c. Tail Pipe Support Installation

(1) Install tail pipe assembly support (1) and bracket (1.1) on winch platform (2) with five screws (3), screw (3.1), and six new locknuts (4) with aid of assistant.

5-4. TAIL PIPE ASSEMBLY REPAIR (CONT)

(2) Install exhaust support brace (5) on winch platform (2) with two screws (6) and new locknuts (7) with aid of assistant.



d. Tail Pipe Installation

WARNING

Support tail pipe when installing to prevent from falling, possibly causing injury to personnel.

NOTE

Tail pipe is installed over muffler.

(1) Install tail pipe (1) on muffler (2) with aid of assistant.

(2) Support tail pipe (1). Align two holes in clamp base (3) with upper holes in tail pipe assembly support (4).

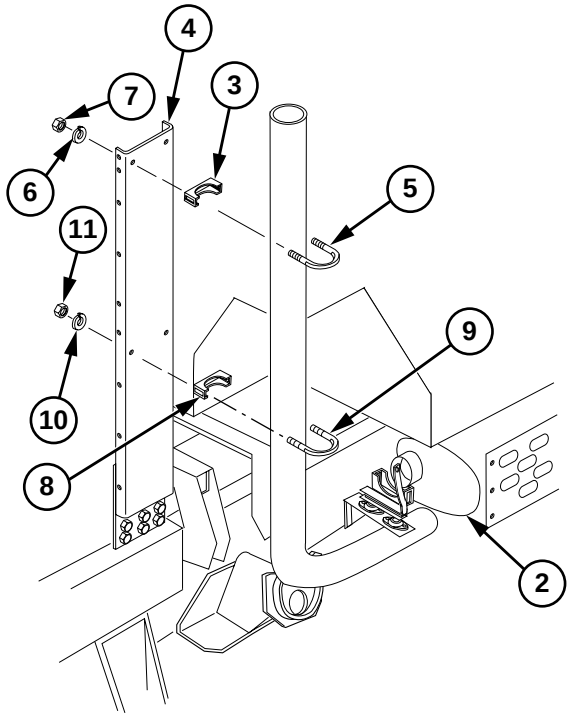
(3) Insert clamp (5) through two holes in tail pipe assembly support (4) and clamp base (3).

(4) Install two new lockwashers (6) and nuts (7) on clamp (5). Do not tighten.

(5) Align two holes in clamp base (8) with lower holes in tail pipe assembly support (4).

(6) Insert clamp (9) through two holes in tail pipe assembly support (4) and clamp base (8).

(7) Install two new lockwashers (10) and nuts (11) on clamp (9). Do not tighten.



(8) Align two holes in clamp base (12) with holes in rear muffler mounting bracket (13).

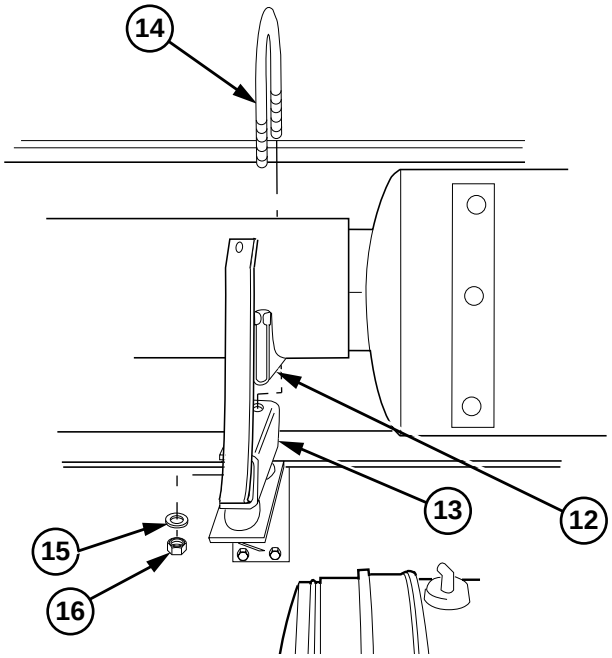
NOTE

Clamp must be positioned evenly around tail pipe.

(9) Insert clamp (14) through two holes in clamp base (12) and rear muffler mounting bracket (13).

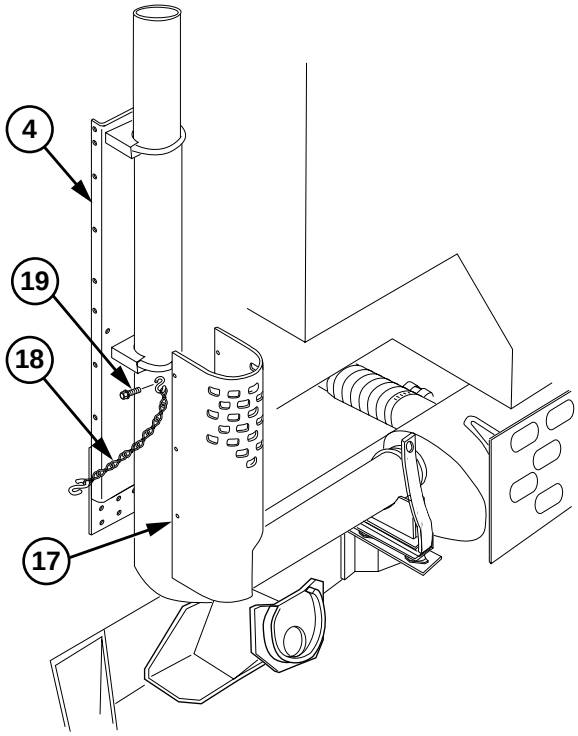
(10) Install two new lockwashers (15) and nuts (16) on clamp (14).

(11) Tighten nuts (7) and (11).



(12) Align eight holes in lower tail pipe guard (17) with holes in lower part of tail pipe assembly support (4).

(13) Install safety chain (18) and seven screws (19) in lower tail pipe guard (17) and tail pipe assembly support (4).



5-4. TAIL PIPE ASSEMBLY REPAIR (CONT)

(14) Align bottom six holes in upper tail pipe guard (20) with holes in tail pipe assembly support (4).

(15) Install five screws (21) through upper tail pipe guard (20) and tail pipe assembly support (4).

(16) Align two holes in exhaust support brace (22) with holes in tail pipe assembly support (4) and upper tail pipe guard (20).

(17) Install two screws (23) through exhaust support brace (22), upper tail pipe guard (20), and tail pipe assembly support (4).

(18) Install two new locknuts (24) on screws (23).

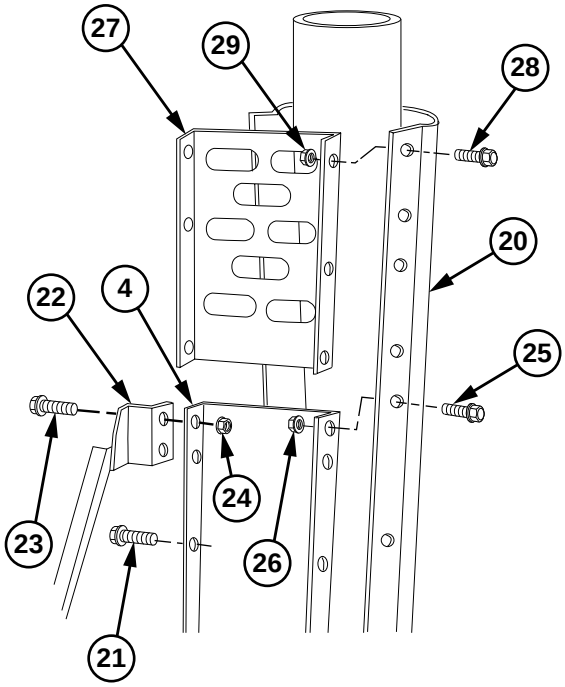
(19) Install two screws (25) through upper tail pipe guard (20) and tail pipe assembly support (4).

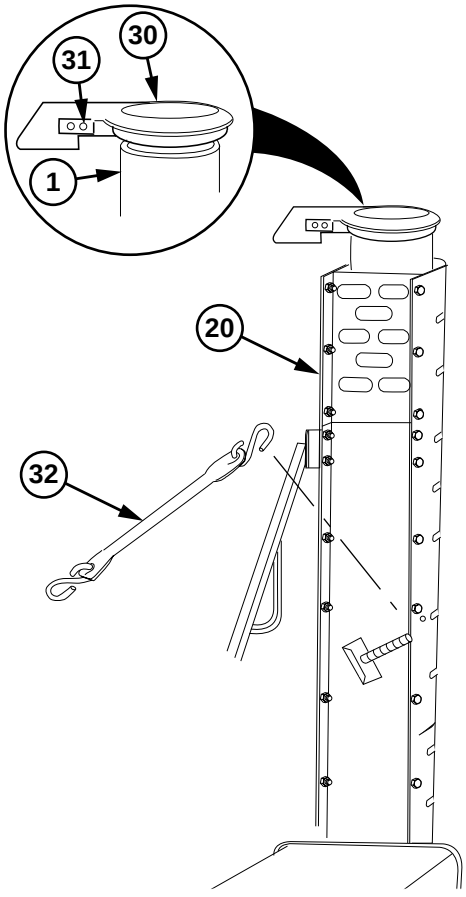
(20) Install two new locknuts (26) on screws (25).

(21) Align six holes in back tail pipe guard (27) with holes in top of upper tail pipe guard (20).

(22) Install six screws (28) through upper tail pipe guard (20) and back tail pipe guard (27).

(23) Install four new locknuts (29) on screws (28).





(24) Install rain cap (30) on tail pipe (1). Tighten nut (31) on rain cap.

(25) Install rubber strap (32) on upper tail pipe guard (20).

e. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check for exhaust leaks, excessive noise, and vibration.

(3) Shut off engine (TM 9-2320-360-10).

(4) Install ladder support (para 5-6).

(5) Install exhaust heat shield (para 5-2.1).

5-5. EXHAUST TUBE REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Clamps (4) (Item 13, Appendix G)

a. Left Exhaust Tube Removal

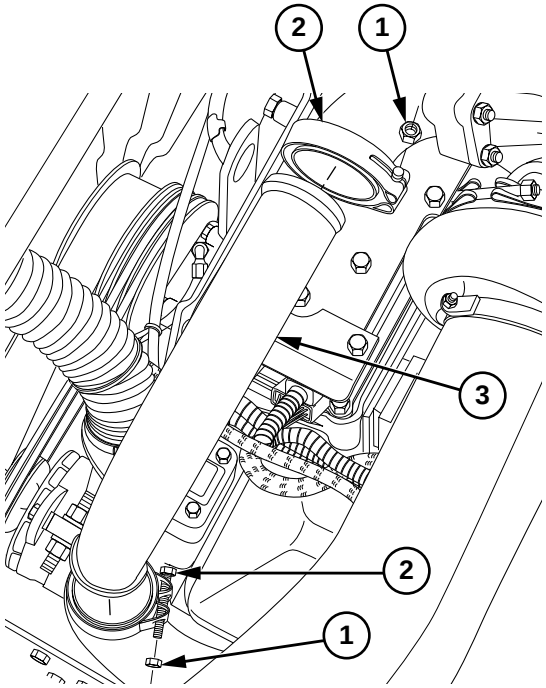
WARNING

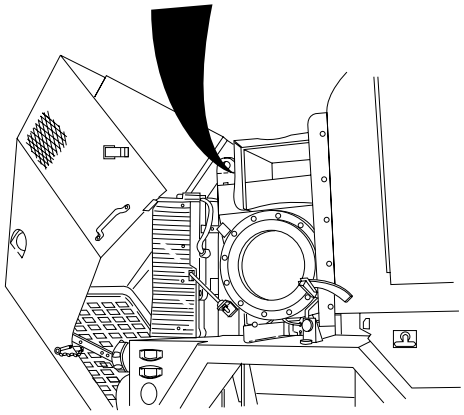
Ensure exhaust tube is cool before performing maintenance. Failure to comply may result in serious personal injury.

(1) Remove two locknuts (1) from clamps (2) on exhaust tube (3). Discard locknuts.

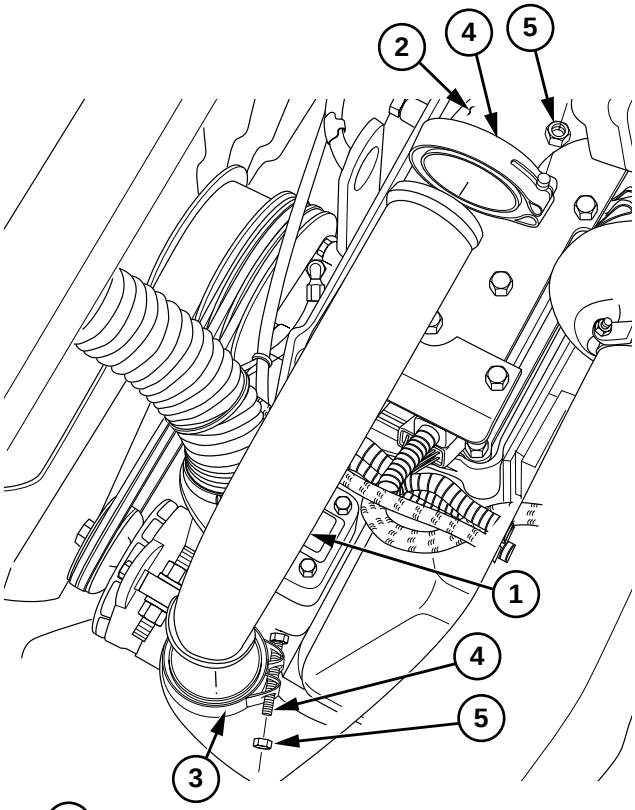
(2) Remove two clamps (2) and exhaust tube (3) from engine compartment.

(3) Remove two clamps (2) from exhaust tube (3). Discard clamps.





5-5. EXHAUST TUBE REPLACEMENT (CONT)



b. Left Exhaust Tube Installation

(1) Install exhaust tube (1) on turbocharger (2) and exhaust manifold (3) with two new clamps (4).

(2) Install two new locknuts (5) on clamps (4).

c. Right Exhaust Tube Removal

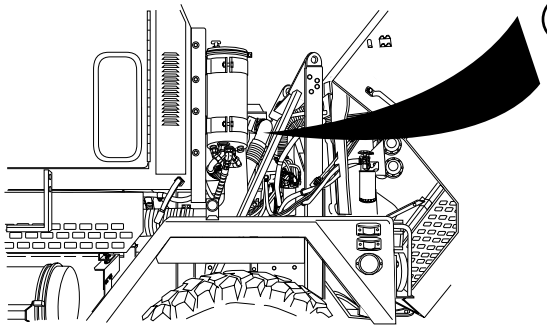
WARNING

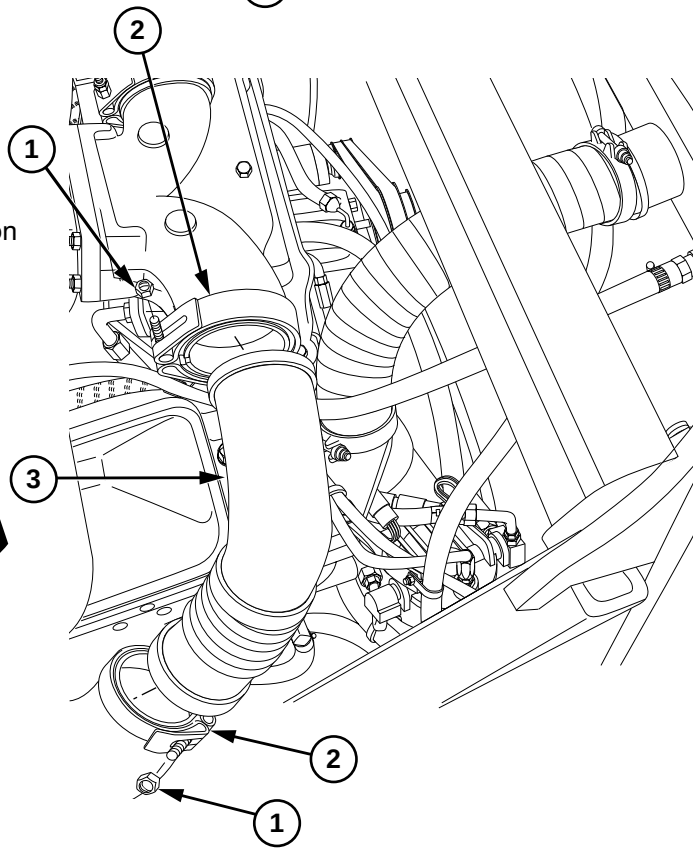
Ensure exhaust tube is cool before performing maintenance. Failure to comply may result in serious personal injury.

(1) Remove two locknuts (1) from clamps (2) on exhaust tube (3). Discard locknuts.

(2) Remove two clamps (2) and exhaust tube (3) from engine.

(3) Remove two clamps (2) from exhaust tube (3). Discard clamps.

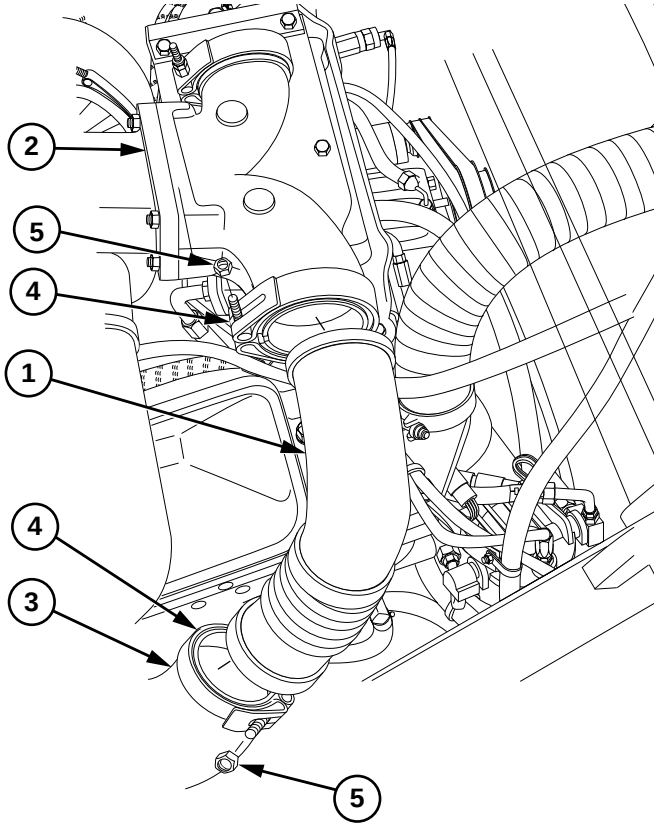




d. Right Exhaust Tube Installation

(1) Install exhaust tube (1) on turbocharger (2) and exhaust manifold (3) with two new clamps (4).

(2) Install two new locknuts (5) on clamps (4).



e. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check for exhaust leaks, excessive noise, and vibration.

(3) Shut off engine (TM 9-2320-360-10).

(4) Close engine hood (TM 9-2320-360-10).

(5) Remove wheel chocks.

5-6. LADDER SUPPORT REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Personnel ladder removed (TM 9-2320-360-10).

Materials/Parts
Adhesive (Item 2, Appendix C)
Locknuts (2) (Item 44, Appendix G)
Locknuts (2) (Item 68, Appendix G)
Locknut (Item 50, Appendix G)
Lockwasher (Item 102, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

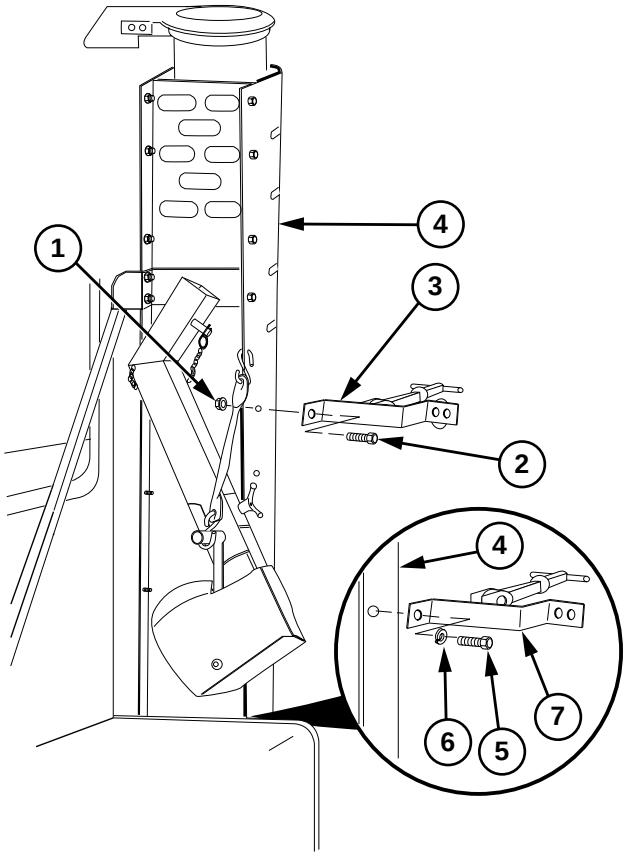
a. Removal

NOTE

- Do step (1) for top ladder support.
- Do step (2) for bottom ladder support.

(1) Remove locknut (1), screw (2), and ladder support (3) from tail pipe support (4). Discard locknut.

(2) Remove screw (5), lockwasher (6), and ladder support (7) from tail pipe support (4). Discard lockwasher.



b. Disassembly

(1) Remove two locknuts (1), screws (2), and bracket (3) from ladder support (4). Discard locknuts.

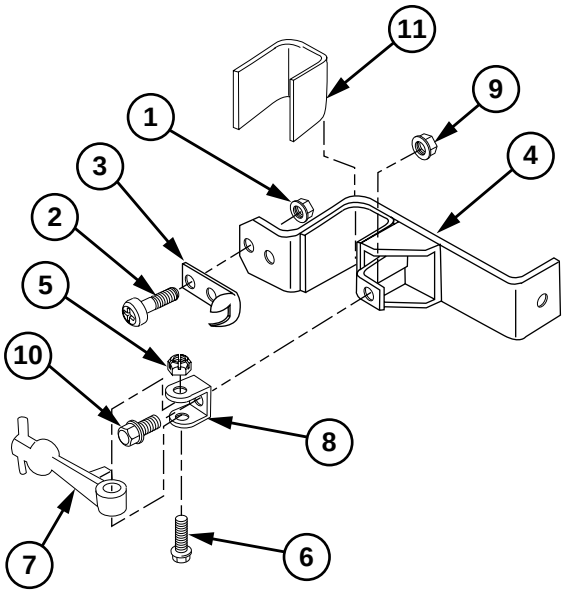
(2) Remove locknut (5), screw (6), and rubber hook (7) from bracket (8). Discard locknut.

(3) Remove locknut (9), screw (10), and bracket (8) from ladder support (4). Discard locknut.

NOTE

Do step (4) only if rubber strip is damaged.

(4) Remove rubber strip (11) from ladder support (4). Discard strip.



c. Assembly

WARNING

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

NOTE

Do steps (1) and (2) only if rubber strip was removed.

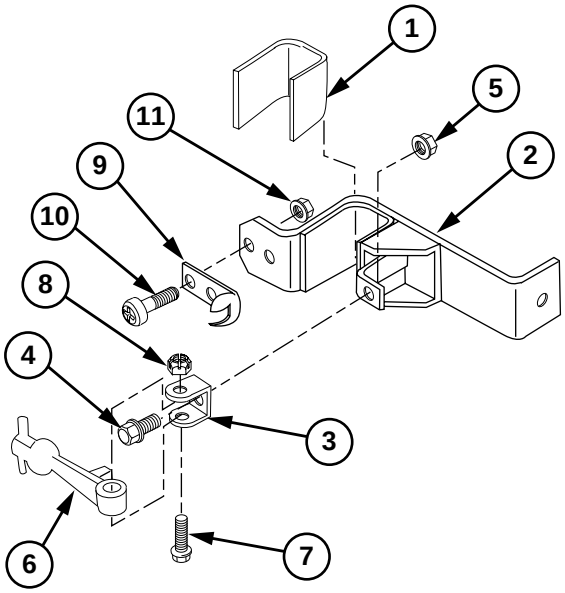
(1) Coat rubber strip (1) with adhesive.

(2) Install rubber strip (1) on ladder support (2).

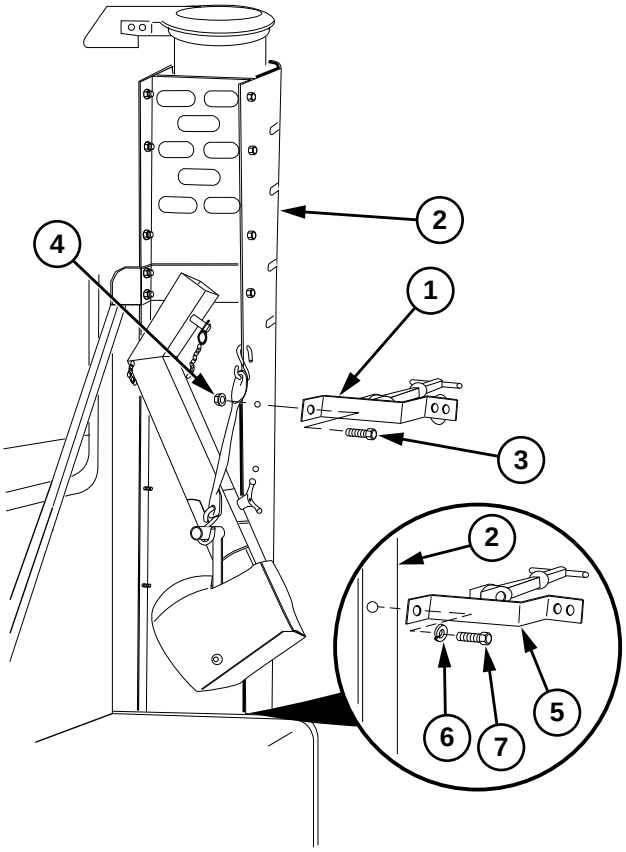
(3) Install bracket (3) on ladder support (2) with screw (4) and new locknut (5).

(4) Install rubber hook (6) on bracket (3) with screw (7) and new locknut (8).

(5) Install bracket (9) on ladder support (2) with two screws (10) and new locknuts (11).



5-6. LADDER SUPPORT REPAIR (CONT)



d. Installation

NOTE

- Do step (1) for top ladder support.
- Do step (2) for bottom ladder support.

(1) Install ladder support (1) on tail pipe support (2) with screw (3) and new locknut (4).

(2) Install ladder support (5) on tail pipe support (2) with new lockwasher (6) and screw (7).

e. Follow-On Maintenance

(1) Install personnel ladder (TM 9-2320-360-10).

(2) Remove wheel chocks.

CHAPTER 6
COOLING SYSTEM MAINTENANCE

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Section I. INTRODUCTION

6-1. INTRODUCTION

This chapter contains instructions for service, adjustment, and replacement of cooling system components at the Unit maintenance level. Some parts must be removed before cooling system parts can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

6-2. COOLING SYSTEM SERVICE

This task covers:
- a. Coolant Testing
- b. Draining
- c. Inspection
- d. Flushing
- e. Coolant Filter Replacement
- f. Filling
- g. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine hood opened (TM 9-2320-360-10).
Inner fenders removed (para 16-34).

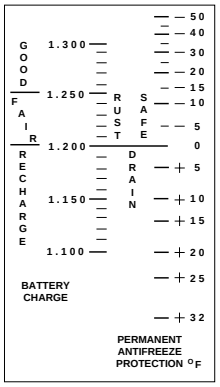
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Tester, Antifreeze and Battery (Item 49, Appendix F)
Test Kit, Reserve Alkalinity (Item 51, Appendix F)

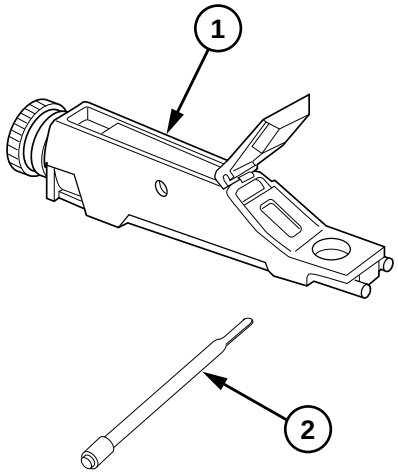
Materials/Parts
Antifreeze (Item 10, Appendix C)
Antifreeze Extender Additive (Item 9, Appendix C)
Filter, Coolant (Item 28, Appendix G)
Filter, Coolant (Item 28.1, Appendix G)

a. Coolant Testing

WARNING

Coolant may be very hot and under pressure from engine operation. Ensure engine is cool before performing maintenance. Failure to comply may cause serious injury.





(1) Test for antifreeze protection using antifreeze/battery tester (1). Using black dipstick (2), place a few drops of coolant on exposed portion of measuring window. Point tester toward bright light source.

(2) Observe permanent antifreeze protection level shown on scale.

CAUTION

Do not dilute Arctic-type antifreeze with water or inhibitor. Use it as issued. Dilution may result in damage to cooling system.

NOTE

Freeze protection indication beyond the limits shown in table 6-1 or below -55ºF (-48ºC) when ethylene glycol antifreeze is used will require partial coolant drain and replace with water. See LO 9-2320-360-12. Freeze protection must not exceed -55ºF (-48ºC).

(3) Adjust freeze protection if required according to scale reading and table 6-1.

NOTE

Do not use test stick at temperatures below 50ºF (10ºC).

(4) Test for reserve alkalinity (corrosion protection) using reserve alkalinity test kit. Dip test stick in coolant and remove immediately.

(5) Wait 15 seconds and compare color on stick with table 6-2.

CAUTION

- Do not add extender to Arctic-type antifreeze. Use it as issued. Dilution may result in damage to cooling system.
- Do not add extender to cooling system if coolant has been extended before.

(6) If coolant is unsafe, add three percent by volume (1 pint per 17 quarts) of antifreeze extender additive to cooling system. Note action taken in vehicle maintenance log.

(7) Withdraw small amount of coolant from radiator. Place in clean container. Inspect coolant for presence of excessive rust, foreign particles, or sediment.

(8) Drain and replace coolant in cooling system if either antifreeze protection or reserve alkalinity test fails or visual inspection indicates particles are present.

Table 6-1. Guide for Preparation of Ethylene Glycol Antifreeze Solutions

Lowest Estimated Temperature in Geographic Area	Pints of Ethylene Glycol Antifreeze to be Included in Preparation of 1 Gallon Antifreeze Solution
+20ºF (-7ºC)	1-1/2
+10ºF (-12ºC)	2
+0ºF (-18ºC)	2-3/4
-10ºF (-23ºC)	3-1/4
-20ºF (-29ºC)	3-1/2
-30ºF (-34ºC)	4
-40ºF (-40ºC)	4-1/4
-50ºF (-46ºC)	4
-55ºF (-48ºC)	4-1/4

Table 6-2. Coolant Color Guide

Blue	Coolant is safe to use.
Green	Coolant may be used until next PMCS.
Yellowish-Green	Coolant is unsafe to use.

6-2. COOLING SYSTEM SERVICE (CONT)

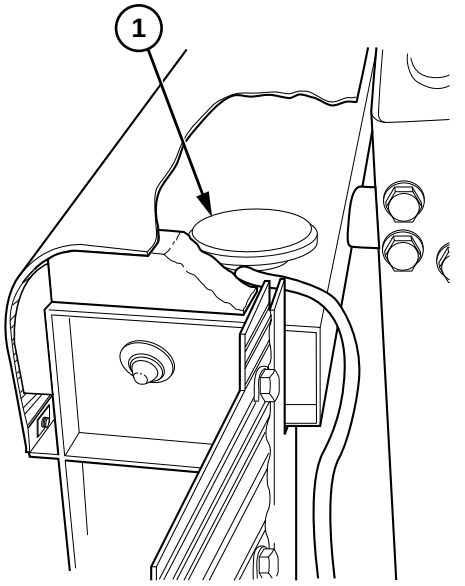
b. Draining

WARNING

Coolant may be very hot and under pressure from engine operation. Ensure engine is cool before performing maintenance. Failure to comply may cause serious injury.

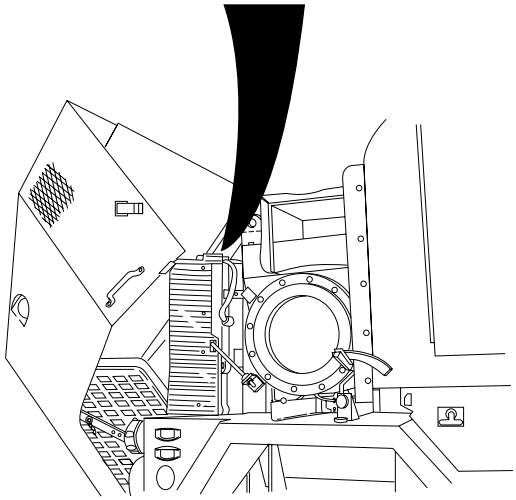
(1) Turn radiator cap (1) slowly counterclockwise to relieve system pressure.

(2) Remove radiator cap (1) after pressure is relieved.



WARNING

When servicing this vehicle, performing maintenance, or disposing of materials such as engine coolant, consult your Unit/local hazardous waste disposal center or safety office for local regulatory guidance. If further information is needed, please contact the Army environmental hotline at 1-800-872-3845. Improper disposal of this material may result in damage to environment or injury to personnel.

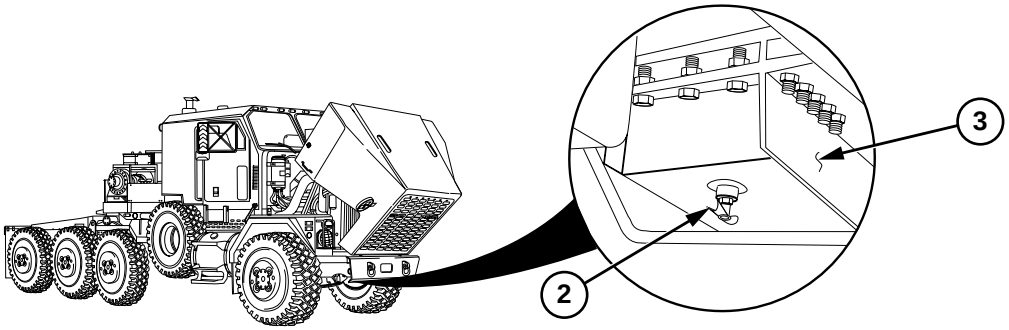


NOTE

Cooling system contains approximately 23.1 gal (87.4 L) of coolant.

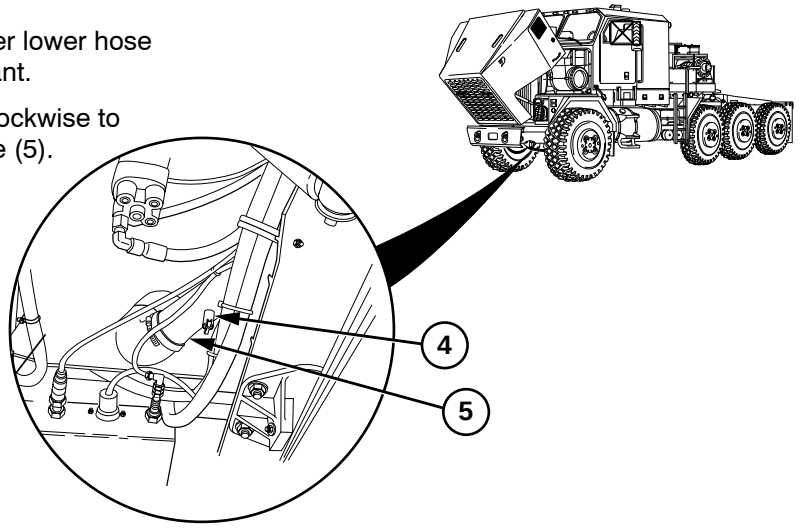
(3) Place suitable container under radiator drain cock (2) to collect coolant.

(4) Turn drain cock (2) counterclockwise to drain coolant from radiator (3).



(5) Place suitable container under lower hose drain cock (4) to collect coolant.

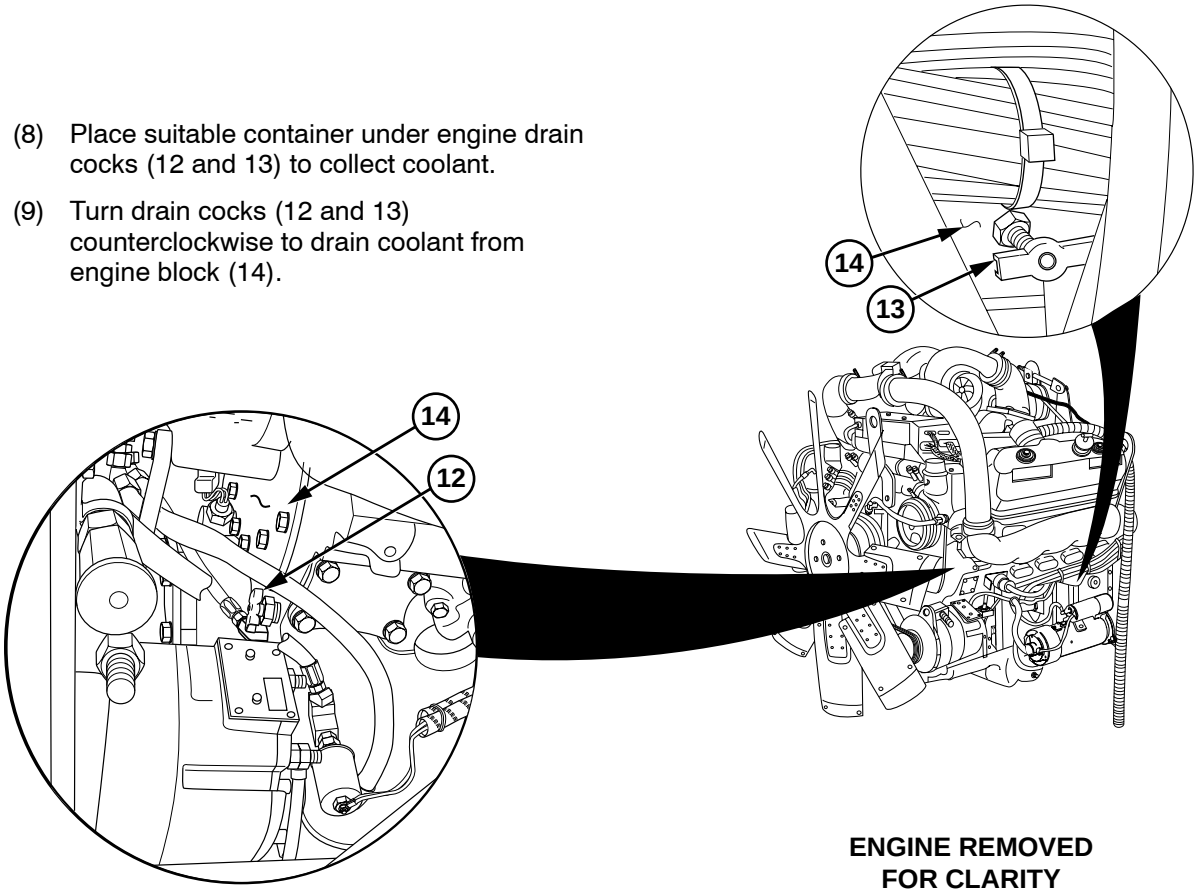
(6) Turn drain cock (4) counterclockwise to drain coolant from lower hose (5).



(7) Deleted.

(8) Place suitable container under engine drain cocks (12 and 13) to collect coolant.

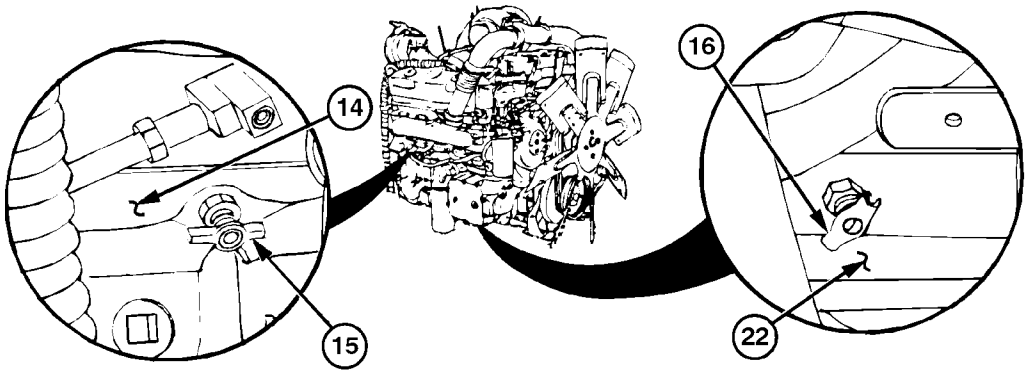
(9) Turn drain cocks (12 and 13) counterclockwise to drain coolant from engine block (14).



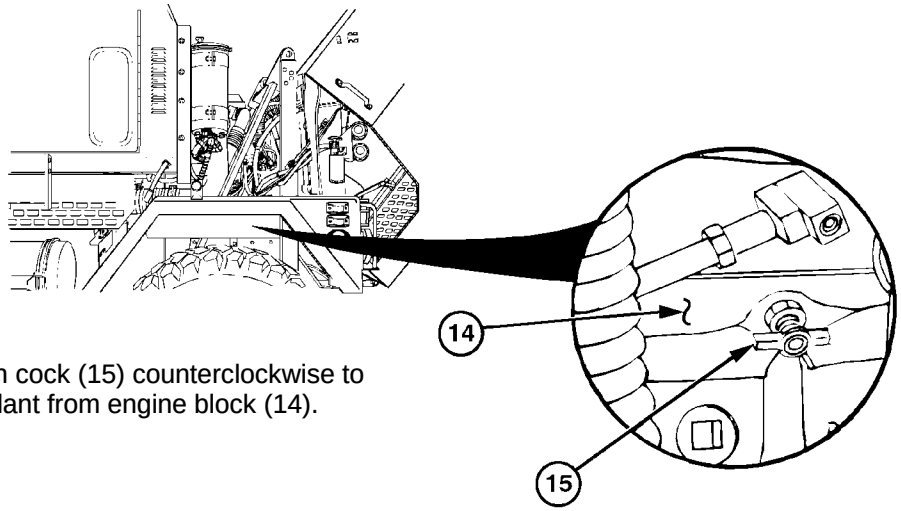
ENGINE REMOVED FOR CLARITY

6-2. COOLING SYSTEM SERVICE (CONT)

(10) Place suitable containers under engine drain cock (15) and oil cooler drain cock (16) to collect coolant.

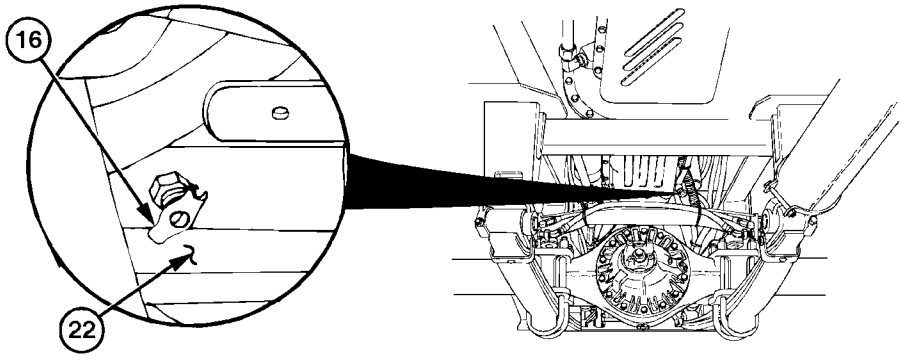


(11) Deleted.

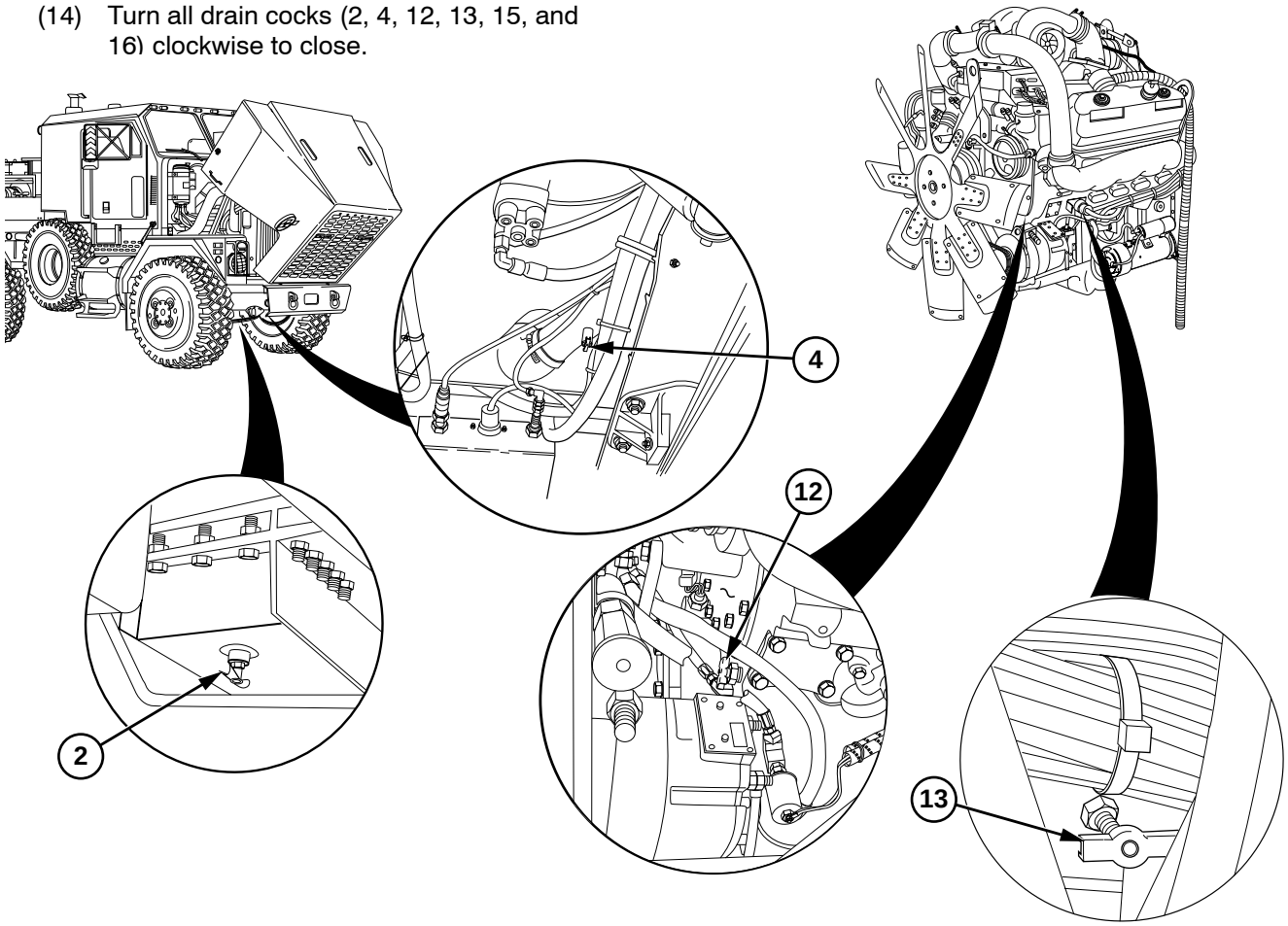


(12) Turn drain cock (15) counterclockwise to drain coolant from engine block (14).

(13) Turn drain cock (16) counterclockwise to drain coolant from oil cooler (22).



(14) Turn all drain cocks (2, 4, 12, 13, 15, and 16) clockwise to close.



c. Inspection

(1) Check hose connections and radiator filler neck for white, powdery deposits.

(2) Check hose connections for leaks.

(3) Check coolant for discoloration caused by dissolved contaminants. Flush cooling system if coolant is contaminated.

d. Flushing

CAUTION

Ensure engine is cool before performing maintenance. Failure to do so may cause rapid cooling and distortion of engine castings.

(1) Fill cooling system with clean water.

(2) Start engine (TM 9-2320-360-10).

(3) Operate engine until water temperature reaches 185-190°F (85-88°C).

(4) Drain cooling system (para 6-2b).

6-2. COOLING SYSTEM SERVICE (CONT)

e. Coolant Filter Replacement

(1) Turn outlet valve (1) and inlet valve (2) on coolant filter mounting head (3) clockwise to close.

(2) Turn coolant filter (4) counterclockwise to remove from coolant filter mounting head (3).

(3) Remove old gasket (5) with coolant filter (4). Discard gasket and filter.

CAUTION

Replacement coolant filters contain an engine coolant additive. Do not add additional additive to cooling system. Failure to comply may result in over concentration of additive.

NOTE

Coolant filter PFC-8A should be used during regularly scheduled filter replacement. Coolant filter PFC-24A must be used whenever coolant is changed.

(4) Lubricate new gasket (5) on new coolant filter (4) with thin film of coolant.

(5) Install new coolant filter (4) on coolant filter mounting head (3).

(6) Turn coolant filter (4) clockwise until gasket (5) contacts base of coolant filter mounting head (3).

CAUTION

Do not install coolant filter with a filter wrench. HAND-TIGHTEN ONLY.

(7) Hand-tighten coolant filter (4). Tighten an additional 3/4 turn after filter (4) contacts mounting head (3).

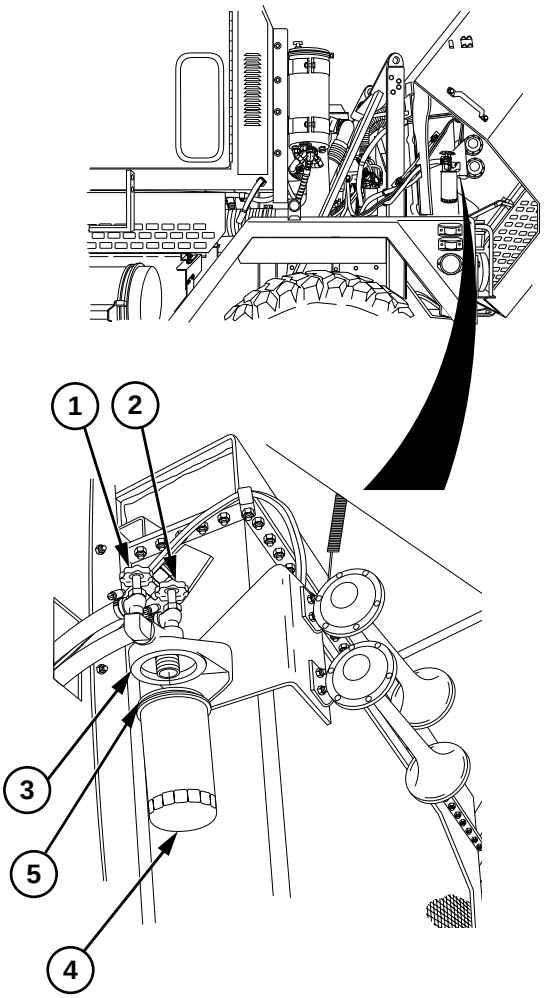
f. Filling

NOTE

Ensure all cooling system drain cocks are closed.

(1) Fill cooling system (LO 9-2320-360-12).

(2) Deleted.



(3) Deleted.

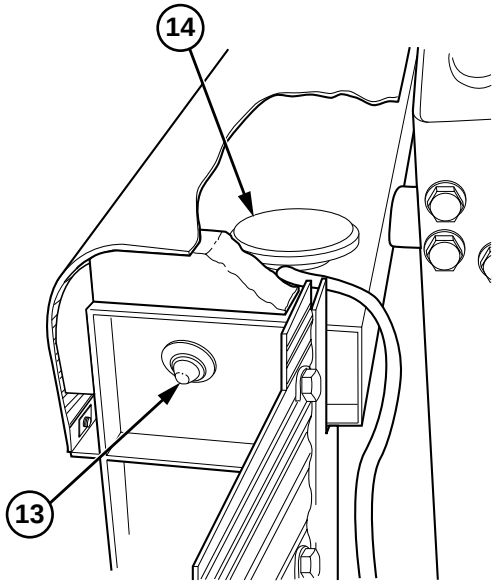
NOTE
Do not install radiator filler cap.

(4) Start engine (TM 9-2320-360-10).

NOTE
Coolant level will drop when normal operating temperature is reached and thermostat opens.

(5) Check coolant level after normal operating temperature has been reached. Coolant level should be visible in radiator sight glass (13). Add coolant as needed.

(6) Install radiator filler cap (14).



g. Follow-On Maintenance

(1) Close engine hood (TM 9-2320-360-10).

(1.1) Install inner fender (para 16-34).

(2) Remove wheel chocks.

6-3. RADIATOR AND SHROUD REPLACEMENT

This task covers:
a. Removal
b. Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine hood removed (para 16-7).
Radiator baffles removed (para 6-4).
Fan removed (para 6-8).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Remover and Setter, Stud (Item 33, Appendix F)
Socket Set, Socket Wrench, 1/2 In. Drive, Deep Style (Item 43, Appendix F)
Socket Wrench Set, 3/4 In. Drive (Item 46, Appendix F)
Wrench, Combination, 1-1/2 In. (Item 63, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)
Socket Wrench Set , 3/8 In. Drive (Item 45, Appendix F)

Materials/Parts
Adhesive-Sealant (Item 6, Appendix C)
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Oil, Lubricating (Item 26, Appendix C)
Tags, Identification (Item 32, Appendix C)
Filter, Coolant (Item 28, Appendix G)
Lockwashers (4) (Item 101, Appendix G)
Lockwashers (4) (Item 104, Appendix G)
Locknuts (2) (Item 57, Appendix G)
Studs (2) (Item 172, Appendix G)

Personnel Required
Two

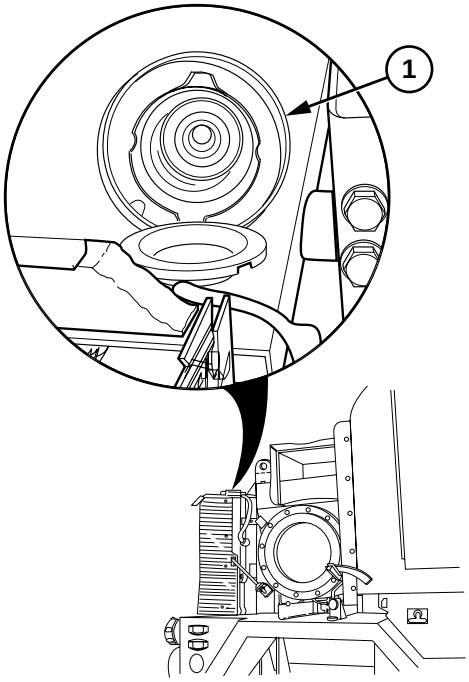
a. Removal

WARNING

Coolant may be very hot and under pressure from engine operation. Ensure engine is cool before performing maintenance. Failure to comply may cause serious injury.

(1) Turn radiator cap (1) slowly counterclockwise to relieve system pressure.

(2) Remove radiator cap (1) after pressure is relieved.

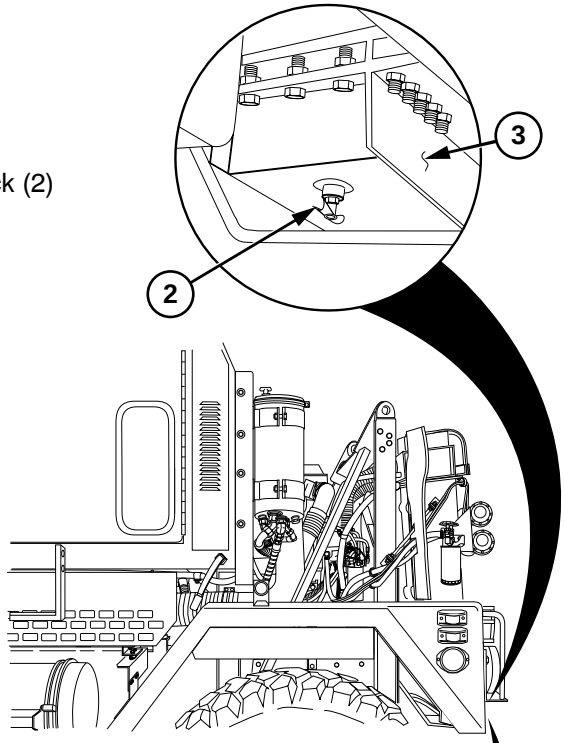


NOTE

Cooling system contains approximately 23.1 gal (87.4 L) of coolant.

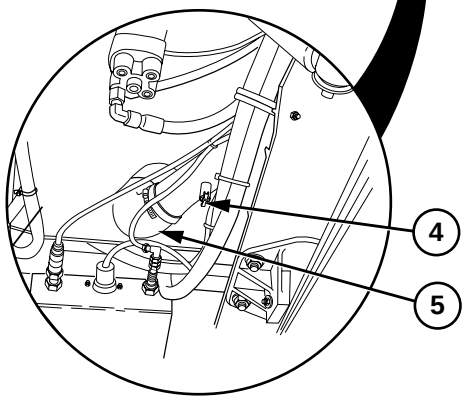
(3) Place suitable container under drain cock (2) to collect coolant.

(4) Turn drain cock (2) counterclockwise to drain coolant from radiator (3).



(5) Place suitable container under drain cock (4) to collect coolant.

(6) Turn drain cock (4) counterclockwise to drain coolant from lower hose (5).



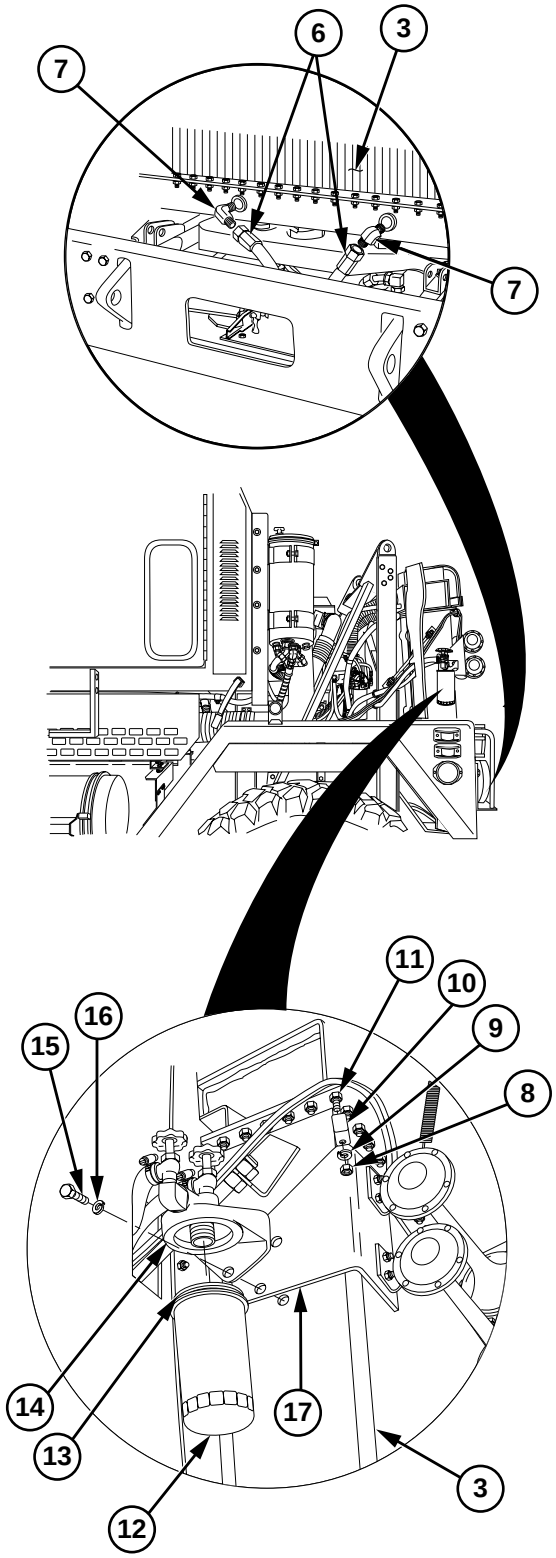
6-3. RADIATOR AND SHROUD REPLACEMENT (CONT)

NOTE

Tag and mark transmission hoses before removing.

(7) Place drain pan under transmission hoses (6).

(8) Remove two transmission hoses (6) and elbows (7) from radiator (3). Cap fittings and plug hoses.

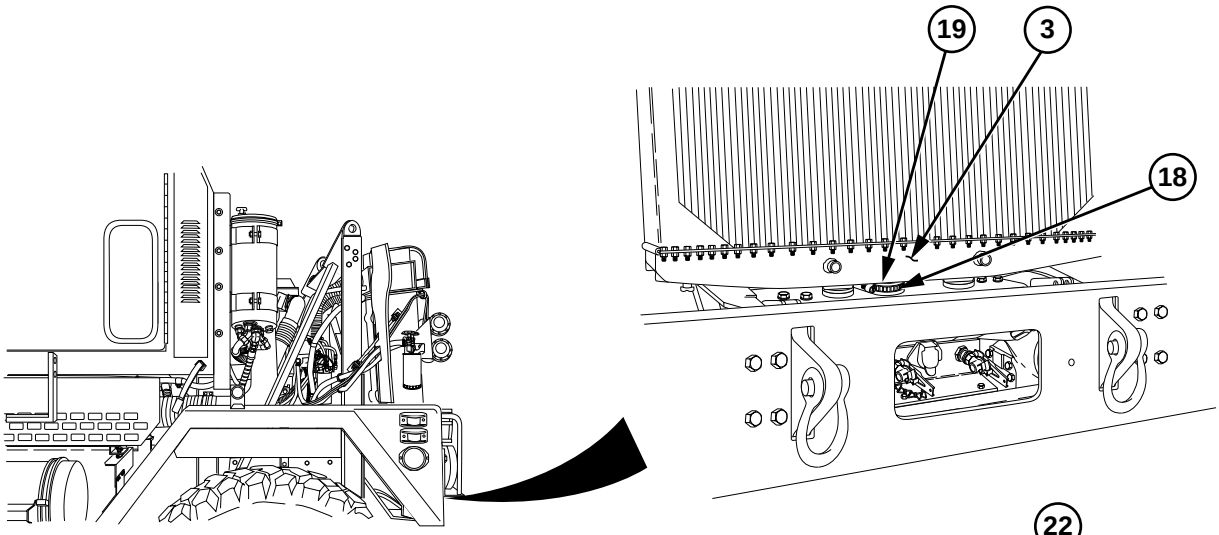


(9) Remove nut (8), lockwasher (9), and clip (10) from screw (11). Discard lockwasher.

(10) Remove coolant filter (12) with gasket (13) from coolant filter mounting head (14). Discard gasket and filter.

(11) Remove three screws (15), lockwashers (16), coolant filter mounting head (14), and air horn bracket (17) from radiator (3) with aid of assistant. Discard lockwashers.

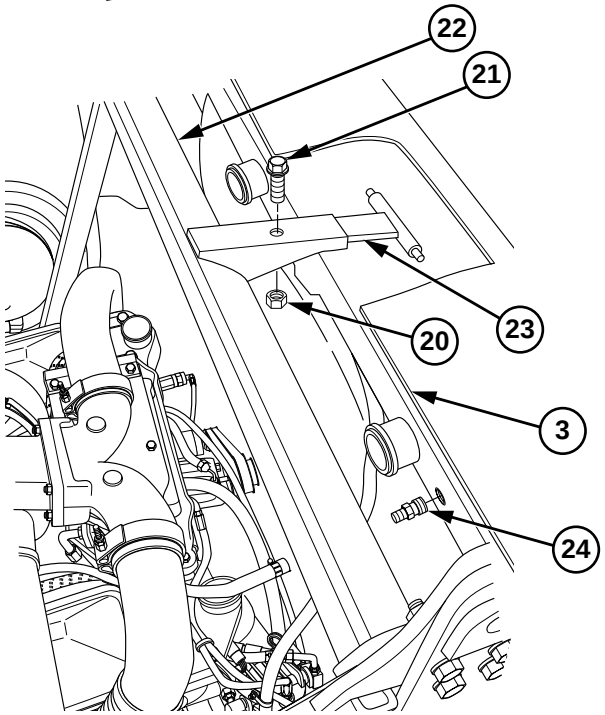
(12) Loosen clamp (18) and remove lower radiator hose (19) from radiator (3).



(13) Remove locknut (20) and screw (21) from hardlift cross bracket (22).

(14) Slide hood spring bracket (23) away from radiator (3).

(15) Remove fitting (24) from radiator (3).

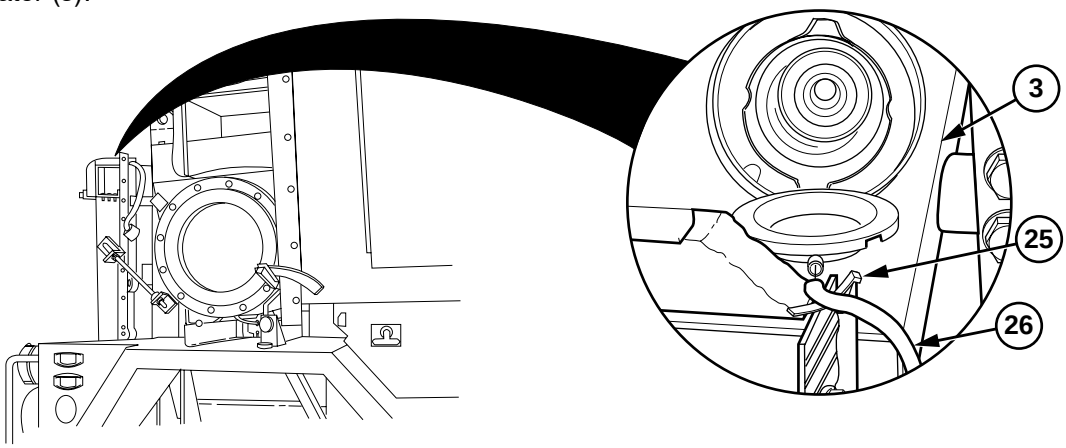


NOTE

Location of plastic cable tie should be marked before removal.

(16) Remove plastic cable tie (25) from overflow hose (26).

(17) Remove overflow hose (26) from radiator (3).



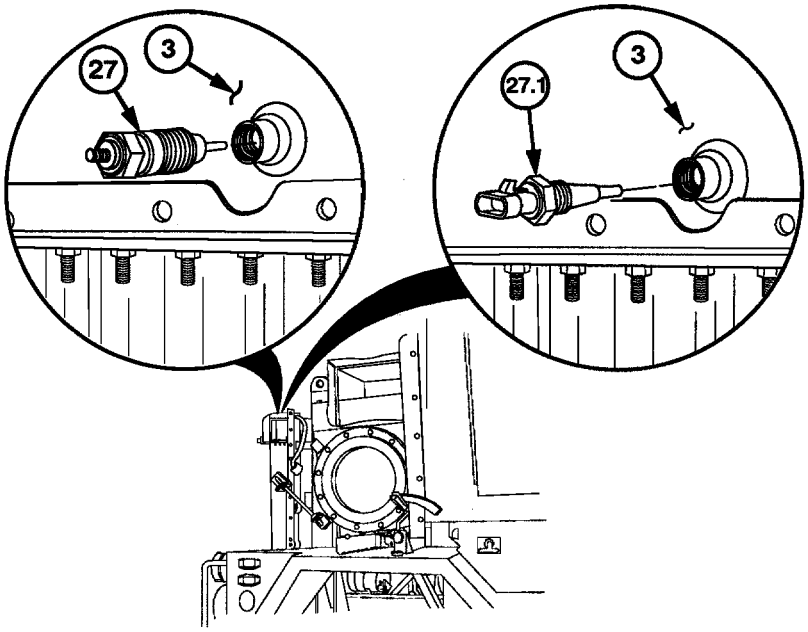
6-3. RADIATOR AND SHROUD REPLACEMENT (CONT)

NOTE

- Step (18) applies only to vehicles with DDEC II engines.
- Step (18.1) applies only to vehicles with DDEC III/IV engines.

(18) Remove sending unit (27) from radiator (3).

(18.1) Remove sending unit (27.1) from radiator (3).



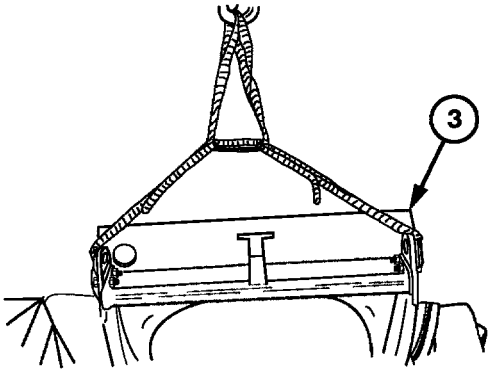
WARNING

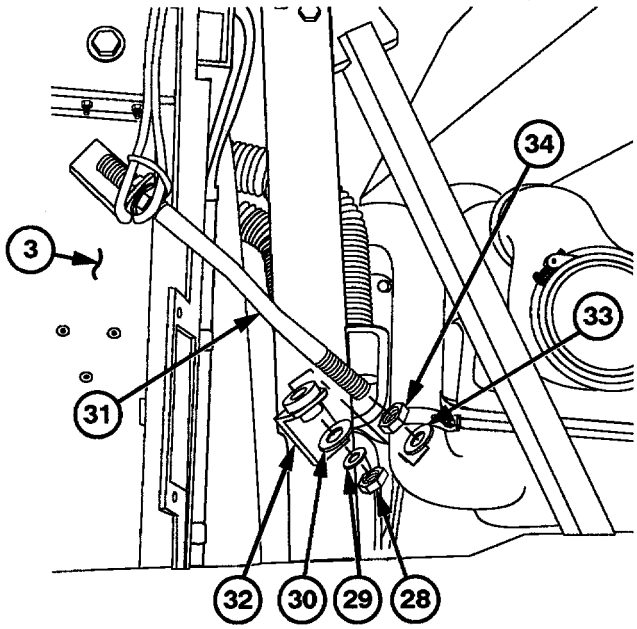
Keep out from under radiator while supported by lifting device to prevent serious injury.

CAUTION

Radiator weighs approximately 375 lb (170 kg). Use suitable lifting device to support radiator.

(19) Support radiator (3) with lifting device.





(20) Remove two nuts (28), lockwashers (29), and washers (30) from tie rods (31). Discard lockwashers.

(21) Tilt radiator (3) forward and remove two tie rods (31) from hardlift bracket (32).

(22) Remove two washers (33) and nuts (34) from tie rods (31).

(23) Remove two locknuts (35), washers (36), and spacers (37) from radiator (3). Discard locknuts.

(24) Remove screw (38) and clip (39) from radiator (3).

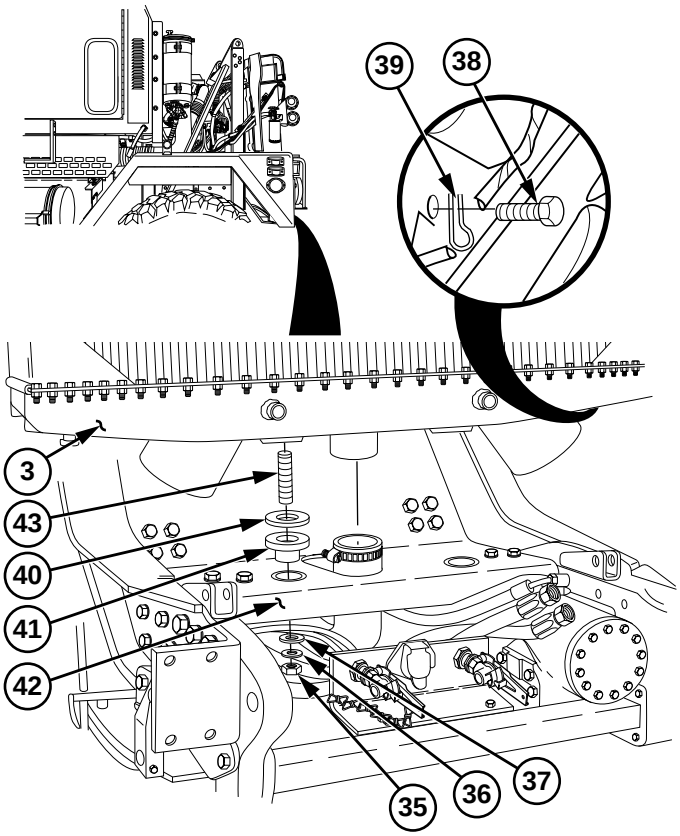
(25) Tilt radiator (3) forward and lift from vehicle.

(26) Remove two spacers (40) and mounting biscuits (41) from crossmember (42).

NOTE

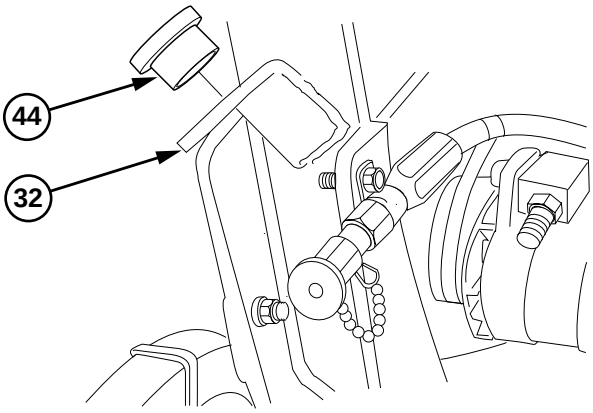
Do step (27) only if studs are damaged.

(27) Remove two studs (43) from radiator (3). Discard studs.

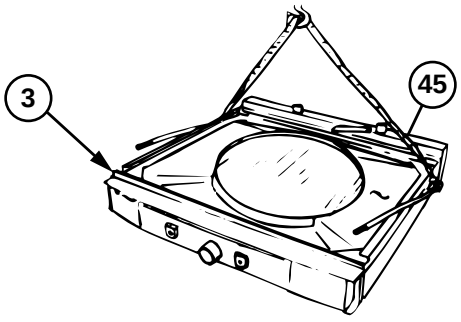


BUMPER REMOVED FOR CLARITY

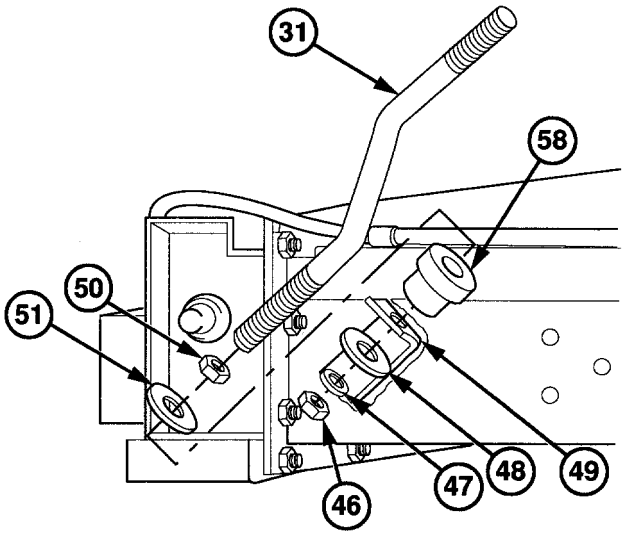
(28) Remove two rubber mounts (44) from hardlift brackets (32).



(29) Place radiator (3) on suitable support with fan shroud (45) facing up.



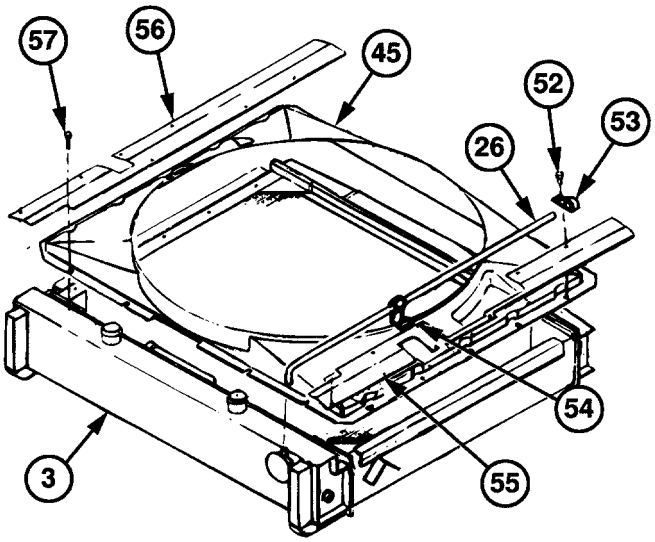
6-3. RADIATOR AND SHROUD REPLACEMENT (CONT)



(30) Remove two nuts (46), lockwashers (47), and washers (48) from tie rods (31). Discard lockwashers.

(31) Remove two tie rods (31) from brackets (49).

(32) Remove two nuts (50) and washers (51) from tie rods (31).



(33) Remove 10 screws (52), clamp (53), bracket (54), overflow hose (26), and 2 baffle mounting plates (55 and 56) from fan shroud (45).

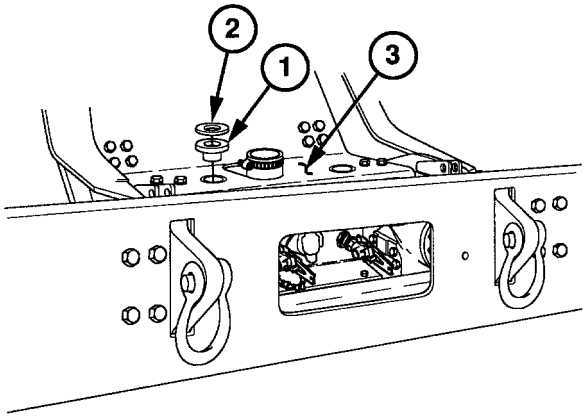
(34) Remove eight screws (57) and fan shroud (45) from radiator (3).

(35) Remove two rubber mounts (58) from radiator brackets (49).

b. Installation

NOTE

Apply soap to mounting biscuits to aid in installation.



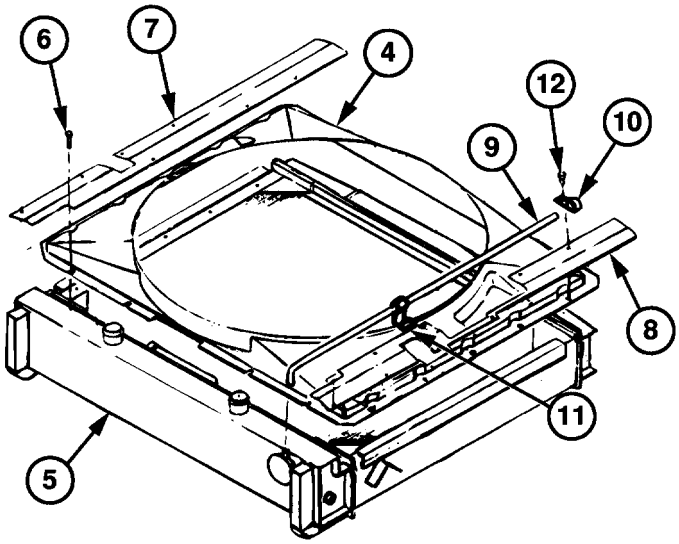
(1) Install two mounting biscuits (1) and spacers (2) on crossmember (3).

(2) Position fan shroud (4) on radiator (5).

(3) Install eight screws (6) in fan shroud (4). Do not tighten screws.

(4) Install 2 baffle mounting plates (7 and 8), overflow hose (9), clamp (10), bracket (11), and 10 screws (12) on fan shroud (4). Do not tighten screws.

(5) Tighten screws (6 and 12).



(6) Install two rubber mounts (13) on radiator brackets (14).

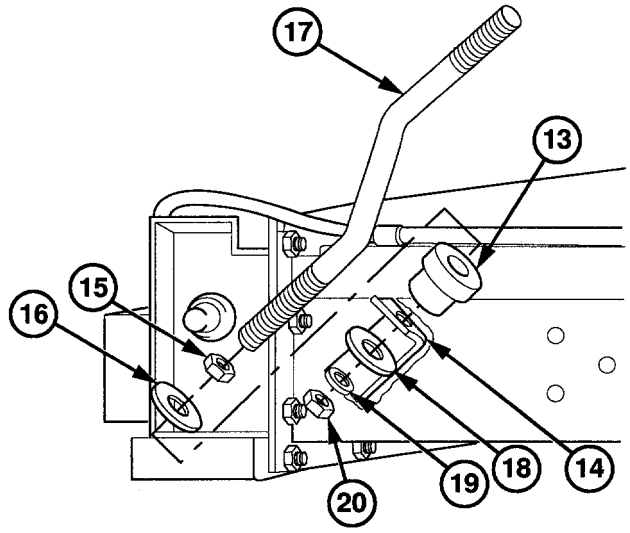
NOTE

Do not use nuts on large end of mount to tighten. Only use nuts on small end to tighten and mushroom mount.

(7) Install two nuts (15) and washers (16) on tie rods (17).

(8) Install two tie rods (17) in brackets (14).

(9) Install two washers (18), new lockwashers (19), and nuts (20) on tie rods (17).



6-3. RADIATOR AND SHROUD REPLACEMENT (CONT)

WARNING

Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.

NOTE

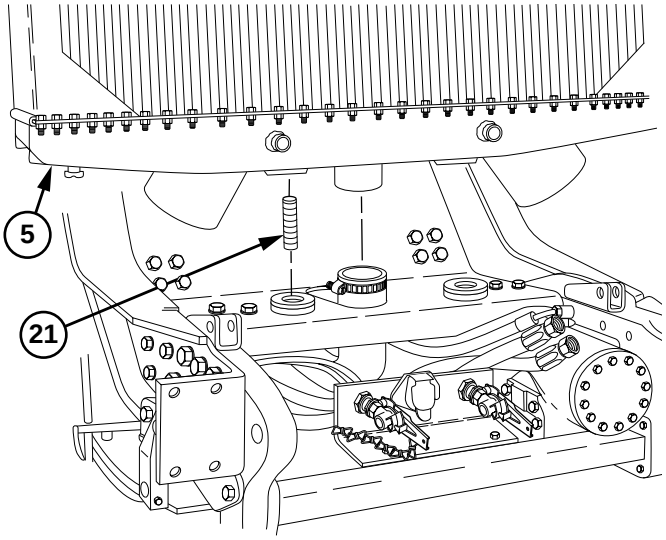
Do steps (10) and (11) only if studs were removed.

(10) Coat threads of two new studs (21) with adhesive-sealant.

NOTE

End of stud with least amount of threads is installed in radiator.

(11) Install two new studs (21) in radiator (5).



BUMPER REMOVED FOR CLARITY

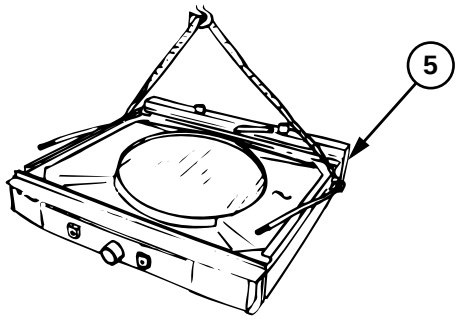
WARNING

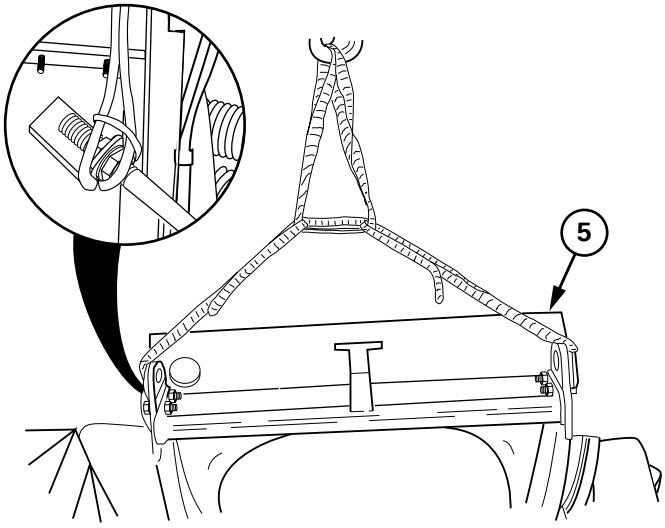
Keep out from under radiator while supported by lifting device to prevent serious injury.

CAUTION

Radiator weighs approximately 375 lb (170 kg). Use suitable lifting device to support radiator.

(12) Support radiator (5) with lifting device.





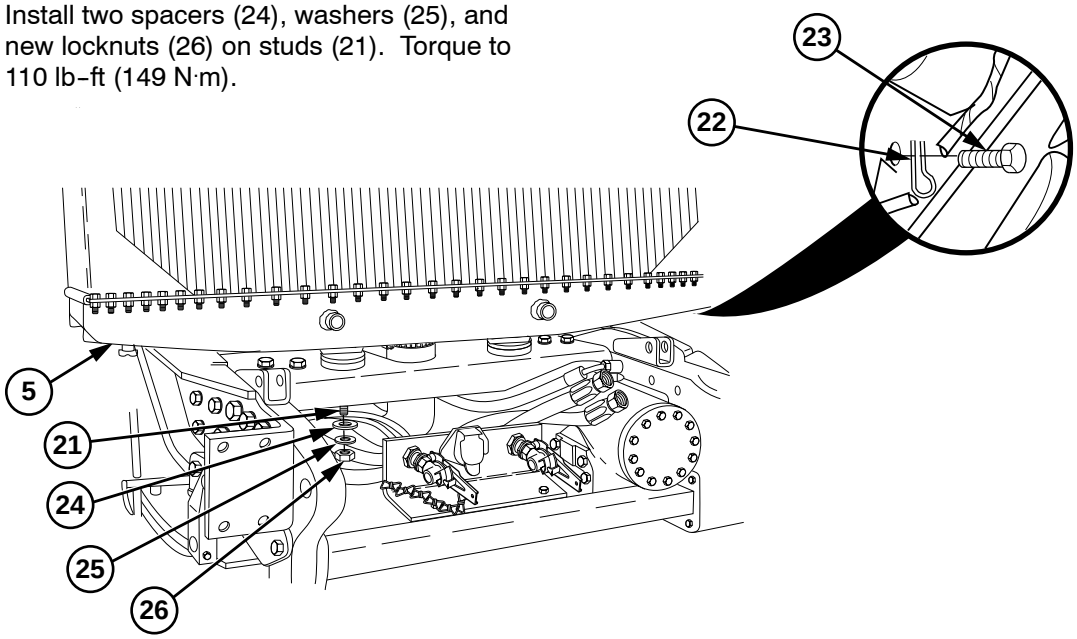
CAUTION

Ensure radiator is not bumped during installation. Damage to radiator may result.

(13) Lift radiator (5) and position on HET Tractor with aid of assistant.

(14) Install clip (22) and screw (23) on radiator (5).

(15) Install two spacers (24), washers (25), and new locknuts (26) on studs (21). Torque to 110 lb-ft (149 N·m).



(16) Install two rubber mounts (27) on hardlift brackets (28).

NOTE

Do not use nuts on large end of mount to tighten. Only use nuts on small end to tighten and mushroom mount.

(17) Install two nuts (29) and washers (30) on tie rods (17).

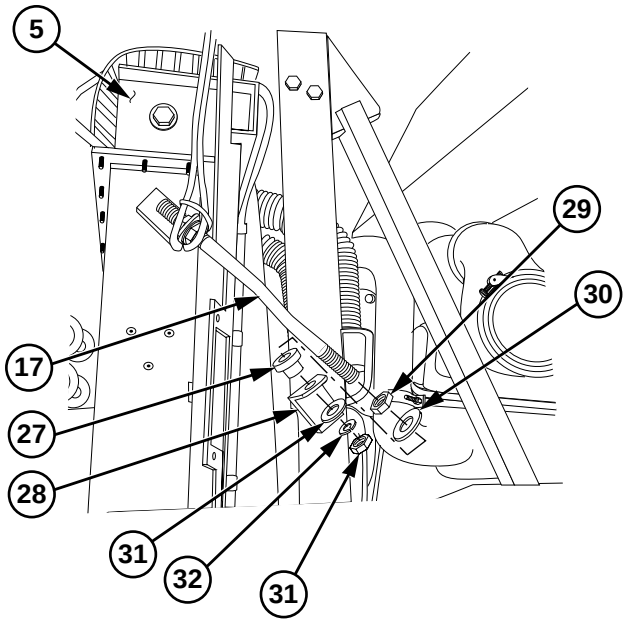
(18) Install tie rods (17) in hardlift bracket (28).

(19) Remove lifting device from radiator (5).

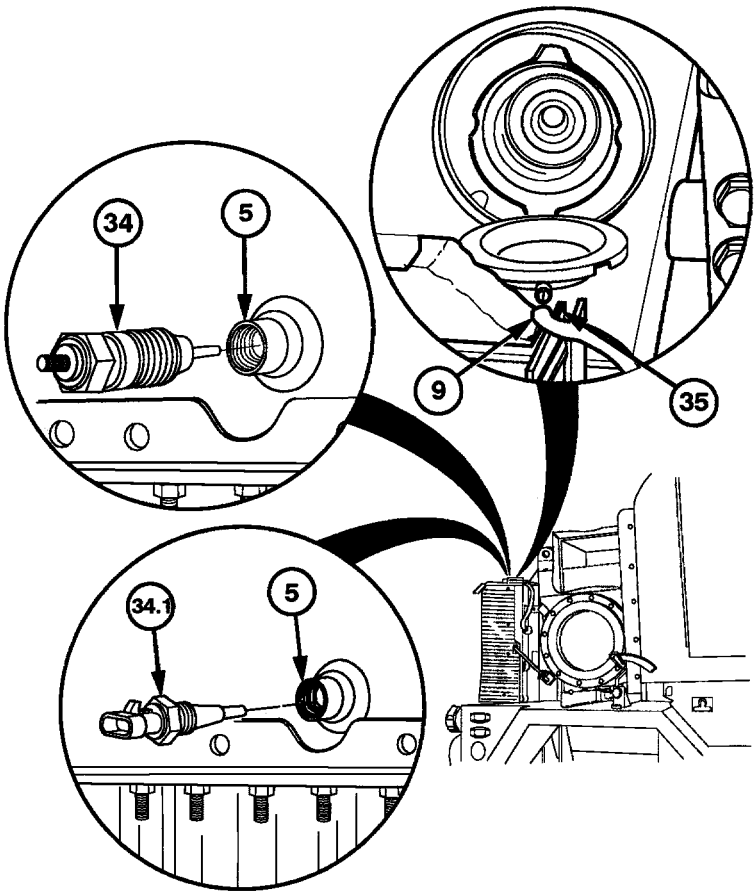
NOTE

- When tie rods are properly installed, clearance between top of radiator and hardlift bracket is 1.75 in. (4.45 cm).
- Tie rod should be centered between radiator and hardlift bracket.

(20) Install two washers (31), new lockwashers (32), and nuts (33) on tie rods (17).



6-3. RADIATOR AND SHROUD REPLACEMENT (CONT)



WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(21) Coat threads of sending unit (34) or (34.1) with pipe thread sealing compound.

NOTE

- Step (22) applies only to vehicles with DDEC II engines.
- Step (22.1) applies only to vehicles with DDEC III/IV engines.

(22) Install sending unit (34) on radiator (5).

(22.1) Install sending unit (34.1) on radiator (5). Torque sending unit to 180 lb-in. (20 N•m).

NOTE

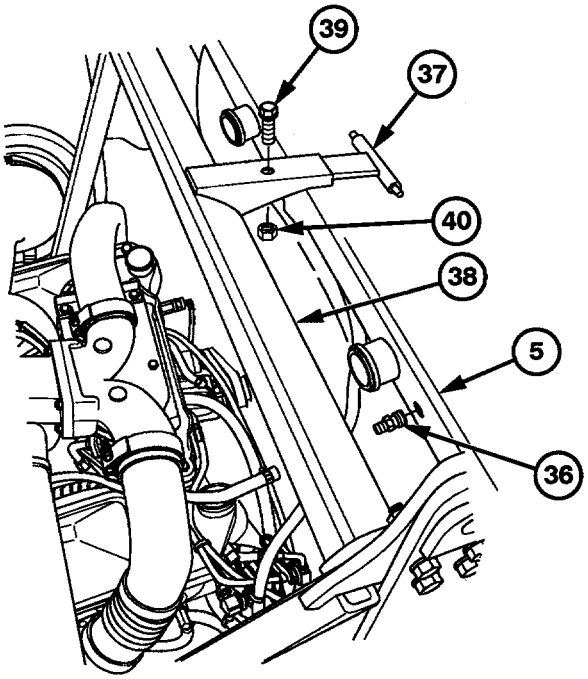
Plastic cable tie should be positioned in location marked during removal.

(23) Secure overflow hose (9) with plastic cable tie (35).

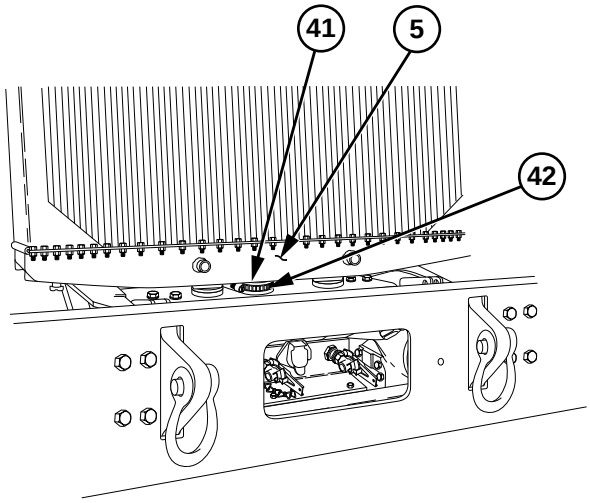
(24) Coat threads of fitting (36) with pipe thread sealing compound.

(25) Install fitting (36) in radiator (5).

(26) Install hood spring bracket (37) on hardlift cross bracket (38) with screw (39) and locknut (40).



(27) Install lower radiator hose (41) with clamp (42) on radiator (5). Torque to 100 lb-in. (11 N·m).



(28) Install air horn bracket (43) and coolant filter mounting head (44) on radiator (5) with three new lockwashers (45) and screws (46) with aid of assistant.

(29) Coat new gasket (47) with lubricating oil.

CAUTION

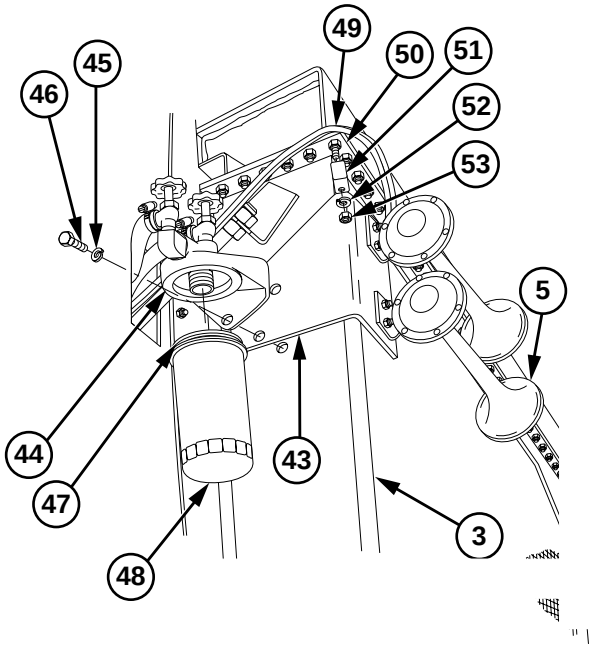
Do not install coolant filter with a filter wrench. HAND-TIGHTEN ONLY.

(30) Install new coolant filter (48) with new gasket (47) on coolant filter mounting head (44).

(31) Turn coolant filter (48) clockwise until gasket (47) contacts base of coolant filter mounting head (44).

(32) Hand-tighten coolant filter (48). Tighten an additional 3/4 turn after filter (48) contacts mounting head (44).

(33) Secure air lines (49) to radiator (5) with screw (50), clip (51), new lockwasher (52), and nut (53).



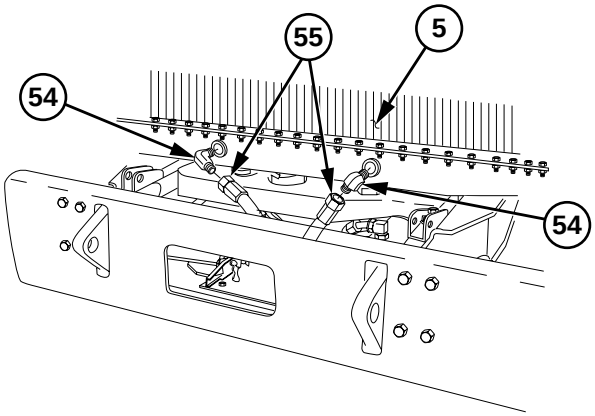
6-3. RADIATOR AND SHROUD REPLACEMENT (CONT)

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

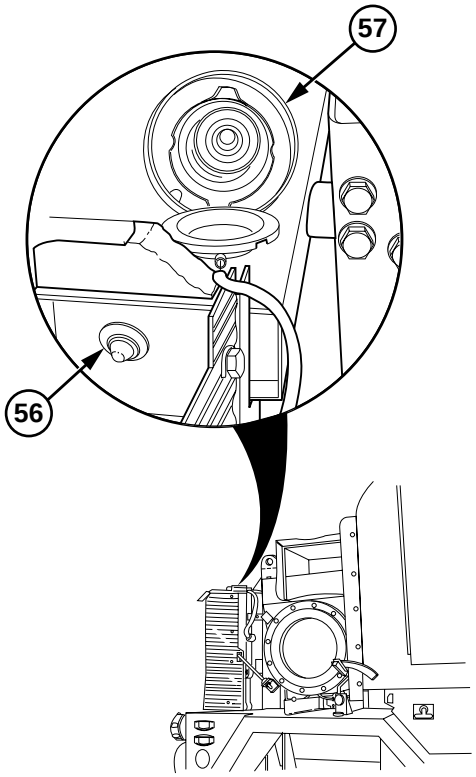
Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(34) Coat threads of two elbows (54) with pipe thread sealing compound.

(35) Remove caps from fittings and plugs from hoses. Install two elbows (54) in radiator (5).

(36) Install two transmission hoses (55) on elbows (54).



(37) Fill cooling system (LO 9-2320-360-12).

NOTE

Do not install radiator filler cap.

(38) Start engine (TM 9-2320-360-10).

NOTE

Coolant level will drop when normal operating temperature is reached and thermostat opens.

(39) Check coolant level after normal operating temperature has been reached. Coolant level should be visible in radiator sight glass (56). Add coolant as needed.

(40) Install radiator filler cap (57).

c. Follow-On Maintenance

(1) Install radiator baffles (para 6-4).

(2) Install fan (para 6-8).

(3) Install engine hood (para 16-7).

6-4. RADIATOR/HOOD BAFFLE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (20) (Item 68, Appendix G)
Clips, Panel Retainer (12) (Item 16.1, Appendix G)

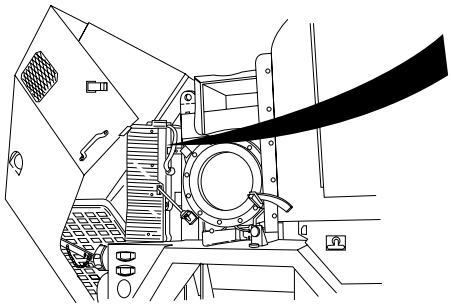
NOTE
Right and left baffles are removed and installed the same way.

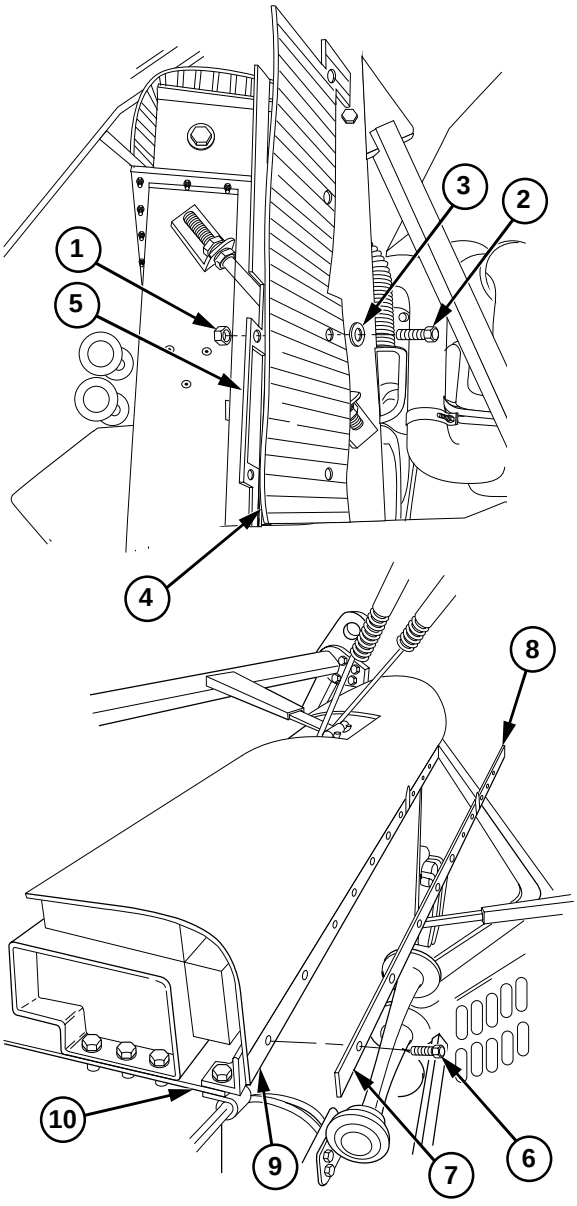
a. Removal

NOTE
Right and left radiator baffles are different. Tag and mark radiator baffles before removing.

(1) Remove four locknuts (1), screws (2), and washers (3) from baffle (4). Discard locknuts.

(2) Remove baffle (4) from mounting plate (5).

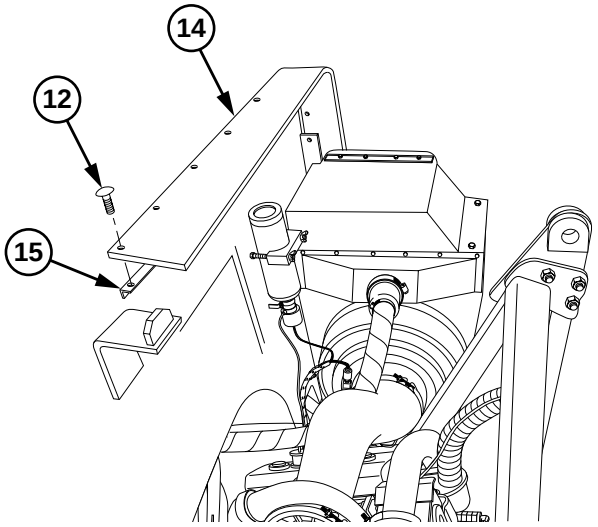




(3) Remove 12 screws (6), plate (7), plate (8), and baffle (9) from bracket (10).

6-4. RADIATOR BAFFLE REPLACEMENT (CONT)

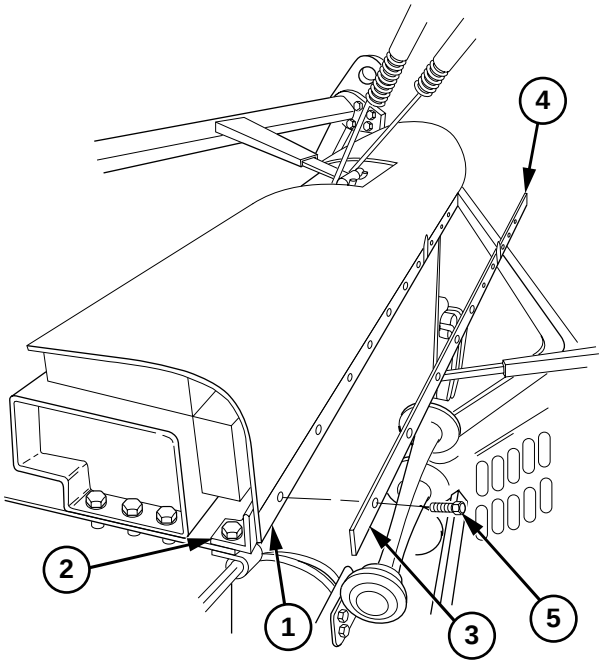
(4) Remove 12 panel retaining clips (12), washers (13), and hood baffle (14) from cab (15). Discard retaining clips.



b. Installation

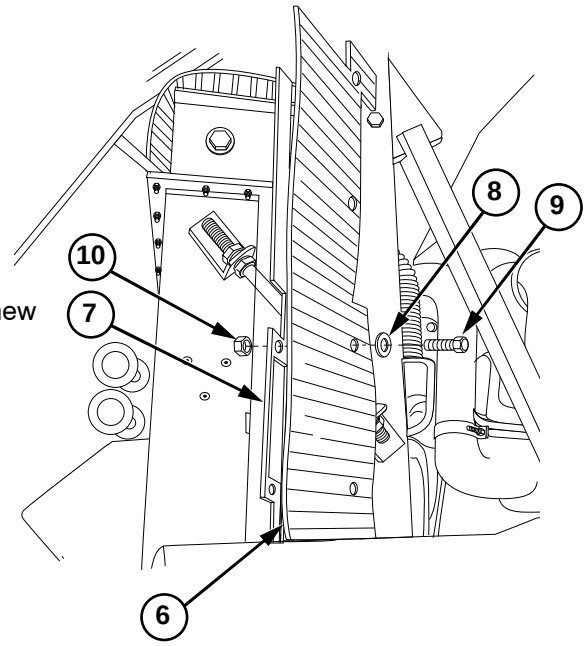
(1) Position baffle (1) on bracket (2).

(2) Install baffle (1), plate (3), and plate (4) on bracket (2) with 12 screws (5).

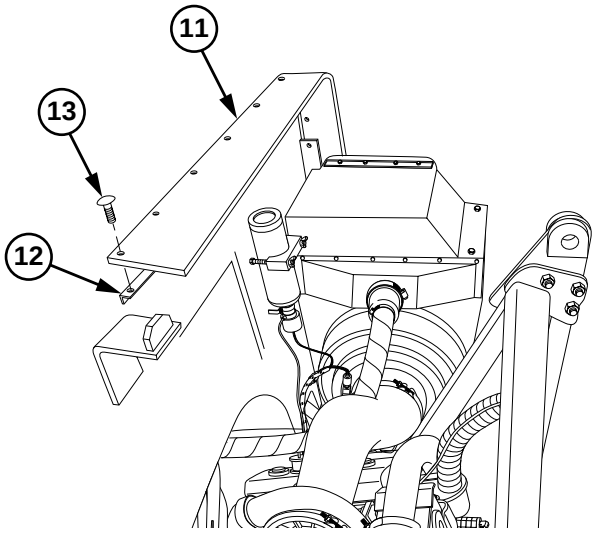


(3) Position baffle (6) on mounting plate (7).

(4) Install four washers (8), screws (9), and new locknuts (10) through baffle (6) and mounting plate (7).



(5) Install hood baffle (11) on cab (12) with 12 new panel retaining clips (13).



c. Follow-On Maintenance

(1) Close engine hood (TM 9-2320-360-10).

(2) Remove wheel chocks.

6-5. THERMOSTAT REPLACEMENT

This task covers:
a. Removal
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Cooling system drained (para 6-2).
ECM removed (para 7-29 or para 7-29.1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Compressor Unit, Air (Item 3, Appendix F)
Goggles, Industrial (Item 14, Appendix F)
Handle, Installer (Item 15, Appendix F)
Installer, Thermostat Seal (Item 16, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Adhesive-Sealant, Silicone (Item 3, Appendix C)
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Cleaning Compound, Solvent (Item 31, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Clamps (2) (Item 13, Appendix G)
Gasket, Thermostat, Left (Item 41, Appendix G)
Gasket, Thermostat, Right (Item 42, Appendix G)
Lockwashers (7) (Item 96, Appendix G)
Seals, Thermostat (2) (Item 166, Appendix G)

NOTE
Both thermostats should be replaced at the same time.

a. Removal

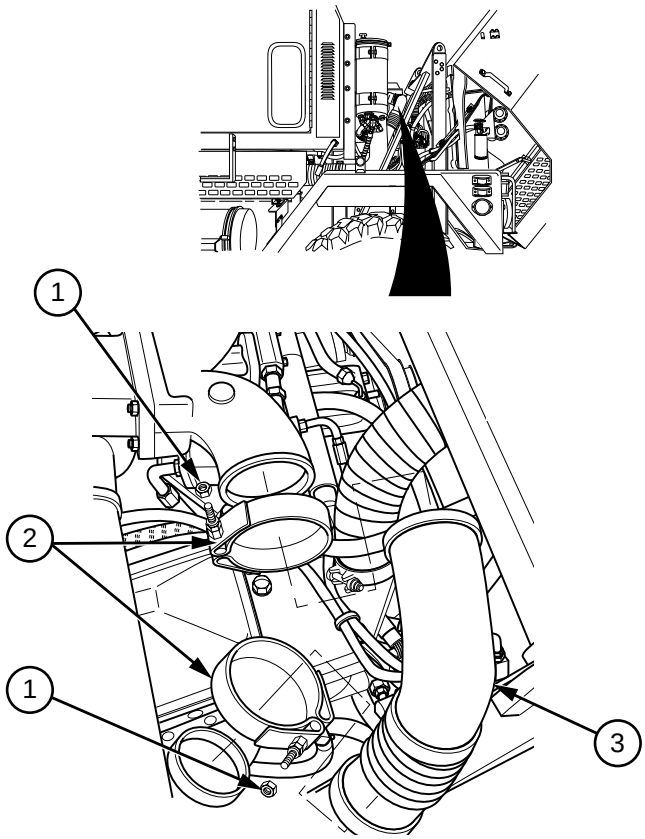
WARNING
Coolant may be very hot and under pressure from engine operation. Ensure engine is cool before performing maintenance. Failure to comply may cause serious injury.

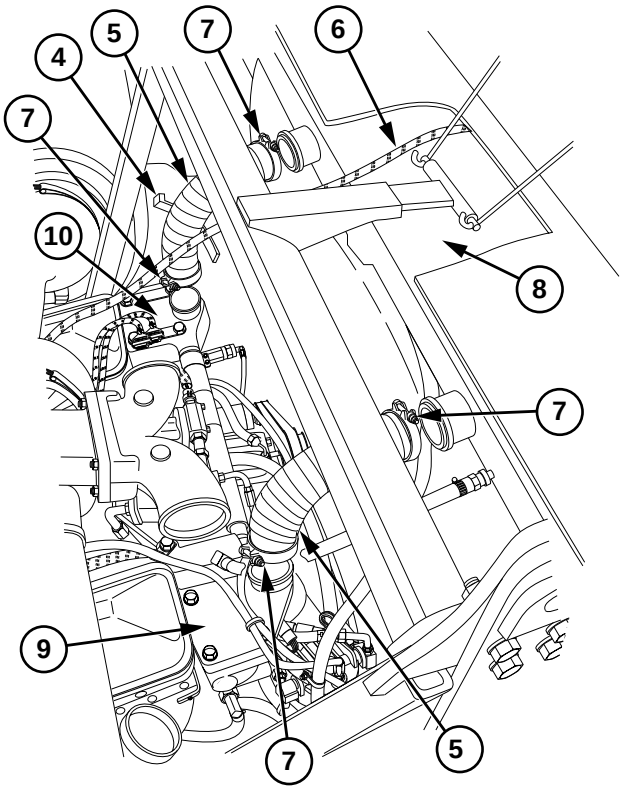
NOTE
- Steps (1) thru (12), (16), and (17) are used to remove right thermostat.
- Steps (4), (5), and (13) thru (17) are used to remove left thermostat.

(1) Remove two locknuts (1) from clamps (2) on exhaust tube (3). Discard locknuts.

(2) Remove two clamps (2) and exhaust tube (3) from engine.

(3) Remove two clamps (2) from exhaust tube (3). Discard clamps.





NOTE

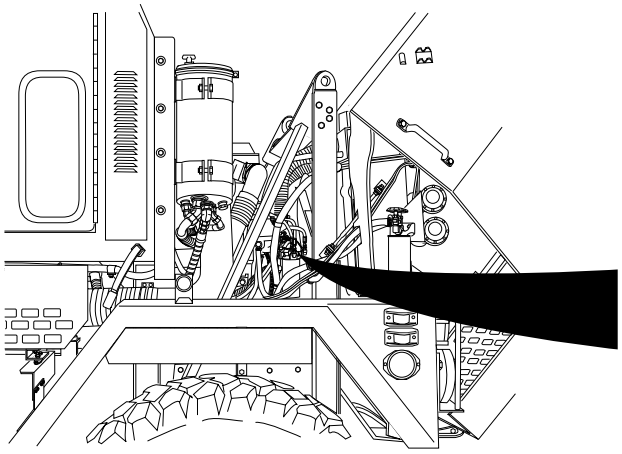
Location of plastic cable ties should be marked before removal.

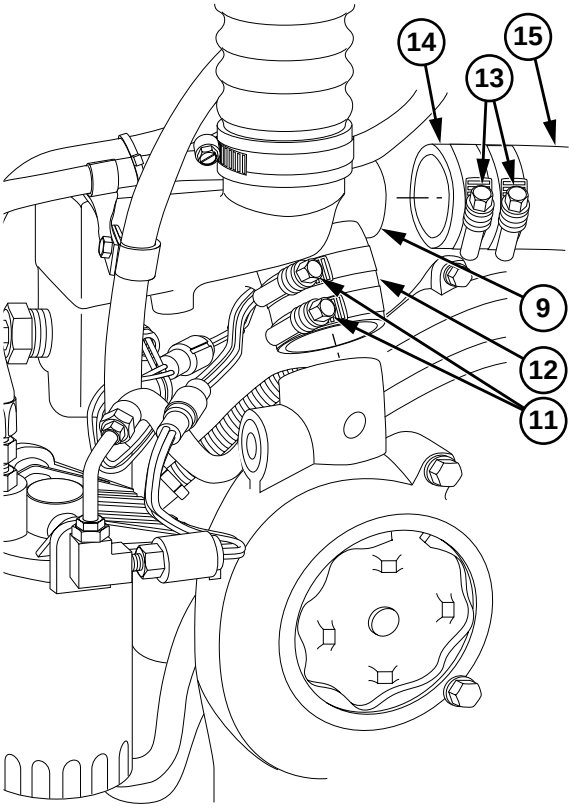
(4) Remove plastic cable ties (4) from hose (5) and wire harness (6).

(5) Remove four clamps (7) and two hoses (5) from radiator (8) and cover (9 or 10).

(6) Loosen two clamps (11) on hose (12). Slide hose on cover (9).

(7) Loosen two clamps (13) on hose (14). Slide hose on bypass tube (15).





6-5. THERMOSTAT REPLACEMENT (CONT)

(8) Remove radiator vent hose (16) and fitting (17) from cover (9).

(9) Remove adapter (18) and elbow (19) from fitting (17).

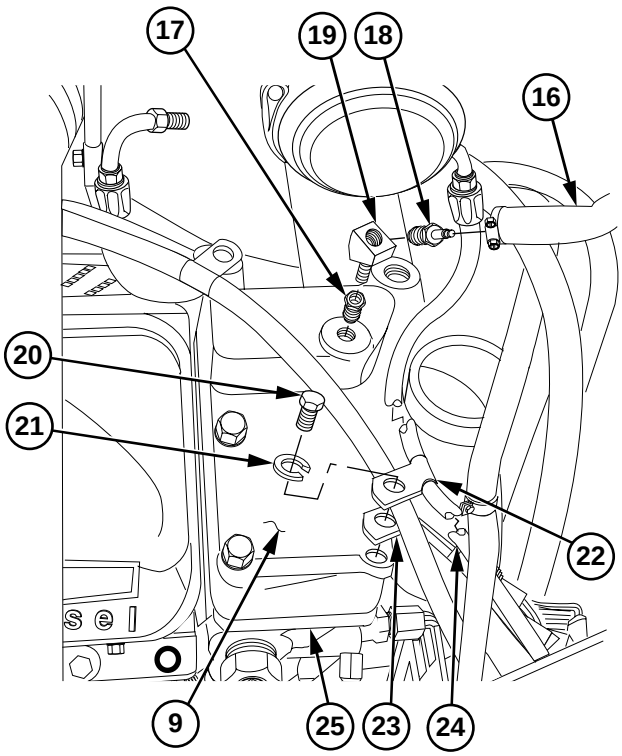
(10) Remove four screws (20), lockwashers (21), hose clip (22), and bracket (23) from cover (9). Discard lockwashers.

(11) Position fuel line (24) with clip (22) and bracket (23) in front of cover (9).

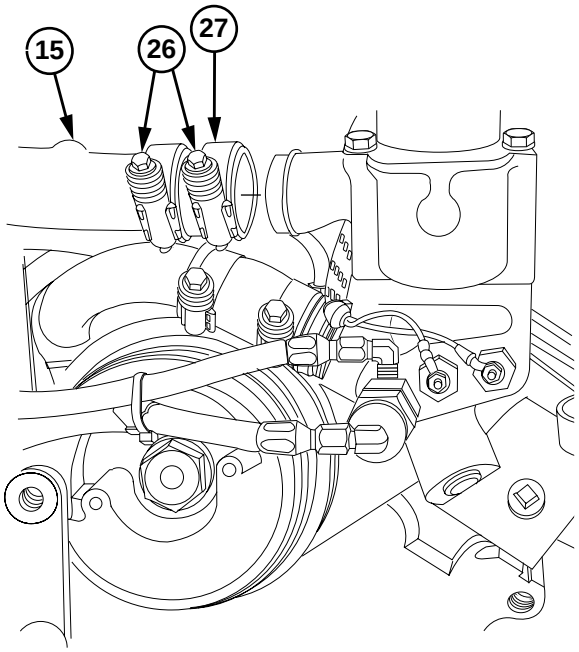
NOTE

Gently strike cover with soft-faced mallet to unseat from housing.

(12) Remove cover (9) from thermostat housing (25).



(13) Loosen two clamps (26). Slide hose (27) off bypass tube (15).

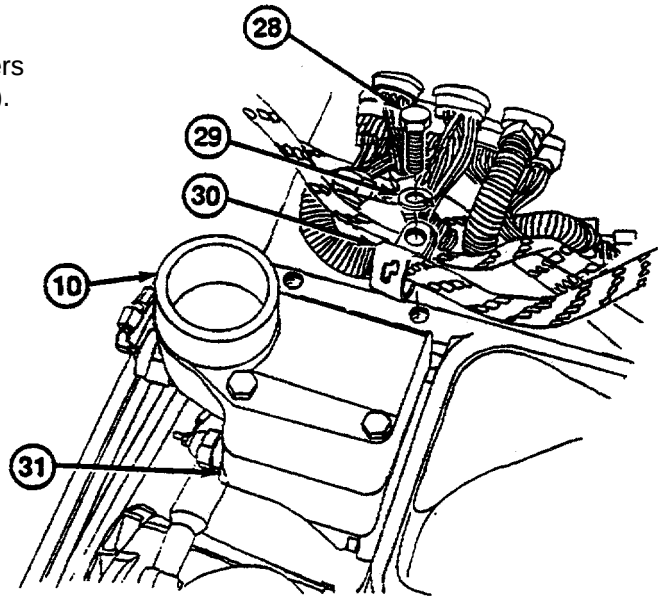


(14) Remove three screws (28), lockwashers (29), and wire clip (30) from cover (10). Discard lockwashers.

NOTE

Gently strike cover with soft-faced mallet to unseat from housing.

(15) Remove cover (10) from thermostat housing (31).

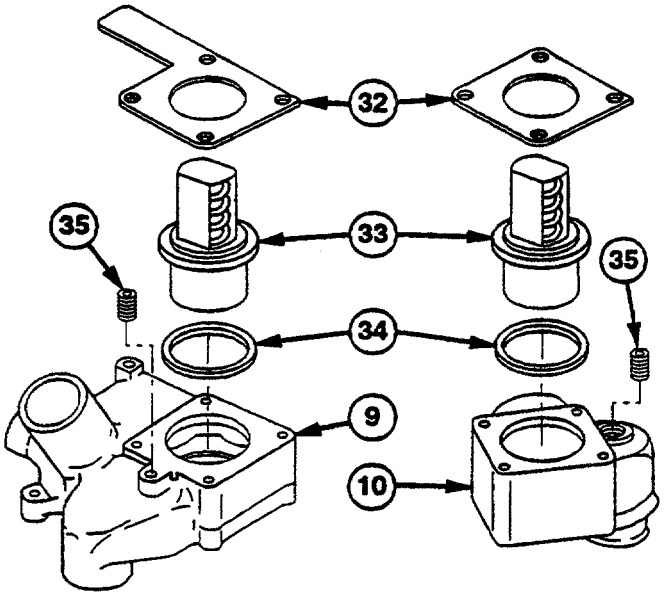


NOTE

Seal can be removed by tapping one side down into housing.

(16) Remove gasket (32), thermostat (33), and seal (34) from cover (9 or 10). Discard seal and gasket.

(17) Remove pipe plug (35) from cover (9 or 10).



6-5. THERMOSTAT REPLACEMENT (CONT)

b. Cleaning/Inspection

CAUTION

Use care when scraping gasket material from machined surface of housing. Damage to housing may result.

(1) Scrape gasket material from thermostat housing.

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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

•The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).
•Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.
•Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.
•Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.
•Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.

(2) Clean all parts with solvent cleaning compound.

WARNING

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

(3) Dry all parts with compressed air.
(4) Inspect cover for cracks or other damage. Replace all damaged parts.

c. Installation

NOTE

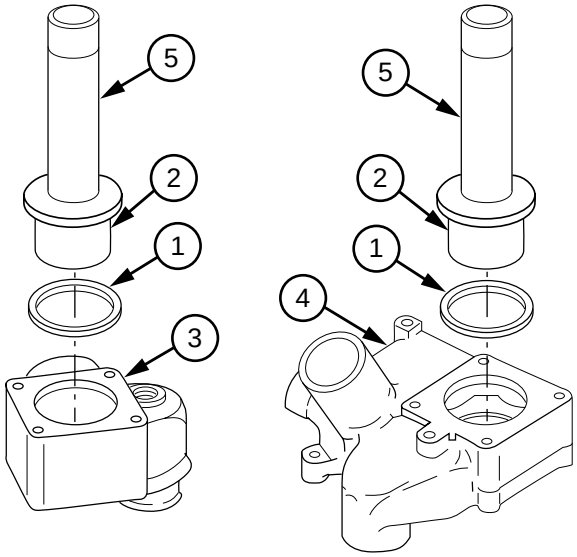
- Steps (1) thru (8) and (15) are used to install left thermostat.
- Steps (1) thru (6) and (9) thru (17) are used to install right thermostat.
- Lip on seal faces up toward thermostat cover.

(1) Install new seal (1) on seal installer (2).

NOTE

Seal installer determines distance seal is installed.

(2) Install new seal (1) on thermostat cover (3 or 4) using seal installer (2) and driver handle (5).



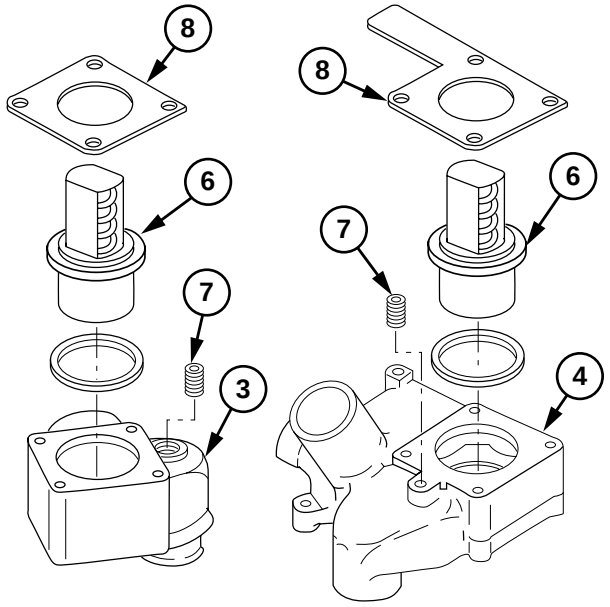
(3) Install thermostat (6) in thermostat cover (3 or 4).

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(4) Coat threads of pipe plug (7) with pipe thread sealing compound.

(5) Install pipe plug (7) on thermostat cover (3 or 4).

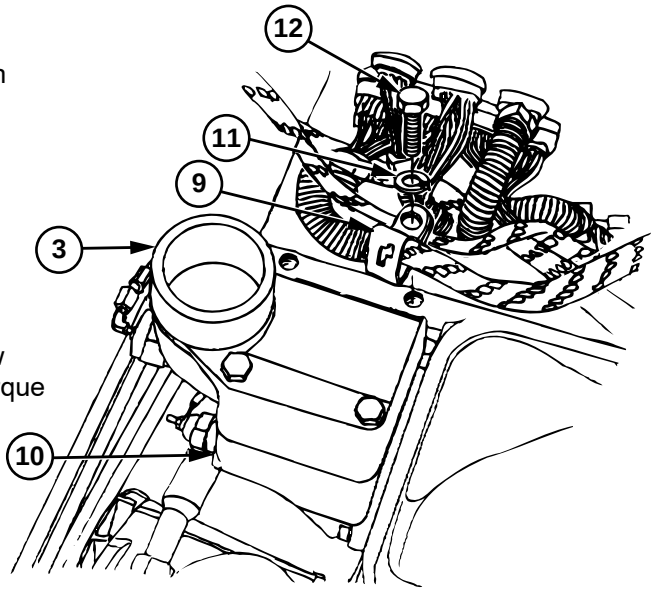


WARNING

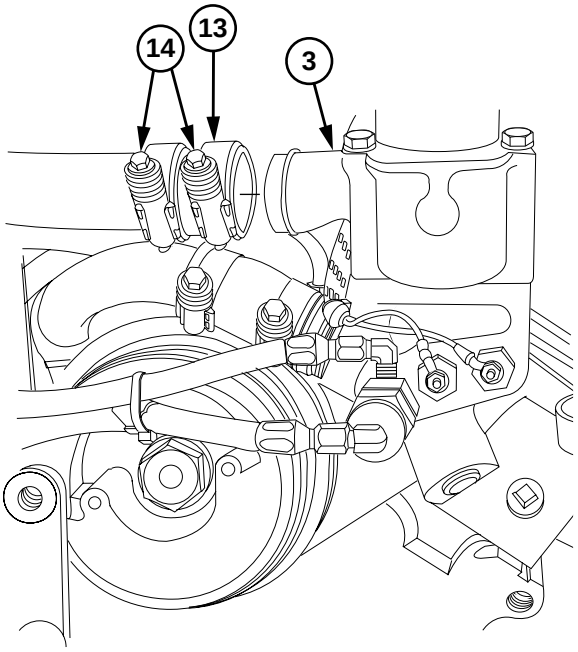
Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.

(6) Coat new gasket (8) with silicone adhesive-sealant. Install gasket (8) on thermostat cover (3 or 4).

(7) Install cover (3) and wire clip (9) on thermostat housing (10) with three new lockwashers (11) and screws (12). Torque to 25 lb-ft (34 N·m).



6-5. THERMOSTAT REPLACEMENT (CONT)



NOTE

When clamp is properly tightened, washer stacks should be nearly collapsed flat and screw tip should extend beyond clamp approximately 3/16 in. (8 mm).

(8) Slide hose (13) on cover (3). Torque clamps (14) to 90 lb-in. (10.3 N·m).

(9) Install cover (4), bracket (15), hose clip (16), and fuel line (17) on thermostat housing (18) with four new lockwashers (19) and screws (20). Torque to 25 lb-ft (34 N·m).

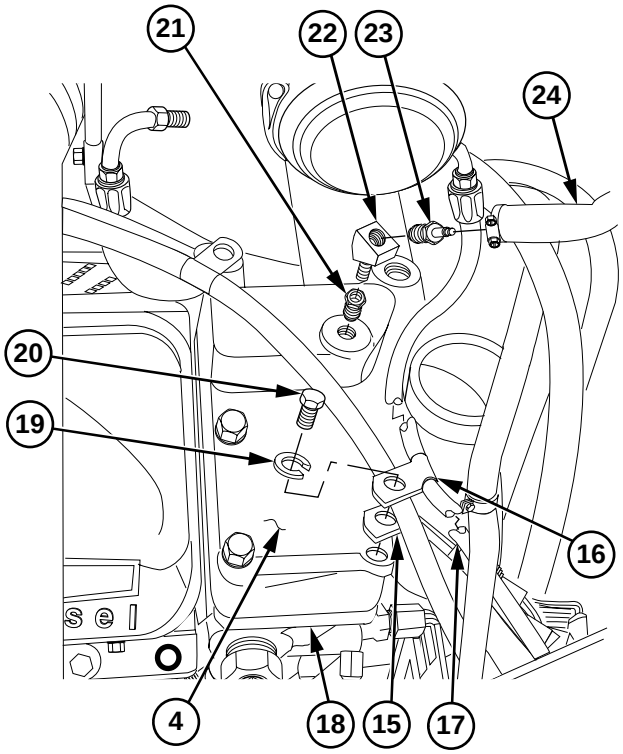
WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(10) Coat threads of fitting (21), elbow (22), and adapter (23) with pipe thread sealing compound.

(11) Install elbow (22) and adapter (23) on fitting (21).

(12) Install fitting (21) and radiator vent hose (24) on cover (4).



CAUTION

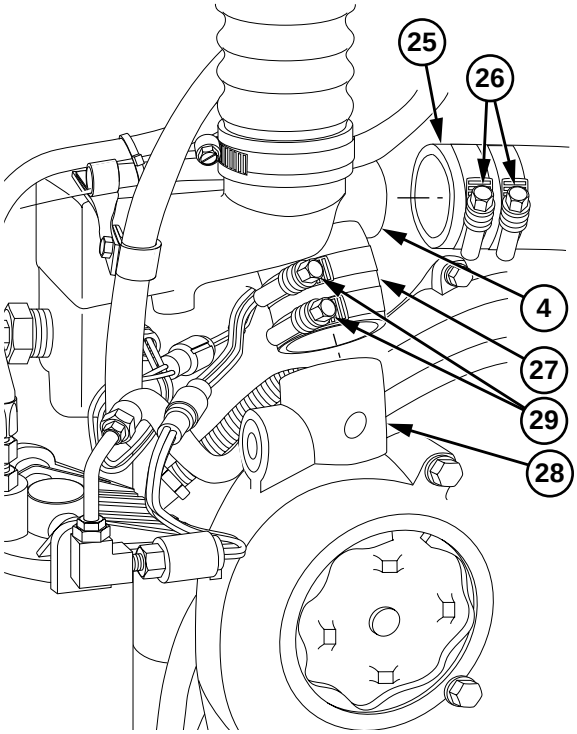
Clamp must be positioned next to bead on crossover tube. Do not position clamps over bead. Failure to comply may result in coolant leak and damage to equipment.

NOTE

When clamp is properly tightened, washer stacks should be nearly collapsed flat and screw tip should extend beyond clamp approximately 3/16 in. (8 mm).

(13) Slide hose (25) on cover (4). Torque clamps (26) to 90 lb-in. (10.3 N·m).

(14) Slide hose (27) on water pump (28). Tighten clamps (29).



(15) Install two hoses (30) and four clamps (31) on radiator (32) and thermostat cover (3 or 4). Torque to 100 lb-in. (11 N·m).

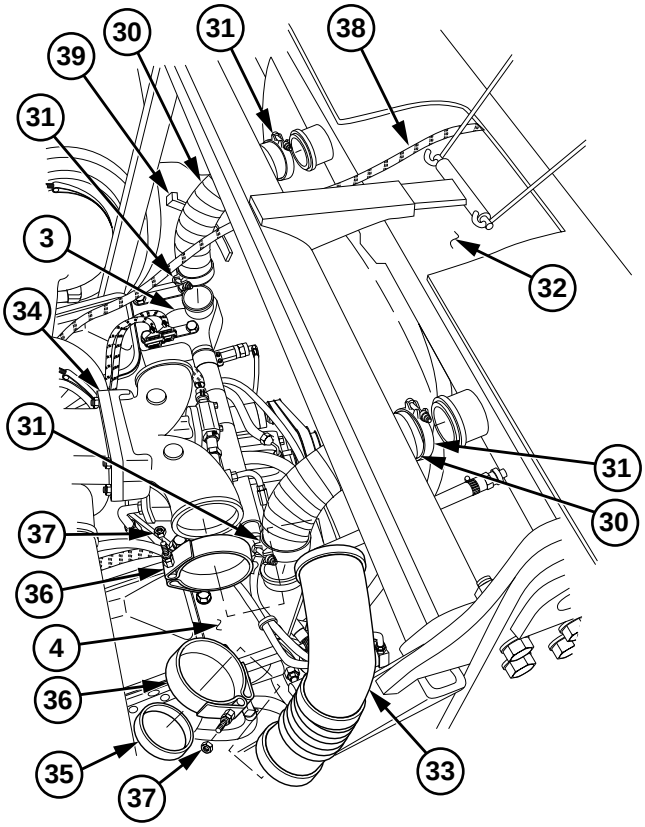
(16) Install exhaust tube (33) on turbocharger (34) and exhaust manifold (35) with two new clamps (36).

(17) Install two new locknuts (37) on clamps (36).

NOTE

Plastic cable tie should be positioned in location marked during removal.

(18) Secure wire harness (38) to hose (30) with plastic cable tie (39).



d. Follow-On Maintenance

(1) Install ECM (para 7-29 or para 7-29.1).

(2) Fill cooling system (para 6-2).

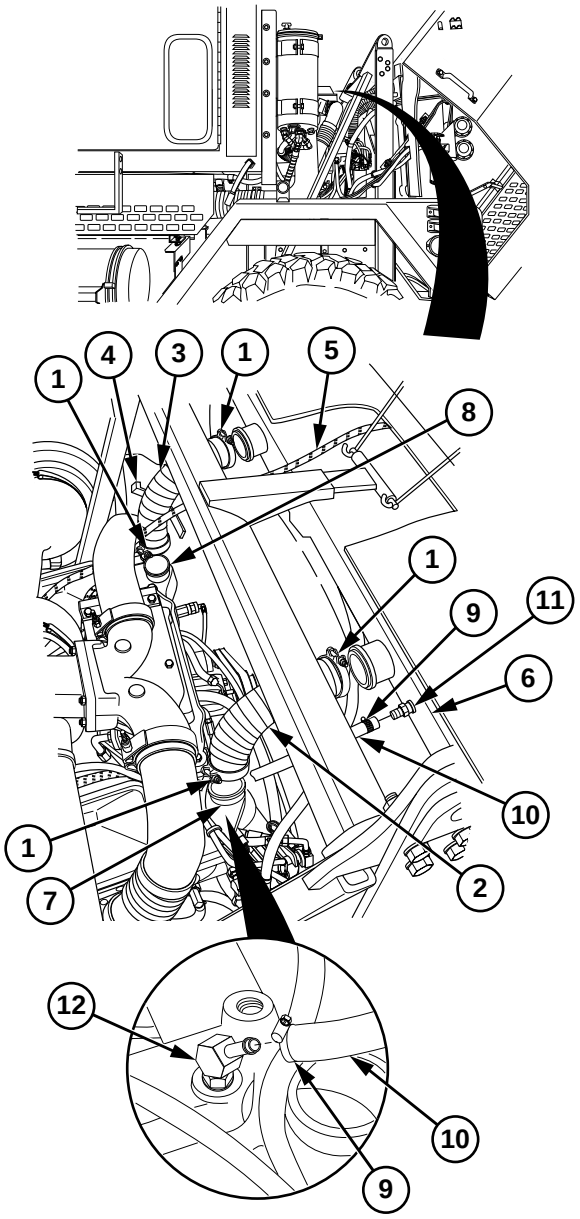
6-6. COOLING SYSTEM HOSE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Cooling system drained (para 6-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)
Socket Wrench Set , 3/8 In. Drive (Item 45, Appendix F)



a. Removal

NOTE
Tag and mark hoses before removal.

(1) Loosen four clamps (1) on two upper hoses (2 and 3).

NOTE
Location of plastic cable ties should be marked before removal.

(2) Remove plastic cable ties (4) from hose (3) and wire harness (5).

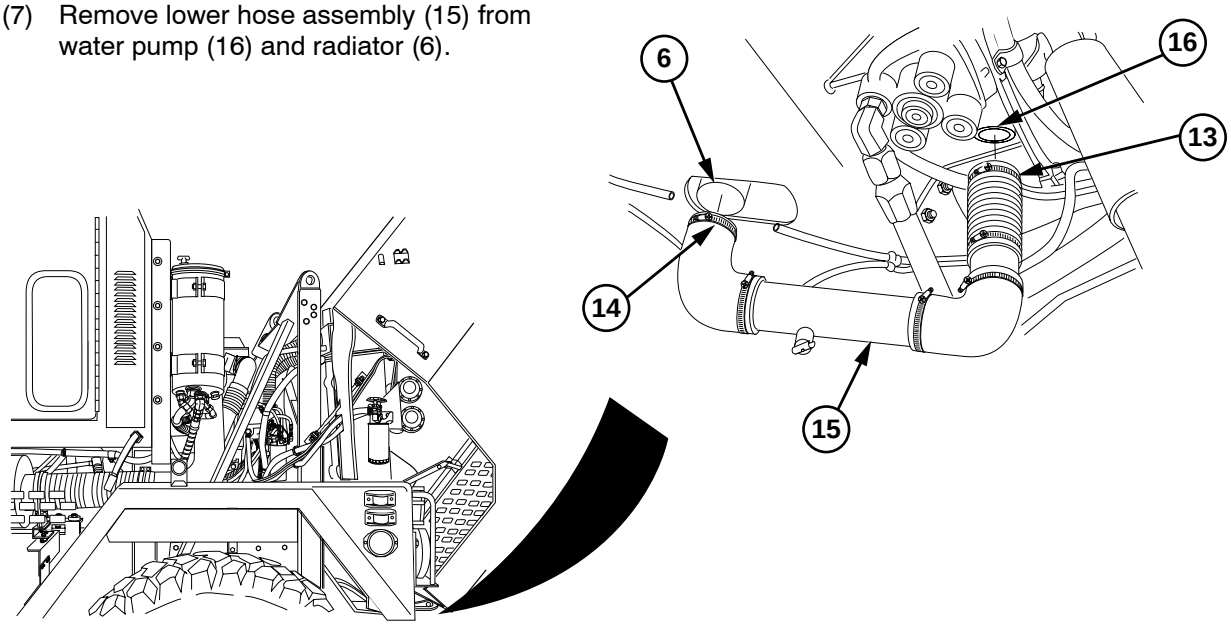
(3) Remove upper hoses (2 and 3) from radiator (6) and thermostat covers (7 and 8).

(4) Loosen two clamps (9) on radiator vent hose (10).

(5) Remove radiator vent hose (10) from fittings (11 and 12).

(6) Loosen two clamps (13 and 14) on lower hose assembly (15).

(7) Remove lower hose assembly (15) from water pump (16) and radiator (6).



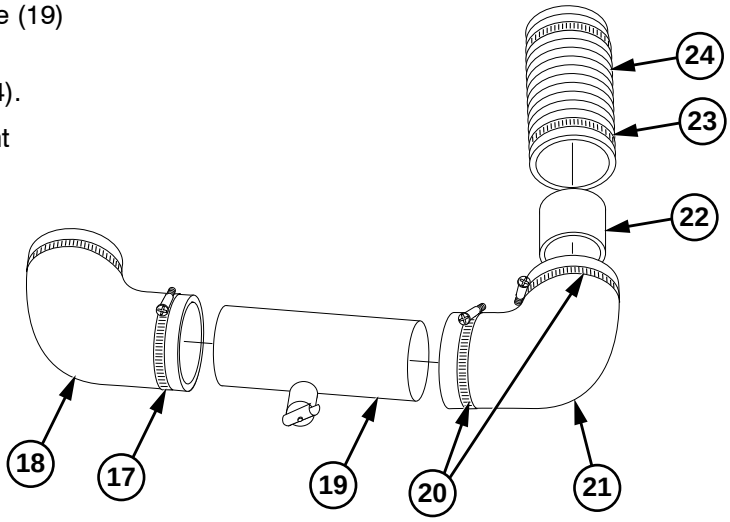
(8) Loosen clamp (17) and remove elbow (18) from coolant tube (19).

(9) Loosen two clamps (20) on elbow (21).

(10) Remove elbow (21) from coolant tube (19) and coolant tube (22).

(11) Loosen clamp (23) on lower hose (24).

(12) Remove lower hose (24) from coolant tube (22).



6-6. COOLING SYSTEM HOSE REPLACEMENT (CONT)

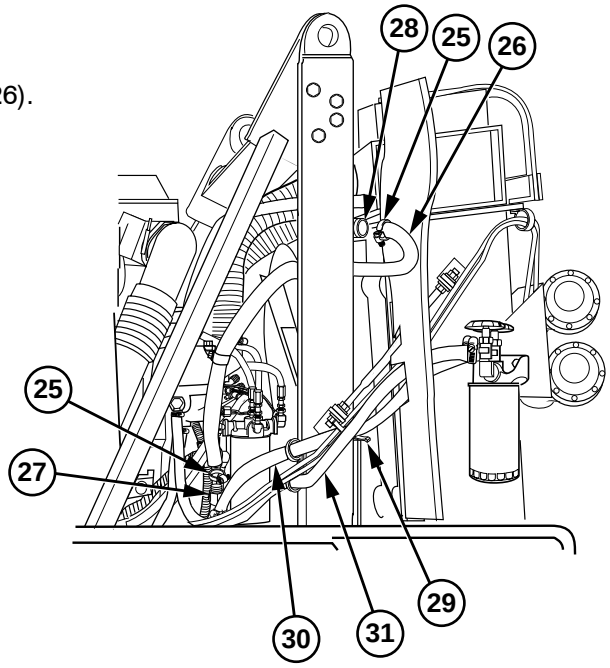
(13) Loosen two clamps (25) on hose no. 2834 (26).

(14) Remove hose no. 2834 (26) from fitting (27) and tube (28).

NOTE

Location of plastic cable ties should be marked before removal.

(15) Remove plastic cable ties (29) from hose no. 2867 (30) and hose no. 2866 (31) as required.

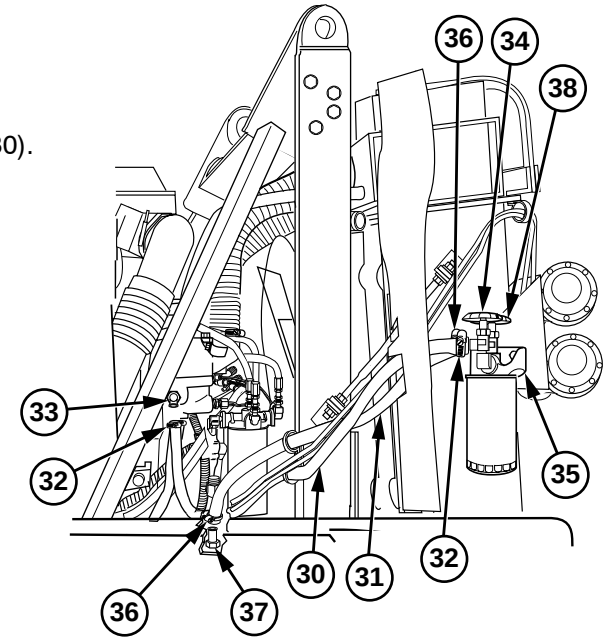


(16) Loosen two clamps (32) on hose no. 2867 (30).

(17) Remove hose no. 2867 (30) from fitting (33) and inlet valve (34) of coolant filter mounting head (35).

(18) Loosen two clamps (36) on hose no. 2866 (31).

(19) Remove hose no. 2866 (31) from fitting (37) and outlet valve (38) of coolant filter mounting head (35).

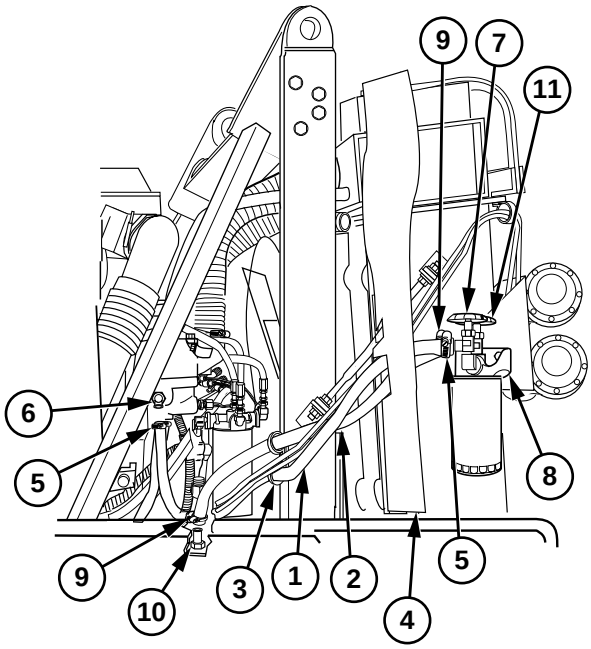


b. Installation

(1) Route hose no. 2867 (1) and hose no. 2866 (2) through hose clips (3) and radiator baffle (4).

(2) Install hose no. 2867 (1) with two clamps (5) on fitting (6) and inlet valve (7) of coolant filter mounting head (8). Torque clamps to 40 lb–in. (4.5 N·m).

(3) Install hose no. 2866 (2) with two clamps (9) on fitting (10) and outlet valve (11) of coolant filter mounting head (8). Torque clamps to 40 lb–in. (4.5 N·m).



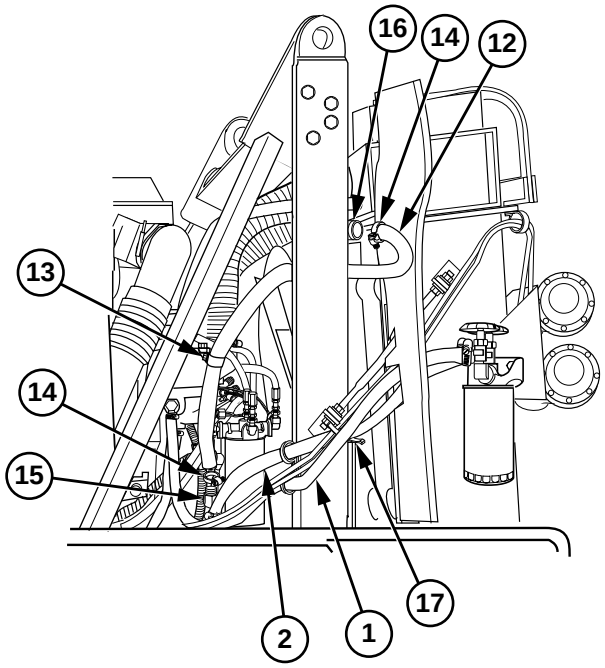
(4) Route hose no. 2834 (12) through hose clip (13).

(5) Install hose no. 2834 (12) with two clamps (14) on fitting (15) and tube (16). Torque clamps to 40 lb–in. (4.5 N·m).

NOTE

Plastic cable ties should be positioned in location marked during removal.

(6) Secure hose no. 2867 (1) and hose no. 2866 (2) with plastic cable ties (17).



6-6. COOLING SYSTEM HOSE REPLACEMENT (CONT)

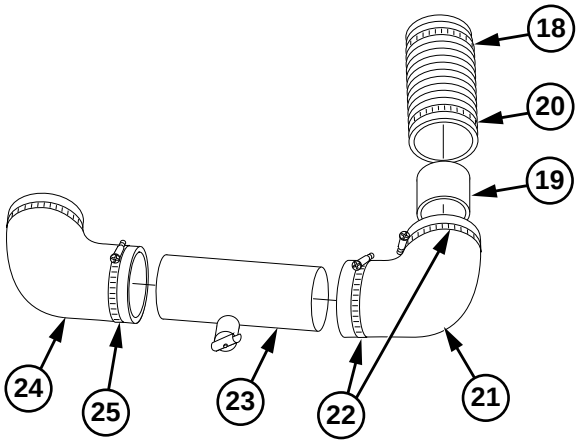
(7) Install lower hose (18) on coolant tube (19) with clamp (20). Torque clamp to 100 lb-in. (11 N·m).

NOTE

Position coolant tube with drain cock facing down.

(8) Install elbow (21) with two clamps (22) on coolant tube (19) and coolant tube (23). Torque clamps to 100 lb-in. (11 N·m).

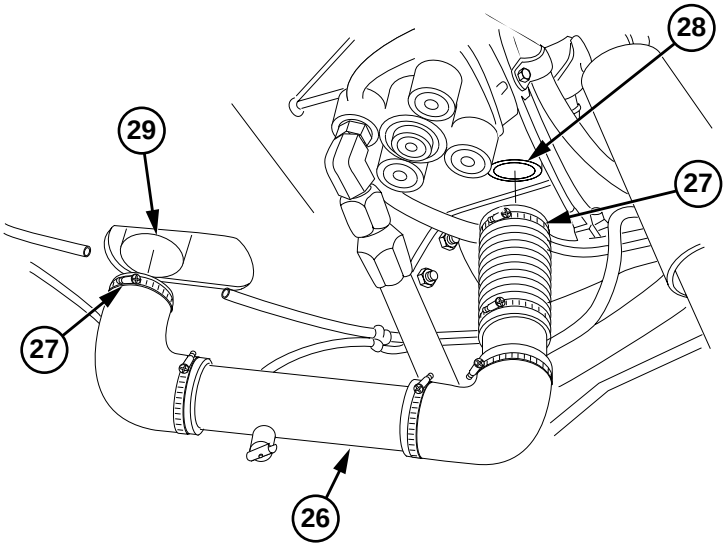
(9) Install elbow (24) on coolant tube (23) with clamp (25). Torque clamp to 100 lb-in. (11 N·m).



NOTE

Hose clamps should be positioned as close as possible to flared end of tubes and radiator.

(10) Install lower hose assembly (26) with two clamps (27) on water pump (28) and radiator (29). Torque clamps to 100 lb-in. (11 N·m).



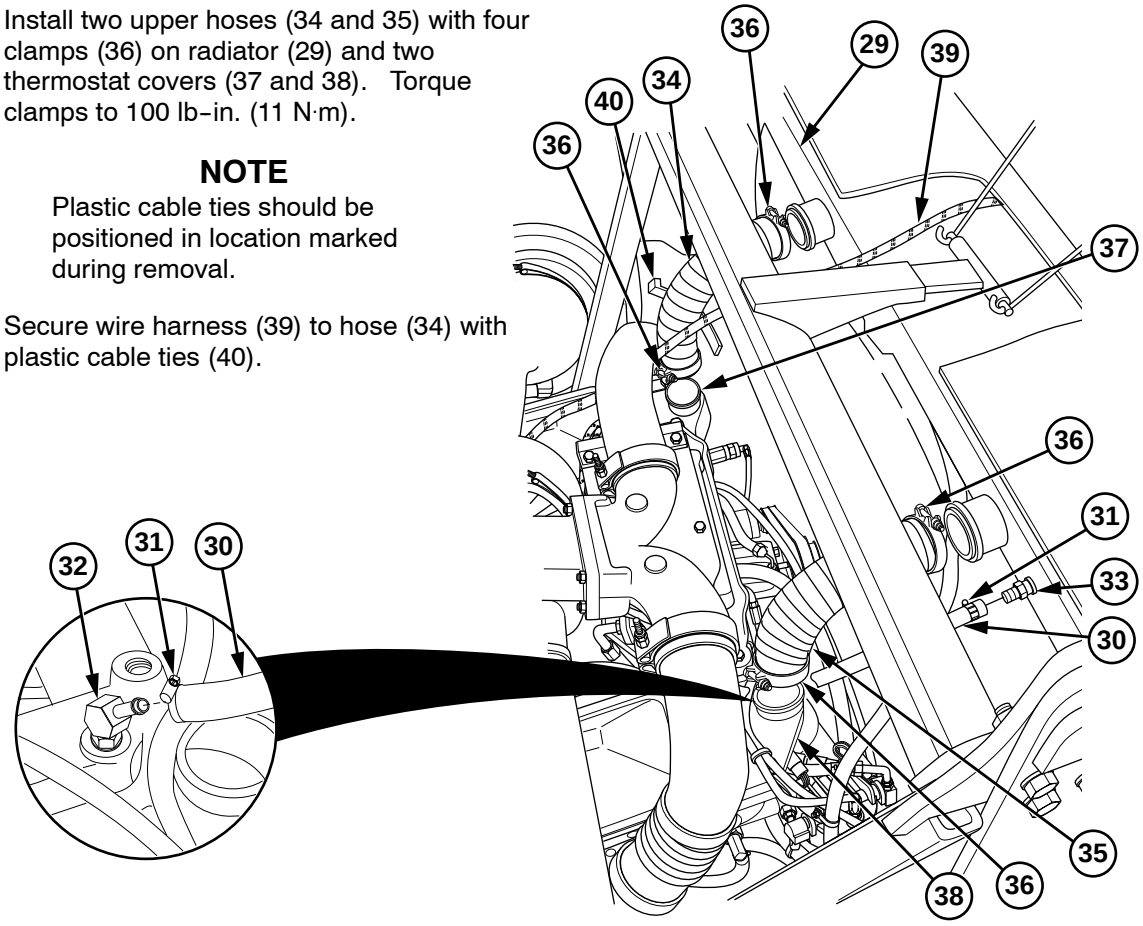
(11) Install radiator vent hose (30) with two clamps (31) on fittings (32 and 33). Torque clamps to 25–35 lb–in. (2.8–4.0 N·m).

(12) Install two upper hoses (34 and 35) with four clamps (36) on radiator (29) and two thermostat covers (37 and 38). Torque clamps to 100 lb–in. (11 N·m).

NOTE

Plastic cable ties should be positioned in location marked during removal.

(13) Secure wire harness (39) to hose (34) with plastic cable ties (40).



c. Follow–On Maintenance

Fill cooling system (para 6–2).

6-7. COOLING SYSTEM DRAIN COCK REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Cooling system drained (para 6-2).
Inner fenders removed (para 16-34).

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

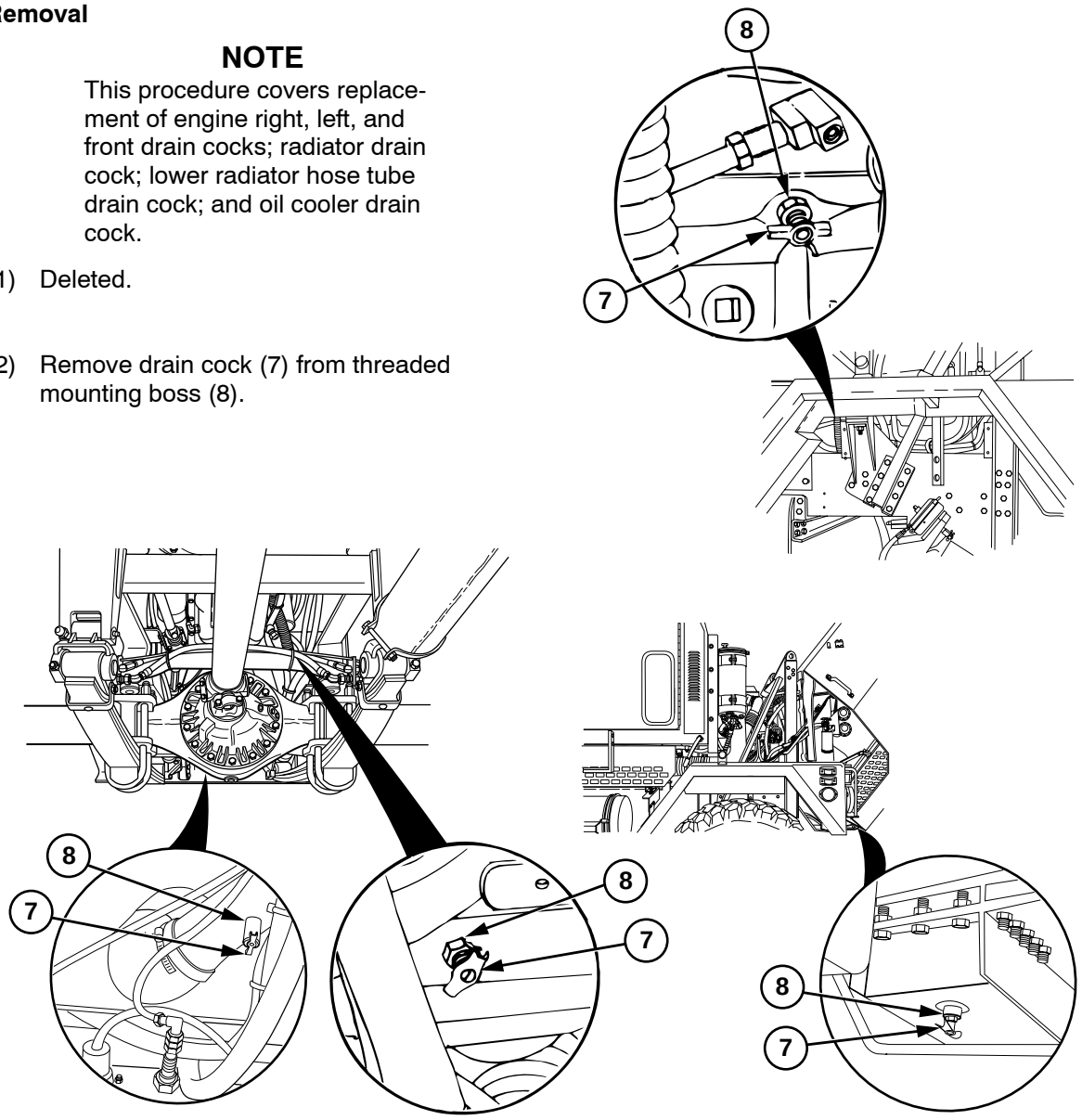
a. Removal

NOTE

This procedure covers replacement of engine right, left, and front drain cocks; radiator drain cock; lower radiator hose tube drain cock; and oil cooler drain cock.

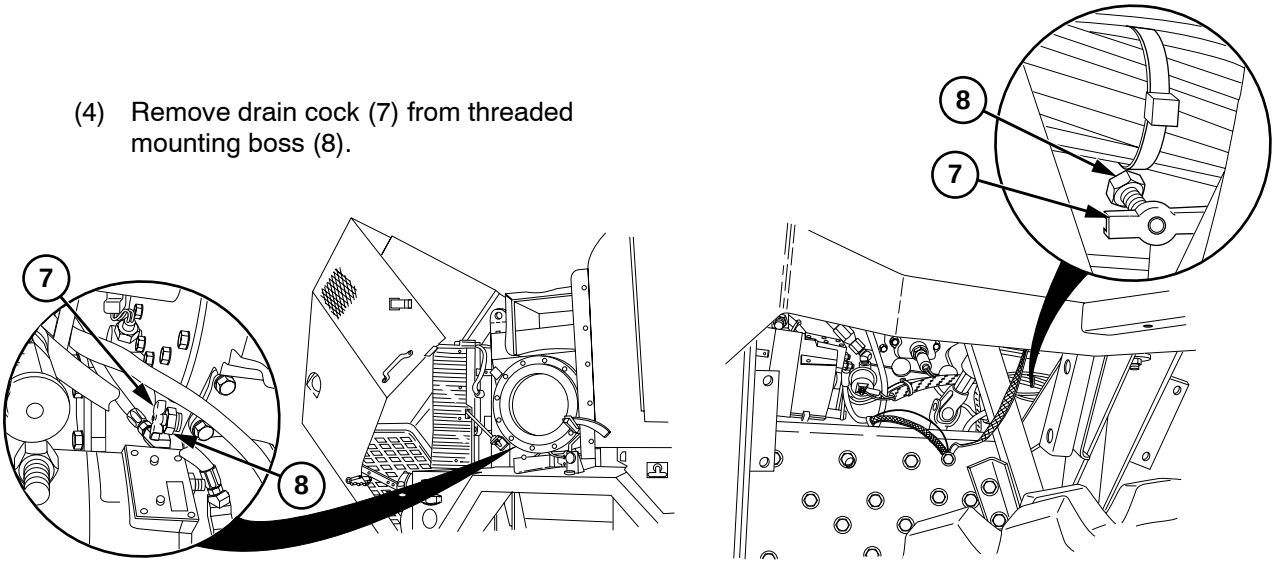
(1) Deleted.

(2) Remove drain cock (7) from threaded mounting boss (8).



(3) Deleted.

(4) Remove drain cock (7) from threaded mounting boss (8).



b. Installation

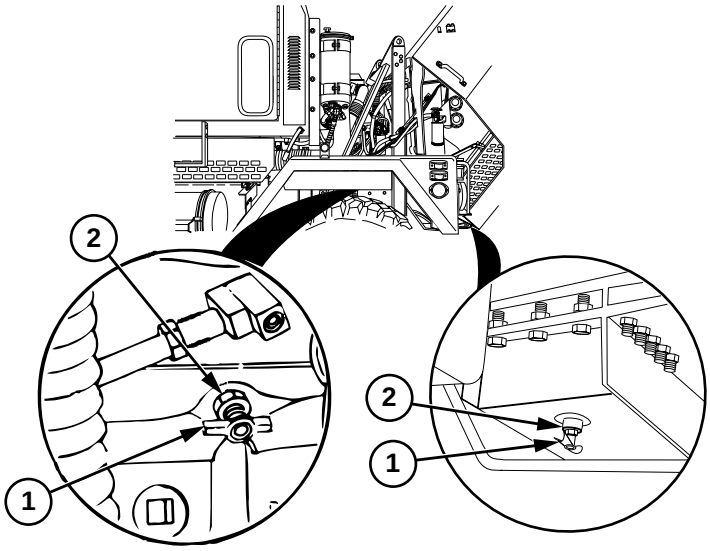
WARNING

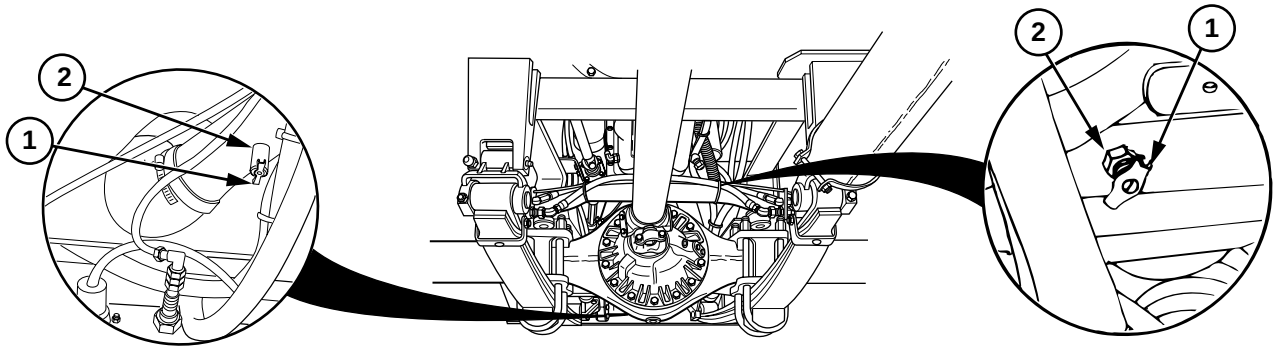
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of drain cock (1) with pipe thread sealing compound.

(2) Install drain cock (1) in threaded mounting boss (2).

(3) Close drain cock (1).





6-7. COOLING SYSTEM DRAIN COCK REPLACEMENT (CONT)

(4) Deleted.

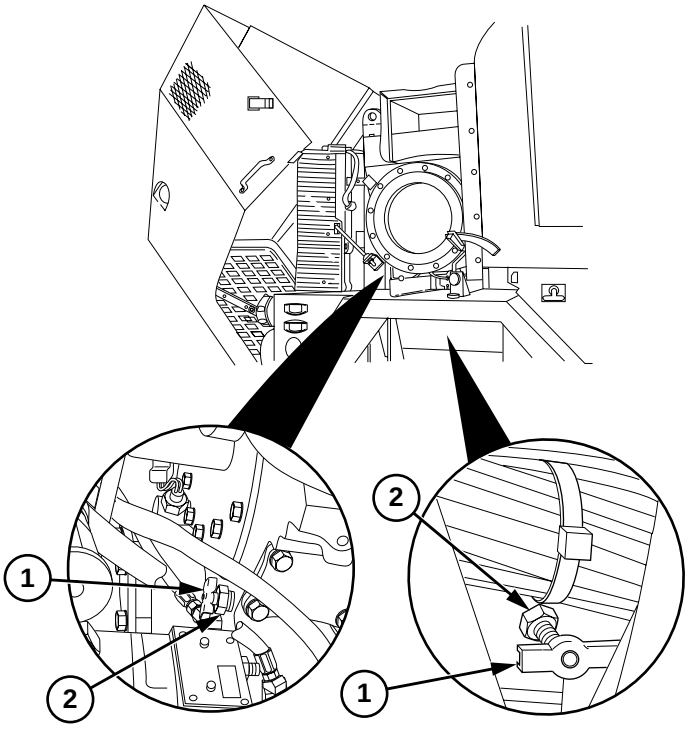
WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(5) Coat threads of drain cock (1) with pipe thread sealing compound.

(6) Install drain cock (1) in threaded mounting boss (2).

(7) Close drain cock (1).



(8) Deleted.

c. Follow-On Maintenance

(1) Fill cooling system (para 6-2).

(2) Start engine (TM 9-2320-360-10).

(3) Check for leaks (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

(5) Install inner fenders (para 16-34).

6-8. FAN ASSEMBLY REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Lockwashers (6) (Item 104, Appendix G)

Personnel Required
Two

a. Removal

WARNING

Coolant may be very hot and under pressure from engine operation. Ensure engine is cool before performing maintenance. Failure to comply may cause serious injury.

(1) Turn radiator cap (1) slowly counterclockwise to relieve system pressure.

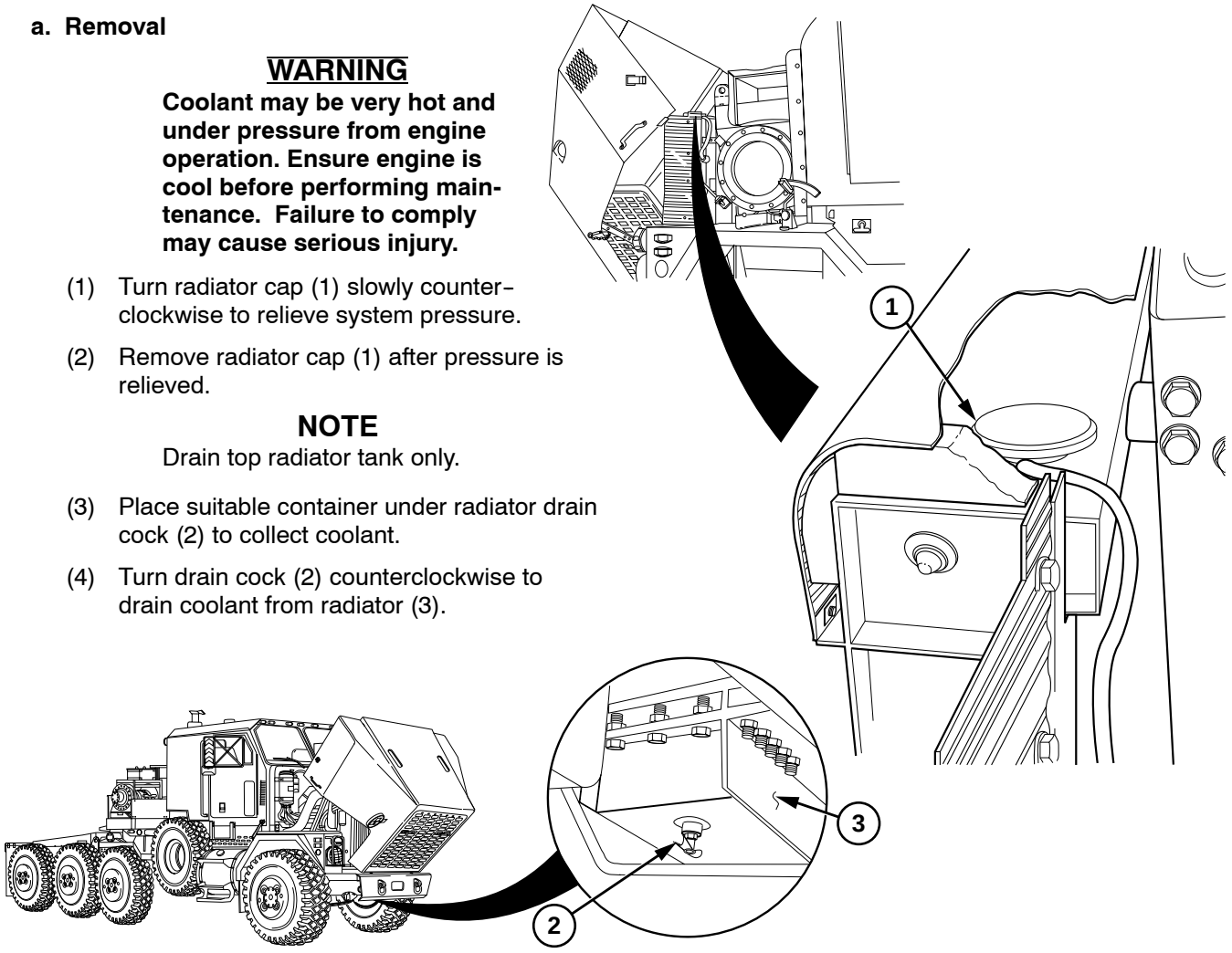
(2) Remove radiator cap (1) after pressure is relieved.

NOTE

Drain top radiator tank only.

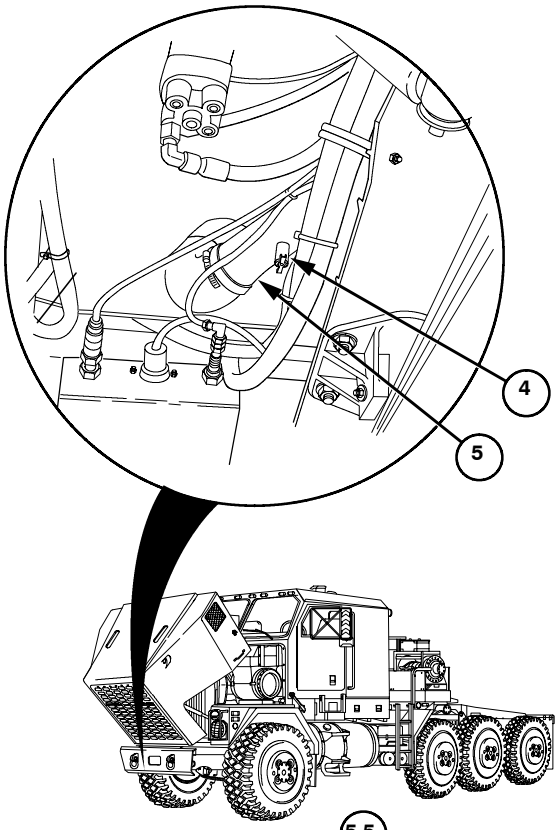
(3) Place suitable container under radiator drain cock (2) to collect coolant.

(4) Turn drain cock (2) counterclockwise to drain coolant from radiator (3).



(5) Place suitable container under lower hose drain cock (4) to collect coolant.

(6) Turn drain cock (4) counterclockwise to drain coolant from lower hose (5).



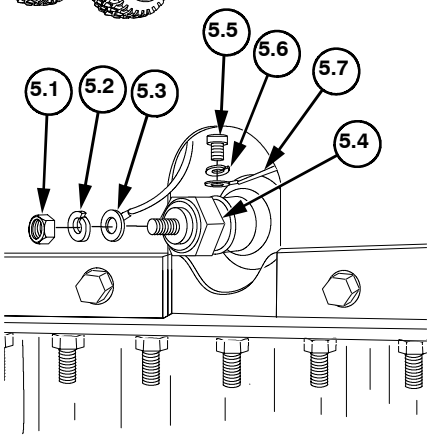
NOTE

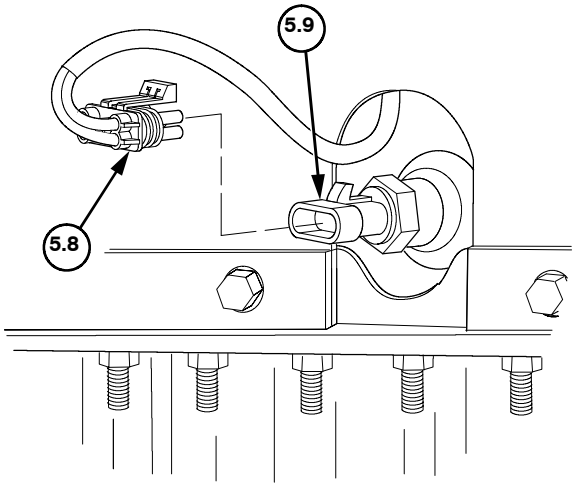
- Steps (6.1 and 6.2) apply only to vehicles with DDEC II engines.
- Step (6.3) applies only to vehicles with DDEC III/IV engines.

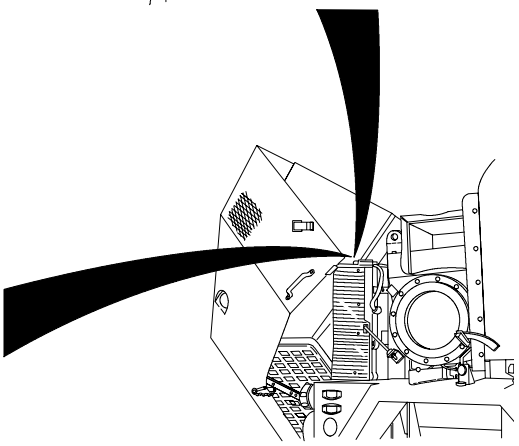
(6.1) Remove nut (5.1), lockwasher (5.2), and wire no. 890 (5.3) from coolant level sensor (5.4). Discard lockwasher.

(6.2) Remove screw (5.5), lockwasher (5.6), and wire no. 1788 (5.7) from coolant level sensor (5.4). Discard lockwasher.

(6.3) Disconnect connector (5.8) from coolant level sensor (5.9).







6-8. FAN ASSEMBLY REPLACEMENT (CONT)

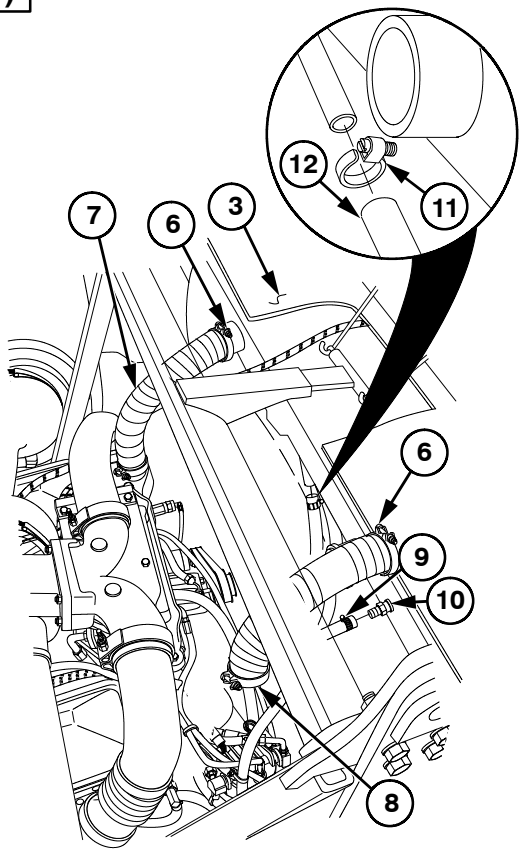
NOTE

Tag and mark hoses before removal.

(7) Loosen two clamps (6) and remove two upper radiator hoses (7 and 8) from radiator (3).

(8) Loosen clamp (9) and remove deareation hose (10) from radiator (3).

(9) Loosen clamp (11) and remove bypass hose (12) from radiator (3).

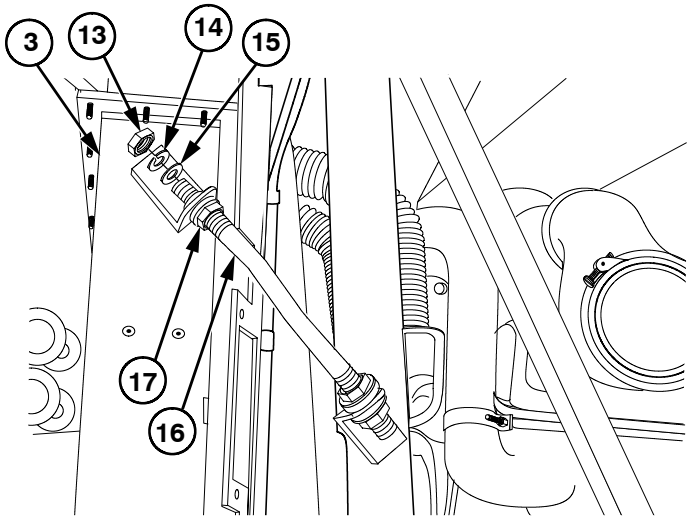


(10) Remove two nuts (13), lockwashers (14), and washers (15) from tie rods (16). Discard lockwashers.

CAUTION

Distance between hardlift bracket and top of radiator should not exceed 4 in. (10 cm). Exceeding this distance may result in damage to hoses.

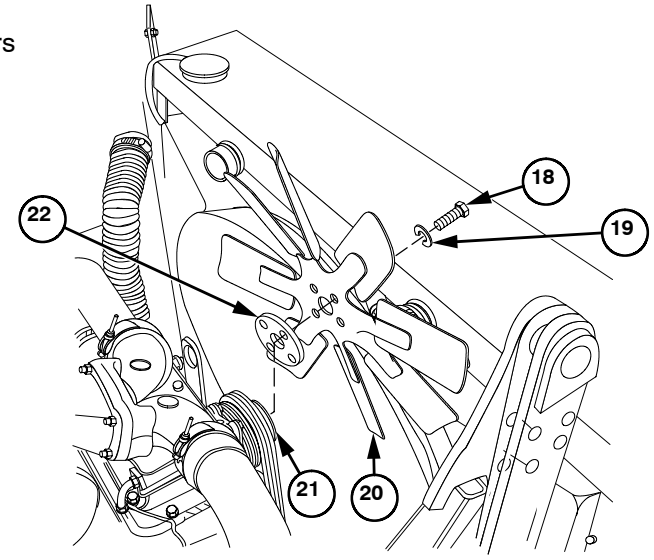
(11) Turn two nuts (17) out on tie rods (16) to tilt radiator (3) forward.



WARNING

Keep out from under fan while removing it to prevent serious injury.

(12) Remove four screws (18) and lockwashers (19) from fan (20) and fan clutch (21). Discard lockwashers.



CAUTION

- Do not allow fan to strike radiator during removal. Damage to radiator may result.
- Spacer must be held in place or caught as fan is removed. Spacer can fall off and be damaged.

NOTE

Fan should be removed from behind hardlift bracket.

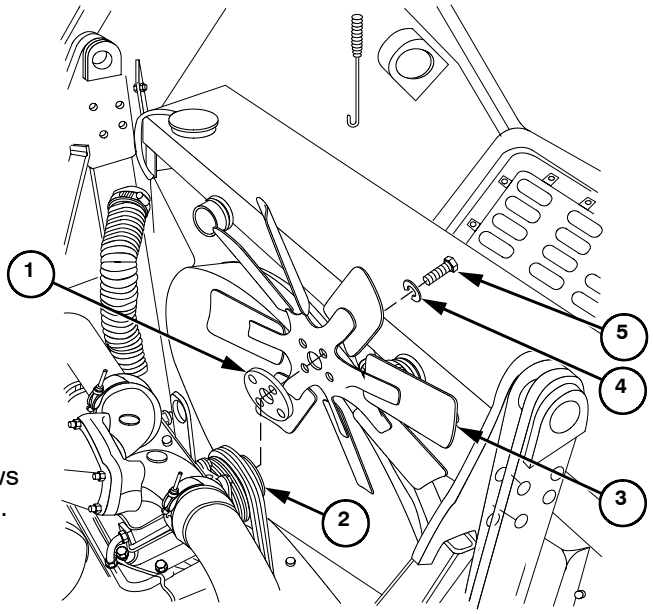
(13) Remove fan (20) and spacer (22) from fan clutch (21) with aid of assistant.

b. Installation

(1) Install spacer (1) on fan clutch (2).

NOTE

When properly installed, side of fan with widest rivet heads will face radiator.



(2) Position fan (3) on spacer (1) with aid of assistant.

(3) Install four new lockwashers (4) and screws (5) in fan (3). Torque to 80 lb-ft (108 N·m).

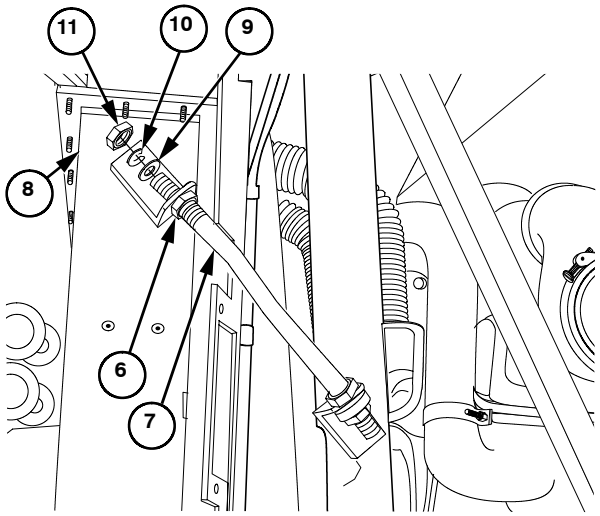
6-8. FAN ASSEMBLY REPLACEMENT (CONT)

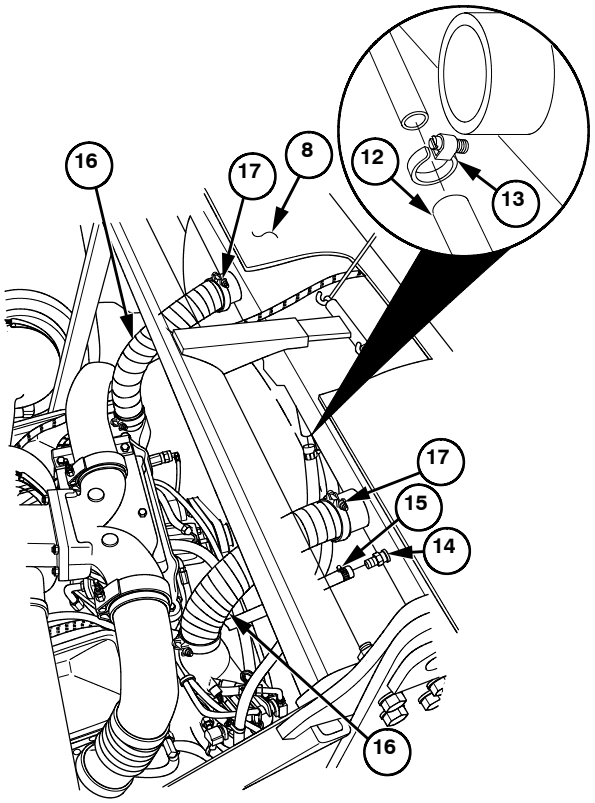
(4) Turn two nuts (6) in on tie rods (7) to tilt radiator (8) rearward.

NOTE

- When tie rods are properly installed, clearance between radiator and hardlift bracket is 1.75 in. (4.45 cm).
- Do not use nuts on large end of mount to tighten. Only use nuts on small end to tighten and mushroom mount.

(5) Install two washers (9), new lockwashers (10), and nuts (11) on tie rods (7).





(6) Install bypass hose (12) with clamp (13) on radiator (8). Torque to 40 lb-in. (4.5 N·m).

(7) Install deareation hose (14) with clamp (15) on radiator (8). Torque to 25-35 lb-in. (2.8-4.0 N·m).

(8) Install two upper radiator hoses (16) with two clamps (17) on radiator (8). Torque to 100 lb-in. (11 N·m).

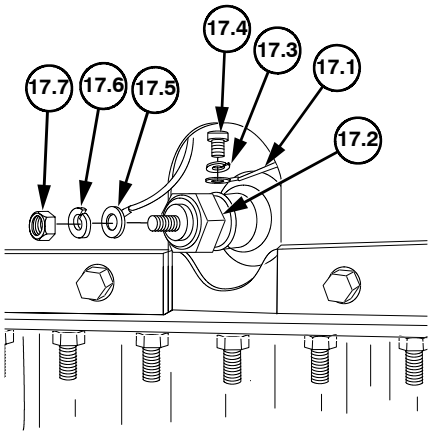
NOTE

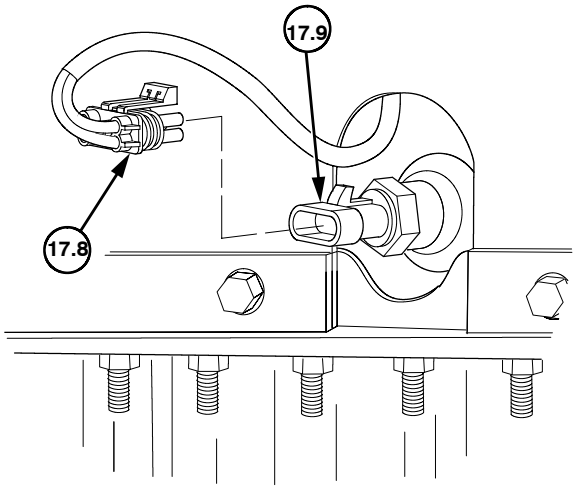
- Steps (8.1 and 8.2) apply only to vehicles with DDEC II engines.
- Step (8.3) applies only to vehicles with DDEC III/IV engines.

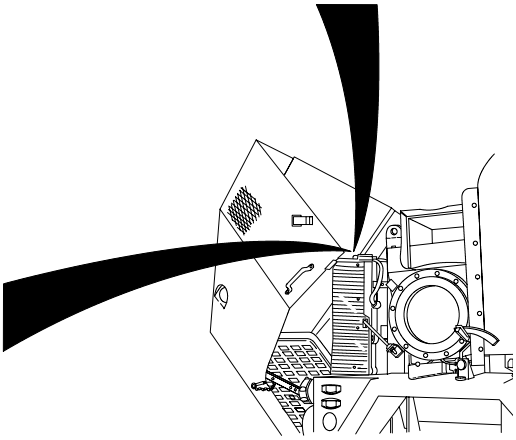
(8.1) Install wire no. 1788 (17.1) on coolant level sensor (17.2) with new lockwasher (17.3) and screw (17.4).

(8.2) Install wire no. 890 (17.5) on coolant level sensor (17.2) with new lockwasher (17.6) and nut (17.7).

(8.3) Install connector (17.8) on coolant level sensor (17.9).







6-8. FAN ASSEMBLY REPLACEMENT (CONT)

NOTE

Ensure all cooling system drain cocks are closed.

(9) Fill cooling system (LO 9-2320-360-12).

NOTE

Do not install radiator filler cap.

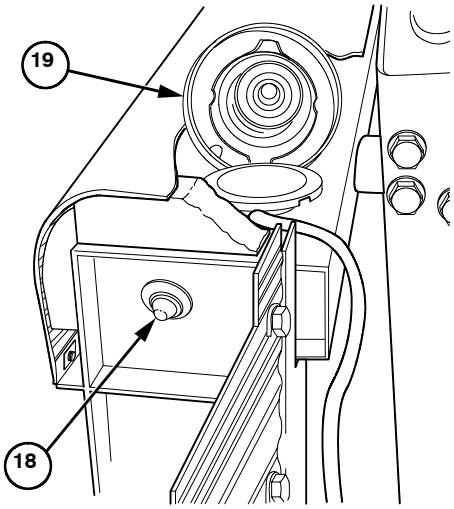
(10) Start engine (TM 9-2320-360-10).

NOTE

Coolant level will drop when normal operating temperature is reached and thermostat opens.

(11) Check coolant level after normal operating temperature has been reached. Coolant level should be visible in radiator sight glass (18). Add coolant as needed.

(12) Install radiator filler cap (19).



c. Follow-On Maintenance

(1) Close engine hood (TM 9-2320-360-10).

(2) Remove wheel chocks.

6-9. FAN CLUTCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

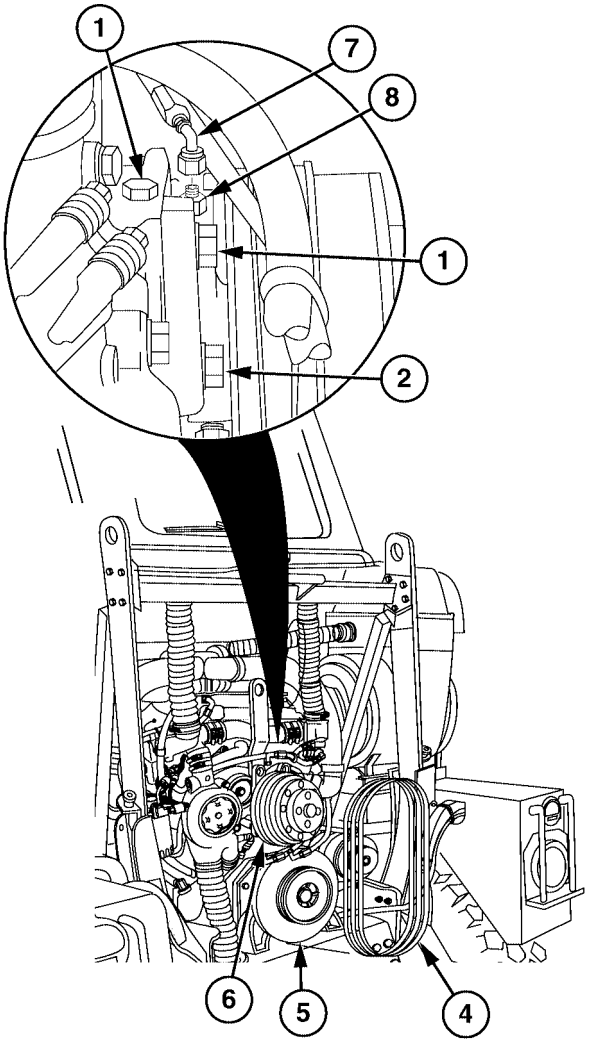
INITIAL SETUP

Equipment Conditions
Radiator removed (para 6-3).
Air system drained (TM 9-2320-360-10).
24-volt (front) alternator belts removed (para 7-7).

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Personnel Required
Two



a. Removal

(1) Loosen four mounting screws (1 and 2).

(2) Loosen adjusting screw (3).

(3) Remove three fan belts (4) from crankshaft pulley (5) and fan clutch (6).

(4) Remove air line no. 2759 (7) from fitting (8).

6-9. FAN CLUTCH REPLACEMENT (CONT)

NOTE

Location of plastic cable ties should be marked before removal.

(5) Remove plastic cable ties (9) from hose no. 2760 (10) and hose no. 2761 (11) as required.

NOTE

Tag and mark hoses before removal.

(6) Remove hose no. 2760 (10) from elbow (12).

(7) Remove hose no. 2760 (10) from fitting (13).

(8) Remove fitting (13) from fan clutch (6).

(9) Remove hose no. 2761 (11) from fitting (14).

(10) Remove adjusting screw (3) from mounting bracket (15).

(11) Remove two upper mounting screws (1) from fan clutch (6).

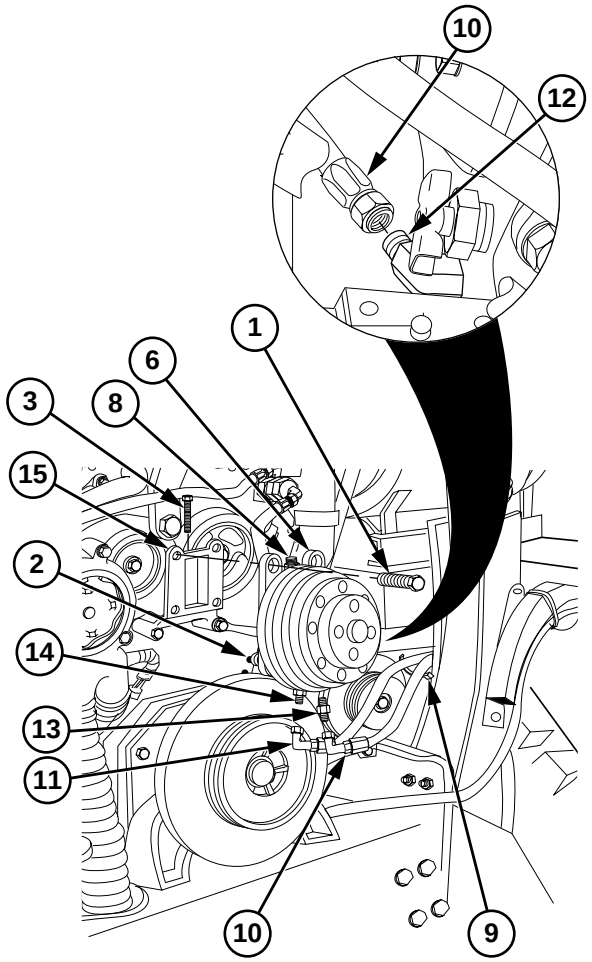
(12) Support fan clutch (6). Pull from mounting bracket (15) while assistant loosens two lower mounting screws (2).

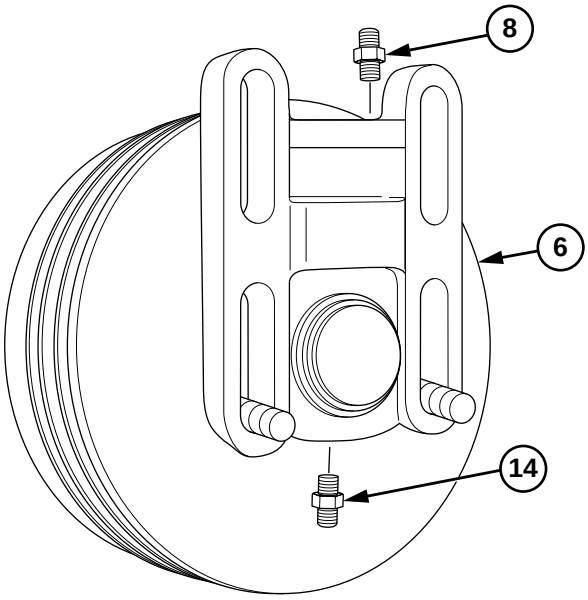
NOTE

Lower mounting screws are captive in fan clutch and cannot be removed.

(13) Remove two lower mounting screws (2) and fan clutch (6) from mounting bracket (15) with aid of assistant.

(14) Remove fitting (8) and fitting (14) from fan clutch (6).





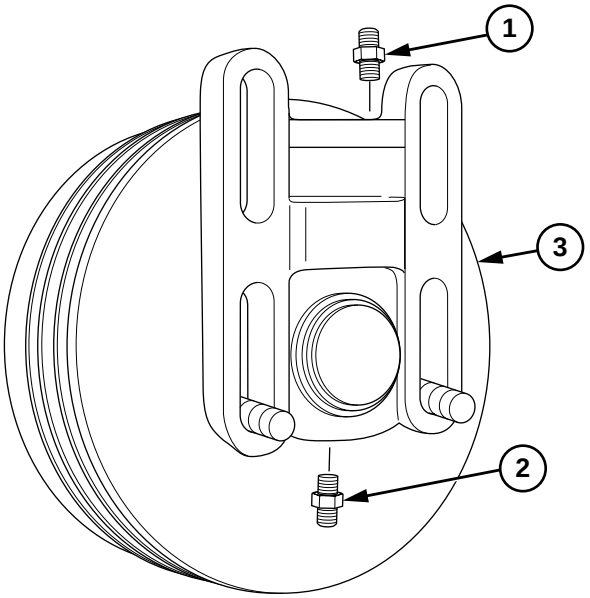
b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



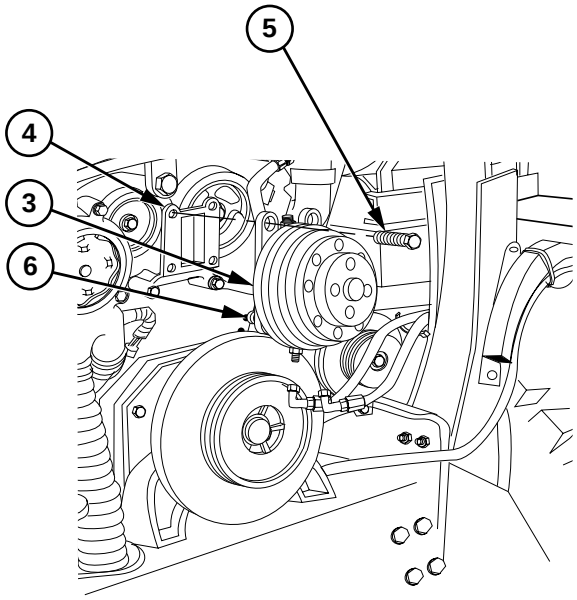
(1) Coat threads of fitting (1) and fitting (2) with pipe thread sealing compound and install fittings in fan clutch (3).

NOTE

Mounting screws are not tightened until fan belts are adjusted.

(2) Position fan clutch (3) on mounting bracket (4) with two upper mounting screws (5) with aid of assistant. Do not tighten.

(3) Install two lower mounting screws (6). Do not tighten.



6-9. FAN CLUTCH REPLACEMENT (CONT)

(4) Install hose no. 2761 (7) on fitting (2).

(5) Coat threads of fitting (8) with pipe thread sealing compound and install fitting in fan clutch (3).

(6) Install hose no. 2760 (9) on fitting (8).

(7) Install hose no. 2760 (9) on elbow (10).

(8) Install air line no. 2759 (11) on fitting (1).

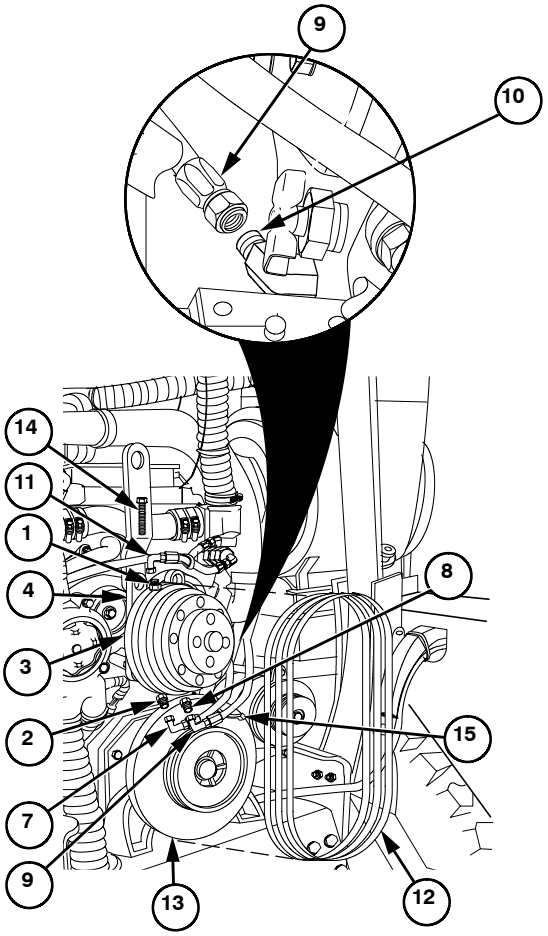
(9) Install three fan belts (12) on crankshaft pulley (13) and fan clutch (3).

(10) Install adjusting screw (14) in mounting bracket (4).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(11) Secure hoses (7 and 9) with plastic cable ties (15).



c. Follow-On Maintenance

(1) Install radiator (para 6-3).

(2) Adjust fan belts (para 6-10).

(3) Install 24-volt (front) alternator belts (para 7-7).

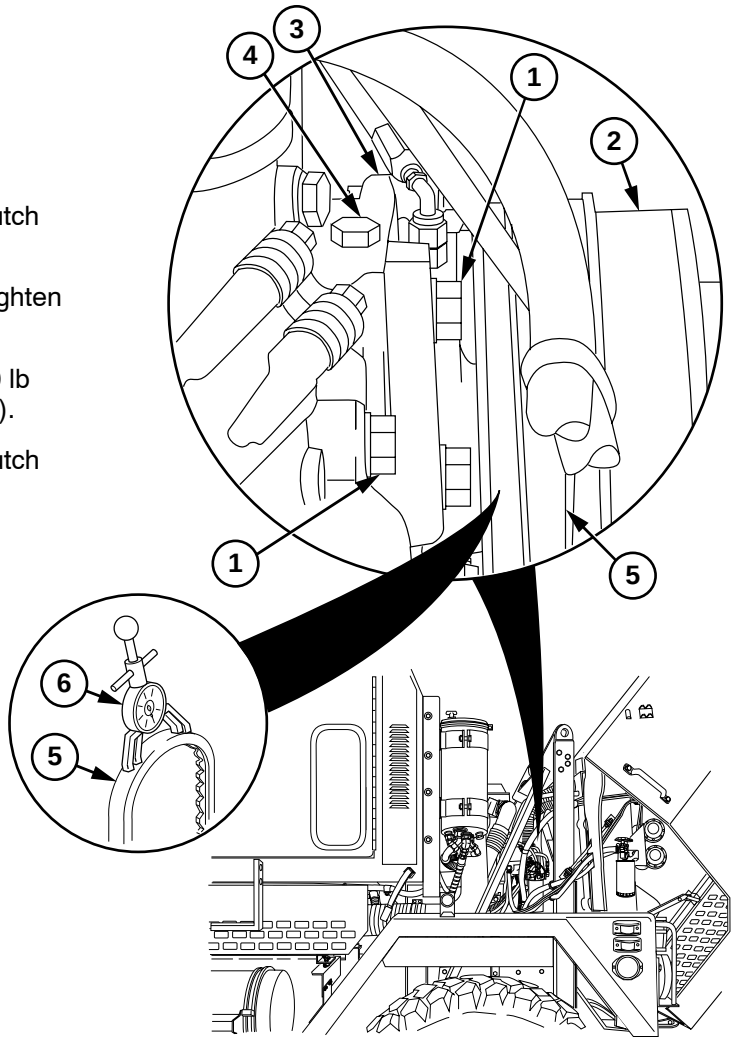
6-10. FAN BELT ADJUSTMENT

This task covers:
a. Adjustment
b. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked
.Engine hood opened (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Gage, Belt Tension (Item 12, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)



a. Adjustment

(1) Loosen four screws (1) securing fan clutch (2) to bracket (3).

(2) Turn adjusting screw (4) clockwise to tighten fan belts (5).

(3) Check that fan belt (5) tension is 70-90 lb (310-400 N) using belt tension gage (6).

(4) Tighten four screws (1) securing fan clutch (2) to bracket (3). Torque to 80 lb-ft (108 N·m).

b. Follow-On Maintenance

(1) Close engine hood (TM 9-2320-360-10).

(2) Remove wheel chocks.

6-11. FAN BELT REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
24-volt (front) alternator belts removed (para 7-7).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Gage, Belt Tension (Item 12, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

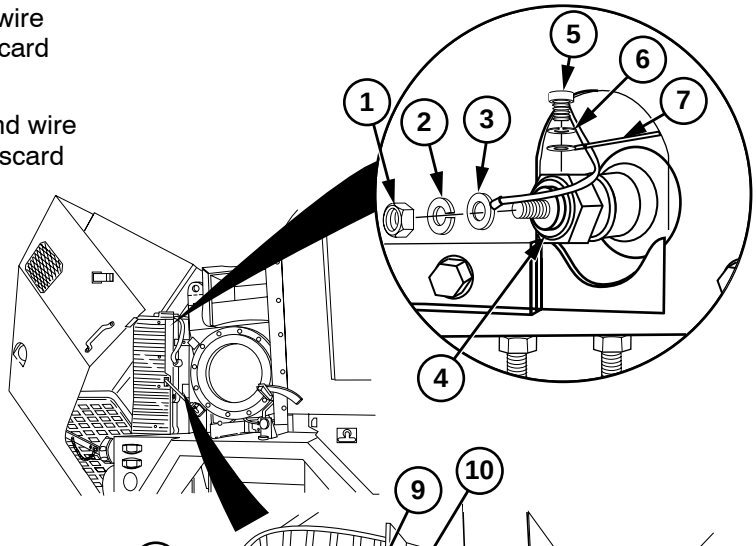
Materials/Parts
Lockwashers (6) (Item 104, Appendix G)
Lockwasher (Item 98, Appendix G)
Lockwasher (Item 99, Appendix G)

Personnel Required
Two

a. Removal

(1) Remove nut (1), lockwasher (2), and wire no. 890 (3) from sending unit (4). Discard lockwasher.

(2) Remove screw (5), lockwasher (6), and wire no. 1788 (7) from sending unit (4). Discard lockwasher.

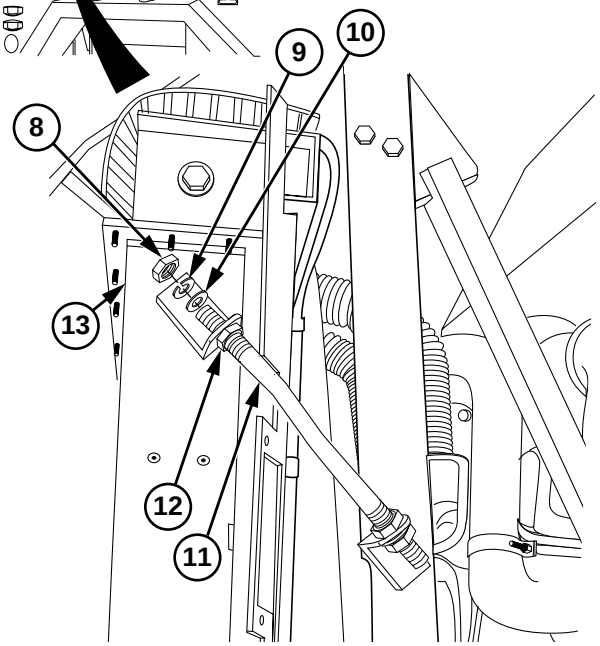


(3) Remove two nuts (8), lockwashers (9), and washers (10) from tie rods (11). Discard lockwashers.

CAUTION

Distance between hardlift bracket and top of radiator should not exceed 4 in. (10 cm). Exceeding this distance may result in damage to hoses.

(4) Turn two nuts (12) out on tie rods (11) to tilt radiator (13) forward.



CAUTION

Do not allow fan to strike radiator during removal. Damage to radiator may result.

(5) Remove four screws (14) and lockwashers (15) from fan (16) and fan clutch (17). Discard lockwashers.

CAUTION

Spacer must be held in place or caught as fan is removed. Spacer can fall off and be damaged.

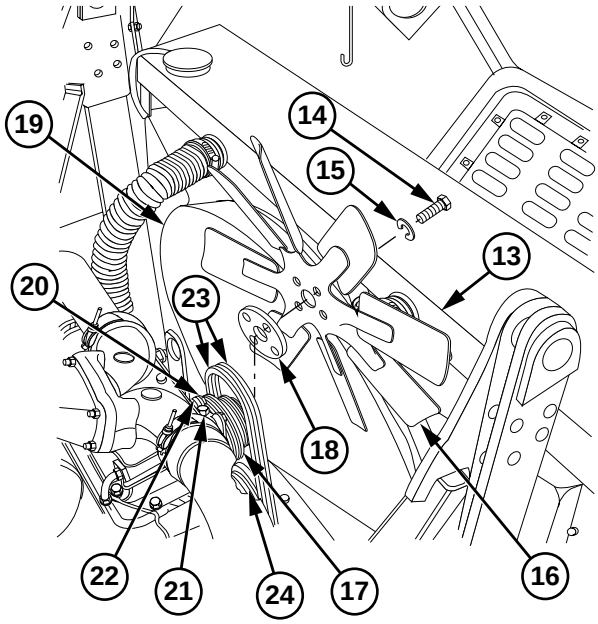
(6) Pull fan (16) and spacer (18) away from fan clutch (17) with aid of assistant.

(7) Set fan (16) down gently on bottom of radiator (13) inside fan shroud (19) with aid of assistant.

(8) Loosen four fan clutch mounting screws (20).

(9) Loosen adjusting screw (21) and lower fan clutch (17) on mounting bracket (22).

(10) Remove fan belts (23) from fan clutch (17) and crankshaft pulley (24).



c. Installation

CAUTION

Arctic kit belts must be installed if temperatures below –37°F (–38°C) are expected. Arctic kit belts should not be used if temperature is continually above 80°F (27°C). Failure to comply may result in shortened belt life.

(1) Install fan belts (1) on crankshaft pulley (2) and fan clutch (3).

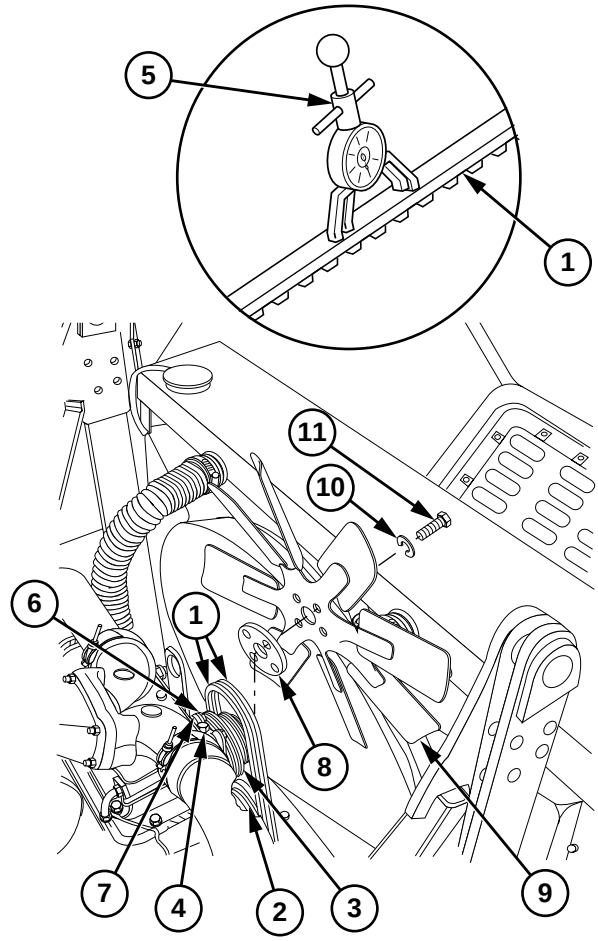
(2) Turn adjusting screw (4) clockwise to tighten fan belts (1).

(3) Check that fan belt (1) tension is 70–90 lb (310–400 N) using belt tension gage (5).

(4) Tighten four screws (6) securing fan clutch (3) to mounting bracket (7). Torque to 80 lb–ft (108 N·m).

(5) Position spacer (8) and fan (9) on fan clutch (3) with aid of assistant.

(6) Install four new lockwashers (10) and screws (11) through fan (9) into fan clutch (3). Torque to 80 lb–ft (108 N·m).



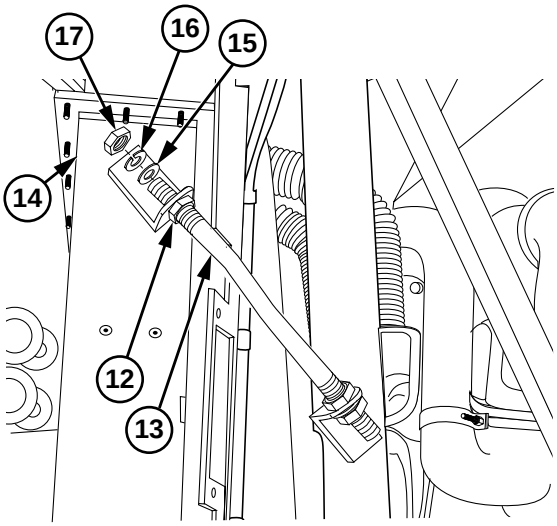
6-11. FAN BELT REPLACEMENT (CONT)

(7) Turn two nuts (12) in on tie rods (13) to tilt radiator (14) rearward.

NOTE

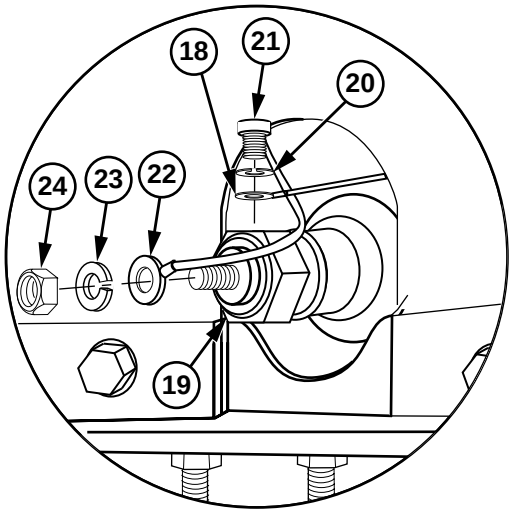
- When tie rods are properly installed, clearance between radiator and hardlift bracket is 1.75 in. (4.45 cm).
- Do not use nuts on large end of mount to tighten. Only use nuts on small end to tighten and mushroom mount.

(8) Install two washers (15), new lockwashers (16), and nuts (17) on tie rods (13).



(9) Install wire no. 1788 (18) on sending unit (19) with new lockwasher (20) and screw (21).

(10) Install wire no. 890 (22) on sending unit (19) with new lockwasher (23) and nut (24).



d. Follow-On Maintenance

Install alternator belts (para 7-7).

6-12. FAN CLUTCH TO ENGINE BLOCK HOSE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Ties, Cable, Plastic (Item 34, Appendix C)

a. Removal

WARNING

Ensure engine is cool before performing maintenance. Failure to comply may cause serious injury.

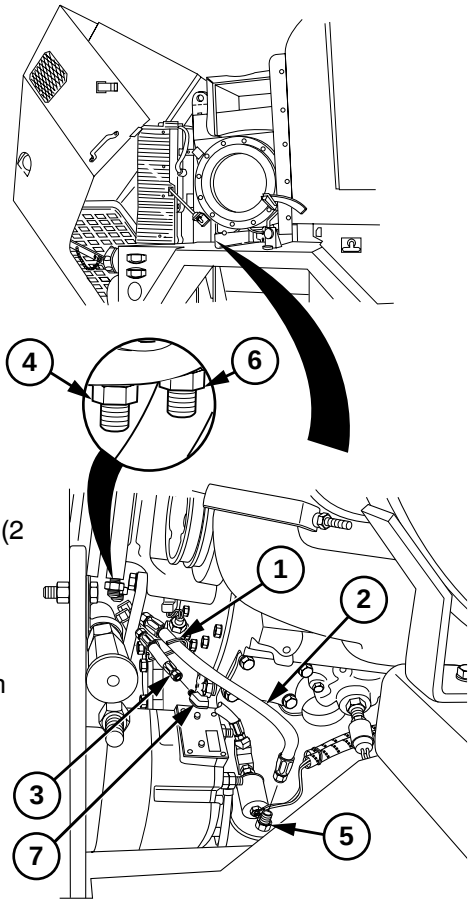
NOTE

Location of plastic cable ties should be marked before removal.

(1) Remove plastic cable ties (1) from hoses (2 and 3) as required.

(2) Remove oil return hose no. 2761 (2) from fittings (4 and 5).

(3) Remove oil supply hose no. 2760 (3) from fittings (6 and 7).



6-12. FAN CLUTCH TO ENGINE BLOCK HOSE REPLACEMENT (CONT)

b. Installation

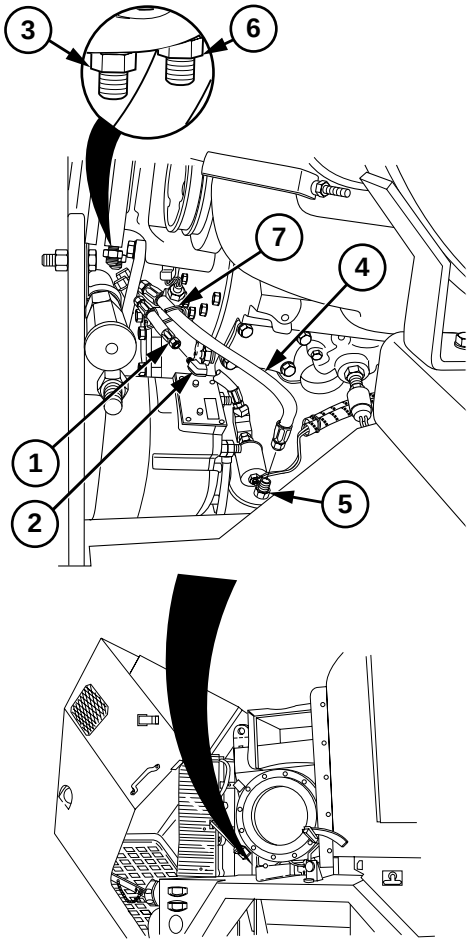
(1) Install oil supply hose no. 2760 (1) on fittings (2 and 3).

(2) Install oil return hose no. 2761 (4) on fittings (5 and 6).

NOTE

Plastic cable tie should be positioned in location marked during removal.

(3) Secure hoses (1 and 4) with plastic cable ties (7) as required.



c. Follow-On Maintenance

(1) Close engine hood (TM 9-2320-360-10).

(2) Start engine (TM 9-2320-360-10).

(3) Check for leaks.

(4) Shut off engine (TM 9-2320-360-10).

(5) Remove wheel chocks.

6-13. FAN CONTROL VALVE REPLACEMENT

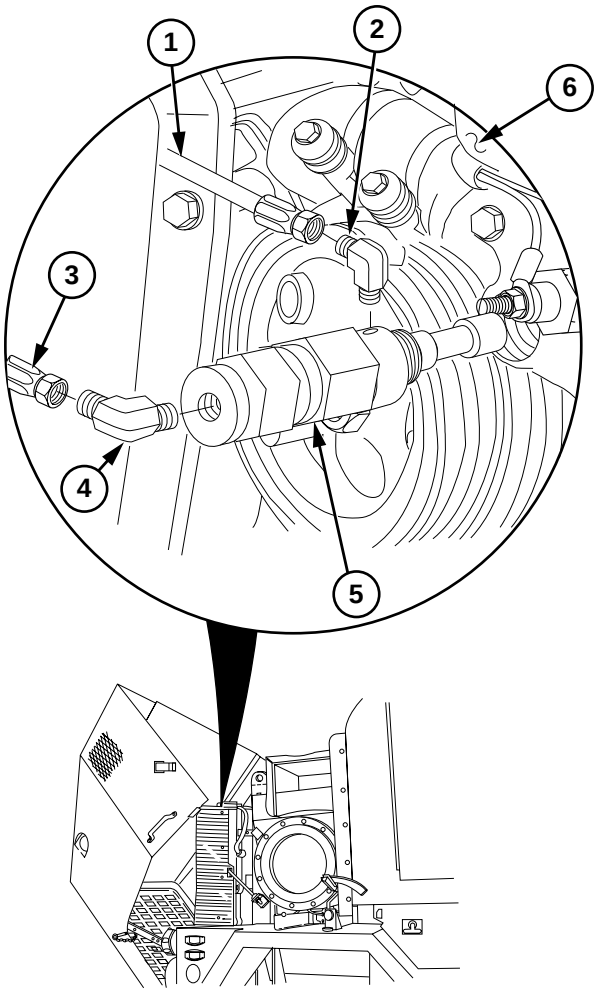
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Cooling system drained (para 6-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)



a. Removal

NOTE
Tag and mark air lines and fittings before removal.

(1) Remove air line no. 2758 (1) from elbow (2).
(2) Remove air line no. 2759 (3) from elbow (4).
(3) Remove elbow (2) from fan control valve (5).
(4) Turn fan control valve (5) counterclockwise until elbow (4) faces down
(5) Remove elbow (4) from fan control valve (5).
(6) Remove fan control valve (5) from left thermostat housing (6).

6-13. FAN CONTROL VALVE REPLACEMENT (CONT)

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of fan control valve (1) with pipe thread sealing compound.

(2) Engage threads of fan control valve (1) with left thermostat housing (2). Turn clockwise four complete revolutions.

NOTE

- Air inlet port on fan control valve should face down in order to do step (3).
- After completion of step (3), threads of elbow should be facing air cleaner.

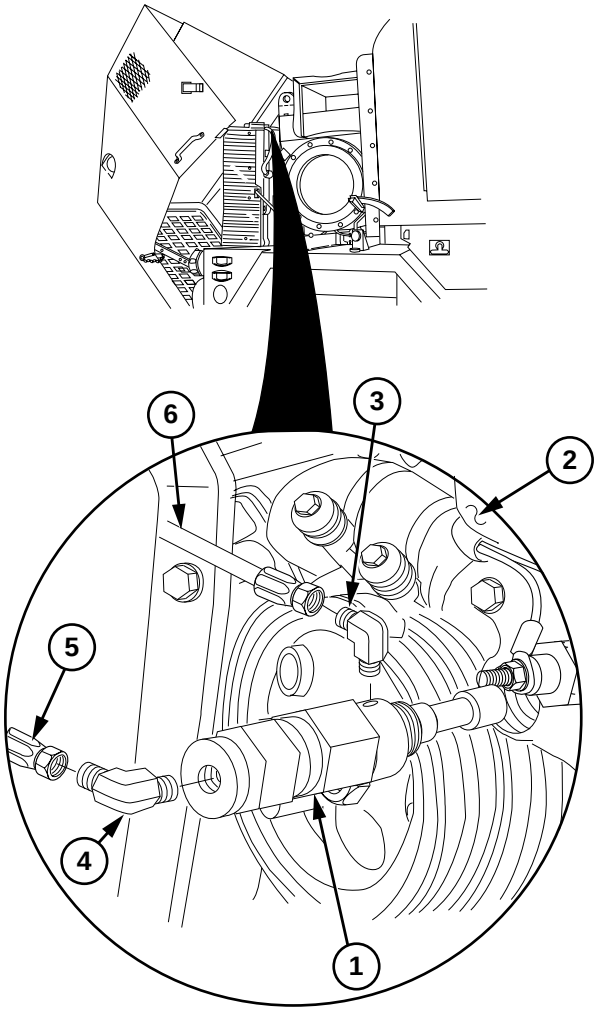
(3) Coat threads of elbow (3) with pipe thread sealing compound and install in fan control valve (1).

(4) Tighten fan control valve (1) one-half turn clockwise.

(5) Coat threads of elbow (4) with sealant. Install in fan control valve (1).

(6) Install air line no. 2759 (5) on elbow (4).

(7) Install air line no. 2758 (6) on elbow (3).



c. Follow-On Maintenance

Fill cooling system (para 6-2).

6-14. COOLANT FILTER MOUNTING HEAD REPLACEMENT

This task covers:
a. Removal
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Cooling system drained (para 6-2).
Coolant filter removed (para 6-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Brush, Wire (Item 2, Appendix F)
Wrench, Torque, 0-75 Lb-In. (Item 71, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Cleaning Compound, Solvent (Item 31, Appendix C)
Tags, Identification (Item 32, Appendix C)
Lockwashers (3) (Item 101, Appendix G)

a. Removal

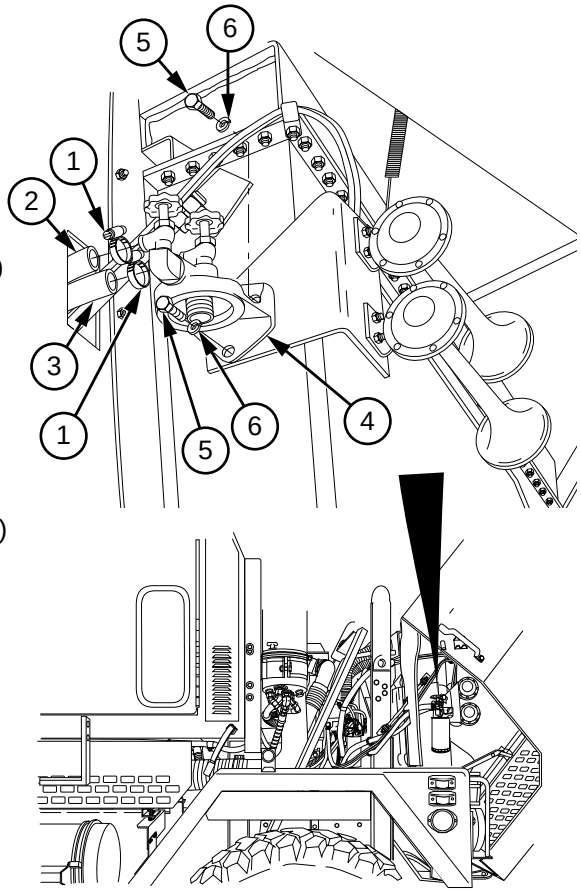
NOTE
Tag and mark hoses before removal.

(1) Loosen two clamps (1) on hose no. 2867 (2) and hose no. 2866 (3).

(2) Remove hose no. 2867 (2) and hose no. 2866 (3) from coolant filter mounting head (4).

(3) Remove two clamps (1) from hoses (2 and 3).

(4) Remove two screws (5) and lockwashers (6) from coolant filter mounting head (4). Discard lockwashers.



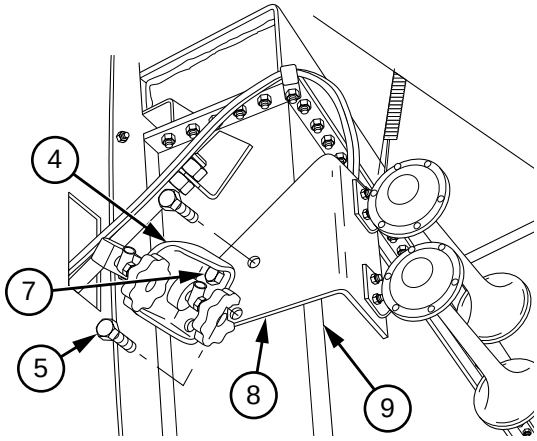
6-14. COOLANT FILTER MOUNTING HEAD REPLACEMENT (CONT)

NOTE

Loosen screw in step (5) enough to allow rotation of coolant filter mounting head on screw.

(5) Loosen screw (7) on coolant filter mounting head (4).

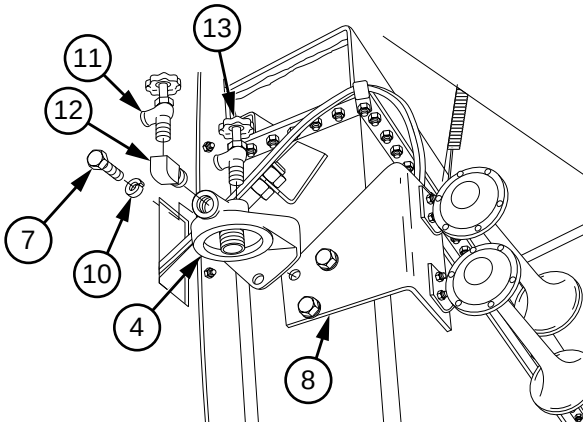
(6) Rotate coolant filter mounting head (4) on screw (7) and install two screws (5) in side of air horn bracket (8) and radiator (9).



(7) Remove screw (7), lockwasher (10), and coolant filter mounting head (4) from air horn bracket (8). Discard lockwasher.

(8) Remove valve (11) and fitting (12) from coolant filter mounting head (4).

(9) Remove valve (13) from coolant filter mounting head (4).



b. Cleaning/Inspection

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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

•The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).
•Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.
•Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.
•Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.
•Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.

(1) Clean threads of valves and fitting with solvent cleaning compound.

(2) Remove excess dry cleaning solvent using a wire brush.

c. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

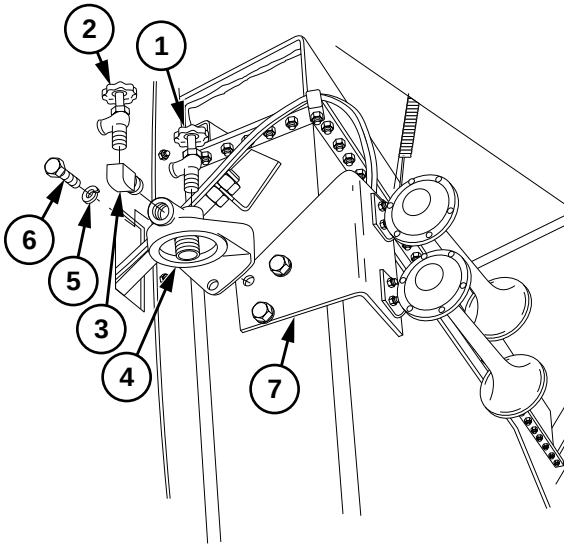
CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(1) Coat threads of valves (1 and 2) and fitting (3) with pipe thread sealing compound.

(2) Install valve (1) on filter mounting head (4).

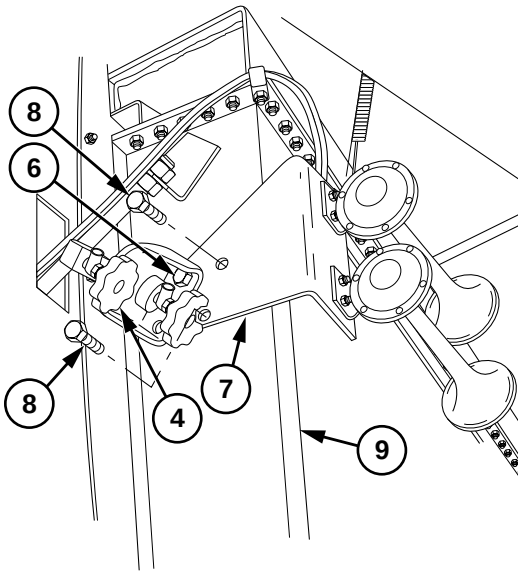
(3) Install fitting (3) and valve (2) on coolant filter mounting head (4).



NOTE

Loosely install screw in step (4) enough to allow rotation of coolant filter mounting head on screw.

(4) Install new lockwasher (5), screw (6), and coolant filter mounting head (4) on air horn bracket (7). Do not tighten.



(5) Remove two screws (8) from side of air horn bracket (7) and radiator (9).

6-14. COOLANT FILTER MOUNTING HEAD REPLACEMENT (CONT)

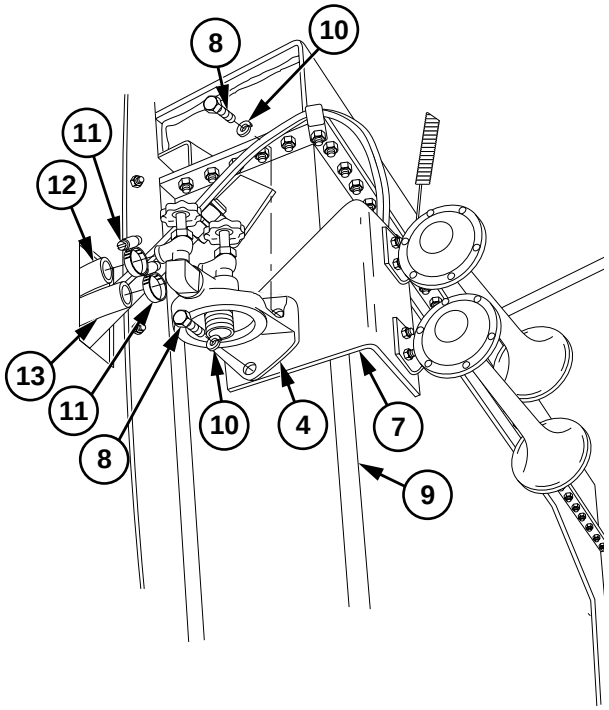
(6) Align air horn bracket (7) and coolant filter mounting head (4) with mounting holes in radiator (9).

(7) Install two new lockwashers (10) and screws (8) in coolant filter mounting head (4). Tighten screws (8).

(8) Install two clamps (11) on hoses (12 and 13).

(9) Install hose no. 2867 (12) and hose no. 2866 (13) on coolant filter mounting head (4).

(10) Position two clamps (11) in mounting position on hoses (12 and 13). Torque clamps to 40 lb-in. (4.5 N·m).



d. Follow-On Maintenance

(1) Install coolant filter (para 6-2).

(2) Fill cooling system (para 6-2).

6-15. RADIATOR SIGHT GLASS REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

WARNING

Coolant may be very hot and under pressure from engine operation. Engine must be cool before performing maintenance. Failure to do so may result in serious injury.

NOTE

Turn radiator cap slowly to remove system pressure.

(1) Remove radiator cap (1) from radiator (2).

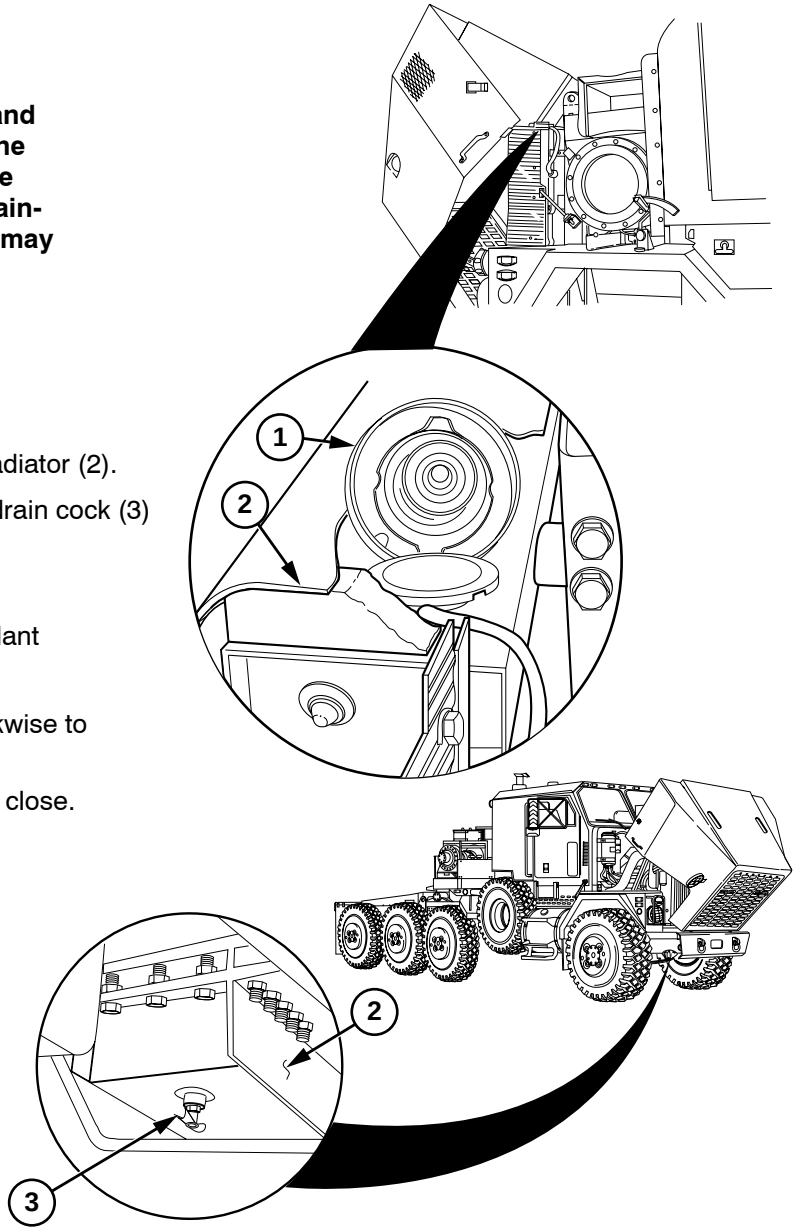
(2) Place suitable container under drain cock (3) on radiator (2).

NOTE

Drain radiator only until coolant level is below sight glass.

(3) Turn drain cock (3) counterclockwise to drain coolant from radiator (2).

(4) Turn drain cock (3) clockwise to close.

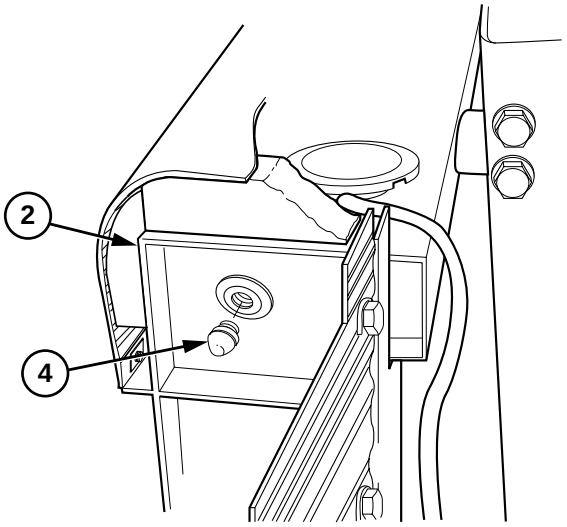


6-15. RADIATOR SIGHT GLASS REPLACEMENT (CONT)

CAUTION

Use light pressure when grasping sight glass. Failure to do so will shatter sight glass.

(5) Turn sight glass (4) counterclockwise and remove from radiator (2).



b. Installation

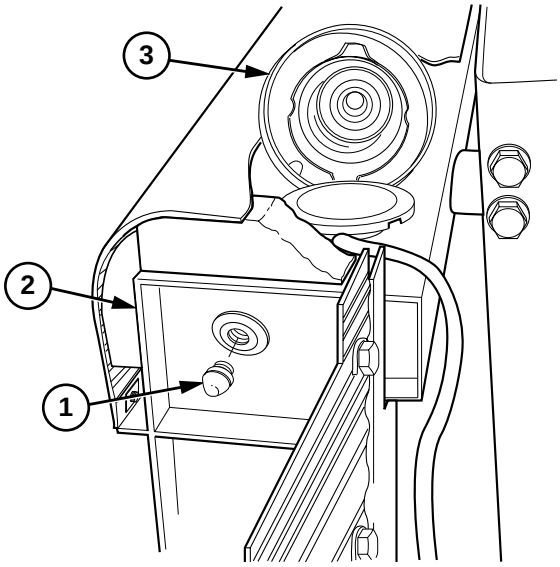
CAUTION

Use light pressure when grasping sight glass and do not overtighten. Failure to do so will shatter sight glass.

(1) Install sight glass (1) in radiator (2). Turn clockwise until snug.

(2) Fill cooling system (LO 9-2320-360-12).

(3) Install radiator cap (3) on radiator (2).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Run until operating temperature is reached.

(3) Check sight glass for leaks.

(4) Shut off engine (TM 9-2320-360-10).

(5) Close engine hood (TM 9-2320-360-10).

(6) Remove wheel chocks.

CHAPTER 7
ELECTRICAL SYSTEM MAINTENANCE

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Section I. INTRODUCTION

7-1. INTRODUCTION

This chapter contains instructions for adjustment, replacement, and repair of electrical system components at the Unit maintenance level. Some parts must be removed before the electrical system components can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

7-2. ALTERNATOR TEST/VOLTAGE REGULATOR ADJUSTMENT

This task covers:
a. Alternator Test
b. Voltage Regulator Adjustment
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Battery Box Open (TM 9-2320-360-10)
Alternator access panel removed (para 16-2).
Inner Fender Removed (left side only) (para 16-34)
Engine running (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Multimeter (Item 20, Appendix F)

Personnel Required
Two

a. Alternator Test

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

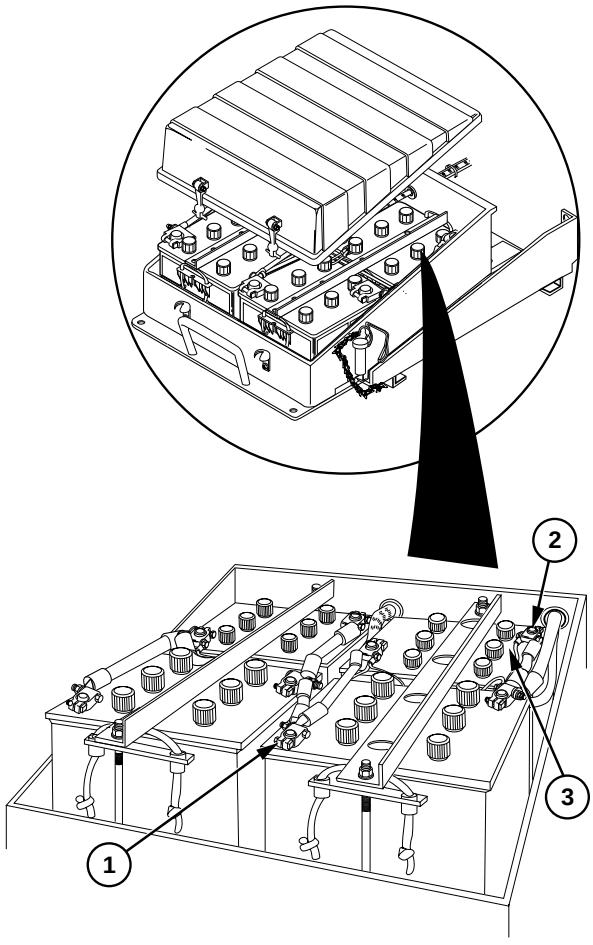
NOTE

Batteries should be at least 95% charged. Specific gravity should be greater than 1.270.

(1) Check battery specific gravity (para 2-12, Item 17).

(2) Connect digital multimeter to positive (+) terminal (1) and negative (-) terminal (2) of batteries (3). Record voltage displayed on multimeter.

(3) If voltage is not 13.90-14.10 volts, adjust voltage regulator(s) (para 7-2b).



7-2. ALTERNATOR TEST/VOLTAGE REGULATOR ADJUSTMENT (CONT)

(4) Connect digital multimeter to positive (+) terminal (4) and negative (-) terminal (2) of batteries (3). Record voltage displayed on multimeter.

(5) Find the voltage recorded in step (2) on Table 7-0.1. If the voltage measured in step (4) is not within the specifications shown in Table 7-0.1, adjust the voltage regulator(s) (para 7-2b).

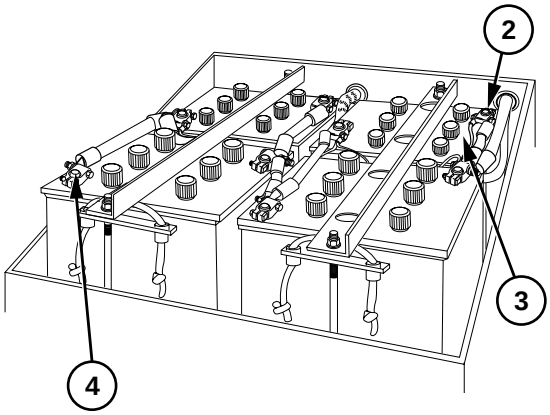


Table 7-0.1

14 Volt Reading (Step 2)	28 Volt Reading (Step 4) Lowest Acceptable	28 Volt Reading (Step 4) Highest Acceptable
13.90	27.75	27.85
13.91	27.77	27.87
13.92	27.79	27.89
13.93	27.81	27.91
13.94	27.83	27.93
13.95	27.85	27.95
13.96	27.87	27.97
13.97	27.89	27.99
13.98	27.91	28.01
13.99	27.93	28.03
14.00	27.95	28.05
14.01	27.97	28.07
14.02	27.99	28.09
14.03	28.01	28.11
14.04	28.03	28.13
14.05	28.05	28.15
14.06	28.07	28.17
14.07	28.09	28.19
14.08	28.11	28.21
14.09	28.13	28.23
14.10	28.15	28.25

NOTE

Batteries should be at least 95% charged. Specific gravity readings should be greater than 1.270.

b. Voltage Regulator Adjustment

WARNING

Use extreame care when measuring voltage while engine is running. Rotating fan blade and hot engine parts may cause injury.

CAUTION

Electrical accessories should be in off position for adjustment to be correct.

(1) Remove plastic cap (1) from access hole in cover (2).

(2) Connect voltmeter leads accross positive (+) terminal (3) and negative (-) terminal (4).

(3) Start and operate engine at idle with aid of assistant (TM 9-2320-360-10).

(4) Insert small screwdriver in access hole of cover.

CAUTION

Do not force adjusting screw past stops at either end of range. Damage to voltage regulator may result.

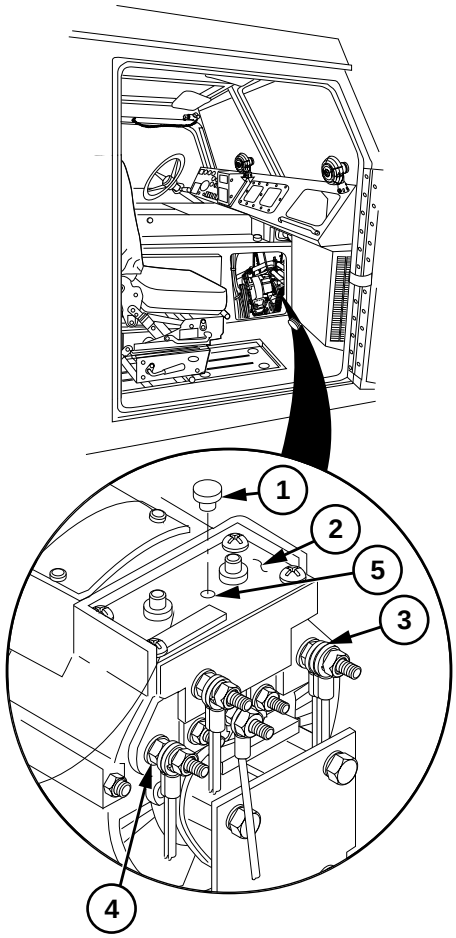
NOTE

- Turn adjusting screw clockwise to increase voltage, counter-clockwise to decrease voltage.
- Replace alternator if 14.05 volts cannot be obtained.

(5) Turn adjusting screw (5) until voltage of 14.05 vdc is obtained.

(6) Install plastic cap (1) in access hole of cover (2).

(7) Disconnect voltmeter test leads from negative (-) terminal (4) and positive (+) terminal (3).



7-2. ALTERNATOR TEST/VOLTAGE REGULATOR ADJUSTMENT (CONT)

(8) Remove plastic screw (6) from access hole in cover (7).

(9) Connect voltmeter leads accross positive (+) terminal (8) and negative (-) terminal (9).

(10) Start and operate engine at idle with aid of assistant (TM 9-2320-360-10).

(11) Insert small screwdriver in access hole cover.

CAUTION

Do not force adjusting screw past stops at either end of range. Damage to voltage regulator may result.

NOTE

- Turn adjusting screw clockwise to increase voltage, counter-clockwise to decrease voltage.
- Replace alternator if 28.02 volts cannot be obtained.

(12) Turn adjusting screw (10) until voltage of 28.02 is achieved.

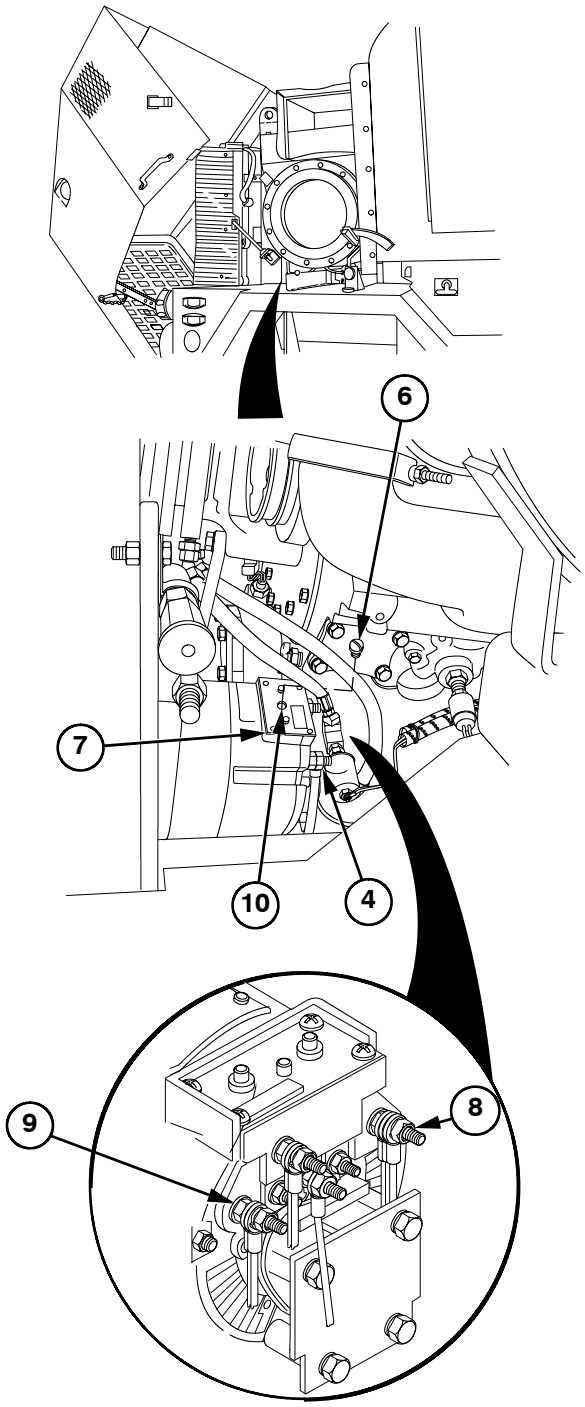
(13) Install plastic screw (6) in access hole of cover (7).

(14) Disconnect voltmeter test leads from negative (-) terminal (9) and positive (+) terminal (8).

NOTE

- If voltage at batteries is not within specifications, after voltage regulator adjustment refer to Electrical System Troubleshooting.
- If voltage regulator cannot be adjusted adequately, replace it.

(15) Test alternator output at batteries (para 7-2a).



d. Follow-On Maintenance

(1) Shut off engine (TM 9-2320-360-10).

(2) Close battery box (TM 9-2320-360-10).

(3) Install alternator access panel (para 16-2).

(4) Install inner fender (para 16-34).

7-3. 12-VOLT (REAR) ALTERNATOR/BRACKET AND STRAP REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).
Alternator belts removed (para 7-6).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15 Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknut (Item 71, Appendix G)
Lockwashers (2) (Item 102, Appendix G)
Lockwashers (2) (Item 103, Appendix G)
Lockwashers (2) (Item 122, Appendix G)
Lockwasher (Item 104, Appendix G)
Nut (Item 128, Appendix G)

a. Alternator Removal

WARNING

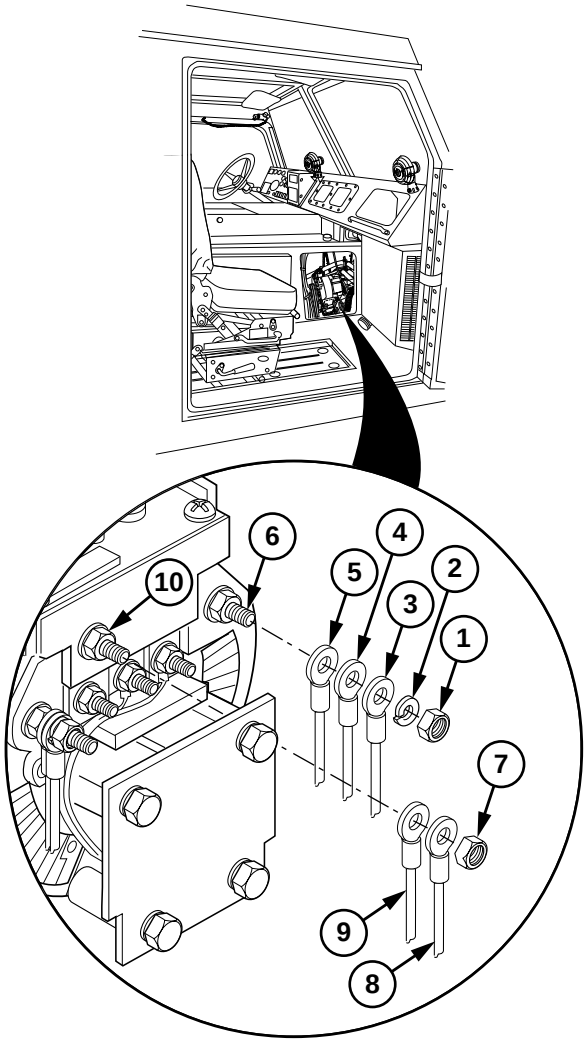
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electric shock.

NOTE

Tag and mark wires before removal.

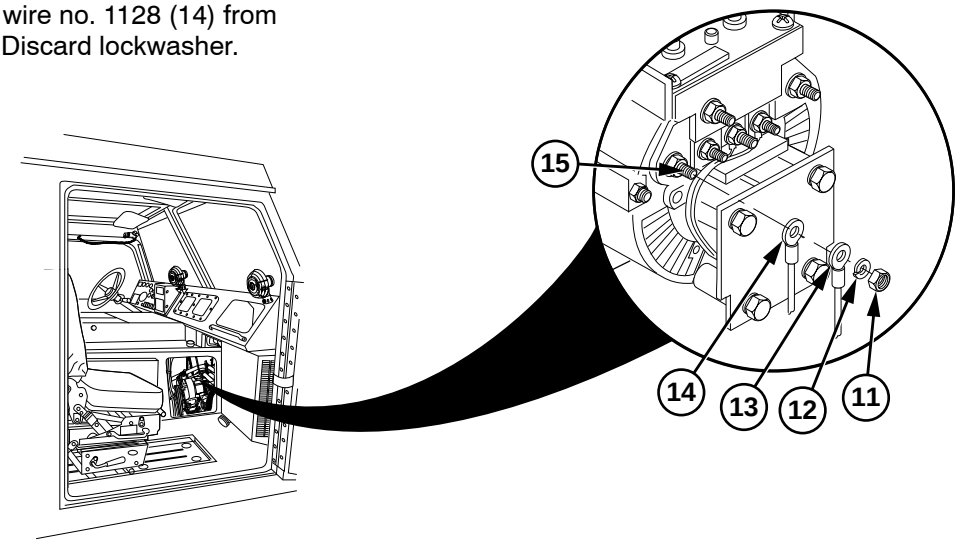
(1) Remove nut (1), lockwasher (2), wire no. 1831 (3), wire no. 1430 (4), and wire no. 1817 (5) from terminal (6). Discard lockwasher.

(2) Remove nut (7), wire no. 1020A (8), and wire no. 1933 (9) from terminal (10). Discard nut.



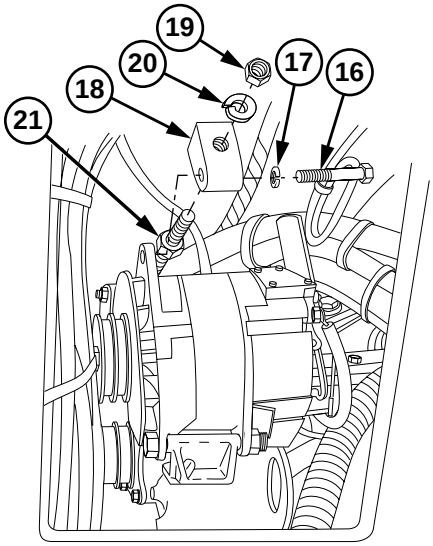
7-3. 12-VOLT (REAR) ALTERNATOR/BRACKET AND STRAP REPLACEMENT (CONT)

(3) Remove nut (11), lockwasher (12), wire no. 1815 (13) and wire no. 1128 (14) from terminal (15). Discard lockwasher.



(4) Remove screw (16) and lockwasher (17) from rod end eye (18). Discard lockwasher.

(5) Remove nut (19), lockwasher (20), and rod end eye (18) from adjusting strap (21). Discard lockwasher.



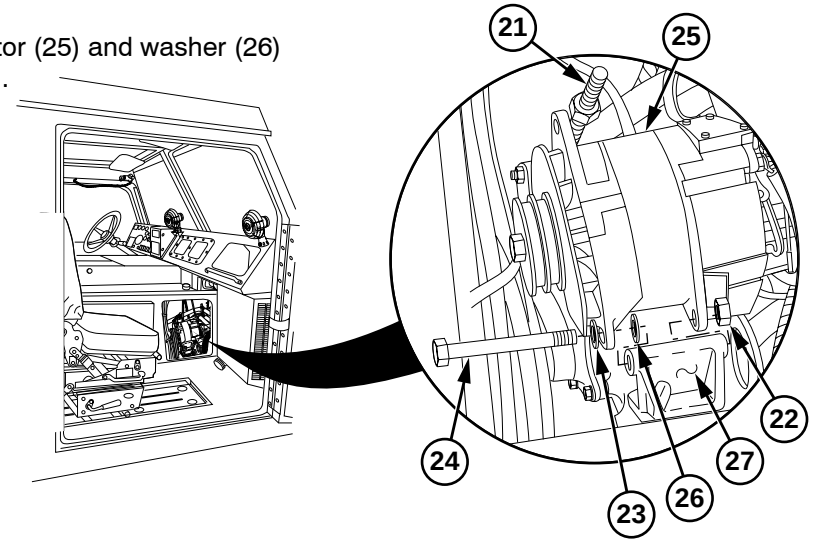
(6) Remove locknut (22), washer (23), and screw (24) from bottom of alternator (25). Discard locknut.

(7) Swing adjusting strap (21) out of way.

NOTE

Some vehicles may not have a washer between the mounting bracket and the alternator.

(8) Remove alternator (25) and washer (26) from engine (27).



b. Bracket and Strap Removal

(1) Remove adjusting nut (1) from adjusting strap (2).

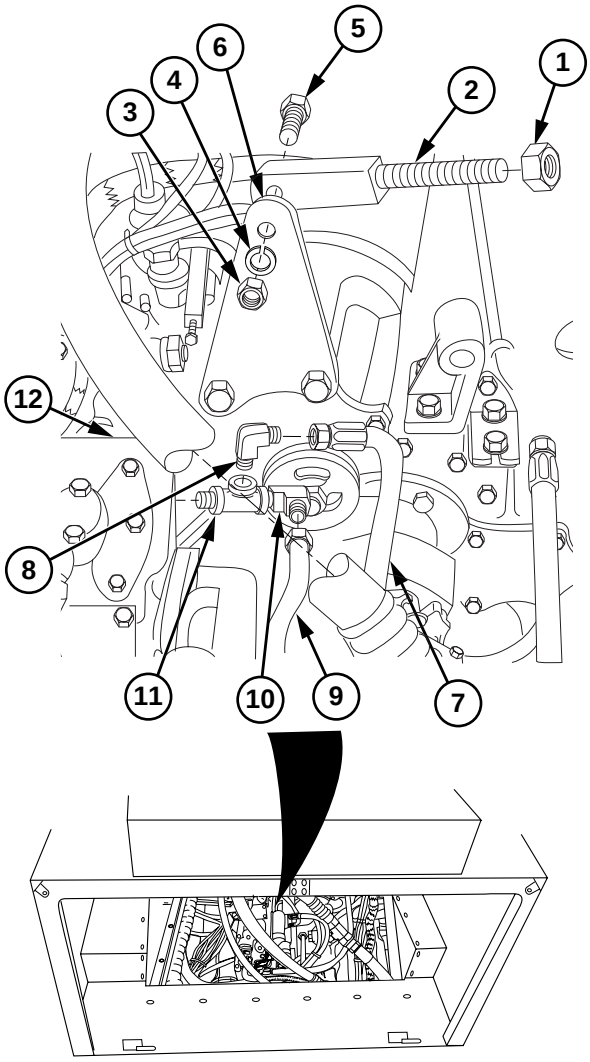
(2) Remove nut (3), lockwasher (4), screw (5), and adjusting strap (2) from bracket (6). Discard lockwasher.

(3) Remove hose no. 2114 (7) from top elbow (8).

(4) Remove hose no. 2096 (9) from side elbow (10).

(5) Remove top elbow (8) from tee (11).

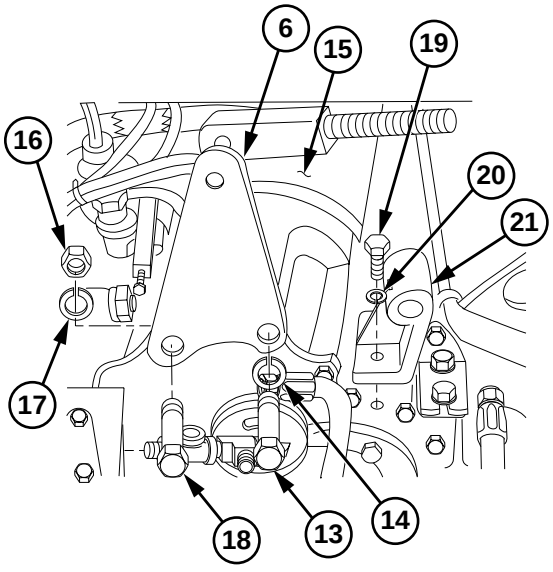
(6) Remove tee (11) and side elbow (10) as one unit from air compressor (12).



(7) Remove screw (13) and lockwasher (14) from bracket (6) and engine block (15). Discard lockwasher.

(8) Remove nut (16), lockwasher (17), screw (18), and bracket (6) from engine block (15). Discard lockwasher.

(9) Remove two screws (19), lockwashers (20), and alternator mounting bracket (21) from engine block (15). Discard lockwashers.



7-3. 12-VOLT (REAR) ALTERNATOR/BRACKET AND STRAP REPLACEMENT (CONT)

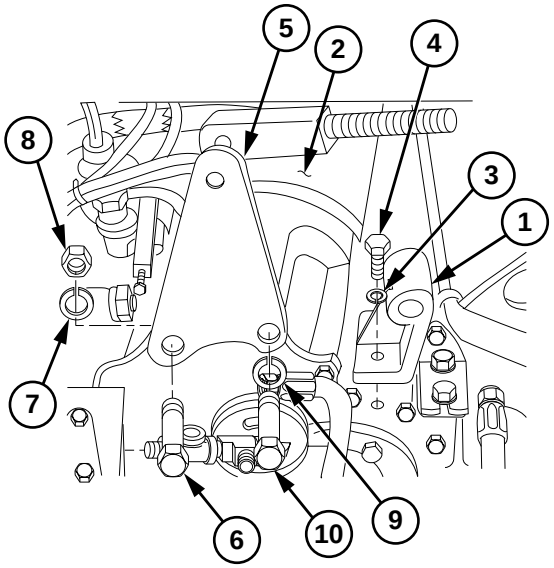
c. Bracket and Strap Installation

(1) Install alternator mounting bracket (1) on engine block (2) with two new lockwashers (3) and screws (4).

(2) Install adjusting strap bracket (5) on engine block (2) with screw (6), new lockwasher (7), and nut (8). Do not tighten.

(3) Install new lockwasher (9) and screw (10) on adjusting strap bracket (5) and engine block (2). Torque to 35–40 lb-ft (47–54 N·m).

(4) Tighten screw (6) to 35–40 lb-ft (47–54 N·m).



WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(5) Coat threads of tee (11) with pipe thread sealing compound.

(6) Install tee (11) and side elbow (12) as one unit on air compressor (13).

(7) Coat threads of elbow (14) with pipe thread sealing compound.

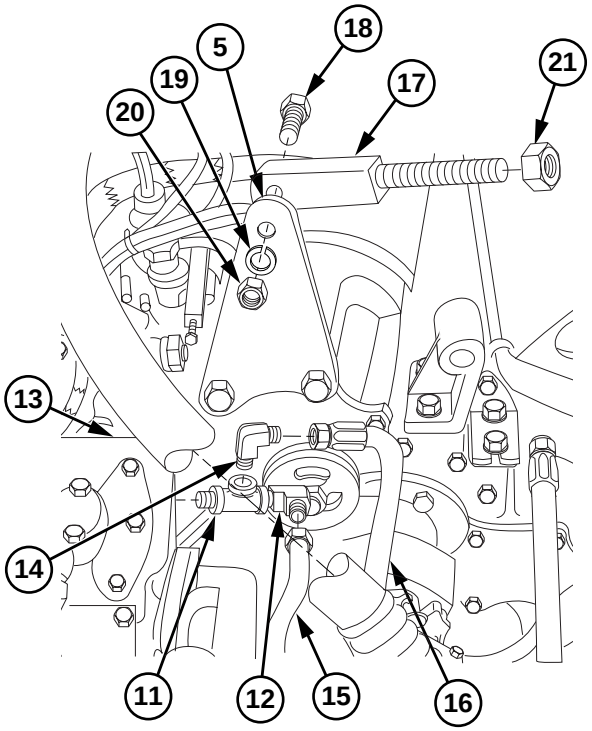
(8) Install top elbow (14) in tee (11).

(9) Install hose no. 2096 (15) on side elbow (12).

(10) Install hose no. 2114 (16) on top elbow (14).

(11) Install adjusting strap (17) on bracket (5) with screw (18), new lockwasher (19), and nut (20).

(12) Install nut (21) on adjusting strap (17).



d. Alternator Installation

CAUTION

If a washer was present between the mounting bracket and the alternator, it must be reinstalled. Failure to comply may result in belt misalignment and damage to drive belts.

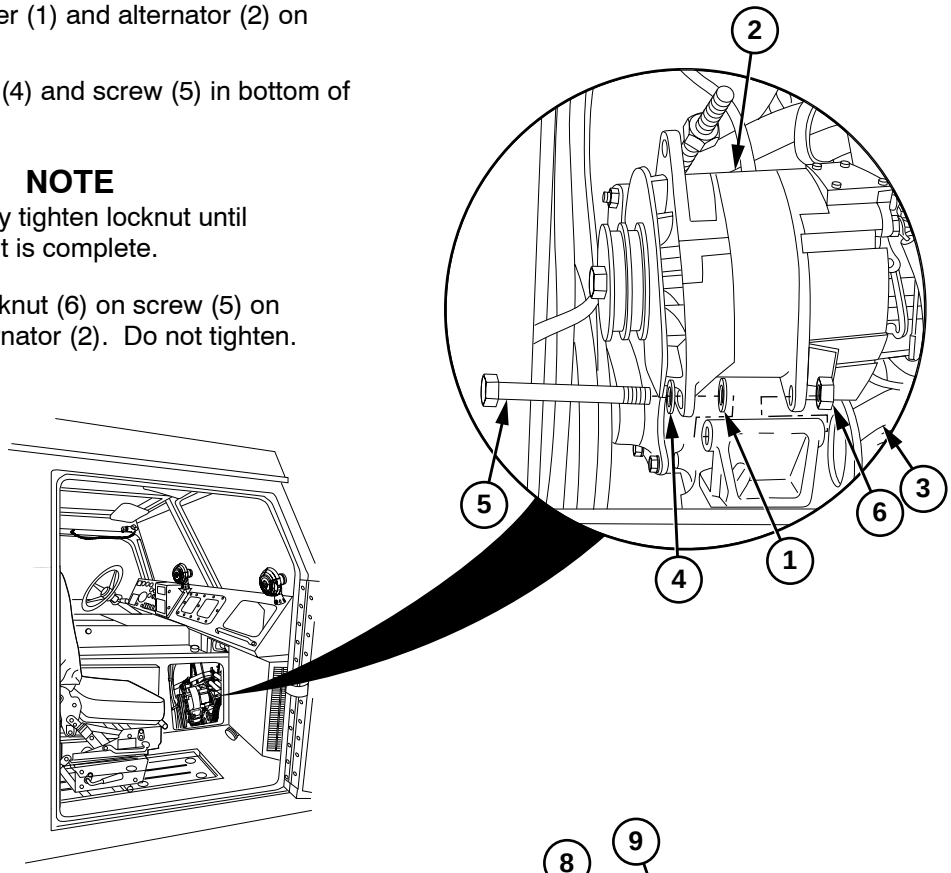
(1) Position washer (1) and alternator (2) on engine (3).

(2) Install washer (4) and screw (5) in bottom of alternator (2).

NOTE

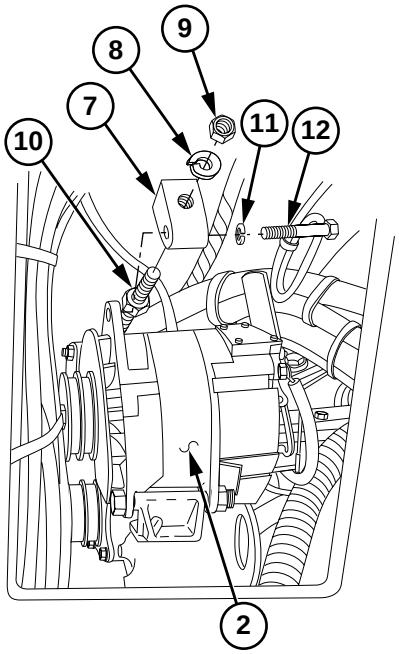
Do not fully tighten locknut until adjustment is complete.

(3) Install new locknut (6) on screw (5) on bottom of alternator (2). Do not tighten.



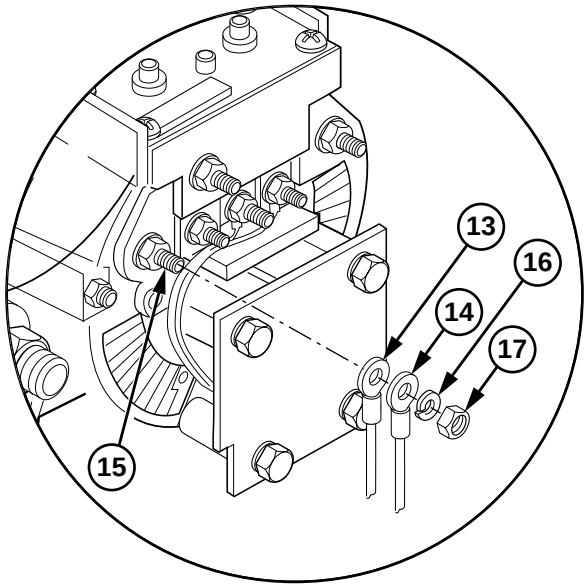
(4) Install rod end eye (7), new lockwasher (8), and nut (9) on adjusting strap (10).

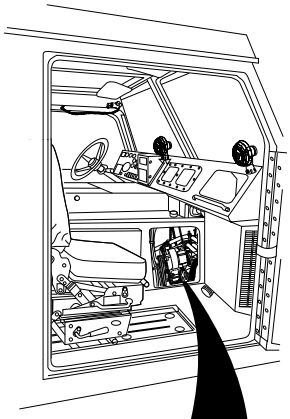
(5) Position new lockwasher (11) and screw (12) in rod end eye (7) and alternator (2). Do not tighten.



7-3. 12-VOLT (REAR) ALTERNATOR/BRACKET AND STRAP REPLACEMENT (CONT)

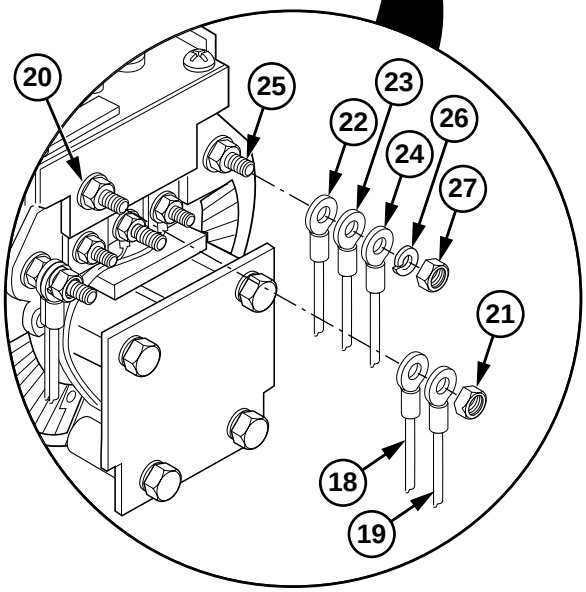
(6) Install wire no. 1815 (13) and wire no.1128 (14) on terminal (15) with new lockwasher (16) and nut (17).





(7) Install wire no. 1933 (18) and wire no. 1020A (19) on terminal (20) with new nut (21).

(8) Install wire no. 1817 (22), wire no. 1430 (23), and wire no. 1831 (24) on terminal (25) with new lockwasher (26) and nut (27).



e. Follow-On Maintenance

(1) Install belts and adjust belt tension (para 7-6).

(2) Connect batteries (para 7-61).

(3) Adjust voltage regulators (para 7-2b).

7-5. 24-VOLT (FRONT) ALTERNATOR/BRACKET REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).
Alternator belts removed (para 7-7).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Locknut (Item 71, Appendix G)
Lockwashers (4) (Item 103, Appendix G)
Lockwashers (2) (Item 122, Appendix G)
Lockwasher (Item 121, Appendix G)

a. Alternator Removal

WARNING

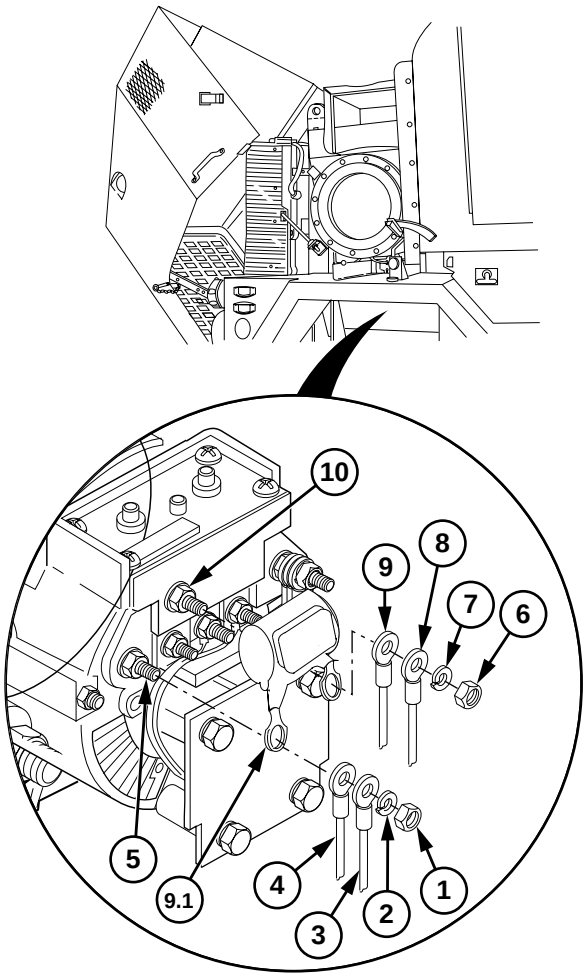
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electric shock.

NOTE

Tag and mark wires before removal.

(1) Remove nut (1), lockwasher (2), wire no. 1128 (3) and wire no. 1815 (4) from terminal (5). Discard lockwasher.

(2) Remove nut (6), lockwasher (7), wire no. 1020 (8), wire no. 1953 (9) and EMI capacitor (9.1) from terminal (10). Discard lockwasher.

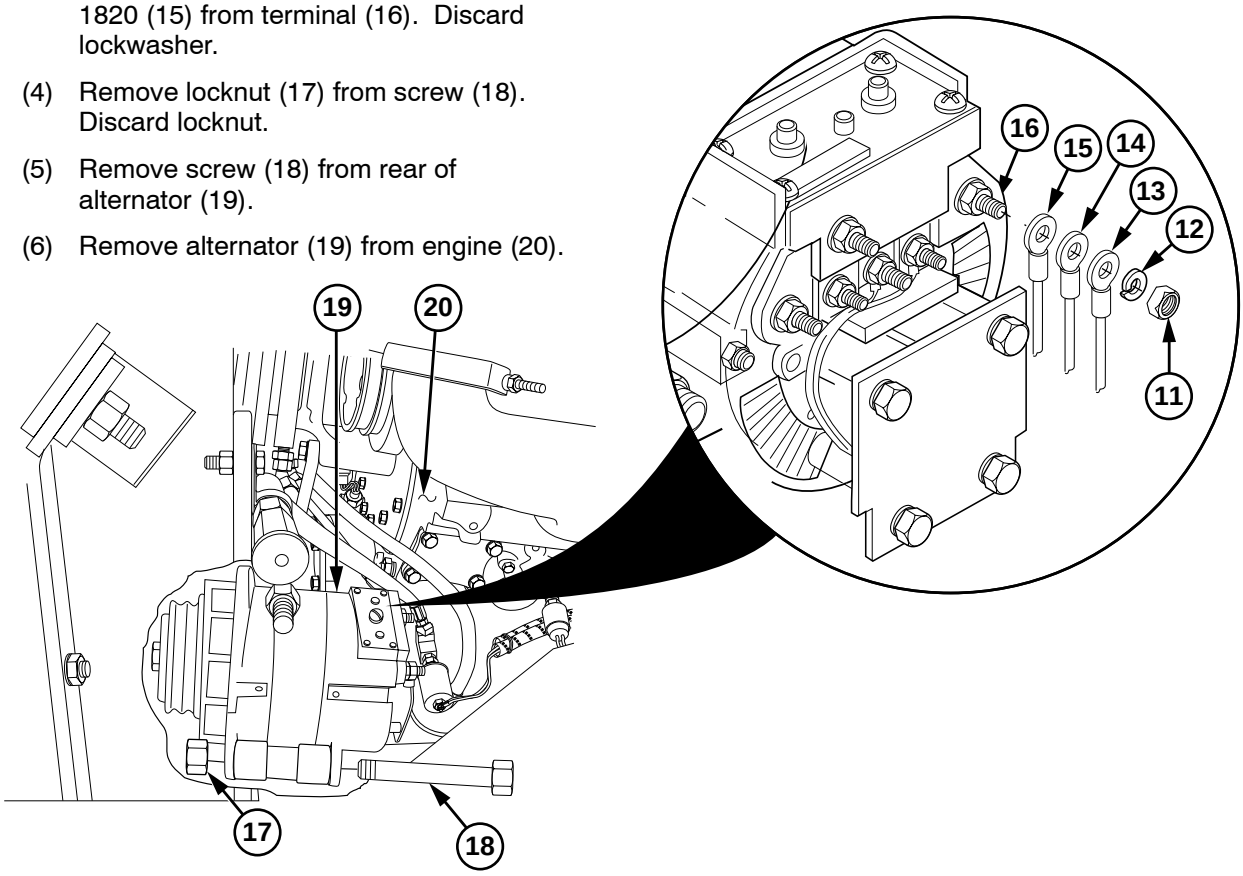


(3) Remove nut (11), lockwasher (12), wire no. 1280 (13), wire no. 1831 (14), and wire no. 1820 (15) from terminal (16). Discard lockwasher.

(4) Remove locknut (17) from screw (18). Discard locknut.

(5) Remove screw (18) from rear of alternator (19).

(6) Remove alternator (19) from engine (20).

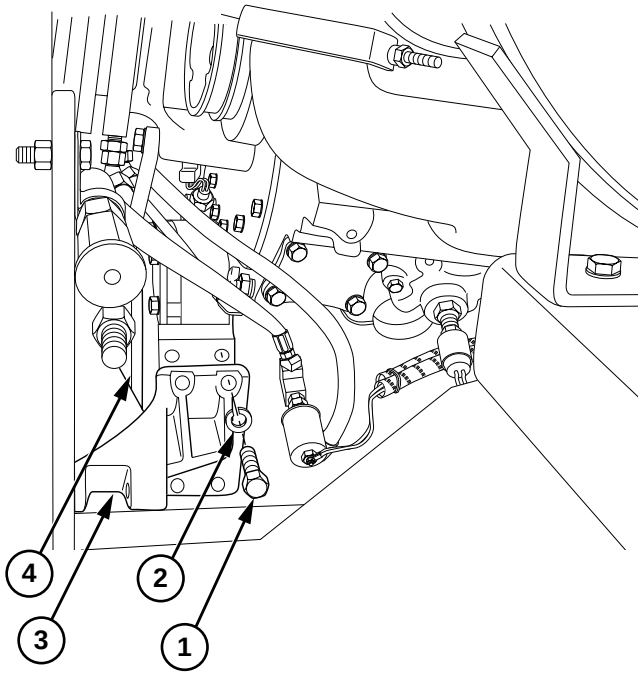


b. Bracket Removal

Remove four screws (1), lockwashers (2), and alternator bracket (3) from engine block (4). Discard lockwashers.

c. Bracket Installation

Install alternator bracket (3) on engine block (4) with four new lockwashers (2) and screws (1).



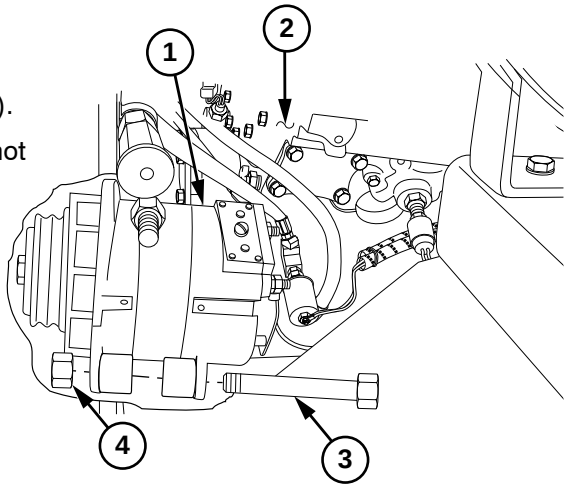
7-5. 24-VOLT (FRONT) ALTERNATOR/BRACKET REPLACEMENT (CONT)

d. Alternator Installation

(1) Position alternator (1) on engine (2).

(2) Install screw (3) in bottom of alternator (1).

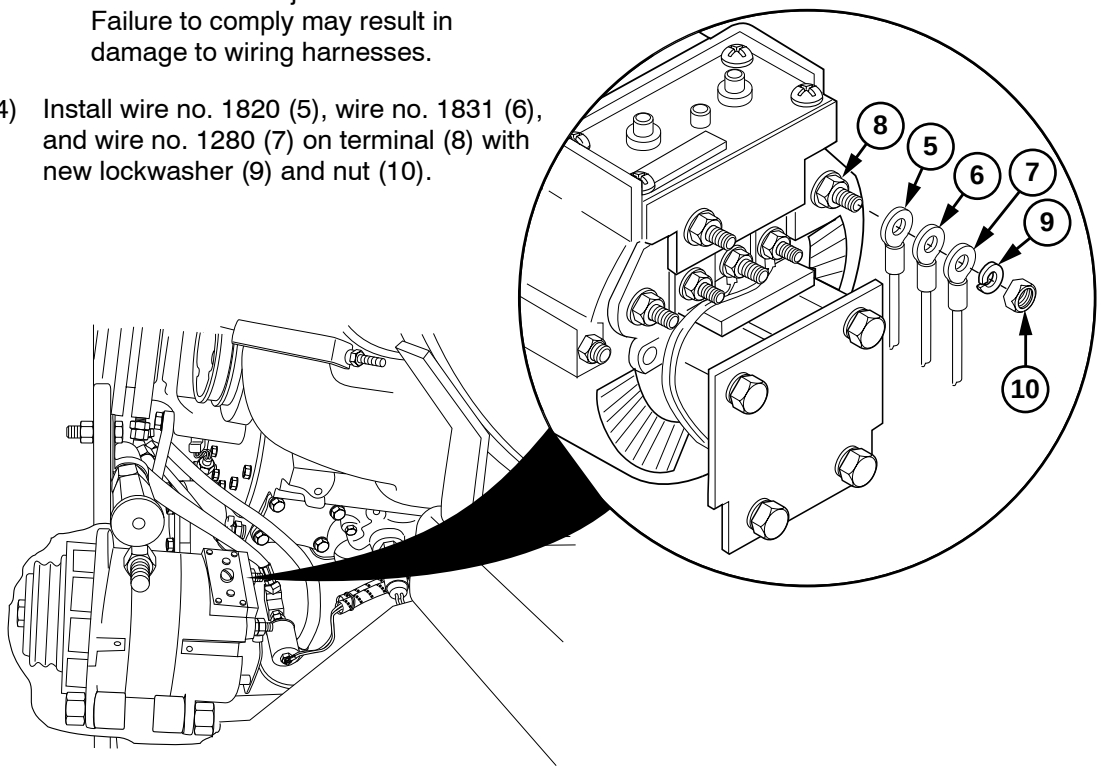
(3) Install new locknut (4) on screw (3). Do not tighten.



CAUTION

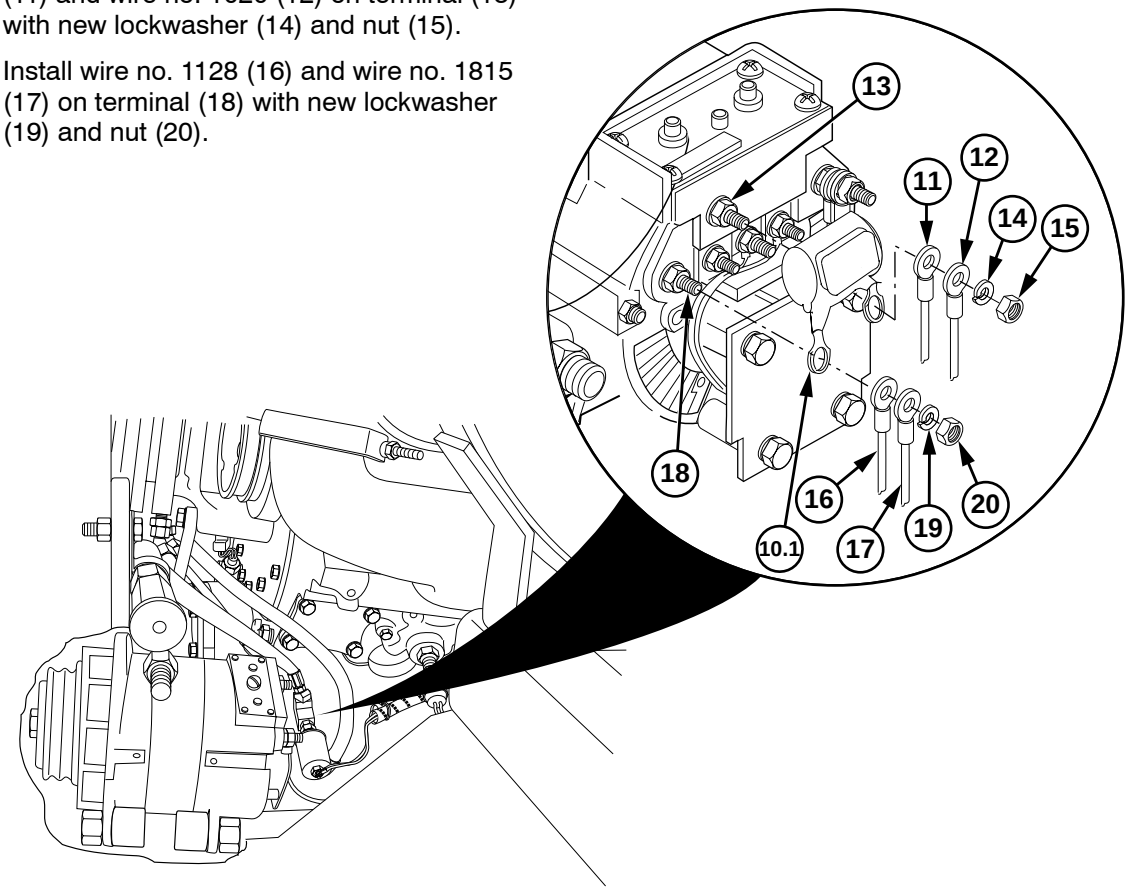
Ensure wires to alternator are loose enough to allow for alternator belt adjustment. Failure to comply may result in damage to wiring harnesses.

(4) Install wire no. 1820 (5), wire no. 1831 (6), and wire no. 1280 (7) on terminal (8) with new lockwasher (9) and nut (10).



(5) Install EMI capacitor (10.1), wire no. 1953 (11) and wire no. 1020 (12) on terminal (13) with new lockwasher (14) and nut (15).

(6) Install wire no. 1128 (16) and wire no. 1815 (17) on terminal (18) with new lockwasher (19) and nut (20).



e. Follow-On Maintenance

(1) Install belts and adjust belt tension (para 7-7).

(2) Connect batteries (para 7-61).

(3) Adjust voltage regulators (para 7-2b).

7-6. 12-VOLT (REAR) ALTERNATOR BELT ADJUSTMENT/REPLACEMENT

This task covers:
- a. Removal
- b. Installation
- c. Adjustment
- c.1. Alignment
- d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Lower engine, front engine, and alternator access panels removed (para 16-2).
Engine hood opened (TM 9-2320-360-10).

Personnel Required
Two

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Gage, Belt Tension (Item 12, Appendix F)

a. Removal

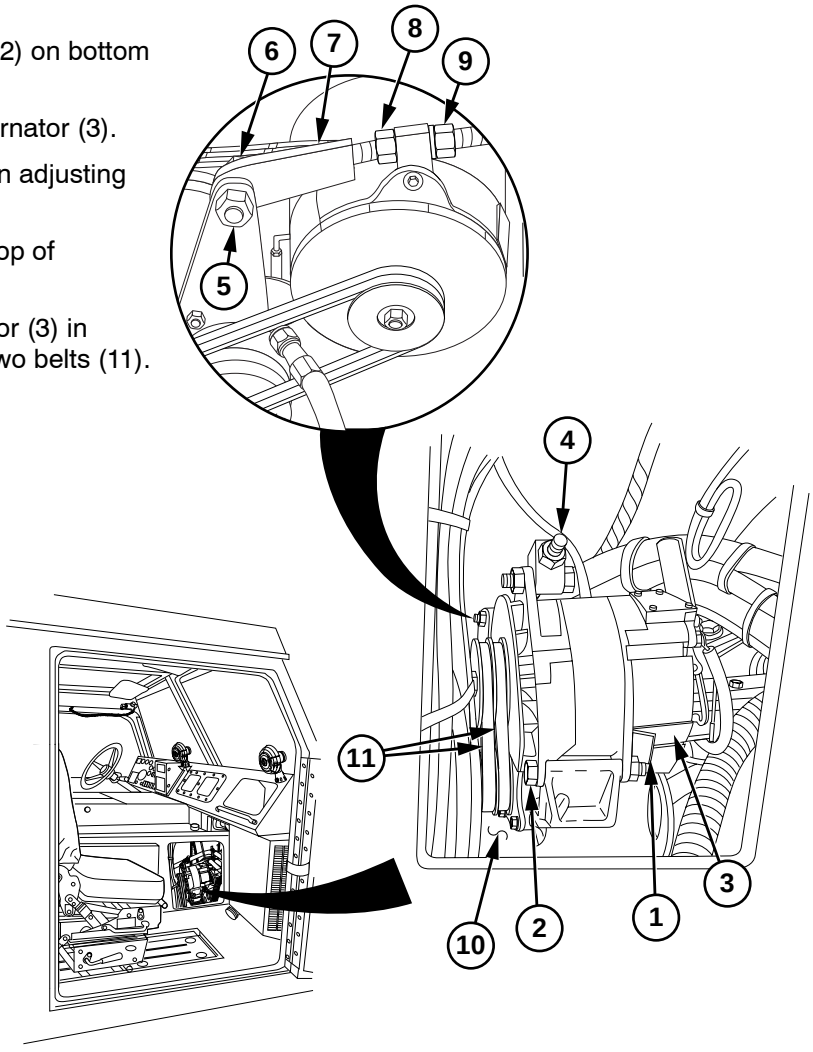
(1) Loosen nut (1) on pivot screw (2) on bottom of alternator (3).

(2) Loosen screw (4) on top of alternator (3).

(3) Loosen nut (5) and screw (6) on adjusting strap (7).

(4) Loosen adjustment nut (8) on top of alternator (3).

(5) Tighten nut (9) to pivot alternator (3) in toward engine (10). Remove two belts (11).



b. Installation

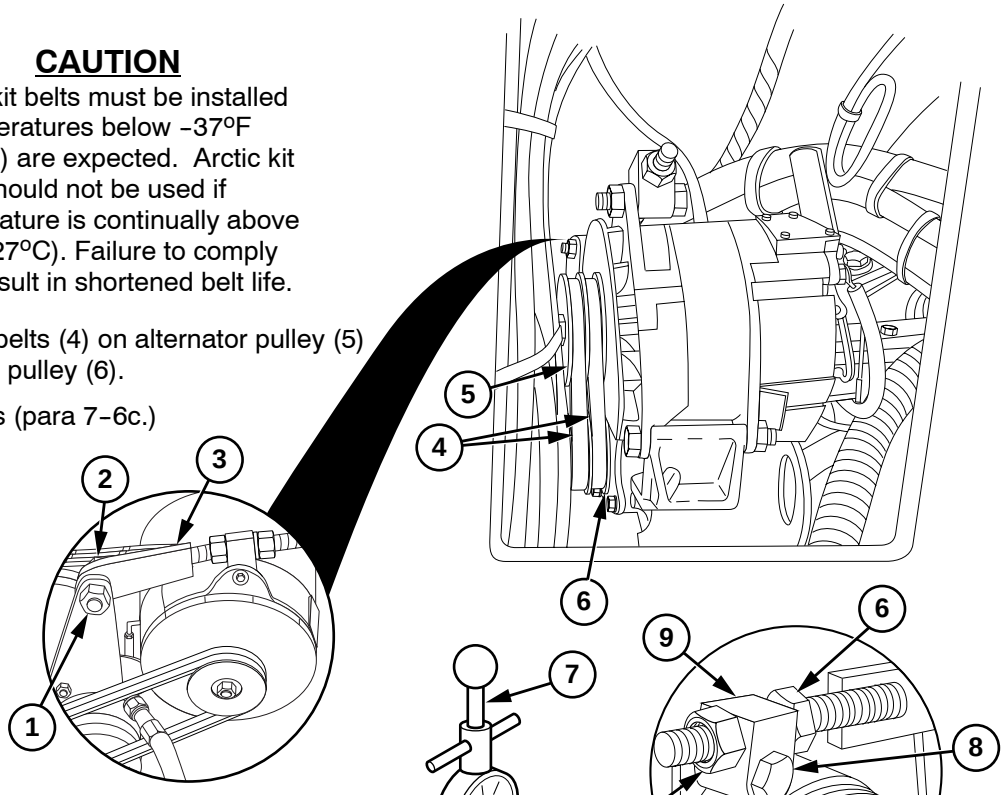
(1) Tighten nut (1) and screw (2) on adjusting strap (3).

CAUTION

Arctic kit belts must be installed if temperatures below -37°F (-38°C) are expected. Arctic kit belts should not be used if temperature is continually above 80°F (27°C). Failure to comply may result in shortened belt life.

(2) Install two belts (4) on alternator pulley (5) and engine pulley (6).

(3) Adjust belts (para 7-6c.)



c. Adjustment

NOTE

If belts have been replaced, begin with step (3).

(1) Loosen nut (1) on screw (2) at bottom of alternator (3).

(2) Loosen nut (4) on top of alternator (3).

(3) Adjust tension on two belts (5) by turning adjusting nut (6) counterclockwise.

(4) Position belt tension gage (7) on belt (5).

(5) When belt tension gage indicates 70-90 lb (310-400 N), tighten nut (4) on top of alternator (3).

(6) Tighten screw (8) on rod end eye (9).

(7) Tighten nut (1) on screw (2) on bottom of alternator (3).

(8) Remove belt tension gage (7) from belt (5).

7-6. 12-VOLT (REAR) ALTERNATOR BELT ADJUSTMENT/REPLACEMENT (CONT)

c.1. Alignment

NOTE

This sub-paragraph is only required if a new mounting bracket or alternator was installed.

(1) Place a straight edge across the outside edge of engine pulley (1).

(2) Measure gap between straight edge and belt (2) at engine pulley (1) and alternator pulley (3). Gap should be equal (±0.10 in. (2.5 mm)).

NOTE

Do steps (3) thru (9) if alignment is not within specifications.

(3) Remove alternator belts (para 7-6a).

(4) Remove alternator (para 7-3).

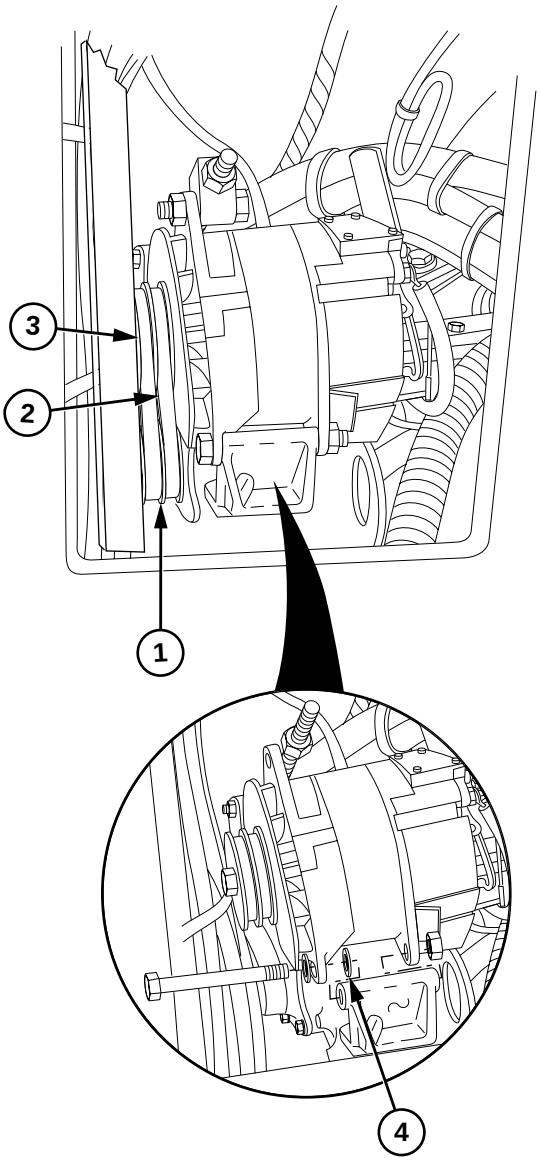
(5) Add washer (4) to move alternator to rear; delete washer (4) to move alternator to front.

(6) Install alternator (para 7-3).

(7) Install alternator belts (para 7-6b).

(8) Adjust alternator belts (para 7-6c).

(9) Repeat steps (1) and (2) to verify adjustment.



d. Follow-On Maintenance

(1) Install alternator, front engine, and lower engine access panels (para 16-2).

(2) Close engine hood (TM 9-2320-360-10).

7-7. 24-VOLT (FRONT) ALTERNATOR BELT ADJUSTMENT/REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Adjustment
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Inner fender removed (left side only) (para 16-34).
Engine hood opened (TM 9-2320-360-10).

Personnel Required
Two

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Gage, Belt Tension (Item 12, Appendix F)
Mirror, Inspection (Item 19, Appendix F)

a. Removal

(1) Start engine (TM 9-2320-360-10).

(2) Turn steering wheel counterclockwise until front wheels are in full left position.

(3) Shut off engine (TM 9-2320-360-10).

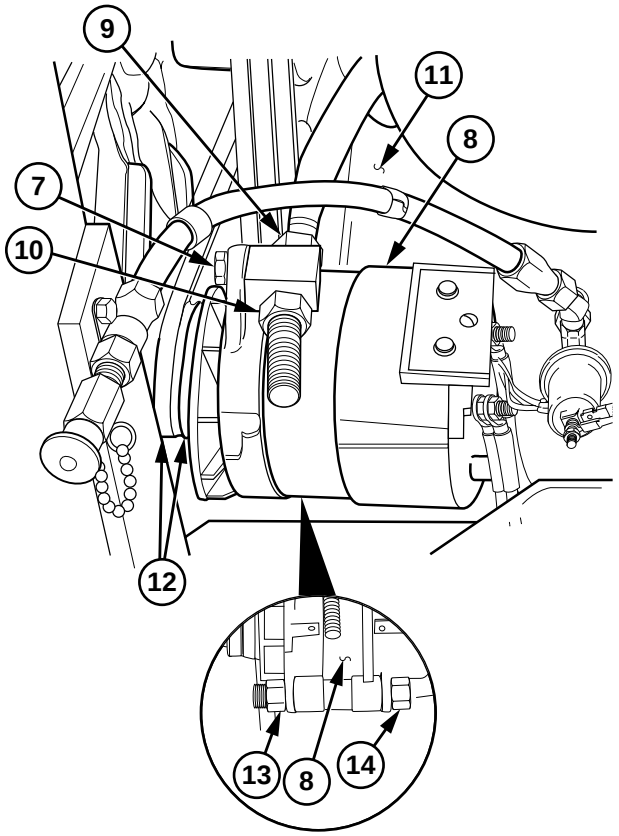
(4) Deleted.

(5) Loosen screw (7) on top of alternator (8).

(6) Loosen adjustment nut (9) at top of alternator (8).

(7) Tighten nut (10) to pivot alternator (8) toward engine (11). Remove two belts (12).

(8) Loosen nut (13) on pivot screw (14) at bottom of alternator (8).



b. Installation

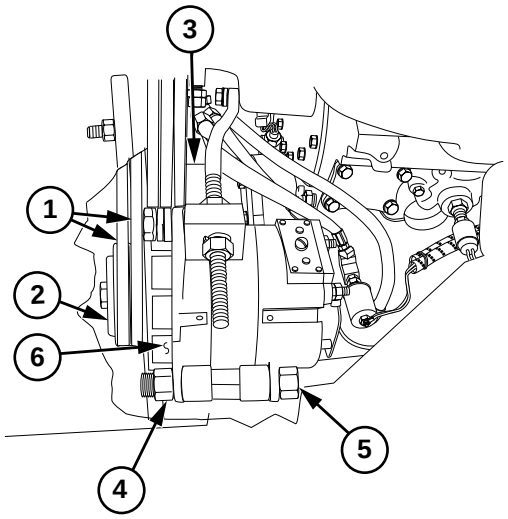
CAUTION

Arctic kit belts must be installed if temperatures below -37°F (-38°C) are expected. Arctic kit belts should not be used if temperature is continually above 80°F (27°C). Failure to comply may result in shortened belt life.

(1) Install two belts (1) on alternator pulley (2) and engine pulley (3).

(2) Tighten nut (4) on pivot screw (5) at bottom of alternator (6).

(3) Adjust belts (para 7-7c.)



7-7. 24-VOLT (FRONT) ALTERNATOR BELT ADJUSTMENT/REPLACEMENT (CONT)

c. Adjustment

NOTE

If belts have been replaced, begin with step (2).

(1) Loosen nut (1) at top of alternator (2).

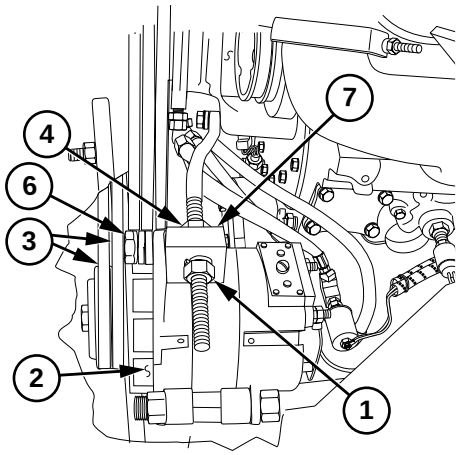
(2) Adjust tension on two belts (3) by turning adjusting nut (4) counterclockwise.

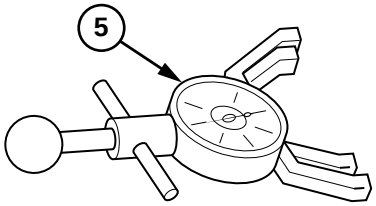
(3) Position belt tension gage (5) on belt (3).

(4) When belt tension gage indicates 70–90 lb (310–400 N), tighten nut (1) at top of alternator (2).

(5) Tighten screw (6) on rod end eye (7).

(6) Remove belt tension gage (5) from belt (3).





(7) Deleted.

d. Follow-On Maintenance

(1) Close engine hood (TM 9-2320-360-10).

(1.1) Install inner fender (para 16-34).

(2) Remove wheel chocks.

7-8. 24-VOLT (FRONT) ALTERNATOR STRAP REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Alternator belts removed (para 7-7).
Fan clutch removed (para 6-9).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Lockwasher (Item 104, Appendix G)
Lockwasher (Item 105, Appendix G)
Lockwasher (Item 106, Appendix G)

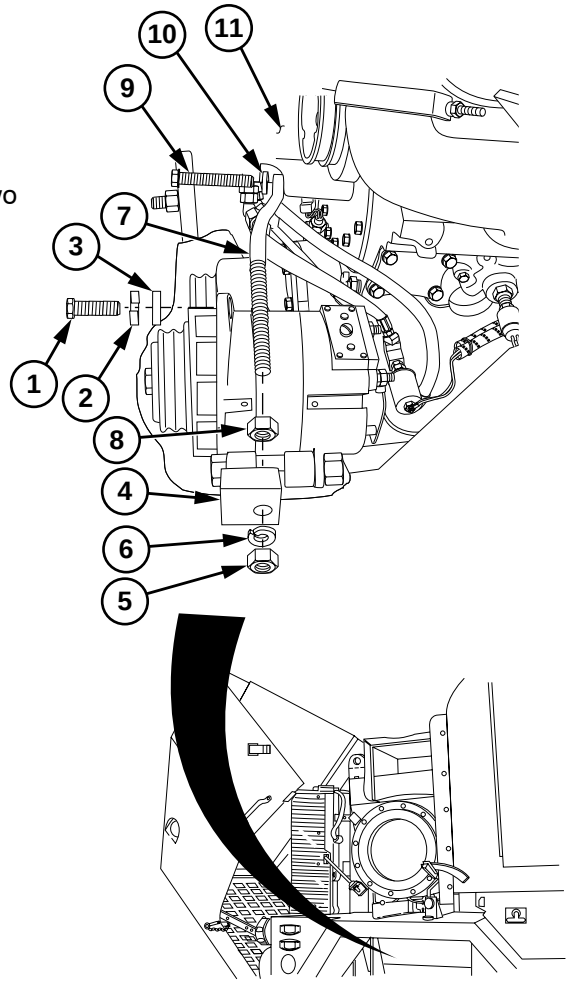
a. Removal

(1) Remove screw (1), lockwasher (2), and two washers(3) from rod end eye (4). Discard lockwasher.

(2) Remove nut (5), lockwasher (6), and rod end eye (4) from adjusting strap (7). Discard lockwasher.

(3) Remove adjusting nut (8) from adjusting strap (7).

(4) Remove screw (9), lockwasher (10), and adjusting strap (7) from engine block (11). Discard lockwasher.



7-8. 24-VOLT (FRONT) ALTERNATOR STRAP REPLACEMENT (CONT)

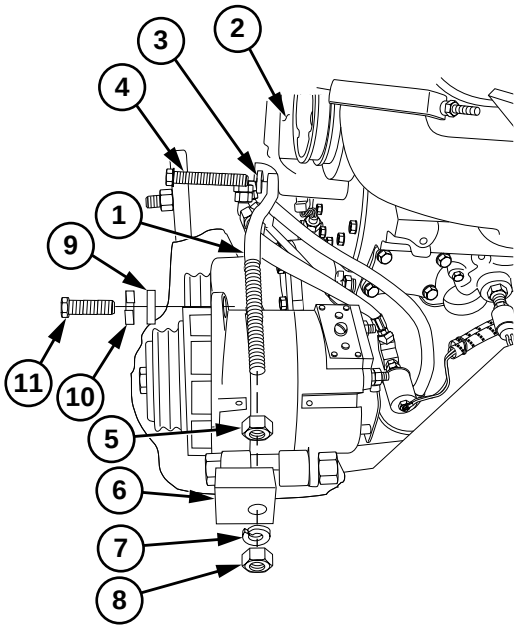
b. Installation

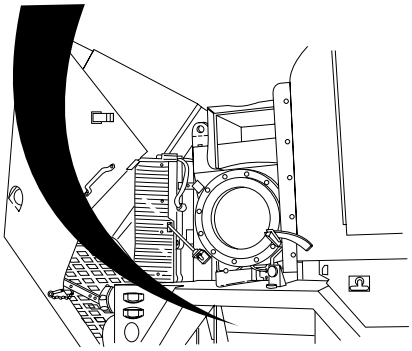
(1) Install adjusting strap (1) on engine block (2) with new lockwasher (3) and screw (4).

(2) Install adjusting nut (5) on adjusting strap (1).

(3) Install rod end eye (6), new lockwasher (7), and nut (8) on adjusting strap (1).

(4) Position two washers (9), new lockwasher (10), and screw (11) on rod end eye (6). Do not tighten.





c. Follow-On Maintenance

(1) Install alternator belts (para 7-7).

(2) Install fan clutch (para 6-9).

7-9. STARTER REPLACEMENT

This task covers:
a. Removal
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine hood opened (TM 9-2320-360-10).
Batteries disconnected (para 7-61).
Tee gear box removed (para 13-8).
Inner fender removed (left side only) (para 16-34).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 30-250 Lb-Ft (Item 75, Appendix F)

Materials/Parts
Adhesive-Sealant, Silicone (Item 3, Appendix C)
Tags, Identification (Item 32, Appendix C)
Gasket (Item 35, Appendix G)
Lockwashers (3) (Item 89, Appendix G)
Lockwasher (Item 104, Appendix G)
Lockwasher (Item 115, Appendix G)
Lockwasher (Item 121, Appendix G)

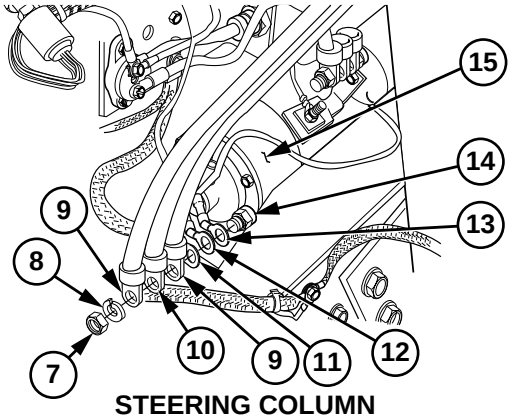
Personnel Required
Three

a. Removal

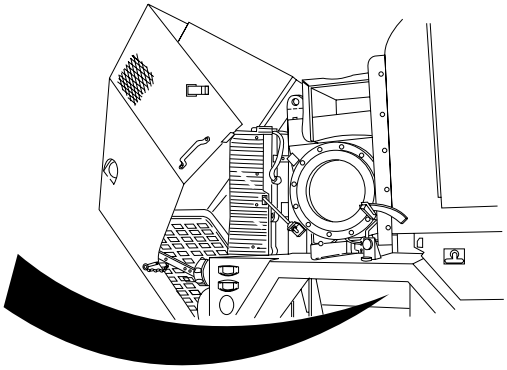
(1) Deleted.

NOTE
Tag and mark cables and wires before disconnecting.

(2) Remove nut (7), lockwasher (8), two negative (-) cables no. 1138 (9), negative (-) cable no. 1128 (10), ground strap (11), wire no. 1819 (12), and jumper wire (13) from negative (-) terminal (14) of starter (15). Discard lockwasher.

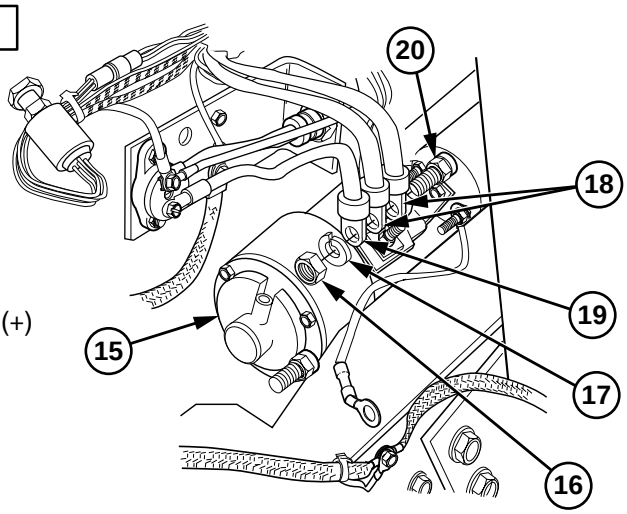


STEERING COLUMN REMOVED FOR CLARITY



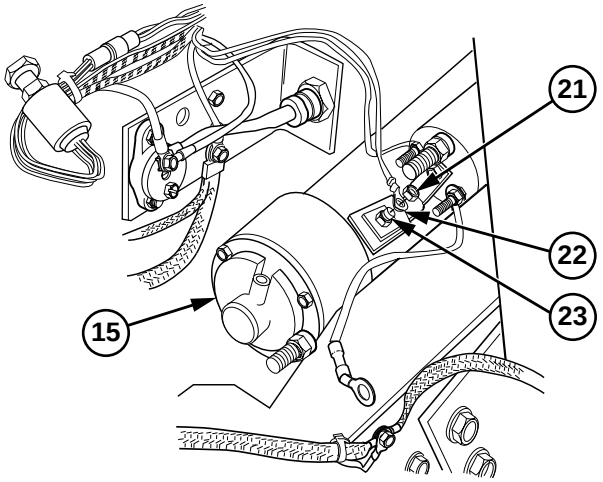
7-9. STARTER REPLACEMENT (CONT)

(3) Remove nut (16), lockwasher (17), two positive (+) cables no. 1139 (18), and positive cable no. 1274 (19) from positive (+) terminal (20) of starter (15). Discard lockwasher.

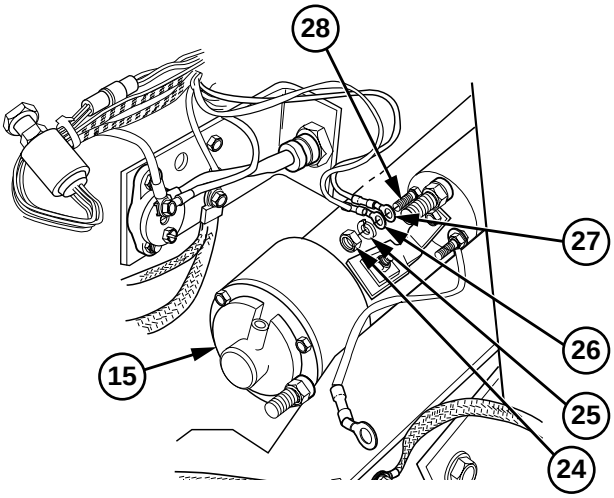


STEERING COLUMN REMOVED FOR CLARITY

(4) Remove nut (21) and wire no. 1818 (22) from terminal (23) of starter (15).



(5) Remove nut (24), lockwasher (25), wire no. 1816 (26), and wire no. 1045 (27) from terminal (28) of starter (15). Discard lockwasher.



(6) Disconnect electrical connector (29) from STE/ICE oil temperature sensor (30).

(7) Move electrical connector (29) from behind starter (15).

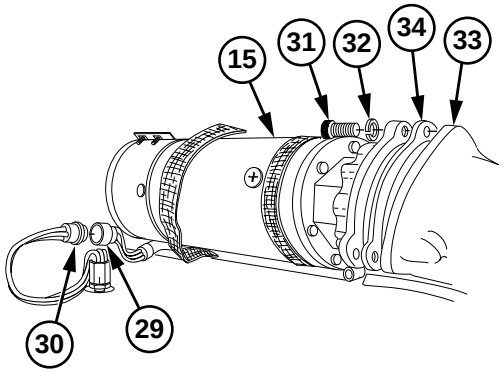
WARNING

Starter weighs 72 lb (33 kg) and is difficult to handle. To prevent injury, use caution when removing.

(8) Position suitable lifting device around starter (15).

(9) Remove three screws (31) and lockwashers (32) from flywheel housing (33) while assistant supports starter (15). Discard lockwashers.

(10) Remove starter (15) from flywheel housing (33) by pulling it forward. Use suitable lifting device to lower starter through engine compartment to ground.



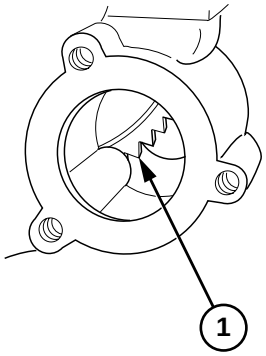
NOTE

Gasket may stay on flywheel housing.

(11) Remove gasket (34) from starter (15). Discard gasket.

b. Cleaning/Inspection

Inspect engine flywheel (1) for worn, broken, or missing teeth.



7-9. STARTER REPLACEMENT (CONT)

c. Installation

WARNING

Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.

(1) Coat new gasket (1) with adhesive-sealant.

(2) Install new gasket (1) on starter (2).

(3) Position starter (2) on ground under engine compartment.

(4) Position suitable lifting device around starter (2).

WARNING

Starter weighs 72 lb (33 kg) and is difficult to handle. To prevent injury, use caution when installing.

(5) Lift starter (2) into engine compartment and position starter in flywheel housing (3) with aid of assistant.

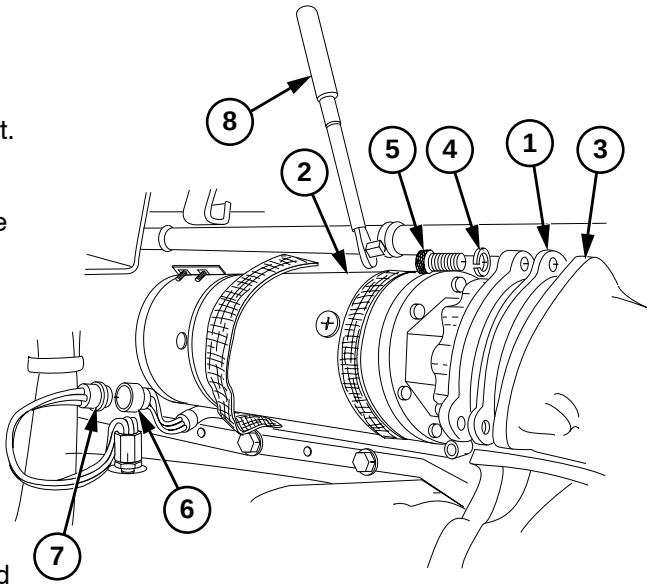
(6) Position three new lockwashers (4) and screws (5) in flywheel housing (3) and starter (2). Do not tighten.

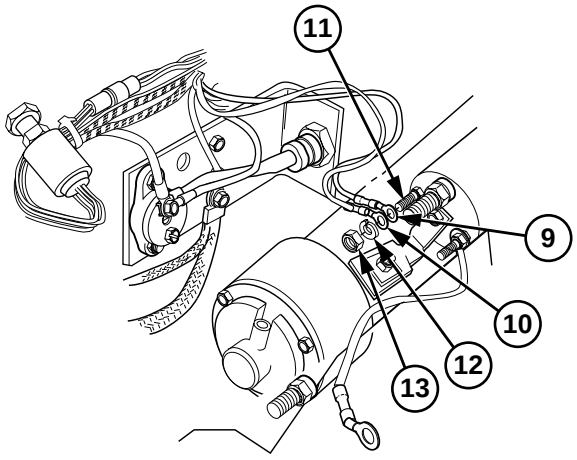
(7) Remove lifting device from starter (2).

(8) Install electrical connector (6) on STE/ICE oil temperature sensor (7).

(9) Tighten three screws (5) to 137-147 lb-ft (186-200 N·m) using torque wrench (8).

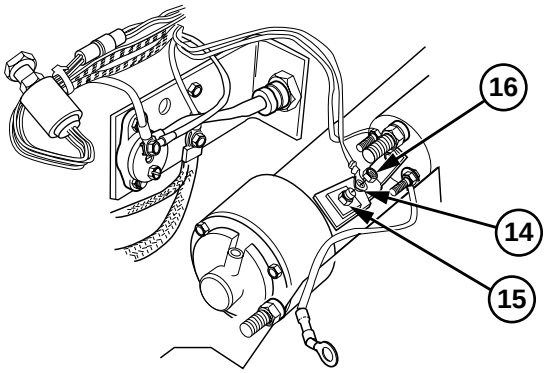
(10) Install wire no. 1045 (9) and wire no. 1816 (10) on terminal (11) with new lockwasher (12) and nut (13).





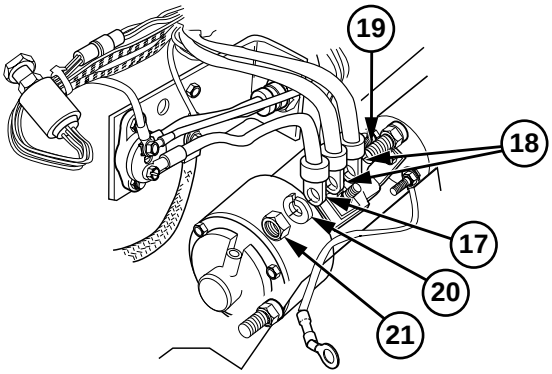
STEERING COLUMN REMOVED FOR CLARITY

(11) Install wire no. 1818 (14) on terminal (15) with nut (16).

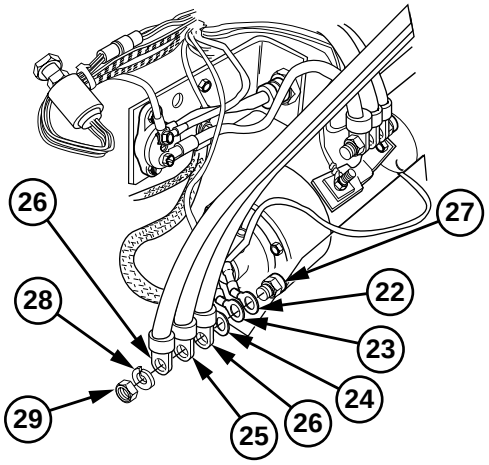


STEERING COLUMN REMOVED FOR CLARITY

(12) Install positive (+) cable no. 1274 (17) and two positive (+) cables no. 1139 (18) on positive (+) terminal (19) with new lockwasher (20) and nut (21).



(13) Install jumper wire (22), wire no. 1819 (23), ground strap (24), negative (–) cable no. 1128 (25), and two negative (–) cables no. 1138 (26) on negative (–) terminal (27) with new lockwasher (28) and nut (29).



7-9. STARTER REPLACEMENT (CONT)

(14) Deleted.

d. Follow-On Maintenance

(1) Install tee gear box (para 13-8).

(2) Connect batteries (para 7-61).

(3) Check starter operation (TM 9-2320-260-10).

(4) Close engine hood (TM 9-2320-360-10).

(4.1) Install inner fender (para 16-34).

(5) Clear historical codes, mode 40 (para 2-13).

7-10. DDEC COOLANT LEVEL SENSOR/ALARMSTAT/TEMPERATURE SENSOR/ DDEC COOLANT LEVEL MODULE REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Cooling system drained (para 6-2). (Not required for DDEC coolant level module replacement.)
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

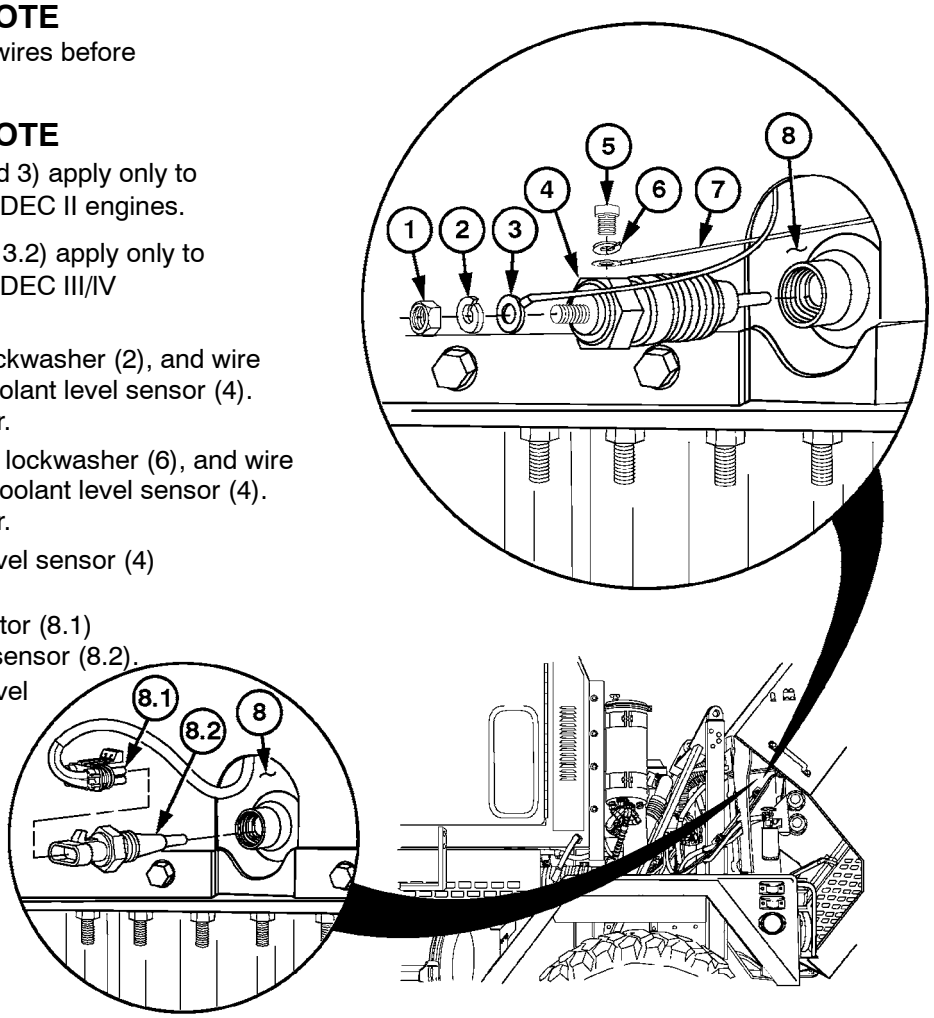
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Lockwashers (2) (Item 99, Appendix G)
Lockwasher (Item 98, Appendix G)
Ties, Cable, Plastic (Item 34, Appendix C)

a. DDEC Coolant Level Sensor Removal

NOTE
Tag and mark wires before removal.

NOTE
- Steps (1, 2, and 3) apply only to vehicles with DDEC II engines.
- Steps (3.1 and 3.2) apply only to vehicles with DDEC III/IV engines.

(1) Remove nut (1), lockwasher (2), and wire no. 890 (3) from coolant level sensor (4). Discard lockwasher.
(2) Remove screw (5), lockwasher (6), and wire no. 1788 (7) from coolant level sensor (4). Discard lockwasher.
(3) Remove coolant level sensor (4) from radiator (8).
(3.1) Disconnect connector (8.1) from coolant level sensor (8.2).
(3.2) Remove coolant level sensor (8.2) from radiator (8).



7-10. DDEC COOLANT LEVEL SENSOR/ALARMSTAT/TEMPERATURE SENSOR/ DDEC COOLANT LEVEL MODULE REPLACEMENT (CONT)

b. DDEC Coolant Level Sensor Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of coolant level sensor (1) or (1.1) with pipe thread sealing compound.

NOTE

- Steps (2, 3, and 4) apply only to vehicles with DDEC II engines.
- Steps (5 and 6) apply only to vehicles with DDEC III/IV engines.

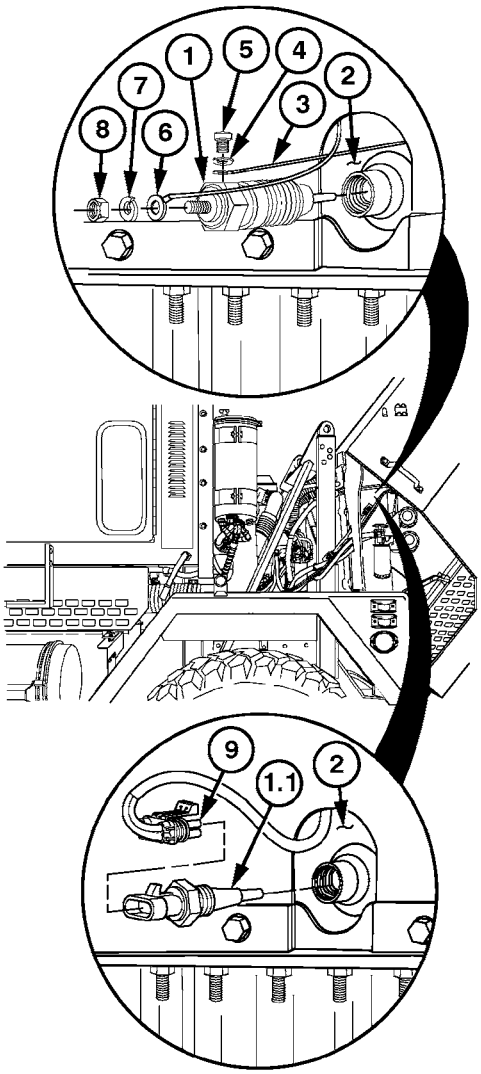
(2) Install coolant level sensor (1) in radiator (2).

(3) Install wire no. 1788 (3), new lockwasher (4), and screw (5) on coolant level sensor (1).

(4) Install wire no. 890 (6), new lockwasher (7), and nut (8) on coolant level sensor (1).

(5) Install coolant level sensor (1.1) in radiator (2). Torque coolant level sensor to 180 lb-in. (20 N•m).

(6) Connect connector (9) to coolant level sensor (1.1).



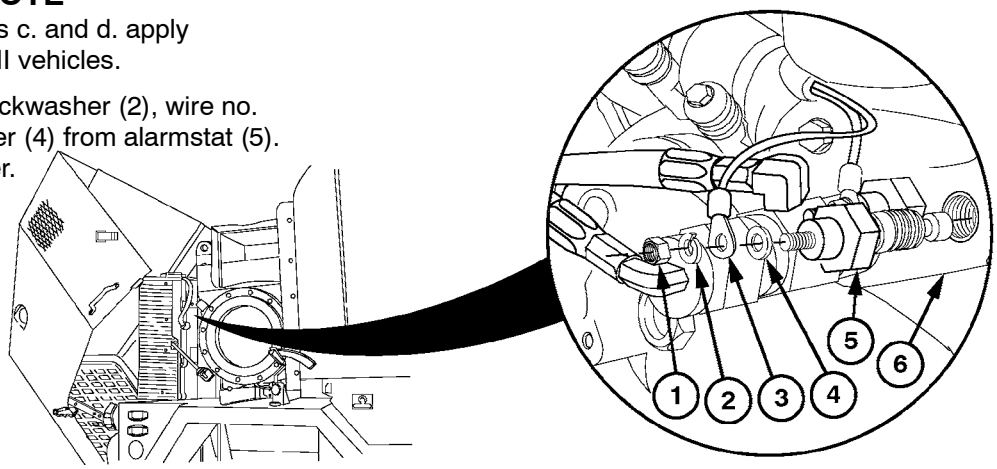
c. Alarmstat Removal

NOTE

Subparagraphs c. and d. apply only to DDEC II vehicles.

(1) Remove nut (1), lockwasher (2), wire no. 524 (3), and washer (4) from alarmstat (5). Discard lockwasher.

(2) Remove alarmstat (5) from left thermostat housing (6).



d. Alarmstat Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of alarmstat (1) with pipe thread sealing compound.

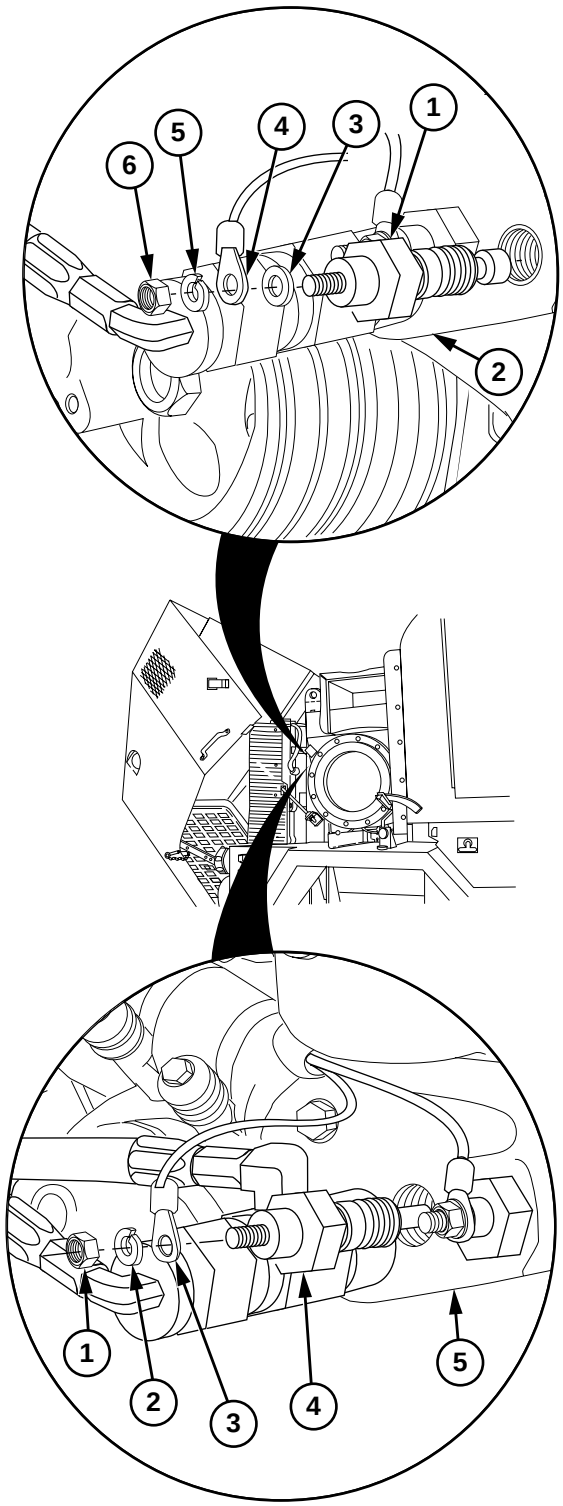
(2) Install alarmstat (1) in left thermostat housing (2).

(3) Install washer (3), wire no. 524 (4), new lockwasher (5), and nut (6) on alarmstat (1).

e. Temperature Sensor Removal

(1) Remove nut (1), lockwasher (2), and wire no. 1320 (3) from temperature sensor (4). Discard lockwasher.

(2) Remove temperature sensor (4) from left thermostat housing (5).



7-10. DDEC COOLANT LEVEL SENSOR/ALARMSTAT/TEMPERATURE SENSOR/ DDEC COOLANT LEVEL MODULE REPLACEMENT (CONT)

f. Temperature Sensor Installation

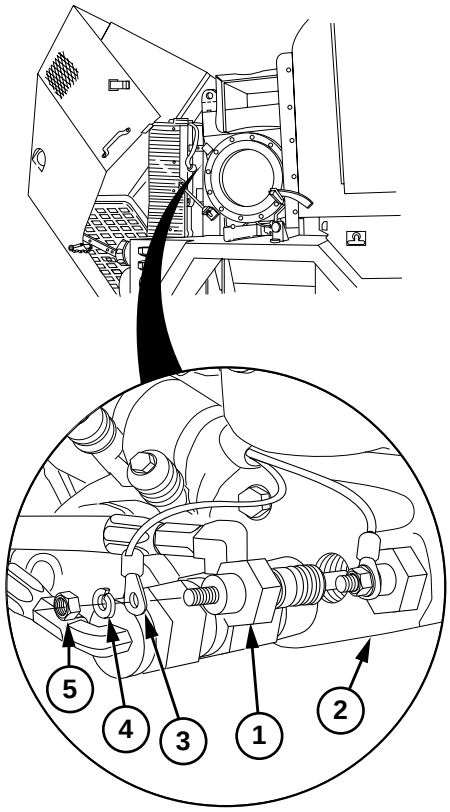
WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of temperature sensor (1) with pipe thread sealing compound.

(2) Install temperature sensor (1) in left thermostat housing (2).

(3) Install wire no. 1320 (3), new lockwasher (4), and nut (5) on temperature sensor (1).



g. DDEC Coolant Level Module Removal

NOTE

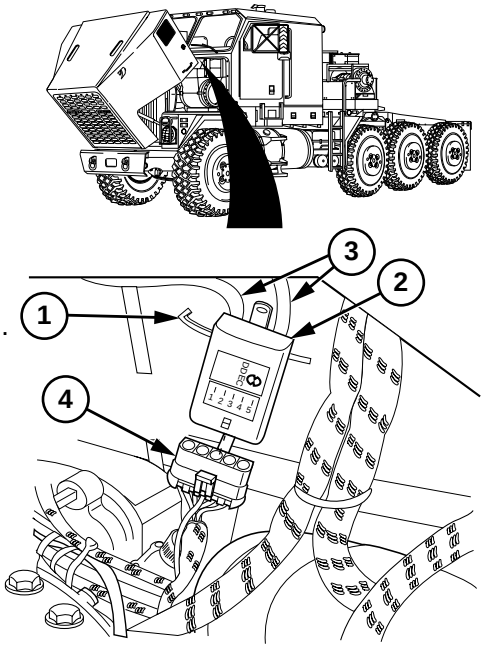
- Subparagraphs g. and h. apply only to DDEC II vehicles.
- Location of plastic cable tie should be marked before removal.

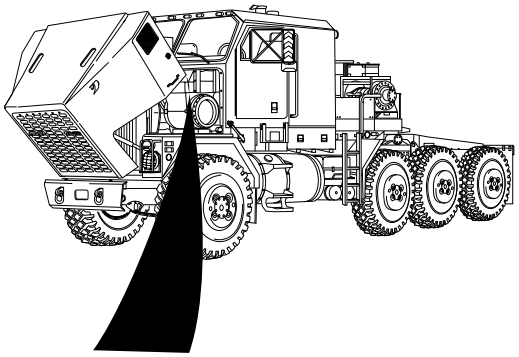
(1) Remove plastic cable tie (1) securing coolant level module (2) to wire bundle (3).

NOTE

Coolant level module is removed by gently prying on tab and pulling on connector.

(2) Remove coolant level module (2) from connector (4).





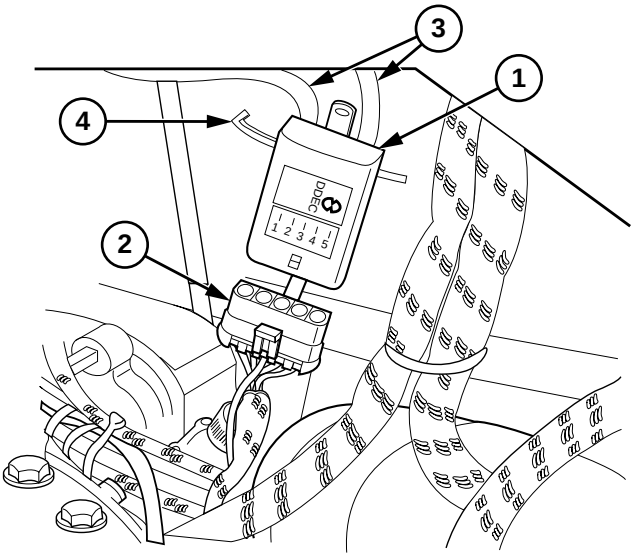
h. DDEC Coolant Level Module Installation

(1) Install coolant level module (1) on connector (2).

NOTE

Plastic cable tie should be positioned in location marked during removal.

(2) Secure coolant level module (1) to wire bundle (3) with new plastic cable tie (4).



i. Follow-On Maintenance

(1) Fill cooling system (para 6-2).

(2) Connect batteries (para 7-61).

(3) Start engine (TM 9-2320-360-10).

(4) Check for leaks and proper operation of cooling system switches (TM 9-2320-360-10).

(5) Shut off engine (TM 9-2320-360-10).

(6) Clear historical codes, mode 40 (DDEC coolant module or sensor only) (para 2-13).

7-11. INSTRUMENT PANEL HARNESS REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Instrument panel removed (para 7-13).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

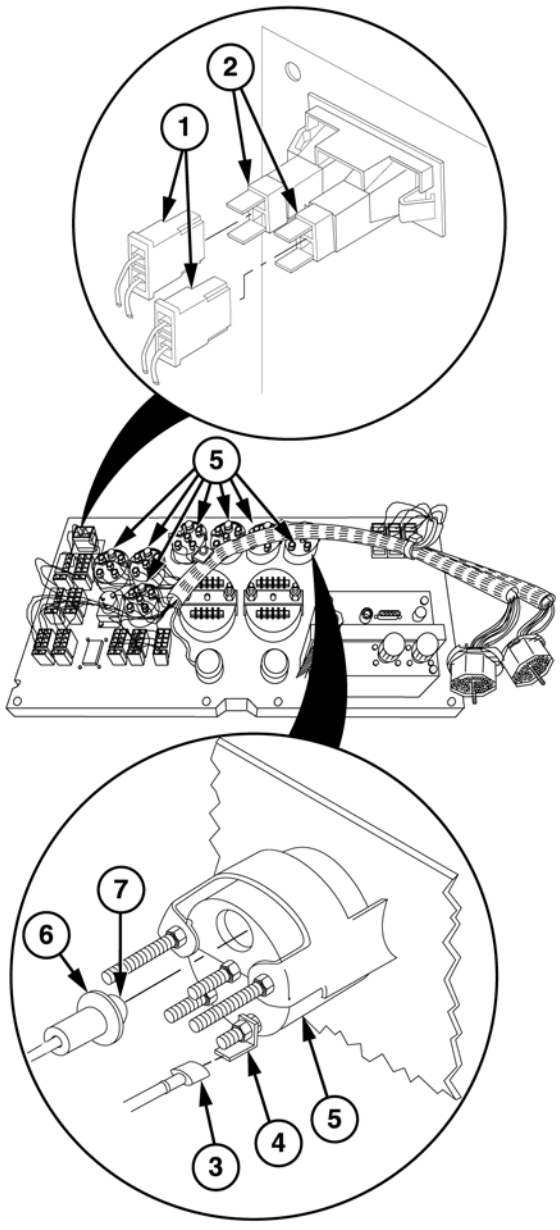
Materials/Parts
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Lockwasher (Item 98, Appendix G)

a. Removal

NOTE

- Deleted
- Retain removed harness as reference to tag and mark new harness.
- Tag and mark wires, connectors, and sockets before removal.

(1) Remove connectors (1) from eight light assemblies (2).



NOTE

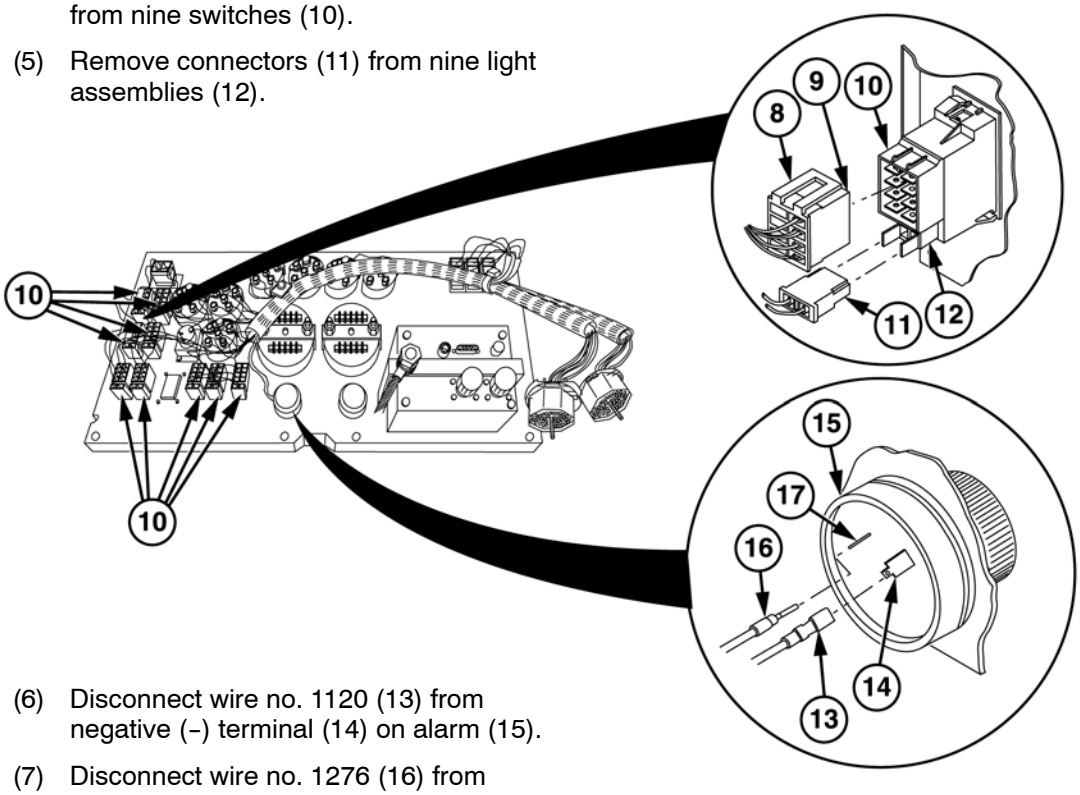
Gages may have two or three wires attached to them.

(2) Remove wires (3) from connectors (4) on seven gages (5).

(3) Remove socket (6) and lamp (7) as one unit from seven gages (5).

(4) Release tab (8) and remove connectors (9) from nine switches (10).

(5) Remove connectors (11) from nine light assemblies (12).



(6) Disconnect wire no. 1120 (13) from negative (–) terminal (14) on alarm (15).

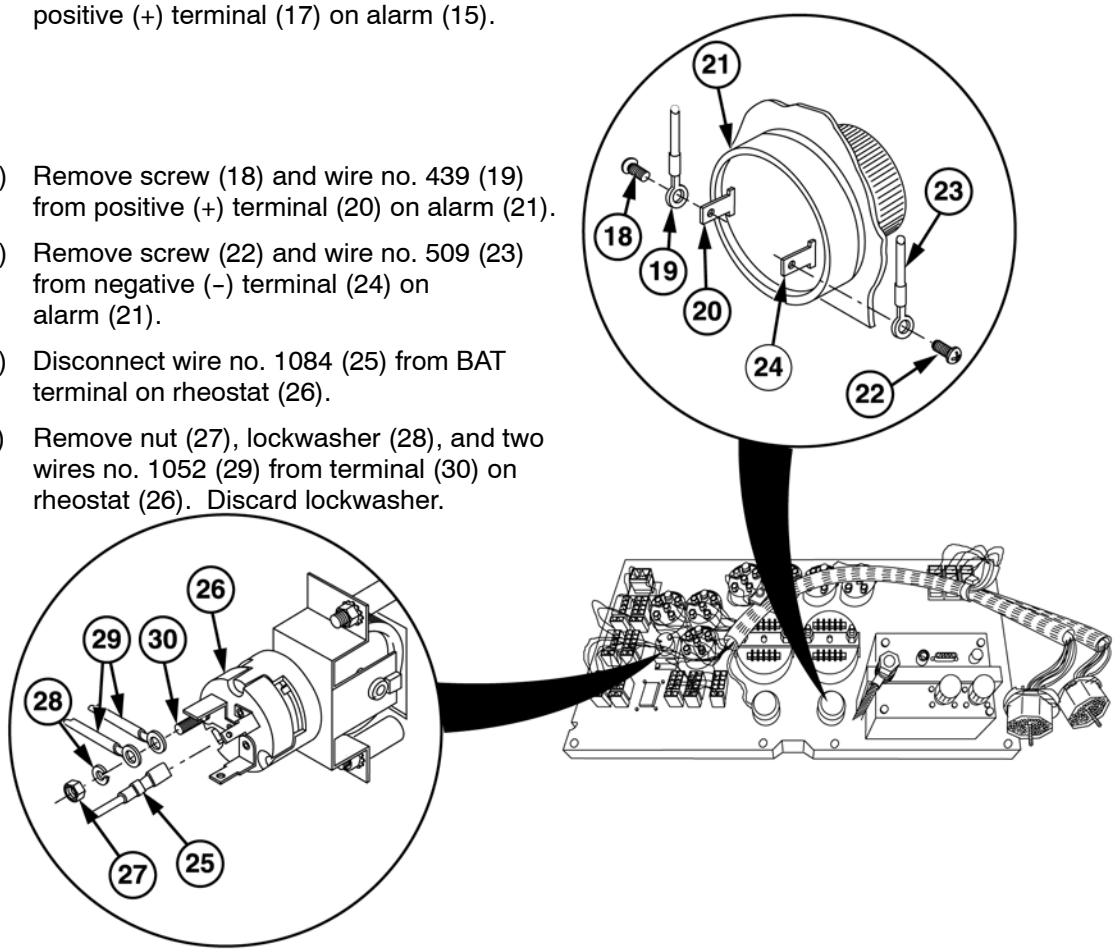
(7) Disconnect wire no. 1276 (16) from positive (+) terminal (17) on alarm (15).

(8) Remove screw (18) and wire no. 439 (19) from positive (+) terminal (20) on alarm (21).

(9) Remove screw (22) and wire no. 509 (23) from negative (–) terminal (24) on alarm (21).

(10) Disconnect wire no. 1084 (25) from BAT terminal on rheostat (26).

(11) Remove nut (27), lockwasher (28), and two wires no. 1052 (29) from terminal (30) on rheostat (26). Discard lockwasher.



7-11. INSTRUMENT PANEL HARNESS REPLACEMENT (CONT)

NOTE

Deleted.

(12) Deleted.

NOTE

Deleted.

(13) Deleted.

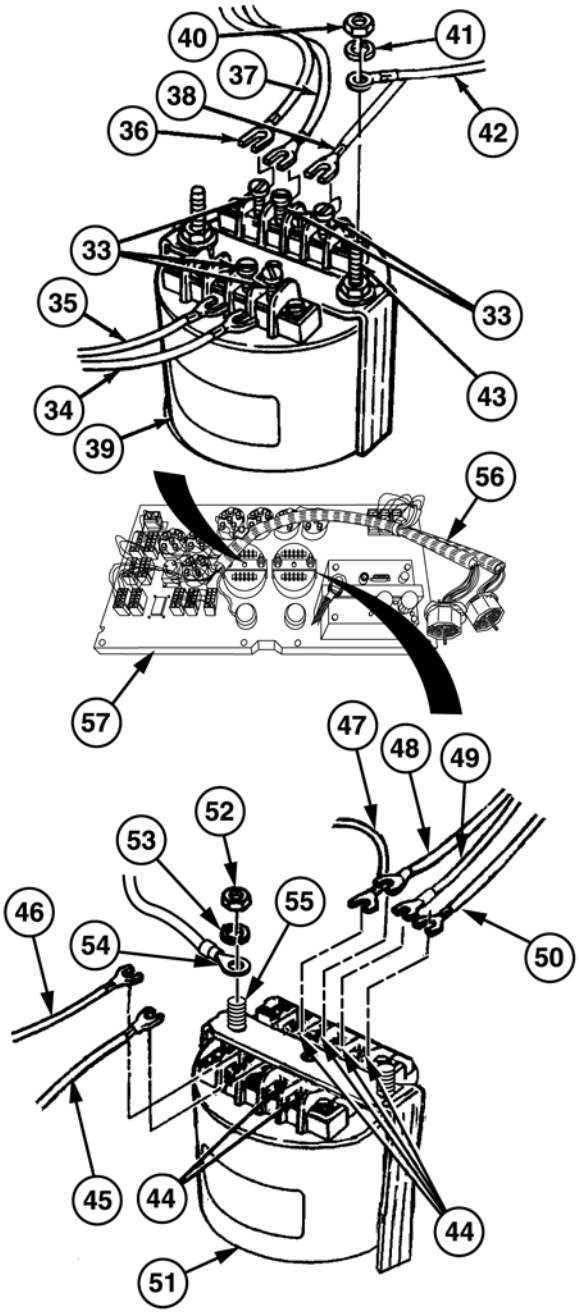
(13.1) Loosen five screws (33) and remove wires 1052 (34), 1435 (35), 1435 (36), 505 (37), and 1276 (38) from tachometer (39).

(13.2) Remove nut (40), lockwasher (41), and drain wire (42) from post (43). Discard lockwasher.

(13.3) Loosen six screws (44) and remove wires 1052 (45), 1435 (46), 1276 (47), 1519 (48), 1519 (49), and 1435 (50) from speedometer (51).

(13.4) Remove nut (52), lockwasher (53), and drain wire (54) from post (55). Discard lockwasher.

(14) Remove wire harness (56) from instrument panel (57).



b. Installation

NOTE

- Use removed harness as reference to tag and mark new harness.
- See FO-1, Wiring Schematic, for detailed wire connections.

(1) Position wire harness (1) on instrument panel (2).

NOTE

Deleted.

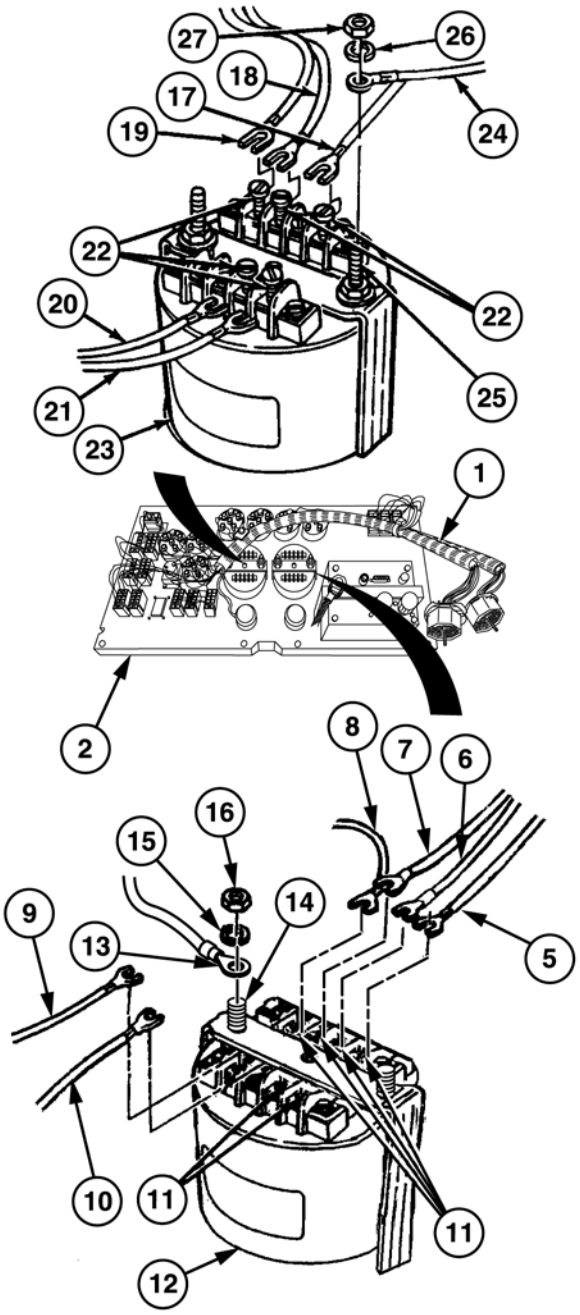
(2) Deleted.

(2.1) Install six wires 1435 (5), 1519 (6), 1519 (7), 1276 (8), 1435 (9), and 1052 (10) with screws (11) on rear of speedometer (12).

(2.2) Install drain wire (13) on post (14) with new lockwasher (15) and nut (16).

(2.3) Install five wires 1276 (17), 505 (18), 1435 (19), 1435 (20), and 1052 (21) with screws (22) on rear of tachometer (23).

(2.4) Install drain wire (24) on post (25) with new lockwasher (26) and nut (27).



7-11. INSTRUMENT PANEL HARNESS REPLACEMENT (CONT)

NOTE

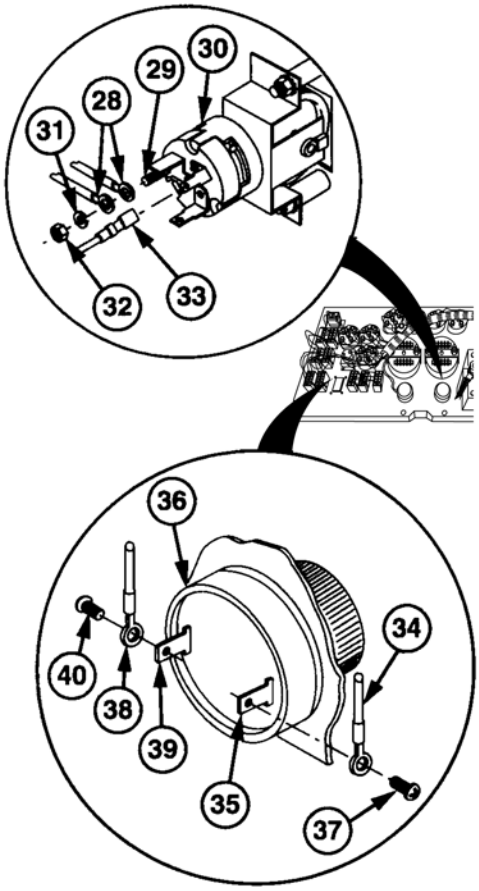
Deleted.

(3) Install two wires no. 1052 (28) on terminal (29) of rheostat (30) with new lockwasher (31) and nut (32).

(4) Install wire no. 1084 (33) on BAT terminal of rheostat (30).

(5) Install wire no. 509 (34) on negative (-) terminal (35) of alarm (36) with screw (37).

(6) Install wire no. 439 (38) on positive (+) terminal (39) of alarm (36) with screw (40).

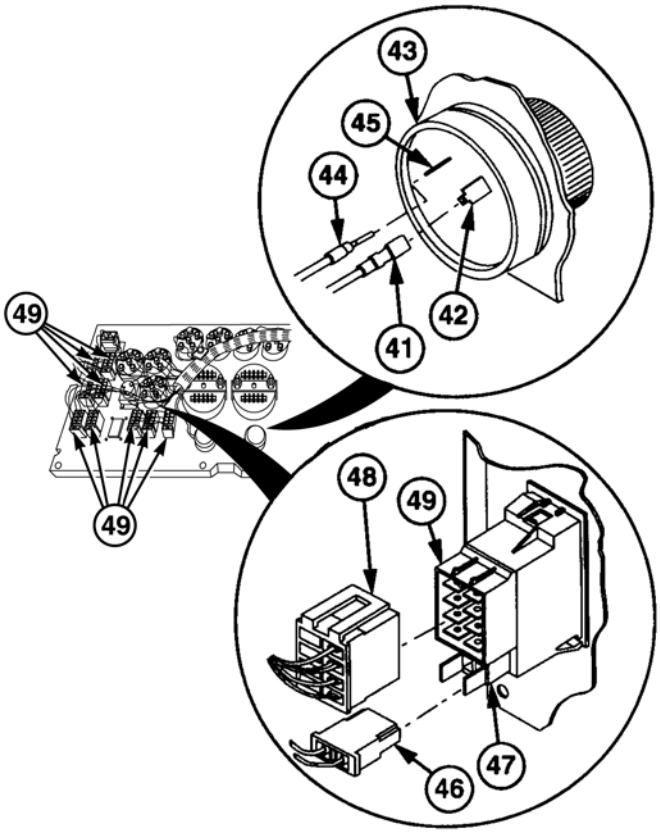


(7) Connect wire no. 1276 (41) to positive (+) terminal (42) on alarm (43).

(8) Connect wire no. 1120 (44) to negative (-) terminal (45) on alarm (43).

(9) Install connectors (46) in nine light assemblies (47).

(10) Install connectors (48) in nine switches (49).



7-11. INSTRUMENT PANEL HARNESS REPLACEMENT (CONT)

(11) Install lamp (50) and socket (51) as one u in seven gages (52).

NOTE

Gages may have two or three wires attached to them.

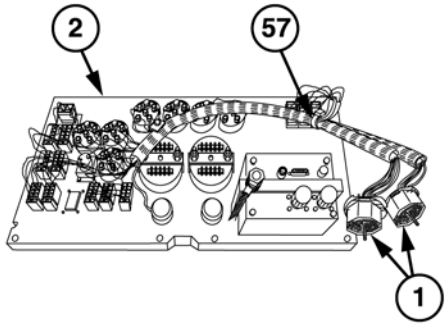
(12) Install wires (53) to connectors (54) on seven gages (52).

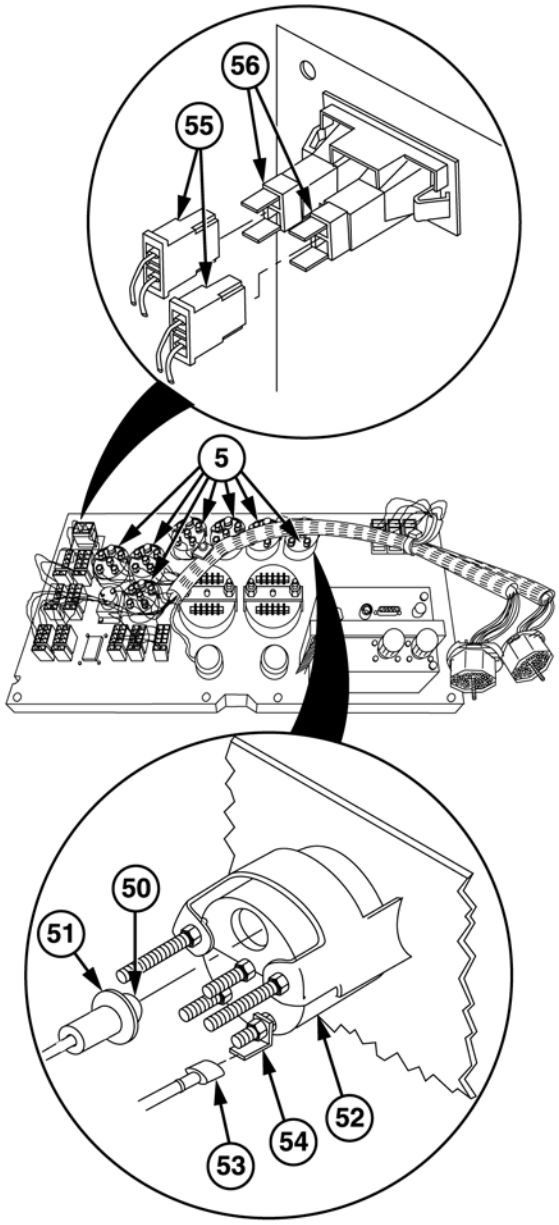
(13) Install connector (55) in eight light assemblies (56).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(14) Secure wire harness (1) with plastic cable ties (57) on instrument panel (2).





c. Follow-On Maintenance

Install instrument panel (para 7-13).

7-12. CIRCUIT BREAKER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

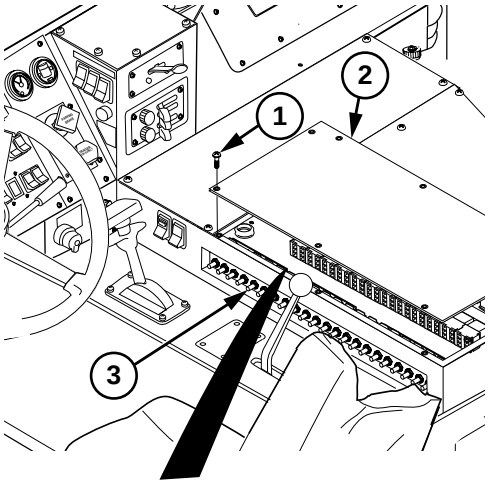
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

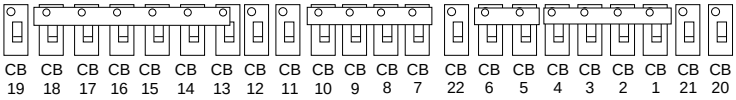
Materials/Parts
Tags, Identification (Item 32 Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Lockwasher(s) (Item 94, Appendix G)

a. Removal

CAUTION

Some circuit breakers have dedicated ground wires. Many circuit breakers are connected by use of a common bus bar. When removing bus bar, ensure connection point is marked. This will enable proper positioning during installation.





NOTE

- Except for 5 amp DDEC circuit breaker, circuit breaker wiring is easily identified by type of connector. Negative (-) wire has round connector and positive (+) wire has pronged connector.
- Tag and mark wires before removal.

(1) Remove eight screws (1) and cover (2) from electronic control box assembly (3).

NOTE

Do step (2) only If removing 5 amp DDEC circuit breaker.

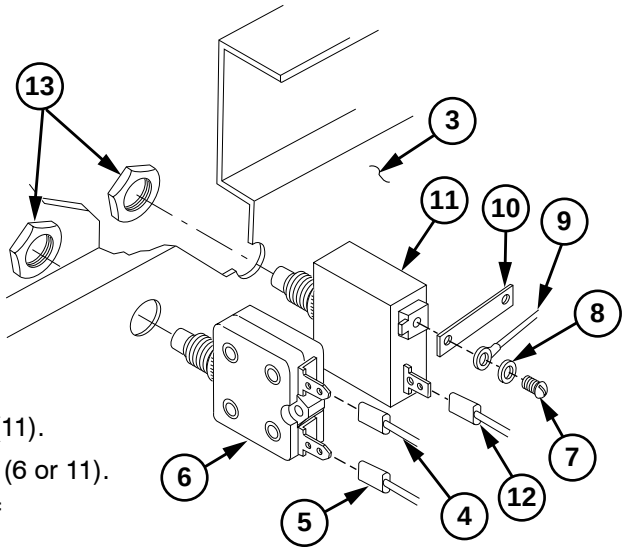
(2) Remove two wires (4 and 5) from rear of 5 amp DDEC breaker (6).

(3) Remove screws (7), lockwashers (8), wire (9), and bus bar (10) (if installed) from circuit breakers (11). Discard lockwashers.

(4) Disconnect wire(s) (12) from circuit breaker (11).

(5) Remove nut (13) from face of circuit breaker (6 or 11).

(6) Remove circuit breaker (6 or 11) from side of electronic control box assembly (3).



7-12. CIRCUIT BREAKER REPLACEMENT (CONT)

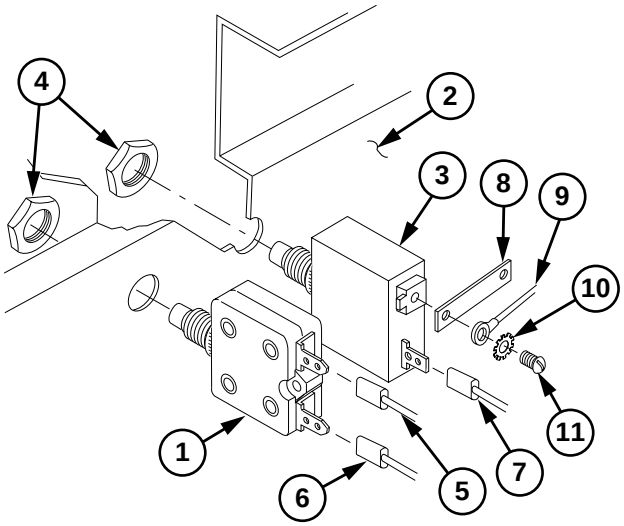
b. Installation

CAUTION

Some circuit breakers have dedicated ground wires. Many circuit breakers are connected by use of a common bus bar. Bus bar must be installed at point from which it was removed.

NOTE

If installing 5 amp DDEC circuit breaker with prong terminals, do steps (1) and (3) thru (7). For all other circuit breakers, go to step (2).



(1) Position 5 amp DDEC circuit breaker (1) with stud through electronic control box assembly (2).

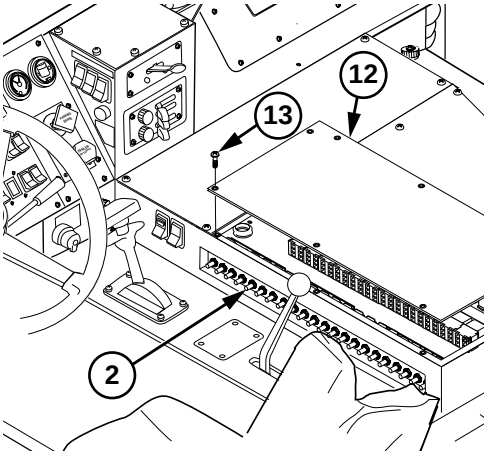
(2) Position circuit breaker (3) in electronic control box assembly (2).

(3) Install nut (4) on stud of circuit breaker (1 or 3).

(4) Install wires (5 and 6) on 5 amp DDEC breaker (1).

(5) Connect wire (7) to circuit breaker (3).

(6) Install bus bar (8) (if applicable) and wire (9) on rear of circuit breaker(s) (3) with new lockwashers (10) and screws (11).



(7) Install cover (12) on electronic control box assembly (2) with eight screws (13).

c. Follow-On Maintenance

Connect batteries (para 7-61).

7-13. INSTRUMENT PANEL REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Locknut (Item 72, Appendix G)

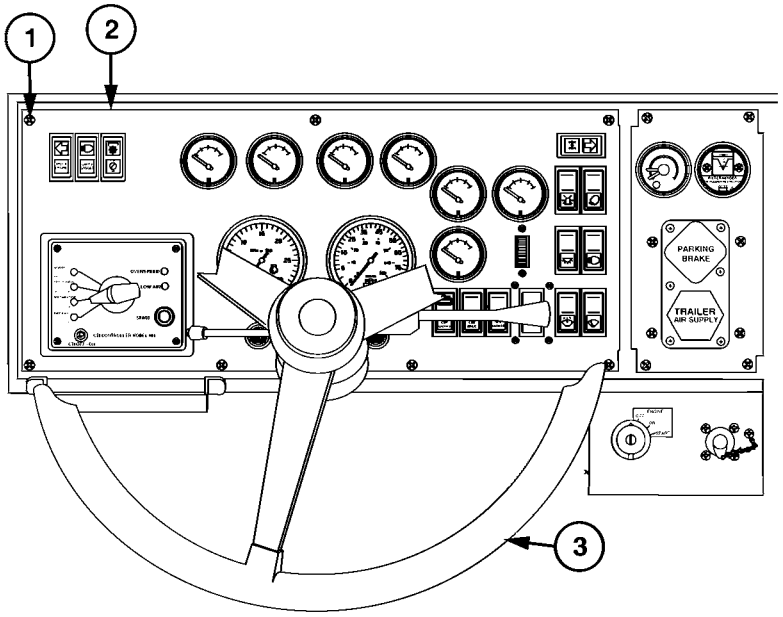
a. Removal

NOTE

Tag and mark wires before removal.

(1) Remove seven screws (1) from instrument panel (2).

(2) Tip top of panel (2) toward steering wheel (3) to allow access to rear of panel.

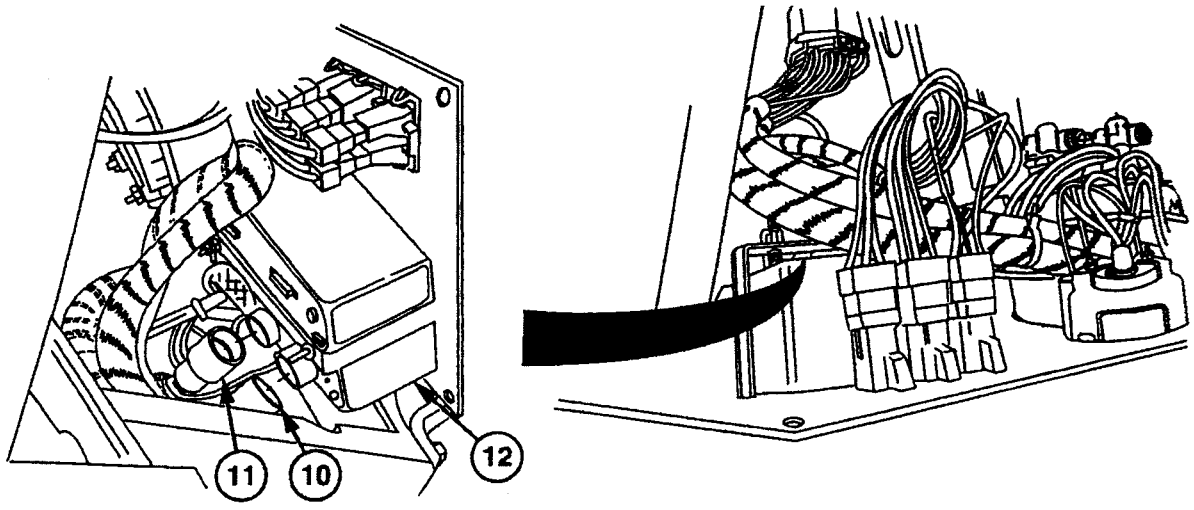


NOTE
Deleted.

(3) Deleted.

(4) Deleted.

(5) Disconnect CTIS cable plugs (10 and 11) from controller (12).



7-13. INSTRUMENT PANEL REPLACEMENT (CONT)

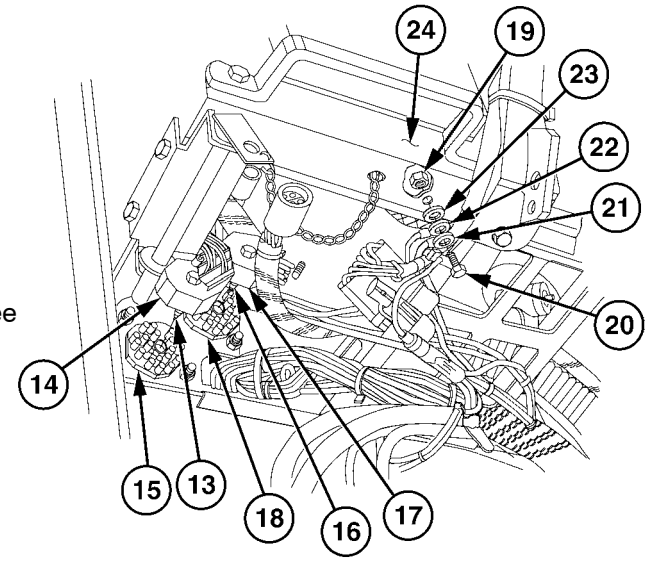
(6) Loosen screw (13) on wire harness plug (14).

(7) Disconnect wire harness plug (14) from jack (15).

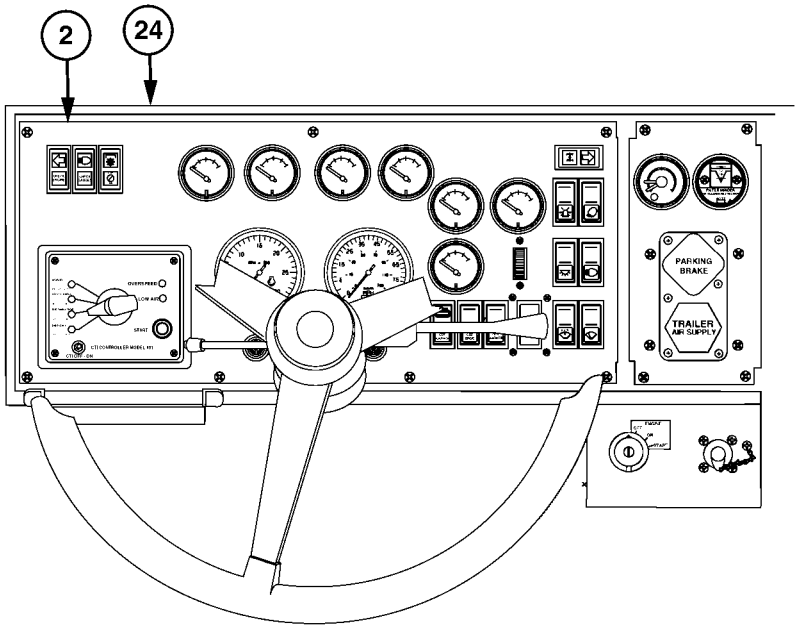
(8) Loosen screw (16) on wire harness plug (17).

(9) Disconnect wire harness plug (17) from jack (18).

(10) Remove locknut (19), screw (20), and three ground wires (21, 22, and 23) from dash (24). Discard locknut.



(11) Remove panel (2) from dash (24).

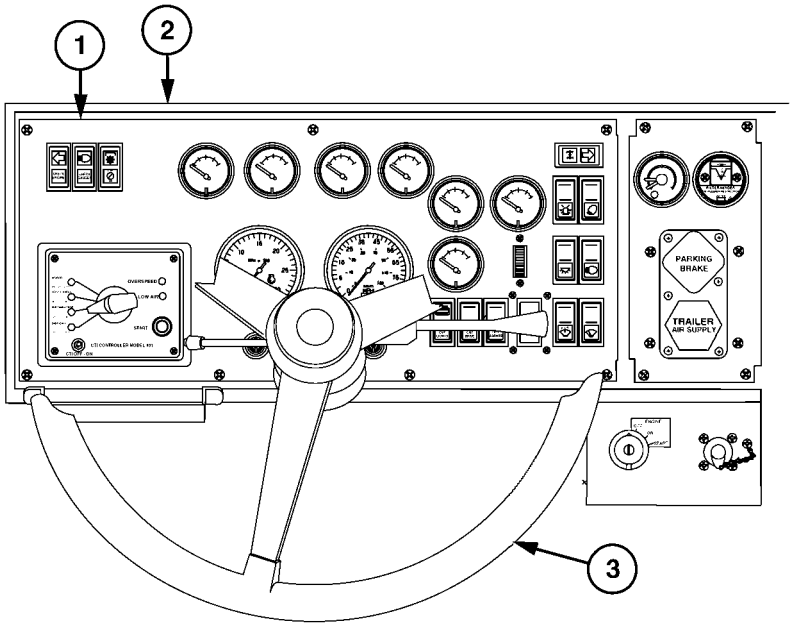


7-13. INSTRUMENT PANEL REPLACEMENT (CONT)

b. Installation

(1) Position instrument panel (1) on dash (2).

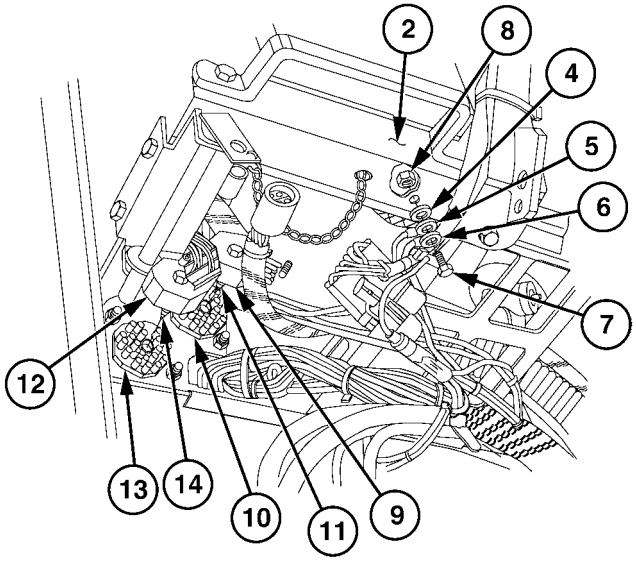
(2) Tip top of panel (1) toward steering wheel (3) to allow access to rear of panel.



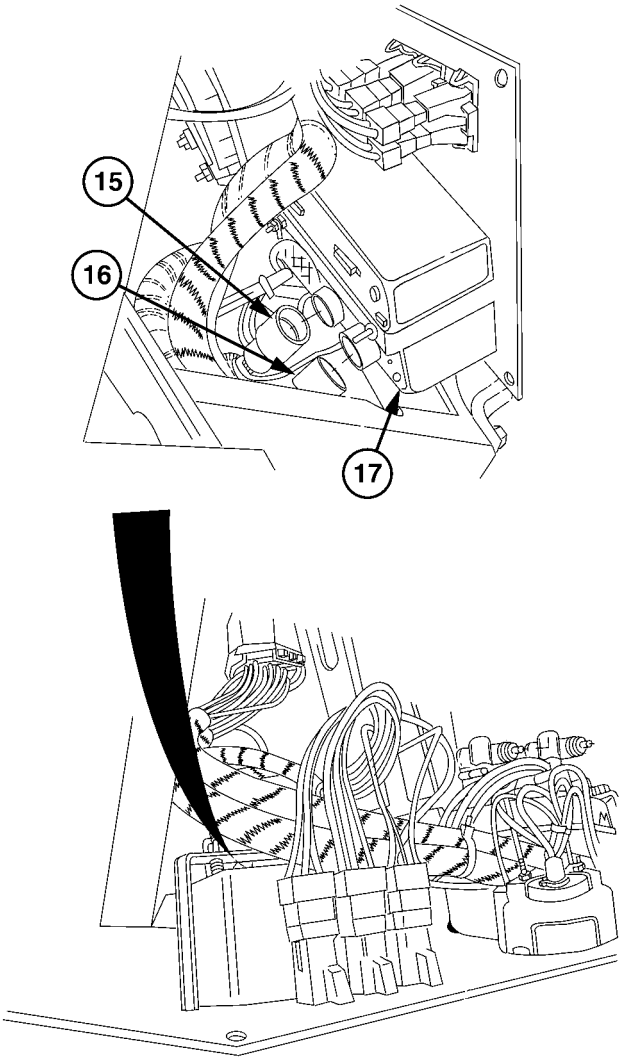
(3) Install three ground wires (4, 5, and 6) in dash (2) with screw (7) and new locknut (8).

(4) Connect wire harness plug (9) to jack (10) and tighten screw (11).

(5) Connect wire harness plug (12) to jack (13) and tighten screw (14).



(6) Connect CTIS cable plugs (15 and 16) to controller (17).

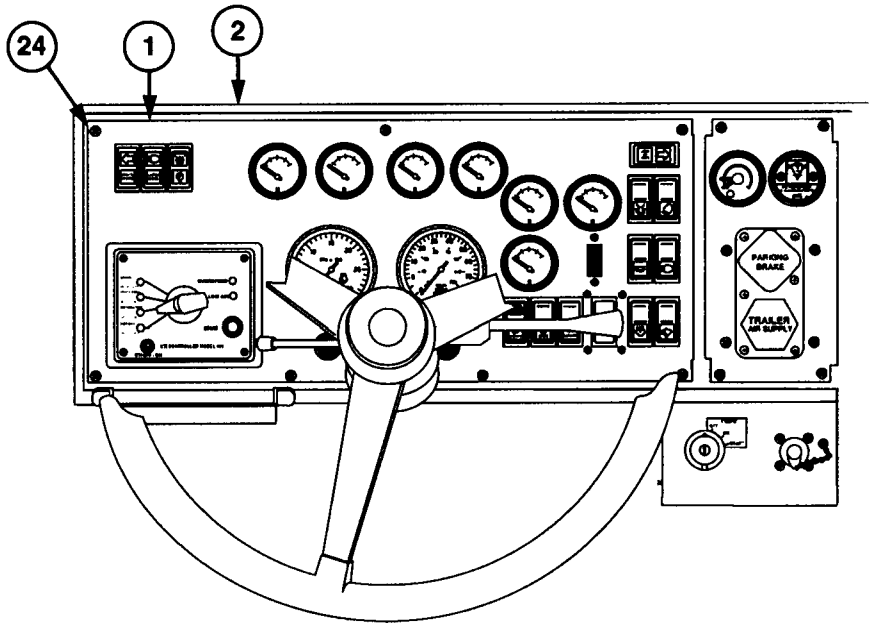


(7) Deleted.

(8) Deleted.

7-13. INSTRUMENT PANEL REPLACEMENT (CONT)

(9) Install panel (1) on dash (2) with seven screws (24).



c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Start engine (TM 9-2320-360-10).

(3) Check operation of instrument panel switches and gages (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

PARAGRAPH 7-14 DELETED

All data on pages 7-47 and 7-48 deleted.

7-14.1. SPEEDOMETER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Wheels chocked (TM 9-2320-360-10).
Instrument panel removed (Para 7-13).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Lockwasher (TBD)

a. Removal

NOTE
Tag and mark wires before removal.

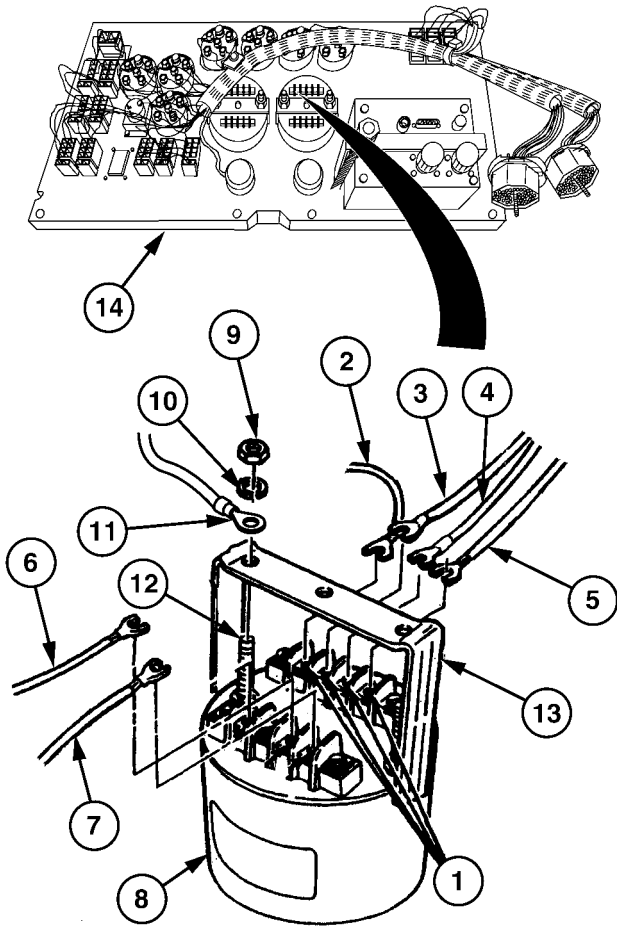
(1) Loosen six screws (1) and remove wires 1435 (2), 1519 (4), 1276 (5), 1435 (6), and 1052 (7) from rear of speedometer (8).

NOTE
Drain wires do not have numbers.

(2) Remove two nuts (9), lockwashers (10), and drain wire (11) from two speedometer mounting bracket screws (12). Discard lockwasher.

(3) Remove speedometer mounting bracket (13) from rear of speedometer (8).

(4) Remove speedometer (8) from instrument panel (14).



7-14.1. SPEEDOMETER REPLACEMENT (CONT)

b. Installation

NOTE

- If new instrument panel is being installed, make sure paint is cleaned off between tachometer and speedometer on back of new instrument panel to allow for grounding.
- Ensure speedometer face is aligned properly with dash during installation.

(1) Install speedometer (8) in instrument panel (14).

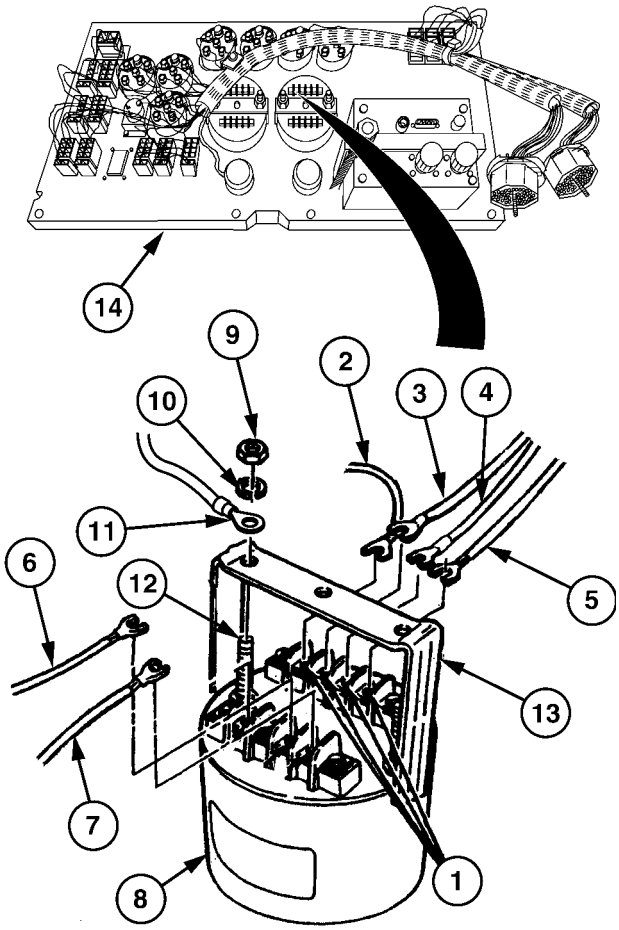
(2) Install speedometer mounting bracket (13) on rear of speedometer (8).

NOTE

Ensure wires are installed as marked during removal.

(3) Install drain wire (11), two new lockwashers (10) and nuts (9) on two speedometer mounting bracket screws (12).

(4) Install wires 1435 (2), 1519 (3), 1519 (4), 1276 (5), 1435 (6), and 1052 (7) with six screws on rear of speedometer (8).



c. Follow-On Maintenance

(1) Install instrument panel (para 7-13).

(2) Remove wheel chocks (TM 9-2320-360-10).

(3) Start engine (TM 9-2320-360-10).

(4) Check operation of speedometer (TM 9-2320-360-10).

(5) Shut OFF engine (TM 9-2320-360-10).

7-14.2. TACHOMETER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Wheels chocked (TM 9-2320-360-10).
Instrument panel removed (Para 7-13).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Lockwasher (TBD)

a. Removal

NOTE
Tag and mark wires before removal.

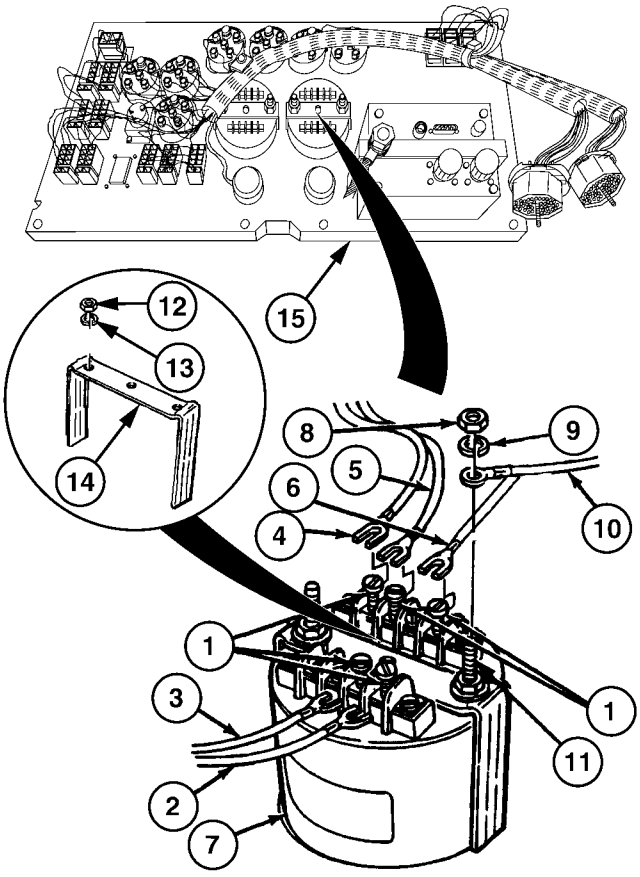
(1) Loosen five screws (1) and remove wires 1052 (2), 1435 (3), 1435 (4), 505 (5), and 1276 (6) from rear of tachometer (7).

(2) Remove nut (8), lockwasher (9), and drain (10) from mounting bracket screw (11). Discard lockwasher.

(3) Remove two nuts (12) and washers (13) from two mounting bracket screws (11).

(4) Remove mounting bracket (14) from rear of tachometer (7).

(5) Remove tachometer (7) from instrument panel (15).

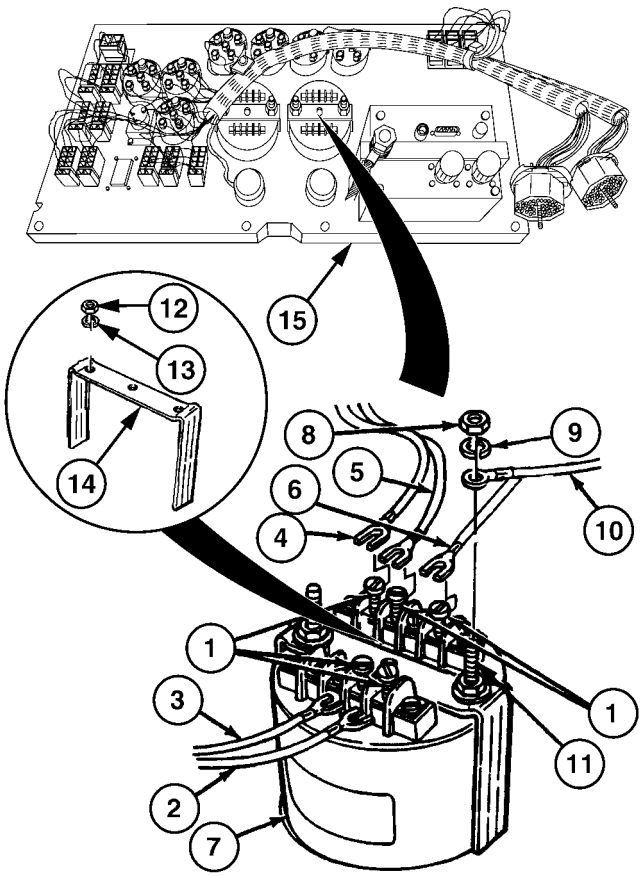


7-14.2. TACHOMETER REPLACEMENT (CONT)

b. Installation

NOTE

- Ensure face of gage is aligned properly with dash during installation.
- If new instrument panel is being installed, ensure paint is cleaned off between tachometer and speedometer on back of new instrument panel where mounting brackets contact panel to allow for grounding.



(1) Position tachometer (7) in instrument panel (15).

(2) Install mounting bracket (14) on rear of tachometer (7).

(3) Install two washers (13) and nuts (12) on two mounting bracket screws (11).

(4) Install drain (10), new lockwasher (9), and nut (8) on mounting bracket screw (11).

(5) Install wires 1052 (2), 1435 (3), 1435 (4), 1108 (5), and 1276 (6) on five screws (1).

c. Follow-On Maintenance

(1) Install instrument panel (para 7-13).

(2) Start engine (TM 9-2320-360-10).

(3) Check operation (TM 9-2320-360-10).

(4) Shut OFF engine (TM 9-2320-360-10).

7-14.3. SPEEDOMETER SIGNAL GENERATOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61)

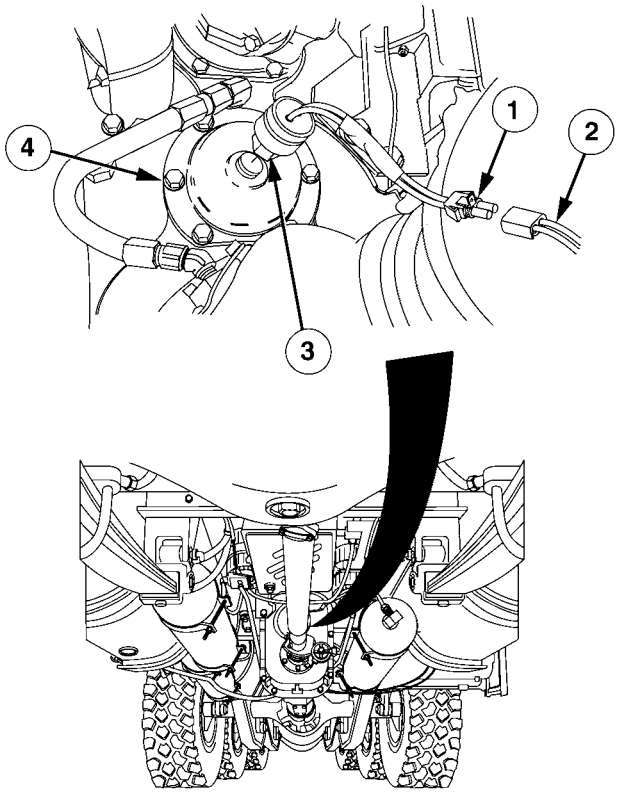
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)

a. Removal

(1) Disconnect speedometer signal generator connector (1) from wire harness connector (2).

(2) Remove speedometer signal generator (3) from transfer case (4).



b. Installation

(1) Install speedometer signal generator (3) on transfer case (4).

(2) Connect wire harness connector (2) to speedometer signal generator (1).

c. Follow-On Maintenance

Connect batteries (para 7-61).

PARAGRAPH 7-15 DELETED

All data on pages 7-49 and 7-50 deleted.

7-16. TOGGLE SWITCH/LIGHT REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Instrument panel removed (para 7-13) (Instrument panel switches only).
Batteries disconnected (para 7-61).

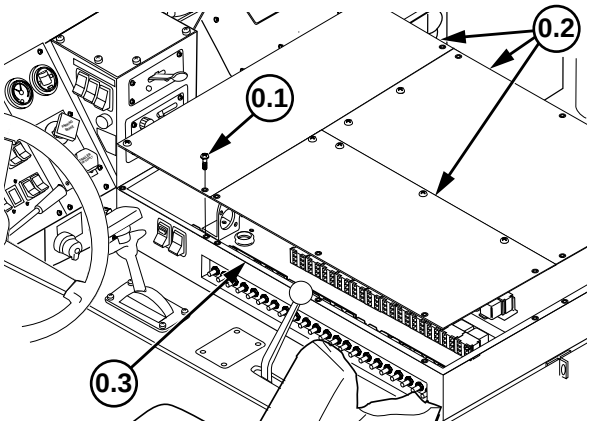
Materials/Parts
Tags, Identification (Item 32, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

NOTE
Do step (1) only for engine brake switch(es) or DDEC III/IV diagnostic request switch.

(1) Remove 19 screws (0.1) and 3 panels (0.2) from electronic control box (0.3).



NOTE
- All toggle switches are replaced the same way.
- Tag and mark wires before removal.
- To remove light assembly only, do steps (1.1) and (2).

(1.1) Remove connector (1) and light assembly (2) as one unit from switch (3).

(2) Remove light assembly (2) from connector (1).

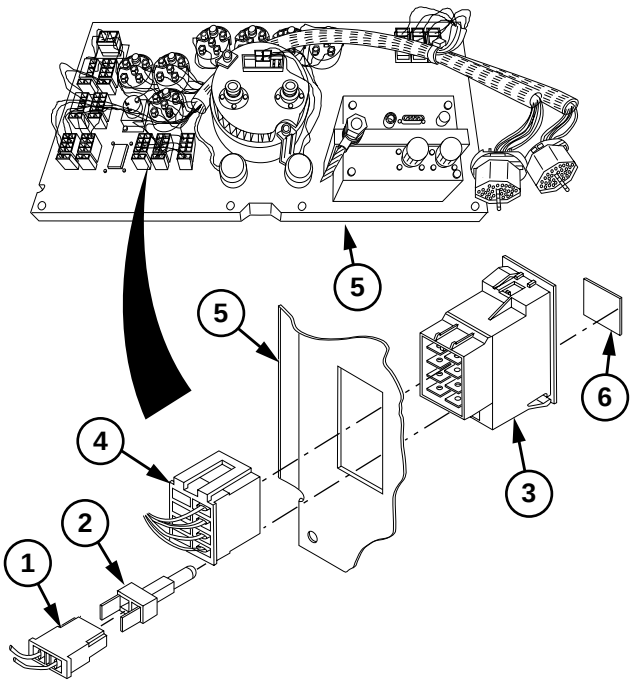
NOTE
Connector is removed by gently prying up on clip and pulling on connector.

(3) Remove connector (4) from switch (3).

NOTE
Remove switch by simultaneously pinching both locktabs of switch and pushing switch out of instrument panel.

(4) Remove switch (3) from instrument panel (5).

(5) Remove applique (6) from switch (3).



7-16. TOGGLE SWITCH/LIGHT REPLACEMENT (CONT)

b. Installation

(1) Install applique (1) on switch (2).

NOTE

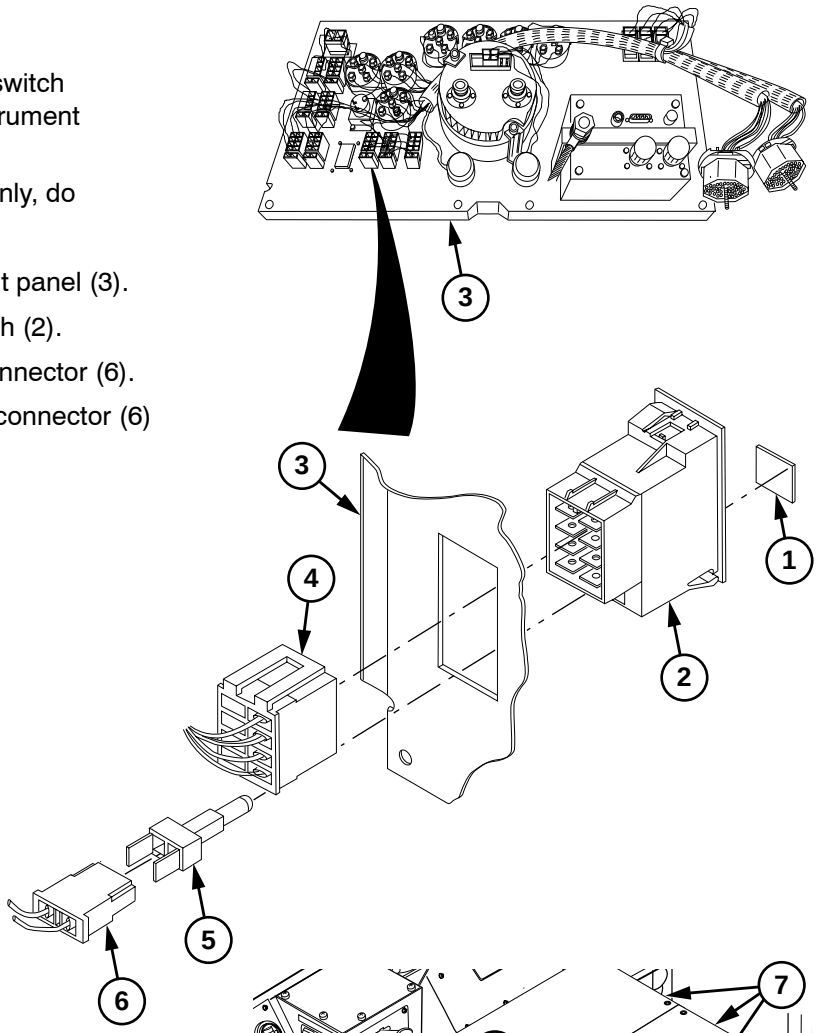
- When properly installed, switch will seat flush against instrument panel.
- To install light assembly only, do steps (4) and (5).

(2) Install switch (2) on instrument panel (3).

(3) Install connector (4) into switch (2).

(4) Install light assembly (5) in connector (6).

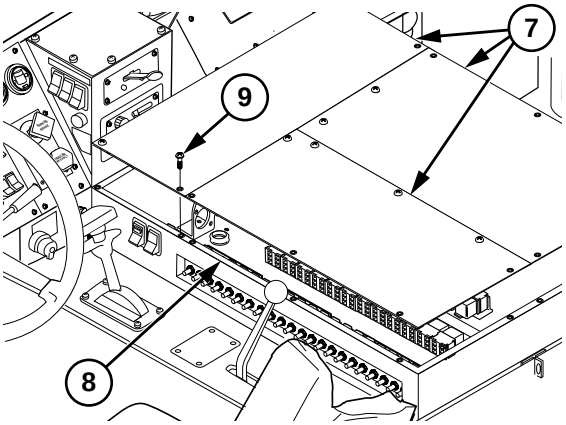
(5) Install light assembly (5) and connector (6) as one unit in switch (2).



NOTE

Do step (6) only if engine brake switch(es) or DDEC III/IV diagnostic request switch were removed.

(6) Install 3 panels (7) on electronic control box (8) with 19 screws (9).



c. Follow-On Maintenance

(1) Install instrument panel (para 7-13).

(2) Start engine (TM 9-2320-360-10).

(3) Check operation of toggle switch/light (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

7-17. TURN SIGNAL HANDLE/DIMMER SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Tool Kit, Electrical Repair (Item 53, Appendix F)

Materials/Parts
Ties, Cable, Plastic (Item 34, Appendix C)
Boots, Dust (2) (Item 8, Appendix G)
Contacts, Electrical (2) (Item 18, Appendix G)

a. Removal

NOTE
Location of plastic cable ties should be marked before removal.

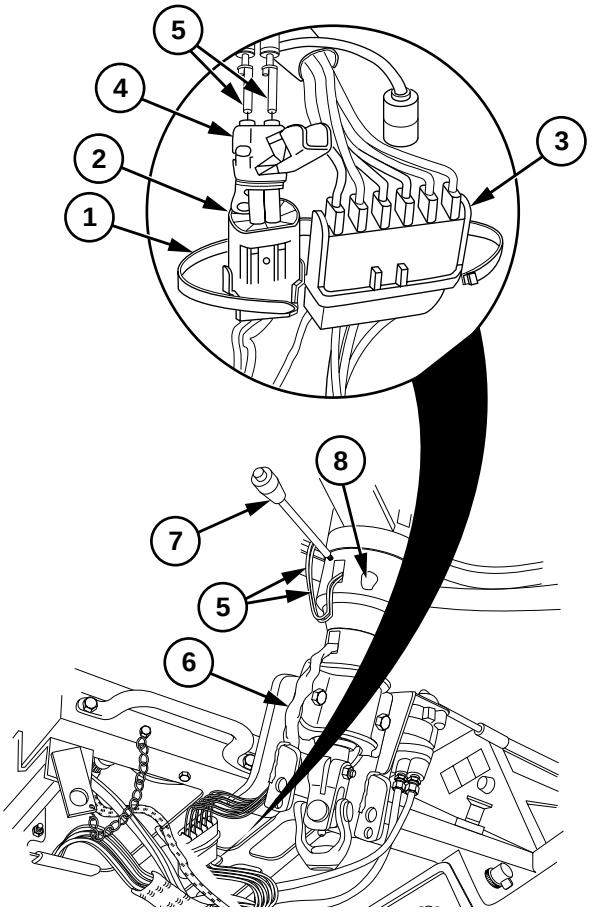
(1) Remove plastic cable ties (1) from receptacles (2 and 3) as required.

(2) Remove electrical connector (4) from receptacle (2).

(3) Remove two wires (5) from electrical connector (4) with contact socket removal tool.

(4) Remove two wires (5) from harness casing (6).

(5) Remove turn signal lever (7) from turn signal switch (8).



7-17. TURN SIGNAL HANDLE/DIMMER SWITCH REPLACEMENT (CONT)

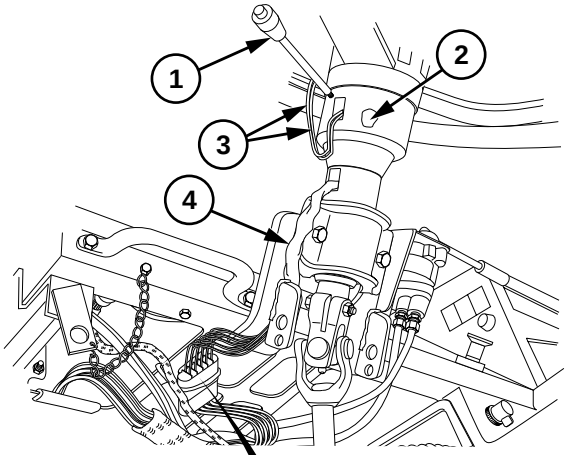
b. Installation

CAUTION

Installing the turn signal handle more than 0.38 in. (9.6 mm) into the switch can cause the stoplight contacts in the switch not to make contact. If this happens, one or both stoplights will not work.

(1) Install turn signal lever (1) on turn signal switch (2).

(2) Install two wires (3) on harness casing (4).



NOTE

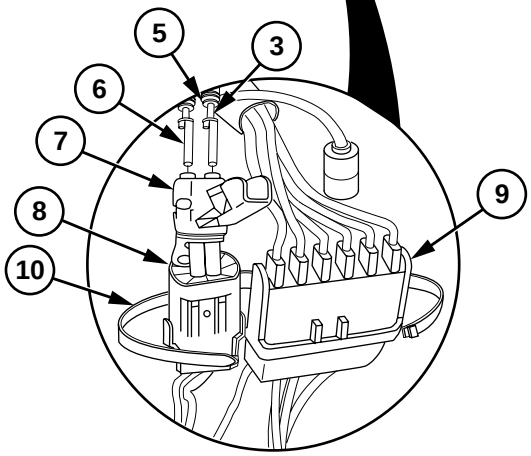
Do steps (3) and (4) only if installing new switch.

(3) Install two dust boots (5) on wires (3).

(4) Crimp electrical contacts (6) on wires (3).

(5) Install two wires (3) in electrical connector (7).

(6) Install electrical connector (7) in receptacle (8).



NOTE

Plastic cable ties should be positioned in locations marked during removal.

(7) Secure receptacles (8 and 9) with plastic cable ties (10).

c. Follow-On Maintenance

(1) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(2) Check operation of turn signal (TM 9-2320-360-10).

(3) Check operation of dimmer switch (TM 9-2320-360-10).

(4) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

(5) Remove wheel chocks.

7-18. ELECTRIC GAGE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Instrument panel removed (para 7-13).

Materials/Parts
Tags, Identification (Item 32, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

NOTE

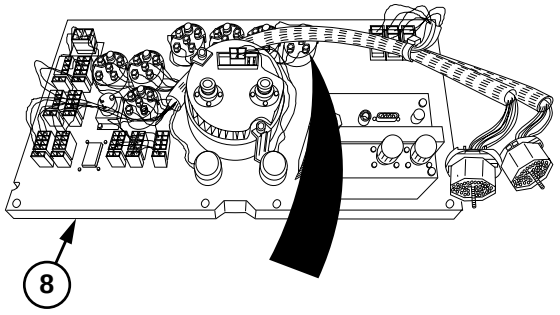
- All instrument panel electric gages are replaced in a similar manner.
- Tag and mark wires before removal.
- Voltmeter only has two terminals.

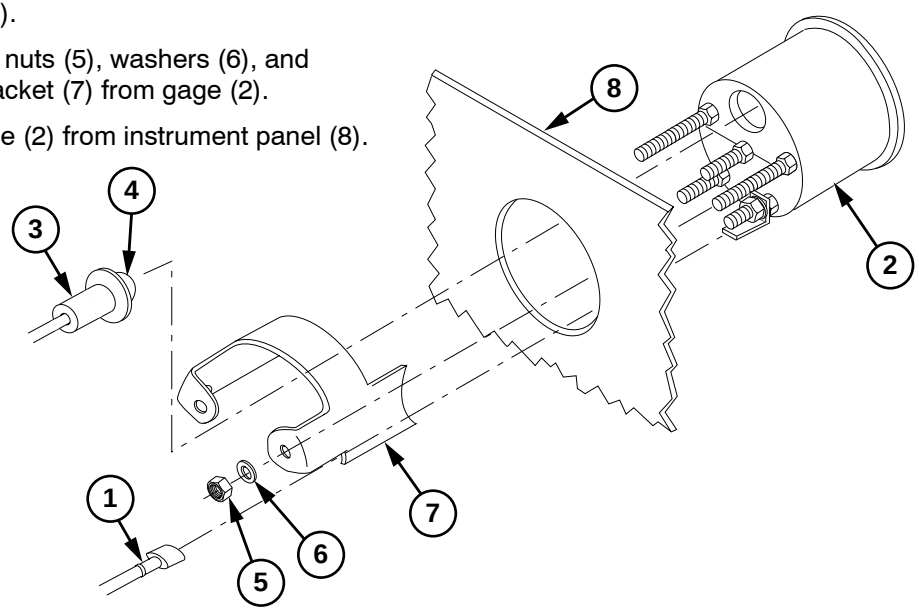
(1) Remove wires (1) from terminals on gage (2).

(2) Remove socket (3) and lamp (4) as one unit from gage (2).

(3) Remove two nuts (5), washers (6), and mounting bracket (7) from gage (2).

(4) Remove gage (2) from instrument panel (8).



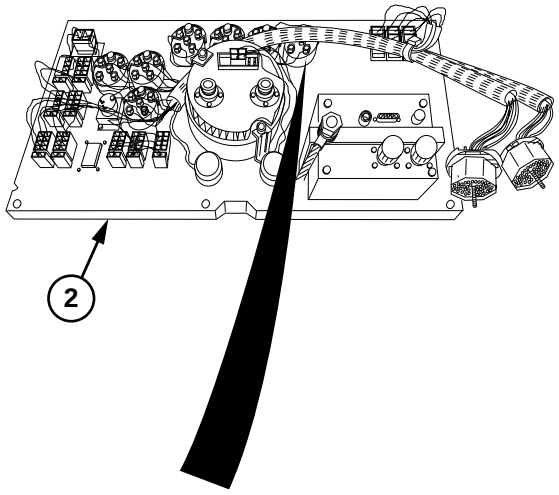


7-18. ELECTRIC GAGE REPLACEMENT (CONT)

b. Installation

NOTE

Gage is installed properly when lamp opening is facing top of instrument panel.



(1) Install gage (1) in instrument panel (2).

(2) Position mounting bracket (3) on gage (1).

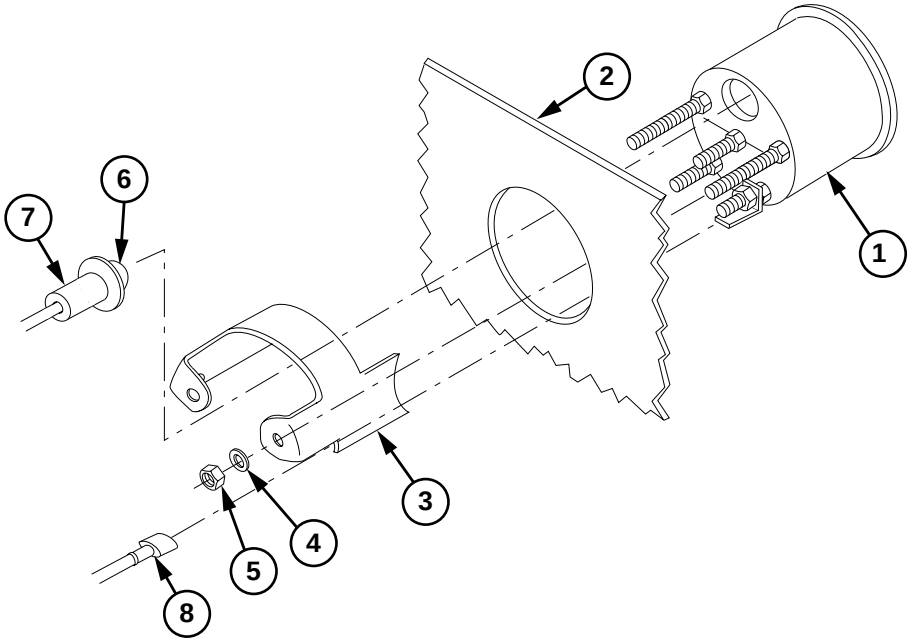
(3) Install two washers (4) and nuts (5) on mounting bracket (3).

(4) Install lamp (6) and socket (7) as one unit in gage (1).

NOTE

Voltmeter only has two terminals.

(5) Install wires (8) on terminals of gage (1).



c. Follow-On Maintenance

(1) Install instrument panel (para 7-13).

(2) Start engine (TM 9-2320-360-10).

(3) Check operation of electric gage (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

7-19. RHEOSTAT SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Instrument panel removed (para 7-13).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

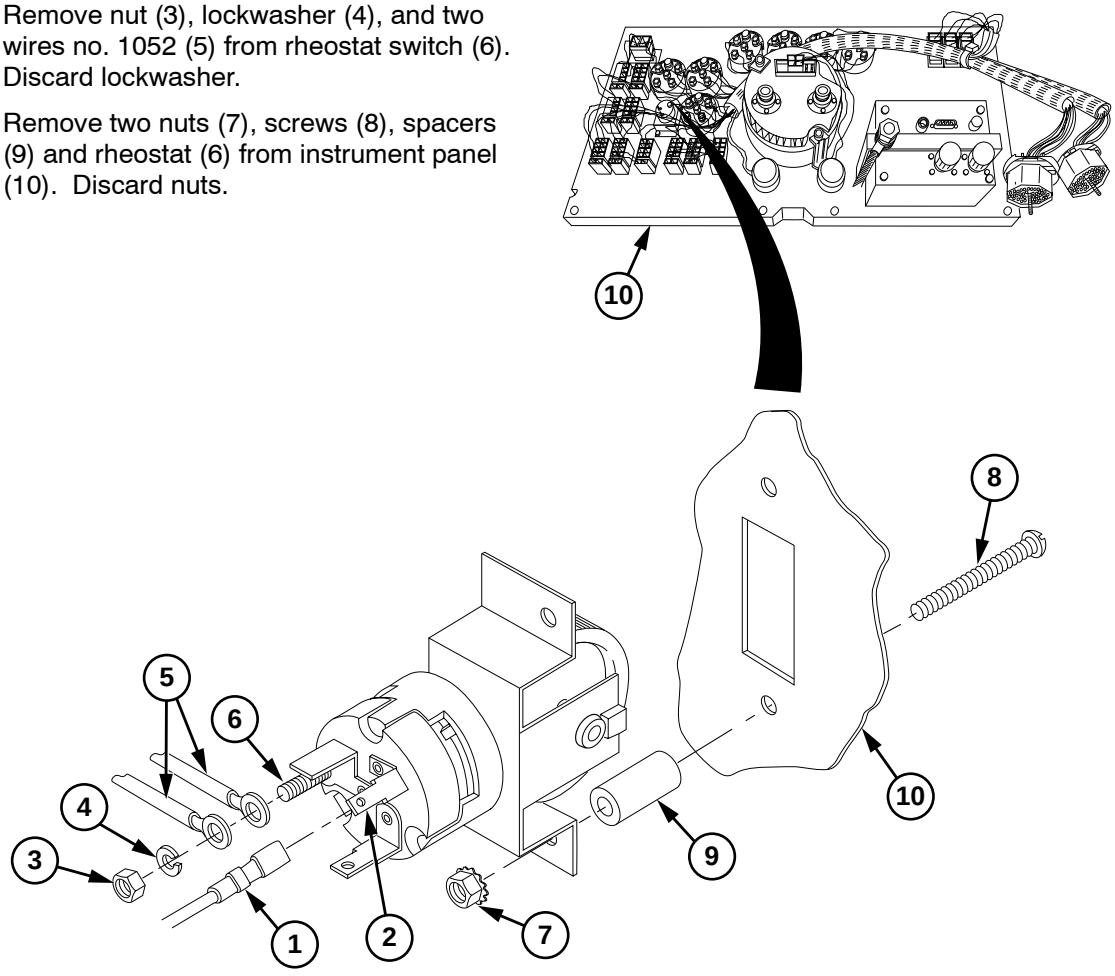
Materials/Parts
Lockwasher (Item 98, Appendix G)
Nuts (2) (Item 126, Appendix G)

a. Removal

(1) Remove wire no. 1084 (1) from BAT terminal (2).

(2) Remove nut (3), lockwasher (4), and two wires no. 1052 (5) from rheostat switch (6). Discard lockwasher.

(3) Remove two nuts (7), screws (8), spacers (9) and rheostat (6) from instrument panel (10). Discard nuts.



7-19. RHEOSTAT SWITCH REPLACEMENT (CONT)

b. Installation

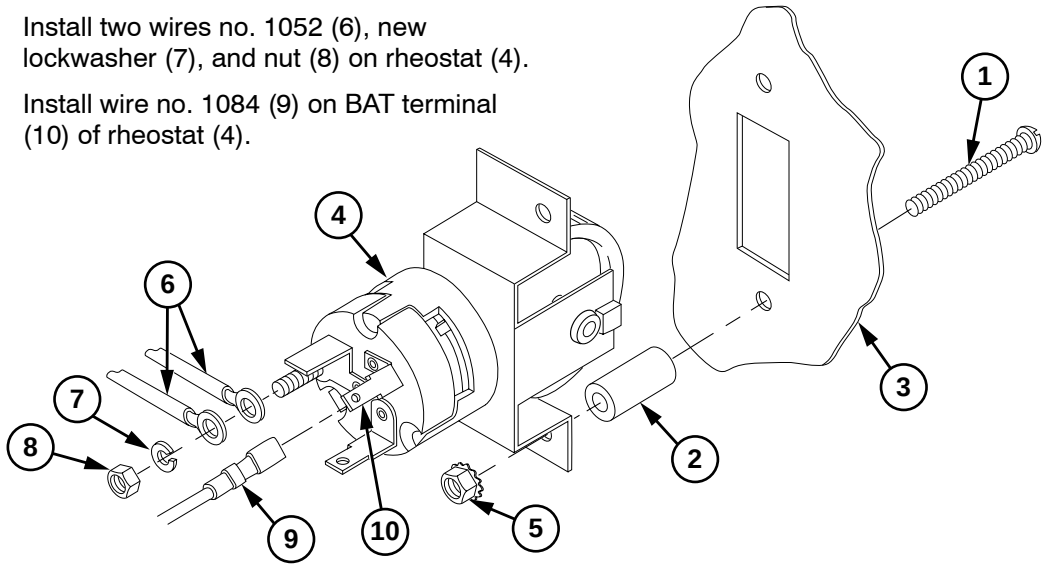
(1) Install two screws (1) and spacers (2) on instrument panel (3).

(2) Position rheostat switch (4) on spacers (2).

(3) Install two new nuts (5) on screws (1).

(4) Install two wires no. 1052 (6), new lockwasher (7), and nut (8) on rheostat (4).

(5) Install wire no. 1084 (9) on BAT terminal (10) of rheostat (4).



c. Follow-On Maintenance

(1) Install instrument panel (para 7-13).

(2) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(3) Check operation of rheostat (TM 9-2320-360-10).

(4) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

7-20. PARKING BRAKE PRESSURE SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Air system drained (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

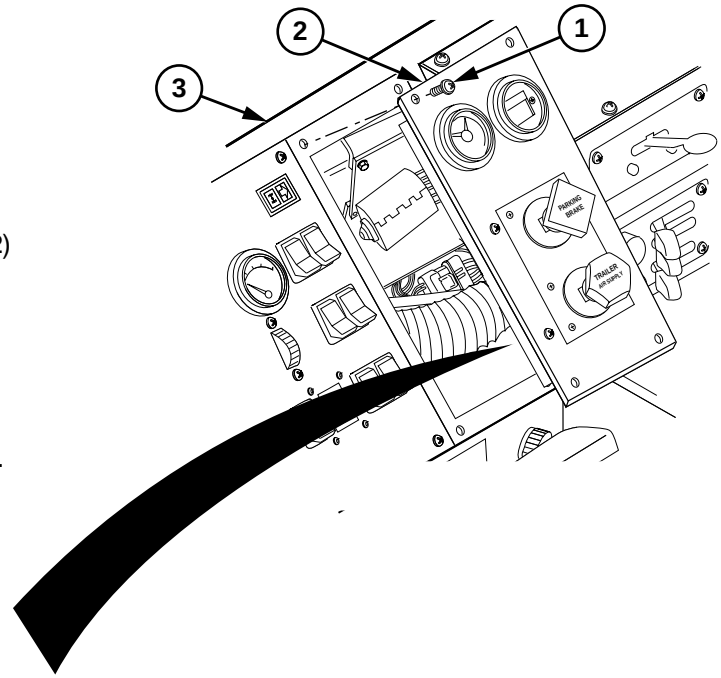
CAUTION
Use care when handling panel. Failure to comply may result in damage to parking brake pressure switch.

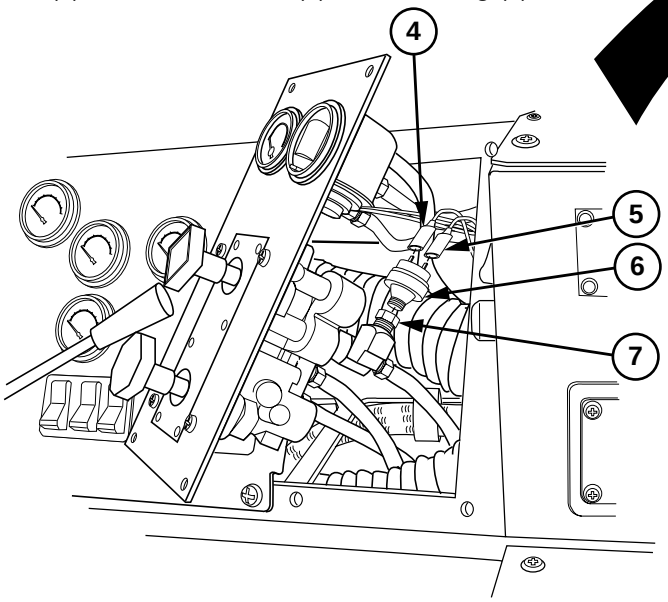
(1) Remove four screws (1) and air panel (2) from dash (3).

NOTE
Tag and mark wires before removal.

(2) Remove wire no. 1719B (4) and wire no. 1719C (5) from pressure switch (6).

(3) Remove switch (6) from bushing (7).





7-20. PARKING BRAKE PRESSURE SWITCH REPLACEMENT (CONT)

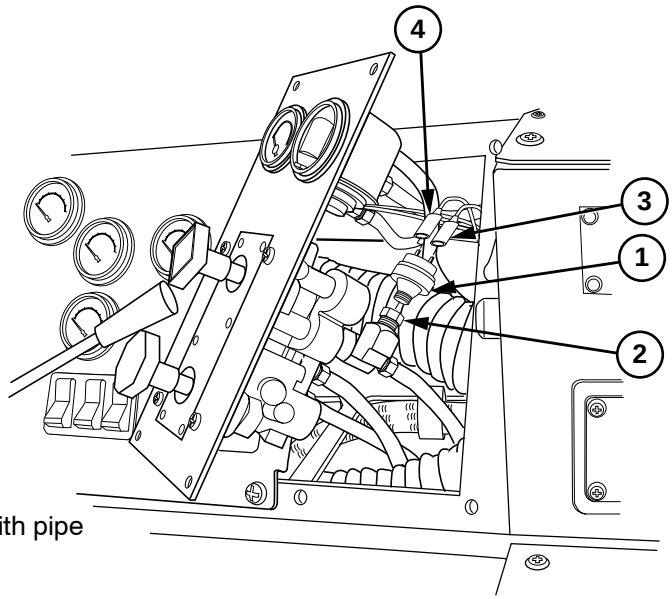
b. Installation

WARNING

Pipe thread sealing compounds can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

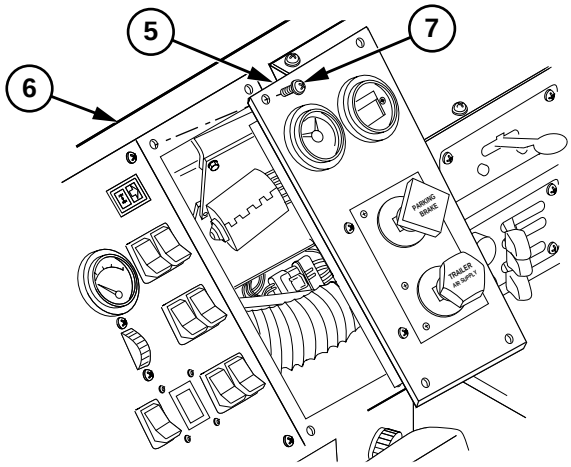
Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of pressure switch (1) with pipe thread sealing compound.

(2) Install switch (1) on bushing (2).

(3) Install wire no. 1719C (3) and wire no. 1719B (4) on switch (1).



(4) Install panel (5) on dash (6) with four screws (7).

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa) (TM 9-2320-360-10).

(3) Check for leaks.

(4) Check operation of parking brakes (TM 9-2320-360-10).

(5) Shut off engine (TM 9-2320-360-10).

(6) Remove wheel chocks.

7-21. ETHER START SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Materials/Parts
Tags, Identification (Item 32, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

(1) Remove nine screws (1) and panel cover (2) from dash (3).

(2) Remove rubber boot (4) from face of switch (5).

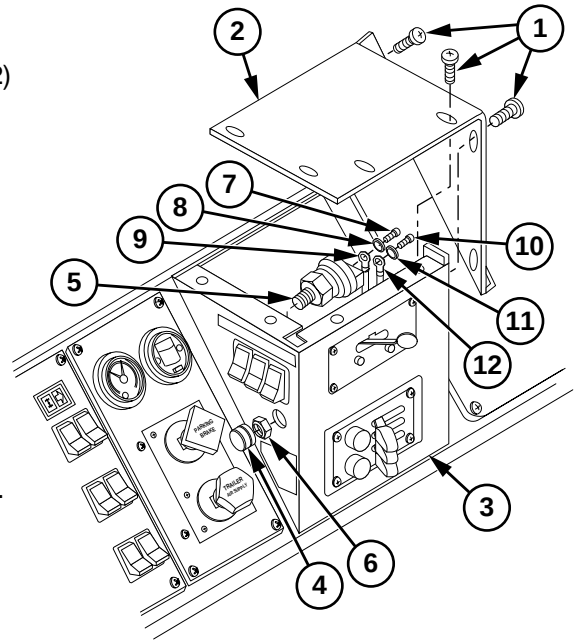
(3) Remove knurled nut (6) from face of switch (5).

(4) Remove switch (5) from dash (3).

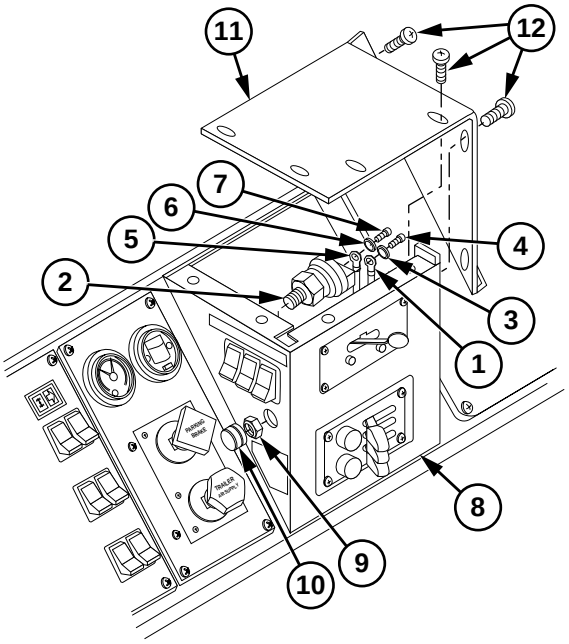
NOTE
Tag and mark wires before removal.

(5) Remove screw (7), washer (8), and wire no. 1036 (9) from rear of switch (5).

(6) Remove screw (10), washer (11), and wire no. 1487 (12) from rear of switch (5).



7-21. ETHER START SWITCH REPLACEMENT (CONT)



b. Installation

(1) Install wire no. 1487 (1) on ether start switch (2) with washer (3) and screw (4).

(2) Install wire no. 1036 (5) on switch (2) with washer (6) and screw (7).

(3) Position ether start switch (2) in dash (8).

(4) Install knurled knob (9) on face of switch (2).

(5) Install rubber boot (10) on face of switch (2).

(6) Install panel cover (11) on dash (8) with nine screws (12).

c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(3) Check operation of ether start switch (TM 9-2320-360-10).

(4) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

7-22. ENGINE (IGNITION) SWITCH REPLACEMENT

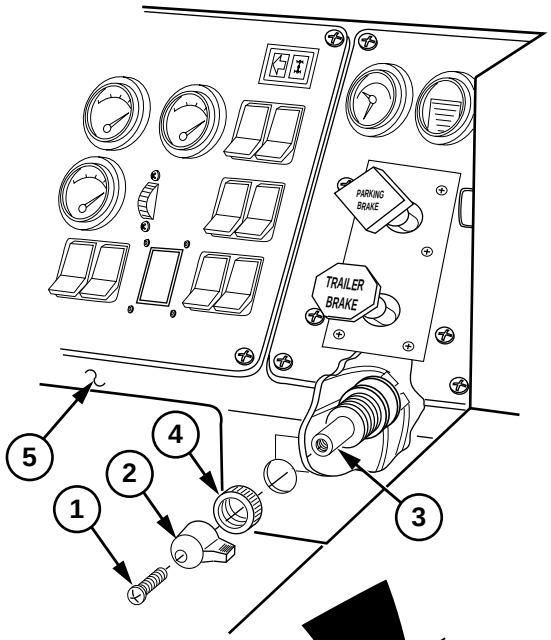
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Materials/Parts
Tags, Identification (Item 32, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

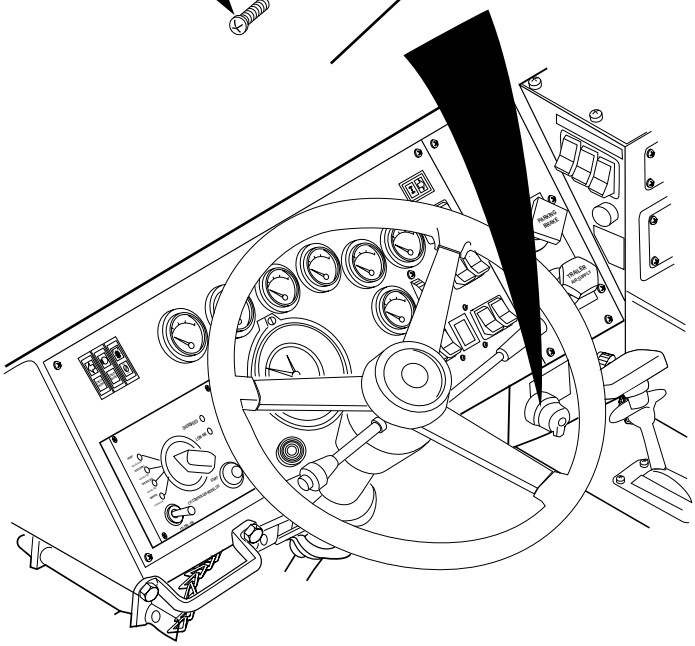


a. Removal

(1) Remove screw (1) and knob (2) from ENGINE switch (3).

(2) Remove knurled nut (4) from ENGINE switch (3).

(3) Remove ENGINE switch (3) from dash (5).



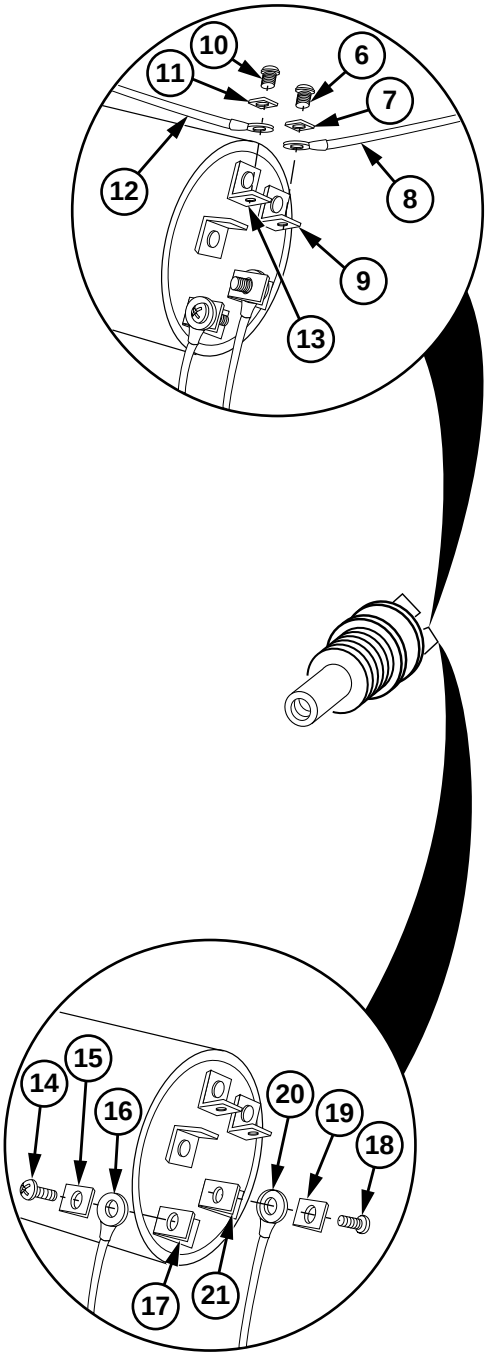
7-22. ENGINE (IGNITION) SWITCH REPLACEMENT (CONT)

NOTE

Tag and mark wires before removal.

(4) Remove screw (6), clip (7), and wire no. 1021 (8) from starter terminal (9).

(5) Remove screw (10), clip (11), and wire no. 1872 (12) from ignition terminal (13).



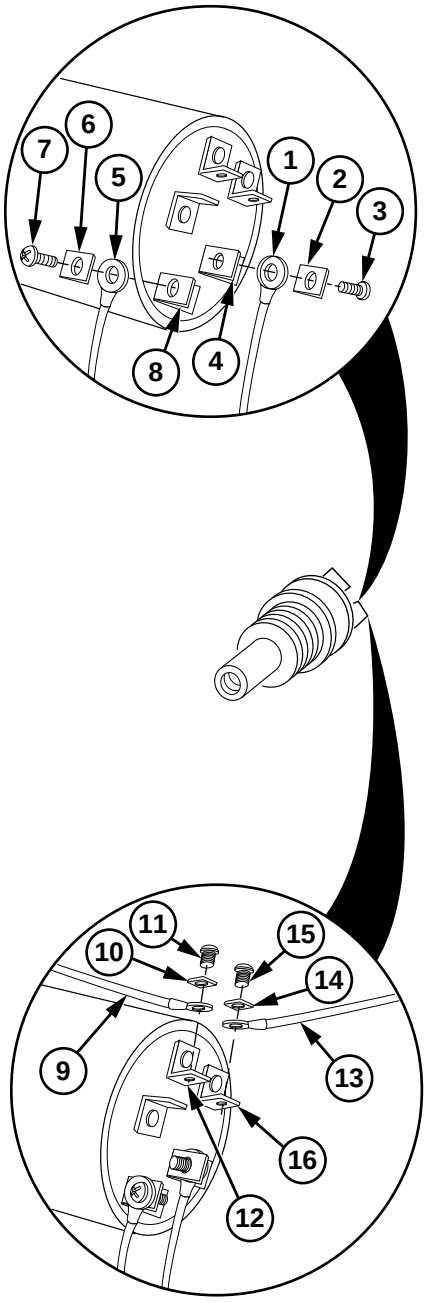
(6) Remove screw (14), clip (15), and wire no. 1640 (16) from accessories terminal (17).

(7) Remove screw (18), clip (19), and wire no. 1431 (20) from battery terminal (21).

b. Installation

(1) Install wire no. 1431 (1) with clip (2) and screw (3) on battery terminal (4).

(2) Install wire no. 1640 (5) with clip (6) and screw (7) on accessories terminal (8).



(3) Install wire no. 1872 (9) with clip (10) and screw (11) on ignition terminal (12).

(4) Install wire no. 1021 (13) with clip (14) and screw (15) on starter terminal (16).

7-22. ENGINE (IGNITION) SWITCH REPLACEMENT (CONT)

NOTE

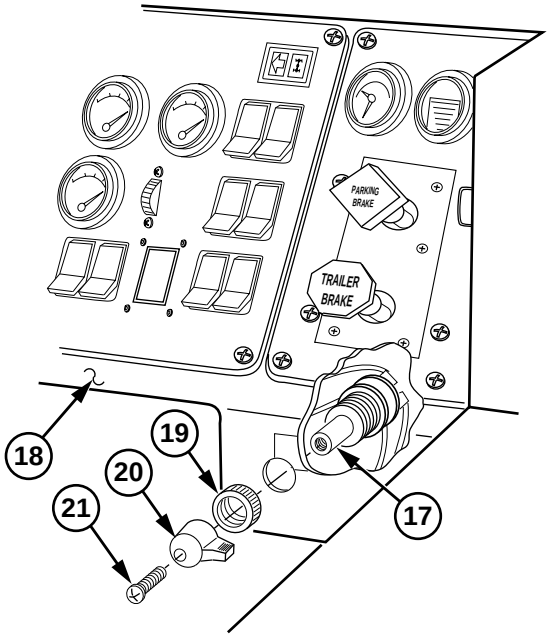
Turn switch shaft fully counterclockwise with flats on shaft pointing up.

(5) Position ENGINE switch (17) in dash (18).

(6) Install knurled nut (19) on ENGINE switch (17).

(7) Position knob (20) on ENGINE switch (17).

(8) Install screw (21) on knob (20).



c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Check ENGINE switch operation (TM 9-2320-360-10).

7-23. STOPLIGHT SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).
Air system drained (TM 9-2320-360-10).
Driver's side interior firewall insulation removed (para 16-36).

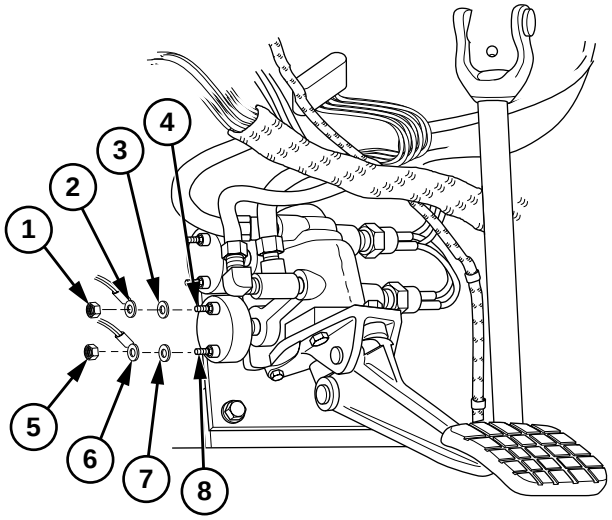
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

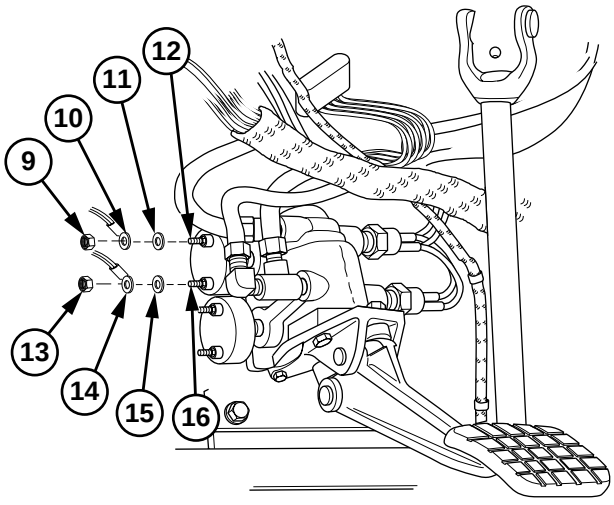
NOTE

- To remove upper switch only, do steps (1), (2), and (5). To remove lower switch only, do steps (3) thru (5).
- Tag and mark wires before removal.



(1) Remove nut (1), wire no. 1005 (2), and washer (3) from terminal (4).

(2) Remove nut (5), wire no. 1009 (6), and washer (7) from terminal (8).

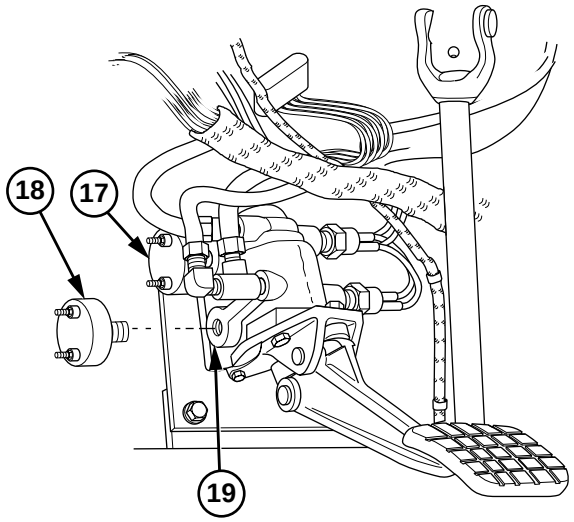


(3) Remove nut (9), wire no. 1005 (10), and washer (11) from terminal (12).

(4) Remove nut (13), wire no. 1009 (14), and washer (15) from terminal (16).

7-23. STOPLIGHT SWITCH REPLACEMENT (CONT)

(5) Remove stoplight switch (17 or 18) from treadle valve (19) by turning switch counterclockwise.



b. Installation

WARNING

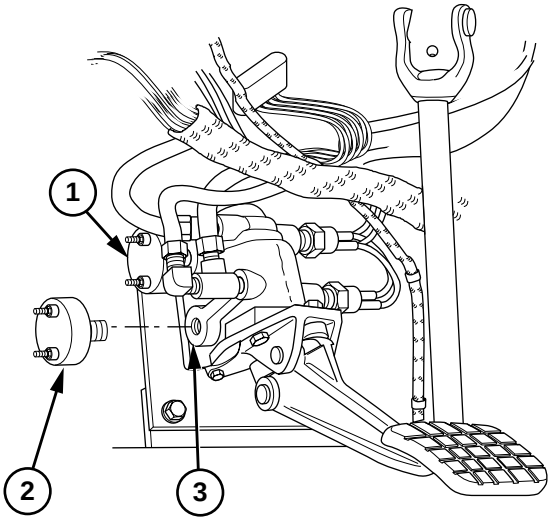
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

To install lower switch only, do steps (1) thru (4). To install upper switch only, do steps (1), (2), (5), and (6).

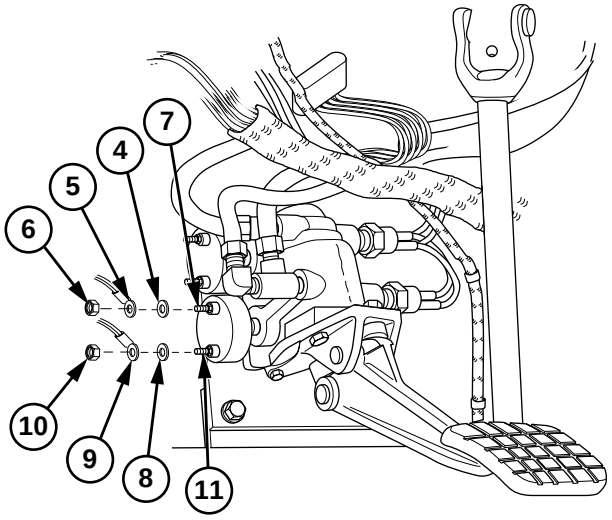
(1) Coat threads of stoplight switch (1 or 2) with pipe thread sealing compound.

(2) Install stoplight switch (1 or 2) to treadle valve (3) by turning switch clockwise.



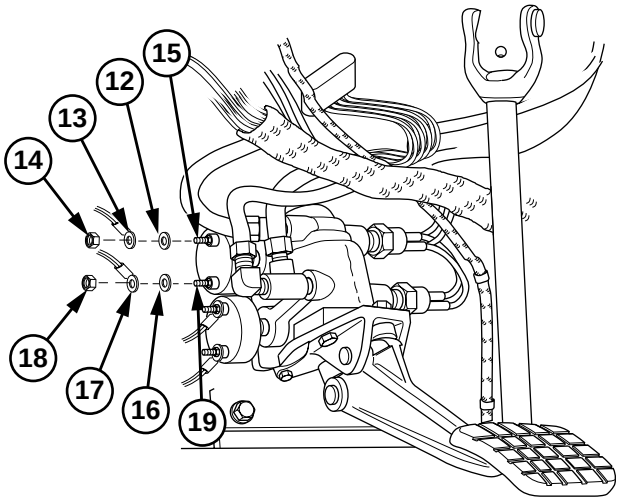
(3) Install washer (4), wire no. 1005 (5), and nut (6) on terminal (7).

(4) Install washer (8), wire no. 1009 (9), and nut (10) on terminal (11).



(5) Install washer (12), wire no. 1005 (13), and nut (14) on terminal (15).

(6) Install washer (16), wire no. 1009 (17), and nut (18) on terminal (19).



c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Start engine (TM 9-2320-360-10).

(2.1) Build system air pressure to 120-125 psi (827-862 kPa) (TM 9-2320-360-10).

(3) Press brake pedal and check brake light operation.

(4) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

(5) Install driver's side interior firewall insulation (para 16-36).

7-24. TRAILER BRAKE STOPLIGHT SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

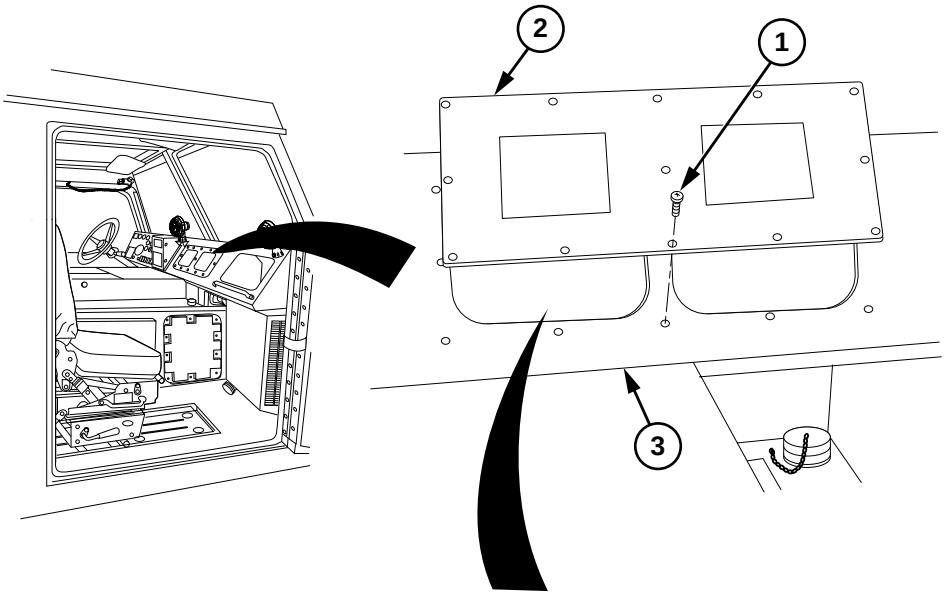
Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 11, Appendix C)

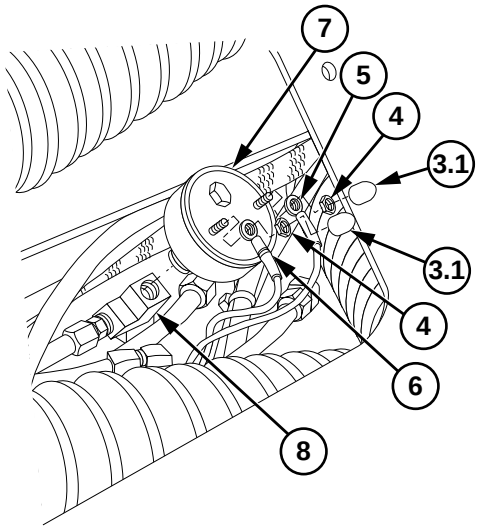
a. Removal

(1) Remove 13 screws (1) and panel (2) from dash (3).



(2) Remove two caps (3.1), nuts (4), wire no. 1005 (5), and wire no. 1009 (6) from trailer brake stoplight switch (7).

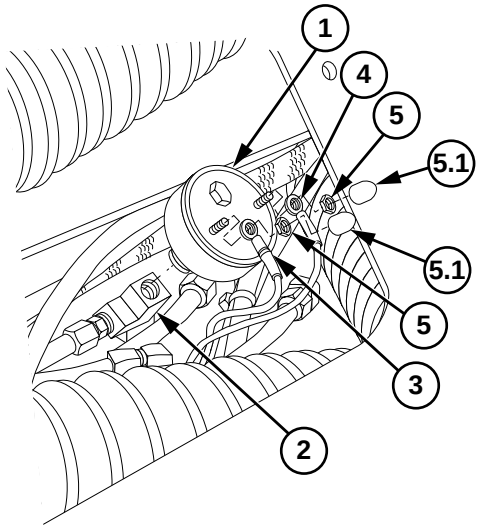
(3) Remove trailer brake stoplight switch (7) from tee (8).



b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. to avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

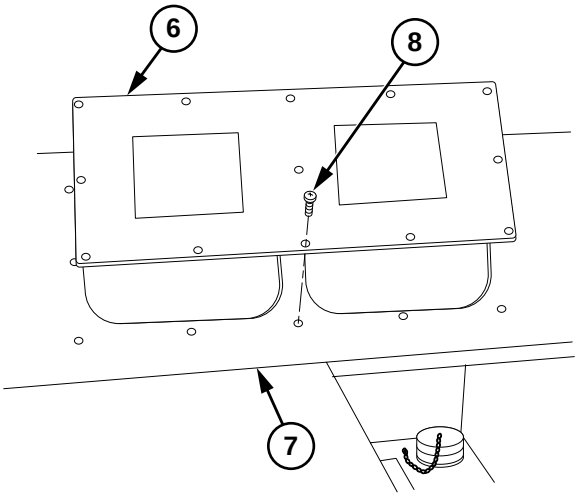


(1) Coat threads of trailer brake stoplight switch (1) with pipe thread sealing compound.

(2) Install trailer brake stoplight switch (1) on tee (2).

(3) Install wire no. 1009 (3) and wire no. 1005 (4) on trailer brake stoplight switch (1) with two nuts (5).

(3.1) Install two caps (5.1) on trailer brake stoplight switch (1).



(4) Install panel (6) on dash (7) with 13 screws (8).

c. Follow-On Maintenance

Connect batteries (para 7-61).

7-25. NEUTRAL SAFETY SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).
Shifter guard removed (para 16-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Lockwashers (2) (Item 113, Appendix G)

a. Removal

(1) Remove four screws (1), four screws (2), and cover plate (3) from top of doghouse (4).

(2) Disconnect cable plug (5) from wiring harness connector (6).

(3) Pull selector lever assembly (7) down into doghouse (4).

NOTE
Location of plastic cable ties should be marked before removal.

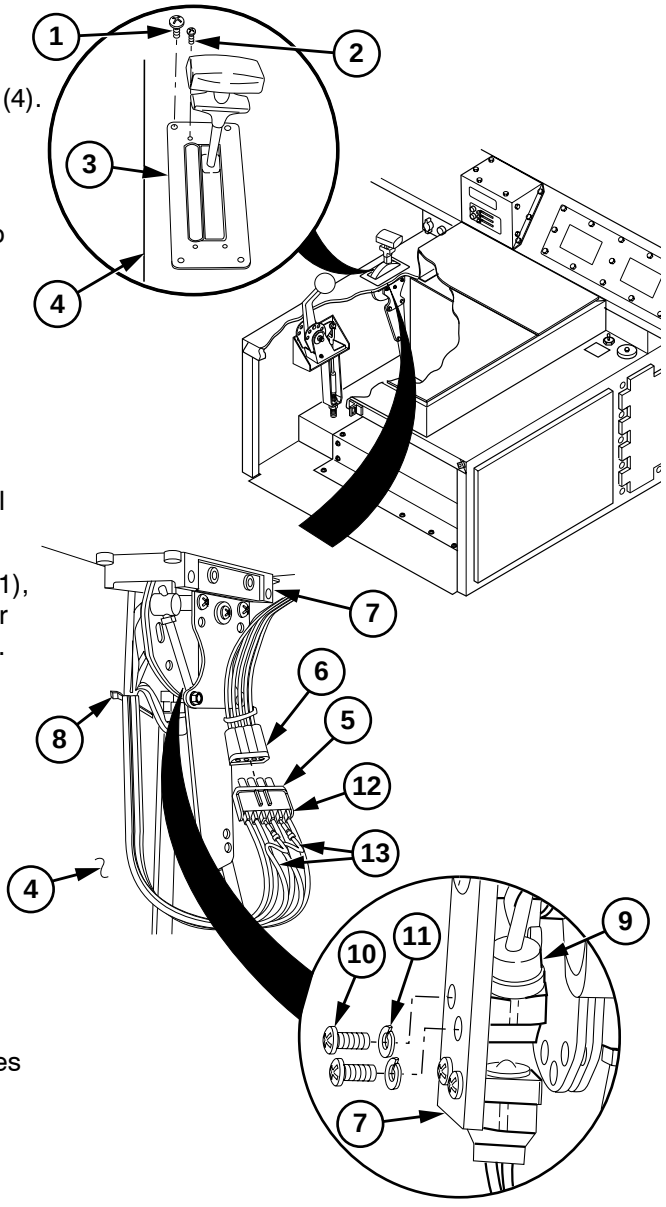
(4) Remove plastic cable ties (8) from neutral safety switch (9) as required.

(5) Remove two screws (10), lockwashers (11), and neutral safety switch (9) from selector lever assembly (7). Discard lockwashers.

(6) Release two tabs (12) and open cable plug (5).

NOTE
Tag and mark wires before removal.

(7) Remove two wires (13) from C and E holes in plug (5).



b. Installation

(1) Install two wires (1) in E and C holes in cable plug (2).

(2) Close cable plug (2).

(3) Position neutral safety switch (3) on selector lever assembly (4). Install two new lockwashers (5) and screws (6).

NOTE

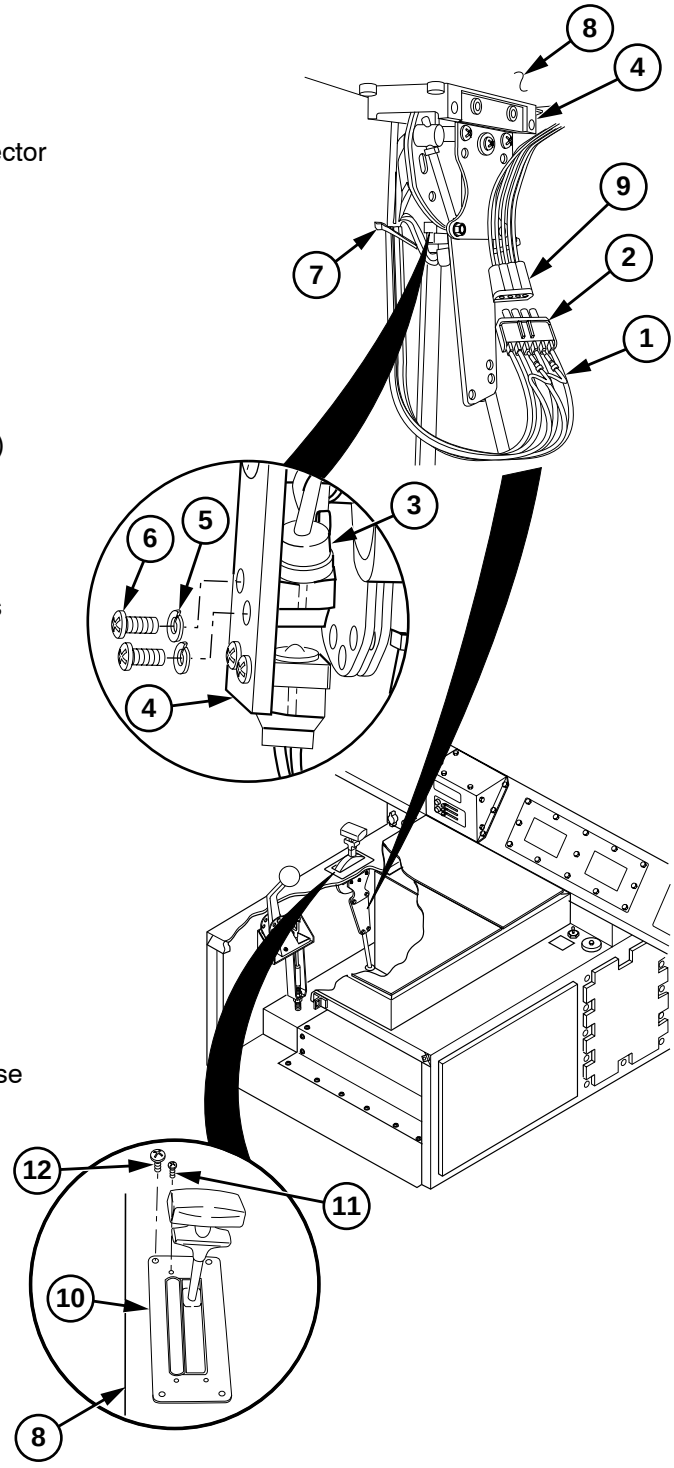
Plastic cable ties should be positioned in locations marked during removal.

(4) Secure wiring to neutral safety switch (3) with plastic cable ties (7).

(5) Position selector lever assembly (4) in mounting position on doghouse (8).

(6) Connect cable plug (2) to wiring harness connector (9).

(7) Install cover plate (10) on top of doghouse (8) with four screws (11) and four screws (12).



c. Follow-On Maintenance

(1) Install shifter guard (para 16-2).

(2) Connect batteries (para 7-61).

(3) Check operation of neutral safety switch.

7-26. REVERSE LIGHT SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).
Shifter guard removed (para 16-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Lockwashers (2) (Item 113, Appendix G)

a. Removal

(1) Remove four screws (1), four screws (2), and cover plate (3) from top of doghouse (4).

(2) Disconnect cable plug (5) from wiring harness connector (6).

(3) Pull selector lever assembly (7) down into doghouse (4).

NOTE
Location of plastic cable ties should be marked before removal.

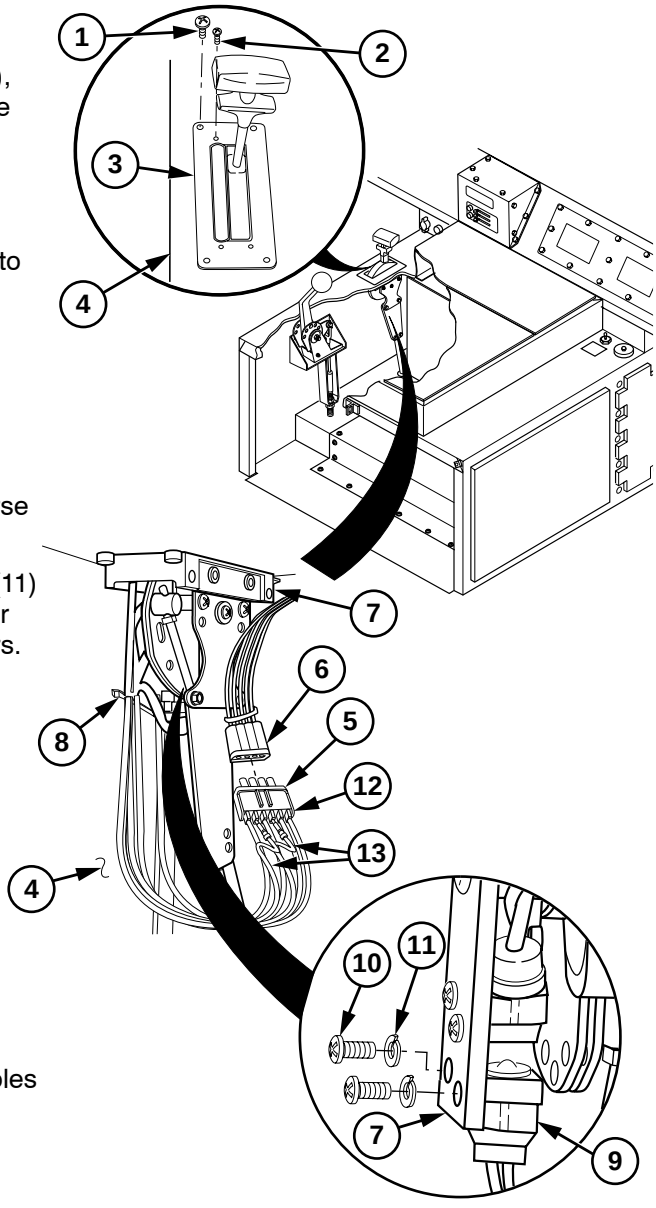
(4) Remove plastic cable ties (8) from reverse light switch (9) as required.

(5) Remove two screws (10), lockwashers (11) and reverse light switch (9) from selector lever assembly (7). Discard lockwashers.

(6) Release two tabs (12) and open cable plug (5).

NOTE
Tag and mark wires before removal.

(7) Remove two wires (13) from B and D holes in plug (5).



b. Installation

(1) Install two wires (1) in D and B holes in cable plug (2).

(2) Close cable plug (2).

(3) Position reverse light switch (3) on selector lever assembly (4). Install two new lockwashers (5) and screws (6).

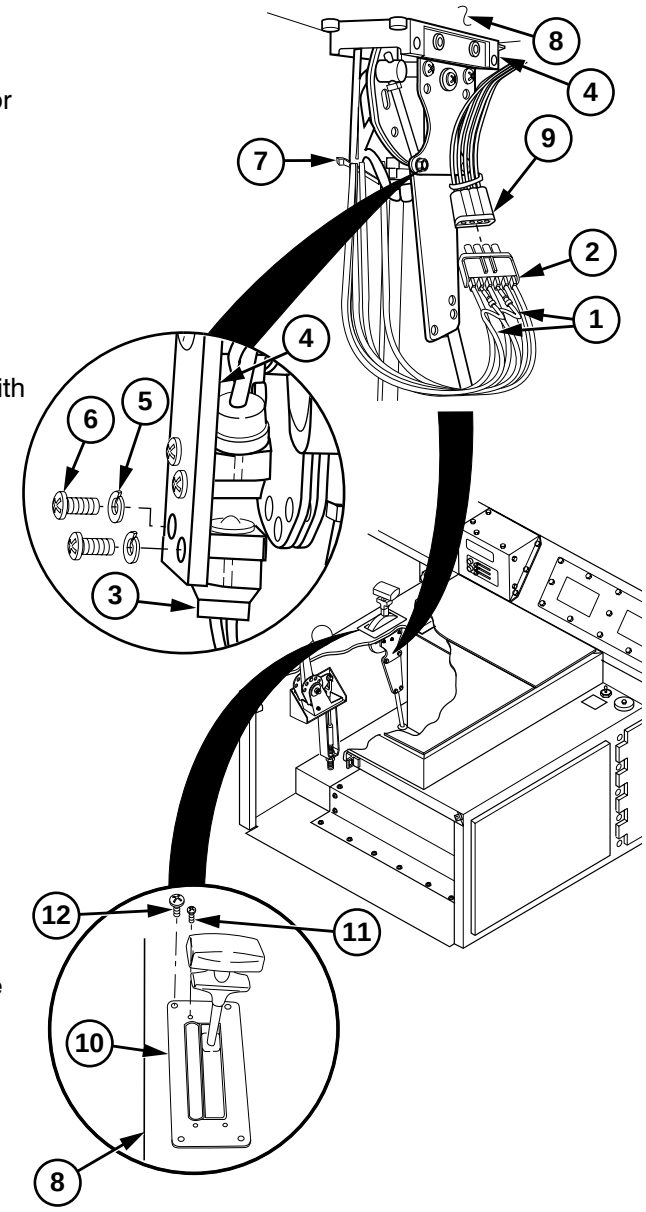
NOTE

Plastic cable ties should be positioned in locations marked during removal.

(4) Secure wiring to reverse light switch (3) with plastic cable ties (7).

(5) Position selector lever assembly (4) in mounting position on doghouse (8).

(6) Connect cable plug (2) to wiring harness connector (9).



(7) Install cover plate (10) on top of doghouse (8) with four screws (11) and four screws (12).

c. Follow-On Maintenance

(1) Install shifter guard (para 16-2).

(2) Connect batteries (para 7-61).

(3) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(4) Check operation of reverse light (TM 9-2320-360-10).

(5) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

7-27. RELAY REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

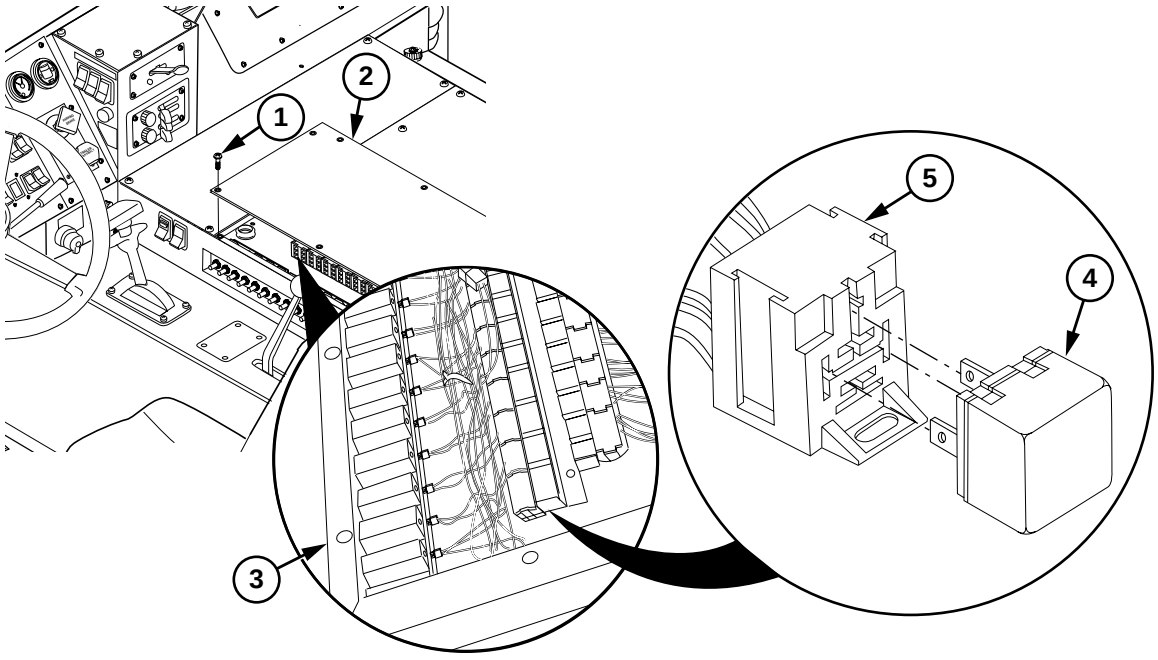
NOTE
All relays are replaced the same way.

a. Removal

NOTE
This procedure is performed to replace a faulty relay. Perform proper trouble-shooting procedures to identify relay needing replacement.

(1) Remove eight screws (1) and cover (2) from electronic control box assembly (3).

(2) Remove relay (4) from socket (5).



b. Installation

(1) Install relay (4) in socket (5).

(2) Install cover (2) on electronic control box assembly (3) with eight screws (1).

c. Follow-On Maintenance

Connect batteries (para 7-61).

7-28. ELECTRONIC THROTTLE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (3) (Item 68, Appendix G)

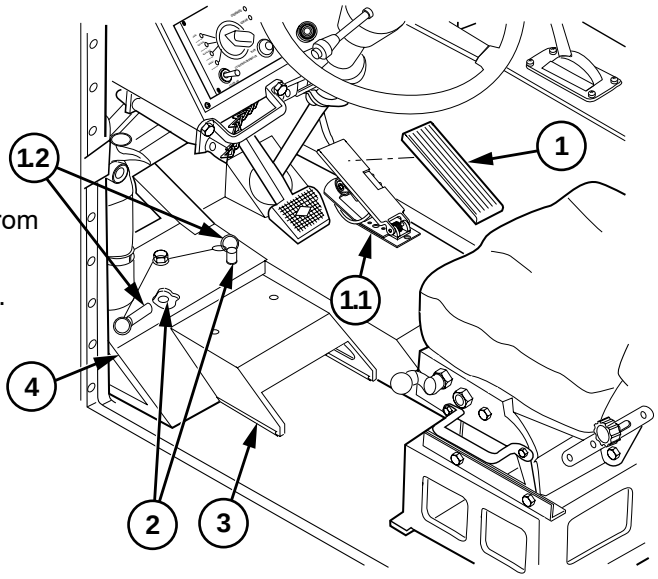
a. Removal

NOTE
To remove throttle pedal cover, do step (1). To replace electronic throttle assembly, do steps (1.1) through (5).

(1) Lift up on edge of cover (1) and remove from pedal (1.1).

(1.1) Remove two lockpins (1.2) from holes (2).

(2) Remove footrest (3) from floorbox (4).



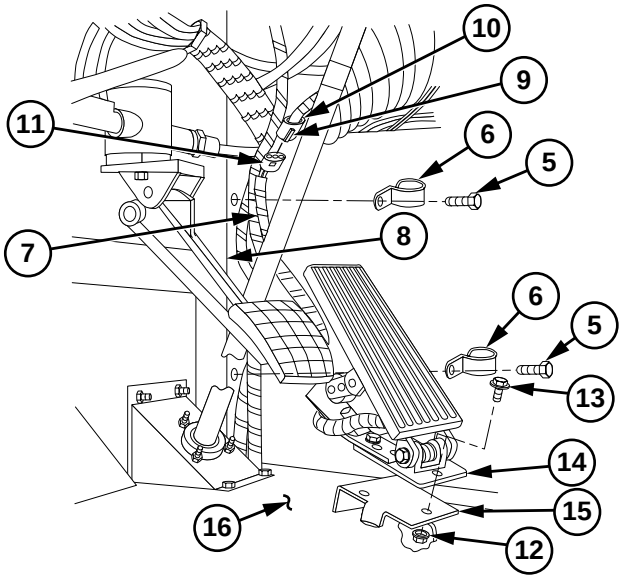
(3) Remove two screws (5), clamps (6), and wire assembly (7) from firewall (8).

(4) Lift locking tab (9) and remove connector plug (10) from connector receptacle (11).

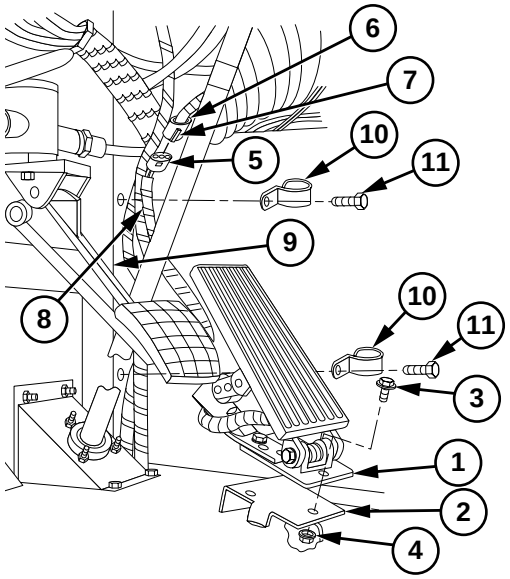
WARNING
Edge of floorbox may be sharp and cause injury to personnel.

NOTE
Lower nut is removed through footrest opening in floorbox.

(5) Remove three locknuts (12), screws (13), and plate (14) from bracket (15) on cab floor (16). Discard locknuts.



7-28. ELECTRONIC THROTTLE REPLACEMENT (CONT)



b. Installation

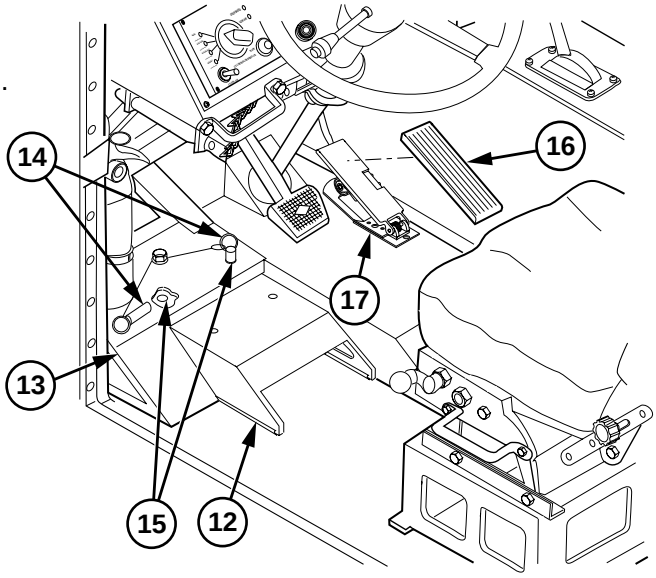
NOTE

To install electronic throttle assembly, do steps (1) through (5). To install throttle pedal cover, do step (6).

(1) Install plate (1) on bracket (2) with three screws (3) and new locknuts (4).

(2) Install connector plug (5) in connector receptacle (6). Push connector plug (5) unti locking tab (7) snaps in place.

(3) Secure wire assembly (8) on firewall (9) with two clamps (10) and screws (11).



(4) Install footrest (12) in floorbox (13).

(5) Install two lockpins (14) in holes (15).

(6) Install cover (16) on pedal (17).

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check operation of electronic throttle (TM 9-2320-360-10).

(3) Shut off engine (TM 9-2320-360-10).

(4) Remove wheel chocks.

7-29. DDEC II ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).
Air intake hose removed (para 4-4).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench Set, Combination (Item 70, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Clamps (2) (Item 13, Appendix G)
Lockwashers (3) (Item 102, Appendix G)
Lockwashers (2) (Item 101, Appendix G)
Seals (2) (Item 165, Appendix G)
Isolators (8) (Item 43.0.1, Appendix G)
Screws (4) (Item 160.1, Appendix G)

a. Removal

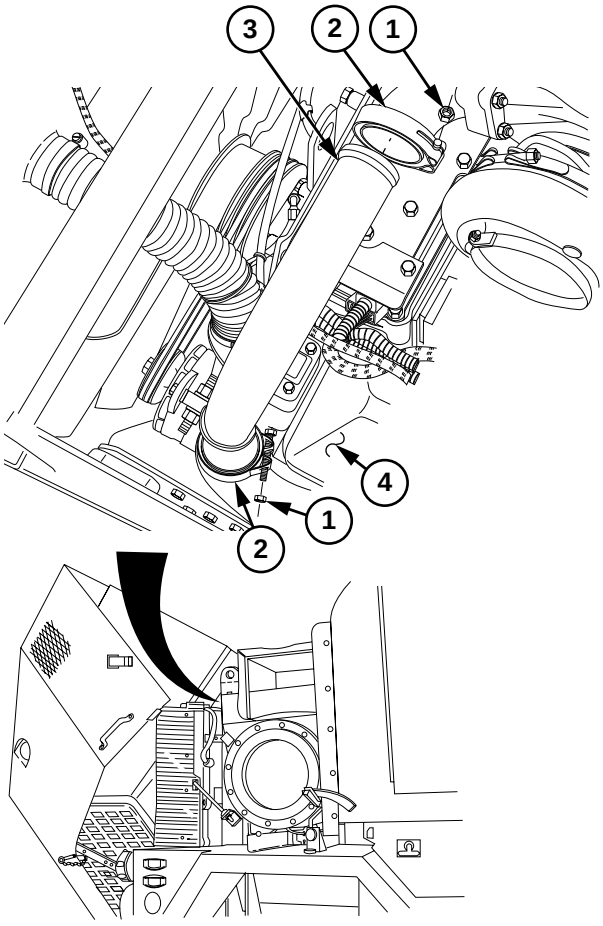
WARNING

Ensure exhaust tube is cool before performing maintenance. Failure to comply may result in serious personal injury.

(1) Remove two locknuts (1) from clamps (2) on left exhaust tube (3). Discard locknuts.

(2) Remove two clamps (2) and left exhaust tube (3) from engine (4).

(3) Remove two clamps (2) from left exhaust tube (3). Discard clamps.



7-29. DDEC II ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT)

NOTE

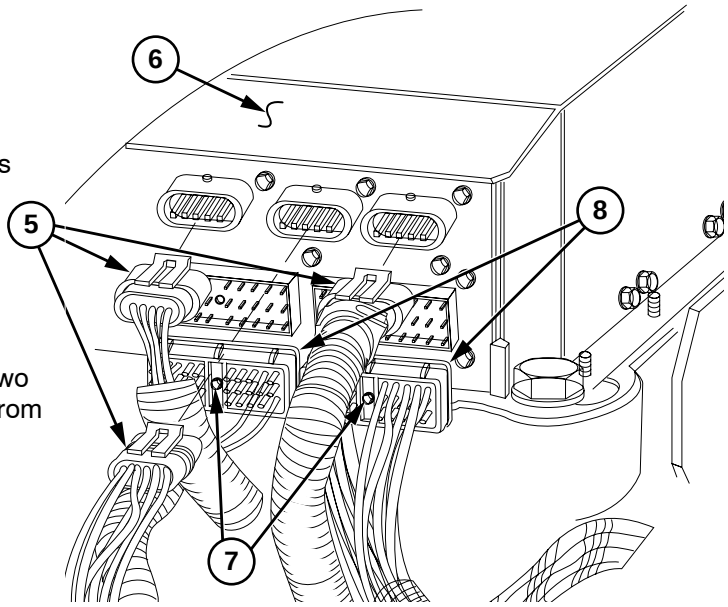
Connector is removed by gently prying on clip and pulling on connector.

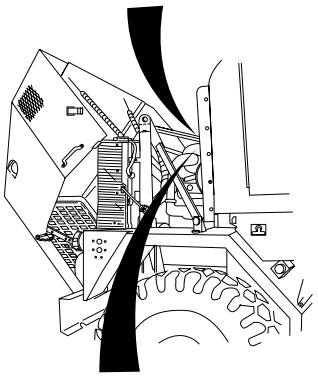
(4) Disconnect three ECM wiring harness connectors (5) from ECM (6).

NOTE

Connector screws are designed to remain with connector.

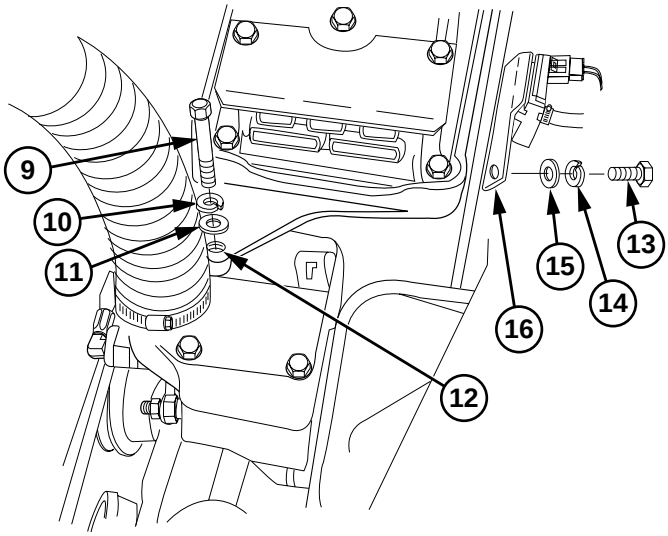
(5) Loosen two screws (7) and remove two ECM wiring harness connectors (8) from ECM (6).





(6) Remove screw (9), lockwasher (10), and washer (11) from ECM bracket (12). Discard lockwasher.

(7) Remove screw (13), lockwasher (14), washer (15), and turbo boost sensor bracket (16) from ECM bracket (12). Discard lockwasher.



WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire 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. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.

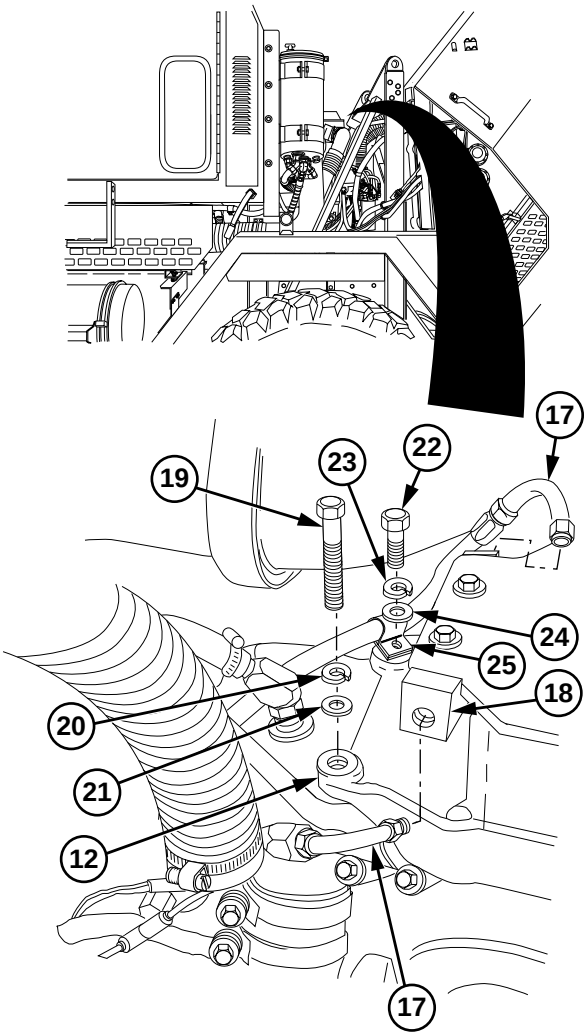
CAUTION

Cover exhaust manifold to prevent foreign material from entering turbocharger and causing damage.

(8) Remove two fuel lines (17) from fitting (18).

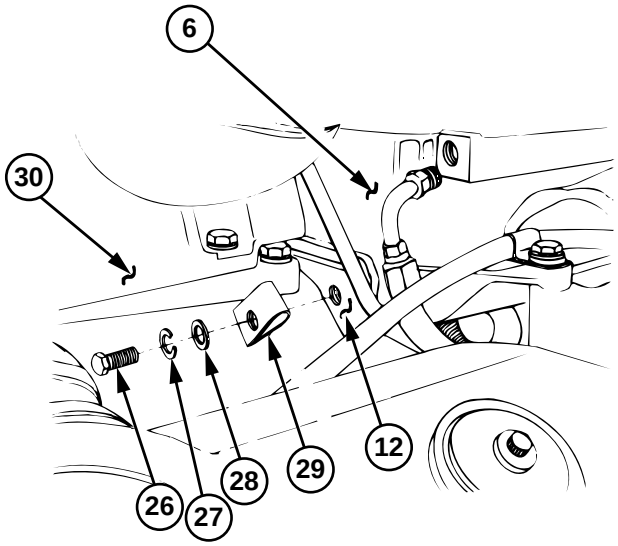
(9) Remove screw (19), lockwasher (20), and washer (21) from ECM bracket (12). Discard lockwasher.

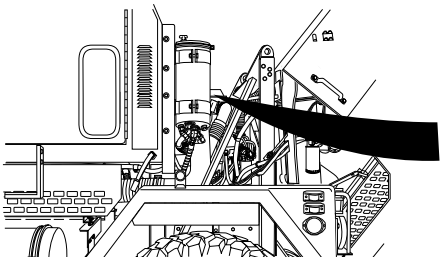
(10) Remove screw (22), lockwasher (23), washer (24), and clip (25) from ECM bracket (12). Discard lockwasher.



(11) Remove screw (26), lockwasher (27), washer (28), and clip (29) from ECM bracket (12). Discard lockwasher.

(12) Remove ECM bracket (12) and ECM (6) from engine (30) and place on clean work surface.





7-29. DDEC II ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT)

b. Disassembly

(1) Remove two screws (1) and heat shield (2) from cooler plate (3).

(2) Remove six screws (4) and cooler plate (3) from ECM (5).

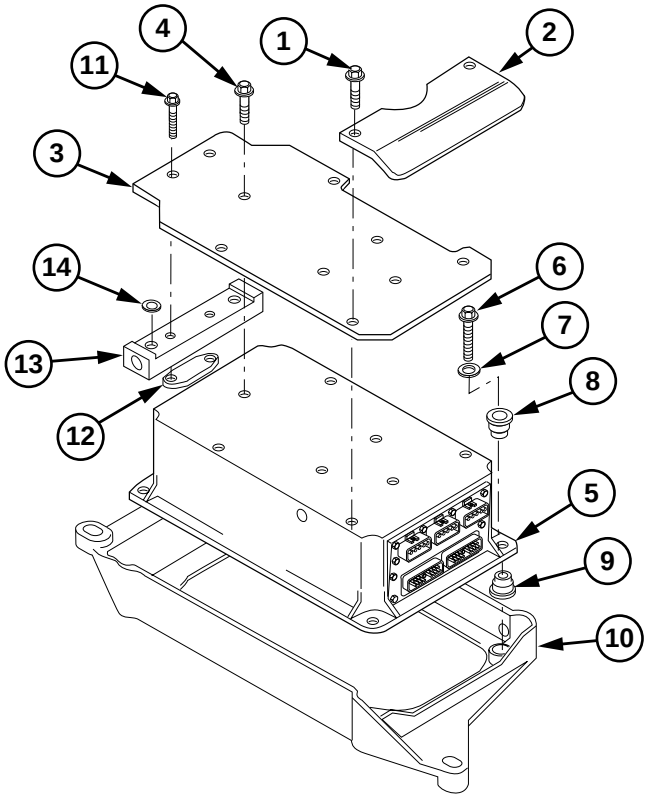
NOTE

Some engines do not have washers. If ECM mounting hardware used washers, discard screws, washers, and isolators. New mounting hardware uses four new screws, eight new isolators and no washers.

(3) Remove four screws (6), washers (7), and isolators (8) from ECM (5). Discard screws, washers, and isolators.

(4) Remove ECM (5) and four isolators (9) from ECM bracket (10). Discard isolators.

(5) Remove two screws (11), retainer plate (12), fitting (13), and two seals (14) from cooler plate (3). Discard seals.



c. Assembly

(1) Install two new seals (1), fitting (2), and retainer plate (3) on cooler plate (4) with two screws (5).

(2) Install cooler plate (4) on ECM (6) with six screws (7). Torque to 180 lb-in. (20 N·m).

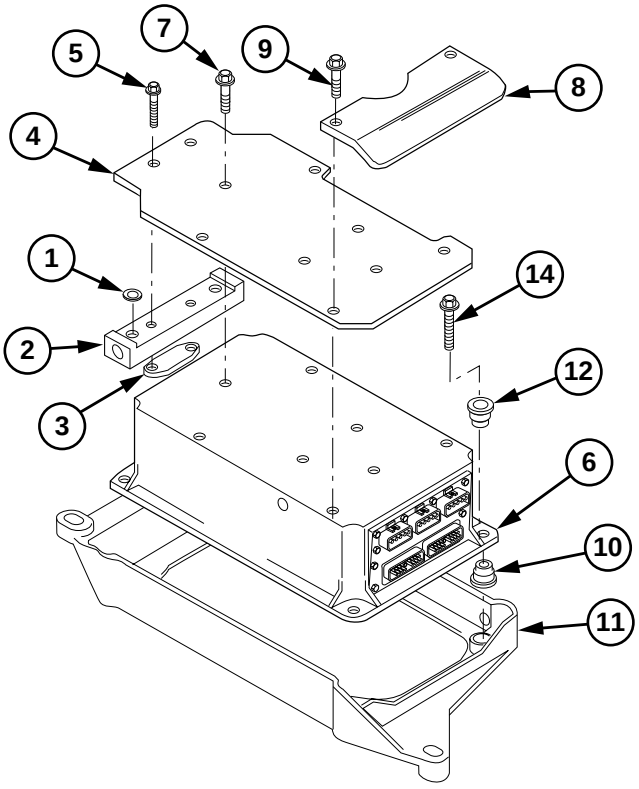
(3) Install heat shield (8) on cooler plate (4) with two screws (9). Torque to 180 lb-in. (20 N·m).

CAUTION

Old ECM hardware used washers with screws and old style isolators. New mounting hardware does not use washers. The eight isolators and four screws must be replaced as a set. Failure to comply may result in damage to ECM.

(4) Install four new isolators (10) on ECM bracket (11).

(5) Install ECM (6) on ECM bracket (11) with four new isolators (12) and new screws (14).



d. Installation

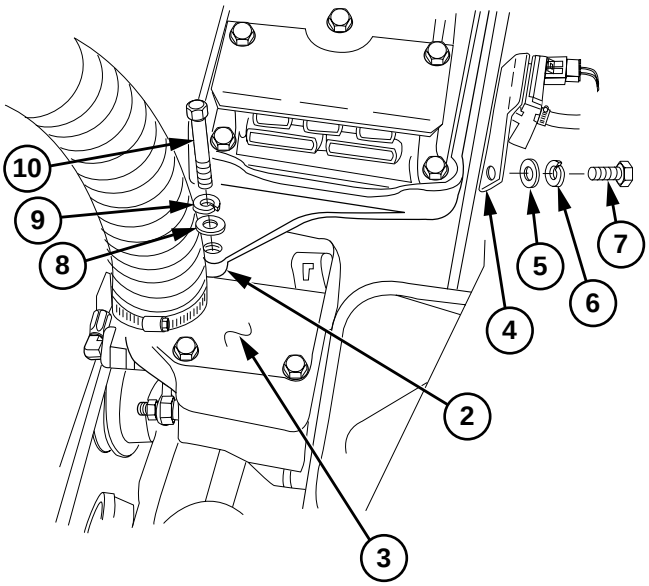
NOTE

Right injector wire harness should be located under ECM bracket.

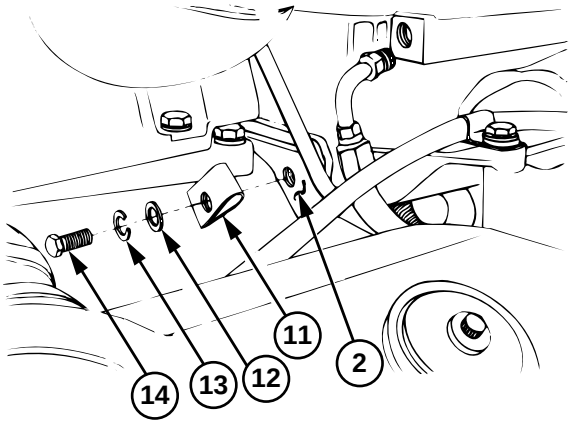
(1) Position ECM (1) and ECM bracket (2) on thermostat housing (3).

(2) Position turbo boost sensor bracket (4) on ECM bracket (2) with washer (5), new lockwasher (6), and screw (7). Do not tighten screw.

(3) Position washer (8), new lockwasher (9), and screw (10) on ECM bracket (2). Do not tighten screw.



(4) Position clip (11), washer (12), lockwasher (13), and screw (14) on ECM bracket (2). Do not tighten screw.



(5) Position clip (15), washer (16), new lockwasher (17), and screw (18) on ECM bracket (2). Do not tighten screw.

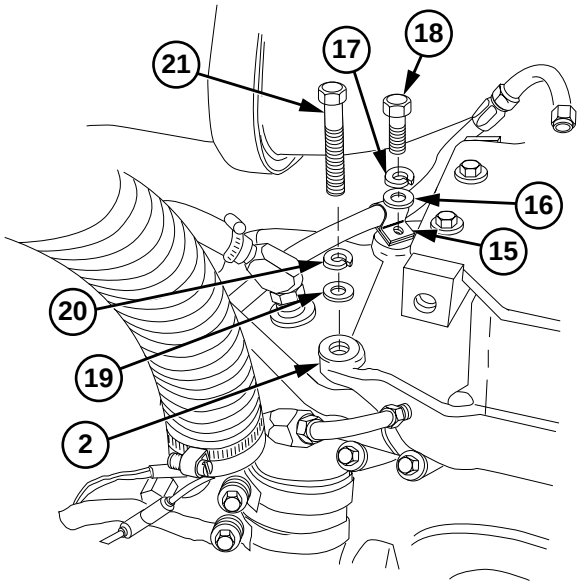
(6) Position washer (19), new lockwasher (20), and screw (21) on ECM bracket (2). Do not tighten screw.

CAUTION

Screws connecting bracket to blower must be tightened first to prevent damage to housing.

(7) Tighten two screws (7 and 14) to 120–156 lb-in. (13.6–17.7 N·m).

(8) Tighten three screws (10, 18, and 21) to 30–35 lb-ft (41–47 N·m).



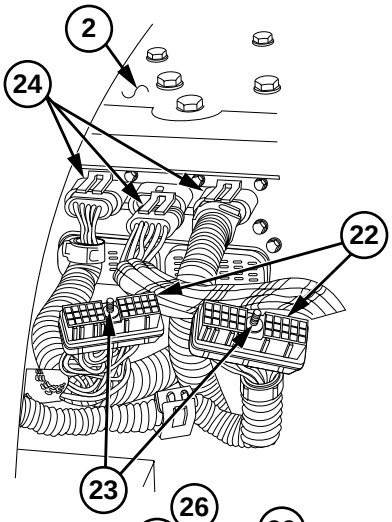
7-29. DDEC II ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT)

NOTE

ECM wiring harnesses are designed to be installed in only one location.

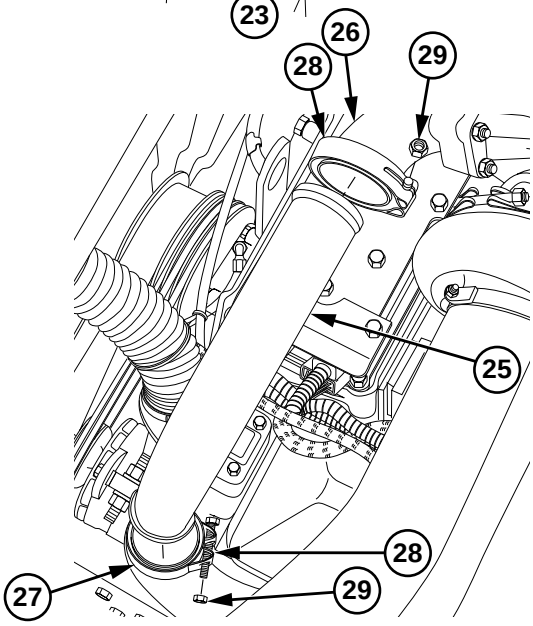
(9) Connect two ECM wiring harness connectors (22) to ECM (2) and tighten screws (23).

(10) Connect three ECM wiring harnesses (24) to ECM (2).

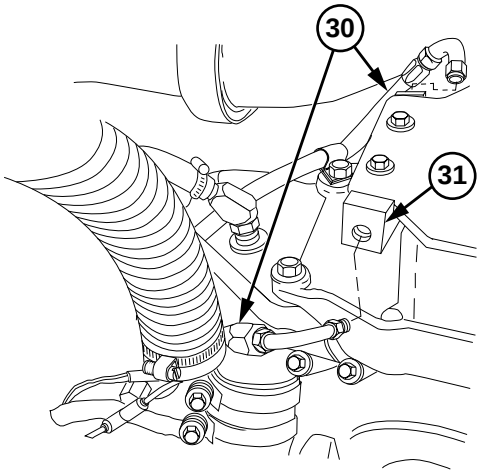


(11) Install exhaust tube (25) on turbocharger (26) and exhaust manifold (27) with two new clamps (28).

(12) Install two new locknuts (29) on clamps (28).



(13) Install two fuel lines (30) on fitting (31).



e. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Install air intake hose (para 4-4).

(3) Clear historical codes, mode 40 (para 2-13).

7-29.1. DDEC III/IV ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).
Air intake hose removed (para 4-4).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench Set, Combination (Item 70, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Compound, Antiseize (Item 14, Appendix C)
Clamps (2) (Item 13, Appendix G)
Lockwashers (3) (Item 102, Appendix G)
Lockwashers (2) (Item 101, Appendix G)
Seals (2) (Item 165, Appendix G)
Isolators (8) (Item 43.0.1, Appendix G)
Screws (4) (Item 160.1, Appendix G)
Packing, Preformed (2) (Item 139, Appendix G)

a. Removal

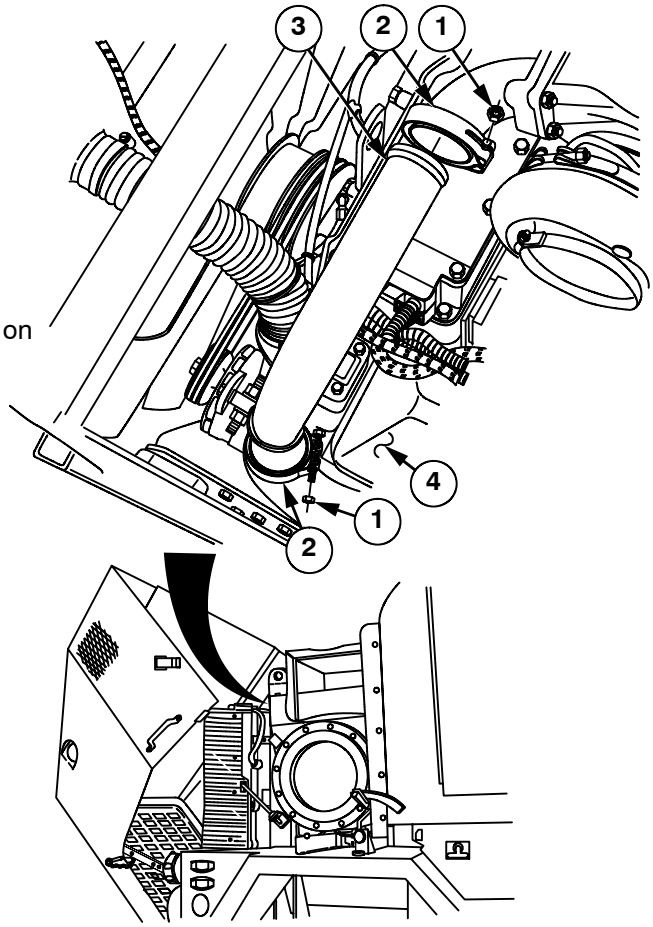
WARNING

Ensure exhaust tube is cool before performing maintenance. Failure to comply may result in serious personal injury.

(1) Remove two locknuts (1) from clamps (2) on left exhaust tube (3). Discard locknuts.

(2) Remove two clamps (2) and left exhaust tube (3) from engine (4).

(3) Remove two clamps (2) from left exhaust tube (3). Discard clamps.



7-29.1. DDEC III/IV ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT)

NOTE

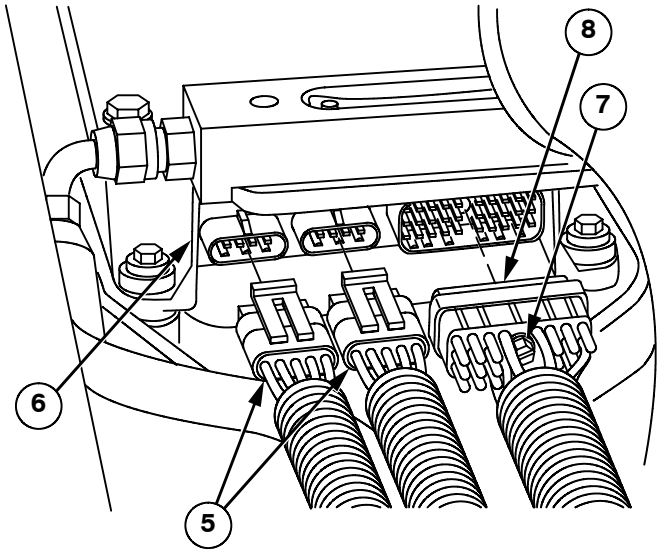
Connector is removed by gently prying on clip and pulling on connector.

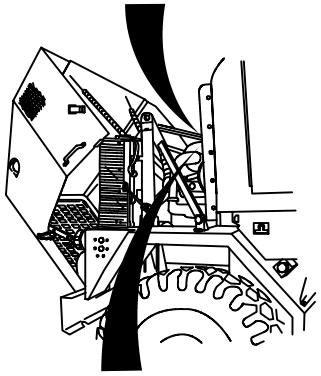
(4) Disconnect two injector wiring harness connectors (5) from right side of ECM (6).

NOTE

Connector screws are designed to remain with connector.

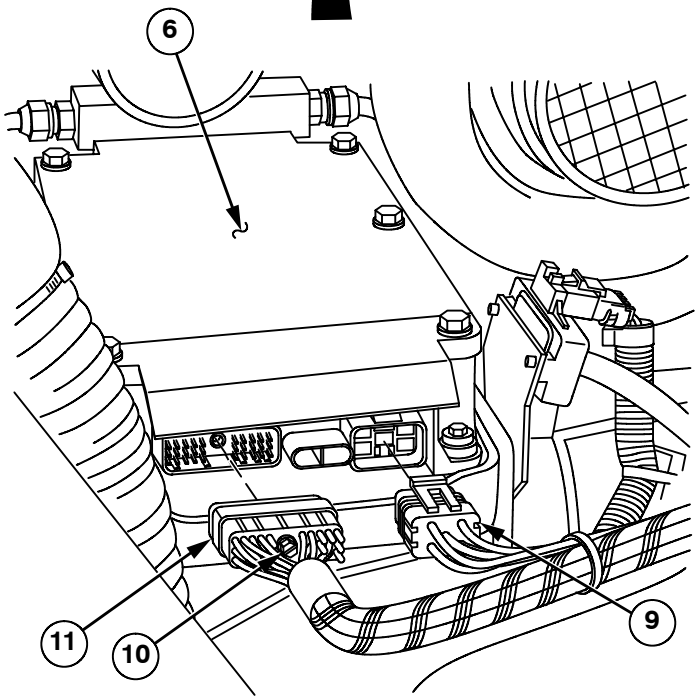
(5) Loosen screw (7) and remove engine wiring harness connector (8) from right side of ECM (6).





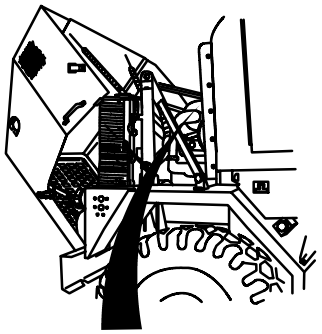
(6) Remove power wire harness connector (9) from left side of ECM (6).

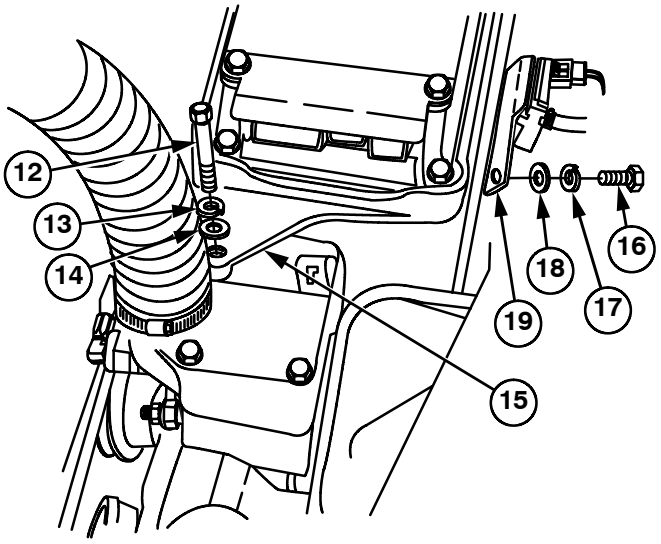
(7) Loosen screw (10) and remove chassis wiring harness connector (11) from left side of ECM (6).



(8) Remove screw (12), lockwasher (13), and washer (14) from ECM bracket (15). Discard lockwasher.

(9) Remove screw (16), lockwasher (17), washer (18), and turbo boost sensor bracket (19) from ECM bracket (15). Discard lockwasher.





7-29.1. DDEC III/IV ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT)

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire 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. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.

CAUTION

Cover exhaust manifold to prevent foreign material from entering turbocharger and causing damage.

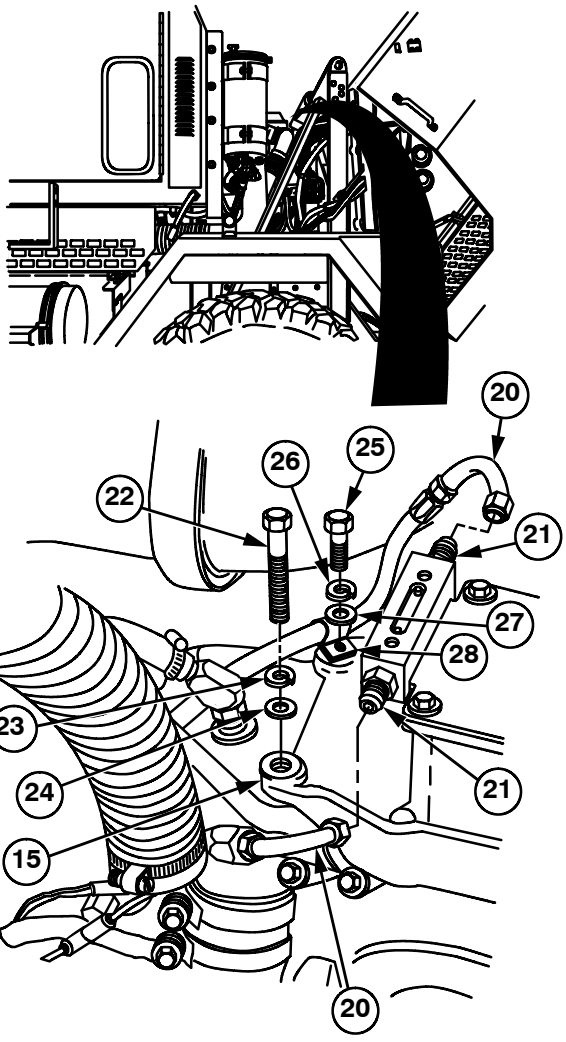
(10) Remove two fuel lines (20) from fittings (21).

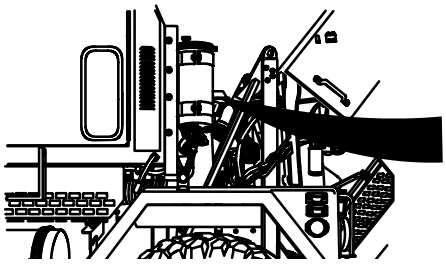
(11) Remove screw (22), lockwasher (23), and washer (24) from ECM bracket (15). Discard lockwasher.

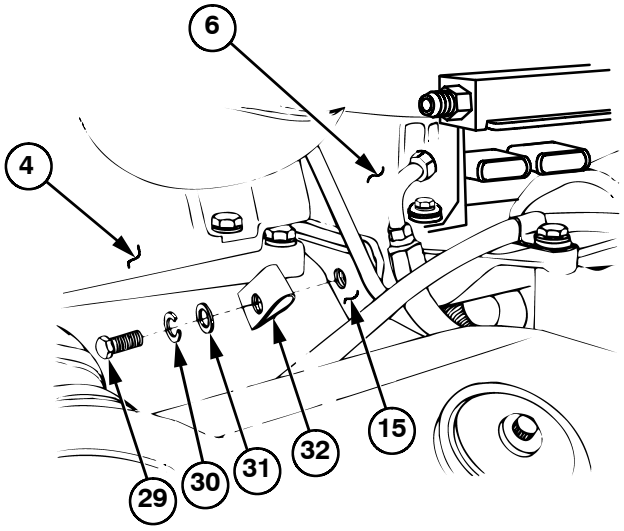
(12) Remove screw (25), lockwasher (26), washer (27), and clip (28) from ECM bracket (15). Discard lockwasher.

(13) Remove screw (29), lockwasher (30), washer (31), and clip (32) from ECM bracket (15). Discard lockwasher.

(14) Remove ECM bracket (15) and ECM (6) from engine (4) and place on clean work surface.







b. Disassembly

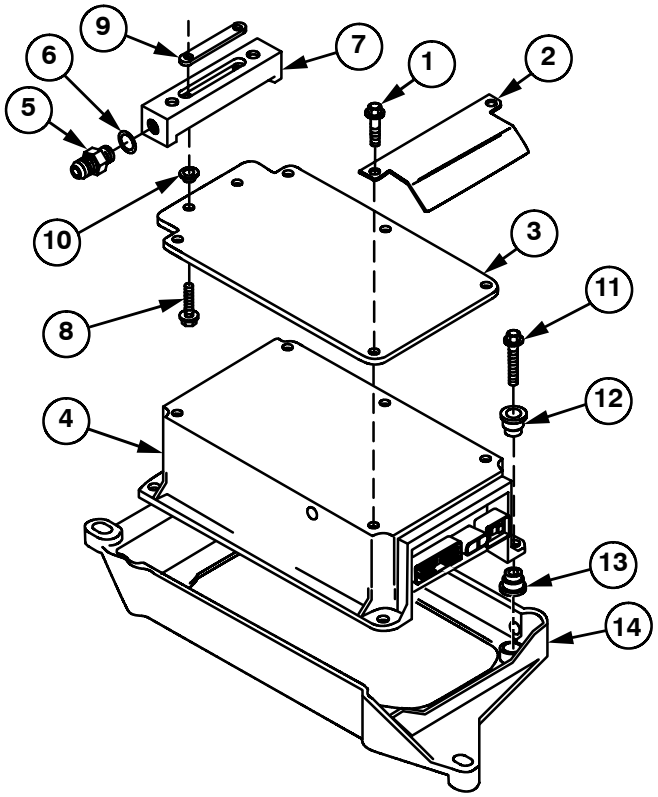
(1) Remove five screws (1), heat shield (2), and cooler plate (3) from ECM (4).

(2) Remove two fittings (5) and preformed packing (6) from fitting (7). Discard preformed packings.

(3) Remove two screws (8), retainer plate (9), fitting (7), and two seals (10) from cooler plate (3). Discard seals.

(4) Remove four screws (11) and isolators (12) from ECM (4). Discard screws and isolators.

(5) Remove ECM (4) and four isolators (13) from ECM bracket (14). Discard isolators.



c. Assembly

(1) Install four new isolators (1) on ECM bracket (2).

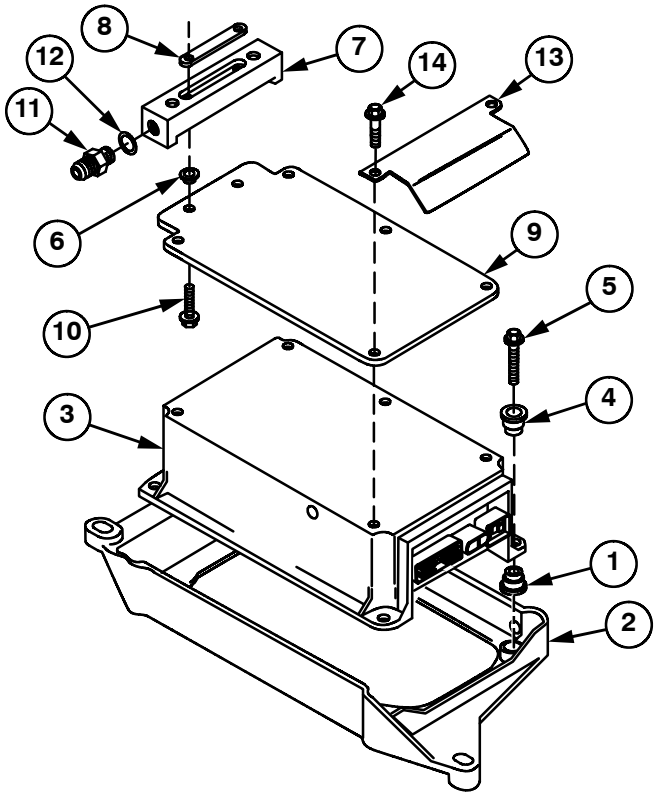
(2) Install ECM (3) on ECM bracket (2) with four new isolators (4) and new screws (5).

(3) Install two new seals (6), fitting (7), and retainer plate (8) on cooler plate (9) with two screws (10).

(4) Install two fittings (11) and new preformed packings (12) on fitting (7).

(5) Coat threads of five screws (14) with antiseize compound.

(6) Install cooler plate (9) and heat shield (13) on ECM (3) with five screws (14). Torque to 180 lb-in. (20 N•m).



7-29.1. DDEC III/IV ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT)

d. Installation

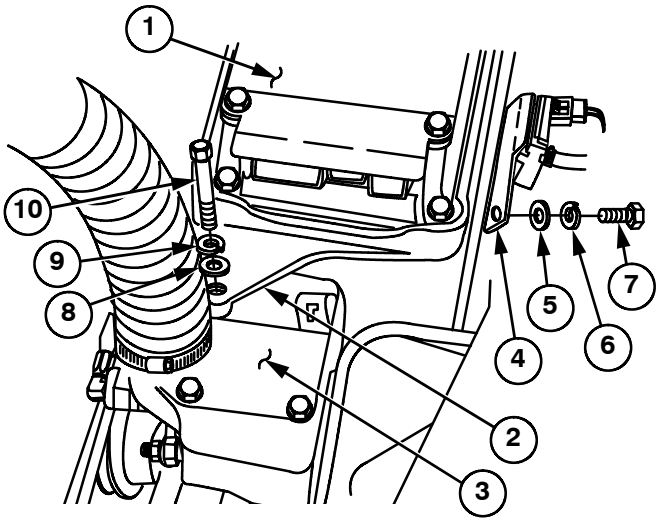
NOTE

Left injector wire harness should be located under ECM bracket.

(1) Position ECM (1) and ECM bracket (2) on thermostat housing (3).

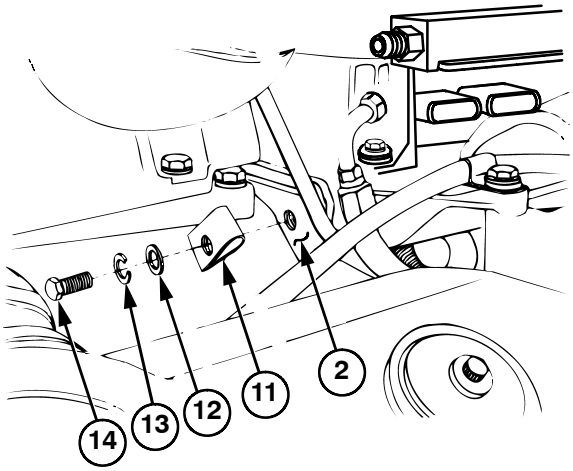
(2) Position turbo boost sensor bracket (4) on ECM bracket (2) with washer (5), new lockwasher (6), and screw (7). Do not tighten screw.

(3) Position washer (8), new lockwasher (9), and screw (10) on ECM bracket (2). Do not tighten screw.



(4) Position clip (11), washer (12), lockwasher (13), and screw (14) on ECM bracket (2). Do not tighten screw.

(5) Position clip (15), washer (16), new lockwasher (17), and screw (18) on ECM bracket (2). Do not tighten screw.



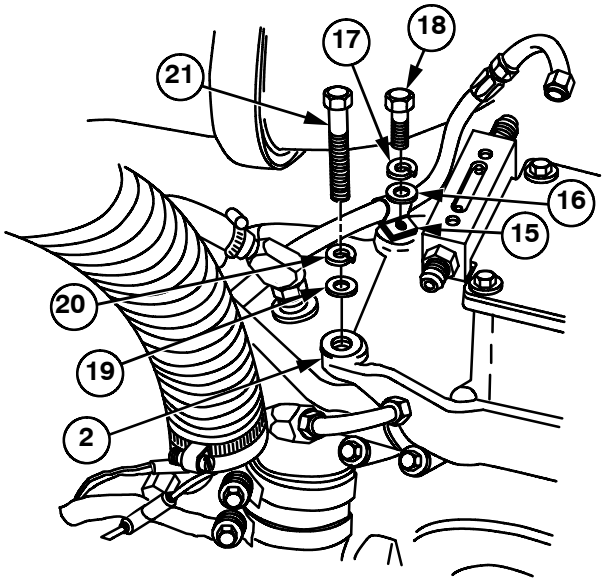
(6) Position washer (19), new lockwasher (20), and screw (21) on ECM bracket (2). Do not tighten screw.

CAUTION

Screws connecting bracket to blower must be tightened first to prevent damage to housing.

(7) Tighten two screws (7 and 14) to 120–156 lb-in. (13.6–17.7 N·m).

(8) Tighten three screws (10, 18, and 21) to 17–20 lb-ft (23–27 N·m).

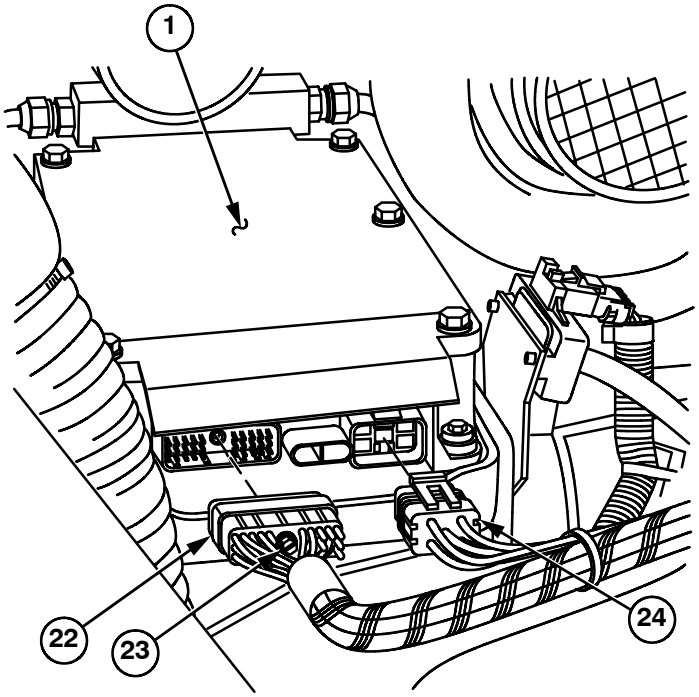


NOTE

ECM wiring harnesses are designed to be installed in only one location.

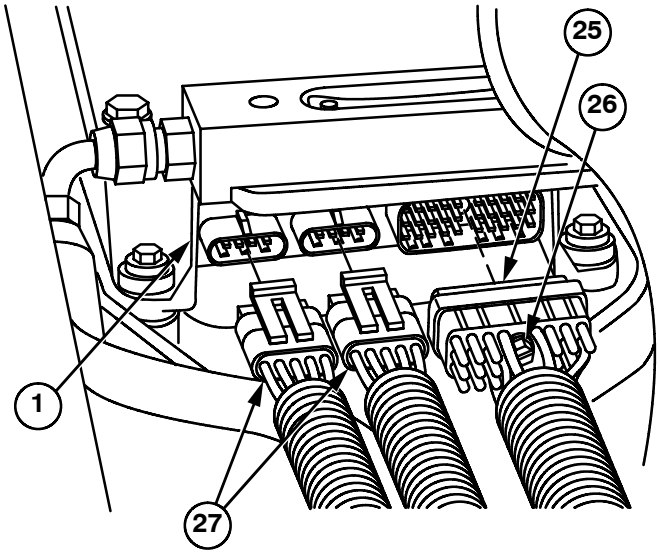
(9) Connect chassis wire harness connector (22) to left side of ECM (1) and tighten screw (23).

(10) Connect power wire harness connector (24) to left side of ECM (1).



(11) Connect engine wiring harness connector (25) to right side of ECM (1) and tighten screw (26).

(12) Connect two injector wiring harnesses (27) to right side of ECM (1).

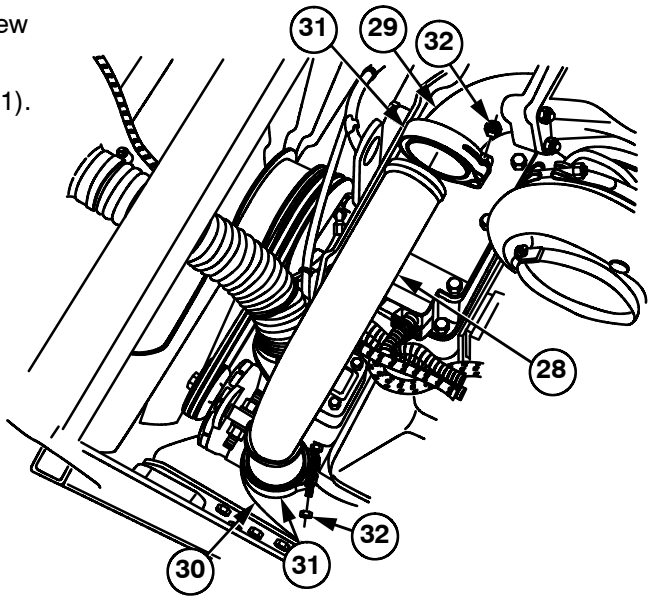


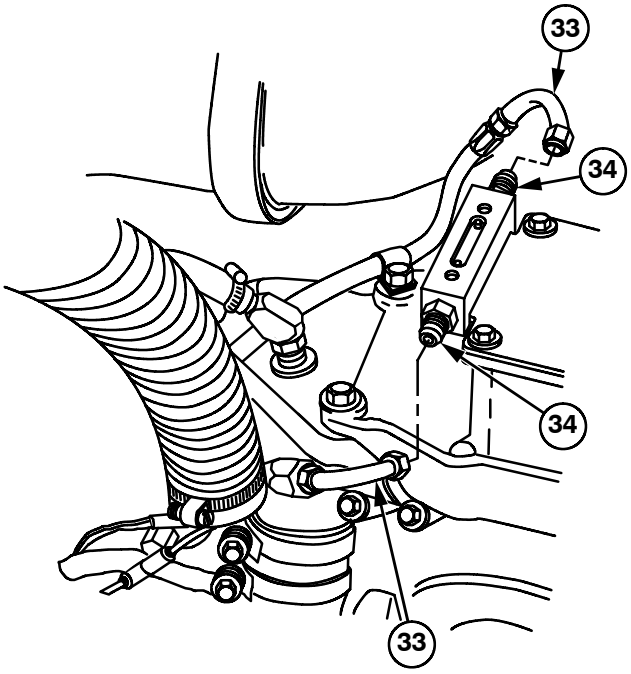
7-29.1. DDEC III/IV ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT)

(13) Install exhaust tube (28) on turbocharger (29) and exhaust manifold (30) with two new clamps (31).

(14) Install two new locknuts (32) on clamps (31).

(15) Install two fuel lines (33) on fittings (34).





e. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Install air intake hose (para 4-4).

(3) Clear inactive codes (Appx H).

7-31. TRANSMISSION TEMPERATURE SENSOR REPLACEMENT

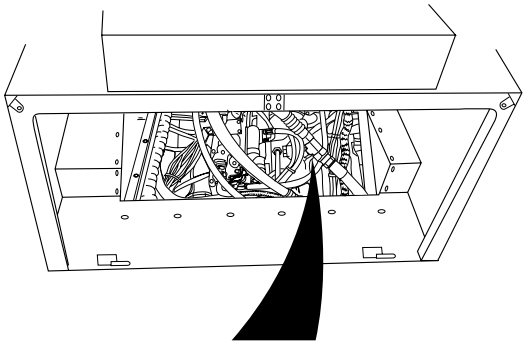
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

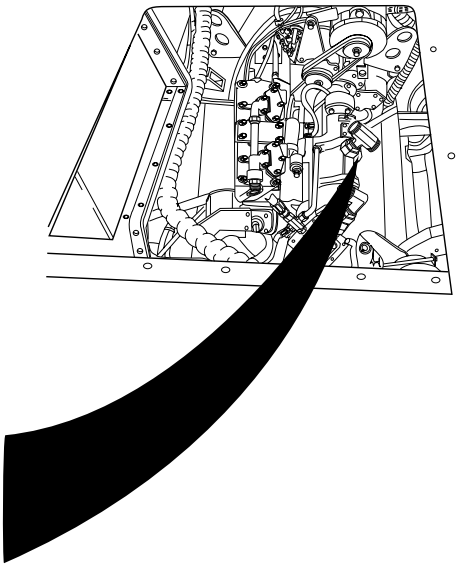
INITIAL SETUP

Equipment Conditions
Doghouse door panel removed (para 16-2).
Lower engine access panel removed (para 16-2).
Front engine access panel removed (para 16-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, (Appendix C)
Lockwasher (Item 99, Appendix G)

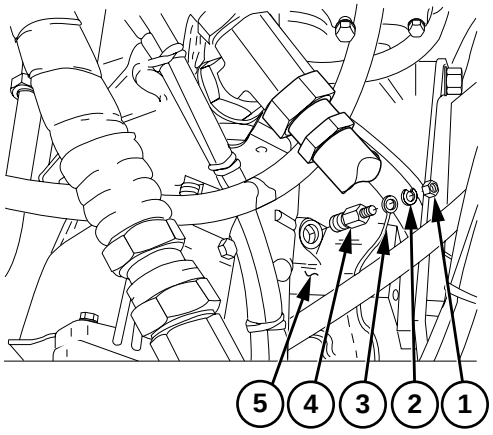




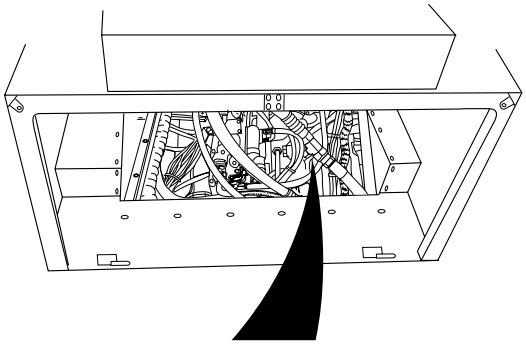
a. Removal

(1) Remove nut (1), lockwasher (2), and wire no. 1068 (3) from temperature sensor (4). Discard lockwasher.

(2) Remove temperature sensor (4) from transmission (5).



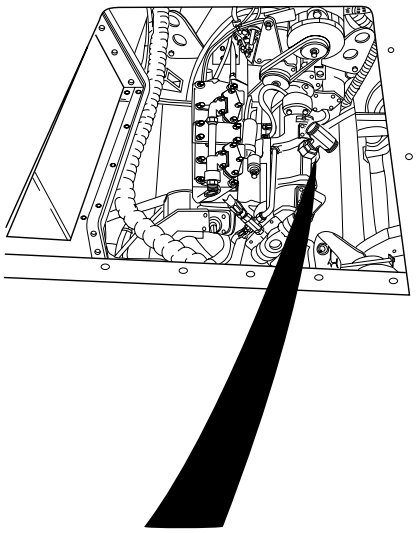
7-31. TRANSMISSION TEMPERATURE SENSOR REPLACEMENT (CONT)



b. Installation

WARNING

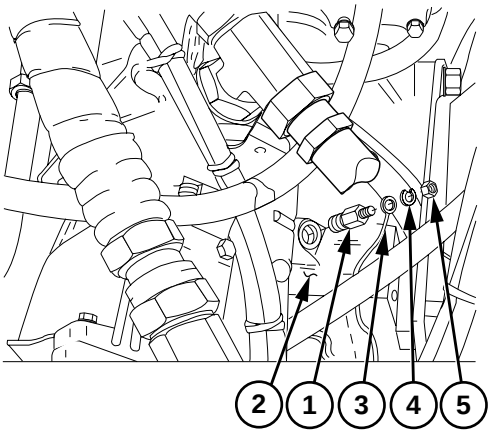
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



(1) Coat threads of temperature sensor (1) with pipe thread sealing compound.

(2) Install temperature sensor (1) on transmission (2).

(3) Install wire no. 1068 (3) on temperature sensor (1) with new lockwasher (4) and nut (5).



c. Follow-On Maintenance

(1) Install front engine access panel (para 16-2).

(2) Install lower engine access panel (para 16-2).

(3) Install doghouse door panel (para 16-2).

7-31.1. TRANSMISSION REVERSE PRESSURE SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shutoff (TM 9-2302-360-10)
Parking brake on (TM 9-2302-360-10)
Wheels chocked

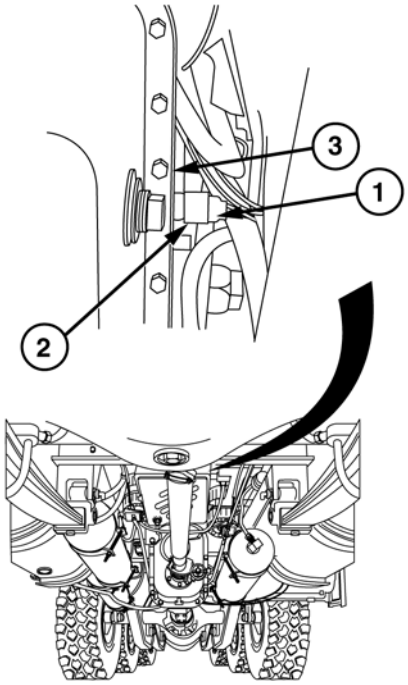
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, (Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

(1) Disconnect connector MC54 (1) form transmission reverse pressure switch (2).

(2) Remove transmission reverse pressure switch (2) from transmission (3).

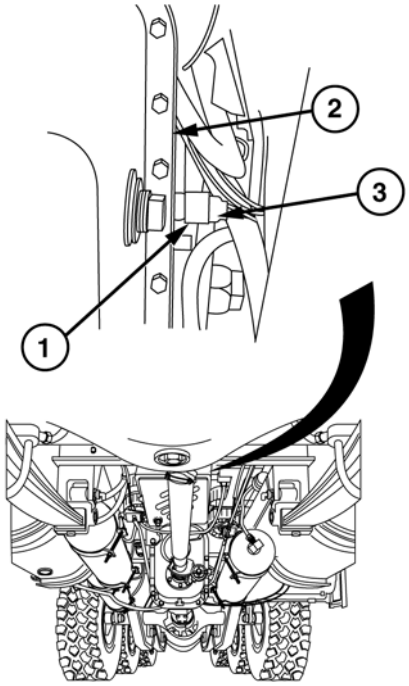


7-31.1 TRANSMISSION REVERSE PRESSURE SWITCH REPLACEMENT (CONT)

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



(1) Coat threads of transmission reverse pressure switch (1) with pipe thread sealing compound.

(2) Install transmission reverse pressure switch (1) on transmission (2).

(3) Install connector MC54 (3) on transmission reverse pressure switch (1).

c. Follow-On Maintenance.

(1) Start engine (TM 9-2302-360-10).

(2) Check for leaks (TM 9-2302-360-10).

(3) Shut off engine (TM 9-2302-360-10).

(4) Remove wheel chocks.

7-32. TRANSFER CASE TEMPERATURE SENSOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Transfer case drained (LO 9-2320-360-12).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

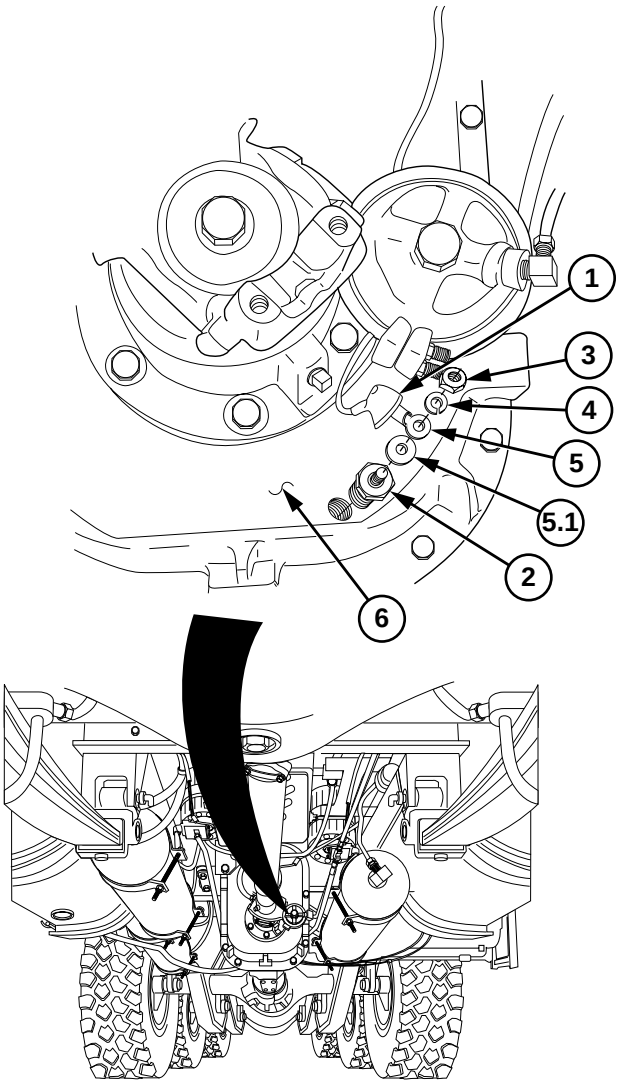
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Grease, Anticorrosion (Item 16, Appendix C)
Lockwasher (Item 99, Appendix G)

a. Removal

(1) Lift and slide boot (1) from temperature sensor (2).

(2) Remove nut (3), lockwasher (4), wire no. 1063 (5), and nylon washer (5.1) from temperature sensor (2). Discard lockwasher.

(3) Remove temperature sensor (2) from transfer case (6).

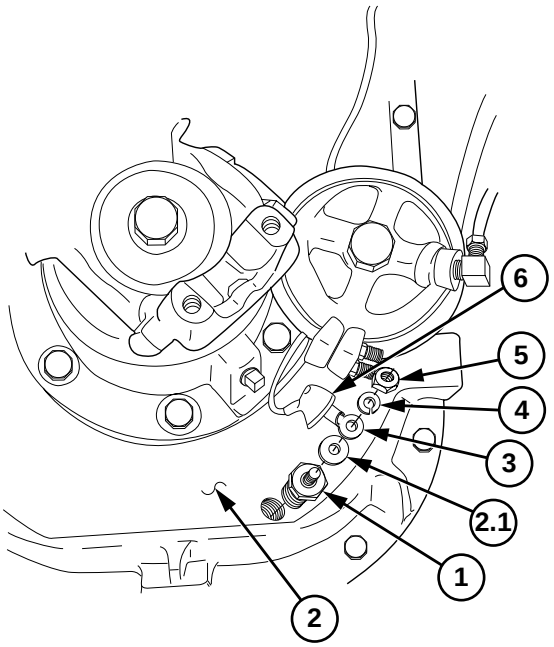


7-32. TRANSFER CASE TEMPERATURE SENSOR REPLACEMENT (CONT)

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



(1) Coat threads of temperature sensor (1) with pipe thread sealing compound.

(2) Install temperature sensor (1) on transfer case (2).

(3) Install nylon washer (2.1) and wire no. 1063 (3) on temperature sensor (1) with new lockwasher (4) and nut (5).

(3.1) Coat temperature sensor (1) with anticorrosion grease.

(4) Slide boot (6) on temperature sensor (1).

c. Follow-On Maintenance

(1) Fill transfer case (LO 9-2320-360-12).

(2) Remove wheel chocks.

7-33. DDEC ENGINE FUEL TEMPERATURE SENSOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Electronic control module removed (para 7-29).

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)

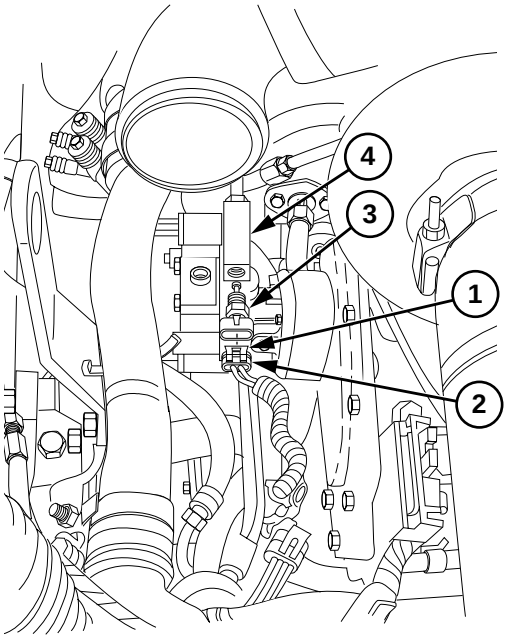
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

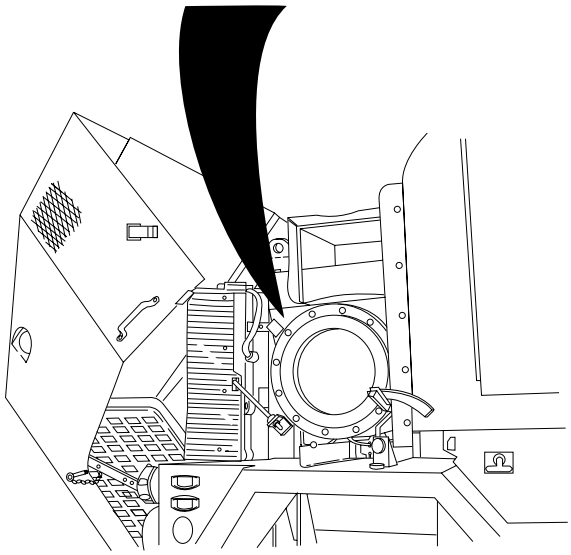
a. Removal

NOTE
Connector is removed by gently prying on tab and pulling on connector.

(1) Lift locking tab (1) and remove electrical connector (2) from fuel temperature sensor (3).

(2) Remove fuel temperature sensor (3) from fuel pump (4).



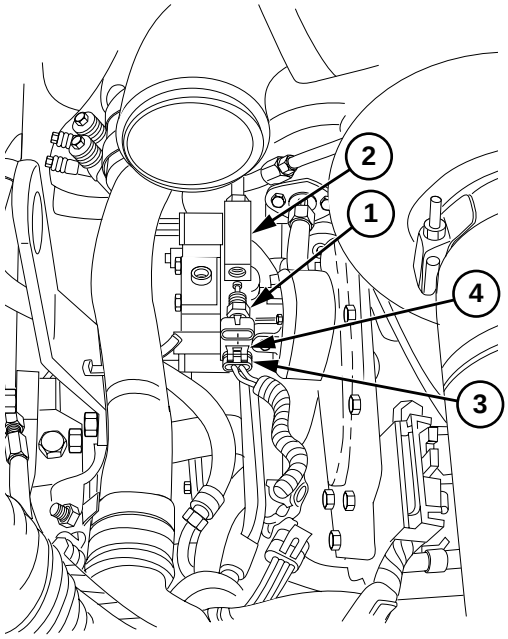


7-33. DDEC ENGINE FUEL TEMPERATURE SENSOR REPLACEMENT (CONT)

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



(1) Coat all but first two threads of fuel temperature sensor (1) with pipe thread sealing compound.

(2) Install fuel temperature sensor (1) on fuel pump (2).

(3) Install electrical connector (3) on fuel temperature sensor (1). Push connector until locking tab (4) snaps in place.

c. Follow-On Maintenance

(1) Install electronic control module (para 7-29).

(2) Start engine (TM 9-2320-360-10).

(3) Check for leaks.

(4) Shut off engine (TM 9-2320-360-10).

(5) Clear historical codes, mode 40 (para 2-13).

7-34. DDEC OIL TEMPERATURE SENSOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Engine hood opened (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

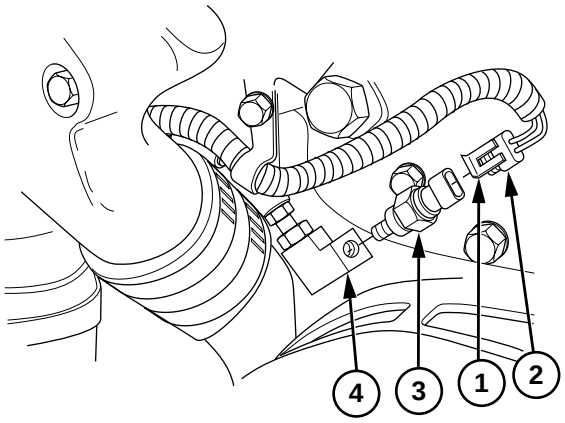
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)

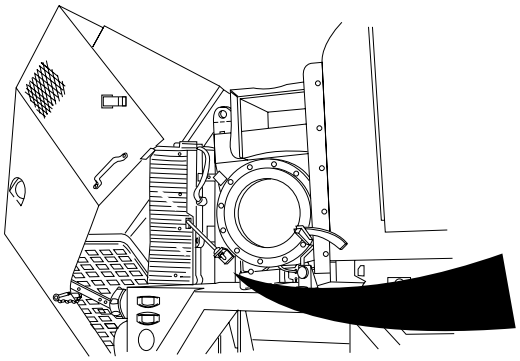
a. Removal

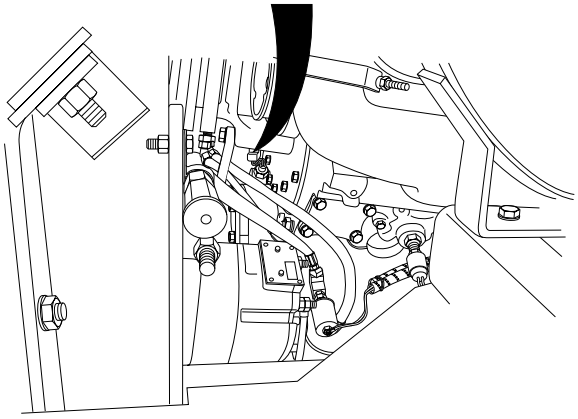
NOTE
Connector is removed by gently prying on tab and pulling on connector.

(1) Lift locking tab (1) and remove electrical connector (2) from oil temperature sensor (3).

(2) Remove oil temperature sensor (3) from elbow (4).







7-34. DDEC OIL TEMPERATURE SENSOR REPLACEMENT (CONT)

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

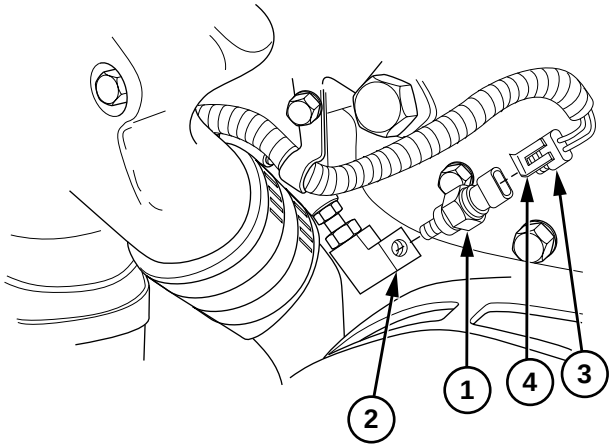
(1) Coat all but first two threads of oil temperature sensor (1) with pipe thread sealing compound.

NOTE

Tab on sensor must face away from engine block to install connector in step (3).

(2) Install oil temperature sensor (1) on elbow (2).

(3) Install electrical connector (3) on oil temperature sensor (1). Push connector until locking tab (4) snaps in place.



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check for leaks around sensor.

(3) Shut off engine (TM 9-2320-360-10).

(4) Close engine hood (TM 9-2320-360-10).

(5) Clear historical codes, mode 40 (para 2-13).

(6) Remove wheel chocks.

7-34.1. DDEC III/IV OIL PRESSURE SENSOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine hood opened (TM 9-2320-360-10).
Inner fender removed (left side only) (para 16-34).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)

a. Removal

(1) Place drain pan under oil pressure sensor (1).

NOTE
Connector is removed by gently prying on tab and pulling on connector.

(2) Remove connector (2) from oil pressure sensor (1).

(3) Remove oil pressure sensor (1) from tee (3).

(4) Remove fan clutch oil line (4) from elbow (5).

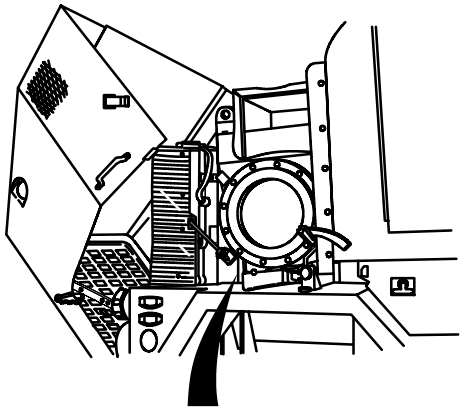
NOTE
- Elbow, tee, and fitting may come out as an assembly.
- Do steps (5) thru (7) if elbow, tee, or fitting are damaged or leaking.

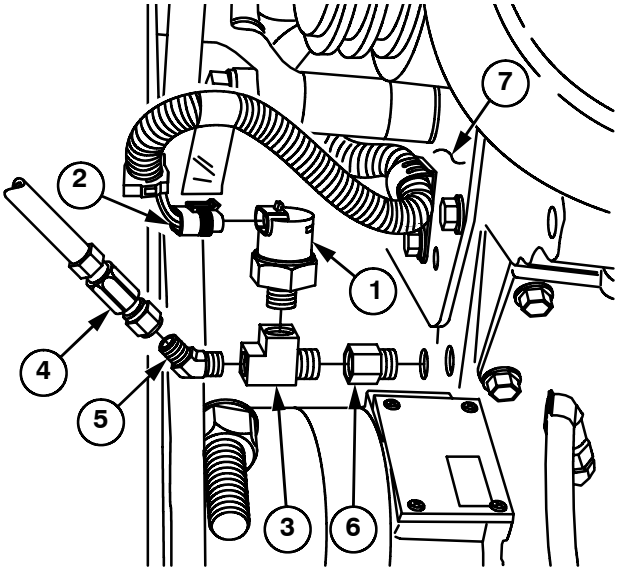
(5) Remove elbow (5) from tee (3).

NOTE
To aid in proper assembly, position of elbow should be marked on engine block before removal.

(6) Remove tee (3) from fitting (6).

(7) Remove fitting (6) from engine (7).





7-34.1. DDEC III/IV OIL PRESSURE SENSOR REPLACEMENT (CONT)

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat all but first two threads of oil pressure sensor (1) with pipe thread sealing compound.

NOTE

Do steps (2) thru (5) only if elbow and fitting were removed.

(2) Coat threads of fitting (2), tee (3), and elbow (4) with pipe thread sealing compound.

(3) Install fitting (2) in engine (5).

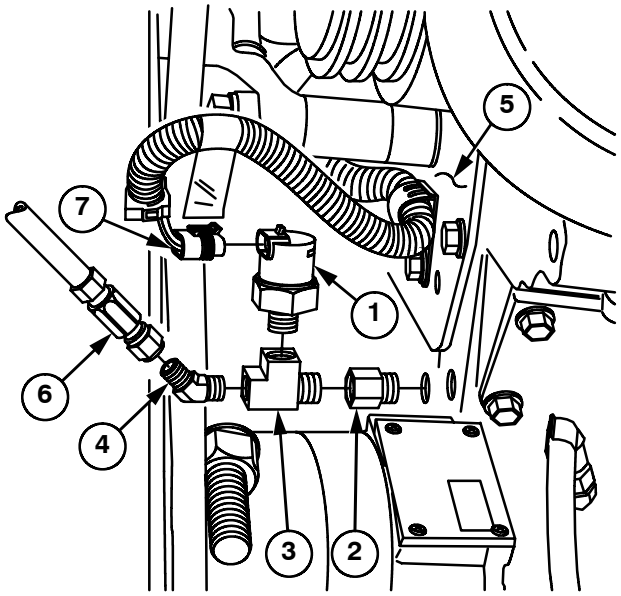
(4) Install tee (3) in fitting (2).

(5) Install elbow (4) on tee (3).

(6) Install oil pressure sensor (1) on tee (3).

(7) Install fan clutch oil line (6) on elbow (4).

(8) Install electrical connector (7) on oil pressure sensor (1).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check for leaks around sensor.

(3) Shut off engine (TM 9-2320-360-10).

(4) Close engine hood (TM 9-2320-360-10).

(5) Install inner fender (para 16-34).

(6) Clear inactive codes (Appx H).

7-35. DDEC II OIL PRESSURE SENSOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Inner fender removed (right side only) (para 16-34).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)

a. Removal

(1) Start engine (TM 9-2320-360-10).

(2) Turn steering wheel counterclockwise until front wheels are in full left position.

(3) Shut off engine (TM 9-2320-360-10).

(4) Deleted.

7-35. DDEC II OIL PRESSURE SENSOR REPLACEMENT (CONT)

NOTE

Connector is removed by gently prying on tab and pulling on connector.

(5) Remove connector (7) from oil pressure *sensor (8).

NOTE

To aid in proper assembly, position of elbow should be marked on engine block before removal.

(6) Remove oil pressure sensor (8) from elbow (9).

NOTE

- Elbow and fitting may come out as an assembly.
- Do steps (7) and (8) if elbow or fitting is damaged or leaking.

(7) Remove elbow (9) from fitting (10).

(8) Remove fitting (10) from engine (11).

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

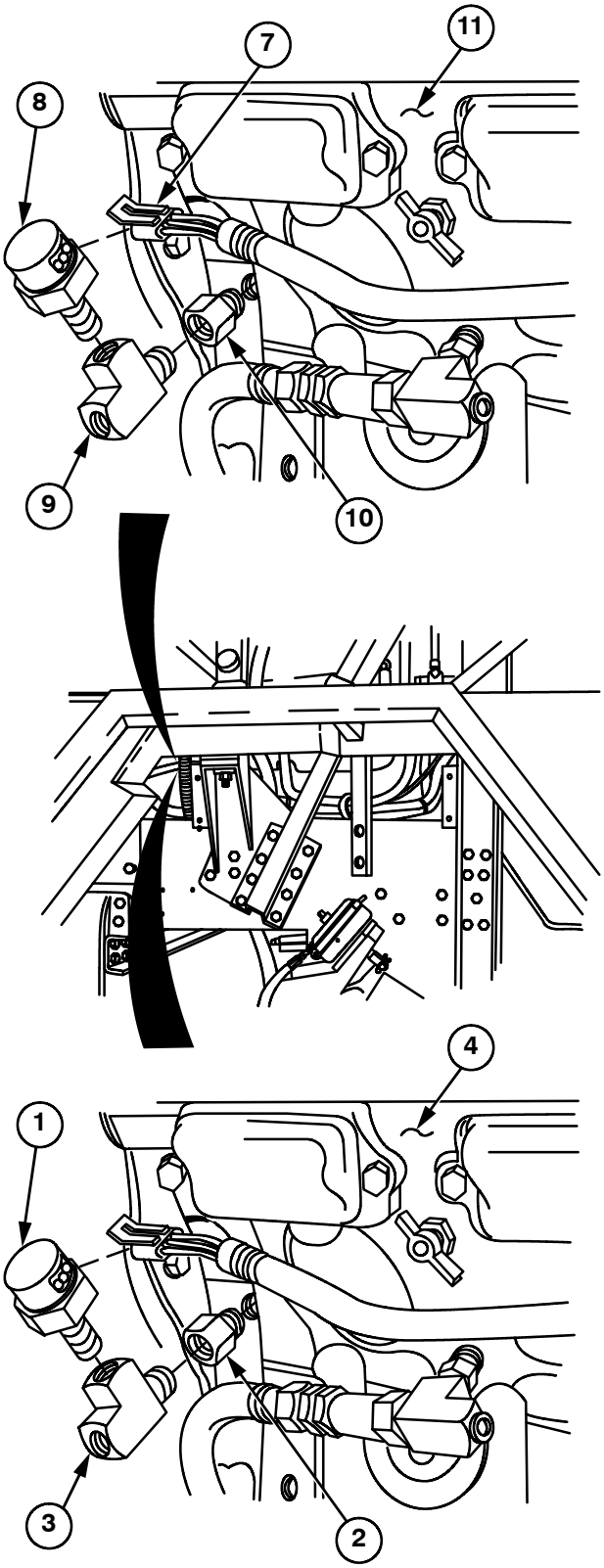
(1) Coat all but first two threads of oil pressure sensor (1) with pipe thread sealing compound.

NOTE

Do steps (2) thru (4) only if elbow and fitting were removed.

(2) Coat fitting (2) and elbow (3) with pipe thread sealing compound.

(3) Install fitting (2) in engine (4).



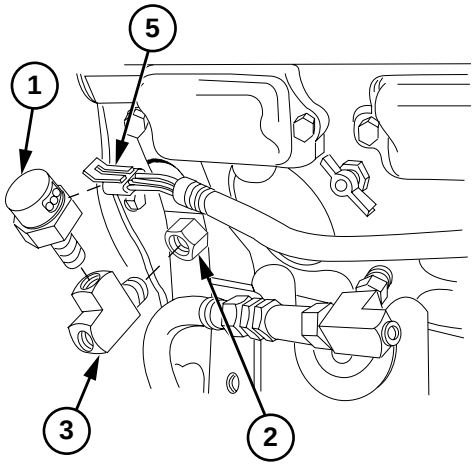
(4) Install elbow (3) in fitting (2).

NOTE

Elbow must be positioned correctly for sensor to be installed.

(5) Install oil pressure sensor (1) on elbow (3).

(6) Install electrical connector (5) on oil pressure sensor (1).



(7) Deleted.

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check for leaks around sensor.

(3) Shut off engine (TM 9-2320-360-10).

(4) Close engine hood (TM 9-2320-360-10).

(4.1) Install inner fender (para 16-34).

(5) Clear historical codes, mode 40 (para 2-13).

7-36. DDEC TURBO BOOST PRESSURE SENSOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Engine hood opened (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)

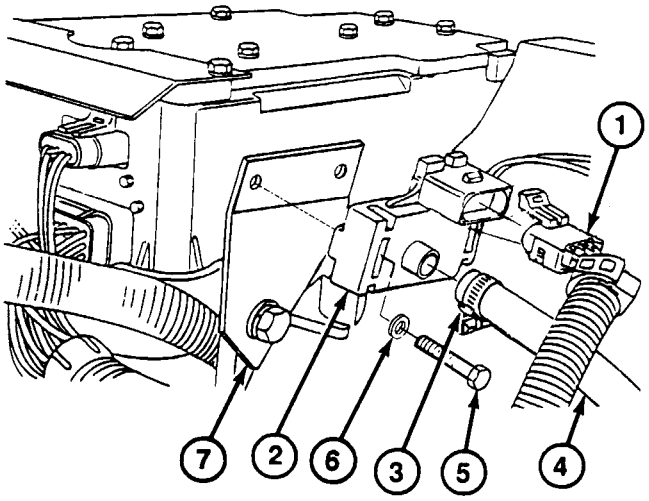
a. Removal

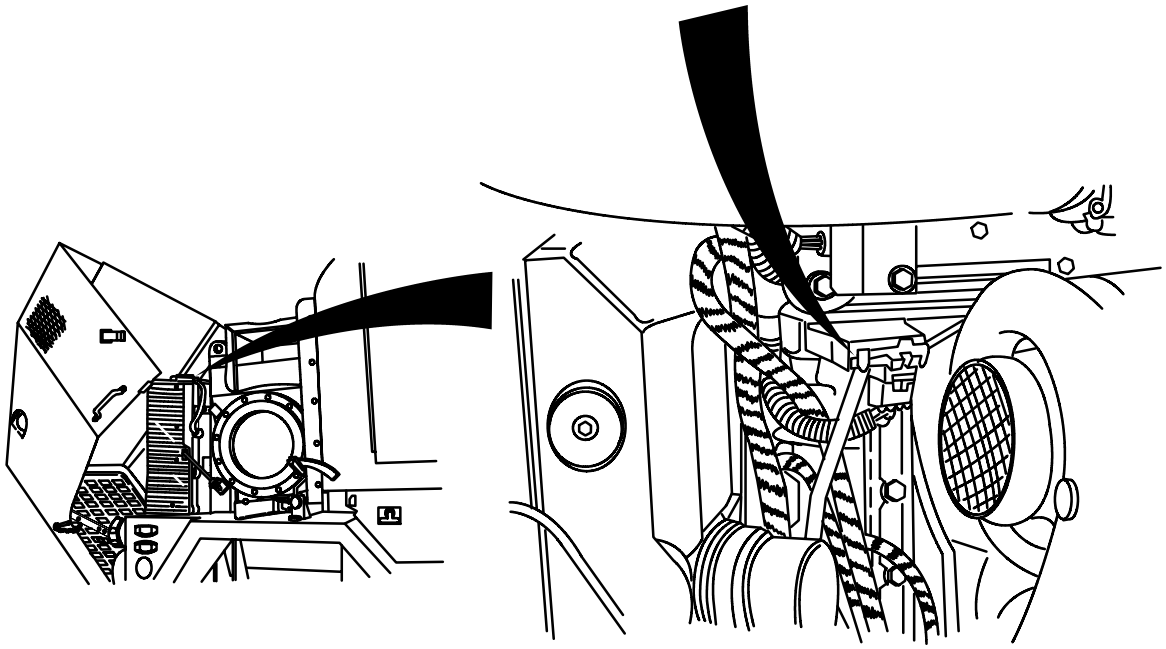
NOTE
Connector is removed by gently prying on tab and pulling on connector.

(1) Remove connector (1) from turbo boost pressure sensor (2).

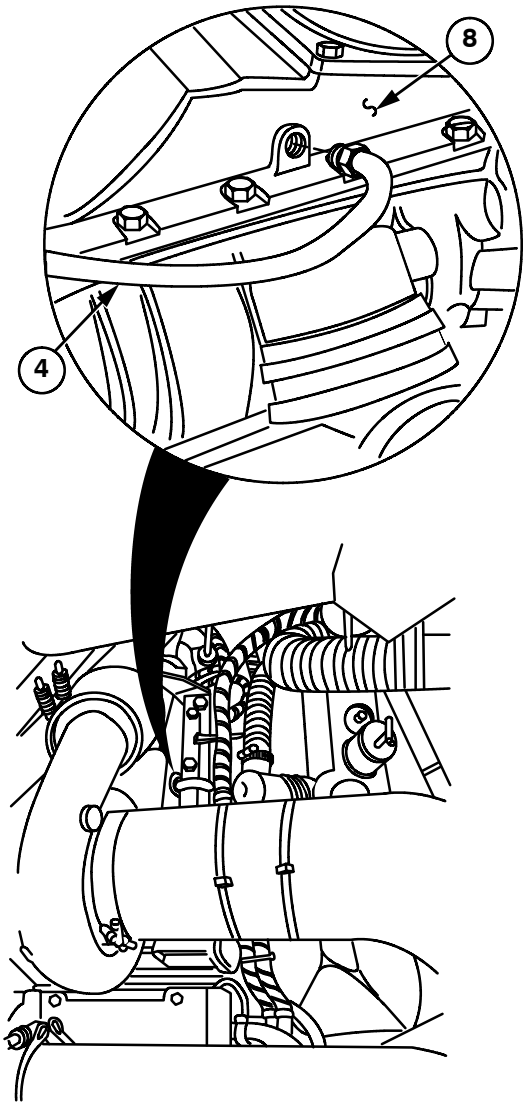
(2) Loosen clamp (3) on air pressure hose (4) and remove hose from sensor (2).

(3) Remove two screws (5), washers (6), and sensor (2) from bracket (7).





(4) Remove hose (4) from air inlet housing (8).



b. Installation

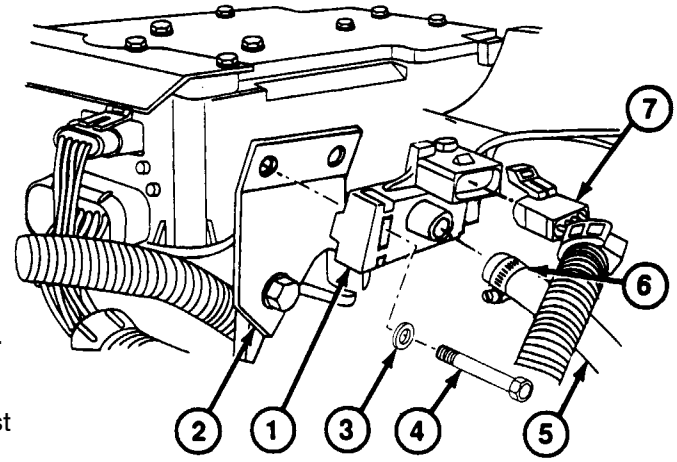
(1) Install turbo boost pressure sensor (1) on bracket (2) with two washers (3) and screws (4).

CAUTION

Do not allow kinks or sags in air pressure hose. Inaccurate pressure readings may result.

(2) Connect air pressure hose (5) to sensor (1). Secure with clamp (6).

(3) Install electrical connector (7) on turbo boost pressure sensor (1).



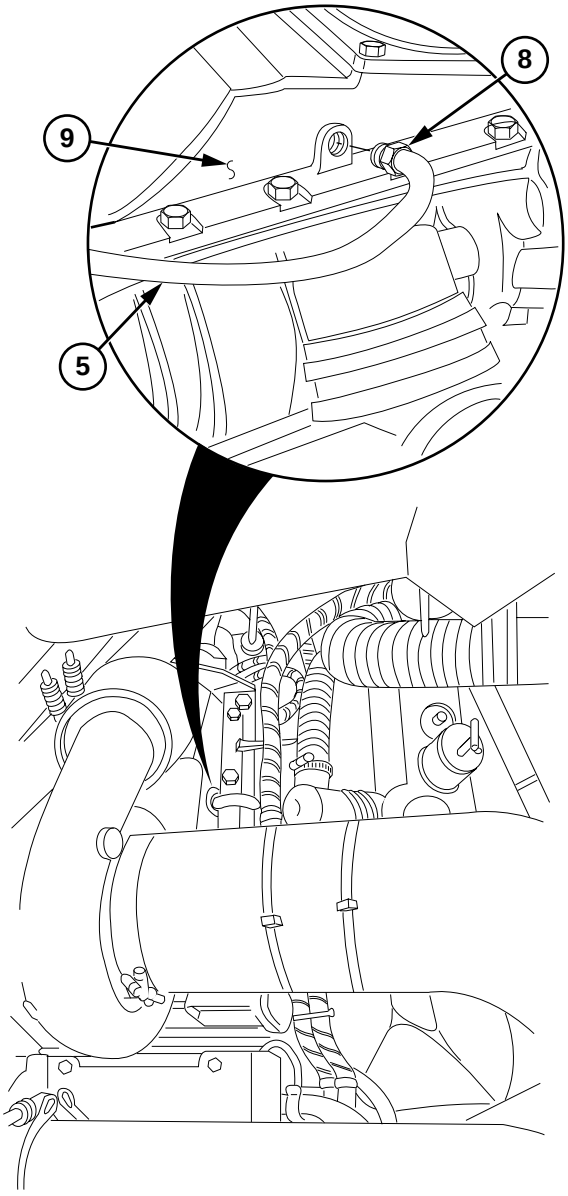
7-36. DDEC TURBO BOOST PRESSURE SENSOR REPLACEMENT (CONT)

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(4) Coat threads of fitting (8) on hose (5) with pipe thread sealing compound.

(5) Install fitting (8) on air inlet housing (9).



c. Follow-On Maintenance

(1) Close engine hood (TM 9-2320-360-10).

(2) Clear historical codes, mode 40 (para 2-13).

(3) Remove wheel chocks.

7-36.1. DDEC III/IV COOLANT TEMPERATURE SENSOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Cooling system drained (para 6-2)
Batteries disconnected (para 7-61)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

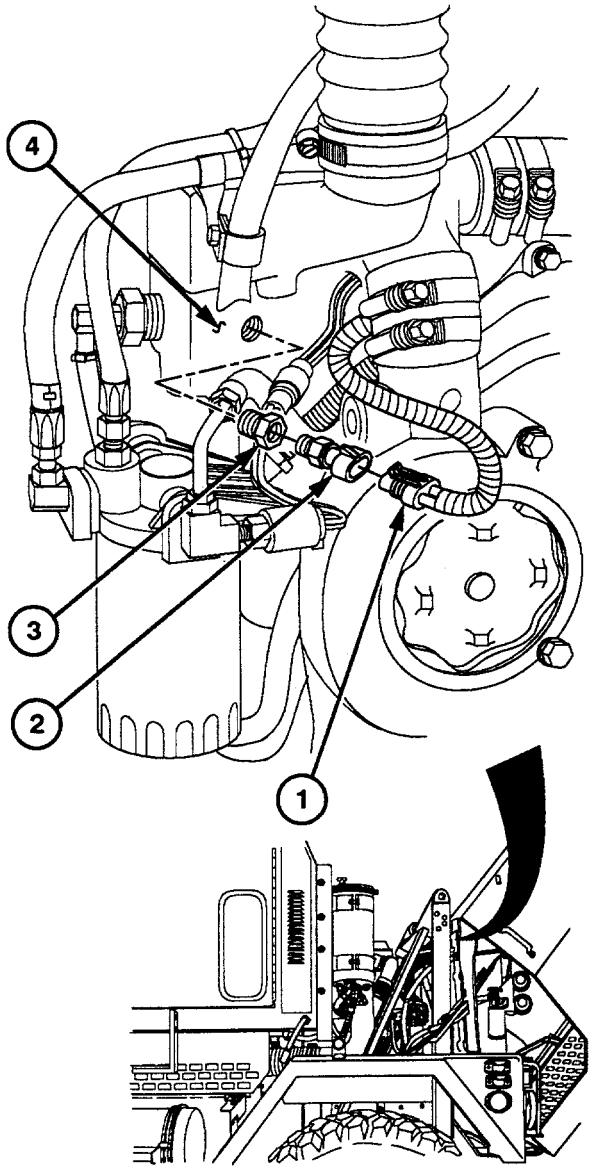
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix G)

a. Removal

(1) Disconnect coolant temperature harness (1) from coolant temperature sensor (2).

(2) Remove coolant temperature sensor (2) from fitting (3).

(3) Remove fitting (3) from right thermostat housing (4).



7-36.1. DDEC III/IV COOLANT TEMPERATURE SENSOR REPLACEMENT (CONT)

b. Installation

WARNING

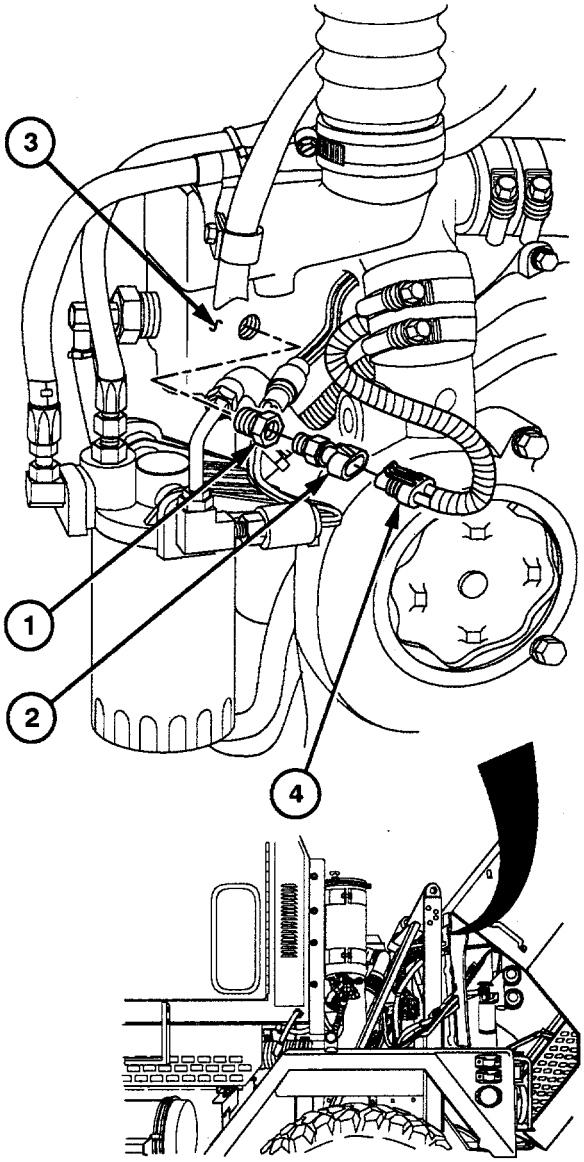
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of fitting (1) and coolant temperature sensor (2) with pipe thread sealing compound.

(2) Install fitting (1) in right thermostat housing (3).

(3) Install coolant temperature sensor (2) in fitting (1).

(4) Install coolant temperature harness (4) into coolant temperature sensor (2).



c. Follow-On Maintenance

(1) Fill cooling system (para 6-2).

(2) Connect batteries (para 7-61).

7-37. MAGNETIC SWITCH REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)

NOTE

- This procedure is performed to replace a faulty magnetic switch. Perform proper trouble-shooting procedures to identify switch needing replacement.
- Tag and mark wires before removal.

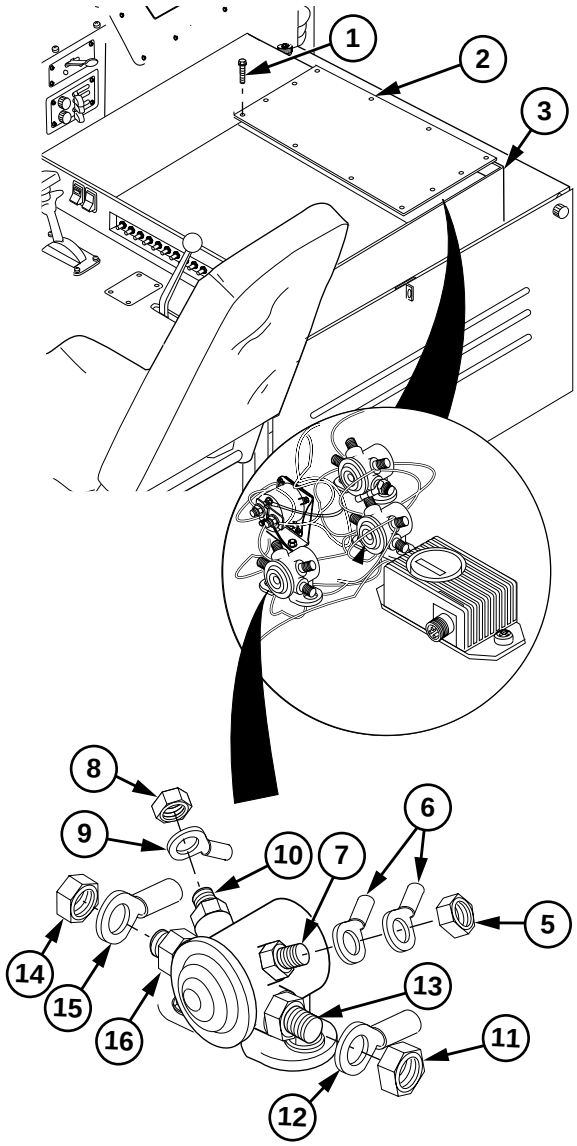
a. R21 Relay Removal

(1) Remove 10 screws (1) and cover (2) from electronic control box assembly (3).

NOTE

Locations of plastic cable ties should be marked before removal.

(2) Remove plastic cable ties (4) securing wiring.



(3) Remove nut (5) and two wires no. 1435 (6) from terminal (7).

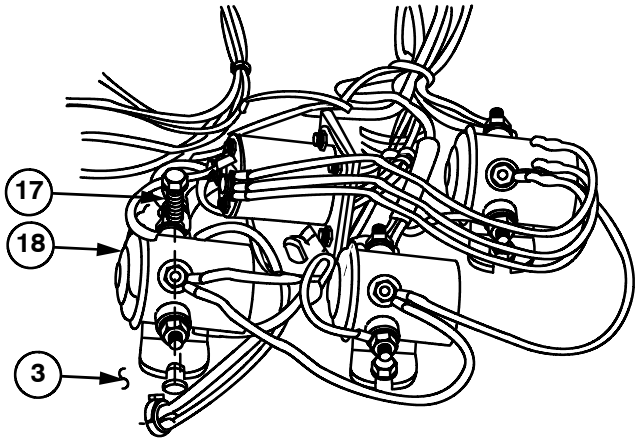
(4) Remove nut (8) and wire no. 1055 (9) from terminal (10).

(5) Remove nut (11) and wire no. 1045 (12) from terminal (13).

(6) Remove nut (14) and wire no. 1284 (15) from terminal (16).

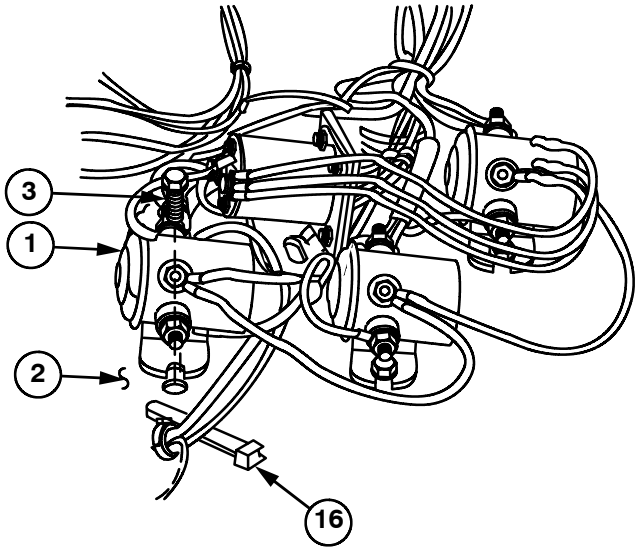
7-37. MAGNETIC SWITCH REPLACEMENT (CONT)

(7) Remove two screws (17) and switch (18) from electronic control box assembly (3).



b. R21 Relay Installation

(1) Install magnetic switch (1) in electronic control box assembly (2) with two screws (3).

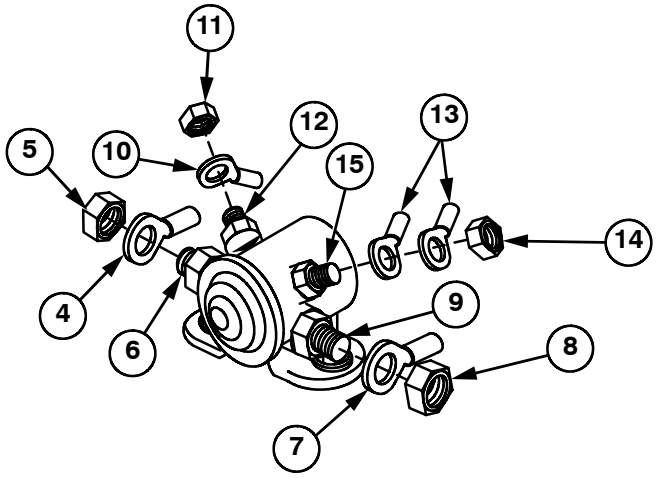


(2) Install wire no. 1284 (4) and nut (5) on terminal (6).

(3) Install wire no. 1045 (7) and nut (8) on terminal (9).

(4) Install wire no. 1055 (10) and nut (11) on terminal (12).

(5) Install two wires no. 1435 (13) and nut (14) on terminal (15).

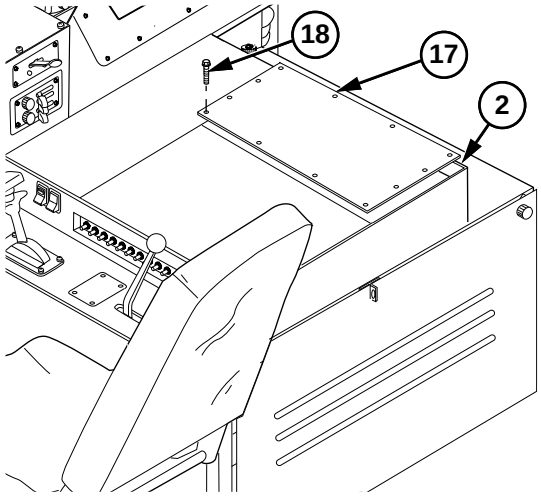


NOTE

Plastic cable ties should be positioned in locations marked during removal.

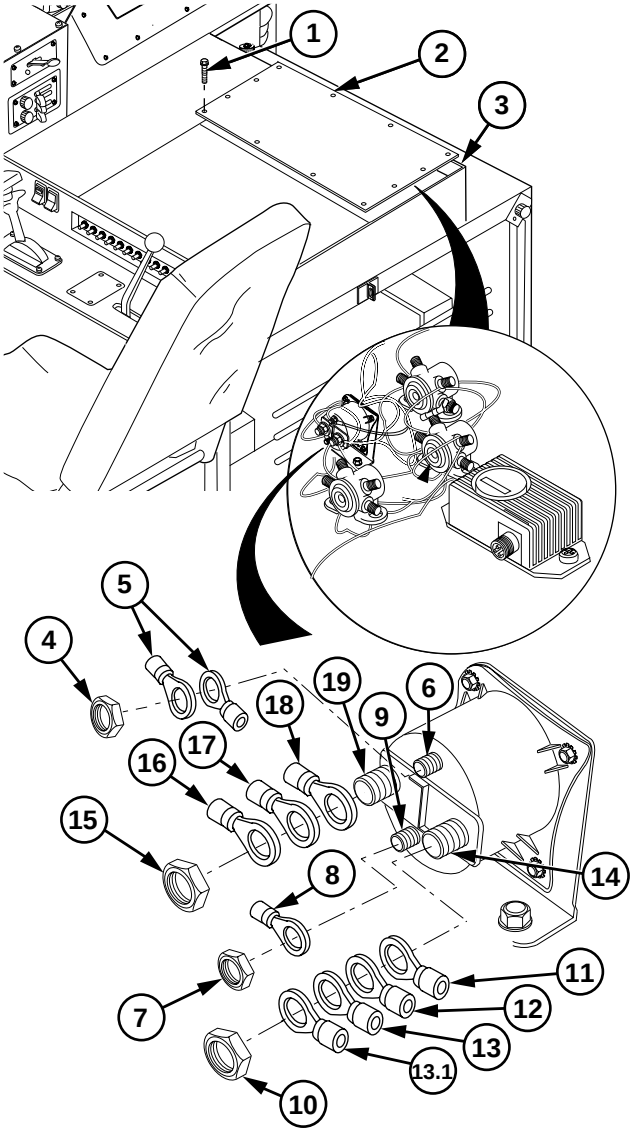
(6) Secure wiring with plastic cable ties (16).

(7) Install cover (17) on electronic control box assembly (2) with 10 screws (18).



c. R22 Relay Removal

(1) Remove 10 screws (1) and cover (2) from electronic control box assembly (3).



(2) Remove nut (4) and two wires no. 1435 (5) from terminal (6).

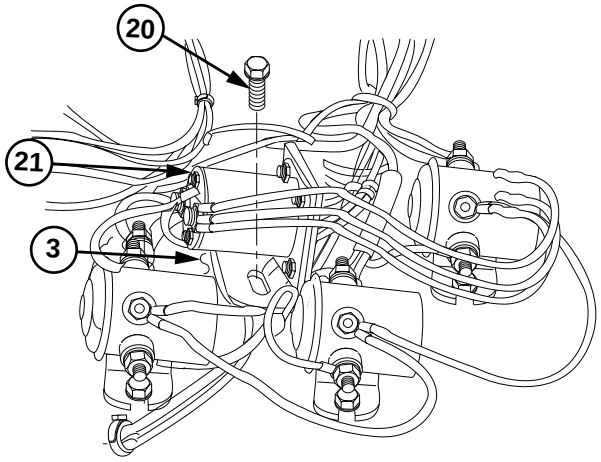
(3) Remove nut (7) and wire no. 1640 (8) from terminal (9).

(4) Remove nut (10), wire no. 1290 (11), wire no. 1702 (12), and wire no. 1072 (13) and wire no. 1488 (13.1) from terminal (14).

(5) Remove nut (15), wire no. 1280 (16), wire no. 1281 (17), and wire no. 1284 (18) from terminal (19).

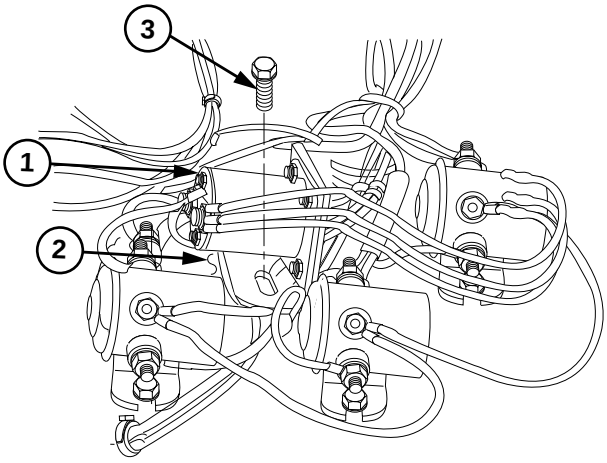
7-37. MAGNETIC SWITCH REPLACEMENT (CONT)

(6) Remove two screws (20) and switch (21) from electronic control box assembly (3).



d. R22 Relay Installation

(1) Install magnetic switch (1) in electronic control box assembly (2) with two screws (3).

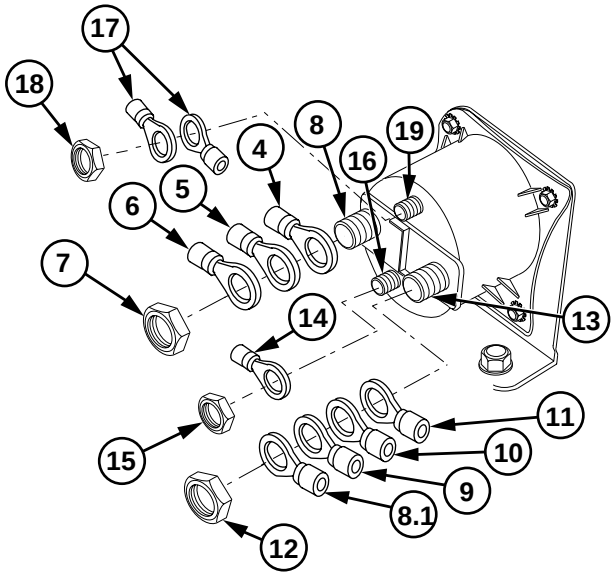


(2) Install wire no. 1284 (4), wire no. 1280 (5), wire no. 1281 (6), and nut (7) on terminal (8).

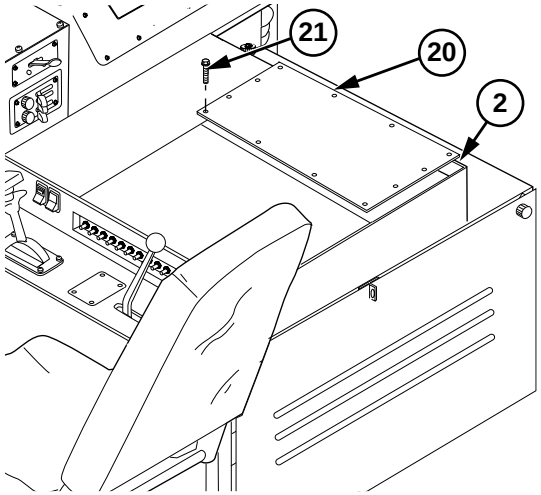
(3) Install wire no. 1488 (8.1), wire no. 1072 (9), wire no. 1702 (10), wire no. 1290 (11), and nut (12) on terminal (13).

(4) Install wire no. 1640 (14) and nut (15) on terminal (16).

(5) Install two wires no. 1435 (17) and nut (18) on terminal (19).

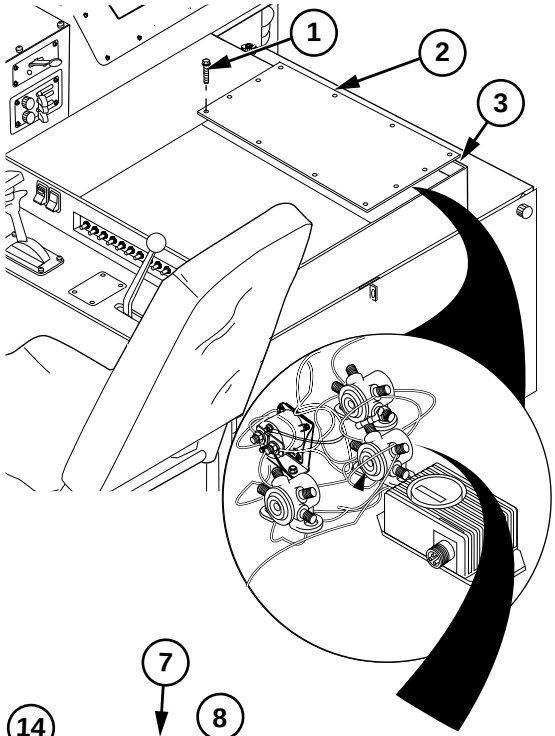


(6) Install cover (20) on electronic control box assembly (2) with 10 screws (21).



e. R31 Relay Removal

(1) Remove 10 screws (1) and cover (2) from electronic control box assembly (3).

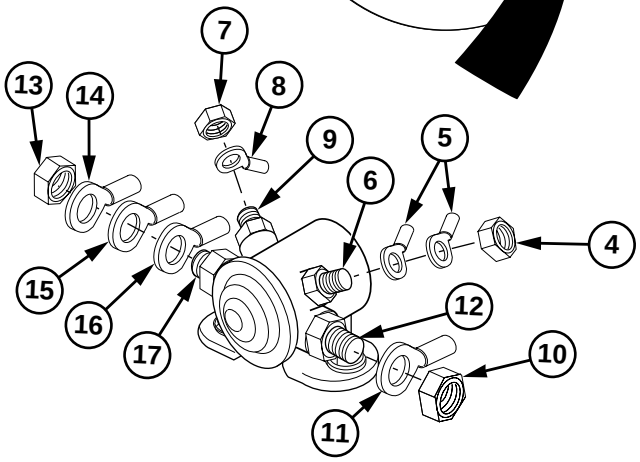


(2) Remove nut (4) and two wires no. 1435 (5) from terminal (6).

(3) Remove nut (7) and wire no. 1072 (8) from terminal (9).

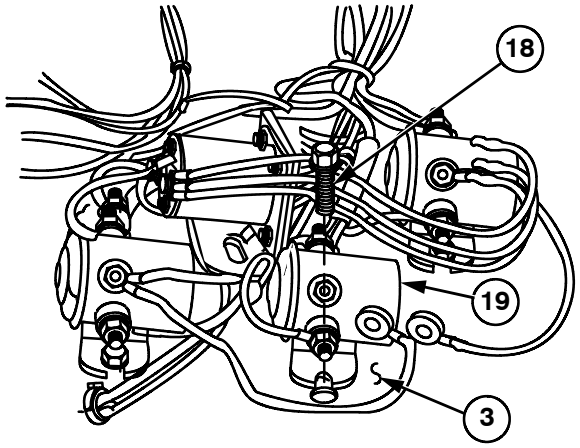
(4) Remove nut (10) and wire no. 1075A (11) from terminal (12).

(5) Remove nut (13), wire no. 1075 (14), wire no. 1402 (15), and wire no. 1430 (16) from terminal (17).



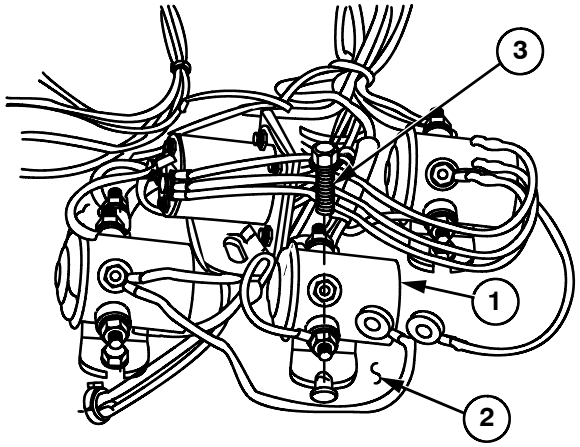
7-37. MAGNETIC SWITCH REPLACEMENT (CONT)

(6) Remove two screws (18) and switch (19) from electronic control box assembly (3).



f. R31 Relay Installation

(1) Install magnetic switch (1) in electronic control box assembly (2) with two screws (3).

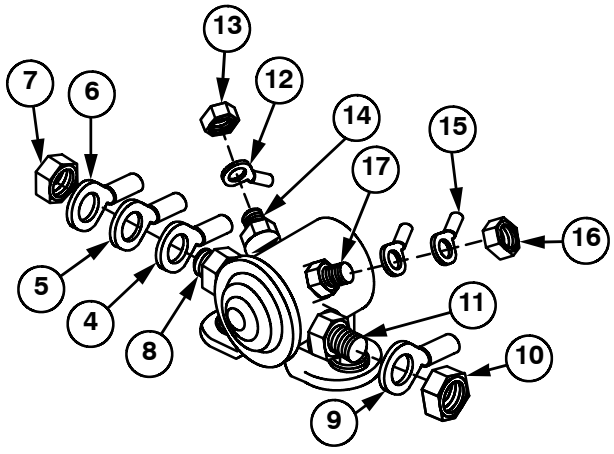


(2) Install wire no. 1430 (4), wire no. 1402 (5), wire no. 1075 (6), and nut (7) on terminal (8).

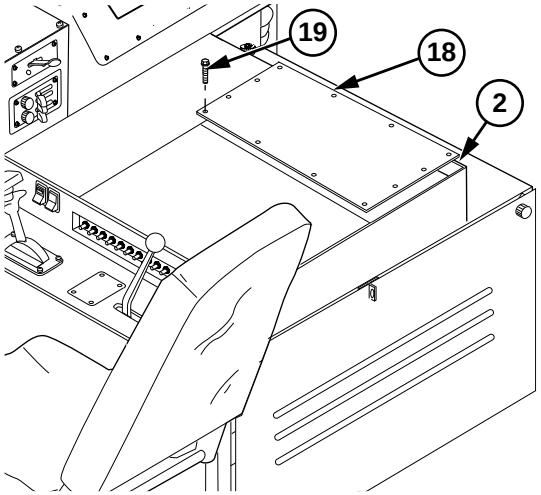
(3) Install wire no. 1075A (9) and nut (10) on terminal (11).

(4) Install wire no. 1072 (12) and nut (13) on terminal (14).

(5) Install two wires no. 1435 (15) and nut (16) on terminal (17).

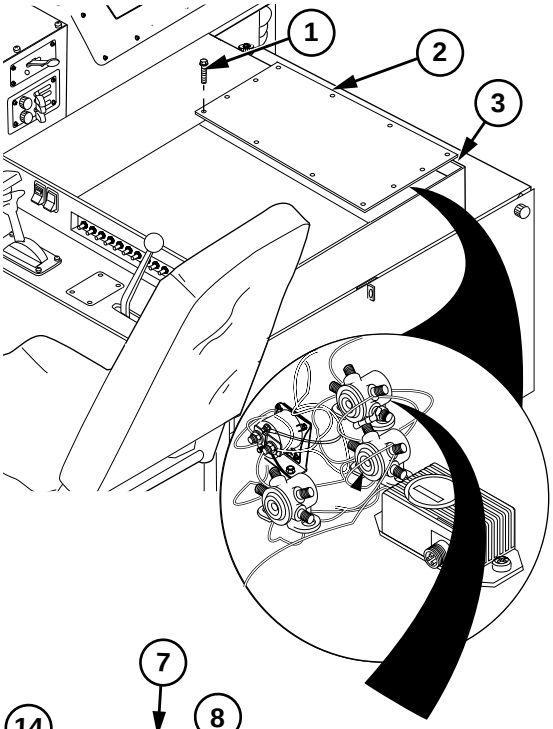


(6) Install cover (18) on electronic control box assembly (2) with 10 screws (19).



g. R13 Relay Removal

(1) Remove 10 screws (1) and cover (2) from electronic control box assembly (3).

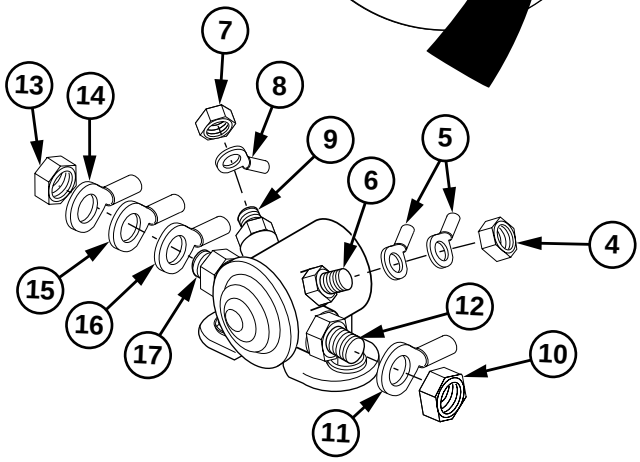


(2) Remove nut (4) and two wires no. 1435 (5) from terminal (6).

(3) Remove nut (7) and wire no. 1189 (8) from terminal (9).

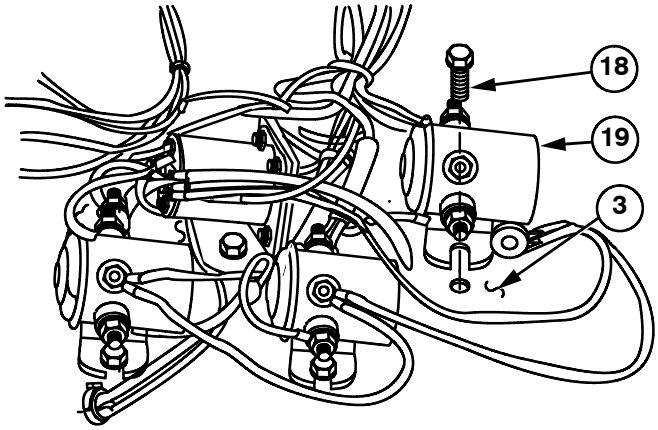
(4) Remove nut (10) and wire no. 1175 (11) from terminal (12).

(5) Remove nut (13), wire no. 1109 (14), wire no. 1107 (15), and wire no. 1075 (16) from terminal (17).



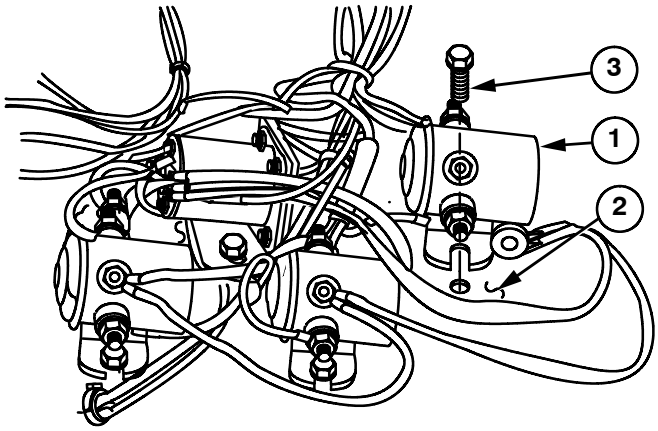
7-37. MAGNETIC SWITCH REPLACEMENT (CONT)

(6) Remove two screws (18) and magnetic switch (19) from electronic control box assembly (3).



h. R13 Relay Installation

(1) Install magnetic switch (1) in electronic control box assembly (2) with two screws (3).

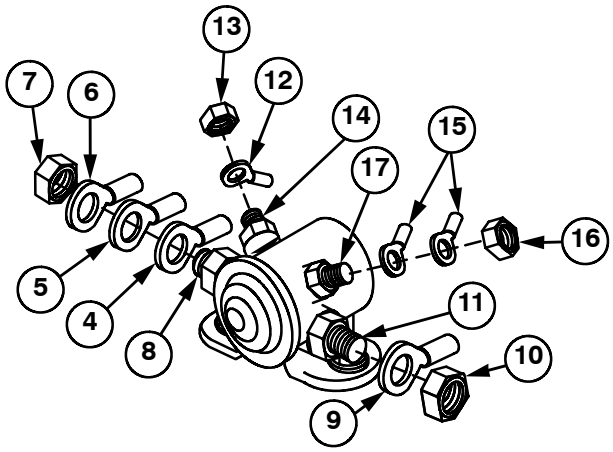


(2) Install wire no. 1075 (4), wire no. 1107 (5), wire no. 1109 (6), and nut (7) on terminal (8).

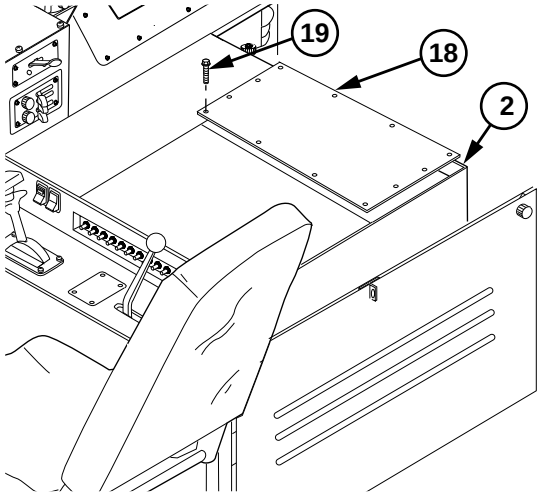
(3) Install wire no. 1175 (9) and nut (10) on terminal (11).

(4) Install wire no. 1189 (12) and nut (13) on terminal (14).

(5) Install two wires no. 1435 (15) and nut (16) on terminal (17).



(6) Install cover (18) on electronic control box assembly (2) with 10 screws (19).



i. Follow-On Maintenance

Connect batteries (para 7-61).

7-38. SIGNAL FLASHER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

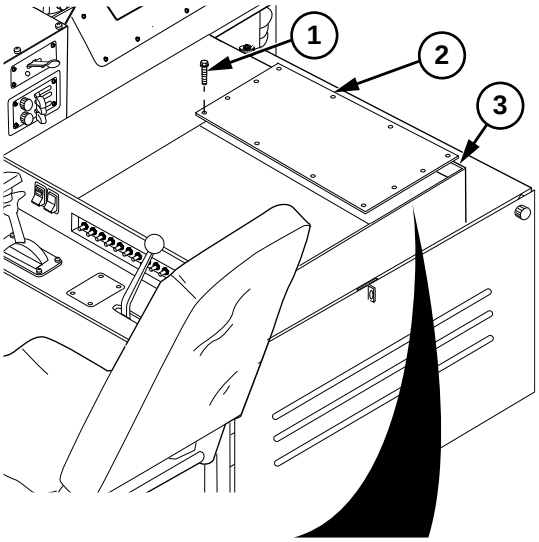
INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

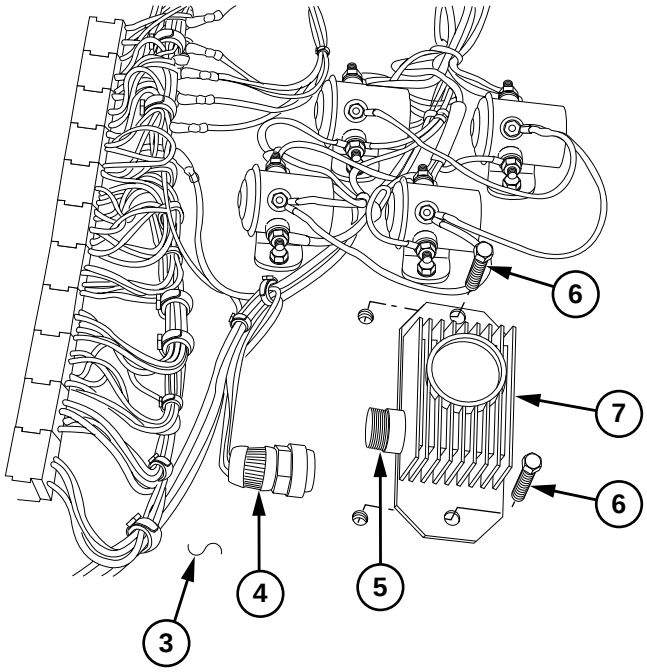
a. Removal

(1) Remove 10 screws (1) and cover (2) from electronic control box assembly (3).



(2) Disconnect wire harness (4) from electrical plug (5).

(3) Remove two screws (6) and flasher (7) from electronic control box assembly (3).



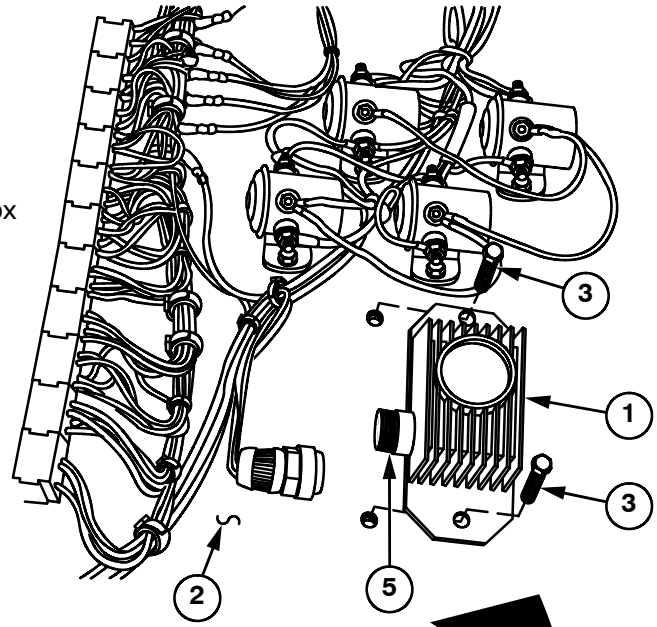
b. Installation

(1) Install flasher (1) in electronic control box assembly (2) with two screws (3).

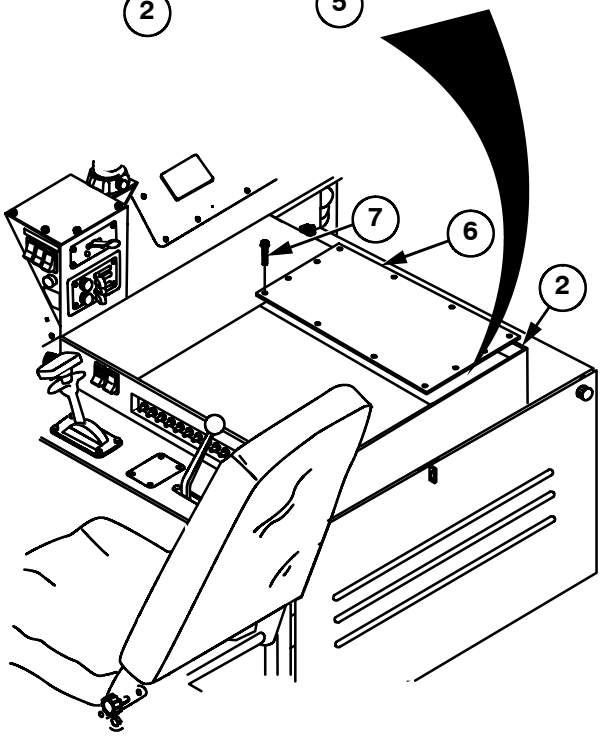
NOTE

Slot in wire harness must align with tab on flasher.

(2) Connect wire harness (4) to electrical plug (5).



(3) Install cover (6) on electronic control box assembly (2) with 10 screws (7).



c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(3) Check flasher for proper operation (TM 9-2320-360-10).

(4) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

7-39. HEADLIGHT ADJUSTMENT/REPAIR

This task covers:
a. Removal
b. Installation
c. Adjustment
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
CTI controller set in highway mode (TM 9-2320-360-10).
Air system pressurized to 120-125psi (827-862 kPa).
HET Tractor parked on hard, level surface.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Tape, Measuring (Item 48, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Locknuts (4) (Item 58, Appendix G)
Lockwashers (6) (Item 100, Appendix G)
Lockwashers (4) (Item 104, Appendix G)

NOTE
Both headlights are replaced the same way. Left side is shown.

a. Removal

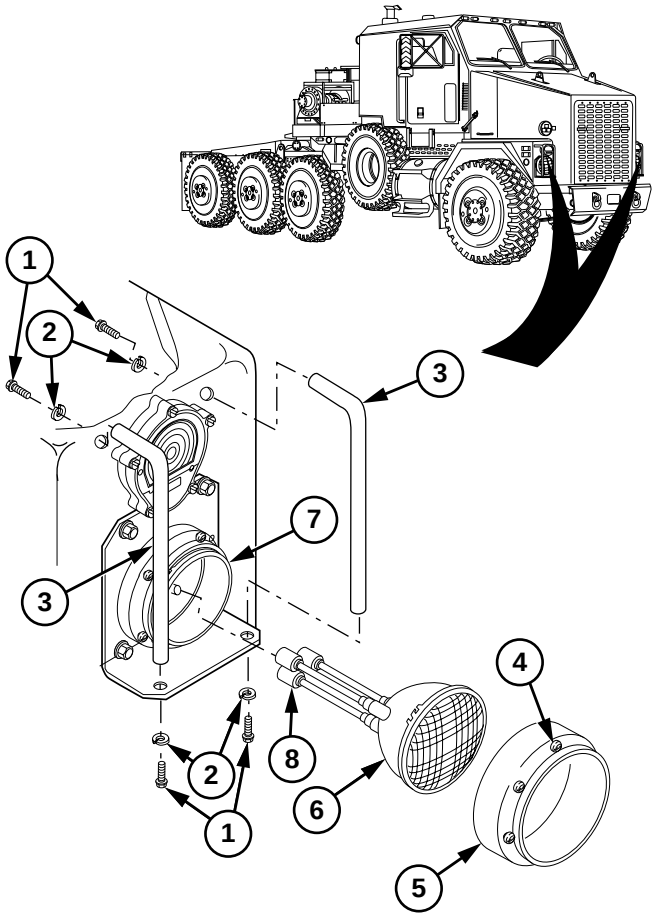
NOTE
To remove lamp only, do steps (1) thru (3).

(1) Remove four screws (1), lockwashers (2), and two headlight guards (3). Discard lockwashers.

(2) Loosen three captive screws (4) and remove retaining ring (5) and lamp (6) from lens retainer (7).

NOTE
Tag and mark wires before disconnecting. Each lamp wire has a numbered metal tag attached.

(3) Disconnect three wire connectors (8) from lens retainer (7).



(4) Disconnect spring (9) from lens retainer (7).

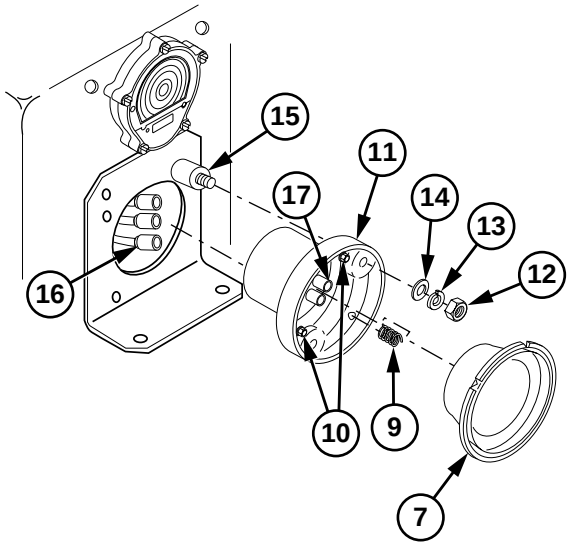
(5) Slide lens retainer (7) off adjusting screws (10) to remove from housing (11).

(6) Remove three nuts (12), lockwashers (13), washers (14), and housing (11) from mounts (15). Discard lockwashers.

NOTE

Tag and mark wires before disconnecting.

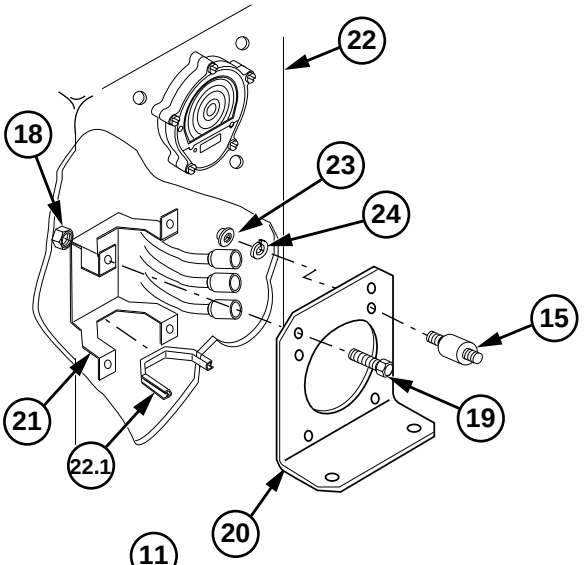
(7) Disconnect three wire connectors (16) from feedthrough connectors (17) in housing (11).



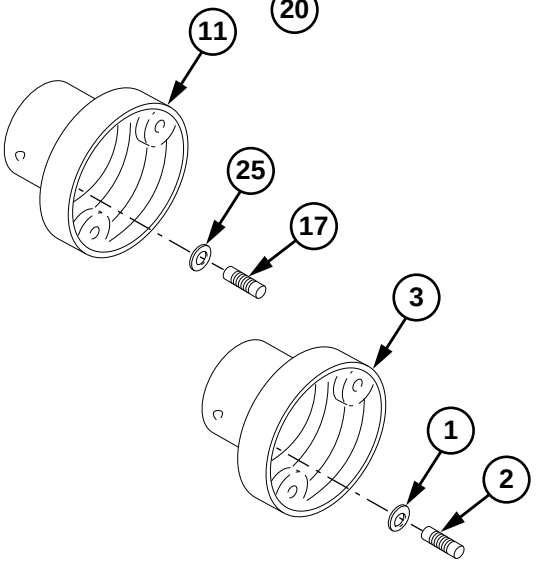
(8) Remove four locknuts (18), screws (19), mount (20), and shield (21) from fender (22). Discard locknuts.

(9) Remove quick-edge molding (22.1) from shield (21).

(10) Remove three nuts (23), lockwashers (24), and mounts (15) from mount (20). Discard lockwashers.



(11) Remove three feedthrough connectors (17) and grommets (25) from housing (11).



b. Installation

NOTE

- To install lamp only, do steps (8) thru (10).
- Grommets are installed on back of housing with larger side facing out.

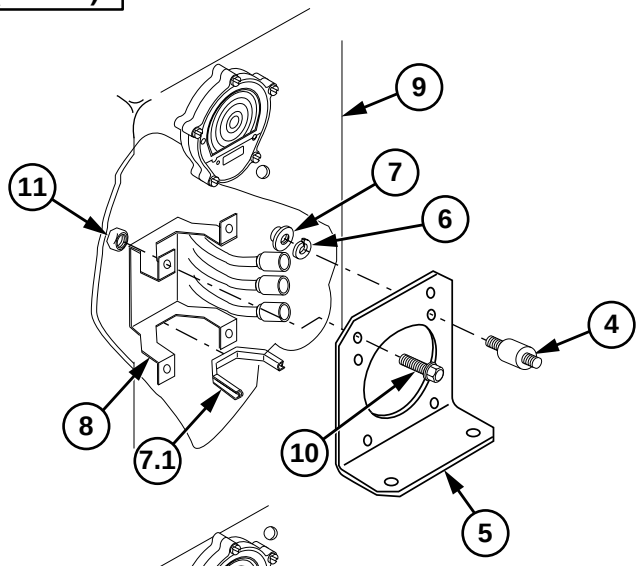
(1) Install three grommets (1) and feedthrough connectors (2) in housing (3).

7-39. HEADLIGHT ADJUSTMENT/REPAIR (CONT)

(2) Install three mounts (4) on mount (5) with new lockwashers (6) and nuts (7).

(3) Install quick-edge molding (7.1) on shield (8).

(4) Install shield (8) and mount (5) on fender (9) with four screws (10) and new locknuts (11).



NOTE

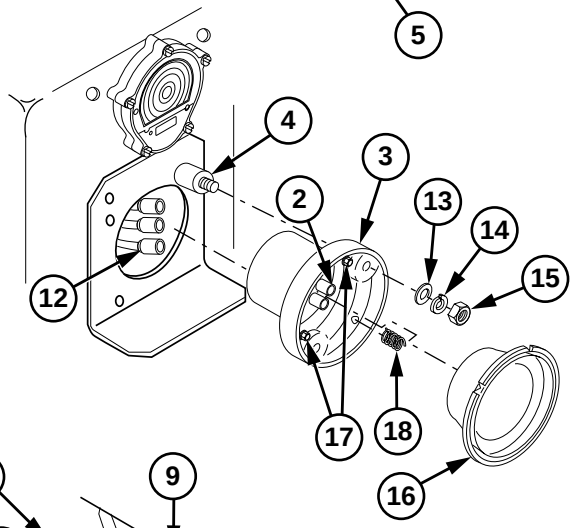
Wire is retained in connector by clip.

(5) Connect three wire connectors (12) to feedthrough connectors (2).

(6) Install housing (3) on three mounts (4) with three washers (13), new lockwashers (14), and nuts (15).

(7) Position lens retainer (16) on adjusting screws (17) in housing (3).

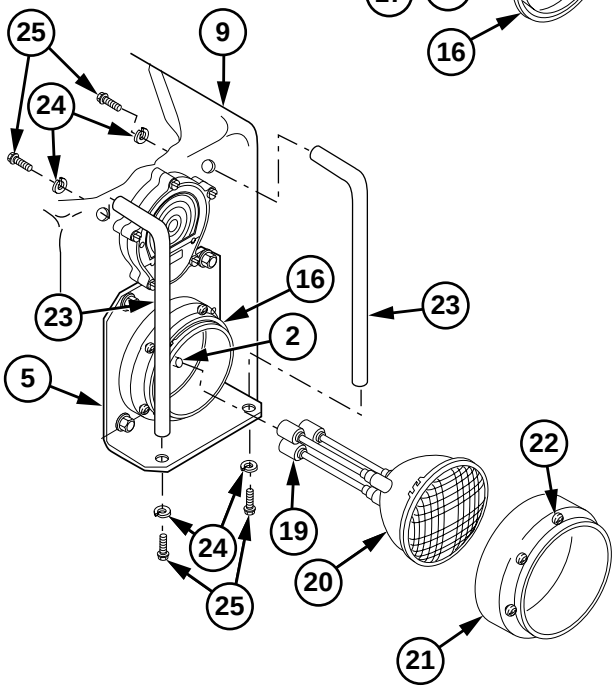
(8) Connect spring (18) to lens retainer (16).



(9) Connect three wire connectors (19) to feedthrough connectors (2).

(10) Install lamp (20) and retaining ring (21) on lens retainer (16). Tighten three captive screws (22).

(11) Install two headlight guards (23) on mount (5) and fender (9) with four new lockwashers (24) and screws (25).



c. Adjustment

(1) Park HET Tractor so both headlights are 25 ft. (7.6 m) from flat vertical surface (1) like a wall.

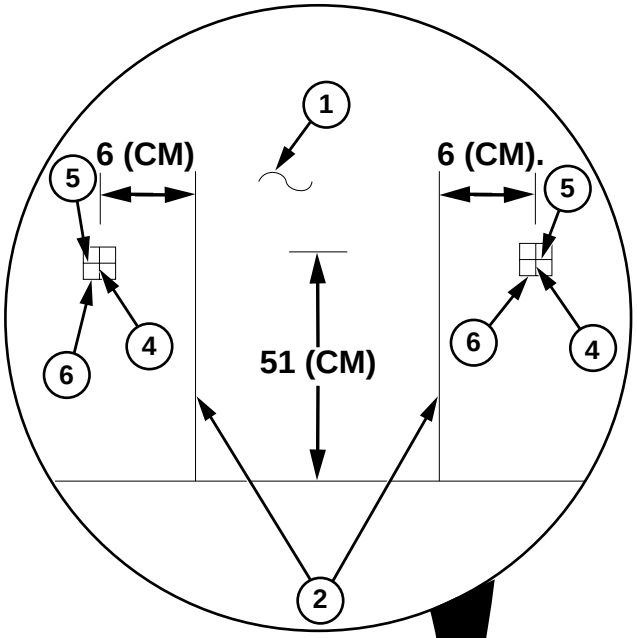
(2) Set parking brakes and chock wheels (TM 9-2320-360-10).

(3) Shut off engine (TM 9-2320-360-10).

NOTE

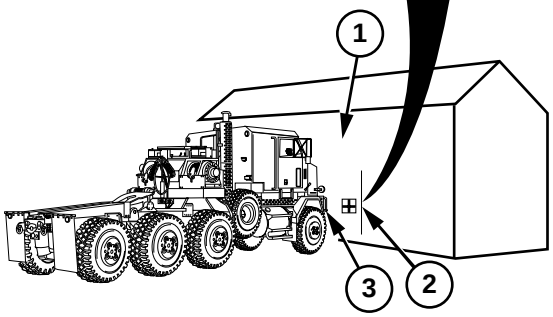
HET Tractor should be empty and without trailer when checking aim of headlights.

(4) Draw vertical lines (2) on flat surface (1) directly in front of each upper end of bumper (3).



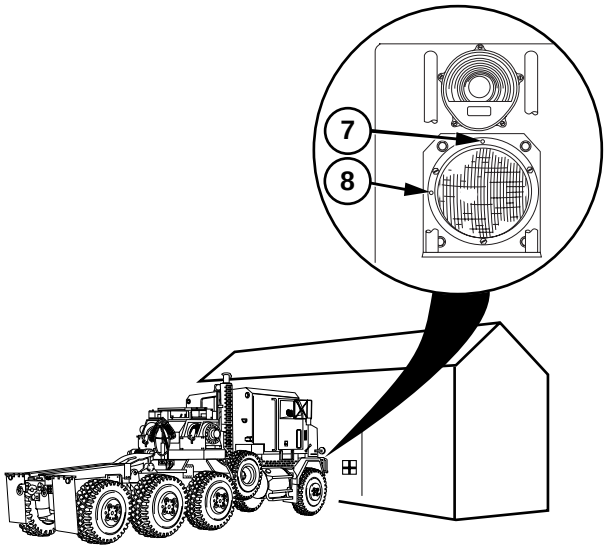
(5) Measure out 6 in. (15 cm) from each vertical line (2). Draw vertical lines (4) about 3-5 in. (8-13 cm) long.

(6) Measure up 51 in. (130 cm) from ground. Draw horizontal lines (5) 3-5 in. (7-13 cm) across vertical lines (4) making crosses.



(7) Measure out 4 in. (10 cm) from center of each cross in four directions to make 8 in. (20 cm) squares (6).

(8) Turn headlights on LOW beam (TM 9-2320-360-10).



(9) Observe high intensity spots of light on surface (1).

NOTE

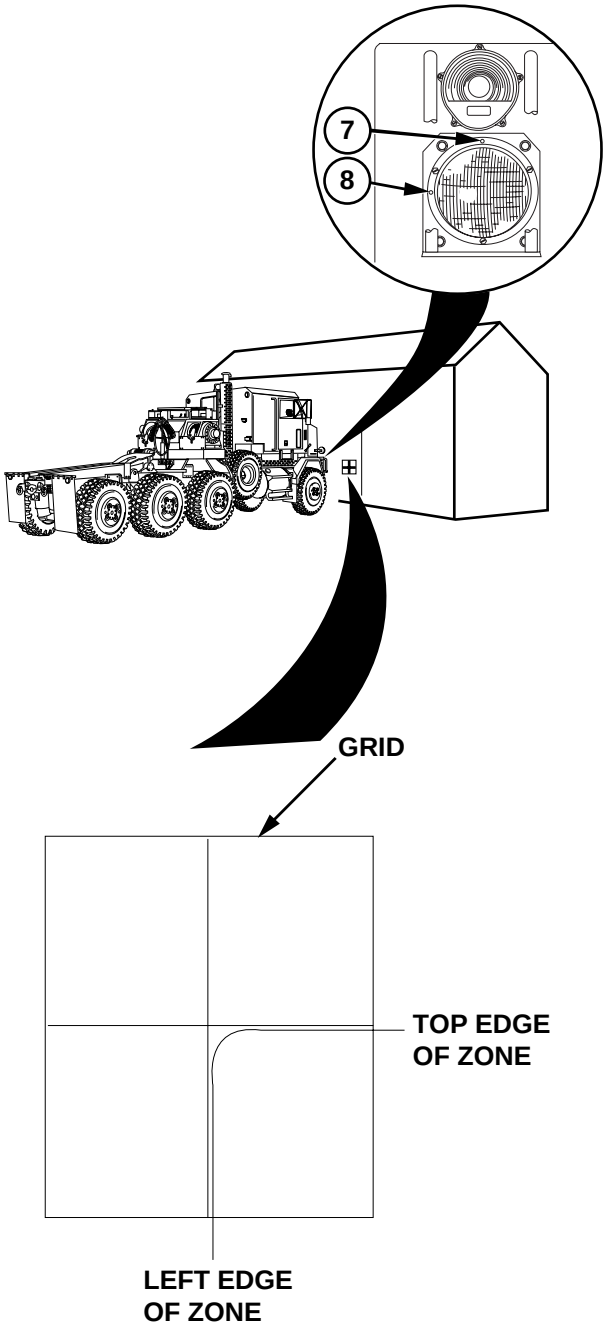
Adjustment is obtained when top edge of high intensity zone is on middle horizontal line. Acceptable adjustment is 4 in. (10 cm) above or below the middle horizontal line.

(10) Adjust screw (7) to move headlight spot up or down.

NOTE

Adjustment is obtained when left edge of high intensity zone is on middle horizontal line. Acceptable adjustment is 4 in. (10 cm) left or right the middle vertical line.

(11) Adjust screw (8) to move headlight spot left or right.



d. Follow-On Maintenance

(1) Turn ENGINE switch to ON position (TM 9-2320- 360-10).

(2) Check light operation (TM 9-2320-360-10).

(3) Turn ENGINE switch to OFF position (TM 9-2320- 360-10).

7-40. INDICATOR LIGHT REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Instrument panel removed (para 7-13).

Materials/Parts
Tags, Identification (Item 32, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

NOTE

- All indicator lights are replaced the same way.
- Tag and mark wires before removal.

(1) Remove connector (1) and light assembly (2) as one unit from housing (3).

NOTE

If removing light assembly, do step (2). Otherwise, go to step (3).

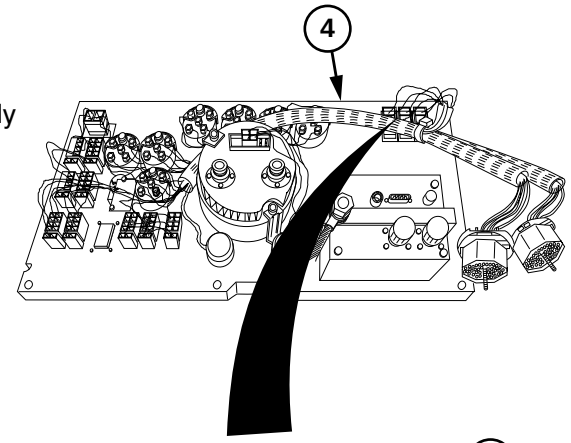
(2) Remove light assembly (2) from connector (1).

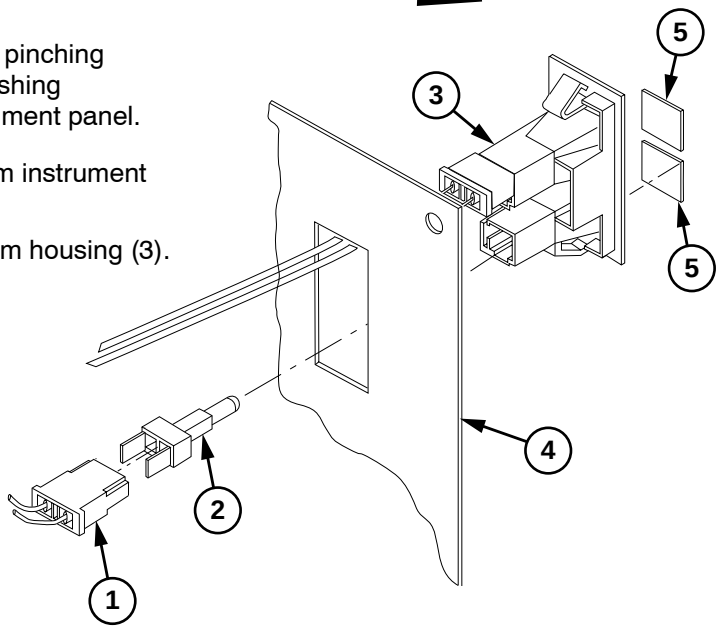
NOTE

Remove housing by pinching two locktabs and pushing housing out of instrument panel.

(3) Remove housing (3) from instrument panel (4).

(4) Remove applique (5) from housing (3).





b. Installation

NOTE

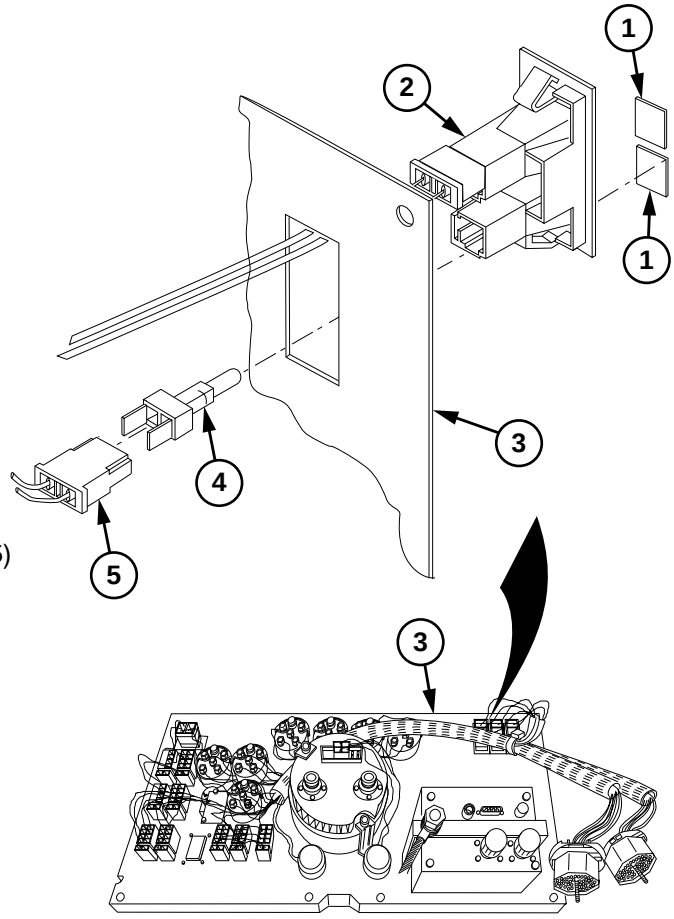
- For proper locations of appliques, refer to TM 9-2320-360-10.
- If installing new light assembly, do steps (3) and (4).

(1) Install two appliques (1) on housing (2).

(2) Install housing (2) in instrument panel (3).

(3) Install light assembly (4) in connector (5).

(4) Install light assembly (4) and connector (5) as one unit in housing (2).



c. Follow-On Maintenance

(1) Install instrument panel (para 7-13).

(2) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(3) Check light operation (TM 9-2320-360-10).

(4) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

7-41. FRONT FENDER SIDE MARKER/TURN SIGNAL LIGHTS REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Anticorrosion (Item 13.1, Appendix C)
Locknuts (2) (Item 44, Appendix G)
Gasket (Item 38.1, Appendix G)

a. Removal

NOTE

- Side marker and turn signal lights are replaced the same way. Turn signal is shown.
- Perform steps (1) through (4) for marker light with lamp or steps (5) through (8) for light with LED.
- To remove lamp only, do steps (1) and (2).
- To remove LED only, do steps (5) and (6).

(1) Remove two screws (1), lens (2), and lens holder (3) from marker light base (4).

(2) Remove lamp (5) from socket (6).

(3) Remove two locknuts (7), washers (8), ground wire (9), screws (10), base (4), and gasket (10.1) from front fender (11). Discard lockwashers and gasket.

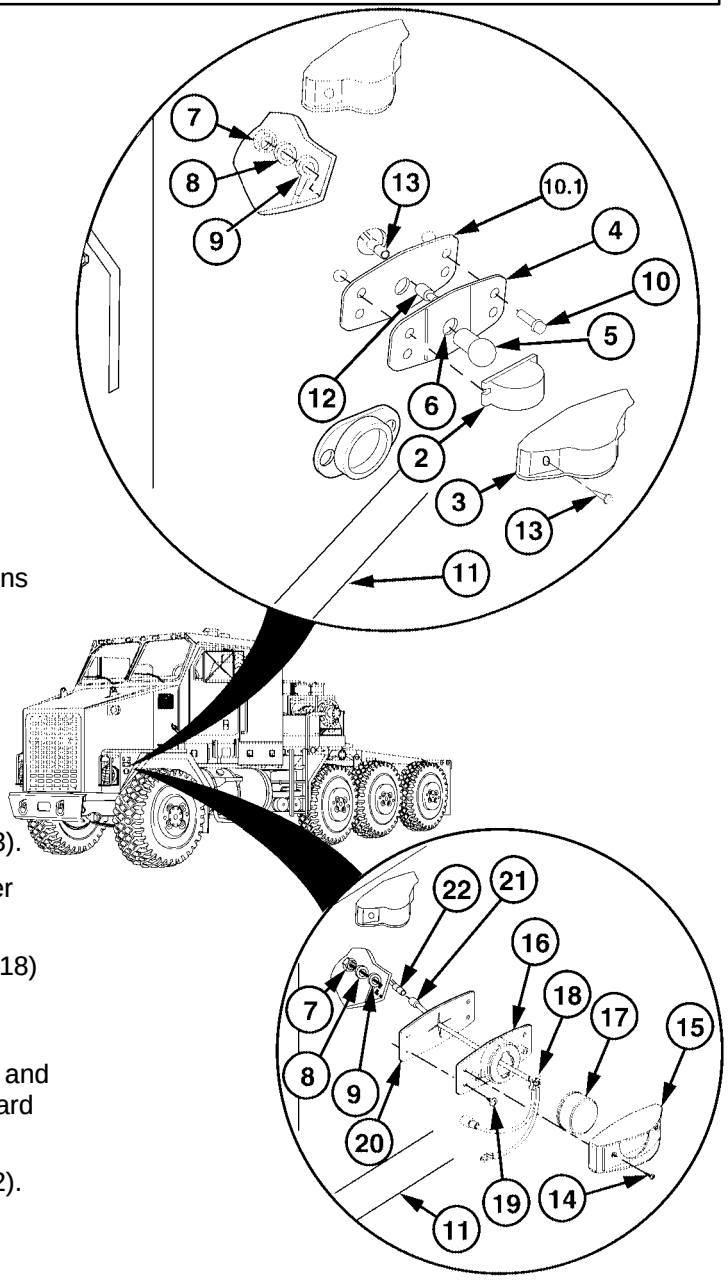
(4) Disconnect plug (12) from connector (13).

(5) Remove two screws (14) and lens holder (15) from marker light base (16).

(6) Remove LED (17) and separate pigtail (18) from LED.

(7) Remove two locknuts (7), washers (8), ground wire (9), screws (19), base (16), and gasket (20), from front fender (11). Discard lockwashers and gasket.

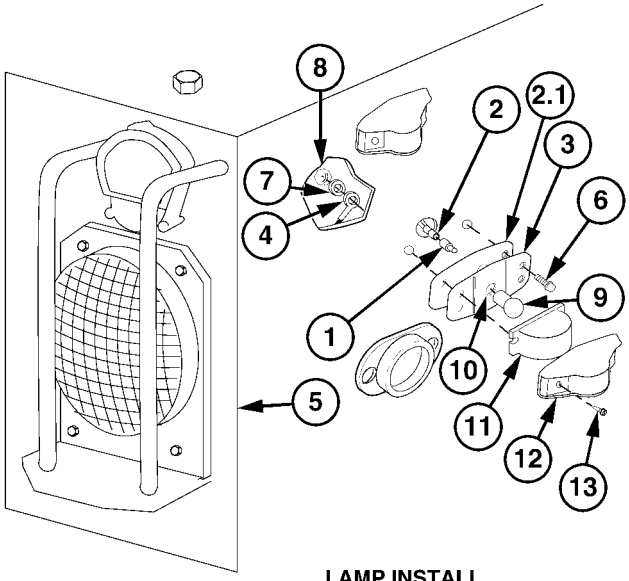
(8) Disconnect plug (21) from connector (22).



b. Installation

NOTE

- Perform steps (1) through (4) for marker light with lamp or steps (5) through (8) for light with LED.
- To install lamp only, do steps (3) and (4).
- To install LED only, do steps (7) and (8).
- Wire is retained in connector by a clip.



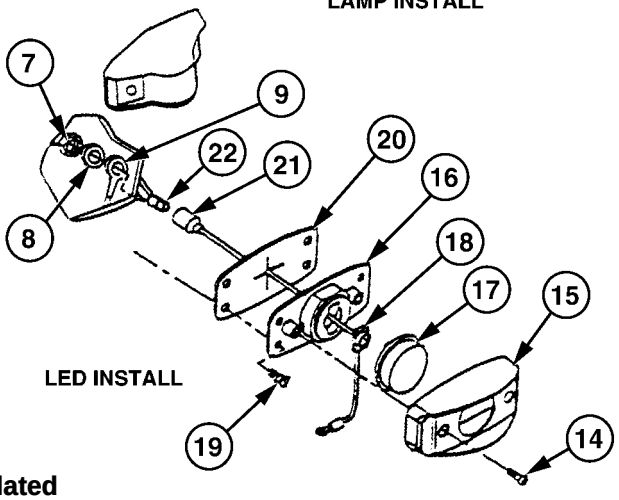
LAMP INSTALL

(1) Connect plug (1) to connector (2).

(2) Install new gasket (2.1), base (3) and ground wire (4) on front fender (5) with two screws (6), washers (7), and new locknuts (8).

WARNING

- **Adhesive-sealants and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To void injury or death, keep away from open fire and use in well-ventilated area. If sealing compound gets on skin or clothing, wash immediately with soap and water.**
- **Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use in well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush eyes with water for 15 minutes and get immediate medical attention.**
- **On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.**



LED INSTALL

(2.1) Coat inside of socket (10) with anticorrosion compound.

(3) Install lamp (9) in socket (10).

(4) Install lens (11) and lens holder (12) on base (3) with two screws (13).

(5) Connect plug (21) to connector (22).

(6) Position ground wire of pigtail (18) and install new gasket (20), pigtail, and marker light base (16) with two screws (19), ground wire (9), washers (8), and new locknuts (7).

(7) Install LED (17) on pigtail (18) and marker light base (16).

(8) Install lens holder (15) on base (16) with two screws (14).

c. Follow-On Maintenance

(1) Check service drive lights operation (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-42. SIDE MARKER LIGHT ASSEMBLY REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Anticorrosion (Item 13.1, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Locknuts (2) (Item 70, Appendix G)
Gasket (Item 38.1, Appendix G)

a. Removal

NOTE

- Perform steps (1) through (5) for side marker light with lamp or steps (6) through (10) for light with LED.
- To remove lamp only, do steps (1) and (2).
- To remove LED only, do steps (6) and (7).

(1) Remove two screws (1), lens (2), and lens holder (3) from base (4).

(2) Remove lamp (5) from socket (6).

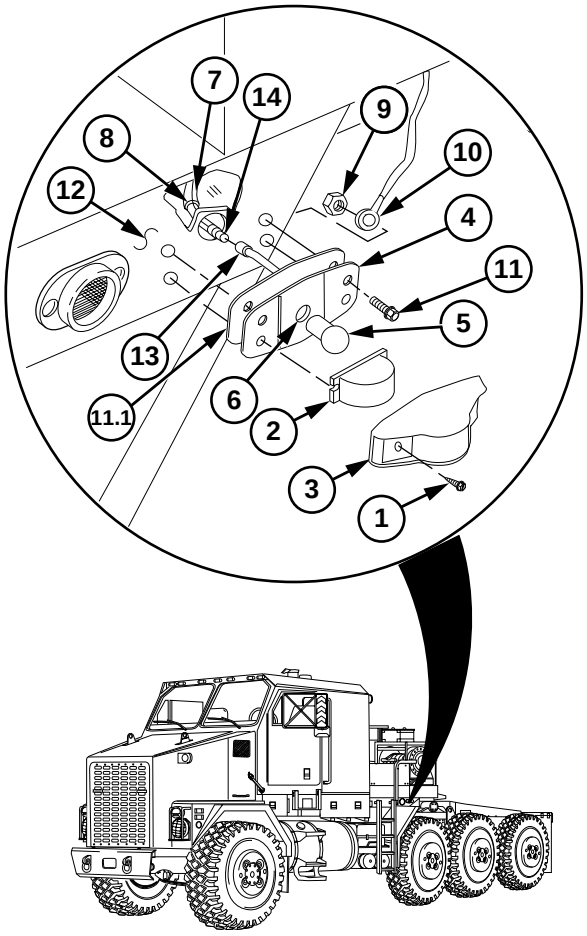
NOTE

Location of plastic cable ties should be marked before removal.

(3) Remove plastic cable ties (7) from side marker light wires (8) as required.

(4) Remove two locknuts (9), ground wire (10), two screws (11), base (4), and gasket (11.1) from winch platform (12). Discard locknuts and gasket.

(5) Disconnect plug (13) from connector (14).



(6) Remove two screws (15) and lens holder (16) from base (17).

(7) Remove LED (18) and separate pigtail (19) from LED.

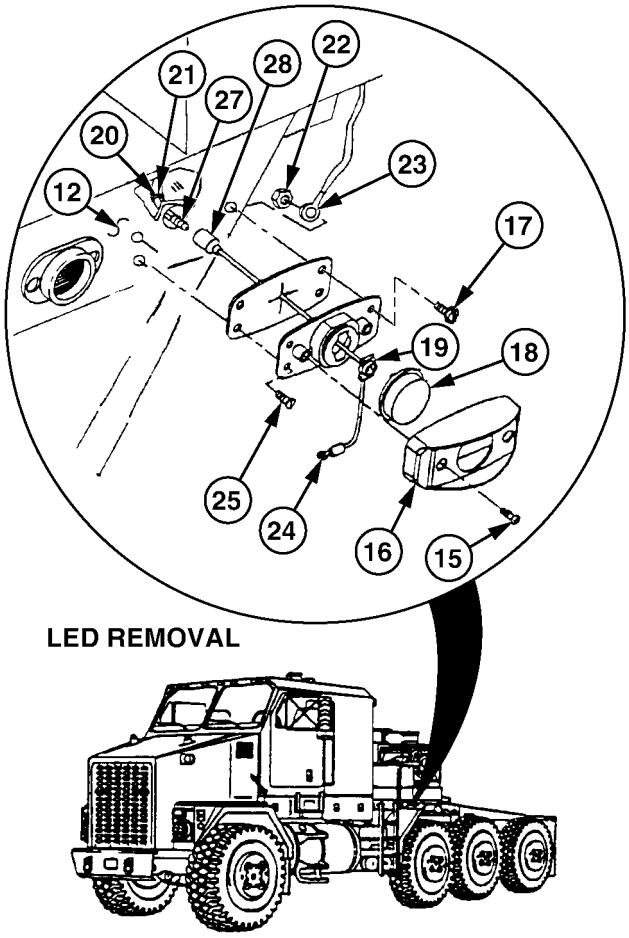
NOTE

Location of plastic cable ties should be marked before removal.

(8) Remove plastic cable ties (20) from side marker light wires (21) as required.

(9) Remove two locknuts (22), ground wire (23), two screws (24), base (17), and gasket (25) from winch platform (12). Discard locknuts and gasket.

(10) Disconnect plug (26) from connector (27).



LED REMOVAL

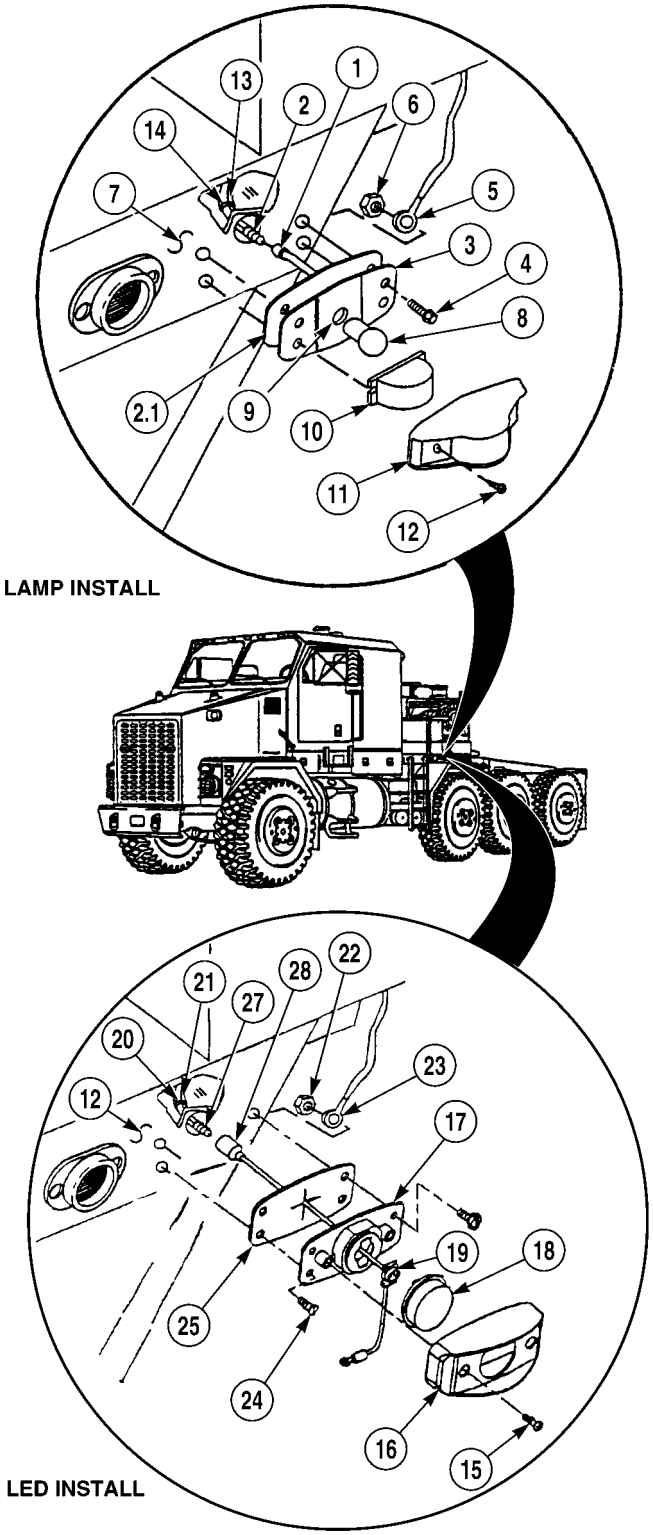
b. Installation

NOTE

- Perform steps (1) through (5) for side marker light with lamp or steps (4.1) through (4.4) for light with LED.
- To install lamp only, do steps (3) and (4).
- To install LED only, do steps (4.1) and (4.4).

(1) Connect plug (1) to connector (2).

(2) Install new gasket (2.1), base (3), two screws (4), one ground wire (5), and two new locknuts (6) on winch platform (7).



WARNING

- **Adhesive-sealants and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To void injury or death, keep away from open fire and use in well-ventilated area. If sealing compound gets on skin or clothing, wash immediately with soap and water.**
- **Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use in well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush eyes with water for 15 minutes and get immediate medical attention.**
- **On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.**

(2.1) Coat inside of socket (9) with anticorrosion compound.

(3) Install lamp (8) in socket (9).

(4) Install lens (10) and lens holder (11) on base (3) with two screws (12).

(4.1) Connect plug (26) to connector (27).

(4.2) Position ground wire (23) of pigtail (19) and install new gasket (25), pigtail, and side marker light base (17) with two screws (24) and new locknuts (22) on winch platform (12).

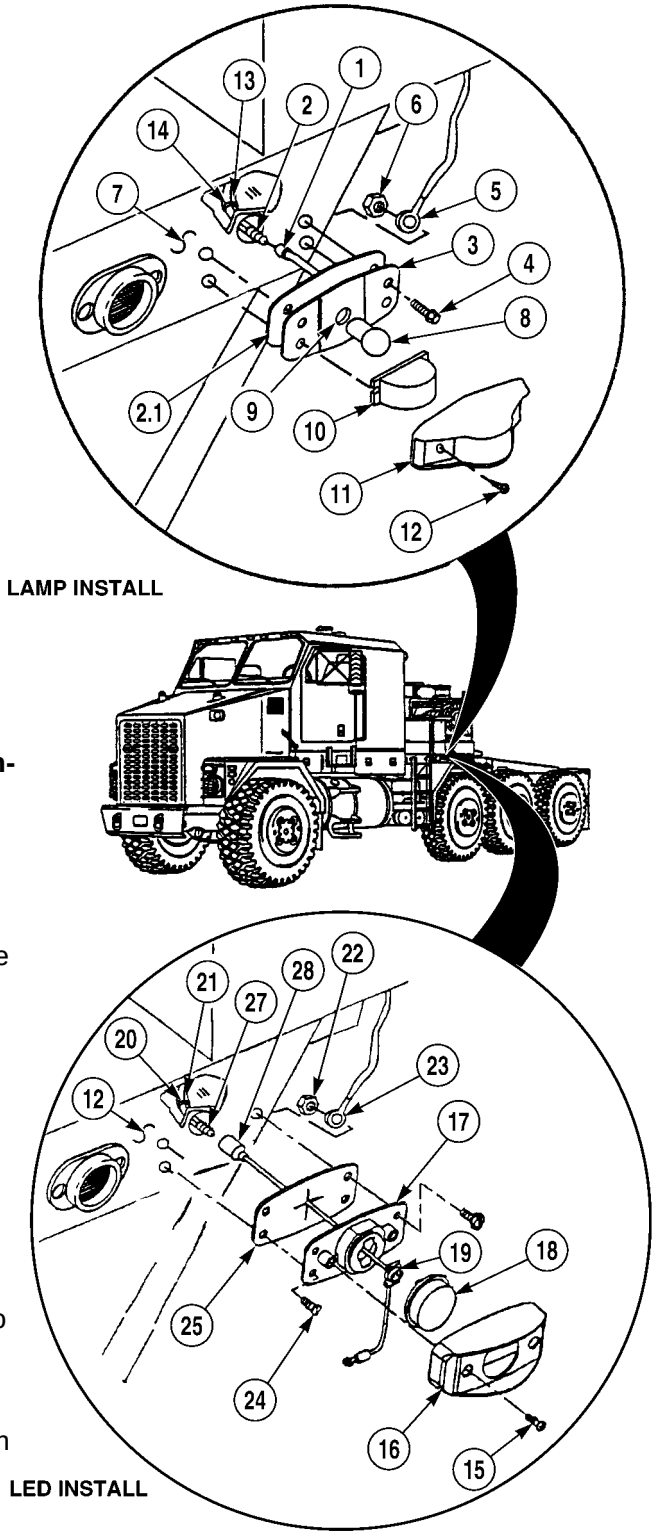
(4.3) Install LED (18) on pigtail (19) and base (17).

(4.4) Install lens holder (16) on base (17) with two screws (15).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(5) Secure side marker light wires (13) with plastic cable ties (14).



c. Follow-On Maintenance

(1) Check service drive lights operation (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-43. CAB FRONT CLEARANCE LIGHT AND SUN VISOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Anticorrosion (Item 13.1, Appendix C)
Tags, Identification (Item 32, Appendix C)
Gaskets (7) (Item 38.1, Appendix G)
Lockwashers (6) (Item 110, Appendix G)
Locknuts (15) (Item 72, Appendix G)

Personnel Required
Two

a. Removal

NOTE

- If an entire clearance light assembly is being replaced, the new light assembly will contain an LED. The truck can not have both lamp and LED light assemblies. If replacing a clearance light assembly which contained a lamp, the entire truck needs to have all clearance assemblies replaced with light assembly with an LED.
- All cab front clearance lights are replaced in a similar way.
- To remove lamp only, do steps (1) and (2).
- To remove LED only, do steps (2.1) and (2.2).

(1) Remove two screws (1), lens (2), and lens holder (3) from base (4).

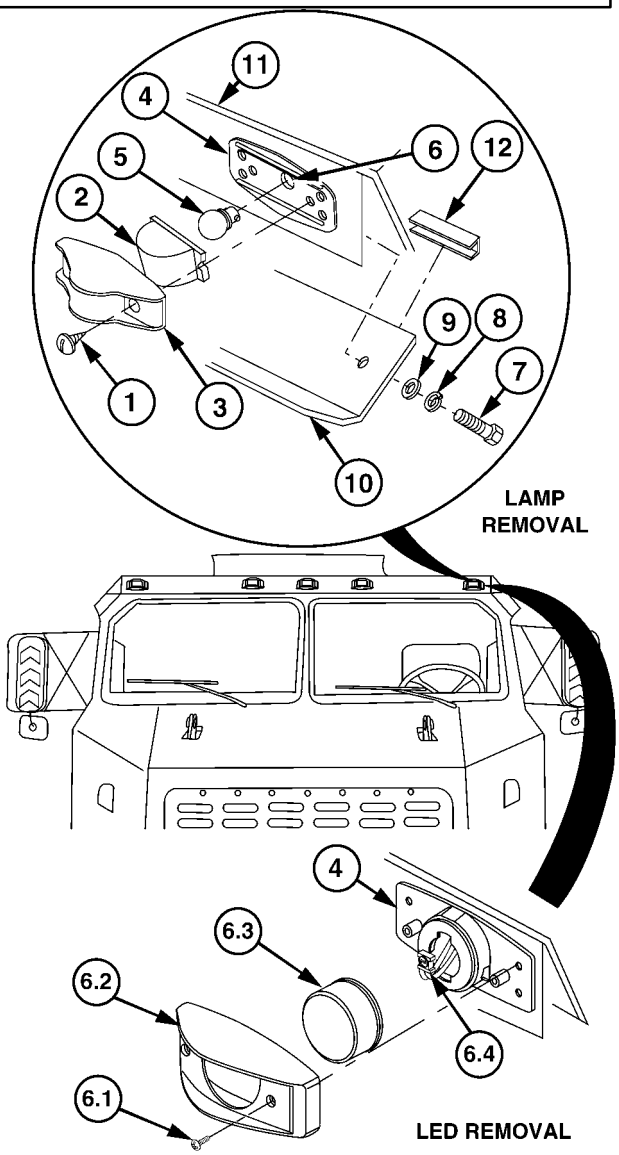
(2) Remove lamp (5) from socket (6).

(2.1) Remove two screws (6.1) and lens holder (6.2) from base (4).

(2.2) Remove LED (6.3) and separate pigtail (6.4) from LED.

(3) Remove five screws (7), lockwashers (8), washers (9), and cover plate (10) from sun visor (11) with aid of assistant. Discard lockwashers.

(4) Remove quickedge molding (12) from cover plate (10).



(5) Push out eight center pins (13) to release clips (14) from sun visor (11).

(6) Remove eight clips (14) and clearance wire harness (15) from sun visor (11).

NOTE

Location of plastic cable ties should be marked before removal.

(7) Remove plastic cable ties (16) from jun wire assemblies (17) as required.

NOTE

Tag and mark wires before removal.

(8) Disconnect two jumper wire assemblies from cab wire harness (18).

(9) Disconnect clearance light wire harnes from two jumper wire assemblies (17).

NOTE

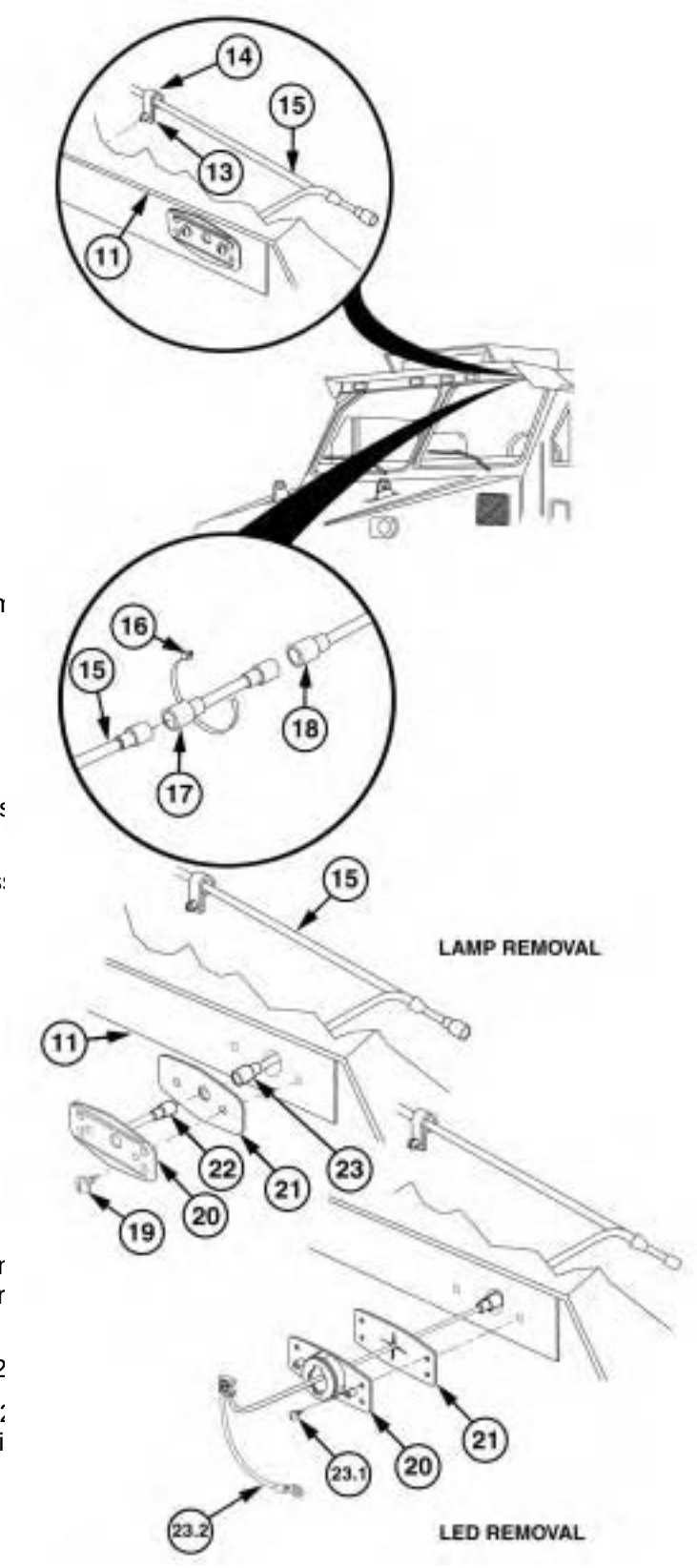
Perform steps (10) and (11) for clearance light with lamp or steps (11.1) and (11.2) for light with LED.

(10) Remove two screws (19), base (20), ar gasket (21) from sun visor (11). Discar gasket.

(11) Disconnect plug (22) from connector (2

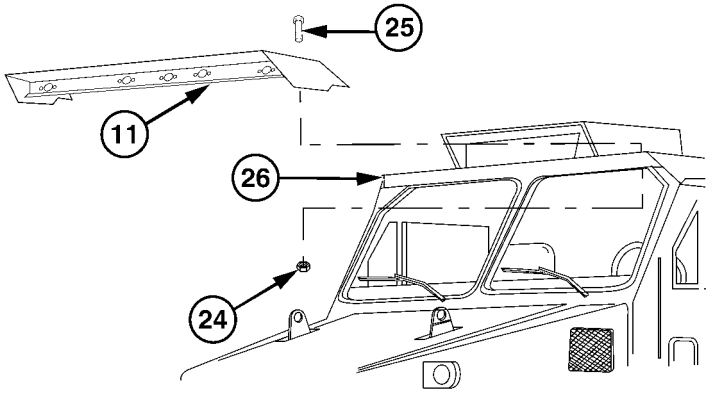
(11.1) Remove two screws (23.1), pigtail (23.2 base (20), and gasket (21), from sun vi (11). Discard gasket

(11.2) Disconnect plug (23.2) from connector (23.4).



7-43. CAB FRONT CLEARANCE LIGHT AND SUN VISOR REPLACEMENT (CONT)

(12) Remove 15 locknuts (24), screws (25) and sun visor (11) from cab (26) with aid of assistant. Discard locknuts.

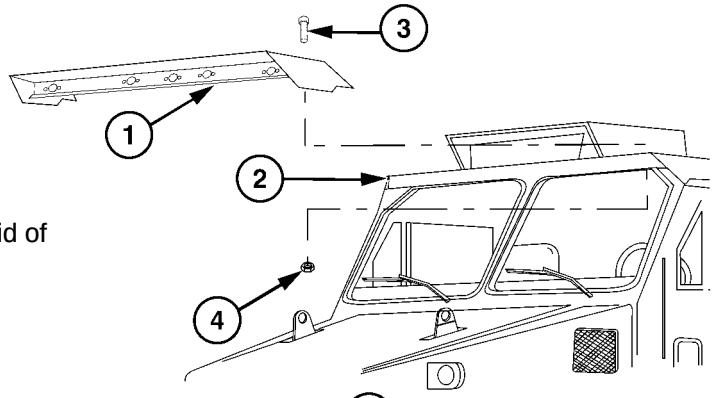


b. Installation

NOTE

- To install lamp only, do steps (12) and (13).
- To install LED only, do steps (14) and (15).

(1) Install sun visor (1) on cab (2) with 15 screws (3) and new locknuts (4) with aid of assistant.



NOTE

Perform steps (3) and (4) for clearance light with lamp or steps (4.1) and (4.2) for light with LED.

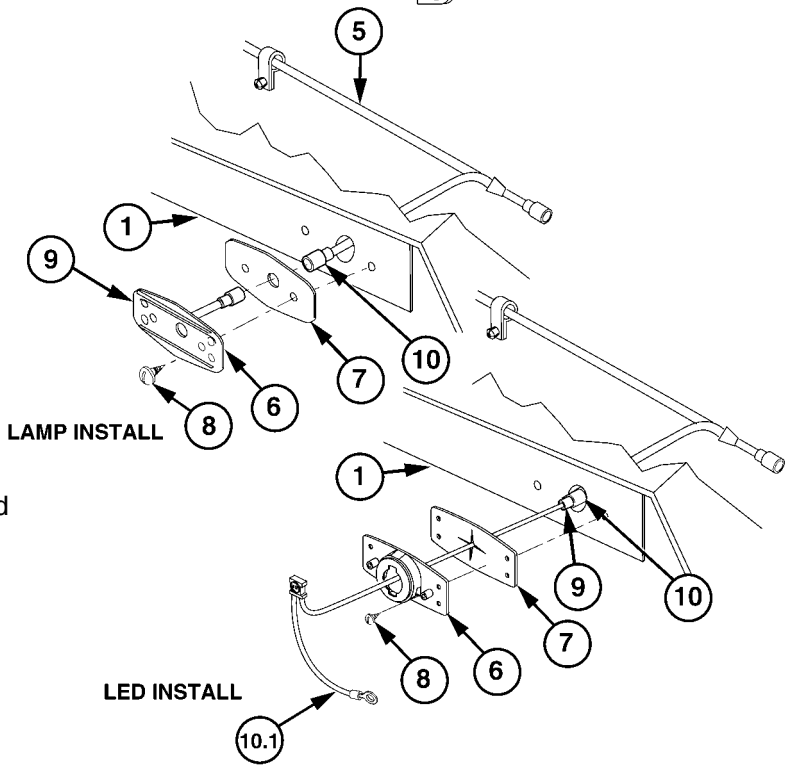
(2) Position clearance light wire harness (5) on sun visor (1).

(3) Install base (6) and new gasket (7) on sun visor (1) with two screws (8).

(4) Connect plug (9) to connector (10).

(4.1) Position ground wire of pigtail (10.1) and install new gasket (7), pigtail (10.1) and base (6) with two screws (8).

(4.2) Connect plug (9) to connector (10).



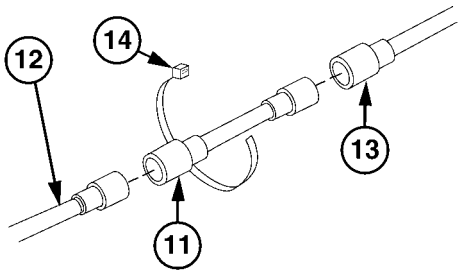
(5) Install two jumper wire assemblies (11) on clearance light wire harness (12).

(6) Install two jumper wires (11) on cab wire harness (13).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

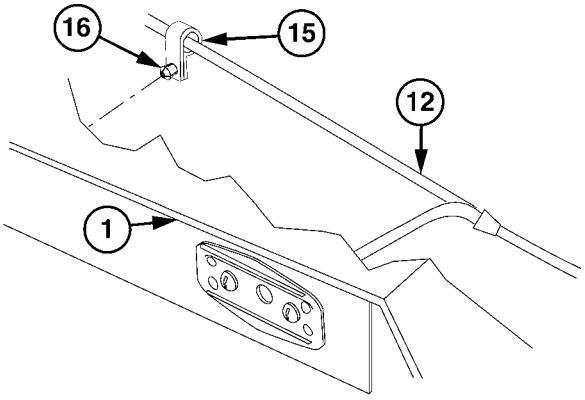
(7) Secure jumper wire assemblies (11) with plastic cable ties (14).



(8) Secure clearance light wire harness (12) to sun visor (1) with eight clips (15).

(9) Push in eight center pins (16) to fasten clips (15) to sun visor (1).

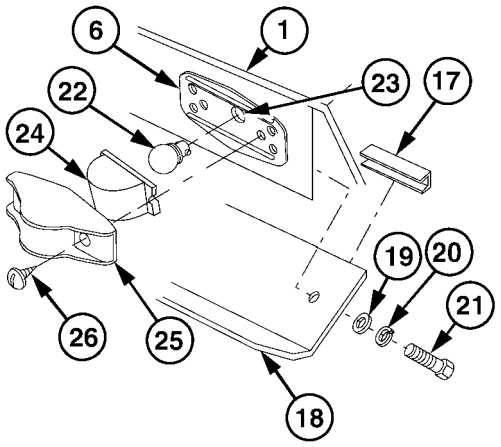
(10) Install quickedge molding (17) on cover plate (18).



CAUTION

Quickedge molding must be positioned over wire assemblies. Failure to comply may result in damage to wire assemblies.

(11) Install cover plate (18) on sun visor (1) with five washers (19), new lockwashers (20), and screws (21) with aid of assistant.



LAMP INSTALL

WARNING

- **Adhesive-sealants and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To void injury or death, keep away from open fire and use in well-ventilated area. If sealing compound gets on skin or clothing, wash immediately with soap and water.**
- **Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use in well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush eyes with water for 15 minutes and get immediate medical attention.**
- **On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.**

NOTE

- Lamps and light covers for blackout clearance lights and clearance lights are not interchangeable.
- If an entire clearance light assembly is being replaced, the new light assembly will contain an LED. The truck can not have both lamp and LED light assemblies. If replacing a clearance light assembly which contained a lamp, the entire truck needs to have all clearance assemblies with light assembly with an LED.

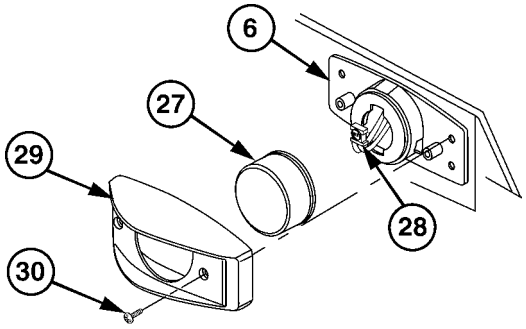
(11.1) Coat inside of socket (23) with anticorrosion compound.

(12) Install lamp (22) in socket (23).

(13) Install lens (24) and lens holder (25) on base (6) with two screws (26).

(14) Install LED (27) on pigtail (28) and base (6).

(15) Install lens holder (29) on base (6) with two screws (30)



LED INSTALL

c. Follow-On Maintenance

(1) Check service drive lights and blackout lights operation (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-44. REAR MARKER LIGHT AND MOUNTING BRACKET REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10)
Parking brake on (TM 9-2320-360-10)
Wheels chocked

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Anticorrosion (Item NO TAG , Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (2) (Item 58, Appendix G)
Locknut (Item 72, Appendix G)
Gasket (Item 38.1, Appendix G)

a. Removal

NOTE

- Perform steps (1) through (1.3) for light with LED or steps (1.4) through (4) for marker light with lamp.
- All rear marker lights are replaced in a similar way.
- To remove LED only, do steps (1) and (1.1).
- To remove lamp only, do steps (1.4) and (2).

(1) Remove two screws (1) and lens holder (1.1) from base (1.2).

(1.1) Remove LED (1.3) and separate pigtail (1.4) from LED.

(1.2) Remove two screws (1.5), base (1.2), and gasket (1.6) from rear mounting bracket (1.7). Discard gasket.

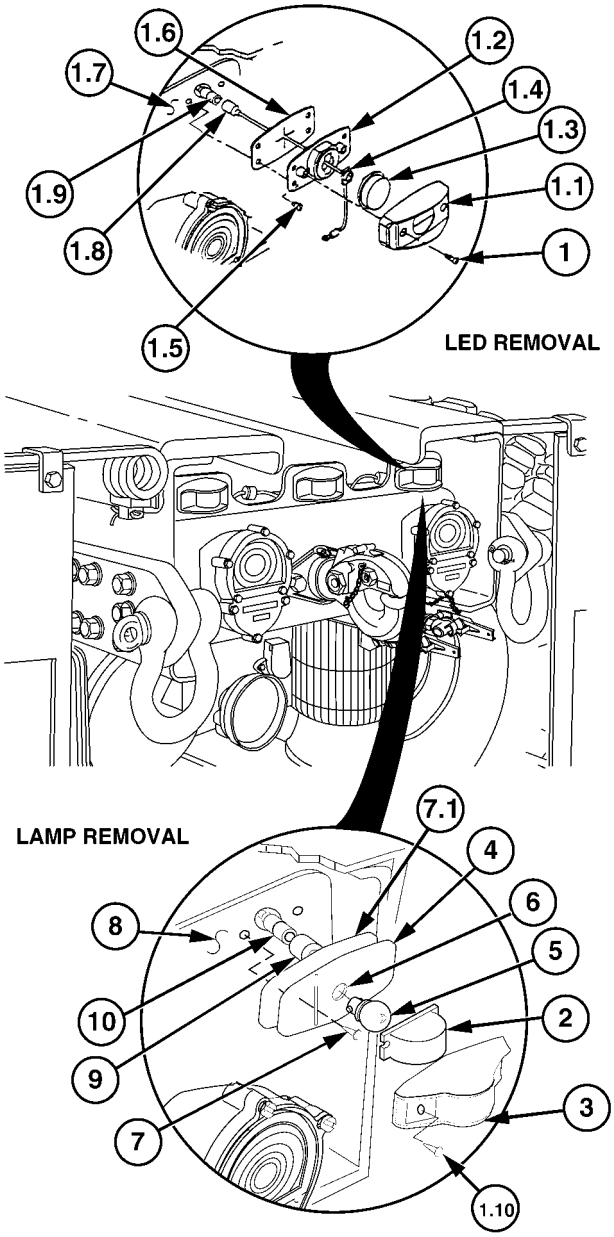
(1.3) Disconnect plug (1.8) from connector (1.9).

(1.4) Remove two screws (1.10), lens (2), and lens holder (3) from base (4).

(2) Remove lamp (5) from socket (6).

(3) Remove two screws (7), base (4), and gasket (7.1) from rear mounting bracket (8). Discard gasket.

(4) Disconnect plug (9) from connector (10).



NOTE

Location of plastic cable ties should be marked before removal.

(1) Remove plastic cable ties (11) from wire harness (12) as required.

(2) Disconnect plug (13) from connector (14).

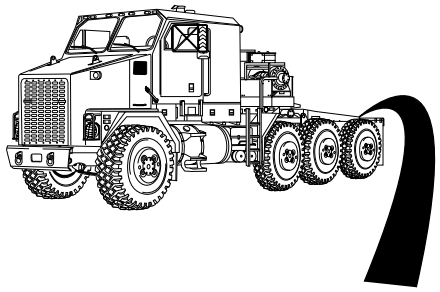
NOTE

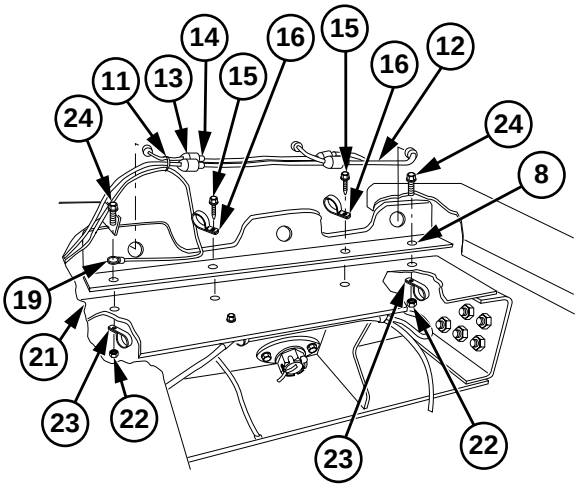
Tag and mark wires before removal.

(3) Remove two screws (15), clips (16), and harness (12) from rear mounting bracket (8).

(4) Deleted.

(5) Remove two locknuts (22), wire clips (23), screws (24), ground wire (19), and rear mounting bracket (8) from rear crossmember (21). Discard locknuts.





b. Installation

NOTE

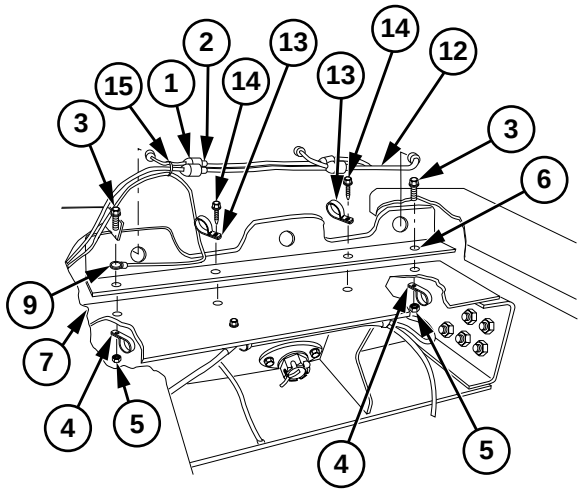
- Perform steps (6) through (9) for marker light with lamp or steps (10) through (13) for light with LED.
- To install lamp only, do steps (8) and (9).
- To install LED only, do steps (12) and 13).

(1) Connect plug (1) to connector (2).

(2) Install two screws (3), ground wire (9), wire clips (4), two new locknuts (5), and rear mounting bracket (6) on rear crossmember (7).

(3) Deleted.

(4) Install harness (12), two clips (13), and screws (14) on rear mounting bracket (6).



NOTE

Plastic cable ties should be positioned in locations marked during removal.

(5) Secure wire harness (12) with plastic cable ties (15).

7-44. REAR MARKER LIGHT AND MOUNTING BRACKET REPLACEMENT (CONT)

(6) Connect plug (16) to connector (17).

(7) Install new gasket (17.1), base (18), and two screws (19) on rear mounting bracket (6).

WARNING

- **Adhesive-sealants and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To void injury or death, keep away from open fire and use in well-ventilated area. If sealing compound gets on skin or clothing, wash immediately with soap and water.**
- **Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use in well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush eyes with water for 15 minutes and get immediate medical attention.**
- **On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.**

(7.1) Coat inside of socket (21) with anticorrosion compound.

(8) Install lamp (20) in socket (21).

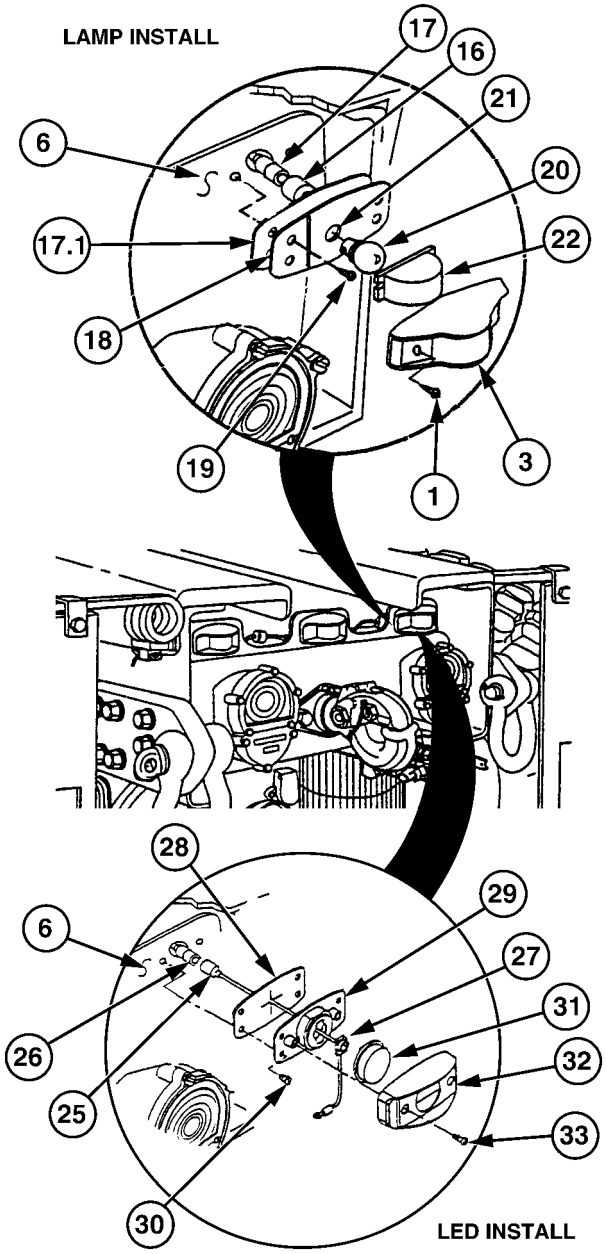
(9) Install lens (22) and lens holder (23) on base (18) with two screws (24).

(10) Connect plug (25) to connector (26).

(11) Position ground wire of pigtail (27) and install new gasket (28), base (29), and two screws (30) on rear mounting bracket (6).

(12) Install LED (31) on pigtail (27) and base (29).

(13) Install lens holder (32) on base (29) with two screws (33).



c. Follow-On Maintenance

(1) Check light operation (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-45. DOME LIGHT REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)

a. Removal

NOTE
To remove lamp only, do steps (1) and (2).

(1) Remove two screws (1) and lens (2) from housing (3).

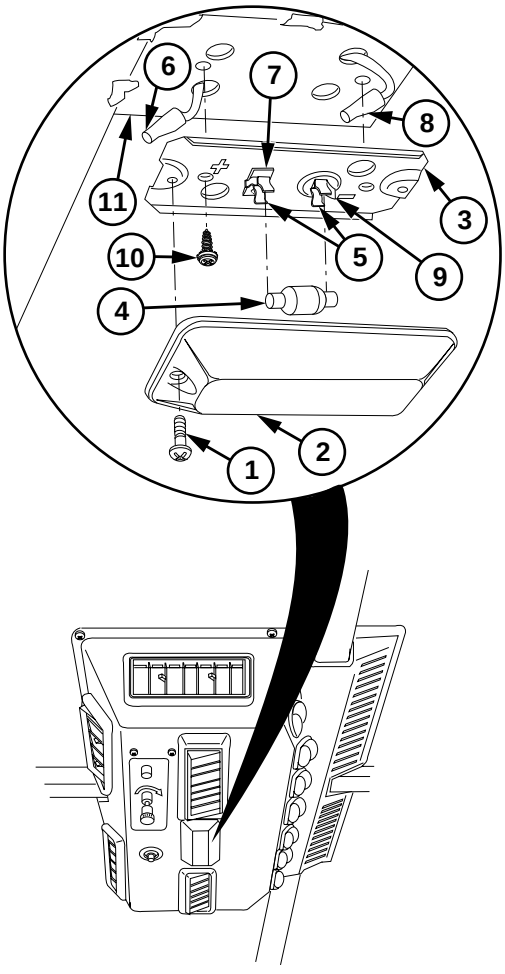
(2) Remove lamp (4) from clips (5).

NOTE
Tag and mark wires before removal.

(3) Disconnect wire (6) from positive (+) terminal (7).

(4) Disconnect wire (8) from negative (-) terminal (9).

(5) Remove two screws (10) and housing (3) from mounting bracket (11).



7-45. DOME LIGHT REPLACEMENT (CONT)

b. Installation

NOTE

To install lamp only, do steps (4) and (5).

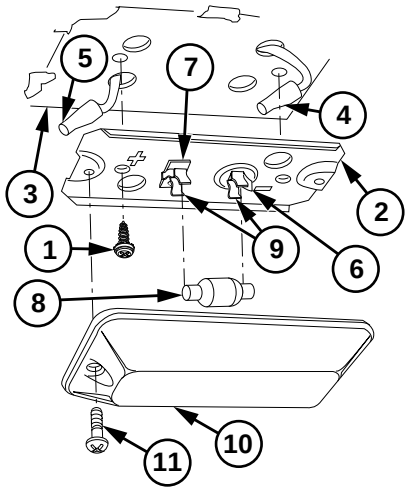
(1) Install two screws (1) and housing (2) on mounting bracket (3) routing two wires (4 and 5) through holes in bracket (3) and housing (2).

(2) Connect wire (4) to negative (-) terminal (6).

(3) Connect wire (5) to positive (+) terminal (7).

(4) Install lamp (8) in clips (9).

(5) Install lens (10) on housing (2) with two screws (11).



c. Follow-On Maintenance

(1) Check cab internal lights operation (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-46. MAP LIGHT REPAIR

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Lockwashers (2) (Item 97, Appendix G)

a. Removal

NOTE

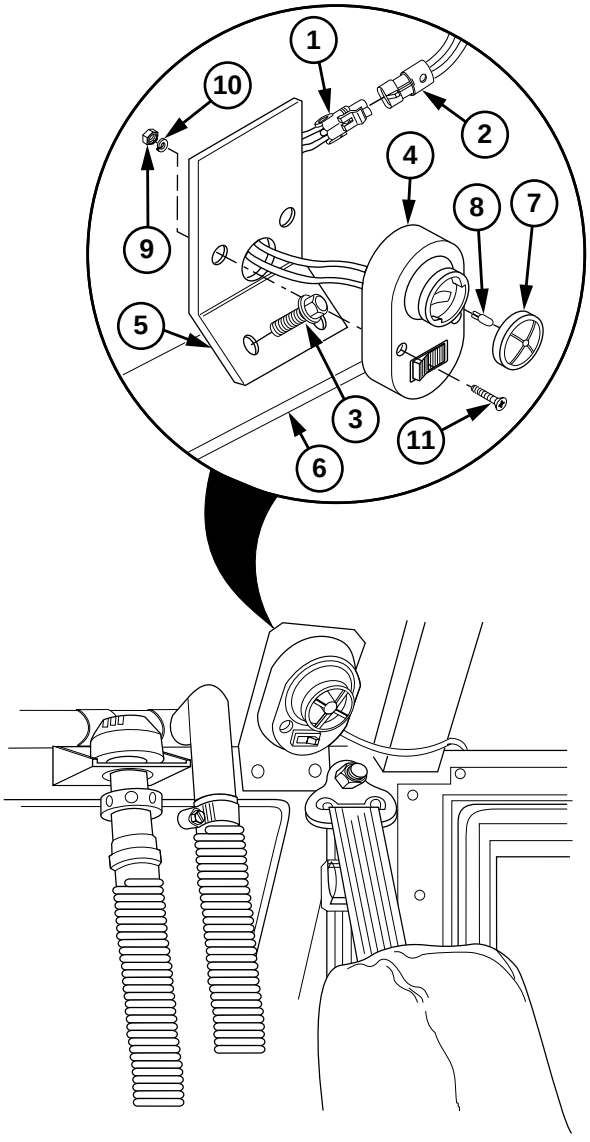
- Left and right map lights are replaced the same way. Left map light is shown.
- To remove lamp only, do step (3).

(1) Disconnect plug (1) from connector (2).

(2) Remove two screws (3), map light (4), and mounting bracket (5) from cab (6).

(3) Remove guard (7) and lamp (8) from map light (4).

(4) Remove two nuts (9), lockwashers (10), screws (11), and map light (4) from mounting bracket (5). Discard lockwashers.



7-46. MAP LIGHT REPAIR (CONT)

b. Installation

NOTE

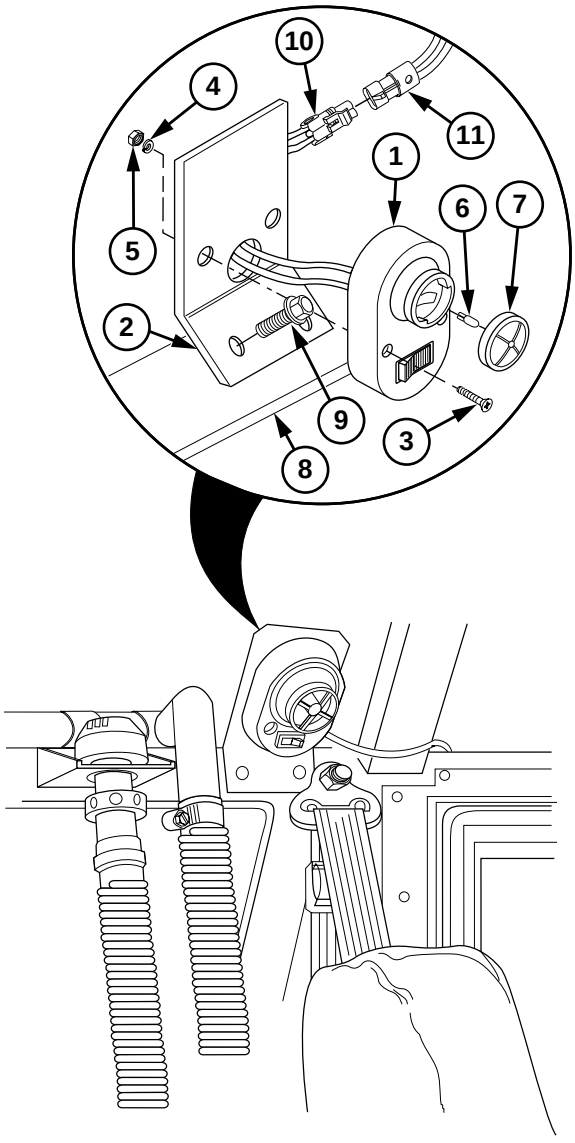
To install lamp only, do step (2).

(1) Install map light (1) on mounting bracket (2) with two screws (3), new lockwashers (4), and nuts (5).

(2) Install lamp (6) and guard (7) on map light (1).

(3) Install mounting bracket (2) and map light (1) on cab (8) with two screws (9).

(4) Install plug (10) in connector (11).



c. Follow-On Maintenance

(1) Check cab internal lights operation (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-47. WORK LIGHT REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknut (Item 48, Appendix G)
Lockwasher (Item 104, Appendix G)

a. Removal

NOTE

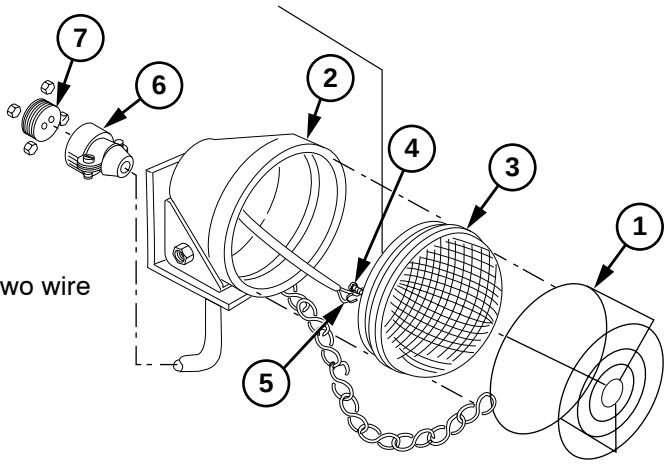
- Both work lights are replaced the same way. Right side is shown.
- To remove lamp only, do steps (1) thru (3).

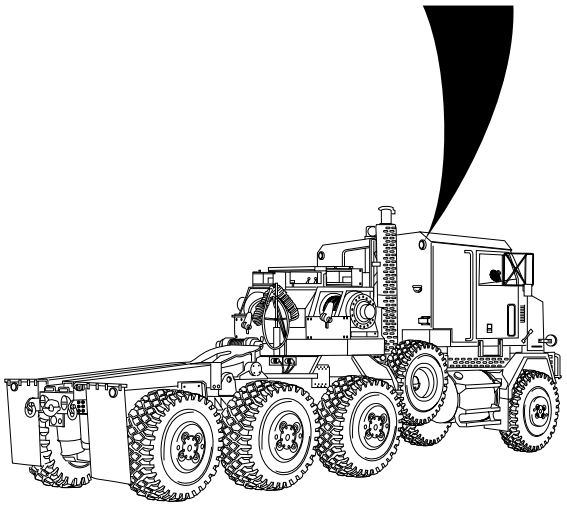
(1) Remove guard (1) from housing (2).

(2) Remove lamp (3) from housing (2).

(3) Loosen two screws (4) and remove two wire terminals (5) from lamp (3).

(4) Disconnect plug (6) from socket (7).



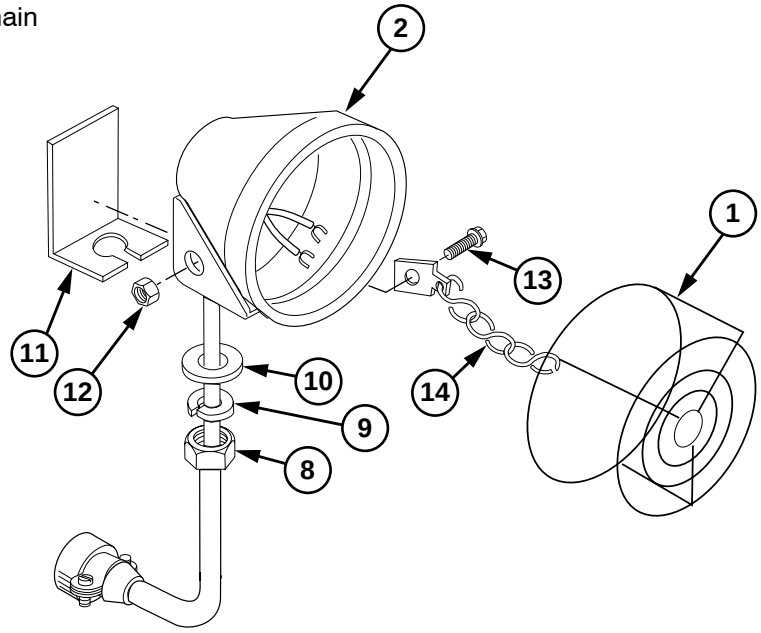


7-47. WORK LIGHT REPLACEMENT (CONT)

(5) Remove nut (8), lockwasher (9), washer (10), and housing (2) from mount (11). Discard lockwasher.

(6) Remove locknut (12), screw (13), and chain (14) from housing (2). Discard locknut.

(7) Remove chain (14) from guard (1).



b. Installation

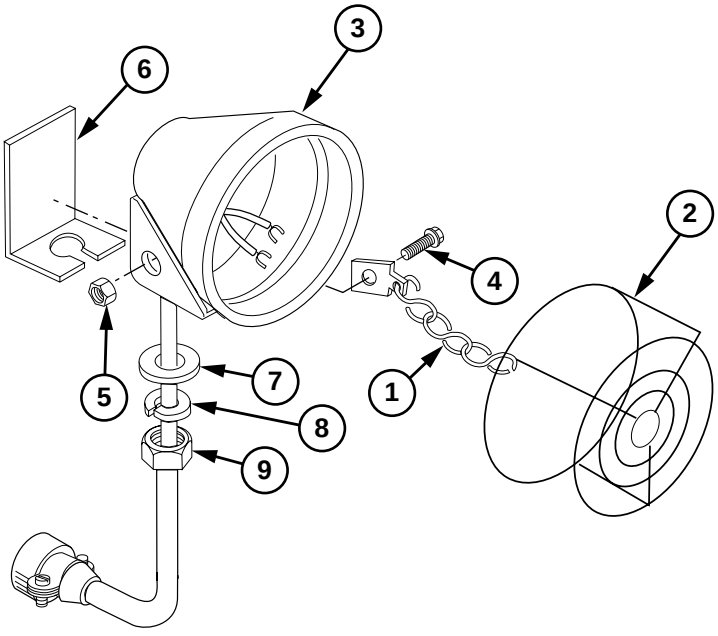
NOTE

To install lamp only, do steps (5) and (6).

(1) Install chain (1) on guard (2).

(2) Install chain (1) on housing (3) with screw (4) and new locknut (5).

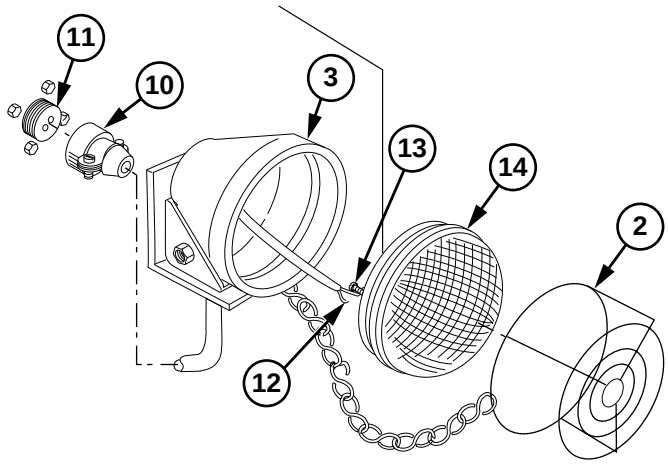
(3) Install housing (3) on mount (6) with washer (7), new lockwasher (8), and nut (9).



(4) Install plug (10) in socket (11).

(5) Insert two wire terminals (12) under screws (13).

(6) Install lamp (14) and guard (2) on housing (3).



c. Follow-On Maintenance

(1) Check cab external lights operation (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-48. BLACKOUT DRIVE LIGHT REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Engine hood opened (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Compound, Anticorrosion (Item 13.1, Appendix C)
Gasket (Item 30, Appendix G)
Lockwasher (Item 102, Appendix G)

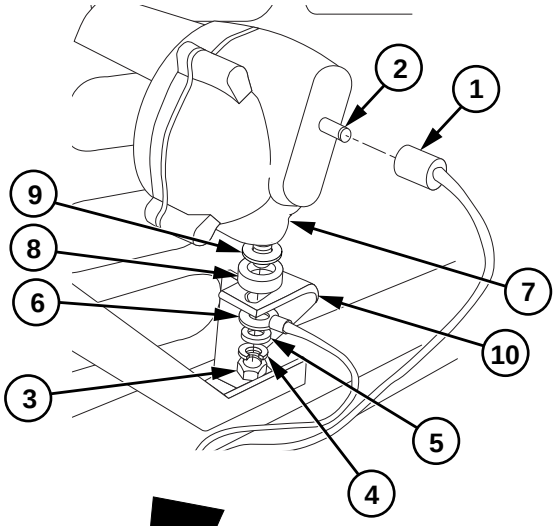
a. Removal

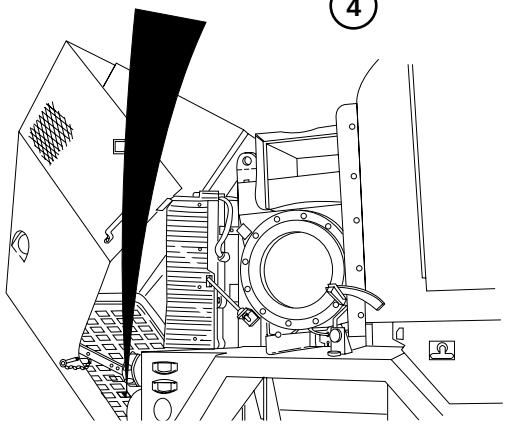
NOTE

- Model A, bulb type, or Model B LED type blackout drive light may be installed on vehicle.
- Removal/Installation is the same for both models.
- Model B, LED type, is not repairable.

(1) Disconnect plug (1) from connector (2).

(2) Remove nut (3), lockwasher (4), washer (5), ground wire (6), housing (7), spacer (8), and bell washer (9) from mounting bracket (10). Discard lockwasher.





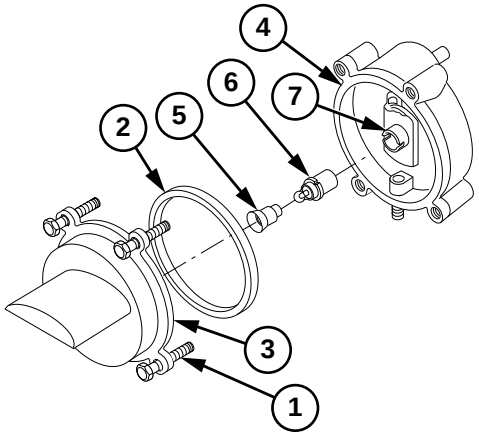
b. Disassembly

NOTE

Screws are not designed to be removed from cover.

(1) Loosen four captive screws (1) and remove gasket (2) and door (3) from housing (4). Discard gasket.

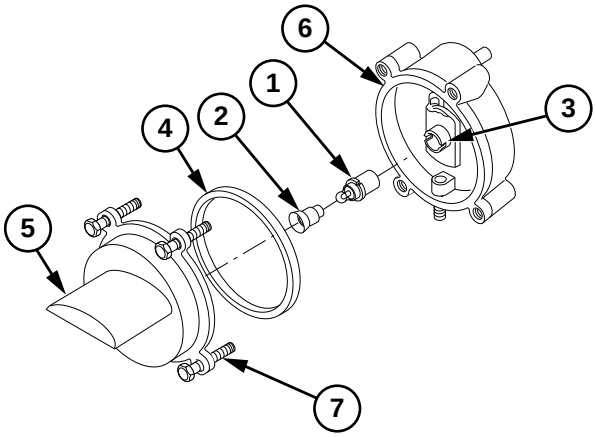
(2) Remove reflector (5) and lamp (6) from socket (7).



c. Assembly

WARNING

- **Adhesive-sealants and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To void injury or death, keep away from open fire and use in well-ventilated area. If sealing compound gets on skin or clothing, wash immediately with soap and water.**
- **Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use in well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush eyes with water for 15 minutes and get immediate medical attention.**
- **On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.**



(1) Coat inside of socket (3) with anticorrosion compound.

(2) Install lamp (1) and reflector (2) in socket (3).

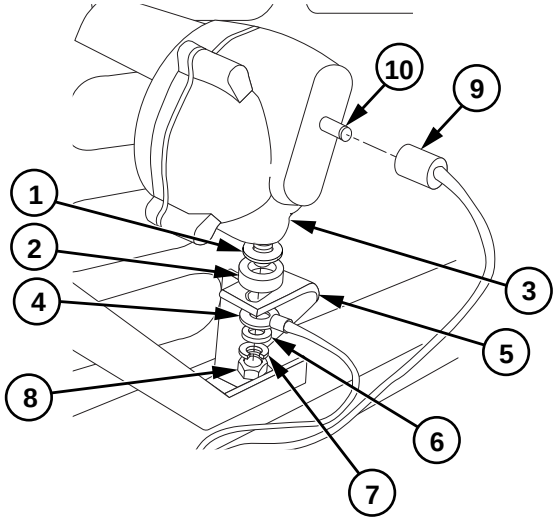
(3) Install new gasket (4) and door (5) on housing (6). Tighten four captive screws (7).

d. Installation

(1) Install bell washer (1) and spacer (2) on housing (3).

(2) Install housing (3) and ground wire (4) on mounting bracket (5) with washer (6), new lockwasher (7), and nut (8). Torque to 18–20 lb–ft (24–27 N·m).

(3) Install plug (9) in connector (10).



e. Follow-On Maintenance

(1) Check blackout lights operation (TM 9–2320–360–10).

(2) Close engine hood (TM 9–2320–360–10).

(3) Remove wheel chocks.

7-49. FRONT COMPOSITE LIGHT REPAIR

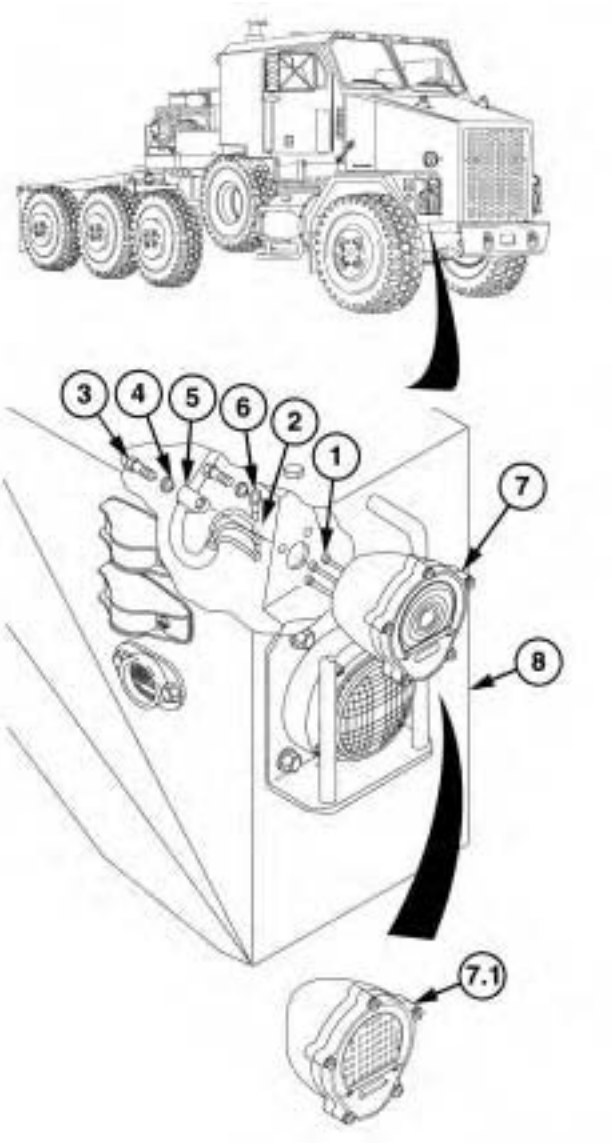
This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Sealant RTV (Item 29.1, Appendix C)
Tags, Identification (Item 32, Appendix C)
Lockwashers (2) (Item 102, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)



a. Removal

NOTE

- Model A, bulb type, or Model B LED type blackout drive light may be installed on vehicle.
- Removal/Installation is the same for both models.
- Model B, LED type, is not repairable.
- Left and right composite lights are repaired the same way. Right composite light is shown.
- Tag and mark wires before removal.

(1) Disconnect three plugs (1) from connectors (2).

(2) Remove two screws (3), lockwashers (4), clip (5), ground wire (6), and composite light (7) or composite LED light (7.1) from front fender (8). Discard lockwashers.

b. Disassembly

NOTE

Perform steps (1) through (4) for composite lamp assembly. Perform step (5) for composite LED assembly.

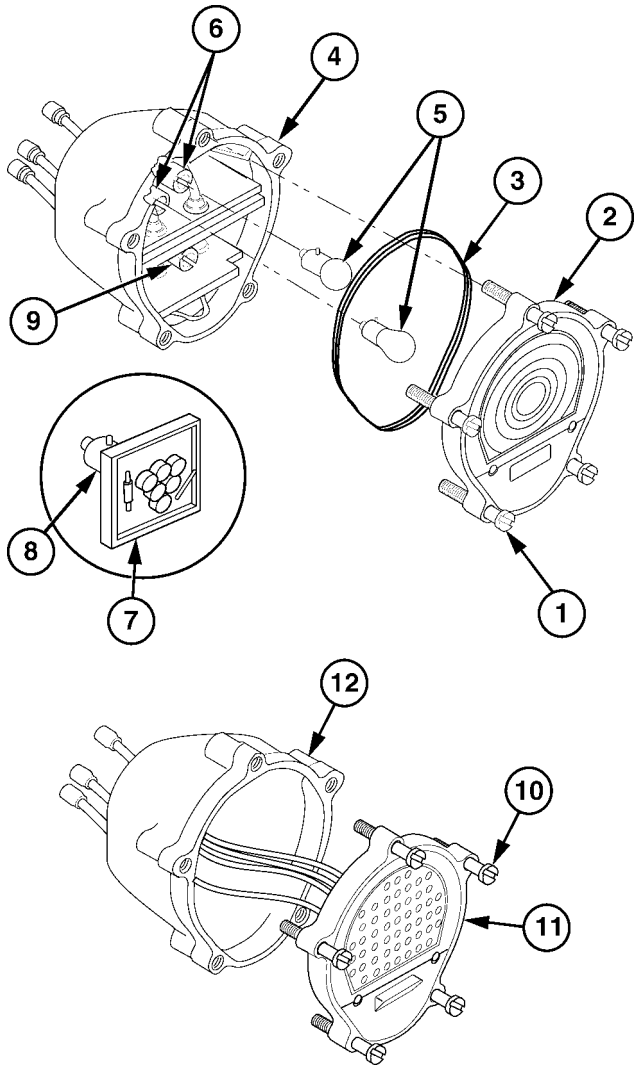
(1) Loosen five captive screws (1) and remove door (2) and gasket (3) from housing (4).

(2) Remove two lamps (5) from sockets (6).

(3) Open blackout marker lamp (7).

(4) Rotate lamp base (8) counterclockwise and remove blackout marker lamp (7) from socket (9).

(5) Remove five screws (10) and LED assembly (11) from housing (12).



7-49. FRONT COMPOSITE LIGHT REPAIR (CONT)

c. Assembly

NOTE

Perform steps (1) through (6) for composite lamp assembly. Perform steps (7) and (8) for composite LED assembly.

(1) Open blackout marker lamp (1).

(2) Install blackout marker lamp (1) in socket (2) and rotate lamp base (3) clockwise.

(3) Close blackout marker lamp (1).

WARNING

- **Adhesive-sealants and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To void injury or death, keep away from open fire and use in well-ventilated area. If sealing compound gets on skin or clothing, wash immediately with soap and water.**
- **Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use in well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush eyes with water for 15 minutes and get immediate medical attention.**
- **On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.**

(3.1) Coat inside of sockets (5) with RTV sealant.

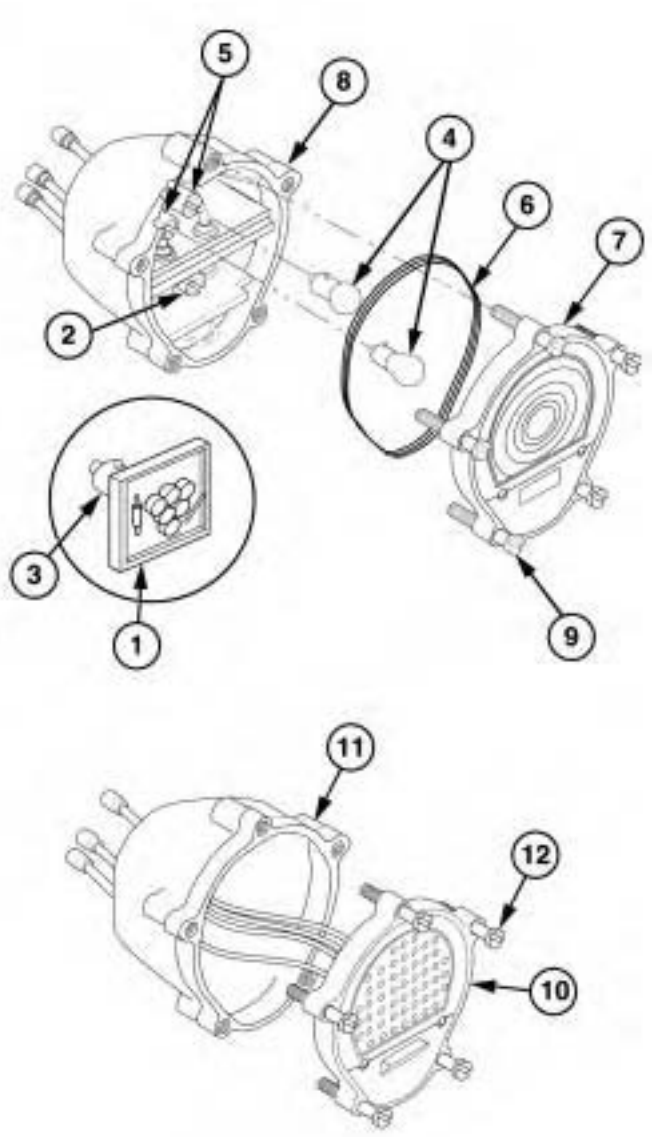
(4) Install two lamps (4) in sockets (5).

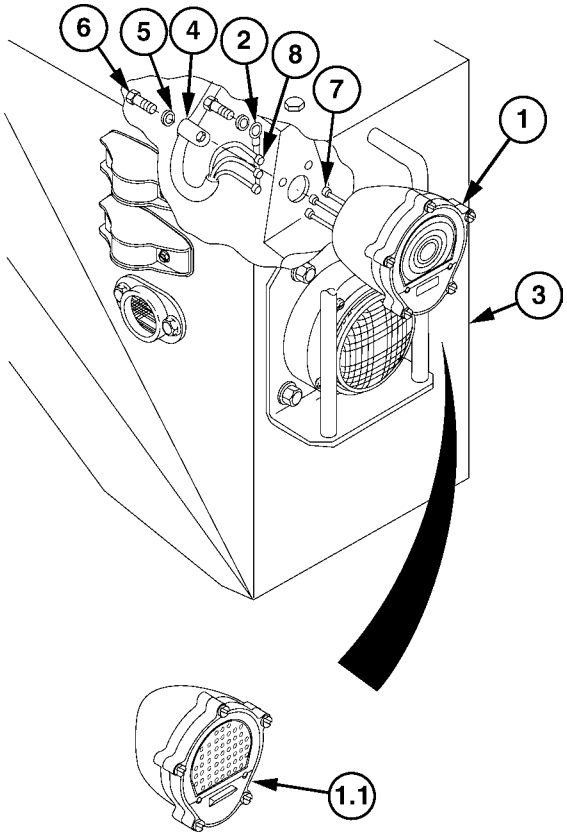
(5) Install gasket (6) and door (7) on housing (8).

(6) Tighten five captive screws (9).

(7) Install LED assembly (10) onto housing (11) using five screws (12).

(8) Tighten five screws (12).





d. Installation

(1) Install composite light (1) or composite LED light (1.1) and ground wire (2) on front fender (3) with clip (4), two new lockwashers (5), and screws (6).

(2) Install three plugs (7) in connectors (8).

e. Follow-On Maintenance

(1) Check blackout lights operation (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-50. REAR COMPOSITE LIGHT REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Sealant, RTV (Item 29.1, Appendix C)
Tags, Identification (Item 32, Appendix C)
Lockwashers (2) (Item 102, Appendix G)

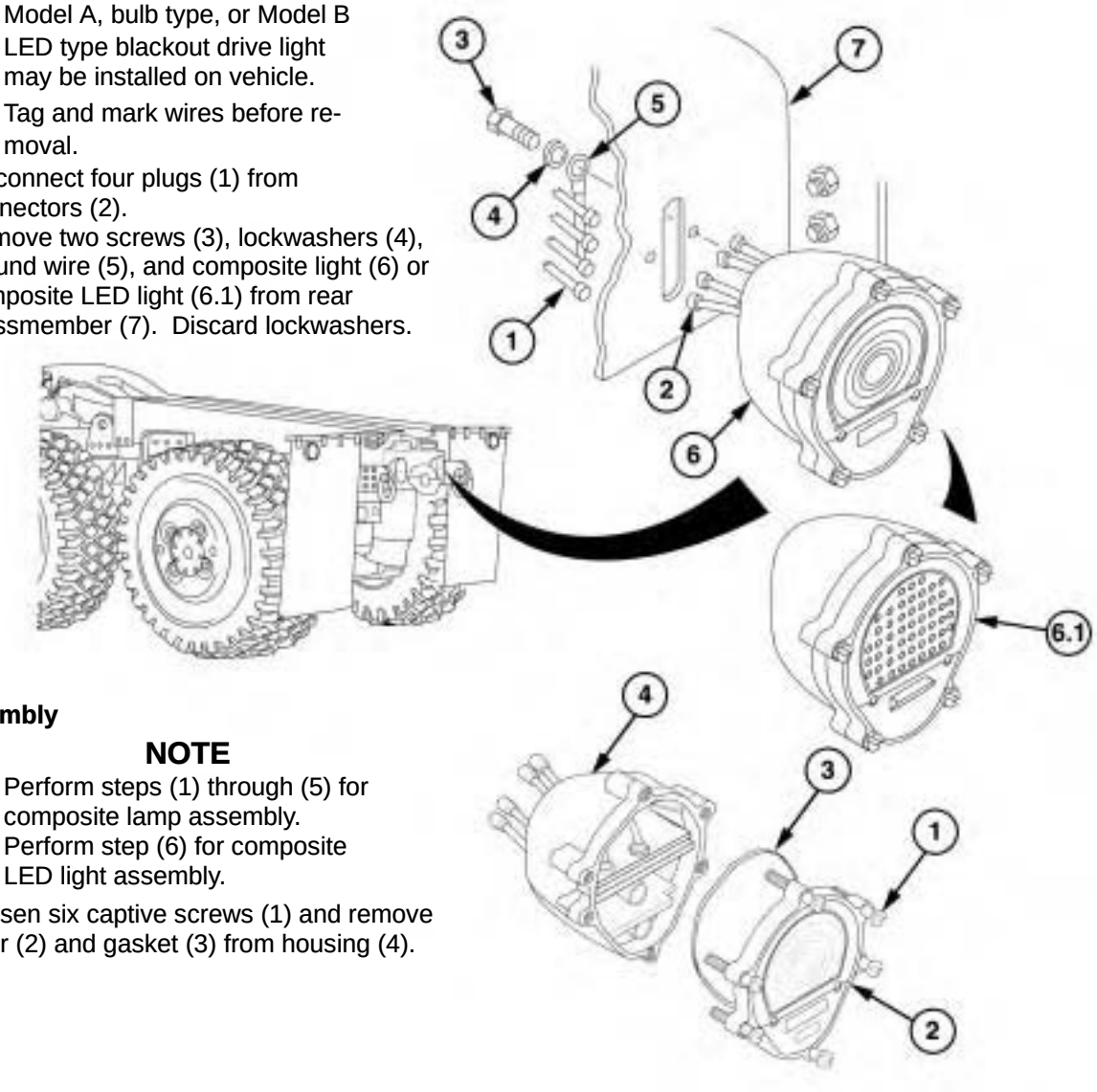
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

NOTE

- Model A, bulb type, or Model B LED type blackout drive light may be installed on vehicle.
- Tag and mark wires before removal.

(1) Disconnect four plugs (1) from connectors (2).
(2) Remove two screws (3), lockwashers (4), ground wire (5), and composite light (6) or composite LED light (6.1) from rear crossmember (7). Discard lockwashers.



b. Disassembly

NOTE

Perform steps (1) through (5) for composite lamp assembly.
Perform step (6) for composite LED light assembly.

(1) Loosen six captive screws (1) and remove door (2) and gasket (3) from housing (4).

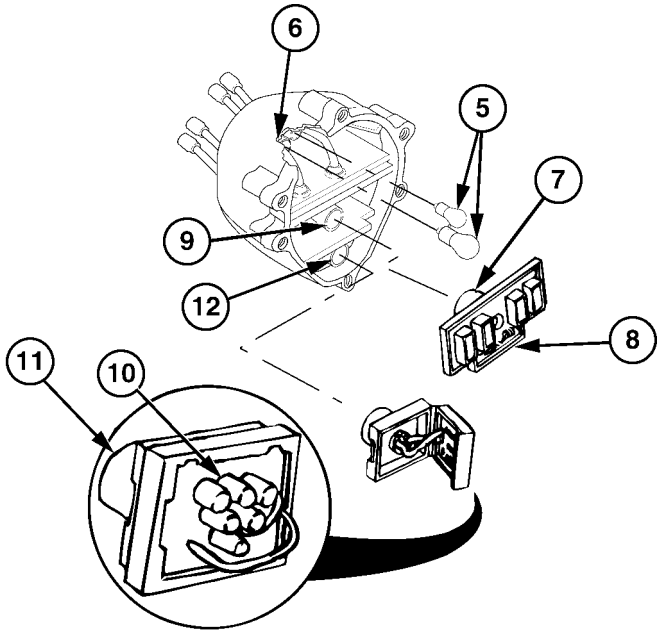
(2) Remove two lamps (5) from sockets (6).

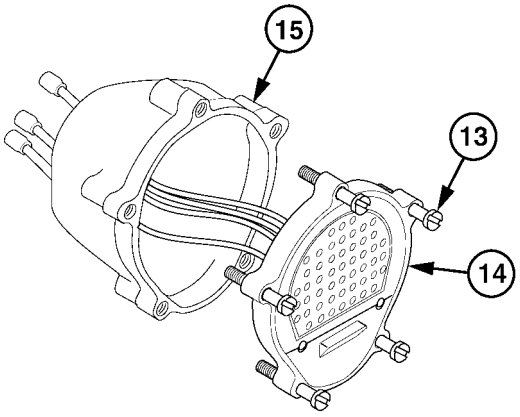
(3) Rotate lamp base (7) counterclockwise and remove blackout brake lamp (8) from socket (9).

(4) Open blackout marker lamp (10).

(5) Rotate lamp base (11) counterclockwise and remove blackout marker lamp (10) from socket (12).

(6) Remove five screws (13) and remove LED assembly (14) from housing (15).





7-50. REAR COMPOSITE LIGHT REPAIR (CONT)

c. Assembly

NOTE

Perform steps (1) through (7) for composite lamp assembly.
Perform step (8) for composite LED assembly.

(1) Open blackout marker lamp (1).

WARNING

- **Adhesive-sealants and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To void injury or death, keep away from open fire and use in well-ventilated area. If sealing compound gets on skin or clothing, wash immediately with soap and water.**
- **Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors Wear protective goggles and use in well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush eyes with water for 15 minutes and get immediate medical attention.**
- **On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin con tact, wipe off and flush with water.**

(1.1) Coat inside of socket (2) with RTV sealant.

(2) Install blackout marker lamp (1) in socket (2) and rotate lamp base (3) clockwise.

(3) Close blackout marker lamp (1).

(4) Install blackout brake lamp (4) in socket (5) and rotate lamp base (6) clockwise.

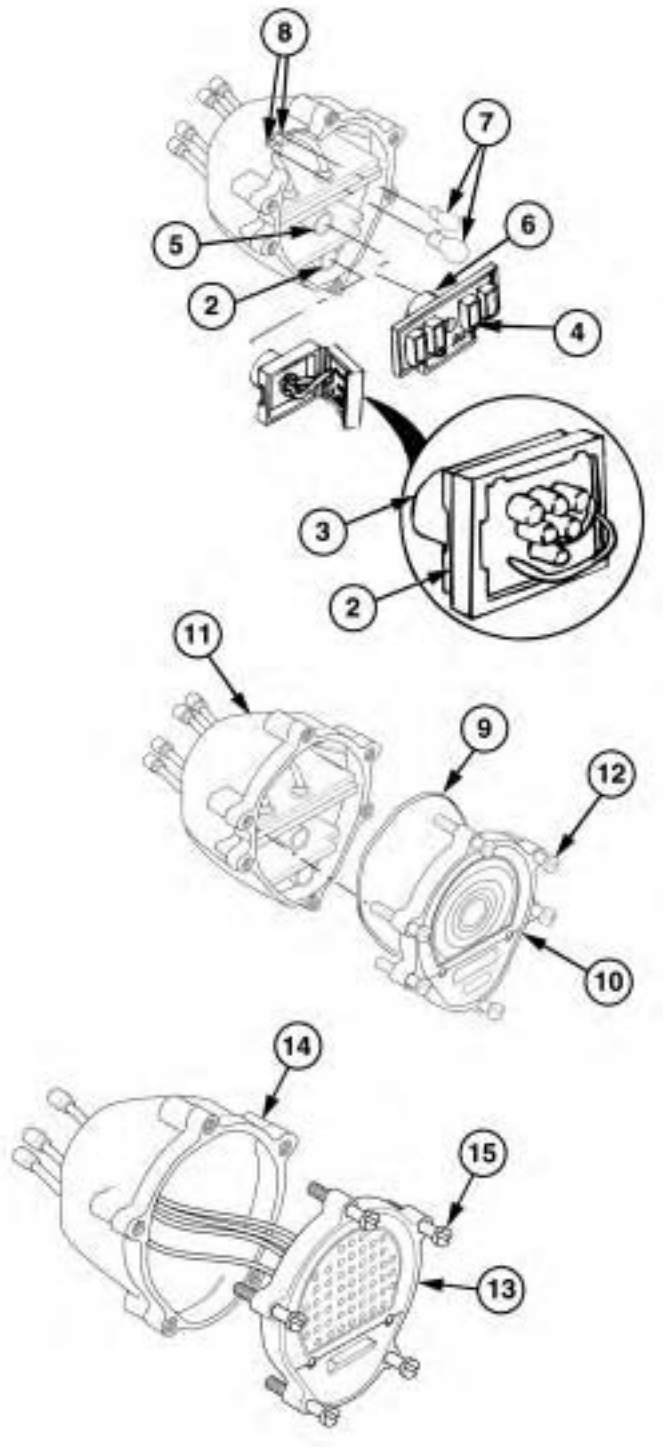
(4.1) Coat inside of sockets (8) with RTV sealant.

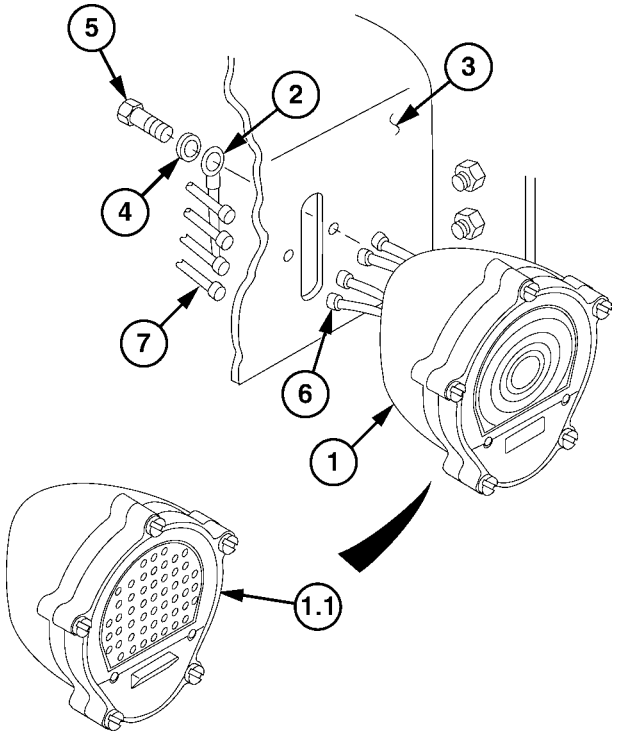
(5) Install two lamps (7) in sockets (8).

(6) Install gasket (9) and door (10) on housing (11).

(7) Tighten six captive screws (12).

(8) Install LED assembly (13) on housing (14) using five screws (15).





d. Installation

(1) Install composite light (1) or composite LED assembly (1.1) and ground wire (2) on rear crossmember (3) with two new lockwashers (4) and screws (5).

(2) Install four plugs (6) in connectors (7).

e. Follow-On Maintenance

(1) Check service drive lights operation (TM 9-2320-360-10).

(2) Check blackout lights operation (TM 9-2320-360-10).

(3) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(4) Check brake lights operation.

(5) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

(6) Remove wheel chocks.

7-51. BACKUP LIGHT REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2302-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Boots, Dust (2) (Item 8, Appendix G)
Contact, Electrical (Item 17, Appendix G)
Locknut (Item 48, Appendix G)
Lockwasher (Item 104, Appendix G)

a. Removal

NOTE
Connector is removed by gently prying on tab and pulling on connector.

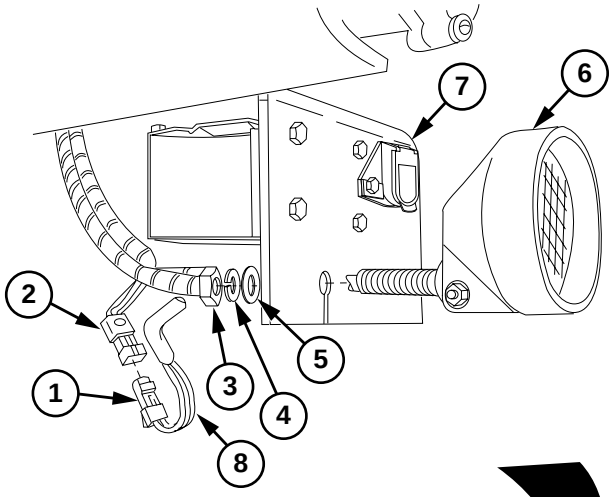
(1) Disconnect plug (1) from connector (2).

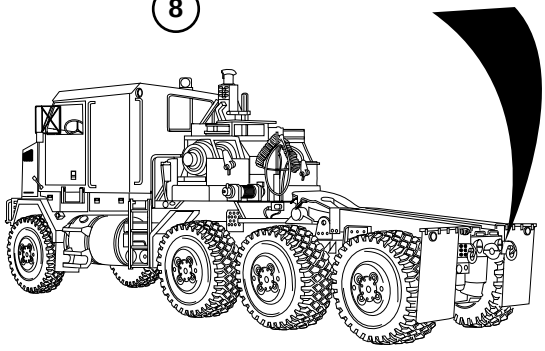
NOTE
Hardware is removed from light assembly during disassembly.

(2) Remove nut (3), lockwasher (4), and washer (5) from backup light (6).

(3) Remove backup light (6) from mounting bracket (7).

(4) Remove wire (8) through slot in mounting bracket (7).





b. Disassembly

NOTE

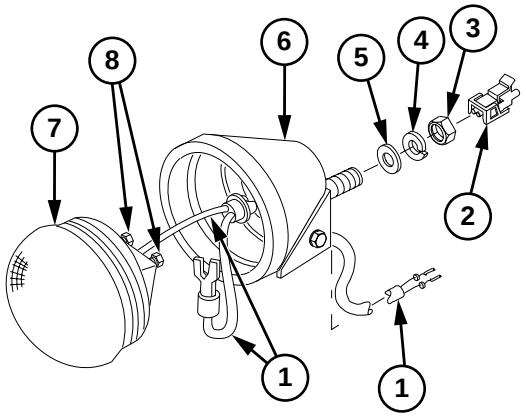
To remove lamp only, do steps (3) and (4).

(1) Remove two wires (1) from electrical connector (2) using contact socket removal tool.

(2) Remove nut (3), lockwasher (4), and washer (5) from backup light (6). Discard lockwasher.

(3) Remove lamp (7) from backup light (6).

(4) Remove two screws (8) and wires (1) from lamp (7).



c. Assembly

NOTE

To install lamp only, do steps (1) and (2).

(1) Install two wires (1) on lamp (2) with two screws (3).

(2) Install lamp (2) in backup light (4).

NOTE

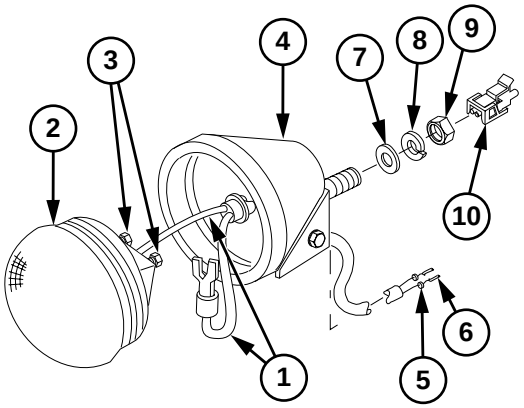
Do steps (3) and (4) only if backup light assembly is being replaced.

(3) Install two dust boots (5) on wires (1).

(4) Crimp electrical contacts (6) on wires (1).

(5) Install washer (7), new lockwasher (8), and nut (9) on backup light (4).

(6) Install two wires (1) on electrical connector (10).



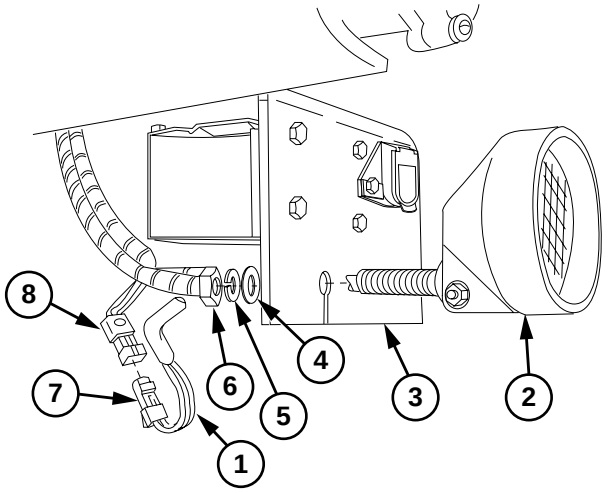
7-51. BACKUP LIGHT REPAIR (CONT)

d. Installation

(1) Slide wire (1) through slot and install backup light (2) on mounting bracket (3).

(2) Install washer (4), new lockwasher (5), and nut (6) on backup light (2).

(3) Install plug (7) in connector (8).



e. Follow-On Maintenance

(1) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(2) Place transmission range selector in R (reverse) position (TM 9-2320-360-10).

(3) Check backup light operation.

(4) Place transmission range selector in N (neutral) position (TM 9-2320-360-10).

(5) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

(6) Remove wheel chocks.

7-52. BEACON LIGHT ASSEMBLY REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Locknuts (3) (Item 72, Appendix G)
Lockwashers (3) (Item 102, Appendix G)
Spacers, Rubber (Item 170, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

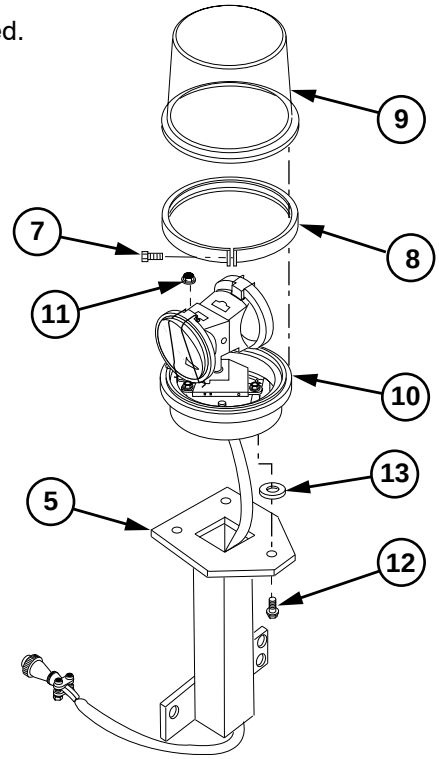
(1) Disconnect plug (1) from connector (2).

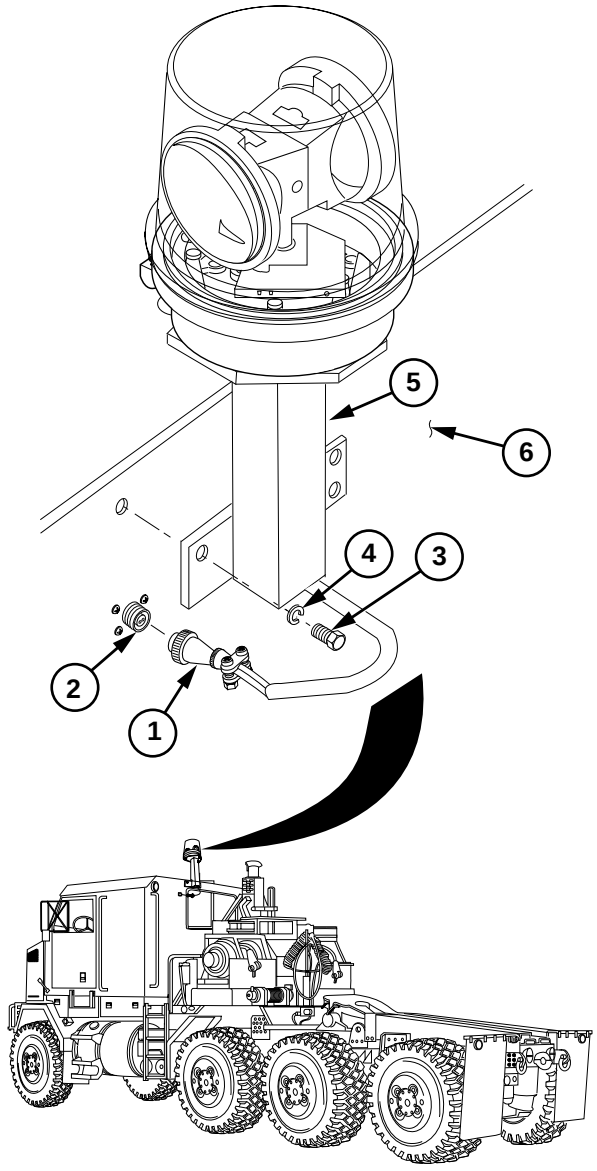
(2) Remove three screws (3), lockwashers (4), and mounting bracket (5) from cab (6). Discard lockwashers.

(3) Remove screw (7), retaining ring (8), and lens (9) from beacon light fixture (10).

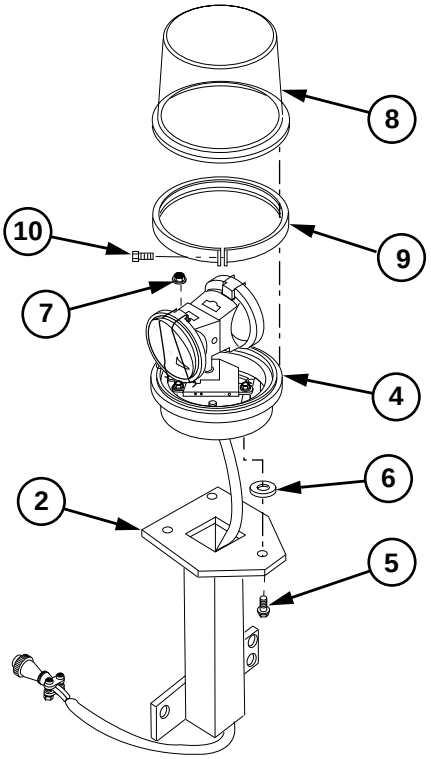
(4) Remove three locknuts (11), screws (12), beacon light fixture (10), and three rubber spacers (13) from mounting bracket (5). Discard locknuts and rubber spacers.

(5) Deleted.





7-52. BEACON LIGHT ASSEMBLY REPLACEMENT (CONT)

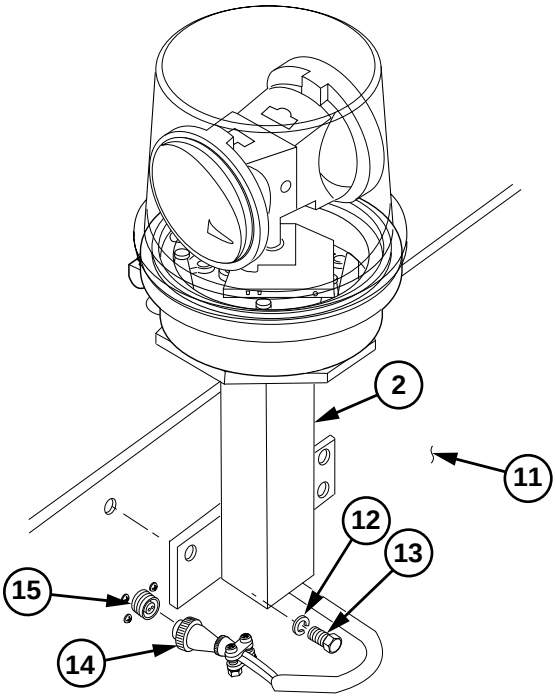


b. Installation

(1) Deleted.

(2) Install beacon light fixture (4) on mounting bracket (2) with three screws (5), new rubber spacers (6) and new locknuts (7).

(3) Install lens (8) and retaining ring (9) on beacon light fixture (4) with screw (10).



(4) Install mounting bracket (2) on cab (11) with three new lockwashers (12) and screws (13).

(5) Install plug (14) in connector (15).

c. Follow-On Maintenance

(1) Check light operation (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-52.1. STROBE LIGHT ASSEMBLY REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Adhesive-Sealant, Silicone (Item 3, Appendix C)
Gasket, Mounting (Item 40.1, Appendix G)
Locknuts (3) (Item 72, Appendix G)
Lockwashers (3) (Item 102, Appendix G)

a. Removal

(1) Disconnect plug (1) from connector (2).

(2) Remove three screws (3), lockwashers (4), and mounting bracket (5) from cab (6). Discard lockwashers.

(3) Remove three screws (7), locknuts (8), strobe light assembly (9) and gasket (10) from mounting bracket (5). Discard locknuts and gasket.

b. Installation

(1) Install new gasket (1) over wires and position on strobe light base (2).

WARNING

On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.

(2) Apply silicone adhesive-sealant around wires where they pass thru new gasket (1).

(3) Install strobe light assembly (3) and new gasket (1) on mounting bracket (4) with three screws (5) and new locknuts (6).

(4) Install mounting bracket (4) on cab (7) with three new lockwashers (8) and screws (9).

(5) Install plug (10) in connector (11).

c. Follow-On Maintenance

(1) Check light operation (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-53. BEACON LIGHT ASSEMBLY REPAIR

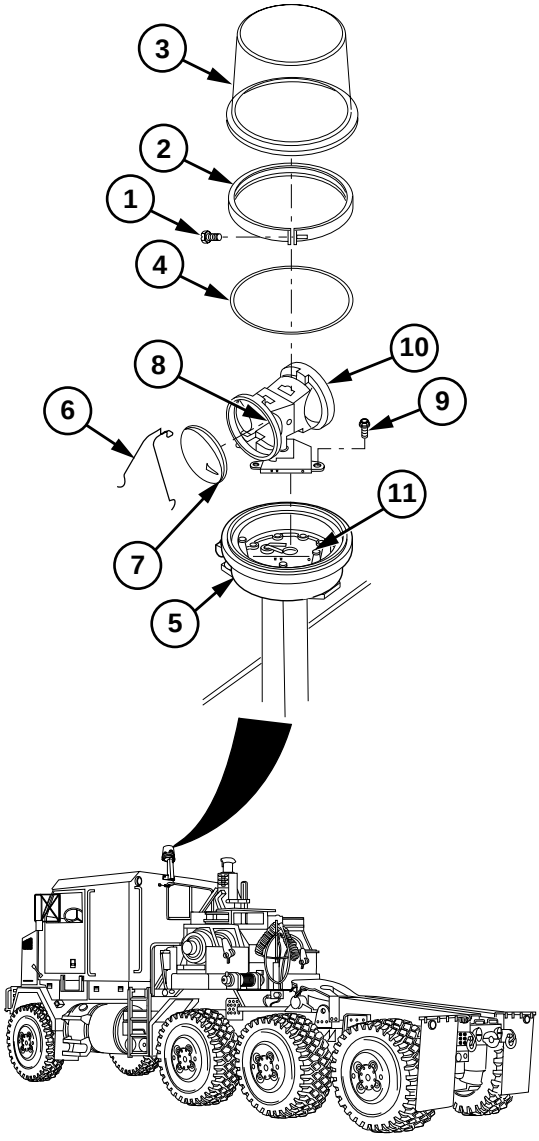
This task covers:
a. Disassembly
b. Assembly
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10)
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Gasket (Item 39, Appendix G)



a. Disassembly

(1) Remove screw (1), retaining ring (2), lens (3), and gasket (4) from housing (5). Discard gasket.

NOTE
Support lamp while removing retaining clip.

(2) Pull two retaining clips (6) down to release lamps (7).

(3) Remove two lamps (7) from sockets (8).

(4) Remove three screws (9) and beacon light fixture (10) from housing (5).

NOTE
Tag and mark wires before removal.

(5) Disconnect two wires (11) from beacon light fixture (10).

7-53. BEACON LIGHT ASSEMBLY REPAIR (CONT)

b. Assembly

(1) Connect two wires (1) to beacon light fixture (2).

(2) Install beacon light fixture (2) and three screws (3) in housing (4).

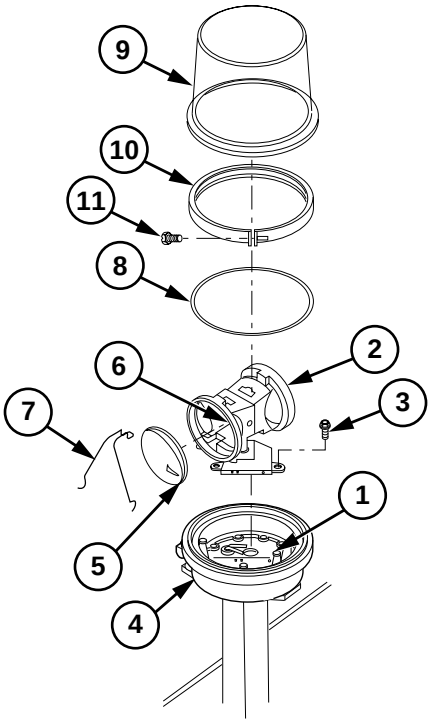
NOTE

Ensure lamp contacts are correctly positioned on socket contacts. Lamps will not light if installed incorrectly.

(3) Install two lamps (5) in sockets (6).

(4) Push two retaining clips (7) up and lock on top of fixture (2) to secure lamps (5).

(5) Install new gasket (8), lens (9), retaining ring (10), and screw (11) on housing (4).



c. Follow-On Maintenance

(1) Check cab external light operation (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-53.1. STROBE LIGHT ASSEMBLY REPAIR

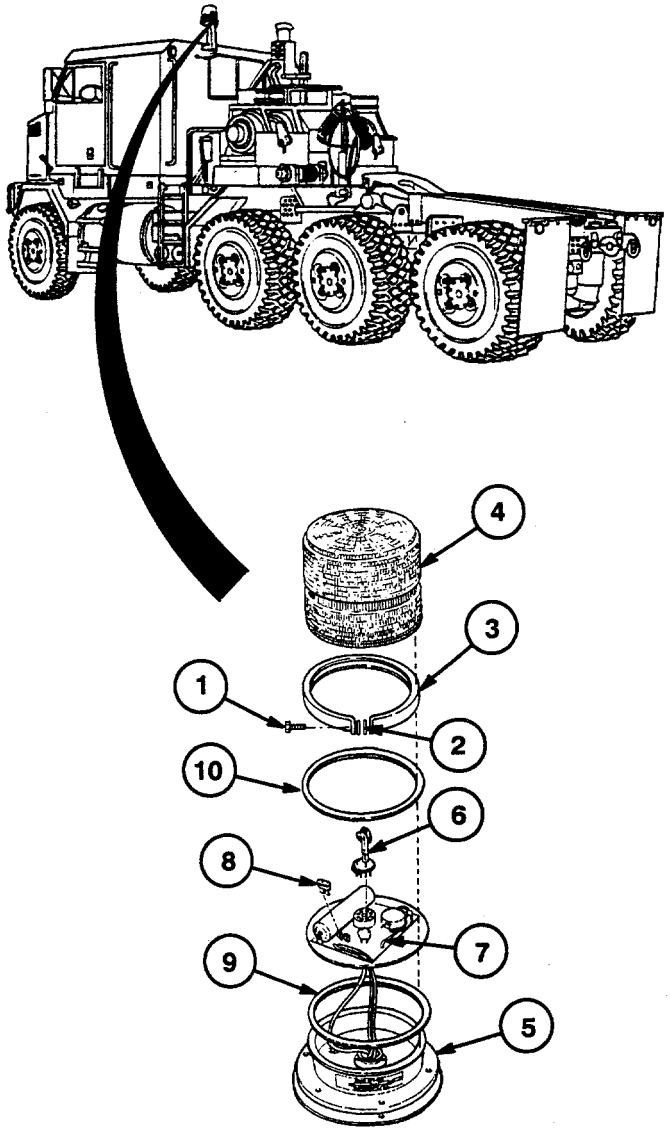
This task covers:
a. Disassembly
b. Assembly
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10)
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Gasket (2) (Item 34.1, Appendix G)
Locknuts (3) (Item 72, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)



a. Disassembly

WARNING

Capacitor inside light assembly may contain high voltage. Ensure light has been turned off at least five minutes before servicing. Failure to comply may result in injury to personnel.

(1) Remove screw (1), two preformed packings (2), clamp ring (3), and lens (4) from base (5).

CAUTION

Do not touch glass portion of strobe tube with bare hands. Oil from your skin will shorten the life of the bulb. Handle the bulb only by the black base of the strobe tube.

(2) Remove strobe tube (6) from circuit board assembly (7).

(3) Remove fuse (8) from circuit board assembly (7).

(4) Remove gasket (9) from base (5). Discard gasket.

(5) Remove gasket (10) from lens (4). Discard gasket.

7-53.1. STROBE LIGHT ASSEMBLY REPAIR (CONT)

b. Assembly

(1) Position new gasket (1) on base (2).

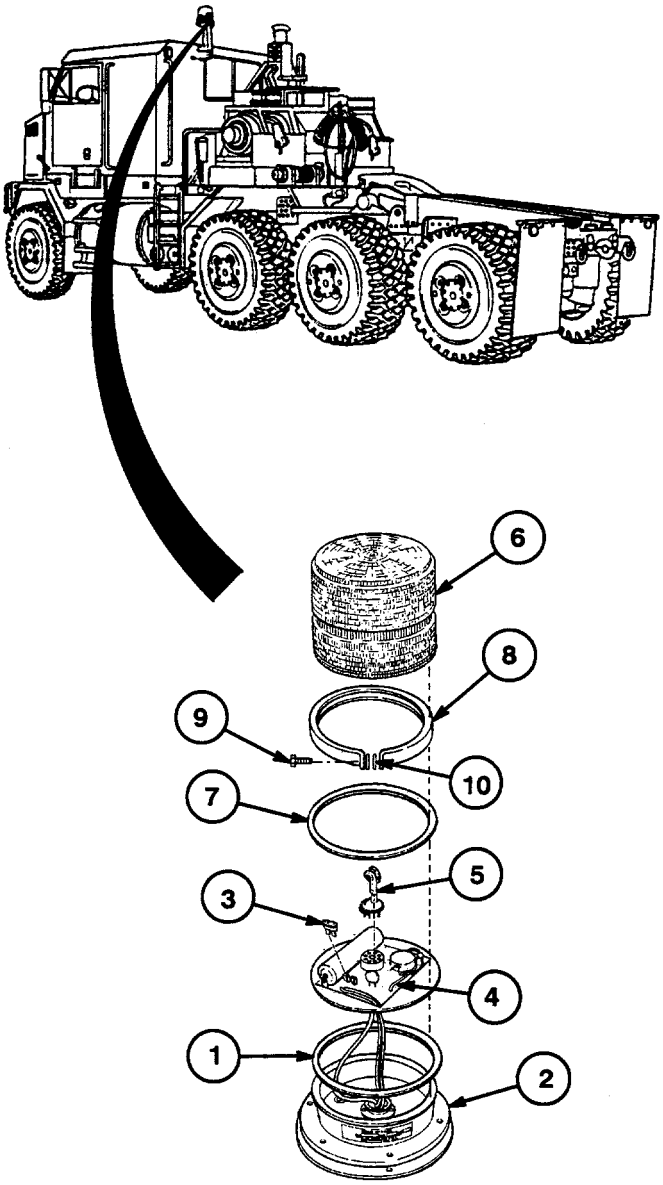
(2) Install fuse (3) on circuit board assembly (4).

CAUTION

Do not touch glass portion of strobe tube with bare fingers. Oil from your skin will shorten the life of the bulb. Handle the bulb only by the black base of the strobe tube.

(3) Install strobe tube (5) on circuit board assembly (4).

(4) Install lens (6) and new gasket (7) on base (2) with clamp ring (8), screw (9), and two preformed packings (10).



c. Follow-On Maintenance

(1) Check cab external light operation (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-54. BUZZER REPLACEMENT

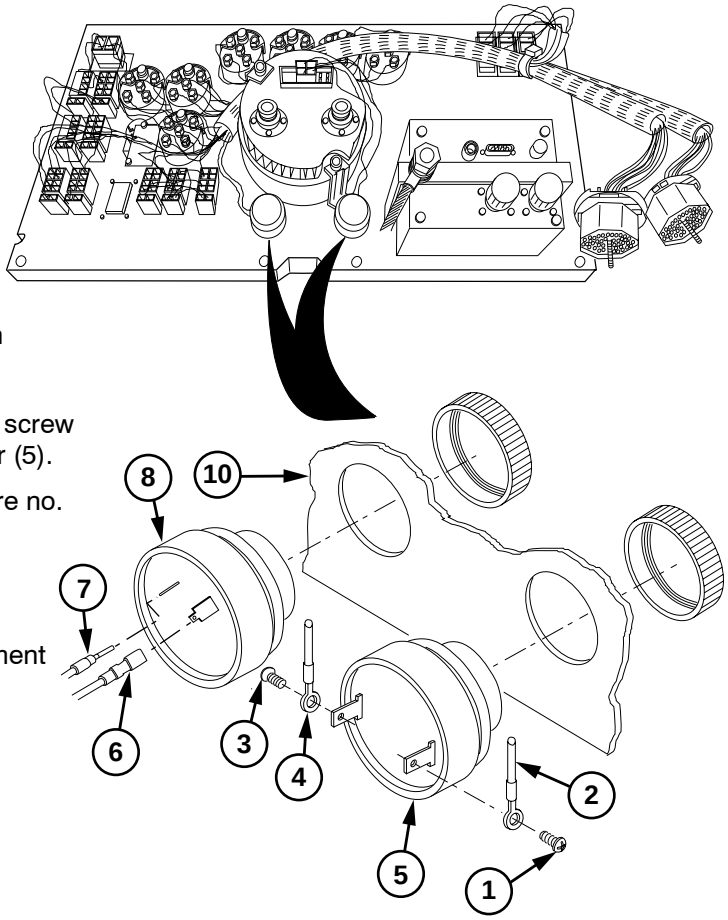
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Instrument panel removed (para 7-13).

Materials/Parts
Tags, Identification (Item 32, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)



a. Removal

NOTE

- Tag and mark wires before removal.
- If wire connections are round, perform steps (1), (3), and (4). For pronged connections, begin with step (2).

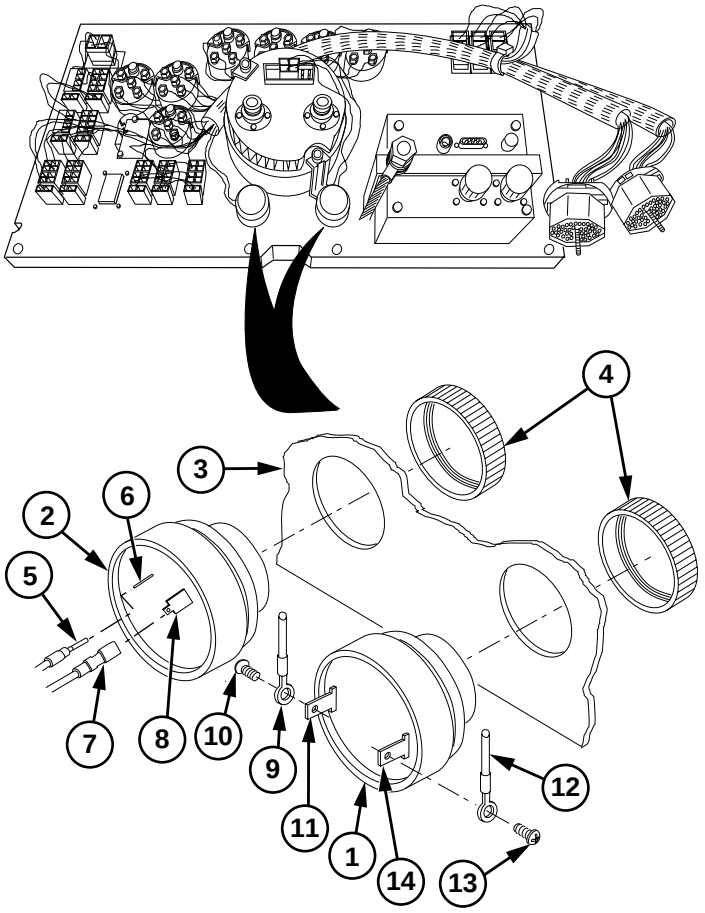
(1) Remove screw (1), wire no. 509 (2), screw (3), and wire no. 439 (4) from buzzer (5).

(2) Disconnect wire no. 1120 (6) and wire no. 1276 (7) from buzzer (8).

(3) Remove knurled nut (9) from buzzer (5 or 8).

(4) Remove buzzer (5 or 8) from instrument panel (10).

7-54. BUZZER REPLACEMENT (CONT)



b. Installation

(1) Position buzzer (1 or 2) on instrument panel (3).

(2) Install knurled nut (4) on buzzer (1 or 2).

NOTE

Do step (3) only if wire connections are pronged.

(3) Connect wire no. 1276 (5) to positive (+) terminal (6) and wire no. 1120 (7) to negative (–) terminal (8) of buzzer (2).

(4) Install wire no. 439 (9) and screw (10) on positive (+) terminal (11) of buzzer (1).

(5) Install wire no. 509 (12) and screw (13) on negative (–) terminal (14) of buzzer (1).

c. Follow-On Maintenance

Install instrument panel (para 7-13).

7-55. BACKUP ALARM REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Locknuts (4) (Item 72, Appendix G)

a. Removal

(1) Remove four locknuts (1), screws (2), backup alarm (3), and guard (4) from rear plate (5). Discard locknuts.

(2) Remove quickedge molding (6) from guard (4).

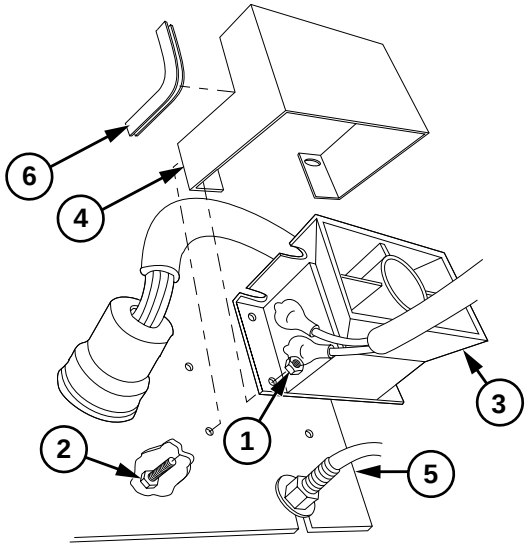
NOTE
Tag and mark wires before removal.

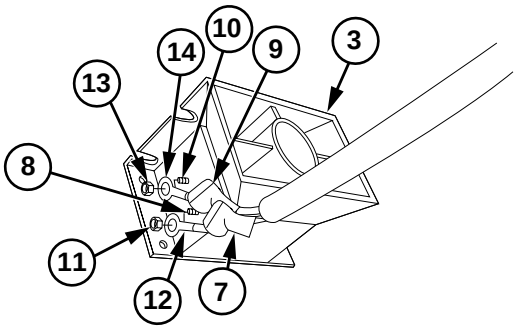
(3) Lift and slide boot (7) from negative (-) terminal (8).

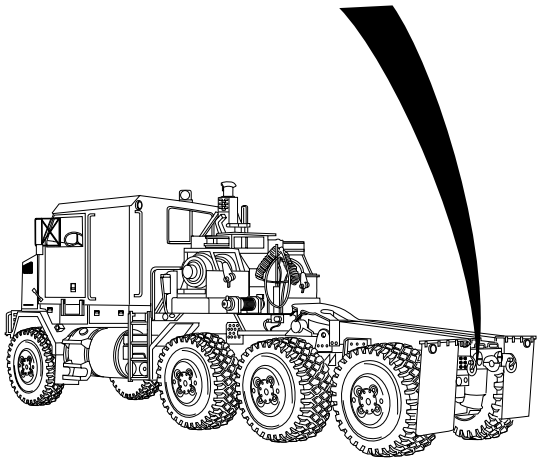
(4) Lift and slide boot (9) from positive (+) terminal (10).

(5) Remove nut (11) and wire no. 1435 (12) from negative (-) terminal (8) on backup alarm (3).

(6) Remove nut (13) and wire no. 1149 (14) from positive (+) terminal (10) on backup alarm (3).







7-55. BACKUP ALARM REPLACEMENT (CONT)

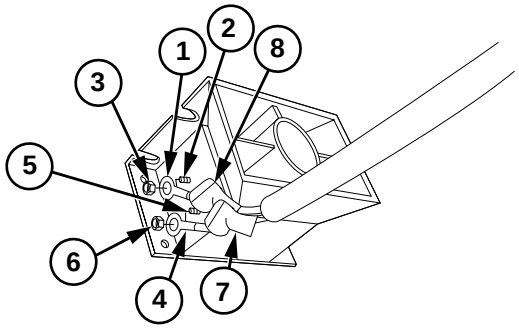
b. Installation

(1) Install wire no. 1149 (1) on positive (+) terminal (2) with nut (3).

(2) Install wire no. 1435 (4) on negative (-) terminal (5) with nut (6).

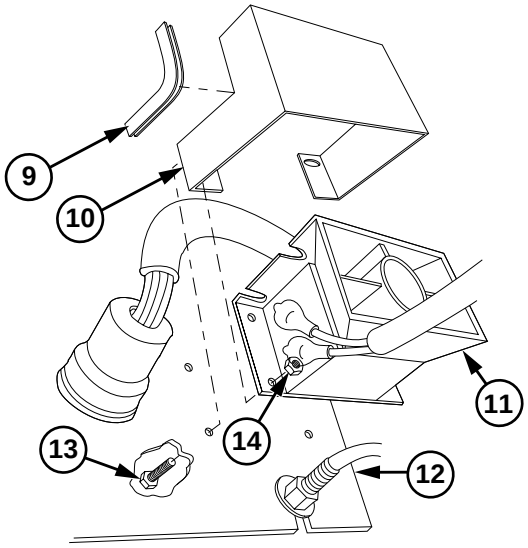
(3) Slide boot (7) on negative (-) terminal (5).

(4) Slide boot (8) on positive (+) terminal (2).



(5) Install quickedge molding (9) on guard (10).

(6) Install guard (10) and backup alarm (11) on rear plate (12) with four screws (13) and new locknuts (14).



c. Follow-On Maintenance

(1) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(2) Place transmission range selector in R (reverse) position and listen for alarm to sound (TM 9-2320-360-10).

(3) Place transmission range selector in N (neutral) position (TM 9-2320-360-10).

(4) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

(5) Remove wheel chocks.

7-56. LOW AIR PRESSURE SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels choked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)

a. Removal

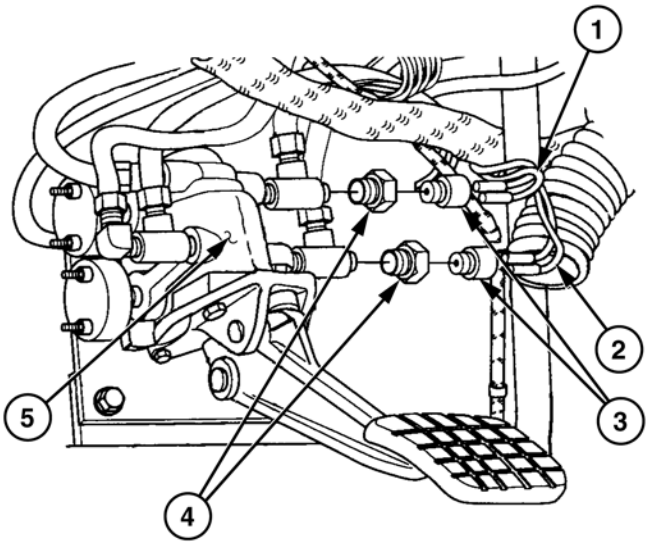
NOTE

- Upper and lower switches are replaced the same way.
- Tag and mark wires before removal.

(1) Remove wire no. 1120 (1) and wire no. 1435 (2) from low air pressure switch (3).

(2) Remove switch (3) from bushing (4).

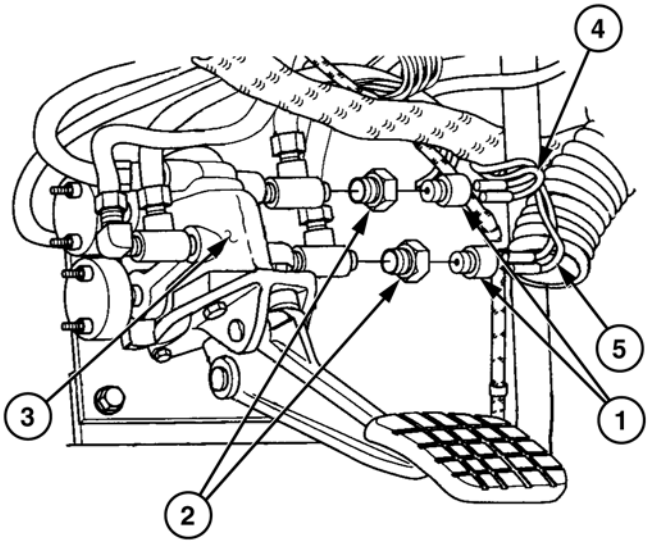
(3) Remove bushing (4) from brake treadle valve (5).



b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



(1) Coat threads of low air pressure switch (1) and bushing (2) with pipe thread sealing compound.

(2) Install bushing (2) on brake treadle valve (3)

(3) Install low air pressure switch (1) in bushing (2).

(4) Connect wire no. 1120 (4) and wire no. 1435 (5) to switch (1).

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check AIR PRESSURE gage for correct operating pressure of 60-120 psi (414-827 kPa) (TM 9-2320-360-10).

(3) Check for leaks.

(4) Shut off engine (TM 9-2320-360-10).

(5) Remove wheel chocks.

7-57. BATTERY CABLE AND TERMINAL/BATTERY/BATTERY BOX REPAIR

This task covers:

- Removal
- Disassembly
- Cleaning/Inspection
- Assembly
- Installation
- Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
- Engine shut off (TM 9-2320-360-10).
- Parking brake on (TM 9-2320-360-10).
- Wheels chocked.
- Arctic kit batteries disconnected (if installed) (para 19-2).
- Battery box cover removed (TM 9-2320-360-10).
- No. 3 air reservoir removed (battery box bracket only) (para 11-21).
- No. 4 Air reservoir removed (battery box bracket only) (para 11-22).
- Accessory air supply coupling removed (battery box bracket only (para 11-41).

Tools and Special Tools
- Tool Kit, Genl Mech (Item 54, Appendix F)
- Puller, Battery Terminal (Item 30, Appendix F)
- Socket Wrench Set, 3/8 In. Drive (Item 45, Appendix F)
- Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

Materials/Parts
- Grease, Anticorrosion (Item 16, Appendix C)
- Paint, Acid Resistant (Item 27.1, Appendix C)
- Tags, Identification (Item 32, Appendix C)
- Locknuts (5) (Item 62, Appendix G)
- Locknuts (4) (Item 44, Appendix G)
- Locknuts (4) (Item 65, Appendix G)
- Locknuts (3) (Item 68, Appendix G)
- Locknuts (2) (Item 58, Appendix G)
- Locknuts (2) (Item 72, Appendix G)
- Locknut (Item 63, Appendix G)
- Lockwashers (8) (Item 120, Appendix G)
- Pins, Cotter (2) (Item 154.1, Appendix G)

Personnel Required
- Two

WARNING

When servicing this vehicle, performing maintenance, or disposing of materials such as batteries or battery acid, consult your Unit/local hazardous waste disposal center or safety office for local regulatory guidance. If further information is needed, please contact the Army environmental hotline at 1-800-872-3845. Improper disposal of this material may result in damage to environment or injury to personnel.

7-57. BATTERY CABLE AND TERMINAL/BATTERY/BATTERY BOX REPAIR (CONT)

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Batteries can explode from a spark. Battery acid is harmful to skin and eyes.

NOTE

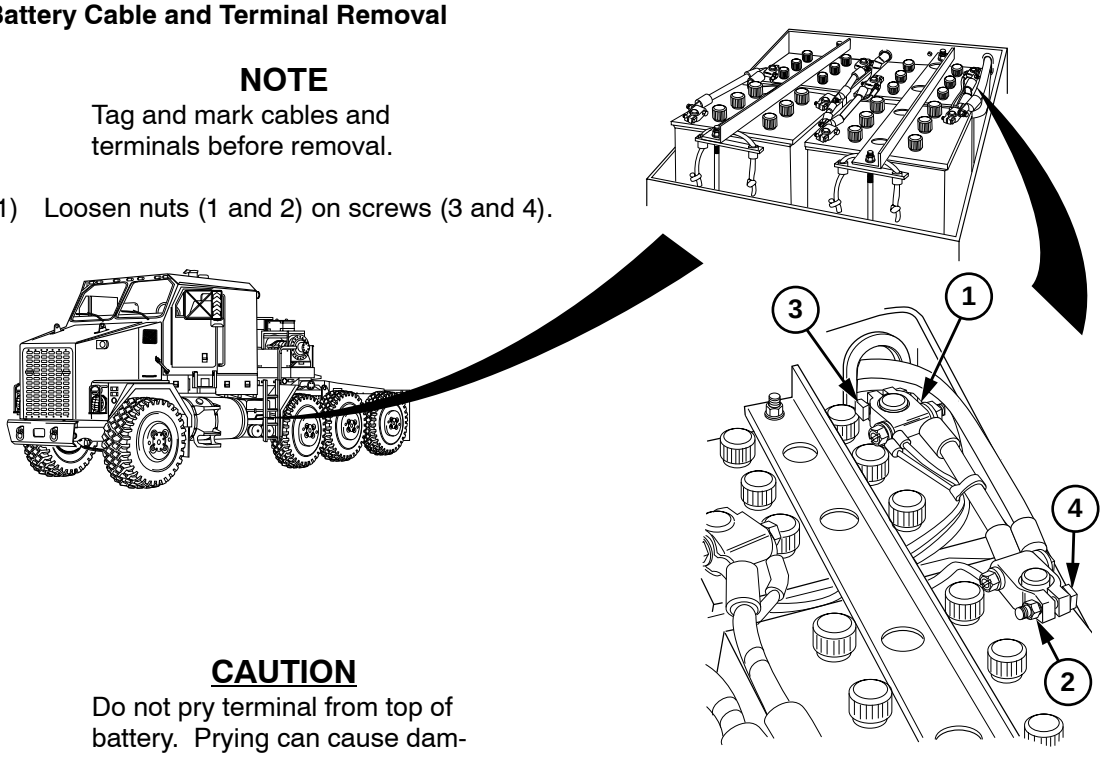
Battery posts are marked (+) for positive and (–) for negative polarity. Cable terminals are marked (P) (+) for positive and (N) (–) for negative polarity.

a. Battery Cable and Terminal Removal

NOTE

Tag and mark cables and terminals before removal.

(1) Loosen nuts (1 and 2) on screws (3 and 4).



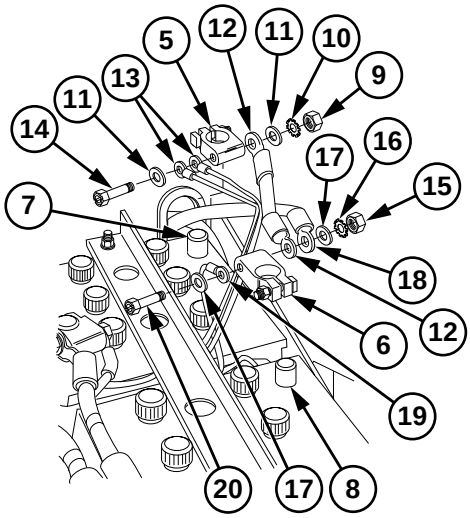
CAUTION

Do not pry terminal from top of battery. Prying can cause damage to battery. Remove battery terminals with battery terminal puller.

(2) Remove negative (–) terminals (5 and 6) from negative (–) battery posts (7 and 8).

(3) Remove nut (9), lockwasher (10), two washers (11), cable (12), two wires no. 150 (13), and screw (14) from negative (–) terminal (5). Discard lockwasher.

(4) Remove nut (15), lockwasher (16), two washers (17), two cables (18 and 12), wire no. 1813 (19), and screw (20) from negative (–) terminal (6). Discard lockwasher.

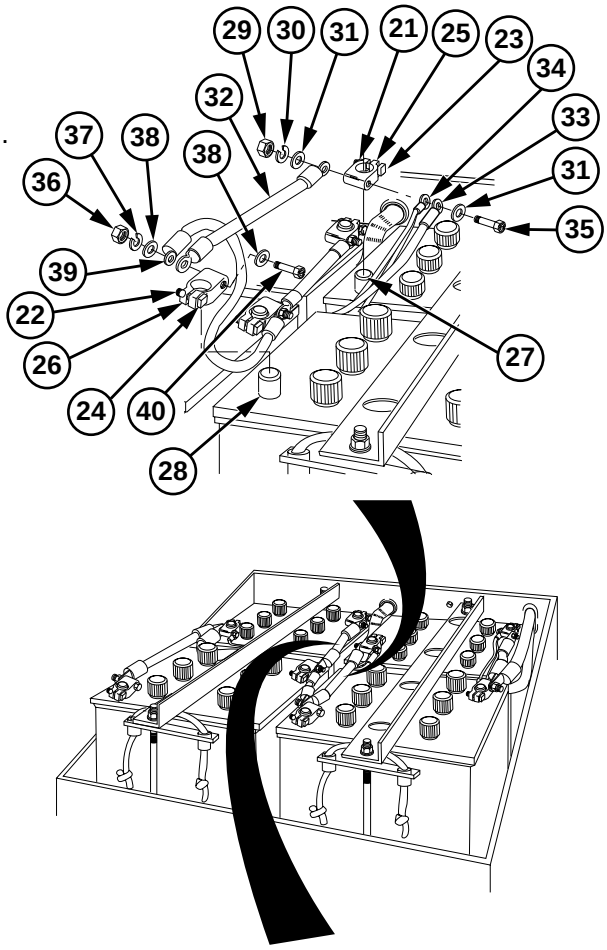


(5) Loosen nuts (21 and 22) on screws (23 and 24).

(6) Remove positive (+) terminals (25 and 26) from positive (+) battery posts (27 and 28).

(7) Remove nut (29), lockwasher (30), two washers (31), cable (32), wire no. 1622 (33), wires no. 240 and no. 241 (34), and screw (35) from positive (+) terminal (25). Discard lockwasher.

(8) Remove nut (36), lockwasher (37), two washers (38), two cables (39 and 32), and screw (40) from positive (+) terminal (26). Discard lockwasher.



(9) Loosen nuts (41 and 42) on screws (43 and 44).

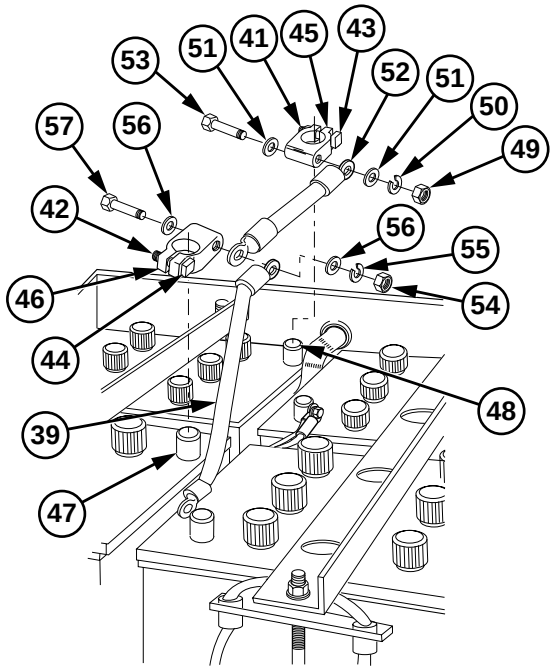
CAUTION

Do not pry terminal from top of battery. Prying can cause damage to battery. Remove battery terminals with battery terminal puller.

(10) Remove negative (–) terminals (45 and 46) from negative (–) battery posts (47 and 48).

(11) Remove nut (49), lockwasher (50), two washers (51), cable (52), and screw (53) from negative (–) terminal (45). Discard lockwasher.

(12) Remove nut (54), lockwasher (55), two washers (56), cables (39 and 52), and screw (57) from negative (–) terminal (46). Discard lockwasher.



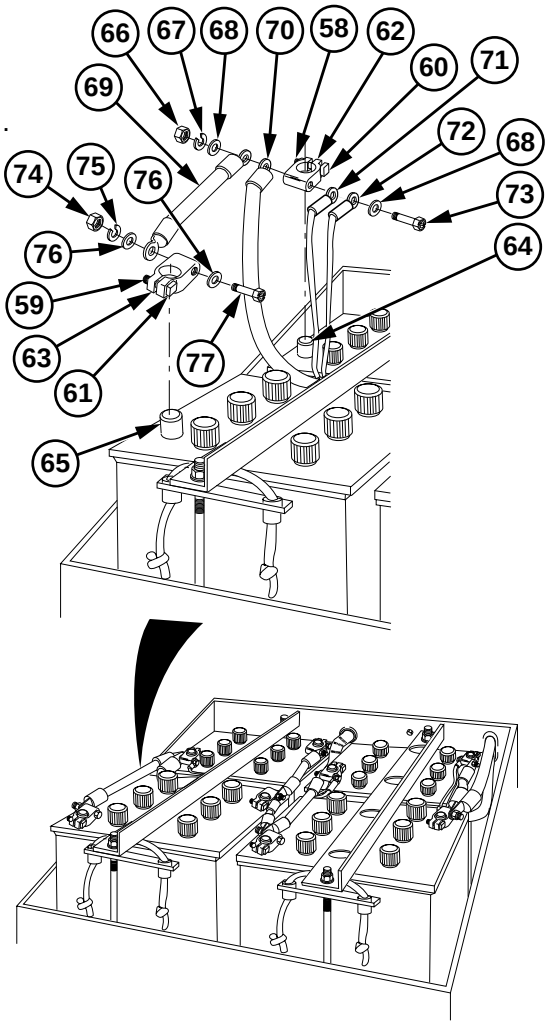
7-57. BATTERY CABLE AND TERMINAL/BATTERY/BATTERY BOX REPAIR (CONT)

(13) Loosen nuts (58 and 59) on screws (60 and 61).

(14) Remove positive (+) terminals (62 and 63) from positive (+) battery posts (64 and 65).

(15) Remove nut (66), lockwasher (67), two washers (68), cables (69 and 70) wire no. 1822 (71), wire no. 1814 (72), and screw (73), from positive (+) terminal (62). Discard lockwasher.

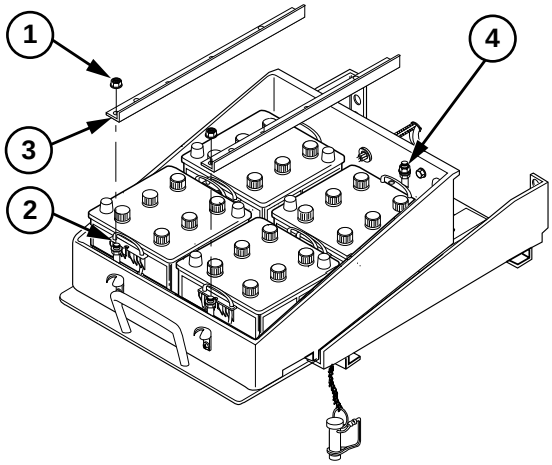
(16) Remove nut (74), lockwasher (75), two washers (76), cable (69), and screw (77) from positive (+) terminal (63). Discard lockwasher.



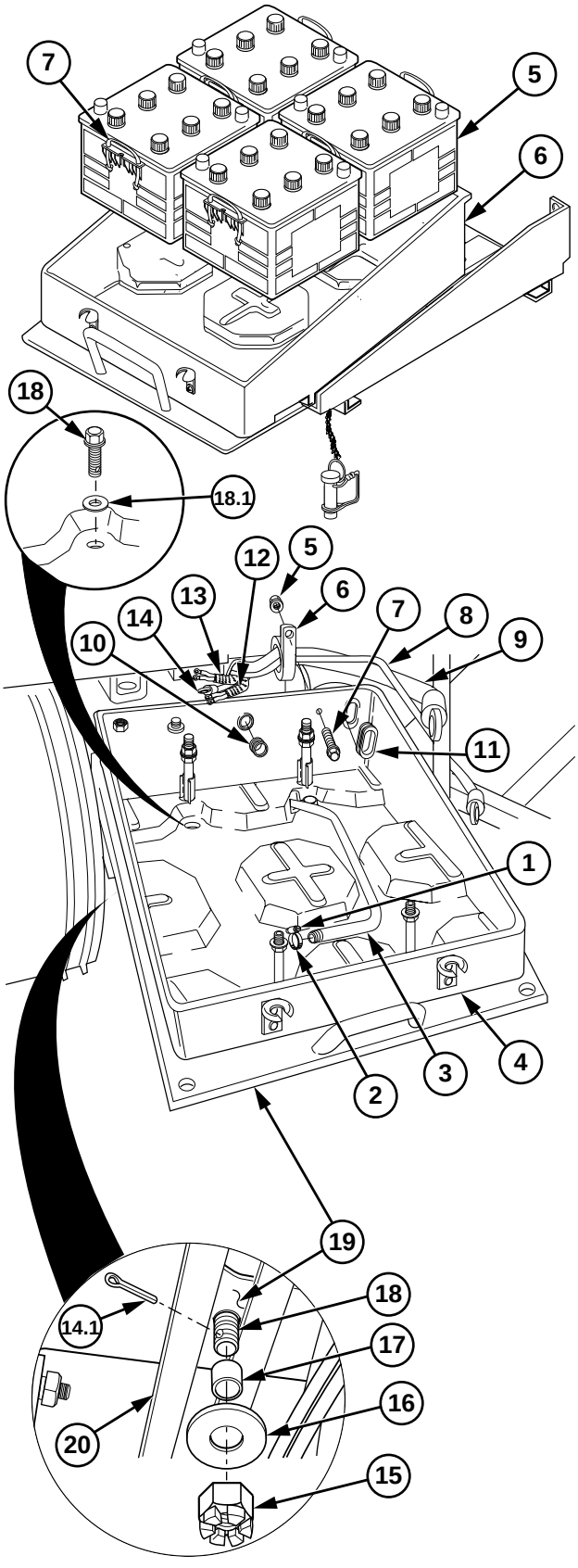
b. Battery Removal

(1) Remove two locknuts (1) from forward studs (2). Discard locknuts.

(2) Remove two battery retainers (3) from forward studs (2) and pull two battery retainers (3) from rear studs (4).



(3) Remove four batteries (5) from battery box (6) using handles (7).



c. Battery Box/Bracket Removal

NOTE

Do steps (1) and (2) if arctic kit is installed on HET Tractor,

(1) Loosen screw (1) on clamp (2). Remove clamp (2) from exhaust hose (3).

(2) Push exhaust hose (3) out through hole in bottom of battery box (4).

(3) Remove locknut (5), clip (6), and screw (7) from battery box (4) and battery cables (8 and 9). Discard locknut.

NOTE

Do step (4) only if grommet or quick-edge molding is damaged.

(4) Remove grommet (10) and quick-edge molding (11) from rear of battery box (4).

NOTE

Tag and mark cables and wire harnesses before removal.

(5) Push two cables (8 and 9) and three wire harnesses (12, 13, and 14) out through holes in rear of battery box (4).

WARNING

Properly support battery box during removal. Battery box could fall and cause injury to personnel.

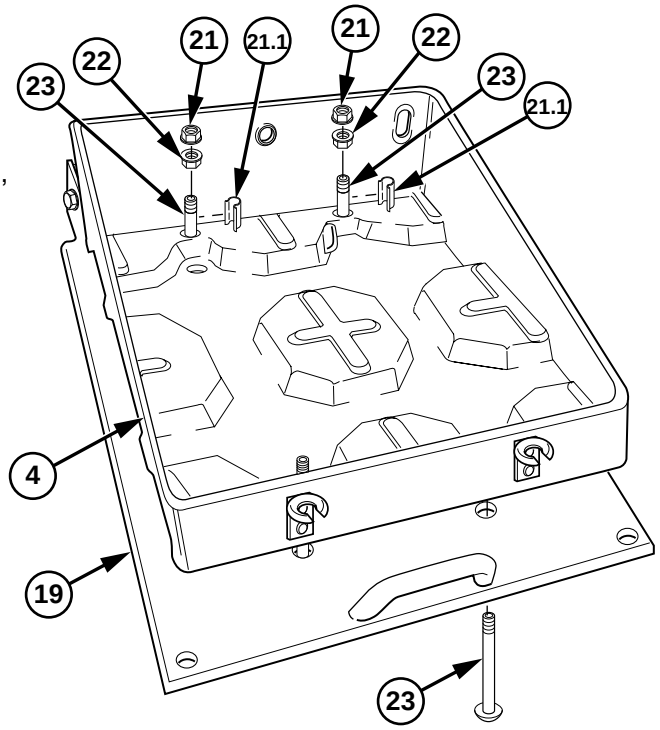
(6) Remove two cotter pins (14.1), nuts (15), washers (16), guides (17), screws (18), washers (18.1), battery box (4), and tray (19) from mounting bracket (20) with aid of assistant. Discard cotter pins.

7-57. BATTERY CABLE AND TERMINAL/BATTERY/BATTERY BOX REPAIR (CONT)

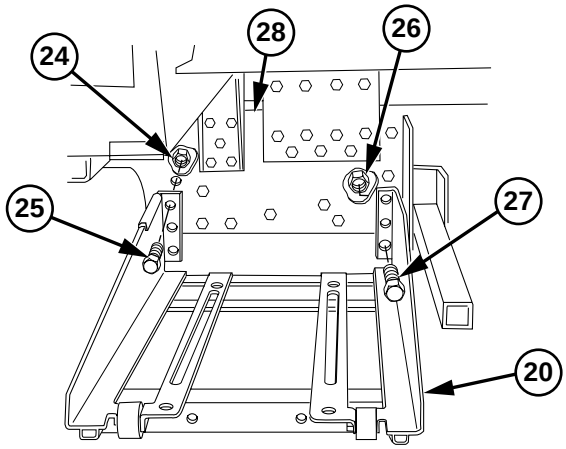
(7) Remove two locknuts (21), tube clips (21.1), and four nuts (22) from hold down screws (23). Discard locknuts.

(8) Remove battery box (4) from tray (19).

(9) Remove four hold down screws (23) from tray (19).

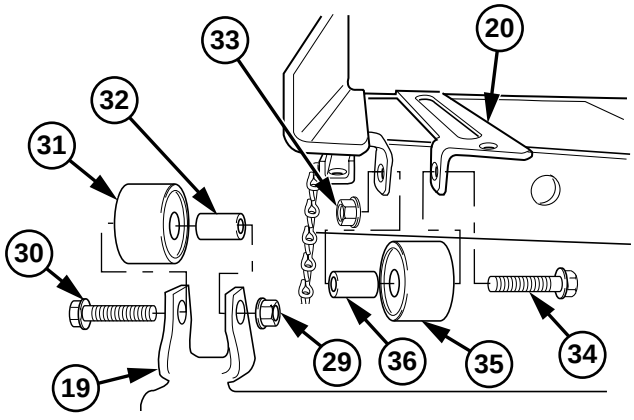


(10) Remove five locknuts (24), screws (25), locknut (26), screw (27), and mounting bracket (20) from frame (28). Discard locknuts



(11) Remove two locknuts (29), screws (30), rollers (31), and sleeves (32) from tray (19). Discard locknuts.

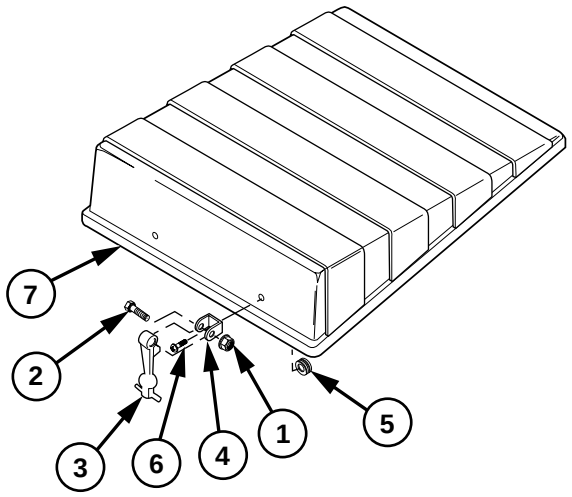
(12) Remove two locknuts (33), screws (34), rollers (35), and sleeves (36) from mounting bracket (20). Discard locknuts.



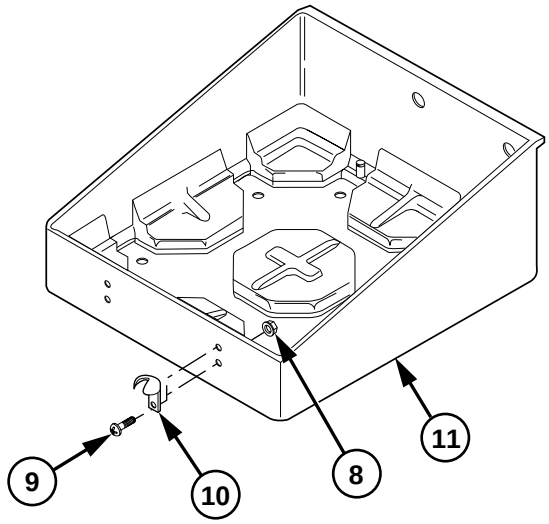
d. Battery Box Disassembly

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

(2) Remove two locknuts (5), screws (6), and brackets (4) from battery box cover (7). Discard locknuts.



(3) Remove four locknuts (8), screws (9), and two support hooks (10) from battery box (11). Discard locknuts.



e. Cleaning/Inspection

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and don't breathe vapors. DO NOT use near open flame or excessive heat. The flash point is 100-138°F (38-59°C). If you become dizzy while using cleaning solvent, get fresh air immediately and medical aid. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

(1) Clean battery box with dry cleaning solvent.

(2) Inspect battery box for cracks.

(3) Inspect battery hold down and hold down screws for corrosion or other damage.

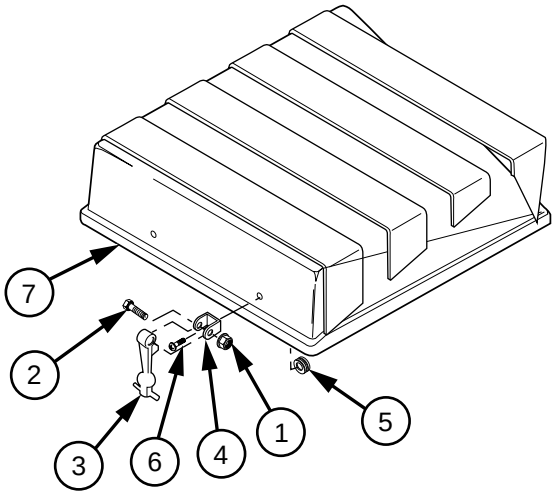
(4) Inspect sliding tray for cracks.

(5) Replace all damaged parts.

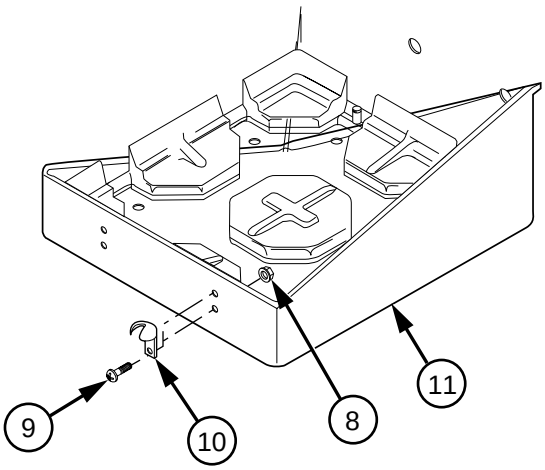
d. Battery Box Disassembly

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

(2) Remove two locknuts (5), screws (6), and brackets (4) from battery box cover (7). Discard locknuts.



(3) Remove four locknuts (8), screws (9), and two support hooks (10) from battery box (11). Discard locknuts.



e. Cleaning/Inspection

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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

•The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).
•Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.
•Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.
•Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.
• Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.

(1) Clean battery box with solvent cleaning compound.

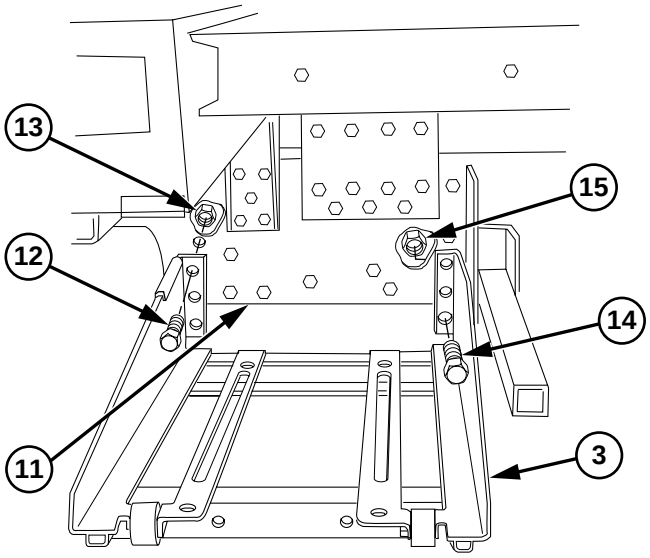
(2) Inspect battery box for cracks.

(3) Inspect battery hold down and hold down screws for corrosion or other damage.

(4) Inspect sliding tray for cracks.

(5) Replace all damaged parts.

(3) Install mounting bracket (3) on frame (11) with five screws (12), new locknuts (13), screw (14), and new locknut (15).



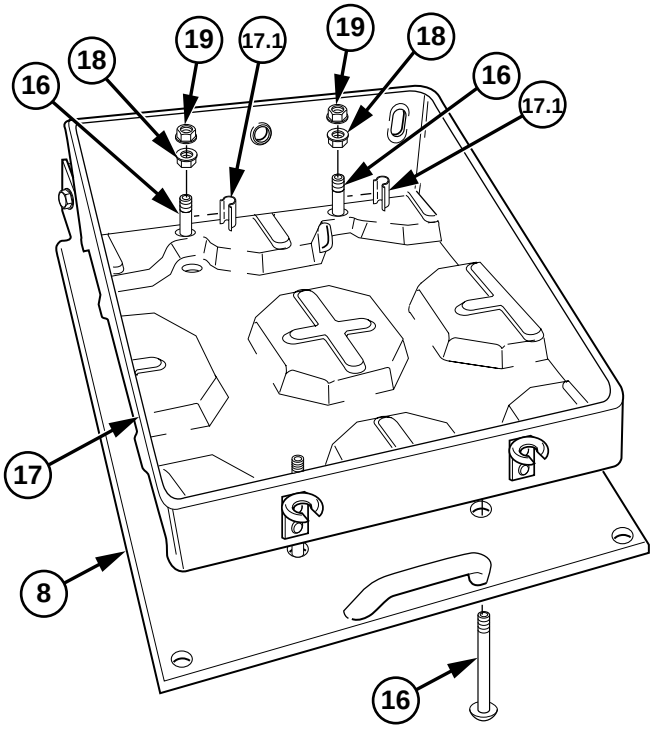
(4) Install four hold down screws (16) on tray (8).

(5) Place battery box (17) over four hold down screws (16).

(5.1) Install two clips (17.1) on two rear screws (16).

(6) Install four nuts (18) on hold down screws (16).

(7) Install two new locknuts (19) on rear hold down screws (16).



7-57. BATTERY CABLE AND TERMINAL/BATTERY/BATTERY BOX REPAIR (CONT)

NOTE
Do step (8) only if grommet and molding were removed.

CAUTION
Do not overtighten locknuts. Damage to guides may result.

(8) Install battery box (17) and tray (8) on mounting bracket (20) with two screws (21), washers (21.1), guides (22), washers (23), nuts (24), and new cotter pins (24.1) with aid of assistant.

(9) Install quick-edge molding (25) and grommet (26) in rear of battery box (17).

(10) Pull two cables (27 and 28) and three wire harnesses (29, 30, and 31) through two holes in rear of battery box (17).

(11) Install clip (32) on two cables (27 and 28).

(12) Install clip (32) on battery box (17) with screw (33) and new locknut (34).

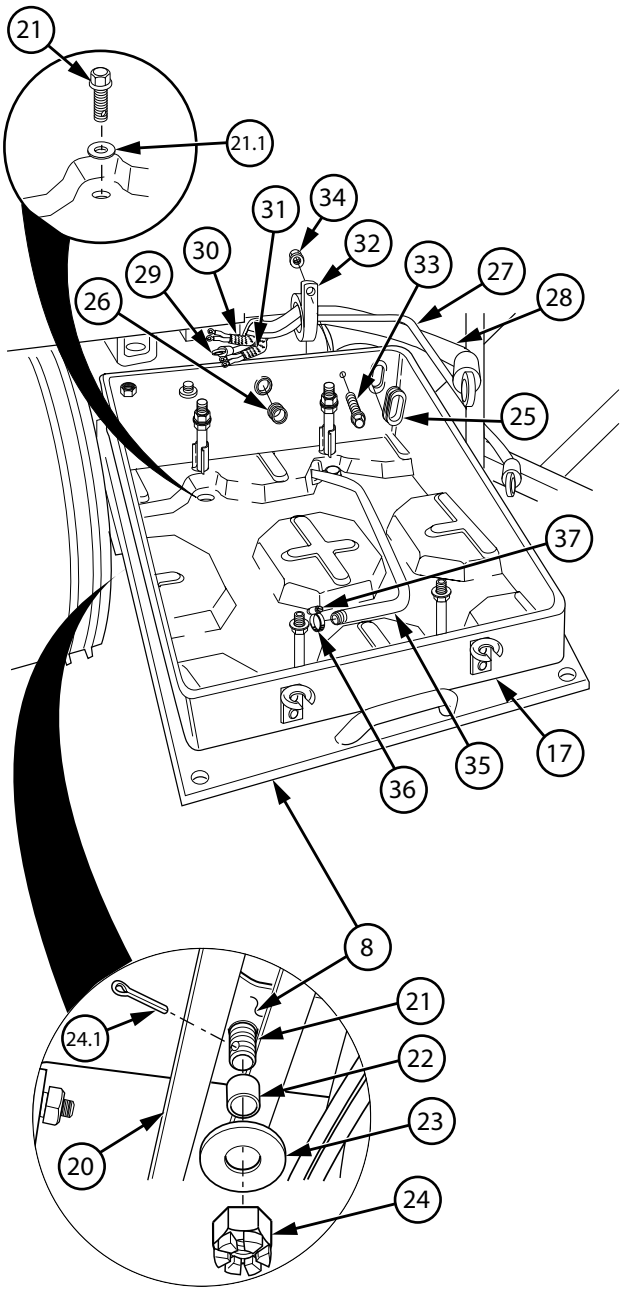
NOTE
Do steps (12) thru (14) if arctic kit is install on HET Tractor.

(13) Pull exhaust hose (35) through hole in bottom of battery box (17).

NOTE
Position clamp on exhaust hose where cloth insulation begins.

(14) Place clamp (36) on exhaust hose (35) on inside of battery box (17).

(15) Tighten screw (37) on clamp (36).



h. Battery Installation

NOTE

Batteries should be positioned with positive (+) posts facing left front.

(1) Install four batteries (1) in battery box (2) using handles (3).

CAUTION

Wiring should be positioned between batteries prior to installation of two battery retainers. Failure to comply may result in damage to wiring.

(2) Install two battery retainers (4) on rear studs (5) under nuts (6).

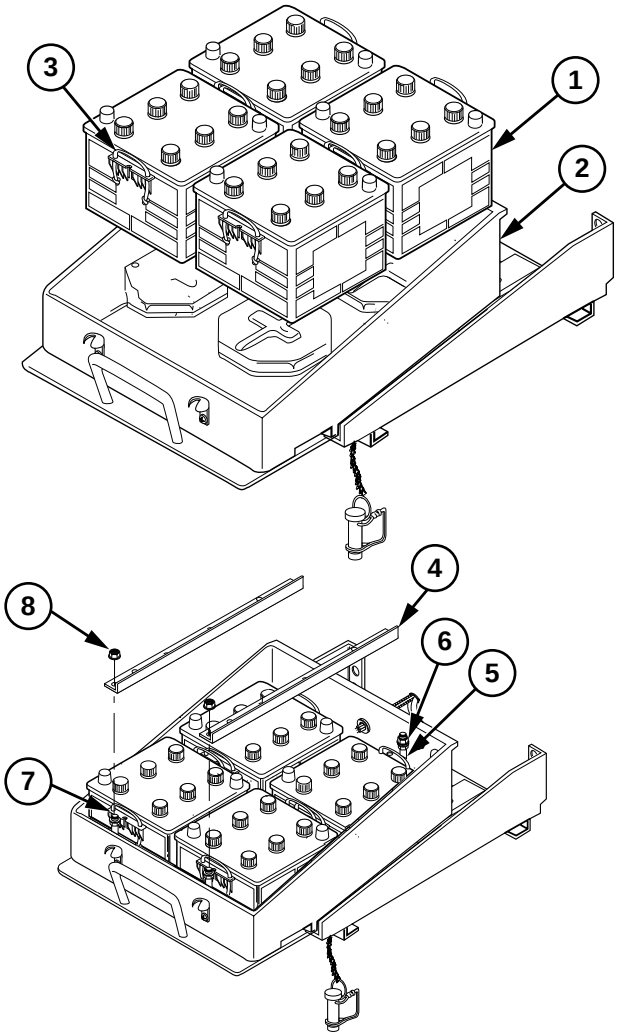
(3) Place two battery retainers (4) on forward studs (7).

(4) Install two new locknuts (8) on forward studs (7).

WARNING

Acid resistant paint can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep paint away from open fire and use in well ventilated area. If paint gets on skin or clothing, wash immediately with soap and water.

(5) Paint all mounting hardware with acid resistant paint.

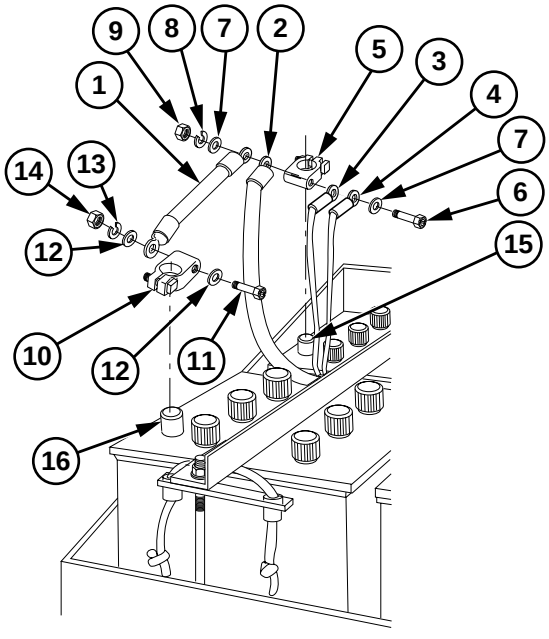


i. Battery Cable and Terminal Installation

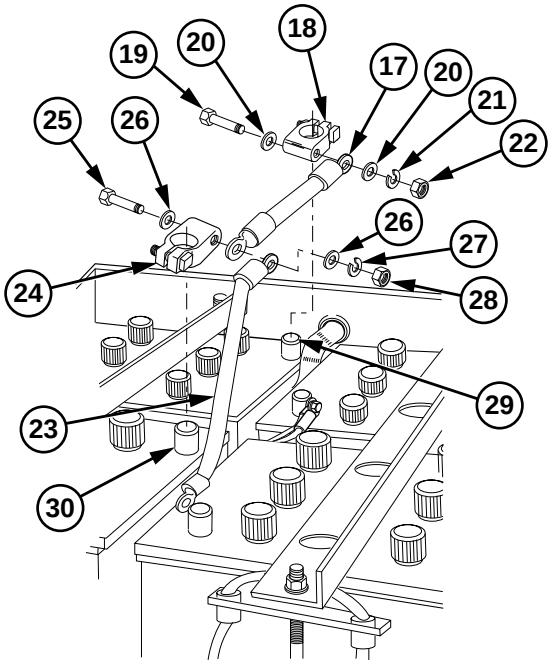
(1) Install cables (1 and 2), wire no. 1814 (3), and wire no. 1822 (4) on positive (+) terminal (5) with screw (6), two washers (7), new lockwasher (8), and nut (9). Torque to 144–192 lb–in. (16.1–21.5 N·m).

(2) Install cable (1) on positive (+) terminal (10) with screw (11), two washers (12), new lockwasher (13), and nut (14). Torque to 144–192 lb–in. (16.1–21.5 N·m).

(3) Install positive (+) terminals (5 and 10) on battery posts (15 and 16). Do not tighten.



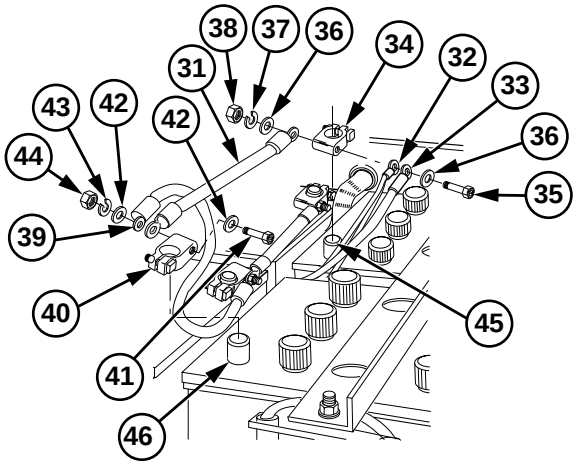
7-57. BATTERY CABLE AND TERMINAL/BATTERY/BATTERY BOX REPAIR (CONT)



(4) Install cable (17) on negative (–) terminal (18) with screw (19), two washers (20), new lockwasher (21), and nut (22). Torque to 144–192 lb–in. (16.1–21.5 N·m).

(5) Install cables (23 and 17) on negative (–) terminal (24) with screw (25), two washers (26) new lockwasher (27), and nut (28). Torque to 144–192 lb–in. (16.1–21.5 N·m).

(6) Install negative (–) terminals (18 and 24) on negative (–) battery posts (29 and 30). Do not tighten.



(7) Install cable (31), wires no. 241 and no. 240 (32), and wire no. 1622 (33) on positive (+) terminal (34) with screw (35), two washers (36), new lockwasher (37), and nut (38). Torque to 144–192 lb–in. (16.1–21.5 N·m).

(8) Install cables (31 and 39) on positive (+) terminal (40) with screw (41), two washers (42), new lockwasher (43), and nut (44). Torque to 144–192 lb–in. (16.1–21.5 N·m).

(9) Install positive (+) terminals (34 and 40) on positive (+) battery posts (45 and 46). Do not tighten.

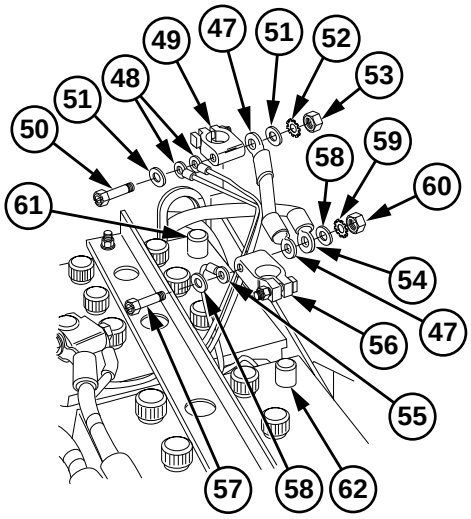
NOTE

Route two wires no. 150 under hold down bracket.

(10) Install cable (47) and two wires no. 150 (48) on negative (–) terminal (49) with screw (50), two washers (51), new lockwasher (52), and nut (53). Torque to 144–192 lb-in. (16.1–21.5 N·m).

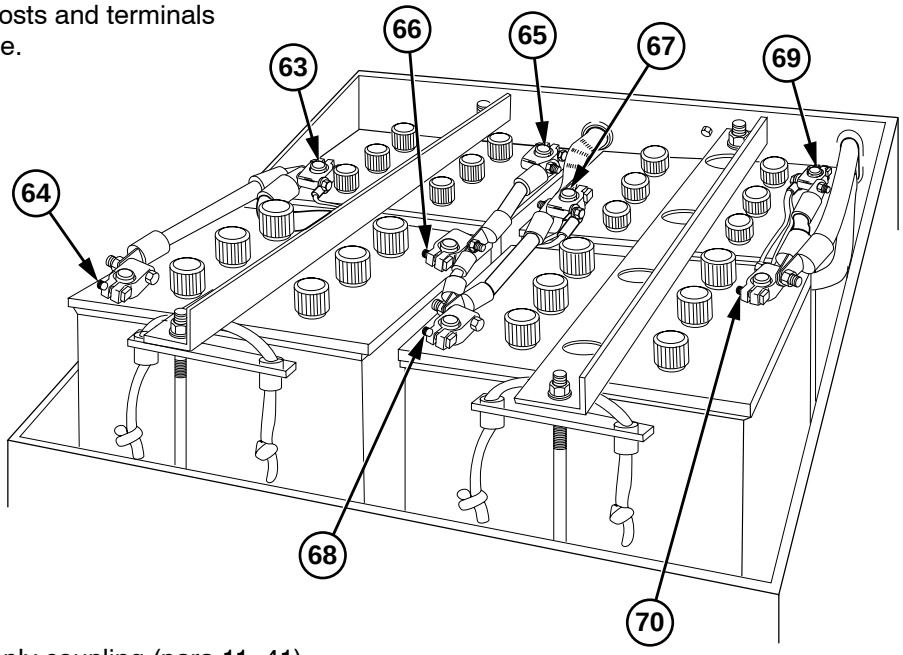
(11) Install cables (47 and 54) and wire no. 1813 (55) on negative (–) terminal (56) with screw (57), two washers (58), new lockwasher (59), and nut (60). Torque to 144–192 lb-in. (16.1–21.5 N·m).

(12) Install two negative (–) terminals (49 and 56) on battery posts (61 and 62).



(13) Tighten nuts (63 thru 70) to 84–96 lb-in. (9.4–10.8 N·m).

(14) Lightly coat all battery posts and terminals with anticorrosion grease.



j. Follow-On Maintenance

(1) Install accessory air supply coupling (para 11-41).

(2) Install no. 3 air reservoir (para 11-21).

(3) Install no. 4 air reservoir (para 11-22).

(4) Connect arctic kit batteries if installed (para 19-2).

(5) Start engine to check operation of batteries (TM 9-2320-360-10).

(6) Shut off engine (TM 9-2320-360-10).

(7) Install battery box cover (TM 9-2320-360-10).

(8) Remove wheel chocks.

7-58. SLAVE RECEPTACLE REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).
Inner fender removed (left side only) (para 16-34).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Socket Wrench Set, 3/8 In. (Item 45, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, (Appendix F)

Materials/Parts
Adhesive-Sealant, Silicone (Item 3, Appendix C)
Grease, Anticorrosion (Item 16, Appendix C)
Silicone (Item 30, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Locknuts (4) (Item 68, Appendix G)
Locknuts (4) (Item 44, Appendix G)
Locknut (Item 58, Appendix G)
Lockwashers (6) (Item 101, Appendix G)
Lockwasher (Item 104, Appendix G)
Lockwasher (Item 115, Appendix G)

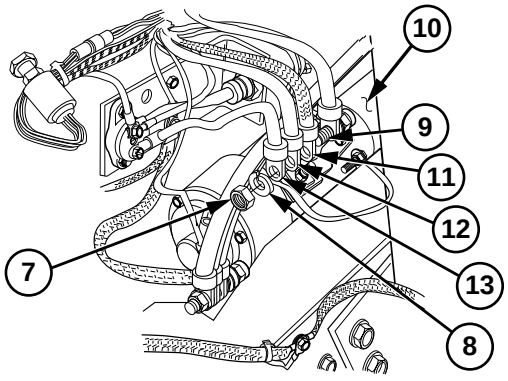
a. Removal

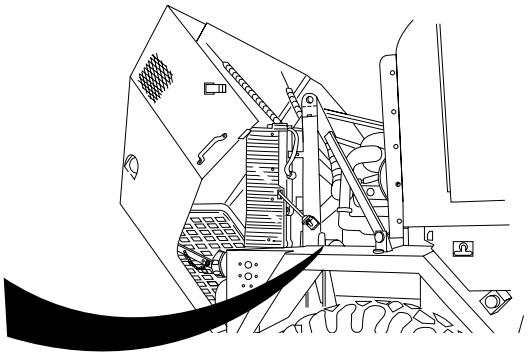
(1) Deleted.

NOTE
Tag and mark all cables before removal.

(2) Remove nut (7) and lockwasher (8) from stud (9) on starter (10). Discard lockwasher.

(3) Remove positive (+) cable no. 1274 (11), arctic kit cable no. 1139 (12) (if installed), and positive (+) slave receptacle cable no. 1139 (13) from stud (9).

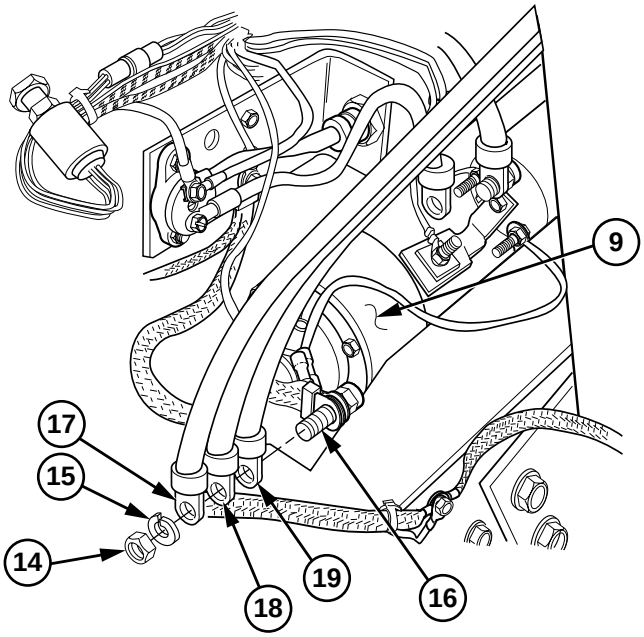




STEERING COLUMN REMOVED FOR CLARITY

(4) Remove nut (14) and lockwasher (15) from stud (16) on starter (9). Discard lockwasher.

(5) Remove negative (–) cable no. 1128 (17), arctic kit cable no. 1119 (18) (if installed), and negative (–) slave receptacle cable no. 1139 (19) from stud (16).



NOTE

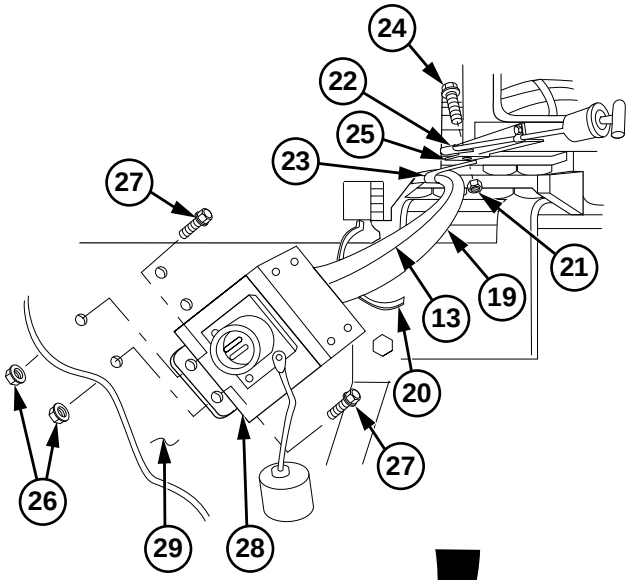
Location of plastic cable ties should be marked before removal.

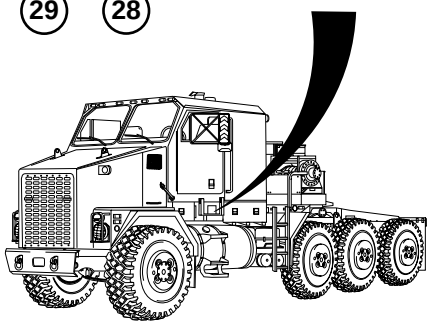
(6) Remove plastic cable ties (20) from slave receptacle cables (13 and 19).

(7) Remove locknut (21), two cushion clips (22 and 23), and screw (24) from engine dipstick support (25) and slave receptacle cables (13 and 19). Discard locknut.

(8) Remove four locknuts (26) and screws (27) from slave receptacle box (28) and fender (29). Discard locknuts.

(9) Remove slave receptacle box (28) and slave receptacle cable no. 1138 (13) and slave receptacle cable no. 1139 (19) from HET Tractor.





7-58. SLAVE RECEPTACLE REPAIR (CONT)

b. Disassembly

(1) Loosen four captive screws (1) and remove cover (2) from slave receptacle box (3).

NOTE

Tag and mark positive (+) and negative (–) cables and receptacle before disassembly.

(2) Remove two screws (4) and lockwashers (5) from cable no. 1138 (6) and cable no. 1139 (7) and receptacle (8). Discard lockwashers.

(3) Remove two cables (6 and 7) and grommets (9) from box (3).

(4) Remove four locknuts (10), washers (11), screws (12), eyelet (13), and cap assembly (14) from receptacle (8). Discard locknuts.

(5) Remove receptacle (8), gasket (15), and insulator (16) from box (3).

c. Assembly

WARNING

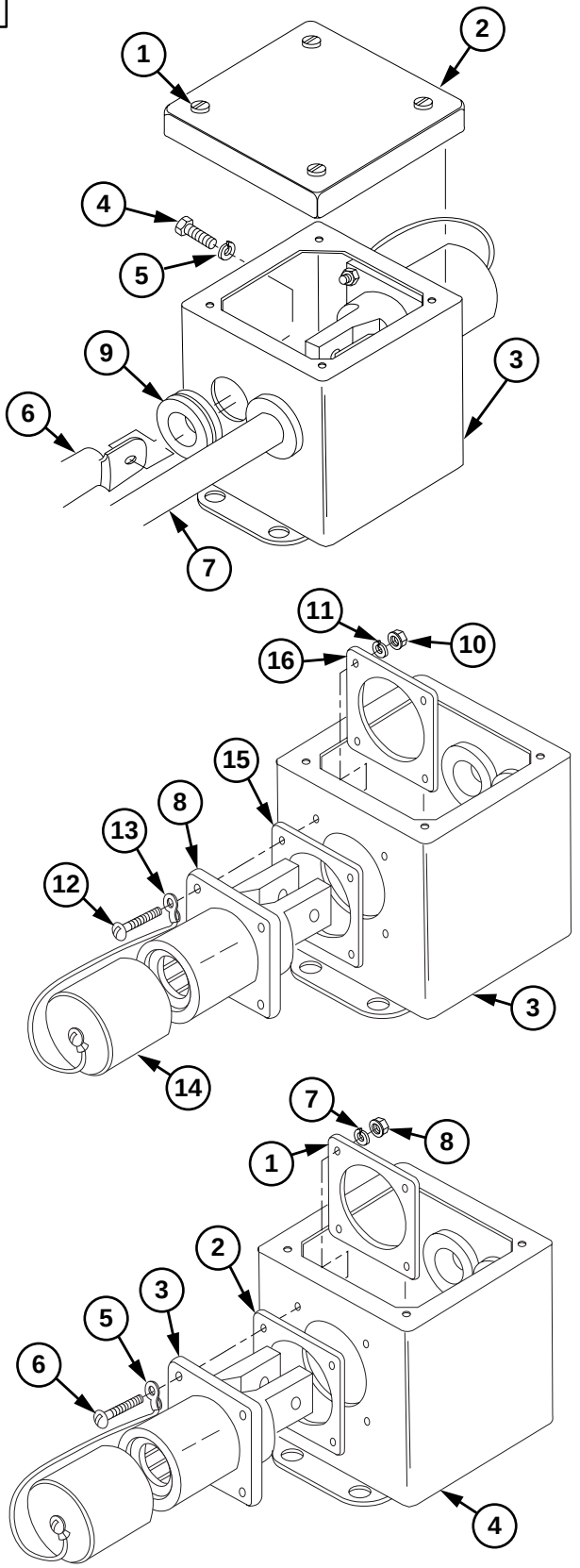
Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.

(1) Coat sides of insulator (1), gasket (2), and receptacle (3) that mount to box (4) with silicone adhesive-sealant.

NOTE

When installing receptacle make sure positive (+) terminal is on right side of box.

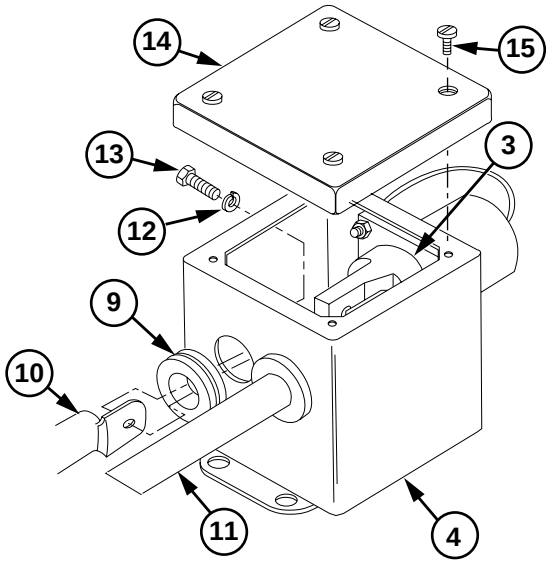
(2) Install insulator (1), gasket (2), eyelet (5), and receptacle (3) on box (4) with four screws (6), washers (7), and new locknuts (8).



(3) Install two grommets (9) in box (4).

WARNING

Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.



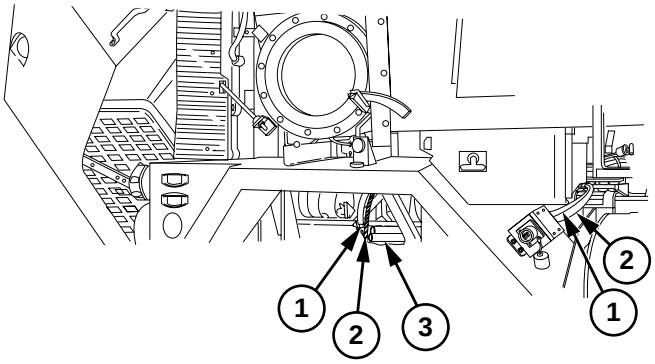
(4) Coat grommets (9) and two cables (10 and 11) with silicone adhesive-sealant.

(5) Insert cable no. 1138 (10) and cable no. 1139 (11) in box (4).

(6) Install two cables (10 and 11) in receptacle (3) with two new lockwashers (12) and screws (13).

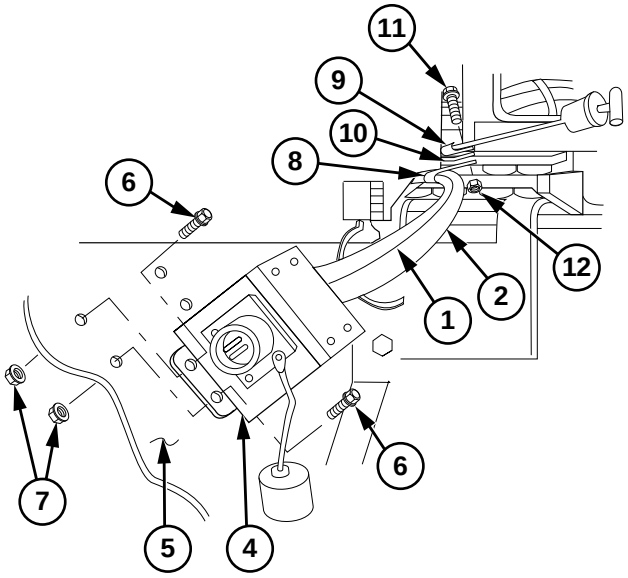
(6.1) Apply anticorrosion grease to electrical connections on two cables (10 and 11).

(7) Install cover (14) on box (4) and tighten four captive screws (15).



d. Installation

(1) Route negative (-) slave receptacle cable no. 1138 (1) and positive (+) slave receptacle cable no. 1139 (2) to starter (3).



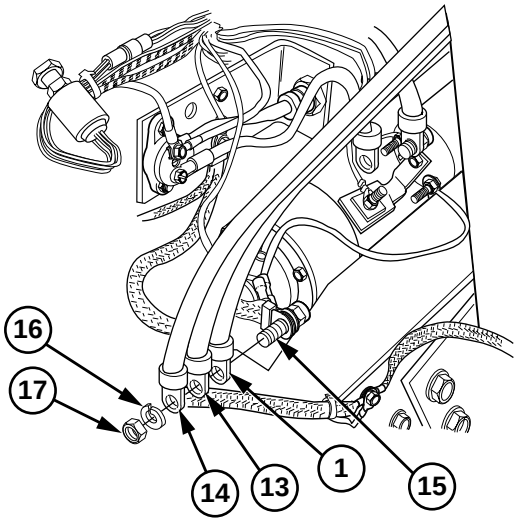
(2) Install slave receptacle box (4) on fender (5) with four screws (6) and new locknuts (7).

(3) Install two cushion clips (8 and 9) on engine dipstick support (10) and slave receptacle cables (1 and 2) with screw (11) and new locknut (12).

7-58. SLAVE RECEPTACLE REPAIR (CONT)

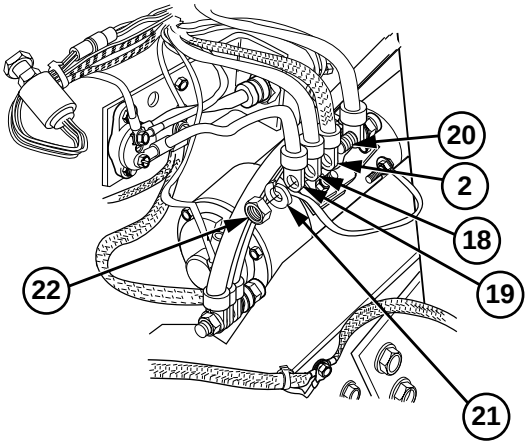
(4) Install negative (–) slave receptacle cable no. 1138 (1), arctic kit cable no. 1119 (13) (if installed), and negative (–) cable no. 1128 (14) on stud (15).

(5) Install new lockwasher (16) and nut (17) on stud (15).



(6) Install positive (+) slave receptacle cable no. 1139 (2), arctic kit cable no. 1119 (18) (if installed), and positive (+) cable no. 1274 (19) on stud (20).

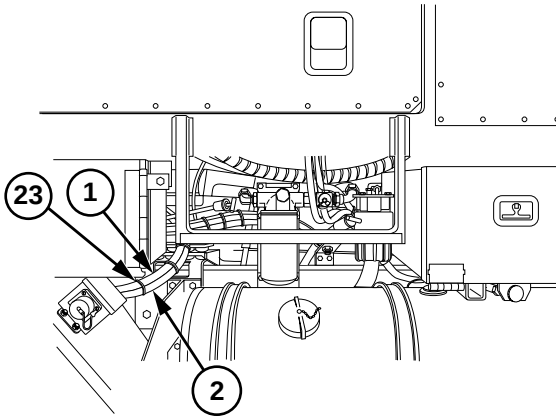
(7) Install new lockwasher (21) and nut (22) on stud (20).



NOTE

Plastic cable ties should be positioned in locations marked during removal.

(8) Secure slave receptacle cables (1 and 2) with plastic cable ties (23).



(9) Deleted.

e. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Install inner fender (para 16-34).

7-59. 12-PIN TRAILER ELECTRICAL CONNECTOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Locknuts (4) (Item 72, Appendix G)

a. Removal

NOTE
Tag and mark all wires before removal.

(1) Remove electrical cable (1) from electrical connector housing (2).

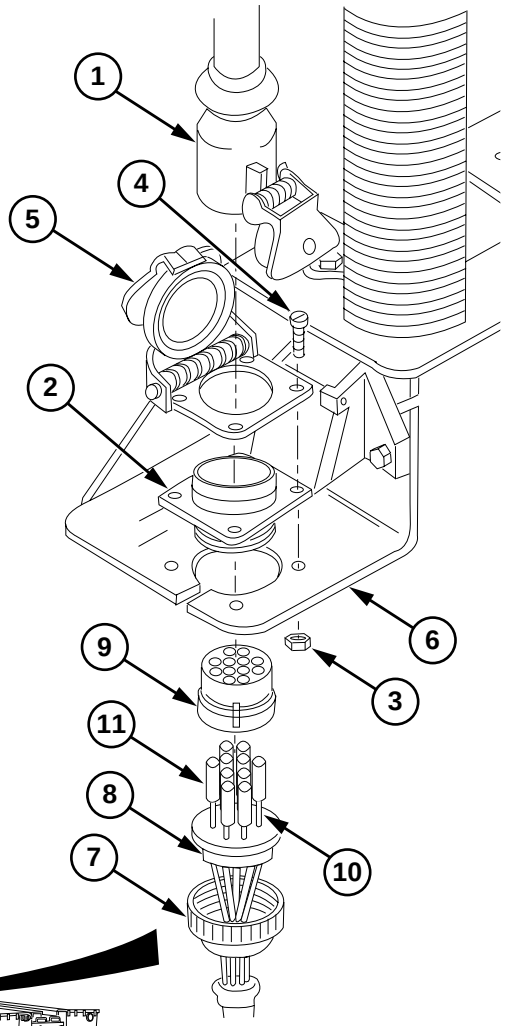
(2) Remove four locknuts (3), screws (4), and spring cover (5) from electrical connector housing (2). Discard locknuts.

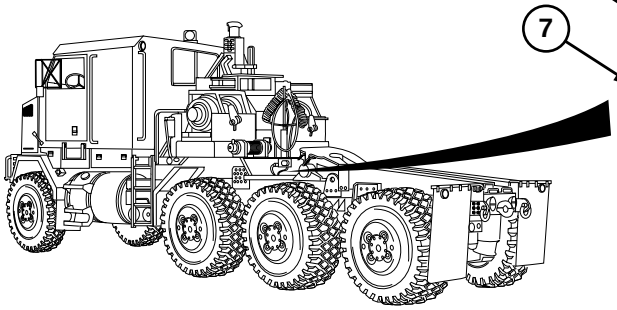
(3) Remove electrical connector housing (2) from mounting bracket (6).

(4) Remove collar (7) and collar boot (8) from electrical connector housing (2).

(5) Remove electrical connector (9) from electrical connector housing (2).

(6) Remove wires (10) with pins (11) from electrical connector (9).





b. Installation

NOTE
Wires should be installed in positioned noted in table 7-1.

(1) Install pins (1) and wires (2) in electrical connector (3).

NOTE
Align tab with keyway.

(2) Install rubber electrical connector (3) in electrical connector housing (4).

(3) Install collar boot (5) and collar (6) on electrical connector housing (4).

NOTE
Electrical connector housing must be positioned on mounting bracket with keyway toward front of HET Tractor.

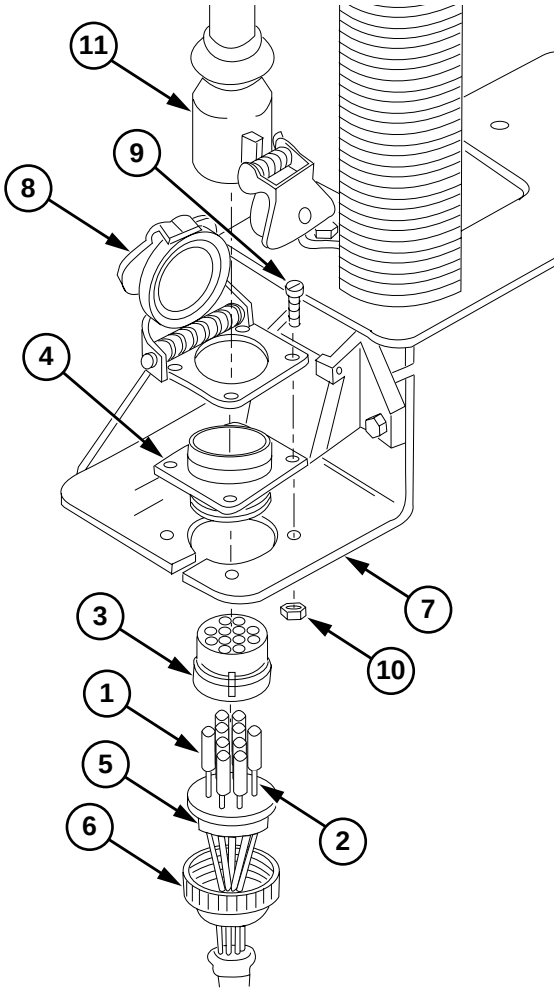
Table 7-1. Wire Positions

Position	Code
A	1680C
B	1003C
C	1680C
D	1435C
E	1008C
F	1678C
H	1680C
J	1004C
K	1665C
L	1435C
M	----
N	1005C

(4) Align four holes in electrical connector housing (4) with holes in mounting bracket (7).

(5) Install spring cover (8) and electrical connector housing (3) on mounting bracket (7) with four screws (9) and new locknuts (10).

(6) Install electrical cable (11) on electrical connector housing (4).



c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Connect to trailer and check operation of trailer lights (TM 9-2320-360-10).

7-60. 7-PIN ELECTRICAL CONNECTOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Tool Kit, Electrical Repair (Item 53, Appendix F)

Materials/Parts
Adhesive-Sealant, Silicone (Item 3, Appendix C)
Compound, Corrosion Preventative (Item 14.1, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (4) (Item 72, Appendix G)
Locknuts (2) (Item 68, Appendix G)

NOTE

- The HET Tractor has three 7-pin electrical connectors. One is located at front, one at fifth wheel work platform, and one at rear of HET Tractor. All three electrical connectors are replaced the same way. Front connector is shown.
- Front connector has four wires. Fifth wheel and rear connectors have six wires.
- There are two types of 7-pin connectors. Model B replaced Model A.
- Model A has a rubber boot covering the back.
- Model B uses rubber push on connectors on the back.
- Do steps (1) thru (4) for model A connector.
- Do steps (5) and (6) for model B connector.

a. Removal

(1) Separate rubber collar (1) from electrical connector (2).

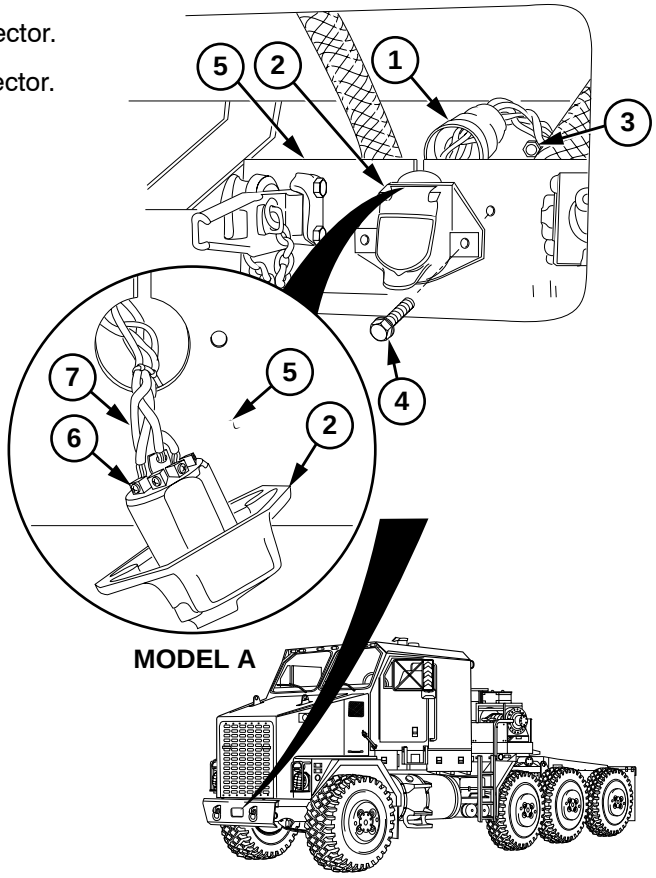
NOTE

Tag and mark all wires before removal.

(2) Remove two locknuts (3) and screws (4) from electrical connector (2). Discard locknuts.

(3) Separate electrical connector (2) from mounting bracket (5).

(4) Loosen screws (6) and remove wires (7) from electrical connector (2).

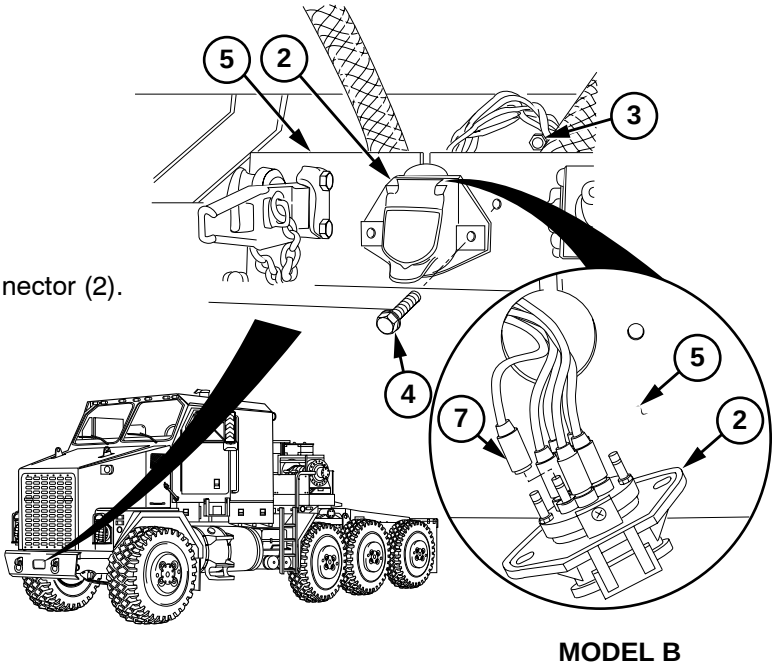


(5) Remove two locknuts (3) and screws (4) from electrical connector (2). Discard locknuts.

NOTE

- Wires are removed by pulling seal boots out of electrical connectors.
- Tag and mark all wires before removal.

(6) Remove wires (7) from electrical connector (2).

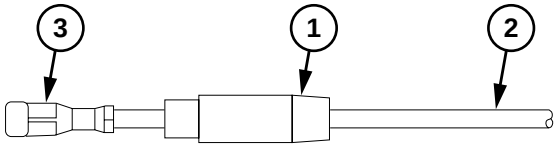


MODEL B

b. Installation

NOTE

- Do steps (1) thru (11) for Model B connector.
- Do steps (12) thru (18) for Model A connector.
- Do steps (4) thru (11) if replacing model A connector with Model B connector.
- Do steps (1) thru (8) if terminal or seal boot is damaged on Model B connector.
- Tapered end of seal boot is installed on wire first.

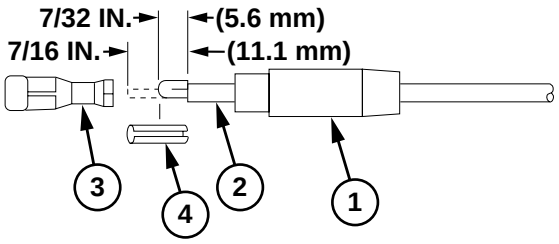


(1) Slide seal boot (1) over wire (2) to expose terminal (3).

(2) Cut off terminal (3) at end of wire (2).

NOTE

Do steps (3) and (4) if seal boot is damaged.



(3) Remove seal boot (1) from wire (2) and discard.

(4) Install new seal boot (1) on wire (2).

(5) Remove 7/16 in. (11.1 mm) of insulation (4) from end of wire (2).

(6) Fold over bare end of wire (2) to 7/32 in. (5.6 mm).

(7) Install new terminal (3) on wire (2).

(8) Slide seal boot (1) over terminal (3).

(9) Apply corrosion preventative compound to front of terminals (3) and seal boots (1).



7-60. 7-PIN ELECTRICAL CONNECTOR REPLACEMENT (CONT)

NOTE

Wires should be installed in positions noted in Table 7-2 or Table 7-3.

(10) Install wires (2) in electrical connector (5).

(11) Install electrical connector (5) on mounting bracket (6) with two screws (7) and new locknuts (8).

NOTE

Wires should be installed in positions noted in table 7-2 or table 7-3.

(12) Install wires (9) on electrical connector (10).

(13) Tighten screws (11) on electrical connector (10).

(14) Install electrical connector (10) on mounting bracket (6).

(15) Install two screws (7) and new locknuts (8) on electrical connector (10).

WARNING

On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and wash with water.

(16) Apply thin strip of silicone adhesive-sealant around electrical connector (10).

(17) Install rubber collar (12) on electrical connector (10).

(18) Apply thin strip of silicone adhesive-sealant around rear of rubber collar (12) where wires (9) enter.

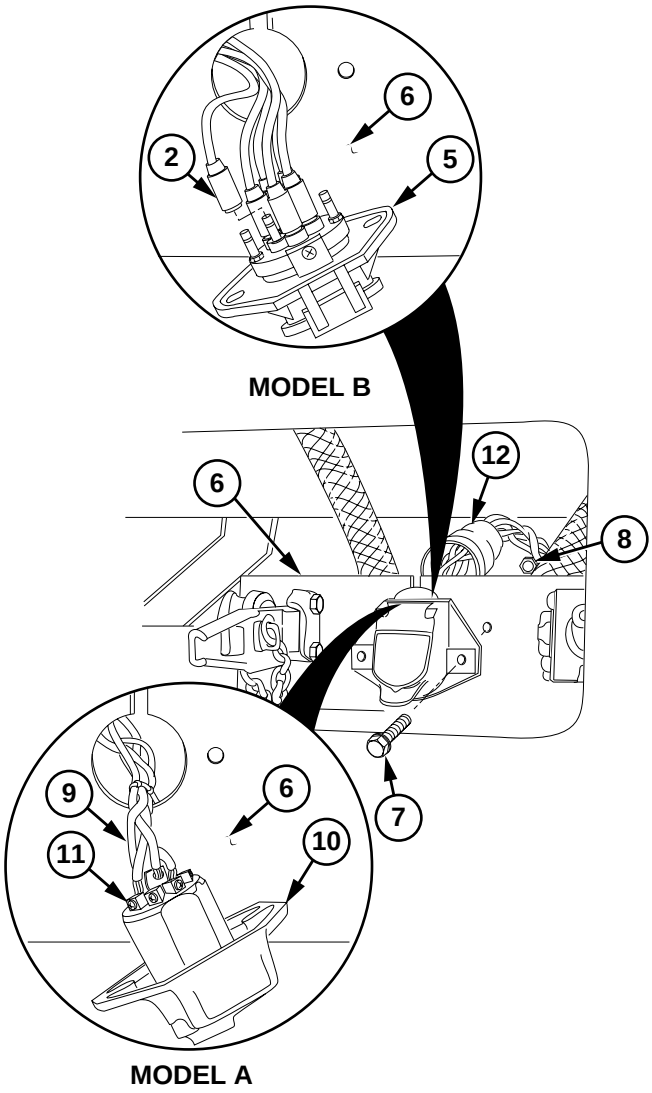
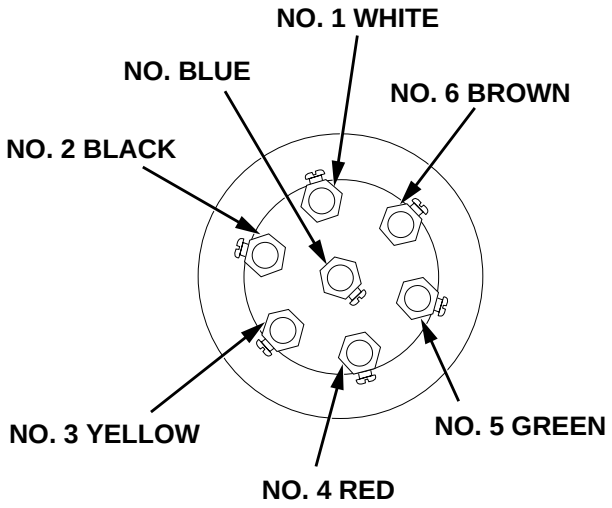


Table 7-2. Wire Positions (Front Connector)

Position	Code
White	1435
Black	1012
Yellow	1003B
Green	1004B

Table 7-3. Wire Positions (Fifth Wheel and Rear Connectors)

Position	Code
White	1435
Black	1012
Yellow	1003A
Red	1005A
Green	1004A
Brown	1012
Blue	----



c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Check operation of 7-pin electrical connector (TM 9-2320-360-10).

7-61. BATTERY DISCONNECTION/CONNECTION.

This task covers:
a. Disconnection
b. Connection
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Battery box cover removed (TM 9-2320-360-10).
Arctic kit batteries disconnected (if installed) (para 19-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Socket Wrench Set, 3/8 In. Drive (Item 45, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72 Appendix E

Materials/Parts
Grease, Anticorrosion (Item16, Appendix C)

a. Disconnection

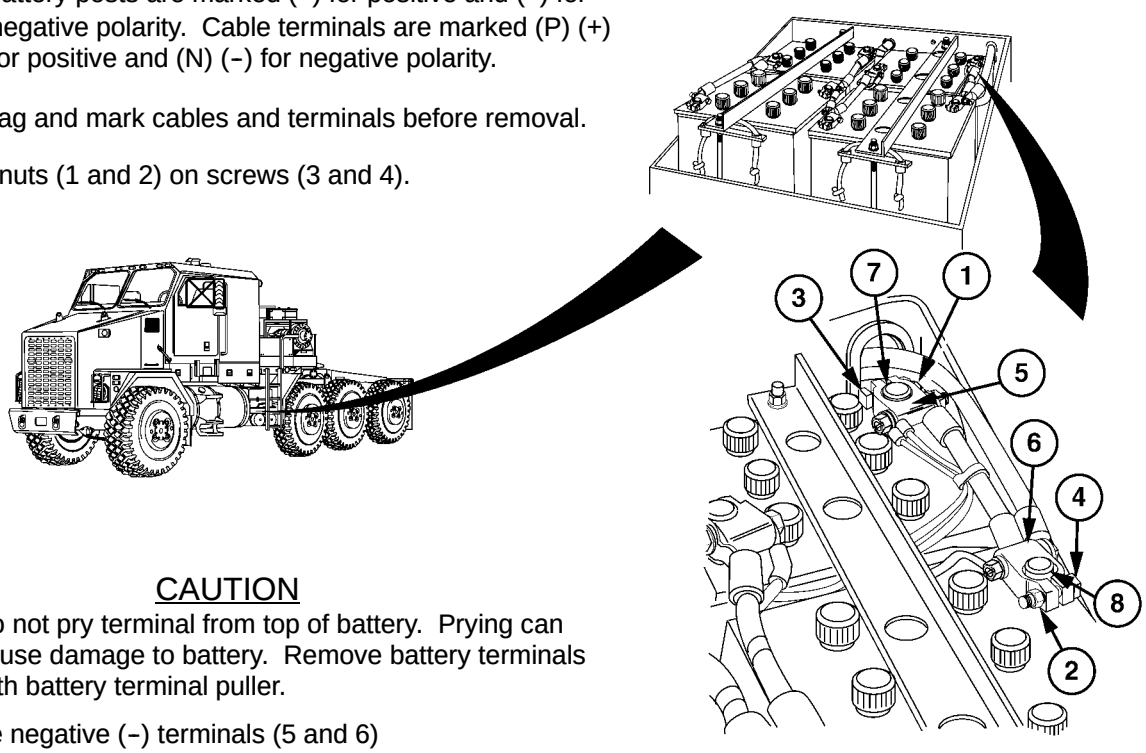
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Batteries can explode from a spark. Battery acid is harmful to skin and eyes.

NOTE

- Battery posts are marked (+) for positive and (-) for negative polarity. Cable terminals are marked (P) (+) for positive and (N) (-) for negative polarity.
- Tag and mark cables and terminals before removal.

(1) Loosen nuts (1 and 2) on screws (3 and 4).



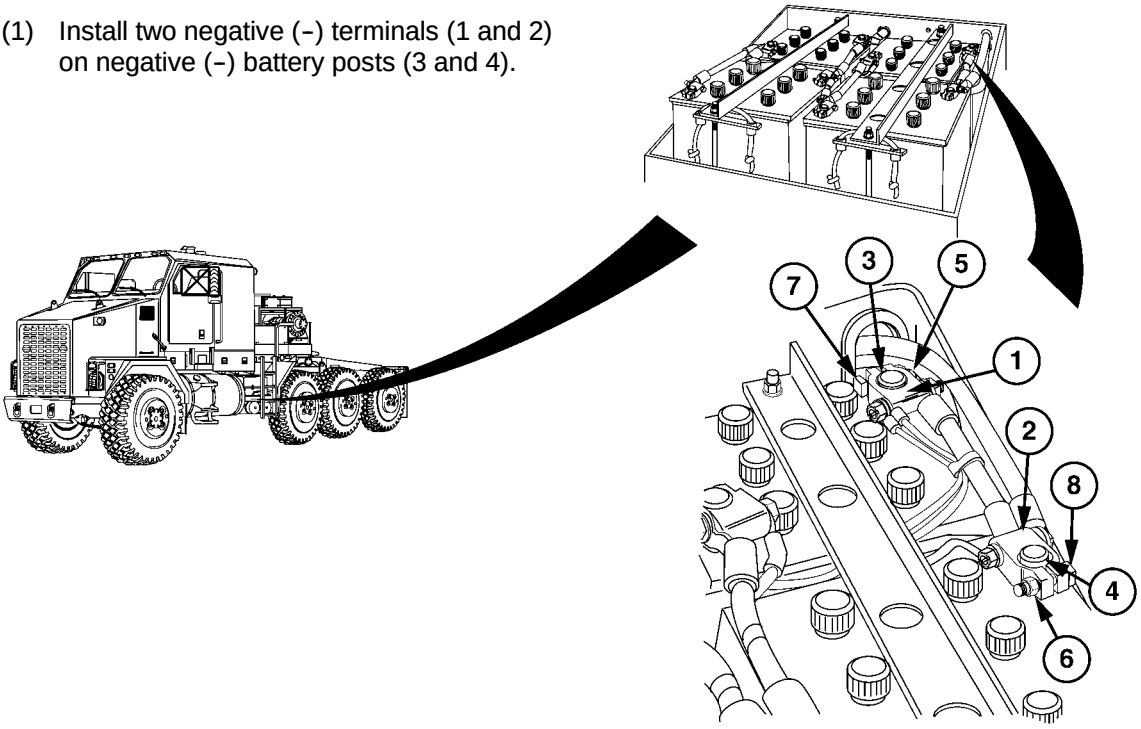
CAUTION

Do not pry terminal from top of battery. Prying can cause damage to battery. Remove battery terminals with battery terminal puller.

(2) Remove negative (-) terminals (5 and 6) from negative (-) battery posts (7 and 8).

b. Connection

(1) Install two negative (–) terminals (1 and 2) on negative (–) battery posts (3 and 4).



(2) Tighten nuts (5 and 6) on screws (7 and 8) to 84-96 lb-in. (9.4-10.8 N•m).

(3) Lightly coat battery posts and terminals with anticorrosion grease.

c. Follow-On Maintenance

(1) Connect arctic kit batteries if installed (para 19-2).

(2) Install battery box cover (TM 9-2320-360-10).

(3) Remove wheel chocks.

7-61.1. BATTERY DISCONNECT SWITCH/BOX/BRACKET REPLACEMENT.

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Batteries disconnected (TM 9-2320-360-20).
Arctic kit batteries disconnected (if installed) (para 19-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Sealant, Electrical RTV (Item 3, Appendix C)
Tags, Identification (Item 32, Appendix C)

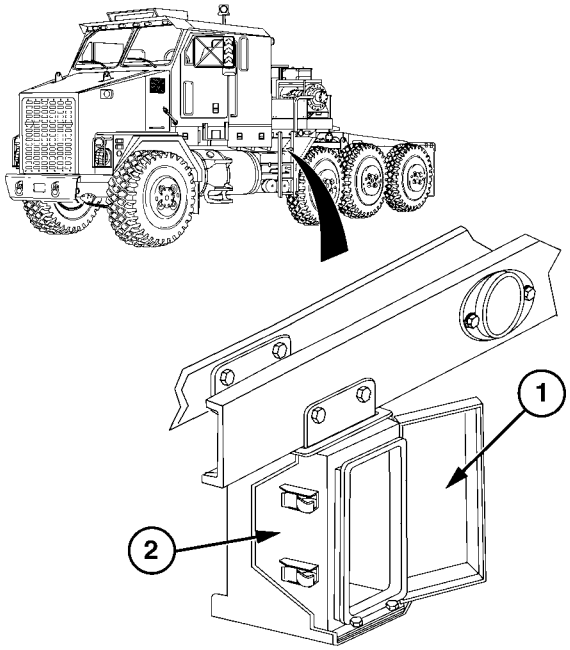
Materials/Parts
Locknuts (4) (Item 58, Appendix G)
Locknuts (4) (Item 72, Appendix G)
Lockwashers (4) (Item 100, Appendix G)
Lockwashers (8) (Item 110.1, Appendix G)

a. Removal

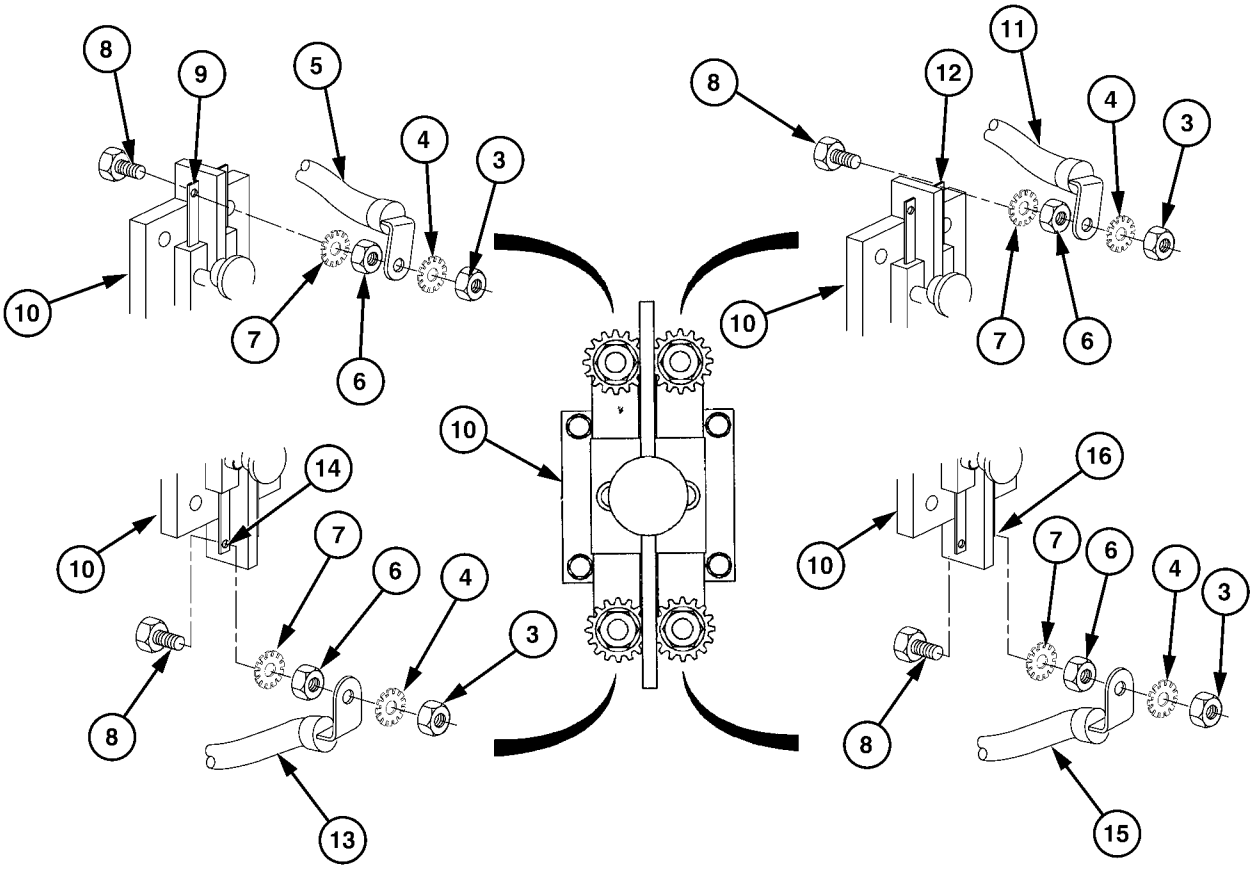
(1) Open door (1) on battery disconnect switch box (2).

NOTE

Tag and mark wires before removal.



(2) Remove nut (3), lockwasher (4), wire no. 1274 (5), nut (6), lockwasher (7), and screw (8) from upper left post (9) of battery disconnect switch (10). Discard lockwashers.

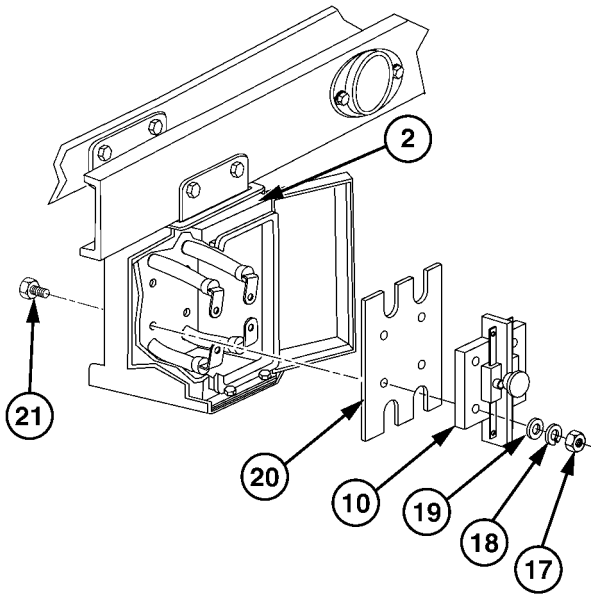


(3) Remove nut (3), lockwasher (4), wire no. 1622 (11), nut (6), lockwasher (7), and screw (8) from upper right post (12) of battery disconnect switch (10). Discard lockwashers.

(4) Remove nut (3), lockwasher (4), wire no. 1274A (13), nut (6), lockwasher (7), and screw (8) from lower left post (14) of battery disconnect switch (10). Discard lockwashers.

(5) Remove nut (3), lockwasher (4), wire no. 1622A (15), nut (6), lockwasher (7), and screw (8) from lower right post (16) of battery disconnect switch (10). Discard lockwashers.

(6) Remove four nuts (17), lockwashers (18), washers (19), battery disconnect switch (10), isolator plate (20), and four screws (21) from battery disconnect switch box (2). Discard lockwashers.



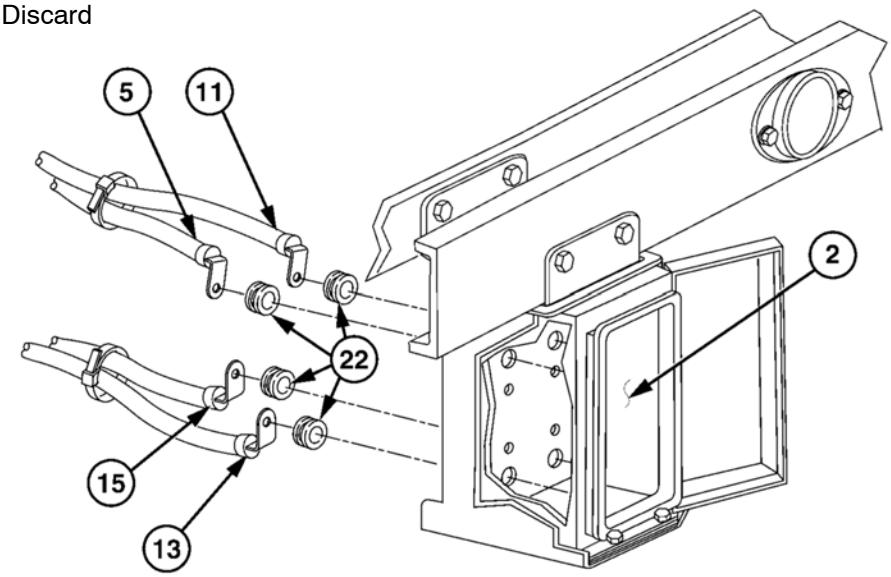
7-61.1. BATTERY DISCONNECT SWITCH/BOX/BRACKET REPLACEMENT (CONT).

NOTE

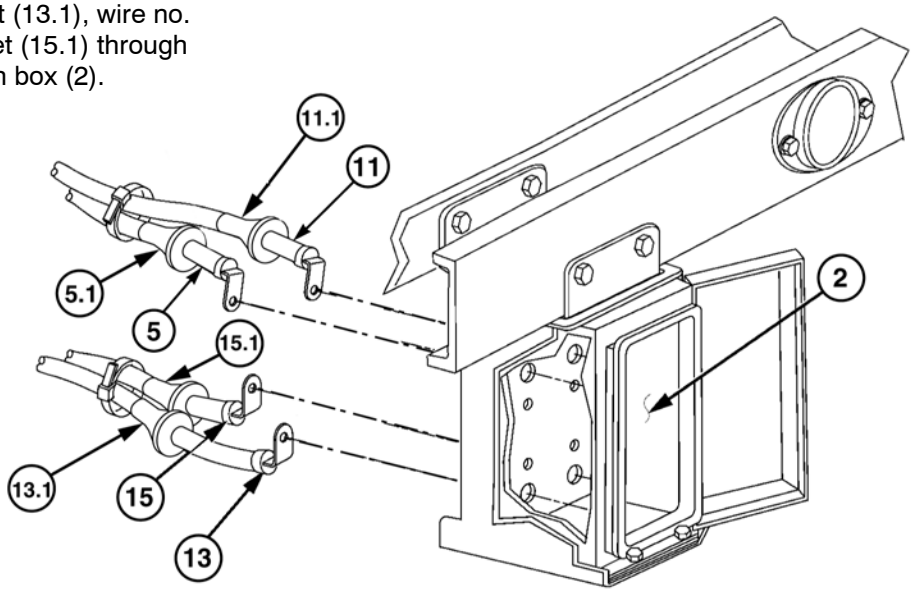
Model A battery disconnect switch box is not equipped with tapered grommets.
Model B battery disconnect switch box is equipped with tapered grommets.
Perform Steps (7 and 8) for Model A. Perform Step (8.1) for Model B.

(7) Pull wire no. 1274 (5), wire no. 1622 (11), wire no. 1274A (13), and wire no. 1622A (15) out of battery disconnect switch box (2).

(8) Remove four grommets (22) from battery disconnect switch box (2). Discard grommets.



(8.1) Pull wire no. 1274 (5), grommet (5.1), wire no. 1622 (11), grommet (11.1), wire no. 1274A (13), grommet (13.1), wire no. 1622A (15), and grommet (15.1) through battery disconnect switch box (2).

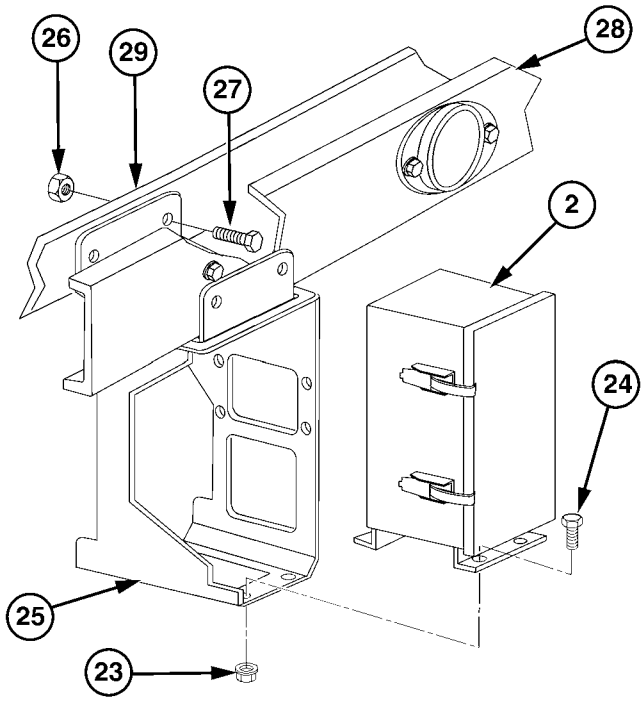


NOTE

- Model A battery disconnect switch box is not equipped with tapered grommets. Model B battery disconnect switch box does have tapered grommets. If vehicle is equipped with Model A battery disconnect switch box and is damaged, Model A battery disconnect switch box will need to be replaced with Model B battery disconnect switch box.
- Perform Step (9) if battery disconnect switch box is damaged.

(9) Remove four locknuts (23), screws (24), and battery disconnect switch box (2) from disconnect box bracket (25). Discard locknuts.

(10) Remove four locknuts (26), screws (27), and disconnect box bracket (25) from air reservoir bracket (28) and winch deck (29). Discard locknuts.



7-61.1. BATTERY DISCONNECT SWITCH/BOX/BRACKET REPLACEMENT (CONT).

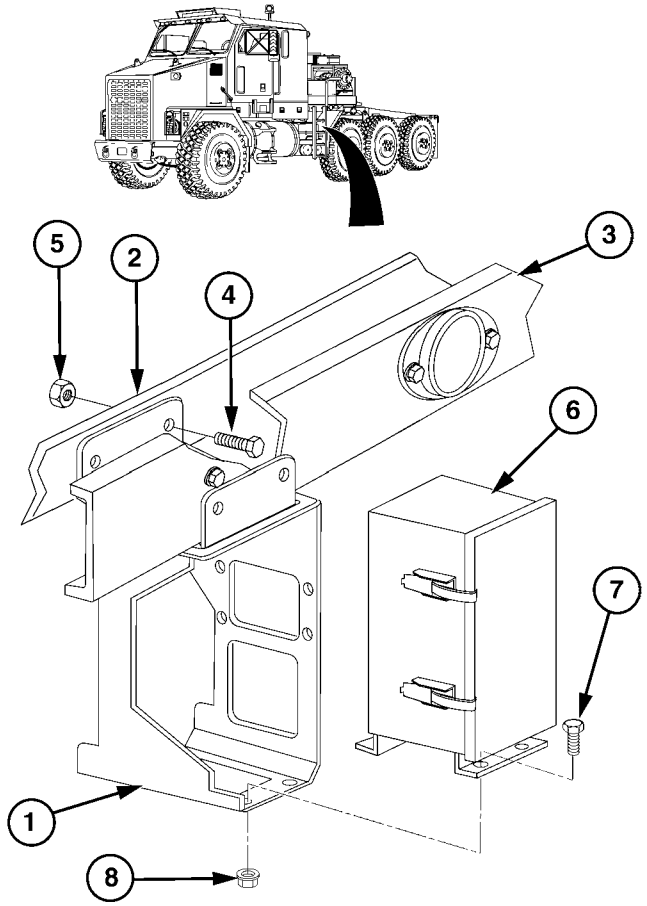
b. Installation

(1) Install disconnect box bracket (1) on winch deck (2) and air reservoir bracket (3) with four screws (4) and locknuts (5).

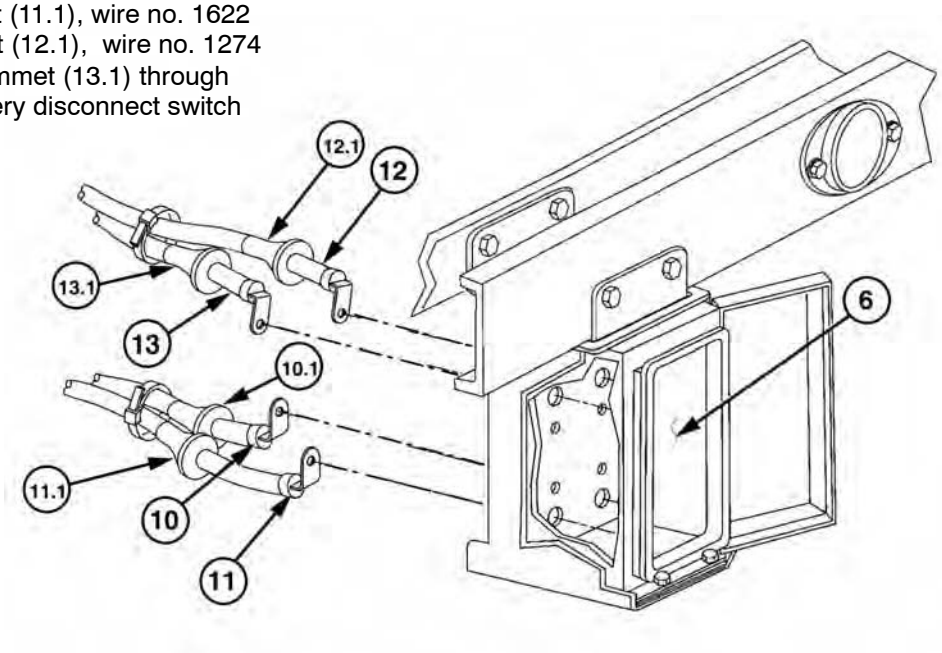
(2) Install battery disconnect switch box (6) on disconnect box bracket (1) with four screws (7) and locknuts (8).

(3) Deleted.

(4) Deleted.

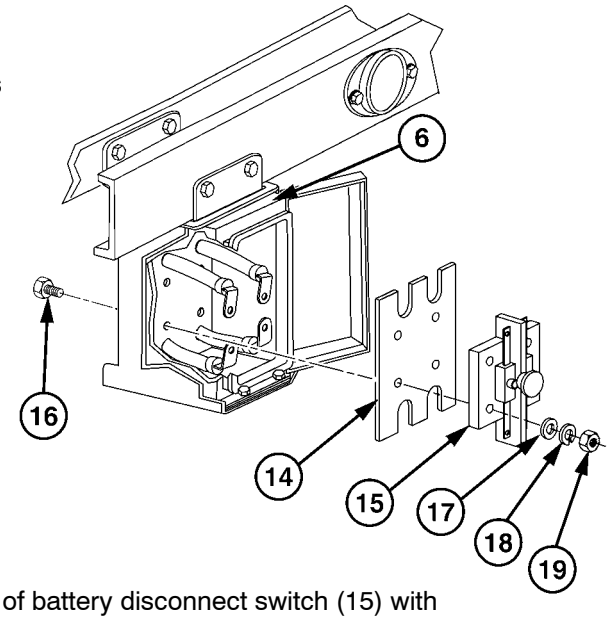


(5) Install wire no. 1622A (10), grommet (10.1), wire no. 1274A (11), grommet (11.1), wire no. 1622 (12), grommet (12.1), wire no. 1274 (13), and grommet (13.1) through holes on battery disconnect switch box (6).

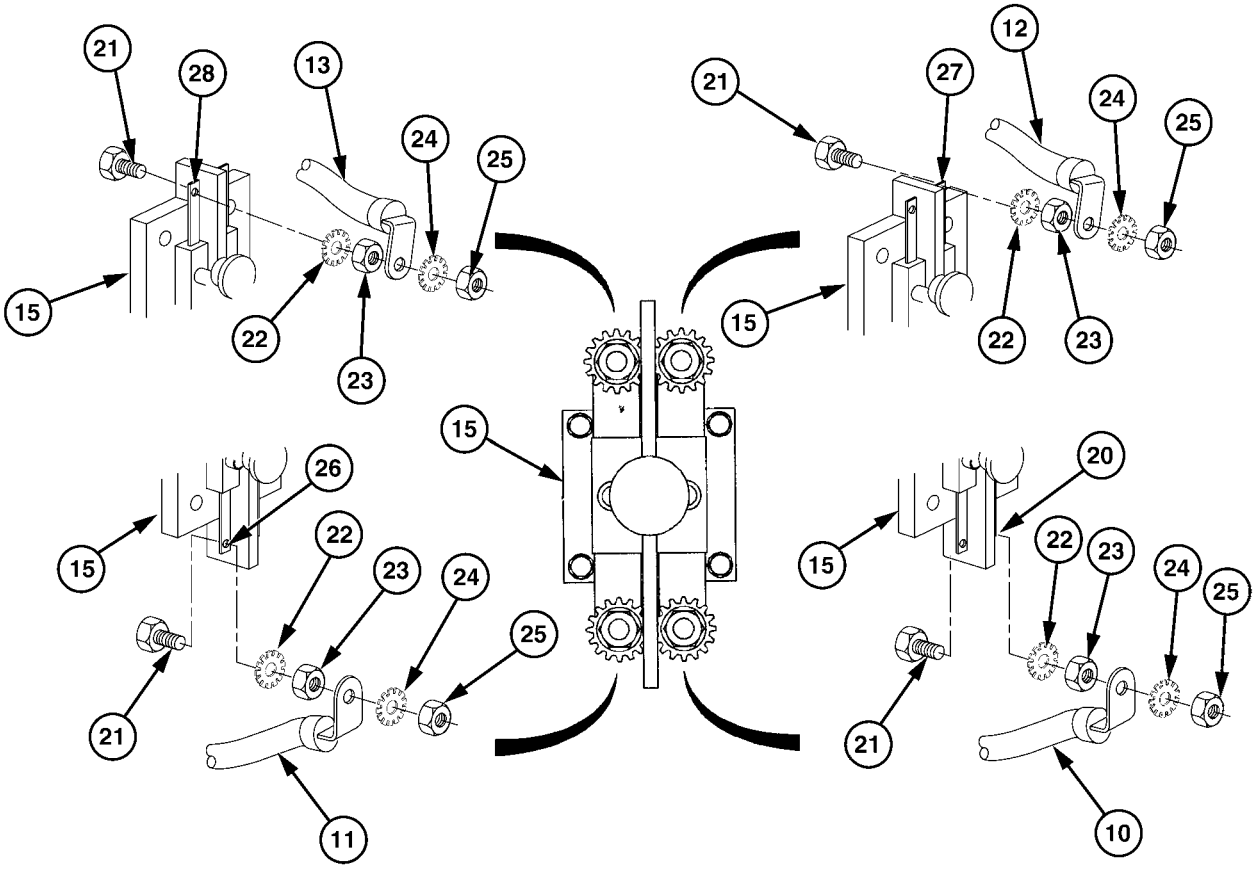


(6) Install isolator plate (14), and battery disconnect switch (15), in battery disconnect switch box (6) with four screws (16), washers (17), lockwashers (18), and nuts (19). Torque to 15 lb-ft (20 N•m).

(7) Install wire no. 1622A (10) on lower right post (20) of battery disconnect switch (15) with screw (21), lockwasher (22), nut (23), lockwasher (24), and nut (25).



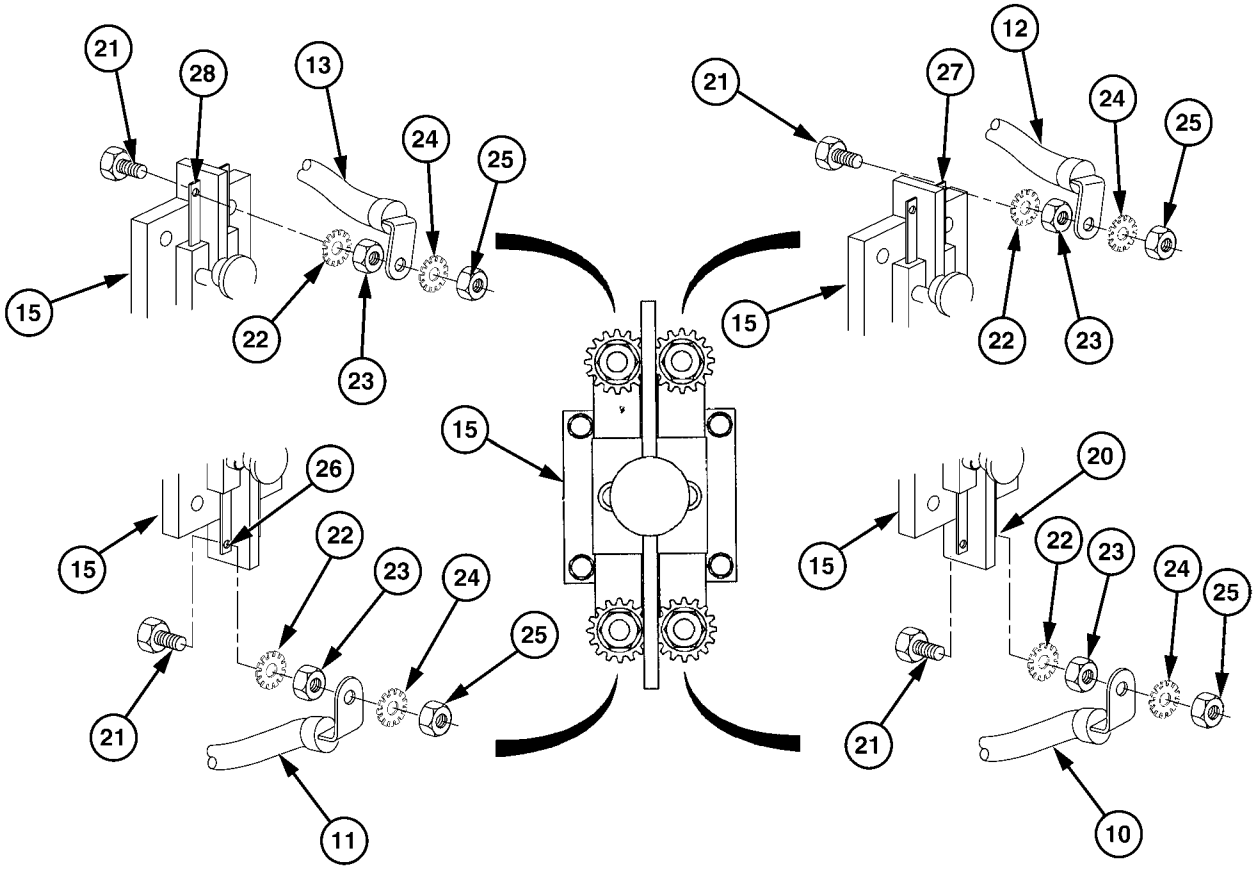
(8) Install wire no. 1274A (11) on lower left post (26) of battery disconnect switch (15) with screw (21), lockwasher (22), nut (23), lockwasher (24), and nut (25).



(9) Install wire no. 1622 (12) on upper right post (27) of battery disconnect switch (15) with screw (21), lockwasher (22), nut (23), lockwasher (24), and nut (25).

7-61.1. BATTERY DISCONNECT SWITCH/BOX/BRACKET REPLACEMENT (CONT).

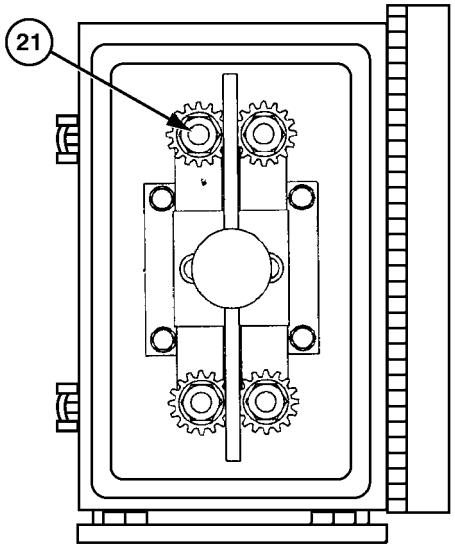
(10) Install wire no. 1274 (13) on upper left post (28) of battery disconnect switch (15) with screw (21), lockwasher (22), nut (23), lockwasher (24), and nut (25).



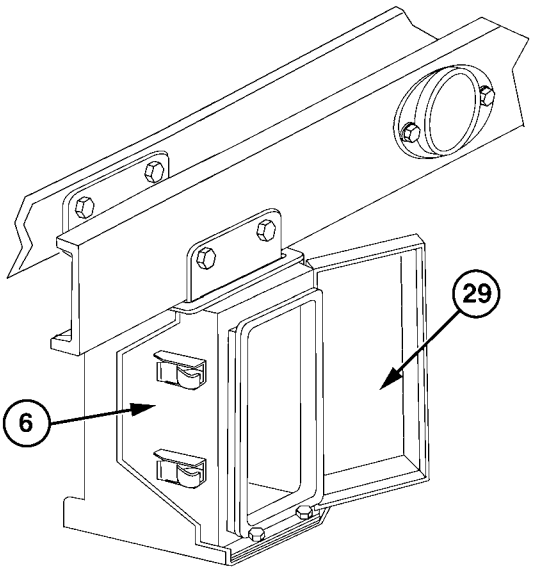
(11) Torque nuts to 15 lb-ft (20 N•m).

WARNING

- **Adhesive-sealants 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 sealing compound gets on skin or clothing, wash immediately with soap and water.**
- **Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use in well-ventilated area. If adhesive gets in eyes, try to keep eyes open, flush eyes with water for 15 minutes and get immediate medical attention.**
- **On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.**



(12) Apply electrical sealant to ends of four screws (21).



(13) Close door (29) on battery disconnect switch box (6).

c. Follow-On Maintenance

(1) Connect arctic kit batteries if installed (para 19-2).

(2) Connect batteries (TM 9-2320-360-20).

(3) Remove wheel chocks.

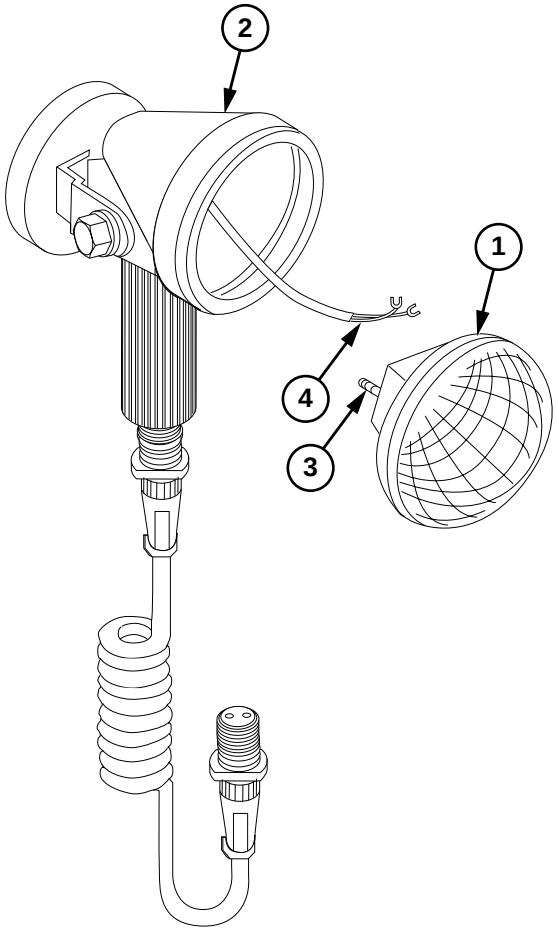
7-62. PORTABLE WORK LIGHT REPAIR

This task covers:
a. Disassembly
b. Assembly
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)



a. Disassembly

(1) Remove lamp (1) from housing (2).

(2) Loosen two screws (3). Remove wires (4) from lamp (1).

b. Assembly

(1) Install two wires (4) on lamp (1) with two screws (3).

(2) Install lamp (1) in housing (2).

c. Follow-On Maintenance

(1) Check light operation (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-63. CTIS CONTROLLER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Lockwashers (2) (Item 91, Appendix G)

a. Removal

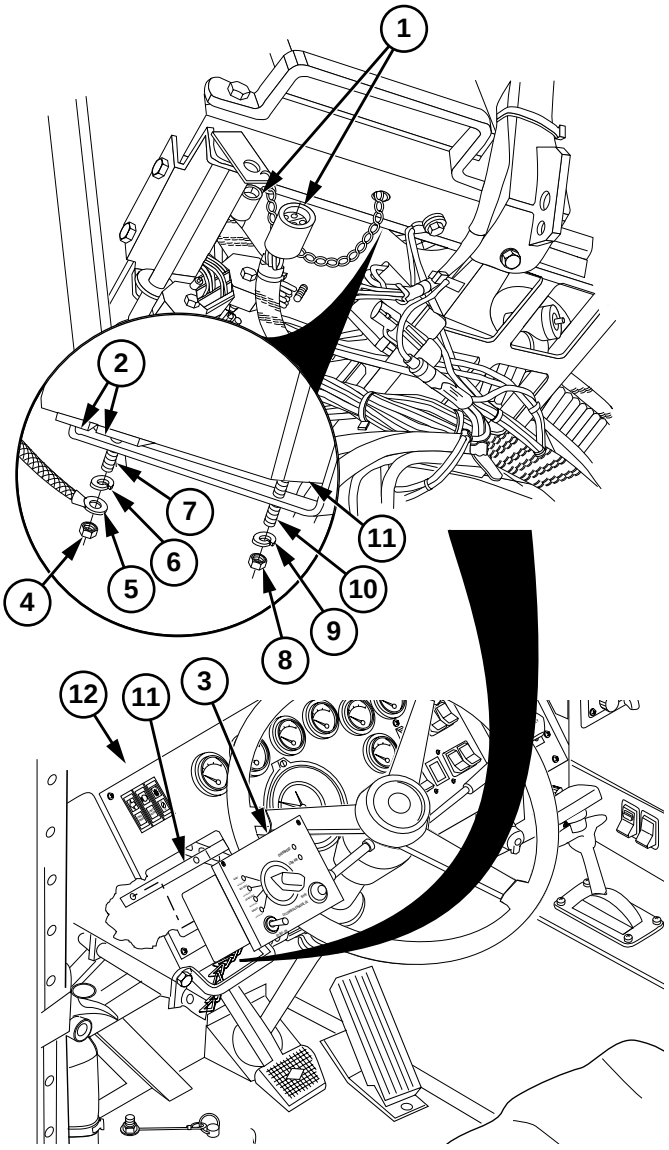
NOTE
Tag and mark wires before removal.

(1) Remove two harness connectors (1) from connectors (2) on controller (3).

(2) Remove nut (4), ground strap (5), and lockwasher (6) from stud (7). Discard lockwasher.

(3) Remove nut (8) and lockwasher (9) from stud (10). Discard lockwasher.

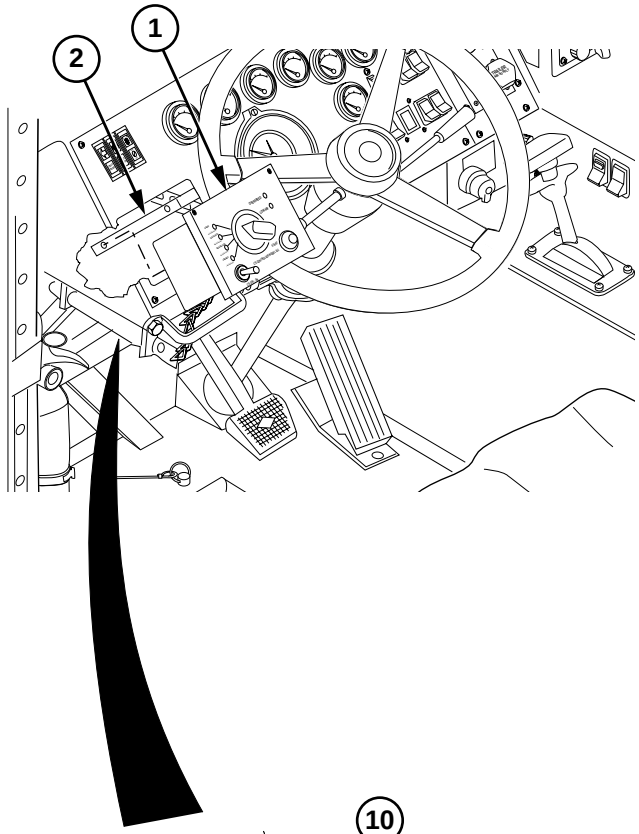
(4) Remove controller (3) from mounting bracket (11) and dash (12).



7-63. CTIS CONTROLLER REPLACEMENT (CONT)

b. Installation

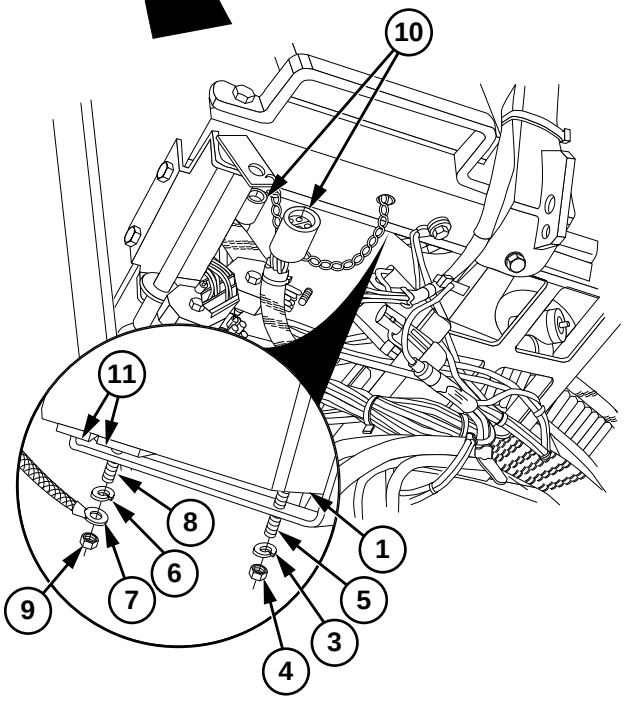
(1) Position controller (1) on mounting bracket (2).



(2) Install new lockwasher (3) and nut (4) on stud (5).

(3) Install new lockwasher (6) and ground strap (7) on stud (8) with nut (9).

(4) Install two harness connectors (10) on connectors (11) on controller (1).



e. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check CTIS operation (TM 9-2320-360-10).

(3) Shut off engine (TM 9-2320-360-10).

(4) Remove wheel chocks.

7-64. CTIS POWER MANIFOLD REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

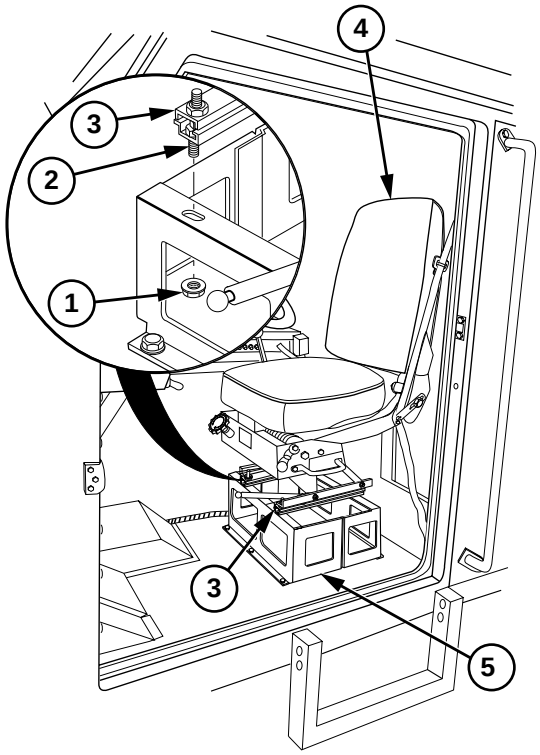
Materials/Parts
Locknuts (4) (Item 64, Appendix G)
Lockwasher (Item 95, Appendix G)
Seal Kit (Item 164, Appendix G)

a. Removal

(1) Remove four locknuts (1) from studs (2) on slide assembly (3). Discard locknuts.

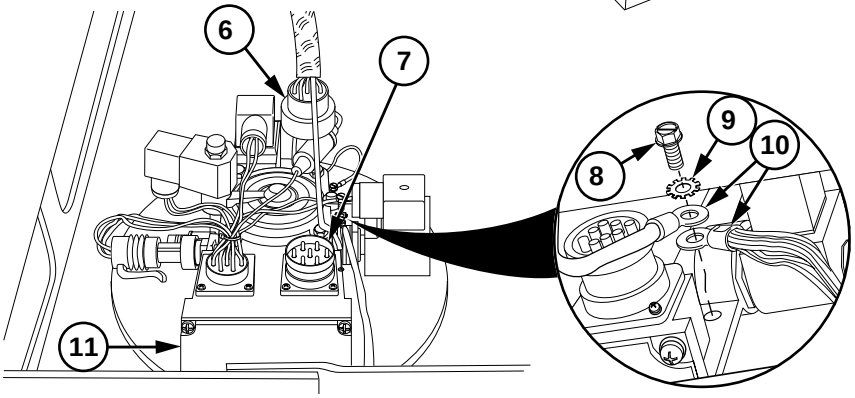
NOTE
Driver's seat is placed on floor behind seat support.

(2) Remove driver's seat (4) from seat support (5).



(3) Remove electrical connector (6) from socket (7).

(4) Remove screw (8), lockwasher (9), and two ground straps (10) from power manifold (11). Discard lockwasher.



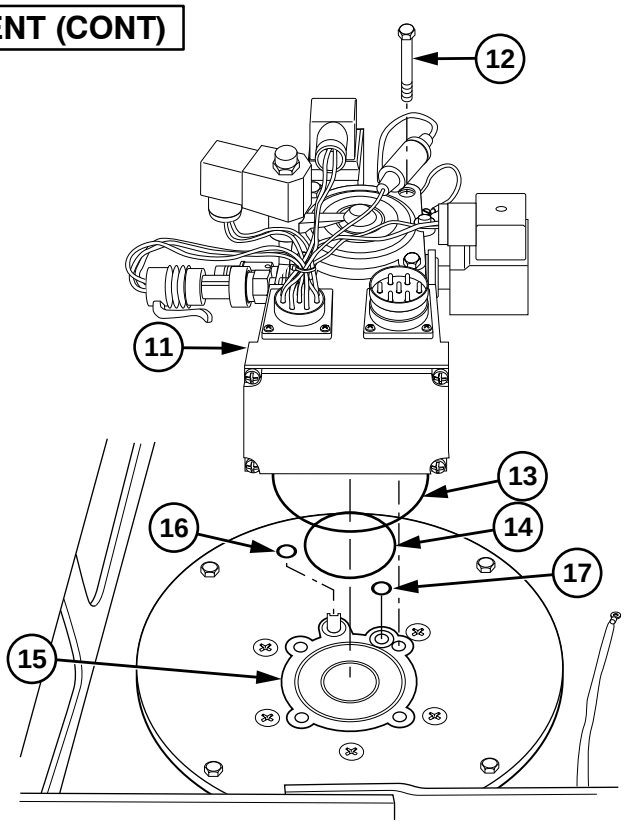
7-64. CTIS POWER MANIFOLD REPLACEMENT (CONT)

CAUTION

Retainer, spring and ball are located in porting block. Use care when working around porting block after CTIS power manifold is removed. Failure to comply may result in loss of retainer, spring and ball.

(5) Remove four screws (12), power manifold (11), preformed packing (13), and preformed packing (14) from porting block (15). Discard preformed packings.

(6) Remove preformed packing (16) and preformed packing (17) from porting block (15). Discard preformed packings.



b. Installation

(1) Install new preformed packing (1) and new preformed packing (2) on porting block (3).

CAUTION

The manifold must be lowered straight down onto the porting block without any side movement. Four mounting screws are installed before lowering manifold to prevent any side movement. Failure to comply may result in damaged to preformed packings.

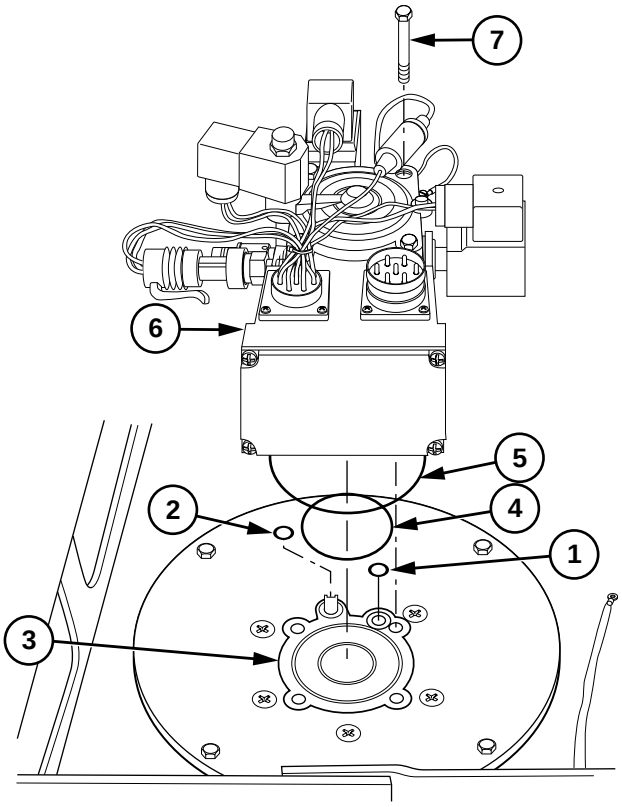
NOTE

Do not lower power manifold until step (4).

(2) Install new preformed packing (4) and new preformed packing (5) on porting block (3).

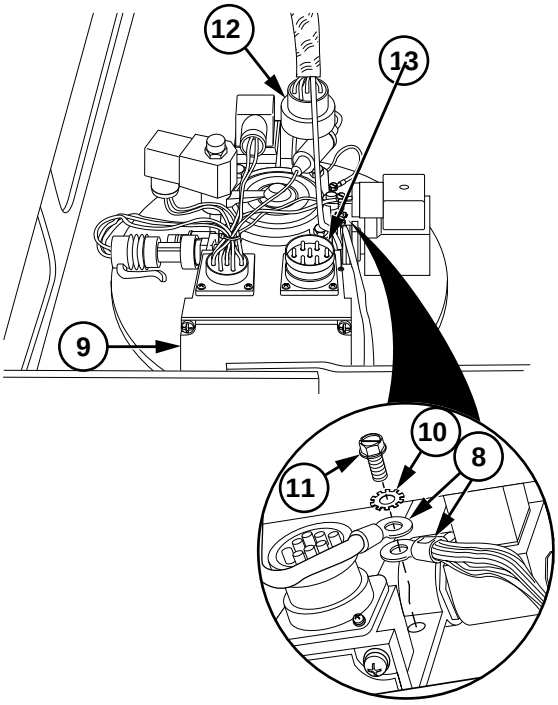
(3) Position power manifold (6) on porting block (3) with four screws (7).

(4) Lower power manifold (6) on porting block (3) and tighten four screws (7).



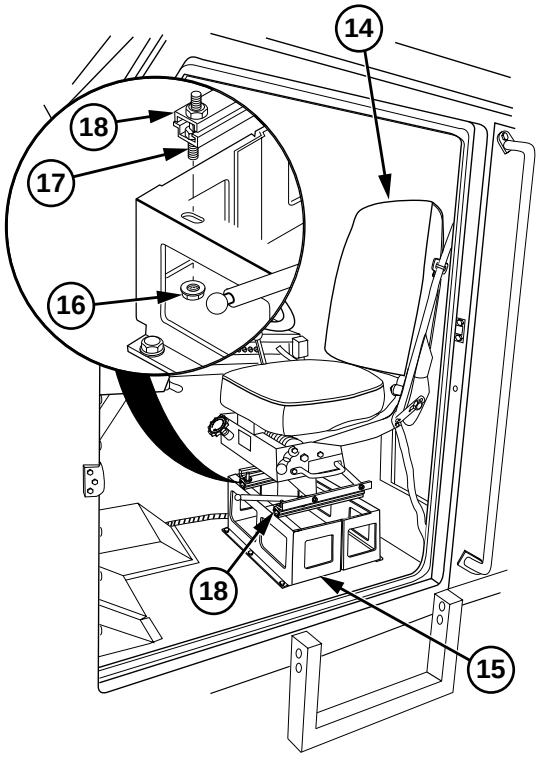
(5) Install two ground straps (8) on power manifold (9) with new lockwasher (10) and screw (11).

(6) Install plug (12) in socket (13).



(7) Install driver's seat (14) on seat support (15).

(8) Install four new locknuts (16) on studs (17) on slide assembly (18).



c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Start engine (TM 9-2320-360-10).

(3) Build up air pressure to 120-125 psi (827 kPa).

(4) Check CTIS operation (TM 9-2320-360-10).

(5) Shut off engine (TM 9-2320-360-10).

(6) Remove wheel chocks.

7-65. CTIS PORTING BLOCK REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
CTIS power manifold removed (para 7-64).
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Combination, 2 In. (Item 64, Appendix F)

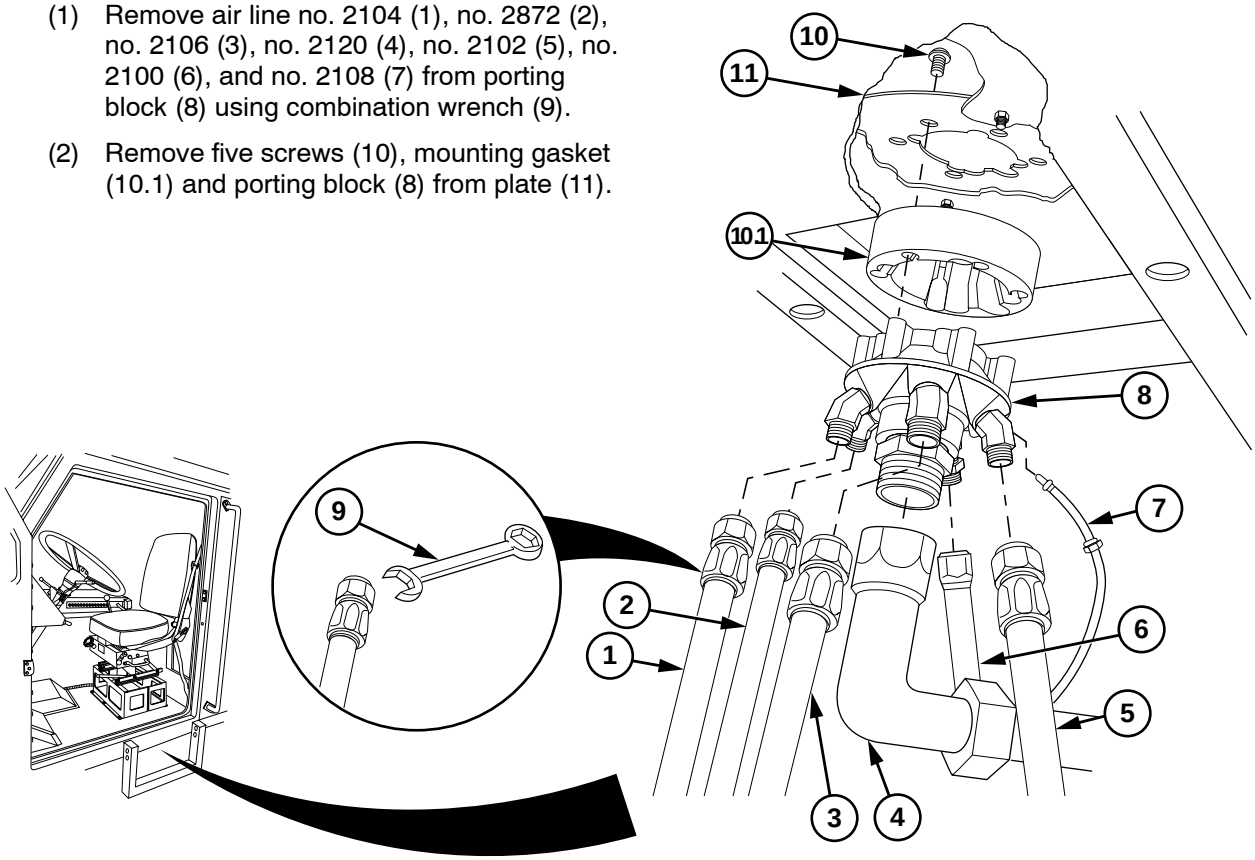
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (4) (Item 72, Appendix G)

a. Removal

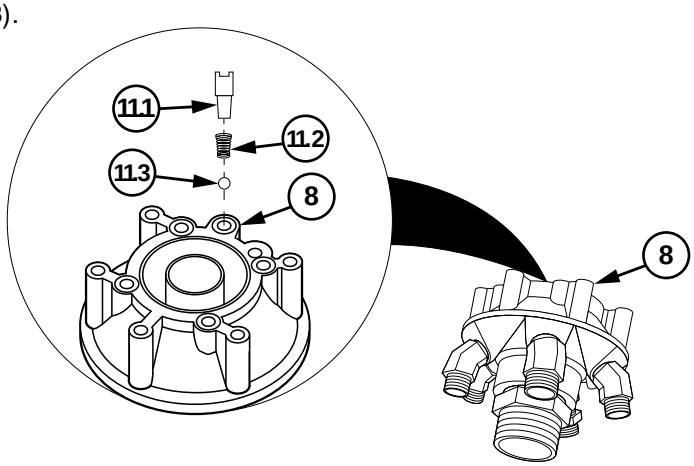
NOTE
Tag and mark air lines, elbows, and fittings before removal.

(1) Remove air line no. 2104 (1), no. 2872 (2), no. 2106 (3), no. 2120 (4), no. 2102 (5), no. 2100 (6), and no. 2108 (7) from porting block (8) using combination wrench (9).

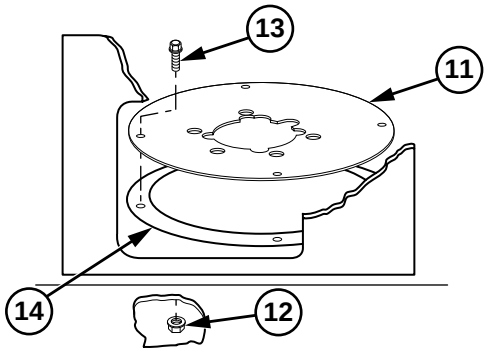
(2) Remove five screws (10), mounting gasket (10.1) and porting block (8) from plate (11).



(2.1) Remove retainer (11.1), spring (11.2) and ball (11.3) from porting block (8).

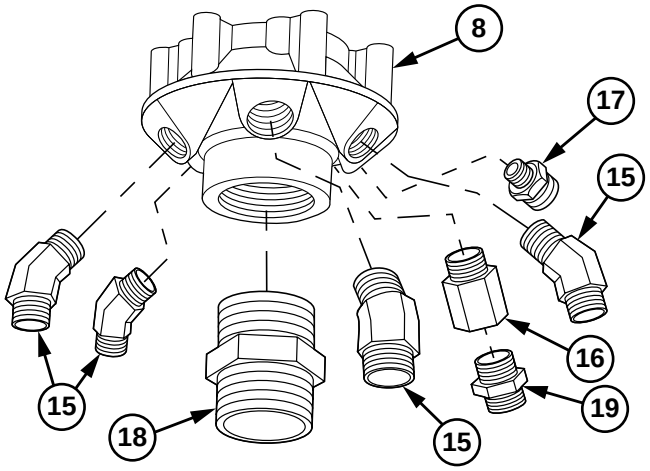


(3) Remove four locknuts (12), screws (13), and plate (11) from cab floor (14). Discard locknuts.



(4) Remove four elbows (15), fitting (16), fitting (17), and fitting (18) from porting block (8).

(5) Remove adapter (19) from fitting (16).



b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

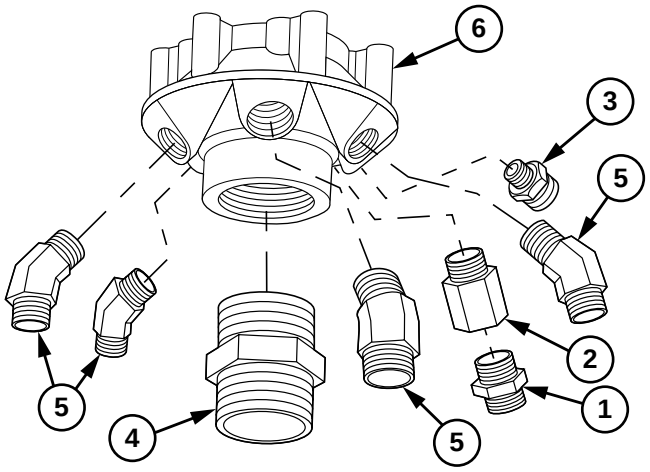
(1) Coat threads of adapter (1), fitting (2), fitting (3), fitting (4), and four elbows (5) with pipe thread sealing compound.

(2) Install adapter (1) on fitting (2).

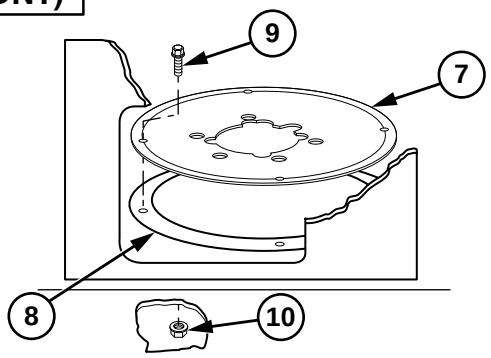
NOTE

Elbows are installed pointing straight down.

(3) Install fitting (2), fitting (3), fitting (4), and four elbows (5) on porting block (6).



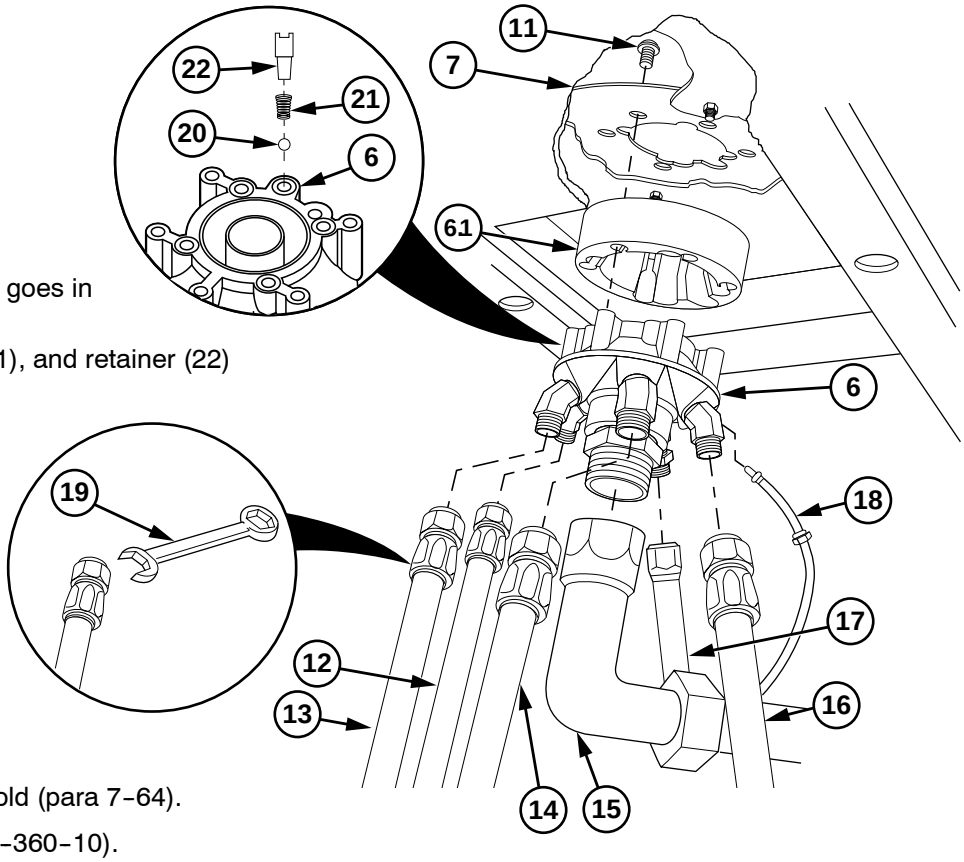
7-65. CTIS PORTING BLOCK REPLACEMENT (CONT)



(4) Install plate (7) on cab floor (8) with four screws (9) and new locknuts (10).

(5) Install porting block (6), and mounting gasket (6.1) on plate (7) with five screws (11).

(6) Install air lines no. 2872 (12), no. 2104 (13), no. 2106 (14), no. 2120 (15), no. 2102 (16), no. 2100 (17), and no. 2108 (18) on porting block (6) using combination wrench (19).



NOTE

Narrow end of spring goes in first.

(7) Install ball (20), spring (21), and retainer (22) on porting block (6).

c. Follow-On Maintenance

(1) Install CTIS power manifold (para 7-64).

(2) Start engine (TM 9-2320-360-10).

(3) Build up air pressure to 120-125 psi (827 -862 kPa).

(4) Shut off engine (TM 9-2320-360-10).

(5) Check for air leaks.

(6) Remove wheel chocks.

7-66. CTIS WIRE HARNESS REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).
Footrest removed (TM 9-2320-360-10).

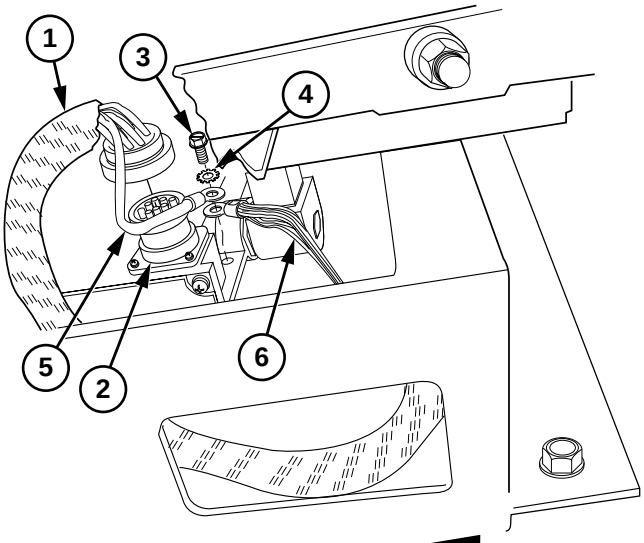
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Ties, Cable, Plastic (Item 28, Appendix C)
Locknut (Item 70, Appendix G)
Lockwasher (Item 95, Appendix G)

a. Removal

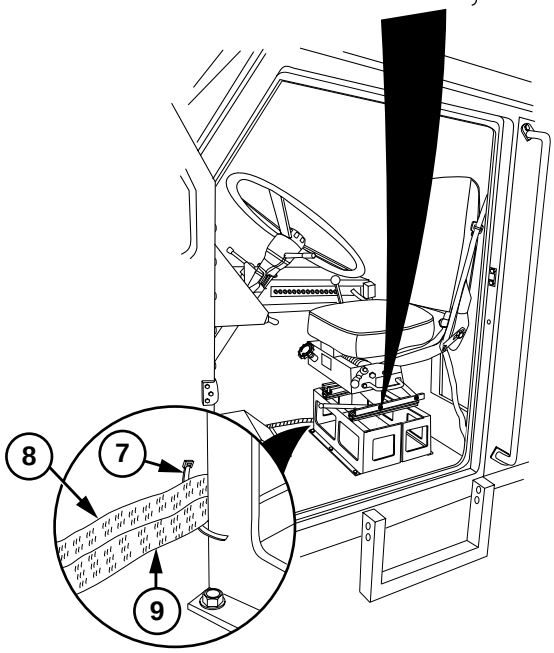
(1) Remove CTIS harness connector (1) from CTIS power manifold (2).

(2) Remove screw (3), lockwasher (4), ground wire (5), and ground wire (6) from CTIS power manifold (2). Discard lockwasher.

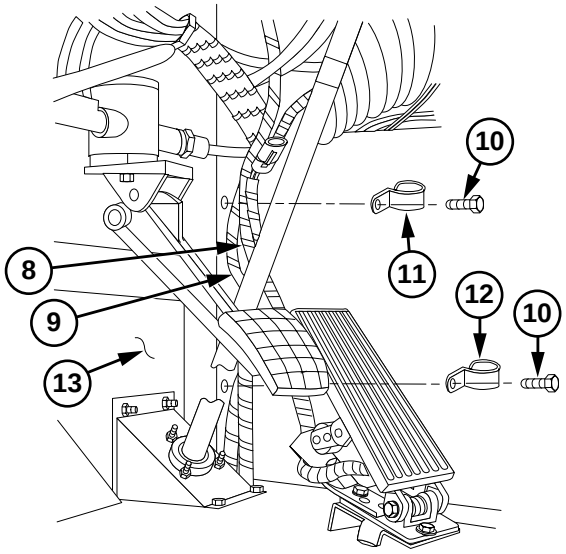


NOTE
Location of plastic cable ties should be marked before removal.

(3) Remove plastic cable ties (7) from CTIS wire harness (8) and cab wire harness (9).

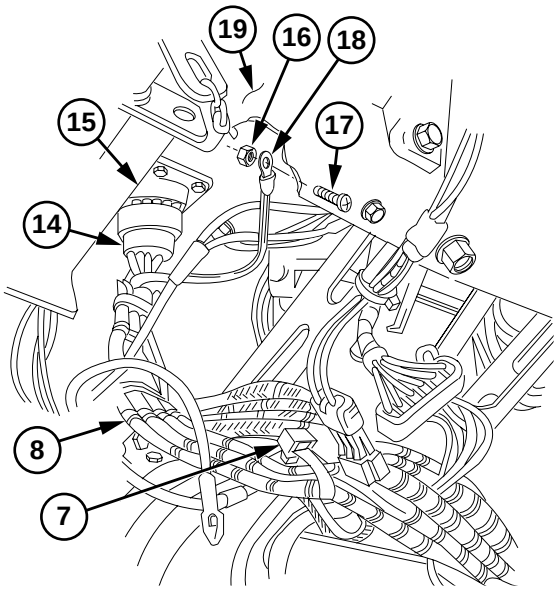


7-66. CTIS WIRE HARNESS REPLACEMENT (CONT)



(4) Remove two screws (10) and clips (11 and 12) from cab wall (13).

(5) Remove two clips (11 and 12) from CTIS wire harness (8) and cab wire harness (9).



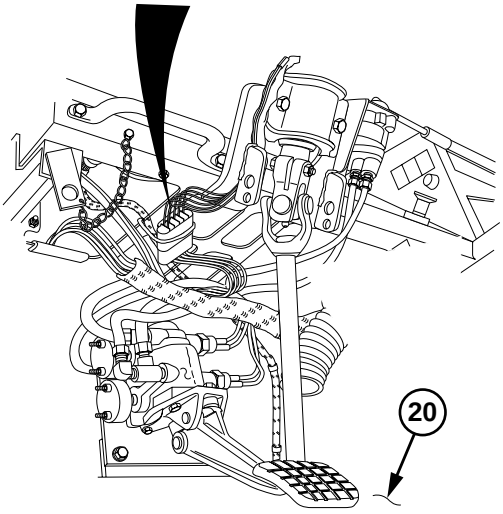
NOTE

Location of plastic cable ties should be marked before removal.

(6) Remove plastic cable ties (7) from CTIS wire harness (8).

(7) Remove CTIS harness connector (14) from CTIS controller (15).

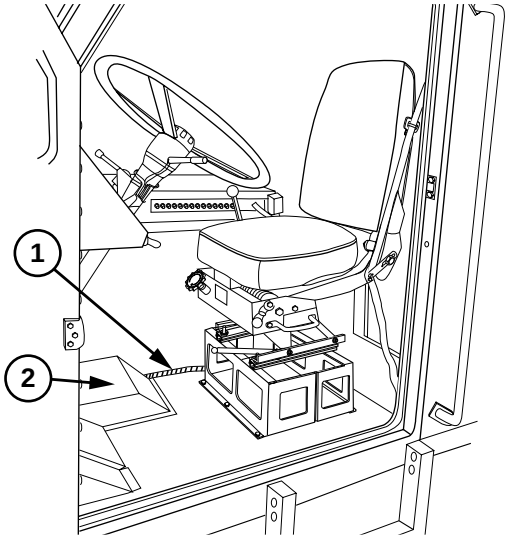
(8) Remove locknut (16), screw (17), and ground wire (18) from dash assembly (19). Discard locknut.



(9) Remove CTIS wire harness (8) from floor (20).

b. Installation

(1) Route CTIS wire harness (1) through floor (2).



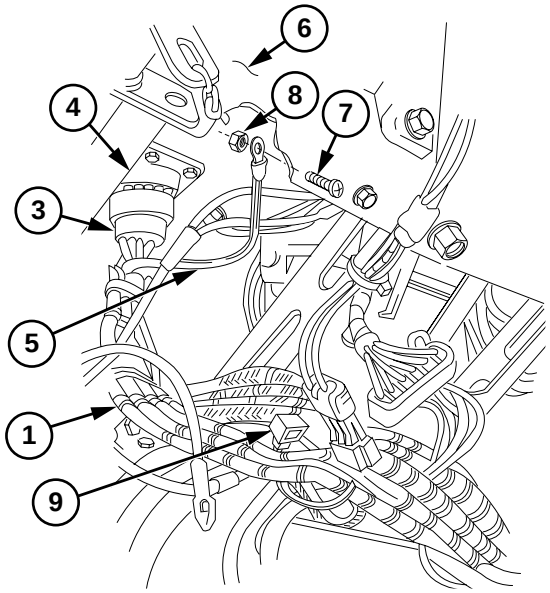
(2) Install harness connector (3) on controller (4).

(3) Install ground wire (5) on dash assembly (6) with screw (7) and new locknut (8).

NOTE

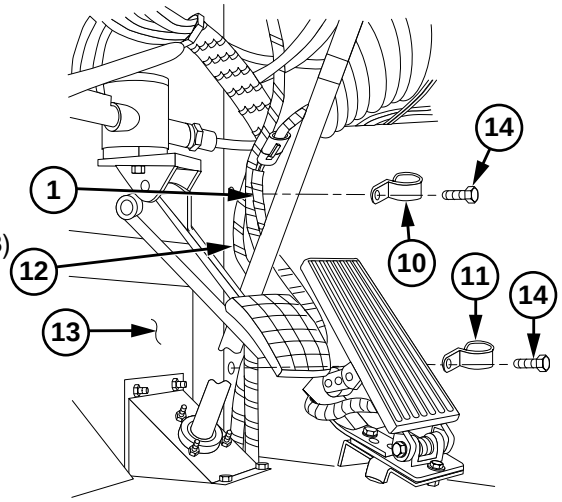
Plastic cable ties should be positioned in locations marked during removal.

(4) Install plastic cable ties (9) on CTIS wire harness (1).

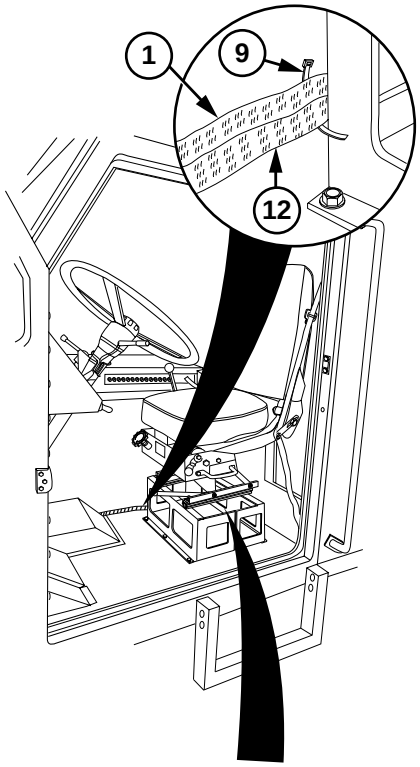


(5) Install two clips (10 and 11) on CTIS wire harness (1) and cab wire harness (12).

(6) Install two clips (10 and 11) on cab wall (13) with screws (14).



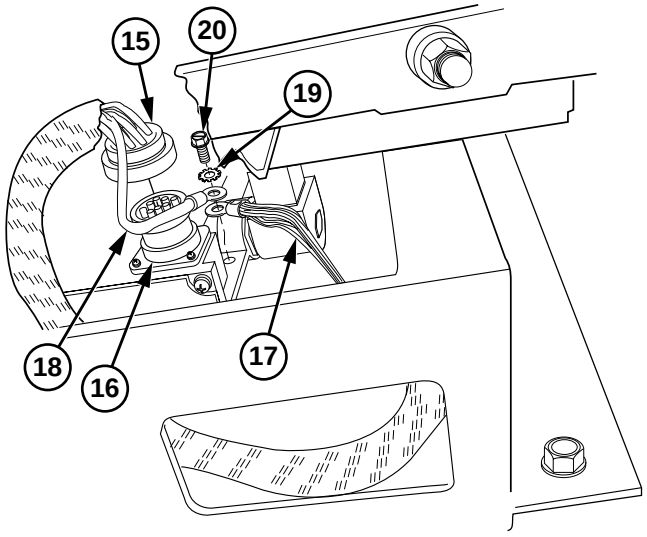
7-66. CTIS WIRE HARNESS REPLACEMENT (CONT)



NOTE

Plastic cable ties should be positioned in locations marked during removal.

(7) Install plastic cable ties (9) on CTIS wire harness (1) and cab wire harness (12).



(8) Install wire harness connector (15) on CTIS power manifold (16).

(9) Install ground wire (17) and ground wire (18) on CTIS power manifold (16) with new lockwasher (19) and screw (20).

c. Follow-On Maintenance

(1) Install footrest (TM 9-2320-360-10).

(2) Connect batteries (para 7-61).

7-67. CTIS TRANSDUCER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

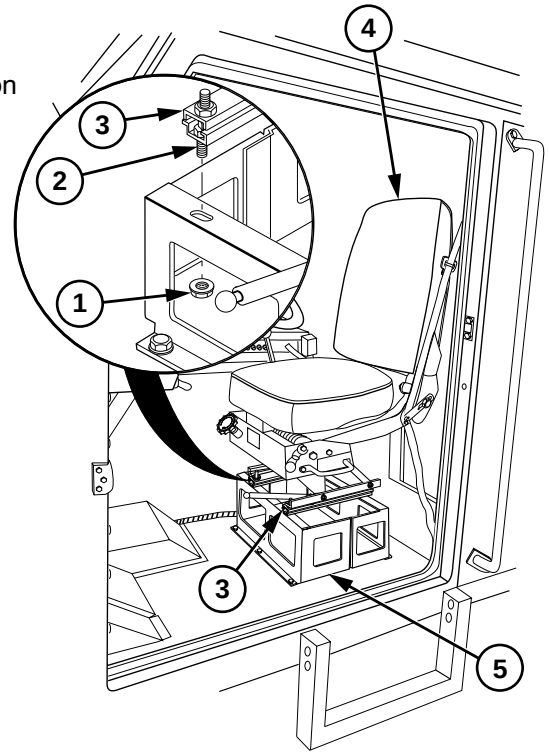
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Locknuts (4) (Item 64, Appendix G)

a. Removal

(1) Remove four locknuts (1) from studs (2) on slide assembly (3). Discard locknuts.

NOTE
Driver's seat is placed on floor behind seat support.

(2) Remove driver's seat (4) from seat support (5).



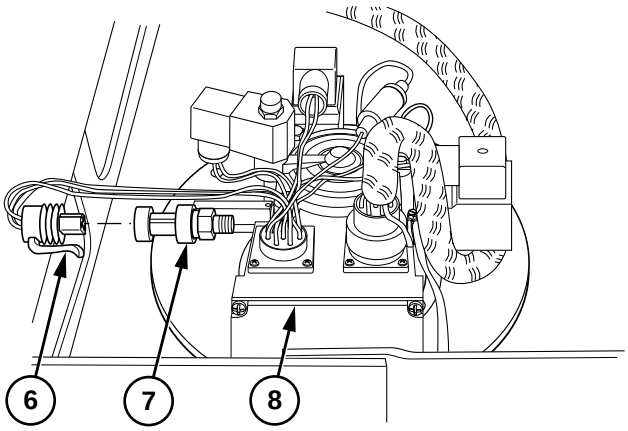
7-67. CTIS TRANSDUCER REPLACEMENT (CONT)

NOTE

Connector is removed by gently prying on tab and pulling on connector.

(3) Remove electrical connector (6) from transducer (7).

(4) Remove transducer (7) from power manifold (8).



b. Installation

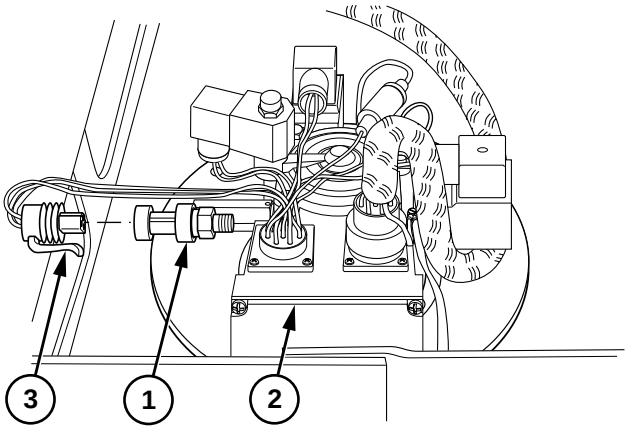
WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of transducer (1) with pipe thread sealing compound.

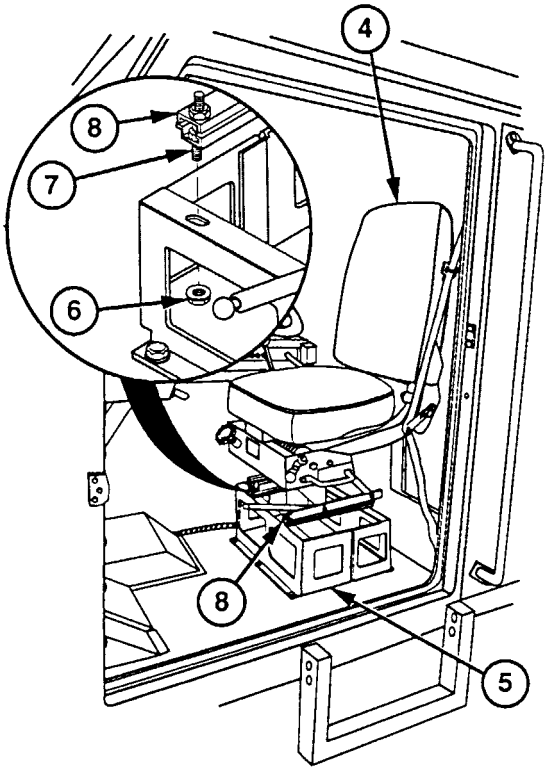
(2) Install transducer (1) on power manifold (2).

(3) Install electrical connector (3) on transducer (1).



(4) Install driver's seat (4) on seat support (5).

(5) Install four new locknuts (6) on studs (7) on slide assembly (8).



c. Follow-On Maintenance

Remove wheel chocks.

7-68. CTIS DEFLATION VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

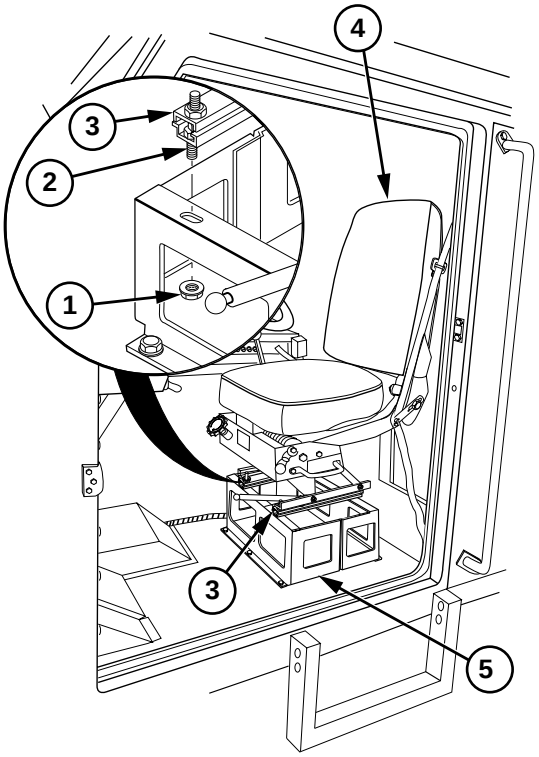
Materials/Parts
Locknuts (4) (Item 64, Appendix F)

a. Removal

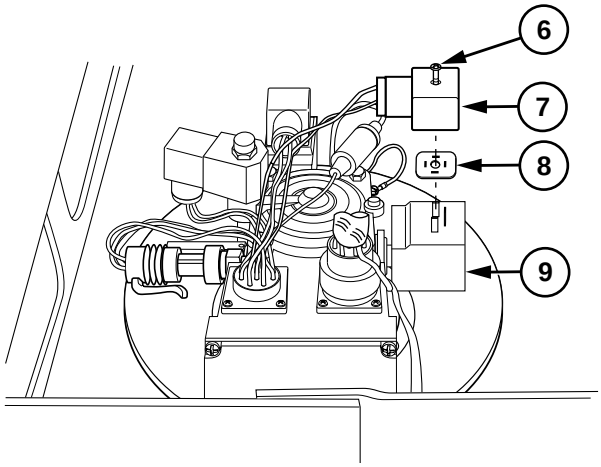
(1) Remove four locknuts (1) from studs (2) on slide assembly (3). Discard locknuts.

NOTE
Driver's seat is placed on floor behind seat support.

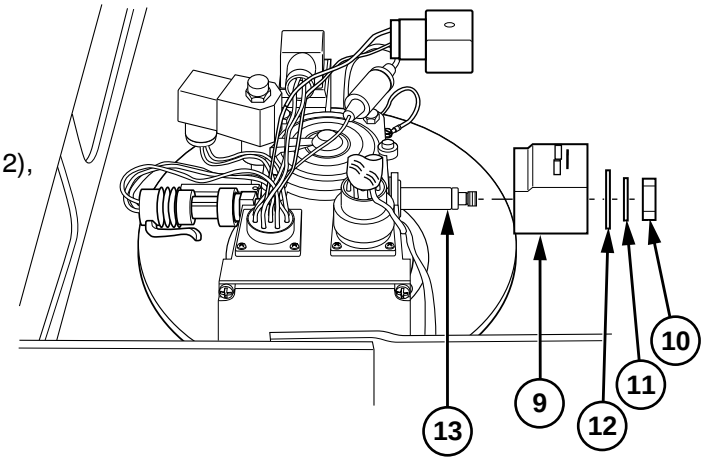
(2) Remove driver's seat (4) from seat support (5).



(3) Loosen screw (6) and remove electrical connector (7) and gasket (8) from solenoid (9).



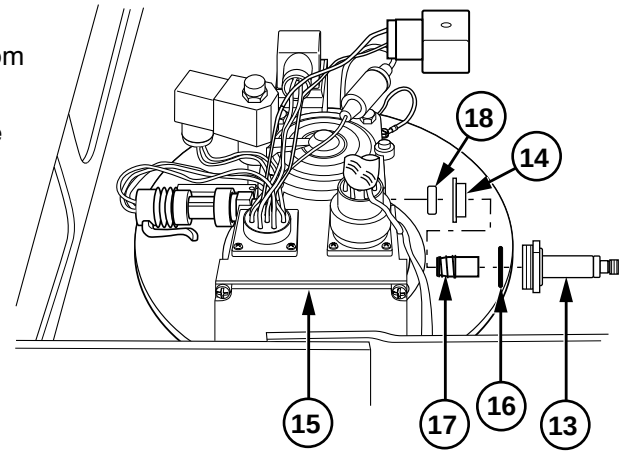
(4) Remove nut (10), washer (11), washer (12), and solenoid (9) from spool (13). Discard washer (11).



(5) Remove spool (13) and diaphragm (14) from power manifold (15).

(6) Remove preformed packing (16) and valve (17) from spool (13). Discard preformed packing.

(7) Remove orifice (18) from power manifold (14).



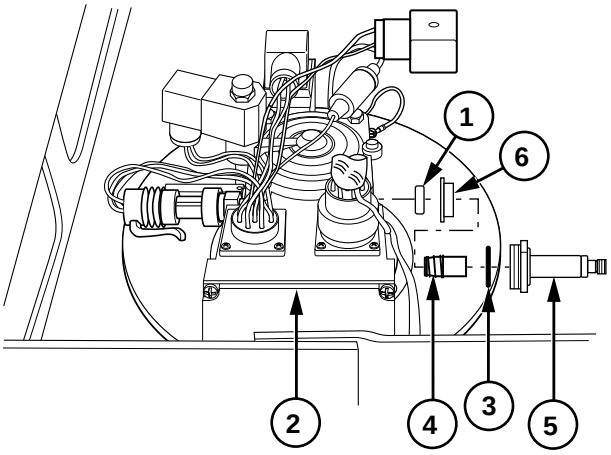
7-68. CTIS DEFLATION VALVE REPLACEMENT (CONT)

b. Installation

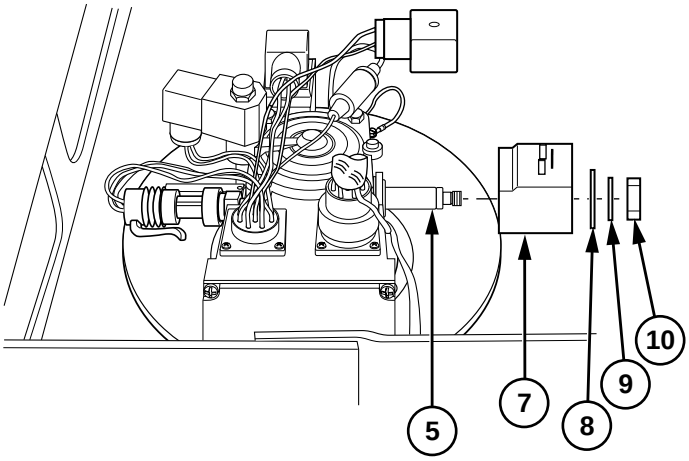
(1) Install orifice (1) in power manifold (2).

(2) Install new preformed packing (3) and valve (4) on spool (5).

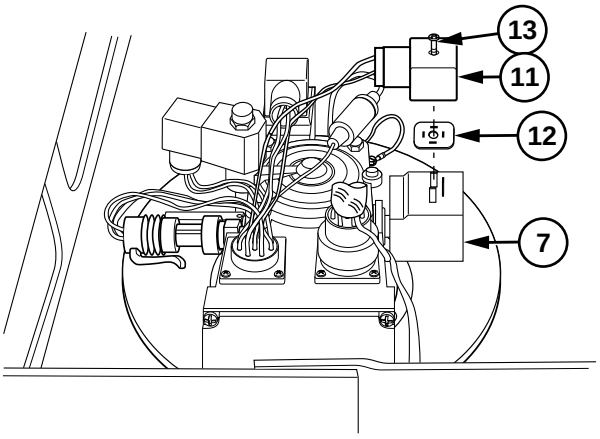
(3) Install spool (5) and diaphragm (6) on power manifold (2).



(4) Install solenoid (7) on spool (5) with washer (8), new washer (9), and nut (10).

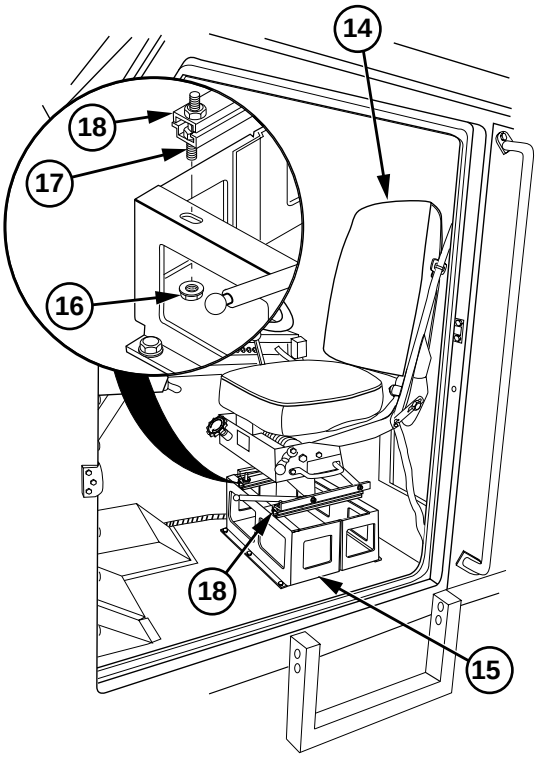


(5) Install electrical connector (11) with gasket (12) on solenoid (7) and tighten screw (13).



(6) Install driver's seat (14) on seat support (15).

(7) Install four new locknuts (16) on studs (17) on slide assembly (18).



c. Follow-On Maintenance

Remove wheel chocks.

7-69. CTIS INFLATION VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Air system drained (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

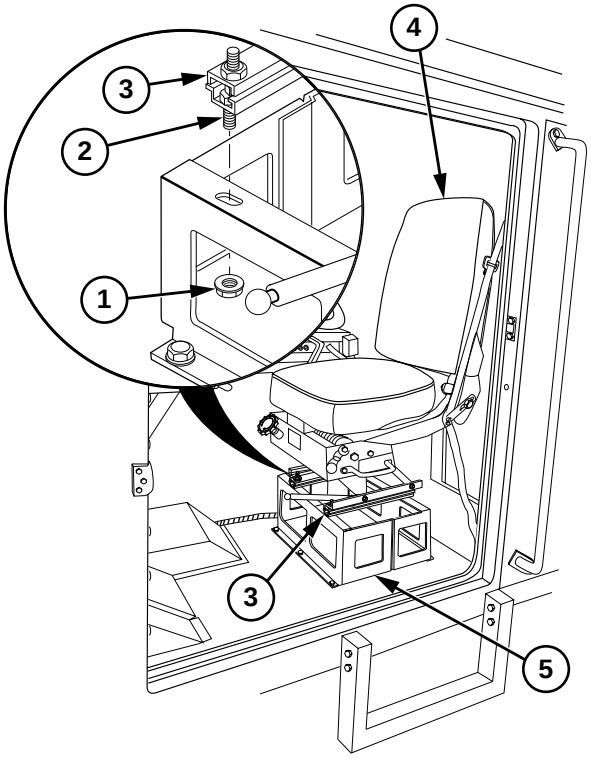
Materials/Parts
Locknuts (4) (Item 64, Appendix G)

a. Removal

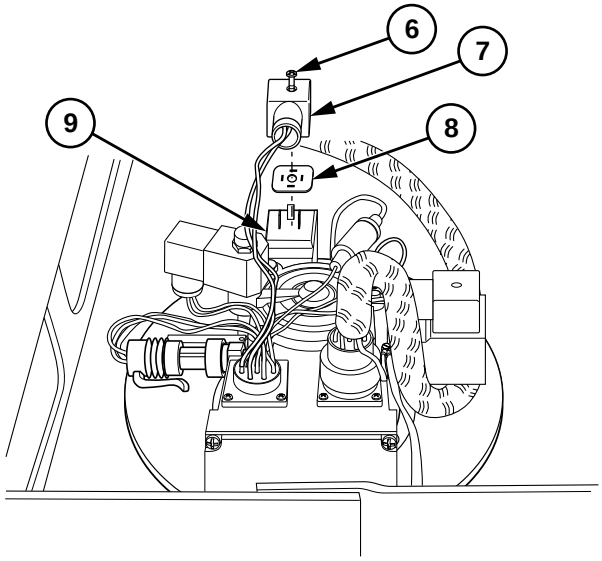
(1) Remove four locknuts (1) from studs (2) on slide assembly (3). Discard locknuts.

NOTE
Driver's seat is placed on floor behind seat support.

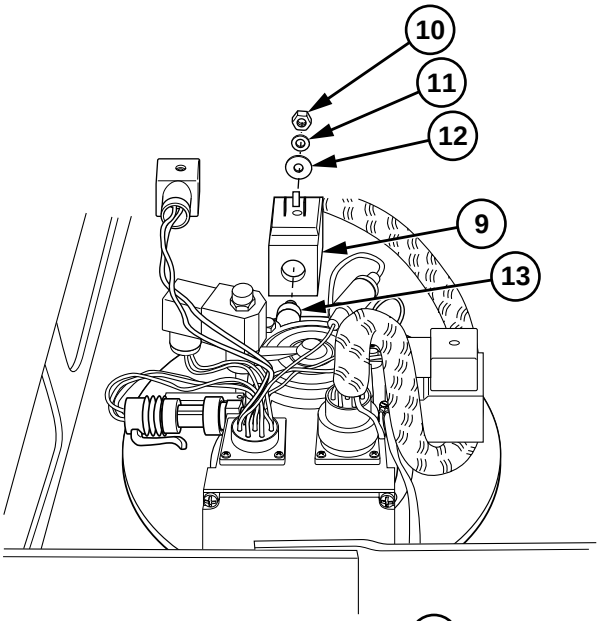
(2) Remove driver's seat (4) from seat support (5).



(3) Loosen screw (6) and remove electrical connector (7) and gasket (8) from solenoid (9).

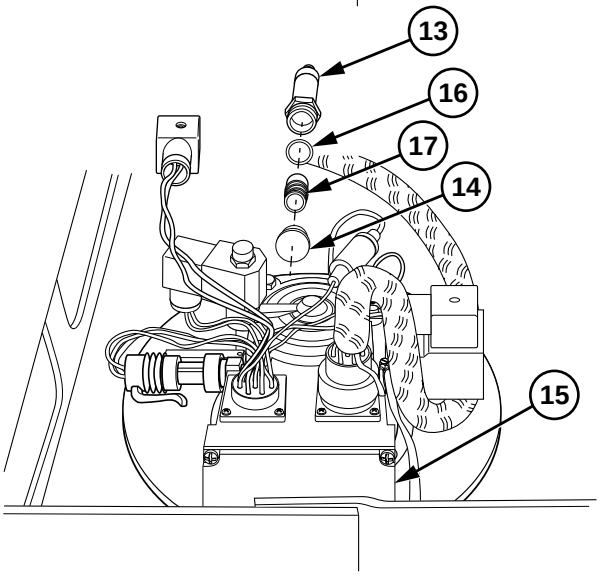


(4) Remove nut (10), washer (11), washer (12), and solenoid (9) from spool (13). Discard washer (11).



(5) Remove spool (13) and diaphragm (14) from power manifold (15).

(6) Remove preformed packing (16) and valve (17) from spool (13). Discard preformed packing.

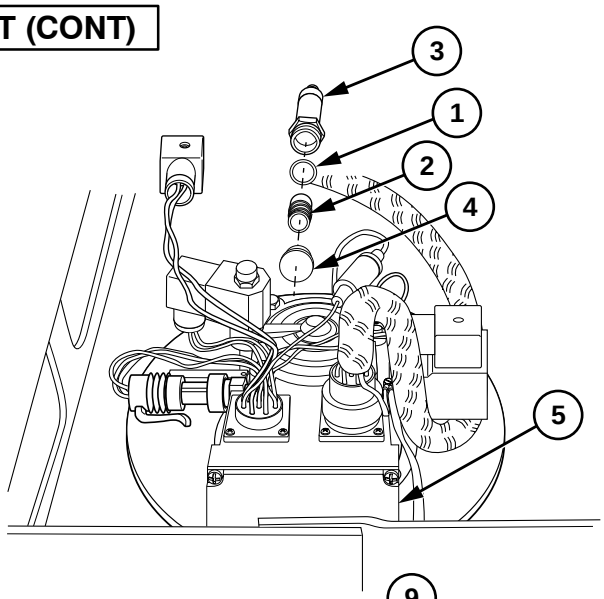


7-69. CTIS INFLATION VALVE REPLACEMENT (CONT)

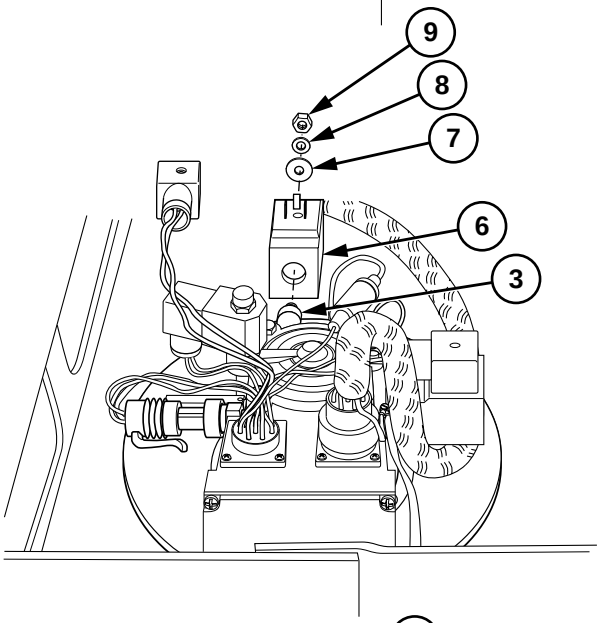
b. Installation

(1) Install new preformed packing (1) and valve (2) on spool (3).

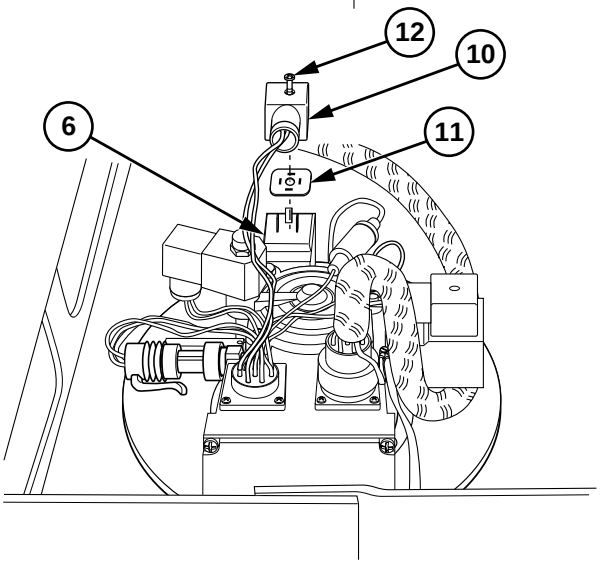
(2) Install spool (3) and diaphragm (4) on power manifold (5).



(3) Install solenoid (6) on spool (3) with washer (7), new washer (8), and nut (9).

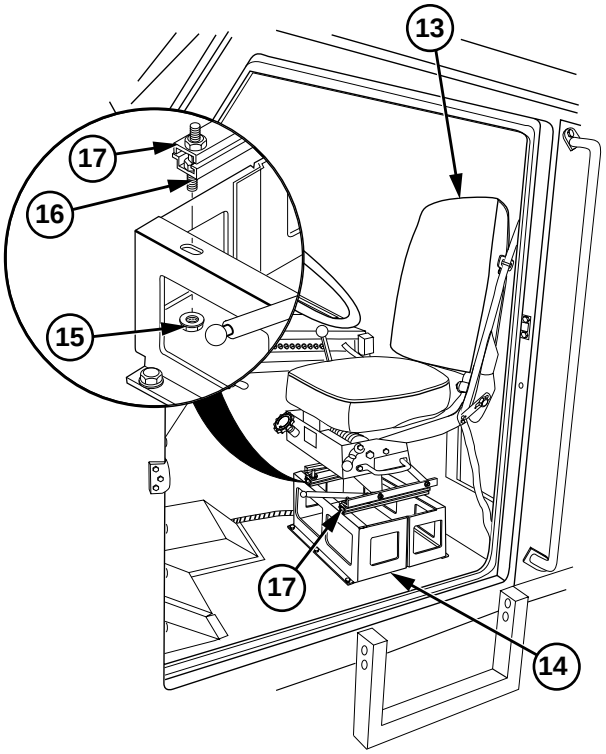


(4) Install electrical connector (10) with gasket (11) on solenoid (6) and tighten screw (12).



(5) Install driver's seat (13) on seat support (14).

(6) Install four new locknuts (15) on studs (16) on slide assembly (17).



c. Follow-On Maintenance

Remove wheel chocks.

7-70. CTIS RELEASE VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Locknuts (4) (Item 64, Appendix G)
Seal Kit (Item 164, Appendix G)

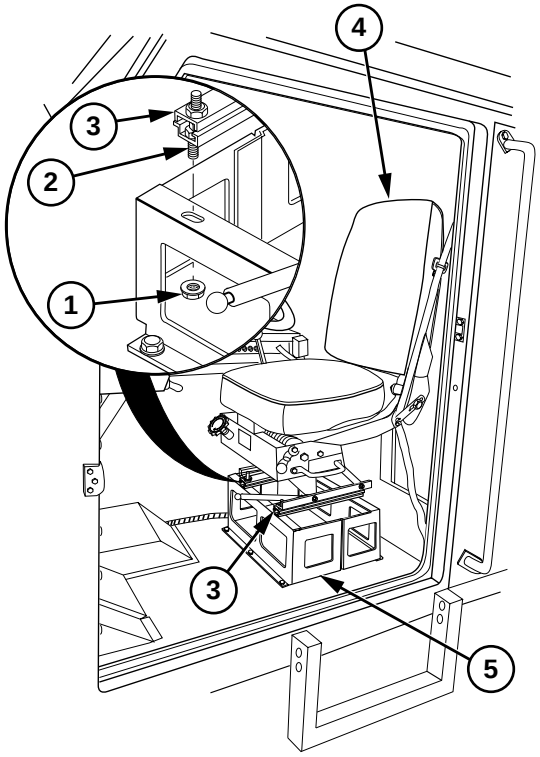
a. Removal

NOTE
Do steps (1) thru (4) to replace release valve solenoid only.

(1) Remove four locknuts (1) from studs (2) on slide assembly (3). Discard locknuts.

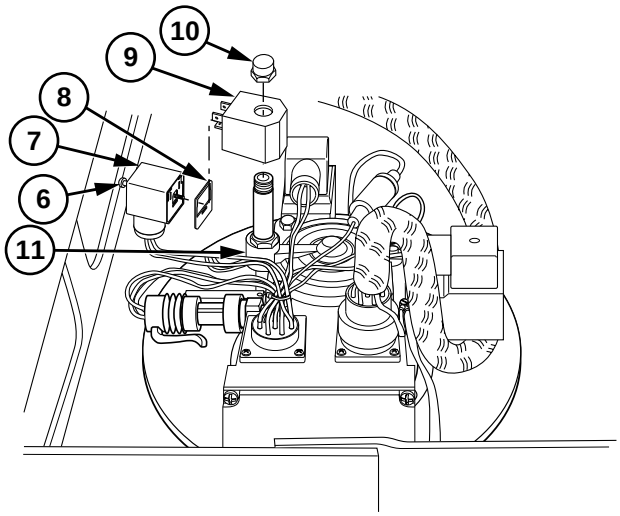
NOTE
Driver's seat is placed on floor behind seat support.

(2) Remove driver's seat (4) from seat support (5).



(3) Loosen screw (6) and remove electrical connector (7) and gasket (8) from solenoid (9).

(4) Remove nut (10) and solenoid (9) from release valve assembly (11).



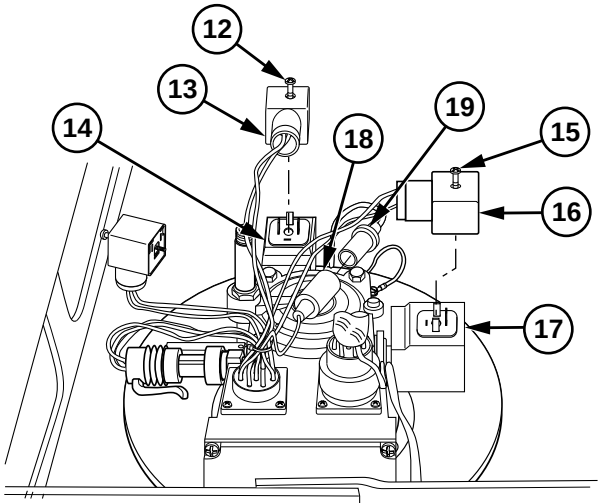
NOTE

Tag and mark electrical connectors before removing.

(5) Loosen screw (12) and remove electrical connector (13) from inflation valve solenoid (14).

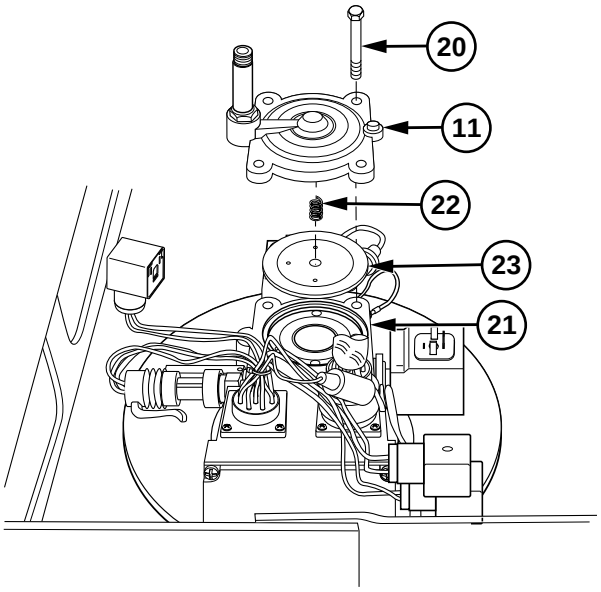
(6) Loosen screw (15) and remove electrical connector (16) from deflation valve solenoid (17).

(7) Remove electrical connector (18) from pressure switch electrical connector (19).



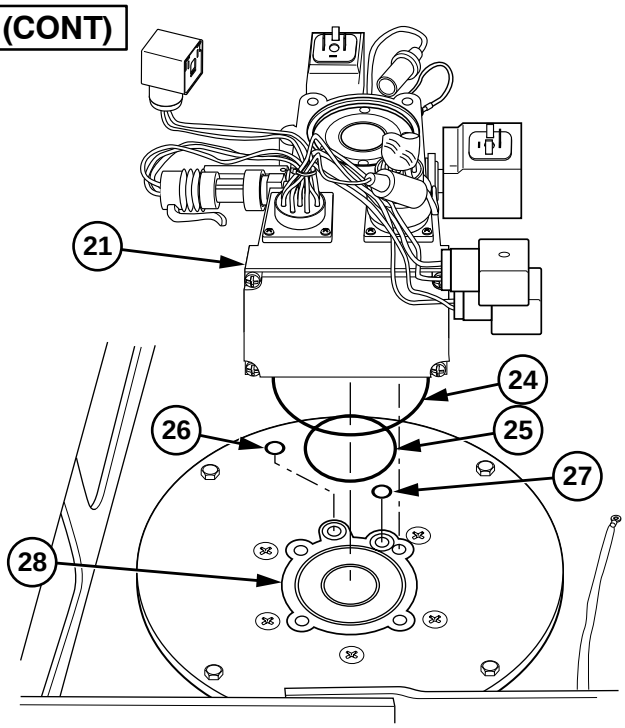
(8) Remove four screws (20) and release valve assembly (11) from power manifold (21).

(9) Remove spring (22) and diaphragm (23) from power manifold (21).



7-70. CTIS RELEASE VALVE REPLACEMENT (CONT)

(10) Remove power manifold (21), preformed packing (24), preformed packing (25), preformed packing (26), and preformed packing (27) from porting block (28). Discard preformed packings.



b. Installation

CAUTION

Spring in center of diaphragm in power manifold must align with hole in center of release valve. Failure to comply may damage spring.

(1) Install diaphragm (1) and spring (2) on power manifold (3).

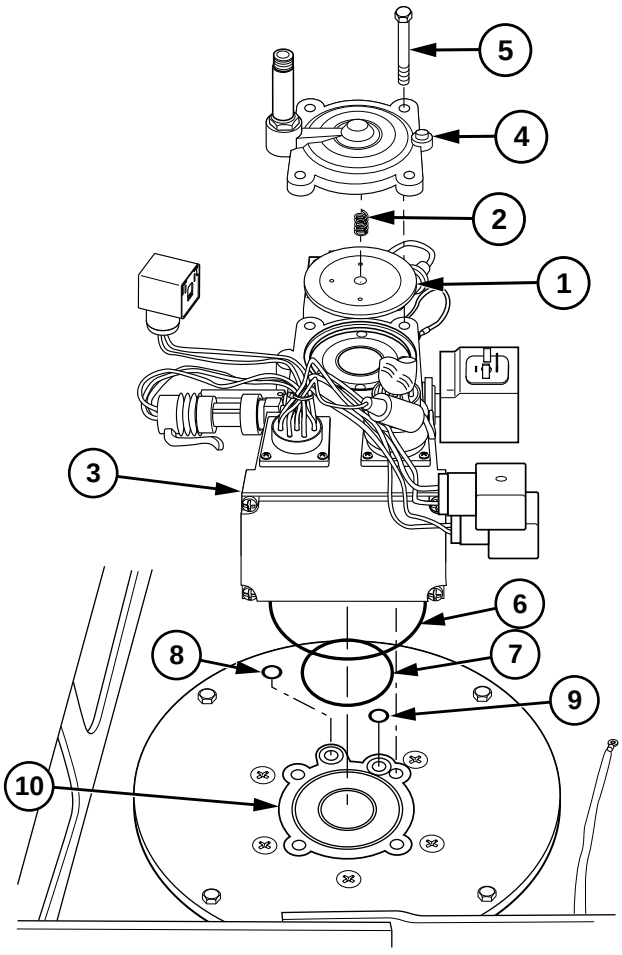
(2) Install release valve assembly (4) on power manifold (3) with four screws (5).

(3) Install new preformed packing (6), new preformed packing (7), new preformed packing (8), and new preformed packing (9) on porting block (10).

CAUTION

The power manifold must be lowered straight down onto the porting block without any side movement. Four mounting screws are installed before lowering manifold to prevent any side movement. Failure to comply may result in damage to preformed packings.

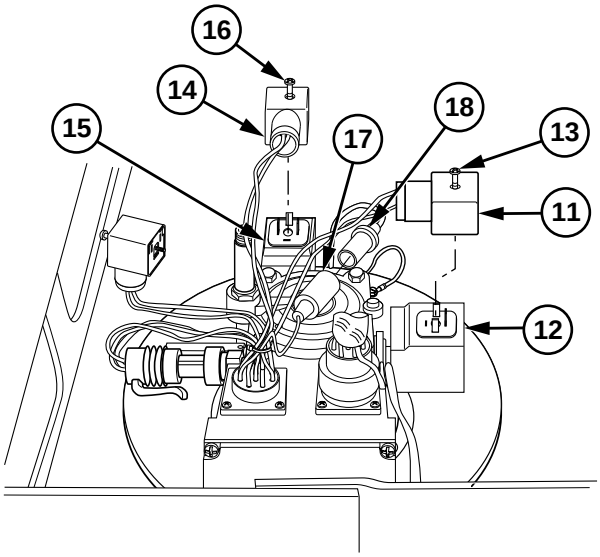
(4) Lower power manifold (3) on porting block (10) and tighten four screws (5).



(5) Install electrical connector (11) on deflation valve solenoid (12) and tighten screw (13).

(6) Install electrical connector (14) on inflation valve solenoid (15) and tighten screw (16).

(7) Install electrical connector (17) on pressure switch electrical connector (18).

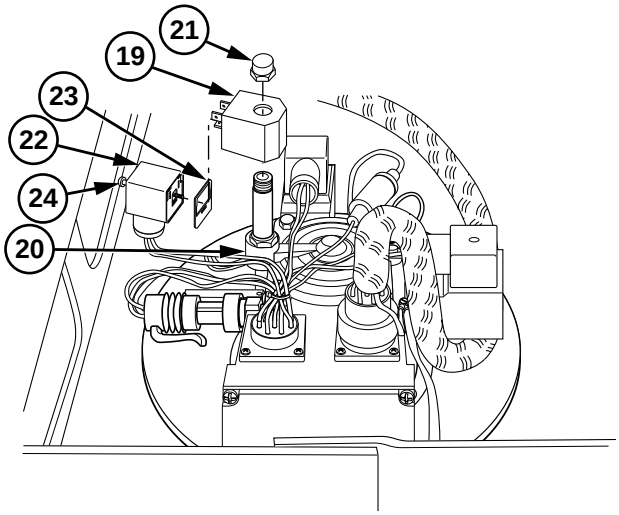


NOTE

Do steps (8) thru (11) to install release valve solenoid only.

(8) Install solenoid (19) on release valve assembly (20) with nut (21).

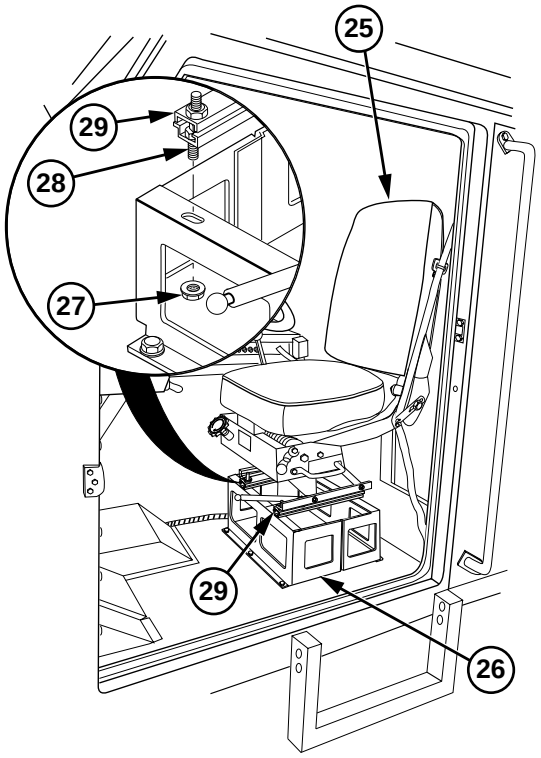
(9) Install electrical connector (22) with gasket (23) on solenoid (19) and tighten screw (24).



7-70. CTIS RELEASE VALVE REPLACEMENT (CONT)

(10) Install driver's seat (25) on seat support (26).

(11) Install four new locknuts (27) on studs (28) on slide assembly (29).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Check CTIS operation (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

(5) Remove wheel chocks.

7-71. CTIS RELIEF VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

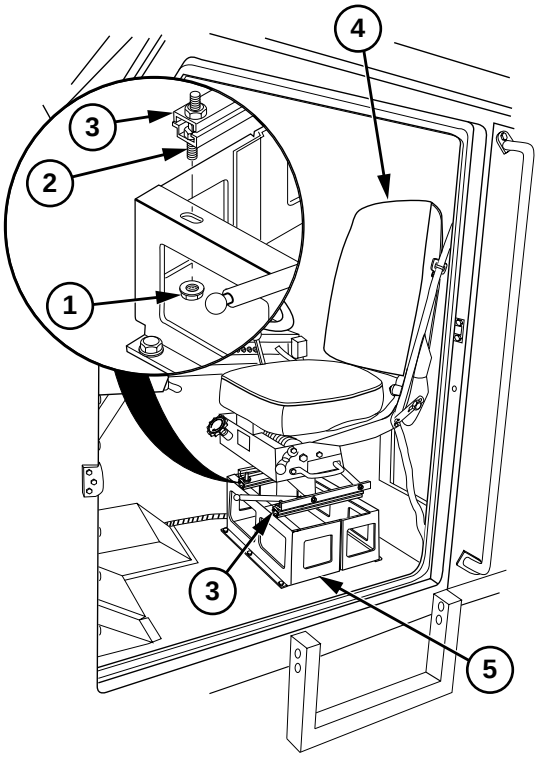
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Locknuts (4) (Item 64, Appendix G)

a. Removal

(1) Remove four locknuts (1) from studs (2) on slide assembly (3). Discard locknuts.

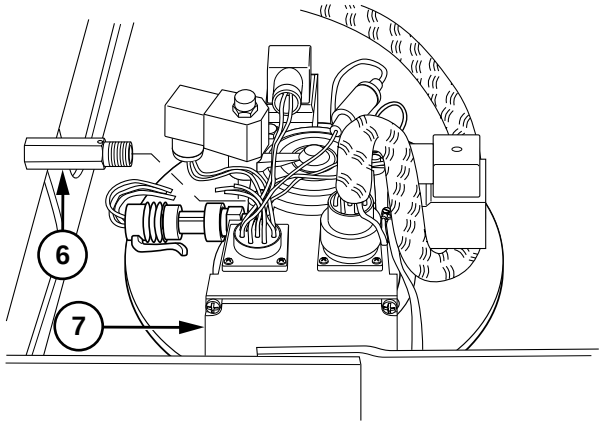
NOTE
Driver's seat is placed on floor behind seat support.

(2) Remove driver's seat (4) from seat support (5).



7-71. CTIS RELIEF VALVE REPLACEMENT (CONT)

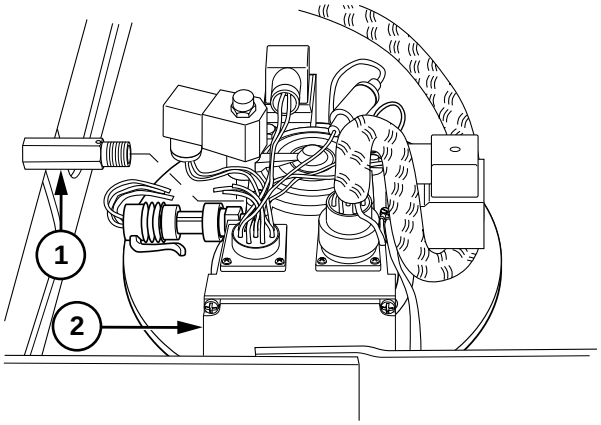
(3) Remove relief valve (6) from power manifold (7).



b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

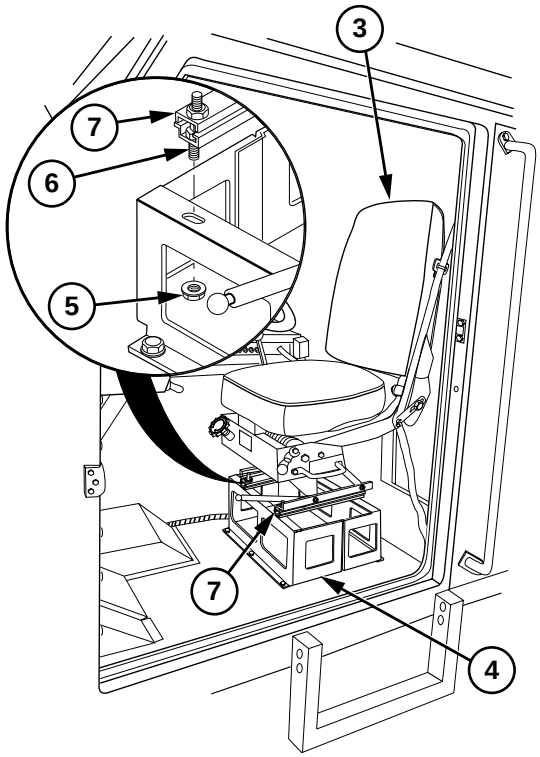


(1) Coat threads of relief valve (1) with pipe thread sealing compound.

(2) Install relief valve (1) on power manifold (2).

(3) Install driver's seat (3) on seat support (4).

(4) Install four new locknuts (5) on studs (6) on slide assembly (7).



c. Follow-On Maintenance

Remove wheel chocks.

7-72. CTIS PRESSURE SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

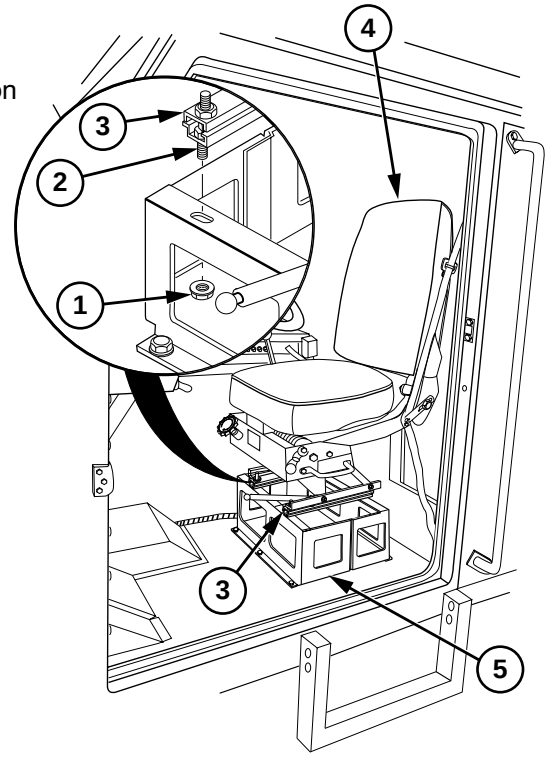
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Locknuts (4) (Item 64, Appendix G)
Lockwasher (Item 97, Appendix G)

a. Removal

(1) Remove four locknuts (1) from studs (2) on slide assembly (3). Discard locknuts.

NOTE
Driver's seat is placed on floor behind seat support.

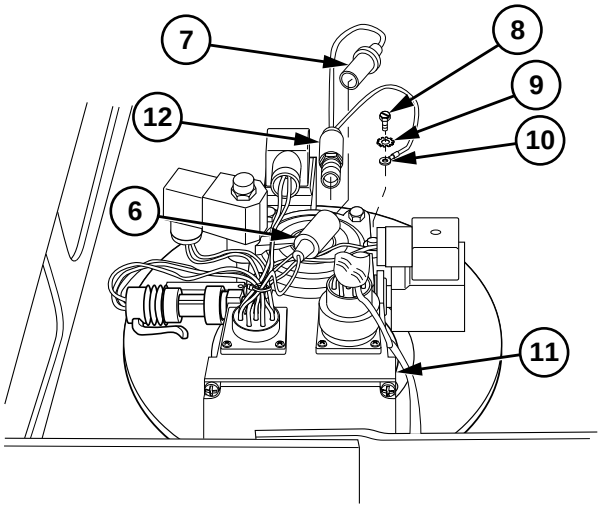
(2) Remove driver's seat (4) from seat support (5).



(3) Remove electrical connector (6) from pressure switch electrical connector (7).

(4) Remove screw (8), lockwasher (9), and ground wire (10) from power manifold (11). Discard lockwasher.

(5) Remove pressure switch (12) from power manifold (11).



b. Installation

WARNING

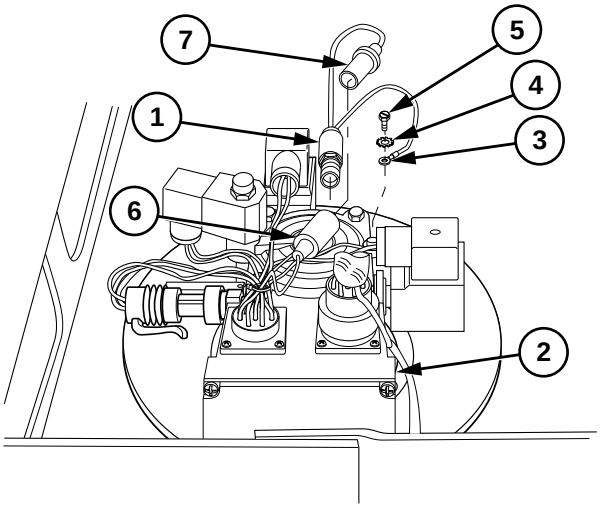
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of pressure switch (1) with pipe thread sealing compound.

(2) Install pressure switch (1) on power manifold (2).

(3) Install ground wire (3), new lockwasher (4), and screw (5) on power manifold (2).

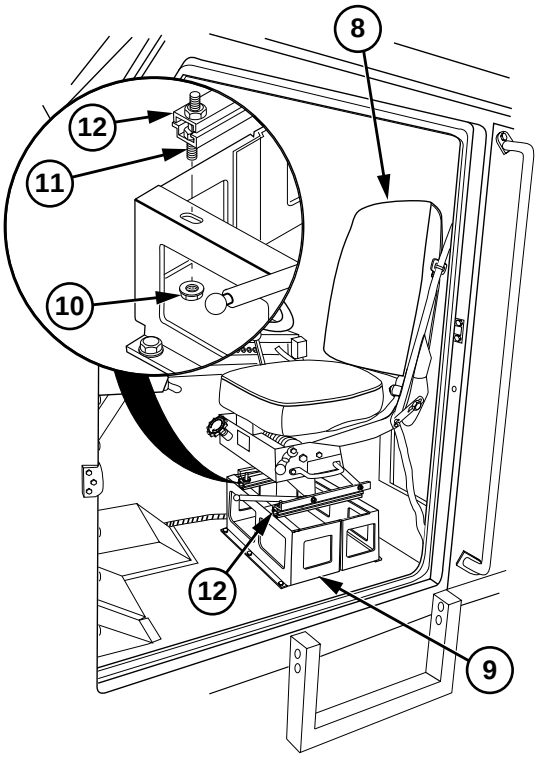
(4) Install electrical connector (6) on pressure switch electrical connector (7).



7-72. CTIS PRESSURE SWITCH REPLACEMENT (CONT)

(5) Install driver's seat (8) on seat support (9).

(6) Install four new locknuts (10) on studs (11) on slide assembly (12).



c. Follow-On Maintenance

Remove wheel chocks.

7-73. PTO SOLENOID REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Lower engine access panel removed (para 16-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Tool Kit, Electrical Repair (Item 53, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Boots, Dust (2) (Item 8, Appendix G)
Contact, Electrical (2) (Item 18, Appendix G)
Screws (2) (Item 161, Appendix G)

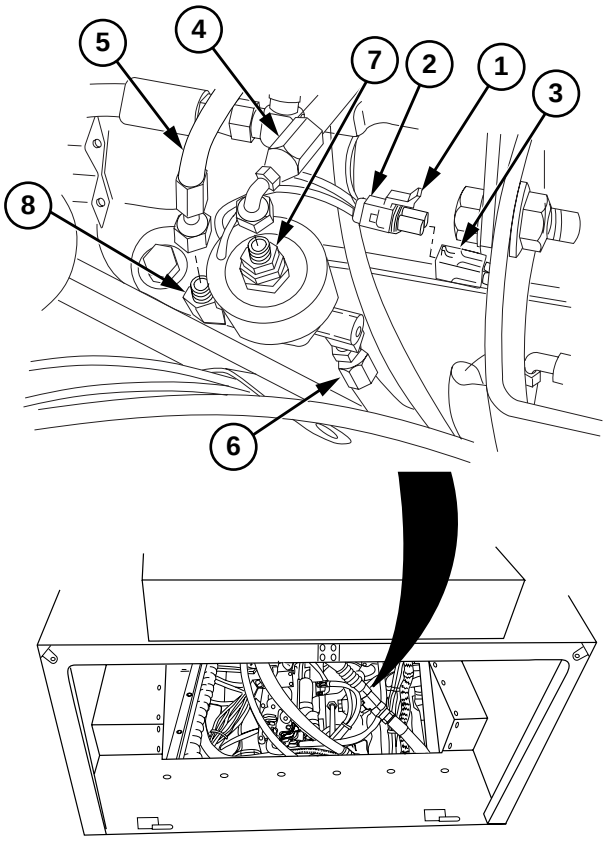
a. Removal

(1) Lift locking tab (1) and remove electrical connector (2) from electrical connector (3).

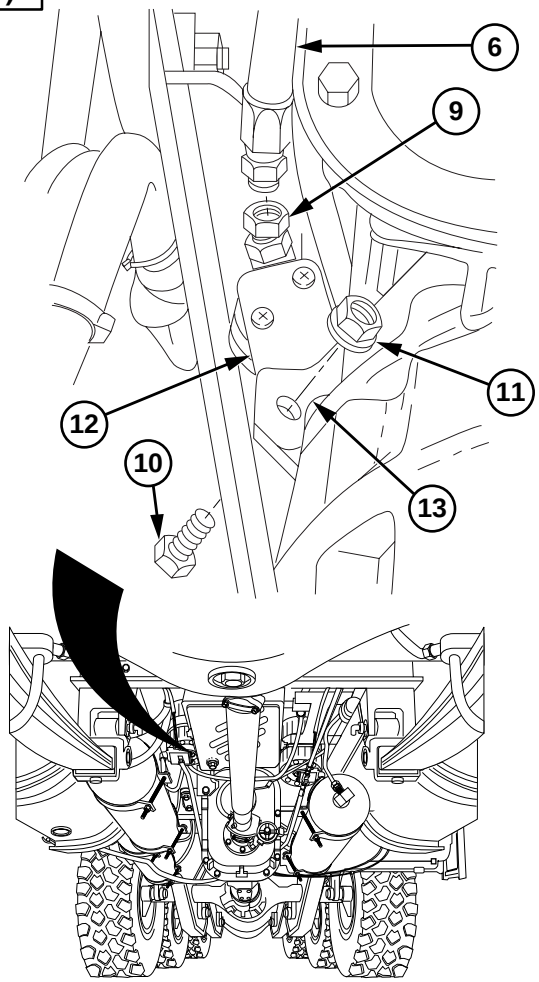
(2) Place drain pan under hoses (4, 5, and 6).

(3) Remove hose no. 2934 (4) from adapter (7).

(4) Remove hose no. 2933 (5) from elbow (8).

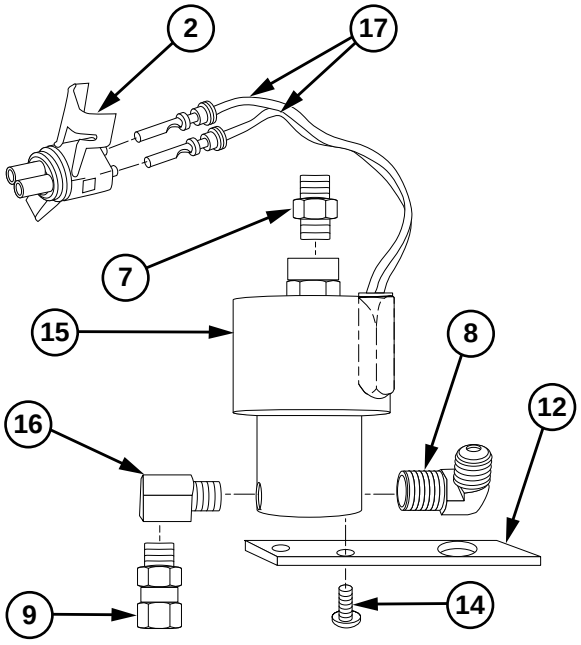


7-73. PTO SOLENOID REPLACEMENT (CONT)



(5) Remove hose no. 2851 (6) from screen adapter (9).

(6) Remove screw (10), locknut (11), and bracket (12) from transmission (13). Discard locknut.



(7) Remove two screws (14) and PTO solenoid (15) from bracket (12). Discard screws.

(8) Remove adapter (7) from PTO solenoid (15).

(9) Remove screen adapter (9) from elbow (16).

(10) Remove two elbows (8 and 16) from PTO solenoid (15).

(11) Remove two wires (17) from electrical connector (2) with contact socket removal tool.

b. Installation

(1) Install two cable seals (1) on wires (2).

(2) Crimp two contact sockets (3) on wires (2).

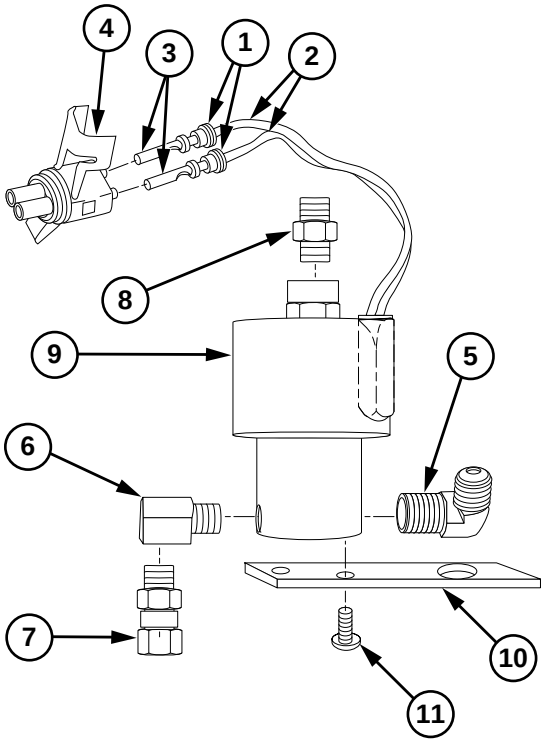
(3) Install two wires (2) on electrical connector (4).

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



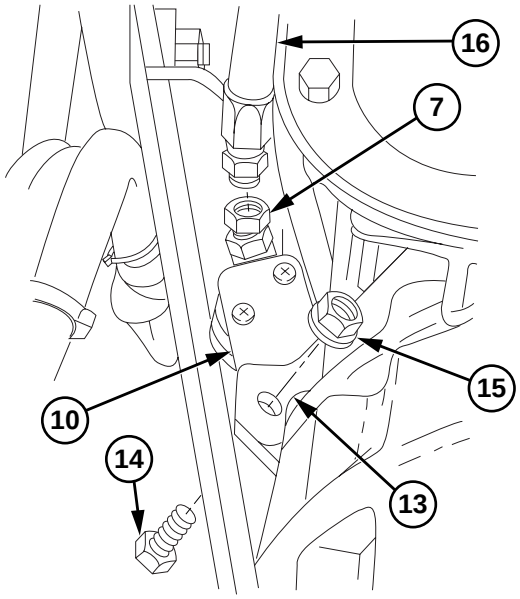
(4) Coat threads of two elbows (5 and 6), screen adapter (7), and adapter (8) with pipe thread sealing compound.

(5) Install two elbows (5 and 6) on PTO solenoid (9).

(6) Install screen adapter (7) on elbow (6).

(7) Install adapter (8) on PTO solenoid (9).

(8) Install PTO solenoid (9) on bracket (10) with two new screws (11).



(9) Install bracket (10) on transmission (13) with screw (14) and new locknut (15).

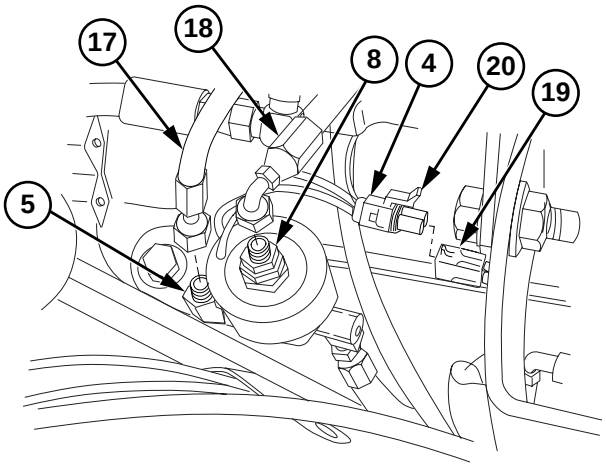
(10) Install hose no. 2851 (16) on screen adapter (7).

7-73. PTO SOLENOID REPLACEMENT (CONT)

(11) Install hose no. 2933 (17) on elbow (5).

(12) Install hose no. 2934 (18) on adapter (8).

(13) Install electrical connector (4) in electrical connector (19) until locking tab (20) snaps in place.



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Engage PTO (TM 9-2320-360-10).

(3) Check for leaks and proper operation (TM 9-2320-360-10).

(4) Disengage PTO (TM 9-2320-360-10).

(5) Shut off engine (TM 9-2320-360-10).

(6) Install lower engine access panel (para 16-2).

7-74. PTO SENDING UNIT REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

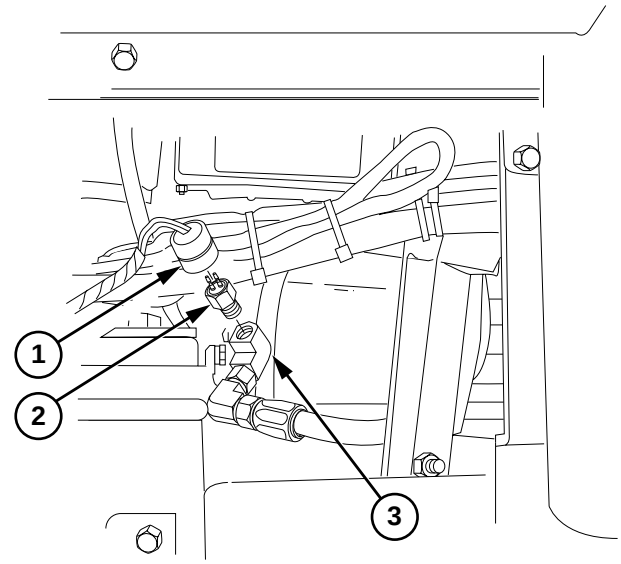
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)
Socket, 1 In., 6 Pt (Item 42, Appendix F)

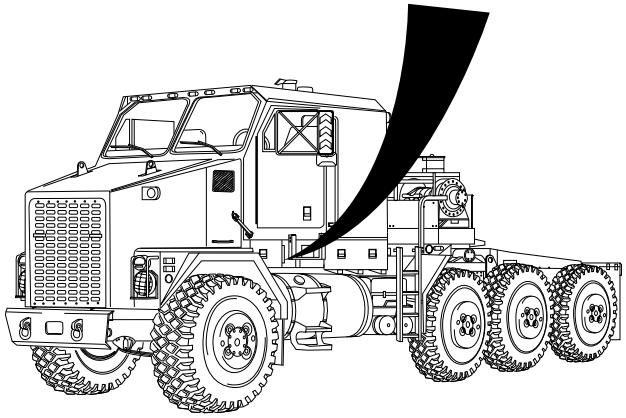
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)

a. Removal

(1) Remove electrical connector (1) from PTO sending unit (2).

(2) Remove PTO sending unit (2) from tee (3).





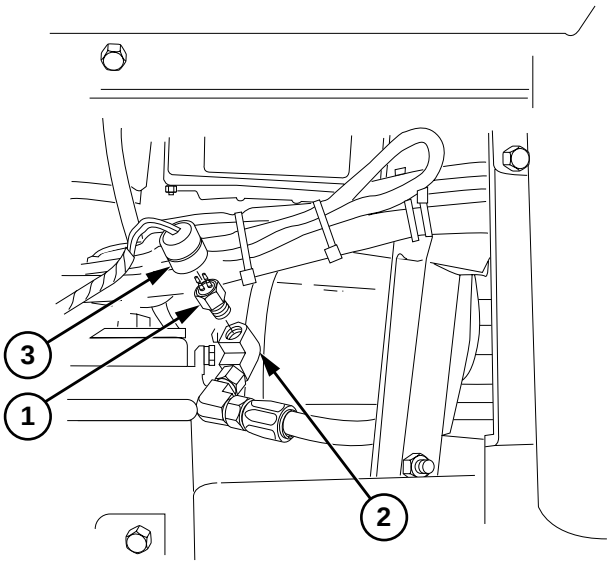
7-74. PTO SENDING UNIT REPLACEMENT (CONT)

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of PTO sending unit (1) with pipe thread sealing compound.



(2) Install PTO sending unit (1) on tee (2).

(3) Install electrical connector (3) on PTO sending unit (1).

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Engage PTO (TM 9-2320-360-10).

(3) Check PTO sending unit for leaks (TM 9-2320-360-10).

(4) Check operation of PTO indicator light (TM 9-2320-360-10).

(5) Shut off engine (TM 9-2320-360-10).

(6) Remove wheel chocks.

7-75. BATTERY TO STARTER CABLE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine hood opened (TM 9-2320-360-10).
Batteries disconnected (para 7-61).
Stowage box removed (para 16-14).
Inner fender removed (left side only) (para 16-34).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

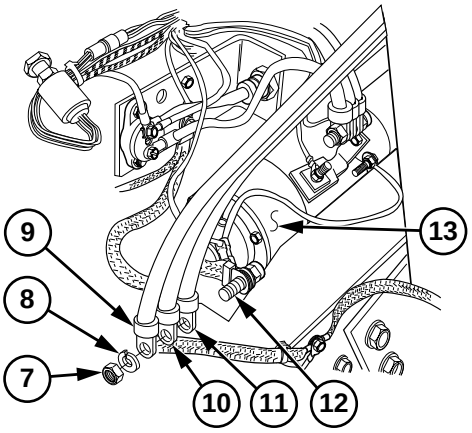
Materials/Parts
Tags, Identification (Item 32, Appendix C)
Ties, Plastic, Cable (Item 34, Appendix C)
Locknut (Item 65, Appendix G)
Locknut (Item 68, Appendix G)
Lockwashers (2) (Item 109, Appendix G)
Lockwashers (Item 104, Appendix G)
Lockwashers (Item 115, Appendix G)

a. Removal

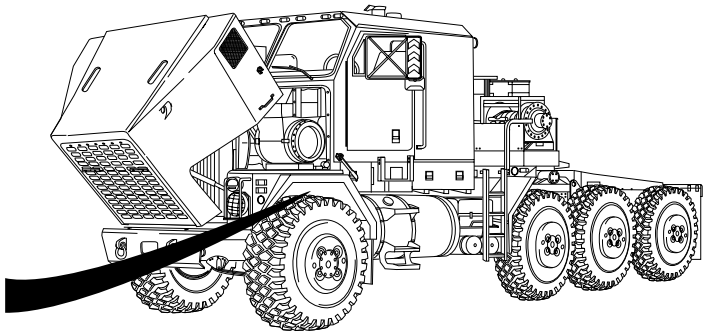
(1) Deleted.

NOTE
Tag and mark cables and wires before removing.

(2) Remove nut (7), lockwasher (8), negative (-) cable no. 1138 (9), negative (-) cable no. 1128 (10), and negative (-) cable no. 1138 (11) from negative (-) terminal (12) of starter (13). Discard lockwasher.

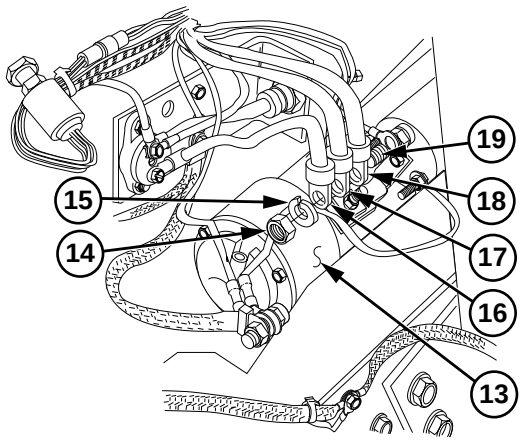


STEERING COLUMN REMOVED FOR CLARITY



7-75. BATTERY TO STARTER CABLE REPLACEMENT (CONT)

(3) Remove nut (14), lockwasher (15), positive (+) cable no. 1139 (16), positive (+) cable no. 1274 (17), and positive (+) cable no. 1139 (18) from positive (+) terminal (19) of starter (13). Discard lockwasher.

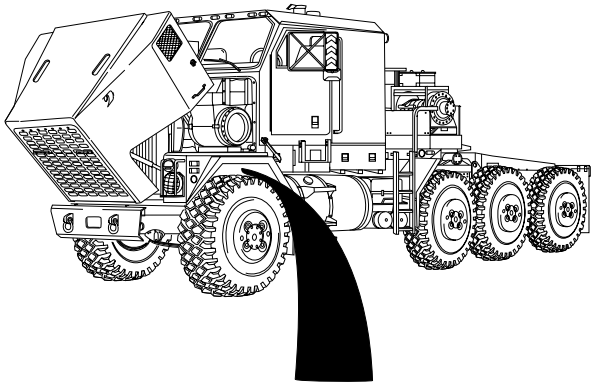


NOTE

Sound shield flap below cab must be pulled away to gain access to components.

STEERING COLUMN REMOVED FOR CLARITY

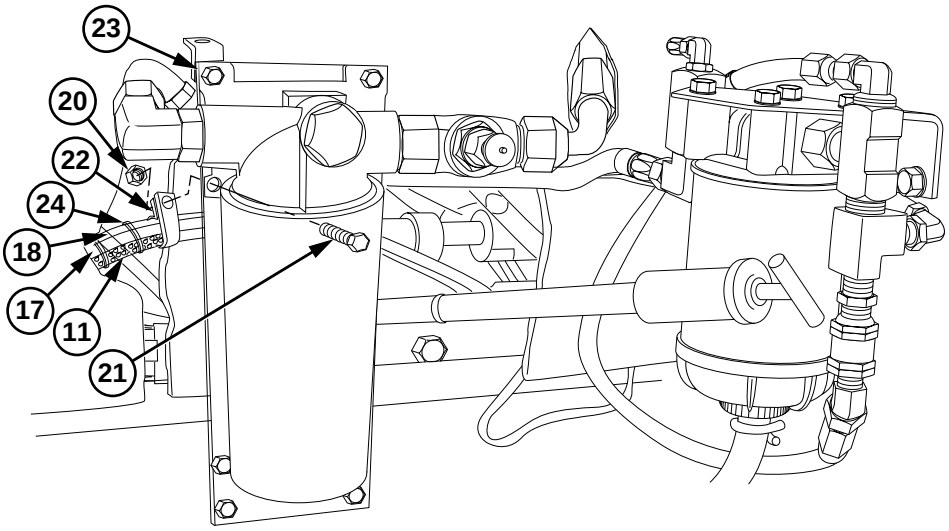
(4) Remove locknut (20), screw (21), and cushion clip (22), positive (+) cable no. 1139 (18), positive (+) cable no. 1274 (17), and negative (-) cable no. 1138 (11) from transmission filter mounting bracket (23). Discard locknut.



NOTE

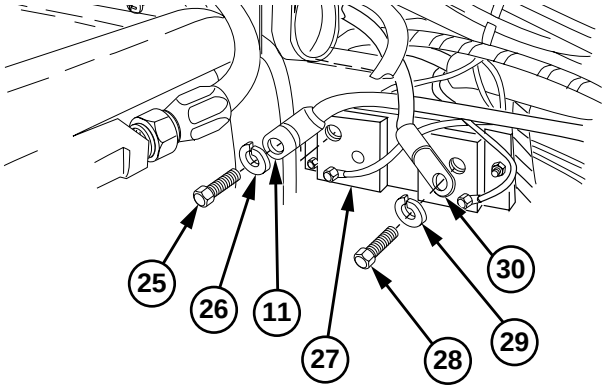
Location of plastic cable ties should be marked before removal.

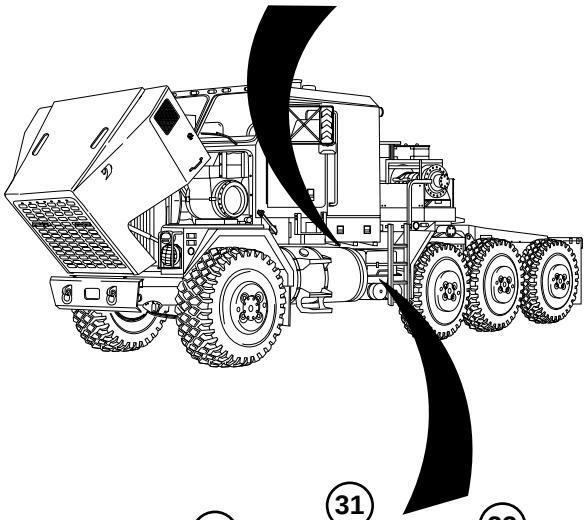
(5) Remove plastic cable ties (24) from cables (11, 17, and 18) as required.



(6) Remove screw (25), lockwasher (26), and negative (–) cable no. 1138 (11) from shunt (27). Discard lockwasher.

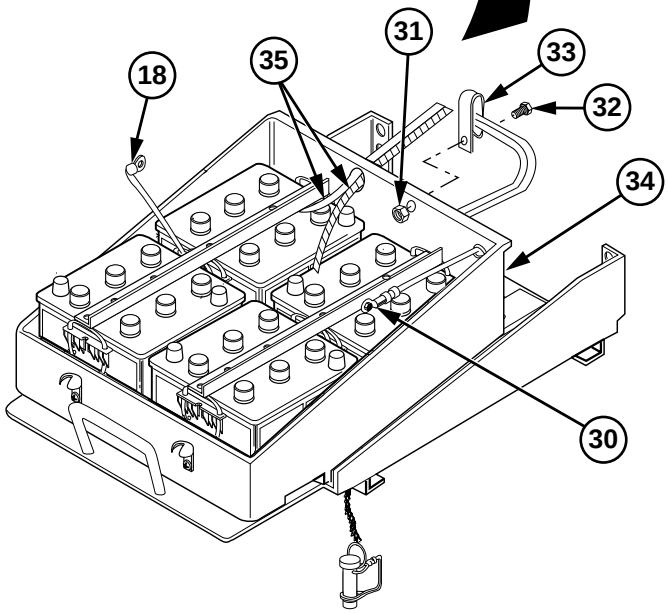
(7) Remove screw (28), lockwasher (29), and negative (–) cable no. 1138 (30) from shunt (27). Discard lockwasher.





(8) Remove locknut (31), screw (32), and cushion clip (33) from battery cables (18 and 30) and battery box (34).

(9) Push positive (+) cable no. 1139 (18), negative (–) cable no. 1138 (30) and two wire harnesses (35) out through holes in rear of battery box (34).

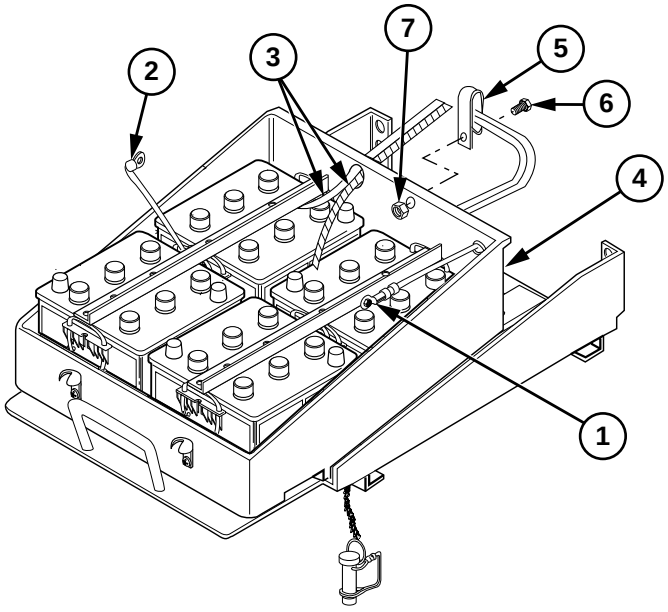


7-75. BATTERY TO STARTER CABLE REPLACEMENT (CONT)

b. Installation

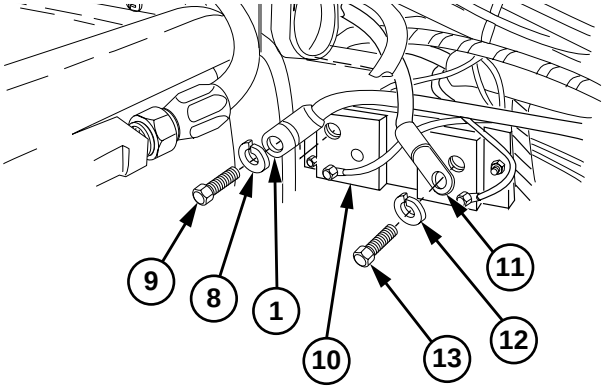
(1) Route negative (–) cable no. 1138 (1), positive (+) cable no. 1139 (2), and two wire harnesses (3) through holes in rear of battery box (4).

(2) Install cushion clip (5) on battery cables (1 and 2) and battery box (4) with screw (6) and new locknut (7).

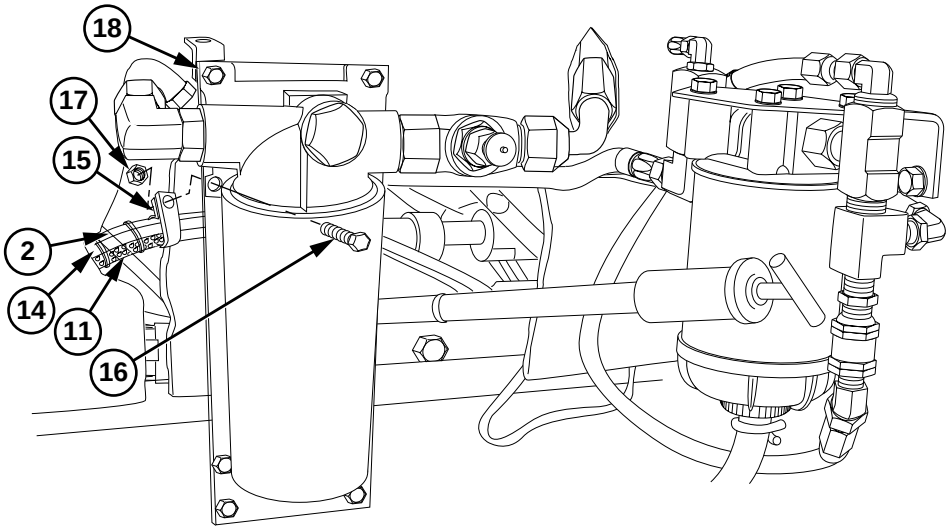


(3) Install negative (–) cable no. 1138 (1), new lockwasher (8), and screw (9) on shunt (10).

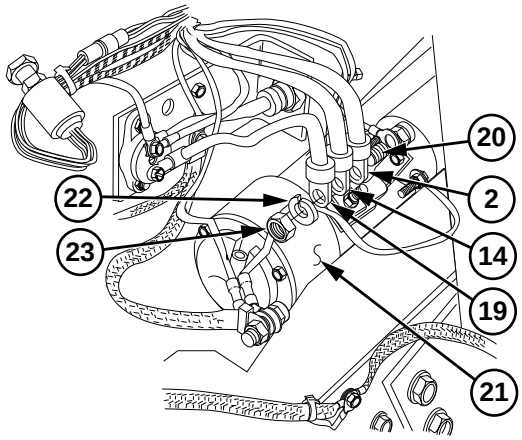
(4) Install negative (–) cable no. 1138 (11), new lockwasher (12), and screw (13) on shunt (10).



(5) Install negative (–) cable no. 1138 (11), positive (+) cable no. 1274 (14), positive (+) cable no. 1139 (2) cushion clip (15), screw (16), and new locknut (17) on transmission filter mounting bracket (18).



(6) Install positive (+) cable no. 1139 (2), positive (+) cable no. 1274 (14), and positive (+) cable no. 1139 (19) on positive (+) terminal (20) of starter (21) with new lockwasher (22) and nut (23).



STEERING COLUMN REMOVED FOR CLARITY

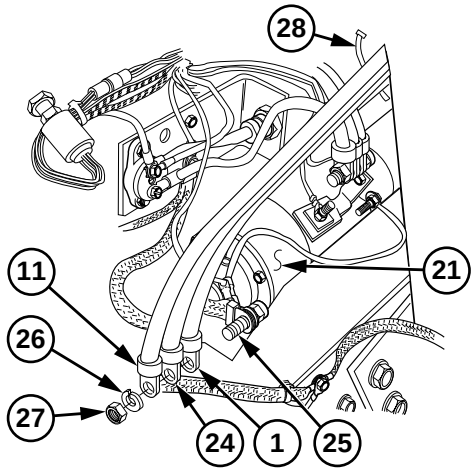
7-75. BATTERY TO STARTER CABLE REPLACEMENT (CONT)

(7) Install negative (-) cable no. 1138 (1), negative (-) cable no. 1128 (24), and negative (-) cable no. 1138 (11) on negative (-) terminal (25) of starter (21) with new lockwasher (26) and nut (27).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(8) Secure cables (1, 11, and 24) with plastic cable ties (28).



STEERING COLUMN REMOVED FOR CLARITY

(9) Deleted.

c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Install stowage box (para 16-14).

(3) Close engine hood (TM 9-2320-360-10).

(4) Install inner fender (para 16-34).

7-76. VERNIER CONTROL REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

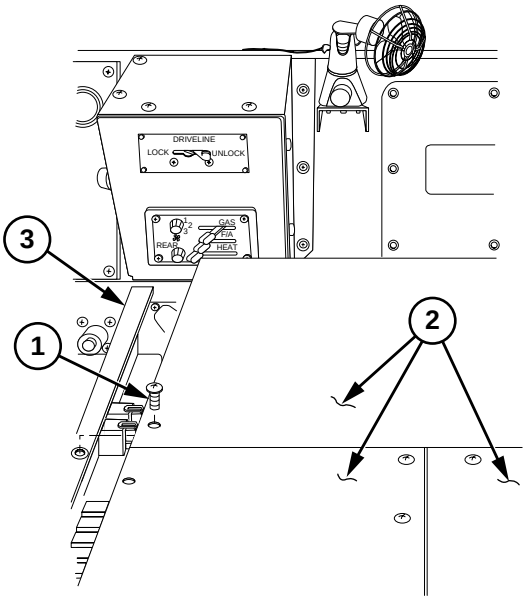
Equipment Conditions
Batteries disconnected (para 7-61).

Materials/Parts
Ties, Cable, Plastic (Item 34, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

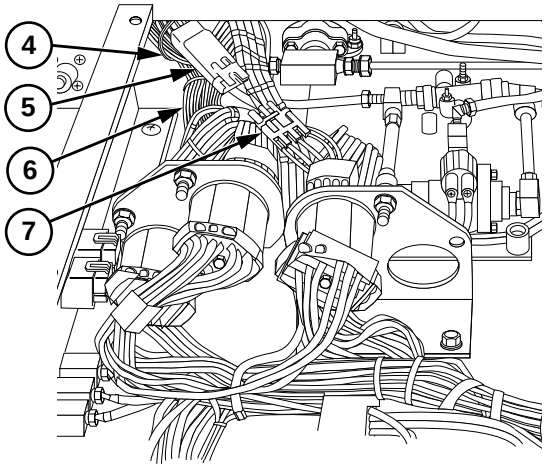
(1) Remove 19 screws (1) and three covers (2) from electronic control box (3).



NOTE
Location of plastic cable tie should be marked before removal.

(2) Remove plastic cable tie (4) securing vernier control (5) to wire harness (6).

(3) Remove vernier control (5) from connector (7).



7-76. VERNIER CONTROL REPLACEMENT (CONT)

b. Installation

CAUTION

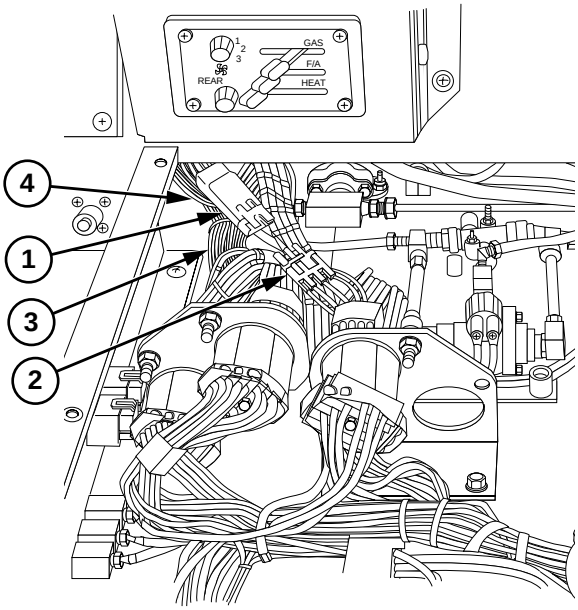
Vernier controls for DDEC II and DDEC III/IV are not interchangeable. Installation of wrong part will cause either too high, or too low, high idle speed which may result in serious engine damage.

(1) Install vernier control (1) on connector (2).

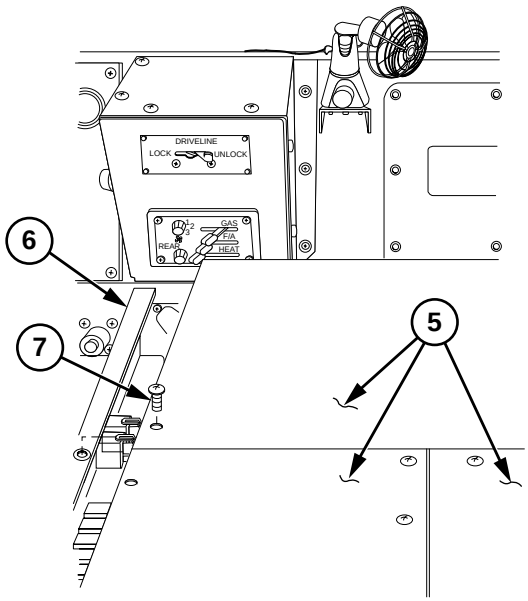
NOTE

Plastic cable tie should be positioned in locations marked during removal.

(2) Secure vernier control (1) to wire harness (3) with plastic cable tie (4).



(3) Install three covers (5) on electronic control box (6) with 19 screws (7).



c. Follow-On Maintenance

Connect batteries (para 7-61).

7-77. DDEC TERMINAL REPAIR

This task covers:
Repair

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Tool Kit, Electrical Repair (Item 53, Appendix F)
Crimper, Terminal, Metri-Pack (Item 4, Appendix F)
Crimper, Terminal, Weather Pack (Item 5, Appendix F)
Crimper, Terminal (Item 6, Appendix F)
Remover, Terminal (Item 34, Appendix F)
Remover, Terminal, Metri-Pack (Item 35, Appendix F)

a. Group I Terminal Repair

WARNING

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

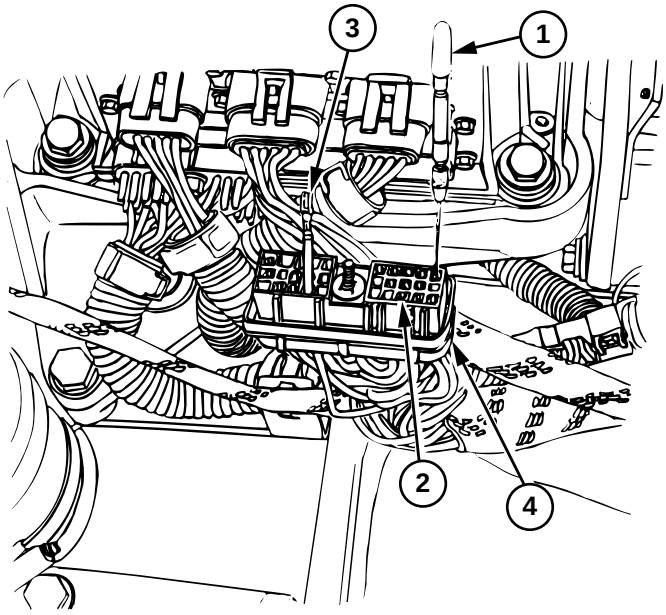
NOTE

- Locking tab on the terminal mates with molded tab in plastic connector to retain cable assembly.
- All Group I connectors are repaired the same way. Number of wires in connector may vary.

(1) Insert tip of terminal remover (Item 35, Appendix F) (1) between locking tab (2) of terminal (3) and wall of connector (4).

(2) Release locking tab (2) from connector (4).

(3) Push terminal (3) through front of connector (4).



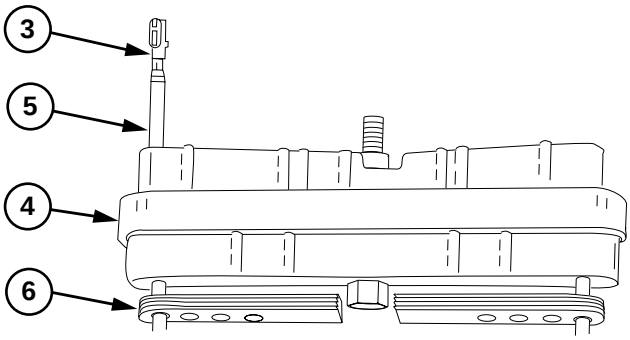
7-77. DDEC TERMINAL REPAIR (CONT)

NOTE

- Do step (4) only if old terminal is still attached to wire.
- Make cut directly behind damaged terminal.

(4) Cut and remove terminal (3) from wire (5). Discard terminal.

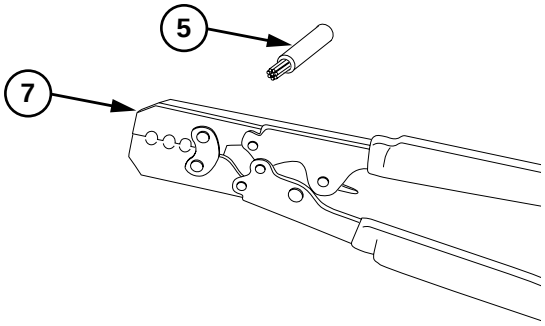
(5) Push wire (5) through seal (6) and connector (4) cavity.



CAUTION

Strip wire after placing it through seal and connector body to prevent damage to individual strands.

(6) Strip end of wire (5) leaving 0.25 in. (0.64 cm) of bare wire.



NOTE

When installing terminal be sure terminal wings point to the upper jaw of crimping tool.

(7) Push terminal holder open and insert terminal (3) until attaching portion of terminal rests on anvil.

NOTE

Wire should be positioned so larger wings of terminal will crimp around insulation and smaller wings will crimp around exposed bare wire.

(8) Position wire (5) on terminal (3).

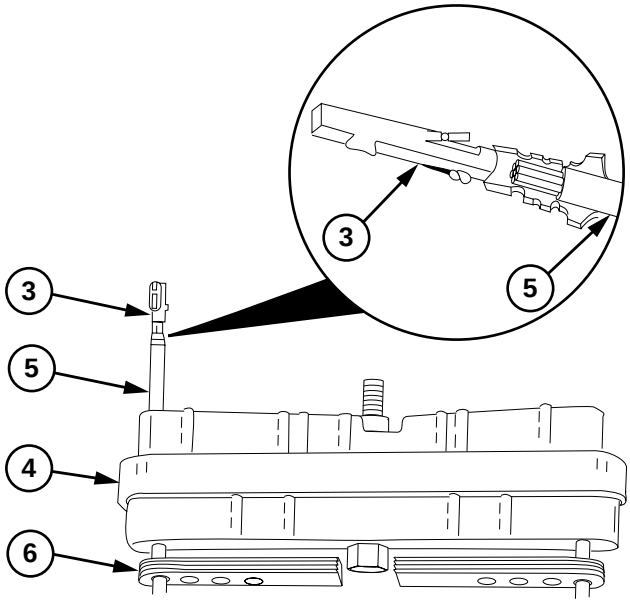
(9) Press handle(s) of terminal crimper (Item 4, Appendix F) (7) together until ratchet releases and crimp is complete.

NOTE

Locking tab should be positioned toward notch in connector cavity when properly installed.

(10) Pull wire (5) and terminal (3) back through connector (4) until seated.

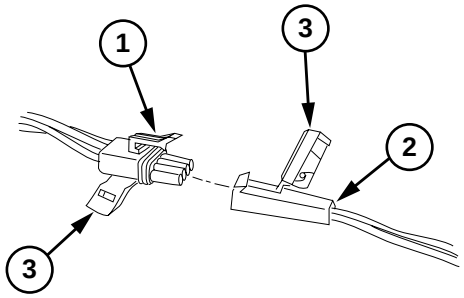
(11) Seat seal (6) into connector (4).



b. Group II Terminal Repair

NOTE

- Connector is removed by gently prying up on clip and pulling on connector.
- All Group II connectors are repaired the same way. Number of wires in connector may vary.



(1) Remove connector (1) from connector (2).

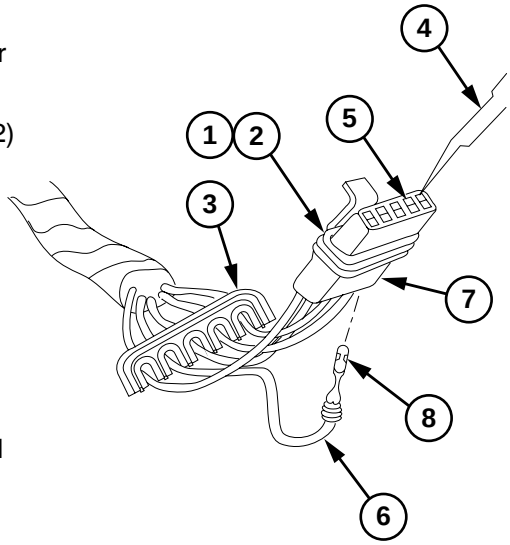
(2) Unlatch and open the secondary lock (3) on two connectors (1 and 2).

WARNING

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

(3) Insert terminal remover (Item 34, Appendix F) (4) into cavity (5) on connector (1 or 2) until seated.

(4) Pull wire (6) back through connector (1 or 2) and remove tool (4).

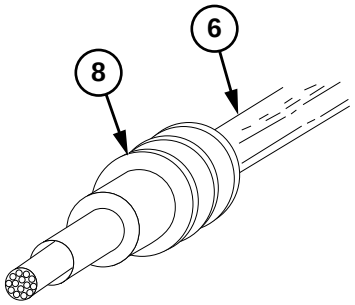


NOTE

- Do step (5) only if old terminal is still attached to wire.
- Make cut directly behind damaged terminal.

(5) Cut terminal (7) and wire seal (8). Discard terminal and seal.

(6) Insert 1 in. (2.5 cm) of wire (6) through new wire seal (8).



CAUTION

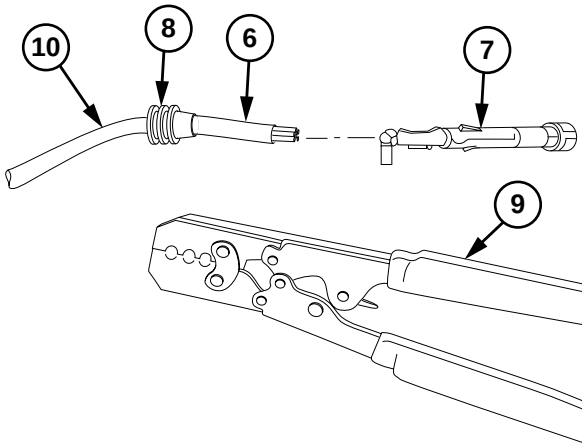
Strip wire after placing it through seal to prevent damage to individual wire strands.

(7) Strip end of wire (6) leaving 0.25 in. (0.64 cm) of bare wire.

7-77. DDEC TERMINAL REPAIR (CONT)

(8) Insert new terminal (7) in locating hole of crimp tool (9) using proper hole according to the gage of wire (6).

(9) Slide seal (8) down to end of insulation (10) on wire (6).



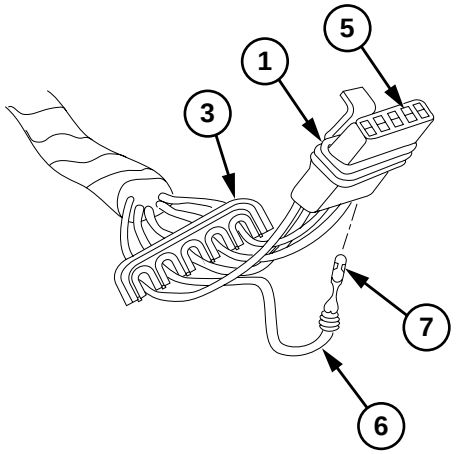
NOTE

Wire and seal should be positioned so larger wings of terminal will crimp around seal and smaller wings will crimp around exposed bare wire.

(10) Position wire (6) on terminal (7).

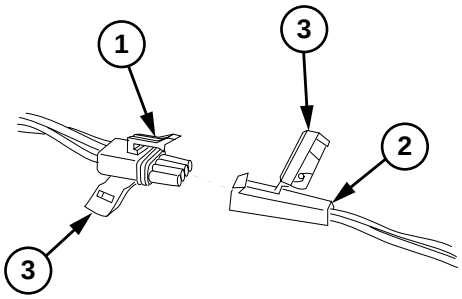
(11) Press handles of terminal crimper (Item 5, Appendix F) (9) together until ratchet releases and crimp is complete.

(12) Push new terminal (7) and wire (6) through connector (1) until seated.



(13) Close secondary locks (3) on two connectors (1 and 2).

(14) Install connector (1) on connector (2).



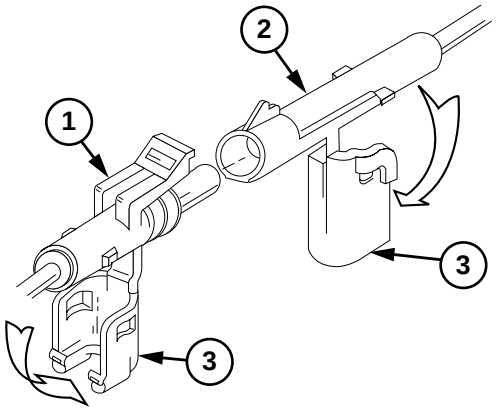
c. Group III Terminal Repair

NOTE

- Connector is removed by gently prying up on clip and pulling on connector.
- All Group III connectors are repaired the same way. Number of wires in connector may vary.

(1) Remove connector (1) from connector (2).

(2) Unlatch and remove secondary lock (3) on two connectors (1 and 2).

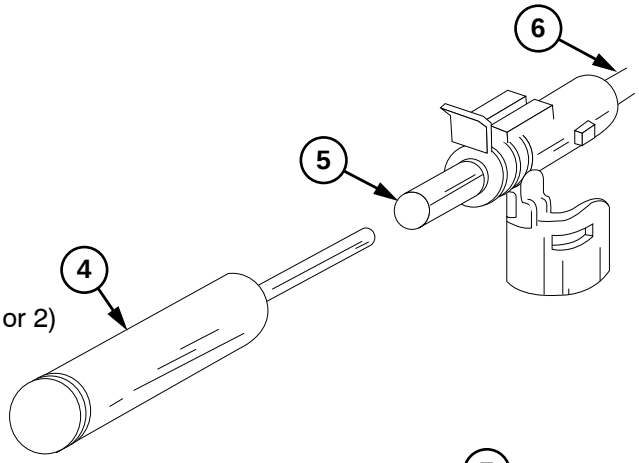


WARNING

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

(3) Insert removal tool (4) into terminal connector cavity (5) until seated.

(4) Pull wire (6) back through connector (1 or 2) and removal tool (4).



NOTE

- Do step (5) only if old terminal is still attached to wire.
- Make cut directly behind damaged terminal.

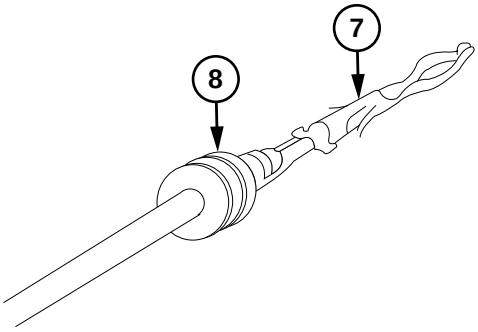
(5) Cut terminal (7) and wire seal (8). Discard terminal and seal.

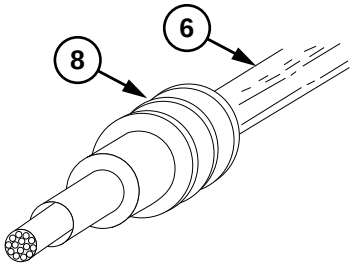
(6) Insert 1 in. (2.5 cm) of wire (6) through new wire seal (8).

CAUTION

Strip wire after placing it through seal to prevent damage to individual wire strands.

(7) Strip end of wire (6) leaving 0.25 in. (0.64 cm) of bare wire.

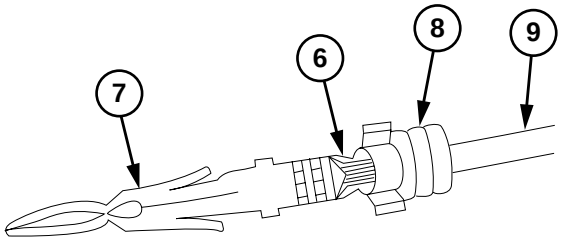




7-77. DDEC TERMINAL REPAIR (CONT)

(8) Insert new terminal (7) in locating hole of crimp tool using the proper hole according to gage of wire (6).

(9) Slide wire seal (8) down to end of insulation (9) on wire (6).



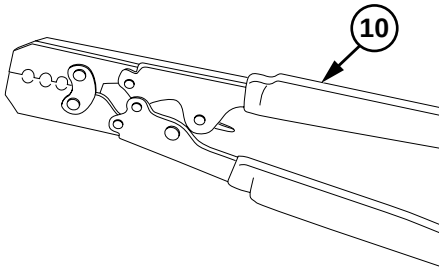
NOTE

Wire and seal should be positioned so larger wings of terminal will crimp around insulation and smaller wings will crimp around exposed bare wire.

(10) Position wire (6) on terminal (7).

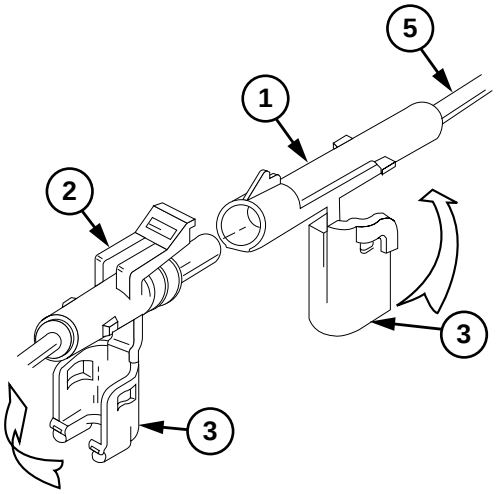
(11) Press handles of terminal crimper (Item 6, Appendix F) (10) together until ratchet releases and crimp is complete.

(12) Push new terminal (7) and wire (6) through connector (1) until seated.



(13) Install two secondary locks (3) on two connectors (1 and 2).

(14) Install connector (1) on connector (2).



d. Follow-On Maintenance

Connect batteries (para 7-61).

7-78. OIL PRESSURE SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).
Engine hood opened (TM 9-2320-360-10).
Inner fender removed (left side only) (para 16-34).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)

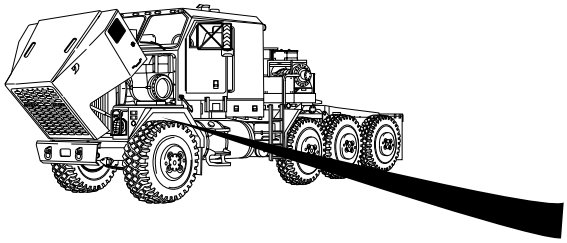
a. Removal

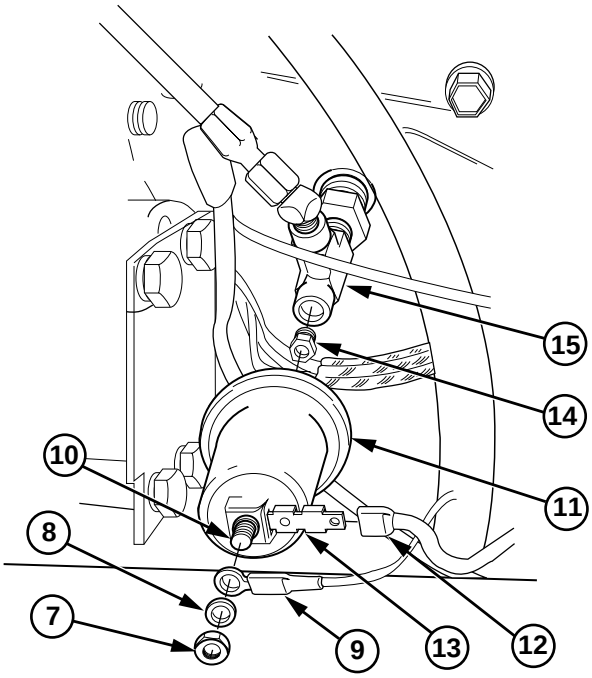
(1) Start engine (TM 9-2320-360-10).

(2) Turn steering wheel counterclockwise until front wheels are in full left position.

(3) Shut off engine (TM 9-2320-360-10).

(4) Deleted.





(5) Remove nut (7), washer (8), and wire no. 1113 (9) from terminal (10) of oil pressure switch (11).

(6) Disconnect wire no. 1435 (12) from terminal (13) of oil pressure switch (11).

(7) Remove oil pressure switch (11) from reducer bushing (14).

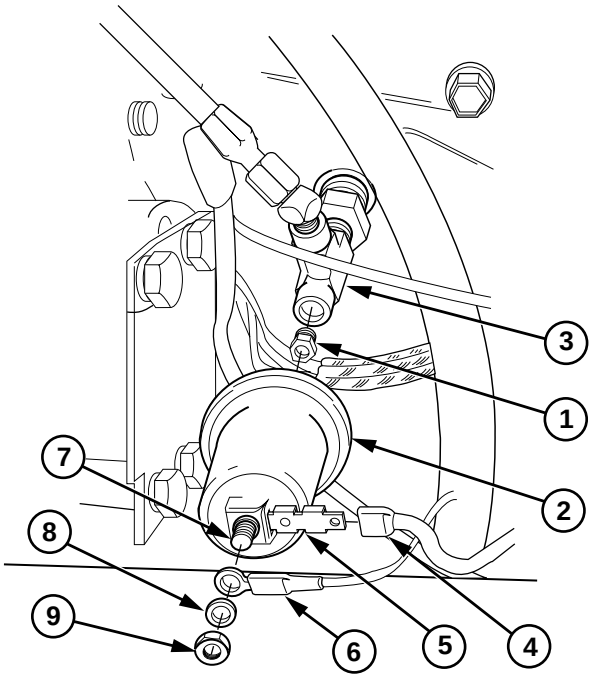
(8) Remove reducer bushing (14) from tee (15).

7-78. OIL PRESSURE SWITCH REPLACEMENT (CONT)

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



(1) Coat threads of reducer bushing (1) and oil pressure switch (2) with pipe thread sealing compound.

(2) Install reducer bushing (1) on tee (3).

(3) Install oil pressure switch (2) on reducer bushing (1).

(4) Connect wire no. 1435 (4) to terminal (5) of oil pressure switch (2).

(5) Install wire no. 1113 (6) on terminal (7) of oil pressure switch (2) with washer (8) and nut (9).

(6) Deleted.

c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Start engine (TM 9-2320-360-10).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Close engine hood (TM 9-2320-360-10).

(6) Install inner fender (para 16-34).

7-79. ENGINE CIRCUIT BREAKER/DIODE/BRACKET REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

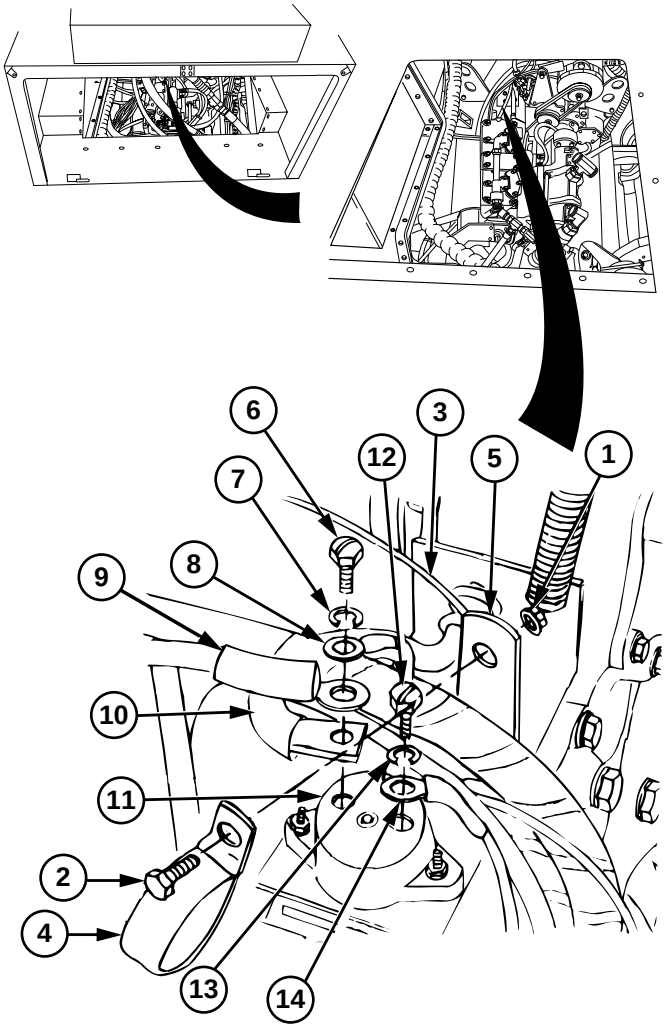
Equipment Conditions
Front wheels turned full left (24V CB/D).
Inner fender removed (24V CB/D) (left side only) (para 16-34).
Engine hood opened (TM 9-2320-360-10).
Batteries disconnected (para 7-61).
Doghouse door panel removed (12V CB/D) (para 16-2).
Lower engine access panel removed (12V CB) (para 16-2).
Front engine access panel removed (12V CB) (para 16-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (2) (Item 70, Appendix G)
Locknut (Item 72, Appendix G)
Lockwashers (4) (Item 100, Appendix G)
Lockwashers (2) (Item 102, Appendix G)
Lockwashers (2) (Item 103, Appendix G)

NOTE

- 12-volt alternator circuit breaker and diode are located on top of engine at left rear.
- 24-volt alternator circuit breaker and diode are located on left side of engine block.



a. Removal

NOTE

- Do steps (1) thru (4) for 12-volt circuit breaker/diode/bracket.
- Do steps (5) thru (9) for 24-volt circuit breaker/diode/bracket.
- Tag and mark wires before removing.

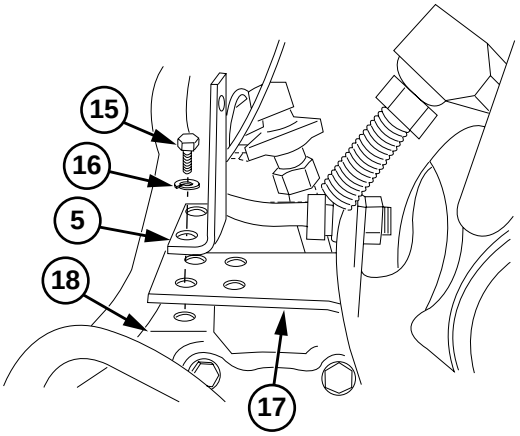
(1) Remove locknut (1), screw (2), ground wire no. 1435 (3), and cushion clip (4) from standoff bracket (5). Discard locknut.

(2) Remove screw (6), lockwasher (7), wire no. 1866 (8), wire no. 1831 (9), and diode wire (10) from circuit breaker (11). Discard lockwasher.

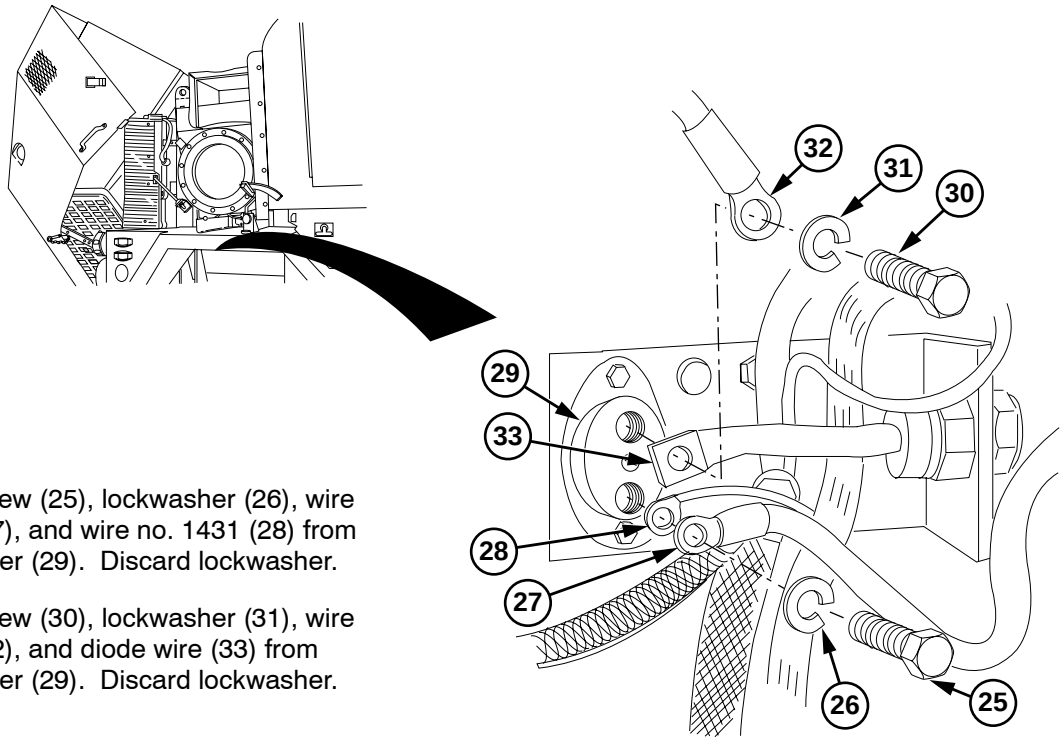
(3) Remove screw (12), lockwasher (13), and wire no. 1622 (14) from circuit breaker (11). Discard lockwasher.

7-79. ENGINE CIRCUIT BREAKER/DIODE/BRACKET REPAIR (CONT)

(4) Remove two screws (15), lockwashers (16), standoff bracket (5), and bracket (17) from engine (18). Discard lockwashers.

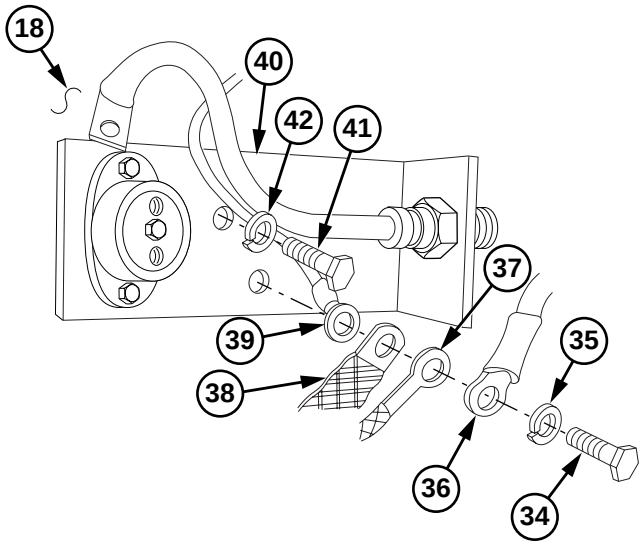


(5) Deleted.



(6) Remove screw (25), lockwasher (26), wire no. 1274 (27), and wire no. 1431 (28) from circuit breaker (29). Discard lockwasher.

(7) Remove screw (30), lockwasher (31), wire no. 1831 (32), and diode wire (33) from circuit breaker (29). Discard lockwasher.



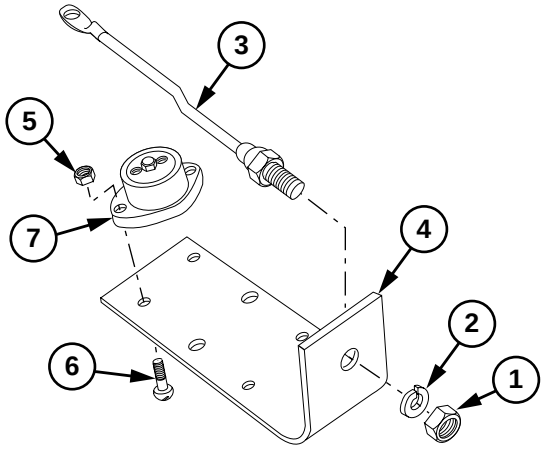
(8) Remove screw (34), lockwasher (35), wire no. 1128 (36), ground strap (37), ground strap (38), and ground wire no. 1435 (39) from bracket (40). Discard lockwasher.

(9) Remove screw (41), lockwasher (42), and bracket (40) from engine (18). Discard lockwasher.

b. Disassembly

NOTE

Both diodes and circuit breakers are removed the same way.



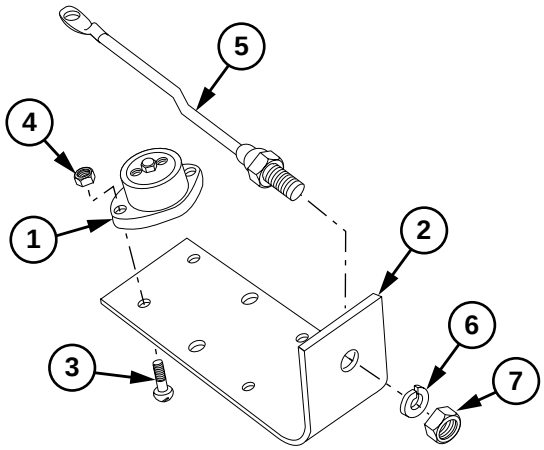
(1) Remove nut (1), lockwasher (2), and diode (3) from bracket (4). Discard lockwasher.

(2) Remove two locknuts (5), screws (6), and circuit breaker (7) from bracket (4). Discard locknuts.

c. Assembly

NOTE

Both circuit breakers and diodes are installed the same way.



(1) Install circuit breaker (1) on bracket (2) with two screws (3) and new locknuts (4).

(2) Install diode (5) on bracket (2) with new lockwasher (6) and nut (7).

7-79. ENGINE CIRCUIT BREAKER/DIODE/BRACKET REPAIR (CONT)

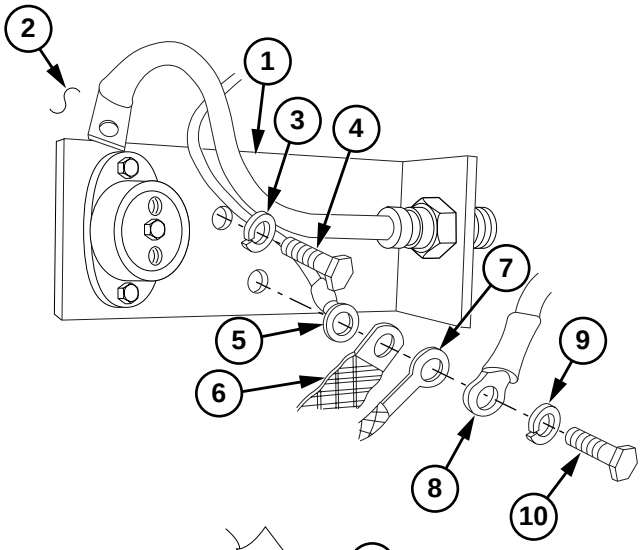
d. Installation

NOTE

- Do steps (1) thru (5) for 24-volt circuit breaker/diode/bracket.
- Do steps (6) thru (9) for 12-volt circuit breaker/diode/bracket.

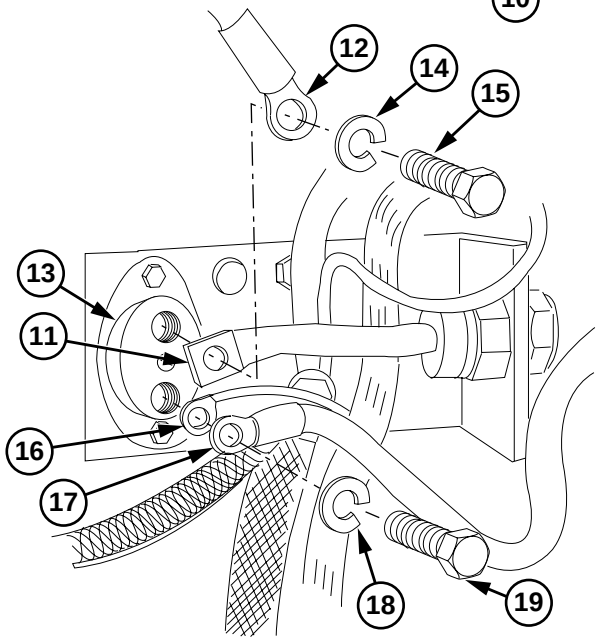
(1) Install bracket (1) on engine (2) with new lockwasher (3) and screw (4).

(2) Install ground wire no. 1435 (5), ground strap (6), ground strap (7), and wire no. 1128 (8) on bracket (1) with new lockwasher (9) and screw (10).



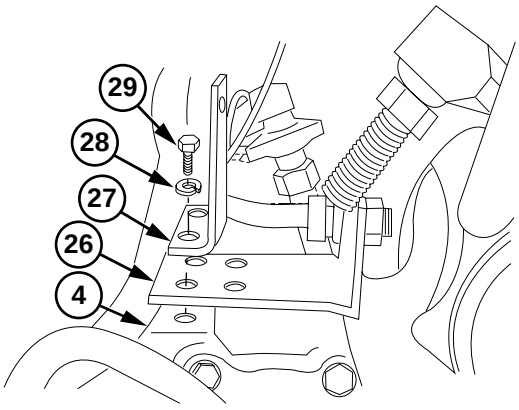
(3) Install diode wire (11) and wire no. 1831 (12) on circuit breaker (13) with new lockwasher (14) and screw (15).

(4) Install wire no. 1431 (16) and wire no. 1274 (17) on circuit breaker (13) with new lockwasher (18) and screw (19).



(5) Deleted.

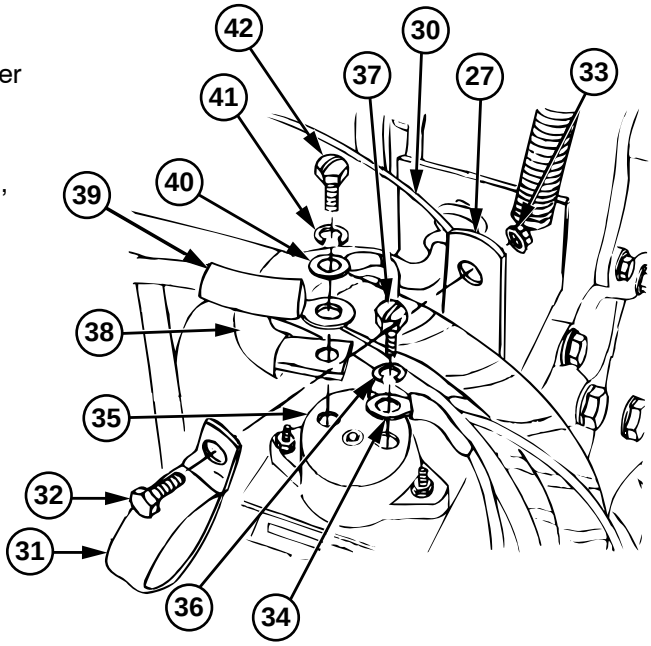
(6) Install bracket (26) and standoff bracket (27) on engine (4) with two new lockwashers (28) and screws (29).



(7) Install ground wire no. 1435 (30) and cushion clip (31) on standoff bracket (27) with screw (32) and new locknut (33).

(8) Install wire no. 1622 (34) on circuit breaker (35) with new lockwasher (36) and screw (37).

(9) Install diode wire (38), wire no. 1831 (39), and wire no. 1866 (40) on circuit breaker (35) with new lockwasher (41) and screw (42).



e. Follow-On Maintenance

(1) Install front engine access panel (12V circuit breaker) (para 16-2).

(2) Install lower engine access panel (12V circuit breaker) (para 16-2).

(3) Install doghouse door panel (12V circuit breaker) (para 16-2).

(4) Connect batteries (para 7-61).

(5) Close engine hood (TM 9-2320-360-10).

(6) Install inner fender (para 16-34).

7-80. STE-ICE TEMPERATURE SENSOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Cooling system drained (para 6-2).
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)

a. Removal

(1) Disconnect plug (1) from connector (2).

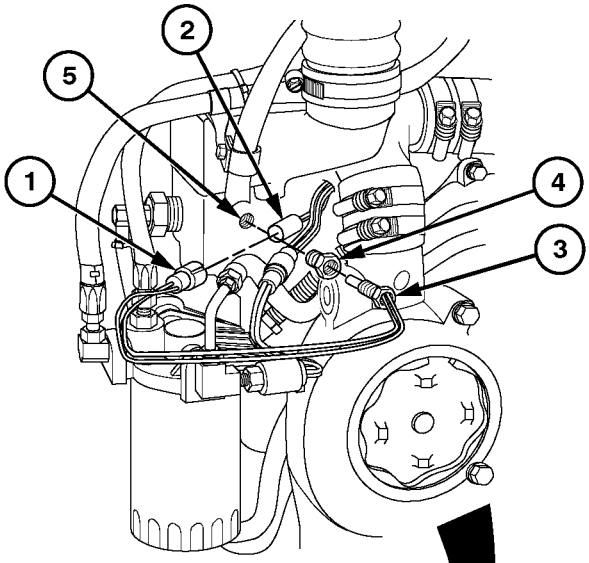
(2) Remove STE-ICE temperature sensor (3) from fitting (4).

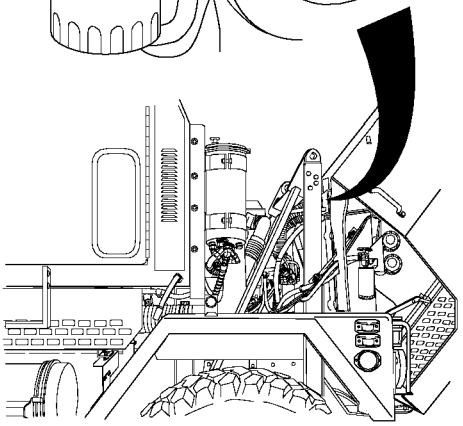
NOTE

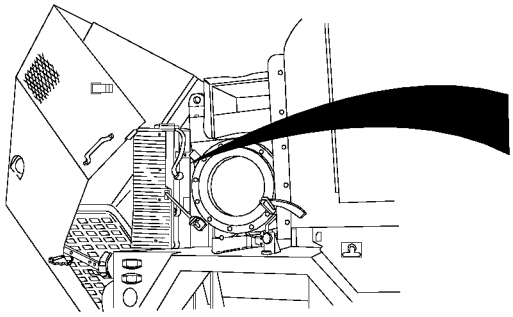
Step (3) applies only to DDEC II engines and step (4) applies only to DDEC III/IV engines.

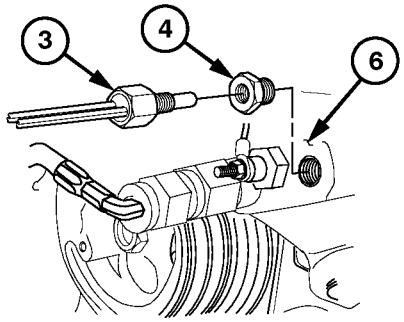
(3) Remove fitting (4) from right thermostat housing (5).

(4) Remove fitting (4) from left thermostat housing (6).









b. Installation

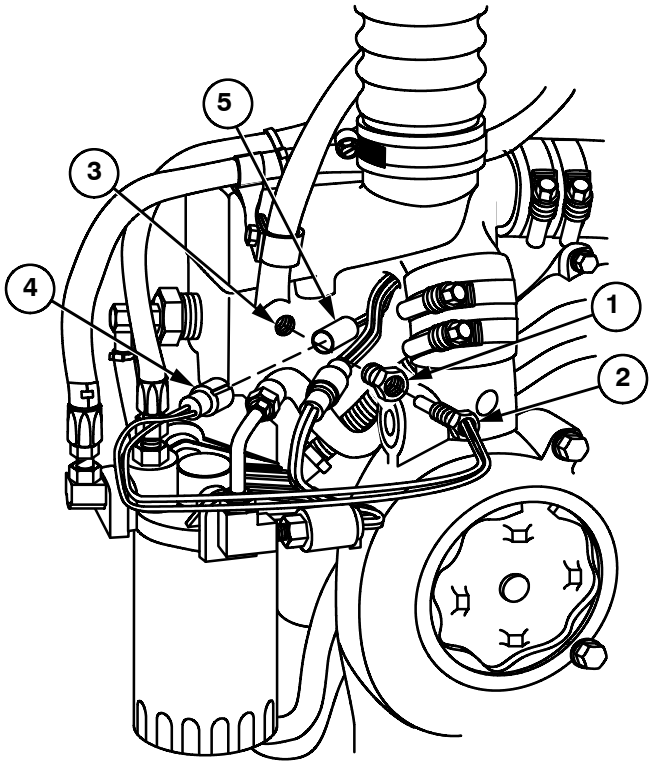
WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

DDEC II sensor is located on right side and DDEC III/IV sensor is located on left side.

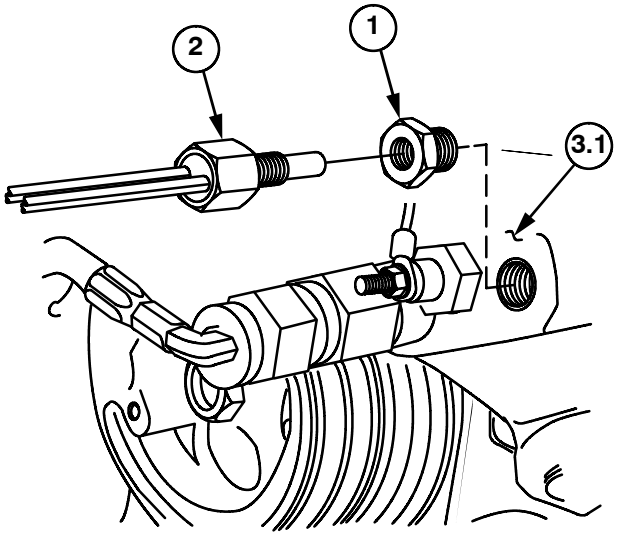
(1) Coat threads of fitting (1) and STE-ICE temperature sensor (2) with pipe thread sealing compound.



NOTE

Step (2) applies only to DDEC II engines and step (2.1) applies only to DDEC III/IV engines.

(2) Install fitting (1) in right thermostat housing (3).



(2.1) Install fitting (1) in left thermostat housing (3.1).

(3) Install STE-ICE temperature sensor (2) in fitting (1).

(4) Install plug (4) in connector (5).

c. Follow-On Maintenance

(1) Fill cooling system (para 6-2).

(2) Connect batteries (para 7-61).

7-81. STE-ICE FUEL DIFFERENTIAL PRESSURE SENSOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Stowage box door opened (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)

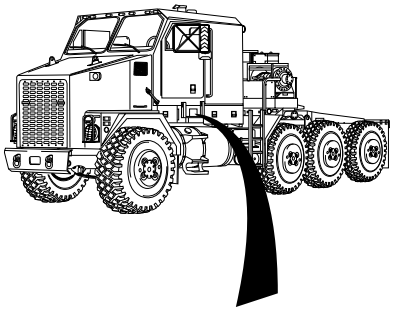
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Locknut (Item 72, Appendix G)

Personnel Required
Two

a. Removal

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire 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. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.



(1) Place drain pan under drain valve and hoses (1 and 2).

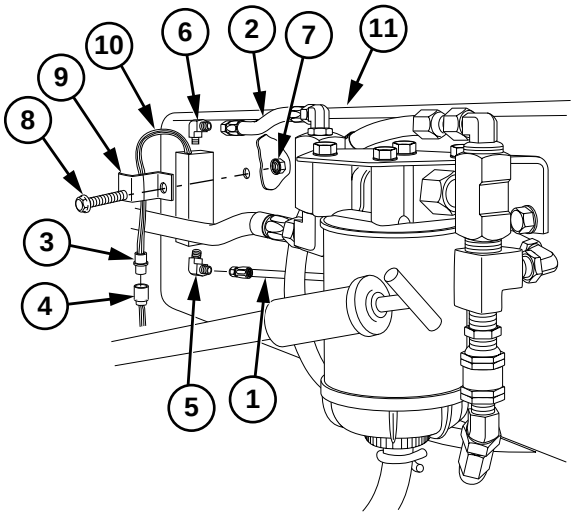
(2) Disconnect STE-ICE fuel differential pressure sensor wire (3) at connector (4).

(3) Disconnect hose no. 2921 (1) from elbow (5).

(4) Disconnect hose no. 2922 (2) from elbow (6).

(5) Remove locknut (7), screw (8), clamp (9), and sensor (10) from stowage box (11) with aid of assistant. Discard locknut.

(6) Remove elbows (5 and 6) from sensor (10).



b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(1) Coat threads of elbows (1 and 2) with pipe thread sealing compound.

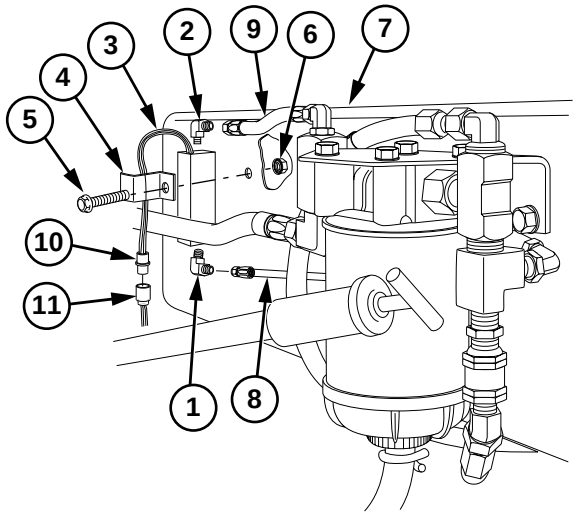
(2) Install elbows (1 and 2) in sensor (3).

(3) Install sensor (3) with clamp (4), screw (5), and new locknut (6) on stowage box (7) with aid of assistant.

(4) Connect hose no. 2921 (8) to elbow (1).

(5) Connect hose no. 2922 (9) to elbow (2).

(6) Connect STE-ICE fuel differential pressure sensor wire (10) to connector (11).



c. Follow-On Maintenance

(1) Close stowage box door (TM 9-2320-360-10).

(1) Prime fuel system (TM 9-2320-360-10).

(2) Start engine (TM 9-2320-360-10).

(3) Check fuel hoses and connections for leaks (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

(5) Remove wheel chocks.

7-82. STE-ICE AIR BOX PRESSURE SENSOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

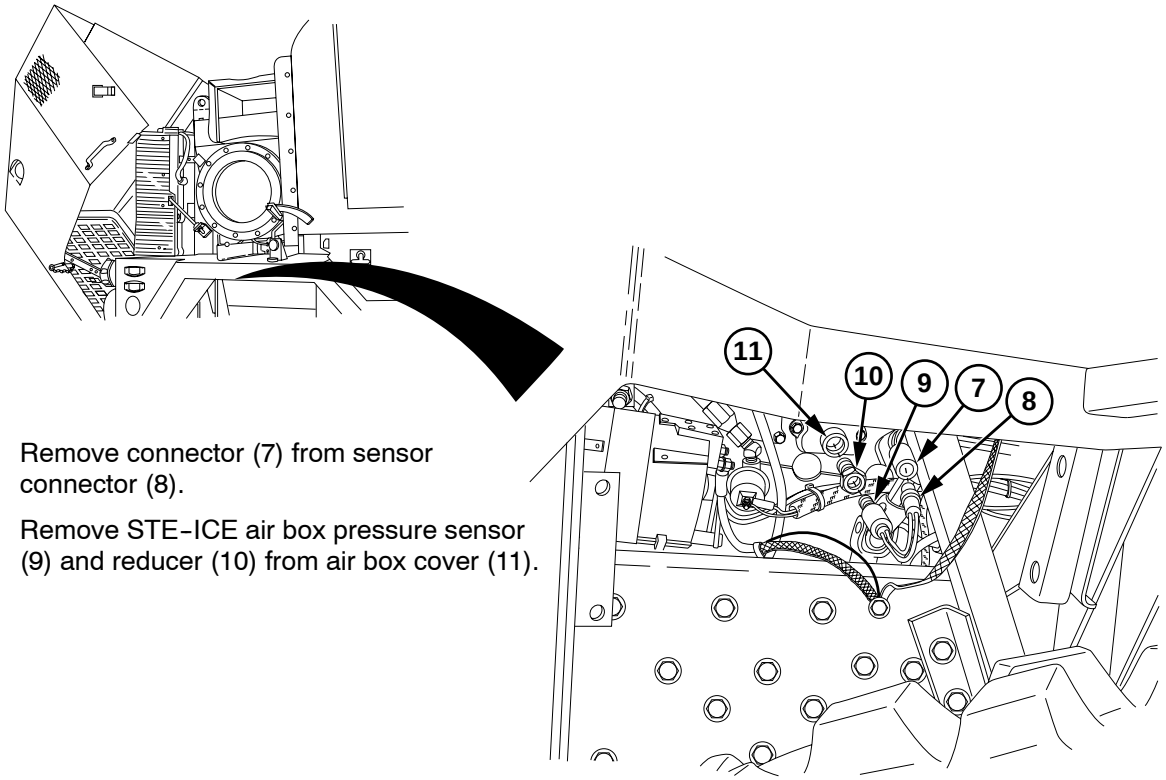
Equipment Conditions
Front wheels turned full left.
Inner fender removed (left side only) (para 16-34).

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

(1) Deleted.



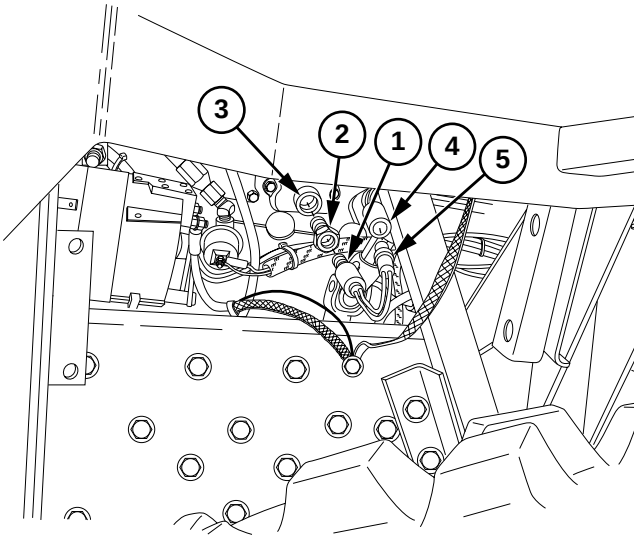
(2) Remove connector (7) from sensor connector (8).

(3) Remove STE-ICE air box pressure sensor (9) and reducer (10) from air box cover (11).

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



(1) Coat threads of STE-ICE air box pressure sensor (1) and reducer (2) with pipe thread sealing compound.

(2) Install sensor (1) and reducer (2) on air box cover (3).

(3) Install connector (4) on sensor connector (5).

(4) Deleted.

c. Follow-On Maintenance

Install Inner fender (para 16-34).

7-83. STE-ICE AIR CLEANER PRESSURE SENSOR REPLACEMENT

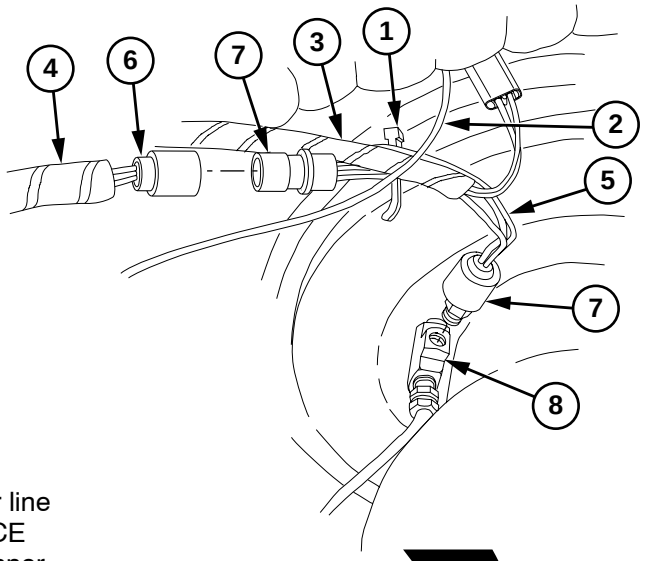
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15 Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)



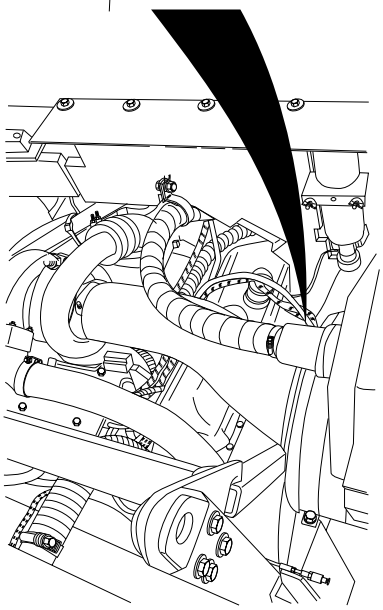
a. Removal

NOTE
Location of plastic cable ties should be marked before removal.

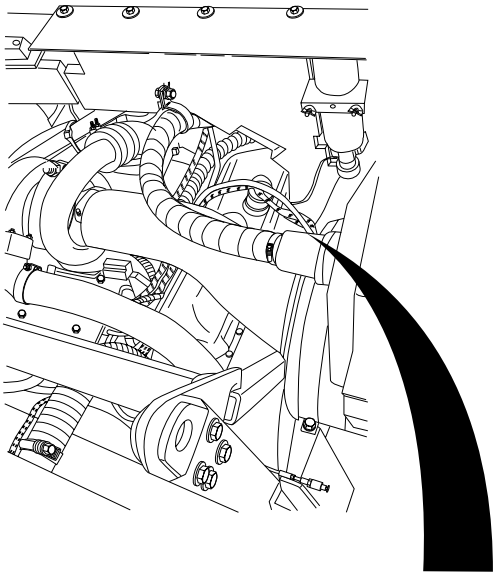
(1) Remove plastic cable tie (1) from ether line (2), ether starting aid wires (3), STE-ICE wire harness (4), and STE-ICE air cleaner pressure sensor wires (5).

(2) Remove connector (6) from STE-ICE air cleaner pressure sensor (7).

(3) Remove sensor (7) from tee (8).



b. Installation



WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

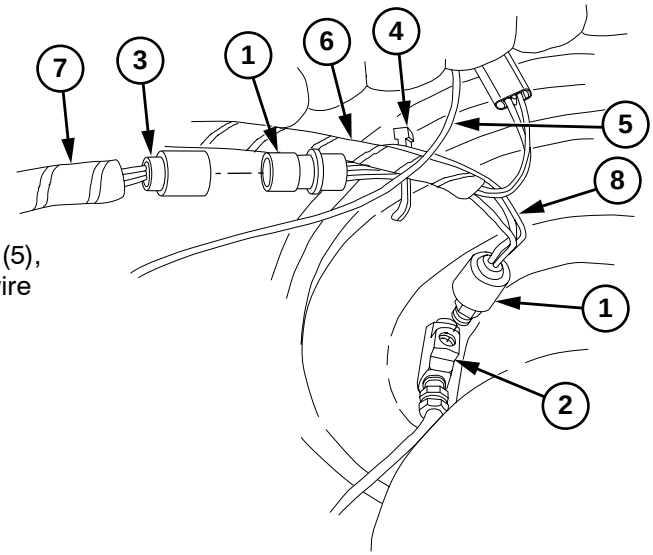
(1) Coat threads of STE-ICE air cleaner pressure sensor (1) with pipe thread sealing compound.

(2) Install sensor (1) in tee (2).

(3) Install connector (3) on sensor (1).

NOTE

Plastic cable ties should be positioned in locations marked during removal.



(4) Install plastic cable tie (4) on ether line (5), ether starting aid wires (6), STE-ICE wire harness (7), and STE-ICE air cleaner pressure sensor wires (8).

c. Follow-On Maintenance

(1) Close engine hood (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-84. STE-ICE ENGINE OIL TEMPERATURE SENSOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine oil drained (LO 9-2320-360-12).

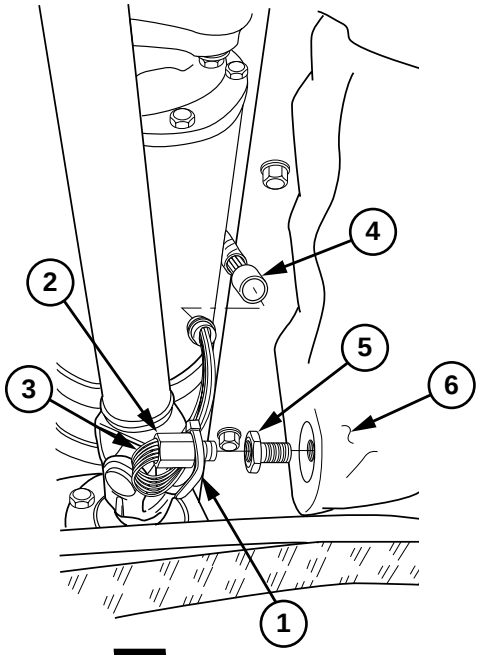
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

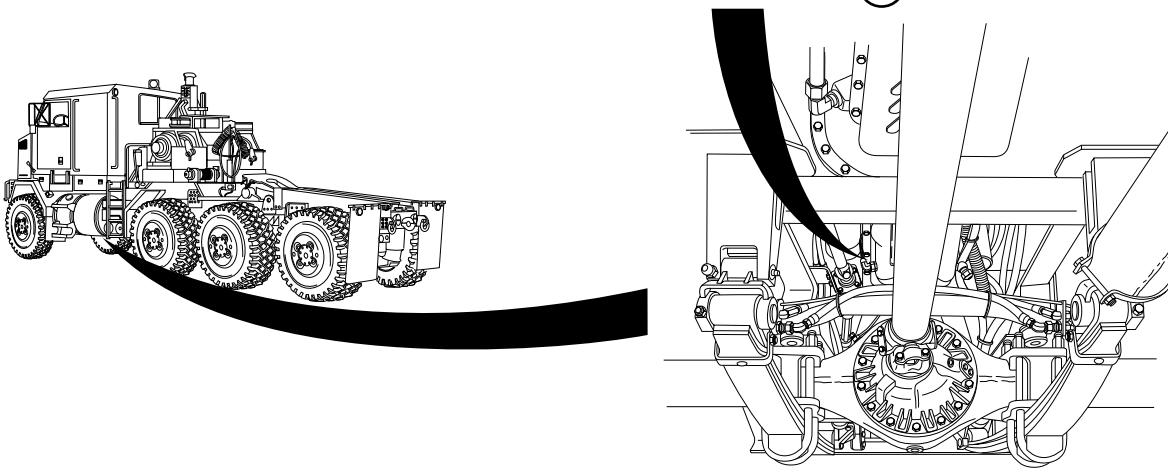
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)

a. Removal

NOTE
Location of plastic cable ties should be marked before removal.

(1) Remove plastic cable tie (1) from STE-ICE engine oil temperature sensor (2) and wires (3).
(2) Remove connector (4) from sensor (2).
(3) Remove sensor (2) and reducer (5) from engine oil pan (6).





b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of STE-ICE engine oil temperature sensor (1) and reducer (2) with pipe thread sealing compound.

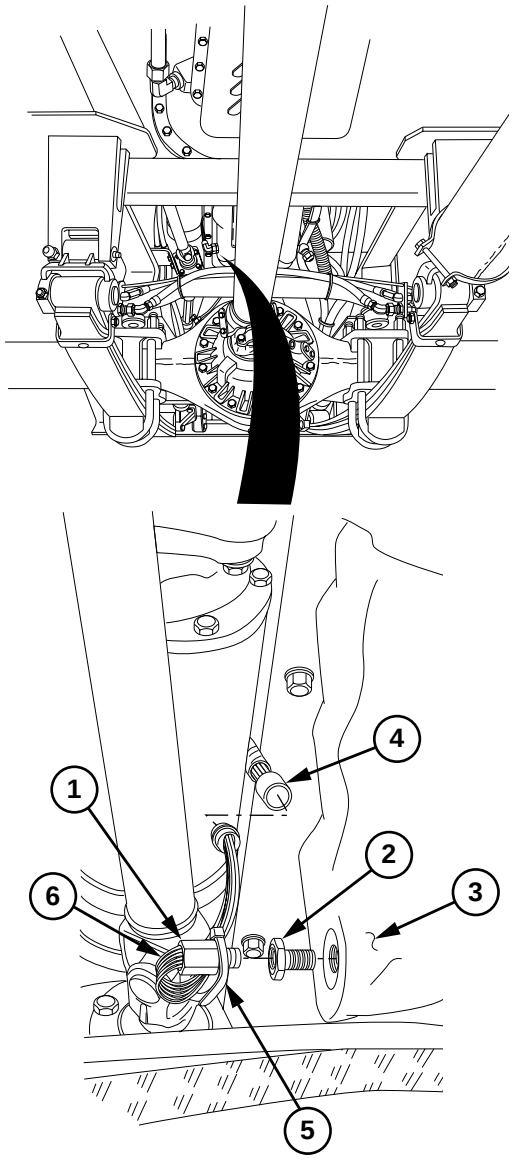
(2) Install sensor (1) and reducer (2) on engine oil pan (3).

(3) Install connector (4) on sensor (1).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(4) Install plastic cable tie (5) on sensor (1) and wires (6).



c. Follow-On Maintenance

(1) Fill engine with oil (LO 9-2320-360-12).

(2) Remove wheel chocks.

7-85. STE-ICE FUEL RETURN PRESSURE TRANSDUCER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).
Doghouse door panel removed (para 16-2).
Lower engine access panel removed (para 16-2).
Front engine access panel removed (para 16-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)

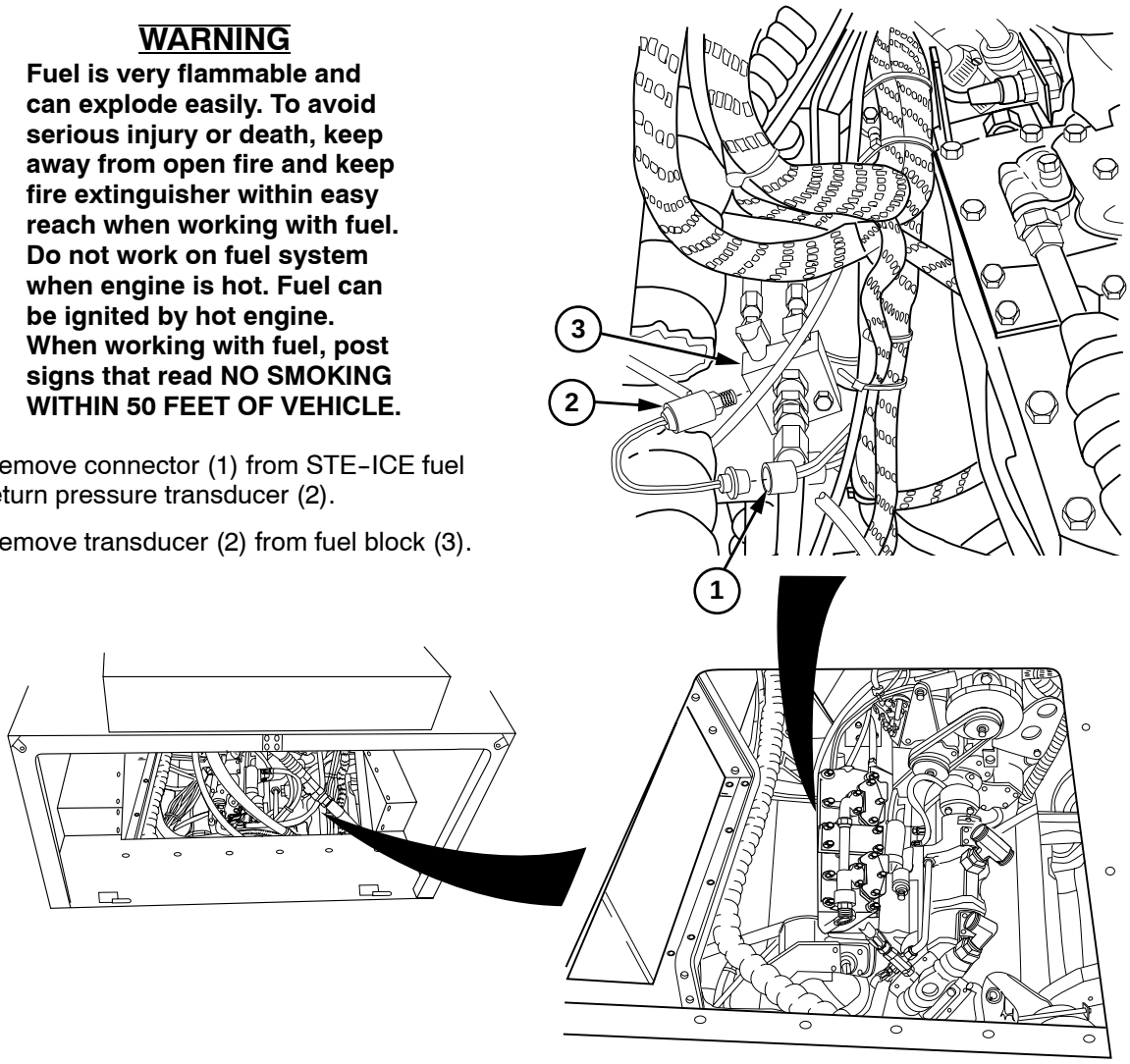
a. Removal

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep away from open fire 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. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.

(1) Remove connector (1) from STE-ICE fuel return pressure transducer (2).

(2) Remove transducer (2) from fuel block (3).



b. Installation

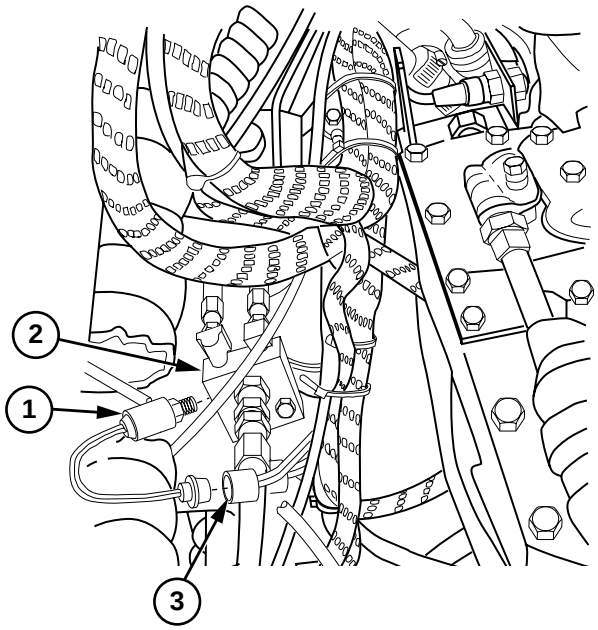
WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of STE-ICE fuel return pressure transducer (1) with pipe thread sealing compound.

(2) Install transducer (1) in fuel block (2).

(3) Install connector (3) on transducer (1).



c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Install front engine access panel (para 16-2).

(3) Install lower engine access panel (para 16-2).

(4) Install doghouse door panel (para 16-2).

7-86. STE-ICE FUEL PRESSURE TRANSDUCER REPLACEMENT

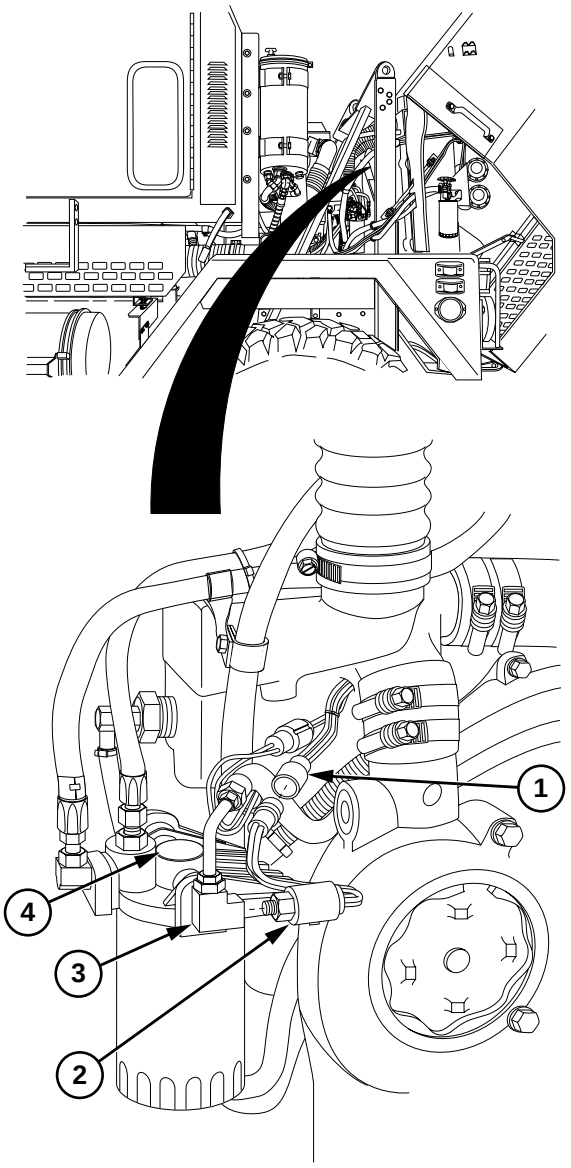
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).
Engine hood opened (TM 9-2320-360-10).

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)



a. Removal

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep away from open fire 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. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.

(1) Remove connector (1) from STE-ICE fuel pressure transducer (2).

(2) Remove transducer (2) from tee (3) on secondary fuel filter mounting head (4).

b. Installation

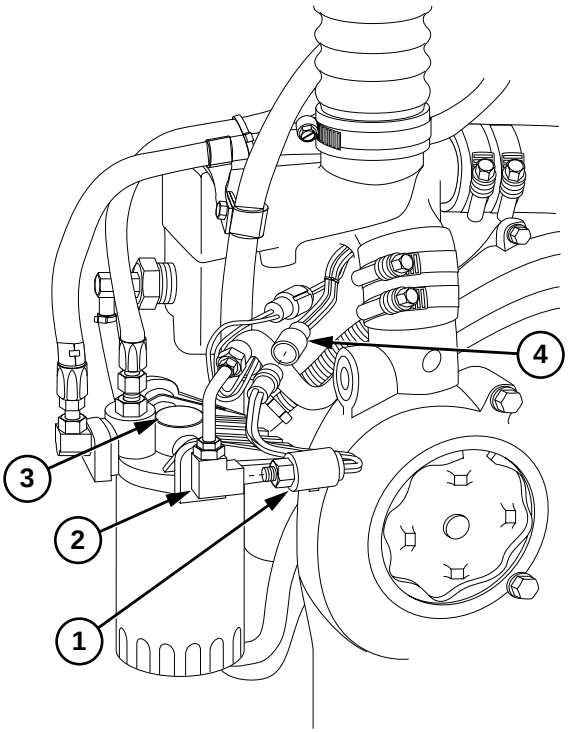
WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of STE-ICE fuel pressure transducer (1) with pipe thread sealing compound.

(2) Install transducer (1) on tee (2) on secondary fuel filter mounting head (3).

(3) Install connector (4) on transducer (1).



c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Close engine hood (TM 9-2320-360-10).

7-87. STE-ICE TURBO OUTLET PRESSURE TRANSDUCER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).

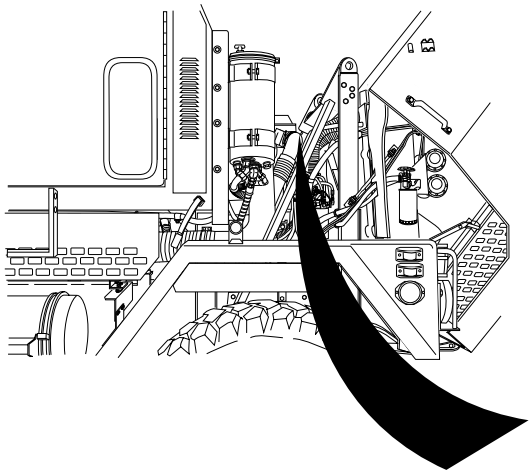
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

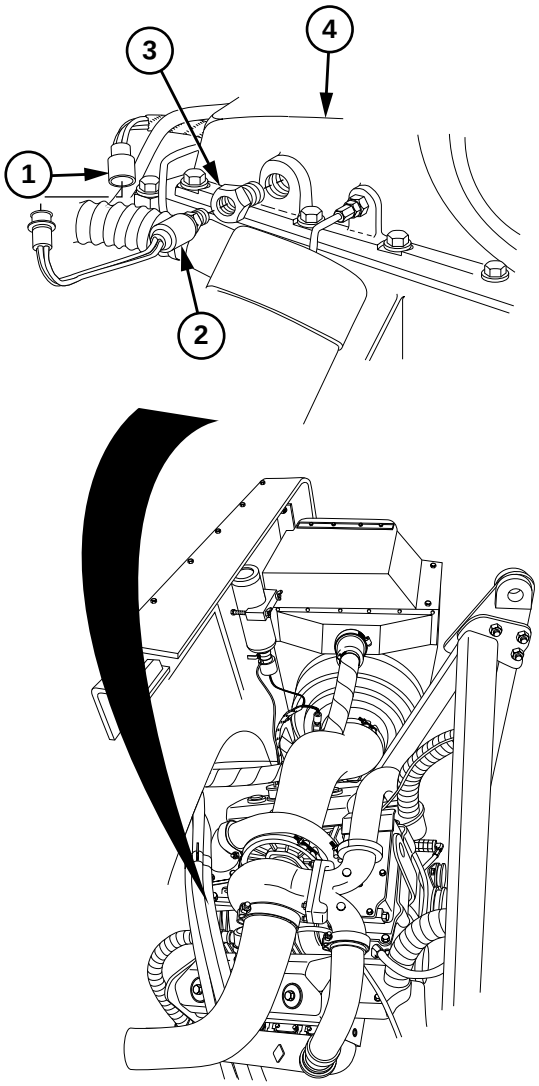
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)

a. Removal

(1) Remove connector (1) from turbo outlet pressure transducer (2).

(2) Remove transducer (2) and reducer (3) from turbocharger air inlet housing (4).





b. Installation

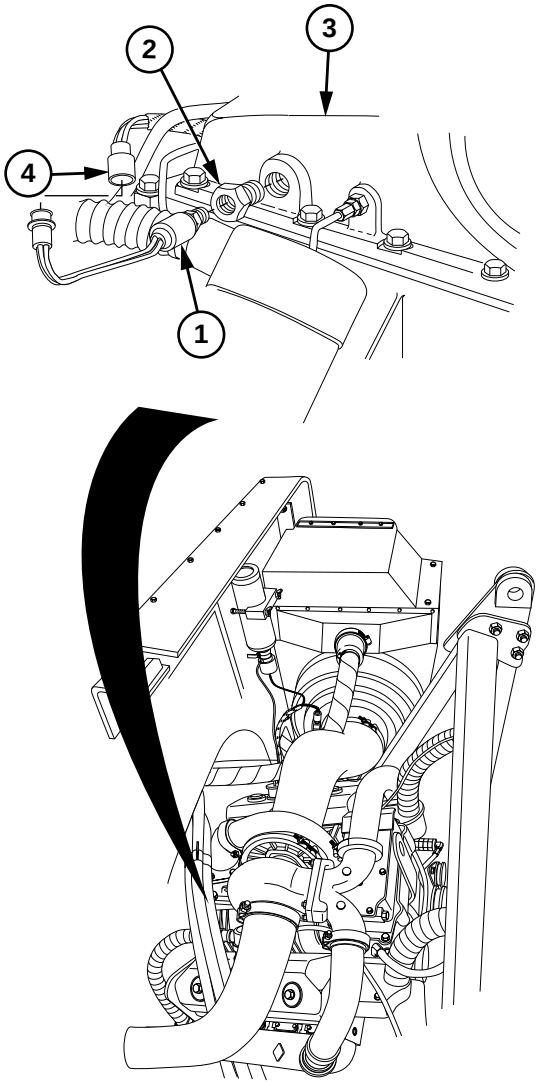
WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of STE-ICE turbo outlet pressure transducer (1) and reducer (2) with pipe thread sealing compound.

(2) Install transducer (1) and reducer (2) on turbocharger air inlet housing (3).

(3) Install connector (4) on transducer (1).



c. Follow-On Maintenance

(1) Close engine hood (TM 9-2320-360-10).

(2) Remove wheel chocks.

7-88. STE-ICE SHUNT REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Stowage box removed (para 16-14).
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Locknuts (4) (Item 72, Appendix G)
Lockwashers (4) (Item 109, Appendix G)
Lockwashers (2) (Item 108, Appendix G)

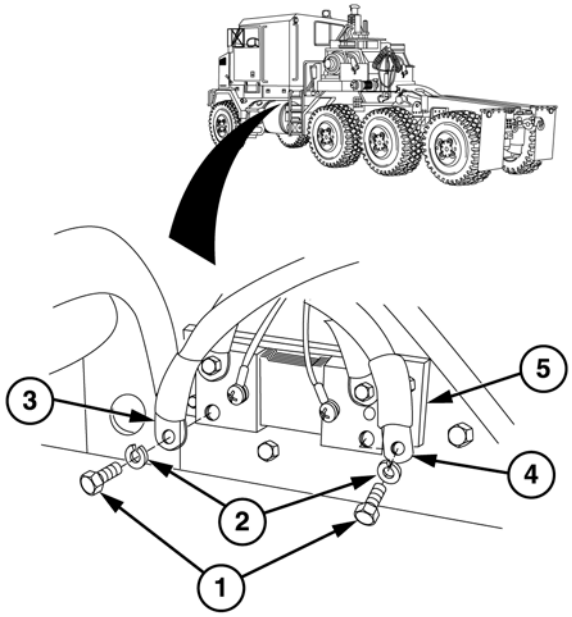
Personnel Required
Two

a. Removal

NOTE

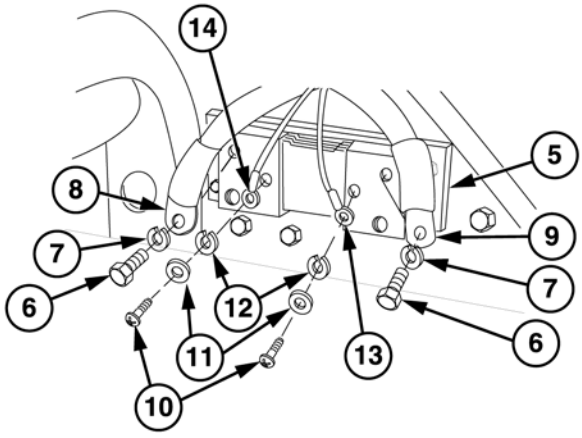
- Tag and mark all wires before removing from shunt.
- Do step (1) only if arctic kit is installed.

(1) Remove two screws (1), lockwashers (2), and two cables no. 1128 (3 and 4) from shunt (5). Discard lockwashers.



(2) Remove two screws (6), lockwashers (7), and two cables no. 1138 (8 and 9) from shunt (5). Discard lockwashers.

(3) Remove two screws (10), washers (11), lockwashers (12), wire no. 1829 (13), and wire no. 1828 (14) from shunt (5). Discard lockwashers.

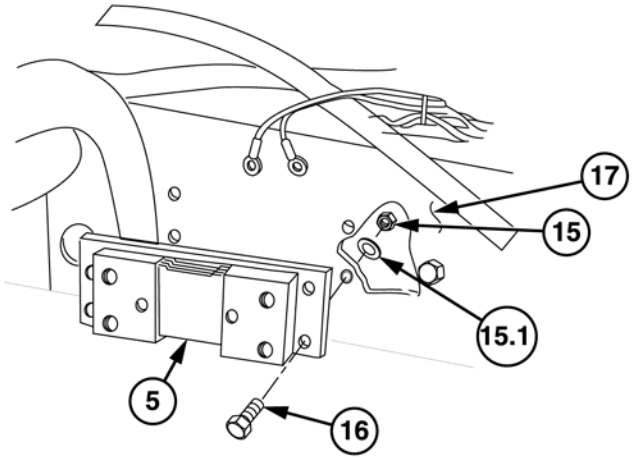


7-88. STE-ICE SHUNT REPLACEMENT (CONT)

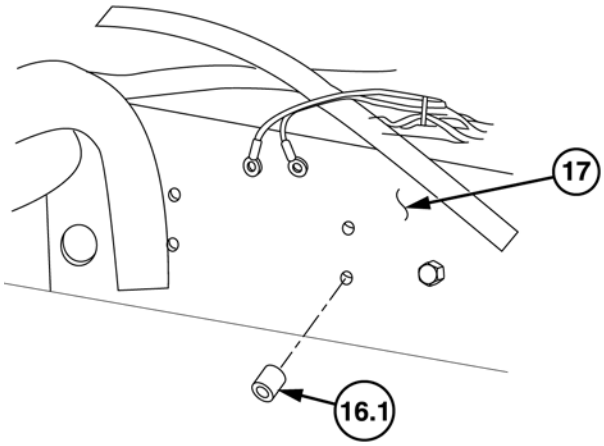
NOTE

Not all models have washer (15.1) and spacer sleeve (16.1) installed.

(4) Remove four locknuts (15), washers (15.1), screws (16), and shunt (5) from frame (17) with aid of assistant. Discard locknuts.

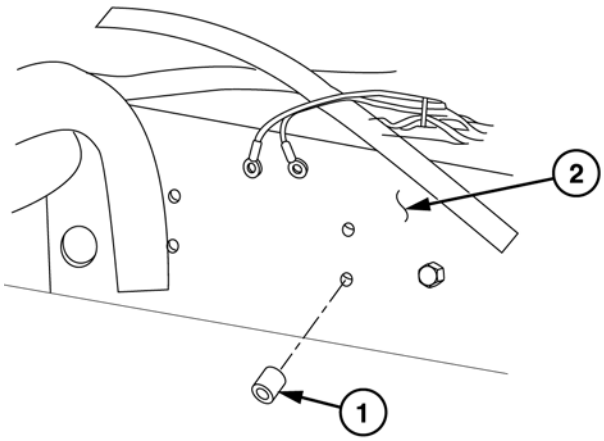


(5) Remove four spacer sleeves (16.1) from frame (17).



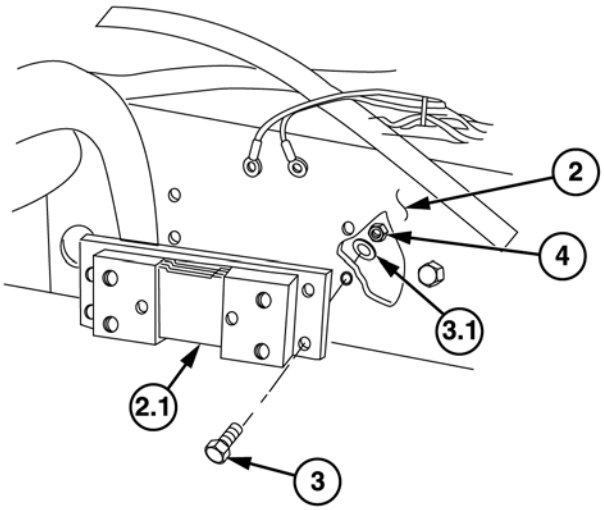
b. Installation

(1) Insert four spacer sleeves (1) in frame (2).



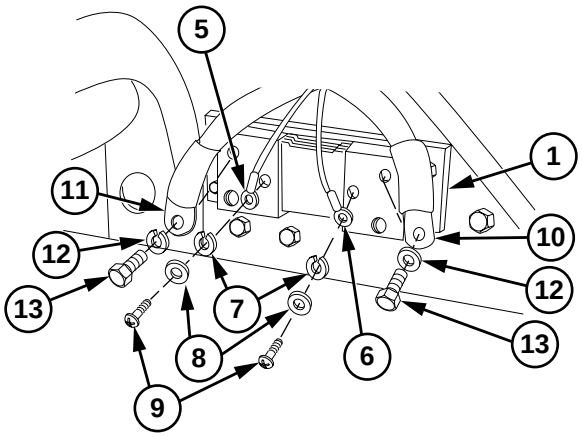
7-88. STE-ICE SHUNT REPLACEMENT (CONT)

(1.1) Install shunt (2.1) on frame (2) with four screws (3), washers (3.1), and new locknuts (4) with aid of assistant.



(2) Install wire no. 1828 (5) and wire no. 1829 (6) on shunt (1) with two new lockwashers (7), washers (8), and screws (9).

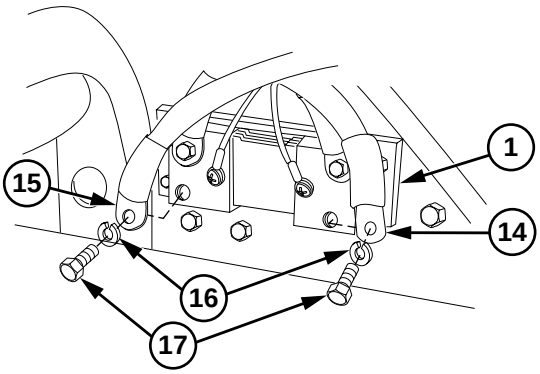
(3) Install two cables no. 1138 (10 and 11) on shunt (1) with two new lockwashers (12) and screws (13).



NOTE

Do step (4) only if arctic kit is installed.

(4) Install two cables no. 1128 (14 and 15) on shunt (1) with two new lockwashers (16) and screws (17).



c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Install stowage box (para 16-14).

7-89. STE-ICE TACHOMETER SENDING UNIT REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Tool Kit, Electrical Repair (Item 53, Appendix F)

Materials/Parts
Ties, Cable, Plastic (Item 34, Appendix C)

a. Removal

(1) Turn collar (1) counterclockwise and remove tachometer cable (2) from sending unit (3).

NOTE

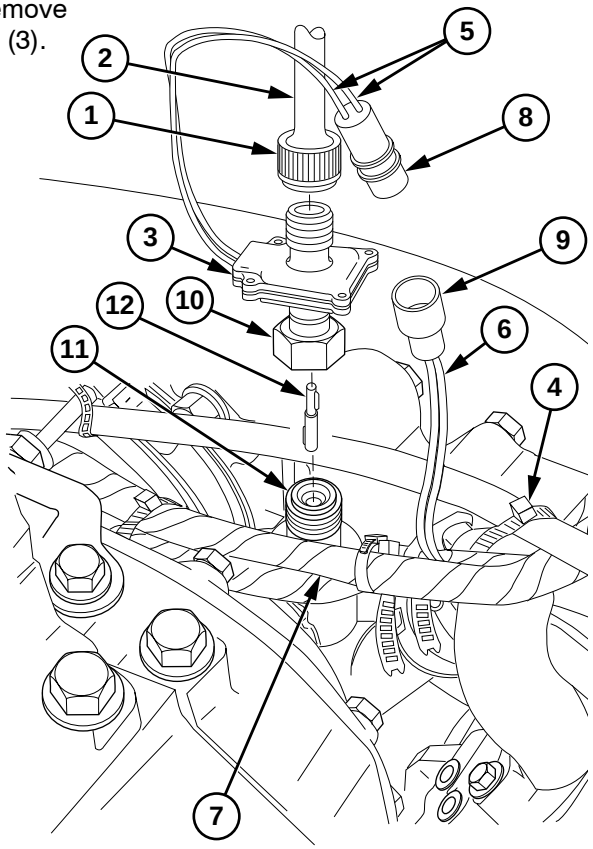
Locations of plastic cable ties should be marked before removal.

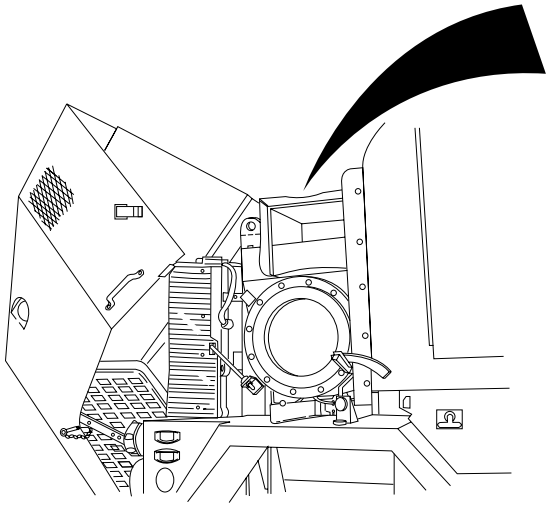
(2) Remove plastic cable ties (4) from wires (5 and 6) and wire harness (7).

(3) Remove electrical connector (8) from electrical connector (9).

(4) Turn nut (10) counterclockwise and remove sending unit (3) from adapter (11).

(5) Remove drive key (12) from sending unit (3).





7-89. STE-ICE TACHOMETER SENDING UNIT REPLACEMENT (CONT)

b. Installation

NOTE

Tabs on drive key and tachometer cable must be aligned with slots in sending unit and adapter for proper installation.

(1) Install drive key (1) in sending unit (2).

(2) Install sending unit (2) on adapter (3) and turn nut (4) clockwise to tighten.

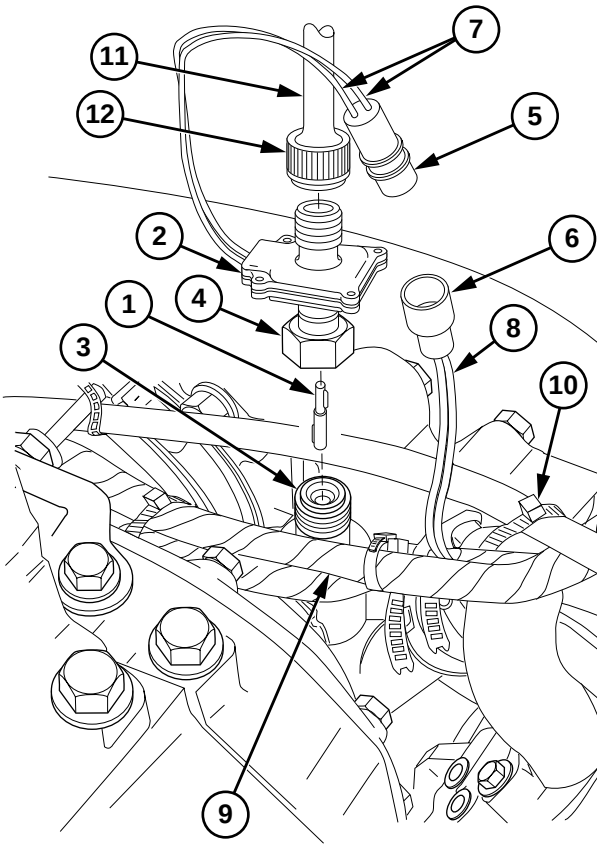
(3) Install electrical connector (5) in electrical connector (6).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(4) Secure wires (7 and 8) to wire harness (9) with plastic cable ties (10).

(5) Install tachometer cable (11) on sending unit (2) and turn collar (12) clockwise to tighten.



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check tachometer operation (TM 9-2320-360-10).

(3) Shut off engine (TM 9-2320-360-10).

(4) Close engine hood (TM 9-2320-360-10).

(5) Remove wheel chocks.

7-90. STE-ICE RESISTOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

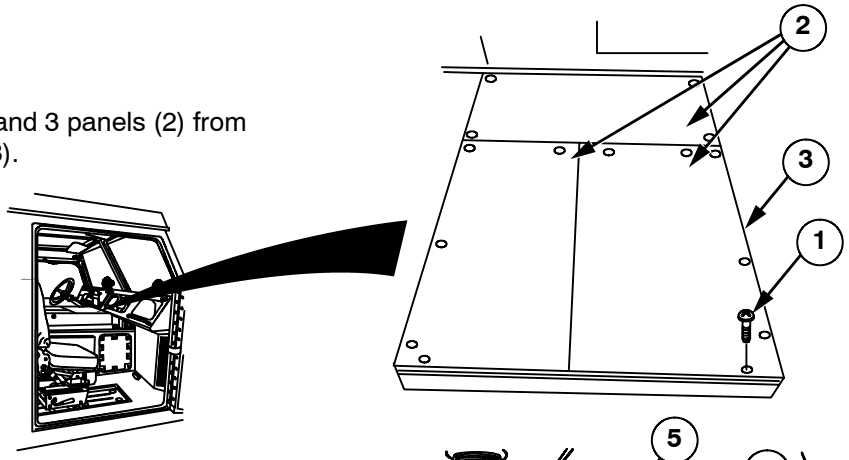
INITIAL SETUP

Equipment Conditions
Alternator access panel removed (para 16-2).

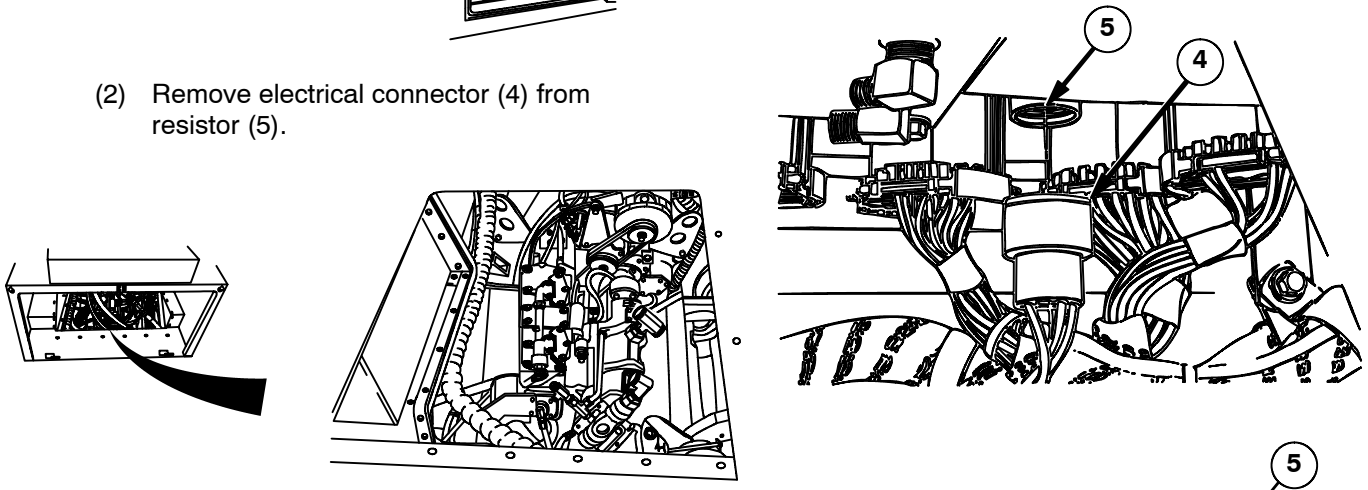
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

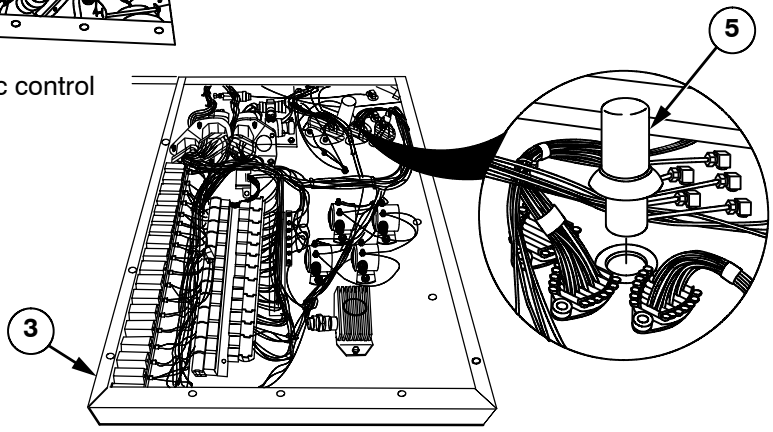
(1) Remove 19 screws (1) and 3 panels (2) from electronic control box (3).



(2) Remove electrical connector (4) from resistor (5).



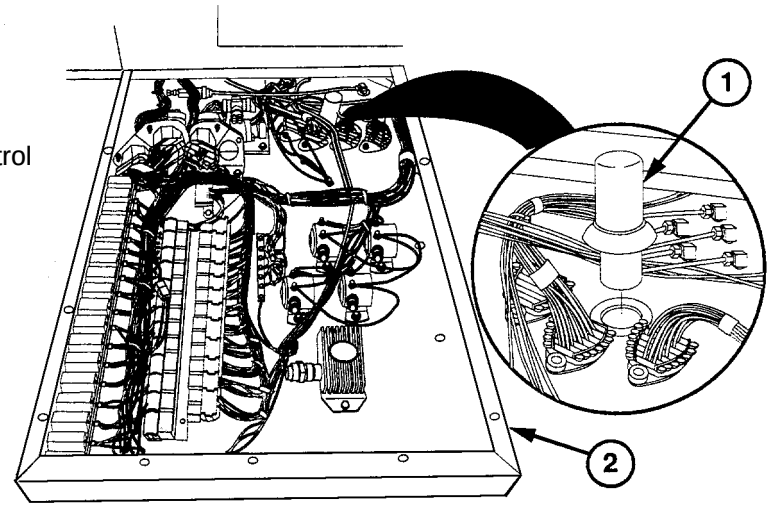
(3) Remove resistor (5) from electronic control box (3).



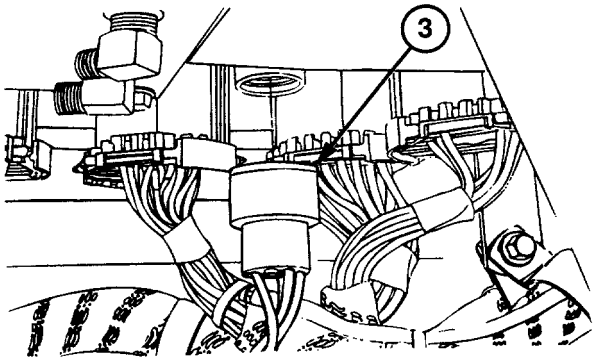
7-90. STE-ICE RESISTOR REPLACEMENT (CONT)

b. Installation

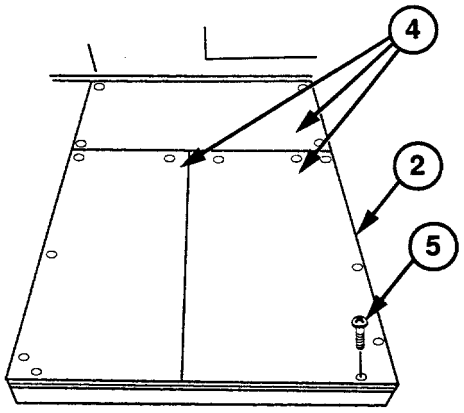
(1) Install resistor (1) in electronic control box (2).



(2) Install electrical connector (3) on resistor (1).



(3) Install 3 panels (4) on electronic control box (2) with 19 screws (5).



c. Follow-On Maintenance

(1) Install alternator access panel (para 16-2).

(2) Remove wheel chocks.

7-91. STE-ICE ZERO OFFSET SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

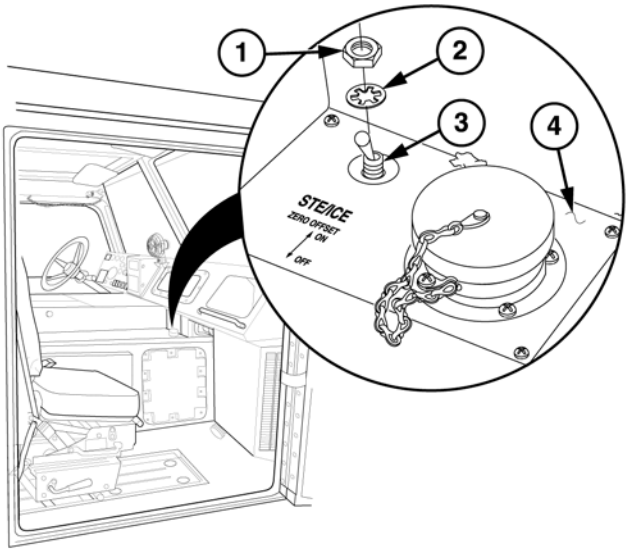
Equipment Conditions
Batteries disconnected (para 7-61).
Alternator access panel removed (para 16-2).

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Lockwasher (Item 93, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

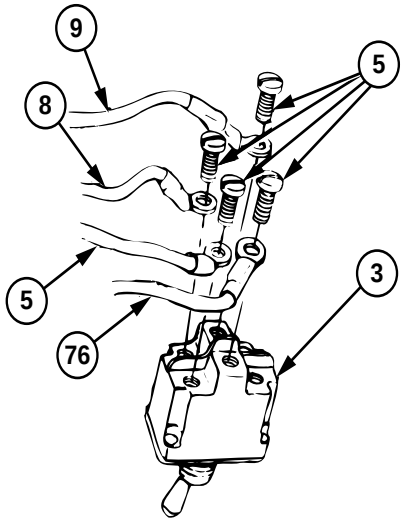
a. Removal

(1) Remove nut (1), lockwasher (2), and STE-ICE ZERO OFFSET SWITCH (3) from doghouse (4). Discard lockwasher.



NOTE
Tag and mark wires before removal.

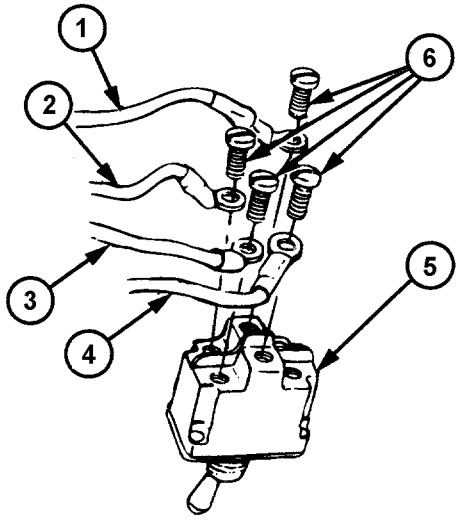
(2) Remove four screws (5), wires no. 1938B (6), no. 1939B (7), no. 1940B (8), and no. 1952B (9) from STE-ICE ZERO OFFSET SWITCH (3).



7-91. STE-ICE ZERO OFFSET SWITCH REPLACEMENT (CONT)

b. Installation

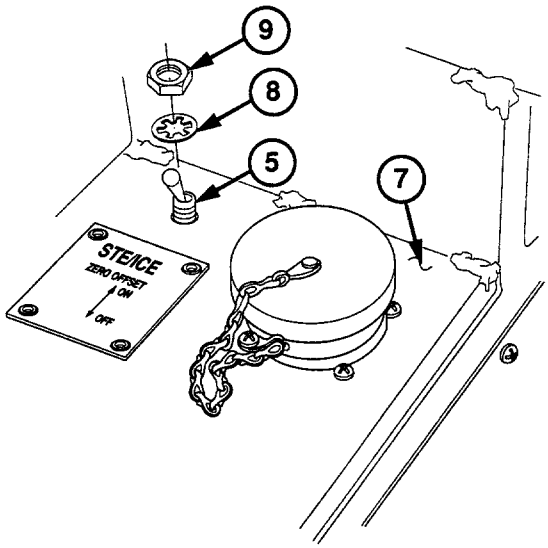
(1) Install wires no. 1952B (1), no. 1940B (2), no. 1939B (3), and no. 1938B (4) on STE-ICE ZERO OFFSET SWITCH (5) with four screws (6).



NOTE

STE/ICE ZERO OFFSET SWITCH must be installed with notch facing rear of HET Tractor.

(2) Install STE-ICE ZERO OFFSET SWITCH (5) on doghouse (7) with new lockwasher (8) and nut (9).



c. Follow-On Maintenance

(1) Install alternator access panel (para 16-2).

(2) Connect batteries (para 7-61).

7-92. WINCH ELECTRICAL SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).
Winch control console panels removed (para 17-8).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)

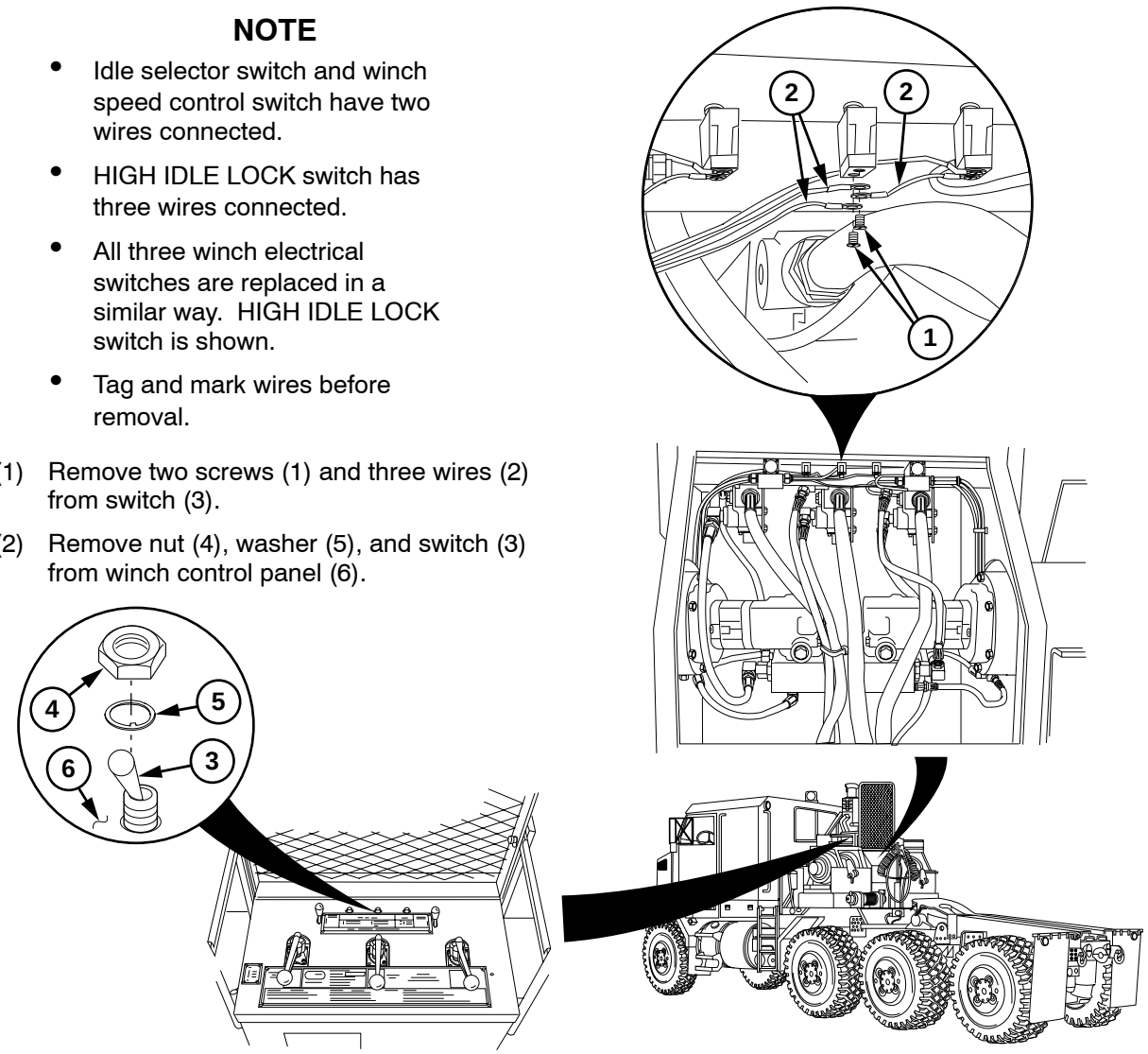
a. Removal

NOTE

- Idle selector switch and winch speed control switch have two wires connected.
- HIGH IDLE LOCK switch has three wires connected.
- All three winch electrical switches are replaced in a similar way. HIGH IDLE LOCK switch is shown.
- Tag and mark wires before removal.

(1) Remove two screws (1) and three wires (2) from switch (3).

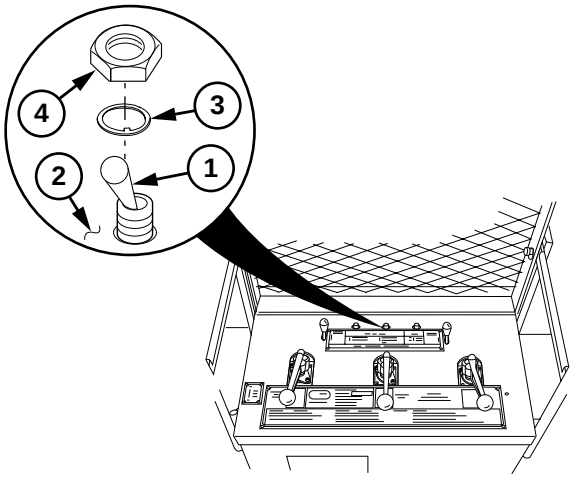
(2) Remove nut (4), washer (5), and switch (3) from winch control panel (6).



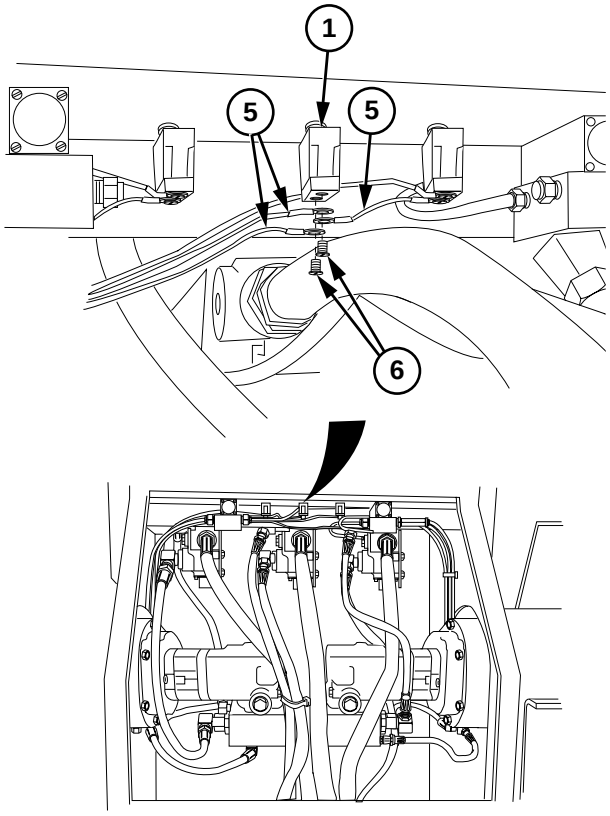
7-92. WINCH ELECTRICAL SWITCH REPLACEMENT (CONT)

b. Installation

(1) Install switch (1) on winch control panel (2) with washer (3) and nut (4).



(2) Install three wires (5) on switch (1) with two screws (6).



c. Follow-On Maintenance

(1) Install winch control console panels (para 17-8).

(2) Connect batteries (para 7-61).

7-93. WINCH WIRE HARNESS REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).
Winch control console panels removed (para 17-8).

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

NOTE
Tag and mark wires before removal.

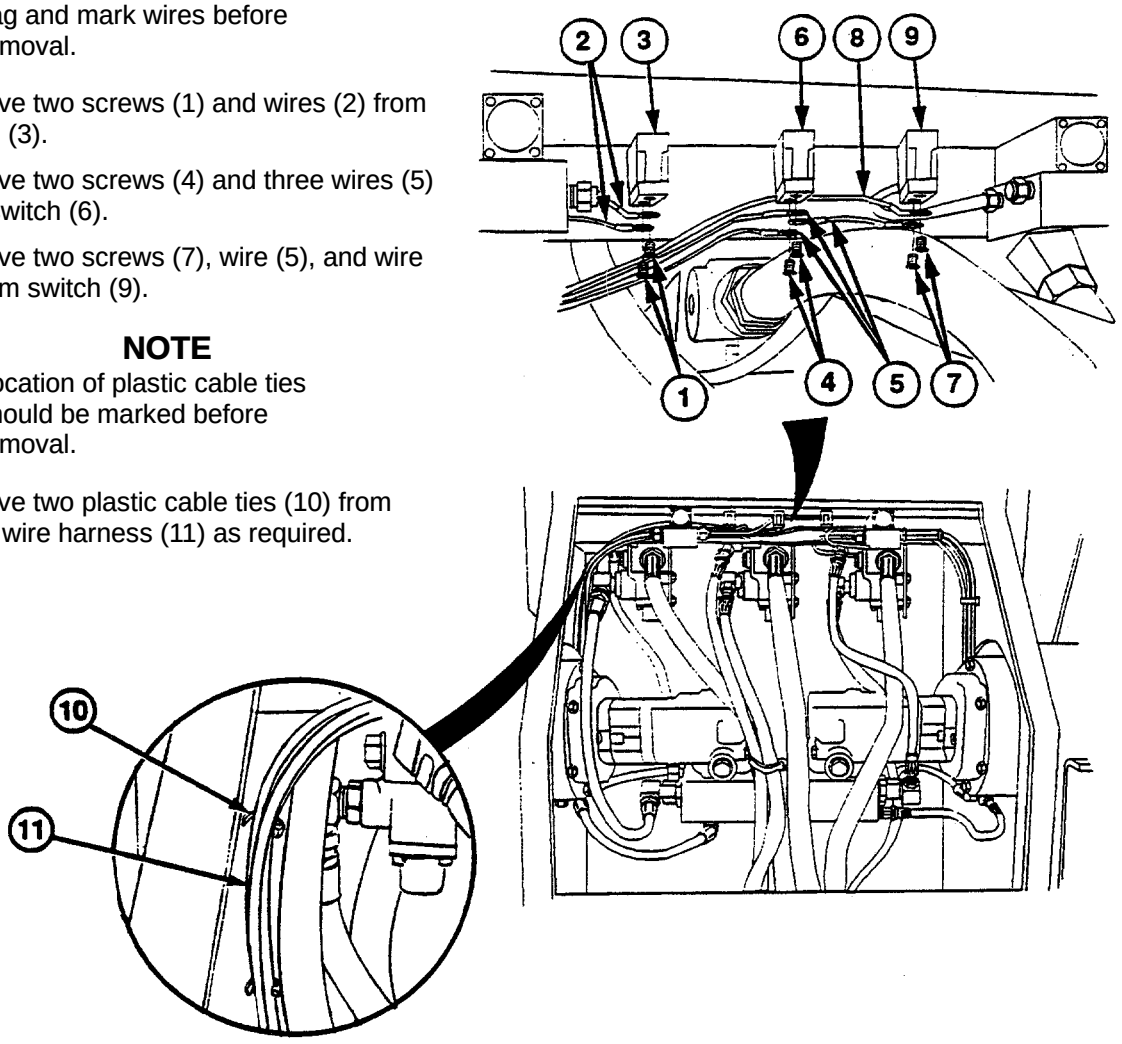
(1) Remove two screws (1) and wires (2) from switch (3).

(2) Remove two screws (4) and three wires (5) from switch (6).

(3) Remove two screws (7), wire (5), and wire (8) from switch (9).

NOTE
Location of plastic cable ties should be marked before removal.

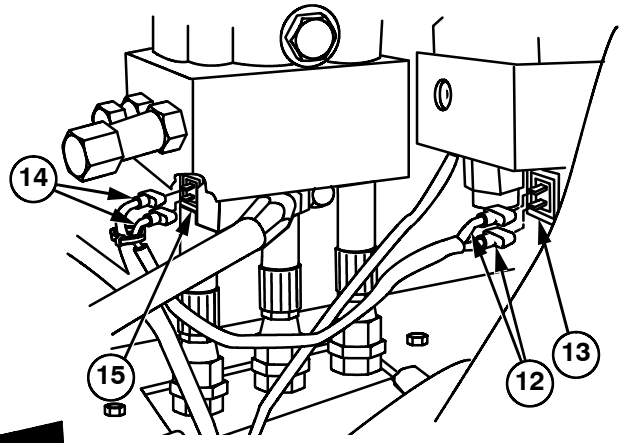
(4) Remove two plastic cable ties (10) from winch wire harness (11) as required.

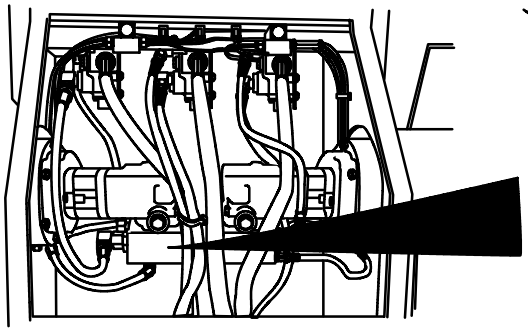


7-93. WINCH WIRE HARNESS REPLACEMENT (CONT)

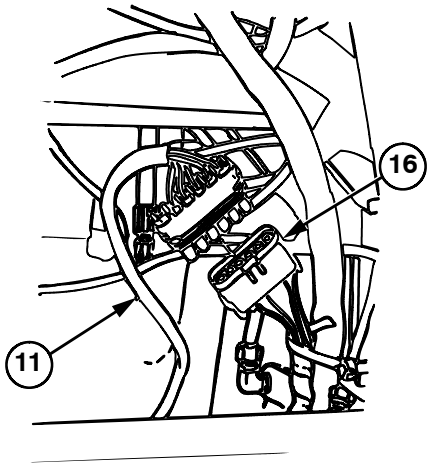
(5) Remove two wires (12) from passenger's side counterbalance valve solenoid (13).

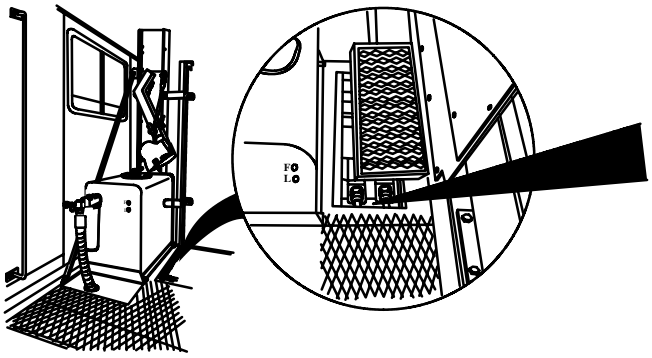
(6) Remove two wires (14) from driver's side counterbalance valve solenoid (15).





(7) Disconnect wire harness (11) from connector (16).



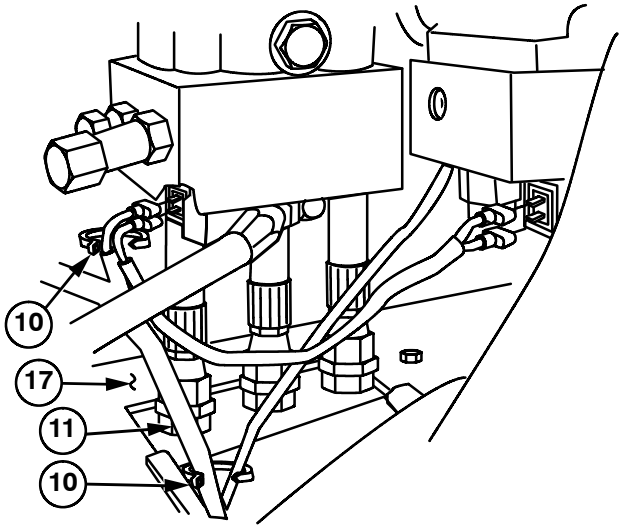


NOTE

Location of plastic cable ties should be marked before removal.

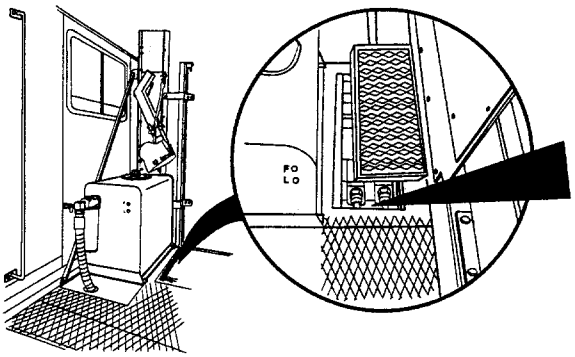
(8) Remove two plastic cable ties (10) from winch wire harness (11) as required.

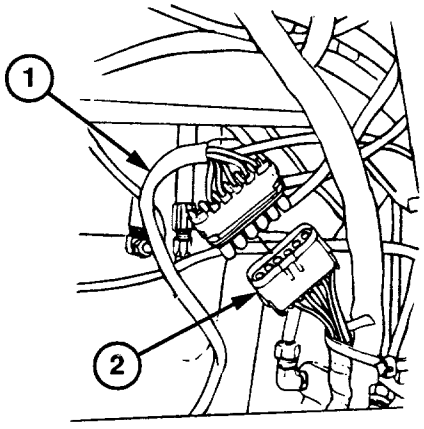
(9) Remove winch wire harness (11) from control console (17).



b. Installation

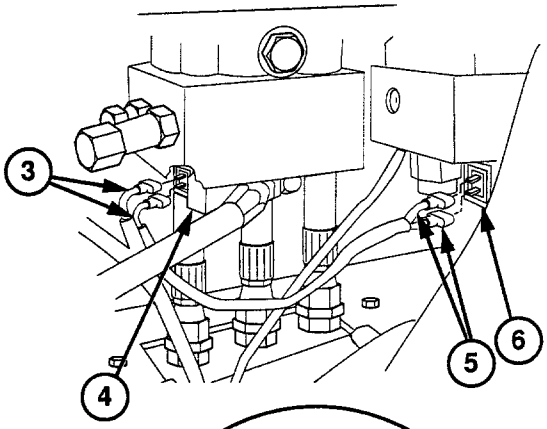
(1) Connect wire harness (1) to connector (2).





(2) Install two wires (3) on driver's side counterbalance valve solenoid (4).

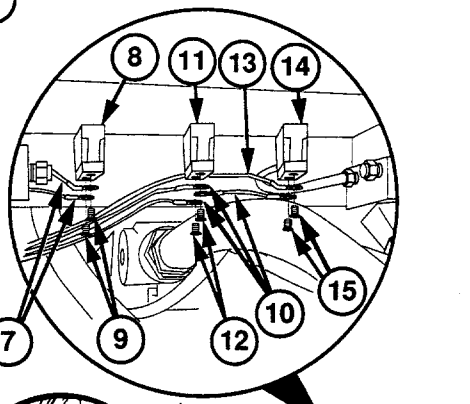
(3) Install two wires (5) on passenger's side counterbalance valve solenoid (6).



(4) Install two wires (7) on switch (8) with two screws (9).

(5) Install three wires (10) on switch (11) with two screws (12).

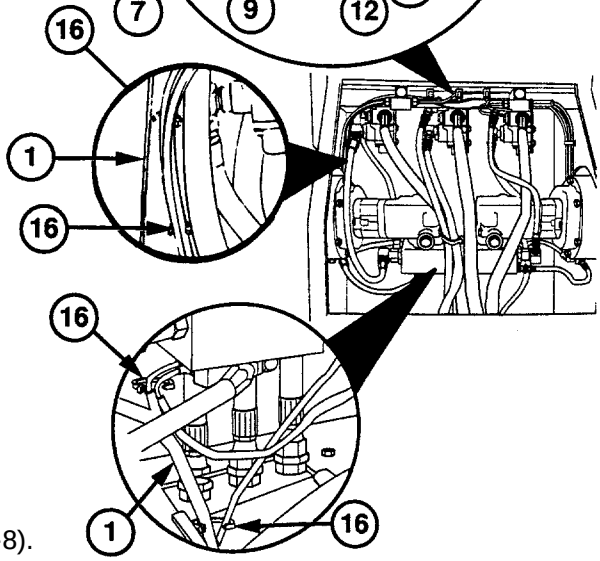
(6) Install wire (10 and wire (13) on switch (14) with two screws (15).



NOTE

Plastic cable ties should be positioned in locations marked during removal.

(7) Secure winch wire harness (1) with four plastic cable ties (16).



c. Follow-On Maintenance

(1) Install winch control console panels (para 17-8).

(2) Connect batteries (para 7-61).

7-94. GENERAL WIRE HARNESS REPAIR

This task covers:
Repair — Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Electrical Repair (Item 53, Appendix F)
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tape, Insulation, Electrical (Item 33, Appendix C)
Locknuts (2) (Item 72, Appendix C)

CAUTION

Terminals come in different styles and sizes. Use only exact replacements. Do not attempt to modify terminal to fit. Failure to comply may result in damage to equipment.

NOTE

Repeat procedure as necessary.

a. Type 1 Connector Repair

(1) Unscrew cover (1) and slide plastic sleeve (2) back.

(2) Remove wire (3) and terminal (4) from connector (5).

NOTE

Make cut directly behind damaged terminal.

(3) Cut and remove terminal (4) from wire (3). Remove 0.25 in. (0.635 cm) of insulation (6) from end of wire (3). Discard terminal.

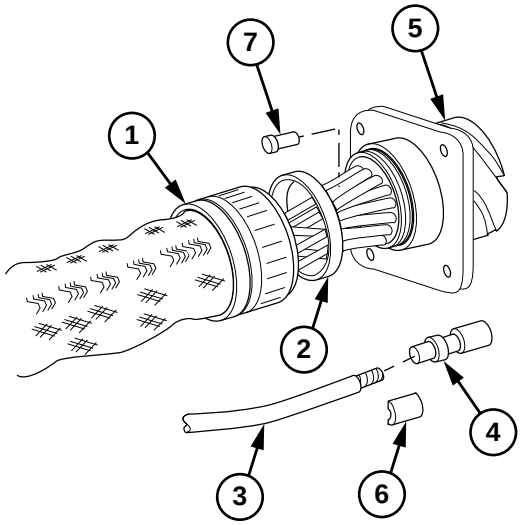
(4) Install new terminal (4) on wire (3) and crimp in place.

(5) Install terminal (4) on connector (5).

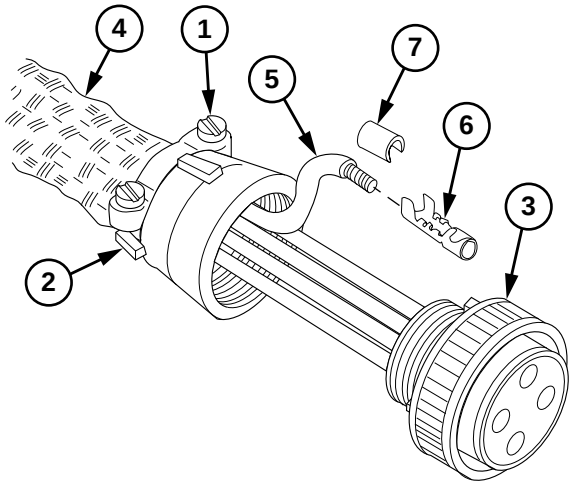
(6) Install plugs (7) in unused holes.

(7) Slide plastic sleeve (2) against connector (5).

(8) Tighten cover (1) on connector.



b. Type 2 Connector Repair



(1) Remove two screws (1) and cable clamp (2) from connector (3).

(2) Remove heatshrink (4) from wires (5).

(3) Remove wire (5) and terminal (6) from connector (3).

NOTE

Make cut directly behind damaged terminal.

(4) Cut and remove terminal (6) from wire (5). Remove 0.25 in. (0.635 cm) of insulation (7) from end of wire (5). Discard terminal.

(5) Install new terminal (6) on wire (5) and crimp in place.

(6) Install terminal (5) on connector (3).

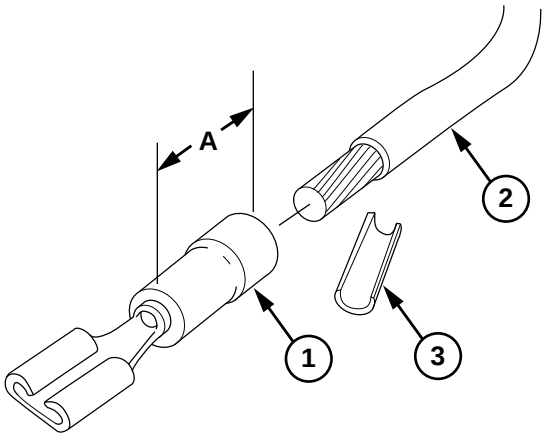
(7) Install heatshrink (4) around wires (5).

(8) Install cable clamp (2) on connector (3) with two screws (1).

c. Type 3 Connector Repair

NOTE

- Make cut directly behind damaged terminal.
- If wire is too short after trimming, refer to TM 43-0158.



(1) Cut and remove terminal (1) from wire (2). Remove insulation (3) from end of wire (2) equal to dimension A. Discard terminal.

NOTE

Ensure all strands of wire are inside terminal when installing.

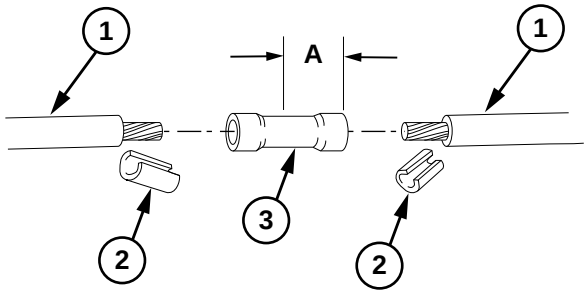
(2) Install new terminal (1) on wire (2).

7-94. GENERAL WIRE HARNESS REPAIR (CONT)

d. Type 4 Wire Repair

NOTE

- When possible, use solder method for splicing wires. Refer to TM 43-0158.
- If repairing a broken wire, do steps (1) thru (4) only.



(1) Remove damaged wire (1).

(2) Remove insulation (2) from both ends of wire (1) equal to dimension A.

(3) Install butt connector (3) over bare ends of wire (1). Crimp securely.

(4) Inspect wire splice to ensure no bare wire is visible.

NOTE

If replacing a section of wire, do steps (5) thru (11).

(5) Install two butt connectors (3) one on each bare end of wire (1).

(6) Crimp one end of both butt connectors (3) securely over wire (1).

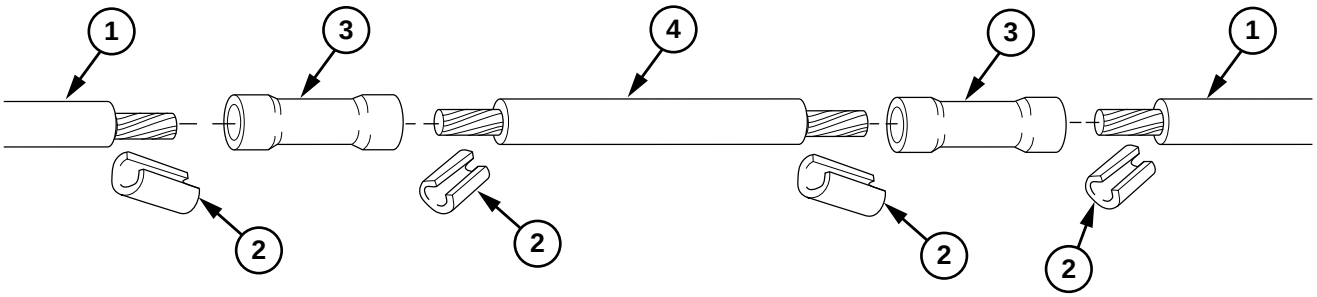
(7) Measure distance between open ends of butt connectors (3).

(8) Cut section of new wire (4) 1 in. (2.54 cm) longer than distance measured in step (7).

(9) Remove insulation (2) from both ends of new wire (4) equal to dimension A.

(10) Install bare ends of new wire (4) in butt connectors (3) and crimp securely.

(11) Inspect splice to ensure no bare wire (1 or 4) is visible.



e. Type 5 Wire Repair

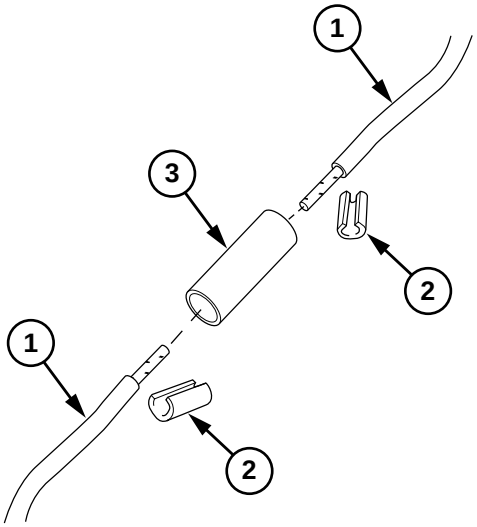
NOTE

- This method produces a stronger, more permanent repair. Use this method when possible.
- If repairing a broken wire, do steps (1) thru (6) only.

(1) Remove damaged wire (1) if necessary.

(2) Remove 0.75 in (1.9 cm) of insulation (2) from both ends of wire (1).

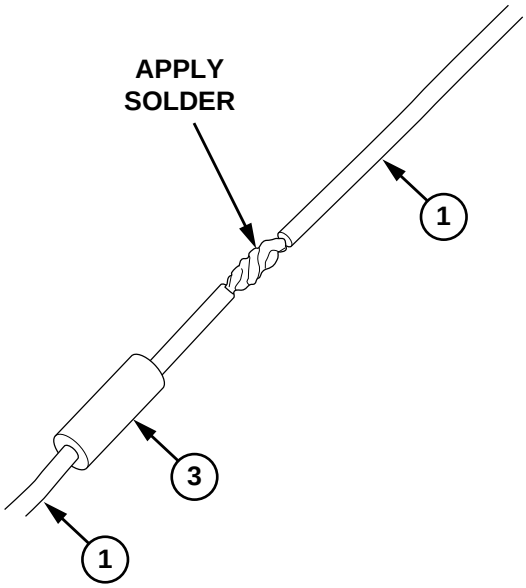
(3) Slide 3 in. (7.62 cm) piece of heatshrink tubing (3) over one end of wire (1).



NOTE

Ensure solder flows evenly on both ends of wire.

(4) Twist two ends of wire (1) together and solder.

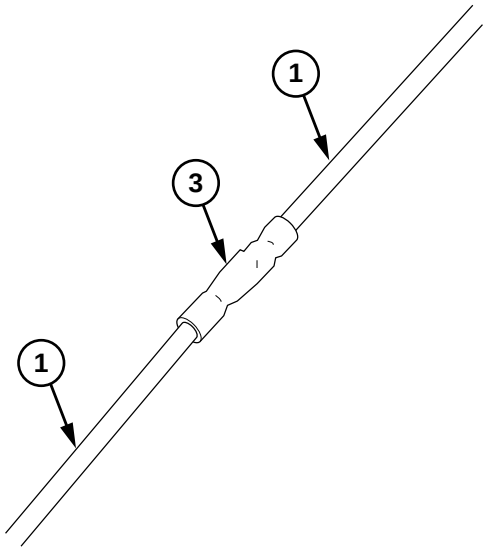


7-94. GENERAL WIRE HARNESS REPAIR (CONT)

WARNING

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

(5) Slide heatshrink tubing (3) over solder joint.



WARNING

- **Never use open flame to apply heat to heatshrink tubing. Failure to comply may result in injury to personnel.**
- **Allow heatshrink tubing to cool before handling. Failure to comply may result in injury to personnel.**

CAUTION

Do not overheat heatshrink tubing. Tubing may split or melt if too much heat is applied.

NOTE

Ensure solder joint is centered in heatshrink tubing.

(6) Apply heat to heatshrink tubing (3). Allow tubing to shrink until tight on solder joint and insulation of wire (1).

NOTE

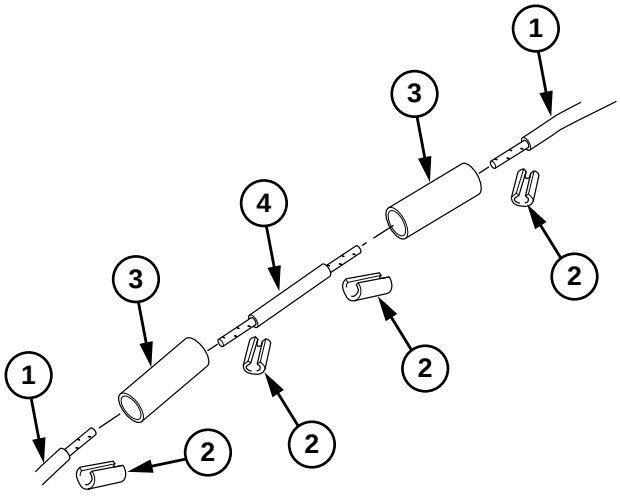
If replacing a section of wire, do steps (7) thru (13).

(7) Measure distance between ends of wire.

(8) Cut section of new wire (4) 2 in. (5.08 cm) longer than distance measured in step (7).

(9) Remove 0.75 in. (1.9 cm) of insulation (2) from both ends of new wire (4).

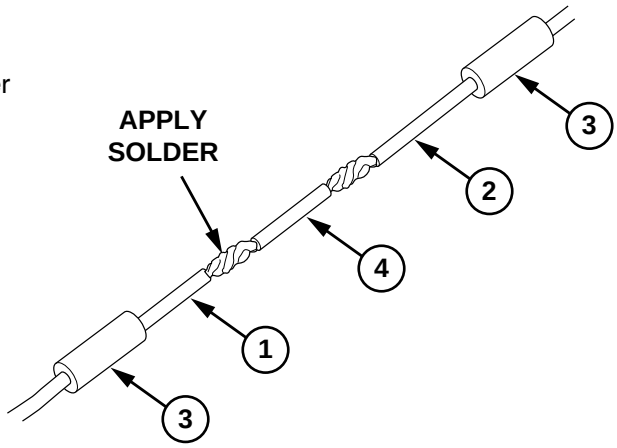
(10) Slide two 3 in. (7.62 cm) pieces of heatshrink tubing (3) over ends of wire (1).



NOTE

Ensure solder flows evenly on both ends of wire.

(11) Twist bare ends of wires (1 and 4) together and solder.



WARNING

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

(12) Slide heatshrink tubing (3) over solder joint.

WARNING

- **Never use open flame to apply heat to heatshrink tubing. Failure to comply may result in injury to personnel.**
- **Allow heatshrink tubing to cool before handling. Failure to comply may result in injury to personnel.**

CAUTION

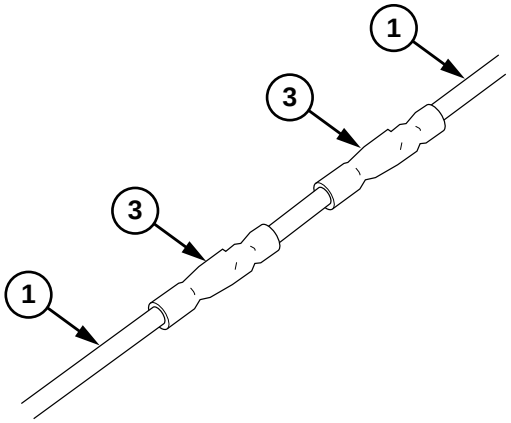
Do not overheat heatshrink tubing. Tubing may split or melt if too much heat is applied.

NOTE

Ensure solder joint is centered in heatshrink tubing.

(13) Apply heat to heatshrink tubing (3). Allow tubing to shrink until tight on solder joint and insulation of wire (1).

(14) Repeat steps (7) thru (13) for other solder joints.



7-94. GENERAL WIRE HARNESS REPAIR (CONT)

f. Type 6 Connector Repair

(1) Slide outer shell (1) back on wire (2).

(2) Remove C-washer (3) from wire (2).

(3) Cut terminal (4) from wire (2).

(4) Trim end of wire (2) as needed.

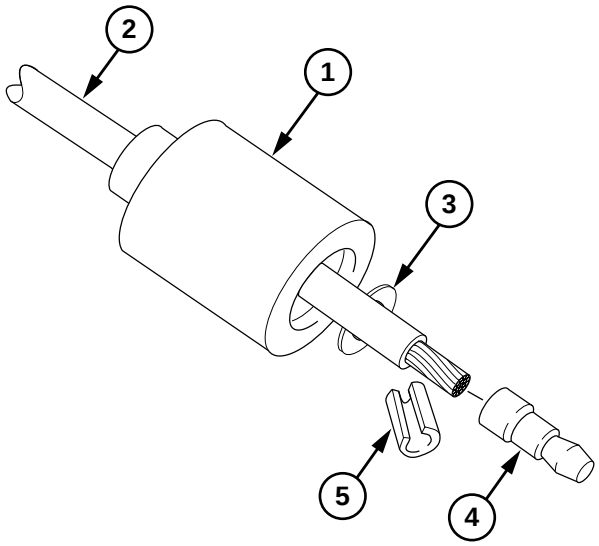
(5) Remove 0.38 in. (1.0 cm) of insulation (5) from end of wire (2).

(6) Install terminal (4) on wire (2).

(7) Install C-washer (3) on wire (2) just below terminal (4).

(8) Slide outer shell (1) over C-washer (3) and terminal (4).

(9) Inspect outer shell (1) to ensure no bare wire is visible.



g. Type 7 Connector Repair

(1) Slide outer shell (1) and sleeve (2) back on wire (3).

(2) Remove contact (4) from wire (3).

(3) Trim end of wire (3) as needed.

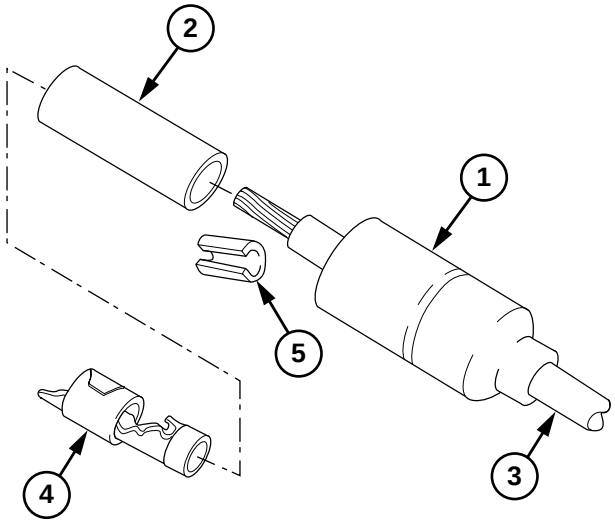
(4) Remove 0.25 in (0.635 cm) of insulation (5) from end of wire (3).

(5) Install sleeve (2) over end of wire (3).

(6) Install contact (4) over end of wire (3). Crimp contact (4).

(7) Slide outer shell (1) over wire (3).

(8) Inspect outer shell (1) to ensure no bare wire is visible.



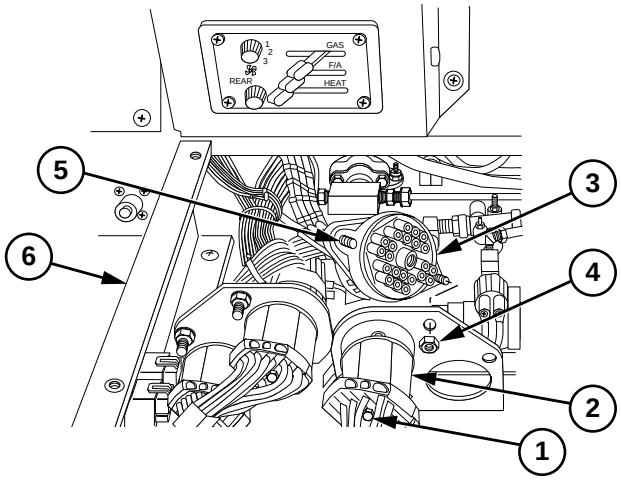
h. 22-Pin Connector Repair

(1) Loosen screw (1) and remove harness connector (2) from cab connector (3).

NOTE

For access to wires on cab connector, it may be necessary to do step (2) to remove connector from dash.

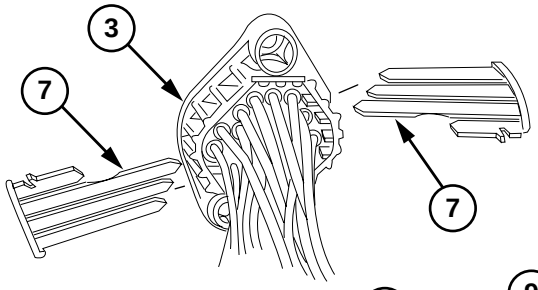
(2) Remove two locknuts (4), screws (5), and cab connector (3) from cab (6). Discard locknuts.



NOTE

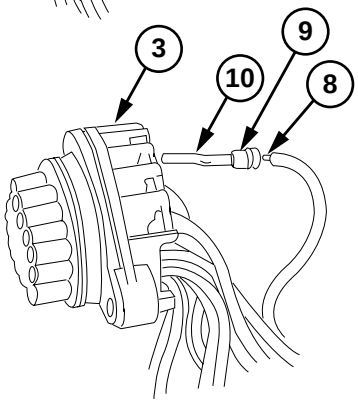
Cab connectors and harness connectors are repaired the same way. Harness connector is shown.

(3) Remove secondary lock(s) (7) from connector (3).



(4) Remove wire(s) (8) from connector (3) with contact socket removal tool.

(5) Cut and remove cable seal (9) and electrical contact (10) from wire(s) (8).

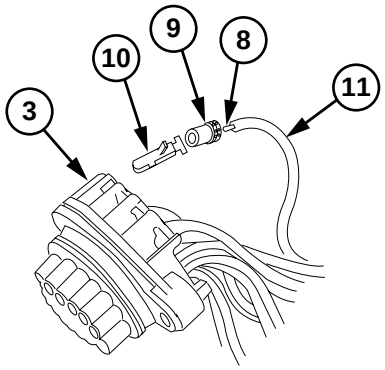


(6) Strip approximately 5/16 in. of insulation (11) from end of wire (8).

(7) Install new cable seal (9) on wire (8).

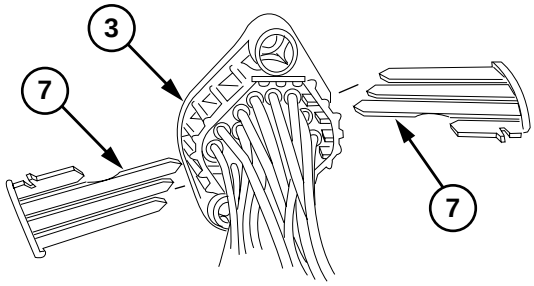
(8) Crimp new electrical contact (10) on wire (8).

(9) Install wire (8) in connector (3) until it locks.



7-94. GENERAL WIRE HARNESS REPAIR (CONT)

(10) Install secondary lock(s) (7) in connector (3).

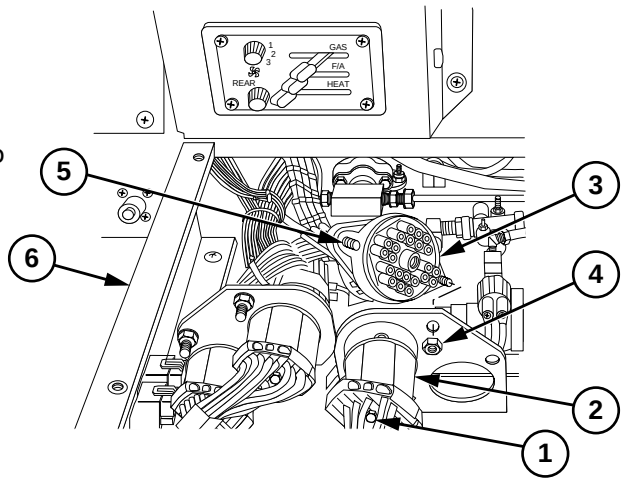


NOTE

Do step (11) only if cab connector was removed.

(11) Install cab connector (3) on cab (6) with two screws (5) and new locknuts (4).

(12) Install harness connector (2) on cab connector (3) with screw (1).



i. Follow-On Maintenance

Connect batteries (para 7-61).

7-95. INTERVEHICULAR CABLE REPAIR

This task covers:
a. Disassembly
b. Cleaning/inspection
c. Assembly

INITIAL SETUP

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Tool Kit, Electrical Repair (Item 53, Appendix F)
Multimeter (Item 20, Appendix F)

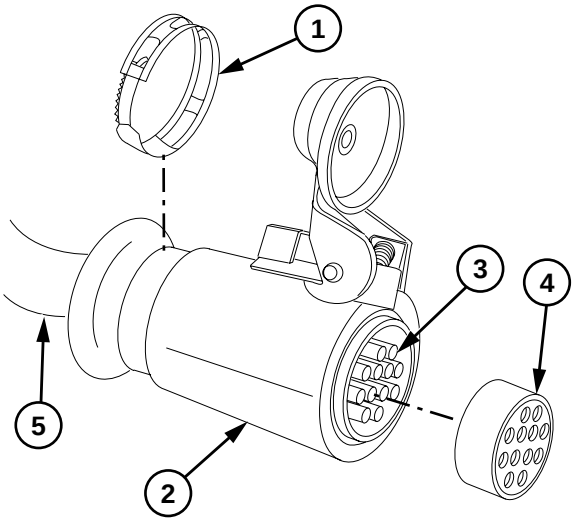
Materials/Parts
Silicone Spray (Item 30, Appendix C)

a. Disassembly

(1) Remove clamp (1) from shell (2).

(2) Push 12 electrical contacts (3) into insert (4) using insertion tool.

(3) Remove insert (4) from shell (2).



(4) Remove shell (2) from cable (5).

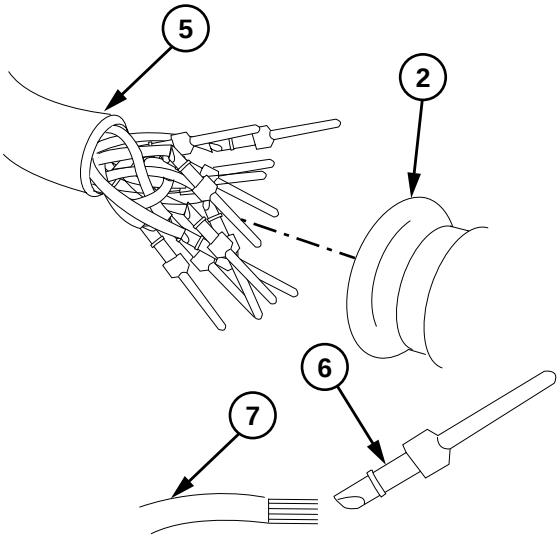
(5) Repeat steps (1) thru (4) for other end of cable.

NOTE

Do steps (6) and (7) only if electrical contact(s) are being replaced.

(6) Cut electrical contact (6) from wire (7). Discard electrical contact.

(7) Remove 1/4 in. (6.3 mm) of insulation from wire (7).



b. Cleaning/Inspection

Check each of the 12 wires for continuity using a multimeter. If any of the individual wires is shorted or open, discard cable assembly.

c. Assembly

NOTE

Do step (1) only if electrical contact(s) are being replaced.

(1) Solder new electrical contact (1) on wire (2).

NOTE

Silicone spray can be applied to cable for easier assembly into shell.

(2) Install shell (3) on cable (4).

CAUTION

A multimeter must be used to verify the proper positioning of the electrical contacts in the insert. Failure to comply may result in improper assembly and damage to equipment.

(3) Place lead of multimeter on one electrical contact (1).

(4) Find the corresponding electrical contact on the other end of the cable using the multimeter.

(5) Insert the correct electrical contact in position ”A” of both inserts (5).

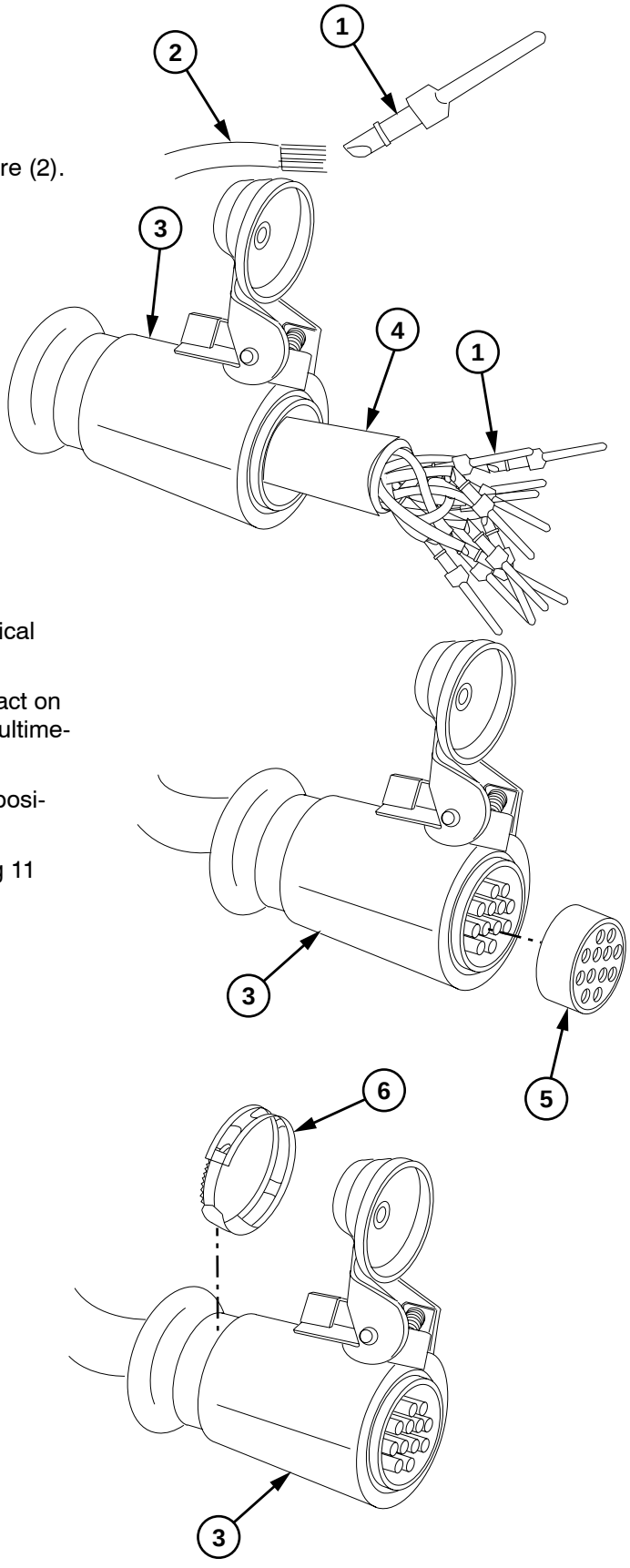
(6) Repeat steps (3) thru (5) for remaining 11 shell positions ”B” thru ”N”.

CAUTION

Insert must be properly positioned in shell for proper light operation. Notch in end of shell must be located between pins/sockets ”A” and ”J”. Failure to comply may result in damage to equipment.

(7) Install insert (5) in shell (3).

(8) Install clamp (6) on shell (3).



7-96. VENTILATOR REPAIR

This task covers:
- Removal
- Disassembly
- Cleaning/inspection
- Assembly
- Installation
- Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Riveter, Blind, Hand (Item 36.1, Appendix F)

Materials/Parts
Adhesive-Sealant, Silicone (Item 3, Appendix C)
Grease, Automotive and Artillery (Item 17, Appendix C)
Tape, Insulation, Electrical (Item 33, Appendix C)

Materials/Parts (cont)
Foam Strip (Figure D-10, Appendix D)
Locknuts (28) (Item 65, Appendix G)
Locknuts (7) (Item 73.2, Appendix G)
Locknuts (2) (Item 73.1, Appendix G)
Lockwasher (Item 93.0.1, Appendix G)
Nut, Push (Item 126.1, Appendix G)
Rivets, Pop (Item 158.1, Appendix G)
Seal Ring (Item 164.0.1, Appendix G)

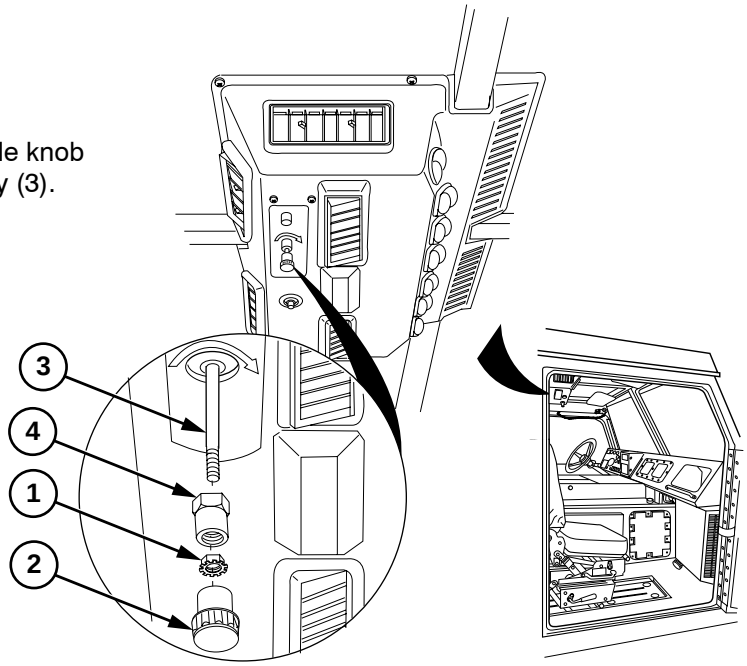
Personnel Required
Two

a. Lower Plenum Removal

(1) Loosen locknut (1) and remove cable knob (2) and locknut from cable assembly (3). Discard locknut.

NOTE
Cable locking nut contains a ferrel insert.

(2) Remove cable locking nut (4) from cable assembly (3).



7-96. VENTILATOR REPAIR (CONT)

CAUTION

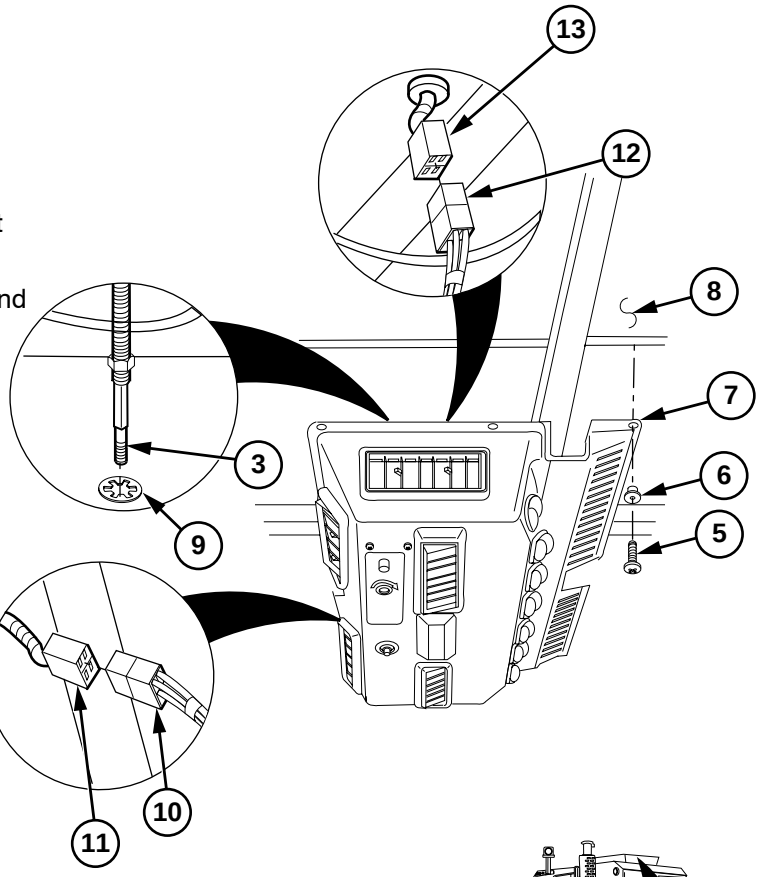
Ventilator wire harness will still be connected. Support plenum chamber during step (3) to prevent damage to wire harness.

(3) Remove 10 screws (5), bushings (6) and plenum chamber (7) from cab roof (8).

(4) Remove lockwasher (9) from cable assembly (3). Discard lockwasher.

(5) Remove electrical connector (10) from cab rear wire harness (11).

(6) Remove electrical connector (12) from motor wire harness (13).



b. Upper Case Removal

WARNING

Use extreme care when working on roof of HET cab. Clean shoes and hands before climbing on vehicle. Never work on roof of cab when snow or ice covered. Failure to comply may result in personnel falling, causing injury or death.

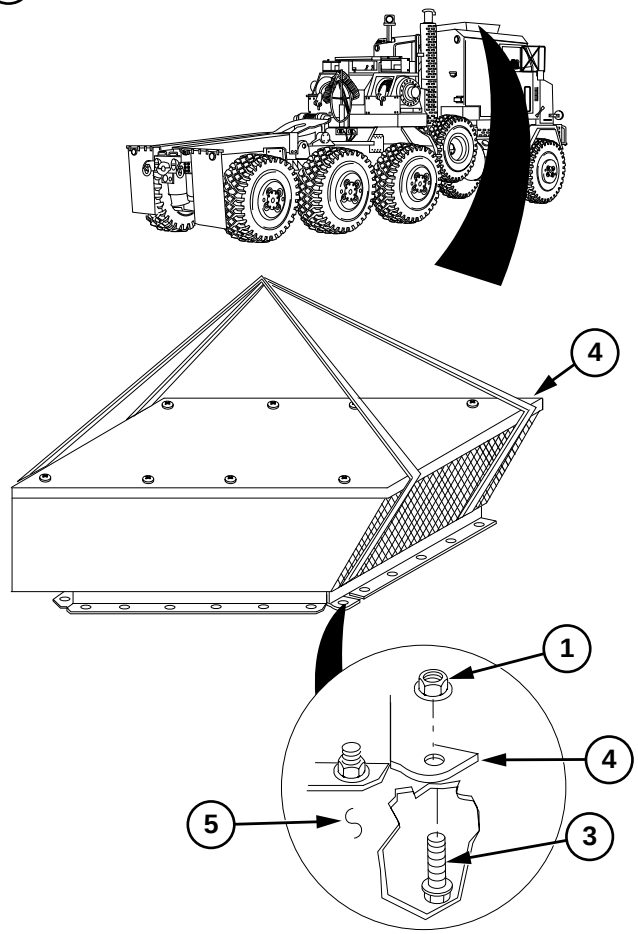
(1) Remove 28 locknuts (1) and screws (3) from upper case (4) with aid of assistant. Discard locknuts.

WARNING

Upper case weighs 75 lbs. (34 kg). Keep out from under upper case when supported by lifting device. Failure to comply may result in injury to personnel.

(2) Attach suitable lifting device to upper case (4).

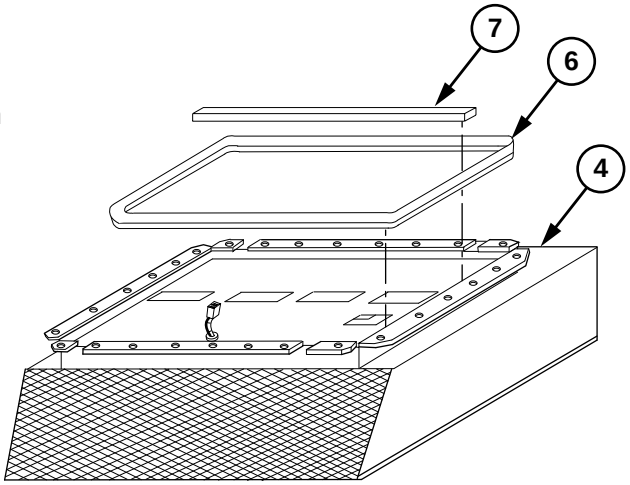
(3) Remove upper case (4) from cab roof (5) using lifting device, with aid of assistant.



(4) Position upper case (4) on suitable work surface, bottom side up, with aid of assistant.

(5) Remove seal ring (6) and foam strip (7) from bottom of upper case (4). Discard seal ring and foam strip.

(6) Place upper case (4) on suitable work surface, top side up, with aid of assistant.



c. Lower Plenum Disassembly

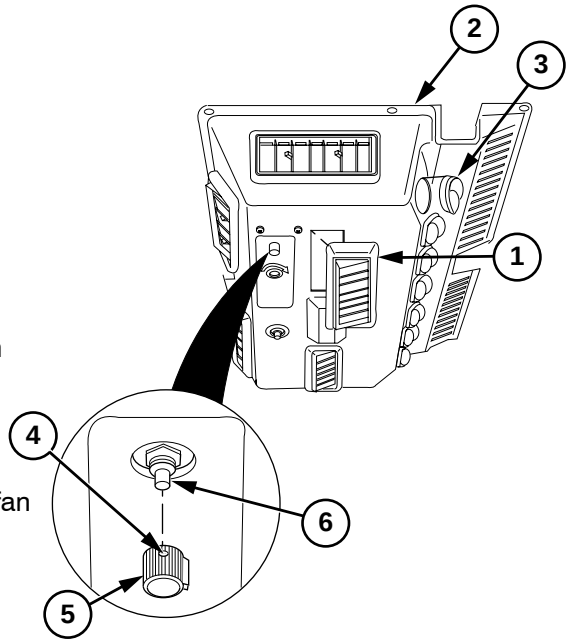
NOTE

Louvers are removed by depressing tab on inside of plenum chamber.

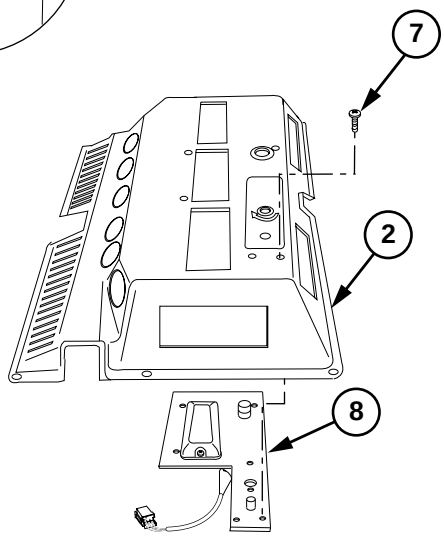
(1) Remove six rectangular louvers (1) from plenum chamber (2).

(2) Remove seven round louvers (3) from plenum chamber (2).

(3) Loosen two set screws (4) and remove fan switch knob (5) from fan switch (6).



(4) Remove seven screws (7) and switch plate (8) from plenum chamber (2).



7-96. VENTILATOR REPAIR (CONT)

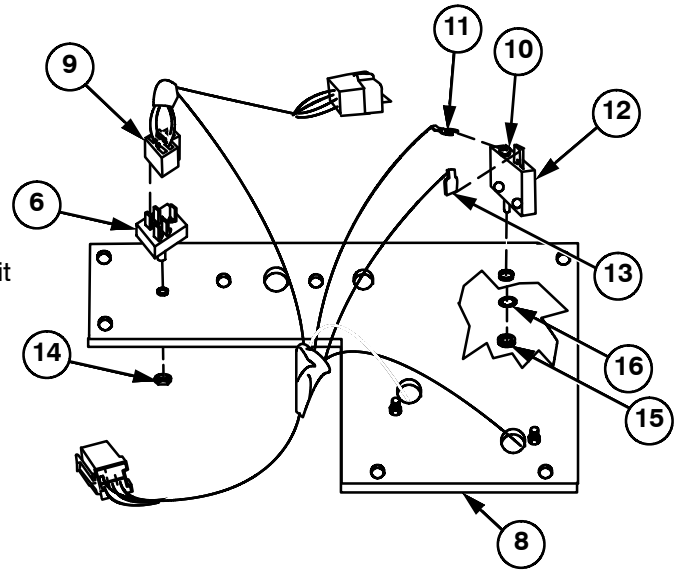
(5) Remove electrical connector (9) from fan switch (6).

(6) Loosen screw (10) and remove wire (11) from circuit breaker (12).

(7) Remove spade connector (13) from circuit breaker (12).

(8) Remove nut (14) and fan switch (6) from switch plate (8).

(9) Remove nut (15), lockwasher (16) and circuit breaker (12) from switch plate (8).



(10) Remove two screws (17) and lens (18) from dome light housing (19).

(11) Remove lamp (20) from two clips (21).

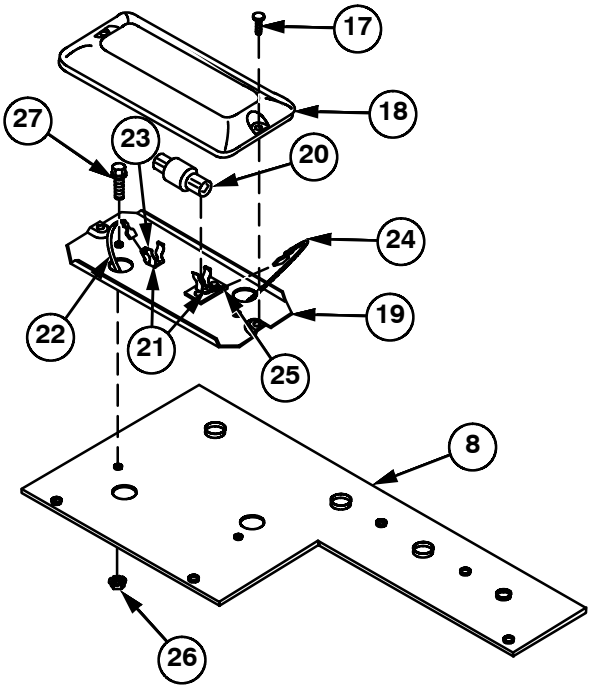
NOTE

Tag and mark wires before removal.

(12) Disconnect wire (22) from positive terminal (23).

(13) Disconnect wire (24) from negative terminal (25).

(14) Remove two locknuts (26), screws (27) and dome light housing (19) from switch plate (8). Discard locknuts.



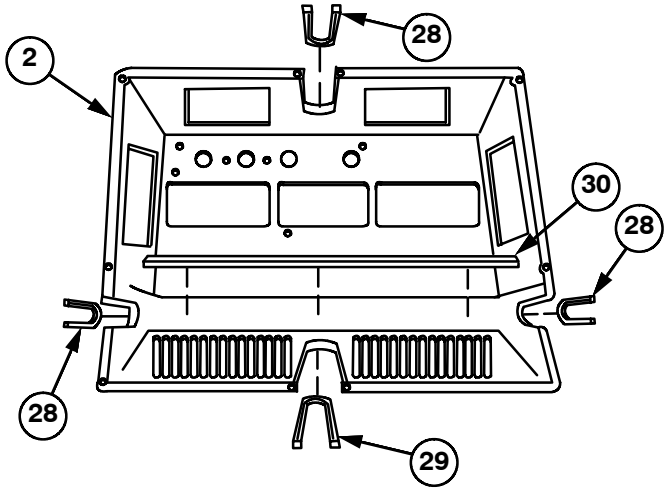
NOTE

Do steps (15) thru (17) only if foam strips fail inspection.

(15) Remove three foam strips (28) from plenum chamber (2).

(16) Remove foam strip (29) from plenum chamber (2).

(17) Remove foam strip (30) from plenum chamber (2).



d. Upper Case Disassembly

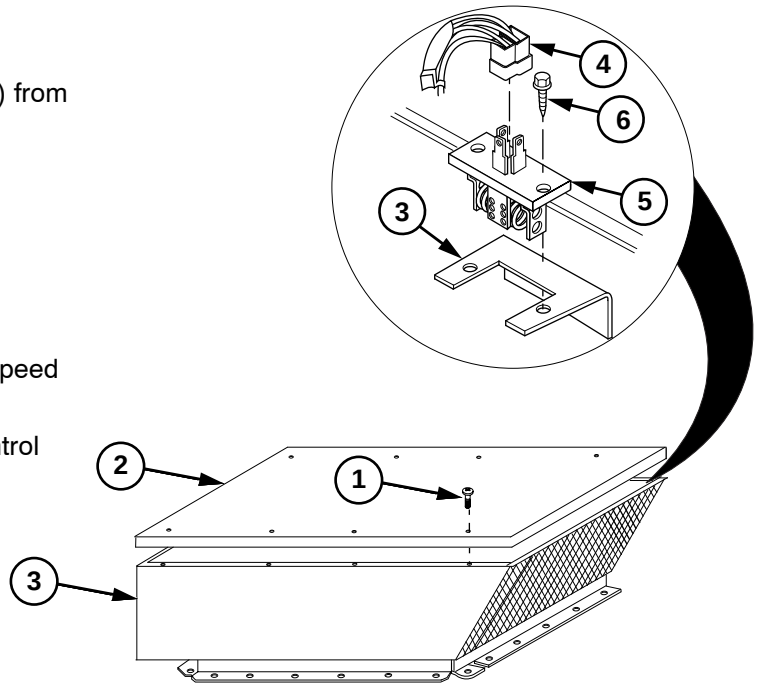
(1) Remove eight screws (1) and cover (2) from upper case (3).

NOTE

There are two blower motor assemblies contained in the ventilator. They are both replaced the same way.

(2) Remove electrical connector (4) from speed control resistor (5).

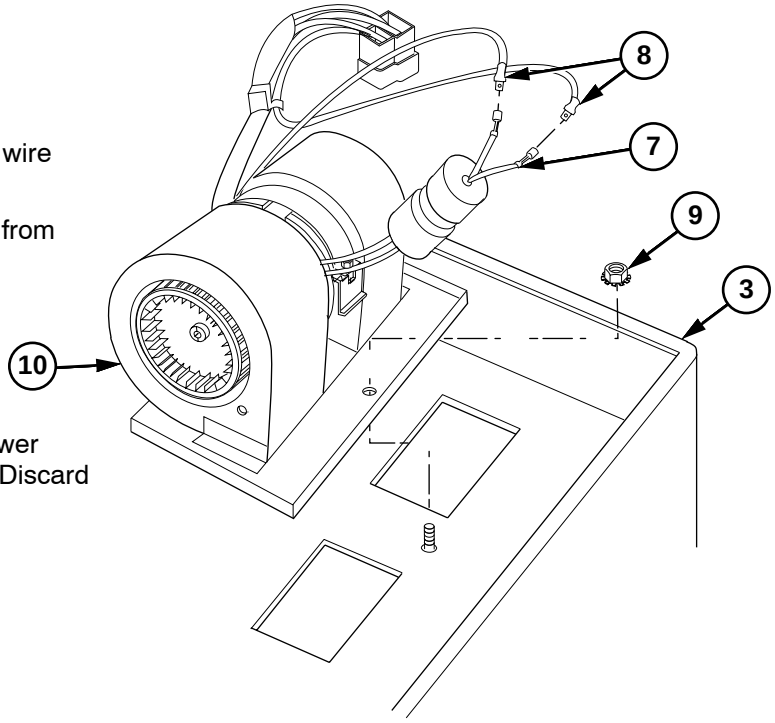
(3) Remove two screws (6) and speed control resistor (5) from upper case (3).



(4) Remove electrical tape from motor wire harness (7).

(5) Remove two spade connectors (8) from motor wire harness (7).

(6) Remove three locknuts (9) and blower housing (10) from upper case (3). Discard locknuts.



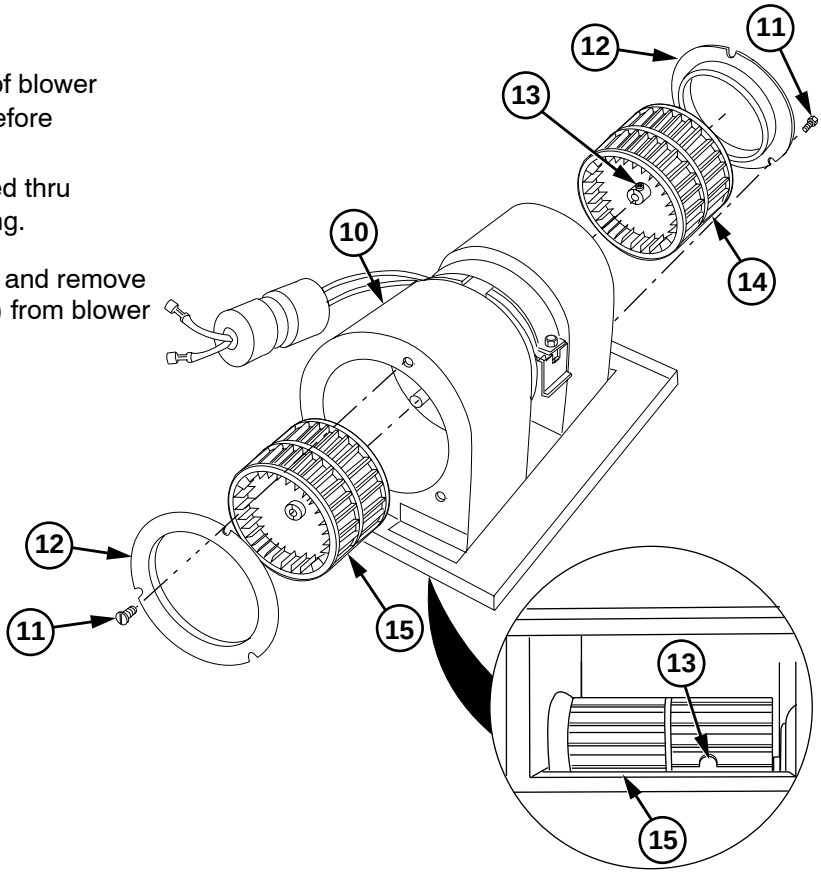
7-96. VENTILATOR REPAIR (CONT)

(7) Remove six screws (11) and two foils (12) from blower housing (10).

NOTE

- Tag and mark position of blower wheels and housings before removal.
- Set screws are accessed thru bottom of blower housing.

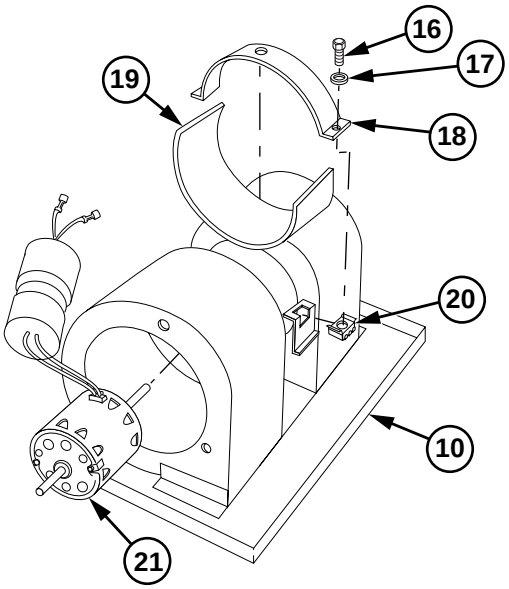
(8) Loosen two set screws (13) and remove blower wheels (14) and (15) from blower housing (10).



(9) Remove screw (16), washer (17), motor strap (18) and motor insulator (19) from blower housing (10).

(10) Remove cage nut (20) from blower housing (10).

(11) Remove motor assembly (21) from blower housing (10).



(12) Remove push nut (22) from recirculating door lever (23). Discard push nut.

(13) Remove screw (24) and cable clamp (25) from upper case (3).

(14) Remove cable assembly (26) from upper case (3).

NOTE

Do steps (15) thru (17) only if foam strips fail inspection.

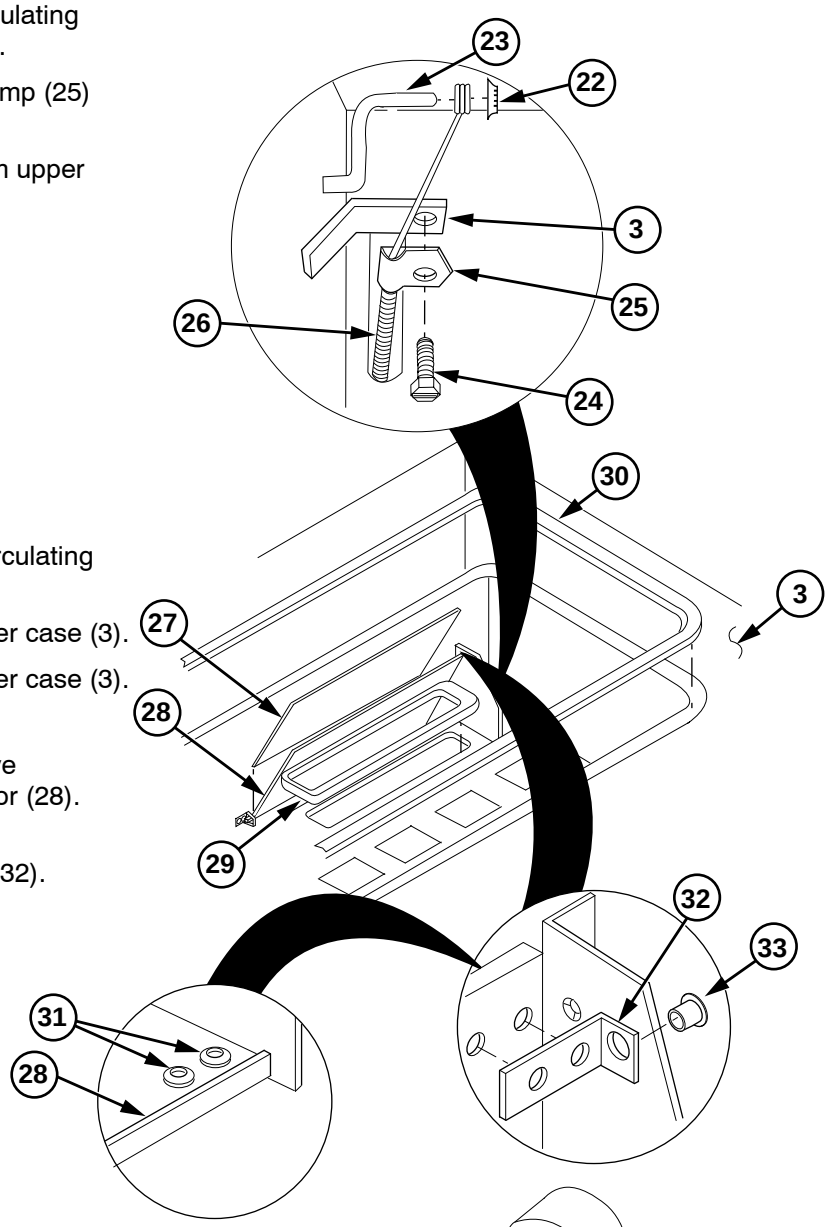
(15) Remove foam strip (27) from recirculating door (28).

(16) Remove foam strip (29) from upper case (3).

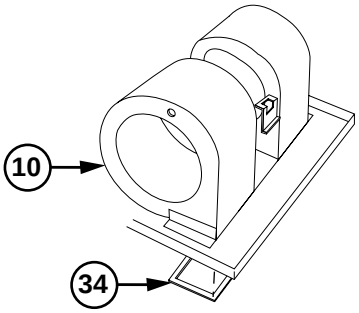
(17) Remove foam strip (30) from upper case (3).

(18) Drill out two rivets (31) and remove bracket (32) from recirculating door (28). Discard rivets.

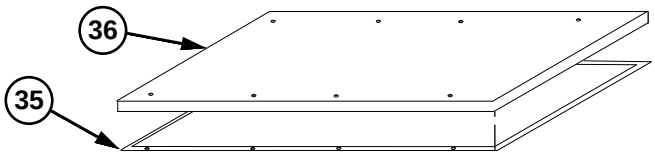
(19) Remove bullet (33) from bracket (32).



(20) Remove foam strip (34) from blower housing (10).



(21) Remove foam strip (35) from cover (36).



7-96. VENTILATOR REPAIR (CONT)

e. Cleaning/Inspection

(1) Clean silicone sealant and foam strip material from cab roof and upper case.

(2) Clean interior and exterior of upper case. Use any process or combination of processes which will accomplish thorough cleaning without damage.

(3) Remove paint scale and rust.

(4) Check upper case for dents, cracks, defective welds and other defects.

(5) Inspect decals for cracks, tears, illegibility and loss of adhesion. Replace any damaged decals.

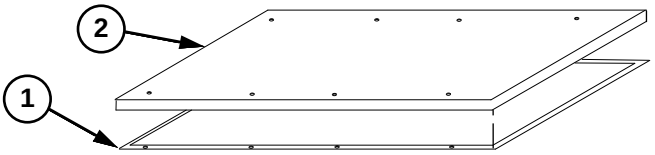
(6) Inspect foam strips for compression, wear and loss of adhesion. Replace damaged foam strips.

f. Upper Case Assembly

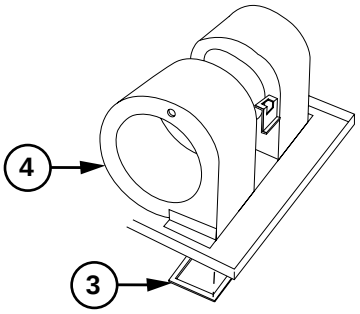
NOTE

Do steps (1) and (2) only if foam strips were removed.

(1) Install foam strip (1) on cover (2).



(2) Install foam strip (3) on blower housing (4).



(3) Install bullet (5) in bracket (6).

(4) Install bracket (6) on recirculating door (7) with two new rivets (8).

(5) Apply a thin coat of grease to upper case (9) where bullet (5) contacts.

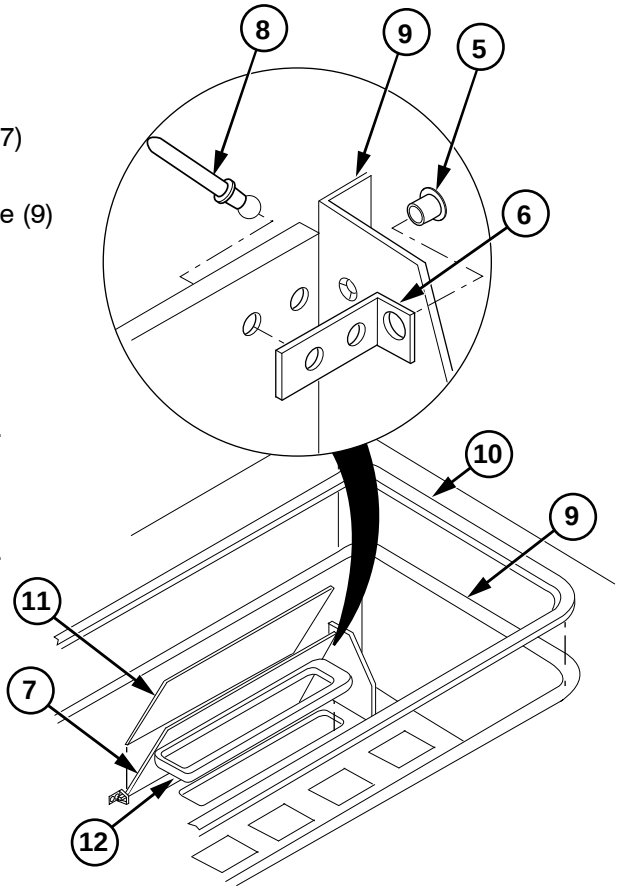
NOTE

Do steps (6) thru (8) only if foam strips were removed.

(6) Install foam strip (10) on upper case (9).

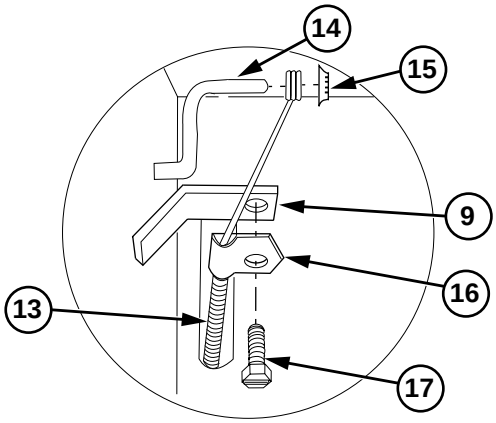
(7) Install foam strip (11) on recirculating door (7).

(8) Install foam strip (12) on upper case (9).



(9) Install cable assembly (13) on recirculating door lever (14) with new push nut (15).

(10) Install cable assembly (13) on upper case (9) with cable clamp (16) and screw (17).

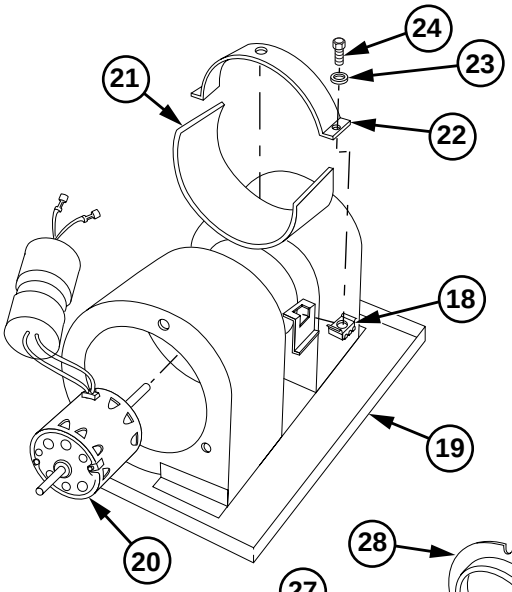


(11) Install cage nut (18) on blower housing (19).

NOTE

Motor assembly must be installed with wiring harness positioned on right side, with cage nut slot toward front. Failure to comply will result in improper air flow thru ventilator.

(12) Install motor assembly (20) on blower housing (19) with motor insulator (21), motor strap (22), washer (23), and screw (24).



CAUTION

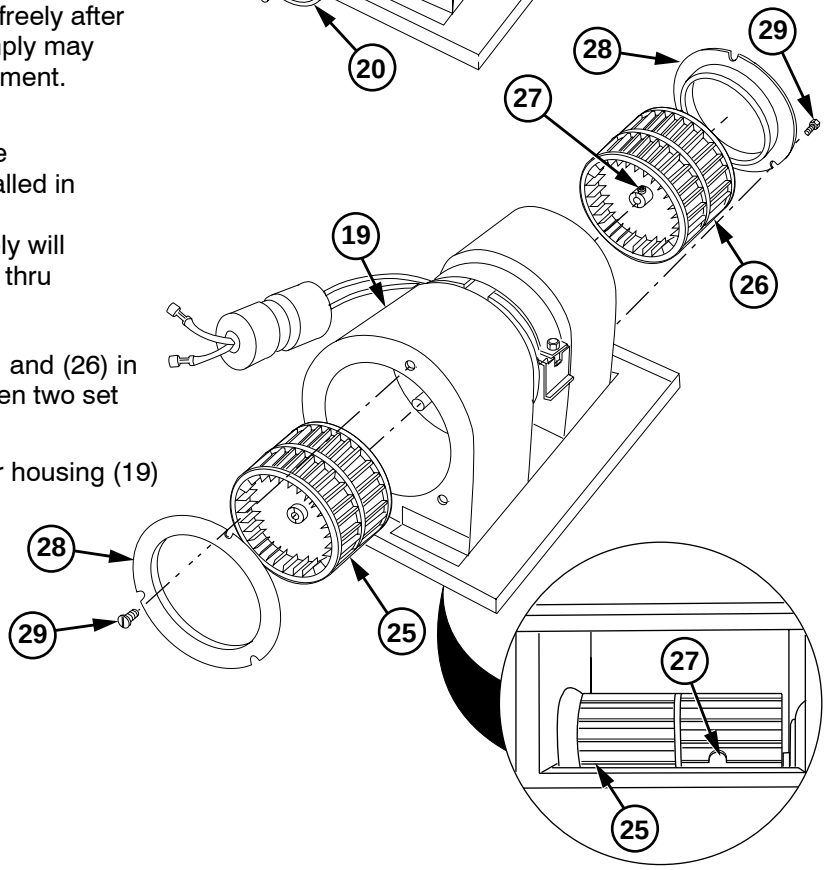
Blower wheels must turn freely after assembly. Failure to comply may result in damage to equipment.

NOTE

Blower wheels are not the same. They must be installed in locations marked during removal. Failure to comply will result in improper air flow thru ventilator.

(13) Install two blower wheels (25) and (26) in blower housing (19) and tighten two set screws (27).

(14) Install two foils (28) on blower housing (19) with six screws (29).

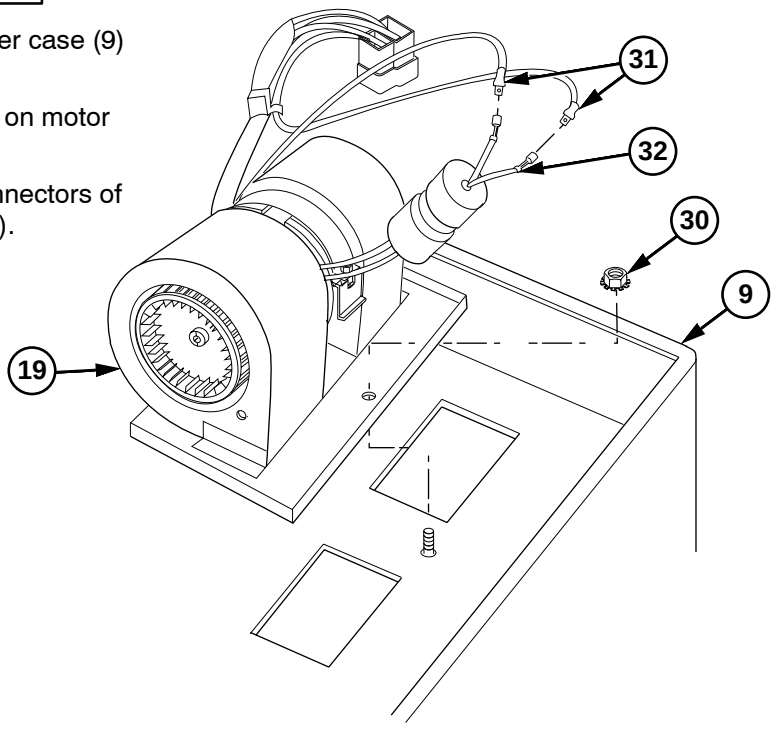


7-96. VENTILATOR REPAIR (CONT)

(15) Install blower housing (19) in upper case (9) with three new locknuts (30).

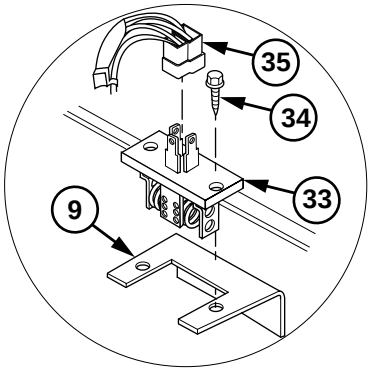
(16) Install two spade connectors (31) on motor assembly wire harness (32).

(17) Apply electrical tape to spade connectors of motor assembly wire harness (32).



(18) Install speed control resistor (33) in upper case (9) with two screws (34).

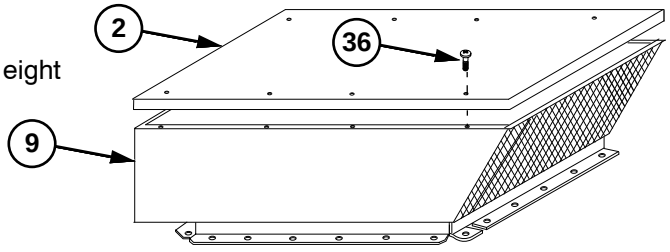
(19) Install electrical connector (35) on speed control resistor (33).



CAUTION

When installing cover, front grill must fit inside of lip on cover. Failure to comply may result in damage to grille.

(20) Install cover (2) on upper case (9) with eight screws (36).



g. Lower Plenum Assembly

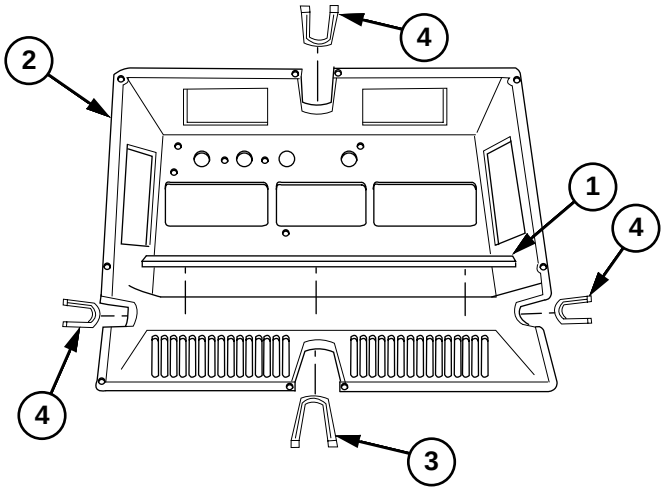
NOTE

Do steps (1) thru (3) only if foam strips were removed.

(1) Install foam strip (1) on plenum camber (2).

(2) Install foam strip (3) on plenum camber (2).

(3) Install three foam strips (4) on plenum chamber (2).



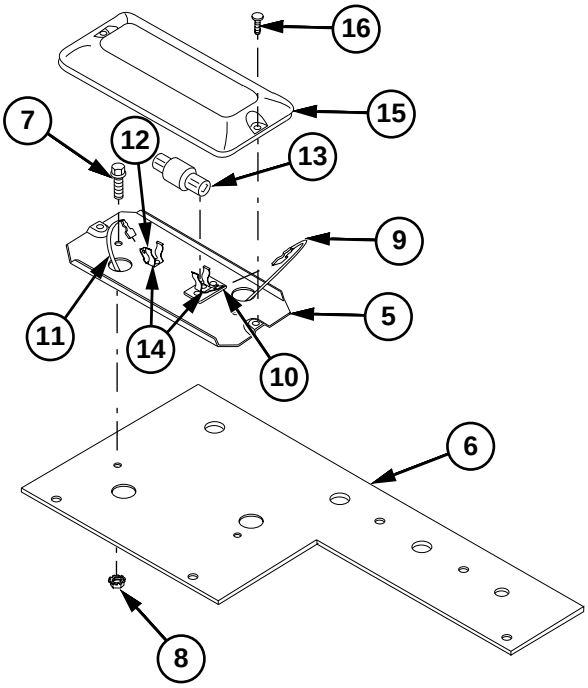
(4) Install dome light housing (5) on switch plate (6) with two screws (7) and new locknuts (8).

(5) Install wire (9) on negative terminal (10).

(6) Install wire (11) on positive terminal (12).

(7) Install lamp (13) in two clips (14).

(8) Install lens (15) on dome light housing (5) with two screws (16).



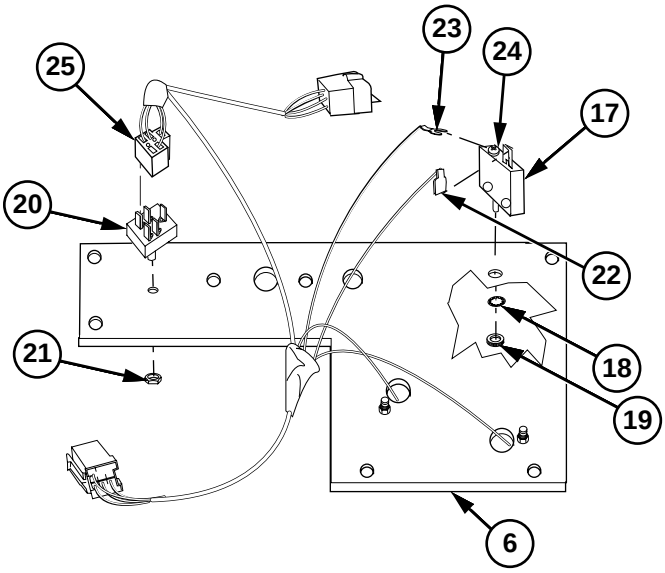
(9) Install circuit breaker (17) on switch plate (6) with lockwasher (18) and nut (19).

(10) Install fan switch (20) on switch plate (6) with nut (21).

(11) Install spade terminal (22) on circuit breaker (17).

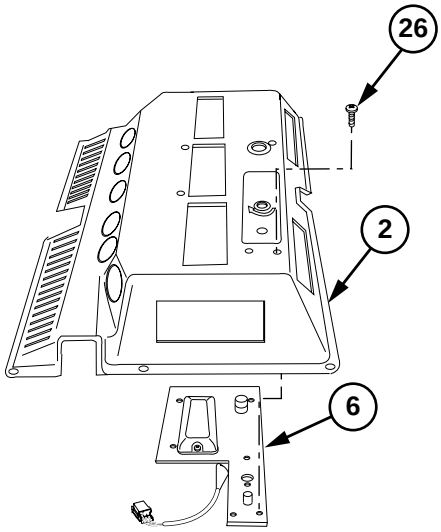
(12) Install wire (23) on circuit breaker (17) with screw (24).

(13) Install electrical connector (25) on fan switch (20).



7-96. VENTILATOR REPAIR (CONT)

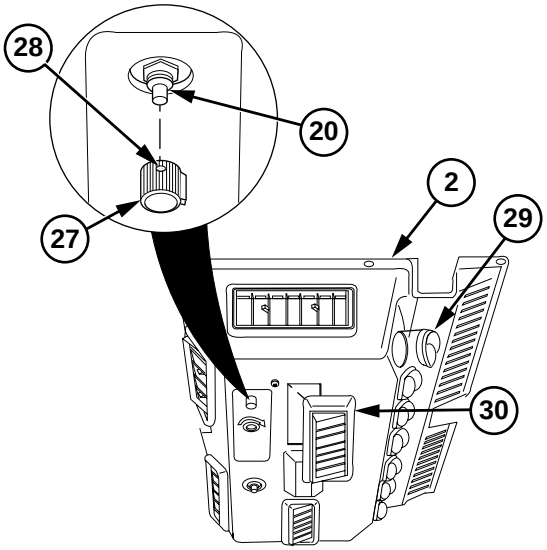
(14) Install switch plate (6) on plenum chamber (2) with seven screws (26).



(15) Install fan switch knob (27) on fan switch (20) and tighten two set screws (28).

(16) Install seven round louvers (29) on plenum chamber (2).

(17) Install six rectangular louvers (30) on plenum chamber (2).

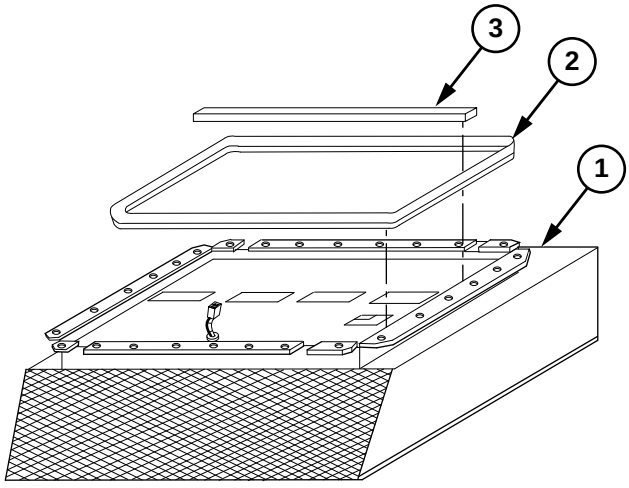


h. Upper Case Installation

(1) Position upper case (1) on suitable work surface, bottom side up, with aid of assistant.

(2) Install new seal ring (2) and foam strip (3) on bottom of upper case (1).

(3) Position upper case (1) top side up, with aid of assistant.



WARNING

Upper case weighs 75 lbs. (34 kg). Keep out from under upper case when supported by lifting device. Failure to comply may result in injury to personnel.

(4) Attach suitable lifting device to upper case (1).

WARNING

On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.

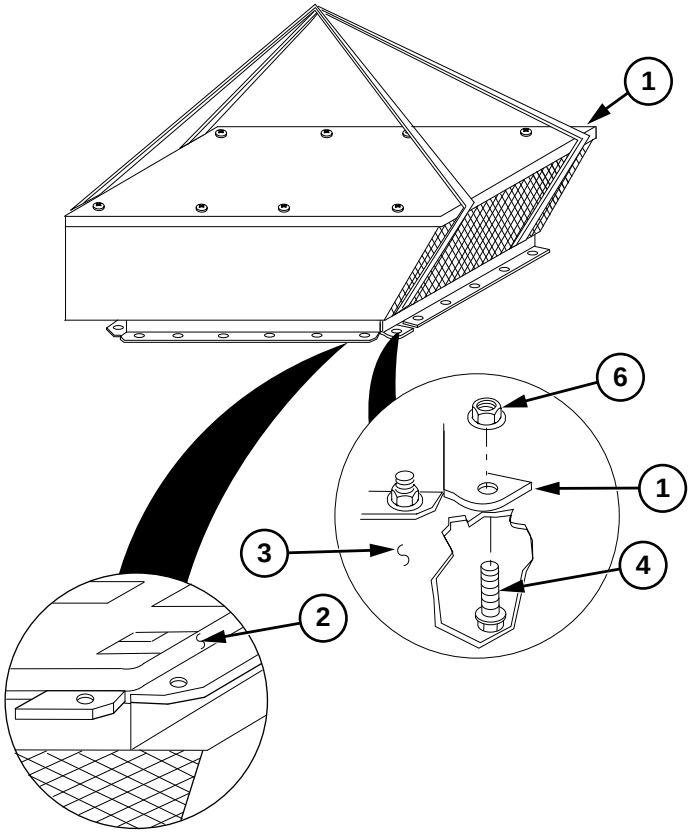
(5) Apply a continuous bead of silicone adhesive-sealant to seal ring (2).

WARNING

Use extreme care when working on roof of HET cab. Clean shoes and hands before climbing on vehicle. Never work on roof of cab when snow or ice covered. Failure to comply may result in personnel falling, causing injury or death.

NOTE

For proper routing of recirculate/fresh air control cable, position cable in left front hole of cab roof when installing upper case. Failure to comply may pinch cable under upper case seals, making cable connection difficult.



(6) Position upper case (1) on cab roof (3) using lifting device, with aid of assistant.

NOTE

Apply thin coat of silicone adhesive-sealant to threads of screws before tightening locknuts.

(7) Install upper case (1) on cab roof (3) with 28 screws (4) and new locknuts (6) with aid of assistant.

7-96. VENTILATOR REPAIR (CONT)

i. Lower Plenum Installation

(1) Install electrical connector (1) on motor wire harness (2).

(2) Install electrical connector (3) on cab rear wire harness (4).

(3) Install new lockwasher (5) on cable assembly (6).

(4) Position cable assembly (6) thru hole in switch plate (7).

NOTE

Ferrel insert must remain in cable locking nut during installation. Cable core can be rotated clockwise to keep insert in locking nut.

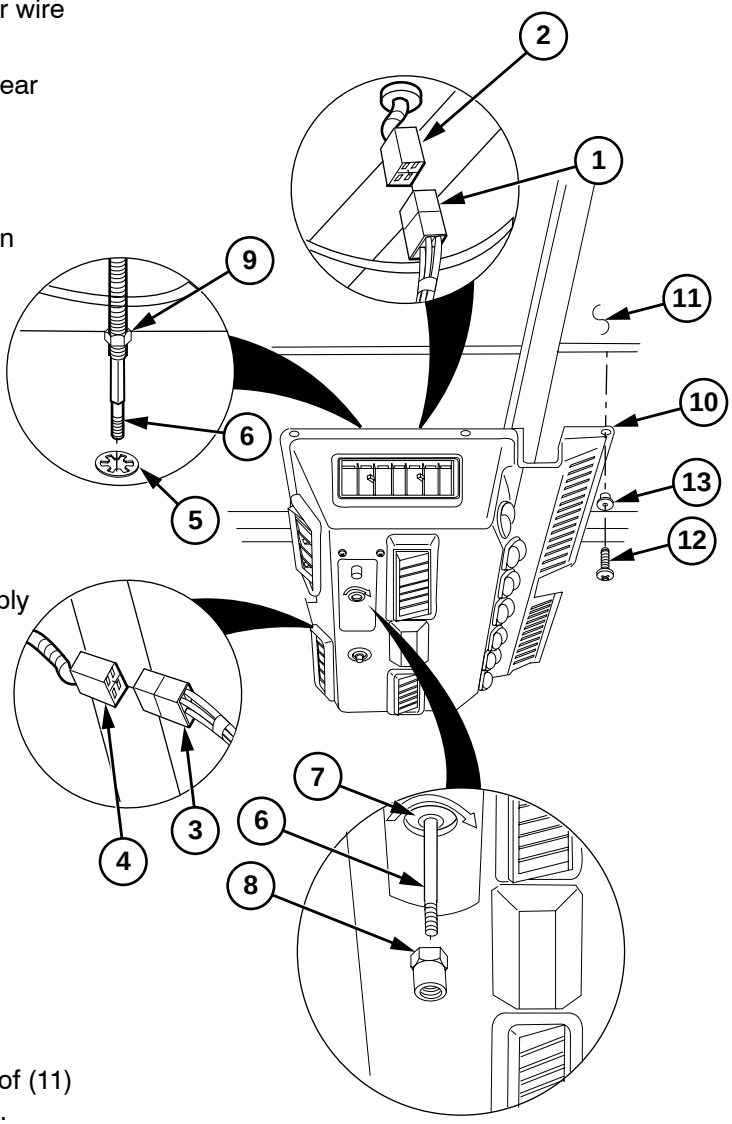
(5) Install cable locking nut (8) on cable assembly (6).

(6) Tighten nut (9) to secure cable assembly (6) on switch plate (7).

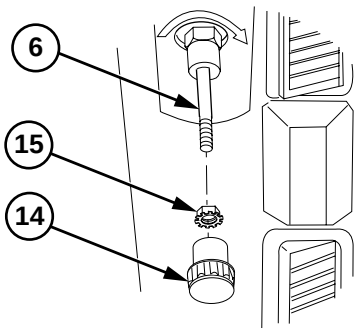
CAUTION

- Make sure that wire harness does not interfere with any of the moving parts inside the ventilator. Failure to comply may result in damage to equipment.
- Bushings must be used when installing plenum chamber to cab roof. Failure to comply may crack plenum chamber.

(7) Install plenum chamber (10) on cab roof (11) with 10 screws (12) and bushings (13).



(8) Install cable knob (14) on cable assembly (6) with new locknut (15).



j. Follow-On Maintenance.

Connect Batteries (para 7-61).

CHAPTER 8
TRANSMISSION MAINTENANCE

Contents

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Shift Cable Adjustment/Replacement	8-5	8-10
Transmission Shift Control Repair	8-6	8-14
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Section I. INTRODUCTION

8-1. INTRODUCTION

This chapter contains instructions for replacement of transmission components at the Unit maintenance level. Some other parts must be removed before transmission parts can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

8-2. EXTERNAL TRANSMISSION FILTER REPLACEMENT

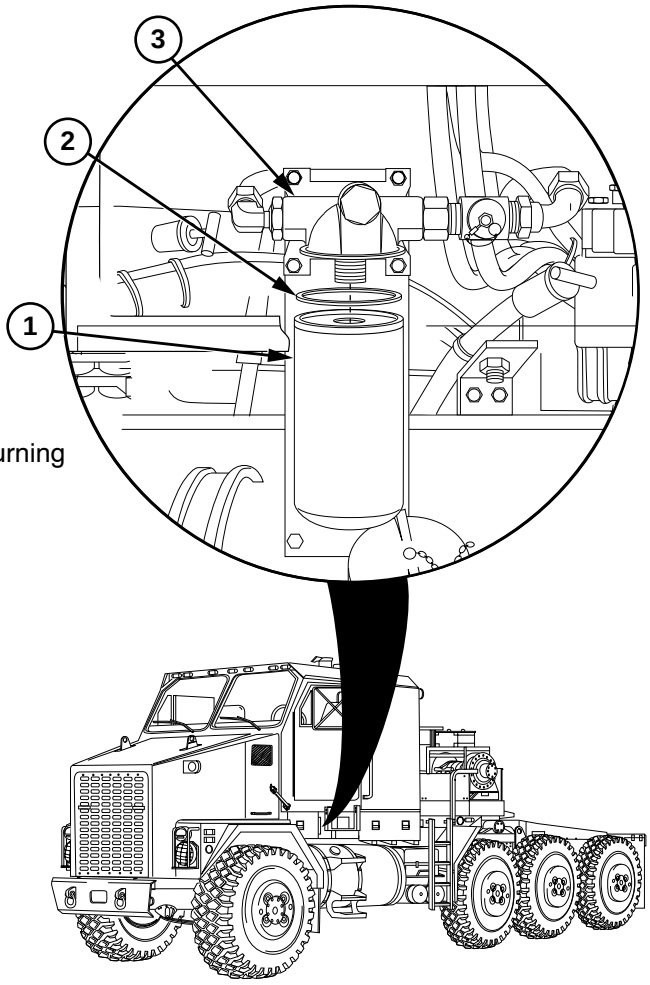
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Oil, Lubricating (Item 24, Appendix C)
Rags (Item 28, Appendix C)
Filter (Item 27, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)



a. Removal

(1) Place drain pan under filter (1).

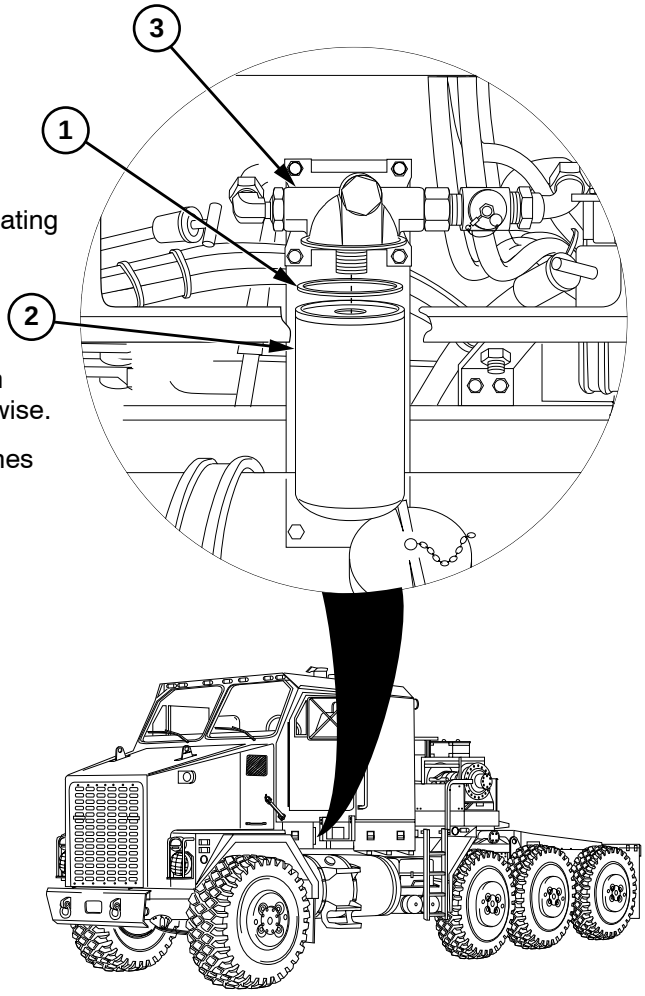
NOTE
Gasket may stay on adapter.

(2) Remove filter (1) and gasket (2) by turning counterclockwise.

(3) Discard filter (1) and gasket (2).

(4) Clean adapter (3) with lint-free cloth.

b. Installation



(1) Coat new gasket (1) with clean lubricating oil.

(2) Fill new filter (2) with lubricating oil two-thirds full.

(3) Install new filter (2) and gasket (1) on adapter (3) by hand by turning clockwise.

(4) Tighten filter (2) until gasket (1) touches adapter (3), then tighten additional two-thirds turn.

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check for leaks.

(3) Check transmission fluid level (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

(5) Remove wheel chocks.

8-3. EXTERNAL TRANSMISSION FILTER ADAPTER/BRACKET REPLACEMENT

This task covers:
a. Removal
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
External transmission filter removed (para 8-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Compressor Unit, Air (Item 3, Appendix F)
Goggles, Industrial (Item 14, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)
Wrench, Combination, 1-1/2 In. (Item 63, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Cleaning Compound, Solvent (Item 31, Appendix C)
Locknuts (8) (Item 65, Appendix G)
Packings, Preformed (2) (Item 141, Appendix G)

Personnel Required
Two

a. Removal

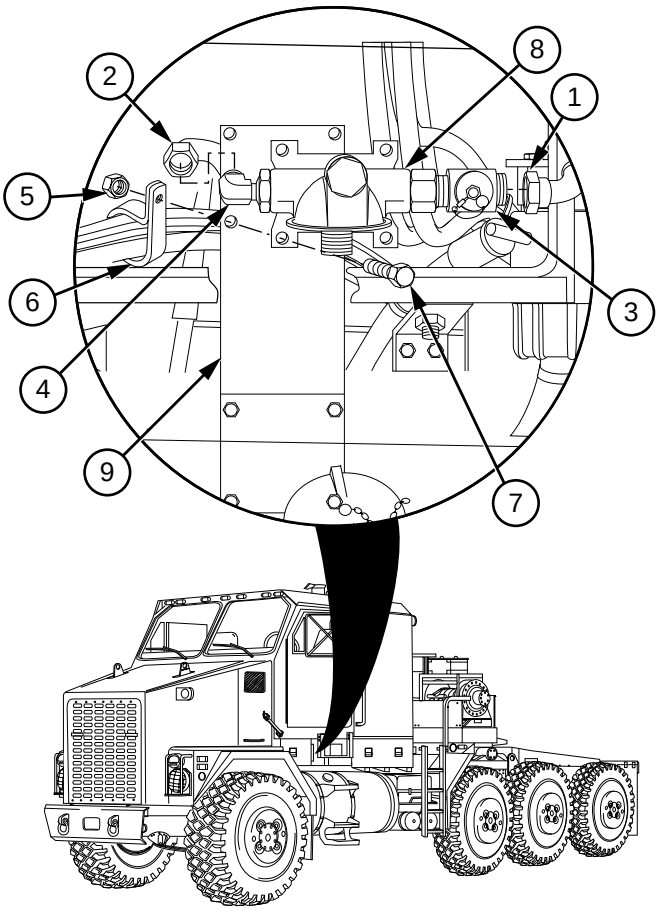
(1) Place drain pan under hoses (1 and 2).

(2) Remove hose no. 2310 (1) from tee fitting (3).

(3) Remove hose no. 2311 (2) from elbow (4).

(4) Remove four locknuts (5), clip (6), and four screws (7) from adapter (8). Discard locknuts.

(5) Remove adapter (8) from filter adapter bracket (9) and place on clean work surface.



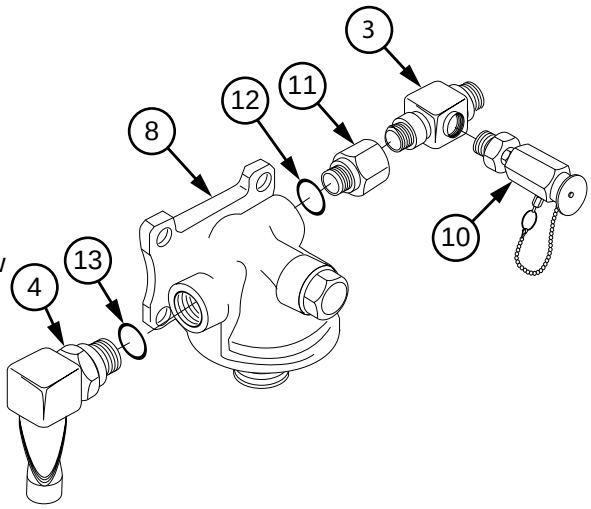
(6) Remove sampling valve (10) from tee fitting (3).

(7) Remove tee fitting (3) from adapter (11).

(8) Remove adapter (11) and preformed packing (12) from adapter (8). Discard preformed packing.

(9) Remove elbow (4) from adapter (8).

(10) Remove preformed packing (13) from elbow (4). Discard preformed packing.

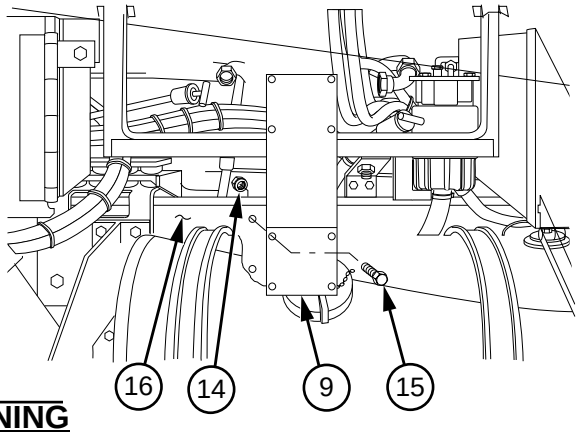


NOTE

Steps (11) and (12) are used to remove bracket.

(11) Remove four locknuts (14) and screws (15) from bracket (9) with aid of assistant. Discard locknuts.

(12) Remove bracket (9) from left frame rail (16).



b. Cleaning/Inspection

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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

•The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).
•Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.
•Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.
•Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.
•Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.

(1) Clean metal parts with solvent cleaning compound.

WARNING

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

(2) Dry metal parts with compressed air.

(3) Inspect parts for damage. Replace damaged parts.

8-3. EXTERNAL TRANSMISSION FILTER ADAPTER/BRACKET REPLACEMENT (CONT)

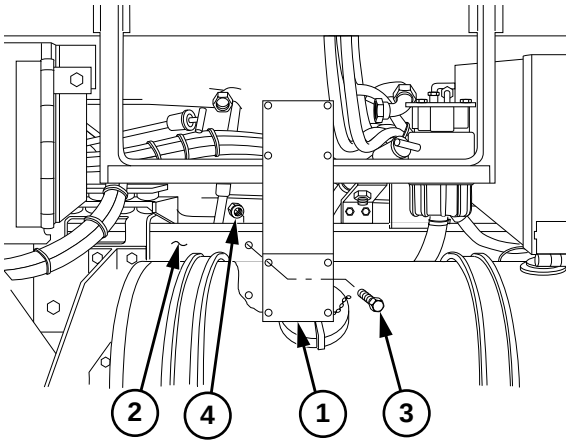
c. Installation

NOTE

- Do steps (1) and (2) only if bracket was removed.

(1) Position filter adapter bracket (1) on left frame rail (2).

(2) Install bracket (1) with four screws (3) and new locknuts (4) with aid of assistant. Torque to 30 lb-ft (41 N·m).



(3) Install new preformed packing (5) on elbow (6).

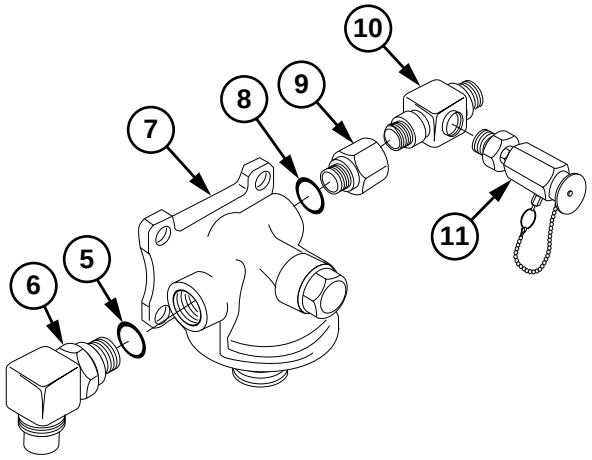
(4) Install elbow (6) in adapter (7). Do not tighten.

(5) Install new preformed packing (8) on adapter (9).

(6) Install adapter (9) on adapter (7).

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



(7) Coat threads of tee fitting (10) and sampling valve (11) with pipe thread sealing compound.

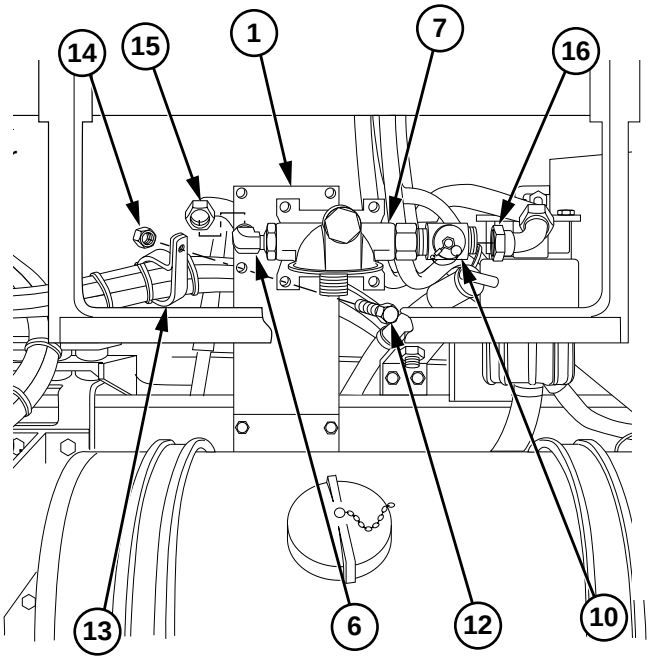
(8) Install tee fitting (10) in adapter (9).

(9) Install sampling valve (11) in tee fitting (10).

(10) Install adapter (7) on filter adapter (1) with four screws (12), clip (13), new locknuts (14). Torque to 30 lb (41 N·m).

(11) Install hose no. 2311 (15) on elbow Tighten elbow.

(12) Install hose no. 2310 (16) on tee fit



d. Follow-On Maintenance

Install external transmission filter (para 8-2).

8-4. TRANSMISSION BREATHER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Lower engine access panel removed (para 16-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

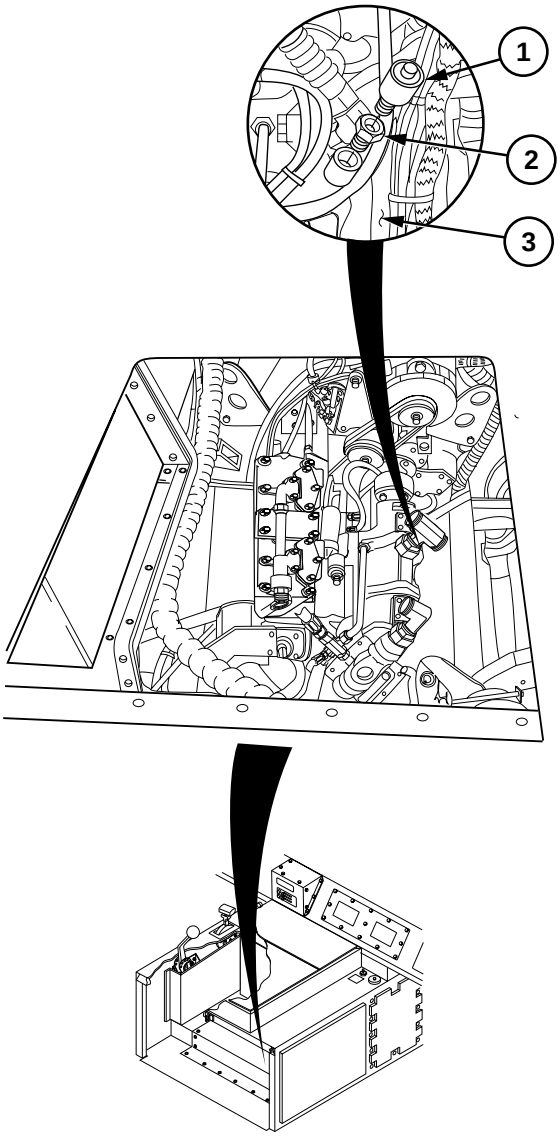
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)

CAUTION
Use wrench to replace breather. Pliers or pipe wrench may crush stem resulting in metal chips and transmission failure.

a. Removal

(1) Remove breather (1) from reducer (2).

(2) Remove reducer (2) from transmission (3).



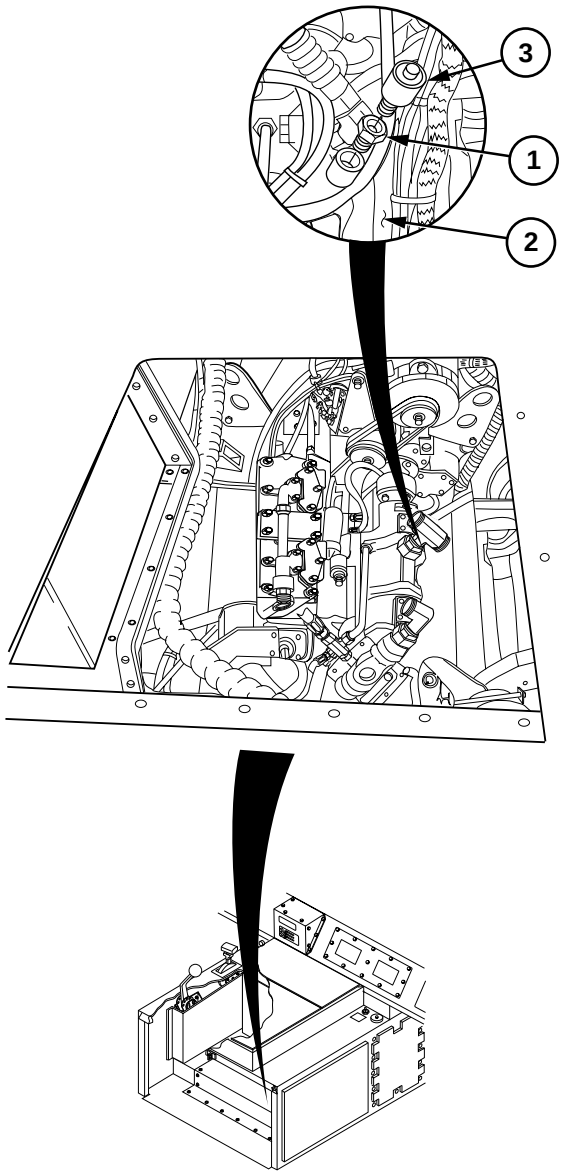
b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of reducer (1) with pipe thread sealing compound. Install reducer (1) on transmission (2).

(2) Coat threads of breather (3) with pipe thread sealing compound. Install breather (3) on reducer (1).



c. Follow-On Maintenance

Install lower engine access panel (para 16-2).

8-5. SHIFT CABLE ADJUSTMENT/REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Adjustment
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Shifter guard removed (para 16-2).
Lower engine access panel removed (para 16-2).

Materials/Parts
Lockwashers (2) (Item 101, Appendix G)
Lockwashers (2) (Item 112, Appendix G)
Pin, Cotter (Item 146, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Personnel Required
Two

a. Removal

(1) Remove cotter pin (1) from clevis pin (2). Discard cotter pin.

(2) Loosen jamnut (3) on yoke (4).

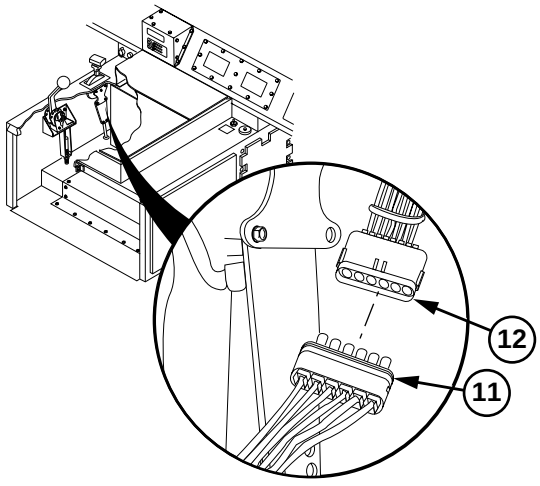
(3) Remove clevis pin (2) from yoke (4).

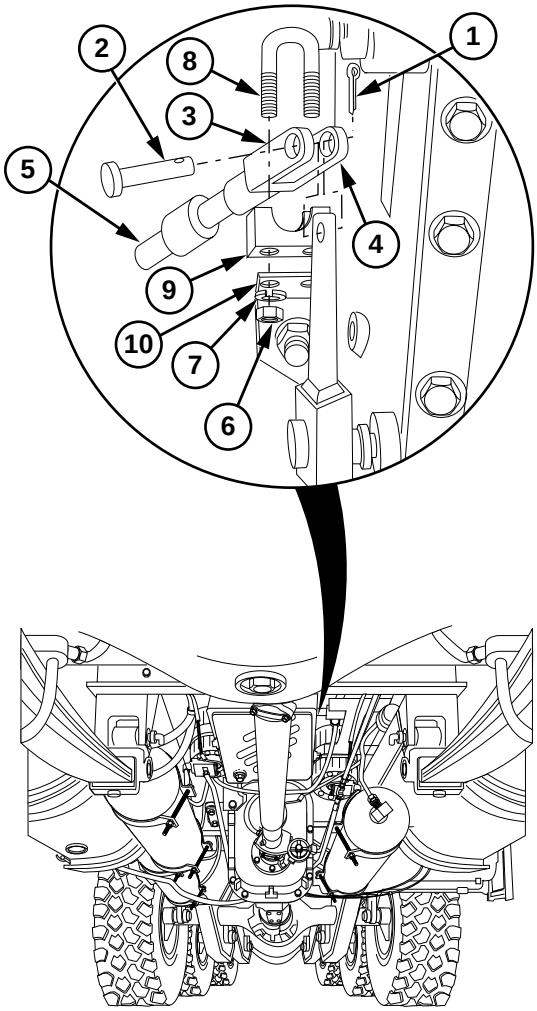
(4) Unscrew yoke (4) from shift cable (5).

(5) Remove two nuts (6) and lockwashers (7) from U-bolt (8). Discard lockwashers.

(6) Remove U-bolt (8) and bracket (9) from bracket (10).

(7) Disconnect 6-pin plug (11) from electrical receptacle (12).





(8) Remove four screws (13) from transmission range selector (14).

(9) Remove transmission range selector (14) from console (15).

(10) Loosen jamnut (16) on shift cable (7).

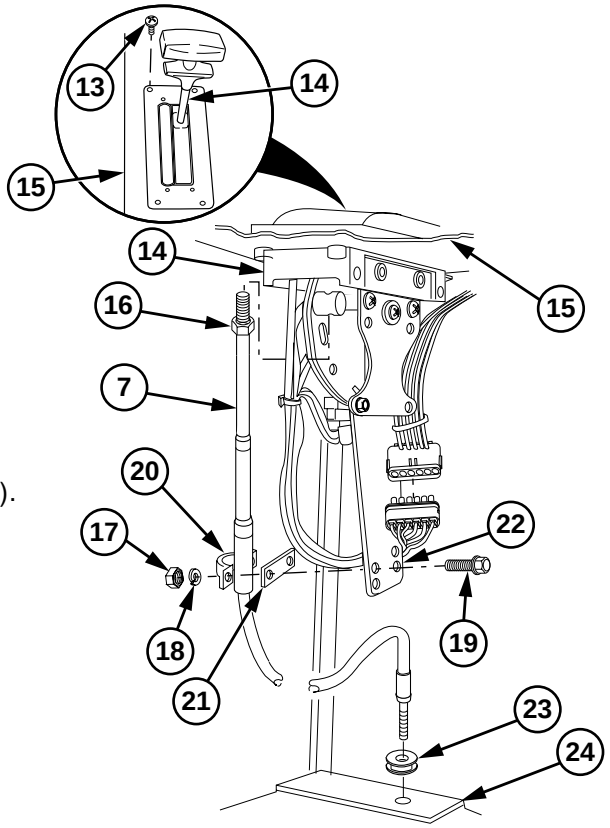
(11) Remove two nuts (17), lockwashers (18), screws (19), bracket (20), and plate (21) from shift plate (22). Discard lockwashers.

(12) Unscrew shift cable (7) from transmission range selector (14).

(13) Push grommet (23) down through cab floor (24).

(14) Remove grommet (23) from shift cable (7).

(15) Pull shift cable (7) up through cab floor (24).



b. Installation

NOTE

Grommet should slide freely on plastic cable casing.

(1) Install grommet (1) on shift cable (2).

NOTE

Shift cable must be routed to the inside of wire harness.

(2) Route shift cable (2) through cab floor (3) to transmission range selector (4) with aid of assistant.

NOTE

Install cable until threads are visible through pivot.

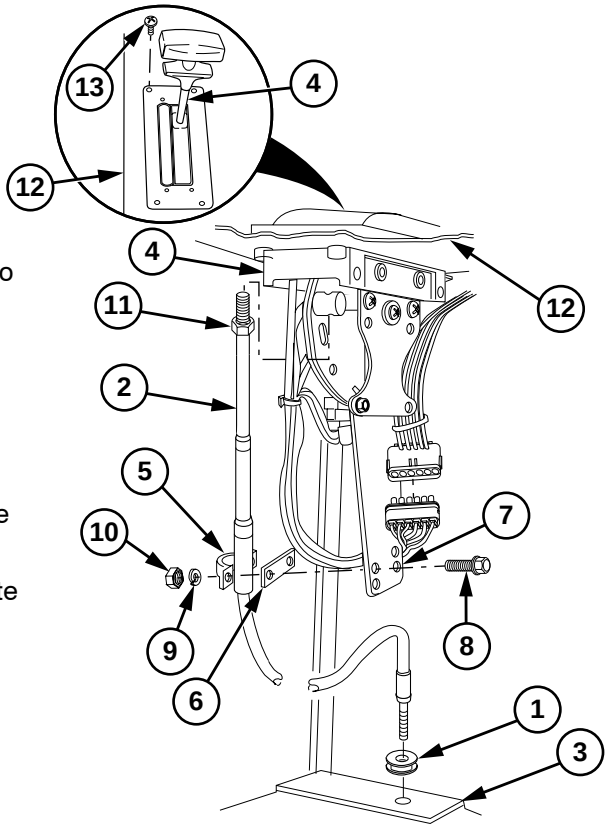
(3) Screw shift cable (2) on transmission range selector (4).

(4) Install bracket (5) and plate (6) on shift plate (7) with two screws (8), new lockwashers (9), and nuts (10).

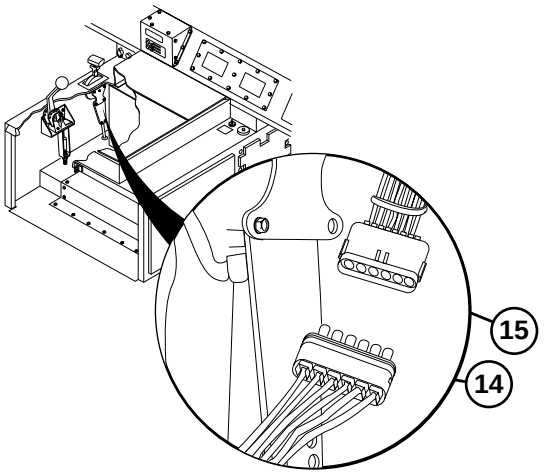
(5) Tighten jamnut (11) on shift cable (2).

(6) Install transmission range selector (4) on console (12) with four screws (13).

(7) Seat grommet (1) in cab floor (3).



8-5. SHIFT CABLE ADJUSTMENT/REPLACEMENT (CONT)



(8) Connect 6-pin plug (14) to electrical receptacle (15).

CAUTION

U-bolt must be located in notch on cable. Failure to comply may result in damage to equipment.

(9) Position U-bolt (16) and bracket (17) around shift cable (2).

(10) Install shift cable (2) on bracket (18) with bracket (17), U-bolt (16), two new lockwashers (19), and nuts (20).

(11) Screw yoke (21) on shift cable (2).

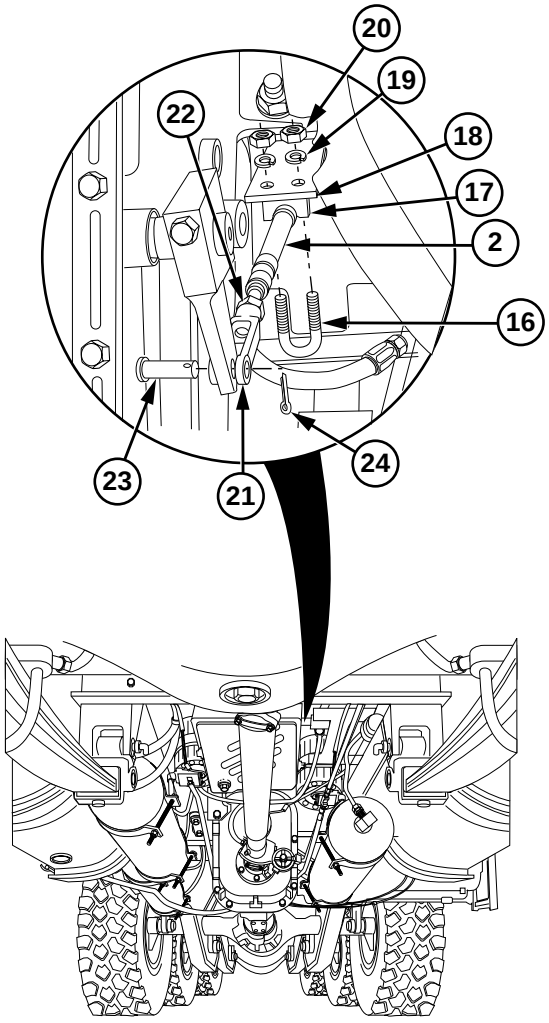
NOTE

Do steps (12) thru (14) only if adjustment is not required.

(12) Tighten jamnut (22) on yoke (21).

(13) Install clevis pin (23) in yoke (21).

(14) Install new cotter pin (24) in clevis pin (23).



c. Adjustment

(1) Remove cotter pin (1) from clevis pin (2). Discard cotter pin.

(2) Loosen jamnut (3) on yoke (4).

(3) Remove clevis pin (2) from yoke (4).

(4) Position transmission range selector (5) in reverse (R) position.

(5) Rotate transmission shift lever (6) on transmission (7) fully counterclockwise to reverse (R) position.

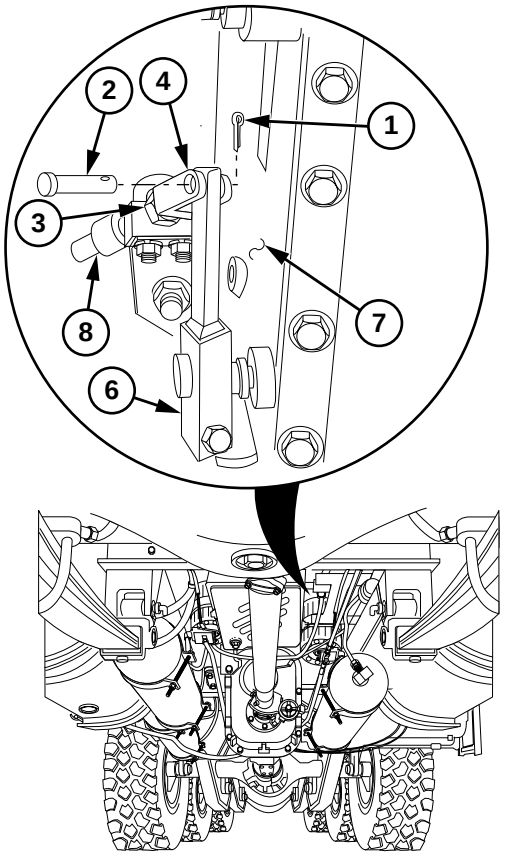
NOTE

Do step (6) or (7) as required to install yoke.

(6) Turn yoke (4) clockwise to shorten cable (8).

(7) Turn yoke (4) counterclockwise to lengthen cable (8).

(8) Install clevis pin (2) in yoke (4) and transmission shift lever (6).



CAUTION

Proper adjustment must be obtained. Failure to do so may result in clutch slippage and transmission failure.

NOTE

Proper adjustment is obtained when transmission range selector locks in both reverse and first gear.

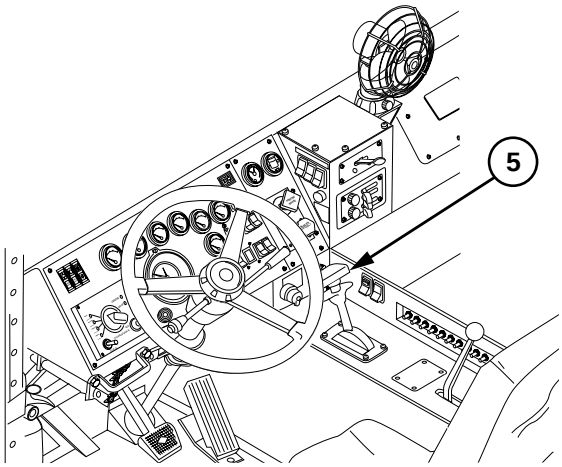
(9) Shift transmission range selector (5) through all ranges.

(10) Repeat steps (3), (6), and (8) if transmission range selector does not lock into first gear.

(11) Repeat steps (3), (7), and (8) if transmission range selector does not lock into reverse.

(12) Install new cotter pin (1) in clevis pin (2).

(13) Tighten jamnut (3) on yoke (4).



d. Follow-On Maintenance

(1) Remove wheel chocks.

(2) Start engine (TM 9-2320-360-10).

(3) Check transmission for correct shifting (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

(5) Install shifter guard (para 16-2).

(6) Install lower engine access panel (para 16-2).

8-6. TRANSMISSION SHIFT CONTROL REPAIR

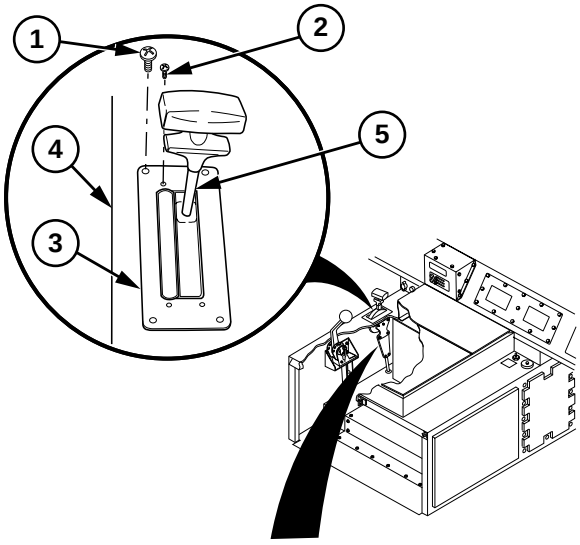
This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Shifter guard removed (para 16-2).

Tools and Special Tools
Tool Kit, Electrical Repair (Item 53, Appendix F)
Tool Kit, Genl Mech (Item 54, Appendix F)

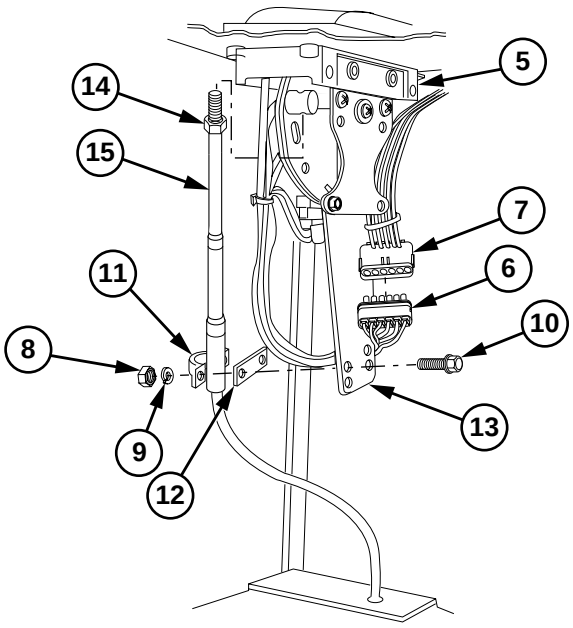
Materials/Parts
Lockpins (2) (Item 84, Appendix G)
Lockwashers (2) (Item 112, Appendix G)



a. Removal

(1) Remove four screws (1), screws (2), and cover plate (3) from top of doghouse (4) and control lever assembly (5).

(2) Pull control lever assembly (5) down into doghouse (4).



(3) Disconnect 6-pin plug (6) from electrical receptacle (7).

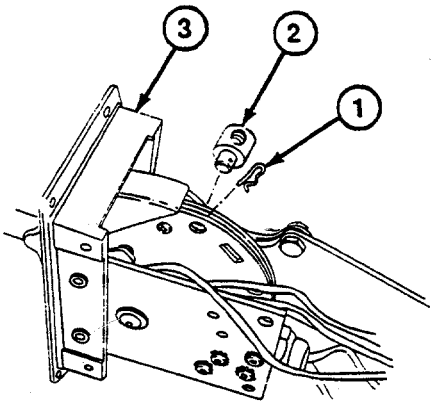
(4) Remove two nuts (8), lockwashers (9), screws (10), bracket (11), and plate (12) from shift plate (13). Discard lockwashers.

(5) Loosen jamnut (14) on shift cable (15).

(6) Remove control lever assembly (5) from shift cable (15).

b. Disassembly

(1) Remove lockpin (1) and pivot (2) from control lever assembly (3). Discard lockpin.



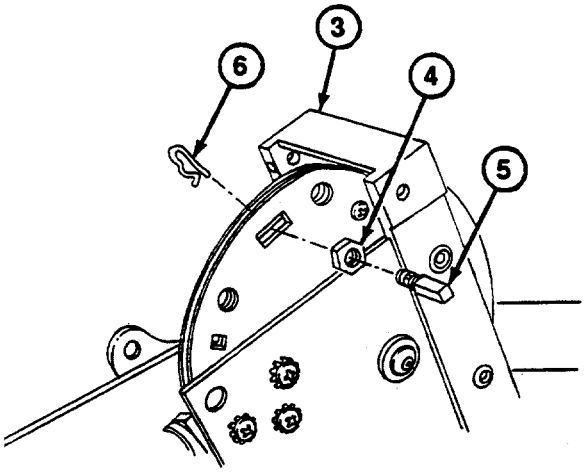
(2) Loosen nut (4) on actuator (5).

NOTE

Mark position of actuator before removal to aid in installation.

(3) Remove lockpin (6) and actuator (5) from control lever assembly (3). Discard lockpin.

(4) Remove nut (4) from actuator (5).



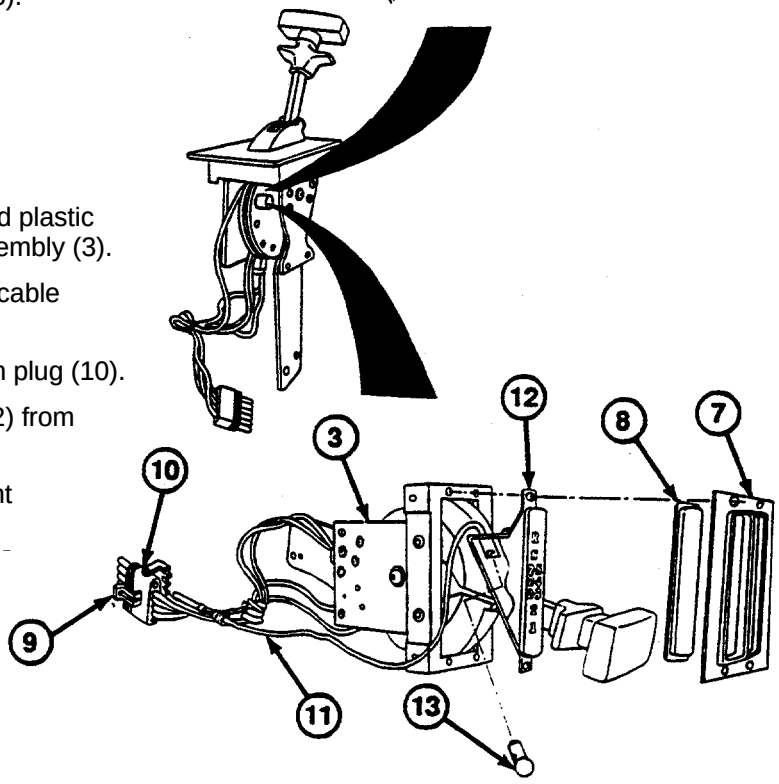
(5) Remove cover plate seal (7) and plastic cover (8) from control lever assembly (3).

(6) Release two tabs (9) and open cable plug (10).

(7) Remove wire (11) from hole A in plug (10).

(8) Remove pipe light assembly (12) from control lever assembly (3).

(9) Remove bulb (13) from pipe light assembly (12).



8-6. TRANSMISSION SHIFT CONTROL REPAIR (CONT)

c. Assembly

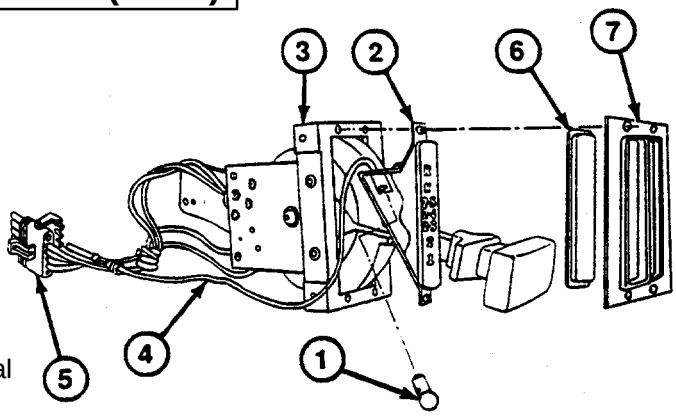
(1) Install bulb (1) on pipe light assembly (2).

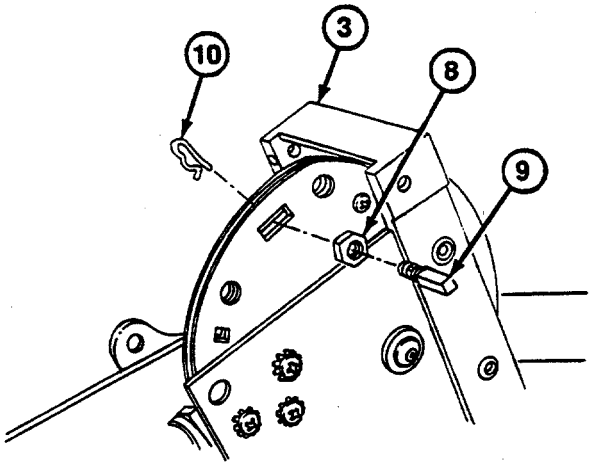
(2) Place pipe light assembly (2) on control lever assembly (3).

(3) Route wire (4) through control lever assembly (3) and install in hole A in cable plug (5).

(4) Close cable plug (5).

(5) Install plastic cover (6) and cover plate seal (7) on control lever assembly (3).





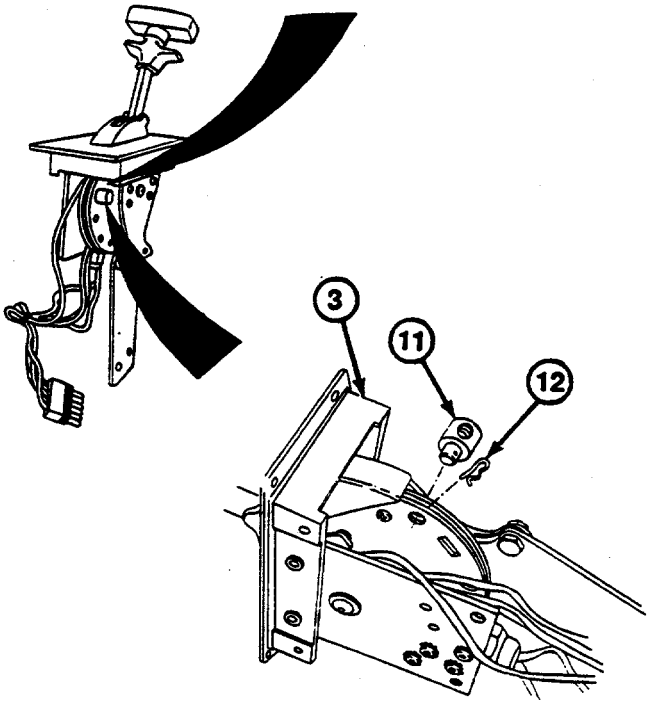
(6) Install nut (8) on actuator (9).

(7) Install actuator (9) on control lever assembly (3) with new lockpin (10).

NOTE

Actuator may need adjustment to correctly contact safety switches when in the neutral and reverse positions.

(8) Tighten nut (8) on actuator (9).



(9) Install pivot (11) on control lever assembly (3) with new lockpin (12).

d. Installation

(1) Install control lever assembly (1) on shift cable (2).

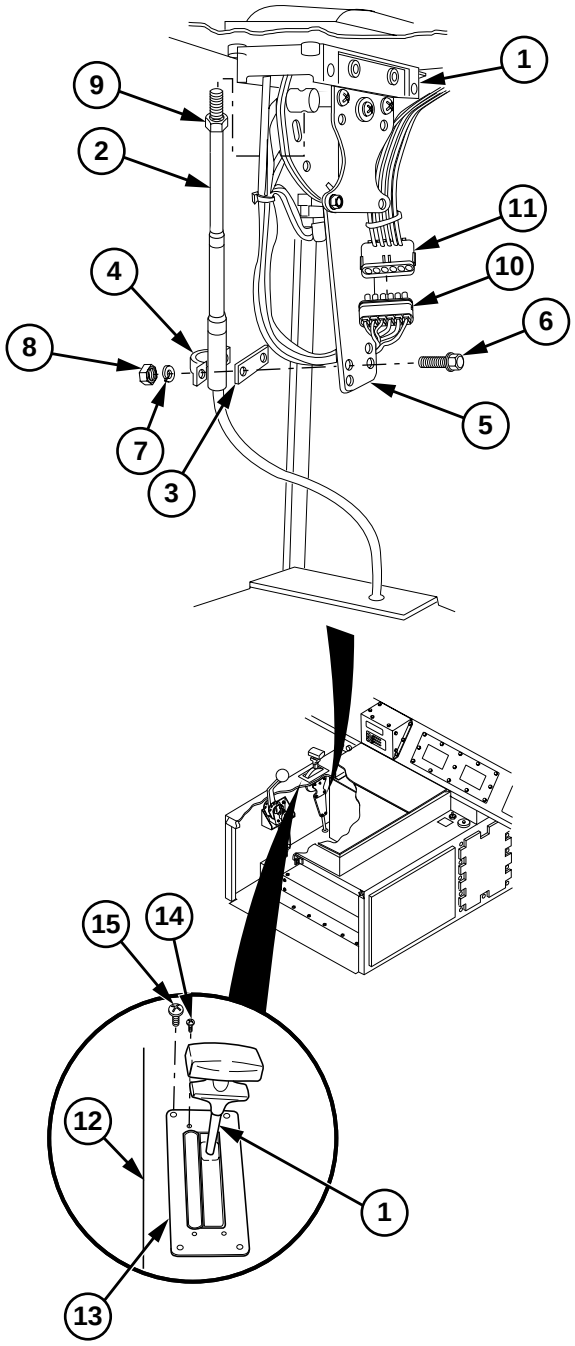
CAUTION

Shift cable must be installed all the way through pivot. Failure to comply may result in damage to equipment.

(2) Install bracket (3) and plate (4) on shift plate (5) with two screws (6), new lockwashers (7), and nuts (8).

(3) Tighten jamnut (9).

(4) Connect 6-pin plug (10) to electrical receptacle (11).



(5) Push control lever assembly (1) through hole in doghouse (12).

(6) Install cover plate (13) on control lever assembly (1) and top of doghouse (12) with four screws (14) and screws (15).

e. Follow-On Maintenance

(1) Adjust shift cable (para 8-5).

(2) Install shifter guard (para 16-2).

8-7. TRANSMISSION HOSES REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).
Transmission oil drained (LO 9-2320-360-12).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)
Wrench, Crow's-Foot, 1-1/2 In. (Item 65, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Locknuts (4) (Item 72, Appendix G)
Locknut (Item 58, Appendix G)

NOTE
Tag and mark all fittings and elbows.

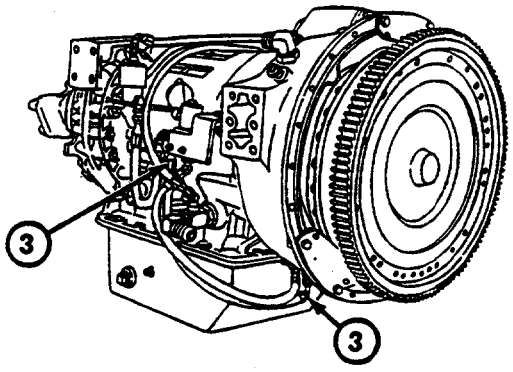
a. Removal

(1) Place drain pan under transmission (1).

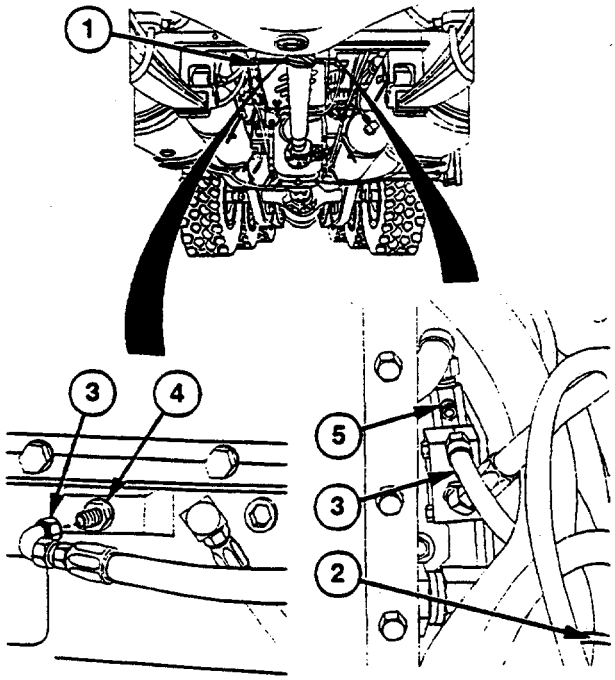
NOTE
Location of plastic cable ties should be marked before removal.

(2) Remove plastic cable ties (2) from hose (3) as required.

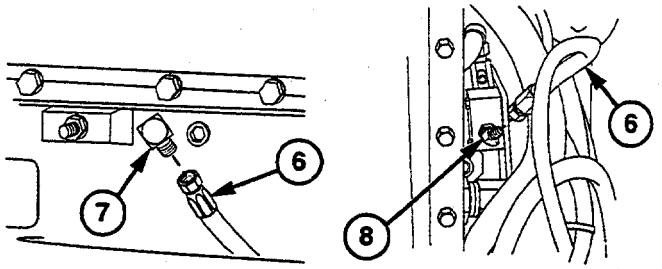
(3) Remove hose no. 2672 (3) from fitting (4) and elbow (5).

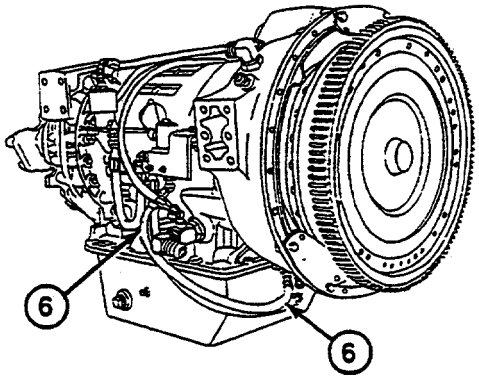


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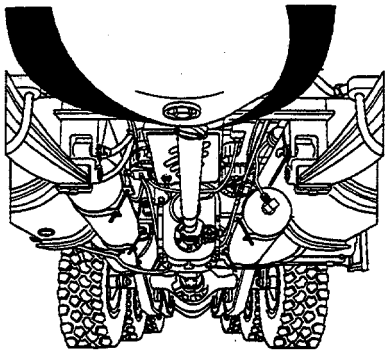


(4) Remove hose no. 2646 (6) from elbow (7) and elbow (8).





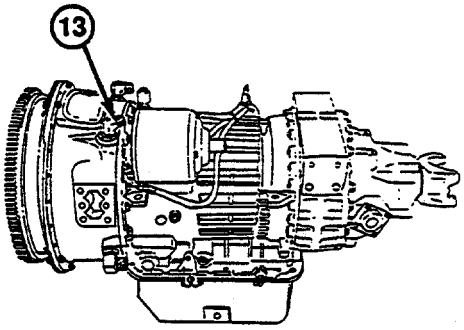
TRANSMISSION REMOVED FOR CLARITY

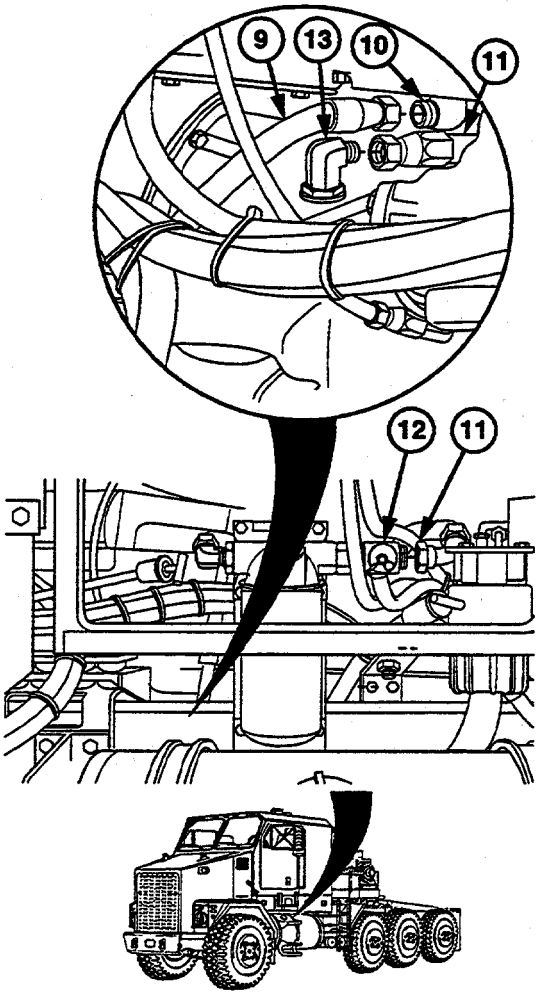


(5) Remove return line (9) from elbow (10).

(6) Remove hose no. 2310 (11) from tee (12) and elbow (13).

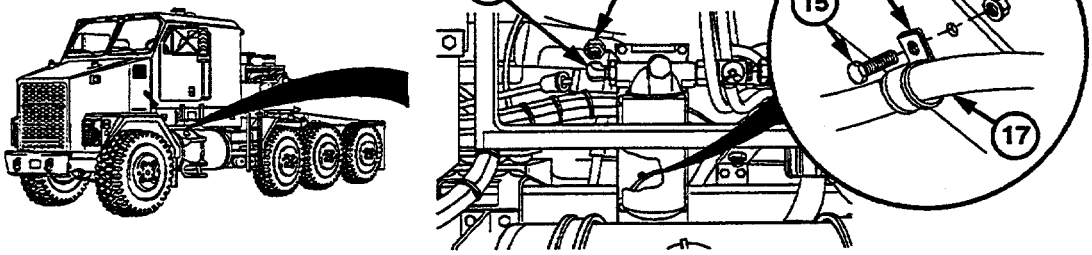
(7) Remove hose no. 2310 (11) from vehicle.





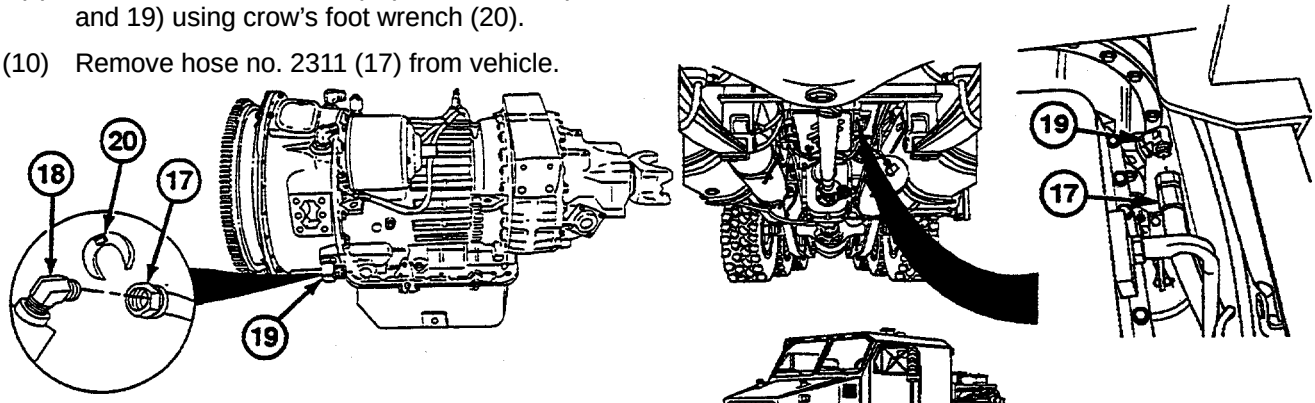
8-7. TRANSMISSION HOSES REPLACEMENT (CONT)

(8) Remove locknut (14), screw (15), and cushion clip (16) from hose no. 2311 (17). Discard locknut.



(9) Remove hose no. 2311 (17) from elbows (18 and 19) using crow's foot wrench (20).

(10) Remove hose no. 2311 (17) from vehicle.



TRANSMISSION REMOVED FOR CLARITY

NOTE

Location of plastic cable ties should be marked before removal.

(11) Remove plastic cable ties (21) from hose no. 2382 (22) and hose no. 2393 (23) as required.

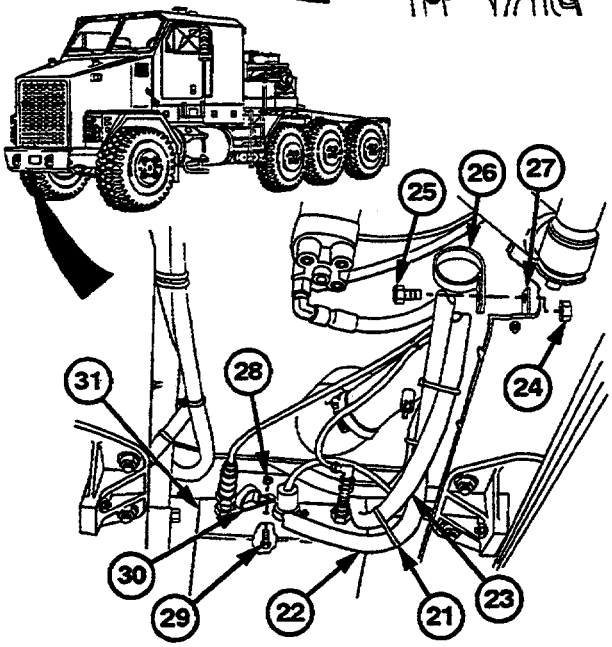
NOTE

Mark location of cushion clips to ease installation.

(12) Remove locknut (24), screw (25), and cushion clip (26) from clip bracket (27). Discard locknut.

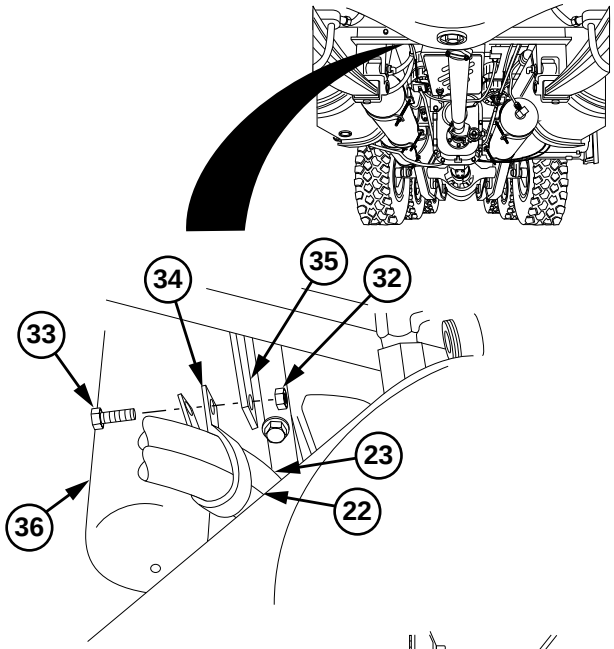
(13) Remove locknut (28), screw (29), and cushion clip (30) from bracket (31). Discard locknuts.

(14) Remove two cushion clips (26 and 30) from hose no. 2382 (22).



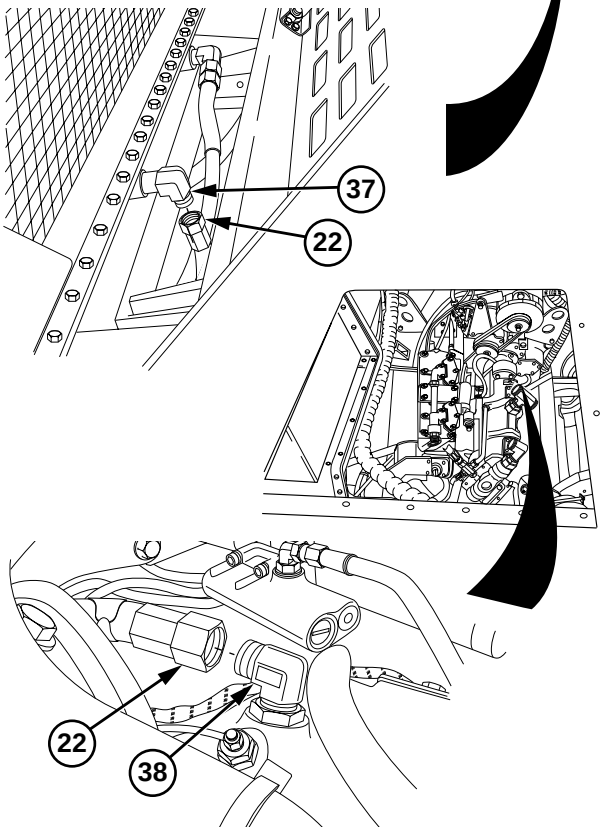
(15) Remove two locknuts (32), screws (33), and cushion clips (34) from two clip brackets (35) on sides of oil filter (36). Discard locknut.

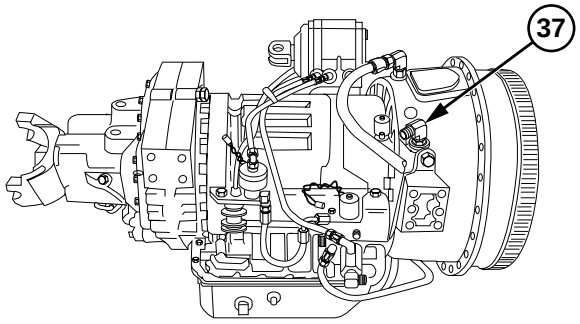
(16) Remove two cushion clips (34) from hose no. 2382 (22) and hose no. 2393 (23).



(17) Remove hose no. 2382 (22) from elbows (37 and 38).

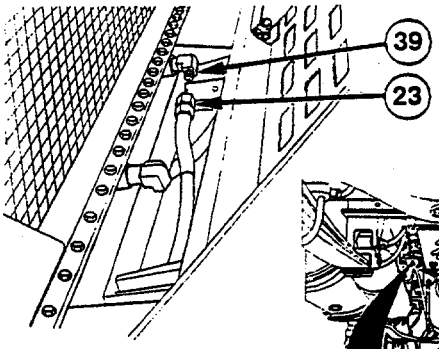
(18) Remove hose no. 2382 (22) from vehicle.

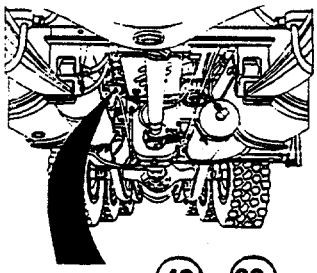




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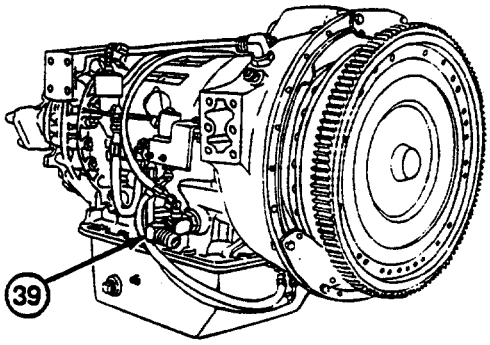
8-7. TRANSMISSION HOSES REPLACEMENT (CONT)



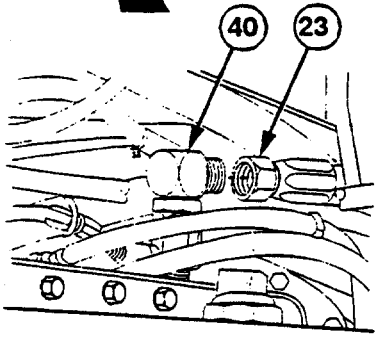


(19) Remove hose no. 2393 (23) from elbows (39 and 40).

(20) Remove hose no. 2393 (23) from vehicle.



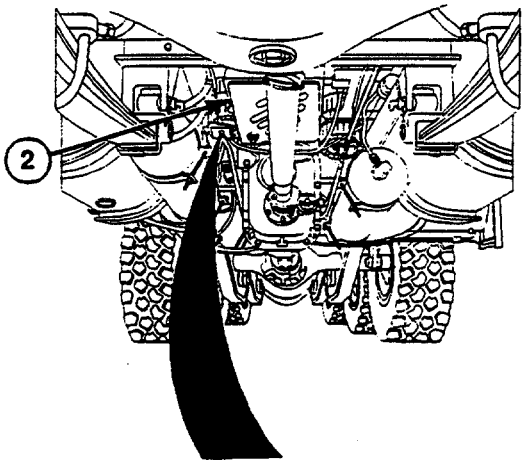
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b. Installation

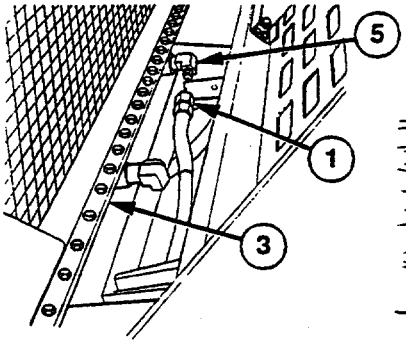
NOTE

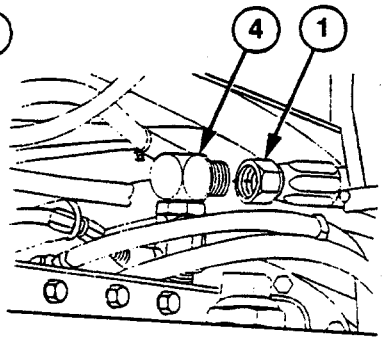
Transmission hoses no. 2393 and no. 2382 must be routed below air line no. 2102.

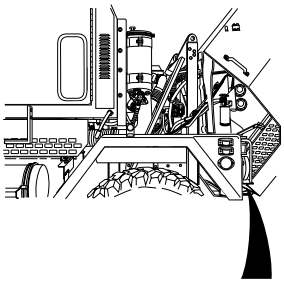


(1) Route hose no. 2393 (1) from transmission (2) to radiator (3).

(2) Install hose no. 2393 (1) on elbows (4 and 5).

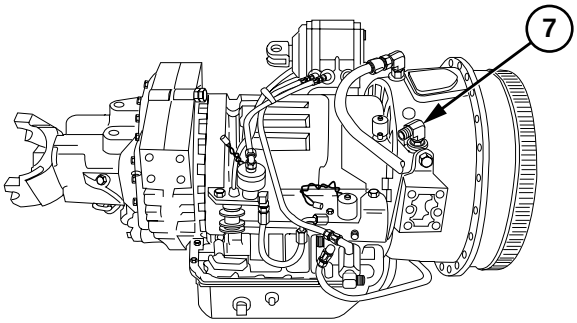




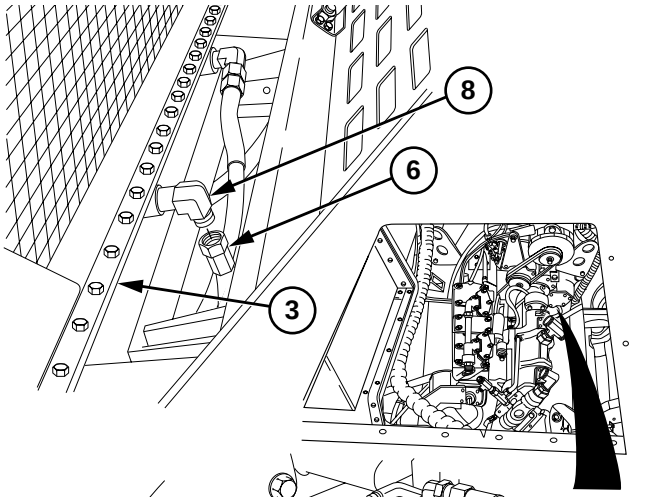


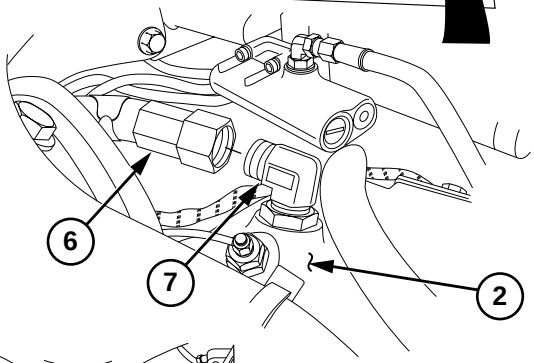
(3) Route hose no. 2382 (6) from transmission (2) to radiator (3).

(4) Install hose no. 2382 (6) on elbows (7 and 8).



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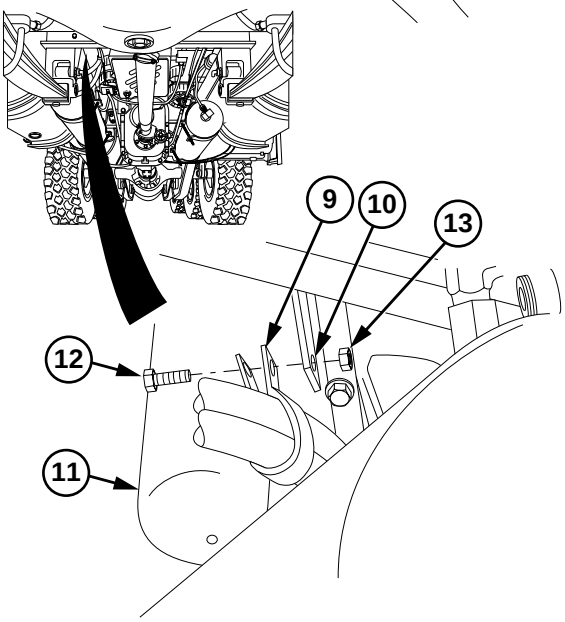




CAUTION

Clips must be positioned so that hoses do not interfere with PTO shaft. Failure to comply may result in damage to hoses.

(5) Install two cushion clips (9) on two clip brackets (10) on sides of oil filter (11) with two screws (12) and new locknuts (13).



8-7. TRANSMISSION HOSES REPLACEMENT (CONT)

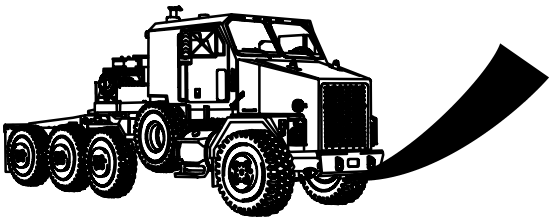
(6) Install cushion clip (14) on bracket (15) with screw (16) and new locknut (17).

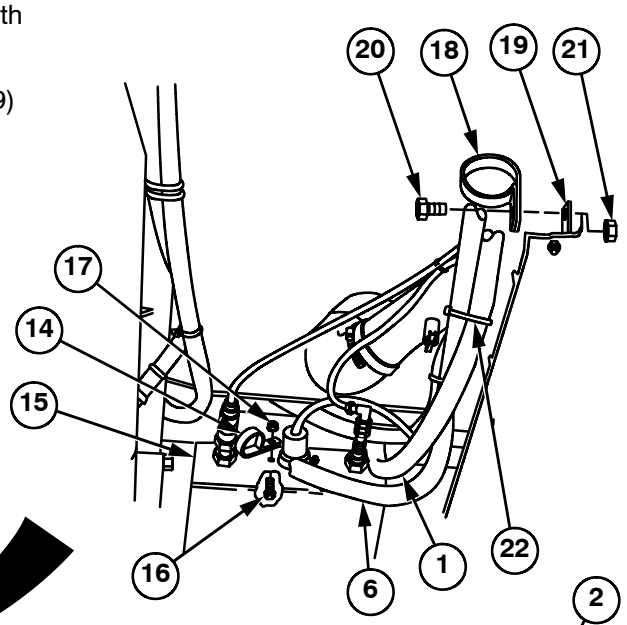
(7) Install cushion clip (18) on clip bracket (19) with screw (20) and new locknut (21).

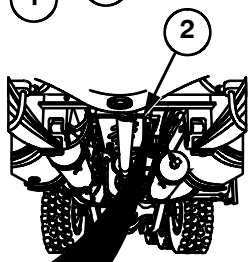
NOTE

Plastic cable ties should be positioned in locations marked during removal.

(8) Secure hose no. 2393 (1) and hose no. 2382 (6) with plastic cable ties (22) as required.

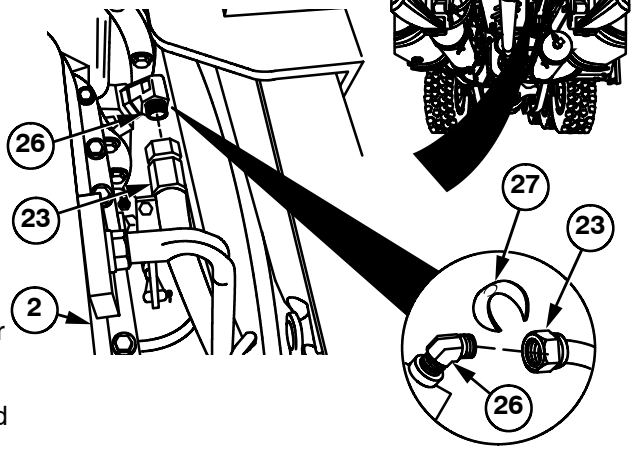






NOTE

Sound shield flap below cab must be pulled away to gain access to hoses.

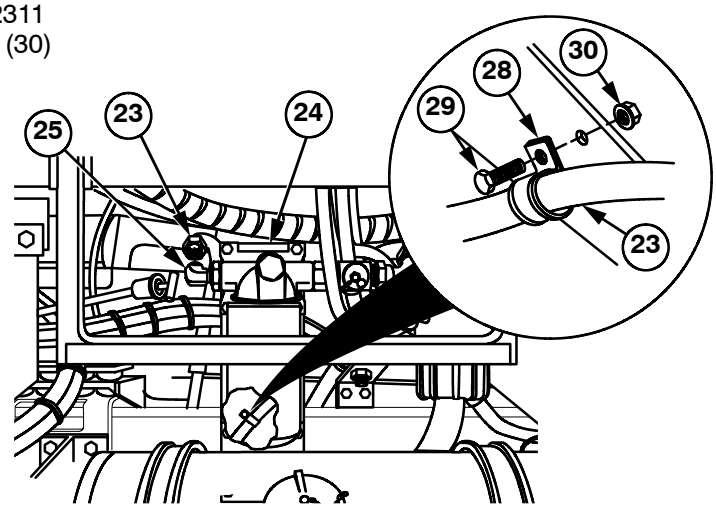


(9) Route hose no. 2311 (23) from external filter adapter (24) to transmission (2).

(10) Install hose no. 2311 (23) on elbows (25 and 26) using crow's foot wrench (27).

(11) Install cushion clip (28) on hose no. 2311 (23) with screw (29) and new locknut (30)

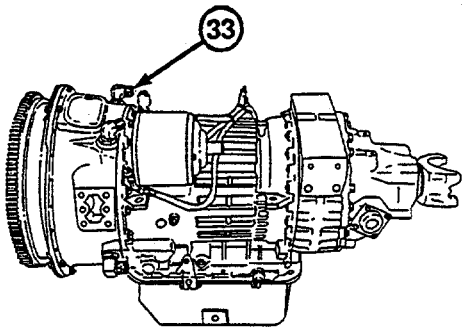
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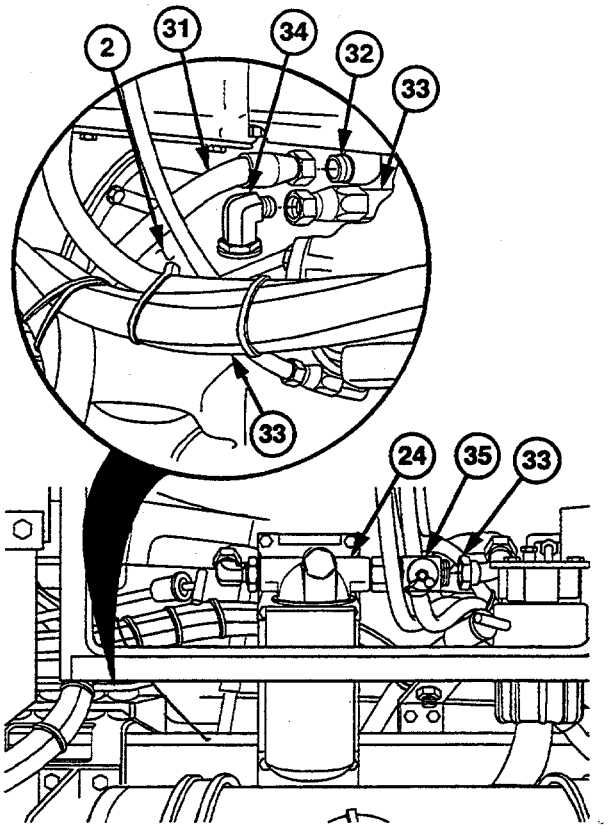
(12) Install return line (31) on elbow (32).

(13) Route hose no. 2310 (33) from external filter adapter (24) to transmission (2).

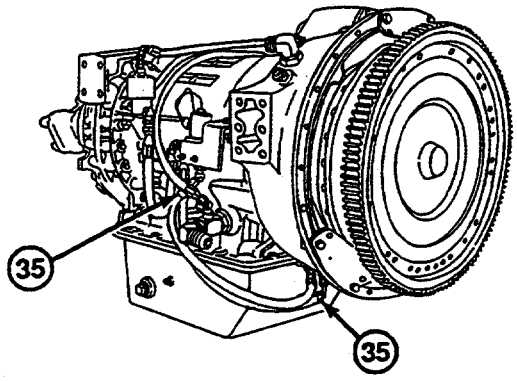
(14) Install hose no. 2310 (33) on elbow (34) and tee (35).



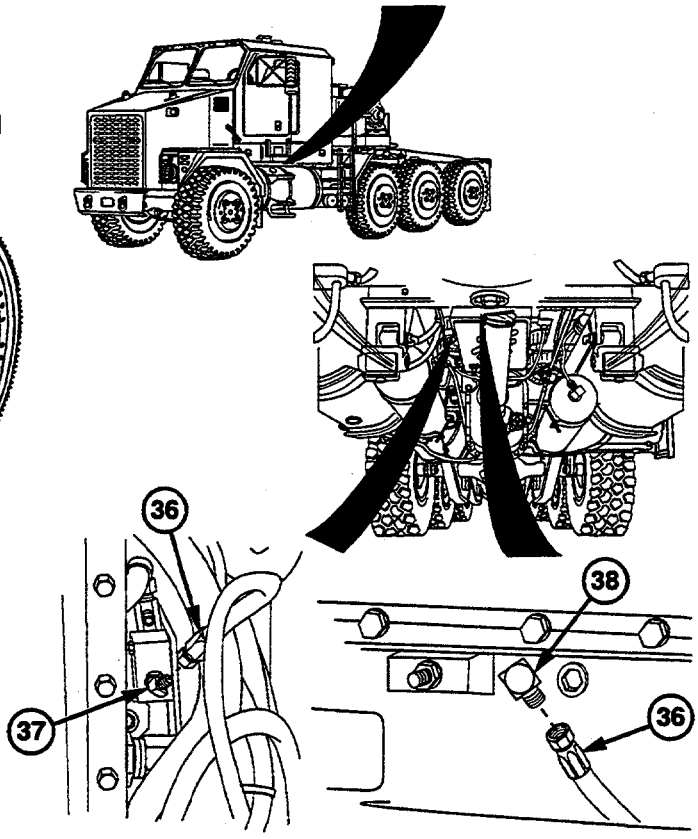
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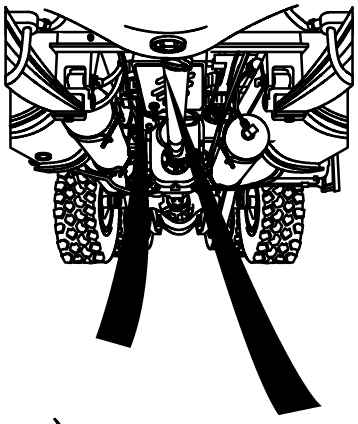
(15) Install hose no. 2646 (36) on elbow (37) and elbow (38).



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8-7. TRANSMISSION HOSES REPLACEMENT (CONT)

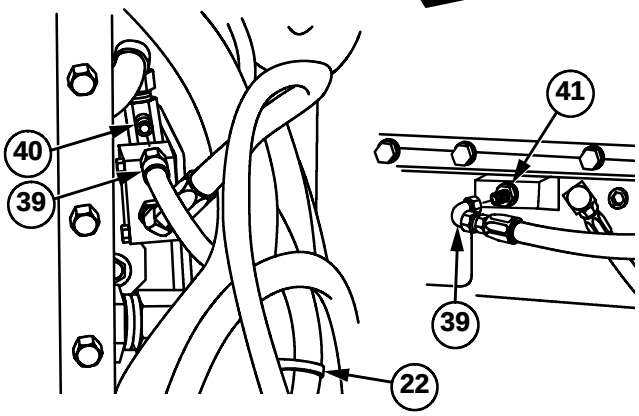


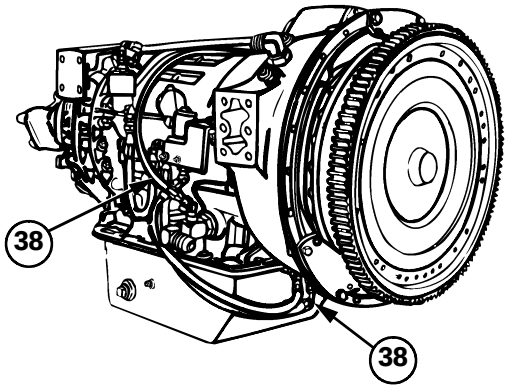
(16) Install hose no. 2672 (39) on elbow (40) and fitting (41).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(17) Secure hose no. 2672 (39) with plastic cable ties (22) as required.





TRANSMISSION REMOVED FOR CLARITY

c. Follow-On Maintenance

(1) Fill transmission with oil (TM 9-2320-360-10).

(2) Start engine (TM 9-2320-360-10).

(3) Check for leaks.

(4) Check transmission fluid level (TM 9-2320-360-10).

(5) Shut off engine (TM 9-2320-360-10).

(6) Close engine hood (TM 9-2320-360-10).

(7) Remove wheel chocks.

8-8. PTO HOSES REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine access panels removed (para 16-2).
Transmission oil drained (LO 9-2320-360-12).

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)

a. Removal

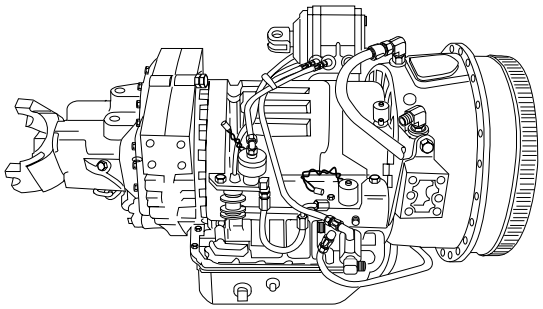
NOTE
Tag and mark hoses before removal.

(1) Place drain pan under PTO (1).

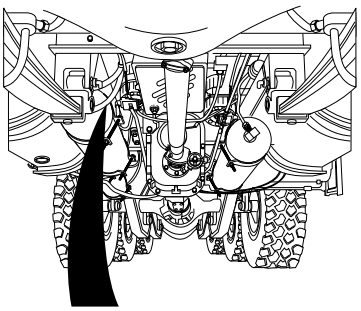
(2) Remove hose no. 2852 (2) from elbow (3) and fitting (4).

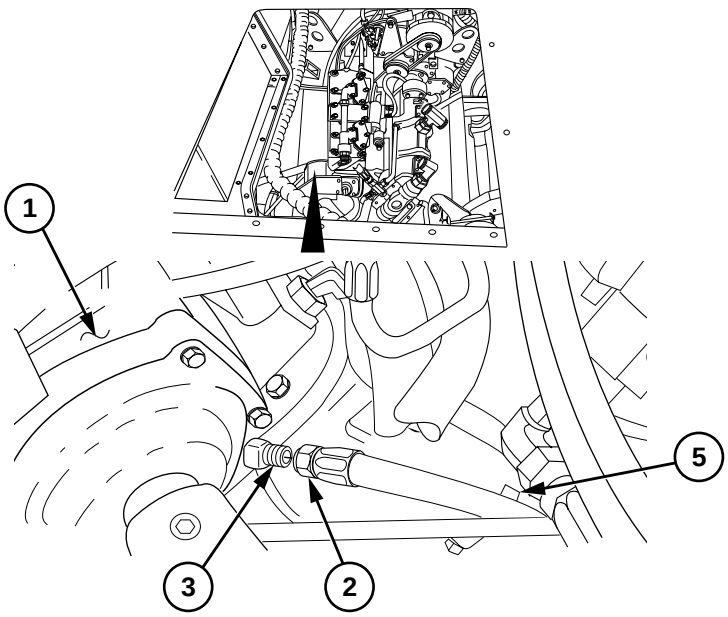
NOTE
Location of plastic cable ties should be marked before removal.

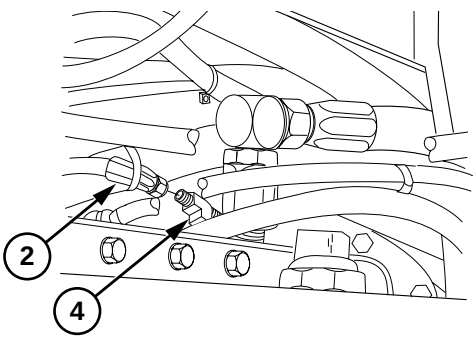
(3) Remove plastic cable ties (5) from hose (2) as required.



TRANSMISSION REMOVED FOR CLARITY

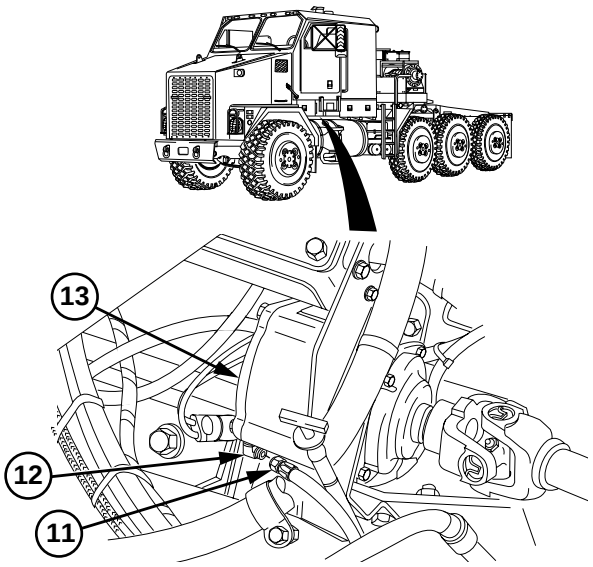




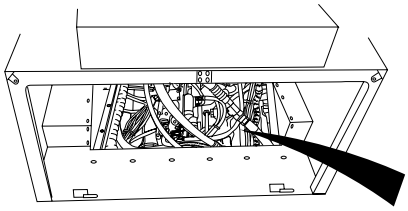


8-8. PTO HOSES REPLACEMENT (CONT)

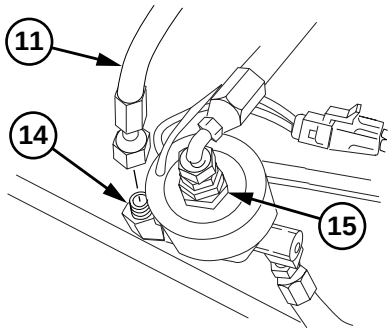
(4) Deleted.



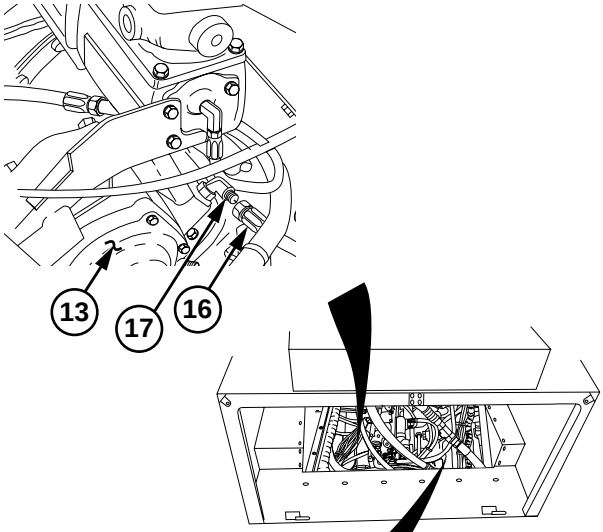
(5) Remove hose no. 2933 (11) from elbow (12) on PTO (13).



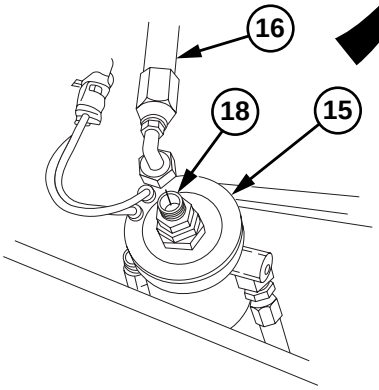
(6) Remove hose no. 2933 (11) from elbow (14) on PTO solenoid (15).



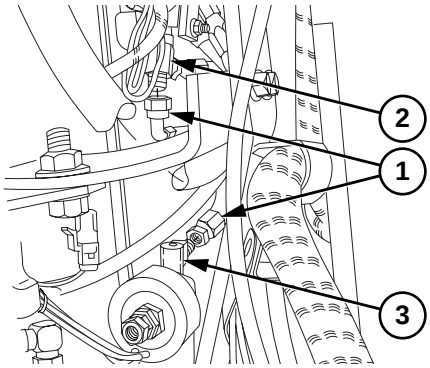
(7) Remove hose no. 2934 (16) from elbow (17) on PTO (13).

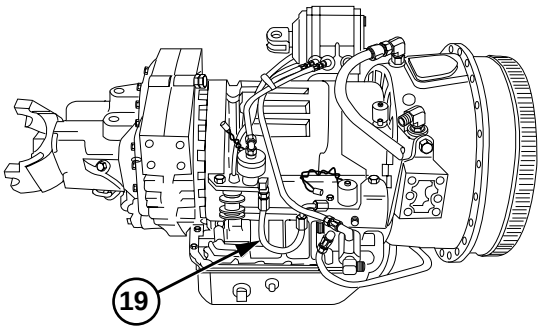


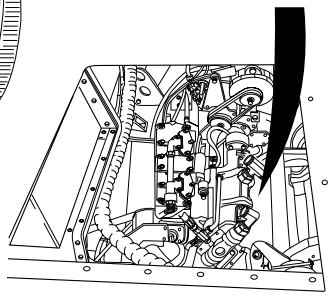
(8) Remove hose no. 2934 (16) from fitting (18) on PTO solenoid (15).



(9) Remove hose no. 2851 (19) from elbow (20) and fitting (21).





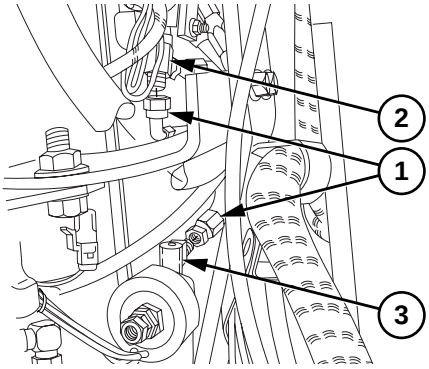


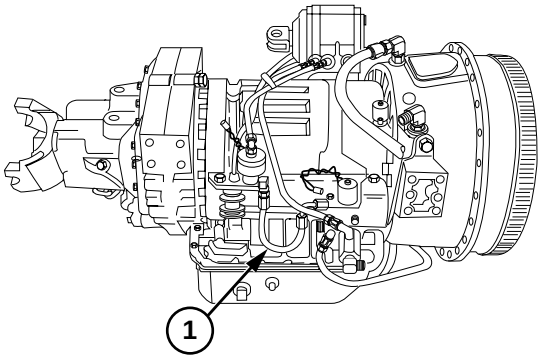
TRANSMISSION REMOVED FOR CLARITY

8-8. PTO HOSES REPLACEMENT (CONT)

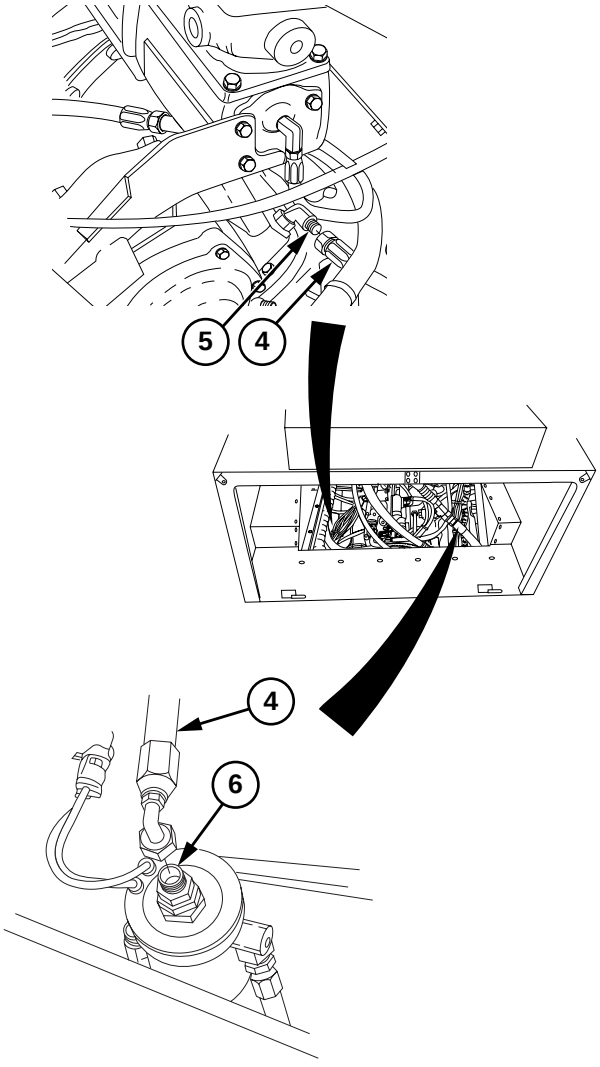
b. Installation

(1) Install hose no. 2851 (1) on fitting (2) and elbow (3).

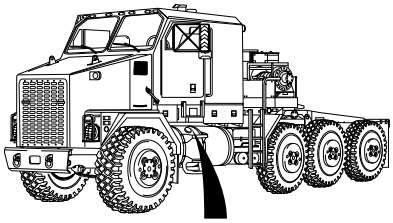


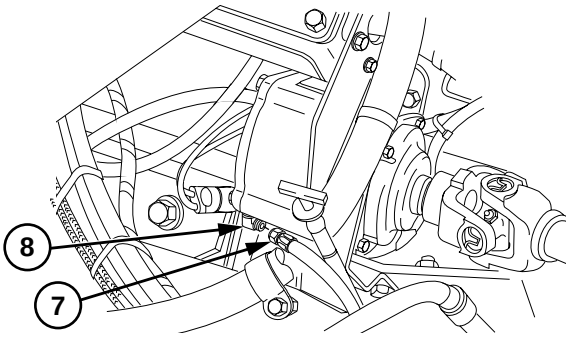


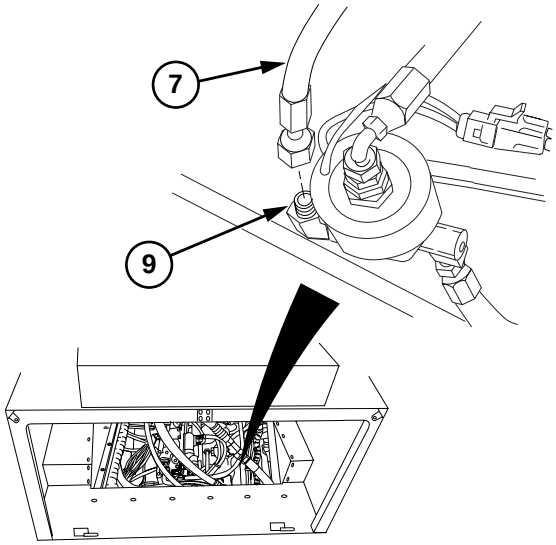
(2) Install hose no. 2934 (4) on elbow (5) and fitting (6).



(3) Install hose no. 2933 (7) on elbows (8 and 9).

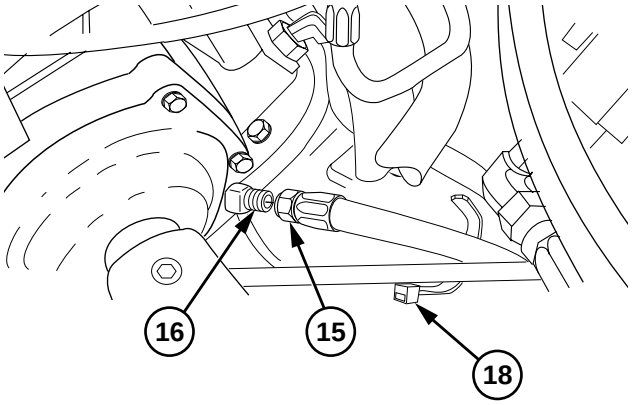






(4) Deleted.

8-8. PTO HOSES REPLACEMENT (CONT)

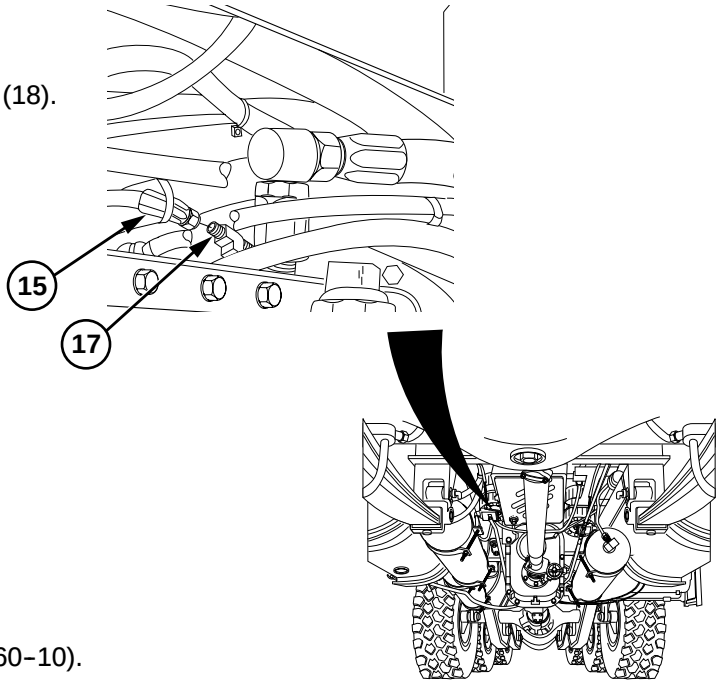


(5) Install hose no. 2852 (15) on elbow (16) and fitting (17).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(6) Secure hose (15) with plastic cable ties (18).



c. Follow-On Maintenance

(1) Fill transmission with oil (TM 9-2320-360-10).

(2) Start engine (TM 9-2320-360-10).

(3) Engage PTO and check for leaks (TM 9-2320-360-10).

(4) Check transmission fluid level (TM 9-2320-360-10).

(5) Shut off engine (TM 9-2320-360-10).

(6) Install engine access panels (para 16-2).

8-9. TRANSMISSION EXTERNAL MODULATOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Transmission oil drained (LO 9-2320-360-12).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

Materials/Parts
Packing, Preformed (Item 137, Appendix G)

a. Removal

(1) Disconnect air line no. 2857 (1) from elbow (2).

(2) Remove screw (3) from transmission (4).

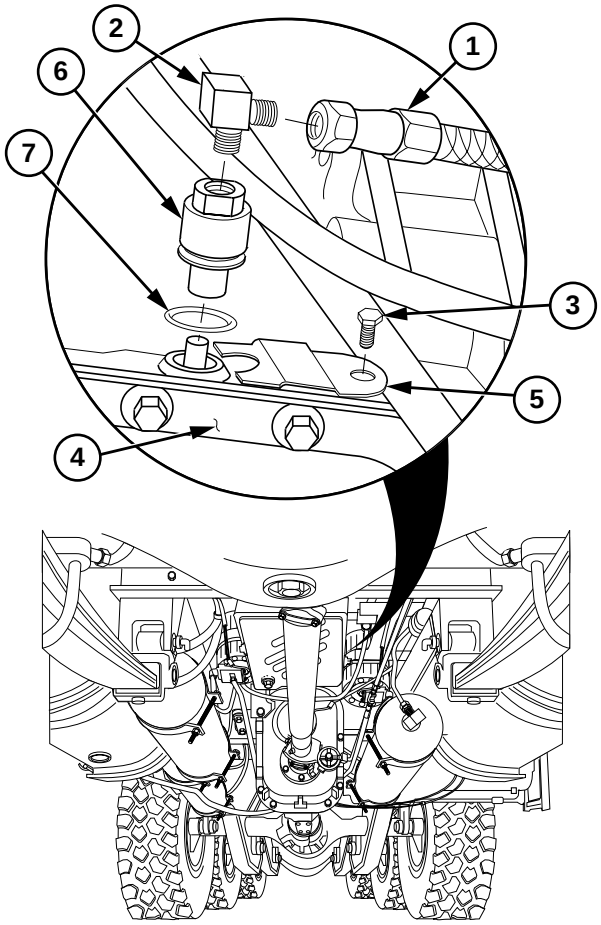
(3) Slide metal fork (5) towards rear of HET tractor.

(4) Remove modulator (6) from transmission (4).

NOTE
Preformed packing may remain with transmission after completion of step (4).

(5) Remove preformed packing (7) from modulator (6). Discard preformed packing.

(6) Remove elbow (2) from modulator (6).



8-9. TRANSMISSION EXTERNAL MODULATOR REPLACEMENT (CONT)

b. Installation

(1) Install elbow (1) on modulator (2).

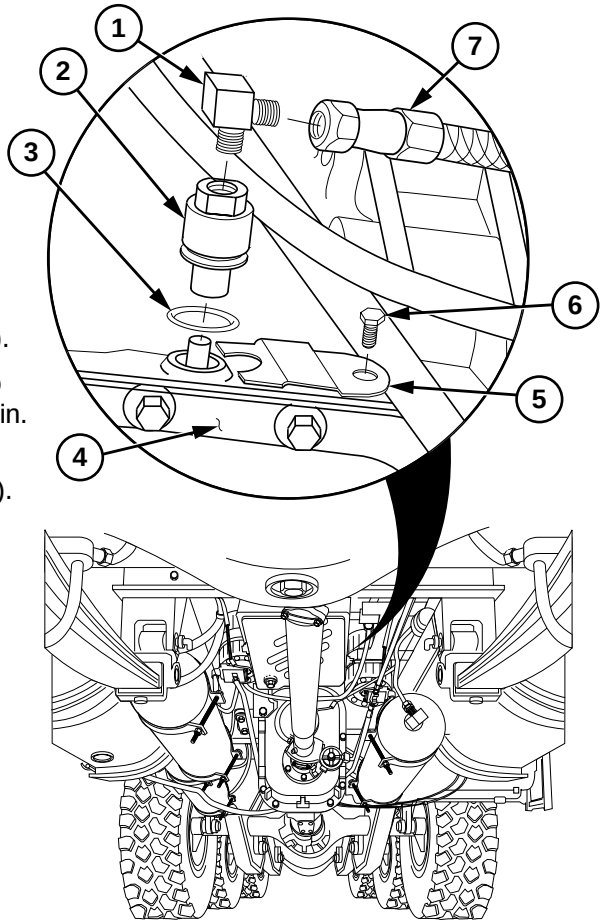
(2) Install new preformed packing (3) on modulator (2).

(3) Install modulator (2) in transmission (4).

(4) Slide metal fork (5) around modulator (2).

(5) Install screw (6) through fork (5) and into transmission (4). Torque to 156-200 lb-in. (18-23 N·m).

(6) Connect air line no. 2857 (7) to elbow (1).



c. Follow-On Maintenance

(1) Fill transmission with oil (LO 9-2320-360-12).

(2) Start engine (TM 9-2320-360-10).

(3) Check for leaks.

(4) Check transmission fluid level (TM 9-2320-360-10).

(5) Shut off engine (TM 9-2320-360-10).

(6) Remove wheel chocks.

8-10. TRANSMISSION AOAP SAMPLING VALVE REPLACEMENT

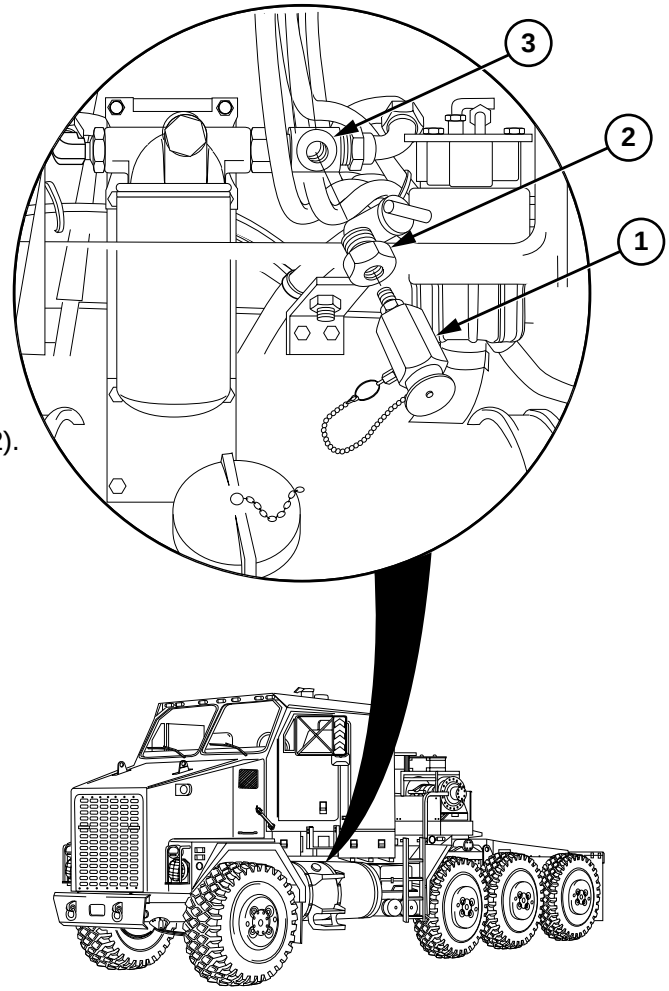
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)



a. Removal

(1) Place drain pan under sampling valve (1).

(2) Remove valve (1) from reducer (2).

(3) Remove reducer (2) from tee (3).

8-10. TRANSMISSION AOAP SAMPLING VALVE REPLACEMENT (CONT)

b. Installation

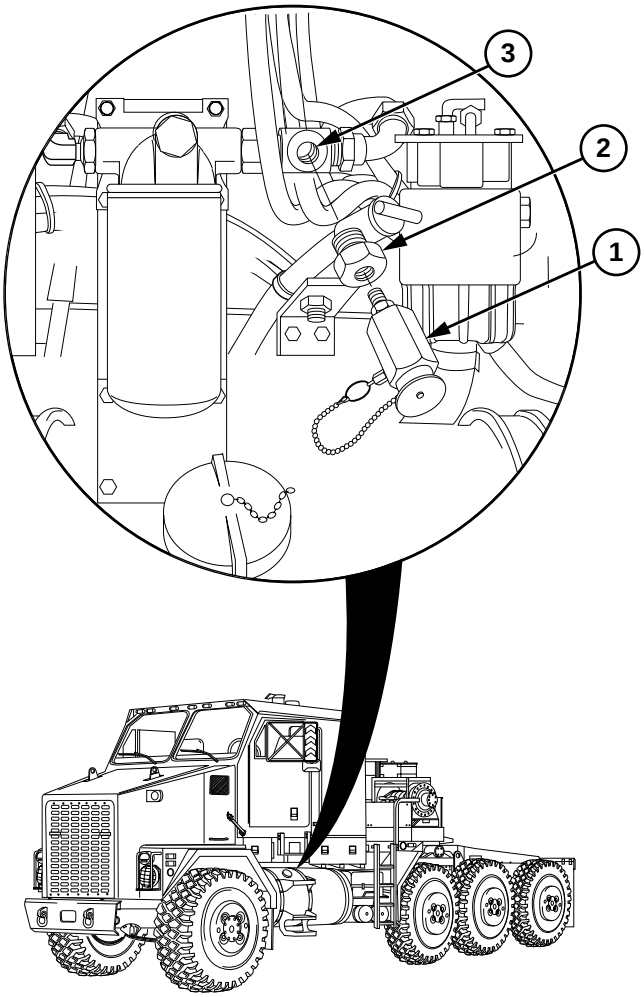
WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well ventilated area. If pipe thread s0zealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of valve (1) and reducer (2) with pipe thread sealing compound.

(2) Install reducer (2) on tee (3).

(3) Install valve (1) on reducer (2).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check for leaks.

(3) Shut off engine (TM 9-2320-360-10).

(4) Remove wheel chocks.

8-11. TRANSMISSION DIPSTICK TUBE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

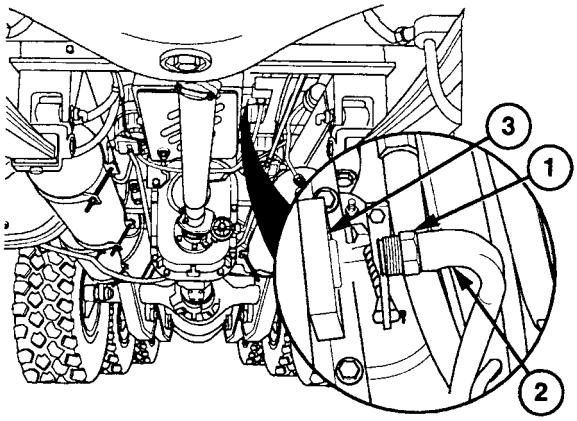
Equipment Conditions
Transmission oil drained (LO 9-2320-360-12).
Transmission dipstick removed (TM 9-2320-360-10).
Engine dipstick removed (TM 9-2320-360-10).

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Locknut (Item 58, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

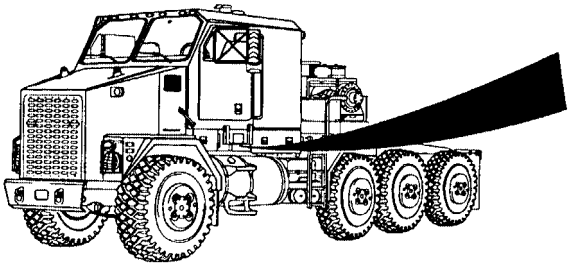
(1) Loosen collar (1) and remove dipstick tube (2) from transmission (3).

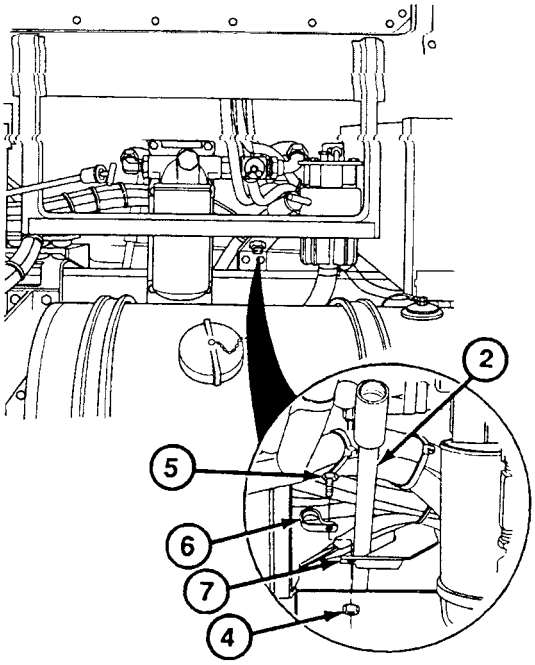


(2) Remove locknut (4), screw (5), and cushion clip (6) from bracket (7) and dipstick tube (2). Discard locknut.

NOTE
Dipstick tube is pulled toward left rear and removed from below HET Tractor.

(3) Remove dipstick tube (2) from HET Tractor.





8-11. TRANSMISSION DIPSTICK TUBE REPLACEMENT (CONT)

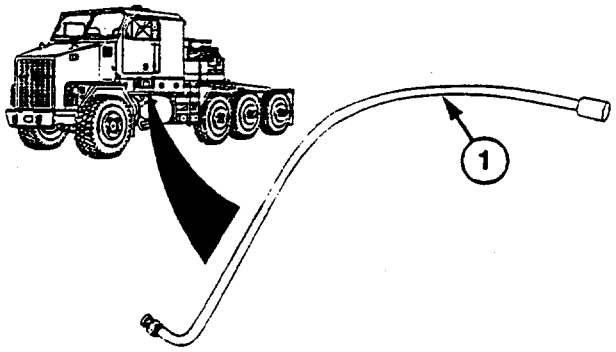
b. Installation

CAUTION

End of dipstick tube must be covered before installing. Failure to comply may result in foreign material entering dipstick tube.

NOTE

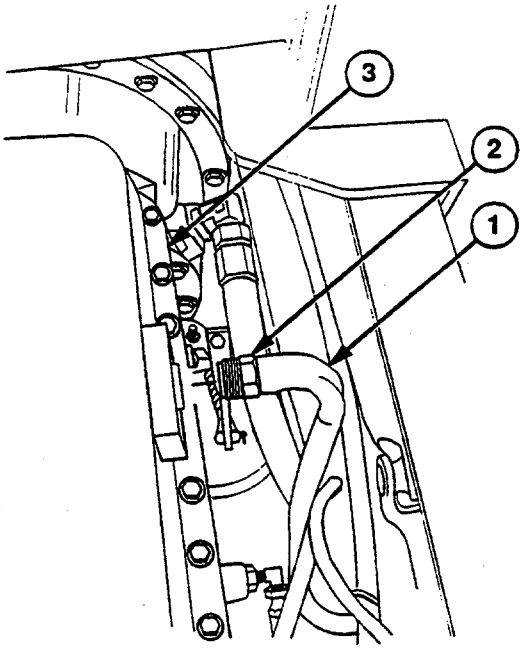
Dipstick tube is routed in from below HET Tractor.



(1) Position dipstick tube (1) on HET.

WARNING

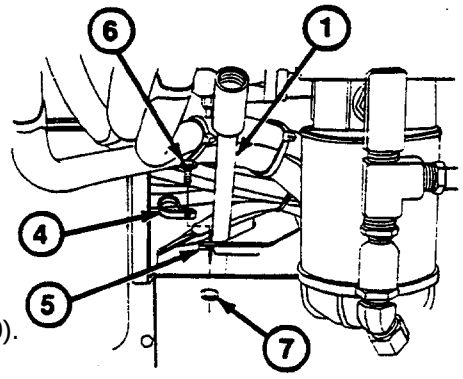
Pipe thread sealing compounds can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



(2) Coat threads of collar (2) with pipe thread sealing compound.

(3) Install dipstick tube (1) on transmission (3) and tighten collar (2).

(4) Install cushion clip (4) on dipstick tube (1) and bracket (5) with screw (6) and new locknut (7).



c. Follow-On Maintenance

(1) Install transmission dipstick (TM 9-2320-360-10).

(2) Install engine dipstick (TM 9-2320-360-10).

(3) Fill transmission with oil (LO 9-2320-360-12).

CHAPTER 9
TRANSFER CASE MAINTENANCE

Contents

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Section I. INTRODUCTION

9-1. INTRODUCTION

This chapter contains instructions for adjustment and replacement of transfer case components at the Unit maintenance level. Some parts must be removed before transfer case parts can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

9-2. TWO-SPEED SHIFT LINKAGE ADJUSTMENT/REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Adjustment
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Shifter guard removed (para 16-2).
Lower engine access panel removed (para 16-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Fasteners, Ratchet (7) (Item 25, Appendix G)
Pins, Cotter (2) (Item 148, Appendix G)

Personnel Required
Two

a. Removal

(1) Remove cotter pin (1) from clevis pin (2). Discard cotter pin.

(2) Loosen jamnut (3) on shift cable (4).

(3) Remove clevis pin (2) from yoke (5).

(4) Unscrew yoke (5) from cable (4).

(5) Remove jamnut (3) from cable (4).

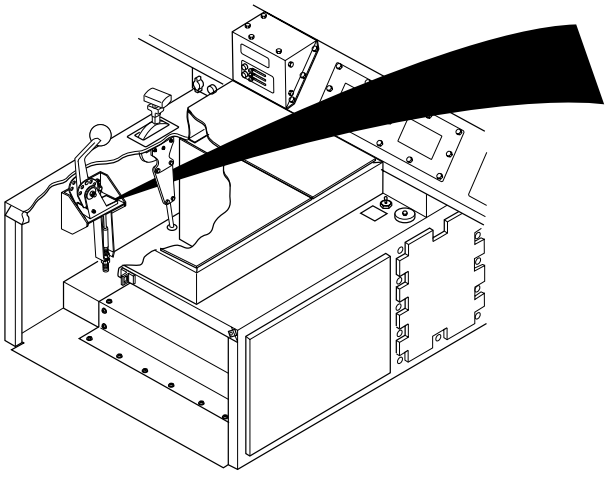
(6) Remove jamnut (6) and washer (7) from cable (4).

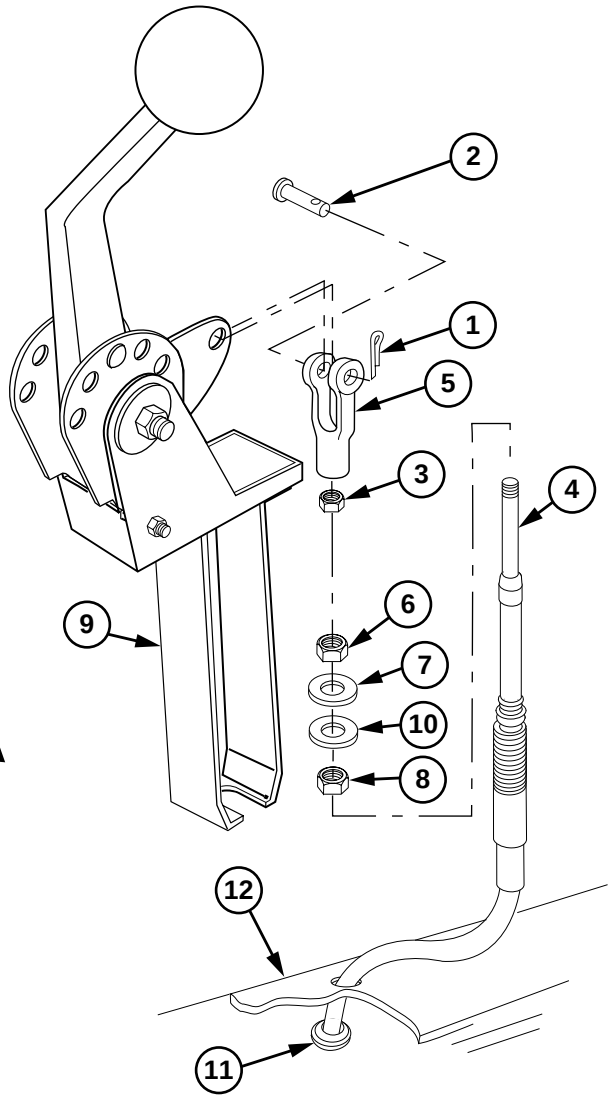
(7) Back off jamnut (8) from bracket (9).

(8) Remove cable (4) from bracket (9).

(9) Remove washer (10) and jamnut (8) from cable (4).

(10) Push cable (4) and grommet (11) down through cab floor (12).



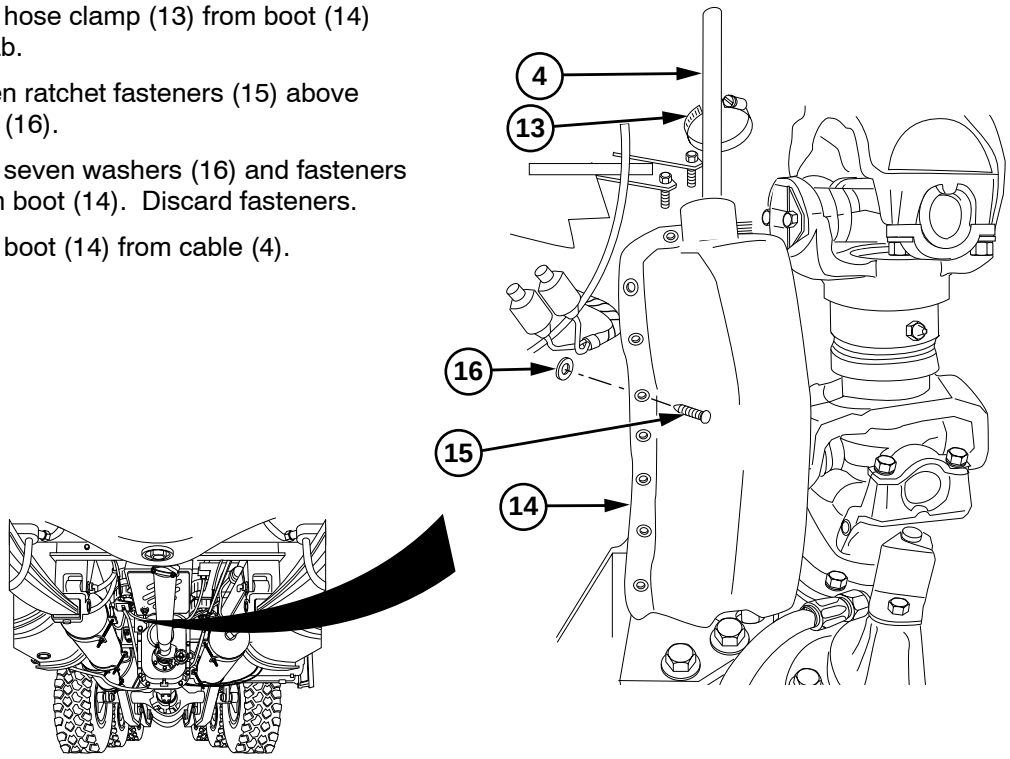


(11) Remove hose clamp (13) from boot (14) under cab.

(12) Cut seven ratchet fasteners (15) above washers (16).

(13) Remove seven washers (16) and fasteners (15) from boot (14). Discard fasteners.

(14) Remove boot (14) from cable (4).



(15) Remove cotter pin (17) from clevis pin (18). Discard cotter pin.

(16) Loosen jamnut (19) on cable (4).

(17) Remove clevis pin (18) from yoke (20) and shift rod (21).

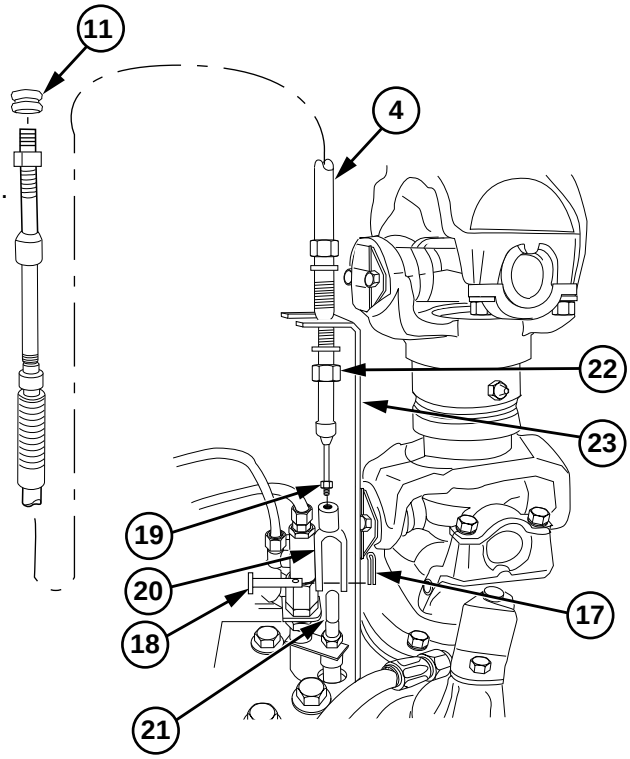
(18) Loosen jamnut (22) on cable (4).

(19) Remove cable (4) from bracket (23).

(20) Unscrew yoke (20) from cable (4).

(21) Remove grommet (11) from cable (4).

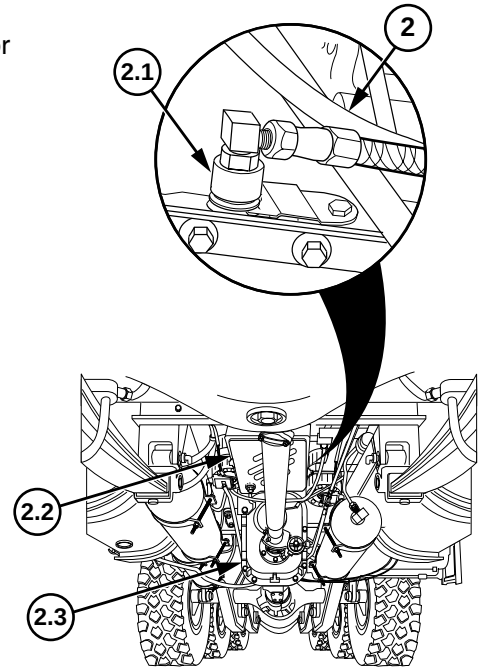
(22) Remove cable (4) from HET Tractor.



9-2. TWO-SPEED SHIFT LINKAGE ADJUSTMENT/REPLACEMENT (CONT)

b. Installation

(1) Route cable (2) past transmission modulator (2.1) and transmission pan (2.2) to transfer case (2.3).



NOTE

Yoke must be threaded on cable 0.75 in. (1.9 cm) to ensure proper yoke to cable engagement.

(1.1) Thread lower yoke (1) on cable (2).

(2) Position upper end of cable (2) by hole in cab floor (3).

(3) Feed cable (2) through hole in cab floor (3).

(4) Slide grommet (4) onto cable (2).

(5) Install grommet (4) in hole in cab floor (3).

(6) Place jamnut (5), washers (6 and 7), and jamnut (8) on cable (2).

(7) Position cable (2) in upper bracket (9).

NOTE

Threaded portion of cable should be centered in cable bracket before tightening jamnut.

(8) Secure cable (2) in bracket (9) with jamnuts (5 and 8) and washers (6 and 7).

(9) Thread jamnut (10) onto cable (2).

NOTE

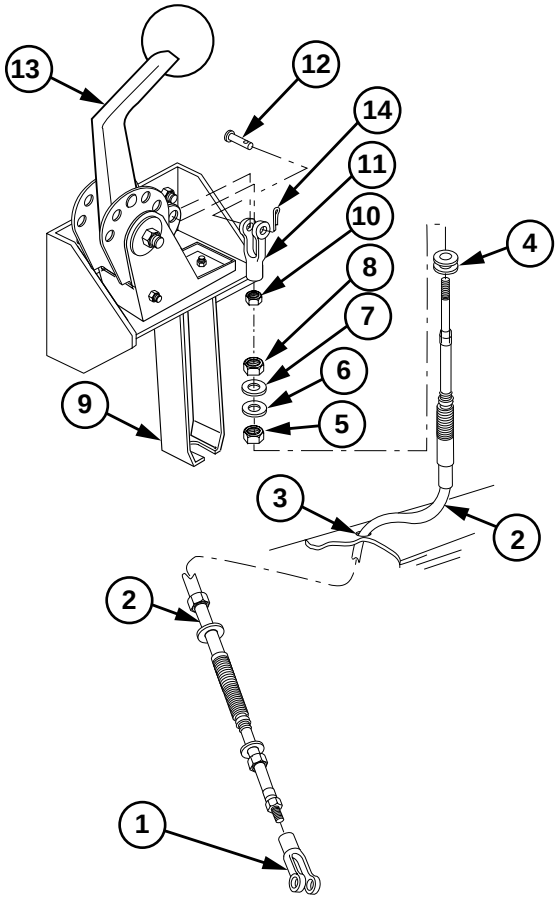
Cable adjustment is done on transfer case end of cable. To ensure cable has adequate threads on transfer case end, thread yoke on cable 0.75 in. (1.9 cm).

(10) Install yoke (11) on cable (2).

(11) Install clevis pin (12) in yoke (11) and shift lever (13).

(12) Install new cotter pin (14) in clevis pin (12).

(13) Tighten jamnut (10) against yoke (11) on cable (2).

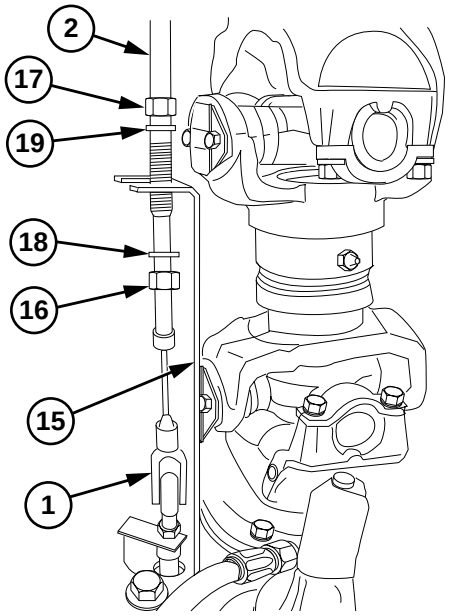


(14) Position lower end of cable (2) in lower bracket (15).

CAUTION

- Never use plastic cable ties to secure cable. Failure to comply may cause difficult shifting and damage to equipment.
- Threaded portion of cable should be centered in cable bracket before tightening jamnut.

(15) Secure cable (2) in bracket (15) with jamnuts (16 and 17) and washers (18 and 19).



c. Adjustment

NOTE

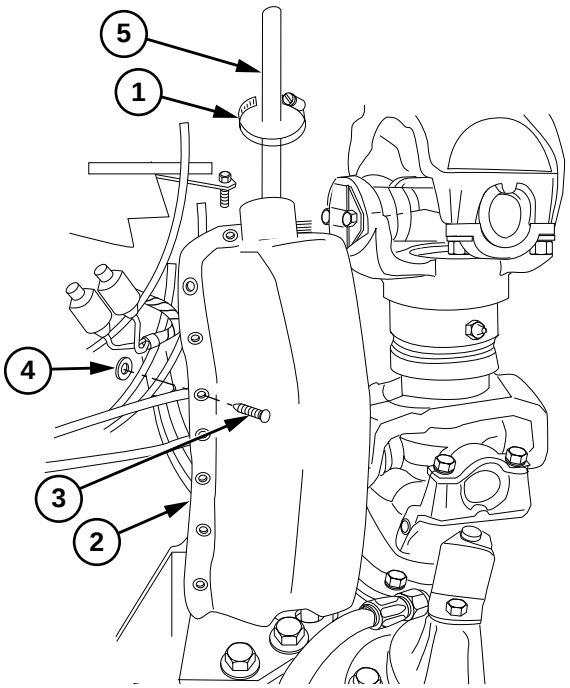
If boot was removed, go to step (5).

(1) Remove clamp (1) from boot (2).

(2) Cut seven ratchet fasteners (3) above washers (4).

(3) Remove seven ratchet fasteners (3) and washers (4) from boot (2). Discard fasteners.

(4) Remove boot (2) from shift cable (5).

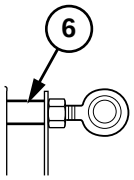


9-2. TWO-SPEED SHIFT LINKAGE ADJUSTMENT/REPLACEMENT (CONT)

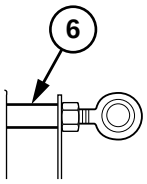
NOTE

Shift rod will lock in three positions: (1) all the way in – HIGH, (2) middle – NEUTRAL, and (3) all the way out – LOW.

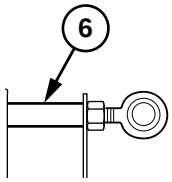
(5) Position shift rod (6) in NEUTRAL detent.



HIGH SETTING approx. 9/16 in. (14 mm)



NEUTRAL SETTING approx. 1-5/8 in. (41 mm)



LOW SETTING approx. 2-3/4 in. (70 mm)

(6) Loosen jamnut (7).

NOTE

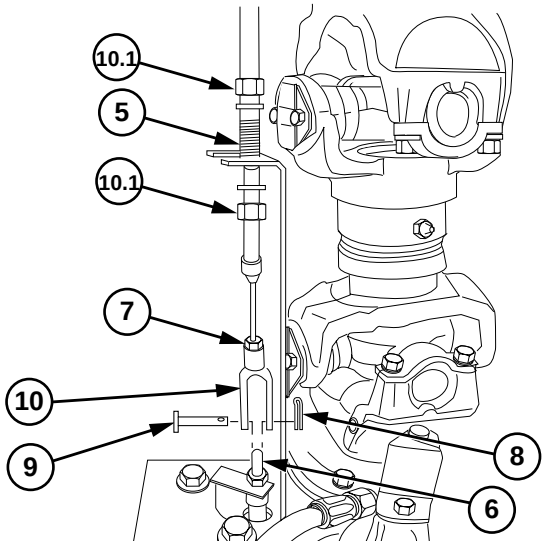
If cable was disconnected from transfer case, go to step (9).

(7) Remove cotter pin (8) from clevis pin (9). Discard cotter pin.

(8) Remove clevis pin (9) from yoke (10) and shift rod (6).

NOTE

Yoke must be threaded on cable 0.75 in. (1.9 cm) to ensure proper yoke to cable engagement.



(9) Install clevis pin (9) in yoke (10) and shift rod (6).

(10) Loosen two nuts (10.1) on shift cable (5).

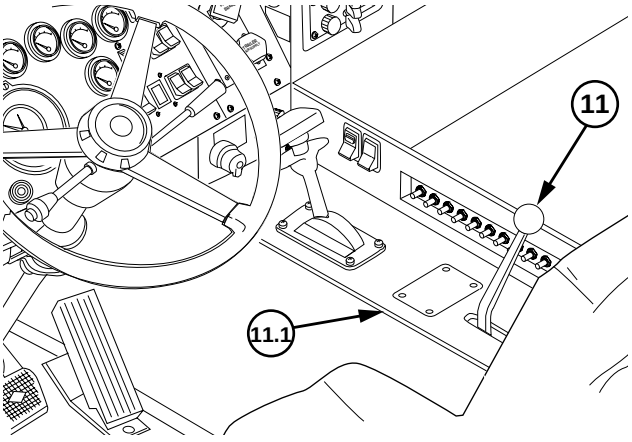
(11) Adjust shift cable (5) in or out to obtain full travel of shift rod in HIGH and LOW range.

(11.1) Tighten two nuts (10.1) on shift cable (5).

(11.2) Shift transfer case shift lever (11) several times into HIGH and LOW range.

(11.3) Remove clevis pin (9) from yoke (10) and shift rod (6).

(11.4) Turn yoke (10) in or out to obtain equal shift lever (11) to doghouse (11.1) clearance in HIGH and LOW range.



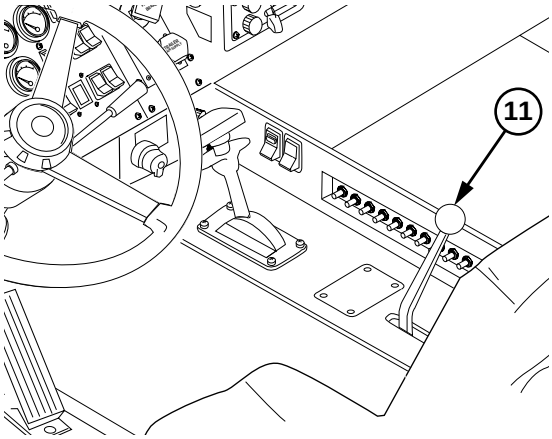
NOTE

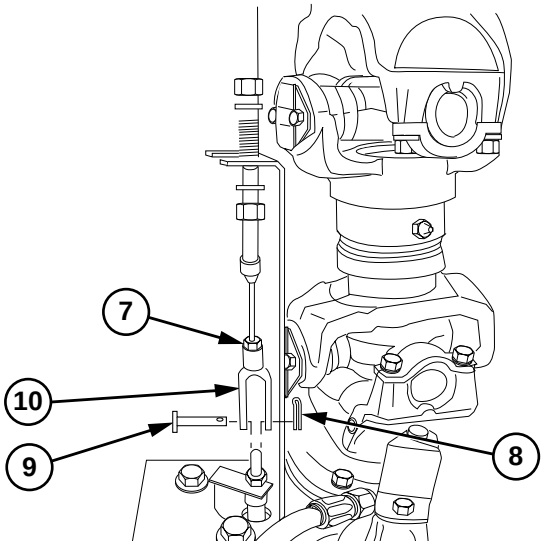
- TRANSFER CASE shift lever should not hit doghouse when shifting into HIGH or LOW range.
- Shift lever should move equal distance in HIGH or LOW range.

(12) Install new cotter pin (8) in clevis pin (9).

(13) Set TRANSFER CASE shift lever (11) to LOW.

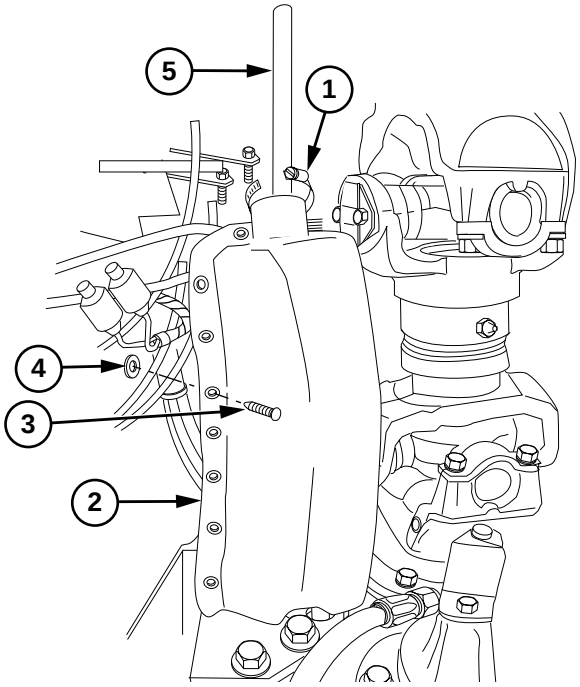
(14) Tighten jamnut (7) against yoke (10).





(15) Install boot (2) on shift cable (5) with seven new ratchet fasteners (3) and washers (4).

(16) Install clamp (1) on boot (2).



d. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check operation of transfer case (TM 9-2320-360-10).

(3) Shut off engine (TM 9-2320-360-10).

(4) Install lower engine access panel (para 16-2).

(5) Install shifter guard (para 16-2).

9-3. SHIFT LEVER REPLACEMENT

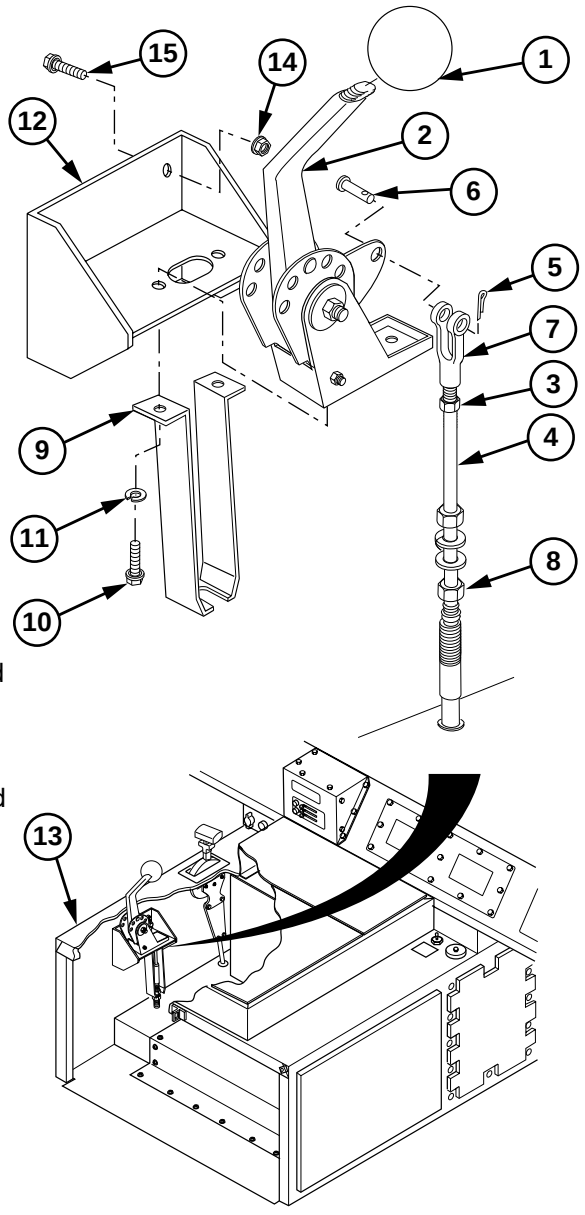
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Shifter guard removed (para 16-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Adhesive-Sealant (Item 6, Appendix C)
Locknuts (4) (Item 72, Appendix G)
Lockwashers (2) (Item 101, Appendix G)
Pin, Cotter (Item 148, Appendix G)



a. Removal

(1) Remove knob (1) from shift lever (2).

(2) Loosen nut (3) on cable (4).

(3) Remove cotter pin (5) from clevis pin (6). Discard cotter pin.

(4) Remove clevis pin (6) from yoke (7) and shift lever (2).

(5) Loosen nut (8) and remove cable (4) from cable bracket (9).

(6) Remove two screws (10), lockwashers (11), and cable bracket (9) from bracket (12). Discard lockwashers.

(7) Remove shift lever (2) from bracket (12) and doghouse (13).

(8) Remove yoke (7) and nut (3) from cable (4).

(9) Remove four locknuts (14), screws (15), and bracket (12) from doghouse (13). Discard locknuts.

b. Installation

(1) Install bracket (1) on doghouse (2) with four screws (3) and new locknuts (4).

NOTE

Cable adjustment is done on transfer case end of cable. To ensure cable has adequate threads on transfer case end, thread yoke on cable 0.50 in. (13 mm).

(2) Loosely install nut (5) and yoke (6) on cable (7).

WARNING

Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.

(2.1) Coat threads of two screws (11) with adhesive-sealant.

(3) Install shift lever (8) and cable bracket (9) on bracket (1) with two new lockwashers (10) and screws (11).

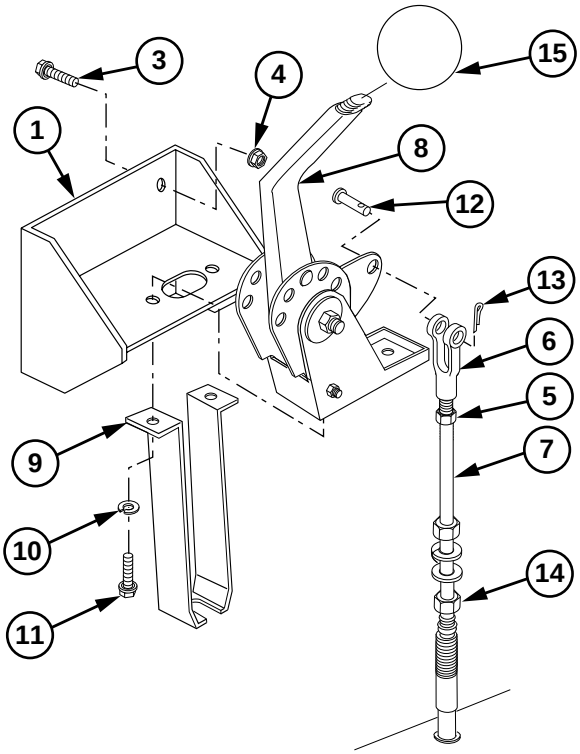
(4) Position cable (7) in cable bracket (9).

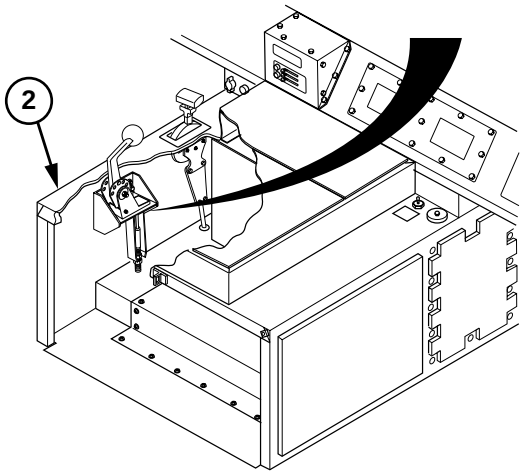
(5) Align holes and install clevis pin (12) in yoke (6) and shift lever (8).

(6) Install new cotter pin (13) in clevis pin (12).

(7) Tighten nut (14) on cable (7).

(8) Install knob (15) on shift lever (8).





c. Follow-On Maintenance

(1) Adjust two-speed shift linkage (para 9-2).

(2) Install shifter guard (para 16-2).

9-4. LUBRICATION LINE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Transfer case drained (LO 9-2320-360-12).

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)

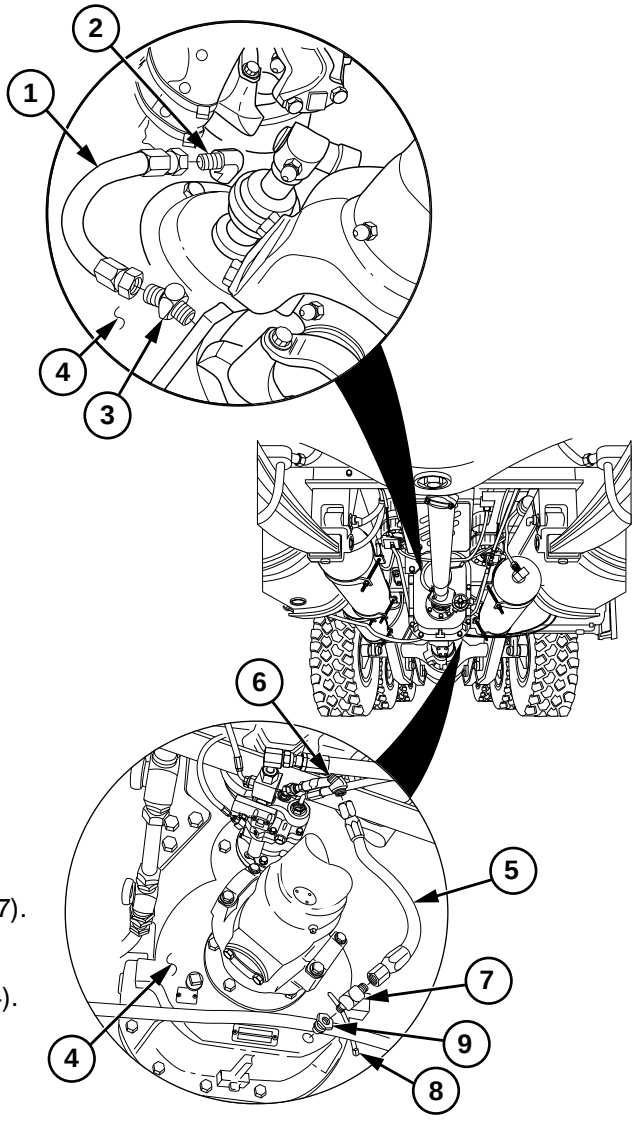
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

(1) Remove lube line no. 2762 (1) from two elbows (2 and 3).

NOTE
Upper elbow will be removed during transfer case replacement.

(2) Remove elbow (3) from transfer case (4).



(3) Remove lube line no. 2831 (5) from fitting (6) and elbow (7).

(4) Remove fitting (6) from transfer case (4).

NOTE
Location of plastic cable tie should be marked before removal.

(5) Remove plastic cable tie (8) from elbow (7).

(6) Remove elbow (7) from strainer (9).

(7) Remove strainer (9) from transfer case (4).

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of strainer (1) and elbow (2) with pipe thread sealing compound.

(2) Install elbow (2) on strainer (1).

(3) Install strainer (1) on transfer case (3).

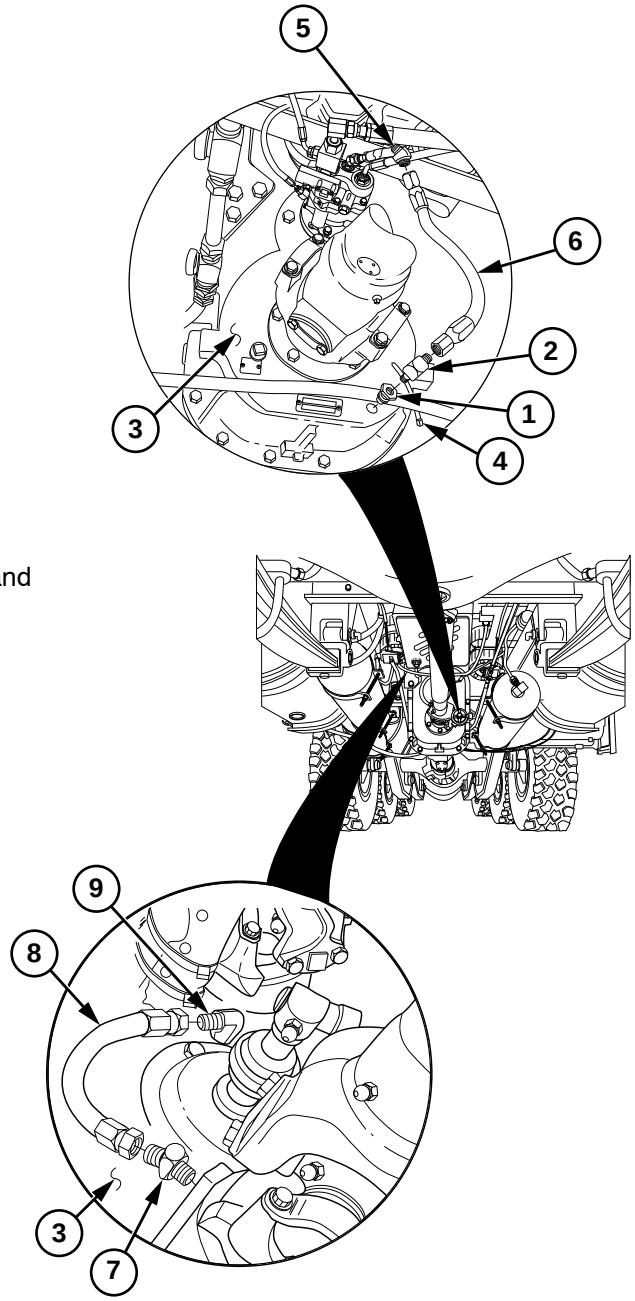
NOTE

Plastic cable tie should be positioned in location marked during removal.

(4) Secure elbow (2) with plastic cable tie (4).

(5) Install fitting (5) on transfer case (3).

(6) Install lube line no. 2831 (6) on fitting (5) and elbow (2).



(7) Coat threads of elbow (7) with pipe thread sealing compound.

(8) Install elbow (7) on transfer case (3).

(9) Install lube line no. 2762 (8) on two elbows (7 and 9).

c. Follow-On Maintenance

(1) Fill transfer case (LO 9-2320-360-12).

(2) Remove wheel chocks.

9-5. TRANSFER CASE BREATHER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

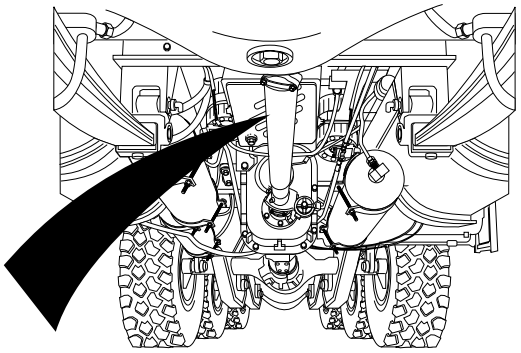
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)

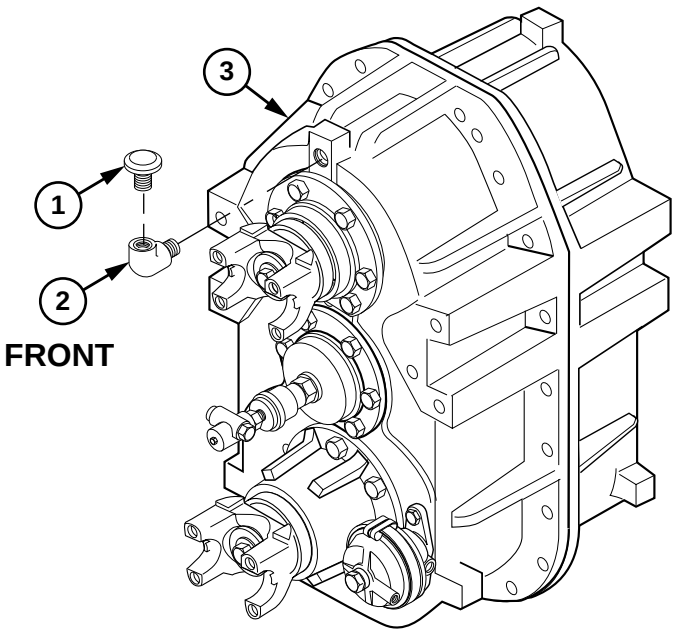
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

(1) Remove breather (1) from elbow (2).

(2) Remove elbow (2) from transfer case (3).





TRANSFER CASE REMOVED FOR CLARITY

b. Installation

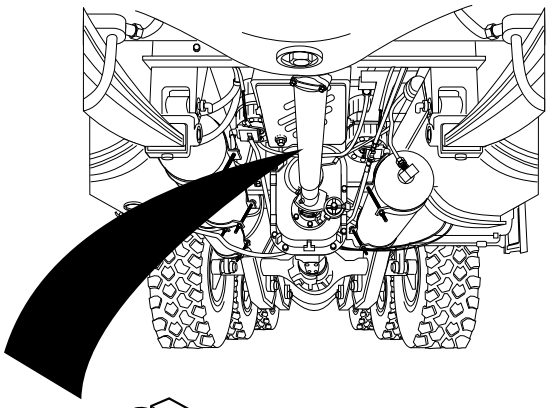
WARNING

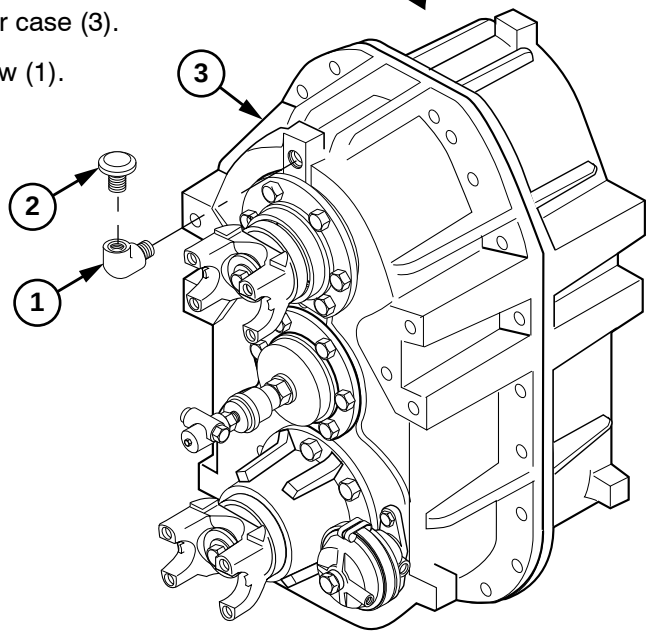
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of elbow (1) and breather (2) with pipe thread sealing compound.

(2) Install elbow (1) in transfer case (3).

(3) Install breather (2) in elbow (1).





TRANSFER CASE
REMOVED FOR CLARITY

c. Follow-On Maintenance

Remove wheel chocks.

9-6. DRIVELINE CONTROL VALVE REPLACEMENT

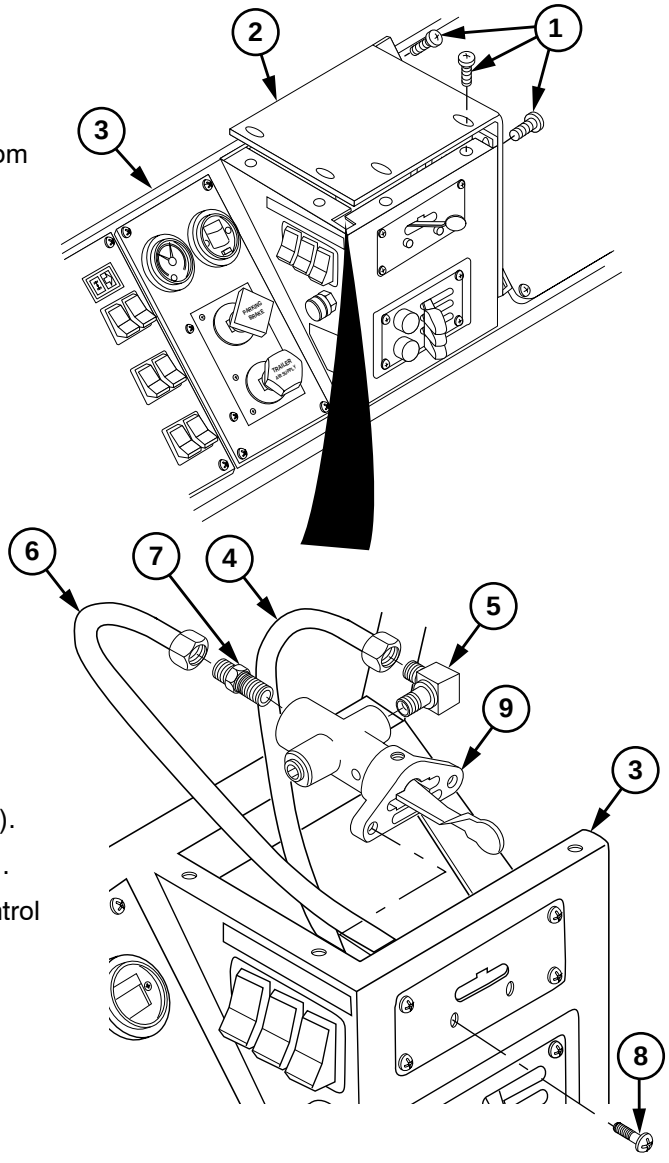
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)



a. Removal

(1) Remove nine screws (1) and panel (2) from dash (3).

NOTE

- Tag and mark hoses before removal.
- To remove hose from elbow or fitting, pull on ferrule with pliers.

(2) Remove hose no. 2765 (4) from elbow (5).

(3) Remove hose no. 2766 (6) from fitting (7).

(4) Remove two screws (8) and driveline control valve (9) from dash (3).

(5) Remove elbow (5) and fitting (7) from valve (9).

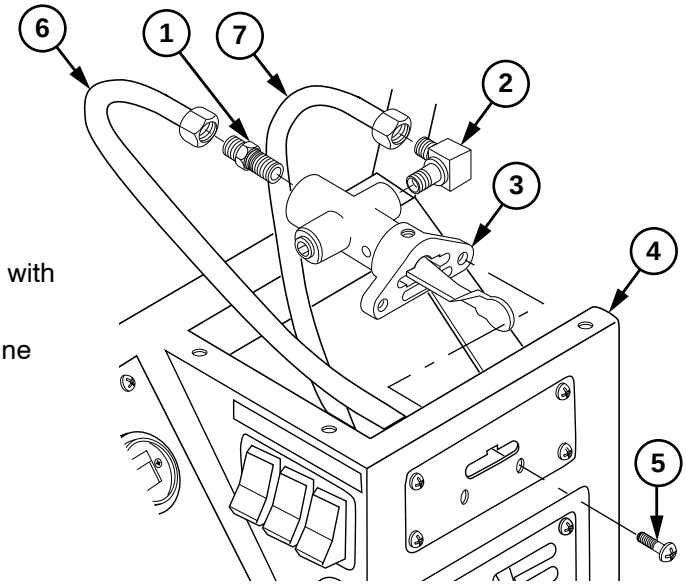
b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



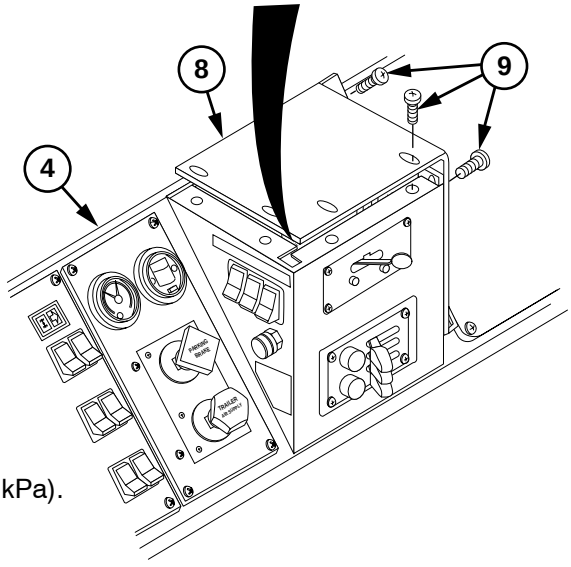
(1) Coat threads of fitting (1) and elbow (2) with pipe thread sealing compound.

(2) Install fitting (1) and elbow (2) on driveline control valve (3).

(3) Install valve (3) on dash (4) with two screws (5).

(4) Install hose no. 2766 (6) on fitting (1).

(5) Install hose no. 2765 (7) on elbow (2).



(6) Install panel (8) on dash (4) with nine screws (9).

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Check for leaks.

(4) Shut off engine (TM 9-2320-360-10).

(5) Remove wheel chocks.

9-7. PUSH VALVE REPLACEMENT/ADJUSTMENT

This task covers:
a. Removal
b. Installation
c. Adjustment
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Transfer case in HIGH range (TM 9-2320-360-10).
Air system drained (TM 9-2320-360-10).

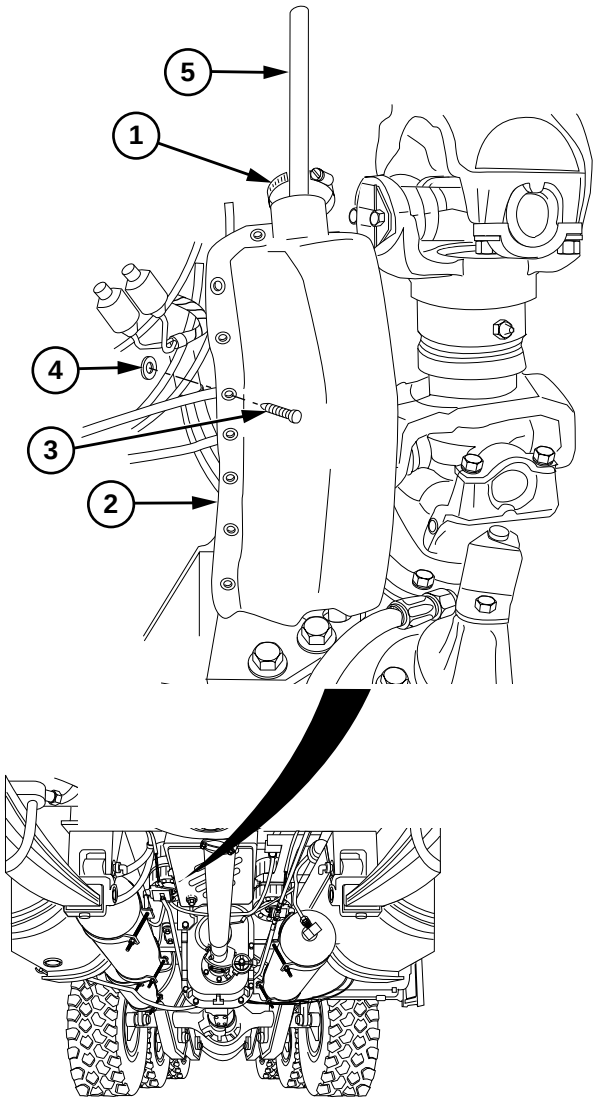
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Fasteners, Ratchet (7) (Item 25, Appendix G)

a. Removal

NOTE
Boot is black plastic cover located on top right side of transfer case.

(1) Remove clamp (1) from boot (2).
(2) Cut seven ratchet fasteners (3) above washers (4).
(3) Remove fasteners (3) and washers (4) from boot (2). Discard fasteners.
(4) Remove boot (2) from shift cable (5).



NOTE

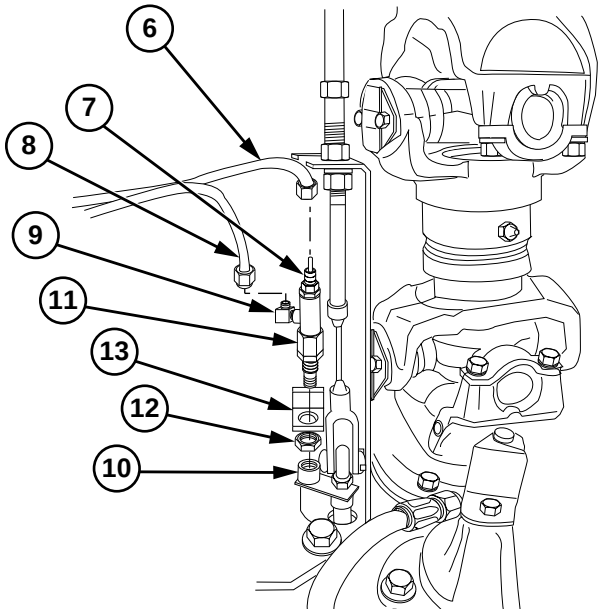
Tag and mark air lines before disconnecting or removing.

(5) Disconnect air line no. 2761 (6) from adapter (7).

(6) Disconnect air line no. 2762 (8) from elbow (9).

(7) Remove boot (10) from push valve (11).

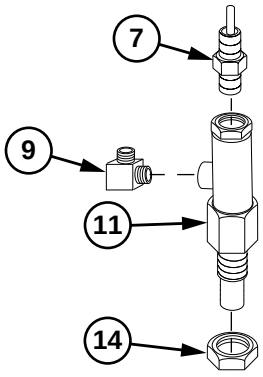
(8) Remove nut (12) and push valve (11) from bracket (13).



(9) Remove nut (14) from push valve (11).

(10) Remove elbow (9) from push valve (11).

(11) Remove adapter (7) from push valve (11).

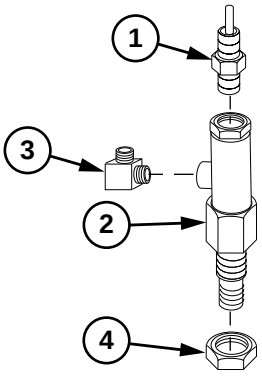


9-7. PUSH VALVE REPLACEMENT/ADJUSTMENT (CONT)

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



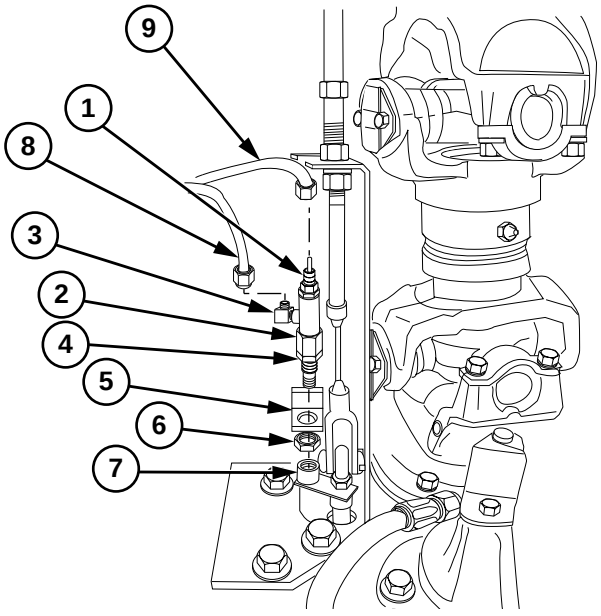
(1) Coat threads of adapter (1) with pipe thread sealing compound.

(2) Install adapter (1) in push valve (2).

(3) Coat threads of elbow (3) with pipe thread sealing compound.

(4) Install elbow (3) in push valve (2).

(5) Install nut (4) on push valve (2).



(6) Install push valve (2) through hole in bracket (5).

(7) Install nut (6) on push valve (2) while holding nut (4).

(8) Install boot (7) on push valve (2).

(9) Connect no. 2762 air line (8) to elbow (3).

(10) Connect no. 2761 air line (9) to adapter (1).

c. Adjustment

NOTE

If boot has already been removed, begin with step (5).

(1) Remove clamp (1) from boot (2).

(2) Cut seven ratchet fasteners (3) above washers (4).

(3) Remove fasteners (3) and washers (4) from boot (2). Discard fasteners.

(4) Remove boot (2) from shift cable (5).

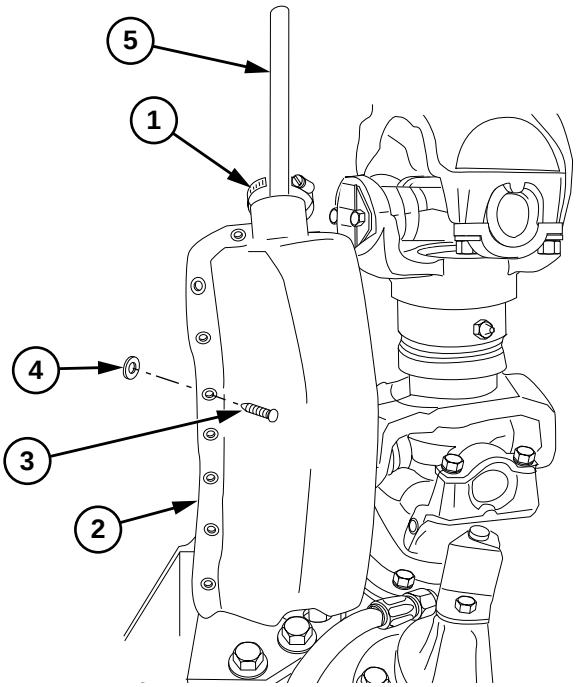
(5) Start engine and build up air pressure to 110–120 psi (758–827 kPa) (TM 9-2320-360-10).

(6) Shut off engine (TM 9-2320-360-10).

(7) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(8) Place DRIVELINE control in UNLOCK position (TM 9-2320-360-10).

(9) Place TRANSFER CASE lever in LOW (TM 9-2320-360-10).



NOTE

- If all wheel drive indicator lights, adjustment is correct. Go to step (13).
- If all wheel drive indicator light fails, do steps (11) and (12).

(10) Check if all wheel drive indicator lights (TM 9-320-360-10).

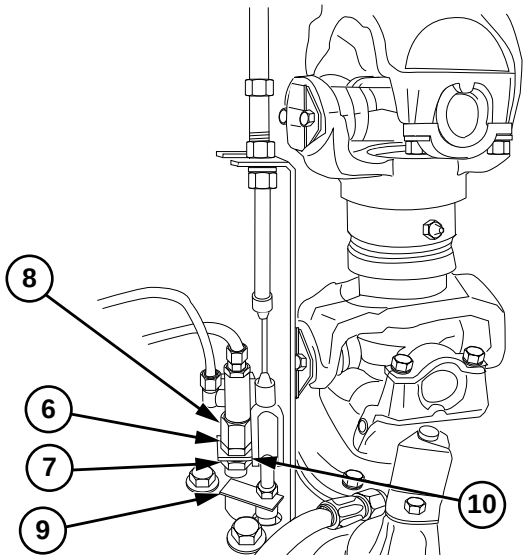
CAUTION

Actuator lever must not bottom out on push valve. Failure to comply may result in damage to push valve.

(11) Loosen nuts (6 and 7) on push valve (8). Move valve (8) toward actuator lever (9) through hole in bracket (10).

(12) Tighten nuts (6 and 7) and test again for proper operation.

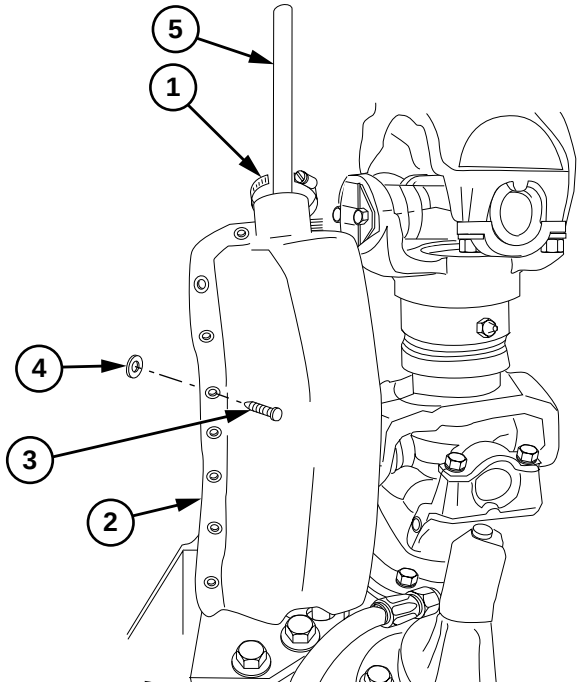
(13) Check for air leaks at push valve (8).



9-7. PUSH VALVE REPLACEMENT/ADJUSTMENT (CONT)

(14) Install boot (2) on shift cable (5) with seven new ratchet fasteners (3) and washers (4).

(15) Install clamp (1) on boot (2).



d. Follow-On Maintenance

Remove wheel chocks.

9-8. LOCKOUT SHIFT CHAMBER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Socket Wrench Set, 3/8 In. Drive (Item 45, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

Materials/Parts
Adhesive-Sealant (Item 4, Appendix C)
Adhesive-Sealant (Item 6, Appendix C)
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknut (Item 52, Appendix G)
Lockwashers (2) (Item 102, Appendix G)
Packing, Preformed (Item 143, Appendix G)
Washers, Copper (2) (Item 179, Appendix G)

a. Removal

NOTE
Tag and mark air hoses before disconnecting.

(1) Remove hose no. 2769 (1) from elbow (2).

(2) Remove hose no. 2874 (3) from elbow (4).

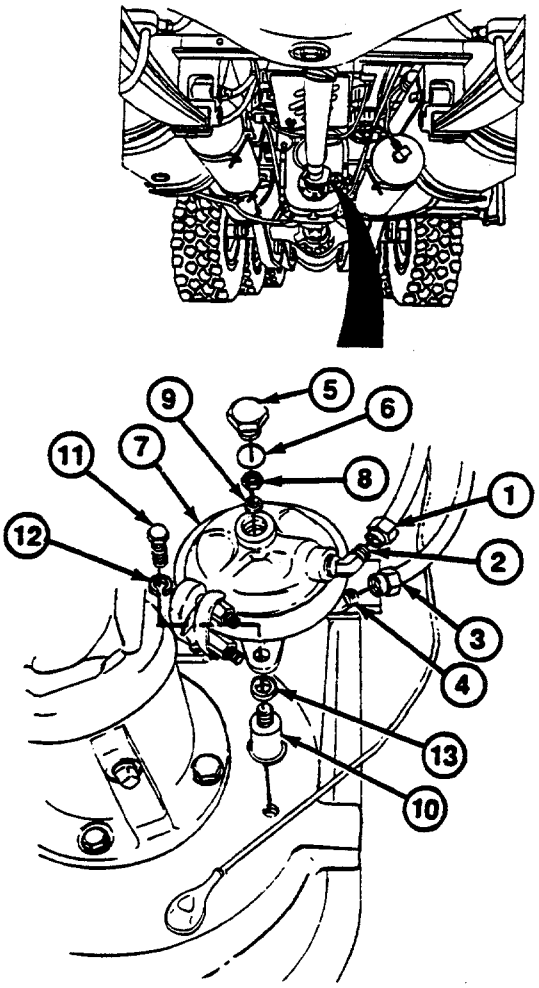
(3) Remove plug (5) and preformed packing (6) from lockout shift chamber (7). Discard preformed packing.

(4) Remove locknut (8) and copper washer (9) from stud (10). Discard locknut and copper washer.

(5) Remove two screws (11) and lockwashers (12) from lockout shift chamber (7). Discard lockwashers.

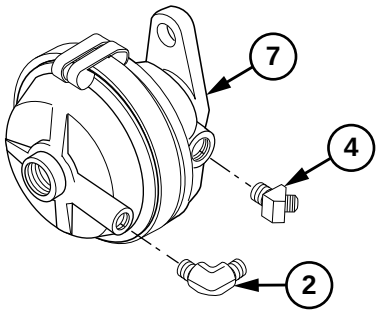
NOTE
Gently strike lockout shift chamber with soft-faced mallet to unseat from transfer case.

(6) Remove lockout shift chamber (7) and copper washer (13) from stud (10). Discard copper washer.



9-8. LOCKOUT SHIFT CHAMBER REPLACEMENT (CONT)

(7) Remove elbow (2) and elbow (4) from lockout shift chamber (7).



b. Installation

WARNING

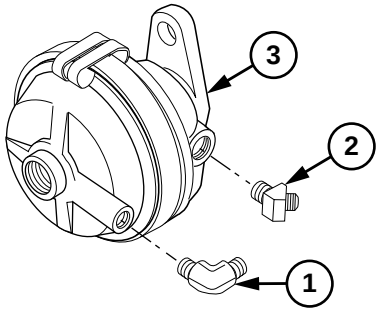
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

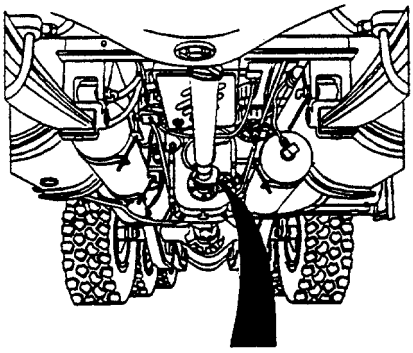
(1) Coat threads of elbow (1) and elbow (2) with pipe thread sealing compound.

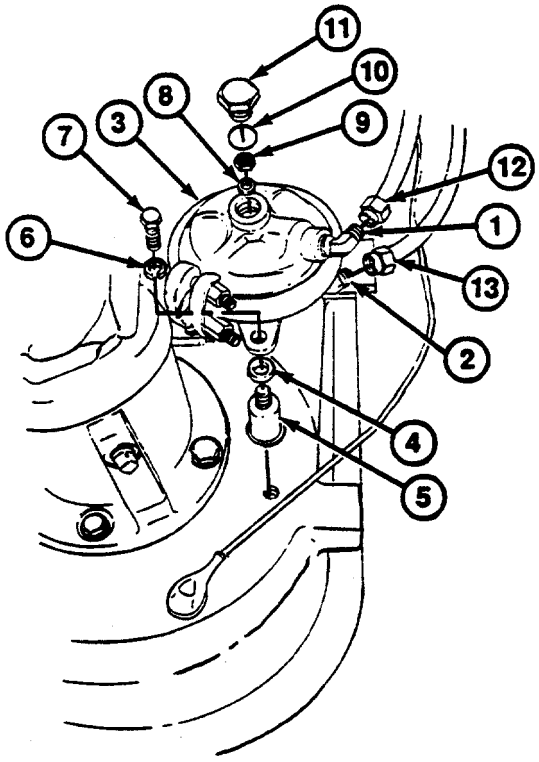
(2) Install elbow (1) and elbow (2) on lockout shift chamber (3).



WARNING

Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.





(3) Coat mounting surface of lockout shift chamber (3) with adhesive-sealant (Item 4, Appendix C).

(4) Install new copper washer (4) on stud (5).

(5) Install lockout shift chamber (3) on stud (5).

(6) Install new lockwashers (6) on screws (7).

(7) Coat threads of screws (7) with adhesive-sealant (Item 6, Appendix C).

(8) Install new lockwashers (6) and screws (7) on lockout shift chamber (3). Torque to 200 lb-in. (23 N·m).

(9) Install new copper washer (8) and new locknut (9) on stud (5).

(10) Install new preformed packing (10) and plug (11) on lockout shift chamber (3).

(11) Install hose no. 2769 (12) on elbow (1).

(12) Install hose no. 2874 (13) on elbow (2).

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Check for leaks and proper operation of lockout shift chamber (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

(5) Remove wheel chocks.

CHAPTER 10
PROPELLER SHAFTS MAINTENANCE

Contents

	Para	Page
Introduction	10-1	10-1
Propeller Shaft and Universal Joint Repair	10-2	10-2

Section I. INTRODUCTION

10-1. INTRODUCTION

This chapter contains instructions for repair of the propeller shafts at the Unit maintenance level. Some parts must be removed before propeller shafts can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

10-2. PROPELLER SHAFT AND UNIVERSAL JOINT REPAIR

This task covers:

a. Removal
b. Disassembly
c. Cleaning/Inspection
d. Assembly
e. Installation
f. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions

Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Transfer case shift lever set to NEUTRAL (TM 9-2320-360-10).

Tools and Special Tools

Tool Kit, Genl Mech (Item 54, Appendix F)
Compressor Unit, Air (Item 3, Appendix F)
Goggles, Industrial (Item 14, Appendix F)
Socket Wrench Set, 3/8 In. Drive (Item 45, Appendix F)
Wrench, Torque 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts

Adhesive-Sealant (Item 6, Appendix C)
Grease, Automotive and Artillery (Item 17, Appendix C)
Cleaning Compound, Solvent (Item 31, Appendix C)
Lockstraps, Transmission to Transfer Case, Transfer Case to No. 2 Axle, and No. 2 Axle to No. 3 Axle (12) (Item 85, Appendix G)
Lockstraps, Transfer Case to No. 1 Axle and No. 3 Axle to No. 4 Axle (8) (Item 86, Appendix G)

Personnel Required

Two

CAUTION

Propshaft parts must not be rotated from their original position during reassembly. An indexing line should be drawn down entire length of all assemblies prior to removal. Failure to comply may result in driveline vibration and damage to equipment.

NOTE

These procedures are used for all propeller shafts. Propeller shafts are all removed, disassembled, cleaned and inspected, assembled, and installed the same way.

b. Removal

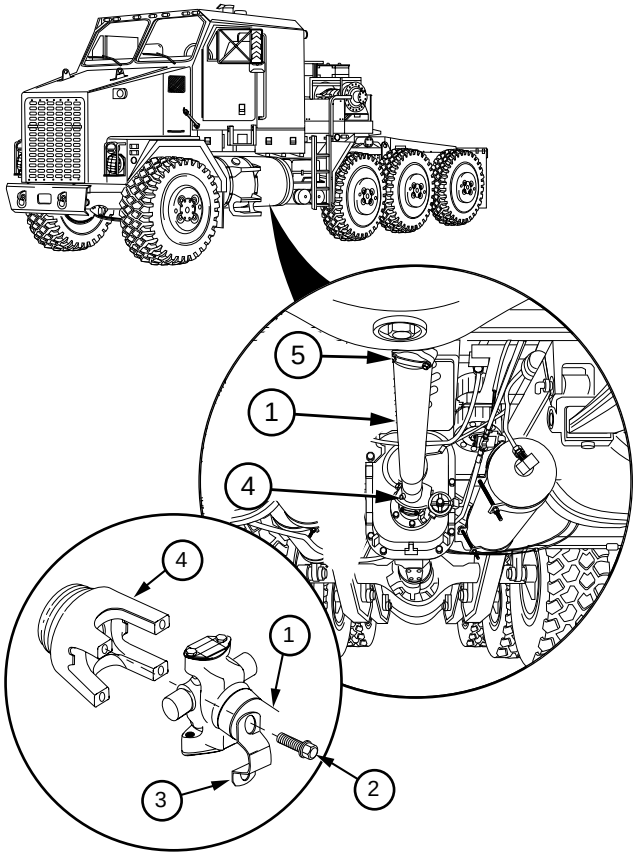
WARNING

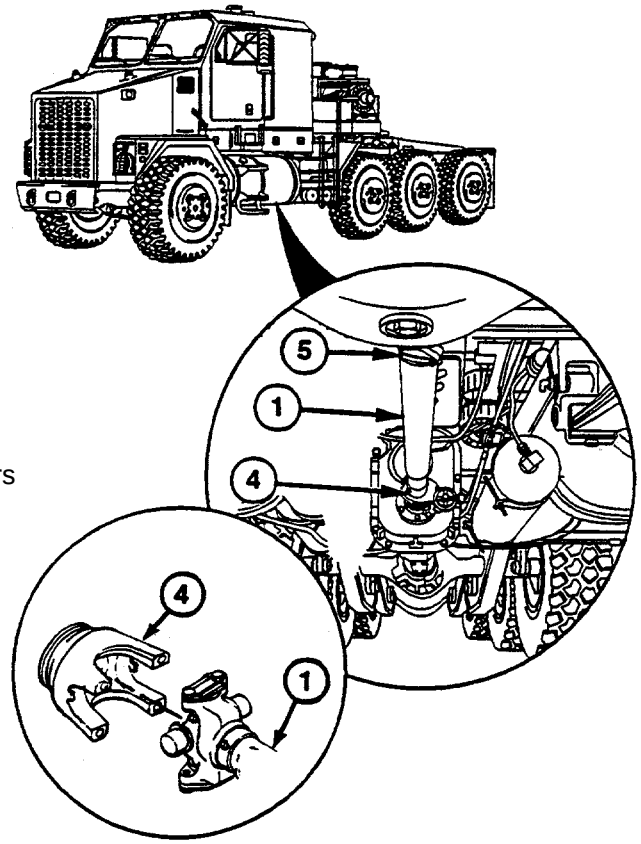
Support propeller shaft during removal. Injury to personnel may result if propeller shaft falls.

(1) Support propeller shaft (1) with lifting strap and aid of assistant.

(2) Remove four capscrews (2) and two bearing straps (3) from yoke (4).

(3) Repeat step (2) for yoke (5).





CAUTION

Use care when removing propeller shaft from yoke. Bearing cap or needle bearings may fall out and be damaged or lost.

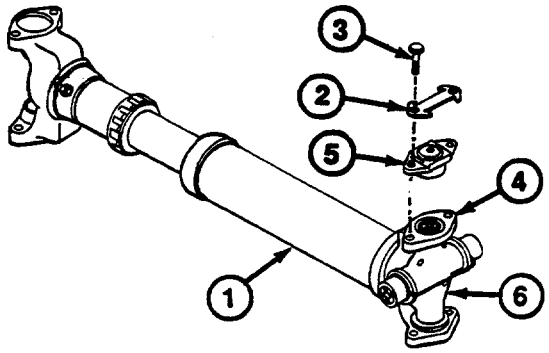
(4) Compress and remove propeller shaft (1) from yokes (4 and 5) while assistant lowers lifting strap.

c. Disassembly

(1) Place propeller shaft (1) on clean work surface.

(2) Bend lockstrap (2) tabs out and away from screws (3).

(3) Remove two screws (3) and lockstrap (2) from each side of yoke (4). Discard lockstrap.



CAUTION

Use care when removing bearing caps from universal joint and yoke. Needle bearings and check valves may fall out and be damaged or lost.

(4) Remove two bearing caps (5) from universal joint (6) and yoke (4).

10-2. PROPELLER SHAFT AND UNIVERSAL JOINT REPAIR (CONT)

(5) Remove universal joint (6) from yoke (4).

(6) Remove retaining wire (7) and two bearing caps (8) from universal joint (6).

NOTE

Do step (7) only if check valves stayed in bearing caps.

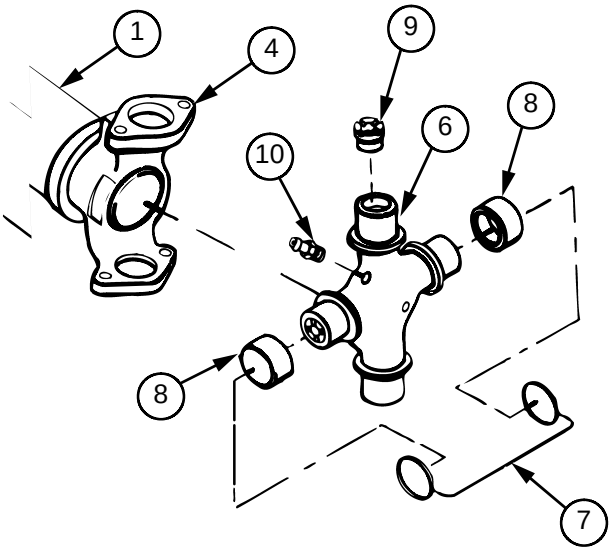
(7) Install check valves (9) in universal joint (6).

NOTE

Some universal joints have two fittings.

(8) Remove fittings (10) from universal joint (6).

(9) Repeat steps (1) thru (8) for universal joint (6) at other end of propeller shaft (1).



NOTE

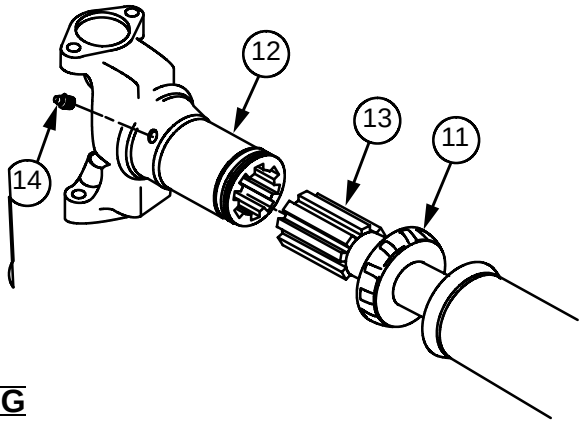
Mark position of slip yoke and splined shaft before removing dust cap.

(10) Remove dust cap (11) from slip yoke (12).

(11) Remove splined shaft (13) from slip yoke (12).

(12) Remove dust cap (11) from splined shaft (13).

(13) Remove grease fitting (14) from slip yoke (12).



d. Cleaning/Inspection

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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

- **The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).**
- **Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.**
- **Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.**
- **Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.**
- **Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.**

(1) Clean all metal parts with solvent cleaning compound.

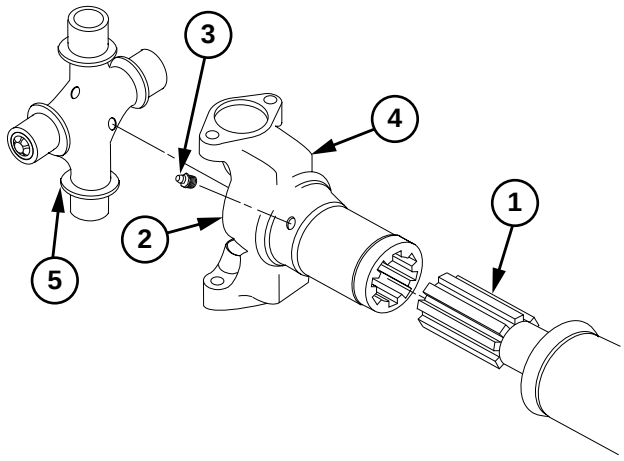
WARNING

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

(2) Dry parts with compressed air.

NOTE

Number of balance weights installed on splined shaft vary.



(3) Inspect splined shaft (1) for damage, bent tubing, or missing balance weights.

(4) Remove burrs from surfaces where prying occurred.

(5) Remove foreign material (paint, rust, etc.) build up on propeller shafts and components.

(6) Inspect for missing or damaged end plug (2) and grease fitting (3) on slip yoke (4).

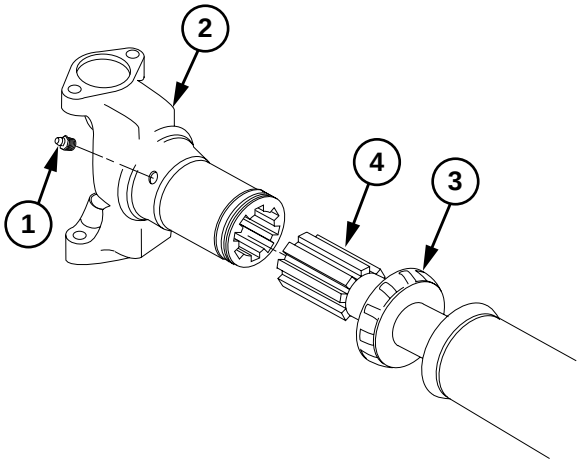
(7) Inspect slip yoke (4) for broken, damaged, or missing teeth.

(8) Inspect universal joint cross (5) for wear.

e. Assembly

CAUTION

Propshaft parts must be positioned in locations marked during removal. Failure to comply may result in driveline vibration and damage to equipment.



(1) Install grease fitting (1) on slip yoke (2).

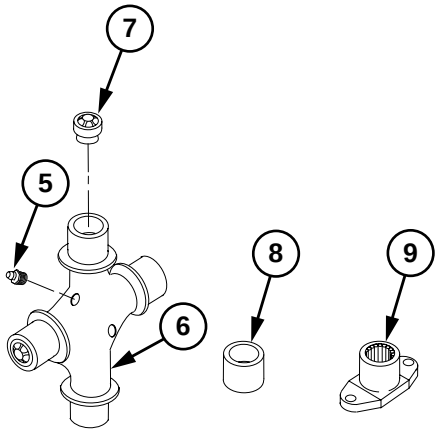
(2) Install dust cap (3) on splined shaft (4).

(3) Install slip yoke (2) on splined shaft (4).

(4) Install dust cap (3) on slip yoke (2).

NOTE

Some universal joints have two fittings.



(5) Install fittings (5) in universal joint (6).

CAUTION

All four check valves must be installed correctly, otherwise lubricant will not flow through check valves and may cause equipment damage.

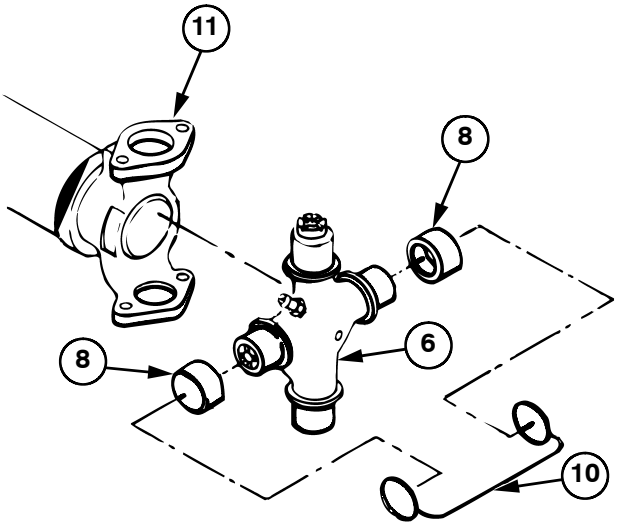
(6) Install check valves (7) in universal joint (6).

(7) Coat inside of bearing caps (8 and 9) with grease.

10-2. PROPELLER SHAFT AND UNIVERSAL JOINT REPAIR (CONT)

(8) Install two bearing caps (8) and retaining wire (10) on universal joint (6).

(9) Install universal joint (6) on yoke (11).



(10) Install two bearing caps (9) on universal joint (6) and yoke (11).

(11) Install new lockstrap (12) with two screws (13) on each side of yoke (11). Torque to values given in table 10-1.

(12) Bend lockstrap (12) over screws (13).

(13) Repeat steps (5) thru (12) for universal joint on other end of propeller shaft (14).

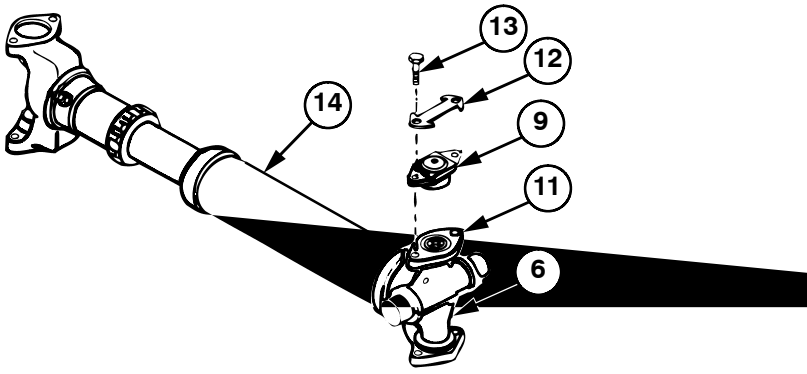


Table 10-1. Lockstrap Screw Torque Requirements

Propeller Shaft	Torque Requirement
Transmission to Transfer Case	32-42 lb-ft (43-57 N·m)
Transfer Case to No. 1 Axle	17-24 lb-ft (23-33 N·m)
Transfer Case to No. 2 Axle	32-42 lb-ft (43-57 N·m)
No. 2 Axle to No. 3 Axle	32-42 lb-ft (43-57 N·m)
No. 3 Axle to No. 4 Axle	17-24 lb-ft (23-33 N·m)

f. Installation

(1) Install lifting strap on propeller shaft (1).

WARNING

Support propeller shaft during installation. Personnel may be injured if propeller shaft falls.

(2) Install propeller shaft (1) on yoke (2).

WARNING

Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.

(3) Coat threads of four capscrews (3) with adhesive-sealant.

(4) Install two bearing straps (4) on yoke (2) with four capscrews (3). Torque to values given in table 10-2.

(5) Repeat steps (2) thru (4) for yoke (5).

(6) Remove lifting strap from propeller shaft (1).

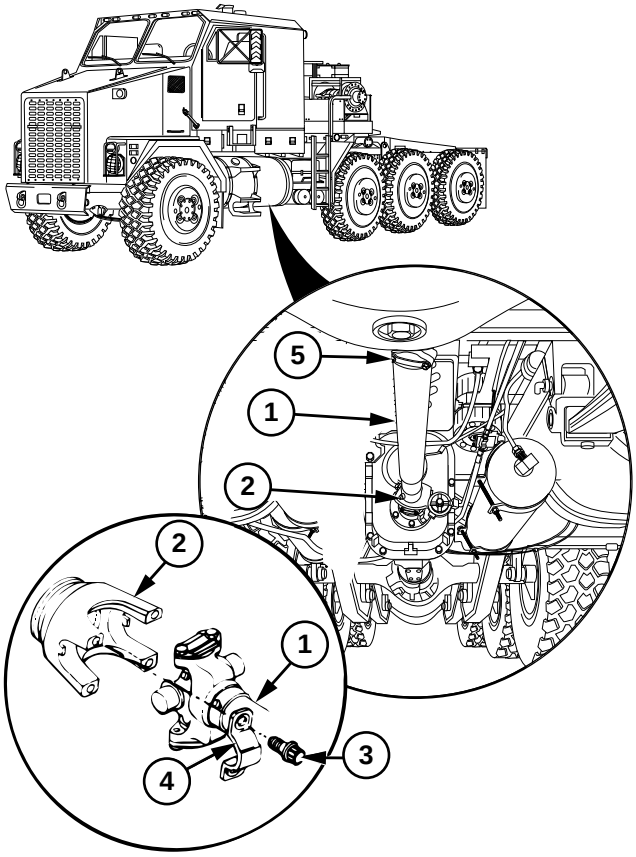


Table 10-2. Bearing Strap Capscrew Torque Requirements

Propeller Shaft	Torque Requirement
Transmission to Transfer Case	130-135 lb-ft (176-183 N·m)
Transfer Case to No. 1 Axle	55-60 lb-ft (75-81 N·m)
Transfer Case to No. 2 Axle	130-135 lb-ft (176-183 N·m)
No. 2 Axle to No. 3 Axle	130-135 lb-ft (176-183 N·m)
No. 3 Axle to No. 4 Axle	55-60 lb-ft (75-81 N·m)

g. Follow-On Maintenance

(1) Lubricate propeller shafts and universal joints (LO 9-2320-360-12).

(2) Remove wheel chocks.

CHAPTER 11
BRAKE SYSTEM MAINTENANCE

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Console Support Bracket Replacement	11-39	11-164
Air Lines and Fittings Replacement	11-40	11-173
Accessory Air Supply Coupling Replacement	11-41	11-196
Pogo Stick Assembly Repair	11-42	11-200
Manifold Replacement	11-43	11-205

Section I. INTRODUCTION

11-1. INTRODUCTION

This chapter contains instructions for maintenance of brake system components at the Unit maintenance level. Some parts must be removed before brake system parts can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

11-2. BRAKE ADJUSTMENT (MANUAL SLACK ADJUSTERS)

This task covers:
a. Adjustment
b. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Adjustment

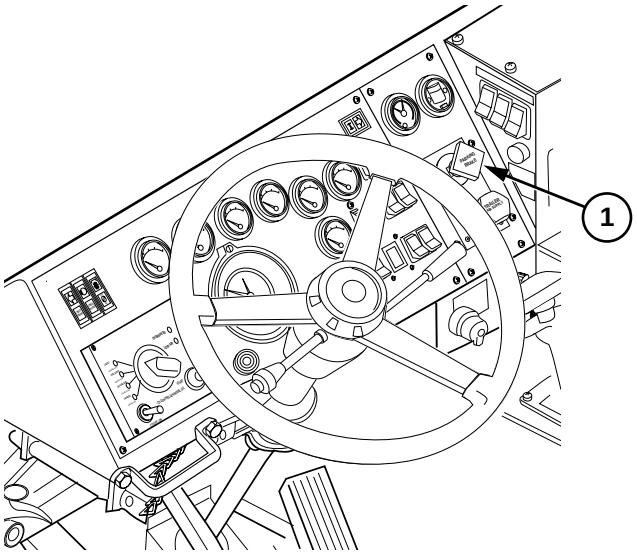
WARNING

All brakes must be adjusted when performing brake adjustment procedure. Failure to comply may cause improper braking and result in injury to personnel.

NOTE

All brakes are adjusted from front of wheel. Left front wheel is shown.

(1) Push in PARKING BRAKE control (1) to release brakes.



NOTE

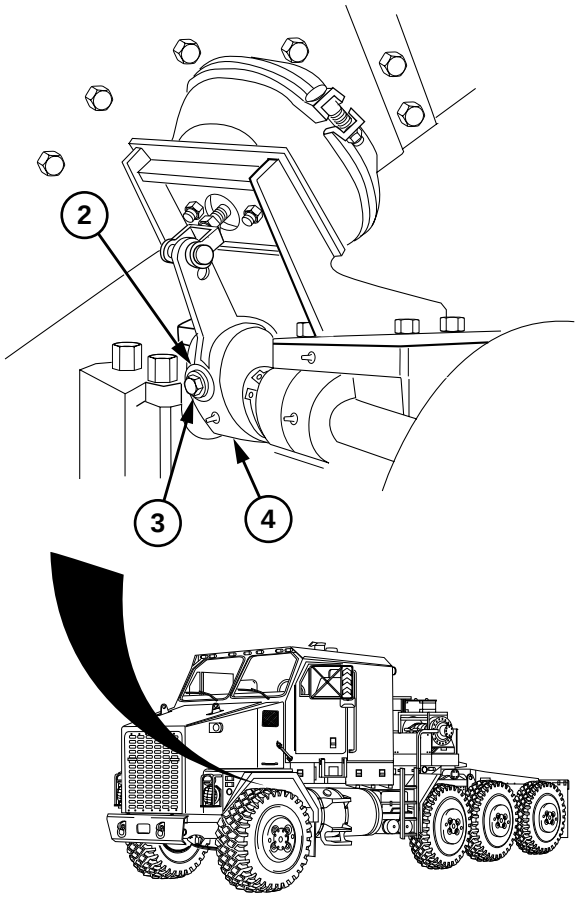
Brake linings will tighten against inside of drum when adjusting screw is turned clockwise.

(2) Push lock (2) in while turning adjusting screw (3) on slack adjuster (4) clockwise until tight.

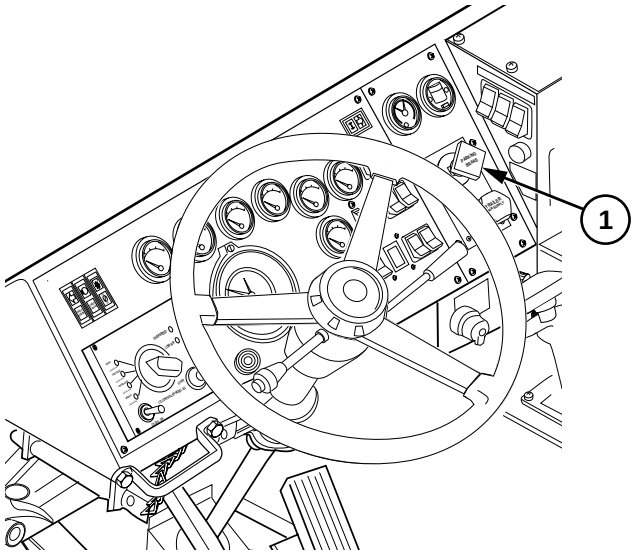
NOTE

Each 1/4 turn moves lining 0.0025 in. (0.06 mm) at center of shoe.

(3) Push lock (2) in while turning adjusting screw (3) on slack adjuster (4) counterclockwise 1/4 turn.



(4) Pull out PARKING BRAKE control (1) to apply brakes.



b. Follow-On Maintenance

(1) Remove wheel chocks.

(2) Drive HET Tractor and check service brake operation (TM 9-2320-360-10).

11-2.1. BRAKE ADJUSTMENT (AUTOMATIC SLACK ADJUSTERS)

This task covers:
a. Adjustment
b. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Wheels chocked.

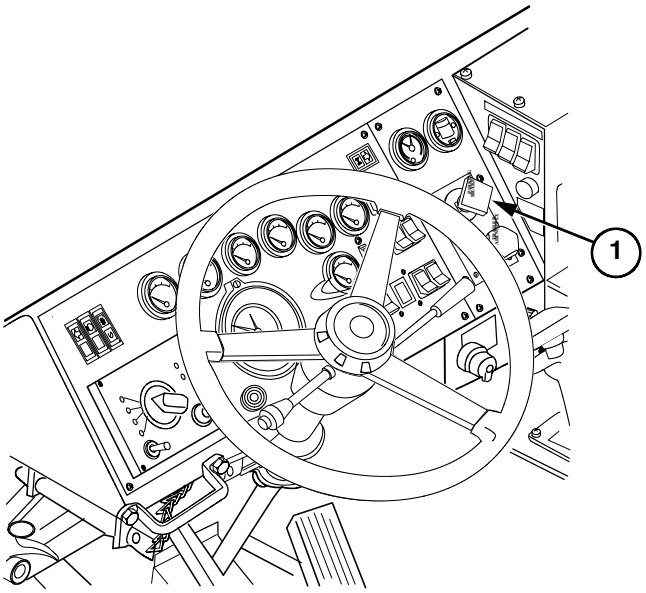
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Adjustment

WARNING

All brakes must be adjusted when performing brake adjustment procedure. Failure to comply may cause improper braking and result in injury to personnel.

(1) Push in PARKING BRAKE control (1) to release brakes.



NOTE

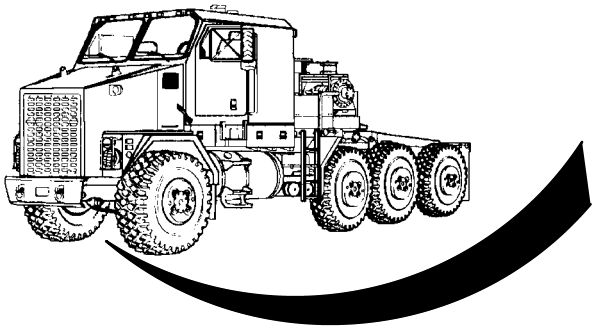
- Brake linings will tighten against inside of drum when adjusting screw is turned clockwise.
- Do steps (2) and (3) for Model A slack adjusters. Do steps (4) and (5) for Model B slack adjusters.

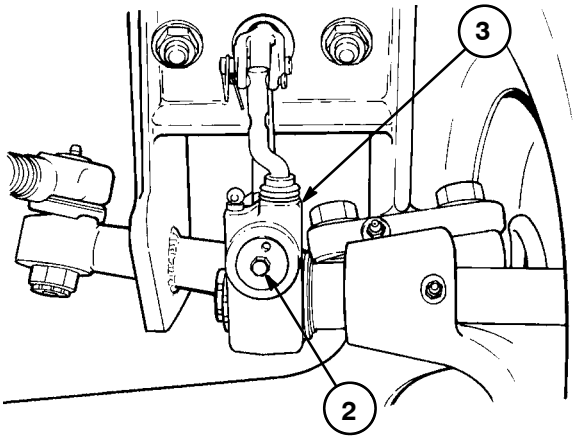
(2) Turn adjusting screw (2) on slack adjuster (3) clockwise until tight.

NOTE

Each 1/4 turn moves lining approximately 0.0025 in. (0.06 mm) at center of shoe.

(3) Turn adjusting screw (2) on slack adjuster (3) counterclockwise 1/2 turn.





MODEL A

CAUTION

The pawl must be pulled out when rotating the manual adjusting nut. Failure to comply will result in damage to slack adjuster.

(4) Pull pawl (4) out while turning adjusting screw (5) clockwise until tight.

(5) Pull pawl (4) out while turning adjusting screw (5) counterclockwise 1/2 turn.

(6) Start engine and build system air pressure to 90–100 psi (621–690 kPa) (TM 9-2320-360-10).

(7) Shut off engine (TM 9-2320-360-10).

(8) Measure distance between center of large clevis pin (6) and brake chamber bracket (7) with brake treadle released. Record measurement.

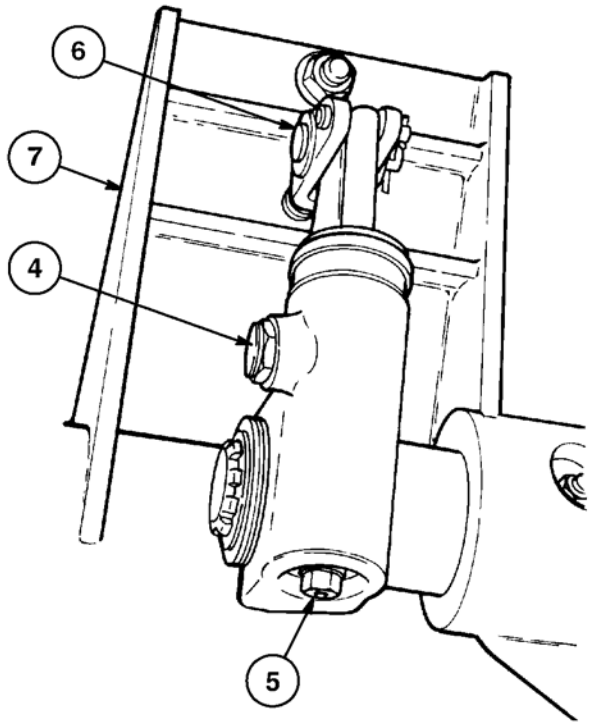
(9) Measure distance between center of large clevis pin (6) and brake chamber bracket (7) while assistant holds brake treadle down. Record measurement.

NOTE

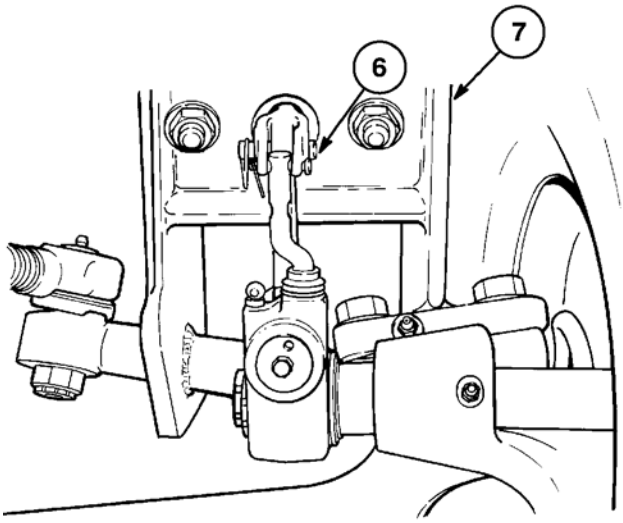
If air chamber stroke is not within specifications, turn adjusting screw clockwise 1/8 turn and repeat steps (8) thru (10).

(10) The difference between measurements made in step (8) and (9) is the air chamber stoke. Air chamber stroke must be 2 in. (50 mm), or less when properly adjusted.

(11) Pull out PARKING BRAKE control (1) to apply brakes.



MODEL B



MODEL A

b. Follow-On Maintenance

(1) Remove wheel chocks.

(2) Drive HET Tractor and check service brake operation (TM 9-2320-360-10).

11-3. BRAKE DRUM/SHOES REPLACEMENT

This task covers:
a. Removal
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Wheel/tire removed (para 12-5).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Screw, Cap, Hex Head 10 mm (Item 40.1 Appendix F)
Socket, Sockethead Screw, 6 mm (Item 44, Appendix F)

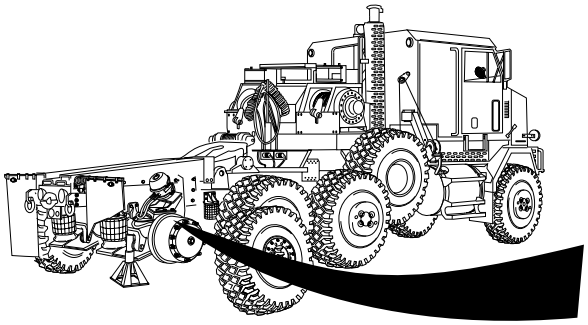
Tools and Special Tools (Cont)
Socket Wrench Set, 3/8 In. Drive (Item 45, Appendix F)

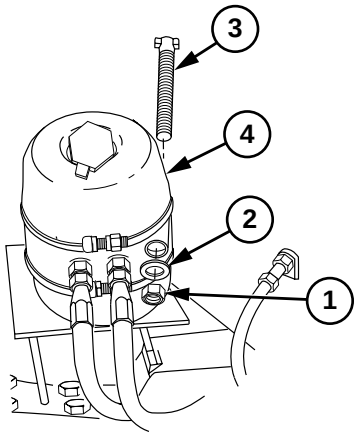
Personnel Required
Two

a. Removal

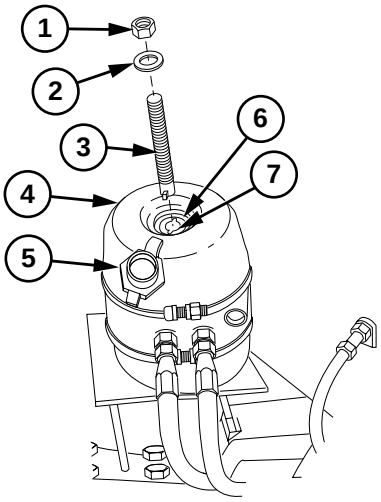
NOTE
Do steps (1) thru (7) for axle no. 2, 3, and 4 only.

(1) Remove nut (1), washer (2), and tool (3) from mounting position on brake chamber (4).





MUD FLAP REMOVED FOR CLARITY



(2) Remove dust cap (5) from access hole (6) in brake chamber (4).

(3) Insert tool (3) in access hole (6) and align with slot (7) inside brake chamber (4).

(4) Push tool (3) in slot (7) until it stops.

(5) Turn tool (3) 90° and pull out until it is seated and stops.

(6) Install washer (2) and nut (1) on tool (3).

(7) Release brake chamber (4) by tightening nut (1) down (clockwise) until it stops.

NOTE

Some axles do not have screws. If screws have been removed previously, go to step (9).

(8) Remove three screws (8) from brake drum (9). Discard screws.

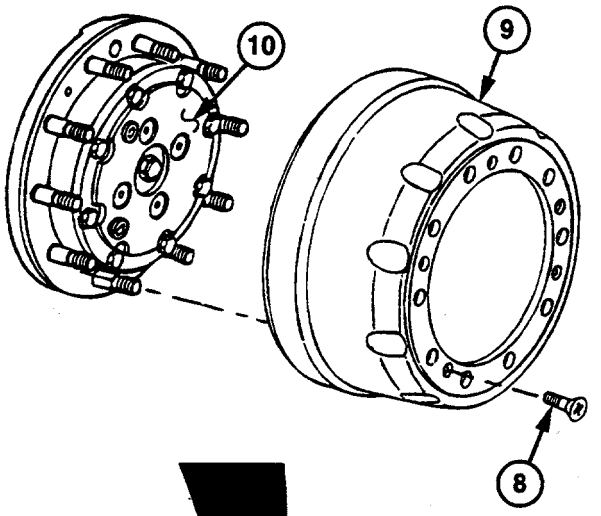
WARNING

Brake drum weighs 135 lb (61 kg). Assistance is required when removing brake drum to avoid personal injury.

NOTE

10mm screws may be turned into three threaded holes in drum to break drum free if stuck on axle.

(9) Remove brake drum (9) from axle (10) with aid of assistant.



WARNING

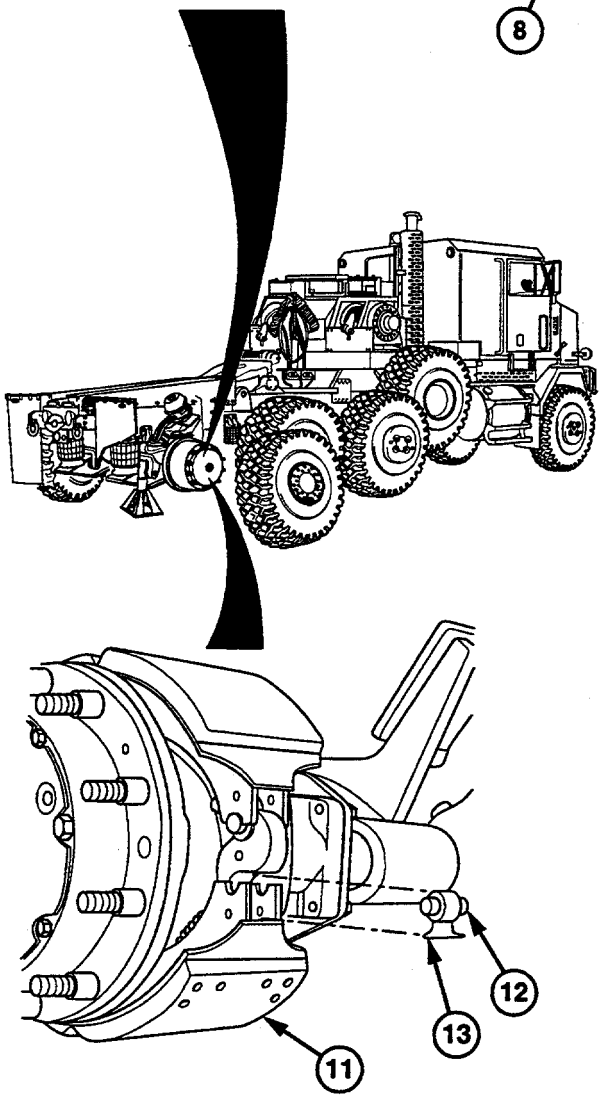
- **Brake shoes may be coated with dust. Breathing dust may be harmful to personnel. Wear filter mask approved for use against brake dust.**
- **Brake shoes are installed with strong spring tension. Keep hands clear when removing parts to prevent serious injury.**

NOTE

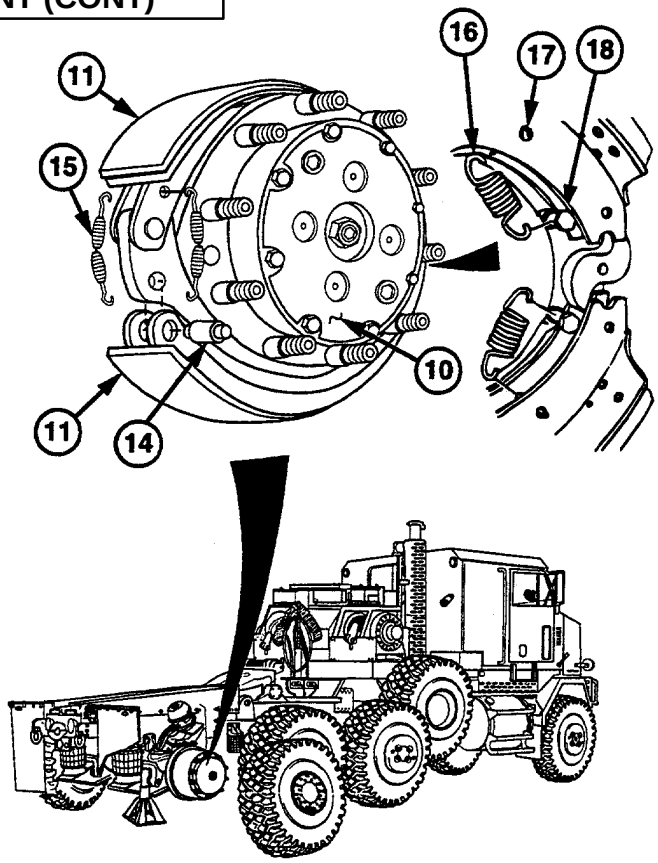
Use pry bar to raise or lower brake shoes from rollers and pins.

(10) Move cam end of brake shoe (11) away from brake shoe roller (12). Remove roller retaining clip (13) and brake shoe roller (12) as one unit.

(11) Repeat step (10) for remaining brake shoe roller.



11-3. BRAKE DRUM/SHOES REPLACEMENT (CONT)



(12) Move anchor end of brake shoe (11) away from anchor pin (14). Remove anchor pin.

(13) Repeat step (12) for remaining anchor pin.

(14) Remove two return springs (15) from brake shoes (11).

(15) Remove two brake shoes (11) and springs (16) from axle (10) and two spring studs (17).

(16) Remove two springs (16) from brake spring pins (18) on brake shoes (11).

b. Cleaning/Inspection

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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

•The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).
•Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.
•Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.
•Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.
•Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.

•Brake drums may be coated with dust. Breathing dust may be harmful to personnel. Do not use compressed air to clean brake drum. Wear filter mask approved for use against brake dust.

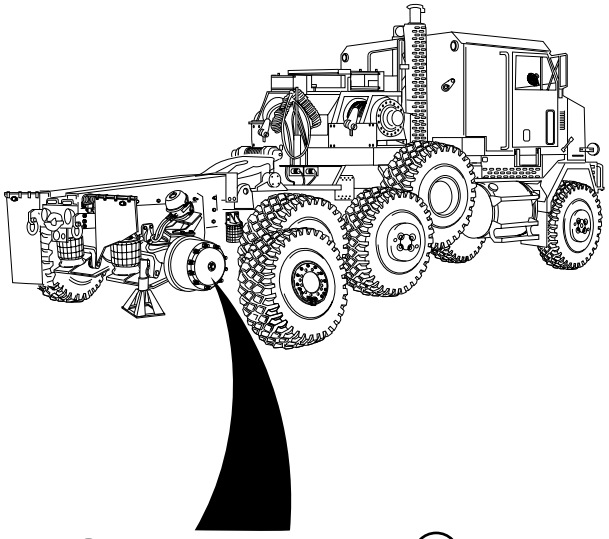
(1) Clean brake drum with solvent cleaning compound.

NOTE

Brake drums must not be discarded at the Unit maintenance level. Brake drums are inspected/repaired at the Direct Support maintenance level.

(2) Check brake drum for badly scored finish, heat cracks, or other damage.

c. Installation



WARNING

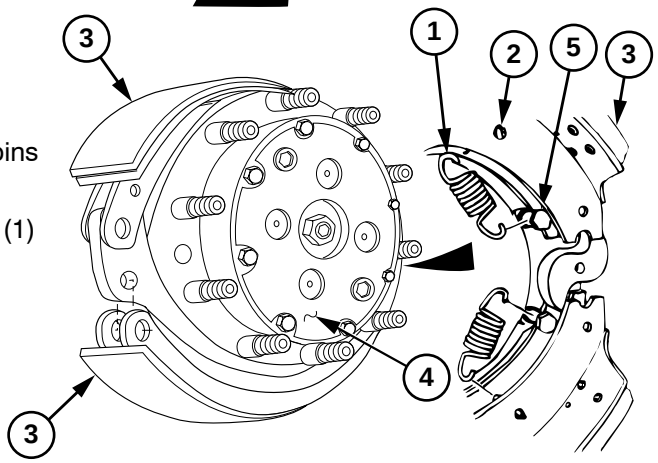
- **Brake shoes are installed with strong spring tension. Keep hands clear when installing parts to prevent serious injury.**
- **When replacing brake shoes, all four shoes on an axle must be replaced at the same time. Failure to comply may result in improper brake operation and injury to personnel.**

NOTE

Use pry bar to raise or lower brake shoes from rollers and pins.

(1) Install two springs (1) on brake spring pins (2) on brake shoes (3).

(2) Install two brake shoes (3) and springs (1) on axle (4) and two spring studs (5).

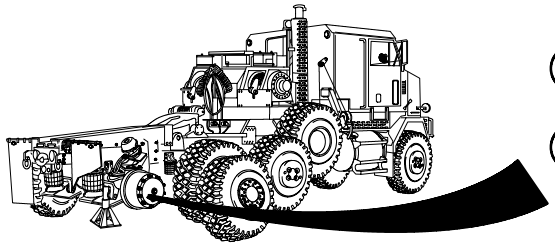


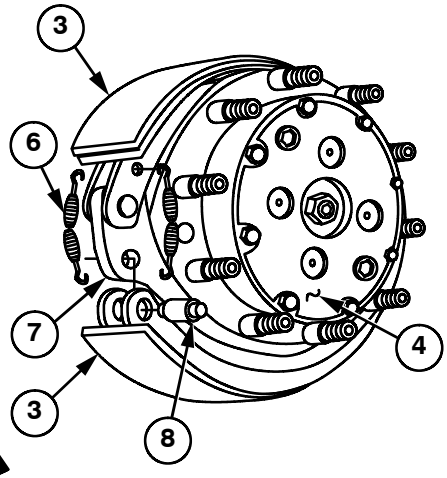
(3) Install two return springs (6) on brake shoes (3).

(4) Move anchor end of brake shoe (3) away from anchor (7).

(5) Install anchor pin (8).

(6) Repeat steps (4) and (5) for remaining anchor pin (8).





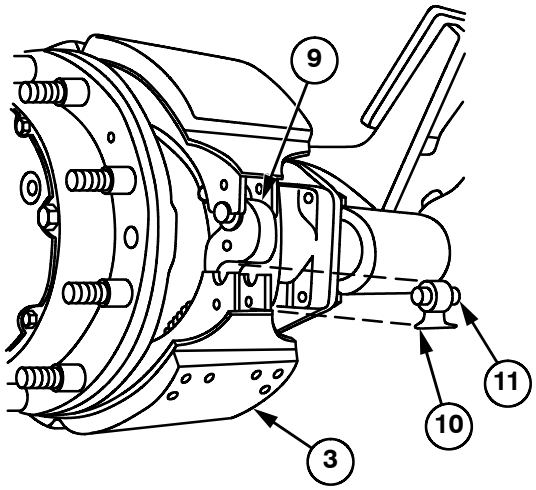
NOTE

Retaining clips are installed on side of roller away from brake camshaft. When properly installed, retaining clips should seat in hole in brake shoes.

(7) Move cam end of brake shoe (3) away from cam (9).

(8) Install brake shoe roller retaining clip (10) and brake shoe roller (11) as one unit.

(9) Repeat steps (7) and (8) for remaining brake shoe roller (11).



WARNING

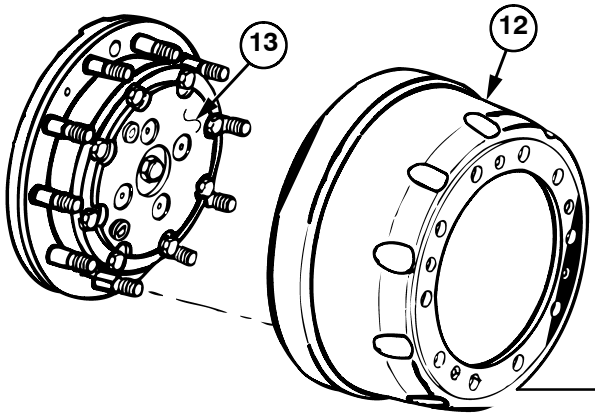
Brake drum weighs 135 lb (61 kg). Assistance is required when installing brake drum. Failure to comply may result in injury to personnel.

NOTE

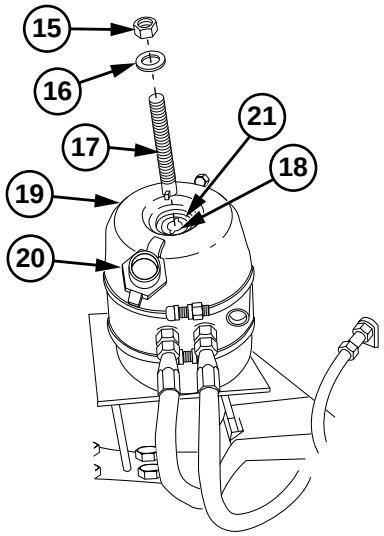
- There are two extra holes in brake drum which must be positioned by wheel hub hose adapter.

(10) Position brake drum (12) on axle (13) with aid of assistant.

(11) Deleted.



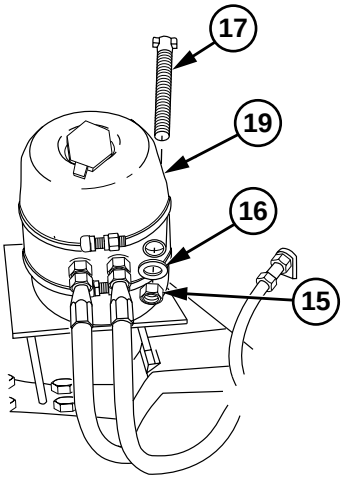
11-3. BRAKE DRUM/SHOES REPLACEMENT (CONT)



(12) Loosen and remove nut (15) and washer (16) from tool (17).

(13) Push tool (17) down, turn counterclockwise 90°. Pull out of slot (18) inside brake chamber (19).

(14) Install dust cap (20) in access hole (21).



(15) Install tool (17), washer (16), and nut (15) in mounting position on brake chamber (19). Tighten nut.

d. Follow-On Maintenance

(1) Adjust brakes (para 11-2).

(2) Install wheel/tire (para 12-5).

(3) Apply parking brake (TM 9-2320-360-10).

11-4. SLACK ADJUSTER (MANUAL) REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Goggles, Industrial (Item 14, Appendix F)
Pliers, Snap Ring (Item 28, Appendix F)

Materials/Parts
Pin, Cotter (Item 155, Appendix G)

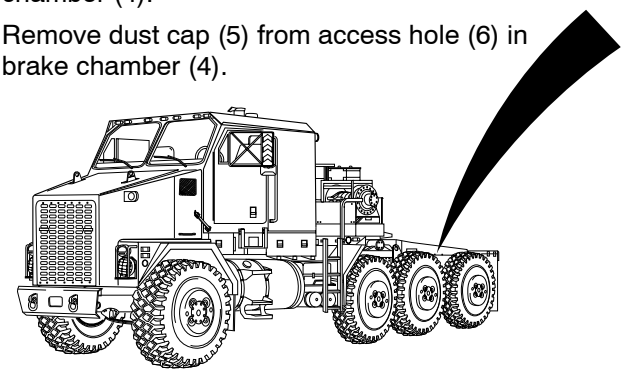
NOTE
All slack adjusters are replaced the same way. Axle no. 4 is shown.

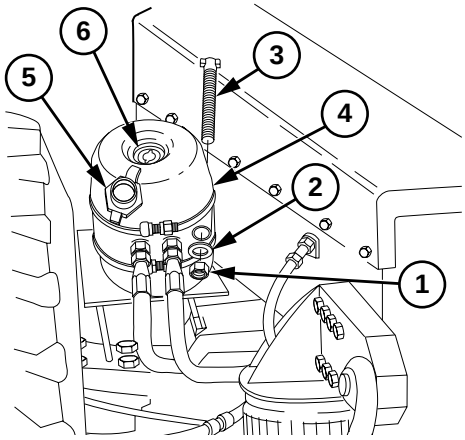
a. Removal

NOTE
Do steps (1) thru (7) for axle no. 2, 3, and 4 only.

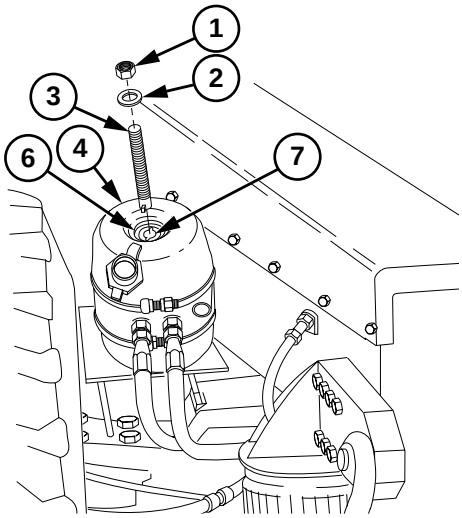
(1) Remove nut (1), washer (2), and tool (3) from mounting position on brake chamber (4).

(2) Remove dust cap (5) from access hole (6) in brake chamber (4).





MUD FLAP REMOVED FOR CLARITY



(3) Insert tool (3) in access hole (6) and align with slot (7) inside brake chamber (4).

(4) Push tool (3) in slot (7) until it stops.

(5) Turn tool (3) 90° and pull out until it is seated and stops.

(6) Install washer (2) and nut (1) on tool (3).

(7) Release brake chamber (4) by tightening nut (1) down (clockwise) until it stops.

11-4. SLACK ADJUSTER (MANUAL) REPLACEMENT (CONT)

(8) Remove cotter pin (8), pin (9), and slack adjuster (10) from clevis (11) of brake chamber (4). Discard cotter pin.

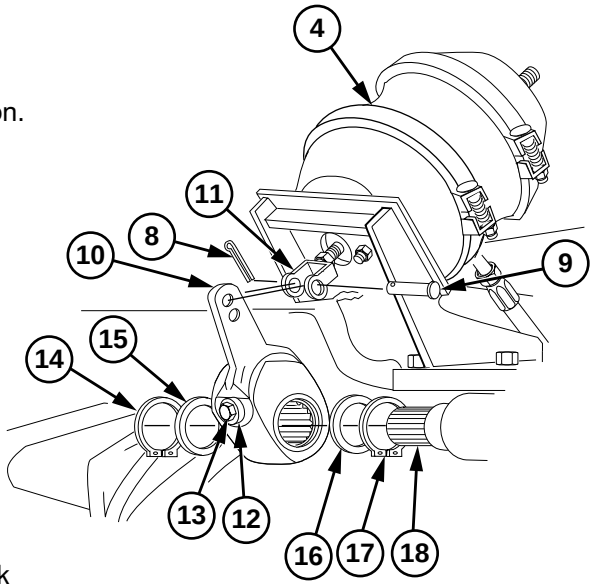
(9) Push lock (12) in while turning adjusting screw (13) counterclockwise one revolution.

WARNING

Wear eye protection and use care when removing snap rings. Snap rings are under spring tension and can act as projectiles when released and may cause severe eye injury.

NOTE

Axles no. 2 and no. 3 do not have a snap ring between axle housing and washer.



(10) Remove snap ring (14), washer (15), slack adjuster (10), washer (16), and snap ring (17) from brake camshaft (18).

b. Installation

NOTE

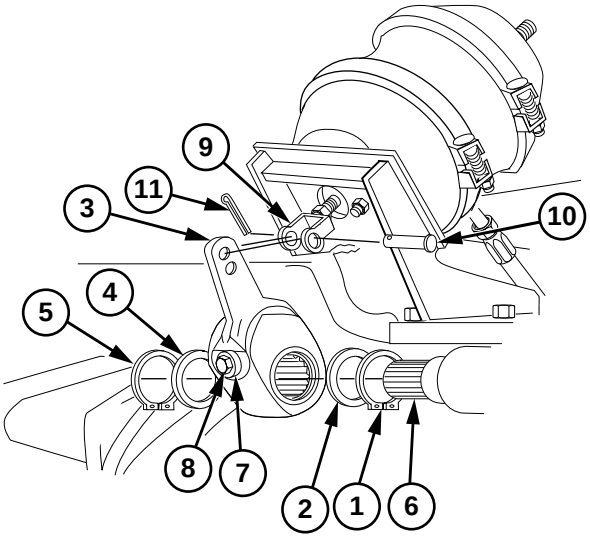
- Install slack adjuster so that adjusting nut faces away from brake chamber.
- Axles no. 2 and no. 3 do not have a snap ring between axle housing and washer.

(1) Install snap ring (1), washer (2), slack adjuster (3), washer (4), and snap ring (5) on brake camshaft (6).

(2) Push lock (7) in while turning adjusting screw (8) clockwise until holes in clevis (9) and slack adjuster (3) are aligned.

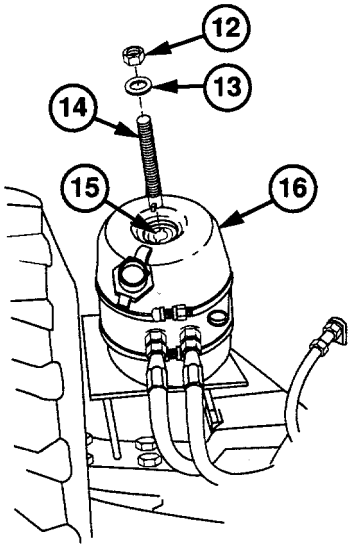
(3) Install pin (10) through clevis (9) and slack adjuster (3).

(4) Install new cotter pin (11) in pin (10).



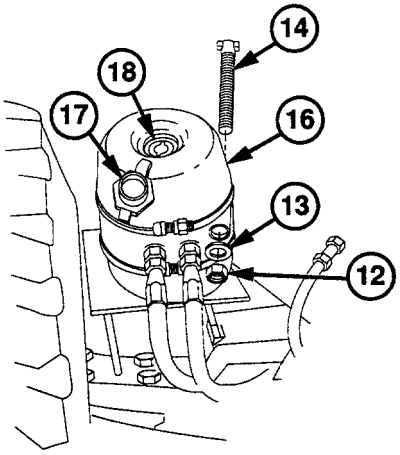
(5) Loosen and remove nut (12) and washer (13) from tool (14).

(6) Push tool (14) down, turn counterclockwise 90°. Pull out of slot (15) inside brake chamber (16).



(7) Install dust cap (17) in access hole (18).

(8) Install tool (14), washer (13), and nut (12) in mounting position on brake chamber (16). Tighten nut.



c. Follow-On Maintenance

(1) Grease slack adjuster (LO 9-2320-360-12).

(2) Adjust brakes (para 11-2).

11-4.1. SLACK ADJUSTER (AUTOMATIC - MODEL A) REPLACEMENT

This task covers:
a. Removal
b. Placing in Service
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Pin, Cotter (Item 146, Appendix G)
Pin, Cotter (Item 148, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Goggles, Industrial (Item 14, Appendix F)
Pliers, Snap Ring (Item 28, Appendix F)

NOTE

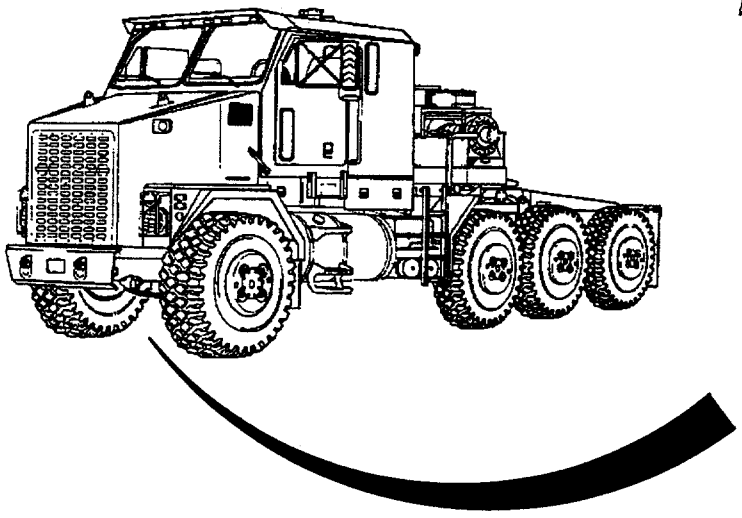
Model A slack adjusters can be identified by an adjusting screw located on the front of the slack adjuster.

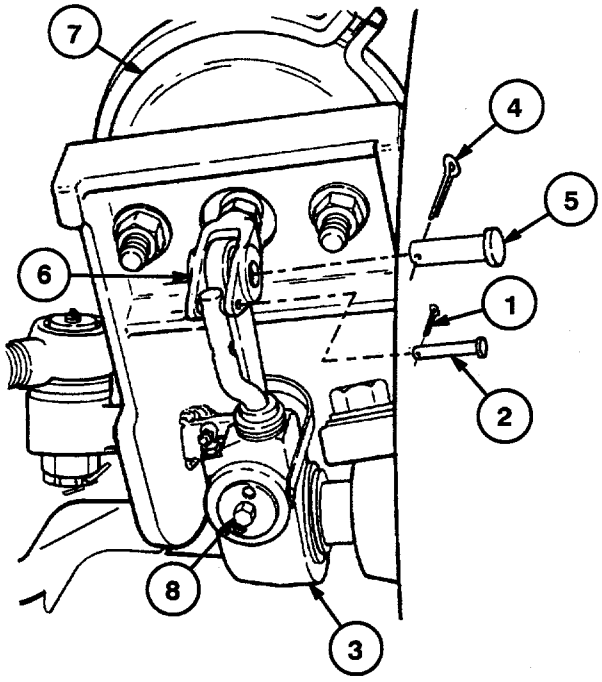
a. Removal

(1) Remove cotter pin (1) and pin (2) from slack adjuster (3). Discard cotter pin.

(2) Remove cotter pin (4) and pin (5) from slack adjuster (3) and clevis (6) on brake chamber (7). Discard cotter pin.

(3) Turn adjusting screw (8) counterclockwise one revolution.





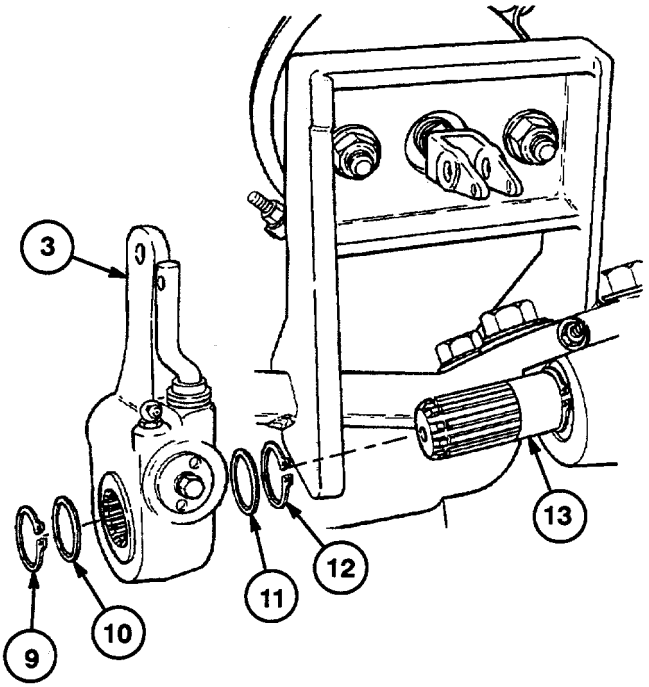
WARNING

Wear eye protection and use care when removing snap rings. Snap rings are under spring tension and can act as projectiles when released and may cause severe eye injury.

NOTE

The number and thickness of washers will vary. For proper assembly, tag and mark shims during removal.

(4) Remove snap ring (9), washer(s) (10), slack adjuster (3), washer(s) (11), and snap ring (12) from brake camshaft (13).



b. Placing in Service

WARNING

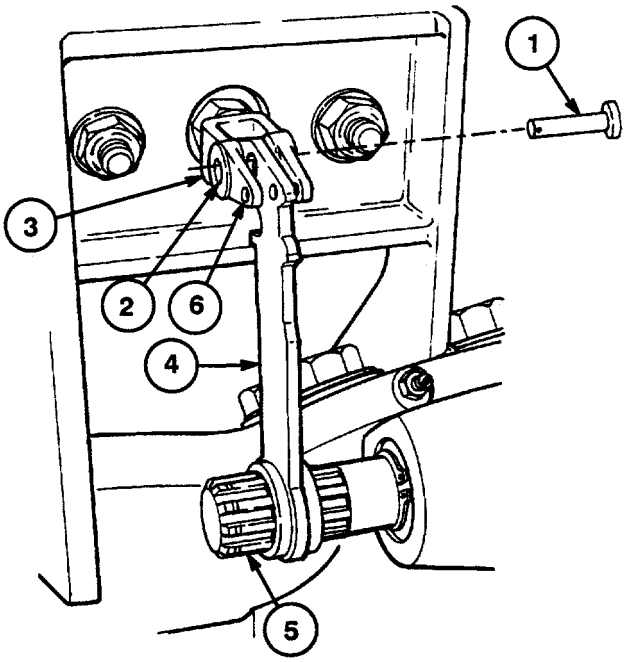
Brake chamber clevis position must be checked as described below. If the clevis position is not correct, the slack adjuster will not adjust the brakes correctly. If the slack adjuster under-adjusts, the vehicle stopping distances will be increased. If the slack adjuster over-adjusts, the brake linings may drag resulting in excessive wear.

(1) Install large clevis pin (1) thru hole (2) in clevis (3).

(2) Install installation guide (4) over the brake camshaft (5).

(3) Swing the installation guide (4) into clevis (3) until slot totally engages large clevis pin (1).

(4) Look thru small hole (6) of clevis (3). Small hole of installation guide (4) must be completely visible thru the hole in clevis (3).



11-4.1. SLACK ADJUSTER (AUTOMATIC - MODEL A) REPLACEMENT (CONT)

CAUTION

There must be at least 0.5 in. (12.7 mm) of clevis thread engagement with the push rod. Also, the push rod must not extend thru the clevis more than 0.125 in. (3.18 mm). Failure to comply may result in damage to equipment.

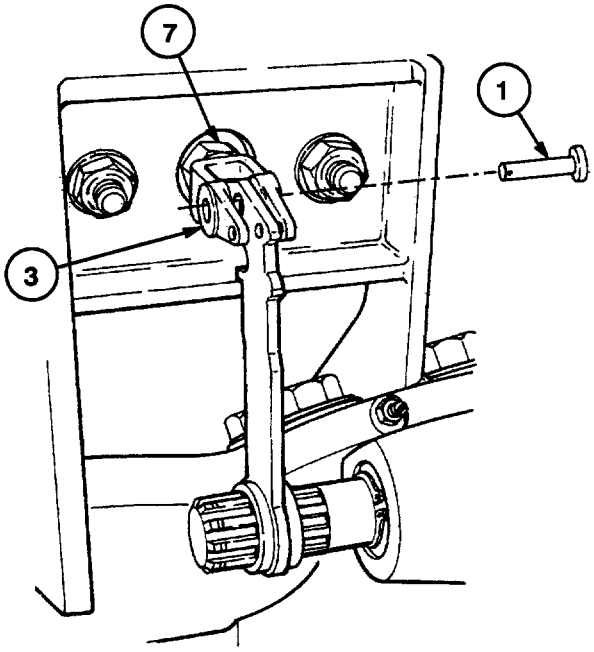
NOTE

Do steps (5) and (6) only if small hole in clevis is not completely visible thru template.

(5) Loosen jamnut (7). Rotate the clevis (3) clockwise if small hole is below clevis or counter-clockwise if small hole is above clevis.

(6) Repeat steps (3) and (4) to verify adjustment. Tighten jamnut (7).

(7) Remove large clevis pin (1) from clevis (3).



c. Installation

WARNING

Wear eye protection and use care when removing snap rings. Snap rings are under spring tension and can act as projectiles when released and may cause severe eye injury.

NOTE

- Install slack adjuster so that adjusting nut faces away from brake chamber.
- Washers should be installed in locations marked during removal.

(1) Install snap ring (1), washer(s) (2), slack adjuster (3), washer(s) (4), and snap ring (5) on brake camshaft (6).

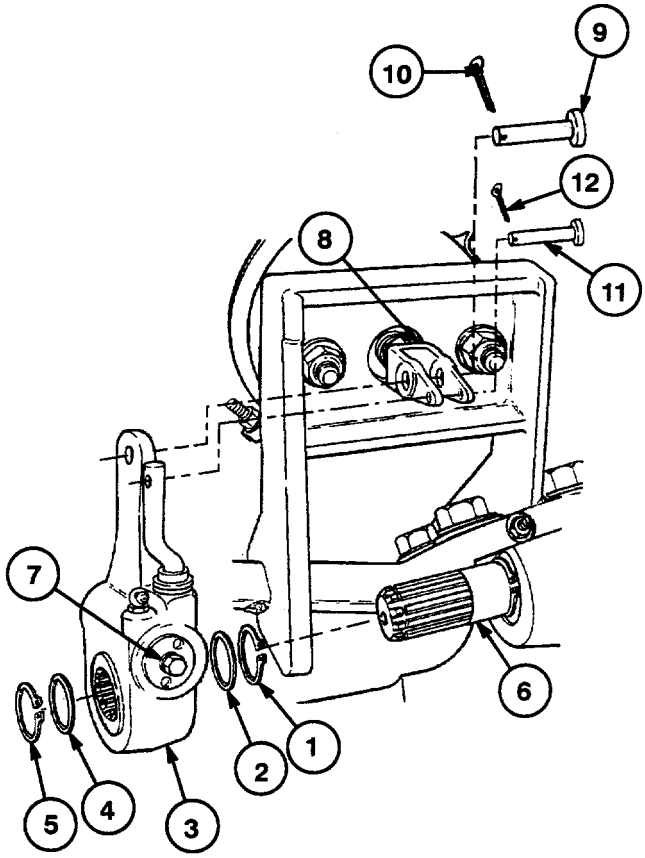
(2) Turn adjusting screw (7) clockwise until holes in clevis (8) and slack adjuster (3) are aligned.

(3) Install pin (9) through clevis (8) and slack adjuster (3).

(4) Install new cotter pin (10) in pin (9).

(5) Install pin (11) through clevis (8) and slack adjuster (3).

(6) Install new cotter pin (12) in pin (11).



d. Follow-On Maintenance

(1) Grease slack adjuster (LO 9-2320-360-12).

(2) Adjust brakes (para 11-2.1).

11-4.2. SLACK ADJUSTER (AUTOMATIC - MODEL B) REPLACEMENT

This task covers:
a. Removal
b. Placing in Service
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Pin, Cotter (Item 146, Appendix G)
Pin, Cotter (Item 148, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Goggles, Industrial (Item 14, Appendix F)
Pliers, Snap Ring (Item 28, Appendix F)

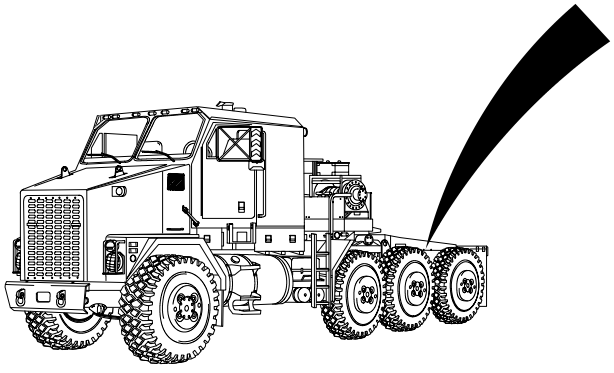
NOTE

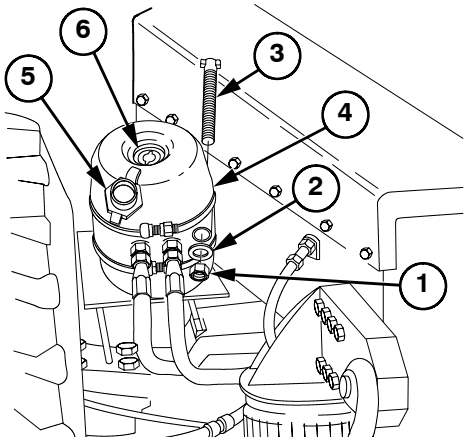
- Model B slack adjusters can be identified by an adjusting pawl located on the side of the slack adjuster.
- Model B slack adjusters were used on Axles no. 2, 3 and 4 of some HET M1070s. If a Model B slack adjuster requires replacement, it should be replaced with a Model A assembly (see previous para).

a. Removal

(1) Remove nut (1), washer (2), and tool (3) from mounting position on brake chamber (4).

(2) Remove dust cap (5) from access hole (6) in brake chamber (4).





MUD FLAP REMOVED FOR CLARITY

(3) Insert tool (3) in access hole (6) and align with slot (7) inside brake chamber (4).

(4) Push tool (3) in slot (7) until it stops.

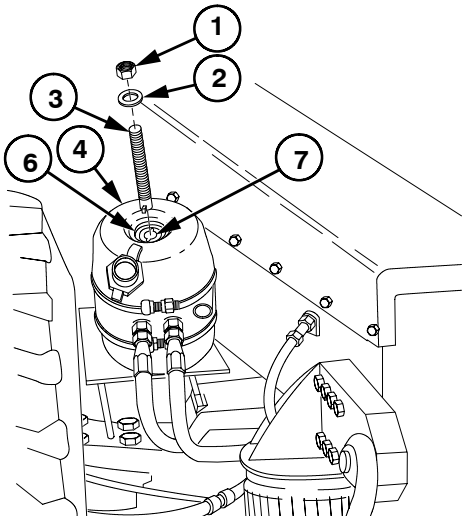
(5) Turn tool (3) 90° and pull out until it is seated and stops.

(6) Install washer (2) and nut (1) on tool (3).

(7) Release brake chamber (4) by tightening nut (1) down (clockwise) until it stops.

(8) Remove cotter pin (8) and pin (9) from slack adjuster (10). Discard cotter pin.

(9) Remove cotter pin (11) and pin (12) from slack adjuster (10) and clevis (13) on brake chamber (4). Discard cotter pin.



CAUTION

The pawl must be pulled out when rotating the manual adjusting nut. Failure to comply will result in damage to slack adjuster.

(10) Pull pawl (14) out while turning adjusting screw (15) counterclockwise one revolution.

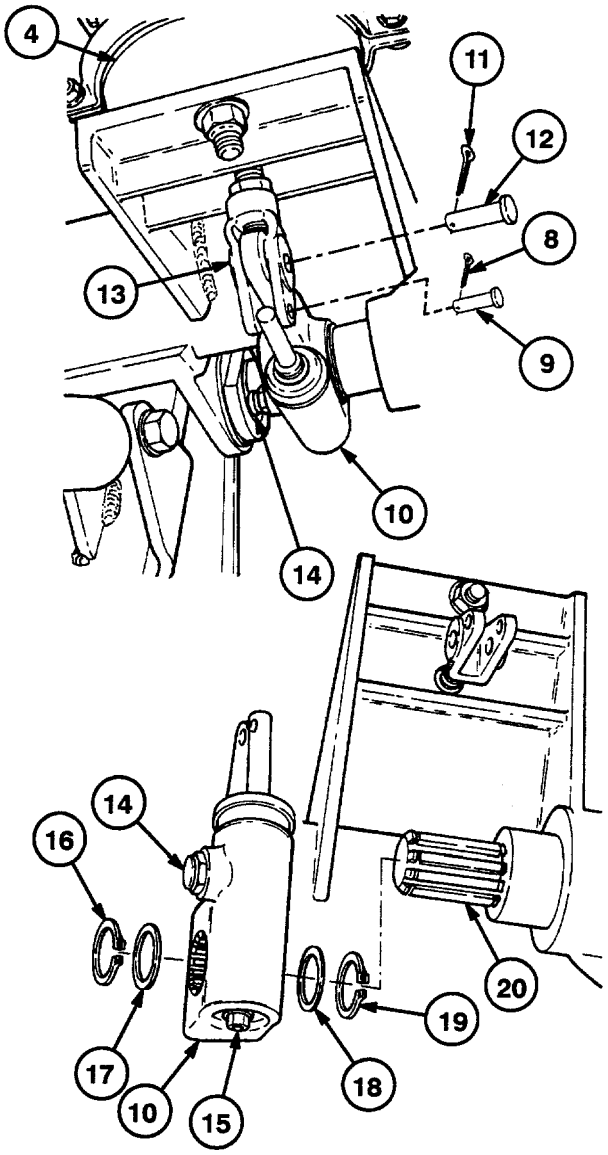
WARNING

Wear eye protection and use care when removing snap rings. Snap rings are under spring tension and can act as projectiles when released and may cause severe eye injury.

NOTE

- Axles no. 2 and no. 3 do not have a snap ring between axle housing and washer.
- The number and thickness of washers will vary. For proper assembly, tag and mark shims during removal.

(11) Remove snap ring (16), washer (17), slack adjuster (10), washer (18), and snap ring (19) from brake camshaft (20).



11-4.2. SLACK ADJUSTER (AUTOMATIC - MODEL B) REPL (CONT)

b. Placing in Service

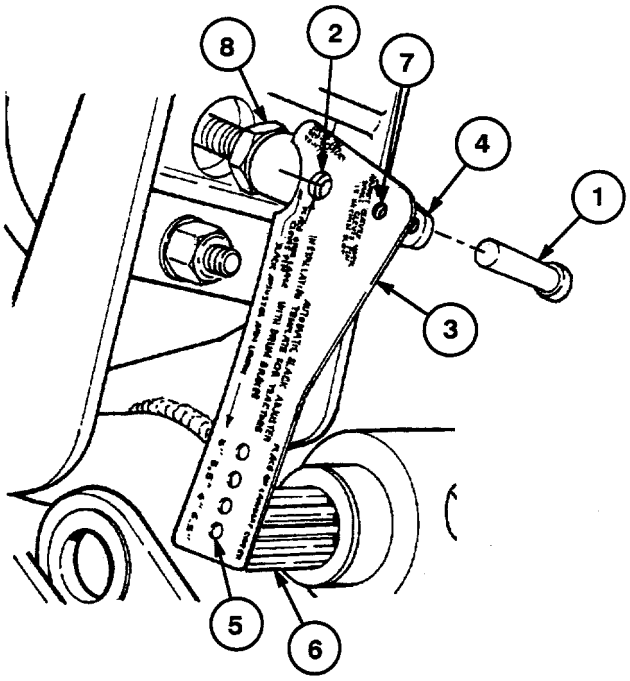
WARNING

Brake chamber clevis position must be checked as described below. If the clevis position is not correct, the slack adjuster will not adjust the brakes correctly. If the slack adjuster under-adjusts, the vehicle stopping distances will be increased. If the slack adjuster over-adjusts, the brake linings may drag resulting in excessive wear.

(1) Install large clevis pin (1) thru hole (2) in template (3) and clevis (4).

(2) Align 6.5 in. hole (5) of template (3) with hole in the center of brake camshaft (6).

(3) Look thru hole (7) of template. Small hole in clevis (4) must be completely visible thru the hole in template.



CAUTION

There must be at least 0.5 in. (12.7 mm) of clevis thread engagement with the push rod. Also, the push rod must not extend thru the clevis more than 0.125 in. (3.18 mm). Failure to comply may result in damage to equipment.

NOTE

Do steps (4) and (5) only if small hole in clevis is not completely visible thru template.

(4) Loosen jamnut (8). Rotate the clevis (4) clockwise if small hole is below clevis or counter-clockwise if small hole is above clevis.

(5) Repeat steps (2) and (3) to verify adjustment. Tighten jamnut (8).

(6) Remove large clevis pin (1) and template (3) from clevis (4).

c. Installation

NOTE

- Install slack adjuster so that pawl faces away from brake drum.
- Axles no. 2 and no. 3 do not have a snap ring between axle housing and washer.
- Washers should be installed as marked during removal.

(1) Install snap ring (1), washer(s) (2), slack adjuster (3), washer(s) (4), and snap ring (5 on brake camshaft (6).

CAUTION

The pawl must be pulled out when rotating the manual adjusting nut. Failure to comply will result in damage to slack adjuster.

(2) Pull pawl (7) out while turning adjusting screw (8) clockwise until holes in clevis (9) and slack adjuster (3) are aligned.

(3) Install pin (10) through clevis (9) and slack adjuster (3).

(4) Install new cotter pin (11) in pin (10).

(5) Install pin (12) through clevis (9) and slack adjuster (3).

(6) Install new cotter pin (13) in pin (12).

(7) Loosen and remove nut (14) and washer (15) from tool (16).

(8) Push tool (16) down, turn counterclockwise 90°. Pull out of slot (17) inside brake chamber (18).

(9) Install dust cap (19) in access hole (20).

(10) Install tool (16), washer (15), and nut (14) in mounting position on brake chamber (18). Tighten nut.

d. Follow-On Maintenance

(1) Grease slack adjuster (LO 9-2320-360-12

(2) Adjust brakes (para 11-2.1).

11-5. FRONT BRAKE CHAMBER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

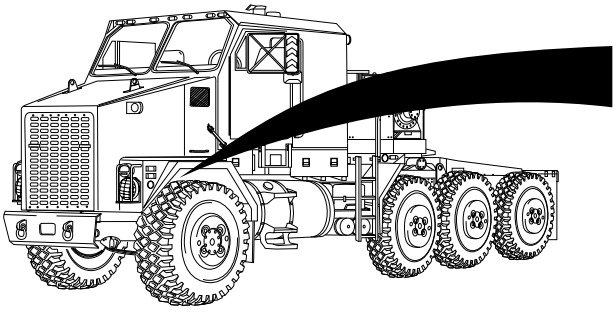
Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

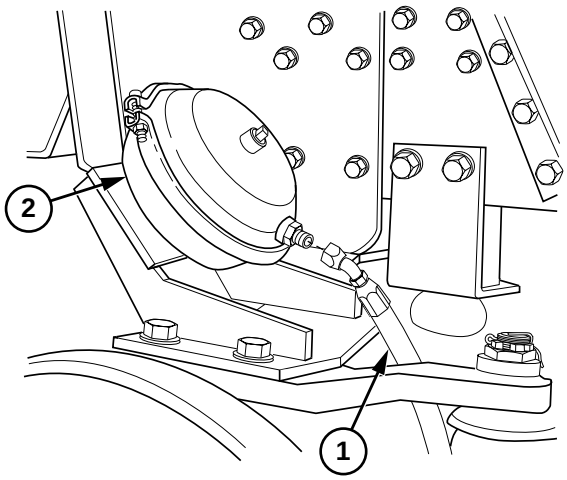
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Locknuts (2) (Item 83, Appendix G)
Pin, Cotter (Item 155, Appendix G)

a. Removal

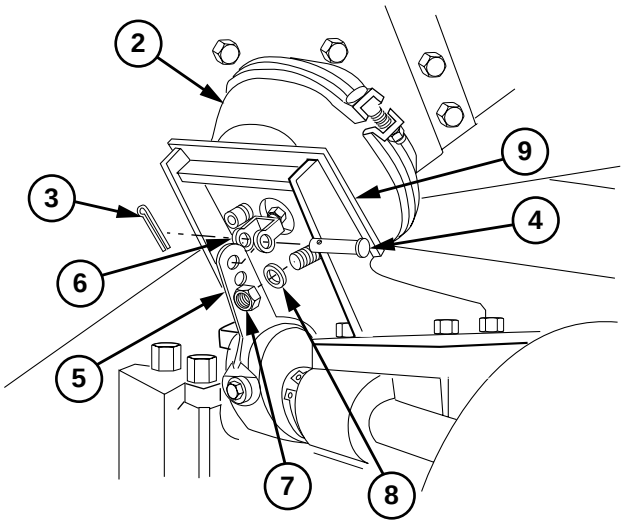
(1) Remove air line (1) from brake chamber (2).



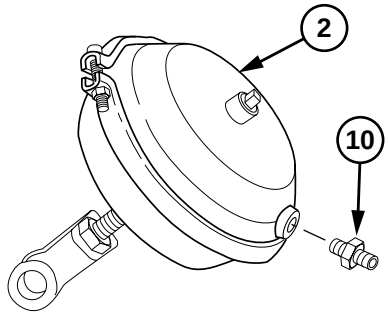


(2) Remove cotter pin (3), pin (4), and slack adjuster (5) from clevis (6) of brake chamber (2). Discard cotter pin.

(3) Remove two locknuts (7), washers (8), and brake chamber (2) from mounting bracket (9). Discard locknuts.



(4) Remove adapter (10) from brake chamber (2).



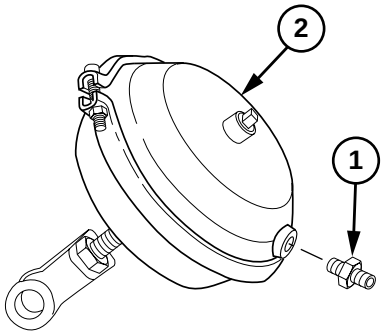
b. Installation

WARNING

- **Front brake chambers for automatic and manual slack adjusters are not interchangeable. They have different push rod lengths. Failure to install correct brake chamber will affect brake performance.**
- **Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.**

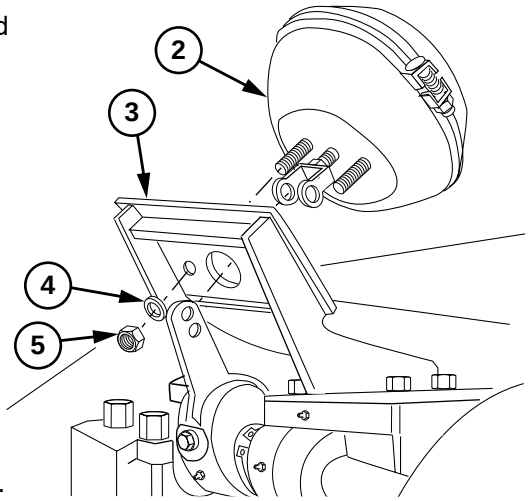
CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of adapter (1) with pipe thread sealing compound.

(2) Install adapter (1) on brake chamber (2).



CAUTION

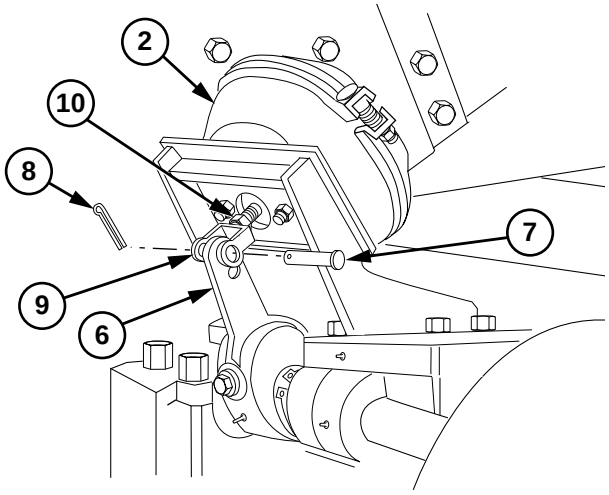
Threads of piston must be flush with clevis. Failure to comply may cause brake failure.

(3) Install brake chamber (2) on mounting bracket (3) with two washers (4) and new locknuts (5). Torque to 110 lb-ft (149 N·m).

11-5. FRONT BRAKE CHAMBER REPLACEMENT (CONT)

(4) Install slack adjuster (6), pin (7), and new cotter pin (8) on clevis (9) of brake chamber (2).

(5) Tighten jamnut (10) against clevis (9).



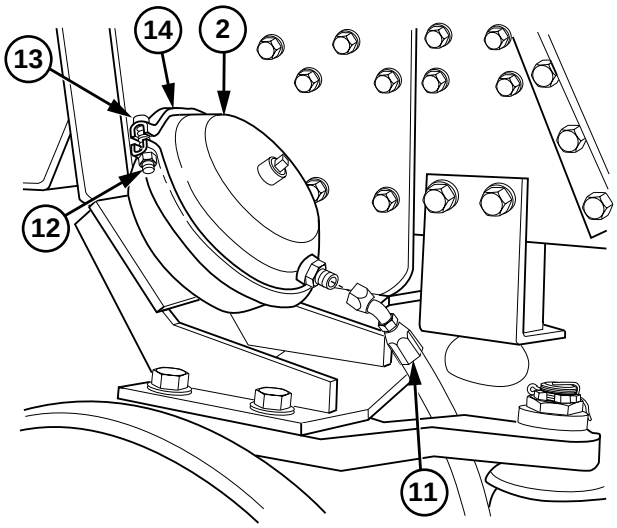
(6) Install air line (11) on brake chamber (2).

CAUTION

Screw and nut on brake chamber clamp cannot be positioned next to tire sidewall. Failure to comply may result in damage to tire.

NOTE

Do steps (7) thru (9) to rotate clamp.



(7) Loosen nut (12) on screw (13).

(8) Rotate clamp (14) on brake chamber (2) so nut (12) and screw (13) are positioned away from tire sidewall.

(9) Tighten nut (12) on screw (13) to 25-30 lb-ft (34-40 N·m).

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-6. REAR BRAKE CHAMBER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Locknuts (2) (Item 83, Appendix G)
Pin, Cotter (Item 155, Appendix G)

General Safety Instructions
Never try to repair rear brake chamber. High spring tension makes repair dangerous. Severe injury or death may result.

a. Removal

WARNING

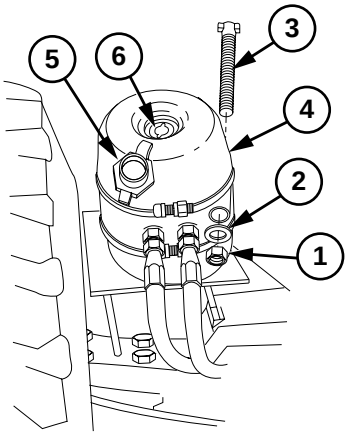
Never try to repair rear brake chamber. High spring tension makes repair dangerous. Severe injury or death may result.

NOTE

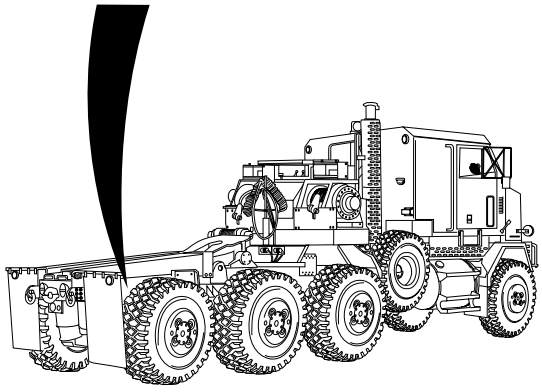
All rear brake chambers are replaced the same way.

(1) Remove nut (1), washer (2), and tool (3) from mounting position on brake chamber (4).

(2) Remove dust cap (5) from access hole (6) in brake chamber (4).



MUD FLAP REMOVED FOR CLARITY



11-6. REAR BRAKE CHAMBER REPLACEMENT (CONT)

(3) Insert tool (3) in access hole (6) and align with slot (7) inside brake chamber (4).

(4) Push tool (3) in slot (7) until it stops.

(5) Turn tool (3) 90º and pull out until it is seated and stops.

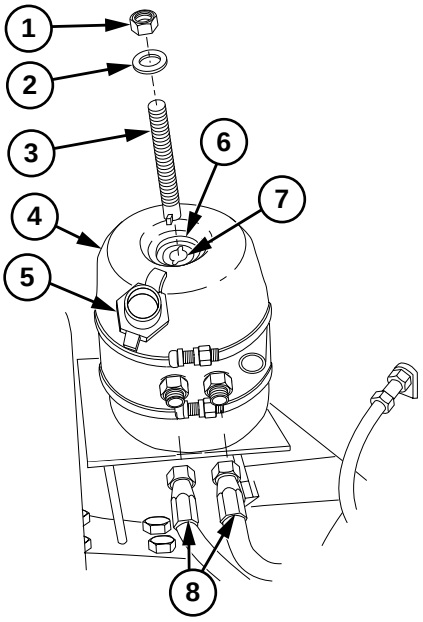
(6) Install washer (2) and nut (1) on tool (3).

(7) Release brake chamber (4) by tightening nut (1) down (clockwise) until it stops.

NOTE

Tag and mark air lines before removal.

(8) Remove two air lines (8) from brake chamber (4).

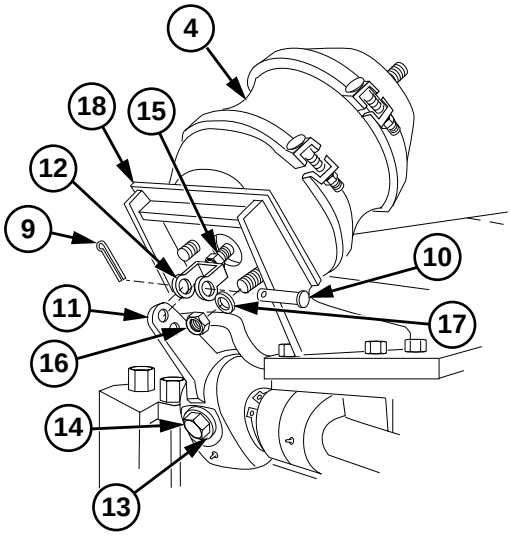


(9) Remove cotter pin (9), pin (10), and slack adjuster (11) from clevis (12) of brake chamber (4). Discard cotter pin.

(10) Push lock (13) in while turning adjusting screw (14) counterclockwise one revolution.

(11) Loosen jamnut (15). Remove clevis (12) from brake chamber (4).

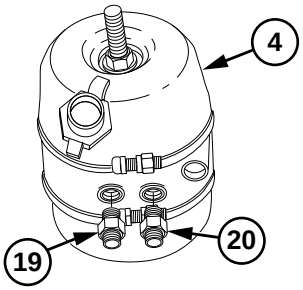
(12) Remove two locknuts (16), washers (17), and brake chamber (4) from mounting bracket (18). Discard locknuts.



NOTE

Do step (13) only when installing new brake chamber.

(13) Remove two fittings (19 and 20) from brake chamber (4).



b. Installation

WARNING

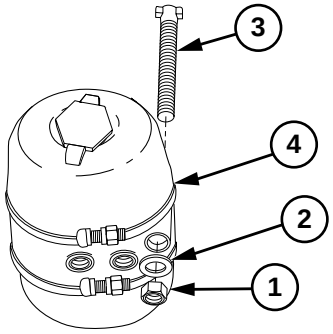
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

NOTE

Do steps (1) thru (9) only when installing new brake chamber.



(1) Remove nut (1), washer (2), and tool (3) from mounting position on brake chamber (4).

(2) Remove dust cap (5) from access hole (6) in brake chamber (4).

(3) Insert tool (3) in access hole (6) and align with slot (7) inside brake chamber (4).

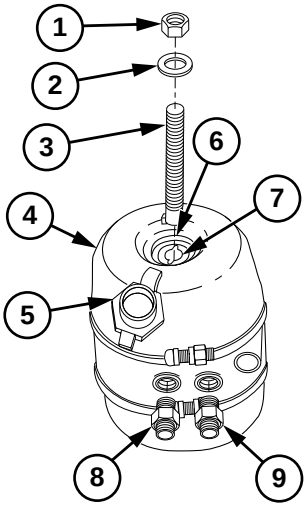
(4) Push tool (3) in slot (7) until it stops.

(5) Turn tool (3) 90° and pull out until it is seated and stops.

(6) Install washer (2) and nut (1) on tool (3).

(7) Release brake chamber (4) by tightening nut (1) down (clockwise) until it stops.

(8) Coat threads of fittings (8 and 9) with pipe thread sealing compound.

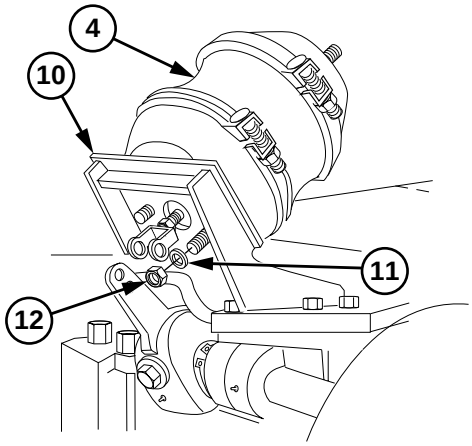


CAUTION

Smaller fitting must be installed in SPRING BRAKE port. Failure to comply will result in abnormal brake operation.

(9) Install fittings (8 and 9) in brake chamber (4).

11-6. REAR BRAKE CHAMBER REPLACEMENT (CONT)



(10) Install brake chamber (4) on mounting bracket (10) with two washers (11) and new locknuts (12). Torque to 110-115 lb-ft (149-156 N·m).

(11) Deleted.

(12) Deleted.

(13) Deleted.

CAUTION

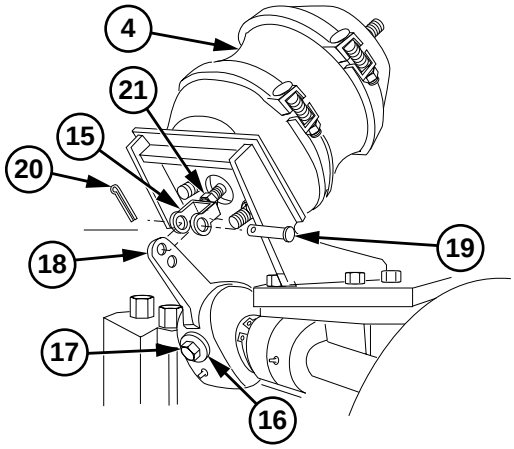
Threads of piston must be flush with clevis. Failure to comply may cause brake failure.

(14) Install clevis (15) on brake chamber (4).

(15) Push lock (16) in while turning adjusting screw (17) clockwise until holes in clevis (15) and slack adjuster (18) are aligned.

(16) Install pin (19) and new cotter pin (20) on clevis (15) of brake chamber (4).

(17) Tighten jamnut (21) against clevis (15).

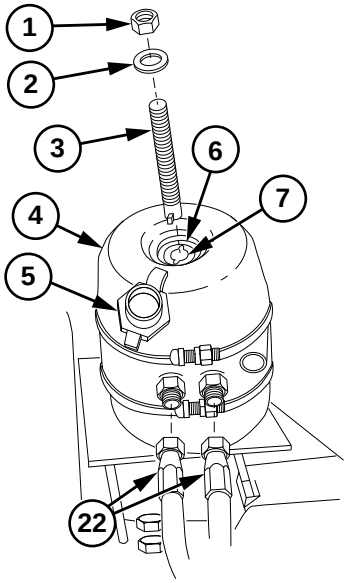


(18) Install two air lines (22) on brake chamber (4).

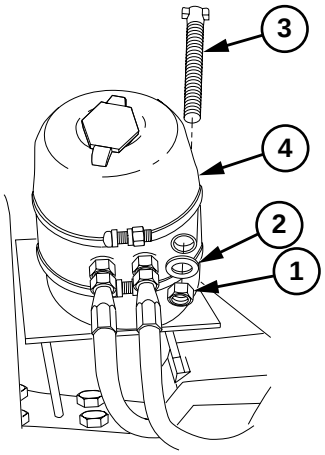
(19) Loosen and remove nut (1) and washer (2) from tool (3).

(20) Push tool (3) down, turn counterclockwise 90°. Pull out of slot (7) inside brake chamber (4).

(21) Install dust cap (5) in access hole (6).



(22) Install tool (3), washer (2), and nut (1) in mounting position on brake chamber (4). Tighten nut.



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check AIR PRESSURE gage for correct reading (TM 9-2320-360-10).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Adjust brakes (para 11-2).

11-7. BRAKE TREADLE VALVE REPAIR

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Air system drained (TM 9-2320-360-10).
Low air pressure switches removed (para 7-56).
Stoplight switches removed (para 7-23).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Locknuts (2) (Item 68, Appendix G)
Lockwashers (3) (Item 102, Appendix G)
Pins, Cotter (2) (Item 147, Appendix G)

a. Removal

NOTE
Tag and mark hoses before removal.

(1) Remove hose no. 2665 (1) and hose no. 2623 (2) from two fittings (3).

(2) Remove hose no. 2610 (4) from elbow (5).

(2.1) Remove hose no. 2006 (5.1) from tee (5.2).

(2.2) Remove hose no. 2073 (5.3) from tee (5.2).

(3) Remove hose no. 2027 (6) from tee (7).

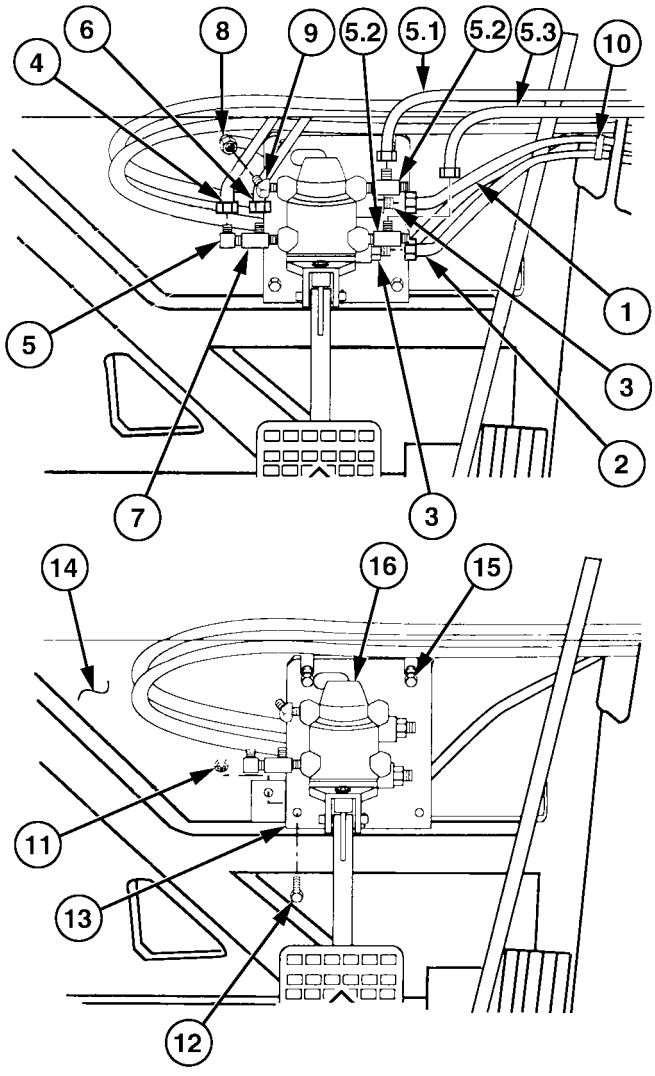
(4) Remove hose no. 2041 (8) from elbow (9).

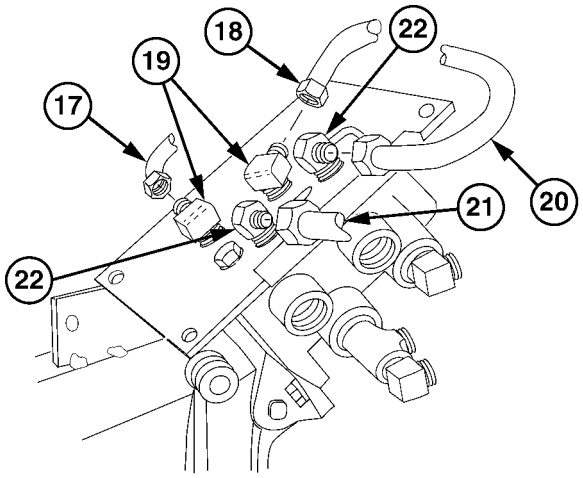
NOTE
Location of plastic cable ties should be marked before removal.

(5) Remove plastic cable ties (10) from hoses (1 and 2) as required.

(6) Remove two locknuts (11) and screws (12) from bracket (13) and cab (14). Discard locknuts.

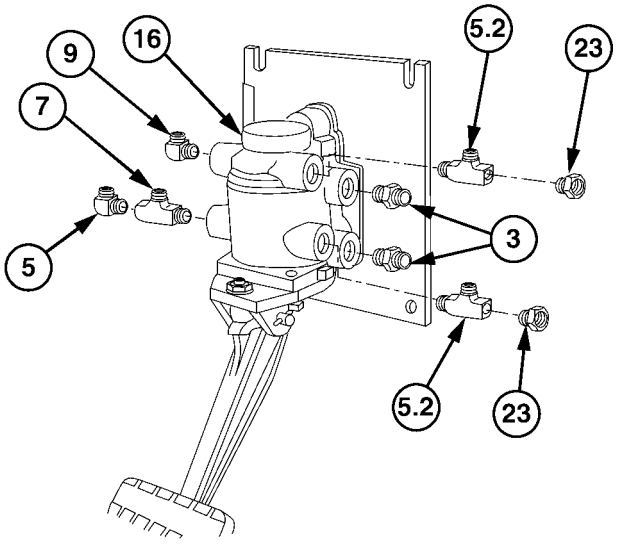
(7) Loosen two screws (15) and remove bracket (13) and treadle valve (16) from cab (14).





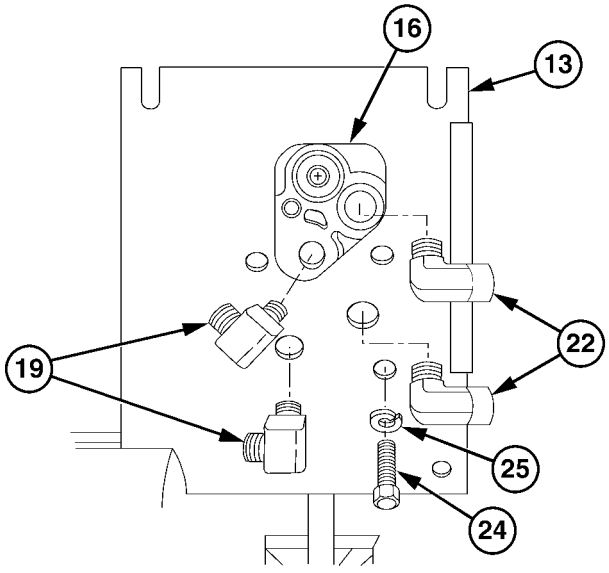
(8) Remove hose no. 2488 (17) and hose no. 2489 (18) from elbows (19).

(9) Remove hose no. 2005 (20) and hose no. 2619 (21) from elbows (22).



(10) Remove elbow (5) and tee (7) from treadle valve (16).

(11) Remove two fittings (3), two tees (5.2), elbow (9), and two adapters (23) from treadle valve (16).

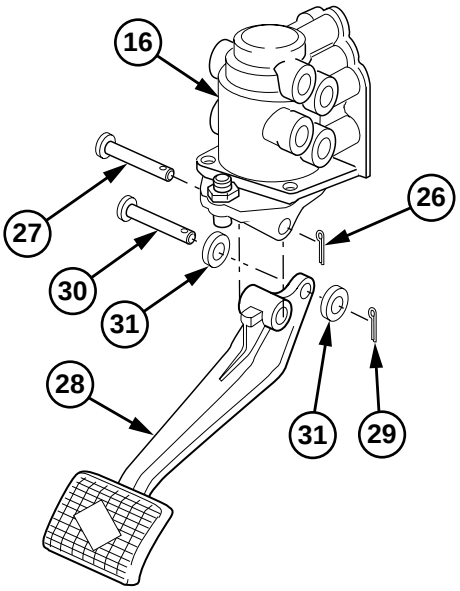


(12) Remove three screws (24) and lockwashers (25) from bracket (13). Discard lockwashers.

(13) Remove four elbows (19 and 22) from treadle valve (16).

(14) Remove bracket (13) from treadle valve (16).

11-7. BRAKE TREADLE VALVE REPAIR (CONT)



(15) Remove cotter pin (26) from pin (27). Discard cotter pin.

(16) Remove pin (27) from pedal (28).

(17) Remove pedal (28) from valve (16).

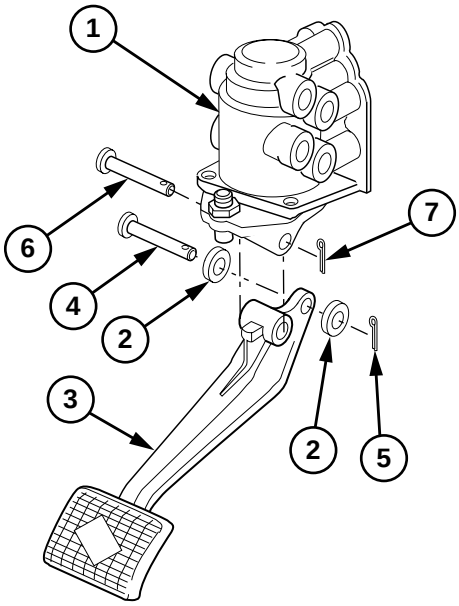
(18) Remove cotter pin (29) from pin (30). Discard cotter pin.

NOTE

Plunger will fall out when pin is removed. Apply tape to bottom of valve to hold plunger in place.

(19) Remove pin (30) and two linear rotor rollers (31) from pedal (28).

b. Installation



(1) Place treadle valve (1) in vise.

NOTE

Plunger will fall out when tape is removed.

(2) Remove tape from treadle valve (1).

(3) Install two linear rotor rollers (2) on pedal (3) with pin (4).

(4) Install new cotter pin (5) in pin (4).

(5) Install pedal (3) on valve (1) with pin (6).

(6) Install new cotter pin (7) in pin (6).

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

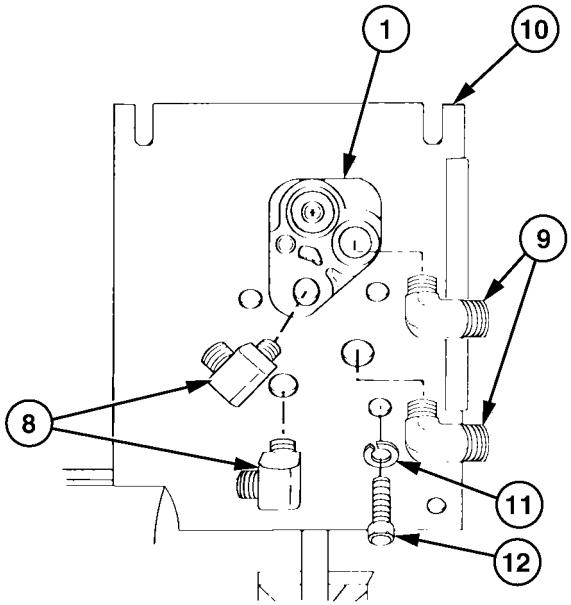
Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(7) Coat threads of four elbows (8 and 9) with pipe thread sealing compound.

(8) Position bracket (10) on treadle valve (1).

(9) Install four elbows (8 and 9) through bracket (10) on treadle valve (1).

(10) Secure treadle valve (1) on bracket (10) with three new lockwashers (11) and screws (12).



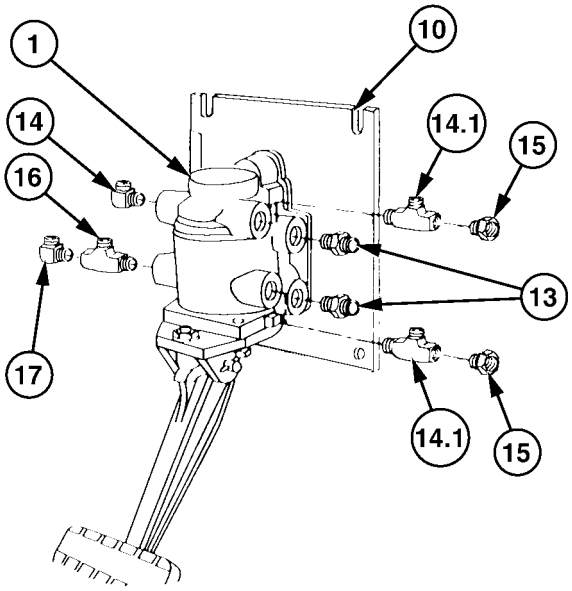
(11) Reposition with bracket (10) in vise.

(12) Coat threads of two fittings (13), elbow (14), two tees (14.1), and adapters (15) with pipe thread sealing compound.

(13) Install two fittings (13), elbow (14), two tees (14.1), and adapters (15) on treadle valve (1).

(14) Coat threads of tee (16) and elbow (17) with pipe thread sealing compound.

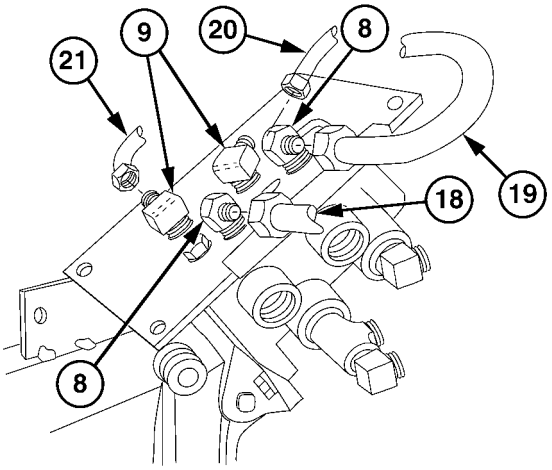
(15) Install tee (16) and elbow (17) on treadle valve (1).



11-7. BRAKE TREADLE VALVE REPAIR (CONT)

(16) Install hose no. 2619 (18) and hose no. 2005 (19) on elbows (8).

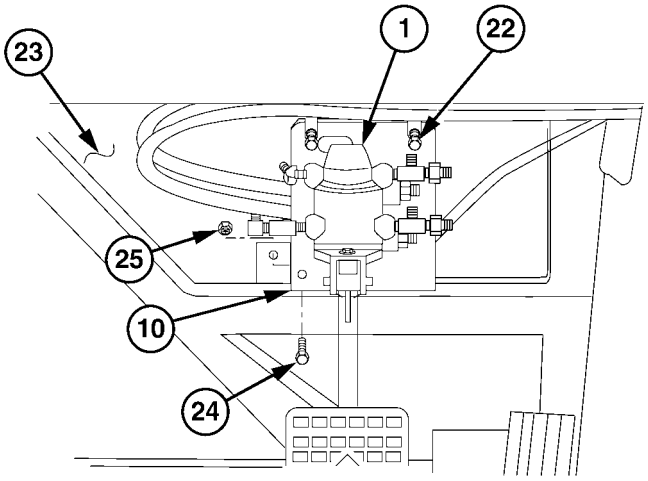
(17) Install hose no. 2489 (20) and hose no. 2488 (21) on elbows (9).



(18) Slide bracket (10) under two screws (22).

(19) Install bracket (10) and treadle valve (1) on cab (23) with two screws (24) and new locknuts (25).

(20) Tighten two screws (22).



(21) Install hose no. 2041 (26) on elbow (14).

(22) Install hose no. 2027 (27) on tee (16).

(23) Install hose no. 2610 (28) on elbow (17).

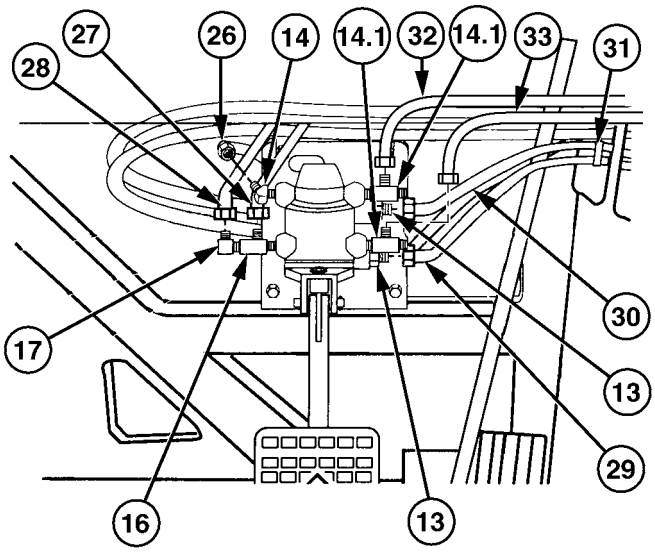
(24) Install hose no. 2623 (29) and hose no. 2665 (30) on fittings (13).

(24.1) Install hose no. 2006 (32) and hose no. 2073 (33) on tees (14.1).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(25) Secure hoses (29 and 30) with plastic cable ties (31).



c. Follow-On Maintenance

(1) Install stoplight switches (para 7-23).

(2) Install low air pressure switches (para 7-56).

(3) Start engine (TM 9-2320-360-10).

(4) Build up air pressure to 120-125 psi (827-862 kPa).

(5) Check service brake operation (TM 9-2320-360-10).

(6) Shut off engine (TM 9-2320-360-10).

(7) Check for leaks.

11-8. NO. 1 AXLE SERVICE BRAKE RELAY VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (2) (Item 58, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

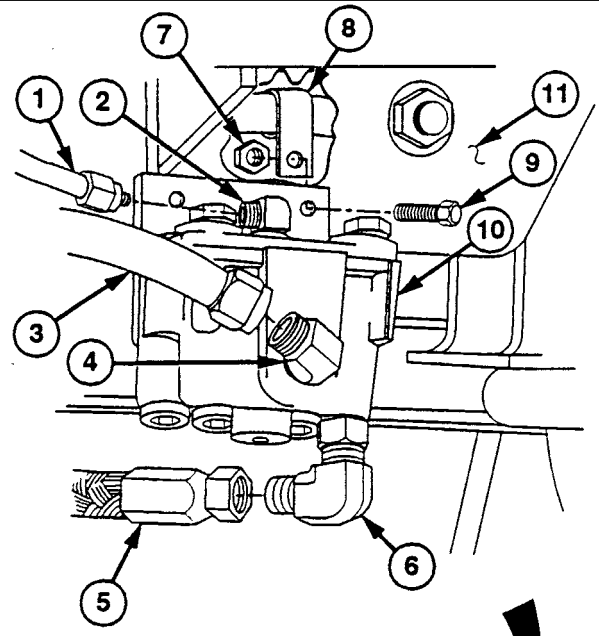
NOTE
Tag and mark hoses before removal.

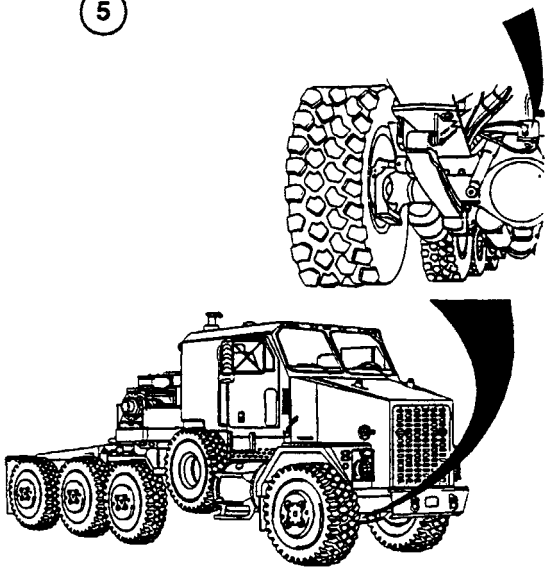
(1) Remove hose no. 2488 (1) from elbow (2).

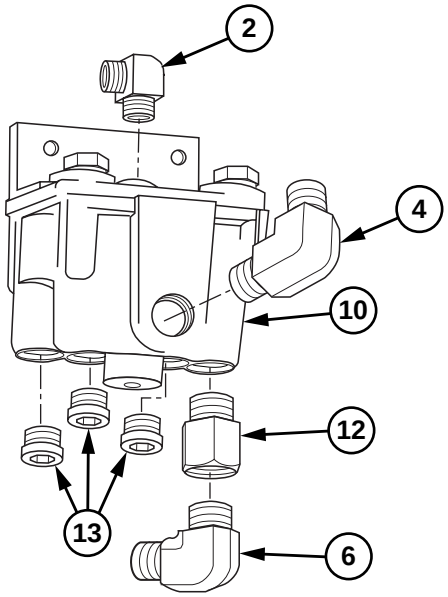
(2) Remove hose no. 2536 (3) from elbow (4).

(3) Remove hose no. 2543 (5) from elbow (6).

(4) Remove two locknuts (7), clip (8), two screws (9), and valve (10) from front crossmember (11). Discard locknuts.







(5) Remove elbow (2), elbow (4), fitting (12), and three plugs (13) from valve (10).

(6) Remove elbow (6) from fitting (12).

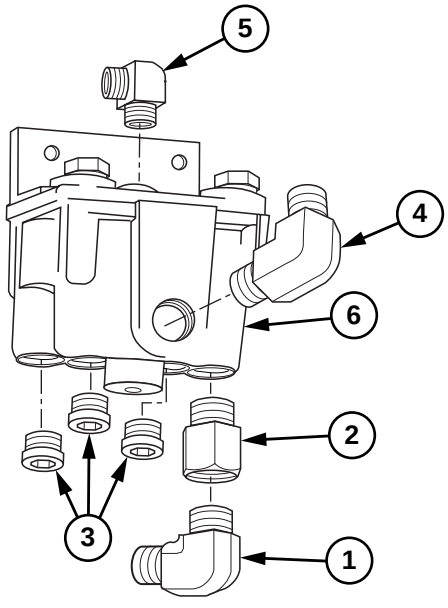
b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of elbow (1) with pipe thread sealing compound.

(2) Install elbow (1) on fitting (2).

(3) Coat threads of three plugs (3), fitting (2), elbow (4), and elbow (5) with pipe thread sealing compound.

(4) Install three plugs (3), fitting (2), elbow (4), and elbow (5) on valve (6).

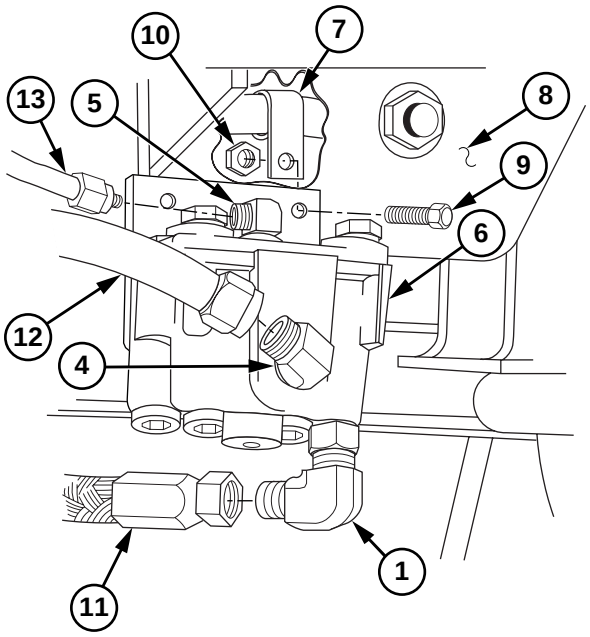
11-8. NO. 1 AXLE SERVICE BRAKE RELAY VALVE REPLACEMENT (CONT)

(5) Install valve (6) and clip (7) on front crossmember (8) with two screws (9) and new locknuts (10).

(6) Install hose no. 2543 (11) on elbow (1).

(7) Install hose no. 2536 (12) on elbow (4).

(8) Install hose no. 2488 (13) on elbow (5).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-9. NO. 2 AXLE SERVICE BRAKE RELAY VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Locknuts (2) (Item 58, Appendix G)

a. Removal

NOTE
Tag and mark hoses before removal.

(1) Remove hose no. 2668 (1) from elbow (2).

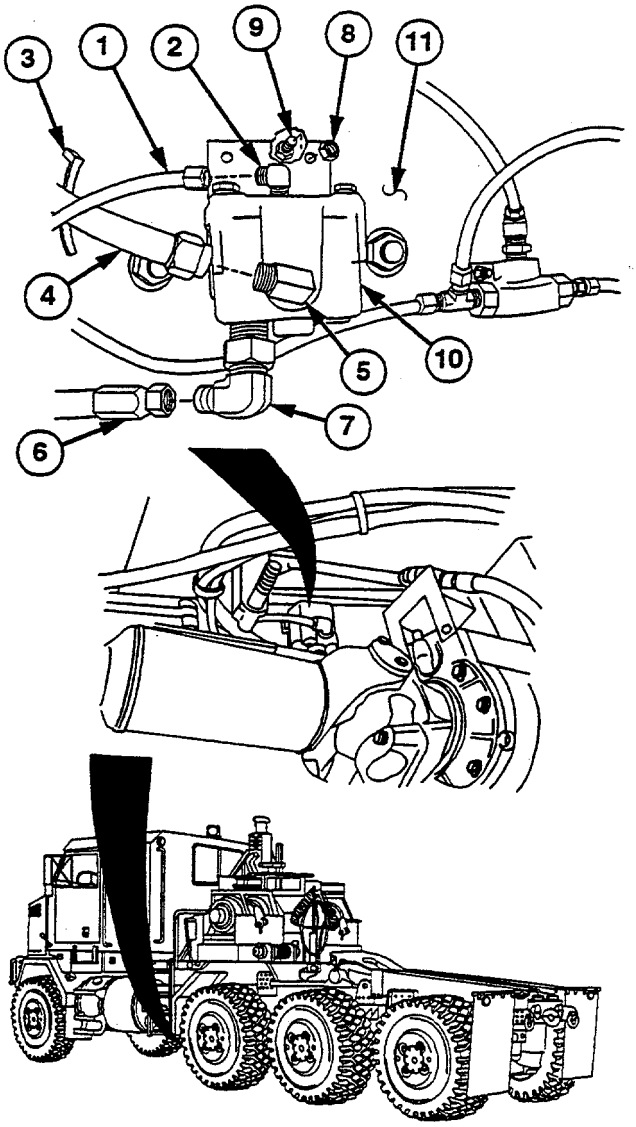
NOTE
Location of plastic cable ties should be marked before removal.

(2) Remove plastic cable ties (3) from hoses (1 and 4) as required.

(3) Remove hose no. 2011 (4) from elbow (5).

(4) Remove hose no. 2545 (6) from elbow (7).

(5) Remove two locknuts (8), screws (9), and valve (10) from frame (11). Discard locknuts.



11-9. NO. 2 AXLE SERVICE BRAKE RELAY VALVE REPLACEMENT (CONT)

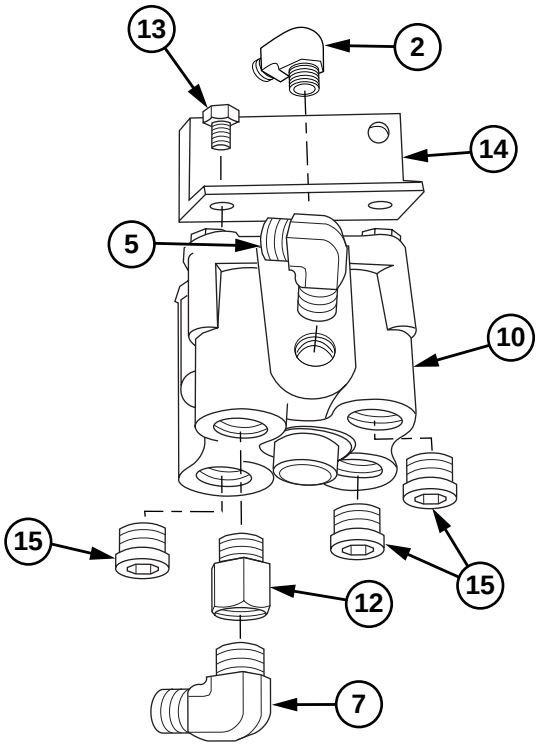
(6) Remove elbow (2) from valve (10).

(7) Remove elbow (5) from valve (10).

(8) Remove fitting (12) and elbow (7) from valve (10).

(9) Remove two screws (13) and bracket (14) from valve (10). Discard screws.

(10) Remove three plugs (15) from valve (10).



b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(1) Coat threads of three plugs (1) with pipe thread sealing compound.

(2) Install three plugs (1) on valve (2).

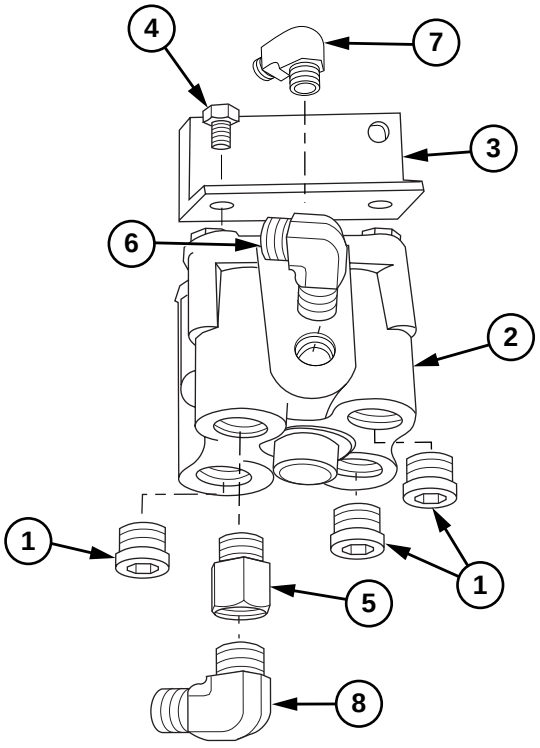
(3) Install bracket (3) on valve (2) with two new screws (4).

(4) Coat threads of fitting (5), elbow (6), and elbow (7) with pipe thread sealing compound.

(5) Install fitting (5) and elbow (8) on valve (2).

(6) Install elbow (6) on valve (2).

(7) Install elbow (7) on valve (2).



(8) Install valve (2) on frame (9) with two screws (10) and new locknuts (11).

(9) Install hose no. 2545 (12) on elbow (8).

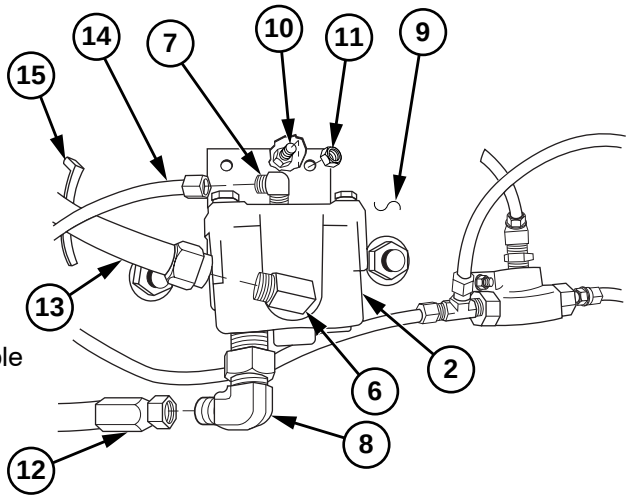
(10) Install hose no. 2011 (13) on elbow (6).

(11) Install hose no. 2668 (14) on elbow (7).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(12) Secure hoses (13 and 14) with plastic cable ties (15).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-10. NO. 3 AXLE SERVICE BRAKE RELAY VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

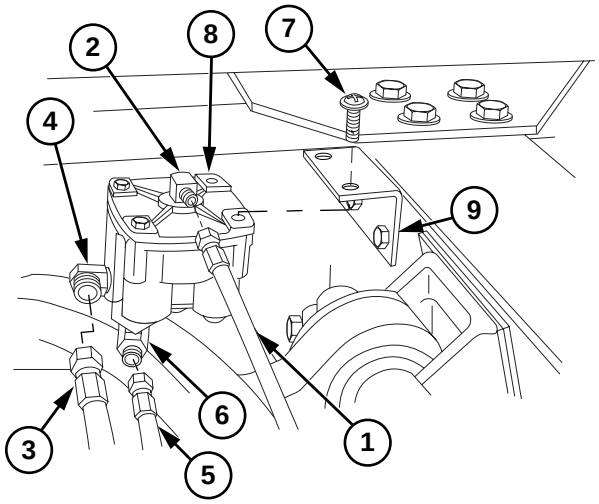
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)

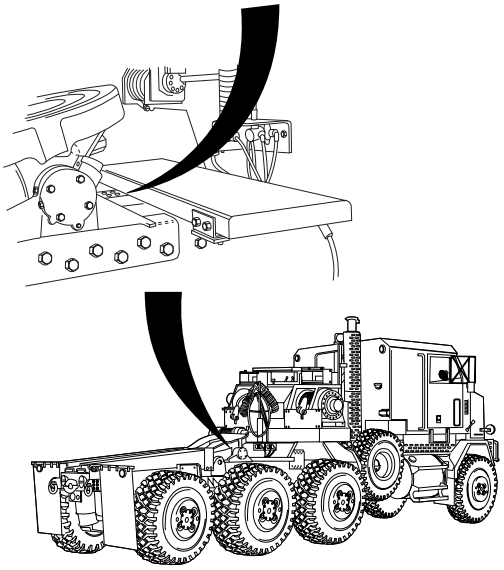
a. Removal

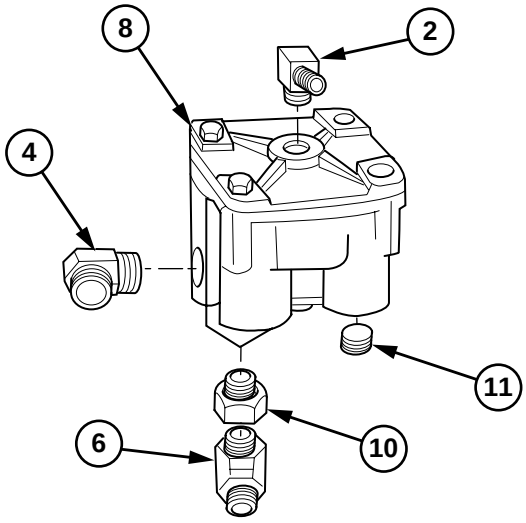
NOTE
Tag and mark hoses before removal.

(1) Remove hose no. 2636 (1) from elbow (2).
(2) Remove hose no. 2634 (3) from elbow (4).
(3) Remove hose no. 2143 (5) from elbow (6).
(4) Remove two screws (7) and valve (8) from mounting bracket (9).



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(5) Remove two elbows (2 and 4) from valve (8).

(6) Remove elbow (6) from fitting (10).

(7) Remove fitting (10) from valve (8).

(8) Remove three plugs (11) from valve (8).

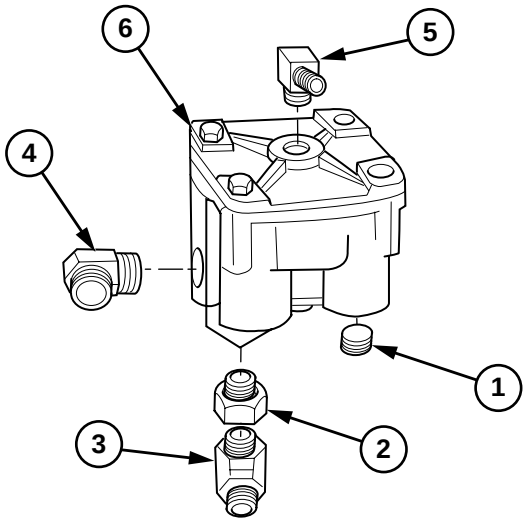
b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of three plugs (1), fitting (2), and elbows (3, 4, and 5) with pipe thread sealing compound.

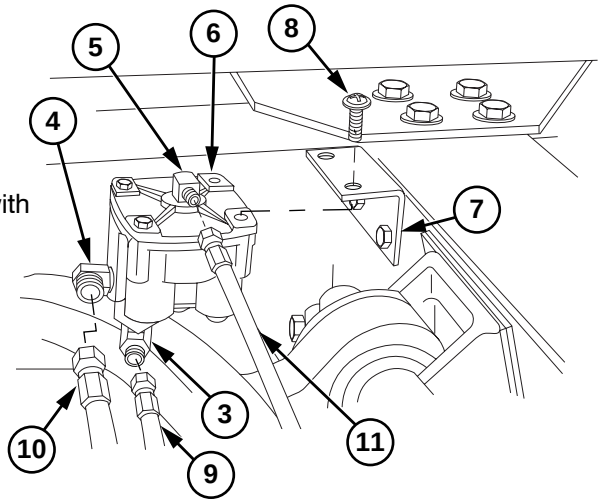
(2) Install three plugs (1) in valve (6).

(3) Install fitting (2) on valve (6).

(4) Install elbow (3) on fitting (2).

(5) Install two elbows (4 and 5) on valve (6).

11-10. NO. 3 AXLE SERVICE BRAKE RELAY VALVE REPLACEMENT (CONT)



(6) Install valve (6) on mounting bracket (7) with two screws (8).

(7) Install hose no. 2143 (9) on elbow (3).

(8) Install hose no. 2634 (10) on elbow (4).

(9) Install hose no. 2636 (11) on elbow (5).

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-11. NO. 4 AXLE SERVICE BRAKE RELAY VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Locknuts (2) (Item 58, Appendix G)

a. Removal

NOTE
Tag and mark hoses before removal.

(1) Remove hose no. 2660 (1) from elbow (2).

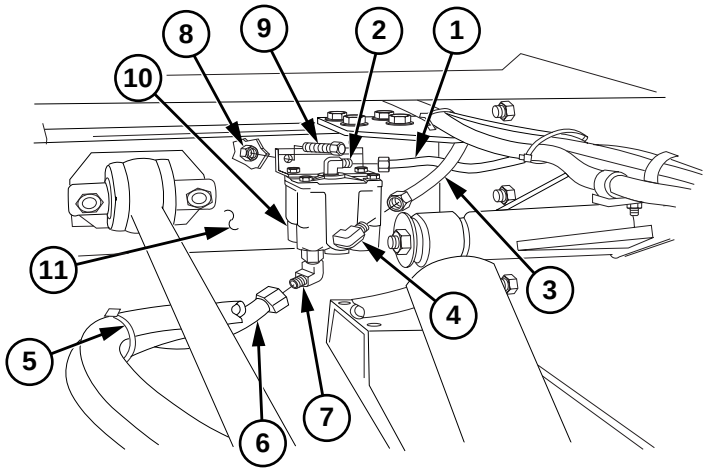
(2) Remove hose no. 2014 (3) from elbow (4).

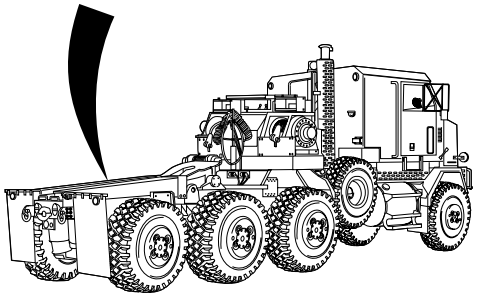
NOTE
Location of plastic cable ties should be marked before removal.

(3) Remove plastic cable ties (5) from hose (6) as required.

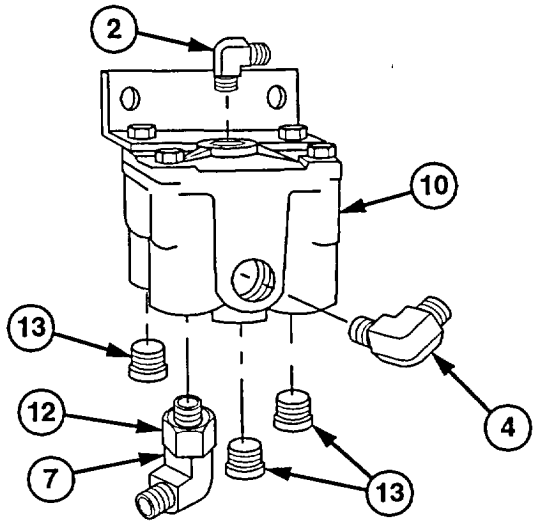
(4) Remove hose no. 2144 (6) from elbow (7).

(5) Remove two locknuts (8), screws (9), and valve (10) from no. 4 crossmember (11). Discard locknuts.





11-11. NO. 4 AXLE SERVICE BRAKE RELAY VALVE REPLACEMENT (CONT)



(6) Remove elbows (2 and 4) from valve (10).

(7) Remove fitting (12) with elbow (7) from valve (10).

(8) Remove three plugs (13) from valve (10).

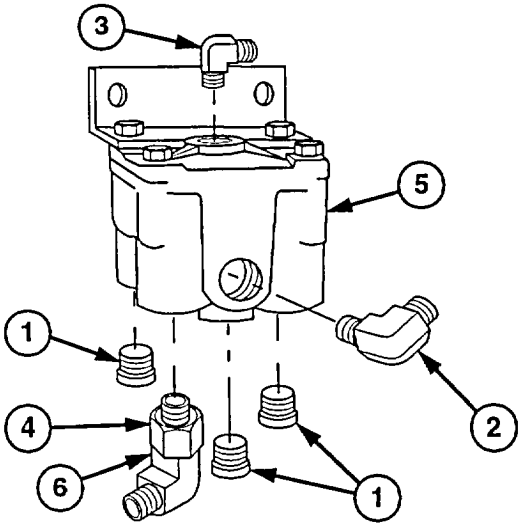
b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of three plugs (1), elbow (2), elbow (3) and fitting (4) with pipe thread sealing compound.

(2) Install three plugs (1) on valve (5).

(3) Install fitting (4) with elbow (6) on valve (5).

(4) Install two elbows (2 and 3) on valve (5).

(5) Install valve (5) on no. 4 crossmember (7) with two screws (8) and new locknuts (9).

(6) Install hose no. 2144 (10) on elbow (6).

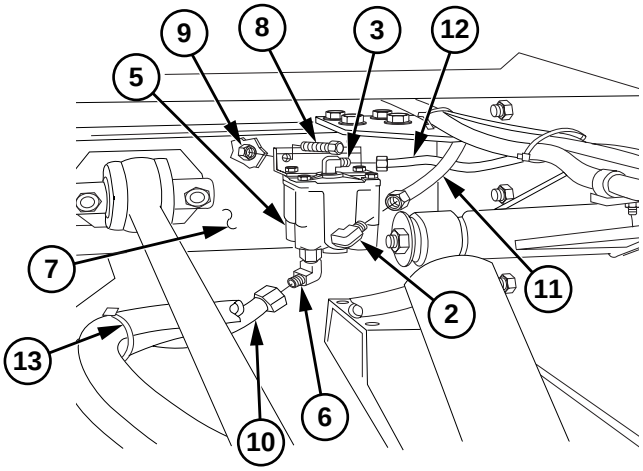
(7) Install hose no. 2014 (11) on elbow (2).

(8) Install hose no. 2660 (12) on elbow (3).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(9) Secure hose (10) with plastic cable ties (13).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-12. NO. 2 AXLE SPRING BRAKE RELAY VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

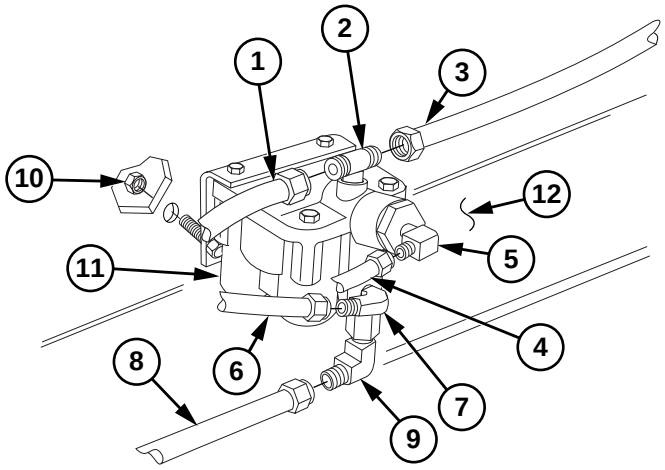
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (2) (Item 68, Appendix G)

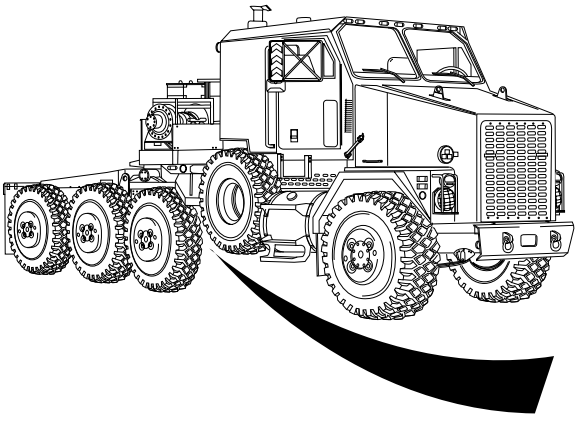
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

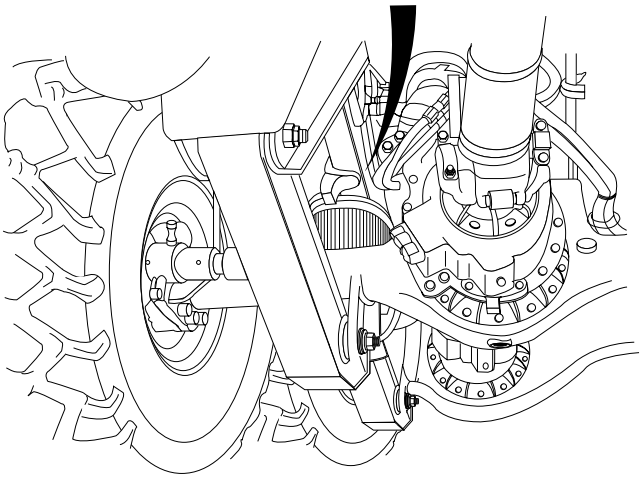
a. Removal

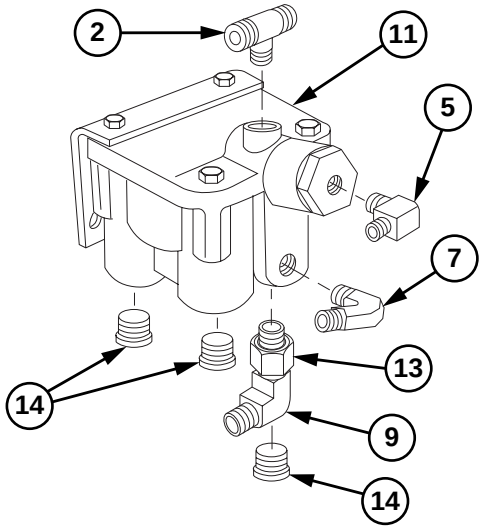
NOTE
Tag and mark hoses before removal.

(1) Remove hose no. 2622 (1) from tee (2).
(2) Remove hose no. 2638 (3) from tee (2).
(3) Remove hose no. 2639 (4) from elbow (5).
(4) Remove hose no. 2620 (6) from elbow (7).
(5) Remove hose no. 2075 (8) from elbow (9).
(6) Remove two locknuts (10) and valve (11) from frame (12). Discard locknuts.









(7) Remove tee (2) from valve (11).

(8) Remove two elbows (5 and 7) from valve (11).

(9) Remove fitting (13) with elbow (9) from valve (11).

(10) Remove three plugs (14) from valve (11).

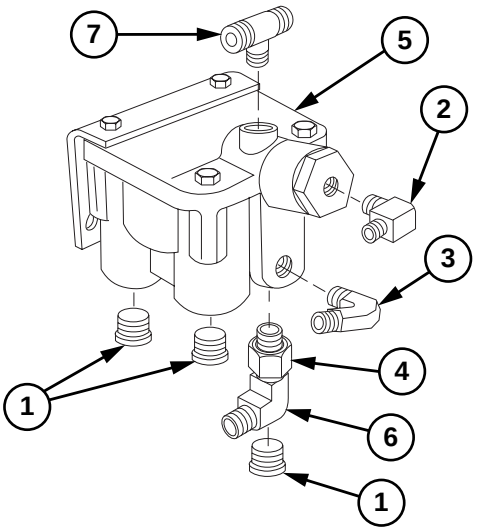
b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of three plugs (1), elbow (2), elbow (3), and fitting (4) with pipe thread sealing compound.

(2) Install three plugs (1) on valve (5).

(3) Install fitting (4) with elbow (6) on valve (5).

(4) Install two elbows (2 and 3) on valve (5).

(5) Install tee (7) on valve (5).

11-12. NO. 2 AXLE SPRING BRAKE RELAY VALVE REPLACEMENT (CONT)

(6) Install valve (5) on frame (8) with two new locknuts (9).

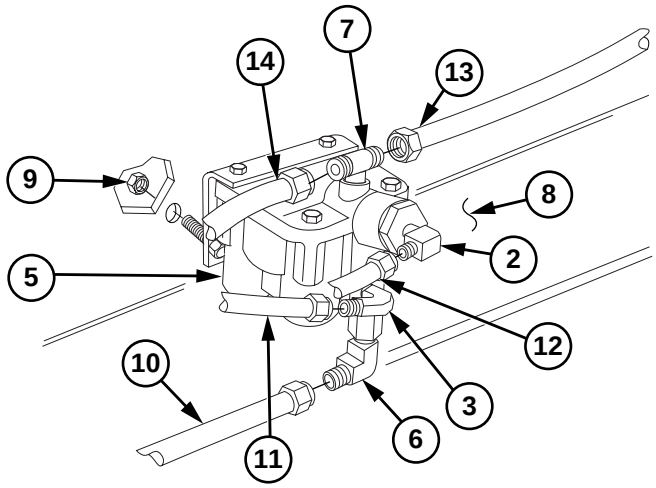
(7) Install hose no. 2075 (10) on elbow (6).

(8) Install hose no. 2620 (11) on elbow (3).

(9) Install hose no. 2639 (12) on elbow (2).

(10) Install hose no. 2638 (13) on tee (7).

(11) Install hose no. 2622 (14) on tee (7).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-13. NO. 3 AND NO. 4 AXLES SPRING BRAKE RELAY VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

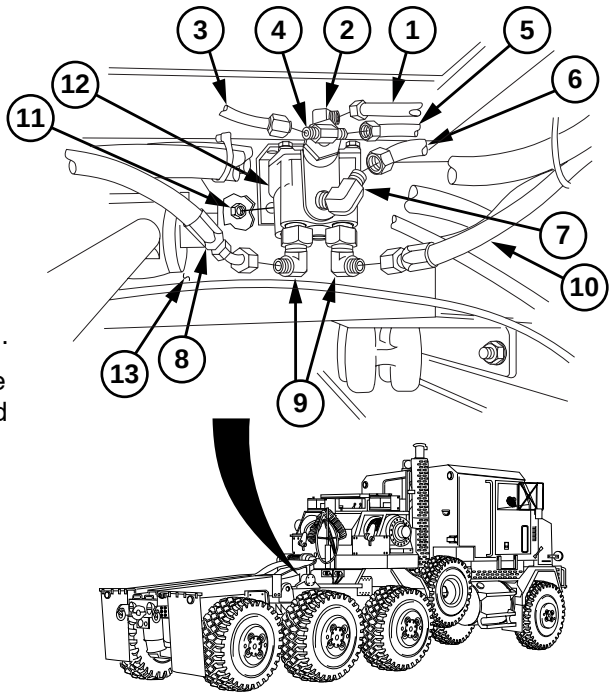
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (2) (Item 68, Appendix G)

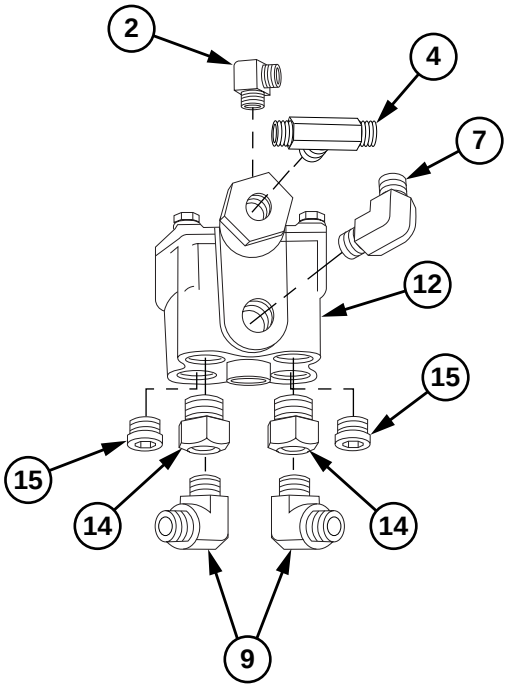
a. Removal

NOTE
Tag and mark hoses before removal.

(1) Remove hose no. 2638 (1) from elbow (2).
(2) Remove hose no. 2636 (3) from tee (4).
(3) Remove hose no. 2604 (5) from tee (4).
(4) Remove hose no. 2614 (6) from elbow (7).
(5) Remove hose no. 2368 (8) from elbow (9).
(6) Remove hose no. 2369 (10) from elbow (9).
(7) Remove two locknuts (11) and spring brake valve (12) from crossmember (13). Discard locknuts.



11-13. NO. 3 AND NO. 4 AXLES SPRING BRAKE RELAY VALVE REPLACEMENT (CONT)



(8) Remove elbow (2) from valve (12).

(9) Remove tee (4) and elbow (7) from valve (12).

(10) Remove two fittings (14) and elbows (9) from valve (12).

(11) Remove two plugs (15) from valve (12).

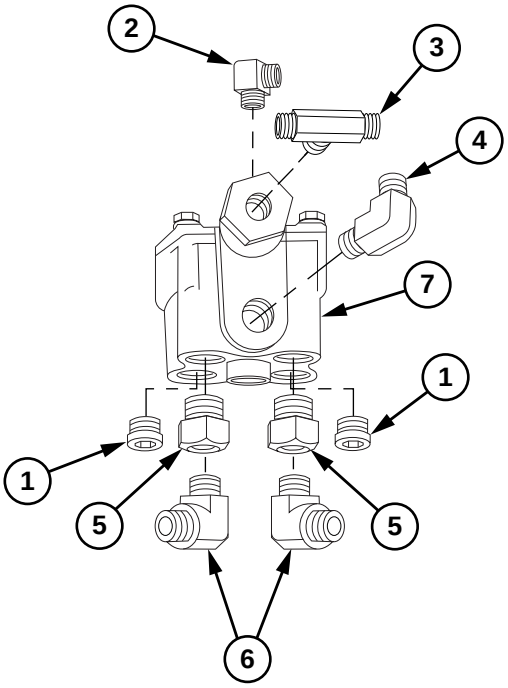
b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of two plugs (1), elbow (2), tee (3), elbow (4), two fittings (5), and elbows (6) with pipe thread sealing compound.

(2) Install two plugs (1) on valve (7).

(3) Install two fittings (5) and elbows (6) on valve (7).

(4) Install tee (3) and elbow (4) on valve (7).

(5) Install elbow (2) on valve (7).

(6) Install valve (7) on crossmember (8) with two locknuts (9).

(7) Install hose no. 2369 (10) on elbow (6).

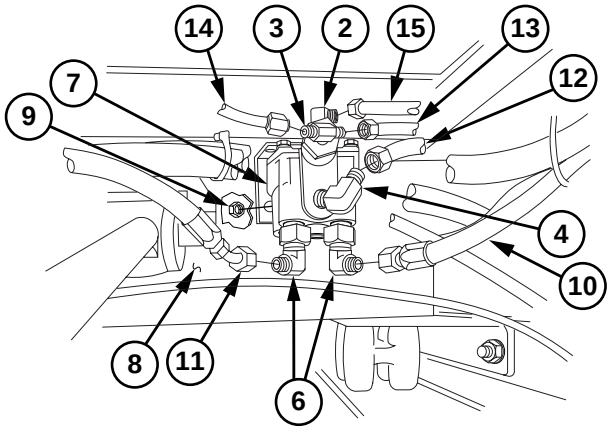
(8) Install hose no. 2368 (11) on elbow (6).

(9) Install hose no. 2614 (12) on elbow (4).

(10) Install hose no. 2604 (13) on tee (3).

(11) Install hose no. 2636 (14) on tee (3).

(12) Install hose no. 2638 (15) on elbow (2).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-14. QUICK-RELEASE VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (6) (Item 68, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Personnel Required
Two

a. Removal

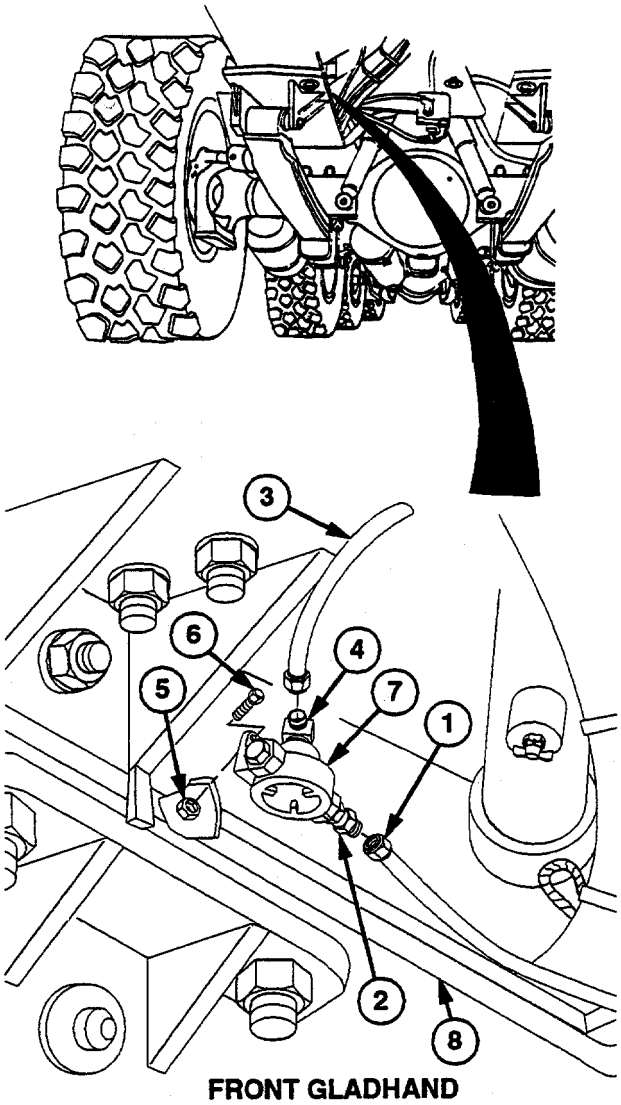
NOTE

- To remove front gladhand quick-release valve, do steps (1) thru (3).
- To remove service brake quick-release valve, do steps (4) thru (8).
- To remove trailer brake quick-release valve, do steps (9) thru (11).
- Tag and mark hoses before removal.

(1) Remove hose no. 2686 (1) from fitting (2).

(2) Remove hose no. 2686 (3) from elbow (4).

(3) Remove two locknuts (5), screws (6), and valve (7) from right dropframe (8) with aid of assistant. Discard locknuts.



FRONT GLADHAND

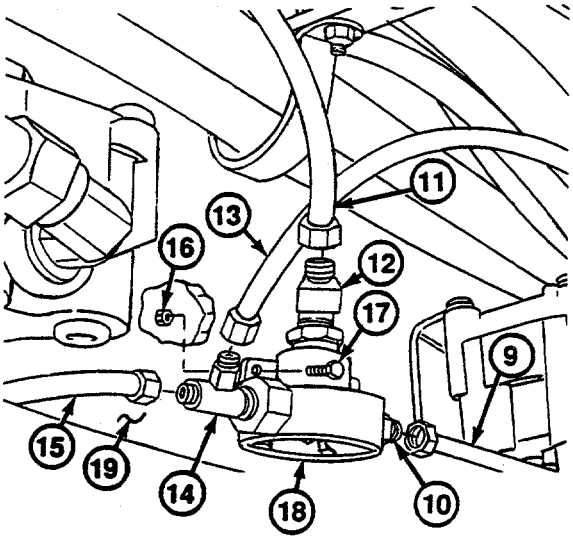
(4) Remove hose no. 2660 (9) from fitting (10).

(5) Remove hose no. 2669 (11) from elbow (12).

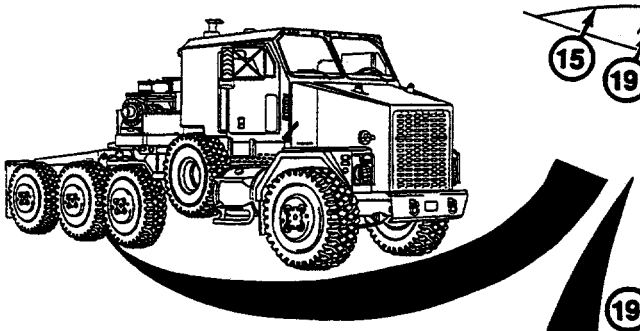
(6) Remove hose no. 2639 (13) from tee (14).

(7) Remove hose no. 2668 (15) from tee (14).

(8) Remove two locknuts (16), screws (17), and valve (18) from right frame (19) with aid of assistant. Discard locknuts.



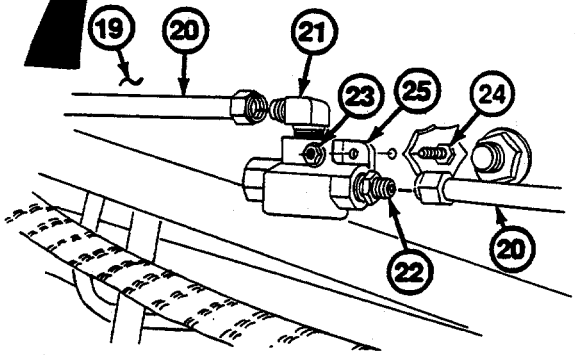
SERVICE BRAKE



(9) Remove hose no. 2661 (20) from elbow (21).

(10) Remove hose no. 2661 (20) from fitting (22).

(11) Remove two locknuts (23), screws (24), and valve (25) from right frame (19) with aid of assistant. Discard locknuts.

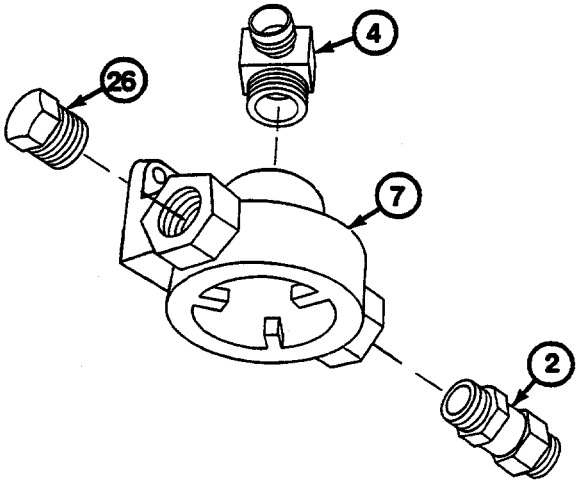


TRAILER BRAKE

NOTE

- To remove front gladhand quick-release valve fittings, do step (12).
- To remove service brake quick-release valve fittings, do steps (13) thru (15).
- To remove trailer brake quick-release valve fittings, do step (16).

(12) Remove fitting (2), elbow (4), and plug (26) from valve (7).



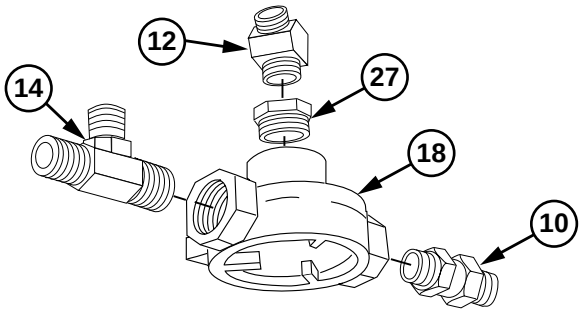
FRONT GLADHAND

11-14. QUICK-RELEASE VALVE REPLACEMENT (CONT)

(13) Remove fitting (10) and tee (14) from valve (18).

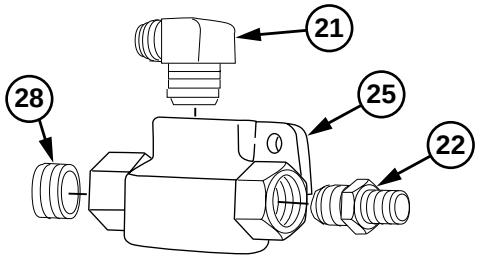
(14) Remove elbow (12) from fitting (27).

(15) Remove fitting (27) from valve (18).



SERVICE BRAKE

(16) Remove elbow (21), fitting (22), and plug (28) from valve (25).



TRAILER BRAKE

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

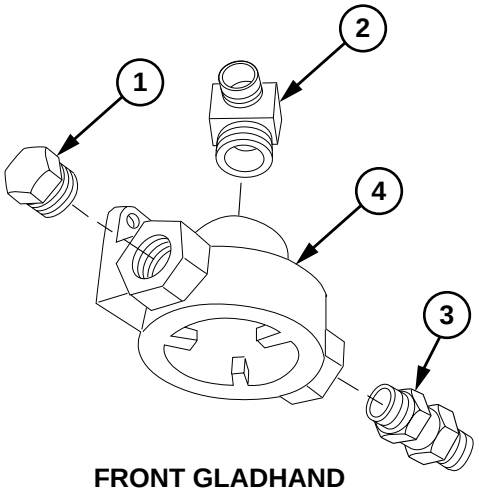
Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(1) Coat threads of plug (1), elbow (2), and fitting (3) with pipe thread sealing compound.

NOTE

To install front gladhand quick-release valve fittings, do step (2).

(2) Install plug (1), elbow (2), and fitting (3) on valve (4).



FRONT GLADHAND

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

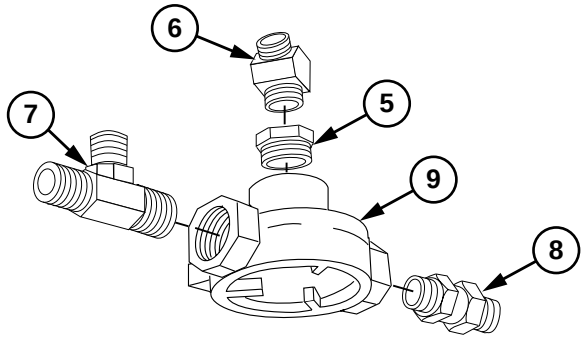
To install service brake quick-release valve fittings, do steps (3) thru (6).

(3) Coat threads of fitting (5), elbow (6), tee (7), and fitting (8) with pipe thread sealing. compound

(4) Install fitting (5) on valve (9).

(5) Install elbow (6) on fitting (5).

(6) Install tee (7) and fitting (8) on valve (9).



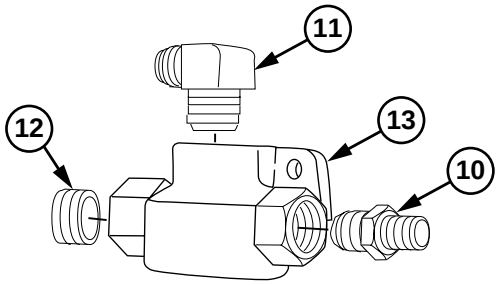
SERVICE BRAKE

NOTE

To install trailer brake quick-release valve fittings, do step (7) and (8).

(7) Coat threads of fitting (10), elbow (11), and plug (12) with pipe thread sealing compound.

(8) Install fitting (10), elbow (11), and plug (12) on valve (13).



TRAILER BRAKE

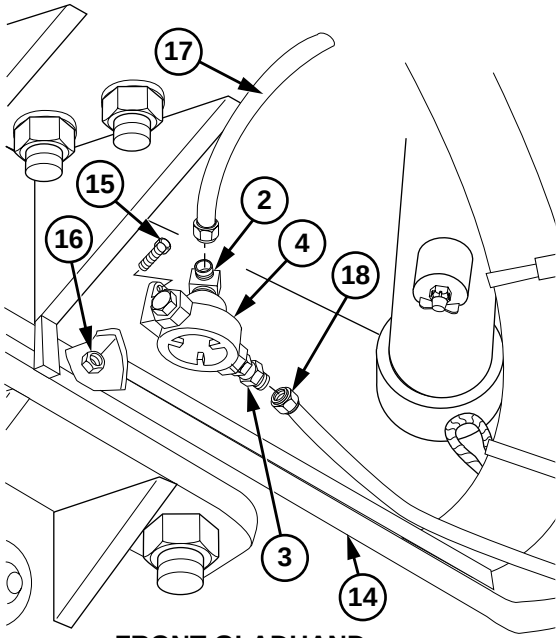
NOTE

To install front gladhand quick-release valve, do steps (9) thru (11).

(9) Install valve (4) on right dropframe (14) with two screws (15) and new locknuts (16) with aid of assistant.

(10) Install hose no. 2686 (17) on elbow (2).

(11) Install hose no. 2686 (18) on fitting (3).



FRONT GLADHAND

11-14. QUICK-RELEASE VALVE REPLACEMENT (CONT)

NOTE

To install service brake quick-release valve, do steps (12) thru (16).

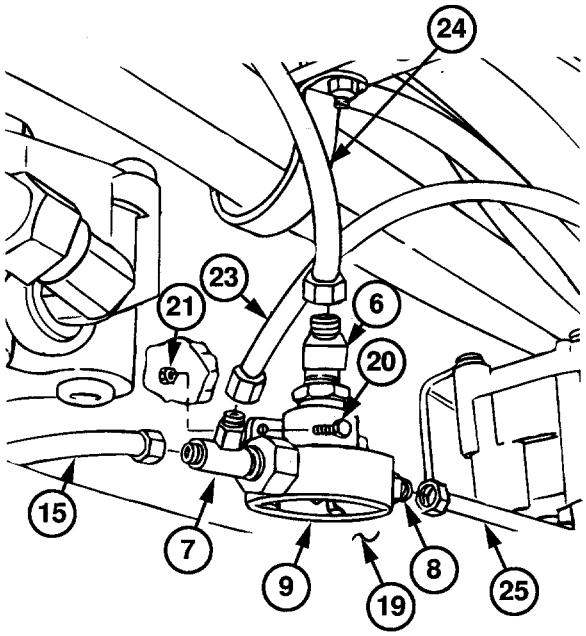
(12) Install valve (9) on right frame (19) with two screws (20) and new locknuts (21) with aid of assistant.

(13) Install hose no. 2668 (22) on tee (7).

(14) Install hose no. 2639 (23) on tee (7).

(15) Install hose no. 2669 (24) on elbow (6).

(16) Install hose no. 2660 (25) on fitting (8).



SERVICE BRAKE

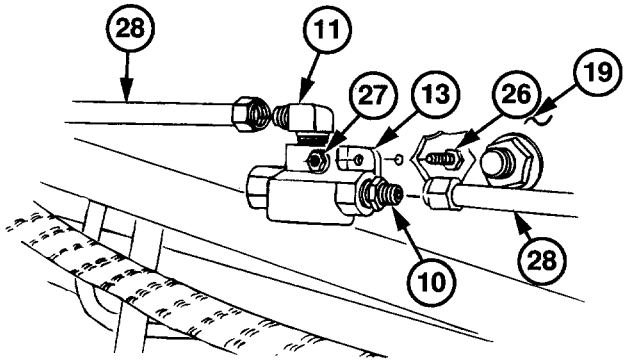
NOTE

To install trailer brake quick-release valve, do steps (17) thru (19).

(17) Install valve (13) on right frame (19) with two screws (26) and new locknuts (27) with aid of assistant.

(18) Install hose no. 2661 (28) on fitting (10).

(19) Install hose no. 2661 (28) on elbow (11).



TRAILER BRAKE

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-15. PRESSURE PROTECTION VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (2) (Item 72, Appendix G)

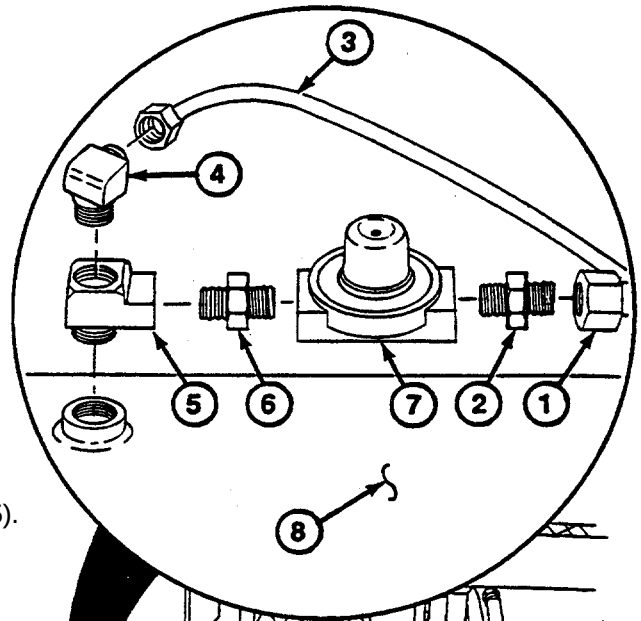
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

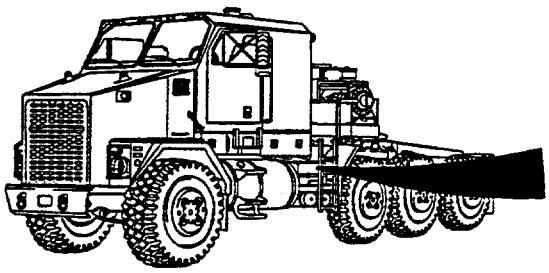
a. Removal

NOTE

- To remove left valve, do steps (1) thru (7). To remove right valve, do steps (8) thru (11).
- Tag and mark hoses before removal.

(1) Remove hose no. 2041 (1) from fitting (2).
(2) Remove hose no. 2108 (3) from elbow (4).
(3) Turn tee (5) one-quarter turn counter-clockwise.
(4) Remove elbow (4) from tee (5).
(5) Remove fitting (6) and valve (7) from tee (5).
(6) Remove tee (5) from from no. 3 air reservoir (8).
(7) Remove two fittings (2 and 6) from valve (7).





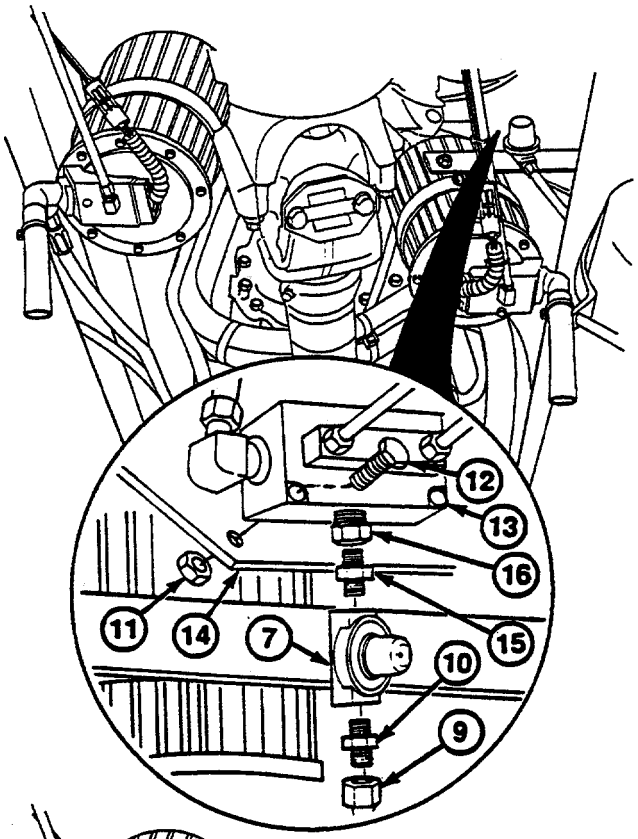
11-15. PRESSURE PROTECTION VALVE REPLACEMENT (CONT)

(8) Remove hose no. 2074 (9) from fitting (10).

(9) Remove two locknuts (11), screws (12), and manifold (13) from mounting bracket (14). Discard locknuts.

(10) Remove fitting (15) and valve (7) from reducer (16).

(11) Remove two fittings (10 and 15) from valve (7).



b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

NOTE

To install right valve, do steps (1) thru (6). To install left valve, do steps (7) thru (15).

(1) Coat threads of fittings (1 and 2) with pipe thread sealing compound.

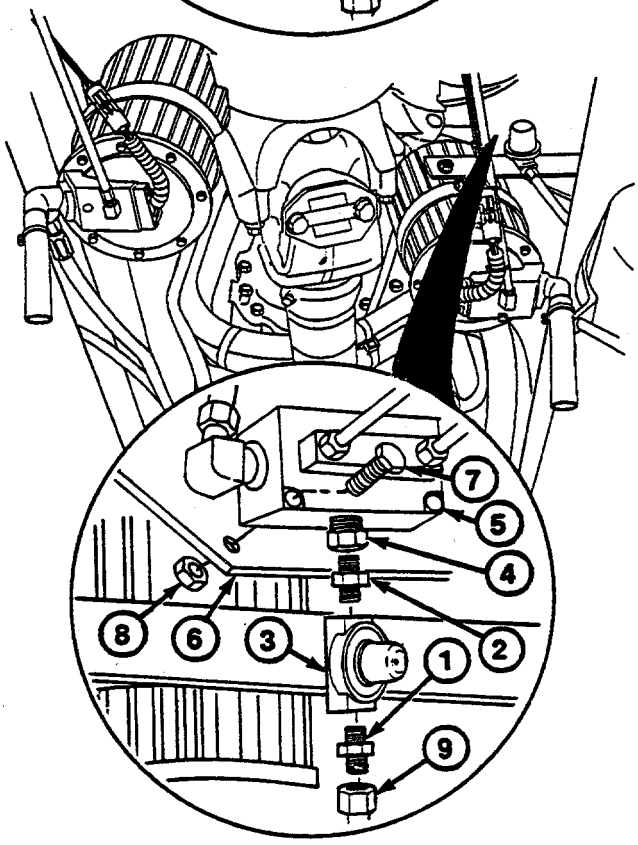
(2) Install fitting (1) on input side of valve (3).

(3) Install fitting (2) on output side of valve (3).

(4) Install fitting (2) and valve (3) on reducer (4).

(5) Install manifold (5) on mounting bracket (6) with two screws (7) and new locknuts (8).

(6) Install hose no. 2074 (9) on fitting (1).



WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(7) Coat threads of fittings (10 and 11), elbow (12), and tee (13) with pipe thread sealing compound.

(8) Install fitting (10) on input side of valve (3).

(9) Install fitting (11) on output side of valve (3).

NOTE

Tee should be turned clockwise until opening faces front of vehicle.

(10) Install tee (13) on no. 3 air reservoir (14).

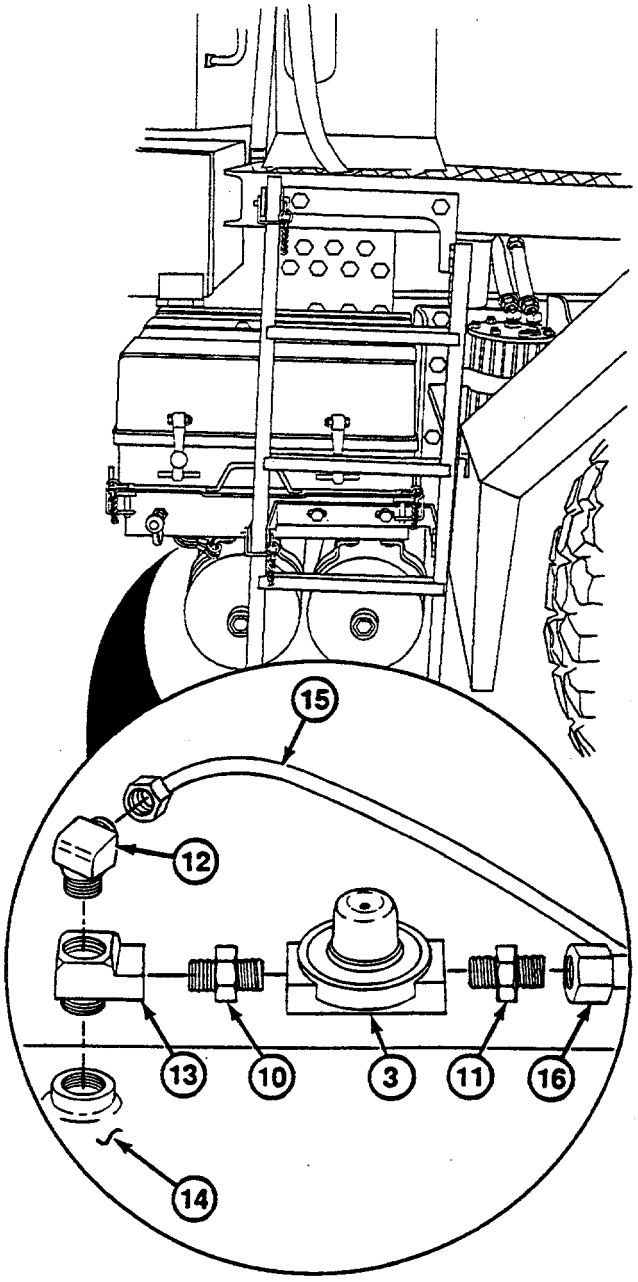
(11) Install elbow (12) on tee (13).

(12) Install fitting (10) and valve (3) on tee (13).

(13) Turn tee (13) one-quarter turn clockwise so fitting (10) and valve (3) are parallel with no. 3 air reservoir (14).

(14) Install hose no. 2108 (15) on elbow (12).

(15) Install hose no. 2041 (16) on fitting (11).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-16. SPRING BRAKE CONTROL VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (2) (Item 68, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

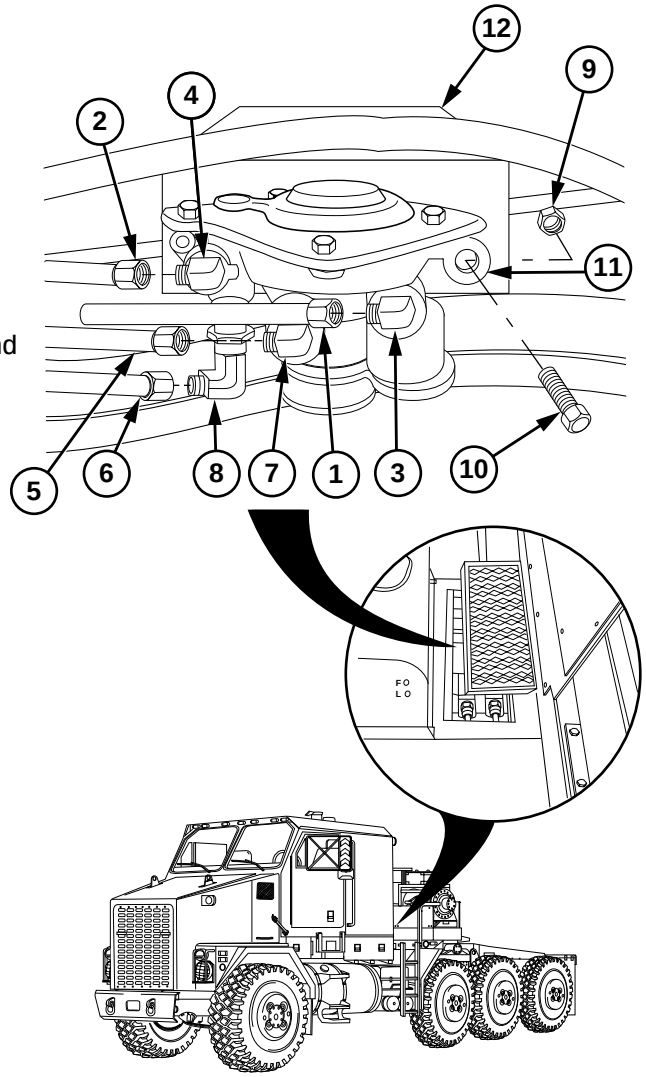
a. Removal

NOTE
Tag and mark hoses before removal.

(1) Remove hose no. 2622 (1) and hose no. 2612 (2) from elbows (3 and 4).

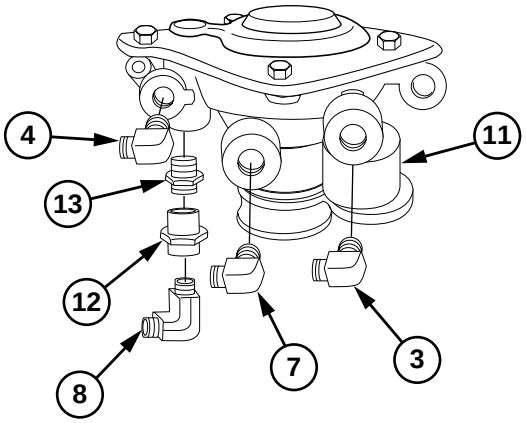
(2) Remove hose no. 2621 (5) and hose no. 2664 (6) from elbows (7 and 8).

(3) Remove two locknuts (9), screws (10), and valve (11) from bracket (12). Discard locknuts.



(4) Remove three elbows (3, 4, and 7) from valve (11).

(5) Remove elbow (8), sleeve (12), and fitting (13) from valve (11).



b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

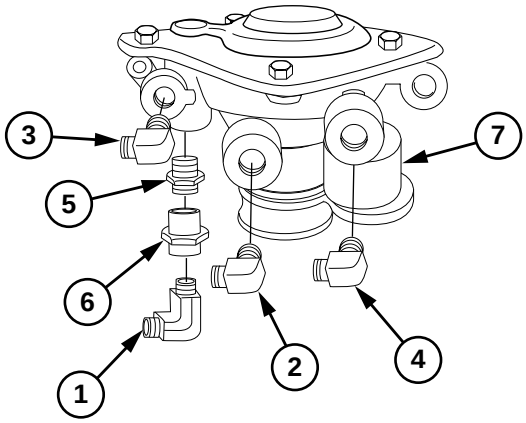
CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(1) Coat threads of elbows (1, 2, 3, and 4), and fitting (5) with pipe thread sealing compound.

(2) Install fitting (5), sleeve (6), and elbow (1) on valve (7).

(3) Install three elbows (2, 3, and 4) on valve (7).

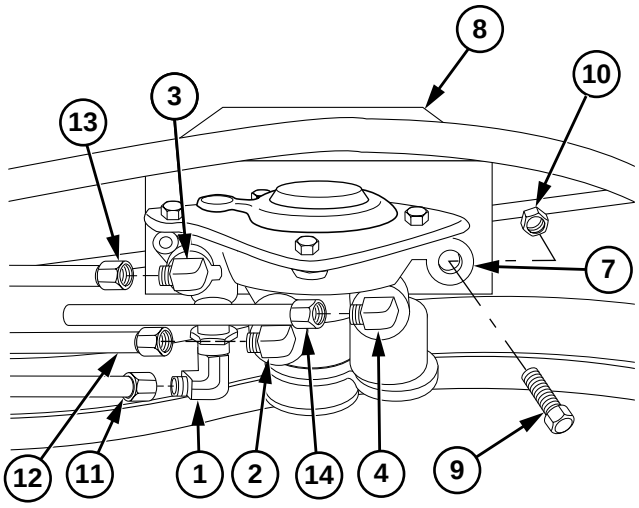


11-16. SPRING BRAKE CONTROL VALVE REPLACEMENT (CONT)

(4) Install valve (7) on bracket (8) with two screws (9) and new locknuts (10).

(5) Install hose no. 2664 (11) and hose no. 2621 (12) on elbows (1 and 2).

(6) Install hose no. 2612 (13) and hose no. 2622 (14) on elbows (3 and 4).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-17. DASH MANIFOLD VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)

a. Removal

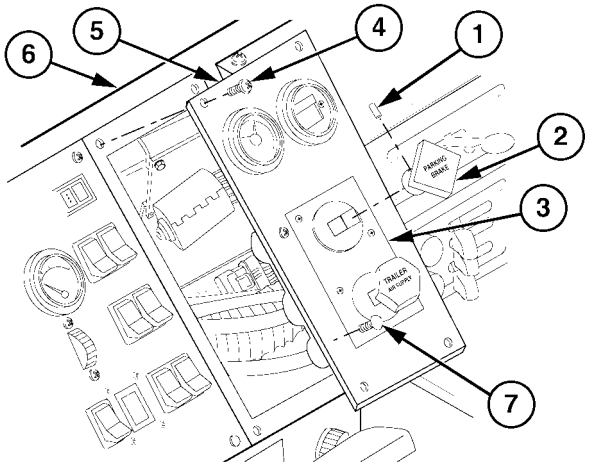
NOTE
Do step (1) if knobs are damaged. Both knobs are removed the same way. Parking brake knob is shown.

(1) Remove pin (1) and knob (2) from valve (3).

CAUTION
Use care when handling panel. Failure to comply may result in damage to parking brake pressure switch.

(2) Remove four screws (4) and panel (5) from dash (6).

(3) Remove four screws (7) and valve (3) from panel (5).



NOTE
Tag and mark wires and hoses before removal.

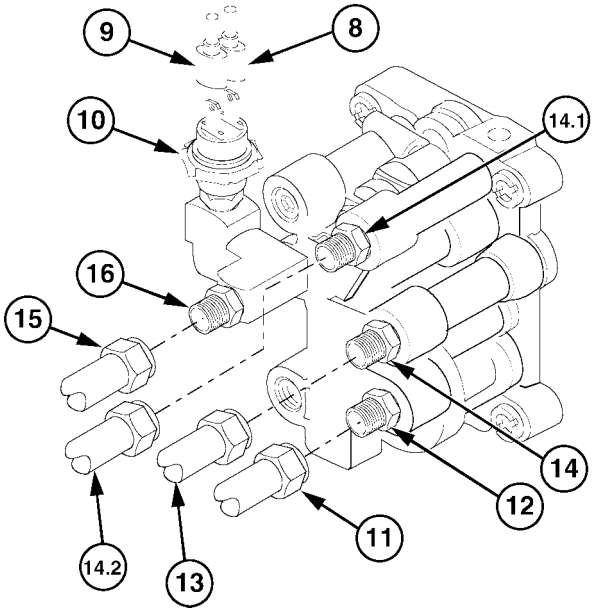
(4) Remove wire no. 1719B (8) and wire no. 1719C (9) from sending unit (10).

(5) Remove hose no. 2662 (11) from adapter (12).

(6) Remove hose no. 2006 (13) from adapter (14).

(6.1) Remove hose no. 2073 (14.2) from adapter (14.1).

(7) Remove hose no. 2612 (15) from adapter (16).



11-17. DASH MANIFOLD VALVE REPLACEMENT (CONT)

(8) Remove adapters (12, 14, and 14.1) from valve (3).

(9) Remove adapter (16) from tee (17).

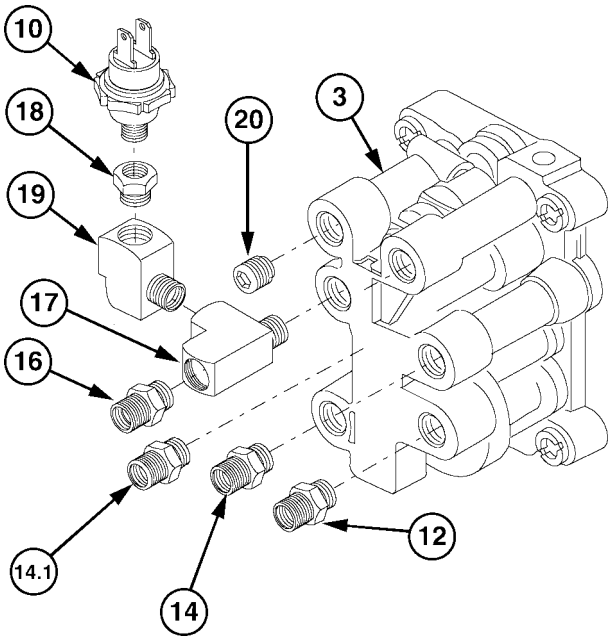
(10) Remove sending unit (10), bushing (18), and elbow (19) from tee (17).

(11) Remove tee (17) from valve (3).

NOTE

Do step (12) if dash manifold valve is being replaced or if plugs are leaking or damaged.

(12) Remove two plugs (20) from valve (3).



b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

NOTE

Do steps (1) and (2) if plugs were removed.

(1) Coat threads of two plugs (1) with pipe thread sealing compound.

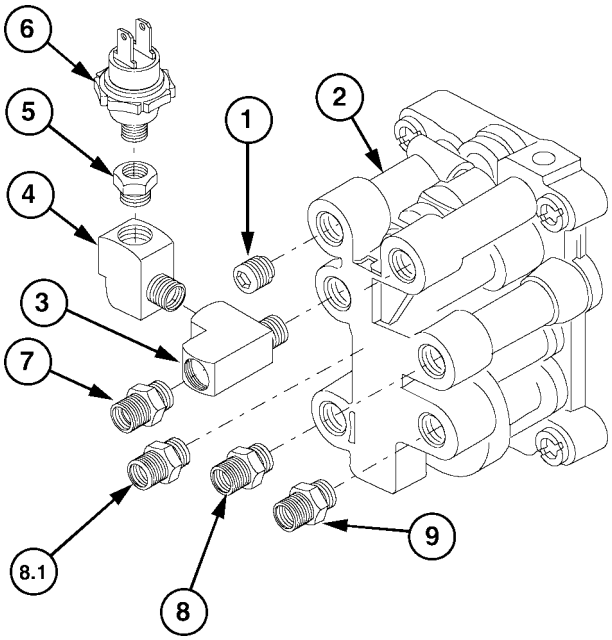
(2) Install two plugs (1) in valve (2).

(3) Coat threads of tee (3), elbow (4), bushing (5), sending unit (6), adapter (7), adapter (8), adapter (8.1), and adapter (9) with pipe thread sealing compound.

(4) Install tee (3) in valve (2).

(5) Install elbow (4), bushing (5), sending unit (6), and adapter (7) in tee (3).

(6) Install three adapters (8, 8.1, and 9) in valve (2).



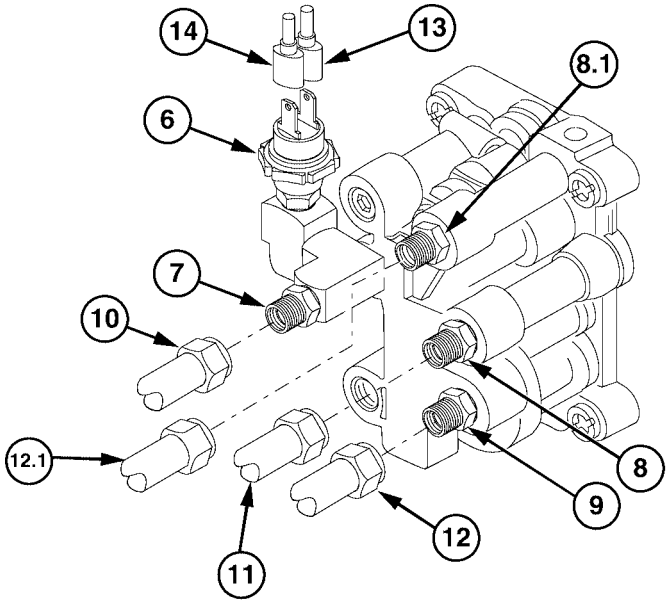
(7) Install hose no. 2612 (10) on adapter (7).

(8) Install hose no. 2006 (11) on adapter (8).

(9) Install hose no. 2662 (12) on adapter (9).

(9.1) Install hose no. 2073 (12.1) on adapter (8.1).

(10) Install wire no. 1719B (13) and wire no. 1719C (14) on sending unit (6).



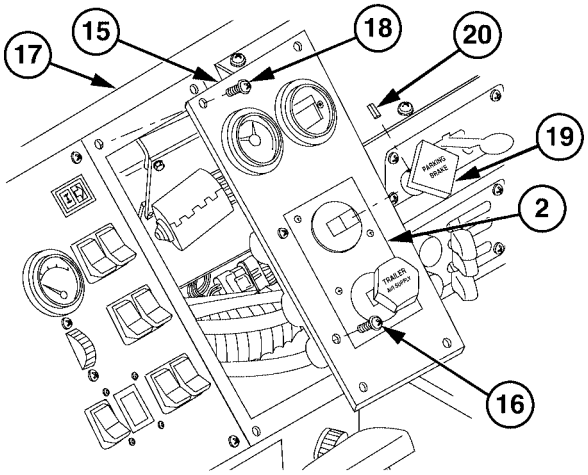
(11) Install valve (2) in panel (15) with four screws (16).

(12) Install panel (15) on dash (17) with four screws (18).

NOTE

Do step (13) if knobs were removed. Both knobs are installed the same way. Parking brake knob is shown.

(13) Install knob (19) on valve (2) with pin (20).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Apply parking brake and check operation (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

(5) Check for leaks.

(6) Remove wheel chocks.

11-18. TRACTOR PROTECTION VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

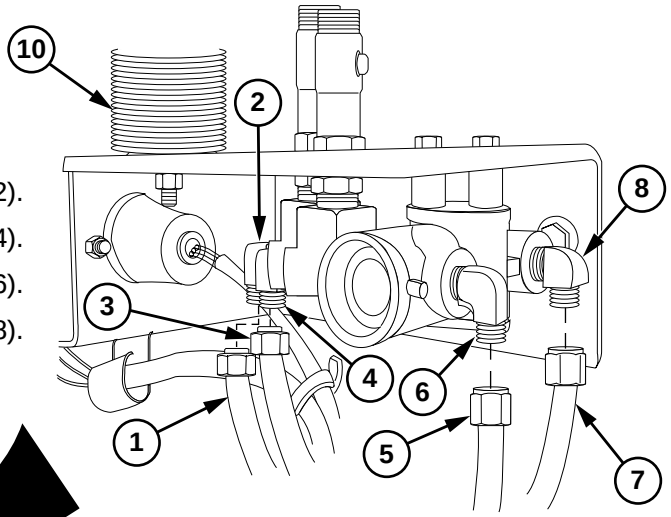
Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (2) (Item 68, Appendix G)

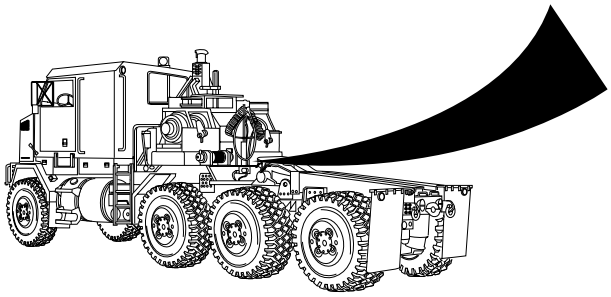
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

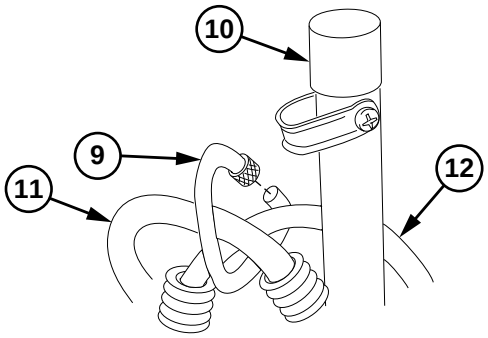
a. Removal

NOTE
Tag and mark hoses before removal.



(1) Remove hose no. 2654 (1) from elbow (2).
(2) Remove hose no. 2653 (3) from elbow (4).
(3) Remove hose no. 2661 (5) from elbow (6).
(4) Remove hose no. 2662 (7) from elbow (8).



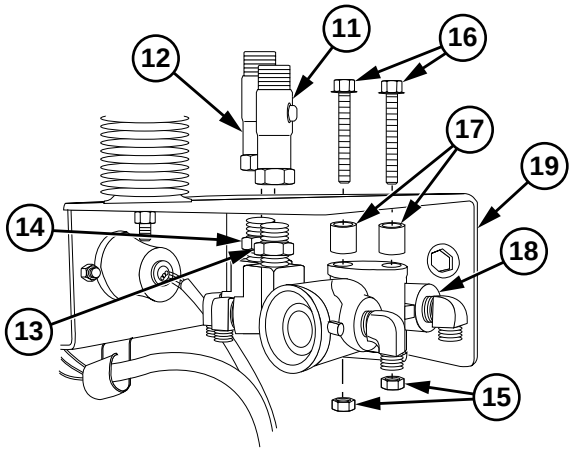


(5) Open clip (9) at top of tenna hose (10).
(6) Remove service hose (11) and emergency hose (12) from clip (9).

(7) Remove service hose (11) from fitting (13).

(8) Remove emergency hose (12) from fitting (14).

(9) Remove two locknuts (15), screws (16), spacers (17), and valve (18) from bracket (19). Discard locknuts.



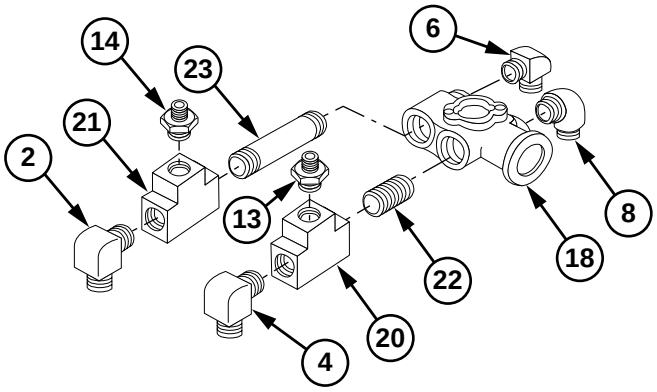
(10) Remove two elbows (2 and 4) from tees (20 and 21).

(11) Remove two fittings (13 and 14) from tees (20 and 21).

(12) Remove tee (20) and pipe (22) from valve (18).

(13) Remove tee (21) and pipe (23) from valve (18).

(14) Remove two elbows (6 and 8) from valve (18).



b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(1) Coat threads of elbows (1, 2, 3, and 4), fittings (5 and 6), and pipes (7 and 8) with pipe thread sealing compound.

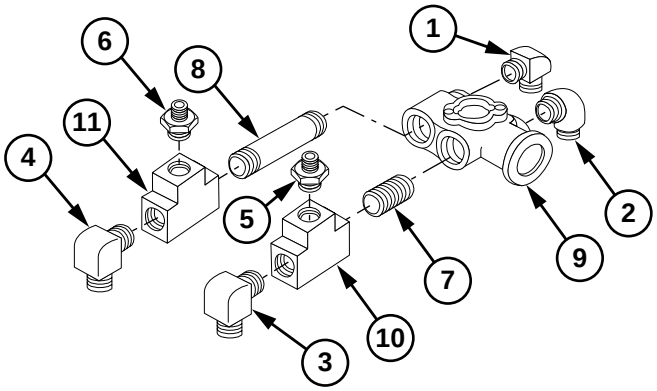
(2) Install two elbows (1 and 2) on valve (9).

(3) Install tee (10) and pipe (7) on valve (9).

(4) Install tee (11) and pipe (8) on valve (9).

(5) Install two fittings (5 and 6) on tees (10 and 11).

(6) Install two elbows (3 and 4) on tees (10 and 11).

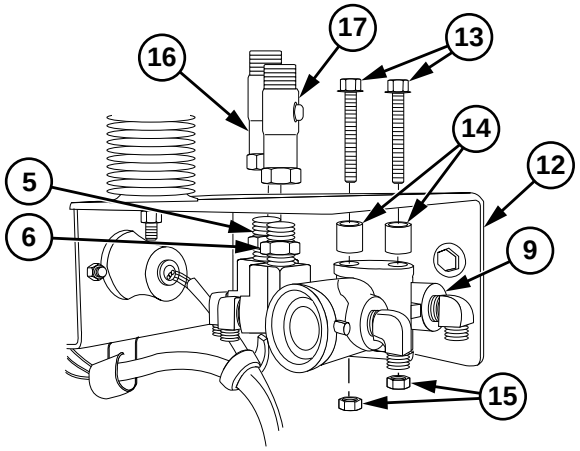


11-18. TRACTOR PROTECTION VALVE REPLACEMENT (CONT)

(7) Install valve (9) on bracket (12) with two screws (13), spacers (14), and new locknuts (15).

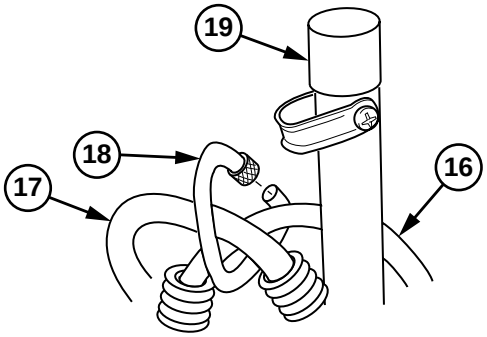
(8) Install emergency hose (16) on fitting (5).

(9) Install service hose (17) on fitting (6).



(10) Position emergency hose (16) and service hose (17) in clip (18) at top of tenna hose (19).

(11) Close clip (18) around hoses (16 and 17).

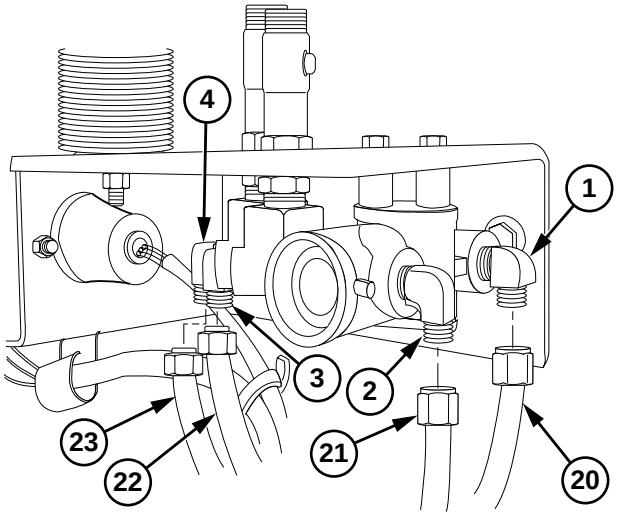


(12) Install hose no. 2662 (20) on elbow (1).

(13) Install hose no. 2661 (21) on elbow (2).

(14) Install hose no. 2653 (22) on elbow (3).

(15) Install hose no. 2654 (23) on elbow (4).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-19. NO. 1 AIR RESERVOIR AND VALVE REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

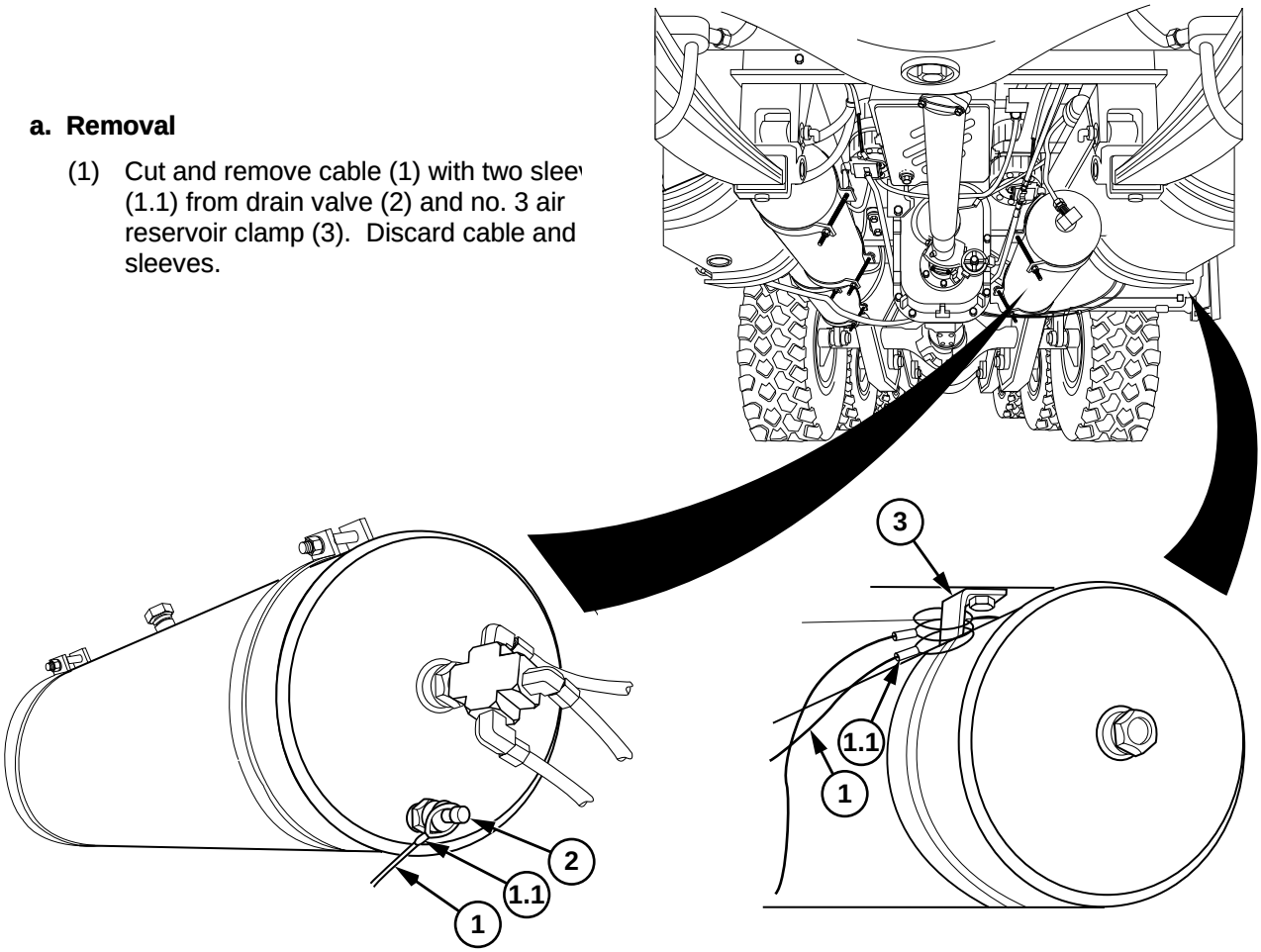
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable Plastic (Item 34, Appendix C)
Locknuts (4) (Item 58, Appendix G)
Lockwashers (4) (Item 102, Appendix G)
Sleeves (2) (Item 167.1, Appendix G)

Personnel Required
Two

a. Removal

(1) Cut and remove cable (1) with two slee (1.1) from drain valve (2) and no. 3 air reservoir clamp (3). Discard cable and sleeves.



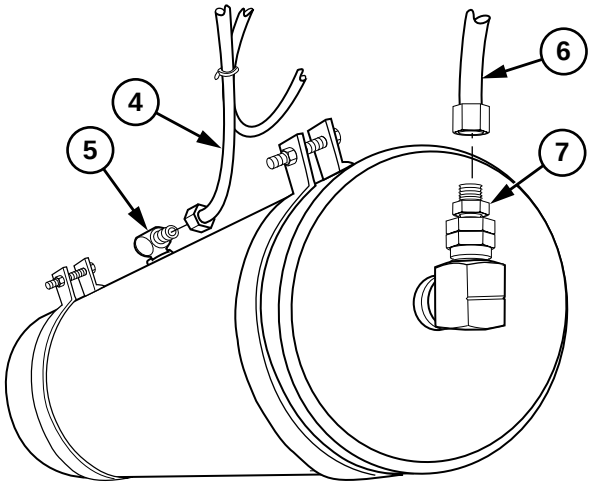
11-19. NO. 1 AIR RESERVOIR AND VALVE REPAIR (CONT)

NOTE

Tag and mark hoses before removal.

(2) Remove hose no. 2159 (4) from elbow (5).

(3) Remove hose no. 2002 (6) from fitting (7).

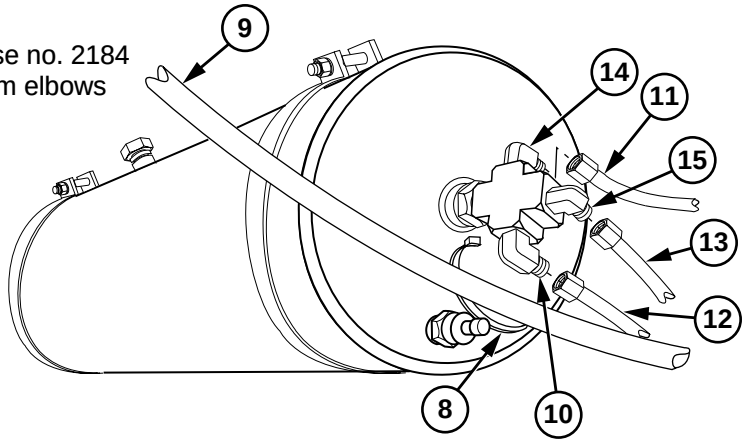


NOTE

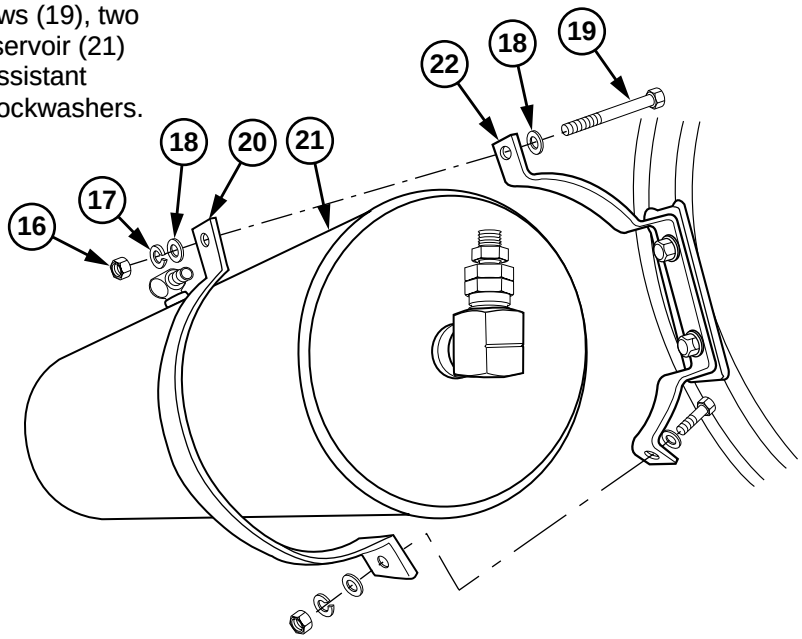
Location of plastic cable ties should be marked before removal.

(4) Remove plastic cable ties (8) from fuel line (9) and elbow (10).

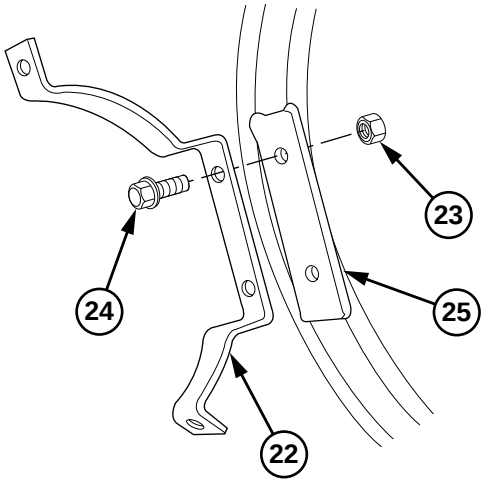
(5) Remove hose no. 2613 (11), hose no. 2184 (12), and hose no. 2100 (13) from elbows (10, 14, and 15).



(6) Remove four nuts (16), lockwashers (17), eight washers (18), four screws (19), two clamps (20), and no. 1 air reservoir (21) from two clamps (22) while assistant supports reservoir. Discard lockwashers.



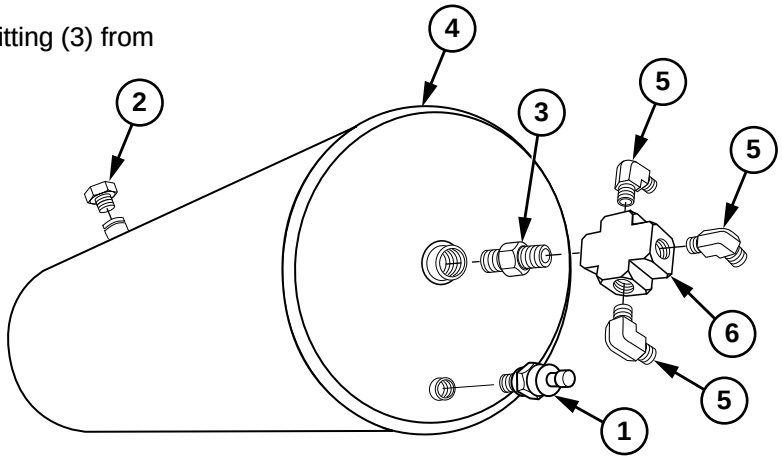
(7) Remove four locknuts (23), screws (24), and two clamps (22) from two fuel tank brackets (25). Discard locknuts.



b. Disassembly

(1) Remove drain valve (1), plug (2), and fitting (3) from no. 1 air reservoir (4).

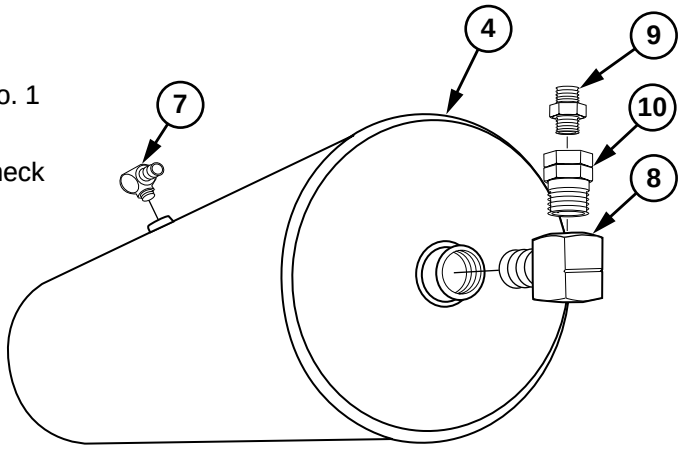
(2) Remove three elbows (5) and fitting (3) from cross (6).



11-19. NO. 1 AIR RESERVOIR AND VALVE REPAIR (CONT)

(3) Remove elbow (7) and elbow (8) from no. 1 air reservoir (4).

(4) Remove elbow (8) and fitting (9) from check valve (10).



c. Assembly

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

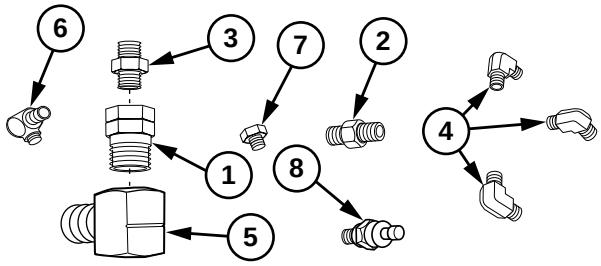
CAUTION

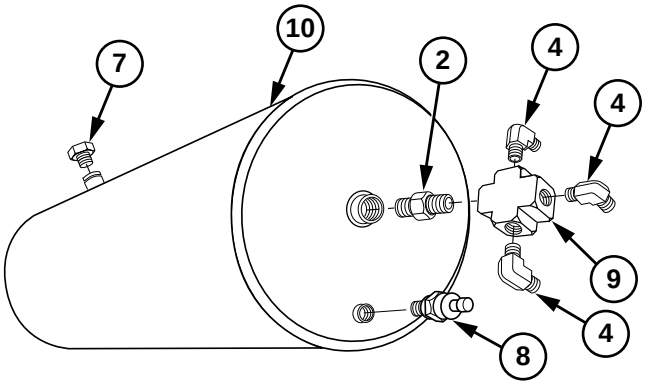
Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(1) Coat threads of check valve (1), fittings (2 and 3), five elbows (4, 5 and 6), plug (7), and drain valve (8) with pipe thread sealing compound.

(2) Install fitting (2) and three elbows (4) on cross (9).

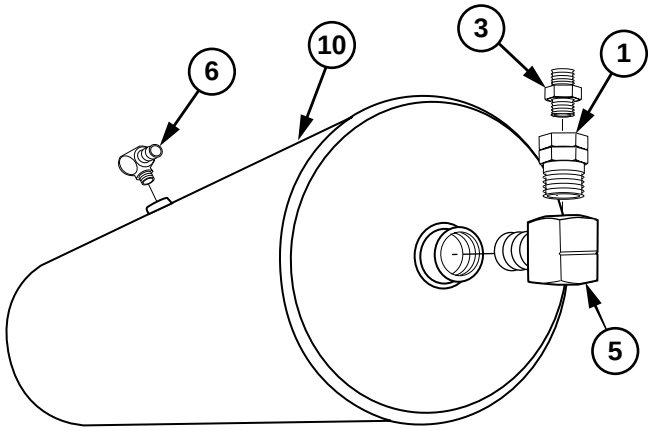
(3) Install fitting (2), plug (7), and drain valve (8) on no. 1 air reservoir (10).





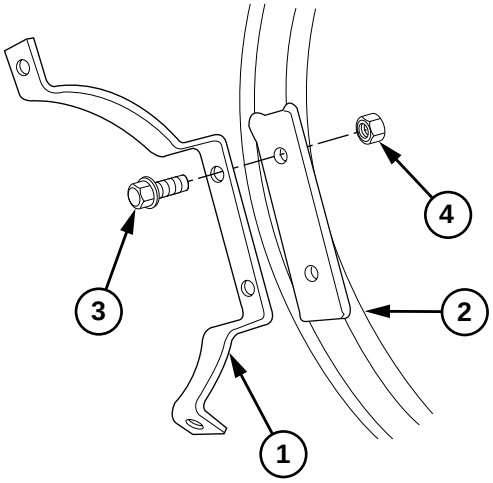
(4) Install fitting (3) and elbow (5) on check valve (1).

(5) Install elbow (5) and elbow (6) on no. 1 air reservoir (10).



d. Installation

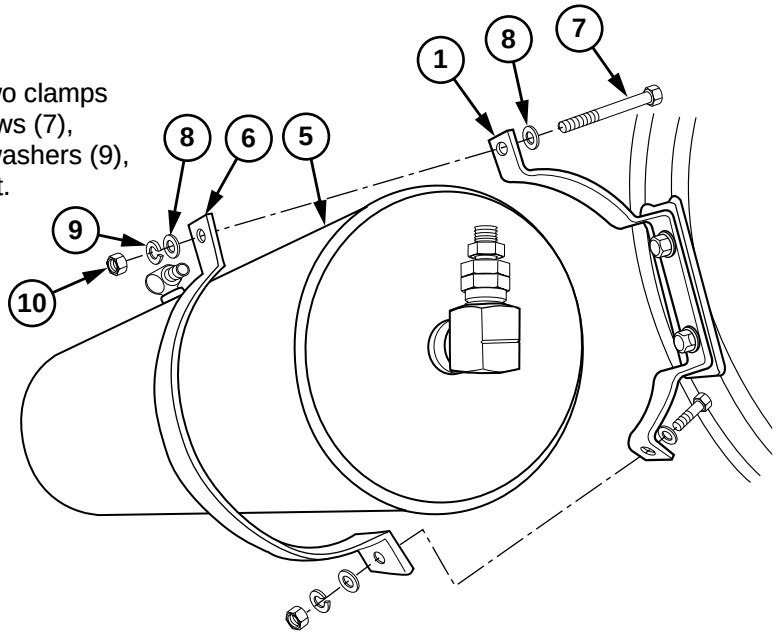
(1) Install two clamps (1) on two fuel tank brackets (2) with four screws (3) and new locknuts (4).



NOTE

Install no. 1 air reservoir with drain valve at bottom.

(2) Install no. 1 air reservoir (5) on two clamps (1) with two clamps (6), four screws (7), eight washers (8), four new lockwashers (9), and nuts (10) with aid of assistant.



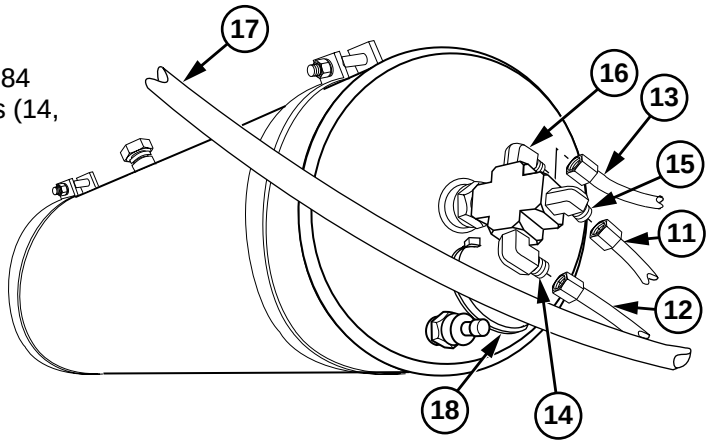
11-19. NO. 1 AIR RESERVOIR AND VALVE REPAIR (CONT)

(3) Install hose no. 2100 (11), hose no. 2184 (12), and hose no. 2613 (13) on elbows (14, 15, and 16).

NOTE

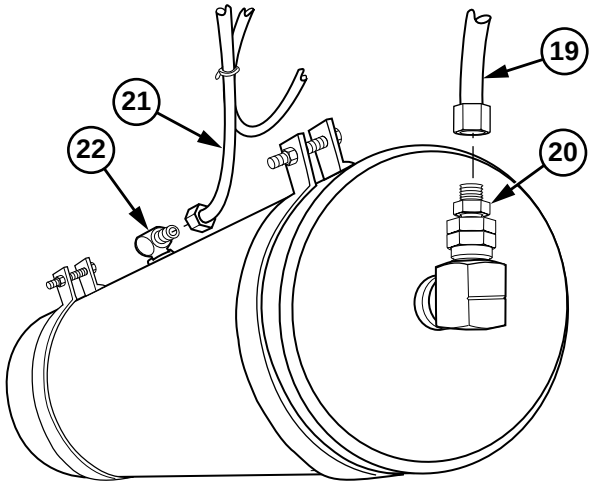
Plastic cable ties should be located in positioned marked during removal.

(4) Secure fuel line (17) to elbow (14) with plastic cable ties (18).



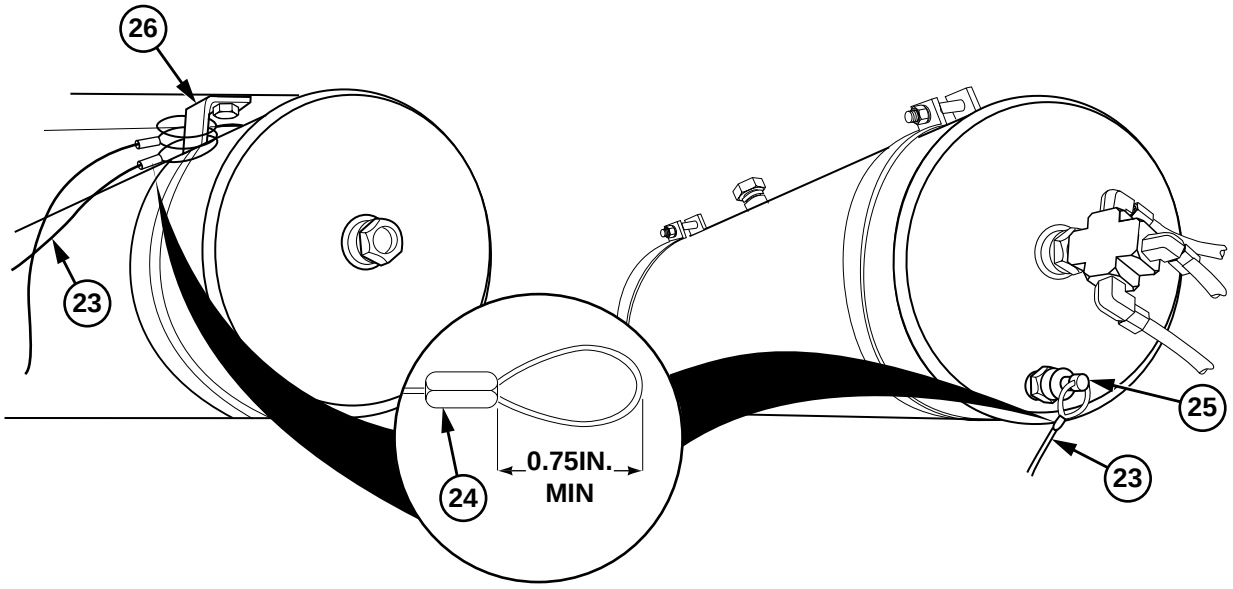
(5) Install hose no. 2002 (19) on fitting (20).

(6) Install hose no. 2159 (21) on elbow (22).



(7) Install new cable (23) and two new sleeves (24) on drain valve (25) and no. 3 air reservoir clamp (26).

(8) Crimp two sleeves (24) on cable (23) so that a 0.75 in. (2 cm) loop is formed.



e. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-20. NO. 2 AIR RESERVOIR AND VALVE REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

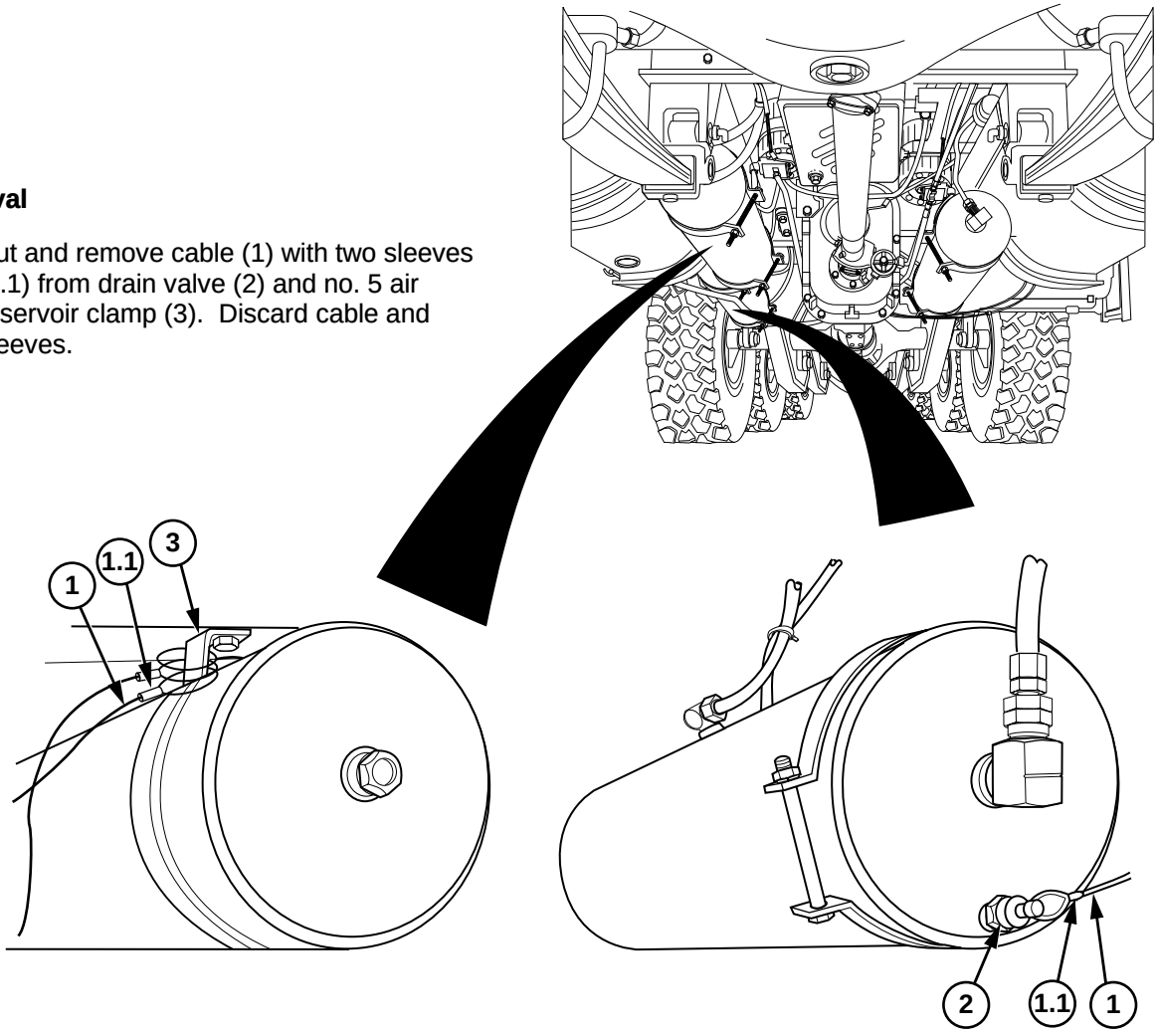
Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (4) (Item 58, Appendix G)
Lockwashers (2) (Item 102, Appendix G)
Sleeves (2) (Item 167.1, Appendix G)

a. Removal

(1) Cut and remove cable (1) with two sleeves (1.1) from drain valve (2) and no. 5 air reservoir clamp (3). Discard cable and sleeves.



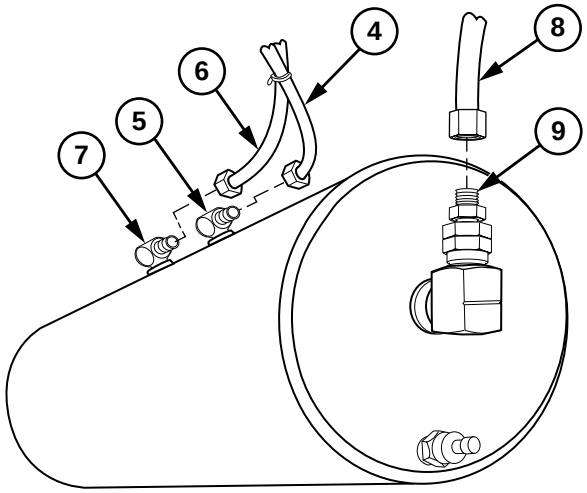
NOTE

Tag and mark hoses before removal.

(2) Remove hose no. 2074 (4) from elbow (5).

(3) Remove hose no. 2169 (6) from elbow (7).

(4) Remove hose no. 2184 (8) from fitting (9).



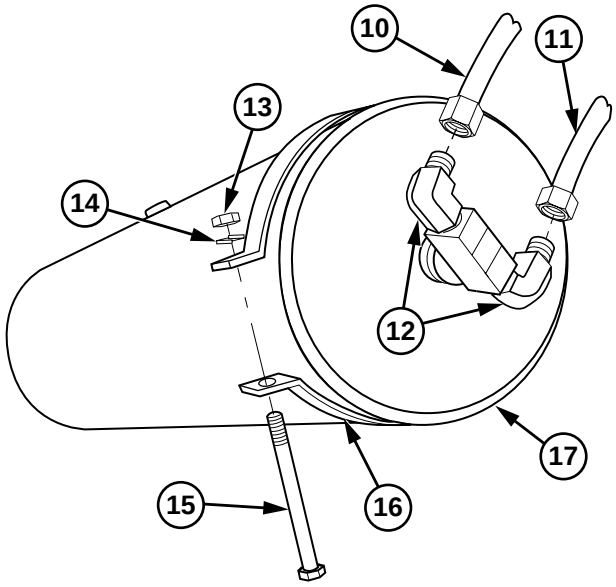
(5) Remove hose no. 2619 (10) and hose no. 2536 (11) from two elbows (12).

(6) Remove two nuts (13), lockwashers (14), and screws (15) from four clamps (16). Discard lockwashers.

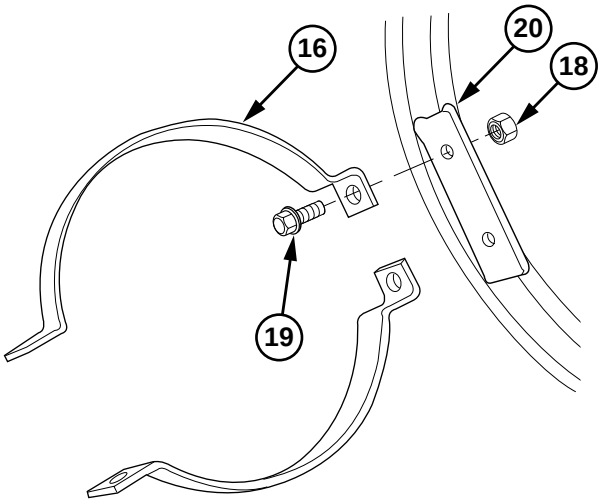
NOTE

No. 2 air reservoir is removed by sliding out of clamps.

(7) Remove no. 2 air reservoir (17) from four clamps (16).



(8) Remove four locknuts (18), screws (19), and clamps (16) from two fuel tank brackets (20). Discard locknuts.



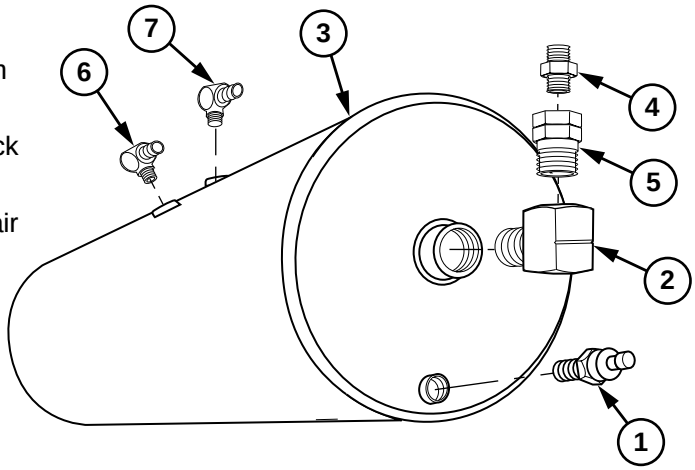
11-20. NO. 2 AIR RESERVOIR AND VALVE REPAIR (CONT)

b. Disassembly

(1) Remove drain valve (1) and elbow (2) from no. 2 air reservoir (3).

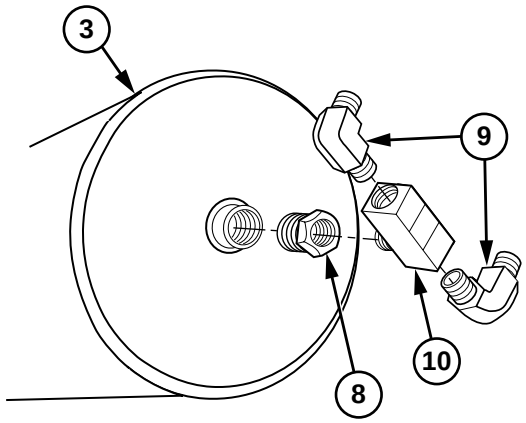
(2) Remove elbow (2) and fitting (4) from check valve (5).

(3) Remove two elbows (6 and 7) from no. 2 air reservoir (3).



(4) Remove fitting (8) from no. 2 air reservoir (3).

(5) Remove two elbows (9) and fitting (8) from tee (10).



c. Assembly

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

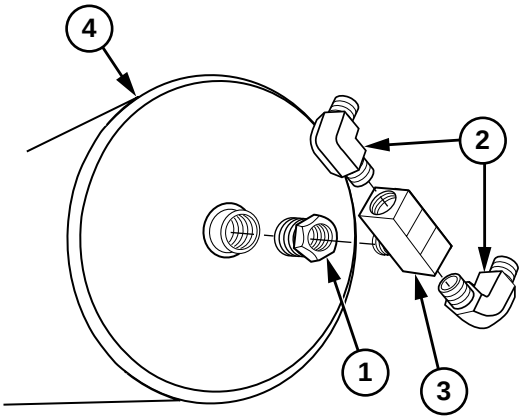
CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(1) Coat threads of fitting (1), elbows (2) and tee (3) with pipe thread sealing compound.

(2) Install fitting (1) and two elbows (2) on tee (3).

(3) Install fitting (1) on no. 2 air reservoir (4).



WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

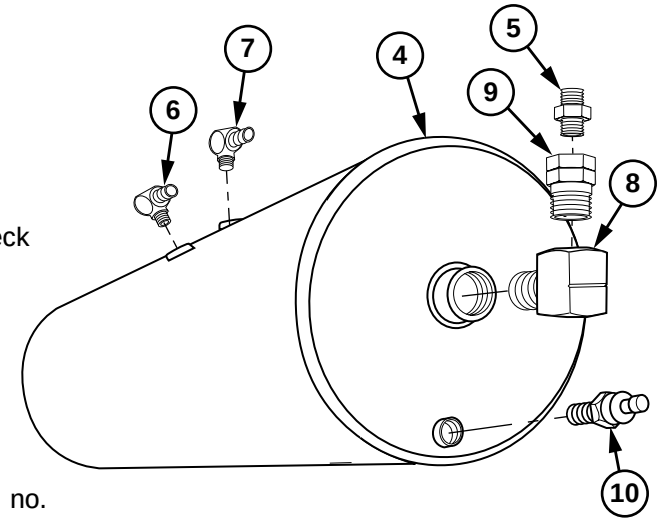
Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(4) Coat fitting (5), elbows (6, 7, and 8), check valve (9), and drain valve (10) with pipe thread sealing compound.

(5) Install two elbows (6 and 7) on no. 2 air reservoir (4).

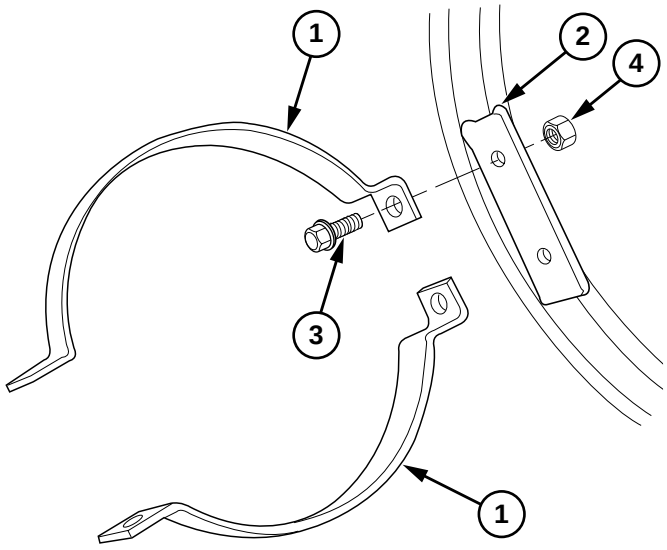
(6) Install fitting (5) and elbow (8) on check valve (9).

(7) Install elbow (8) and drain valve (10) on no. 2 air reservoir (4).



d. Installation

(1) Install four clamps (1) on two fuel tank brackets (2) with screws (3) and new locknuts (4).



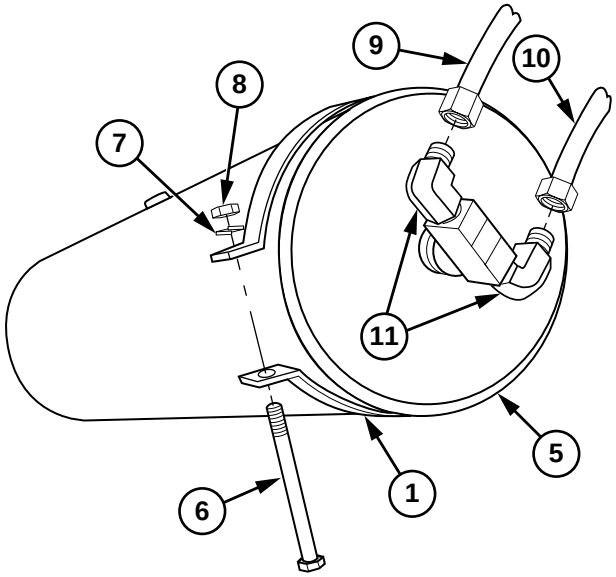
11-20. NO. 2 AIR RESERVOIR AND VALVE REPAIR (CONT)

NOTE

- No. 2 air reservoir is installed by sliding into clamps.
- Install no. 2 air reservoir with drain valve at bottom.

(2) Install no. 2 air reservoir (5) on four clamps (1) with two screws (6), new lockwashers (7), and nuts (8).

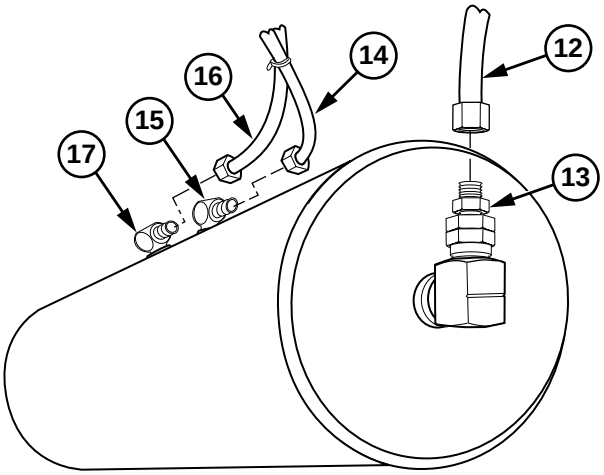
(3) Install hose no. 2619 (9) and hose no. 2536 (10) on two elbows (11).



(4) Install hose no. 2184 (12) on fitting (13).

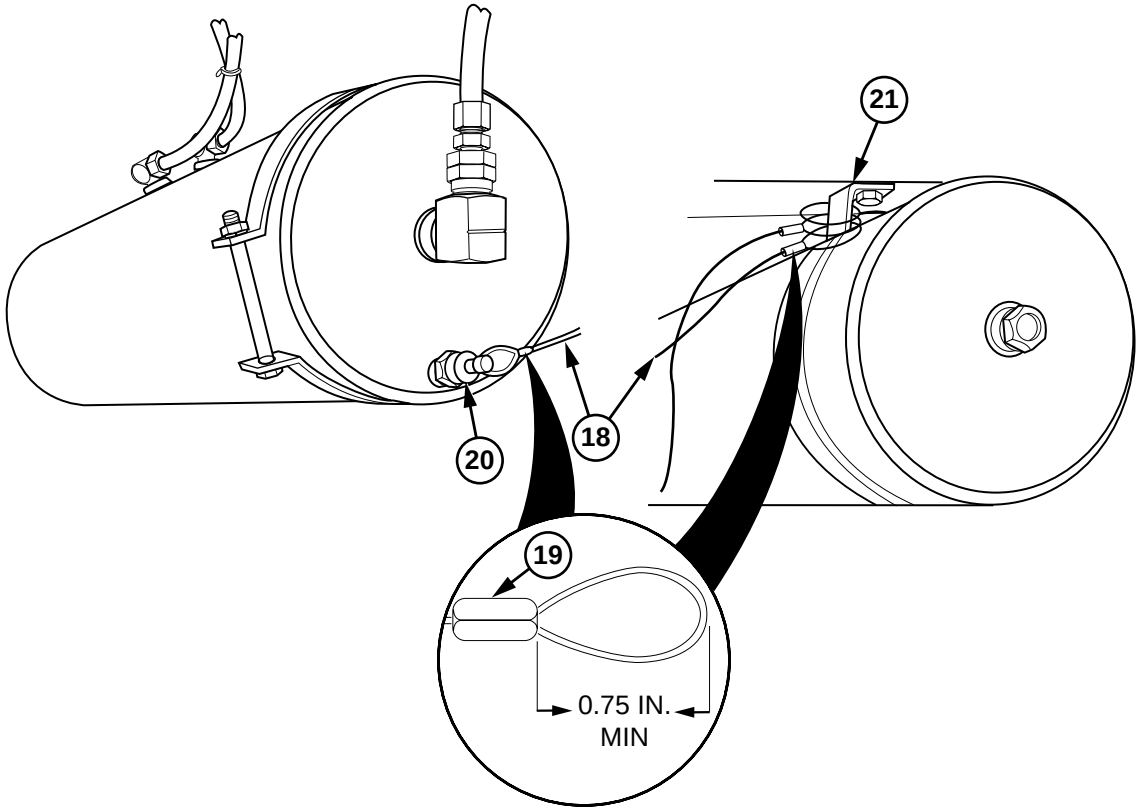
(5) Install hose no. 2074 (14) on elbow (15).

(6) Install hose no. 2169 (16) on elbow (17).



(7) Install new cable (18) and two new sleeves (19) on drain valve (20) and no. 5 air reservoir clamp (21).

(8) Crimp two sleeves (19) on cable (18) so that a 0.75 in. (2 cm) loop is formed.



e. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-21. NO. 3 AIR RESERVOIR AND VALVE REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

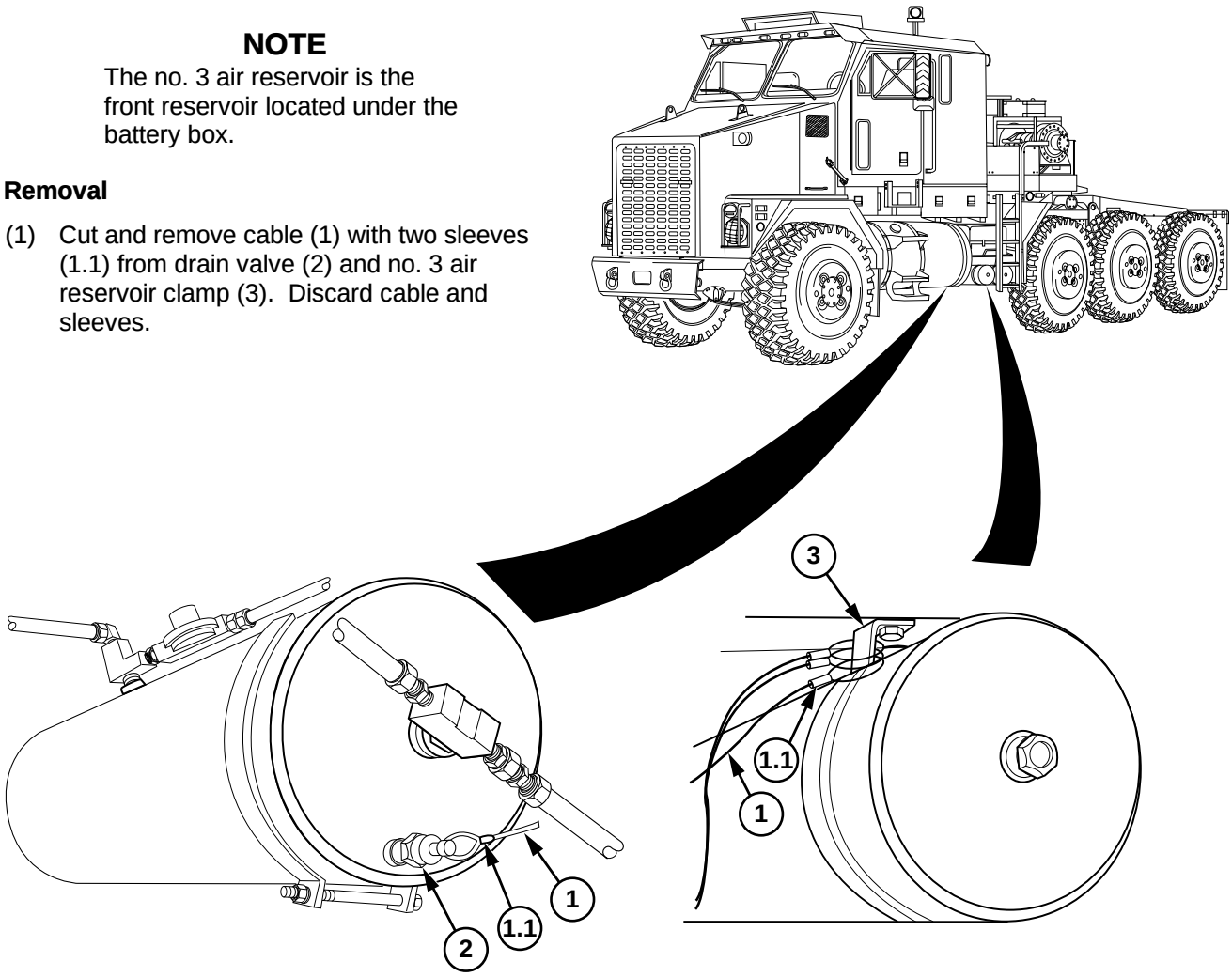
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (4) (Item 58, Appendix G)
Lockwashers (2) (Item 102, Appendix G)
Sleeves (2) (Item 167.1, Appendix G)

NOTE
The no. 3 air reservoir is the front reservoir located under the battery box.

a. Removal

(1) Cut and remove cable (1) with two sleeves (1.1) from drain valve (2) and no. 3 air reservoir clamp (3). Discard cable and sleeves.



NOTE

Tag and mark hoses before removal.

(2) Remove hose no. 2613 (4) from fitting (5).

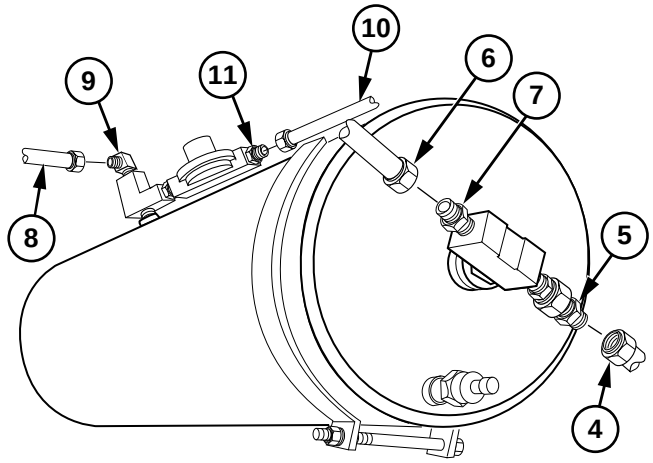
NOTE

Crossover hose is removed by turning tee counterclockwise.

(3) Remove crossover hose (6) from fitting (7).

(4) Remove hose no. 2108 (8) from elbow (9).

(5) Remove hose no. 2041 (10) from fitting (11).



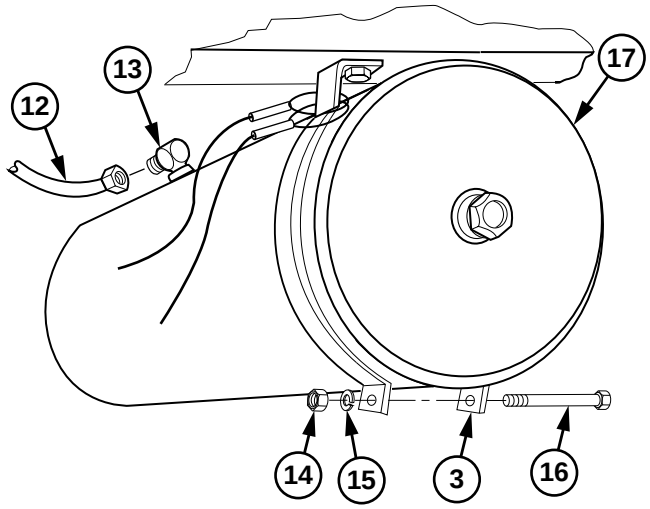
(6) Remove hose no. 2005 (12) from elbow (13).

(7) Remove two nuts (14), lockwashers (15), and screws (16) from four clamps (3). Discard lockwashers.

NOTE

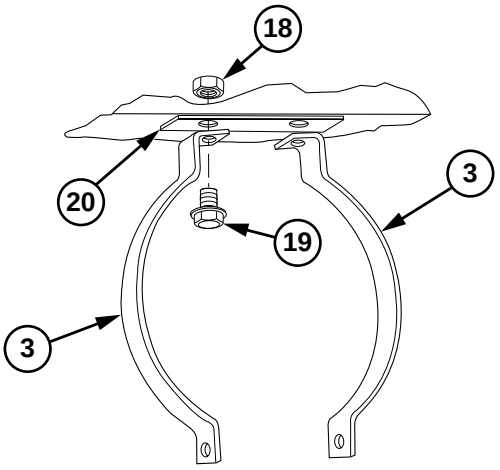
No. 3 air reservoir is removed by turning and sliding out of clamps.

(8) Remove no. 3 air reservoir (17) from four clamps (3).



11-21. NO. 3 AIR RESERVOIR AND VALVE REPAIR (CONT)

(9) Remove four locknuts (18), screws (19), and clamps (3) from battery tray (20). Discard locknuts.

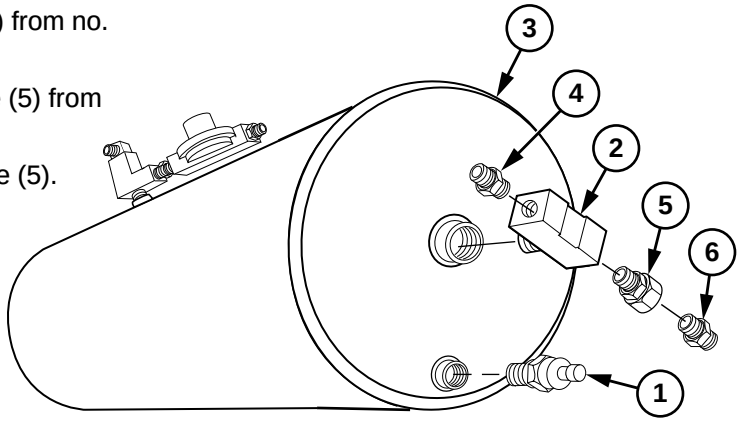


b. Disassembly

(1) Remove drain valve (1) and tee (2) from no. 3 air reservoir (3).

(2) Remove fitting (4) and check valve (5) from tee (2).

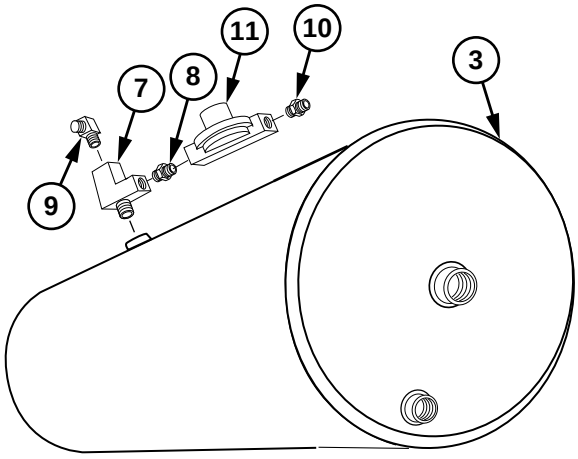
(3) Remove fitting (6) from check valve (5).



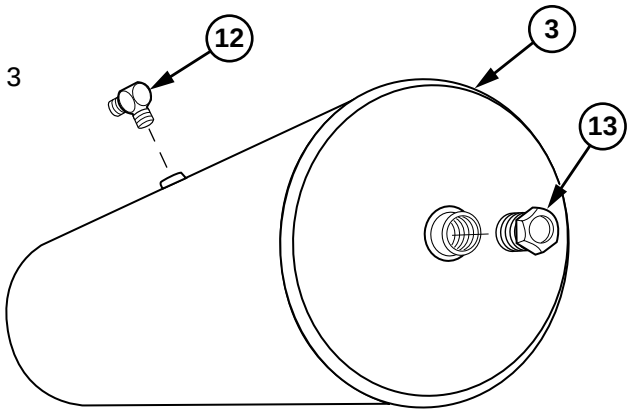
(4) Remove tee (7) from no. 3 air reservoir (3).

(5) Remove fitting (8) and elbow (9) from tee (7).

(6) Remove two fittings (8 and 10) from pressure protection valve (11).



(7) Remove elbow (12) and plug (13) from no. 3 air reservoir (3).



c. Assembly

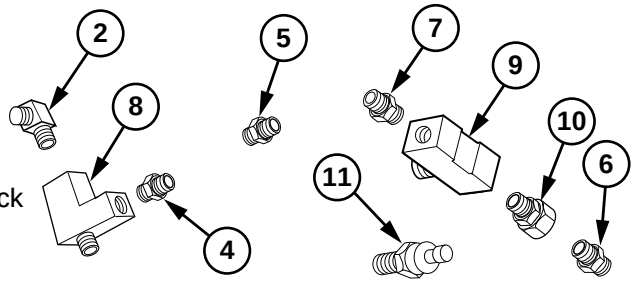
WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

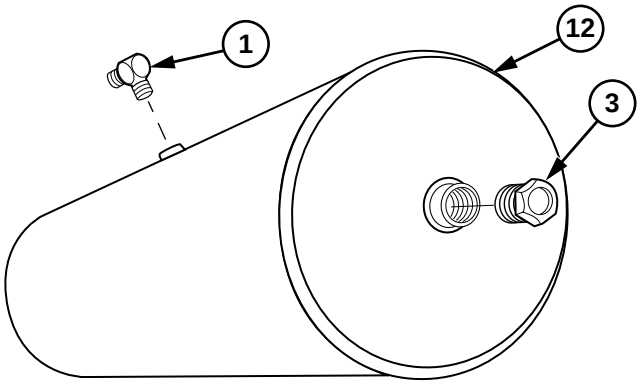
CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(1) Coat threads of elbows (1 and 2), plug (3), fittings (4, 5, 6, and 7), tees (8 and 9), check valve (10), and drain valve (11) with pipe thread sealing compound.



(2) Install elbow (1) and plug (3) on no. 3 air reservoir (12).

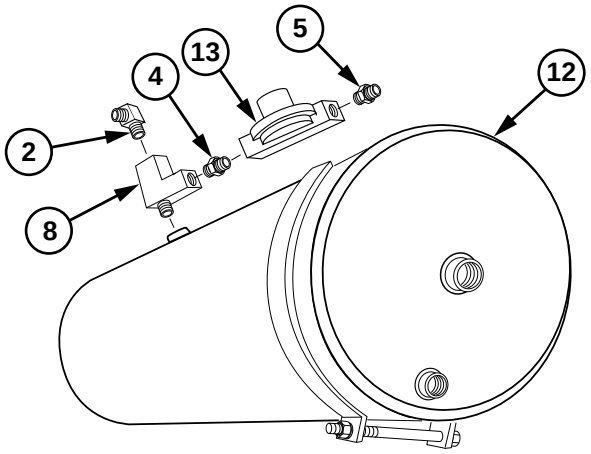


11-21. NO. 3 AIR RESERVOIR AND VALVE REPAIR (CONT)

(3) Install two fittings (4 and 5) on pressure protection valve (13).

(4) Install fitting (4) and elbow (2) on tee (8).

(5) Install tee (8) on no. 3 air reservoir (12).



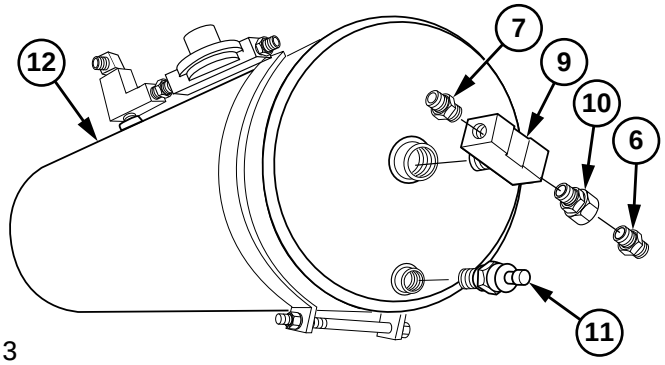
(6) Install fitting (6) on check valve (10).

(7) Install check valve (10) and fitting (7) on tee (9).

NOTE

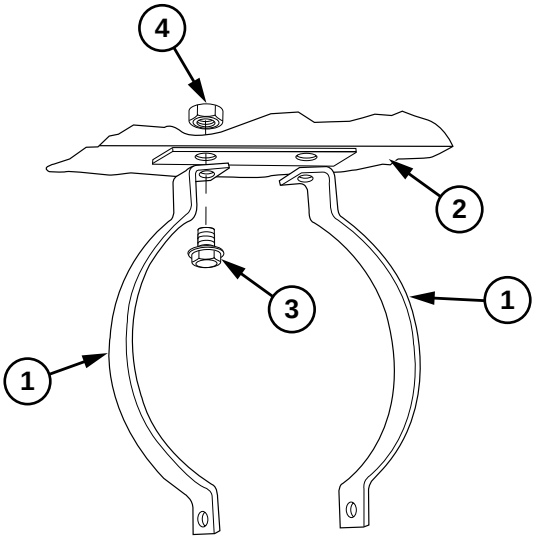
Check valve must point toward top of tank for crossover hose installation when installing tee.

(8) Install tee (9) and drain valve (11) on no. 3 air reservoir (12).



d. Installation

(1) Install four clamps (1) on battery tray (2) with screws (3) and new locknuts (4).

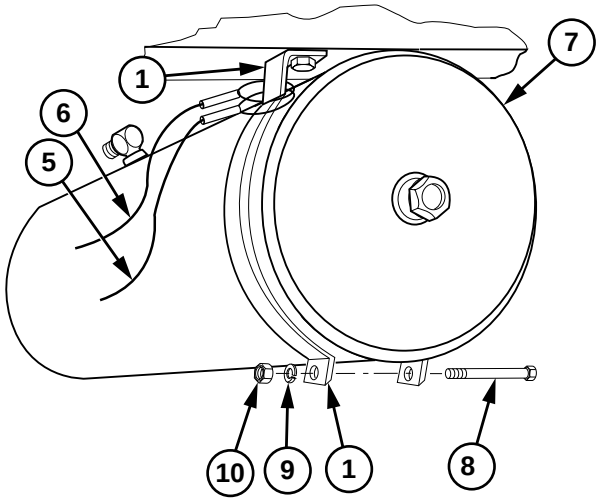


(2) Install no. 1 and no. 4 air reservoir cables (5 and 6) on clamp (1).

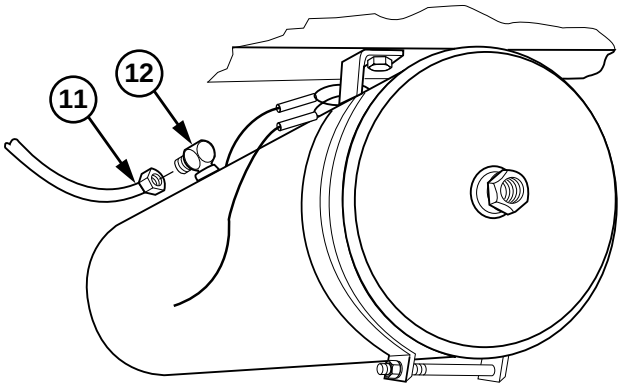
NOTE

- No. 3 air reservoir is installed by turning and sliding into clamps.
- Install no. 3 air reservoir with drain valve at bottom.

(3) Install no. 3 air reservoir (7) on four clamps (1) with two screws (8), new lockwashers (9), and nuts (10).



(4) Install hose no. 2005 (11) on elbow (12).



(5) Install hose no. 2108 (13) on elbow (14).

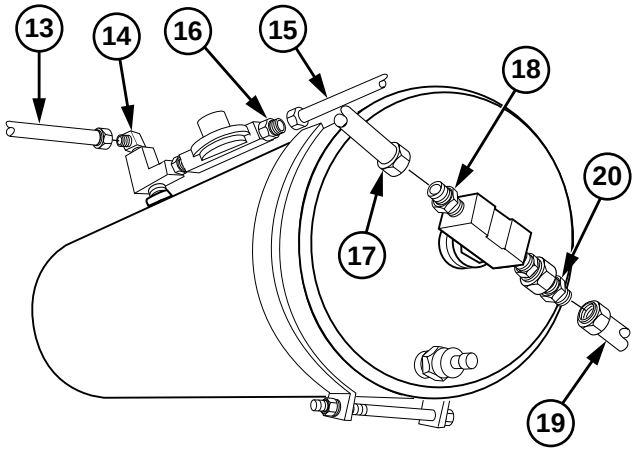
(6) Install hose no. 2041 (15) on fitting (16).

NOTE

Crossover hose is installed by turning tee clockwise and guiding hose into fitting.

(7) Install crossover hose (17) on fitting (18).

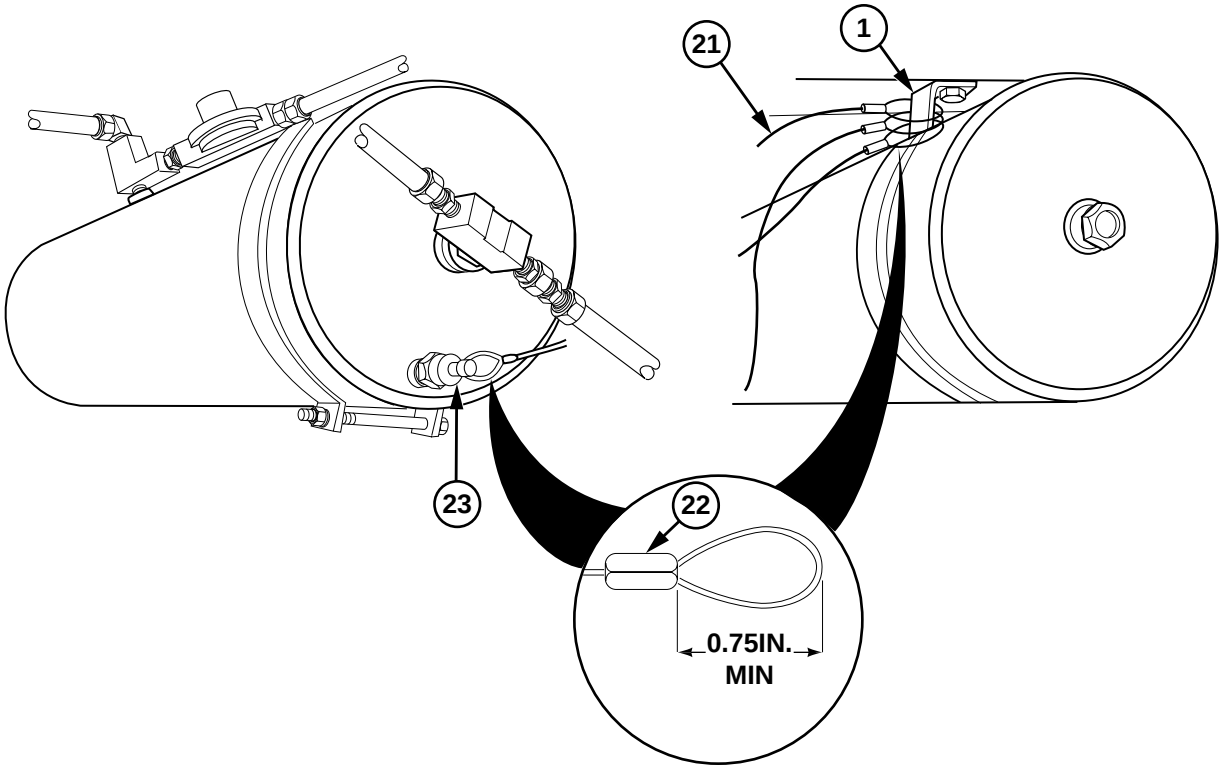
(8) Install hose no. 2613 (19) on fitting (20).



11-21. NO. 3 AIR RESERVOIR AND VALVE REPAIR (CONT)

(9) Install new cable (21) and two new sleeves (22) on drain valve (23) and no. 3 air reservoir clamp (1).

(10) Crimp two sleeves (22) on cable (21) so that a 0.75 in. (2 cm) loop is formed.



e. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-22. NO. 4 AIR RESERVOIR AND VALVE REPAIR

This task covers:
- a. Removal
- b. Disassembly
- c. Assembly
- d. Installation
- e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

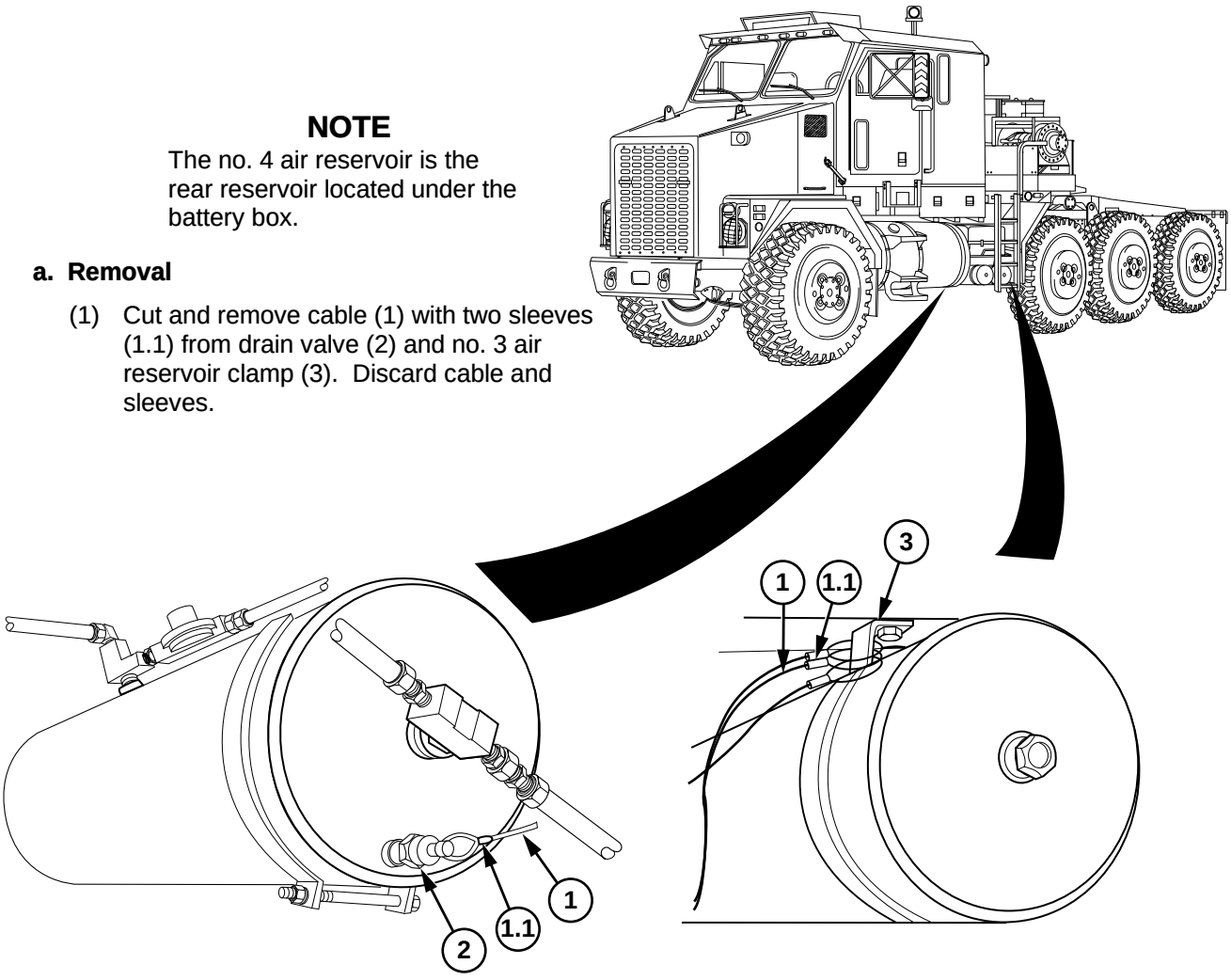
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (4) (Item 58, Appendix G)
Lockwashers (2) (Item 102, Appendix G)
Sleeves (2) (Item 167.1, Appendix G)

NOTE
The no. 4 air reservoir is the rear reservoir located under the battery box.

a. Removal

(1) Cut and remove cable (1) with two sleeves (1.1) from drain valve (2) and no. 3 air reservoir clamp (3). Discard cable and sleeves.

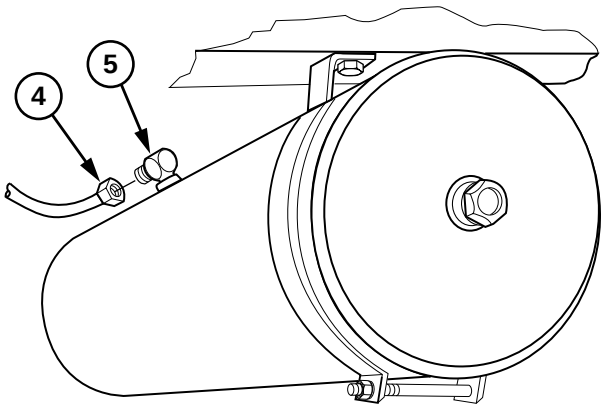


11-22. NO. 4 AIR RESERVOIR AND VALVE REPAIR (CONT)

NOTE

Tag and mark hoses before removal.

(2) Remove hose no. 2615 (4) from elbow (5).



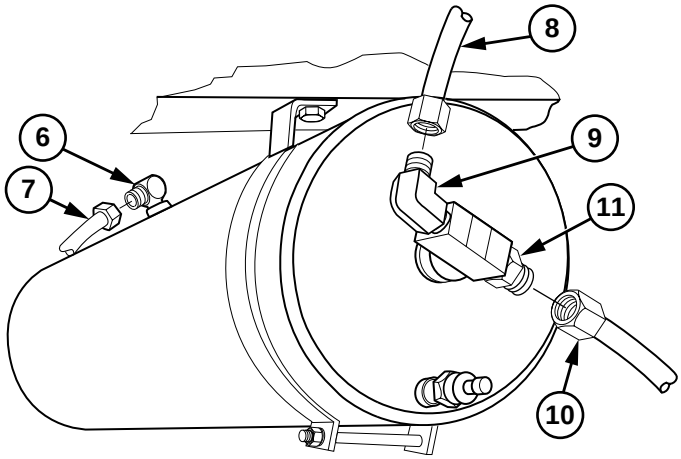
(3) Remove hose no. 2011 (6) from elbow (7).

(4) Remove hose no. 2617 (8) from elbow (9).

NOTE

Crossover hose is removed by turning tee counterclockwise.

(5) Remove crossover hose (10) from fitting (11).

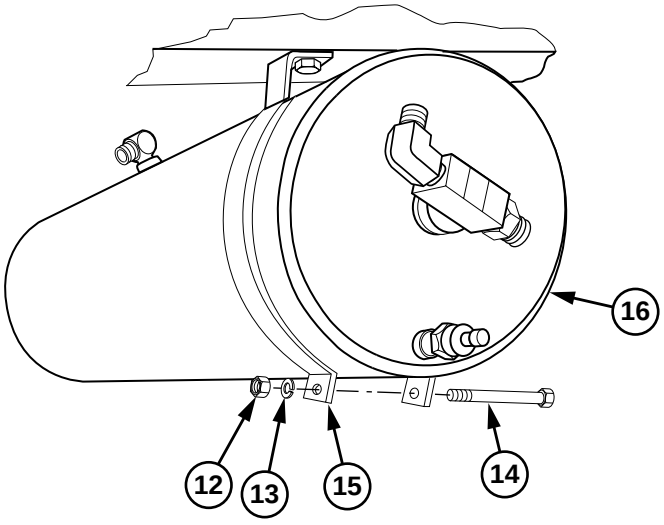


(6) Remove two nuts (12), lockwashers (13), and screws (14) from four clamps (15). Discard lockwashers.

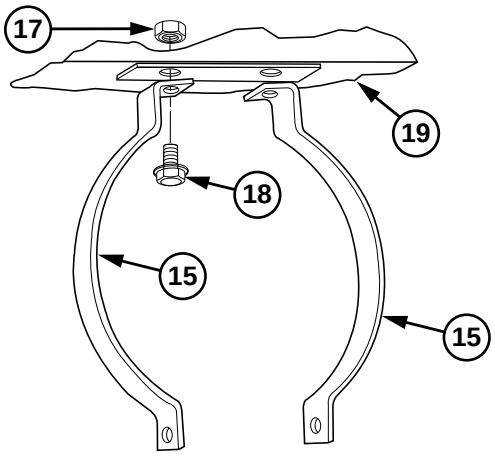
NOTE

No. 4 air reservoir is removed by turning and sliding out of clamps.

(7) Remove no. 4 air reservoir (16) from four clamps (15).



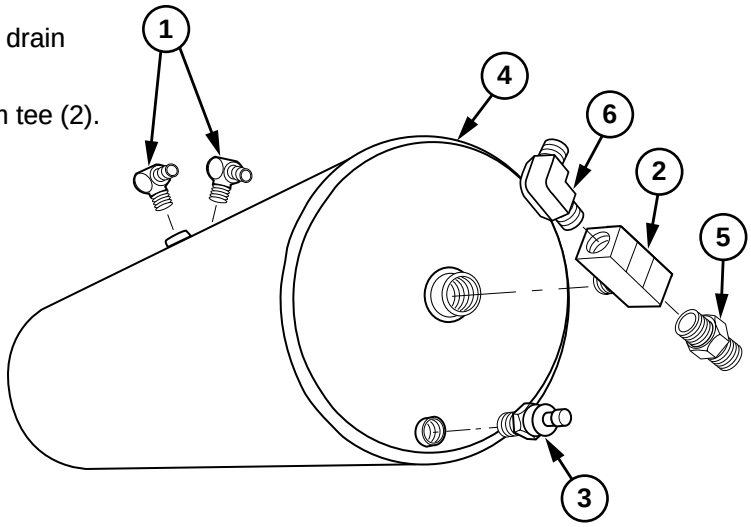
(8) Remove four locknuts (17), screws (18), and clamps (15) from battery tray (19). Discard locknuts.



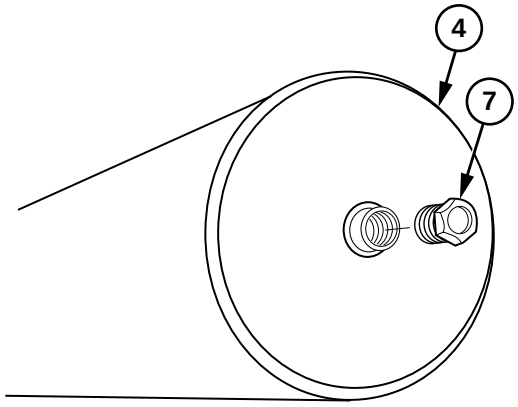
b. Disassembly

(1) Remove two elbows (1), tee (2), and drain valve (3) from no. 4 air reservoir (4).

(2) Remove fitting (5) and elbow (6) from tee (2).



(3) Remove plug (7) from no. 4 air reservoir (4).



11-22. NO. 4 AIR RESERVOIR AND VALVE REPAIR (CONT)

c. Assembly

WARNING

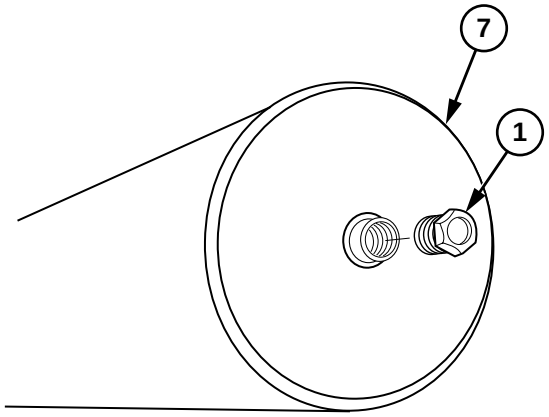
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(1) Coat threads of plug (1), elbows (2 and 3), fitting (4), tee (5), and drain valve (6) with pipe thread sealing compound.

(2) Install plug (1) on no. 4 air reservoir (7).

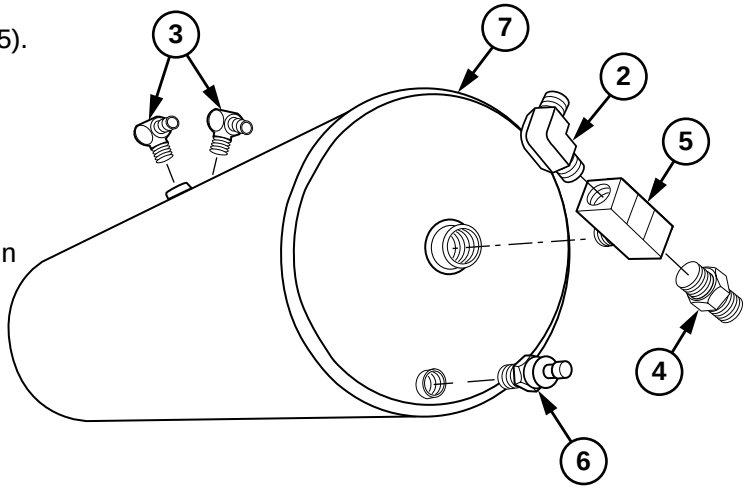


(3) Install elbow (2) and fitting (4) on tee (5).

NOTE

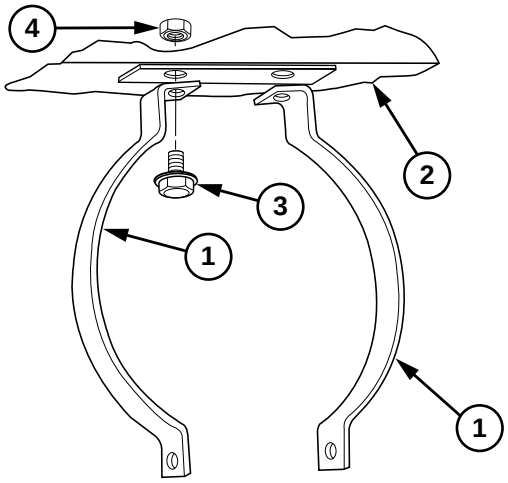
Fitting must point toward top of tank for crossover hose installation when installing tee.

(4) Install tee (5), two elbows (3), and drain valve (6) on no. 4 air reservoir (7).



d. Installation

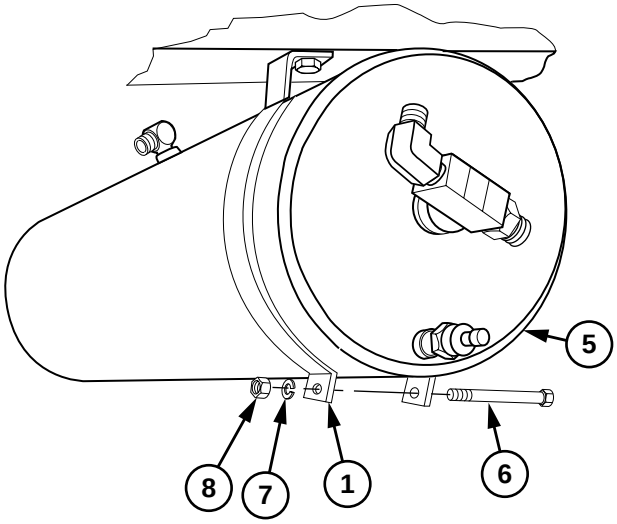
(1) Install four clamps (1) on battery tray (2) with screws (3) and new locknuts (4).



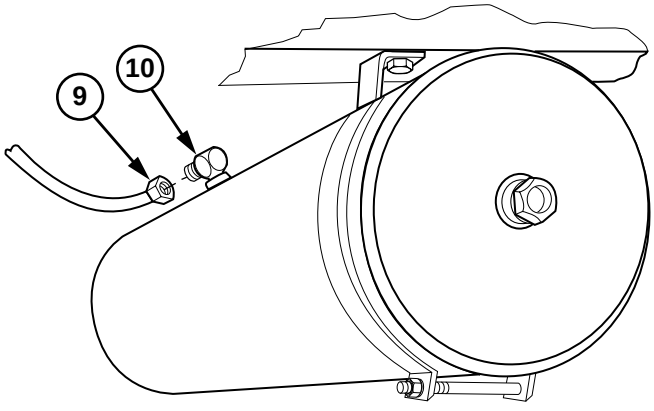
NOTE

- No. 4 air reservoir is installed by turning and sliding into clamps.
- Install no. 4 air reservoir with drain valve at bottom.

(2) Install no. 4 air reservoir (5) on four clamps (1) with two screws (6), new lockwashers (7), and nuts (8).



(3) Install hose no. 2615 (9) on elbow (10).



11-22. NO. 4 AIR RESERVOIR AND VALVE REPAIR (CONT)

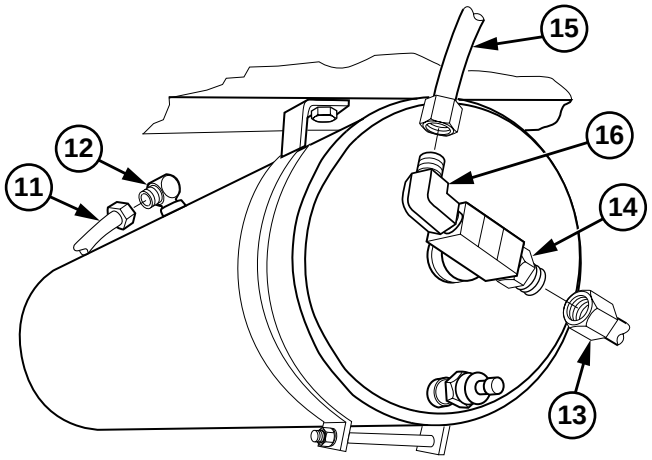
(4) Install hose no. 2011 (11) on elbow (12).

NOTE

Crossover hose is installed by turning tee clockwise and guiding hose into fitting.

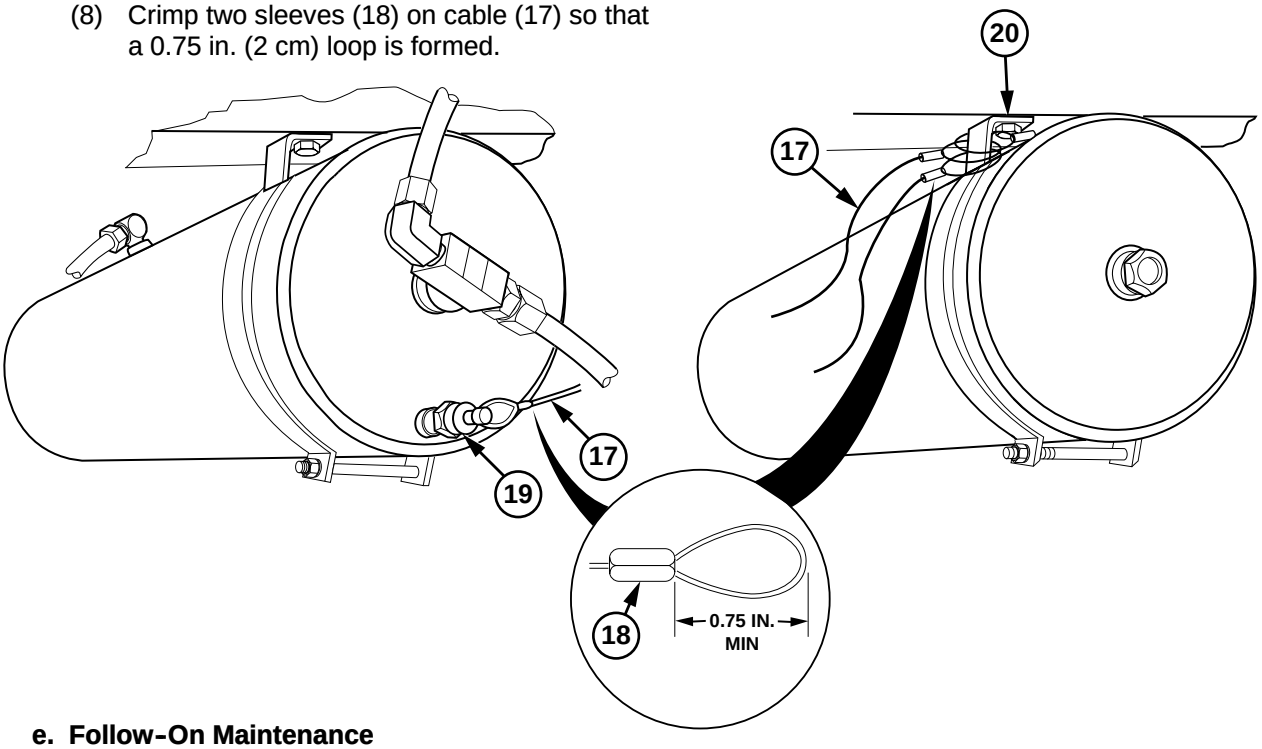
(5) Install crossover hose (13) on fitting (14).

(6) Install hose no. 2617 (15) on elbow (16).



(7) Install new cable (17) and two new sleeves (18) on drain valve (19) and no. 3 air reservoir clamp (20).

(8) Crimp two sleeves (18) on cable (17) so that a 0.75 in. (2 cm) loop is formed.



e. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-23. NO. 5 AIR RESERVOIR AND VALVE REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Air system drained (TM 9-2320-360-10).
Spare tire removed (TM 9-2320-360-10).

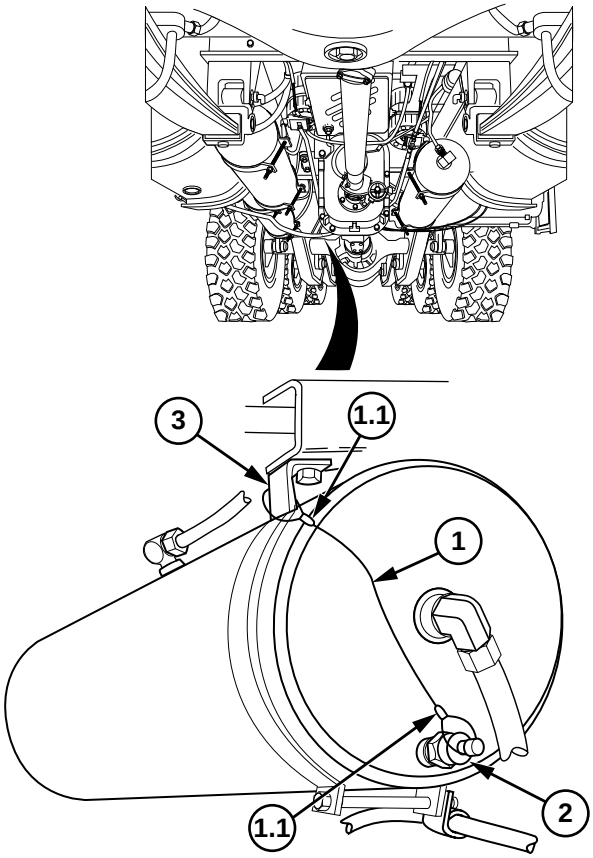
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (8) (Item 58, Appendix G)
Lockwashers (2) (Item 102, Appendix G)
Sleeves (2) (Item 167.1, Appendix G)

Personnel Required
Two

a. Removal

(1) Cut and remove cable (1) with two sleeves (1.1) from drain valve (2) and no. 5 air reservoir clamp (3). Discard cable and sleeves.



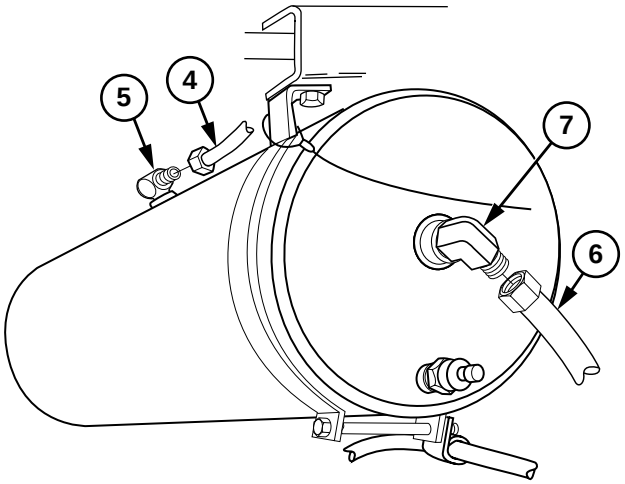
11-23. NO. 5 AIR RESERVOIR AND VALVE REPAIR (CONT)

NOTE

Tag and mark hoses before removal.

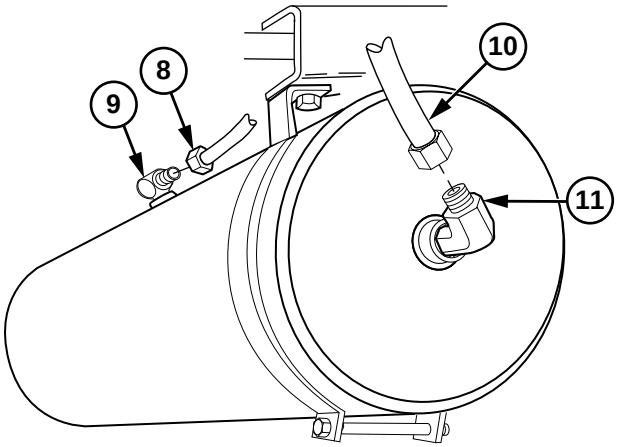
(2) Remove hose no. 2895 (4) from elbow (5).

(3) Remove hose no. 2617 (6) from elbow (7).



(4) Remove hose no. 2621 (8) from elbow (9).

(5) Remove hose no. 2014 (10) from elbow (11).



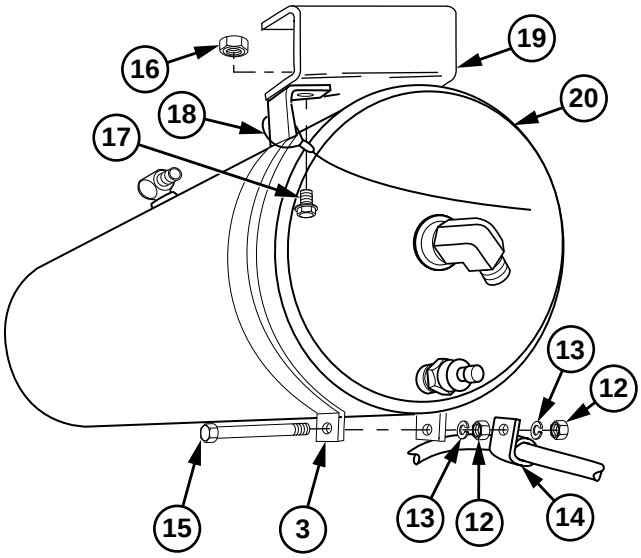
(6) Remove three nuts (12), lockwashers (13), clip (14), and two screws (15) from four clamps (3). Discard lockwashers.

NOTE

Position fuel hose away from reservoir.

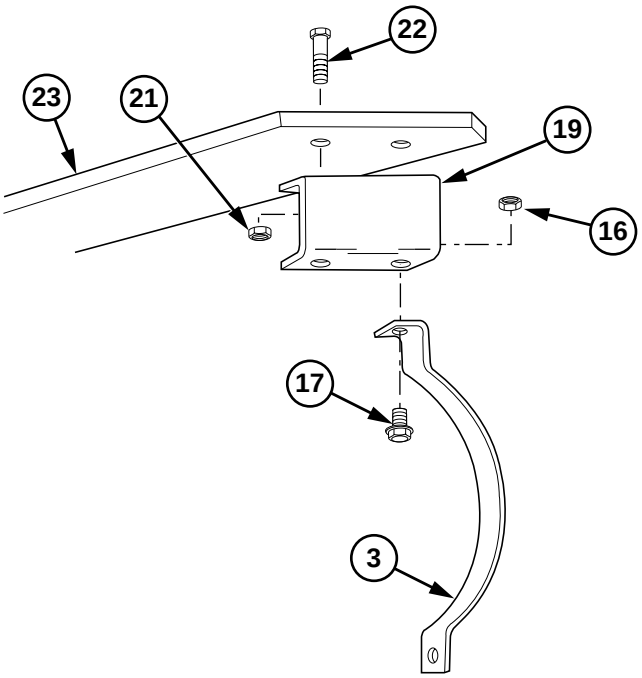
(7) Remove two locknuts (16), screws (17), no. 2 air reservoir cable (18), and two clamps (3) from brackets (19) while assistant supports reservoir (20). Discard locknuts.

(8) Remove reservoir (20) from two clamps (3).



(9) Remove two locknuts (16), screws (17), and clamps (3) from two brackets (19). Discard locknuts.

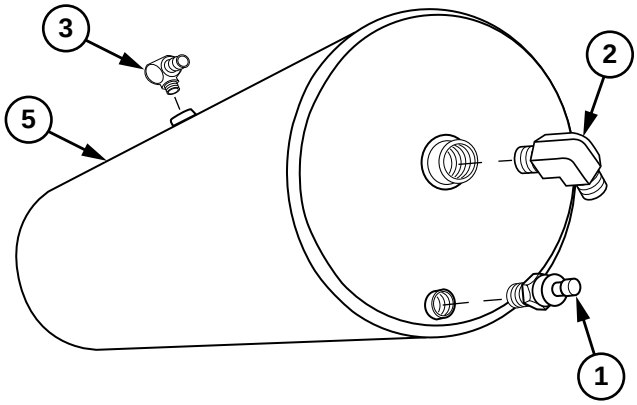
(10) Remove four locknuts (21), screws (22), and two brackets (19) from spare tire bracket (23). Discard locknuts.

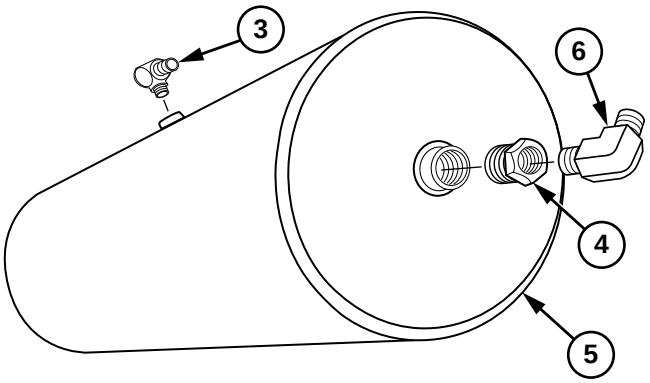


b. Disassembly

(1) Remove drain valve (1), elbow (2), two elbows (3), and fitting (4) from no. 5 reservoir (5).

(2) Remove elbow (6) from fitting (4).



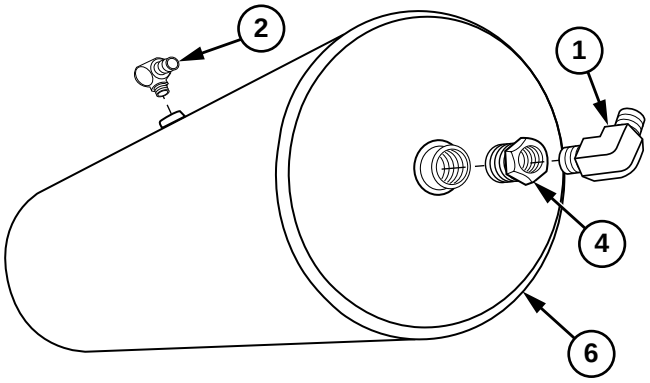


11-23. NO. 5 AIR RESERVOIR AND VALVE REPAIR (CONT)

c. Assembly

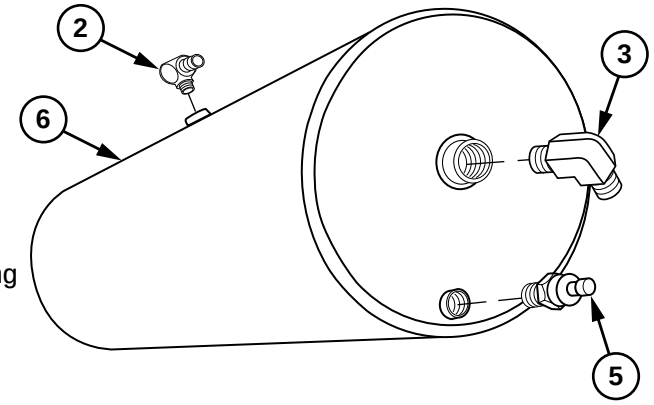
WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



CAUTION

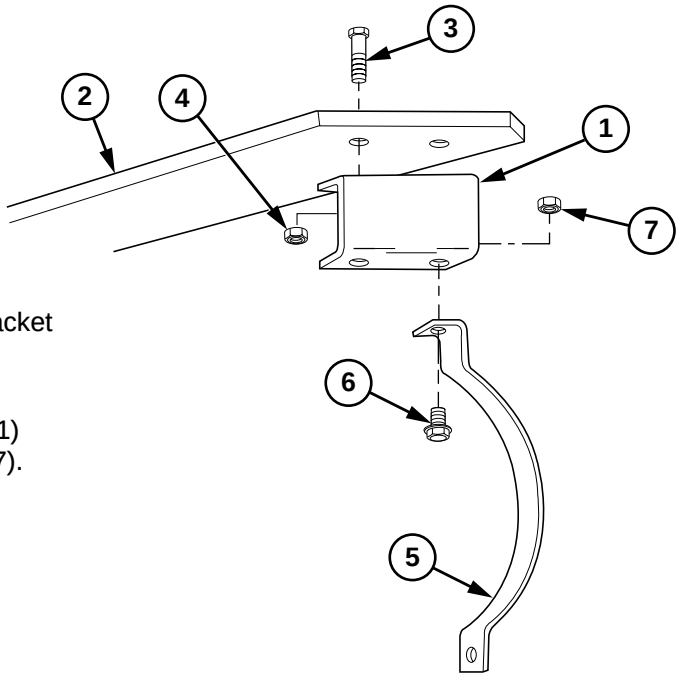
Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of elbows (1, 2, and 3), fitting (4), and drain valve (5) with pipe thread sealing compound.

(2) Install elbow (1) on fitting (4).

(3) Install fitting (4), two elbows (2), elbow (3), and drain valve (5) on no. 5 reservoir (6).



d. Installation

(1) Install two brackets (1) on spare tire bracket (2) with four screws (3) and new locknuts (4).

(2) Install two clamps (5) on two brackets (1) with two screws (6) and new locknuts (7).

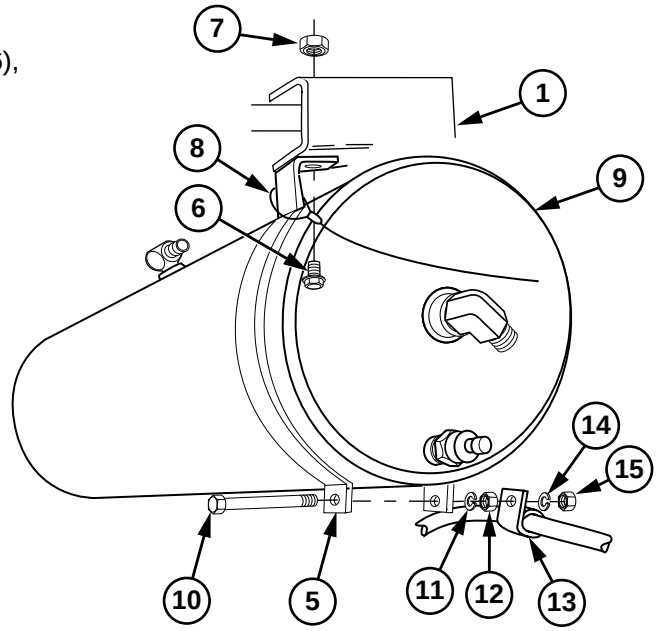
NOTE

Install no. 5 air reservoir with drain valve at bottom.

(3) Install no. 2 air reservoir cable (8), no. 5 air reservoir (9), two clamps (5), two screws (6), and new locknuts (7) on two brackets (1) with aid of assistant.

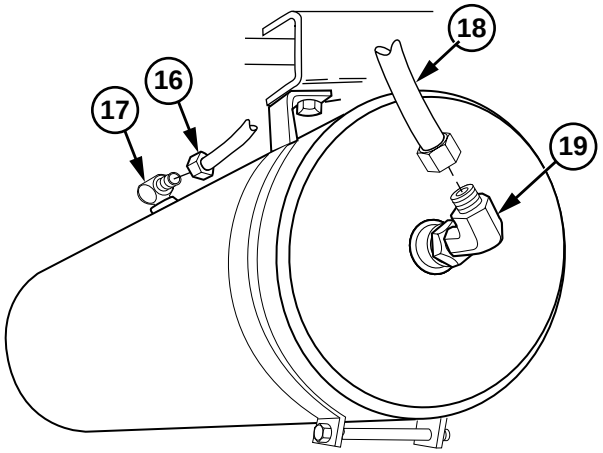
(4) Install two screws (10), new lockwashers (11), and nuts (12) on four clamps (5).

(5) Install clip (13) on screw (10) with lockwasher (14) and nut (15) .



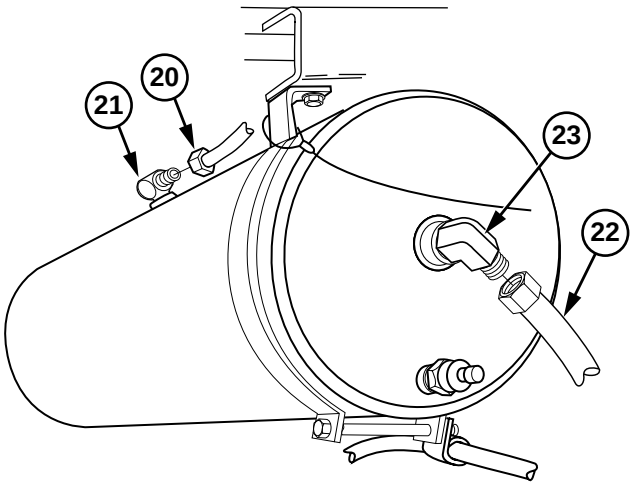
(6) Install hose no. 2621 (16) on elbow (17).

(7) Install hose no. 2014 (18) on elbow (19).



(8) Install hose no. 2895 (20) on elbow (21).

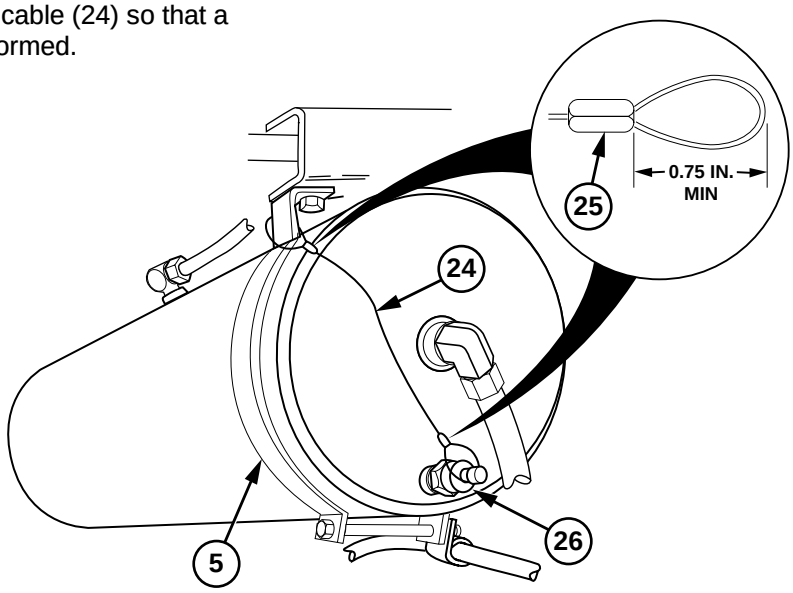
(9) Install hose no. 2617 (22) on elbow (23).



11-23. NO. 5 AIR RESERVOIR AND VALVE REPAIR (CONT)

(10) Install new cable (24) and two new sleeves (25) on drain valve (26) and clamp (5).

(11) Crimp sleeves (25) on cable (24) so that a 0.75 in (2 cm) loop is formed.



e. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Install spare tire (TM 9-2320-360-10).

11-24. PURGE TANK AND VALVE REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Muffler removed (para 5-3).
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Locknuts (8) (Item 58, Appendix G)
Locknuts (2) (Item 72, Appendix G)

a. Removal

(1) Remove hose no. 2994 (1) from elbow (2).

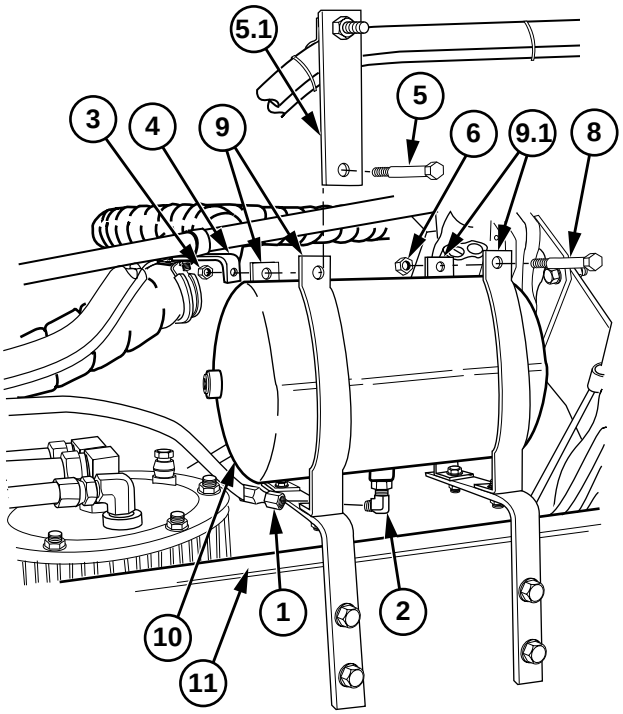
(2) Remove locknut (3), standoff bracket (4), screw (5), and standoff bracket (5.1) from clamp (9). Discard locknut.

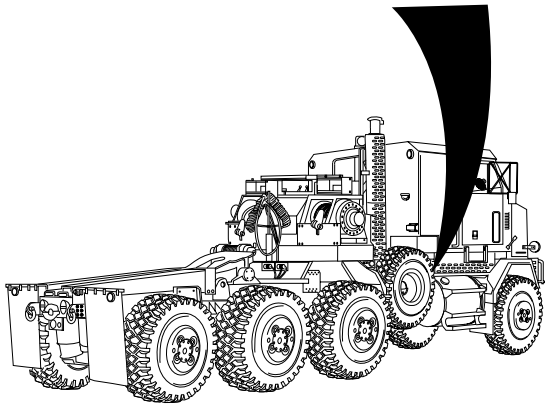
(3) Remove locknut (6) and screw (8) from clamp (9.1). Discard locknut.

NOTE

Purge tank is removed by sliding forward out of rear support bracket, then up and out of frame.

(4) Remove purge tank (10) from frame (11).

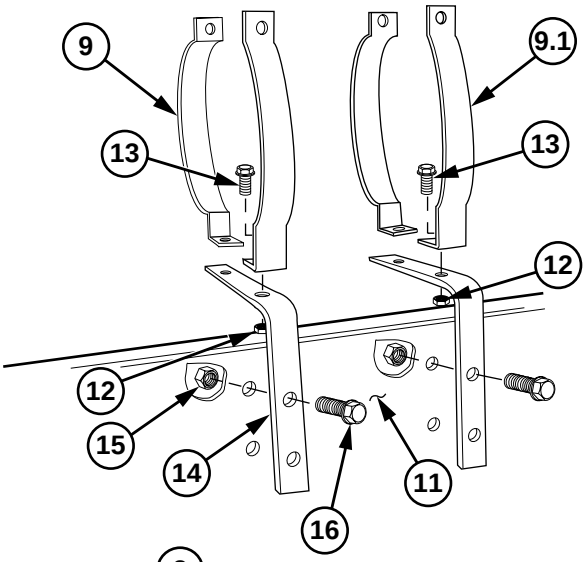




11-24. PURGE TANK AND VALVE REPAIR (CONT)

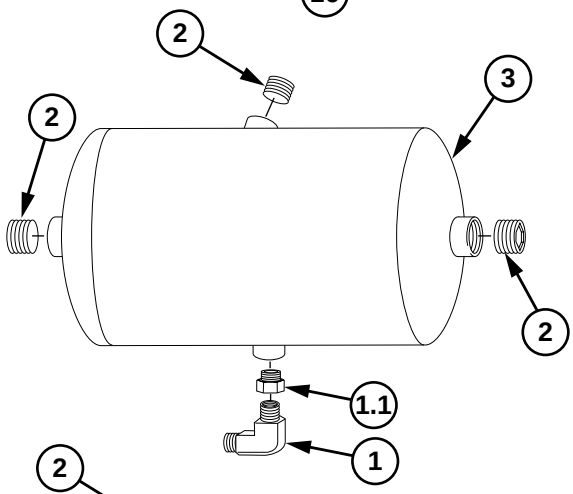
(5) Remove four locknuts (12), screws (13), and clamps (9 and 9.1) from support brackets (14). Discard locknuts.

(6) Remove four locknuts (15), screws (16), and support brackets (14) from frame (11). Discard locknuts.



b. Disassembly

(1) Remove elbow (1), reducer bushing (1.1), and three plugs (2) from purge tank (3).



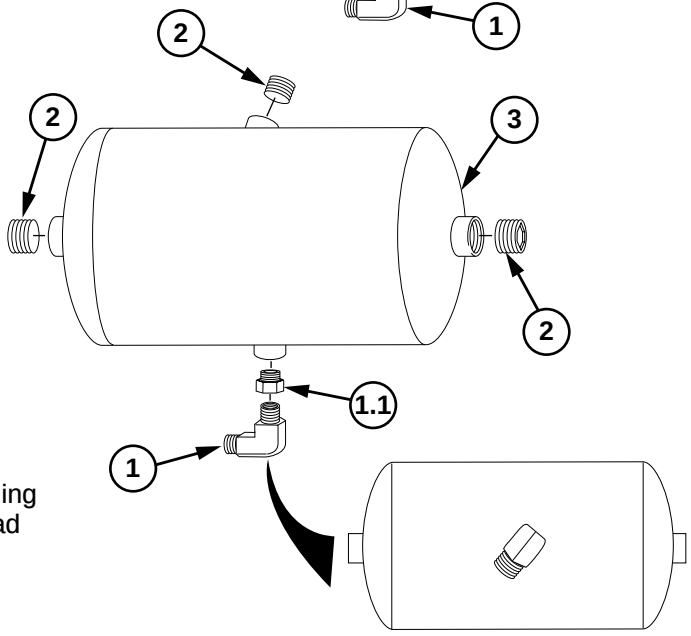
c. Assembly

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of elbow (1), reducer bushing (1.1), and three plugs (2) with pipe thread sealing compound.

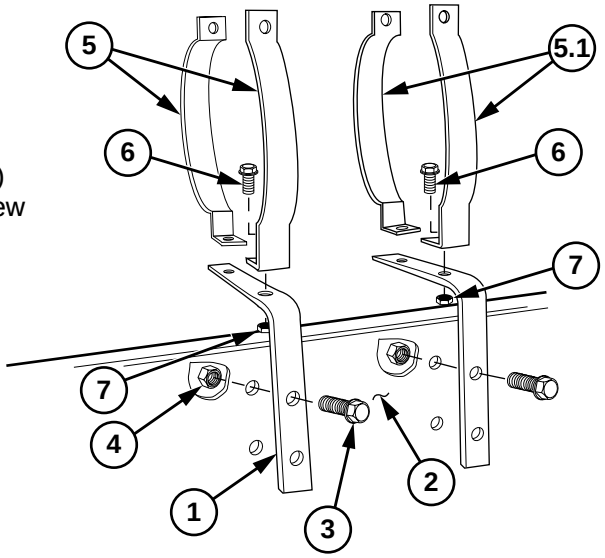
(2) Install three plugs (2) and elbow (1) on purge tank (3).



d. Installation

(1) Install two support brackets (1) on right frame (2) with four screws (3) and new locknuts (4).

(2) Install two clamps (5) and two clamps (5.1) on brackets (1) with four screws (6) and new locknuts (7). Do not tighten.



NOTE

Purge tank is installed by tilting up and sliding back into rear support bracket.

(3) Install purge tank (8) on right frame (2).

(4) Install screw (11) and new locknut (10) on clamps (5.1).

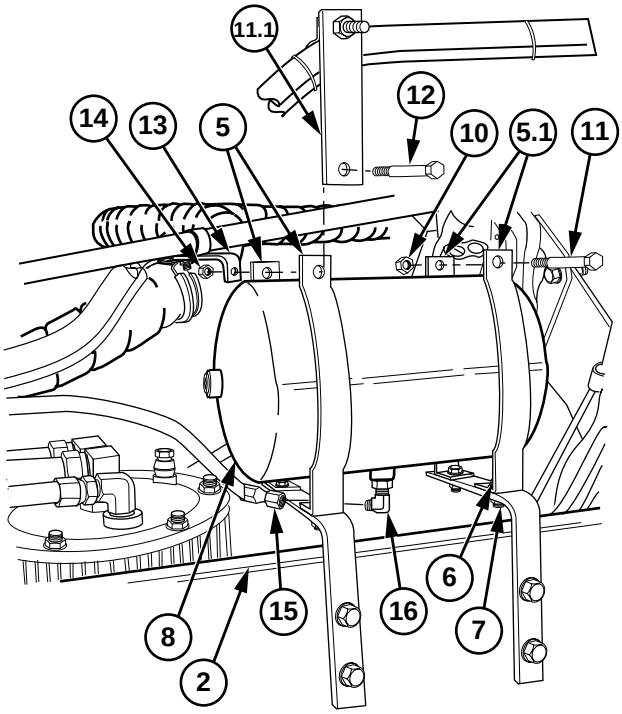
(5) Install standoff bracket (11.1) and standoff bracket (13) on clamps (5) with screw (12) and new locknut (14).

(6) Tighten locknuts (7) and screws (6) on clamps (5 and 5.1).

CAUTION

Hose must be positioned so it doesn't rub on cradle assembly. Failure to comply may result in damage to hose.

(7) Install hose no. 2994 (15) on elbow (16).



e. Follow-On Maintenance

(1) Install muffler (para 5-3).

(2) Start engine (TM 9-2320-360-10).

(3) Build up air pressure to 120-125 psi (827-862 kPa).

(4) Shut off engine (TM 9-2320-360-10).

(5) Check for leaks.

11-25. DOUBLE CHECK VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

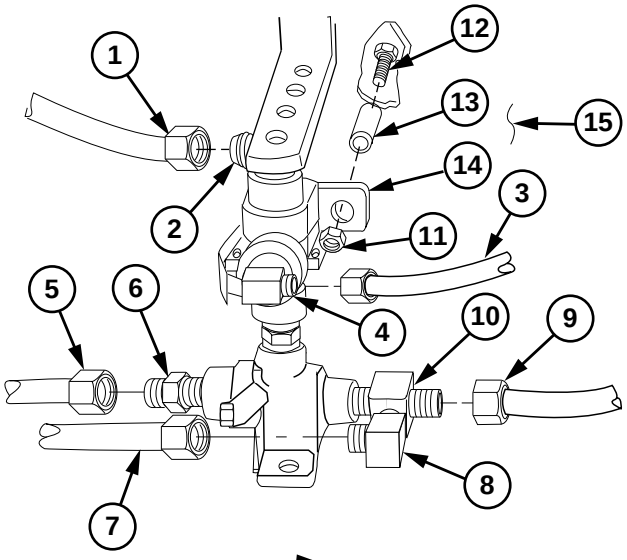
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknut (Item 68, Appendix G)

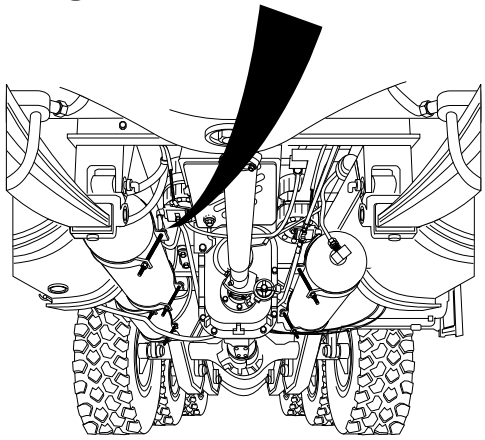
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

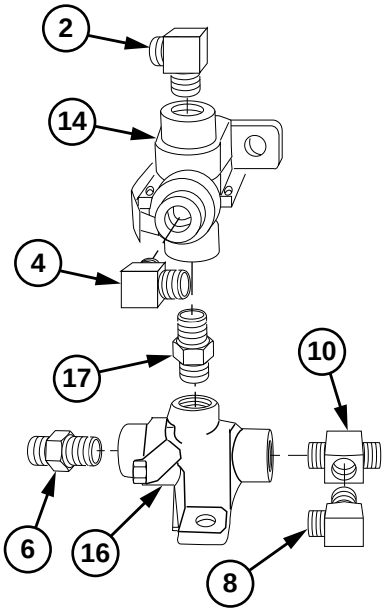
a. Removal

NOTE
Tag and mark hoses before removal.

(1) Remove hose no. 2665 (1) from elbow (2).
(2) Remove hose no. 2661 (3) from elbow (4).
(3) Remove hose no. 2663 (5) from fitting (6).
(4) Remove hose no. 2623 (7) from elbow (8).
(5) Remove hose no. 2664 (9) from tee (10).
(6) Remove locknut (11), screw (12), spacer (13), and valve (14) from right frame (15). Discard locknut.







(7) Remove valve (16) from fitting (17).

(8) Remove fitting (6) and tee (10) with elbow (8) from valve (16).

(9) Remove fitting (17) and two elbows (2 and 4) from valve (14).

(10) Remove elbow (8) from tee (10).

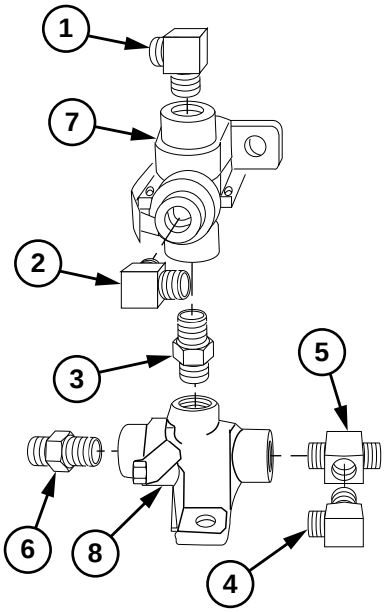
b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of two elbows (1 and 2), fitting (3), elbow (4), tee (5), and fitting (6) with pipe thread sealing compound.

(2) Install two elbows (1 and 2) and fitting (3) on valve (7).

(3) Install elbow (4) on tee (5).

(4) Install fitting (6) and tee (5) on valve (8).

(5) Install valve (8) on fitting (3).

11-25. DOUBLE CHECK VALVE REPAIR (CONT)

(6) Install valve (7) on right frame (9) with screw (10), spacer (11), and new locknut (12).

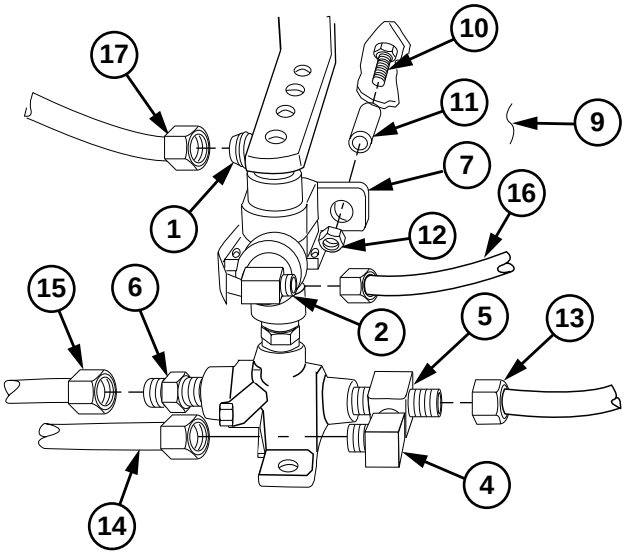
(7) Install hose no. 2664 (13) on tee (5).

(8) Install hose no. 2623 (14) on elbow (4).

(9) Install hose no. 2663 (15) on fitting (6).

(10) Install hose no. 2661 (16) on elbow (2).

(11) Install hose no. 2665 (17) on elbow (1).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-26. NO. 1 MANIFOLD ASSEMBLY REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Combination, 1-1/2 In. (Item 63, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (2) (Item 72, Appendix G)

a. Removal

(1) Remove winch pump access grate (1).

NOTE
Tag and mark hoses before removal.

(2) Remove hose no. 2614 (2) from elbow (3).

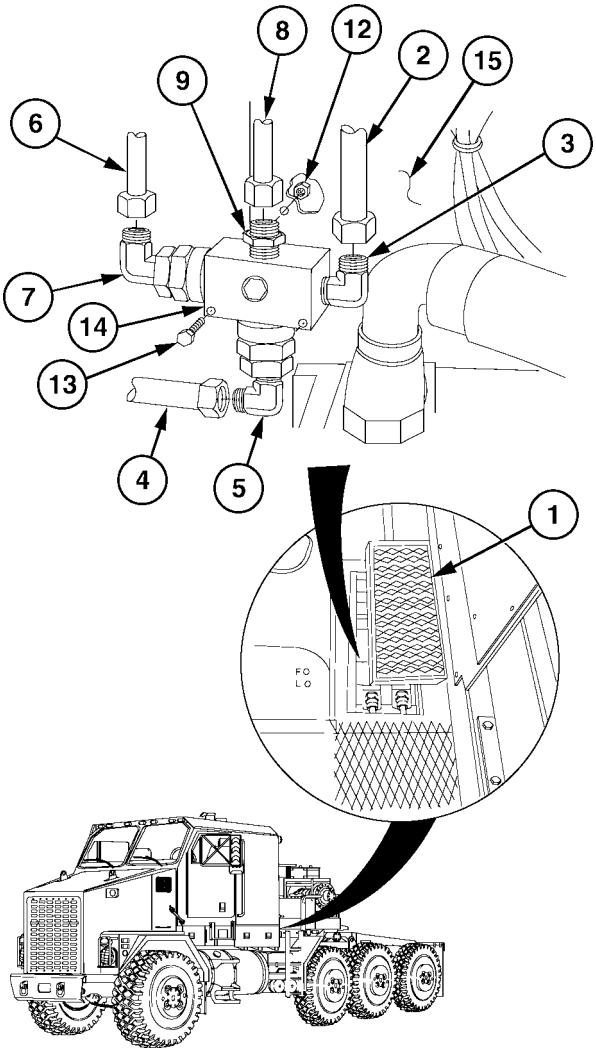
(3) Remove hose no. 2615 (4) from elbow (5).

(4) Remove hose no. 2169 (6) from elbow (7).

(5) Remove hose no. 2620 (8) from fitting (9).

(6) Deleted

(7) Remove two locknuts (12), screws (13), and manifold (14) from no. 2 crossmember (15). Discard locknuts.

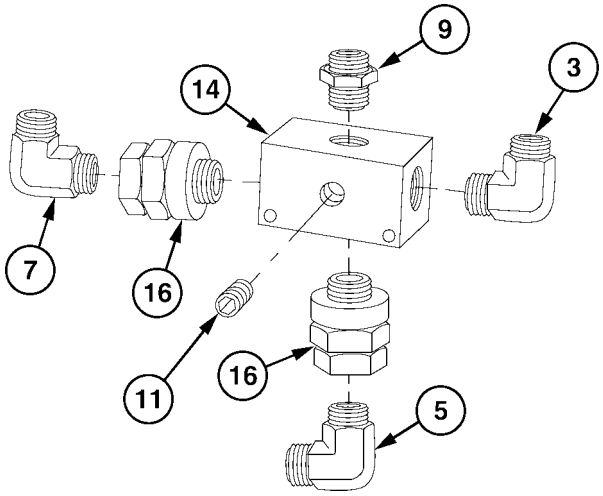


11-26. NO. 1 MANIFOLD ASSEMBLY REPLACEMENT (CONT)

(8) Remove fitting (9), elbow (3), and plug (11) from manifold (14).

(9) Remove two check valves (16) from manifold (14).

(10) Remove two elbows (5 and 7) from check valves (16).



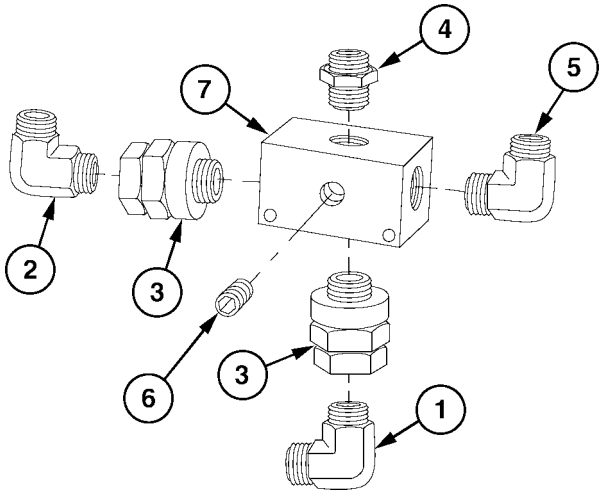
b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of two elbows (1 and 2), check valves (3), fitting (4), elbow (5), and elbow (6) with pipe thread sealing compound.

(2) Install two elbows (1 and 2) on check valves (3).

(3) Install two check valves (3) on manifold (7).

(4) Install fitting (4), plug (5), and plug (6) on manifold (7).

(5) Install manifold (7) on no. 2 crossmember (8) with two screws (9) and new locknuts (10).

(6) Deleted

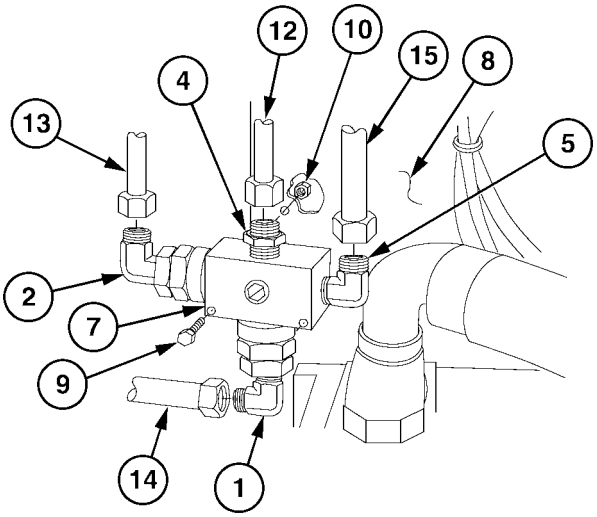
(7) Install hose no. 2620 (12) on fitting (4).

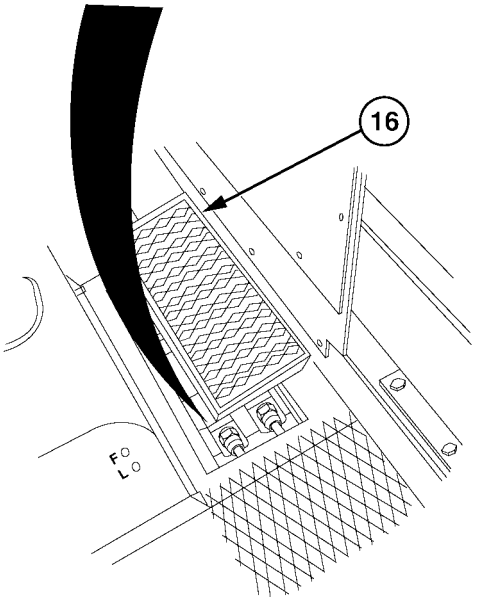
(8) Install hose no. 2169 (13) on elbow (2).

(9) Install hose no. 2615 (14) on elbow (1).

(10) Install hose no. 2614 (15) on elbow (5).

(11) Install winch pump access grate (16).





c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-27. NO. 3 MANIFOLD ASSEMBLY REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (2) (Item 68, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

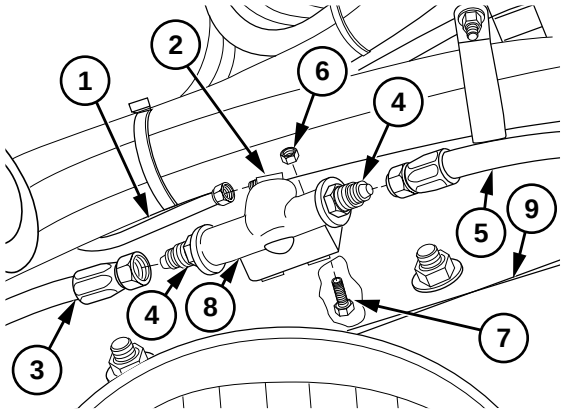
NOTE
Tag and mark hoses before removal.

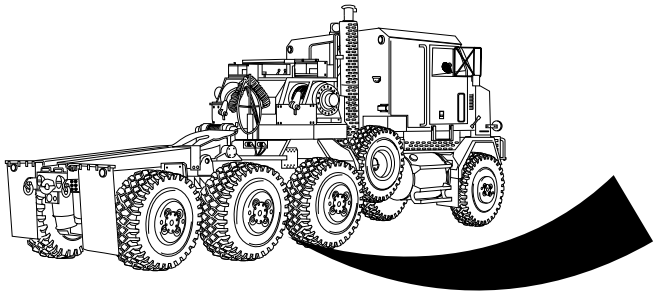
(1) Remove hose no. 2767 (1) from elbow (2).

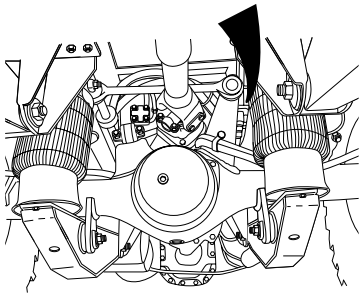
(2) Remove hose no. 2339 (3) from fitting (4).

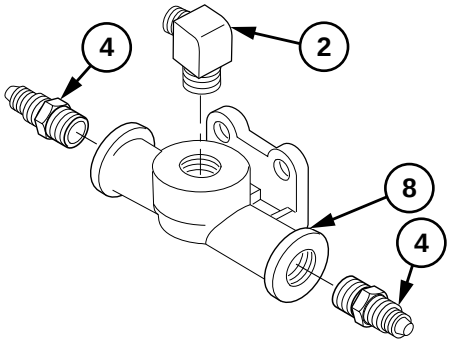
(3) Remove hose no. 2422 (5) from fitting (4).

(4) Remove two locknuts (6), screws (7), and manifold (8) from frame (9). Discard locknuts.









(5) Remove elbow (2) and two fittings (4) from manifold (8).

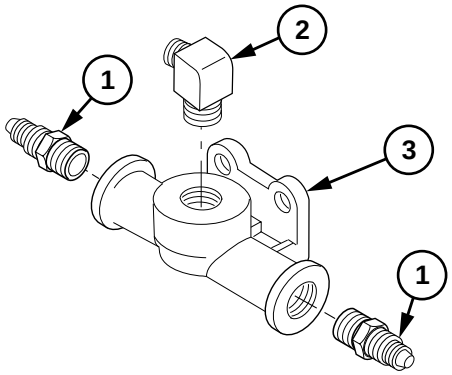
b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

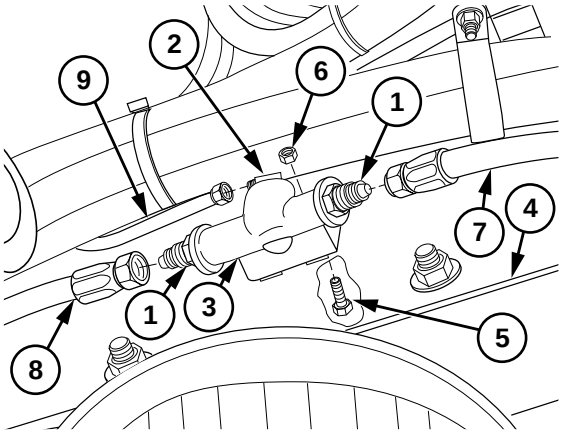
CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of two fittings (1) and elbow (2) with pipe thread sealing compound.

(2) Install two fittings (1) and elbow (2) on manifold (3).



(3) Install manifold (3) on frame (4) with two screws (5) and new locknuts (6).

(4) Install hose no. 2422 (7) on fitting (1).

(5) Install hose no. 2337 (8) on fitting (1).

(6) Install hose no. 2767 (9) on elbow (2).

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-28. GLADHAND REPLACEMENT

This task covers:
Removal
Installation

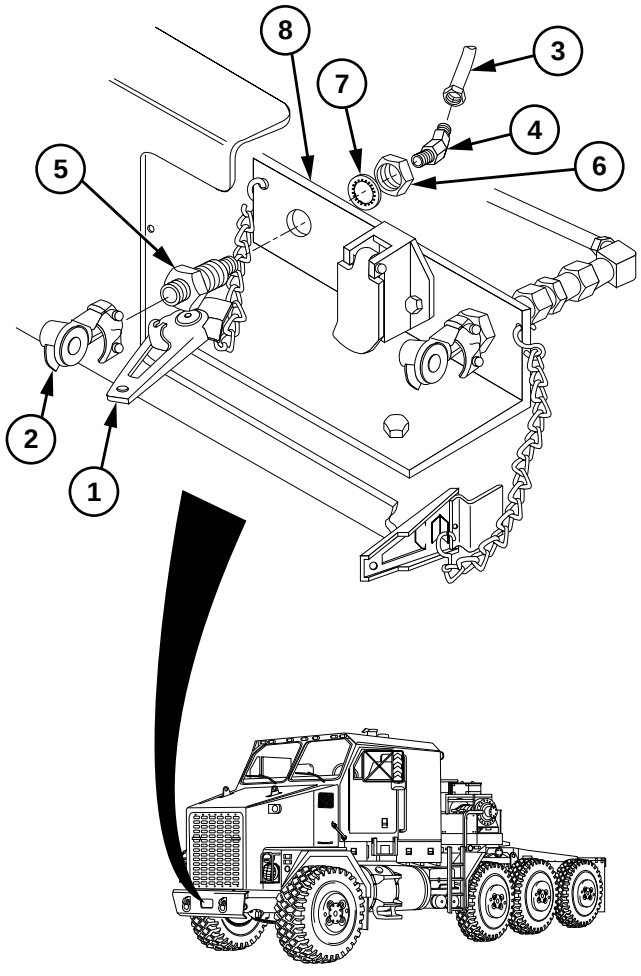
Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Combination, 1-1/2 In. (Item 63, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Lockwashers (4) (Item 117, Appendix G)



a. Front Service Removal

(1) Remove dummy coupling (1) from gladhand (2).

(2) Remove hose (3) from elbow (4).

(3) Remove elbow (4) from fitting (5).

(4) Remove nut (6), lockwasher (7), and fitting (5) from bracket (8). Discard lockwasher.

(5) Remove gladhand (2) from fitting (5).

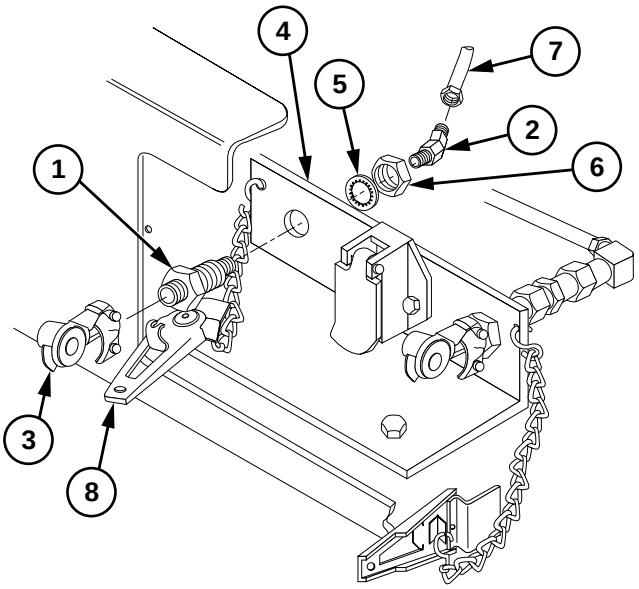
b. Front Service Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Damage to equipment may result.



(1) Coat threads of fitting (1) and elbow (2) with pipe thread sealing compound.

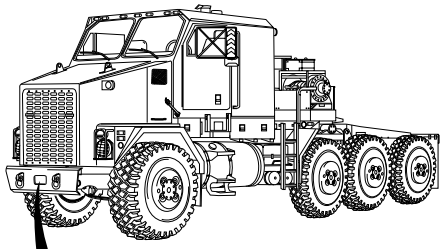
(2) Install gladhand (3) on fitting (1).

(3) Install fitting (1) on bracket (4) with new lockwasher (5) and nut (6).

(4) Install elbow (2) on fitting (1).

(5) Install hose (7) on elbow (2).

(6) Install dummy coupling (8) on gladhand (3).



c. Front Emergency Removal

(1) Remove dummy coupling (1) from gladhand (2).

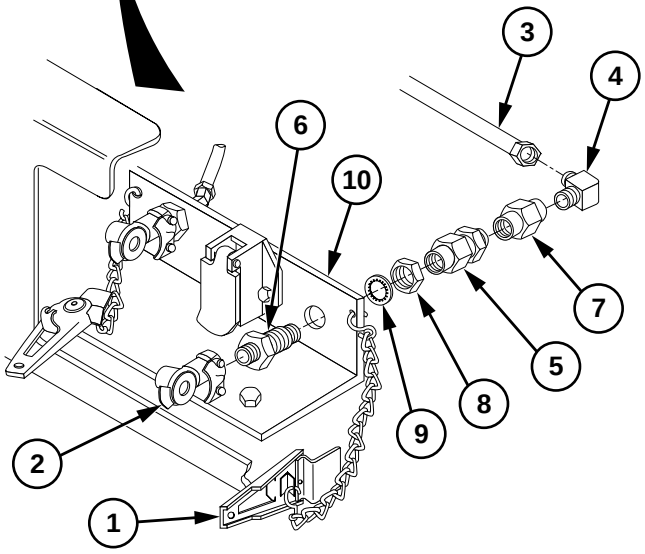
(2) Remove hose (3) from elbow (4).

(3) Remove check valve (5) from fitting (6).

(4) Remove elbow (4) and fitting (7) from check valve (5).

(5) Remove nut (8), lockwasher (9), and fitting (6) from bracket (10). Discard lockwasher.

(6) Remove gladhand (2) from fitting (6).



11-28. GLADHAND REPLACEMENT (CONT)

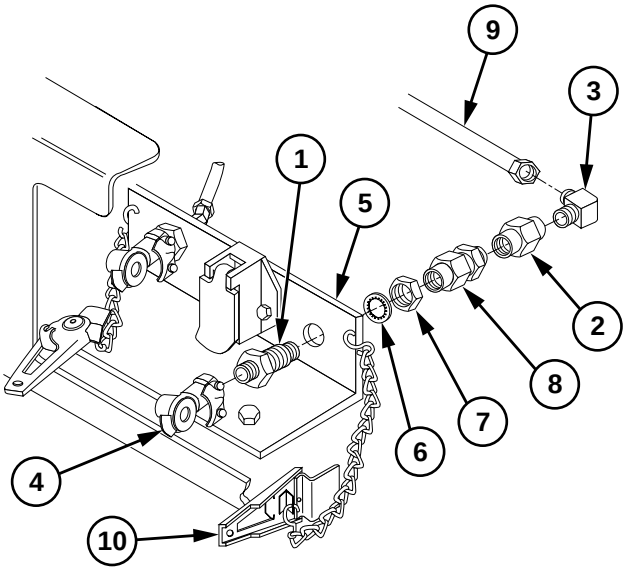
d. Front Emergency Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Damage to equipment may result.



(1) Coat threads of two fittings (1 and 2) and elbow (3).

(2) Install gladhand (4) on fitting (1).

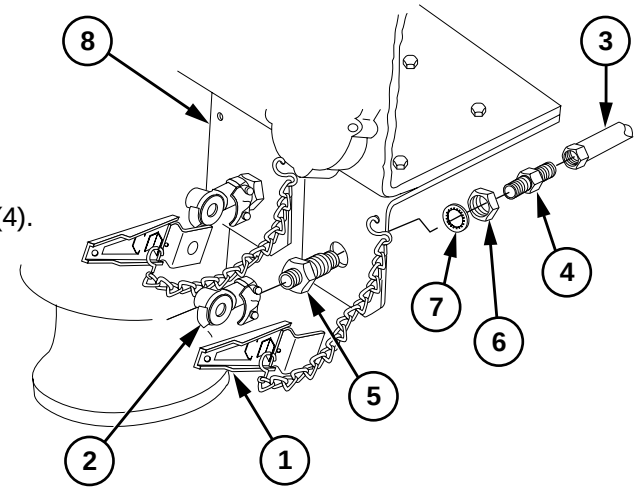
(3) Install fitting (1) on bracket (5) with new lockwasher (6) and nut (7).

(4) Install fitting (2) and elbow (3) on check valve (8).

(5) Install check valve (8) on fitting (1).

(6) Install hose (9) on elbow (3).

(7) Install dummy coupling (10) on gladhand (4).



e. Rear Service Removal

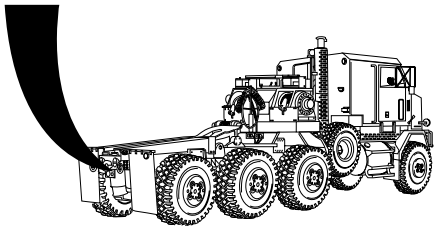
(1) Remove dummy coupling (1) from gladhand (2).

(2) Remove hose (3) from fitting (4).

(3) Remove fitting (4) from fitting (5).

(4) Remove nut (6), lockwasher (7), and fitting (5) from bracket (8). Discard lockwasher.

(5) Remove gladhand (2) from fitting (5).



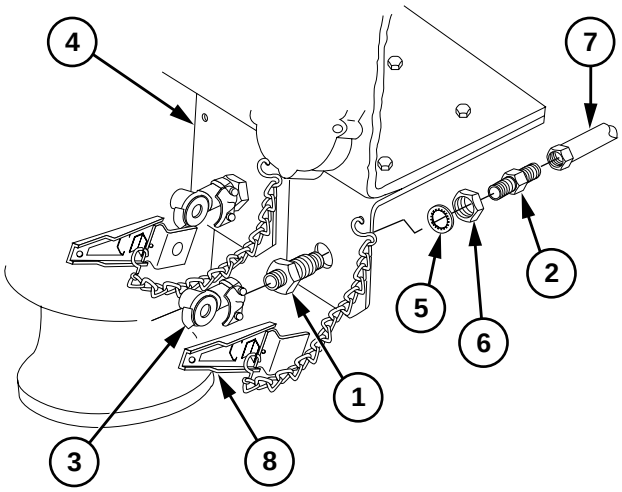
f. Rear Service Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Damage to equipment may result.



(1) Coat threads of fitting (1) and fitting (2) with pipe thread sealing compound.

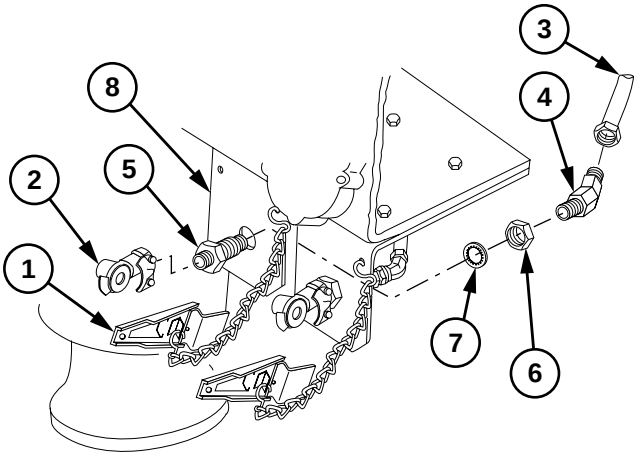
(2) Install gladhand (3) on fitting (1).

(3) Install fitting (1) on bracket (4) with new lockwasher (5) and nut (6).

(4) Install fitting (2) on fitting (1).

(5) Install hose (7) on fitting (2).

(6) Install dummy coupling (8) on gladhand (3).



g. Rear Emergency Removal

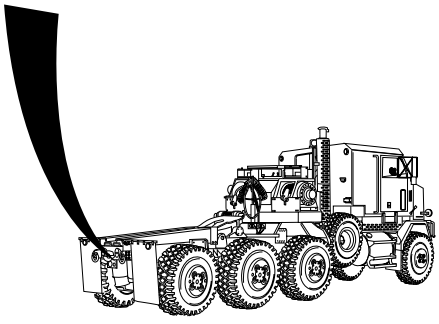
(1) Remove dummy coupling (1) from gladhand (2).

(2) Remove hose (3) from elbow (4).

(3) Remove elbow (4) from fitting (5).

(4) Remove nut (6), lockwasher (7), and fitting (5) from bracket (8). Discard lockwasher.

(5) Remove gladhand (2) from fitting (5).



11-28. GLADHAND REPLACEMENT (CONT)

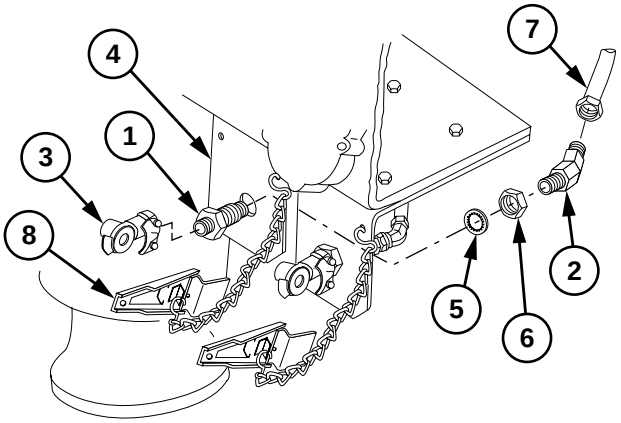
h. Rear Emergency Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Damage to equipment may result.



(1) Coat threads of fitting (1) and elbow (2) with pipe thread sealing compound.

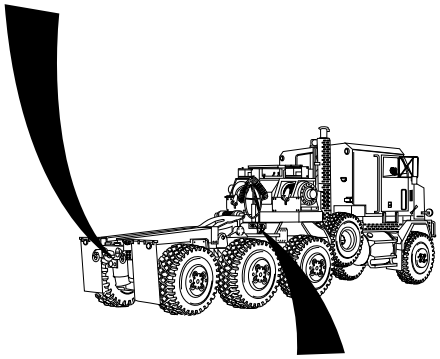
(2) Install gladhand (3) on fitting (1).

(3) Install fitting (1) on bracket (4) with new lockwasher (5) and nut (6).

(4) Install elbow (2) in fitting (1).

(5) Install hose (7) on elbow (2).

(6) Install dummy coupling (8) on gladhand (3).

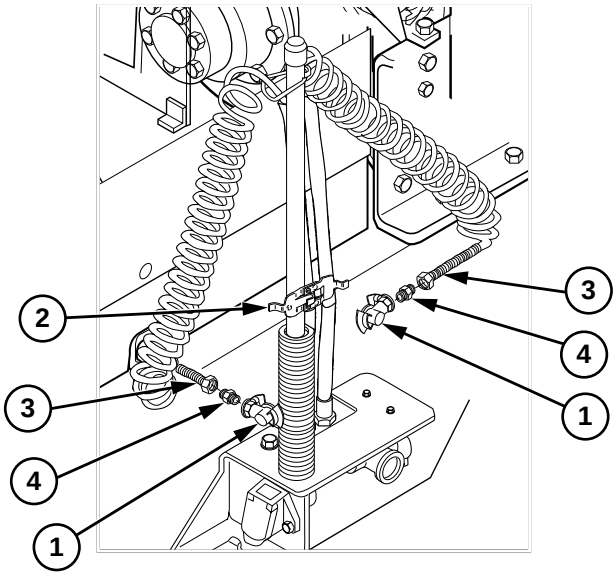


i. Trailer Service and Emergency Removal

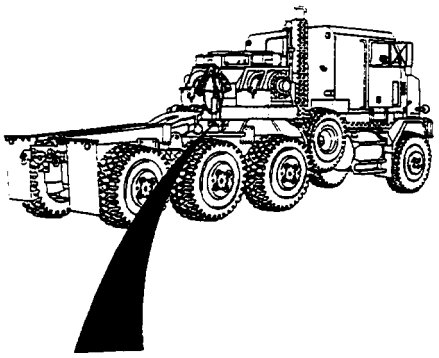
(1) Remove gladhand (1) from mounting bracket (2).

(2) Remove hose (3) from fitting (4).

(3) Remove fitting (4) from gladhand (1).



j. Trailer Service and Emergency Installation

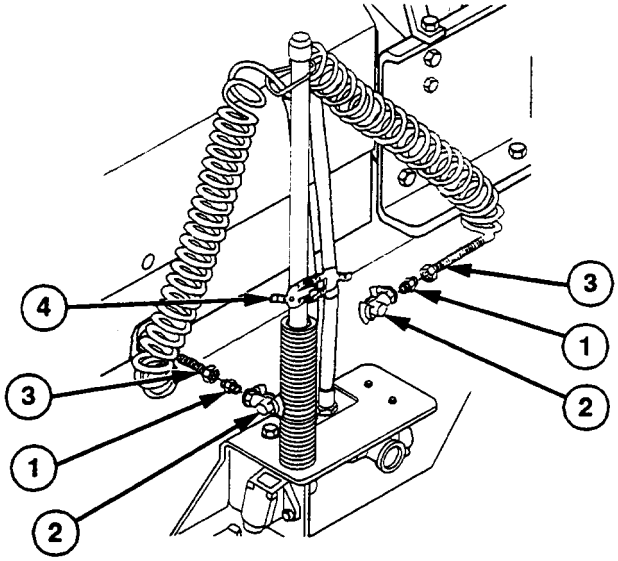


WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Damage to equipment may result.



(1) Coat threads of fitting (1) with pipe thread sealing compound.

(2) Install fitting (1) on gladhand (2).

(3) Install hose (3) on fitting (1).

(4) Install gladhand (2) on mounting bracket (4).

k. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-29. AIR COMPRESSOR HOSES REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine hood opened (TM 9-2320-360-10).
Access panels removed (para 16-2).
Muffler removed (para 5-3).
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Combination, 1-1/2 In. (Item 63, Appendix F)

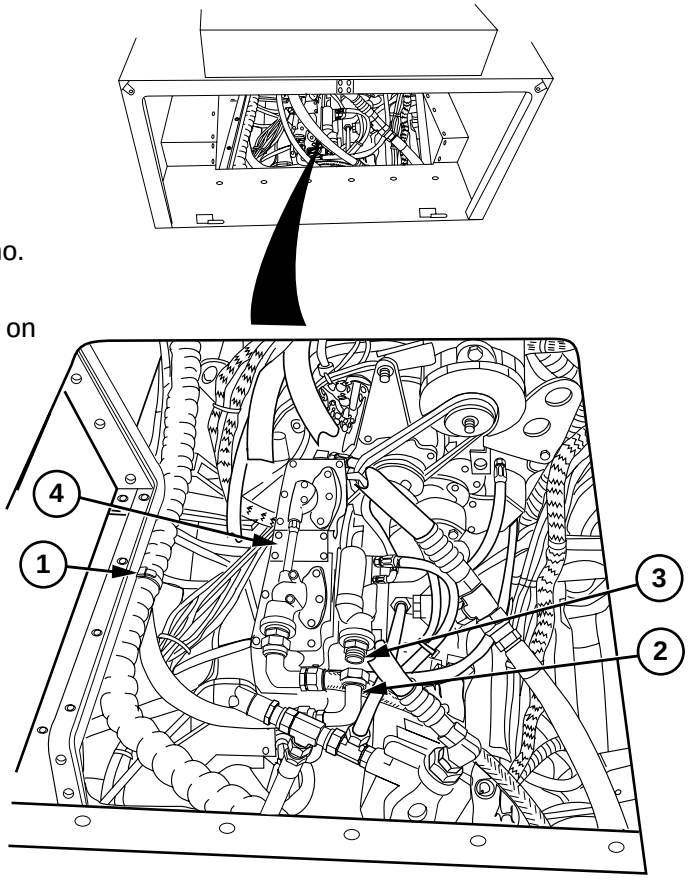
Materials/Parts
Ties, Cable, Plastic (Item 34, Appendix C)
Locknuts (8) (Item 72, Appendix G)

a. Removal

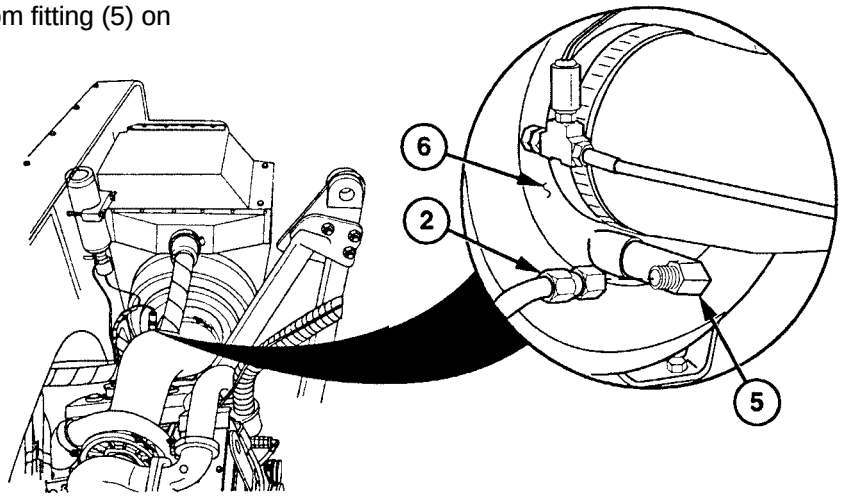
NOTE
Location of plastic cable ties should be marked before removal.

(1) Remove plastic cable ties (1) from hose no. 2600 (2) as required.

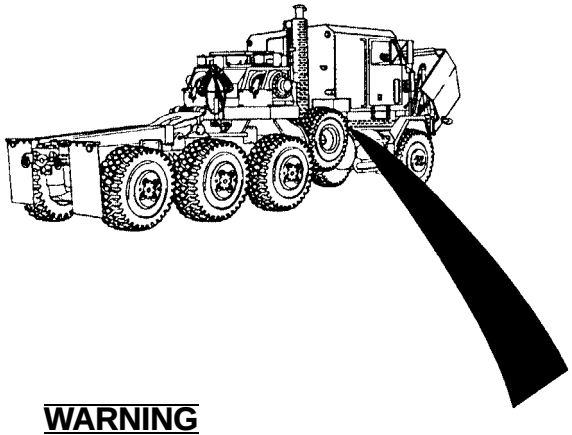
(2) Remove hose no. 2600 (2) from fitting (3) on air compressor (4).



(3) Remove hose no. 2600 (2) from fitting (5) on air cleaner assembly (6).

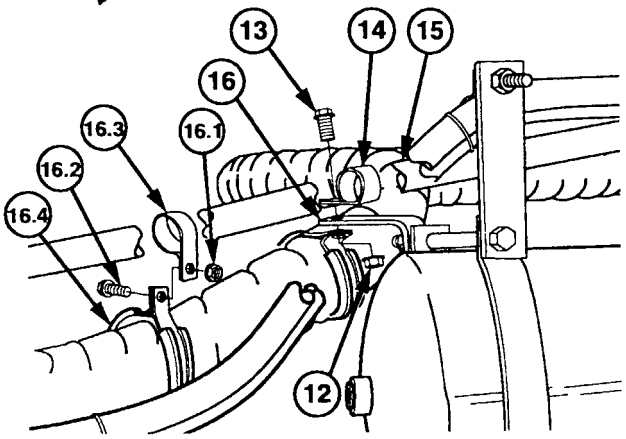


(4) Deleted.



WARNING

Hose no. 2001 gets extremely hot during normal operation. Allow enough time to cool before performing maintenance. Failure to comply may result in injury to personnel.

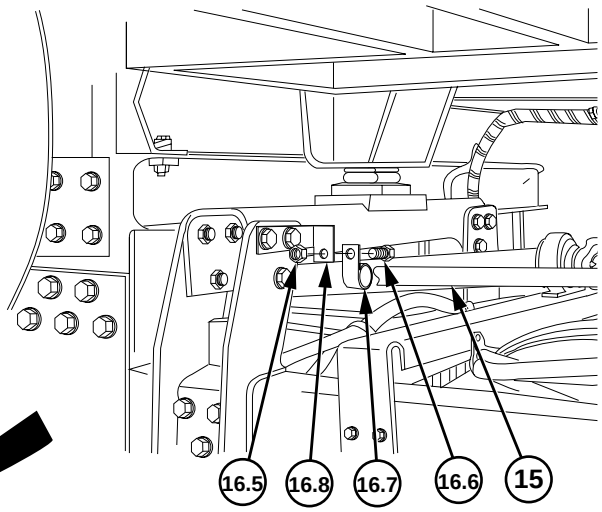


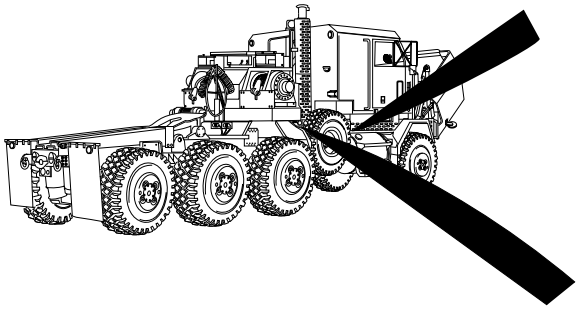
(5) Remove locknut (12), screw (13), and clip (14) from hose no. 2001 (15) and bracket (16). Discard locknut.

(5.1) Remove locknut (16.1), screw (16.2), and clip (16.3) from hose no. 2001 (15) and clip (16.4). Discard locknut.

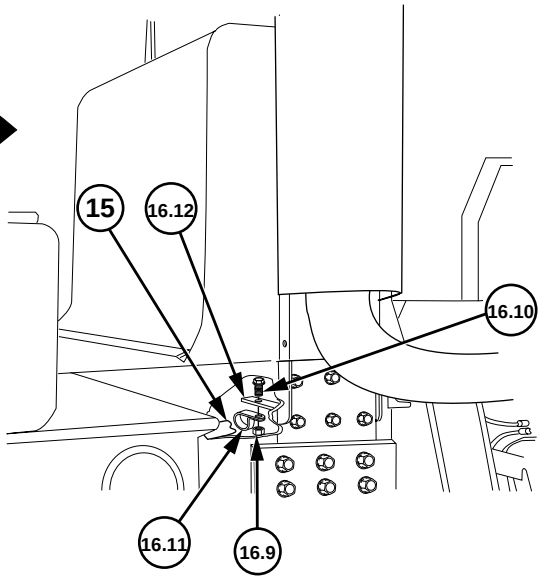
11-29. AIR COMPRESSOR HOSES REPLACEMENT (CONT)

(5.2) Remove locknut (16.5), screw (16.6), and clip (16.7) from hose no. 2001 (15) and bracket (16.8). Discard locknut.





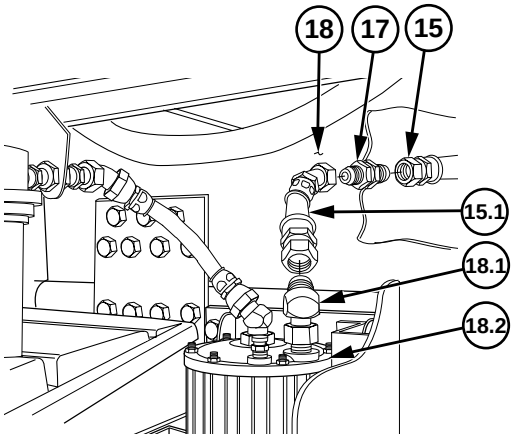
(5.3) Remove locknut (16.9), screw (16.10), and clip (16.11) from hose no. 2001 (15) and bracket (16.12). Discard locknut.

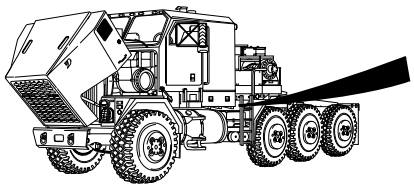


(6) Remove hose no. 2001 (15) from bulkhead fitting (17) on winch deck (18).

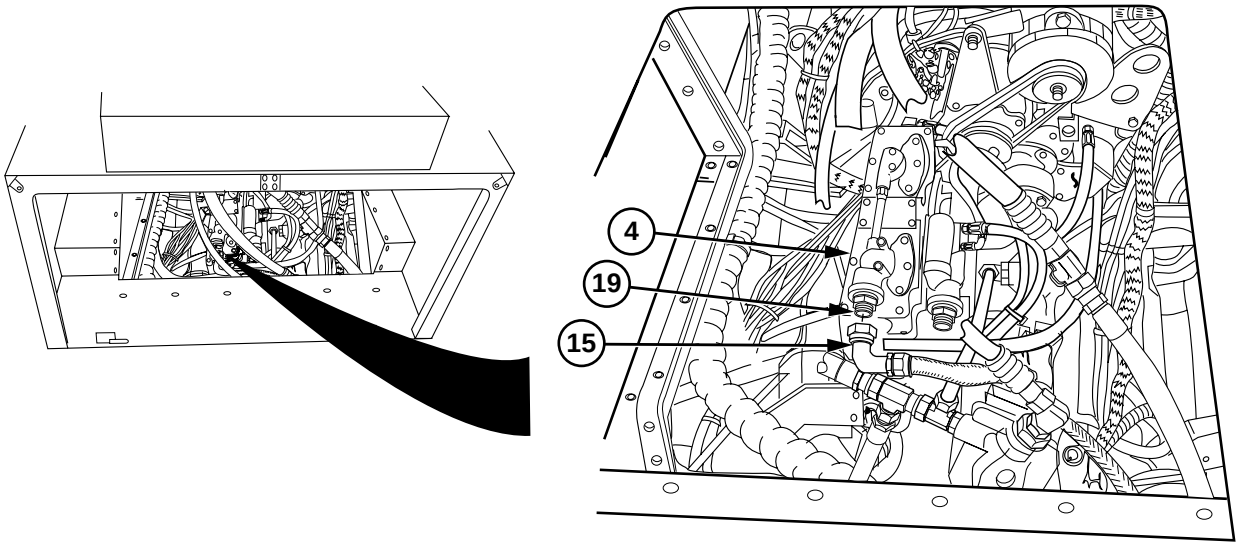
(6.1) Remove hose no. 2001 (15.1) from bulkhead fitting (17) on winch deck (18).

(6.2) Remove hose no. 2001 (15.1) from elbow (18.1) on aftercooler (18.2).





(7) Remove hose no. 2001 (15) from fitting (19) on air compressor (4).

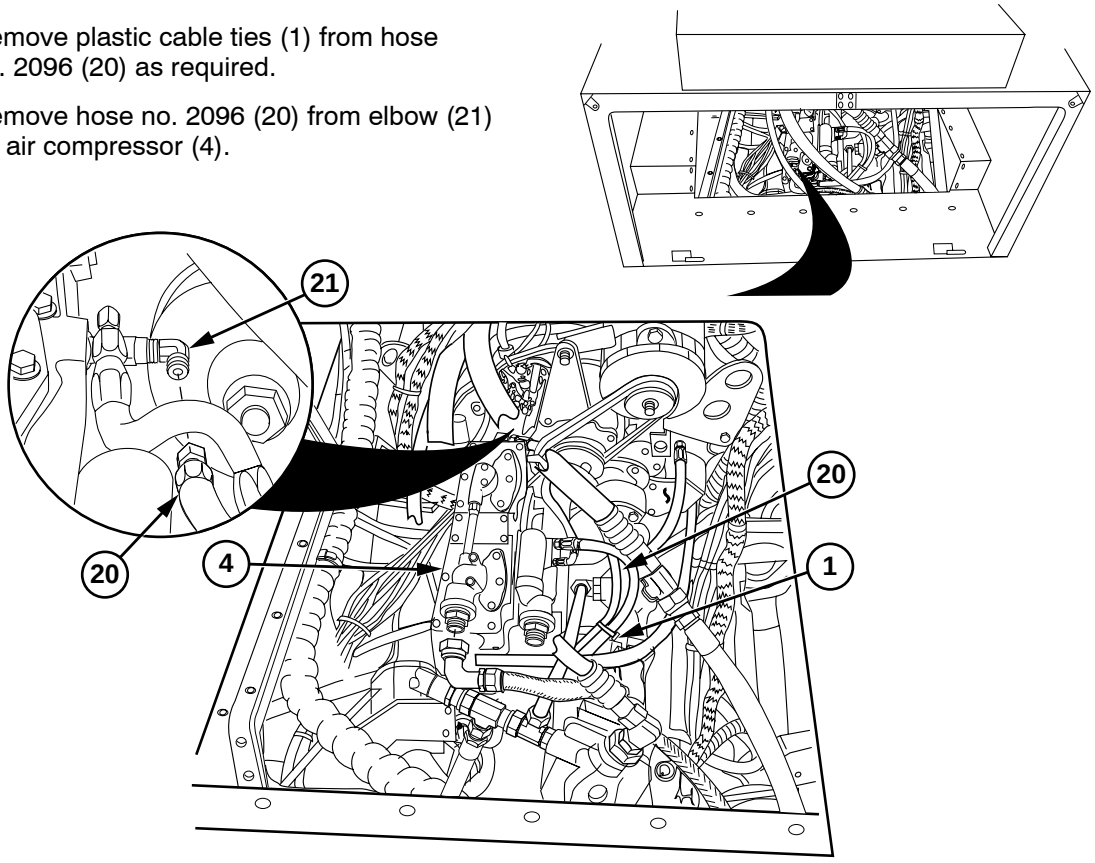


NOTE

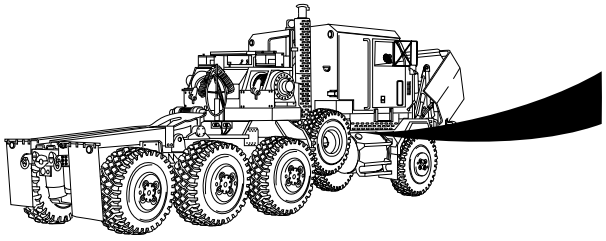
Location of plastic cable ties should be marked before removal.

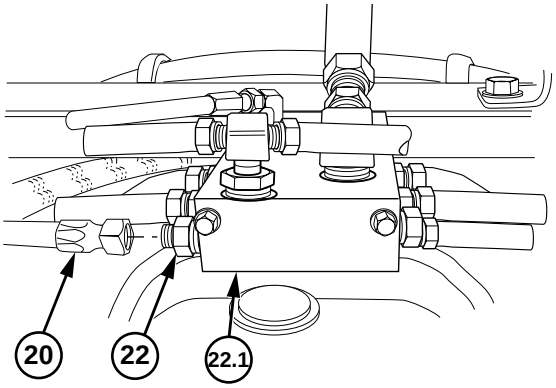
(8) Remove plastic cable ties (1) from hose no. 2096 (20) as required.

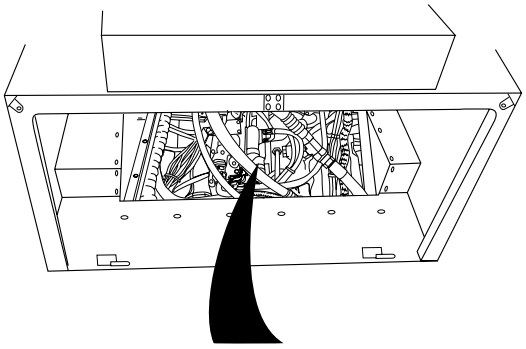
(9) Remove hose no. 2096 (20) from elbow (21) on air compressor (4).



(10) Remove hose no. 2096 (20) from fitting (22) on manifold (22.1).







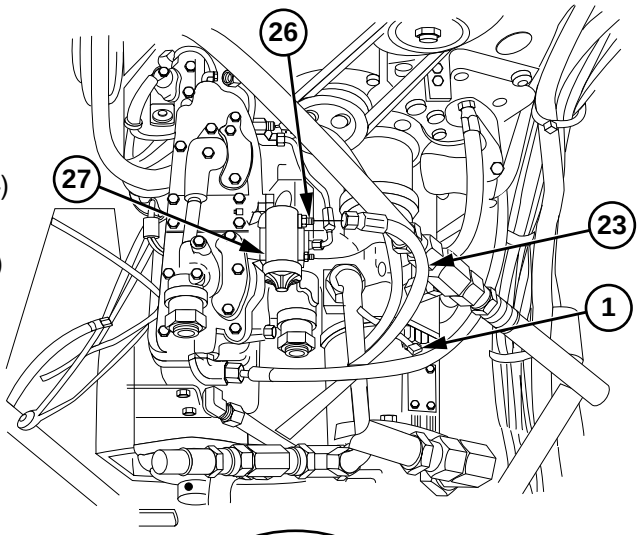
NOTE

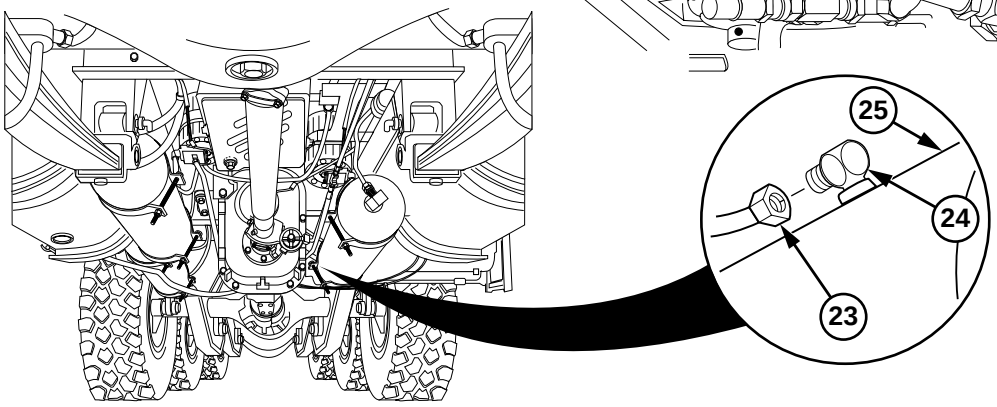
Location of plastic cable ties should be marked before removal.

(11) Remove plastic cable ties (1) from hose no. 2159 (23) as required.

(12) Remove hose no. 2159 (23) from elbow (24) on no. 1 air reservoir (25).

(13) Remove hose no. 2159 (23) from fitting (26) on air governor (27).

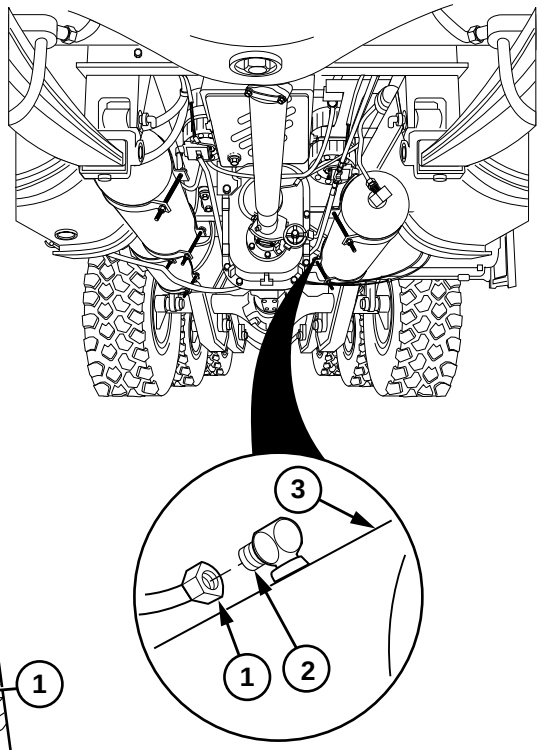




11-29. AIR COMPRESSOR HOSES REPLACEMENT (CONT)

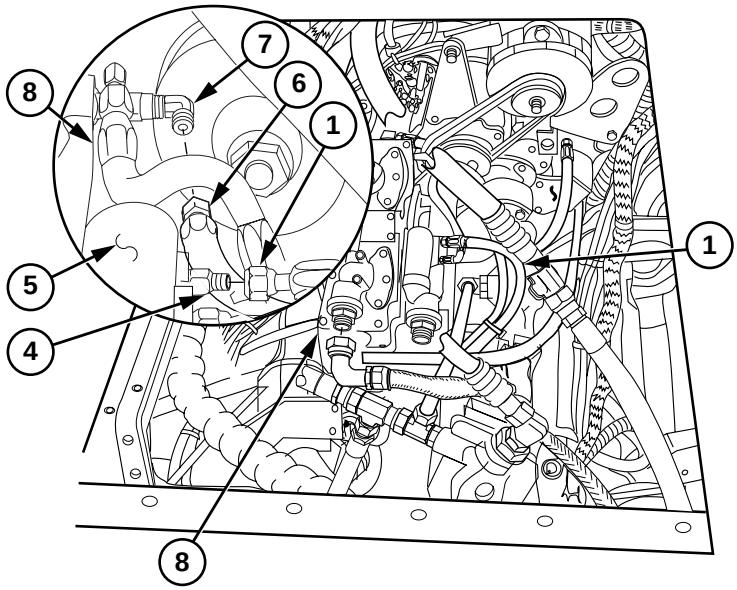
b. Installation

(1) Install hose no. 2159 (1) on elbow (2) on no. 1 air reservoir (3).

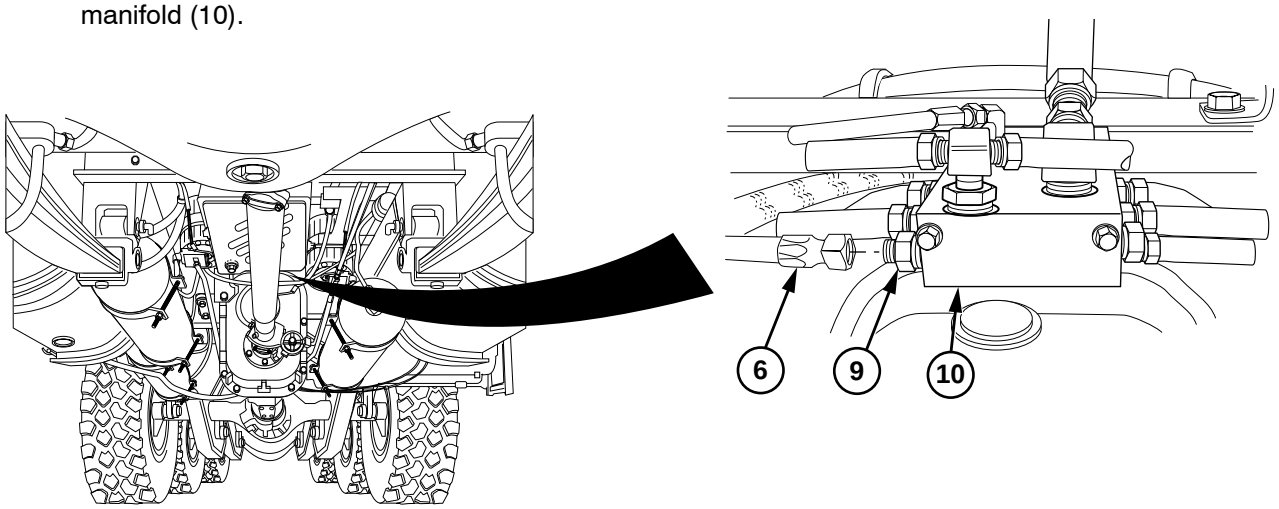


(2) Install hose no. 2159 (1) on fitting (4) on air governor (5).

(3) Install hose no. 2096 (6) on elbow (7) on air compressor (8).



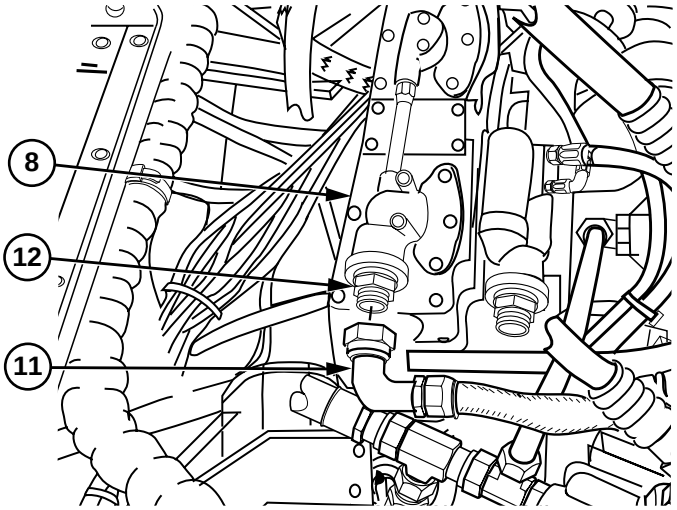
(4) Install hose no. 2096 (6) on fitting (9) on manifold (10).



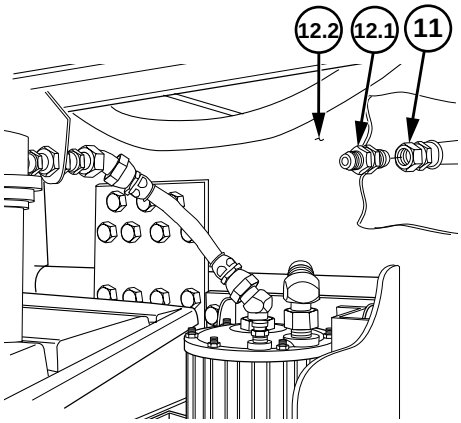
CAUTION

Hose no. 2001 is a braided hose and will get extremely hot during normal operation. Do not allow hoses to touch other hoses after installation.

(5) Install hose no. 2001 (11) on fitting (12) on air compressor (8).

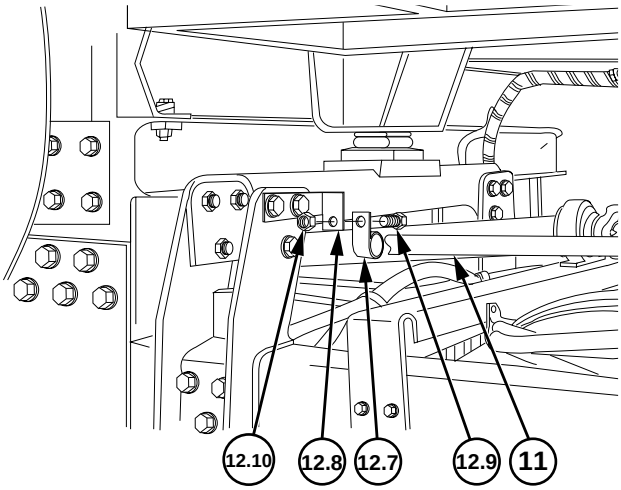


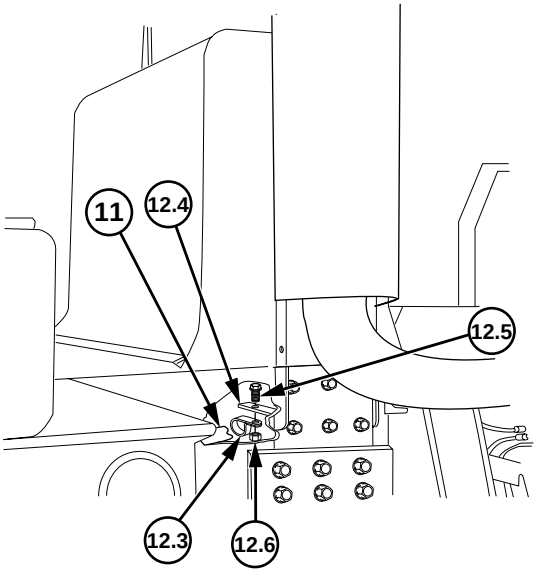
(5.1) Install hose no. 2001 (11) on bulkhead fitting (12.1) on winch deck (12.2).



(5.2) Position clip (12.3) on hose no. 2001 (11) and install on bracket (12.4) with screw (12.5) and new locknut (12.6).

(5.3) Position clip (12.7) on hose no. 2001 (11) and install on bracket (12.8) with screw (12.9) and new locknut (12.10).

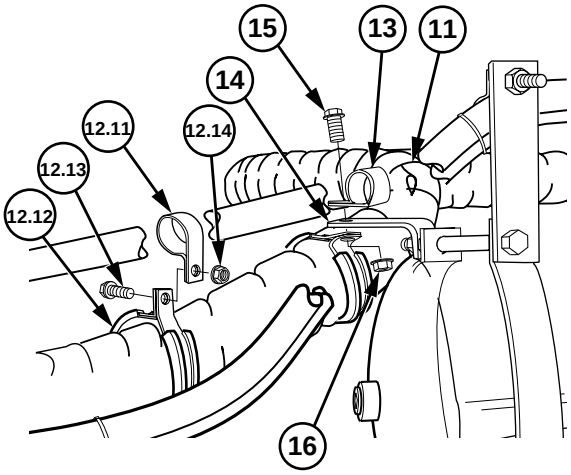




11-29. AIR COMPRESSOR HOSES REPLACEMENT (CONT)

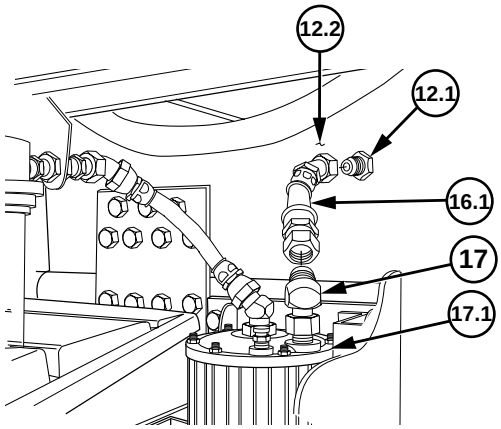
(5.4) Position clip (12.11) on hose no. 2001 (11) and install on clip (12.12) with screw (12.13) and new locknut (12.14).

(6) Position clip (13) on hose no. 2001 (11) and install on bracket (14) with screw (15) and new locknut (16).



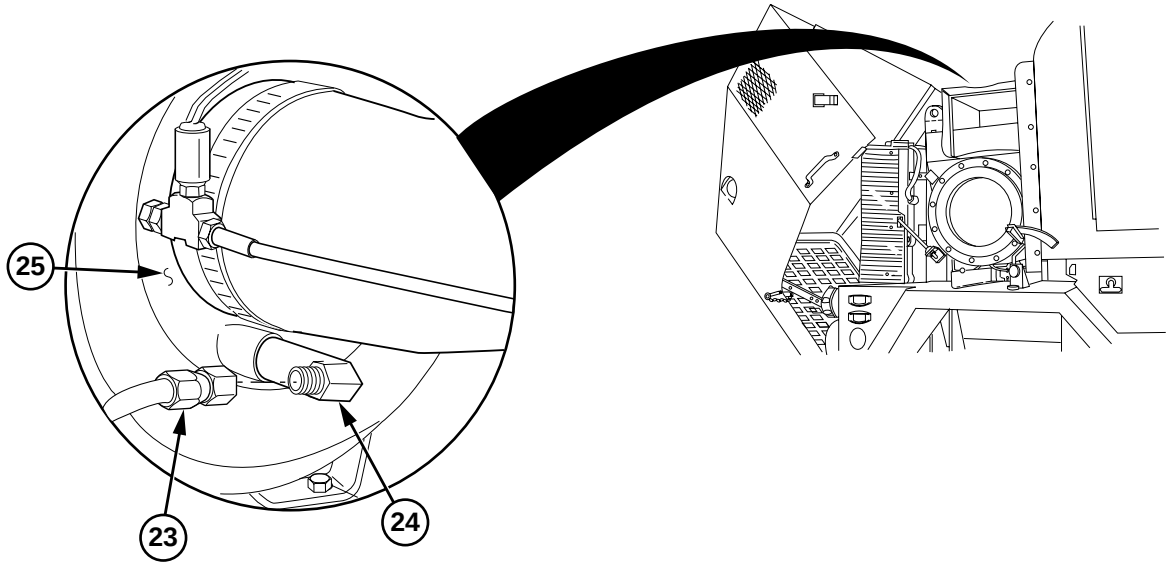
(7) Install hose no. 2001 (16.1) on elbow (17) on aftercooler (17.1).

(7.1) Install hose no 2001 (16.1) on bulkhead fitting (12.1) on winch deck (12.2).



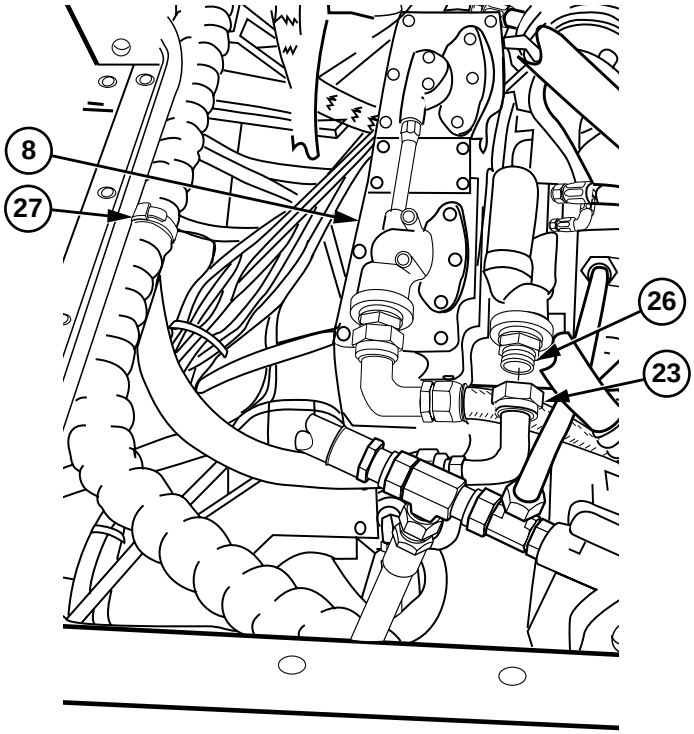
(8) Deleted.

(9) Install hose no. 2600 (23) on fitting (24) on air cleaner assembly (25).



(10) Install hose no. 2600 (23) on fitting (26) on air compressor (8).

(11) Secure hose (23) with plastic cable ties (27).



c. Follow-On Maintenance

(1) Install muffler (para 5-3).

(2) Start engine (TM 9-2320-360-10).

(3) Build up air pressure to 120-125 psi (827-862 kPa).

(4) Shut off engine (TM 9-2320-360-10).

(5) Check for leaks.

(6) Install access panels (para 16-2).

11-30. AIR GOVERNOR TESTING/ADJUSTMENT

This task covers:
a. Testing
b. Adjustment
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Air system drained (TM 9-2320-360-10).
Lower engine access panel removed (para 16-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Testing

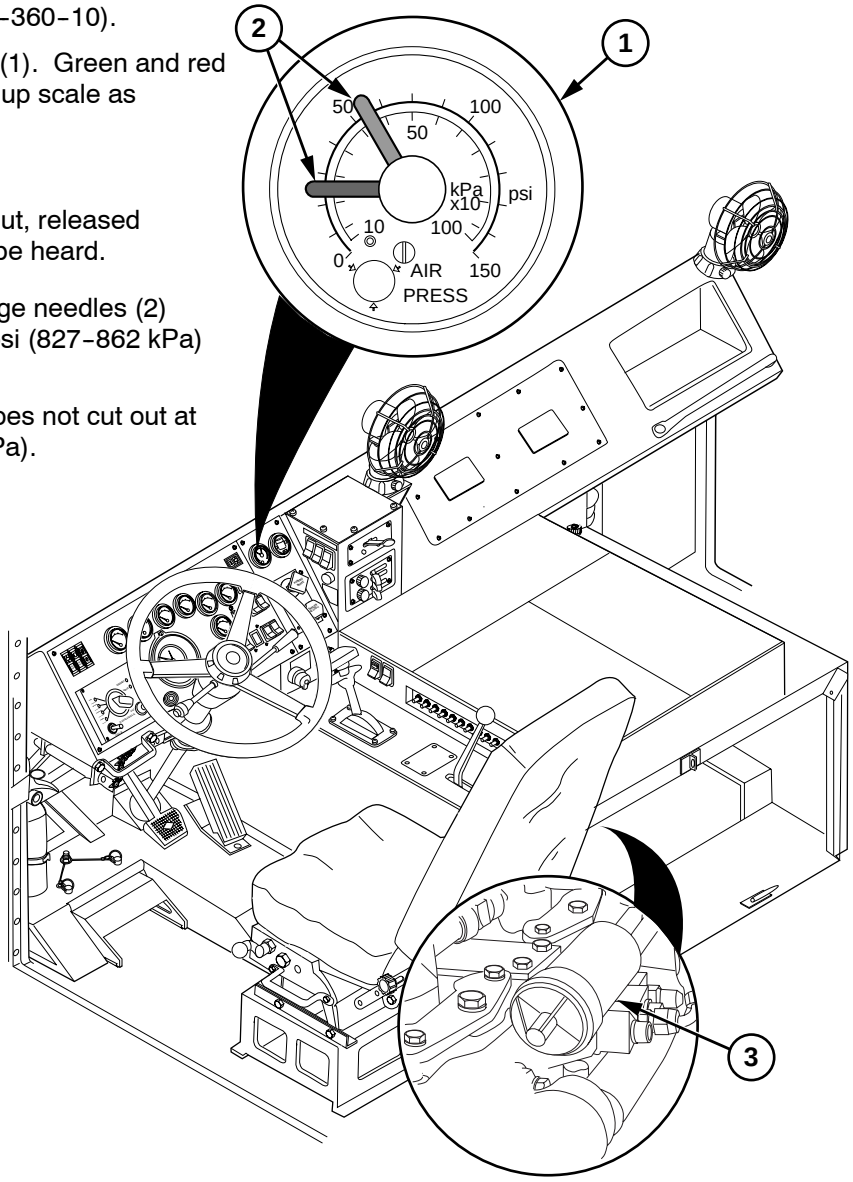
(1) Start engine (TM 9-2320-360-10).

(2) Watch air pressure gage (1). Green and red needles (2) should move up scale as pressure builds up.

NOTE
When governor cuts out, released air from air dryer can be heard.

(3) After several minutes, gage needles (2) should stop at 120-125 psi (827-862 kPa) as governor cuts out.

(4) Adjust governor (3) if it does not cut out at 120-125 psi (827-862 kPa).



11-30. AIR GOVERNOR TESTING/ADJUSTMENT (CONT)

b. Adjustment

(1) Shut off engine (TM 9-2320-360-10).

(2) Unscrew cap (1) from air governor (2).

(3) Loosen nut (3) at base of adjusting screw (4).

NOTE

One complete turn will change adjustment approximately 15 psi (103 kPa).

(4) Turn adjusting screw (4) in to decrease cutout air pressure or out to increase cutout air pressure.

(5) Hold adjusting screw (4) and tighten nut (3).

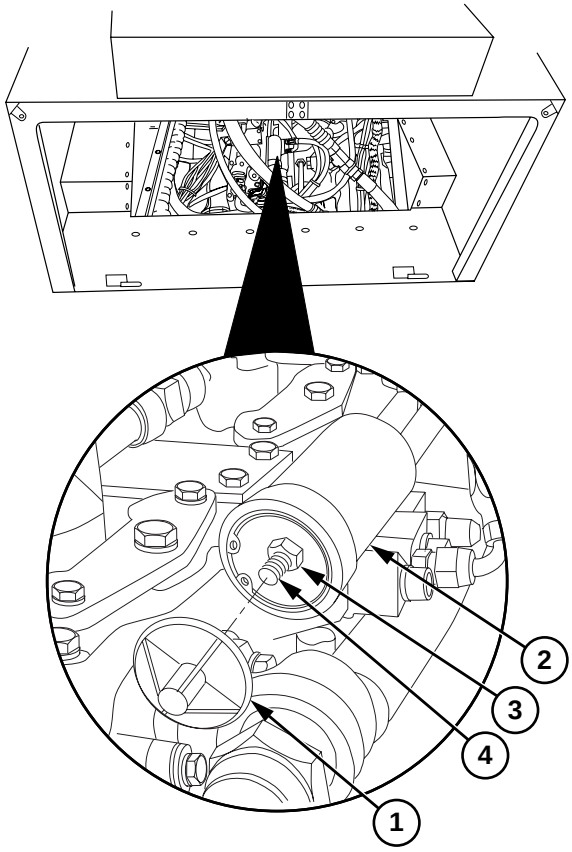
(6) Press and release brake pedal to reduce air pressure reading on gage to below 100 psi (690 kPa).

(7) Start engine (TM 9-2320-360-10).

(8) Observe pressure at which governor (2) cuts out. Repeat steps (1) thru (6) if governor does not cut out at 120-125 psi (827-862 kPa).

(9) Shut off engine (TM 9-2320-360-10).

(10) Install cap (1) on air governor (2).



c. Follow-On Maintenance

Install lower engine access panel (para 16-2).

11-31. AIR GOVERNOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Air system drained (TM 9-2320-360-10).
Lower engine access panel removed (para 16-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Gasket (Item 34, Appendix G)
Lockwashers (2) (Item 101, Appendix G)

a. Removal

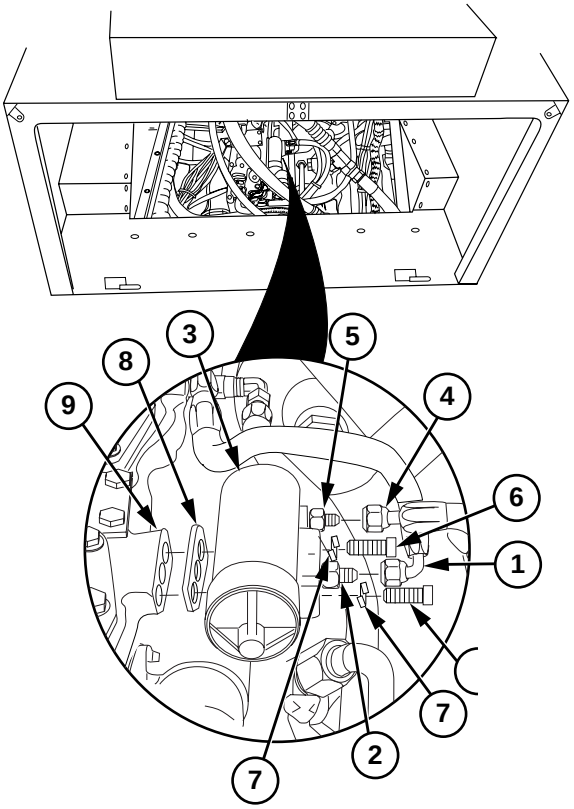
(1) Remove hose no. 2114 (1) from fitting (2) on air governor (3).

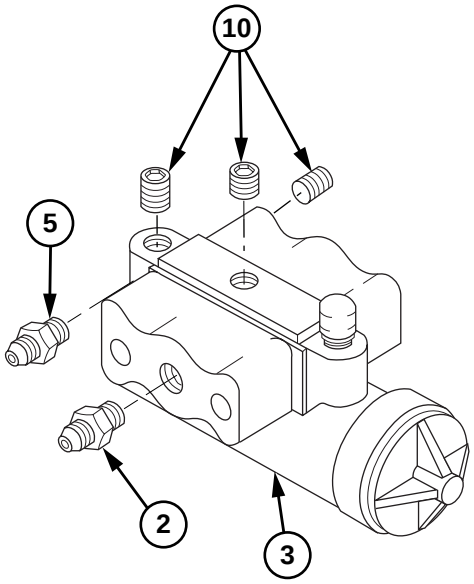
(2) Remove hose no. 2159 (4) from fitting (5) on air governor (3).

(3) Remove two sockethead screws (6), lockwashers (7), air governor (3), and gasket (8) from air compressor head (9). Discard gasket and lockwashers.

(4) Remove two fittings (2 and 5) from air governor (3).

(5) Remove three plugs (10) from air governor (3).





11-31. AIR GOVERNOR REPLACEMENT (CONT)

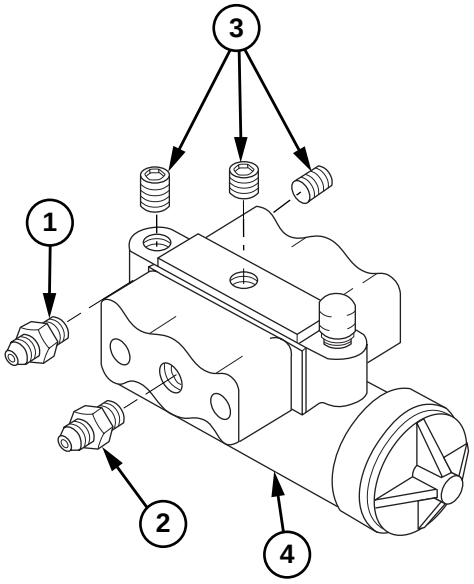
b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

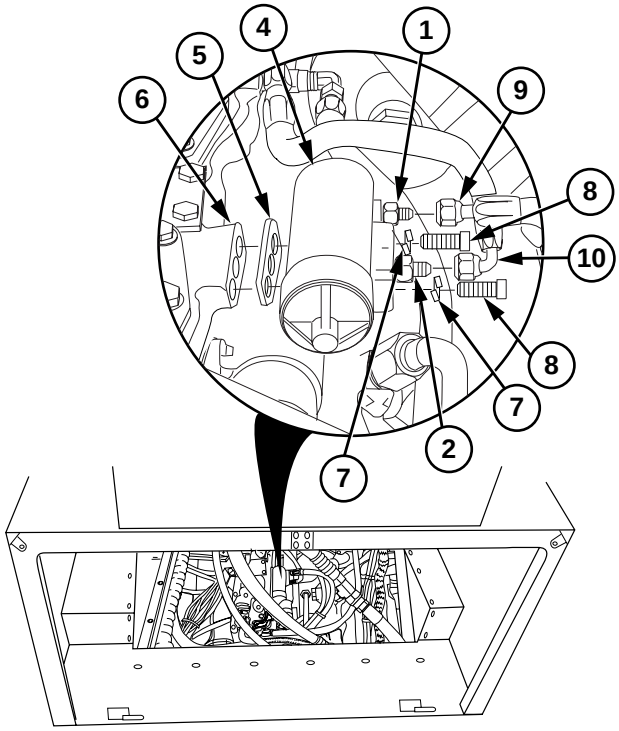
CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to no. hose connections. Damage to equipment may result.



(1) Coat threads of two fittings (1 and 2) and three plugs (3) with pipe thread sealing compound.

(2) Install two fittings (1 and 2) and three plugs (3) on air governor (4).



(3) Install new gasket (5) and air governor (4) on air compressor head (6) with two new lockwashers (7) and sockethead screws (8).

(4) Install hose no. 2159 (9) on fitting (1).

(5) Install hose no. 2114 (10) on fitting (2).

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check for air leaks.

(3) Shut off engine (TM 9-2320-360-10).

(4) Adjust air governor (para 11-30).

(5) Install lower engine access panel (para 16-2).

11-32. AIR DRYER SERVICE

This task covers:
a. Removal
b. Service
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Service Kit (Item 167, Appendix G)

a. Removal

(1) Remove plug (1) from socket (2).

NOTE

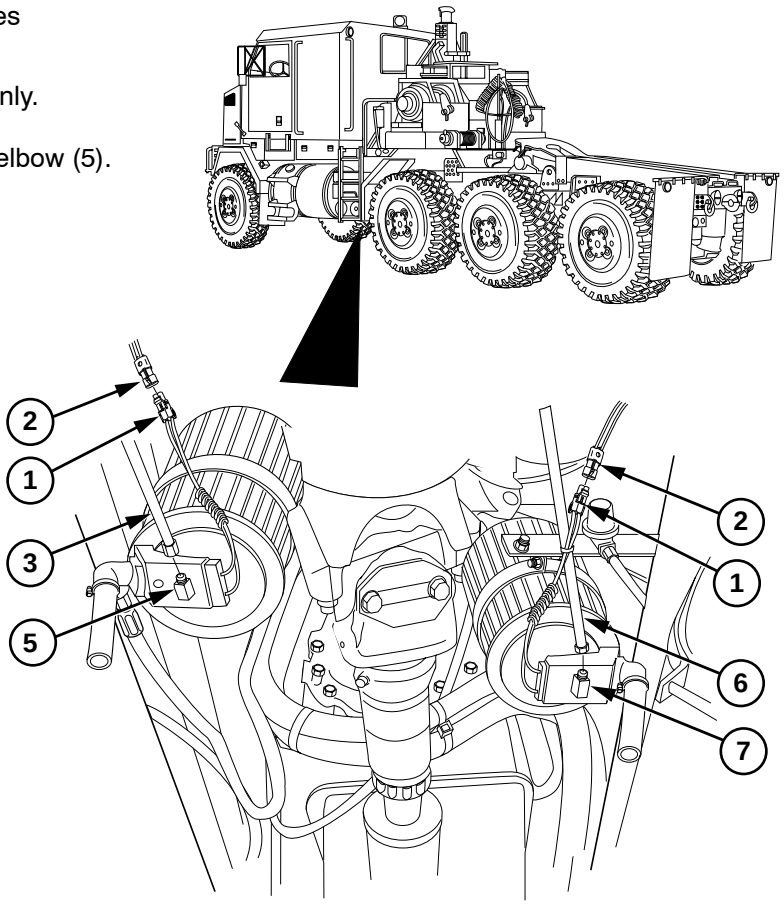
- Tag and mark wires and hoses before removal.
- Do step (2) for left air dryer only.

(2) Remove hose no. 2080 (3) from elbow (5).

NOTE

Do step (3) for right air dryer only.

(3) Remove hose no. 2097 (6) from elbow (7).



11-32. AIR DRYER SERVICE (CONT)

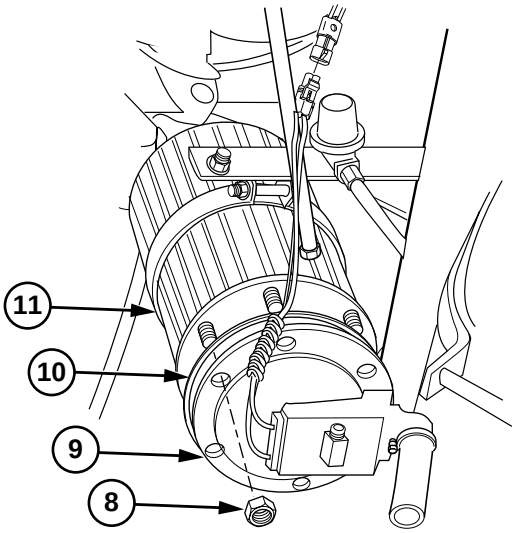
WARNING

Desiccant cartridge may drop when lower cover is removed and cause injury. Be very careful when removing cover.

NOTE

Matchmark lower cover and housing.

(4) Remove six nuts (8), lower cover (9), and preformed packing (10) from housing (11). Discard preformed packing.

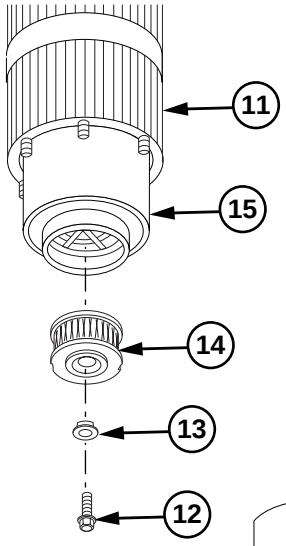


(5) Remove screw (12), retainer (13), and filter element (14) from canister (15). Discard filter element.

WARNING

Follower spring may drop when desiccant canister is removed and cause injury. Be very careful when working under air dryer.

(6) Remove canister (15) from housing (11).



b. Service

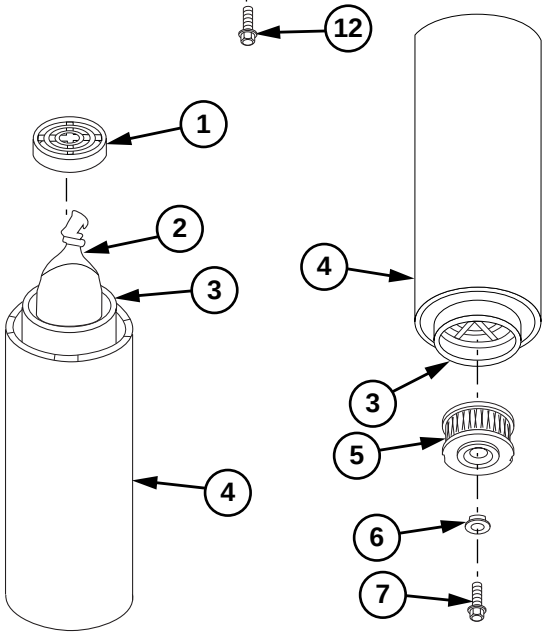
(1) Remove retainer (1) and desiccant cartridge (2) from inner cylinder (3) of canister (4). Discard desiccant cartridge.

(2) Clean inside of housing, lower cover, inner cylinder, and canister. Inspect for cracks.

(3) Install new filter element (5), retainer (6), and screw (7) on inner cylinder (3). Torque to 72 lb-in. (9 N·m).

(4) Install new desiccant cartridge (2) in inner cylinder (3) of canister (4).

(5) Install retainer (1) in inner cylinder (3) of canister (4).



c. Installation

(1) Install new preformed packing (1) on lower cover (2).

WARNING

Support canister in housing until lower cover is installed.

NOTE

Do step (2) only if follower spring was removed with desiccant canister.

(2) Install follower spring (3) in canister (4).

(3) Install canister (4) and follower spring (3) in housing (5).

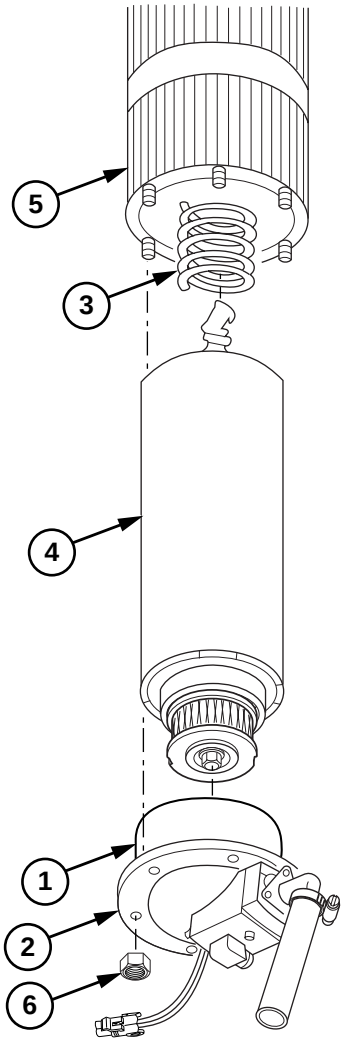
CAUTION

Nuts must be tightened evenly to prevent damage to preformed packing and air dryer.

NOTE

Align matchmarks on lower cover and housing.

(4) Install lower cover (2) on housing (5) with six nuts (6). Torque to 180 lb-in. (20 N·m).



11-32. AIR DRYER SERVICE (CONT)

NOTE

Do step (5) for right air dryer only.

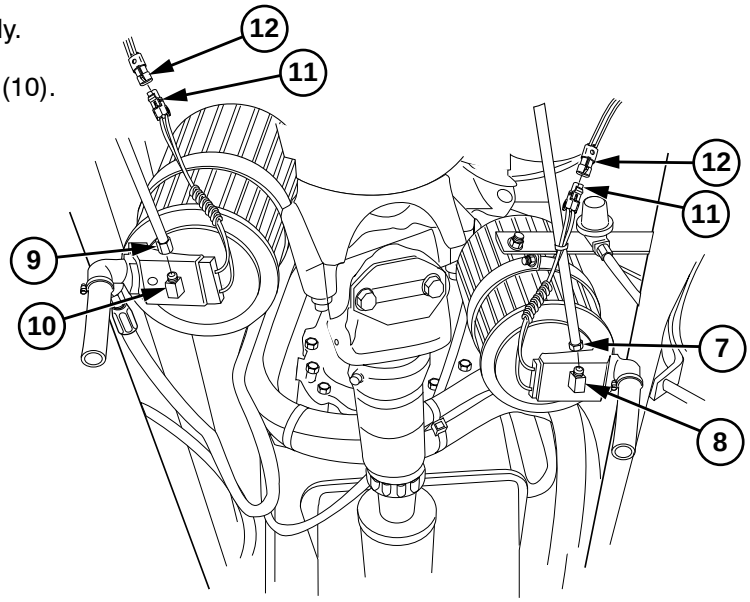
(5) Install hose no. 2097 (7) on elbow (8).

NOTE

Do step (6) for left air dryer only.

(6) Install hose no. 2080 (9) on elbow (10).

(7) Install plug (11) in socket (12).



d. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 100 psi (689 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

11-33. LEFT AIR DRYER REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Stowage box removed (para 16-14).

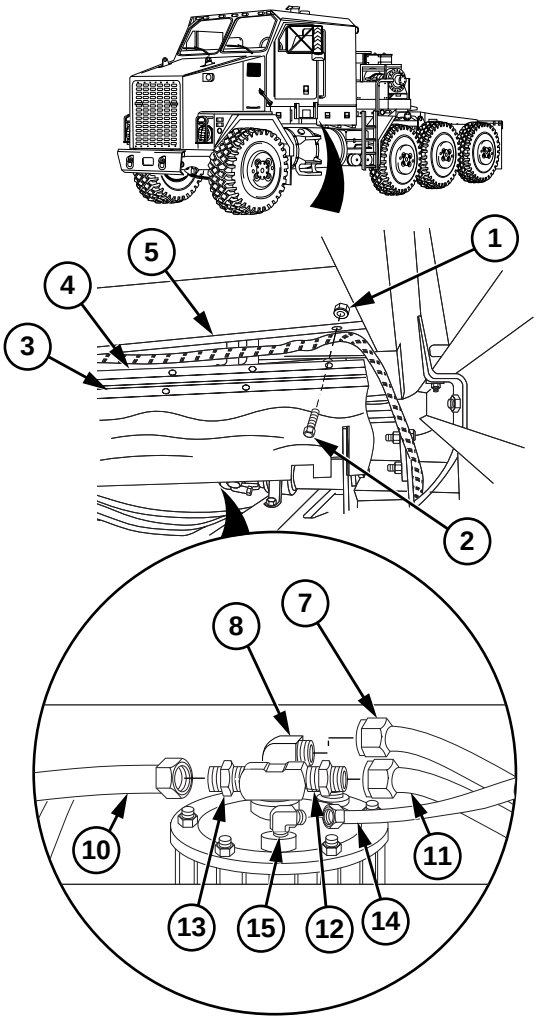
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Elbow with Gasket (Item 20, Appendix G)
Locknuts (4) (Item 58, Appendix G)
Locknuts (4) (Item 72, Appendix G)
Lockwashers (2) (Item 123, Appendix G)
Service Kit (Item 167, Appendix G)

a. Removal

NOTE
Steps (1) thru (4) are performed from above on outside left of HET Tractor. Steps (5) thru (10) are performed from under HET Tractor.

(1) Remove four locknuts (1), screws (2), plate (3), and sound shield flap (4) from bracket (5). Discard locknuts.



NOTE
Tag and mark hoses and wires before removal.

(2) Remove hose no. 2995 (7) from elbow (8).

(3) Remove hose no. 2002 (10) and hose no. 2996 (11) from two fittings (12 and 13).

(4) Remove hose no. 2993 (14) from elbow (15).

11-33. LEFT AIR DRYER REPAIR (CONT)

(5) Remove clamp (16) and drain hose (17) from air dryer (18).

(6) Remove plug (19) from socket (20).

(7) Deleted.

(8) Remove hose no. 2080 (22) from elbow (25).

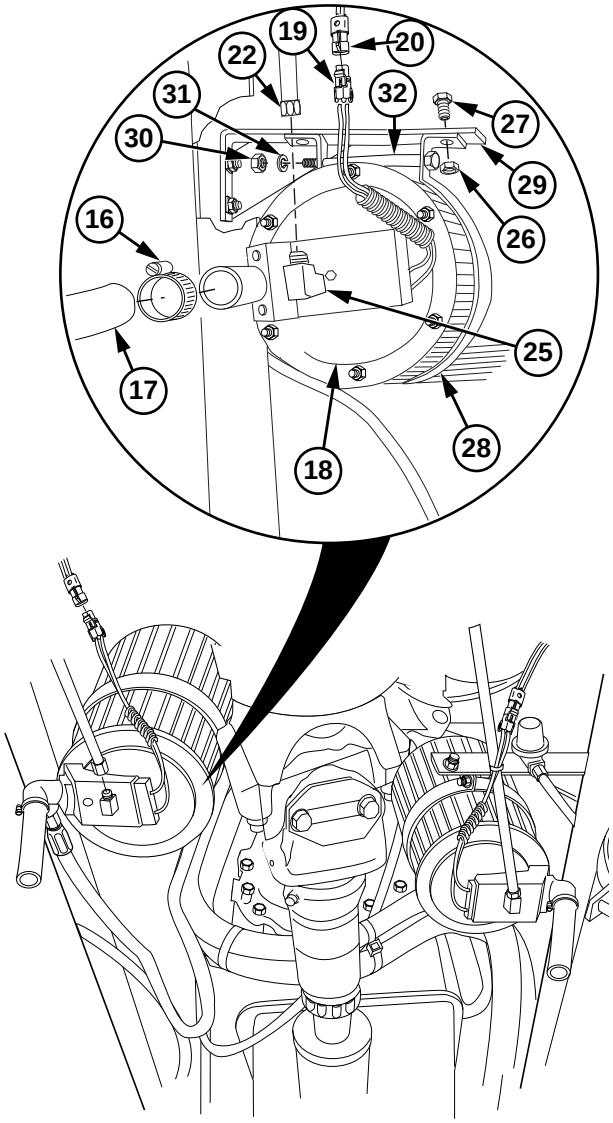
WARNING

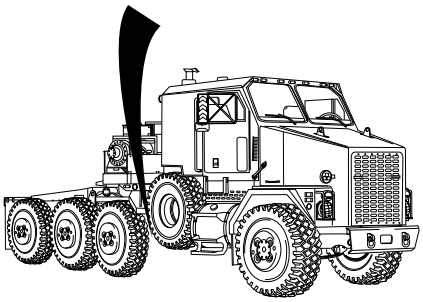
Support air dryer while removing screws to prevent it from falling. Failure to do so may cause injury to personnel.

(9) Remove four locknuts (26), screws (27), and two clamps (28) from two brackets (29). Discard locknuts.

(10) Remove two nuts (30), lockwashers (31), and screws (32) from clamps (28). Discard lockwashers.

(11) Remove air dryer (18) from clamps (28).





b. Disassembly

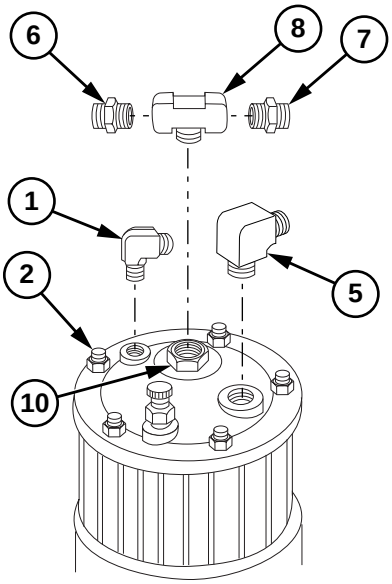
(1) Remove elbow (1) from top cover (2).

(2) Remove elbow (5) from top cover (2).

(3) Remove two fittings (6 and 7) from tee (8).

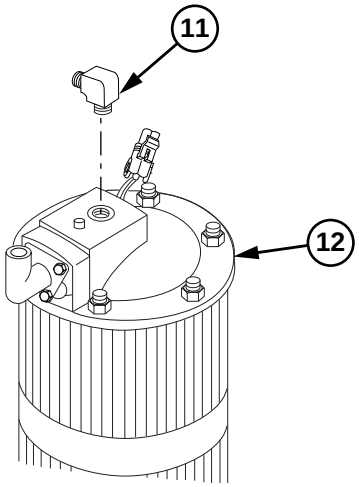
(4) Deleted.

(5) Remove tee (8) from check valve cap (10).



(6) Remove elbow (11) from bottom cover (12).

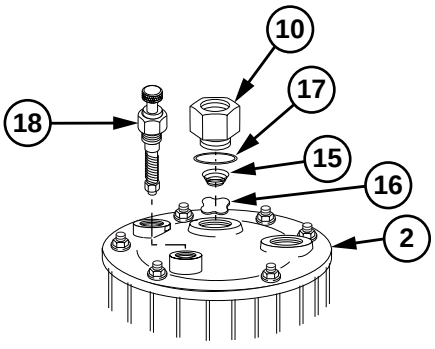
(7) Deleted.



(8) Remove check valve cap (10), spring (15), and disc (16) from top cover (2). Discard disc.

(9) Remove preformed packing (17) from check valve cap (10). Discard preformed packing.

(10) Remove relief valve (18) from top cover (2).



11-33. LEFT AIR DRYER REPAIR (CONT)

NOTE

Matchmark top cover and housing before separating.

(11) Remove six nuts (19) and top cover (2) from housing (20).

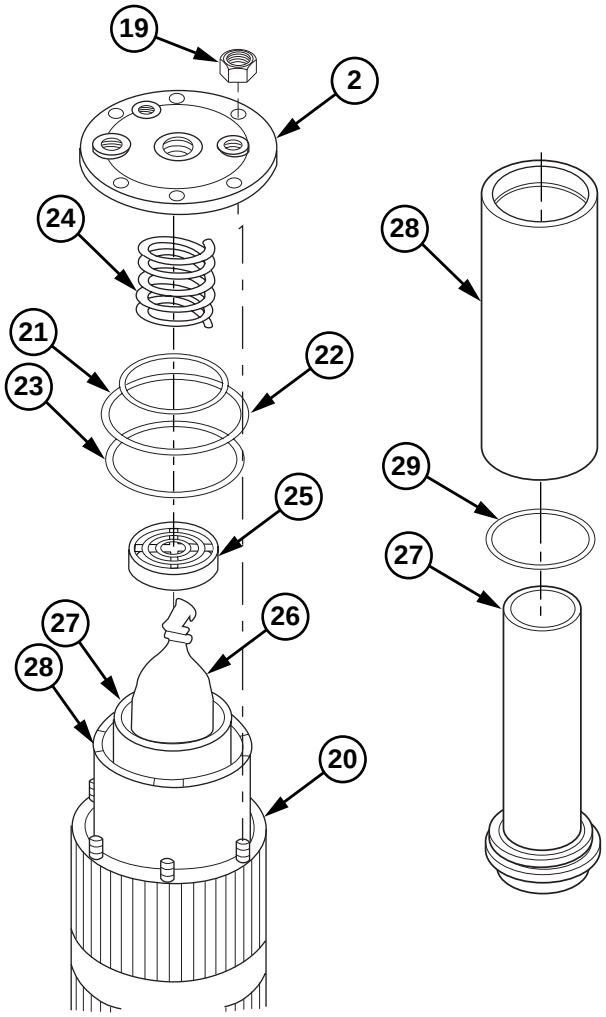
(12) Remove three preformed packings (21, 22, and 23) and spring (24) from top cover (2). Discard preformed packings.

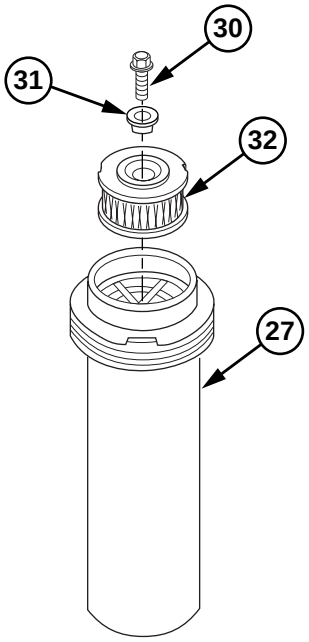
(13) Remove follower (25) and desiccant cartridge (26) from inner cylinder (27) of canister (28).

(14) Remove canister (28) from housing (20).

(15) Remove canister (28) from inner cylinder (27).

(16) Remove preformed packing (29) from cylinder (27). Discard preformed packing.





(17) Remove screw (30), retainer (31), and filter element (32) from inner cylinder (27).

NOTE

Matchmark lower cover and housing before separating.

(18) Remove six nuts (33) and bottom cover (12) from housing (20).

(19) Remove preformed packing (34) from bottom cover (12). Discard preformed packing.

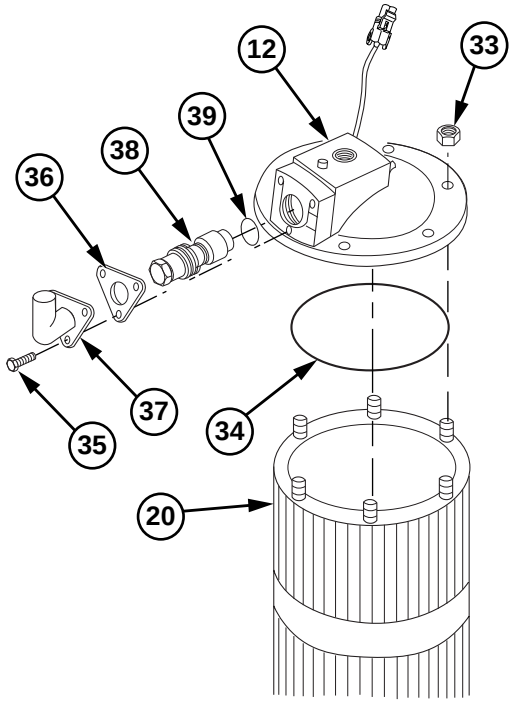
(20) Remove three screws (35), gasket (36), and exhaust tube (37) from bottom cover (12). Discard gasket.

NOTE

One-inch OD nut in purge valve may be used to turn purge valve counterclockwise to remove.

(21) Remove purge valve (38) from bottom cover (12).

(22) Remove preformed packing (39) from purge valve (38). Discard preformed packing.



c. Assembly

(1) Install new preformed packing (1) on purge valve (2).

NOTE

One-inch OD nut in purge valve may be used to turn purge valve clockwise to install.

(2) Install purge valve (2) on bottom cover (3). Torque to 48 lb-in. (5 N·m).

(3) Install new gasket (4), exhaust tube (5), and three screws (6) on bottom cover (3). Torque to 60 lb-in. (7 N·m).

(4) Install new preformed packing (7) on bottom cover (3).

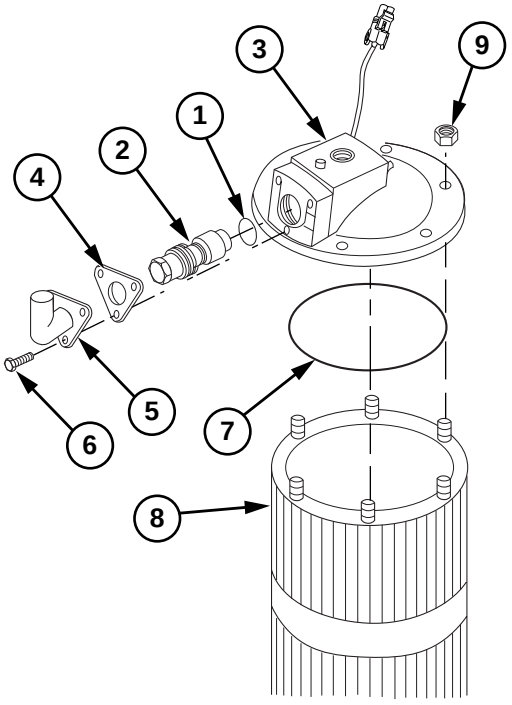
CAUTION

Nuts must be tightened evenly to prevent damage to preformed packing and air dryer.

NOTE

Align matchmarks on bottom cover and housing when installing.

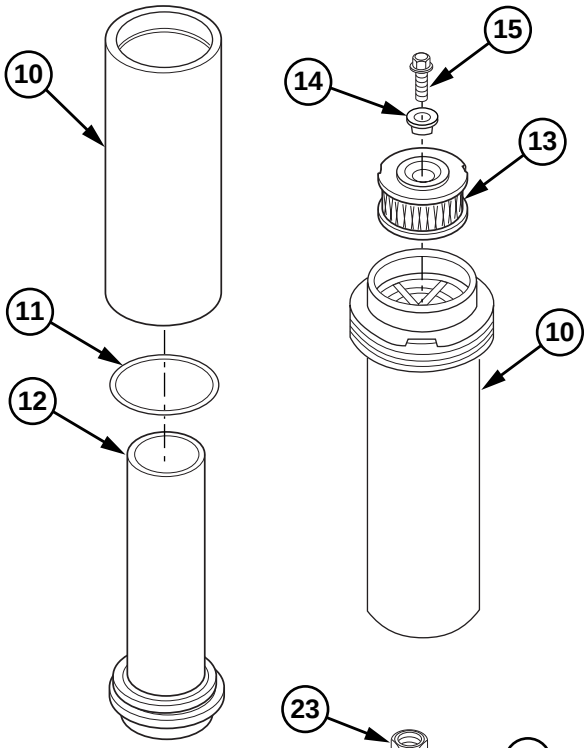
(5) Install bottom cover (3) on housing (8) with six nuts (9). Torque to 180 lb-in. (20 N·m).



11-33. LEFT AIR DRYER REPAIR (CONT)

(6) Install canister (10) and new preformed packing (11) on inner cylinder (12).

(7) Install filter element (13), retainer (14), and screw (15) on canister (10). Torque to 72 lb-in. (9 N·m).



NOTE

Ensure canister is fully seated on inner cylinder before installing.

(8) Install canister (10) in housing (8).

(9) Install desiccant cartridge (16) and retainer (17) in inner cylinder (12) of canister (10).

(10) Install three new preformed packings (18, 19, and 21) and spring (21) on top cover (22).

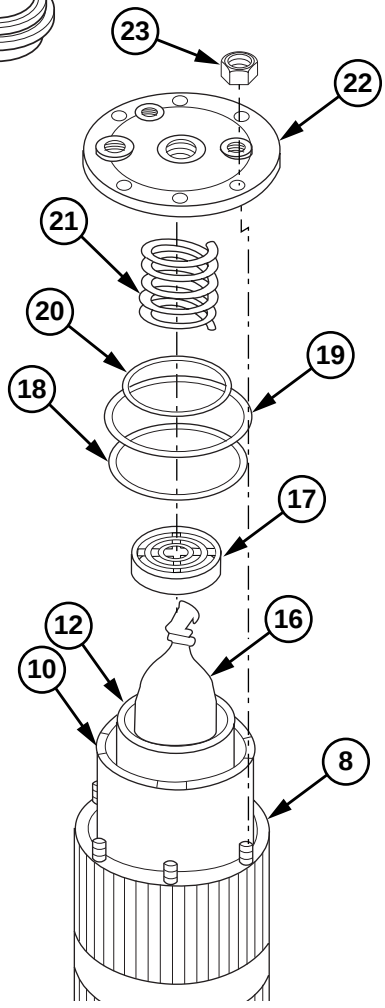
CAUTION

Nuts must be tightened evenly to prevent damage to preformed packing and air dryer.

NOTE

Align matchmarks on top cover and housing when installing.

(11) Install top cover (22) on housing (8) with six nuts (23). Torque to 180 lb-in. (20 N·m).

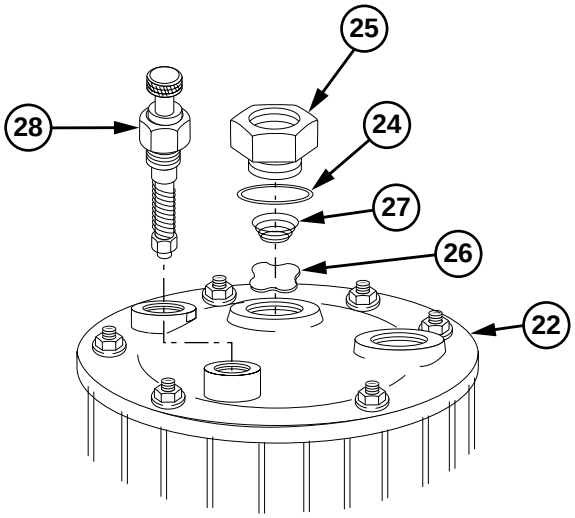


(12) Install new preformed packing (24) on check valve cap (25).

NOTE

Install disc with rubber side in. Install spring with smallest diameter toward disc.

(13) Install new disc (26), spring (27), and check valve cap (25) on top cover (22). Torque to 48 lb-in. (5 N·m).



WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(14) Coat threads of relief valve (28) with pipe thread sealing compound.

(15) Install relief valve (28) on top cover (22).

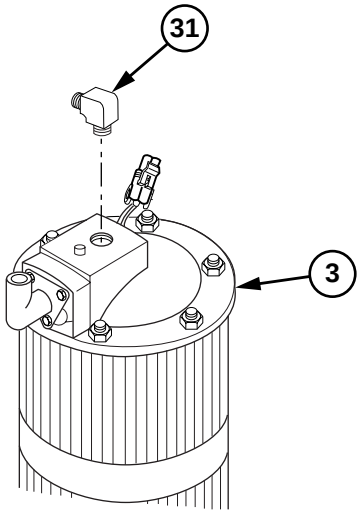
CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to no. hose connections. Damage to equipment may result.

(16) Coat threads of elbow (31) with pipe thread sealing compound.

(17) Deleted.

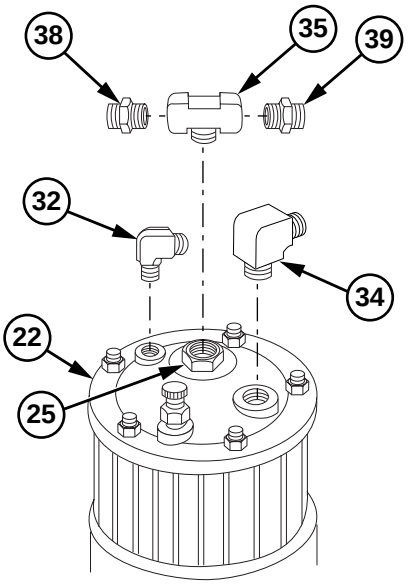
(18) Install elbow (31) on bottom cover (3).



11-33. LEFT AIR DRYER REPAIR (CONT)

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



(19) Coat threads of elbow (32), tee (35), elbow (34), and two fittings (38 and 39) with pipe thread sealing compound.

(20) Install elbow (32) on top cover (22).

(21) Deleted.

(22) Install elbow (34) on top cover (22).

(23) Deleted.

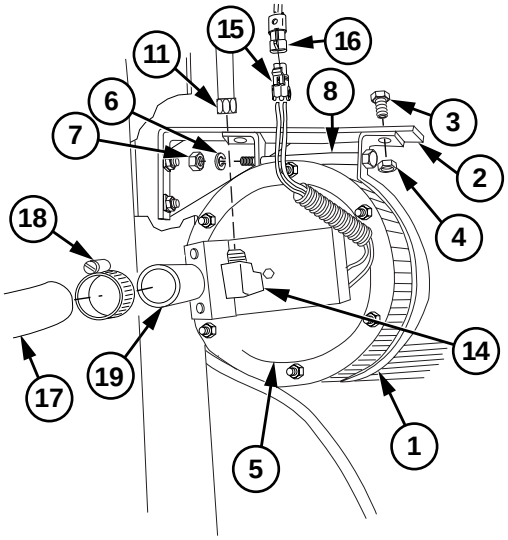
(24) Install tee (35) on check valve cap (25).

(25) Install two fittings (38 and 39) on tee (35).

d. Installation

NOTE

Steps (1) thru (8) are performed from under HET Tractor. Steps (9) thru (13) are performed from above on outside left of HET Tractor.



(1) Install two clamps (1) on two brackets (2) with two screws (3) and new locknuts (4). Do not tighten.

(2) Position air dryer (5) in two clamps (1).

(3) Install two new lockwashers (6), nuts (7), and screws (8) on clamps (1).

(4) Install two screws (9) and new locknuts (10) on clamps (1).

(5) Tighten two screws (3) and locknuts (4).

(6) Install hose no. 2080 (11) on elbow (14).

(7) Install plug (15) in socket (16).

(8) Install drain hose (17) and clamp (18) on exhaust tube (19).

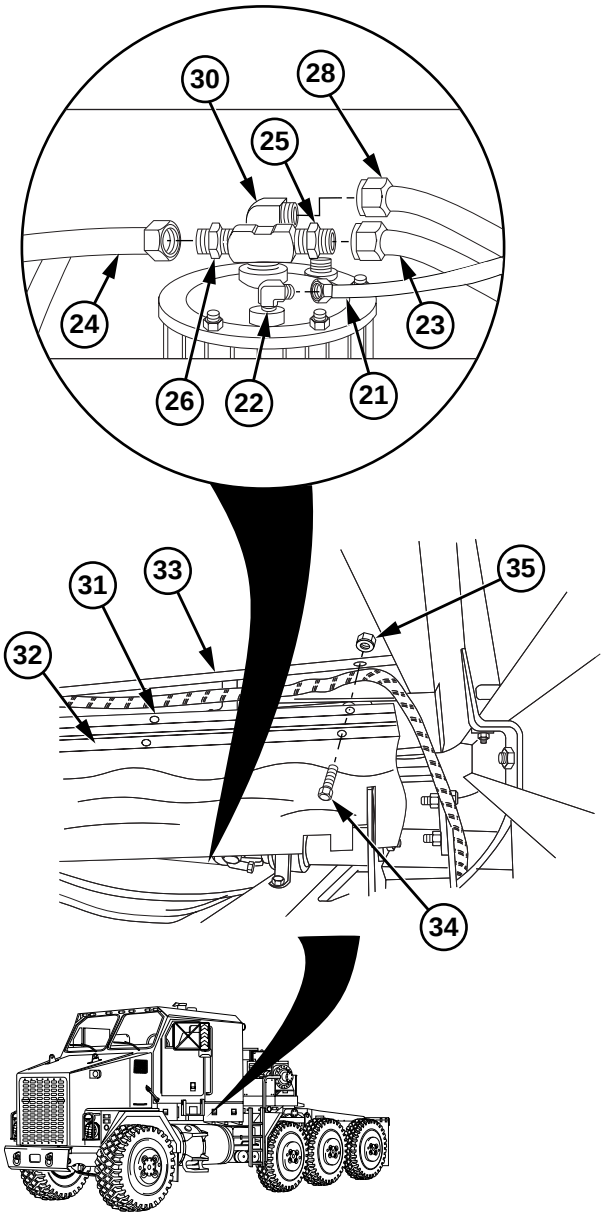
(9) Deleted.

(10) Install hose no. 2993 (21) on elbow (22).

(11) Install hose no. 2002 (23) and hose no. 2996 (24) on two fittings (25 and 26).

(12) Install hose no. 2995 (28) on elbow (30).

(13) Install sound shield flap (31) and plate (32) on bracket (33) with four screws (34) and new locknuts (35).



e. Follow-On Maintenance

(1) Install stowage box (para 16-14).

(2) Start engine (TM 9-2320-360-10).

(3) Build up air pressure to 100 psi (689 kPa).

(4) Shut off engine (TM 9-2320-360-10).

(5) Check for leaks.

11-34. RIGHT AIR DRYER REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Muffler removed (para 5-3).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Elbow with Gasket (Item 20, Appendix G)
Locknuts (4) (Item 58, Appendix G)
Locknuts (4) (Item 72, Appendix G)
Lockwashers (2) (Item 123, Appendix G)
Service Kit (Item 167, Appendix G)

a. Removal

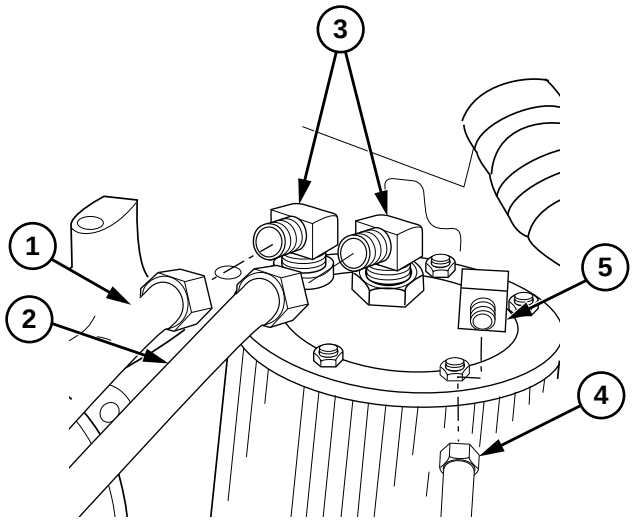
NOTE

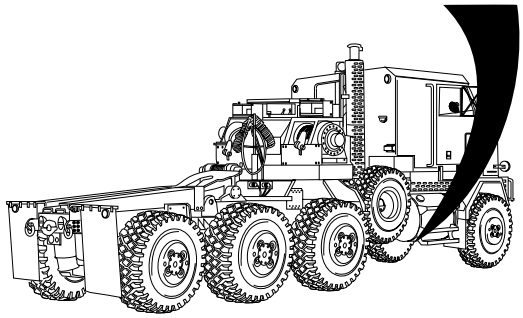
- Steps (1) thru (3) are performed from above on outside right of HET Tractor. Steps (4) thru (8) are performed from under HET Tractor.
- Tag and mark hoses and wires before removal.

(1) Remove hose no. 2076 (1) and hose no. 2996 (2) from two elbows (3).

(2) Remove hose no. 2082 (4) from elbow (5).

(3) Deleted.





(3.1) Remove quickedge moulding (7.1) from air dryer (10).

(4) Remove clamp (8) and drain hose (9) from air dryer (10).

(5) Remove plug (11) from socket (12).

NOTE

Location of plastic cable ties should be marked before removal.

(6) Remove plastic cable ties (13) that secures hose (14).

(7) Remove hose no. 2097 (14) from elbow (15).

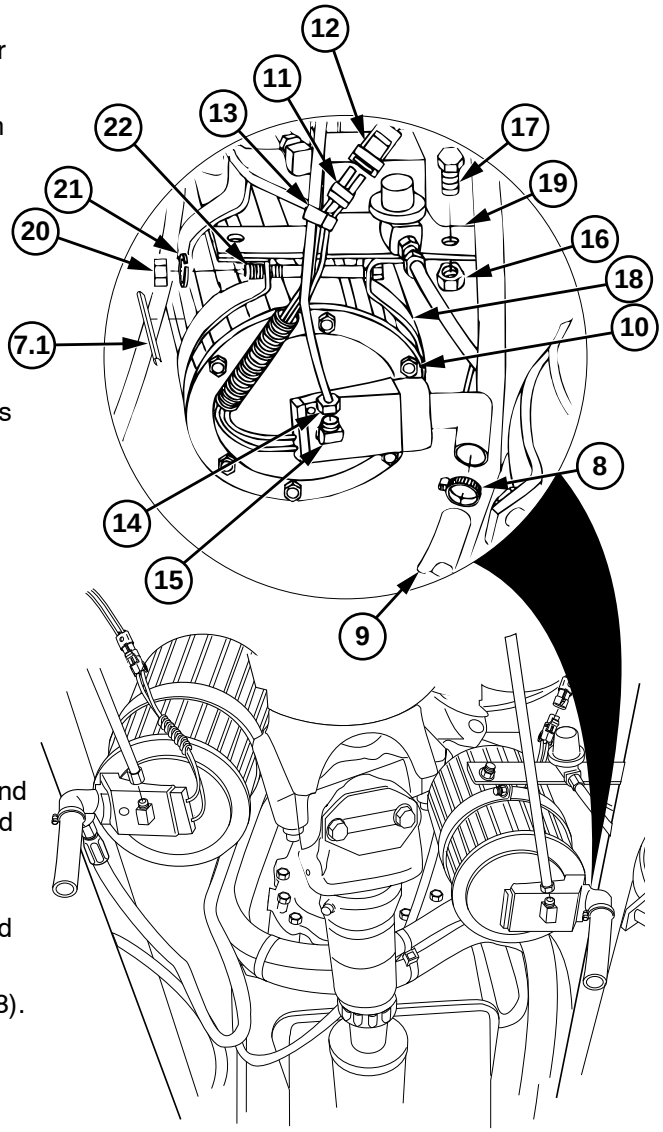
WARNING

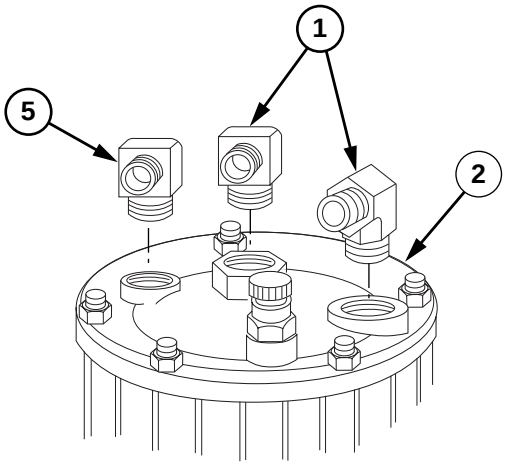
Support air dryer while removing screws to prevent it from falling. Failure to do so may cause injury to personnel.

(8) Remove four locknuts (16), screws (17), and two clamps (18) from bracket (19). Discard locknuts.

(9) Remove two nuts (20), lockwashers (21), and screws (22) from clamps (18). Discard lockwashers.

(10) Remove air dryer (10) from two clamps (18).





b. Disassembly

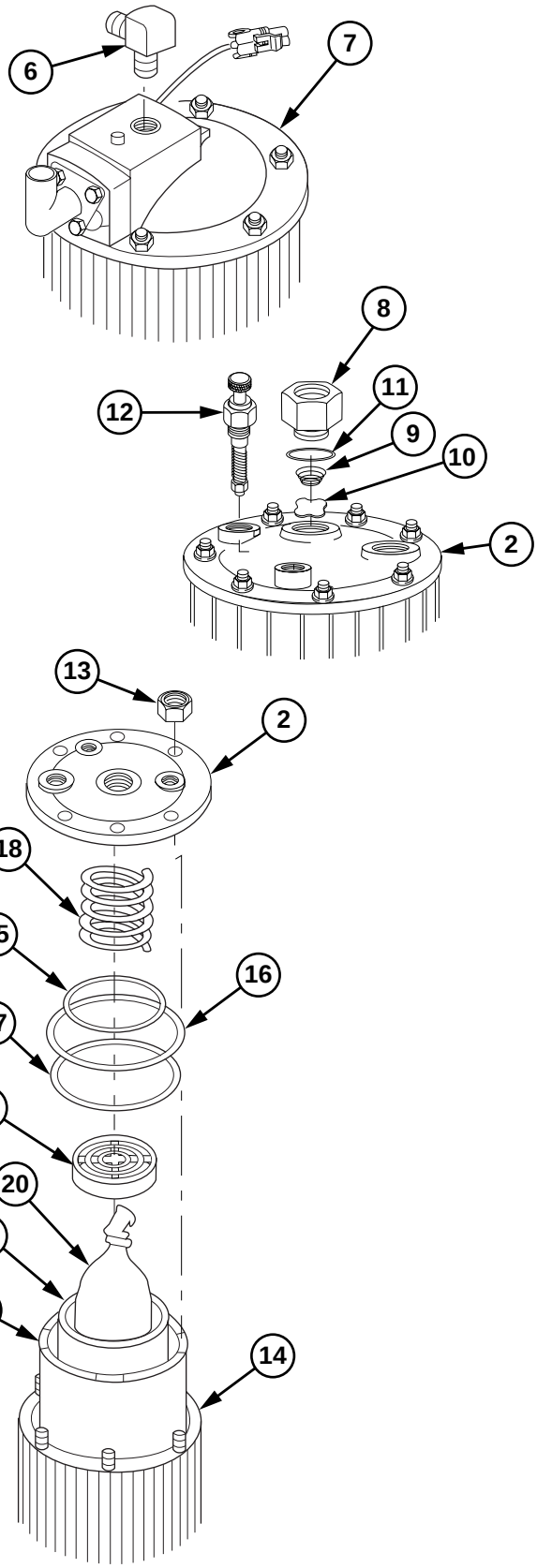
(1) Remove two elbows (1) from top cover (2).

(2) Deleted.

(3) Remove elbow (5) from top cover (2).

11-34. RIGHT AIR DRYER REPAIR (CONT)

(4) Remove elbow (6) from bottom cover (7).



(5) Remove check valve cap (8), spring (9), and disc (10) from top cover (2). Discard disc.

(6) Remove preformed packing (11) from check valve cap (8). Discard preformed packing.

(7) Remove relief valve (12) from top cover (2).

NOTE

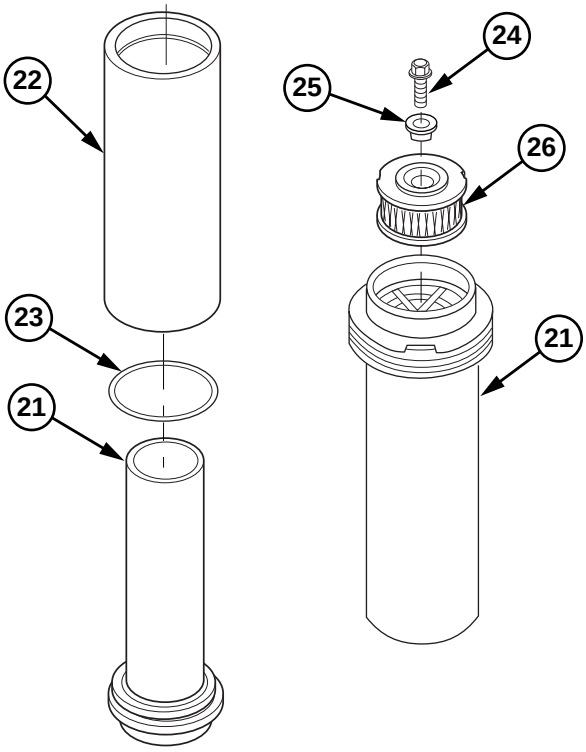
Matchmark top cover and housing before separating.

(8) Remove six nuts (13) and top cover (2) from housing (14).

(9) Remove three preformed packings (15, 16, and 17) and spring (18) from top cover (2). Discard preformed packings.

(10) Remove retainer (19) and desiccant cartridge (20) from inner cylinder (21) of canister (22).

(11) Remove canister (22) from housing (14).



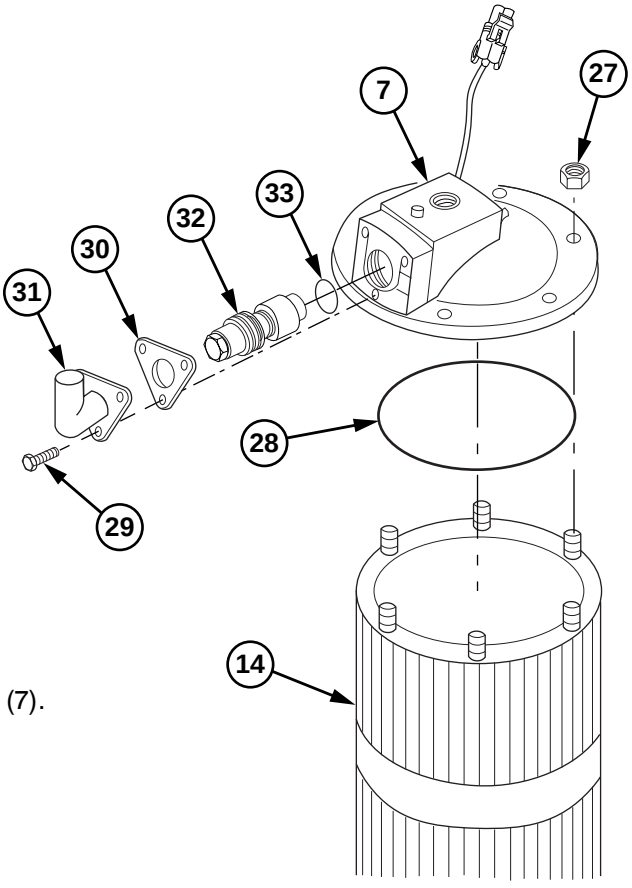
(12) Remove canister (22) from cylinder (21).

(13) Remove preformed packing (23) from cylinder (21). Discard preformed packing.

(14) Remove screw (24), retainer (25), and filter element (26) from cylinder (21).

NOTE

Matchmark lower cover and housing before separating.



(15) Remove six nuts (27) and bottom cover (7) from housing (14).

(16) Remove preformed packing (28) from bottom cover (7). Discard preformed packing.

(17) Remove three screws (29), gasket (30), and exhaust tube (31) from bottom cover (7). Discard exhaust tube and gasket.

NOTE

One-inch OD nut in purge valve may be used to turn purge valve counterclockwise to remove.

(18) Remove purge valve (32) from bottom cover (7).

(19) Remove preformed packing (33) from purge valve (32). Discard preformed packing.

11-34. RIGHT AIR DRYER REPAIR (CONT)

c. Assembly

(1) Install new preformed packing (1) on purge valve (2).

NOTE

One-inch OD nut in purge valve may be used to turn purge valve clockwise to install.

(2) Install purge valve (2) on bottom cover (3). Torque to 48 lb-in. (5 N·m).

(3) Install new gasket (4), new exhaust tube (5), and three screws (6) on bottom cover (3). Torque to 60 lb-in. (7 N·m).

(4) Install new preformed packing (7) on bottom cover (3).

CAUTION

Nuts must be tightened evenly to prevent damage to preformed packing and air dryer.

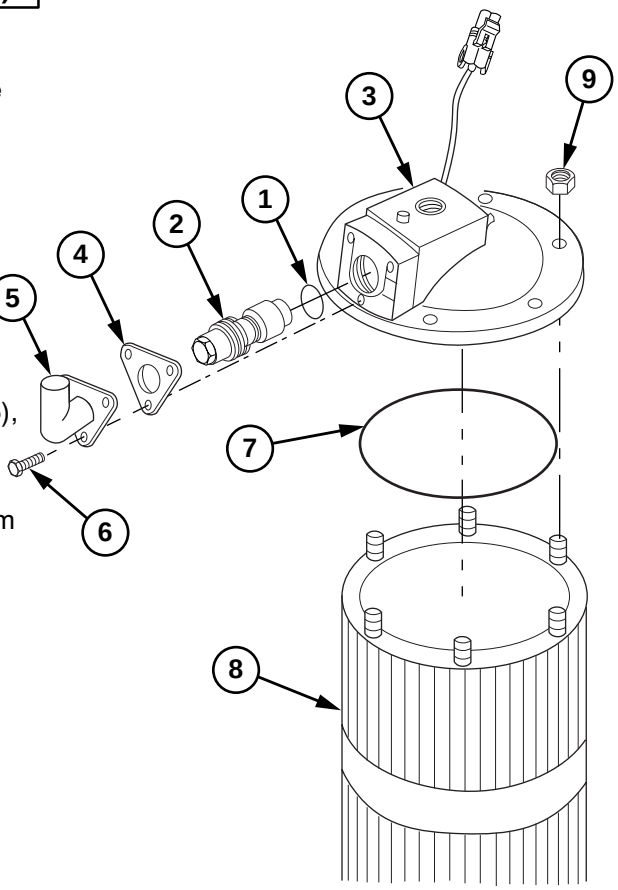
NOTE

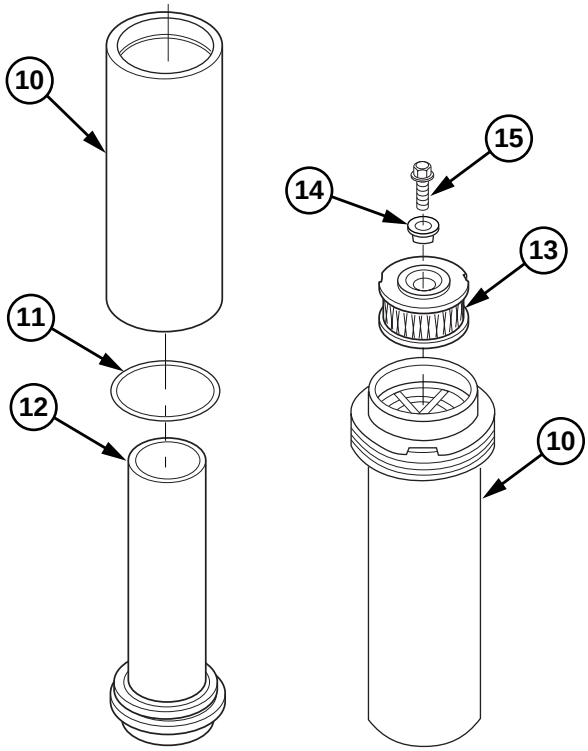
Align matchmarks on bottom cover and housing when installing.

(5) Install bottom cover (3) on housing (8) with six nuts (9). Torque to 180 lb-in (20 N·m).

(6) Install canister (10) and new preformed packing (11) on inner cylinder (12).

(7) Install filter element (13), retainer (14), and screw (15) on canister (10). Torque to 72 lb-in. (9 N·m).





NOTE

Ensure canister is fully seated on inner cylinder before installing.

(8) Install canister (10) in housing (8).

(9) Install desiccant cartridge (16) and retainer (17) in inner cylinder (12) of canister (10).

(10) Install three new preformed packings (18, 19, and 20) and spring (21) on top cover (22).

CAUTION

Nuts must be tightened evenly to prevent damage to preformed packing and air dryer.

NOTE

Align matchmarks on top cover and housing when installing.

(11) Install top cover (22) on housing (8) with six nuts (23). Tighten nuts to 180 lb-in. (20 N·m).

(12) Install new preformed packing (24) on check valve cap (25).

NOTE

Install disc with rubber side in. Install spring with smallest diameter toward disc.

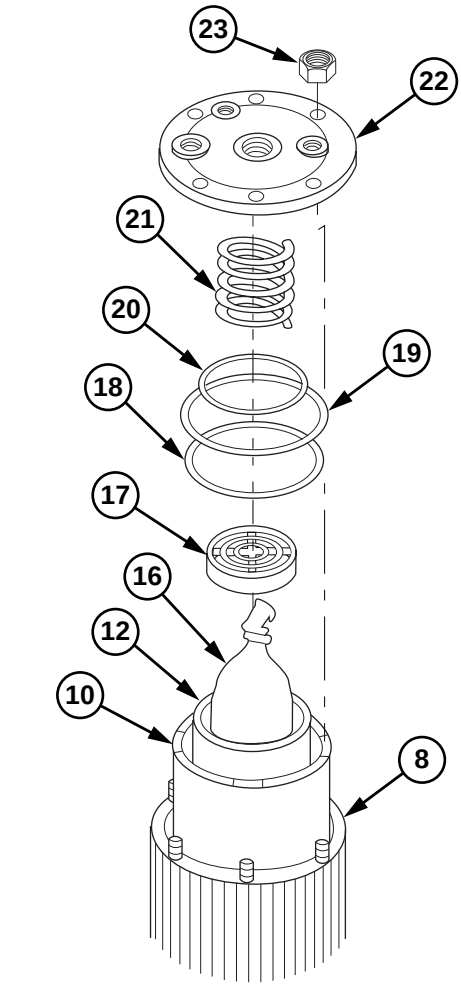
(13) Install new disc (26), spring (27), and check valve cap (25) on top cover (22). Torque to 48 lb-in. (5 N·m).

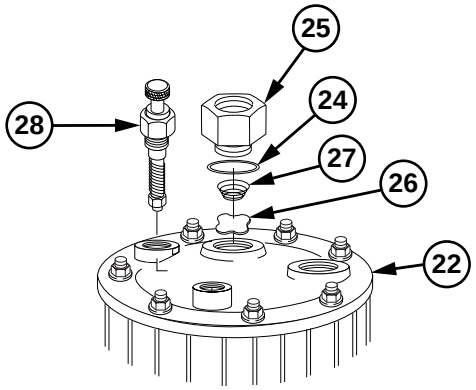
WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(14) Coat threads of relief valve (28) with pipe thread sealing compound.

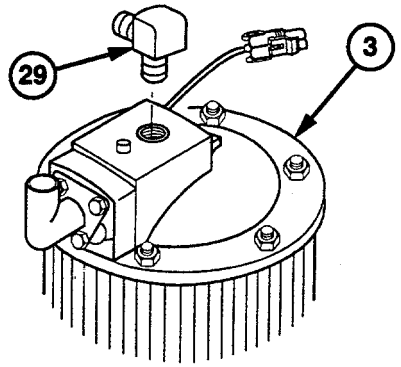
(15) Install relief valve (28) on top cover (22).





11-34. RIGHT AIR DRYER REPAIR (CONT)

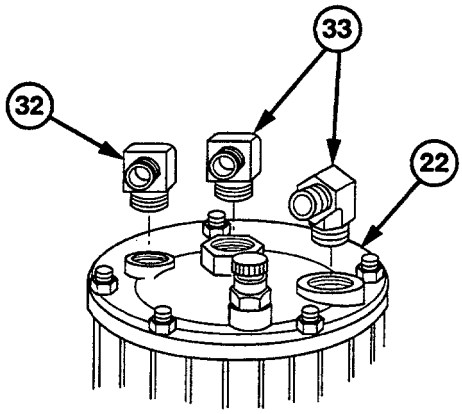
(16) Install elbow (29) on bottom cover (3).



(17) Deleted.

(18) Install elbow (32) on top cover (22).

(19) Install two elbows (33) on top cover (22).



d. Installation

NOTE

Steps (1) thru (6) are performed from under HET Tractor. Steps (8) thru (13) are performed from above on outside right of HET Tractor.

(1) Install two clamps (1) on bracket (2) with two screws (3) and new locknuts (4). Do not tighten locknuts.

(2) Position air dryer (5) in two clamps (1).

(3) Install two screws (6), new lockwashers (7), and nuts (8) on clamps (1) and air dryer (5).

(4) Install two screws (9) and new locknuts (10) on clamps (1) and bracket (2).

(5) Tighten two screws (3) and locknuts (4).

(6) Install hose no. 2097 (11) on elbow (12).

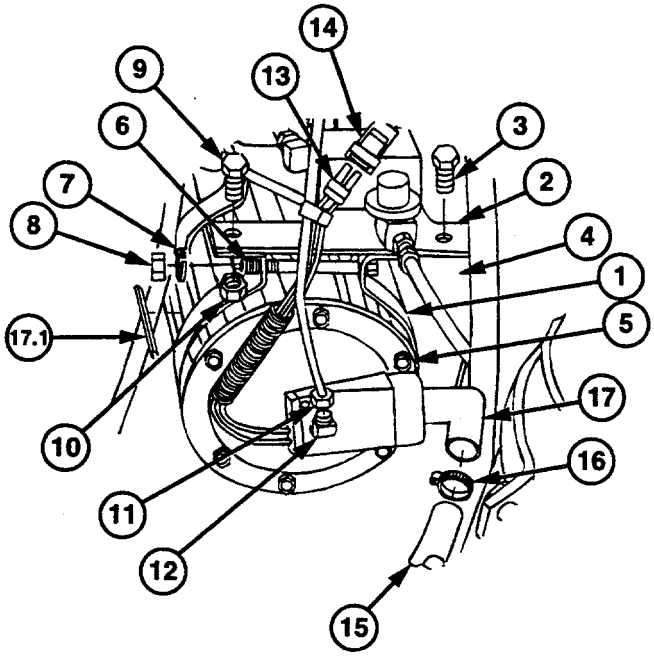
(7) Install plug (13) in socket (14).

(8) Install drain hose (15) and clamp (16) on exhaust tube (17).

CAUTION

Quickedge moulding must be positioned so air dryer fins do not contact transfer case shift cable. Failure to comply may result in damage to equipment.

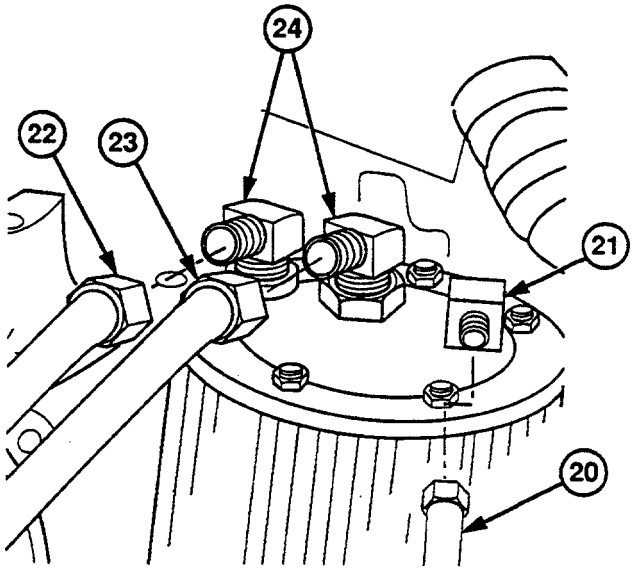
(8.1) Install quickedge moulding (17.1) on air dryer (5).



(9) Deleted.

(10) Install hose no. 2082 (20) on elbow (21).

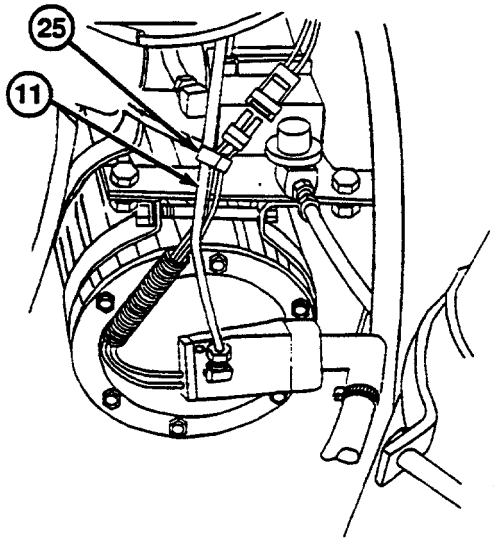
(11) Install hose no. 2076 (22) and hose no. 2996 (23) on two elbows (24).



NOTE

Plastic cable ties should be positioned in locations marked during removal.

(12) Secure hoses (11) with plastic cable ties (25).



e. Follow-On Maintenance

(1) Install muffler (para 5-3).

(2) Start engine (TM 9-2320-360-10).

(3) Build up air pressure to 120-125 psi (827-862 kPa).

(4) Shut off engine (TM 9-2320-360-10).

(5) Check for leaks.

11-34.1 AFTERCOOLER REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Caps, Vise Jaw (Item 2.1, Appendix F)
Vise, Machinists (Item 57, Appendix F)
Wrench, Combination, 1-1/2 In. (Item 63, Appendix F)
Wrench, Combination, 1-1/4 In. (Item 63.1, Appendix F)
Wrench Set, Socket, 3/8 In. Drive (Item 45, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

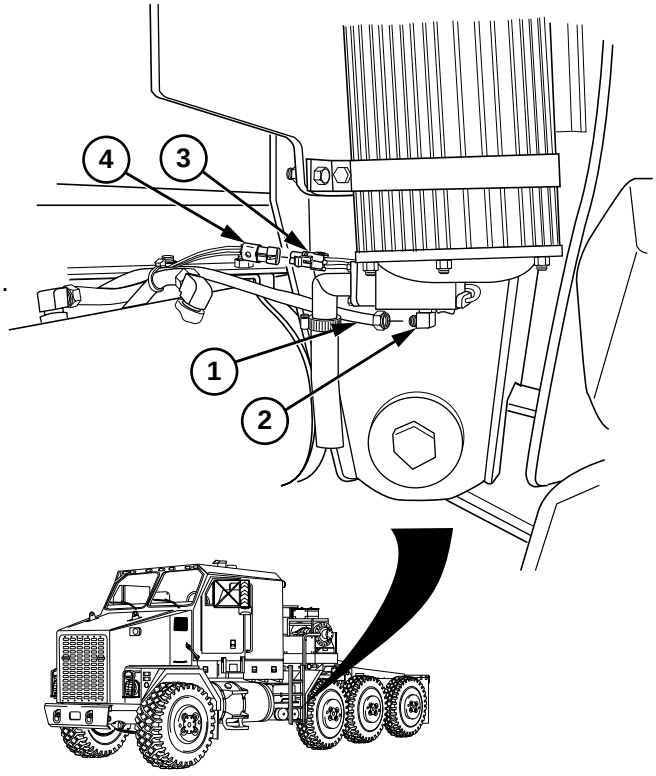
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (4) (Item 58, Appendix G)
Locknuts (3) (Item 68, Appendix G)
Kit, Parts (Item 43.3, Appendix G)

a. Removal

NOTE
Tag and mark hoses before removal.

(1) Remove hose no. 2081 (1) from elbow (2).

(2) Remove electrical connector (3) from electrical connector (4).



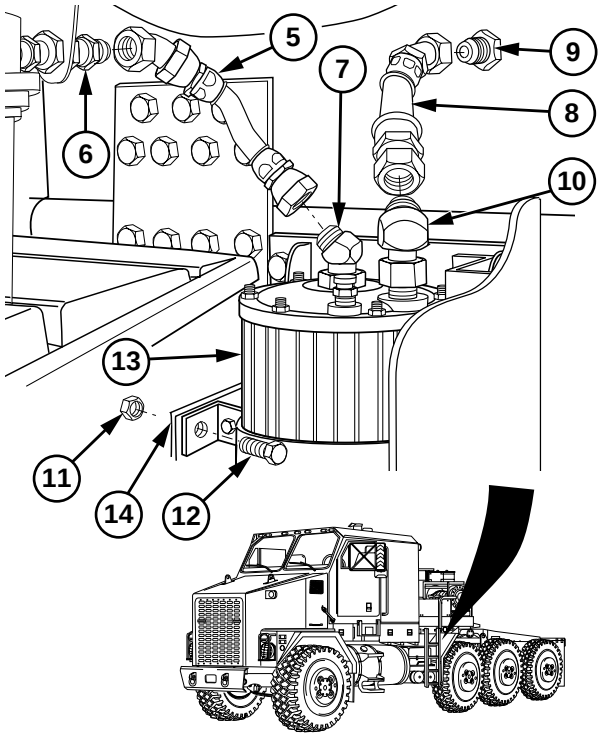
(3) Remove hose no. 2079 (5) from fitting (6).

(4) Remove hose no. 2079 (5) from elbow (7).

(5) Remove hose no. 2001 (8) from bulkhead fitting (9).

(6) Remove hose no. 2001 (8) from elbow (10).

(7) Remove four locknuts (11), screws (12), and aftercooler (13) from two brackets (14). Discard locknuts.



b. Disassembly

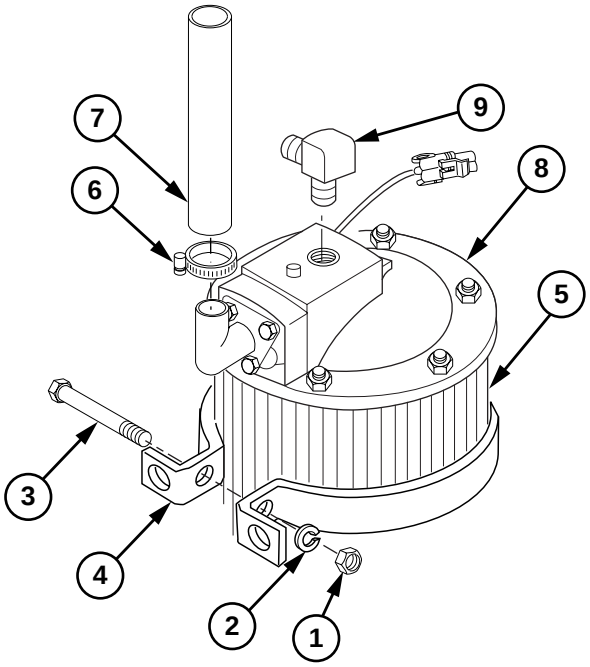
NOTE

Bracket locations should be marked on aftercooler for proper assembly.

(1) Remove two nuts (1), lockwashers (2), screws (3), and brackets (4) from aftercooler (5). Discard lockwashers.

(2) Loosen clamp (6) and remove hose (7) from bottom cover (8).

(3) Remove elbow (9) from bottom cover (8).



11-34.1. AFTERCOOLER REPAIR (CONT)

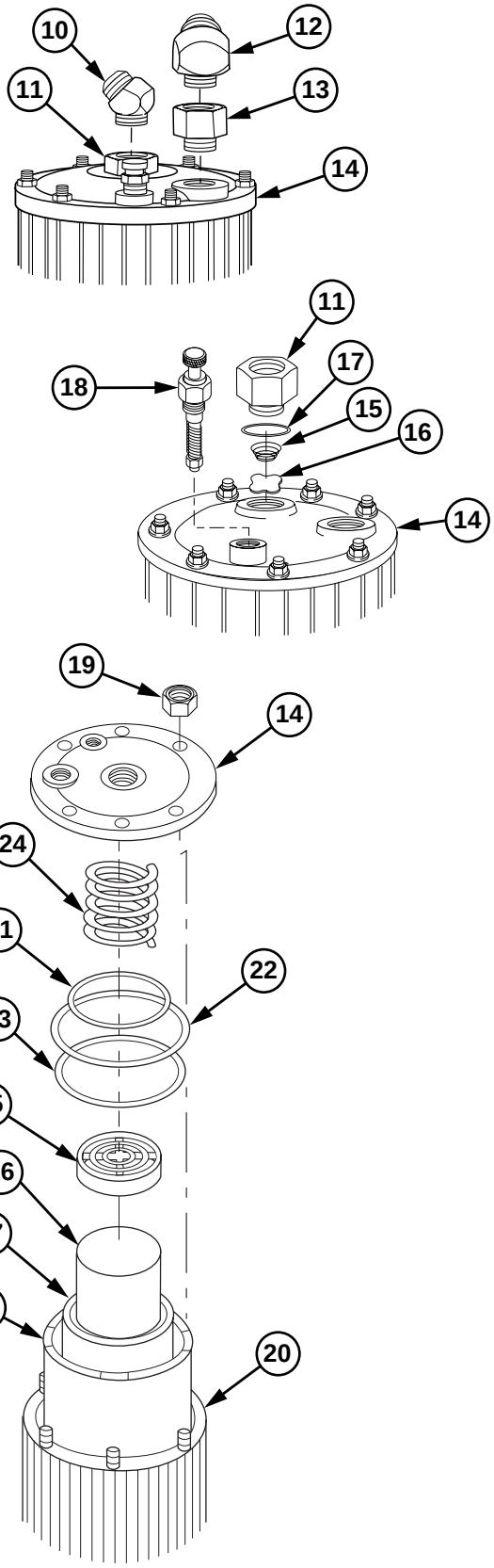
(4) Remove elbow (10) from check valve cap (11).

(5) Remove elbow (12) and fitting (13) from top cover (14).

(6) Remove check valve cap (11), spring (15), and disc (16) from top cover (14). Discard disc.

(7) Remove preformed packing (17) from check valve cap (11). Discard preformed packing.

(8) Remove relief valve (18) from top cover (14).



NOTE

Matchmark top cover and housing before separating.

(9) Remove six nuts (19) and top cover (14) from housing (20).

(10) Remove three preformed packings (21, 22, and 23) and spring (24) from top cover (14). Discard preformed packings.

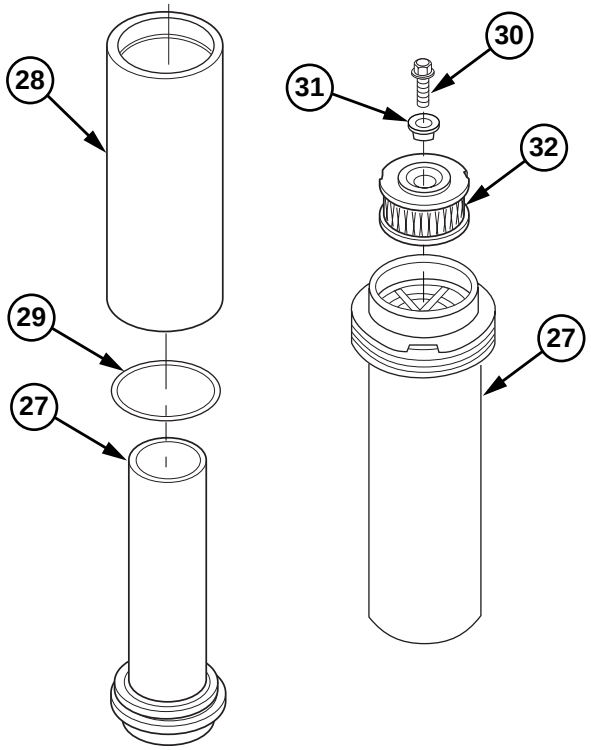
(11) Remove retainer (25) and two foil filters (26) from inner cylinder (27) of canister (28).

(12) Remove canister (28) from housing (20).

(13) Remove inner cylinder (27) from canister (28).

(14) Remove preformed packing (29) from inner cylinder (27). Discard preformed packing.

(15) Remove screw (30), retainer (31), and filter element (32) from inner cylinder (27).



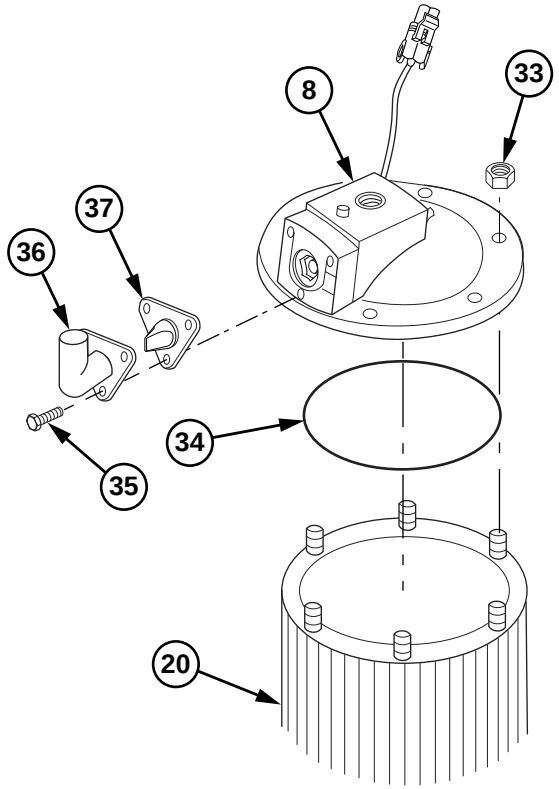
NOTE

Matchmark bottom cover and housing before separating.

(16) Remove six nuts (33) and bottom cover (8) from housing (20).

(17) Remove preformed packing (34) from bottom cover (8). Discard preformed packing.

(18) Remove three screws (35), exhaust tube (36), and gasket (37) from bottom cover (8). Discard gasket.



11-34.1. AFTERCOOLER REPAIR (CONT)

(19) Position bottom cover (8) in vise.

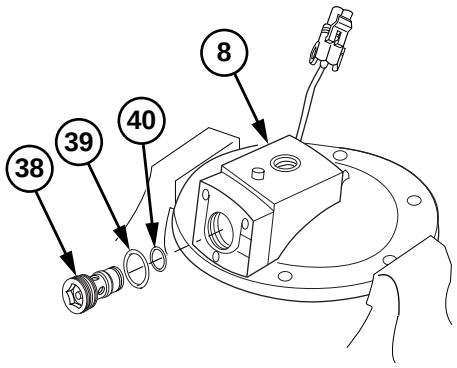
NOTE

One-inch OD nut in purge valve may be used to turn purge valve counterclockwise to remove.

(20) Remove purge valve (38) from bottom cover (8).

(21) Remove bottom cover (8) from vise.

(22) Remove preformed packing (39) and preformed packing (40) from purge valve (38). Discard preformed packing.



c. Assembly

(1) Install new preformed packing (1) and new preformed packing (2) on purge valve (3).

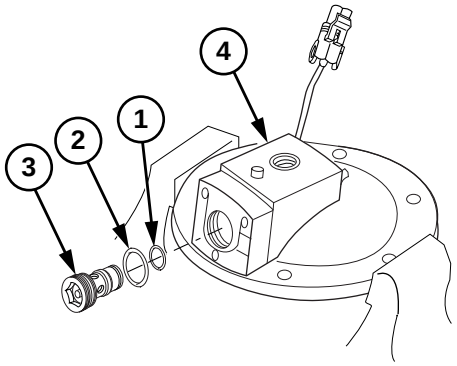
(2) Position bottom cover (4) in vise.

NOTE

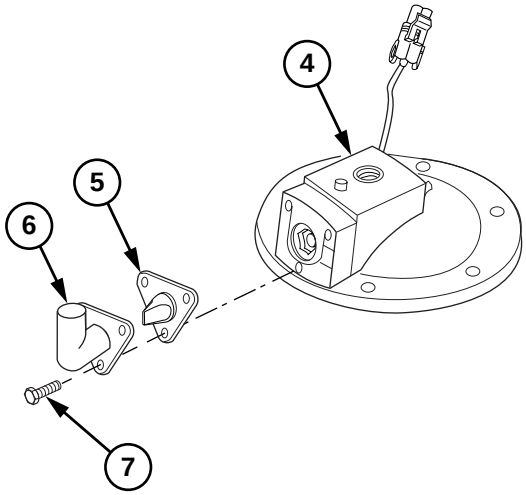
One-inch OD nut in purge valve may be used to turn purge valve clockwise to install.

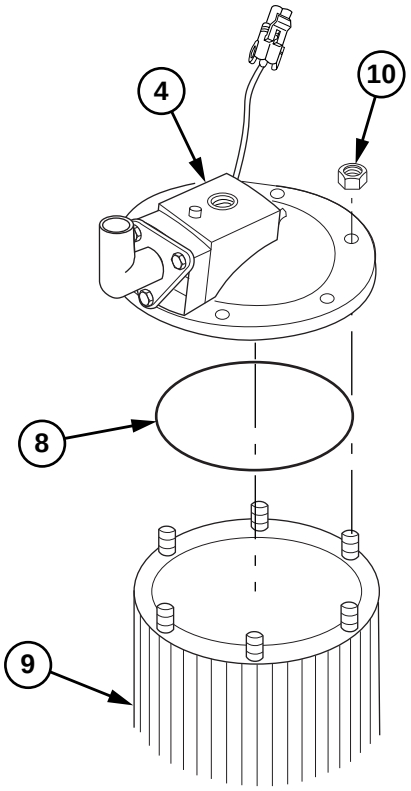
(3) Install purge valve (3) on bottom cover (4). Torque to 48 lb-in. (5 N·m).

(4) Remove bottom cover (4) from vise.



(5) Install new gasket (5) and exhaust tube (6) on bottom cover (4) with three screws (7). Torque to 60 lb-in. (7 N·m).





(6) Install new preformed packing (8) on bottom cover (4).

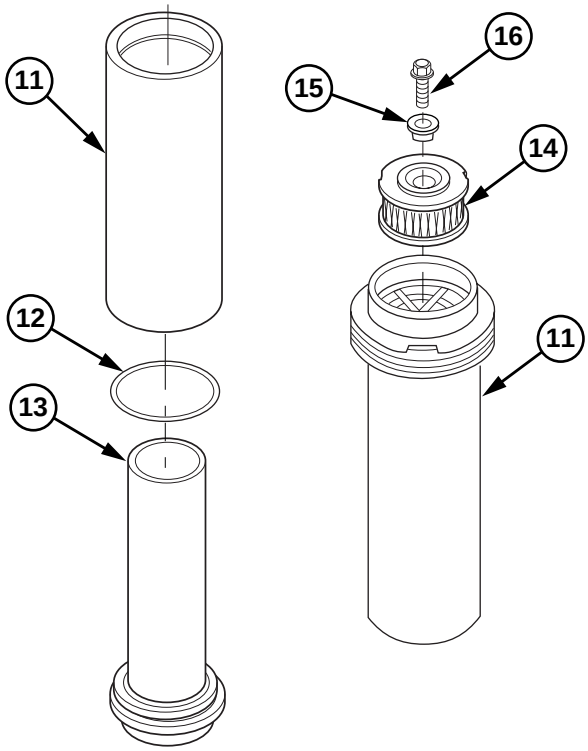
CAUTION

Nuts must be tightened evenly to prevent damage to preformed packing and aftercooler.

NOTE

Align matchmarks on bottom cover and housing.

(7) Install bottom cover (4) on housing (9) with six nuts (10). Torque to 180 lb-in. (20 N·m).



(8) Install canister (11) and new preformed packing (12) on inner cylinder (13).

(9) Install filter element (14) and retainer (15) on canister (11) with screw (16). Torque to 72 lb-in. (9 N·m).

11-34.1. AFTERCOOLER REPAIR (CONT)

NOTE

Ensure canister is fully seated on inner cylinder before installing.

(10) Install canister (11) in housing (9).

(11) Install two foil filters (17) and retainer (18) in inner cylinder (13).

(12) Install three new preformed packings (19, 20, and 21) and spring (22) on top cover (23).

CAUTION

Nuts must be tightened evenly to prevent damage to preformed packing and aftercooler.

NOTE

Align matchmarks on top cover and housing.

(13) Install top cover (23) on housing (9) with six nuts (24). Torque to 180 lb-in. (20 N·m).

(14) Install new preformed packing (25) on check valve cap (26).

NOTE

Install disc with rubber side in. Install spring with smallest diameter toward disc.

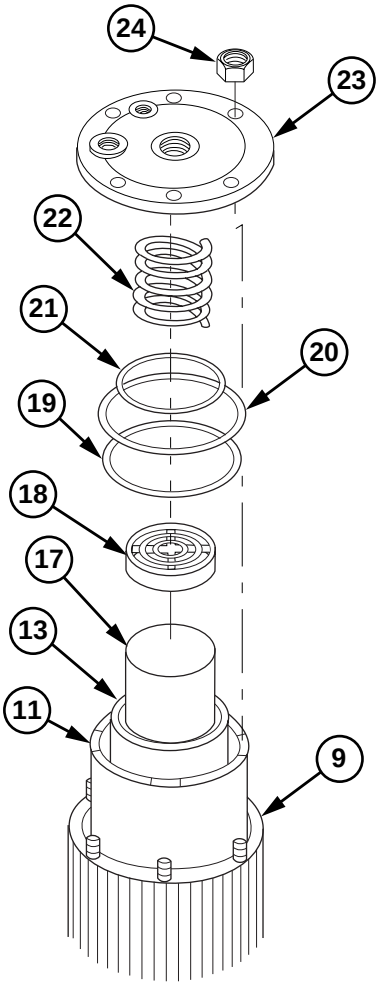
(15) Install new disc (27), spring (28), and check valve cap (26) on top cover (23). Torque to 48 lb-in. (5 N·m).

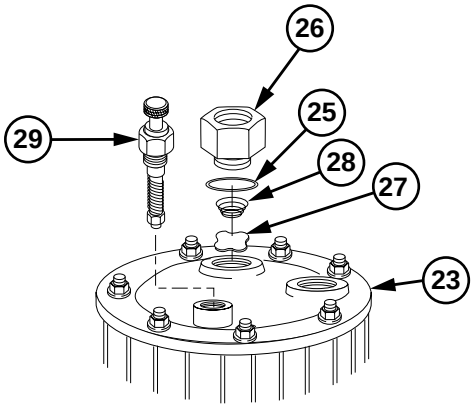
WARNING

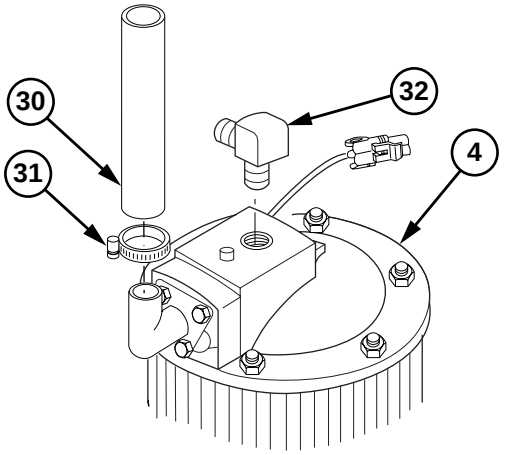
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

(16) Coat threads of relief valve (29) with pipe thread sealing compound.

(17) Install relief valve (29) on top cover (23).



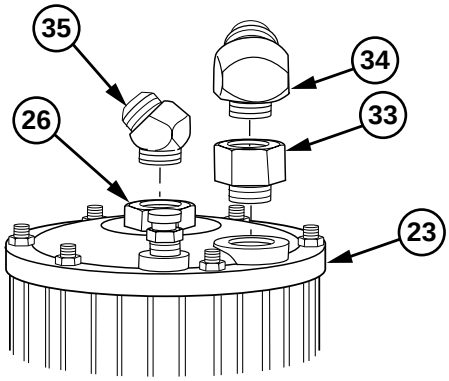




(18) Install hose (30) on bottom cover (4) with clamp (31).

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

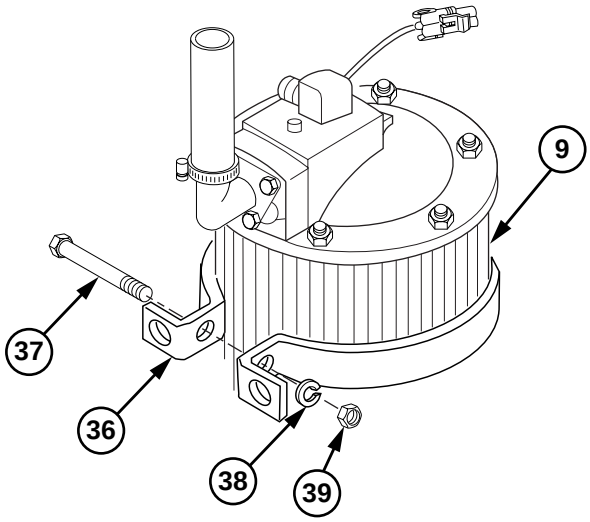


(19) Coat threads of elbow (32), fitting (33), elbow (34), and elbow (35) with pipe thread sealing compound.

(20) Install elbow (32) on bottom cover (4).

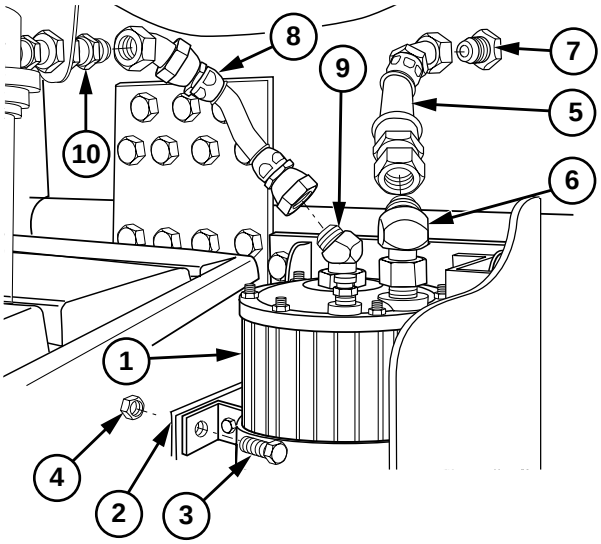
(21) Install fitting (33) and elbow (34) on top cover (23).

(22) Install elbow (35) on check valve cap (26).



(23) Install two brackets (36) on housing (9) with two screws (37), new lockwashers (38), and nuts (39).

11-34.1. AFTERCOOLER REPAIR (CONT)



d. Installation

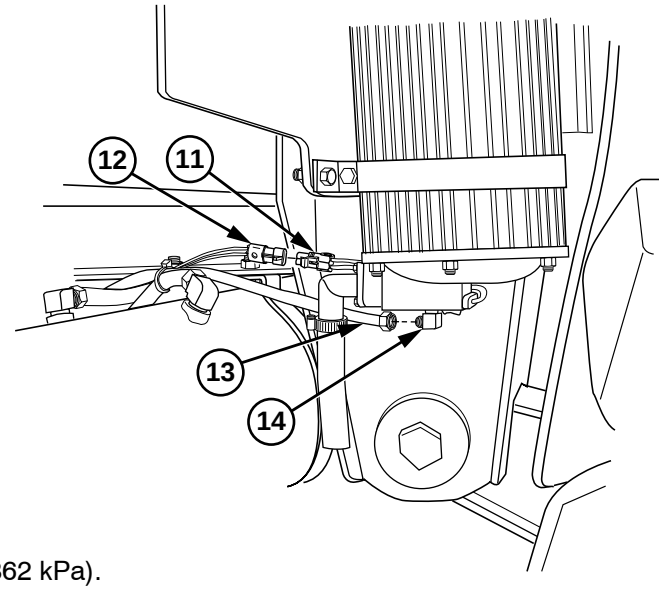
(1) Install aftercooler (1) on two brackets (2) with four screws (3) and new locknuts (4).

(2) Install hose no. 2001 (5) on elbow (6).

(3) Install hose no. 2001 (5) on bulkhead fitting (7).

(4) Install hose no. 2079 (8) on elbow (9).

(5) Install hose no. 2079 (8) on fitting (10).



(6) Connect electrical connector (11) to electrical connector (12).

(7) Install hose no. 2081 (13) on elbow (14).

e. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (824-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-34.2 COALESCING FILTER REPAIR

This task covers:
a. Disassembly
b. Assembly
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Kit, Parts (Item 43.1, Appendix G)
Locknuts (2) (Item 72, Appendix G)
Lockwashers (2) (Item 93.1, Appendix G)

a. Disassembly

WARNING

Coalescing filter may be pressurized with air. Relieve air pressure by opening drain cock before removing filter cover. Failure to comply may result in injury to personnel.

(1) Open drain cock (1) on filter cover (2).

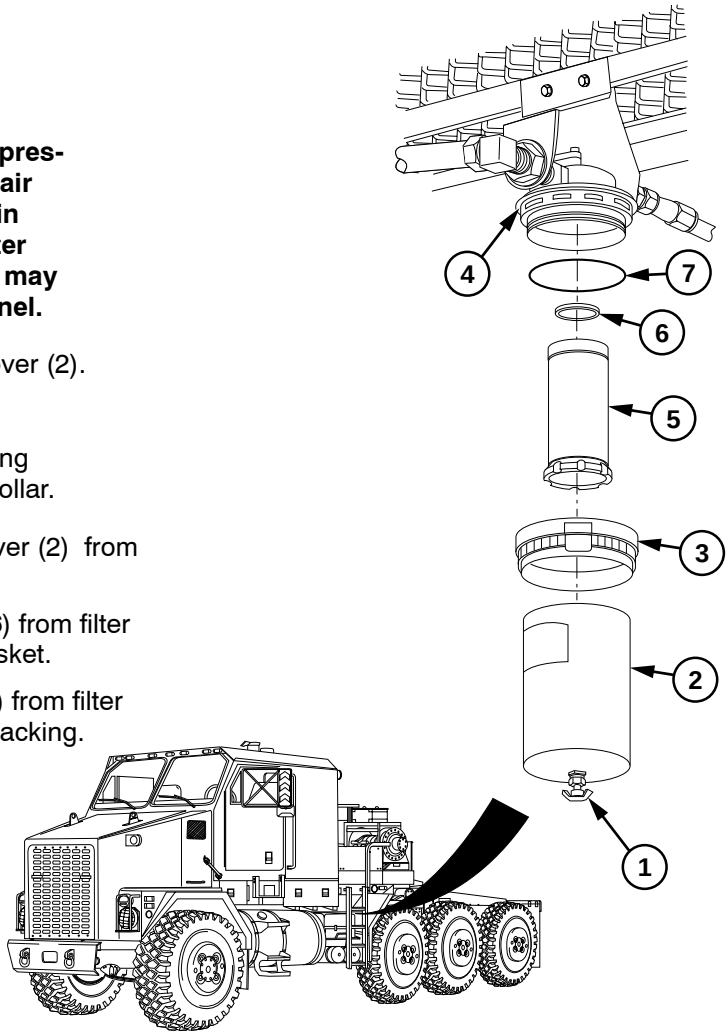
NOTE

Collar is removed by pushing down on tab and rotating collar.

(2) Remove collar (3) and filter cover (2) from filter head (4).

(3) Remove filter (5) and gasket (6) from filter head (4). Discard filter and gasket.

(4) Remove preformed packing (7) from filter head (4). Discard preformed packing.



11-34.2. COALESCING FILTER REPAIR (CONT)

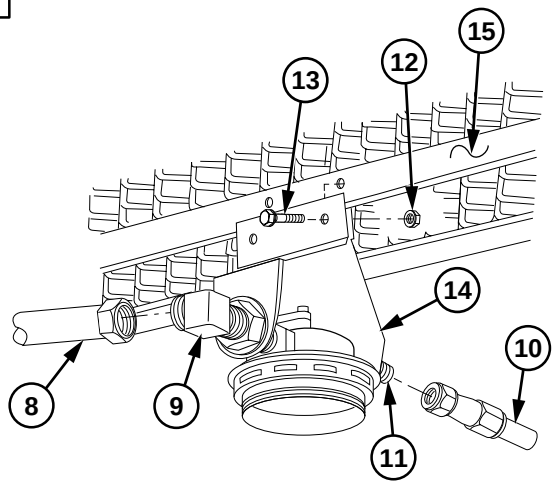
NOTE

If replacing filter head, do steps (5) thru (11)

(5) Remove hose no. 2078 (8) from elbow (9).

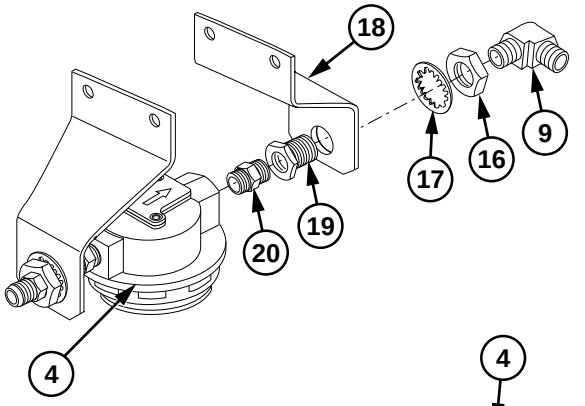
(6) Remove hose no. 2079 (10) from fitting (11).

(7) Remove two locknuts (12), screws (13), and coalescing filter assembly (14) from winch deck (15). Discard locknuts.



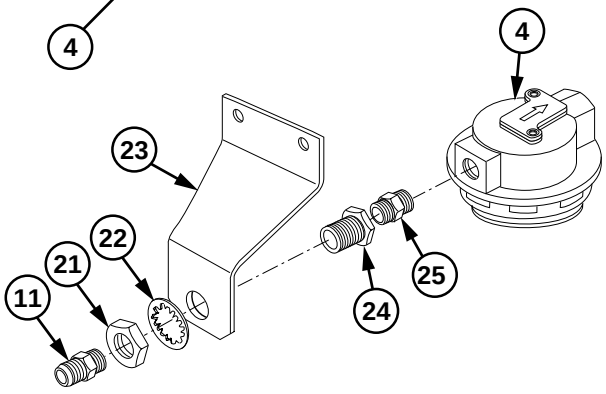
(8) Remove elbow (9), nut (16), lockwasher (17), and bracket (18) from bulkhead fitting (19). Discard lockwasher.

(9) Remove bulkhead fitting (19) and fitting (20) from filter head (4).

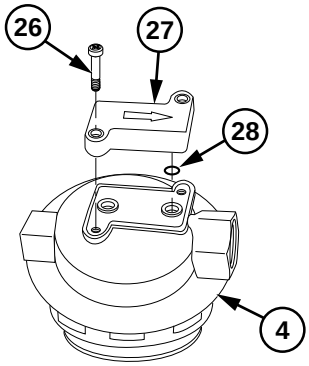


(10) Remove fitting (11), nut (21), lockwasher (22), and bracket (23) from bulkhead fitting (24). Discard lockwasher.

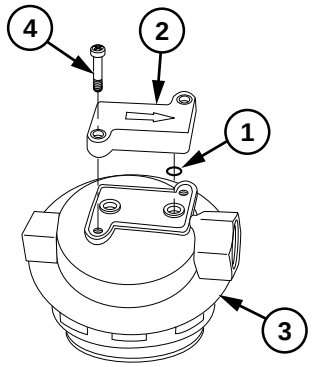
(11) Remove bulkhead fitting (24) and fitting (25) from filter head (4).



(12) Remove two screws (26), cap (27), and two preformed packings (28) from filter head (4). Discard preformed packings.



b. Assembly



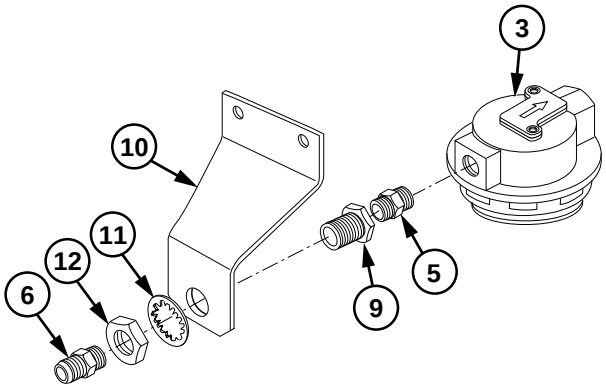
NOTE

If coalescing filter head was removed, do steps (1) thru (11).

(1) Install two new preformed packings (1) and cap (2) on filter head (3) with two screws (4).

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



CAUTION

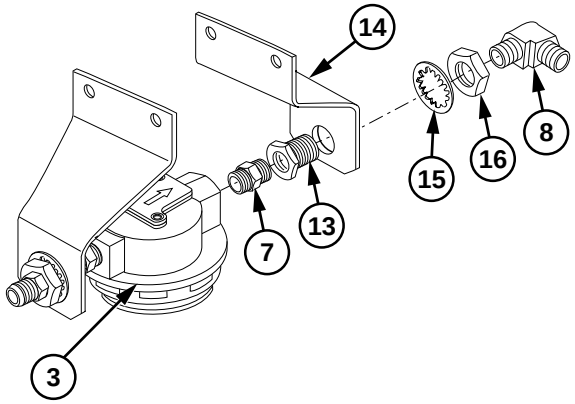
Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Failure to comply may result in component damage.

(2) Coat threads of three fittings (5, 6, and 7) and elbow (8) with pipe thread sealing compound.

(3) Install fitting (5) and bulkhead fitting (9) on filter head (3).

(4) Install bracket (10) on bulkhead fitting (9) with new lockwasher (11) and nut (12).

(5) Install fitting (6) on bulkhead fitting (9).

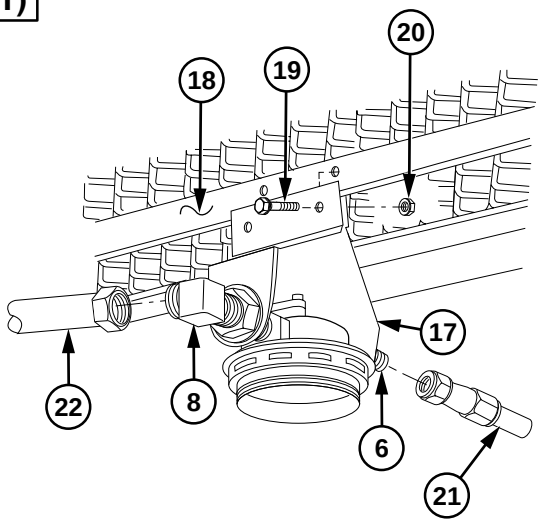


(6) Install fitting (7) and bulkhead fitting (13) on filter head (3).

(7) Install bracket (14) on bulkhead fitting (13) with new lockwasher (15) and nut (16).

(8) Install elbow (8) on bulkhead fitting (13).

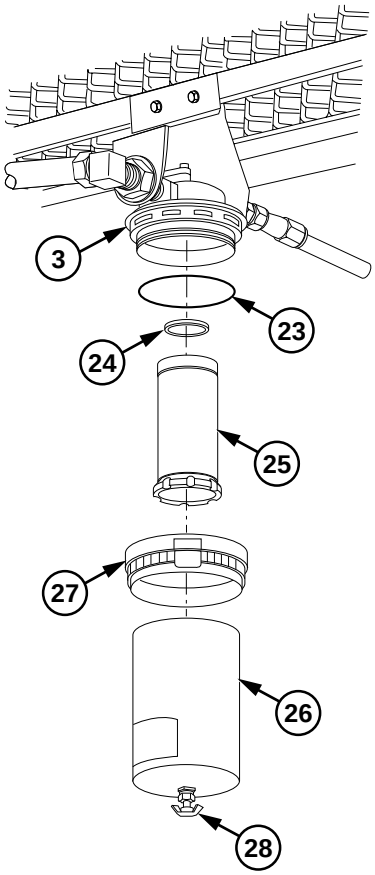
11-34.2. COALESCING FILTER REPAIR (CONT)



(9) Install coalescing filter assembly (17) on winch deck (18) with two screws (19) and new locknuts (20).

(10) Install hose no. 2079 (21) on fitting (6).

(11) Install hose no. 2078 (22) on elbow (8).



(12) Install new preformed packing (23) on filter head (3).

CAUTION

Hand tighten filter only. Failure to comply may result in component damage.

(13) Install new gasket (24) and filter (25) on filter head (3).

NOTE

Collar is Installed by pushing down on tab and rotating collar.

(14) Install filter cover (26) and collar (27) on filter head (3).

(15) Close drain cock (28) on filter cover (26).

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (824-862 kPa)

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

11-34.3. AFTERCOOLER SERVICE

This task covers:
a. Removal
b. Service
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

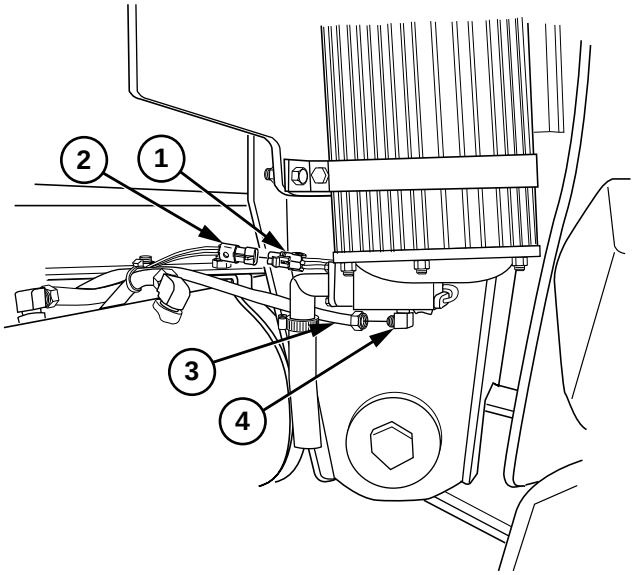
Materials/Parts
Tags, Identification (Item 32, Appendix C)
Kit, Parts (Item 43.2, Appendix G)

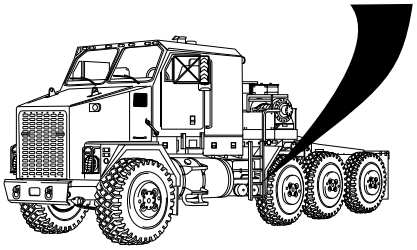
a. Removal

(1) Remove plug (1) from socket (2).

NOTE
Tag and mark wires and hoses before removal.

(2) Remove hose no. 2081 (3) from elbow (4).





11-34.3. AFTERCOOLER SERVICE (CONT)

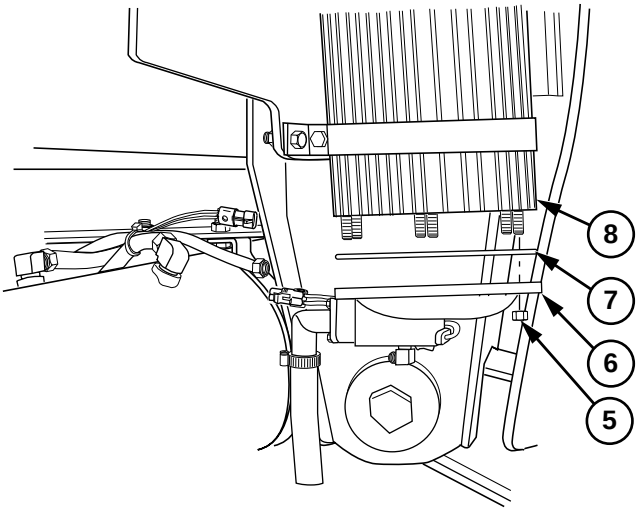
WARNING

Foil filters may drop when lower cover is removed and cause injury. Be very careful when removing cover.

NOTE

Matchmark lower cover and housing.

(3) Remove six nuts (5), lower cover (6), and preformed packing (7) from housing (8). Discard preformed packing.

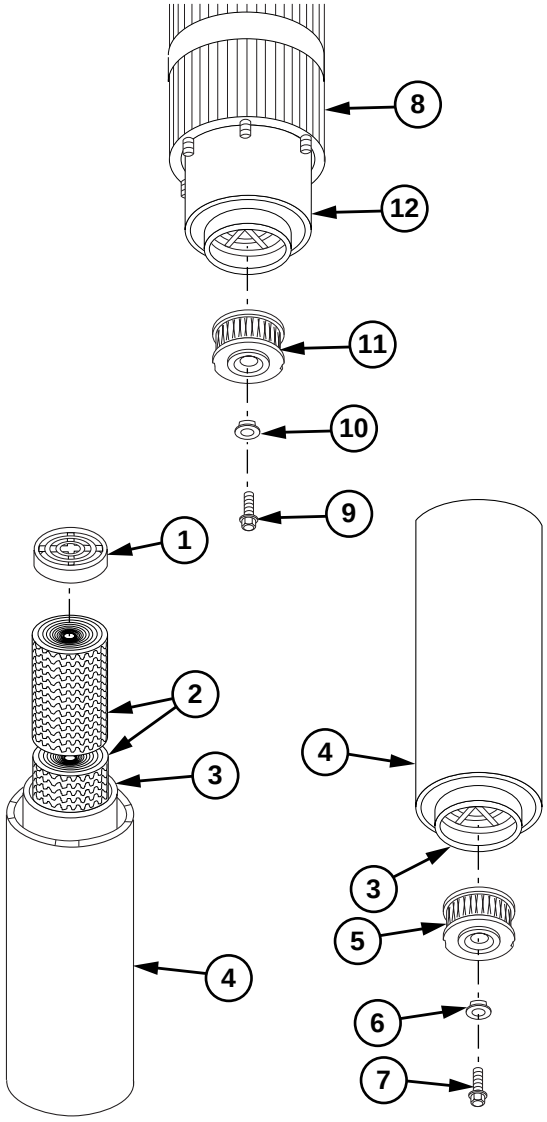


(4) Remove screw (9), retainer (10), and filter element (11) from canister (12). Discard filter element.

WARNING

Follower spring may drop when canister is removed and cause injury. Be very careful when working under aftercooler.

(5) Remove canister (12) from housing (8).



b. Service

(1) Remove retainer (1) and two foil filters (2) from inner cylinder (3) of canister (4). Clean foil filters.

(2) Clean inside of housing, lower cover, inner cylinder, and canister. Inspect for cracks.

(3) Install new filter element (5), retainer (6), and screw (7) on inner cylinder (3). Torque to 72 lb-in. (9 N·m).

(4) Install two new foil filters (2) in inner cylinder (3) of canister (4).

(5) Install retainer (1) in inner cylinder (3) of canister (4).

c. Installation

(1) Install new preformed packing (1) on lower cover (2).

WARNING

Support canister in housing until lower cover is installed.

NOTE

Do step (2) only if follower spring was removed with canister.

(2) Install follower spring (3) in canister (4).

(3) Install canister (4) and follower spring (3) in housing (5).

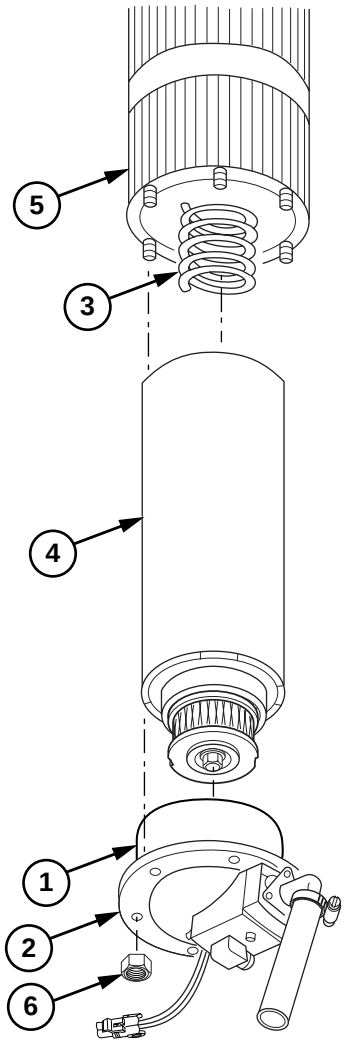
CAUTION

Nuts must be tightened evenly to prevent damage to preformed packing and aftercooler.

NOTE

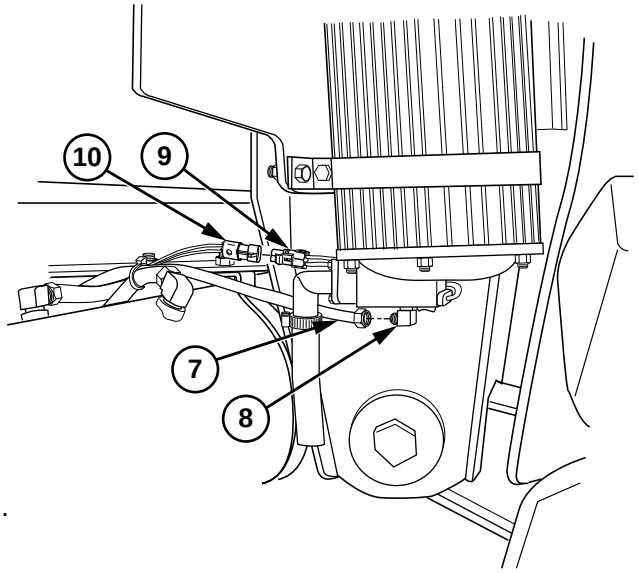
Align matchmarks on lower cover and housing.

(4) Install lower cover (2) on housing (5) with six nuts (6). Torque to 180 lb-in. (20 N·m).



(5) Install hose no. 2081 (7) on elbow (10).

(6) Install plug (9) in socket (10).



d. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 100 psi (689 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

11-35. TRAILER HAND CONTROL VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

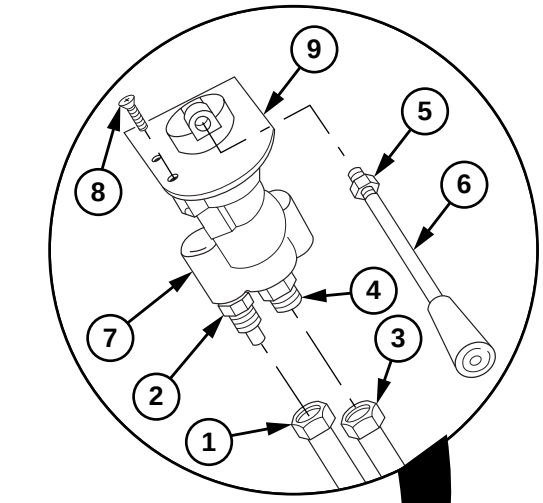
NOTE
Tag and mark hoses before removal.

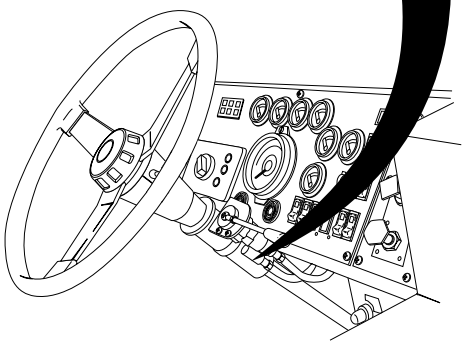
(1) Remove hose no. 2663 (1) from fitting (2).

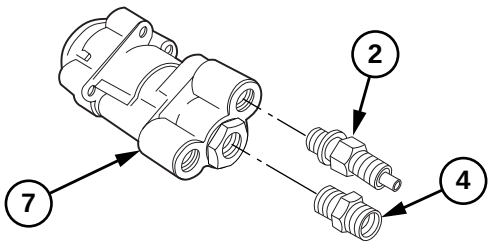
(2) Remove hose no. 2027 (3) from fitting (4).

(3) Loosen jamnut (5) and remove lever (6) from valve (7).

(4) Remove three screws (8) and valve (7) from bracket (9).





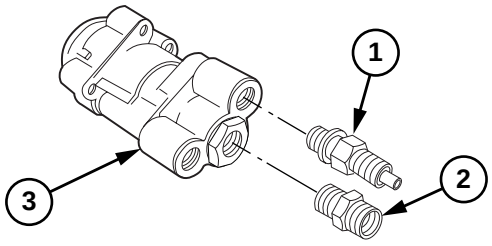


(5) Remove two fittings (2 and 4) from valve (7).

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

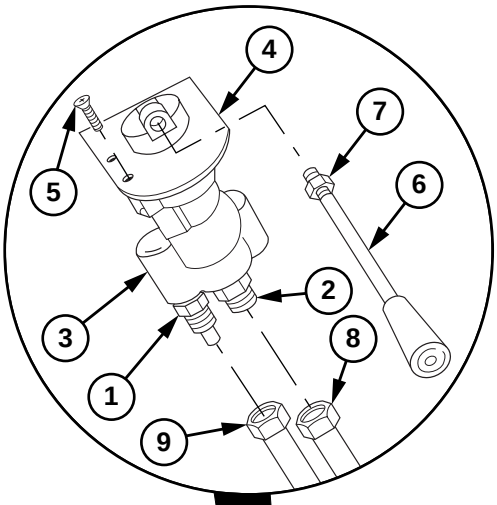


CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to no. hose connections. Damage to equipment may result.

(1) Coat threads of two fittings (1 and 2) with pipe thread sealing compound.

(2) Install two fittings (1 and 2) on valve (3).

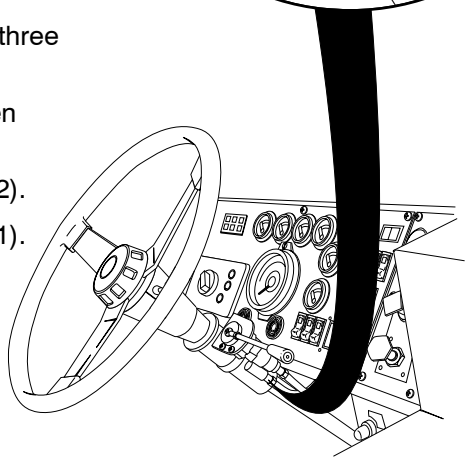


(3) Install valve (3) on bracket (4) with three screws (5).

(4) Install lever (6) on valve (3). Tighten jamnut (7).

(5) Install hose no. 2027 (8) on fitting (2).

(6) Install hose no. 2663 (9) on fitting (1).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Check operation of trailer hand control valve (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

(5) Check for leaks.

(6) Remove wheel chocks.

Paragraph 11-36 deleted

All data on pages 11-144 thru 11-146 deleted.

11-37. AIR VALVE ASSEMBLY REPAIR

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Console support bracket removed (para 11-39).

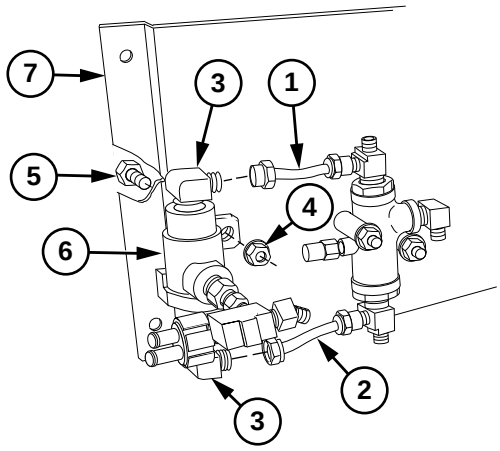
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
STE/ICE-R (Item 47, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Locknuts (10) (Item 72, Appendix G)
Locknuts (2) (Item 68, Appendix G)
Lockwashers (2) (Item 98, Appendix G)

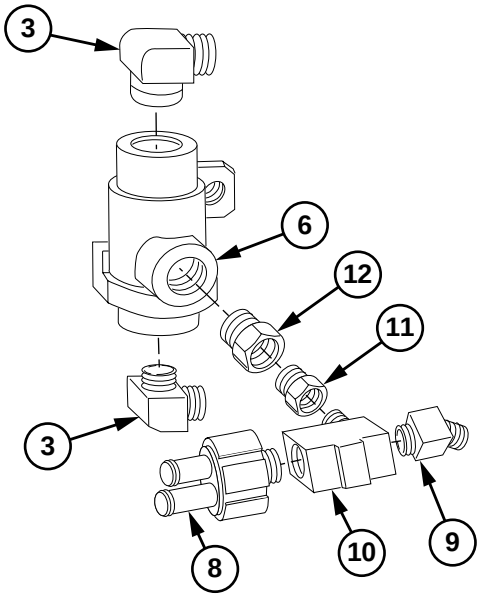
a. Driveline Lockup Double Check Valve Removal

(1) Remove air line no. 2769 (1) and air line no. 2762 (2) from two elbows (3).

(2) Remove locknut (4), screw (5), and driveline lockup double check valve (6) from support bracket (7). Discard locknut.



(3) Remove driveline lockup indicator switch (8), elbow (9), tee (10), reducer (11), reducer (12), and two elbows (3) from driveline lockup double check valve (6).



11-37. AIR VALVE ASSEMBLY REPAIR (CONT)

b. Driveline Lockup Double Check Valve Installation

WARNING

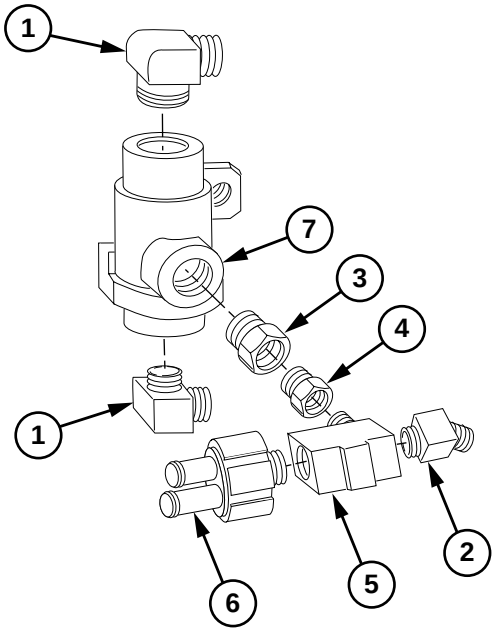
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply pipe thread sealing compound to hose connections. Damage to equipment may result.

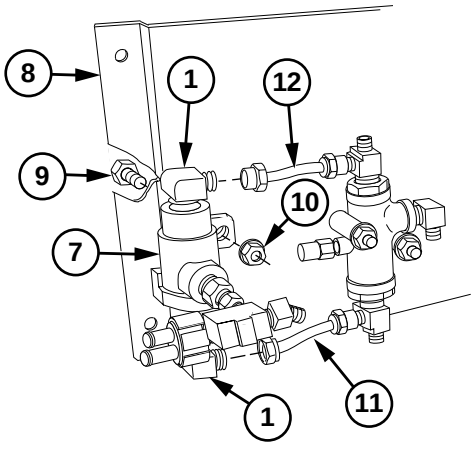
(1) Coat threads of two elbows (1), elbow (2), reducer (3), reducer (4), tee (5), and driveline lockup indicator switch (6) with pipe thread sealing compound.

(2) Install two elbows (1), reducer (3), reducer (4), tee (5), elbow (2), and driveline lockup indicator switch (6) on driveline lockup double check valve (7).



(3) Install driveline lockup double check valve (7) on support bracket (8) with screw (9) and new locknut (10).

(4) Install air line no. 2762 (11) and air line no. 2769 (12) on two elbows (1).

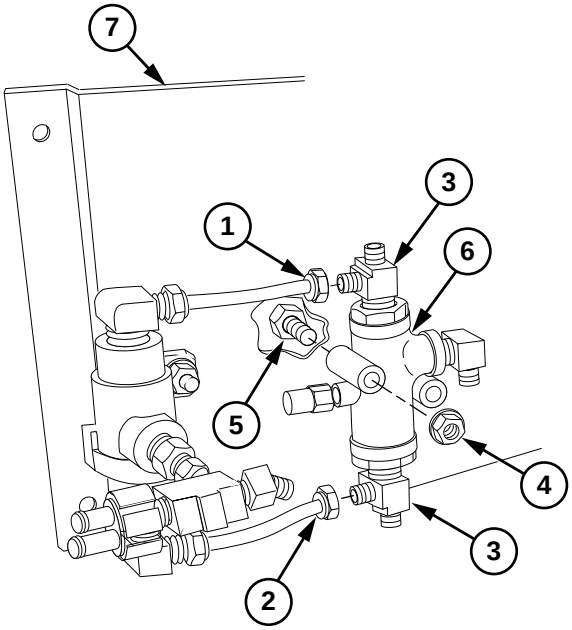


c. Interaxle Lockup Pilot Valve Removal

(1) Remove air line no. 2769 (1) and air line no. 2762 (2) from two tees (3).

(2) Remove two locknuts (4), screws (5), and interaxle lockup pilot valve (6) from support bracket (7). Discard locknuts.

(3) Remove two tees (3), elbow (8), and breather (9) from interaxle lockup pilot valve (6).



d. Interaxle Lockup Pilot Valve Installation

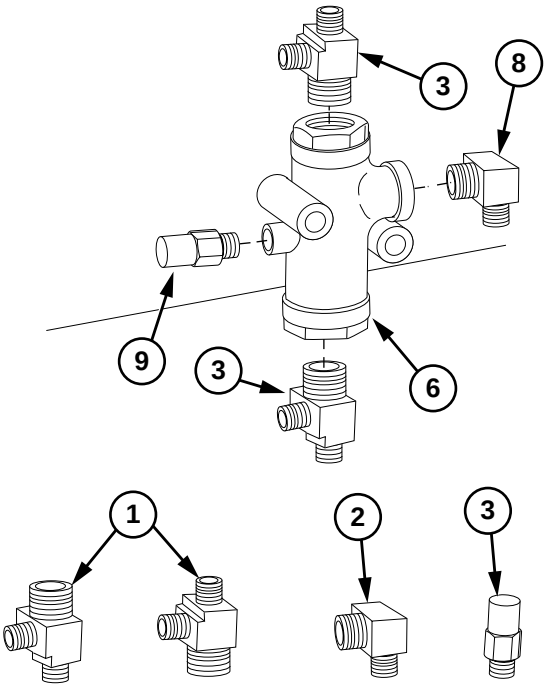
WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

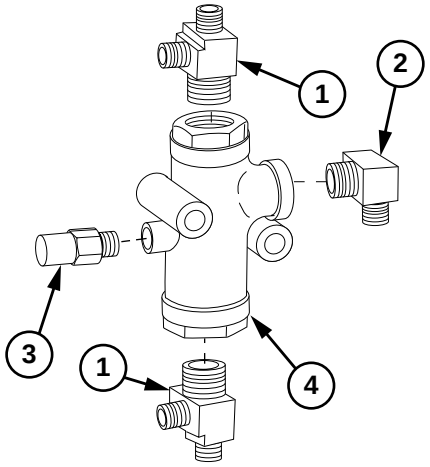
Use pipe thread sealing compound sparingly only on pipe threads. Do not apply pipe thread sealing compound to hose connections. Damage to equipment may result.

(1) Coat threads of two tees (1), elbow (2), and breather (3) with pipe thread sealing compound.



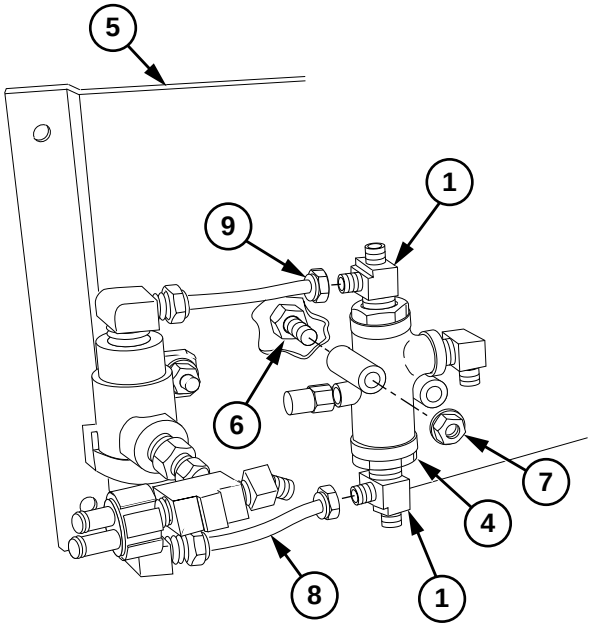
11-37. AIR VALVE ASSEMBLY REPAIR (CONT)

(2) Install two tees (1), elbow (2), and breather (3) on interaxle lockup pilot valve (4).



(3) Install interaxle lockup pilot valve (4) on support bracket (5) with two screws (6) and new locknuts (7).

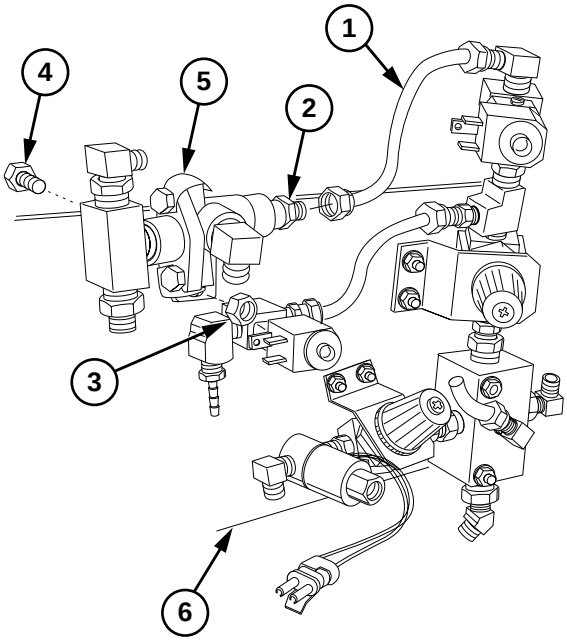
(4) Install air line no. 2762 (8) and air line no. 2769 (9) on two tees (1).



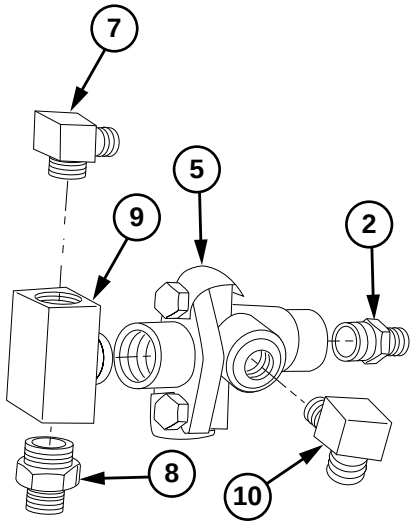
e. Air Horn Double Check Valve Removal

(1) Remove air line no. 2040 (1) from fitting (2).

(2) Remove locknut (3), screw (4), and air horn double check valve (5) from support bracket (6). Discard locknut.



(3) Remove elbow (7), fitting (8), tee (9), elbow (10), and fitting (2) from air horn double check valve (5).



f. Air Horn Double Check Valve Installation

WARNING

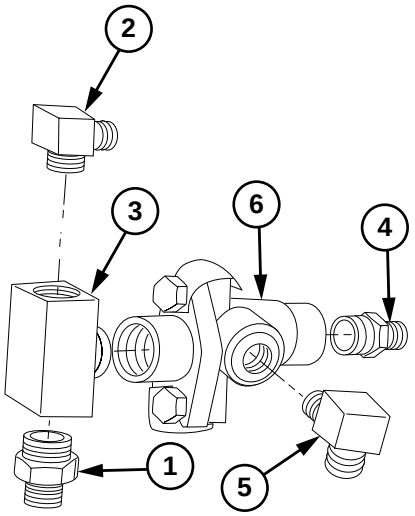
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply pipe thread sealing compound to hose connections. Damage to equipment may result.

(1) Coat threads of fitting (1), elbow (2), tee (3), fitting (4), and elbow (5) with pipe thread sealing compound.

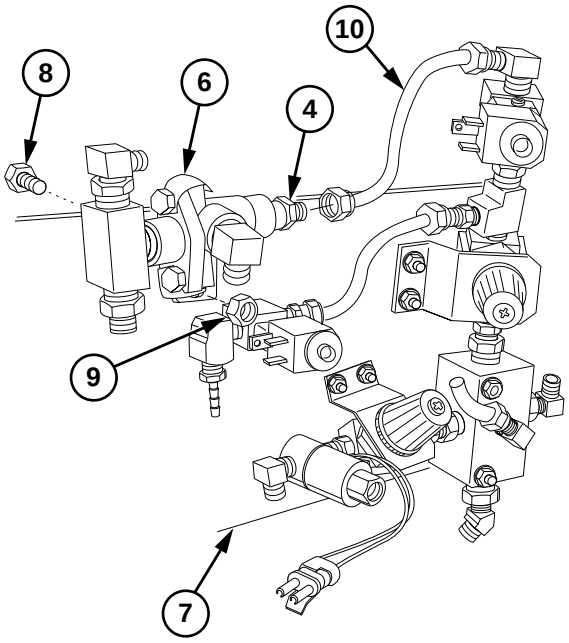
(2) Install tee (3), elbow (2), fitting (1), elbow (5), and fitting (4) on air horn double check valve (6).



11-37. AIR VALVE ASSEMBLY REPAIR (CONT)

(3) Install air horn double check valve (6) on support bracket (7) with screw (8) and new locknut (9).

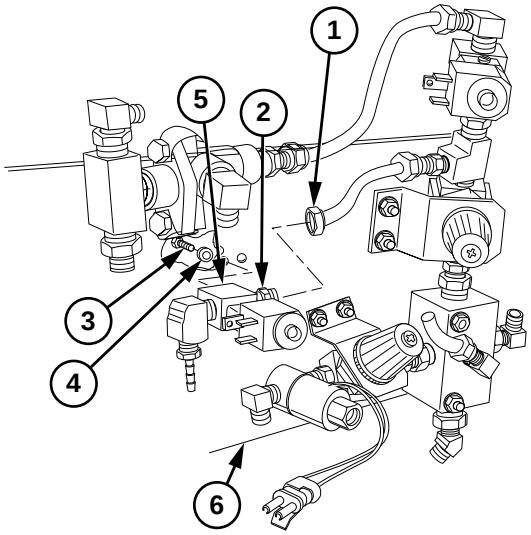
(4) Install air line no. 2040 (10) on fitting (4).



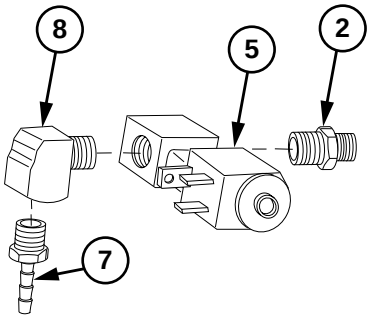
g. Windshield Washer Solenoid Valve Removal

(1) Remove air line no. 2786 (1) from fitting (2).

(2) Remove two screws (3), lockwashers (4), and windshield washer solenoid valve (5) from support bracket (6). Discard lockwashers.



(3) Remove fitting (7), elbow (8), and fitting (2) from windshield washer solenoid valve (5).



h. Windshield Washer Solenoid Valve Installation

WARNING

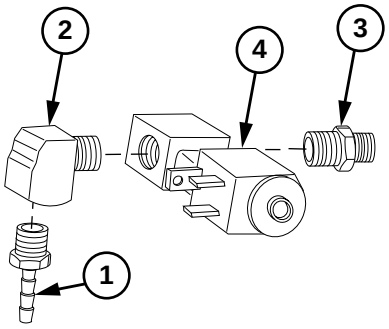
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply pipe thread sealing compound to hose connections. Damage to equipment may result.

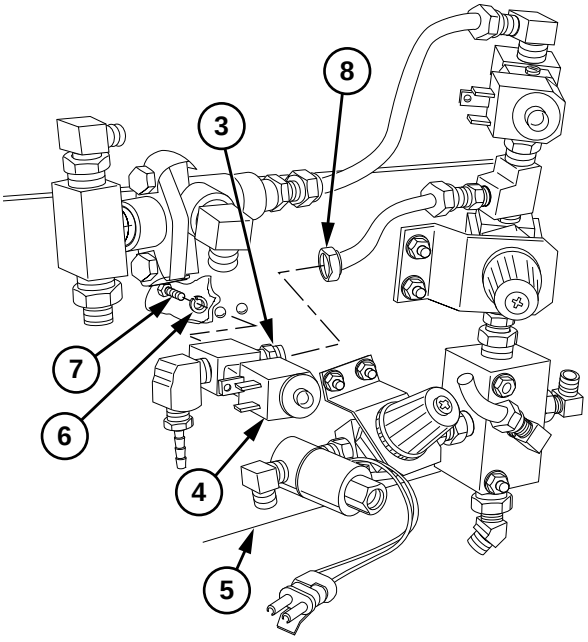
(1) Coat threads of fitting (1), elbow (2), and fitting (3) with pipe thread sealing compound.

(2) Install fitting (1), elbow (2), and fitting (3) on windshield washer solenoid valve (4).



(3) Install windshield washer solenoid valve (4) on support bracket (5) with two new lockwashers (6) and screws (7).

(4) Install air line no. 2786 (8) on fitting (3).



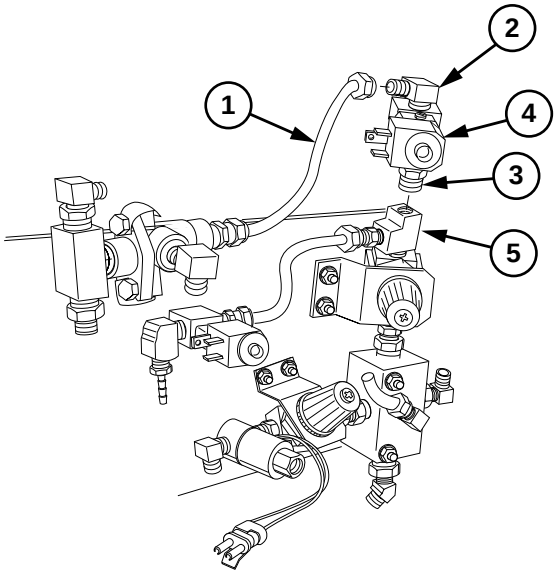
11-37. AIR VALVE ASSEMBLY REPAIR (CONT)

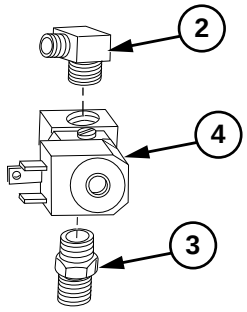
i. City Horn Solenoid Valve Removal

(1) Remove air line no. 2040 (1) from elbow (2).

(2) Remove coupling (3) and city horn solenoid valve (4) from tee (5).

(3) Remove coupling (3) and elbow (2) from city horn solenoid valve (4).





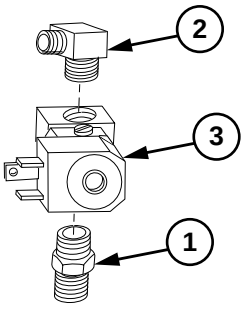
j. City Horn Solenoid Valve Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply pipe thread sealing compound to hose connections. Damage to equipment may result.

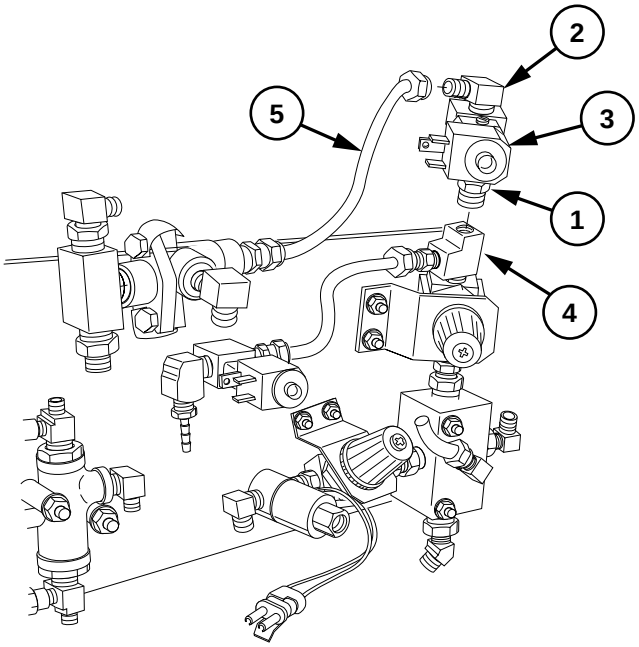


(1) Coat threads of coupling (1) and elbow (2) with pipe thread sealing compound.

(2) Install coupling (1) and elbow (2) on city horn solenoid valve (3).

(3) Install coupling (1) and city horn solenoid valve (3) on tee (4).

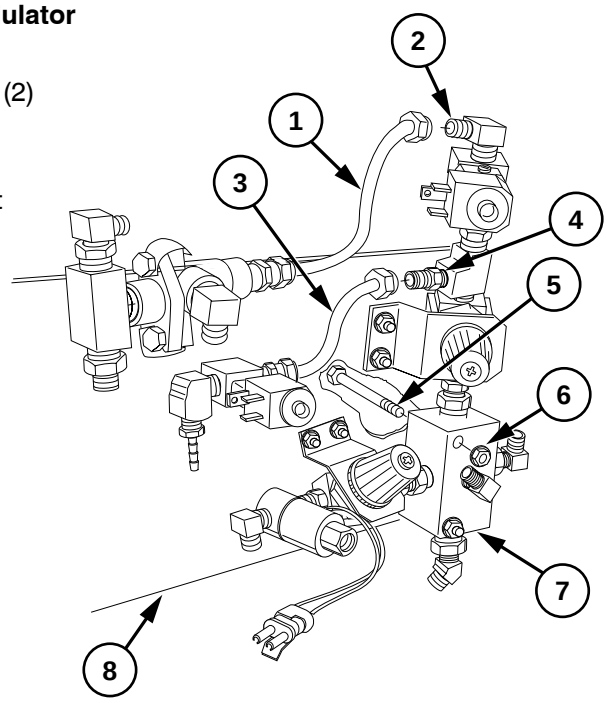
(4) Install air line no. 2040 (5) on elbow (2).



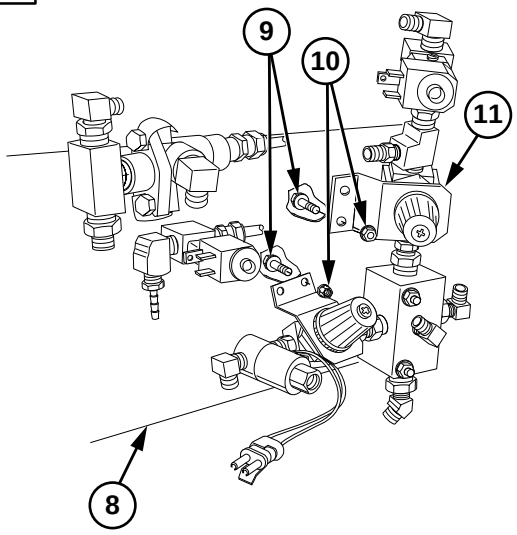
k. Air Pressure Regulators/Air Manifold/Modulator Solenoid Valve Assembly Removal

(1) Remove air line no. 2040 (1) from elbow (2) and air line no. 2786 (3) from fitting (4).

(2) Remove two screws (5) and locknuts (6) from air manifold (7) and support bracket (8). Discard locknuts.



11-37. AIR VALVE ASSEMBLY REPAIR (CONT)

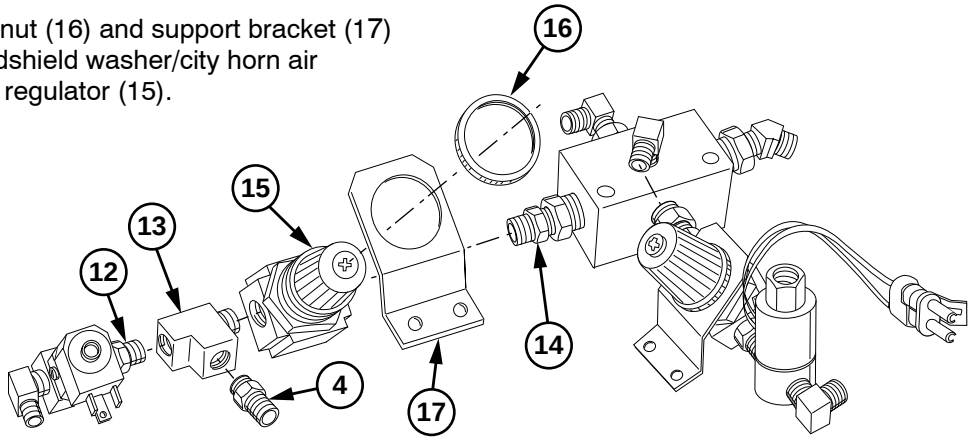


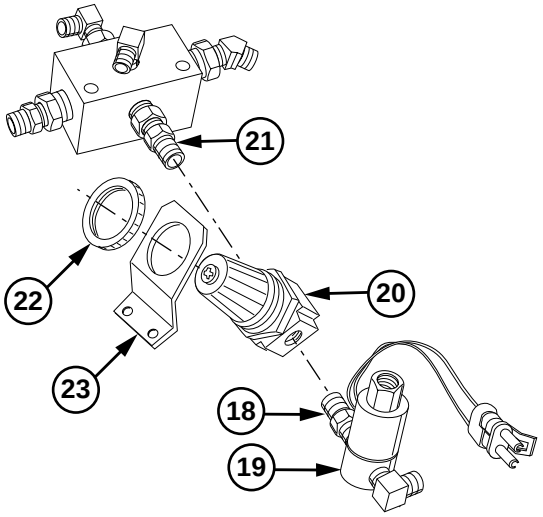
(3) Remove four screws (9), locknuts (10), and air pressure regulators/air manifold/ modulator solenoid valve assembly (11) from support bracket (8). Discard locknuts.

(4) Remove coupling (12) and fitting (4) from tee (13).

(5) Remove tee (13) and coupling (14) from windshield washer/city horn air pressure regulator (15).

(6) Remove nut (16) and support bracket (17) from windshield washer/city horn air pressure regulator (15).



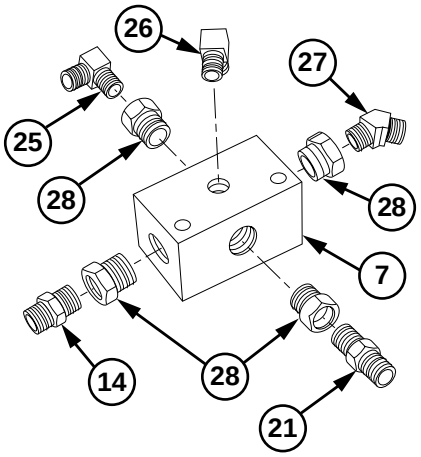


(7) Remove reducer (18) and modulator solenoid valve (19) from modulator air pressure regulator (20).

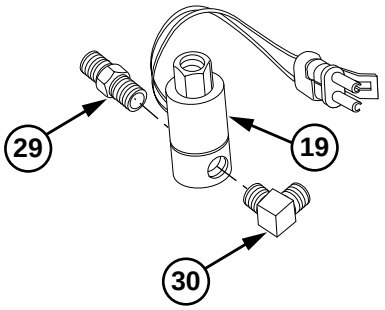
(8) Remove modulator air pressure regulator (20) from coupling (21).

(9) Remove nut (22) and support bracket (23) from modulator air pressure regulator (20).

(10) Remove coupling (14), coupling (21), elbow (25), elbow (26), elbow (27), and four reducers (28) from air manifold (7).



(11) Remove coupling (29), and elbow (30) from modulator solenoid valve (19).



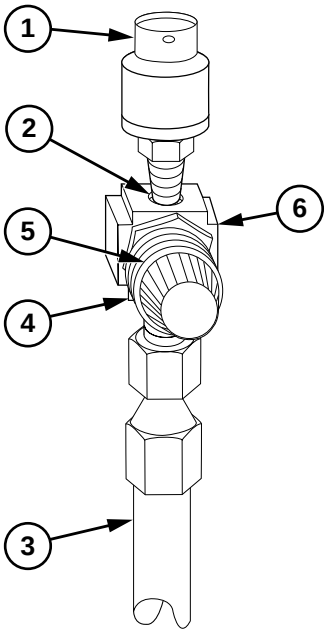
I. Air Pressure Regulators Adjustment

CAUTION

Windshield washer/city horn air pressure regulator must be adjusted to 30 psi ±2 psi (207 kPa ±14 kPa). Modulator air pressure regulator must be adjusted to 70 psi ±2 psi (483 ±14 kPa).

NOTE

Arrows on back of air pressure regulator point in direction of air flow.



(1) Attach 0–1000 PSI pressure transducer (1) to air pressure regulator outlet port (2).

(2) Attach air supply hose (3) to air pressure regulator inlet port (4).

(3) Pull knob (5) to unlock air pressure regulator (6).

(4) Adjust air pressure regulator (6) to proper air pressure using STE/ICE Test 50 (TM 9–4910–571–12&P). Turn knob (5) clockwise to increase regulator pressure or counterclockwise to decrease regulator pressure.

(5) Push in knob (5) to lock air pressure regulator (6).

(6) Remove air supply hose (3) and pressure transducer (1) from air pressure regulator (6).

11-37. AIR VALVE ASSEMBLY REPAIR (CONT)

m. Air Pressure Regulators/Air Manifold/Modulator Solenoid Valve Assembly Installation

WARNING

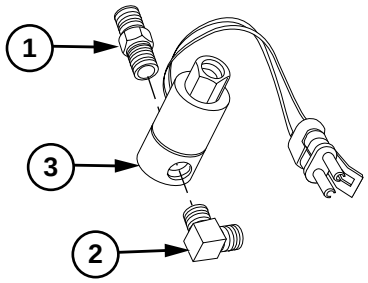
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply pipe thread sealing compound to hose connections. Damage to equipment may result.

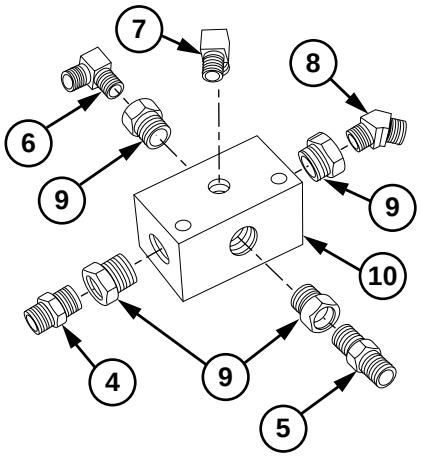
NOTE

Observe markings on components indicating air flow to ensure proper assembly.



(1) Coat threads of coupling (1) and elbow (2) with pipe thread sealing compound.

(2) Install coupling (1) and elbow (2) on modulator solenoid valve (3).

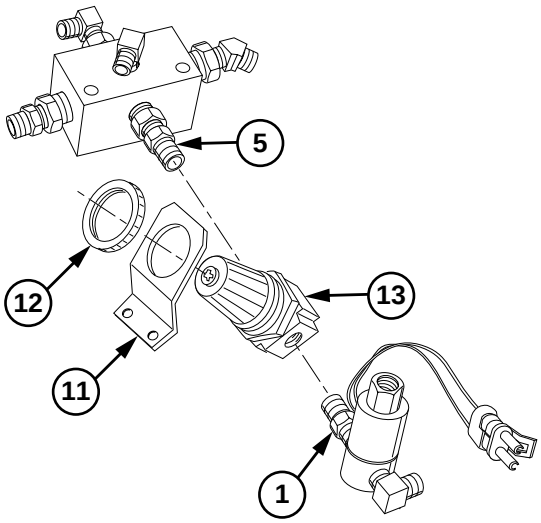


(3) Coat threads of coupling (4), coupling (5), elbow (6), elbow (7), elbow (8), and four reducers (9) with pipe thread sealing compound.

(4) Install four reducers (9), elbow (6), elbow (7), elbow (8), coupling (4), and coupling (5) on air manifold (10).

(5) Install support bracket (11) on modulator air pressure regulator (13) with nut (12).

(6) Install coupling (1) and coupling (5) on modulator air pressure regulator (13).



(7) Install support bracket (14) on windshield washer/city horn air pressure regulator (16) with nut (15).

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

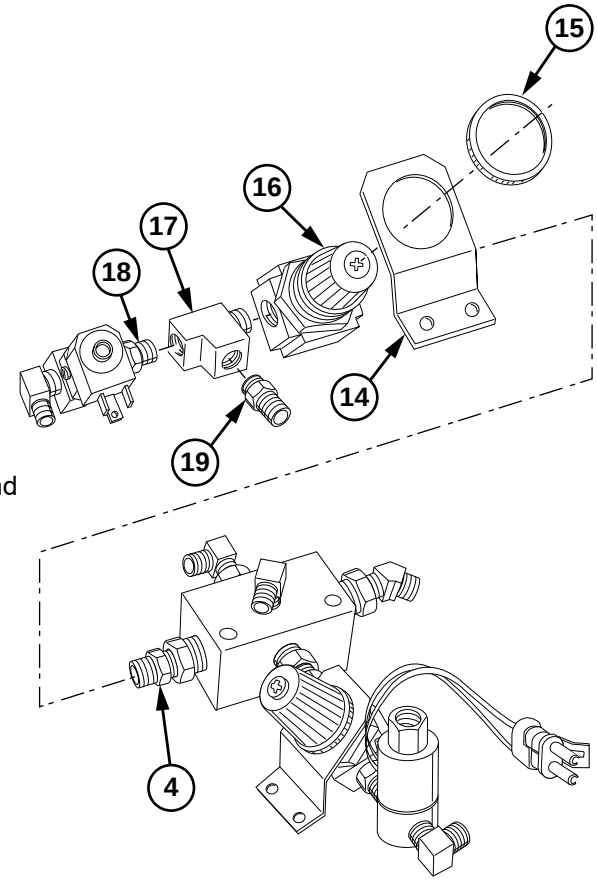
CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply pipe thread sealing compound to hose connections. Damage to equipment may result.

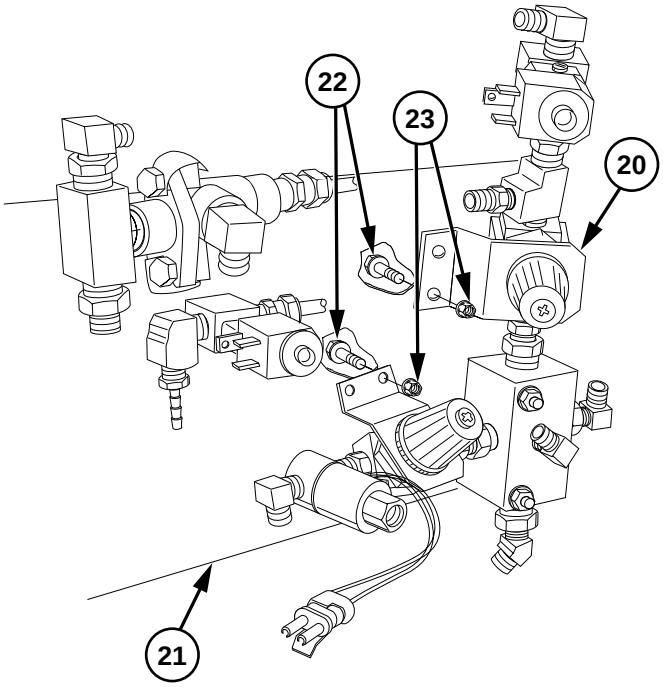
(8) Coat threads of tee (17), coupling (18), and fitting (19) with pipe thread sealing compound.

(9) Install coupling (4) and tee (17) on windshield washer/city horn air pressure regulator (16).

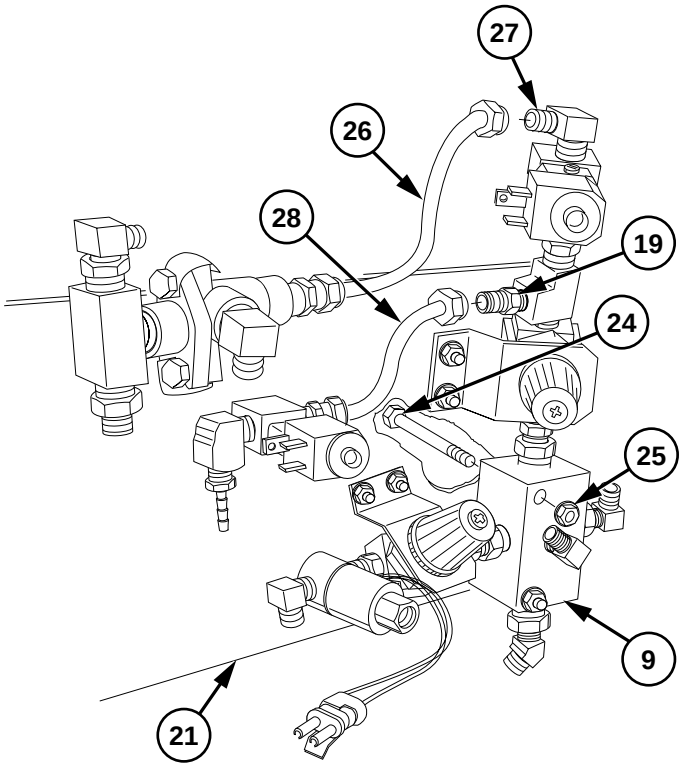
(10) Install coupling (18) and fitting (19) on tee (17).



11-37. AIR VALVE ASSEMBLY REPAIR (CONT)



(11) Install air pressure regulators/air manifold/ modulator solenoid valve assembly (20) on support bracket (21) with four screws (22) and new locknuts (23).



(12) Install two screws (24) and new locknuts (25) on air manifold (9) and support bracket (21).

(13) Install air line no. 2040 (26) on elbow (27) and air line no. 2786 (28) on fitting (19).

n. Follow-On Maintenance

Install console support bracket (para 11-39).

11-38. LOAD SENSING VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Air system drained (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Locknuts (2) (Item 68, Appendix G)

a. Removal

NOTE
Tag and mark hoses before removal.

(1) Remove hose no. 2489 (1) and hose no. 2686 (2) from elbows (3).

NOTE
Location of plastic cable ties should be marked before removal.

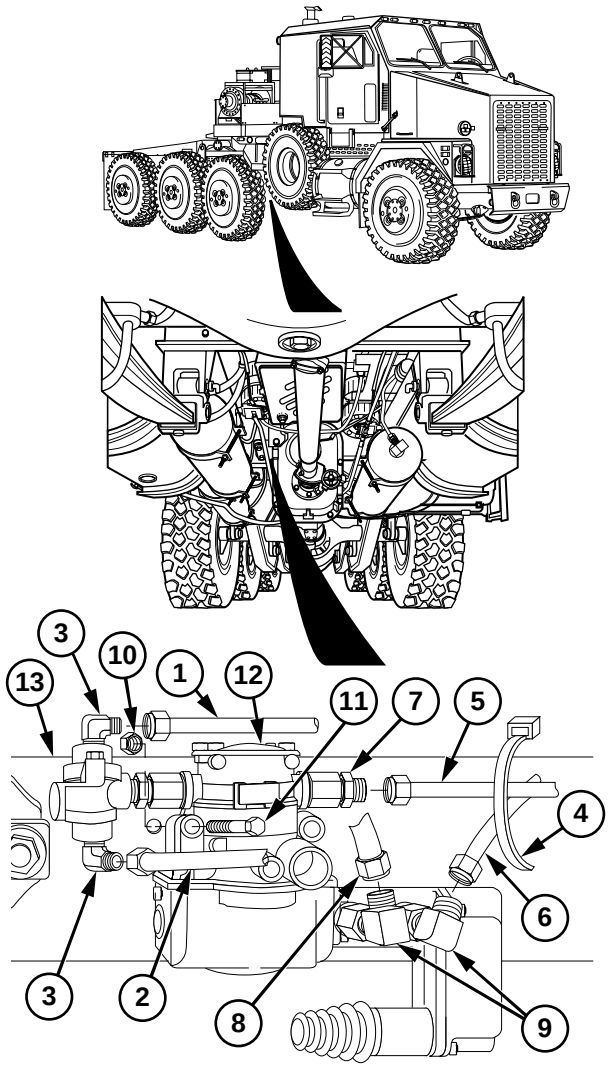
(2) Remove plastic cable ties (4) from hose no. 2669 (5) and hose no. 2050 (6) as required.

(3) Remove hose no. 2669 (5) from fitting (7).

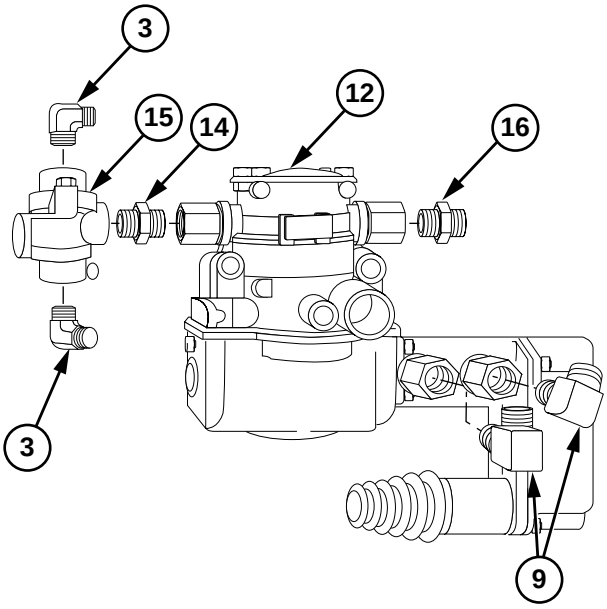
WARNING
Air suspension will lower when hoses are removed. To avoid injury, stay clear of HET Tractor frame until air suspension is completely lowered.

(4) Remove hose no. 2049 (8) and hose no. 2050 (6) from elbows (9).

(5) Remove two locknuts (10), screws (11), and valve (12) from no. 2 crossmember (13). Discard locknuts.



11-38. LOAD SENSING VALVE REPLACEMENT (CONT)



(6) Remove fitting (14) from valve (12).

(7) Remove fitting (14) and two elbows (3) from check valve (15).

(8) Remove fitting (16) from valve (12).

(9) Remove two elbows (9) from valve (12).

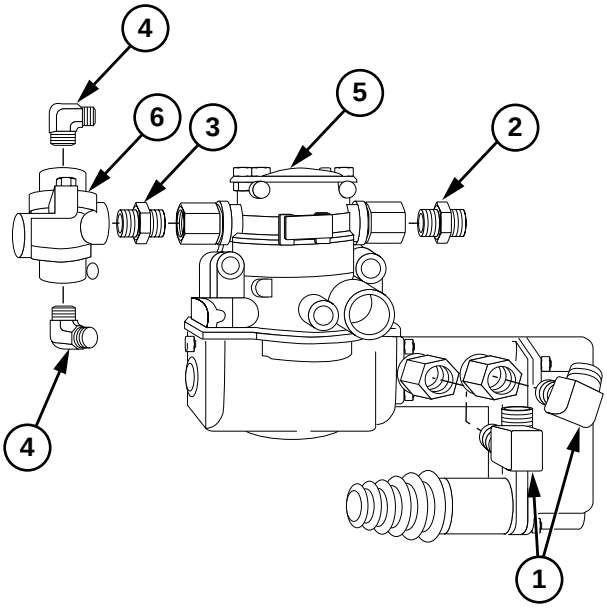
b. Installation

WARNING

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CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of two elbows (1), fitting (2), fitting (3), and two elbows (4) with pipe thread sealing compound.

(2) Install two elbows (1) on valve (5).

(3) Install fitting (2) on valve (5).

(4) Install fitting (3) and two elbows (4) on check valve (6).

(5) Install fitting (3) on valve (5).

(6) Install valve (5) on no. 2 crossmember (7) with two screws (8) and new locknuts (9).

(7) Install hose no. 2050 (10) and hose no. 2049 (11) on elbows (1).

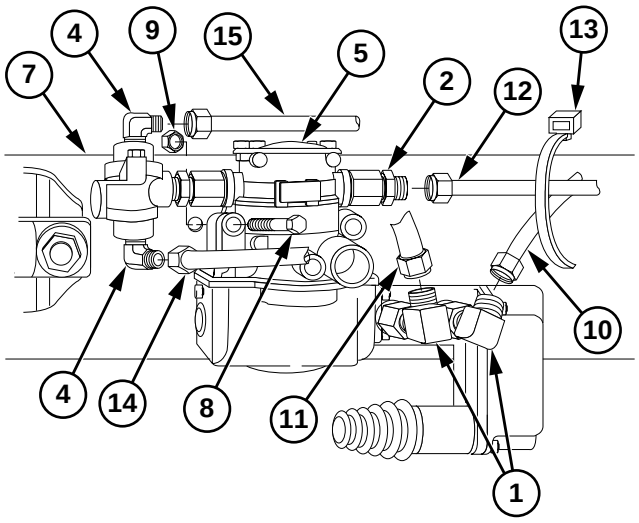
(8) Install hose no. 2669 (12) on fitting (2).

NOTE

Position plastic cable ties in locations marked during removal.

(9) Secure hose no. 2050 (10) and hose no. 2669 (12) with plastic cable ties (13).

(10) Install hose no. 2686 (14) and hose no. 2489 (15) on elbows (4).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

11-39. CONSOLE SUPPORT BRACKET REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

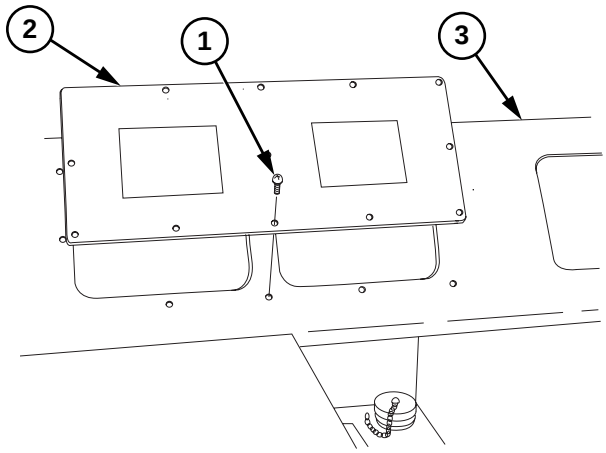
Equipment Conditions
Batteries disconnected (para 7-61).
Top doghouse insulation removed (para 16-36a).
Engine hood opened (TM 9-2320-360-10).
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

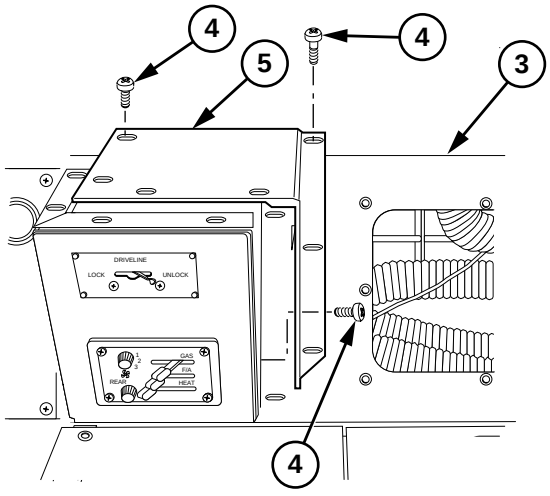
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Locknut (Item 72, Appendix G)
Lockwashers (4) (Item 107, Appendix G)

a. Removal

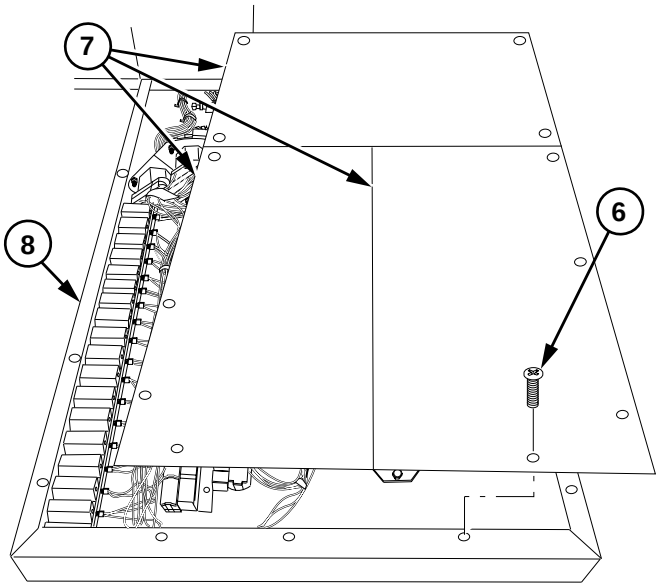
(1) Remove 13 screws (1) and dash access panel (2) from dash (3).



(2) Remove nine screws (4) and dash cover panel (5) from dash (3).



(3) Remove 19 screws (6) and 3 covers (7) from electronic control box (8).



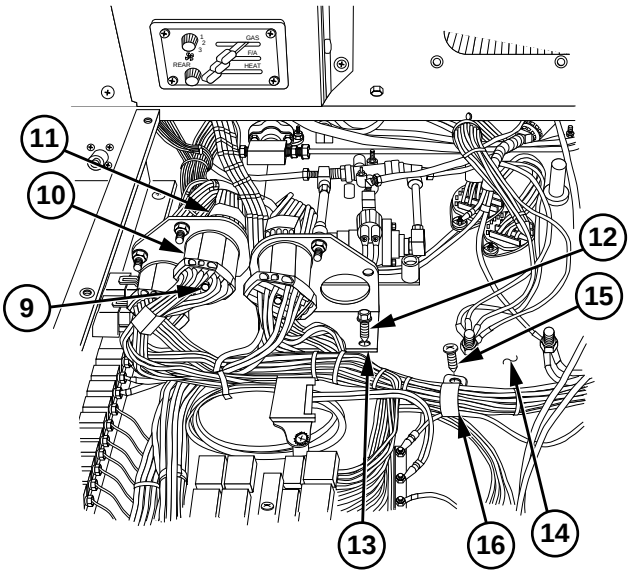
NOTE

Tag and mark all hoses, wiring harnesses, and wires before removal.

(4) Loosen three screws (9) and disconnect three wiring harnesses (10) from wiring harness receptacles (11).

(5) Remove four screws (12) and two wiring harness brackets (13) from console (14).

(6) Remove screw (15) and cushion clip (16) from console (14).

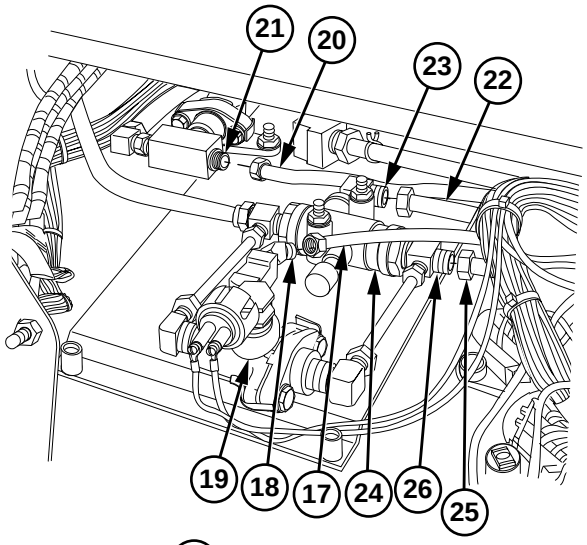


(7) Remove hose no. 2769 (17) from elbow (18) on check valve (19).

(8) Remove hose no. 2039 (20) from fitting (21).

(9) Remove hose no. 2767 (22) from elbow (23) on synchro valve (24).

(10) Remove hose no. 2762 (25) from tee (26) on synchro valve (24).

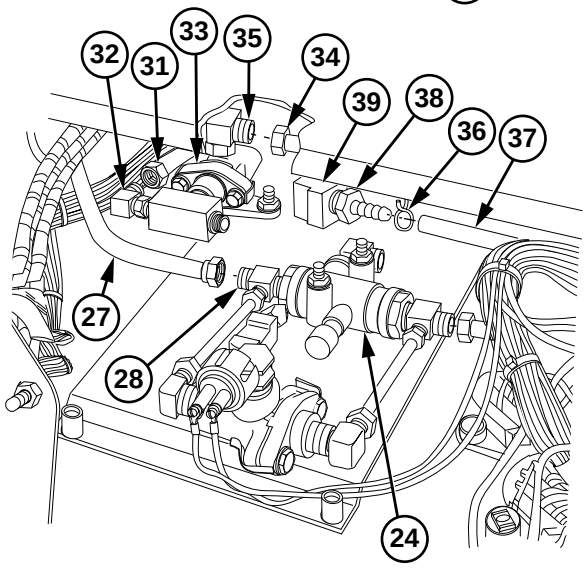


(11) Remove hose no. 2766 (27) from tee (28) on synchro valve (24).

(12) Remove hose no. 2039 (31) from elbow (32) on double check valve (33).

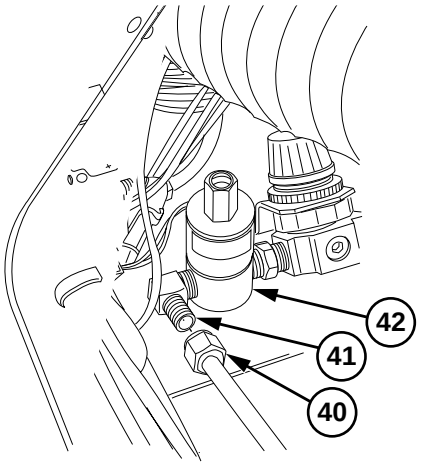
(13) Remove hose no. 2036 (34) from elbow (35) on double check valve (33).

(14) Remove clamp (36) and air line (37) from hose adapter (38) on elbow (39).

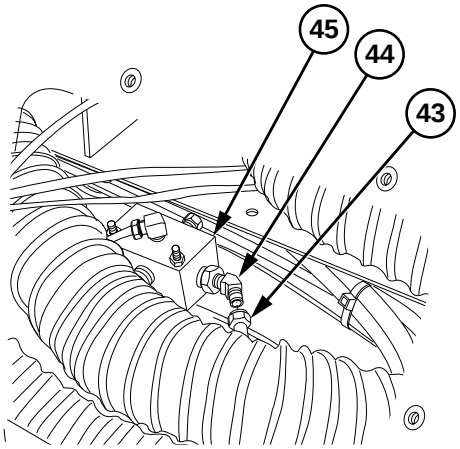


11-39. CONSOLE SUPPORT BRACKET REPLACEMENT (CONT)

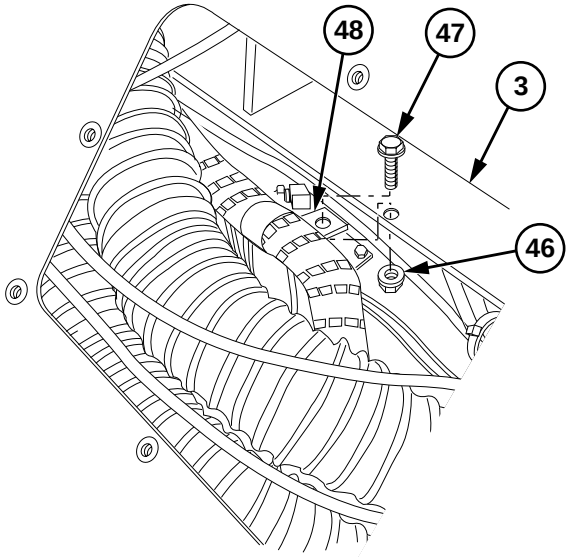
(15) Remove hose no. 2857 (40) from elbow (41) on air solenoid valve (42).



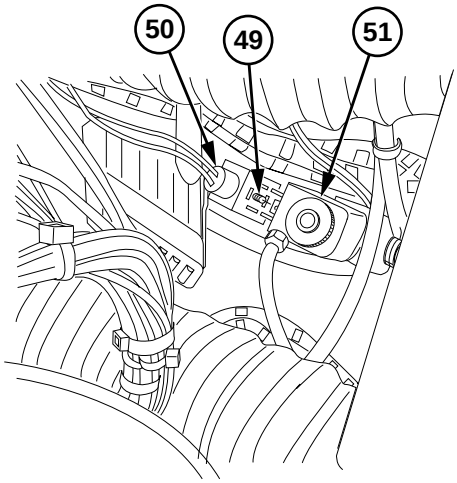
(16) Remove hose no. 2785 (43) from elbow (44) on air manifold (45).



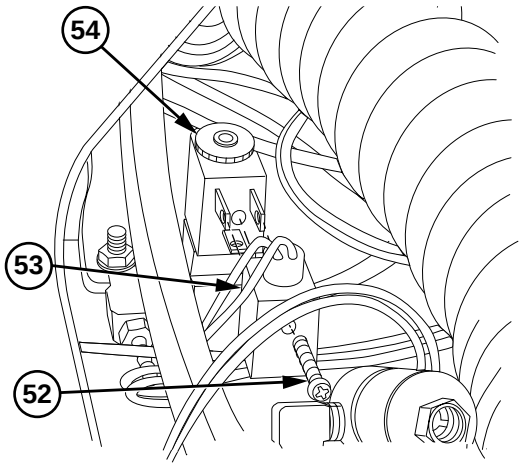
(17) Remove locknut (46), screw (47), and cushion clip (48) from dash (3). Discard locknut.



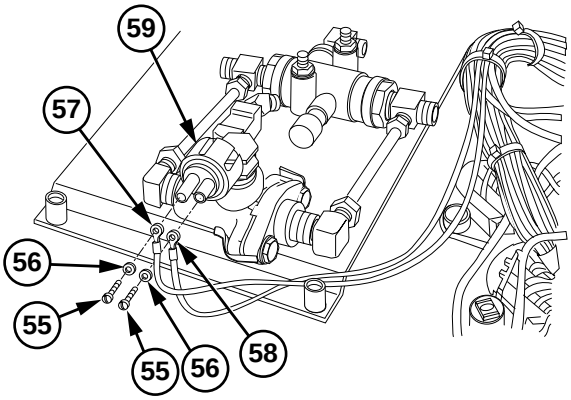
(18) Loosen screw (49) and remove electrical connector (50) from air solenoid valve (51).



(19) Loosen screw (52) and remove electrical connector (53) from washer air valve (54).

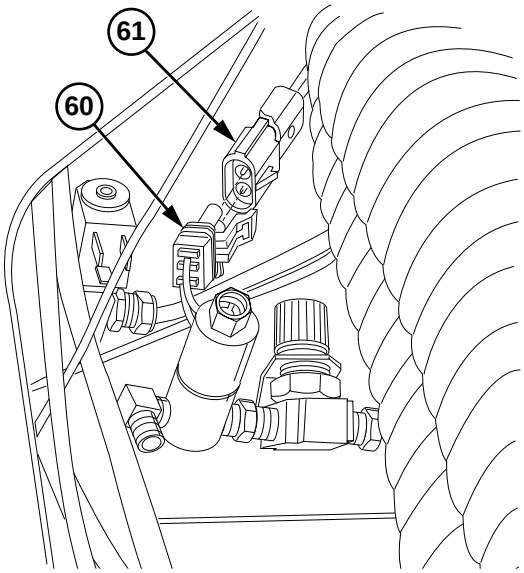


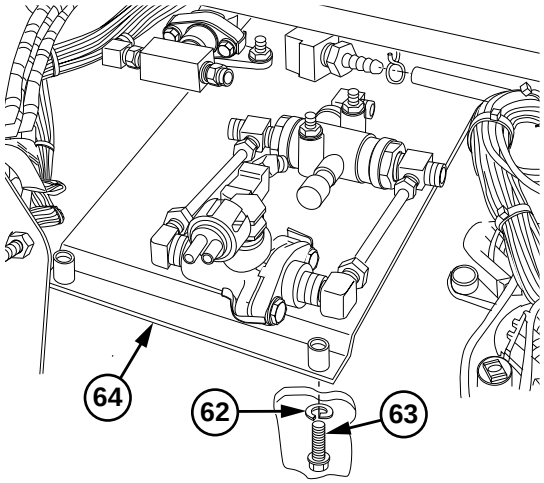
(20) Remove two screws (55), washers (56), wire no. 1092 (57), and wire no. 1435 (58) from switch (59).



(21) Remove two-pin connector (60) from electrical receptacle (61).

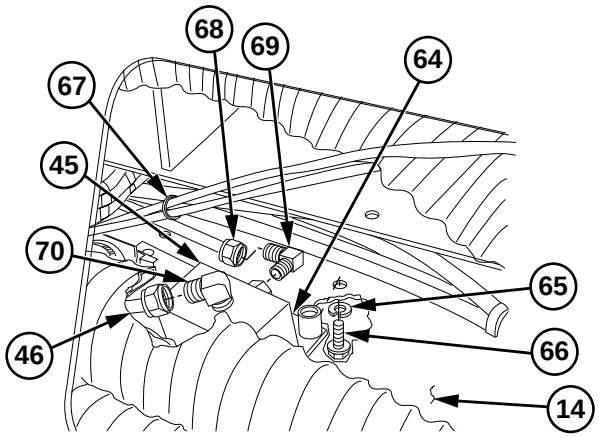
(22) Remove two screws (63) and lockwashers (62) from console support bracket (64). Discard lockwashers.





11-39. CONSOLE SUPPORT BRACKET REPLACEMENT (CONT)

(23) Remove two screws (66) and lockwashers (65) from console support bracket (64). Discard lockwashers.



NOTE

Location of plastic cable ties should be marked before removal.

(24) Remove plastic cable ties (67) as required to move console support bracket (64).

(25) Pull console support bracket (64) out 2 in. (50 mm) toward rear of cab.

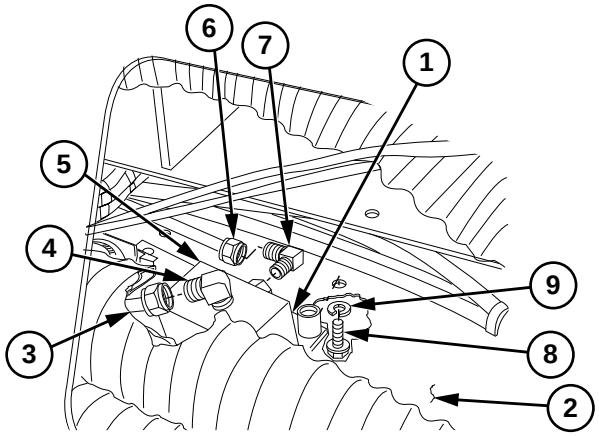
(26) Remove hose no. 2037 (68) from elbow (71) on air manifold (45).

(27) Remove hose no. 2765 (46) from elbow (70) on air manifold (45).

NOTE

Air solenoid valve must be rotated slightly to remove console support bracket.

(28) Remove console support bracket (64) from console (14).



b. Installation

(1) Position console support bracket (1) on console (2).

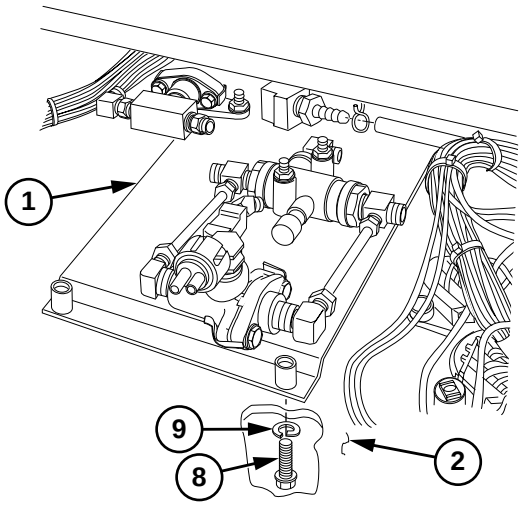
(2) Install hose no. 2765 (3) on elbow (4) on air manifold (5).

(3) Install hose no. 2037 (6) on elbow (7) on air manifold (5).

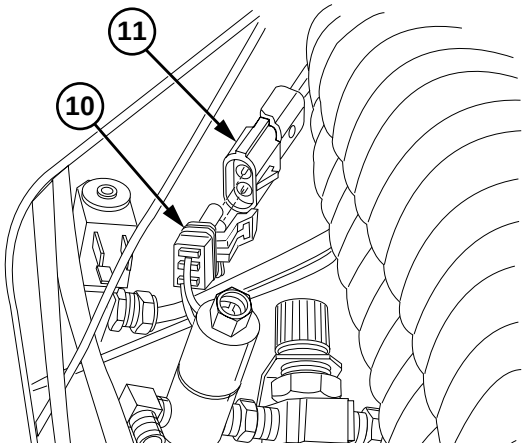
NOTE

Air solenoid valve must be rotated slightly to install console support bracket.

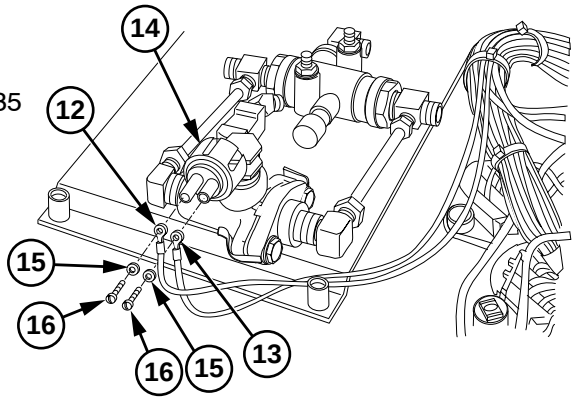
(4) Secure console support bracket (1) on console (2) with four screws (8) and new lockwashers (9).



(5) Install two-pin connector (10) on electrical receptacle (11).

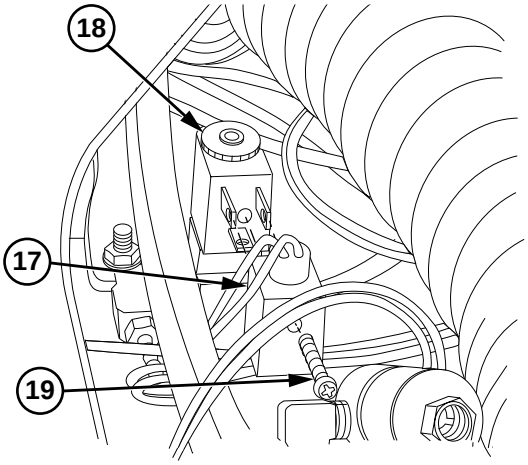


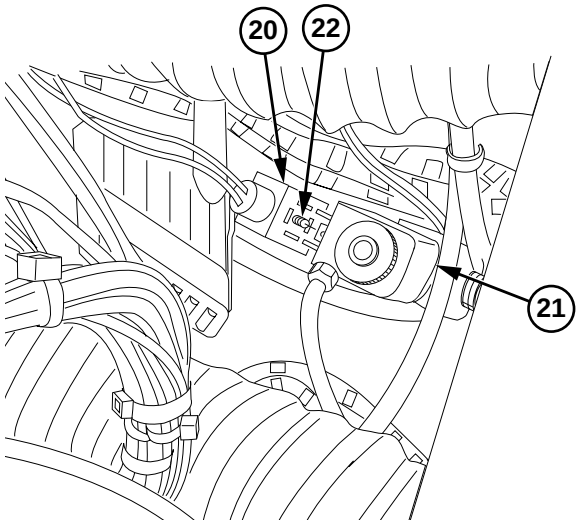
(6) Install wire no. 1092 (12) and wire no. 1435 (13) on switch (14) with two washers (15) and screws (16).



(7) Install electrical connector (17) on washer air valve (18). Tighten screw (19).

(8) Install electrical connector (20) on air solenoid valve (21). Tighten screw (22).

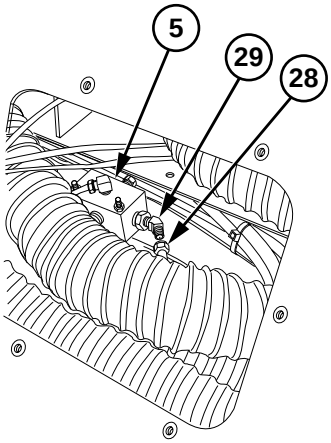


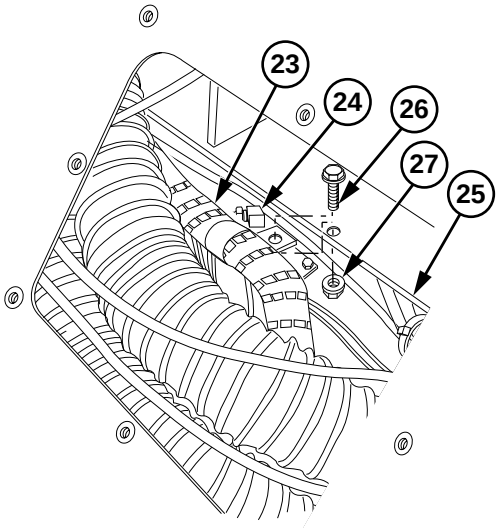


11-39. CONSOLE SUPPORT BRACKET REPLACEMENT (CONT)

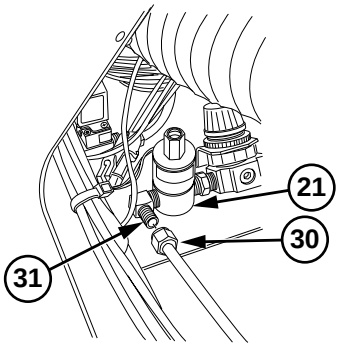
(9) Install wiring harness (23) and cushion clip (24) on dash (25) with screw (26) and new locknut (27).

(10) Install hose no. 2785 (28) on elbow (29) on air manifold (5).





(11) Install hose no. 2857 (30) on elbow (31) on air solenoid valve (21).

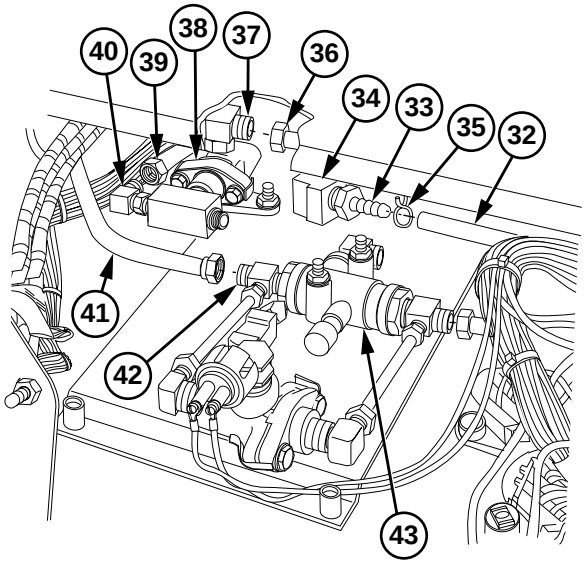


(12) Install air line (32) on hose adapter (33) on elbow (34) with clamp (35).

(13) Install hose no. 2036 (36) on elbow (37) on double check valve (38).

(14) Install hose no. 2039 (39) on elbow (40) on double check valve (38).

(15) Install hose no. 2766 (41) on tee (42) on synchro valve (43).

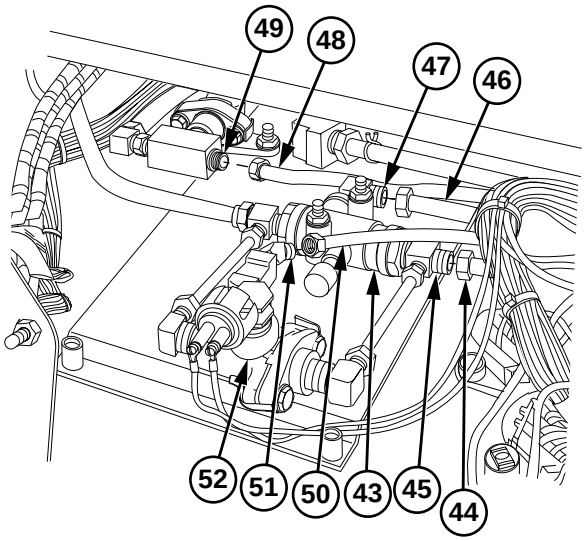


(16) Install hose no. 2762 (44) on elbow (45) on synchro valve (43).

(17) Install hose no. 2767 (46) on elbow (47) on synchro valve (43).

(18) Install hose no. 2039 (48) on fitting (49).

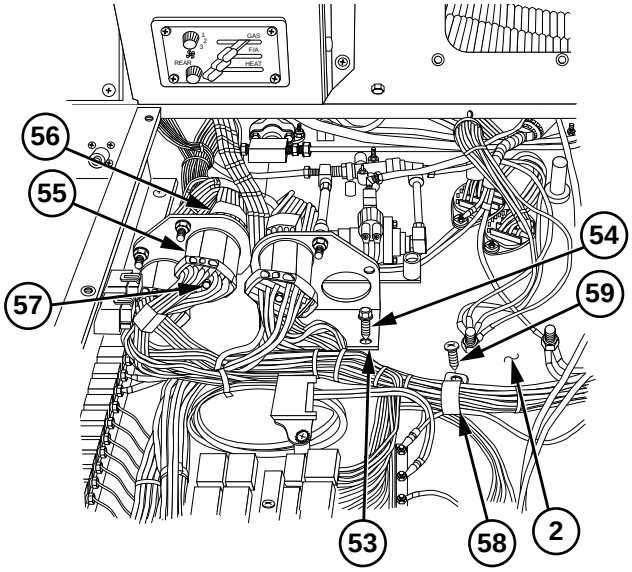
(19) Install hose no. 2769 (50) on elbow (51) on check valve (52).



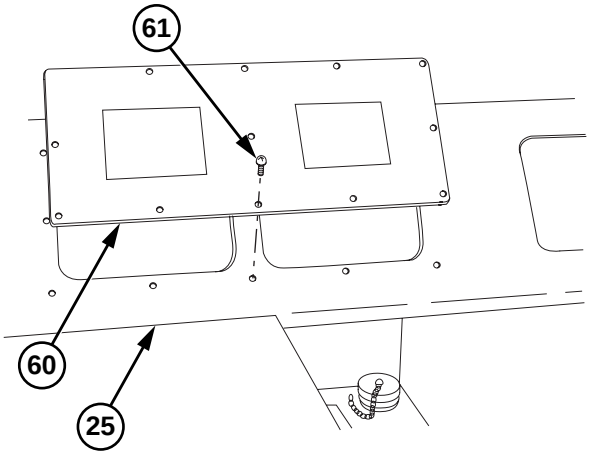
(20) Install two wire harness brackets (53) on console (2) with four screws (54).

(21) Connect three wiring harness connectors (55) to wiring harness receptacles (56) and tighten screws (57).

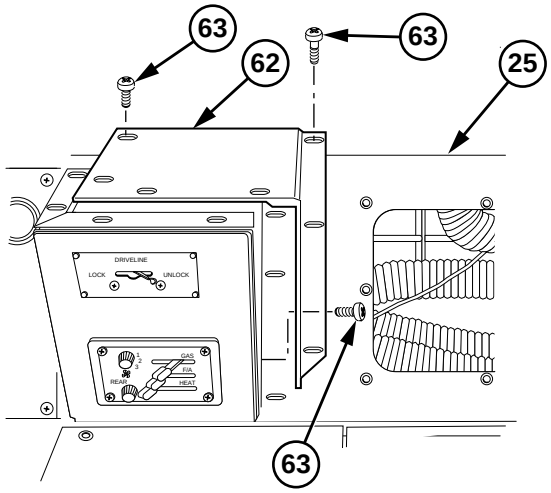
(22) Install cushion clip (58) on console (2) with screw (59).



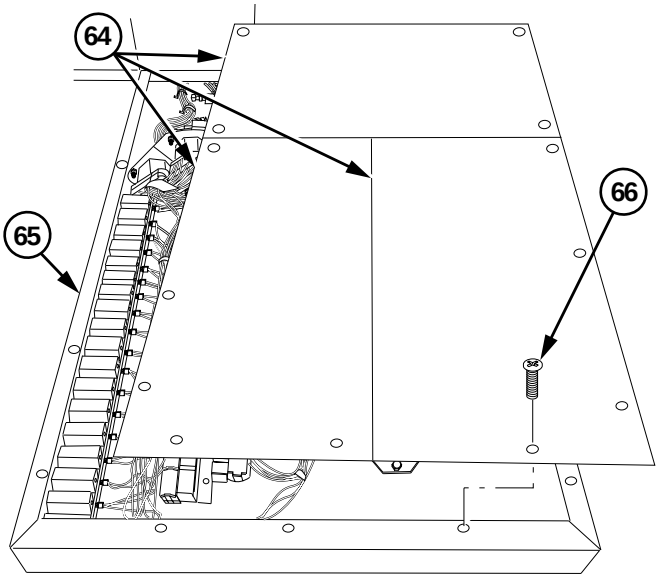
(23) Install dash access panel (60) on dash (25) with 13 screws (61).



11-39. CONSOLE SUPPORT BRACKET REPLACEMENT (CONT)



(24) Install dash cover panel (62) on dash (25) with nine screws (63).



(25) Install 3 covers (64) on electronic control box (65) with 19 screws (66).

c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Start engine (TM 9-2320-360-10).

(3) Build system air pressure to 120-125 psi (827-862 kPa) (TM 9-2320-360-10).

(4) Check for leaks.

(5) Check operation of city horn (TM 9-2320-360-10).

(6) Check operation of windshield washer (TM 9-2320-360-10).

(7) Shut off engine (TM 9-2320-360-10).

(8) Install top doghouse insulation (para 16-36b).

(9) Close engine hood (TM 9-2320-360-10).

11-40. AIR LINES AND FITTINGS REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine hood opened (TM 9-2320-360-10).
Air system drained (TM 9-2320-360-10).
Defroster hoses removed (para 18-15).
Brake treadle valve removed (para 11-7).
Instrument panel removed (para 7-13).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Bushing, 1/4 in. (Item 2, Appendix G)
Bushing, 3/8 in. (Item 3, Appendix G)
Bushing, 1/2 in. (Item 4, Appendix G)
Bushing, 5/8 in. (Item 5, Appendix G)
Bushing, 3/4 in. (Item 6, Appendix G)
Tube, 1/4 in. (Item 173, Appendix G)
Tube, 3/8 in. (Item 174, Appendix G)
Tube, 1/2 in. (Item 175, Appendix G)
Tube, 5/8 in. (Item 176, Appendix G)
Tube, 3/4 in. (Item 177, Appendix G)

a. Type 1 Air Line Fitting Removal

(1) Remove nut (1) from fitting (2).

(2) Pull line (3) from fitting (2).

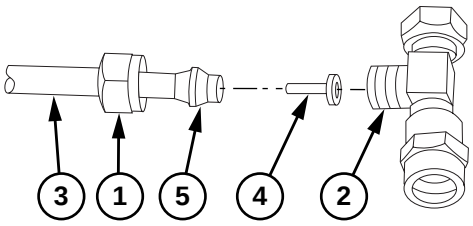
NOTE

- Tube may stay with fitting or come off with line.
- Do step (3) only if tube stayed with line.

(3) Remove tube (4) from line (3) and install in fitting (2).

(4) Cut line (3) directly behind bushing (5). Discard bushing.

(5) Remove nut (1) from line (3).



b. Type 1 Air Line Fitting Installation

(1) Install nut (1) on line (3).

(2) Install new bushing (5) on line (3).

(3) Push line (3) over tube (4) in fitting (2) until seated.

(4) Install bushing (5) and nut (1) on fitting (2).

11-40. AIR LINES AND FITTINGS REPLACEMENT (CONT)

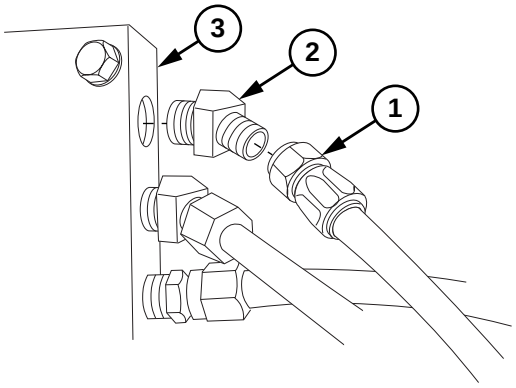
c. Type 2 Air Line Fitting Removal

(1) Remove hose nut (1) from fitting (2).

NOTE

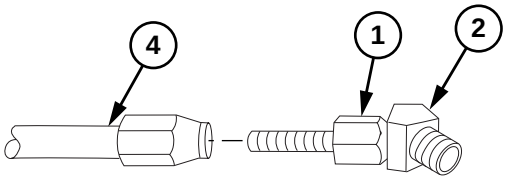
Fitting will be used to disassemble and assemble type 2 fitting.

(2) Remove fitting (2) from air system component (3).



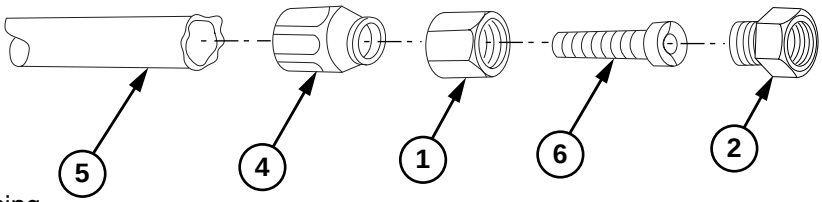
(3) Install fitting (2) in hose nut (1).

(4) Remove hose nut (1) from nut (4).



(5) Remove nut (4) from hose (5) by turning clockwise.

(6) Remove fitting (2) and bushing (6) from hose nut (1).



d. Type 2 Air Line Fitting Installation

(1) Install nut (1) on hose (2) by turning counterclockwise until seated.

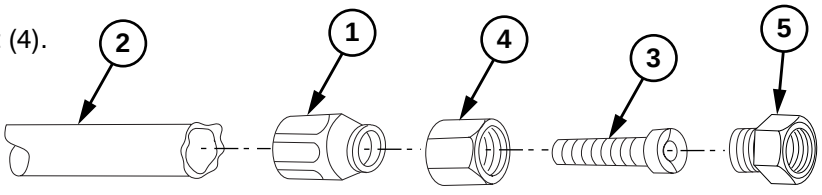
(2) Install bushing (3) in hose nut (4) with fitting (5).

NOTE

Bushing may be lubricated with oil to ease installation.

(3) Install bushing (3) in hose (2) by turning fitting (5).

(4) Remove fitting (5) from hose nut (4).

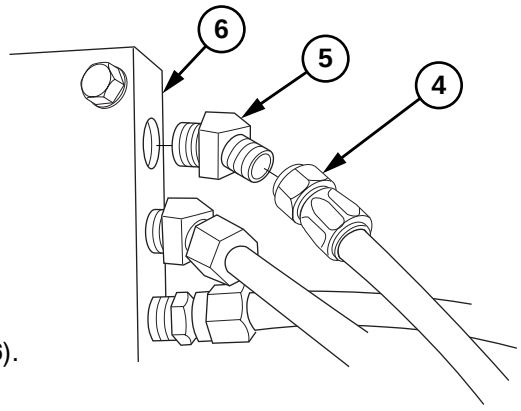


WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(5) Coat threads of fitting (5) with pipe thread sealing compound.

(6) Install fitting (5) in air system component (6).

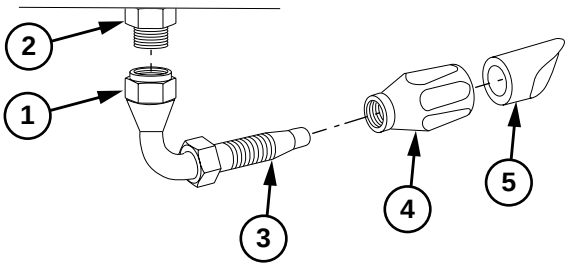
(7) Install hose nut (4) on fitting (5).

e. Type 3 Air Line Fitting Removal

(1) Remove hose nut (1) from fitting (2).

(2) Remove bushing (3) from nut (4).

(3) Remove nut (4) from hose (5) by turning clockwise.



f. Type 3 Air Line Fitting Installation

(1) Install nut (4) on hose (5) by turning counterclockwise.

(2) Install bushing (3) in nut (4).

(3) Install hose nut (1) on fitting (2).

11-40. AIR LINES AND FITTINGS REPLACEMENT (CONT)

g. Air Line Removal

This section contains a Hose Index, tables 11-1 thru 11-6, and diagrams 11-1 thru 11-6 to help locate ends of all air hoses on the HET Tractor. Hose numbers provided in tables 11-1 thru 11-6 refer to those on Air Schematic, FO-2, located at the end of this manual.

CAUTION

- Winch air lines must be routed away from winch hydraulic fittings or hoses. Failure to comply may result in damage to equipment.
- Air line no. 2102 must be routed above transmission oil lines no. 2382 and no. 2393. Failure to comply may result in damage to equipment.
- When tie strapping CTI hoses, be sure there is no contact with steering shafts located on left frame rail. Failure to comply may result in damage to equipment.

NOTE

- Tag and mark air hoses and locations of plastic cable ties before removal.
- Remove attaching hardware as necessary to remove air hoses.
- When replacing air hoses or tubing, remove hose or tubing from vehicle, remove fittings, cut new hose or tubing 1/4 to 1/2 in. (5 to13 mm) longer than hose or tubing being replaced, then install fittings.

Table 11-1. Brake Air Hose Index

Hose No.	From	To/From	To
2011	No. 4 Air Reservoir		No. 2 Axle Service Brake Relay Valve
2012	No. 1 Axle Air Manifold	Adapter	No. 1 Axle Brake Chamber, LH
2013	No. 1 Axle Air Manifold	Adapter	No. 1 Axle Brake Chamber, RH
2014	No. 5 Air Reservoir	Tee (at Hose No. 2634)	No. 4 Axle Service Brake Relay Valve
2015	No. 3 Axle Air Manifold		No. 3 Axle Brake Chamber, LH
2016	No. 4 Axle Air Manifold		No. 4 Axle Brake Chamber, LH
2017	No. 3 Axle Air Manifold		No. 3 Axle Brake Chamber, RH
2018	No. 4 Axle Air Manifold		No. 4 Axle Brake Chamber, RH
2022	No. 2 Axle Air Manifold		No. 2 Axle Brake Chamber, RH
2023	No. 2 Axle Air Manifold		No. 2 Axle Brake Chamber, LH
2075	No. 2 Axle Spring Brake Relay Valve		No. 2 Axle Air Manifold
2138	No. 3 Axle Air Manifold		No. 3 Axle Brake Chamber, RH
2139	No. 3 Axle Air Manifold		No. 3 Axle Brake Chamber, LH
2140	No. 4 Axle Air Manifold		No. 4 Axle Brake Chamber, RH
2141	No. 4 Axle Air Manifold		No. 4 Axle Brake Chamber, LH
2143	No. 3 Axle Service Brake Relay Valve		No. 3 Axle Air Manifold
2144	No. 4 Axle Service Brake Relay Valve		No. 4 Axle Air Manifold

Table 11-1. Brake Air Hose Index (Cont)

Hose No.	From	To/From	To
2368	No. 3 & 4 Axle Spring Brake Relay Valve		No. 3 Axle Air Manifold
2369	No. 3 & 4 Axle Spring Brake Relay Valve		No. 4 Axle Air Manifold
2488	Brake Treadle Valve	Large Cab Air Manifold	No. 1 Axle Service Brake Relay Valve
2536	No. 2 Air Reservoir		No. 1 Axle Service Brake Relay Valve
2543	No. 1 Axle Service Brake Relay Valve		No. 1 Axle Air Manifold
2545	No. 2 Axle Service Brake Relay Valve		No. 2 Axle Air Manifold
2546	No. 2 Axle Air Manifold		No. 2 Axle Brake Chamber, RH
2547	No. 2 Axle Air Manifold		No. 2 Axle Brake Chamber, LH
2604	Tee (Splits Hose No. 2660)		No. 3 & 4 Axle Spring Brake Relay Valve
2611	No. 1 Air Manifold	Large Cab Air Manifold	Parking Brake Valve[1]
2612	Parking Brake Valve[1]	Large Cab Air Manifold	Spring Brake Valve
2614	No. 1 Air Manifold		No. 3 & 4 Axle Spring Brake Relay Valve
2620	No. 1 Air Manifold		No. 2 Axle Spring Brake Relay Valve
2621	No. 5 Air Reservoir		Spring Brake Valve
2622	Spring Brake Valve		No. 2 Axle Spring Brake Relay Valve
2623	Brake Treadle Valve	Large Cab Air Manifold	Double Check Valve
2634	Tee (Splits Hose No. 2014)		No. 3 Axle Service Brake Relay Valve
2636	No. 3 Axle Service Brake Relay Valve		No. 3 & 4 Axle Spring Brake Relay Valve
2638	No. 2 Axle Spring Brake Relay Valve		No. 3 & 4 Axle Spring Brake Relay Valve
2639	Quick Release Valve		No. 2 Axle Spring Brake Relay Valve
2660	Quick Release Valve	Tee	No. 4 Axle Service Brake Relay Valve
2664	Double Check Valve		Spring Brake Valve
2668	Quick Release Valve		No. 2 Axle Service Brake Relay Valve
2669	Load Sensing Valve		Quick Release Valve

[1] Hose not shown. Refer to figure 11-4.

11-40. AIR LINES AND FITTINGS REPLACEMENT (CONT)

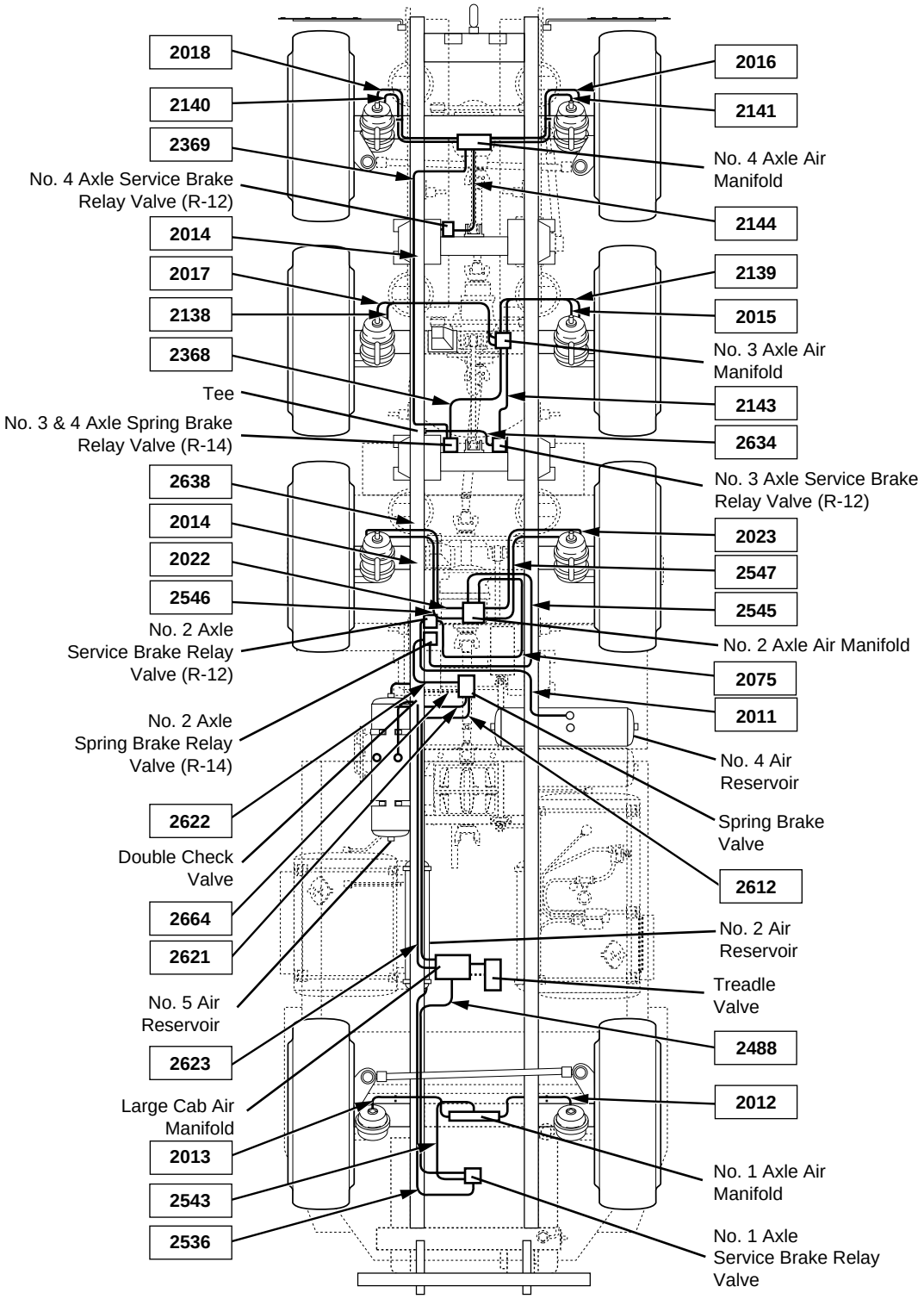


Figure 11-1. Brake Air Hose Diagram (Sheet 1 of 2)

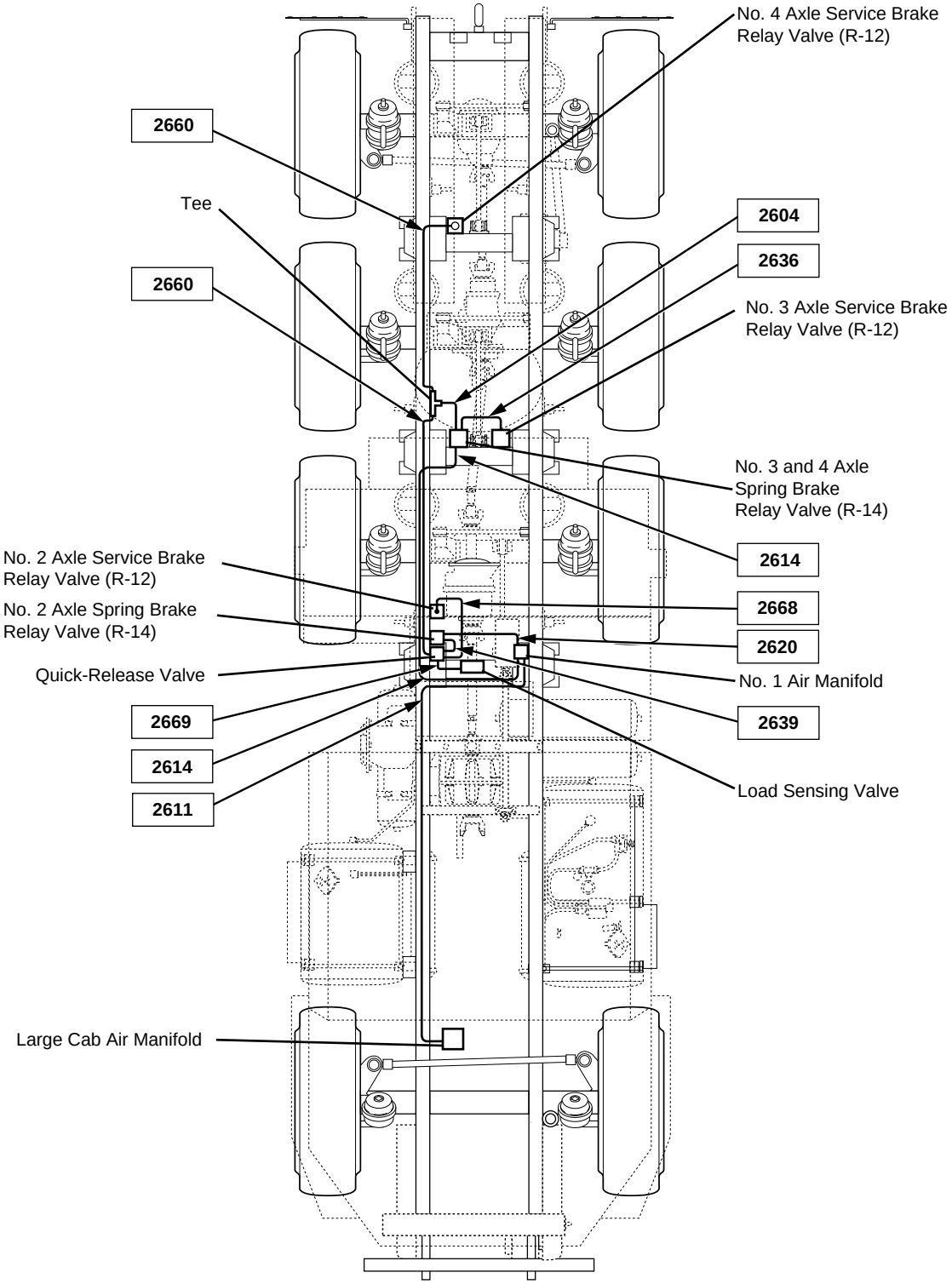


Figure 11-1. Brake Air Hose Diagram (Sheet 2 of 2)

11-40. AIR LINES AND FITTINGS REPLACEMENT (CONT)

Table 11-2. Emergency/Service Air Hose Index

Hose No.	From	To/From	To
2027	Brake Treadle Valve		Trailer Hand Control Valve
2489	Brake Treadle Valve	Large Cab Air Manifold	Load Sensing Valve
2653	Protection Valve (at Pogo Stick)		Rear Service Gladhand
2654	Protection Valve (at Pogo Stick)		Rear Emergency Gladhand
2655	Protection Valve (at Pogo Stick)		Fifth Wheel Service Gladhand
2656	Protection Valve (at Pogo Stick)		Fifth Wheel Emergency Gladhand
2661	Double Check Valve	Quick-Release Valve	Protection Valve (at Pogo Stick)
2662	Trailer Brake Valve	Large Cab Air Manifold	Protection Valve (at Pogo Stick)
2663	Trailer Hand Control	Large Cab Air Manifold	Double Check Valve
2665	Brake Treadle Valve	Large Cab Air Manifold	Double Check Valve
2686	Load Sensing Valve	Quick-Release Valve	Front Service Gladhand
2895	No. 5 Air Reservoir		Front Emergency Gladhand

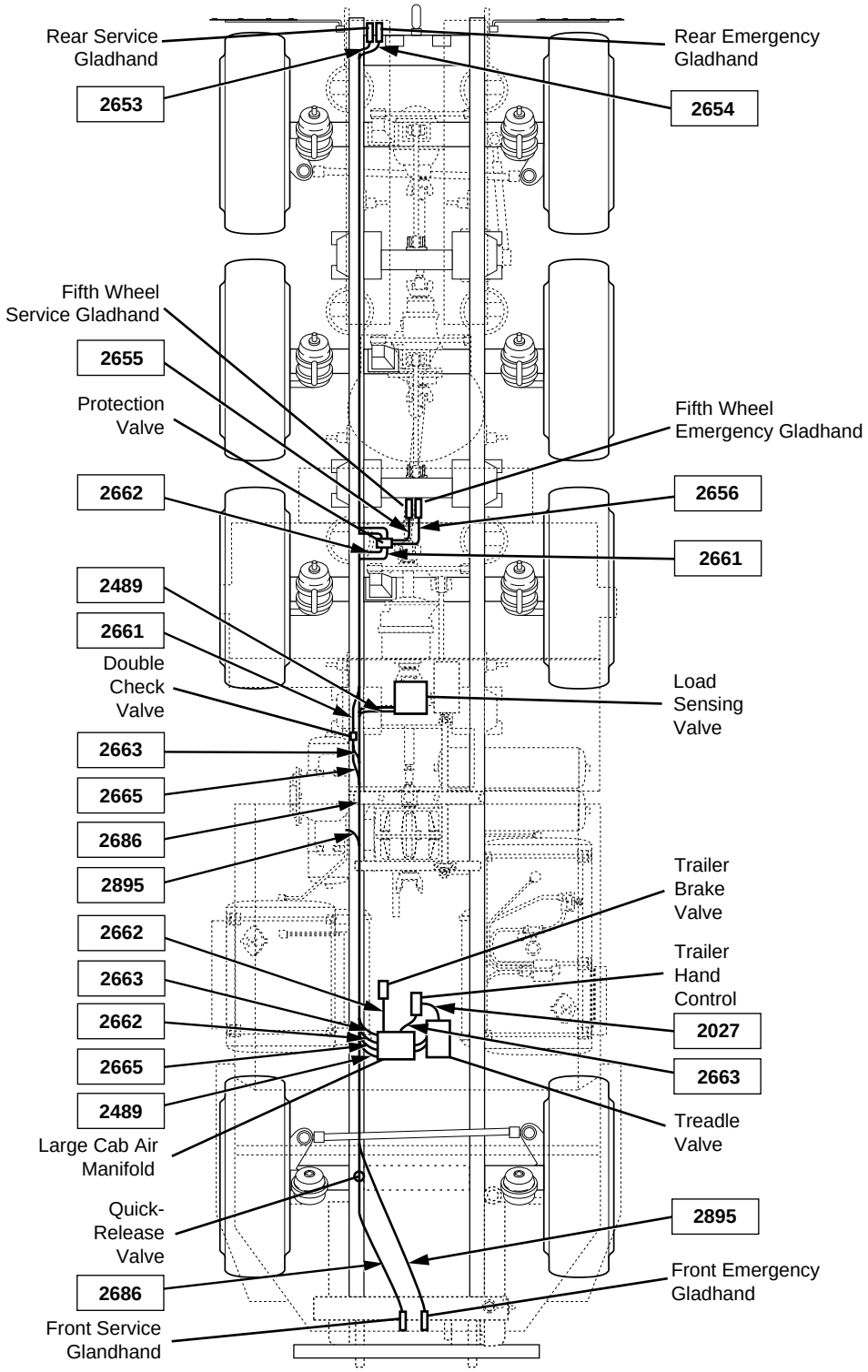


Figure 11-2. Emergency/Service Air Hose Diagram

11-40. AIR LINES AND FITTINGS REPLACEMENT (CONT)

Table 11-3. Air Supply Hose Index

Hose No.	From	To/From	To
2001	Air Compressor	Bulkhead Adapter	Aftercooler
2002	LH Air Dryer		No. 1 Air Reservoir
2005	No. 3 Air Reservoir	Bulkhead Adapter	Brake Treadle Valve
2074	No. 2 Air Reservoir		Protection Valve (at RH Air Dryer)
2096	Air Compressor Governor		Manifold
2097	Manifold		RH Air Dryer
2114	Air Compressor		Air Compressor Governor
2159	No. 1 Air Reservoir		Air Compressor Governor
2169	No. 2 Air Reservoir		No. 1 Air Manifold
2184	No. 1 Air Reservoir		No. 2 Air Reservoir
2600	Engine Air Filter		Air Compressor
2613	No. 1 Air Reservoir		No. 3 Air Reservoir
2615	No. 4 Air Reservoir		No. 1 Air Manifold
2616	No. 3 Air Reservoir		No. 4 Air Reservoir
2617	No. 4 Air Reservoir		No. 5 Air Reservoir
2619	No. 2 Air Reservoir	Bulkhead Adapter	Brake Treadle Valve
2993	Manifold		LH Air Dryer
2994	Purge Tank		Manifold
2995	Manifold		LH Air Dryer
2996	LH Air Dryer		RH Air Dryer
2078	Coalescent Filter		Manifold
2081	Manifold		Aftercooler
2080	Manifold		LH Air Dryer
2076	Manifold		RH Air Dryer
2082	Manifold		RH Air Dryer

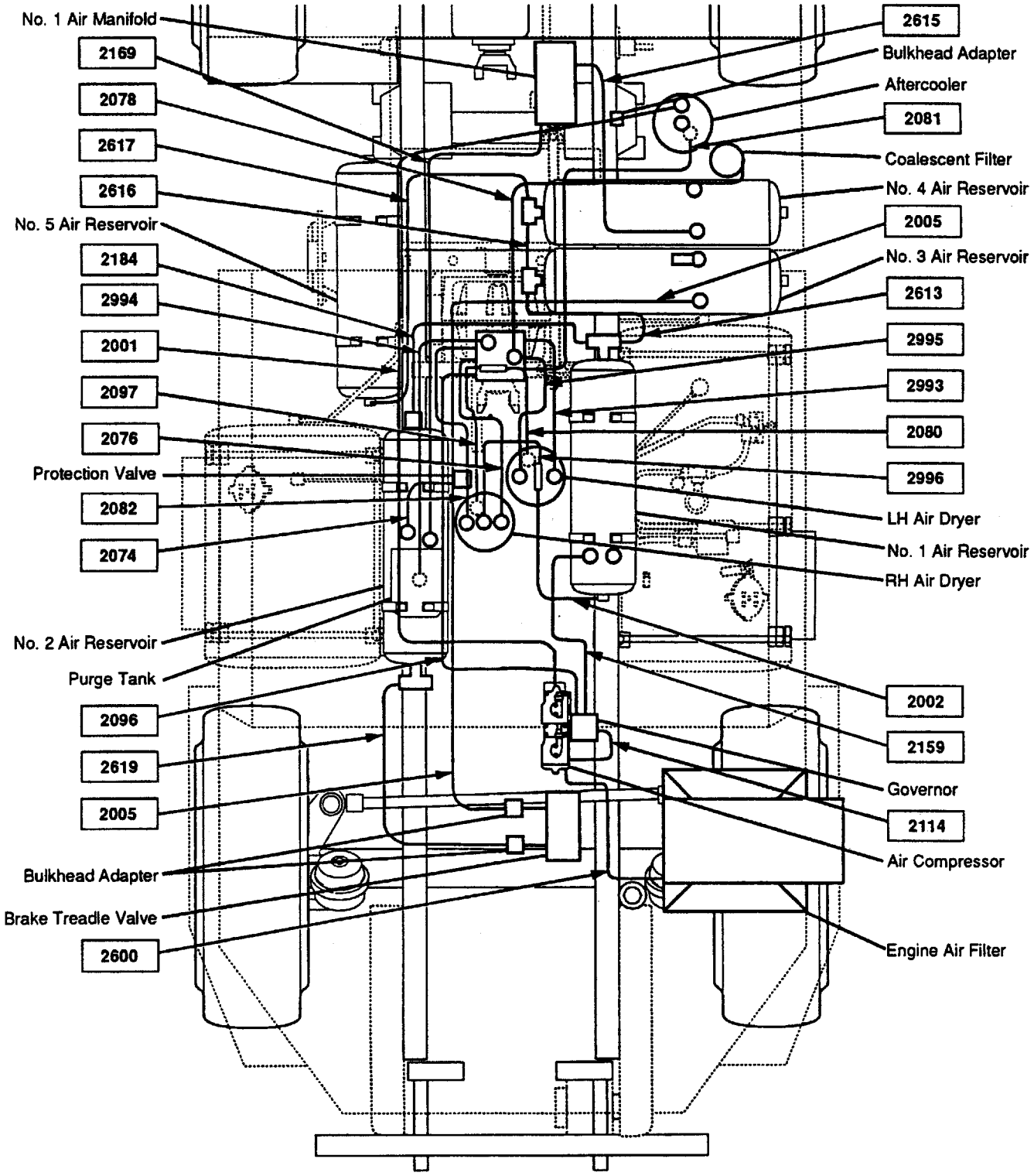


Figure 11-3. Air Supply Hose Diagram

11-40. AIR LINES AND FITTINGS REPLACEMENT (CONT)

Table 11-4. Cab Air Hose Index

Hose No.	From	To/From	To
2005	No. 3 Air Reservoir[1]	Bulkhead Adapter	Brake Treadle Valve
2027	Brake Treadle Valve		Trailer Hand Control Valve
2036	Horn Double Check Valve	Small Cab Air Manifold	City Horn[2]
2037	Cab Air Valve Air Manifold		Country Horn Valve
2039	Horn Double Check Valve	Small Cab Air Manifold	Country Horn [2]
2040	City Horn Solenoid Valve		Horn Double Check Valve
2041	Brake Treadle Valve		Dual Air Gage
2381	Engine Air Intake[2]	Large Cab Air Manifold	Air Restriction Indicator Gage
2488	Brake Treadle Valve	Large Cab Air Manifold	No. 1 Axle Service Brake Relay Valve[3]
2489	Brake Treadle Valve	Large Cab Air Manifold	Load Sensing Valve [4]
2610	Brake Treadle Valve		Dual Air Gage
2611	No. 1 Air Manifold[3]	Large Cab Air Manifold	Parking Brake Valve
2612	Parking Brake Valve	Large Cab Air Manifold	Spring Brake Valve[3]
2619	No. 2 Air Reservoir[1]	Bulkhead Adapter	Brake Treadle Valve
2623	Brake Treadle Valve	Large Cab Air Manifold	Double Check Valve[3]
2662	Trailer Brake Valve	Large Cab Air Manifold	Protection Valve (at Pogo Stick)[3]
2663	Trailer Hand Control Valve	Large Cab Air Manifold	Double Check Valve[4]
2665	Brake Treadle Valve	Large Cab Air Manifold	Double Check Valve [4]
2762	Transfer Case HI-LOW Range Valve[2]	Small Cab Air Manifold	Interaxle Lockup Double Check Valve
2765	Cab Air Valve Air Manifold		Driveline Lockup Valve

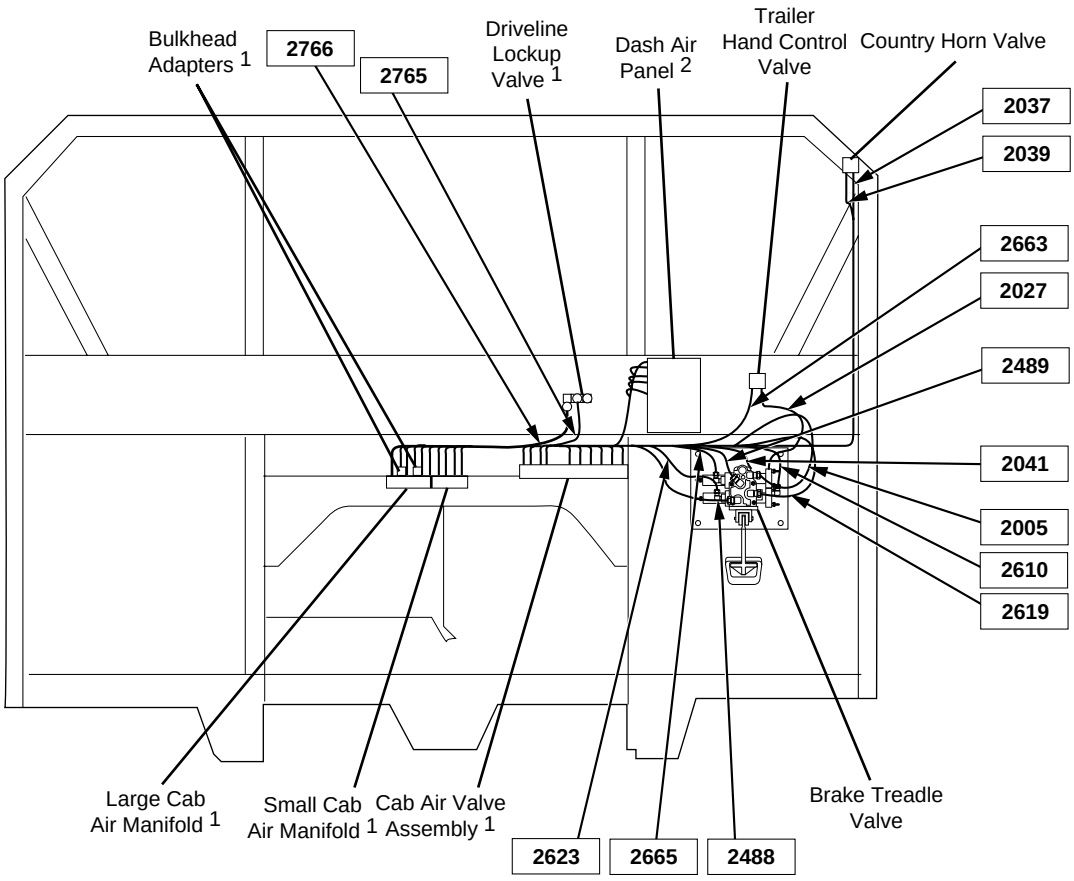
[1] Hose not shown. Refer to figure 11-3.
[2] Hose not shown. Refer to figure 11-5.
[3] Hose not shown. Refer to figure 11-1.
[4] Hose not shown. Refer to figure 11-2.

Table 11-4. Cab Air Hose Index (Cont)

Hose No.	From	To/From	To
2766	Driveline Lockup Valve		Interaxle Lockup Pilot Valve
2767	Interaxle Lockup Pilot Valve	Small Cab Air Manifold	No. 3 Air Manifold[2]
2769	Driveline Lockup Valve	Interaxle Lockup Pilot Valve	Small Cab Air Manifold
2785	Large Cab Air Manifold		Cab Air Valve Air Manifold
2786	30 PSI Pressure Regulator		Windshield Washer Solenoid Valve
2857	Transmission Modulator Solenoid Valve	Large Cab Air Manifold	Transmission Modulator Valve[2]

[2] Hose not shown. Refer to figure 11-5.

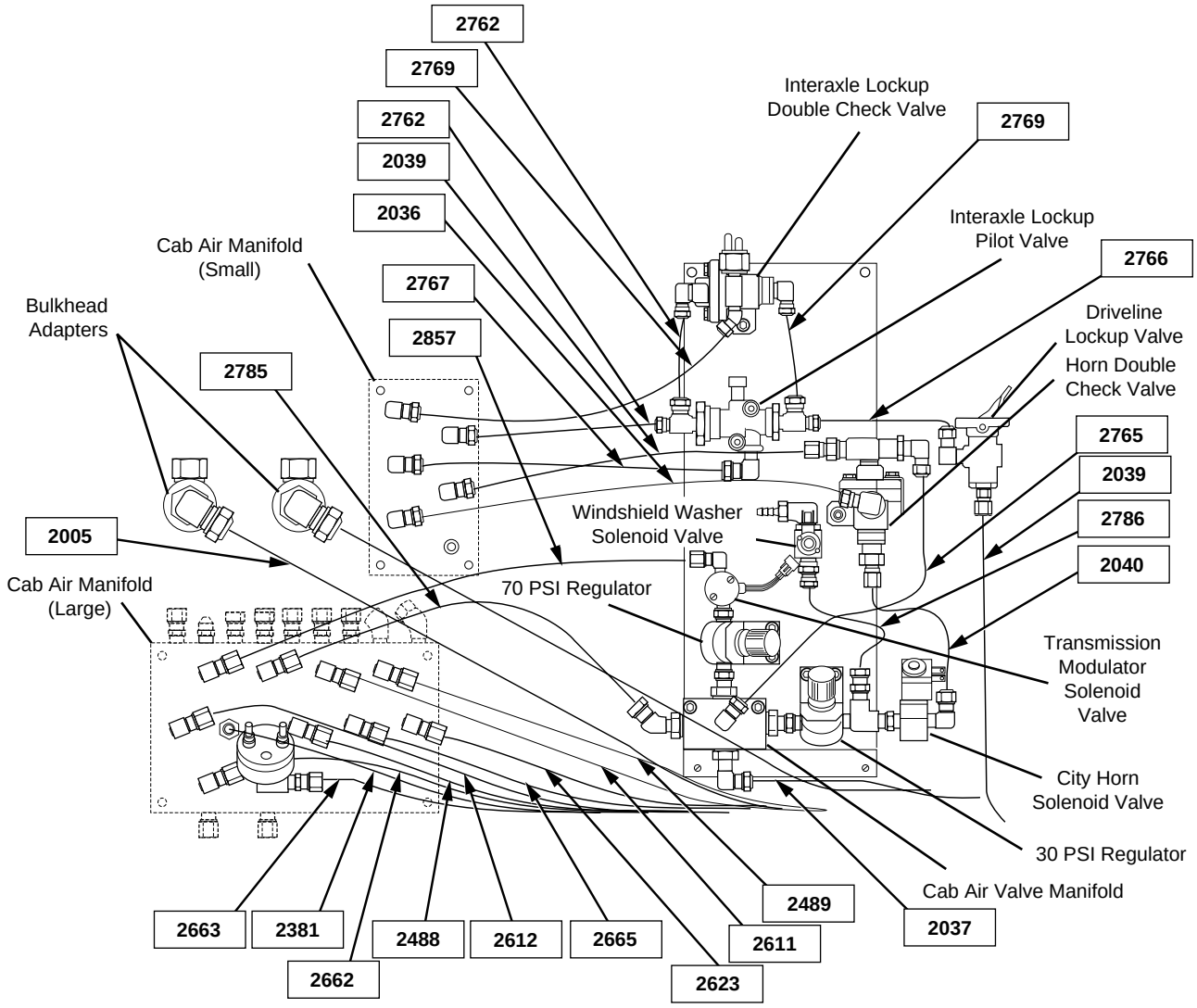
11-40. AIR LINES AND FITTINGS REPLACEMENT (CONT)



Notes:
1) See sheet 2 for detail.
2) See sheet 3 for detail.

Front View of Cab Interior

Figure 11-4. Cab Air Hose Diagram (Sheet 1 of 3)



Top View of Cab Air Valve Assembly and Manifold

Figure 11-4. Cab Air Hose Diagram (Sheet 2 of 3)

11-40. AIR LINES AND FITTINGS REPLACEMENT (CONT)

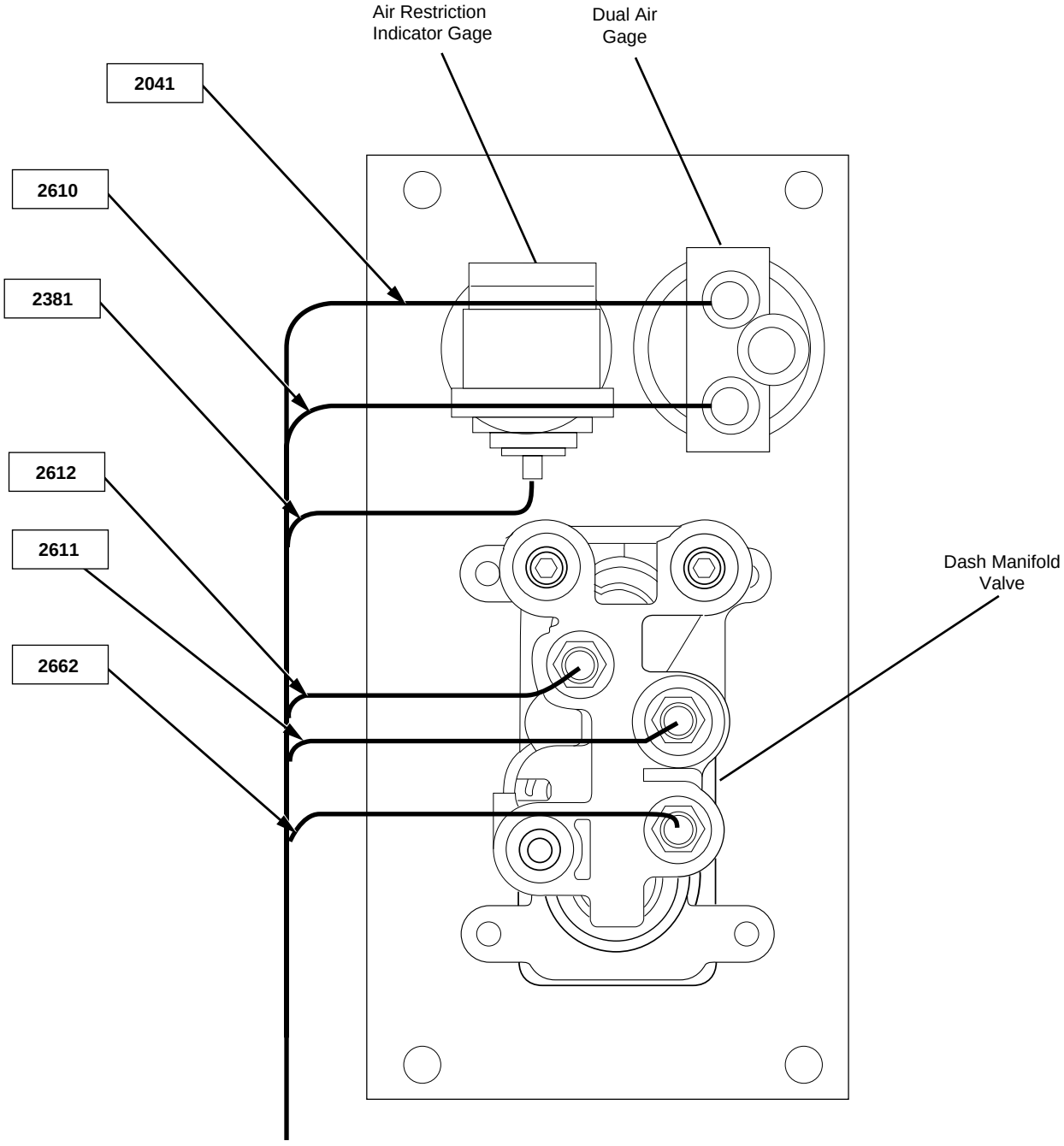


Figure 11-4. Cab Air Hose Diagram (Sheet 3 of 3)

Table 11-5. Accessory Air Hose Index (Chassis/Engine)

Hose No.	From	To/From	To
2036	Cab Air Valve Assembly[1]	Small Cab Air Manifold	City Horn
2039	Cab Air Valve Assembly[1]	Small Cab Air Manifold	Country Horn
2339	No. 3 Air Manifold		No. 2 Axle Differential
2381	Engine Air Intake	Large Cab Air Manifold	Air Restriction Indicator Gage[1]
2422	No. 3 Air Manifold		No. 3 Axle Differential
2758	Air Manifold (at RH Air Dryer)		Engine Fan Clutch Thermostat Valve
2759	Engine Fan Clutch Thermostat Valve		Engine Fan Clutch
2761	Air Manifold (at RH Air Dryer)		Transfer Case HI-LO Range Valve
2762	Transfer Case HI-LO Range Valve	Small Cab Air Manifold	Cab Air Valve Assembly[1]
2767	Interaxle Lockup Pilot Valve[1]	Small Cab Air Manifold	No. 3 Air Manifold
2769	Cab Air Valve Assembly[1]	Small Cab Air Manifold	Transfer Case Differential Lock Chamber
2771	Air Manifold (at RH Air Dryer)		Winch System
2781	Air Manifold (at RH Air Dryer)		LH Accessory Air Coupling
2782	Air Manifold (at RH Air Dryer)		RH Accessory Air Coupling
2857	Transmission Modulator Solenoid Valve[1]	Large Cab Air Manifold	Transmission Modulator Valve
2874	Transfer Case Differential Lock Chamber		Exhaust (Open)

[1] Hose not shown. Refer to figure 11-4.

11-40. AIR LINES AND FITTINGS REPLACEMENT (CONT)

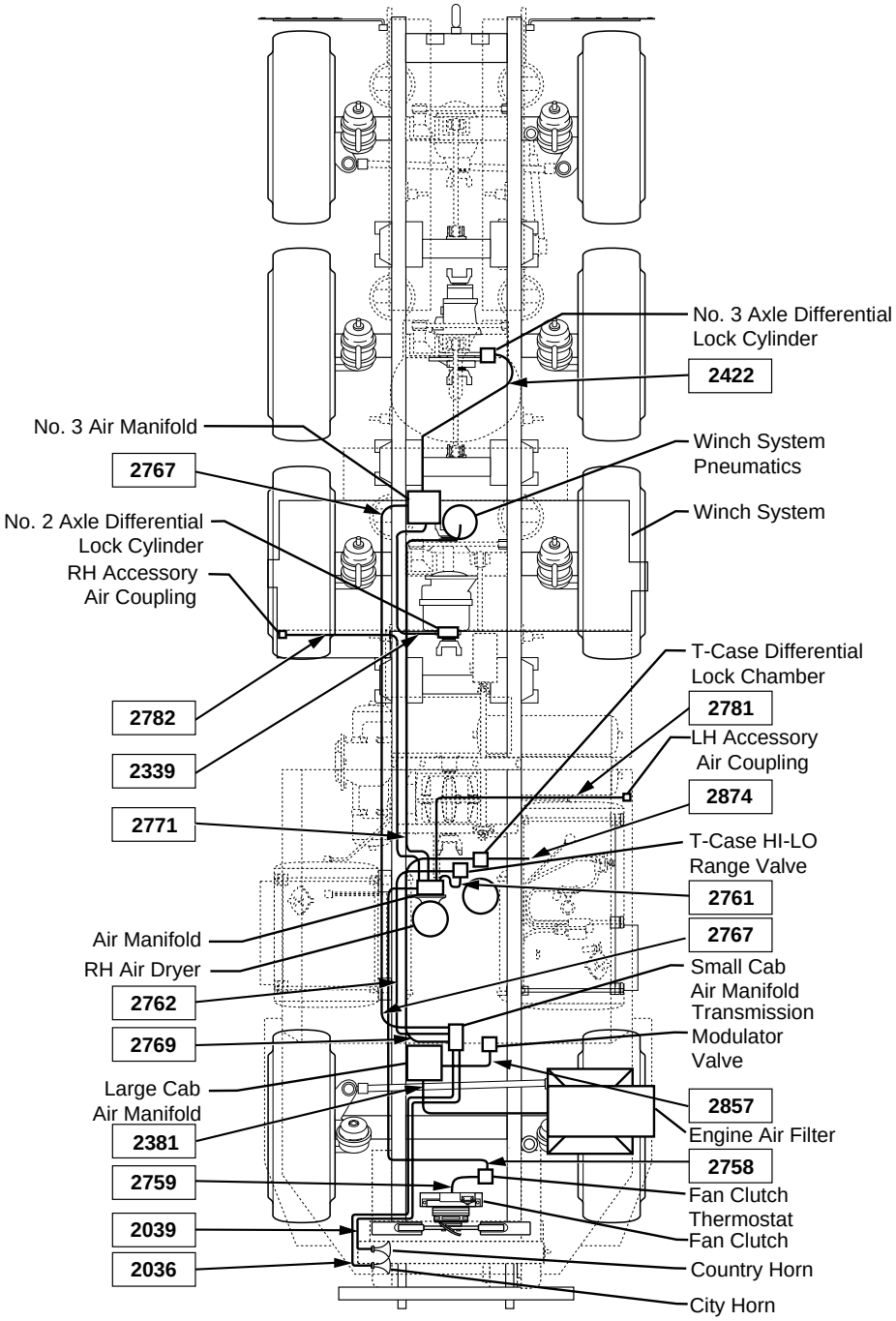


Figure 11-5. Accessory Air Hose Diagram (Chassis/Engine)

Table 11-6. Central Tire Inflation System (CTIS) Air Hose Index

Hose No.	From	To/From	To
2099	No. 1 Axle Air Manifold	Adapter	No. 1 Axle Spindle, RH
2100	No. 1 Air Reservoir		CTIS Power Manifold
2102	No. 1 Axle Air Manifold		CTIS Power Manifold
2103	No. 1 Axle Air Manifold	Adapter	No. 1 Axle Spindle, LH
2104	CTIS Power Manifold		No. 2 Axle Air Manifold
2105	No. 2 Axle Air Manifold		No. 2 Axle Spindle, RH
2106	CTIS Power Manifold		No. 3 Axle Air Manifold
2107	No. 3 Axle Air Manifold		No. 3 Axle Spindle, RH
2108	No. 3 Air Reservoir		CTIS Power Manifold
2109	No. 4 Axle Air Manifold	Adapter	No. 4 Axle Spindle, RH
2120	CTIS Power Manifold		Exhaust (Open)
2869	No. 2 Axle Air Manifold		No. 2 Axle Spindle, LH
2871	No. 3 Axle Air Manifold		No. 3 Axle Spindle, LH
2872	CTIS Power Manifold		No. 4 Axle Air Manifold
2873	No. 4 Axle Air Manifold	Adapter	No. 4 Axle Spindle, LH

11-40. AIR LINES AND FITTINGS REPLACEMENT (CONT)

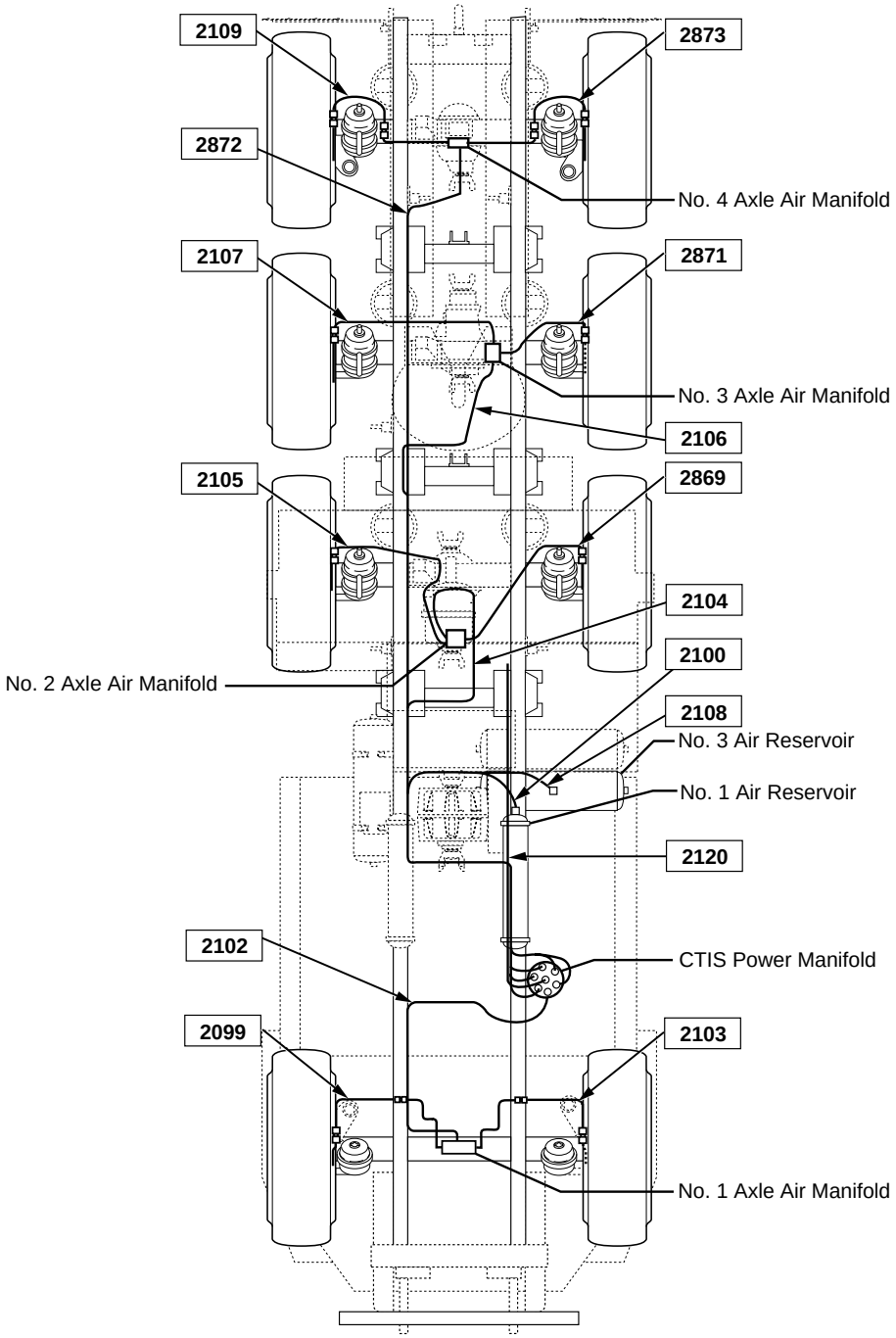


Figure 11-6. Central Tire Inflation System (CTIS) Air Hose Diagram

Table 11-7. Suspension Air Hose Index

Hose No.	From	To/From	To
2041	Pressure Protection Valve, Reservoir 3		Height Control Valve, RH
2042	Height Control Valve, RH		Height Control Valve, LH
2043	Height Control Valve, LH		Elbow, No. 3 Axle Air Spring, LH
2044	Height Control Valve, LH		Tee, No. 3 Axle Air Spring, RH
2045	Tee, No. 2 Axle Air Spring, LH		Tee, No. 3 Axle Air Spring, LH
2046	Tee, No. 2 Axle Air Spring, RH		Tee, No. 3 Axle Air Spring, RH
2047	Tee, No. 3 Axle Air Spring, LH		Elbow, No. 4 Axle Air Spring, LH
2048	Tee, No. 3 Axle Air Spring, RH		Elbow, No. 4 Axle Air Spring, RH
2049	Load Sensing Valve		Tee, No. 2 Axle Air Spring, LH
2050	Load Sensing Valve		Tee, No. 2 Axle Air Spring, RH
2051	Elbow, No. 4 Axle Air Spring, LH		Air Spring, No. 4 Axle, LH
2051	Elbow, No. 3 Axle Air Spring, LH		Air Spring, No. 3 Axle, LH
2051	Elbow, No. 2 Axle Air Spring, LH		Air Spring, No. 2 Axle, LH
2052	Elbow, No. 3 Axle Air Spring, RH		Air Spring, No. 3 Axle, RH
2052	Elbow, No. 4 Axle Air Spring, RH		Air Spring, No. 4 Axle, RH
2052	Elbow, No. 2 Axle Air Spring, RH		Air Spring, No. 2 Axle, RH

11-40. AIR LINES AND FITTINGS REPLACEMENT (CONT)

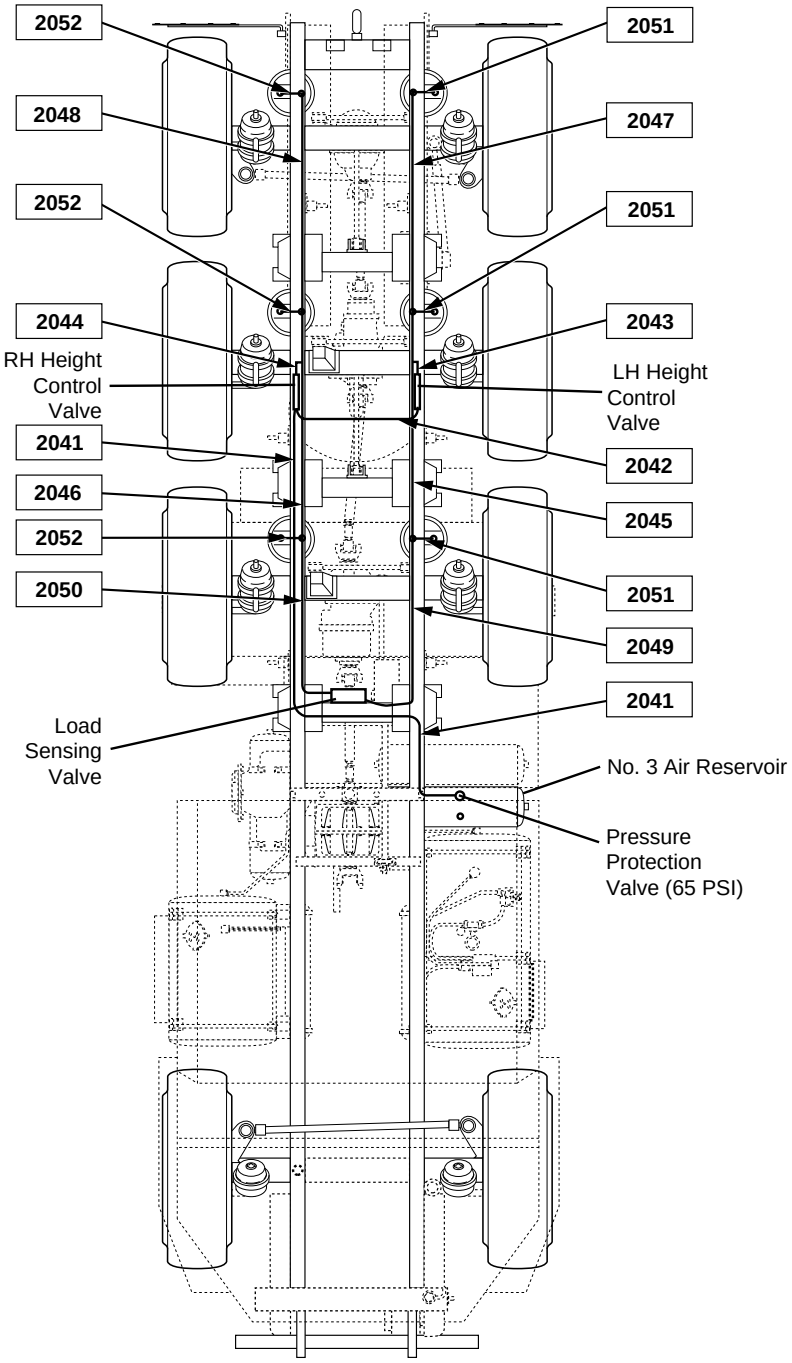


Figure 11-7. Suspension Air Hose Diagram

e. Follow-On Maintenance

(1) Install instrument panel (para 7-13).

(2) Install brake treadle valve (para 11-7).

(3) Install defroster hoses (para 18-15).

(4) Charge air system (TM 9-2320-360-10).

(5) Check for leaks.

(6) Close engine hood (TM 9-2320-360-10).

11-41. ACCESSORY AIR SUPPLY COUPLING REPLACEMENT

This task covers:
Removal
Installation

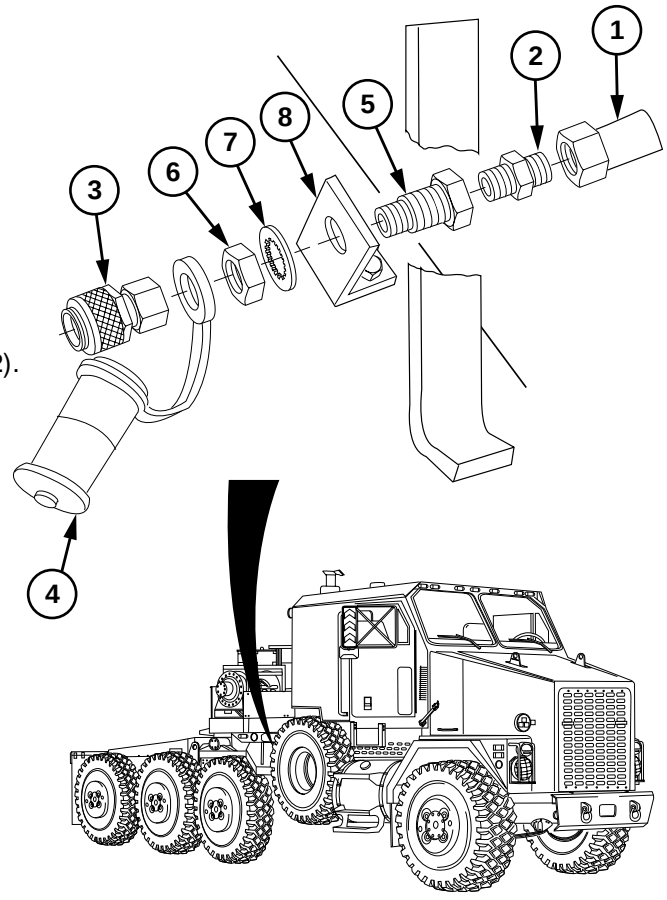
Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Air system drained (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Locknuts (2) (Item 68, Appendix G)
Lockwashers (2) (Item 116, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)



a. Right Side Removal

(1) Remove hose no. 2782 (1) from adapter (2).

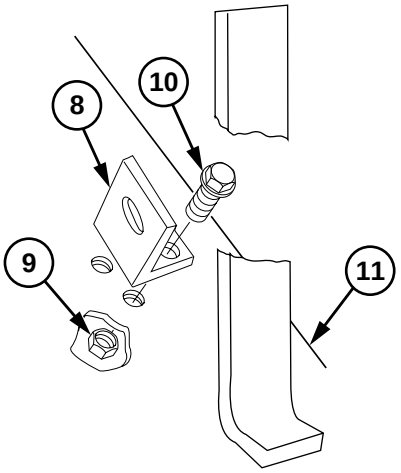
(2) Remove coupling (3) and cap (4) from anchor coupling (5).

(3) Remove nut (6) and lockwasher (7) from anchor coupling (5). Discard lockwasher.

(4) Remove anchor coupling (5) from bracket (8).

(5) Remove adapter (2) from anchor coupling (5).

(6) Remove two locknuts (9), screws (10), and bracket (8) from fender (11). Discard locknuts.



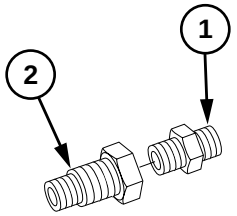
b. Right Side Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

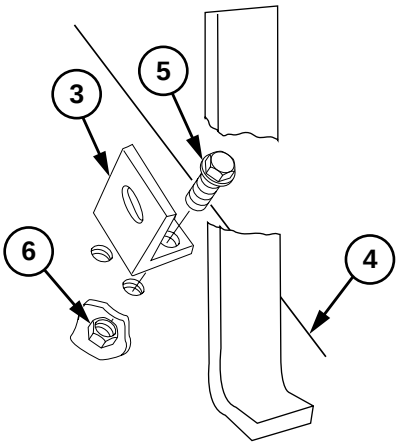
CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of adapter (1) with pipe thread sealing compound.

(2) Install adapter (1) on anchor coupling (2).



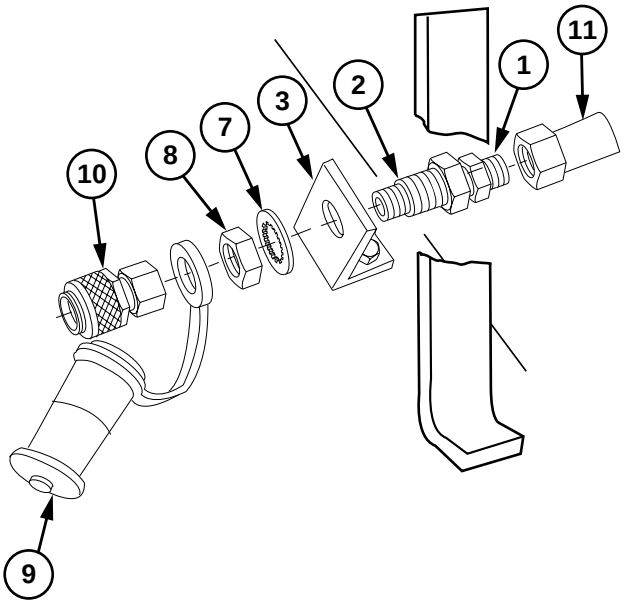
(3) Install bracket (3) on fender (4) with two screws (5) and new locknuts (6).

11-41. ACCESSORY AIR SUPPLY COUPLING REPLACEMENT (CONT)

(4) Install anchor coupling (2) on bracket (3) with new lockwasher (7) and nut (8).

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



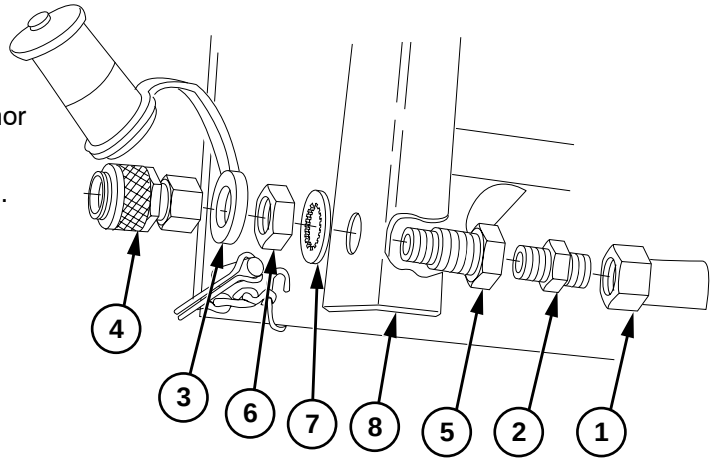
CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(5) Coat threads of anchor coupling (2) with pipe thread sealing compound.

(6) Install cap (9) and coupling (10) on anchor coupling (2).

(7) Install hose no. 2782 (11) on adapter (1).



c. Left Side Removal

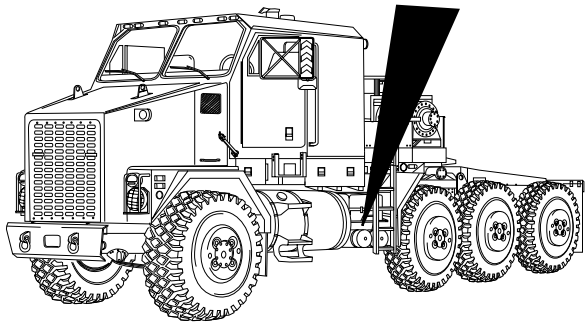
(1) Remove hose no. 2781 (1) from adapter (2).

(2) Remove coupling (3) and cap (4) from anchor coupling (5).

(3) Remove nut (6) and lockwasher (7) from anchor coupling (5). Discard lockwasher.

(4) Remove anchor coupling (5) from battery tray (8).

(5) Remove adapter (2) from anchor coupling (5).



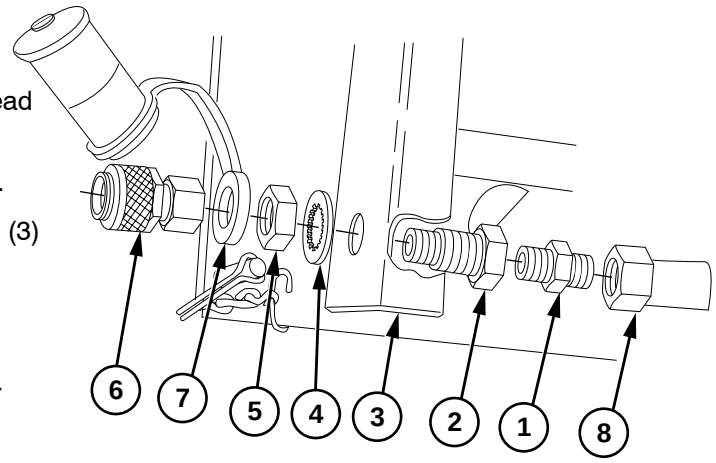
d. Left Side Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of adapter (1) with pipe thread sealing compound.

(2) Install adapter (1) on anchor coupling (2).

(3) Install anchor coupling (2) on battery tray (3) with new lockwasher (4) and nut (5).

(4) Coat threads of anchor coupling (2) with pipe thread sealing compound.

(5) Install cap (6) and coupling (7) on anchor coupling (2).

(6) Install hose no. 2781 (8) on adapter (1).

e. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

11-42. POGO STICK ASSEMBLY REPAIR

This task covers:
a. Disassembly
b. Assembly
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Tractor protection valve removed (para 11-18).
12 Pin trailer electrical connector removed (para 7-59).
7 Pin electrical connector removed (para 7-60).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Lockwasher (Item 104, Appendix G)
Locknuts (4) (Item 44, Appendix G)
Locknuts (2) (Item 61, Appendix G)
Locknut (Item 68, Appendix G)

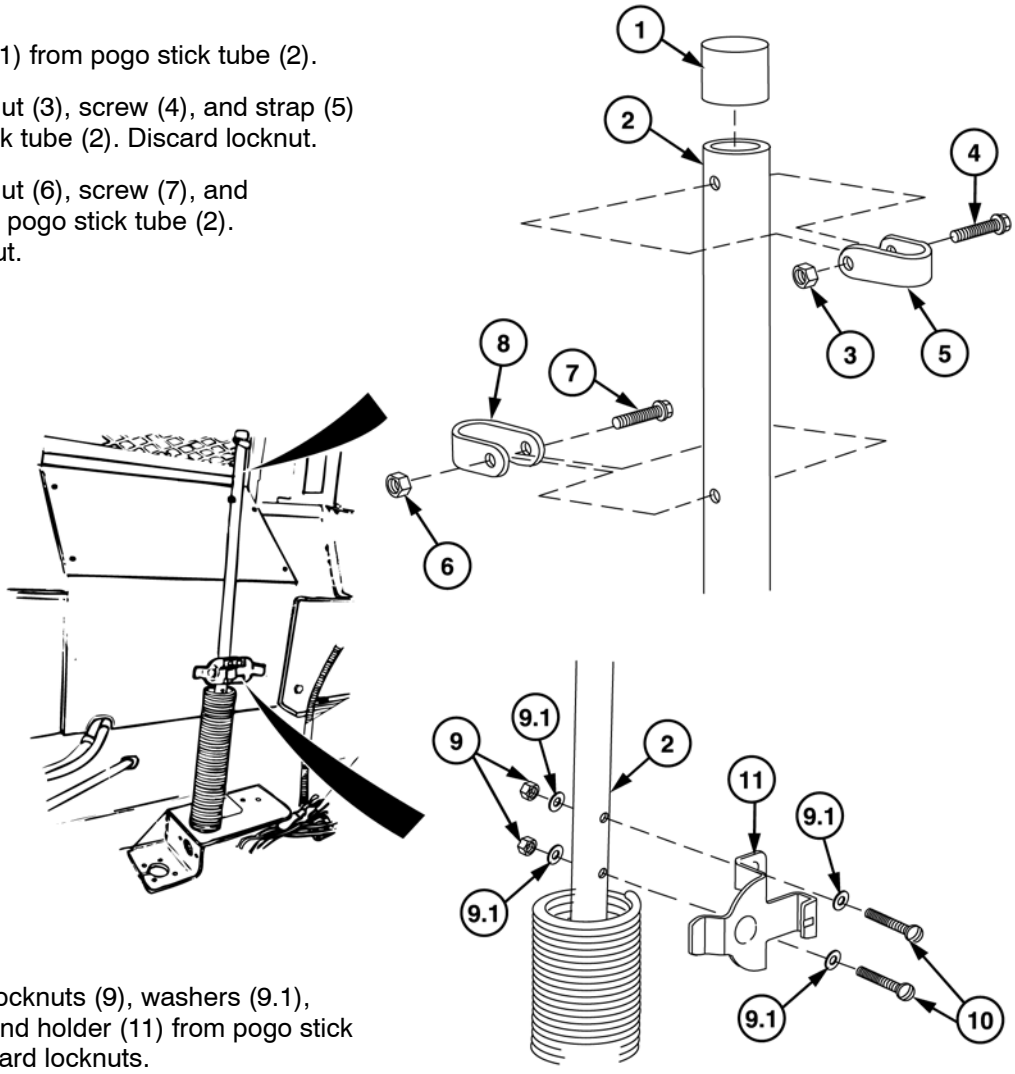
Personnel Required
Two

a. Disassembly

(1) Remove cap (1) from pogo stick tube (2).

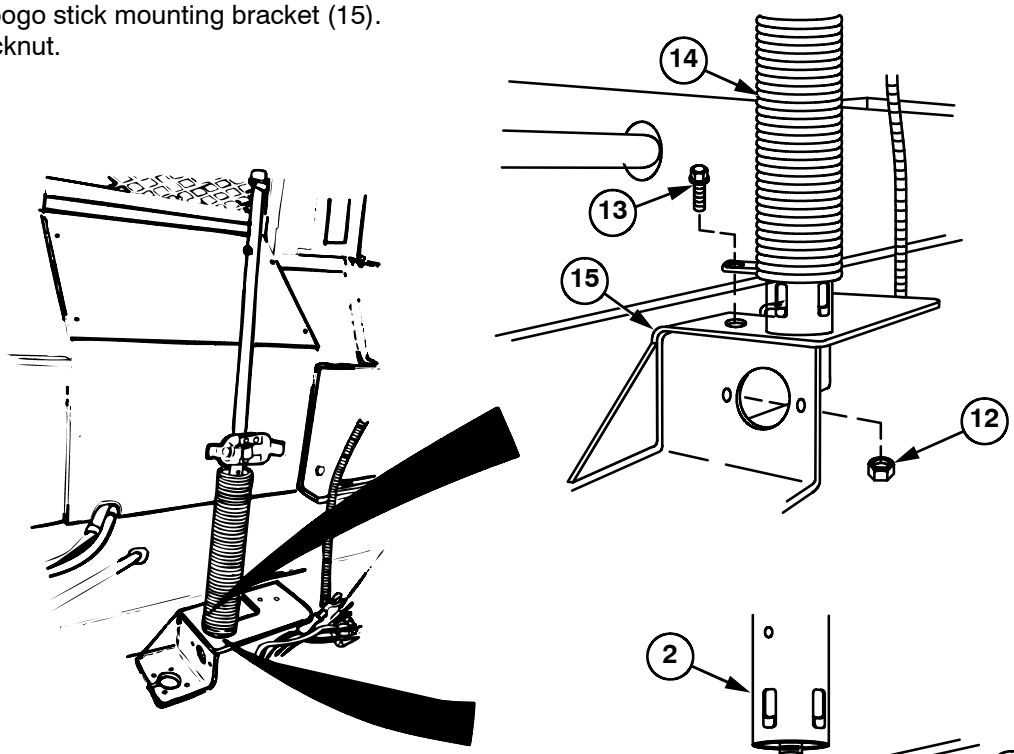
(2) Remove locknut (3), screw (4), and strap (5) from pogo stick tube (2). Discard locknut.

(3) Remove locknut (6), screw (7), and strap (8), from pogo stick tube (2). Discard locknut.

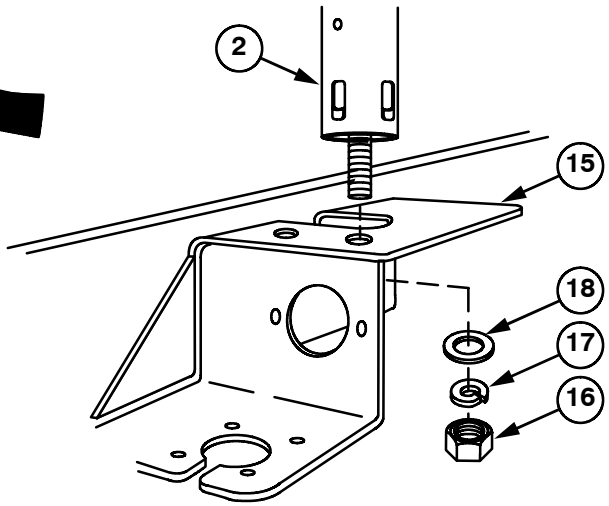


(4) Remove two locknuts (9), washers (9.1), screws (10), and holder (11) from pogo stick tube (2). Discard locknuts.

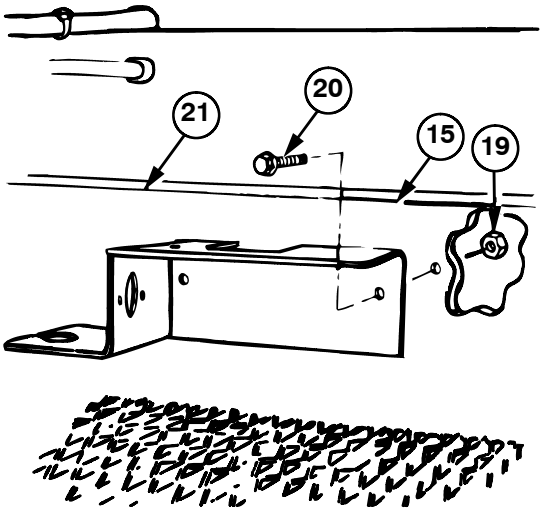
(5) Remove locknut (12), screw (13), and spring (14) from pogo stick mounting bracket (15). Discard locknut.



(6) Remove nut (16), lockwasher (17), and washer (18) and pogo stick tube (2) from pogo stick mounting bracket (15). Discard lockwasher.



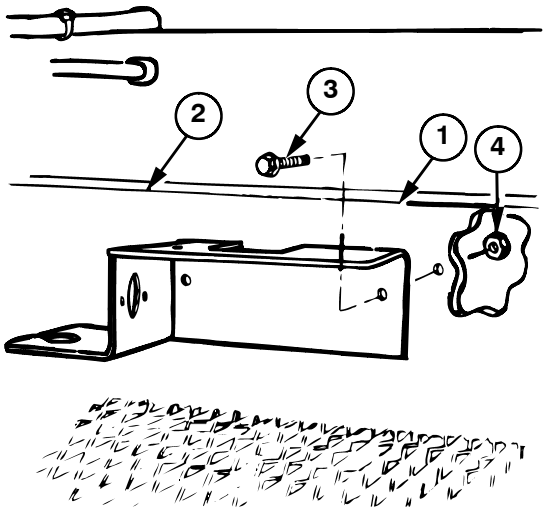
(7) Remove two locknuts (19), screws (20) and pogo stick mounting bracket (15) from winch platform (21) with aid of assistant. Discard locknuts.



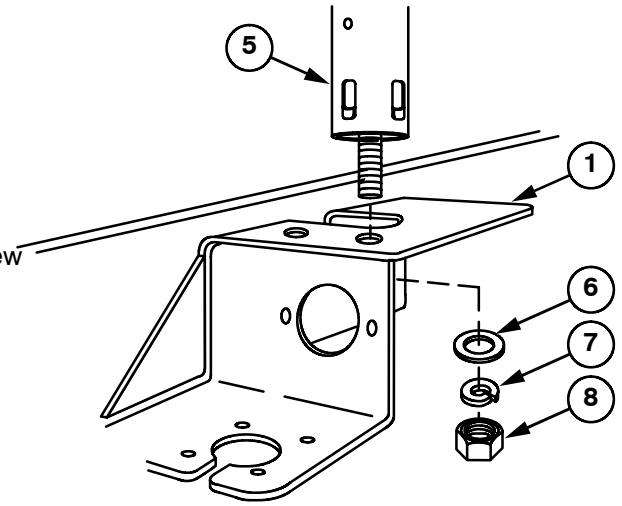
11-42. POGO STICK ASSEMBLY REPLACEMENT (CONT)

b. Assembly

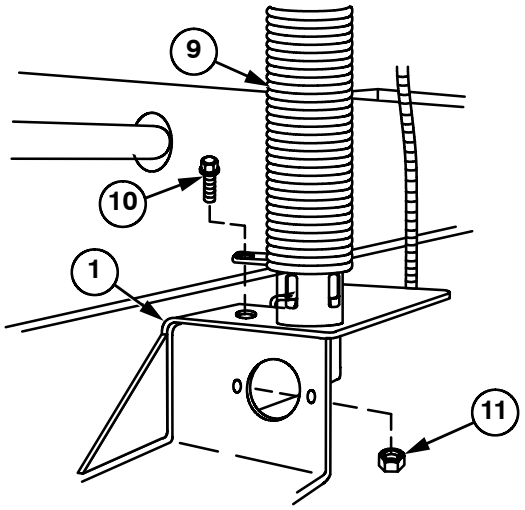
(1) Install pogo stick mounting bracket (1) on winch platform (2) with two screws (3) and new locknuts (4).



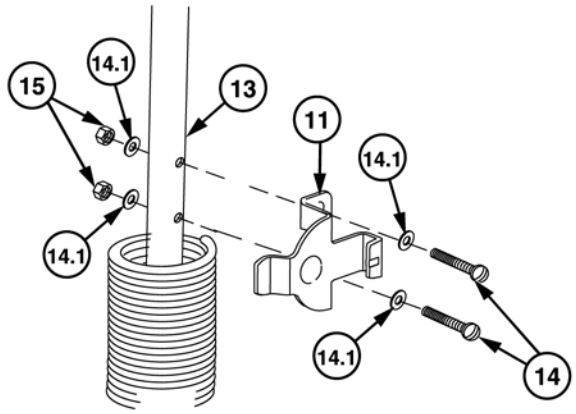
(2) Install pogo stick tube (5) on pogo stick mounting bracket (1) with washer (6), new lockwasher (7) and nut (8).



(3) Install spring (9) on pogo stick mounting bracket (1) with screw (10) and new locknut (11).



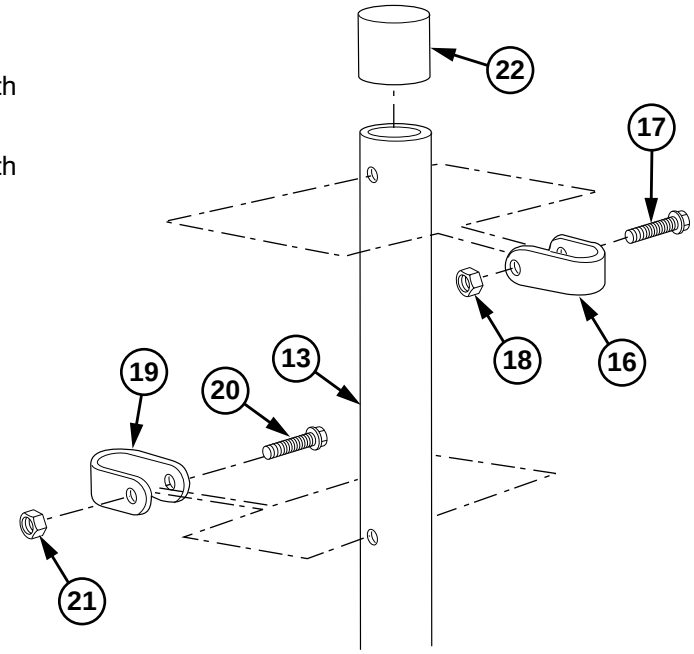
(4) Install holder (12) on pogo stick tube (13) with two screws (14), washers (14.1), and new locknuts (15).



(5) Install strap (16) on pogo stick tube (13) with screw (17) and new locknut (18).

(6) Install strap (19) on pogo stick tube (13) with screw (20) and new locknut (21).

(7) Install cap (22) on pogo stick tube (13).



c. Follow-On Maintenance

(1) Install 7-pin electrical connector (para 7-60).

(2) Install 12-pin electrical connector (para 7-59).

(3) Install tractor protection valve (para 11-18).

11-43. MANIFOLD REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).
Stowage box removed (para 16-14).

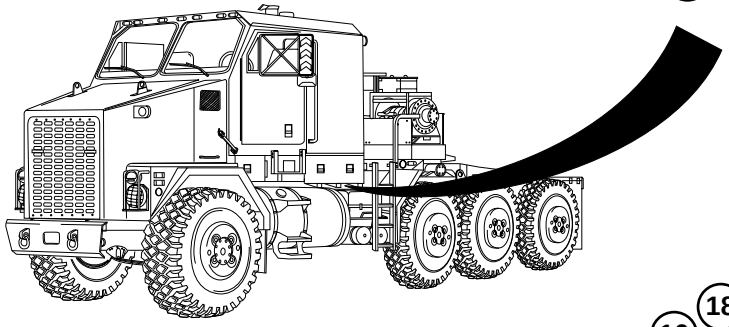
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

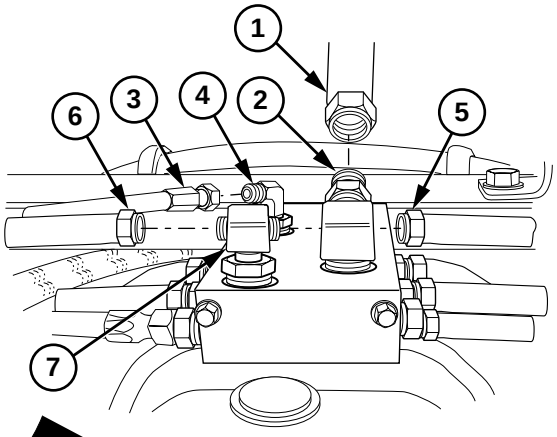
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (2) (Item 72, Appendix G)

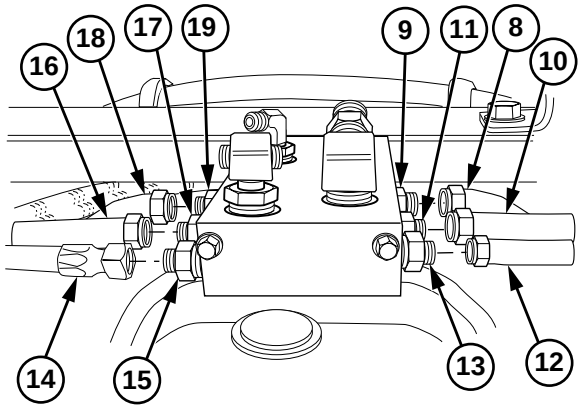
a. Removal

NOTE
Tag and mark hoses before removal.

(1) Remove hose no. 2078 (1) from fitting (2).
(2) Remove hose no. 2994 (3) from elbow (4).
(3) Remove hose no. 2080 (5) and hose no. 2097 (6) from tee (7).

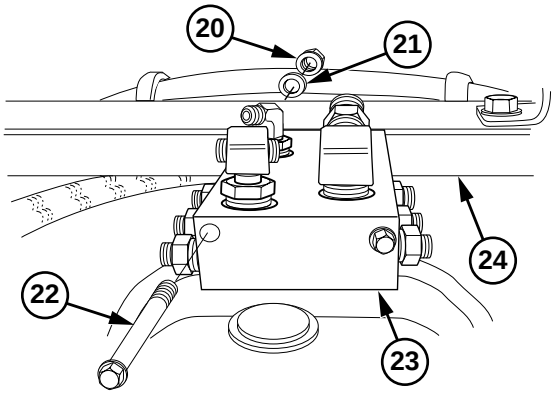






(4) Remove hose no. 2993 (8) from fitting (9).
(5) Remove hose no. 2995 (10) from fitting (11).
(6) Remove hose no. 2081 (12) from fitting (13).
(7) Remove hose no. 2096 (14) from fitting (15).
(8) Remove hose no. 2076 (16) from fitting (17).
(9) Remove hose no. 2082 (18) from fitting (19).

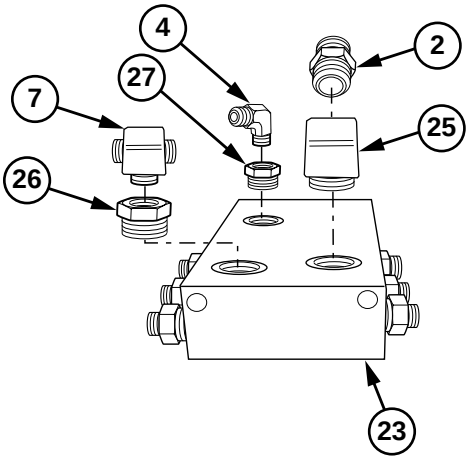
(10) Remove two locknuts (20), washers (21), screws (22), and manifold (23) from PTO shaft support (24). Discard locknuts.



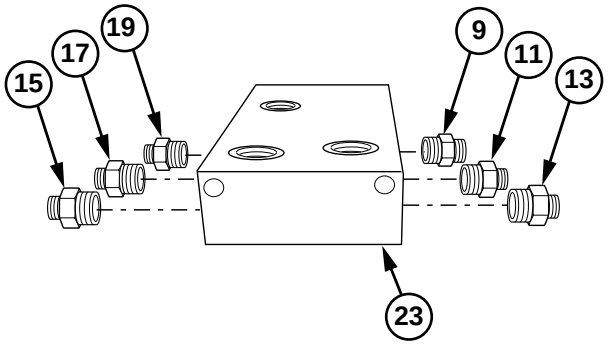
(11) Remove fitting (2) and elbow (25) from manifold (23).

(12) Remove tee (7) and reducer (26) from manifold (23).

(13) Remove elbow (4) and reducer (27) from manifold (23).



(14) Remove six fittings (9, 11, 13, 15, 17, and 19) from manifold (23).



11-43. MANIFOLD REPLACEMENT (CONT)

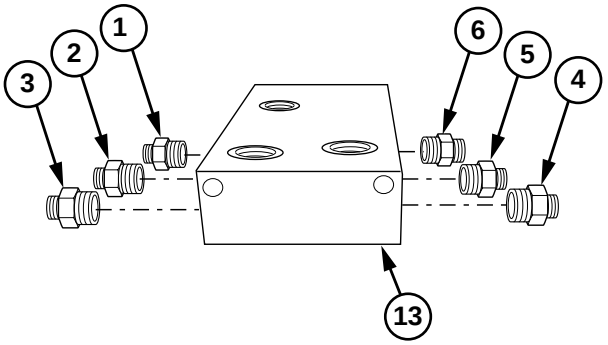
b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

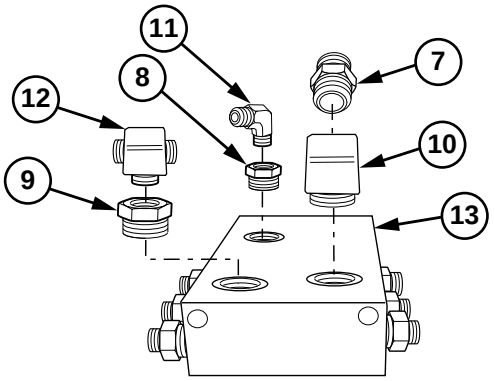
CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Failure to comply may result in component damage.



(1) Coat threads of seven fittings (1, 2, 3, 4, 5, 6, and 7), two reducers (8 and 9), two elbows (10 and 11), and tee (12) with pipe thread sealing compound.

(2) Install six fittings (1, 2, 3, 4, 5, and 6) on manifold (13).

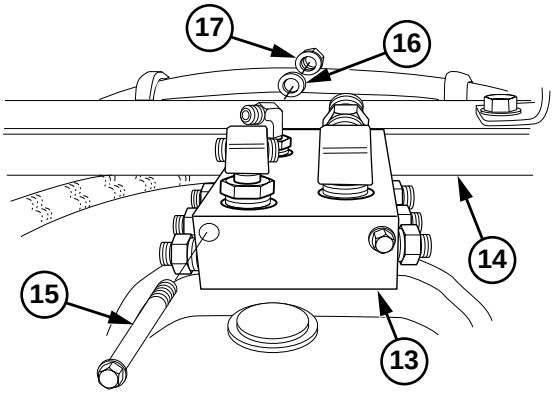


(3) Install two reducers (8 and 9) and elbow (10) on manifold (13).

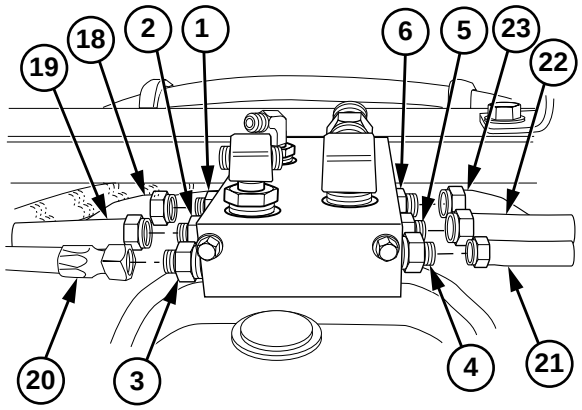
(4) Install elbow (11) on reducer (8).

(5) Install tee (12) on reducer (9).

(6) Install fitting (7) on elbow (10).



(7) Install manifold (13) on PTO shaft support (14) with two screws (15), washers (16), and new locknuts (17).



(8) Install hose no. 2082 (18) on fitting (1).

(9) Install hose no. 2076 (19) on fitting (2).

(10) Install hose no. 2096 (20) on fitting (3).

(11) Install hose no. 2081 (21) on fitting (4).

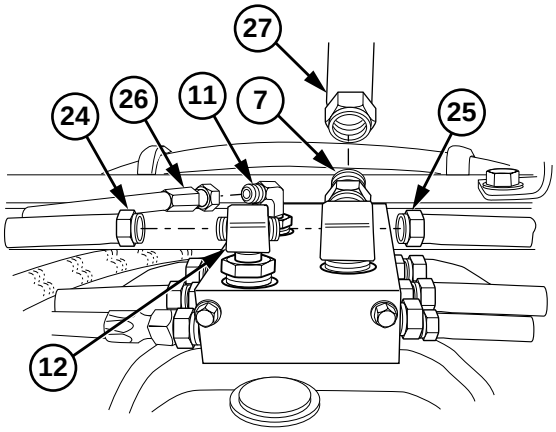
(12) Install hose no. 2995 (22) on fitting (5).

(13) Install hose no. 2993 (23) on fitting (6).

(14) Install hose no. 2097 (24) and hose no. 2080 (25) on tee (12).

(15) Install hose no. 2994 (26) on elbow (11).

(16) Install hose no. 2078 (27) on fitting (7).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (824-862 kPa)

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Install stowage box (para 16-14).

CHAPTER 12
WHEEL AND TIRE MAINTENANCE

Contents

	Para	Page
Introduction	12-1	12-1
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Wheel Valve and Bracket Repair	12-3	12-13
CTIS Tube Replacement	12-4	12-15
Wheel and Tire Repair	12-5	12-18

Section I. INTRODUCTION

12-1. INTRODUCTION

This chapter contains instructions for replacement of wheel and tire components at the Unit maintenance level. Some parts must be removed before wheel and tire components can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10. Refer to TM 9-2610-200-14 for tire repair.

Section II. MAINTENANCE PROCEDURES

12-2. AXLE NO. 1, NO. 2, NO. 3, AND NO. 4 MANIFOLDS REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Air system drained (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

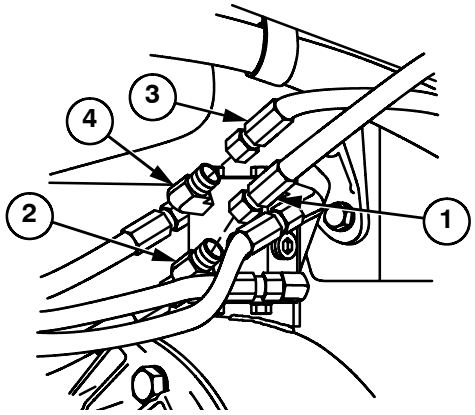
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (8) (Item 72, Appendix G)

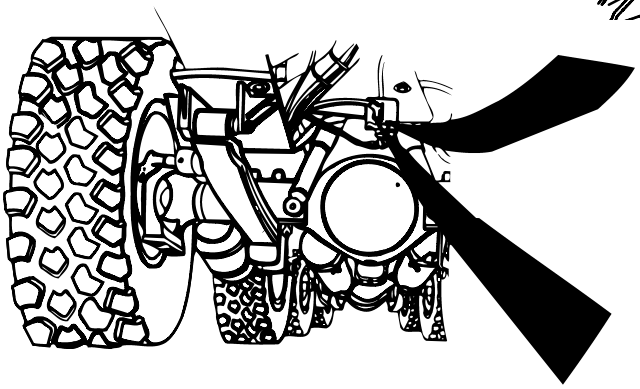
a. Axle No. 1 Manifold Removal

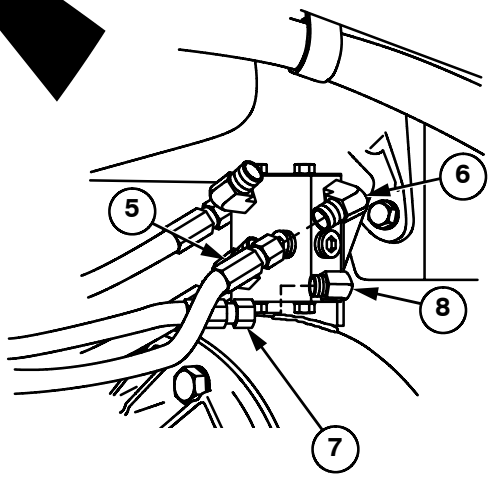
NOTE
Tag and mark hoses before removal.

(1) Remove hose no. 2543 (1) from elbow (2).

(2) Remove hose no. 2102 (3) from elbow (4).







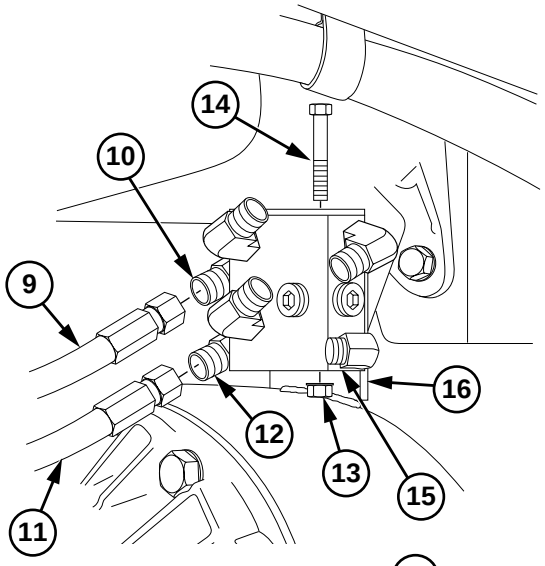
(3) Remove hose no. 2099 (5) from elbow (6).

(4) Remove hose no. 2012 (7) from elbow (8).

(5) Remove hose no. 2103 (9) from elbow (10).

(6) Remove hose no. 2013 (11) from elbow (12).

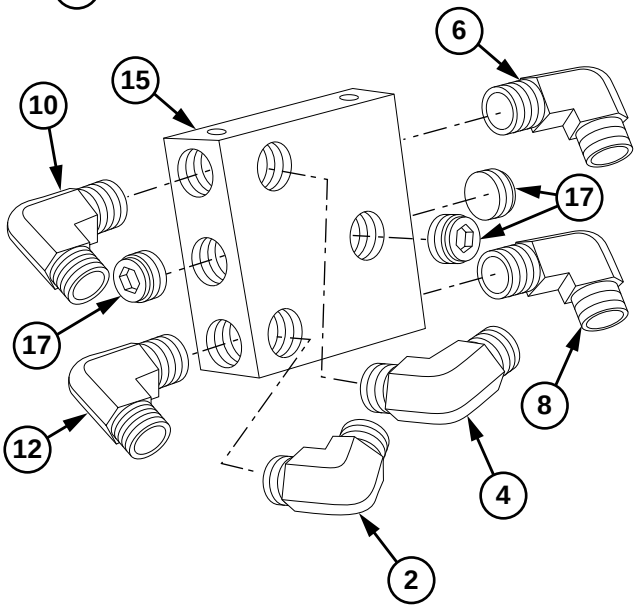
(7) Remove two locknuts (13), screws (14), and manifold (15) from mounting bracket (16). Discard locknuts.



NOTE

Tag elbows and mark elbow positions before removal.

(8) Remove elbows (2, 4, 6, 8, 10, and 12) and three plugs (17) from manifold (15).



b. Axle No. 1 Manifold Installation

WARNING

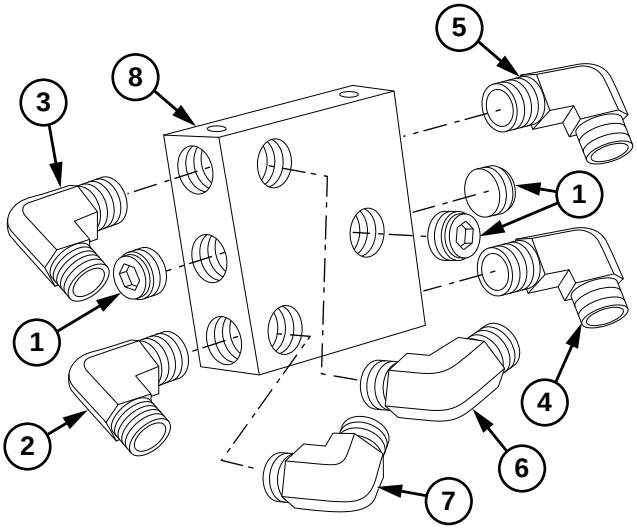
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Damage to equipment may result.

(1) Coat threads of three plugs (1) and six elbows (2 thru 7) with pipe thread sealing compound.

(2) Install three plugs (1) and six elbows (2 thru 7) in manifold (8).

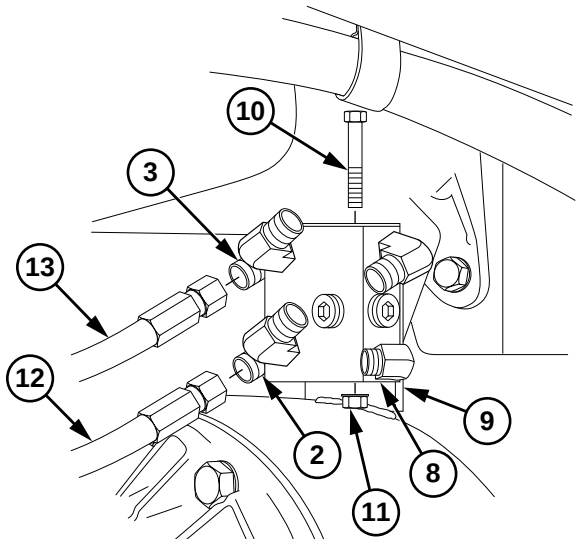


12-2. AXLE NO. 1, NO. 2, NO. 3, AND NO. 4 MANIFOLDS REPLACEMENT (CONT)

(3) Install manifold (8) on mounting bracket (9) with two screws (10) and new locknuts (11).

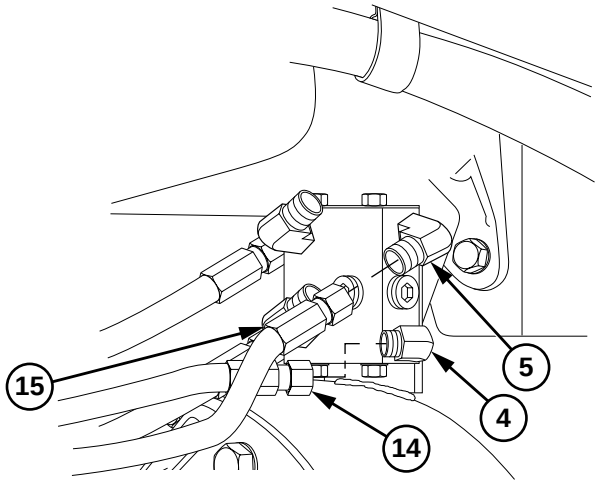
(4) Install hose no. 2013 (12) on elbow (2).

(5) Install hose no. 2103 (13) on elbow (3).



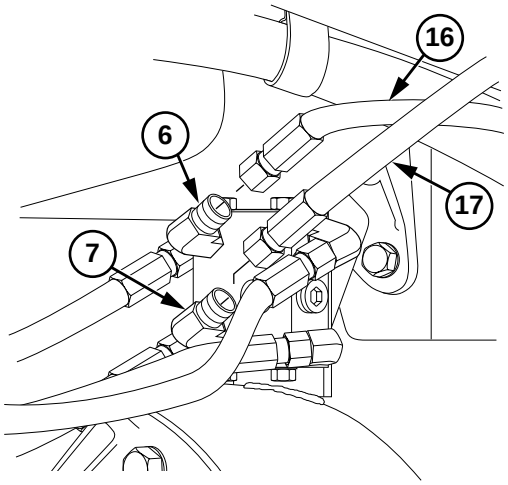
(6) Install hose no. 2012 (14) on elbow (4).

(7) Install hose no. 2099 (15) on elbow (5).



(8) Install hose no. 2102 (16) on elbow (6).

(9) Install hose no. 2543 (17) on elbow (7).



c. Axle No. 2 Manifold Removal

(1) Remove hose no. 2105 (1) from elbow (2).

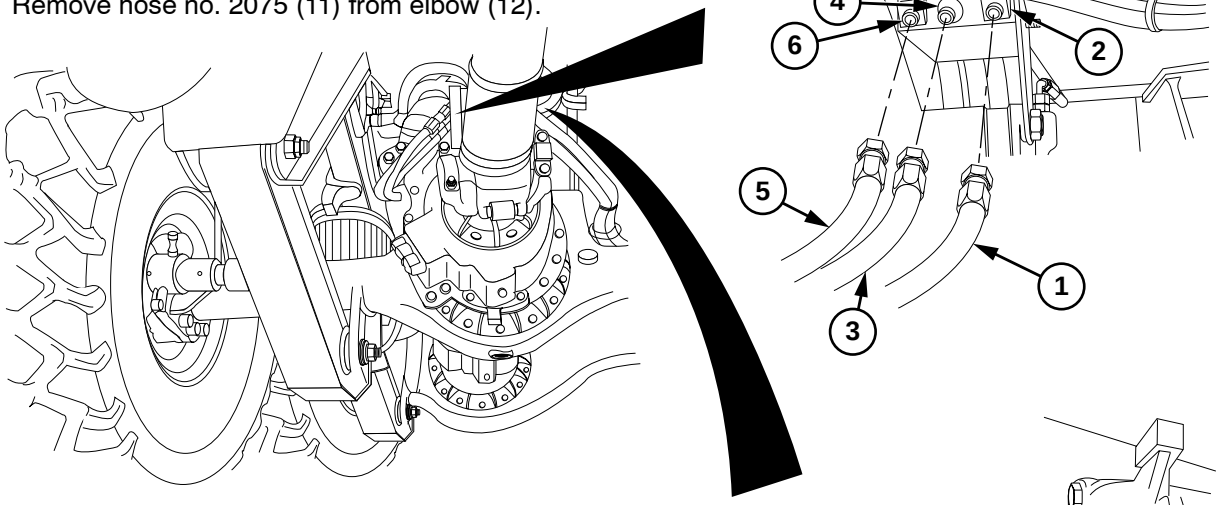
(2) Remove hose no. 2546 (3) from elbow (4).

(3) Remove hose no. 2022 (5) from elbow (6).

(4) Remove hose no. 2104 (7) from elbow (8).

(5) Remove hose no. 2545 (9) from elbow (10).

(6) Remove hose no. 2075 (11) from elbow (12).

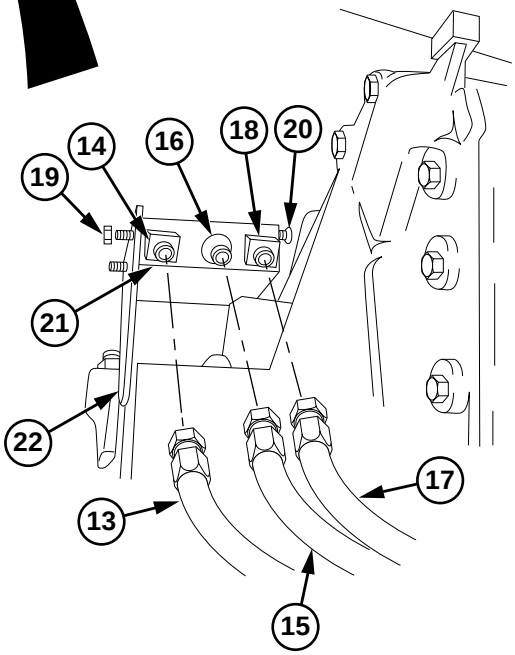


(7) Remove hose no. 2869 (13) from elbow (14).

(8) Remove hose no. 2547 (15) from elbow (16).

(9) Remove hose no. 2023 (17) from elbow (18).

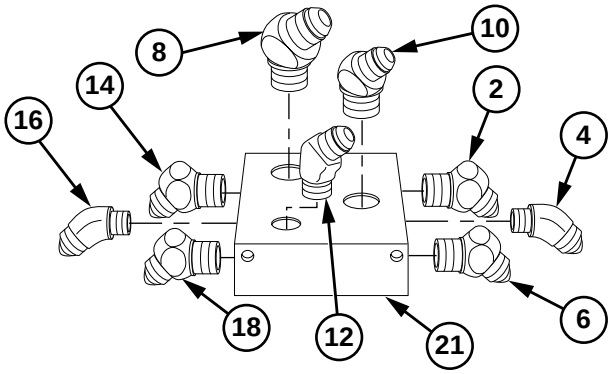
(10) Remove two locknuts (19), screws (20), and manifold (21) from mounting bracket (22). Discard locknuts.



NOTE

Tag elbow and mark elbow positions before removal.

(11) Remove elbows (2, 4, 6, 8, 10,12, 14, 16, and 18) from manifold (21).



12-2. AXLE NO. 1, NO. 2, NO. 3, AND NO. 4 MANIFOLDS REPLACEMENT (CONT)

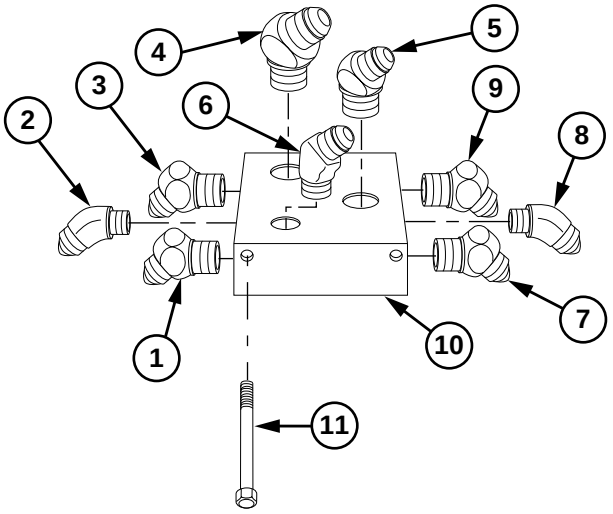
d. Axle No. 2 Manifold Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

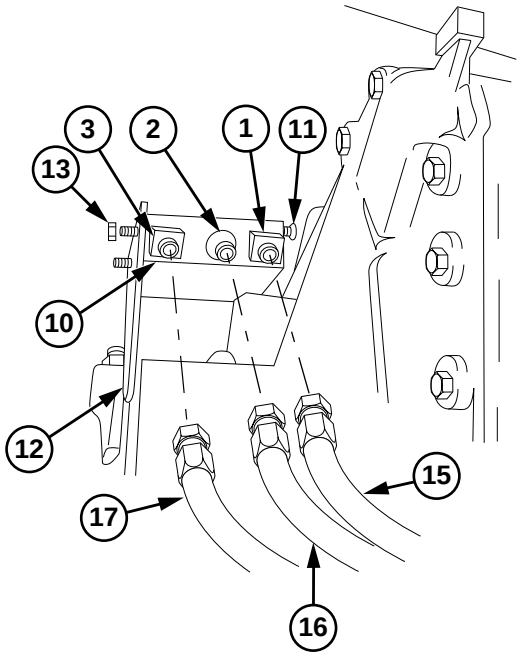
Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Damage to equipment may result.



(1) Coat threads of nine elbows (1 thru 9) with pipe thread sealing compound.

(2) Install elbows (1 thru 9) in manifold (10).

(3) Install two screws (11) in manifold (10).



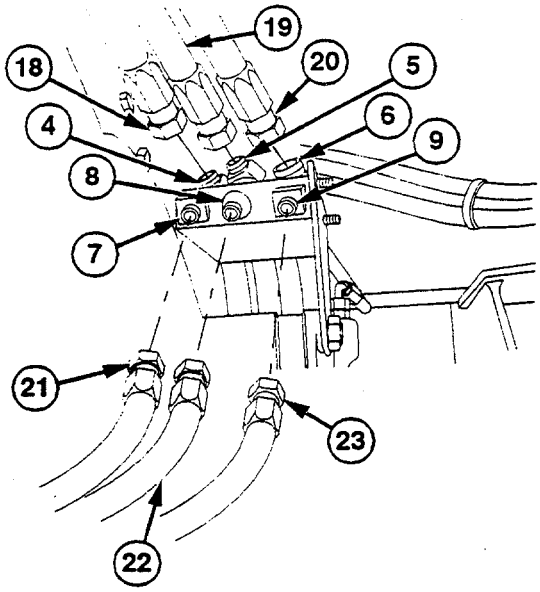
(4) Install manifold (10) on mounting bracket (12) with two screws (11) and new locknuts (13).

(5) Install hose no. 2023 (15) on elbow (1).

(6) Install hose no. 2547 (16) on elbow (2).

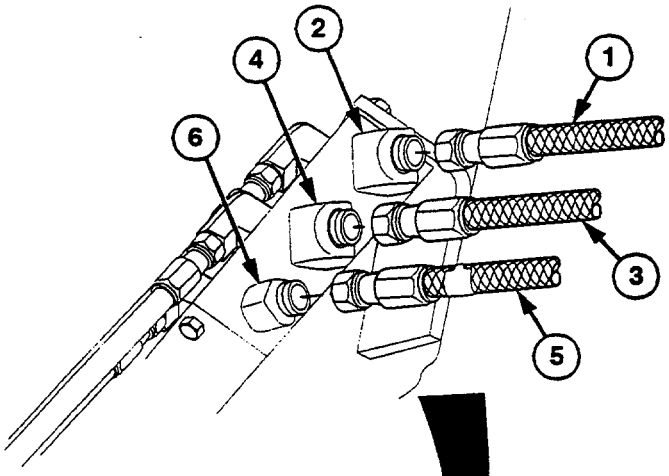
(7) Install hose no. 2869 (17) on elbow (3).

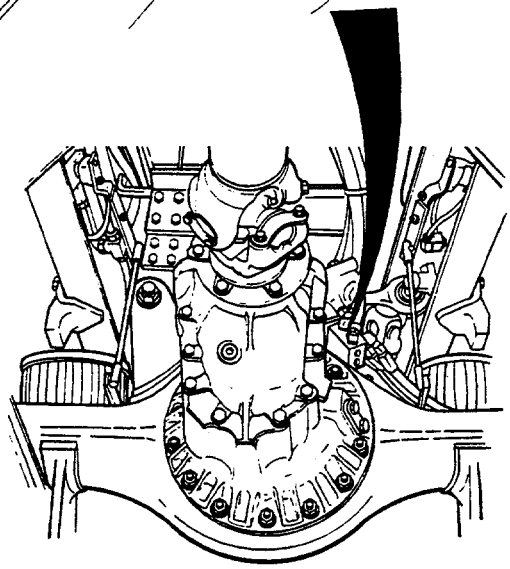
(8) Install hose no. 2075 (18) on elbow (4).
(9) Install hose no. 2545 (19) on elbow (5).
(10) Install hose no. 2104 (20) on elbow (6).
(11) Install hose no. 2022 (21) on elbow (7).
(12) Install hose no. 2546 (22) on elbow (8).
(13) Install hose no. 2105 (23) on elbow (9).



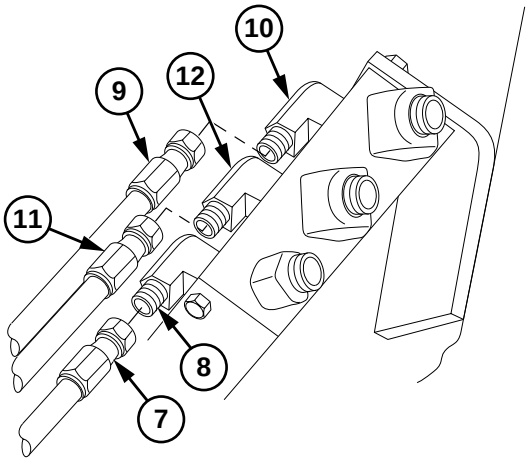
e. Axle No. 3 Manifold Removal

(1) Remove hose no. 2143 (1) from elbow (2).
(2) Remove hose no. 2368 (3) from elbow (4).
(3) Remove hose no. 2106 (5) from elbow (6).





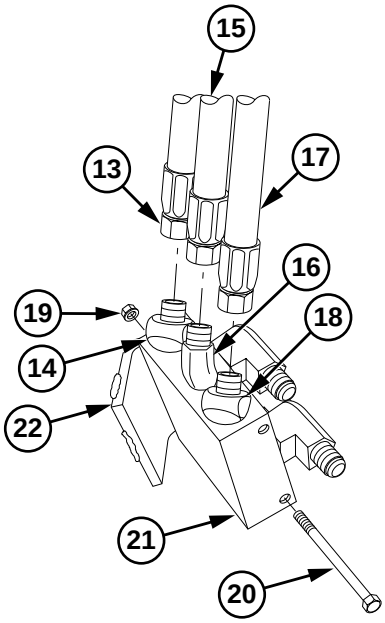
12-2. AXLE NO. 1, NO. 2, NO. 3, AND NO. 4 MANIFOLDS REPLACEMENT (CONT)



(4) Remove hose no. 2015 (7) from elbow (8).

(5) Remove hose no. 2871 (9) from elbow (10).

(6) Remove hose no. 2139 (11) from elbow (12).



(7) Remove hose no. 2017 (13) from elbow (14).

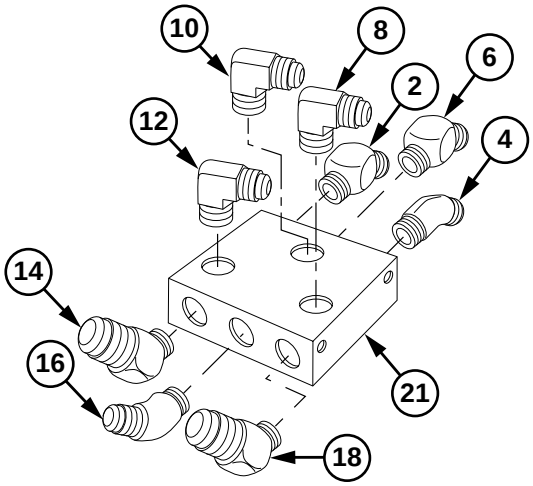
(8) Remove hose no. 2138 (15) from elbow (16).

(9) Remove hose no. 2107 (17) from elbow (18).

(10) Remove two locknuts (19), screws (20), and manifold (21) from mounting bracket (22). Discard locknuts.

NOTE

Tag elbows and mark elbow positions before removal.



(11) Remove elbows (2, 4, 6, 8, 10,12, 14, 16, and 18) from manifold (21).

f. Axle No. 3 Manifold Installation

WARNING

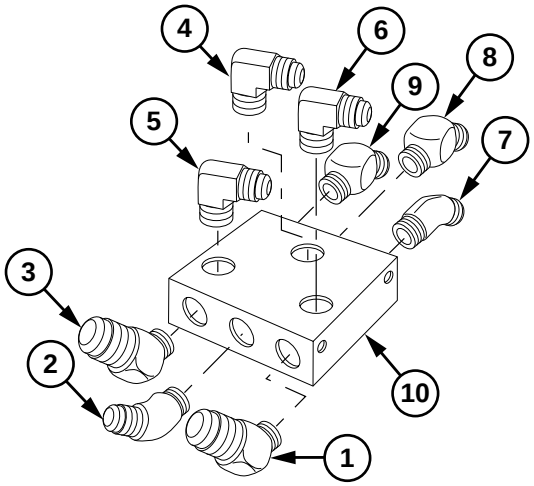
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Damage to equipment may result.

(1) Coat threads of nine elbows (1 thru 9) with pipe thread sealing compound.

(2) Install elbows (1 thru 9) in manifold (10).

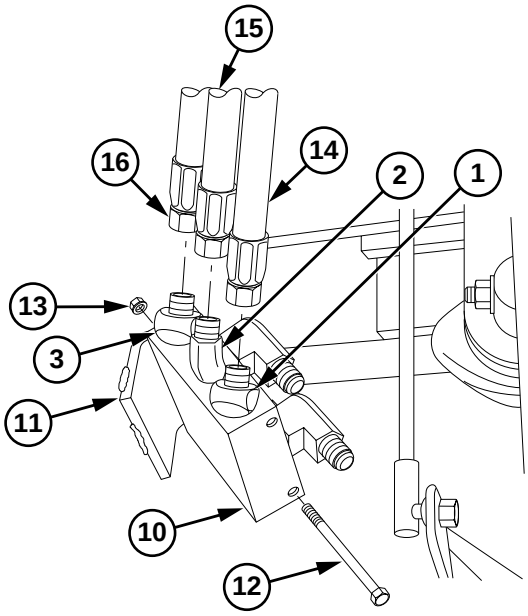


(3) Install manifold (10) on mounting bracket (11) with two screws (12) and new locknuts (13).

(4) Install hose no. 2107 (14) on elbow (1).

(5) Install hose no. 2138 (15) on elbow (2).

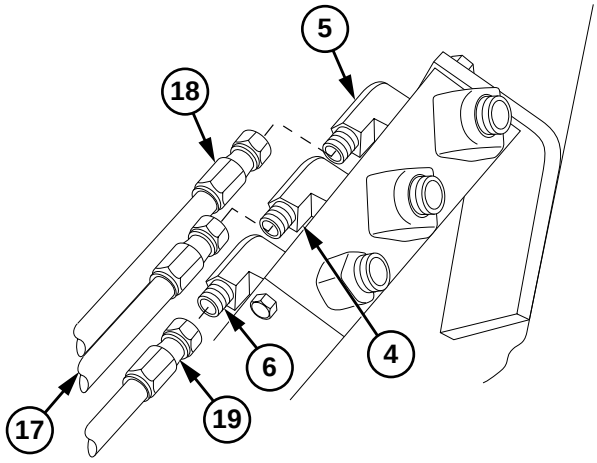
(6) Install hose no. 2017 (16) on elbow (3).



(7) Install hose no. 2139 (17) on elbow (4).

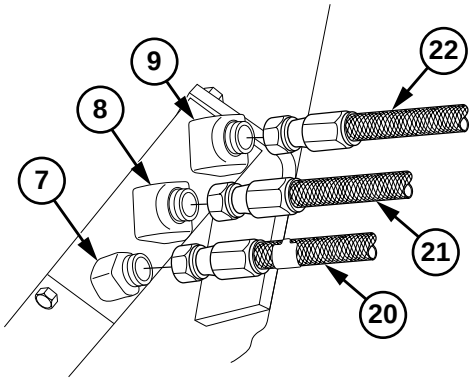
(8) Install hose no. 2871 (18) on elbow (5).

(9) Install hose no. 2015 (19) on elbow (6).



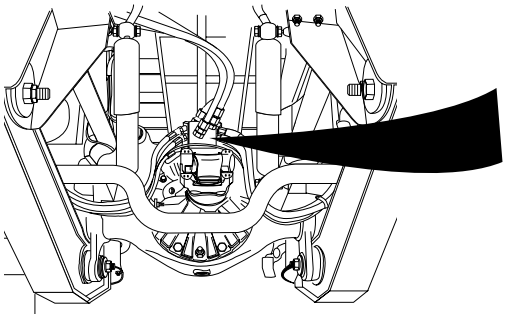
12-2. AXLE NO. 1, NO. 2, NO. 3, AND NO. 4 MANIFOLDS REPLACEMENT (CONT)

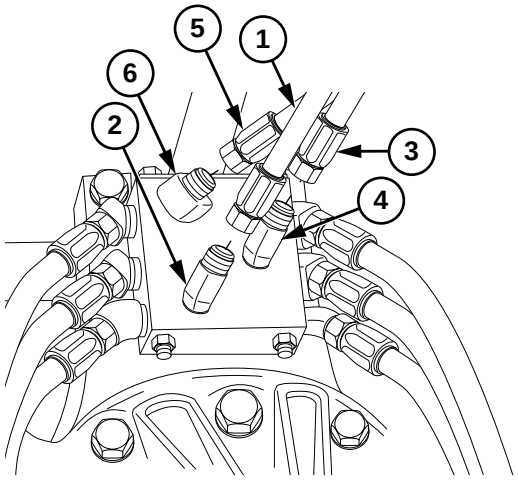
(10) Install hose no. 2106 (20) on elbow (7).
(11) Install hose no. 2368 (21) on elbow (8).
(12) Install hose no. 2143 (22) on elbow (9).



g. Axle No. 4 Manifold Removal

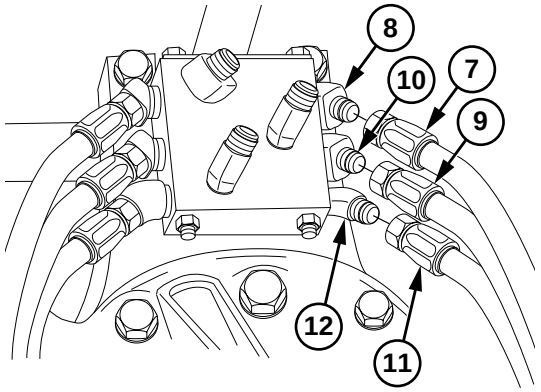
(1) Remove hose no. 2144 (1) from elbow (2).
(2) Remove hose no. 2369 (3) from elbow (4).
(3) Remove hose no. 2872 (5) from elbow (6).





DRIVESHAFT REMOVED FOR CLARITY

(4) Remove hose no. 2873 (7) from elbow (8).
(5) Remove hose no. 2141 (9) from elbow (10).
(6) Remove hose no. 2016 (11) from elbow (12).

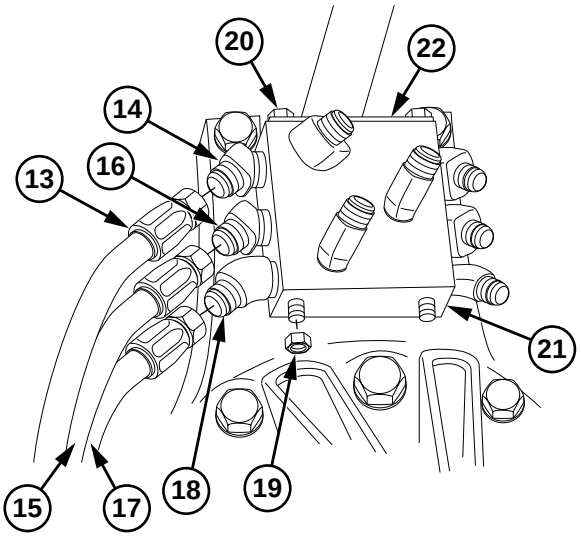


(7) Remove hose no. 2109 (13) from elbow (14).

(8) Remove hose no. 2140 (15) from elbow (16).

(9) Remove hose no. 2018 (17) from elbow (18).

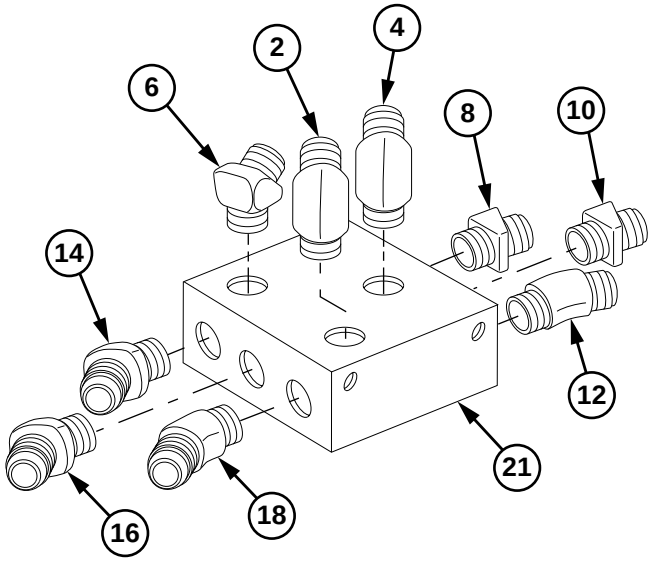
(10) Remove two locknuts (19), screws (20), and manifold (21) from mounting bracket (22). Discard locknuts.



NOTE

Tag elbows and mark elbow positions before removal.

(11) Remove elbows (2, 4, 6, 8, 10,12, 14, 16, and 18) from manifold (21).



h. Axle No. 4 Manifold Installation

WARNING

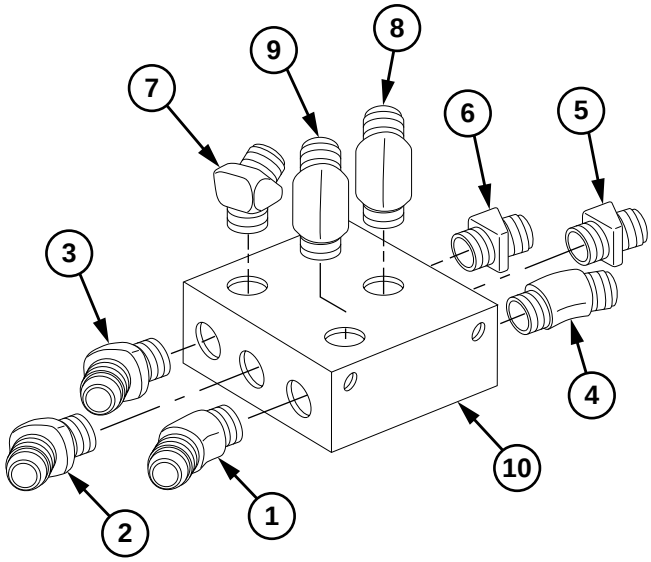
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Damage to equipment may result.

(1) Coat threads of nine elbows (1 thru 9) with pipe thread sealing compound.

(2) Install elbows (1 thru 9) in manifold (10).



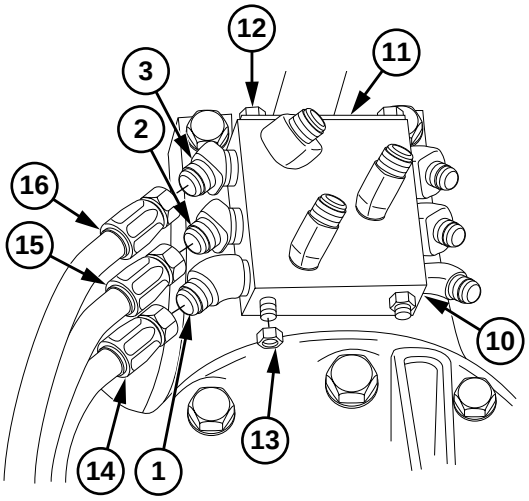
12-2. AXLE NO. 1, NO. 2, NO. 3, AND NO. 4 MANIFOLDS REPLACEMENT (CONT)

(3) Install manifold (10) on mounting bracket (11) with two screws (12) and new locknuts (13).

(4) Install hose no. 2018 (14) on elbow (1).

(5) Install hose no. 2140 (15) on elbow (2).

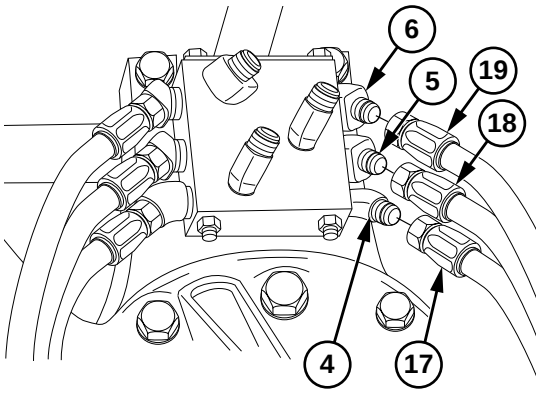
(6) Install hose no. 2109 (16) on elbow (3).



(7) Install hose no. 2016 (17) on elbow (4).

(8) Install hose no. 2141 (18) on elbow (5).

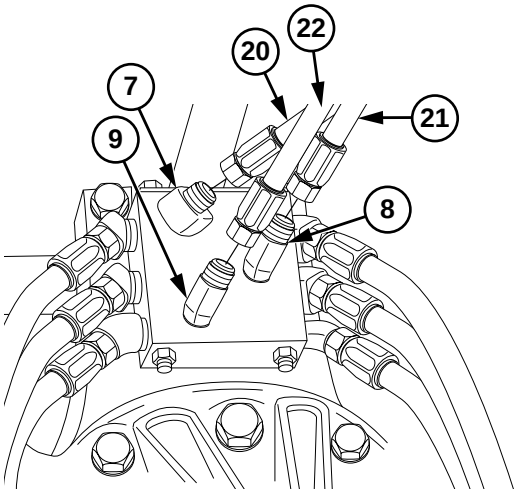
(9) Install hose no. 2873 (19) on elbow (6).



(10) Install hose no. 2872 (20) on elbow (7).

(11) Install hose no. 2369 (21) on elbow (8).

(12) Install hose no. 2144 (22) on elbow (9).



i. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Remove wheel chocks.

12-3. WHEEL VALVE AND BRACKET REPAIR

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Air system drained (TM 9-2320-360-10).
CTIS hoses removed (para 12-4).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Socket Wrench Set, 3/8 In. Drive (Item 45, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Locknuts (2) (Item 68, Appendix G)

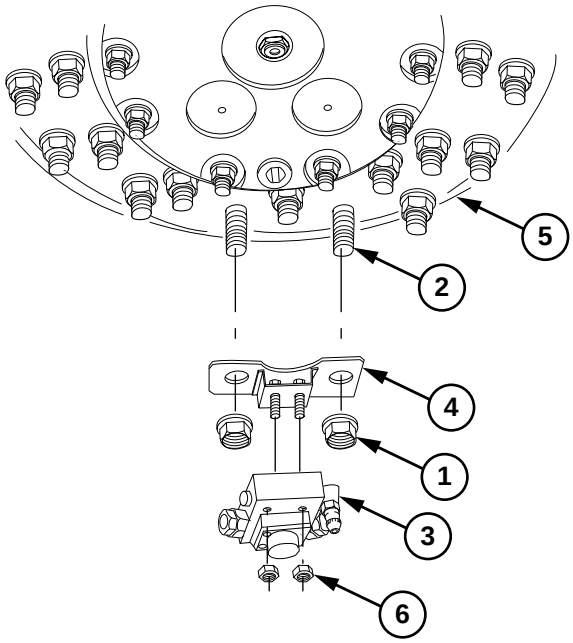
a. Removal

NOTE
All wheel valves are removed the same way. Axle no. 1 is shown.

(1) Remove two nuts (1) from studs (2).

(2) Remove valve (3) with bracket (4) from wheel (5).

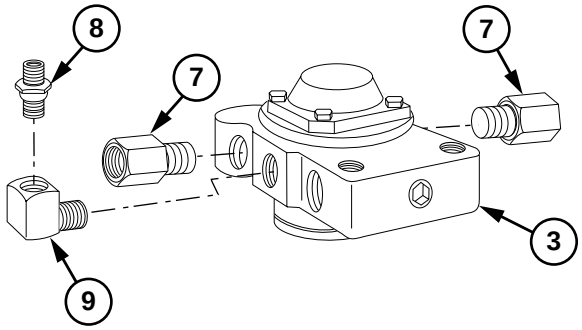
(3) Remove two locknuts (6) and separate valve (3) from bracket (4). Discard locknuts.



(4) Remove two fittings (7) from valve (3).

(5) Remove valve stem (8) from elbow (9).

(6) Remove elbow (9) from valve (3).



12-3. WHEEL VALVE AND BRACKET REPAIR (CONT)

b. Disassembly

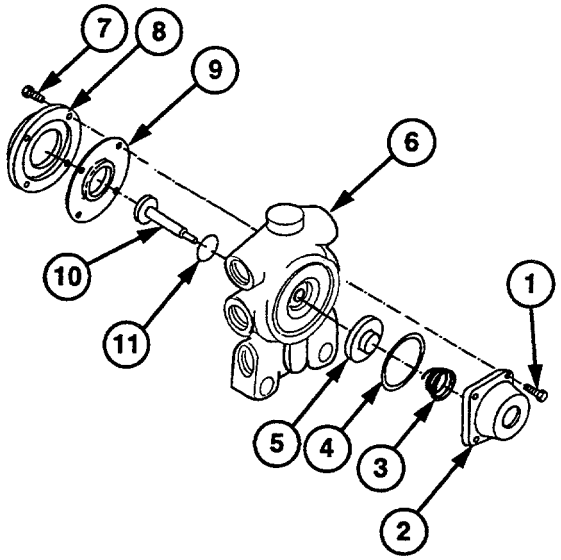
NOTE

All wheel valves are disassembled the same way.

(1) Remove four screws (1), poppet end cover (2), spring (3), preformed packing (4), and poppet (5) from housing (6). Discard four screws, spring, preformed packing, and poppet.

(2) Remove four screws (7), pilot end cover (8), and diaphragm (9) from housing (6). Discard four screws and diaphragm.

(3) Remove piston (10) from housing (6) and preformed packing (11) from piston (10). Discard preformed packing.



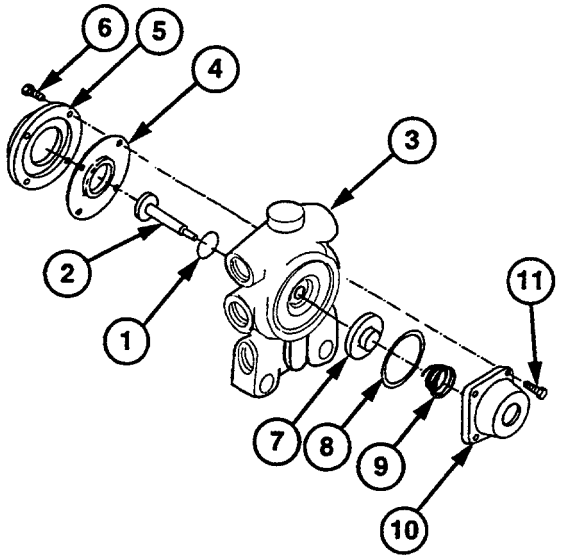
c. Assembly

(1) Install new preformed packing (1) on piston (2).

(2) Install piston (2) in housing (3).

(3) Install new diaphragm (4) and pilot end cover (5) on housing (3) with four new screws (6).

(4) Install new poppet (7), new preformed packing (8), new spring (9), and poppet end cover (10) on housing (3) with four new screws (11).



d. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

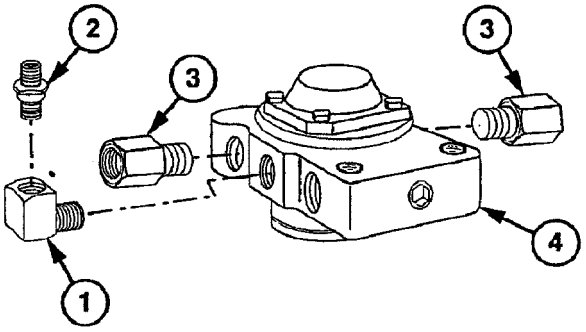
Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Failure to comply may result in component failure.

(1) Coat threads of elbow (1), valve stem (2), and fittings (3) with pipe thread sealing compound.

(2) Install elbow (1) on valve (4).

(3) Install valve stem (2) on elbow (1).

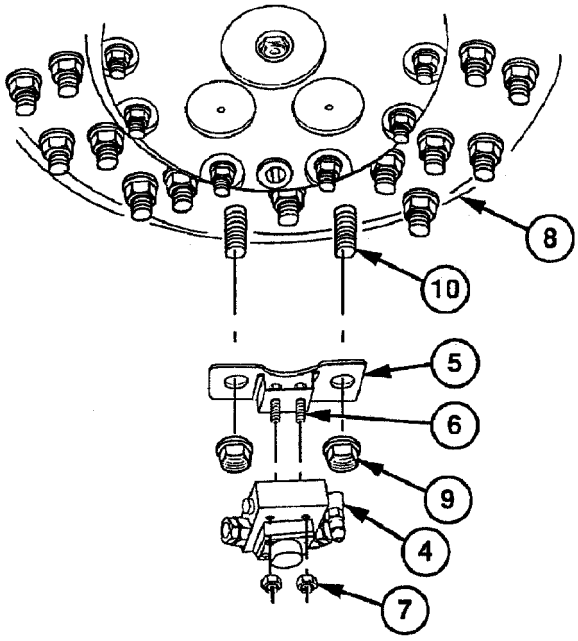
(4) Install two fittings (3) on valve (4).



(5) Install valve (4) on bracket (5) and two screws (6) with new locknuts (7).

(6) Install valve (4) with bracket (5) on wheel (8).

(7) Install two nuts (9) on studs (10).



e. Follow-On Maintenance

Install CTIS hoses (para 12-4).

12-4. CTIS TUBE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Air system drained (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Packings, Preformed (4) (Item 136, Appendix G)

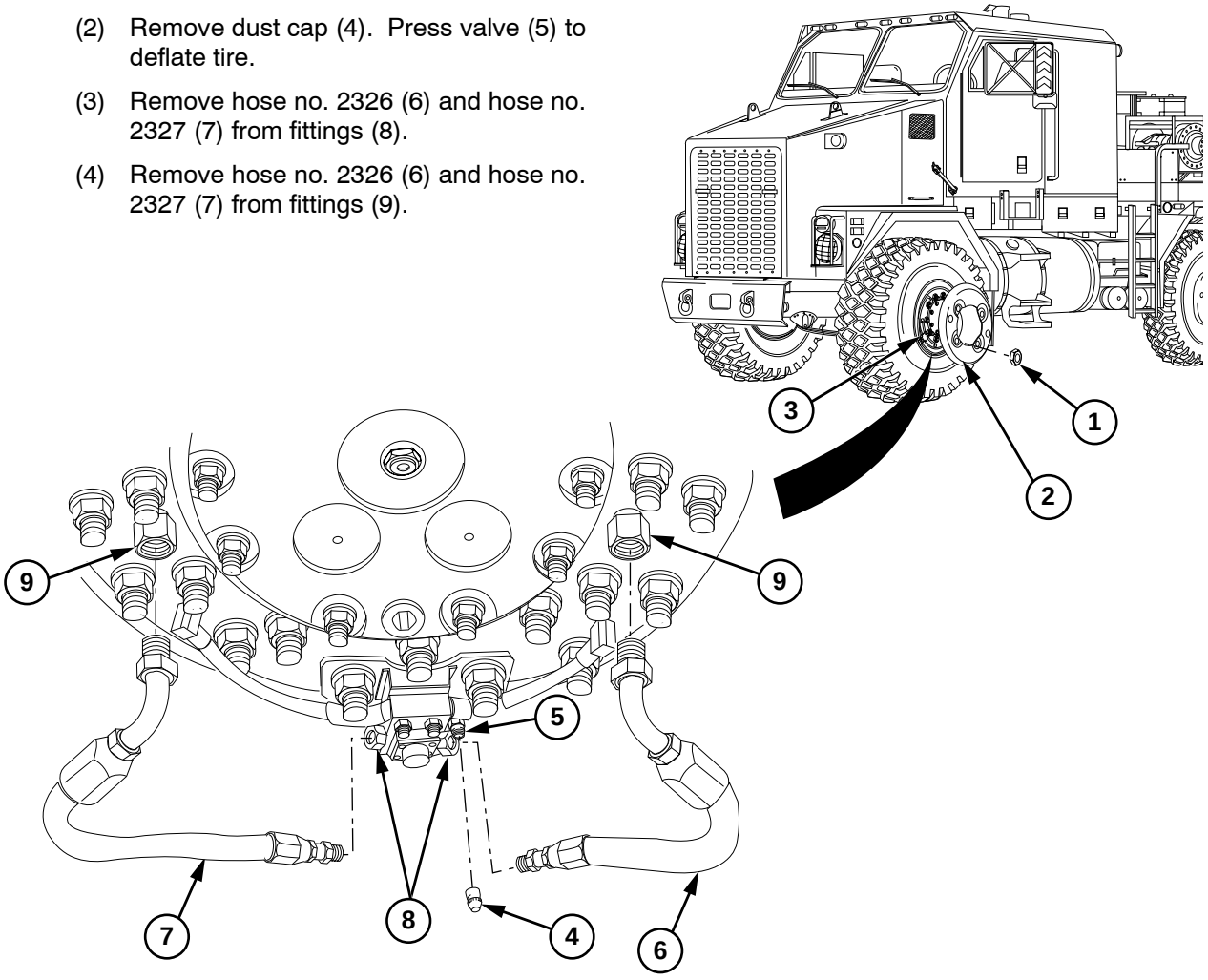
a. Removal

(1) Remove four nuts (1) and wheel cover (2) from wheel (3).

(2) Remove dust cap (4). Press valve (5) to deflate tire.

(3) Remove hose no. 2326 (6) and hose no. 2327 (7) from fittings (8).

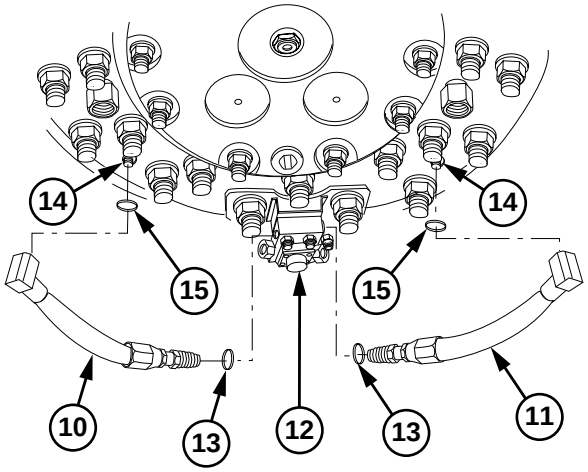
(4) Remove hose no. 2326 (6) and hose no. 2327 (7) from fittings (9).



12-4. CTIS TUBE REPLACEMENT (CONT)

NOTE

The wheel valve to valve stem tube is a rubber hose on some trucks and steel line on others. The rubber hose can be switched from side to side, the steel line cannot.



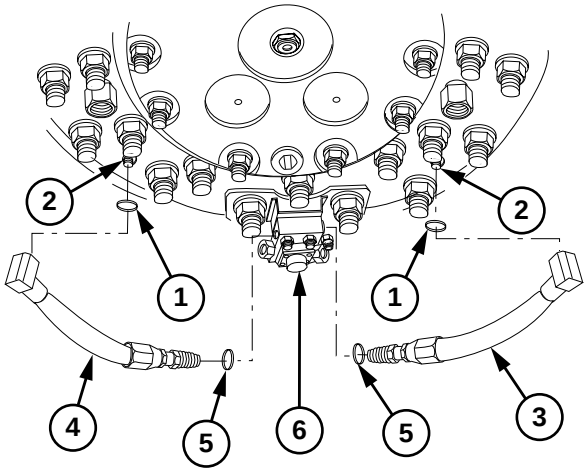
(5) Remove tube no. 2328 (10) and tube no. 2329 (11) from valve (12).

(6) Remove two preformed packings (13) from tube no. 2328 (10) and tube no. 2329 (11). Discard preformed packings.

(7) Remove tube no. 2328 (10) and tube no. 2329 (11) from two valve stems (14).

(8) Remove two preformed packings (15) from valve stems (14). Discard preformed packings.

b. Installation



(1) Install two new preformed packings (1) on valve stems (2).

(2) Install tube no. 2329 (3) and tube no. 2328 (4) on valve stems (2).

(3) Install two new preformed packings (5) on tube no. 2329 (3) and tube no. 2328 (4).

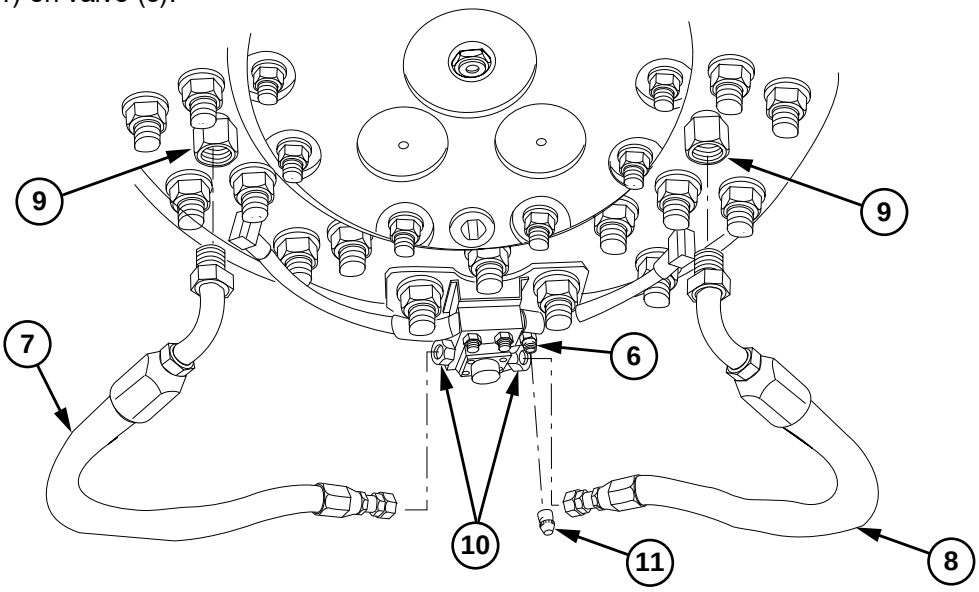
(4) Install tube no. 2329 (3) and tube no. 2328 (4) on valve (6).

(5) Install hose no. 2327 (7) and hose no. 2326 (8) on fittings (9).

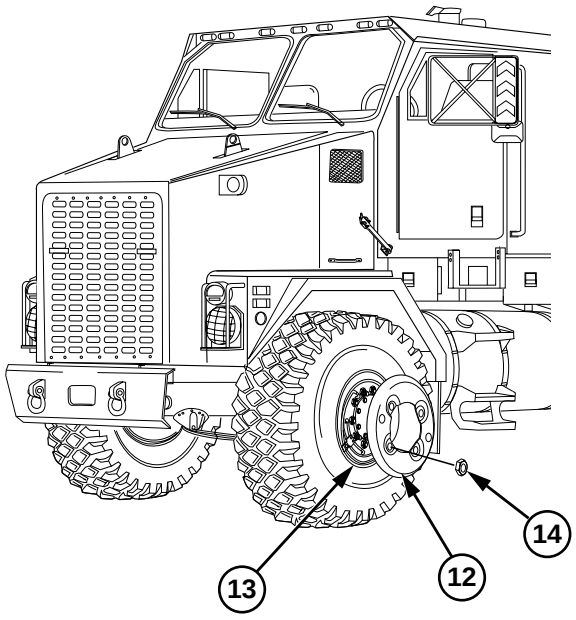
(6) Install hose no. 2327 (7) and hose no. 2326 (8) on fittings (10).

(7) Inflate tire to 75 psi (517 kPa).

(8) Install dust cap (11) on valve (6).



(9) Install wheel cover (12) on wheel (13) with four nuts (14). Torque to 170-175 lb-ft (230-244 N·m).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Check CTIS for proper operation (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

(5) Check for leaks.

(6) Remove wheel chocks.

12-5. WHEEL AND TIRE REPAIR

This task covers:
- Removal
- Cleaning/Inspection
- Installation
- Repair
- Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
- Engine shut off (TM 9-2320-360-10).
- Parking brake on (TM 9-2320-360-10).
- Wheels chocked.

Tools and Special Tools
- Tool Kit, Genl Mech (Item 54, Appendix F)
- Blocks, Wooden (2) (Figure D-19, Appendix D)
- Chock Block (TM 9-2320-360-10).
- Jack, Hydraulic, 12-Ton (Item 17, Appendix F)
- Jackstands, 7-Ton (Item 18, Appendix F)
- Repair Tool, Valve, Pneumatic Tire (Item 36, Appendix F)
- Socket Wrench Set, 3/4 In. Drive (Item 46, Appendix F)
- Tire Irons (2) (Item 52, Appendix F)

Tools and Special Tools (Cont)
- Truck, Lift, Wheel (Item 56, Appendix F)
- Wrench, Torque, 0-600 Lb-Ft (Item 74, Appendix F)

Materials/Parts
- Adhesive-Sealant (Item 5, Appendix C)
- Compound, Corrosion Preventive (Item 14.1, Appendix C)
- Lubricant, Tire and Rim (Item 17.1, Appendix C)
- Grommet (Item 43, Appendix G)
- Locknuts (4) (Item 46, Appendix G)
- Packings, Preformed (2) (Item 136, Appendix G)
- Seal (Item 163, Appendix G)

Personnel Required
- Two

a. Jacking Procedure

WARNING

Hydraulic jack must be positioned on flat surface. Placing jack on unlevel or soft surface may result in truck falling and cause injury or death to personnel.

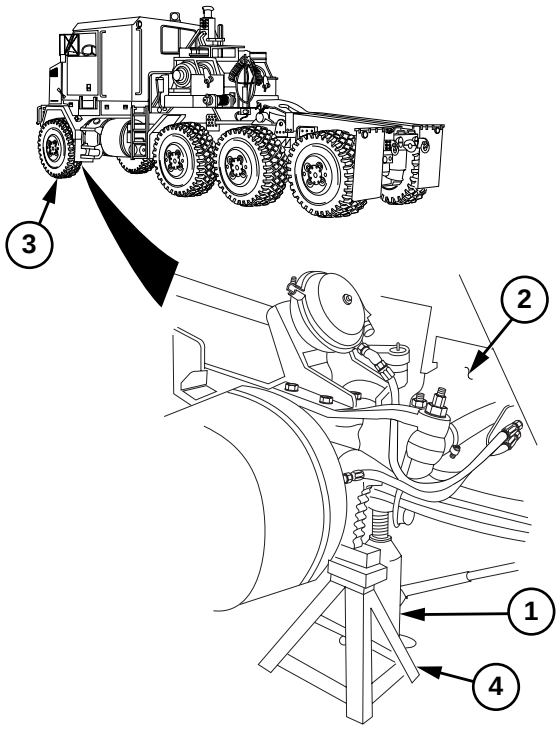
(1) Position jack (1) under axle (2).

(2) Lift axle (2) until tire (3) is about 3 in. (8 cm) off ground.

WARNING

Jackstand must be positioned on flat surface. Placing jackstand on unlevel or soft surface may result in truck falling and cause injury or death to personnel.

(3) Place jackstand (4) under axle (2) not more than 10 in. (25 cm) from tire (3).



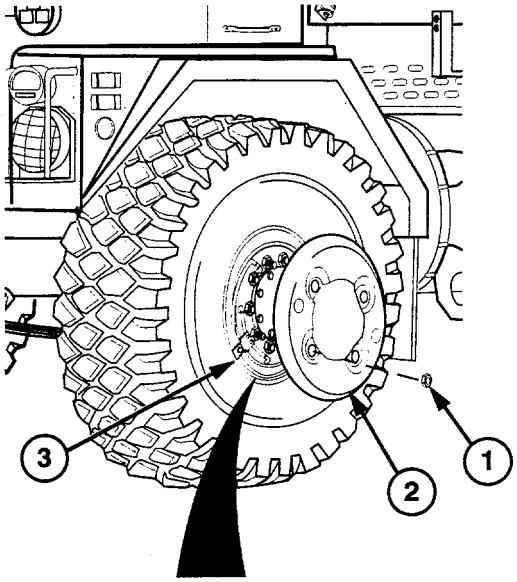
TIRE REMOVED FOR CLARITY

b. Wheel and Tire Removal

WARNING

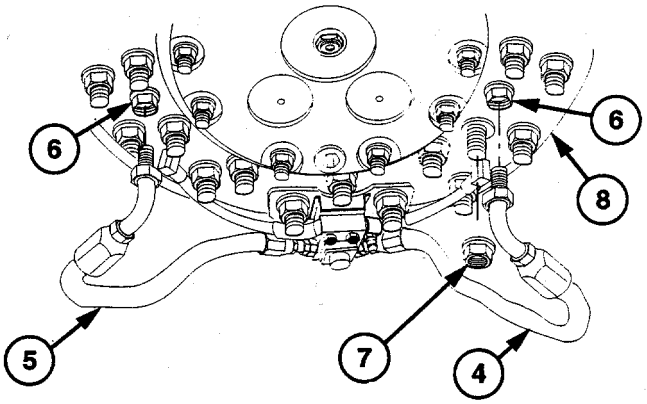
If any loose or broken bolts are found after removing the wheel cover, deflate the tire completely before attempting to loosen lug nuts. Failure to comply may result in injury to personnel.

(1) Remove four nuts (1) and wheel cover (2) from studs (3).



(2) Remove CTI hose no. 2326 (4) and CTI hose no. 2327 (5) from fittings (6).

(3) Remove 10 nuts (7) from wheel (8).

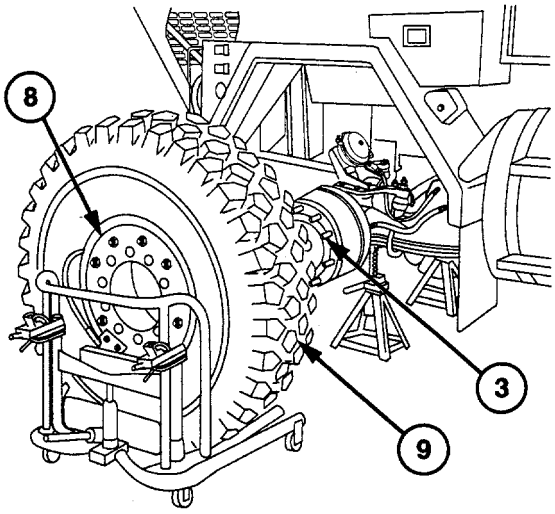


(4) Position wheel lift under tire (9).

WARNING

Wheel assembly weighs 523 lb (237 kg). Use caution when handling wheel to keep it from tipping over. Failure to comply may result in serious injury or death to personnel.

(5) Remove wheel (8) from studs (3) with aid of assistant.



12-5. WHEEL AND TIRE REPAIR (CONT)

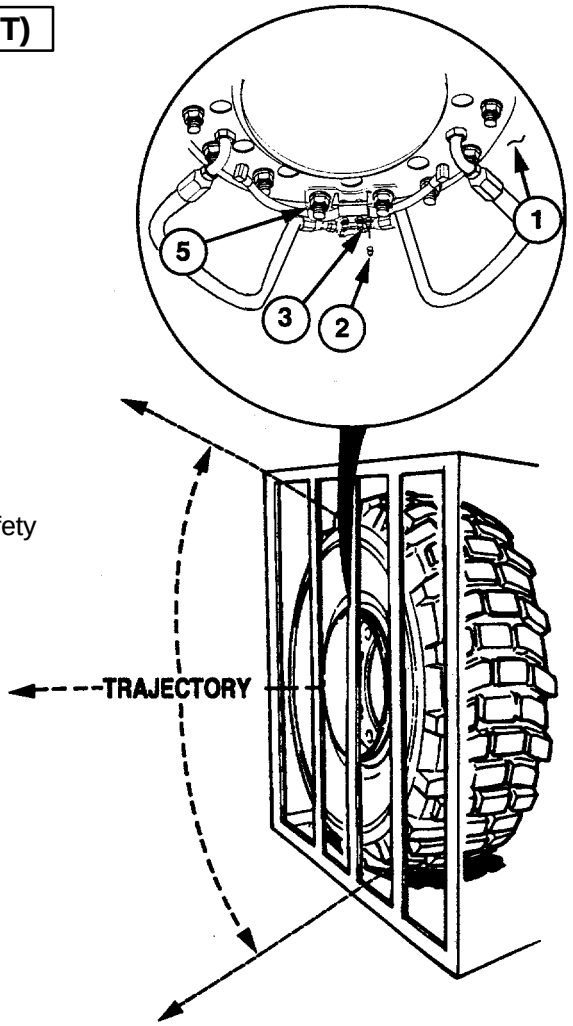
c. Tire Removal

WARNING

- **Wheel/tire assembly must be deflated in a safety cage or personal injury or death may result.**
- **Wheel/tire assembly weighs 523 lbs. (327 kg). Attach suitable lifting device prior to moving to prevent possible injury to personnel.**

(1) Position wheel/tire assembly (1) in a safety cage using a lifting device.

(2) Remove cap (2) from valve stem (3).

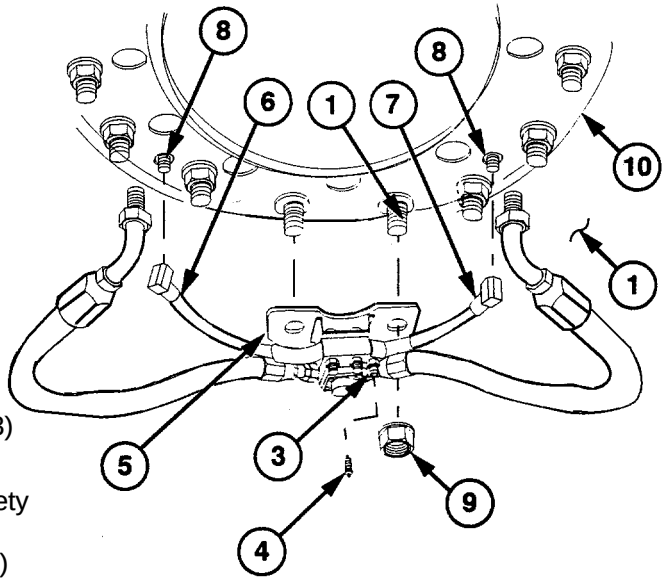


WARNING

- **High pressure air will be released from valve stem when core is removed. Stay clear of valve stem after core is removed. Failure to comply may result in personnel injury.**
- **Stand clear of trajectory area during deflation or personal injury or death may result.**
- **Always completely deflate tire by removing valve core from valve stem before attempting demounting operation. After air has finished exhausting from valve stem, carefully run a piece of wire through valve stem to ensure it is not plugged and tire is completely deflated. Failure to comply may result in injury to personnel.**

(3) Remove valve core (4) from valve stem (3) and allow air to drain.

(3.1) Remove wheel/tire assembly (1) from safety cage and position on chock block on flat surface with CTI wheel valve assembly (5) facing up.



NOTE

The wheel valve to valve stem tube is a rubber hose on some trucks and steel line on others. The rubber hose can be switched from side to side, the steel line cannot.

(4) Remove tube no. 2328 (6) and tube no. 2329 (7) from valve stems (8).

(5) Remove 12 nuts (9) and wheel valve (5) from outer wheel (10).

CAUTION

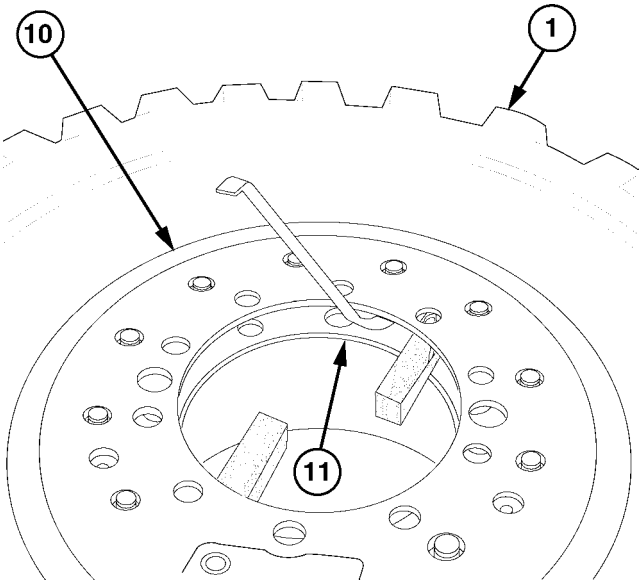
Do not attempt to break seal on tire until wheel halves have been separated. Do not pry between tire and outer wheel. Failure to comply may damage tire or bead lock.

NOTE

Tire iron can be used to lift outer wheel.

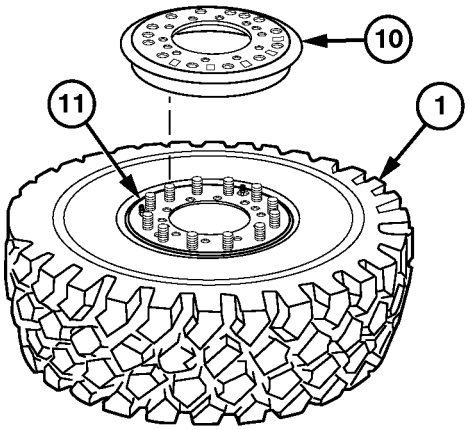
(5.1) Lift outer wheel (10) from inner wheel (11) and separate with two wooden blocks.

(6) Break seal on tire (1) with tire iron.



(7) Remove outer wheel (10) from inner wheel (11).

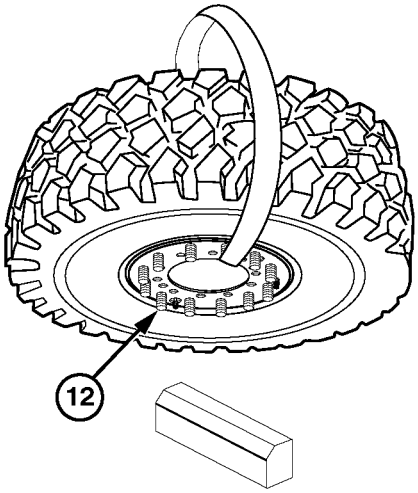
(8) Position lifting strap through center of inner wheel (11) and around tire (1).



WARNING

Wheel assembly weighs 523 lb (237 kg). Use caution when removing wheel. Failure to comply may result in serious injury or death to personnel.

(9) Lift and rotate inner wheel (11) so studs (12) face down and inner wheel (11) is positioned evenly on edge of chock block using lifting device and aid of assistant.



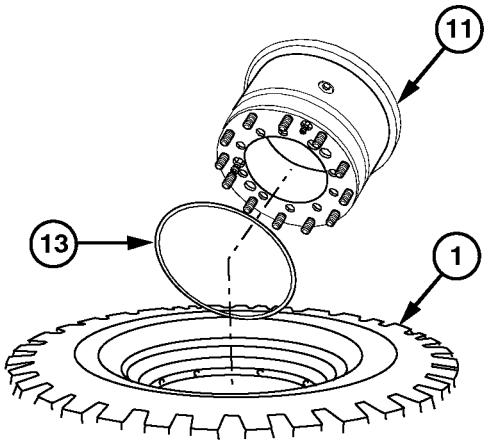
(10) Break seal on tire (1) with tire iron.

NOTE

Tire lubricant may be used to ease removal of inner wheel.

(11) Remove inner wheel (11) from tire (1) with aid of assistant.

(12) Remove seal (13) from inner wheel (11). Cut seal in two and discard.

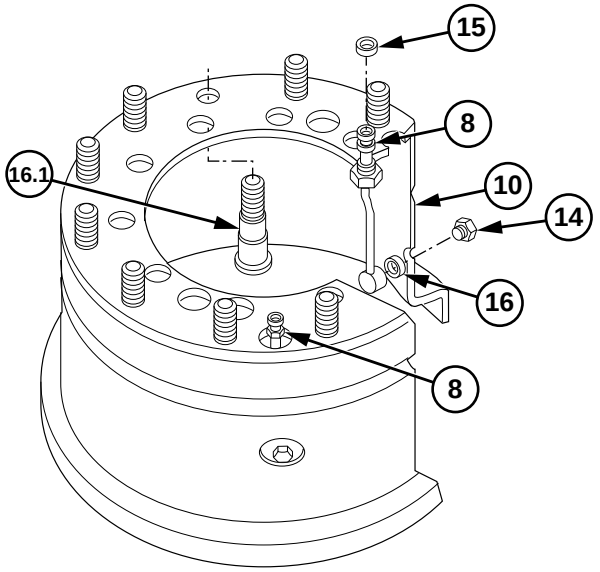


12-5. WHEEL AND TIRE REPAIR (CONT)

(13) Remove two retaining nuts (14) from valve stems (8).

(14) Remove two valve stems (8) from inner wheel (10).

(15) Remove two preformed packings (15) and grommets (16) from valve stems (8). Discard preformed packings and grommets.



NOTE

Do step (15.1) if wheel studs fail inspection.

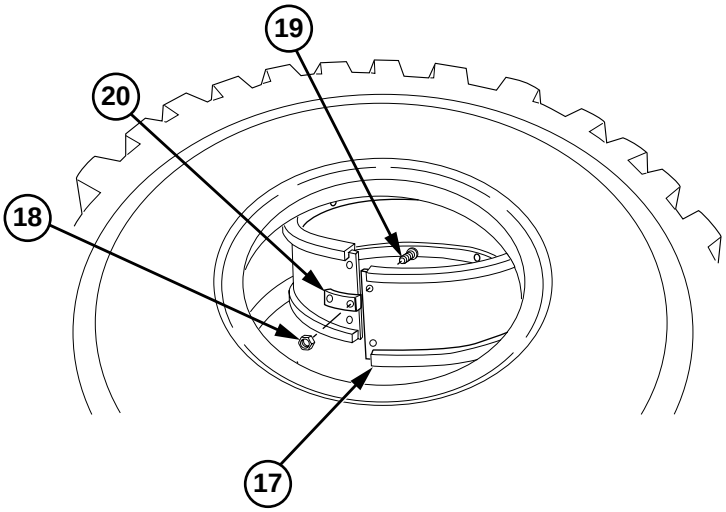
(15.1) Remove stud(s) (16.1) from inner wheel (10).

NOTE

Mallet and tire lubricant may be used to ease movement of bead lock.

(16) Move bead lock (17) so locknuts (18) are visible.

(17) Remove four locknuts (18), screws (19), and two plates (20) from bead lock (17). Discard locknuts.



(17.1) Install two wooden blocks in tire (1) to separate sidewalls.

WARNING

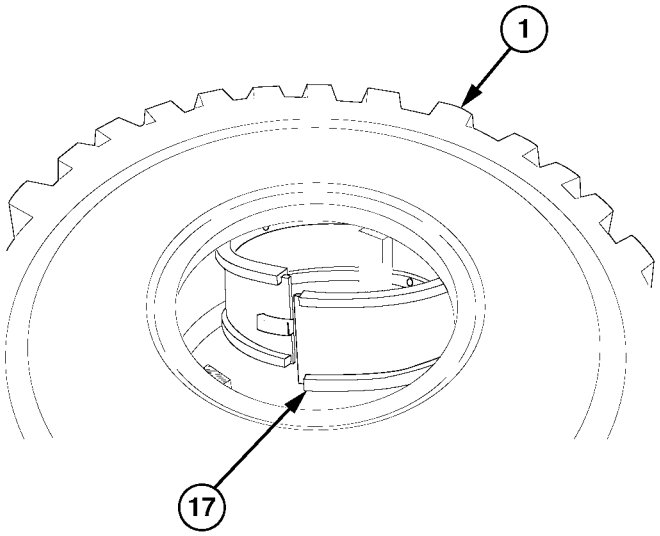
Keep hands and fingers from between tire and bead lock. Failure to comply may result in injury to personnel.

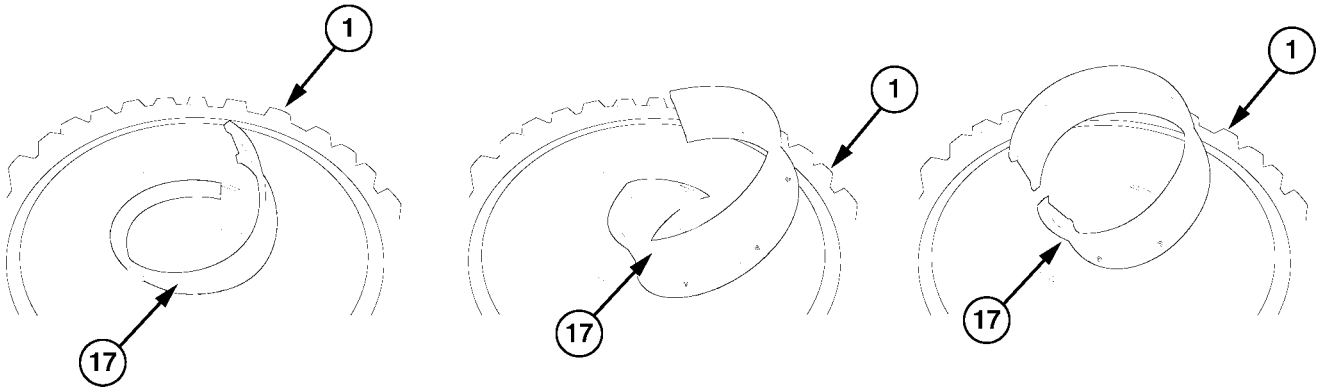
NOTE

Bead lock is removed by lifting one end of bead lock and twisting out of tire.

(18) Remove bead lock (17) from tire (1).

(19) Remove two wooden blocks from tire (1).





c. Cleaning/Inspection

CAUTION

Never apply paint to threaded portion of wheel studs or or to the wheel nut contact area of outer wheel. Failure to comply may result in damage to wheel studs

(1) Inspect inner wheel rim bolts for stripped threads, cracks, or breaks. If any bolts are damaged, all bolts on that wheel should be replaced.

(2) Inspect inner and outer wheel rim for damage. If any cracks or dents are found, replace both halves of the rim.

(3) Inspect bead lock for kinks and missing rivets. Check bead lock rubber seals for damage and proper position. Replace damaged bead locks.

(4) Inspect tire tread for nails, glass and other foreign material in tread.

(5) Inspect for irregular wear, cuts, and blisters appearing on tire.

(6) Inspect bead of tire for damaged rim seal ridges.

(7) Inspect complete inside surface of inner liner for imperfections, discoloration or irregular surface that may indicate excessive heat, breaks or other fabric damage.

(8) Check rim for cracks, dents, dirt, and rust.

(9) Remove rust, gummy rubber deposits, nicks and gouges in the rim seat surface to provide an airtight seal with the tire bead.

(9.1) Paint wheel assembly parts as need to protect against rust.

(10) Remove all dirt and foreign material from inside of tire.

12-5. WHEEL AND TIRE REPAIR (CONT)

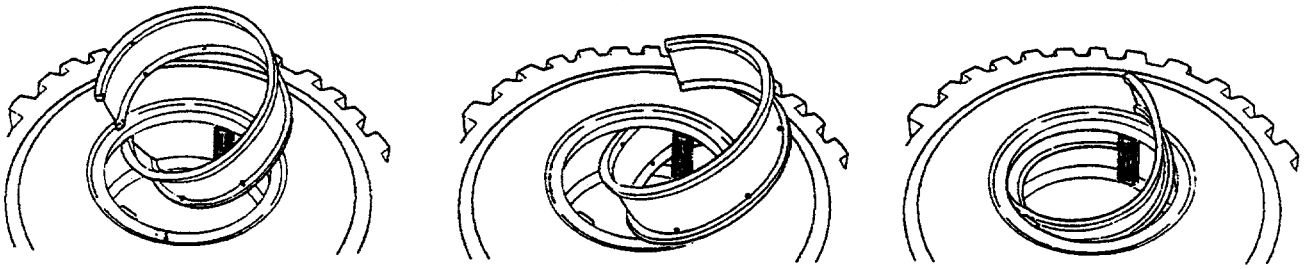
d. Tire Installation

WARNING

Do not use retread tires on vehicles equipped with a Central Tire Inflation System (CTIS). Use only the tires that are specified in the Repair Parts and Special Tools List (RPSTL). Failure to comply may result in tire failure and loss of vehicle control.

(1) Install two wooden blocks in tire (1) to separate sidewalls.

(2) Deleted.



NOTE

Bead lock is installed by starting one end of bead lock in tire and slowly working bead lock around and into tire.

(3) Wet bead lock (2) with tire lubricant and install in tire (1).

(4) Position bead lock (2) so end is visible.

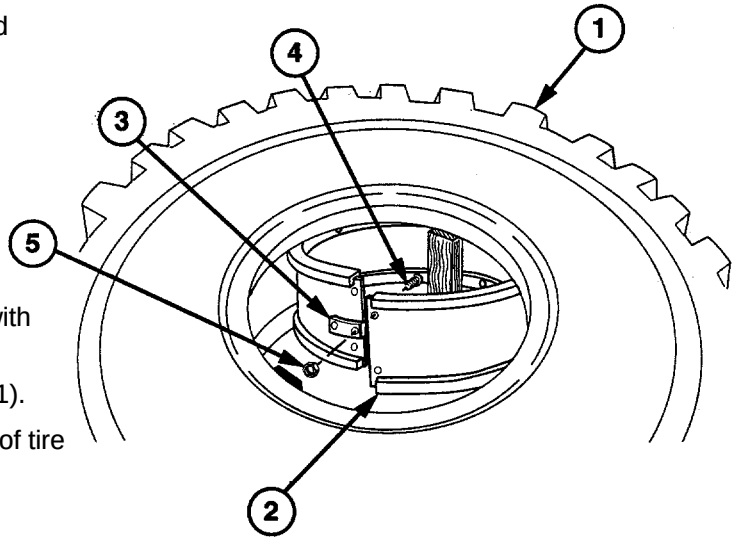
NOTE

End of bead lock must be aligned before tightening screws.

(5) Install two plates (3) on bead lock (2) with four screws (4) and new locknuts (5).

(5.1) Remove two wooden blocks from tire (1).

(6) Position bead lock (2) evenly in center of tire (1).



CAUTION

If wheel studs are replaced, they must be torqued after 50–75 mi (80–120 km) of use. Failure to comply may result in failure of wheel studs.

NOTE

- Do step (6.1) only if studs were removed.
- Studs must be firmly seated and square in rim.
- Flat edge of stud must face edge of rim.

(6.1) Install stud(s) (5.1) on inner wheel (10).

(7) Install two new preformed packings (6) and new grommets (7) on two valve stems (8).

WARNING

Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.

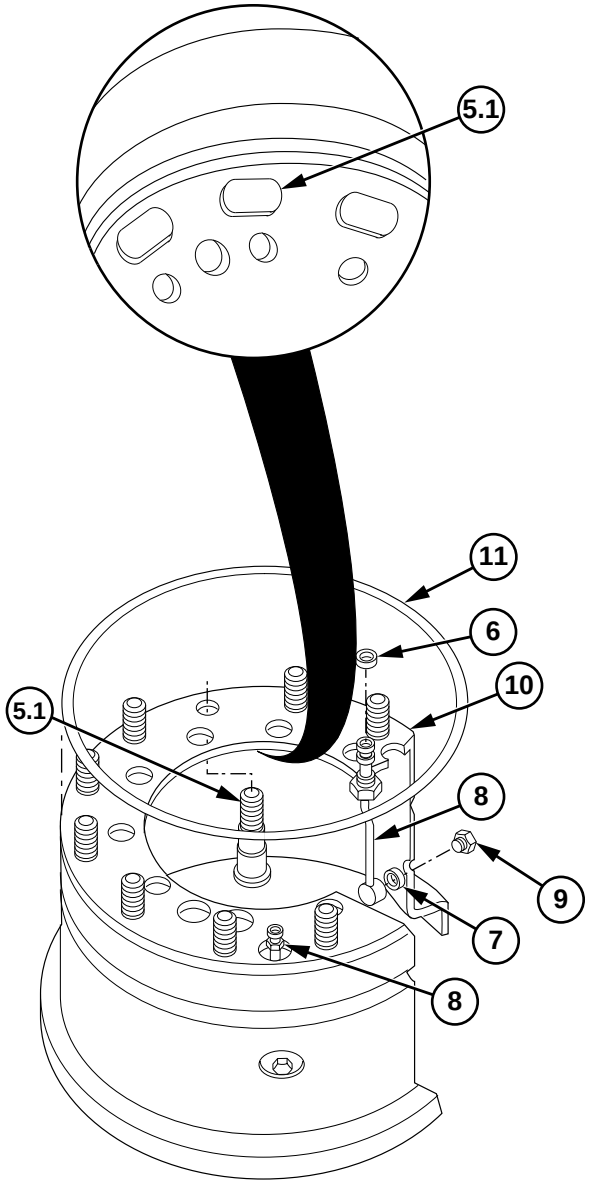
(8) Coat threads of two retaining nuts (9) with adhesive-sealant.

(9) Install two valve stems (8) on inner wheel (10) with retaining nuts (9).

NOTE

To ensure proper sealing, inner wheel bead and seal areas must be clean.

(10) Wet new seal (11) with tire lubricant and position on inner wheel (10).



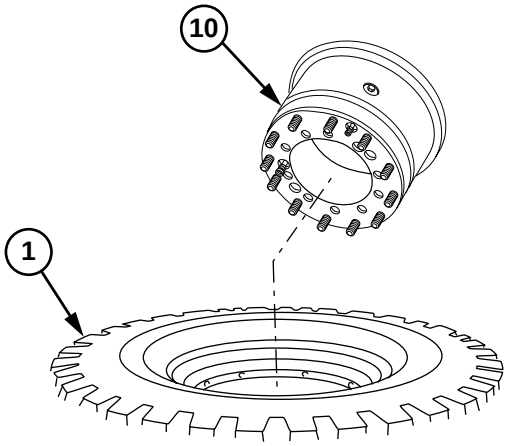
12-5. WHEEL AND TIRE REPAIR (CONT)

WARNING

Wheel weighs 106 lb (48 kg). Use caution when installing wheel. Failure to comply may result in serious injury or death to personnel.

(11) Install inner wheel (10) in tire (1) with aid of assistant.

(12) Attach lifting device to inner wheel (10) and tire (1).



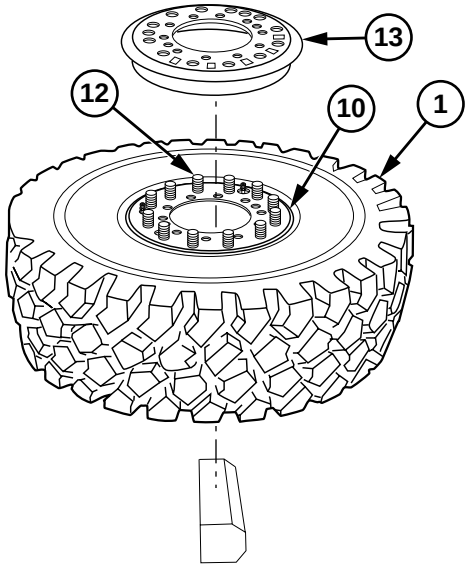
(13) Rotate inner wheel (10) and tire (1) so studs (12) face up and wheel (10) is supported on edge of chock block.

(14) Remove lifting device.

CAUTION

- Holes in rim must align with holes in wheel. Failure to comply may result in damage to valve stems.
- Wheel seal must be properly positioned around inner wheel before installing outer wheel. It may be necessary to center inner wheel in tire and properly position seal. Failure to comply may result in damage to seal.

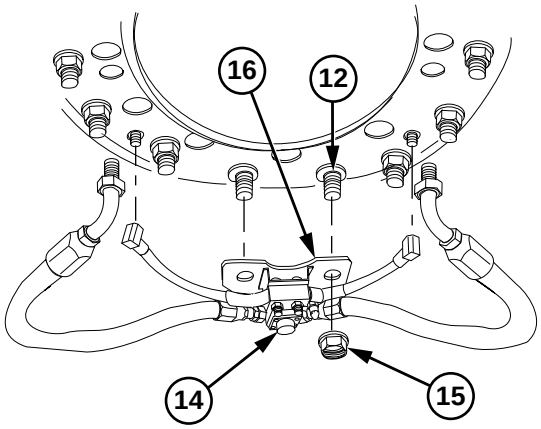
(15) Position outer wheel (13) on inner wheel (10) with aid of assistant.



NOTE

Locknuts should be tightened evenly 0.25 in. (6.4 mm) at a time until wheel parts are drawn together.

(16) Install wheel valve (14) and 12 nuts (15) on studs (12). Torque to 75–100 lb–ft (102–136 N·m) in sequence shown in figure 12–1.



NOTE

Torque sequence is performed three times.

(17) Tighten 12 nuts (15) to 450–500 lb–ft (610–678 N·m) in sequence shown in figure 12–1.

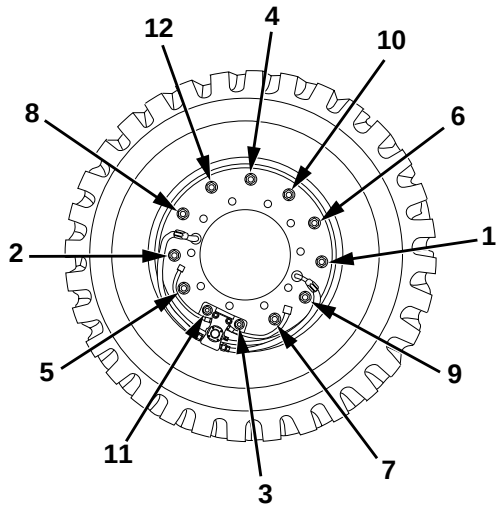


Figure 12-1. Torque Sequence

(18) Tighten 12 nuts (15) to 450–500 lb–ft (610–678 N·m) in sequence shown in figure 12–2.

(19) Tighten 12 nuts (15) to 450–500 lb–ft (610–678 N·m) in sequence shown in figure 12–2.

(19.1) Coat threads of 12 studs (12) with corrosion preventive compound.

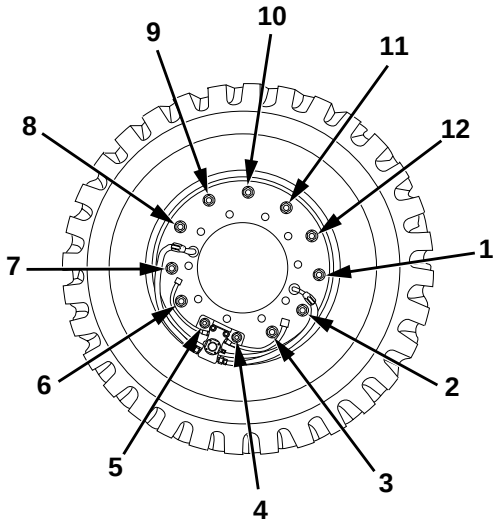


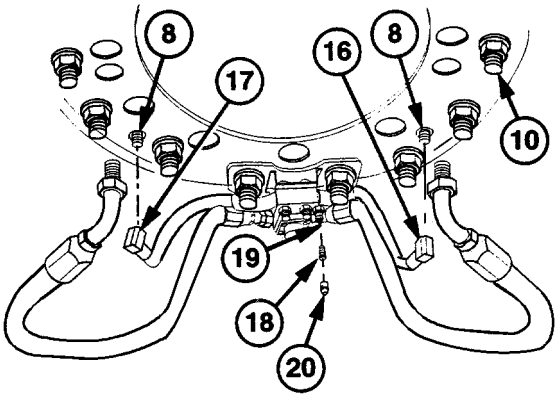
Figure 12-2. Torque Sequence

12-5. WHEEL AND TIRE REPAIR (CONT)

(20) Remove chock block from inner wheel (10).

(21) Install tube no. 2329 (16) and tube no. 2328 (17) on valve stems (8).

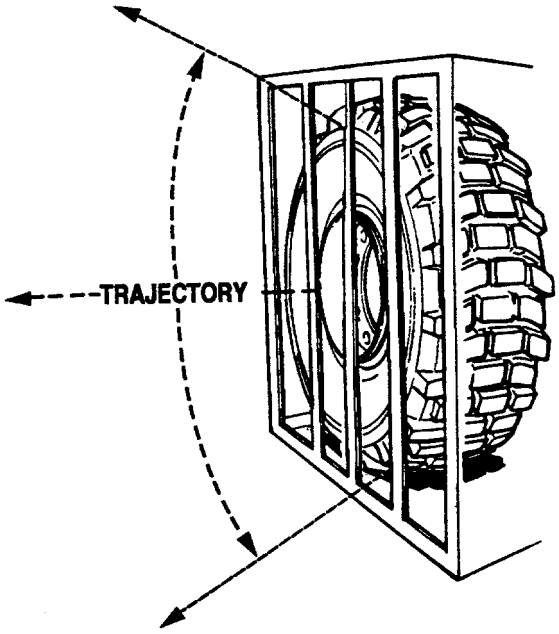
(22) Install valve core (18) in valve stem (19).



WARNING

- **Tire may explode and cause serious injury or death. Place wheel and tire in safety cage before inflating. Stay back 10 ft (3 m) from cage when inflating. Minimum hose length is 10 ft (3 m).**
- **Failure to place wheel/tire assembly in a safety cage prior to initial inflation could result in serious injury or death to personnel.**
- **When a wheel/tire assembly is in a safety cage, do not lean any part of body or equipment on or against the safety cage, or injury or death could result.**

(22.1) Using a lifting device, position wheel/tire assembly in a safety cage.



WARNING

- **Tire may explode and cause serious injury or death. Place wheel and tire in safety cage before inflating. Stay back 10 ft (0.3 m) from cage when inflating. Minimum hose length is 10 ft (0.3 m).**
- **Stay out of the trajectory area as indicated by the area shown. Under some circumsatances, the trajectory may deviate from its expected path. Injury or death to personnel may result.**

(23) Inflate tire (1) to 75 psi (517 kPa) and check for leaks.

(24) Install cap (20) on valve stem (19).

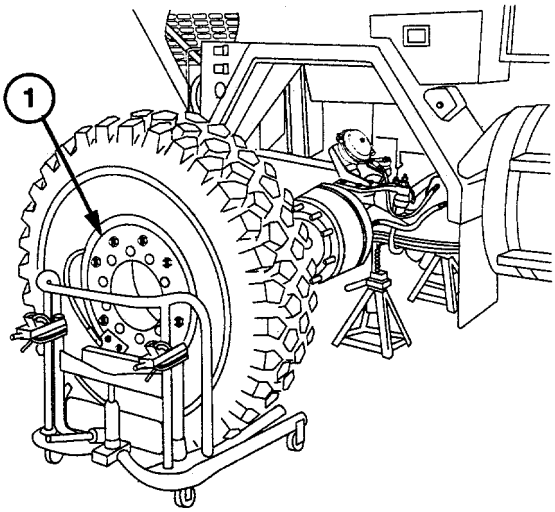
(25) Remove wheel/tire assembly (1) from safety cage.

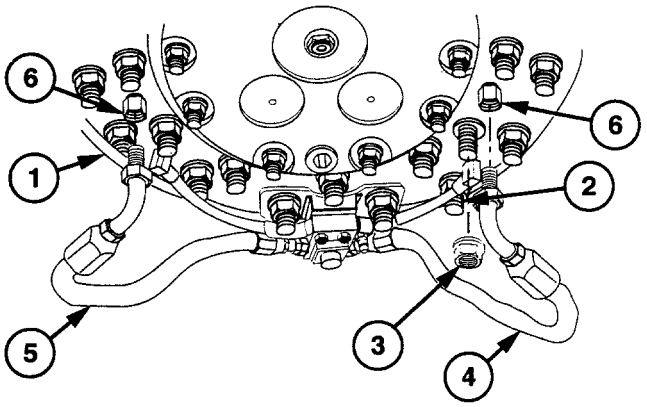
e. Wheel and Tire Installation

WARNING

Wheel assembly weighs 523 lb (237 kg). Use caution when handling wheel to keep it from tipping over. Failure to comply may result in serious injury or death to personnel.

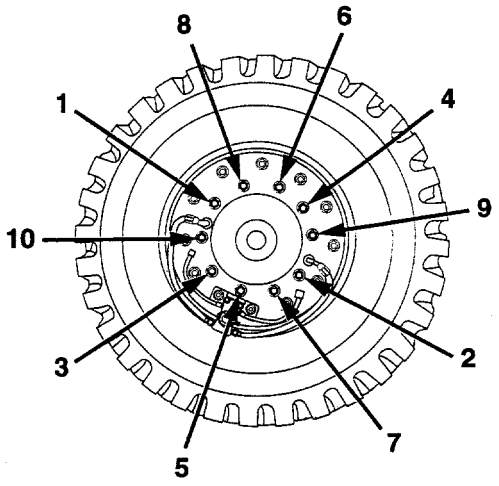
(1) Position wheel (1) on wheel lift.





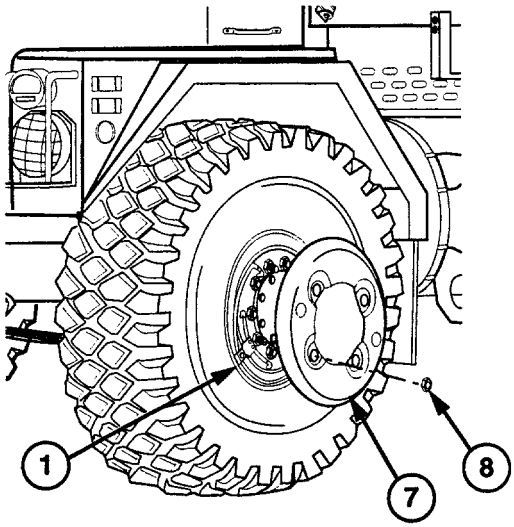
(2) Install wheel (1) on studs (2) with 10 nuts (3) with aid of assistant.

(3) Connect CTI hose no. 2327 (4) and CTI hose no. 2326 (5) on fittings (6).



WHEEL REMOVED FOR CLARITY

(4) Tighten 10 nuts (3) to 450–550 lb–ft (610–746 N·m) in order shown.



(5) Install wheel cover (7) on wheel (1) with four nuts (8). Torque to 170–180 lb–ft (230–244 N·m).

12-5. WHEEL AND TIRE REPAIR (CONT)

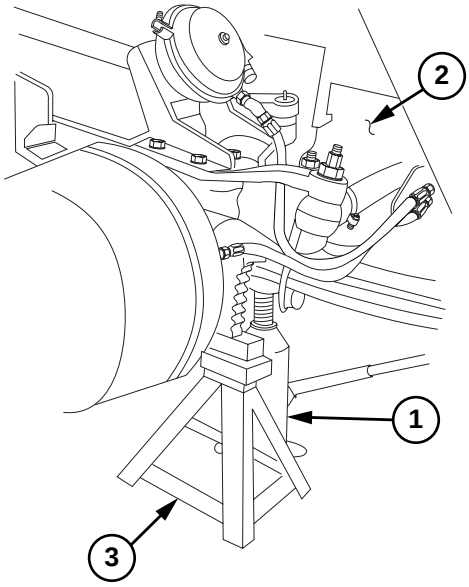
f. Lowering Procedure

(1) Place hydraulic jack (1) under axle (2) beside jackstand (3).

(2) Extend jack (1) until axle (2) is lifted off jackstand (3) about 0.5 in. (13 mm).

(3) Remove jackstand (3) from under axle (2).

(4) Lower hydraulic jack (1) and remove from under HET Tractor.



WHEEL REMOVED FOR CLARITY

g. Repair

Refer to TM 9-2610-200-20 for tire repair.

h. Follow-On Maintenance

Remove wheel chocks.

CHAPTER 13
STEERING SYSTEM MAINTENANCE

Contents

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Section I. INTRODUCTION

13-1. INTRODUCTION

This chapter contains instructions for replacement and repair of steering system components at the Unit maintenance level. Some parts must be removed before steering system components can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

13-2. STEERING WHEEL REPAIR

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Horn button removed (para 18-9).
Front wheels straight ahead.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Puller Kit, Mechanical (Item 31, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

a. Removal

(1) Remove nut (1) from shaft (2).

(2) Attach suitable puller to steering wheel (3).

(3) Remove steering wheel (3) from shaft (2) with puller.

(4) Remove puller from steering wheel (3).

(5) Gently pry cancel ring (4) from steering wheel (3).

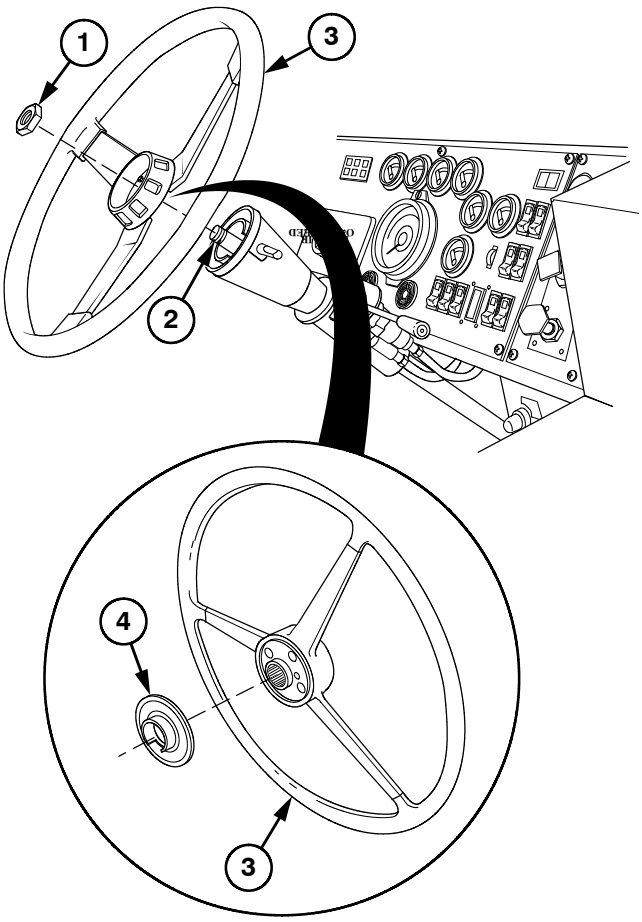
b. Installation

(1) Press cancel ring (4) into steering wheel (3).

NOTE

- Sleeve near top of steering shaft must be fully seated before installing steering wheel.
- Constant upward pressure should be held on steering shaft when installing steering wheel to prevent shaft from sliding.

(2) Install steering wheel (3) on shaft (2) with nut. Torque to 55-65 lb-ft (75-88 N·m).



c. Follow-On Maintenance

Install horn button (para 18-9).

13-3. STEERING COLUMN REPAIR

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Steering wheel removed (para 13-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)
Wrench, Torque, 0-200 Lb-In (Item 72, Appendix F).

Materials/Parts
Adhesive (Item 1.1, Appendix C)
Ties, Plastic, Cable (Item 34, Appendix C)
Locknuts (2) (Item 58, Appendix G)
Locknuts (2) (Item 65, Appendix G)
Locknuts (2) (Item 72, Appendix G)
Locknut (Item 56, Appendix G)

a. Removal

NOTE
Location of plastic cable ties should be marked before removal.

(1) Remove plastic cable ties (1) from connectors (2) as required.

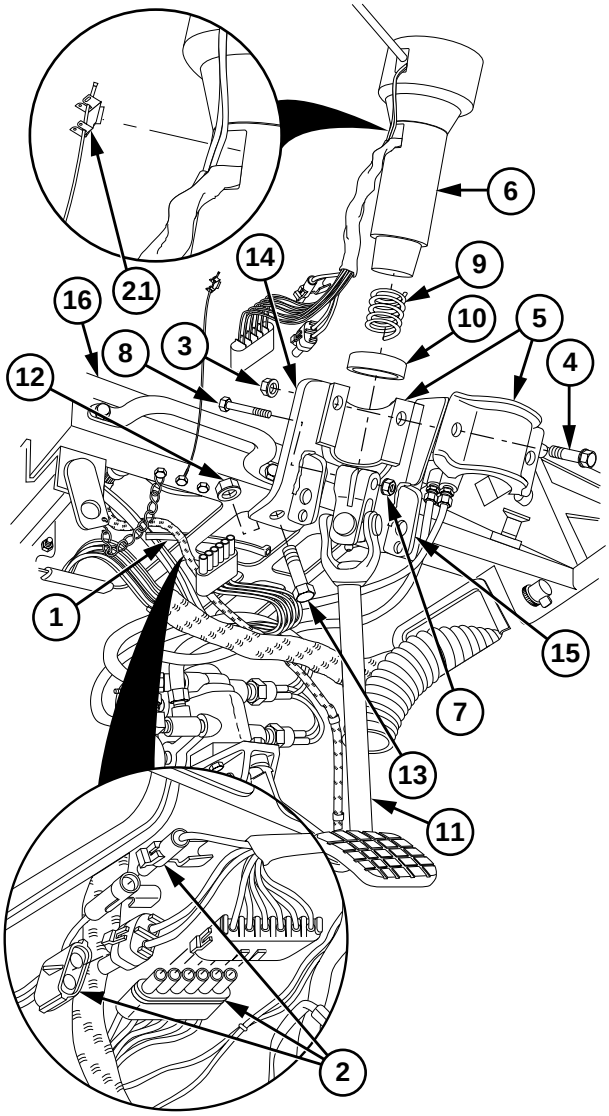
(2) Disconnect 1-pin, 2-pin, and 6-pin connectors (2).

(2.1) Disconnect wire assembly ground clip (2.1) from steering column (6).

(3) Remove two locknuts (3), screws (4), and rubber pads (5) while supporting steering column (6). Discard locknuts.

(4) Remove locknut (7), screw (8), steering column (6), spring (9), and dust cap (10) from upper shaft (11). Discard locknut.

(5) Remove two locknuts (12), screws (13), left steering column brace (14), and right steering column brace (15) from dash (16). Discard locknuts.



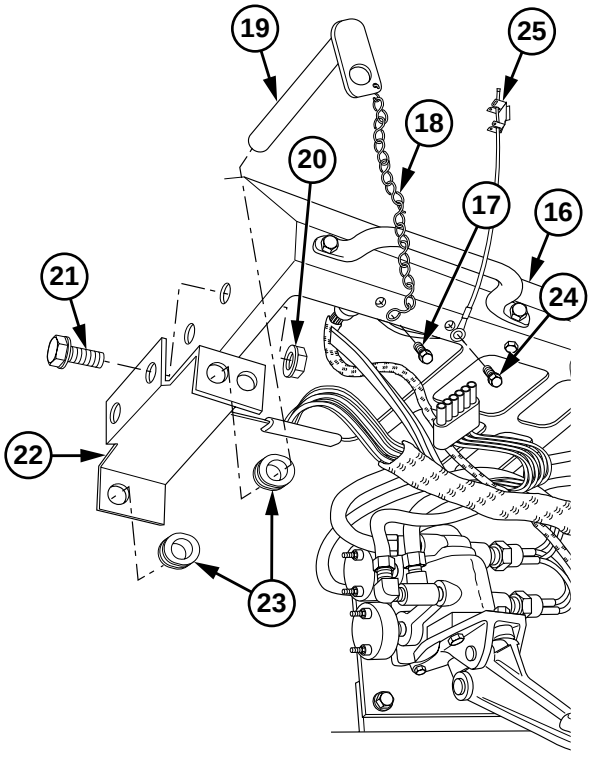
13-3. STEERING COLUMN REPAIR (CONT)

(6) Remove screw (17), chain (18), and steering lock pin (19) from dash (16).

(7) Remove two locknuts (20), screws (21), and steering lock bracket (22) from dash (16). Discard locknuts.

(8) Remove two grommets (23) from steering lock bracket (22).

(9) Remove screw (24) and wire assembly (25) from dash (16).



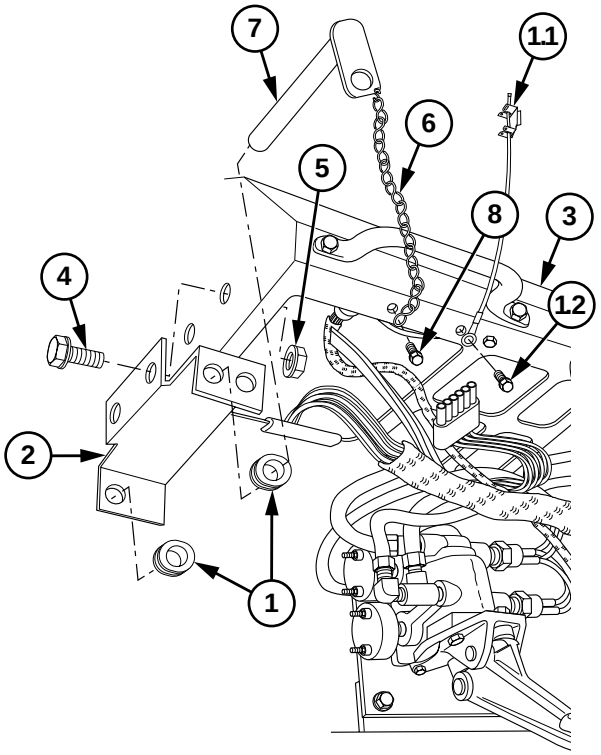
b. Installation

(1) Install wire assembly (1.1) on dash (3) with screw (1.2).

(1.1) Install two grommets (1) on steering lock bracket (2).

(2) Install steering lock bracket (2) on dash (3) with two screws (4) and new locknuts (5).

(3) Install chain (6) and steering lock pin (7) on dash (3) with screw (8).



(4) Install left steering column lock brace (9) and right steering column lock brace (10) on dash (3) with two screws (11) and new locknuts (12).

CAUTION

To install screw, hole in steering column shaft must align with groove in upper shaft. Failure to install screw through groove may result in steering shaft disconnecting, causing damage to equipment.

NOTE

Steering column is properly positioned when hazard control is on right and turn signal lever is on left.

(5) Install dust cap (13), spring (14), and steering column (15) on upper shaft (16) with screw (17) and new locknut (18). Torque to 35-40 lb-ft (47-54 N·m).

WARNING

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

(5.1) Coat two rubber pads (19) with adhesive.

WARNING

Do not overtighten steering column mounting screws. Failure to tighten them correctly can cause the steering column to bind, resulting in loss of steering control.

(6) Install two rubber pads (19) on steering column (15) with two screws (20) and new locknuts (21). Torque to 85-100 lb-in (10-12 N·m).

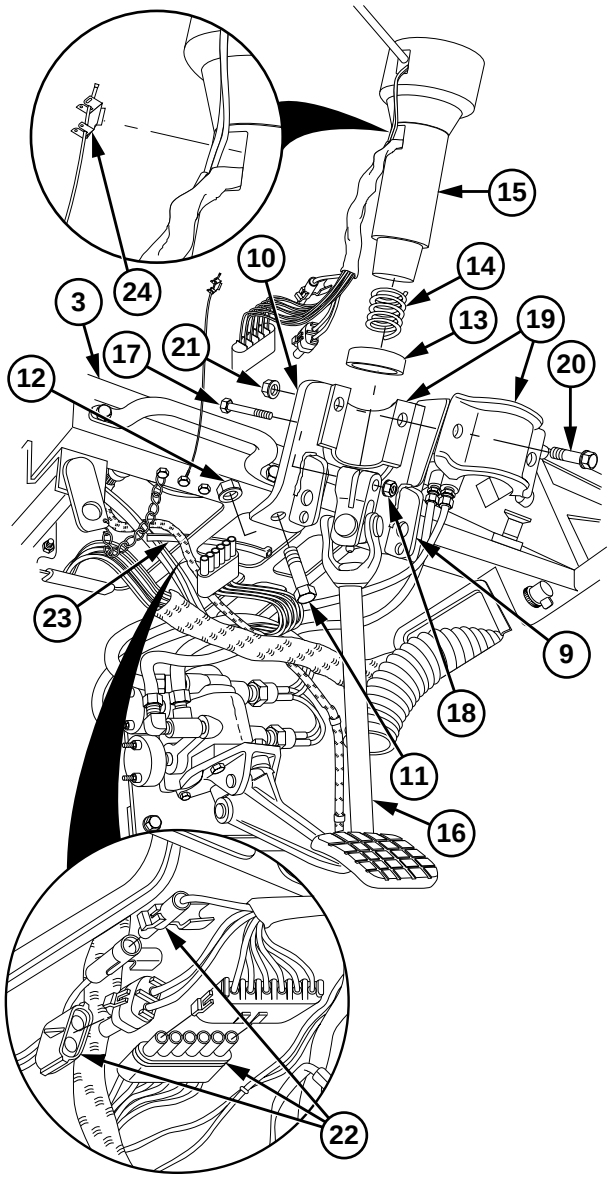
(7) Connect 1-pin, 2-pin, and 6-pin connectors (22).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(8) Secure connectors (22) with plastic cable ties (23).

(9) Connect wire assembly ground clip (24) on steering column (15).



c. Follow-On Maintenance

(1) Install steering wheel (para 13-2).

(2) Start engine (TM 9-2320-360-10).

(3) Check operation of steering (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

13-4. NO. 1 AND NO. 4 AXLE TIE ROD END REPAIR

This task covers:
a. Removal
b. Installation
c. Adjustment

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
HET Tractor on level surface with wheels straight ahead.
No. 3 to no. 4 propshaft removed (no. 4 axle only) (para 10-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Jackstands (Item 18, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Ties, Cable, Plastic (Item 34, Appendix C)
Locknuts (4) (Item 68, Appendix G)
Locknut (Item 53, Appendix G)
Pins, Cotter (4) (Item 151, Appendix G)

Personnel Required
Two

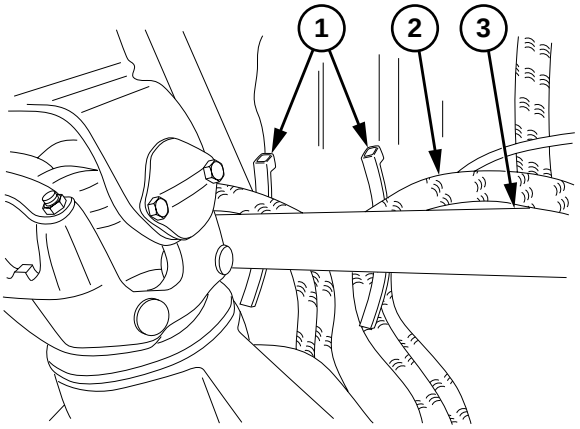
a. Removal

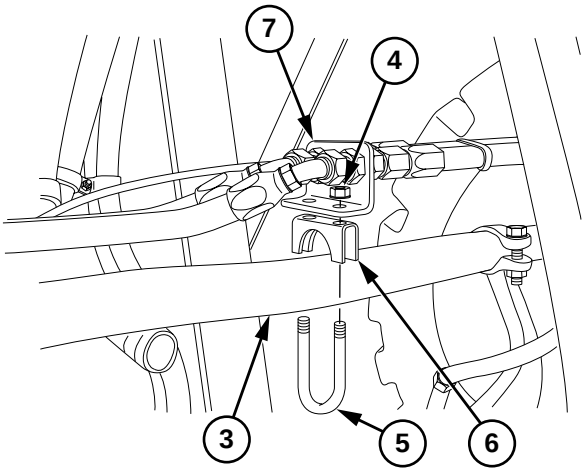
NOTE

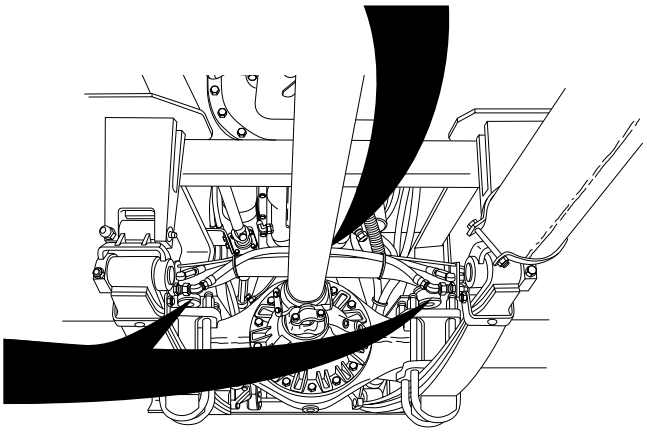
- Do steps (1) and (2) for axle no. 1 only.
- Location of plastic cable ties should be marked before removal.

(1) Remove plastic cable ties (1) securing hoses (2) to tie rod (3).

(2) Remove four locknuts (4), two clamps (5), and spacers (6) from tie rod (3) and brackets (7). Discard locknuts.







(3) Remove cotter pin (8) from tie rod end (9). Discard cotter pin.

(4) Remove castle nut (10) from tie rod end (9).

CAUTION

Nut must be installed upside down on tie rod end. Failure to comply may result in damage to nut.

(5) Install castle nut (10) on tie rod end (9).

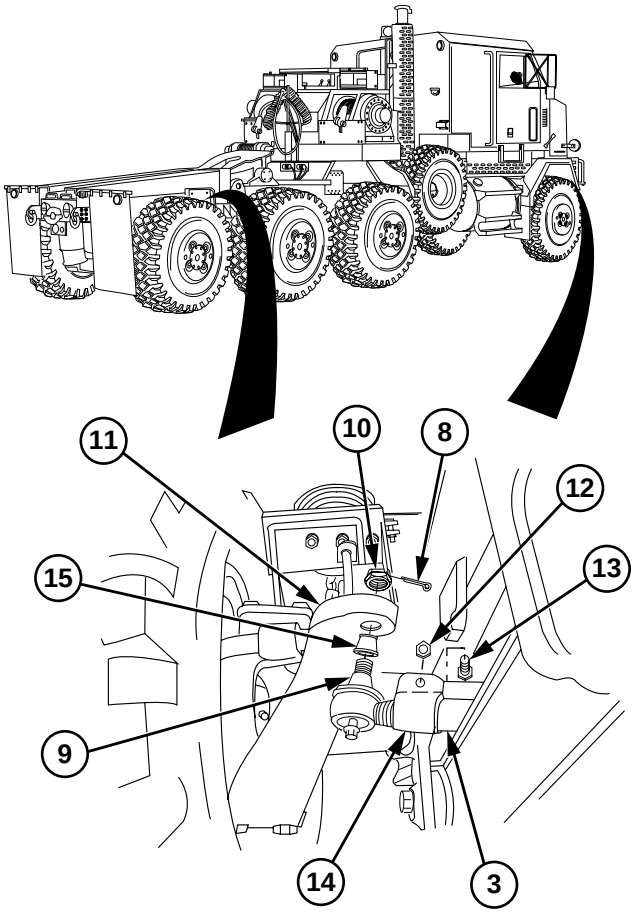
(6) Strike tie rod end (9) to loosen from steering arm (11).

(7) Remove castle nut (10) from tie rod end (9).

(8) Remove locknut (12) and screw (13) from clamp (14). Discard locknut.

(9) Remove tie rod end (9) from tie rod (3).

(10) Remove dust cover (15) from tie rod end (9).



b. Installation

(1) Install dust cover (1) on tie rod end (2).

WARNING

Tie rod end must be threaded into tie rod so that threads are beyond slot under clamp. Failure to comply may result in tie rod end separating from tie rod resulting in loss of vehicle control.

NOTE

- Ensure tie rods are installed evenly on tie rod ends.
- Initial distance between tie rod end grease fittings should be 61.5 in. (156 cm) for no. 1 axle tie rod and 59.6 in. (151 cm) for no. 4 axle tie rod.

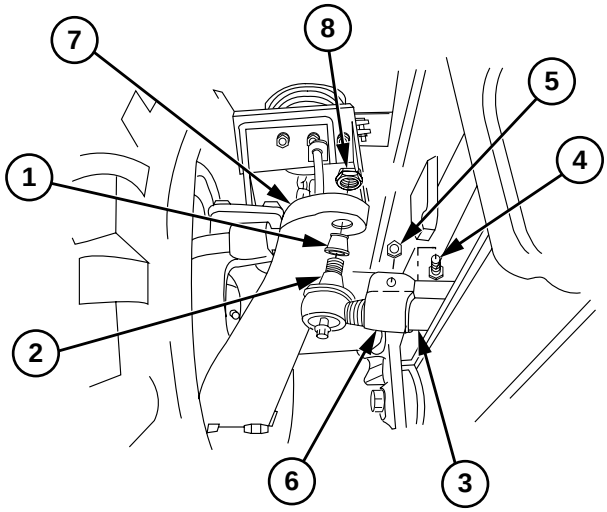
(2) Install tie rod end (2) on tie rod (3).

(3) Install screw (4) and new locknut (5) on clamp (6).

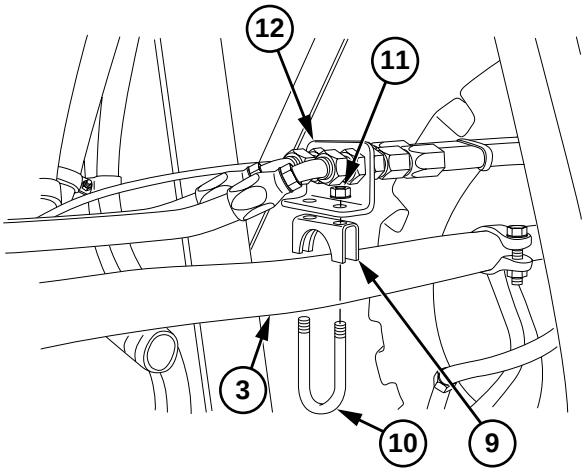
(4) Install tie rod ends (2) in steering arm holes (7) with aid of assistant.

(5) Install castle nut (8) on tie rod end (2). Do not tighten.

(6) Repeat step (5) for other end of tie rod.



13-4. NO. 1 AND NO. 4 AXLE TIE ROD END REPAIR (CONT)



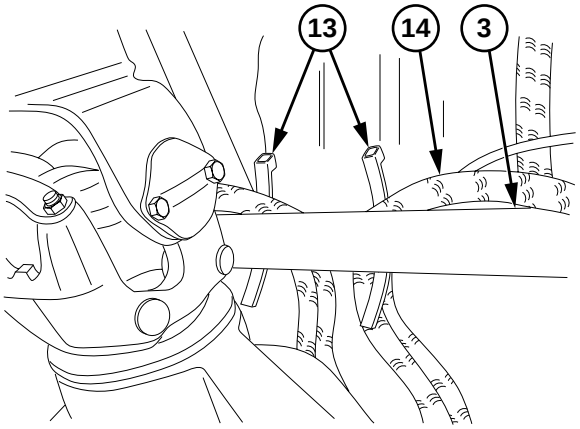
NOTE

Do steps (7) and (8) for no. 1 axle only.

(7) Install two spacers (9), clamps (10), and four new locknuts (11) on tie rod (3) and bracket (12).

NOTE

Plastic cable ties should be positioned in location marked during removal.



(8) Install plastic cable ties (13) to secure hoses (14) to tie rod (3).

(9) Lubricate tie rods (LO 9-2320-360-12).

c. Adjustment

NOTE

This toe-in adjustment procedure should only be used after the replacement of a tie rod. It is not a wheel alignment procedure.

(1) Drive HET Tractor straight back about 20 ft (6 m), then straight forward about 20 ft (6 m). Park with wheels straight.

NOTE

HET Tractor must be parked on hard, level surface.

(2) Shut off engine (TM 9-2320-360-10).

(3) Chock wheels.

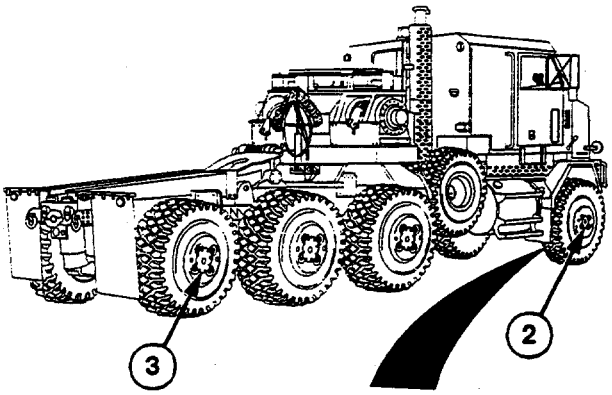
(4) Manually release spring brakes on no. 4 axle (TM 9-2320-360-10).

(5) Raise no. 1 and no. 4 axles off the ground with suitable lifting device.

(6) Support no. 1 and no. 4 axles with jackstands.

(7) Scribe line around tire (1) by securely holding marking device on tire tread while rotating tire by hand.

(8) Measure and mark four tires (1) on no. 1 axle (2) and no. 4 axle (3), 19 in. (48.3 cm) above ground on front and rear side of each tire (1) at center.

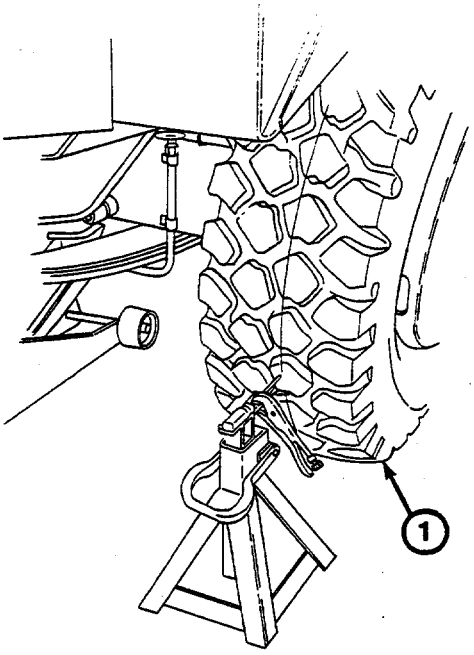


(9) Measure and record distances, at front and rear, between scribe lines on tires (1) on no. 1 axle (2).

(10) Measure and record distances, at front and rear, between centers of tires (1) on no. 4 axle (3).

NOTE

Preferred difference in distance measured between center of tires at front and rear is 0.0625 in. (1.6 mm) less in front than rear. Acceptable difference is from 0 to 0.250 in. (6.4 mm) less in front than rear.



(11) Compare distances measured between centers of tires (1) at front and rear.

13-4. NO. 1 AND NO. 4 AXLE TIE ROD END REPAIR (CONT)

NOTE

- If distances are correct, go to step (20). If distances are not correct, continue with step (12).
- No. 1 and no. 4 axles are adjusted the same way. No. 4 axle is shown.

(12) Remove castle nut (4) from tie rod end (5) on one side of HET Tractor only.

(13) Remove tie rod end (5) from steering arm (6).

(14) Loosen locknut (7) and clamp (8) on tie rod end (5).

NOTE

- Lengthening no. 1 axle tie rod will decrease front-side measurement. Shortening no. 1 axle tie rod will increase front-side measurement.
- Lengthening no. 4 axle tie rod will increase front-side measurement. Shortening no. 4 axle tie rod will decrease front-side measurement.

(15) Turn tie rod end (5) counterclockwise to lengthen or clockwise to shorten tie rod (9).

(16) Tighten locknut (7) and clamp (8) after adjusting tie rod (9).

(17) Install tie rod end (5) on steering arm (6).

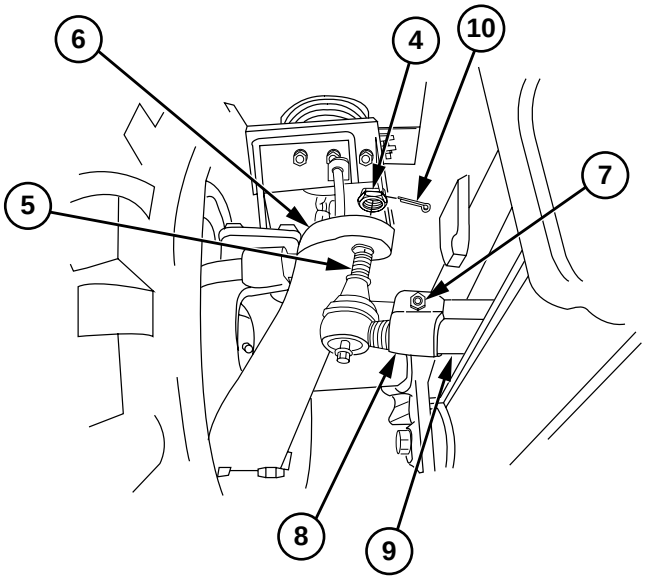
(18) Install castle nut (4) on tie rod end (5). Do not tighten.

(19) Repeat steps (1) thru (11).

(20) Tighten castle nut (4) to 150-200 lb-ft (203-271 N·m).

(21) Continue tightening castle nut (4) until hole in tie rod end (5) aligns with slots in castle nut (4).

(22) Install new cotter pin (10) through castle nut (4) and tie rod end (5).



13-4.1. NO. 1 and NO. 4 AXLE TIE ROD and DRAG LINK INSPECTION.

This task covers:
a. Removal
b. Follow-On-Maintenance

INITIAL SETUP

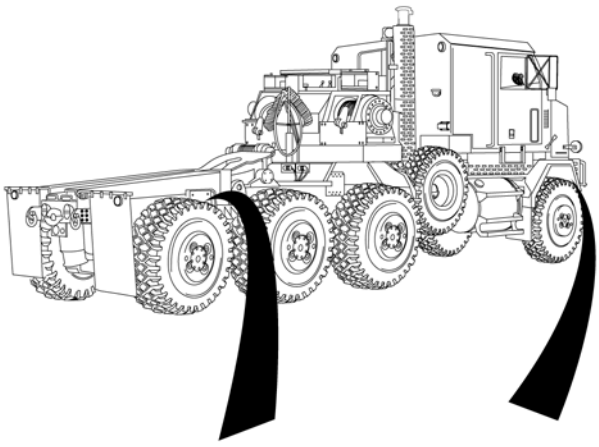
Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked (TM 9-2320-360-10).

Materials/Parts
Tool Kit, Genl Mech (Item 54, Appendix F)
Gloves, Heavy Duty (Item 13.1, Appendix F)

a. Inspection.

NOTE

Tie rod and drag link end wear is determined by the amount of axial movement in the end. The arrow in the illustration shows the direction of axial movement in the end. Side to side, twisting or lateral movement is NOT an indication of end wear.

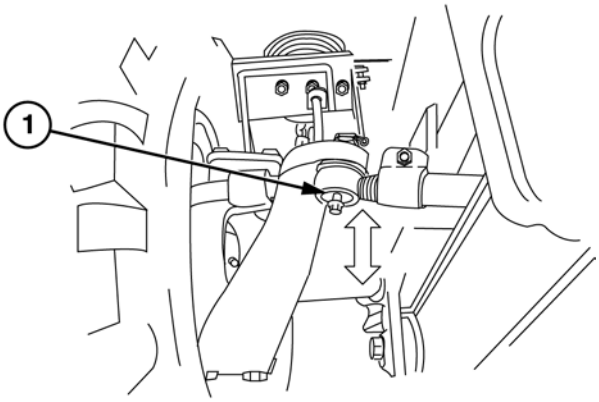


(1) Ensure wheels are straight ahead with no tension or binding on steering linkage and components.

CAUTION

Use hand force only in performing this inspection. Using mechanical and other leverage such as pry bars may damage the equipment.

(2) Using hand force only, check for wear of tie rod ends or drage link ends (1) by pulling and pushing in a straight in and out motion only.



13-4.1. NO. 1 and NO. 4 AXLE TIE ROD and DRAG LINK INSPECTION (CONT)

(3) Measure results. If:

(a) If movement is 1/16 inch (1.6 mm) or less no further action is required.

(b) If movement is between 1/16 inch (1.6 mm) and 1/8th inch (3.2 mm) plan to replace the end at the next scheduled service interval.

(c) If tie rod end movement is 1/8 inch (3.2 mm) or more replace end immediately (para 13-4). If drag link movement is greater than 1/8 inch (3.2 mm) notify Direct Support.

b. Follow-On Maintenance

- Remove wheel chocks, (TM 9-2320-360-10).

13-5. TOP STEERING SHAFT REPAIR

This task covers:
- Removal
- Disassembly
- Assembly
- Installation
- Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
- Air cleaner assembly and bracket removed (para 4-3).
- Front wheels straight ahead.
- Inner fender removed (left side only) (para 16-34).
- Driver's side interior firewall insulation removed (para 16-36c)

Tools and Special Tools
- Tool Kit, Genl Mech (Item 54, Appendix F)
- Goggles, Industrial (Item 14, Appendix F)
- Vise, Machinist's (Item 57, Appendix F)
- Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
- Lockwashers (3) (Item 101, Appendix G)
- Locknuts (4) (Item 72, Appendix G)
- Locknuts (3) (Item 56, Appendix G)

Personnel Required
- Two

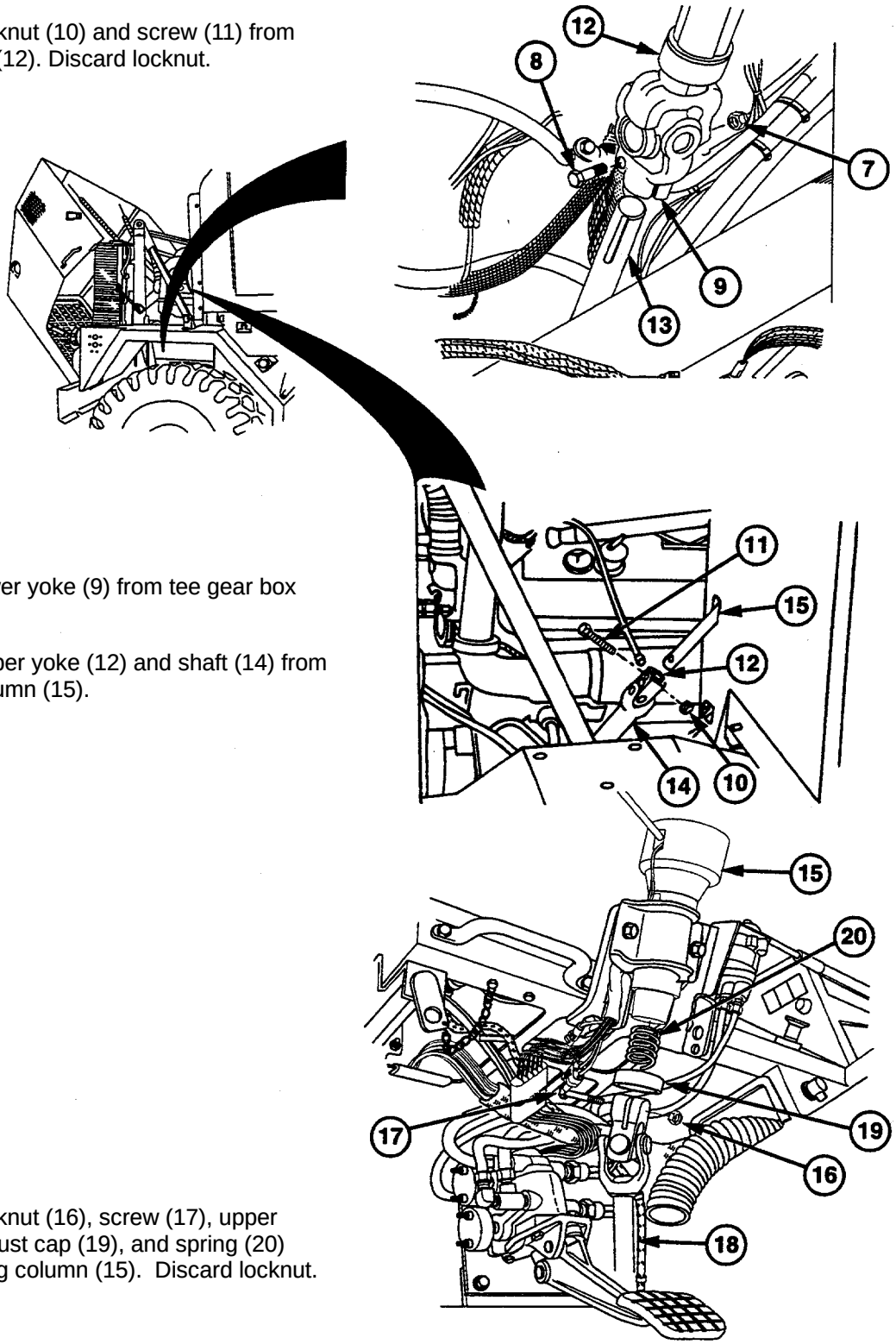
a. Removal

(1) Deleted.

13-5. TOP STEERING SHAFT REPAIR (CONT)

(2) Remove locknut (7) and screw (8) from lower yoke (9). Discard locknut.

(3) Remove locknut (10) and screw (11) from upper yoke (12). Discard locknut.



(4) Remove lower yoke (9) from tee gear box shaft (13).

(5) Remove upper yoke (12) and shaft (14) from steering column (15).

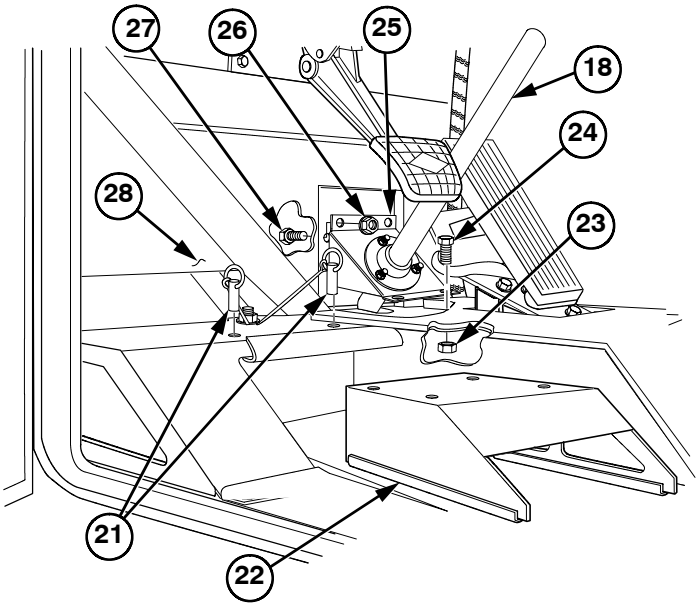
(6) Remove locknut (16), screw (17), upper shaft (18), dust cap (19), and spring (20) from steering column (15). Discard locknut.

(7) Pull out two lockpins (21) and remove footrest (22).

(8) Remove two locknuts (23) and screws (24) from support bracket (25). Discard locknuts.

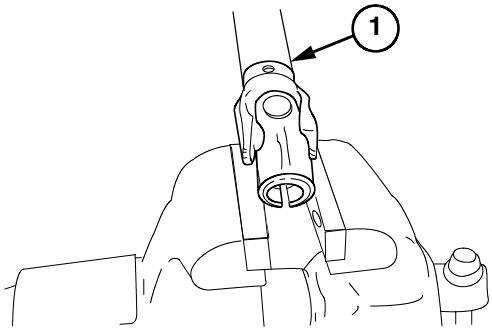
(9) Remove remaining two locknuts (26), screws (27), and support bracket (25) from firewall (28) with aid of assistant. Discard locknuts.

(10) Pull upper shaft (18) through cab.

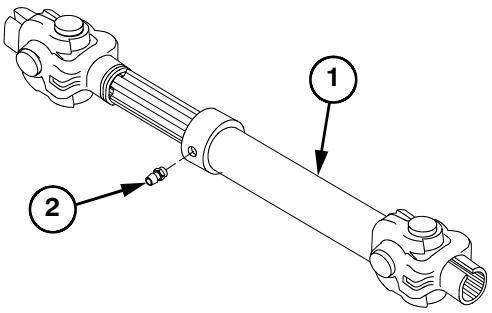


b. No. 1 Shaft Disassembly

(1) Position shaft (1) in vise.



(2) Remove grease fitting (2) from shaft (1).



13-5. TOP STEERING SHAFT REPAIR (CONT)

WARNING

Wear eye protection and use care when removing retaining rings. Retaining rings are under spring tension and can act as projectiles when released causing severe eye injury.

NOTE

Note position of yoke screw hole in relation to shaft for proper assembly.

(3) Remove four retaining rings (3) from four bearing caps (4).

CAUTION

Use care when removing bearing caps. Bearings may fall out and be damaged.

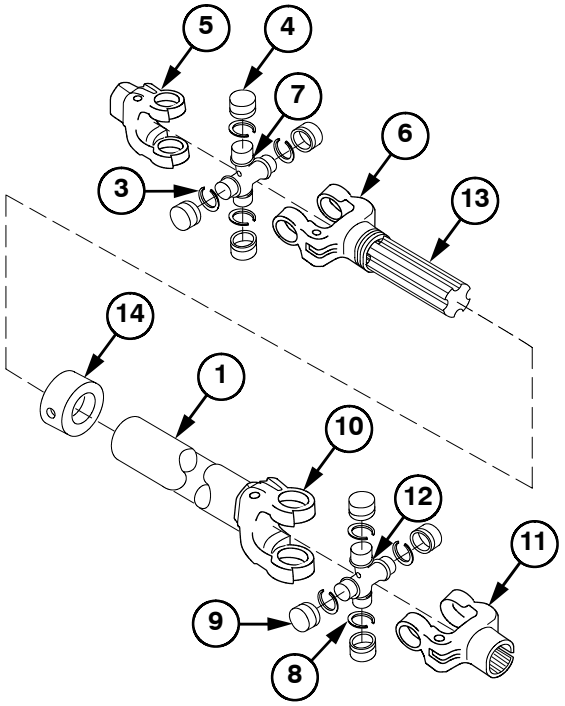
(4) Remove four bearing caps (4) and yokes (5 and 6) from U-joint (7).

(5) Remove four retaining rings (8) from four bearing caps (9).

(6) Remove four bearing caps (9) and yokes (10 and 11) from U-joint (12).

(7) Remove splined shaft (13) from shaft (1).

(8) Remove dust cap (14) from shaft (1).



c. No. 1 Shaft Assembly

(1) Install dust cap (1) on shaft (2).

CAUTION

Both upper and lower yokes must be in same position. Arrows on upper and lower shafts must align. Failure to comply may result in steering shaft binding.

(2) Install splined shaft (3) on shaft (2).

(3) Install yokes (4 and 5) on U-joint (6).

CAUTION

Use care when installing bearing caps. Bearings may fall out and be damaged.

(4) Install four bearing caps (7) through yokes (4 and 5) onto U-joint (6).

WARNING

Wear eye protection and use care when installing retaining rings. Retaining rings are under spring tension and can act as projectiles when released causing severe eye injury.

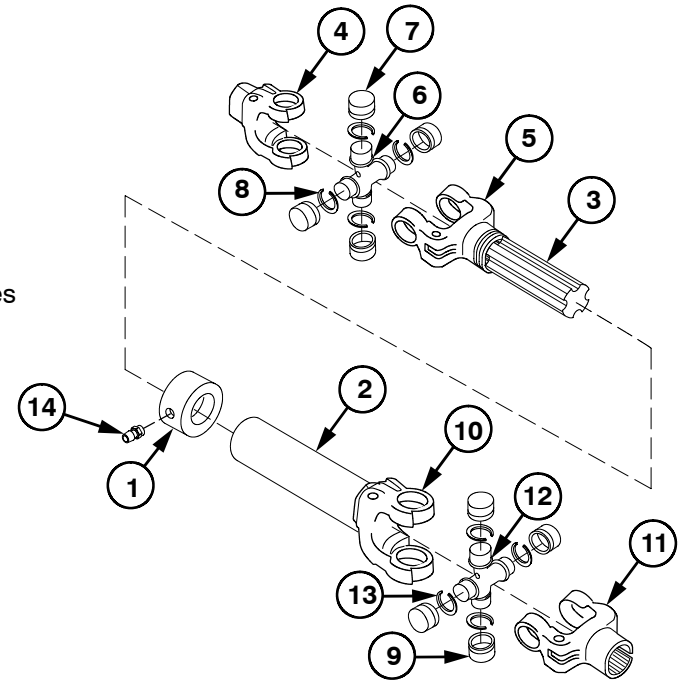
(5) Install four retaining rings (8) on bearing caps (7).

(6) Install four bearing caps (9) through yokes (10 and 11) onto U-joint (12).

(7) Install four retaining rings (13) on bearing caps (9).

(8) Install grease fitting (14) in shaft (2).

(9) Remove shaft (2) from vise.



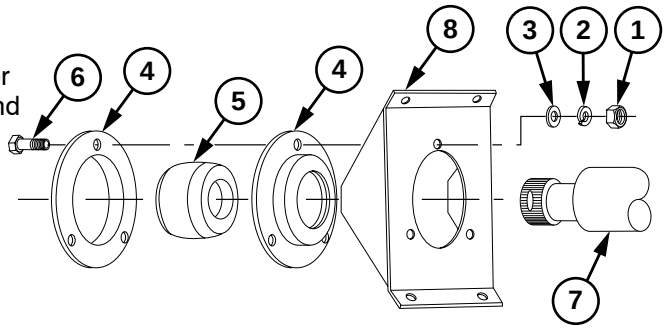
13-5. TOP STEERING SHAFT REPAIR (CONT)

d. No. 2 Shaft Disassembly

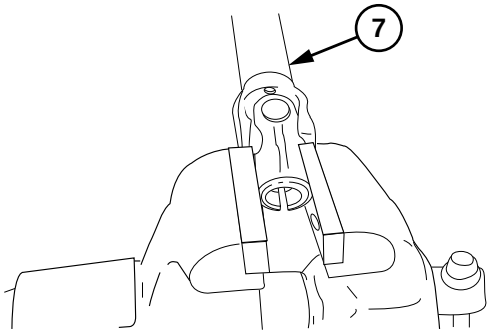
NOTE

Foreign material must be removed from shaft to remove bearing.

(1) Remove three nuts (1), lockwashers (2), washers (3), two retaining plates (4), center flange mounting bearing (5), screws (6), and upper shaft (7) from support bracket (8). Discard lockwashers.



(2) Position shaft (7) in vise.



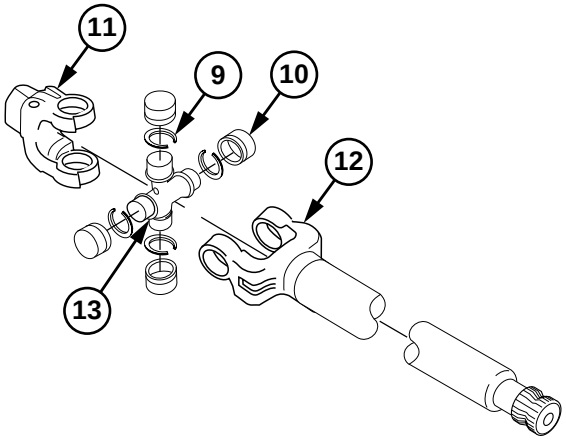
WARNING

Wear eye protection and use care when removing retaining rings. Retaining rings are under spring tension and can act as projectiles when released causing severe eye injury.

NOTE

Note position of yoke screw hole in relation to groove in shaft splines for proper assembly.

(3) Remove four retaining rings (9) from four bearing caps (10).



CAUTION

Use care when removing bearing caps. Bearings may fall out and be damaged.

(4) Remove four bearing caps (10) and yokes (11 and 12) from U-joint (13).

e. No. 2 Shaft Assembly

(1) Install yokes (1 and 2) on U-joint (3).

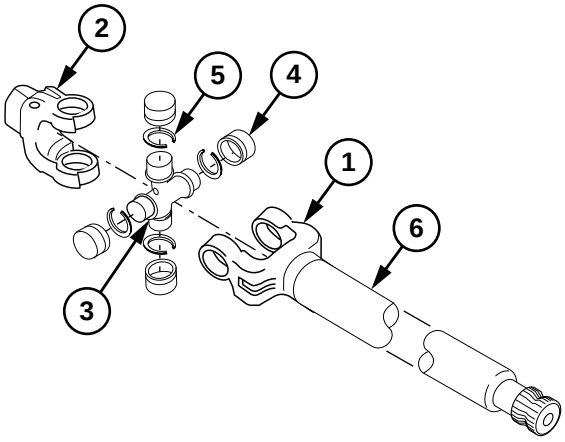
CAUTION

Use care when installing bearing caps. Bearings may fall out and be damaged.

(2) Install four bearing caps (4) through yokes (1 and 2) onto U-joint (3).

WARNING

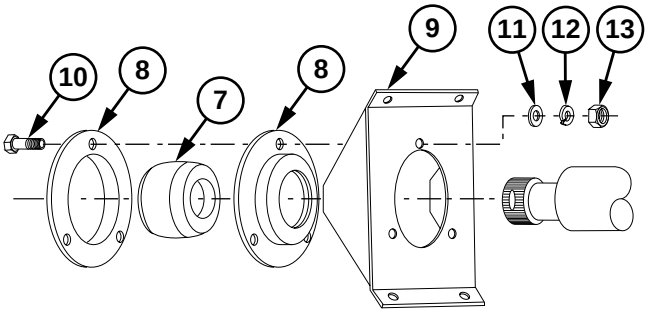
Wear eye protection and use care when installing retaining rings. Retaining rings are under spring tension and can act as projectiles when released causing severe eye injury.



(3) Install four retaining rings (5) on bearing caps (4).

(4) Remove shaft (6) from vise.

(5) Install center flange mounting bearing (7) and two retaining plates (8) on support bracket (9) with three screws (10), washers (11), new lockwashers (12), and nuts (13).



f. Installation

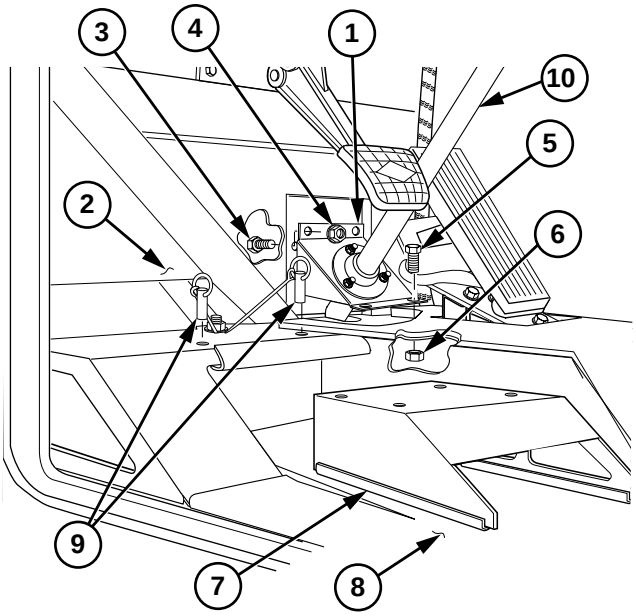
(1) Install support bracket (1) on firewall (2) with two screws (3) and new locknuts (4) with aid of assistant.

(2) Install two remaining screws (5) and two new locknuts (6) in support bracket (1).

(3) Install footrest (7) in cab floor (8).

(4) Push in two lockpins (9) to lock footrest (7) in place.

(5) Push upper shaft (10) through base plate (1) from inside cab.



13-5. TOP STEERING SHAFT REPAIR (CONT)

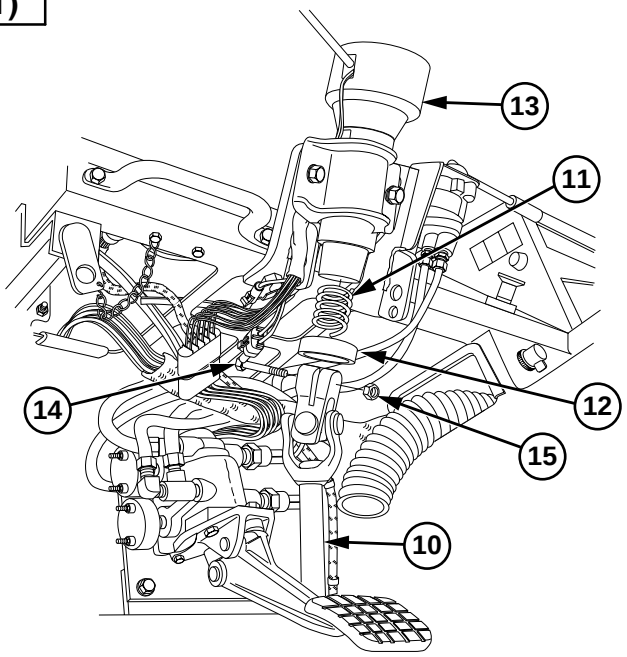
CAUTION

To install screws, holes in steering shafts must align with grooves in tee box shafts. Failure to install screws through grooves may result in steering shafts disconnecting, causing damage to equipment.

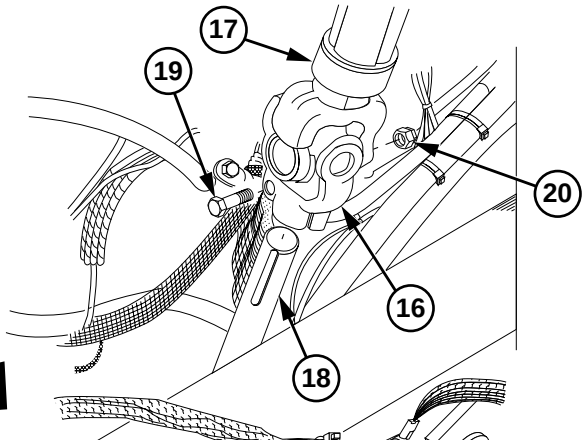
NOTE

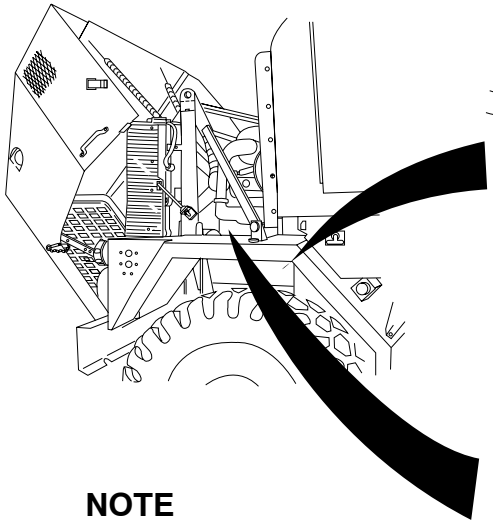
Properly position steering wheel before doing step (6).

(6) Install spring (11), dust cap (12), and upper shaft (10) on steering column (13) with screw (14) and new locknut (15).



(7) Install lower yoke (16) and shaft (17) on tee gear box shaft (18) with screw (19) and new locknut (20). Torque to 35-40 lb-ft (47-54 N·m).

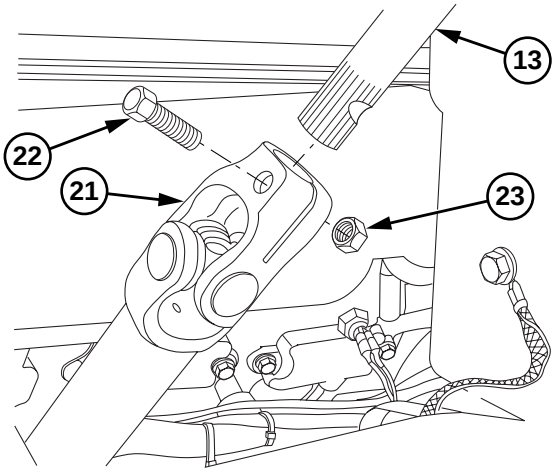




NOTE

Groove in splined end of shaft must align with yoke screw hole.

(8) Install upper yoke (21) on steering column (13) with screw (22) and new locknut (23). Torque to 35-40 lb-ft (47-54 N·m).



(9) Deleted.

g. Follow-On Maintenance

(1) Lubricate shafts (LO 9-2320-360-12).

(2) Install air cleaner assembly and bracket (para 4-3).

(3) Start engine (TM 9-2320-360-10).

(4) Check operation of steering (TM 9-2320-360-10).

(5) Shut off engine (TM 9-2320-360-10).

(6) Install inner fender (para 16-34).

(7) Install drivers side interior firewall insulation (para 16-36d).

13-6. FRONT STEERING SHAFT ASSEMBLY REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Goggles, Industrial (Item 14, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Locknuts (2) (Item 56, Appendix G)

NOTE

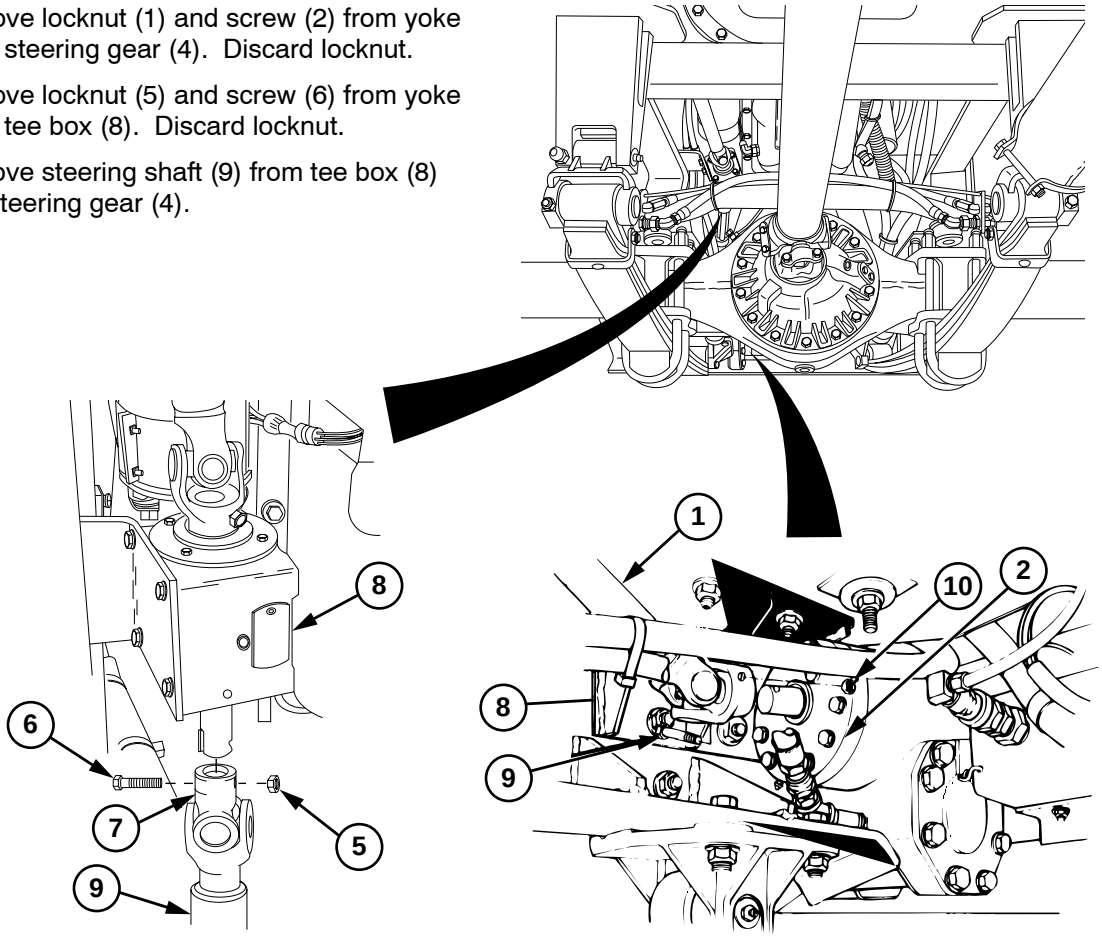
- Do not move HET Tractor wheels during replacement. If wheels are moved, notify direct support to do steering timing procedure (TM 9-2320-360-34).
- Matchmark position of shaft and steering gear.

a. Removal

(1) Remove locknut (1) and screw (2) from yoke (3) at steering gear (4). Discard locknut.

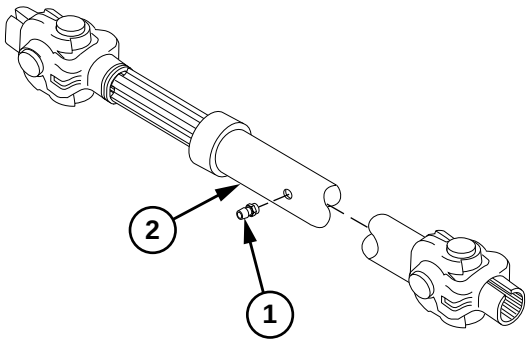
(2) Remove locknut (5) and screw (6) from yoke (7) at tee box (8). Discard locknut.

(3) Remove steering shaft (9) from tee box (8) and steering gear (4).



b. Disassembly

(1) Remove grease fitting (1) from shaft (2).



WARNING

Wear eye protection and use care when removing retaining rings. Retaining rings are under spring tension and can act as projectiles when released causing severe eye injury.

NOTE

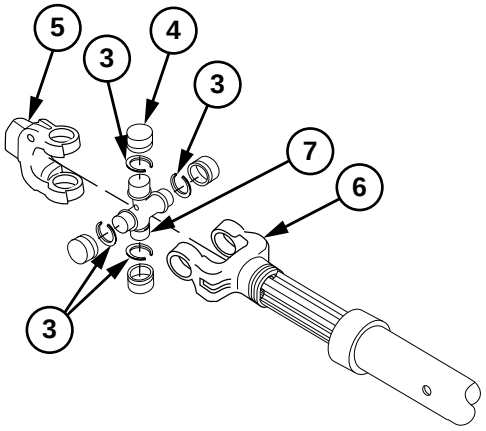
Note position of yoke screw hole in relation to shaft for proper assembly.

(2) Remove four retaining rings (3) from four bearing caps (4).

CAUTION

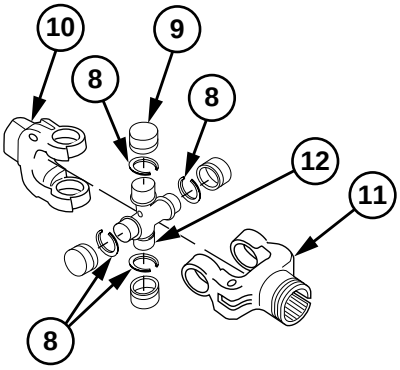
Use care when removing bearing caps. Bearings may fall out and be damaged.

(3) Remove four bearing caps (4) and yokes (5 and 6) from U-joint (7).



(4) Remove four retaining rings (8) from four bearing caps (9).

(5) Remove four bearing caps (9) and yokes (10 and 11) from U-joint (12).



13-6. FRONT STEERING SHAFT ASSEMBLY REPAIR (CONT)

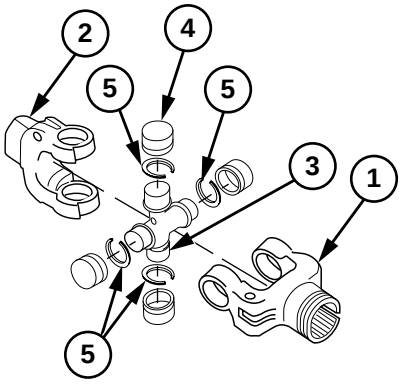
c. Assembly

(1) Install yokes (1 and 2) on U-joint (3).

CAUTION

Use care when installing bearing caps. Bearings may fall out and be damaged.

(2) Install four bearing caps (4) through yokes (1 and 2) onto U-joint (3).



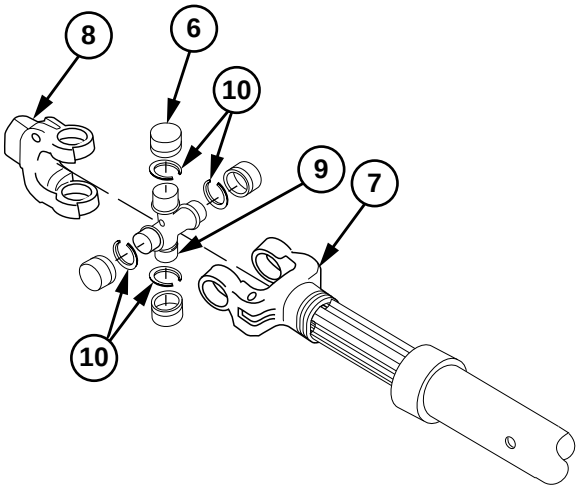
WARNING

Wear eye protection and use care when installing retaining rings. Retaining rings are under spring tension and can act as projectiles when released causing severe eye injury.

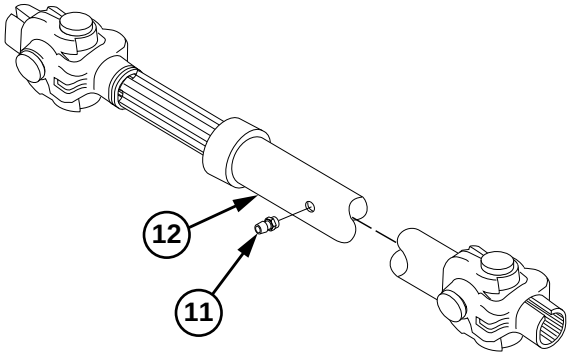
(3) Install four retaining rings (5) on bearing caps (4).

(4) Install four bearing caps (6) through yokes (7 and 8) onto U-joint (9).

(5) Install four retaining rings (10) on bearing caps (6).



(6) Install grease fitting (11) in shaft (12).



NOTE

- Lubricate shaft (LO 9-2320-360-12).
- Align matchmarks on shaft and steering gears. Shaft must be aligned for proper steering timing (front and rear gears).

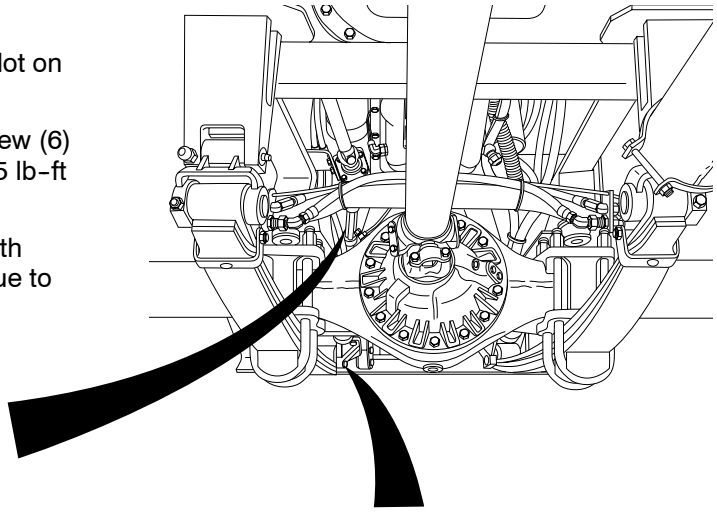
d. Installation

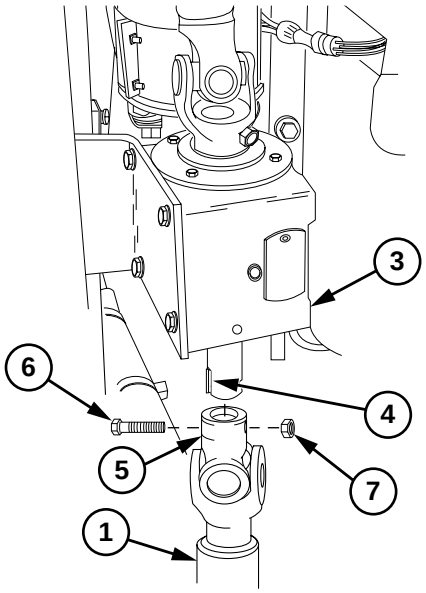
(1) Position steering shaft (1) between steering gear (2) and tee box (3) with splined end of shaft toward steering gear (2).

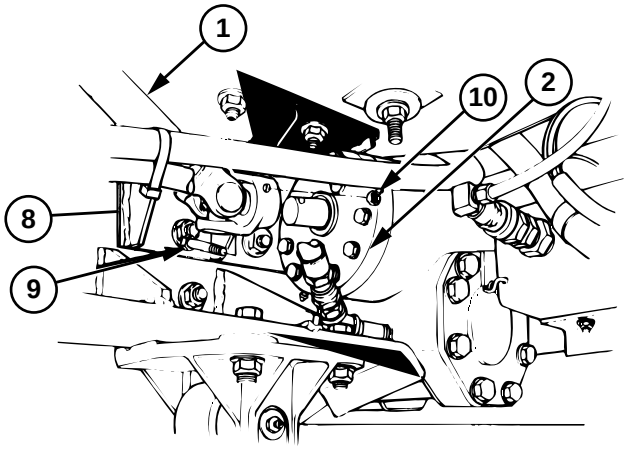
(2) Align keyway (4) on tee box (3) with slot on steering shaft (1).

(3) Install yoke (5) on tee box (3) with screw (6) and new locknut (7). Torque to 35-45 lb-ft (48-54 N·m).

(4) Install yoke (8) on steering gear (2) with screw (9) and new locknut (10). Torque to 35-45 lb-ft (48-54 N·m).







e. Follow-On Maintenance

(1) Lubricate shaft (LO 9-2320-360-12).

(2) Start engine (TM 9-2320-360-10).

(3) Check operation of steering (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

13-7. REAR STEERING SHAFTS NO. 1, NO. 2, NO. 3, NO. 4, AND NO. 5 REPAIR

This task covers:
- Removal
- Disassembly
- Assembly
- Installation
- Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
- Engine shut off (TM 9-2320-360-10).
- Parking brake on (TM 9-2320-360-10).
- Wheels chocked.
- No. 1 air reservoir removed (shaft no. 2 only) (para 11-19).

Tools and Special Tools
- Tool Kit, Genl Mech (Item 54, Appendix F)
- Goggles, Industrial (Item 14, Appendix F)
- Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
- Ties, Cable, Plastic (Item 34, Appendix C)
- Locknuts (6) (Item 61, Appendix G)
- Locknuts (5) (Item 56, Appendix G)

Personnel Required
- Two

CAUTION

Do not move HET Tractor wheels during replacement. If wheels are moved, notify direct support to do steering timing procedure (TM 9-2320-360-34). Failure to comply may result in improper steering and damage to equipment.

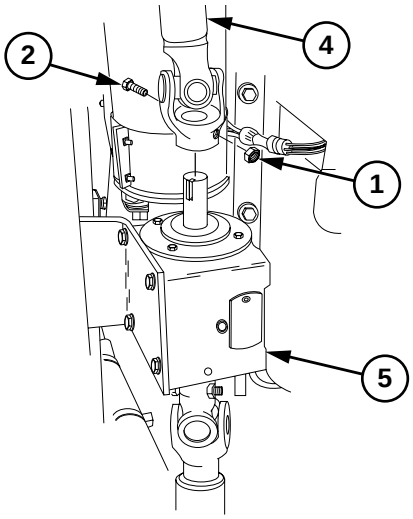
NOTE

Rear steering assembly consists of five shafts between tee gear box and rear steering gear.

a. Removal

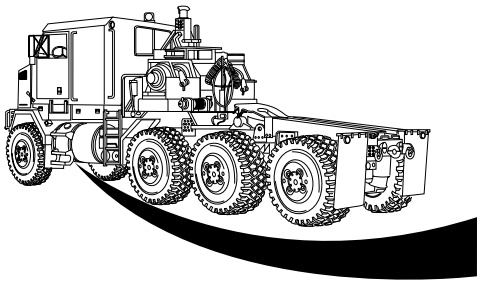
NOTE

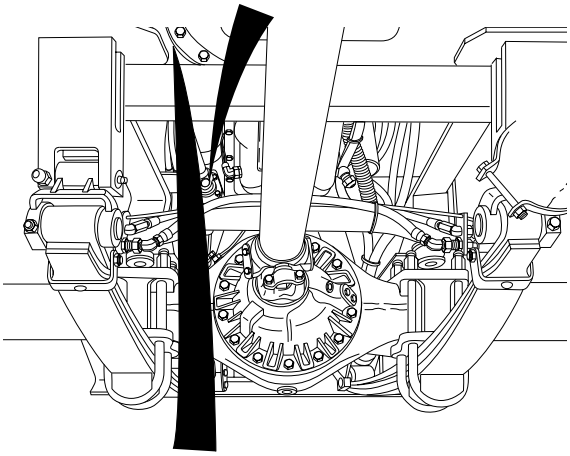
- To remove steering shaft no. 1, do steps (1) thru (4).
- To remove steering shaft no. 2, do steps (3) thru (12).
- To remove steering shaft no. 3, do steps (9) and (12) thru (14).
- To remove steering shaft no. 4, do steps (13) thru (15), (16.1), and (16.2).
- To remove steering shaft no. 5, do steps (16.3) thru (19).



(1) Remove locknut (1) and screw (2) from yoke (3). Discard locknut.

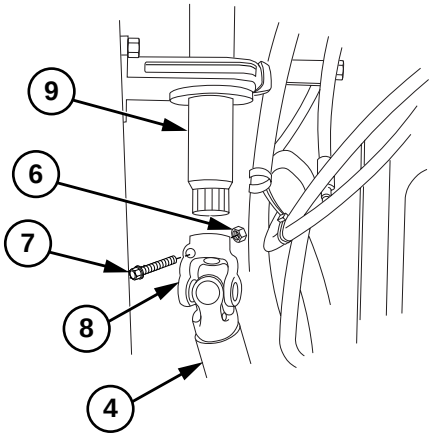
(2) Remove steering shaft no. 1 (4) from tee gear box (5).





(3) Remove locknut (6) and screw (7) from yoke (8). Discard locknut.

(4) Remove steering shaft no. 1 (4) from steering shaft no. 2 (9).



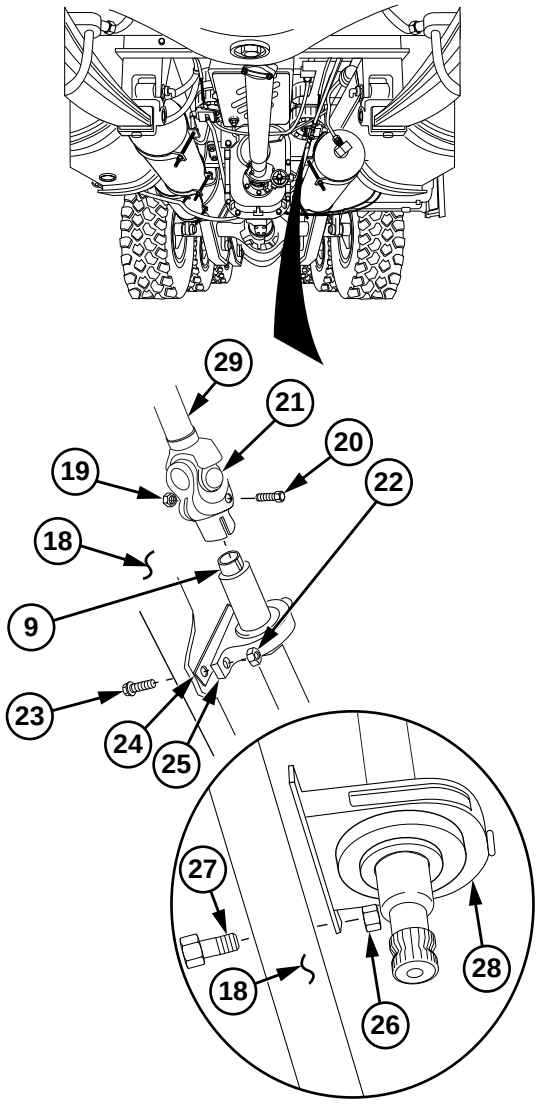
13-7. REAR STEERING SHAFTS NO. 1, NO. 2, NO. 3, NO. 4, AND NO. 5 REPAIR (CONT)

(5) Deleted.

(6) Deleted.

(7) Deleted.

(8) Deleted.



(9) Remove locknut (19) and screw (20) from yoke (21). Discard locknut.

(10) Remove two locknuts (22), screws (23), and shim (24) from rear carrier bearing mount (25) and frame (18). Discard locknuts.

WARNING

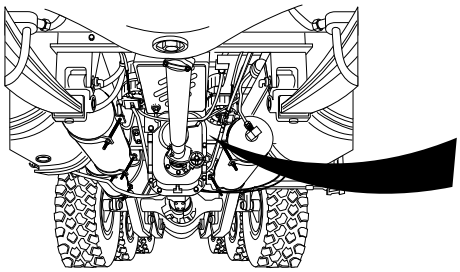
Support shaft to keep it from falling. Failure to comply may result in serious injury.

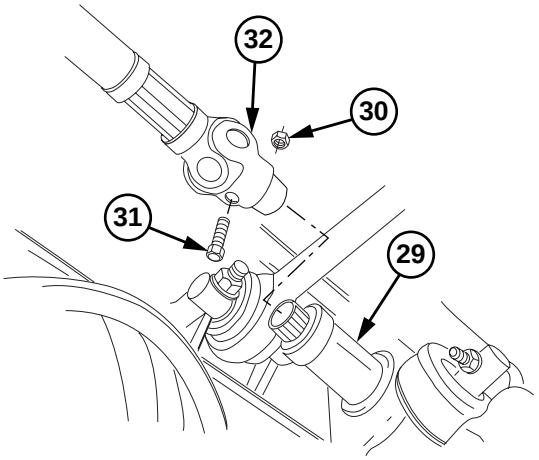
(11) Remove two locknuts (26) and screws (27) from front carrier bearing mount (28) and frame (18). Discard locknuts.

(12) Remove steering shaft no. 2 (9) from steering shaft no. 3 (29).

(13) Remove locknut (30) and screw (31) from no. 4 yoke (32). Discard locknut.

(14) Remove no. 4 yoke (32) from shaft no. 3 (29).

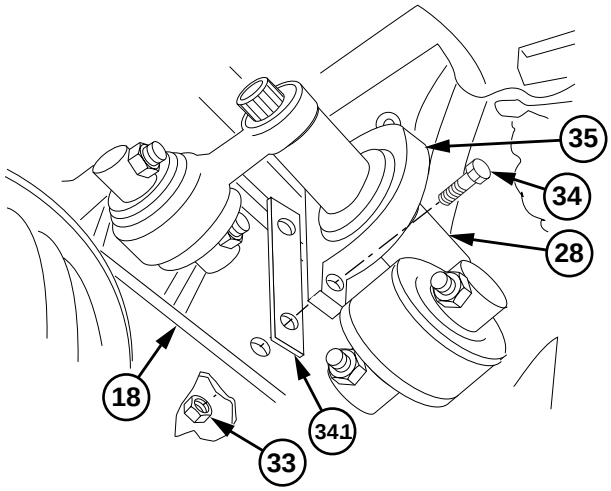




WARNING

Support shaft when removing hardware to prevent it from falling. Failure to comply may result in serious injury.

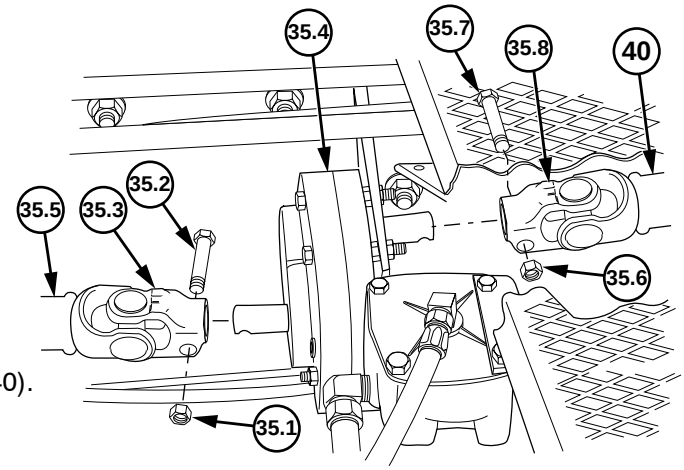
(15) Remove two locknuts (33), two screws (34) and spacer (34.1) from carrier bearing (35) and frame (18). Discard locknuts.



NOTE

Lift shaft no. 3 over shaft no. 4 and crossmember between second and third axles. Then lift over no. 2 axle torque arm. Assembly can be passed under fifth wheel and up between ramps to assistant.

(16) Remove steering shaft no. 3 (28) from vehicle with aid of assistant.

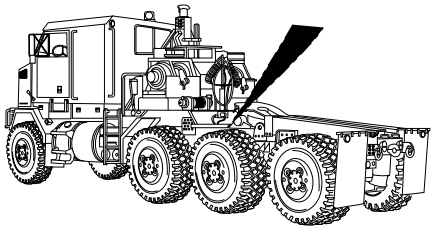


(16.1) Remove locknut (35.1) and screw (35.2) from yoke (35.3). Discard locknut.

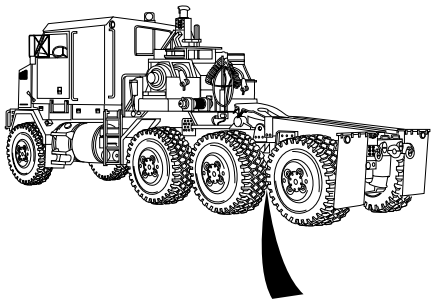
(16.2) Remove yoke (35.3) from gear reducer (35.4) and remove shaft no. 4 (35.5) from vehicle.

(16.3) Remove locknut (35.6) and screw (35.7) from yoke (35.8) on steering shaft no. 5 (40). Discard locknut.

(16.4) Remove yoke (35.8) from gear reducer (35.4).



13-7. REAR STEERING SHAFTS NO. 1, NO. 2, NO. 3, NO. 4, AND NO. 5 REPAIR (CONT)



WARNING

Support shaft when removing hardware to prevent it from falling. Failure to comply may result in serious injury.

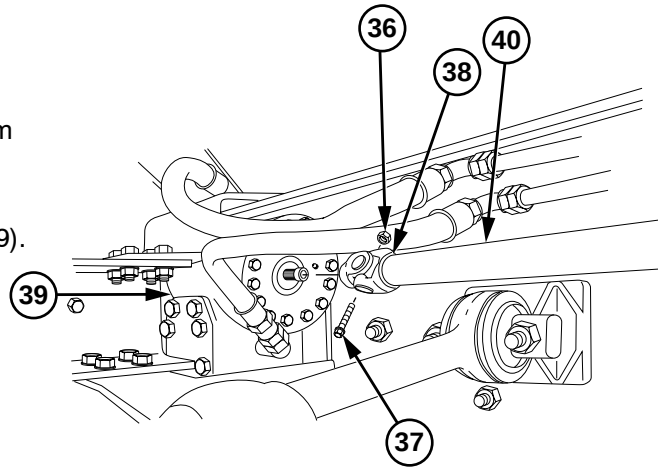
NOTE

Matchmark position of shaft and steering gear.

(17) Remove locknut (36) and screw (37) from yoke (38) on steering shaft no. 5 (40). Discard locknut.

(18) Remove yoke (38) from steering gear (39).

(19) Remove steering shaft no. 5 (40) from vehicle.



b. Steering Shafts No. 1, No. 4, and No. 5 Disassembly

(1) Remove grease fitting (1) from steering shaft (2).

WARNING

Wear eye protection and use care when removing retaining rings. Retaining rings are under spring tension and can act as projectiles when released causing severe eye injury.

NOTE

Note position of yoke screw hole in relation to shaft for proper assembly.

(2) Remove four retaining rings (3) from four bearing caps (4).

CAUTION

Use care when removing bearing caps. Bearings may fall out and be damaged.

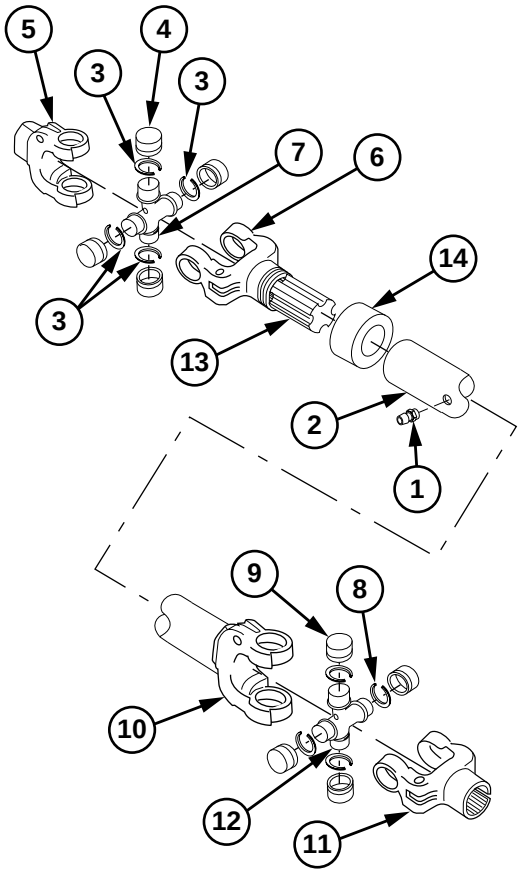
(3) Remove four bearing caps (4) and yokes (5 and 6) from U-joint (7).

(4) Remove four retaining rings (8) from four bearing caps (9).

(5) Remove four bearing caps (9) and yokes (10 and 11) from U-joint (12).

(6) Remove splined shaft (13) from shaft (2).

(7) Remove dust cap (14) from shaft (2).



c. Steering Shaft No. 3 Disassembly

(1) Remove grease fitting (1) from shaft (2).

NOTE

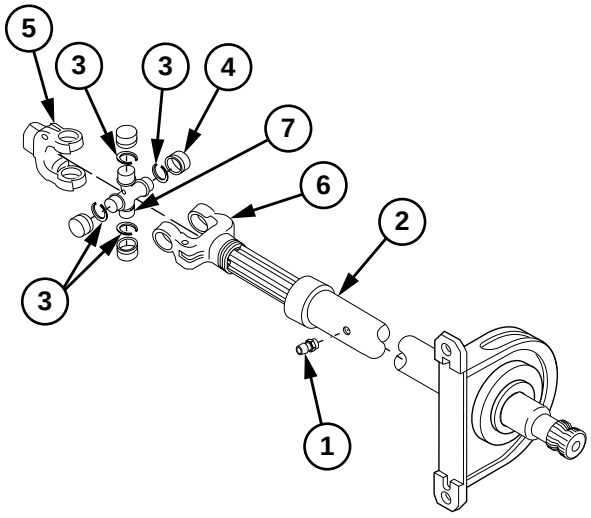
Note position of yoke screw hole in relation to shaft for proper assembly.

(2) Remove four retaining rings (3) from four bearing caps (4).

CAUTION

Use care when removing bearing caps. Bearings may fall out and be damaged.

(3) Remove four bearing caps (4) and yoke (5 and 6) from U-joint (7).



13-7. REAR STEERING SHAFTS NO. 1, NO. 2, NO. 3, NO. 4, AND NO. 5 REPAIR (CONT)

d. Steering Shaft No. 3 Assembly

(1) Install yokes (1 and 2) on U-joint (3).

CAUTION

Use care when installing bearing caps. Bearings may fall out and be damaged.

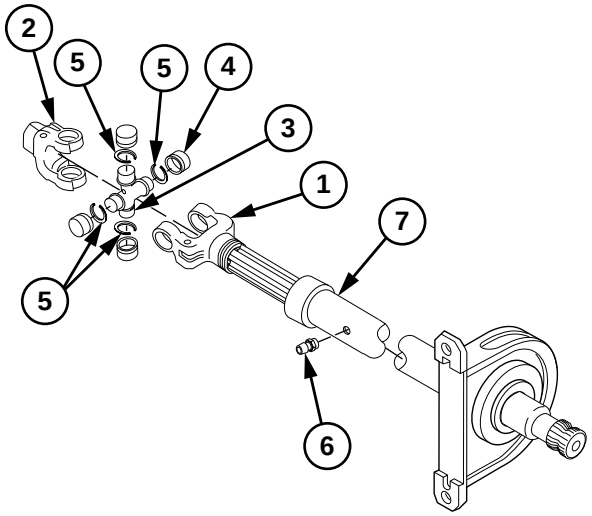
(2) Install four bearing caps (4) through yokes (1 and 2) onto U-joint (3).

WARNING

Wear eye protection and use care when installing retaining rings. Retaining rings are under spring tension and can act as projectiles when released causing severe eye injury.

(3) Install four retaining rings (5) on bearing caps (4).

(4) Install grease fitting (6) in shaft (7).



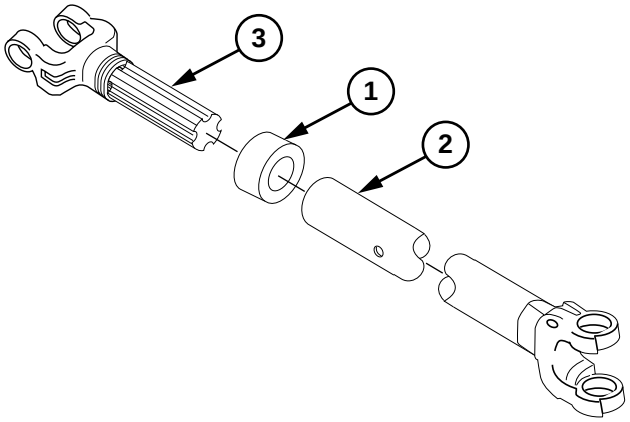
e. Steering Shafts No. 1, No. 4, and No. 5 Assembly

(1) Install dust cap (1) on shaft (2).

CAUTION

Both upper and lower yokes must be in same position. Arrows on upper and lower shafts must align. Failure to comply may result in steering shaft binding.

(2) Install splined shaft (3) on shaft (2).



(3) Install yokes (4 and 5) on U-joint (6).

CAUTION

Use care when installing bearing caps. Bearings may fall out and be damaged.

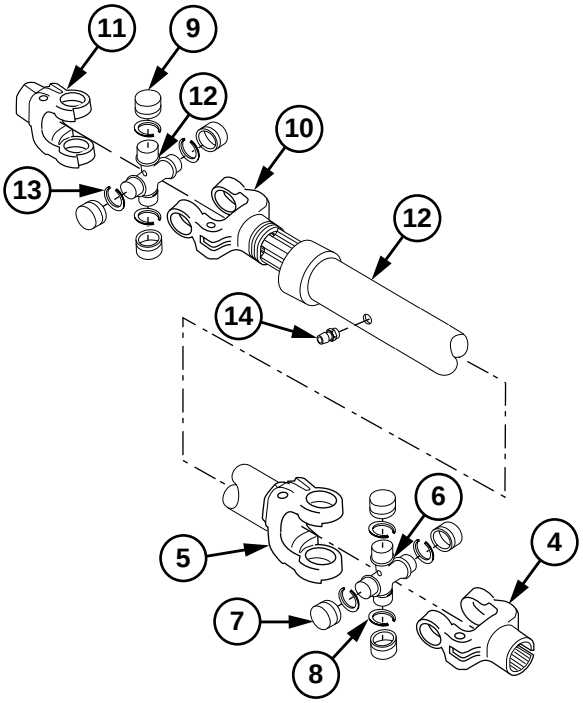
(4) Install four bearing caps (7) through yokes (4 and 5) onto U-joint (6).

(5) Install four retaining rings (8) on bearing caps (7).

(6) Install four bearing caps (9) through yokes (10 and 11) onto U-joint (12).

(7) Install four retaining rings (13) on bearing caps (9).

(8) Install grease fitting (14) in shaft (2).



f. Installation

(1) Deleted.

(2) Deleted.

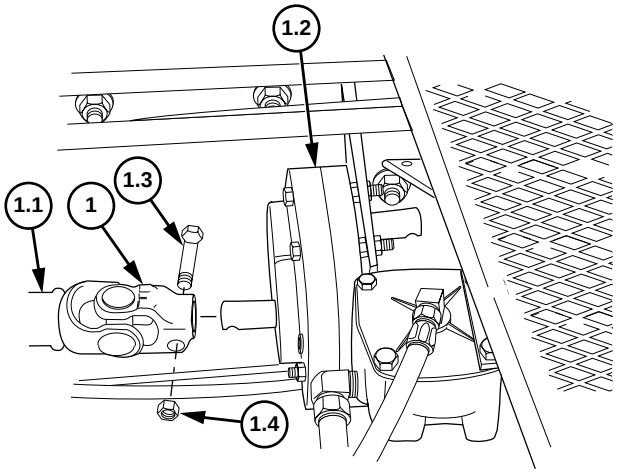
WARNING

Support shaft when installing hardware to prevent it from falling. Failure to comply may result in serious injury.

NOTE

- Align matchmarks on shaft and steering gear. Shaft must be aligned for proper steering timing (front and rear gears).
- To install no. 1 steering shaft, do steps (17) thru (19).
- To install no. 2 steering shaft, do steps (7) thru (17).
- To install no. 3 steering shaft, do steps (3) thru (7) and (11).
- To install no. 4 steering shaft, do steps (2.1), (5), and (6).
- To install no. 5 steering shaft, do steps (20) and (21).

(2.1) Install yoke (1) from steering shaft no. 4 (1.1) on gear reducer (1.2) with screw (1.3) and new locknut (1.4). Torque to 35-40 lb-ft (48-54 N·m).



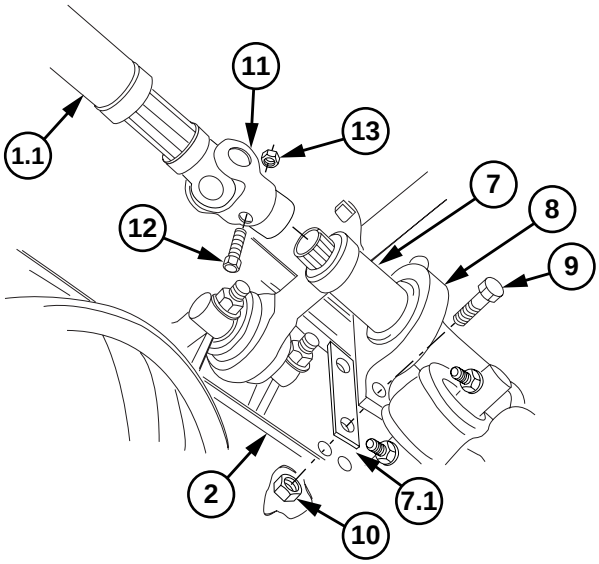
13-7. REAR STEERING SHAFTS NO. 1, NO. 2, NO. 3, NO. 4, AND NO. 5 REPAIR (CONT)

WARNING

Support shaft during installation to prevent it from falling. Failure to comply may result in serious injury.

NOTE

- Pass shaft between ramps, under fifth wheel, and over no. 2 axle torque arm, between left frame and crossmember in front of no. 2 axle.
- Shaft no. 3 should be connected to shaft no. 2 before installing carrier bearing.

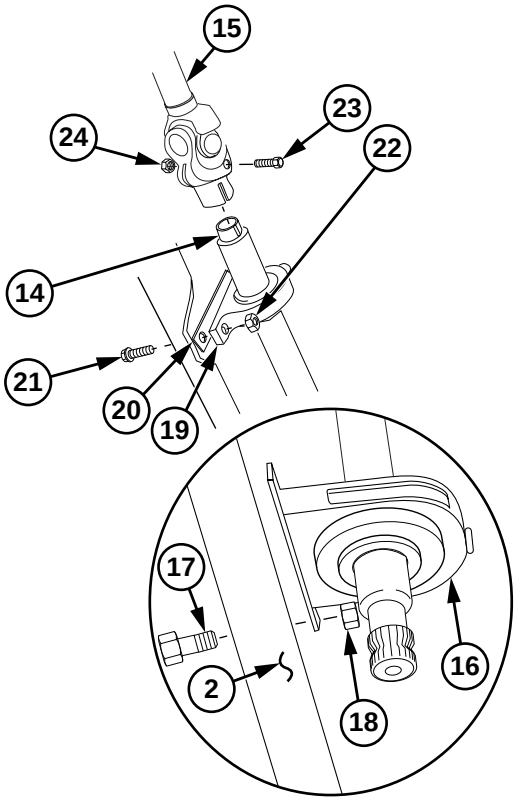


(3) Position steering shaft no. 3 (7) along frame (2) with aid of assistant.

(4) Install spacer (7.1) and carrier bearing (8) on frame (2) with two screws (9) and new locknuts (10) with aid of assistant. Torque to 44 lb-ft (60 N·m).

(5) Install yoke (11) from steering shaft no. 4 (1.1) on steering shaft no. 3 (7).

(6) Install screw (12) and new locknut (13) in yoke (11). Torque to 35-40 lb-ft (48-54 N·m).



(7) Install steering shaft no. 2 (14) in yoke (15).

(8) Install front carrier bearing (16) on frame (2) with two screws (17) and new locknuts (18). Do not tighten.

(9) Install rear carrier bearing (19) and shim (20) on frame (2) with two screws (21) and new locknuts (22). Do not tighten.

(10) Tighten four locknuts (18 and 22) to 44 lb-ft (60 N·m).

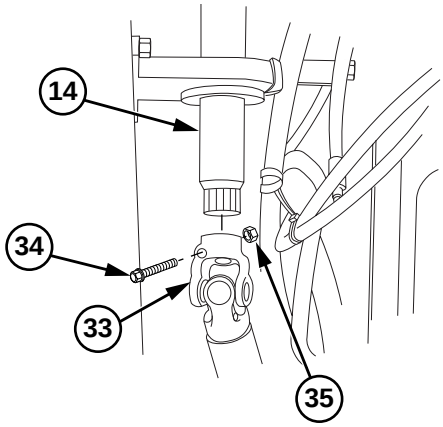
(11) Install screw (23) and new locknut (24) through yoke (15). Torque to 35-40 lb-ft (48-54 N·m).

(12) Deleted

(13) Deleted

(14) Deleted

(15) Deleted

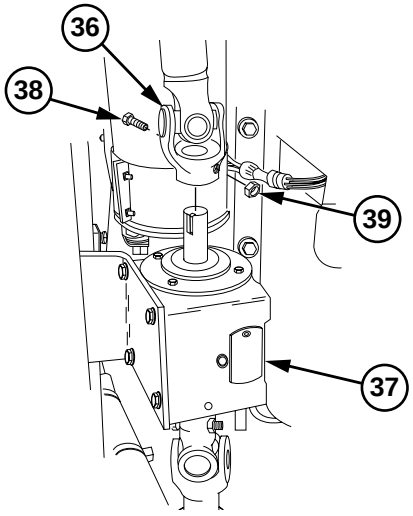


(16) Install yoke (33) on steering shaft no. 2 (14).

CAUTION

To install screws, holes in steering shafts must align with grooves in tee box shafts. Failure to install screws through grooves may result in steering shafts disconnecting, causing damage to equipment.

(17) Install screw (34) and new locknut (35) on yoke (33). Torque to 35–40 lb–ft (47–54 N·m).

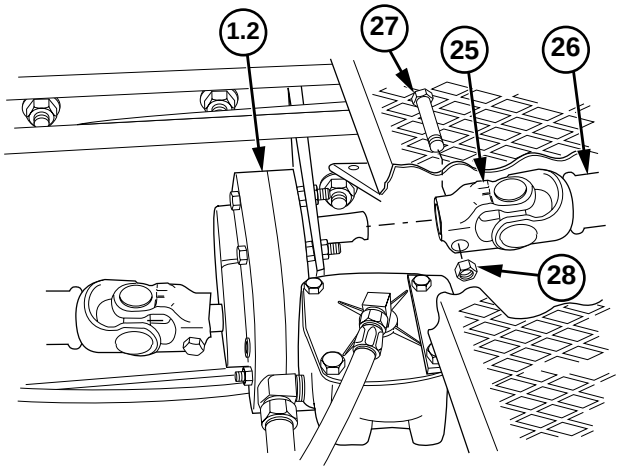


(18) Install yoke (36) on tee box (37).

(19) Install screw (38) and new locknut (39) on yoke (36). Torque to 35–40 lb–ft (47–54 N·m).

13-7. REAR STEERING SHAFTS NO. 1, NO. 2, NO. 3, NO. 4, AND NO. 5 REPAIR (CONT)

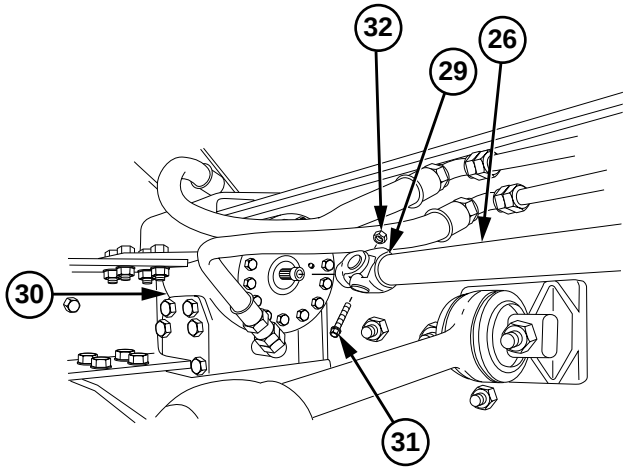
(20) Install yoke (25) from steering shaft no. 5 on gear reducer (1.2) with screw (27) and new locknut (28). Torque to 35-40 lb-ft (48-54 N·m).



CAUTION

To install screws, holes in steering shafts must align with grooves in steering gear shafts. Failure to install screws through grooves may result in steering shafts disconnecting, causing damage to equipment.

(21) Install yoke (29) from steering shaft no. 5 (0.3) on steering gear (30) with screw (31) and new locknut (32). Torque to 35-40 lb-ft (48-54 N·m).



g. Follow-On Maintenance

(1) Lube steering shafts (LO 9-2320-360-12).

(2) Start engine (TM 9-2320-360-10).

(3) Check operation of steering (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

13-8. TEE GEAR BOX REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Air cleaner assembly and bracket removed (para 4-3).
Inner fender removed (left side only) (para 16-34).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Locknuts (4) (Item 61, Appendix G)
Locknuts (3) (Item 56, Appendix G)
Lockwashers (4) (Item 102, Appendix G)

Personnel Required
Two

NOTE

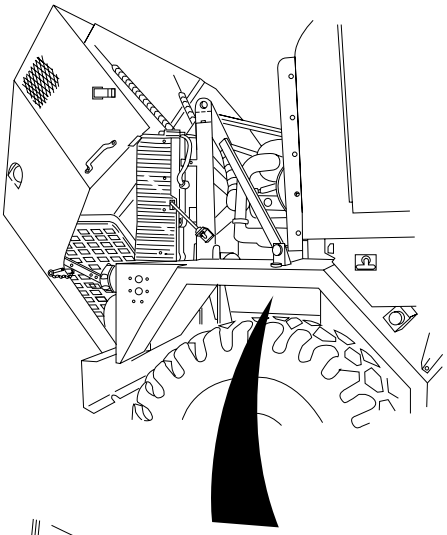
Do not move HET Tractor wheels during tee gear box replacement. If wheels are moved, notify direct support to do steering timing procedure (TM 9-2320-360-34).

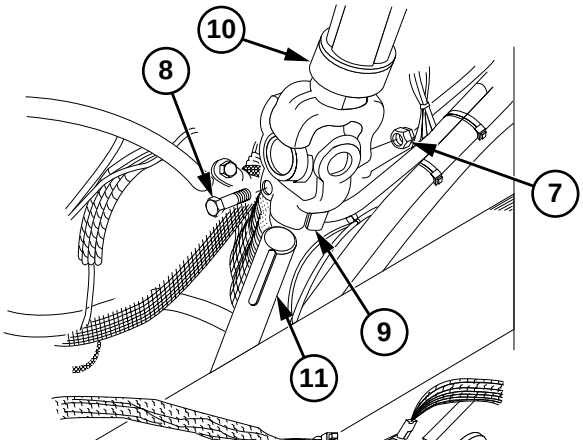
a. Removal

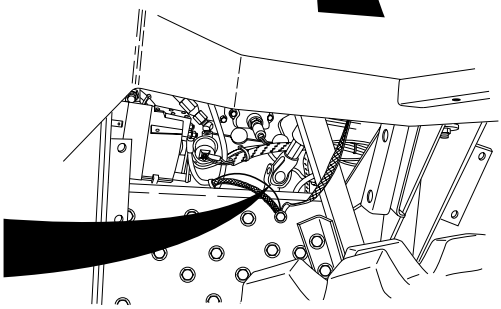
(1) Deleted.

(2) Remove locknut (7) and screw (8) from lower yoke (9) of top steering shaft (10). Discard locknut.

(3) Remove yoke (9) from tee gear box shaft (11).



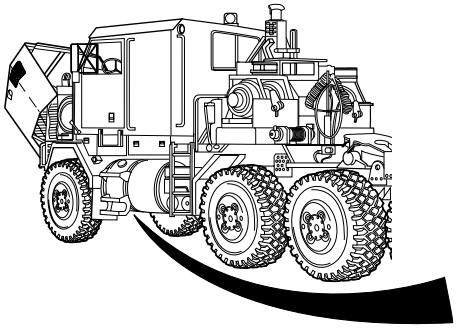


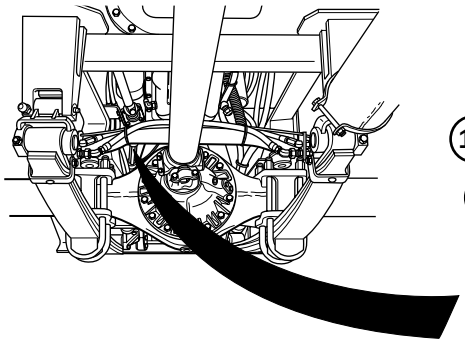


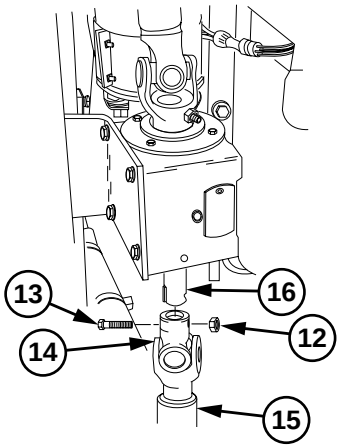
13-8. TEE GEAR BOX REPLACEMENT (CONT)

(4) Remove locknut (12) and screw (13) from yoke (14) of front steering shaft (15). Discard locknut.

(5) Remove yoke (14) from tee box front shaft (16).





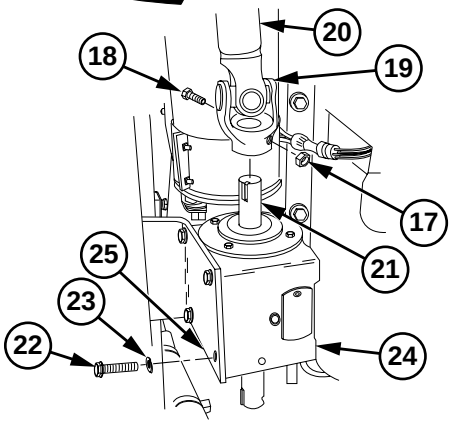


(6) Remove locknut (17) and screw (18) from yoke (19) of rear steering shaft (20). Discard locknut.

(7) Remove yoke (19) from tee box rear shaft (21).

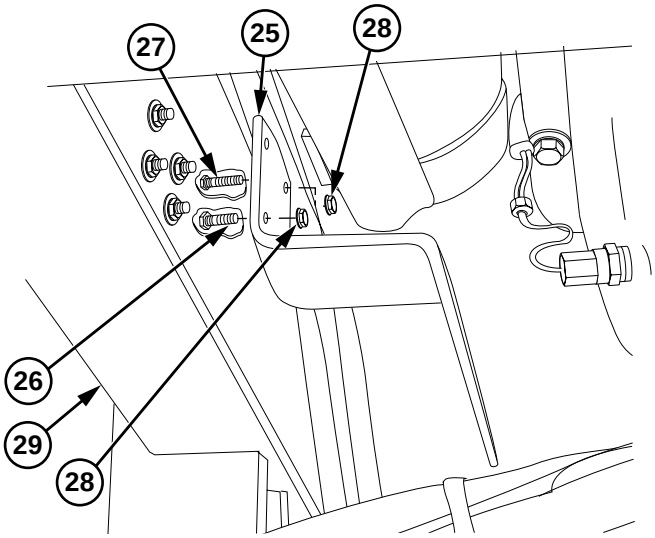
WARNING

Support tee gear box before removing mounting screws to prevent injury.

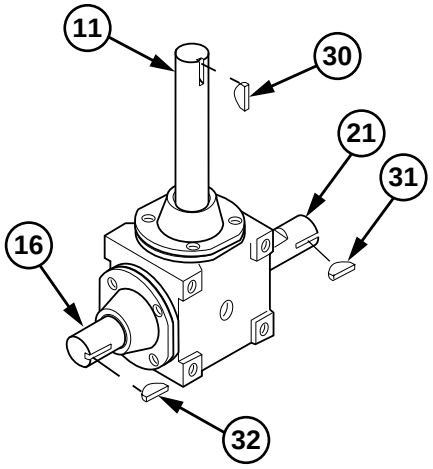


(8) Remove four screws (22), lockwashers (23), and tee box (24) from mount (25) while assistant supports tee box (24) and removes tee box. Discard lockwashers.

(9) Remove three screws (26), screw (27), four locknuts (28), and mount (25) from frame (29). Discard locknuts.

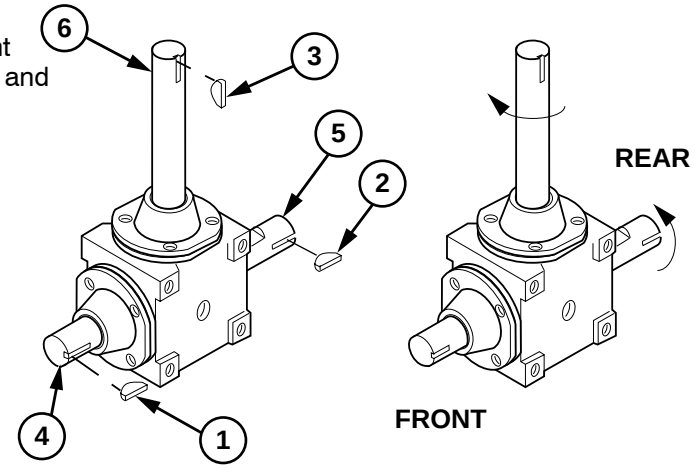


(10) Remove three keys (30, 31, and 32) from input shaft (11), rear output shaft (21), and front output shaft (16).

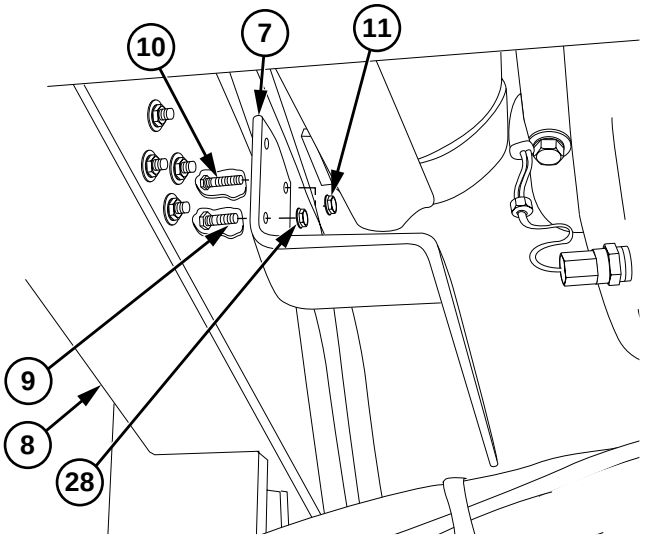


b. Installation

(1) Install three keys (1, 2, and 3) on front output shaft (4), rear output shaft (5), and input shaft (6).



(2) Install mount (7) on frame (8) with three screws (9), screw (10), and four new locknuts (11).



13-8. TEE GEAR BOX REPLACEMENT (CONT)

WARNING

Support tee gear box before installing mounting screws to prevent injury.

CAUTION

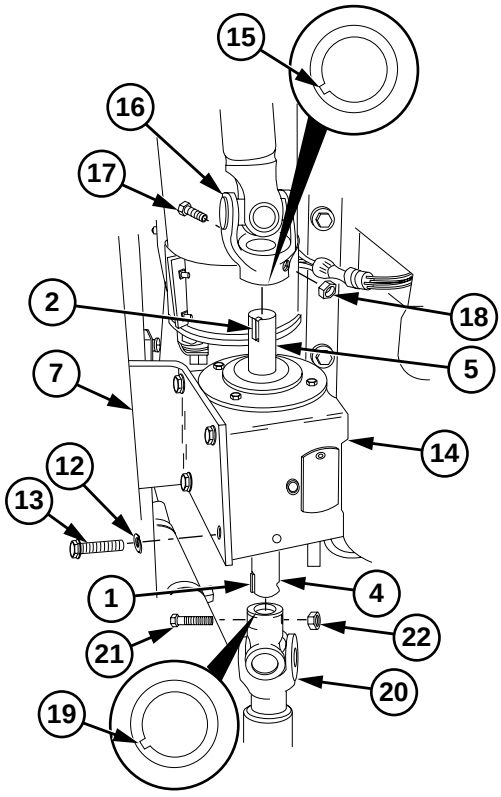
Tee box must be installed so that input shaft and rear output shaft turn in same direction. Failure to do so will result in reverse steering response.

(3) Install four new lockwashers (12) and screws (13) through mount (7) and tee box (14) while assistant supports tee box (14). Torque to 30 lb-ft (41 N·m).

(4) Rotate rear output shaft (5) to align key (2) with slot (15) in rear steering shaft yoke (16).

CAUTION

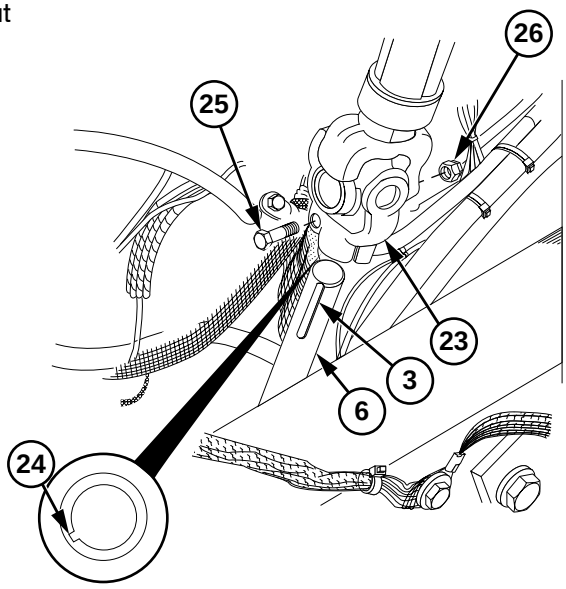
To install screws, holes in steering shafts must align with grooves in tee box shafts. Failure to install screws through grooves may result in steering shafts disconnecting, causing damage to equipment.



(5) Install rear steering yoke (16) on rear output shaft (5) with screw (17) and new locknut (18). Torque to 35-40 lb-ft (48-54 N·m).

(6) Align key slot (19) with key (1) in front output shaft (4).

(7) Install front steering yoke (20) on front output shaft (4) with screw (21) and new locknut (22). Torque to 35-40 lb-ft (48-54 N·m).



(8) Rotate top steering shaft yoke (23) to align key slot (24) with key (3) in input shaft (6).

(9) Install top steering shaft yoke (23) on input shaft (6) with screw (24) and new locknut (25). Torque to 35-40 lb-ft (48-54 N·m).

(10) Deleted.

c. Follow-On Maintenance

(1) Install air cleaner assembly and bracket (para 4-3).

(2) Start engine (TM 9-2320-360-10).

(3) Check operation of steering (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

(5) Install inner fender (para 16-34).

13-8.1. STEERING GEAR REDUCER/BRACKET REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Catwalk removed (bracket only) (para 14-5).
Steering shaft no. 5 removed (para 13-7).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (4) (Item 68, Appendix G)
Locknuts (2) (Item 63, Appendix G)
Locknut (Item 56, Appendix G)

Personnel Required
Two

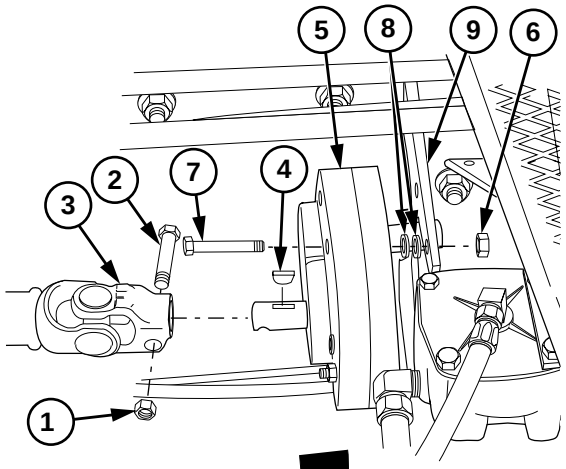
CAUTION

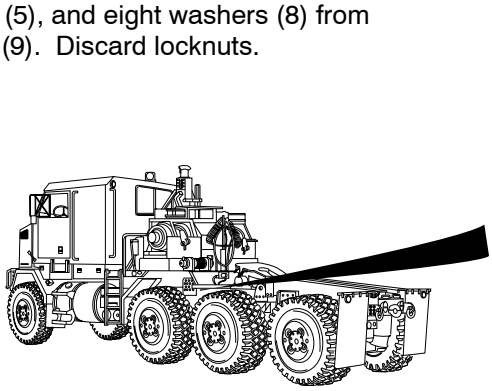
Do not move Het Tractor wheels during replacement. If wheels are moved, notify direct support to do steering timing procedure (TM 9-2320-360-34). Failure to comply may result in improper steering and damage to equipment.

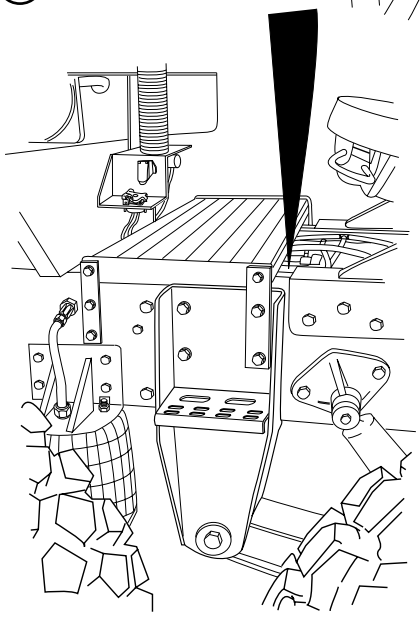
a. Removal

(1) Remove locknut (1), screw (2), yoke (3), and key (4) from gear reducer (5). Discard locknut.

(2) Remove four locknuts (6), screws (7), gear reducer (5), and eight washers (8) from bracket (9). Discard locknuts.

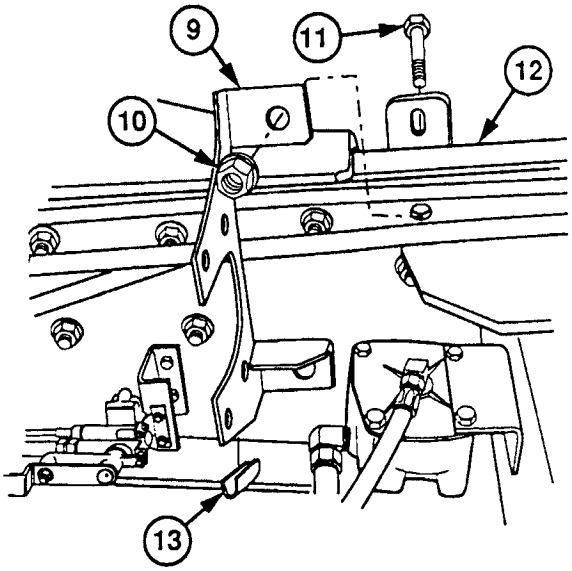






(3) Remove two locknuts (10), screws (11), and bracket (9) from frame (12) with aid of assistant. Discard locknuts.

(4) Remove quickedge (13) from bracket (9).



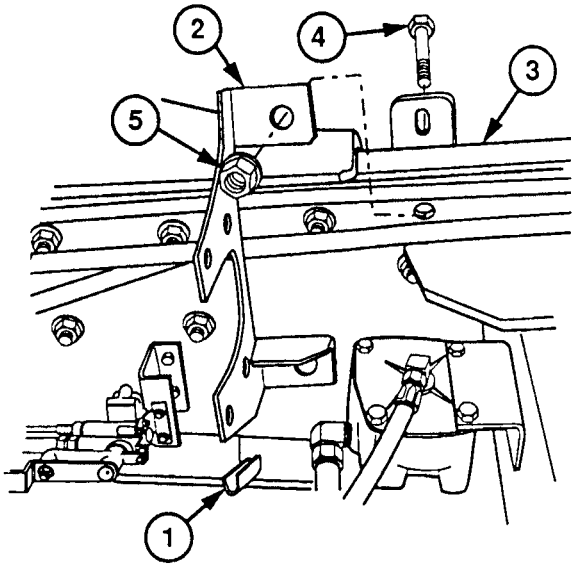
b. Installation

(1) Install quickedge (1) on bracket (2).

(2) Install bracket (2) on frame (3) with two screws (4) and new locknuts (5).

CAUTION

Steering gear reducer must be installed with output shaft and housing facing rear of HET Tractor. Failure to comply may result in damage to equipment.

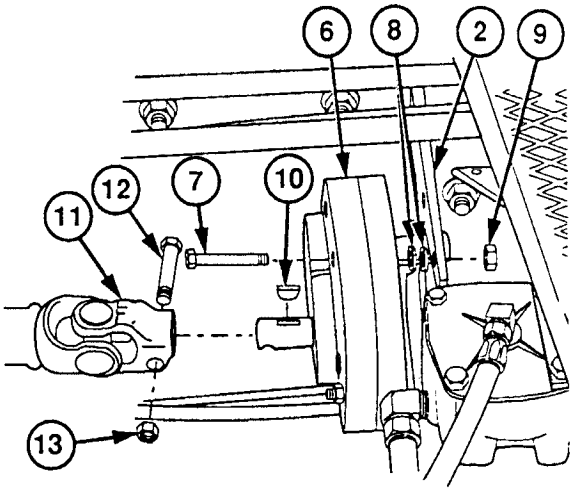


NOTE

- Output housing has three pipe plugs. Input housing has one pipe plug.
- Output shaft turns 1 revolution for every 2.21 revolutions of the input shaft.

(3) Install gear reducer (6) on bracket (2) with four screws (7), eight washers (8), and four new locknuts (9).

(4) Install key (10) and yoke (11) on gear reducer (6) with screw (12) and new locknut (13).



c. Follow-On Maintenance

(1) Install steering shaft no. 5 (para 13-7).

(2) Install catwalk (para 14-5).

13-9. STEERING SYSTEM HOSES NO. 2301/2726/2701/2302/2883/2278/2274/2275/2276/2906/2918/2916/2935/2723/2879 AND FITTINGS REPLACEMENT

This task covers:
- Removal
- Installation
- Follow-On Maintenance
- Hose Locations

INITIAL SETUP

Equipment Conditions
- Engine hood opened (TM 9-2320-360-10).
- Steering reservoir drained (LO 9-2320-360-12).
- Front engine access panel removed (para 16-2).
- Lower engine access cover removed (para 16-2).

Tools and Special Tools
- Tool Kit, Genl Mech (Item 54, Appendix F)
- Pan, Oil Drain (Item 26, Appendix F)
- Wrench, Combination, 1-3/8 In. (Item 62, Appendix F)
- Wrench, Open-end, 1-7/8 and 1 11/16 In. (Item 68, Appendix F)
- Wrench, Open-end, 1-5/8 and 1 13/16 In. (Item 69, Appendix F)

Materials/Parts
- Tags, Identification (Item 32, Appendix C)
- Ties, Cable, Plastic (Item 34, Appendix C)
- Locknuts (4) (Item 72, Appendix G)
- Locknuts (2) (Item 58, Appendix G)
- Packings, Preformed (9) (Item 130, Appendix G)
- Packings, Preformed (6) (Item 131, Appendix G)
- Packings, Preformed (4) (Item 132, Appendix G)
- Packings, Preformed (3) (Item 134, Appendix G)
- Packings, Preformed (2) (Item 140, Appendix G)
- Packings, Preformed (2) (Item 142, Appendix G)
- Packing, Preformed (Item 133, Appendix G)
- Packing, Preformed (Item 141, Appendix G)

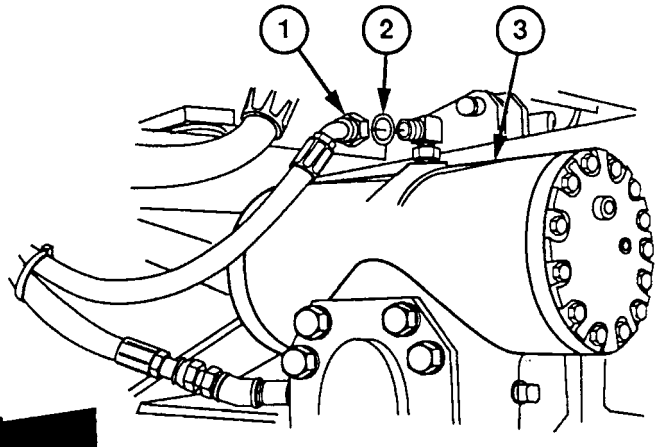
NOTE

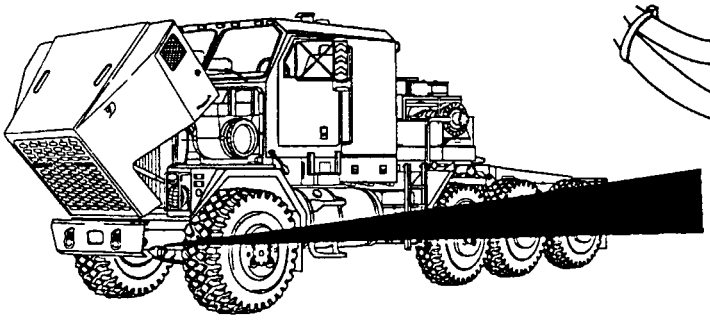
Sub-paragraph af. contains an index (Table 13-1) and locator diagram (Figure 13-1) to help locate ends of all steering system hydraulic hoses on the HET Tractor.

a. Hose No. 2301 Removal

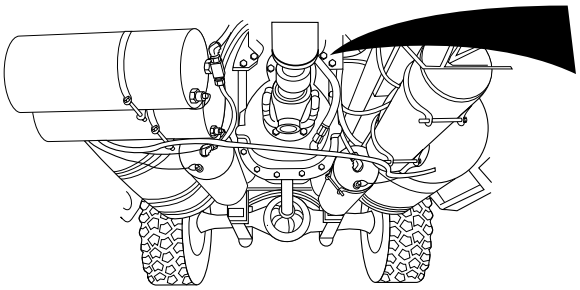
(1) Place drain pan under hose no. 2301 (1).

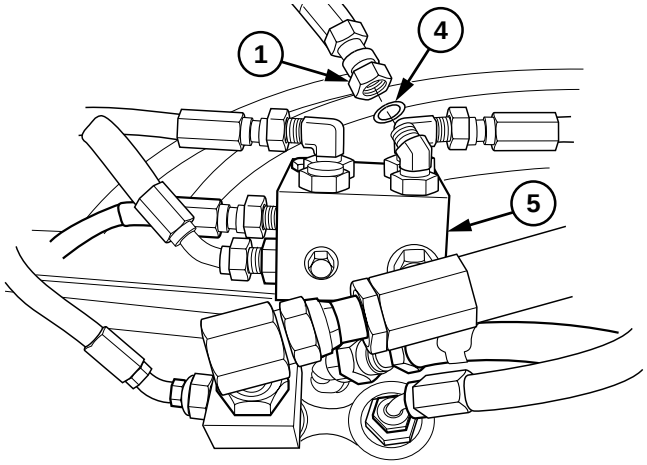
(2) Remove hose no. 2301 (1) and preformed packing (2) from front steering gear (3). Discard preformed packing.





(3) Remove hose no. 2301 (1) and preformed packing (4) from auxiliary steering pump manifold (5). Discard preformed packing.

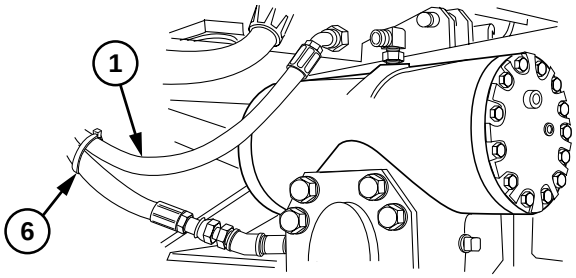




NOTE

Location of plastic cable ties should be marked before removal.

(4) Remove plastic cable ties (6) as required and hose no. 2301 (1) from vehicle.

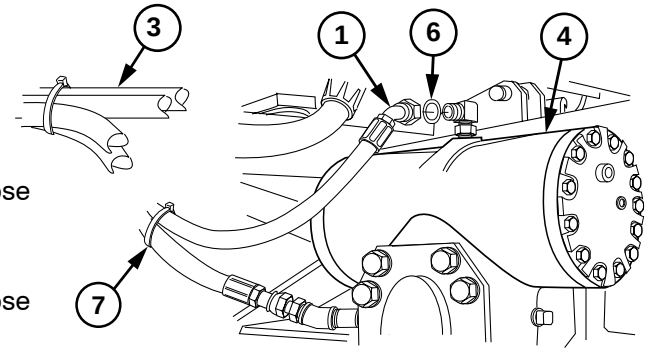


b. Hose No. 2301 Installation

(1) Route hose no. 2301 (1) from steering pump manifold (2) along steel tube (3) to front steering gear (4).

(2) Install new preformed packing (5) and hose no. 2301 (1) on auxiliary steering pump manifold (2).

(3) Install new preformed packing (6) and hose no. 2301 (1) on front steering gear (4).



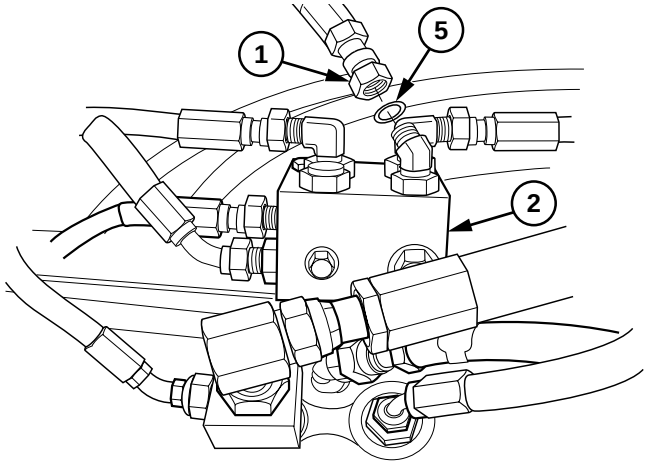
CAUTION

Properly secured hoses cannot touch PTO driveshaft, air compressor discharge hose (silver-braided hose), or frame rail. Failure to comply will result in hose failure.

NOTE

Plastic cable ties should be positioned in location marked during removal.

(4) Secure hose no. 2301 (1) with plastic cable ties (7).



13-9. STEERING SYSTEM HOSES NO. 2301/2726/2701/2302/2883/2278/2274/2275/ 2276/2906/2918/2916/2935/2723/2879 AND FITTINGS REPLACEMENT (CONT)

c. Hose No. 2726 Removal

(1) Place drain pan under hose no. 2726 (1).

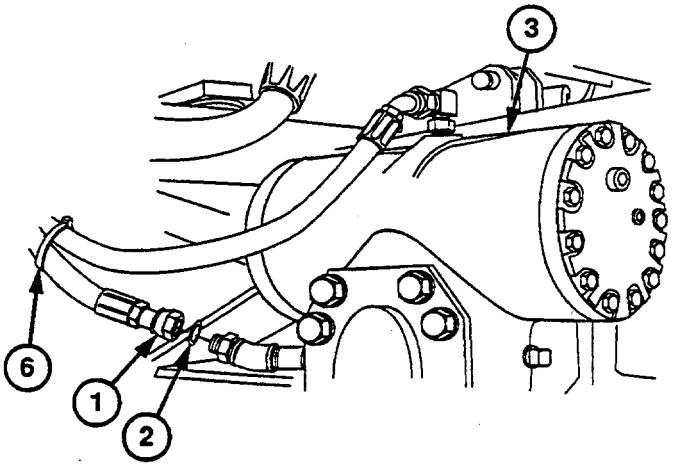
(2) Remove hose no. 2726 (1) and preformed packing (2) from front steering gear (3). Discard preformed packing.

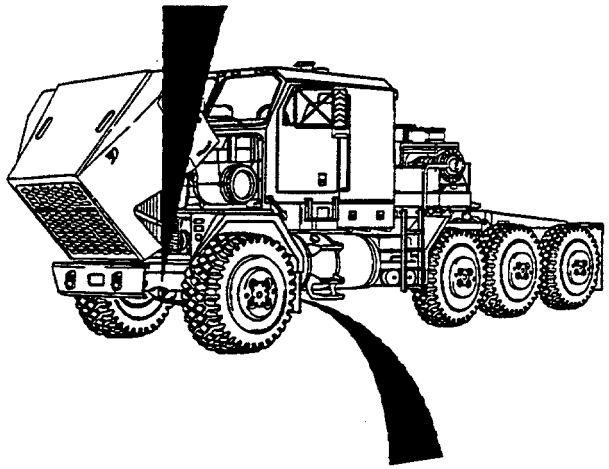
(3) Remove hose no. 2726 (1) and preformed packing (4) from steel tube (5). Discard preformed packing.

NOTE

Location of plastic cable ties should be marked before removal.

(4) Remove plastic cable ties (6) as required and hose no. 2726 (1) from vehicle.





d. Hose No. 2726 Installation

(1) Install new preformed packing (4) and hose no. 2726 (1) on steel tube (5).

(2) Install new preformed packing (2) and hose no. 2726 (1) on front steering gear (3).

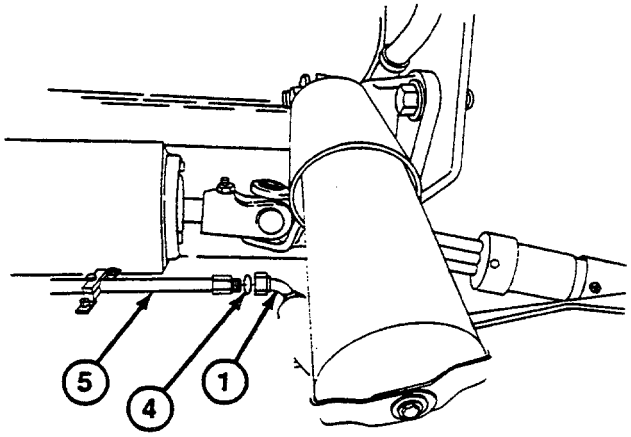
CAUTION

Properly secured hoses cannot touch PTO driveshaft, air compressor discharge hose (silver-braided hose), or frame rail. Failure to comply will result in hose failure.

NOTE

Plastic cable ties should be positioned in location marked during removal.

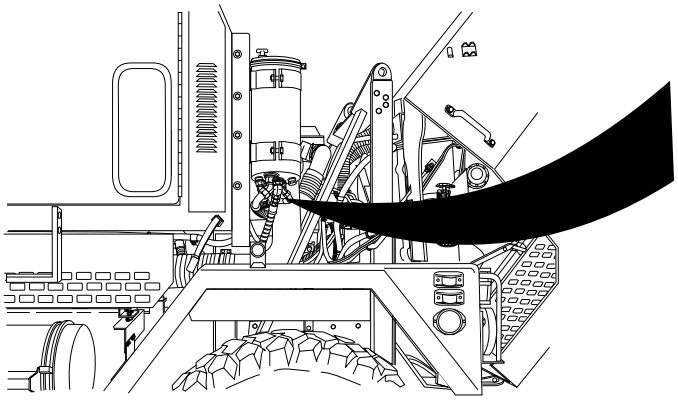
(3) Secure hose no. 2726 (1) with plastic cable ties (6).

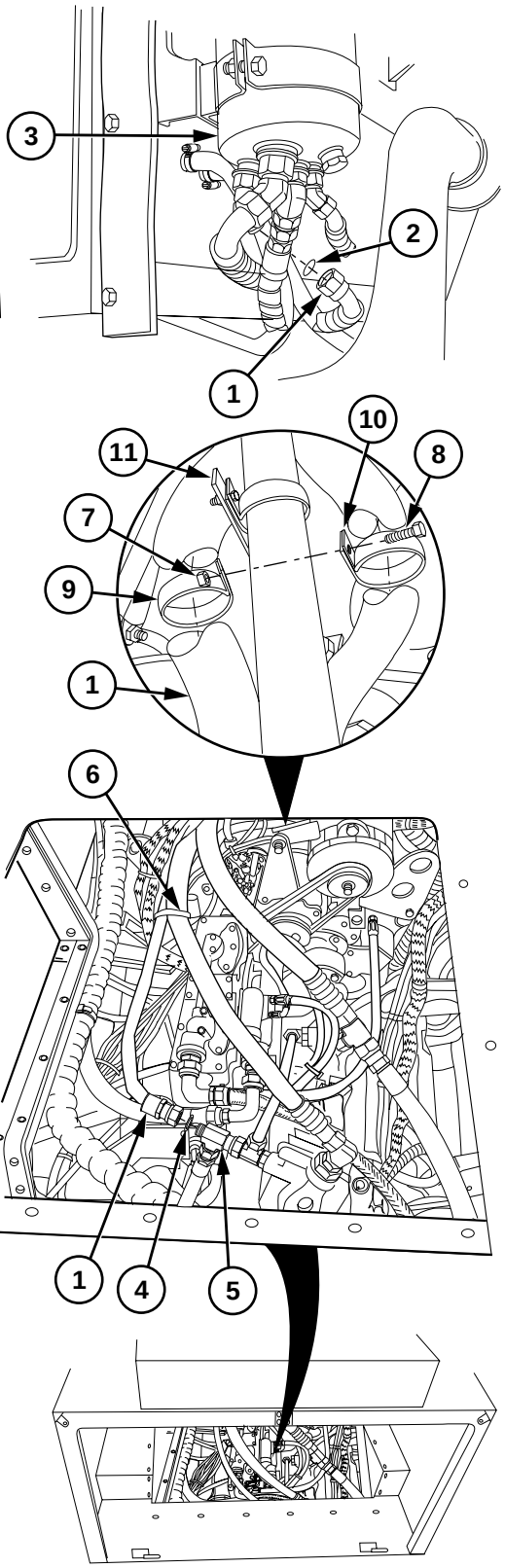


e. Hose No. 2701 Removal

(1) Place drain pan under hose no. 2701 (1).

(2) Remove hose no. 2701 (1) and preformed packing (2) from steering reservoir (3). Discard preformed packing.





(3) Remove hose no. 2701 (1) and preformed packing (4) from tee (5). Discard preformed packing.

NOTE

Location of plastic cable ties should be marked before removal.

(4) Remove plastic cable ties (6) from hose no. 2701 (1) as required.

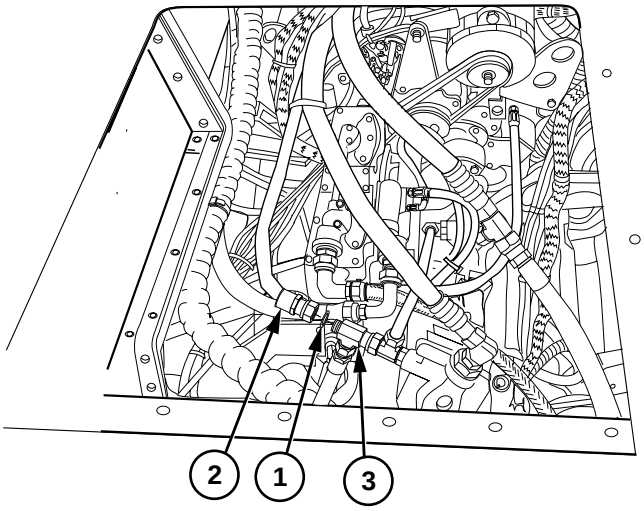
(5) Remove locknut (7), screw (8), and two clips (9 and 10) from bracket (11). Discard locknut.

(6) Remove clip (9) from hose no. 2701 (1) and remove hose no. 2701 (1) from vehicle.

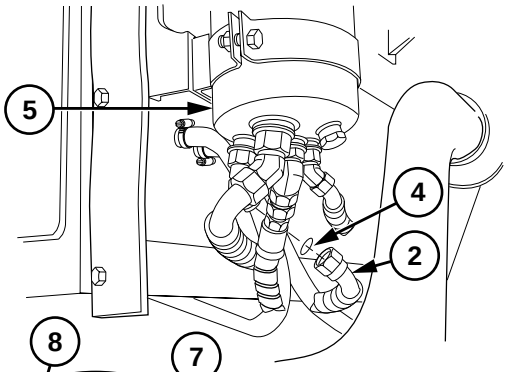
13-9. STEERING SYSTEM HOSES NO. 2301/2726/2701/2302/2883/2278/2274/2275/ 2276/2906/2918/2916/2935/2723/2879 AND FITTINGS REPLACEMENT (CONT)

f. Hose No. 2701 Installation

(1) Install new preformed packing (1) and hose no. 2701 (2) on tee (3).



(2) Install new preformed packing (4) and hose no. 2701 (2) on steering reservoir (5).



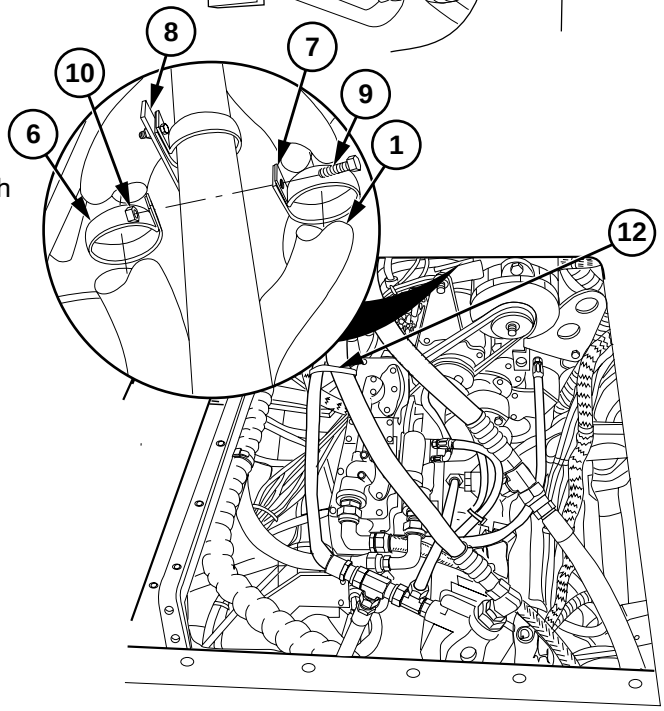
(3) Install clip (6) on hose no. 2701 (1).

(4) Install two clips (6 and 7) on bracket (8) with screw (9) and new locknut (10).

NOTE

Plastic cable ties should be positioned in location marked during removal.

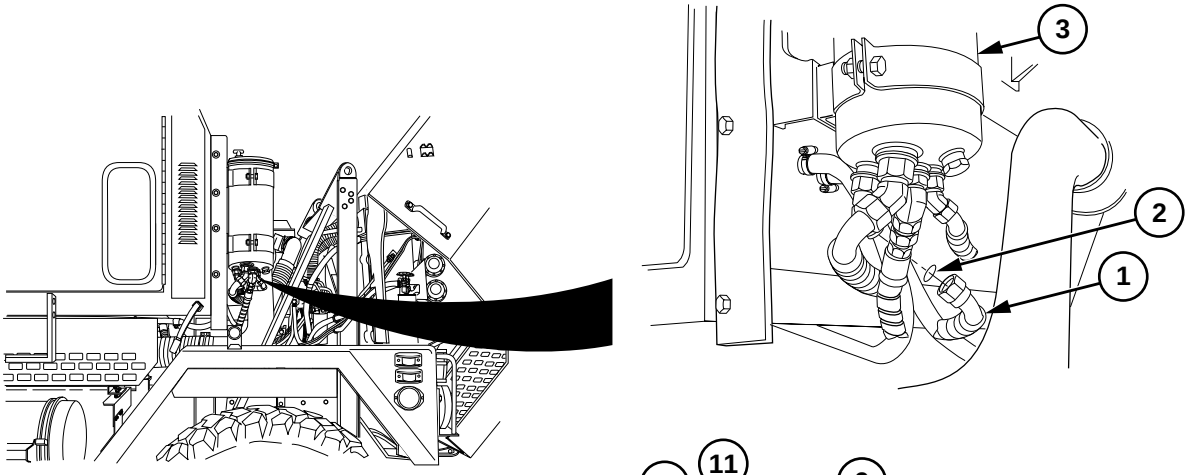
(5) Secure hose no. 2701 (1) with plastic cable ties (12).



g. Hose No. 2302 Removal

(1) Place drain pan under hose no. 2302 (1).

(2) Remove hose no. 2302 (1) and preformed packing (2) from steering reservoir (3). Discard preformed packing.



(3) Remove hose no. 2302 (1) and preformed packing (4) from steering pump (5). Discard preformed packing.

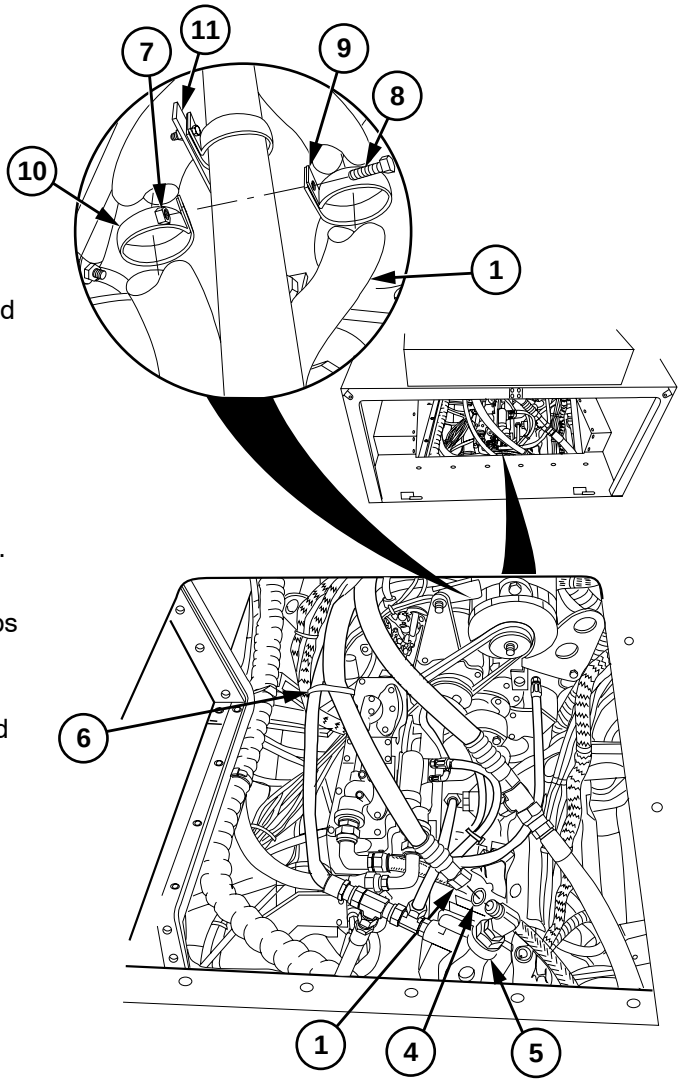
NOTE

Location of plastic cable ties should be marked before removal.

(4) Remove plastic cable ties (6) from hose no. 2302 (1) as required.

(5) Remove locknut (7), screw (8), and two clips (9 and 10) from bracket (11). Discard locknut.

(6) Remove clip (9) from hose no. 2302 (1) and remove hose no. 2302 (1) from vehicle.

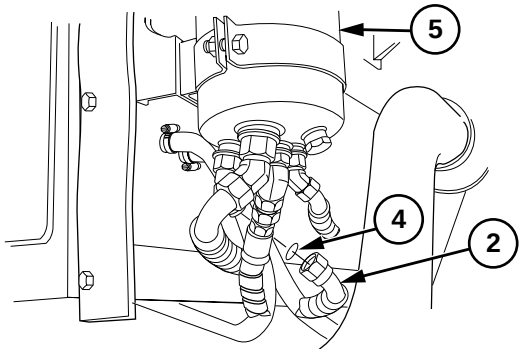


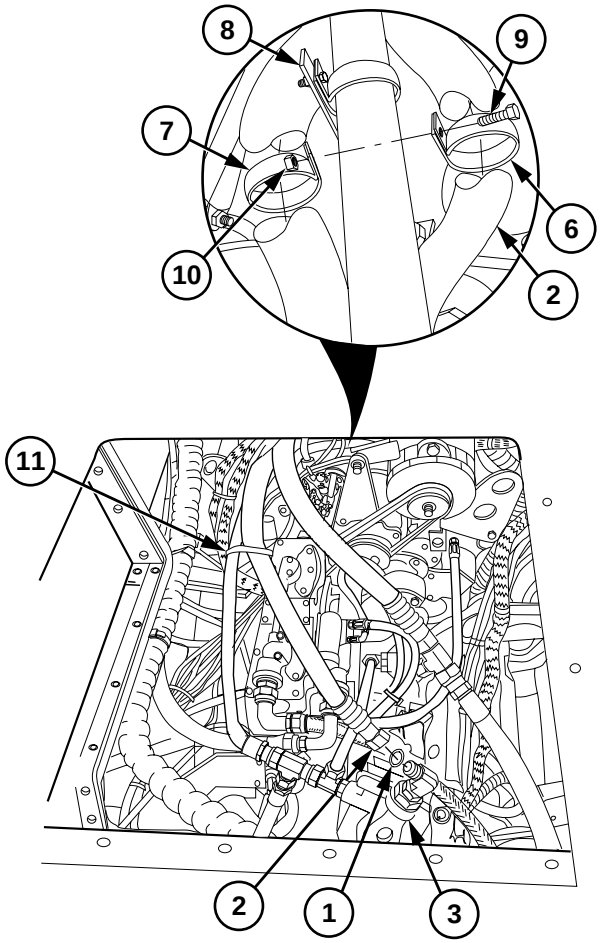
13-9. STEERING SYSTEM HOSES NO. 2301/2726/2701/2302/2883/2278/2274/2275/ 2276/2906/2918/2916/2935/2723/2879 AND FITTINGS REPLACEMENT (CONT)

h. Hose No. 2302 Installation

(1) Install new preformed packing (1) and hose no. 2302 (2) on steering pump (3).

(2) Install new preformed packing (4) and hose no. 2302 (2) on steering reservoir (5).





(3) Install clip (6) on hose no. 2302 (2).

(4) Install two clips (6 and 7) on bracket (8) with screw (9) and new locknut (10).

NOTE

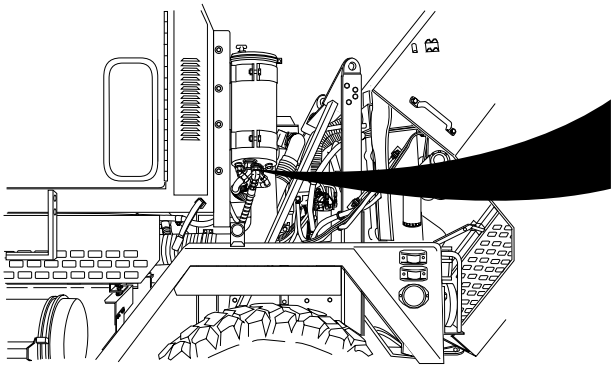
Plastic cable ties should be positioned in location marked during removal.

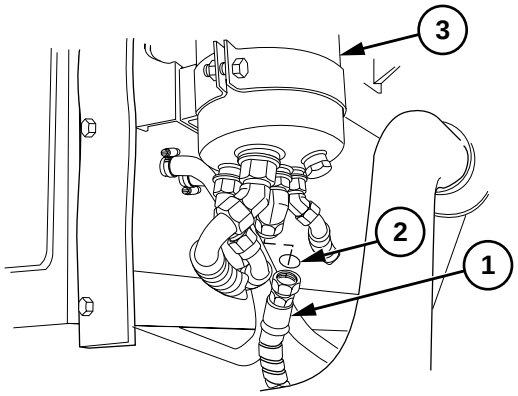
(5) Secure hose no. 2302 (2) with plastic cable ties (11).

i. Hose No. 2883 Removal

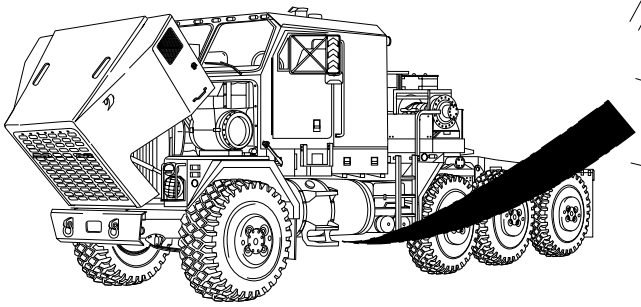
(1) Place drain pan under hose no. 2883 (1).

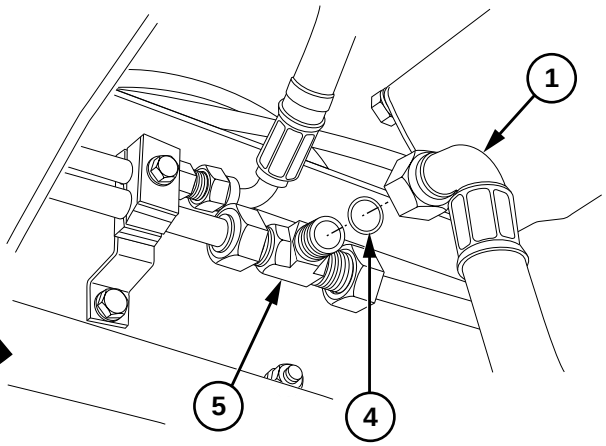
(2) Remove hose no. 2883 (1) and preformed packing (2) from steering reservoir (3). Discard preformed packing.





(3) Remove hose no. 2883 (1) and preformed packing (4) from tee (5). Discard preformed packing.





NOTE

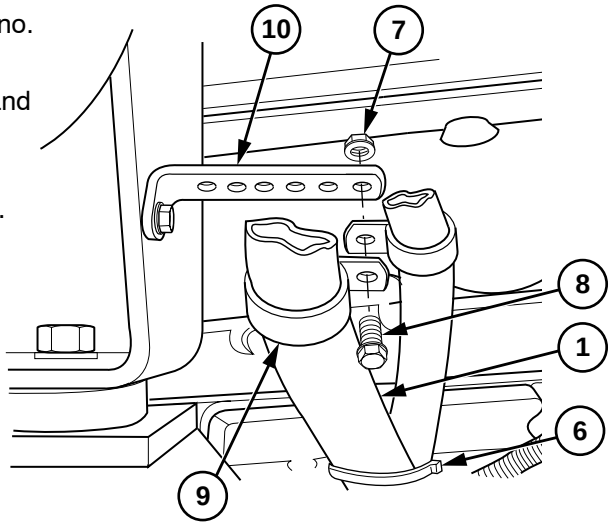
Location of plastic cable ties should be marked before removal.

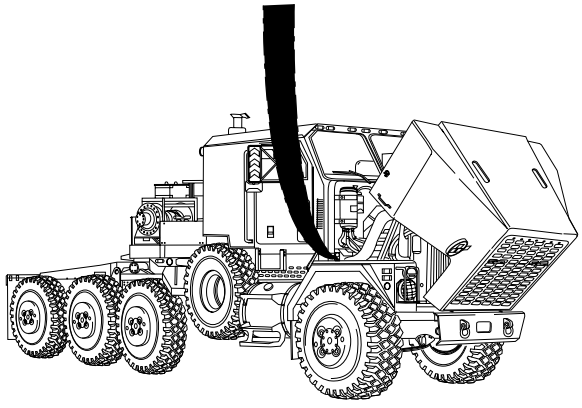
(4) Remove plastic cable ties (6) from hose no. 2883 (1) as required.

(5) Remove three locknuts (7), screws (8), and clips (9) from brackets (10). Discard locknuts.

(6) Remove clips (9) from hose no. 2883 (1).

(7) Remove hose no. 2883 (1) from vehicle.





13-9. STEERING SYSTEM HOSES NO. 2301/2726/2701/2302/2883/2278/2274/2275/ 2276/2906/2918/2916/2935/2723/2879 AND FITTINGS REPLACEMENT (CONT)

j. Hose No. 2883 Installation

(1) Route hose no. 2883 (1) from tee (2) along brackets (3) to steering reservoir (4).

(2) Install new preformed packing (5) and hose no. 2883 (1) on tee (2).

(3) Install new preformed packing (6) and hose no. 2883 (1) on steering reservoir (4).

(4) Install three clips (7) on hose no. 2883 (1).

(5) Install three clips (7) on brackets (3) with three screws (8) and new locknuts (9).

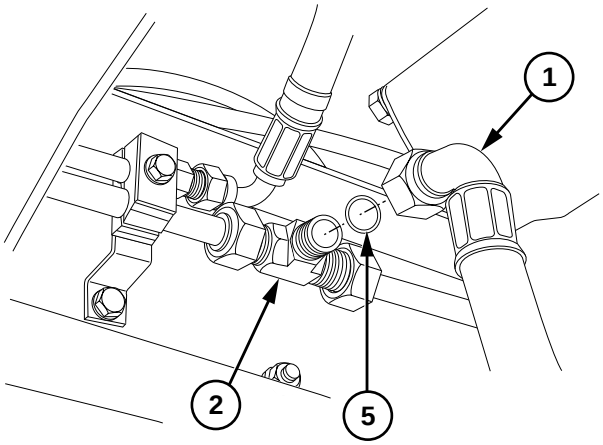
CAUTION

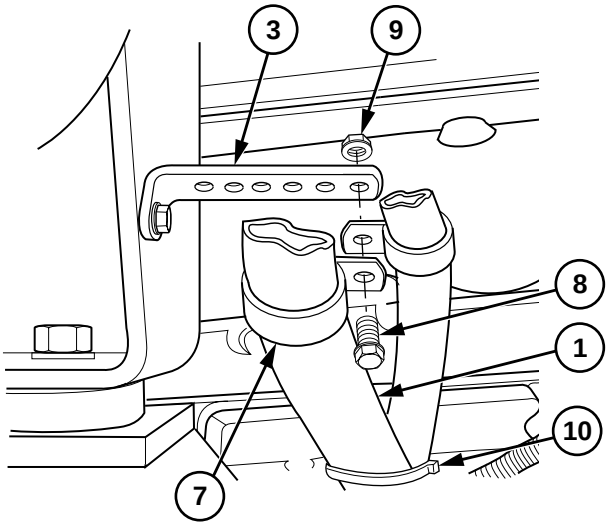
Properly secured hoses cannot touch PTO driveshaft, air compressor discharge hose (silver-braided hose), or frame rail. Failure to comply will result in hose failure.

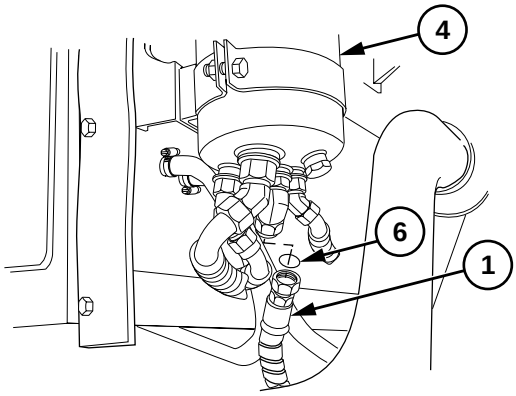
NOTE

Plastic cable ties should be positioned in location marked during removal.

(6) Secure hose no. 2883 (1) with plastic cable ties (10).



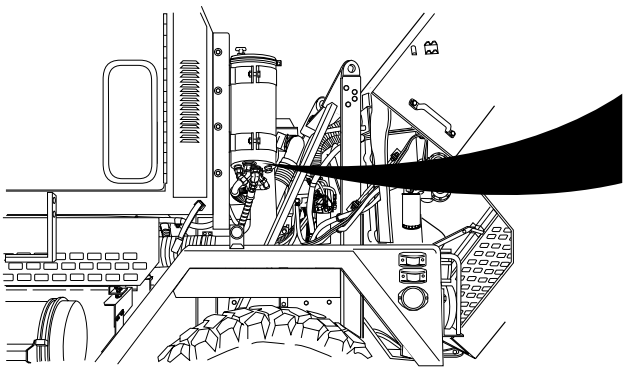


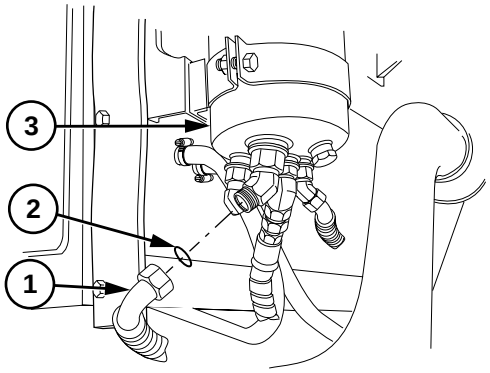


k. Hose No. 2278 Removal

(1) Place drain pan under hose no. 2278 (1).

(2) Remove hose no. 2278 (1) and preformed packing (2) from steering reservoir (3). Discard preformed packing.





(3) Remove hose no. 2278 (1) and preformed packing (4) from steering pump (5). Discard preformed packing.

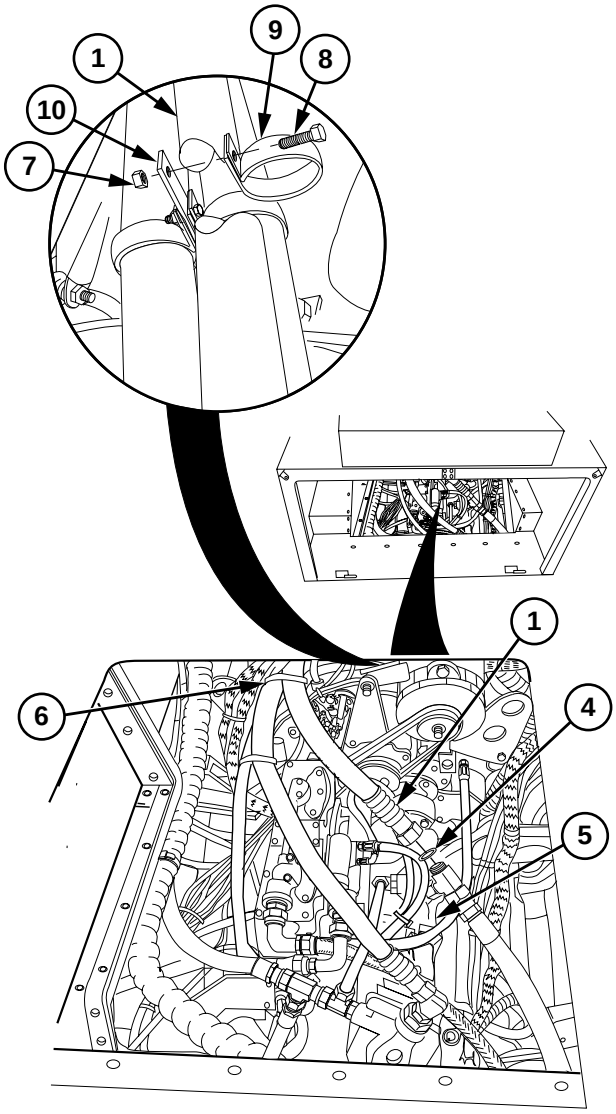
NOTE

Location of plastic cable ties should be marked before removal.

(4) Remove plastic cable ties (6) from hose no. 2278 (1) as required.

(5) Remove locknut (7), screw (8), and clip (9) from bracket (10). Discard locknut.

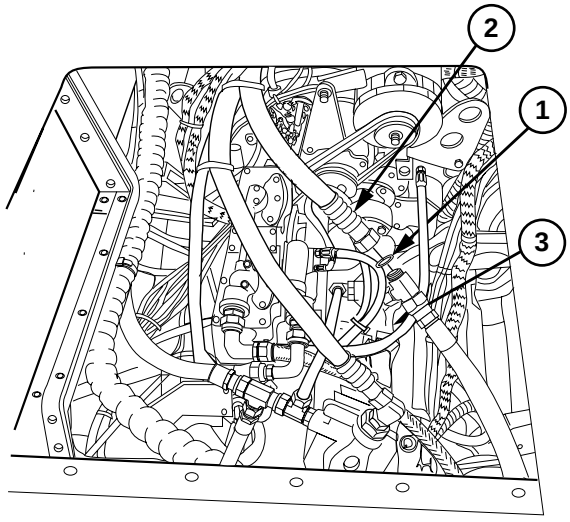
(6) Remove clip (9) from hose no. 2278 (1) and remove hose no. 2278 from vehicle.



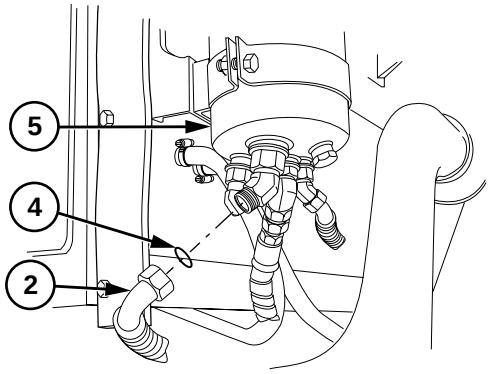
13-9. STEERING SYSTEM HOSES NO. 2301/2726/2701/2302/2883/2278/2274/2275/2276/2906/2918/2916/2935/2723/2879 AND FITTINGS REPLACEMENT (CONT)

I. Hose No. 2278 Installation

(1) Install new preformed packing (1) and hose no. 2278 (2) on steering pump (3).



(2) Install new preformed packing (4) and hose no. 2278 (2) on steering reservoir (5).



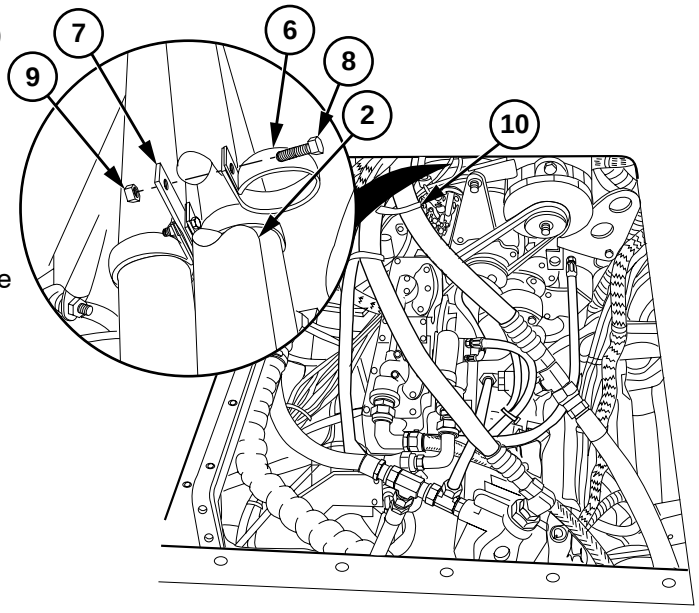
(3) Install clip (6) on hose no. 2278 (2).

(4) Install clip (6) on bracket (7) with screw (8) and new locknut (9).

NOTE

Plastic cable ties should be positioned in location marked during removal.

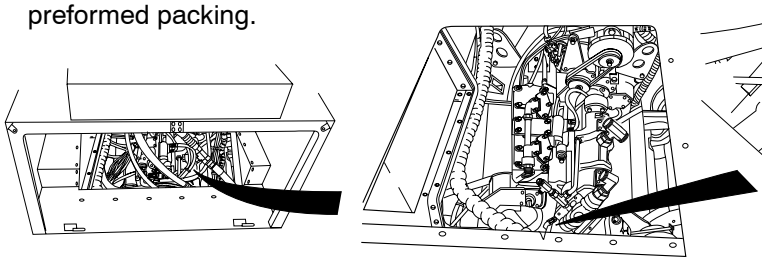
(5) Secure hose no. 2278 (2) with plastic cable ties (10).

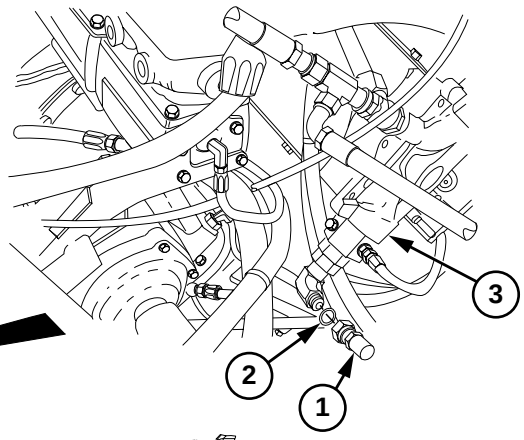


m. Hose No. 2274 Removal

(1) Place drain pan under hose no. 2274 (1).

(2) Remove hose no. 2274 (1) and preformed packing (2) from steering pump (3). Discard preformed packing.

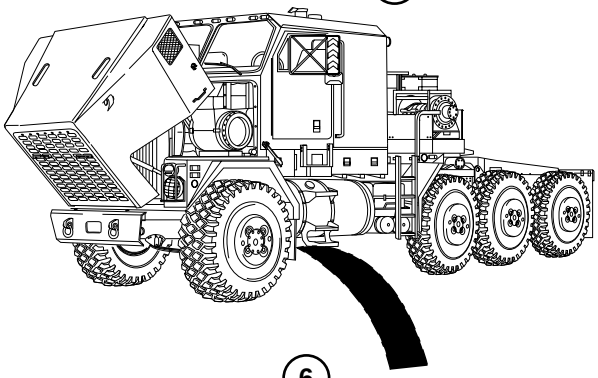




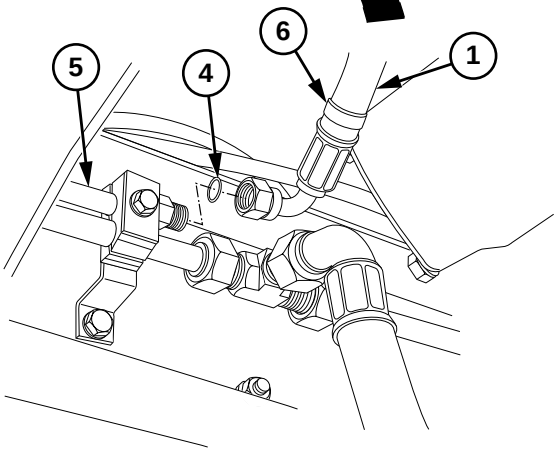
(3) Remove hose no. 2274 (1) and preformed packing (4) from steel tube (5). Discard preformed packing.

NOTE

Location of plastic cable ties should be marked before removal.



(4) Remove plastic cable tie (6) as required and hose no. 2274 (1) from vehicle.



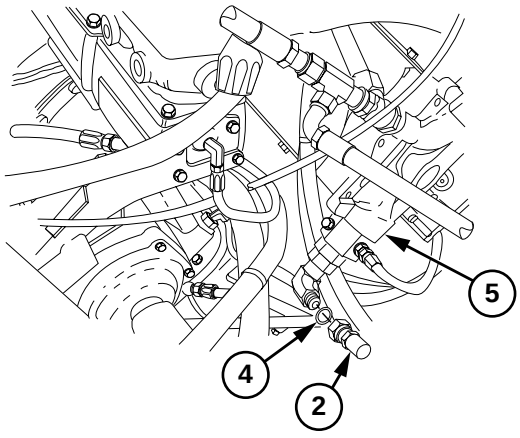
n. Hose No. 2274 Installation

(1) Install new preformed packing (1) and hose no. 2274 (2) on steel tube (3).

(2) Install new preformed packing (4) and hose no. 2274 (2) on steering pump (5).

CAUTION

Properly secured hoses cannot touch PTO driveshaft, air compressor discharge hose (silver-braided hose), or frame rail. Failure to comply will result in hose failure.

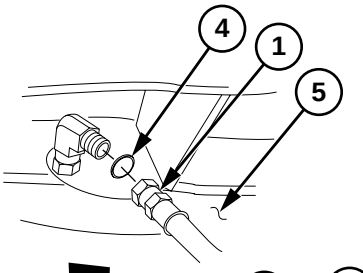


NOTE

Plastic cable ties should be positioned in location marked during removal.

(3) Secure hose no. 2274 (2) with plastic cable ties (6).

13-9. STEERING SYSTEM HOSES NO. 2301/2726/2701/2302/2883/2278/2274/2275/ 2276/2906/2918/2916/2935/2723/2879 AND FITTINGS REPLACEMENT (CONT)

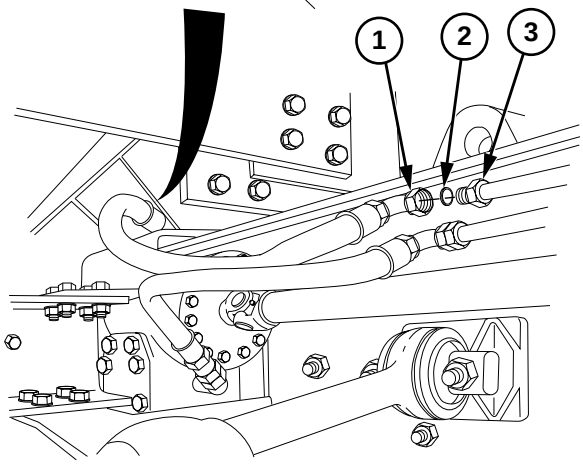


o. Hose No. 2275 Removal

(1) Place drain pan under hose no. 2275 (1).

(2) Remove hose no. 2275 (1) and preformed packing (2) from steel tube (3). Discard preformed packing.

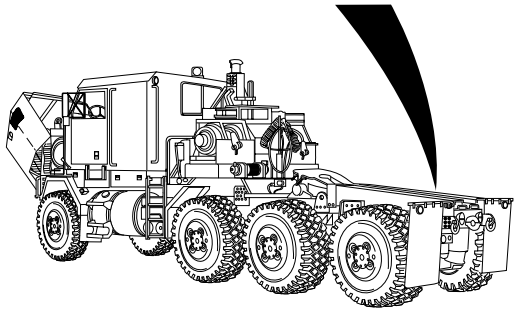
(3) Remove hose no. 2275 (1) and preformed packing (4) from rear steering gear (5). Discard preformed packing.



p. Hose No. 2275 Installation

(1) Install new preformed packing (4) and hose no. 2275 (1) on rear steering gear (5).

(2) Install new preformed packing (2) and hose no. 2275 (1) on steel tube (3).

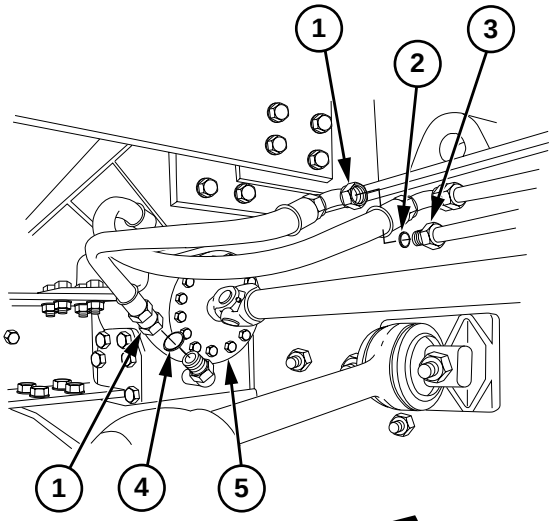


q. Hose No. 2276 Removal

(1) Place drain pan under hose no. 2276 (1).

(2) Remove hose no. 2276 (1) and preformed packing (2) from steel tube (3). Discard preformed packing.

(3) Remove hose no. 2276 (1) and preformed packing (4) from rear steering gear (5). Discard preformed packing.



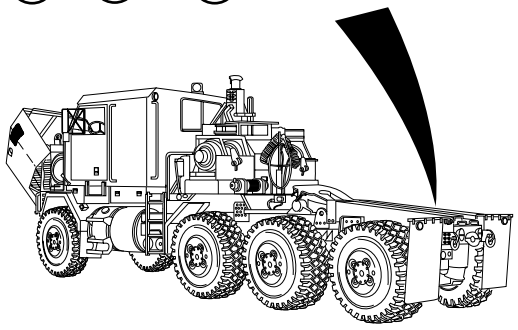
r. Hose No. 2276 Installation

CAUTION

Properly secured hoses cannot touch PTO driveshaft, air compressor discharge hose (silver-braided hose), or frame rail. Failure to comply will result in hose failure.

(1) Install new preformed packing (4) and hose no. 2276 (1) on rear steering gear (5).

(2) Install new preformed packing (2) and hose no. 2276 (1) on steel tube (3).



13-9. STEERING SYSTEM HOSES NO. 2301/2726/2701/2302/2883/2278/2274/2275/ 2276/2906/2918/2916/2935/2723/2879 AND FITTINGS REPLACEMENT (CONT)

s. Hose No. 2906 Removal

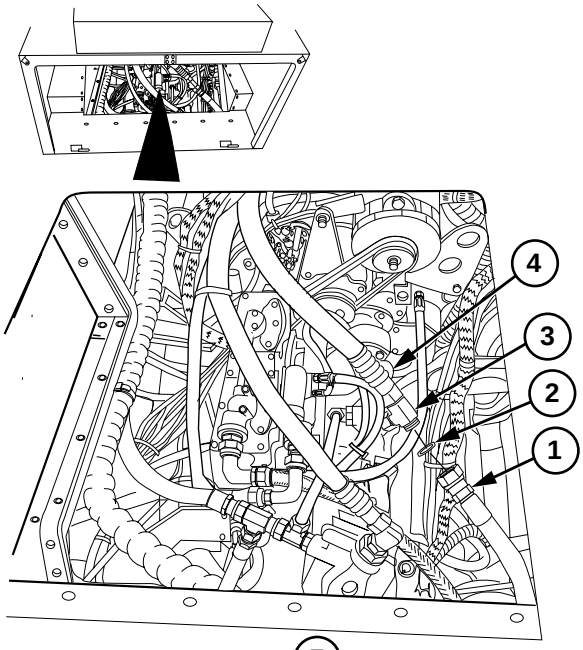
(1) Place drain pan under hose no. 2906 (1).

(2) Remove hose no. 2906 (1) and preformed packing (2) from tee (3) on steering pump (4). Discard preformed packing.

(3) Remove locknut (5), screw (6), and clip (7) from bracket (8). Discard locknut.

(4) Remove clip (7) from hose no. 2906 (1).

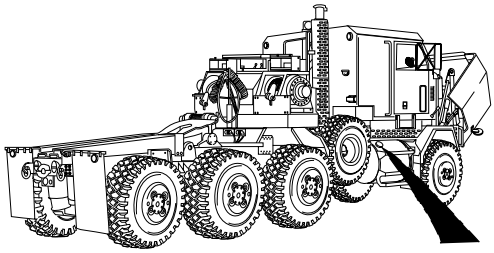
(5) Remove hose no. 2906 (1) and preformed packing (9) from elbow (10) on auxiliary steering pump (11). Discard preformed packing.

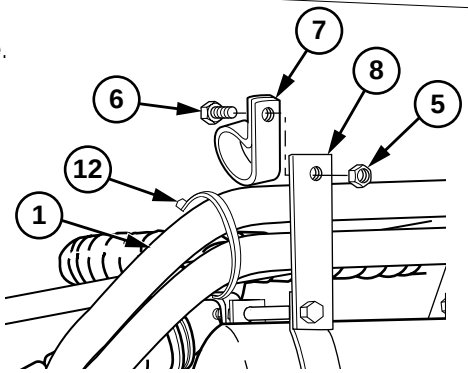


NOTE

Location of plastic cable ties should be marked before removal.

(6) Remove plastic cable ties (12) as required and remove hose no. 2906 (1) from vehicle.





t. Hose No. 2906 Installation

(1) Install new preformed packing (9) a no. 2906 (1) on elbow (10) on auxil steering pump (11).

(2) Install new preformed packing (2) a no. 2906 (1) on tee (3) on steering pump (4).

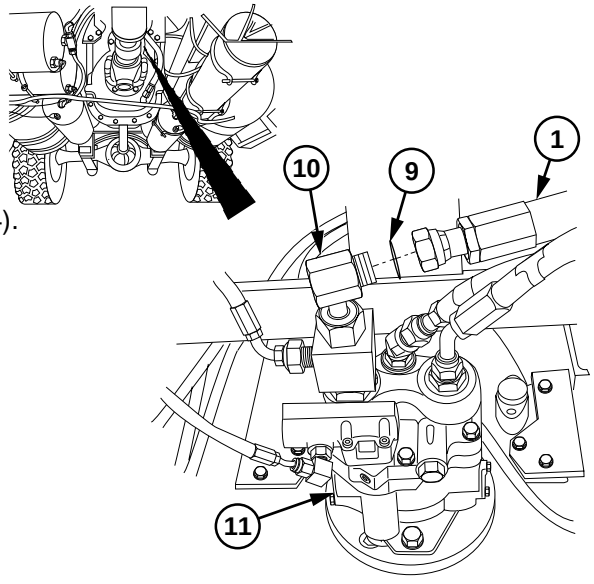
(3) Install clip (7) on hose no. 2906 (1).

(4) Install clip (7) on bracket (8) with screw (6) and new locknut (5).

NOTE

Plastic cable ties should be positioned in location marked during removal.

(5) Secure hose no. 2906 (1) with plastic cabe ties (12).



u. Hose No. 2918 Removal

(1) Place drain pan under hose no. 2918 (1).

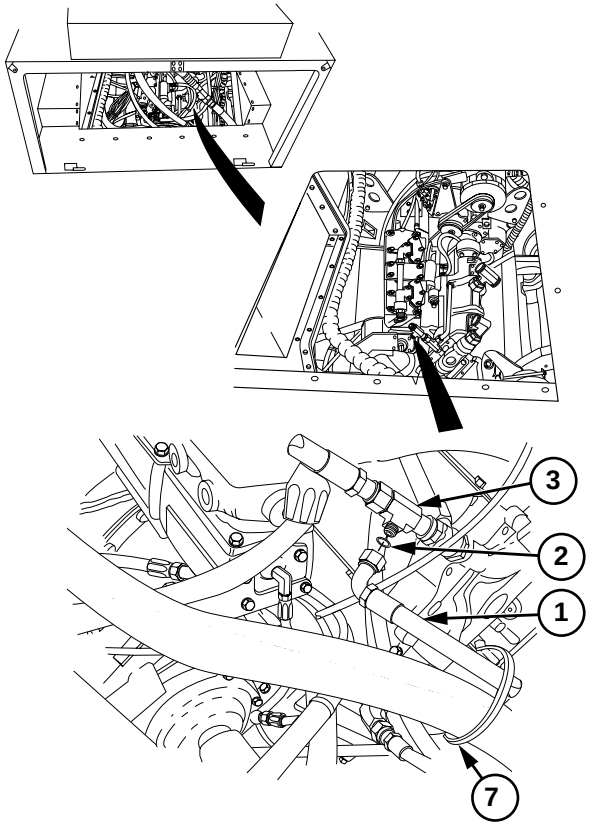
(2) Remove hose no. 2918 (1) and preformed packing (2) from tee (3). Discard preformed packing.

(3) Remove hose no. 2918 (1) and preformed packing (4) from elbow (5) on auxiliary steering pump (6). Discard preformed packing.

NOTE

Location of plastic cable ties should be marked before removal.

(4) Remove plastic cable ties (7) as required and remove hose no. 2918 (1) from vehicle.



v. Hose No. 2918 Installation

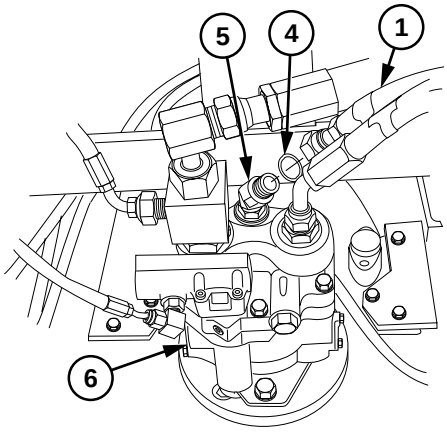
(1) Install new preformed packing (4) and hose no. 2918 (1) on elbow (5) on auxiliary steering pump (6).

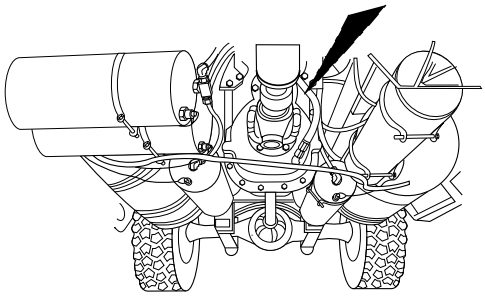
(2) Install new preformed packing (2) and hose no. 2918 (1) on tee (3).

NOTE

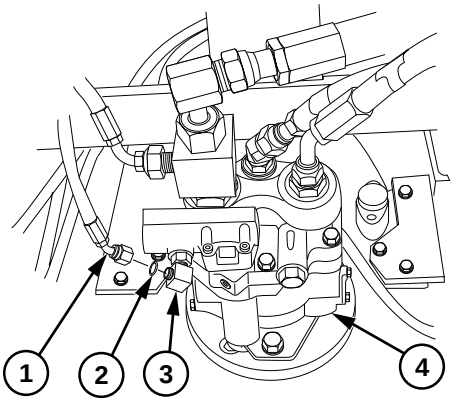
Plastic cable ties should be positioned in location marked during removal.

(3) Secure hose no. 2918 (1) with plastic cable ties (7).





13-9. STEERING SYSTEM HOSES NO. 2301/2726/2701/2302/2883/2278/2274/2275/ 2276/2906/2918/2916/2935/2723/2879 AND FITTINGS REPLACEMENT (CONT)

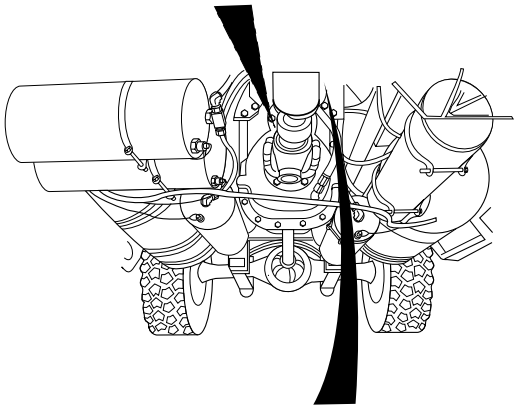


w. Hose No. 2916 Removal

(1) Place drain pan under hose no. 2916 (1).

(2) Remove hose no. 2916 (1) and preformed packing (2) from elbow (3) on auxiliary steering pump (4). Discard preformed packing.

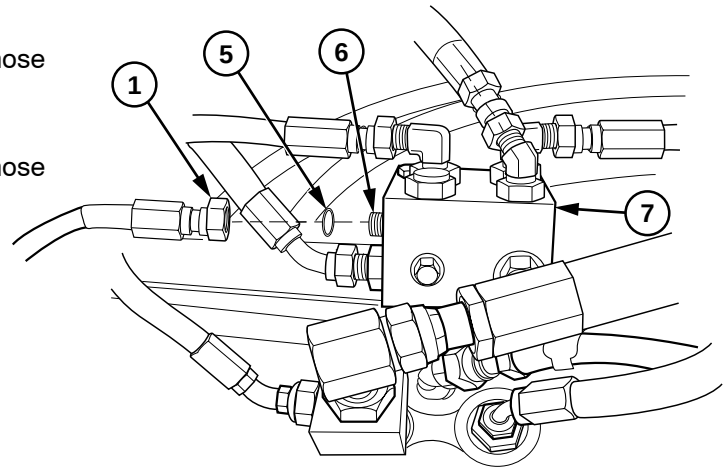
(3) Remove hose no. 2916 (1) and preformed packing (5) from adapter (6) on auxiliary steering pump manifold (7). Discard preformed packing.



x. Hose No. 2916 Installation

(1) Install new preformed packing (5) and hose no. 2916 (1) on adapter (6) on auxiliary steering pump manifold (7).

(2) Install new preformed packing (2) and hose no. 2916 (1) on elbow (3) on auxiliary steering pump (4).

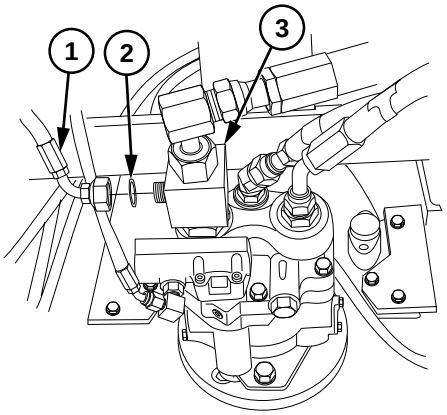


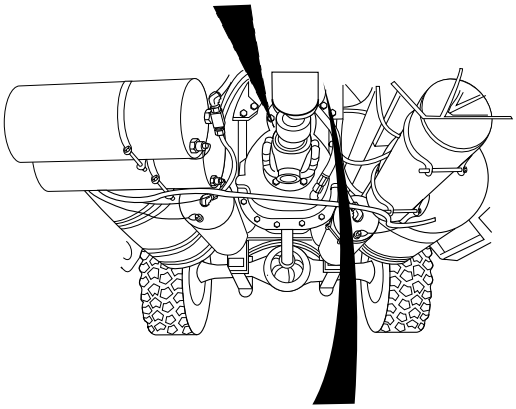
y. Hose No. 2935 Removal

(1) Place drain pan under hose no. 2935 (1).

(2) Remove hose no. 2935 (1) and preformed packing (2) from tee (3). Discard preformed packing.

(3) Remove hose no. 2935 (1) and preformed packing (4) from elbow (5) on auxiliary steering pump manifold (6). Discard preformed packing.

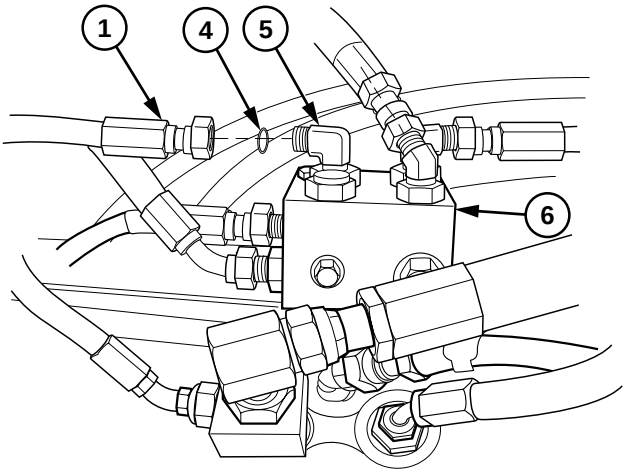




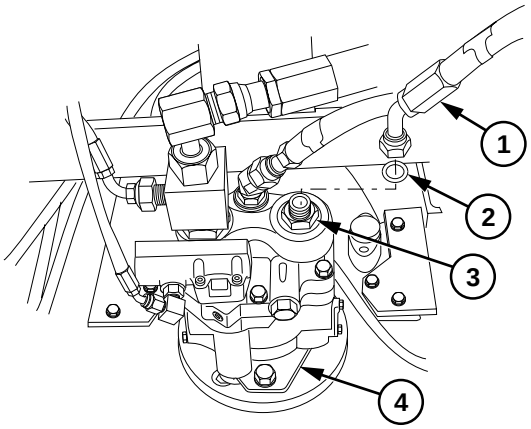
z. Hose No. 2935 Installation

(1) Install new preformed packing (4) and hose no. 2935 (1) on elbow (5) on auxiliary steering pump manifold (6).

(2) Install new preformed packing (2) and hose no. 2935 (1) on tee (3).



13-9. STEERING SYSTEM HOSES NO. 2301/2726/2701/2302/2883/2278/2274/2275/ 2276/2906/2918/2916/2935/2723/2879 AND FITTINGS REPLACEMENT (CONT)

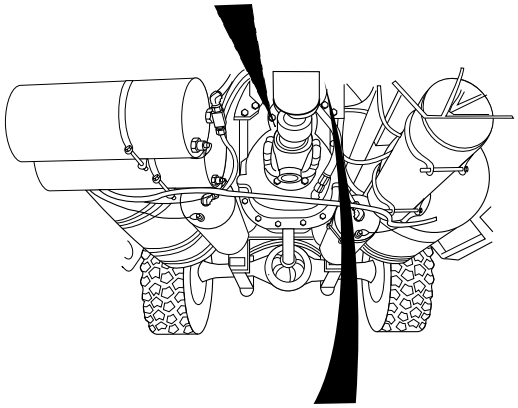


aa. Hose No. 2723 Removal

(1) Place drain pan under hose no. 2723 (1).

(2) Remove hose no. 2723 (1) and preformed packing (2) from adapter (3) on auxiliary steering pump (4). Discard preformed packing.

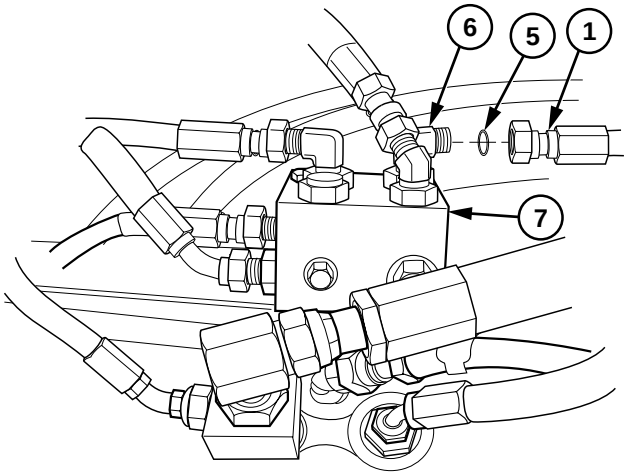
(3) Remove hose no. 2723 (1) and preformed packing (5) from elbow (6) on auxiliary steering pump manifold (7). Discard preformed packing.

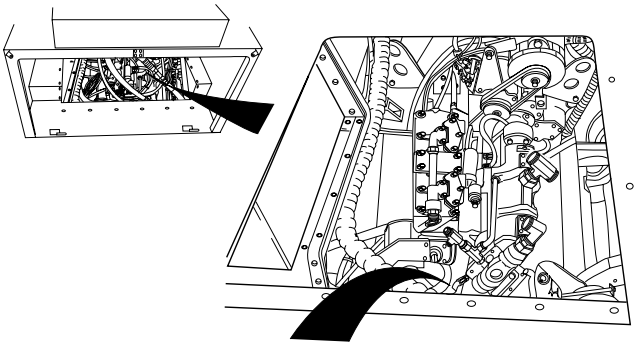


ab. Hose No. 2723 Installation

(1) Install new preformed packing (5) and hose no. 2723 (1) on elbow (6) on auxiliary steering pump manifold (7).

(2) Install new preformed packing (2) and hose no. 2723 (1) on adapter (3) on auxiliary steering pump (4).





ac. Hose No. 2879 Removal

(1) Place drain pan under hose no. 2879 (1).

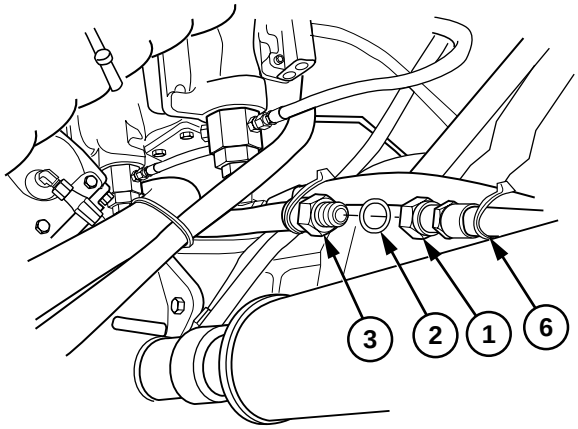
(2) Remove hose no. 2879 (1) and preformed packing (2) from hose no. 2879 (3). Discard preformed packing.

(3) Remove hose no. 2879 (1) and preformed packing (4) from auxiliary steering pump manifold (5). Discard preformed packing.

NOTE

Location of plastic cable ties should be marked before removal.

(4) Remove plastic cable ties (6) as required and remove hose no. 2879 (1) from vehicle.



ad. Hose No. 2879 Installation

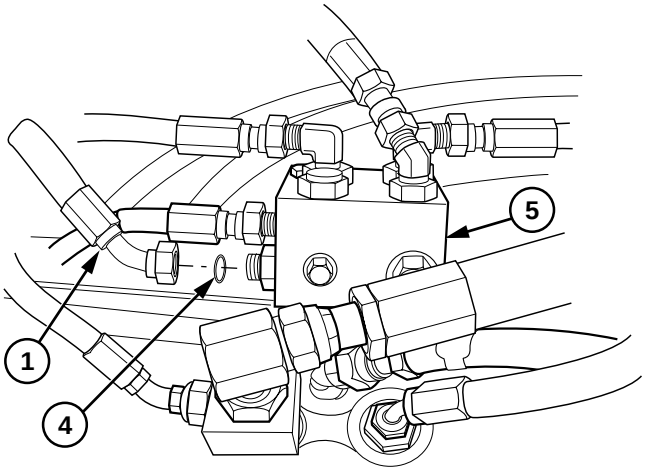
(1) Install new preformed packing (4) and hose no. 2879 (1) on auxiliary steering pump manifold (5).

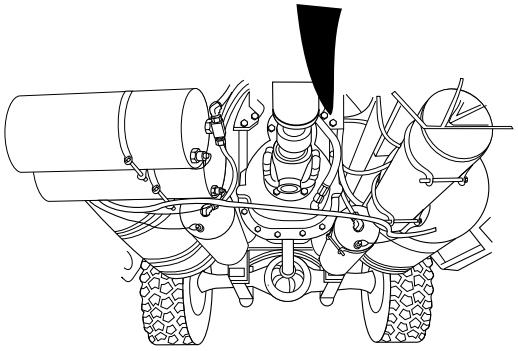
(2) Install new preformed packing (2) and hose no. 2879 (1) on hose no. 2879 (3).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(3) Secure hose no. 2879 (1) with plastic cable ties (6).





13-9. STEERING SYSTEM HOSES NO. 2301/2726/2701/2302/2883/2278/2274/2275/ 2276/2906/2918/2916/2935/2723/2879 AND FITTINGS REPLACEMENT (CONT)

ae. Follow-On Maintenance

(1) Fill steering reservoir (LO 9-2320-360-12).

(2) Start engine (TM 9-2320-360-10).

(3) Check for leaks (TM 9-2320-360-10).

(4) Check steering system operation (TM 9-2320-360-10).

(5) Shut off engine (TM 9-2320-360-10).

(6) Close engine hood (TM 9-2320-360-10).

(7) Install front engine access panel (para 16-2).

(8) Install lower engine access panel (para 16-2).

af. Hose Locator Diagram

This section contains an index and locator diagram to help locate ends of all steering system hydraulic hoses on the HET Tractor.

NOTE

Refer to figure 13-1 for component locations.

Table 13-1. Steering System Hydraulic Hose Index

Hose No.	From	To/From	To
2274	Rear Steering Pump		0.50 OD Tube
2275	0.50 OD Tube		Rear Steering Gear
2276	Rear Steering Gear		0.75 OD Tube (164 In.)
2278	Steering Reservoir		Front Steering Pump
2301	Front Steering Pump		Auxiliary Steering Manifold
2302	Steering Reservoir		Rear Steering Pump
2701	Steering Reservoir		Rear Steering Pump
2726	Front Steering Gear		0.75 OD Tube (60 In.)
2879	Front Steering Pump		Hose No. 2879 (second section)
2879	Hose No. 2879 (first section)		Auxiliary Steering Manifold
2883	Tee		Steering Reservoir
2906	Auxiliary Steering Pump		Front Steering Pump
2918	Rear Steering Pump		Auxiliary Steering Pump
2916	Auxiliary Steering Pump		Auxiliary Steering Manifold
2935	Auxiliary Steering Pump		Auxiliary Steering Manifold
2723	Auxiliary Steering Pump		Auxiliary Steering Manifold

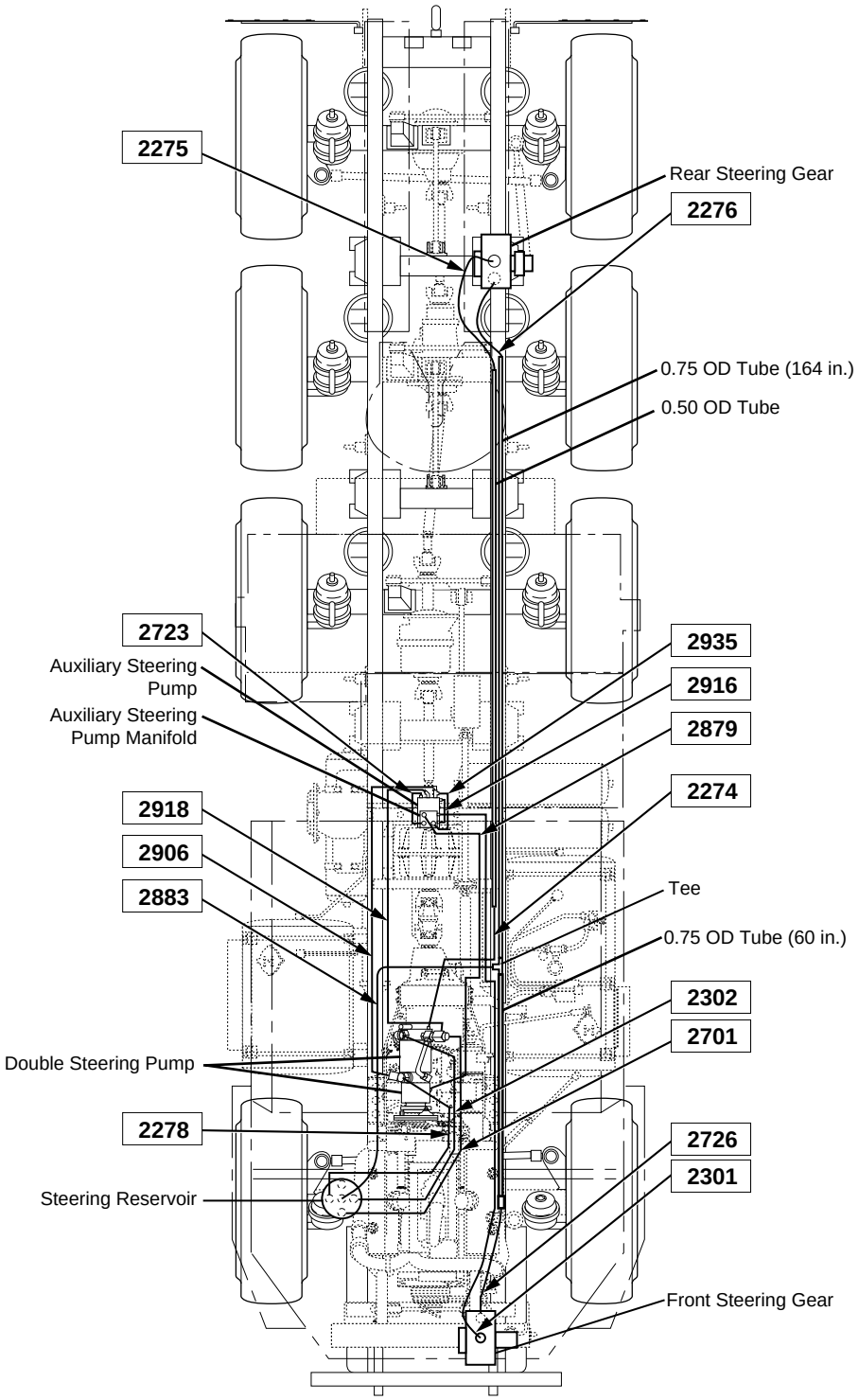


Figure 13-1. Steering System Hydraulic Hose Locator Diagram

13-10. STEERING SYSTEM STEEL TUBE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Steering reservoir drained (LO 9-2320-360-12).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Ties, Plastic, Cable (Item 34, Appendix C)
Locknuts (6) (Item 68, Appendix G)
Locknuts (6) (Item 58, Appendix G)
Packings, Preformed (2) (Item 130, Appendix G)
Packings, Preformed (2) (Item 131, Appendix G)
Packings, Preformed (2) (Item 133, Appendix G)

a. Removal

NOTE
Tag and mark hoses before removal.

(1) Remove hose no. 2726 (1), hose no. 2274 (2), hose no. 2275 (3), and hose no. 2276 (4) and preformed packings (5 and 6) from three steel tubes (7, 8, and 9).

(2) Remove 6 locknuts (10), screws (11), cover plates (12), and 12 clamps (13) from 6 brackets (14). Discard locknuts.

(3) Remove two steel tubes (7 and 8) and preformed packings (15) from tee (16). Discard preformed packings.

NOTE

Location of plastic cable ties should be marked before removal.

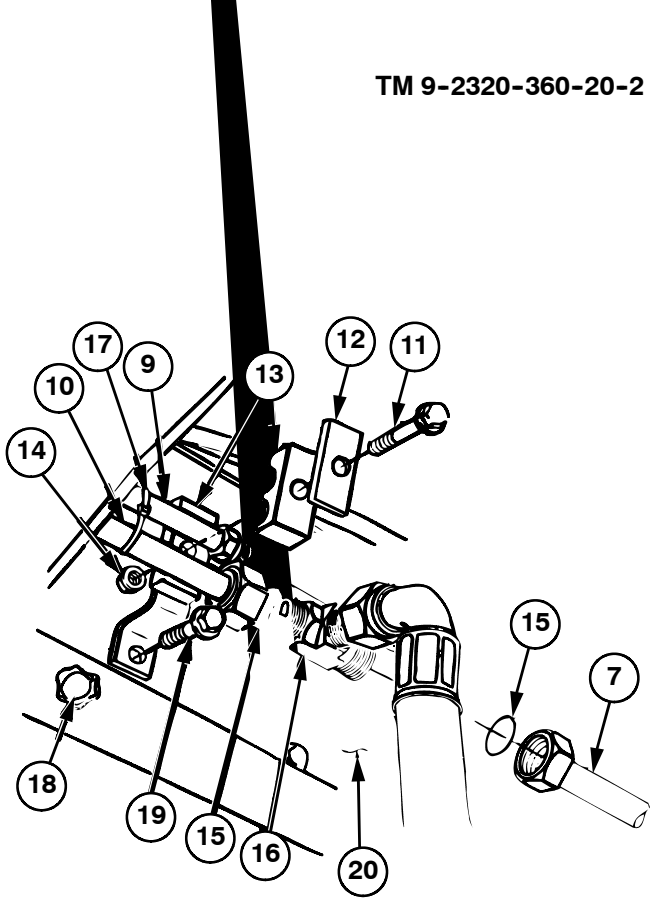
(4) Remove plastic cable ties (17) from three steel tubes (7, 8, and 9) as required.

NOTE

Steel tubes are removed from frame by sliding tubes through fifth wheel ramps.

(5) Remove three steel tubes (7, 8, and 9) from brackets (14).

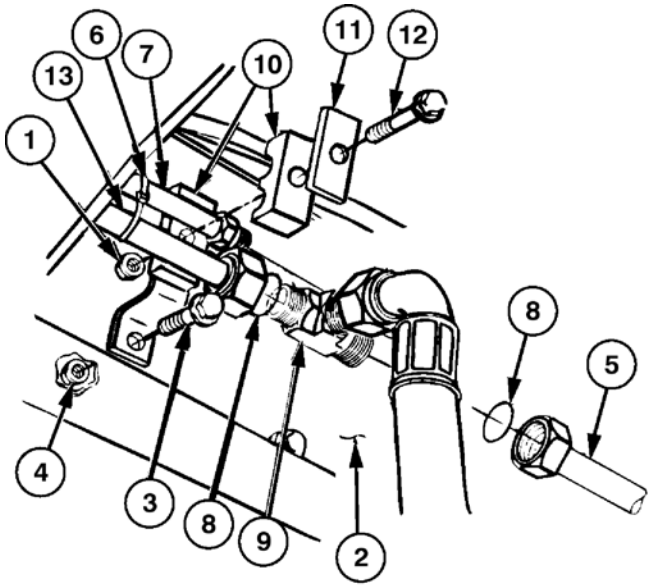
(6) Remove six locknuts (18), screws (19), and brackets (14) from frame (20). Discard locknuts.



13-10. STEERING SYSTEM STEEL TUBE REPLACEMENT (CONT)

b. Installation

(1) Install six brackets (1) on frame (2) with six screws (3) and new locknuts (4).



NOTE

- Coupling ends of 3/4 in. (1.9 cm) diameter tubes attach to tee.
- 164 in. (417 cm) long, 3/4 in. (1.9 cm) diameter tube and 160 in. (406 cm) long, 1/2 in. (1.27 cm) diameter tube are positioned at rear of tee.
- 60 in. (152 cm) long, 3/4 in. (1.9 cm) diameter tube is positioned at front of tee.

(2) Position three steel tubes (5, 6 and 7) in vehicle.

(3) Install new preformed packings (8) and steel tubes (5 and 6) on tee (9).

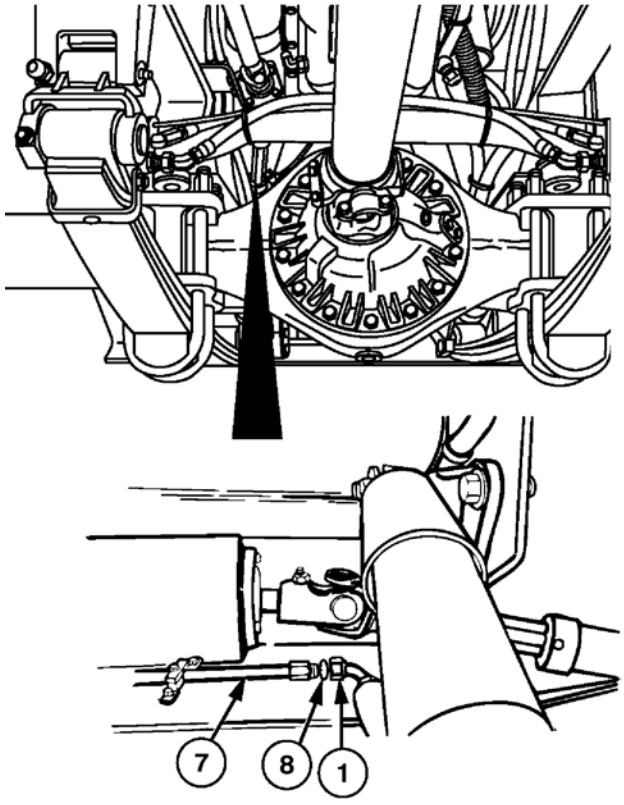
(4) Install 12 clamps (10) and 6 cover plates (11) on 6 brackets (1) with 6 screws (12) and new locknuts (13). Do not tighten.

NOTE

Upper tube should extend beyond rear clamp by 6.5 in. (16.5 cm). Lower tube should extend beyond rear clamp by 8.5 in. (21.6 cm).

(5) Install three steel tubes (5, 6, and 7) in 12 clamps (10).

(6) Tighten six locknuts (13).

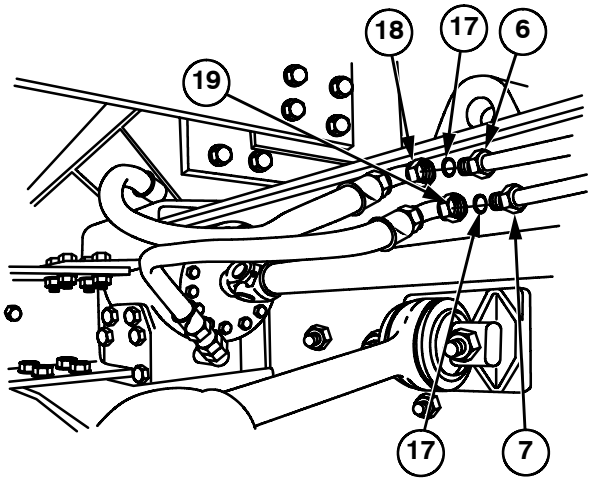


(7) Install new preformed packing (14) and hose no. 2726 (15) on steel tube (5).

(8) Install new preformed packing (14) and hose no. 2274 (16) on steel tube (6).

(9) Install new preformed packing (17) and hose no. 2275 (18) on steel tube (6).

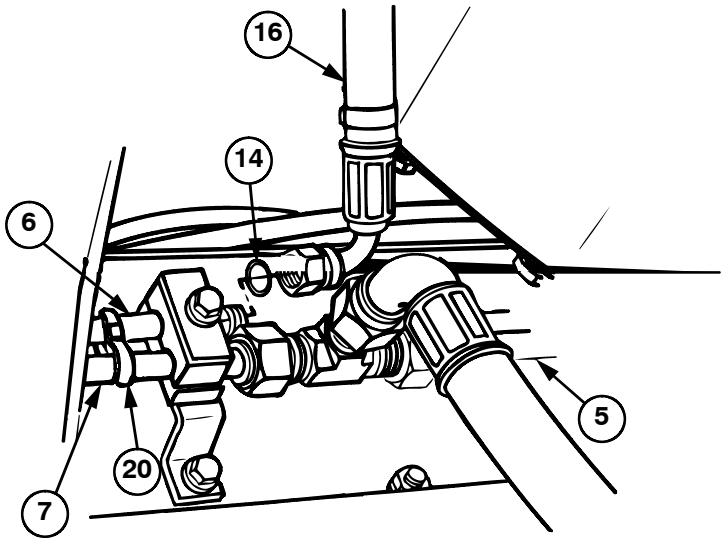
(10) Install new preformed packing (17) and hose no. 2276 (19) on steel tube (7).



NOTE

Plastic cable ties should be positioned in location marked during removal.

(11) Secure hoses (19) to steel tubes (7) with plastic cable ties (20) as required.



c. Follow-On Maintenance

(1) Fill steering reservoir (LO 9-2320-360-12).

(2) Start engine (TM 9-2320-360-10).

(3) Check for leaks (TM 9-2320-360-10).

(4) Check steering system operation (TM 9-2320-360-10).

(5) Shut off engine (TM 9-2320-360-10).

(6) Remove wheel chocks.

13-11. STEERING RESERVOIR AND FILTER REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Engine hood opened (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Steering reservoir drained (LO 9-2320-360-12).

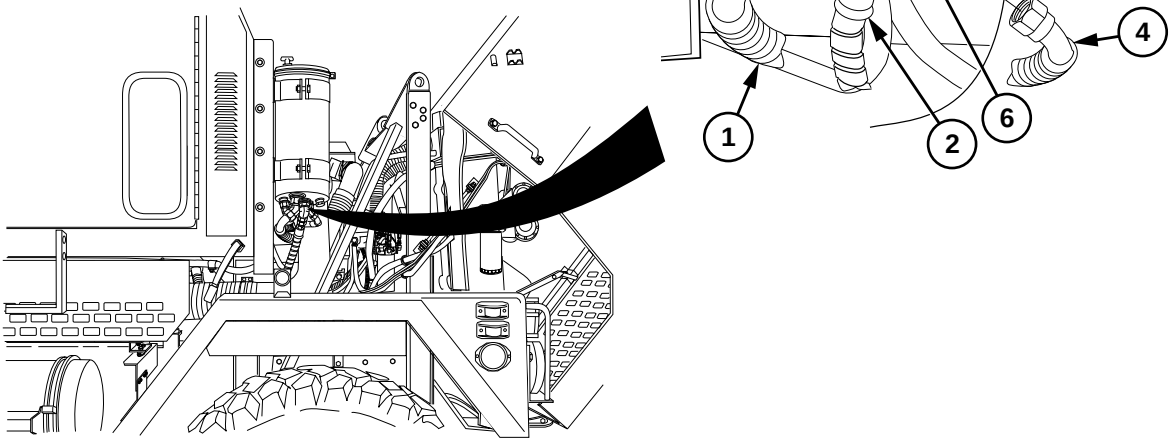
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Combination, 1-3/8 In. (Item 62, Appendix F)
Wrench, Open-End, 1-7/8 and 1-11/16 In. (Item 68, Appendix F)
Wrench, Open-End, 1-5/8 and 1-13/16 In. (Item 69, Appendix F)

Materials/Parts
Element, Filter (Item 24, Appendix G)
Locknuts (8) (Item 58, Appendix G)
Lockwashers (4) (Item 102, Appendix G)
Packings, Preformed (2) (Item 134, Appendix G)
Packings, Preformed (2) (Item 140, Appendix G)
Packings, Preformed (2) (Item 142, Appendix G)
Packing, Preformed (Item 132, Appendix G)
Packing, Preformed (Item 133, Appendix G)
Packing, Preformed (Item 135, Appendix G)
Packing, Preformed (Item 141, Appendix G)

Personnel Required
Two

a. Steering Reservoir Removal

(1) Remove hose no. 2278 (1), hose no. 288 (2), hose no. 2302 (3), and hose no. 270 (4) from four elbows (5, 6, and 7).



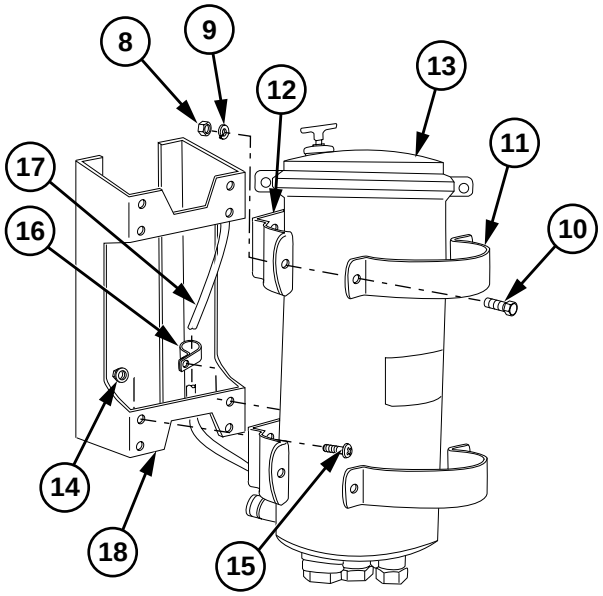
WARNING

Steering reservoir requires support while doing step (2). If dropped, reservoir may cause serious injury.

(2) Remove four nuts (8), lockwashers (9), screws (10), and clamps (11) from two clamp brackets (12) while assistant supports reservoir (13). Discard lockwashers.

(3) Remove reservoir (13) from two clamp brackets (12).

(4) Remove eight locknuts (14), screws (15), clip (16), cable (17), and two clamp brackets (12) from mounting bracket (18).



(5) Remove two elbows (5) from reservoir (13).

(6) Remove two preformed packings (19) and two preformed packings (20) from two elbows (5). Discard preformed packings.

(7) Remove elbow (6) from reservoir (13).

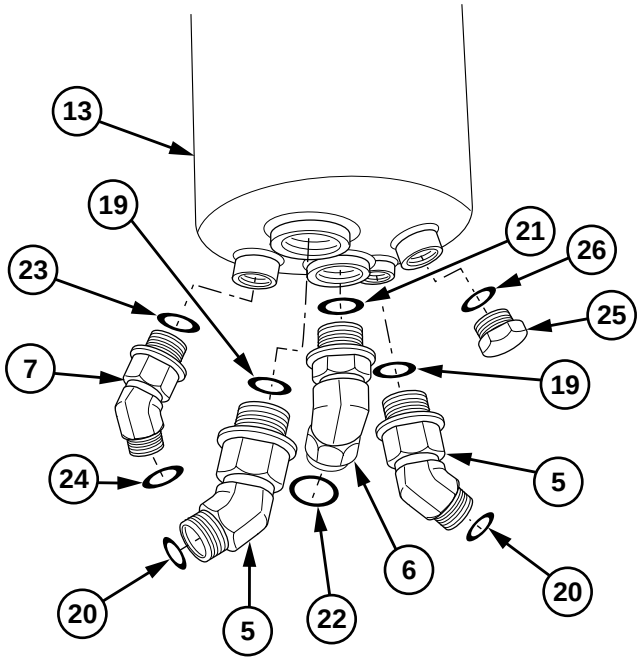
(8) Remove preformed packing (21) and preformed packing (22) from elbow (6). Discard preformed packings.

(9) Remove elbow (7) from reservoir (13).

(10) Remove preformed packing (23) and preformed packing (24) from elbow (7). Discard preformed packings.

(11) Remove plug (25) from reservoir (13).

(12) Remove preformed packing (26) from plug (25). Discard preformed packing.



13-11. STEERING RESERVOIR AND FILTER REPLACEMENT (CONT)

b. Steering Reservoir Installation

(1) Install new preformed packing (1) on plug (2).

(2) Install plug (2) in reservoir (3).

(3) Install new preformed packing (4) and new preformed packing (5) on elbow (6).

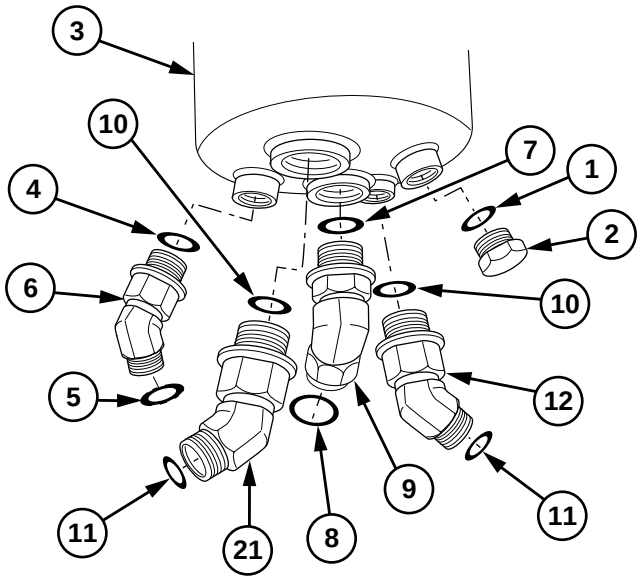
(4) Install elbow (6) in reservoir (3).

(5) Install new preformed packing (7) and new preformed packing (8) on elbow (9).

(6) Install elbow (9) in reservoir (3).

(7) Install two new preformed packings (10) and new preformed packings (11) on two elbow (12).

(8) Install two elbows (12) in reservoir (3).



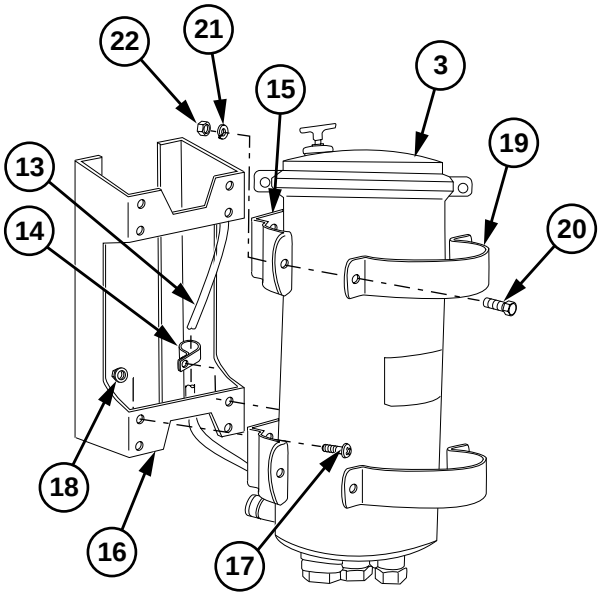
(9) Install cable (13), clip (14), and two clamp brackets (15) on mounting bracket (16) with eight screws (17) and new locknuts (18).

NOTE

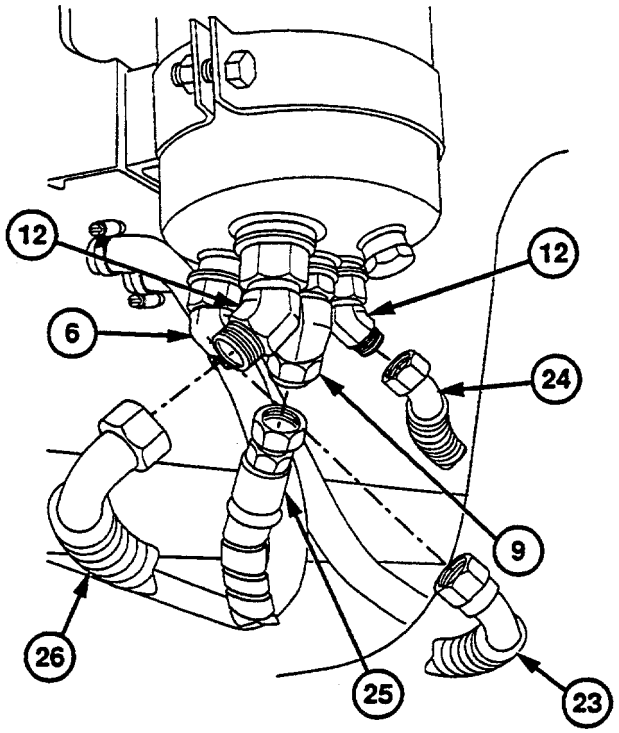
Ensure 0.5 in. (13 mm) of clearance is maintained between top of upper rear bracket and bottom of cover band clamp.

(10) Position reservoir (3) on two clamp brackets (15) with aid of assistant.

(11) Install two clamps (19) on reservoir (3) with four screws (20), new lockwashers (21), and nuts (22). Tighten nuts to 30 lb-ft (41 N·m).



(12) Install hose no. 2701 (23), hose no. 2302 (24), hose no. 2883 (25), and hose no. 2278 (26) on elbows (6, 9, and 12).

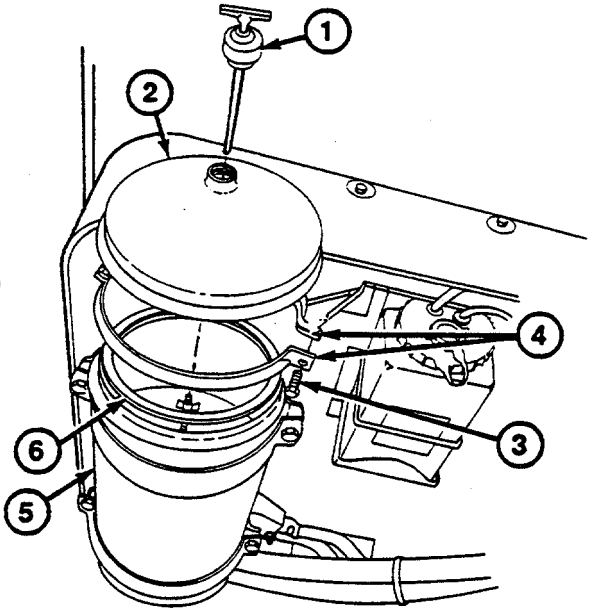


c. Steering Reservoir Filter Removal

(1) Remove dipstick (1) from cover (2).

(2) Remove two screws (3) and band clamp (4) from cover (2) and reservoir (5).

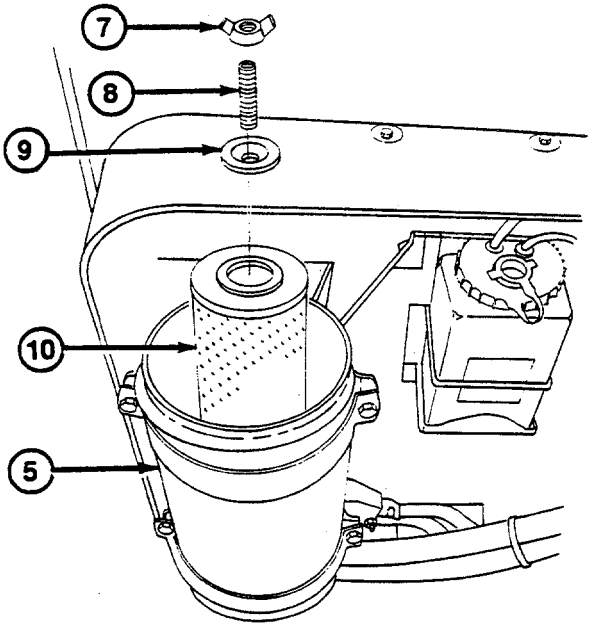
(3) Remove cover (2) and preformed packing (6) from reservoir (5). Discard preformed packing.



13-11. STEERING RESERVOIR AND FILTER REPLACEMENT (CONT)

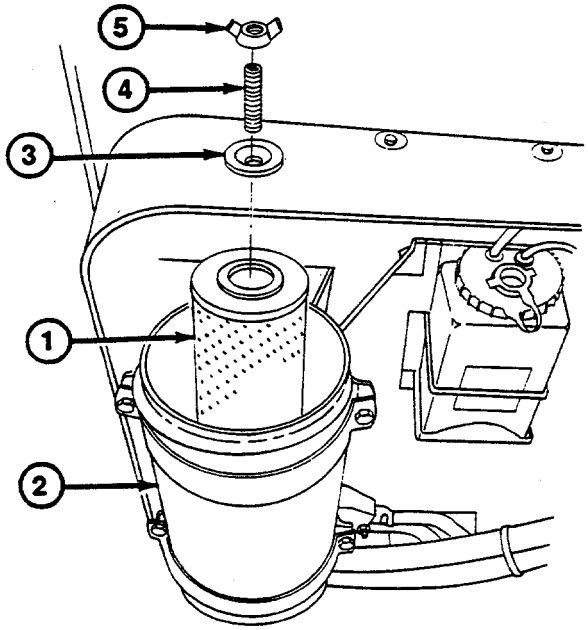
(4) Remove nut (7) and spring (8) from reservoir (5).

(5) Remove retainer (9) and filter element (10) from reservoir (5). Discard filter element.



d. Steering Reservoir Filter Installation

(1) Install new filter element (1) in reservoir (2) with retainer (3), spring (4), and nut (5).

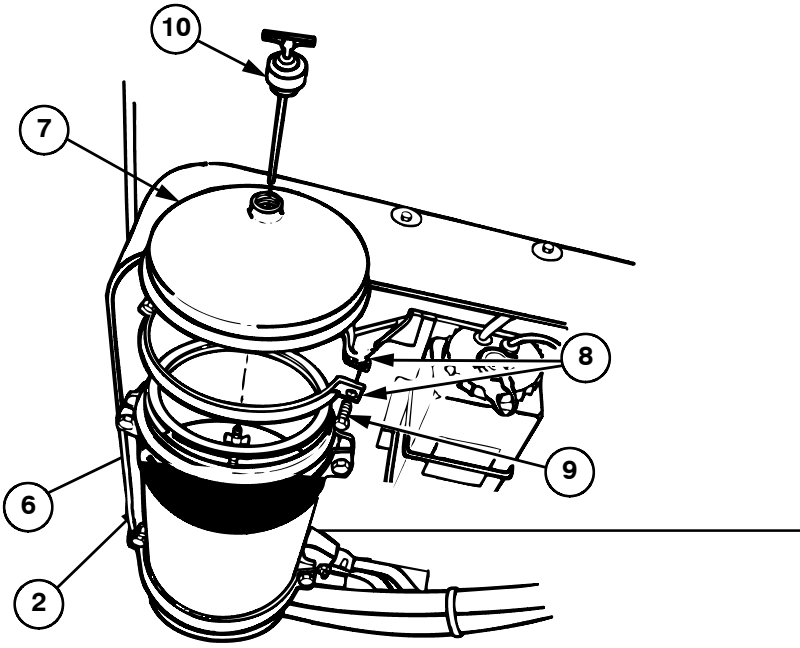


(2) Position new preformed packing (6) on reservoir (2).

(3) Install cover (7) on reservoir (2).

(4) Install band clamp (8) on reservoir (2) and cover (7) with two screws (9). Tighten screws to 12-18 lb-ft. (53-80 N•m).

(5) Install dipstick (10) in cover (7).



e. Follow-On Maintenance

(1) Fill steering reservoir (LO 9-2320-360-12).

(2) Start engine (TM 9-2320-360-10).

(3) Check steering fluid level in reservoir (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

(5) Close engine hood (TM 9-2320-360-10).

(6) Remove wheel chocks.

CHAPTER 14
FRAME MAINTENANCE

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Section I. INTRODUCTION

14-1. INTRODUCTION

This chapter contains instructions for replacement and repair of frame components at the Unit maintenance level. Some parts must be removed before frame components can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

14-2. PINTLE HOOK REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Locknuts (2) (Item 59, Appendix G)
Pin, Cotter (Item 153, Appendix G)
Pin, Cotter (Item 154, Appendix G)

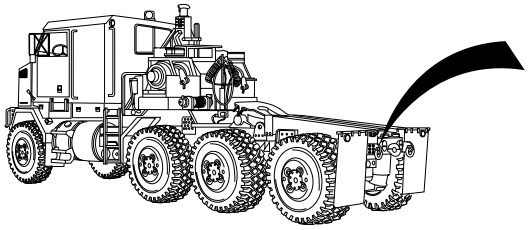
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Socket Wrench Set, 3/4 In. Drive (Item 46, Appendix F)
Wrench, Torque, 0-600 Lb-Ft (Item 74, Appendix F)

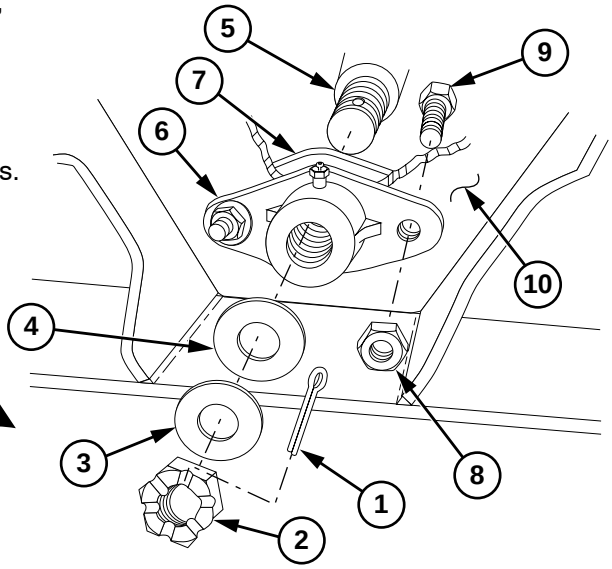
Personnel Required
Two

a. Removal

(1) Remove cotter pin (1), nut (2), washer (3), washer (4), and pintle hook (5) from two mounts (6 and 7). Discard cotter pin.

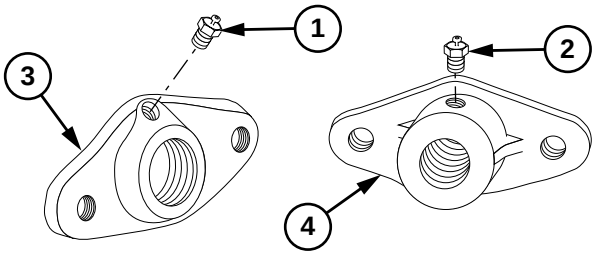
(2) Remove two locknuts (8), screws (9), and mounts (6 and 7) from rear crossmember (10) with aid of assistant. Discard locknuts.





b. Disassembly

(1) Remove two grease fittings (1 and 2) from mounts (3 and 4).



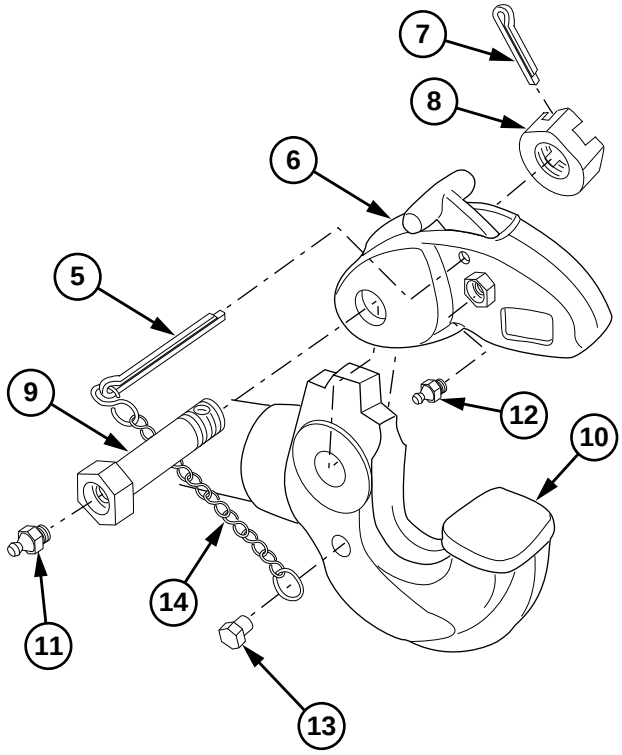
(2) Remove cotter pin (5) from jaw (6).

(3) Remove cotter pin (7), nut (8), screw (9), and jaw (6) from pintle hook (10). Discard cotter pin.

(4) Remove grease fitting (11) from screw (9).

(5) Remove grease fitting (12) from jaw (6).

(6) Remove pin (13) and chain (14) from pintle hook (10).



c. Assembly

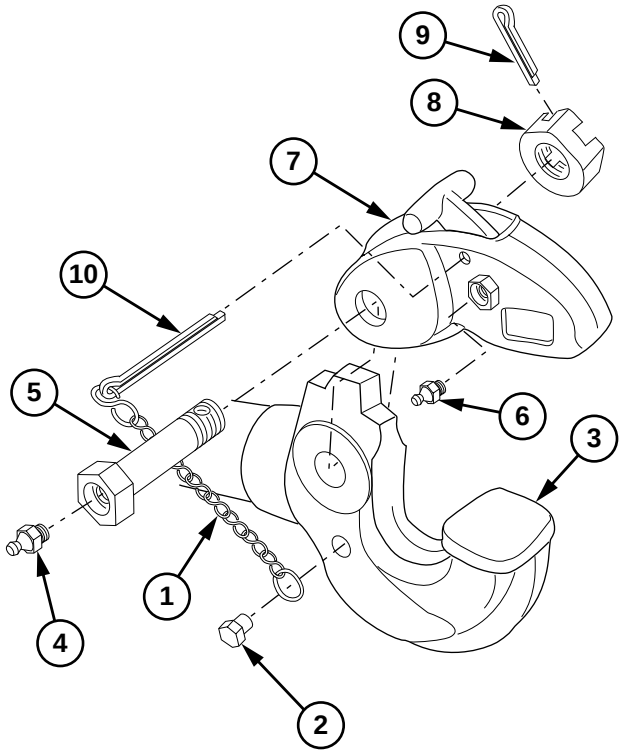
(1) Install chain (1) and pin (2) in pintle hook (3).

(2) Install grease fitting (4) in screw (5).

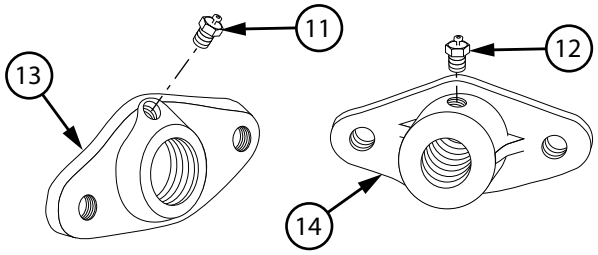
(3) Install grease fitting (6) in jaw (7).

(4) Install jaw (7), screw (5), nut (8), and new cotter pin (9) on pintle hook (3).

(5) Install cotter pin (10) in jaw (7).



14-2. PINTLE HOOK REPLACEMENT (CONT)

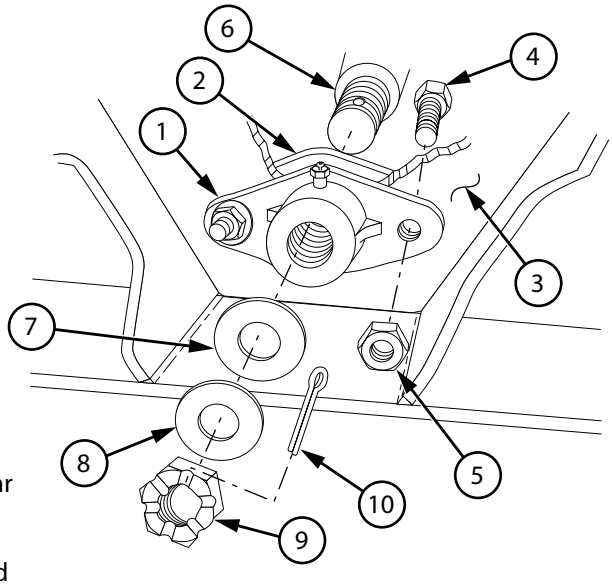


(6) Install two grease fittings (11 and 12) in two mounts (13 and 14).

d. Installation

NOTE

Position inner mount with grease fitting facing upward.



(1) Install two mounts (1 and 2) on rear crossmember (3) with two screws (4) and new locknuts (5) with aid of assistant. Torque to 250-300 lb-ft (339-407 N·m).

CAUTION

Overtightening nut (9) will cause excess wear to pintle hook. Do not overtighten nut.

(2) Install pintle hook (6), thick washer (7), and thin washer (8) on two mounts (1 and 2) with nut (9) and new cotter pin (10). Only tighten nut (9) far enough to install cotter pin (10).

e. Follow-On Maintenance

(1) Lubricate pintle hook (LO 9-2320-360-12).

(2) Remove wheel chocks.

14-3. FIFTH WHEEL ADJUSTMENT

This task covers:
a. Adjustment
b. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Personnel Required
Two

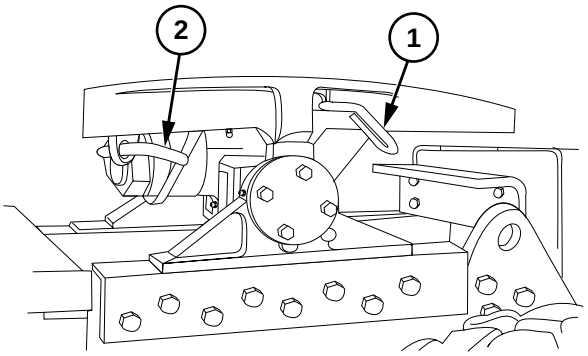
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Socket Wrench Set, 3/4 In. (Item 46, Appendix F)
Tester, Fifth Wheel Lock (Item 50, Appendix F)

a. Adjustment

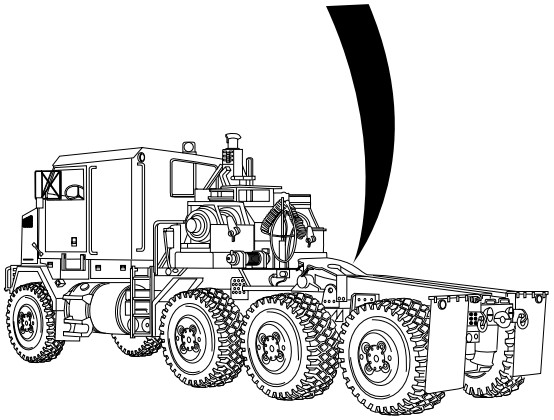
(1) Pull out secondary lock release handle (1) and latch in position.

CAUTION

Ensure coupler jaws stay open when primary lock release handle is in locked position. Failure to comply may result in damage to fifth wheel.



(2) Put primary lock release handle (2) in locked position.

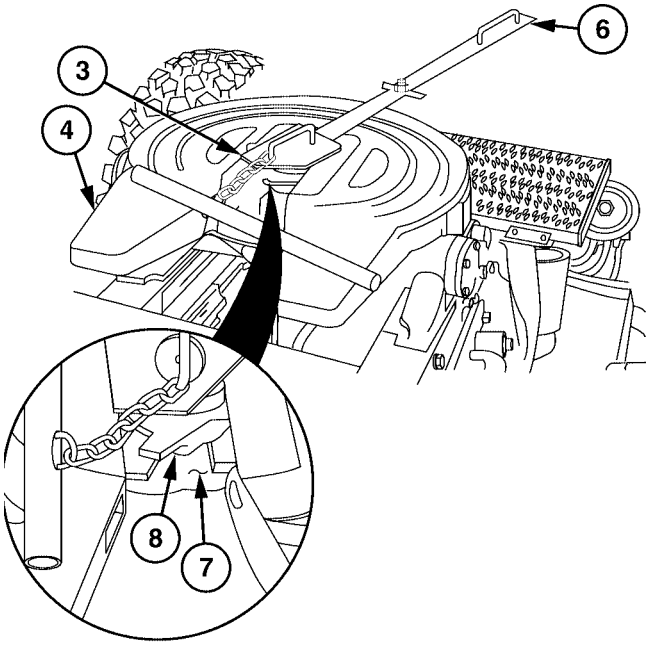


14-3. FIFTH WHEEL ADJUSTMENT (CONT)

(3) Install lock tester tool (3) in jaws of fifth wheel (4) with aid of assistant.

(4) Ensure tab (5) on lock tester tool (3) is on outside of fifth wheel (4).

(5) Engage lock tester tool (3) by moving handle (6) counterclockwise until plunger (7) locks hinged jaw (8).



CAUTION

Hinged jaw must be in fully locked position with plunger. Failure to comply may result in improper adjustment.

(6) Turn adjustment bolt (9) on fifth wheel (4) clockwise until tight.

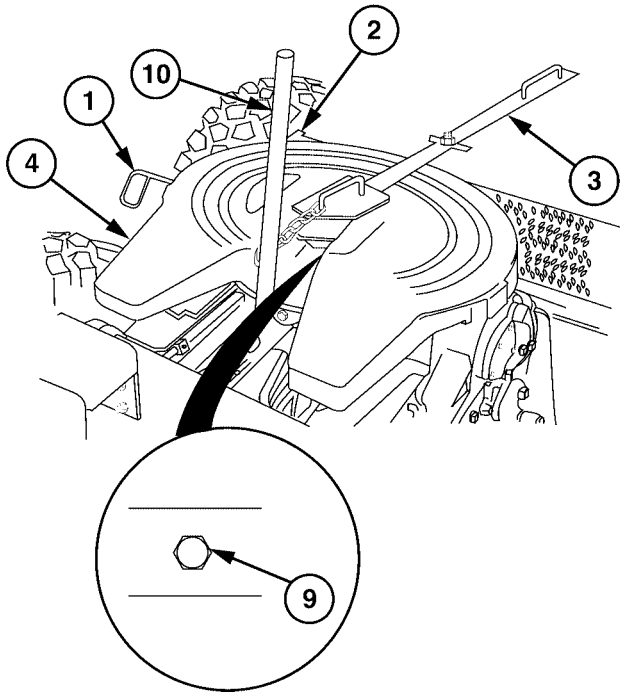
(7) Turn adjustment bolt (9) on fifth wheel (4) counterclockwise 1 and 1/2 turns.

WARNING

Improper adjustment of fifth wheel may cause trailer to become uncoupled during operation. Serious injury or death may result.

NOTE

- Maximum clearance between fifth locks and kingpin is 0.25 in. (6.4 mm). If, after adjustment, distance between marks made in steps (8) and (9) exceeds 0.25 in. (6.4 mm), fifth wheel needs to be repaired. Notify direct support maintenance.
- If tool does not stay locked in fifth wheel, repeat steps (2) thru (5).



(8) Pry lock tester tool (3) forward by moving handle (6) and mark fifth wheel (4).

(9) Position chained end of pipe (10) on lip of fifth wheel (4). Move lock tester (3) rearward by pulling on pipe (10) and mark fifth wheel (4).

(10) Remove lock tester tool (3) by pulling out primary and secondary handles (2 and 1) and pulling back on pipe (10) with aid of assistant.

b. Follow-On Maintenance

Remove wheel chocks.

14-4. FIFTH WHEEL RAMP/EXTENSION REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Blocks, Wooden (4) (Figure D-19, Appendix D)
Eye, Lifting (Figure D-21, Appendix D)
Socket Wrench Set, 3/4 In. (Item 46, Appendix F)
Wrench, Torque, 0-600 Lb-Ft (Item 74, Appendix F)

Materials/Parts
Locknuts (40) (Item 62, Appendix G)
Locknuts (4) (Item 47, Appendix G)
Locknuts (2) (Item 63, Appendix G)
Pin, Cotter (Item 150, Appendix G)

Personnel Required
Two

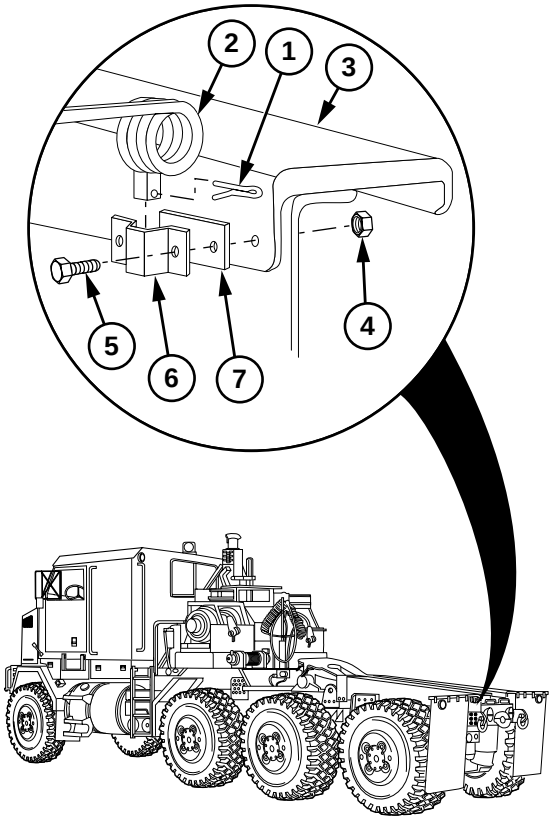
a. Fifth Wheel Ramp Removal

NOTE
Left and right ramps are replaced the same way.

(1) Remove cotter pin (1) from mud flap assembly (2). Discard cotter pin.

(2) Remove mud flap assembly (2) from ramp (3).

(3) Remove two locknuts (4), screws (5), bracket (6), and plate (7) from ramp (3). Discard locknuts.



14-4. FIFTH WHEEL RAMP/EXTENSION REPLACEMENT (CONT)

(4) Remove four locknuts (8) and screws (9) from ramp extension (10). Discard locknuts.

(5) Remove four locknuts (11), screws (12), and rear ramp tie (13) from ramps (3). Discard locknuts.

WARNING

Ramp weighs 237 lb (108 kg). Keep out from under heavy parts. Falling parts may cause serious injury or death.

(6) Install lifting eye (14) through hole (15) in ramp (3).

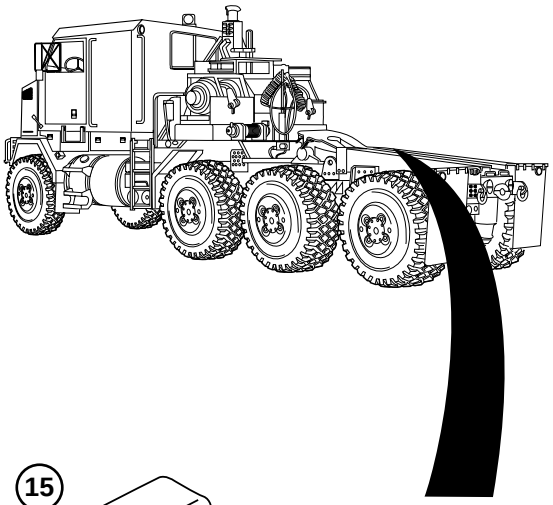
(7) Attach suitable lifting device to lifting eye (14).

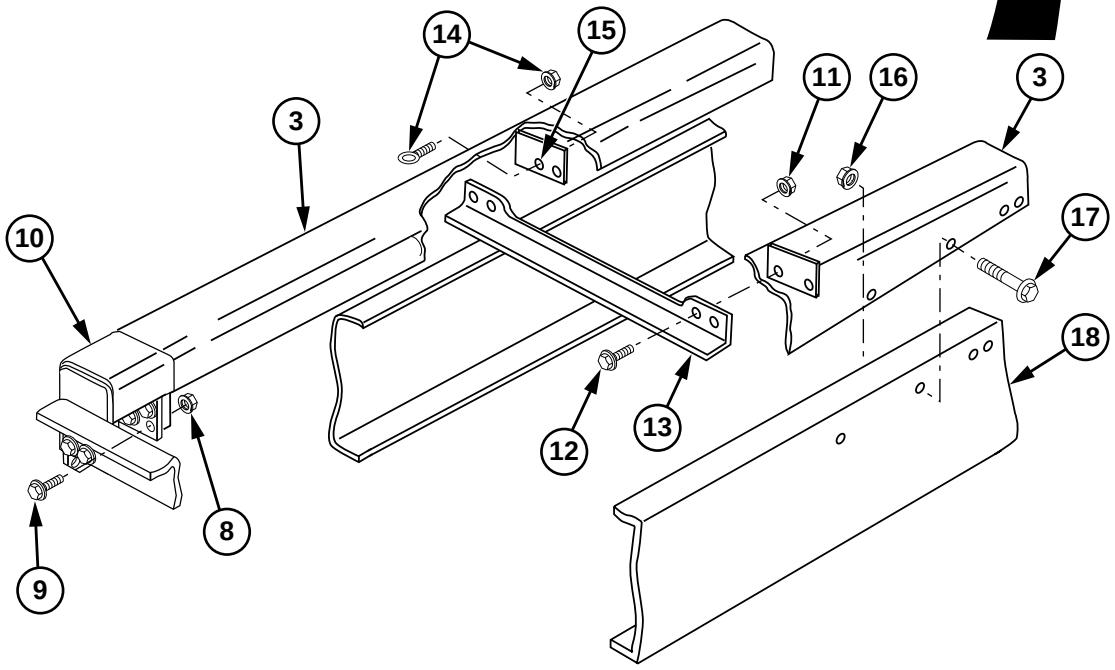
(8) Remove seven locknuts (16) and screws (17) from ramp (3). Discard locknuts.

(9) Guide ramp (3) away from frame (18) while assistant operates lifting device.

(10) Position ramp (3) on wooden blocks.

(11) Remove lifting eye (14) from ramp (3).





b. Fifth Wheel Ramp Installation

(1) Install lifting eye (1) through hole (2) in ramp (3).

(2) Attach suitable lifting device to lifting eye (1).

WARNING

Ramp weighs 237 lb (108 kg). Keep out from under heavy parts. Falling parts may cause serious injury or death.

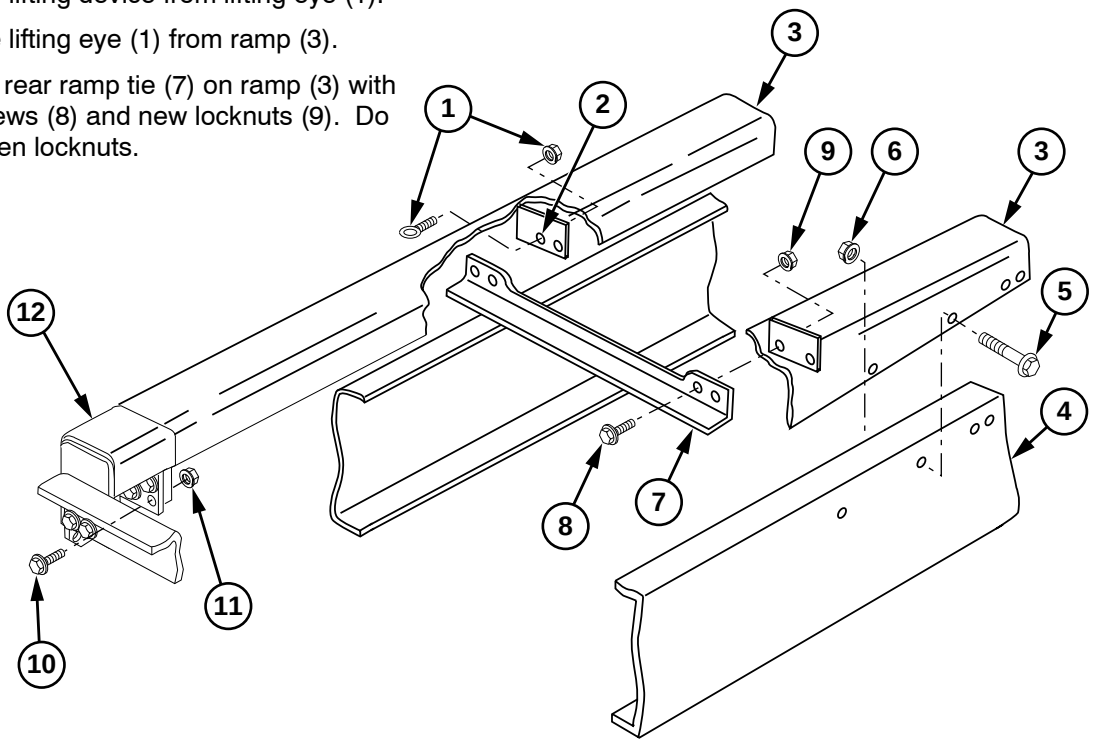
(3) Guide ramp (3) to frame (4) while assistant operates lifting device.

(4) Position seven screws (5) and new locknuts (6) on ramp (3). Do not tighten locknuts.

(5) Remove lifting device from lifting eye (1).

(6) Remove lifting eye (1) from ramp (3).

(7) Position rear ramp tie (7) on ramp (3) with four screws (8) and new locknuts (9). Do not tighten locknuts.



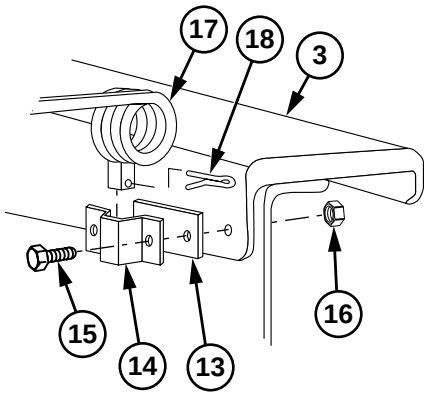
(8) Position four screws (10) and new locknuts (11) on ramp (3) and ramp extension (12). Do not tighten locknuts.

(9) Tighten locknuts (6, 9, and 11) to 167 lb-ft (227 N·m).

(10) Install plate (13) and bracket (14) on ramp (3) with two screws (15) and new locknuts (16).

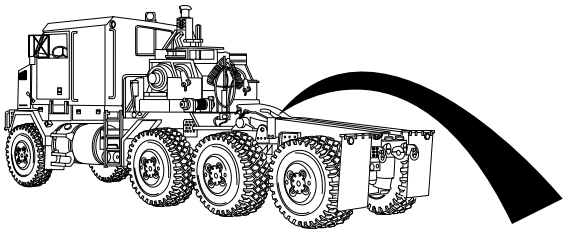
(11) Install mud flap assembly (17) on ramp (3).

(12) Install new cotter pin (18) on mud flap assembly (17).



14-4. FIFTH WHEEL RAMP/EXTENSION REPLACEMENT (CONT)

c. Fifth Wheel Ramp Extension Removal



WARNING

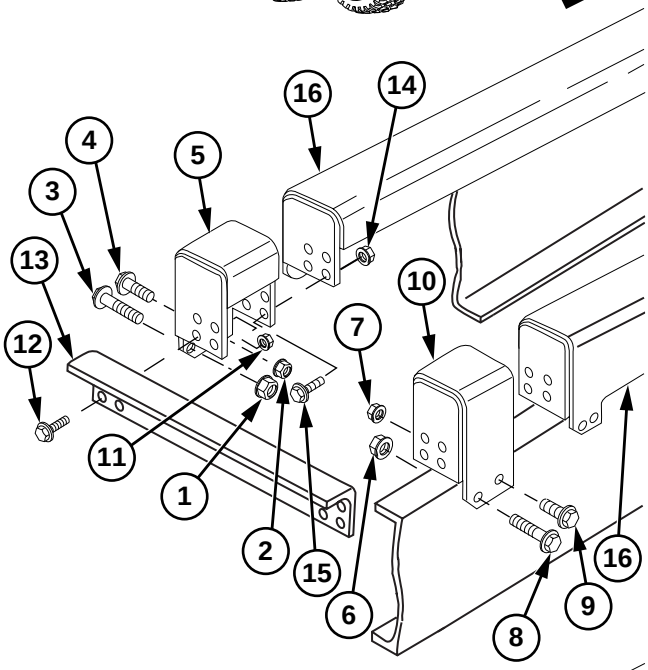
Position two wooden blocks between rear ends of fifth wheel assembly and frame to prevent fifth wheel from shifting during ramp extension removal.

(1) Remove two locknuts (1 and 2) and screws (3 and 4) from left ramp extension (5). Discard locknuts.

(2) Remove two locknuts (6 and 7) and screws (8 and 9) from right ramp extension (10). Discard locknuts.

(3) Remove eight locknuts (11), screws (12), and angle stop (13) from ramp extensions (5 and 10). Discard locknuts.

(4) Remove eight locknuts (14), screws (15), and ramp extensions (5 and 10) from ramps (16). Discard locknuts.



d. Fifth Wheel Ramp Extension Installation

(1) Position ramp extensions (1 and 2) on ramps (3) with eight screws (4) and new locknuts (5). Do not tighten locknuts.

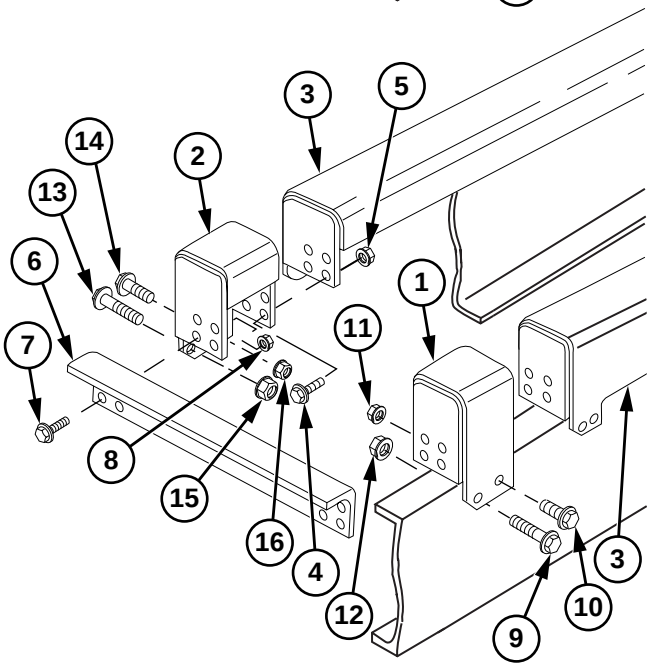
(2) Position angle stop (6) on ramp extensions (1 and 2) with eight screws (7) and new locknuts (8). Do not tighten locknuts.

(3) Position two screws (9 and 10) and locknuts (11 and 12) on right ramp extension (1). Do not tighten locknuts.

(4) Position two screws (13 and 14) and locknuts (15 and 16) on left ramp extension (2). Do not tighten locknuts.

(5) Tighten locknuts (5, 8, 12, and 16) to 212 lb-ft (288 N·m).

(6) Tighten locknuts (11 and 15) to 375 lb-ft (509 N·m).



e. Follow-On Maintenance

(1) Grease fifth wheel ramp (LO 9-2320-360-12).

(2) Remove wheel chocks.

14-5. FIFTH WHEEL CATWALK AND STEP REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

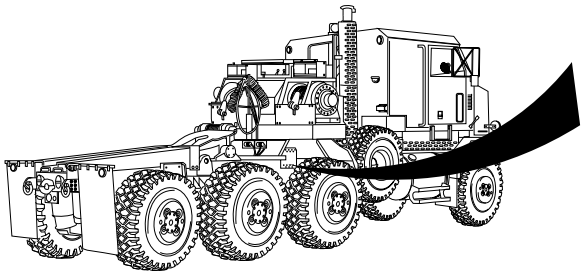
INITIAL SETUP

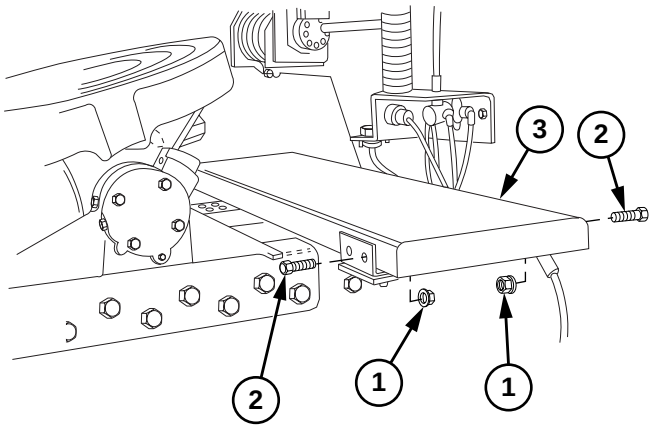
Equipment ConditionsMaterials/Parts
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Locknuts (8) (Item 58, Appendix G)
Locknuts (4) (Item 63, Appendix G)
Locknuts (2) (Item 61, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Socket Wrench Set, 3/4 In. Drive (Item 46, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)
Wrench, Torque, 0-600 Lb-Ft (Item 74, Appendix F)

a. Catwalk Removal

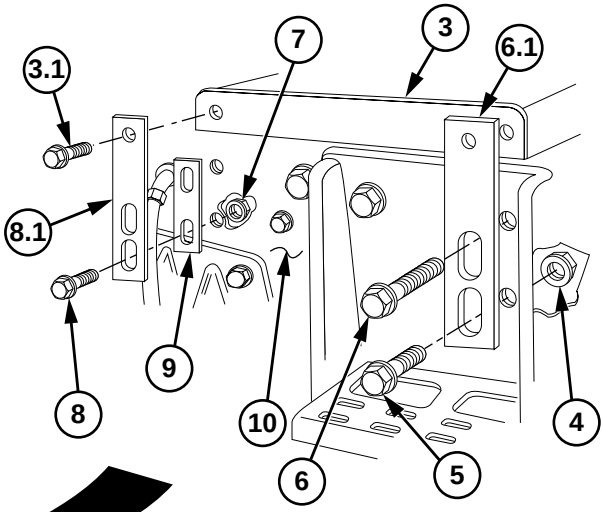
(1) Remove four locknuts (1) and screws (2) from catwalk (3). Discard locknuts.





14-5. FIFTH WHEEL CATWALK AND STEP REPLACEMENT (CONT)

(1.1) Remove two screws (3.1) and catwalk (3) from frame (10).

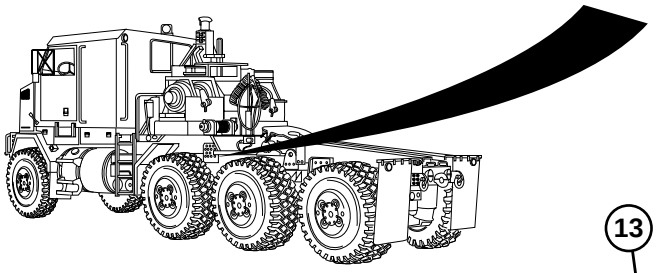


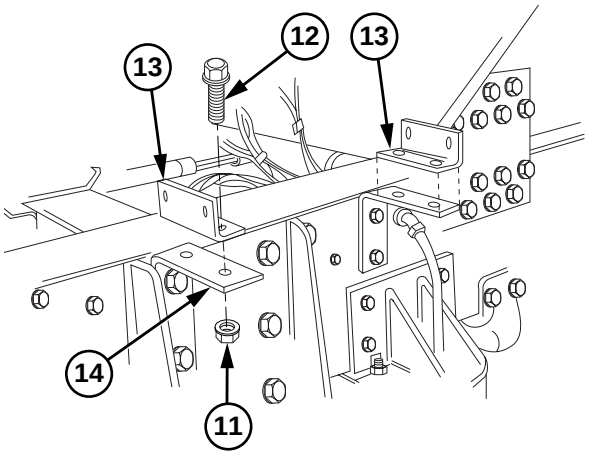
NOTE

Do steps (2) and (3) if brackets are damaged or removal is required to repair another assembly.

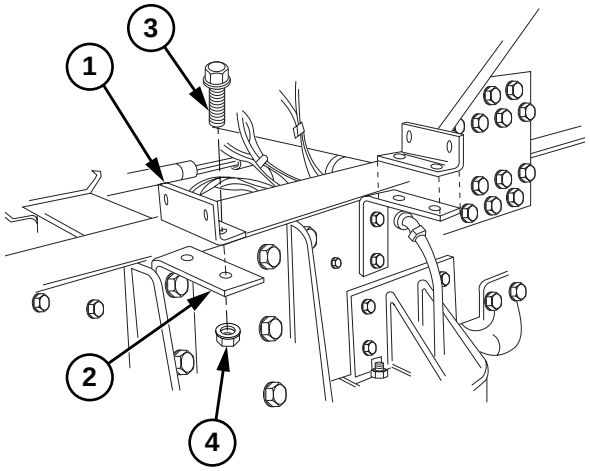
(2) Remove two locknuts (4), screw (5), screw (6), and bracket (6.1) from frame (10). Discard locknuts.

(3) Remove two locknuts (7), screws (8), bracket (8.1), and spacer (9) from frame (10). Discard locknuts.





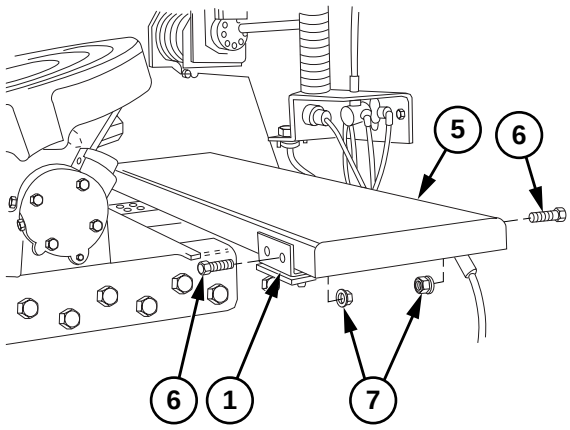
(4) Remove four locknuts (11), screws (12), and two brackets (13) from angle brackets (14). Discard locknuts.



b. Catwalk Installation

(1) Install two brackets (1) on angle brackets (2) with four screws (3) and new locknuts (4). Do not tighten.

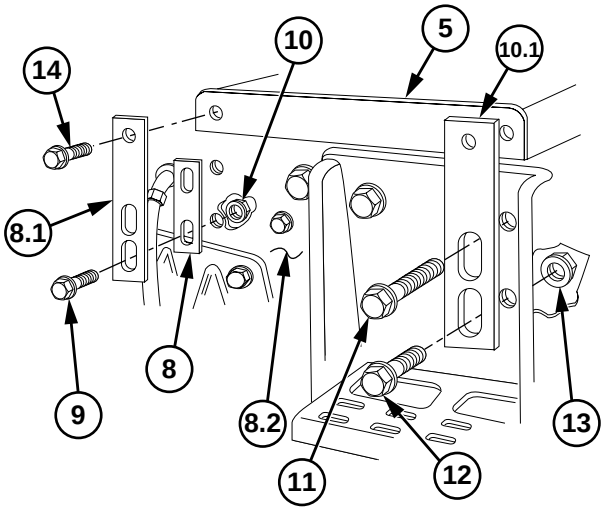
(2) Install catwalk (5) on brackets (1) with four screws (6) and new locknuts (7). Do not tighten.



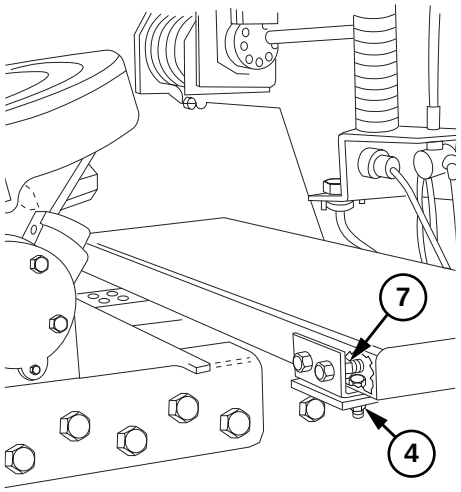
(3) Install spacer (8) and bracket (8.1) on frame (8.2) with two screws (9) and new locknuts (10).

(4) Install bracket (10.1) on frame (8.2) with screw (11), screw (12), and two new locknuts (13). Torque to 375 lb-ft (509 N·m).

(5) Install two screws (14) on catwalk (5).



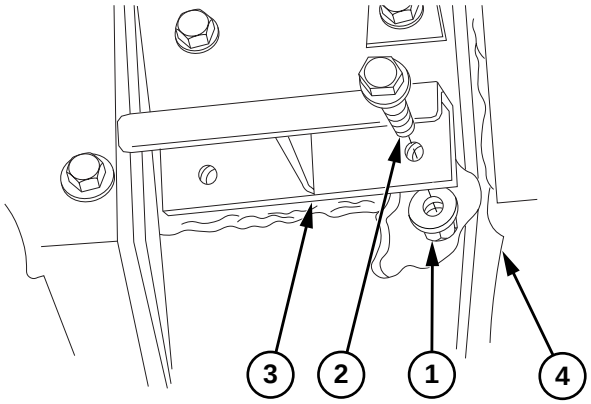
(6) Tighten eight locknuts (4 and 7) to 44 lb-ft (60 N·m).



14-5. FIFTH WHEEL CATWALK AND STEP REPLACEMENT (CONT)

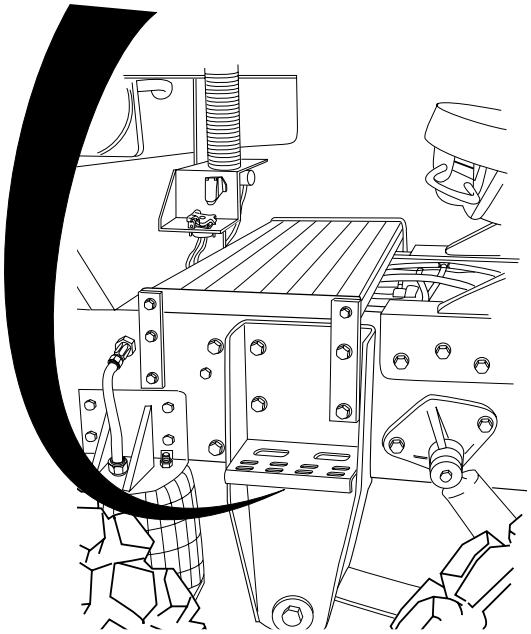
c. Step Removal

Remove two locknuts (1), screws (2), and step (3) from frame hanger (4). Discard locknuts.



d. Step Installation

Install step (3) on frame hanger (4) with two screws (2) and new locknuts (1). Torque to 375 lb-ft (509 N.m).



e. Follow-On Maintenance

Remove wheel chocks.

14-6. ALTERNATE FIFTH WHEEL MOUNTING POSITION (FOR NON-M1000 TRAILERS)

This task covers:
a. Alignment (Front to Rear)
b. Alignment (Rear to Front)
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Fifth wheel ramp extensions removed (para 14-4).

Tool and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-600 Lb-Ft (Item 74, Appendix F)

Materials/Parts
Locknuts (30) (Item 63, Appendix G)
Locknuts (8) (Item 62, Appendix G)

a. Alignment (Front to Rear)

WARNING

Fifth wheel plate must be secure before performing maintenance. Failure to do so may result in injury to personnel.

NOTE

The HET Tractor can haul a variety of trailers by moving the fifth wheel forward and rearward on the frame. This task covers aligning the fifth wheel to accept trailers other than the M1000 trailer (front to rear) and returning it to its normal position (rear to front).

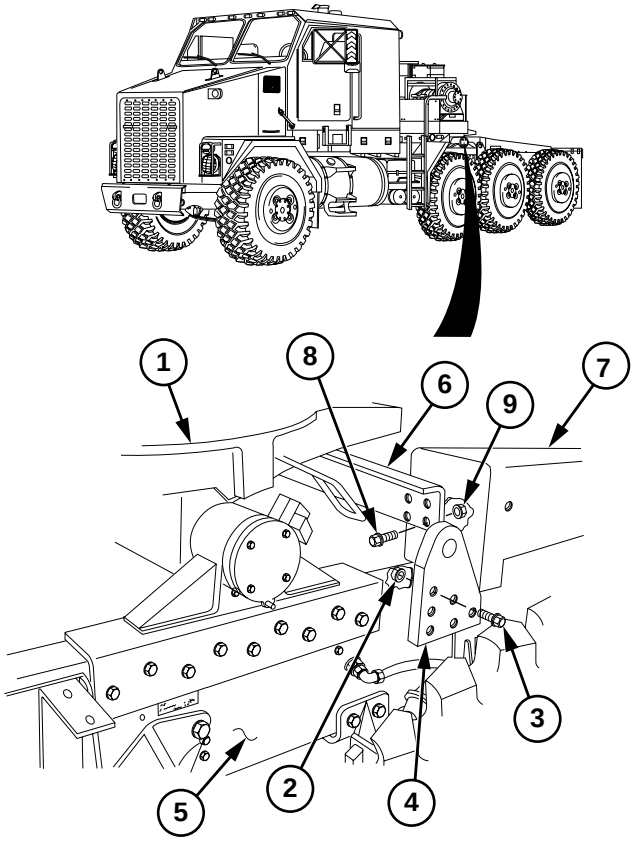
(1) Block fifth wheel (1) in a horizontal position.

(2) Remove 12 locknuts (2), screws (3), and two rear lifting lugs (4) from frame rails (5). Discard locknuts.

(3) Position rear lifting lugs (4) two holes toward rear of HET Tractor.

(4) Install 2 rear lifting lugs (4) on frame (5) with 12 screws (3) and new locknuts (2). Torque to 375 lb-ft (509 N·m).

(5) Install angle stop (6) on fifth wheel ramps (7) with eight screws (8) and new locknuts (9). Torque to 167 lb-ft (227 N·m).



14-6. ALTERNATE FIFTH WHEEL MOUNTING POSITION (FOR NON-M1000 TRAILERS) (CONT)

(6) Remove 18 locknuts (10) and screws (11) from fifth wheel (1). Discard locknuts.

(7) Attach suitable lifting device to fifth wheel (1).

(8) Remove blocks from fifth wheel (1).

WARNING

Fifth wheel weighs 925 lb (420 kg). Use suitable lifting device to prevent injury to personnel.

NOTE

Shims are on right frame rail only.

(9) Lift fifth wheel (1) 1 in. (25 mm) off frame (5) using suitable lifting device.

(10) Slide fifth wheel (1) and shim(s) (12) down two holes toward rear of HET Tractor.

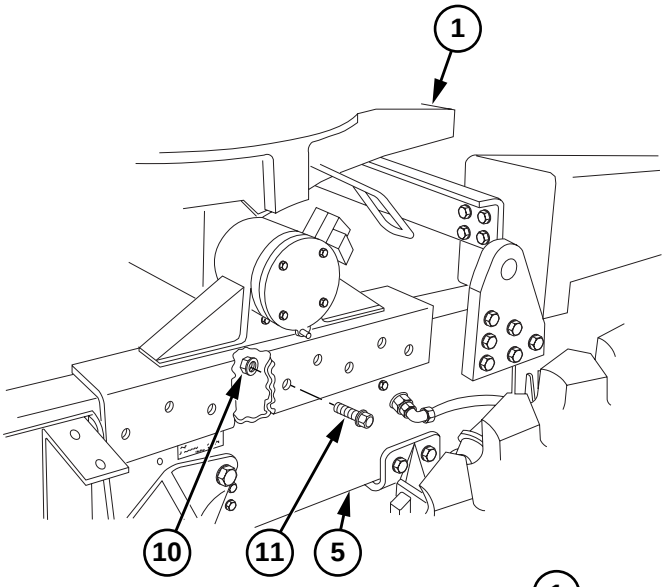
CAUTION

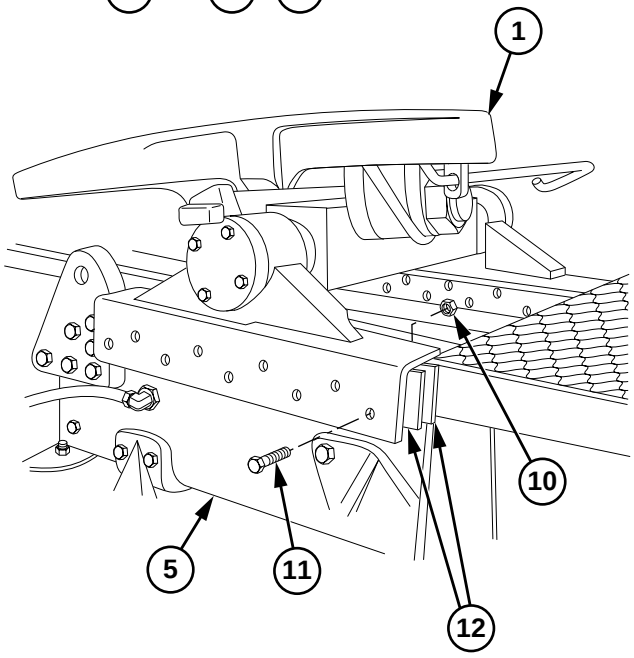
Do not add or remove shims. Failure to comply may result in damage to fifth wheel.

(11) Install fifth wheel (1) and shim(s) (12) on frame (5) with 18 screws (11) and new locknuts (10). Torque to 375 lb-ft (509 N·m).

NOTE

Store ramp extensions and mounting hardware in stowage box.





b. Alignment (Rear to Front)

WARNING

Fifth wheel plate must be secure before performing maintenance. Failure to do so may result in injury to personnel.

(1) Block fifth wheel (1) in a horizontal position.

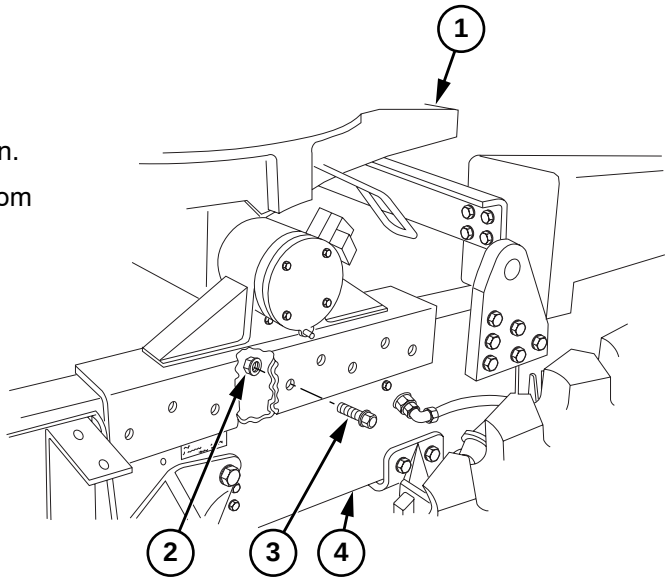
(2) Remove 18 locknuts (2) and screws (3) from fifth wheel (1). Discard locknuts.

WARNING

Fifth wheel weighs 925 lb (420 kg). Use suitable lifting device to prevent injury to personnel.

NOTE

Shims are on right frame rail only.



(3) Attach suitable lifting device to fifth wheel (1).

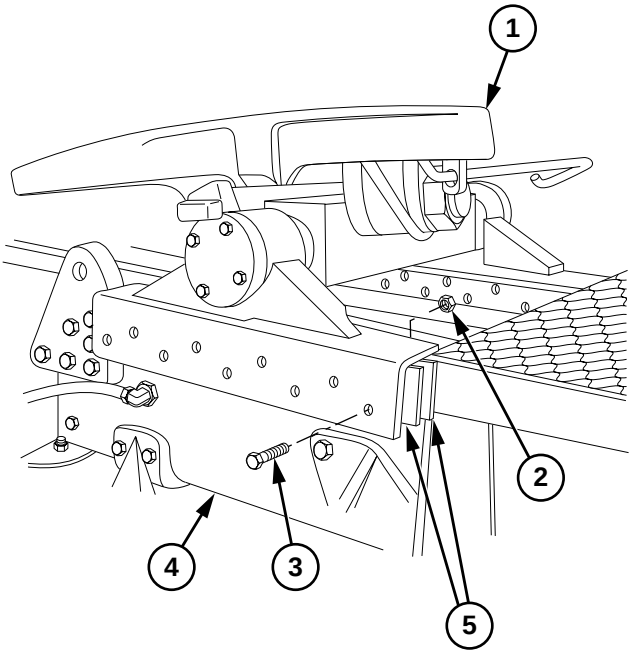
(4) Lift fifth wheel (1) 1 in. (25 mm) off frame (4) using suitable lifting device.

(5) Slide fifth wheel (1) and shims (5) forward two holes toward cab.

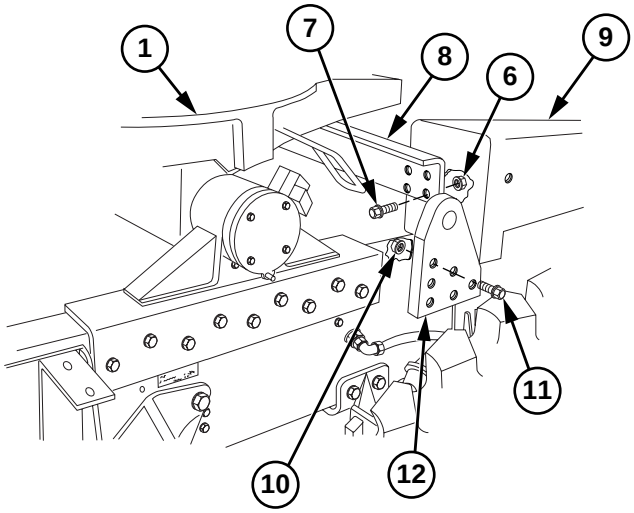
CAUTION

Do not add or remove shims. Failure to comply may result in damage to fifth wheel.

(6) Install fifth wheel (1) and shims (5) with 18 screws (3) and new locknuts (2). Torque to 375 lb-ft (509 N·m).



14-6. ALTERNATE FIFTH WHEEL MOUNTING POSITION (FOR NON-M1000 TRAILERS) (CONT)



(7) Remove eight locknuts (6), screws (7), and angle stop (8) from fifth wheel ramps (9). Discard locknuts.

(8) Remove 12 locknuts (10) and screws (11) from two rear lifting lugs (12). Discard locknuts.

(9) Position two rear lifting lugs (12) two holes toward cab.

(10) Install two rear lifting lugs (12) with 12 screws (11) and new locknuts (10). Torque to 375 lb-ft (509 N·m).

(11) Remove blocks from fifth wheel (1).

c. Follow-On Maintenance

Install fifth wheel ramp extensions (para 14-4).

14-7. FRONT AXLE STOP REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

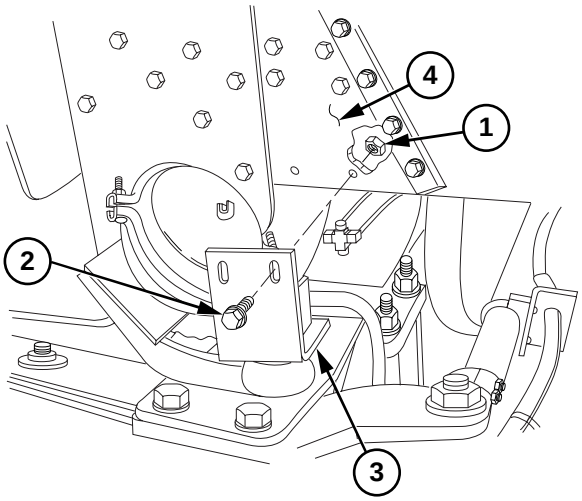
Equipment ConditionsMaterials/Parts
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Locknuts (4) (Item 62, Appendix G)
Lockwasher (Item 104, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Vise, Machinist's (Item 57, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)
Wrench, Torque, 0-600 Lb-Ft (Item 74, Appendix F)

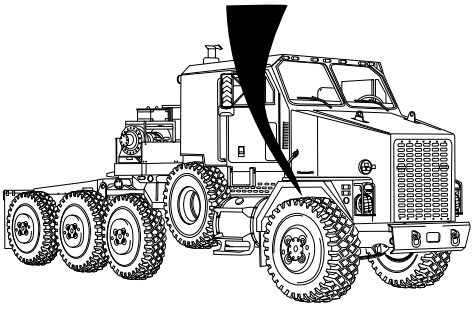
a. Removal

NOTE
Turn front wheels to gain access to axle stops.

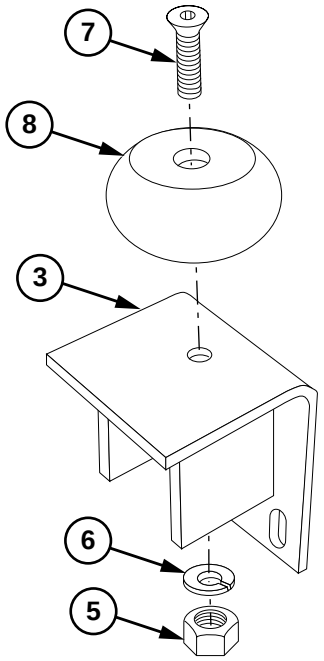
(1) Remove two locknuts (1), screws (2), and front axle stop (3) from frame (4). Discard locknuts.



TIRE REMOVED FOR CLARITY



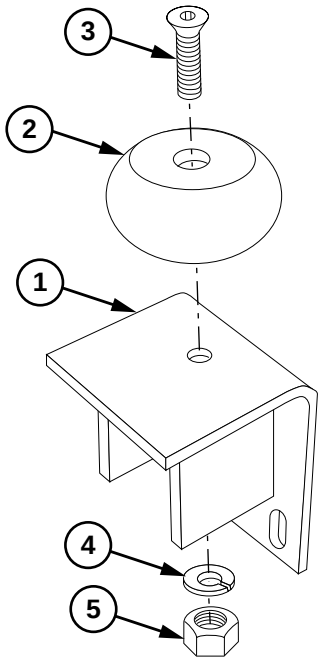
14-7. FRONT AXLE STOP REPLACEMENT (CONT)



(2) Place axle stop (3) in vise.

(3) Remove nut (5), lockwasher (6), screw (7), and cushion (8) from axle stop (3). Discard lockwasher.

(4) Remove axle stop (3) from vise.



b. Installation

(1) Place axle stop (1) in vise.

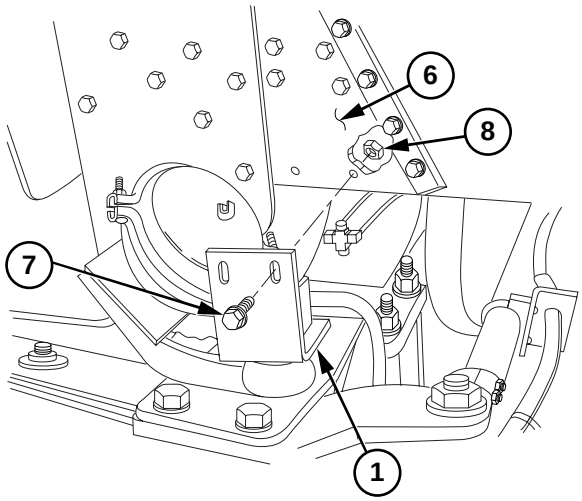
(2) Install cushion (2), screw (3), new lockwasher (4), and nut (5) on axle stop (1). Torque to 110 lb-ft (149 N·m).

CAUTION

Axle stop must be installed so that it also contacts bottom of frame. Failure to comply may result in damage to axle stop.

(3) Position axle stop (1) on frame (6).

(4) Install two screws (7) and new locknuts (8) on axle stop (1). Torque to 220 lb-ft (298 N·m).



c. Follow-On Maintenance

Remove wheel chocks.

14-8. REAR AXLE STOP REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment ConditionsMaterials/Parts
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Locknuts (2) (4 for no. 4 left stop) (Item 62, Appendix G)

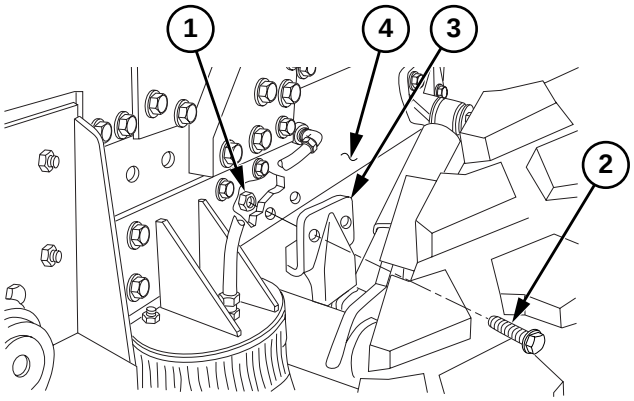
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-600 Lb-Ft (Item 74, Appendix F)

a. Removal

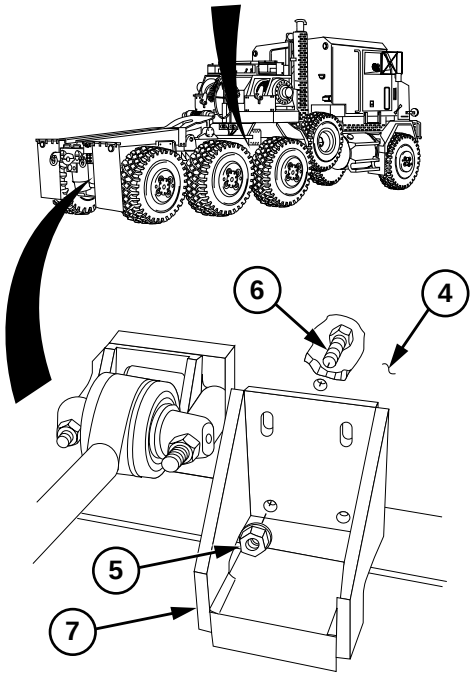
NOTE

- For all rear axle stops, except for no. 4 axle left stop, do step (1).
- For no. 4 axle left stop only, do step (2).

(1) Remove two locknuts (1), screws (2), and axle stop (3) from frame (4). Discard locknuts.



(2) Remove four locknuts (5), screws (6), and axle stop (7) from frame (4). Discard locknuts.



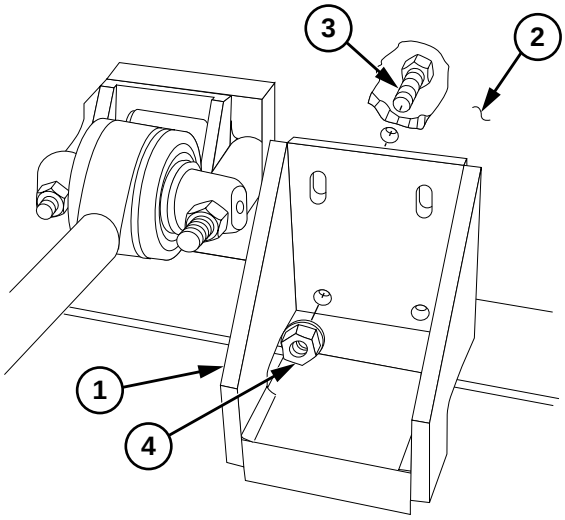
b. Installation

CAUTION

Axle stop must be installed so that it also contacts bottom of frame. Failure to comply may result in damage to axle stop.

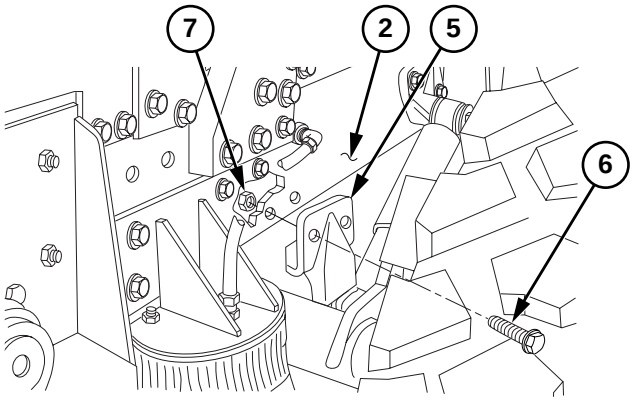
NOTE

- Do steps (1) and (2) for no. 4 axle left stop.
- Do steps (3) and (4) for all others.



(1) Position axle stop (1) on frame (2).

(2) Install four screws (3) and new locknuts (4). Torque to 220 lb-ft (298 N·m).



(3) Position axle stop (5) on frame (2).

(4) Install two screws (6) and new locknuts (7). Torque to 220 lb-ft (298 N·m).

c. Follow-On Maintenance

Remove wheel chocks.

14-9. SPARE WHEEL/TIRE CARRIER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Exhaust heat shield removed (para 5-2.1)
No. 5 air reservoir removed (para 11-23).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-600 Lb-Ft (Item 74, Appendix F)

Materials/Parts
Locknuts (7) (Item 62, Appendix G)
Locknuts (4) (Item 58, Appendix G)

Personnel Required
Two

a. Removal

(1) Remove four locknuts (1), screws (2), and two brackets (3) from spare wheel/tire carrier (4) with aid of assistant. Discard locknuts.

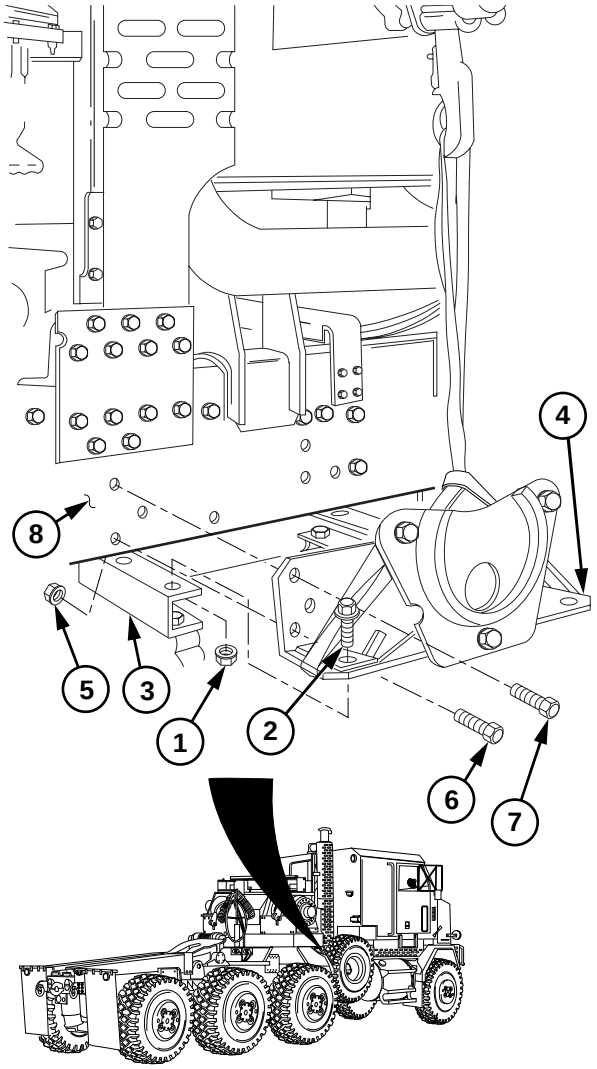
WARNING

Keep out from under spare wheel/tire carrier while supported by lifting device to prevent injury.

(2) Install suitable lifting device and support spare wheel/tire carrier (4).

(3) Remove seven locknuts (5), six screws (6), screw (7), and spare wheel/tire carrier (4) from frame (8) with aid of assistant. Discard locknuts.

(4) Remove lifting device from spare wheel/tire carrier (4).



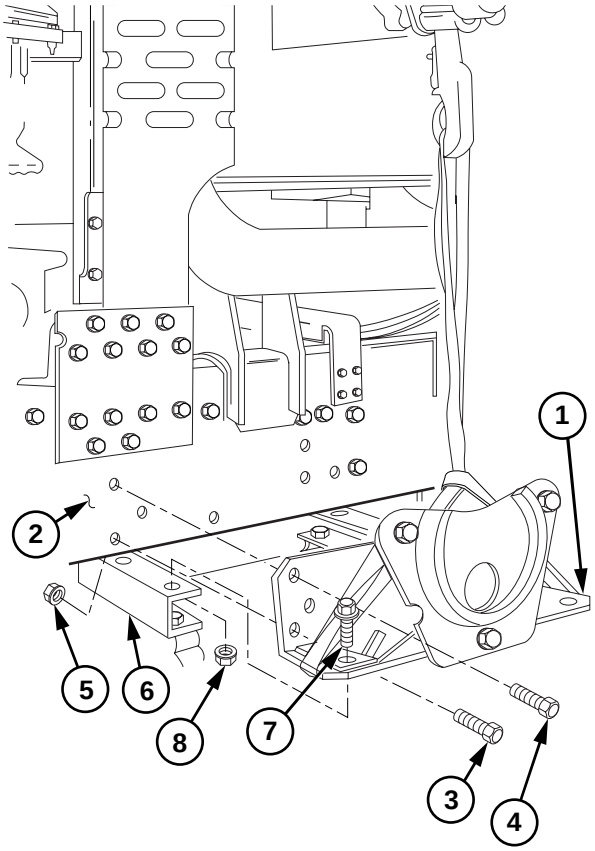
b. Installation

(1) Install suitable lifting device and support spare wheel/tire carrier (1).

(2) Install spare wheel/tire carrier (1) on frame (2) with six screws (3), screw (4), and seven new locknuts (5) with aid of assistant. Torque to 220 lb-ft (298 N·m).

(3) Remove lifting device from spare wheel/tire carrier (1).

(4) Install two brackets (6) on spare wheel/tire carrier (1) with four screws (7) and new locknuts (8).



c. Follow-On Maintenance

(1) Install no. 5 air reservoir (para 11-23).

(2) Install exhaust heat shield (para 5-2.1).

14-10. TIRE DAVIT REPAIR

This task covers:
- a. Removal
- b. Disassembly
- c. Assembly
- c. Installation
- e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Adhesive-Sealant, Silicone (Item 3, Appendix C)
Locknuts (8) (Item 65, Appendix G)
Locknuts (3) (Item 58, Appendix G)

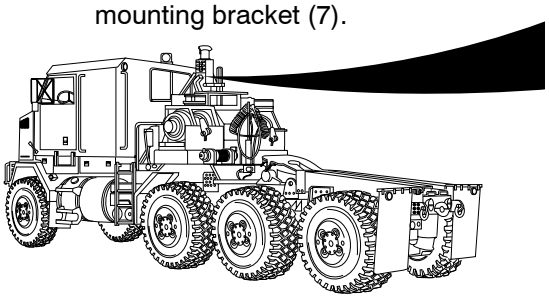
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Vise, Machinist's (Item 57, Appendix F)

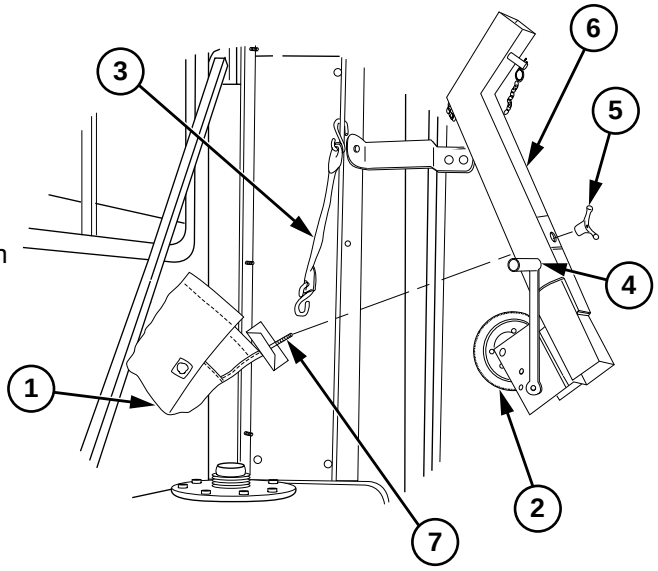
a. Removal

(1) Remove boot (1) from winch (2).

(2) Remove rubber strap (3) from handcrank (4).

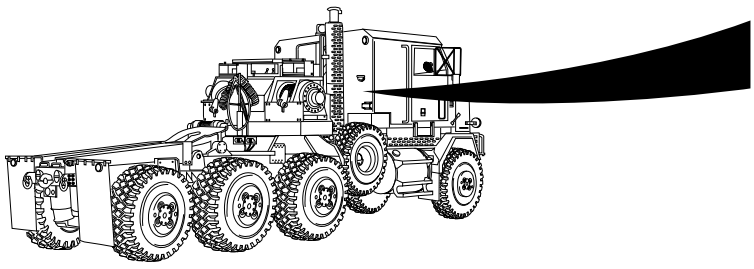
(3) Remove T-handle (5) and tire davit (6) from mounting bracket (7).

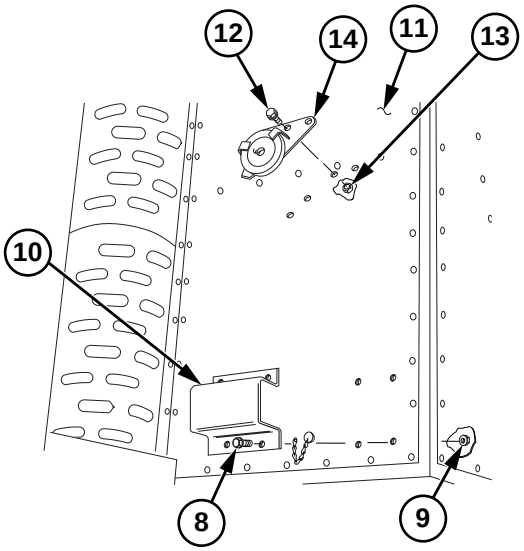




(4) Remove four screws (8), locknuts (9), and tire lift bracket (10) from cab (11) with aid of assistant. Discard locknuts.

(5) Remove four screws (12), locknuts (13), and tire lift pulley (14) from cab (11) with aid of assistant. Discard locknuts.





b. Disassembly

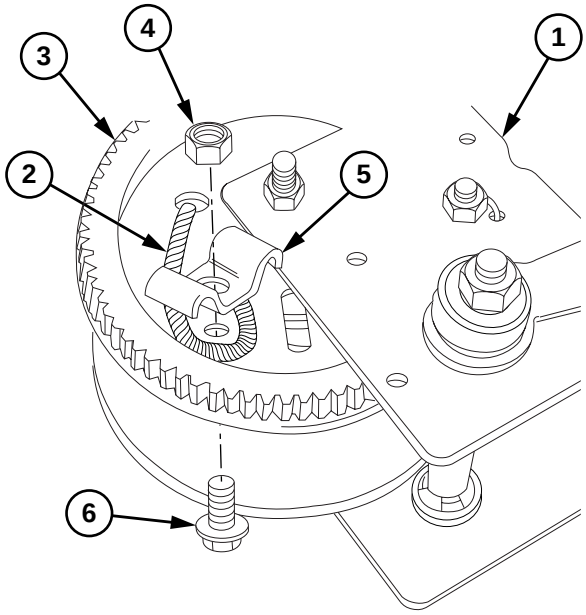
(1) Place tire davit (1) in vise.

WARNING

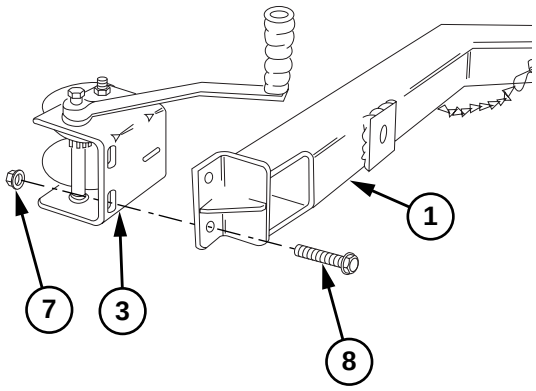
Always wear heavy duty gloves when handling winch cable. Never let cable run through hands. Frayed cable can cut hands severely.

(2) Unwind wire rope (2) from winch (3).

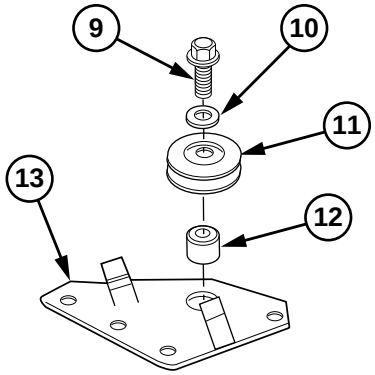
(3) Remove nut (4), clamp (5), wire rope (2), and screw (6) from winch (3).



(4) Remove three locknuts (7), screws (8), and winch (3) from tire davit (1). Discard locknuts.



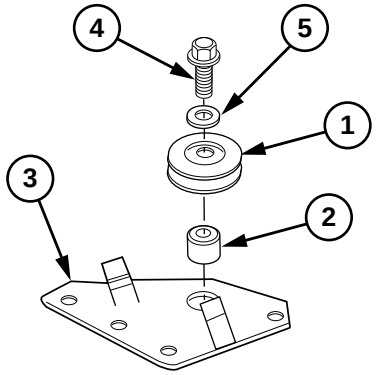
(5) Remove screw (9), washer (10), tire lift pulley (11), and tire lift tube (12) from plate (13).



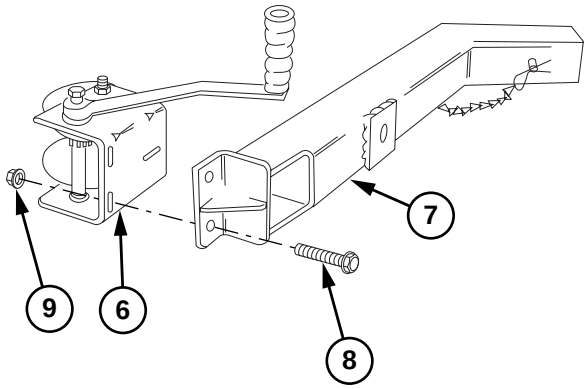
14-10. TIRE DAVIT REPAIR (CONT)

c. Assembly

(1) Install tire lift pulley (1) and tire lift tube (2) on plate (3) with screw (4) and washer (5).



(2) Install winch (6) on tire davit (7) with three screws (8) and new locknuts (9).



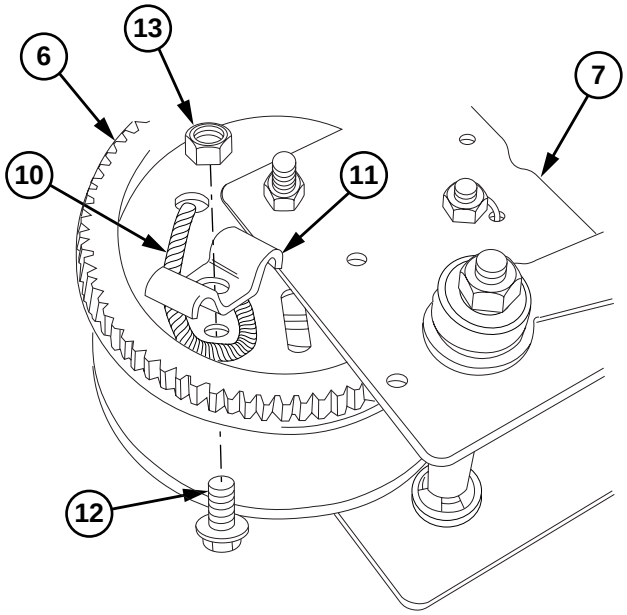
NOTE

Wire rope is installed through inside of spool.

(3) Install wire rope (10) and clamp (11) on winch (6) with screw (12) and nut (13).

(4) Wind wire rope (10) on winch (6).

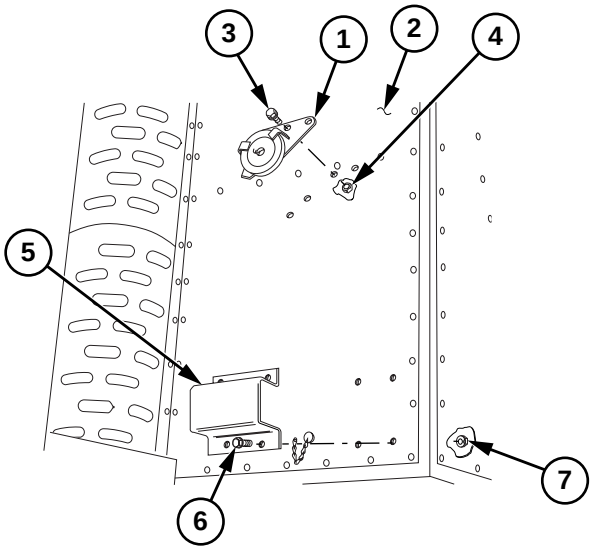
(5) Remove tire davit (7) from vise.



d. Installation

WARNING

On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.



(1) Coat mounting surface of tire lift pulley (1) with silicone adhesive-sealant.

(1.1) Install tire lift pulley (1) on cab (2) with four screws (3) and new locknuts (4) with aid of assistant.

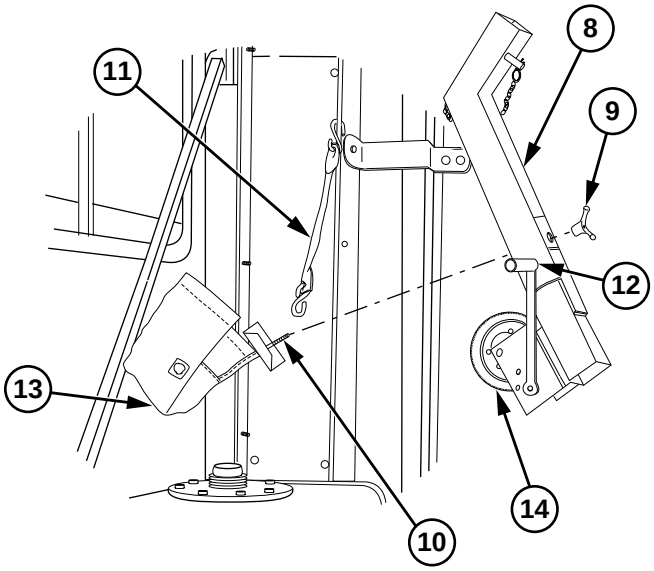
(1.2) Coat mounting surface of tire lift bracket (5) with silicone adhesive-sealant.

(2) Install tire lift bracket (5) on cab (2) with four screws (6) and new locknuts (7) with aid of assistant.

(3) Install tire davit (8) and T-handle (9) on mounting bracket (10).

(4) Hook rubber strap (11) on handcrank (12).

(5) Install boot (13) on winch (14).



e. Follow-On Maintenance

Remove wheel chocks.

14-11. FRONT BUMPER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment ConditionsMaterials/Parts
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Pins, Cotter (2) (Item 152, Appendix G)

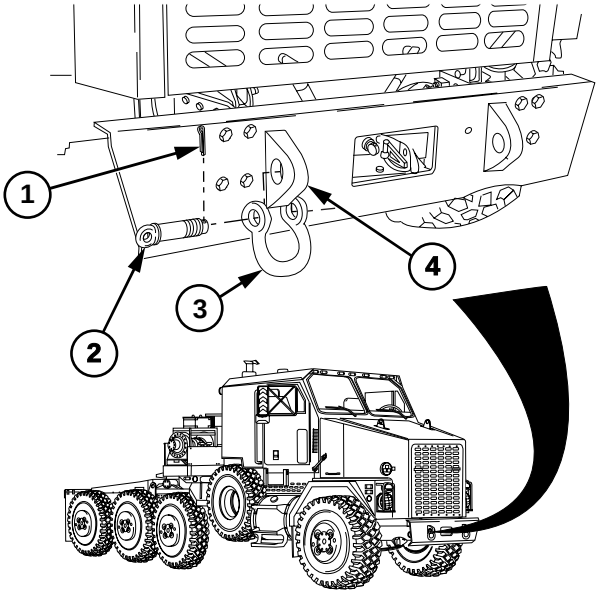
Personnel Required
Two

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Socket Wrench Set, 3/4 In. Drive (Item 46, Appendix F)
Wrench, Torque, 0-600 Lb-Ft (Item 74, Appendix F)

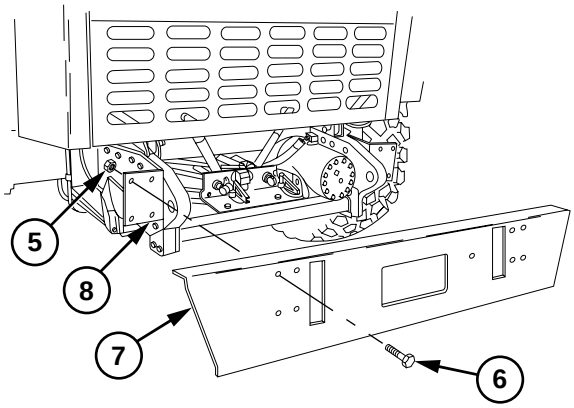
a. Removal

(1) Remove two cotter pins (1) from pins (2). Discard cotter pins.

(2) Remove two pins (2) and towing shackles (3) from front tow eyes (4).

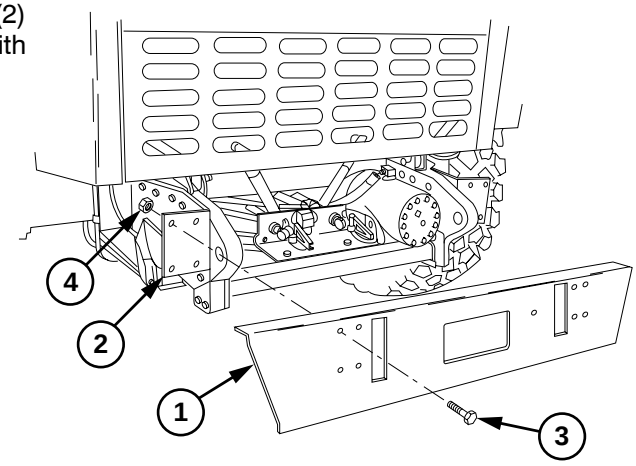


(3) Remove eight nuts (5), screws (6), and front bumper (7) from drop frames (8) with aid of assistant.



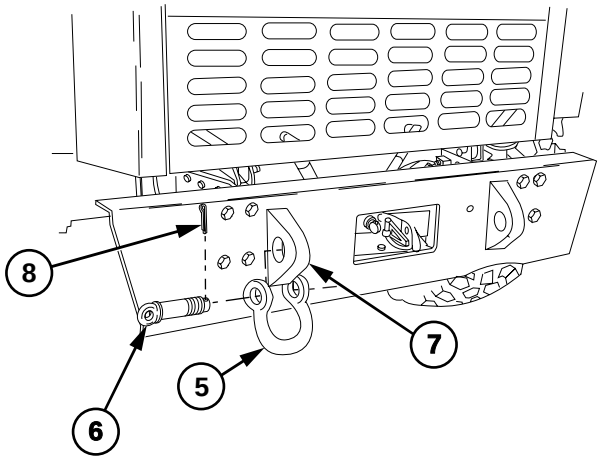
b. Installation

(1) Position front bumper (1) on drop frames (2) and install eight screws (3) and nuts (4) with aid of assistant. Torque to 220 lb-ft (298 N·m).



(2) Install two towing shackles (5) and pins (6) on front tow eyes (7).

(3) Install two new cotter pins (8) in pins (6).



c. Follow-On Maintenance

Remove wheel chocks.

PARAGRAPHS 14-12 AND 14-13 DELETED

All data on pages 14-32 thru 14-36 deleted.

CHAPTER 15
SUSPENSION MAINTENANCE

Contents **Para** **Page**

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Shock Absorber Replacement 15-3 15-6
Ride Height Adjustment 15-4 15-10
Height Control Valve Replacement 15-5 15-12
Shock Absorber Bracket Replacement 15-6 15-16

Section I. INTRODUCTION

15-1. INTRODUCTION

This chapter contains instructions for adjustment and replacement of suspension components at the Unit maintenance level. Some subassemblies and parts must be removed before suspension components can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

15-2. AIR SPRING REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Block, Wooden (Figure D-19, Appendix D)
Plug, Limp Home (Item 29, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Lockwashers (4) (Item 111, Appendix G)

WARNING

Do not attempt to inflate air spring when it is removed from vehicle. Failure to comply may result in serious injury to personnel.

NOTE

All six air springs are replaced the same way. Axle no. 4 right side is shown.

a. Removal

WARNING

- **Air suspension system may still be pressurized even though air pressure gage reads 0 psi. Remove air line slowly to allow air to escape. Failure to comply may result in air line blowing off causing serious injury to personnel.**
- **Air suspension will drop when air line is removed. Stay clear of suspension. Failure to comply may result in serious injury to personnel**

(1) Remove air line (1) from fitting (2) on air spring (3).

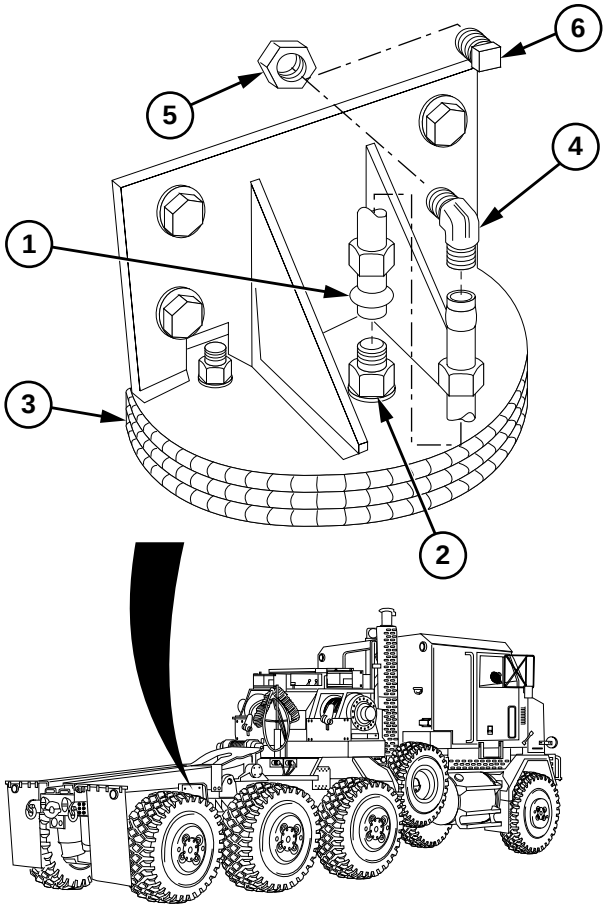
NOTE

If air line has been plugged by operator, go to step (5).

(2) Remove air line (1) from elbow (4).

(3) Remove elbow (4) from fitting (5).

(4) Install plug (6) in fitting (5).



(5) Start engine (TM 9-2320-360-10).

(6) Build air pressure to 120-125 psi (826-867 kPa).

(7) Shut off engine (TM 9-2320-360-10).

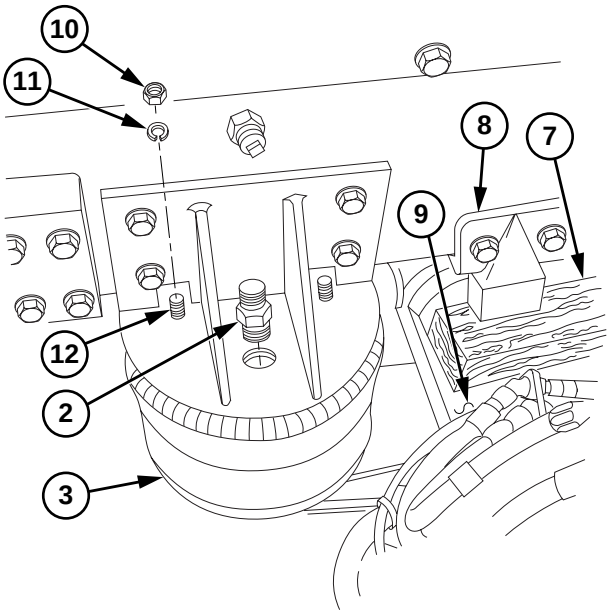
WARNING

Wooden block must be positioned between axle stop and axle housing to support axle in case of air suspension failure. Failure to comply may result in injury to personnel.

(8) Position wooden block (7) between axle stop (8) and axle housing (9).

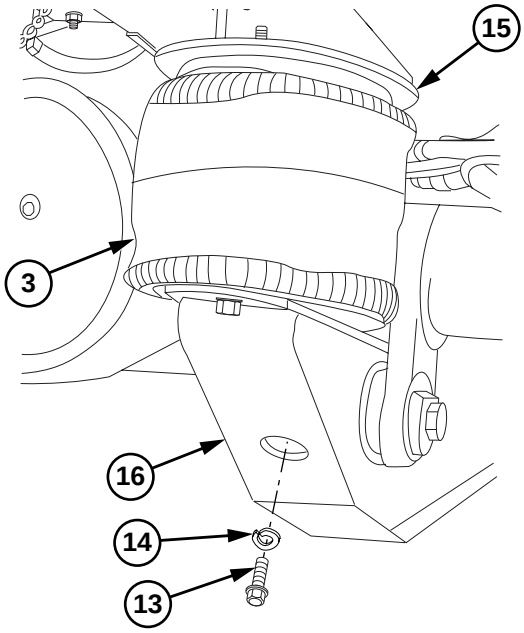
(9) Remove fitting (2) from air spring (3).

(10) Remove two nuts (10) and lockwashers (11) from studs (12). Discard lockwashers.



(11) Remove two screws (13) and lockwashers (14) from air spring (3). Discard lockwashers.

(12) Remove air spring (3) from spring plate (15) and suspension arm (16).



15-2. AIR SPRING REPLACEMENT (CONT)

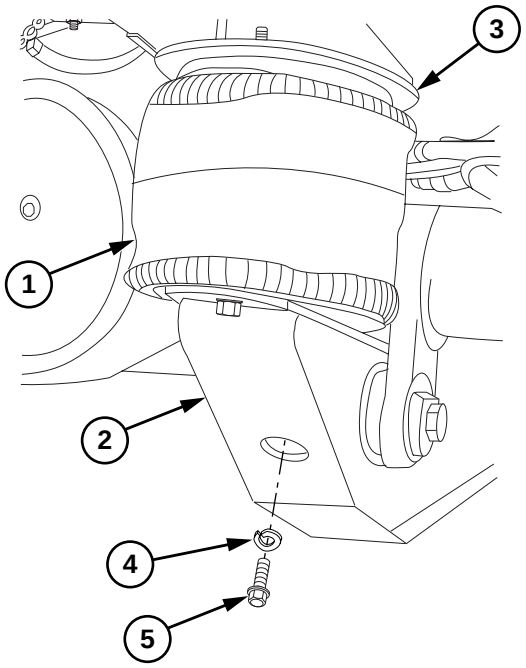
b. Installation

NOTE

Hole in top of air spring should be positioned under hole in air spring bracket.

(1) Position air spring (1) between suspension arm (2) and air spring plate (3).

(2) Install two new lockwashers (4) and screws (5) on air spring (1) and suspension arm (2). Torque to 50 lb-ft (68 N·m).



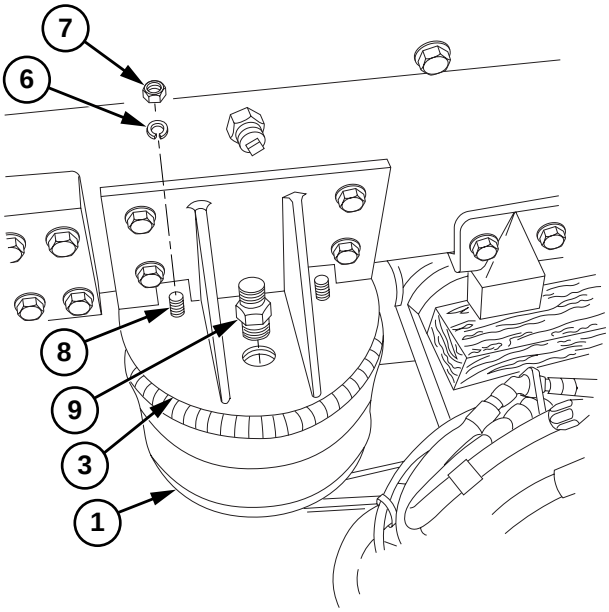
(3) Install two new lockwashers (6) and nuts (7) on studs (8) and air spring plate (3). Torque to 25 lb-ft (34 N·m).

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep compound away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

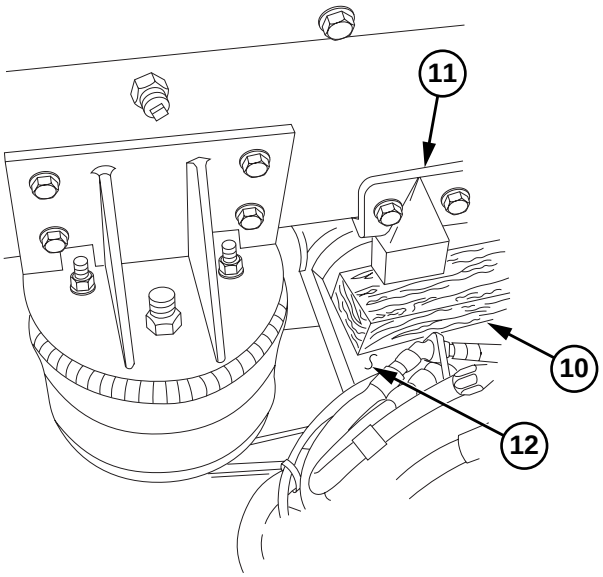
(4) Coat threads of fitting (9) with pipe thread sealing compound.

(5) Install fitting (9) on air spring (1).



(6) Remove wooden block (10) from between axle stop (11) and axle housing (12).

(7) Drain air system (TM 9-2320-360-10).



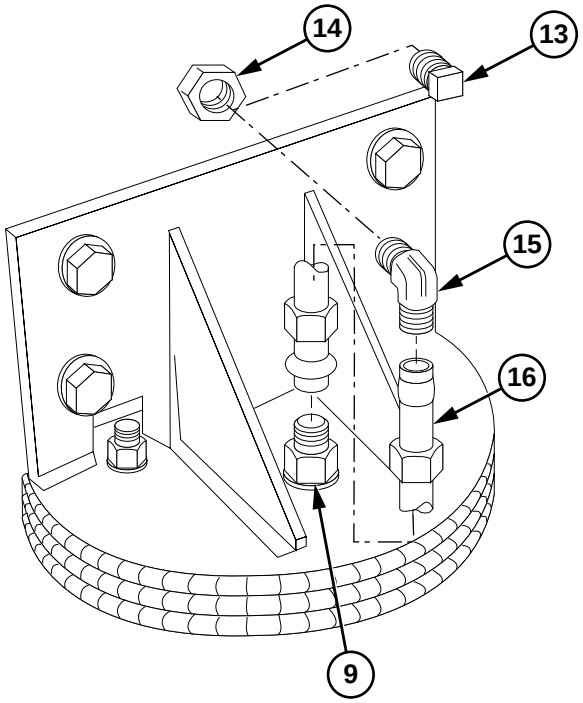
WARNING

- **Air suspension system may still be pressurized even though air pressure gage reads 0 psi. Remove air line plug slowly to allow air to escape. Failure to comply will result in air line plug blowing off causing serious injury to personnel.**
- **Air suspension will drop when air line is removed. Stay clear of suspension. Failure to comply may result in serious injury to personnel.**

(8) Remove plug (13) from fitting (14).

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep compound away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.



(9) Coat threads of elbow (15) with pipe thread sealing compound.

(10) Install elbow (15) on fitting (14).

(11) Install hose (16) on elbow (15).

(12) Install hose (16) on fitting (9).

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build air pressure to 120-125 psi (827-862 kPa) (TM 9-2320-360-10).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check air springs for leaks.

(5) Remove wheel chocks.

15-3. SHOCK ABSORBER REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Socket Wrench Set, 3/4 In. (Item 46, Appendix F)
Wrench, Torque, 0-600 Lb-Ft (Item 74, Appendix F)

Materials/Parts
Adhesive-Sealant (Item 5, Appendix C)
Locknuts (5) (Item 55, Appendix G)
Locknut (Item 63, Appendix G)

a. No. 1 Axle Shock Absorber Removal

NOTE
Right and left shock absorbers are replaced the same way.

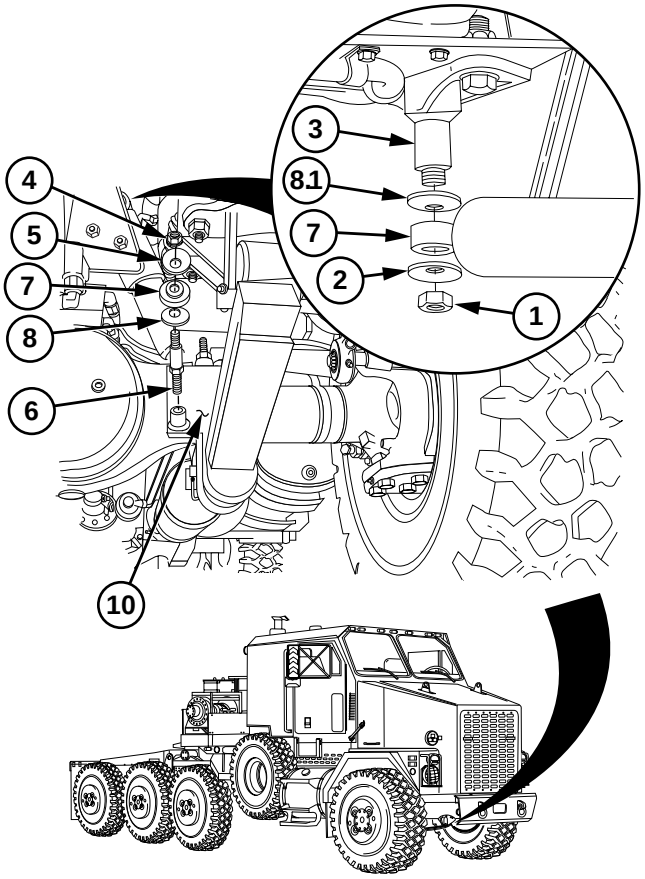
(1) Remove locknut (1) and washer (2) from stud (3). Discard locknut.

(2) Remove locknut (4) and washer (5) from mounting pin (6). Discard locknut.

(3) Remove shock absorber (7) from stud (3) and mounting pin (6).

(4) Remove washer (8) from mounting pin (6) and washer (8.1) from stud (3).

(5) Remove mounting pin (6) from axle housing (10).



b. No. 1 Axle Shock Absorber Installation

WARNING

Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of mounting pin (2) with adhesive-sealant.

(1.1) Install mounting pin (2) in axle housing (2.1).

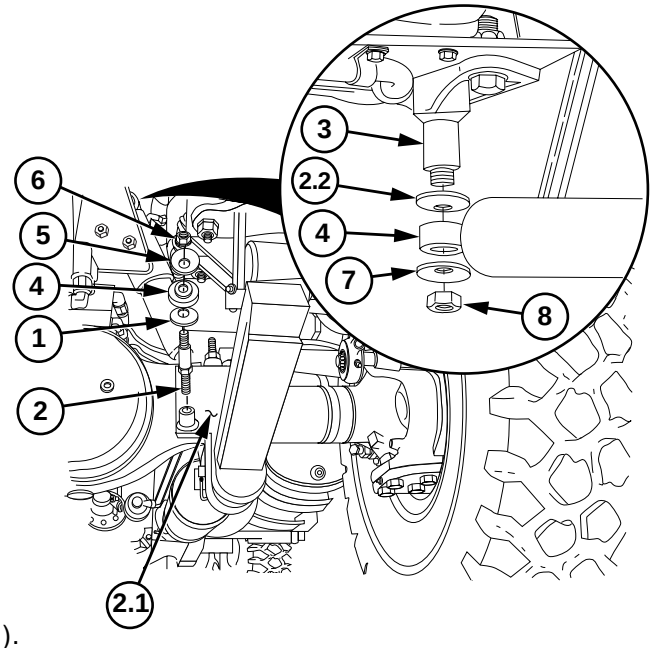
(1.2) Install washer (1) on mounting pin (2).

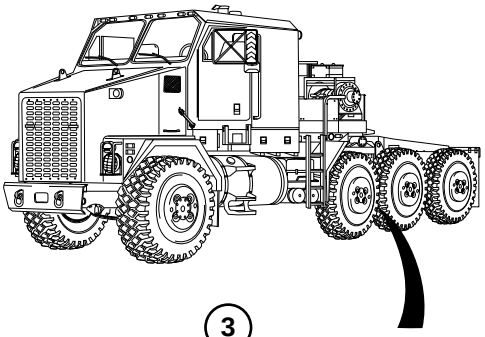
(1.3) Install washer (2.2) on stud (3).

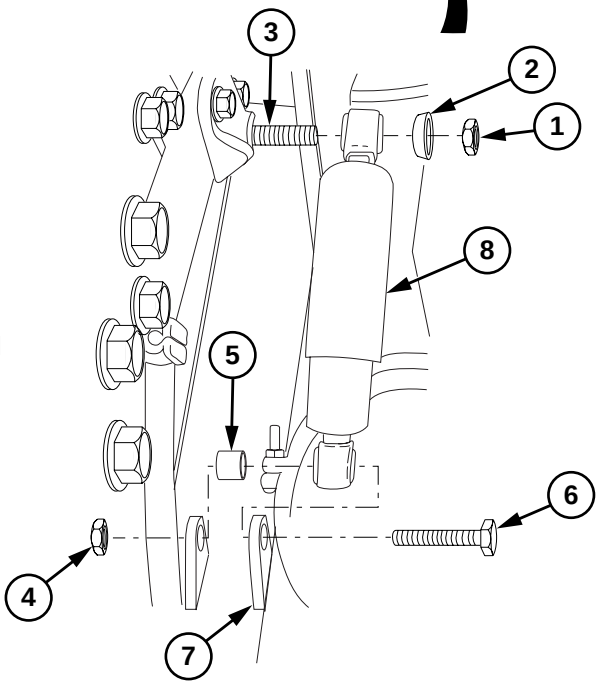
(2) Install shock absorber (4) on mounting pin (2) and stud (3).

(3) Install washer (5) and new locknut (6) on mounting pin (2). Torque to 170 lb-ft (230 N·m).

(4) Install washer (7) and new locknut (8) on stud (3). Torque to 170 lb-ft (230 N·m).







c. No. 2 and No. 3 Axles Shock Absorber Removal

(1) Remove locknut (1) and washer (2) from stud (3). Discard locknut.

(2) Remove locknut (4), bushing (5), and screw (6) from suspension beam (7). Discard locknut.

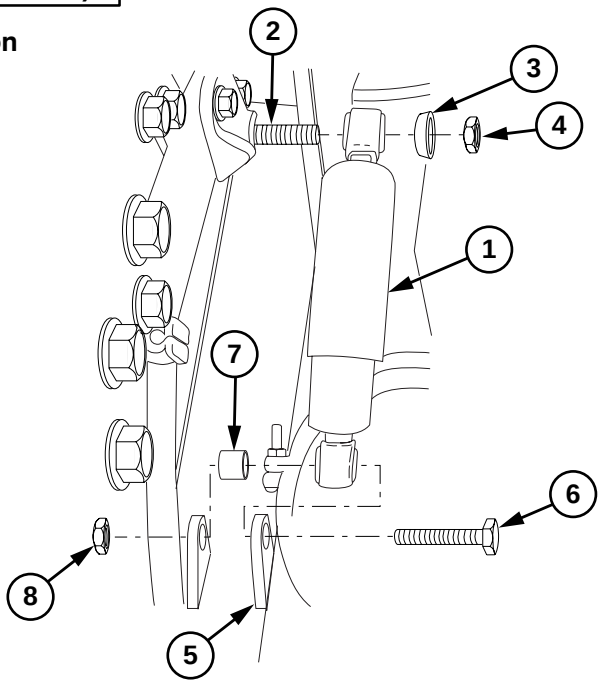
(3) Remove shock absorber (8) from stud (3) and suspension beam (7).

15-3. SHOCK ABSORBER REPLACEMENT (CONT)

d. No. 2 and No. 3 Axles Shock Absorber Installation

(1) Install shock absorber (1) on stud (2) with washer (3) and new locknut (4). Torque to 170 lb-ft (230 N·m).

(2) Install shock absorber (1) on suspension beam (5) with screw (6), bushing (7), and new locknut (8). Torque to 170 lb-ft (230 N·m).



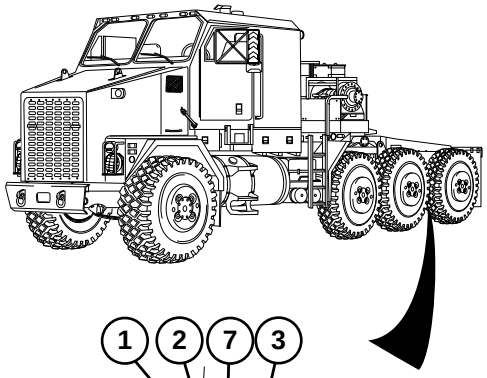
e. No. 4 Axle Shock Absorber Removal

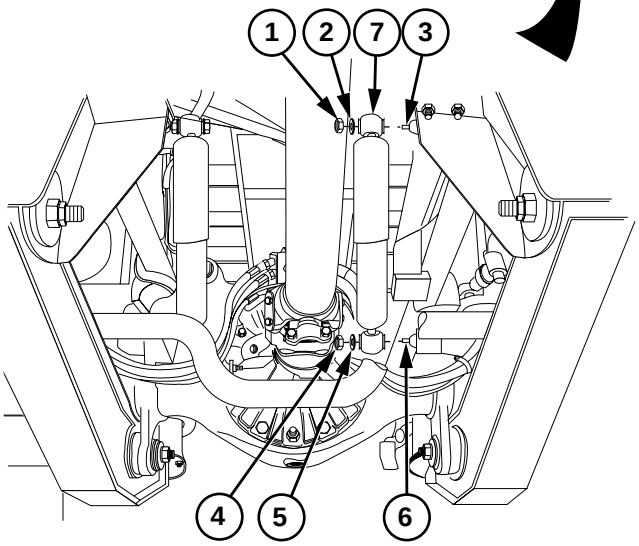
(1) Remove locknut (1) and washer (2) from stud (3). Discard locknut.

(2) Remove locknut (4) and washer (5) from stud (6). Discard locknut.

(3) Remove shock absorber (7) from stud (3) and stud (6).

(4) Deleted.





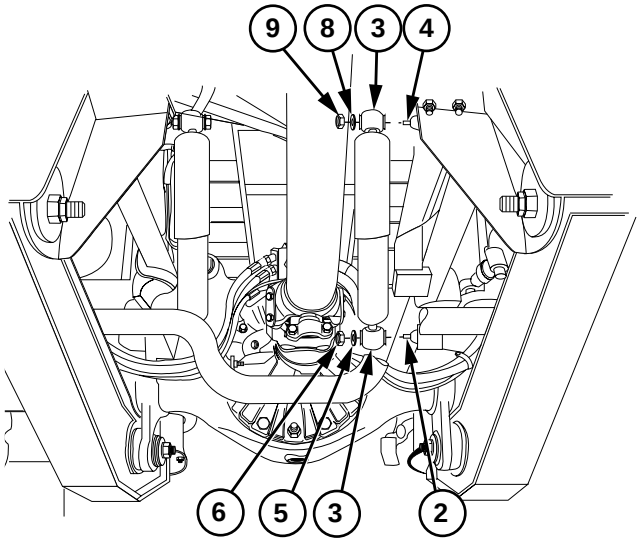
f. No. 4 Axle Shock Absorber Installation

(1) Deleted.

(2) Install shock absorber (3) on stud (2) and stud (4).

(3) Install washer (5) and new locknut (6) on stud (2). Torque to 170 lb-ft (230 N·m).

(4) Install washer (8) and new locknut (9) on stud (4). Torque to 170 lb-ft (230 N·m).



g. Follow-On Maintenance

Remove wheel chocks.

15-4. RIDE HEIGHT ADJUSTMENT

This task covers:
a. Adjustment
b. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
HET Tractor parked on hard, level surface.
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system pressurized to 120-125 psi (827-862 kPa).

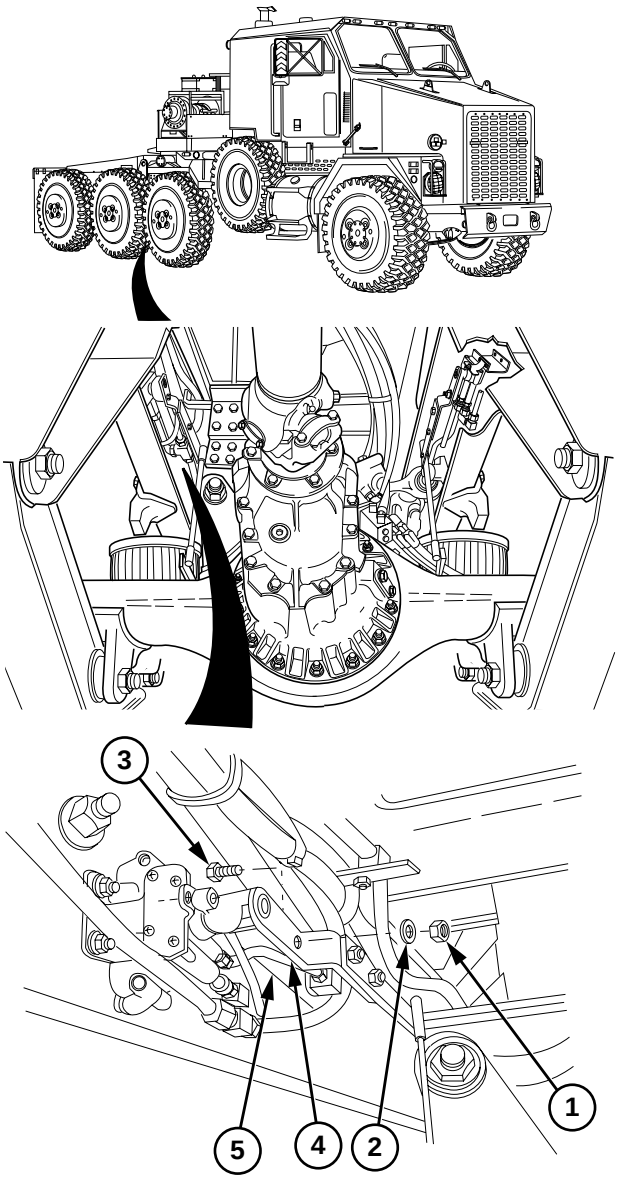
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Drill Set, Twist (Item 9, Appendix F)

Materials/Parts
Locknuts (2) (Item 72, Appendix G)
Lockwashers (2) (Item 100, Appendix G)

a. Adjustment

NOTE

- Due to characteristics of air spring suspension, allow 5 minutes for suspension to stabilize before beginning adjustment.
- Do not attempt adjustment if difference between bottom of frame and ground is less than 1.5 in. (38.1 mm) from side to side.
- Trailer must be disconnected from HET Tractor when setting ride height adjustment.
- Air pressure must be at least 65 psi (450 kPa) for air ride system to function.
- Both ride height valves are adjusted the same way. Right valve is shown.



(1) Remove locknut (1), washer (2), and screw (3) from valve lever arm (4). Discard locknut.

NOTE

Correct ride height is 9 in. (23 cm) measured from top of no. 3 axle to bottom of frame rail.

(2) Push valve (5) up to raise or down to lower ride height.

NOTE

Locating hole in lever arm should line up with corresponding hole in valve mounting bracket.

(3) Insert 3/16 in. twist drill (6) through locating hole in valve lever arm (4) and corresponding hole in mounting bracket (7).

CAUTION

Valve lever arm must be positioned over pin on end of valve assembly.

NOTE

Do steps (5) thru (9) only if screw cannot be installed in step (4).

(4) Install screw (3), washer (2), and new locknut (1) on valve lever arm (4).

(5) Remove nut (8), lockwasher (9), and upper ball joint (10) from valve lever arm (4). Discard lockwasher.

(6) Loosen two jamnuts (11) from ball joints (10) on adjusting rod (12).

NOTE

Center rod between ball joints. Use amount of thread visible on rod as a guide.

(7) Turn rod (12) and upper ball joint (10) clockwise to shorten linkage or counterclockwise to lengthen linkage.

(8) Install upper ball joint (10) on valve lever arm (4) with new lockwasher (9) and nut (8).

(9) Tighten two jamnuts (11) on adjusting rod (12).

CAUTION

Damage to height control valve and linkage may occur if twist drill is not removed before suspension is allowed to move.

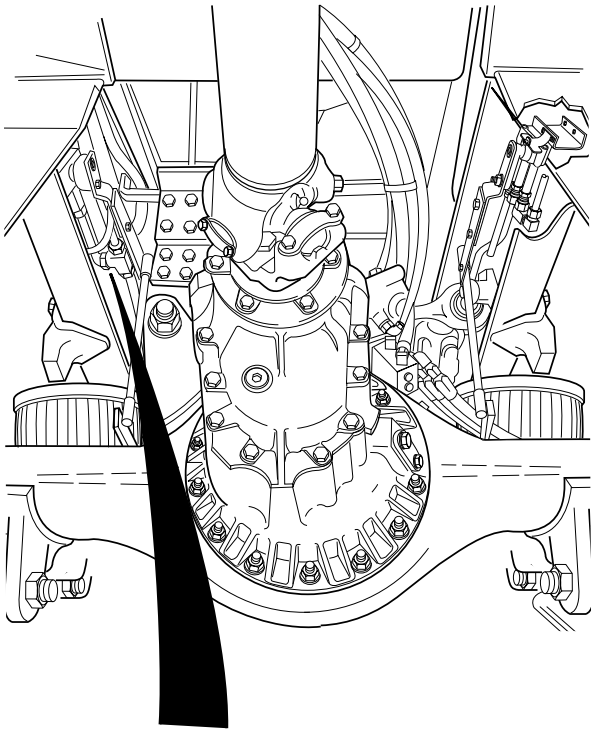
(10) Remove 3/16 in. twist drill (6) from valve lever arm (4).

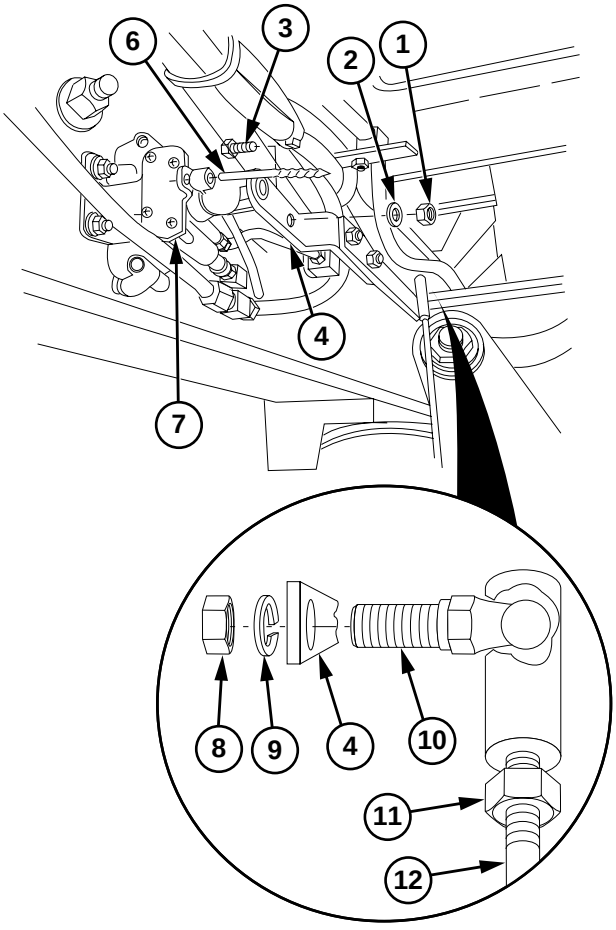
(11) Remove wheel chocks and drive HET Tractor several miles. Recheck ride height for 9 $\pm$0.31 in. (23 $\pm$0.8 cm).

(12) Repeat steps (1) thru (11) if necessary to establish correct ride height.

b. Follow-On Maintenance

Remove wheel chocks.





15-5. HEIGHT CONTROL VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (8) (Item 72, Appendix G)
Lockwasher (Item 100, Appendix G)

a. Removal

(1) Remove nut (1), lockwasher (2), and ball joint (3) from valve lever arm (4). Discard lockwasher.

WARNING

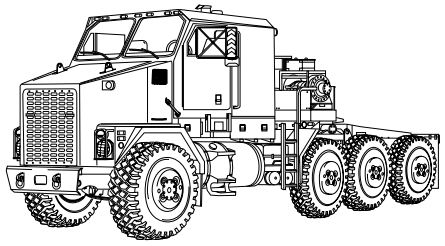
- **Air suspension system may still be pressurized even though air pressure gage reads 0 psi. Remove air line slowly to allow air to escape. Failure to comply may result in air line blowing off causing injury to personnel.**
- **Air suspension will lower when air line is removed. Stay clear of suspension. Failure to comply may result in injury to personnel.**

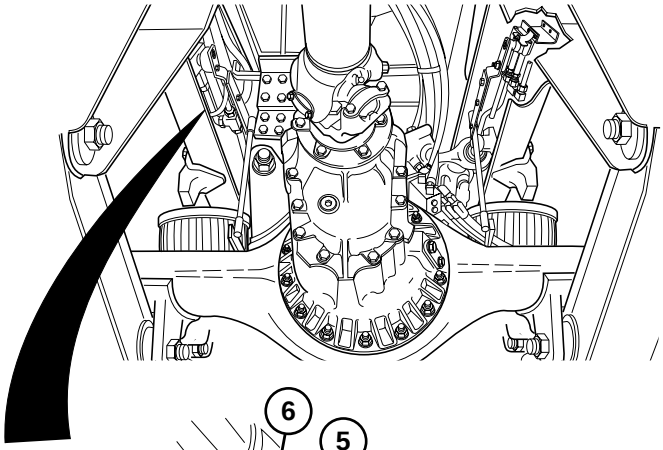
NOTE

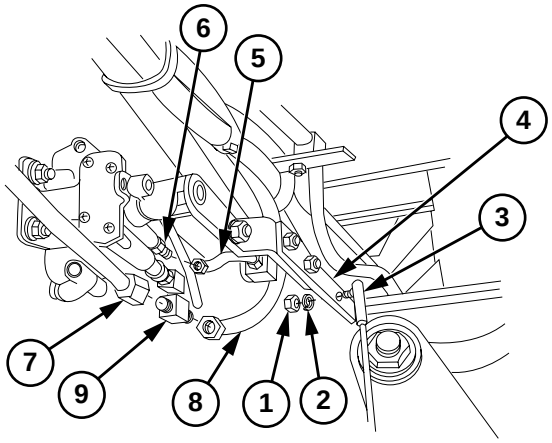
- Tag and mark hoses before removal.
- Do steps (2) and (3) when removing right height control valve. Do steps (4) and (5) when removing left height control valve.

(2) Remove hose no. 2044 (5) from fitting (6).

(3) Remove hose no. 2042 (7) and hose no. 2041 (8) from tee (9).







RIGHT VALVE

(4) Remove hose no. 1040 (10) from fitting (11).

(5) Remove hose no. 2042 (12) from elbow (13).

NOTE

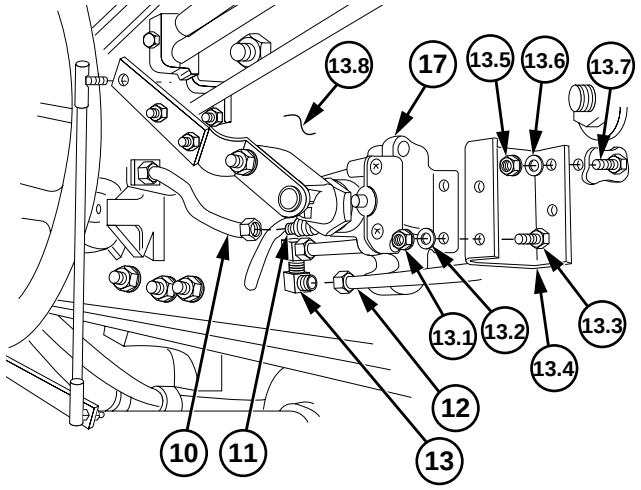
Do step (5.1) when removing left height control valve. Do step (6) when removing right height control valve.

(5.1) Remove two locknuts (13.1), washers (13.2), screws (13.3), and left height control valve (17) from bracket (13.4).

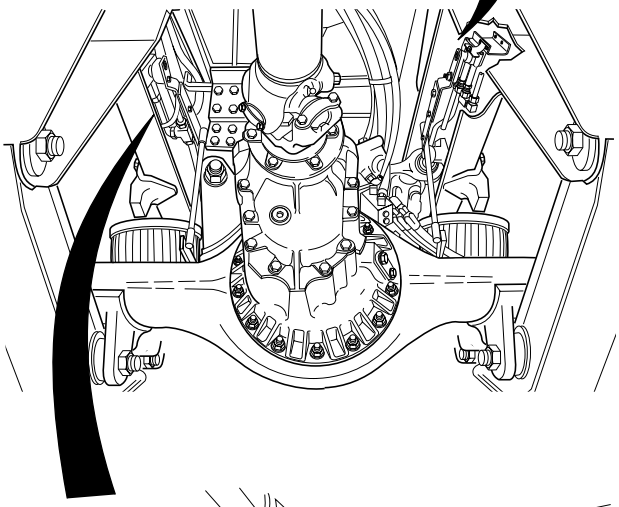
NOTE

If bracket is damaged, do step (5.2) for left height control valve.

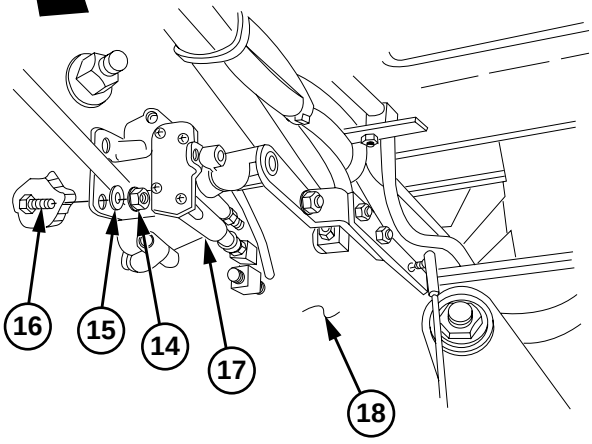
(5.2) Remove two locknuts (13.5), washers (13.6), screws (13.7), and bracket (13.4) from frame (13.8). Discard locknuts.



LEFT VALVE



(6) Remove two locknuts (14), washers (15), screws (16), and right height control valve (17) from frame (18). Discard locknuts.



RIGHT VALVE

15-5. HEIGHT CONTROL VALVE REPLACEMENT (CONT)

(7) Remove fitting (6 or 11) from height control valve (17).

NOTE

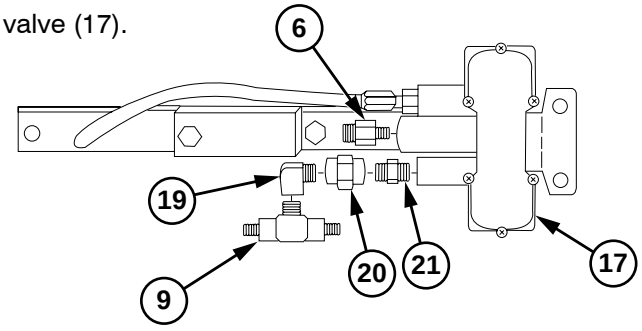
Do step (8) when removing right height control valve. Do step (9) when removing left height control valve.

(8) Remove tee (9) from elbow (19).

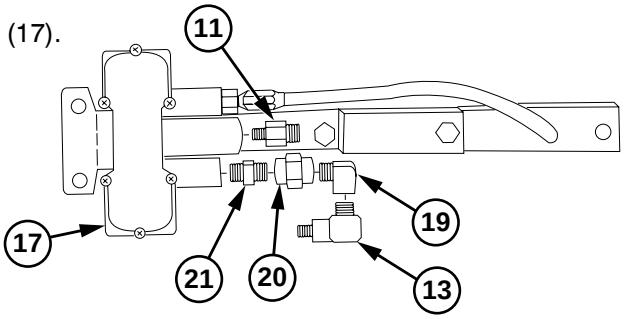
(9) Remove elbow (13) from elbow (19).

(10) Remove elbow (19) and fitting (20) from fitting (21).

(11) Remove fitting (21) from height control valve (17).



RIGHT VALVE



LEFT VALVE

b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(1) Coats threads of fitting (1), elbow (2), tee (3), elbow (4), and fitting (5) with pipe thread sealing compound.

(2) Install fitting (1) on height control valve (6).

(3) Install fitting (7) and elbow (2) on fitting (1).

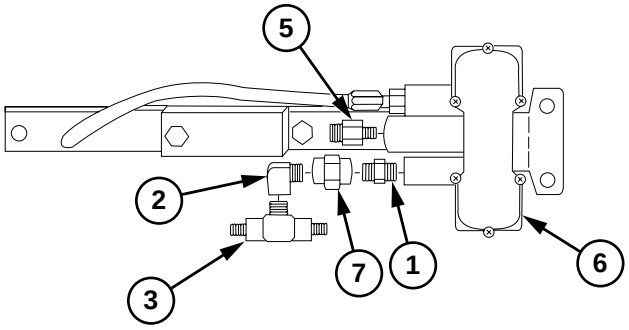
NOTE

Do step (4) only when installing right height control valve. Do step (5) only when installing left height control valve.

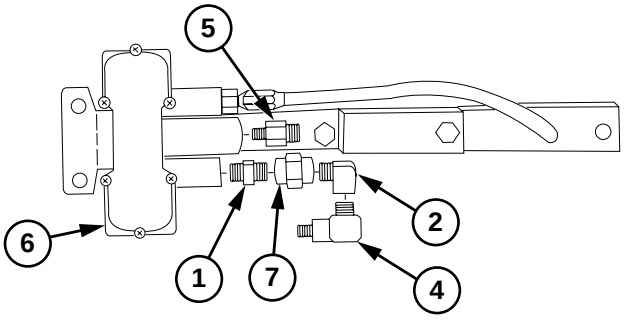
(4) Install tee (3) on elbow (2).

(5) Install elbow (4) on elbow (2).

(6) Install fitting (5) on height control valve (6).



RIGHT VALVE



LEFT VALVE

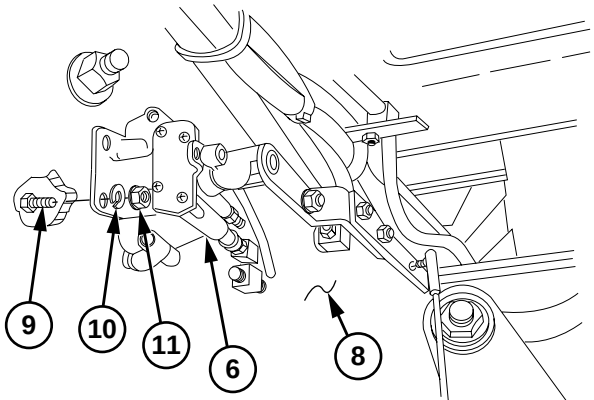
NOTE

Do steps (7), (8), and (9) when installing right height control valve. Do steps (9.1), (9.2), (10), and (11) when installing left height control valve.

(7) Install right height control valve (6) on frame (8) with two screws (9), washers (10), and new locknuts (11).

(8) Install hose no. 2041 (12) and hose no. 2042 (13) on tee (3).

(9) Install hose no. 2044 (14) on fitting (5).



RIGHT VALVE

NOTE

If bracket was removed, do step (9.1).

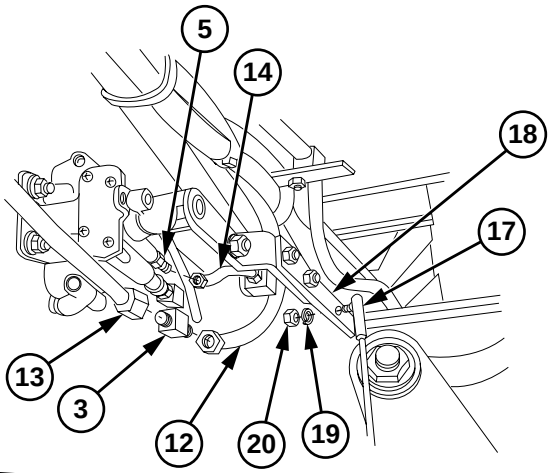
(9.1) Install bracket (14.1) on frame (14.2) with two screws (14.3), washers (14.4), and new locknuts (14.5).

(9.2) Install left height control valve (6) on bracket (14.1) with two screws (14.6), washers (14.7), and new locknuts (14.8).

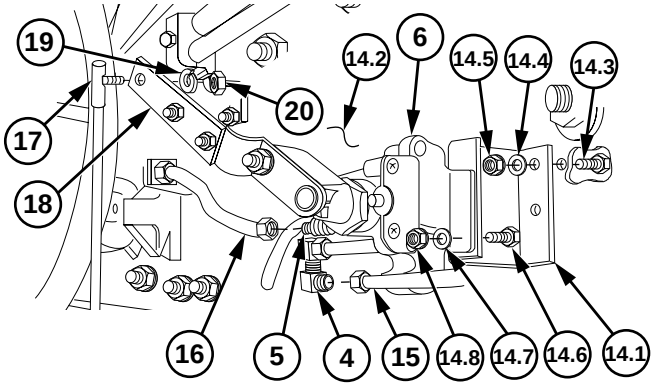
(10) Install hose no. 2042 (15) on elbow (4).

(11) Install hose no. 1040 (16) on fitting (5).

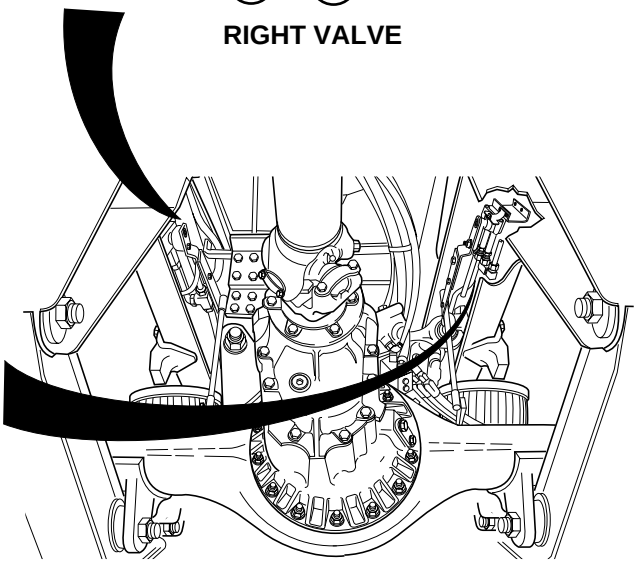
(12) Install ball joint (17) on valve lever arm (18) with new lockwasher (19) and nut (20).



RIGHT VALVE



LEFT VALVE



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks.

(5) Adjust ride height (para 15-4).

15-6. SHOCK ABSORBER BRACKET REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Shock absorbers removed (para 15-3).

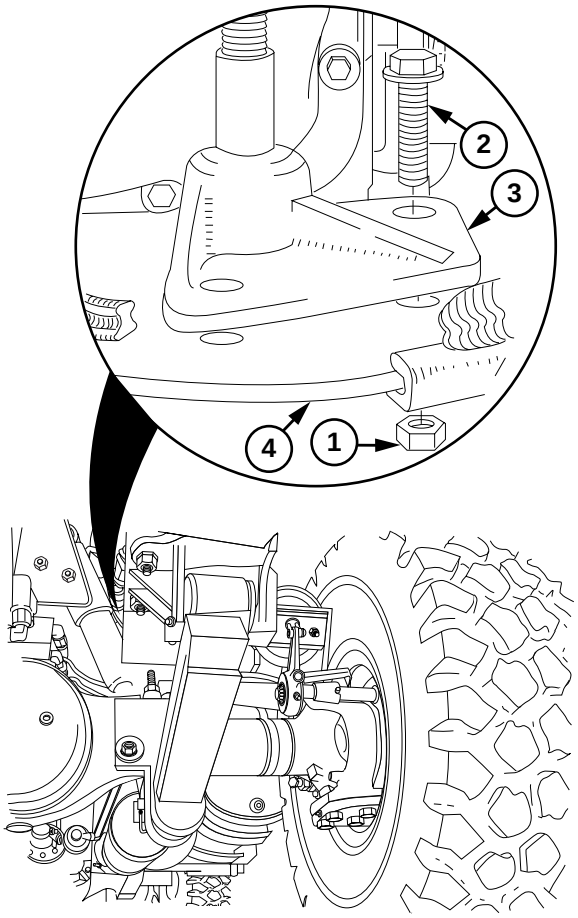
Materials/Parts
Locknuts (8) (Item 63, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-600 Lb-Ft (Item 74, Appendix F)

a. No. 1 Axle Bracket Removal

NOTE
Left and right shock absorber brackets are replaced the same way. Left side is shown.

Remove two locknuts (1), screws (2), and bracket (3) from front crossmember (4). Discard locknuts.



b. No. 1 Axle Bracket Installation

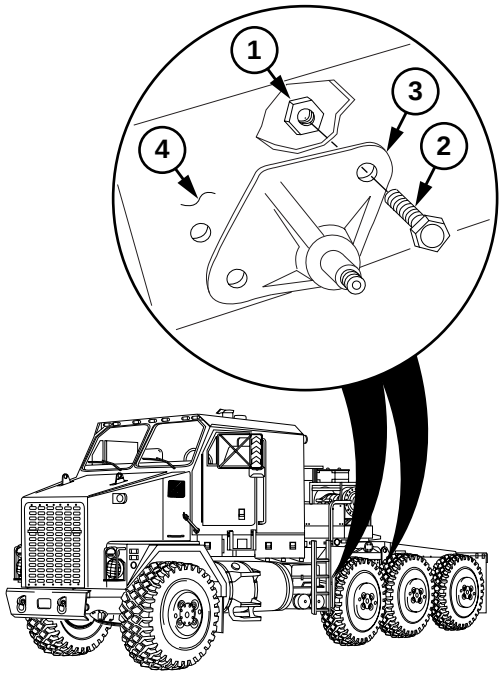
Install bracket (3) on front crossmember (4) with two screws (2) and new locknuts (1). Torque to 380 lb-ft (515 N·m).

c. No. 2 and No. 3 Axle Bracket Removal

NOTE

- Left and right shock absorber brackets are replaced the same way. Right side is shown.
- No. 2 and no. 3 axle brackets are mounted on outside of frame.

Remove two locknuts (1), screws (2), and bracket (3) from frame (4). Discard locknuts.



d. No. 2 and No. 3 Axle Bracket Installation

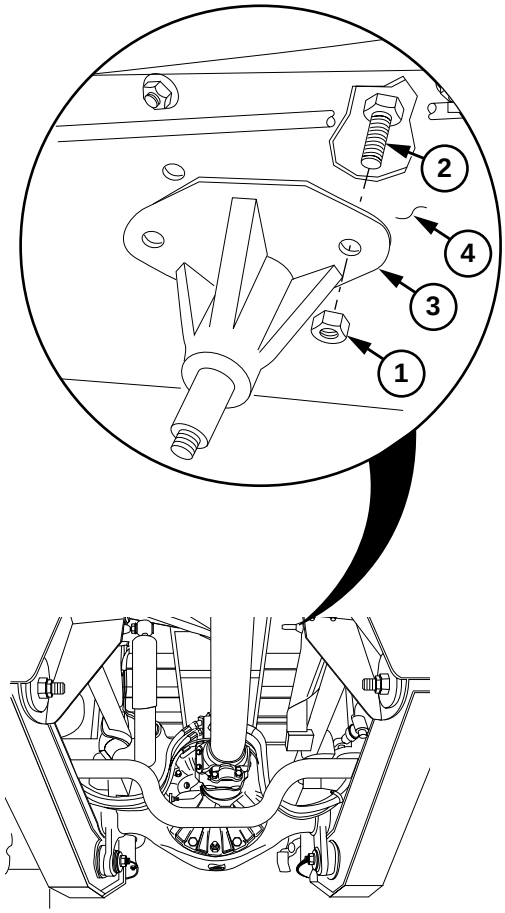
Install bracket (3) on frame (4) with two screws (2) and locknuts (1). Torque to 380 lb-ft (515 N·m).

e. No. 4 Axle Bracket Removal

NOTE

- Left and right shock absorber brackets are replaced the same way. Left side is shown.
- No. 4 axle bracket is mounted on inside of frame.

Remove two locknuts (1), screws (2), and bracket (3) from frame (4). Discard locknuts.



f. No. 4 Axle Bracket Installation

Install bracket (3) on frame (4) with two screws (2) and new locknuts (1). Torque to 380 lb-ft (515 N·m).

g. Follow-On Maintenance

Install shock absorbers (para 15-3).

CHAPTER 16
CAB AND BODY MAINTENANCE

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Section I. INTRODUCTION

16-1. INTRODUCTION

This chapter contains instructions for adjustment, replacement, and repair of cab and body components at the Unit maintenance level. Some parts must be removed before cab and body components can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

16-2. ACCESS PANELS REMOVAL/INSTALLATION

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

WARNING

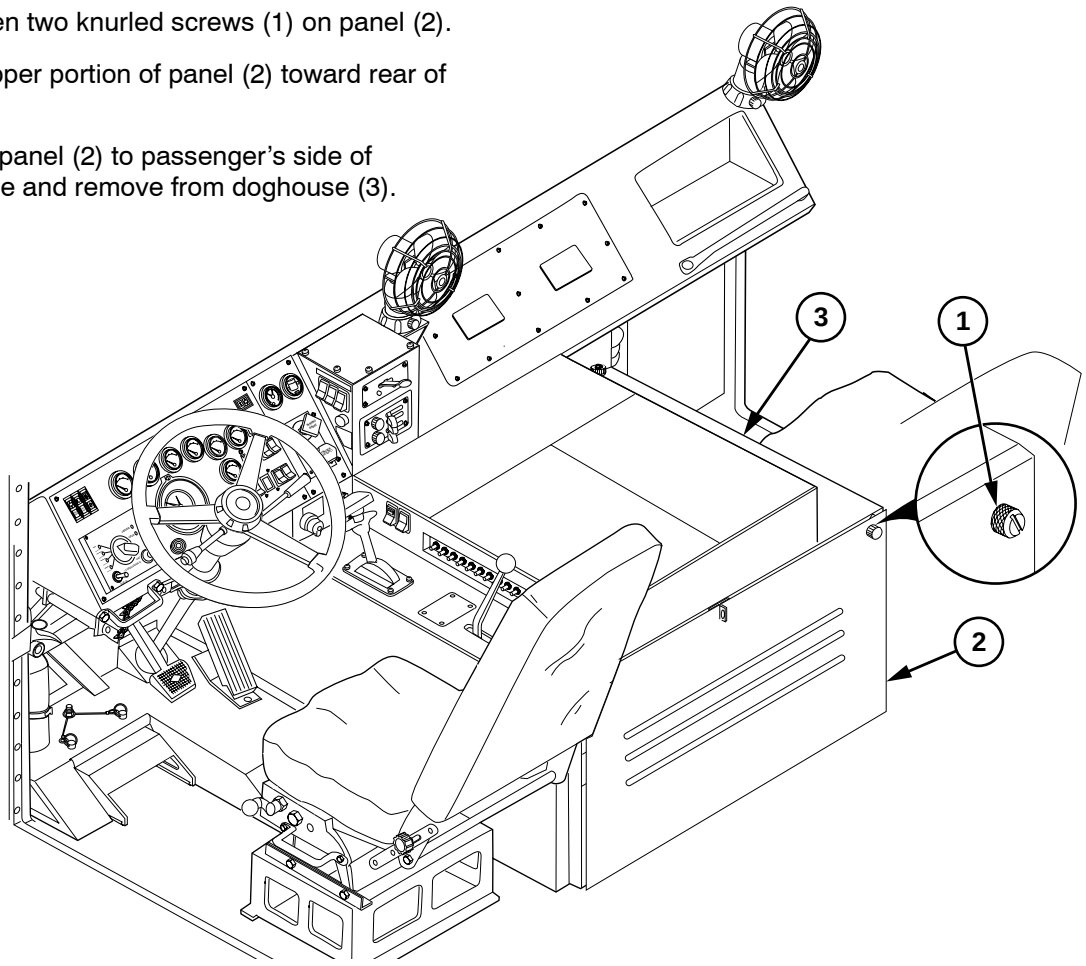
Ensure engine is cool before performing maintenance. Failure to comply may result in severe burns.

a. Doghouse Door Panel Removal

(1) Loosen two knurled screws (1) on panel (2).

(2) Tilt upper portion of panel (2) toward rear of cab.

(3) Slide panel (2) to passenger's side of vehicle and remove from doghouse (3).



NOTE

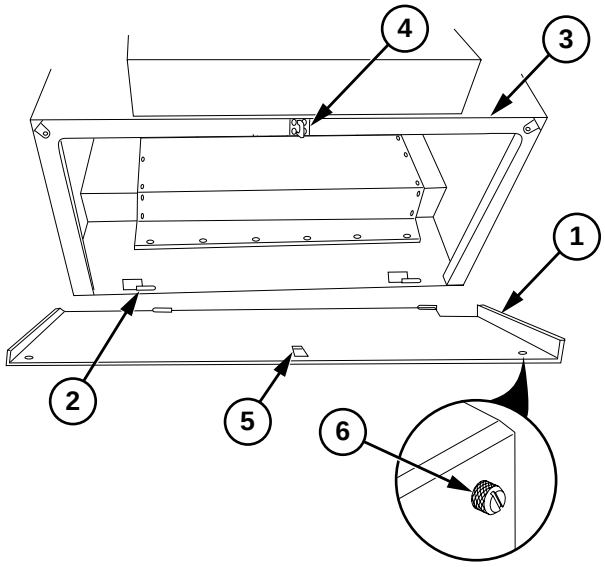
Lower engine access panel, front engine access panel, and shifter guard must be installed prior to installation of doghouse door panel.

b. Doghouse Door Panel Installation

(1) Position panel (1) on hinge pins (2).

(2) Install panel (1) on doghouse (3) with latch (4) through slot (5).

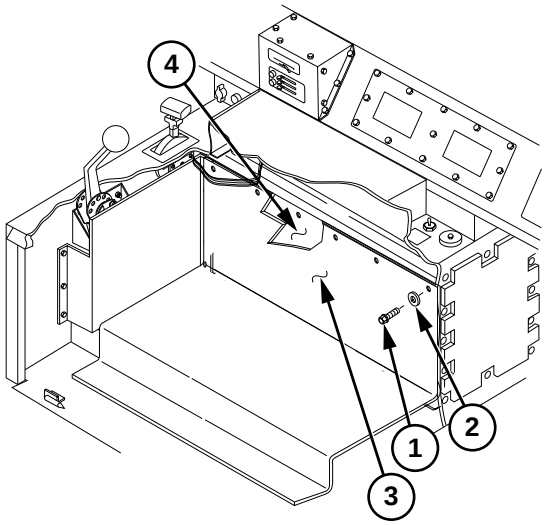
(3) Tighten two screws (6) on panel (1).



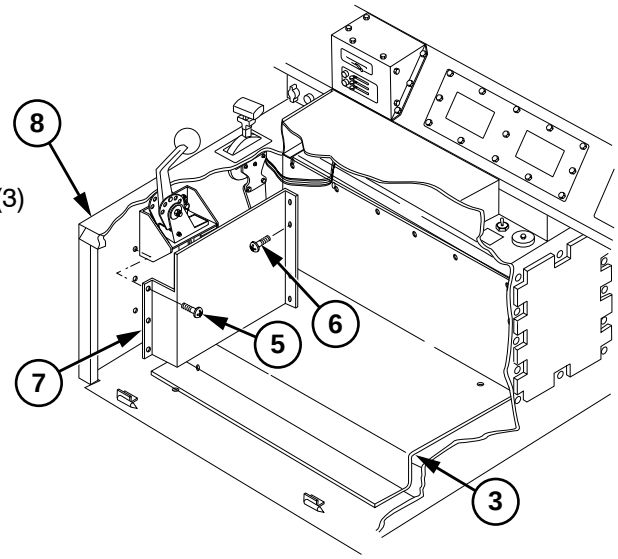
c. Doghouse Floor Mat, Shifter Guard and Access Panel Removal

(1) Remove doghouse door panel (para 16-2a).

(2) Remove six screws (1), washers (2) and doghouse floor mat (3) from front engine access panel (4).

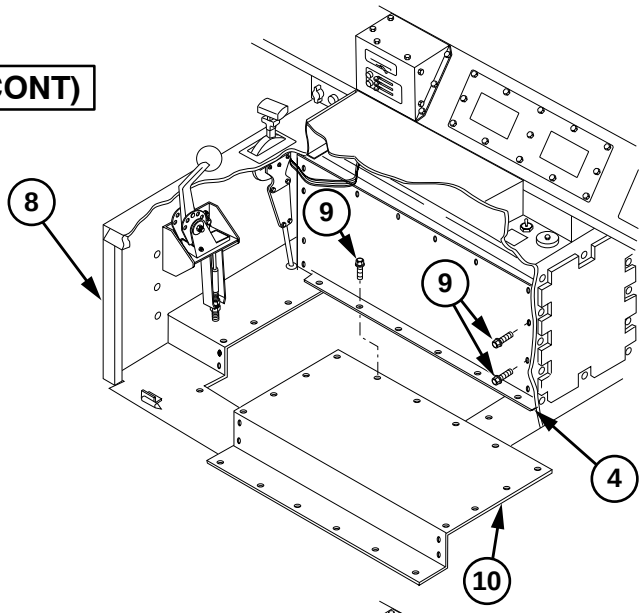


(3) Remove four screws (5), three screws (6), shifter guard (7), and doghouse floor mat (3) from doghouse (8).



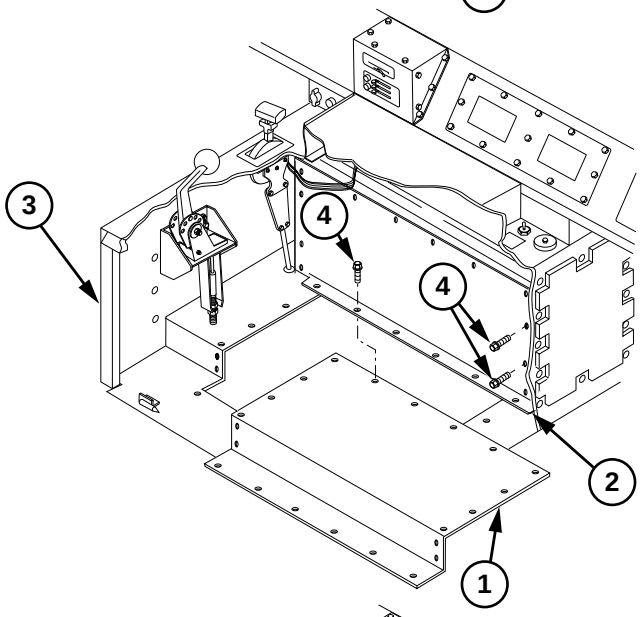
16-2. ACCESS PANELS REPLACEMENT (CONT)

(4) Remove 26 screws (9), lower engine access panel (10) and front engine access panel (4) from doghouse (8).



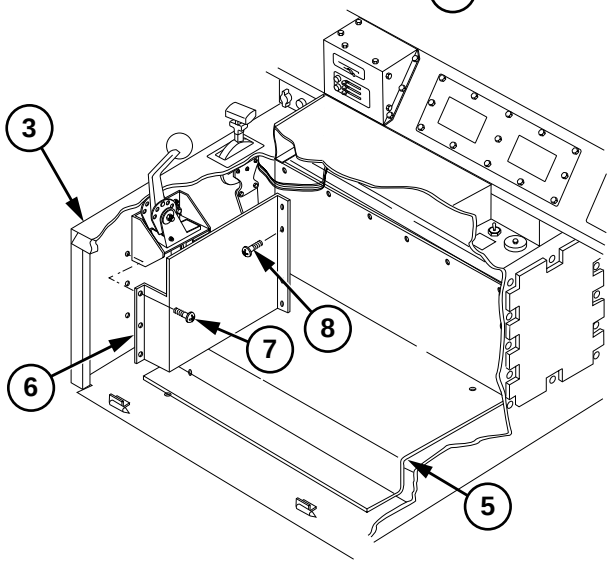
d. Doghouse Floor Mat, Shifter Guard and Access Panel Installation

(1) Install lower access panel (1) and front engine access panel (2) in doghouse (3) with 26 screws (4).



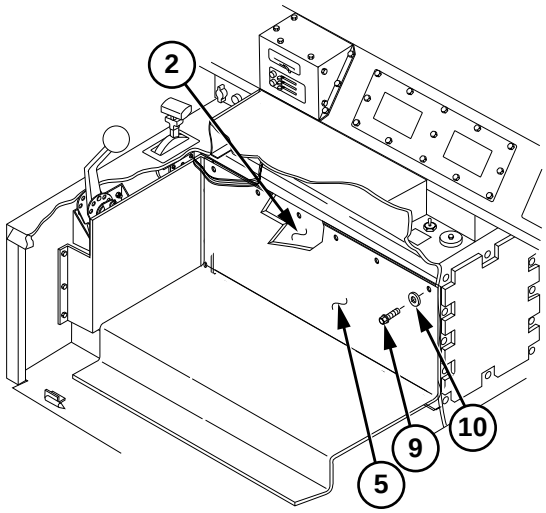
(2) Position doghouse floor mat (5) and shifter guard (6) in doghouse (3).

(3) Install shifter guard (6) on doghouse (3) with four screws (7) and three screws (8).



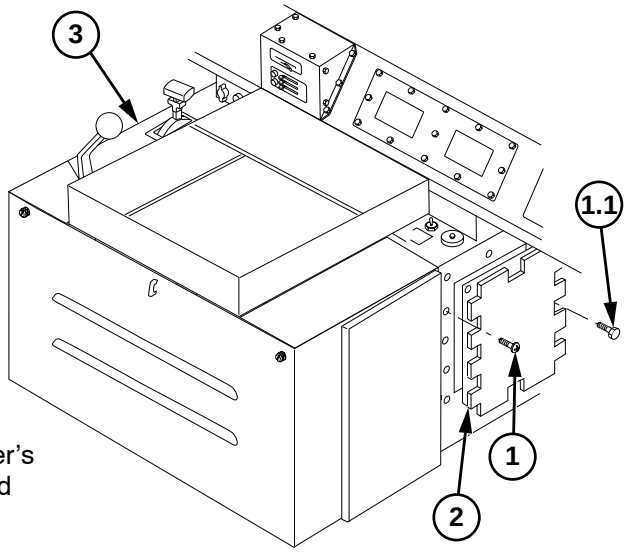
(4) Install doghouse floor mat (5) on front engine access panel (2) with six screws (9) and washers (10).

(5) Install doghouse door panel (para 16-2b).



e. Alternator Access Panel Removal

Remove seven screws (1), three screws (1.1), and alternator access panel (2) from passenger's side of doghouse (3).



NOTE

The three capscrews are installed in the three upper holes along the right (front) side of the alternator access panel.

f. Alternator Access Panel Installation

Install alternator access panel (2) on passenger's side of doghouse (3) with seven screws (1) and three screws (1.1).

g. Follow-On Maintenance

Remove wheel chocks.

16-3. CAB PANEL REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Muffler removed (para 5-3).

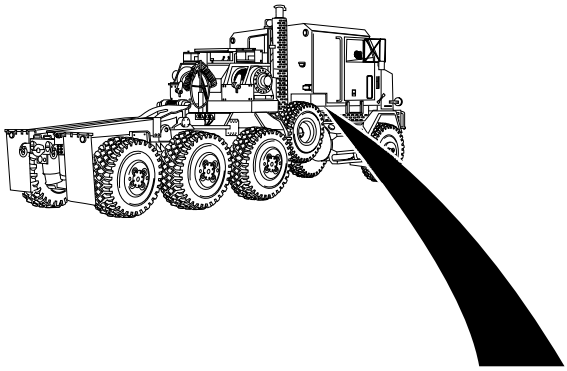
Materials/Parts
Lockwashers (29) (Item 100, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

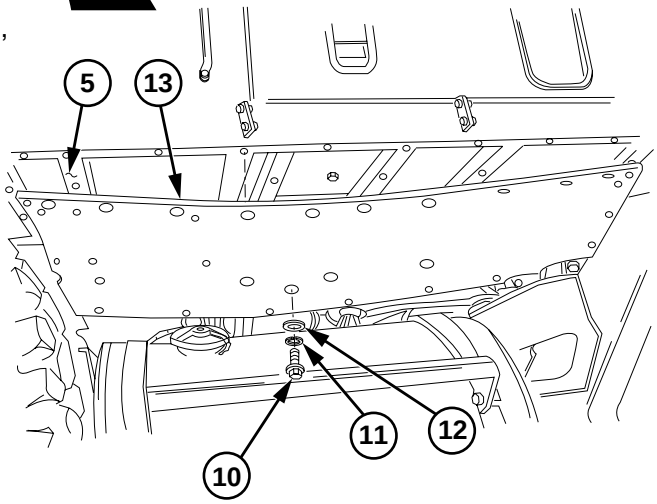
a. Removal

(1) Deleted.

(2) Deleted.

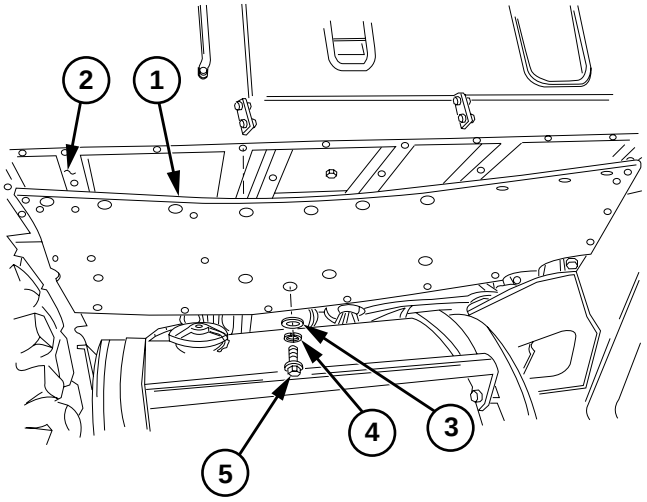


(3) Remove 29 screws (10), lockwashers (11), washers (12), and cab panel (13) from bottom of cab (5). Discard lockwashers.



b. Installation

Install cab panel (1) on bottom of cab (2) with 29 washers (3), new lockwashers (4), and screws (5).



c. Follow-On Maintenance

Install muffler (para 5-3).

16-4. THREADED SCREW INSERT REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Tool Kit, Blind Fastener Installation (Item 52.1, Appendix F)
Drill, Electric (Item 8, Appendix F)
Drill Set, Twist (Item 9, Appendix F)

NOTE

- All threaded screw inserts are replaced the same way. Dash threaded screw insert is shown.
- When replacing threaded screw inserts, use chart below to determine which twist drill to use.

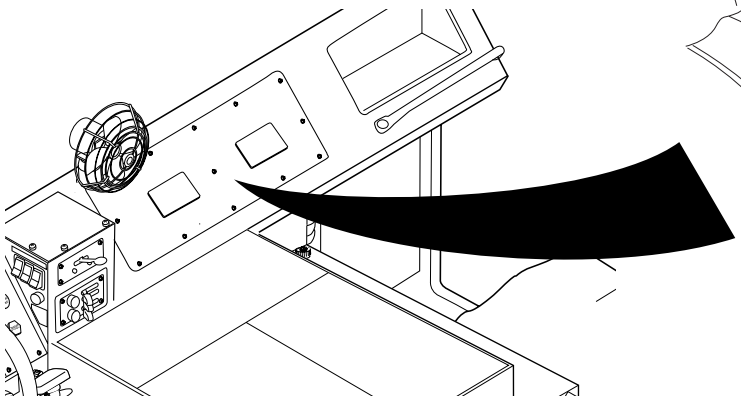
PART NUMBER	TWIST DRILL SIZE (IN.)
ALS7-1024-130	1/4
ALS7-1032-130	1/4
ALS7-420-165	3/8
ALS7-1024-225	1/4
ALS7-616-150	1/2
ALS7-420-260	3/8
ALS7-518-150	13/32
ALS7-518-312	13/32

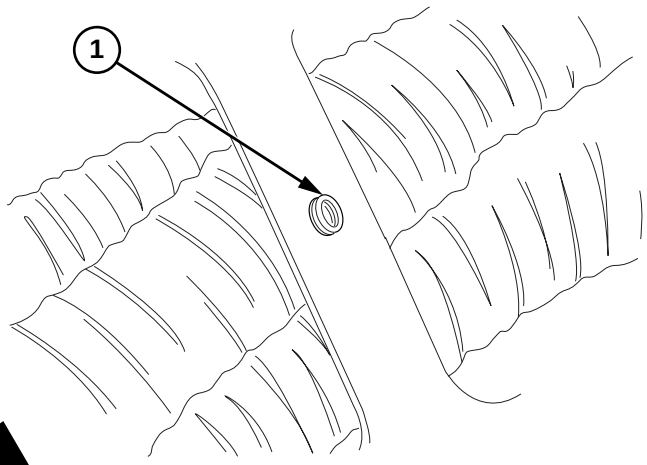
a. Removal

CAUTION

When drilling out threaded screw insert do not enlarge existing hole. The new threaded screw insert will not seat properly if hole is enlarged.

Drill out threaded screw insert (1).





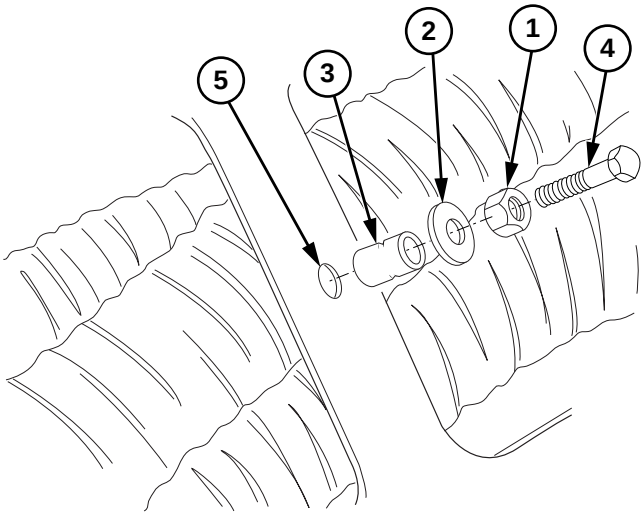
b. Installation

(1) Install threaded screw insert (3) on installation tool.

(2) Install threaded screw insert (3) in hole (5) using installation tool.

(3) Deleted.

(4) Deleted



c. Follow-On Maintenance

Remove wheel chocks.

16-5. DOOR/DOOR HINGE ADJUSTMENT/REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Adjustment
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Side mirror bracket removed (para 18-6).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Bit Set, Screwdriver (Item 1.1, Appendix F)

Materials/Parts
Adhesive-Sealant, RTV (Item 2.3, Appendix C)
Locknut (Item 75, Appendix G)
Lockwashers (2) (Item 100, Appendix G)

Personnel Required
Two

a. Removal

NOTE

Left and right doors are removed the same way. Right door is shown.

(1) Remove two screws (1) and spacer (2) from door strap (3) and cab (4).

(2) Remove two screws (5), lockwashers (6), and door strap (3) from door (7). Discard lockwashers.

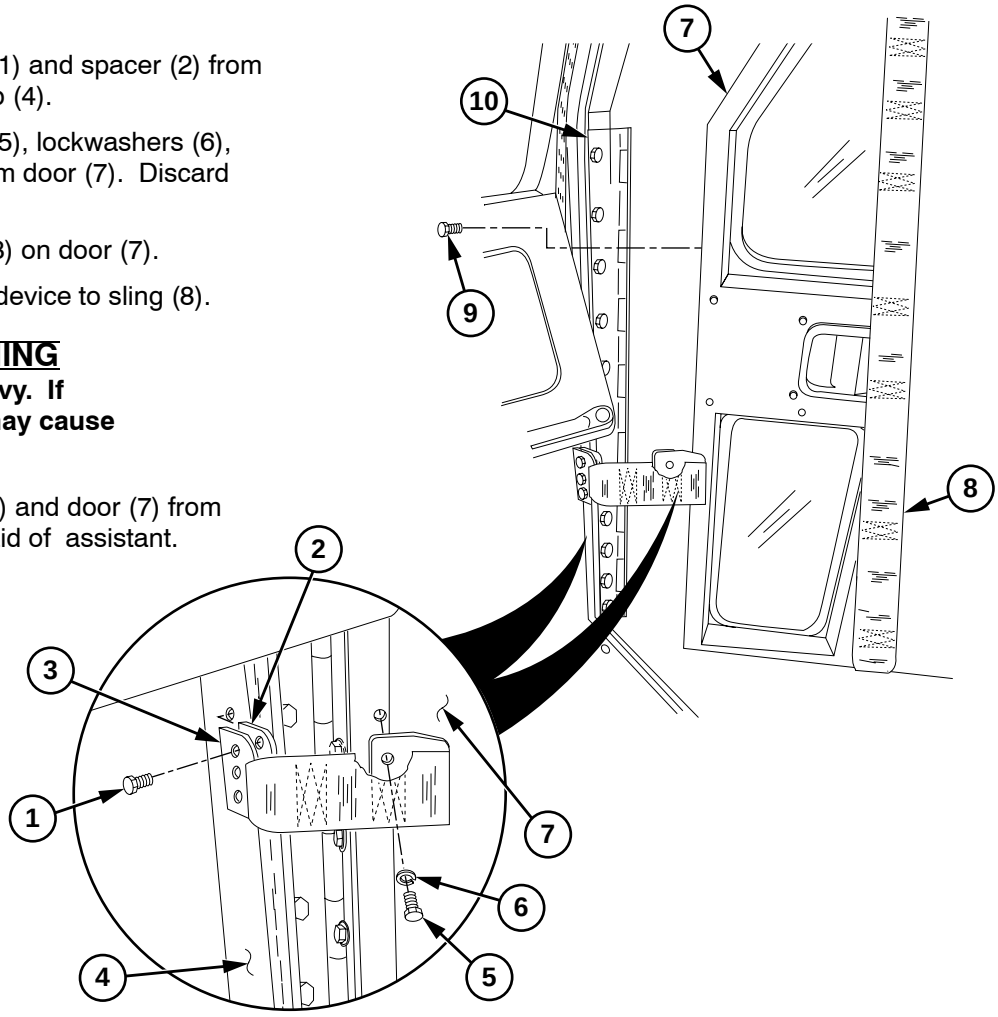
(3) Install suitable sling (8) on door (7).

(4) Attach suitable lifting device to sling (8).

WARNING

Door is very heavy. If dropped, door may cause serious injury.

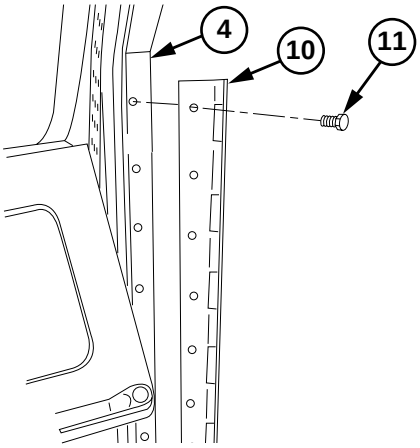
(5) Remove 11 screws (9) and door (7) from door hinge (10) with aid of assistant.



NOTE

Do step (6) only if replacing door hinge.

(6) Remove 12 screws (11) and door hinge (10) from cab (4).

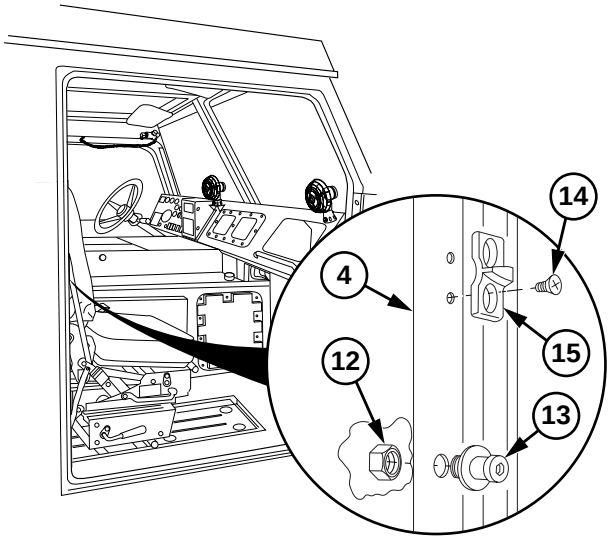


NOTE

Do steps (7) or (8) only if striker pin or male dovetail is damaged.

(7) Remove locknut (12) and striker pin (13) from cab (4). Discard locknut.

(8) Remove two screws (14) and male dovetail (15) from cab (4).



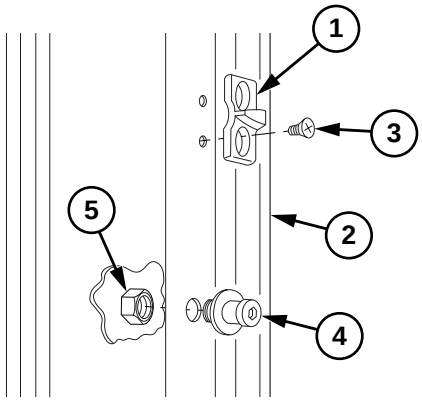
b. Installation

NOTE

Do steps (1) or (2) only if installing new male dovetail or striker pin.

(1) Install male dovetail (1) on cab (2) with two screws (3).

(2) Install striker pin (4) on cab (2) with new locknut (5).



16-5. DOOR/DOOR HINGE ADJUSTMENT/REPLACEMENT (CONT)

NOTE

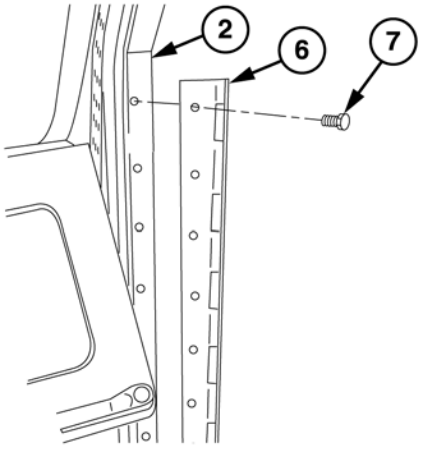
Do steps (3) and (3.1) only if installing new door hinge.

WARNING

Adhesive-sealants 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 sealing compound gets on skin or clothing, wash immediately with soap and water.

(3) Coat door hinge (6) with adhesive-sealant, RTV (Item 2.3, Appendix C).

(3.1) Install hinge (6) on cab (2) with 12 screws (7).



(4) Install suitable sling (8) on door (9).

(5) Attach suitable lifting device to sling (8).

WARNING

- **Door is very heavy. If dropped, door may cause serious injury.**
- **Adhesive-sealants 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 sealing compound gets on skin or clothing, wash immediately with soap and water.**

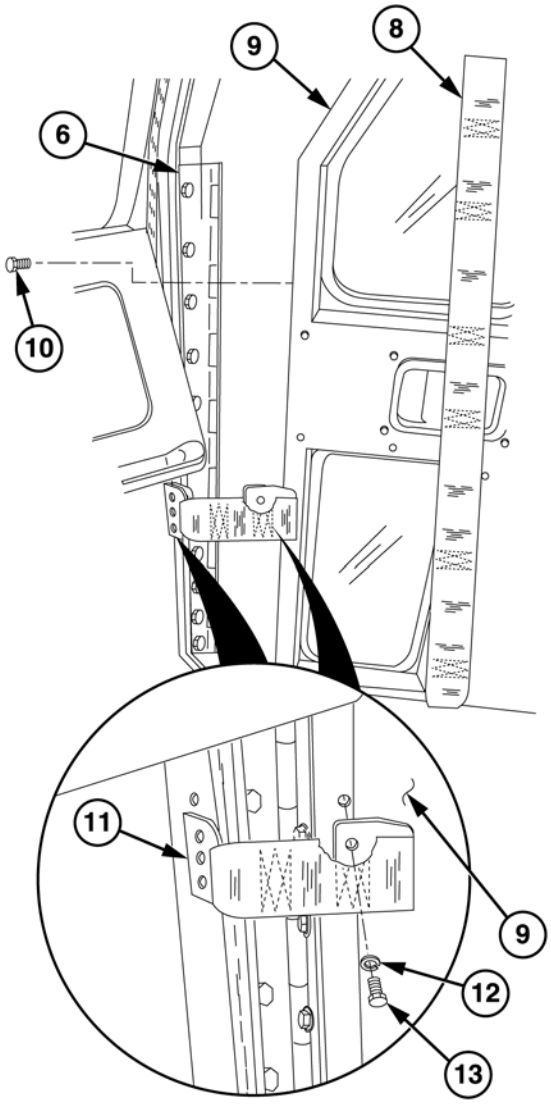
(6) Coat door hinge (6) with adhesive-sealant.

(6.1) Guide door (9) to door hinge (6) while assistant operates lifting device.

(7) Install 11 screws (10) through hinge (6) to door (9) while assistant holds door.

(8) Remove lifting device and sling (8) from door (9).

(9) Install door strap (11) on door (9) with two new lockwashers (12) and screws (13).



c. Adjustment

NOTE

- Adjustment is performed whenever the door is replaced or will not close properly.
- If door has not been replaced, do step (1). Otherwise, go to step (2).

(1) Remove two screws (1) and spacer (2) from door strap (3) and cab (4).

(2) Loosen 12 screws (5) and 11 screws (6) 3/4 turn from hinge (7).

NOTE

It may be necessary to open and close door several times before step (3) can be accomplished.

(3) Align position of door (8) to permit proper closing and locking.

(4) Tighten 12 screws (5) and 11 screws (6).

NOTE

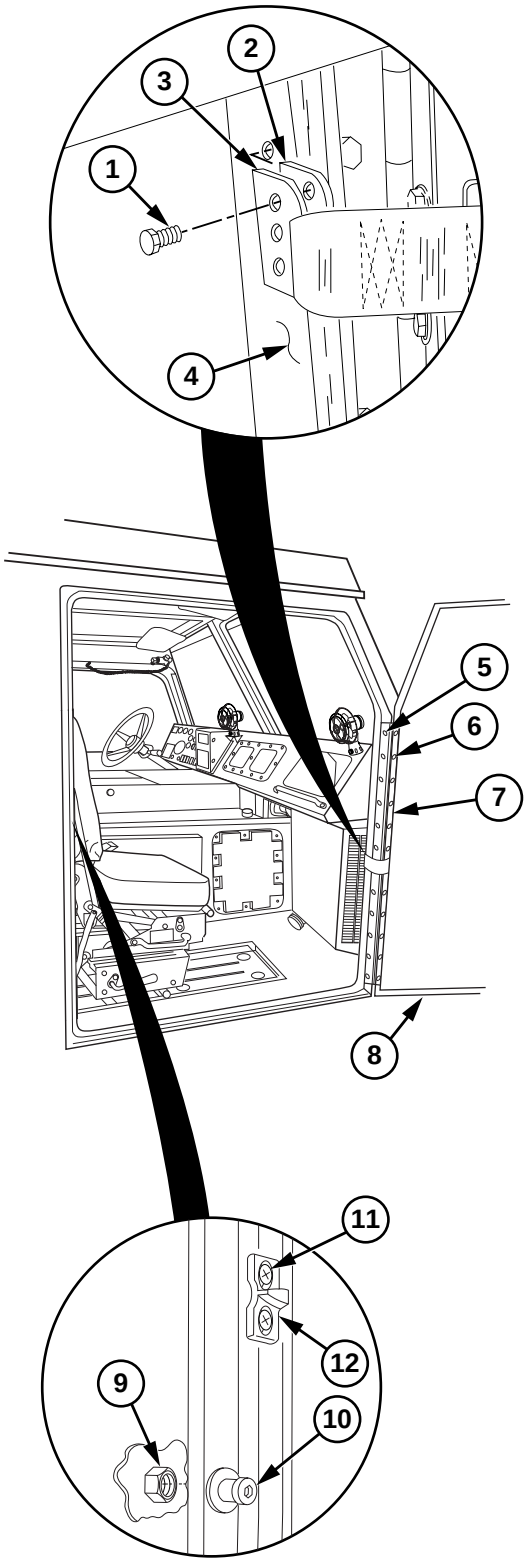
Do steps (5) thru (9) if door does not close and lock properly.

(5) Loosen locknut (9) and striker pin (10).

(6) Loosen two screws (11) and male dovetail (12).

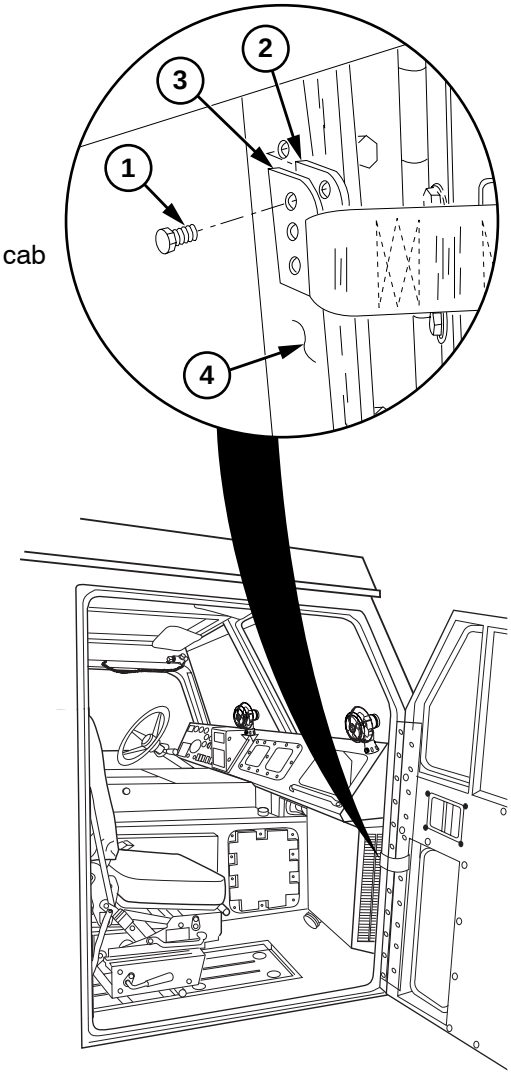
(7) Position male dovetail (12) to permit proper closing and locking. Tighten two screws (11).

(8) Position striker pin (10) to permit proper closing and locking. Tighten locknut (9).



16-5. DOOR/DOOR HINGE ADJUSTMENT/REPLACEMENT (CONT)

(9) Install door strap (3) and spacer (2) on cab (4) with two screws (1).



d. Follow-On Maintenance

Install side mirror bracket (para 18-6).

16-6. MUD FLAP AND BRACKET REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Reflector removed (para 16-23).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

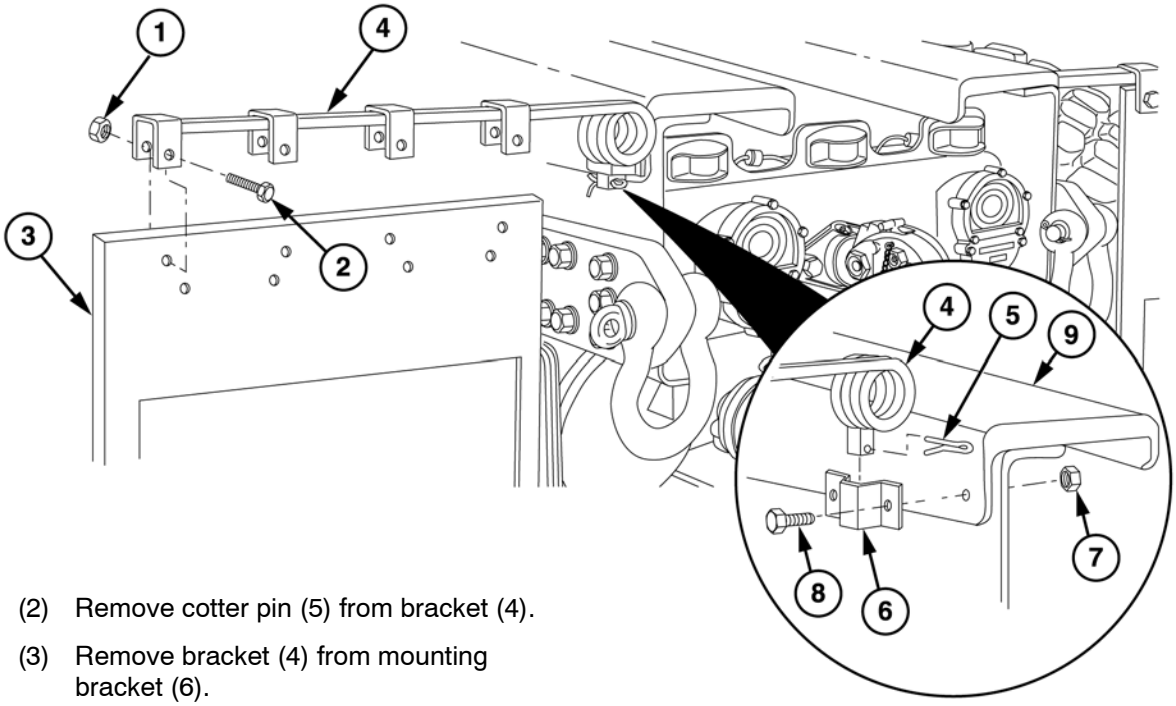
Materials/Parts
Locknuts (8) (Item 68, Appendix G)
Locknuts (4) (Item 47, Appendix G)

a. Rear Mud Flap Removal

NOTE

- Left and right mud flaps are replaced the same way. Left side is shown.
- If only mud flaps are being replaced, do step (1) only.

(1) Remove four locknuts (1), screws (2), and mud flap (3) from bracket (4). Discard locknuts.



(2) Remove cotter pin (5) from bracket (4).

(3) Remove bracket (4) from mounting bracket (6).

(4) Remove two locknuts (7), screws (8), and mounting bracket (6) from frame (9). Discard locknuts.

16-6. MUD FLAP AND BRACKET REPLACEMENT (CONT)

b. Rear Mud Flap Installation

NOTE

If only mud flaps are being installed, go to step (3).

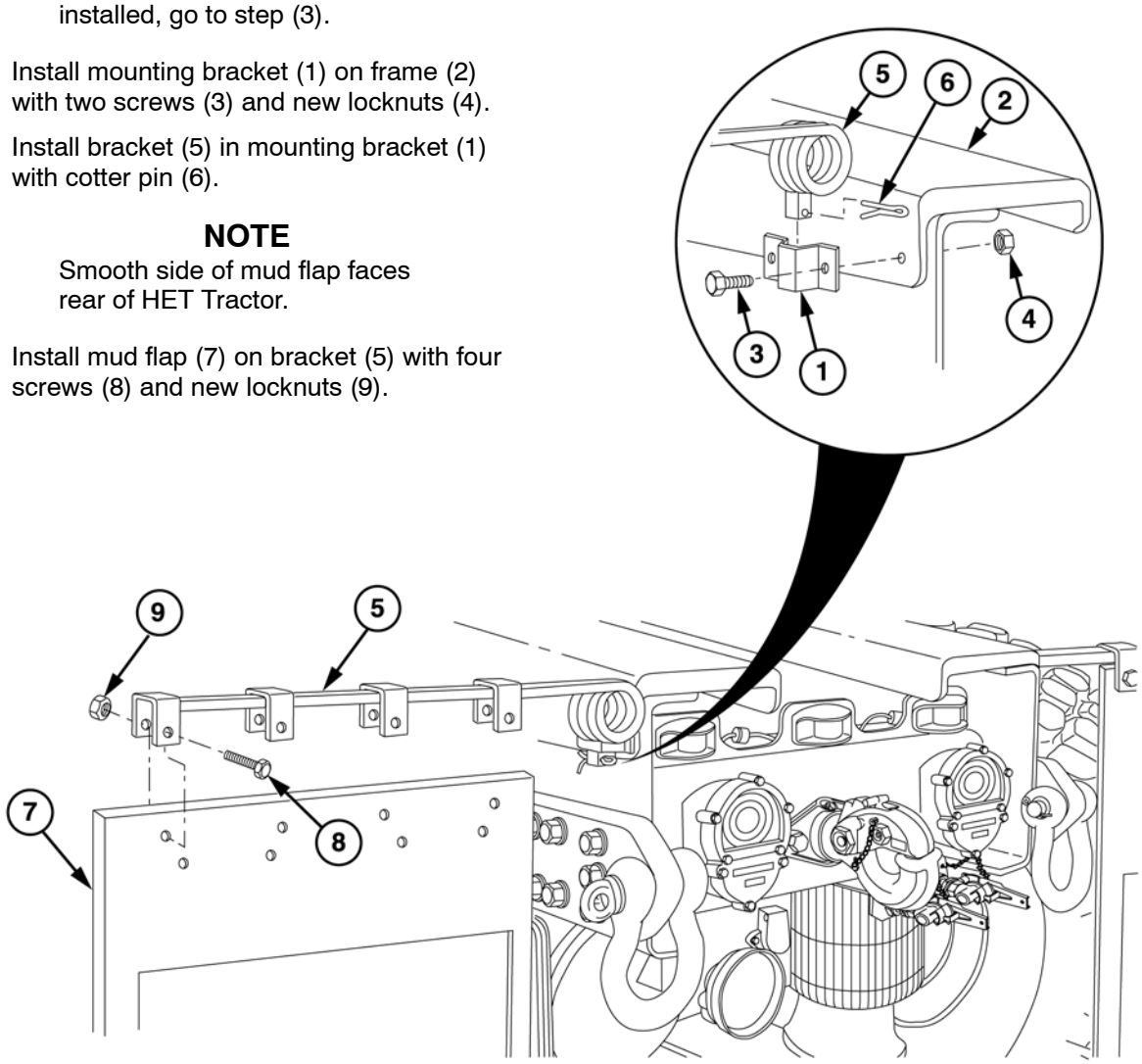
(1) Install mounting bracket (1) on frame (2) with two screws (3) and new locknuts (4).

(2) Install bracket (5) in mounting bracket (1) with cotter pin (6).

NOTE

Smooth side of mud flap faces rear of HET Tractor.

(3) Install mud flap (7) on bracket (5) with four screws (8) and new locknuts (9).

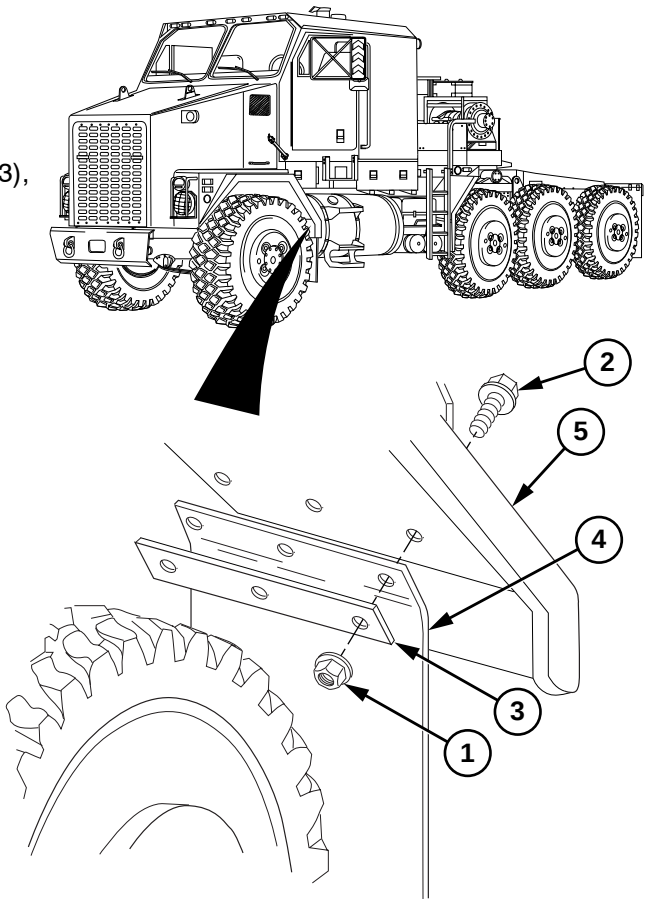


c. Front Mud Flap Removal

NOTE

Left and right front mud flaps are replaced the same way. Left side is shown.

Remove three locknuts (1), screws (2), plate (3), and mud flap (4) from fender (5). Discard locknuts.



d. Front Mud Flap Installation

Install mud flap (4) and plate (3) on fender (5) with three screws (2) and new locknuts (1).

e. Follow-On Maintenance

Install reflector (para 16-23).

16-7. HOOD ASSEMBLY REPAIR

This task covers:
- a. Removal
- b. Disassembly
- c. Assembly
- d. Installation
- e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
- Engine shut off (TM 9-2320-360-10).
- Parking brake on (TM 9-2320-360-10).
- Wheels chocked.
- Engine hood opened (TM 9-2320-360-10).

Tools and Special Tools
- Tool Kit, Genl Mech (Item 54, Appendix F)
- Riveter, Blind, Hand (Item 36.1, Appendix F)

Materials/Parts
- Adhesive-Sealant (Item 5, Appendix C)
- Locknuts (28) (Item 64, Appendix G)
- Locknuts (18) (Item 74.1 Appendix G)
- Locknuts (5) (Item 72, Appendix G)
- Locknuts (4) (Item 68, Appendix G)
- Locknuts (4) (Item 74, Appendix G)
- Lockwasher (Item 102, Appendix G)
- Pins, Cotter (2) (Item 145, Appendix G)
- Pin, Cotter (Item 148, Appendix G)
- Rivet, Blind (Item 158.2, Appendix G)
- Snap Fastener, Male (Item 164.0.2, Appendix G)

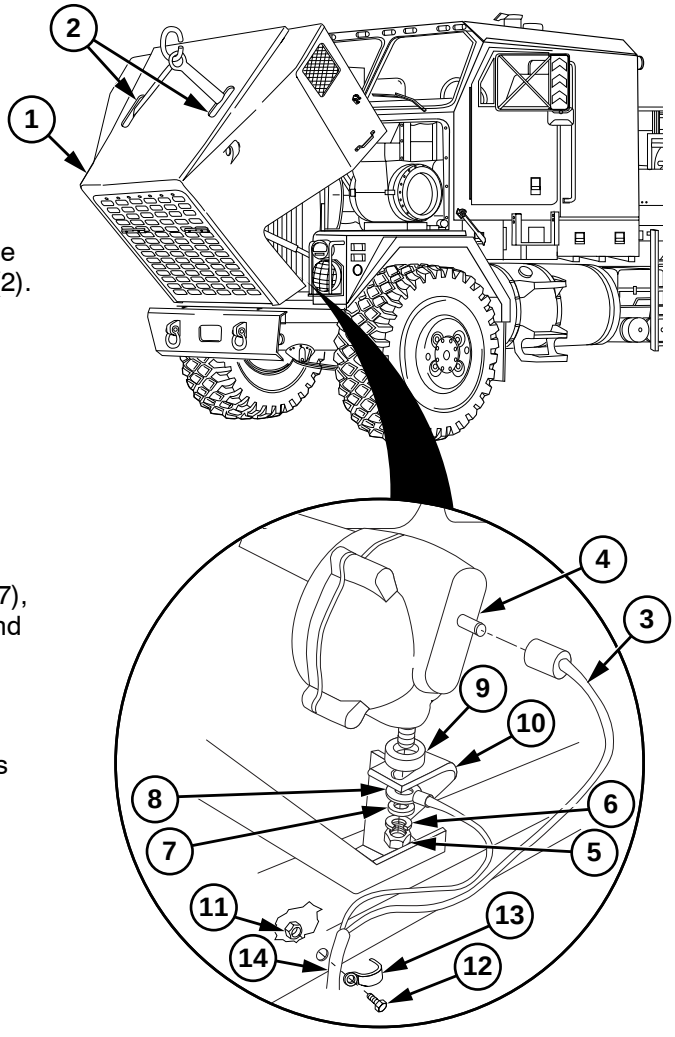
Personnel Required
- Two

a. Removal

WARNING

Hood weighs 235 lb (107 kg). Keep out from under hood. Hood could fall causing serious injury.

(1) Support hood (1) with suitable lifting device and strap inserted through hardlift points (2).



(2) Remove wire (3) from blackout drive light (4).

(3) Remove nut (5), lockwasher (6), washer (7), ground wire (8), blackout drive light (4), and spacer (9) from bracket (10). Discard lockwasher.

(4) Remove locknut (11), screw (12), and cushion clip (13) from hood wiring harness (14). Discard locknut.

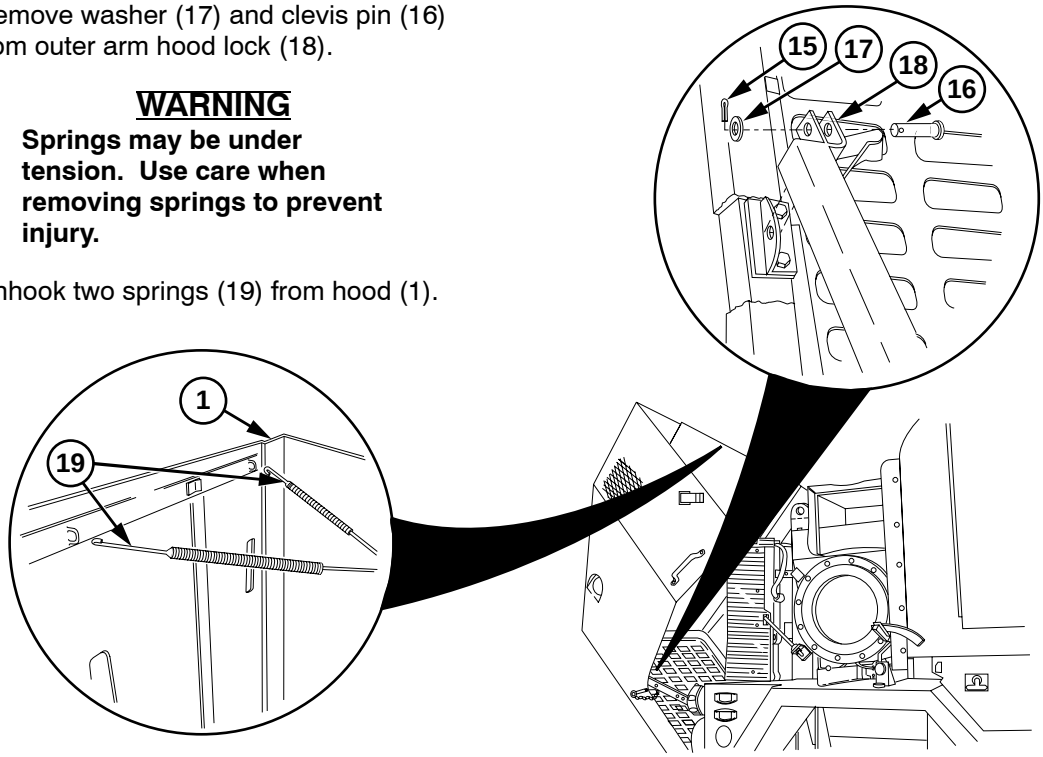
(5) Remove cotter pin (15) from clevis pin (16). Discard cotter pin.

(6) Remove washer (17) and clevis pin (16) from outer arm hood lock (18).

WARNING

Springs may be under tension. Use care when removing springs to prevent injury.

(7) Unhook two springs (19) from hood (1).



(8) Remove two cotter pins (20) from clevis pins (21). Discard cotter pins.

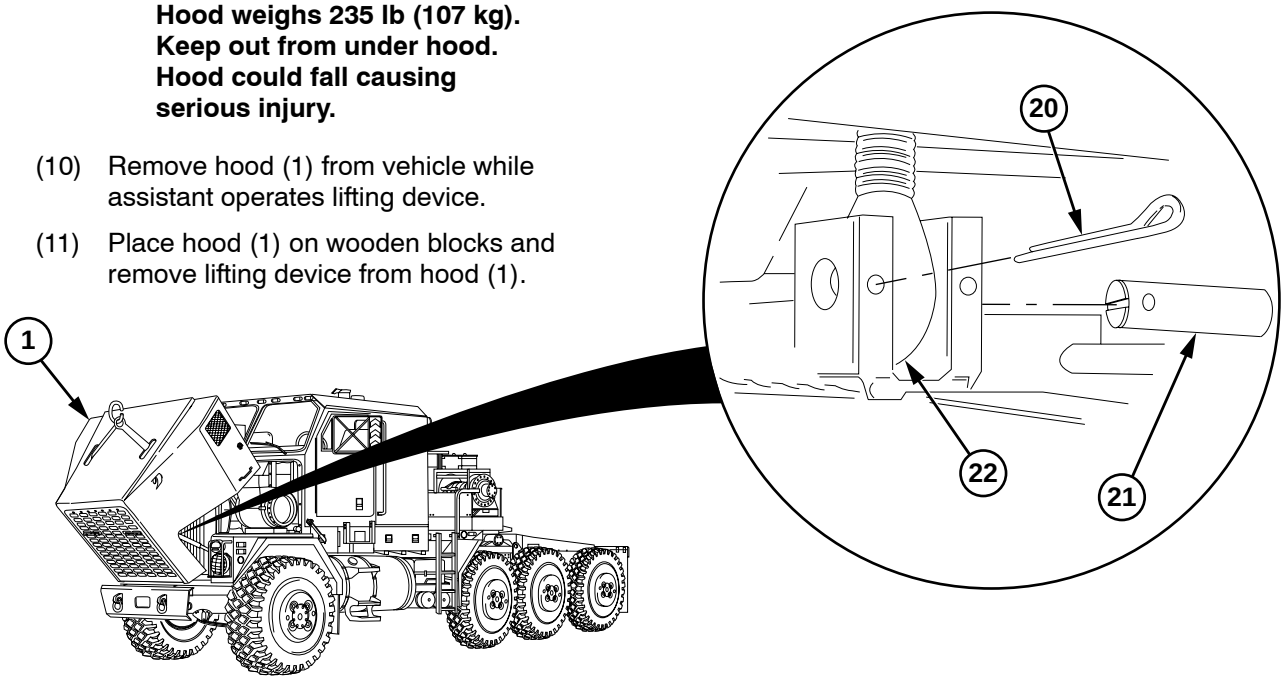
(9) Remove two clevis pins (21) from eyebolts (22).

WARNING

Hood weighs 235 lb (107 kg). Keep out from under hood. Hood could fall causing serious injury.

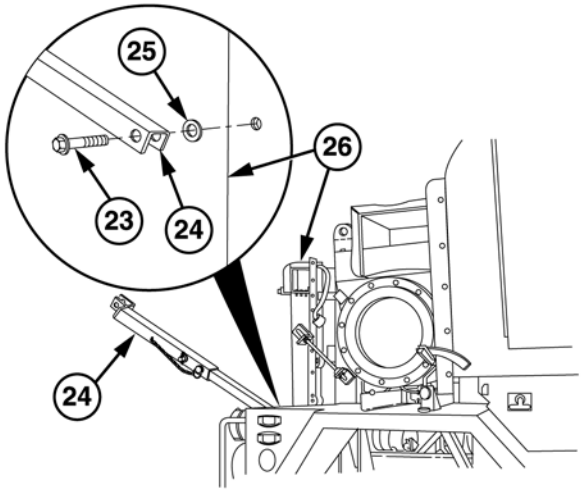
(10) Remove hood (1) from vehicle while assistant operates lifting device.

(11) Place hood (1) on wooden blocks and remove lifting device from hood (1).



16-7. HOOD ASSEMBLY REPAIR (CONT)

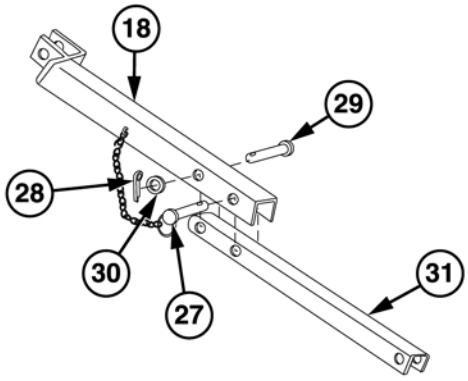
(12) Remove screw (23), hood lock assembly (24), and washer (25) from radiator (26).



(13) Remove pin (27) from outer arm hood lock (18).

(14) Remove cotter pin (28) from clevis pin (29). Discard cotter pin.

(15) Remove clevis pin (29) and washer (30), to separate outer arm hood lock (18) from inner arm hood lock (31).



b. Disassembly

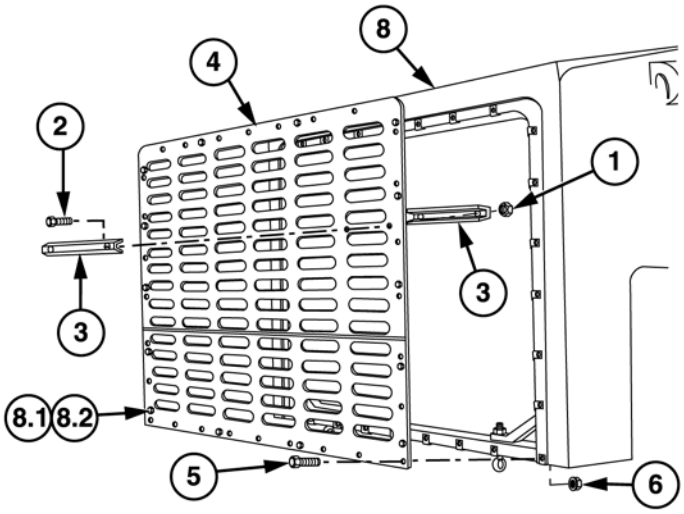
(1) Remove four locknuts (1), screws (2), and two hood tilt handles (3) from grille (4). Discard locknuts.

(2) Remove 28 screws (5), locknuts (6), and grille (4) from hood (8). Discard locknuts.

NOTE

Do Step (2.1) only if rivets or snap fastners fail inspection.

(2.1) Drill out rivet(s) (8.1) and snap fastener(s) (8.2) from grille (4). Discard rivets and snap fasteners.

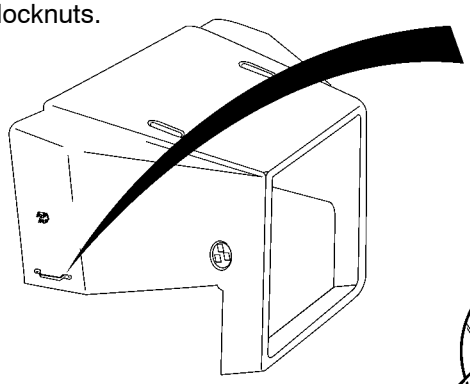


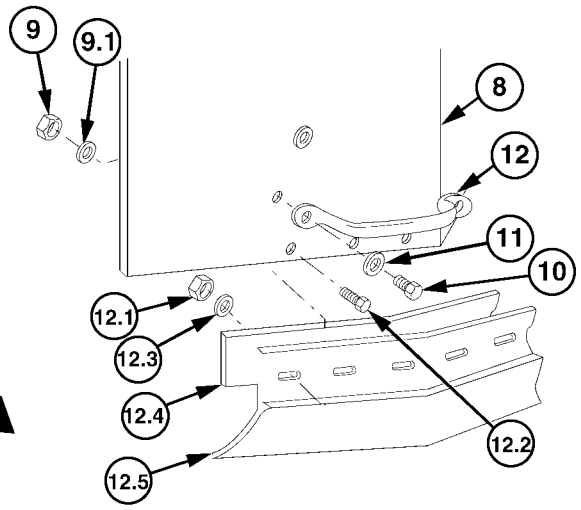
NOTE

Both hood grab handles and hood skirts are replaced the same way. Passenger's side is shown.

(3) Remove two locknuts (9), washers (9.1) (if present), screws (10), washers (11), and hood grab handle (12) from hood (8). Discard locknuts.

(3.1) Remove nine locknuts (12.1), screws (12.2), washers (12.3), backing plate (12.4), and hood skirt (12.5) from hood (8). Discard locknuts.

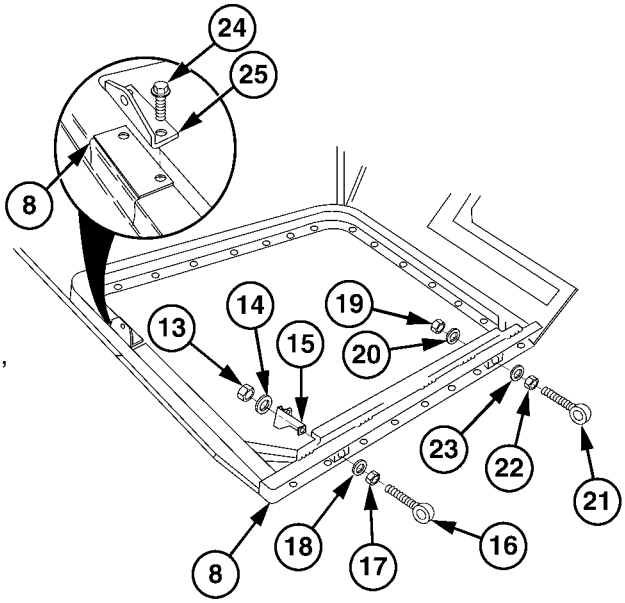




(4) Remove nut (13), washer (14), bracket (15), eyebolt (16), nut (17), and washer (18) from hood (8) on driver's side.

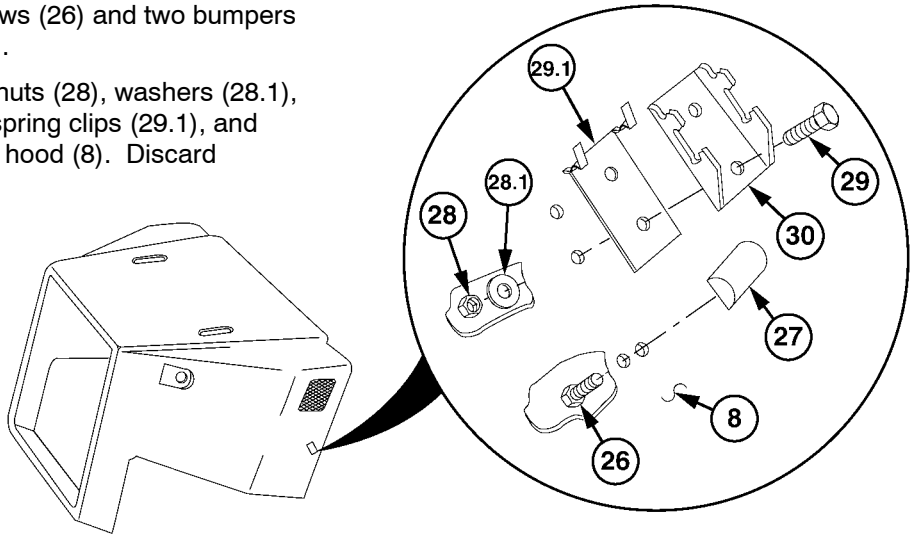
(5) Remove nut (19), washer (20), eyebolt (21), nut (22), and washer (23) from hood (8) on passenger's side.

(6) Remove two screws (24) and bracket (25) from hood (8).



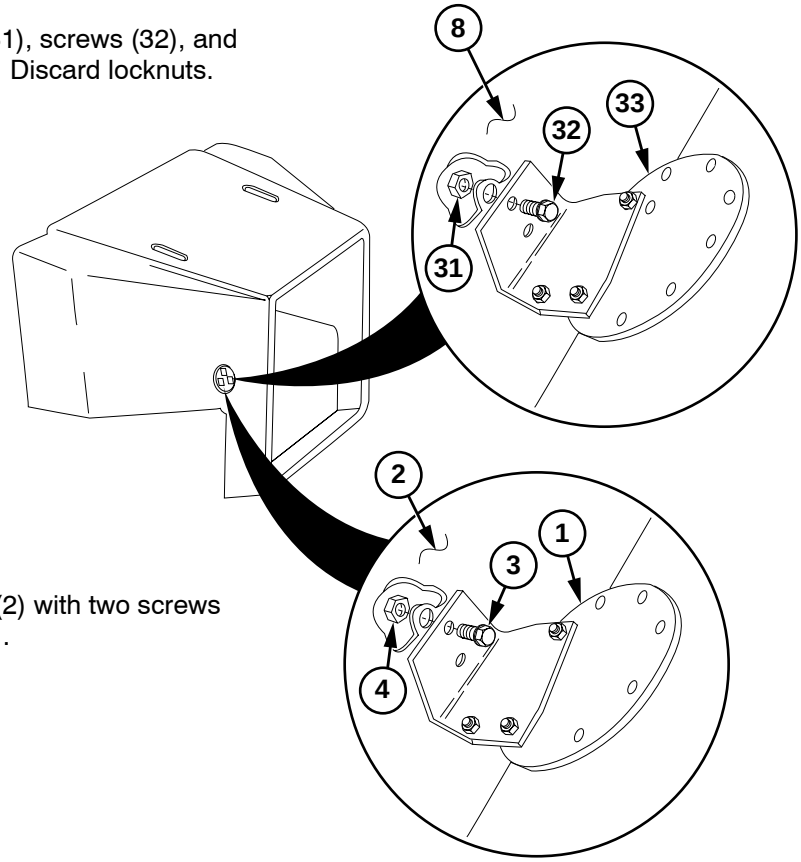
(7) Remove four screws (26) and two bumpers (27) from hood (8).

(8) Remove four locknuts (28), washers (28.1), screws (29), two spring clips (29.1), and keepers (30) from hood (8). Discard locknuts.



16-7. HOOD ASSEMBLY REPAIR (CONT)

(9) Remove two locknuts (31), screws (32), and sign (33) from hood (8). Discard locknuts.

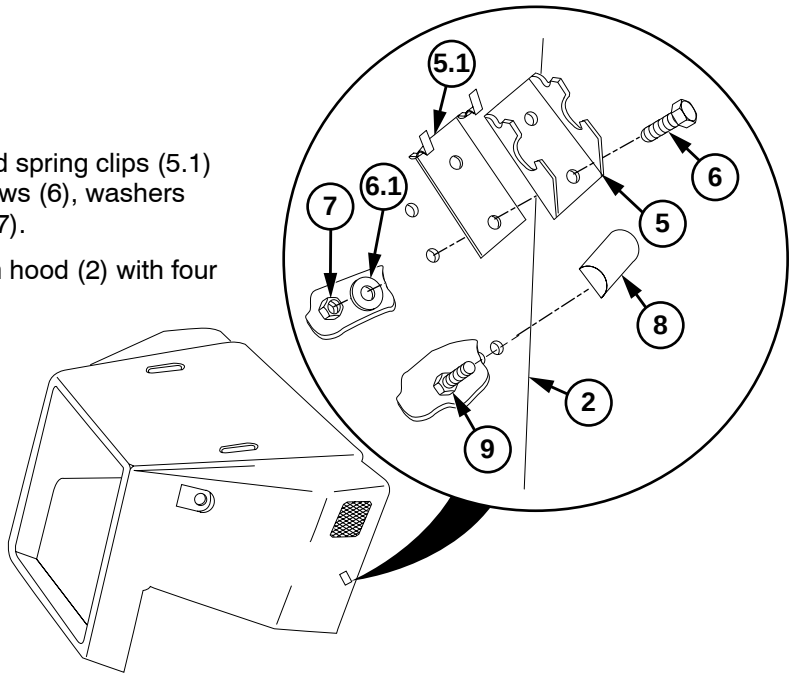


c. Assembly

(1) Install sign (1) on hood (2) with two screws (3) and new locknuts (4).

(2) Install two keepers (5) and spring clips (5.1) on hood (2) with four screws (6), washers (6.1), and new locknuts (7).

(3) Install two bumpers (8) on hood (2) with four screws (9).



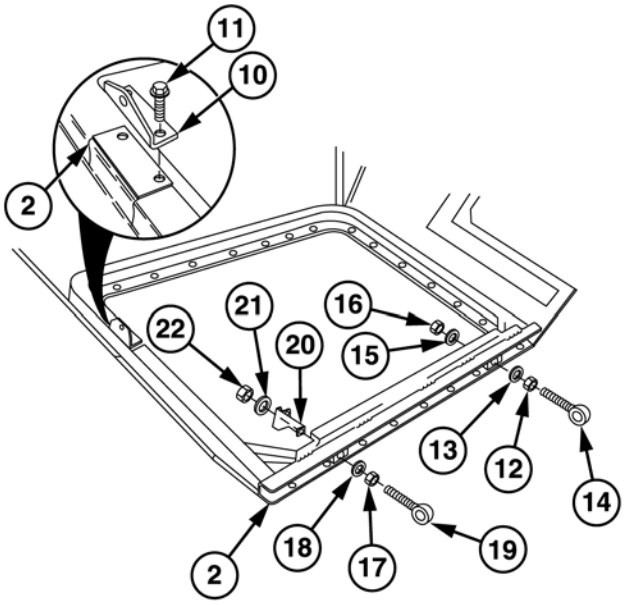
(4) Install bracket (10) on hood (2) with two screws (11).

(5) Install nut (12) and washer (13) on eyebolt (14).

(6) Install eyebolt (14) on hood (2) with washer (15) and nut (16).

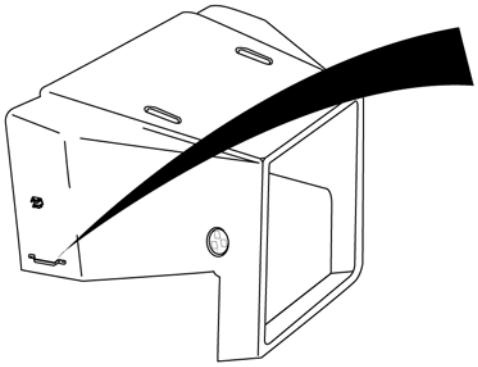
(7) Install nut (17) and washer (18) on eyebolt (19).

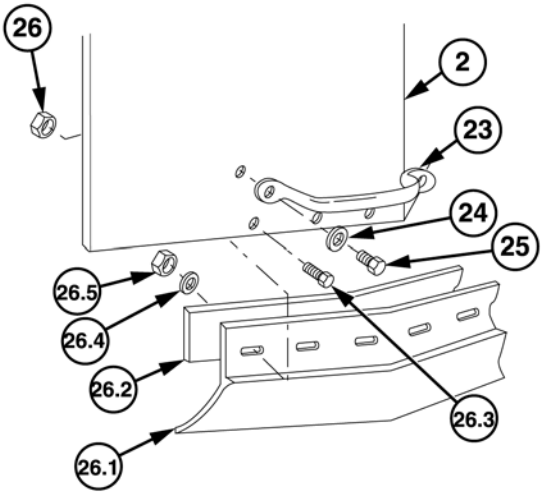
(8) Install eyebolt (19) and bracket (20) on hood (2) with washer (21) and nut (22).



(9) Install hood grab handle (23) on hood (2) with two washers (24), screws (25), flat washers (25.1), and new locknuts (26).

(9.1) Install hood skirt (26.1) and backing plate (26.2) on hood (2) with nine screws (26.3), washers (26.4), and new locknuts (26.5).





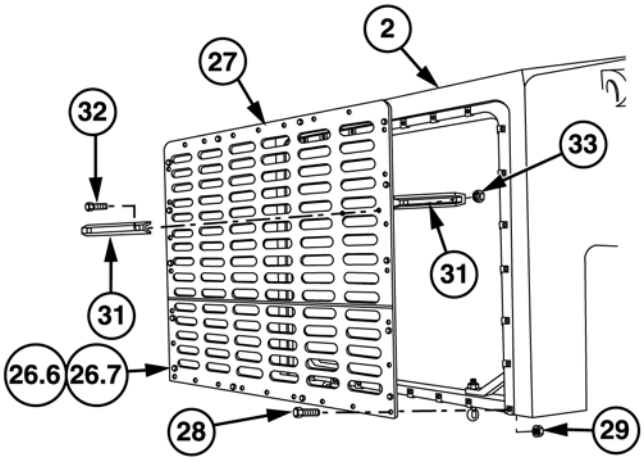
NOTE

Do Step (9.2) only if rivets or snap fasteners were removed.

(9.2) Install new snap fastener(s) (26.6) and rivet(s) (26.7) on grille (27).

(10) Install grille (27) on hood (2) with 28 screws (28) and new locknuts (29).

(11) Install two hood tilt handles (31) on grille (27) with four screws (32)and new locknuts (33).



16-7. HOOD ASSEMBLY REPAIR (CONT)

d. Installation

(1) Insert clevis pin (1) through holes in outer arm hood lock (2) and inner arm hood lock (3).

(2) Install washer (4) and new cotter pin (5) on clevis pin (1).

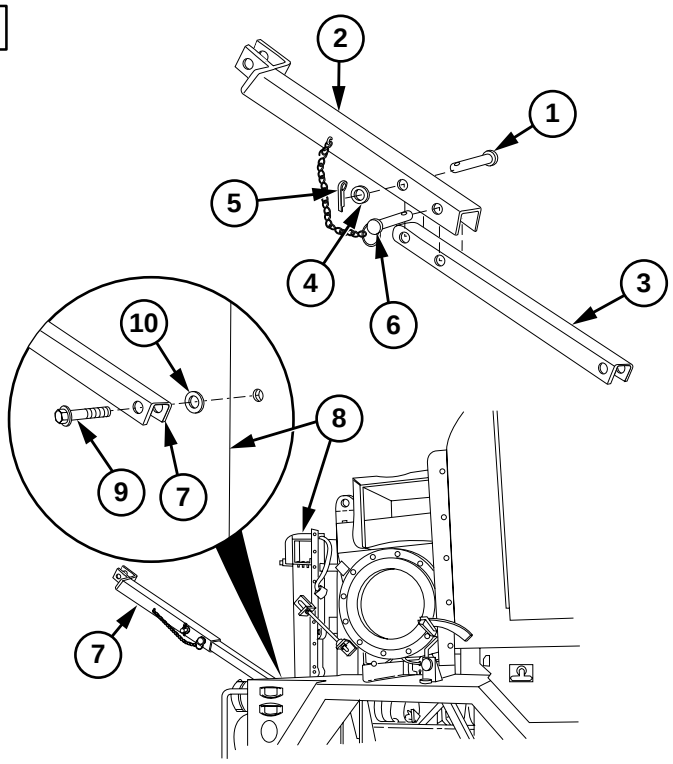
(3) Install pin (6) in outer arm hood lock (2).

WARNING

Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.

(3.1) Coat threads of screw (9) with adhesive-sealant.

(4) Install hood lock assembly (7) on radiator (8) with screw (9) and washer (10).



WARNING

Hood weighs 235 lb (107 kg). Keep out from under hood. Hood could fall causing serious injury.

(5) Attach suitable lifting device to hood (11).

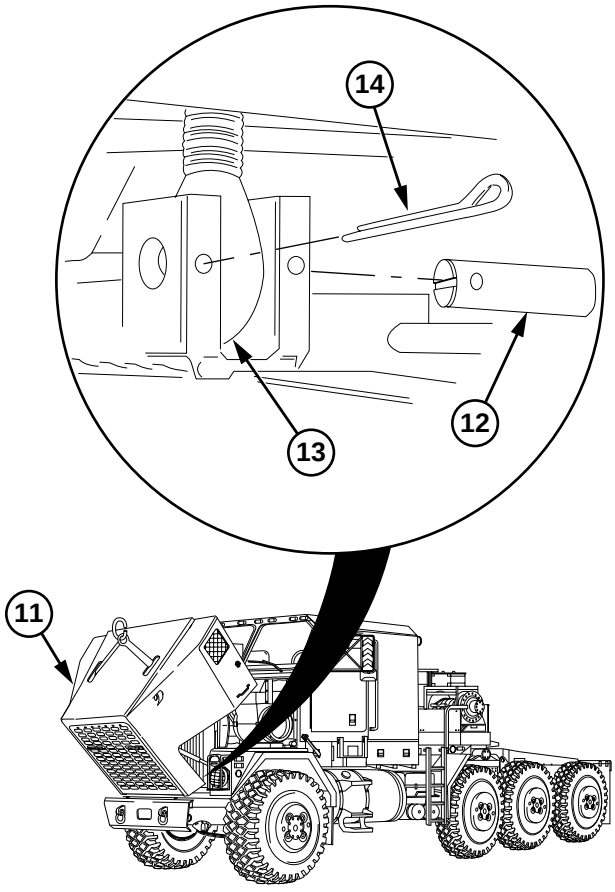
(6) Position hood (11) while assistant operates lifting device.

NOTE

Clevis pins are installed from inside out.

(7) Insert two clevis pins (12) through eyebolts (13).

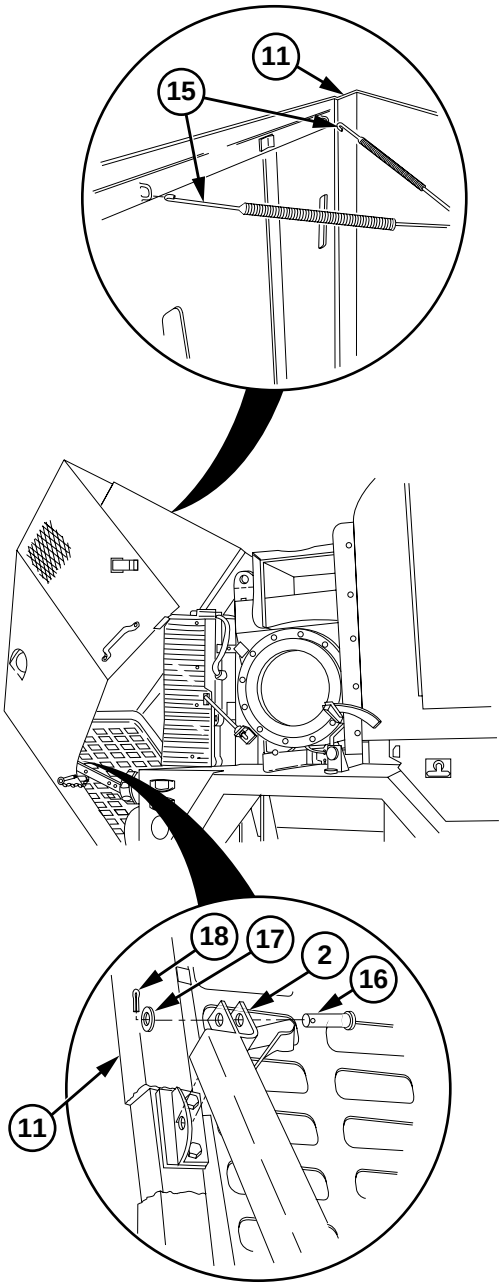
(8) Install two new cotter pins (14) in clevis pins (12).



WARNING

Wear eye protection and use care when installing springs. Springs under tension can act as projectiles if released and may cause severe eye injury.

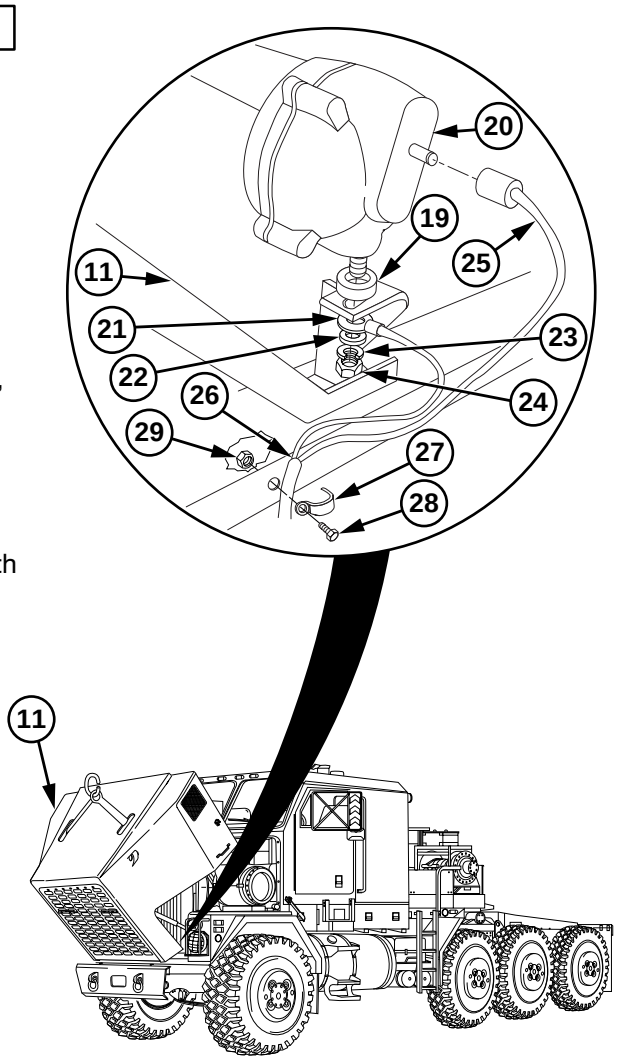
(9) Attach springs (15) to hood (11).



(10) Insert clevis pin (16) through outer arm hood lock (2) and hood (11).

(11) Install washer (17) and new cotter pin (18) on clevis pin (16).

16-7. HOOD ASSEMBLY REPAIR (CONT)



(12) Install spacer (19), blackout drive light (20), and ground wire (21) on hood (11) with washer (22), new lockwasher (23), and nut (24).

(13) Install wire (25) on blackout drive light (20).

(14) Secure wiring harness (26) to hood (11) with cushion clip (27), screw (28), and new locknut (29).

(15) Remove lifting device from hood (11).

e. Follow-On Maintenance

(1) Close engine hood (TM 9-2320-360-10).

(2) Remove wheel chocks.

16-8. HOOD ADJUSTMENT

This task covers:
a. Adjustment
b. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

Materials/Parts
Adhesive-Sealant (Item 6, Appendix C)
Locknuts (4) (Item 58, Appendix G)
Locknuts (2) (Item 72, Appendix G)
Lockwashers (4) (Item 101, Appendix G)
Lockwashers (2) (Item 102, Appendix G)

NOTE

- To adjust hood position from front to rear, do steps (1) thru (5).
- To adjust hood side support, do steps (6) thru (11).
- To adjust hood position up or down at bumper, do steps (12) thru (15).
- To adjust hood position up or down at cab, do steps (16) thru (20).
- When hood is adjusted properly, it should be 1.5 in. (38 mm) above front fenders and 1.5 in. (38 mm) from cab.

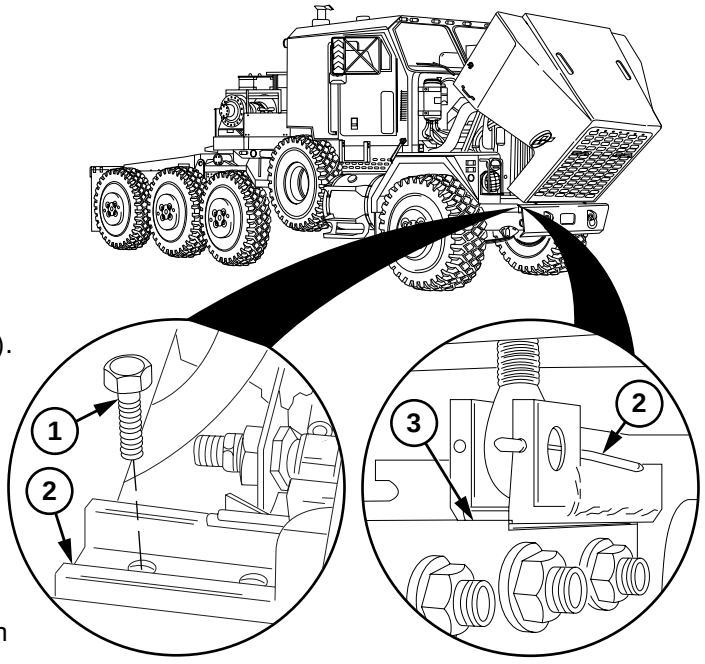
a. Adjustment

CAUTION
Do not attempt to adjust both hinge brackets at the same time. Failure to comply will result in hood being unsupported. Damage to equipment may result.

(1) Remove two screws (1) from bracket (2).

NOTE
Do not push hood bracket back more than 0.5 in. (13 mm). Mounting screw cannot be tightened if hood bracket is pushed back too far.

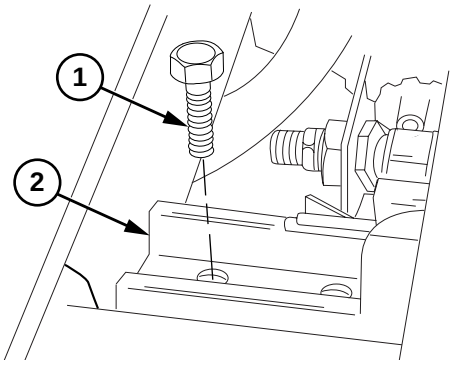
(2) Position bracket (2) 0.5 in. (13 mm) from machined lip (3).



16-8. HOOD ADJUSTMENT (CONT)

WARNING

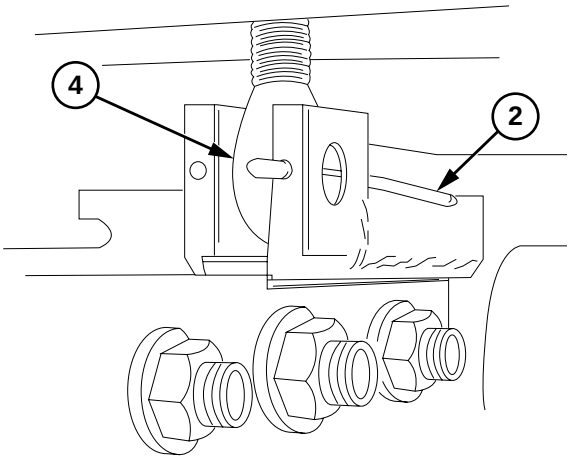
Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.



(3) Coat threads of two screws (1) with adhesive-sealant.

(4) Install bracket (2) on tow eye (4) with two screws (1). Torque to 110 lb-ft (150 N·m).

(5) Repeat steps (1) thru (4) for other side.

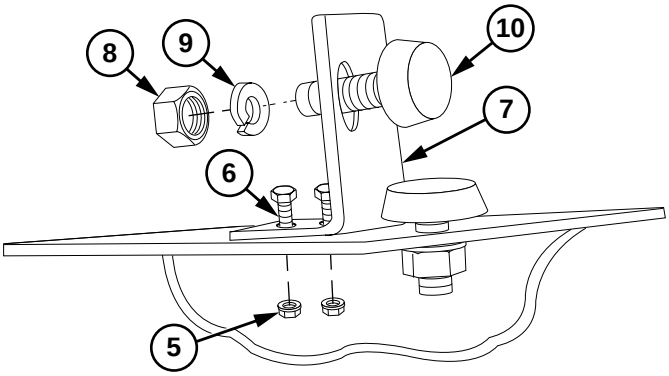


(6) Remove two locknuts (5) from screws (6) on bracket (7). Discard locknuts.

(7) Position two new locknuts (5) on screws (6). Do not tighten locknuts.

NOTE

When bracket is properly adjusted, hood bracket and cushion will hold rear of hood flush with cab.



(8) Move bracket (7) to left or right and tighten two new locknuts (5) to 23 lb-ft (16 N·m).

(9) Remove nut (8) and lockwasher (9) from back of cushion (10).

(10) Move cushion (10) up or down and install new lockwasher (9) and nut (8).

(11) Repeat steps (6) thru (10) for other side.

NOTE

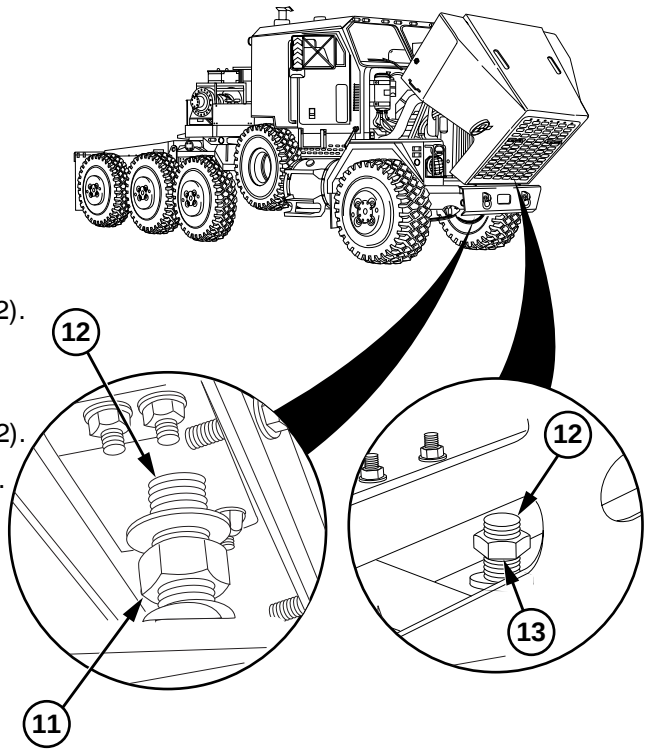
- Hood mounting lug is adjusted properly when there is 3.75 in. (9.5 cm) between drop frame and bottom of hood brace.
- Turning nuts counterclockwise raises hood, clockwise lowers hood.

(12) Loosen nut (11) on hood mounting lug (12).

(13) Turn nuts (11 and 13) to adjust hood mounting lug (12).

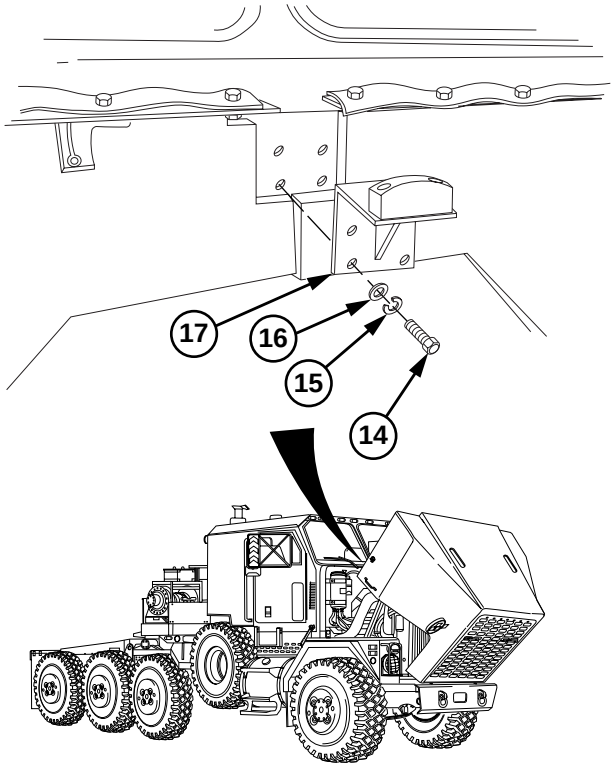
(14) Tighten nut (11) on hood mounting lug (12).

(15) Repeat steps (12) thru (14) for other side.



(16) Remove four screws (14), lockwashers (15), and washers (16) from bracket (17). Discard lockwashers.

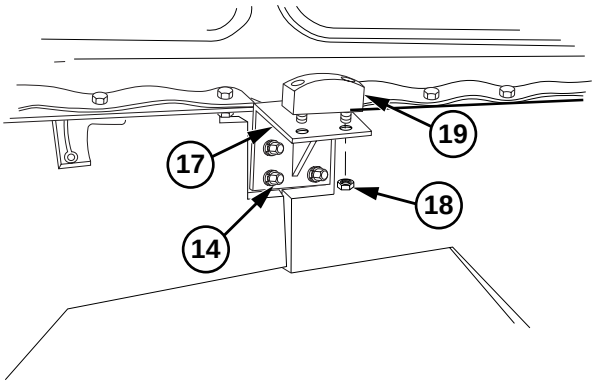
(17) Position four washers (16), new lockwashers (15), and screws (14) on bracket (17). Do not tighten.



16-8. HOOD ADJUSTMENT (CONT)

NOTE

When rear hood bracket and cushion are properly adjusted, bottom sides of hood will be parallel to top of fenders.



(18) Move bracket (17) up or down and tighten screws (14) to 156 lb-in. (18 N·m).

(19) Remove two locknuts (18) from under cushion (19). Discard locknuts.

(20) Move cushion (19) to front or rear and install two new locknuts (18).

c. Follow-On Maintenance

(1) Close engine hood (TM 9-2320-360-10).

(2) Remove wheel chocks.

16-8.1. RUBBER DRAW LATCHES (HOOD) REPLACEMENT

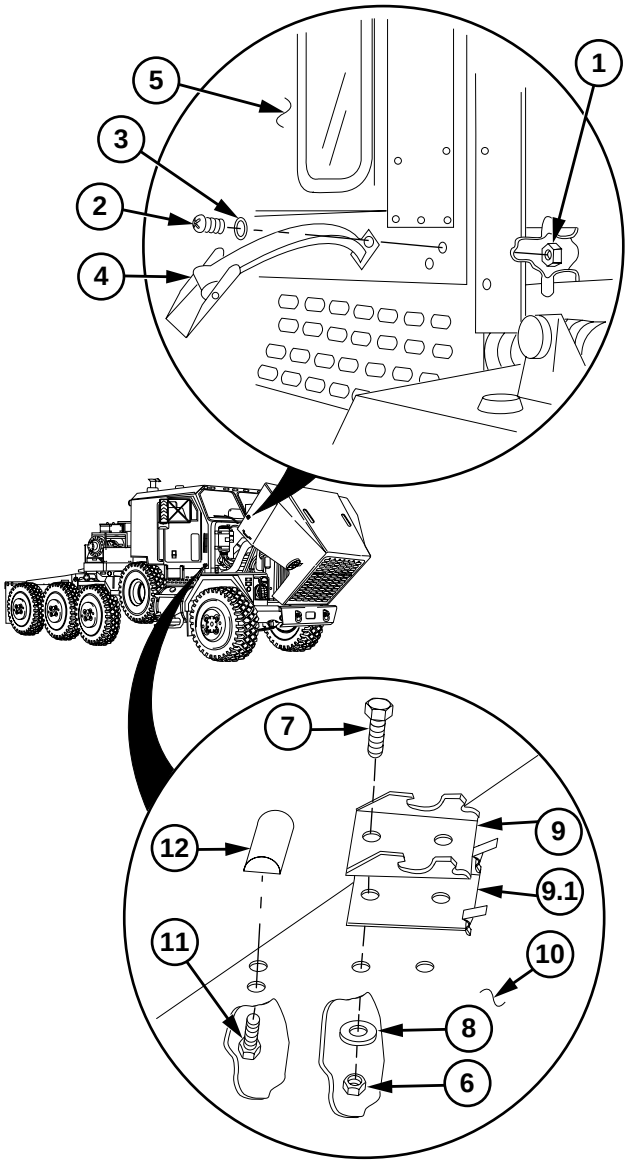
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment ConditionsTools and Special Tools
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).

Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (4) (Item 74, Appendix G)



a. Removal

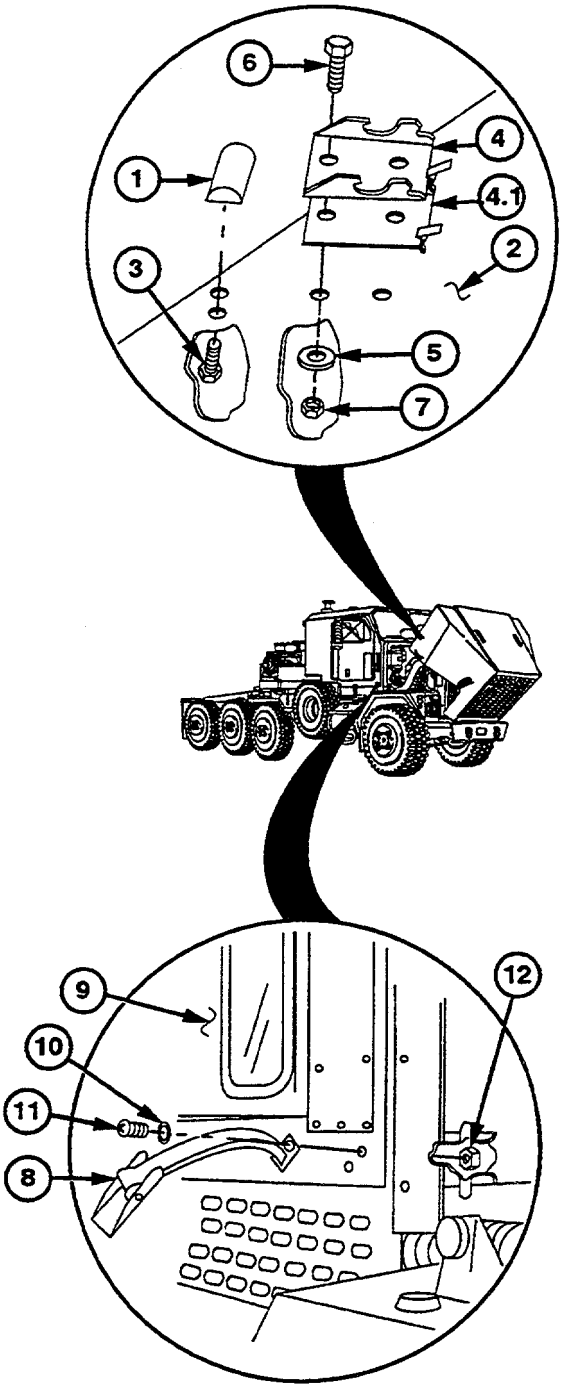
NOTE
Both latches are replaced the same way. Right side is shown.

(1) Remove two locknuts (1), screws (2), washers (3), and latch (4) from cab (5). Discard locknuts.

(2) Remove two locknuts (6), screws (7), washers (8), latch hook (9), and spring clip (9.1) from hood (10). Discard locknuts.

(3) Remove two screws (11) and bumper (12) from hood (10).

16-8.1. RUBBER DRAW LATCHES (HOOD) REPLACEMENT (CONT)



b. Installation

(1) Install bumper (1) on hood (2) with two screws (3).

(2) Install latch hook (4) and spring clip (4.1) on hood (2) with two washers (5), screws (6), and new locknuts (7).

(3) Install latch (8) on cab (9) with two washers (10), screws (11), and new locknuts (12).

c. Follow-On Maintenance

(1) Close engine hood (TM 9-2320-360-10).

(2) Remove wheel chocks.

16-9. SEATBELT REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

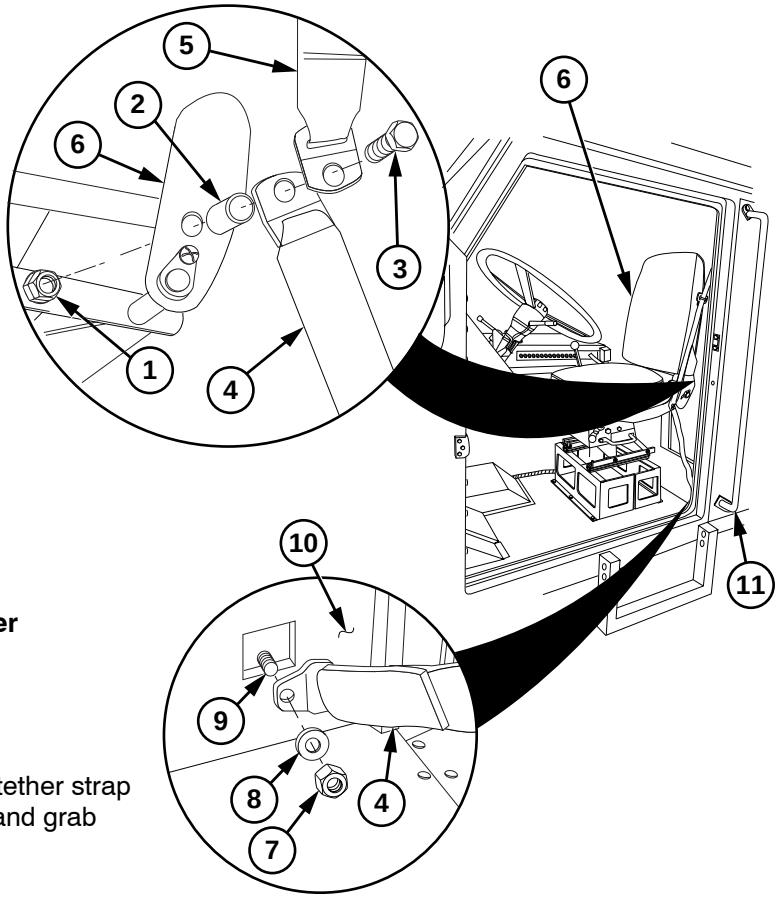
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-75 Lb-In. (Item 71, Appendix F)

Materials/Parts
Locknuts (20) (Item 47, Appendix G)
Locknuts (3) (Item 67, Appendix G)
Lockwashers (16) (Item 103, Appendix G)

Personnel Required
Two

a. Driver's Side Removal

(1) Remove locknut (1), spacer (2), screw (3), tether strap (4) and seat belt (5) from door side of driver's seat (6). Discard locknut.



WARNING

Do not use grab handle after completing step (2). Grab handle is no longer secure. Serious injury may result.

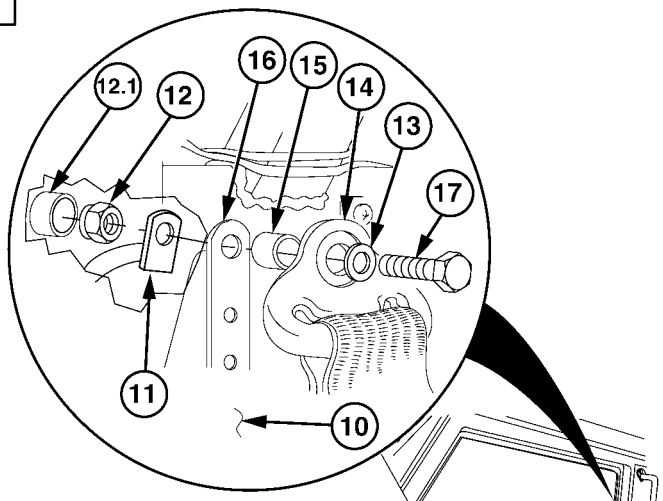
(2) Remove locknut (7), washer (8), tether strap (4), and screw (9) from cab (10) and grab handle (11). Discard locknut.

16-9. SEATBELT REPLACEMENT (CONT)

NOTE

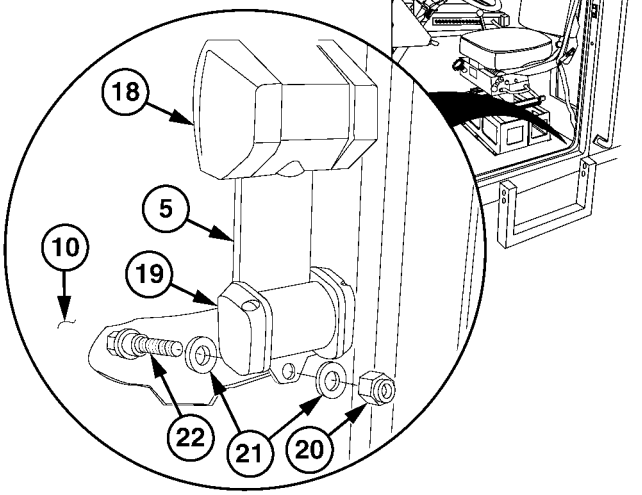
Position of screw and locknut may be reversed.

(3) Remove cap (12.1), locknut (12), D-loop (14), bushing (15), comfort latch (16), washer (13), screw (17), and grab handle (11) from cab (10). Discard locknut.



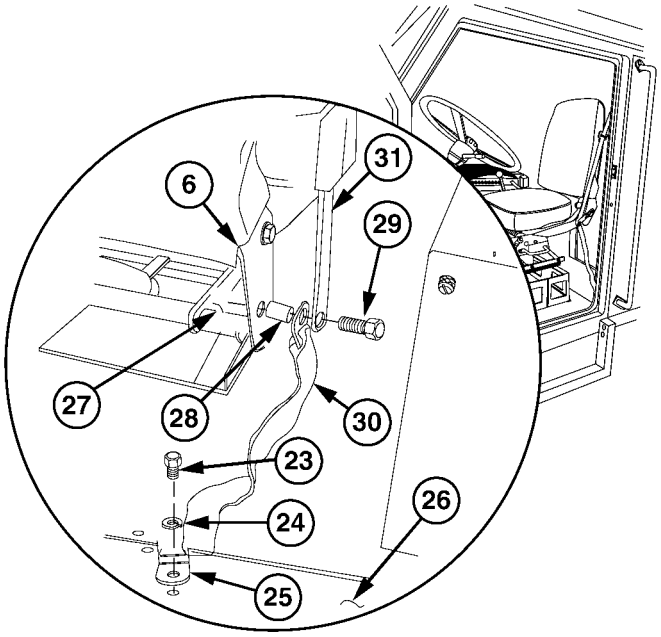
(4) Remove retractor cover (18) from retractor (19).

(5) Remove locknut (20), two washers (21), screw (22), retractor (19), and belt assembly (5) from cab (10). Discard locknut.



(6) Remove screw (23), lockwasher (24) and bracket (25) from doghouse side of cab floor (26). Discard lockwasher.

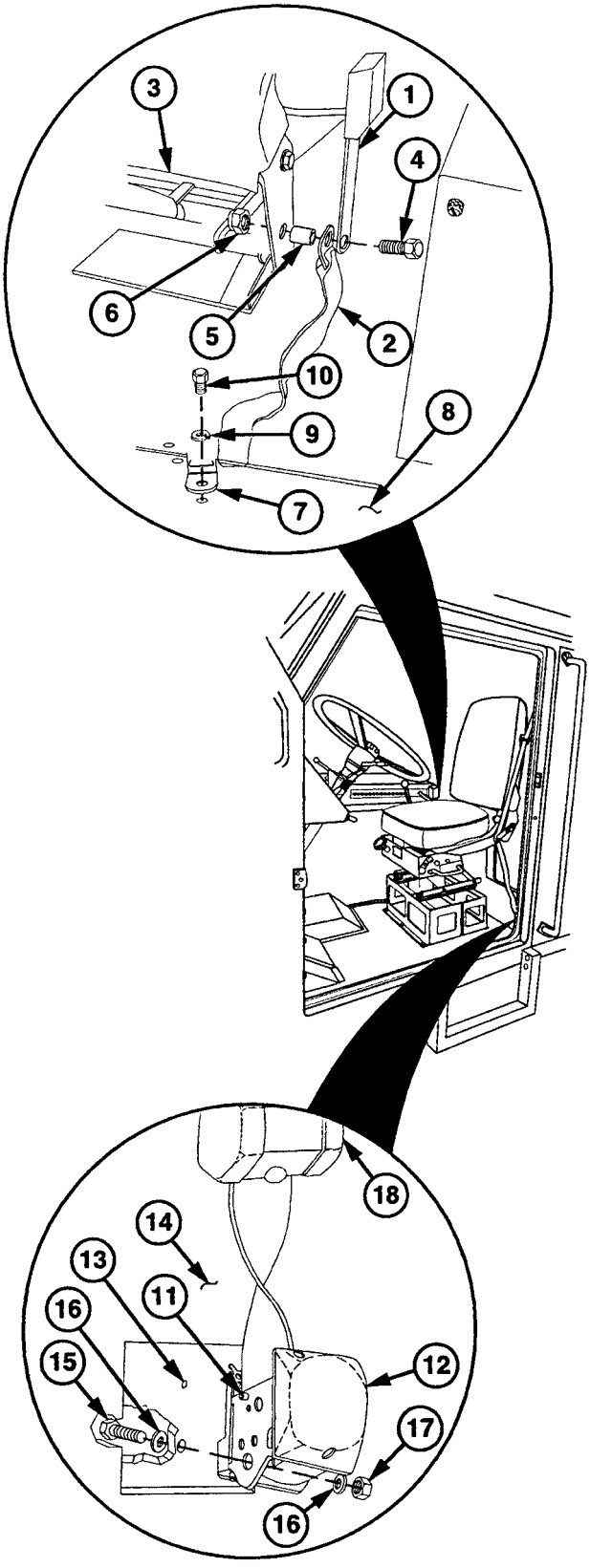
(7) Remove locknut (27), spacer (28), screw (29), tether strap (30), and buckle (31) from driver's seat (6). Discard locknut.



b. Driver's Side Installation

(1) Install buckle (1) and tether strap (2) on driver's seat (3) with screw (4), spacer (5), and new locknut (6).

(2) Install bracket (7) on cab floor (8) with new lockwasher (9) and screw (10).



(3) Align dowel (11) on retractor (12) with slot (13) in cab (14).

(4) Install retractor (12) on cab (14) with screw (15), two washers (16), and new locknut (17).

(5) Install retractor cover (18) on retractor (12).

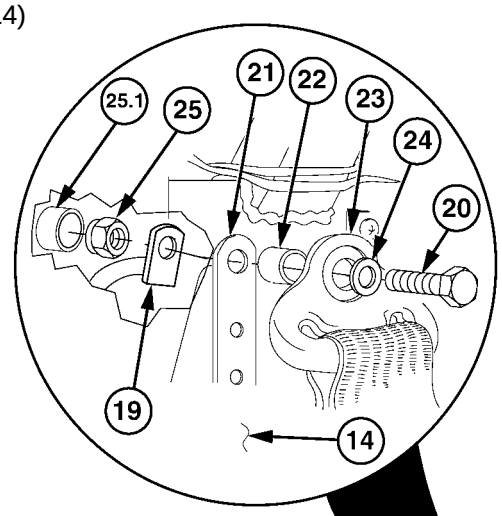
16-9. SEATBELT REPLACEMENT (CONT)

(6) Position D-loop (23), bushing (22), comfort latch (21), and grab handle (19) on cab (14) with screw (20) and washer (24).

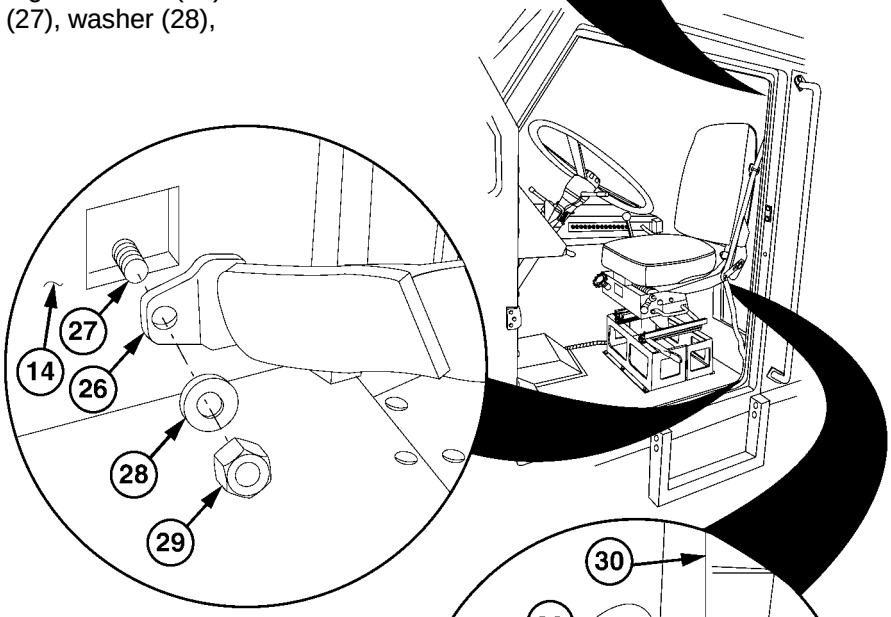
NOTE

Bushing fits inside D-loop.
D-loop must rotate freely after installed.

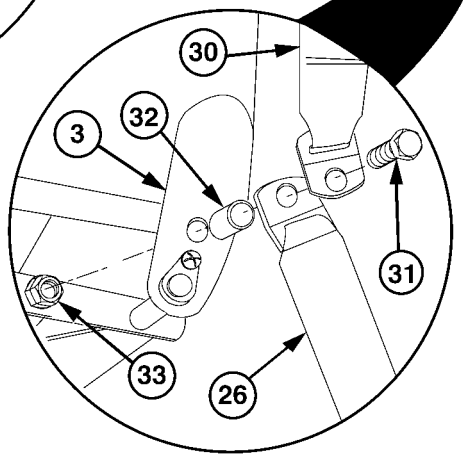
(7) Install new locknut (25) on screw (20). Torque to 70 lb-in. (7.9 NSm). Install cap (25.1) on locknut (25).



(8) Install tether strap (26) on grab handle (19) and cab (14) with screw (27), washer (28), and new locknut (29).



(9) Install tether strap (26) and seat belt (30) on driver's seat (3) with screw (31), spacer (32), and new locknut (33).

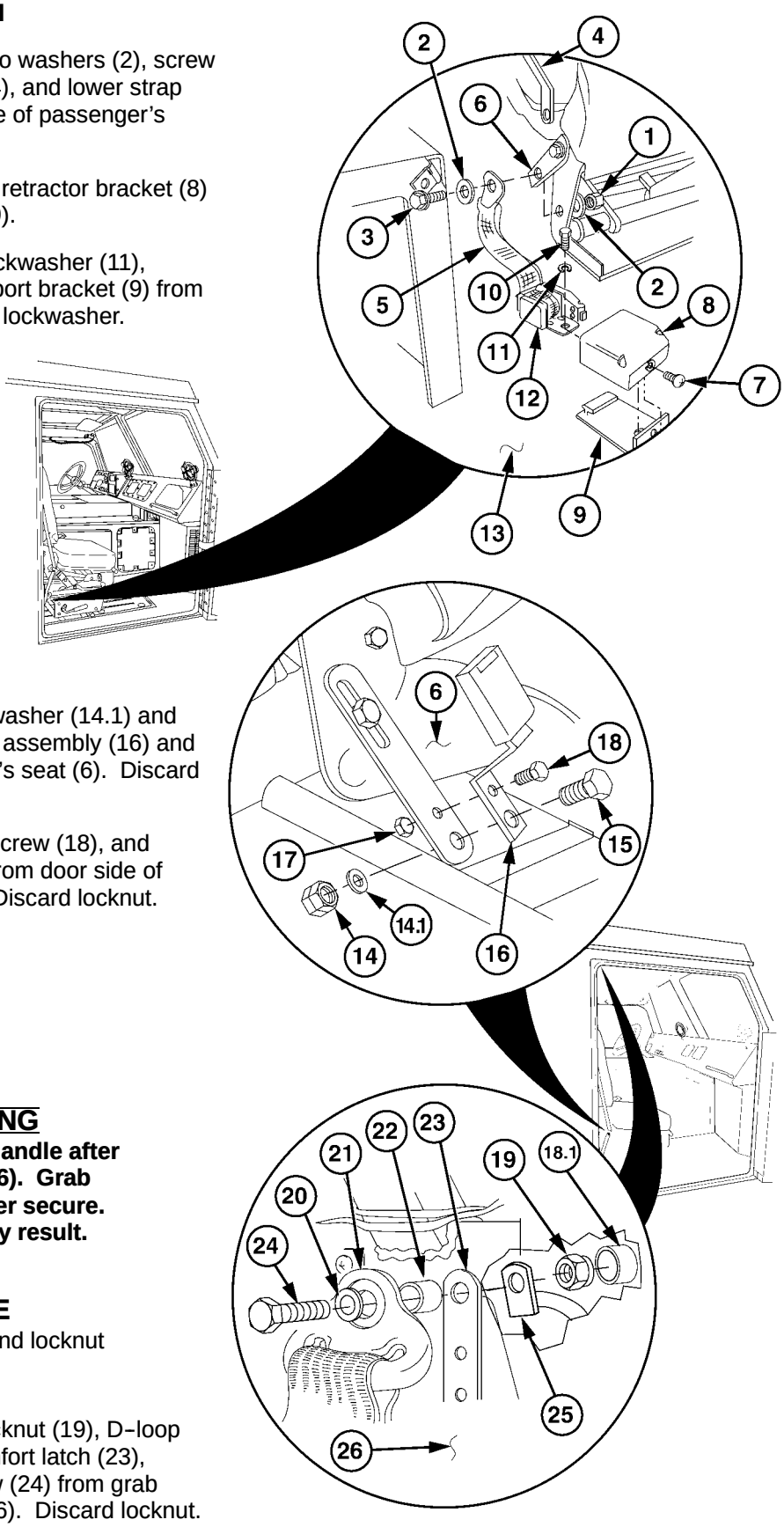


c. Passenger's Side Removal

(1) Remove locknut (1), two washers (2), screw (3), buckle assembly (4), and lower strap (5), from doghouse side of passenger's seat (6).

(2) Remove screw (7) and retractor bracket (8) from support bracket (9).

(3) Remove screw (10), lockwasher (11), retractor (12), and support bracket (9) from cab floor (13). Discard lockwasher.



(4) Remove locknut (14), washer (14.1) and screw (15) from buckle assembly (16) and door side of passenger's seat (6). Discard locknut.

(5) Remove locknut (17), screw (18), and buckle assembly (16) from door side of passenger's seat (6). Discard locknut.

WARNING

Do not use grab handle after completing step (6). Grab handle is no longer secure. Serious injury may result.

NOTE

Position of screw and locknut may be reversed.

(6) Remove cap (18.1), locknut (19), D-loop (21), bushing (22), comfort latch (23), washer (20), and screw (24) from grab handle (25) and cab (26). Discard locknut.

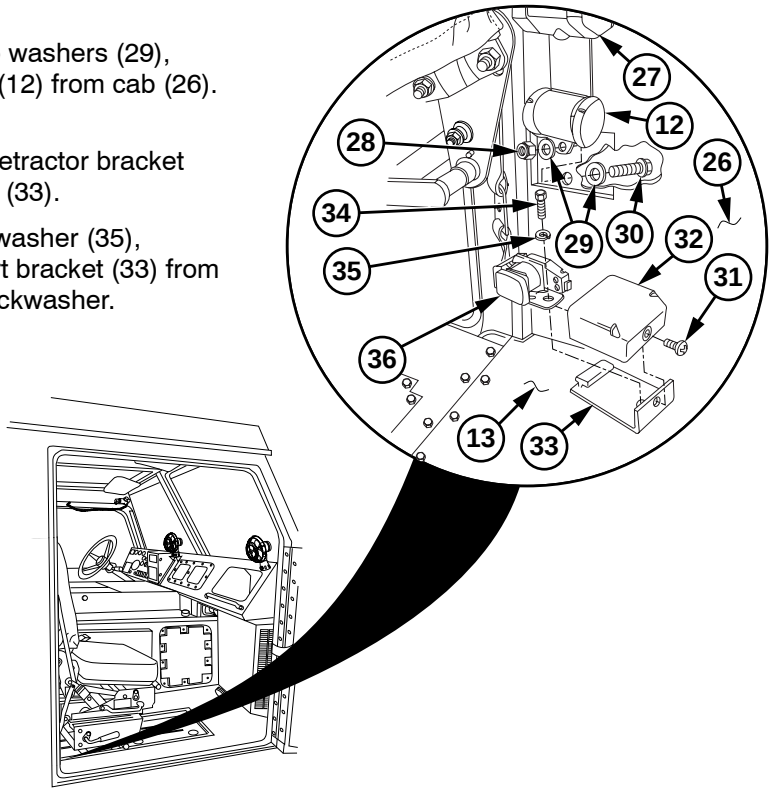
16-9. SEATBELT REPLACEMENT (CONT)

(7) Remove retractor cover (27) from retractor (12).

(8) Remove locknut (28), two washers (29), screw (30), and retractor (12) from cab (26). Discard locknut.

(9) Remove screw (31) and retractor bracket (32) from support bracket (33).

(10) Remove screw (34), lockwasher (35), retractor (36), and support bracket (33) from cab floor (13). Discard lockwasher.



(11) Deleted.

d. Passenger's Side Installation

(1) Deleted.

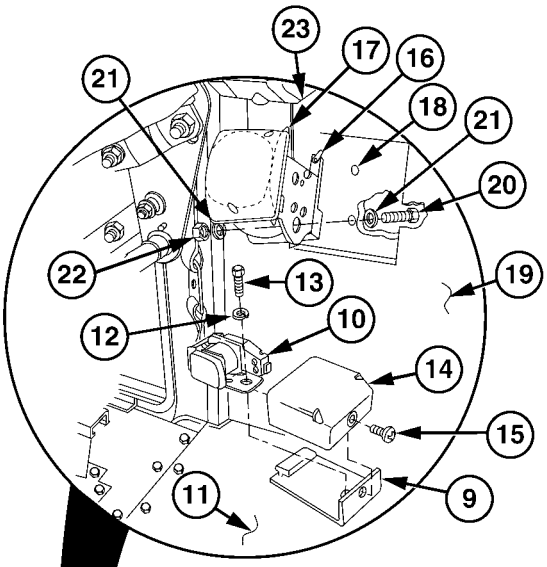
(2) Install support bracket (9) and retractor (10) on cab floor (11) with new lockwasher (12) and screw (13).

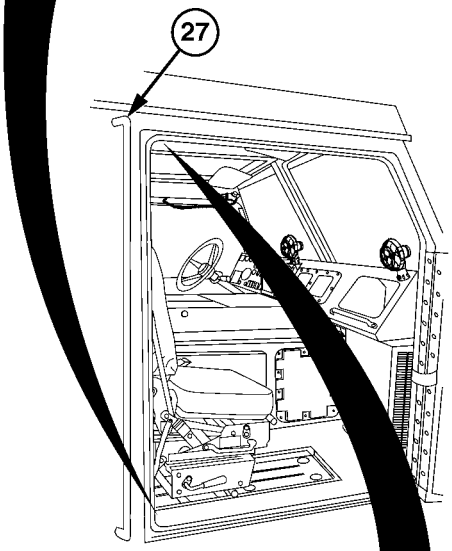
(3) Install retractor bracket (14) on support bracket (9) with screw (15).

(4) Align dowel (16) on retractor (17) with slot (18) in cab (19).

(5) Install retractor (17) on cab (19) with screw (20), two washers (21), and new locknut (22).

(6) Install retractor cover (23) on retractor (17).

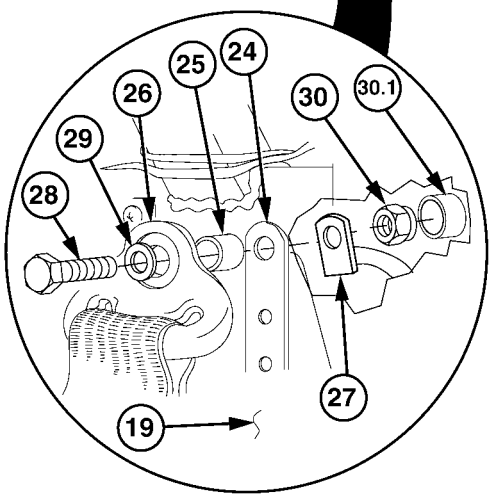




NOTE

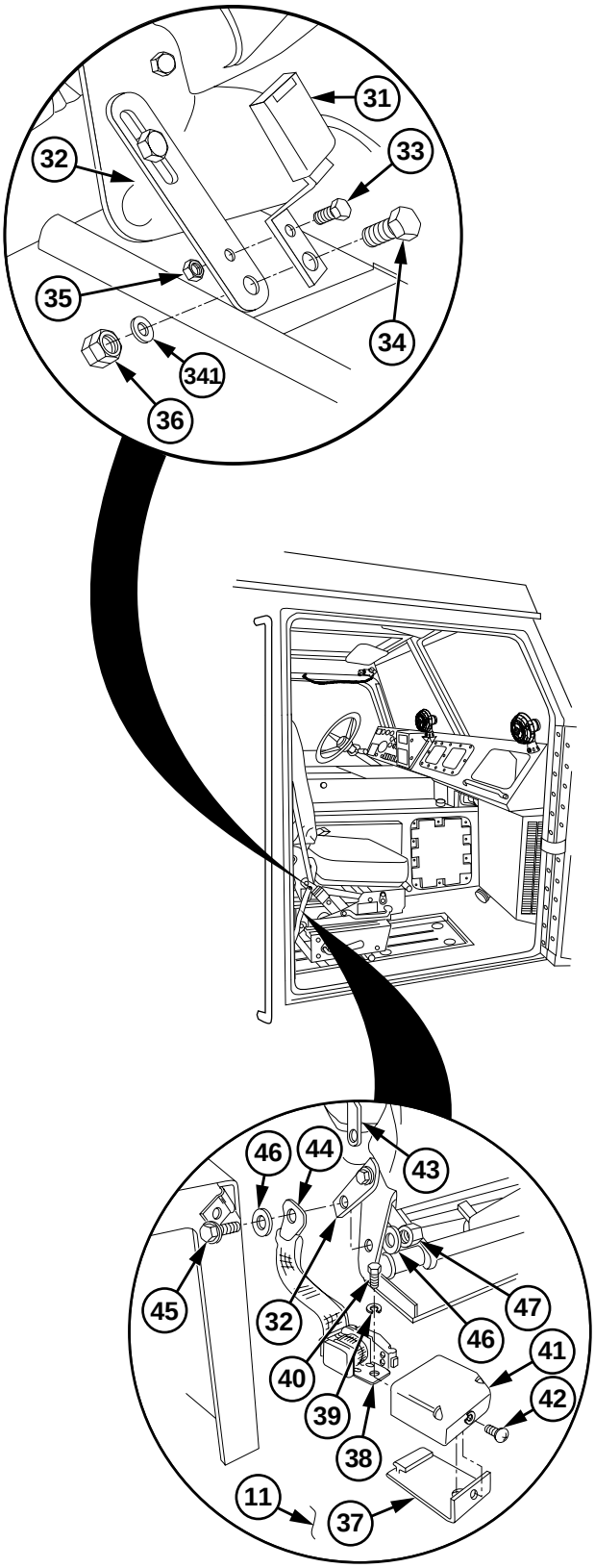
Bushing fits inside D-loop.
D-loop must rotate freely after installed.

(7) Install comfort latch (24), bushing (25), and D-loop (26) on cab (19) and grab handle (27) with screw (28), washer (29), and new locknut (30). Torque to 70 lb-in. (7.9 N·m). Install cap (30.1) on locknut (30).



16-9. SEATBELT REPLACEMENT (CONT)

(8) Install buckle assembly (31) on door side of passenger's seat (32) with two screws (33 and 34), washer (34.1), and new locknuts (35 and 36).



(9) Install support bracket (37) and retractor (38) on cab floor (11) with new lockwasher (39) and screw (40).

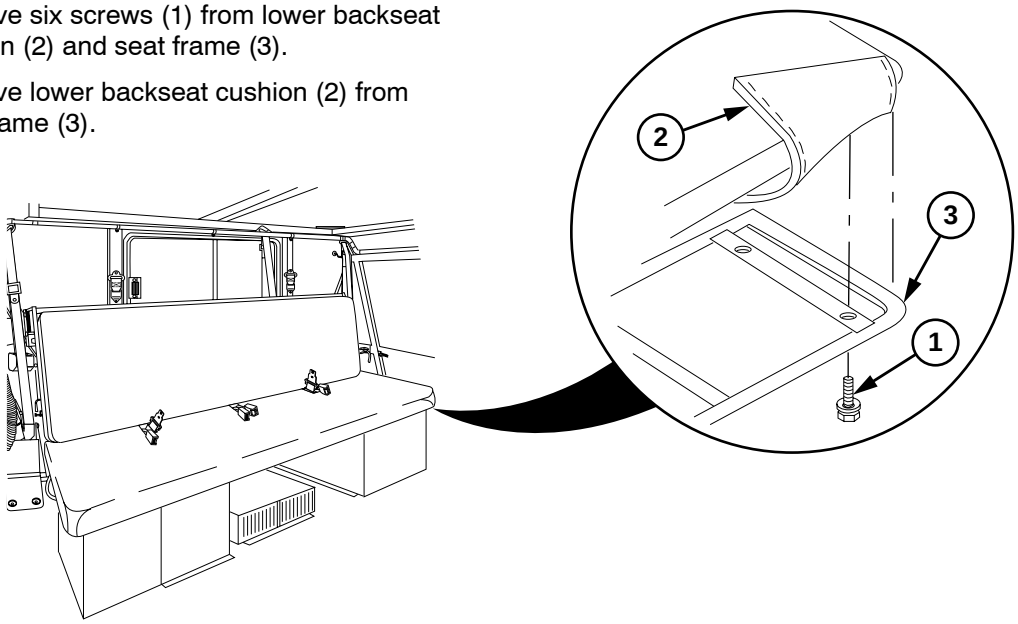
(10) Install retractor bracket (41) on support bracket (37) with screw (42).

(11) Install buckle assembly (43) and lower strap (44) on doghouse side of passenger's seat (32) with screw (45), two washers (46), and new locknut (47).

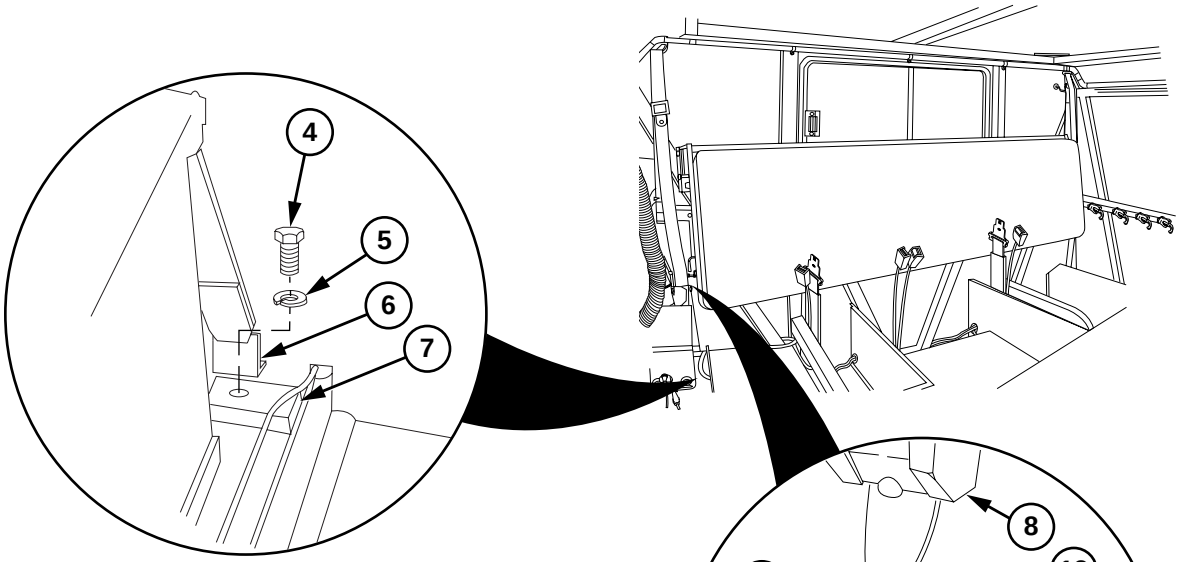
e. Right Rear Removal

(1) Remove six screws (1) from lower backseat cushion (2) and seat frame (3).

(2) Remove lower backseat cushion (2) from seat frame (3).

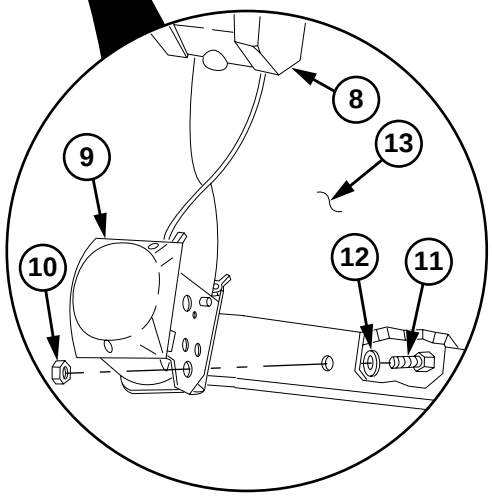


(3) Remove screw (4), lockwasher (5), and belt (6) from cab floor (7). Discard lockwasher.



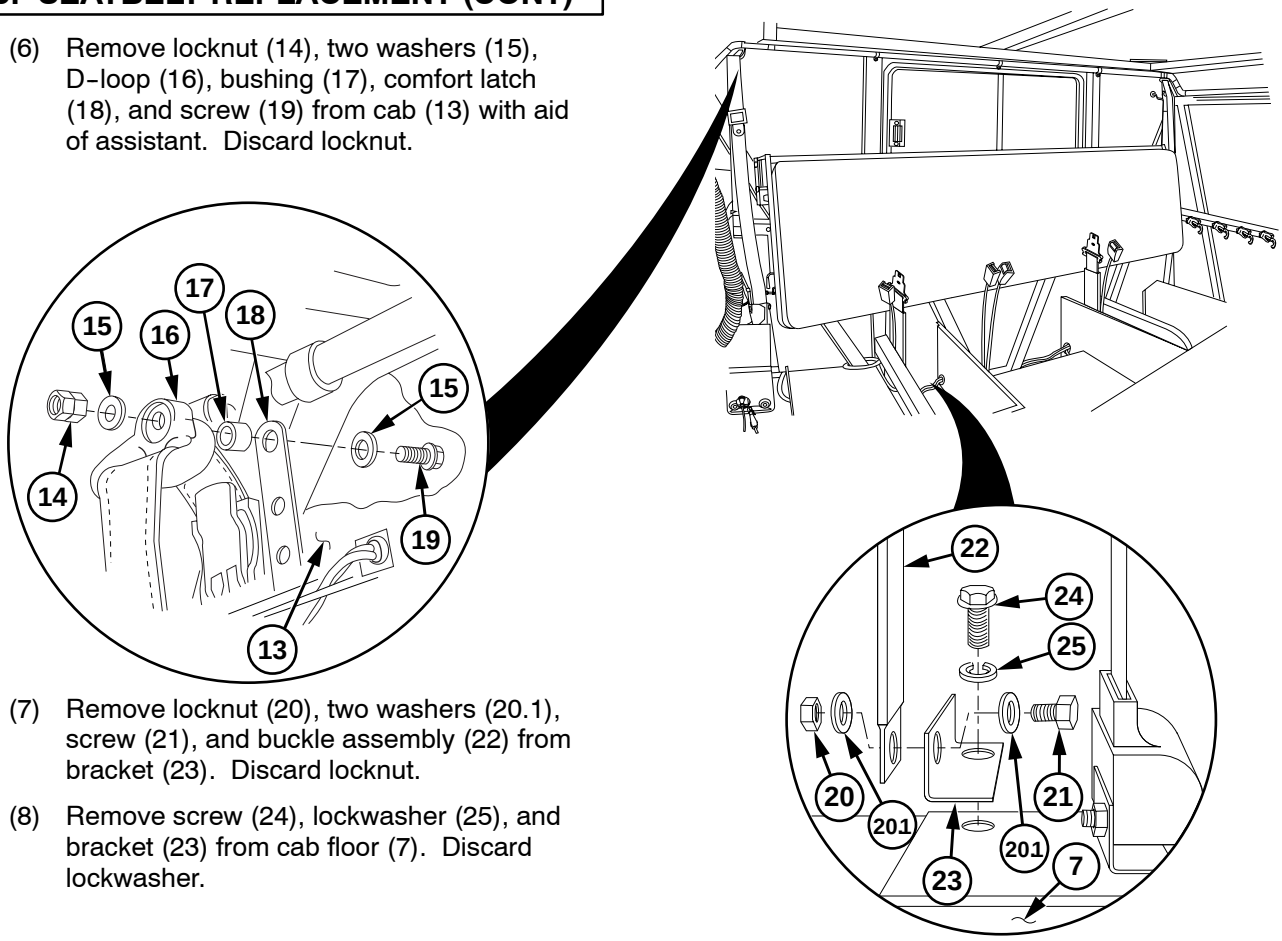
(4) Remove retractor cover (8) from retractor (9).

(5) Remove locknut (10), retractor (9), screw (11), and washer (12) from cab (13) with aid of assistant. Discard locknut.



16-9. SEATBELT REPLACEMENT (CONT)

(6) Remove locknut (14), two washers (15), D-loop (16), bushing (17), comfort latch (18), and screw (19) from cab (13) with aid of assistant. Discard locknut.



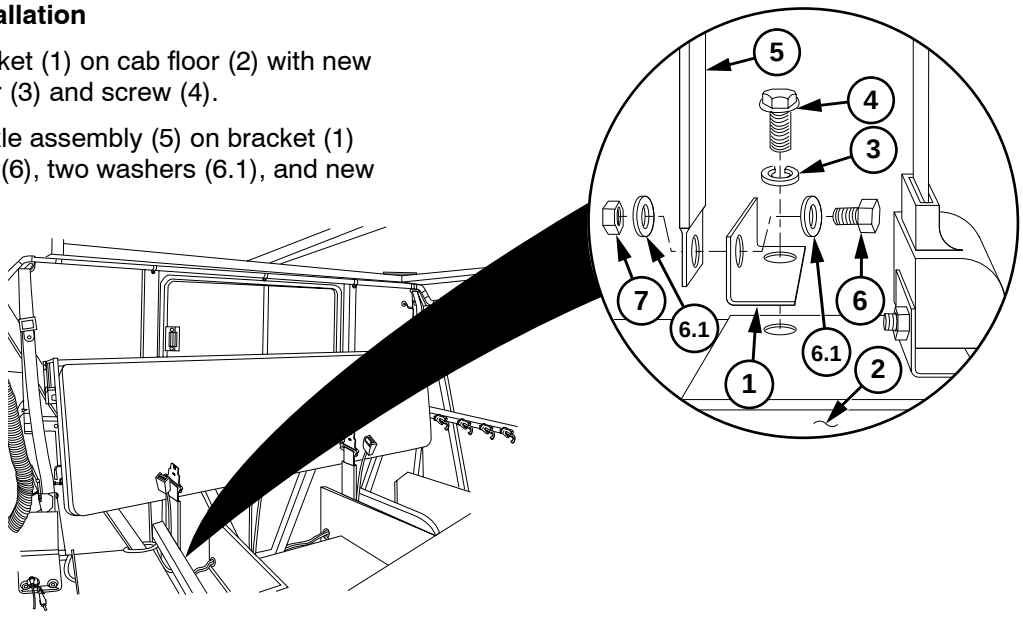
(7) Remove locknut (20), two washers (20.1), screw (21), and buckle assembly (22) from bracket (23). Discard locknut.

(8) Remove screw (24), lockwasher (25), and bracket (23) from cab floor (7). Discard lockwasher.

f. Right Rear Installation

(1) Install bracket (1) on cab floor (2) with new lockwasher (3) and screw (4).

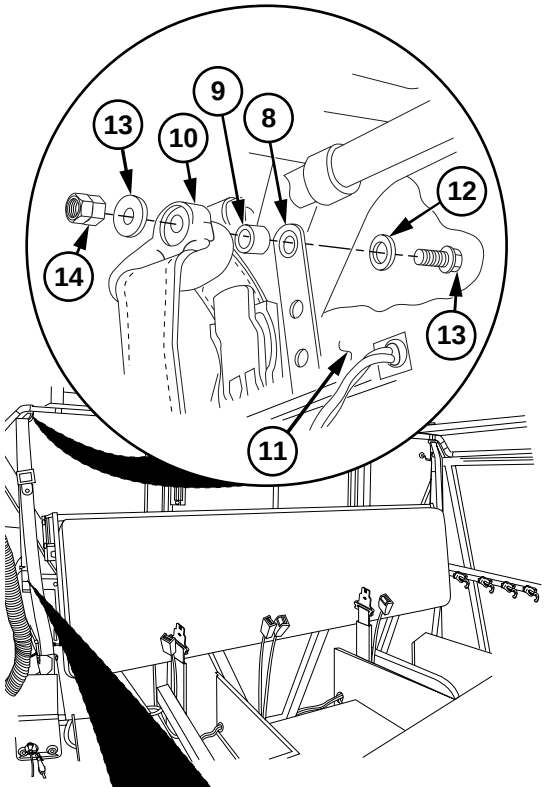
(2) Install buckle assembly (5) on bracket (1) with screw (6), two washers (6.1), and new locknut (7).



NOTE

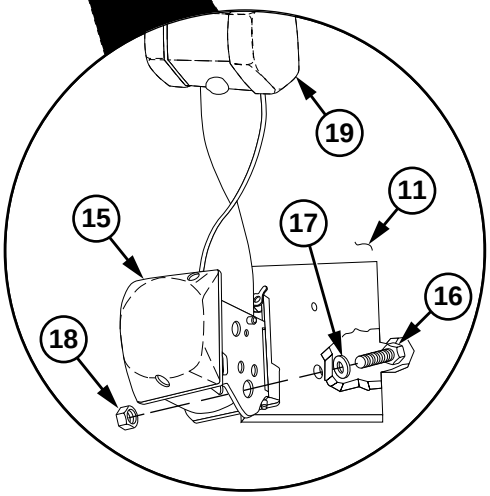
Bushing fits inside D-loop.
D-loop must rotate freely after installed.

(3) Install comfort latch (8), bushing (9), and D-loop (10) on cab (11) with screw (12), two washers (13), and new locknut (14) with aid of assistant. Torque to 70 lb-in. (7.9 N·m).



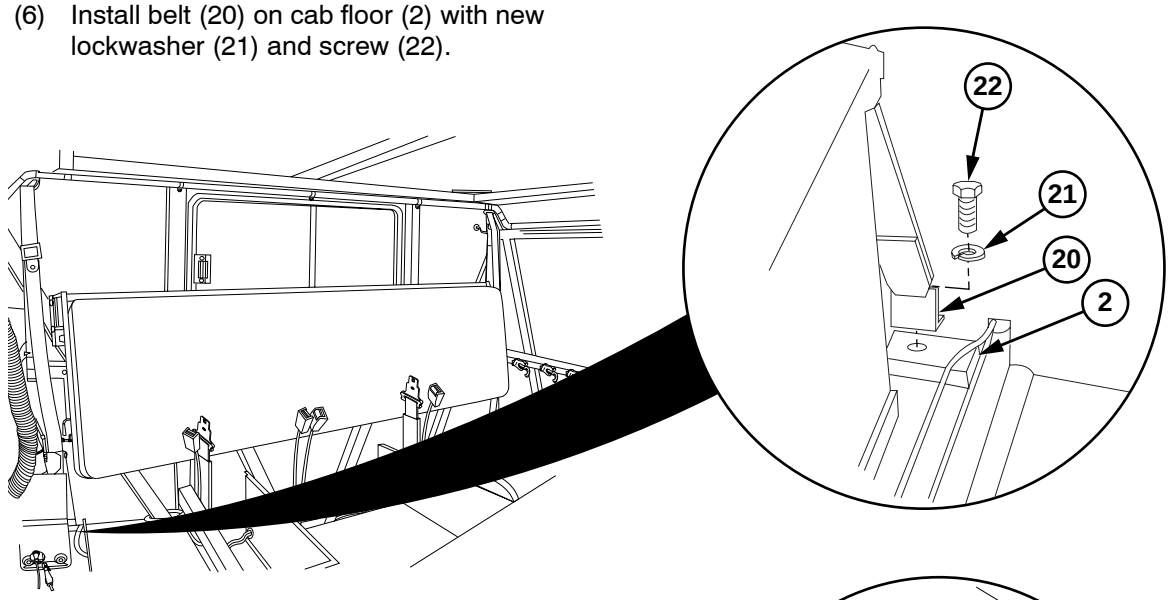
(4) Install retractor (15) on cab (11) with screw (16), washer (17), and new locknut (18) with aid of assistant. Torque to 70 lb-in. (7.9 N·m).

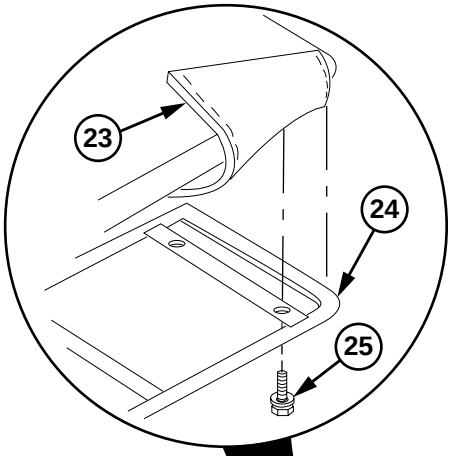
(5) Install retractor cover (19) on retractor (15).



16-9. SEATBELT REPLACEMENT (CONT)

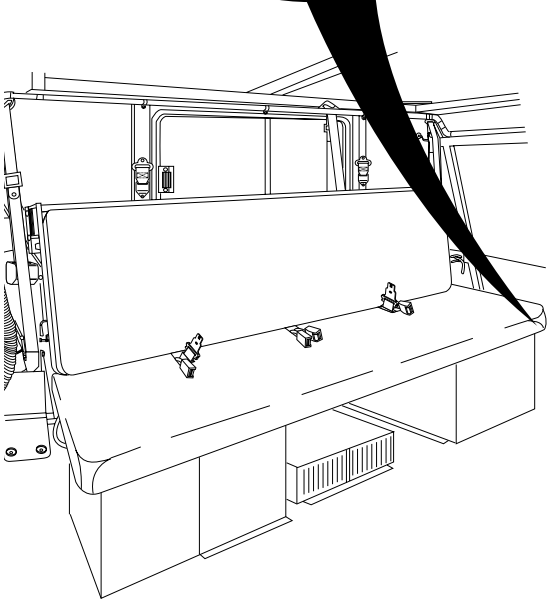
(6) Install belt (20) on cab floor (2) with new lockwasher (21) and screw (22).





(7) Position lower backseat cushion (23) on seat frame (24).

(8) Install six screws (25) in lower backseat cushion (23) and seat frame (24).



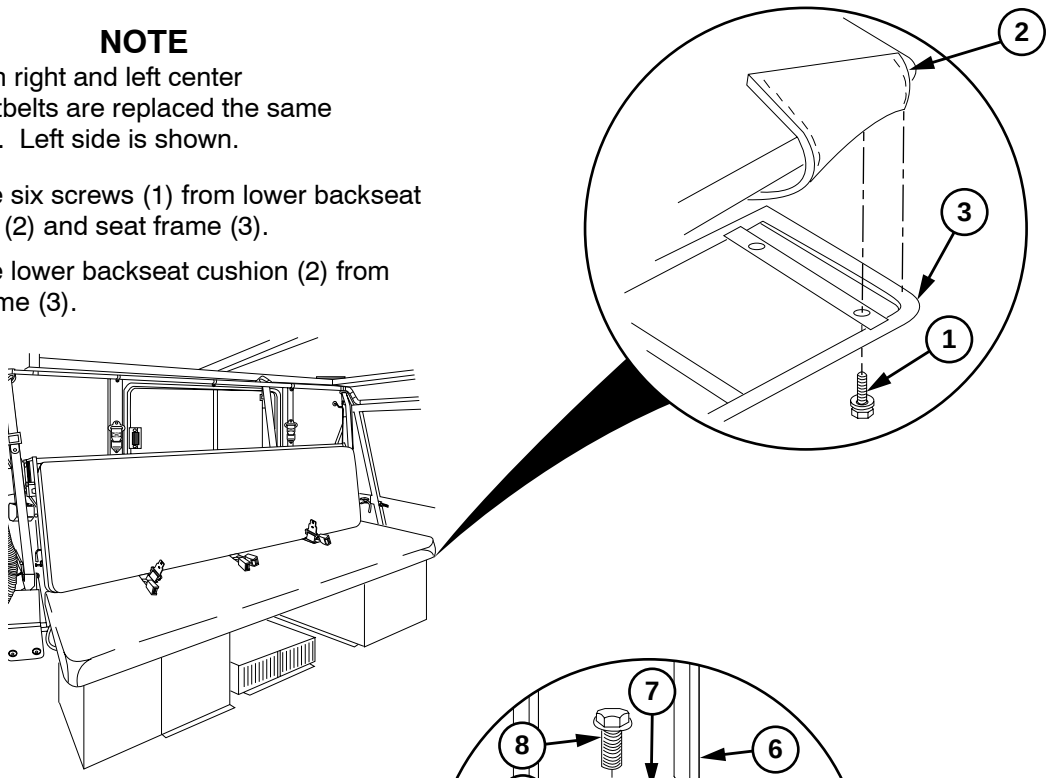
g. Center Rear Removal

NOTE

Both right and left center seatbelts are replaced the same way. Left side is shown.

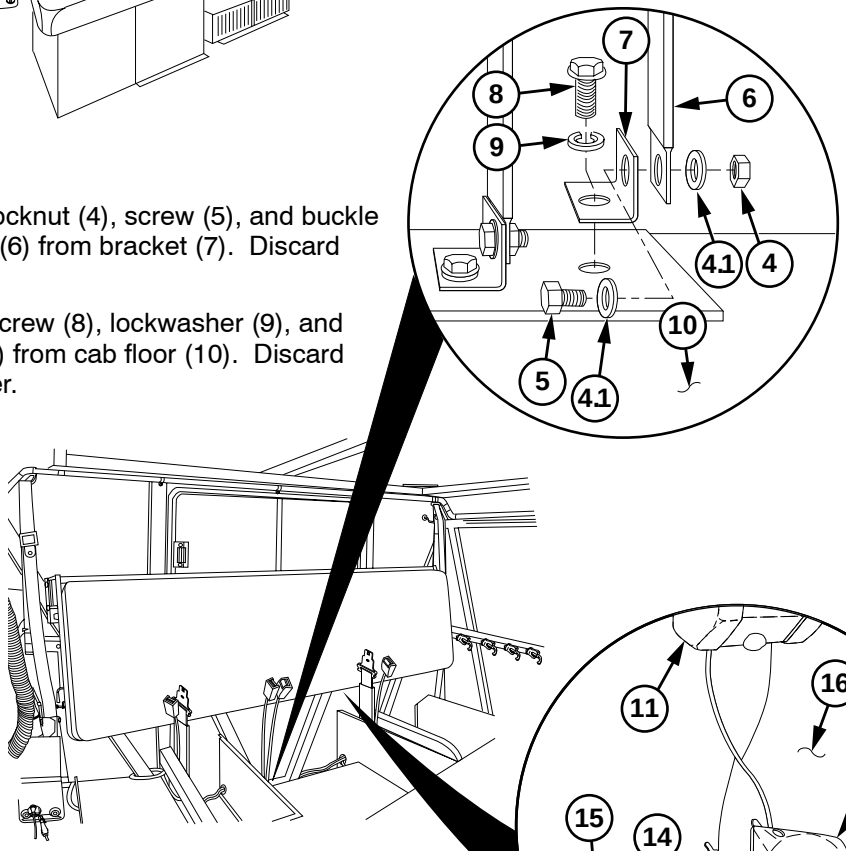
(1) Remove six screws (1) from lower backseat cushion (2) and seat frame (3).

(2) Remove lower backseat cushion (2) from seat frame (3).



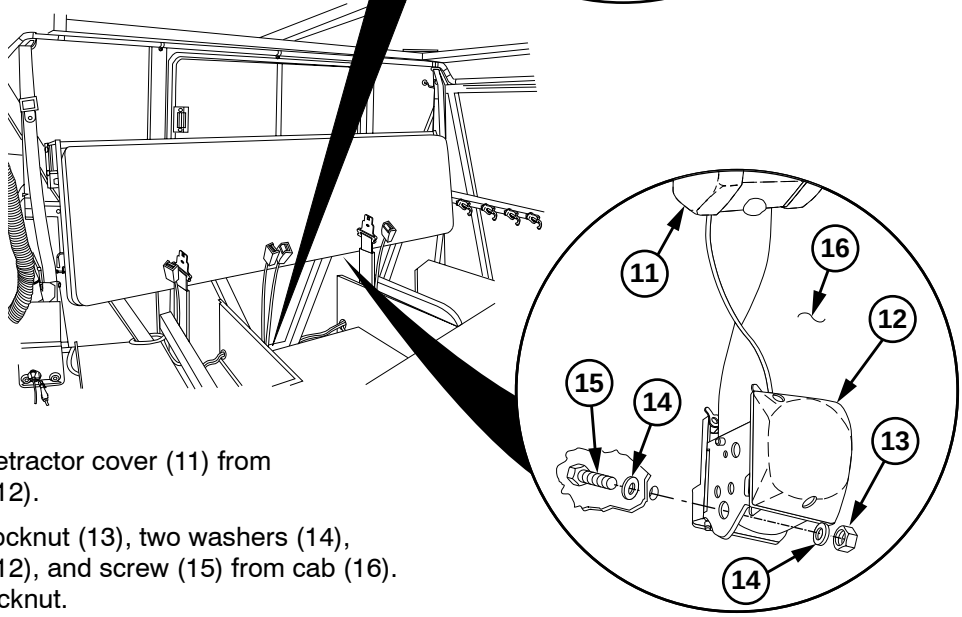
(3) Remove locknut (4), screw (5), and buckle assembly (6) from bracket (7). Discard locknut.

(4) Remove screw (8), lockwasher (9), and bracket (7) from cab floor (10). Discard lockwasher.



(5) Remove retractor cover (11) from retractor (12).

(6) Remove locknut (13), two washers (14), retractor (12), and screw (15) from cab (16). Discard locknut.

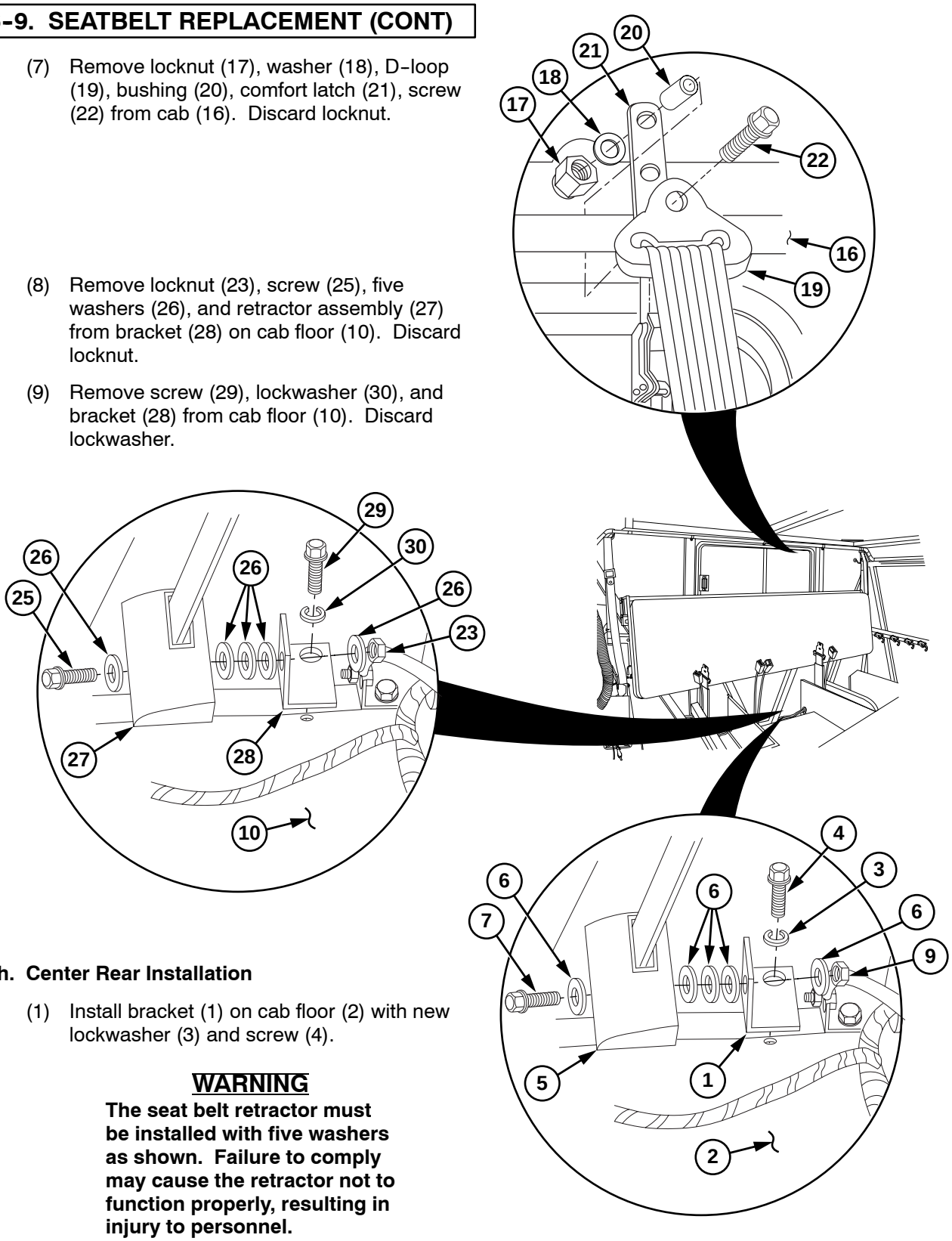


16-9. SEATBELT REPLACEMENT (CONT)

(7) Remove locknut (17), washer (18), D-loop (19), bushing (20), comfort latch (21), screw (22) from cab (16). Discard locknut.

(8) Remove locknut (23), screw (25), five washers (26), and retractor assembly (27) from bracket (28) on cab floor (10). Discard locknut.

(9) Remove screw (29), lockwasher (30), and bracket (28) from cab floor (10). Discard lockwasher.



h. Center Rear Installation

(1) Install bracket (1) on cab floor (2) with new lockwasher (3) and screw (4).

WARNING

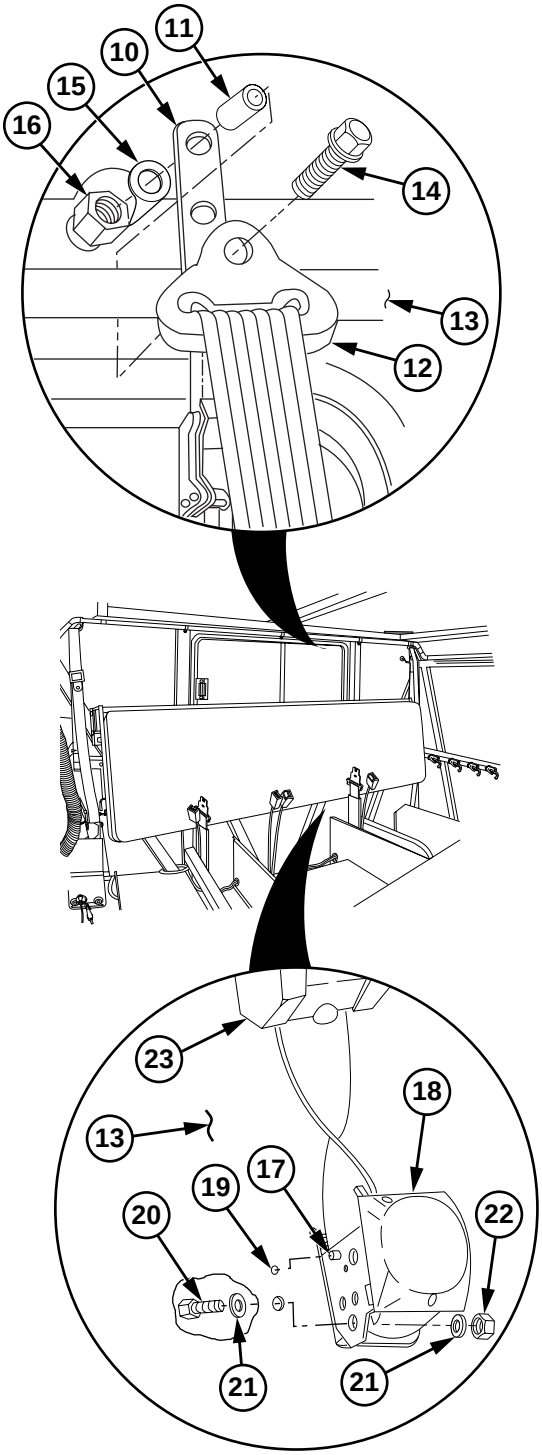
The seat belt retractor must be installed with five washers as shown. Failure to comply may cause the retractor not to function properly, resulting in injury to personnel.

(2) Install retractor (5) on bracket (1) with five washers (6), screw (7), and new locknut (9).

NOTE

Bushing fits inside D-loop. D-loop must rotate freely after installed.

(3) Install comfort latch (10), bushing (11), and D-loop (12) on cab (13) with screw (14), washer (15), and new locknut (16). Torque to 70 lb-in. (7.9 N·m).



(4) Align dowel (17) on retractor (18) with slot (19) in cab (13).

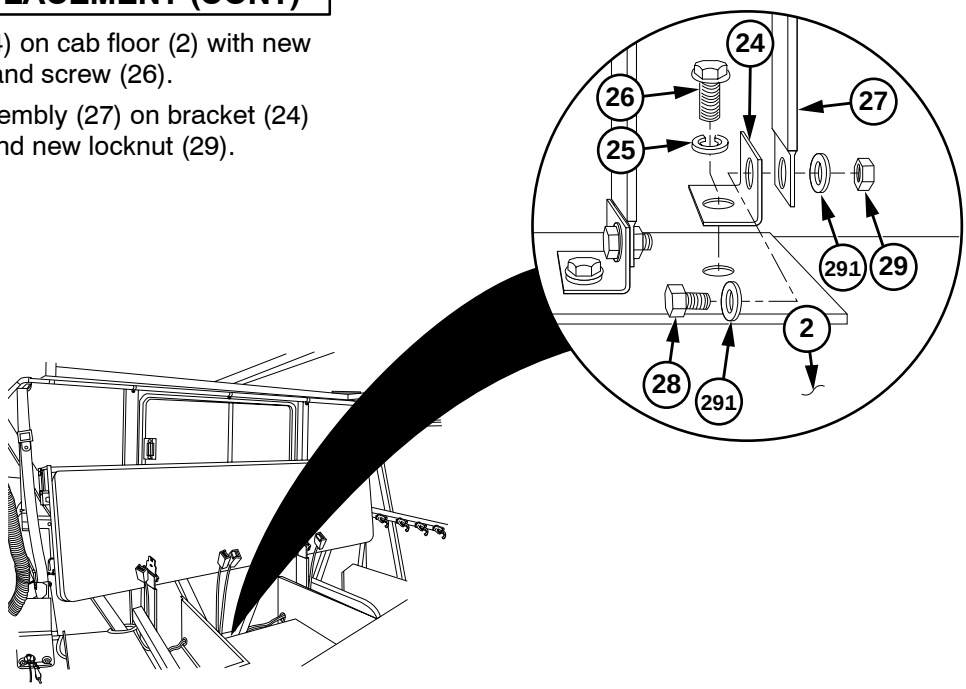
(5) Install retractor (18) on cab (13) with screw (20), two washers (21), and new locknut (22). Torque to 70 lb-in. (7.9 N·m).

(6) Install retractor cover (23) on retractor (18).

16-9. SEATBELT REPLACEMENT (CONT)

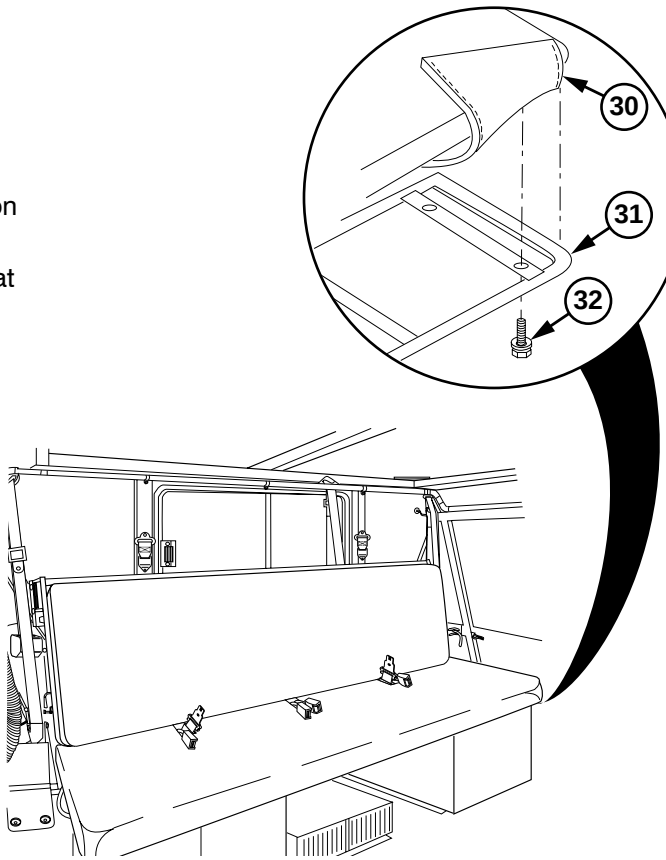
(7) Install bracket (24) on cab floor (2) with new lockwasher (25) and screw (26).

(8) Install buckle assembly (27) on bracket (24) with screw (28) and new locknut (29).



(9) Position lower backseat cushion (30) on seat frame (31).

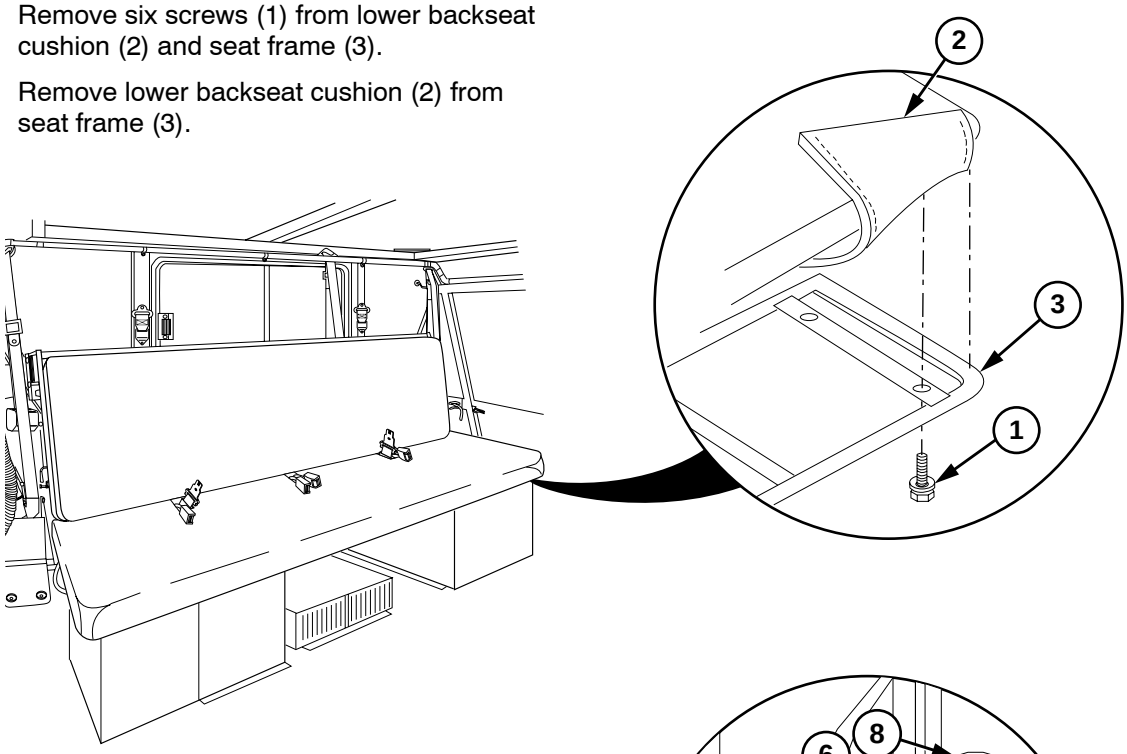
(10) Install six screws (32) in lower backseat cushion (30) and seat frame (31).



i. Left Rear Removal

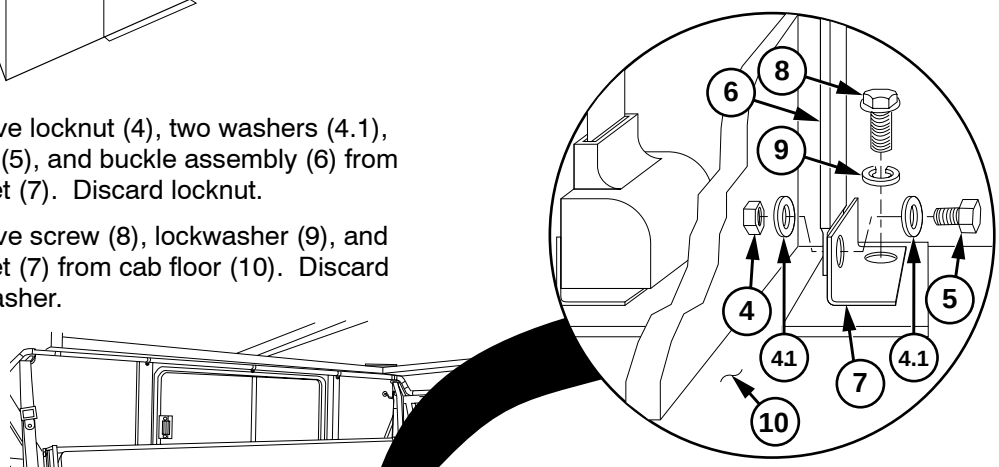
(1) Remove six screws (1) from lower backseat cushion (2) and seat frame (3).

(2) Remove lower backseat cushion (2) from seat frame (3).

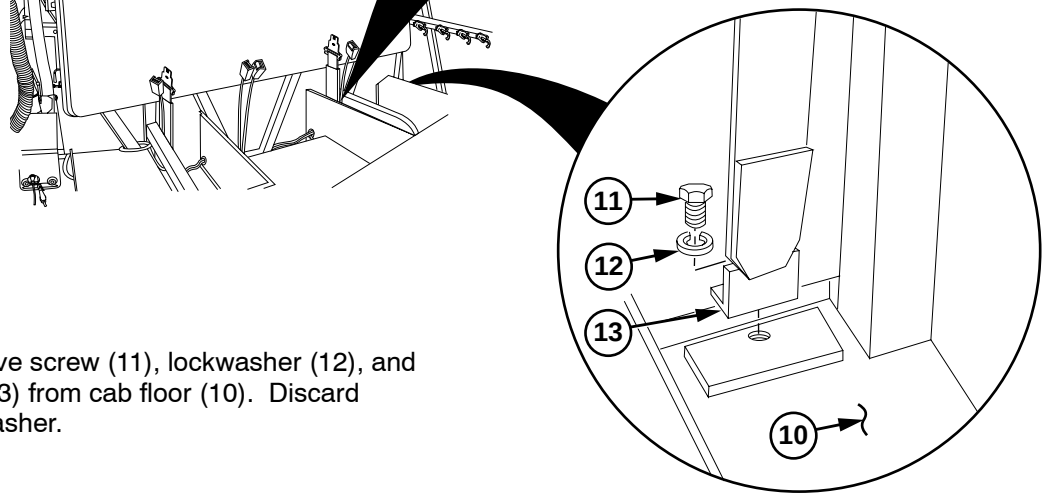


(3) Remove locknut (4), two washers (4.1), screw (5), and buckle assembly (6) from bracket (7). Discard locknut.

(4) Remove screw (8), lockwasher (9), and bracket (7) from cab floor (10). Discard lockwasher.

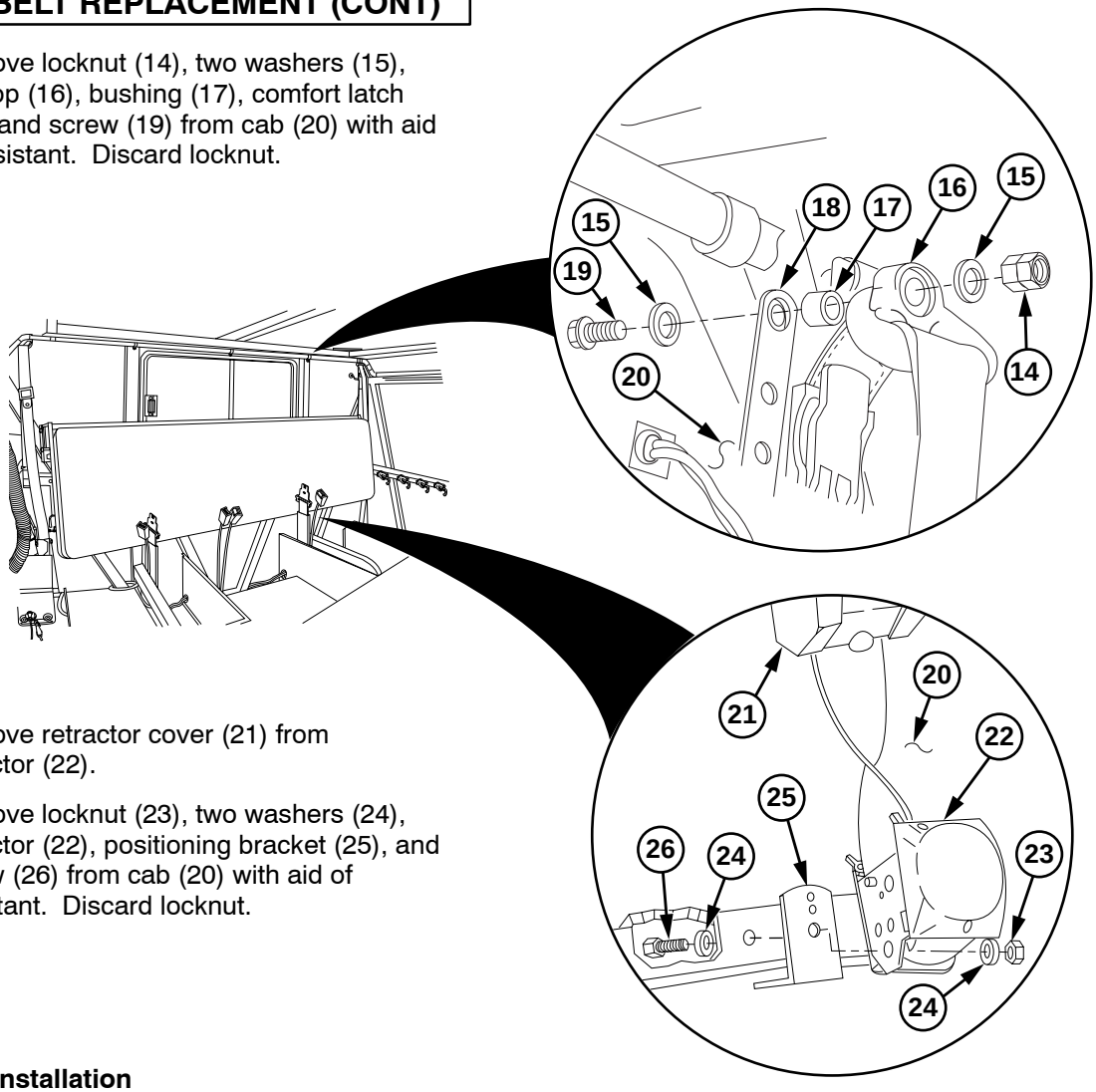


(5) Remove screw (11), lockwasher (12), and belt (13) from cab floor (10). Discard lockwasher.



16-9. SEATBELT REPLACEMENT (CONT)

(6) Remove locknut (14), two washers (15), D-loop (16), bushing (17), comfort latch (18), and screw (19) from cab (20) with aid of assistant. Discard locknut.



(7) Remove retractor cover (21) from retractor (22).

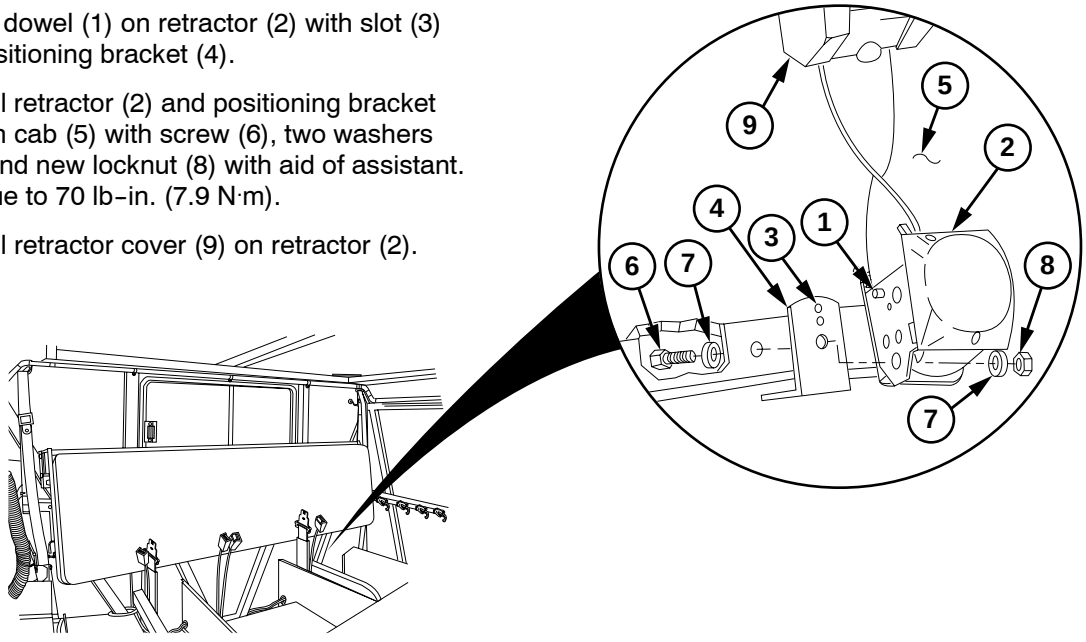
(8) Remove locknut (23), two washers (24), retractor (22), positioning bracket (25), and screw (26) from cab (20) with aid of assistant. Discard locknut.

j. Left Rear Installation

(1) Align dowel (1) on retractor (2) with slot (3) in positioning bracket (4).

(2) Install retractor (2) and positioning bracket (4) on cab (5) with screw (6), two washers (7), and new locknut (8) with aid of assistant. Torque to 70 lb-in. (7.9 N·m).

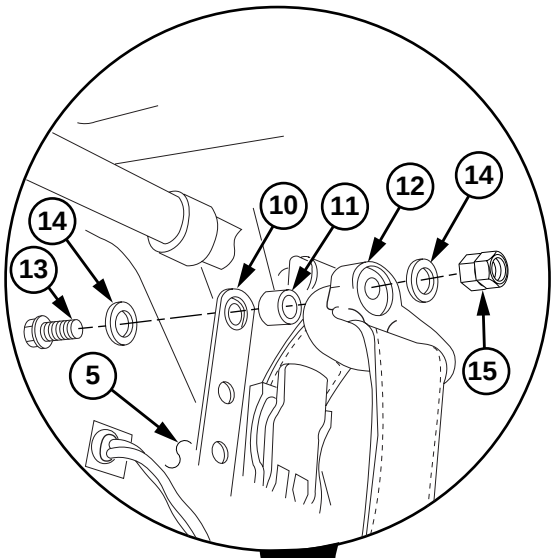
(3) Install retractor cover (9) on retractor (2).



NOTE

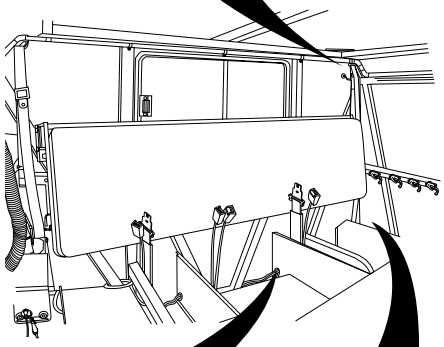
Bushing fits inside D-loop.
D-loop must rotate freely after installed.

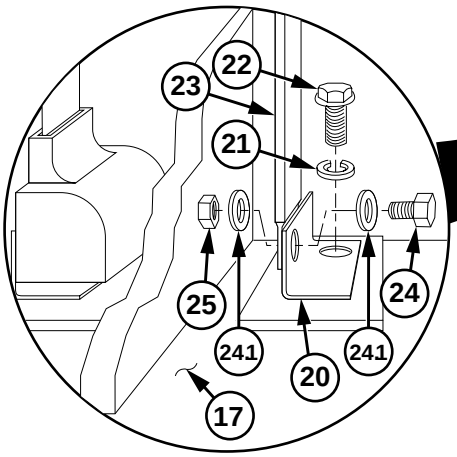
(4) Install comfort latch (10), bushing (11), and D-loop (12) on cab (5) with screw (13), two washers (14), and new locknut (15) with aid of assistant. Torque to 70 lb-in. (7.9 N·m).

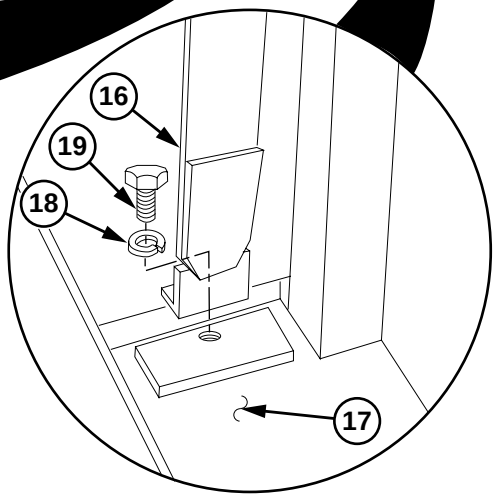


(5) Install belt (16) on cab floor (17) with new lockwasher (18) and screw (19).

(6) Install bracket (20) on cab floor (17) with new lockwasher (21) and screw (22).





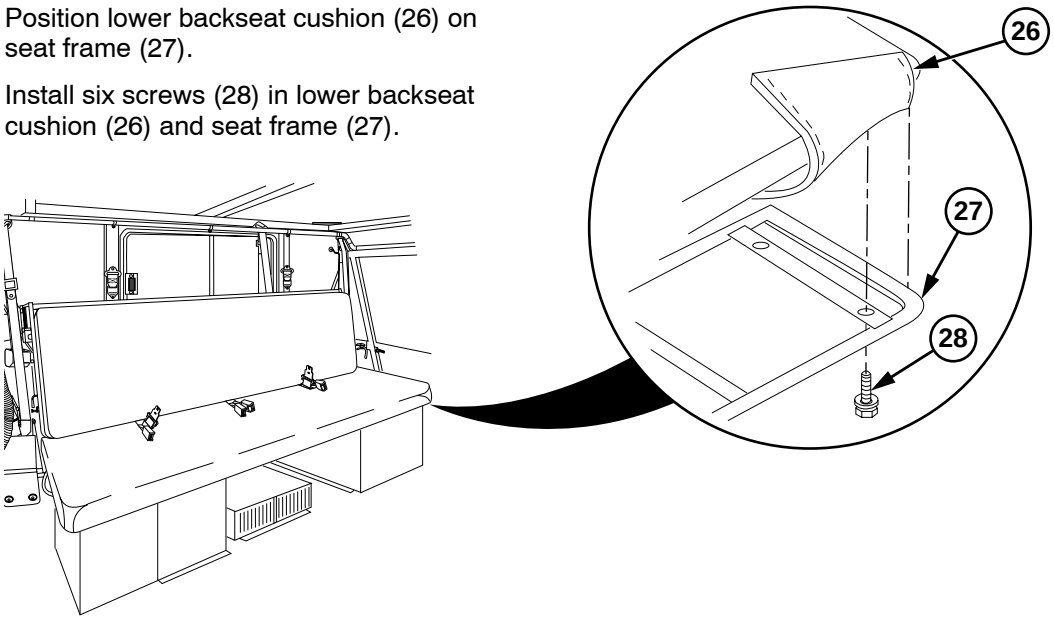


(7) Install buckle assembly (23) on bracket (20) with screw (24), two washers (24.1), and new locknut (25).

16-9. SEATBELT REPLACEMENT (CONT)

(8) Position lower backseat cushion (26) on seat frame (27).

(9) Install six screws (28) in lower backseat cushion (26) and seat frame (27).



k. Follow-On Maintenance

(1) Check seatbelts for proper operation (TM 9-2320-360-10).

(2) Remove wheel chocks.

16-10. SEAT CUSHION AND BACK COVER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

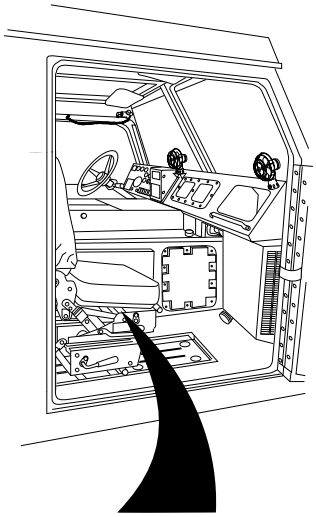
INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

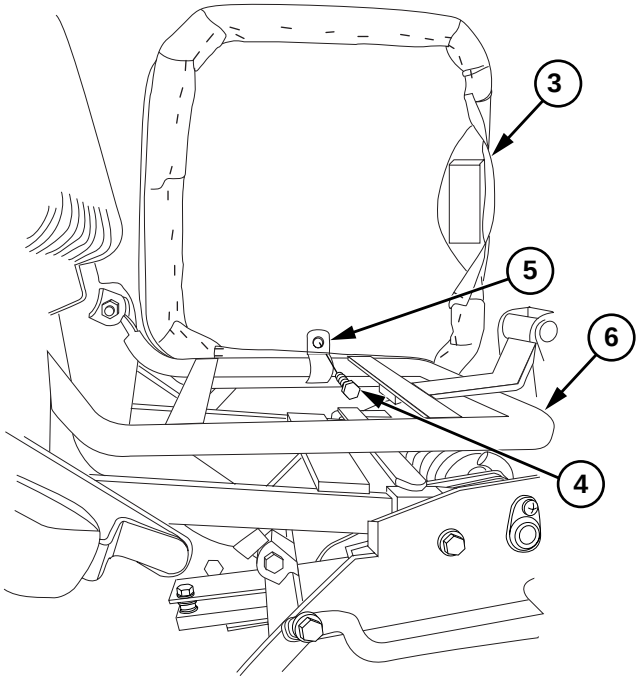
NOTE
Seat cushions and back covers on driver's side and passenger's side are replaced in the same way. Passenger's side is shown.

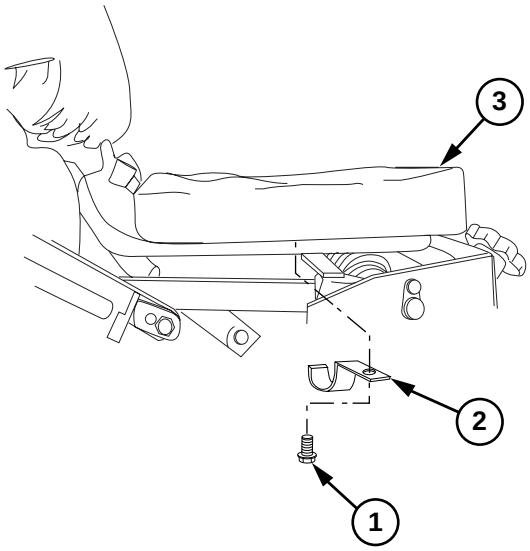


(1) Remove screw (1) and clamp (2) from seat cushion (3).

(2) Tilt seat cushion (3) up and remove screw (4) and clamp (5) from seat cushion (3).

(3) Remove seat cushion (3) from seat frame (6).

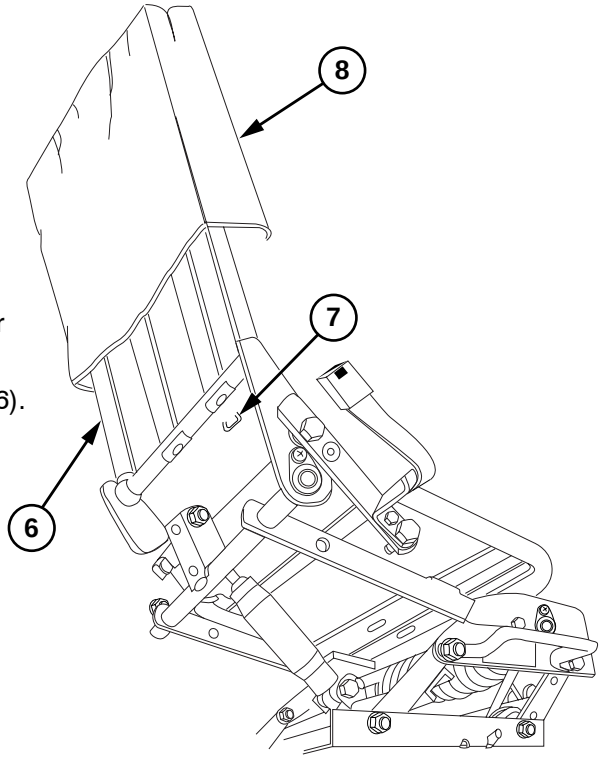




16-10. SEAT CUSHION AND BACK COVER REPLACEMENT (CONT)

(4) Cut and remove hooks (7) from back cover (8) and seat frame (6).

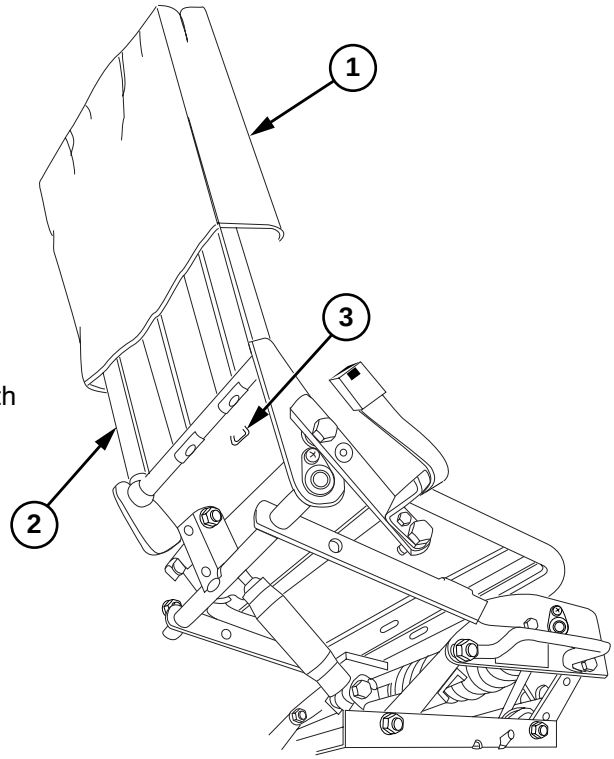
(5) Pull back cover (8) up and off seat frame (6).



b. Installation

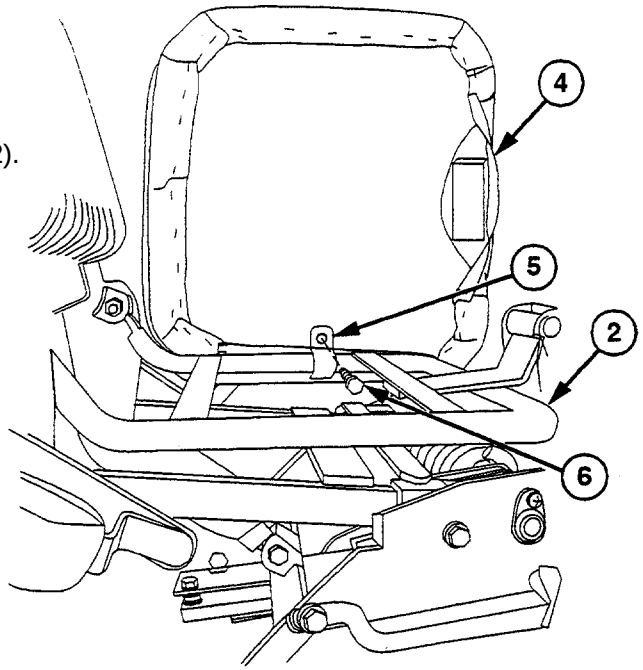
(1) Position back cover (1) on seat frame (2).

(2) Install back cover (1) on seat frame (2) with hooks (3).



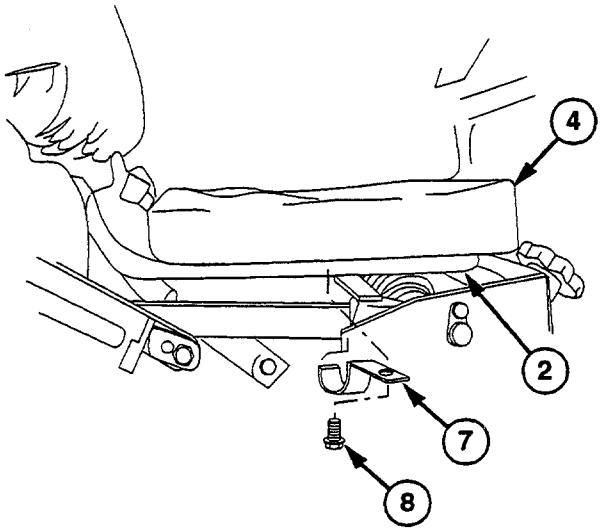
(3) Position seat cushion (4) on seat frame (2).

(4) Install clamp (5) with screw (6) on seat cushion (4) and seat frame (2).



(5) Lower seat cushion (4) until flat on seat frame (2).

(6) Install clamp (7) with screw (8) on seat cushion (4) and seat frame (2).



c. Follow-On Maintenance

Remove wheel chocks.

16-11. DRIVER'S SEAT REPAIR

This task covers:
a. Removal
b. Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Seat adjusted to highest point (TM 9-2320-360-10).

Materials/Parts
Locknuts (6) (Item 65, Appendix G)
Locknuts (4) (Item 64, Appendix G)
Locknuts (4) (Item 81, Appendix G)
Locknuts (4) (Item 47, Appendix G)
Locknuts (2) (Item 58, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Personnel Required
Two

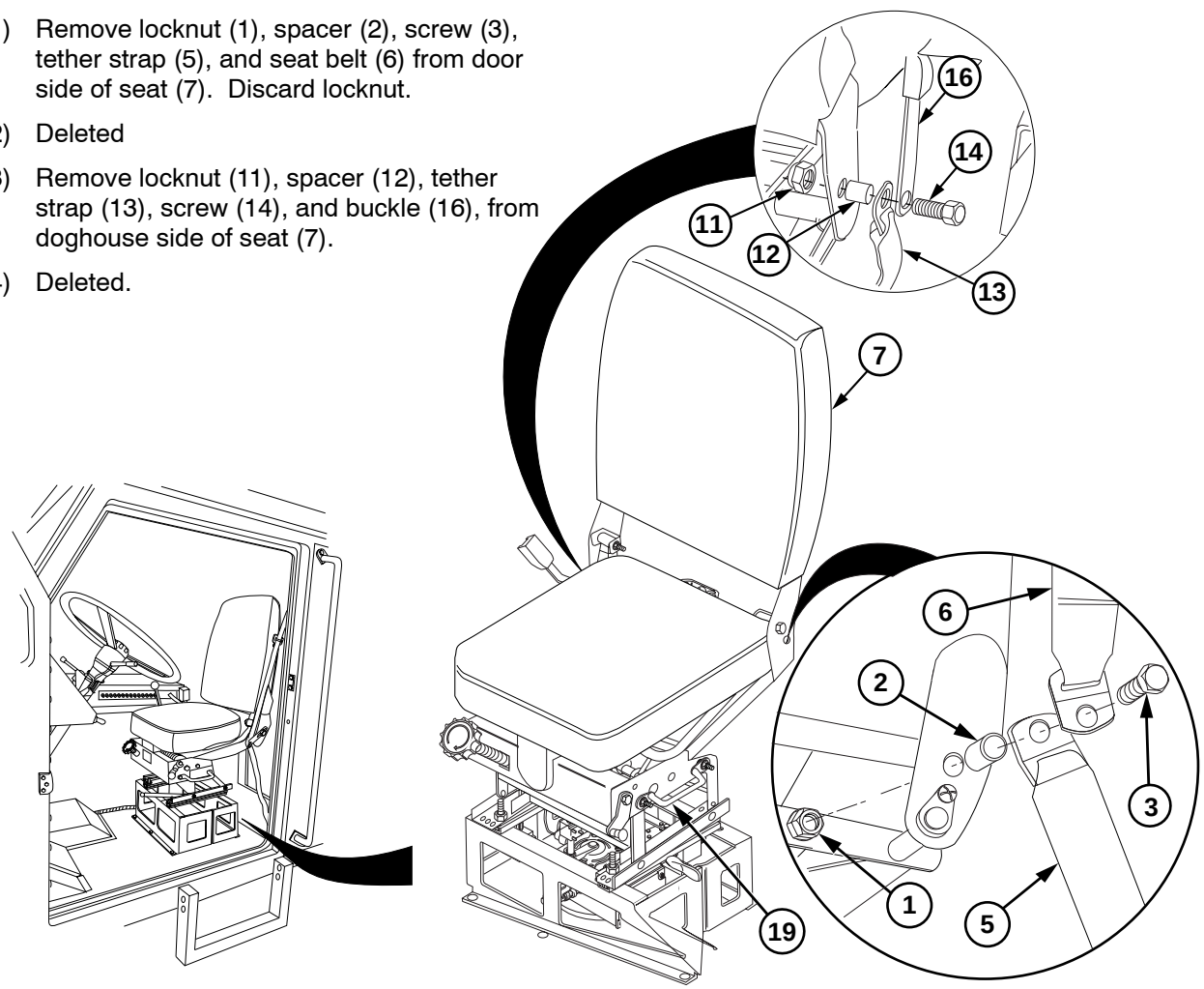
a. Removal

(1) Remove locknut (1), spacer (2), screw (3), tether strap (5), and seat belt (6) from door side of seat (7). Discard locknut.

(2) Deleted

(3) Remove locknut (11), spacer (12), tether strap (13), screw (14), and buckle (16), from doghouse side of seat (7).

(4) Deleted.



(5) Remove four locknuts (20) from studs (21). Discard locknuts.

(6) Lift seat frame (22) from control track (23) with aid of assistant.

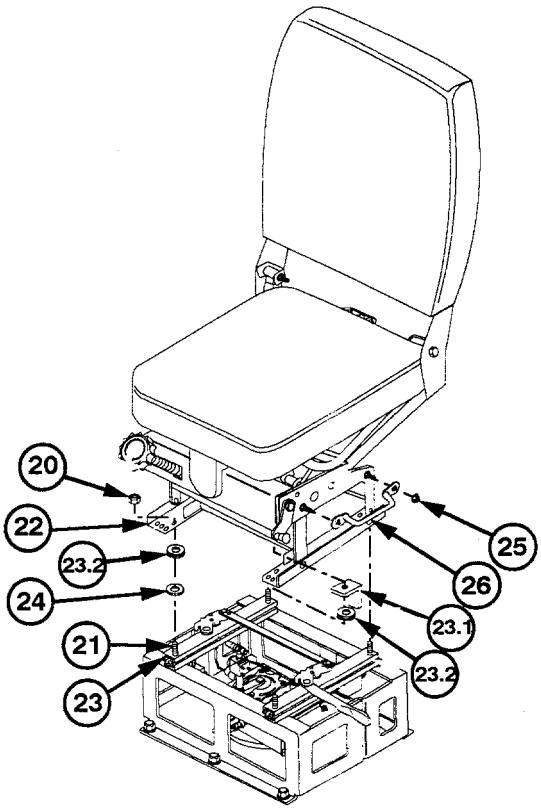
(7) Remove stop bracket (23.1), four spacers (23.2) and six washers (24) from studs (21).

(8) Remove two locknuts (25) and grab handle (26) from seat frame (22).

NOTE

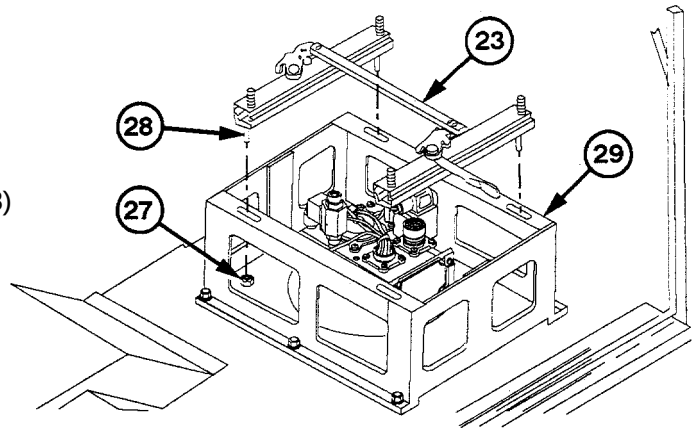
Locknuts are put back on temporarily to hold seat together during removal.

(9) Install old locknuts (25) on seat frame (22).

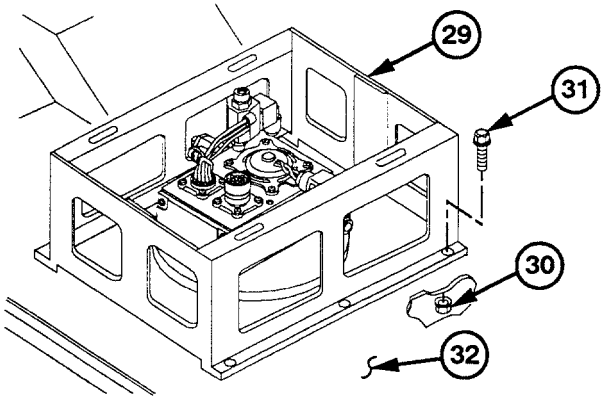


(10) Remove four locknuts (27) from studs (28) on control track (23). Discard locknuts.

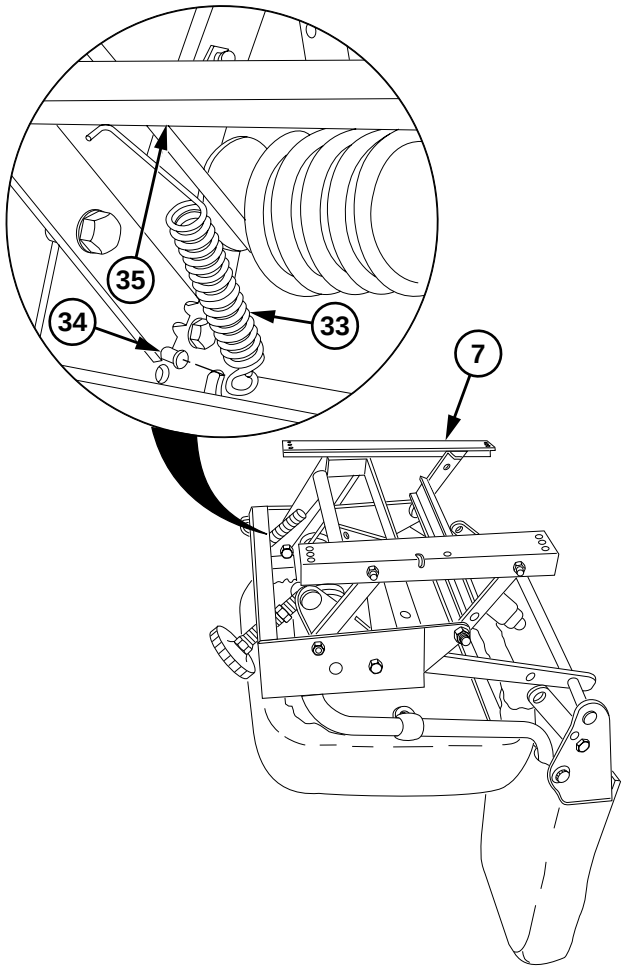
(11) Remove control track (23) from seat support (29)./



(12) Remove six locknuts (30), screws (31), and seat support (29) from cab floor (32). Discard locknuts.



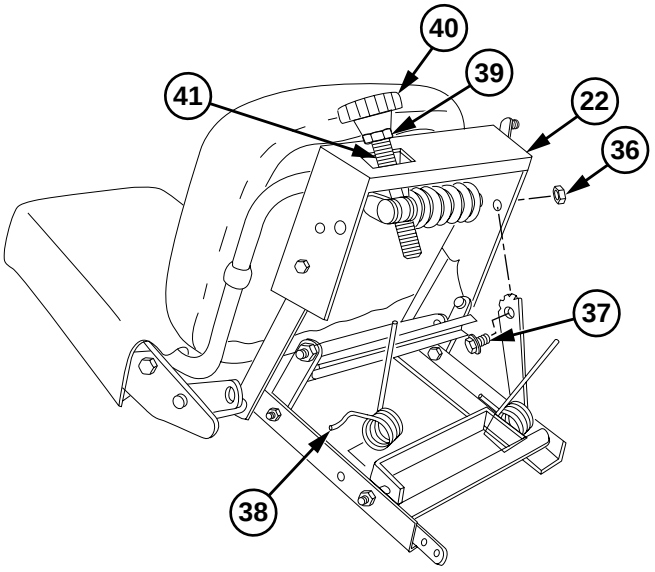
16-11. DRIVER'S SEAT REPAIR (CONT)



(13) Position seat (7) with bottom facing up.

(14) Disconnect spring (33) from pin (34) and shaft (35).

(15) Position seat (7) with bottom facing down.



(16) Remove two locknuts (36) and screws (37) from seat frame (22) while assistant pushes down lightly on seat frame (22). Discard locknuts.

(17) Unfold seat frame (22) and remove two springs (38) from seat frame (22).

(18) Loosen jam nut (39) and remove knob (40) from stud (41).

b. Inspection

(1) Inspect seat support and control track for loose fasteners.

(2) Inspect seat frame for broken welds.

(3) Inspect cab floor mounting holes for cracks.

(4) Inspect seat support for cracks, broken welds, and other damage.

c. Installation

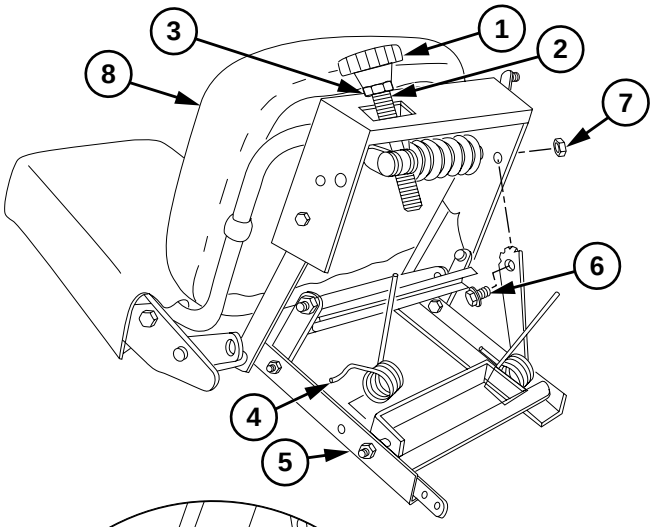
(1) Install knob (1) on stud (2) and tighten jam nut (3).

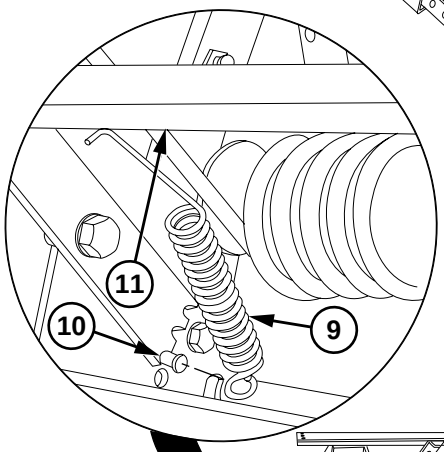
(2) Install two springs (4) in seat frame (5).

NOTE

Spring must be positioned outside of washer and in front of main shaft.

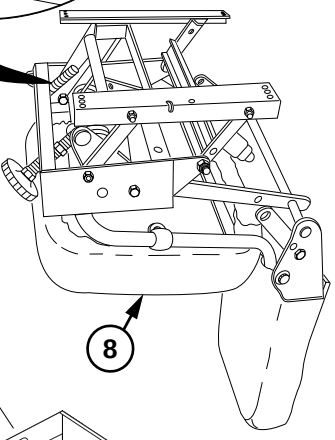
(3) Fold down seat frame (5) and install two screws (6) and new locknuts (7) in sides of seat frame (5) while assistant holds seat frame (5).



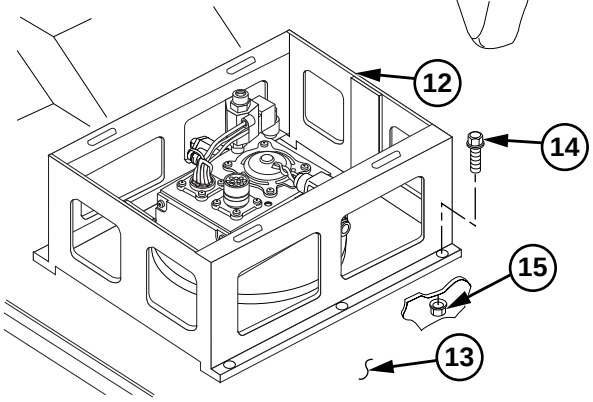


(4) Position seat (8) with bottom facing up.

(5) Connect spring (9) to pin (10) and shaft (11).

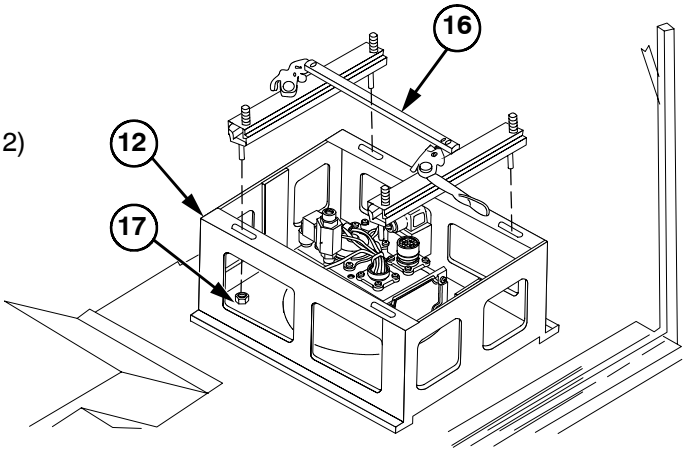


(6) Install seat support (12) on cab floor (13) with six screws (14) and new locknuts (15).



16-11. DRIVER'S SEAT REPAIR (CONT)

(7) Install control track (16) on seat support (12) with four new locknuts (17). Torque to 20 lb-ft (27 N·m).



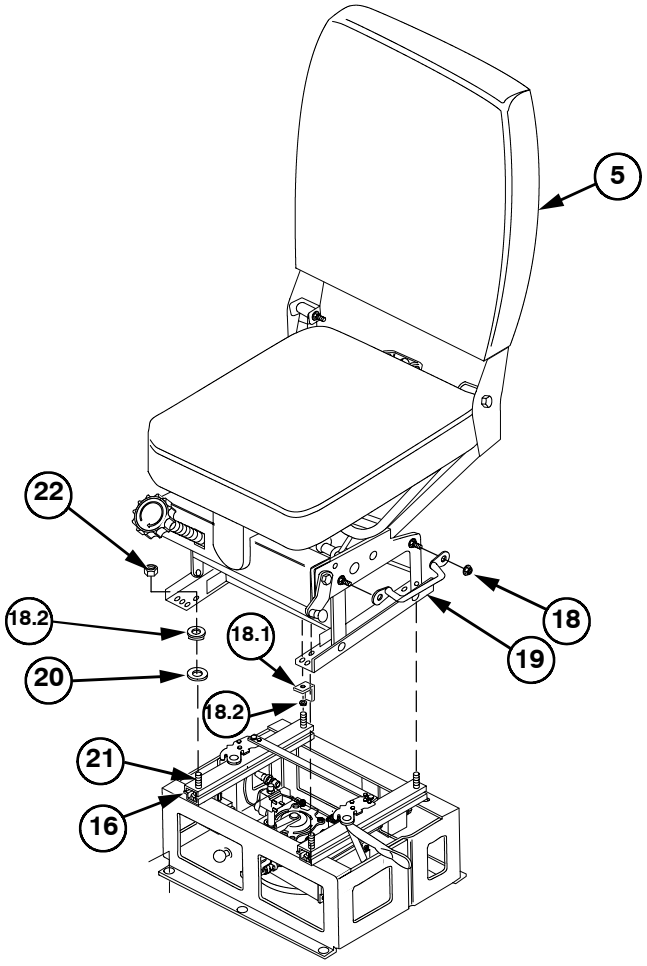
(8) Remove two locknuts (18) from seat frame (5). Discard locknuts.

(9) Place six washers (20), four spacers (18.1), and stop bracket (18.2) on studs (21).

(10) Install grab handle (19) on seat frame (5) with two new locknuts (18). Torque to 23 lb-ft (31 N·m).

(11) Position seat frame (5) on control track (16) with aid of assistant.

(12) Install four new locknuts (22) on studs (21).



(13) Deleted.

NOTE

Passenger 's side has buckle assembly instead of seatbelt.

(14) Install buckle (26) and tether strap (27) on doghouse side of seat (8) with screw (28), spacer (30), and locknut (31).

(15) Deleted.

(16) Install seatbelt (35) and tether strap (36) on door side of seat (8) with screw (37), spacer (39), and new locknut (40).

d. Follow-On Maintenance

(1) Adjust seat (TM 9-2320-360-10).

(2) Remove wheel chocks.

16-12. PASSENGER'S SEAT REPAIR

This task covers:
a. Removal
b. Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Seat adjusted to highest point (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-175 lb-ft (Item 73, Appendix F)

Materials/Parts
Adhesive-Sealant (Item 6, Appendix C)
Caps (6) (Item 10, Appendix G)
Locknut (Item 78.1, Appendix G)
Locknuts (8) (Item 79, Appendix G)
Locknuts (2) (Item 47, Appendix G)
Locknuts (2) (Item 78, Appendix G)
Locknuts (2) (Item 80, Appendix G)
Lockwashers (6) (Item 102, Appendix G)

Personnel Required
Two

a. Removal

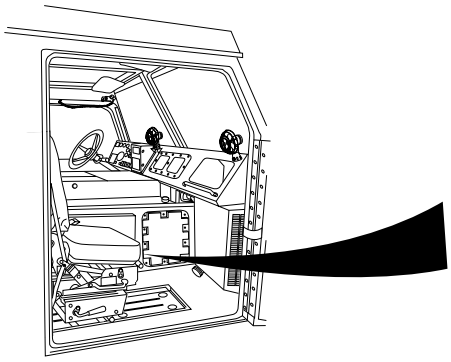
NOTE
Passenger 's side has latch assembly instead of seatbelt.

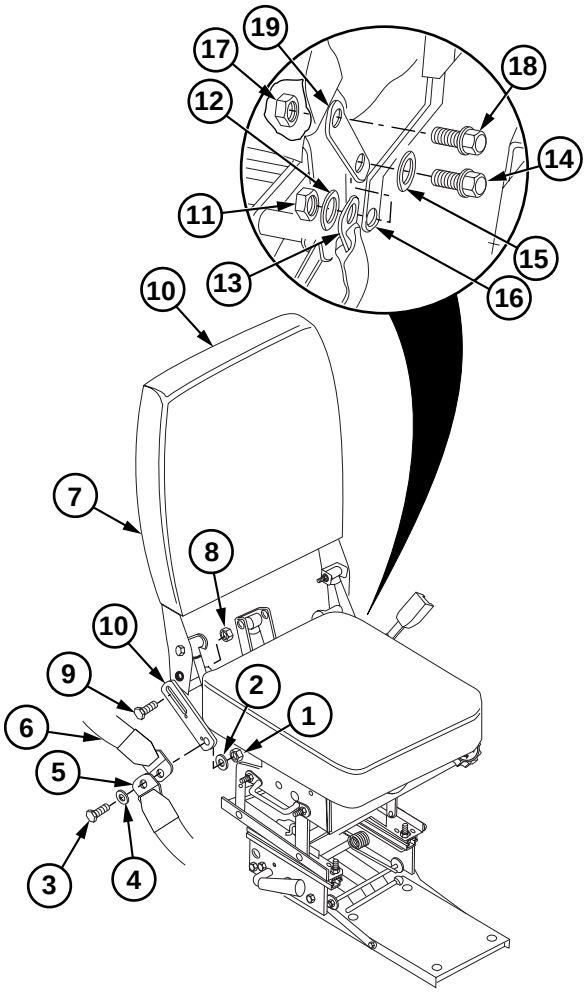
(1) Remove locknut (1), washer (2), screw (3), washer (4), anchor strap (5), and seat belt (6) from door side of seat (7). Discard locknut.

(2) Remove locknut (8), screw (9), and link (10) from door side of seat (7). Discard locknut.

(3) Remove locknut (11), washer (12), anchor strap (13), screw (14), washer (15), and latch (16) from doghouse side of seat (7). Discard locknut.

(4) Remove locknut (17), screw (18), and link (19) from doghouse side of seat (7). Discard locknut.





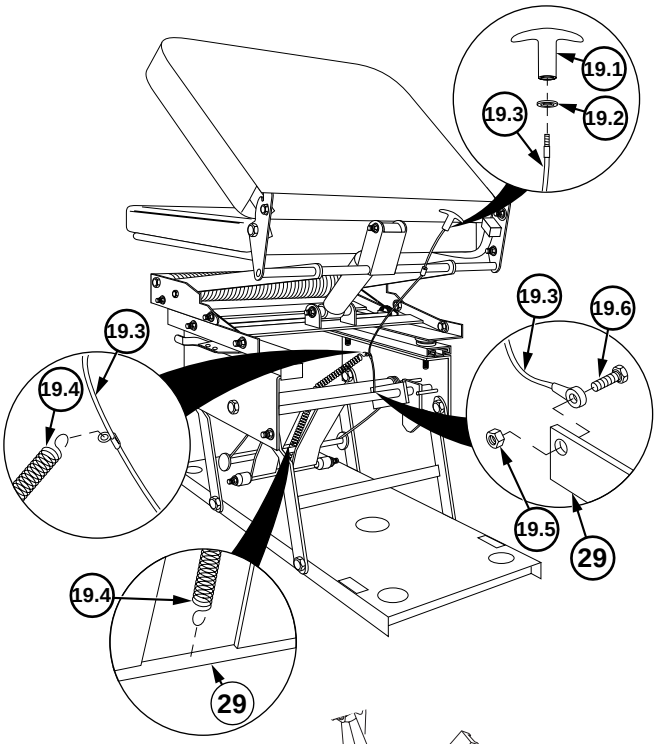
SEAT REMOVED FOR CLARITY

(4.1) Remove handle (19.1) and washer (19.2) from cable (19.3).

(4.2) Remove cable (19.3) from spring (19.4).

(4.3) Remove spring (19.4) from seat support (29).

(4.4) Remove locknut (19.5), screw (19.6), and cable (19.3) from seat support (29). Discard locknut.



(5) Remove four locknuts (20) from studs (21). Discard locknuts.

(6) Lift seat frame (22) from control track (23) with aid of assistant.

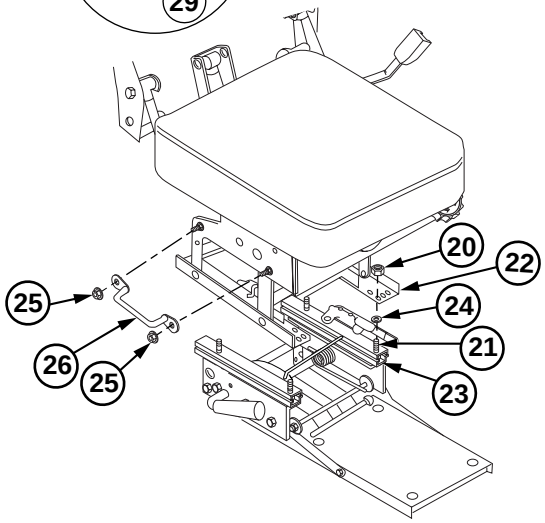
(7) Remove four washers (24) from studs (21).

(8) Remove two locknuts (25) and grab handle (26) from seat frame (22).

NOTE

Locknuts are put back on temporarily to hold seat together during removal.

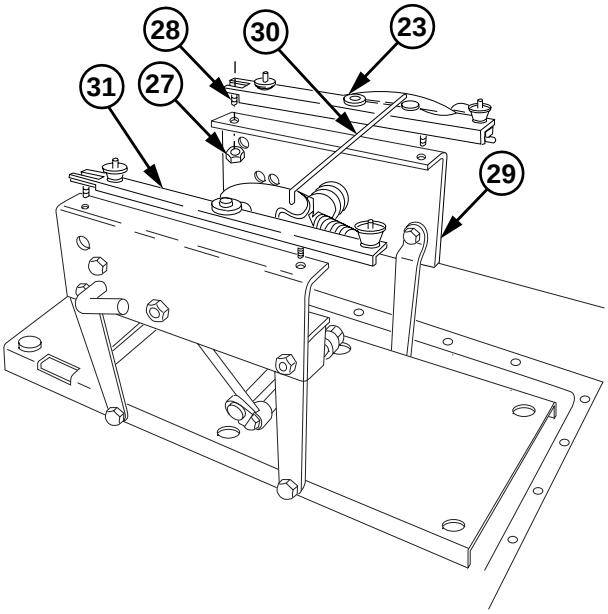
(9) Install old locknuts (25) on seat frame (22).



(10) Remove four locknuts (27) from studs (28) on control track (23). Discard locknuts.

(11) Remove control track (23) from seat support (29).

(12) Remove tie wire (30) from control track (23) and slave track (31).



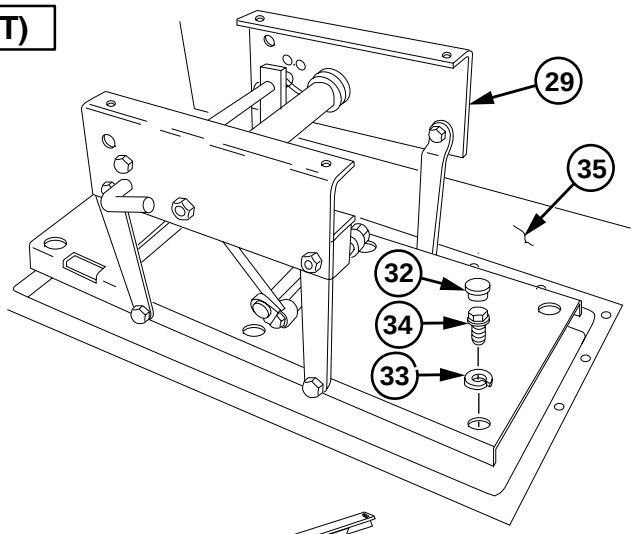
16-12. PASSENGER'S SEAT REPAIR (CONT)

NOTE

Seat support must be in forward position to be removed.

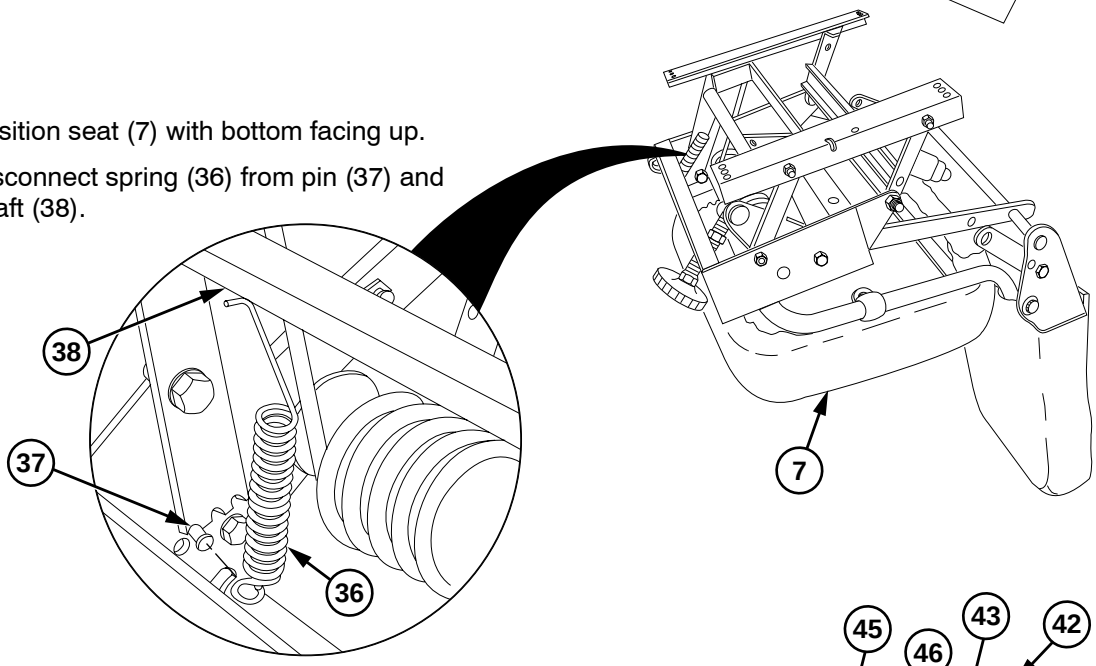
(13) Remove six caps (32) from seat support (29). Discard caps.

(14) Remove six screws (34), lockwashers (33), and seat support (29) from cab floor (35). Discard lockwashers.



(15) Position seat (7) with bottom facing up.

(16) Disconnect spring (36) from pin (37) and shaft (38).



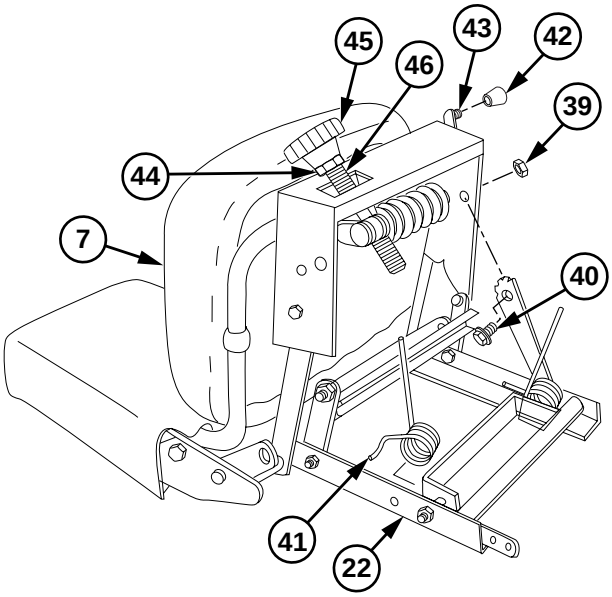
(17) Position seat (7) with bottom facing down.

(18) Remove two locknuts (39) and screws (40) from seat frame (22) while assistant pushes down lightly on seat frame (22). Discard locknuts.

(19) Unfold seat frame (22) and remove two springs (41) from seat frame (22).

(20) Remove knob (42) from lever (43).

(21) Loosen jam nut (44) and remove knob (45) from stud (46).



b. Inspection

(1) Inspect seat support and slide assembly for loose fasteners.

(2) Inspect seat frame for broken welds.

(3) Inspect cab floor mounting holes for cracks.

(4) Inspect seat support for cracks, broken welds, and other damage.

c. Installation

(1) Install knob (1) on stud (2) and tighten jam nut (3).

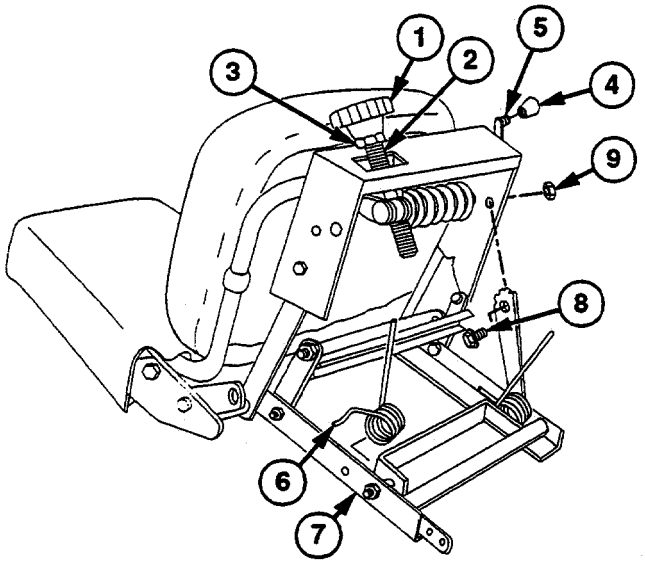
(2) Install knob (4) on lever (5).

(3) Install two springs (6) in seat frame (7).

NOTE

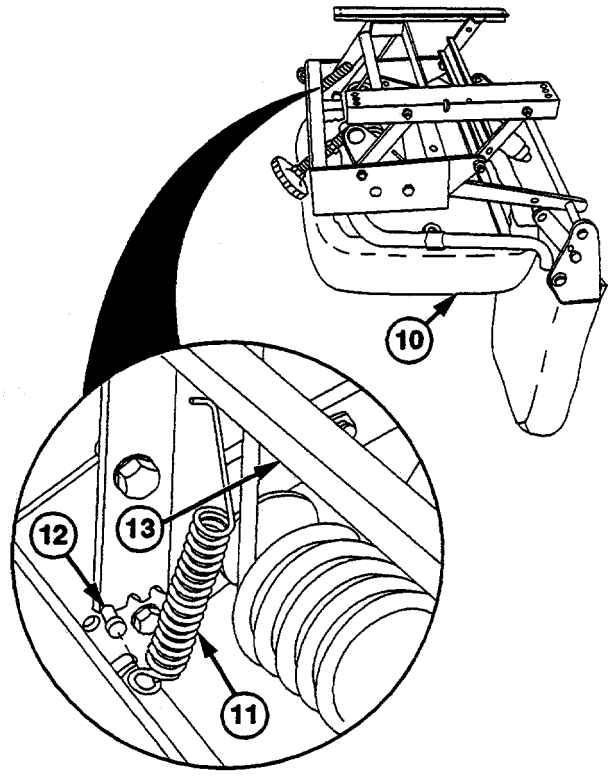
Spring must be positioned outside of washer and in front of main shaft.

(4) Fold down seat frame (7) and install two screws (8) and new locknuts (9) in sides of seat frame (7) while assistant holds seat frame (7).



(5) Position seat (10) with bottom facing up.

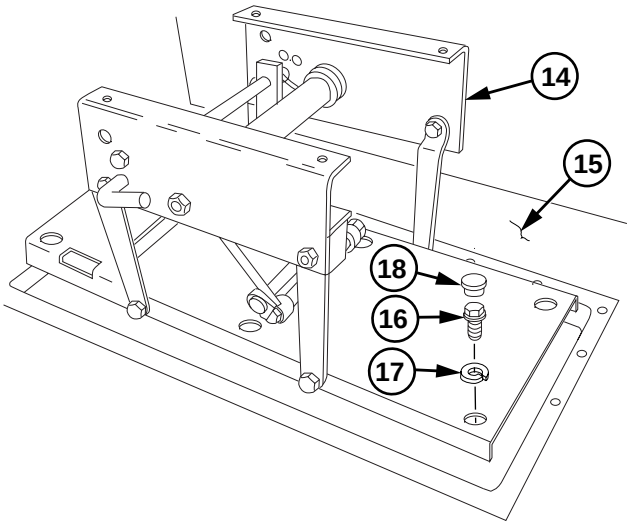
(6) Connect spring (11) to pin (12) and shaft (13).



16-12. PASSENGER'S SEAT REPAIR (CONT)

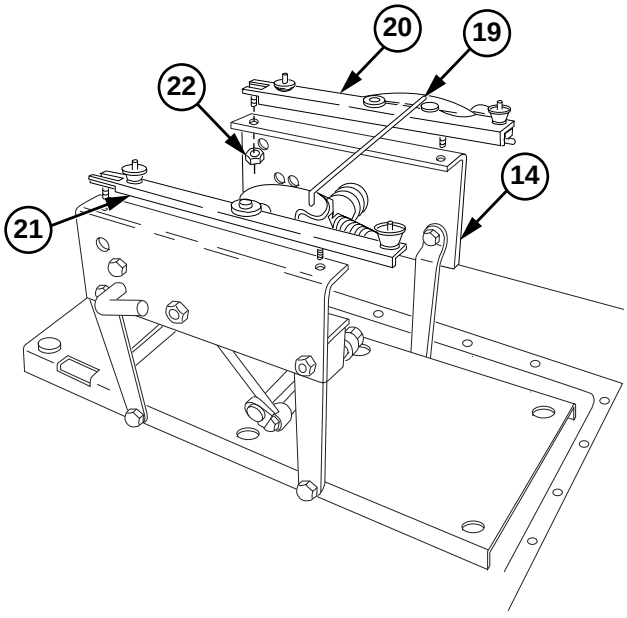
(7) Install side seat support (14) on cab floor (15) with six new lockwashers (17) and screws (16).

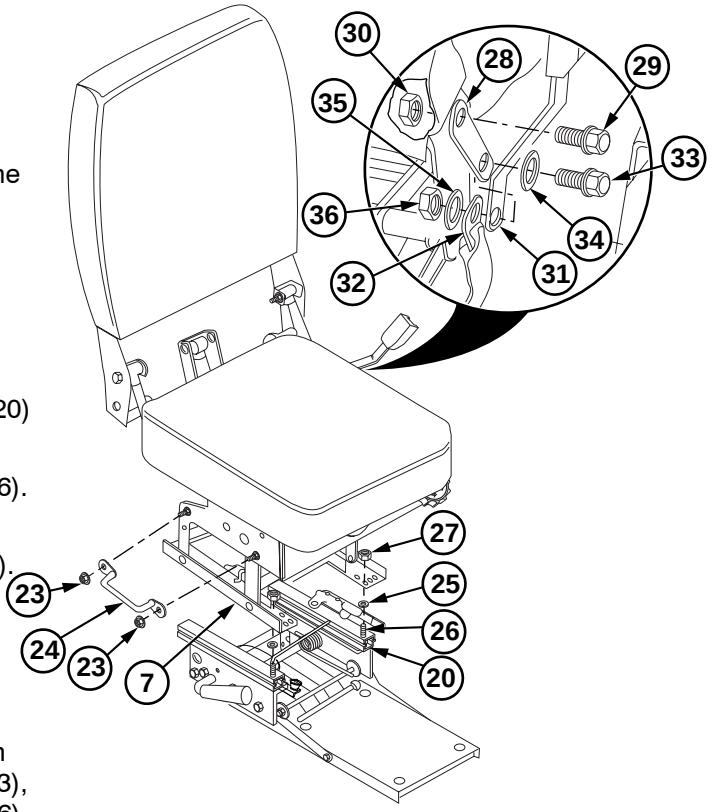
(8) Install six new caps (18) on seat support (14).



(9) Install tie wire (19) on control track (20) and slave track (21).

(10) Install control track (20) on seat support (14) with four new locknuts (22).





(11) Remove two locknuts (23) from seat frame (7). Discard locknuts.

(12) Install grab handle (24) on seat frame (7) with two new locknuts (23). Torque to 23 lb–ft (31 N·m).

(13) Place four washers (25) on studs (26).

(14) Position seat frame (7) on control track (20) with aid of assistant.

(15) Install four new locknuts (27) on studs (26).

(16) Install link (28) on doghouse side of seat (10) with screw (29) and new locknut (30).

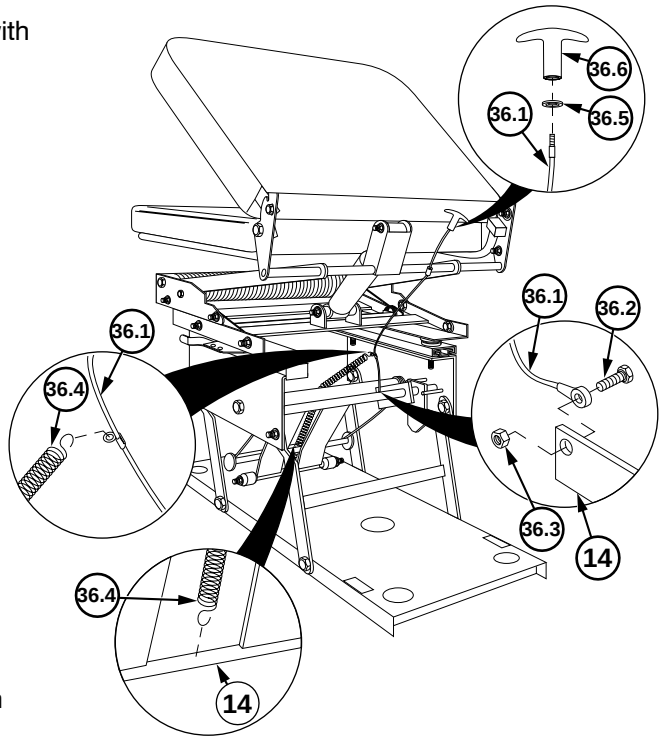
NOTE

Passenger 's side has latch assembly instead of seatbelt.

(17) Install latch (31) and anchor strap (32) on doghouse side of seat (10) with screw (33), washer (34), washer (35), and locknut (36).

NOTE

Do not overtighten. Cable should be able to pivot.



(17.1) Install cable (36.1) on seat support (14) with screw (36.2) and new locknut (36.3).

(17.2) Install spring (36.4) on seat support (14).

(17.3) Install cable (36.1) on spring (36.4).

WARNING

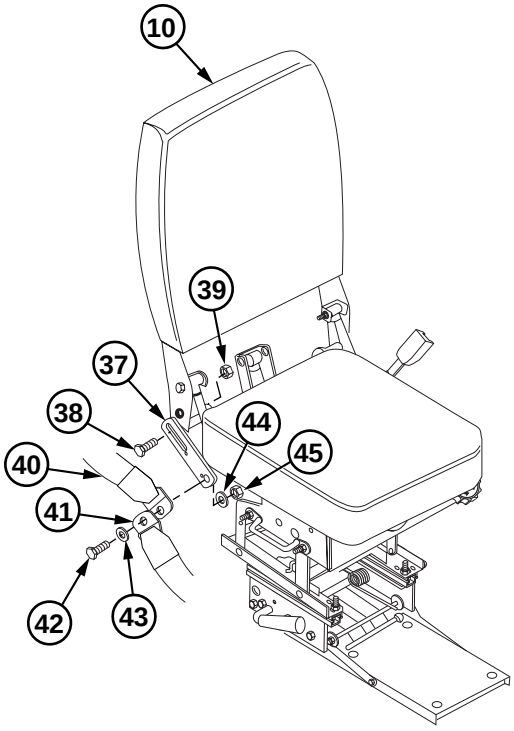
Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.

(17.4) Coat threads of cable (36.1) with adhesive–sealant.

(17.5) Route cable (36.1) thru seat frame and install washer (36.5) and handle (36.6) on cable.

(18) Install link (37) on door side of seat (10) with screw (38) and new locknut (39).

(19) Install seatbelt (40) and anchor strap (41) on door side of seat (10) with screw (42), washer (43), washer (44), and new locknut (45).



d. Follow-On Maintenance

(1) Adjust seat (TM 9-2320-360-10).

(2) Remove wheel chocks.

16-13. SEAT SHOCK ABSORBER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Seat adjusted to highest point (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Lockwashers (4) (Item 125, Appendix G)

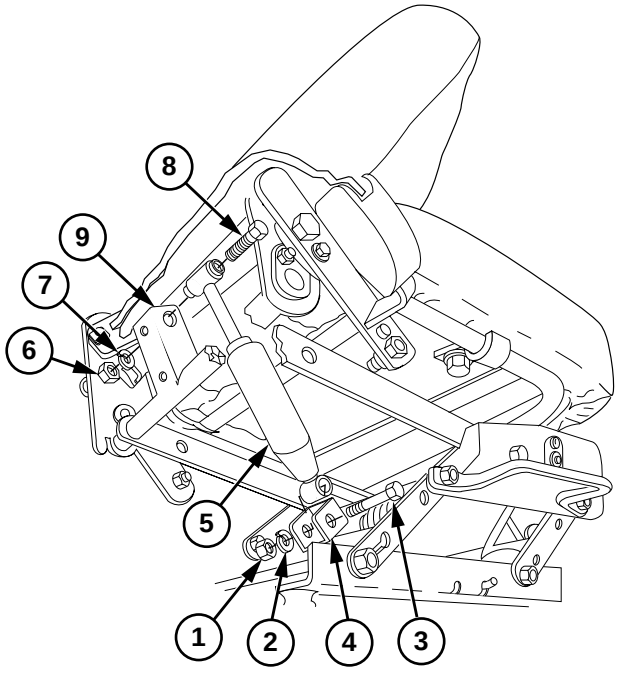
a. Removal

NOTE
Shock absorbers on driver's side and passenger's side are replaced in a similar way. Passenger's side is shown.

(1) Remove nut (1), lockwasher (2), and screw (3) from bracket (4) and shock absorber (5). Discard lockwasher.

(2) Remove nut (6), lockwasher (7), and screw (8) from bracket (9) and shock absorber (5). Discard lockwasher.

(3) Remove shock absorber (5) from brackets (4 and 9).



SEAT REMOVED FOR CLARITY

b. Installation

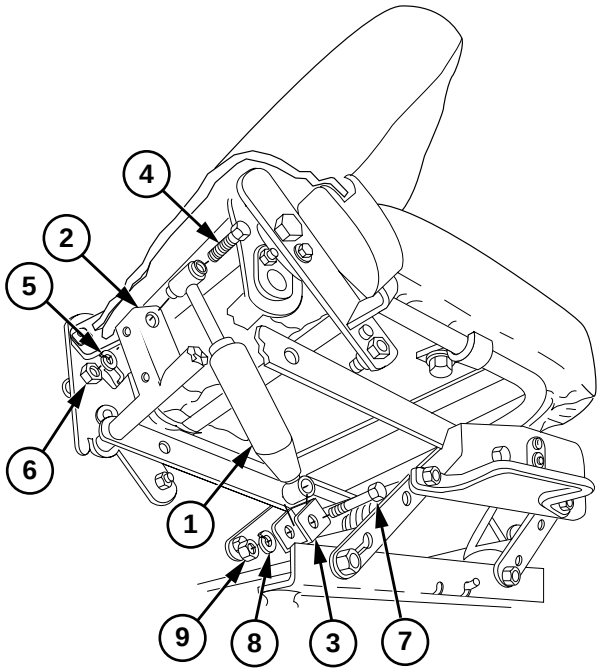
NOTE

Install shock absorber with rod up and ends centered in mounting brackets.

(1) Position shock absorber (1) in brackets (2 and 3).

(2) Install shock absorber (1) in bracket (2) with screw (4), new lockwasher (5), and nut (6).

(3) Install shock absorber (1) in bracket (3) with screw (7), new lockwasher (8), and nut (9).



c. Follow-On Maintenance

(1) Adjust seat (TM 9-2320-360-10).

(2) Remove wheel chocks.

16-14. STOWAGE BOX/BRACKETS REPLACEMENT

This task covers:
a. Removal
b. Inspection
c. Installation
d. Adjustment
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Stowage box empty.
Left fuel tank removed (bracket replacement only) (TM 9-2320-360-20).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

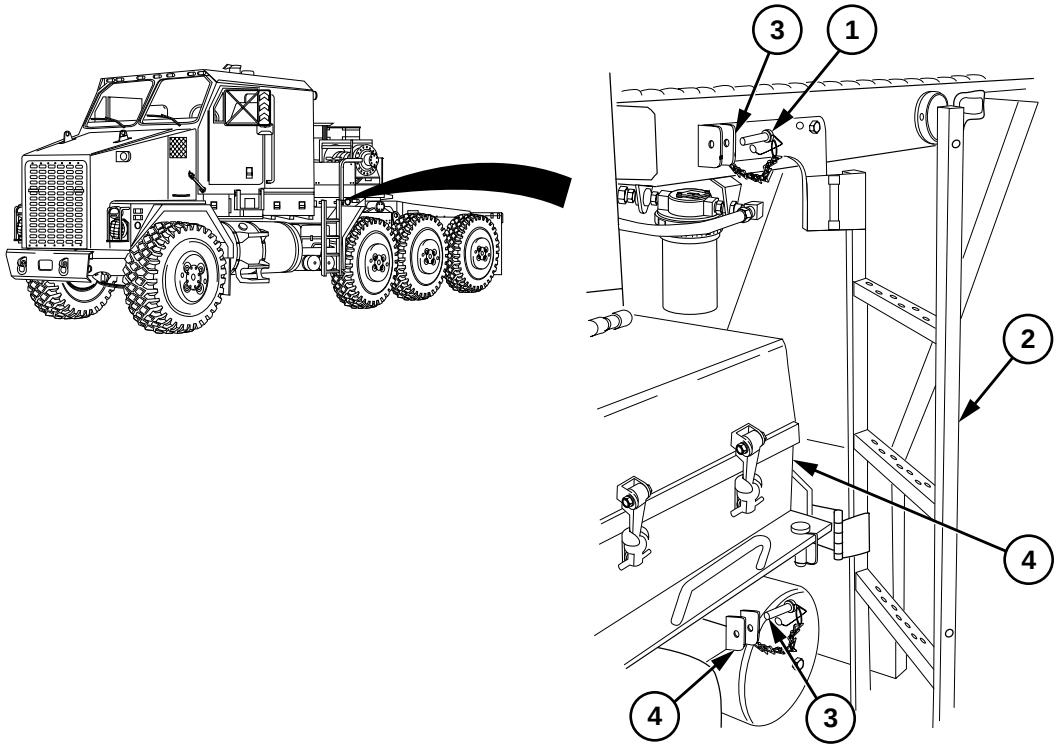
Materials/Parts
Locknuts (11) (Item 61, Appendix G)
Locknuts (2) (Item 58, Appendix G)
Locknuts (2) (Item 68, Appendix G)
Locknut (Item 72, Appendix G)
Locknut (Item 63, Appendix G)

Personnel Required
Two

a. Removal

(1) Remove two clevis pins (1) from ladder (2) and ladder support (3).

(2) Swing ladder (2) clear of battery box (4).



(3) Open door (5) on stowage box (6).

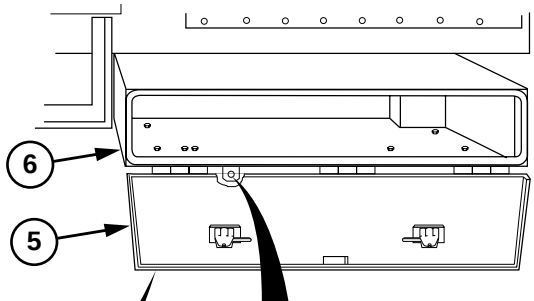
(4) Remove two locknuts (7) and screws (8) from hand priming pump bracket (9). Discard locknuts.

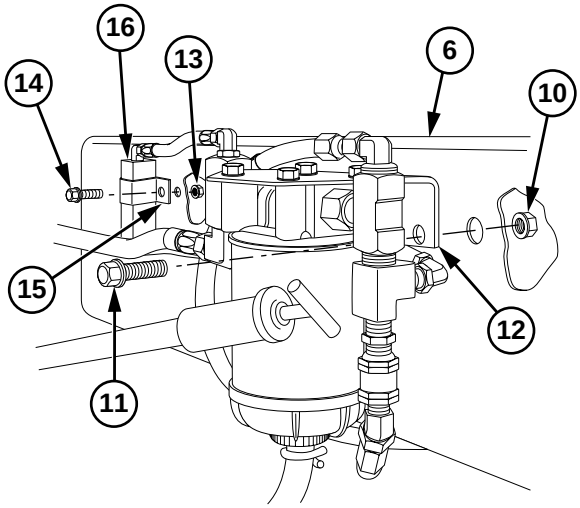
(5) Remove two locknuts (10) and screws (11) from fuel/water separator bracket (12). Discard locknuts.

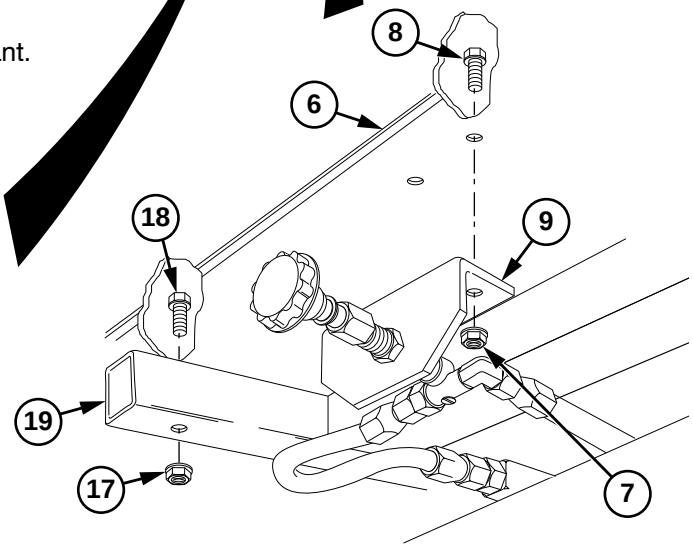
(6) Remove locknut (13), screw (14), bracket (15), and fuel restriction indicator (16) from stowage box (6) with aid of assistant. Discard locknut.

(7) Remove six locknuts (17) and screws (18) from stowage box (6) and support brackets (19). Discard locknuts.

(8) Remove stowage box (6) from support brackets (19 thru 21) with aid of assistant.



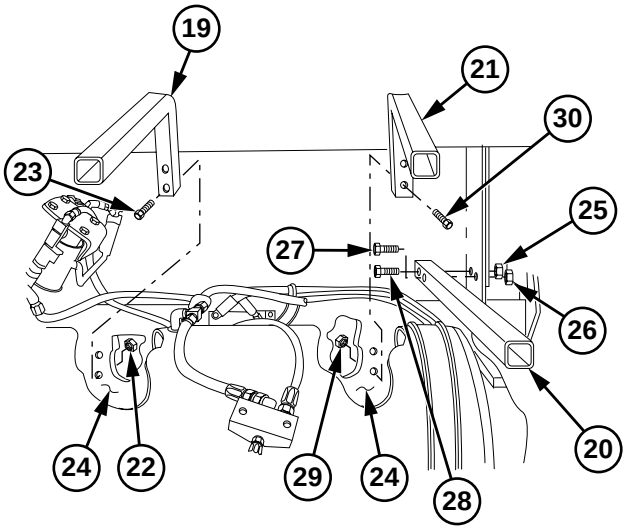




(9) Remove two locknuts (22), screws (23), and bracket (19) from frame (24). Discard locknuts.

(10) Remove locknut (25), locknut (26), screw (27), screw (28), and bracket (20) from frame (24). Discard locknuts.

(11) Remove two locknuts (29), screws (30), and bracket (21) from frame (24). Discard locknuts.



16-14. STOWAGE BOX REPLACEMENT (CONT)

b. Inspection

(1) Inspect mounting brackets for loose or missing hardware.

(2) Inspect for damage to mounting brackets.

(3) Inspect gasket on stowage box for damage and proper fit.

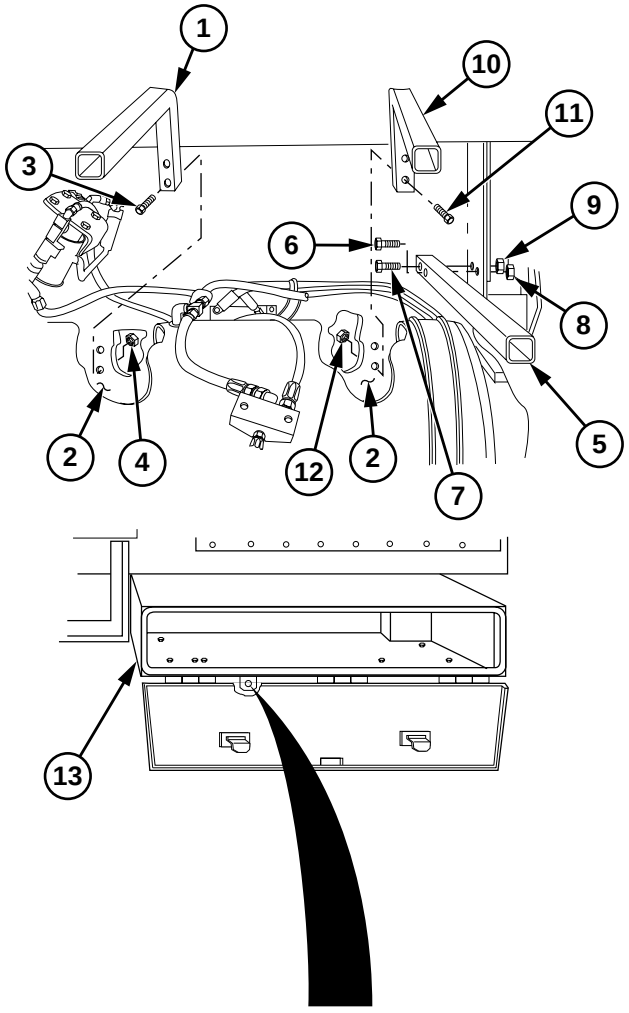
c. Installation

(1) Install bracket (1) on frame (2) with two screws (3) and new locknuts (4).

(2) Install bracket (5) on frame (2) with screw (6), screw (7), new locknut (8), and new locknut (9).

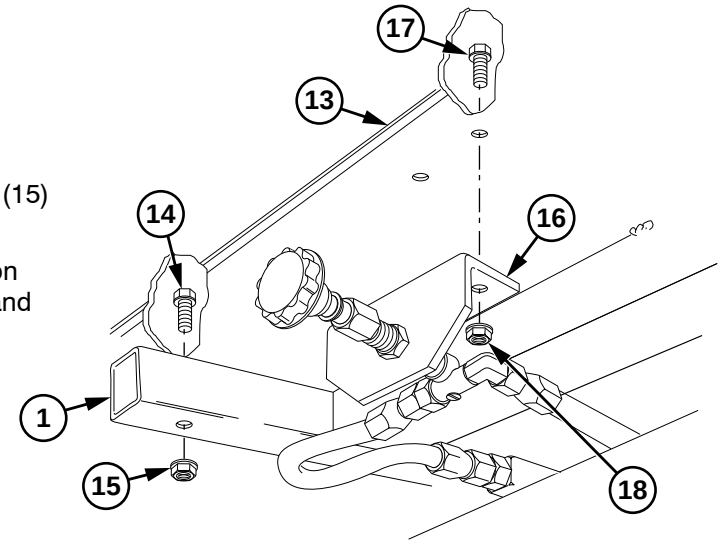
(3) Install bracket (10) on frame (2) with two screws (11) and new locknuts (12).

(4) Position stowage box (13) on support brackets (1, 5, and 10) with aid of assistant.



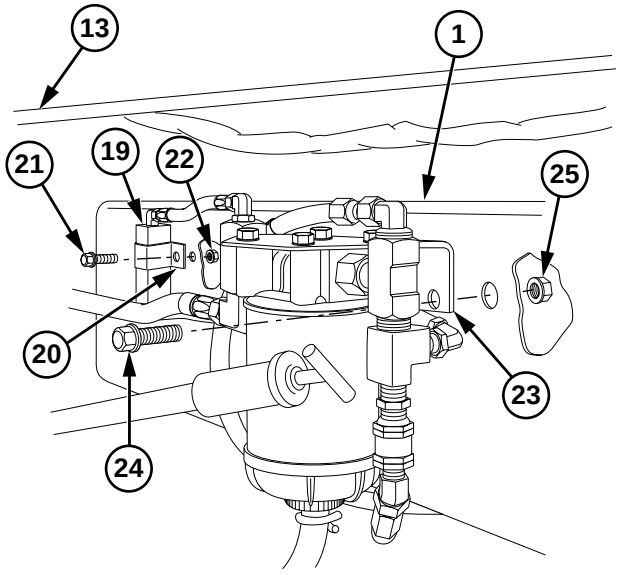
(5) Install six screws (14) and new locknuts (15) on stowage box (13).

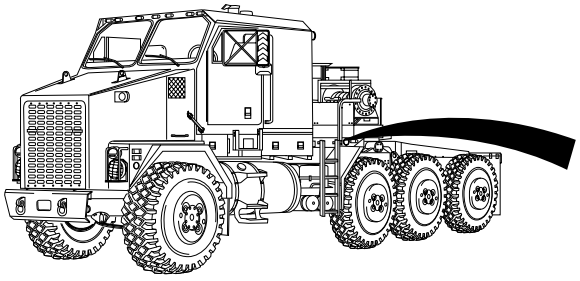
(6) Install hand priming pump bracket (16) on stowage box (13) with two screws (17) and new locknuts (18).



(7) Install fuel restriction indicator (19) and bracket (20) on stowage box (13) with screw (21) and new locknut (22) with aid of assistant.

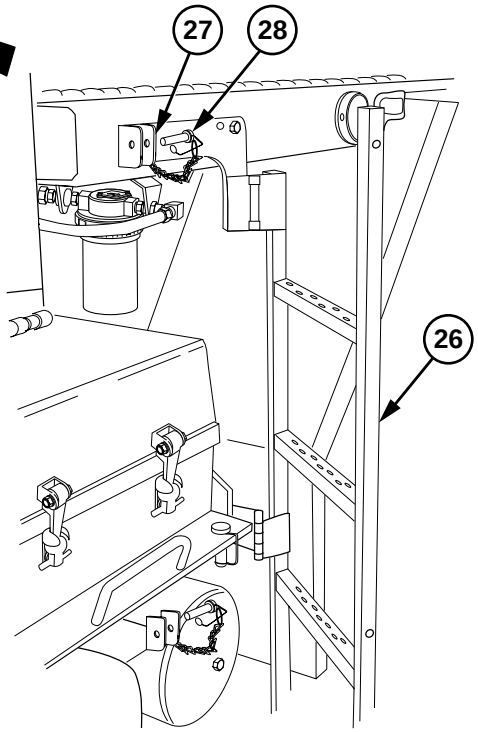
(8) Install fuel/water separator bracket (23) on stowage box (13) with two screws (24) and new locknuts (25).





(9) Swing ladder (26) into ladder supports (27).

(10) Install two clevis pins (28) through ladder supports (27) and ladder (26).



16-14. STOWAGE BOX REPLACEMENT (CONT)

d. Adjustment

NOTE

To tighten latch, do steps (1) thru (3). To loosen latch, do steps (4) thru (6).

(1) Loosen nut (1) away from latching device (2).

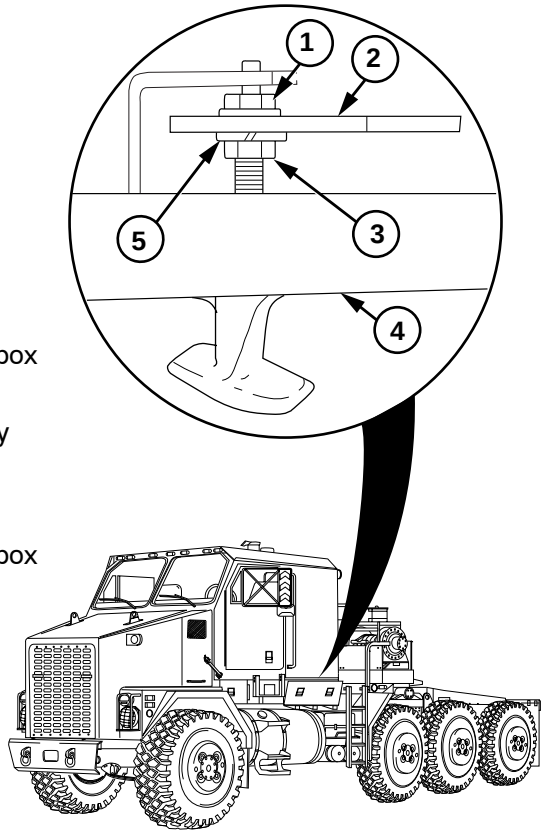
(2) Tighten nut (3).

(3) Repeat steps (1) and (2) until stowage box door (4) latches properly.

(4) Loosen nut (3) and lockwasher (5) away from latching device (2).

(5) Tighten nut (1).

(6) Repeat steps (4) and (5) until stowage box door latches properly.



e. Follow-On Maintenance

Remove wheel chocks.

16-15. RIFLE MOUNT REPAIR

This task covers:
- a. Removal
- b. Disassembly
- c. Assembly
- d. Installation
- e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (2) (Item 72, Appendix G)

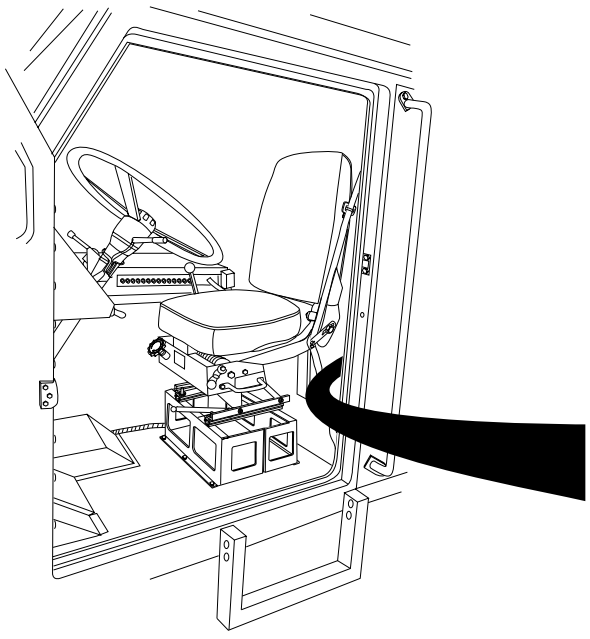
a. Removal

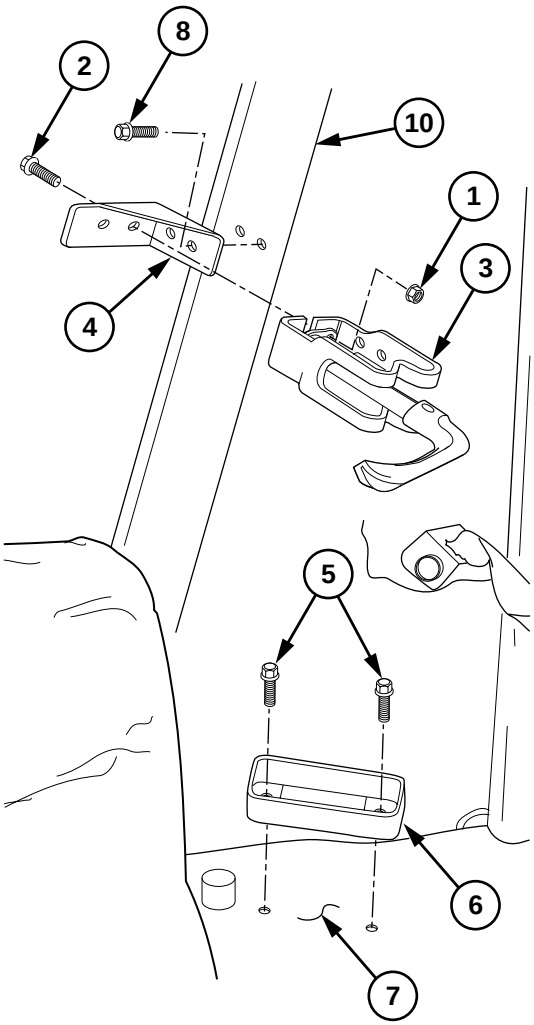
NOTE
Both rifle mounts are repaired the same way. Mount on driver's side is shown.

(1) Remove two locknuts (1), screws (2), and catch assembly (3) from rifle mount bracket (4). Discard locknuts.

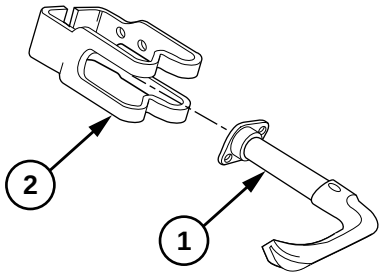
(2) Remove two screws (8) and rifle mount bracket (4) from cab (10).

(3) Remove two screws (5) and support (6) from cab floor (7).





16-15. RIFLE MOUNT REPAIR (CONT)

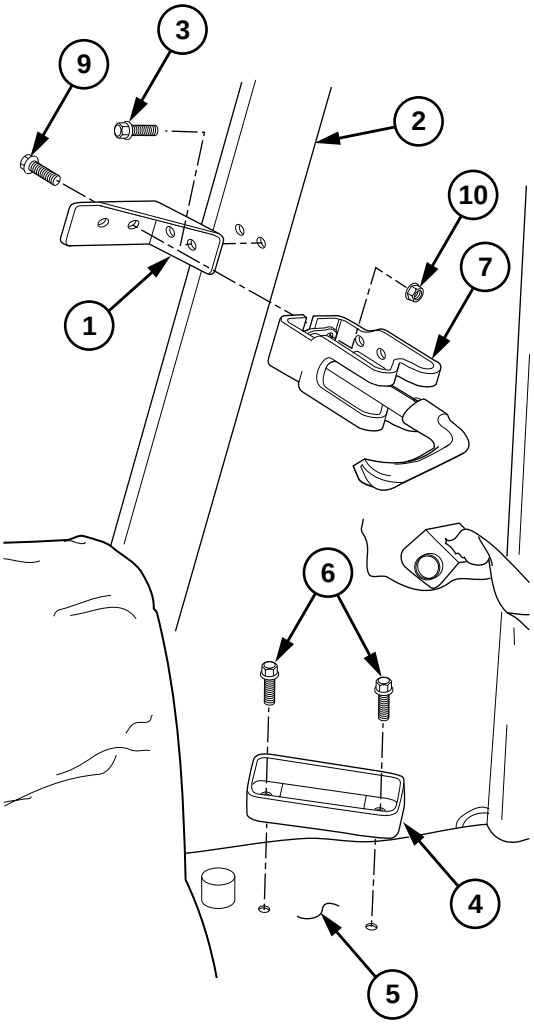


b. Disassembly

Remove catch (1) from mounting bracket (2).

c. Assembly

Install catch (1) in mounting bracket (2).



d. Installation

(1) Install support (4) on cab floor (5) with two screws (6).

(2) Install rifle mount bracket (1) on cab (2) with two screws (3).

(3) Install catch assembly (7) on rifle mount bracket (8) with two screws (9) and new locknuts (10).

e. Follow-On Maintenance

Remove wheel chocks.

16-16. SUNVISOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

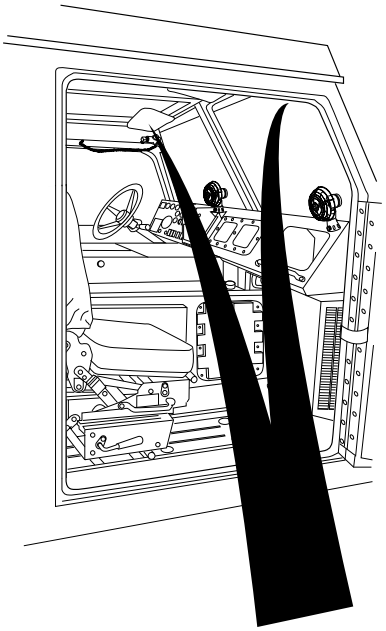
Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

NOTE
Both sunvisors are replaced the same way. Right sunvisor is shown.

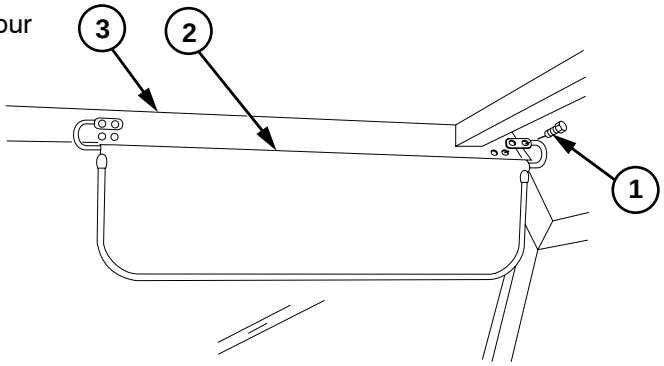
Remove four screws (1) and sunvisor (2) from cab roof brace (3).



b. Installation

NOTE
Sunvisor bracket should be flush against brace.

Install sunvisor (2) on cab roof brace (3) with four screws (1).



c. Follow-On Maintenance

Remove wheel chocks.

16-17. BACKSEAT CUSHION/FRAME REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Rear seat converted to bed (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Locknuts (8) (Item 58, Appendix G)
Locknut (Item 82, Appendix G)

Personnel Required
Two

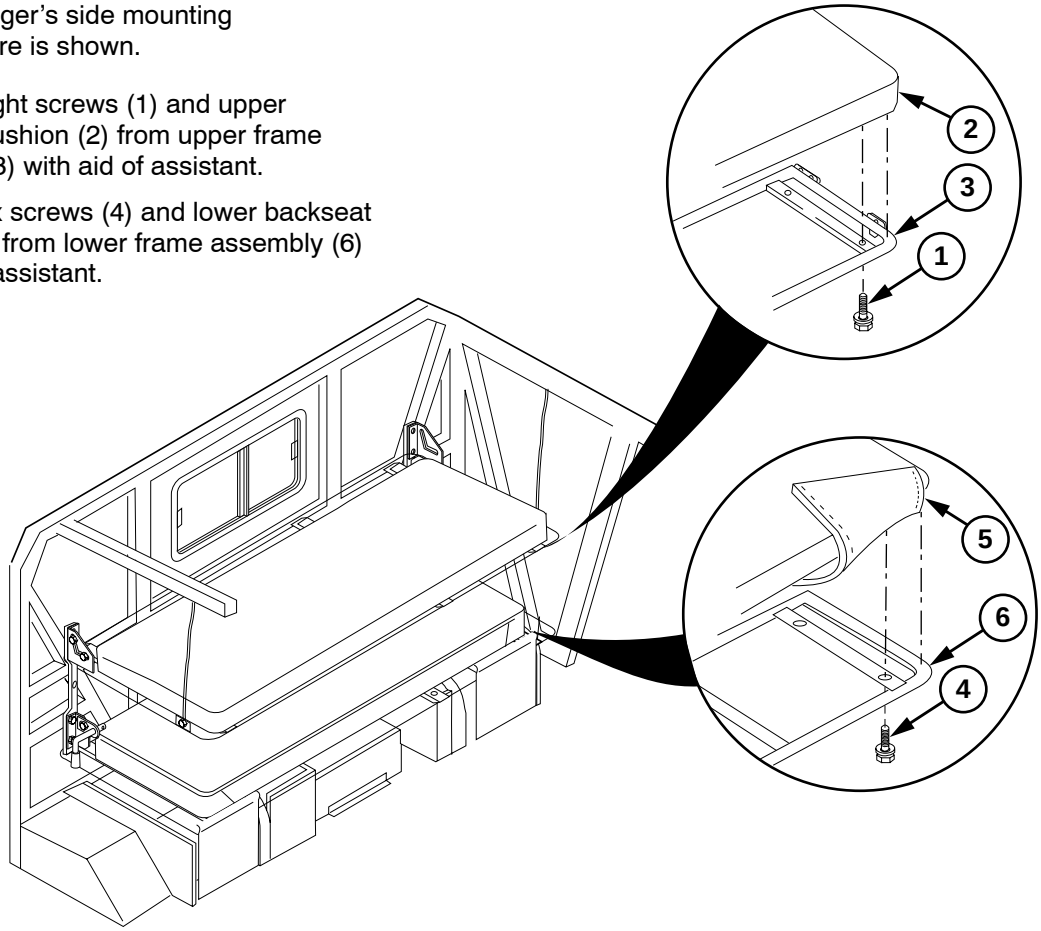
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

NOTE
Mounting hardware is the same on both sides of the backseat. Passenger's side mounting hardware is shown.

(1) Remove eight screws (1) and upper backseat cushion (2) from upper frame assembly (3) with aid of assistant.

(2) Remove six screws (4) and lower backseat cushion (5) from lower frame assembly (6) with aid of assistant.



16-17. BACKSEAT CUSHION/FRAME REPLACEMENT (CONT)

(3) Remove two cables (7) from hooks (8).

(4) Remove two screws (9) from upper frame assembly (3).

(5) Loosen two nuts (10) and remove hooks (8) from cab roof (11).

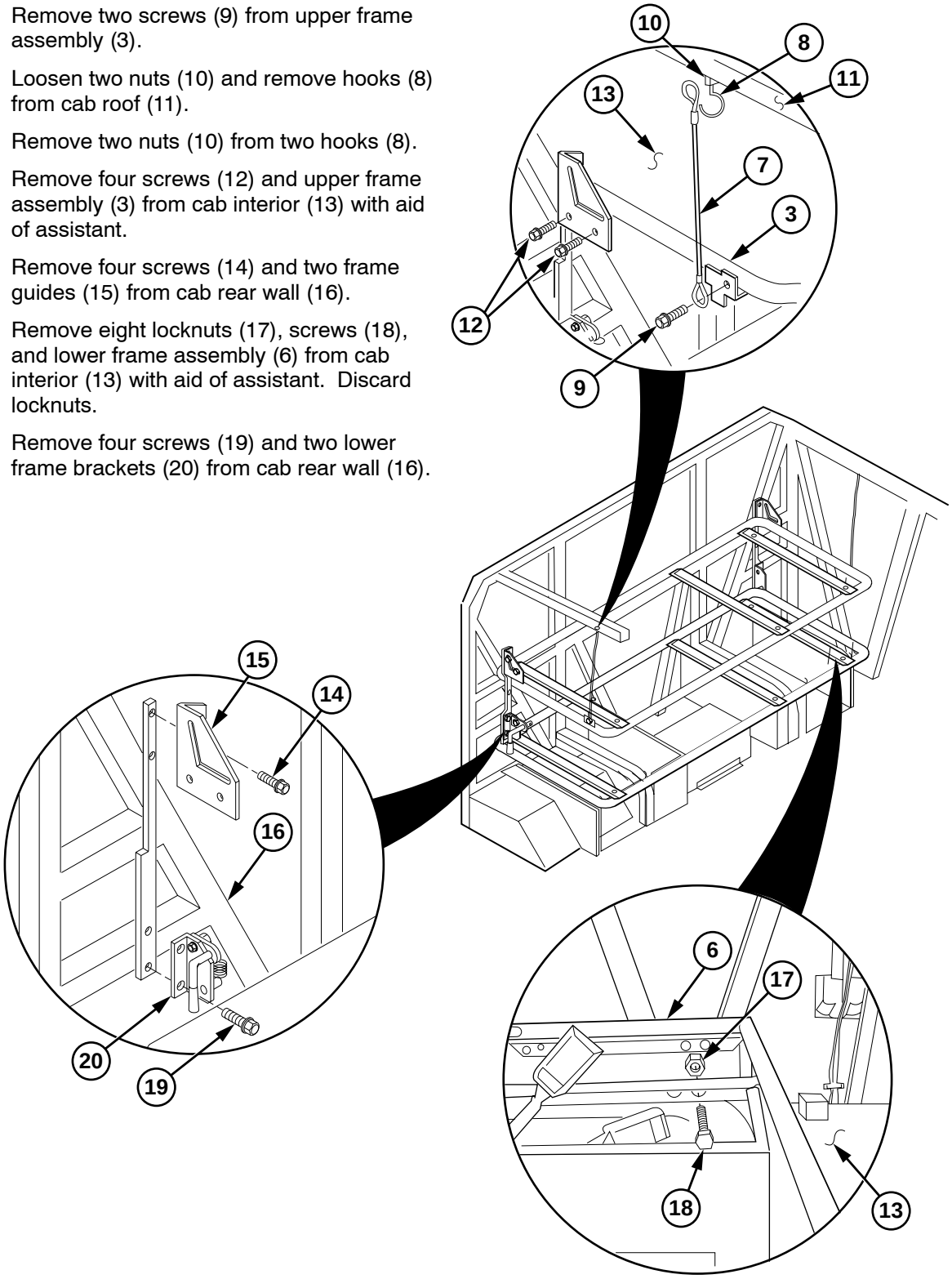
(6) Remove two nuts (10) from two hooks (8).

(7) Remove four screws (12) and upper frame assembly (3) from cab interior (13) with aid of assistant.

(8) Remove four screws (14) and two frame guides (15) from cab rear wall (16).

(9) Remove eight locknuts (17), screws (18), and lower frame assembly (6) from cab interior (13) with aid of assistant. Discard locknuts.

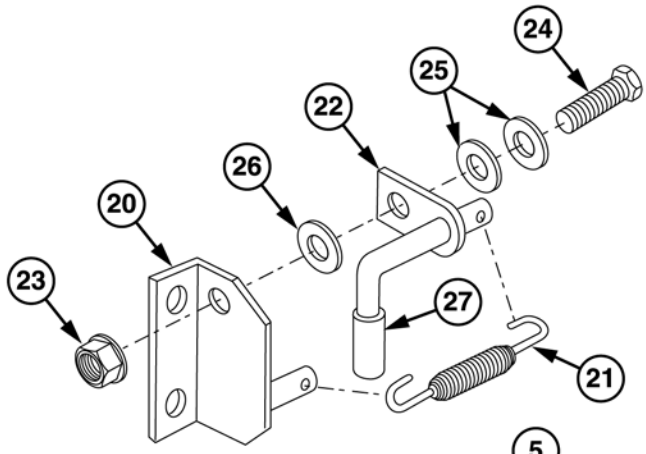
(10) Remove four screws (19) and two lower frame brackets (20) from cab rear wall (16).



(11) Remove spring (21) from lower frame bracket (20) and handle (22).

(12) Remove locknut (23), screw (24), two washers (25), handle (22), and washer (26 from lower frame bracket (20). Discard locknut.

(13) Remove end tip (27) from handle (22).



b. Installation

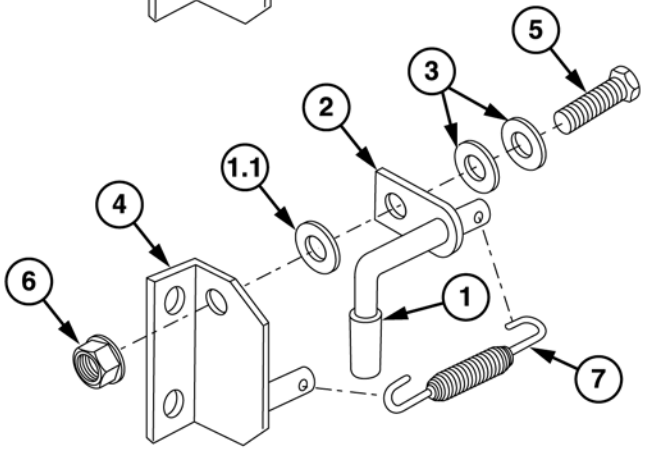
NOTE

Do not overtighten locknut. Handle should move when properly installed.

(1) Install end tip (1) on handle (2).

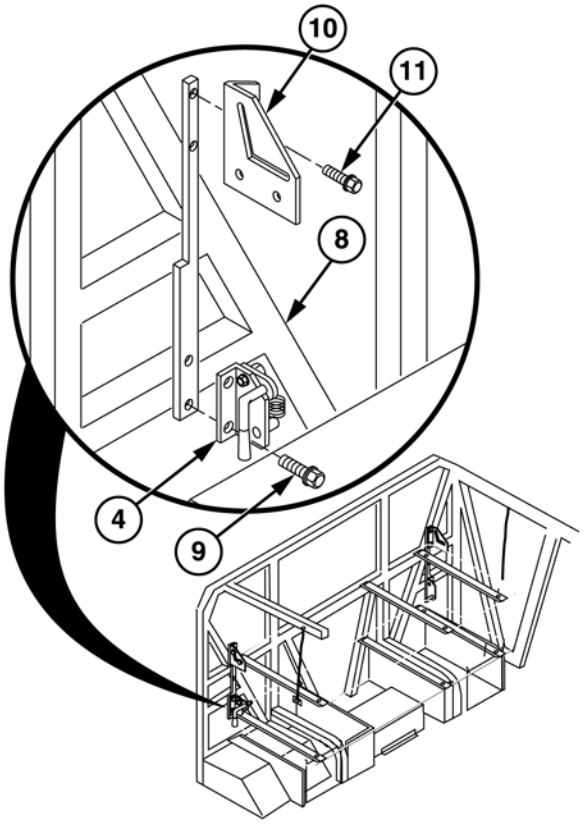
(1.1) Install washer (1.1), handle (2), and two washers (3) on lower frame bracket (4) with screw (5) and new locknut (6).

(2) Install spring (7) on handle (2) and lower frame bracket (4).



(3) Install two lower frame brackets (4) on cab rear wall (8) with four screws (9).

(4) Install two frame guides (10) on cab rear wall (8) with four screws (11).



16-17. BACKSEAT CUSHION/FRAME REPLACEMENT (CONT)

(5) Install lower frame assembly (12) on cab interior (13) with eight screws (14) and new locknuts (15) with aid of assistant.

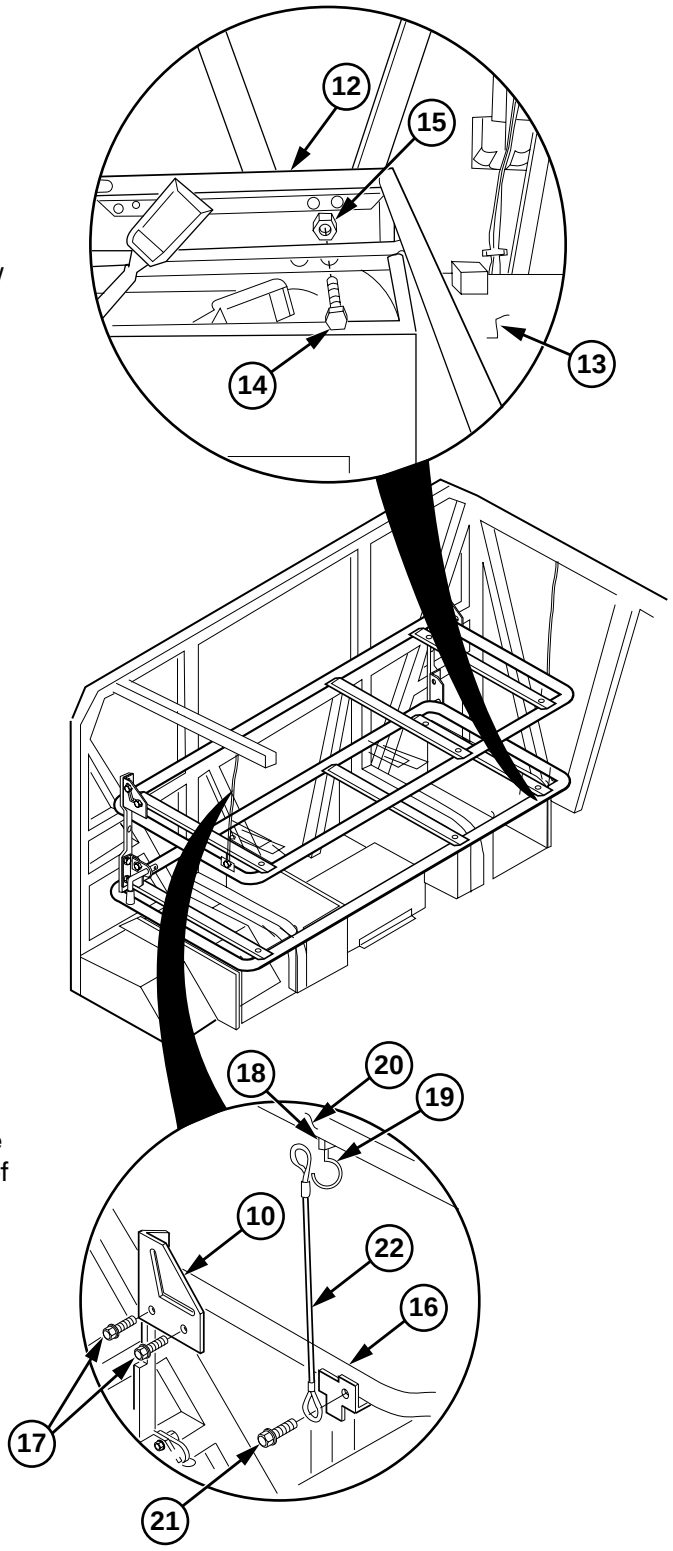
(6) Install upper frame assembly (16) on frame guides (10) with four screws (17) with aid of assistant.

(7) Install two nuts (18) on hooks (19).

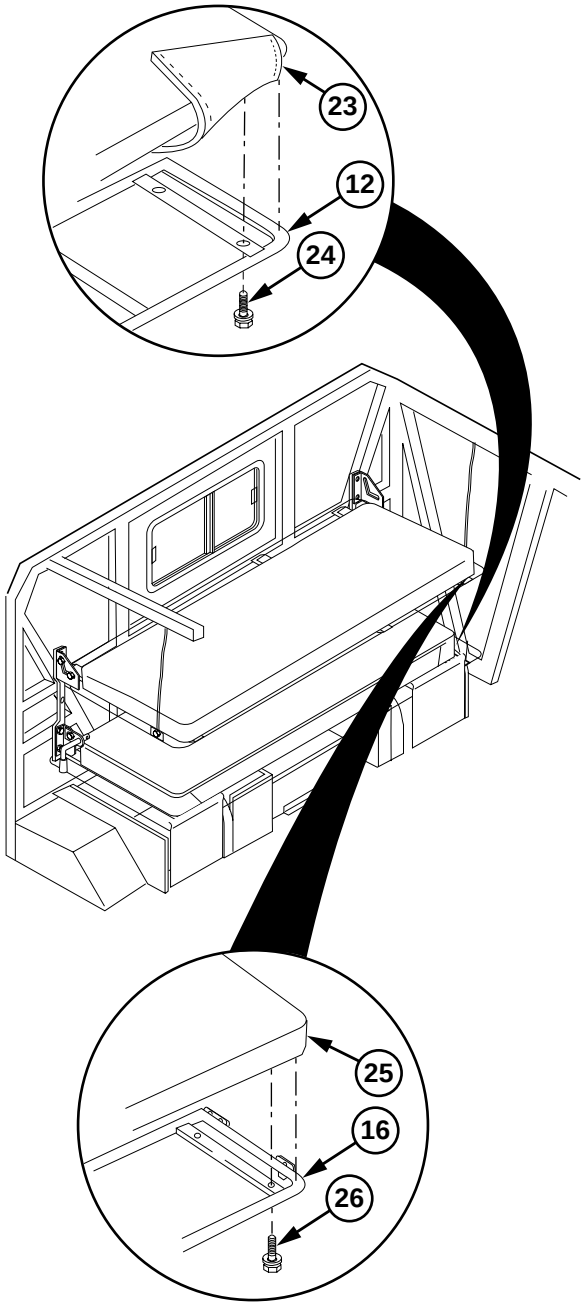
(8) Install two hooks (19) on cab roof (20) and tighten two nuts (18).

(9) Install two screws (21) on upper frame assembly (16).

(10) Install two cables (22) on hooks (19).



(11) Install lower backseat cushion (23) on lower frame assembly (12) with six screws (24) with aid of assistant.



NOTE

Install upper backseat cushion with finished edge facing front of cab.

(12) Install upper backseat cushion (25) on upper frame assembly (16) with eight screws (26) with aid of assistant.

c. Follow-On Maintenance

(1) Convert bed to rear seat (TM 9-2320-360-10).

(2) Remove wheel chocks.

16-18. TOOL BOX REPLACEMENT

This task covers:
a. Removal
b. Inspection
c. Installation
d. Adjustment
e. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Tool box empty.

Materials/Parts
Locknuts (3) (Item 58, Appendix G)
Lockwasher (Item 102, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

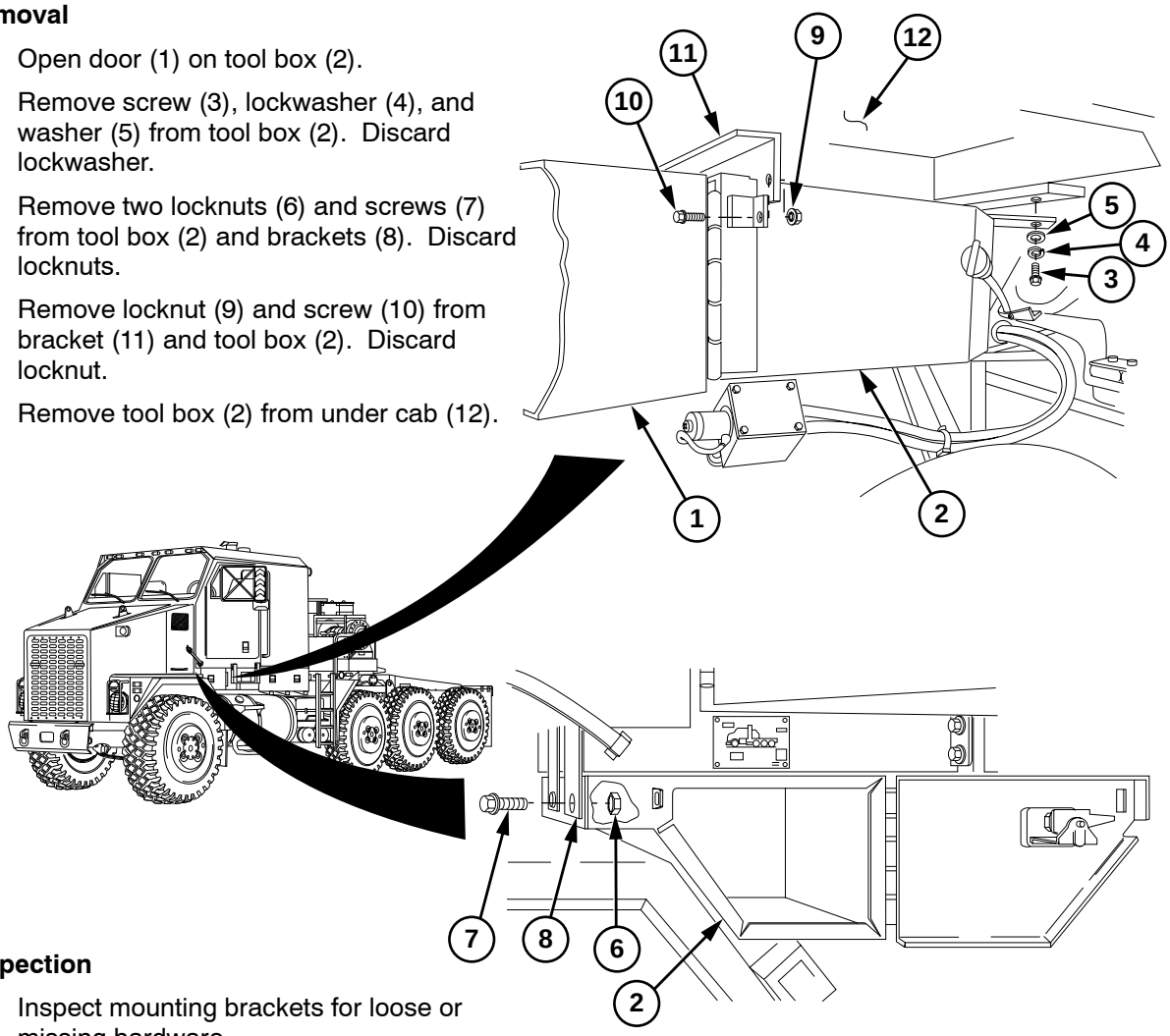
(1) Open door (1) on tool box (2).

(2) Remove screw (3), lockwasher (4), and washer (5) from tool box (2). Discard lockwasher.

(3) Remove two locknuts (6) and screws (7) from tool box (2) and brackets (8). Discard locknuts.

(4) Remove locknut (9) and screw (10) from bracket (11) and tool box (2). Discard locknut.

(5) Remove tool box (2) from under cab (12).



b. Inspection

(1) Inspect mounting brackets for loose or missing hardware.

(2) Inspect for damage to mounting brackets.

c. Installation

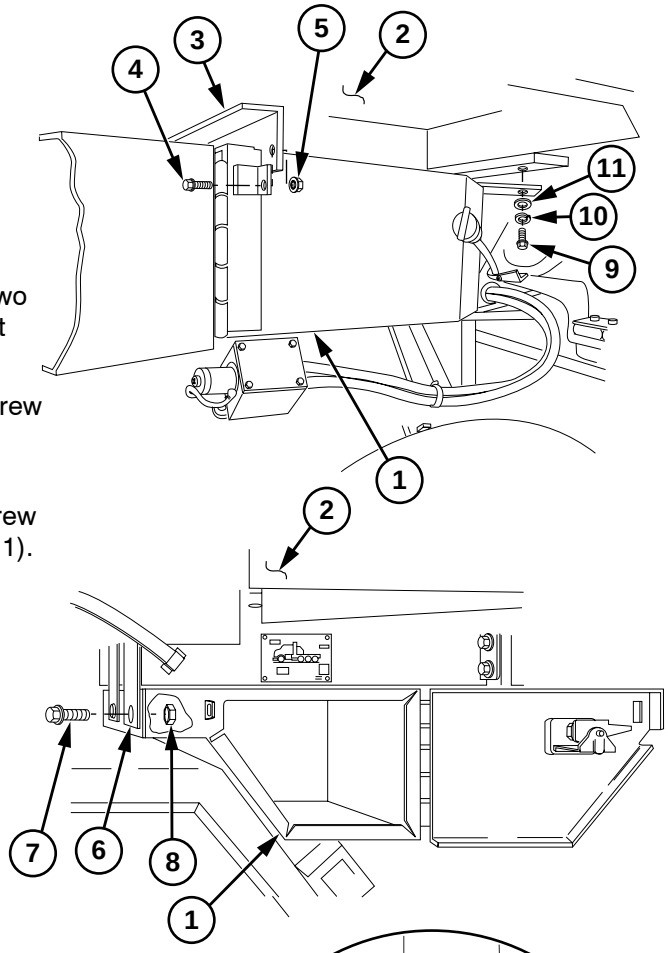
(1) Position tool box (1) under cab (2) while aligning mounting holes.

(2) Install tool box (1) on brackets (3) with two screws (4) and new locknuts (5). Do not tighten locknuts.

(3) Install tool box (1) on bracket (6) with screw (7) and new locknut (8). Do not tighten locknuts.

(4) Install tool box (1) under cab (2) with screw (9), new lockwasher (10), and washer (11).

(5) Tighten locknuts (5 and 8).



d. Adjustment

NOTE

To tighten latch, do steps (1) thru (3). To loosen latch, do steps (4) thru (6).

(1) Loosen nut (1) away from latching device (2).

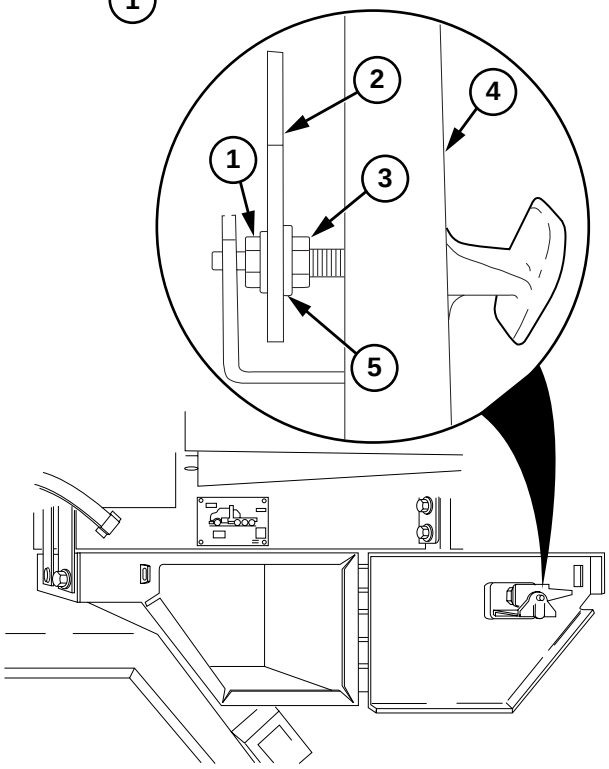
(2) Tighten nut (3).

(3) Repeat steps (1) and (2) until tool box door (4) latches properly.

(4) Loosen nut (3) and lockwasher (5) away from latching device (2).

(5) Tighten nut (1).

(6) Repeat steps (4) and (5) until tool box door latches properly.



e. Follow-On Maintenance

Remove wheel chocks.

16-19. CAB STEP REPLACEMENT

This task covers:
a. Removal
b. Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (4) (Item 65, Appendix G)

a. Removal

NOTE
Right and left cab steps are replaced the same way.
Driver's side cab step is shown.

Remove four locknuts (1), door lock bracket (1.1), screws (2), and cab step (3) from brackets (4). Discard locknuts.

b. Inspection

Inspect cab mounting brackets for broken welds and elongated holes.

c. Installation

Install cab step (3) on brackets (4) with four screws (2), door lock bracket (1.1), and new locknuts (1).

d. Follow-On Maintenance

Remove wheel chocks.

16-20. GRAB HANDLE REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-175 Lb-Ft. (Item 73, Appendix F)

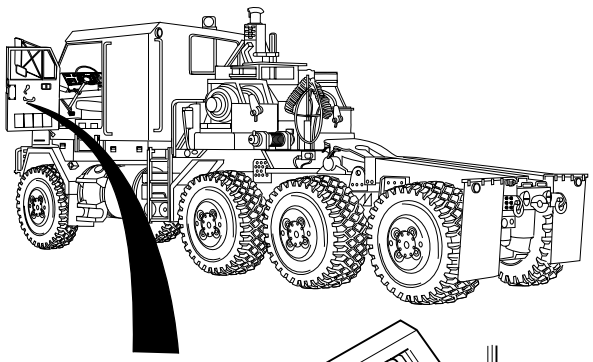
Materials/Parts
Locknuts (11) (Item 58, Appendix G)
Locknuts (4) (Item 68, Appendix G)
Locknuts (3) (Item 47, Appendix G)
Lockwashers (2) (Item 102, Appendix G)

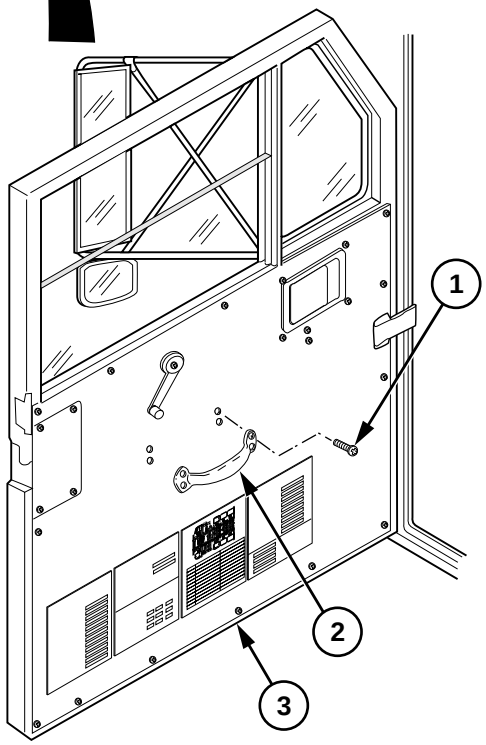
Personnel Required
Two

a. Door Grab Handle Removal

NOTE
Both door grab handles are replaced the same way. Driver's door grab handle is shown.

Remove four screws (1) and grab handle (2) from inside of door (3).





b. Door Grab Handle Installation

Install grab handle (2) on inside of door (3) with four screws (1).

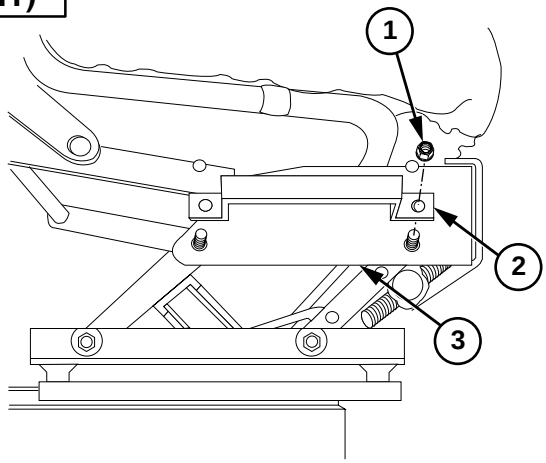
16-20. GRAB HANDLE REPLACEMENT (CONT)

c. Seat Grab Handle Removal

NOTE

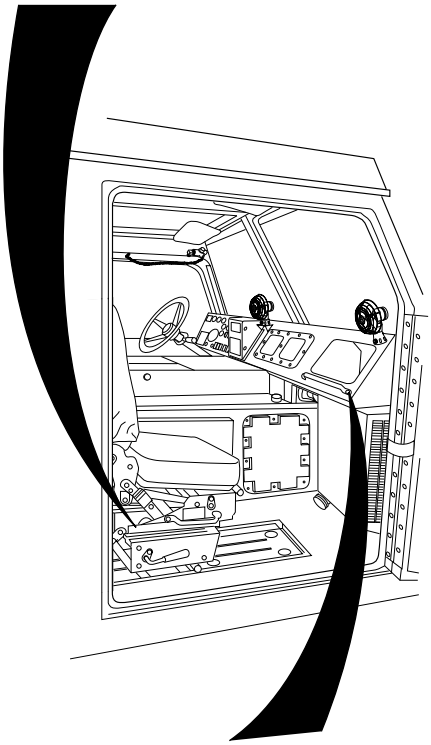
- Both seat grab handles are replaced the same way. Right seat grab handle is shown.
- Do not remove screw when removing seat grab handle.

Remove two locknuts (1) and grab handle (2) from seat (3). Discard locknuts.



d. Seat Grab Handle Installation

Install grab handle (2) on seat (3) with two new locknuts (1). Torque to 23 lb-ft (31 N·m).

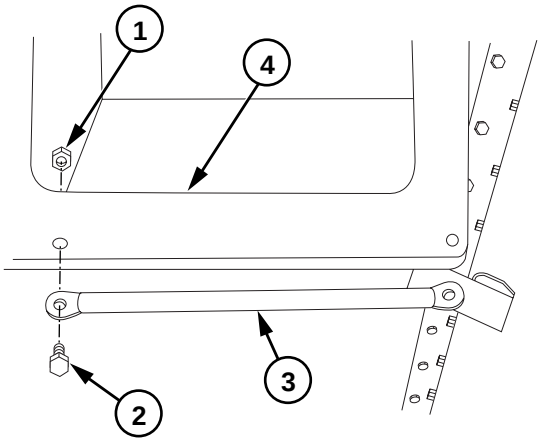


e. Dash Grab Handle Removal

NOTE

Both dash grab handles are replaced the same way. Passenger's side dash grab handle is shown.

Remove two locknuts (1), screws (2), and dash grab handle (3) from dash (4). Discard locknuts.



f. Dash Grab Handle Installation

Install grab handle (3) on dash (4) with two screws (2) and new locknuts (1).

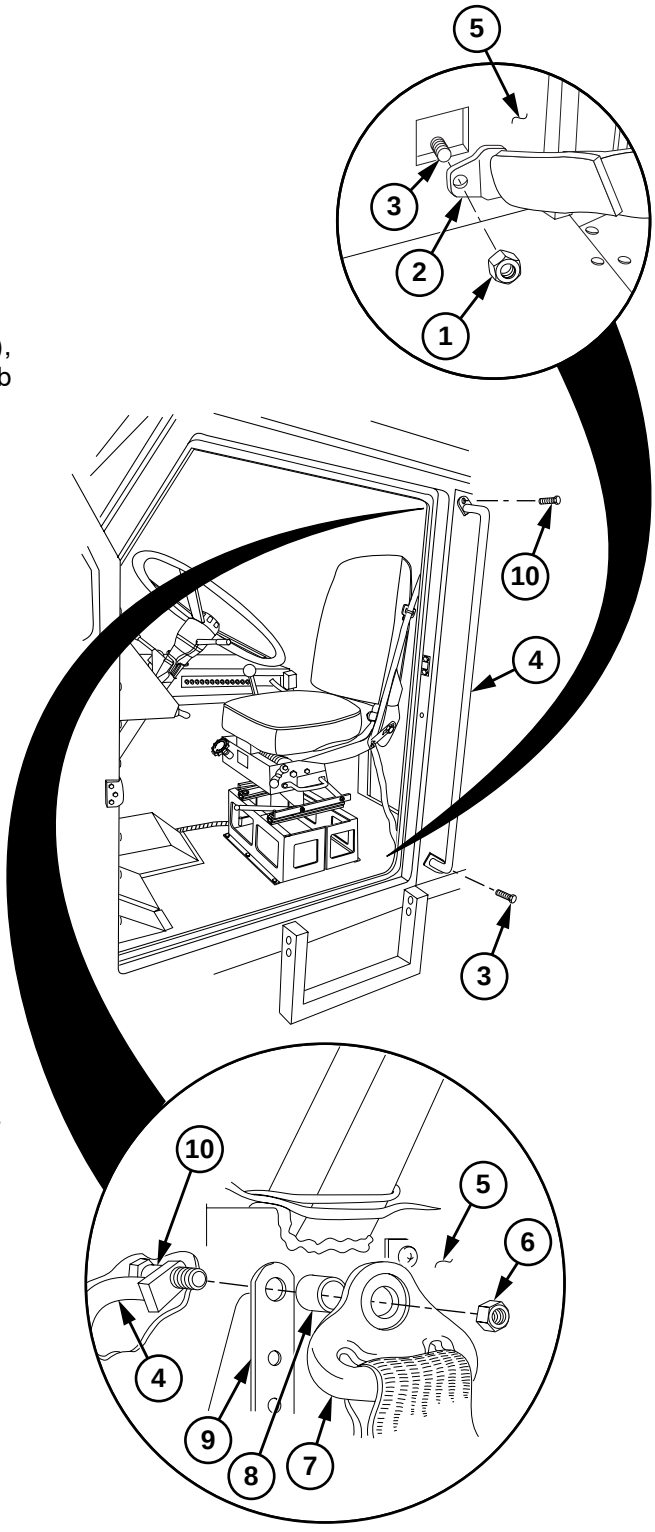
g. Cab Grab Handle Removal

NOTE

Both cab grab handles are replaced the same way. Driver's side cab grab handle is shown. Passenger's side does not have anchor strap.

(1) Remove locknut (1), anchor strap (2), and screw (3) from cab grab handle (4) and cab (5). Discard locknut.

(2) Remove locknut (6), D-loop (7), bushing (8), comfort latch buckle (9), screw (10), and cab grab handle (4) from cab (5). Discard locknut.



h. Cab Grab Handle Installation

(1) Install cab grab handle (4), comfort latch buckle (9), bushing (8), and D-loop (7) on cab (5) with screw (10) and new locknut (6). Torque to 70 lb-in. (7.9 N·m).

(2) Install anchor strap (2) and cab grab handle (4) on cab wall (5) with screw (3) and new locknut (1).

16-20. GRAB HANDLE REPLACEMENT (CONT)

i. Rear Cab Grab Handle Removal

NOTE

Have assistant positioned inside cab.

Remove four locknuts (1), screws (2), and rear cab grab handle (3) from rear of cab (4) with aid of assistant. Discard locknuts.

j. Rear Cab Grab Handle Installation

Install rear cab grab handle (3) on rear of cab (4) with four screws (2) and new locknuts (1) with aid of assistant.

k. Hood Grab Handle Removal

NOTE

Both hood grab handles are replaced the same way. Passenger's side hood grab handle is shown.

(1) Open hood (TM 9-2320-360-10).

(2) Remove two locknuts (1), flat washers (1.1), screws (2), washers (3), and hood grab handle (4) from hood (5). Discard locknuts.

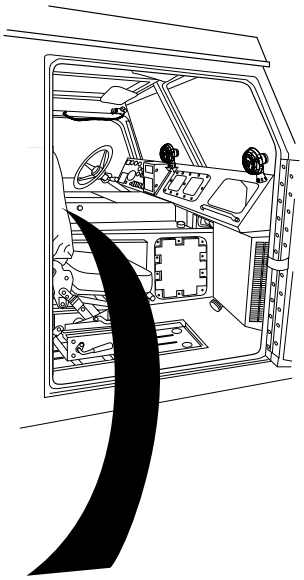
l. Hood Grab Handle Installation

(1) Install hood grab handle (4) on hood (5) with two washers (3), screws (2), flat washers (1.1), and new locknuts (1).

(2) Close hood (TM 9-2320-360-10).

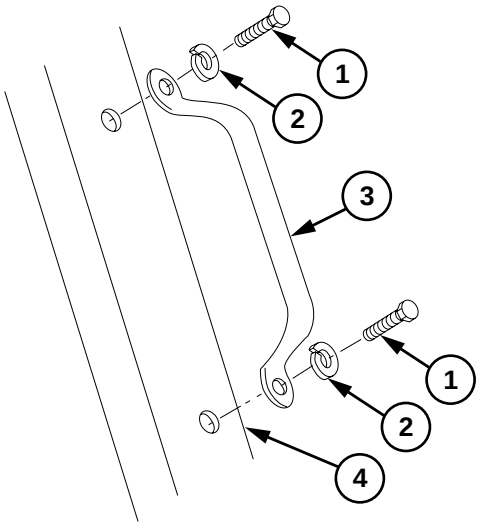
m. Rear Seat Grab Handle Removal

Remove two screws (1), lockwashers (2), and grab handle (3) from cab wall (4). Discard lockwashers.



n. Rear Seat Grab Handle Installation

Install grab handle (3) on cab wall (4) with two screws (1) and new lockwashers (2).



o. Follow-On Maintenance

Remove wheel chocks.

16-21. WINCH LADDER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (4) (Item 61, Appendix G)

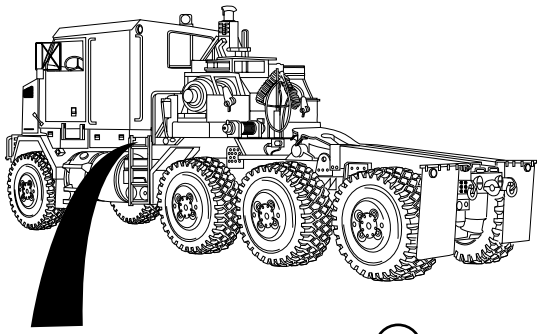
a. Removal

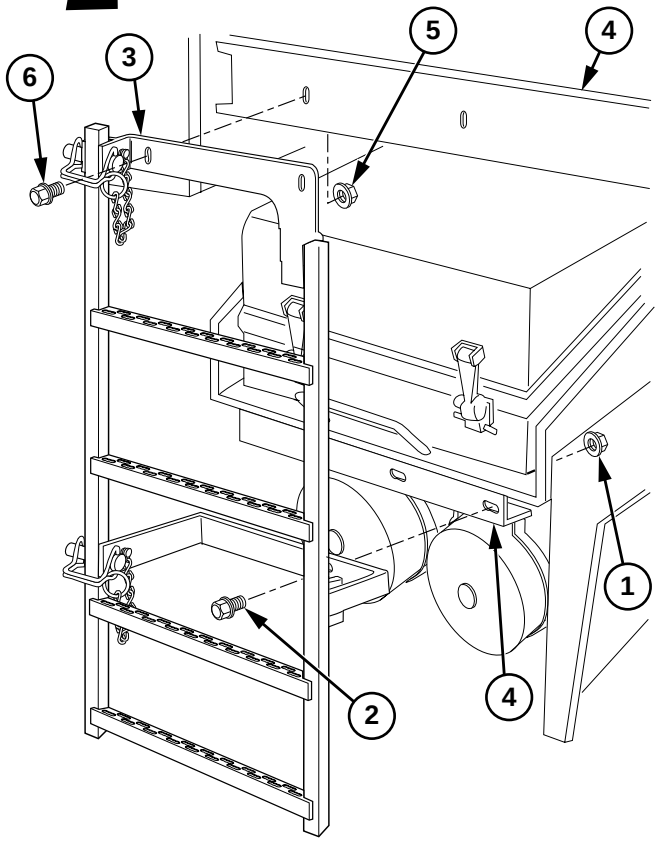
(1) Remove two locknuts (1) and screws (2) from winch ladder (3) and air reservoir bracket (4). Discard locknuts.

WARNING

Support ladder while removing screws to prevent ladder from falling. Failure to do so may cause injury.

(2) Remove two locknuts (5), screws (6), and winch ladder (3) from winch deck (7). Discard locknuts





b. Installation

(1) Install winch ladder (3) on winch deck (7) with two screws (6) and new locknuts (5).

(2) Install winch ladder (3) on air reservoir bracket (4) with two screws (2) and new locknuts (1).

c. Follow-On Maintenance

Remove wheel chocks.

16-22. FIRE EXTINGUISHER MOUNT REPLACEMENT

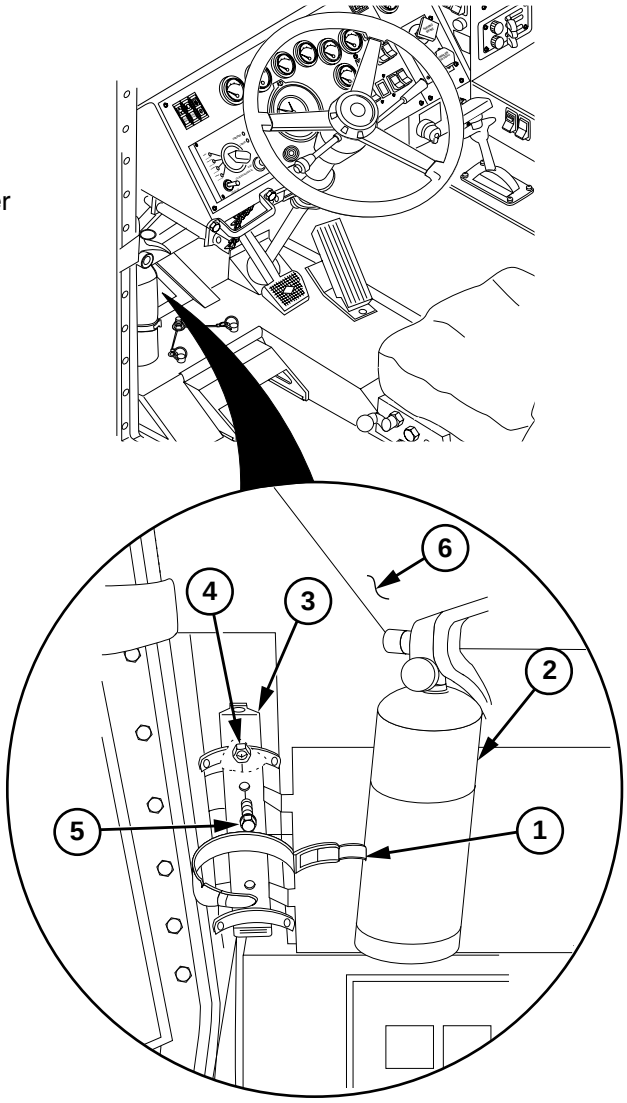
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (2) (Item 58, Appendix G)



a. Removal

(1) Open clamp (1) and remove fire extinguisher (2) from mount (3).

NOTE
Some vehicles use threaded screw inserts instead of locknuts.

(2) Remove two locknuts (4), screws (5), and mount (3) from firewall (6). Discard locknuts.

b. Installation

(1) Install mount (3) on firewall (6) with two screws (5) and new locknuts (4).

(2) Position fire extinguisher (2) in mount (3). Tighten clamp (1).

c. Follow-On Maintenance

Remove wheel chocks.

16-23. REFLECTOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

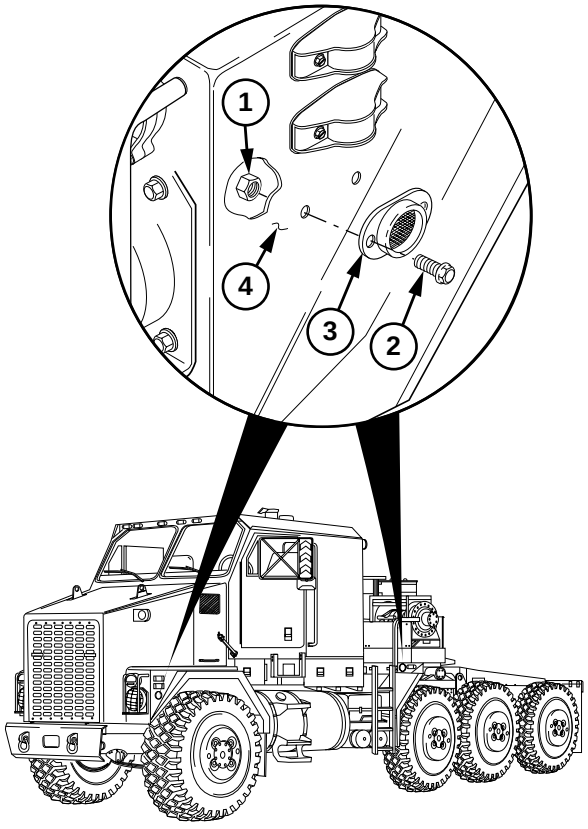
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (2) (Item 72, Appendix G)

a. Removal

NOTE
All reflectors are replaced the same way. Driver's side front is shown.

Remove two locknuts (1), screws (2), and reflector (3) from HET Tractor (4). Discard locknuts.



b. Installation

Install reflector (3) on HET Tractor (4) with two screws (2) and new locknuts (1).

c. Follow-On Maintenance

Remove wheel chocks.

16-24. DOOR HANDLE REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Inner door panel removed (para 16-26).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (2) (Item 44, Appendix G)
Pins, Cotter (2) (Item 149, Appendix G)

NOTE
Driver's and passenger's door handles are replaced in a similar manner. Driver's side is shown.

a. Outer Door Handle Removal

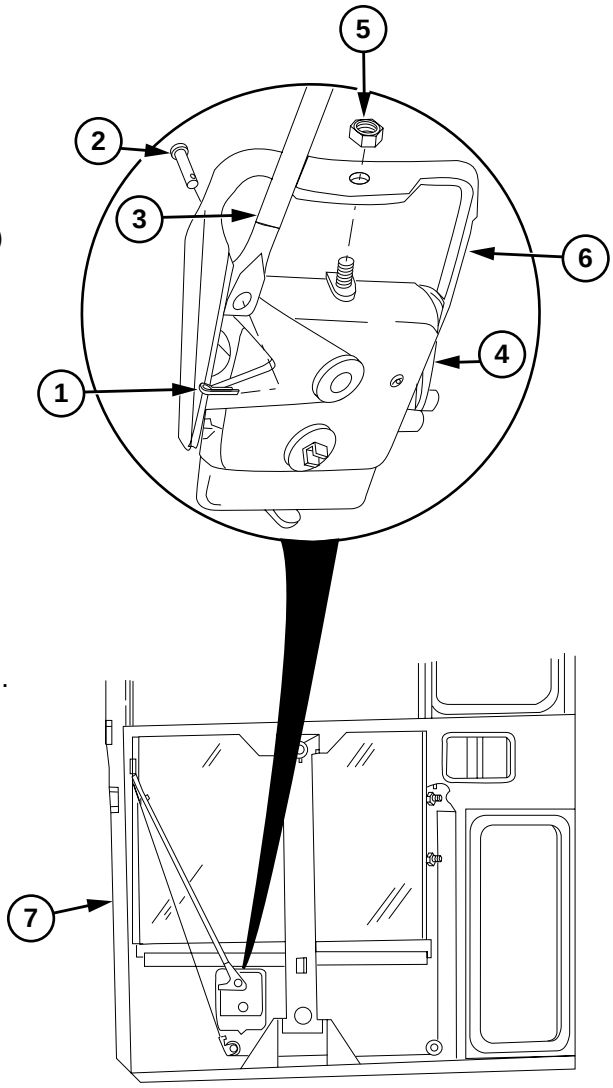
(1) Remove cotter pin (1), pin (2), and clevis (3) from outer door handle (4). Discard cotter pin.

NOTE
Locknut may come off stud or stud and locknut may come off together.

(2) Remove locknut (5) from outer door handle (4). Discard locknut.

(3) Remove handle retainer (6) from behind outer door handle (4).

(4) Remove outer door handle (4) from door (7).



b. Outer Door Handle Installation

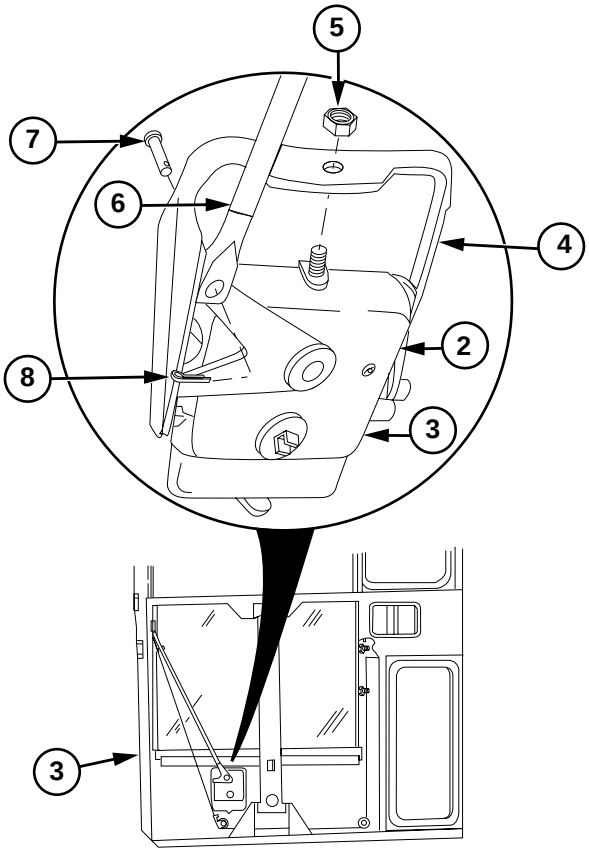
(1) Deleted.

NOTE

- Wide flange of door handle retainer must be installed toward door.
- Door handle retainer must slide under tab on handle.

(2) Install outer door handle (2) on door (3) with door handle retainer (4) and new locknut (5).

(3) Install clevis (6) on outer door handle (2) with pin (7) and new cotter pin (8).



c. Inner Door Handle Removal

NOTE

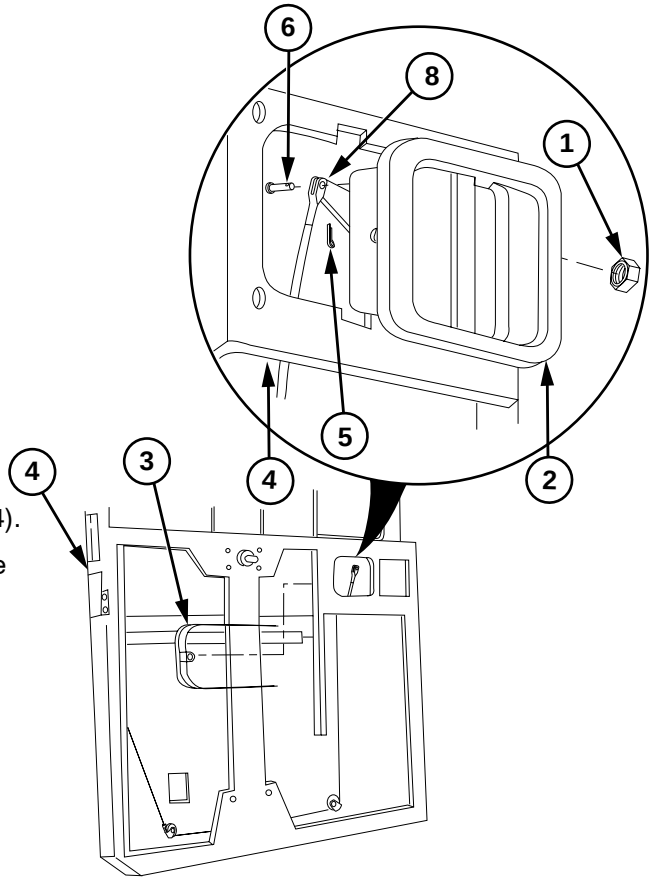
Locknut may come off stud or stud and locknut may come off together.

(1) Remove locknut (1) from inner door handle (2).

(2) Remove door handle retainer (3) from behind inner door handle (2).

(3) Remove inner door handle (2) from door (4).

(4) Remove cotter pin (5) and pin (6) from wire rope assembly (8). Discard cotter pin.



16-24. DOOR HANDLE REPLACEMENT (CONT)

d. Inner Door Handle Installation

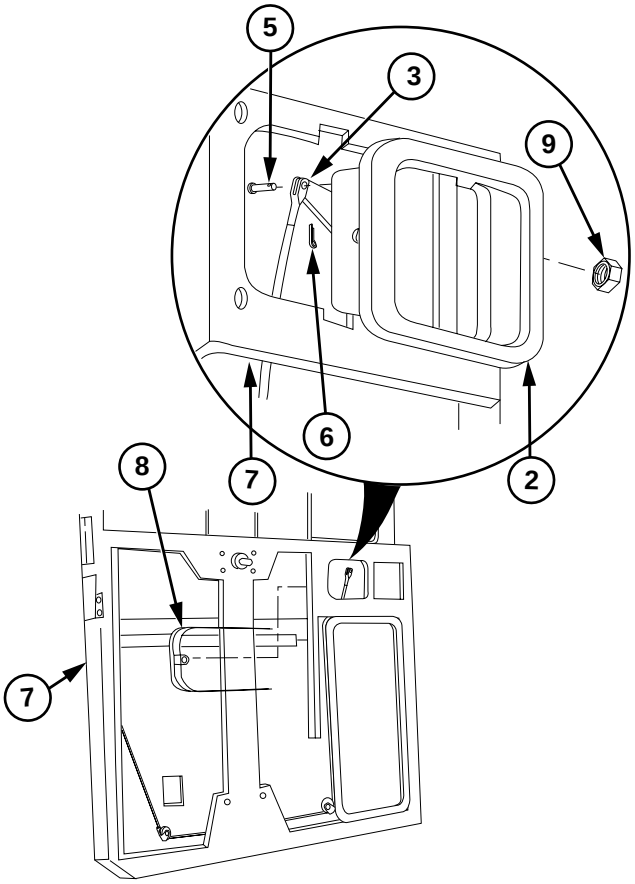
(1) Deleted.

(2) Install wire rope assembly (3) on inner door handle (2) with pin (5) and new cotter pin (6).

NOTE

- Wide flange of door handle retainer must be installed toward door.
- Door handle retainer must slide under tab on handle.

(3) Install inner door handle (2) on door (7) with door handle retainer (8) and new locknut (9).



e. Follow-On Maintenance

Install inner door panel (para 16-26).

16-25. DOOR WINDOW/REGULATOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Outer door handle removed (para 16-24).

Materials/Parts
Locknuts (2) (Item 44, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

NOTE
Driver's and passenger's windows and regulators are replaced in a similar manner. Driver's side is shown.

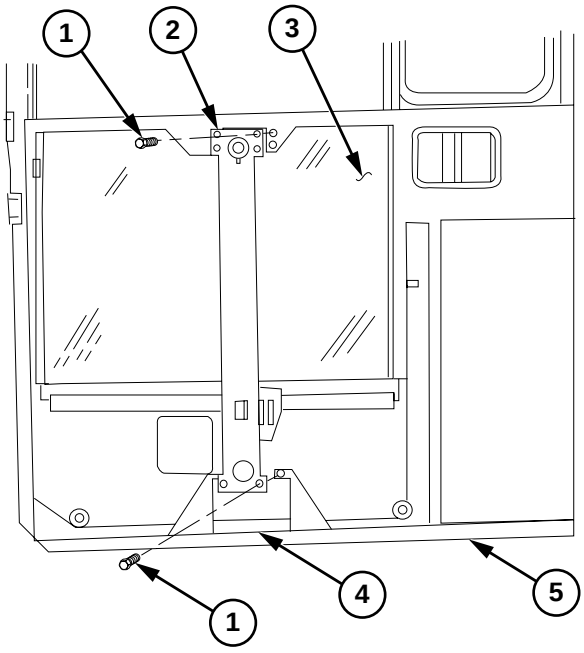
(1) Remove two screws (1) from bottom of regulator (2).

WARNING
Window must be supported when pulling regulator away from window. Failure to comply may result in injury to personnel and damage to window.

(2) Pull regulator (2) away from window (3).

(3) Lower window (3) to stop (4).

(4) Remove four remaining screws (1) and regulator (2) from door (5).



16-25. DOOR WINDOW/REGULATOR REPLACEMENT (CONT)

WARNING

Always wear eye protection and protective clothing when handling glass. Failure to comply may result in injury to personnel.

(5) Prop window (3) with wooden block.

(6) Remove two locknuts (6) from channel (7) on door (5). Discard locknuts.

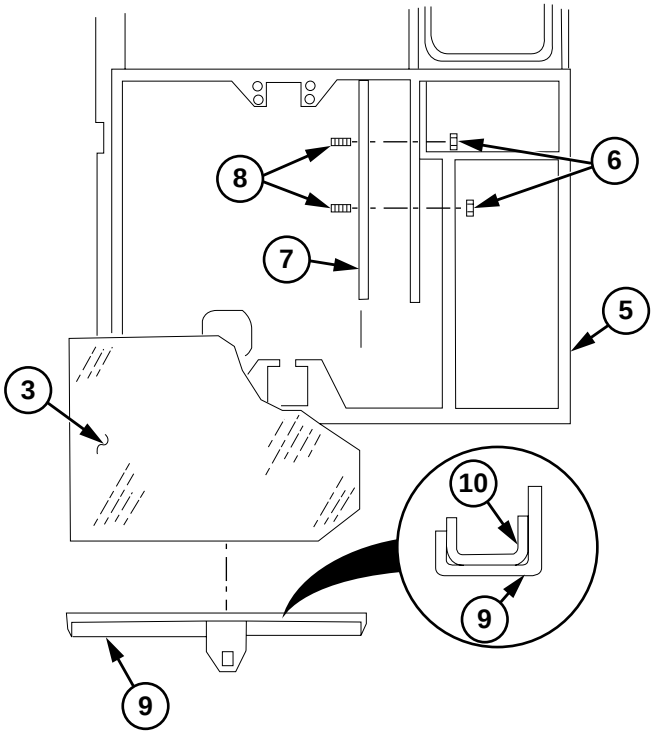
(7) Push window (3) completely up and remove channel (7) from door (5).

(8) Remove two screws (8) from channel (7).

(9) Lower window (3) to bottom of door (5).

(10) Remove window (3) and channel (9) from door (5).

(11) Remove channel (9) and rubber seal (10) from window (3).



b. Installation

NOTE

Flat side of regulator mounting bracket must face inside of vehicle. Angled corner of glass must be at bottom. Channel must be mounted to glass 1-1/2 in. (3.8 cm) from edge of glass at angled corner.

(1) Install channel (1) and rubber seal (2) on window (3).

(2) Install window (3) in bottom of door (4) and channel (1).

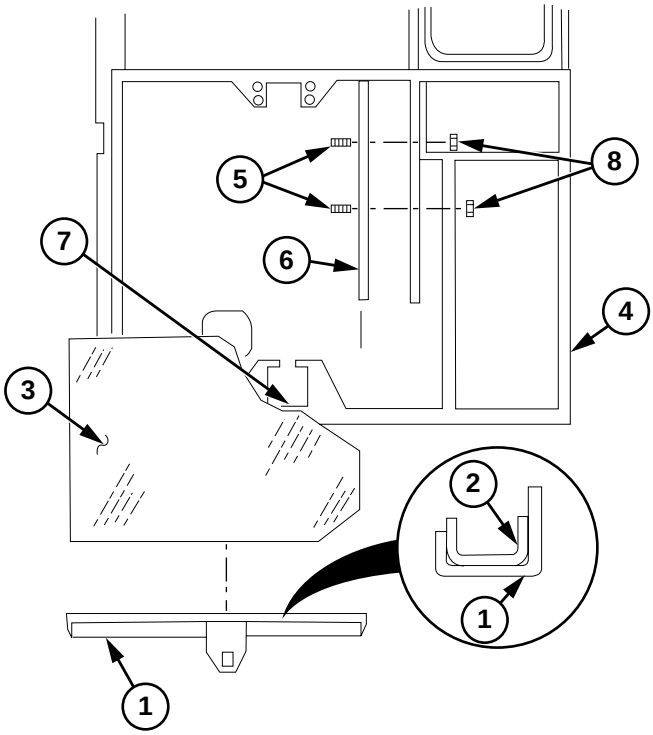
(3) Push window (3) completely up.

(4) Install two screws (5) on channel (6).

(5) Install channel (6) in door (4).

(6) Lower window (3) to stop (7).

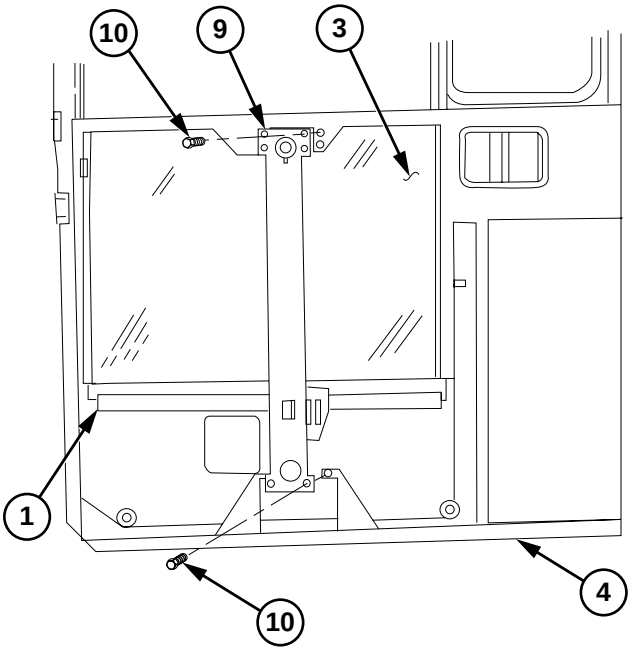
(7) Install two new locknuts (8) on channel (6).



(8) Install regulator (9) on door (4) with four screws (10).

(9) Lower window (3) and install regulator (9) in channel (1).

(10) Install regulator (9) on door (4) with two remaining screws (10).



c. Follow-On Maintenance

Outer door handle installed (para 16-24).

16-26. INNER DOOR PANEL REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Lockwashers (2) (Item 100, Appendix G)
Screw, Machine (Item 161.1, Appendix G)
Spacer (Item 169, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

NOTE
Driver's and passenger's door panels are replaced in a similar manner. Driver's side is shown.

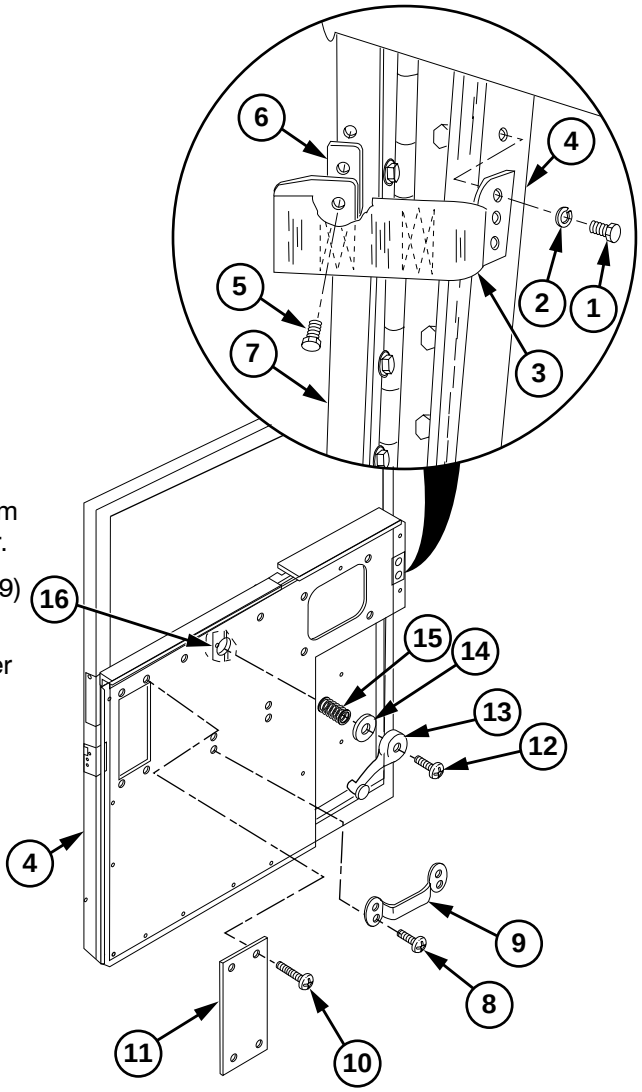
(1) Remove two screws (1), lockwashers (2), and door strap (3) from door (4). Discard lockwashers.

(2) Remove two screws (5) and spacer (6) from door strap (3) and cab (7). Discard spacer.

(3) Remove four screws (8) and grab handle (9) from door (4).

(4) Remove four screws (10) and access cover (11) from door (4).

(5) Remove screw (12), window crank (13), washer plate (14), and spring (15) from window regulator (16). Discard screw.



(6) Deleted.

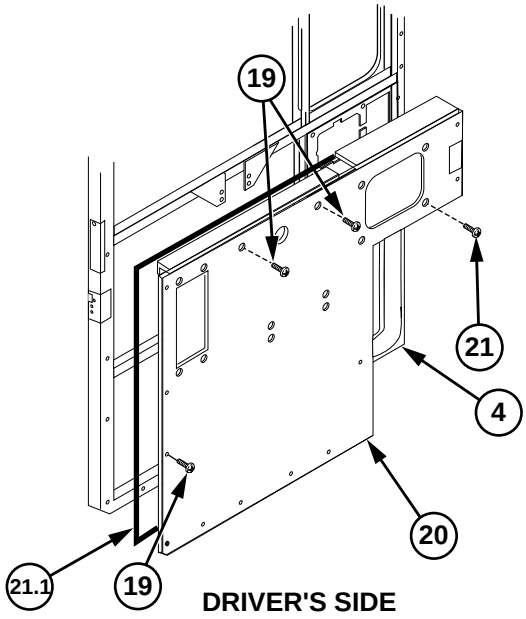
(7) Remove 16 screws (19) from door panel (20).

(8) Remove four screws (21) and door panel (20) from door (4).

NOTE

If rubber strip; is damaged, do step (9).

(9) Remove rubber strip (21.1) from door panel (20).



b. Installation

(1) Deleted.

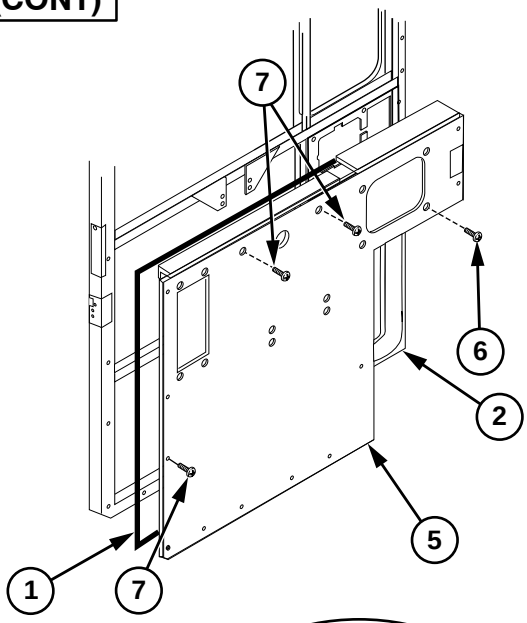
16-26. INNER DOOR PANEL REPLACEMENT (CONT)

NOTE

If rubber strip was removed, do step (1). If rubber strip was not removed, go to step (2).

(1) Install new rubber strip (1) on door panel (5).

(2) Install door panel (5) on door (2) with four screws (6) and 16 screws (7).



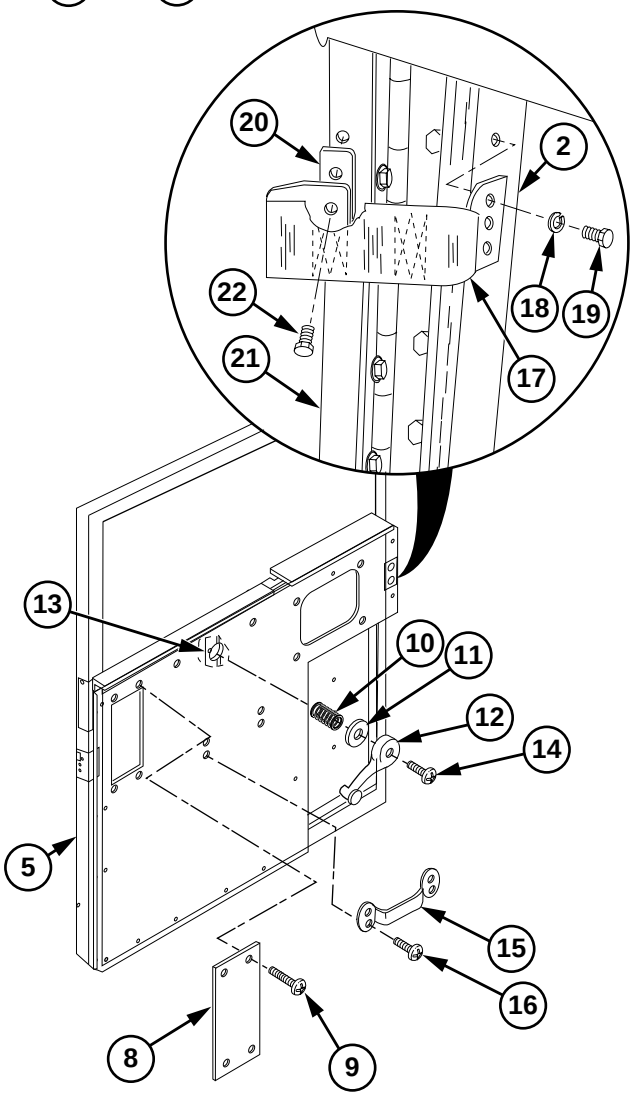
(3) Install access cover (8) on door panel (5) with four screws (9).

(4) Install spring (10), washer plate (11), and window crank (12) on window regulator (13) with new screw (14).

(5) Install grab handle (15) on door panel (5) with four screws (16).

(6) Install door strap (17) on door (2) with two new lockwashers (18) and screws (19).

(7) Install door strap (17) and spacer (20) on cab (21) with two screws (22).



c. Follow-On Maintenance

Remove wheel chocks.

16-27. DOOR LATCH/LINKAGE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Inner door panel removed (para 16-26).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknut (Item 44, Appendix G)
Pin, Cotter (4) (Item 149, Appendix G)
Screws, Self-Locking (3) (Item 160, Appendix G)

a. Removal

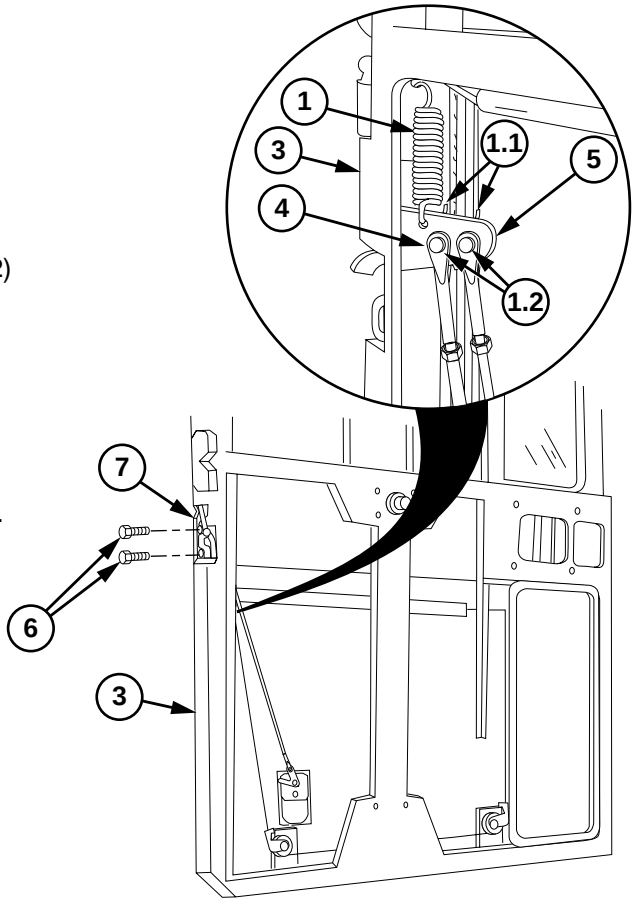
NOTE
Driver's and passenger's door latches and linkage are replaced in a similar manner. Driver's side is shown.

(1) Remove spring (1) from door lock connecting lever (5) and door (3).

(2) Remove two cotter pins (1.1) and pins (1.2) from clevis (4). Discard cotter pins.

NOTE
Latch must be in closed position to remove lock.

(3) Remove two self-locking screws (6) from door lock mechanism (7). Discard screws.



16-27. DOOR LATCH/LINKAGE REPLACEMENT (CONT)

NOTE

Hold spacer plates to prevent them from falling inside door.

(4) Remove self-locking screw (8), door lock cylinder (7), and two lock spacer plates (9) from door (3). Discard screw.

(5) Remove cotter pin (10), pin (11), and clevis (2) from outer door handle (12). Discard cotter pin.

NOTE

Locknut may come off stud or stud and locknut may come off together.

(6) Remove locknut (13) from inner door handle (14). Discard locknut.

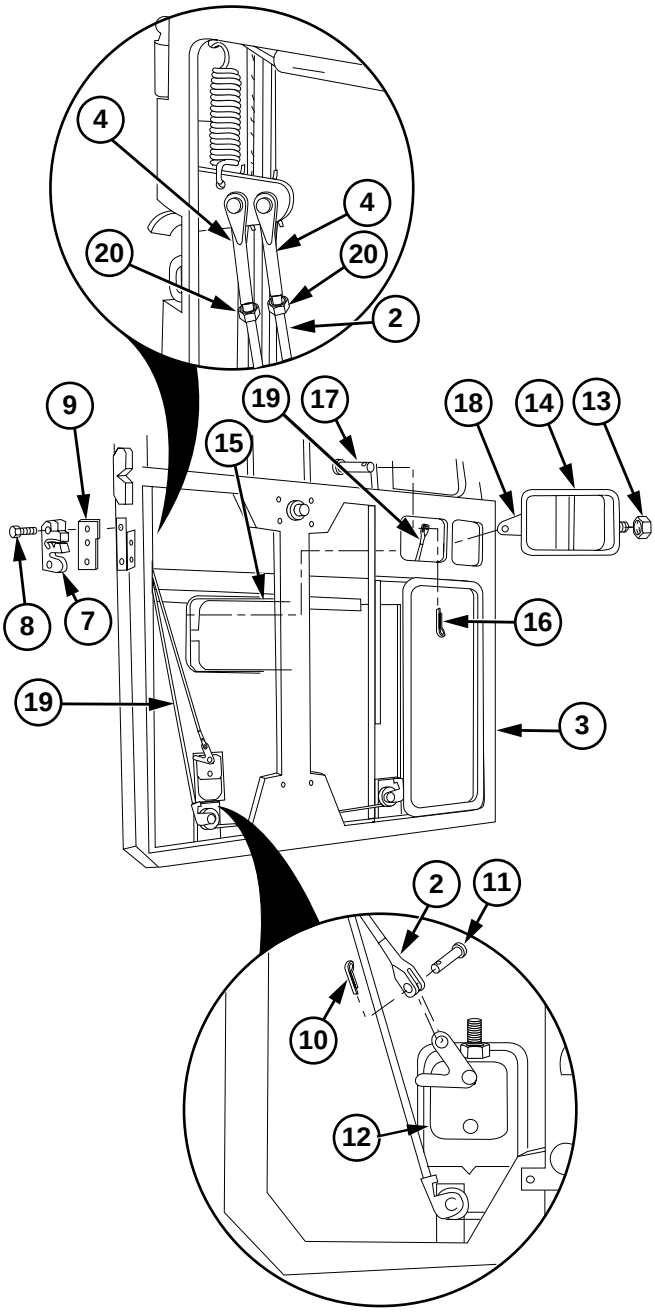
(7) Remove door handle retainer (15) from behind inner door handle (14).

(8) Remove inner door handle (14) from door (3).

(9) Remove cotter pin (16), pin (17), and door handle lever (18) from cable (19). Discard cotter pin.

(10) Loosen two jam nuts (20) on cable (19) and outer rod (2).

(11) Remove two clevises (4) and jam nut (20) from cable (19) and outer rod (2).



NOTE

If replacing roller or cable, do steps (12) thru (15).

(12) Loosen two nuts (21) on rollers (22).

NOTE

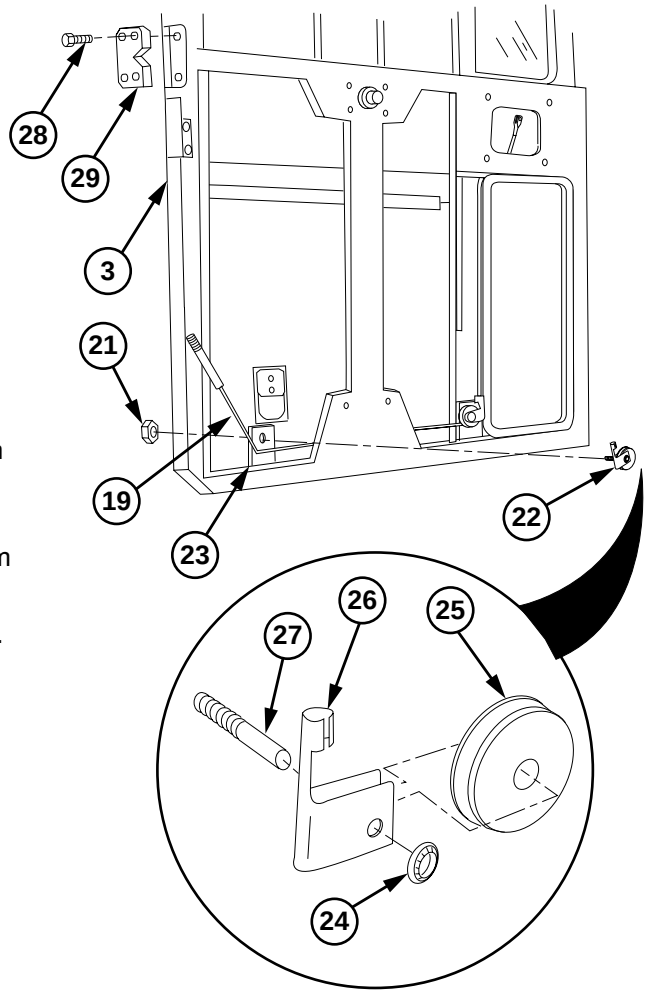
Roller is threaded into bracket.

(13) Remove two nuts (21) and rollers (22) from brackets (23).

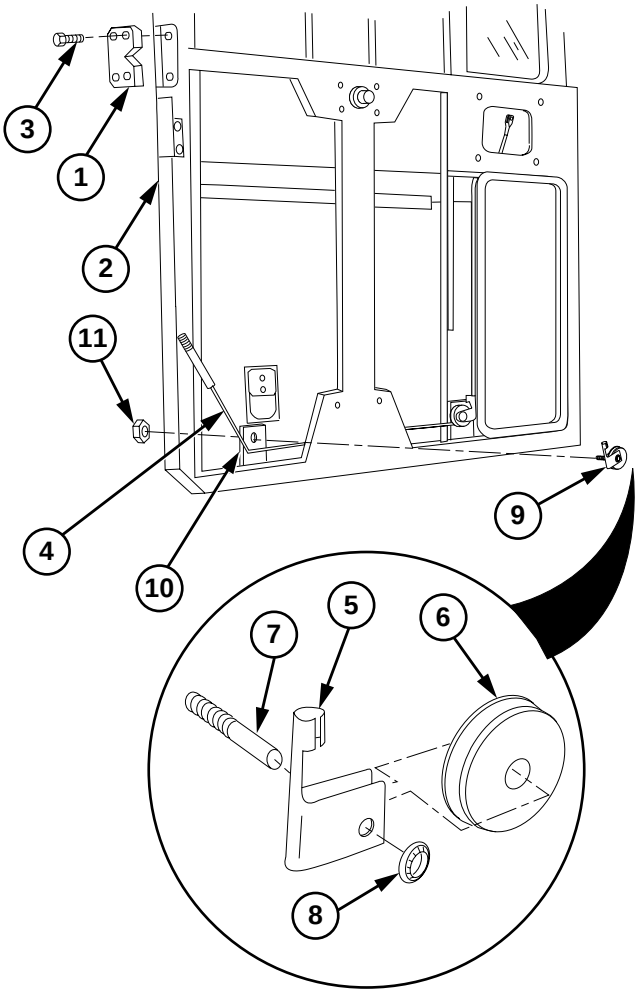
(14) Remove two retaining clips (24), pulleys (25), cable guards (26), and cable (19) from studs (27).

(15) Remove cable (19) from cable guards (26).

(16) Remove four screws (28) and female dovetail (29) from door (3).



16-27. DOOR LATCH/LINKAGE REPLACEMENT (CONT)



b. Installation

(1) Install female dovetail (1) on door (2) with four screws (3).

NOTE

If replacing roller or cable, do steps (2) thru (5).

(2) Route cable (4) through two cable guards (5).

(3) Install two pulleys (6), cable guards (5), and cable (4) on two studs (7) with clips (8).

NOTE

Roller is threaded into bracket.

(4) Thread two rollers (9) into brackets (10). Do not tighten.

(5) Install two nuts (11) on studs (7).

(6) Route cable (4) through inner door latch opening (12) from behind.

NOTE

If stud was removed, do step (7). Otherwise go to step (8).

(7) Install stud (13) on inside door handle (14).

(8) Install cable (4) to inside door handle lever (15) with pin (16) and new cotter pin (17).

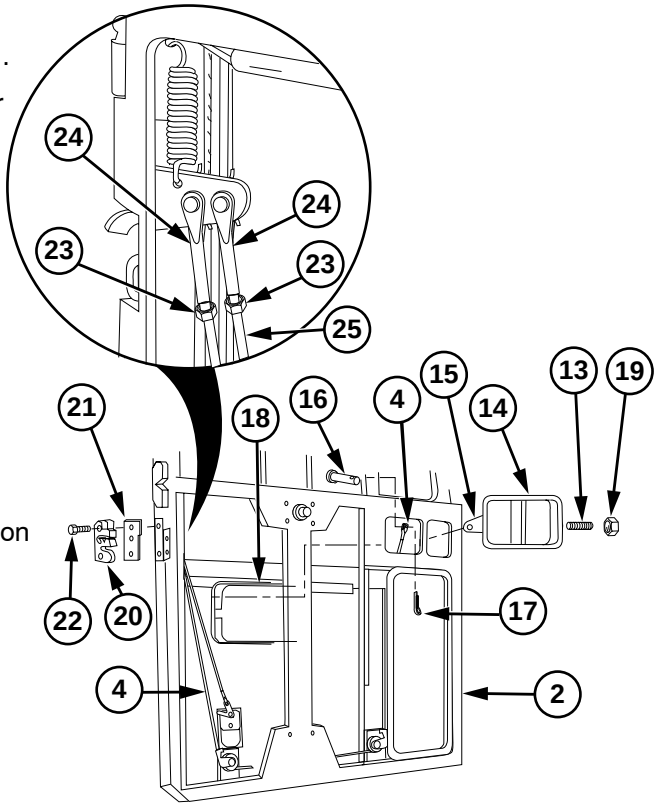
(9) Install inside door handle (14) on door (2) with door handle retainer (18) and new locknut (19).

NOTE

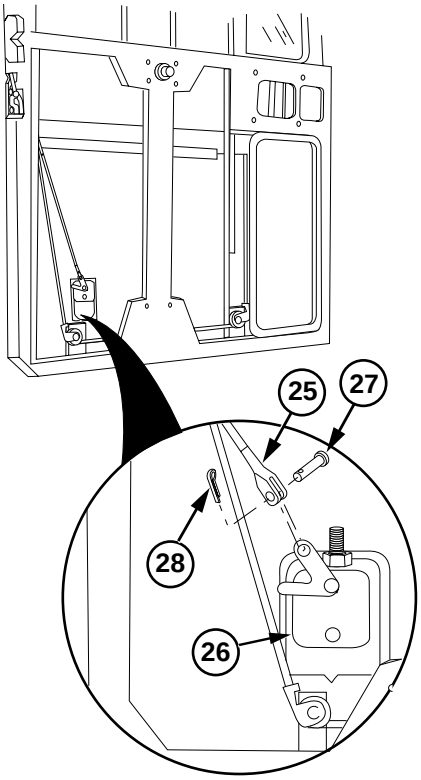
Latch must be in closed position to install lock.

(10) Install door lock cylinder (20) and two spacer plates (21) on door (2) with three new screws (22).

(11) Install two jam nuts (23) and clevises (24) on cable (4) and outer rod (25).



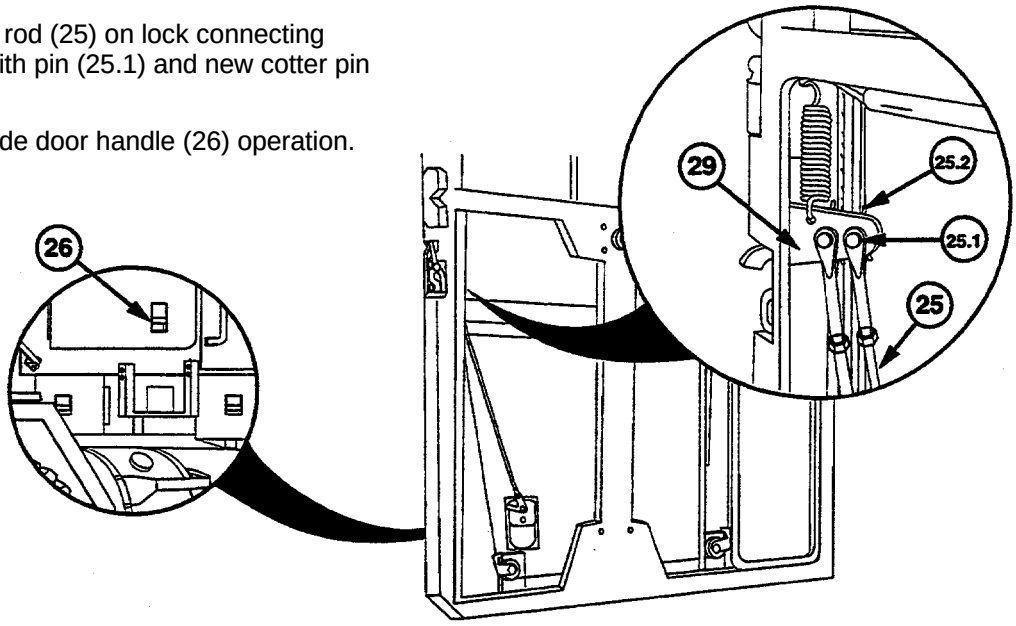
(12) Install outer rod (25) on outer door handle (26) with pin (27) and new cotter pin (28).



16-27. DOOR LATCH/LINKAGE REPLACEMENT (CONT)

(13) Install outer rod (25) on lock connecting lever (29) with pin (25.1) and new cotter pin (25.2).

(14) Check outside door handle (26) operation.



NOTE

Do steps (15) thru (18) to adjust outer rod if necessary.

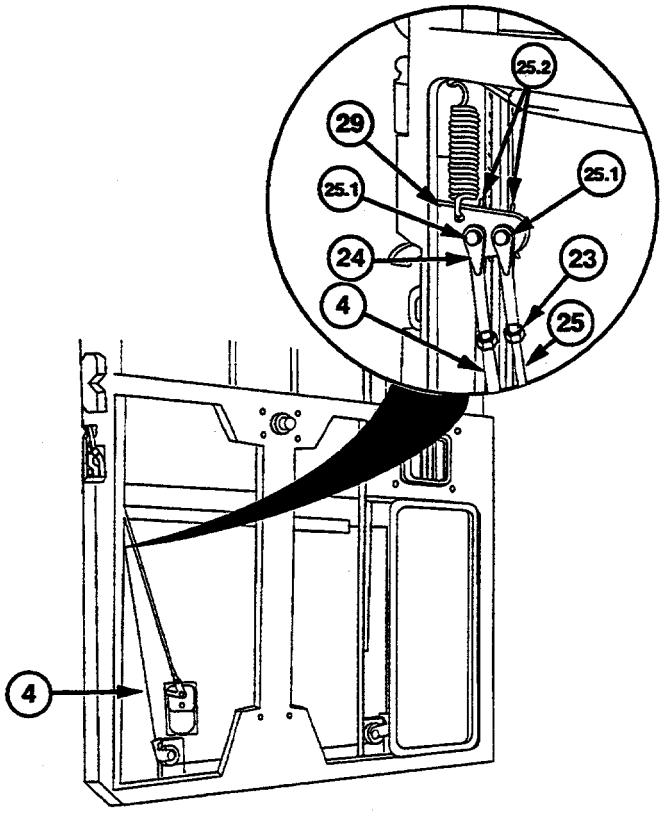
(15) Remove cotter pin (25.2), pin (25.1), and outer rod (25) from lock connecting lever (29).

(16) Loosen jam nut (23) and turn outer rod (25) clockwise to shorten, counterclockwise to lengthen.

(17) Tighten jam nut (23) and install outer rod (25) on lock connecting lever (29).

(18) Check outside door handle operation. Repeat steps (15) thru (17), if necessary.

(19) Pull cable (4) tight and install clevis (24) on lock connecting lever (29) with pin (25.1) and new cotter pin (25.2).



(20) Check inside door handle (14) operation.

NOTE

Do steps (20) thru (24) to adjust cable if necessary.

(21) Remove cotter pin (25.2), pin (25.1) and cable (4) from lock connecting lever (29).

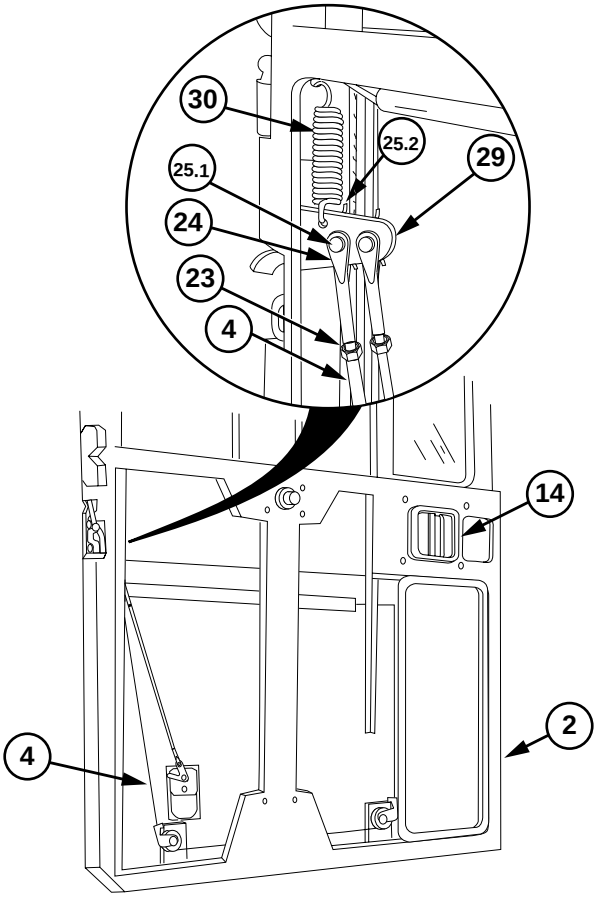
(22) Loosen jam nut (23) and turn clevis end (24) clockwise on cable (4) to shorten, counterclockwise to lengthen.

(23) Tighten jam nut (23) and install clevis end (24) on lock connecting lever (29) with pin (25.1) and new cotter pin (25.2).

(24) Deleted.

(25) Check operation of inside door handle (14). Repeat steps (21) thru (24), if necessary.

(26) Install spring (30) on door (2) and lock connecting lever (29).



c. Follow-On Maintenance

Install inner door panel (para 16-26).

16-27.1. SEAL REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Adhesive-Sealant, RTV (Item 2.3, Appendix C)
Adhesive-Sealant, Silicone (Item 3, Appendix C)

a. Door Seal Removal

NOTE

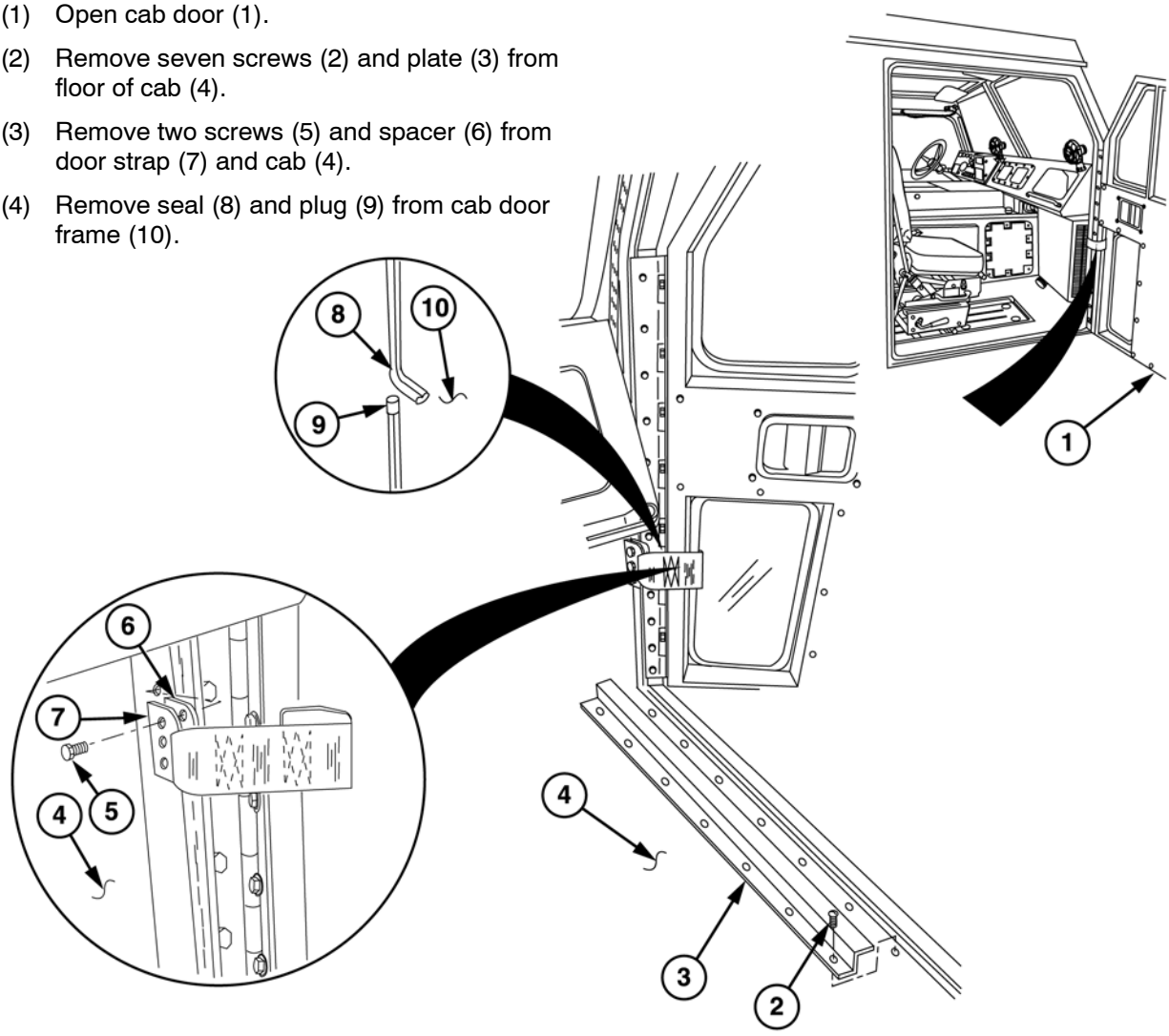
Left and right door seals are replaced the same way. Right door is shown.

(1) Open cab door (1).

(2) Remove seven screws (2) and plate (3) from floor of cab (4).

(3) Remove two screws (5) and spacer (6) from door strap (7) and cab (4).

(4) Remove seal (8) and plug (9) from cab door frame (10).



16-27.1. SEAL REPLACEMENT (CONT)

b. Door Seal Installation

Table 14-1. Seal Lengths	
Door Seal	162 in. (411 cm)
BII Stowage Box	96 in. (244 cm)
Tool Stowage Box	42 in. (107 cm)

WARNING

Adhesive-sealants and sealing compounds can burn easily, can give off harmful vapprs, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If sealing compound gets gets on skin or clothing, wash immediately with soap and water.

(1) Apply adhesive-sealant to all corners of cab door frame (1).

NOTE

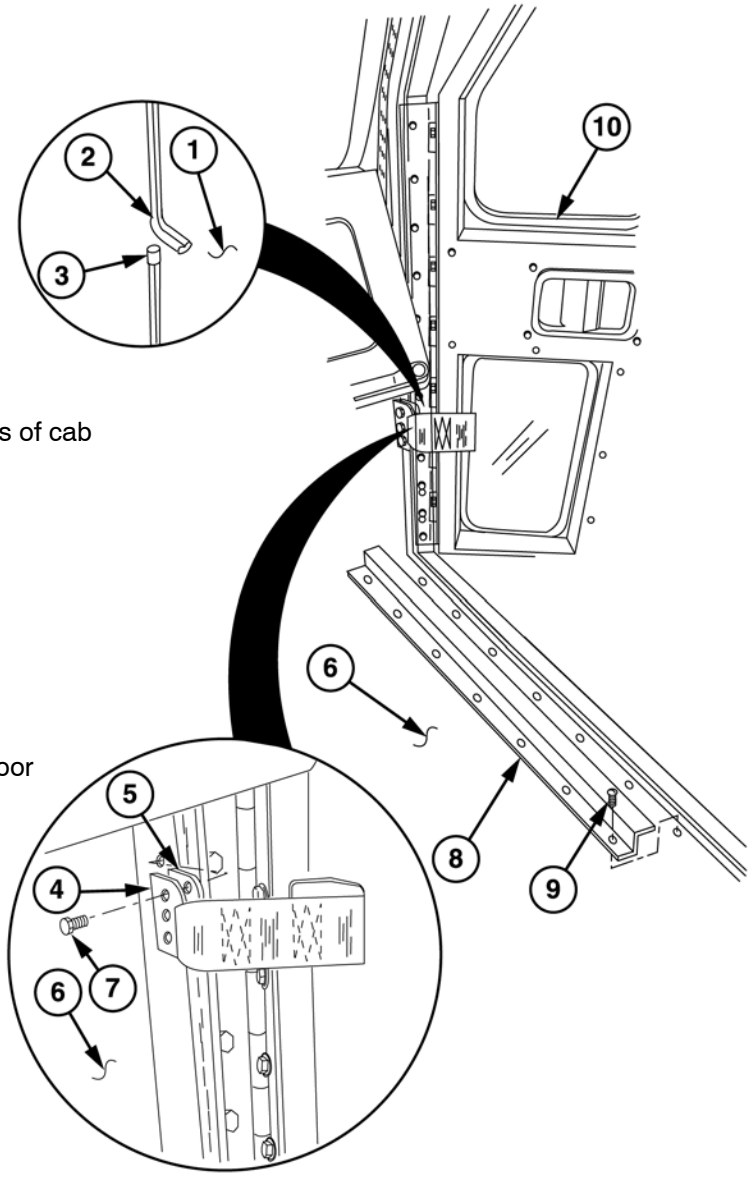
- Refer to table 14-1 for proper seal length.
- Door seal seam should be located behind door strap.

(2) Install seal (2) and plug (3) on cab door frame (1).

(3) Install door strap (4) and spacer (5) on cab (6) with two screws (7).

(4) Install plate (8) on floor of cab (6) with seven screws (9).

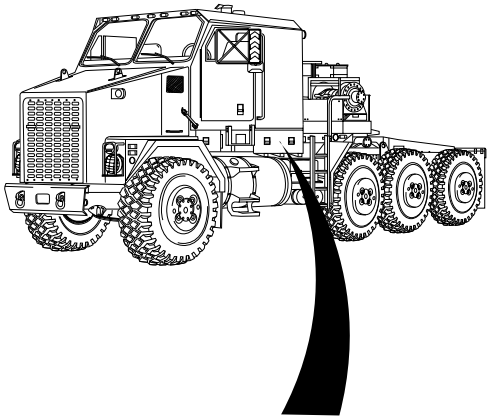
(5) Close cab door (10).



c. Stowage Box Seal Removal

NOTE

BII stowage box and tool stowage box seals are replaced the same way. BII stowage box is shown.



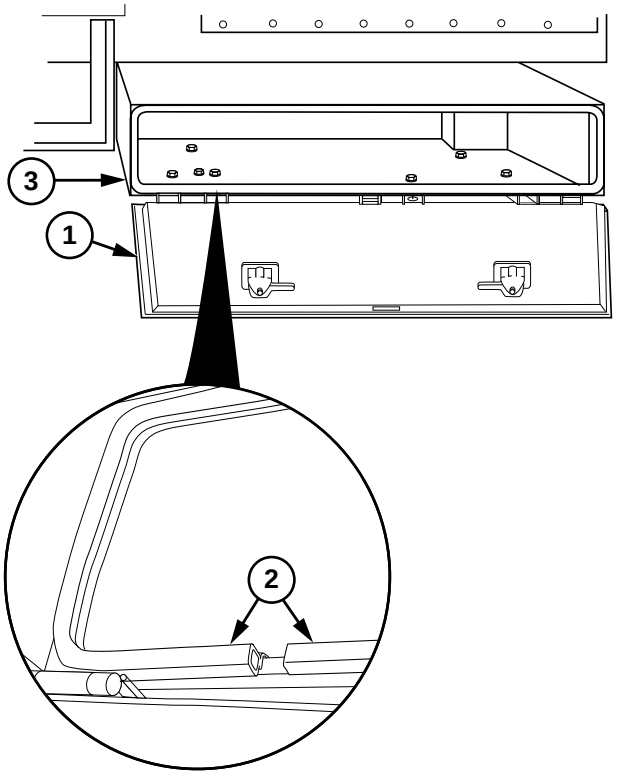
(1) Open stowage box door (1).

(2) Remove seal (2) from stowage box (3).

d. Stowage Box Seal Installation

NOTE

- Refer to table 14-1 for proper seal length.
- Stowage box seal seam should be located at bottom center of box.



(1) Install seal (2) on stowage box (3).

WARNING

Silicone adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If silicone adhesive-sealant gets on skin or clothing, wash immediately with soap and water.

NOTE

Allow 30 minutes for silicone adhesive-sealant to cure.

(2) Coat ends of seal (2) with silicone adhesive-sealant.

(3) Close stowage box door (1).

e. Follow-On Maintenance

Remove wheel chocks.

16-28. LEFT FRONT FENDER/BRACKETS REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine hood opened (TM 9-2320-360-10).
Air cleaner assembly and bracket removed (para 4-3).
Left headlight removed (para 7-39).
Left front composite light removed (para 7-49).
Left front fender marker lights removed (para 7-41).
Left front fender reflector (para 16-23).
Left front mud flap removed (para 16-6).
Inner fender removed (left side only) (para 16-34).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 15-100 Lb-Ft (Item 76, Appendix F)

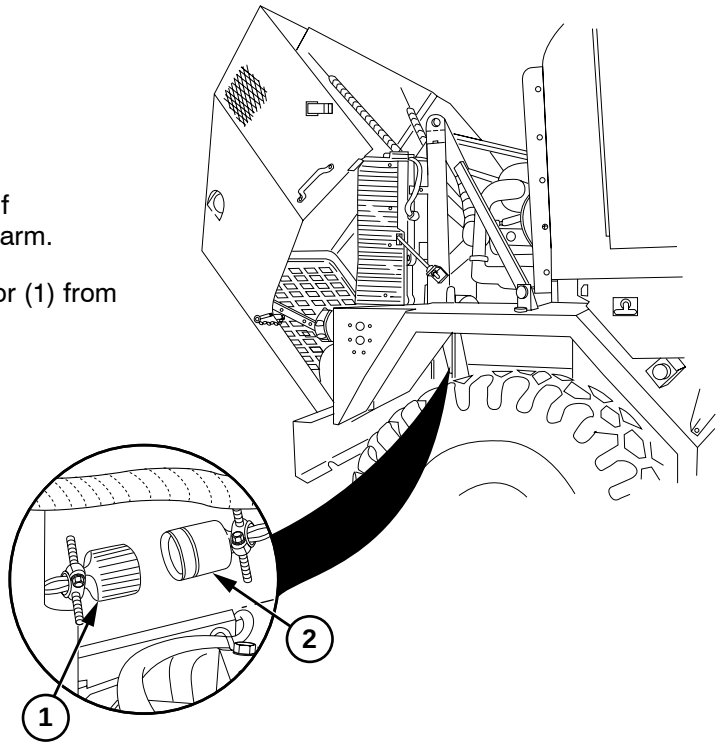
Materials/Parts
Locknuts (8) (Item 58, Appendix G)
Locknuts (4) (Item 61, Appendix G)
Locknuts (4) (Item 68, Appendix G)
Locknuts (2) (Item 62, Appendix G)
Lockwashers (4) (Item 107, Appendix G)
Lockwasher (Item 102, Appendix G)

Personnel Required
Two

a. Removal

NOTE
Do steps (1) and (2) only if equipped with chemical alarm.

(1) Disconnect electrical connector (1) from receptacle (2).

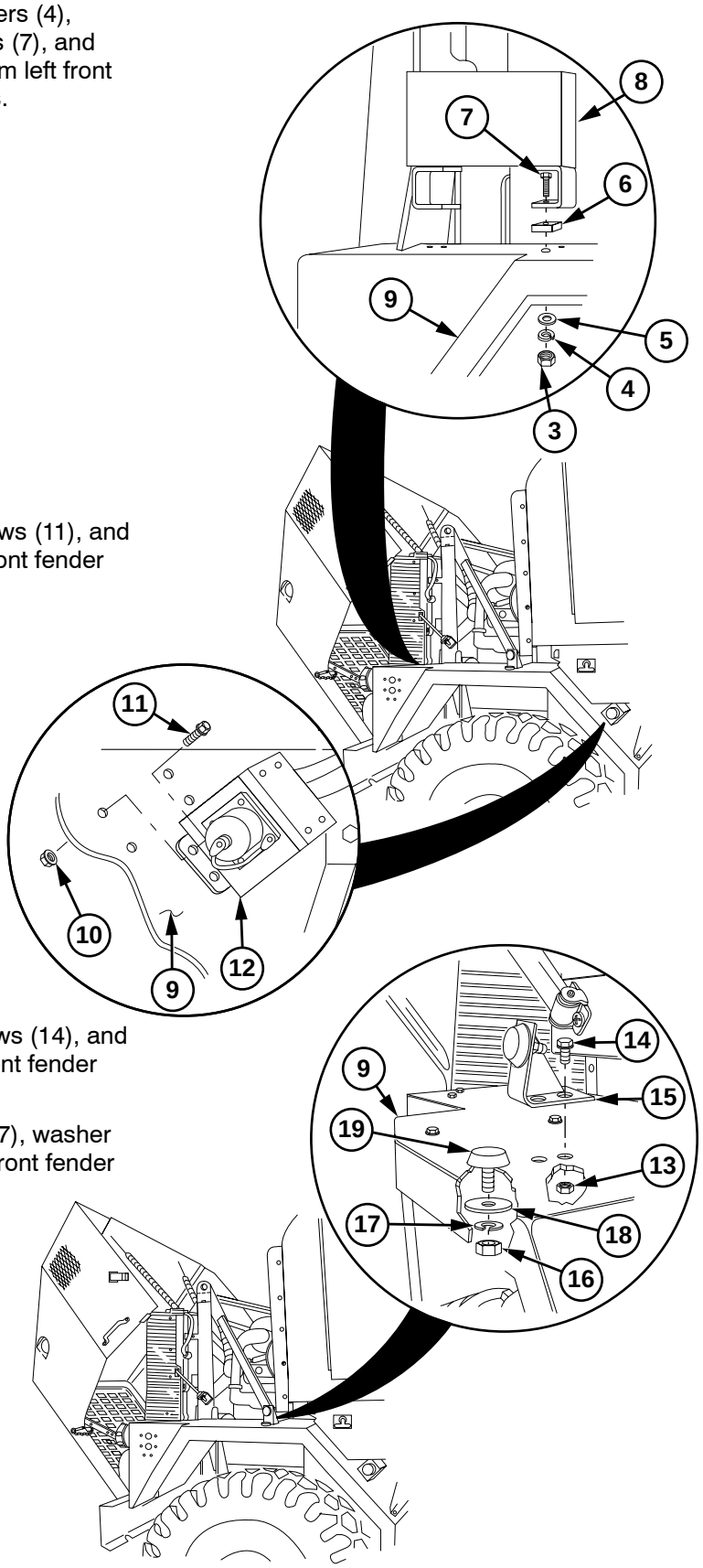


(2) Remove four nuts (3), lockwashers (4), washers (5), spacers (6), screws (7), and chemical alarm assembly (8) from left front fender (9). Discard lockwashers.

(3) Remove four locknuts (10), screws (11), and slave receptacle (12) from left front fender (9). Discard locknuts.

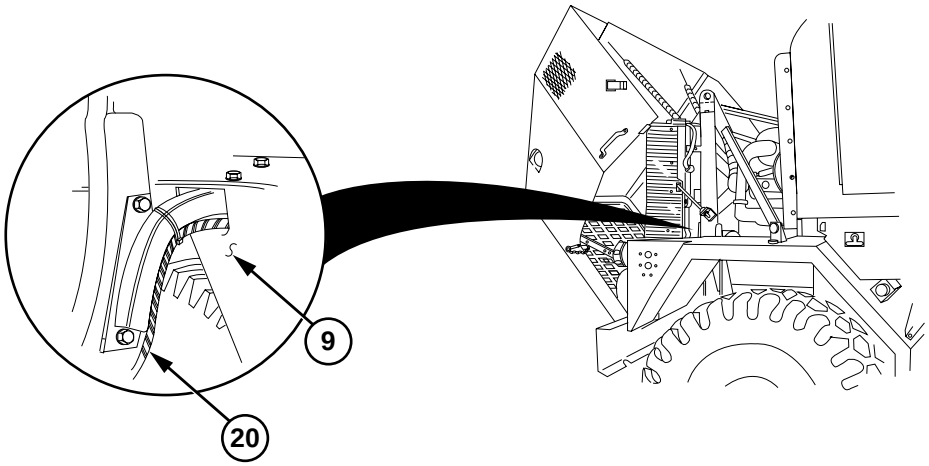
(4) Remove two locknuts (13), screws (14), and bumper bracket (15) from left front fender (9). Discard locknuts.

(5) Remove nut (16), lockwasher (17), washer (18), and bumper (19) from left front fender (9). Discard lockwasher.



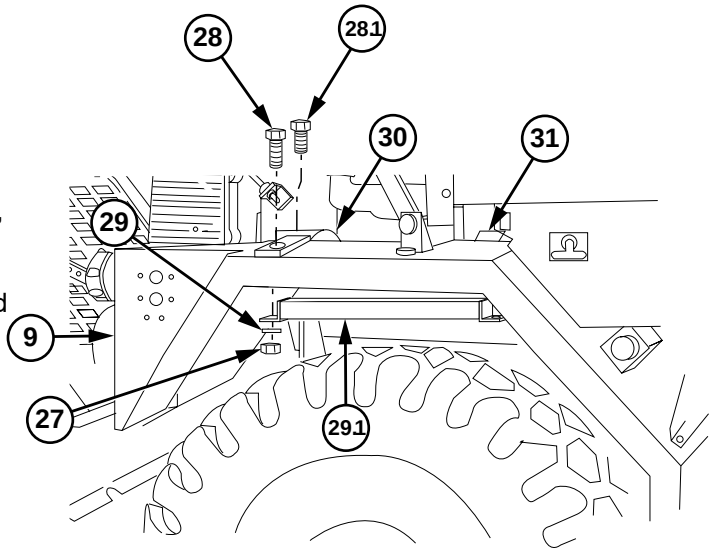
16-28. LEFT FRONT FENDER/BRACKETS REPLACEMENT (CONT)

(6) Pull wire harness (20) out of left front fender (9).



(7) Deleted.

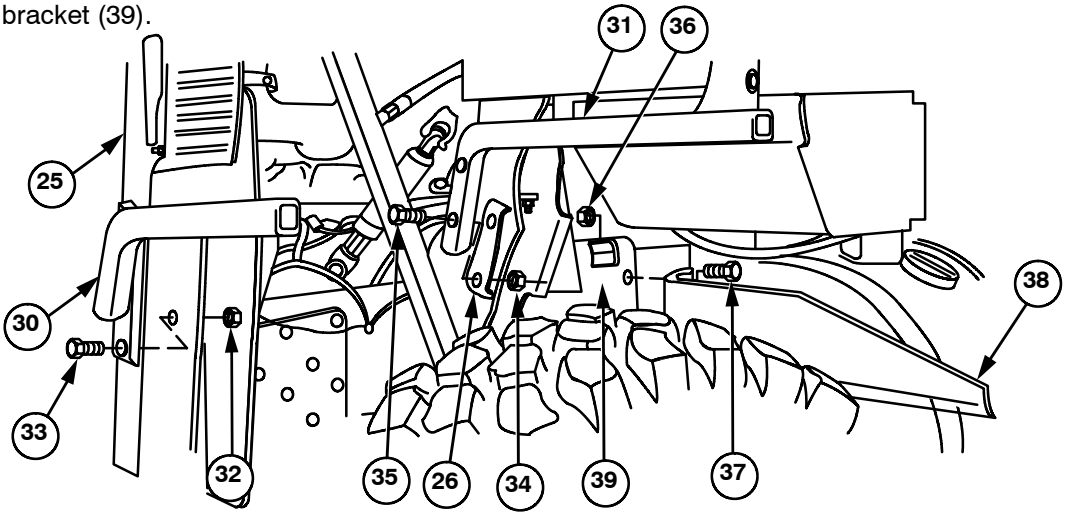
(8) Remove five locknuts (27), two screws (28), three screws (28.1), washers (29), reinforcement bracket (29.1), and left front fender (9) from front fender bracket (30) and center fender bracket (31) with aid of assistant.



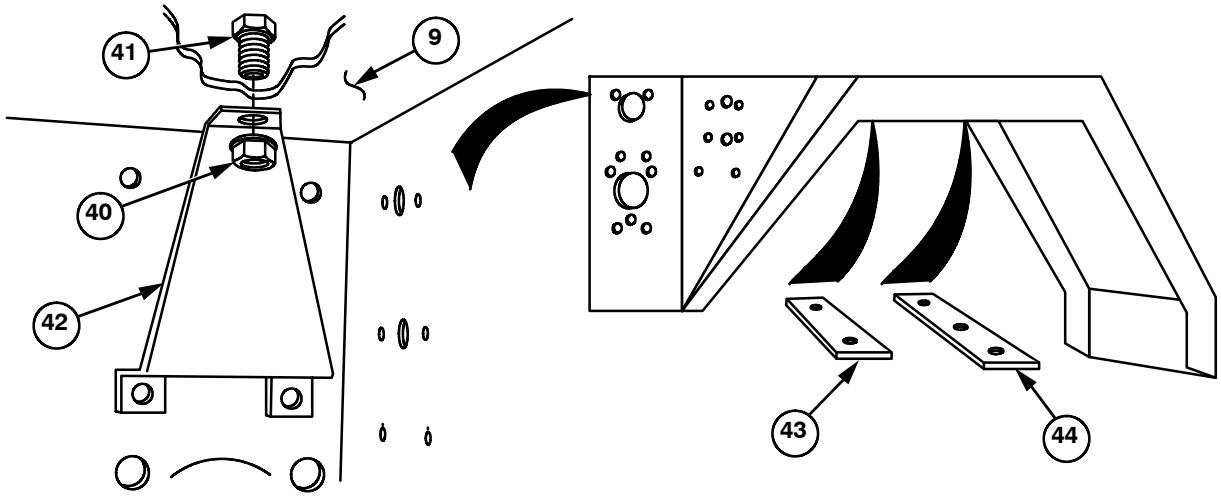
(9) Remove two locknuts (32), screws (33), and front fender bracket (30) from hardlift (25). Discard locknuts.

(10) Remove two locknuts (34), screws (35), and center fender bracket (31) from cab mount (26). Discard locknuts.

(11) Remove two locknuts (36), screws (37) and rear fender brace (38) from engine mounting bracket (39).



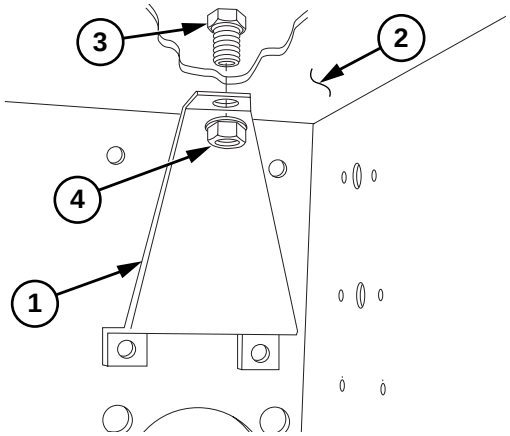
(12) Remove locknut (40), screw (41), and composite light bracket (42) from left front fender (9). Discard locknut.



16-28. LEFT FRONT FENDER/BRACKETS REPLACEMENT (CONT)

b. Installation

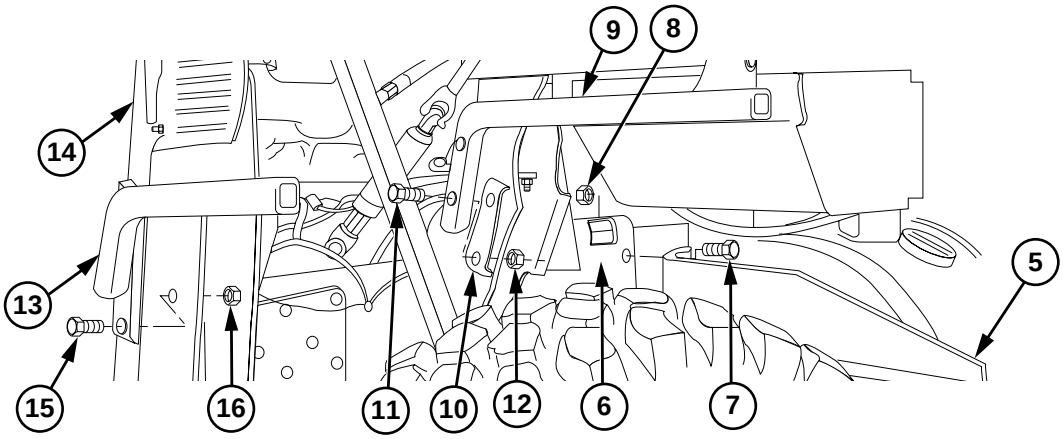
(1) Install composite light bracket (1) on left front fender (2) with screw (3) and new locknut (4).

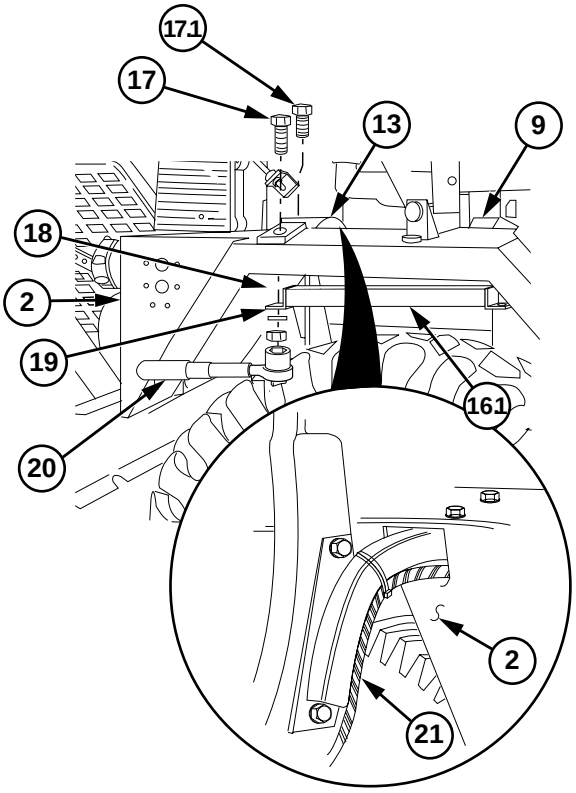


(2) Install rear fender brace (5) on engine mounting bracket (6) with two screws (7) and new locknuts (8).

(3) Install center fender bracket (9) on cab mount (10) with two screws (11) and new locknuts (12).

(4) Install front fender bracket (13) on hardlift (14) with two screws (15) and new locknuts (16).

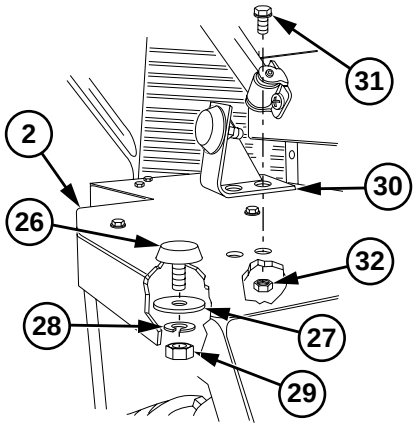




(5) Install left front fender (2) and reinforcement bracket (16.1) on center fender bracket (9) and front fender bracket (13) with two screws (17), three screws (17.1) washers (18), and new locknuts (19) with aid of assistant. Torque to 22 lb-ft (29.8 N·m) using torque wrench (20).

(6) Route wiring harness (21) through left front fender (2).

(7) Deleted.



(8) Install bumper (26) on left front fender (2) with washer (27), new lockwasher (28), and nut (29).

NOTE

Hood bumper bracket is slotted. Bracket should be positioned toward engine as far as possible.

(9) Install bumper bracket (30) on left front fender (2) with two screws (31) and new locknuts (32).

16-28. LEFT FRONT FENDER/BRACKETS REPLACEMENT (CONT)

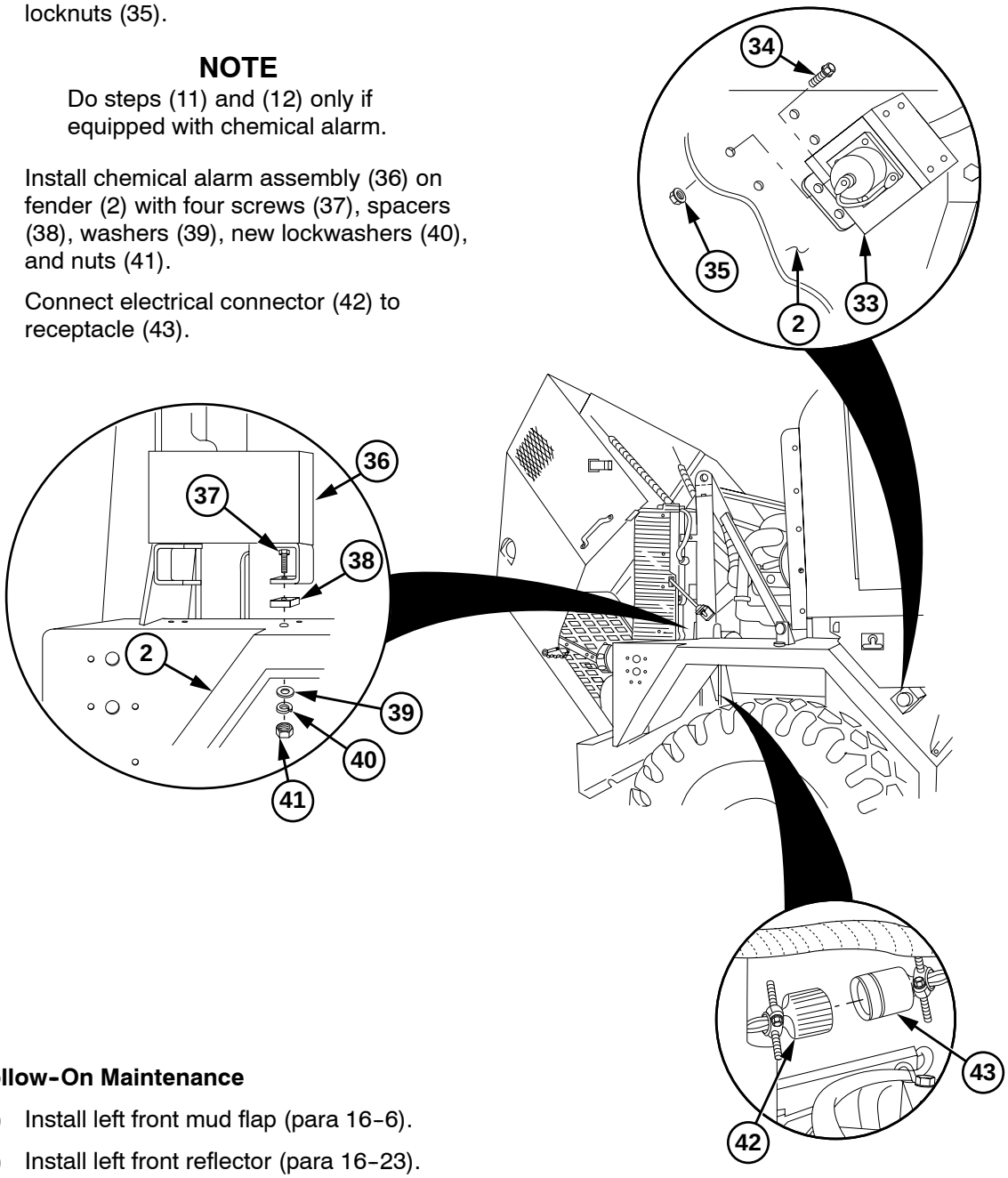
(10) Install slave receptacle (33) on left front fender (2) with four screws (34) and new locknuts (35).

NOTE

Do steps (11) and (12) only if equipped with chemical alarm.

(11) Install chemical alarm assembly (36) on fender (2) with four screws (37), spacers (38), washers (39), new lockwashers (40), and nuts (41).

(12) Connect electrical connector (42) to receptacle (43).



c. Follow-On Maintenance

(1) Install left front mud flap (para 16-6).

(2) Install left front reflector (para 16-23).

(3) Install left front fender marker lights (para 7-41).

(4) Install left front composite light (para 7-49).

(5) Install left headlight (para 7-39).

(6) Install air cleaner assembly and bracket (para 4-3).

(7) Close engine hood (TM 9-2320-360-10).

(8) Install inner fender (para 16-34).

16-29. RIGHT FRONT FENDER/BRACKETS REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine hood opened (TM 9-2320-360-10).
Right headlight removed (para 7-39)
Right front composite light removed (para 7-49).
Right front fender marker lights removed (para 7-41).
Right front fender reflector removed (para 16-23).
Right front mud flap removed (para 16-6).
Inner fender removed (right side only) (para 16-34).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 15-100 Lb-Ft (Item 76, Appendix F)

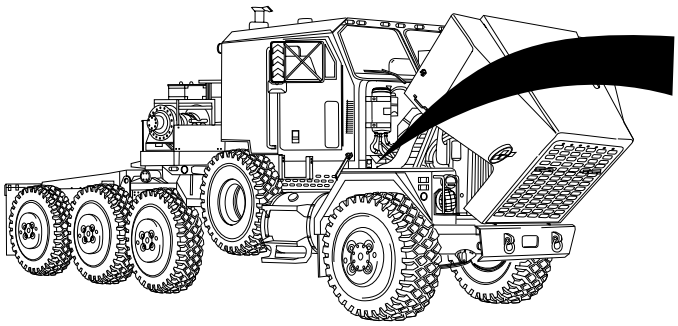
Materials/Parts
Locknuts (12) (Item 58, Appendix G)
Locknuts (2) (Item 61, Appendix G)
Locknuts (2) (Item 62, Appendix G)
Lockwasher (Item 102, Appendix G)

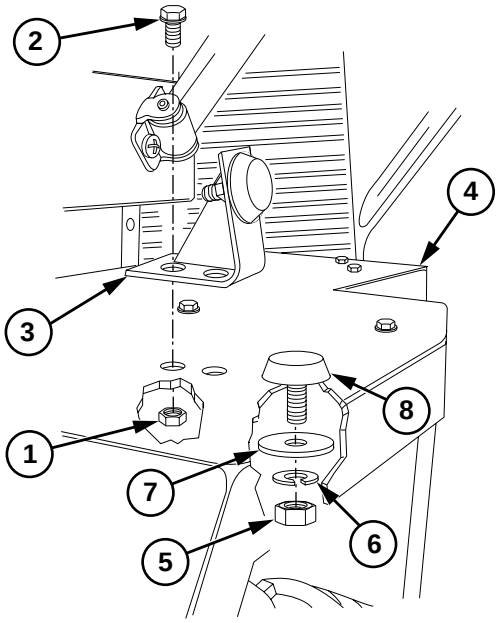
Personnel Required
Two

a. Removal

(1) Remove two locknuts (1), screws (2), and bumper bracket (3) from right front fender (4). Discard locknuts.

(2) Remove nut (5), lockwasher (6), washer (7), and bumper (8) from right fender (4). Discard lockwasher.

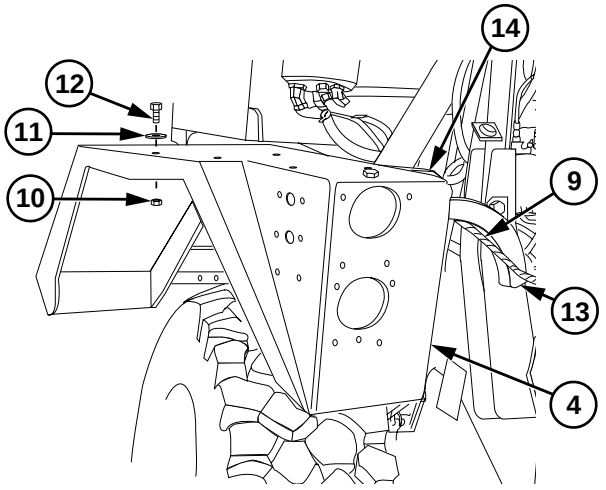




16-29. RIGHT FRONT FENDER/BRACKETS REPLACEMENT (CONT)

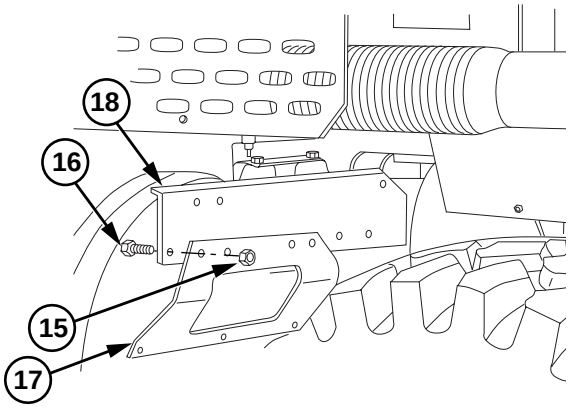
(3) Pull wire harness (9) out of right front fender (4).

(4) Remove five locknuts (10), washers (11) and screws (12) and right front fender (4) from front fender bracket (13) and center fender bracket (14) with aid of assistant. Discard locknuts.



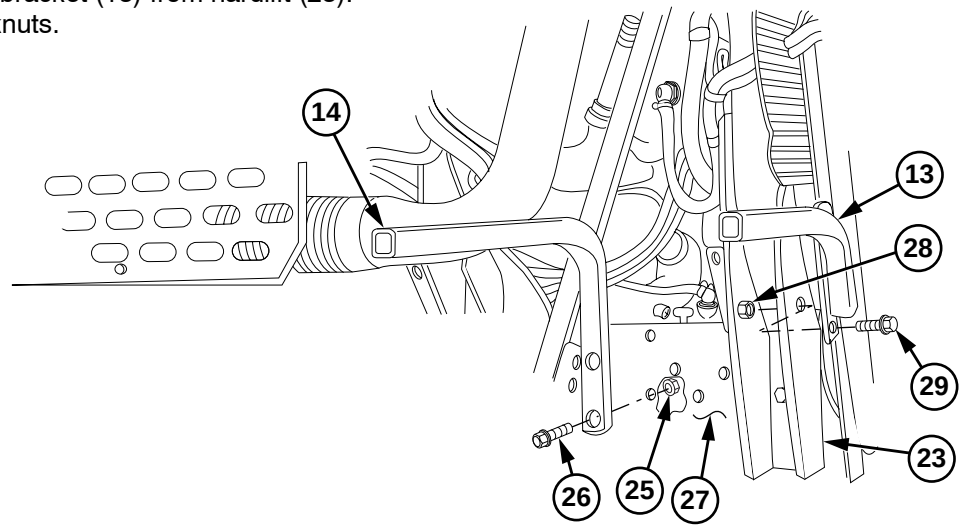
(5) Remove four locknuts (15), screws (16), and rear fender bracket (17) from muffler bracket (18). Discard locknuts.

(6) Deleted.

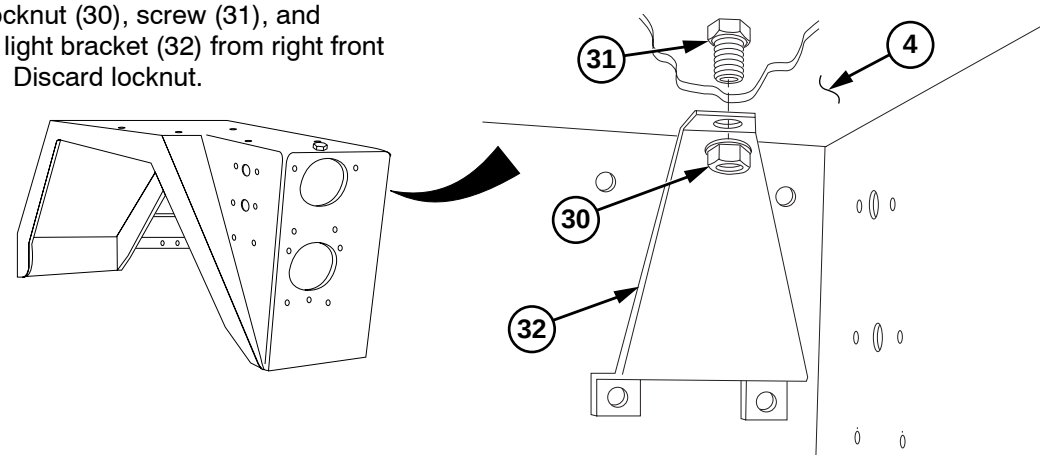


(7) Remove two locknuts (25), screws (26), and center fender bracket (14) from frame (27) with aid of assistant. Discard locknuts.

(8) Remove two locknuts (28), screws (29), and front fender bracket (13) from hardlift (23). Discard locknuts.

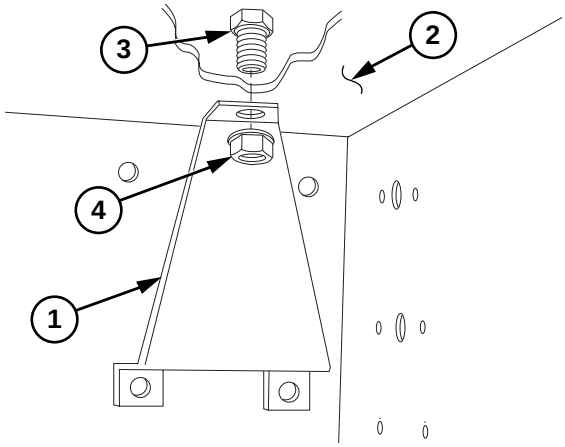


(9) Remove locknut (30), screw (31), and composite light bracket (32) from right front fender (4). Discard locknut.



b. Installation

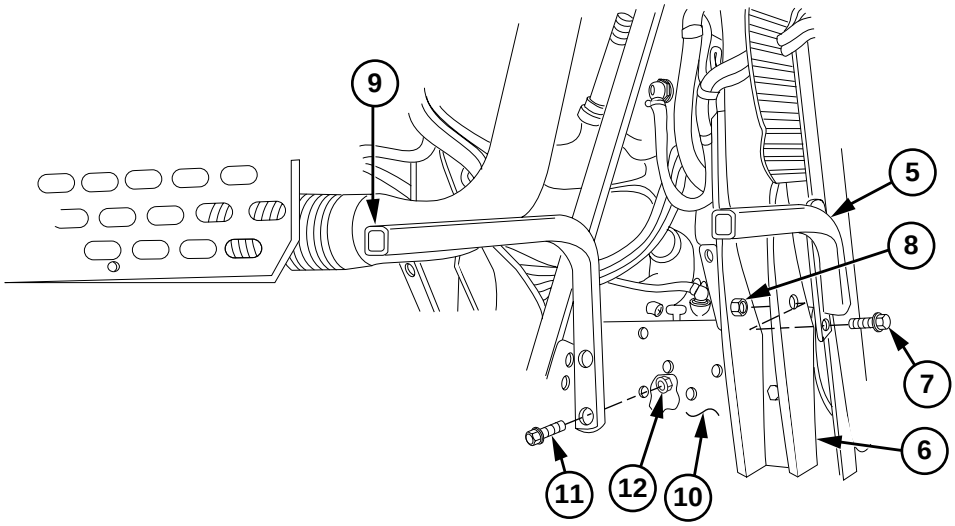
(1) Install composite light bracket (1) on right front fender (2) with screw (3) and new locknut (4).



(2) Install front fender bracket (5) on hardlift (6) with two screws (7) and new locknuts (8).

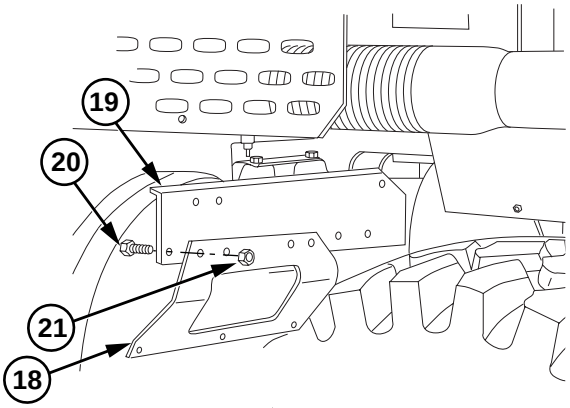
(3) Install center fender bracket (9) on frame (10) with two screws (11) and new locknuts (12) with aid of assistant.

(4) Deleted.



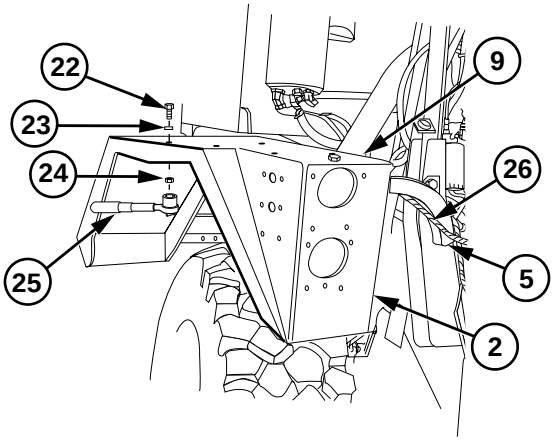
16-29. RIGHT FRONT FENDER/BRACKETS REPLACEMENT (CONT)

(5) Position rear fender bracket (18) on muffler bracket (19) with four screws (20) and new locknuts (21). Do not tighten.



(6) Install right front fender (2) on front fender bracket (5) and center fender bracket (9) with five screws (22), washers (23), and new locknuts (24) with aid of assistant. Torque to 22 lb-ft (29.8 N·m) with 15-100 lb-ft torque wrench (25).

(7) Route wiring harness (26) through fender (2).

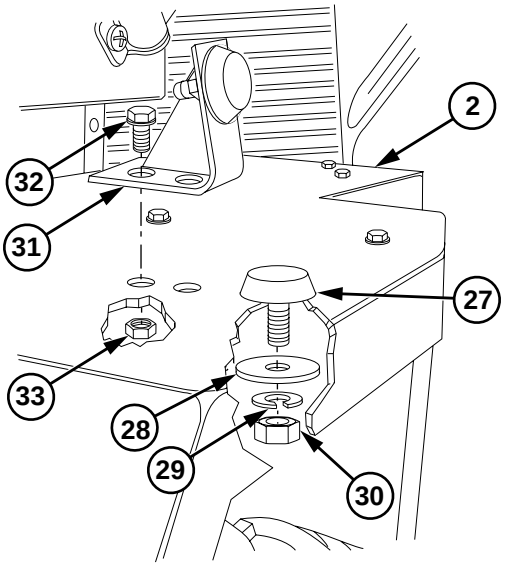


(8) Install bumper (27) on right front fender (2) with washer (28), new lockwasher (29), and nut (30).

NOTE

Hood bumper bracket is slotted. Bracket should be positioned toward engine as far as possible.

(9) Install bumper bracket (31) on right front fender (2) with two screws (32) and new locknuts (33).



c. Follow-On Maintenance

(1) Install right front mud flap (para 16-6).

(2) Install right front reflector (para 16-23).

(3) Install right front fender marker lights (para 7-41).

(4) Install right front composite light (para 7-49).

(5) Install right headlight (para 7-39).

(6) Close engine hood (TM 9-2320-360-10).

(7) Install inner fender (para 16-34).

16-30. LEFT REAR FENDER/SHIELD REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

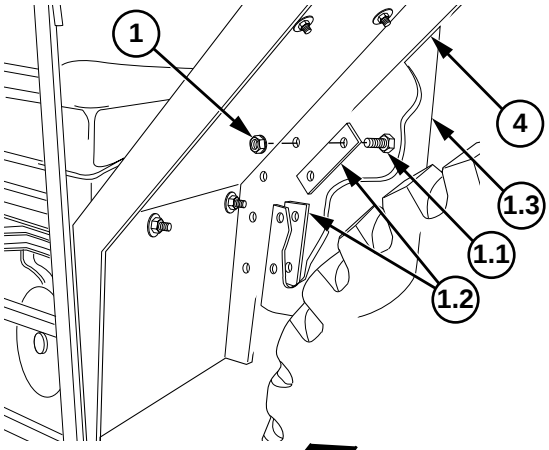
Materials/Parts
Locknuts (13) (Item 68, Appendix G)

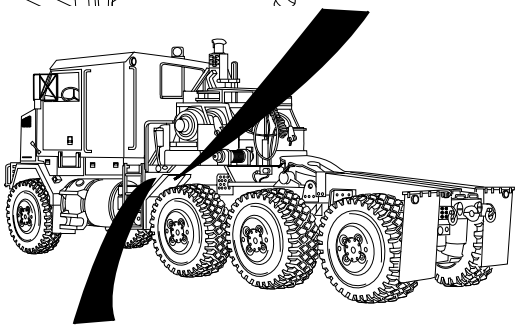
Personnel Required
Two

a. Removal

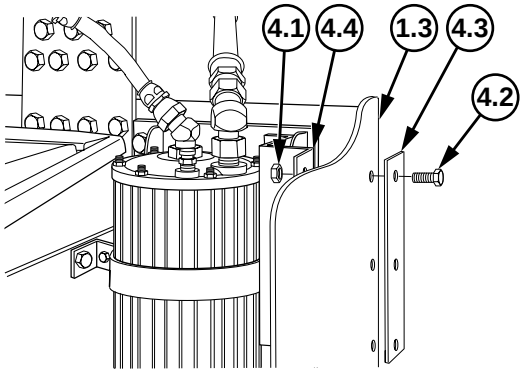
NOTE
To replace aftercooler shield only, do steps (1) and (1.1).

(1) Remove four locknuts (1), screws (1.1), two strips (1.2), and shield (1.3) from left rear fender (4). Discard locknuts.



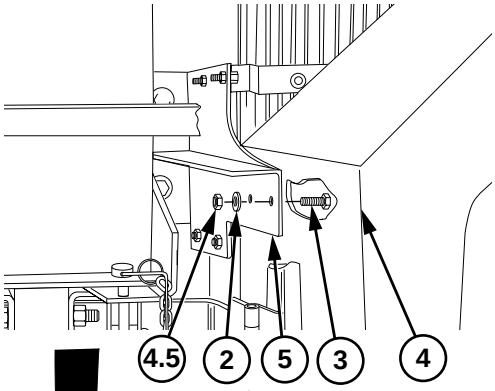


(1.1) Remove three locknuts (4.1), screws (4.2), strip (4.3), and shield (1.3) from bracket (4.4). Discard locknuts.

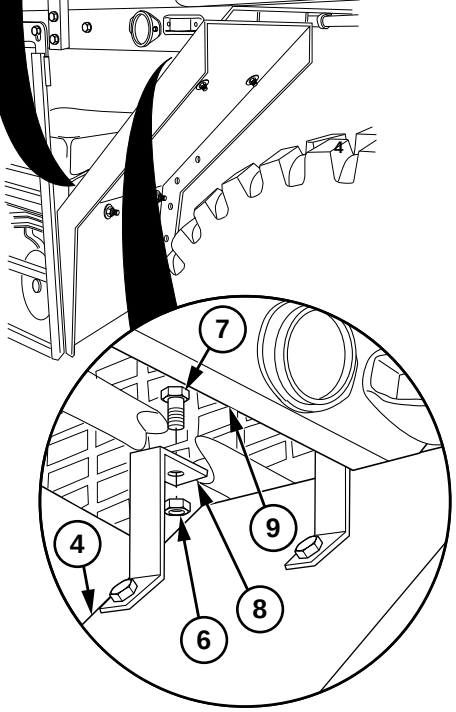


16-30. LEFT REAR FENDER/SHIELD REPLACEMENT (CONT)

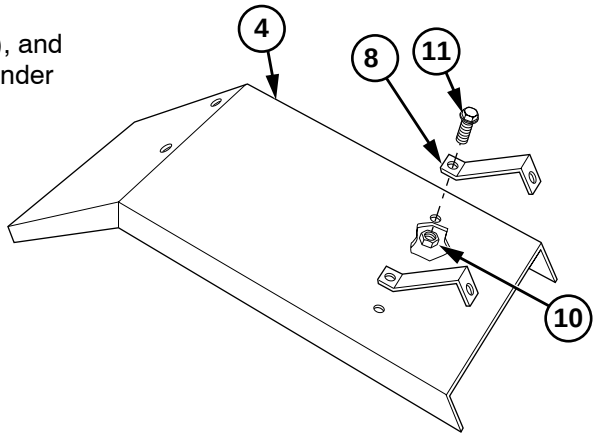
(1.2) Remove two locknuts (4.5), washers (2), screws (3), and left rear fender (4) from lower fender support bracket (5). Discard locknuts.



(2) Remove two locknuts (6), screws (7), top fender brackets (8), and left rear fender (4) from winch deck (9) with aid of assistant. Discard locknuts.



(3) Remove two locknuts (10), screws (11), and top fender brackets (8) from left rear fender (4). Discard locknuts.

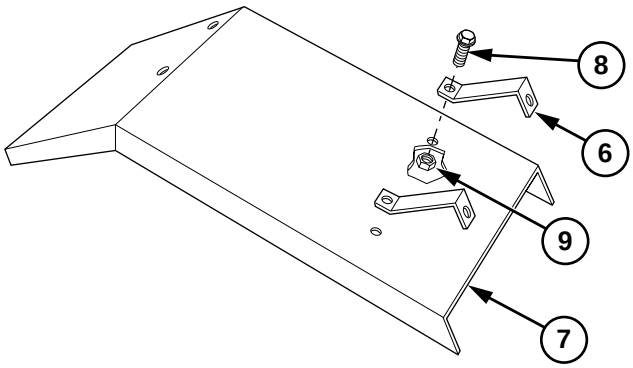


(4) Deleted.

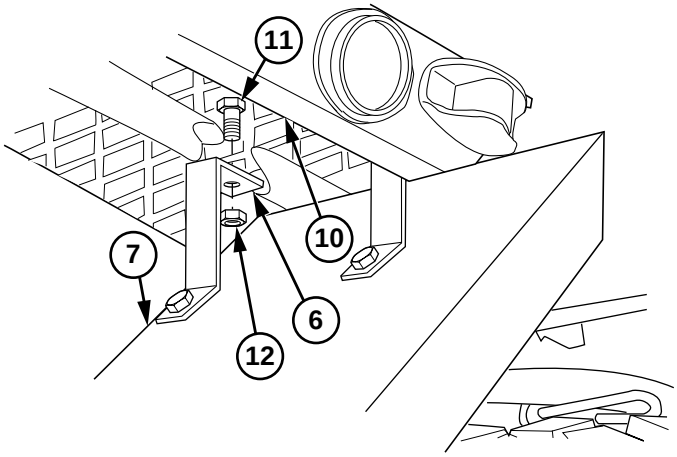
b. Installation

(1) Deleted.

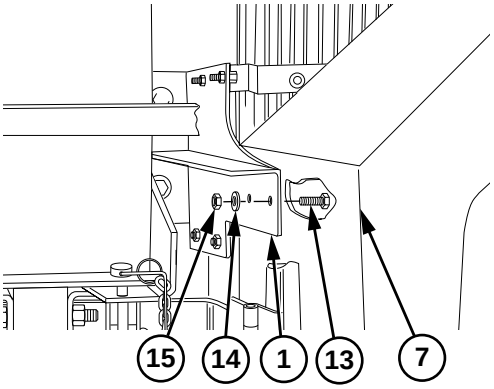
(2) Position two top fender brackets (6) on left rear fender (7) with two screws (8) and new locknuts (9).



(3) Position top fender brackets (6) and left rear fender (7) on winch deck (10) with two screws (11) and new locknuts (12) with aid of assistant.

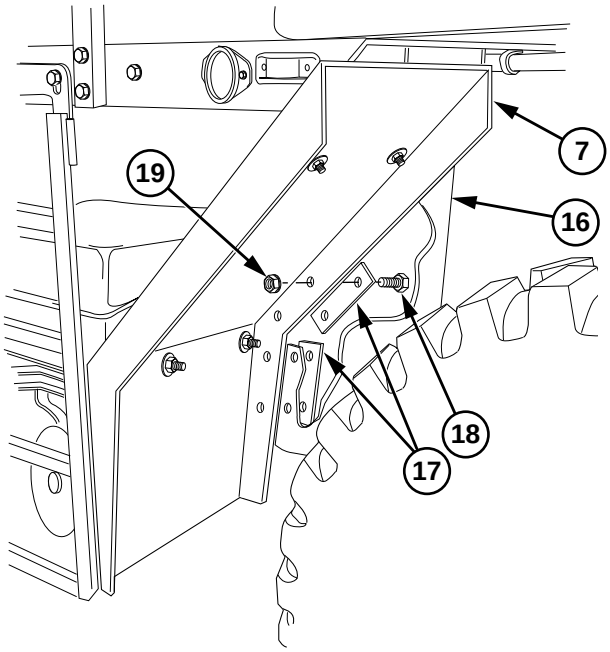


(4) Install left rear fender (7) on lower fender support bracket (1) with two screws (13), washers (14), and new locknuts (15).

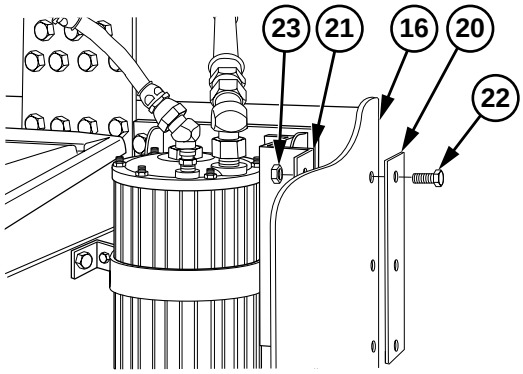


16-30. LEFT REAR FENDER/SHIELD REPLACEMENT (CONT)

(5) Install shield (16) and two strips (17) on left rear fender (7) with four screws (18) and new locknuts (19).



(6) Install shield (16) and strip (20) on bracket (21) with three screws (22) and new locknuts (23).



c. Follow-On Maintenance

Remove wheel chocks.

16-31. RIGHT REAR FENDER/BRACKETS REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

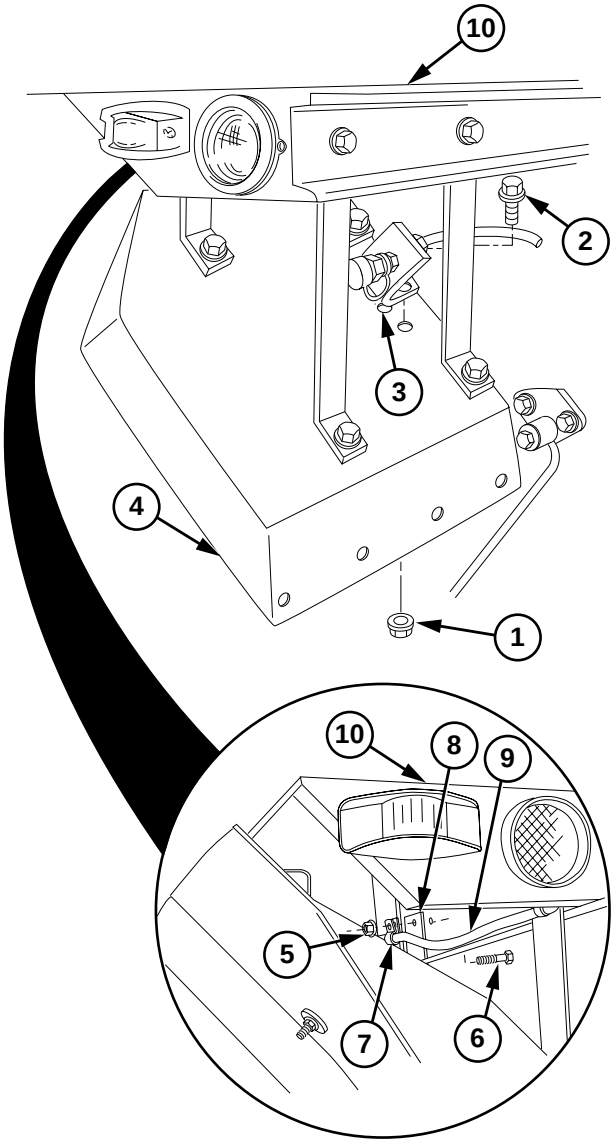
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (10) (Item 68, Appendix G)

Personnel Required
Two

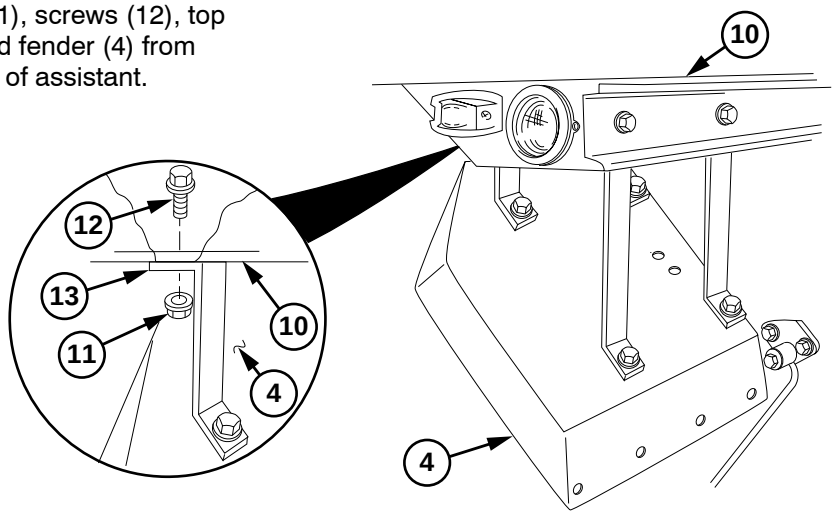
a. Removal

(1) Remove two locknuts (1), screws (2), and quick-disconnect coupling (3) from right rear fender (4). Discard locknuts.



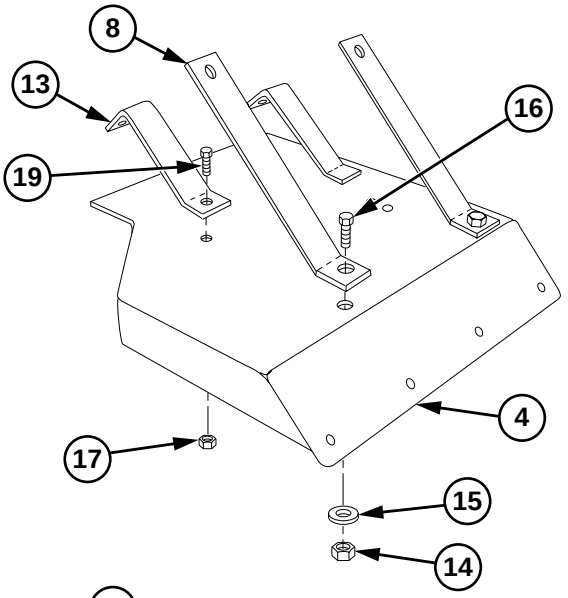
(2) Remove two locknuts (5), screws (6), clips (7), brackets (8), and wire harness (9) from winch deck (10). Discard locknuts.

(3) Remove two locknuts (11), screws (12), top fender brackets (13), and fender (4) from winch deck (10) with aid of assistant. Discard locknuts.



(4) Remove two locknuts (14), washers (15), screws (16), and brackets (8) from right rear fender (4). Discard locknuts.

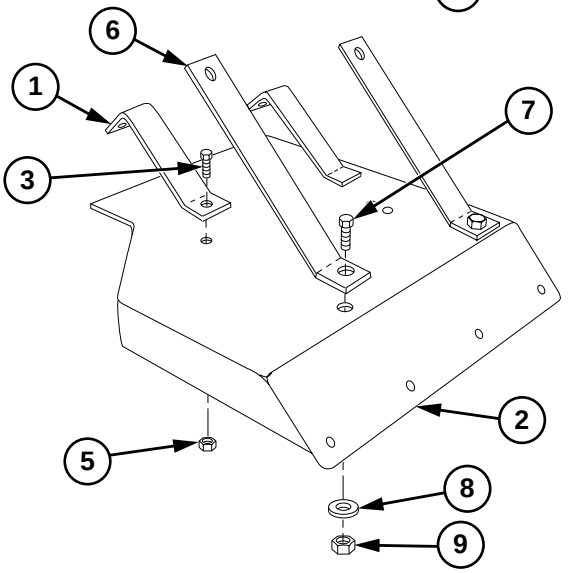
(5) Remove two locknuts (17), screws (19), and top fender brackets (13) from right rear fender (4). Discard locknuts.



b. Installation

(1) Install two top fender brackets (1) on right rear fender (2) with two screws (3) and new locknuts (5).

(2) Install two brackets (6) on right rear fender (2) with two screws (7), washers (8), and new locknuts (9).



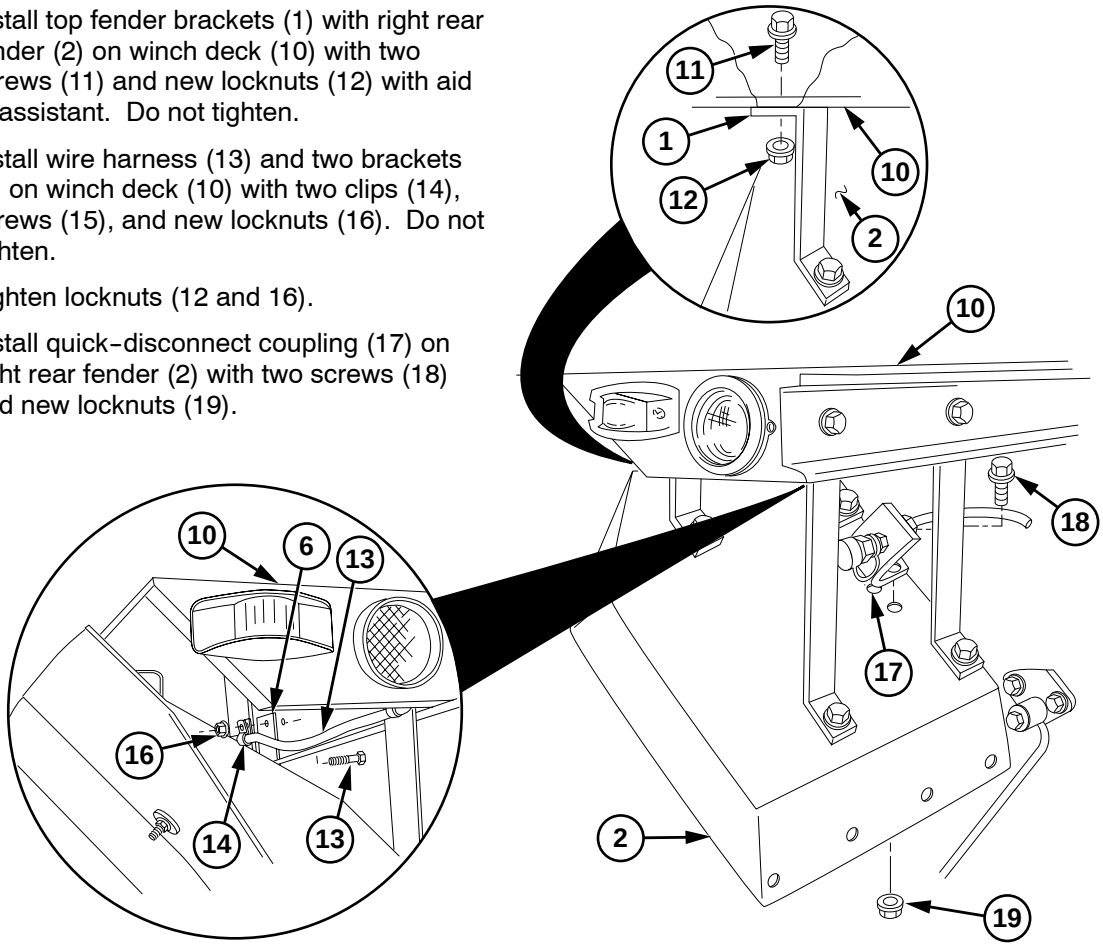
16-31. RIGHT REAR FENDER/BRACKETS REPLACEMENT (CONT)

(3) Install top fender brackets (1) with right rear fender (2) on winch deck (10) with two screws (11) and new locknuts (12) with aid of assistant. Do not tighten.

(4) Install wire harness (13) and two brackets (6) on winch deck (10) with two clips (14), screws (15), and new locknuts (16). Do not tighten.

(5) Tighten locknuts (12 and 16).

(6) Install quick-disconnect coupling (17) on right rear fender (2) with two screws (18) and new locknuts (19).



c. Follow-On Maintenance

Remove wheel chocks.

16-32. LEFT REAR FENDER BRACKETS REPLACEMENT

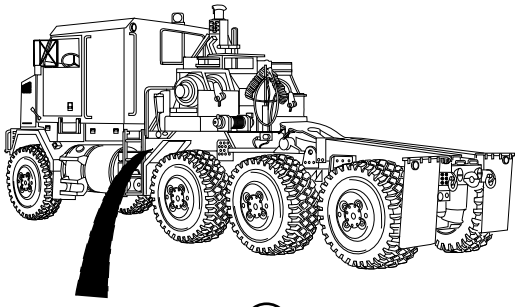
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Aftercooler removed (para 11-34.1).
Left rear fender removed (para 16-30).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench Set, Socket, 3/4 In. Drive (Item 46, Appendix F)
Wrench, Torque, 0-600 Lb-Ft (Item 74, Appendix F)

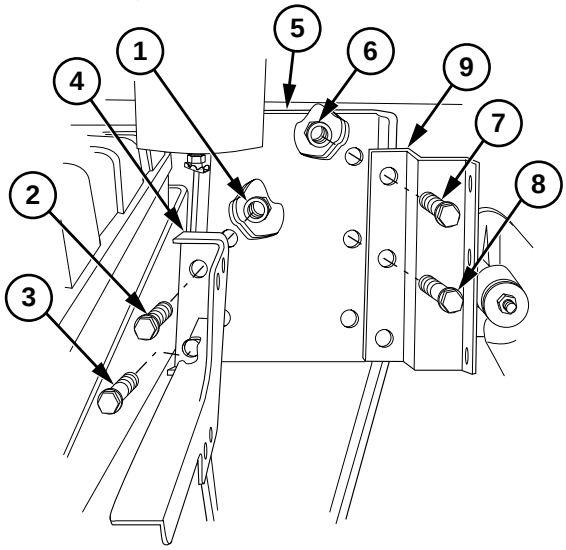
Materials/Parts
Locknuts (5) (Item 63, Appendix G)



a. Removal

(1) Remove two locknuts (1), screw (2), screw (3), and bracket (4) from frame hanger (5). Discard locknuts.

(2) Remove three locknuts (6), two screws (7), screw (8), and bracket (9) from frame hanger (5). Discard locknuts.

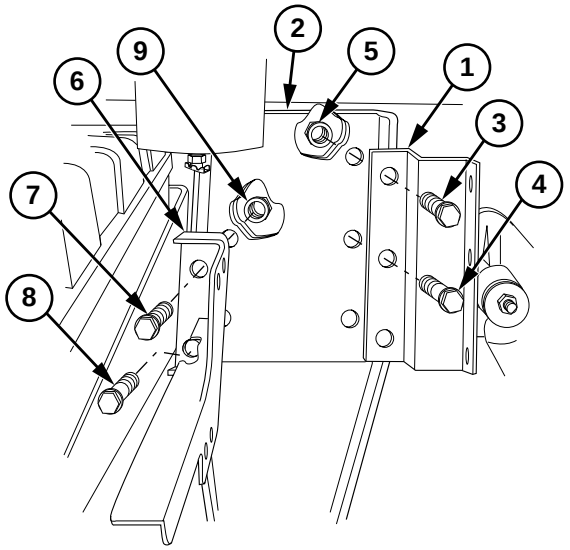


16-32. LEFT REAR FENDER BRACKETS REPLACEMENT (CONT)

b. Installation

(1) Install bracket (1) on frame hanger (2) with two screws (3), screw (4), and three new locknuts (5). Torque to 375 lb-ft (508 N·m).

(2) Install bracket (6) on frame hanger (2) with screw (7), screw (8), and two new locknuts (9). Torque to 375 lb-ft (508 N·m).



c. Follow-On Maintenance

(1) Install left rear fender (para 16-30).

(2) Install aftercooler (para 11-34.1).

16-33. FLOOR MATS REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Goggles, Industrial (Item 14, Appendix F)

Materials/Parts
Adhesive, Rubber/Gasket (Item 2.2, Appendix C)
Caps (6) (Item 10, Appendix G)
Locknut (Item 47, Appendix G)
Lockwashers (6) (Item 102, Appendix G)
Lockwasher (Item 103, Appendix G)

Personnel Required
Two

NOTE

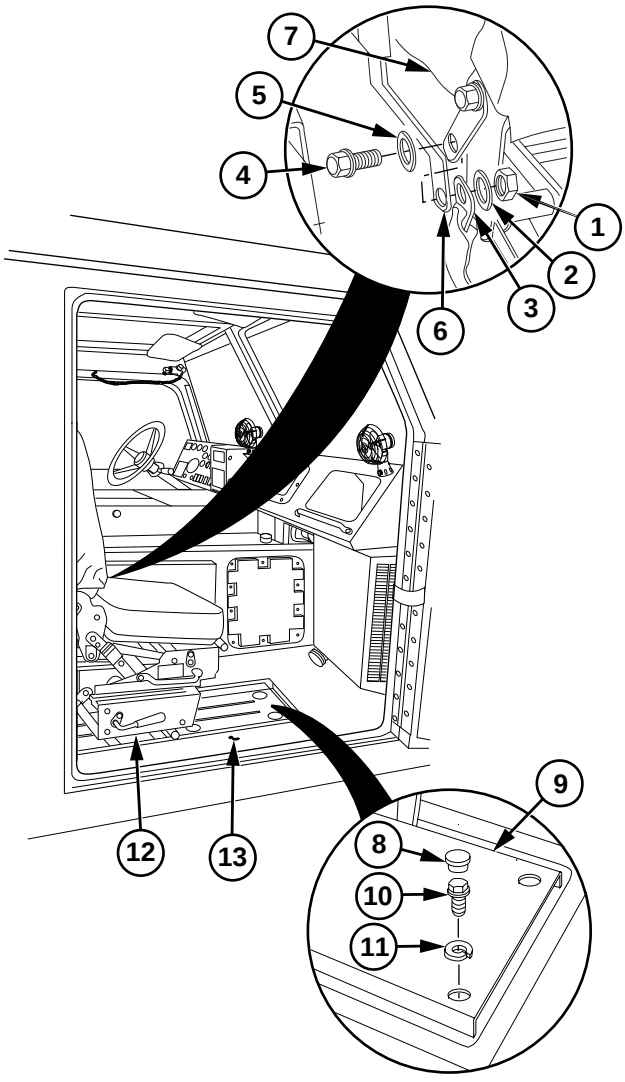
Doghouse floor mat is removed/installed as part of access panel replacement (para 16-2).

a. Passenger Side Floor Mat Removal

(1) Remove locknut (1), washer (2), anchor strap (3), screw (4), washer (5), and latch (6) from doghouse side of seat (7). Discard locknut.

(2) Remove six caps (8) from seat support (9). Discard caps.

(3) Remove six screws (10), lockwashers (11), and passenger seat assembly (12) from cab floor (13). Discard lockwashers.



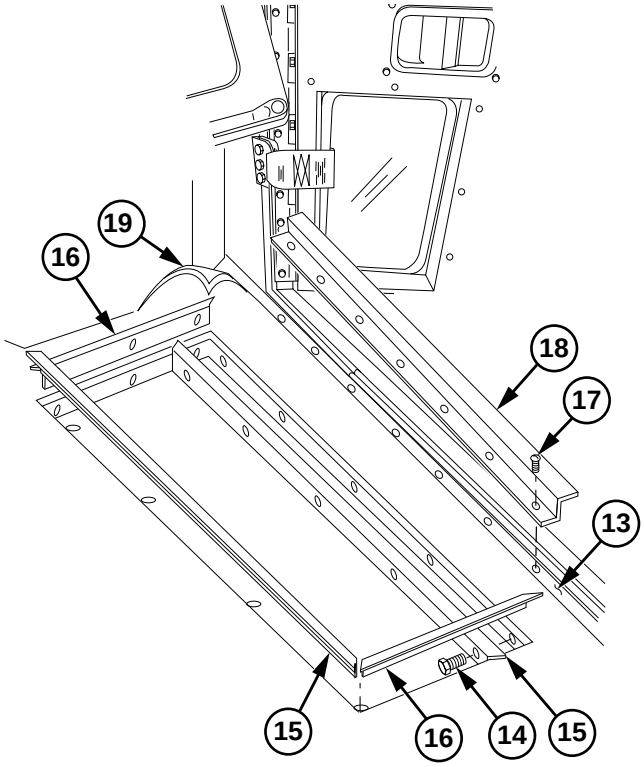
16-33. FLOOR MATS REPLACEMENT (CONT)

(4) Remove 16 screws (14), 2 retainer strips (15), and 2 retainer strips (16) from cab floor (13).

(5) Remove seven screws (17) and door seal guard (18) from cab floor (13).

(6) Remove floor mat (19) from cab floor (13).

(7) Clean old adhesive from cab floor (13).



b. Passenger Side Floor Mat Installation

WARNING

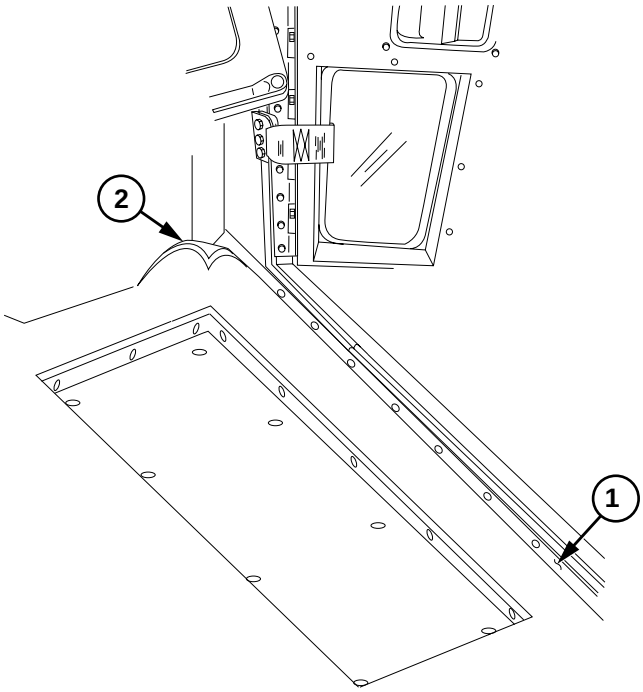
Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use in well-ventilated area. If adhesive gets in eyes, try to keep eyes open: flush with water for 15 minutes and get immediate medical attention.

NOTE

- Cab floor must be clean and dry before applying adhesive.
- Only apply adhesive to area on cab floor to be covered by floor mat.
- Allow adhesive to dry, approximately 4 minutes, before installing floor mat.

(1) Apply thin coat of adhesive to cab floor (1).

(2) Install floor mat (2) on cab floor (1).

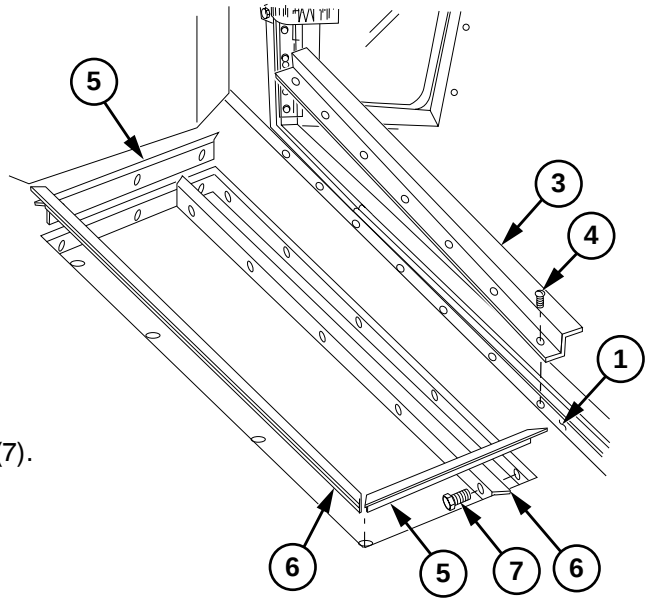


NOTE

Door seal guard and retainer strips are installed over floor mat.

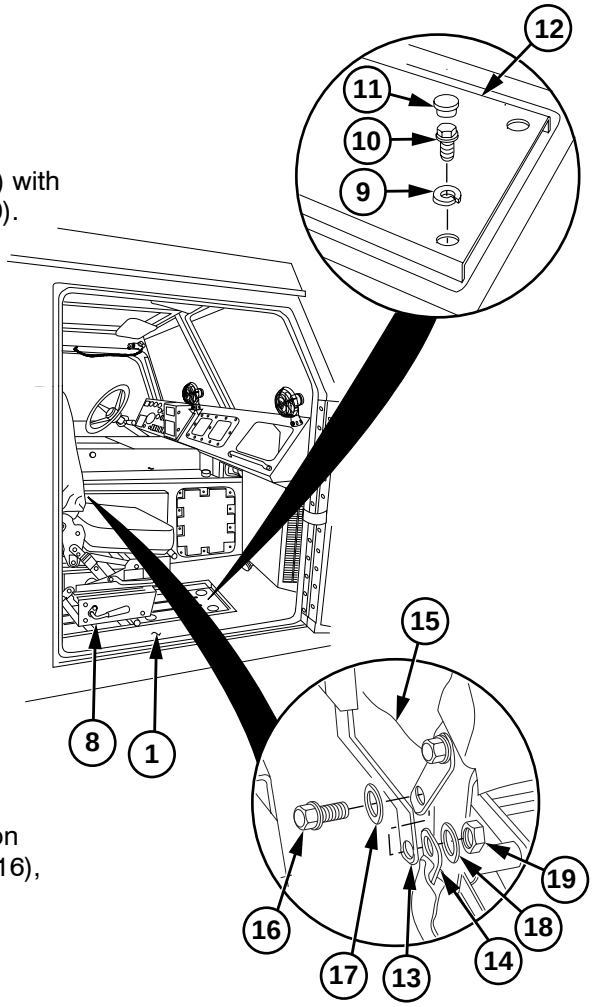
(3) Install door seal guard (3) on cab floor (1) with seven screws (4).

(4) Install 2 retainer strips (5) and 2 retainer strips (6) on cab floor (1) with 16 screws (7).



(5) Install seat assembly (8) on cab floor (1) with six new lockwashers (9) and screws (10).

(6) Install six new caps (11) on seat support (12).



(7) Install latch (13) and anchor strap (14) on doghouse side of seat (15) with screw (16), washer (17), washer (18), and new locknut (19).

16-33. FLOOR MATS REPLACEMENT (CONT)

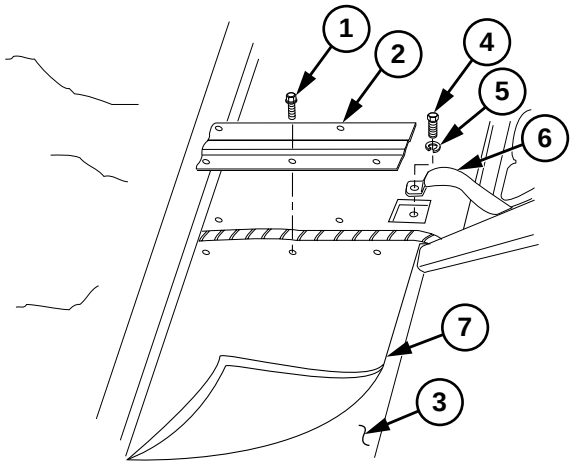
c. Driver's Side Rear Floor Mat Removal

(1) Remove five screws (1) and guard (2) from cab floor (3).

(2) Remove screw (4), lockwasher (5), and belt bracket (6) from cab floor (3).

(3) Remove floor mat (7) from cab floor (3).

(4) Clean old adhesive from cab floor (3).



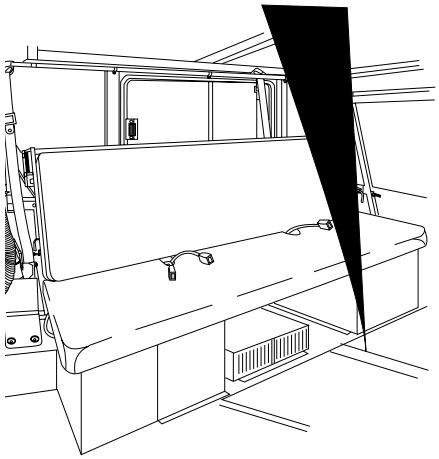
d. Driver's Side Rear Floor Mat Installation

WARNING

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

NOTE

- Cab floor must be clean and dry before applying adhesive.
- Only apply adhesive to area on cab floor to be covered by floor mat.
- Allow adhesive to dry, approximately 4 minutes, before installing floor mat.



(1) Apply thin coat of adhesive to cab floor (3).

NOTE

Floor mat is installed under wire harness.

(2) Install floor mat (7) on cab floor (3).

(3) Install belt bracket (6) on cab floor (3) with new lockwasher (5) and screw (4).

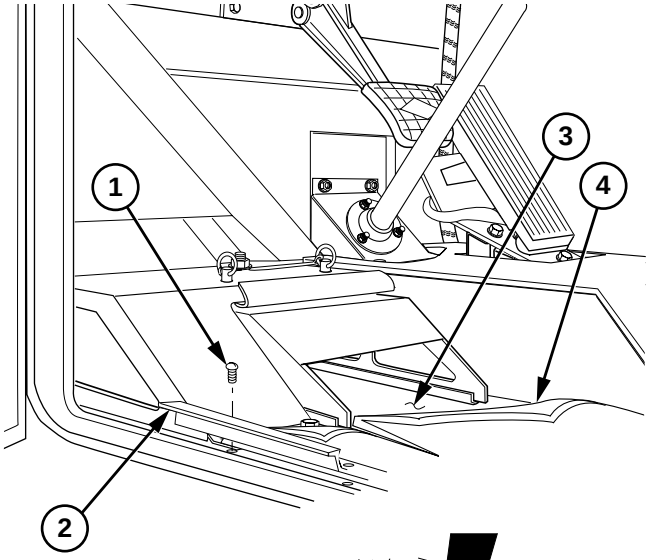
(4) Install guard (2) on cab floor (3) with five screws (1).

e. Driver's Side Front Left Floor Mat Removal

(1) Remove seven screws (1) and door seal guard (2) from cab floor (3).

(2) Remove floor mat (4) from cab floor (3).

(3) Clean old adhesive from cab floor (3).



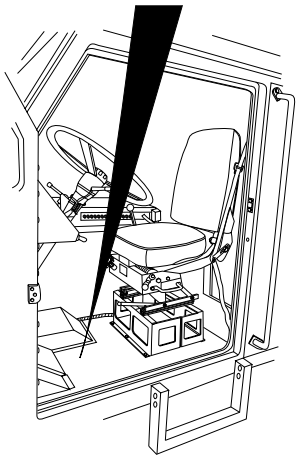
f. Driver's Side Front Left Floor Mat Installation

WARNING

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

NOTE

- Cab floor must be clean and dry before applying adhesive.
- Only apply adhesive to area on cab floor to be covered by floor mat.
- Allow adhesive to dry, approximately 4 minutes, before installing floor mat.



(1) Apply thin coat of adhesive to cab floor (3).

(2) Install floor mat (4) on cab floor (3).

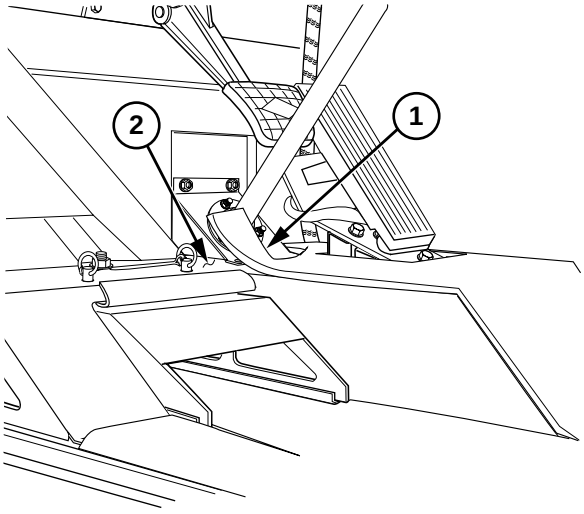
(3) Install door seal guard (2) on cab floor (3) with seven screws (1).

16-33. FLOOR MATS REPLACEMENT (CONT)

g. Driver's Side Front Right Floor Mat Removal

(1) Remove floor mat (1) from cab floor (2).

(2) Clean old adhesive from cab floor (2).



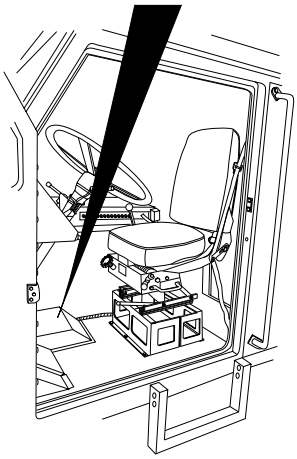
h. Driver's Side Front Right Floor Mat Installation

WARNING

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

NOTE

- Cab floor must be clean and dry before applying adhesive.
- Only apply adhesive to area on cab floor to be covered by floor mat.
- Allow adhesive to dry, approximately 4 minutes, before installing floor mat.

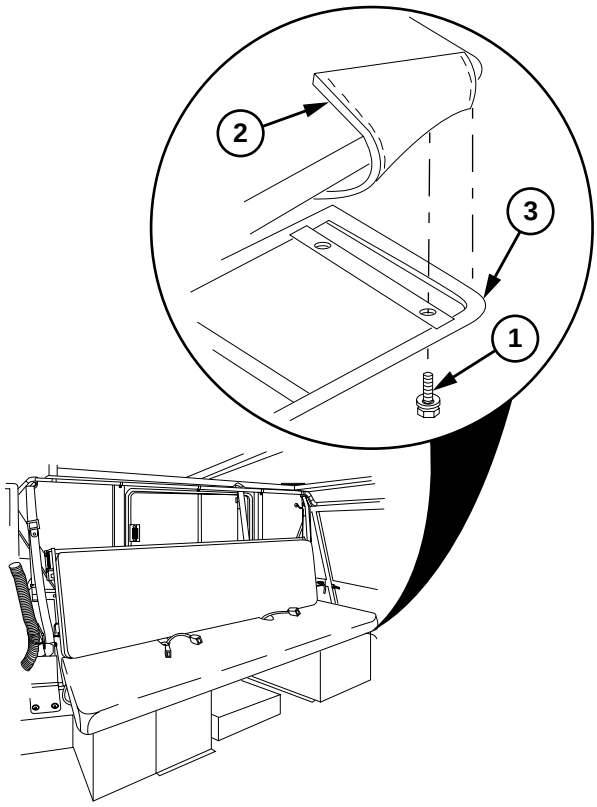


(1) Apply thin coat of adhesive to cab floor (2).

(2) Install floor mat (1) on cab floor (2).

i. Rear Seat Floor Mat Removal

(1) Remove six screws (1) and lower backseat cushion (2) from lower frame assembly (3) with aid of assistant.



NOTE

All six rear seat floor mats are replaced the same way.

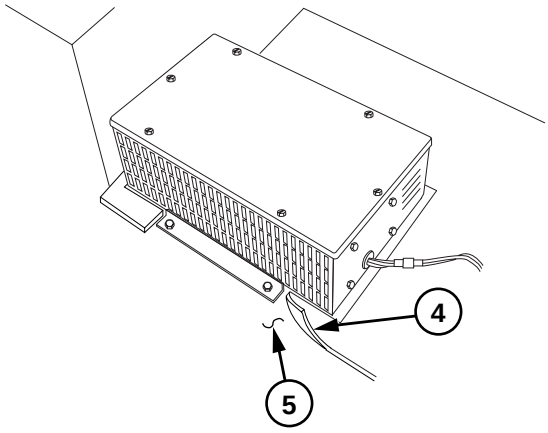
(2) Remove floor mat (4) from cab floor(5).

(3) Clean old adhesive from cab floor (5).

j. Rear Seat Floor Mat Installation

WARNING

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



NOTE

- Cab floor must be clean and dry before applying adhesive.
- Only apply adhesive to area on cab floor to be covered by floor mat.
- Allow adhesive to dry, approximately 4 minutes, before installing floor mat.

(1) Apply thin coat of adhesive to cab floor (5).

(2) Install floor mat (4) on cab floor (5).

(3) Install lower backseat cushion (2) on lower frame assembly (3) with six screws (1) with aid of assistant.

k. Follow-On Maintenance

Remove wheel chocks.

16-34. INNER FENDER REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Condition
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

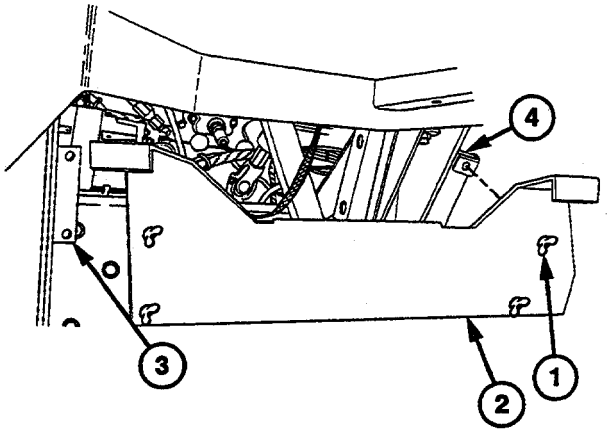
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Goggles, Industrial (Item 14, Appendix F)

NOTE
Right and left inner fenders are replaced the same way. Left side is shown.

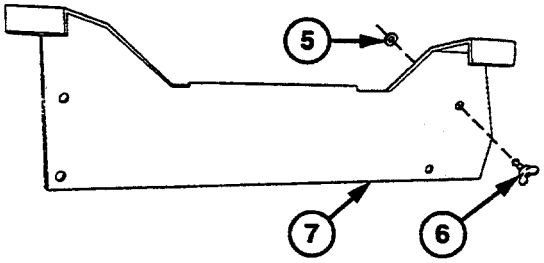
a. Removal

NOTE
Only do step (1) to remove inner fender.

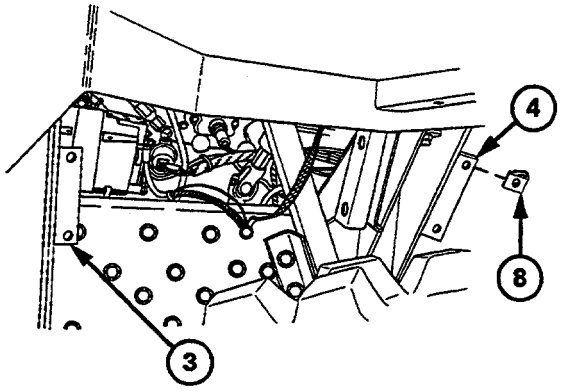
(1) Turn four studs (1) 1/4 turn counterclockwise to unlock and remove inner fender (2) from hardlift bracket (3) and cab mount (4).



(2) Remove four washers (5) and studs (6) from inner fender (7).



(3) Remove four receptacles (8) from hardlift bracket (3) and cab mount (4).



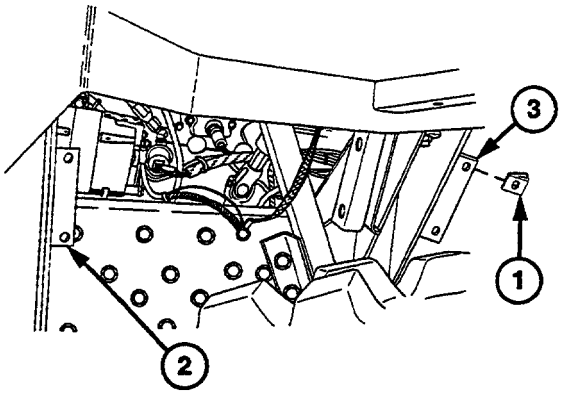
16-34. INNER FENDER REPLACEMENT (CONT)

b. Installation

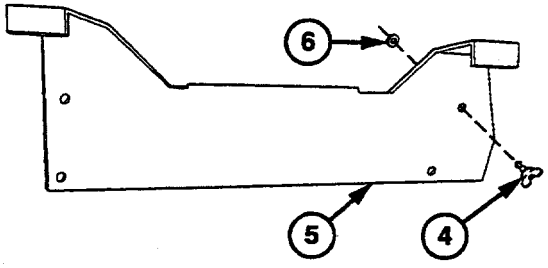
NOTE

Only do step (3) to install inner fender.

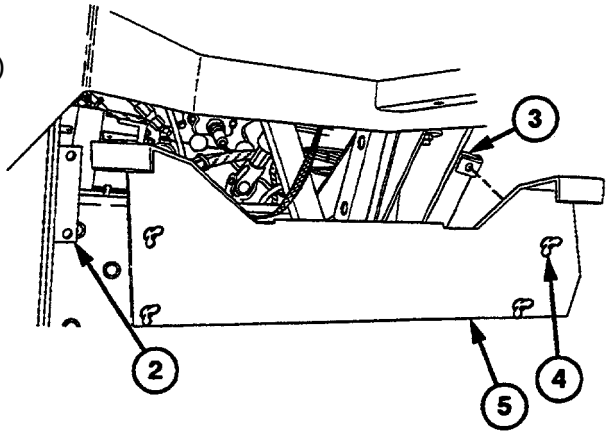
(1) Install four receptacles (1) on hardlift bracket (2) and cab mount (3).



(2) Install four studs (4) on inner fender (5) with four washers (6).



(3) Position inner fender (5) on hardlift bracket (2) and cab mount (3) and turn four studs (4) 1/4 turn clockwise to lock in place.



c. Follow-On Maintenance

Remove wheel chocks.

16-35. VENT WINDOW REPLACEMENT

This task covers:
a. Removal
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Adhesive-Sealant, Silicone (Item 3, Appendix C)
Locknuts (14) (Item 44, Appendix G)

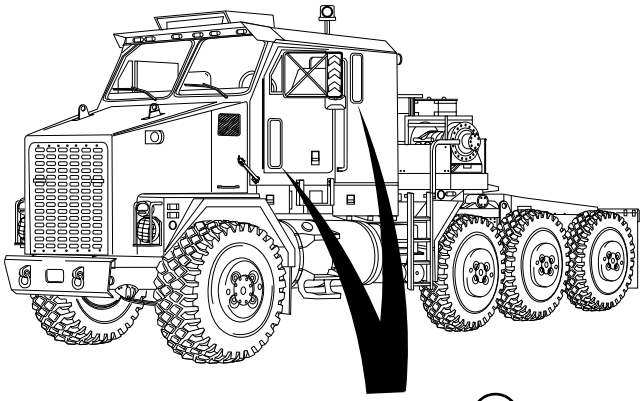
a. Removal

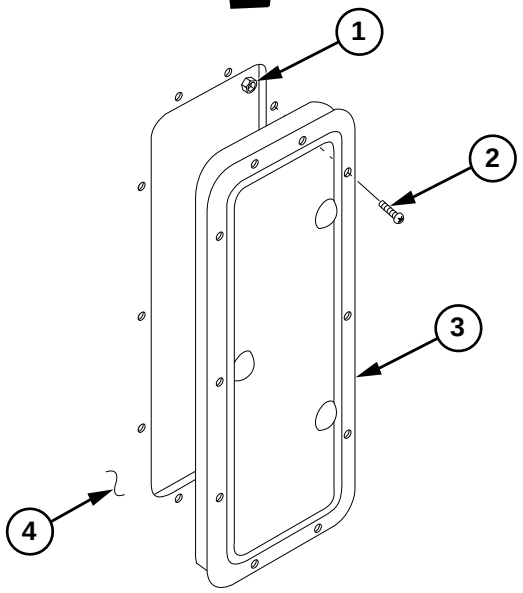
WARNING

Always wear eye protection and protective clothing when handling glass. Failure to comply may result in injury.

NOTE

Vent windows in doors and rear cab wall are replaced in a similar manner. Do step (1) for door vent windows or step (2) for rear cab vent windows.





(1) Remove 14 locknuts (1), screws (2), and vent window (3) from door (4). Discard locknuts.

(2) Remove 14 locknuts (1), screws (2), and vent window (3) from rear cab wall (4). Discard locknuts.

b. Cleaning/Inspection

Clean silicone sealant from door or rear cab wall.

16-35. VENT WINDOW REPLACEMENT (CONT)

c. Installation

WARNING

On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.

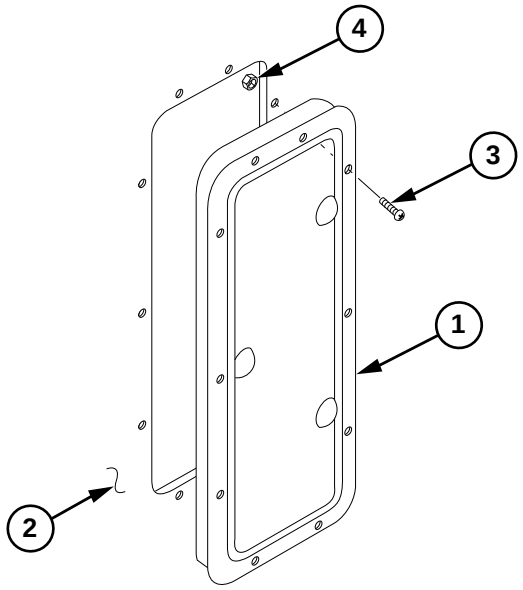
(1) Apply continuous bead of silicone adhesive-sealant to sealing surface of vent window (1).

NOTE

- Vent windows should be installed with latch toward the front of vehicle and hinges toward the rear.
- Do step (2) for door vent windows or step (3) for rear cab vent windows.

(2) Install vent window (1) on door (2) with 14 screws (3) and new locknuts (4).

(3) Install vent window (1) on rear cab wall (2) with 14 screws (3) and new locknuts (4).



c. Follow-On Maintenance

Remove wheel chocks.

16-36. CAB INSULATION REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions

Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools

Tool Kit, Genl Mech (Item 54, Appendix F)

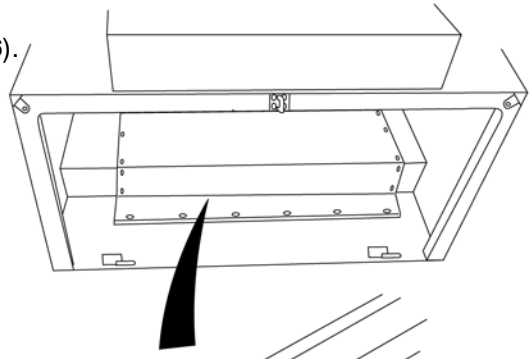
Materials/Parts

Adhesive (Item 1.2, Appendix C)
Adhesive, Insulation (Item 2.1, Appendix C)
Adhesive, Rubber/Gasket (Item 2.2, Appendx C)
Adhesive-Sealant (Item 6, Appendix C).
Tape, Adhesive (Item 32.1, Appendix C).

a. Top Doghouse Insulation Removal

(1) Remove doghouse door panel (para 16-2a).

(2) Remove four nuts (1), washers (2), retaining strip (3), rear retaining strip (4), and insulation panel (5) from doghouse (6).



b. Top Doghouse Insulation Installation

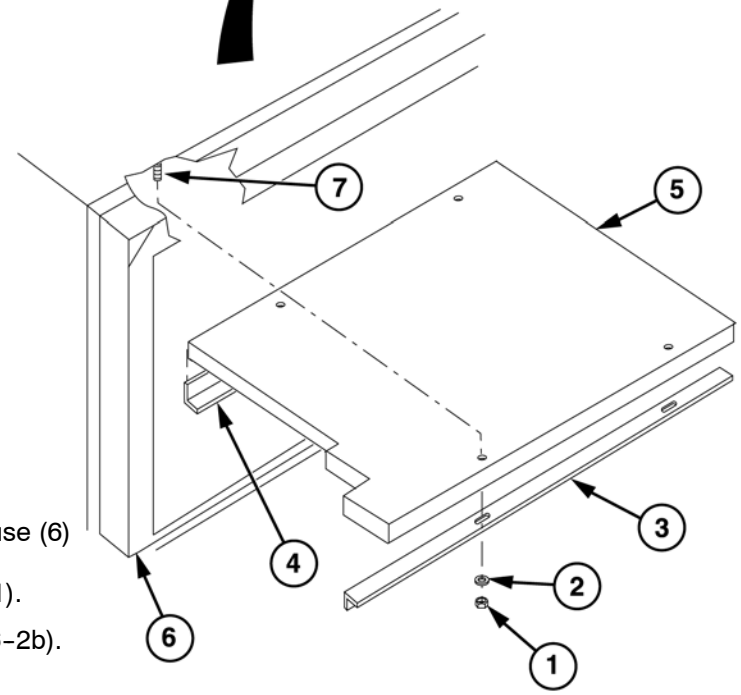
WARNING

Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.

(1) Coat threads of four screws (7) with adhesive-sealant.

(2) Install insulation panel (5) on doghouse (6) with retaining strip (3), rear retaining strip (4), four washers (2) and nuts (1).

(3) Install doghouse door panel (para 16-2b).



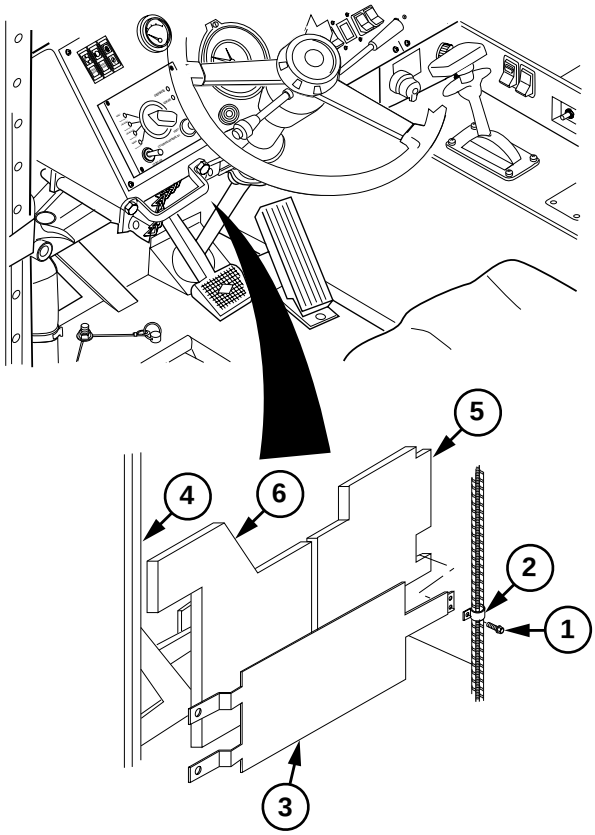
16-36. CAB INSULATION REPLACEMENT (CONT)

c. Drivers Side Interior Firewall Insulation Removal

(1) Remove fire extinguisher mount (para 16-22).

(2) Remove screw (1), clip (2) and kick plate (3) from firewall (4).

(3) Remove insulation panel (5) and insulation panel (6) from firewall (4).



d. Drivers Side Interior Firewall Insulation Installation

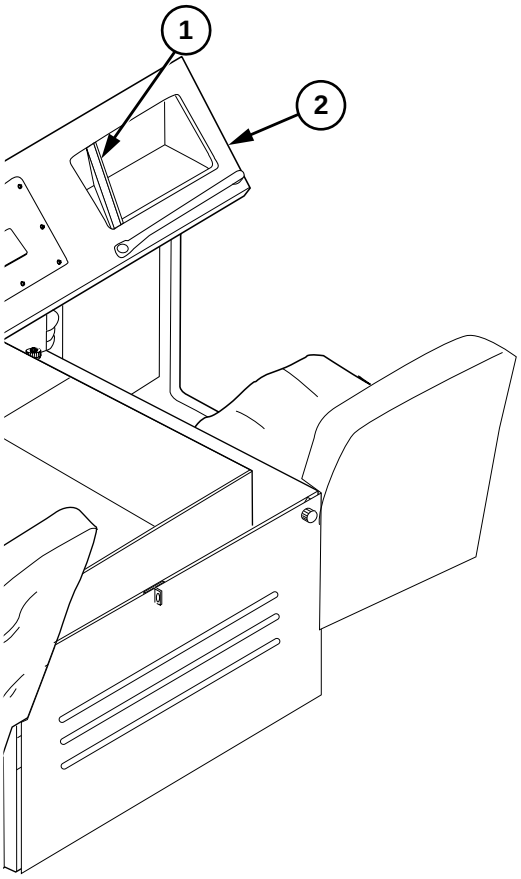
(1) Install insulation panel (5) and insulation panel (6) on firewall (4).

NOTE

There are two slots on the right side of the kick plate. Only the top or bottom hole is used depending on the location of the hole in the firewall.

(2) Install kick plate (3), and clip (2) on firewall (4) with screw (1).

(3) Install fire extinguisher mount (para 16-22).



e. Cab Insulation Removal

NOTE

- All insulation panels are replaced the same way. The glove box insulation panel is shown.
- Some insulation panels require the removal of other cab components for access to the complete panel. Refer to applicable tasks for specific instructions.

(1) Remove insulation panel (1) from cab (2).

(2) Clean old adhesive from cab (2).

f. Cab Insulation Installation

WARNING

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

NOTE

- Cab must be clean and dry before applying adhesive.
- Do step (1) for insulation located on interior cab walls, ceiling, glove box, doghouse exterior and doghouse storage area.
- Do step (2) for insulation located on cab underside, exterior firewall, and passenger side interior firewall.
- Do step (3) for insulation panel located on doghouse door.

(1) Apply bead of insulation adhesive (Item 2.1, Appendix C) to insulation panel (1).

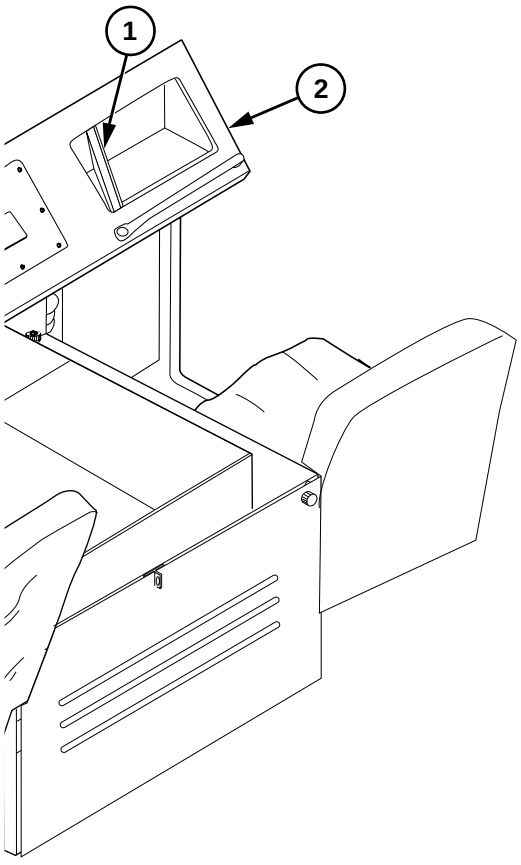
NOTE

Adhesive applied in step (2) must be allowed to dry approximately 4 minutes before installing insulation

(2) Apply rubber/gasket adhesive (Item 2.2, Appendix C) to insulation panel (1).

(3) Apply adhesive tape (item 32.1, Appendix C) and adhesive (item 1.2, Appendix C) to edge of insulation panel (1).

(4) Install insulation panel (1) on cab (2).



g. Follow-On Maintenance

Remove wheel chocks.

CHAPTER 17
WINCHES MAINTENANCE

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Section I. INTRODUCTION

17-1. GENERAL

This chapter contains instructions for replacement and repair of winch components at the Unit maintenance level.

Section II. MAINTENANCE PROCEDURES

17-2. KICKOUT CONTROL VALVE REPLACEMENT

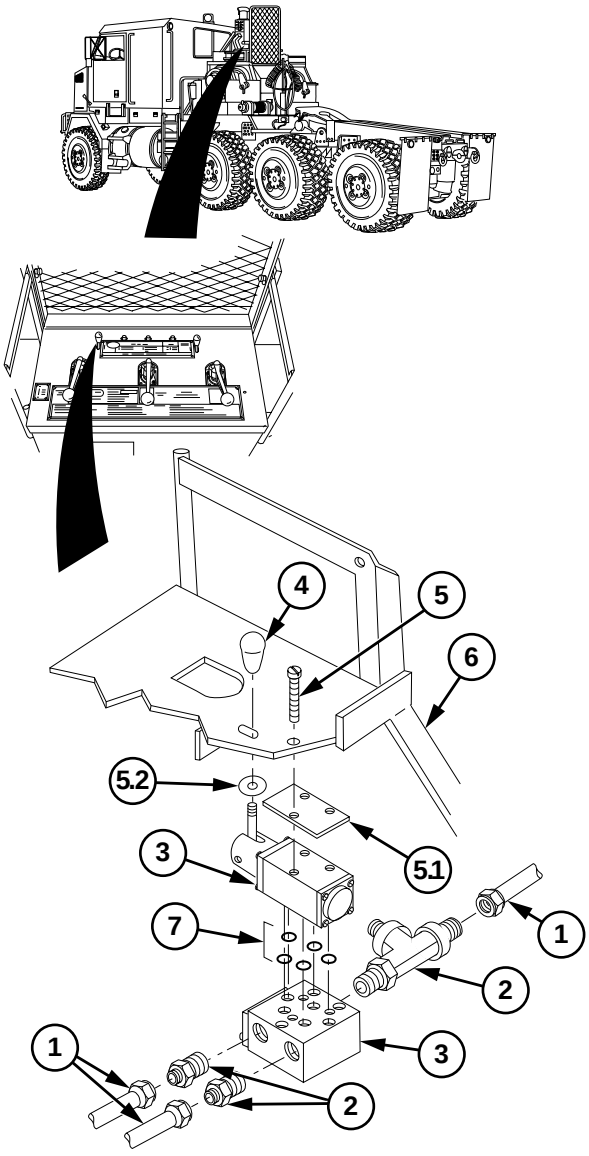
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Front console panel removed (para 17-8).
Air system drained (TM 9-2320-360-10).
Personnel guard in raised position.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Packing Assortment (Item 129, Appendix G)



a. Removal

NOTE

- Passenger side valve has four hoses and tee. Driver side valve has three hoses and elbow.
- Tag and mark hoses before removal.

(1) Remove hoses (1) from fitting (2).

(2) Remove fittings (2) from valve (3).

(3) Remove knob (4) from lever on valve (3).

NOTE

Attaching screws hold valve sections together.

(4) Remove three screws (5) and spacer (5) valve (3) from control panel (6).

(4.1) Remove washer (5.2) from valve (3).

(5) Separate valve (3). Remove and discard five preformed packings (7).

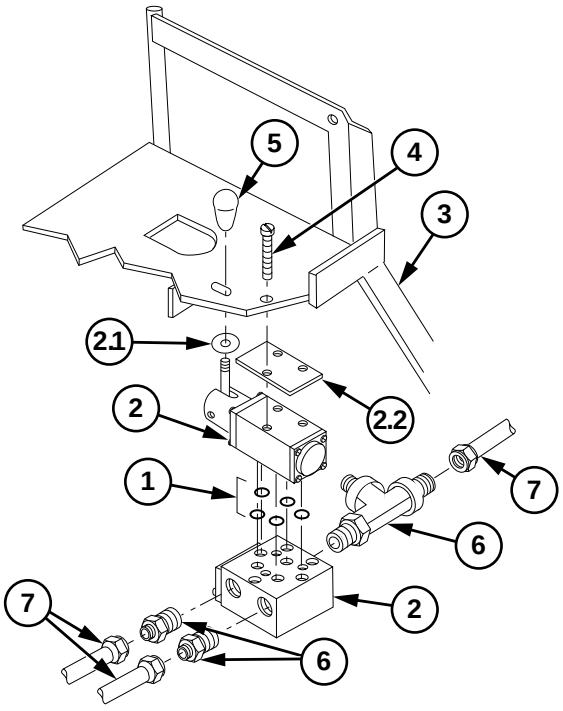
b. Installation

(1) Install five new preformed packings (1) in valve (2).

(1.1) Position washer (2.1) on valve (2).

(2) Install spacer (2.2) and valve (2) on control panel (3) with three screws (4).

(3) Install knob (5) on lever of valve (2).



WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use only in well-ventilated areas. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Damage to equipment may result.

(4) Coat threads of fittings (6) with pipe thread sealing compound. Install on valve (2).

(5) Connect hoses (7) to fittings (6).

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Check for leaks.

(4) Shut off engine (TM 9-2320-360-10).

(5) Lower personnel guard.

(6) Install front console panel (para 17-8).

17-3. PRESSURE REGULATOR VALVE REPLACEMENT/ADJUSTMENT

This task covers:
a. Removal
b. Adjustment
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Front console panel removed (para 17-8).
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
STE/ICE-R (Item 47, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Lockwasher (Item 92, Appendix G)

a. Removal

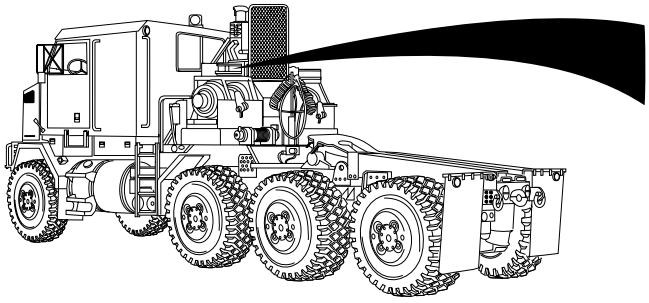
NOTE
Tag and mark hoses before removal.

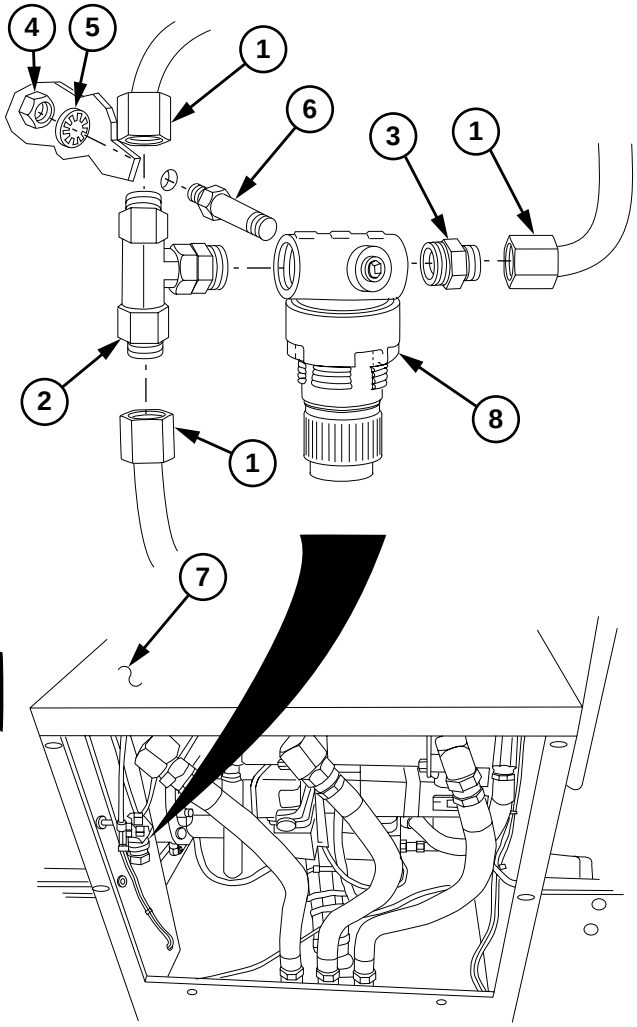
(1) Remove hoses (1) from tee (2) and reducer (3).

(2) Remove nut (4), lockwasher (5), and stud (6) from control console (7). Discard lockwasher.

(3) Remove tee (2) and reducer (3) from regulator valve (8).

(4) Remove regulator valve (8) from stud (6).





b. Adjustment

(1) Attach 0–1000 psi pressure transducer to pressure regulator valve outlet port (1).

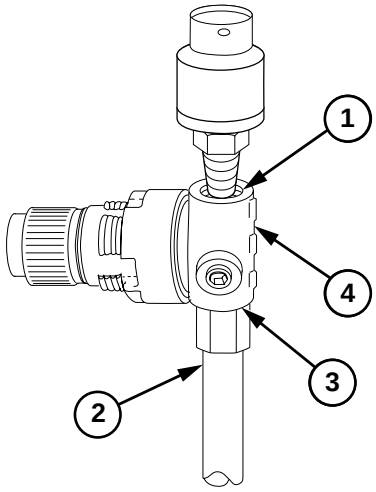
(2) Attach air supply hose (2) to pressure regulator valve inlet port (3).

NOTE

Pressure regulator valve must be adjusted to 70 psi (483 kPa).

(3) Adjust pressure regulator valve (4) to proper air pressure using STE-ICE.

(4) Remove air supply hose (2) and pressure transducer from pressure regulator valve (4).



c. Installation

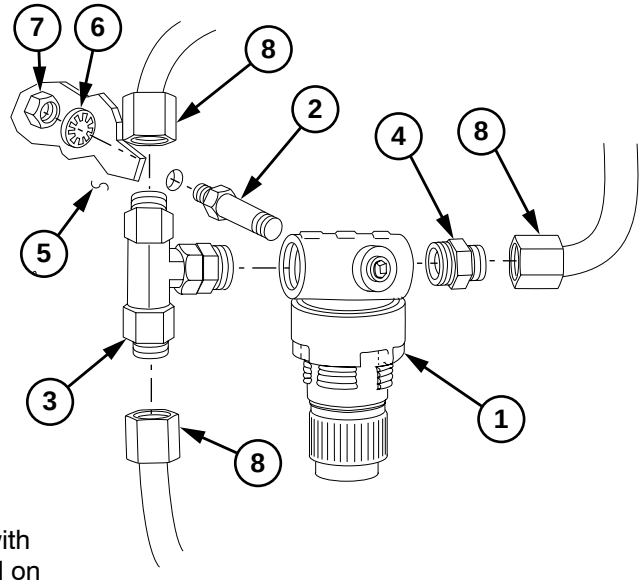
(1) Install regulator valve (1) on stud (2).

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use only in well-ventilated areas. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Damage to equipment may result.



(2) Coat threads of tee (3) and reducer (4) with pipe thread sealing compound and install on regulator valve (1).

(3) Install stud (2) on control console (5) with new lockwasher (6) and nut (7).

(4) Connect hoses (8) to tee (3) and reducer (4).

d. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120–125 psi (827–862 kPa).

(3) Check for leaks.

(4) Shut off engine (TM 9-2320-360-10).

(5) Install front console panel (para 17-8).

17-4. WINCH CABLE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Winch cable wound out (TM 9-2320-360-10).

Materials/Parts
Grease, Automotive and Artillery (GAA) (Item 17, Appendix C)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

WARNING

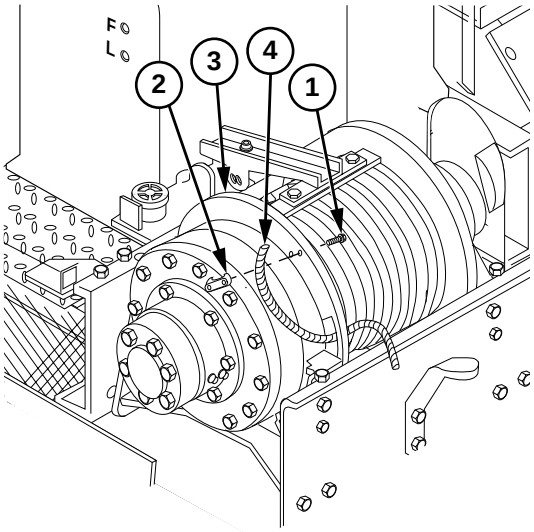
Always wear heavy duty gloves when handling winch cable. Never let cable run through hands. Frayed cable can cut hands severely.

(1) Remove two screws (1) and clamp (2) from drum (3).

WARNING

Use care when removing cable from drum. End of cable can spring up causing injury to personnel.

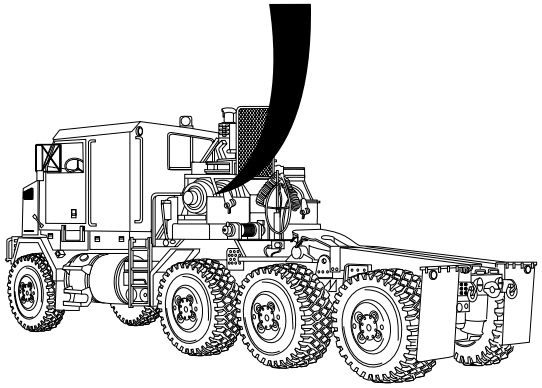
(2) Remove cable (4) from drum (3).



WINCH CABLE REMOVED FOR CLARITY

b. Installation

(1) Coat cable (4) with grease.
(2) Install cable (4) on drum (3).
(3) Install two screws (1) and clamp (2) on drum (3).



c. Follow-On Maintenance

(1) Wind in winch cable (TM 9-2320-360-10).
(2) Remove wheel chocks.

17-5. WINCH CABLE GUARD/CHOCK BLOCK STOWAGE BOX REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (4) (Item 68, Appendix G)
Lockwashers (4) (Item 102, Appendix G)

NOTE
Both cable guards are replaced the same way.

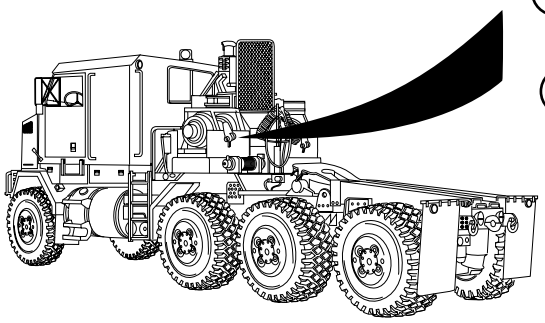
a. Removal

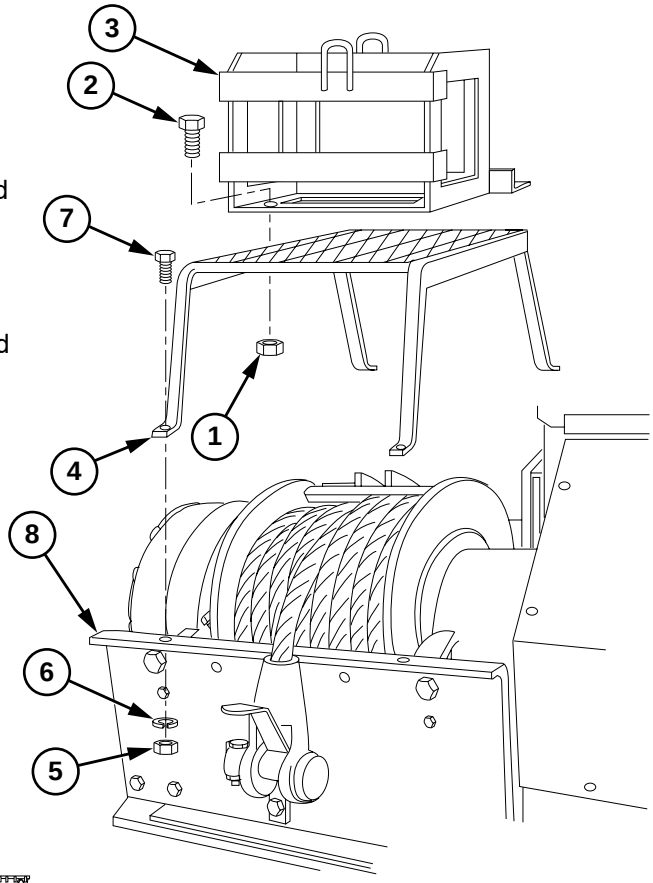
(1) Remove four locknuts (1) and screws (2) from chock block stowage box (3). Discard locknuts.

(2) Remove stowage box (3) from cable guard (4).

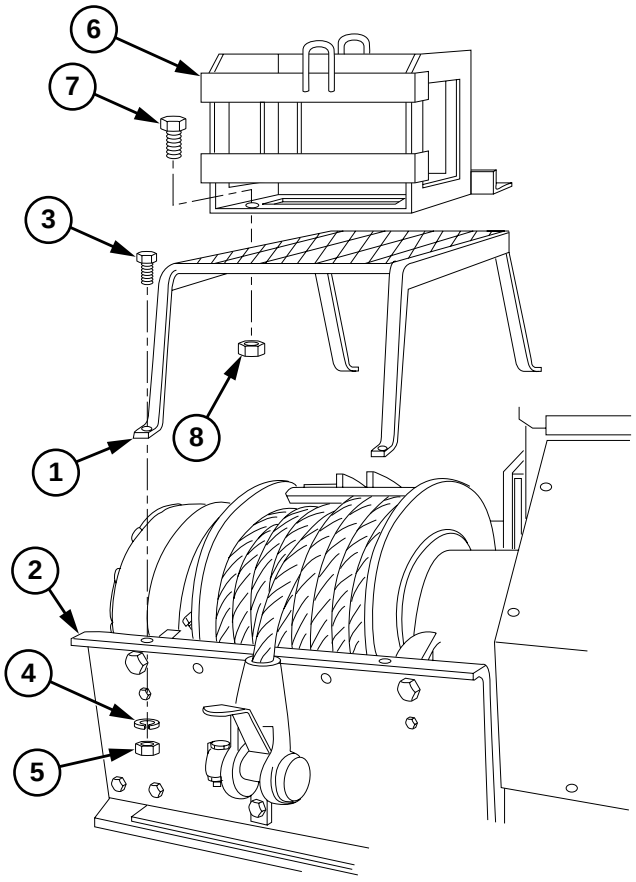
(3) Remove four nuts (5), lockwashers (6), and screws (7) from cable guard (4). Discard lockwashers.

(4) Remove cable guard (4) from winch assembly (8).





17-5. WINCH CABLE GUARD/CHOCK BLOCK STOWAGE BOX (CONT)



b. Installation

(1) Position cable guard (1) on winch assembly (2). Align holes.

(2) Install cable guard (1) on winch assembly (2) with four screws (3), new lockwashers (4), and nuts (5).

(3) Install chock block stowage box (6) on cable guard (1) with four screws (7) and new locknuts (8).

c. Follow-On Maintenance

Remove wheel chocks.

17-6. CABLE HOLD DOWN ASSEMBLY REPLACEMENT

This task covers:

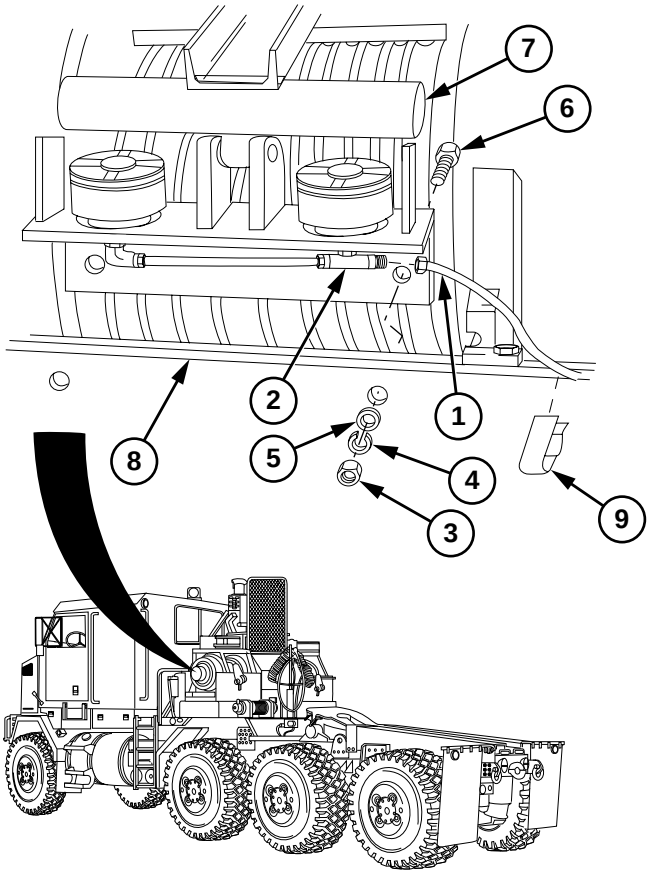
a. Removal
b. Disassembly
c. Cleaning/Inspection
d. Assembly
e. Installation
f. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Cable hold down assembly released (TM 9-2320-360-10).
Winch cable guard removed (para 17-5).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Grease, Automotive and Artillery (GAA) (Item 17, Appendix C)
Lockwashers (4) (Item 104, Appendix G)



a. Removal

(1) Disconnect hose (1) from tee (2).

(2) Remove two nuts (3), lockwashers (4), washers (5), and screws (6) from cable hold down assembly (7). Discard lockwashers.

(3) Remove hold down assembly (7) from winch side support (8).

(4) Place cable hold down assembly (7) on flat work surface.

(5) Remove clip (9) from hose (1).

17-6. CABLE HOLD DOWN ASSEMBLY REPLACEMENT (CONT)

b. Disassembly

(1) Remove two spring pins (1), pivot (2), and two spacers (3) from mount (4).

(2) Remove arm (5) from mount (4).

NOTE

Do step (3) only if bearing or grease fitting fails inspection criteria.

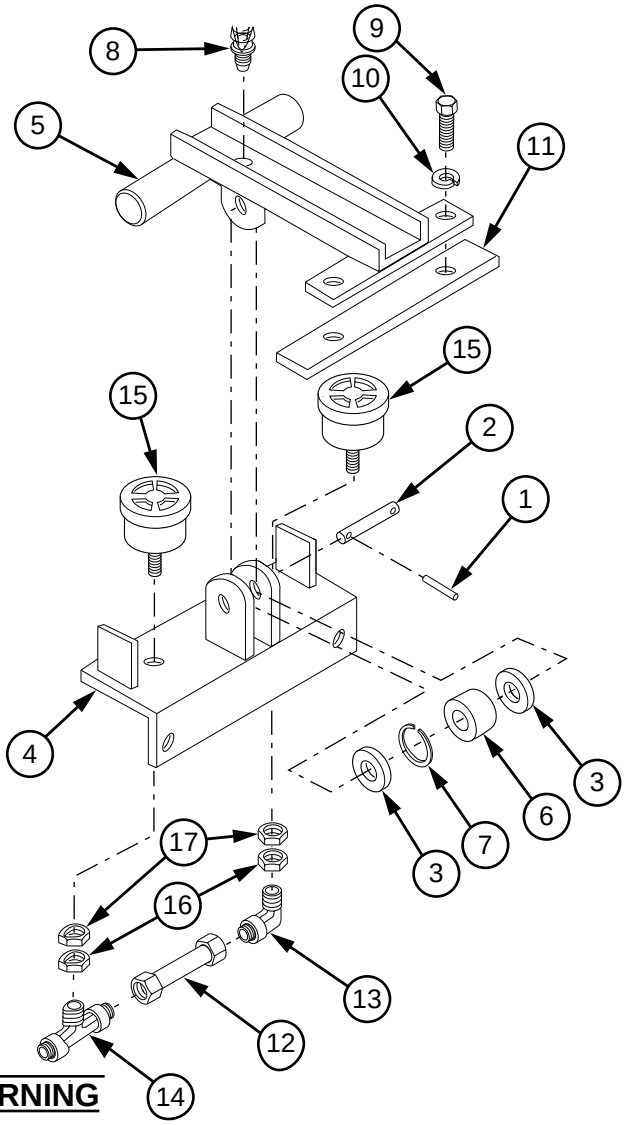
(3) Remove bearing (6), lockring (7), and grease fitting (8) from arm (5).

(4) Remove two screws (9), lockwashers (10), and bar (11) from arm (5). Discard lockwashers.

(5) Remove hose (12) from elbow (13) and tee (14).

(6) Remove elbow (13) and tee (14) from spring cushions (15).

(7) Remove two jamnuts (16), nuts (17), and spring cushions (15) from mount (4). Discard lockwashers.



c. Cleaning/Inspection

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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

•The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).
•Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.
•Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.
•Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.
•Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.

(1) Clean all metal parts with solvent cleaning compound.

(2) Inspect spring air cushions for signs of cracking, splitting, or rotting.

(3) Inspect bearing and grease fitting for cracks or damage.

(4) Replaced damaged parts.

d. Assembly

(1) Install two spring cushions (1), nuts (2), and jamnuts (3) on mount (4).

(2) Install tee (5) and elbow (6) on spring cushions (1).

(3) Install hose (7) on elbow (6) and tee (5).

(4) Install bar (8) on arm (9) with two new lockwashers (10) and screws (11).

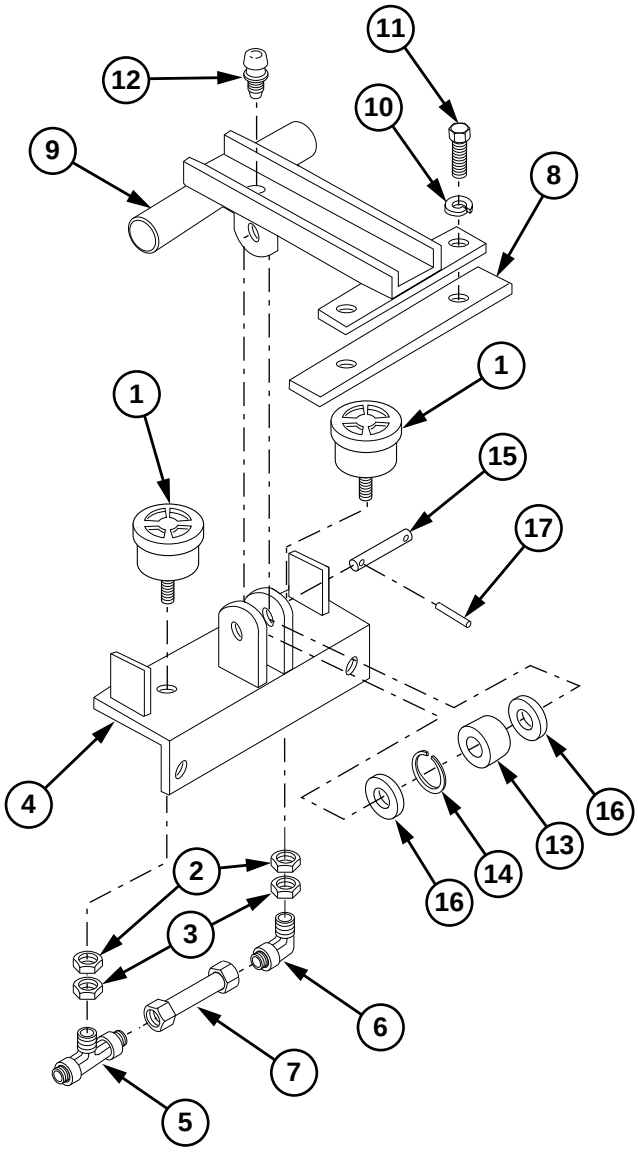
NOTE

Do step (5) only if bearing or grease fitting was removed during disassembly.

(5) Install grease fitting (12), bearing (13), and lockring (14).

(6) Install arm (9) on mount (4).

(7) Install pivot (15) and two spacers (16) on mount (4) with two spring pins (17).



17-6. CABLE HOLD DOWN ASSEMBLY REPLACEMENT (CONT)

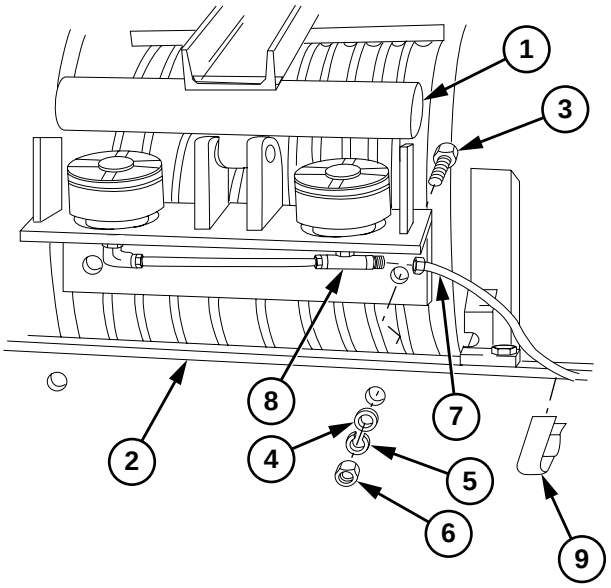
e. Installation

(1) Install cable hold down assembly (1) on winch front base mount (2).

(2) Install two screws (3), washers (4), new lockwashers (5), and nuts (6) on hold down assembly (1).

(3) Connect hose (7) to tee (8).

(4) Install hose clip (9) on base mount (2).



f. Follow-On Maintenance

(1) Install winch cable guard (para 17-5).

(2) Check operation of cable hold down assembly.

(3) Check for leaks.

17-7. WINCH CABLE HOLD DOWN VALVE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

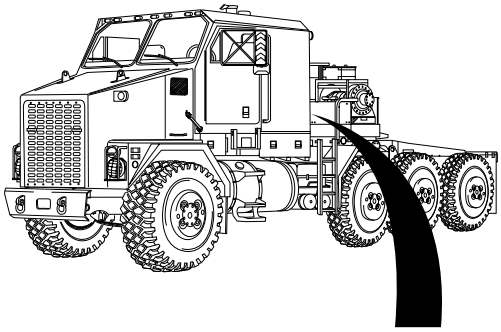
INITIAL SETUP

Equipment Conditions
Winch control console front panel removed (para 17-8).
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)

a. Removal



NOTE
Tag and mark air lines before removal.

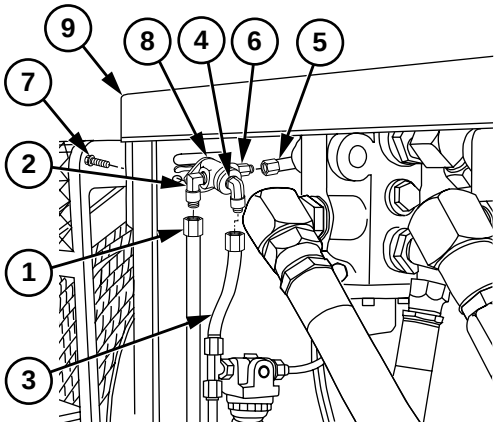
(1) Remove air line (1) from elbow (2).

(2) Remove air line (3) from elbow (4).

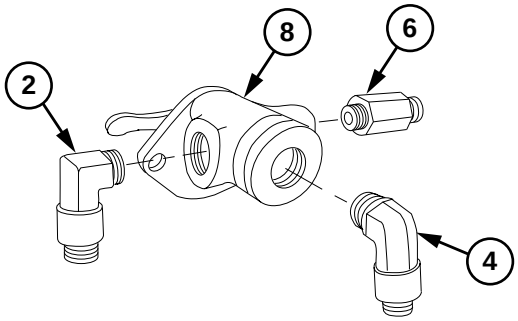
(3) Remove air line (5) from fitting (6).

NOTE
Valve must be turned counter-clockwise while removing to route lever through slot in winch console.

(4) Remove two screws (7) and valve (8) fror winch console (9).



(5) Remove elbow (2), elbow (4), and fitting (6) from valve (8).



17-7. WINCH CABLE HOLD DOWN VALVE REPLACEMENT (CONT)

b. Installation

WARNING

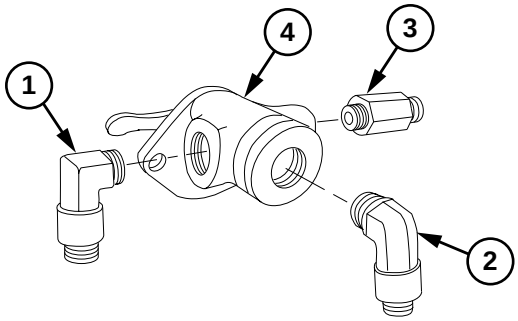
Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound at hose connections. Damage to equipment may result.

(1) Coat threads of elbow (1), elbow (2), and fitting (3) with pipe thread sealing compound.

(2) Install elbow (1), elbow (2), and fitting (3) on valve (4).



NOTE

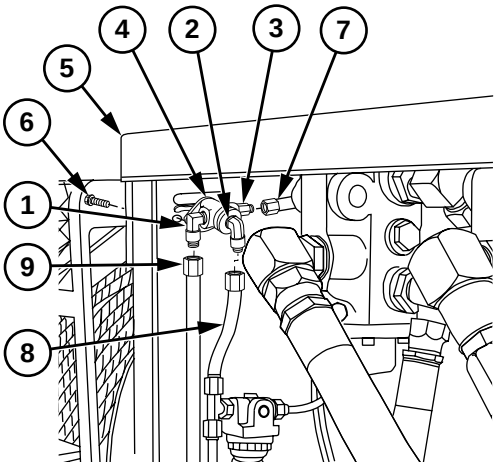
Valve must be turned clockwise while installing to route lever through slot in winch console.

(3) Install valve (4) on winch console (5) with two screws (6).

(4) Install air line (7) on fitting (3).

(5) Install air line (8) on elbow (2).

(6) Install air line (9) on elbow (1).



c. Follow-On Maintenance

Install winch control console front panel (para 17-8).

17-8. CONTROL CONSOLE PANELS/PERSONNEL GUARD REPLACEMENT

This task covers:
- Removal
- Inspection
- Installation
- Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
- Engine shut off (TM 9-2320-360-10).
- Parking brake on (TM 9-2320-360-10).
- Wheels chocked.
- Personnel guard in raised position.

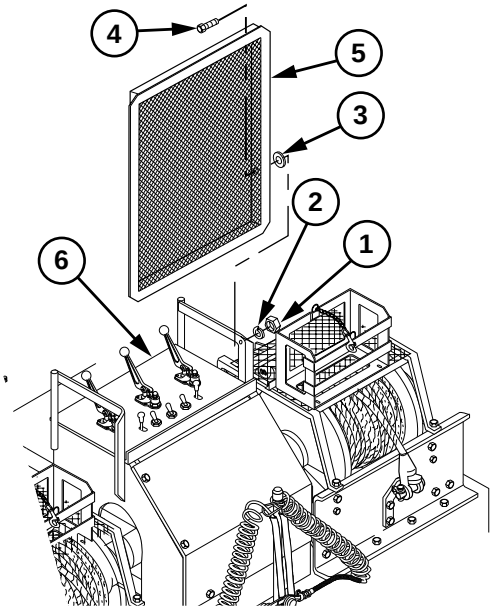
Tools and Special Tools
- Tool Kit, Genl Mech (Item 54, Appendix F)
- Wrench, Torque, 15-100 lb-ft (Item 76, Appendix F)

Materials/Parts
- Lockwashers (2) (Item 102, Appendix C)

a. Personnel Guard Removal

(1) Remove two nuts (1), lockwashers (2), washers (3), and screws (4) from personnel guard (5). Discard lockwashers.

(2) Remove personnel guard (5) from control console (6).



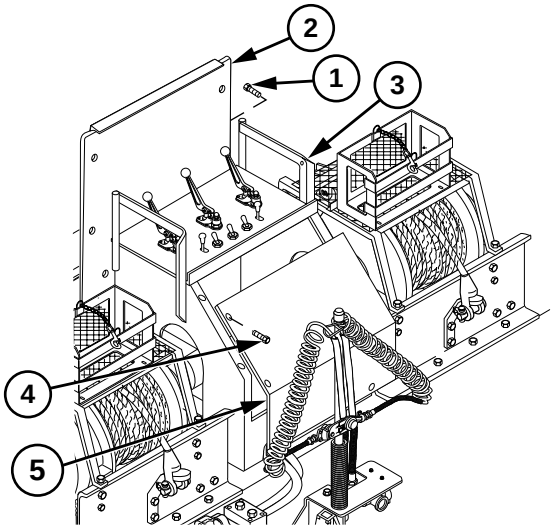
b. Control Console Panels Removal

WARNING

Console panels are heavy. Use care when removing screws to avoid injury to personnel.

(1) Remove six screws (1) and front console panel (2) from control console (3).

(2) Remove six screws (4) and rear console panel (5) from control console (3).



17-8. CONTROL CONSOLE PANELS/PERSONNEL GUARD REPLACEMENT (CONT)

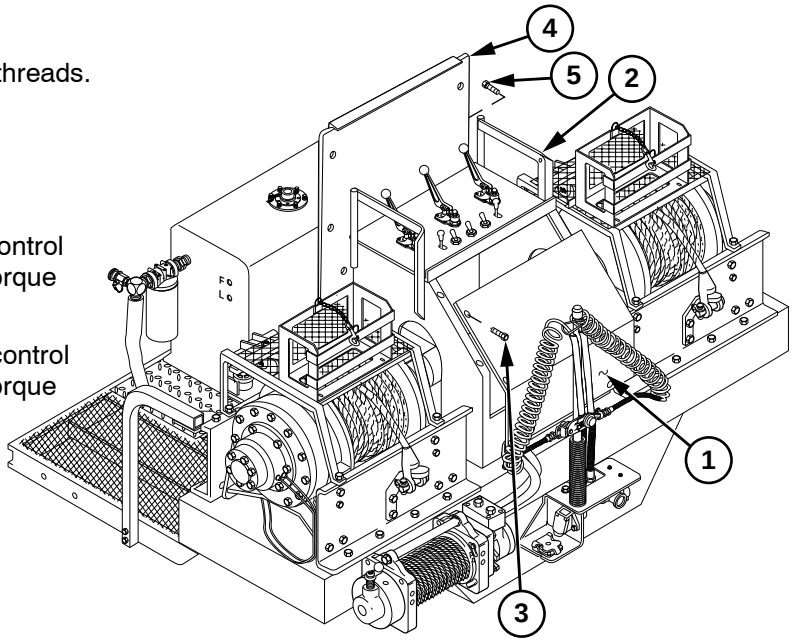
c. Inspection

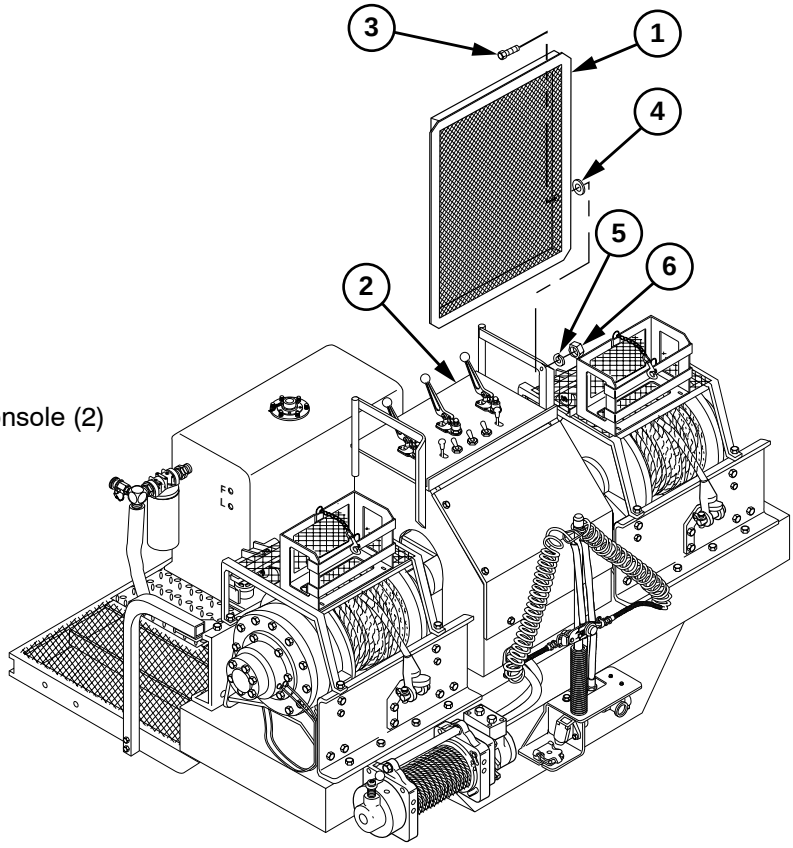
Inspect threaded inserts for damaged threads.

d. Control Console Panels Installation

(1) Install rear console panel (1) on control console (2) with six screws (3). Torque to 20 lb-ft (27 N·m).

(2) Install front console panel (4) on control console (2) with six screws (5). Torque to 20 lb-ft (27 N·m).





e. Personnel Guard Installation

Install personnel guard (1) on control console (2) with two screws (3), washers (4), new lockwashers (5), and nuts (6).

f. Follow-On Maintenance

(1) Lower personnel guard.

(2) Remove wheel chocks.

17-9. HYDRAULIC FILTER AND HOUSING REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Filter (Item 26, Appendix G)
Packings, Preformed (2) (Item 142, Appendix G)
Packing, Preformed (Item 138, Appendix G)

Tools and Special Tools,
Tool Kit, Genl Mech (Item 54, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)
Wrench, Open-End,1-7/8 and 1-11/16 In. (Item 68, Appendix F)
Wrench Set, Combination (Item 70, Appendix F)

a. Removal

(1) Place drain pan under filter element (1).

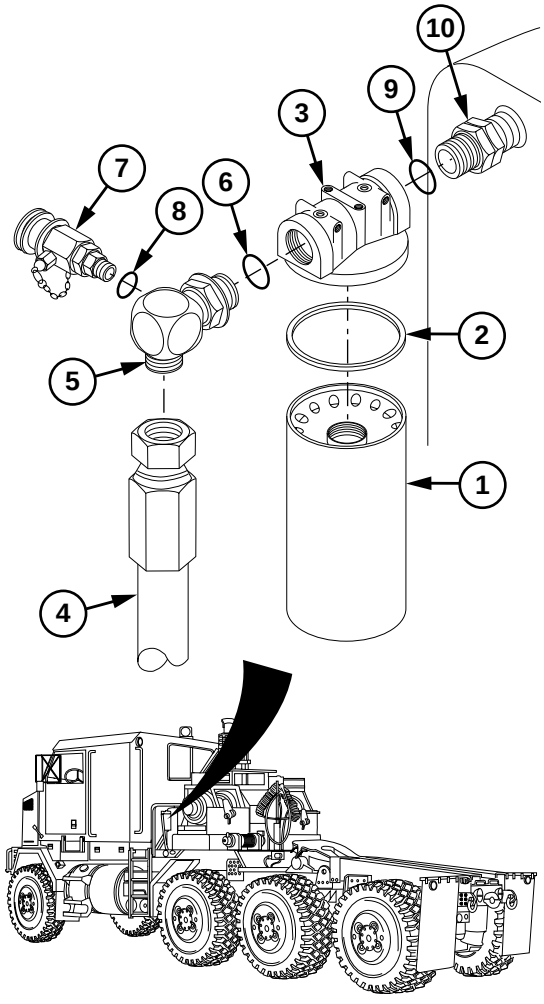
(2) Remove filter (1) and preformed packing (2) from filter housing (3). Discard filter and preformed packing.

(3) Disconnect hose (4) from adapter (5).

(4) Remove adapter (5) and preformed packing (6) from filter housing (3). Discard preformed packing.

(5) Remove oil sampling valve (7) and preformed packing (8) from adapter (5). Discard preformed packing.

(6) Remove filter housing (3) and preformed packing (9) from adapter (10). Discard preformed packing.



17-9. HYDRAULIC FILTER AND HOUSING REPLACEMENT (CONT)

b. Installation

NOTE

OUT side of filter housing faces toward reservoir.

(1) Install new preformed packing (1) and filter housing (2) on adapter (3).

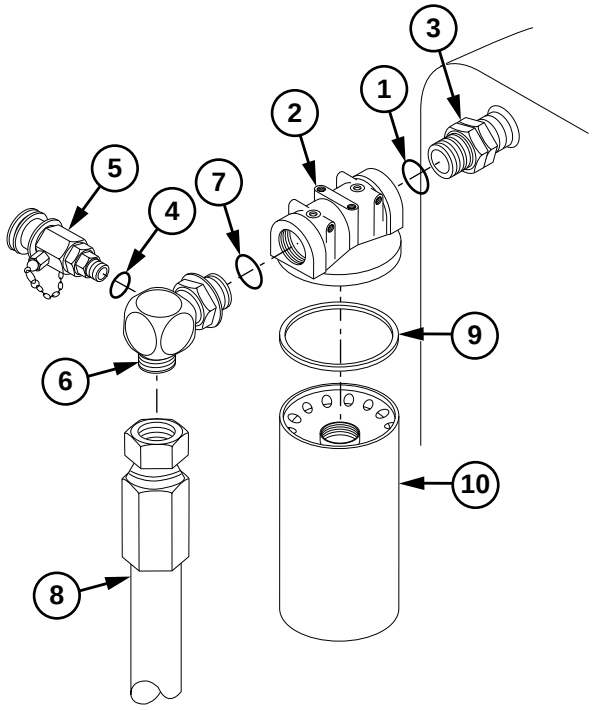
(2) Install new preformed packing (4) and oil sampling valve (5) in adapter (6).

(3) Install new preformed packing (7) and adapter (6) in filter housing (2).

(4) Connect hose (8) to adapter (6).

(5) Install new preformed packing (9) and filter (10) on filter housing (2) by hand by turning clockwise.

(6) Tighten filter (10) until preformed packing (9) touches filter housing (2), then tighten additional one-half turn.



c. Follow-On Maintenance

(1) Check reservoir oil level (TM 9-2320-360-10).

(2) Start engine (TM 9-2320-360-10).

(3) Check for leaks.

(4) Shut off engine (TM 9-2320-360-10).

(5) Remove wheel chocks.

17-10. WINCH RESERVOIR REPAIR

This task covers:
a. Removal
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

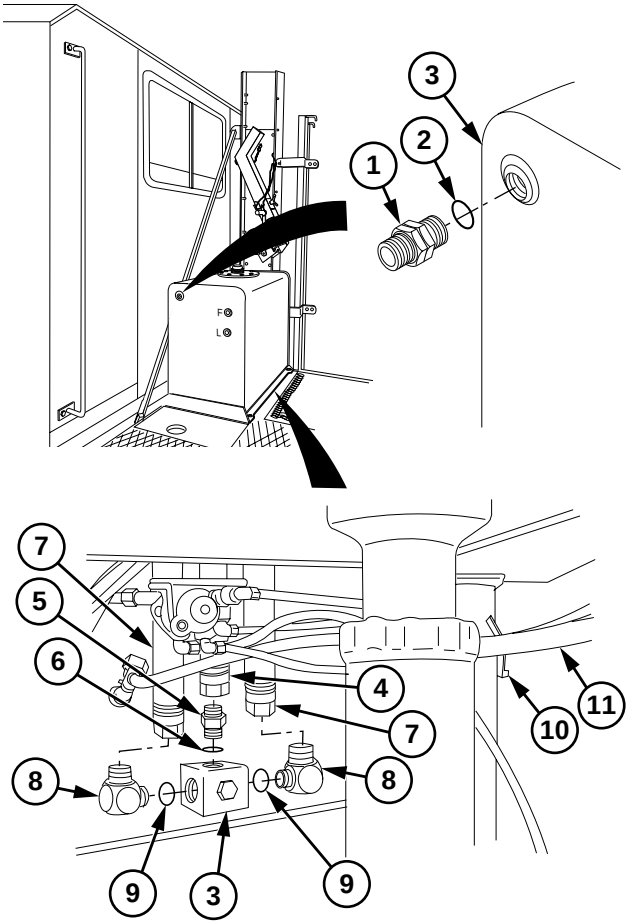
INITIAL SETUP

Equipment Conditions
Hydraulic filter and housing removed (para 17-9).
Oil drained from reservoir (LO 9-2320-360-12).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Crow's Foot, 2-3/4 In. (Item 66, Appendix F)
Wrench, adjustable, automobile (Item 61.1, Appendix F)

Materials/Parts
Sealant, Hydraulic (Item 29, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Breather Assembly (Item 1, Appendix G)
Lockwashers (4) (Item 102, Appendix G)
Packings, Preformed (3) (Item 142, Appendix G)
Packing, Preformed (Item 138, Appendix G)
Packing, Preformed (Item 140, Appendix G)
Packing, Preformed (Item 144, Appendix G)

Personnel Required
Two



a. Removal

(1) Remove adapter (1) and preformed packing (2) from reservoir (3). Discard preformed packing.

(2) Remove hose (4), adapter (5), and preformed packing (6) from reservoir (3). Discard preformed packing.

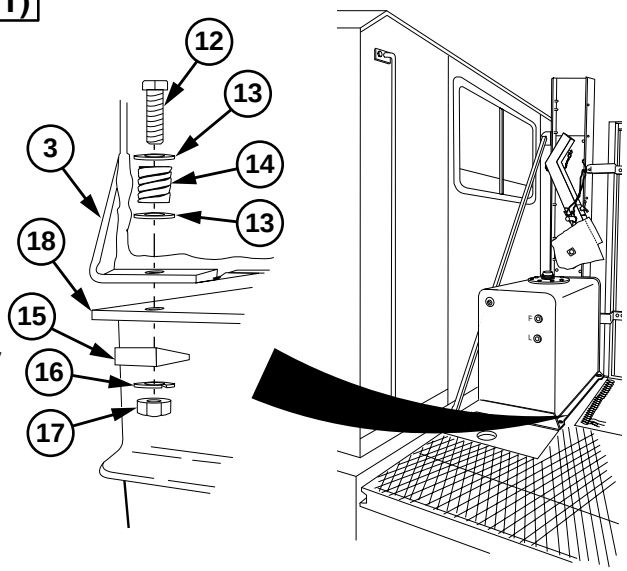
(3) Remove two hoses (7), elbows (8), and preformed packings (9) from reservoir (3). Discard preformed packings

NOTE

Location of plastic cable ties should be marked before removal.

(4) Remove plastic cable tie (10) from drain hose (11).

17-10. WINCH RESERVOIR REPAIR (CONT)

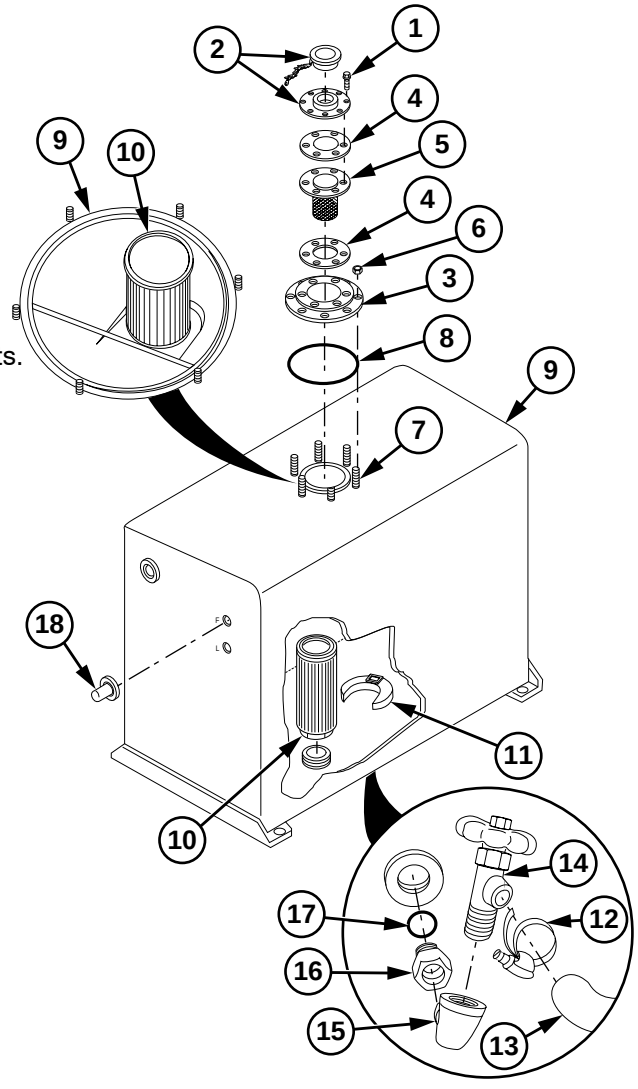


(5) Remove four screws (12), eight washers (13), four springs (14), wedges (15), lockwashers (16), and nuts (17). Discard lockwashers.

(6) Attach lifting device to reservoir (3).

(7) Remove reservoir (3) from frame assembly (18) while assistant operates lifting device.

(8) Remove lifting device from reservoir (3).



b. Disassembly

(1) Remove six screws (1) and cap assembly (2) from plate (3). Discard cap assembly and screws.

(2) Remove two gaskets (4) and screen (5) from plate (3). Discard screen and gaskets.

(3) Remove 12 nuts (6) from 6 studs (7).

(4) Remove plate (3) and packing (8) from reservoir (9). Discard packing.

(5) Turn strainer (10) counterclockwise to remove from base of reservoir (9) using crows foot wrench (11).

(6) Clean strainer (10) with lint-free cloth.

(7) Remove clamp (12) and hose (13) from drain valve (14).

(8) Remove drain valve (14) from elbow (15).

(9) Remove elbow (15) from adapter (16).

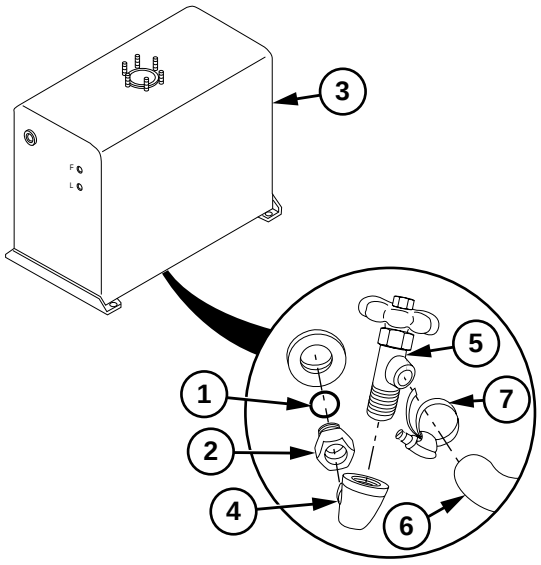
(10) Remove adapter (16) and preformed packing (17) from reservoir (9). Discard preformed packing.

(11) Remove two sight glasses (18) from reservoir (9).

c. Assembly

(1) Install new preformed packing (1) on adapter (2).

(2) Install adapter (2) on reservoir (3).



WARNING

Sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If sealant gets on skin or clothing, wash immediately with soap and water.

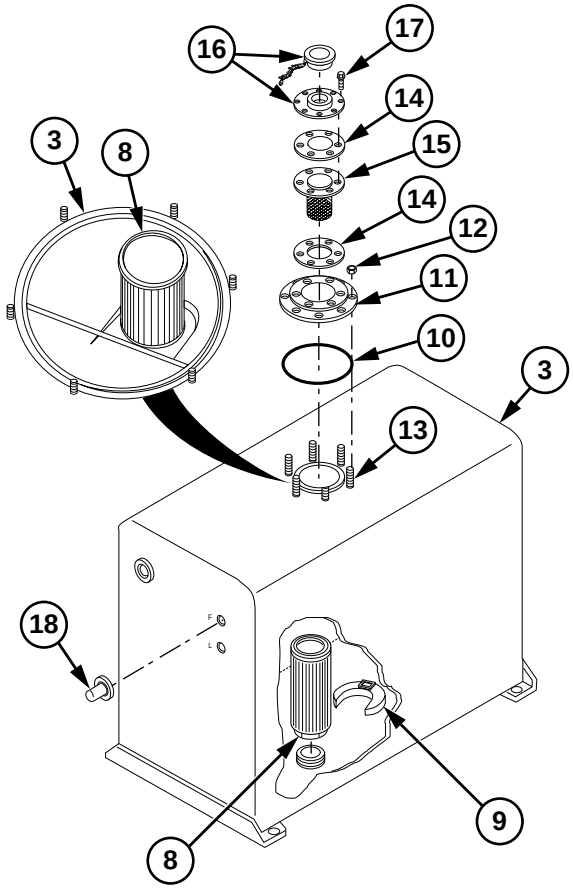
(3) Coat threads of elbow (4) with hydraulic sealant.

(4) Install elbow (4) on adapter (2).

(5) Coat threads of drain valve (5) with hydraulic sealant.

(6) Install drain valve (5) on street elbow (4).

(7) Install hose (6) on drain valve (5) with clamp (7).



(8) Turn strainer (8) clockwise to install on base of reservoir (3) using crows foot wrench (9).

(9) Install new packing (10) and plate (11) on reservoir (3).

(10) Install 12 nuts (12) on 6 studs (13).

(11) Install two new gaskets (14) and new screen (15) on plate (11).

(12) Install new cap assembly (16) on plate (11) with six new screws (17).

(13) Install two sight glasses (18) on reservoir (3).

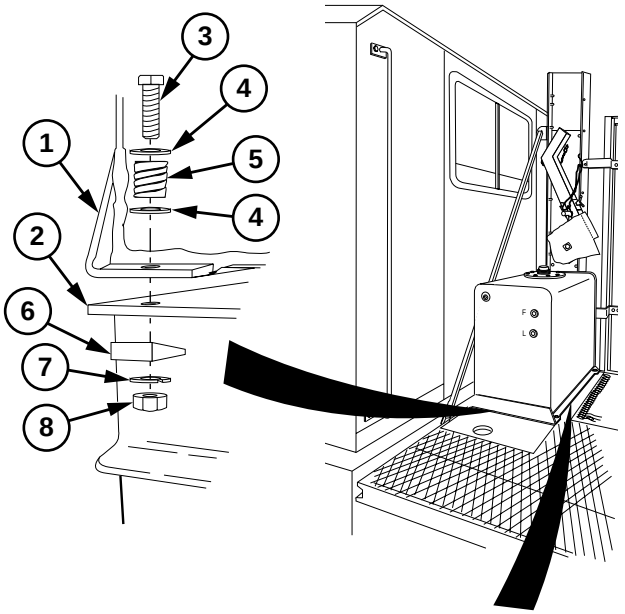
17-10. WINCH RESERVOIR REPAIR (CONT)

d. Installation

(1) Attach lifting device to reservoir (1).

(2) Install reservoir (1) on frame assembly (2) while assistant operates lifting device.

(3) Install four screws (3), eight washers (4), four springs (5), wedges (6), new lockwashers (7), and nuts (8).



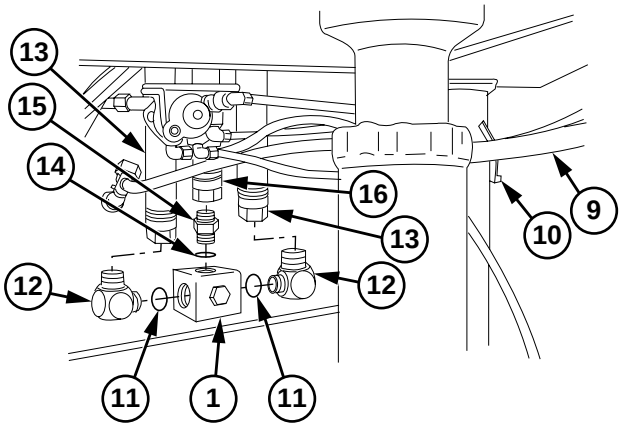
NOTE

Plastic cable ties should be positioned in locations marked during removal.

(4) Secure drain hose (9) with plastic cable tie (10).

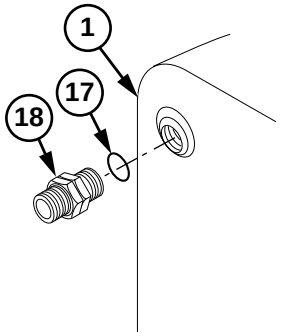
(5) Install two new preformed packings (11), elbows (12), and hoses (13) on reservoir (1).

(6) Install new preformed packing (14), adapter (15), and hose (16) on reservoir (1).



(7) Install new preformed packing (17) and adapter (18) on reservoir (1).

(8) Remove lifting device from reservoir (1).



e. Follow-On Maintenance

(1) Install hydraulic filter and housing (para 17-9).

(2) Fill reservoir with oil (LO 9-2320-360-12).

17-11. WINCH HYDRAULIC HOSES REPLACEMENT

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Winch reservoir drained (LO 9-2320-360-12).
Winch control console panels removed (para 17-8).

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Locknut (Item 69, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, adjustable, automobile (Item 61.1, Appendix F)

NOTE
Tag and mark hoses before removal.

a. Auxiliary Winch Hose Removal

NOTE
Both auxiliary winch hoses are removed in a similar manner.

(1) Remove hose (1) from adapter (2) on auxiliary winch counterbalance valve (3).

(2) Remove hose (1) from adapter (4) on control valve (5).

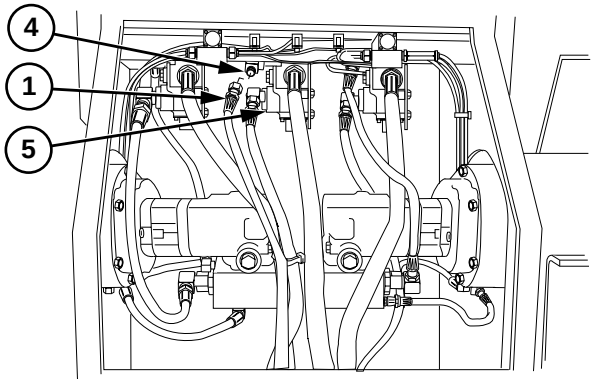
NOTE
Locations of plastic cable ties should be marked before removal.

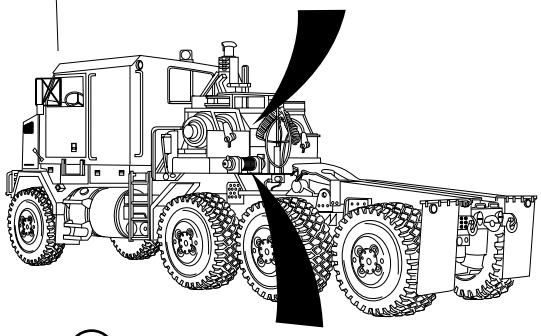
(3) Remove plastic cable ties (6) from hose (1), hose (7), and hose (8).

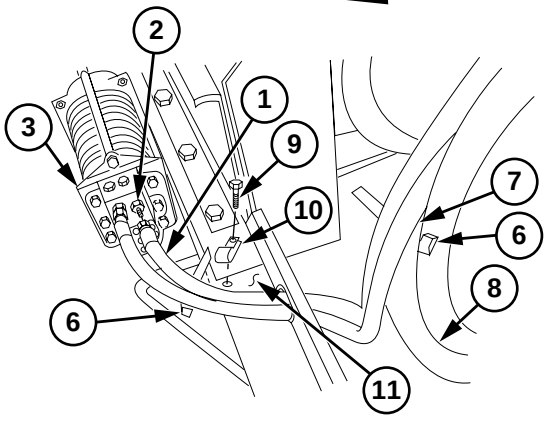
NOTE
Only one hose is held by clip.

(4) Remove screw (9) and cushion clip (10) from winch platform (11) and hose (1).

(5) Remove hose (1) through cutout in winch platform (11).







17-11. WINCH HYDRAULIC HOSES REPLACEMENT (CONT)

b. Auxiliary Winch Hose Installation

NOTE

Both auxiliary winch hoses are installed in a similar manner.

(1) Position hose (1) through cutout in winch platform (2).

NOTE

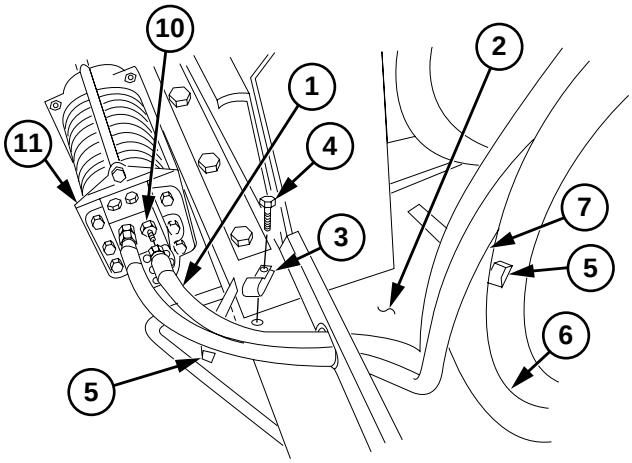
Only one hose is held by a clip.

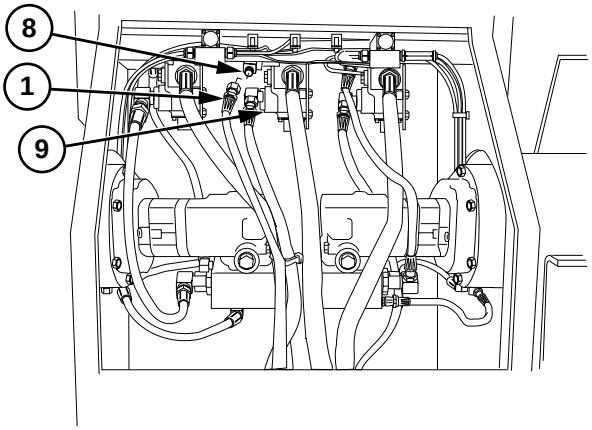
(2) Install cushion clip (3) on hose (1) and winch platform (2) with screw (4).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(3) Install plastic cable ties (5) on hose (1), hose (6), and hose (7).





(4) Install hose (1) on adapter (8) on control valve (9).

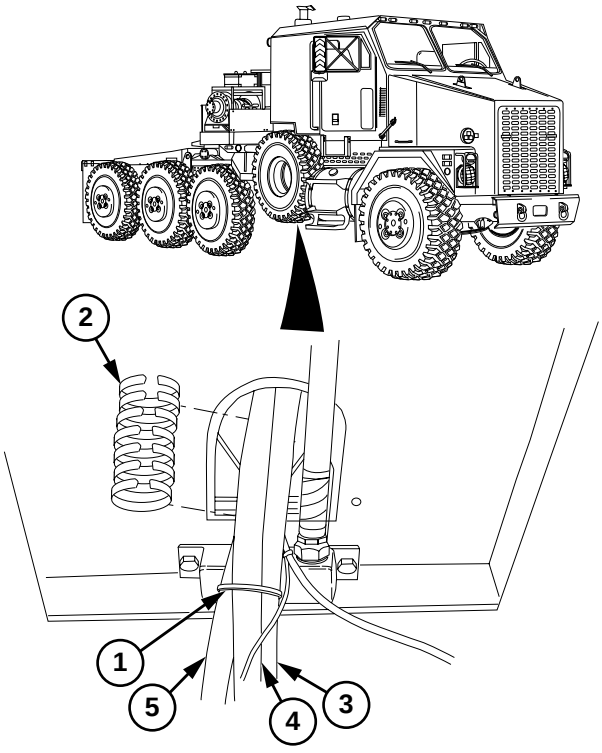
(5) Install hose (1) on adapter (10) on auxiliary winch counterbalance valve (11).

c. Pump to Control Valve Hose Removal

NOTE

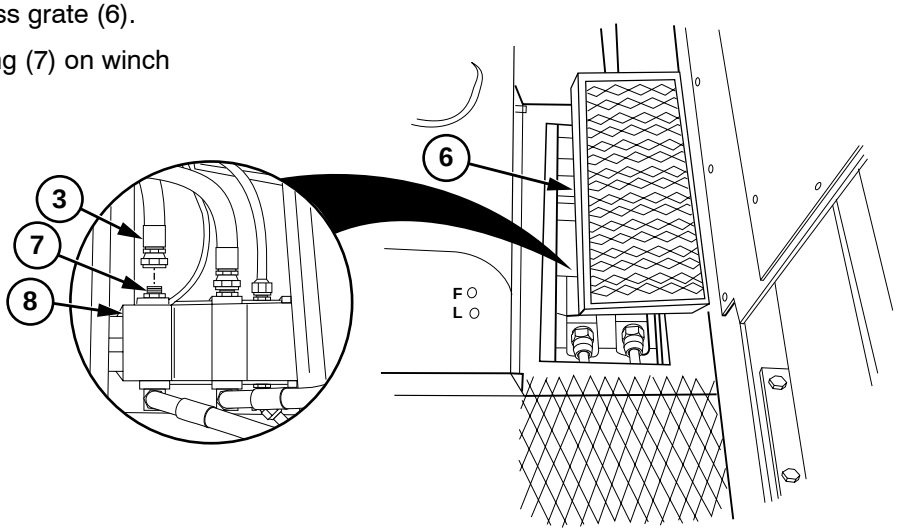
- Winch pump hoses are removed the same way.
- Location of plastic cable ties should be marked before removal.

(1) Remove plastic cable ties (1) and spiral wrap (2) from hose (3), hose (4), and hose (5). Discard spiral wrap.



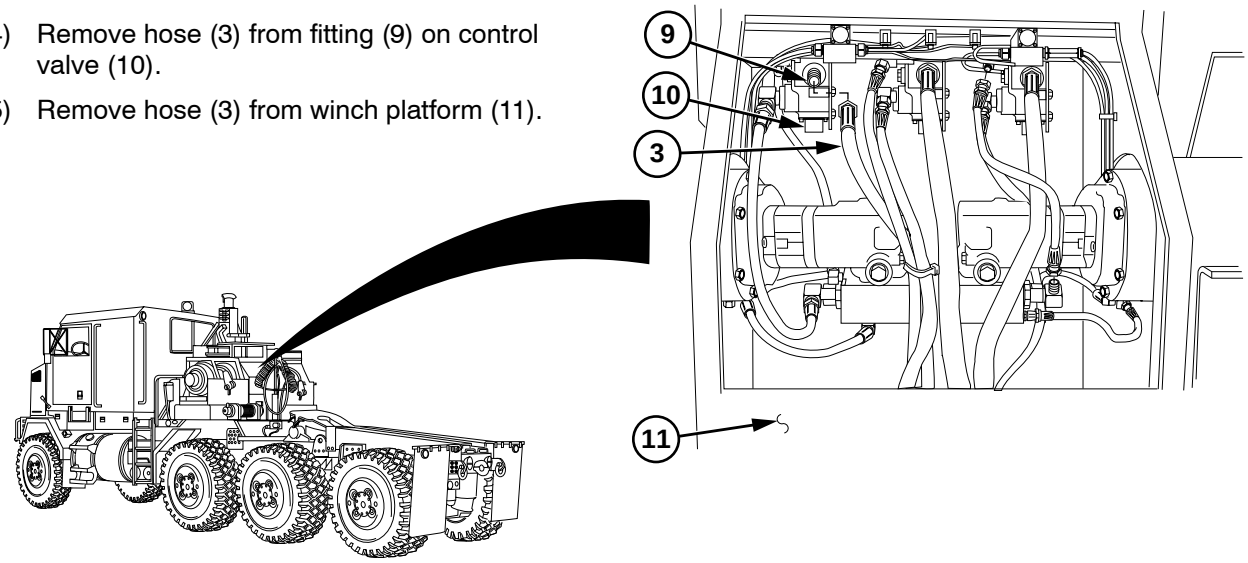
(2) Remove winch pump access grate (6).

(3) Remove hose (3) from fitting (7) on winch pump (8).



(4) Remove hose (3) from fitting (9) on control valve (10).

(5) Remove hose (3) from winch platform (11).

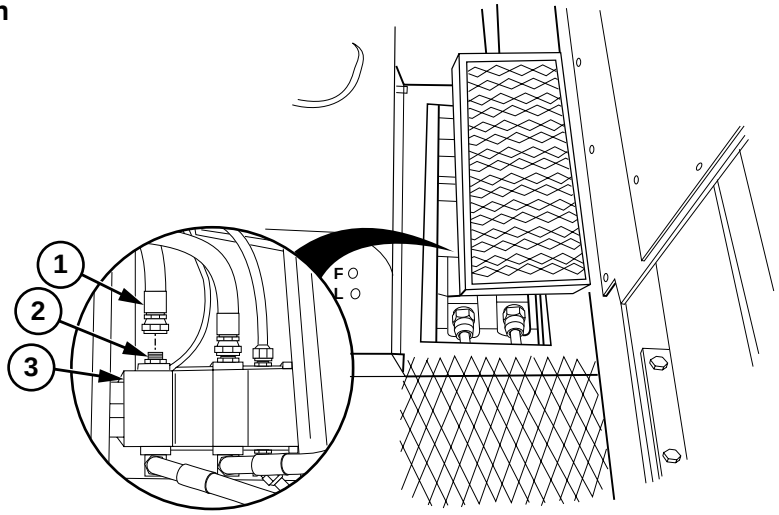


d. Pump to Control Valve Hose Installation

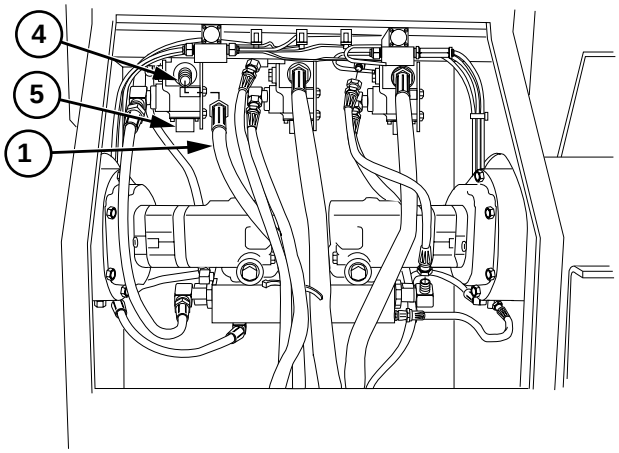
NOTE

Winch pump hoses are installed the same way.

(1) Install hose (1) on fitting (2) on winch pump (3).



17-11. WINCH HYDRAULIC HOSES REPLACEMENT (CONT)



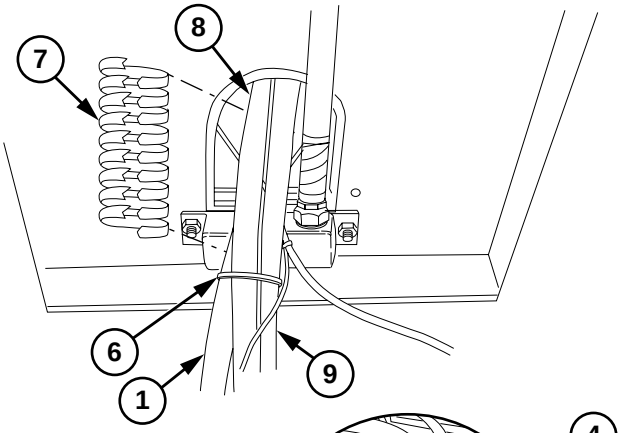
(2) Install hose (1) on fitting (4) on control valve (5).

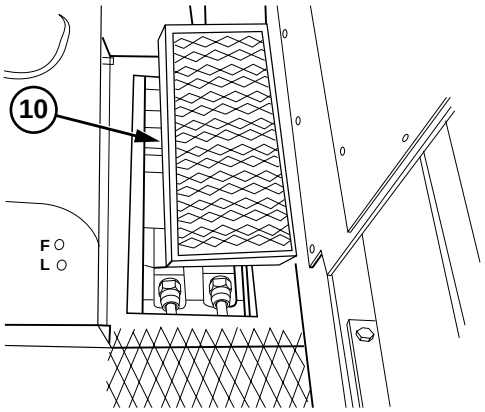
NOTE

Plastic cable ties should be positioned in locations marked during removal.

(3) Install plastic cable ties (6) and spiral wrap (7) on hose (1), hose (8), and hose (9).

(4) Install winch pump access grate (10).



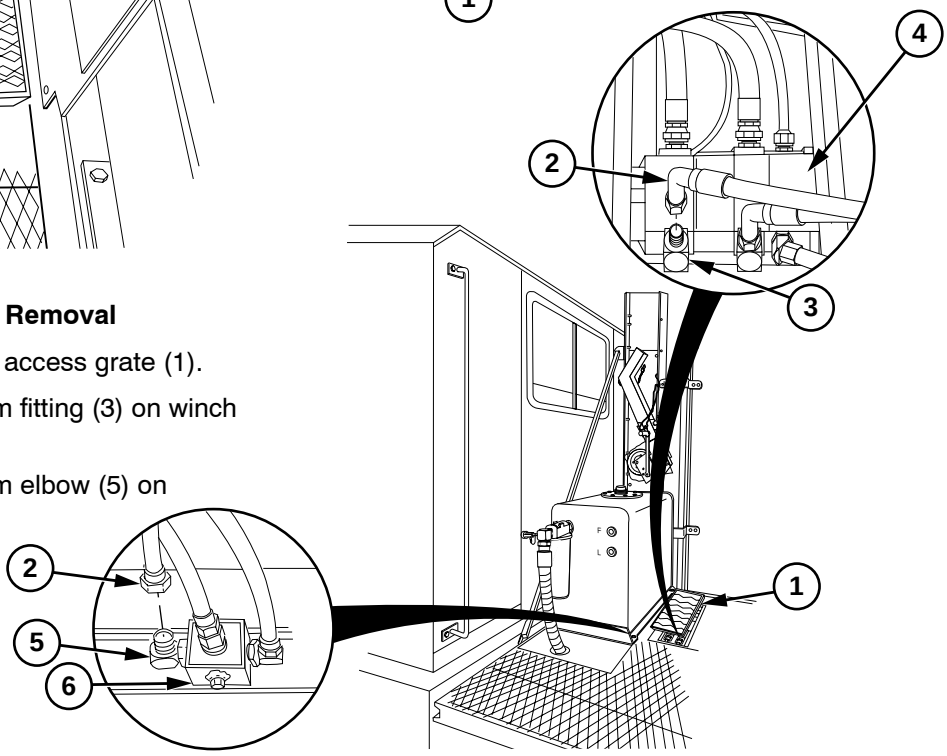


e. Reservoir to Pump Hose Removal

(1) Remove winch pump access grate (1).

(2) Remove hose (2) from fitting (3) on winch pump (4).

(3) Remove hose (2) from elbow (5) on reservoir (6).

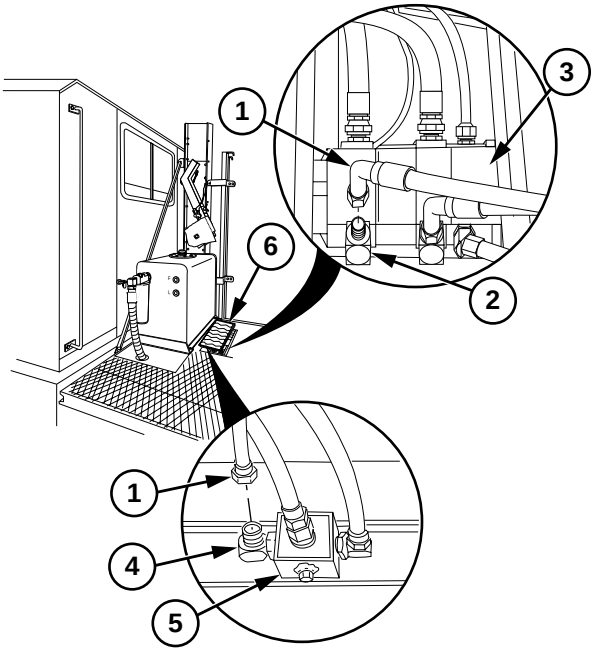


f. Reservoir to Pump Hose Installation

(1) Install hose (1) on fitting (2) on winch pump (3).

(2) Install hose (1) on elbow (4) on reservoir (5).

(3) Install winch pump access grate (6).



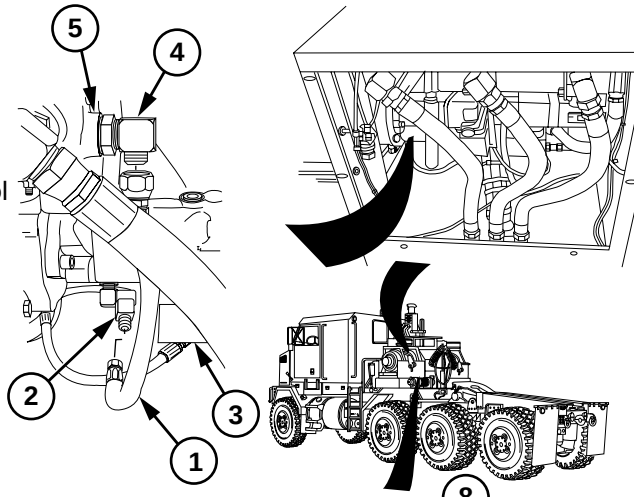
g. Control Valve to Counterbalance Valve Hose Removal

NOTE

Hoses on both main winch counterbalance valves are removed the same way.

(1) Remove hose (1) from elbow (2) on counterbalance valve (3).

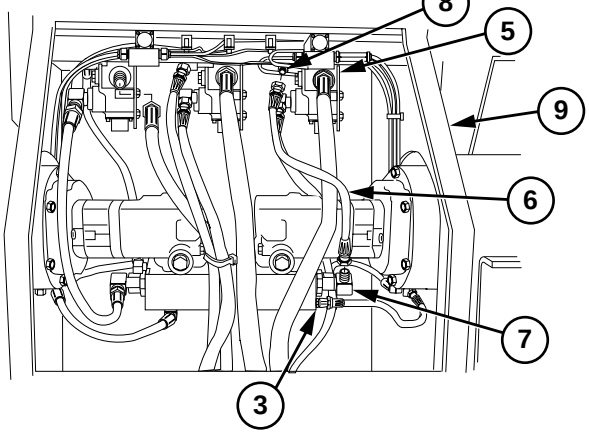
(2) Remove hose (1) from elbow (4) on control valve (5).



(3) Remove hose (6) from elbow (7) on counterbalance valve (3).

(4) Remove hose (6) from elbow (8) on control valve (5).

(5) Remove hose (6) from winch console (9).



17-11. WINCH HYDRAULIC HOSES REPLACEMENT (CONT)

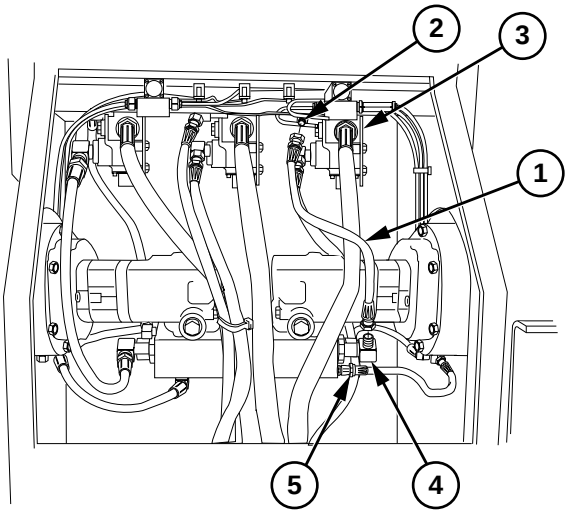
h. Control Valve to Counterbalance Valve Hose Installation

NOTE

Hoses on both main winch counterbalance valves are installed the same way.

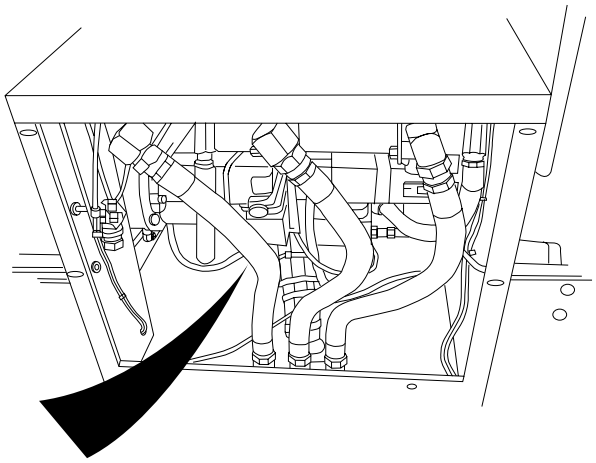
(1) Install hose (1) on elbow (2) on control valve (3).

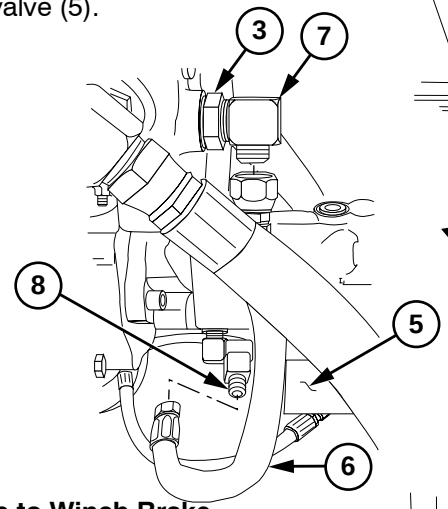
(2) Install hose (1) on elbow (4) on counterbalance valve (5).



(3) Install hose (6) on elbow (7) control valve (3).

(4) Install hose (6) on elbow (8) on counterbalance valve (5).

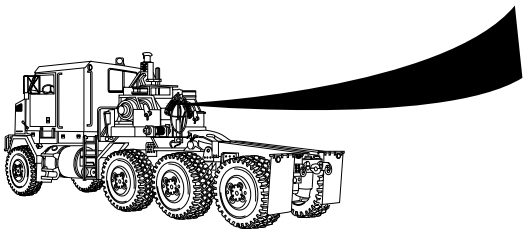


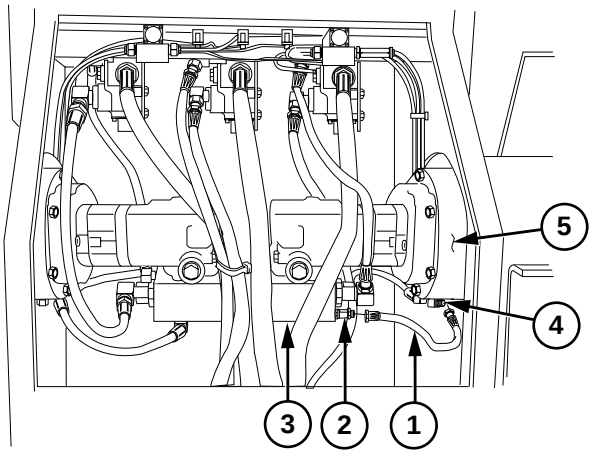


i. Counterbalance Valve to Winch Brake Hose Removal

(1) Remove hose (1) from fitting (2) on counterbalance valve (3).

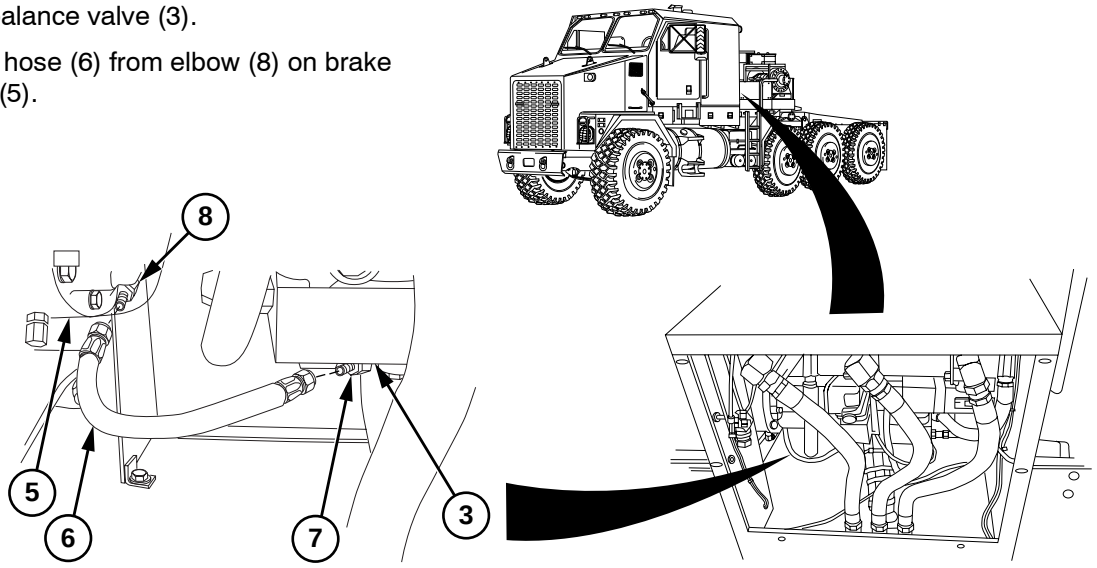
(2) Remove hose (1) from elbow (4) on brake housing (5).





(3) Remove hose (6) from elbow (7) on counterbalance valve (3).

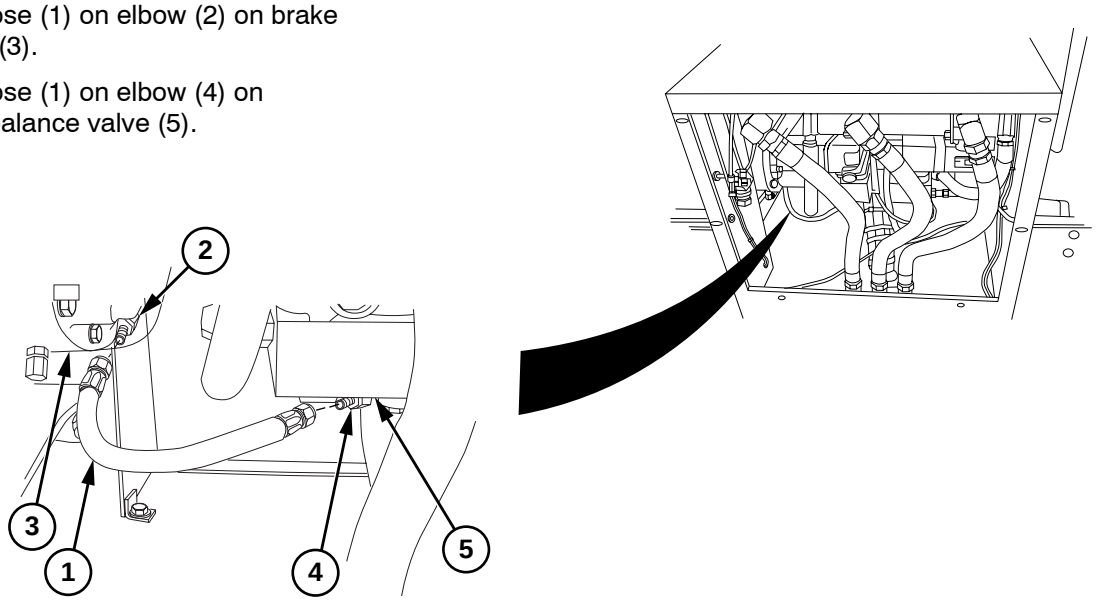
(4) Remove hose (6) from elbow (8) on brake housing (5).



j. Counterbalance Valve to Winch Brake Hose Installation

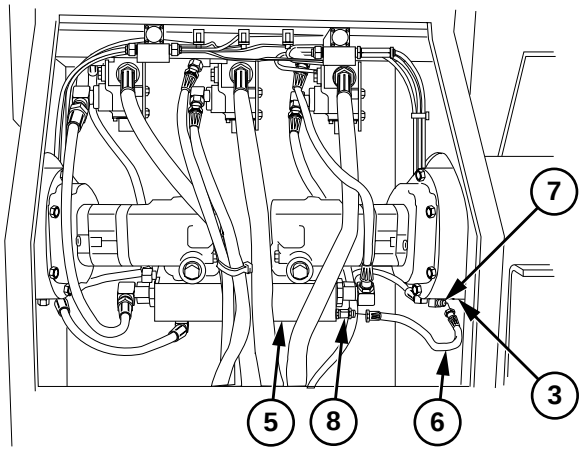
(1) Install hose (1) on elbow (2) on brake housing (3).

(2) Install hose (1) on elbow (4) on counterbalance valve (5).



(3) Install hose (6) on elbow (7) on brake housing (3).

(4) Install hose (6) on fitting (8) on counterbalance valve (5).



17-11. WINCH HYDRAULIC HOSES REPLACEMENT (CONT)

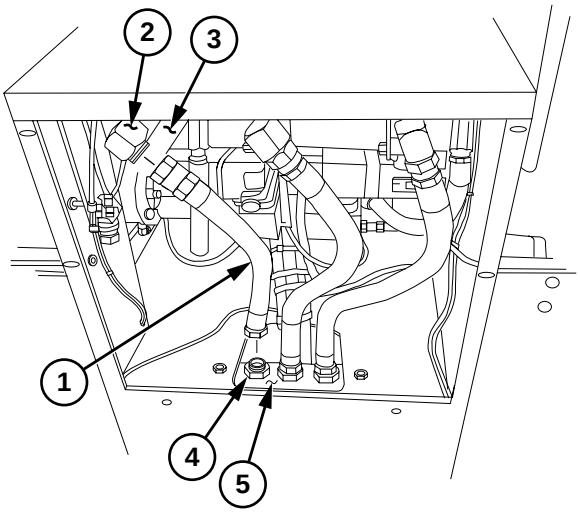
k. Control Valve to Manifold Hose Removal

NOTE

Three hoses from control valves to return manifold are removed the same way.

(1) Remove hose (1) from elbow (2) on control valve (3).

(2) Remove hose (1) from fitting (4) on return manifold (5).



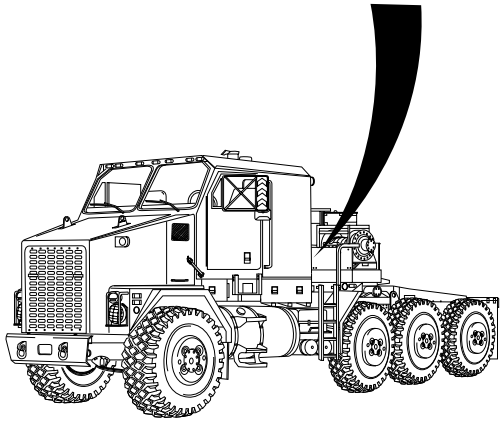
l. Control Valve to Manifold Hose Installation

NOTE

Three hoses from control valves to return manifold are installed the same way.

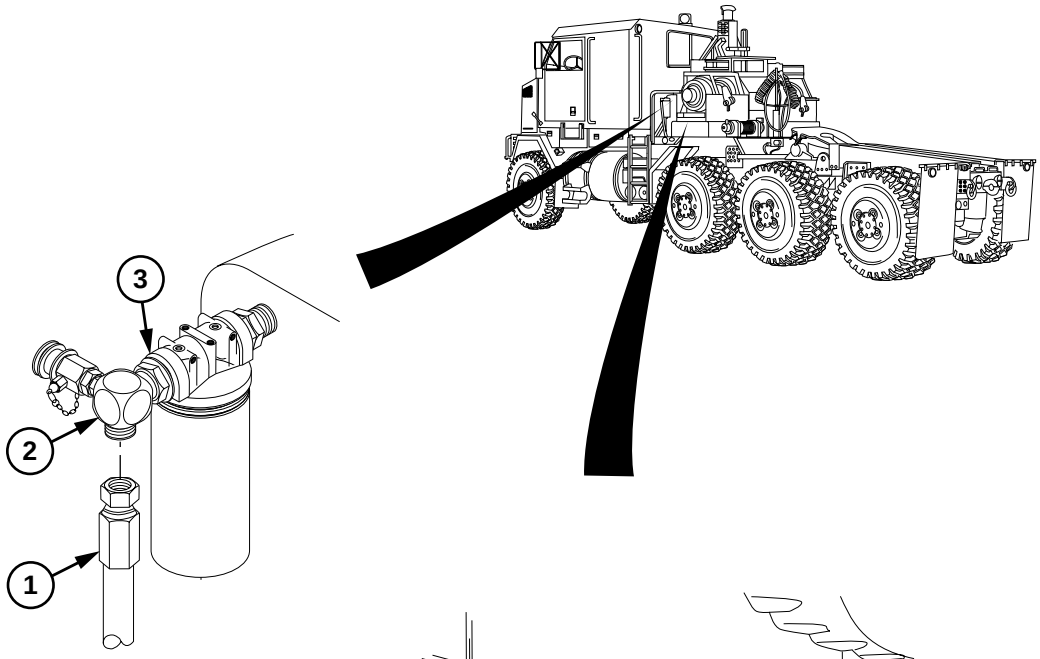
(1) Install hose (1) on fitting (4) on return manifold (5).

(2) Install hose (1) on elbow (2) on control valve (3).

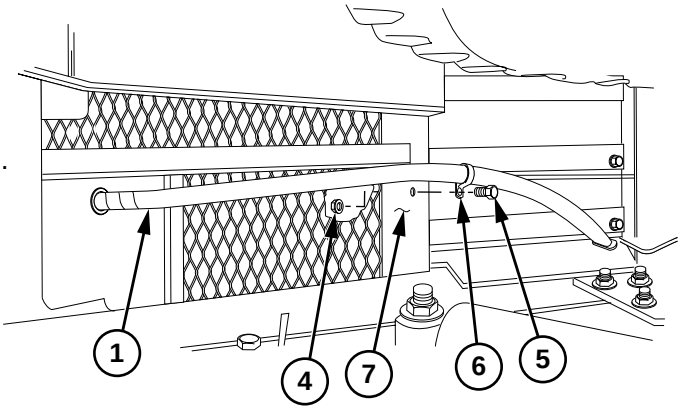


m. Manifold to Reservoir Hose Removal

(1) Remove hose (1) from elbow (2) on filter head (3).



(2) Remove locknut (4), screw (5), and cushion clip (6) from winch platform (7) and hose (1). Discard locknut.

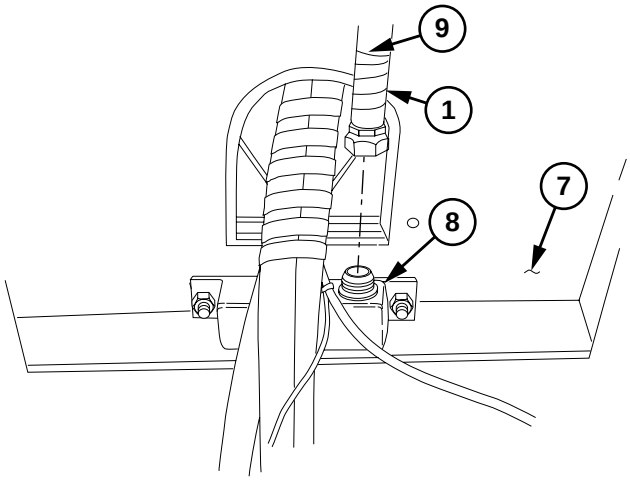


NOTE

Hose must be routed through cutouts in winch platform to remove.

(3) Disconnect hose (1) from return manifold (8) and remove from winch platform (7).

(4) Remove spiral wrap (9) from hose (1).



17-11. WINCH HYDRAULIC HOSES REPLACEMENT (CONT)

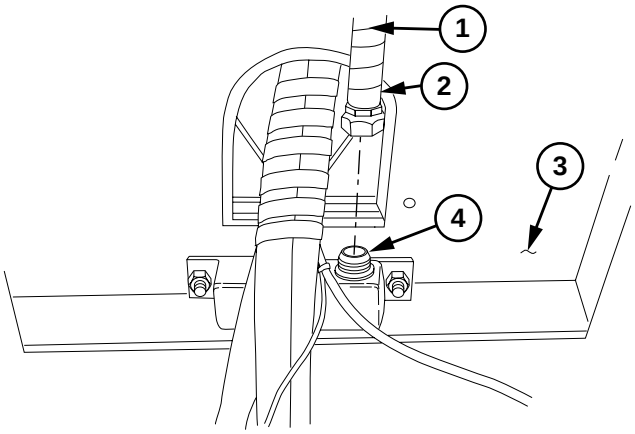
n. Manifold to Reservoir Hose Installation

(1) Install spiral wrap (1) on hose (2).

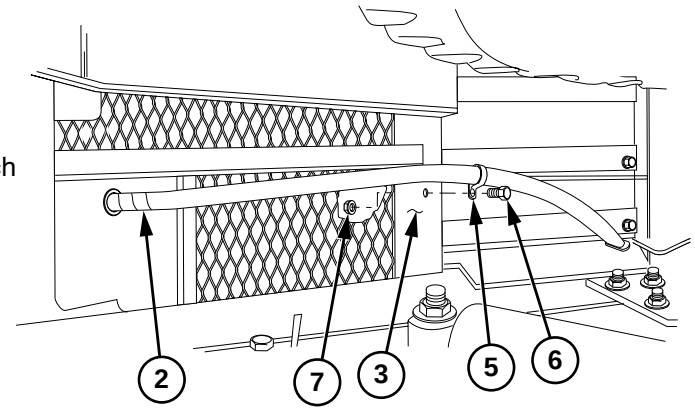
NOTE

Hose must be routed through cutouts in winch platform.

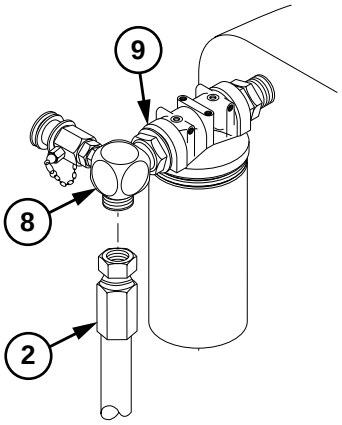
(2) Position hose (2) on winch platform (3) and install on return manifold (4).



(3) Install cushion clip (5) on hose (2) and winch platform (3) with screw (6) and new locknut (7).



(4) Install hose (2) on elbow (8) on filter head (9).



o. Follow-On Maintenance

(1) Install winch control console panels (para 17-8).

(2) Fill winch reservoir with oil (LO 9-2320-360-12).

17-12. WINCH HYDRAULIC RETURN MANIFOLD REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Winch reservoir drained (LO 9-2320-360-12).
Winch control console panels removed (para 17-8).

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Locknuts (2) (Item 76, Appendix G)
Packings, Preformed (3) (Item 140, Appendix G)

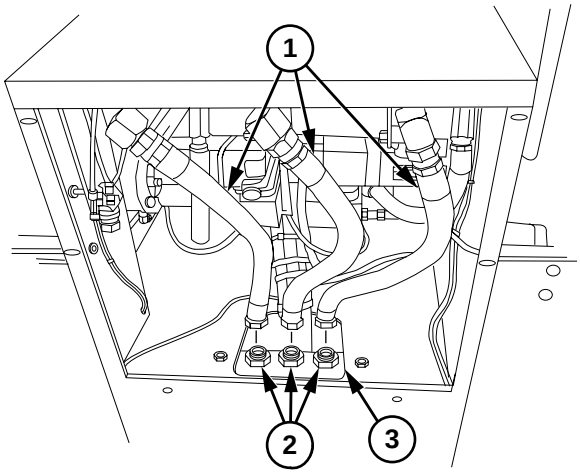
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

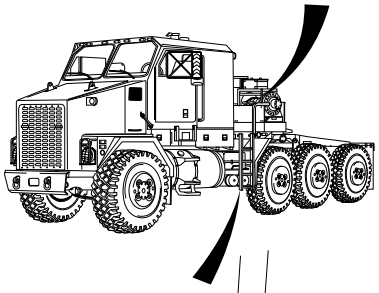
a. Removal

NOTE

- Tag and mark hoses before removing.
- Three hoses from control valves to return manifold are removed the same way.

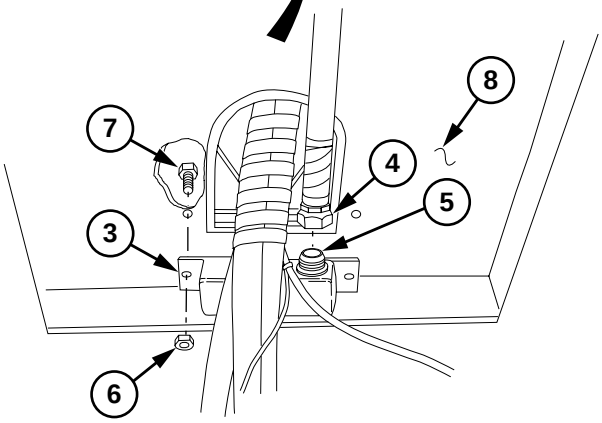
(1) Remove three control valve hoses (1) from fittings (2) on return manifold (3).





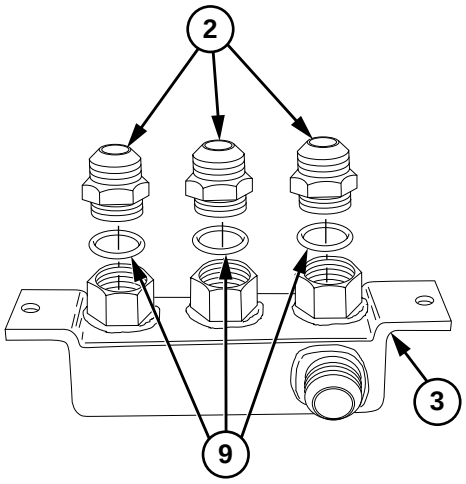
(2) Remove return hose (4) from fitting (5) on manifold (3).

(3) Remove two locknuts (6), screws (7), and return manifold (3) from winch platform (8). Discard locknuts.



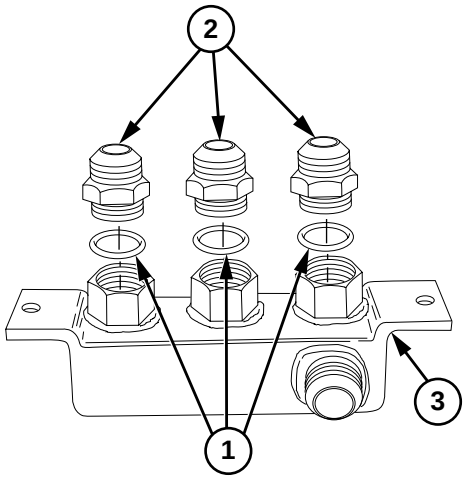
17-12. WINCH HYDRAULIC RETURN MANIFOLD REPLACEMENT (CONT)

(4) Remove three fittings (2) and preformed packings (9) from return manifold (3). Discard preformed packings.



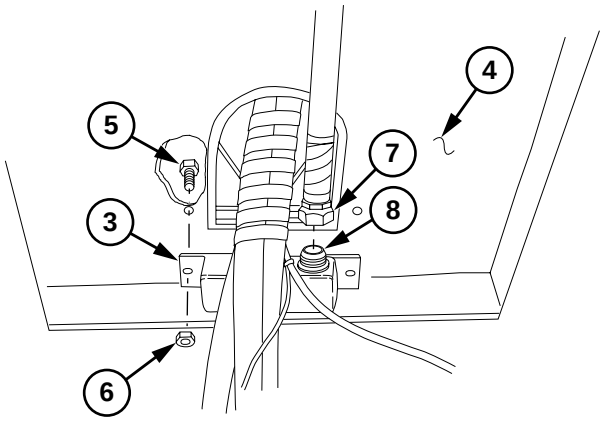
b. Installation

(1) Install three new preformed packings (1) and fittings (2) on return manifold (3).



(2) Install return manifold (3) on winch platform (4) with two screws (5) and new locknuts (6).

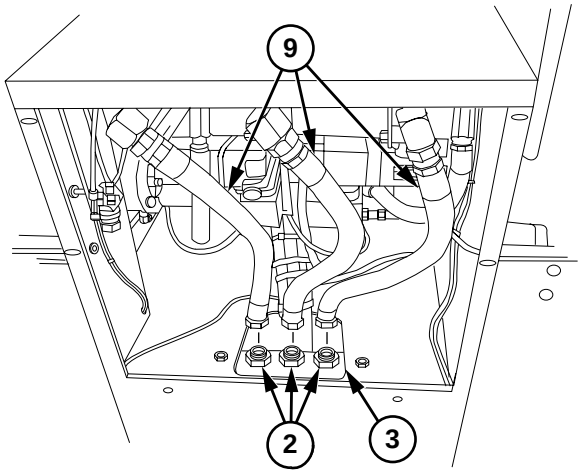
(3) Install return hose (7) on fitting (8) on manifold (3).



NOTE

Three hoses from control valves to return manifold are installed the same way.

(4) Install three control valve hoses (9) on fittings (2) on return manifold (3).



c. Follow-On Maintenance

(1) Install winch control console panels (para 17-8).

(2) Fill winch reservoir with clean oil (LO 9-2320-360-12).

17-13. AUXILIARY WINCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Auxiliary winch cable removed (para 17-14).
Rear control console panel removed (para 17-8).

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Lockwashers (4) (Item 102, Appendix G)
Packings, Preformed (2) (Item 139, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)

Personnel Required
Two

a. Removal

(1) Place drain pan under auxiliary winch (1).

NOTE
Tag and mark hoses before removal.

(2) Remove two hoses (2) from auxiliary winch (1).

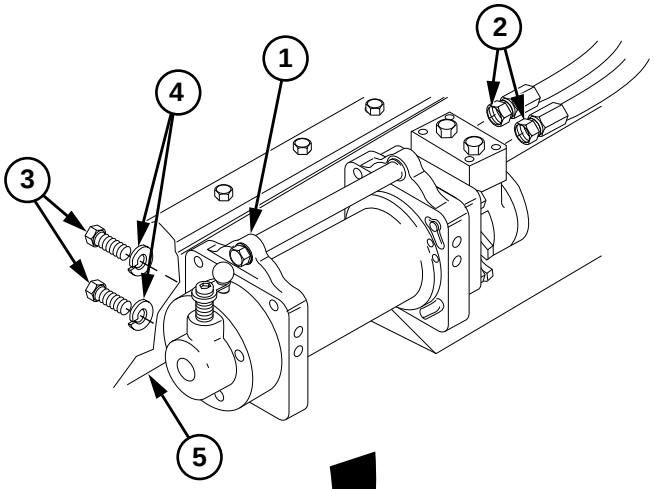
WARNING
Auxiliary winch weighs approximately 130 lb (59 kg). Use lifting device to remove auxiliary winch. Failure to comply may result in injury to personnel.

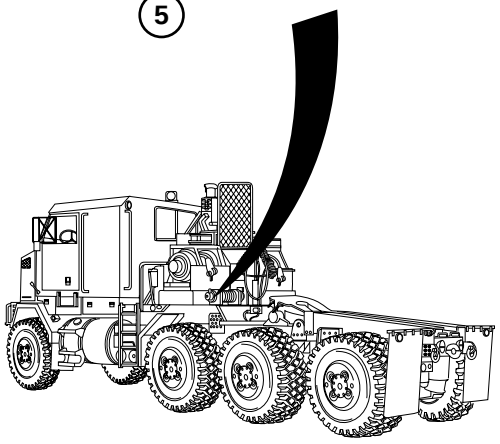
(3) Attach lifting device to auxiliary winch (1).

(4) Remove four screws (3) and lockwashers (4) from underside of frame assembly (5). Discard lockwashers.

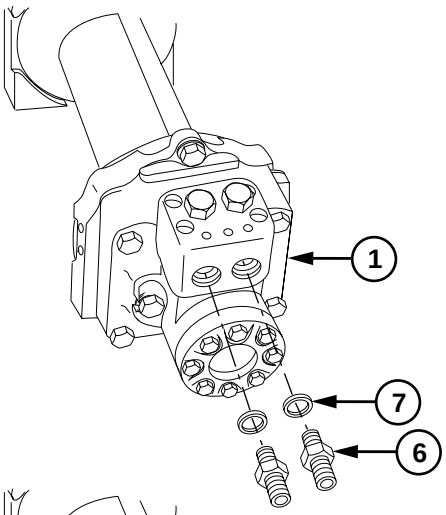
(5) Remove auxiliary winch (1) from frame assembly (5) while assistant operates lifting device.

(6) Remove lifting device from auxiliary winch (1).



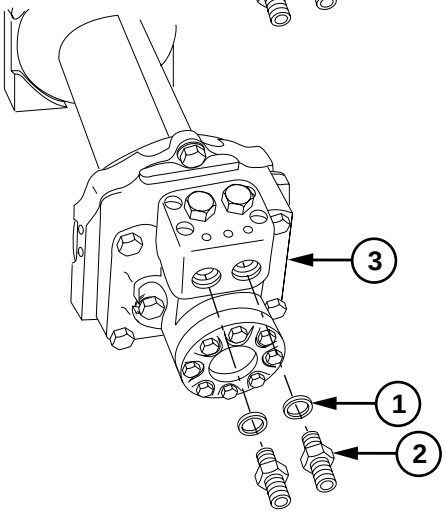


(7) Remove two adapters (6) and preformed packings (7) from auxiliary winch (1). Discard preformed packings.



b. Installation

(1) Install two new preformed packings (1) and adapters (2) on auxiliary winch (3).



WARNING

Auxiliary winch weighs approximately 130 lb (59 kg). Use lifting device to install auxiliary winch. Failure to comply may result in injury to personnel.

(2) Install lifting device on auxiliary winch (3).

(3) Install auxiliary winch (3) on frame assembly (4) while assistant operates lifting device.

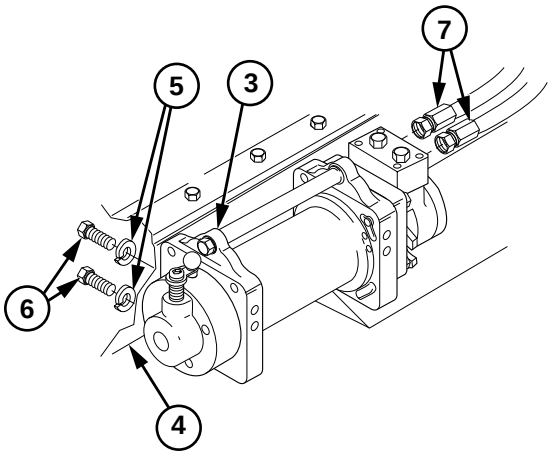
(4) Install four new lockwashers (5) and screws (6) on underside of frame assembly (4).

NOTE

Hoses must be installed as marked during removal.

(5) Install two hoses (7) on auxiliary winch (3).

(6) Remove lifting device from auxiliary winch (3).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Check for leaks.

(3) Shut off engine (TM 9-2320-360-10).

(4) Install rear control console panel (para 17-8).

(5) Install auxiliary winch cable (para 17-14).

17-14. AUXILIARY WINCH CABLE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Auxiliary winch cable wound out (TM 9-2320-360-10).

Materials/Parts
Grease, Automotive and Artillery (GAA) (Item 17, Appendix C)

Personnel Required
Two

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

WARNING

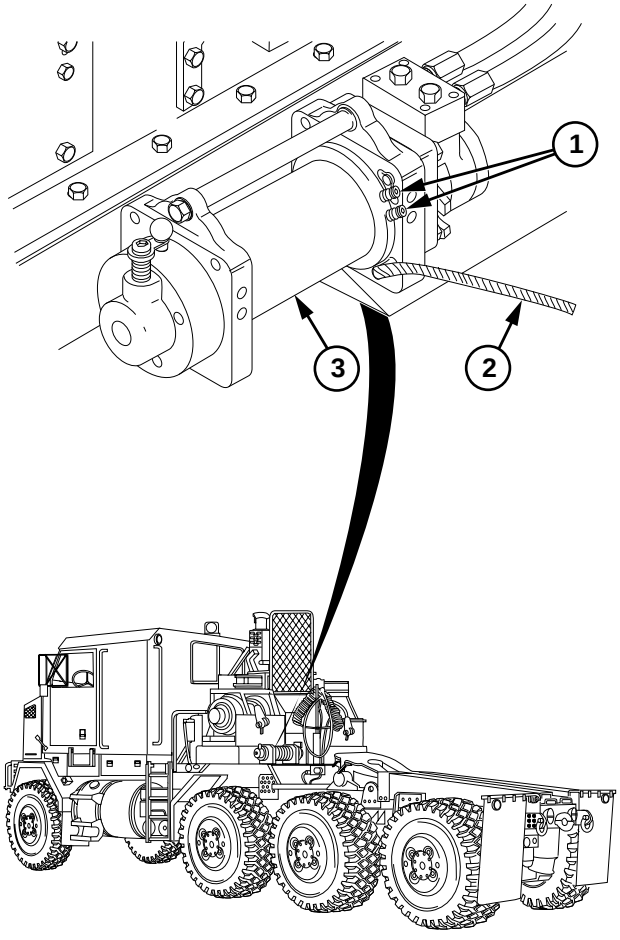
Always wear heavy duty gloves when handling winch cable. Never let cable run through hands. Frayed cable can cut hands severely.

(1) Loosen two screws (1) and remove end of cable (2) from drum (3).

WARNING

Use care when removing cable from drum. End of cable can spring up causing injury to personnel.

(2) Remove cable (2) from drum (3).



b. Installation

(1) Coat cable (2) with grease.
(2) Install end of cable (2) in drum (3) with two screws (1).

NOTE

Coating the set screw holes with grease will prevent corrosion and make future removal of screws easier.

(2.1) Coat screw holes with grease.
(3) Start engine (TM 9-2320-360-10).
(4) Position winch speed control to low position and wind auxiliary winch cable (TM 9-2320-360-10).

c. Follow-On Maintenance

(1) Shut off engine (TM 9-2320-360-10).
(2) Remove wheel chocks.

17-15. PTO PROPSHAFTS/SUPPORT REPAIR

This task covers:

Removal
Disassembly
Cleaning/Inspection
Assembly
Installation
Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Stowage box removed (para 16-14).
Spare tire removed (support only) (TM 9-2320-360-10-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Compressor Unit, Air (Item 3, Appendix F)
Goggles, Industrial (Item 14, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Adhesive-Sealant (Item 6, Appendix C)
Compound, Antiseize, High Temperature (Item 14, Appendix C)
Grease, Automotive and Artillery (GAA) (Item 17, Appendix C)
Cleaning Compound, Solvent (Item 31, Appendix C)
Locknuts (10) (Item 58, Appendix G)
Locknuts (4) (Item 72, Appendix G)
Lockwasher (Item 124, Appendix G)
Rings, Retaining (10) (Item 158, Appendix G)
U-Bolt Assembly (2) (Item 178, Appendix G)

Personnel Required
Two

CAUTION

Propshaft parts must not be rotated from their original position during reassembly. An indexing line should be drawn down entire length of all assemblies prior to removal. Failure to comply may result in driveline vibration and damage to equipment.

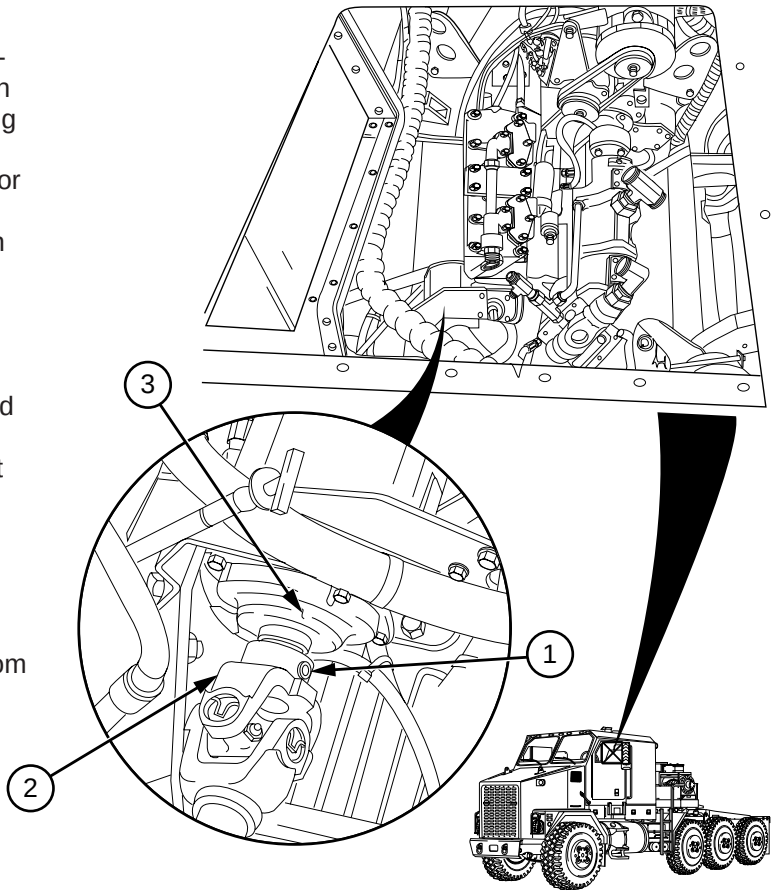
a. Removal

NOTE

Steps (1) and (2) are performed through doghouse. Steps (3) thru (6) are performed from left side of HET Tractor. Steps (7) and (8) are performed from below HET Tractor.

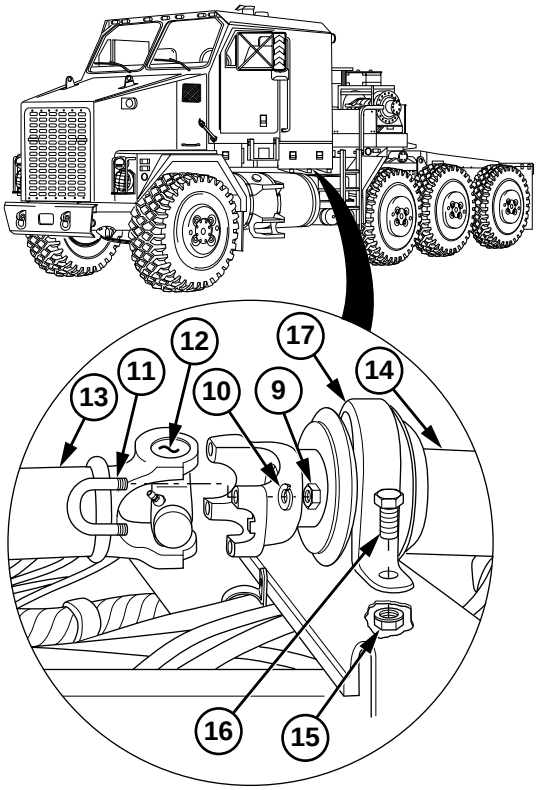
(1) Loosen screw (1) on yoke (2).

(2) Slide back and remove yoke (2) from PTO (3).



17-15. PTO PROPSHAFTS/SUPPORT REPAIR (CONT)

(3) Deleted.



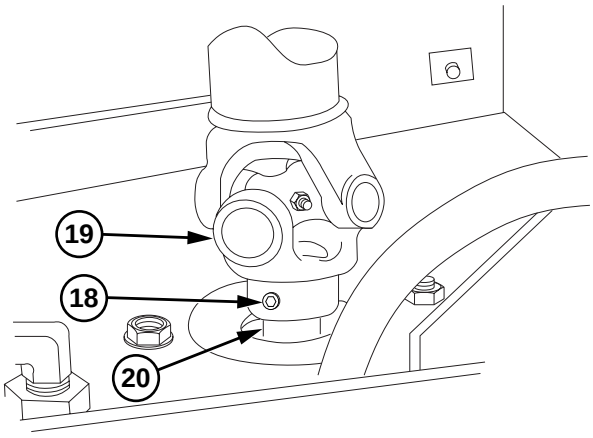
CAUTION

Hold U-joint bearing caps secure. Bearing caps may fall off and needle bearings may be damaged or lost.

(4) Remove four nuts (9), lockwashers (10), and two U-bolts (11) from universal joint (12). Discard lockwashers, nuts, and U-bolts.

(5) Remove front shaft (13) from rear shaft (14).

(6) Remove two locknuts (15) and screws (16) from center bearing (17). Discard locknuts.



(7) Loosen screw (18) on yoke (19).

WARNING

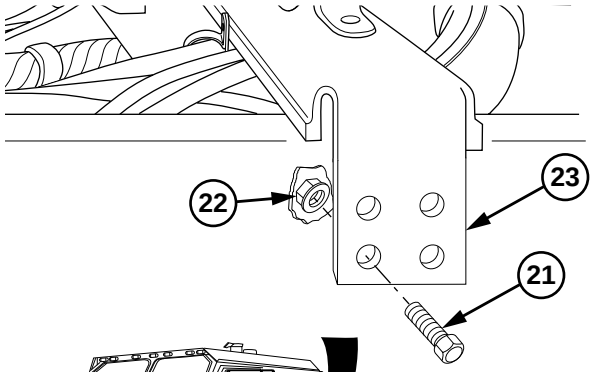
Support rear shaft while removing from winch pump to prevent injury to personnel.

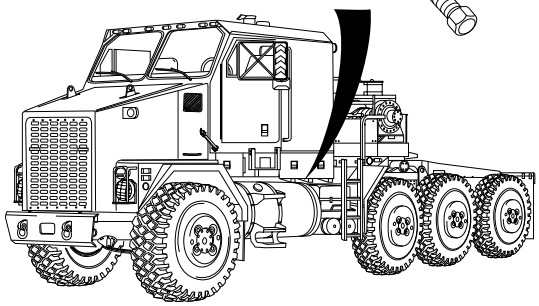
(8) Slide forward and remove yoke (19) from winch pump (20) with aid of assistant.

NOTE

Do step (9) only if replacing support.

(9) Remove four screws (21) and locknuts (22) from both sides of support (23) with aid of assistant. Discard locknuts.





b. Front Shaft Disassembly

WARNING

Wear eye protection and use care when removing retaining rings. Retaining rings are under spring tension and can act as projectiles when released causing severe eye injury.

(1) Remove two retaining rings (1) from slip yoke (2). Discard retaining rings.

(2) Strike cap (3) to press cap (4) out of slip yoke (2).

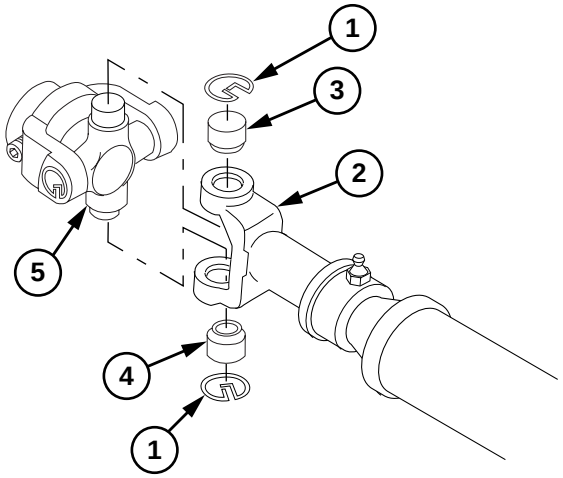
CAUTION

Use care when removing bearing caps from universal joint and yokes. Needle bearings may fall out and be damaged or lost.

(3) Remove cap (4) from slip yoke (2).

(4) Remove universal joint (5) from slip yoke (2).

(5) Remove cap (3) from slip yoke (2).



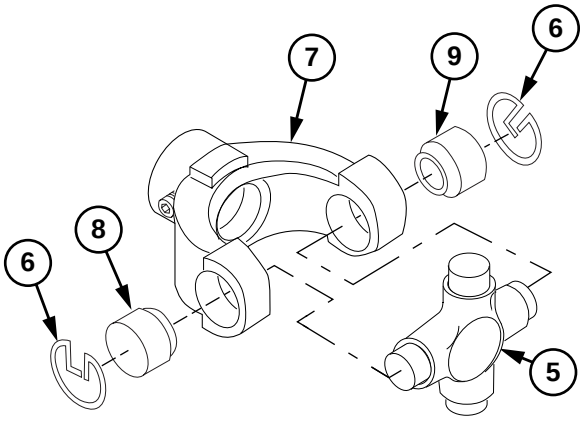
(6) Remove two retaining rings (6) from yoke (7). Discard retaining rings.

(7) Strike cap (8) to press cap (9) out of yoke (7).

(8) Remove cap (9) from yoke (7).

(9) Remove universal joint (5) from yoke (7).

(10) Remove cap (8) from yoke (7).

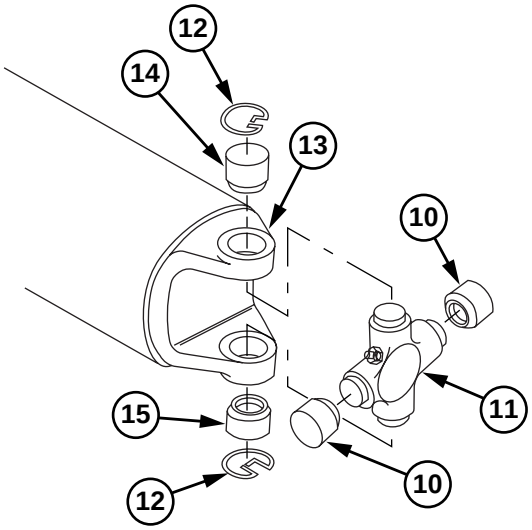


17-15. PTO PROPSHAFTS/SUPPORT REPAIR (CONT)

(11) Remove two caps (10) from universal joint (11).

WARNING

Wear eye protection and use care when removing retaining rings. Retaining rings are under spring tension and can act as projectiles when released causing severe eye injury.



(12) Remove two retaining rings (12) from yoke (13). Discard retaining rings.

(13) Strike cap (14) to press cap (15) out of yoke (13).

(14) Remove cap (15) from yoke (13).

(15) Remove universal joint (11) from yoke (13).

(16) Remove cap (14) from yoke (13).

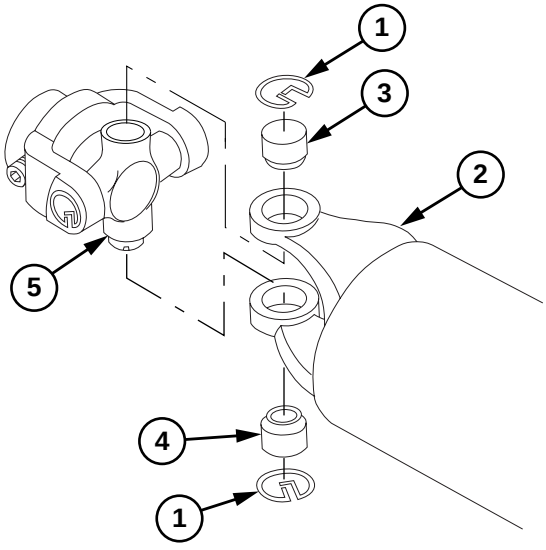
c. Rear Shaft Disassembly

(1) Remove two retaining rings (1) from slip yoke (2). Discard retaining rings.

(2) Strike cap (3) to press cap (4) out of slip yoke (2).

CAUTION

Use care when removing bearing caps from universal joint and yokes. Needle bearings may fall out and be damaged or lost.



(3) Remove cap (4) from yoke (2).

(4) Remove universal joint (5) from yoke (2).

(5) Remove cap (3) from yoke (2).

WARNING

Wear eye protection and use care when removing retaining rings. Retaining rings are under spring tension and can act as projectiles when released causing severe eye injury.

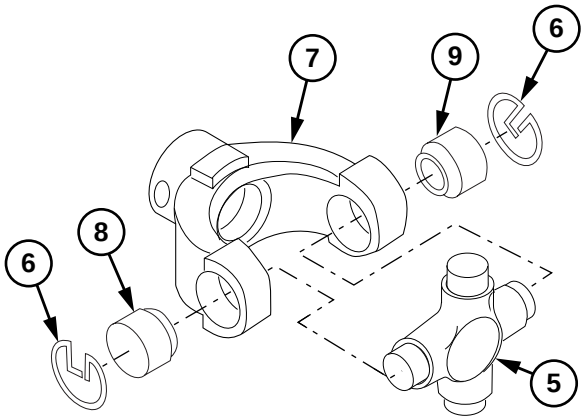
(6) Remove two retaining rings (6) from yoke (7). Discard retaining rings.

(7) Strike cap (8) to press cap (9) out of yoke (7).

(8) Remove cap (9) from yoke (7).

(9) Remove universal joint (5) from yoke (7).

(10) Remove cap (8) from yoke (7).

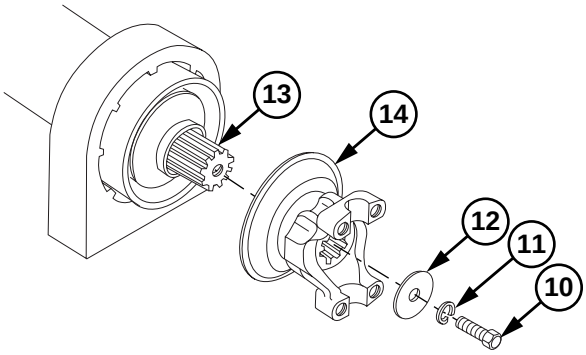


(11) Remove screw (10), lockwasher (11), and washer (12) from rear shaft (13). Discard lockwasher.

NOTE

Matchmark end of rear shaft and inside of yoke.

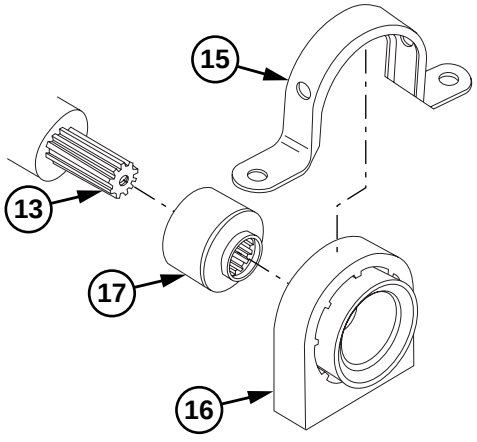
(12) Remove yoke (14) from rear shaft (13).



(13) Remove mounting strap (15) from cushion (16).

(14) Remove cushion (16) from center bearing (17).

(15) Remove center bearing (17) from rear shaft (13).



17-15. PTO PROPSHAFTS/SUPPORT REPAIR (CONT)

d. Cleaning/Inspection

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 sources of ignition. Failure to follow this warning may result in injury or death to personnel.

- **The flashpoint for type II solvent cleaning compound is 141-198°F (61-92C) and type III is 200-241°F (93-116C).**
- **Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.**
- **Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.**
- **Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.**
- **Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.**

(1) Clean all metal parts with solvent cleaning compound.

WARNING

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

(2) Dry parts with compressed air.

NOTE

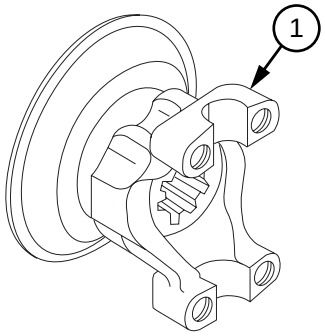
Number of balance weights installed on shafts can vary.

(3) Inspect shafts for damage, bent tubing, or missing balance weights.

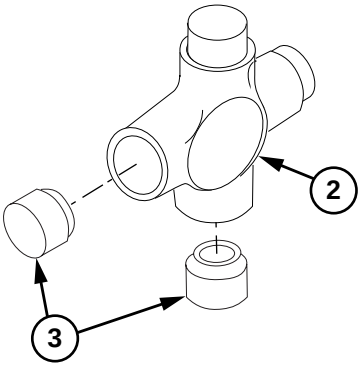
(4) Remove burrs from surfaces where prying occurred.

(5) Remove foreign material (paint, rust, etc.) build up on propeller shafts and components.

(6) Inspect yoke (1) for broken, damaged, or missing teeth.



(7) Inspect universal joints (2) and caps (3) for wear.



e. Front Shaft Assembly

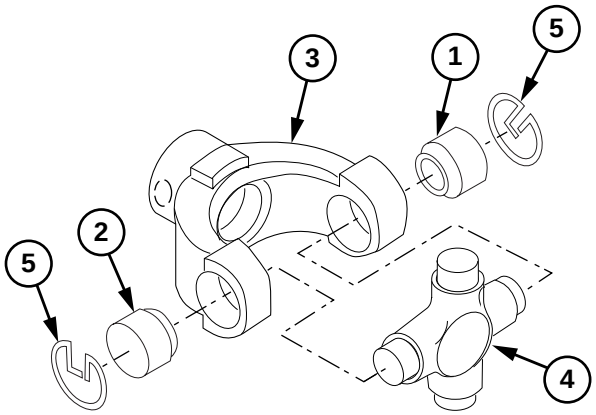
CAUTION

Propshaft parts must be positioned in locations marked during removal. Failure to comply may result in driveline vibration and damage to equipment.

(1) Coat inside of caps (1 and 2) with grease.

CAUTION

Bearing caps must be installed so that universal joint pivots freely in yoke. Failure to comply will result in premature universal joint failure.



(2) Install cap (1) in yoke (3).

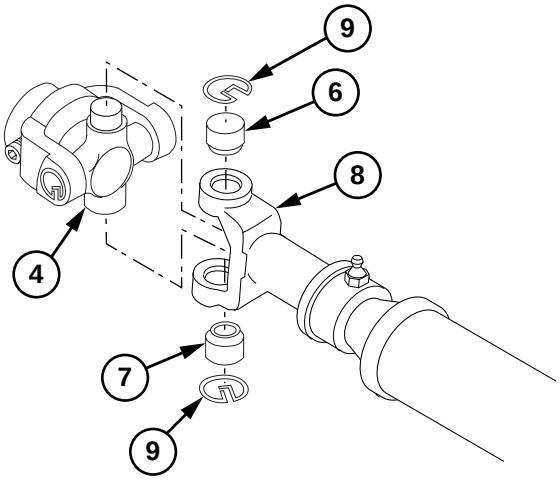
(3) Install universal joint (4) in yoke (3).

(4) Install cap (2) in yoke (3).

WARNING

Wear eye protection and use care when installing retaining rings. Retaining rings are under spring tension and can act as projectiles when released causing severe eye injury.

(5) Install two retaining rings (5) in yoke (3).



(6) Coat inside of caps (6 and 7) with grease.

(7) Install cap (6) in yoke (8).

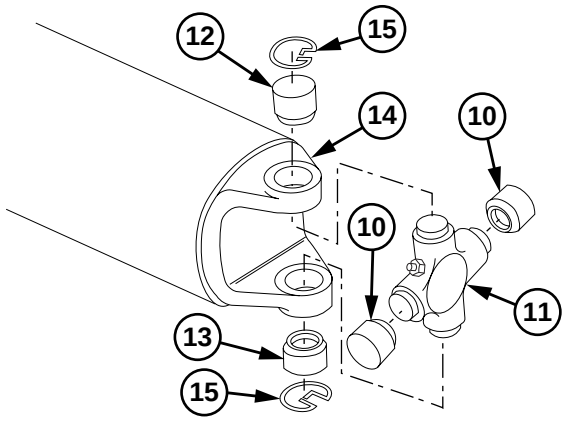
(8) Install universal joint (4) in yoke (8).

(9) Install cap (7) in yoke (8).

(10) Install two retaining rings (9) in yoke (8).

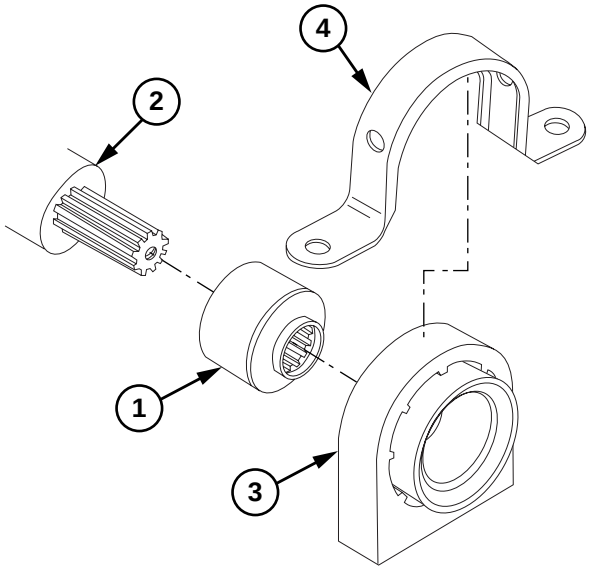
17-15. PTO PROPSHAFTS/SUPPORT REPAIR (CONT)

(11) Coat inside of caps (10) with grease.
(12) Install two caps (10) on universal joint (11).
(13) Coat inside of caps (12 and 13) with grease.
(14) Install cap (12) in slip yoke (14).
(15) Install universal joint (11) in slip yoke (14).
(16) Install cap (13) in slip yoke (14).
(17) Install two retaining rings (15) in slip yoke (14).



f. Rear Shaft Assembly

(1) Install center bearing (1) on rear shaft (2).
(2) Install cushion (3) on center bearing (1).
(3) Install mounting strap (4) on cushion (3).



NOTE

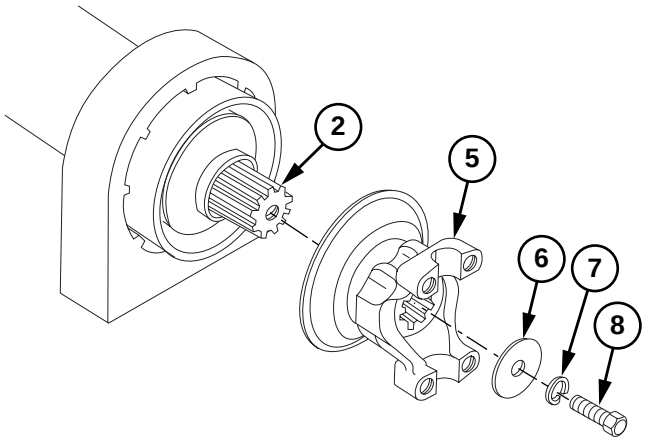
Align matchmarks on end of rear shaft and inside of yoke.

(4) Install yoke (5) on rear shaft (2).

NOTE

Concave side of washer faces out.

(5) Install washer (6), new lockwasher (7), and screw (8) on rear shaft (2). Torque to 55 lb–ft (75 N·m).



(6) Coat inside of caps (9 and 10) with grease.

CAUTION

Bearing caps must be installed so that universal joint pivots freely in yoke. Failure to comply will result in premature universal joint failure.

(7) Install cap (9) in yoke (11).

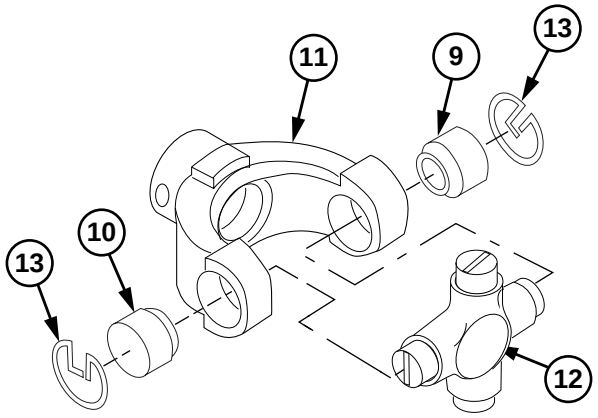
(8) Install universal joint (12) in yoke (11).

(9) Install cap (10) in yoke (11).

WARNING

Wear eye protection and use care when installing retaining rings. Retaining rings are under spring tension and can act as projectiles when released causing severe eye injury.

(10) Install two retaining rings (13) in yoke (11).



17-15. PTO PROPSHAFTS/SUPPORT REPAIR (CONT)

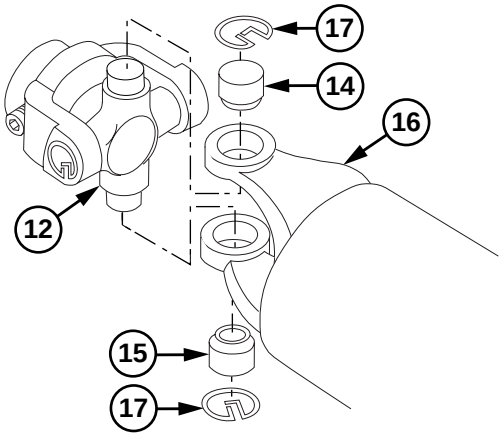
(11) Coat inside of caps (14 and 15) with grease.

(12) Install cap (14) in yoke (16).

(13) Install universal joint (12) in yoke (16).

(14) Install cap (15) in yoke (16).

(15) Install two retaining rings (17) in yoke (16).

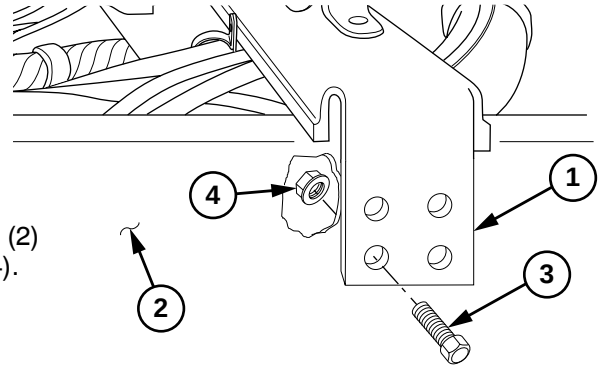


g. Installation

NOTE

Locknuts are installed on inside of frame on driver's side and outside of frame on passenger's side.

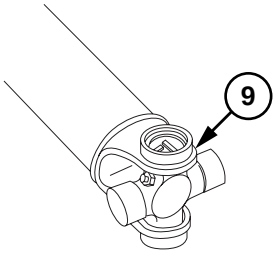
(1) Install both ends of support (1) on frame (2) with four screws (3) and new locknuts (4).

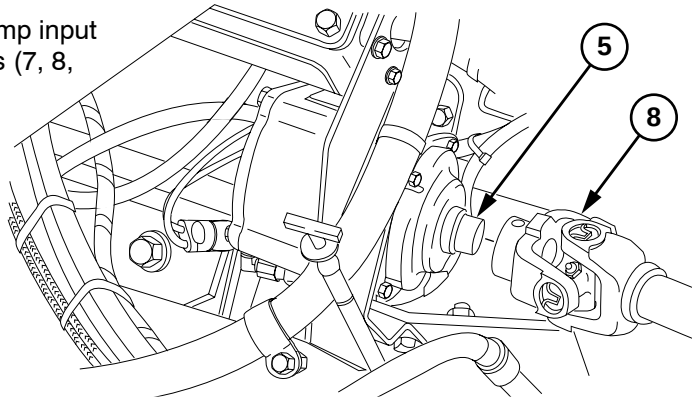


NOTE

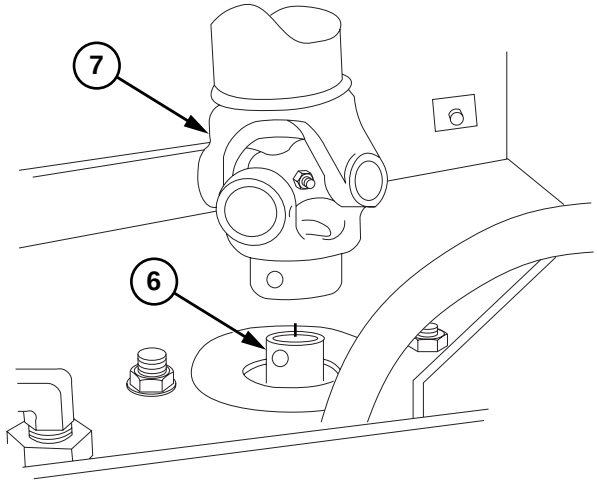
Steps (3) thru (5) are performed from below HET Tractor. Steps (6) thru (9) and (12) are performed from left side of HET Tractor. Steps (10) and (11) are performed through doghouse.

(2) Coat PTO output shaft (5), winch pump input shaft (6), and inside surface of yokes (7, 8, and 9) with antiseize compound.





(3) Install yoke (7) on winch pump input shaft (6) with aid of assistant.

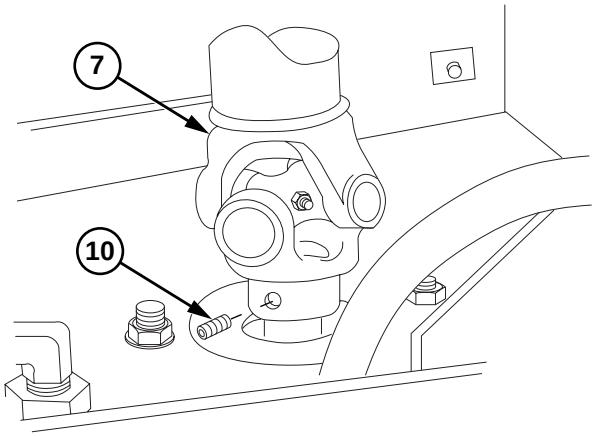


WARNING

Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.

(4) Coat threads of screw (10) with adhesive-sealant.

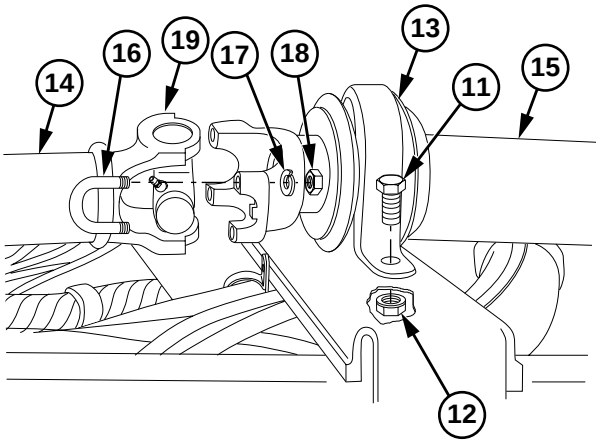
(5) Install screw (10) on yoke (7).



(6) Install two screws (11) and new locknuts (12) on center bearing (13).

(7) Install front shaft (14) on rear shaft (15).

(8) Install two new U-bolts (16), new lockwashers (17), and four new nuts (18) on universal joint (19). Torque to 13-18 lb-ft (17.6-24.4 N·m).

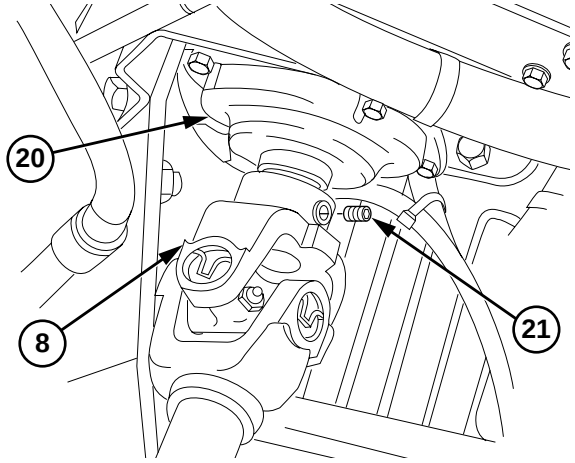


17-15. PTO PROPSHAFTS/SUPPORT REPAIR (CONT)

(9) Install yoke (8) on PTO (20).

WARNING

Adhesive-sealant can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive-sealant gets on skin or clothing, wash immediately with soap and water.



(10) Coat threads of screw (21) with adhesive-sealant.

(11) Install screw (21) on yoke (8).

(12) Deleted.

h. Follow-On Maintenance

(1) Install spare tire (TM 9-2320-360-10).

(2) Install stowage box (para 16-14).

17-16. WINCH GEARBOX OIL DRAIN/REFILL

This task covers:
a. Drain
b. Fill
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Adapter, Funnel (Figure D-22, Appendix D)
Funnel (Item 11, Appendix F)
Pan, Oil Drain (Item 26, Appendix F)

Materials/Parts
Rags (Item 28, Appendix C)

Personnel Required
Two

NOTE

- Winch gearbox capacity is approximately 17.25 pt (8.16 L).
- Both passenger and driver side winches are serviced the same way. Driver side winch is shown.

a. Drain

(1) Place drain pan under winch gearbox end drain plug (1).

(2) Remove breather (2) from gearbox end (3) of winch (4).

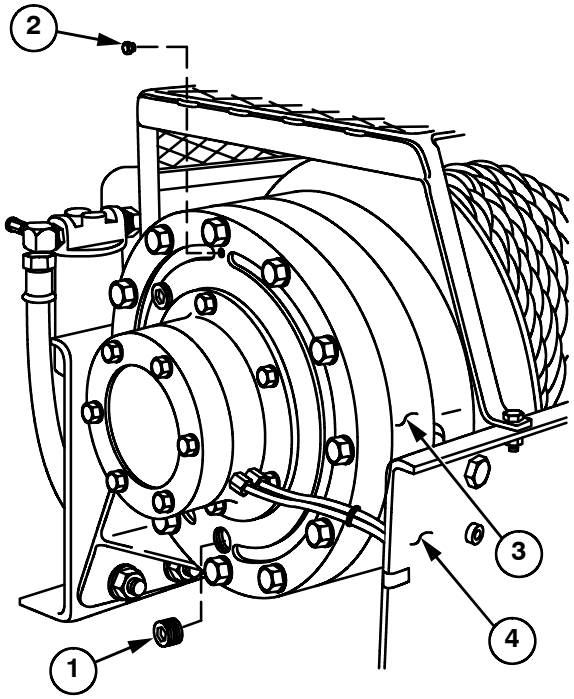
WARNING

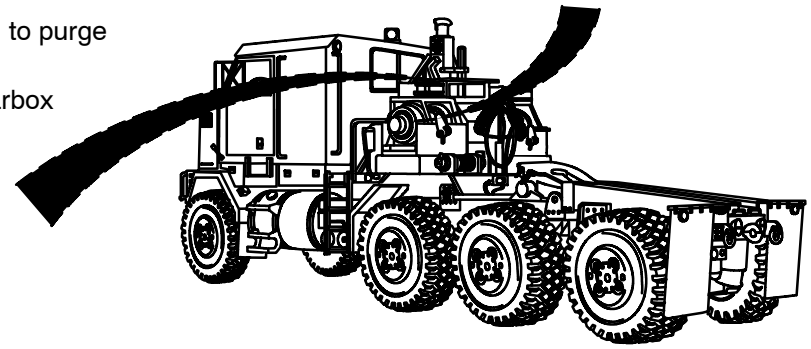
When servicing this vehicle, performing maintenance, or disposing of materials such as lubricants, consult your Unit/local hazardous waste disposal center or safety office for local regulatory guidance. If further information is needed, please contact the Army environmental hotline at 1-800-872-3845. Improper disposal of this material may result in damage to environment or injury to personnel.

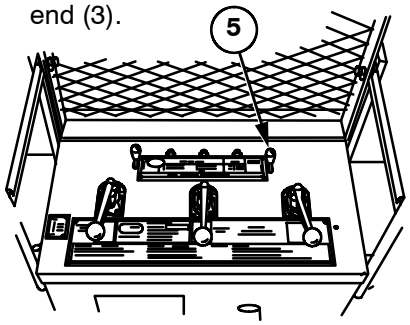
(3) Remove drain plug (1) from gearbox end (3) and drain oil.

(4) Operate winch kickout control (5) to purge oil from the kickout cavity.

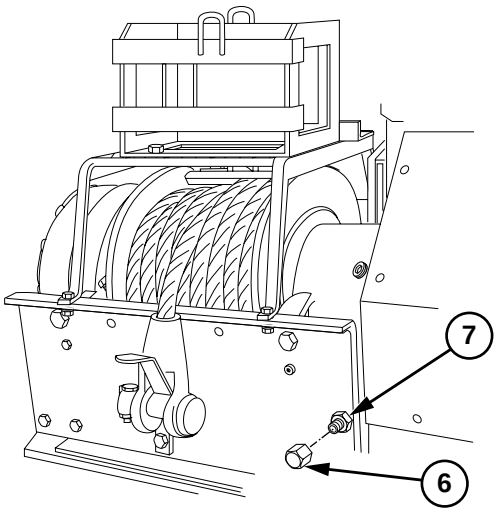
(5) Install drain plug (1) in winch gearbox end (3).







17-16. WINCH GEARBOX OIL DRAIN/REFILL (CONT)

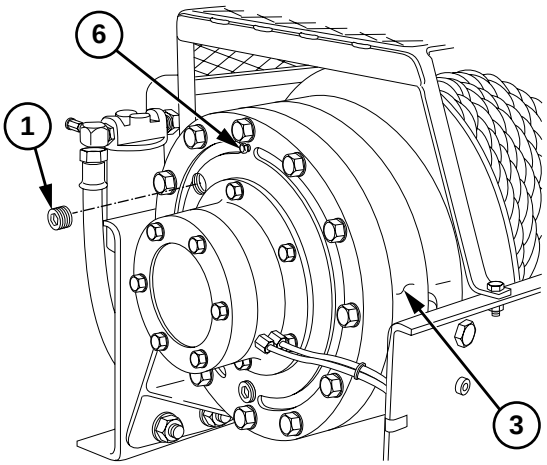


(6) Place drain pan under motor end drain cap (6).

(7) Remove drain cap (6) from motor end drain fitting (7) and drain oil.

(8) Install drain cap (6) on motor end drain fitting (7).

b. Fill



(1) Remove fill plugs (1 and 2) from winch gearbox end (3) and motor end (4).

NOTE

Refer to appendix D for fabrication of funnel adapter.

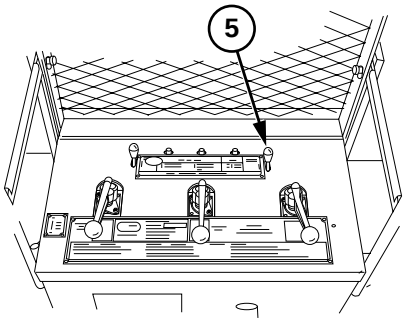
(2) Fill motor end (4), using funnel adapter, with 4 pt (1.9 L) of proper lubricant (LO 9-2320-360-12).

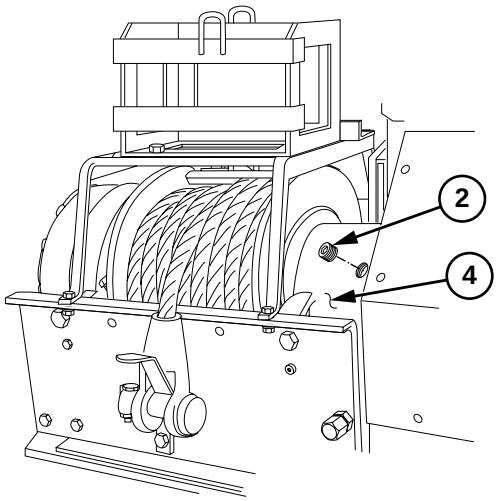
(3) Install fill plug (2) in motor end (4).

(4) Fill gearbox end (3) with approximately 13 pt (6.2 L) of proper lubricant (LO 9-2320-360-12).

(5) Operate winch kickout control (5) several times.

(6) Install fill plug (1) and breather (6) in gearbox end (3).





c. Follow-On Maintenance

Remove wheel chocks.

CHAPTER 18
BODY ACCESSORY ITEMS MAINTENANCE

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Windshield Wiper Linkage Replacement	18-5	18-11
Mirror and Bracket Replacement	18-6	18-14
Air Horn Replacement	18-7	18-19
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Section I. INTRODUCTION

18-1. INTRODUCTION

This chapter contains instructions for adjustment, replacement, and repair of body accessory items at the Unit maintenance level. Some subassemblies and parts must be removed before these items can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

18-2. WINDSHIELD WIPER MOTOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

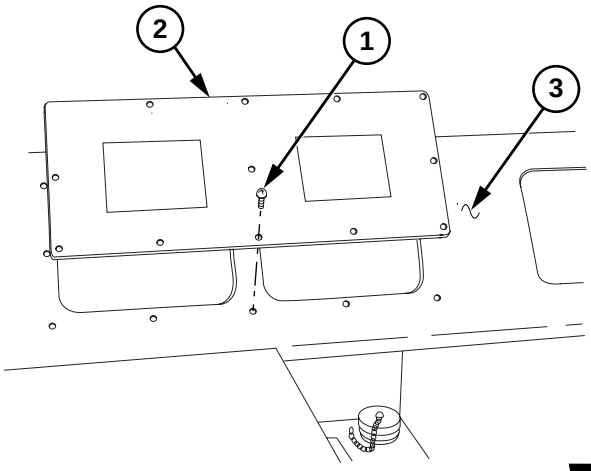
Equipment Conditions
Instrument panel removed (para 7-13).
Dash manifold valve removed (para 11-17).
Air cleaner restriction indicator removed. (para 20-2).
Air pressure gage removed (para 20-3).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

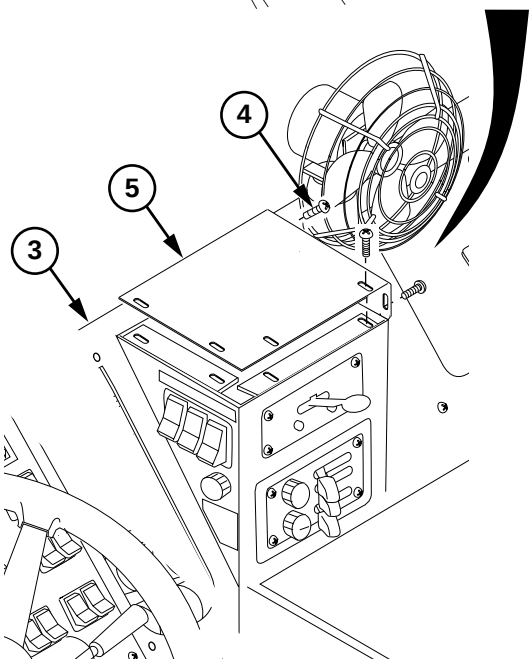
Materials/Parts
Locknut (Item 73, Appendix G).

a. Removal

(1) Remove 13 screws (1) and dash access panel (2) from dash (3).



(2) Remove nine screws (4) and dash cover panel (5) from dash (3).

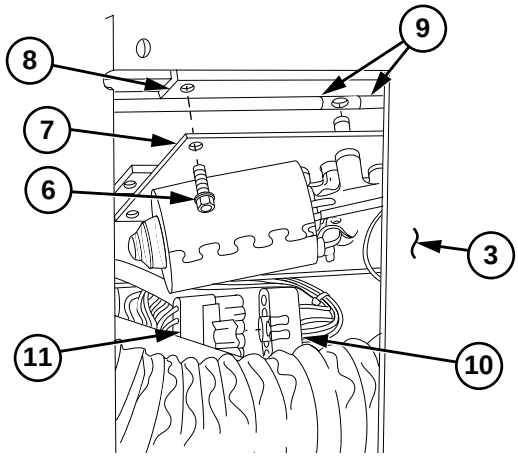


(3) Remove four screws (6) and motor assembly (7) from bracket (8).

(4) Remove two links (9) from motor assembly (7).

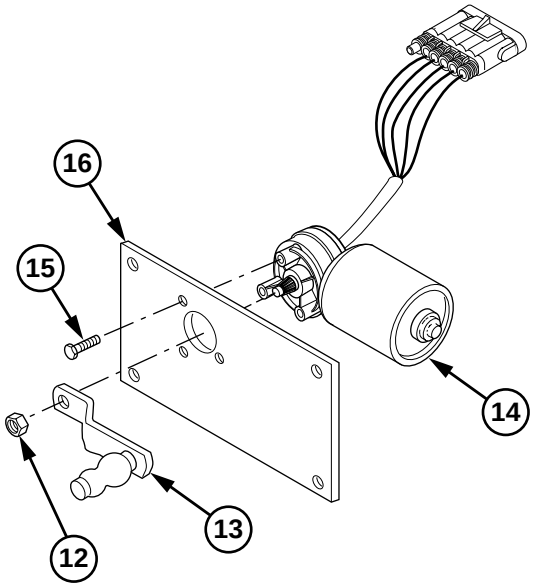
(5) Disconnect connector (10) from wire harness (11).

(6) Remove motor assembly (7) from dash (3).



(7) Remove locknut (12) and crank assembly (13) from wiper motor (14). Discard locknut.

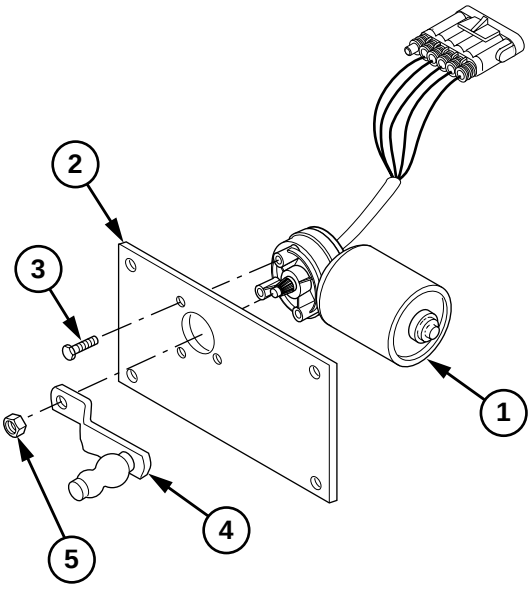
(8) Remove three screws (15) and wiper motor (14) from plate (16).



b. Installation

(1) Install wiper motor (1) on plate (2) with three screws (3).

(2) Install crank assembly (4) on wiper motor (1) with new locknut (5).



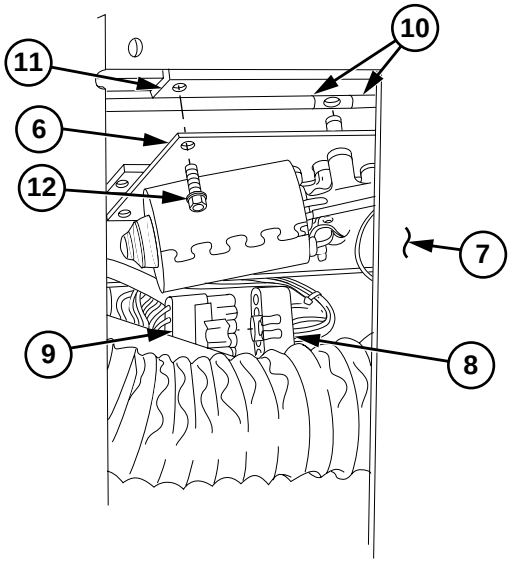
18-2. WINDSHIELD WIPER MOTOR REPLACEMENT (CONT)

(3) Position motor assembly (6) in dash (7).

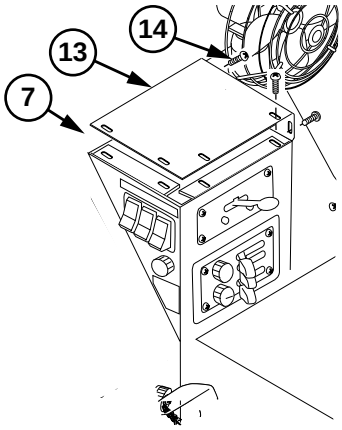
(6) Connect connector (8) to wire harness (9).

(7) Install two links (10) on motor assembly (6).

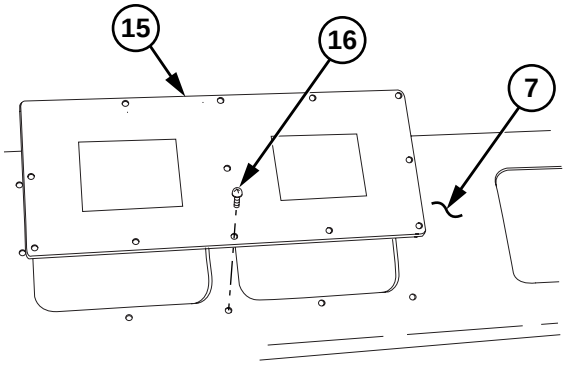
(8) Install motor assembly (6) on bracket (11) with four screws (12).



(9) Install dash cover panel (13) on dash (7) with nine screws (14).



(10) Install dash access panel (15) on dash (7) with 13 screws (16).



c. Follow-On Maintenance

(1) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(2) Check operation of windshield wipers(TM 9-2320-360-10).

(3) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

(4) Install air pressure gage (para 20-3).

(5) Install air cleaner restriction indicator (para 20-2).

(6) Install trailer air supply valve (para 11-36).

(7) Install parking brake valve (para 11-17).

(8) Install instrument panel (para 7-13).

*

18-3. WINDSHIELD WIPER BLADE AND ARM REPLACEMENT/ADJUSTMENT

This task covers:
a. Removal
b. Installation
c. Adjustment
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

Materials/Parts
Locknut (Item 45, Appendix G)
Lockwasher (Item 87, Appendix G)

a. Removal

WARNING

Do not use hood as a work platform. Using hood as a work platform may result in injury to personnel and/or equipment damage.

NOTE

Both wipers are replaced the same way.

(1) Open hood (TM 9-2320-360-10).

NOTE

A 7/64 in. (3 mm) hex key is used to lock windshield wiper blade.

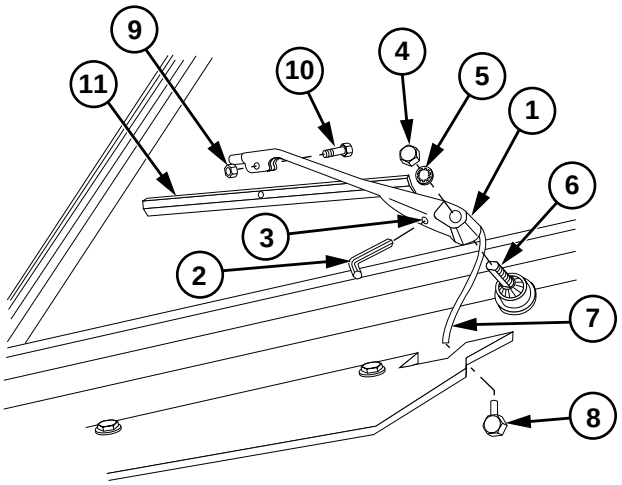
(2) Lift wiper arm (1) and insert hex key (2) through hole (3).

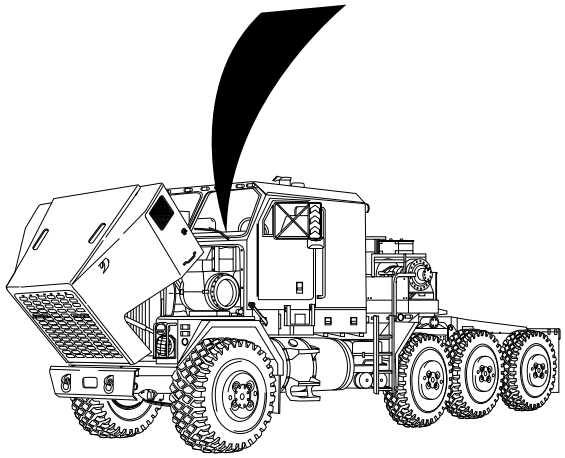
(3) Remove nut (4), lockwasher (5), and wiper arm (1) from stud (6). Discard lockwasher.

(4) Disconnect hose (7) from nozzle (8).

(5) Remove hex key (2) from hole (3) on wiper arm (1).

(6) Remove locknut (9), screw (10), and blade (11) from wiper arm (1). Discard locknut.





18-3. WINDSHIELD WIPER BLADE AND ARM REPLACEMENT (CONT)

b. Installation

(1) Insert hex key (1) through hole (2).

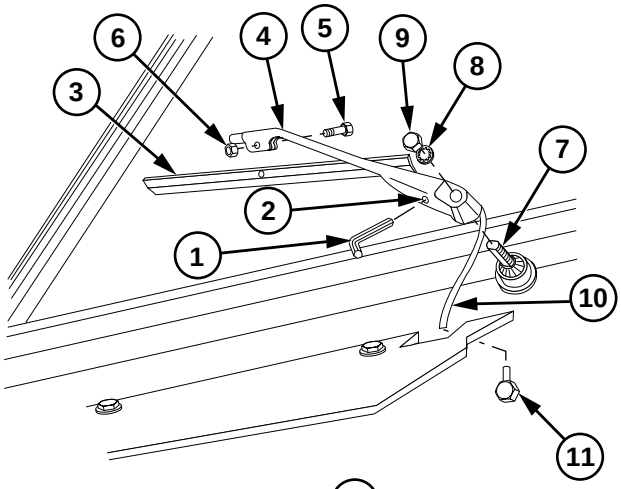
(2) Install blade (3) on wiper arm (4) with screw (5) and new locknut (6).

(3) Install wiper arm (4) on stud (7) with new lockwasher (8) and nut (9). Torque to 90-110 lb-in. (10.2-12.4 N·m).

(4) Remove hex key (1) from hole (2) on wiper arm (4).

(5) Connect hose (10) to nozzle (11).

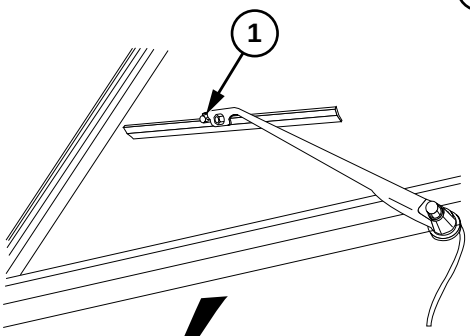
(6) Close hood (TM 9-2320-360-10).

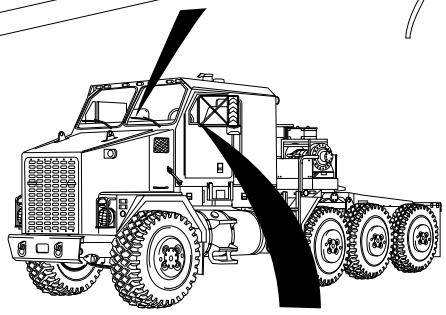


c. Adjustment

(1) Turn washer nozzles (1) with screwdriver to adjust direction of washer spray.

(2) Turn ENGINE switch to ON position (TM 9-2320-360-10).

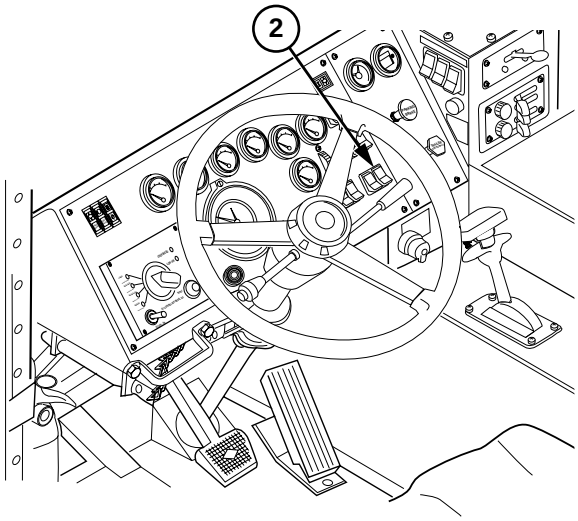




(3) Press windshield washer switch (2) on instrument panel to check washer spray pattern.

(4) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

(5) Repeat steps (1) thru (4) if additional adjustment is required.



d. Follow-On Maintenance

(1) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(2) Check operation of wiper arm (TM 9-2320-360-10).

(3) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

(4) Remove wheel chocks.

18-4. WINDSHIELD WASHER RESERVOIR, HOSE, AND NOZZLE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.
Engine hood opened (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Lockwashers (4) (Item 100, Appendix G)

Personnel Required
Two

a. Removal

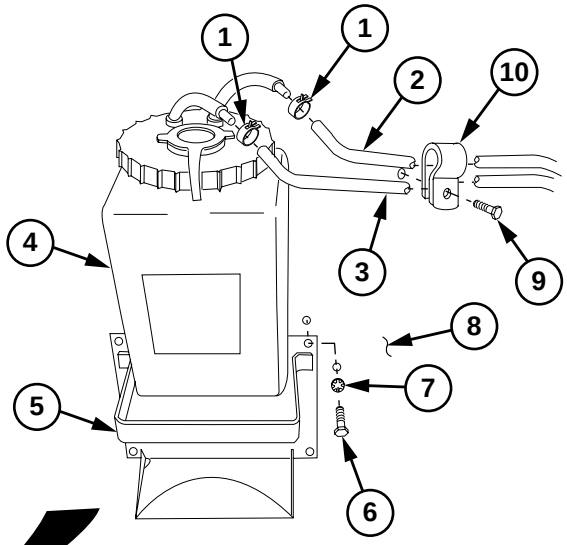
NOTE
Tag and mark hoses before removal.

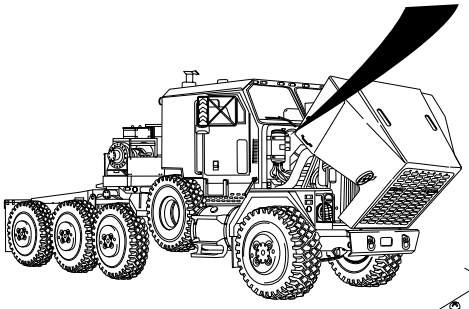
(1) Remove clamps (1), air hose (2), and hose (3) from top of reservoir (4).

(2) Remove reservoir (4) from bracket (5).

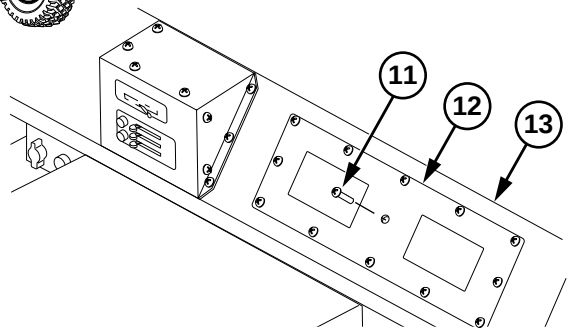
(3) Remove four screws (6), lockwashers (7), and bracket (5) from firewall (8). Discard lockwashers.

(4) Remove screw (9) and clip (10) from firewall (8).





(5) Remove 13 screws (11) and dash access panel (12) from dash (13).



18-4. WINDSHIELD WASHER RESERVOIR, HOSE, AND NOZZLE REPLACEMENT (CONT)

(6) Pull two hoses (2 and 3) from firewall (8) and into cab.

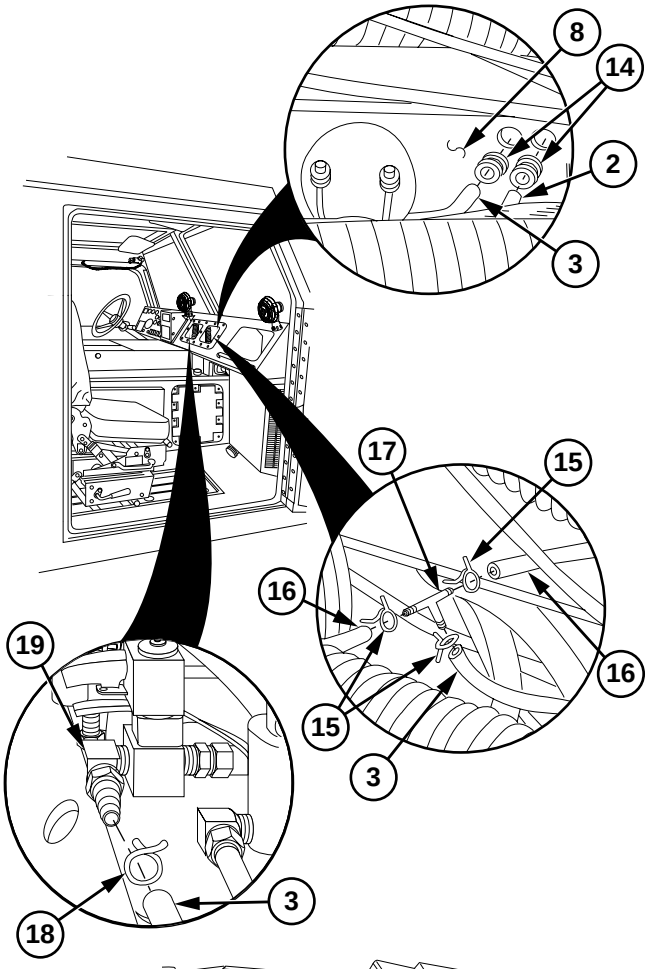
(7) Remove two grommets (14) from firewall (8).

CAUTION

Use care when removing hoses. Excessive force may damage tee.

(8) Remove three clamps (15), two hoses (16), and hose (3) from tee (17).

(9) Remove clamp (18) and air hose (3) from washer control valve (19).



CAUTION

Use care when removing nipples. Excessive force may damage nipple.

NOTE

Both nipples are removed the same way.

(10) Remove clamp (20) and hose (16) from nipple (21).

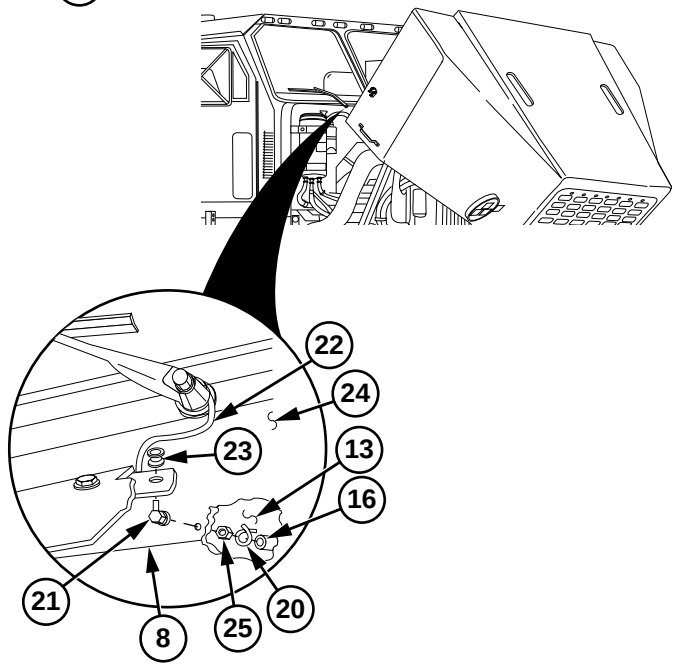
(11) Remove hose (16) from dash (13).

(12) Remove hose (22) from nipple (21).

(13) Remove grommet (23) from cab wall (24).

(14) Remove nut (25) from nipple (21) while assistant holds nipple.

(15) Remove nipple (21) from firewall (8).



b. Installation

CAUTION

Use care when installing nipples. Excessive force will damage nipple.

NOTE

Both nipples are installed the same way.

(1) Install nipple (1) on firewall (2).

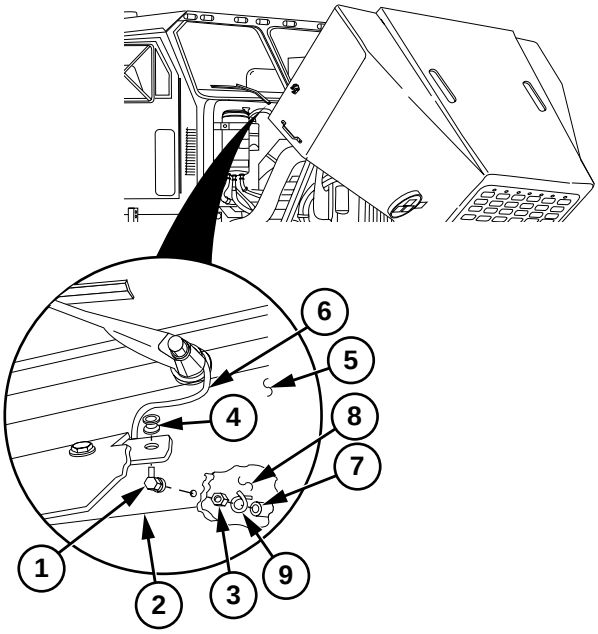
(2) Install nut (3) on nipple (1) while assistant holds nipple.

(3) Install grommet (4) on cab wall (5).

(4) Install hose (6) on nipple (1).

(5) Install hose (7) in dash (8).

(6) Install hose (7) on nipple (1) inside cab with clamp (9).

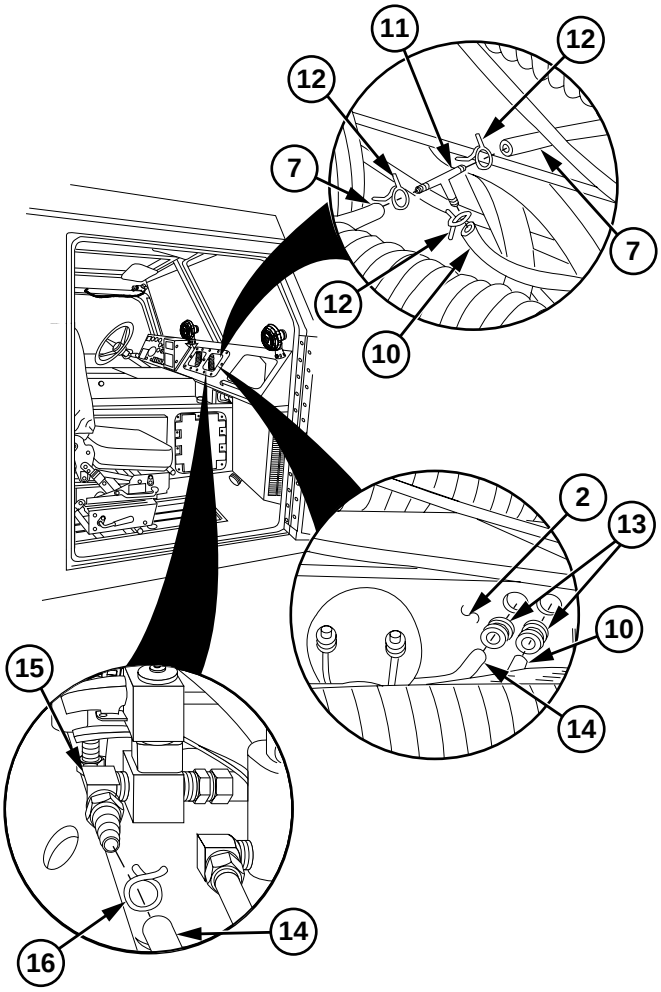


(7) Install two hoses (7) and hose (10) on tee (11) with three clamps (12).

(8) Install two grommets (13) on firewall (2).

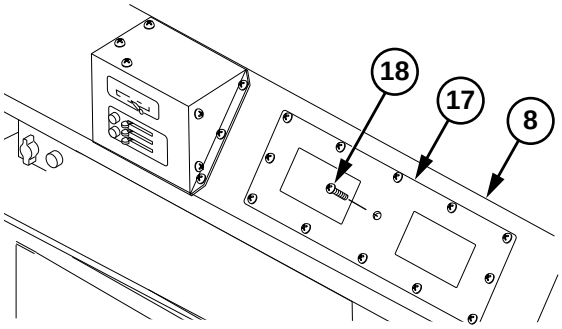
(9) Route air hose (14) and hose (10) through firewall (2) into cab.

(10) Install air hose (14) on washer valve (15) with clamp (16).



18-4. WINDSHIELD WASHER RESERVOIR, HOSE, AND NOZZLE REPLACEMENT (CONT)

(11) Install dash access panel (17) on dash (8) with 13 screws (18).



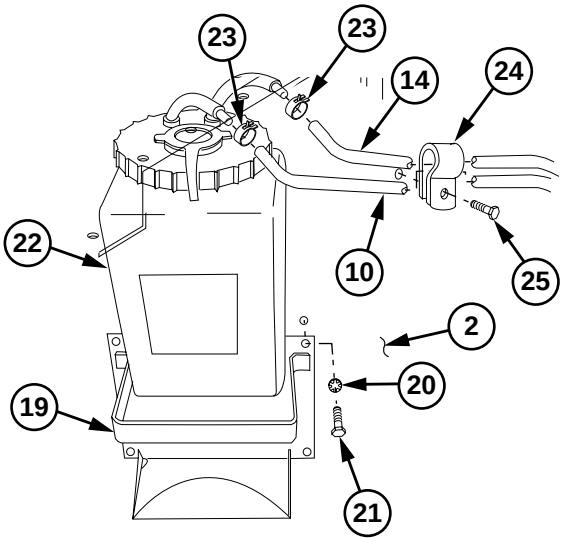
(12) Install bracket (19) on firewall (2) with four new lockwashers (20) and screws (21).

(13) Install reservoir (22) in bracket (19).

(14) Install air hose (14), hose (10), and clamps (23) on top of reservoir (22).

(15) Install clip (24) on two hoses (14) and (10).

(16) Install clip (24) on firewall (2) with screw (25).



c. Follow-On Maintenance

(1) Fill washer reservoir (para NO TAG).

(2) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(3) Check operation of windshield washer (TM 9-2320-360-10).

(4) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

(5) Close engine hood (TM 9-2320-360-10).

(6) Remove wheel chocks.

18-5. WINDSHIELD WIPER LINKAGE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Windshield wiper arms removed (para 18-3).
Windshield wiper motor removed (para 18-2).

Materials/Parts
Repair Kit, Idler Shaft (Item 156, Appendix G)

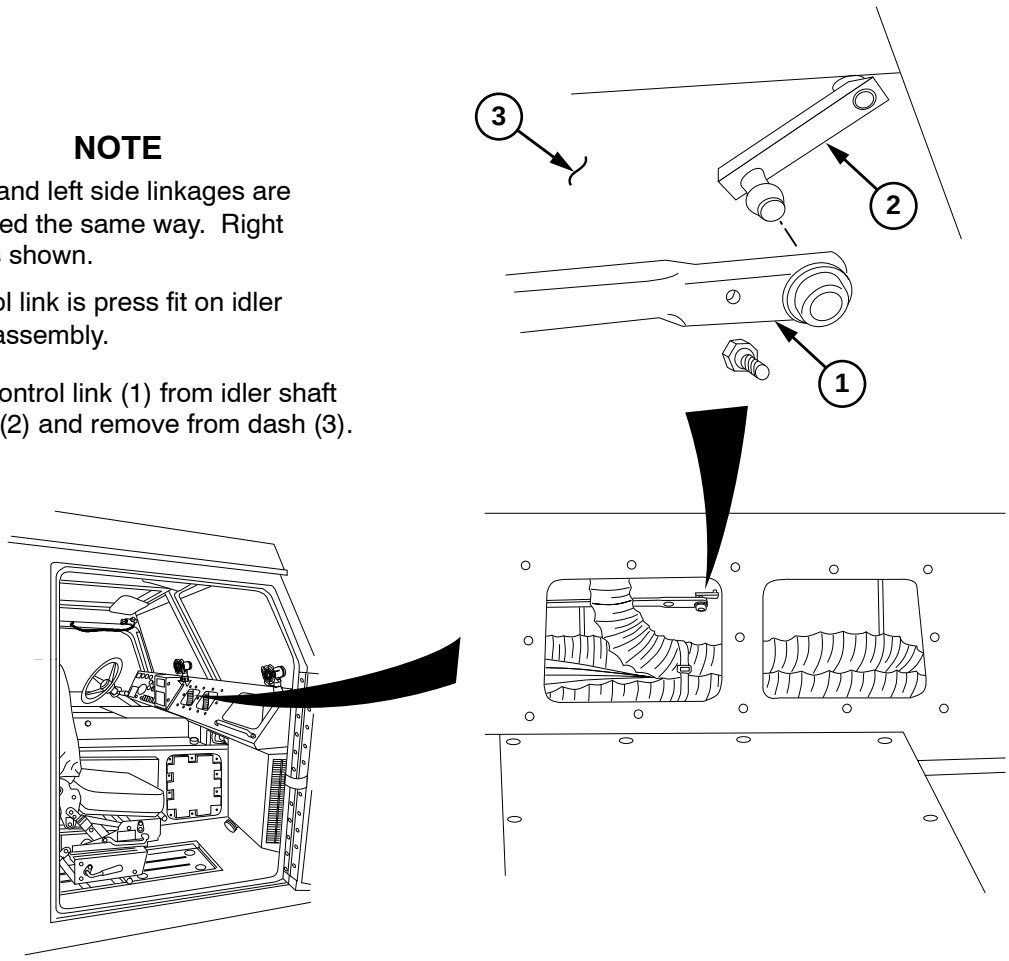
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

a. Removal

NOTE

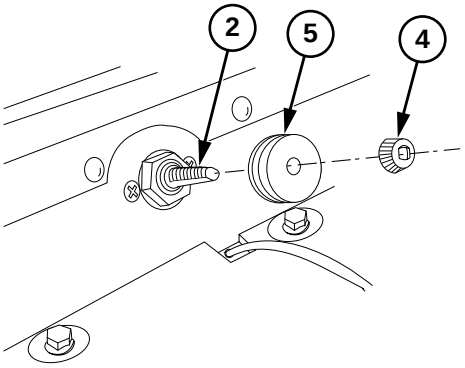
- Right and left side linkages are replaced the same way. Right side is shown.
- Control link is press fit on idler shaft assembly.

(1) Remove control link (1) from idler shaft assembly (2) and remove from dash (3).

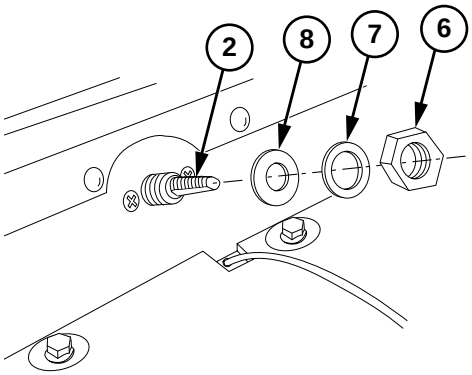


18-5. WINDSHIELD WIPER LINKAGE REPLACEMENT (CONT)

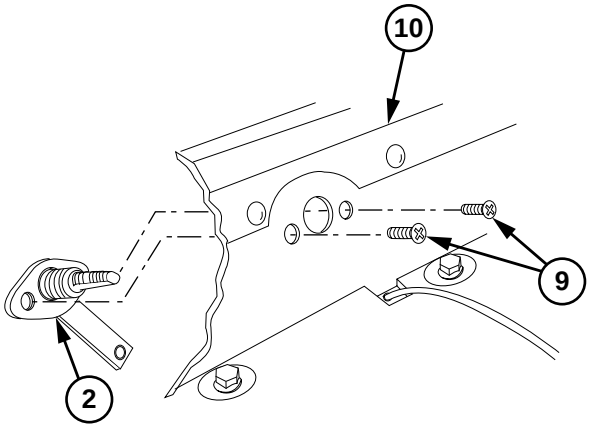
(2) Remove driver (4) and seal (5) from idler shaft assembly (2).



(3) Remove nut (6), washer (7), and gasket (8) from idler shaft assembly (2). Discard gasket.

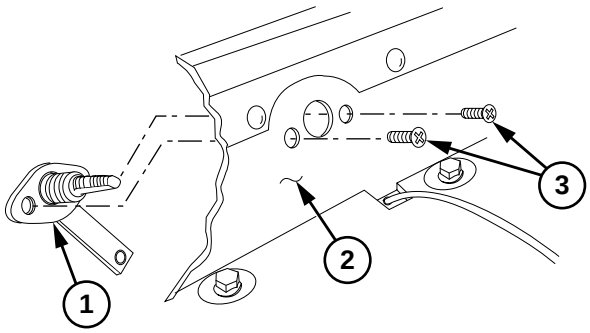


(4) Remove two screws (9) and idler shaft assembly (2) from cab (10).

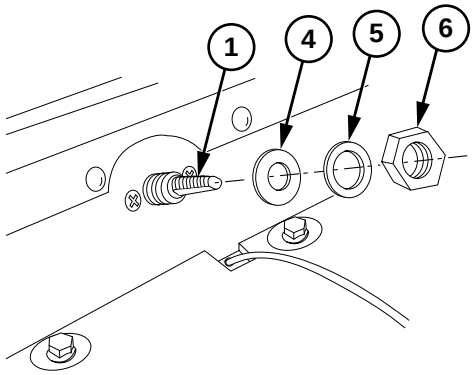


b. Installation

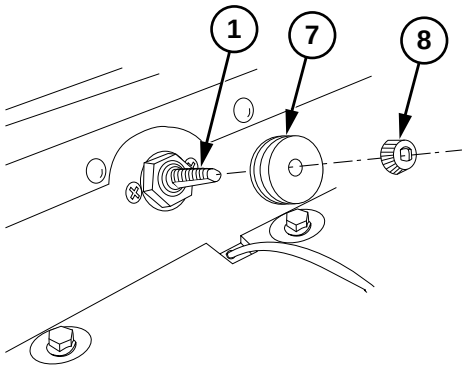
(1) Install idler shaft assembly (1) on cab (2) with two screws (3).



(2) Install new gasket (4) on idler shaft assembly (1) with washer (5) and nut (6). Torque to 140–180 lb-in. (16–20.3 N·m).



(3) Install seal (7) and driver (8) on idler shaft assembly (1).

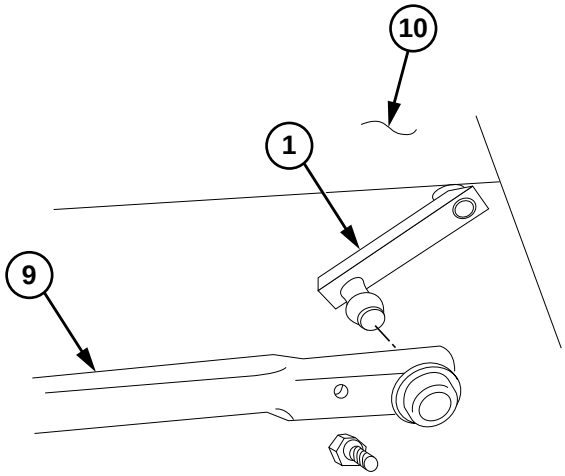


(4) Position control link (9) in dash (10).

NOTE

- Control link is press fit on idler shaft assembly.
- Larger plastic socket on end of right side control link is installed on right side idler shaft.

(5) Install control link (9) on idler shaft assembly (1).



c. Follow-On Maintenance

(1) Install windshield wiper motor (para 18-2).

(2) Install windshield wiper arms (para 18-3).

18-6. MIRROR AND BRACKET REPLACEMENT

This task covers:
- Removal
- Disassembly
- Assembly
- Installation
- Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
- Engine shut off (TM 9-2320-360-10).
- Parking brake on (TM 9-2320-360-10).
- Wheels chocked.

Tools and Special Tools
- Tool Kit, Genl Mech (Item 54, Appendix F)
- Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)

Materials/Parts
- Tags, Identification (Item 32, Appendix C)
- Lockwashers (11) (Item 100, Appendix G)
- Lockwashers (2) (Item 114, Appendix G)
- Locknut (Item 60, Appendix G)
- Locknut (Item 60.1, Appendix G)

a. Mirror Removal

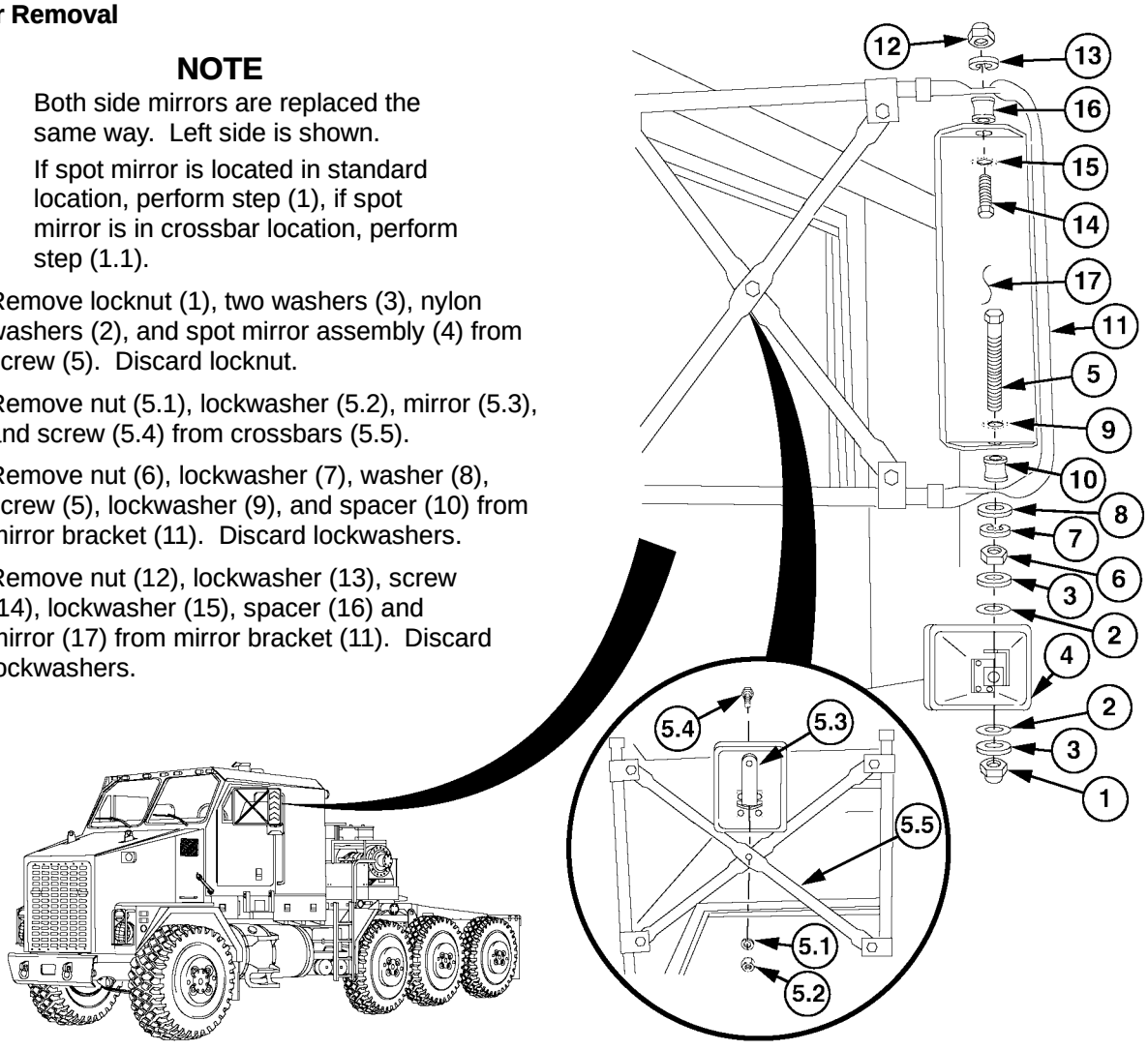
NOTE
- Both side mirrors are replaced the same way. Left side is shown.
- If spot mirror is located in standard location, perform step (1), if spot mirror is in crossbar location, perform step (1.1).

(1) Remove locknut (1), two washers (3), nylon washers (2), and spot mirror assembly (4) from screw (5). Discard locknut.

(1.1) Remove nut (5.1), lockwasher (5.2), mirror (5.3), and screw (5.4) from crossbars (5.5).

(2) Remove nut (6), lockwasher (7), washer (8), screw (5), lockwasher (9), and spacer (10) from mirror bracket (11). Discard lockwashers.

(3) Remove nut (12), lockwasher (13), screw (14), lockwasher (15), spacer (16) and mirror (17) from mirror bracket (11). Discard lockwashers.

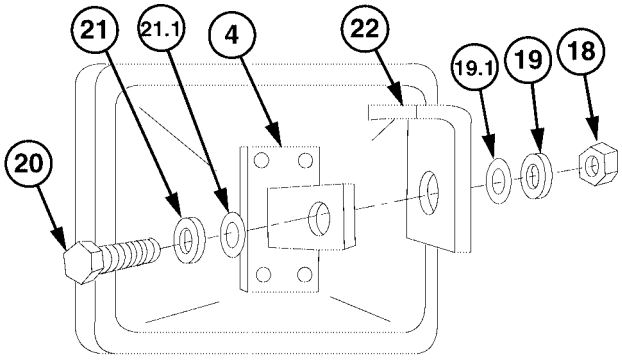


NOTE

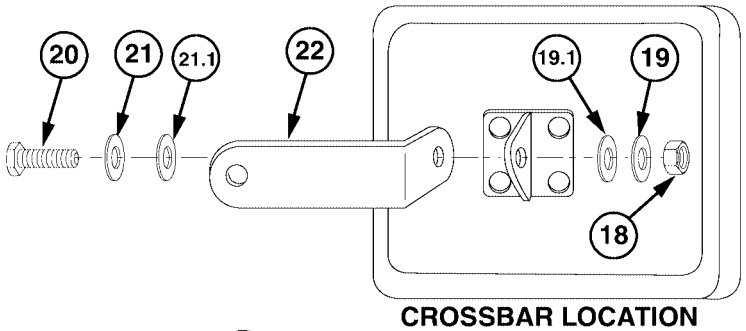
If spot mirror was removed from standard location, perform step (4), if spot mirror was removed from crossbar location, perform step 5.

(4) Remove locknut (18), washer (19), nylon washer (19.1), screw (20), washer (21), nylon washer (21.1), and bracket (22) from spot mirror (4). Discard locknut.

(5) Remove locknut (18), washer (19), nylon washer (19.1), and screw (20), washer (21), nylon washer (21.1), and bracket (22) from spot mirror (4).



STANDARD LOCATION



CROSSBAR LOCATION

b. Bracket Removal

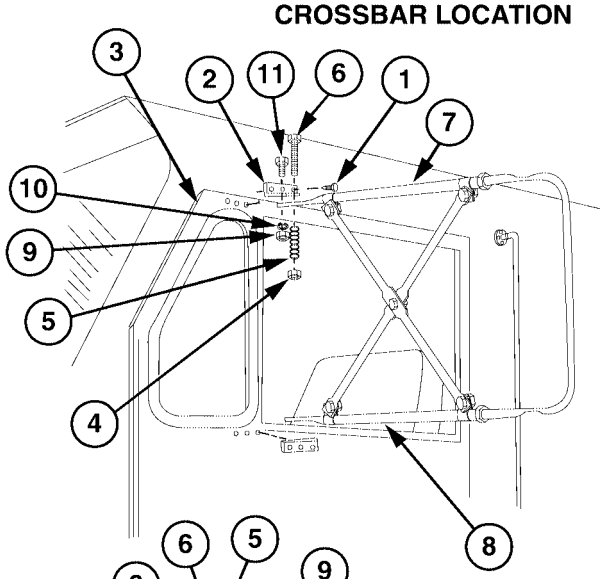
NOTE

Both mirror brackets are replaced the same way. Left side is shown.

(1) Remove six screws (1) and two mounting brackets (2) from door (3).

(2) Remove two nuts (4), springs (5), mounting brackets (2), and screws (6) from two mirror brackets (7 and 8).

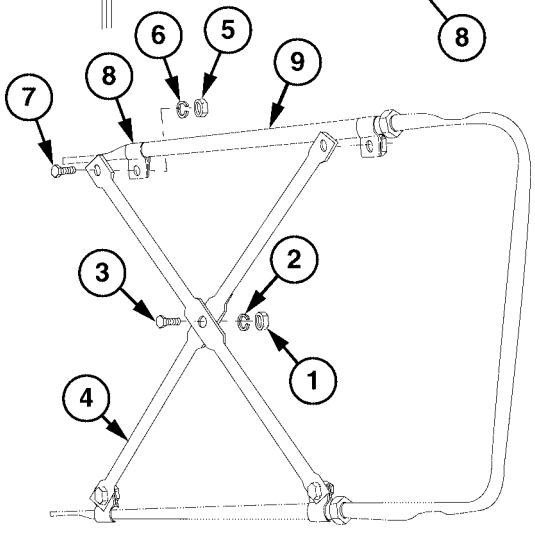
(3) Remove four nuts (9), lockwashers (10), and screws (11) from two mounting brackets (2).



c. Bracket Disassembly

(1) Remove nut (1), lockwasher (2), and screw (3) from crossbars (4). Discard lockwasher.

(2) Remove two nuts (5), lockwashers (6), screws (7), and clamps (8) from two crossbars (4) and mirror bracket (9). Discard lockwashers.

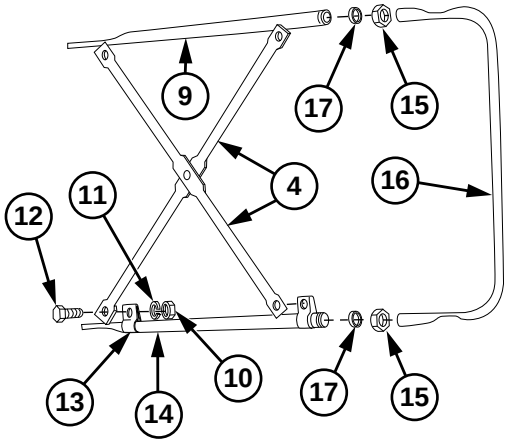


18-6. MIRROR AND BRACKET REPLACEMENT (CONT)

(3) Remove two nuts (10), lockwashers (11), screws (12), crossbars (4), and clamps (13) from mirror bracket (14). Discard lockwashers.

(4) Loosen two nuts (15) and remove loop (16) from two mirror brackets (9 and 14).

(5) Remove two nut glands (17) and nuts (15) from loop (16).

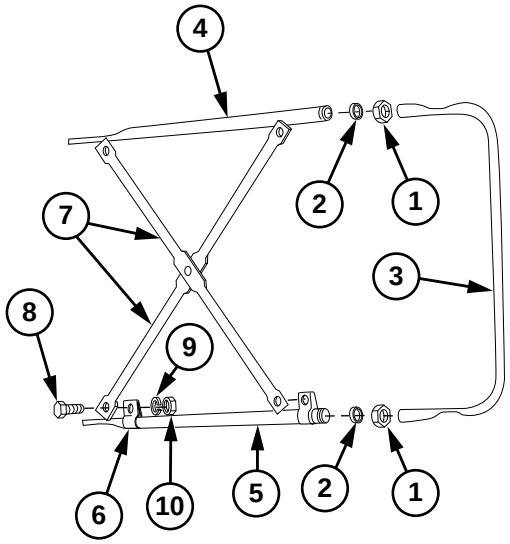


d. Bracket Assembly

(1) Install two nuts (1) and nut glands (2) on loop (3).

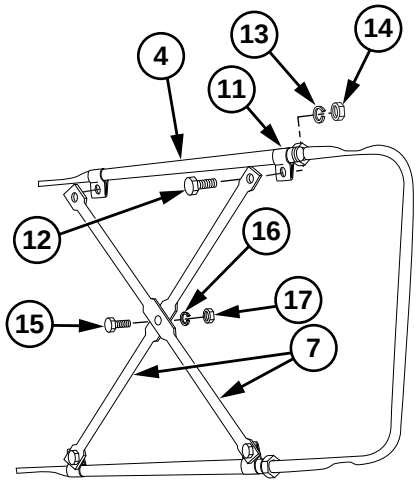
(2) Install loop (3) on mirror brackets (4 and 5).

(3) Install two clamps (6) and crossbars (7) on mirror bracket (5) with two screws (8), new lockwashers (9), and nuts (10). Do not tighten.



(4) Install two clamps (11) and crossbars (7) on mirror bracket (4) with two screws (12), new lockwashers (13), and nuts (14). Do not tighten.

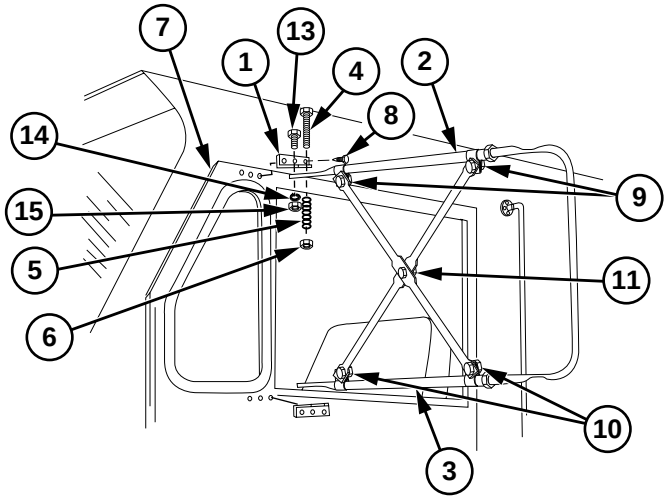
(5) Install screw (15), new lockwasher (16), and nut (17) on crossbars (7). Do not tighten.



e. Bracket Installation

NOTE

- Mirror must be able to swivel. Do not tighten nuts so springs are completely compressed.
- When assembled properly, raised detents on mounting bracket will engage into stamped detents of mirror bracket.



(1) Install two mounting brackets (1) on mirror brackets (2 and 3) with two screws (4), springs (5), and nuts (6).

(2) Install two mounting brackets (1) on door (7) with six screws (8).

(3) Tighten two nuts (9), nuts (10), and nut (11).

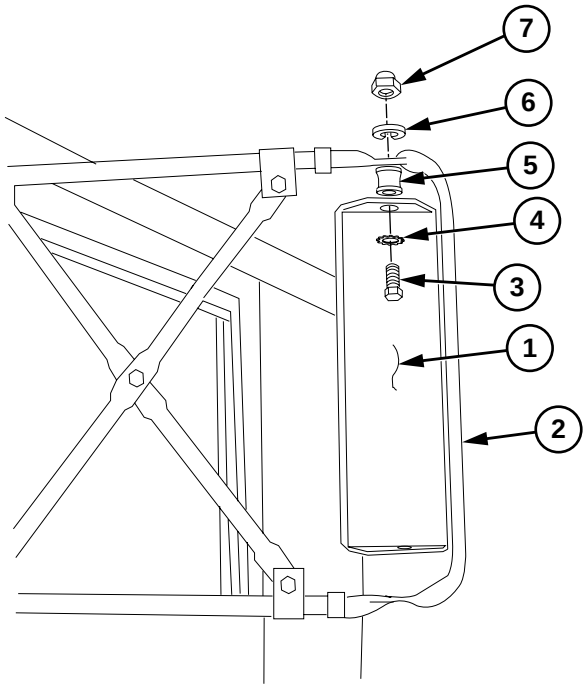
(4) Install four screws (13), lockwashers (14), and nuts (15) on mounting brackets (1).

f. Mirror Installation

NOTE

Mirror must be able to swivel. Do not overtighten nuts.

(1) Install mirror (1) on mirror bracket (2) with screw (3), new lockwasher (4), spacer (5), new lockwasher (6), and nut (7).

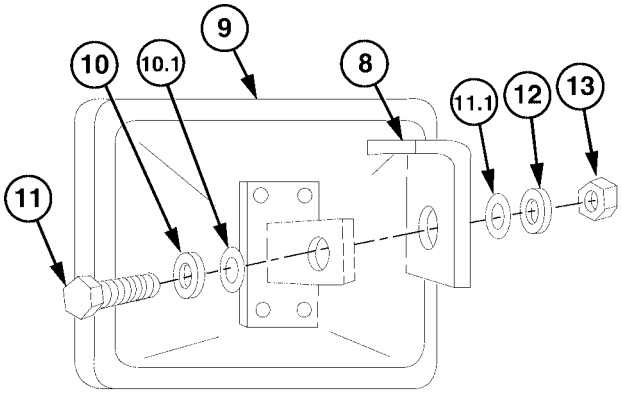


18-6. MIRROR AND BRACKET REPLACEMENT (CONT)

NOTE

- For additional visibility, the spot mirror can also be mounted at the center of the bracket crossbars.
- If mounting spot mirror in standard location, perform steps (2) thru (4). If mounting spot mirror at crossbars, perform steps (5) thru (8).

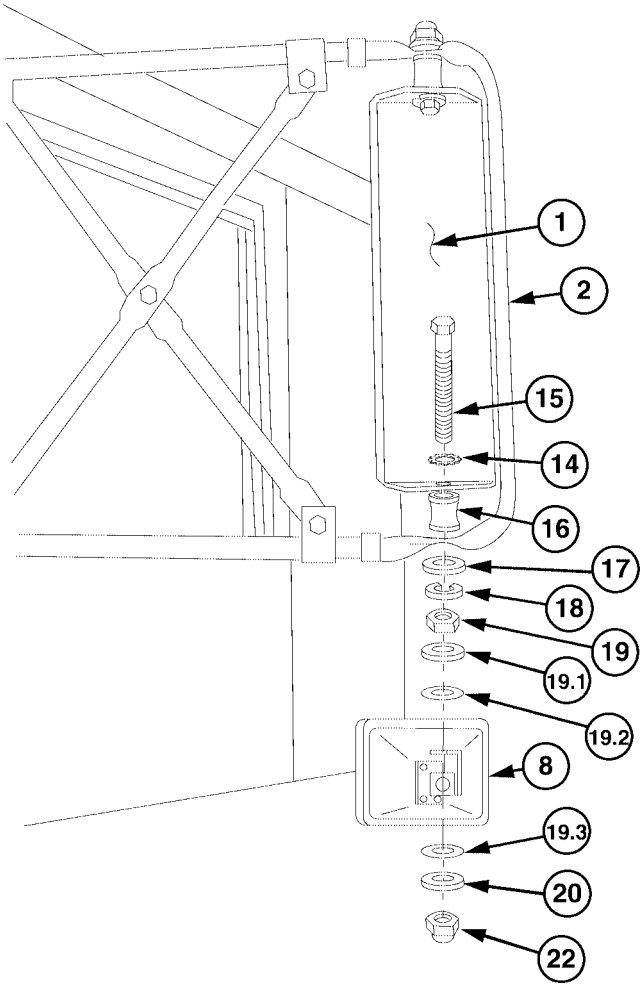
(2) Install bracket (8) on spot mirror (9) with washer (10), nylon washer (10.1), screw (11), nylon washer (11.1), washer (12), and new locknut (13).



STANDARD LOCATION

(3) Install mirror (1) on mirror bracket (2) with new lockwasher (14), screw (15), spacer (16), washer (17), new lockwasher (18), and nut (19).

(4) Install washer (19.1), nylon washer (19.2), and spot mirror (8) on screw (15) with nylon washer (19.3), washer (20), and new locknut (22). Torque to 120 lb-in. (13.56 N·m).



NOTE

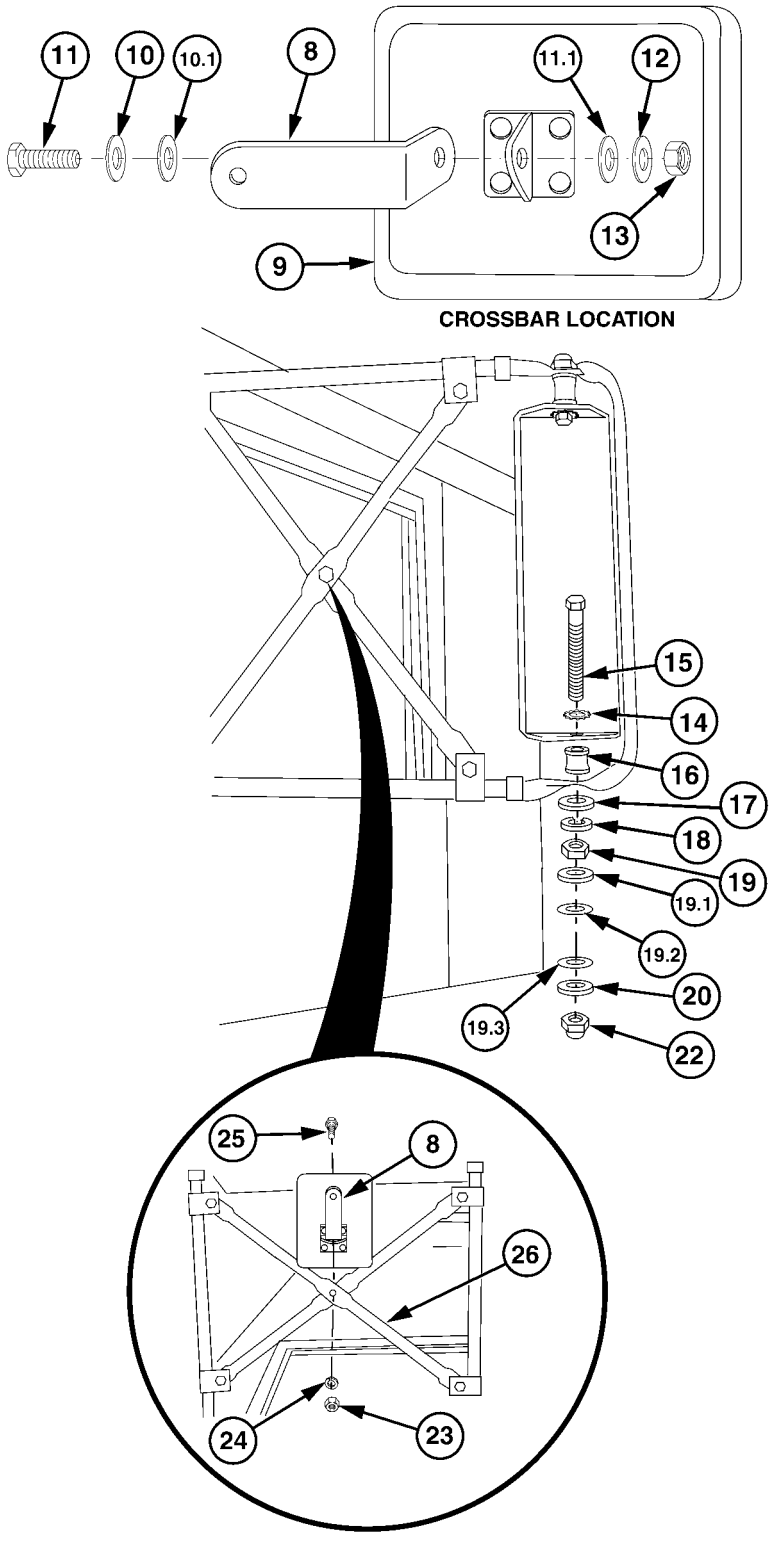
Before mounting the spot mirror at the center of the crossbars, the smaller mounting hole in the spot mirror bracket must be enlarged.

(5) Install bracket (8) on spot mirror (9) with washer (10), nylon washer (10.1), screw (11), nylon washer (11.1), washer (12), and new locknut (13).

(6) Install new lockwasher (14), spacer (16), washer (17), new lockwasher (18), nut (19), washer (19.1), and nylon washer (19.2), on screw (15) with nylon washer (19.3), washer (20), and new locknut (22). Torque to 120 lb-in. (13.56 NSm).

(7) Remove nut (23), lockwasher (24), and screw (25) from crossbars (26). Discard lockwasher.

(8) Install bracket (8) on crossbars (26) with screw (25), new lockwasher (24), and nut (23).



g. Follow-On Maintenance

Remove wheel chocks.

18-7. AIR HORN REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Engine hood opened (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Locknuts (2) (Item 72, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Personnel Required
Two

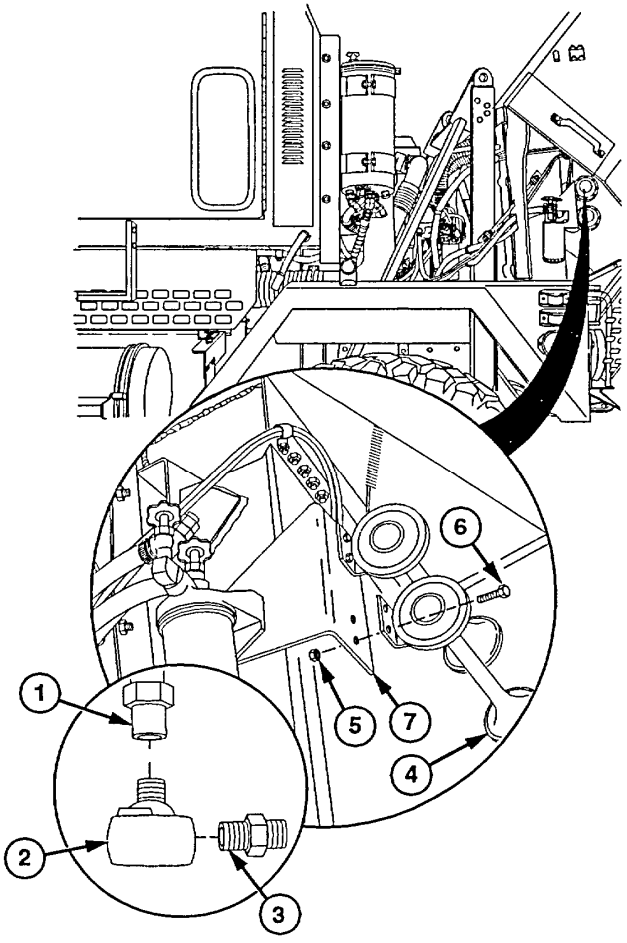
a. Removal

NOTE
- **The HET Tractor has two air horns. Both air horns are replaced the same way.**
- **Tag and mark all air lines before disconnecting.**

(1) Disconnect air line (1) from elbow (2).

CAUTION
Use care when replacing hardware. Failure to comply may result in damage to radiator core.

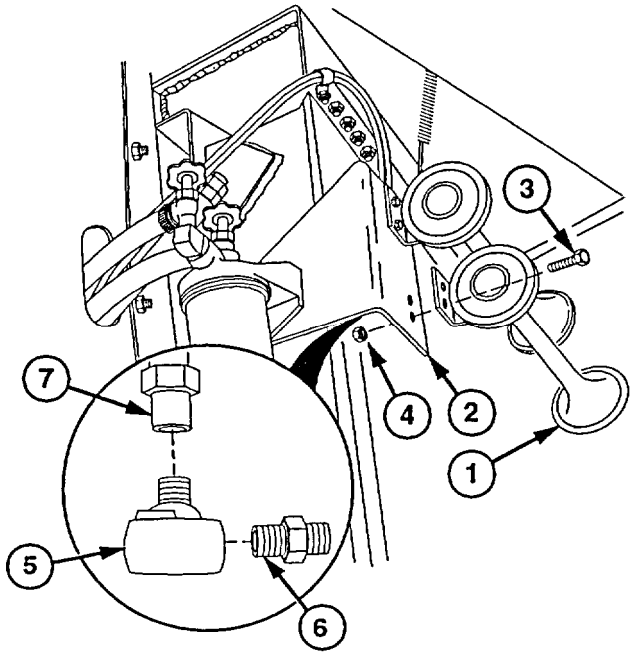
(2) Remove elbow (2) and fitting (3) from air horn (4).
(3) Remove elbow (2) from fitting (3).
(4) Remove two locknuts (5), screws (6), and air horn (4) from bracket (7). Discard locknuts.



18-7. AIR HORN REPLACEMENT (CONT)

b. Installation

(1) Install air horn (1) on bracket (2) with two screws (3) and new locknuts (4).



WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid Injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(2) Coat threads of elbow (5) and fitting (6) with pipe thread sealing compound.

(3) Install fitting (6) in elbow (5).

(4) Install fitting (6) and elbow (5) in air horn (1).

(5) Connect air line (7) to elbow (5).

c. Follow-On Maintenance

(1) Start engine.

(2) Build up air pressure to 90 psi (621 kPa) (TM 9-2320-360-10).

(3) Check operation of horn.

(4) Shut off engine (TM 9-2320-360-10).

(5) Close engine hood (TM 9-2320-360-10).

(6) Remove wheel chocks.

18-8. AIR HORN VALVE REPLACEMENT

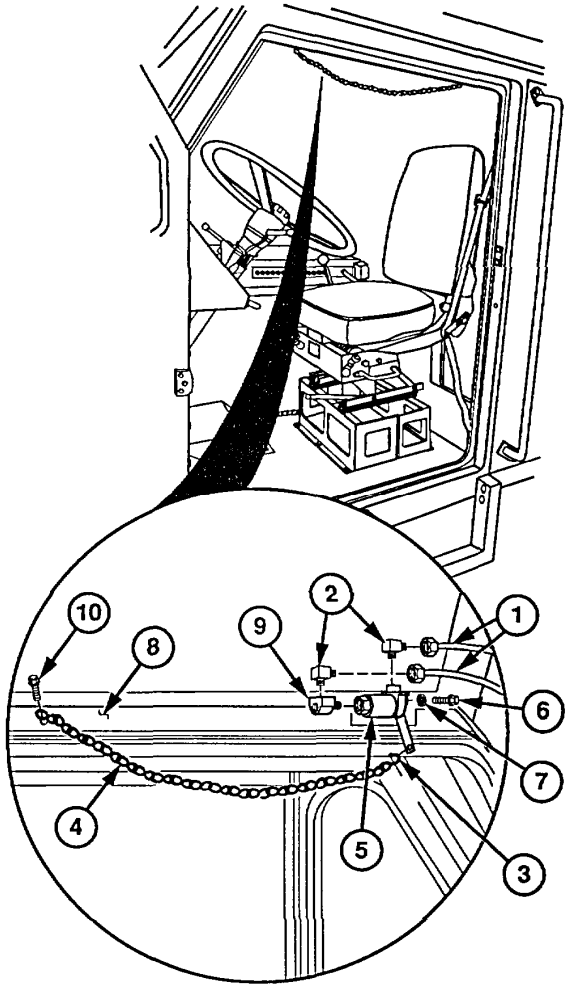
This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-1 0).
Parking brake on (TM 9-2320-360-10)
Wheels chocked.
Air system drained (TM 9-2320-360-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Lockwashers (2) (Item 119, Appendix G)



a. Removal

NOTE
Tag and mark air lines before removal.

(1) Disconnect two air lines (1) from elbows (2).
(2) Spread S-hook (3) and disconnect chain (4) from air horn valve (5).
(3) Remove two screws (6), lockwashers (7), and air horn valve (5) from cab wall (8). Discard lockwashers.
(4) Remove elbows (2) from air horn valve (5).
(5) Remove elbow (9) from air horn valve (5).
(6) Remove screw (10) and chain (4) from cab wall (8).

18-8. AIR HORN VALVE REPLACEMENT (CONT)

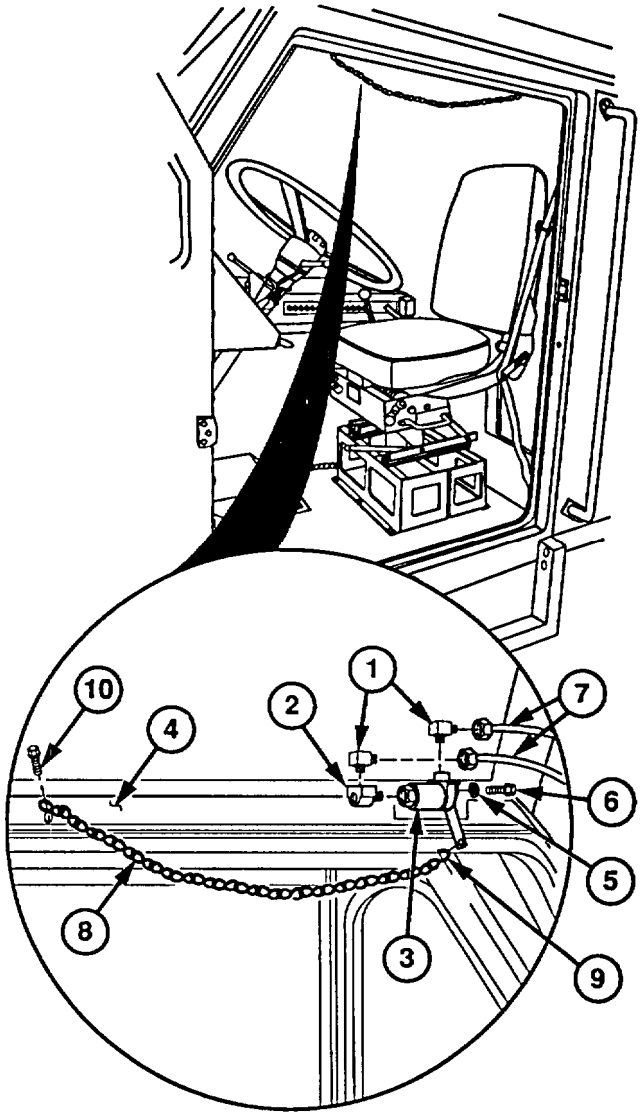
b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(1) Coat threads of two elbows (1) and elbow (2) with pipe thread sealing compound.
(2) Install elbows (1 and 2) on air horn valve (3).
(3) Install air horn valve (3) on cab wall (4) with two new lockwashers (5) and screws (6).
(4) Connect two air lines (7) to elbows (1).
(5) Attach chain (8) to air horn valve (3) and close S-hook (9).
(6) Install chain (8) on cab wall (4) with screw (10).

c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).
(2) Build up air pressure to 90 psi (621 kPa) (TM 9-2320-360-10).
(3) Check operation of horn.
(4) Shut off engine (TM 9-2320-360-10).
(5) Check connections for leaks.
(6) Remove wheel chocks.

18-9. HORN BUTTON REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

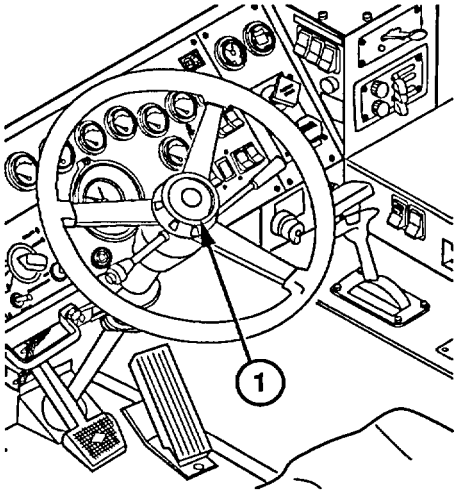
CAUTION

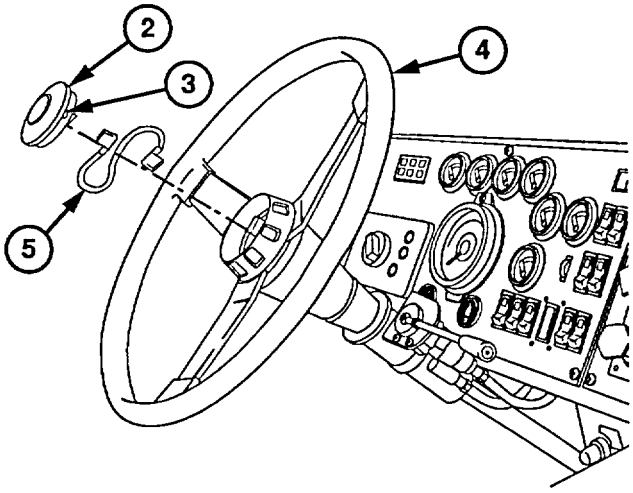
Use care when lifting up on lip of horn button. Excessive force may cause damage.

NOTE

Horn button is held in place by an internal spring extending outside of the assembly in two places.

(1) Lift up on outer lip (1) of horn button (2) until two spring retainers (3) are free of steering wheel (4).
(2) Disconnect wire (5) from steering wheel (4) and horn button (2).





b. Installation

(1) Connect wire (5) to steering wheel (4) and horn button (2).
(2) Install horn button (2) on steering wheel (4).

c. Follow-On Maintenance

(1) Connect batteries (para 7-61).
(2) Turn ENGINE switch to ON position (TM 9-2320-360-10).
(3) Check operation of city horn (TM 9-2320-360-10).
(4) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

18-10. HEATER REPAIR

This task covers:
Removal
Installation

Follow-On Maintenance

INITIAL SETUP

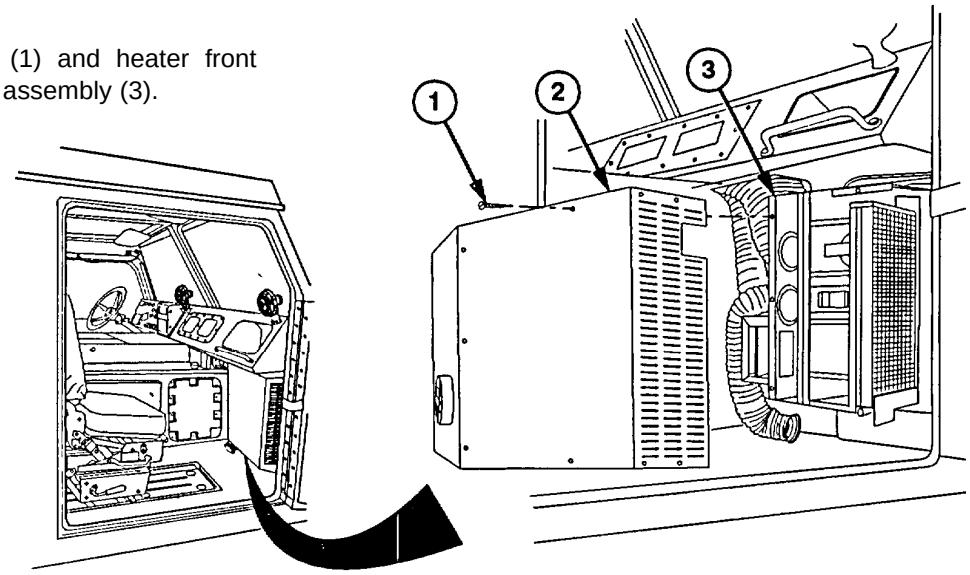
Equipment Conditions
Cooling system drained (heater core only) (para 6-2).
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-75 Lb-In. (Item 71, Appendix F)

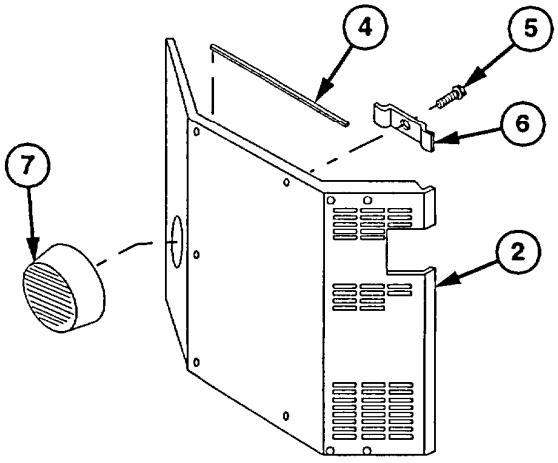
Materials/Parts
Adhesive (Item 1, Appendix C)
Silicone (Item 30, Appendix C)
Tags, Identification (Item 32, Appendix C)
Tape, Insulation, Electrical (Item 33, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Lockwashers (4) (Item 101, Appendix G)
Lockwasher (Item 95, Appendix G)
Nuts, Push-On (2) (Item 127, Appendix G)

a. Heater Motor Removal

(1) Remove 10 screws (1) and heater front plate (2) from heater assembly (3).



(2) Remove quickedge molding (4) from heater front plate (2).
(3) Remove screw (5), mounting spring (6), and louver (7) from front plate (2).



NOTE

Tag and mark wires before removal.

(4) Disconnect heater wire (8) from speed control resistor wire (9).

(5) Remove two screws (10) from heater assembly (3).

CAUTION

Use care when removing motor assembly to avoid damaging fins on heater core.

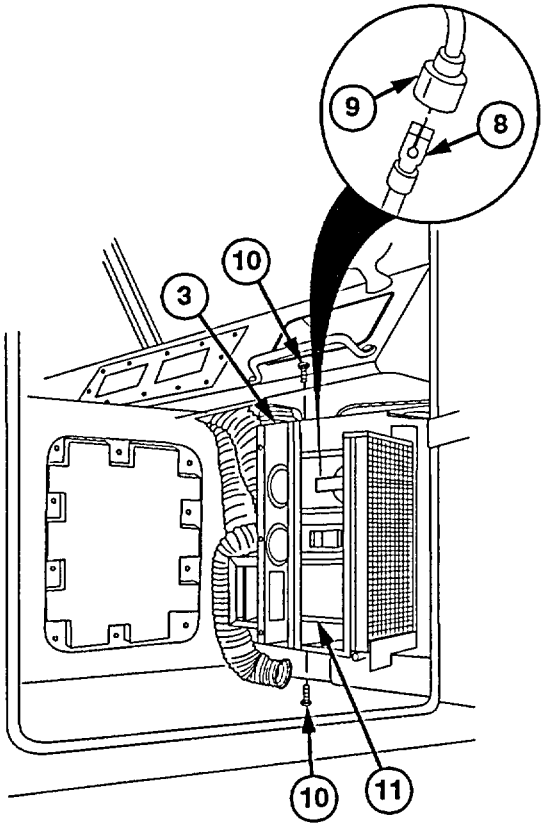
(6) Remove motor assembly (11) from heater assembly (3).

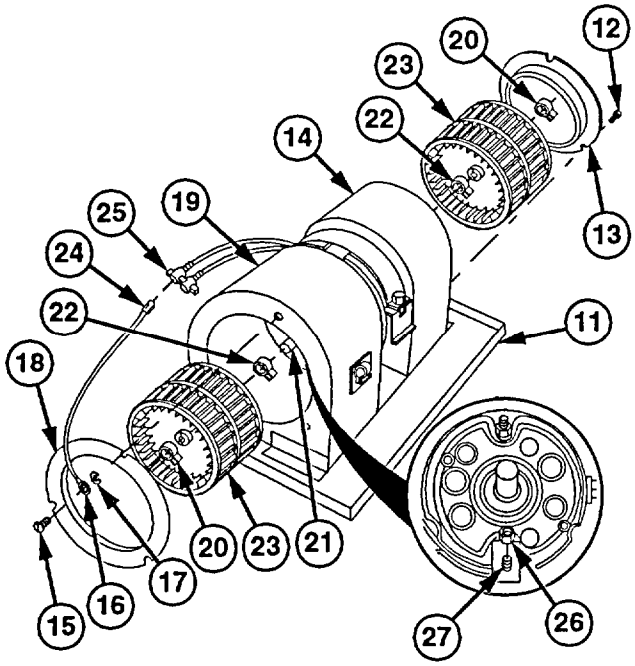
(7) Remove three screws (12) and foil (13) from blower housing (14).
(8) Remove three screws (15), wire (16), lockwasher (17), and foil (18) from blower housing (19). Discard lockwasher.
(9) Remove two retaining clips (20) from motor shafts (21).
(10) Remove two retaining clips (22) from blower wheels (23).

NOTE

Tag and mark position of blower wheels and housings before removal.

(11) Remove two blower wheels (23) from blower housings (14 and 19).
(12) Remove blower housing ground wire (24) from motor wire (25).
(13) Remove caged nut (26) from motor stud (27).





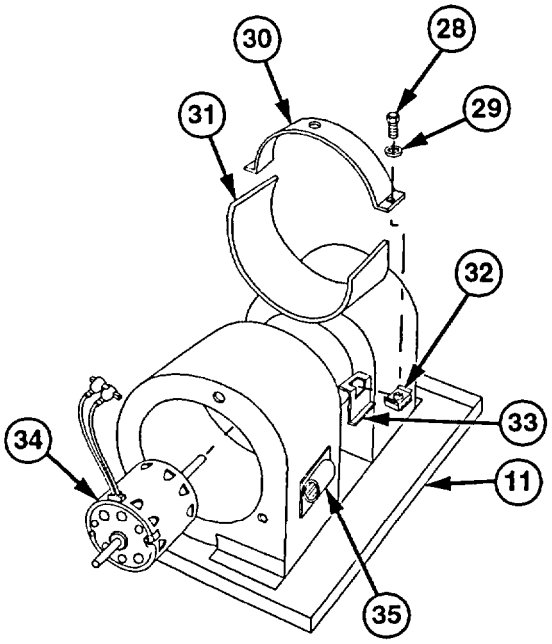
18-10. HEATER REPAIR (CONT)

(14) Remove screw (28), washer (29), retaining strap (30), and rubber cushion (31) from motor assembly (11).
(15) Remove caged nut (32) from bracket (33).
(16) Remove motor (34) from motor assembly (11).

NOTE

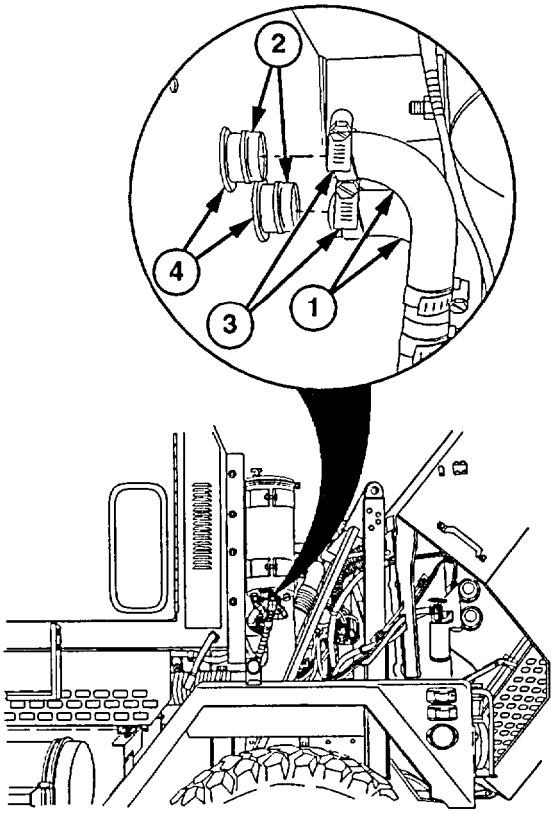
Do step (17) only if clip is broken.

(17) Remove clip (35) from motor assembly (11).



b. Heater Core Removal

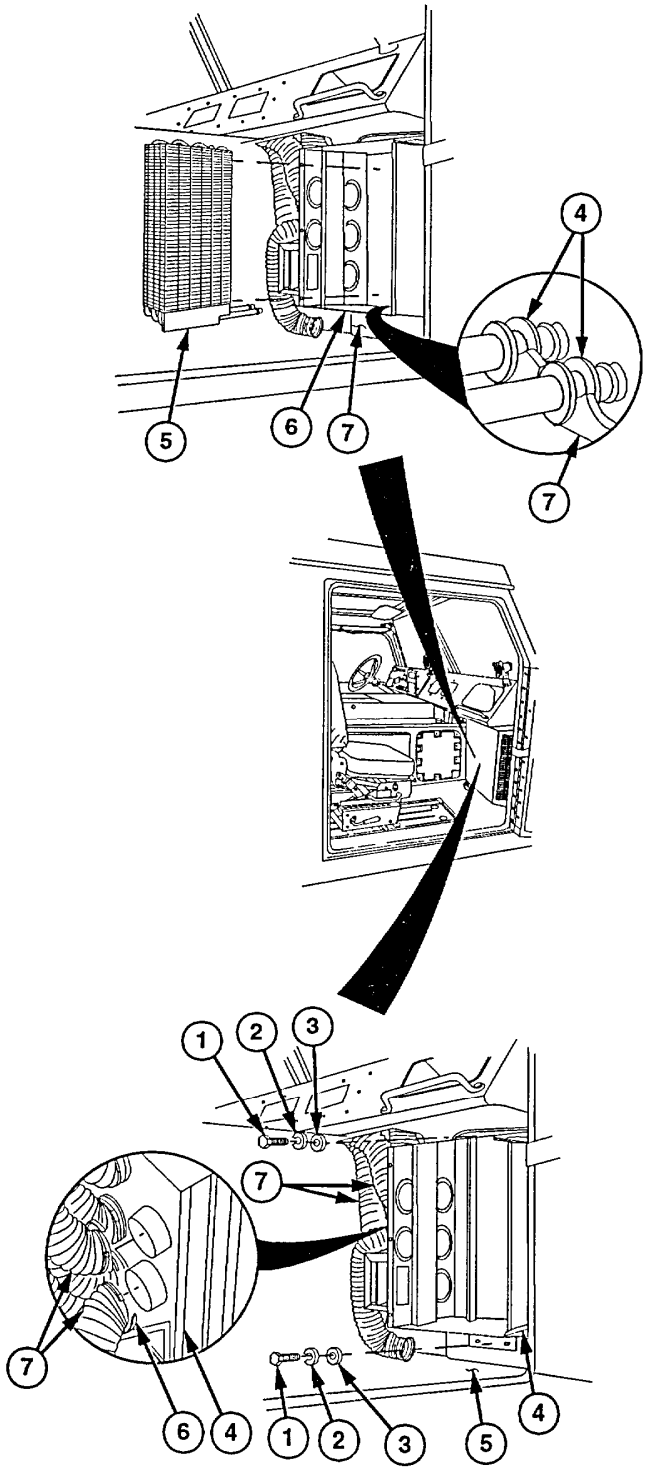
(1) Place drain pan under hoses (1) and heater pipes (2).
(2) Loosen clamps (3) and remove two hoses (1) from heater pipes (2).
(3) Coat grommets (4) with silicone.



CAUTION

Use care when handling heater core. Excessive force may result in damage.

(4) Remove heater core (5) from heater assembly (6).
(5) Remove two grommets (4) from firewall (7).



c. Heater Removal

(1) Remove four screws (1), lockwashers (2), and washers (3) from heater assembly (4) and firewall (5). Discard lockwashers.

NOTE

Location of plastic cable ties should be marked before removal.

(2) Remove plastic cable ties (6) from heater ducts (7).

NOTE

Tag and mark heater ducts before removal.

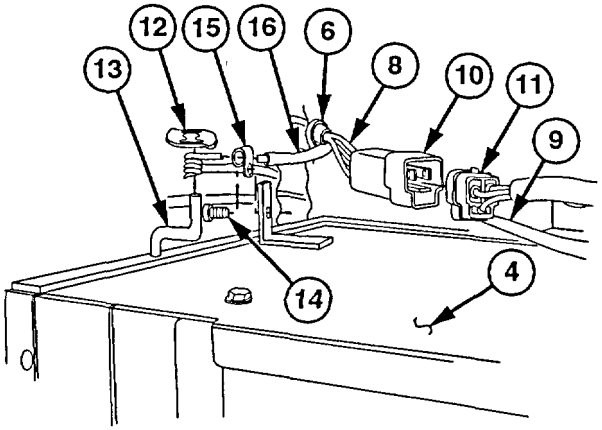
(3) Remove six heater ducts (7) from heater assembly (4).

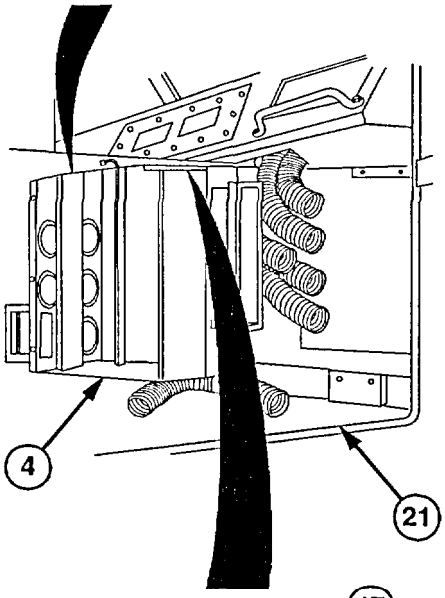
18-10. HEATER REPAIR (CONT)

NOTE

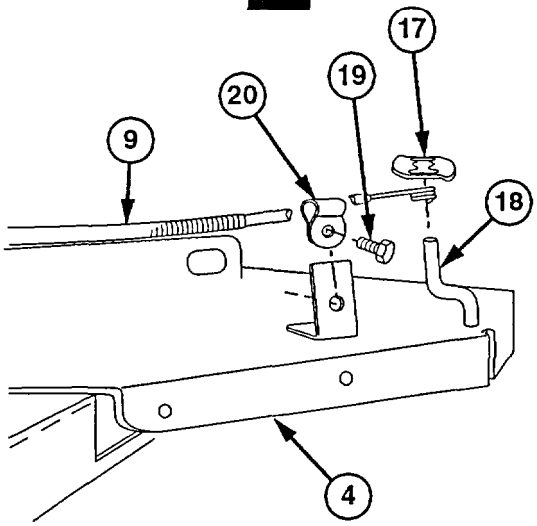
Location of plastic cable ties should be marked before removal.

(4) Remove plastic cable ties (6) from electrical cable (8) and fresh air cable (9) as required.
(5) Disconnect electrical plug (10) from receptacle (11).
(6) Remove nut (12) from defrost lever (13). Discard nut.
(7) Remove screw (14), cushion clip (15), and defrost cable (16) from heater assembly (4).
(8) Remove defrost cable (16) from defrost lever (13).





(9) Remove nut (17) from fresh air lever (18). Discard nut.
(10) Remove screw (19), clip (20), and fresh air cable (9) from heater assembly (4).
(11) Remove fresh air cable (9) from fresh air lever (18).
(12) Remove heater assembly (4) from cab (21).



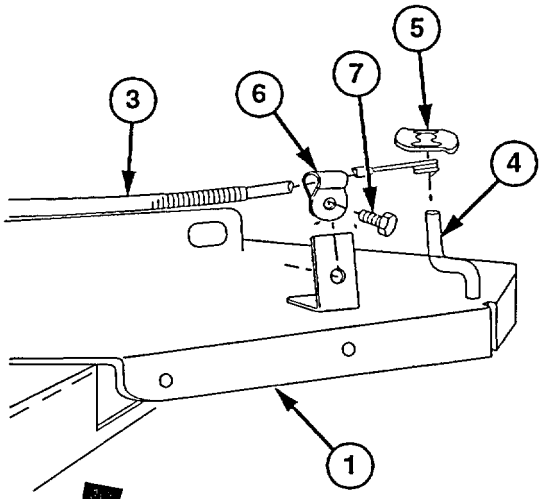
d. Heater Installation

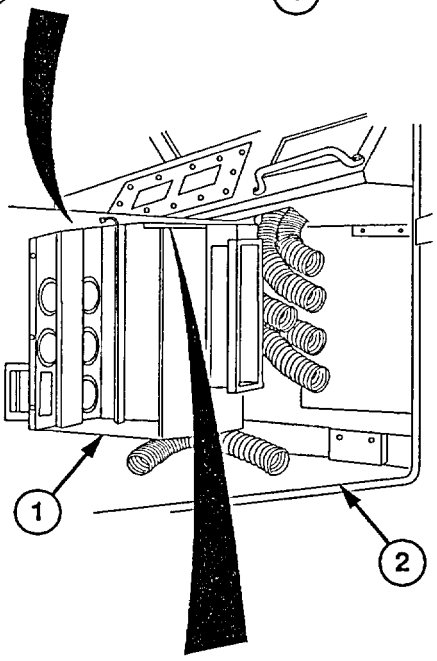
(1) Position heater assembly (1) in cab (2).
(2) Position fresh air cable (3) on fresh air lever (4).
(3) Install new nut (5) on fresh air lever (4).

NOTE

Dash control lever must be in RECIRC position and fresh air lever in closed position before performing step (4).

(4) Install fresh air cable (3) on heater assembly (1) with clip (6) and screw (7).





(5) Position defrost cable (8) on defrost lever (9).
(6) Install new nut (10) on defrost lever (9).

NOTE

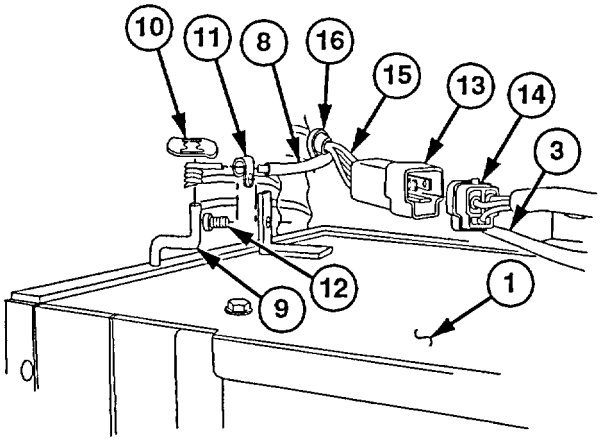
Dash control lever must be in DEFROST position and defrost lever rotated fully clockwise before performing step (7).

(7) Install defrost cable (8) on heater assembly (1) with clip (11) and screw (12).
(8) Connect electrical plug (13) to receptacle (14).

NOTE

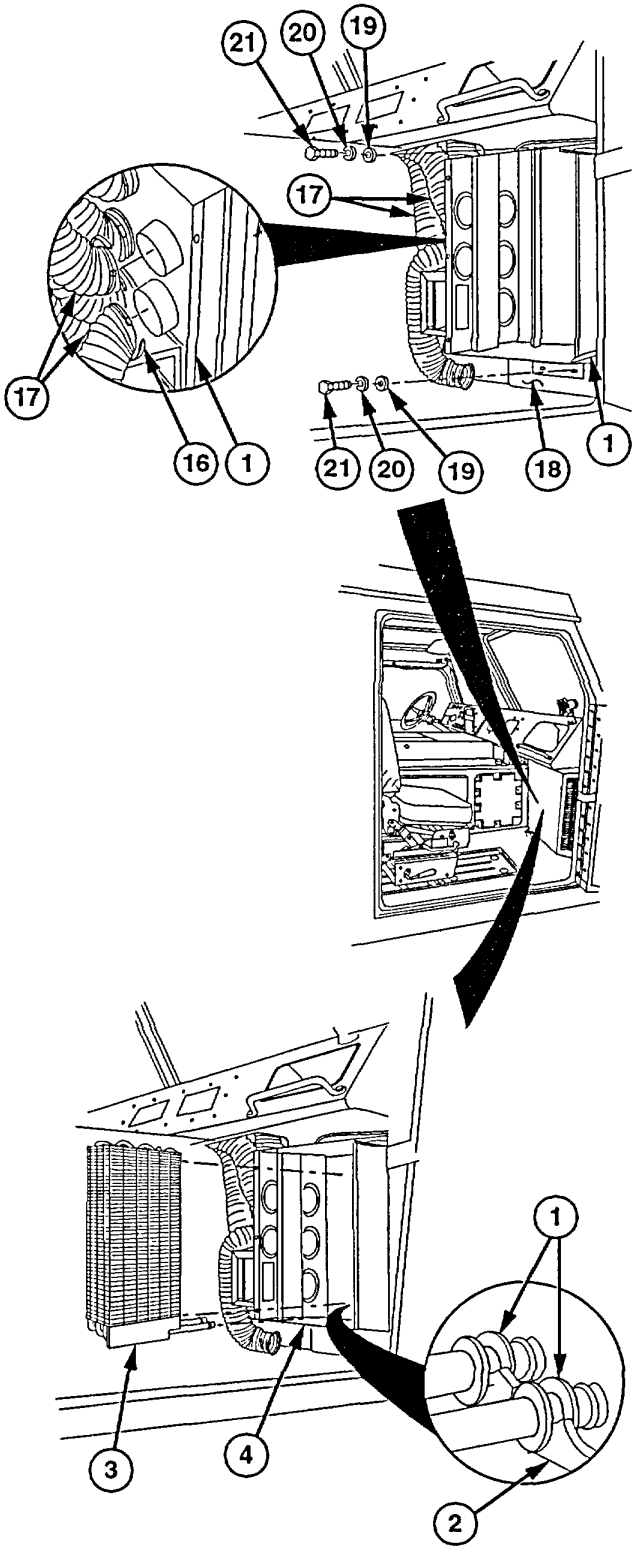
Plastic cable ties should be positioned in locations marked during removal.

(9) Secure electrical cable (15) to fresh air cable (3) with plastic cable ties (16).



18-10. HEATER REPAIR (CONT)

(10) Install six heater ducts (17) on heater assembly (1) with plastic cable ties (16).
(11) Install heater assembly (1) on firewall (18) with four washers (19), new lockwashers (20), and screws (21).



e. Heater Core Installation

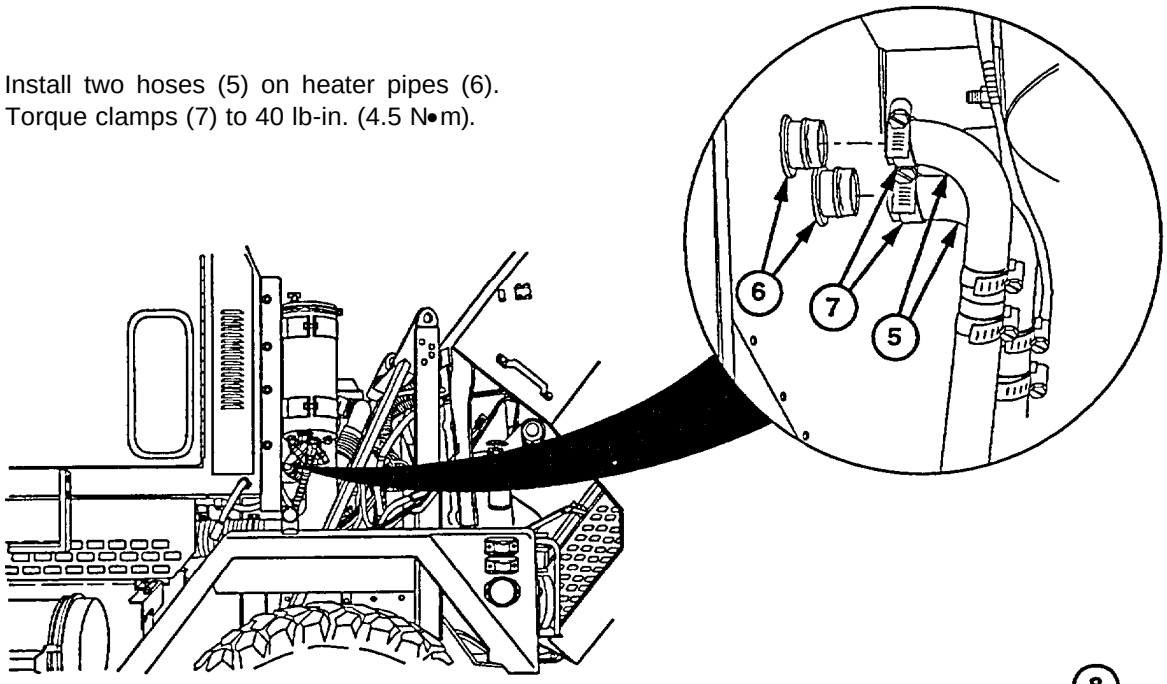
(1) Install two grommets (1) on firewall (2).
(2) Coat two grommets (1) with silicone.

CAUTION

Use care when handling heater core. Copper heater pipes may bend or break if not aligned with holes in firewall and cause damage to heater.

(3) Install heater core (3) in heater assembly (4).

(4) Install two hoses (5) on heater pipes (6). Torque clamps (7) to 40 lb-in. (4.5 N•m).

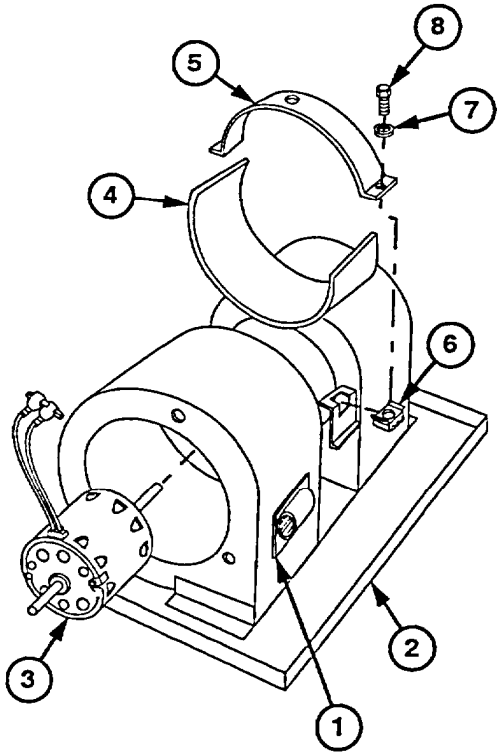


f. Heater Motor Installation

NOTE

Do step (1) only if clip was removed.

(1) Install clip (1) on motor assembly (2).
(2) Position motor (3) on motor assembly (2).
(3) Install cushion (4), motor clamp (5), and caged nut (6) on motor assembly (2) with washer (7) and screw (8). Torque to 5 lb-in. (0.57 N•m).



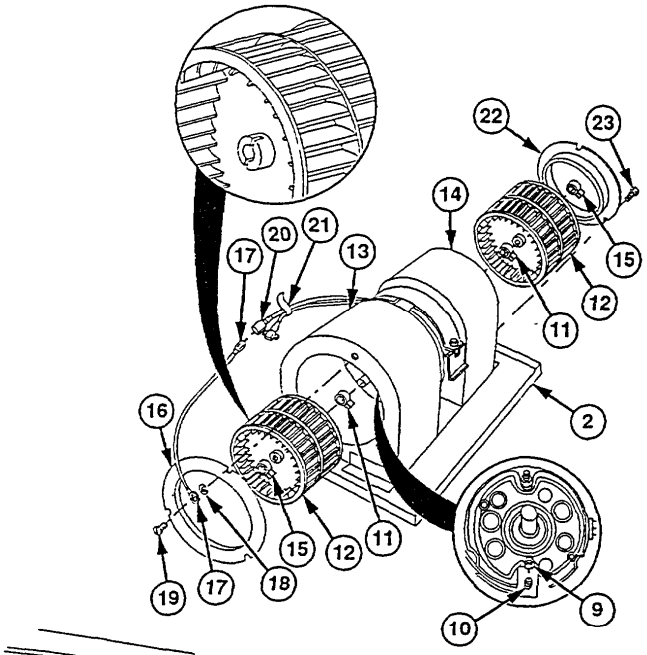
18-10. HEATER REPAIR (CONT)

(4) Install caged nut (9) on stud (10).
(5) Install two retaining dips (11) on blower wheels (12).
(6) Install two blower wheels (12) in blower housings (13 and 14).
(7) Install two retaining dips (15) on blower wheels (12).

NOTE

Blower wheels should turn freely after installation.

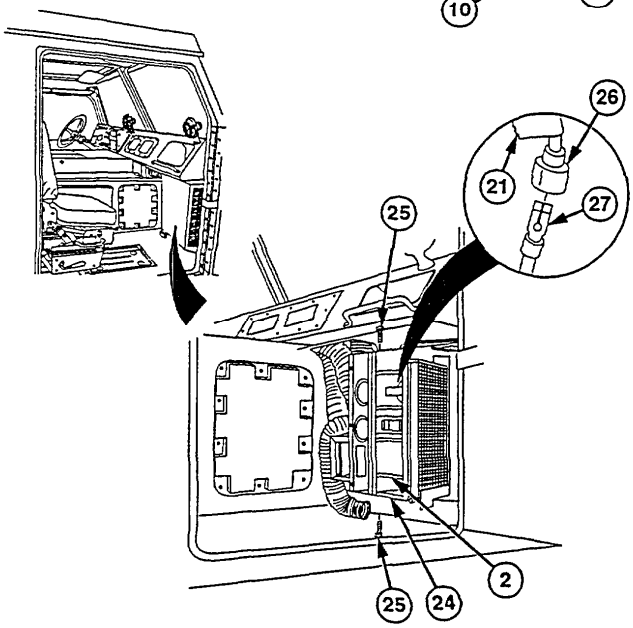
(8) Install foil (16) and blower housing ground wire (17) on blower housing (13) with new lockwasher (18) and three screws (19).
(9) Connect blower housing ground wire (17) to motor wire (20).
(10) Secure electrical connection (17 and 20) with electrical tape (21).
(11) Position foil (22) on other side of motor assembly (2).
(12) Install foil (22) on blower housing (14) with three screws (23).



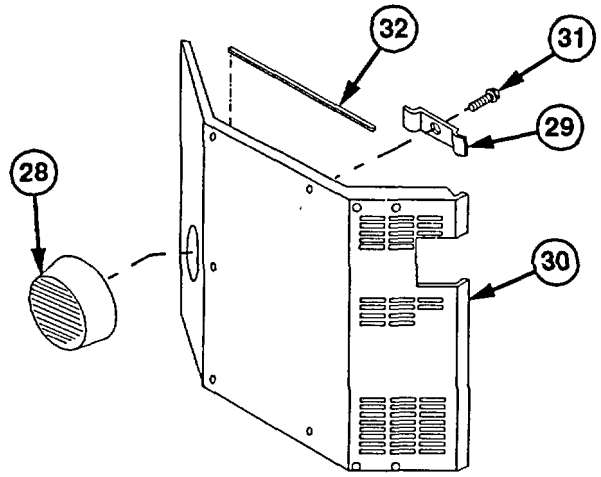
CAUTION

Use care when installing motor assembly to avoid damaging fins on heater core.

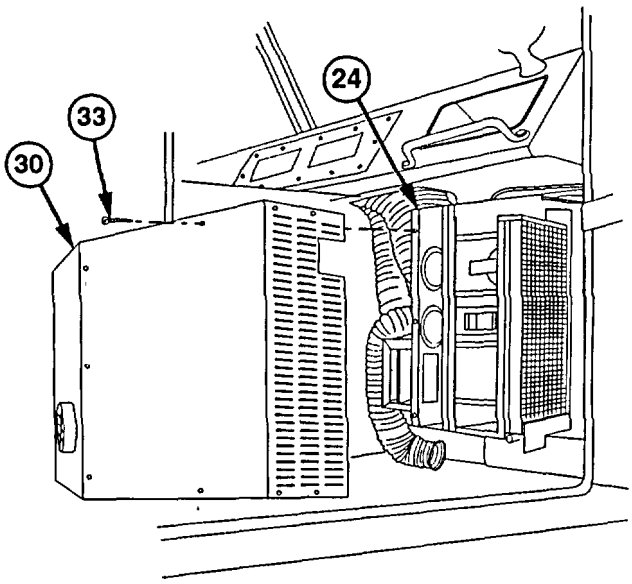
(13) Install motor assembly (2) on heater assembly (24) with two screws (25).
(14) Connect heater wire (26) to speed control resistor wire (27).
(15) Secure electrical connection (26 and 27) with electrical tape (21).



(16) Install louver (28) and mounting spring (29) on heater front plate (30) with screw (31).
(17) Install quickedge molding (32) on heater front plate (30).



(18) Install heater front plate (30) on heater assembly (24) with 10 screws (33).



g. Follow-On Maintenance

(1) Fill cooling system (para 6-2).
(2) Connect batteries (para 7-61).
(3) Start engine. Warm up to normal operating temperature (TM 9-2320-360-10).
(4) Check operation of heater (TM 9-2320-360-10).
(5) Check heater hoses for leaks.
(6) Shut off engine (TM 9-2320-360-10).

18-11. HEATER SPEED CONTROL RESISTOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

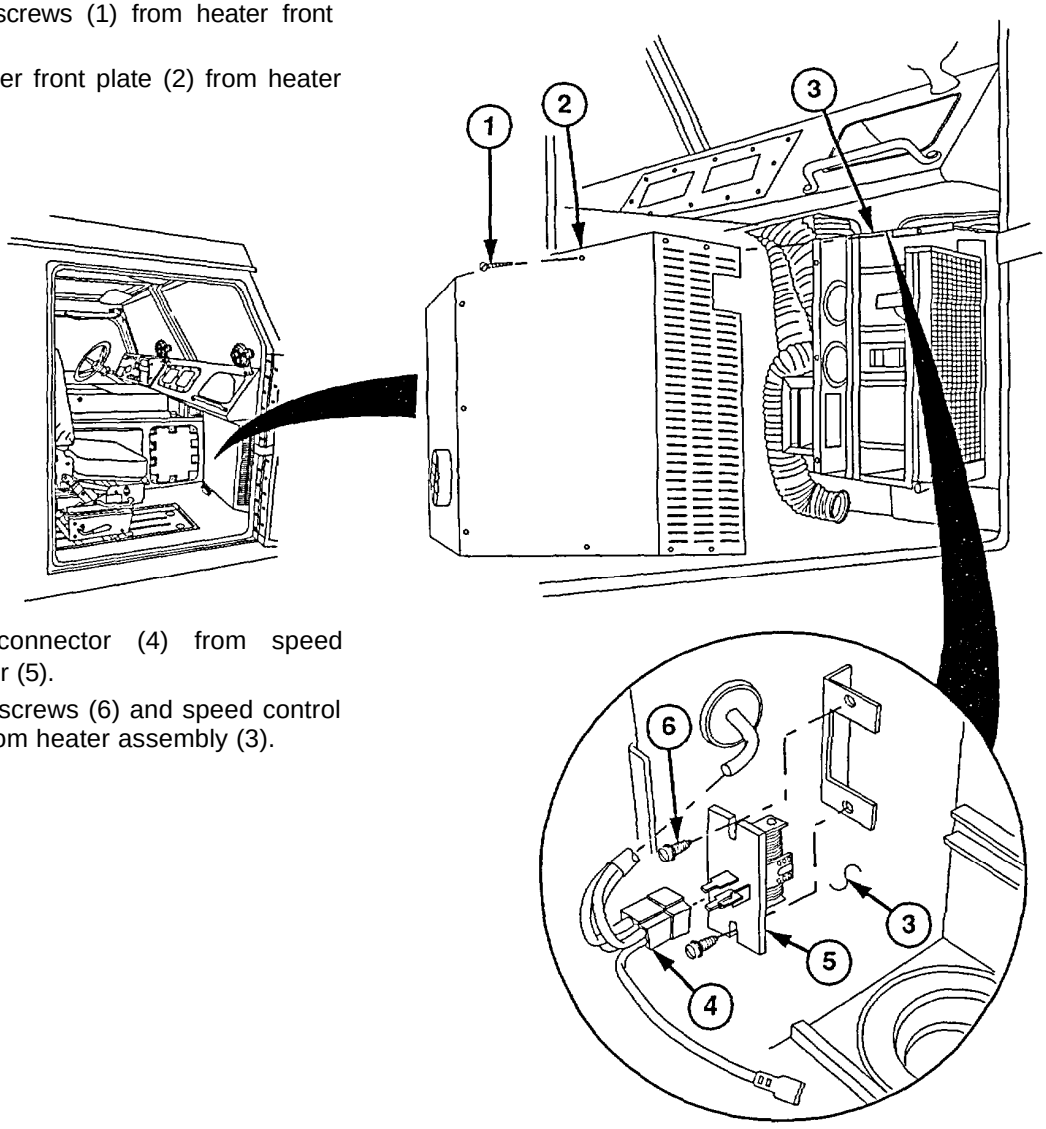
INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

(1) Remove 10 screws (1) from heater front plate (2).
(2) Remove heater front plate (2) from heater assembly (3).



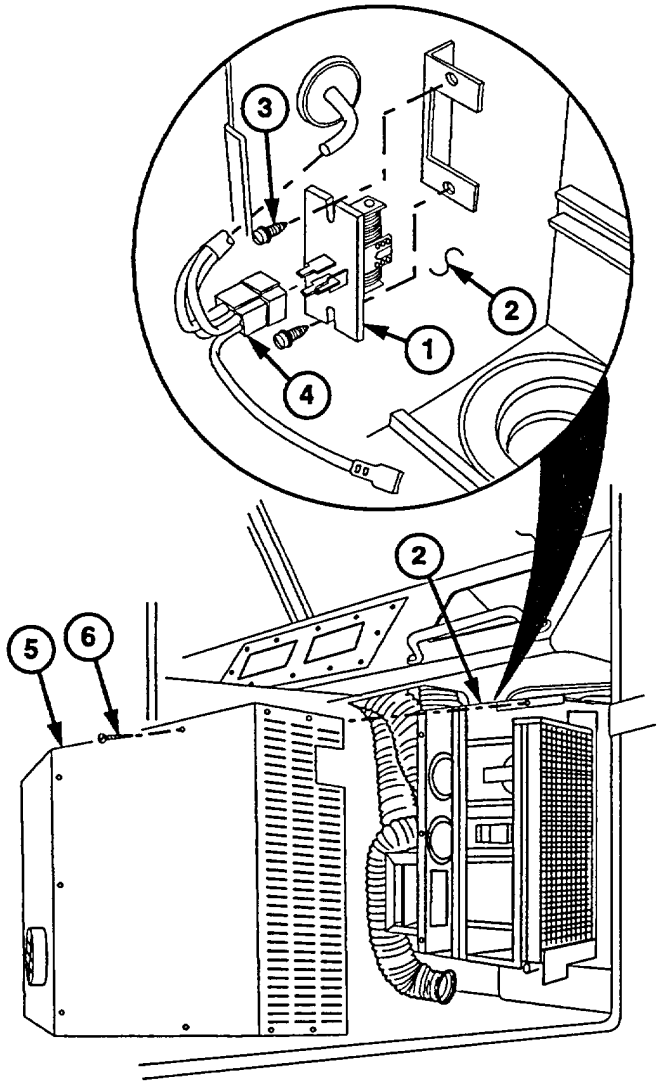
(3) Disconnect connector (4) from speed control resistor (5).
(4) Remove two screws (6) and speed control resistor (5) from heater assembly (3).

b. Installation

(1) Install speed control resistor (1) on heater assembly (2) with two screws (3).

(2) Connect connector (4) to speed control resistor (1).

(3) Install heater front plate (5) on heater assembly (2) with 10 screws (6).



c. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(3) Operate heater speed control and check for proper operation (TM 9-2320-360-10).

(4) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

18-12. EXHAUST FAN REPAIR

This task covers:

a. Removal
b. Disassembly
c. Cleaning/Inspection
d. Assembly
e. Installation
f. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions

Batteries Disconnected (para 7-61).
Winch Reservoir Removed (for removal of rear louver panel only) (para 17-10).

Tools and Special Tools

Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts

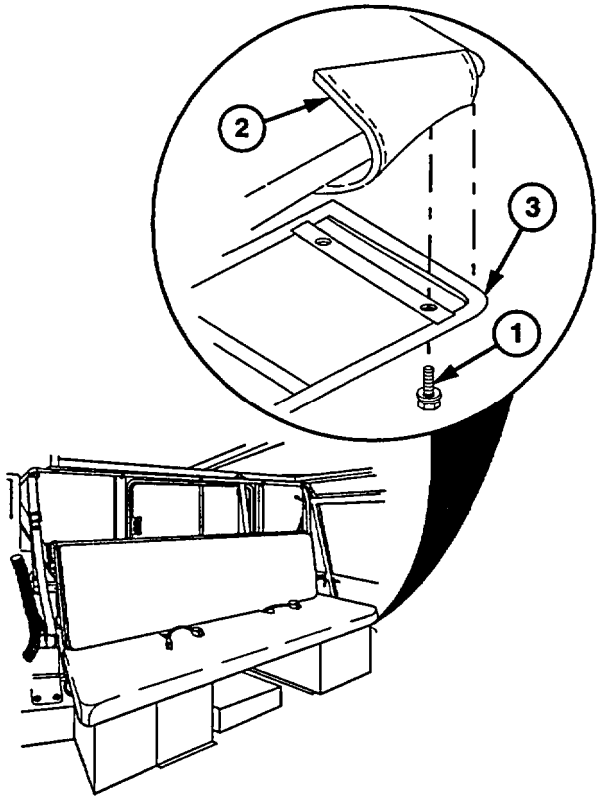
Tags, Identification (Item 32, Appendix C)
Tape, Insulation, Electrical (Item 33, Appendix C)
Ties, Cable, (4) (Item 35, Appendix C)
Lockwashers (4) (Item 100, Appendix G)
Lockwasher (Item 95, Appendix G)
Rivets (8) (Item 158.0.1, Appendix G)

Personnel Required

Two

a. Removal

(1) Remove six screws (1) and lower backseat cushion (2) from lower frame assembly (3) with aid of assistant



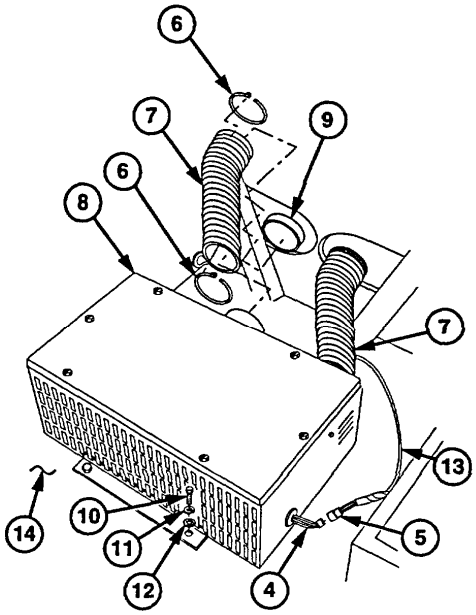
(2) Disconnect plug (4) from cab rear wire harness connector (5).

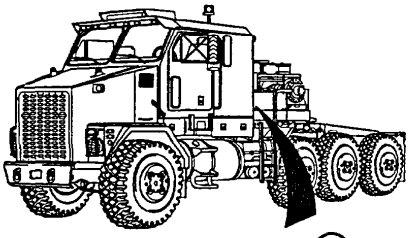
(3) Cut and remove four cable ties (6) from two flexible ducts (7). Discard cable ties.

(4) Remove two flexible ducts (7) from exhaust fan (8) and two duct hose adapters (9).

(5) Remove four screws (10), lockwashers (11), washers (12), and ground wire no. 1435 (13) from exhaust fan (8). Discard lockwashers.

(6) Remove exhaust fan (8) from cab floor (14).



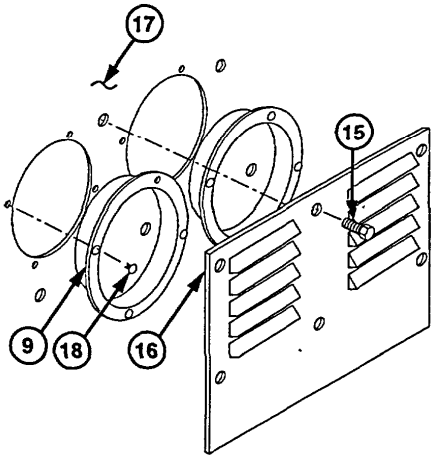


NOTE

Do steps (7) and (8) only if louver panel and/or duct hose adapter(s) fail inspection.

(7) Remove six screws (15) and louver panel (16) from cab wall (17).

(8) Remove eight rivets (18) and two duct hose adapters (9) from cab wall (17). Discard rivets.



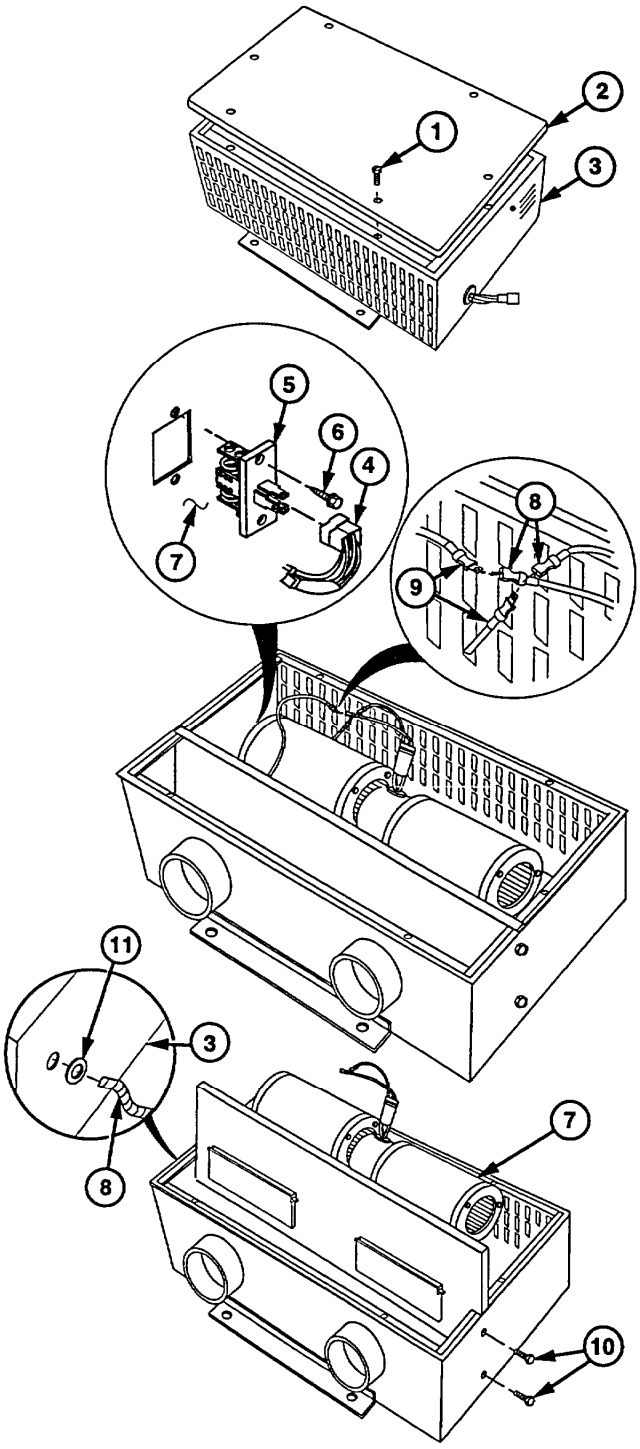
18-12. EXHAUST FAN REPAIR (CONT)

b. Disassembly

(1) Remove six screws (1), and cover (2) from housing (3).

(2) Disconnect connector (4) from speed control resistor (5).
(3) Remove two screws (6) and speed control resistor (5) from blower housing (7).
(4) Remove electrical tape from motor wire harness (8).
(5) Remove two spade connectors (9) from motor wire harness (8).

(6) Remove four screws (10) and blower housing (7) from housing (3).
(7) Remove grommet (11) and motor wire harness (8) from housing (3).



(8) Remove three screws (12) and foil (13) from blower housing (7).

(9) Remove three screws (14), ground wire (15), lockwasher (16), and foil (17) from blower housing (7). Discard lockwasher.

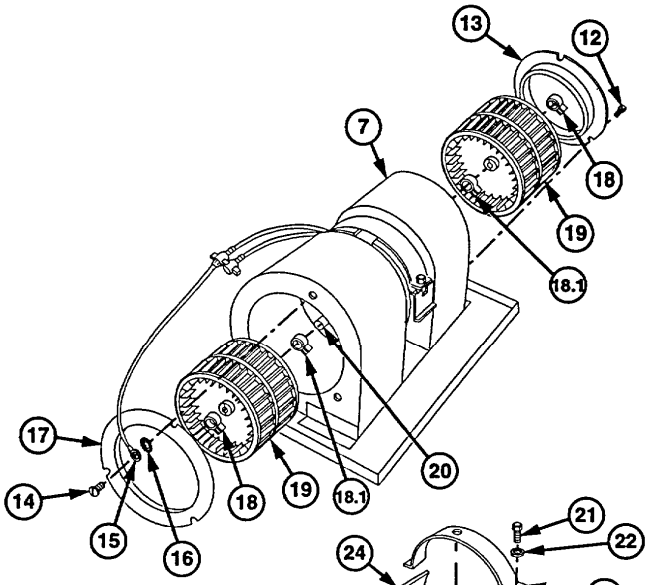
(10) Remove two retaining dips (18) from blower wheels (19).

NOTE

Tag and mark position of blower wheels and housing before removal.

(11) Remove two blower wheels (19) from motor (20).

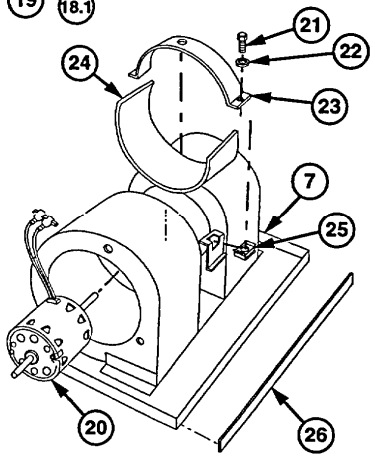
(11.1) Remove two retaining clips (18.1) from two blower wheels (19).



(12) Remove screw (21), washer (22), retaining strip (23), and cushion (24) from blower housing (7).

(13) Remove caged nut (25) from blower housing (7).

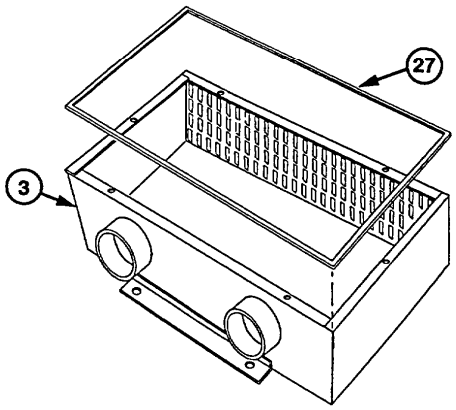
(14) Remove motor (20) from blower housing (7).



NOTE

Do steps (15) and (16) only if foam strips fail inspection.

(15) Remove two foam strips (26) from blower housing (7).



(16) Remove foam strip (27) from housing (3).

18-12. EXHAUST FAN REPAIR (CONT)

c. Cleaning/Inspection

(1) Clean interior and exterior of housings. Use any process or combination of processes which will accomplish thorough cleaning without damage.

(2) Inspect housings for dents, cracks, defective welds and other defects.

(3) Inspect foam strips for compression, wear, and loss of adhesion. Replace any damaged foam strips.

d. Assembly

NOTE

Do steps (1) and (2) only if foam strips were removed.

(1) Install foam strip (1) on housing (2).

(2) Install two foam strips (3) on blower housing (4).

(3) Install caged nut (5) on bracket (6).

NOTE

Motor assembly must be installed with wiring harness positioned on right side, with cage nut slot toward the front Failure to comply will result in improper air flow thru exhaust fan.

(4) Install motor (7) in blower housing (4) with cushion (8), retaining strap (9), screw (10), and washer (11).

(4.1) Install two retaining clips (11.1) on two blower wheels (12).

CAUTION

Blower wheels must turn freely after assembly. Failure to comply may result in damage to equipment.

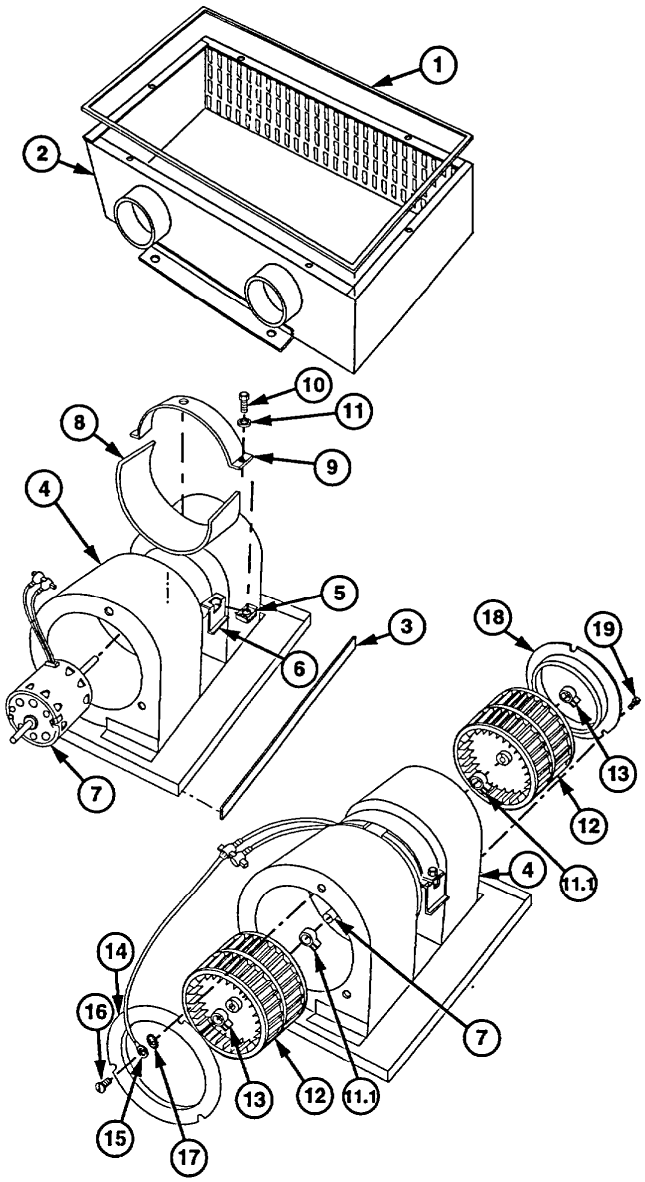
NOTE

Blower wheels must be installed in locations marked during removal. Failure to comply will result in improper air flow thru exhaust fan.

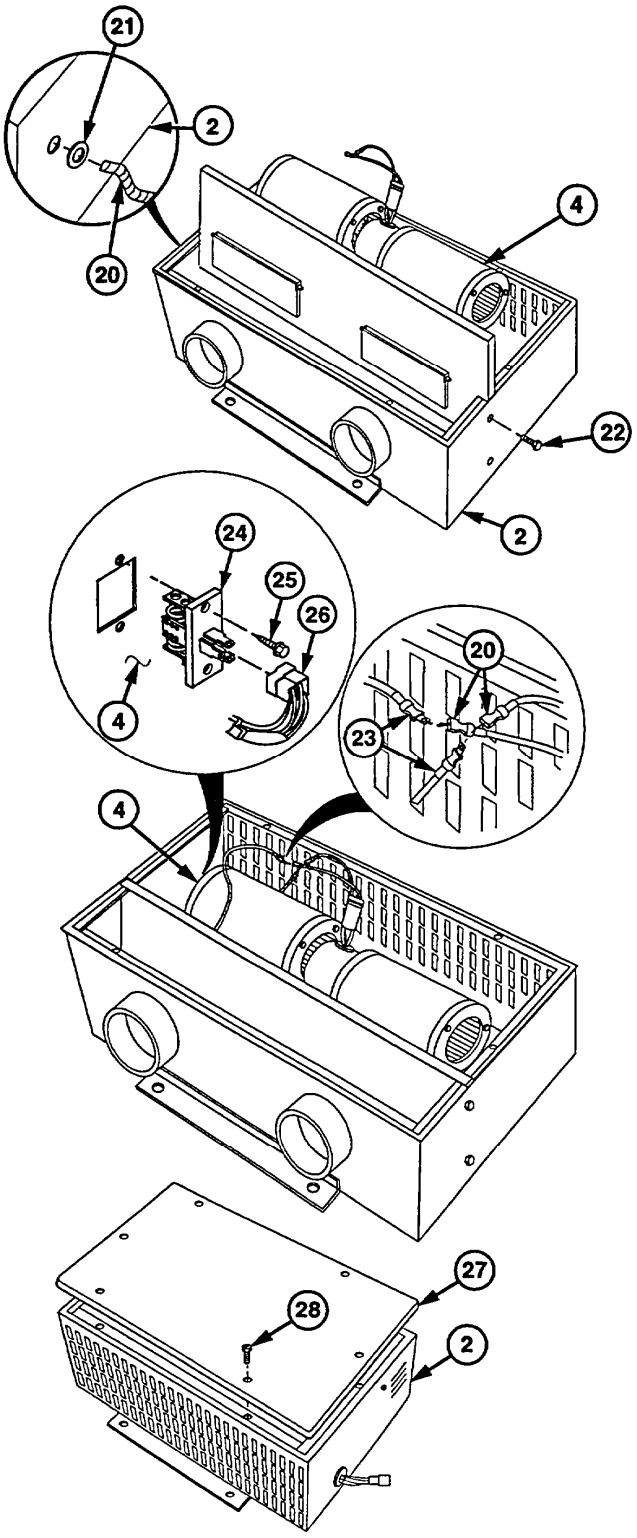
(5) Install two blower wheels (12) on motor (7) with two retaining clips (13).

(6) Install foil (14) and ground wire (15) on blower housing (4) with three screws (16) and new lockwasher (17).

(7) Install foil (18) on blower housing (4) with three screws (19).



(8) Install motor wire harness (20) and grommet (21) in housing (2).



(9) Install blower housing (4) in housing (2) with four screws (22).

(10) Install two spade connectors (23) on motor wire harness (20).

(11) Apply electrical tape to two spade connectors (23).

(12) Install speed control resistor (24) on blower housing (4) with two screws (25).

(13) Install connector (26) on speed control resistor (24).

(14) Install cover (27) on housing (2) with six screws (28).

18-12. EXHAUST FAN REPAIR (CONT)

e. Installation

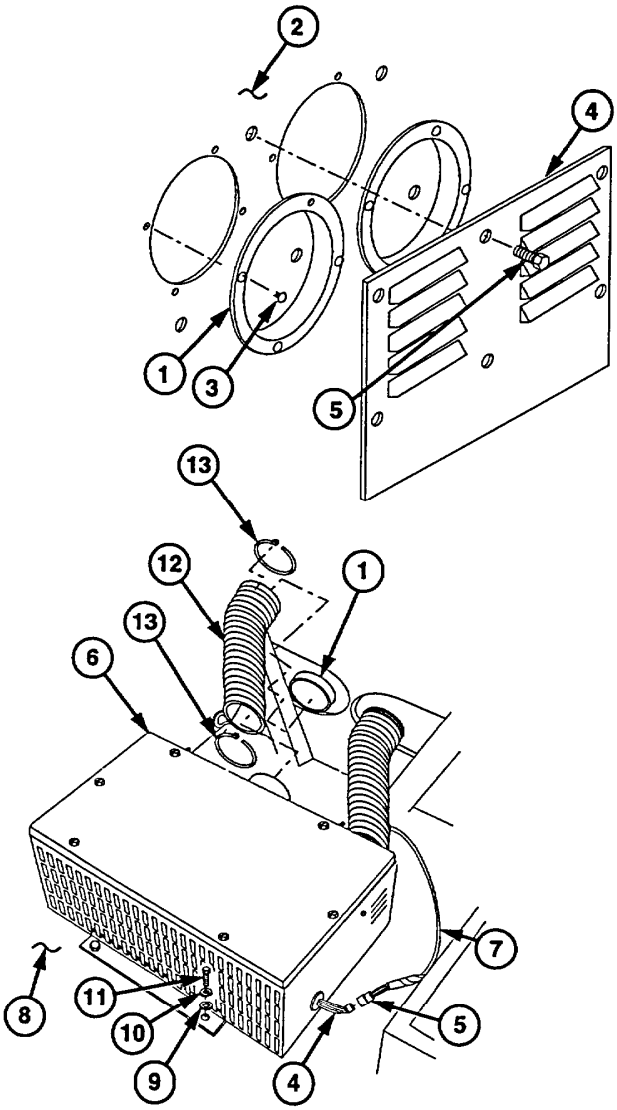
WARNING

On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.

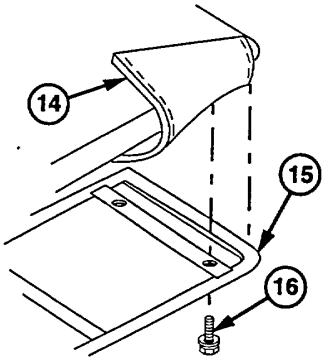
NOTE

Do steps (1) thru (4) only if louver panel and/or duct hose adapter(s) were removed.

(1) Apply silicone adhesive-sealant to sealing surface of two duct hose adapters (1)
(2) Install two duct hose adapters (1) on cab wall (2) with eight new rivets (3).
(3) Apply silicone adhesive-sealant to sealing surface of louver panel (4)
(4) Install louver panel (4) on cab wall (2) with six screws (5).
(5) Install exhaust fan (6) and ground wire (7) on cab floor (8) with four washers (9), new lockwashers (10), and screws (11).
(6) Install two flexible ducts (12) on exhaust fan (6) and two duct adapters (1) with four new cable ties (13).



(7) Install lower backseat cushion (14) on lower frame assembly (15) with six screws (16) with aid of assistant.



g. Follow-On Maintenance

(1) Connect batteries (para 7-61).
(2) Operate exhaust fan and check for operation (TM 9-2320-360-10).

18-13. REAR HEATER SPEED CONTROL RESISTOR REPLACEMENT

This task covers
a. Removal
b. Installation
c. Follow-On Maintenance

Initial Setup:

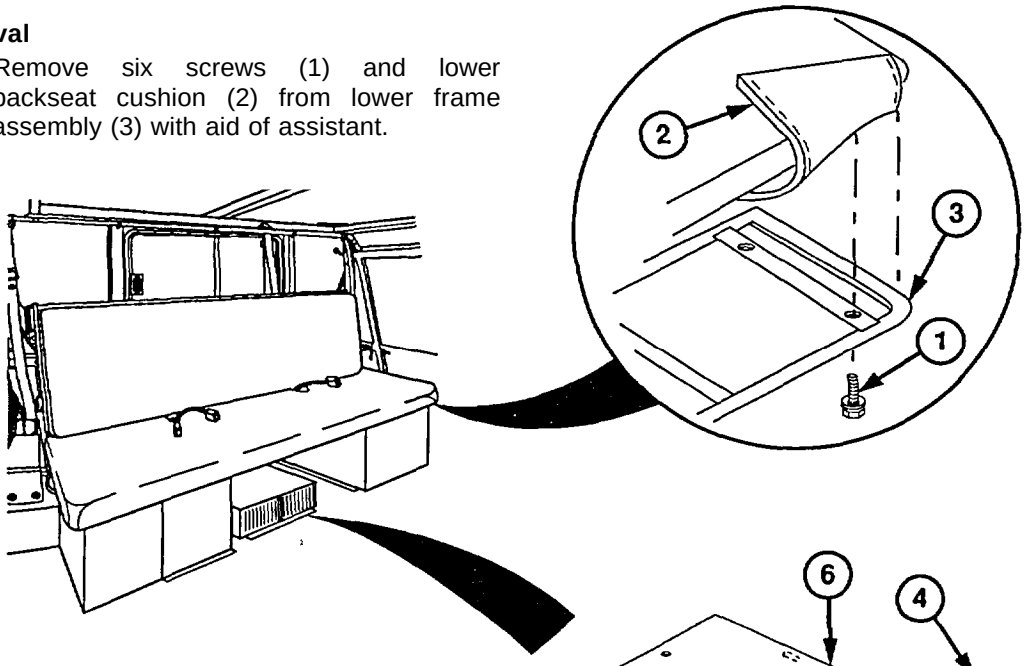
Equipment Conditions
Batteries disconnected (para 7-61).

Personnel Required
Two

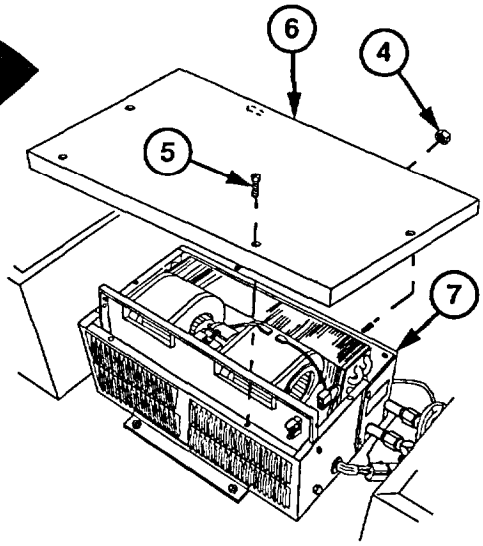
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

(1) Remove six screws (1) and lower backseat cushion (2) from lower frame assembly (3) with aid of assistant.



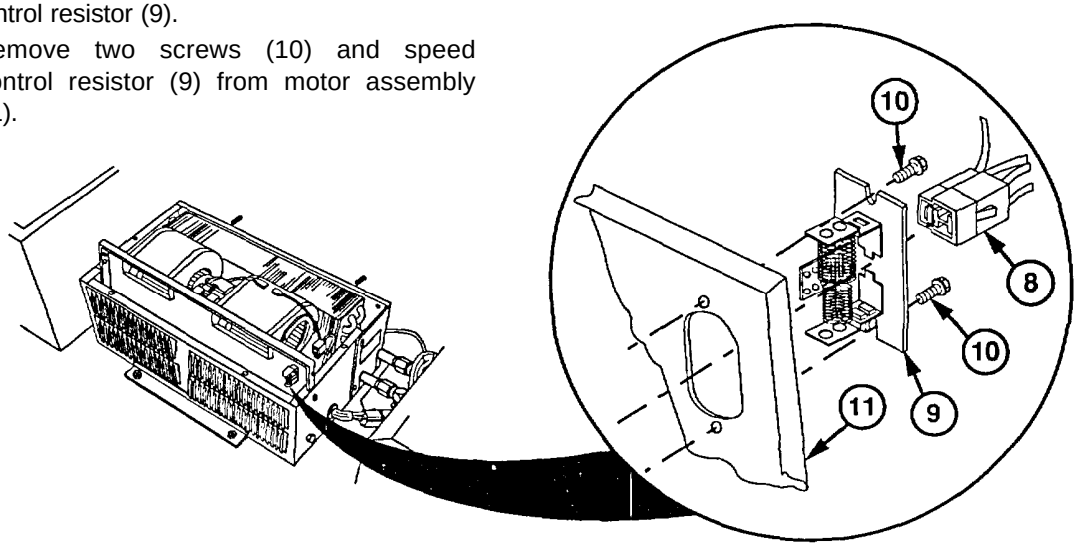
(2) Remove two nuts (4), four screws (5), and heater cover (6) from rear heater assembly (7).



18-13. REAR HEATER SPEED CONTROL RESISTOR REPLACEMENT (CONT)

(3) Disconnect connector (8) from speed control resistor (9).

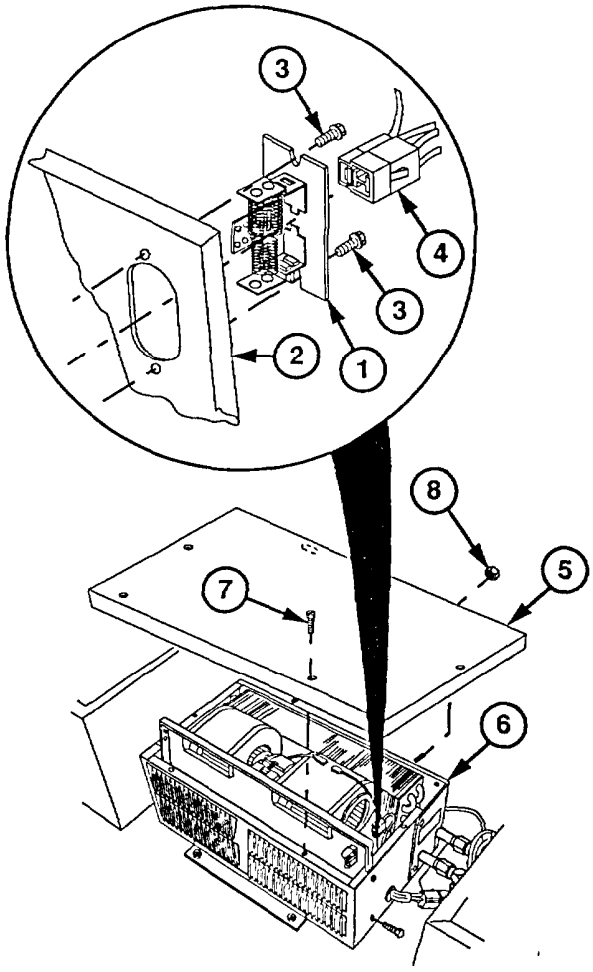
(4) Remove two screws (10) and speed control resistor (9) from motor assembly (11).



b. Installation

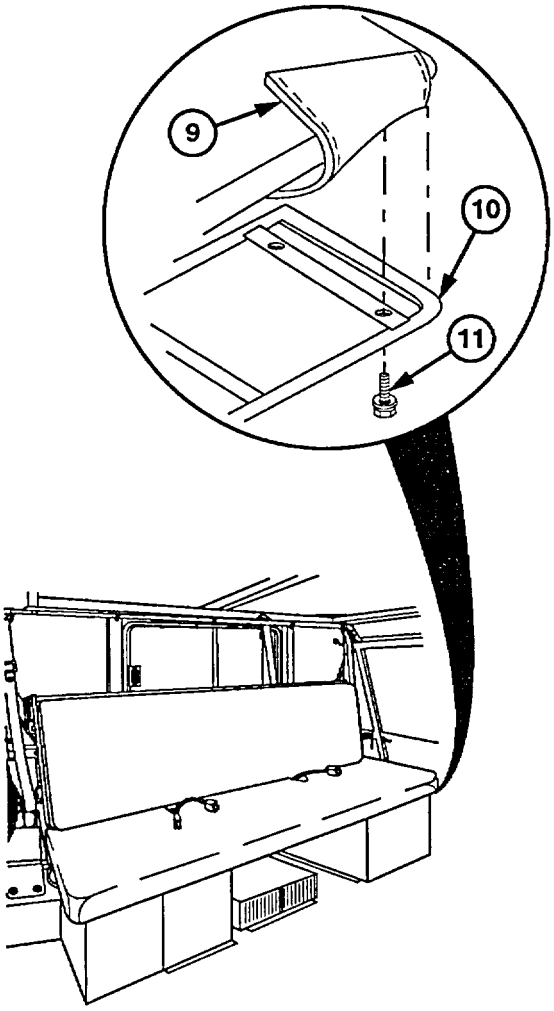
(1) Install speed control resistor (1) on motor assembly (2) with two screws (3).

(2) Connect connector (4) to speed control resistor (1).



(3) Install heater cover (5) on heater assembly (6) with four screws (7) and two nuts (8).

(4) Install backseat cushion (9) on lower frame assembly (10) with six screws (11) with aid of assistant.



c. Follow-On Maintenance

(1) Connect batteries (para 7-61).
(2) Turn ENGINE switch to ON position (TM 9-2320-360-10).
(3) Check heater fan operation (TM 9-2320-360-10).
(4) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

18-14. HEATER HOSE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Cooling system drained (para 6-2).
Inner fender removed (right side only) (para 16-34).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)
Wrench, Torque, 0-75 Lb-In. (Item 71, Appendix F)

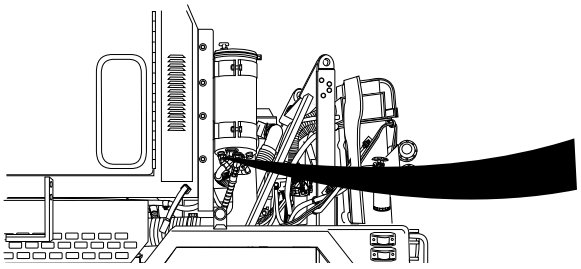
Materials/Parts
Adhesive-Sealant, Silicone (Item 3, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Locknuts (2) (Item 72, Appendix G)
Lockwashers (4) (Item 104, Appendix G)
Lockwashers (3) (Item 101, Appendix G)

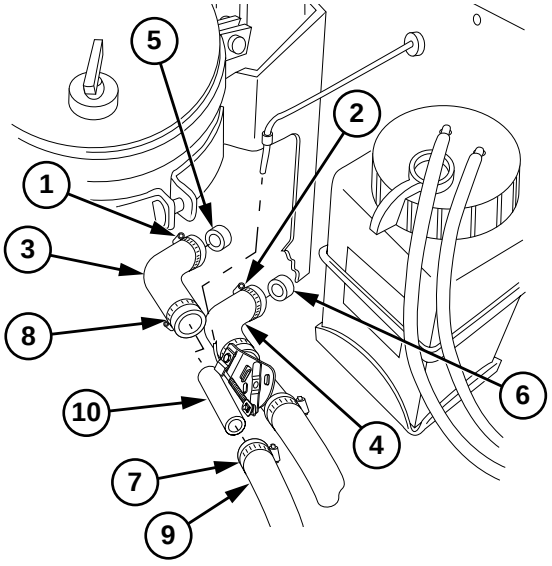
a. Removal

NOTE
Tag and mark routing of hoses before removal.

(1) Loosen two clamps (1 and 2) and remove two hoses (3 and 4) from pipes (5 and 6).

(2) Loosen two clamps (7 and 8) and remove two hoses (3 and 9) from pipe (10).

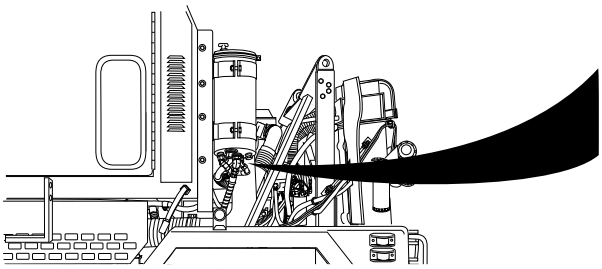


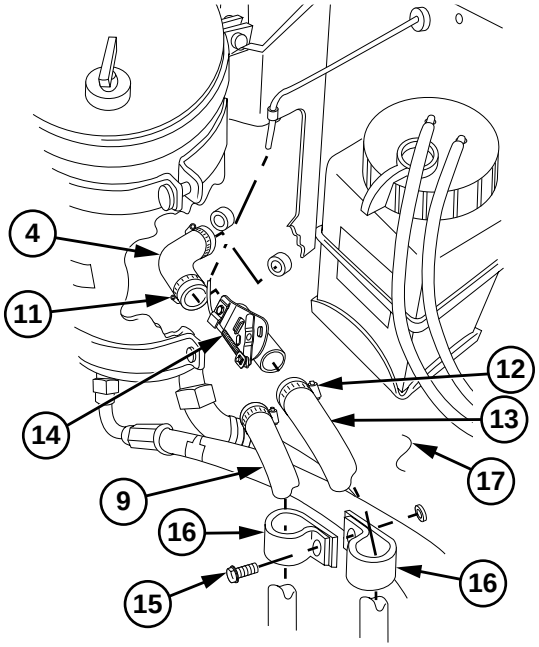


(3) Loosen two clamps (11 and 12) and remove hoses (4 and 13) from heater control valve (14).

(4) Remove screw (15) and two clips (16) from firewall (17).

(5) Remove two clips (16) from hoses (9 and 13).





(6) Remove locknut (18), screw (19), and two clips (20 and 21) from bracket (22). Discard locknut.

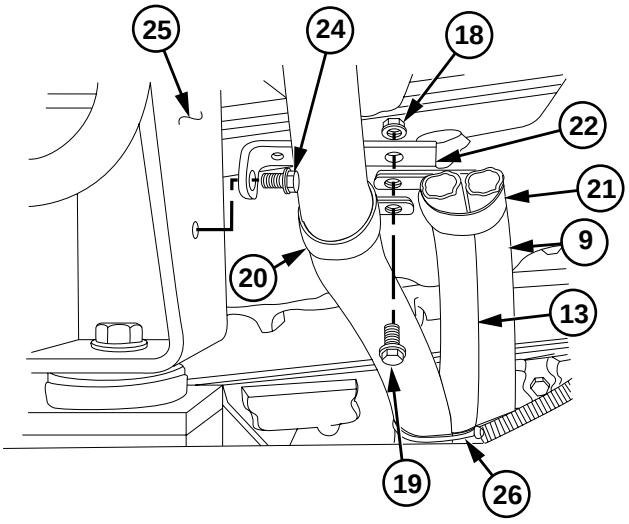
(7) Remove clip (21) from hose (9) and hose (13).

(8) Remove screw (24) and bracket (22) from cab (25).

NOTE

Location of plastic cable ties should be marked before removal.

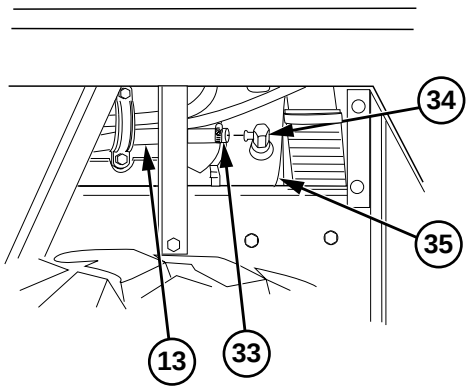
(9) Remove plastic cable ties (26) from hoses as required.



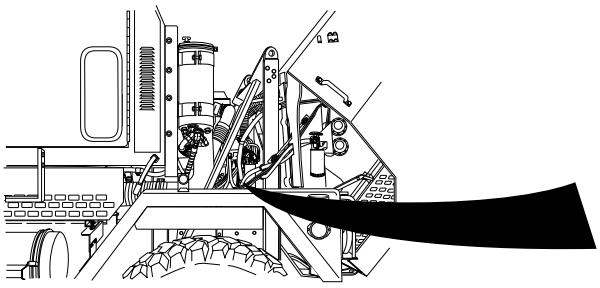
(10) Deleted.

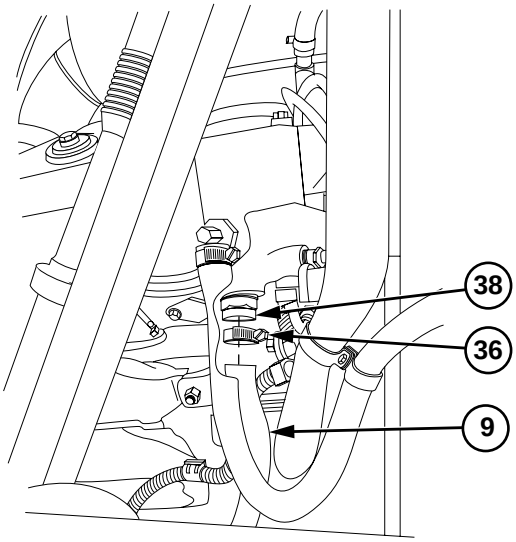
18-14. HEATER HOSE REPLACEMENT (CONT)

(11) Loosen clamp (33) and remove hose (13) from fitting (34) on oil cooler (35).



(12) Loosen clamp (36) and remove hose (9) from thermostat housing (38).





(13) Deleted.

(14) Deleted.

(3) Deleted.

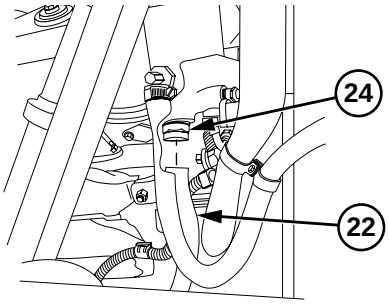
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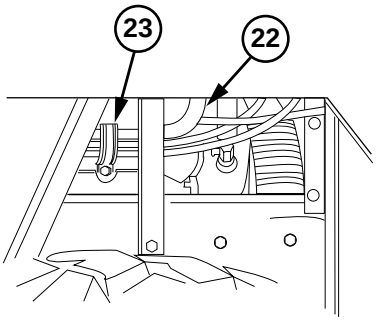
(6) Deleted.

(6.1) Deleted.

(6.2) Deleted.



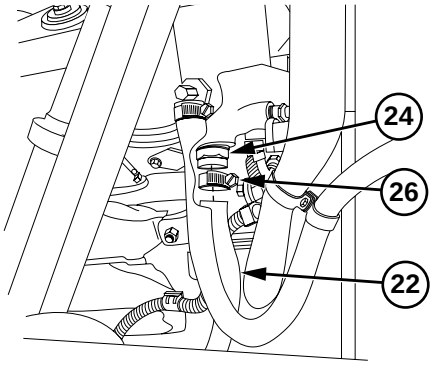
(7) Route hose (22) through clamp (23) to thermostat housing (24).



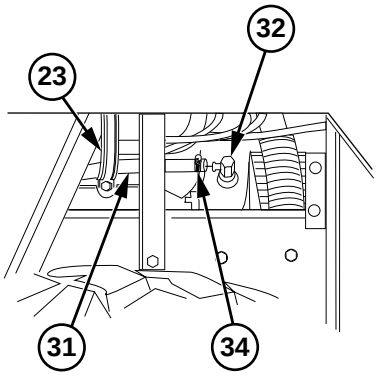
18-14. HEATER HOSE REPLACEMENT (CONT)

(8) Deleted.

(9) Install hose (22) on thermostat housing (24) with clamp (26). Torque to 40 lb-in. (4.5 N·m).



(10) Deleted.

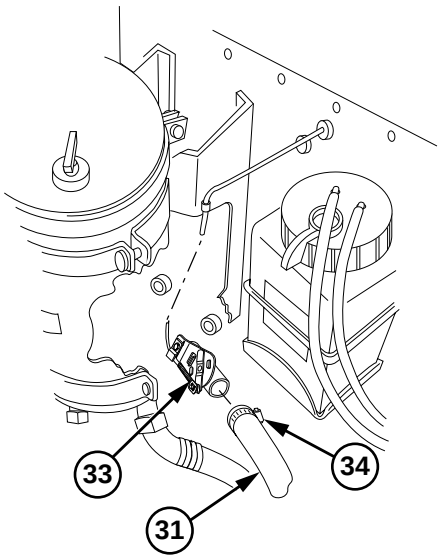


CAUTION

Heater control valve must be positioned so it does not interfere with firewall. Failure to comply may result in improper heater operation.

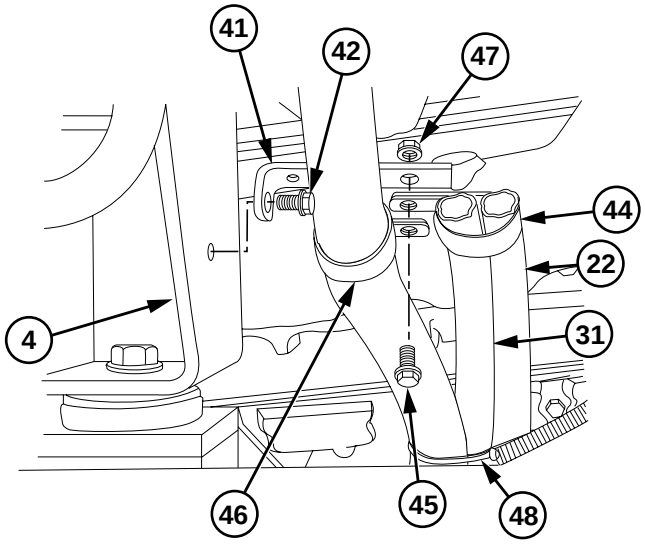
(11) Route hose (31) through clamp (23) to fitting (32) and heater control valve (33).

(12) Install hose (31) on fitting (32) and heater control valve (33) with clamps (34). Torque to 40 lb-in. (4.5 N·m).



(13) Deleted.

18-14. HEATER HOSE REPLACEMENT (CONT)



(14) Install bracket (41) on cab (4) with screw (42).

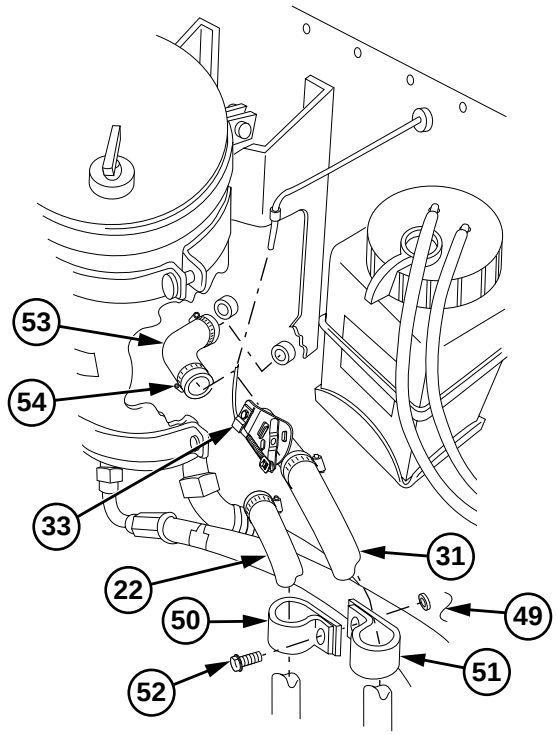
(15) Install clip (44) on hose (22) and hose (31).

(16) Install clips (44 and 46) on bracket (41) with screw (45) and new locknut (47).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(17) Secure hose (31) with plastic cable ties (48).

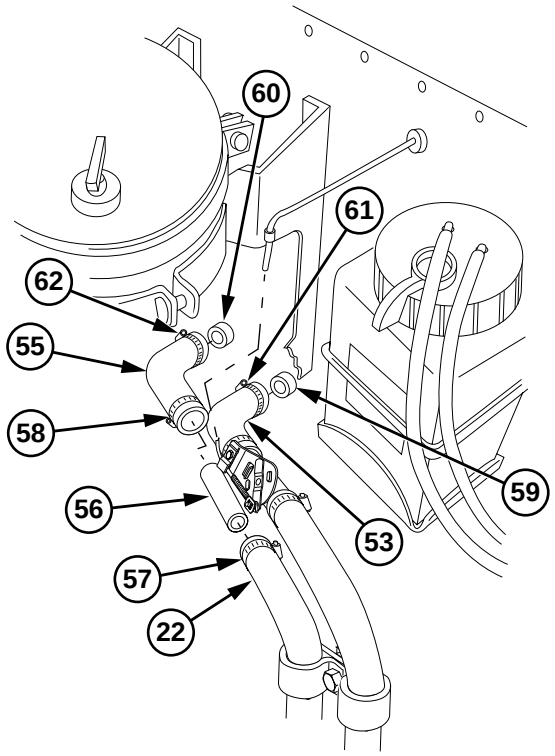


(18) Install hoses (22 and 31) on firewall (49) with two clips (50 and 51) and screw (52).

(19) Install hose (53) on heater control valve (33) with clamp (54). Torque to 40 lb-in. (4.5 N·m).

(20) Install hoses (22 and 55) on pipe (56) with clamps (57 and 58). Torque to 40 lb-in. (4.5 N·m).

(21) Install hoses (53 and 55) on pipes (59 and 60) with clamps (61 and 62). Torque to 40 lb-in. (4.5 N·m).



c. Follow-On Maintenance

(1) Fill cooling system (para 6-2).

(2) Start engine (TM 9-2320-360-10).

(3) Check for leaks (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

(5) Install inner fender (para 16-34).

18-15. HEATER/DEFROSTER TUBING REPLACEMENT

This task covers:
a. Removal
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

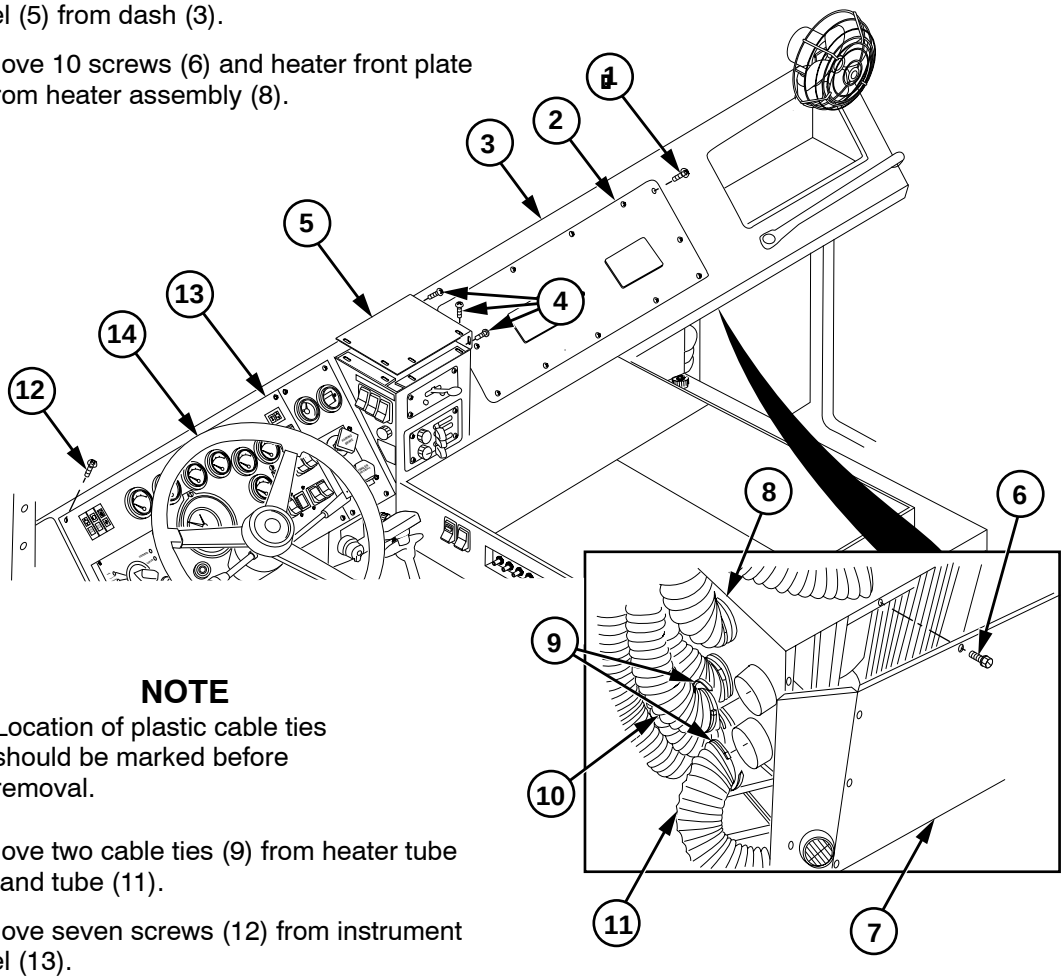
Materials/Parts
Adhesive (Item 1, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)

a. Removal

(1) Remove 13 screws (1) and dash access panel (2) from dash (3).

(2) Remove nine screws (4) and dash cover panel (5) from dash (3).

(3) Remove 10 screws (6) and heater front plate (7) from heater assembly (8).



NOTE
Location of plastic cable ties should be marked before removal.

(4) Remove two cable ties (9) from heater tube (10) and tube (11).

(5) Remove seven screws (12) from instrument panel (13).

(6) Tilt top of instrument panel (13) toward steering wheel (14).

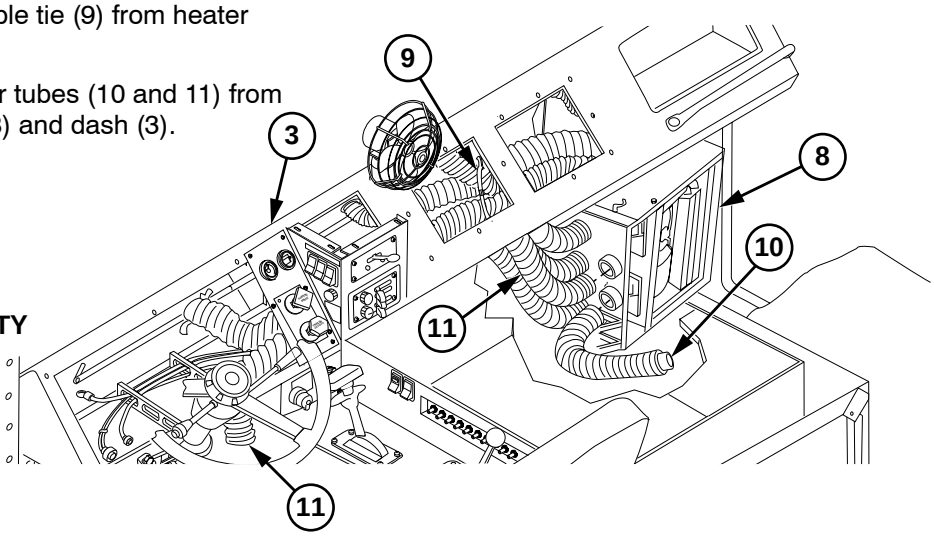
NOTE

Location of plastic cable ties should be marked before removal.

(7) Remove plastic cable tie (9) from heater tube (11).

(8) Remove two heater tubes (10 and 11) from heater assembly (8) and dash (3).

INSTRUMENT PANEL REMOVED FOR CLARITY



NOTE

Location of plastic cable ties should be marked before removal.

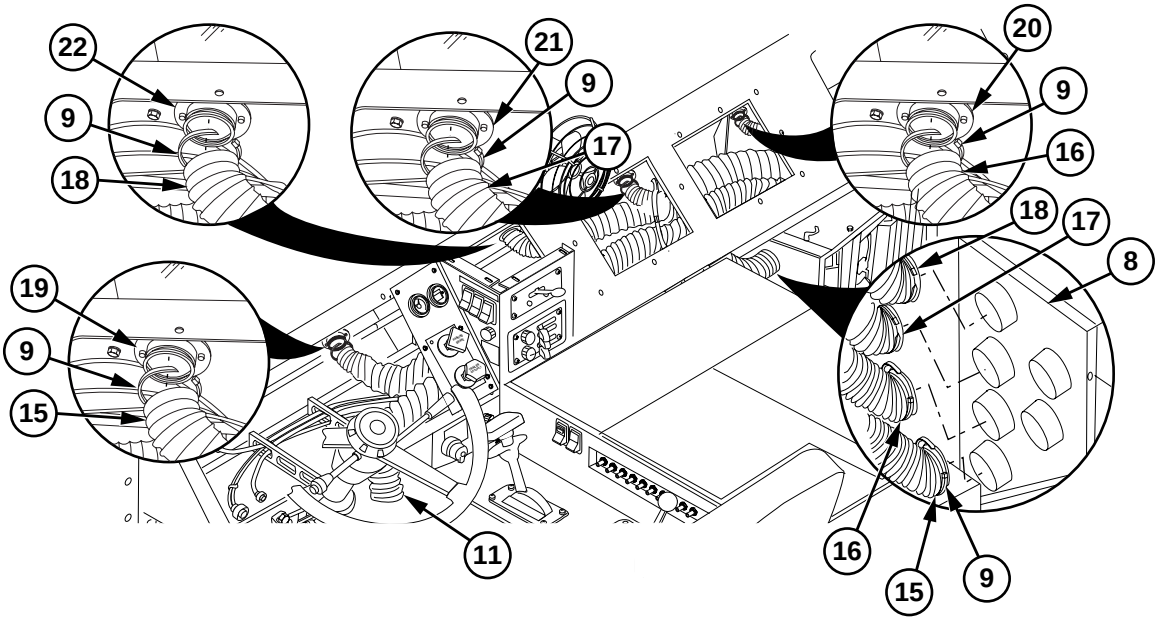
(9) Remove eight plastic cable ties (9) from defroster tubing (15, 16, 17, and 18) at ducts (19, 20, 21 and 22) and heater assembly (8)..

(10) Remove left defroster tubing (15) from duct (19) and heater assembly (8).

(11) Remove right defroster tubing (16) from duct (20) and heater assembly (8).

(12) Remove center right defroster tubing (17) from duct (21) and heater assembly (8).

(13) Remove center left defroster tubing (18) from duct (22) and heater assembly (8).



18-15. HEATER/DEFROSTER TUBING REPLACEMENT (CONT)

b. Cleaning/Inspection

(1) Inspect defroster and heater tubing for signs of damage (collapsed, torn, frayed, etc.).

(2) Replace damaged tubing with new tubing as required. Refer to table 18-1 for correct length.

(3) Remove adhesive from heater assembly and tubing to be reinstalled.

Table 18-1. Heater/Defroster Tubing Lengths

Left Heater	60 in. (152 cm)
Right Heater	27 in. (69 cm)
Left Defrost	72 in. (183 cm)
Left Center Defrost	57 in. (145 cm)
Right Center Defrost	48 in. (122 cm)
Right Defrost	17 in. (43 cm)

c. Installation

WARNING

Adhesive can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive gets on skin or clothing, wash immediately with soap and water.

(1) Coat ends of six tubes (1 thru 6) with adhesive.

(2) Install center left defroster tubing (1) on heater assembly (7) and duct (8).

(3) Install center right defroster tubing (2) on heater assembly (7) and duct (9).

(4) Install right defroster tubing (3) on heater assembly (7) and duct (10).

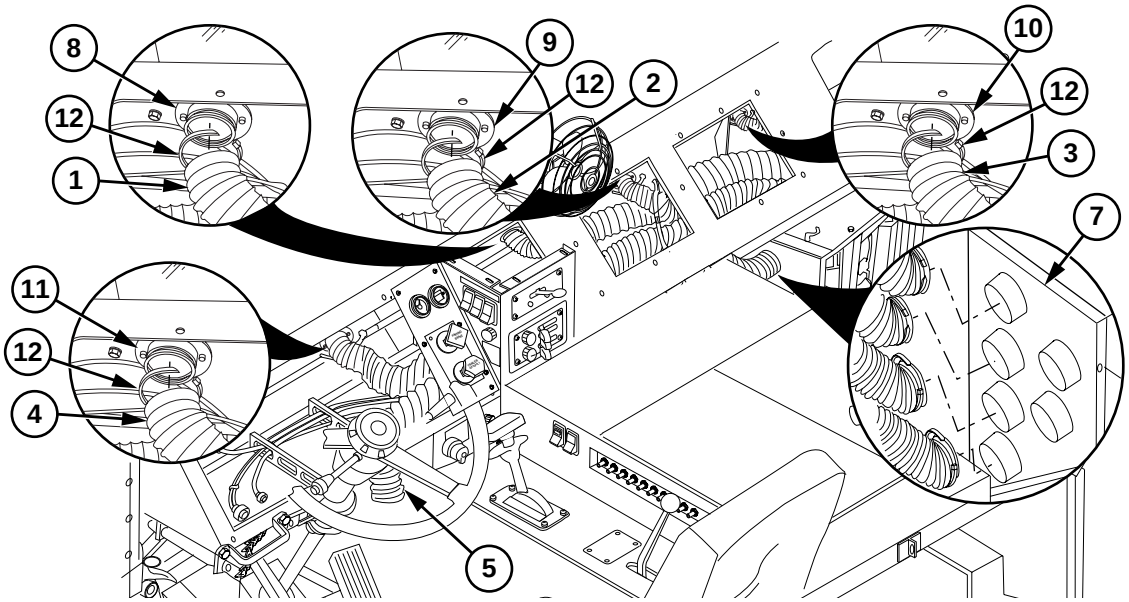
(5) Install left defroster tubing (4) on heater assembly (7) and duct (11).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(6) Secure tubing (1 thru 4) on defroster ducts (8 thru 11) with plastic cable ties (12).

(7) Secure tubing (1 thru 4) on heater assembly (7) with plastic cable ties (12).



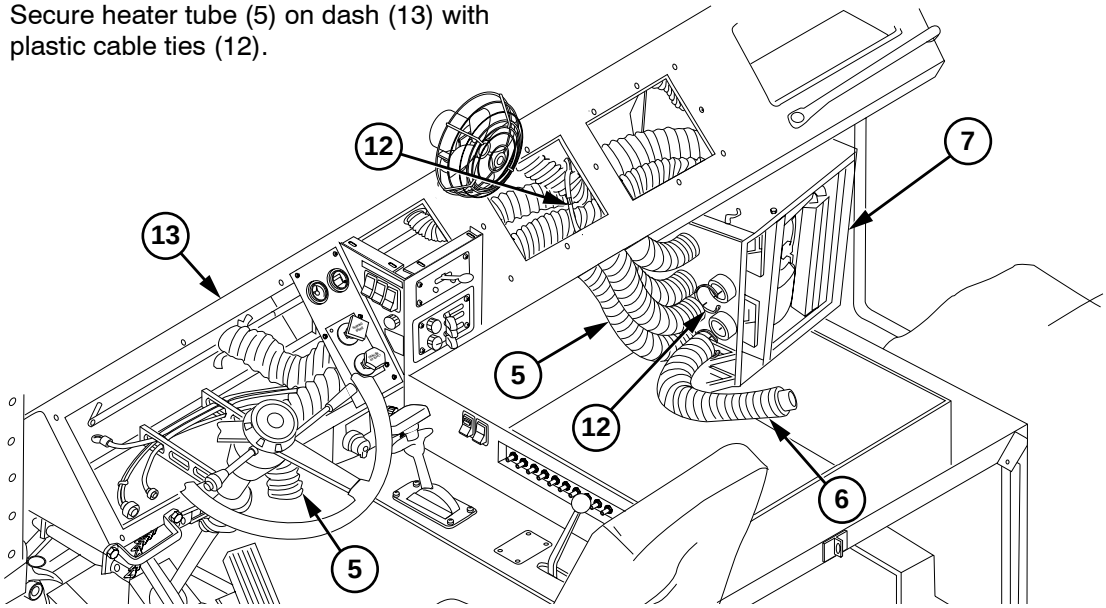
(8) Route heater tube (5) through dash (13).

NOTE

Heater tubes do not connect to dash.

(9) Install heater tube (5) and tube (6) on heater assembly (7).

(10) Secure heater tube (5) on dash (13) with plastic cable ties (12).



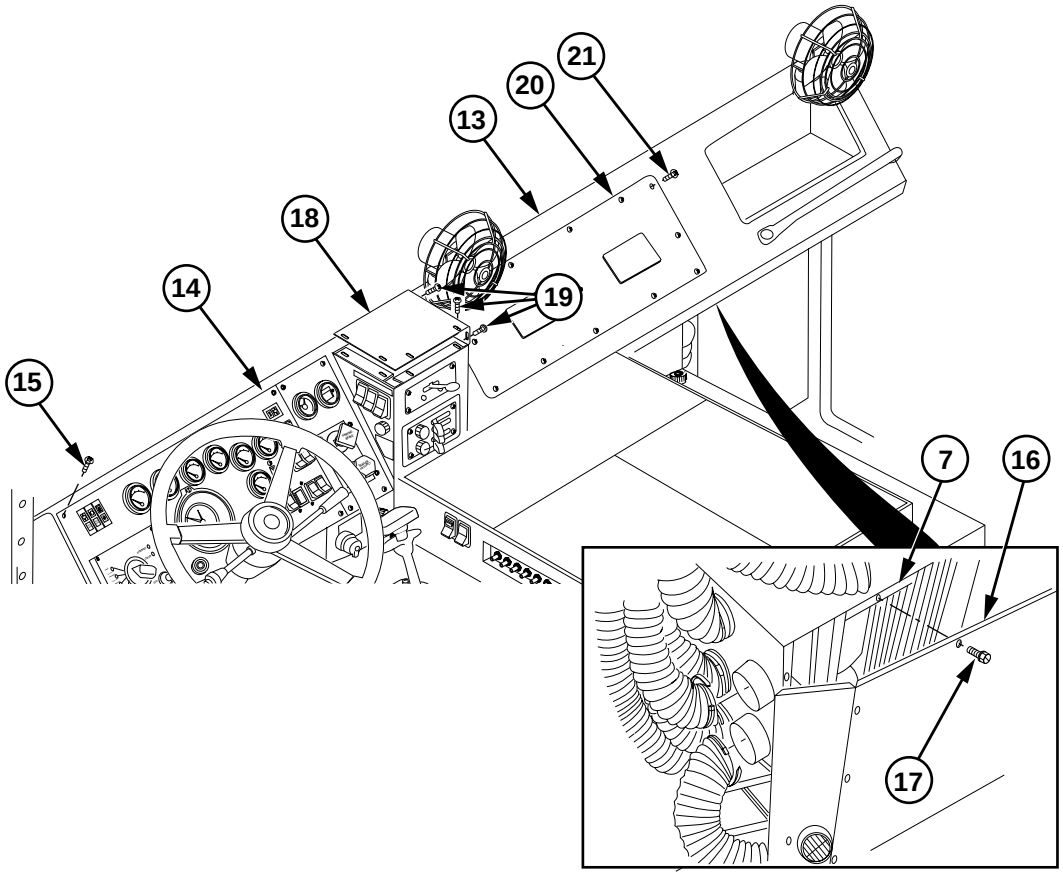
18-15. HEATER/DEFROSTER TUBING REPLACEMENT (CONT)

(11) Install instrument panel (14) on dash (13) with seven screws (15).

(12) Install heater front plate (16) on heater assembly (7) with 10 screws (17).

(13) Install dash cover panel (18) on dash (13) with nine screws (19).

(14) Install dash access panel (20) on dash (13) with 13 screws (21).



d. Follow-On Maintenance

(1) Connect batteries (para 7-61).

(2) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(3) Check defroster operation (TM 9-2320-360-10).

(4) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

18-16. HEATER CONTROL PANEL REPAIR

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

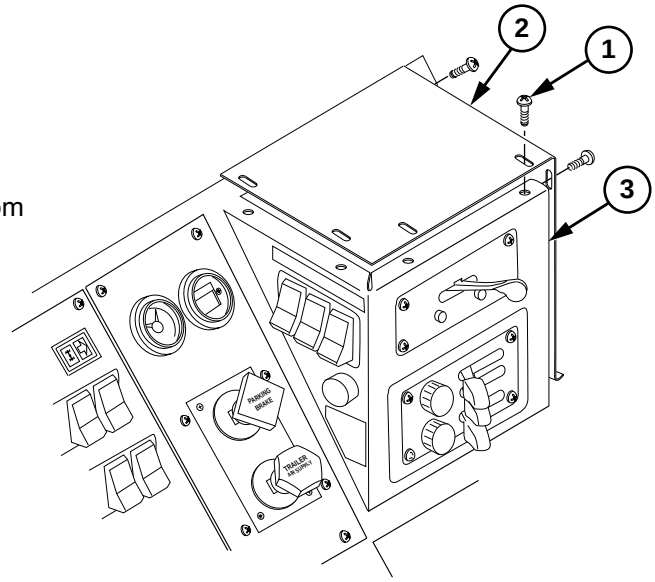
Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

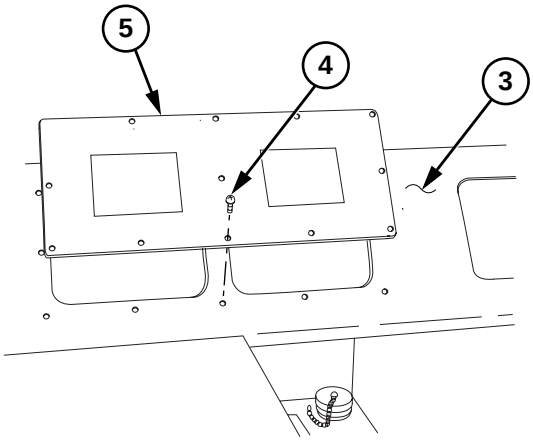
Materials/Parts
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34 Appendix C)
Locknuts (2) (Item 72, Appendix G)
Nuts, Push-On (6) (Item 127, Appendix G)

a. Removal

(1) Remove nine screws (1) and panel (2) from dash (3).



(2) Remove 13 screws (4) and panel (5) from dash (3).

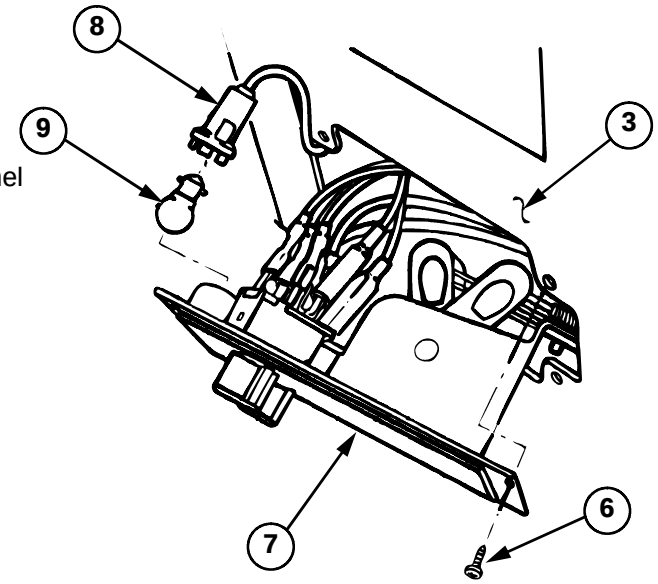


18-16. HEATER CONTROL PANEL REPAIR (CONT)

(3) Remove four screws (6) and fan control panel assembly (7) from dash (3).

(4) Remove lamp holder (8) from control panel assembly (7).

(5) Remove bulb (9) from lamp holder (8).

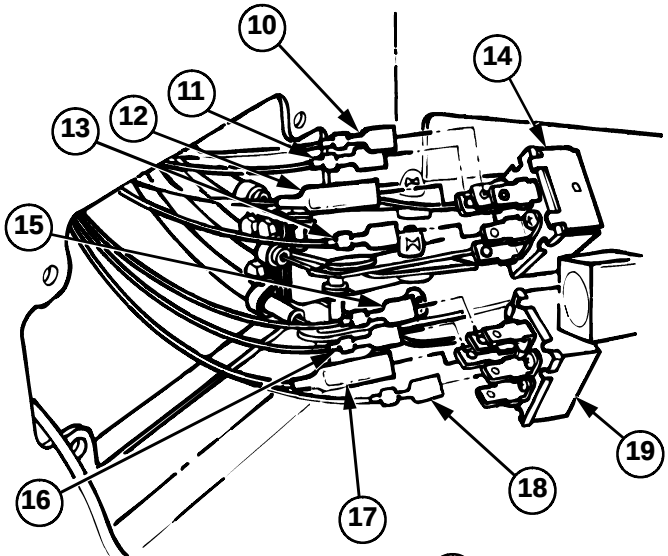


NOTE

Tag and mark wires before removal.

(6) Remove four wires (10, 11, 12, and 13) from front fan switch (14).

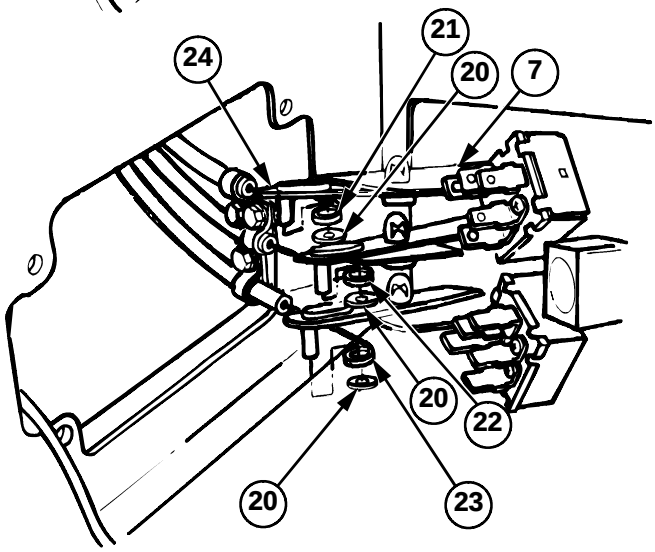
(7) Remove four wires (15, 16, 17, and 18) from rear fan switch (19).



NOTE

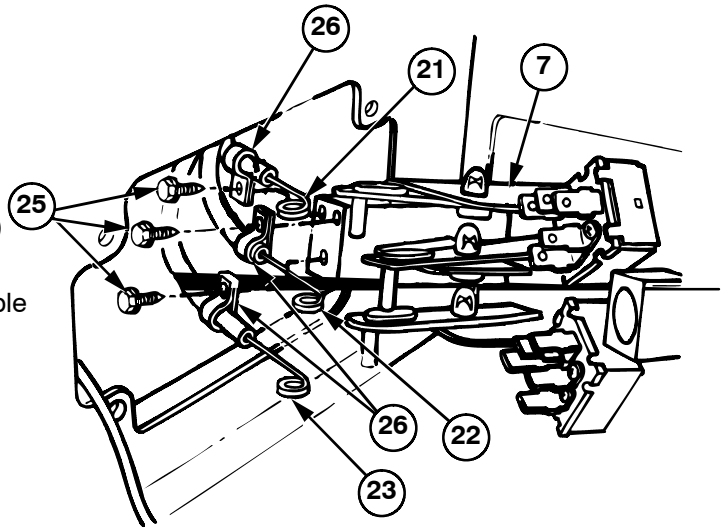
Tag and mark cables before removal.

(8) Remove three nuts (20), defrost cable (21), fresh air cable (22), and heater cable (23) from levers (24). Discard nuts.



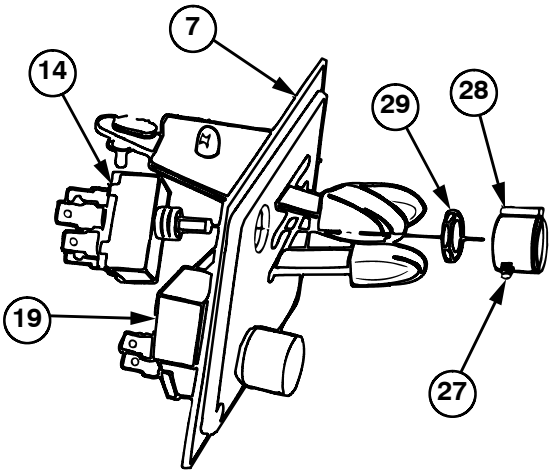
(9) Remove three screws (25) and clips (26) from heater control assembly (7).

(10) Remove three clips (26) from defrost cable (21), fresh air cable (22), and heater cable (23).

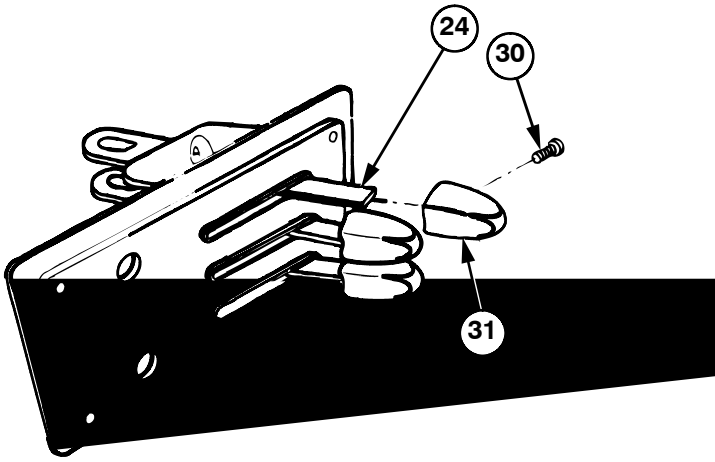


(11) Loosen four socket head screws (27) and remove two knobs (28) from front fan switch (14) and rear fan switch (19).

(12) Remove two nuts (29) and two switches (14 and 19) from control panel (7).

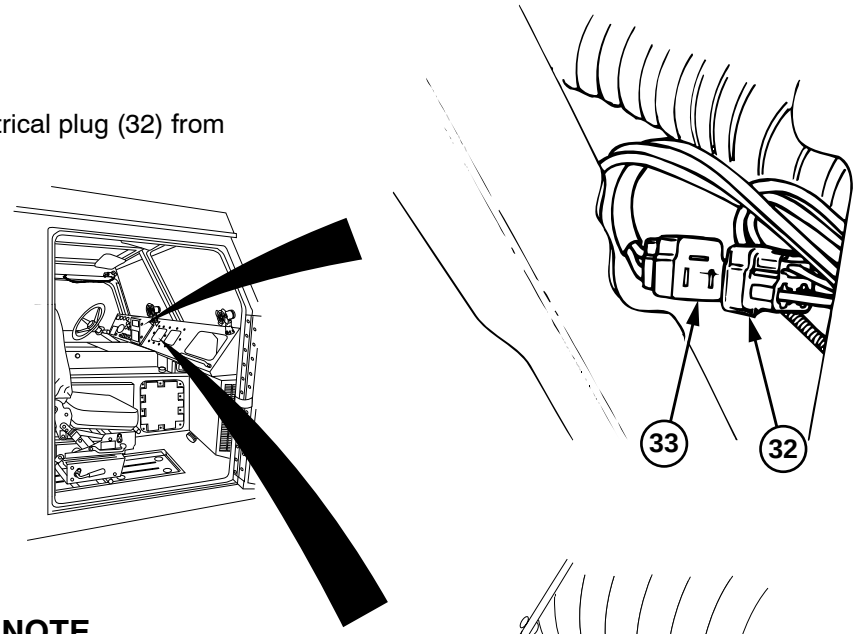


(13) Remove three screws (30) and three knobs (31) from levers (24).



18-16. HEATER CONTROL PANEL REPAIR (CONT)

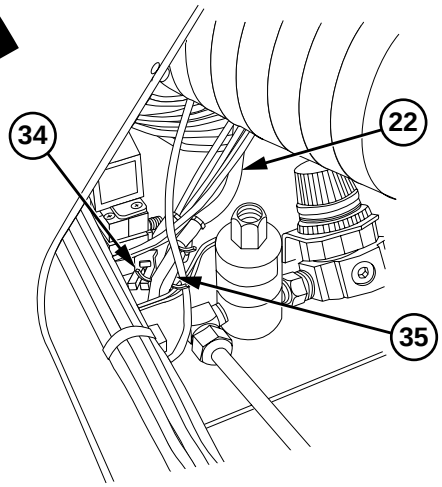
(14) Disconnect electrical plug (32) from receptacle (33).



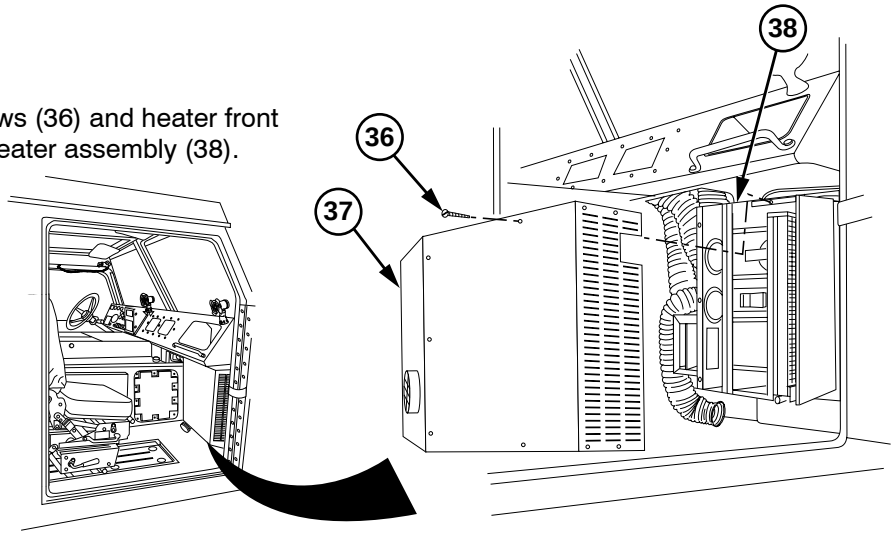
NOTE

Location of plastic cable ties should be marked before removal.

(15) Remove plastic cable ties (34) from electrical cable (35) and fresh air cable (22) as required.



(16) Remove 10 screws (36) and heater front plate (37) from heater assembly (38).

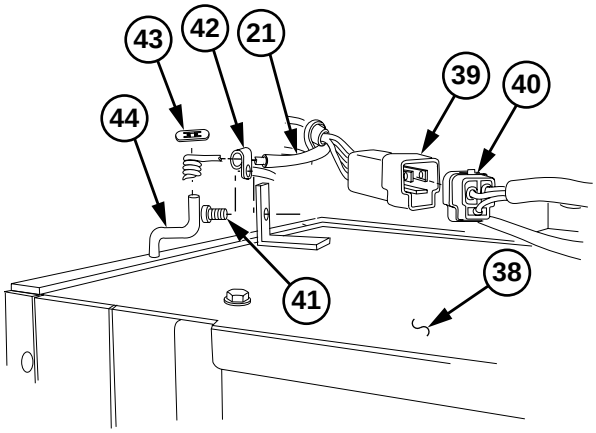


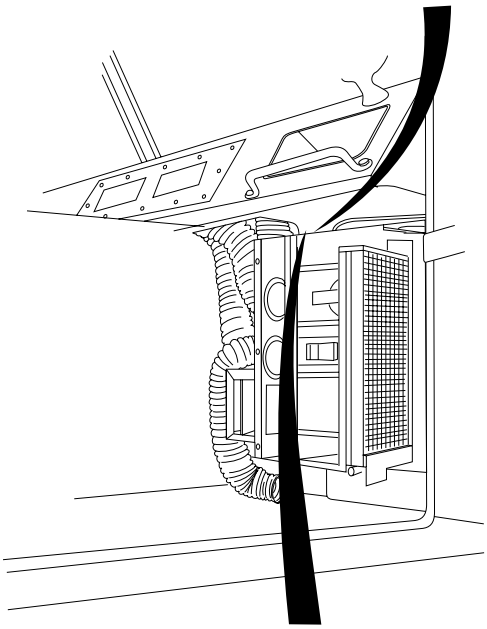
(17) Disconnect electrical plug (39) from receptacle (40).

(18) Remove screw (41), and clip (42) from heater assembly (38).

(19) Remove clip (42) from defrost cable (21).

(20) Remove nut (43) and defrost cable (21) from defrost lever (44). Discard nut.

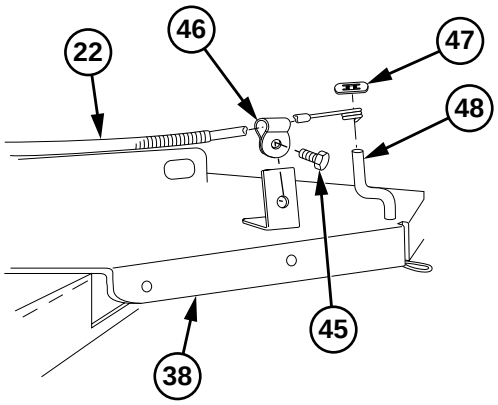




(21) Remove screw (45), and clip (46) from heater assembly (38).

(22) Remove clip (46) from fresh air cable (22).

(23) Remove nut (47) and fresh air cable (22) from fresh air lever (48). Discard nut.

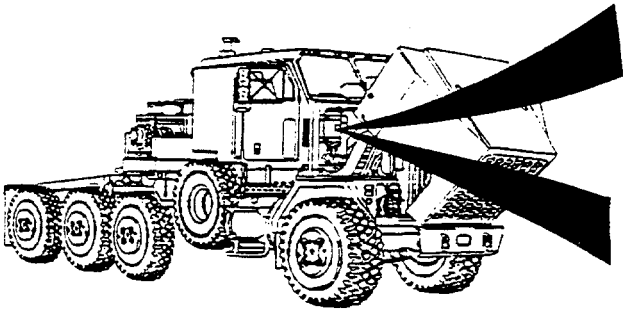


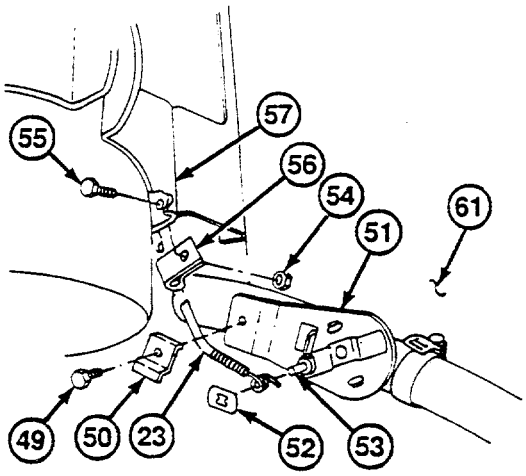
18-16. HEATER CONTROL PANEL REPAIR (CONT)

(24) Remove screw (49) and bracket (50) from control valve (51).

(25) Remove nut (52) and heater cable (23) from heater control valve lever (53). Discard nut.

(26) Remove locknut (54) screw (55) and clip (56) from steering reservoir bracket (57). Discard locknut.

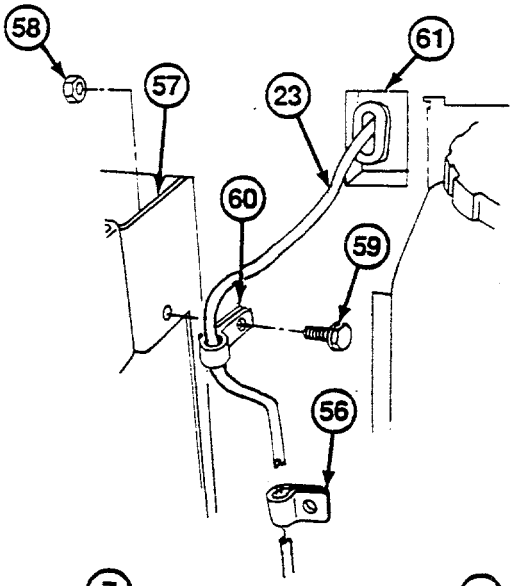




(27) Remove locknut (58), screw (59), and clip (60) from steering reservoir bracket (57). Discard locknut.

(28) Remove two clips (56 and 60) from heater cable (23).

(29) Remove heater cable (23) from firewall (61).

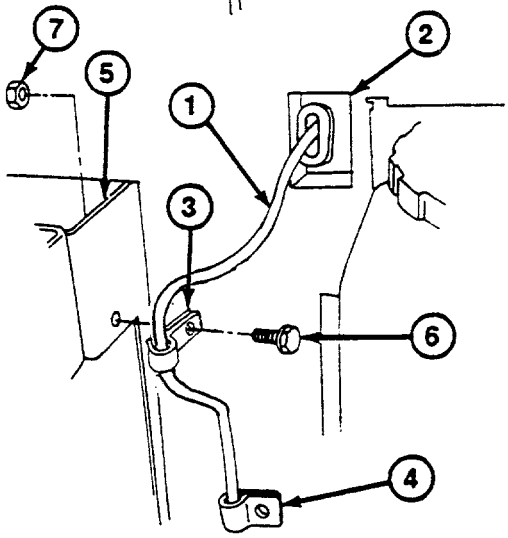


b. Installation

(1) Route heater cable (1) through firewall (2).

(2) Install two clips (3 and 4) on heater cable (1).

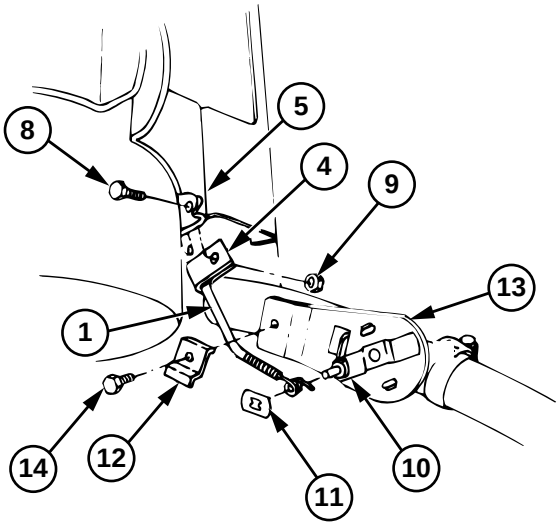
(3) Install clip (3) on steering reservoir bracket (5) with screw (6) and new locknut (7).



(4) Install clip (4) on steering reservoir bracket (5) with screw (8) and new locknut (9).

(5) Install heater cable (1) on heater control valve lever (10) with new nut (11).

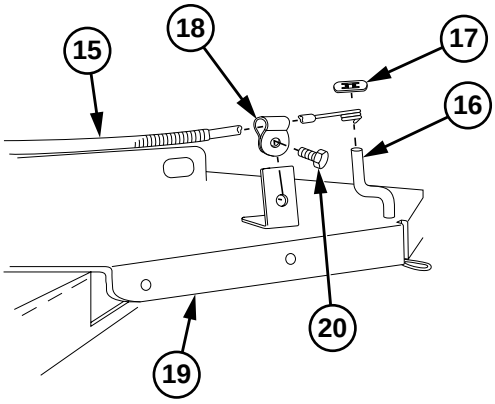
(6) Install bracket (12) on heater control valve (13) with screw (14).



(7) Install fresh air cable (15) on fresh air lever (16) with new nut (17).

(8) Install clip (18) on fresh air cable (15).

(9) Install clip (18) on heater assembly (19) with screw (20).

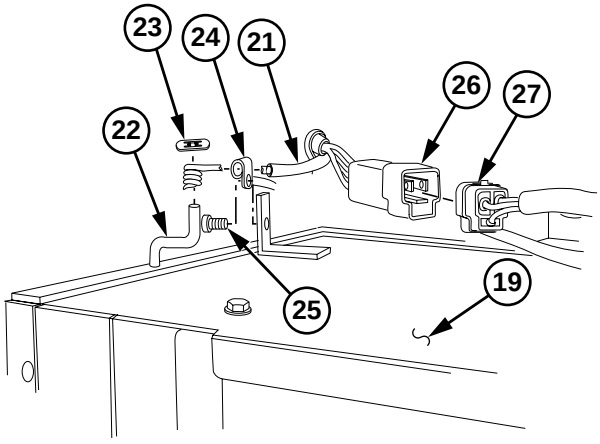


(10) Install defrost cable (21) on defrost lever (22) with new nut (23).

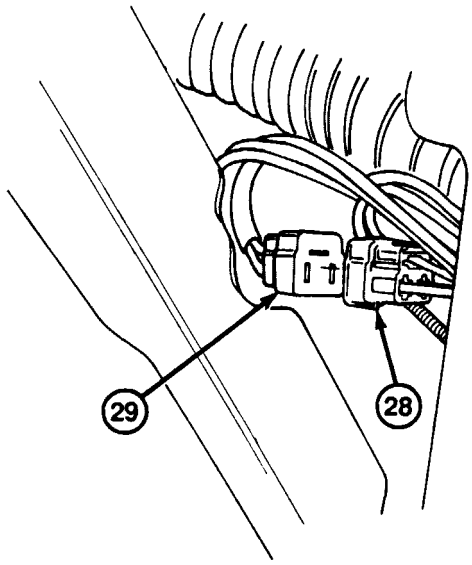
(11) Install clip (24) on defrost cable (21).

(12) Install clip (24) on heater assembly (19) with screw (25).

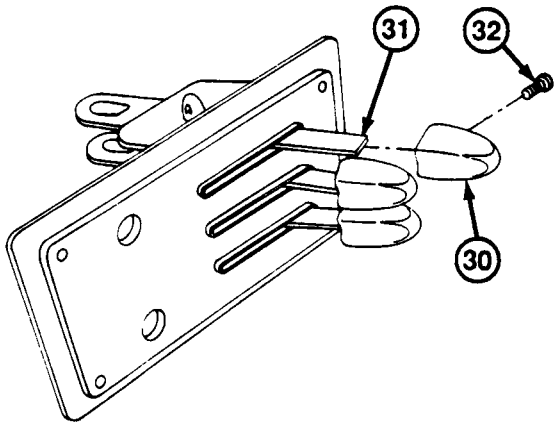
(13) Connect electrical plug (26) to receptacle (27).



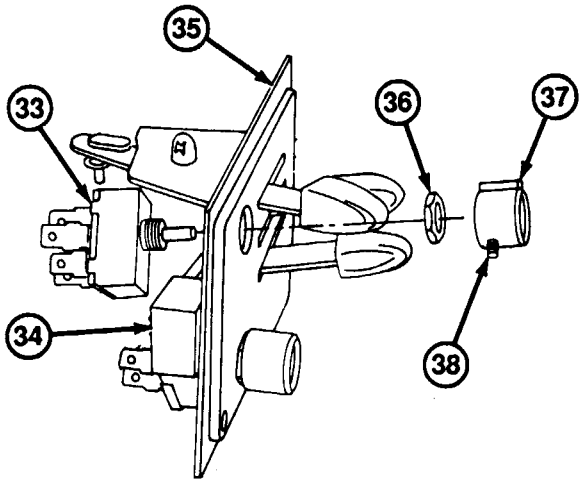
18-16. HEATER CONTROL PANEL REPAIR (CONT)



(14) Connect electrical plug (28) to receptacle (29).



(15) Install three knobs (30) on levers (31) with three screws (32).



(16) Install front fan switch (33) and rear fan switch (34) on control panel (35) with two nuts (36).

(17) Install two knobs (37) on switches (33 and 34) and tighten four socket head screws (38).

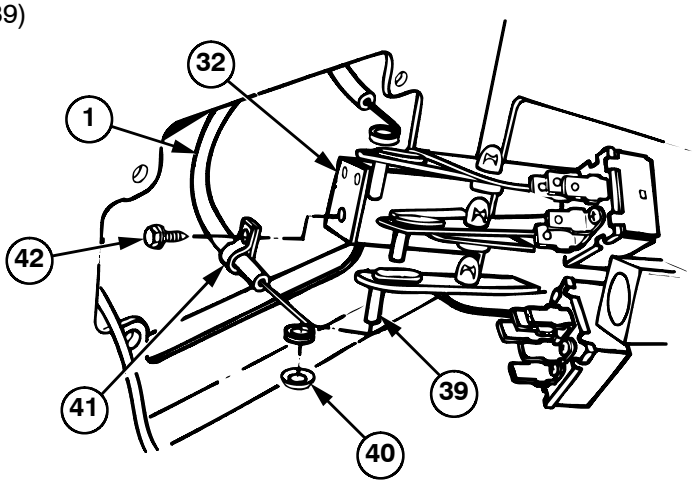
(18) Install heater cable (1) on heater lever (39) with new nut (40).

(19) Install clip (41) on heater cable (1).

NOTE

Dash control lever must be in heat position and heater control valve lever must be rotated fully clockwise before performing step (20).

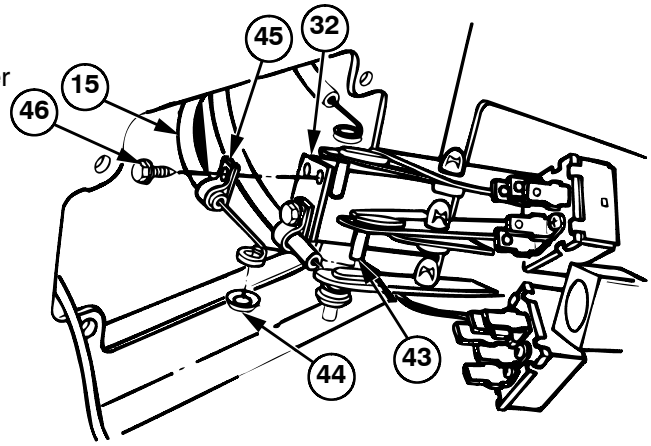
(20) Install clip (41) on control panel (32) with screw (42).



(21) Install fresh air cable (15) on fresh air lever (43) with new nut (44).

(22) Install clip (45) on fresh air cable (15).

(23) Install clip (45) on control panel (32) with screw (46).



NOTE

Dash control lever must be in RECIRC position and and fresh air lever in closed position before performing step (24).

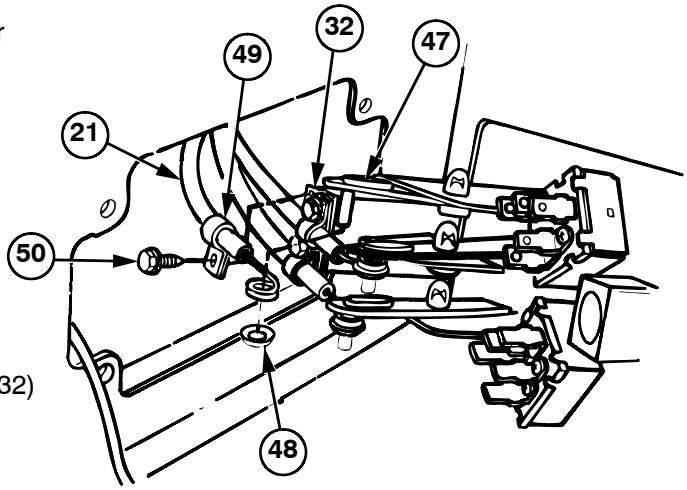
(24) Install defrost cable (21) on defrost lever (47) with new nut (48).

(25) Install clip (49) on defrost cable (21).

NOTE

Dash control lever must be in DEFROST position and and fresh air lever rotated fully clockwise before performing step (25).

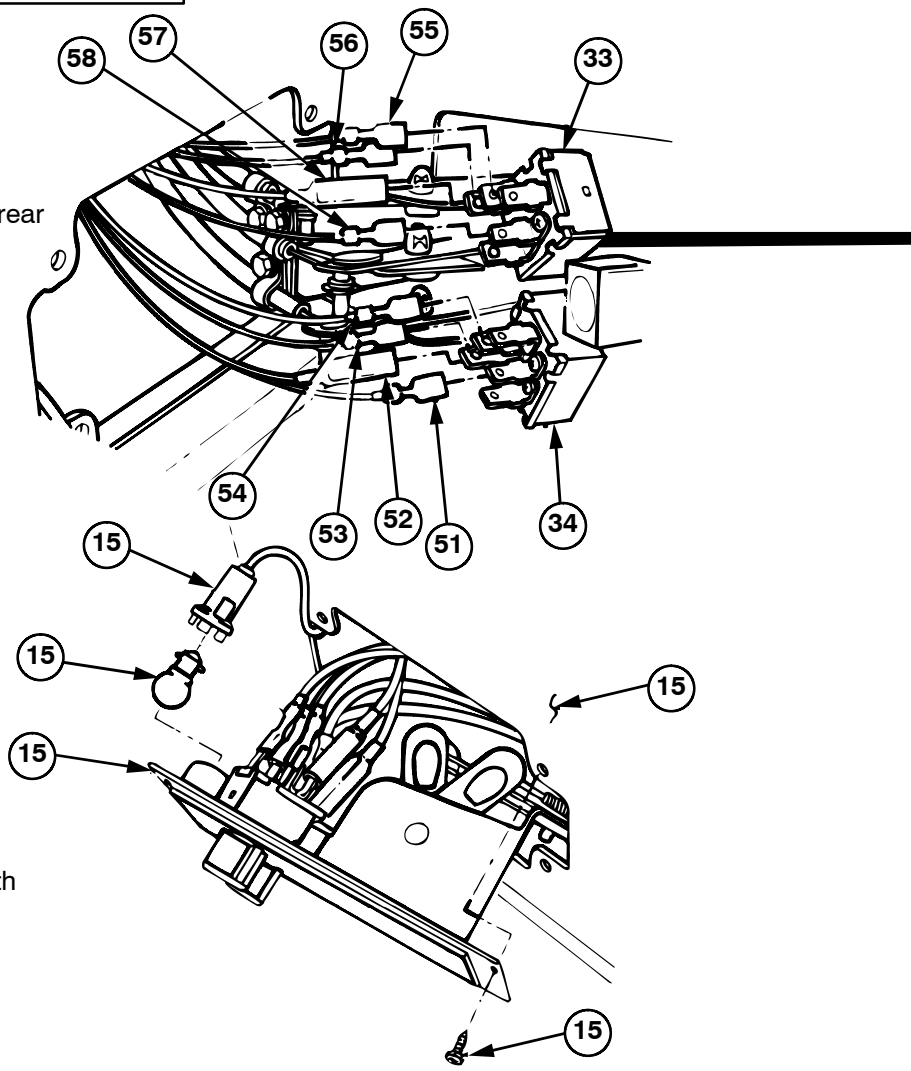
(26) Install clip (49) on heater control panel (32) with screw (50).



18-16. HEATER CONTROL PANEL REPAIR (CONT)

(27) Install four wires (51, 52, 53, and 54) on rear fan switch (34).

(28) Install four wires (55, 56, 57, and 58) on front fan switch (33).



(29) Install bulb (59) in lamp holder (60).

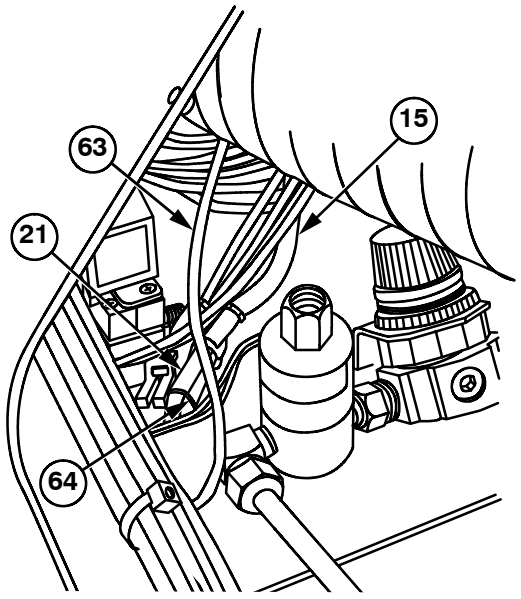
(30) Install lamp holder (60) on control panel assembly (32).

(31) Install control panel (32) on dash (61) with four screws (62).

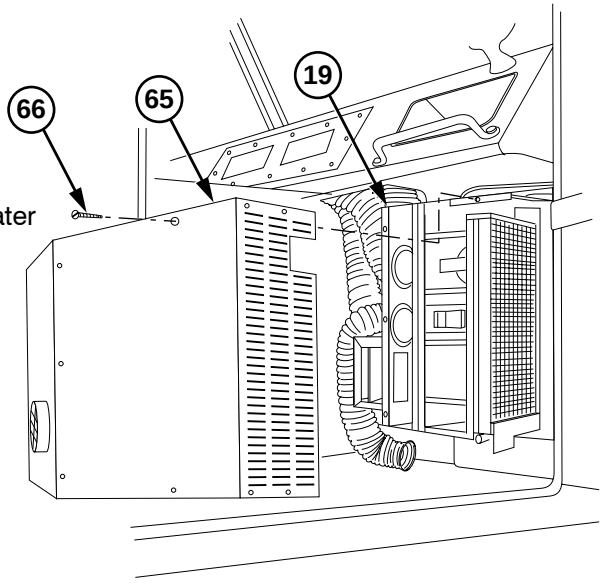
NOTE

Plastic cable ties should be positioned in locations marked during removal.

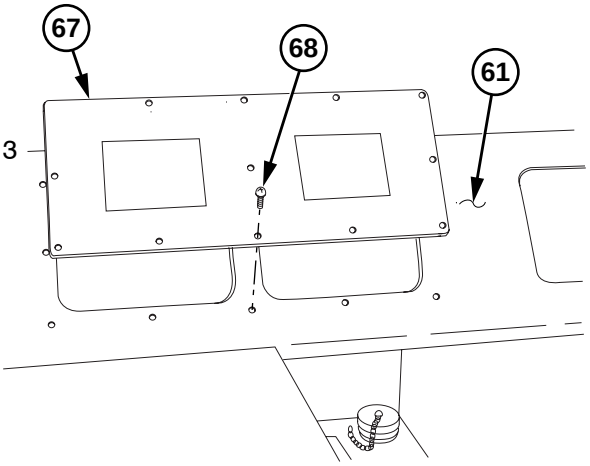
(32) Secure fresh air cable (15) and electrical cable (63) to defrost cable (21) with plastic cable ties (64).



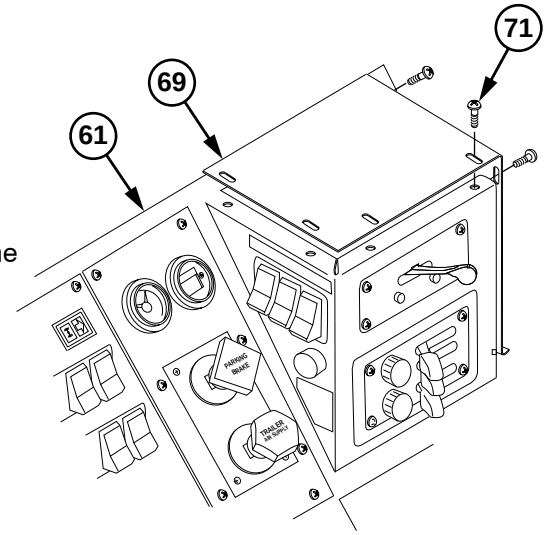
(33) Install heater front plate (65) on heater assembly (19) with 10 screws (66).



(34) Install panel (67) on dash (61) with 13 screws (68).



(35) Install panel (69) on dash (61) with nine screws (71).



c. Follow-On Maintenance

Connect batteries (para 7-61).

CHAPTER 19
SPECIAL PURPOSE KITS MAINTENANCE

Content	Para	Page
Introduction	19-1	19-1
Arctic Kit Batteries Disconnection/Connection	19-2	19-2
Arctic Kit Battery Assembly Replacement	19-3	19-4
Arctic Kit Exhaust Hose Replacement	19-4	19-10
Arctic Kit Coolant Hoses Replacement	19-5	19-13
Arctic Kit Coolant Pump Replacement	19-6	19-22
Arctic Kit Wire Harness Replacement	19-7	19-27
Arctic Kit Toggle Switch Replacement	19-8	19-39
Arctic Kit Water Jacket Replacement	19-9	19-40
Deleted	19-10	
Battery Disconnect Switch Kit Installation	19-11	19-61

Section I. INTRODUCTION

19-1. INTRODUCTION

This chapter contains instructions for replacement of arctic kit components and installation of battery disconnect switch kit at the Unit maintenance level.

Section II. MAINTENANCE PROCEDURES

19-2. ARCTIC KIT BATTERIES DISCONNECTION/CONNECTION

This task covers:
a. Disconnection
b. Connection
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
HET Tractor batteries disconnected (para 7-61).

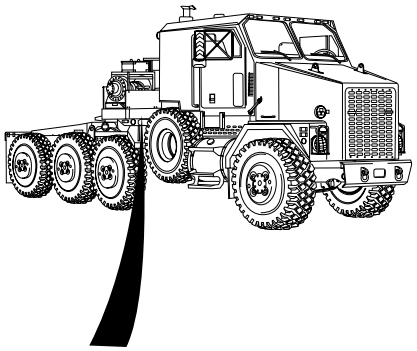
Materials/Parts
Grease, Anticorrosion (Item 16, Appendix C)
Tags, Identification (Item 32, Appendix C)

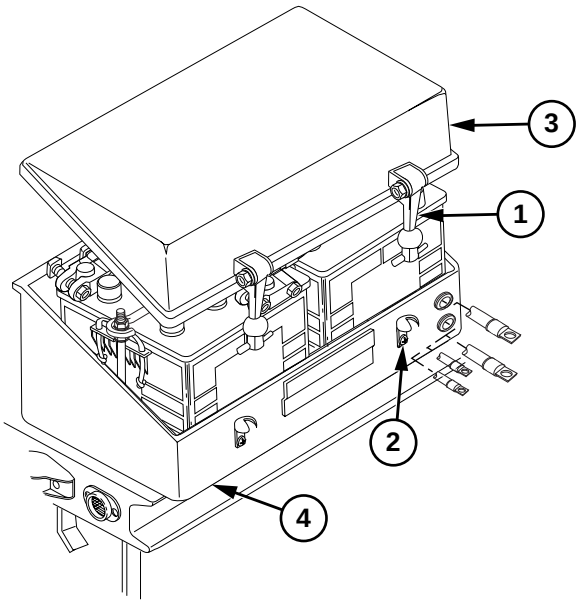
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Disconnection

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Batteries can explode from a spark. Battery acid is harmful to skin and eyes. Always wear eye protection when working with batteries.





(2) Remove two rubber hood hooks (1) from hood brackets (2).

(3) Remove battery box cover (3) from battery box (4).

CAUTION

Do not pry between terminals and top of battery. Damage to battery may result.

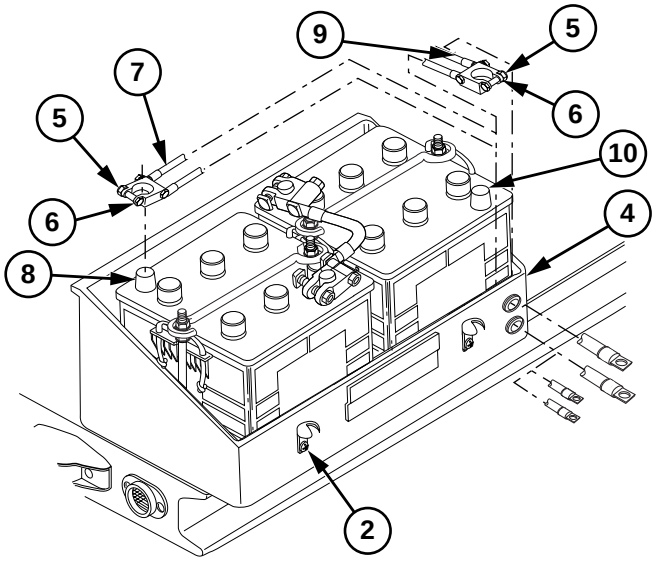
NOTE

Tag and mark cables before removal.

(4) Loosen two nuts (5) on cable clamps (6).

(5) Remove negative (–) cable (7) from battery post (8).

(6) Remove positive (+) cable (9) from battery post (10).



b. Connection

(1) Install positive (+) cable (1) on battery post (2).

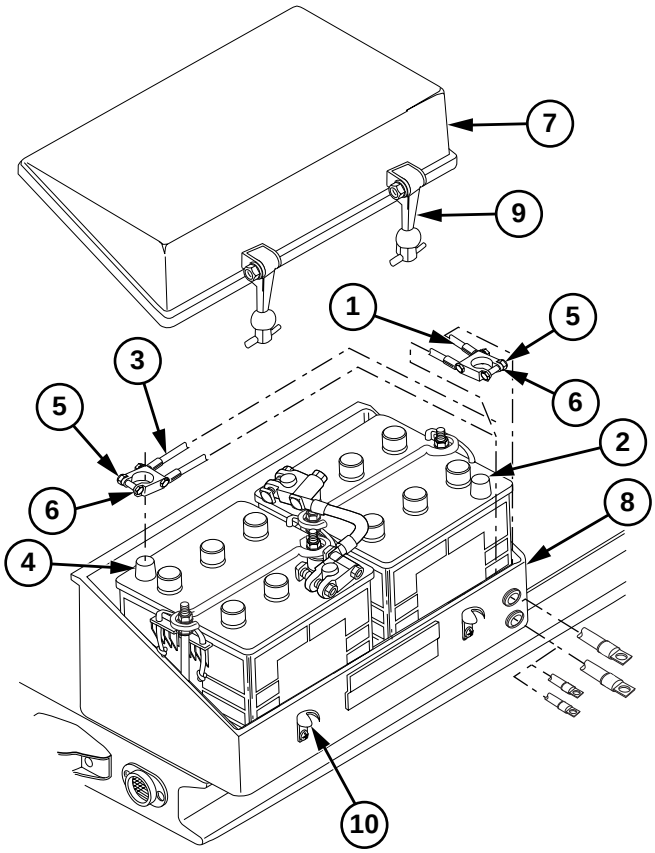
(2) Install negative (–) cable (3) on battery post (4).

(3) Tighten two nuts (5) on cable clamps (6).

(4) Lightly coat battery posts (2 and 4) with grease.

(5) Install battery box cover (7) on battery box (8).

(6) Secure two rubber hood hooks (9) to hood brackets (10).



c. Follow-On Maintenance

Connect HET Tractor batteries (para 7-61).

19-3. ARCTIC KIT BATTERY ASSEMBLY REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Arctic kit batteries disconnected (para 19-2).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Wrench, Torque, 0-200 Lb-In. (Item 72, Appendix F)
Wrench, Torque, 0-175 Lb-Ft (Item 73, Appendix F)

Materials/Parts
Grease, Anticorrosion (Item 16, Appendix C)
Spray, Adhesive (Item 7, Appendix C)
Locknuts (4) (Item 44, Appendix G)
Locknuts (4) (Item 65, Appendix G)
Locknuts (3) (Item 58, Appendix G)
Locknuts (2) (Item 68, Appendix G)
Locknuts (2) (Item 72, Appendix G)
Lockwashers (2) (Item 102, Appendix G)

a. Removal

WARNING

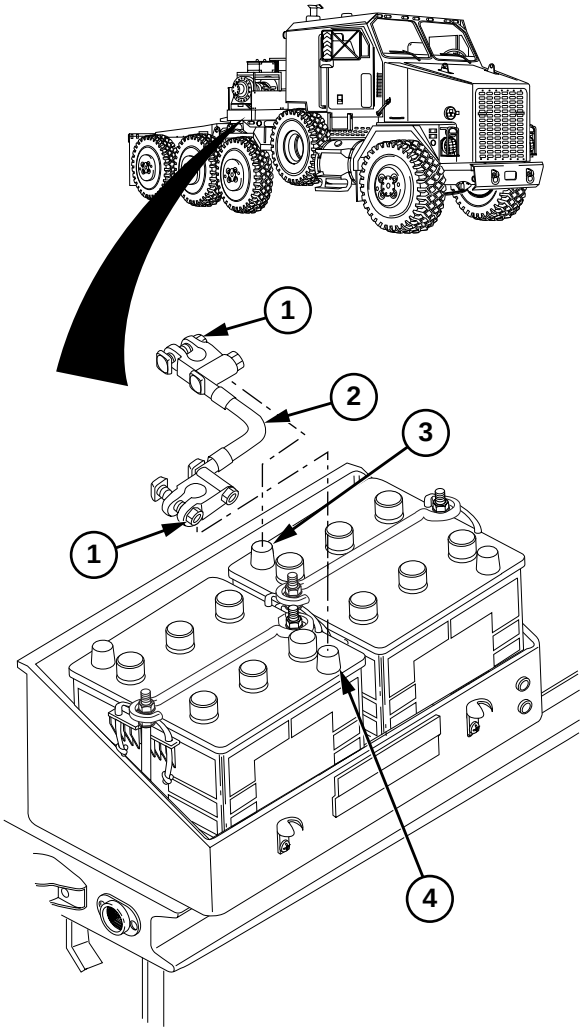
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Batteries can explode from a spark. Battery acid is harmful to skin and eyes. Always wear eye protection when working with batteries.

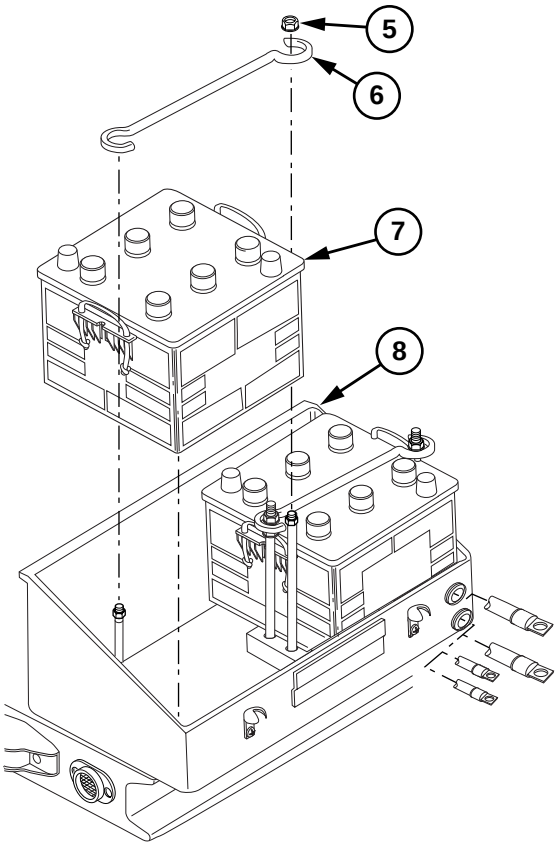
(1) Loosen two nuts (1) on jumper cable (2).

CAUTION

Do not pry between terminals and top of battery. Damage to battery may result.

(2) Remove jumper cable (2) from battery posts (3 and 4).



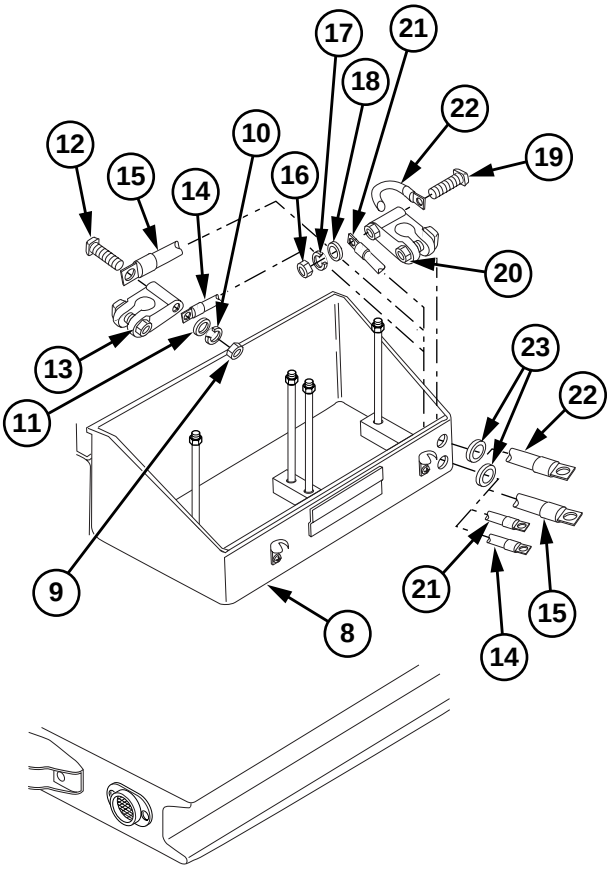


(3) Remove four locknuts (5) and two retainers (6) from two batteries (7). Discard locknuts.

(4) Note position and remove two batteries (7) from battery box (8).

NOTE

Do steps (5) thru (16) only if replacing battery box.



(5) Remove nut (9), lockwasher (10), washer (11), and screw (12) from battery cable clamp (13). Discard lockwasher.

(6) Remove wire no. 1435 (14) and negative (–) cable (15) from battery cable clamp (13).

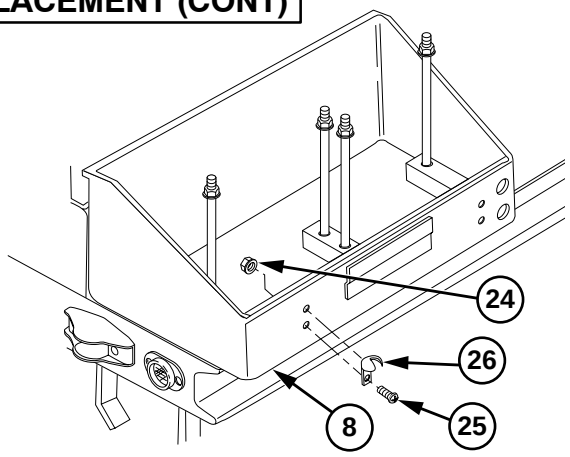
(7) Remove nut (16), lockwasher (17), washer (18), and screw (19) from battery cable clamp (20). Discard lockwasher.

(8) Remove wire no. 1373 (21) and positive (+) cable (22) from battery cable clamp (20).

(9) Remove wires (14 and 21) and cables (15 and 22) with grommets (23) from battery box (8).

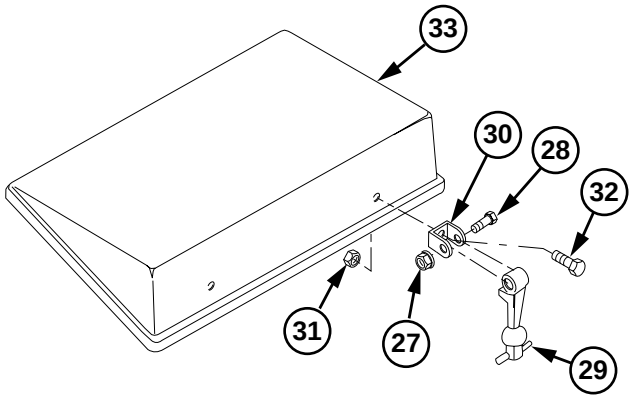
19-3. ARCTIC KIT BATTERY ASSEMBLY REPLACEMENT (CONT)

(10) Remove four locknuts (24), screws (25), and two hood brackets (26) from battery box (8). Discard locknuts.



(11) Remove two locknuts (27), screws (28), and rubber hood hooks (29) from hood anchor brackets (30). Discard locknuts.

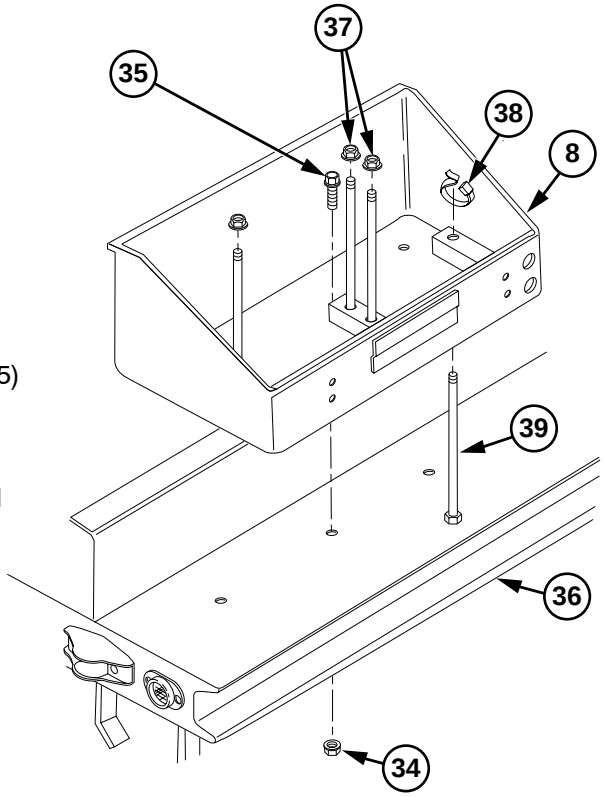
(12) Remove two locknuts (31), screws (32), and hood anchor brackets (30) from battery box cover (33). Discard locknuts.



(13) Remove three locknuts (34) and screws (35) from battery box (8). Discard locknuts.

(14) Remove battery box (8) from platform (36).

(15) Remove four nuts (37), cable ties (38), and screws (39) from battery box (8).



b. Installation

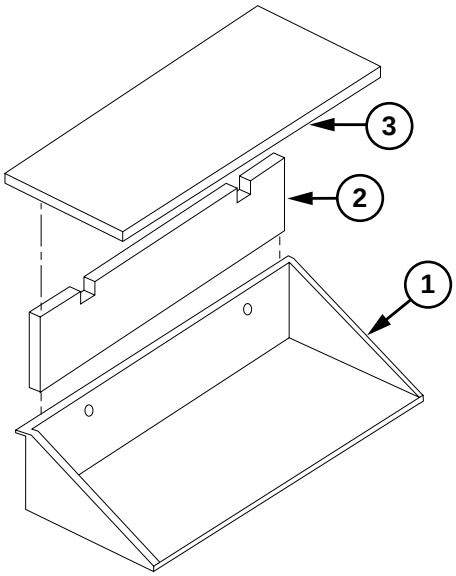
WARNING

- **Ensure engine is cool before performing maintenance. Failure to comply may result in serious injury to personnel.**
- **Adhesive can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive gets on skin or clothing, wash immediately with soap and water.**

NOTE

Do step (1) thru (8) and (14) through (18) only if installing new battery box.

(1) Spray adhesive on inside of arctic battery box cover (1). Install insulation panels (2 and 3).



CAUTION

Rubber grommets must be installed correctly in holes on side of battery box to prevent cables from shorting out on box.

(2) Install two grommets (4) on battery box (5).

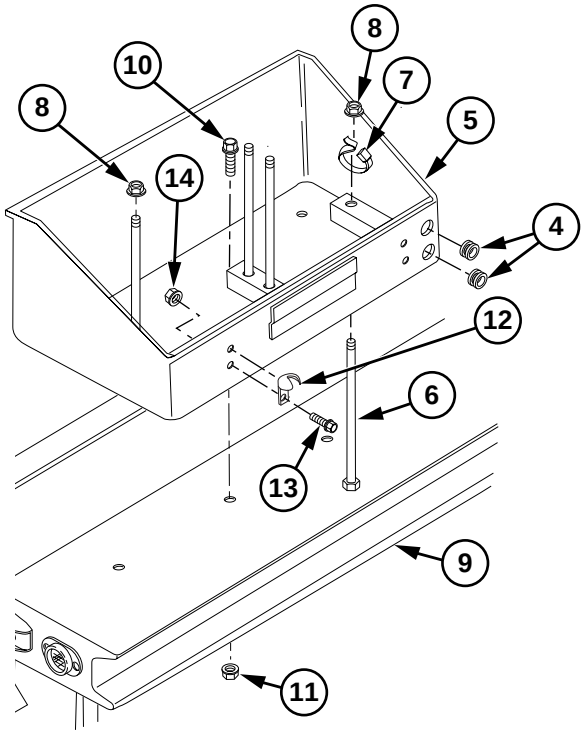
(3) Secure screws (6) in battery box (5) with plastic cable ties (7).

(4) Install four nuts (8) on screws (6).

(5) Position battery box (5) on platform (9).

(6) Install three screws (10) and new locknuts (11) on battery box (5). Torque to 50 lb-ft (68 N·m).

(7) Install two support hooks (12) on battery box (5) with four screws (13) and new locknuts (14).



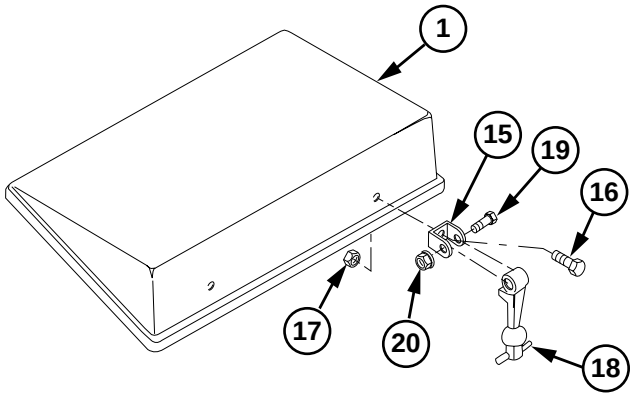
19-3. ARCTIC KIT BATTERY ASSEMBLY REPLACEMENT (CONT)

(8) Install two hood anchor brackets (15) on battery box cover (1) with two screws (16) and new locknuts (17).

NOTE

Rubber hooks must turn freely in anchor brackets.

(9) Install two rubber hood hooks (18) on hood anchor brackets (15) with two screws (19) and new locknuts (20). Do not overtighten.



WARNING

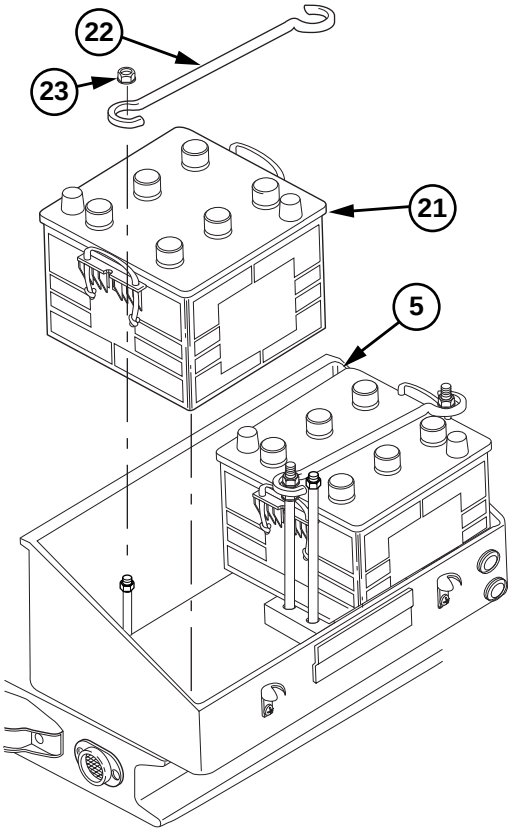
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Batteries can explode from a spark. Battery acid is harmful to skin and eyes. Always wear eye protection when working with batteries.

(10) Install two batteries (21) in battery box (5).

CAUTION

Do not overtighten battery retainers. Damage to batteries may result.

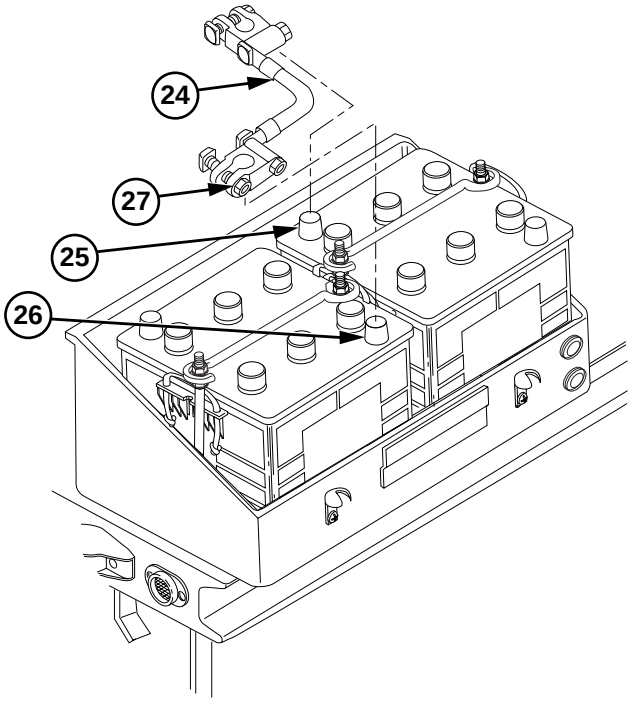
(11) Install two retainers (22) on batteries (21) with four new locknuts (23). Do not overtighten.



(12) Install jumper cable (24) on battery posts (25 and 26).

(13) Tighten two nuts (27) on jumper cable (24). Torque to 84-96 lb-in. (9.4-10.8 N·m).

(14) Lightly coat battery posts (25 and 26) with grease.



(15) Insert negative (-) cable (28) through rubber grommet (4).

(16) Insert wire no. 1435 (29) and wire no. 1373 (30) through rubber grommet (4).

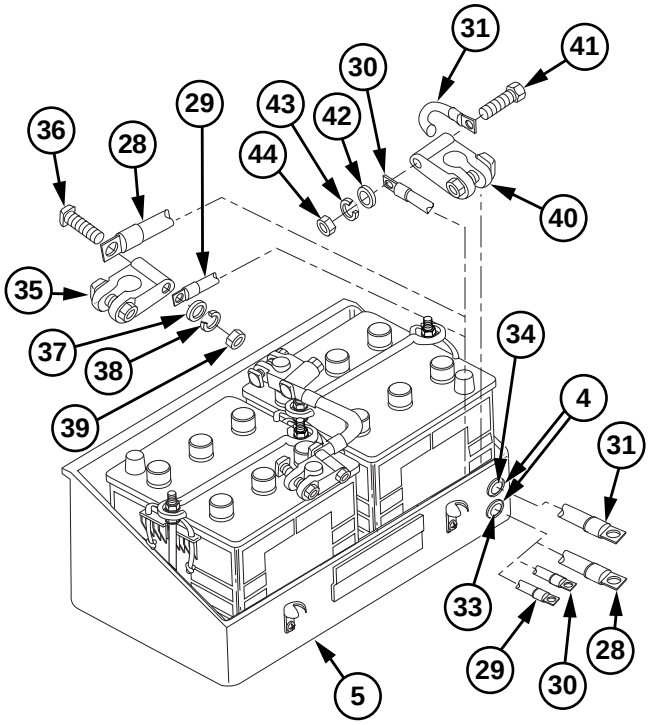
(17) Insert positive (+) cable (31) through rubber grommet (4).

(18) Install wire no. 1435 (29), wire no. 1373 (30), and negative (-) cable (28) through lower hole (33) in battery box (5).

(19) Install positive (+) cable (31) through upper hole (34) in battery box (5).

(20) Install wire no. 1435 (29) and negative (-) cable (28) to cable clamp (35) with screw (36), washer (37), new lockwasher (38), and nut (39). Torque to 144-192 lb-in. (16.1-21.5 N·m).

(21) Install wire no. 1373 (30) and positive (+) cable (31) to cable clamp (40) with screw (41), washer (42), new lockwasher (43), and nut (44). Torque to 144-192 lb-in. (16.1-21.5 N·m).



c. Follow-On Maintenance

(1) Connect arctic kit batteries (para 19-2).

(2) Start engine (TM 9-2320-360-10).

(3) Check battery operation (TM 9-2320-360-10).

(4) Shut off engine (TM 9-2320-360-10).

19-4. ARCTIC KIT EXHAUST HOSE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
HET Tractor batteries removed (para 7-57).

Materials/Parts
Locknuts (6) (Item 72, Appendix G)
Locknut (Item 58, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

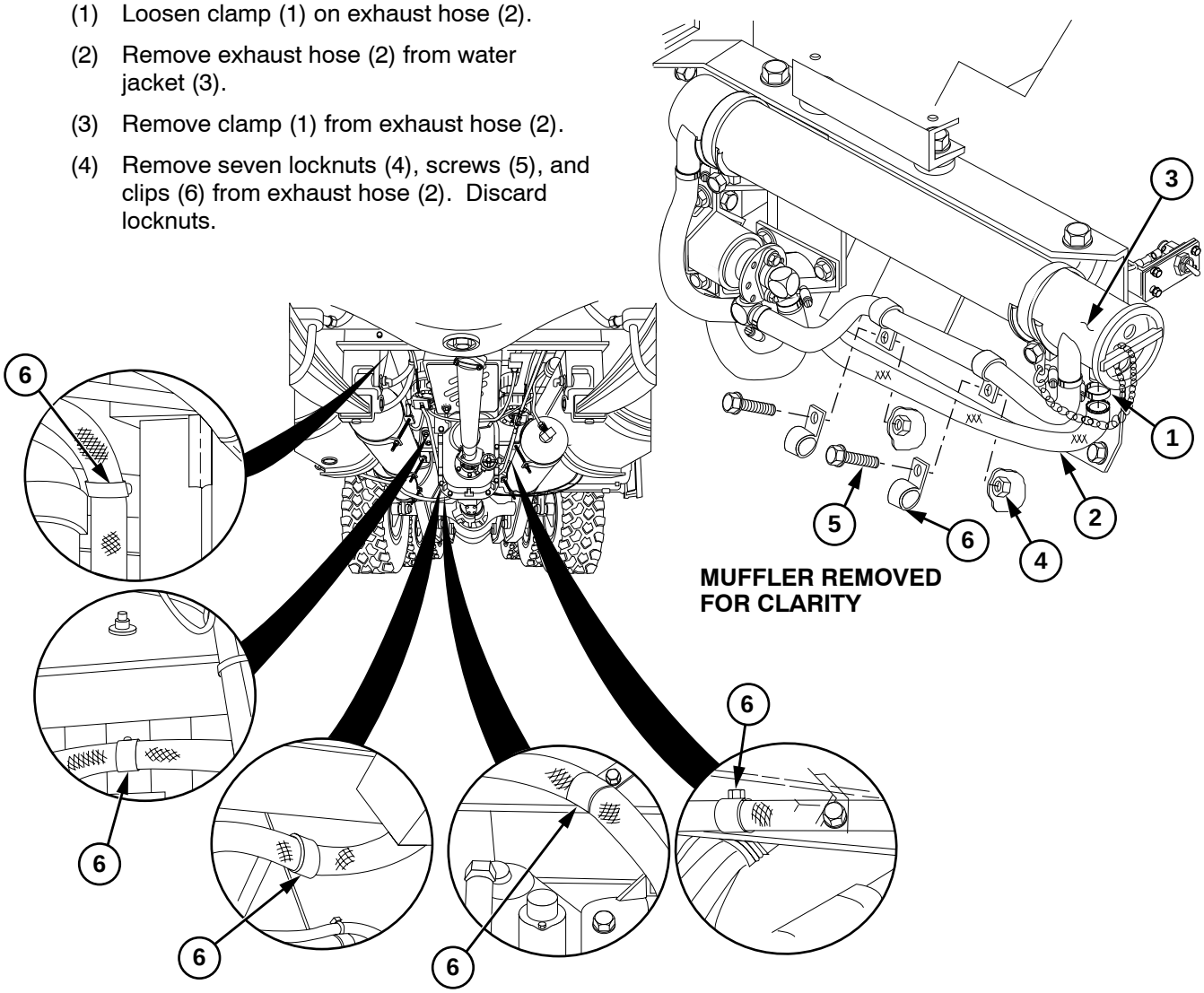
a. Removal

(1) Loosen clamp (1) on exhaust hose (2).

(2) Remove exhaust hose (2) from water jacket (3).

(3) Remove clamp (1) from exhaust hose (2).

(4) Remove seven locknuts (4), screws (5), and clips (6) from exhaust hose (2). Discard locknuts.

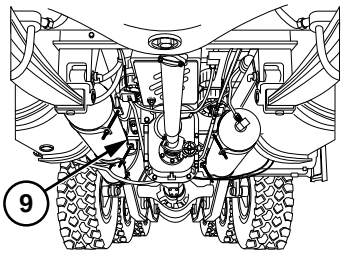


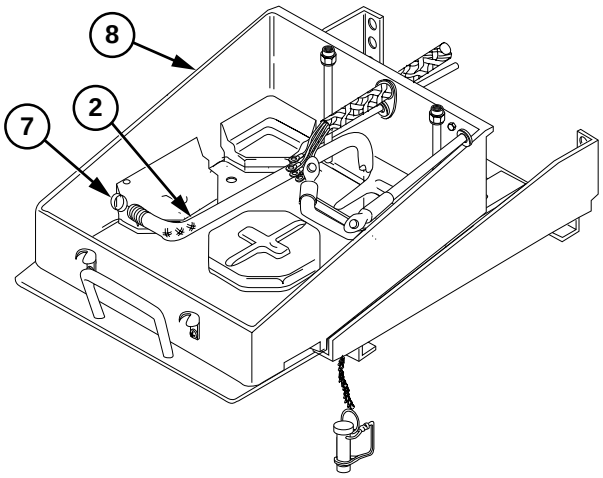
MUFFLER REMOVED FOR CLARITY

(5) Remove clamp (7) from exhaust hose (2).

(6) Remove exhaust hose (2) from main battery box (8).

(7) Route exhaust hose (2) out from frame assembly (9).





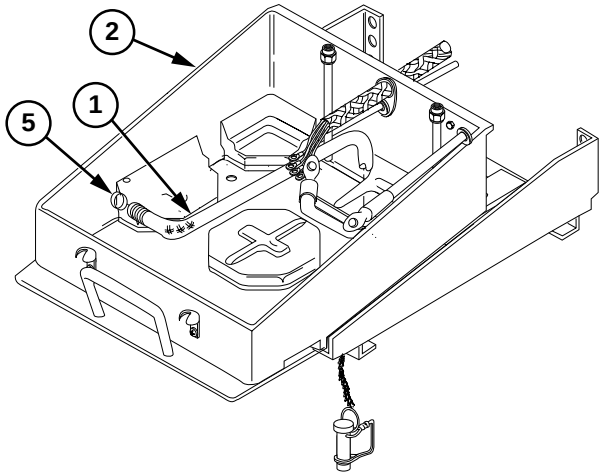
b. Installation

(1) Install exhaust hose (1) in battery box (2).

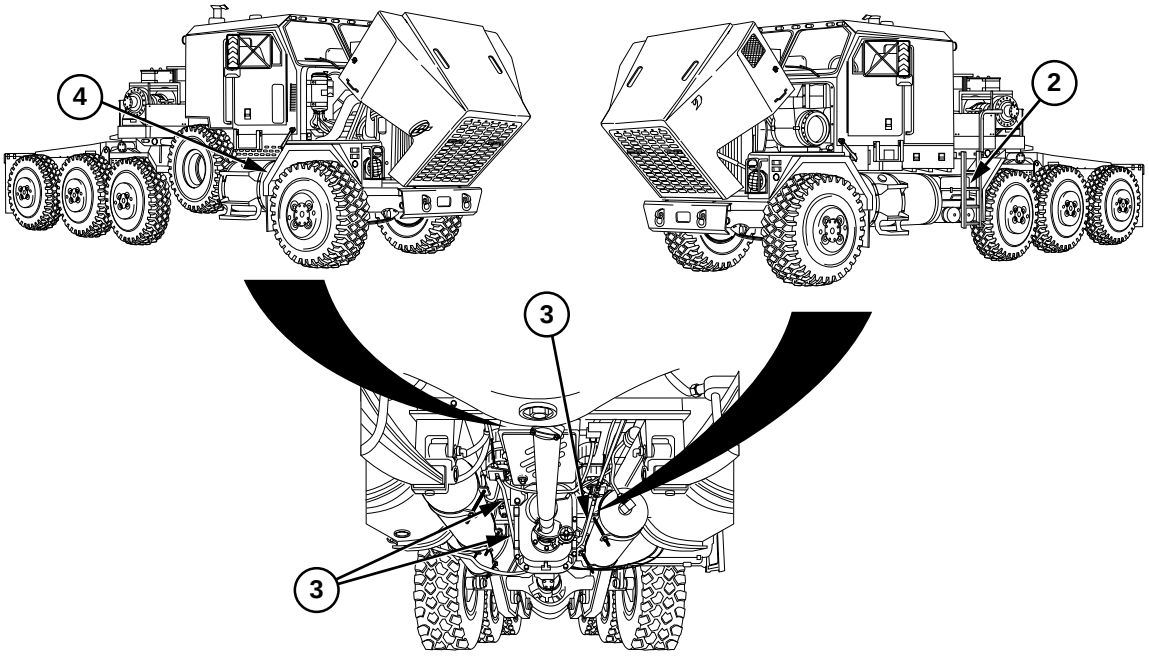
(2) Route exhaust hose (1) along mounting positions (3) from main battery box (2) to water jacket (4).

CAUTION

Exhaust hose becomes hot during normal operation. Do not use plastic cable ties to secure exhaust hose. Do not allow the exhaust hose to contact hoses or wire harnesses. Failure to comply may result in damage to equipment.



(3) Install clamp (5) on exhaust hose (1). Tighten clamp.



19-4. ARCTIC KIT EXHAUST HOSE REPLACEMENT (CONT)

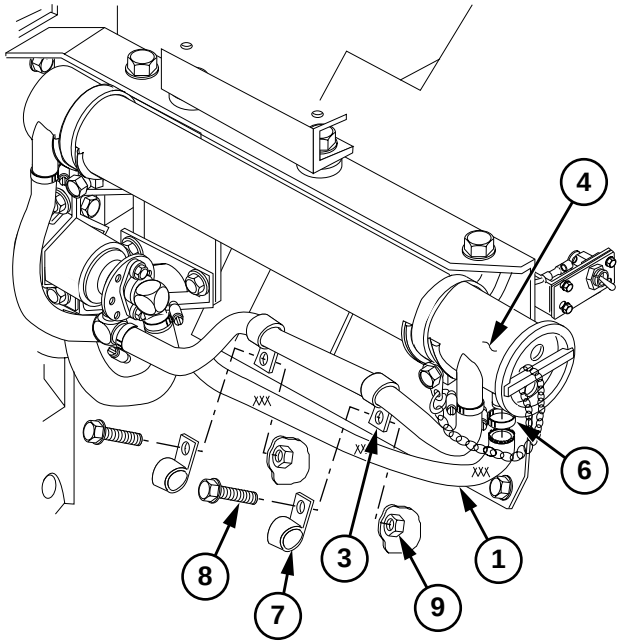
(4) Install clamp (6) on exhaust hose (1).

(5) Install exhaust hose (1) on water jacket (4). Tighten clamp (6).

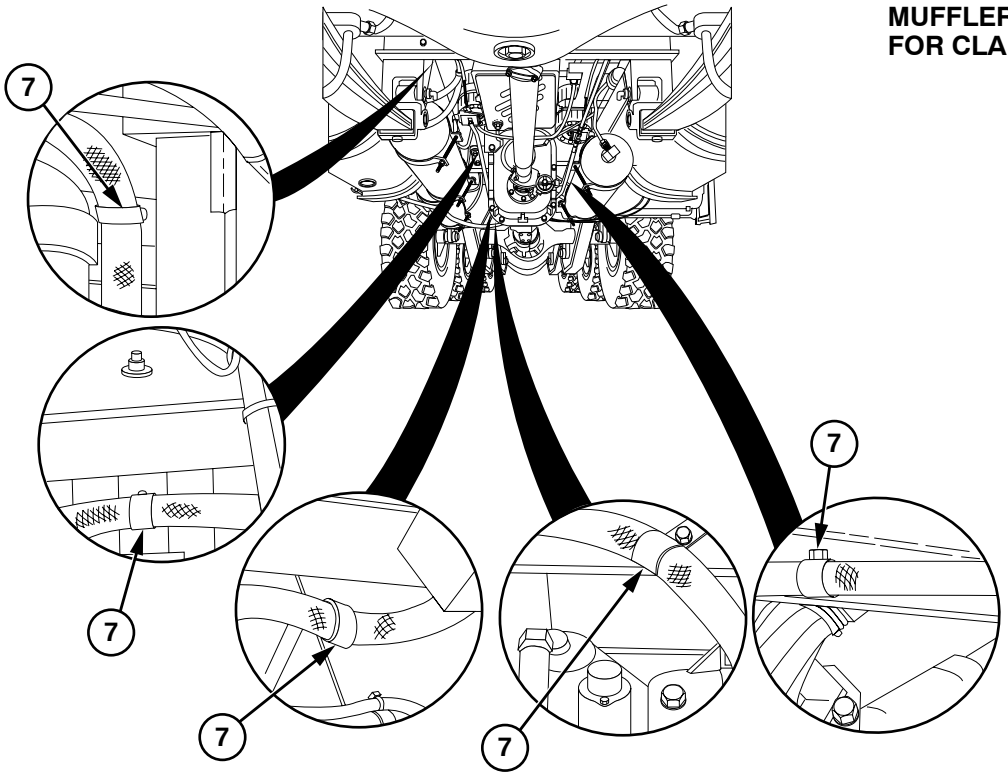
NOTE

Install clips starting at battery box and working toward water jacket.

(6) Install seven clips (7) on exhaust hose (1) at mounting positions (3) with seven screws (8) and new locknuts (9).



MUFFLER REMOVED FOR CLARITY



c. Follow-On Maintenance

Install HET Tractor batteries (para 7-57).

19-5. ARCTIC KIT COOLANT HOSES REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Cooling system drained (para 6-2).
Inner fender removed (left side only) (para 16-34).

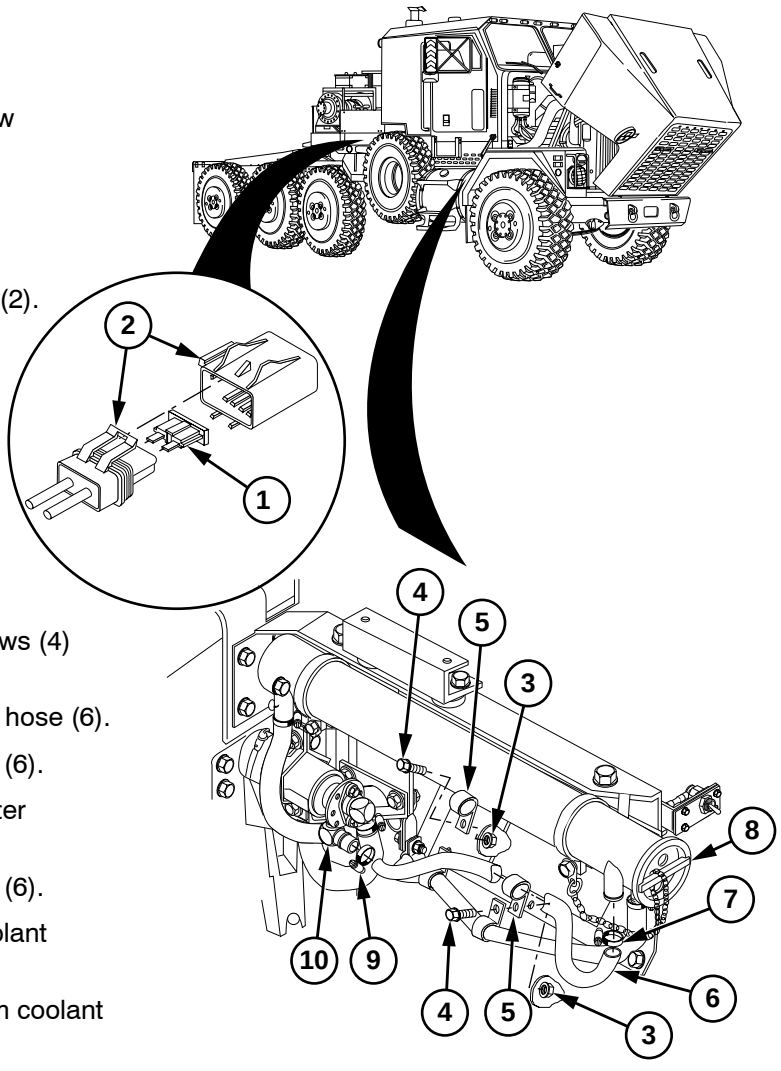
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Ties, Cable Plastic (Item 34, Appendix C)
Locknuts (8) (Item 72, Appendix G)
Lockwasher (Item 107, Appendix G)

a. Removal

CAUTION
Failure to do step (1) may allow inadvertant startup of coolant pump while coolant hoses are removed. Damage to equipment may result.

(1) Remove fuse (1) from fuse holder (2).



MUFFLER REMOVED FOR CLARITY

(2) Remove two locknuts (3) and screws (4) from clips (5). Discard locknuts.
(3) Remove two clips (5) from coolant hose (6).
(4) Loosen clamp (7) on coolant hose (6).
(5) Remove coolant hose (6) from water jacket (8).
(6) Loosen clamp (9) on coolant hose (6).
(7) Remove coolant hose (6) from coolant pump (10).
(8) Remove two clamps (7 and 9) from coolant hose (6).

19-5. ARCTIC KIT COOLANT HOSES REPLACEMENT (CONT)

(9) Remove four locknuts (11), five screws (12), lockwasher (13), and five clips (14) from coolant hose (15). Discard locknuts.

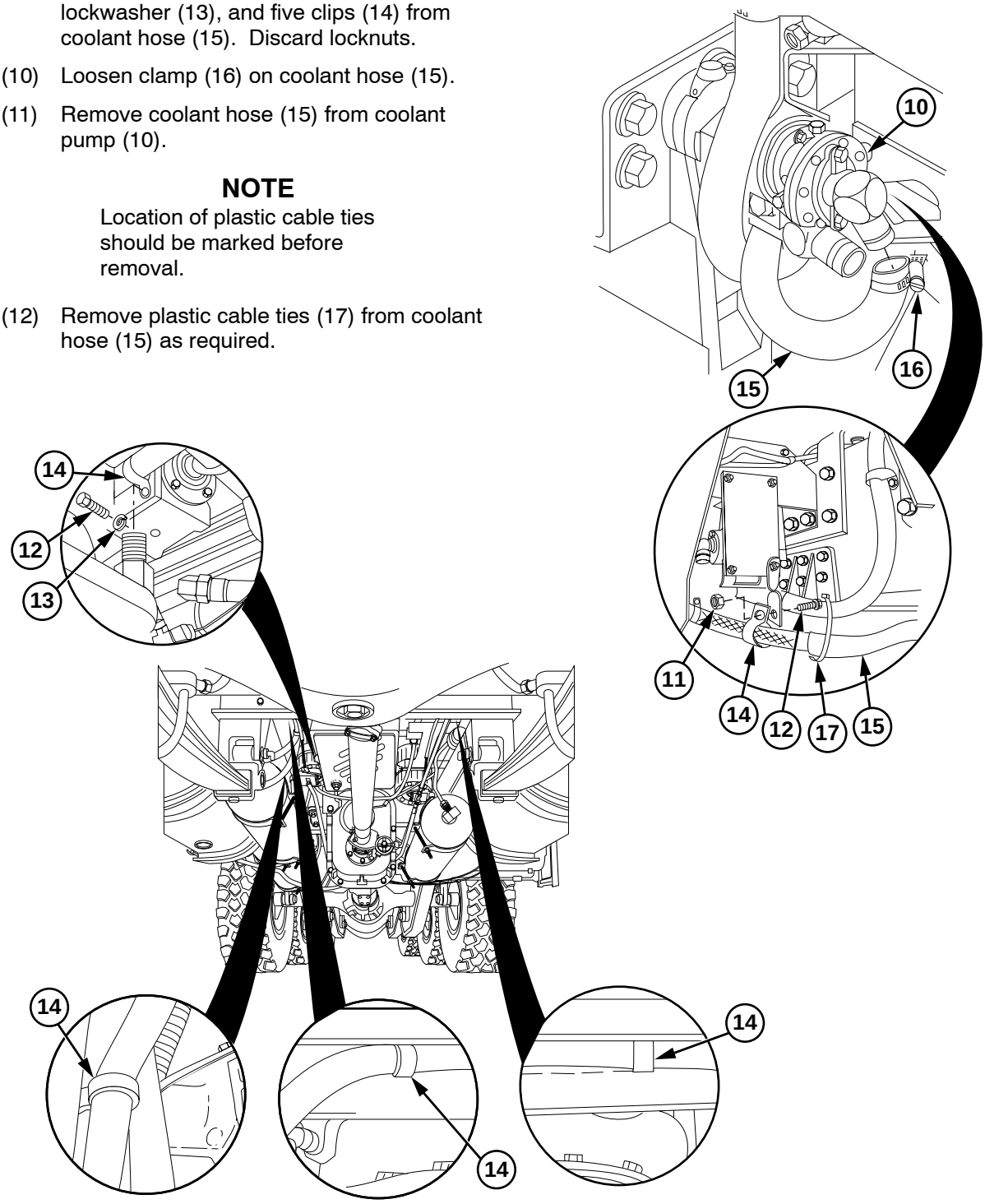
(10) Loosen clamp (16) on coolant hose (15).

(11) Remove coolant hose (15) from coolant pump (10).

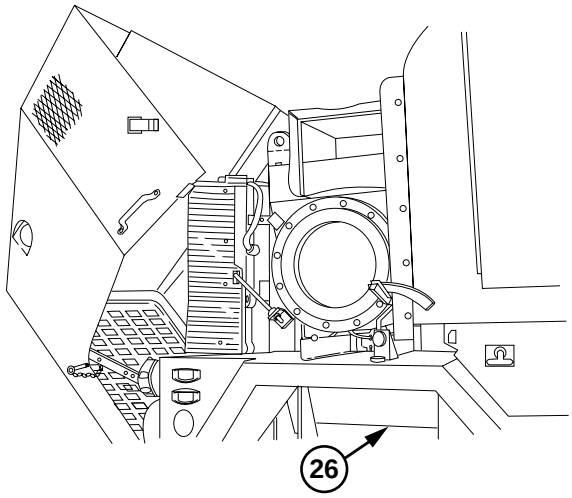
NOTE

Location of plastic cable ties should be marked before removal.

(12) Remove plastic cable ties (17) from coolant hose (15) as required.



(13) Deleted.

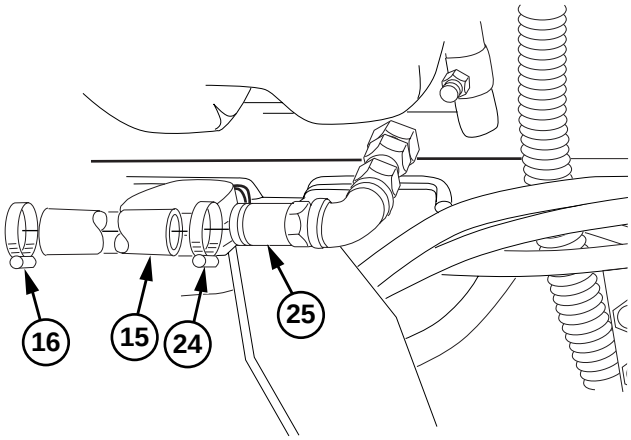


(14) Loosen clamp (24) on coolant hose (15).

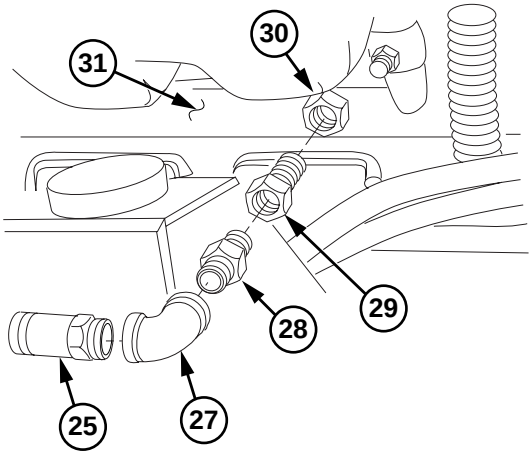
(15) Remove coolant hose (15) from fitting (25).

(16) Route coolant hose (15) out from frame assembly (26).

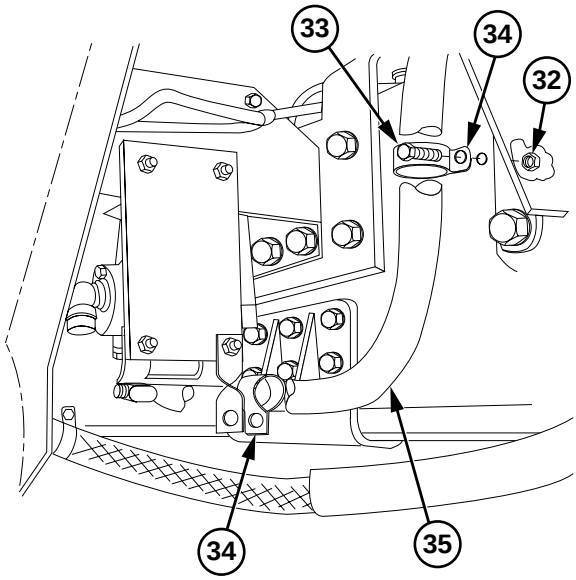
(17) Remove two clamps (16 and 24) from coolant hose (15).



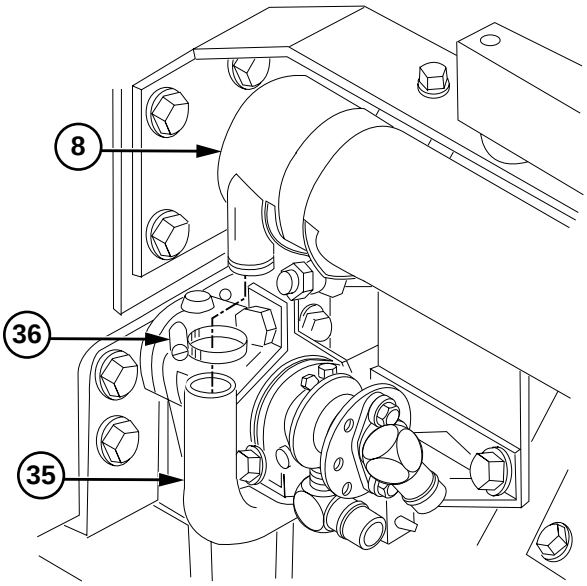
(18) Remove fitting (25), elbow (27), reducer (28), and nipple (29) from adapter (30) on engine (31).



(19) Remove locknut (32), screw (33), and two clips (34) from coolant hose (35). Discard locknuts.



19-5. ARCTIC KIT COOLANT HOSES REPLACEMENT (CONT)



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(20) Loosen clamp (36) on coolant hose (35).

(21) Remove coolant hose (35) from water jacket (8).

NOTE

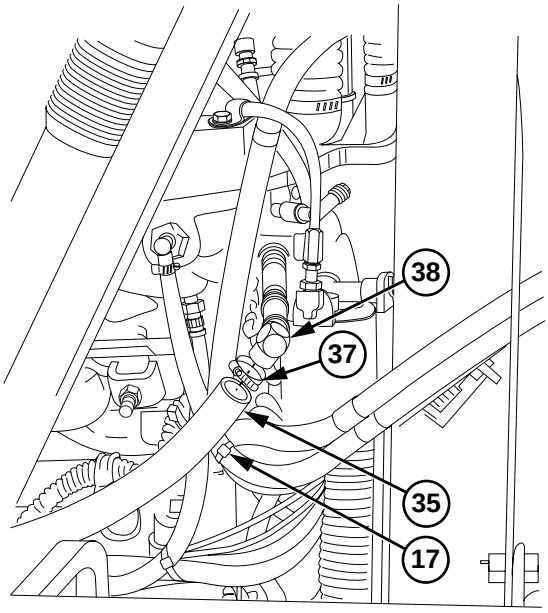
Location of plastic cable ties should be marked before removal.

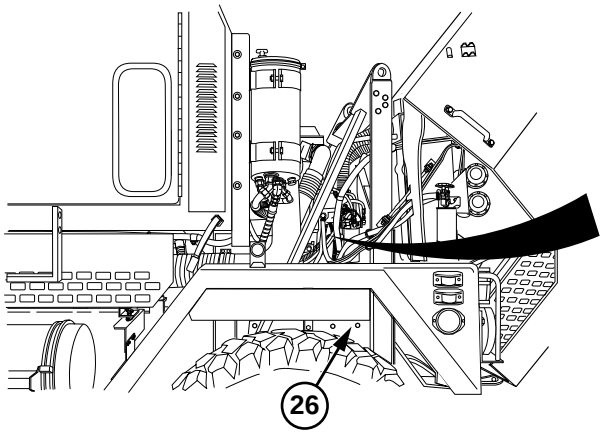
(22) Remove plastic cable ties (17) from coolant hose (35) as required.

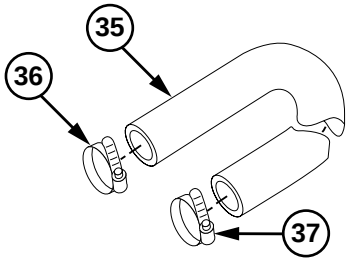
(23) Loosen clamp (37) on coolant hose (35).

(24) Remove coolant hose (35) from elbow (38).

(25) Route coolant hose (35) out from frame assembly (26).







(26) Remove two clamps (36 and 37) from coolant hose (35).

(27) Disconnect plug (39) from socket (40).

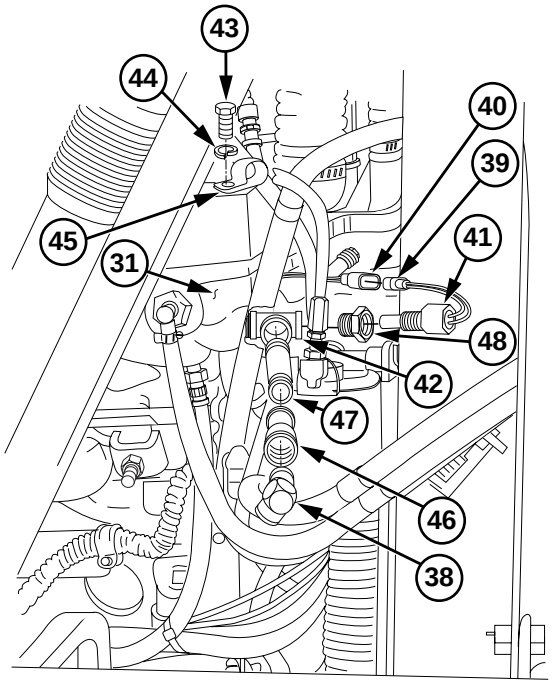
(28) Remove STE/ICE water temperature sender (41) from tee (42).

(29) Remove screw (43) and lockwasher (44) from clip (45). Discard lockwasher.

(30) Remove elbow (38), reducer coupling (46) and nipple (47) from tee (42).

(31) Remove tee (42) from engine block (31).

(32) Remove fitting (48) from tee (42).



b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

(1) Coat threads of tee (1) with pipe thread sealing compound.

(2) Install fitting (2) on tee (1).

(3) Install tee (1) on engine block (3).

(4) Coat threads of nipple (4), reducer coupling (5), and elbow (6) with pipe thread sealing compound.

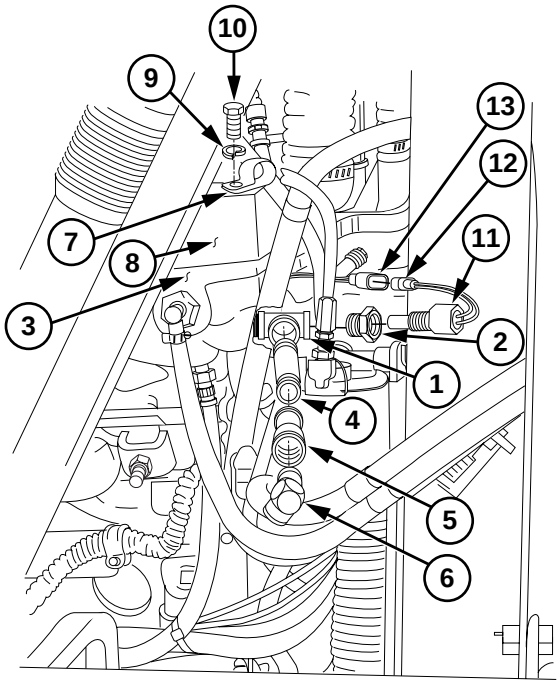
(5) Install nipple (4), reducer coupling (5), and elbow (6) on tee (1).

(6) Install clip (7) on upper right thermostat housing (8) with new lockwasher (9) and screw (10).

(7) Coat threads of STE/ICE water temperature sender (11) with pipe thread sealing compound.

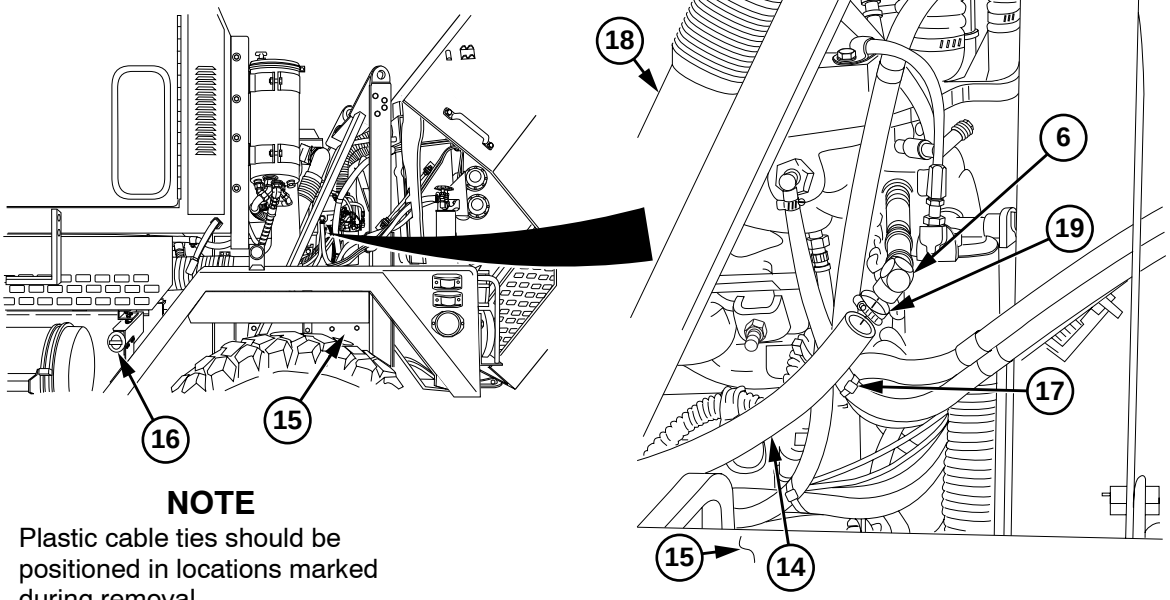
(8) Install STE/ICE water temperature sender (11) on fitting (2).

(9) Connect plug (12) to socket (13).



19-5. ARCTIC KIT COOLANT HOSES REPLACEMENT (CONT)

(10) Route coolant hose (14) along frame assembly (15) to water jacket (16).



NOTE

Plastic cable ties should be positioned in locations marked during removal.

(11) Secure coolant hose (14) with plastic cable ties (17) to keep hose (14) away from frame assembly (15) and exhaust manifold (18).

(12) Install clamp (19) on coolant hose (14).

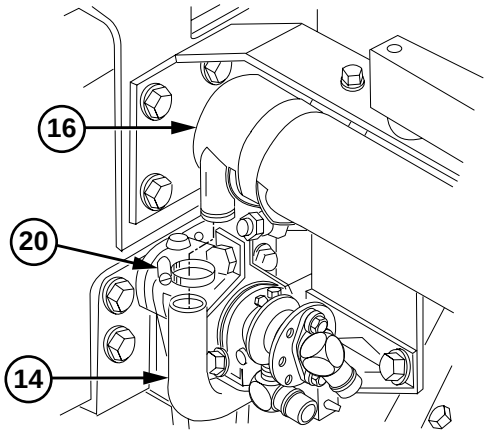
(13) Install coolant hose (14) on elbow (6).

(14) Tighten clamp (19) on coolant hose (14).

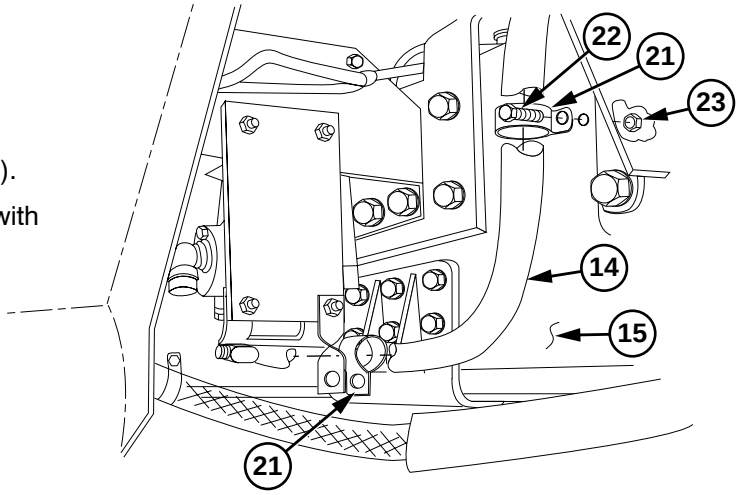
(15) Install clamp (20) on coolant hose (14).

(16) Install coolant hose (14) on water jacket (16).

(17) Tighten clamp (20) on water jacket (16).



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(18) Install two clips (21) on coolant hose (14).

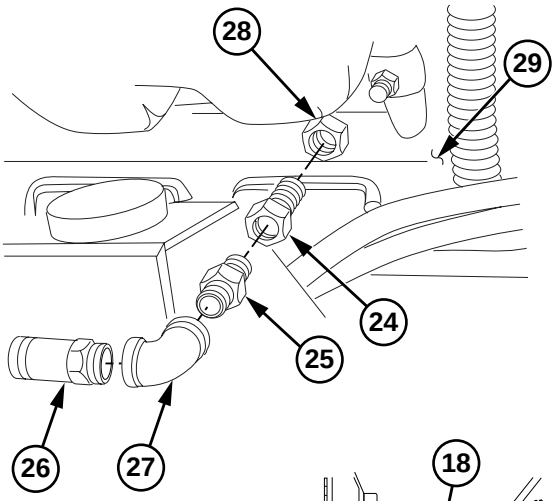
(19) Install clip (21) on frame assembly (15) with screw (22) and new locknut (23).

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

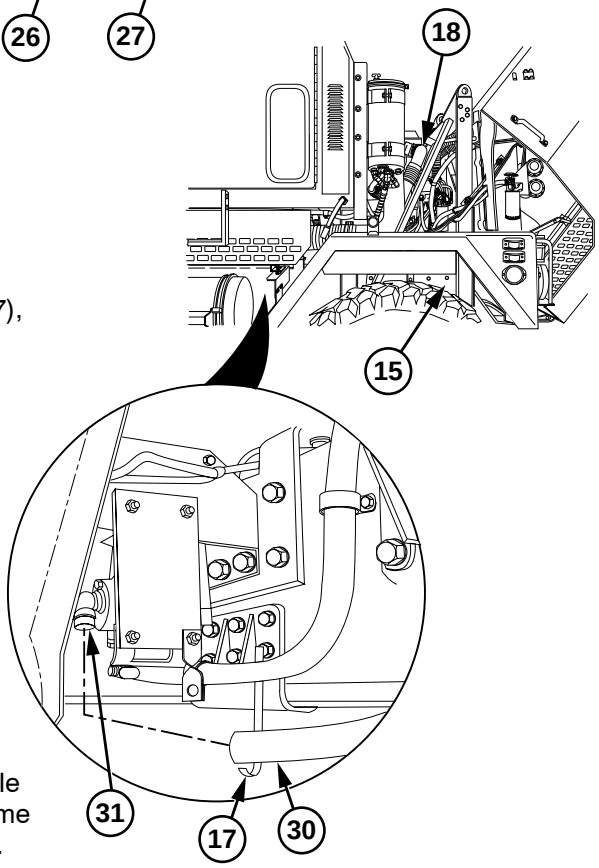
CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.



(20) Coat threads of nipple (24), reducer (25), and fitting (26) with pipe thread sealing compound.

(21) Install nipple (24), reducer (25), elbow (27), and fitting (26) in adapter (28) on engine (29).

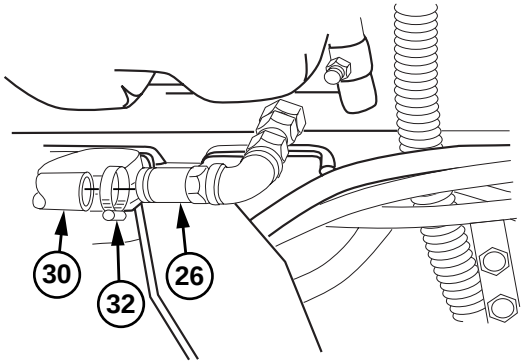


(22) Route coolant hose (30) along frame assembly (15) to coolant pump (31).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(23) Secure coolant hose (30) with plastic cable ties (17) to keep hose (30) away from frame assembly (15) and exhaust manifold (18).



(24) Install clamp (32) on coolant hose (30).

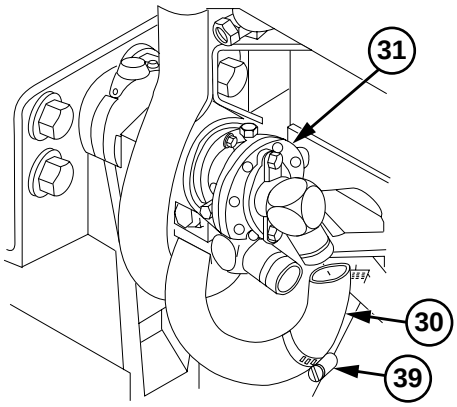
(25) Install coolant hose (30) on fitting (26). Tighten clamp (32).

19-5. ARCTIC KIT COOLANT HOSES REPLACEMENT (CONT)

(26) Deleted.

(27) Install clamp (39) on coolant hose (30).

(28) Install coolant hose (30) on coolant pump (31). Tighten clamp (39).

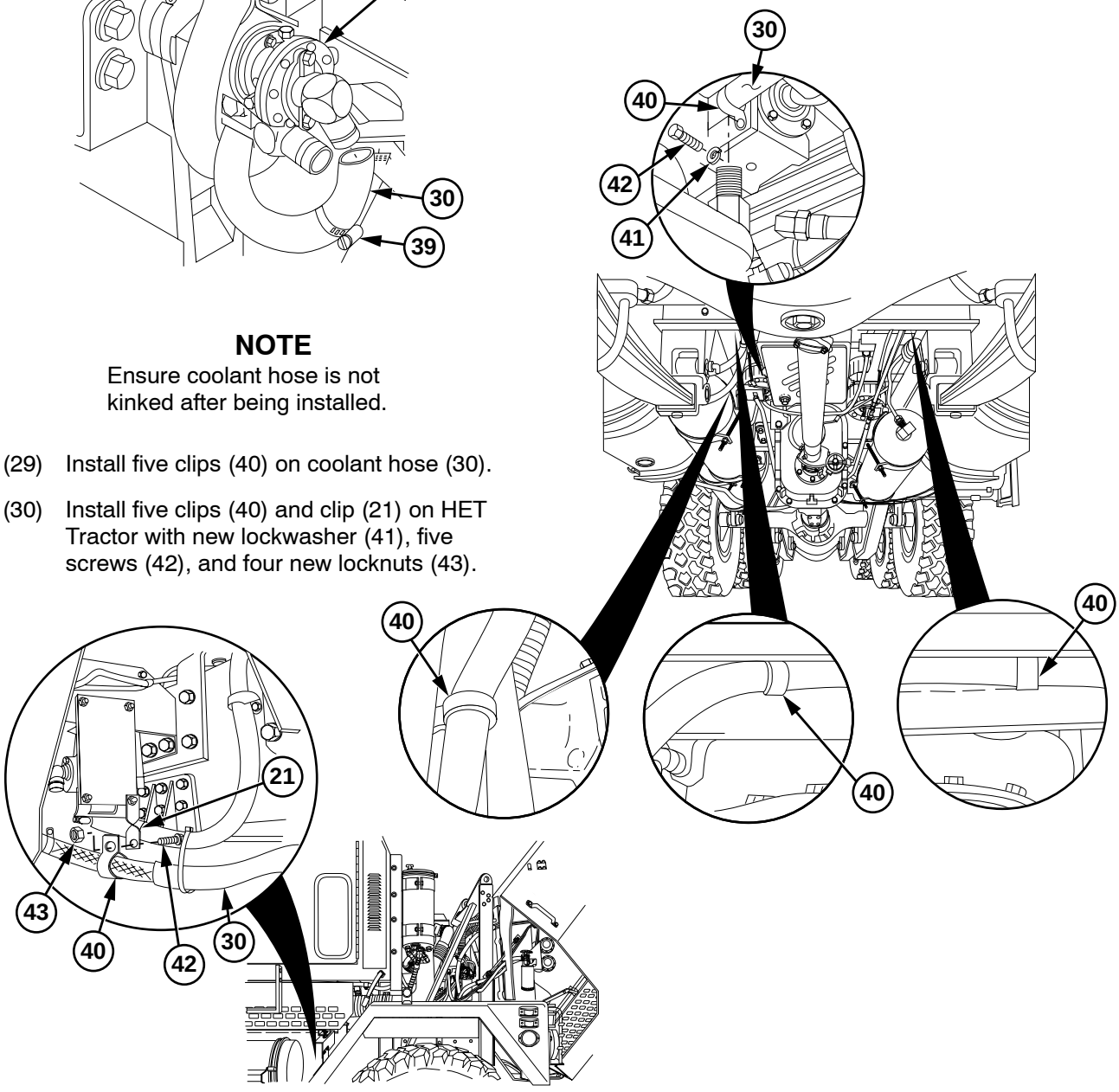


NOTE

Ensure coolant hose is not kinked after being installed.

(29) Install five clips (40) on coolant hose (30).

(30) Install five clips (40) and clip (21) on HET Tractor with new lockwasher (41), five screws (42), and four new locknuts (43).



(31) Route coolant hose (44) from coolant pump (31) to water jacket (16).

(32) Install two clamps (45) on coolant hose (44).

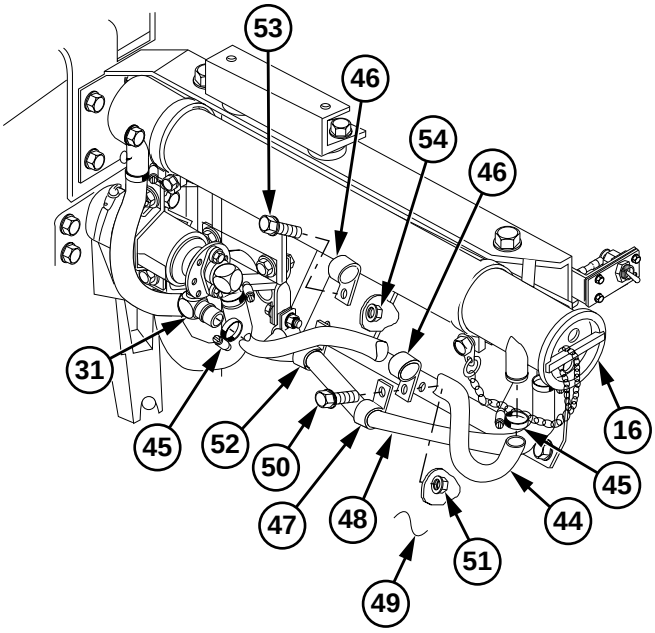
(33) Install coolant hose (44) on coolant pump (31). Tighten clamp (45).

(34) Install coolant hose (44) on water jacket (16). Tighten clamp (45).

(35) Install two clips (46) on coolant hose (44).

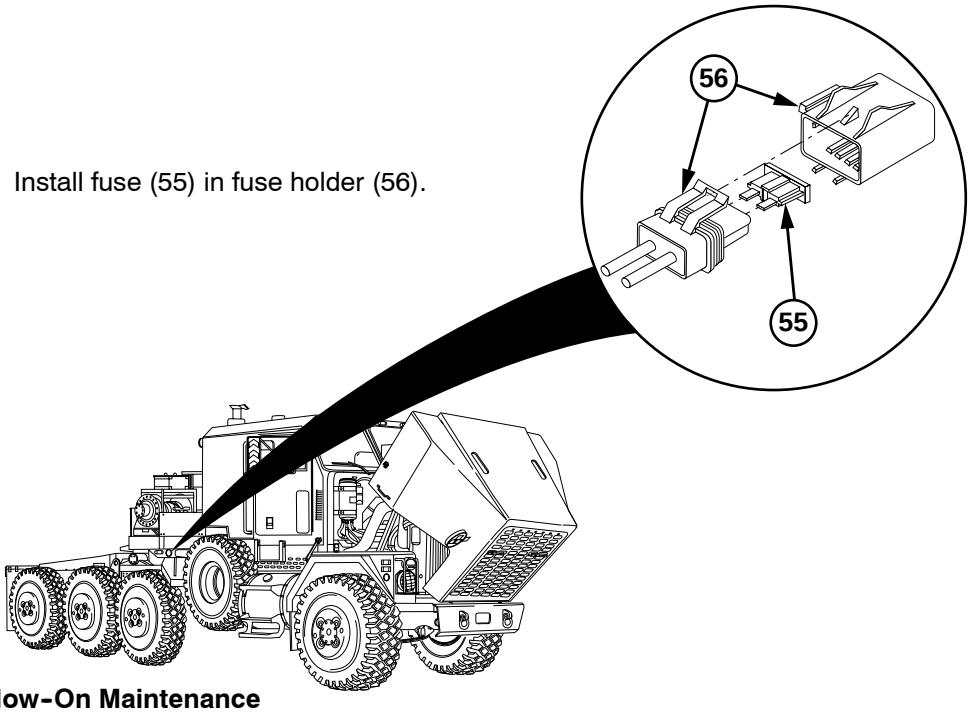
(36) Install clip (46) and clip (47) on exhaust hose (48) and fender (49) with screw (50) and new locknut (51).

(37) Install clip (46) and clip (52) on exhaust hose (48) with screw (53) and new locknut (54).



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(38) Install fuse (55) in fuse holder (56).



c. Follow-On Maintenance

(1) Fill cooling system (para 6-2).

(2) Operate coolant pump and check for leaks (TM 9-2320-360-10).

(3) Install inner fender (para 16-34).

19-6. ARCTIC KIT COOLANT PUMP REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Cooling system drained (para 6-2).
Arctic kit batteries disconnected (para 19-2).
Het tractor batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

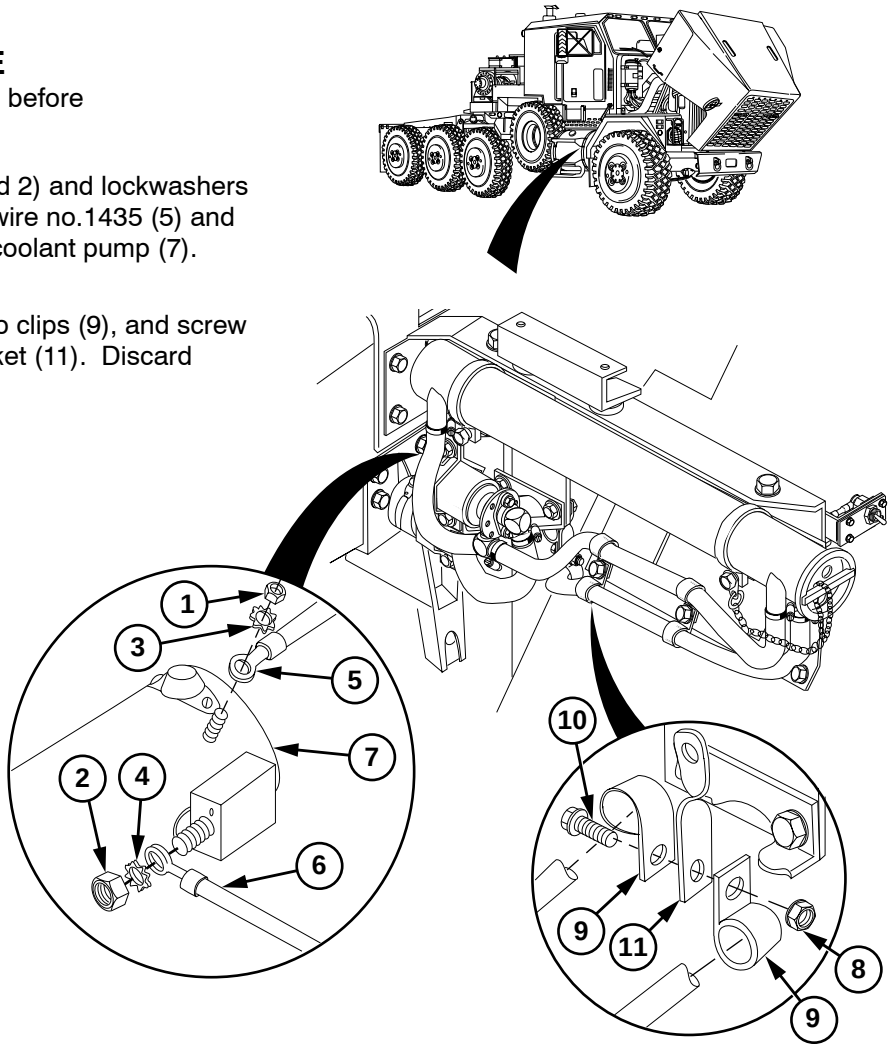
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Ties, Cable Plastic (Item 34, Appendix C)
Locknuts (8) (Item 72, Appendix G)
Lockwashers (2) (Item 90, Appendix G)

a. Removal

NOTE
Tag and mark wires before removal.

(1) Remove two nuts (1 and 2) and lockwashers (3 and 4). Disconnect wire no.1435 (5) and wire no. 1373 (6) from coolant pump (7). Discard lockwashers.

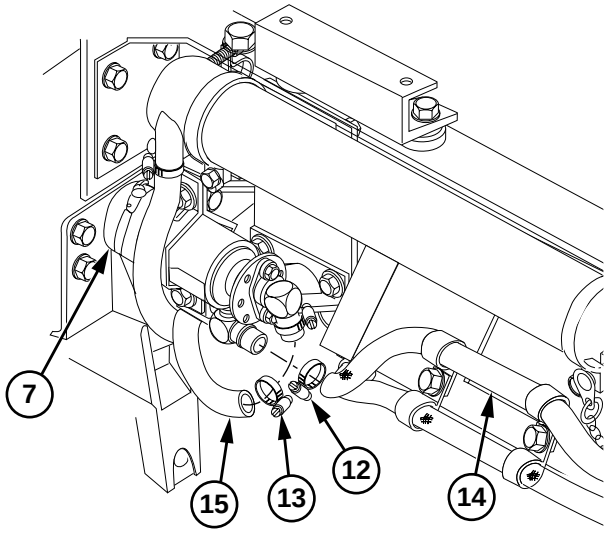
(2) Remove locknut (8), two clips (9), and screw (10) from standoff bracket (11). Discard locknut.



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(3) Loosen two clamps (12 and 13) on coolant hoses (14 and 15).

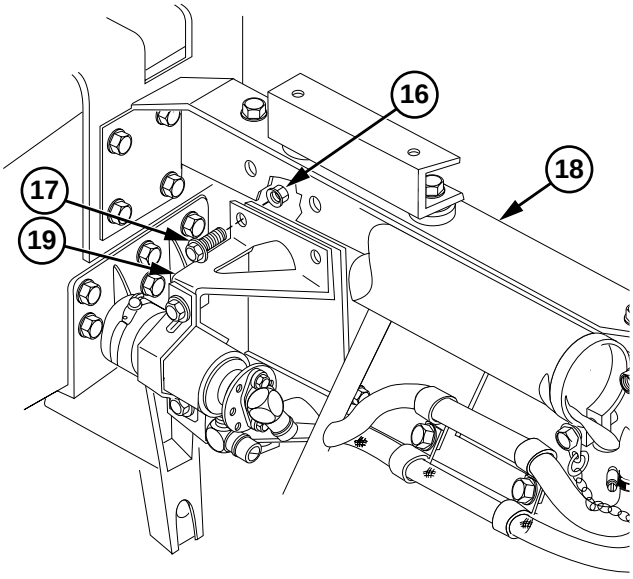
(4) Remove coolant hoses (14 and 15) from coolant pump (7).



MUFFLER REMOVED FOR CLARITY

(5) Remove two locknuts (16) and screws (17) from muffler bracket (18) while supporting coolant pump assembly (19).

(6) Remove coolant pump assembly (19) from muffler bracket (18).



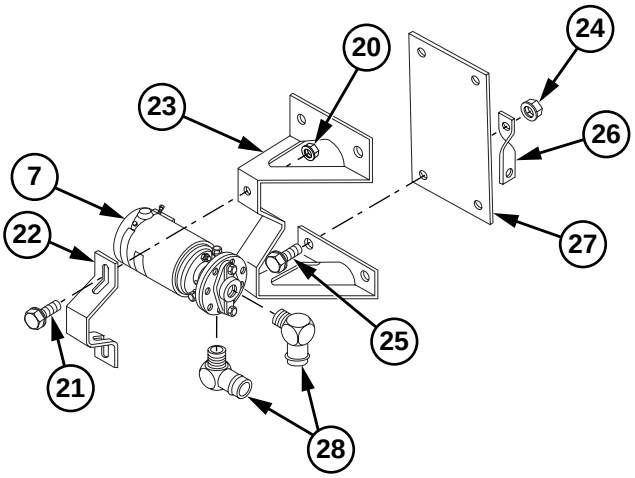
19-6. ARCTIC KIT COOLANT PUMP REPLACEMENT (CONT)

(7) Remove two locknuts (20), screws (21), and clamps (22) from support (23). Discard locknuts.

(8) Remove coolant pump (7) from support (23).

(9) Remove two locknuts (24), screws (25), standoff bracket (26), and plate (27) from support (23). Discard locknuts.

(10) Remove two elbows (28) from coolant pump (7).



b. Installation

WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply compound to hose connections. Damage to equipment may result.

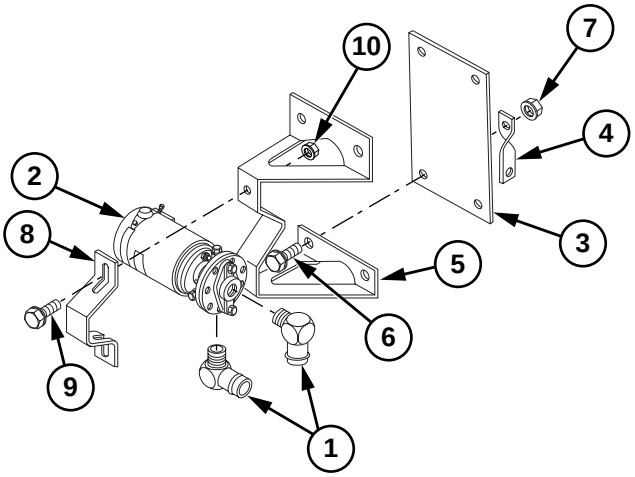
(1) Coat threads of two elbows (1) with pipe thread sealing compound.

(2) Install two elbows (1) on coolant pump (2).

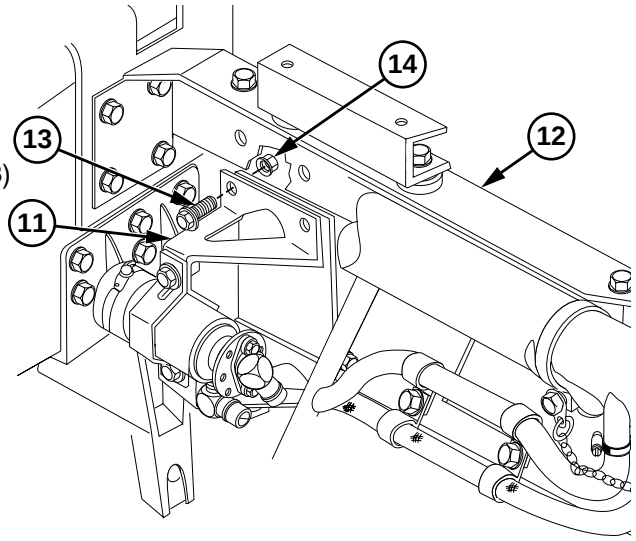
(3) Install plate (3) and standoff bracket (4) on support (5) with two screws (6) and new locknuts (7).

(4) Install coolant pump (2) on support (5).

(5) Install clamp (8) on support (5) with two screws (9) and new locknuts (10).



(6) Install coolant pump assembly (11) on muffler bracket (12) with two screws (13) and new locknuts (14).

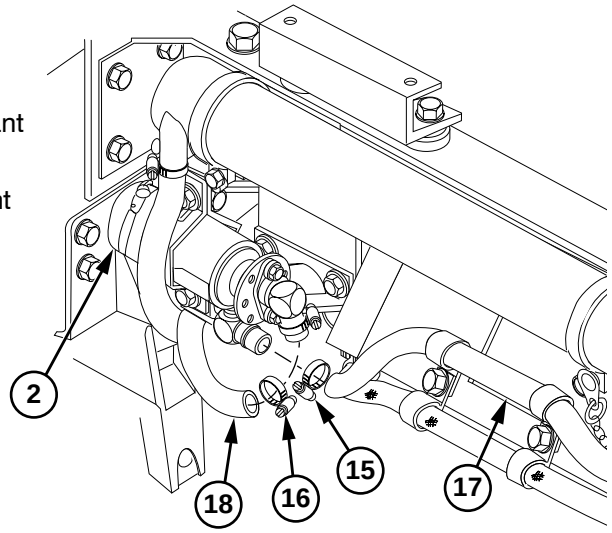


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(7) Install two clamps (15 and 16) on coolant hoses (17 and 18).

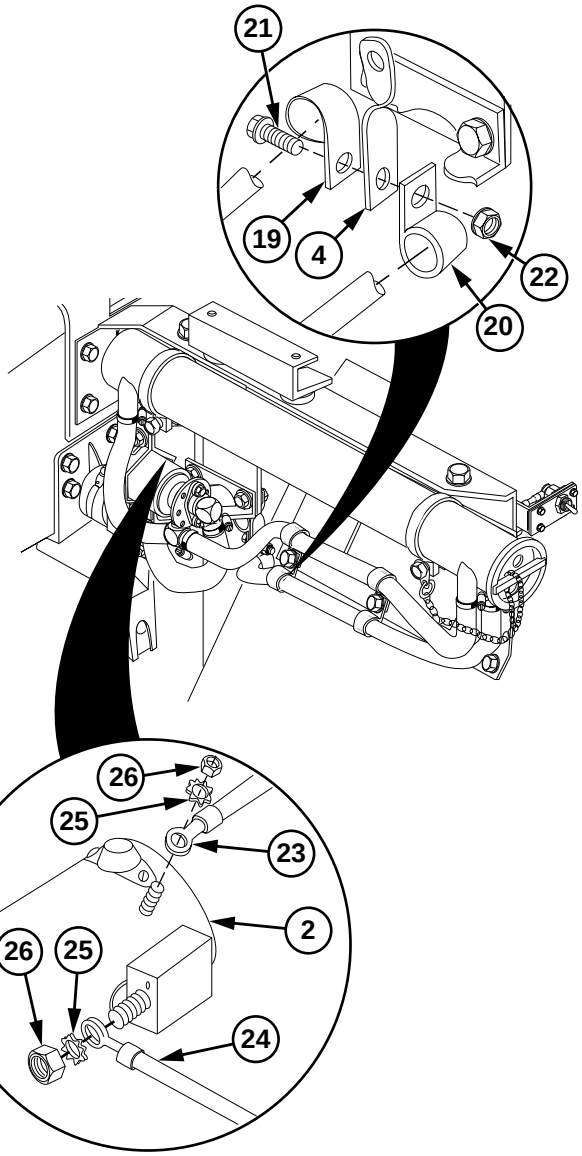
(8) Install coolant hoses (17 and 18) on coolant pump (2).

(9) Tighten two clamps (15 and 16) on coolant hoses (17 and 18).



19-6. ARCTIC KIT COOLANT PUMP REPLACEMENT (CONT)

(10) Install two clips (19 and 20) on standoff bracket (4) with screw (21) and new locknut (22).



(11) Connect wire no. 1435 (23) and wire no. 1373 (24) to coolant pump (2) with two new lockwashers (25) and nuts (26).

c. Follow-On Maintenance

(1) Connect arctic kit batteries (para 19-2).

(2) Connect HET Tractor batteries (para 7-61).

(3) Fill cooling system (para 6-2).

(4) Operate coolant pump and check for leaks (TM 9-2320-360-10).

19-7. ARCTIC KIT WIRE HARNESS REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine hood opened (TM 9-2320-360-10).
HET Tractor batteries disconnected (para 7-61).
Arctic kit batteries disconnected (para 19-2).
Exhaust heat shield removed (para 5-2.1).
Inner fender removed (left side only) (para 16-34).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Tags, Identification (Item 32, Appendix C)
Ties, Cable Plastic (Item 34, Appendix C)
Locknuts (6) (Item 72, Appendix G)
Locknut (Item 65, Appendix G)
Lockwashers (2) (Item 90, Appendix G)
Lockwashers (2) (Item 97, Appendix G)
Lockwashers (2) (Item 102, Appendix G)
Lockwashers (2) (Item 109, Appendix G)
Lockwasher (Item 104, Appendix G)
Lockwasher (Item 115, Appendix G)

Personnel Required
Two

a. Removal

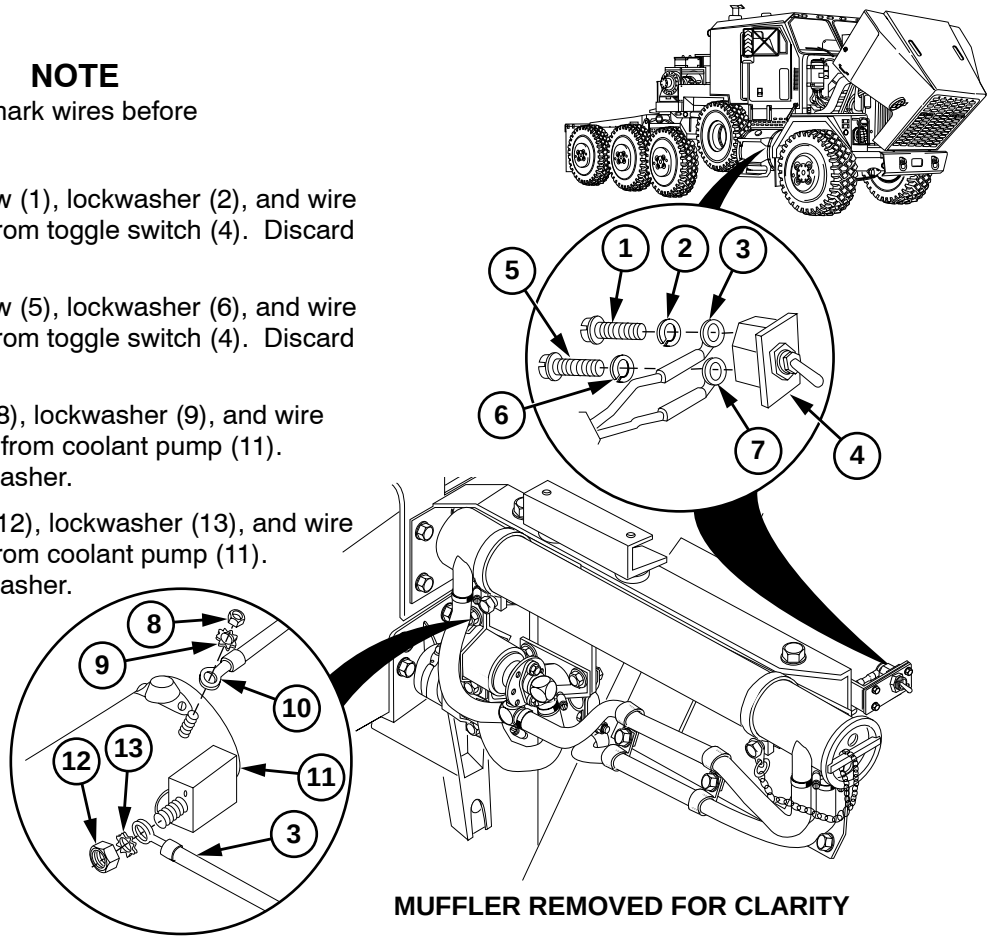
NOTE
Tag and mark wires before removal.

(1) Remove screw (1), lockwasher (2), and wire no. 1373 (3) from toggle switch (4). Discard lockwasher.

(2) Remove screw (5), lockwasher (6), and wire no. 1373 (7) from toggle switch (4). Discard lockwasher.

(3) Remove nut (8), lockwasher (9), and wire no. 1435 (10) from coolant pump (11). Discard lockwasher.

(4) Remove nut (12), lockwasher (13), and wire no. 1373 (3) from coolant pump (11). Discard lockwasher.



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19-7. ARCTIC KIT WIRE HARNESS REPLACEMENT (CONT)

(5) Remove two locknuts (14), screws (15), and clips (16) from frame assembly (17). Discard locknuts.

(6) Remove locknut (18), screw (19), and clip (20) from cab mount stand off bracket (21). Discard locknut.

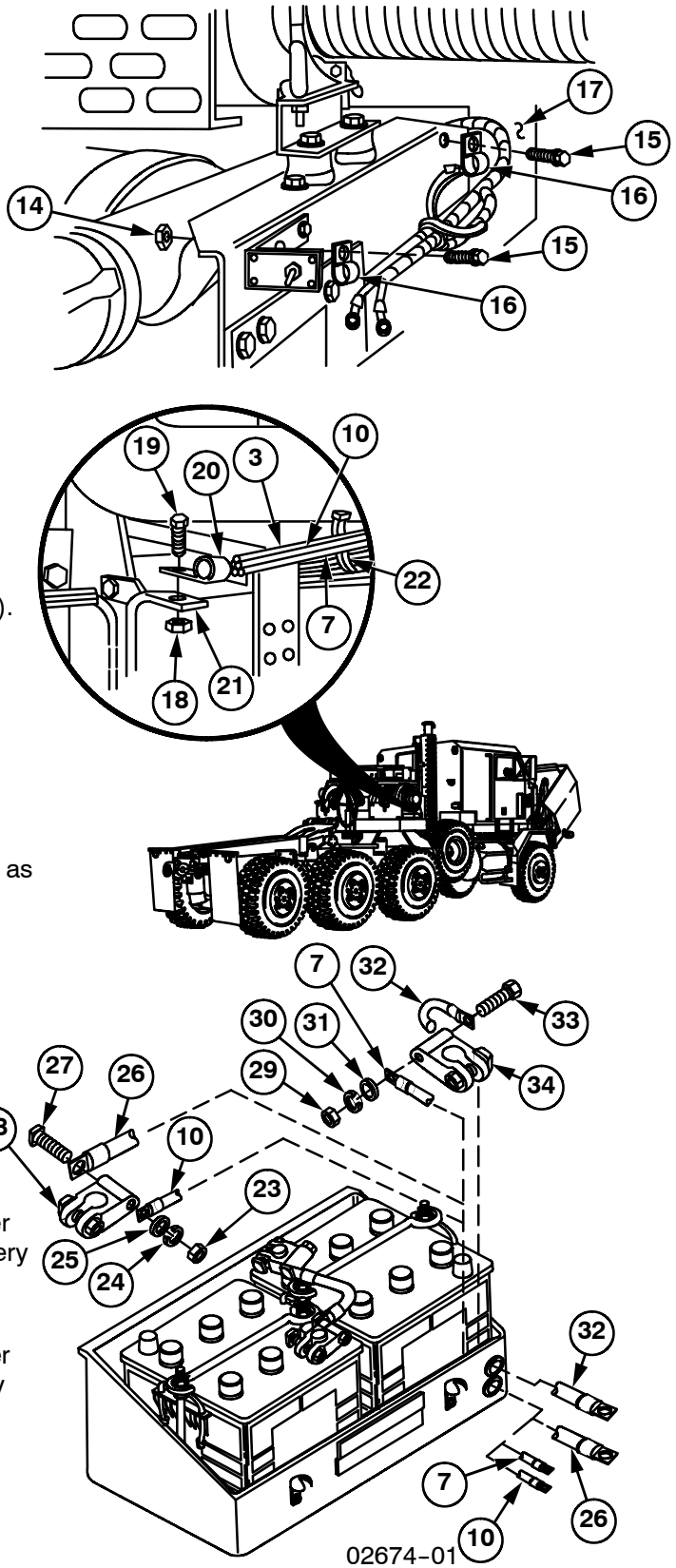
NOTE

Location of cable plastic ties should be marked before removal.

(7) Remove plastic cable ties (22) from wires no. 1373 (3 and 7) and wire no. 1435 (10) as required.

(8) Remove nut (23), lockwasher (24), washer (25), wire no. 1435 (10), negative (-) battery cable (26), and screw (27) from battery clamp (28). Discard lockwasher.

(9) Remove nut (29), lockwasher (30), washer (31), wire no. 1373 (7), positive (+) battery cable (32), and screw (33) from battery clamp (34). Discard lockwasher.

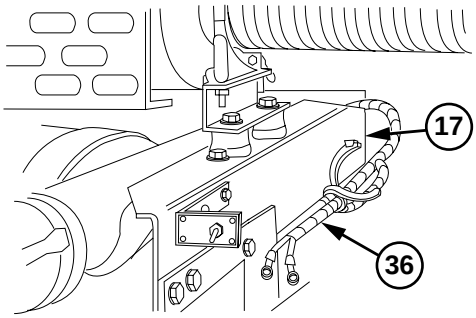


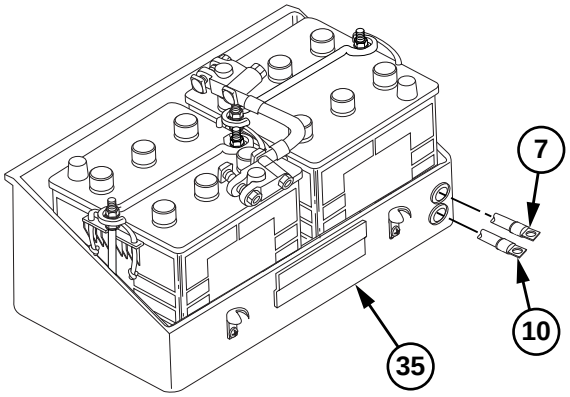
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(10) Remove wire no. 1373 (7) and wire no. 1435 (10) from arctic kit battery box (35).

(11) Route wire harness (36) through frame assembly (17) toward arctic kit battery box (35).

(12) Remove wire harness (36) from HET Tractor.

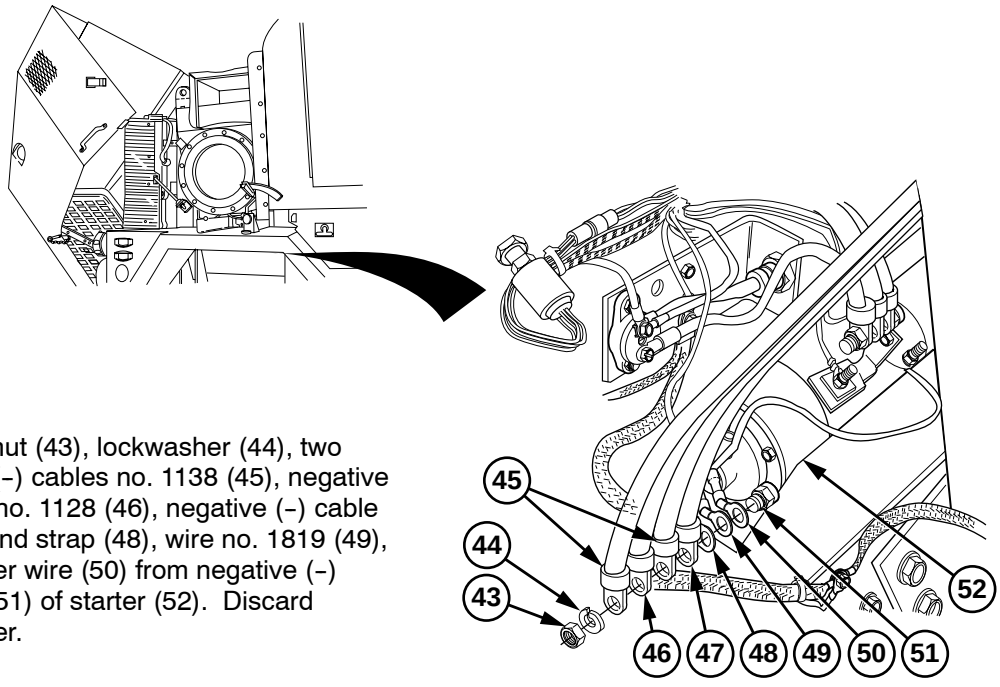




NOTE

- Do steps (13) thru (26) if removing starter cables.
- Tag and mark cables before removal.

(13) Deleted.



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(14) Remove nut (43), lockwasher (44), two negative (–) cables no. 1138 (45), negative (–) cable no. 1128 (46), negative (–) cable (47), ground strap (48), wire no. 1819 (49), and jumper wire (50) from negative (–) terminal (51) of starter (52). Discard lockwasher.

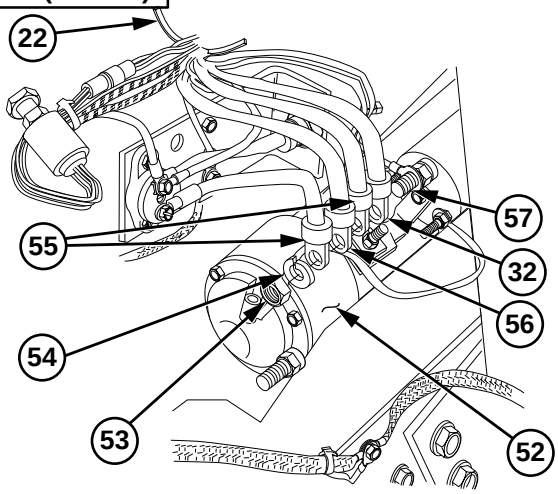
19-7. ARCTIC KIT WIRE HARNESS REPLACEMENT (CONT)

(15) Remove nut (53), lockwasher (54), two positive (+) cables no. 1139 (55), positive (+) cable (32), and positive (+) cable no. 1274 (56) from positive (+) terminal (57) of starter (52). Discard lockwasher.

NOTE

Location of plastic cable ties should be marked before removal.

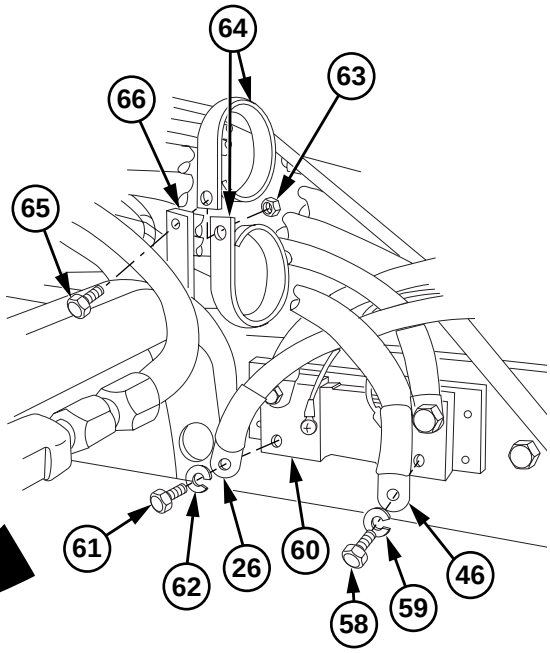
(16) Remove plastic cable ties (22) from positive (+) cable (32) and negative (–) cable (46) as required.

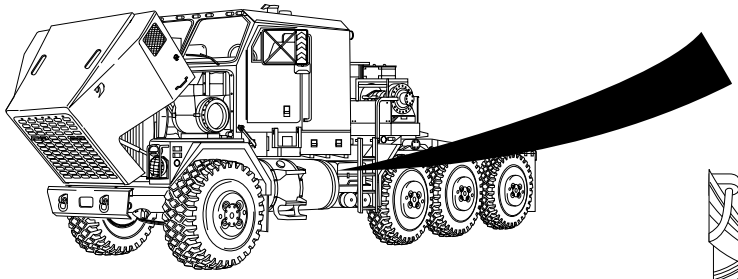


(17) Remove screw (58), lockwasher (59), and negative (–) battery cable (46) from shunt (60). Discard lockwasher.

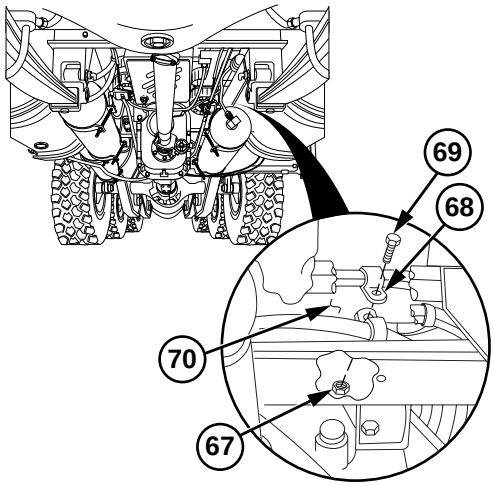
(18) Remove screw (61), lockwasher (62), and negative (–) cable (26) from shunt (60). Discard lockwasher.

(19) Remove locknut (63), two clips (64), and screw (65) from left frame rail stand off bracket (66). Discard locknut.

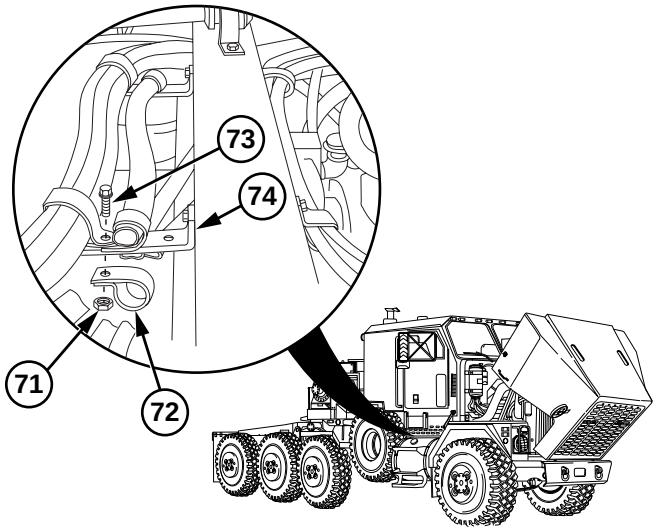




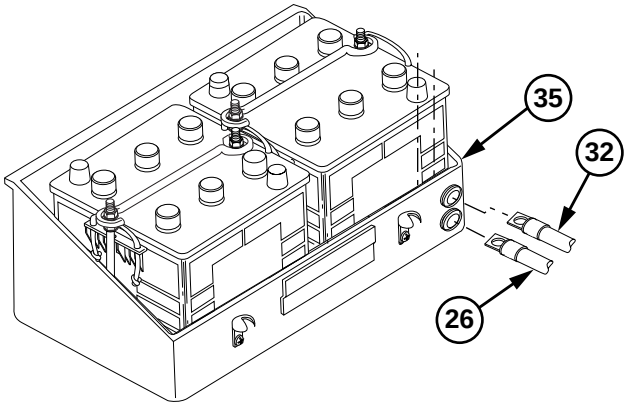
(20) Remove locknut (67), clip (68), and screw (69) from crossmember (70) with aid of assistant. Discard locknut.



(21) Remove locknut (71), clip (72), and screw (73) from standoff bracket (74) with aid of assistant. Discard locknut.

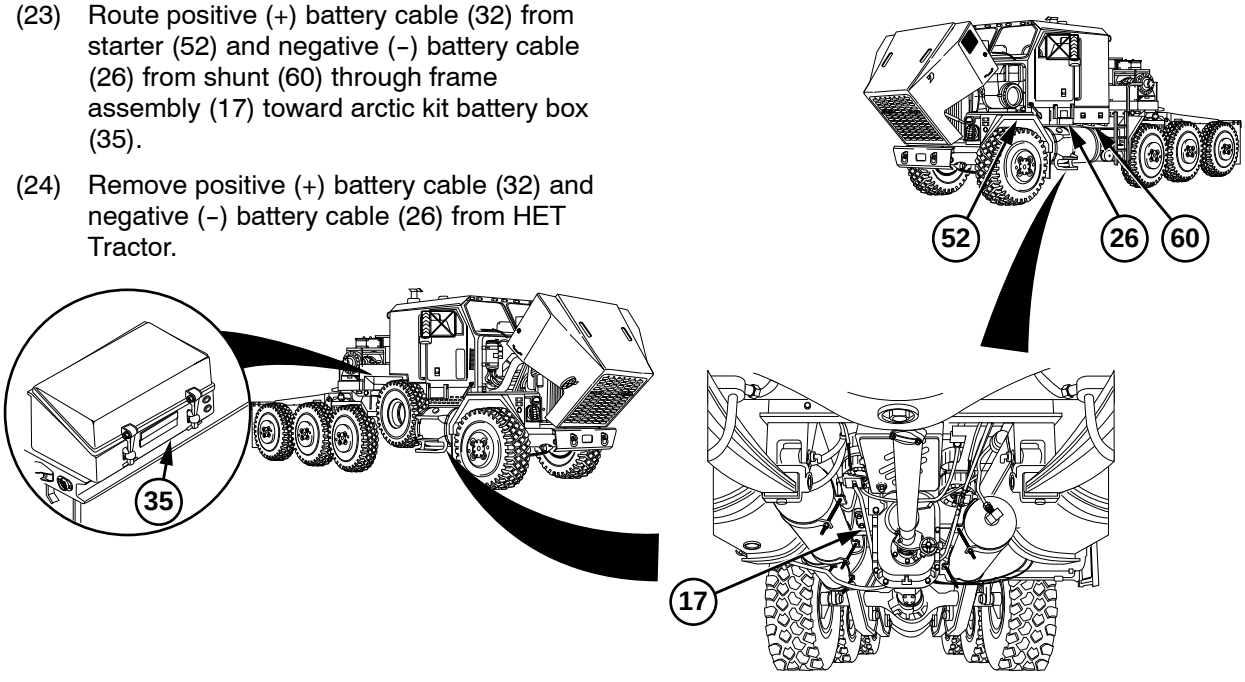


(22) Remove positive (+) battery cable (32) and negative (–) battery cable (26) from arctic kit battery box (35).

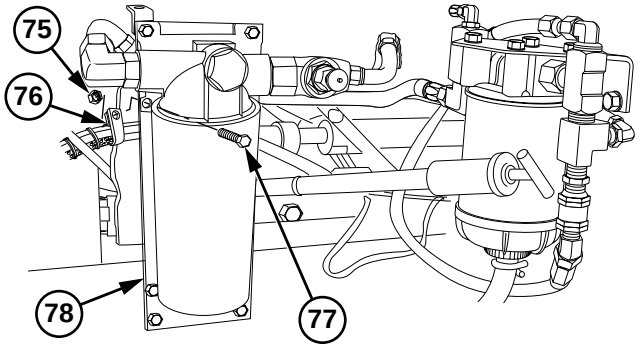


(23) Route positive (+) battery cable (32) from starter (52) and negative (–) battery cable (26) from shunt (60) through frame assembly (17) toward arctic kit battery box (35).

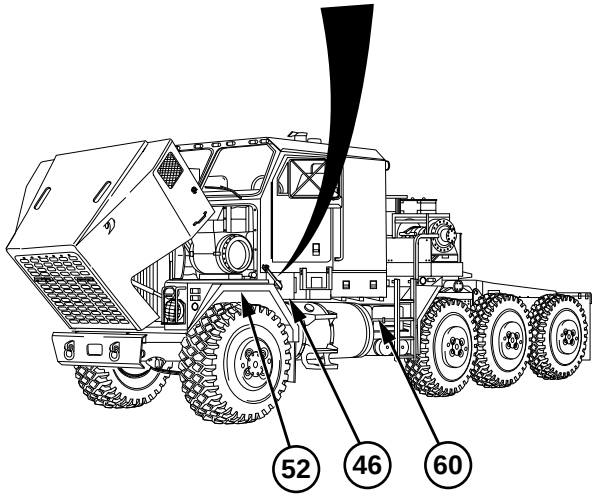
(24) Remove positive (+) battery cable (32) and negative (–) battery cable (26) from HET Tractor.



19-7. ARCTIC KIT WIRE HARNESS REPLACEMENT (CONT)



(25) Remove locknut (75), clip (76), and screw (77) from transmission oil filter bracket (78). Discard locknut.



(26) Remove negative (–) cable (46) from starter (52) to shunt (60) from HET Tractor.

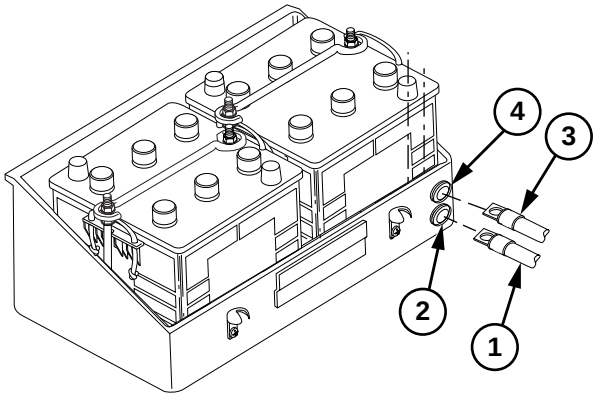
b. Installation

CAUTION

Make sure rubber grommets are installed correctly in holes on side of battery box to prevent cables from shorting out on box.

NOTE

- Do steps (1) thru (14) if starter cables were removed.
- It may be necessary to coat rubber grommets and battery cables with lubricant to aid with installation.



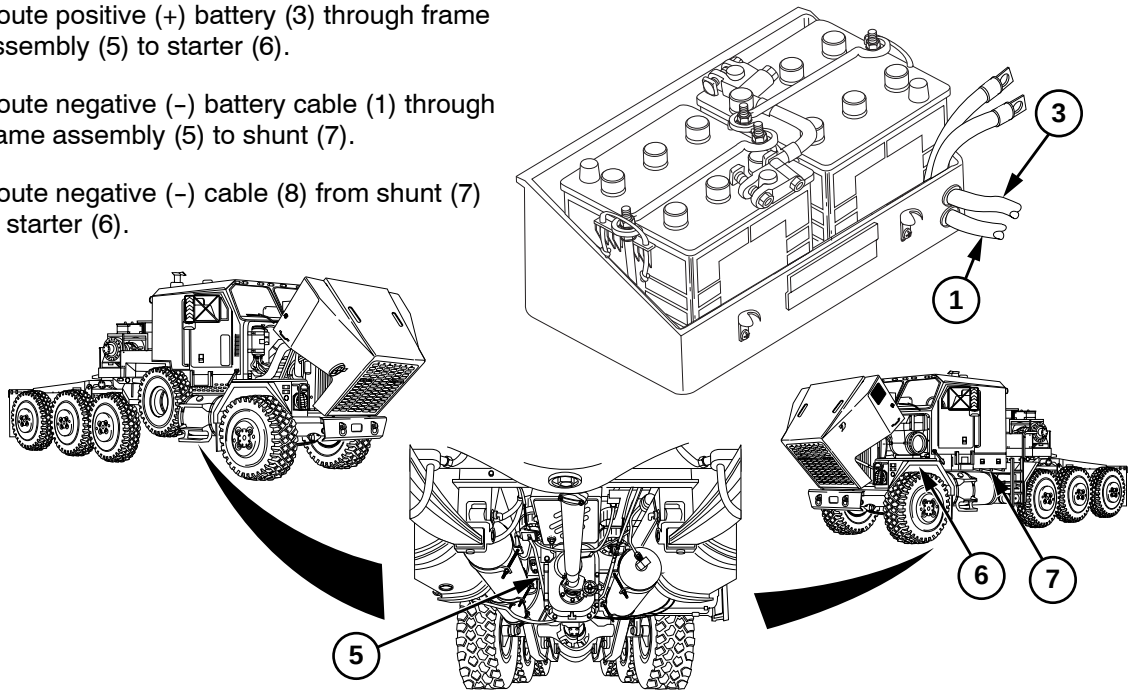
(1) Insert negative battery (–) cable (1) through rubber grommet (2).

(2) Insert positive (+) battery cable (3) through rubber grommet (4).

(3) Route positive (+) battery (3) through frame assembly (5) to starter (6).

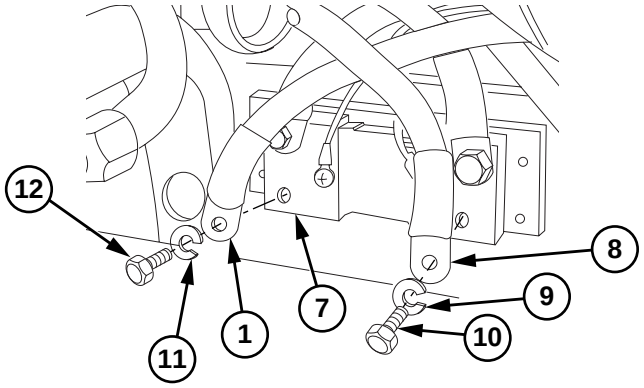
(4) Route negative (–) battery cable (1) through frame assembly (5) to shunt (7).

(5) Route negative (–) cable (8) from shunt (7) to starter (6).

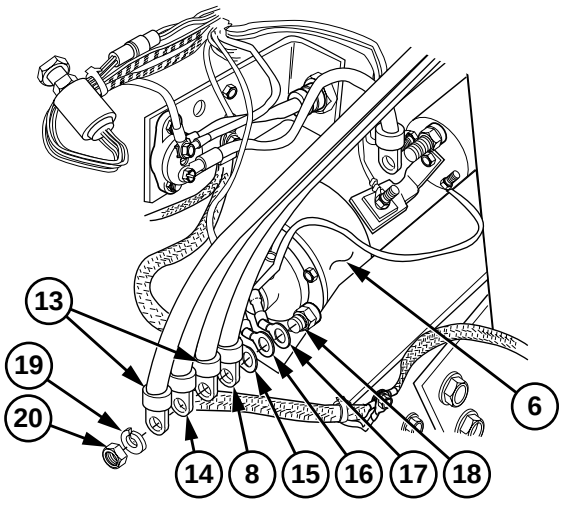


(6) Install negative (–) cable (8) on shunt (7) with new lockwasher (9) and screw (10).

(7) Install negative (–) battery cable (1) on shunt (7) with new lockwasher (11) and screw (12).



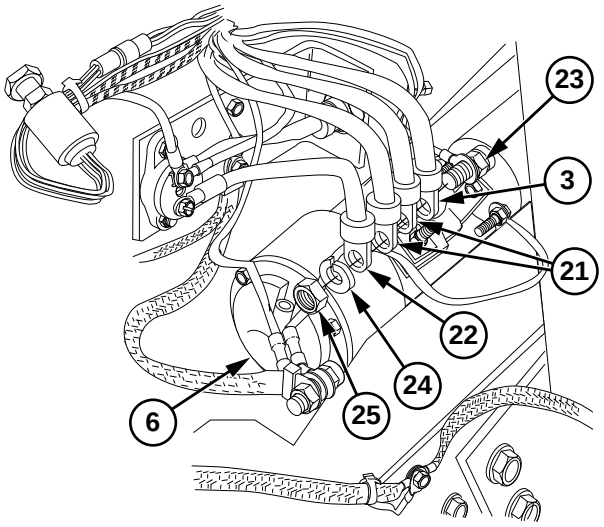
(8) Install two negative (–) cables no. 1138 (13), negative (–) cable no. 1128 (14), negative (–) cable (8), ground strap (15), wire no. 1819 (16), and jumper wire (17) on negative (–) terminal (18) of starter (6) with new lockwasher (19) and nut (20).



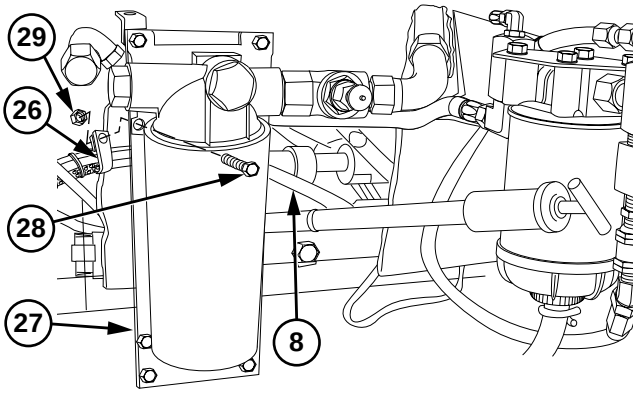
STEERING COLUMN REMOVED FOR CLARITY

19-7. ARCTIC KIT WIRE HARNESS REPLACEMENT (CONT)

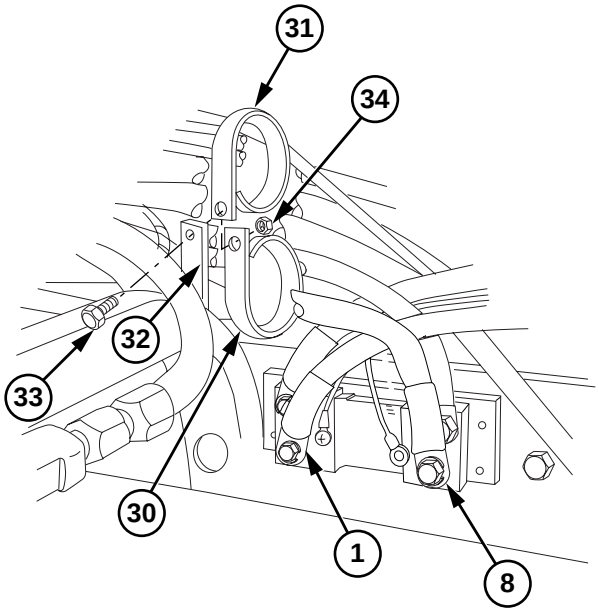
(9) Install two positive (+) cables no. 1139 (21), positive (+) battery cable (3), and positive (+) cable no. 1274 (22) on positive (+) terminal (23) of starter (6) with new lockwasher (24) and nut (25).



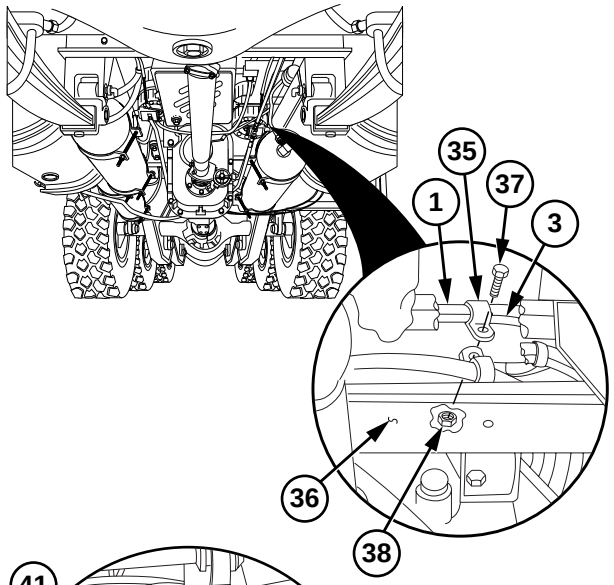
(10) Insert negative (-) cable (8) through clip (26). Install clip (26) on transmission oil filter bracket (27) with screw (28) and new locknut (29).



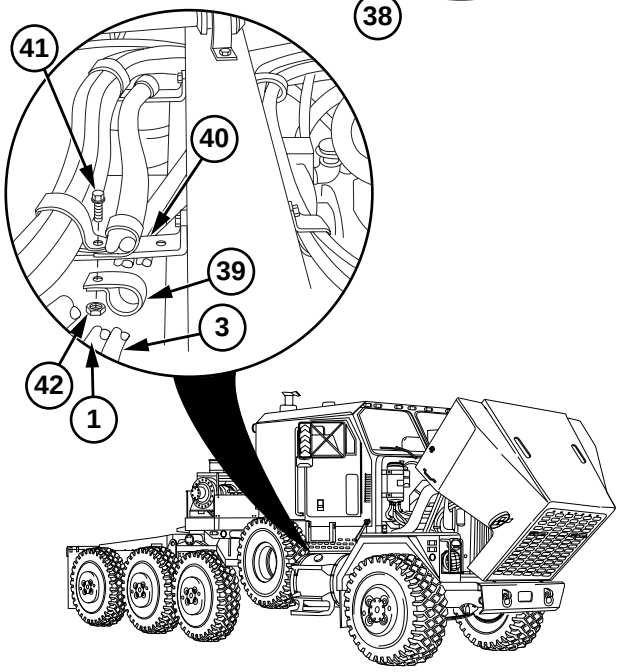
(11) Insert two negative (-) cables (1 and 8) thru clip (30). Install two clips (30 and 31) on left frame rail stand off bracket (32) with screw (33) and new locknut (34).



(12) Insert positive (+) and negative (–) cables (1 and 3) thru clip (35). Install clip (35) on crossmember (36) with screw (37) and new locknut (38).



(13) Insert positive (+) and negative (–) cables (1 and 3) through clip (39). Install clip (39) on standoff bracket (40) with screw (41) and new locknut (42) with aid from assistant.



(14) Deleted.

19-7. ARCTIC KIT WIRE HARNESS REPLACEMENT (CONT)

CAUTION

Make sure rubber grommets are installed correctly in holes on side of battery box to prevent cables from shorting out on box.

NOTE

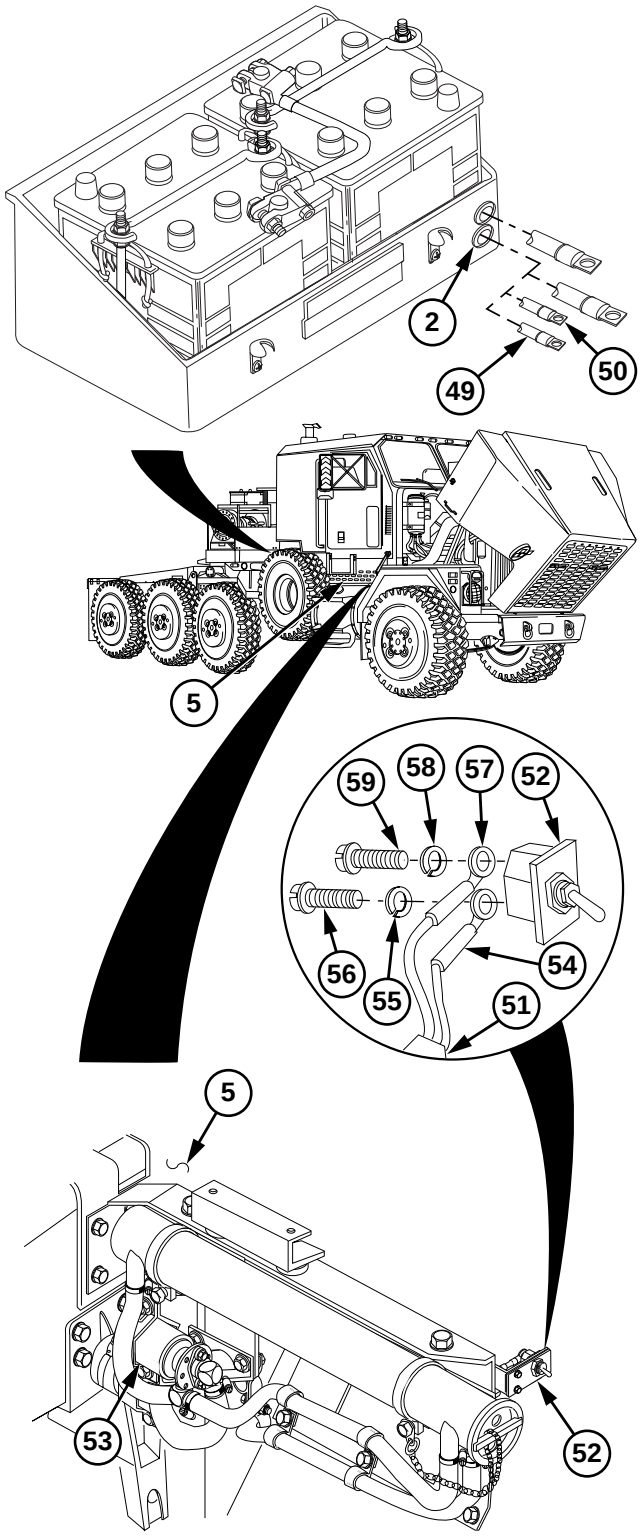
It may be necessary to coat rubber grommets and battery cables with lubricant to aid with installation.

(15) Insert wire no. 1435 (49) and wire no. 1373 (50) through rubber grommet (2).

(16) Route wire harness (51) along frame assembly (5) to toggle switch (52) and coolant pump (53) with aid from assistant.

(17) Install wire no. 1373 (54) on toggle switch (52) with new lockwasher (55) and screw (56).

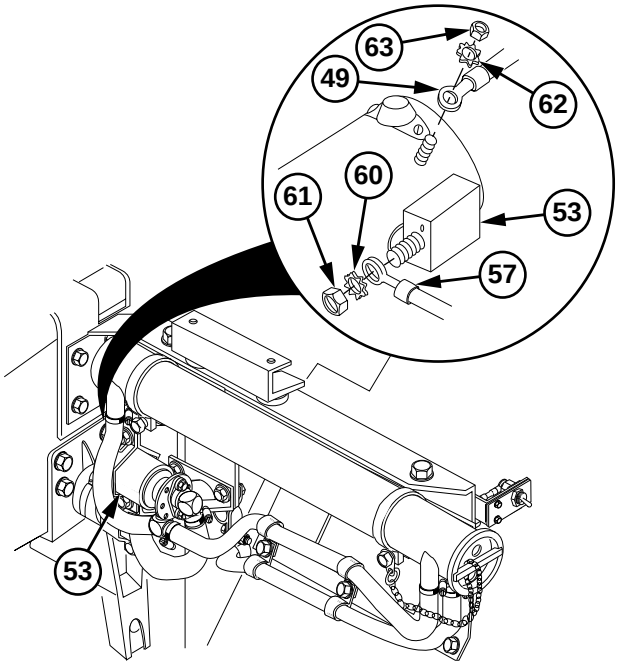
(18) Install wire no. 1373 (57) on toggle switch (52) with new lockwasher (58) and screw (59).



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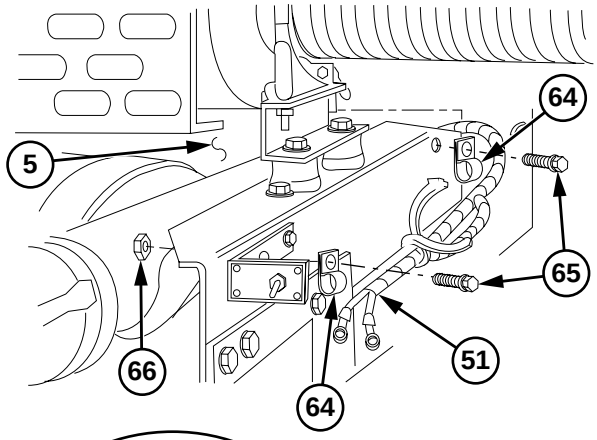
(19) Install wire no. 1373 (57) on coolant pump (53) with new lockwasher (60) and nut (61).

(20) Install wire no. 1435 (49) on coolant pump (53) with new lockwasher (62) and nut (63).

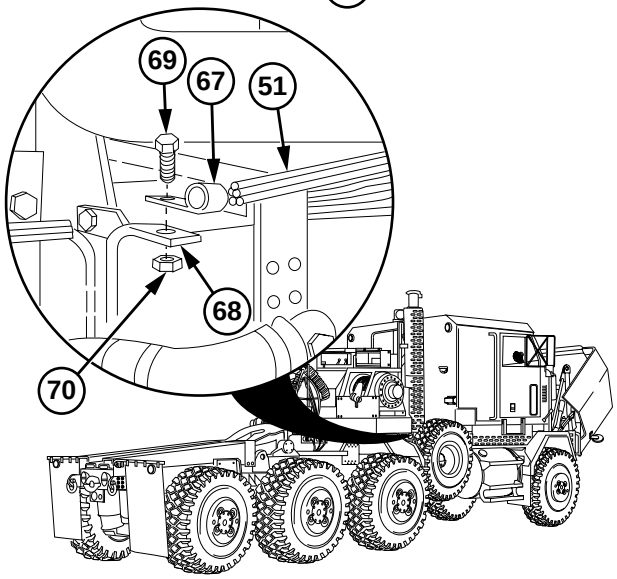


MUFFLER REMOVED FOR CLARITY

(21) Insert wire harness (51) thru two clips (64). Install clips (64) to frame assembly (5) with two screws (65) and new locknuts (66).



(22) Insert wire harness (51) thru clip (67). Install clip (67) on cab mount standoff bracket (68) with screw (69) and new locknut (70).



19-7. ARCTIC KIT WIRE HARNESS REPLACEMENT (CONT)

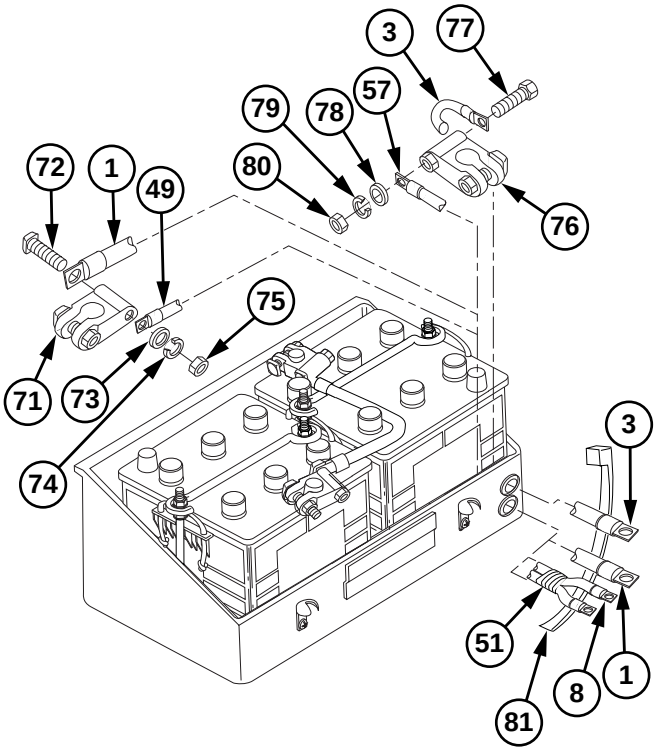
(23) Install negative (-) battery cable (1) and wire no. 1435 (49) on battery clamp (71) with screw (72), washer (73), new lockwasher (74), and nut (75). Torque to 144-192 lb-in. (16.1-21.5 N·m).

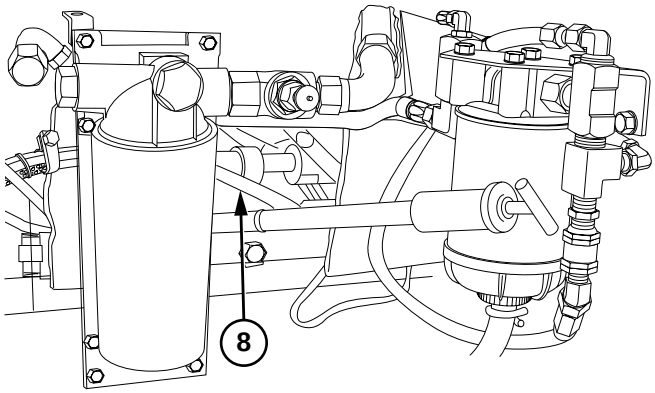
(24) Install positive (+) battery cable (3) and wire no. 1373 (57) on battery clamp (76) with screw (77), washer (78), new lockwasher (79), and nut (80). Torque to 144-192 lb-in. (16.1-21.5 N·m).

NOTE

Plastic cable ties should be positioned in locations marked during removal.

(25) Secure wire harness (51), positive (+) battery cable (1), negative (-) battery cable (3), and negative battery cable (8) with plastic cable ties (81).





c. Follow-On Maintenance

(1) Connect HET Tractor batteries (para 7-61).

(2) Connect arctic kit batteries (para 19-2).

(3) Install exhaust heat shield (para 5-2.1).

(4) Operate arctic kit coolant pump (TM 9-2320-360-10).

(5) Close engine hood (TM 9-2320-360-10).

(6) Install inner fender (para 16-34).

19-8. ARCTIC KIT TOGGLE SWITCH REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Arctic kit batteries disconnected (para 19-2).
HET Tractor batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

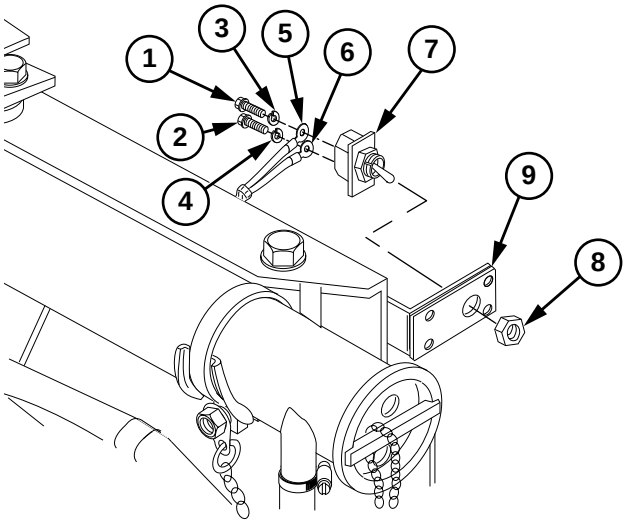
Materials/Parts
Tags, Identification (Item 32, Appendix C)
Lockwashers (2) (Item 97, Appendix G)

a. Removal

NOTE
Tag and mark wires before removal.

(1) Remove two screws (1 and 2) and lockwashers (3 and 4), and disconnect two wires no. 1373 (5 and 6) from toggle switch (7).

(2) Remove nut (8) and toggle switch (7) from support bracket (9).



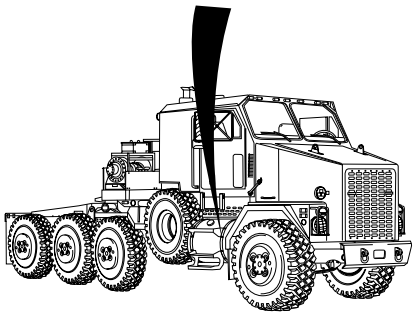
MUFFLER REMOVED FOR CLARITY

b. Installation

(1) Install toggle switch (7) on support bracket (9) with nut (8).

(2) Connect wire no. 1373 (6) to toggle switch (7) with new lockwasher (4) and screw (2).

(3) Connect wire no. 1373 (5) to toggle switch (7) with new lockwasher (3) and screw (1).



c. Follow-On Maintenance

(1) Connect HET Tractor batteries (para 7-61).

(2) Connect arctic kit batteries (para 19-2).

(3) Operate coolant pump (TM 9-2320-360-10).

19-9. ARCTIC KIT WATER JACKET REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

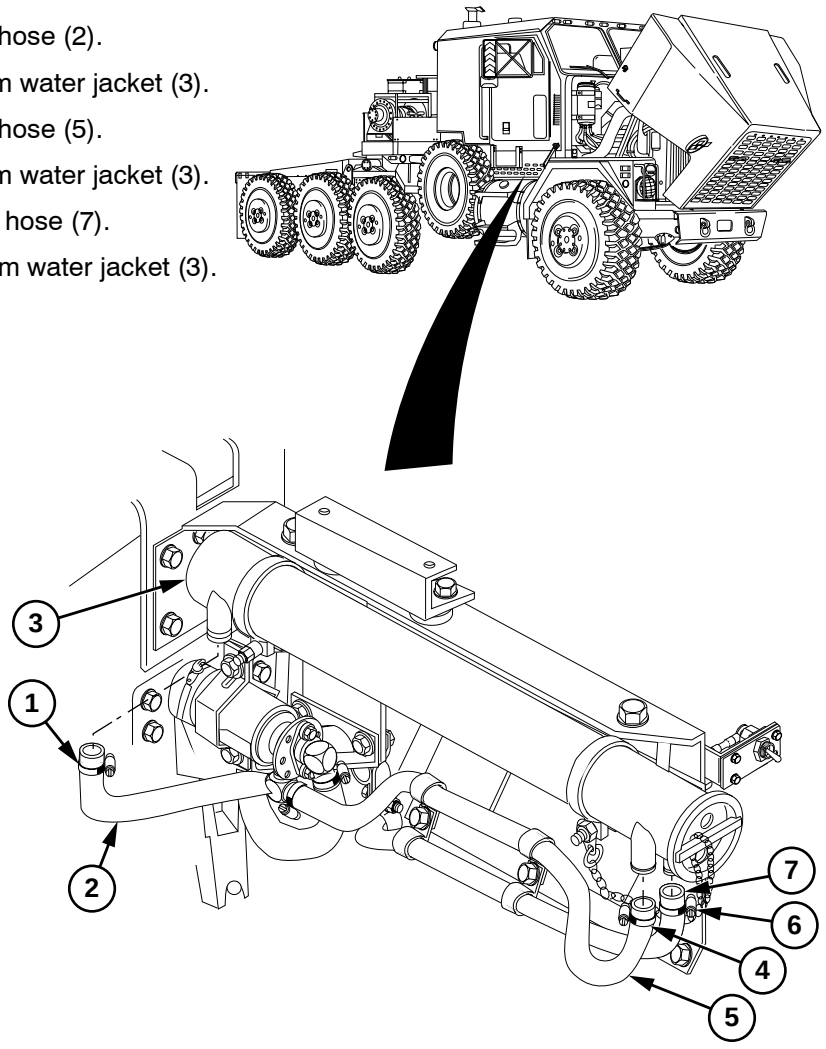
Equipment Conditions
Cooling system drained (para 6-2).

Materials/Parts
Locknuts (2) (Item 58, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

(1) Loosen clamp (1) on coolant hose (2).
(2) Remove coolant hose (2) from water jacket (3).
(3) Loosen clamp (4) on coolant hose (5).
(4) Remove coolant hose (5) from water jacket (3).
(5) Loosen clamp (6) on exhaust hose (7).
(6) Remove exhaust hose (7) from water jacket (3).



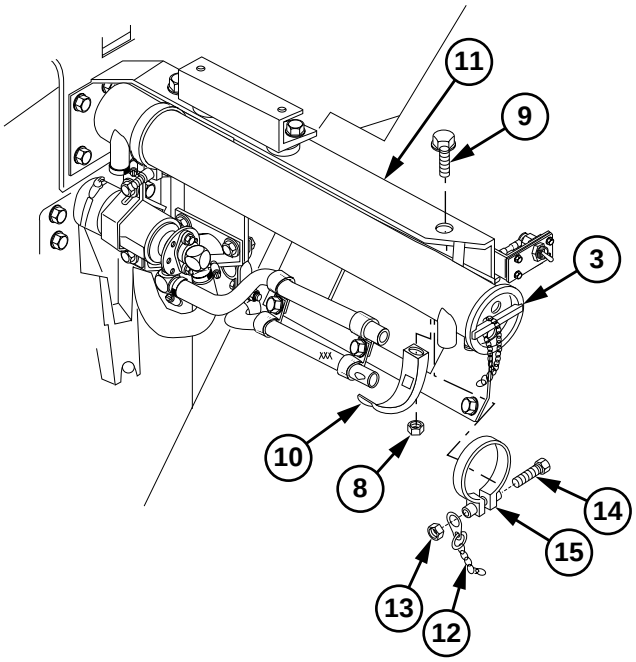
MUFFLER REMOVED FOR CLARITY

(7) Remove two locknuts (8), screws (9), and brackets (10) from muffler bracket (11). Discard locknuts.

(8) Remove lanyard (12), nut (13), and two screws (14) from clamps (15).

(9) Remove clamps (15) from brackets (10).

(10) Remove water jacket (3) from brackets (10).



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b. Installation

(1) Install water jacket (1) on brackets (2).

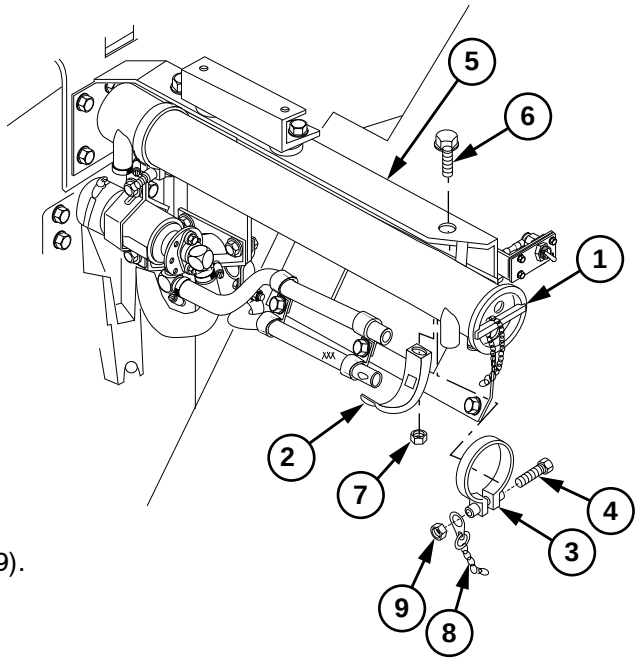
(2) Install clamps (3) on brackets (2).

(3) Install two screws (4) on clamps (3). Do not tighten screws.

(4) Install brackets (2) on muffler bracket (5) with two screws (6) and new locknuts (7).

(5) Tighten screws (4) on clamps (3) to 75 lb-ft (102 N·m).

(6) Install lanyard (8) on screw (4) with nut (9).



MUFFLER REMOVED FOR CLARITY

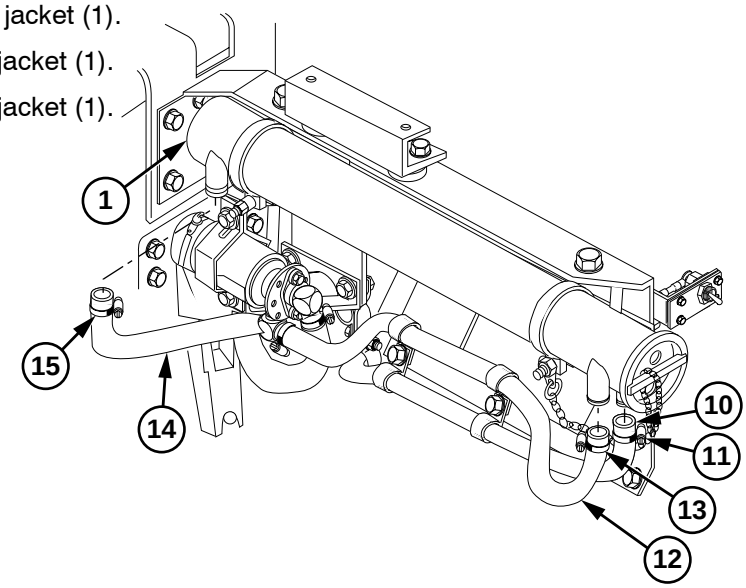
19-9. ARCTIC KIT WATER JACKET REPLACEMENT (CONT)

(7) Install exhaust hose (10) on water jacket (1).

(8) Install coolant hose (12) on water jacket (1).

(9) Install coolant hose (14) on water jacket (1).

(10) Tighten clamps (11, 13, and 15).



c. Follow-On Maintenance

(1) Fill cooling system (para 6-2).

(2) Operate coolant pump. Check for leaks (TM 9-2320-360-10).

PARAGRAPH 19-10 DELETED

All data on pages 19-43 thru 19-60 deleted.

19-11. BATTERY DISCONNECT SWITCH KIT INSTALLATION.

This task covers:
a. Installation
b. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10)
Parking brake on (TM 9-2320-360-10)
Wheels chocked
Batteries disconnected (TM 9-2320-360-20)
Arctic kit batteries disconnected (if installed) (para 19-2)

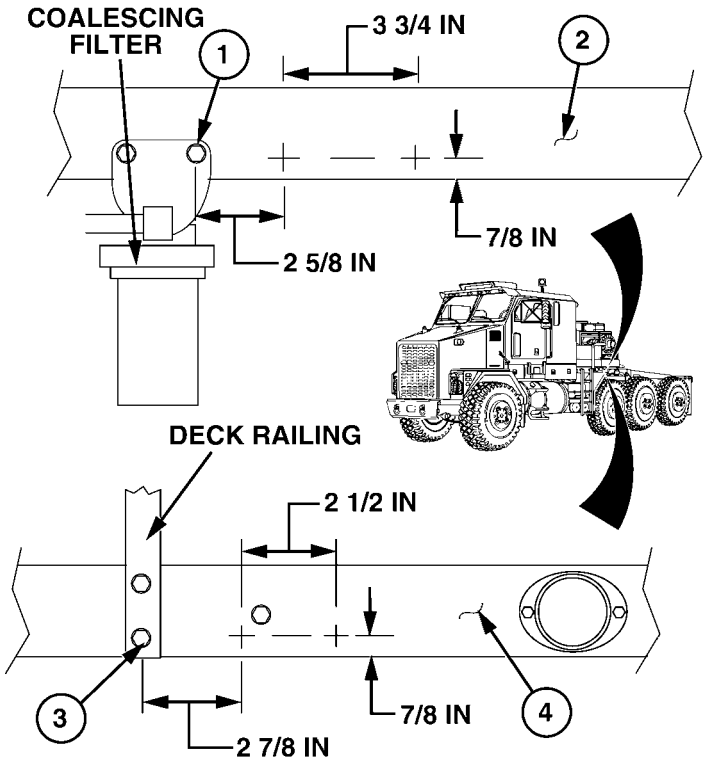
Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Socket Wrench Set, 3/8 In. Drive (Item 45, Appendix F)
Wrench Torque, 0-200 lb-In. (Item 72 Appendix E)
Drill Set, Twist, 1/16 - 1/2 In. (by 64ths (Item 9, Appendix F)

Materials/Parts
Sealant, Electrical RTV (Item 3, Appendix C)
Tags, Identification (Item 32, Appendix C)
Ties, Cable, Plastic (Item 34, Appendix C)
Lockwashers (2) (Item 94, Appendix G)
Lockwashers (2) (Item 100, Appendix G)
Lockwashers (2) (Item 120, Appendix G)

a. Installation

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Batteries can explode from a spark. Battery acid is harmful to skin and eyes. Always wear eye protection when working with batteries.



AT WINCH DECK

(1) Measure 2 5/8 in. from center of filter mounting bolt (1) towards rear of vehicle. Mark first vertical center line here.

(2) Measure 3 3/4 in. from first vertical center line towards rear of vehicle. Mark second vertical center line here.

(3) Measure 7/8 in. up from bottom of winch deck (2). Mark horizontal center lines here.

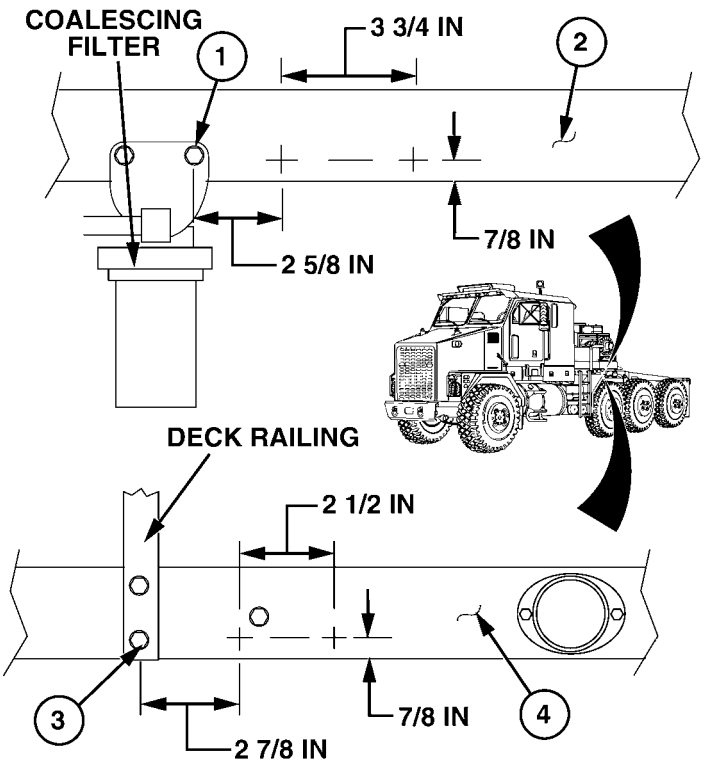
(4) Using a center punch, mark both center points.

19-11. BATTERY DISCONNECT SWITCH KIT INSTALLATION (CONT).

(5) Measure 2 7/8 in. from center of deck railing bolt (3) towards rear of vehicle. Mark third vertical center line here.

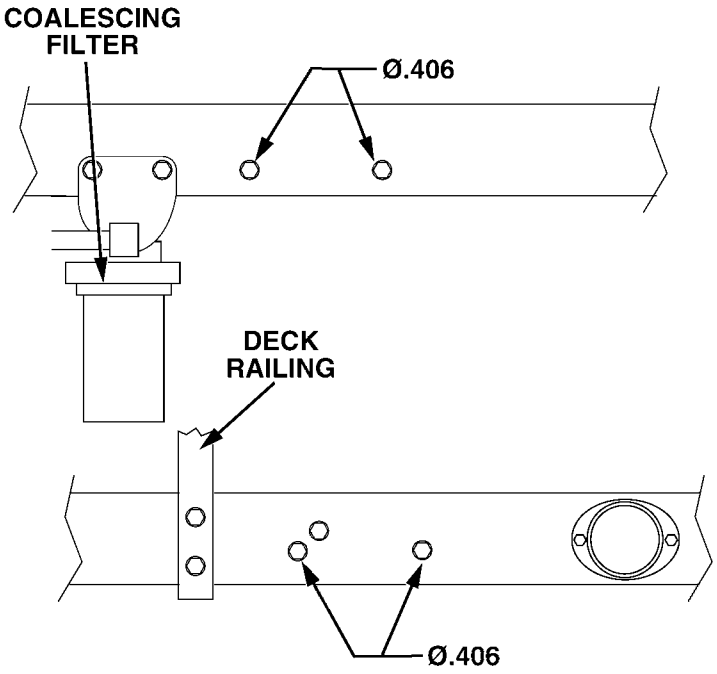
(6) Measure 2 1/2 in. from third vertical center line towards rear of vehicle. Mark fourth vertical center line here.

(7) Measure 7/8 in. up from bottom of air reservoir bracket (4). Mark horizontal center lines here.



(8) Using a center punch, mark both center points.

(9) Drill four holes (0.406) at center punch marks using 13/32 in. drill bit.



(10) Install disconnect box bracket (5) on winch deck (2) and air reservoir bracket (4) with four screws (6) and locknuts (7).

(11) Install disconnect switch box (8) on disconnect box bracket (5) with four screws (9) and locknuts (10).

AT ENGINE

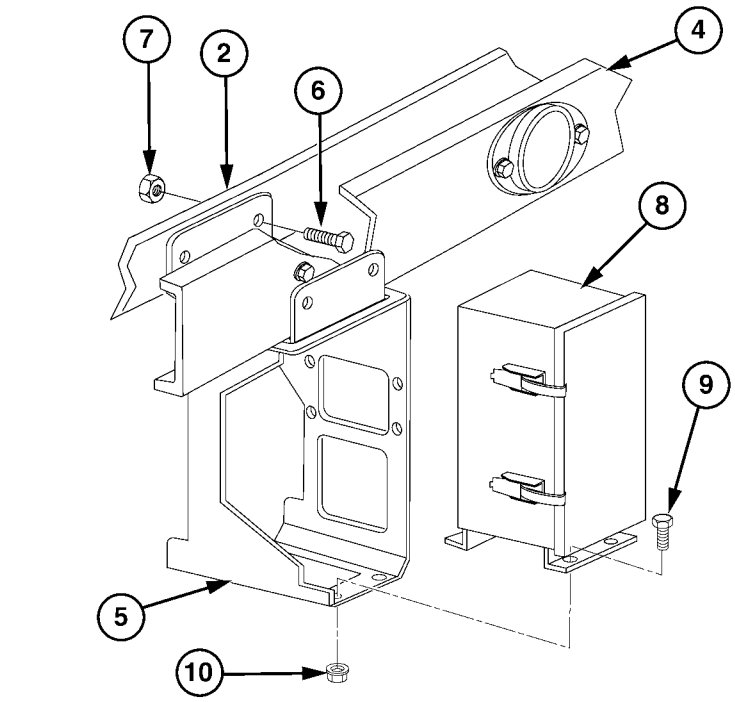
NOTE

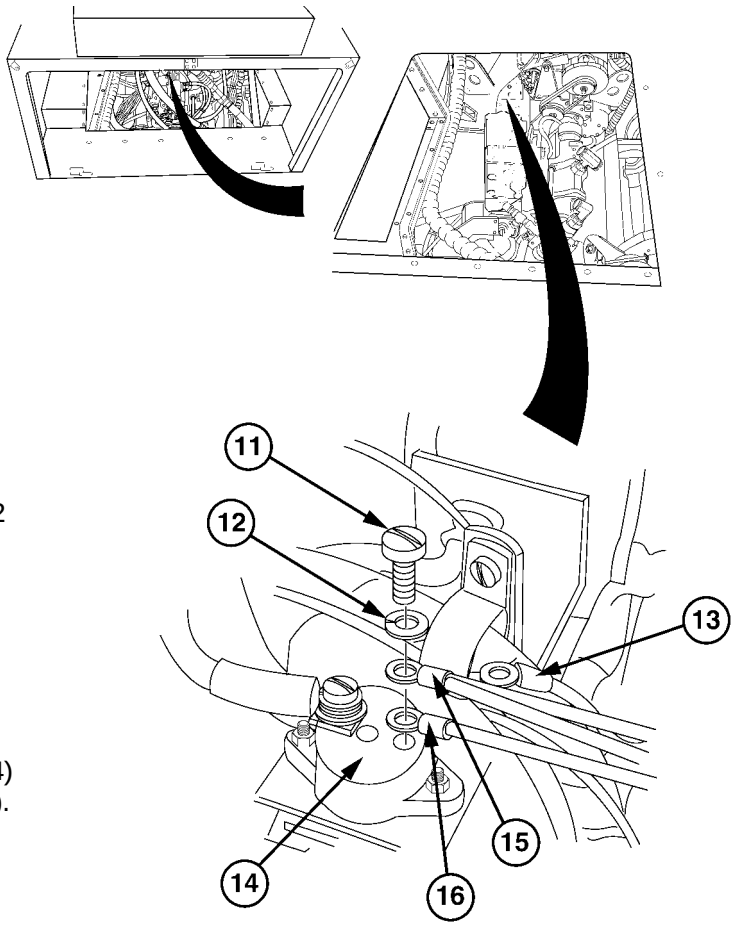
- Tag and mark wires before removal.
- Remove/Install cable ties as required.

(12) Remove screw (11), lockwasher (12), and wire no. 1622 (13) from circuit breaker CB24 (14). Discard lockwasher.

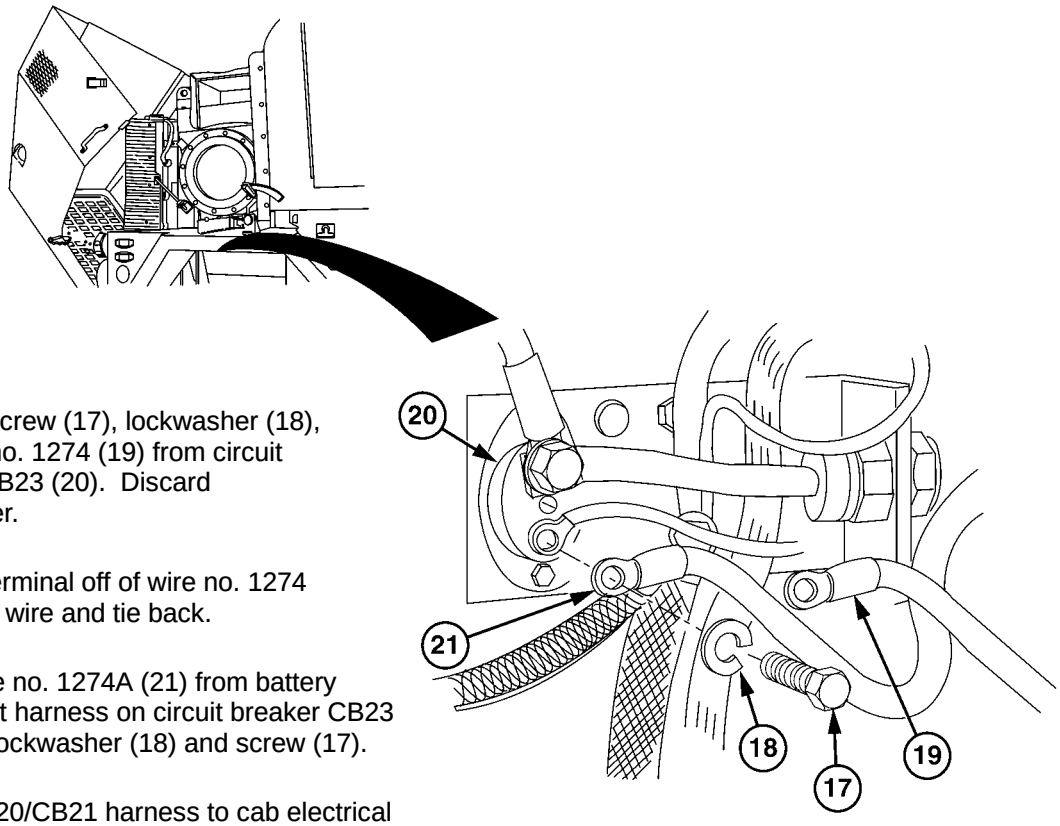
(13) Cut ring terminal off of wire no. 1622 (13). Cap wire and tie back.

(14) Install wire no. 240/241 (15) from CB20/CB21 harness and wire no. 1622A (16) from battery disconnect harness on circuit breaker CB24 (14) with lockwasher (12) and screw (11).





19-11. BATTERY DISCONNECT SWITCH KIT INSTALLATION (CONT).



(15) Remove screw (17), lockwasher (18), and wire no. 1274 (19) from circuit breaker CB23 (20). Discard lockwasher.

(16) Cut ring terminal off of wire no. 1274 (19). Cap wire and tie back.

(17) Install wire no. 1274A (21) from battery disconnect harness on circuit breaker CB23 (20) with lockwasher (18) and screw (17).

(18) Route CB20/CB21 harness to cab electrical box.

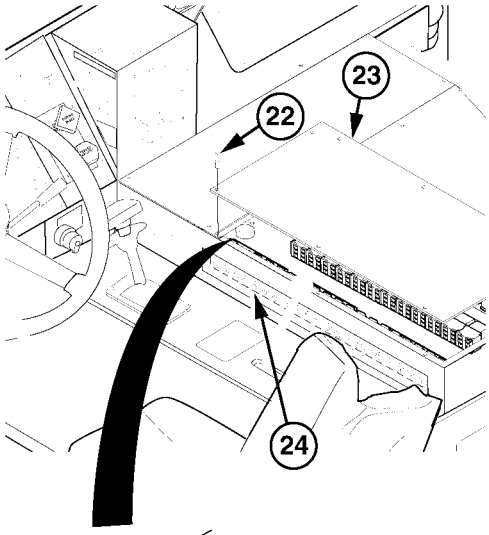
(19) Route battery disconnect harness along bottom of cab to disconnect switch box. Tie strap to DDEC harness.

IN CAB

(20) Remove eight screws (22) and cover (23) from electronic control box assembly (24).

NOTE

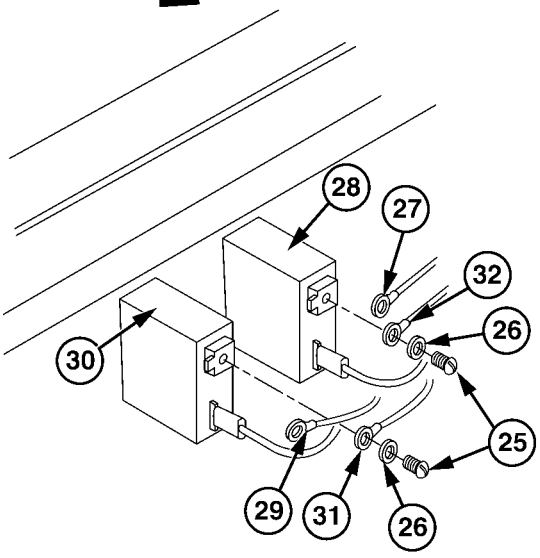
Remove wire no. 240 and wire no. 241 ring terminals only. Do not remove wire no. 240 and wire no. 241 blade terminals.



(21) Remove screw (25), lockwasher (26), and DDEC harness wire no. 240 (27) from circuit breaker CB20 (28). Discard lockwasher.

(22) Remove screw (25), lockwasher (26), and DDEC harness wire no. 241 (29) from circuit breaker CB21 (30). Discard lockwasher.

(23) Cut ring terminals off of wire no. 240 (27) and wire no. 241 (29). Cap wires and tie back to DDEC harness.

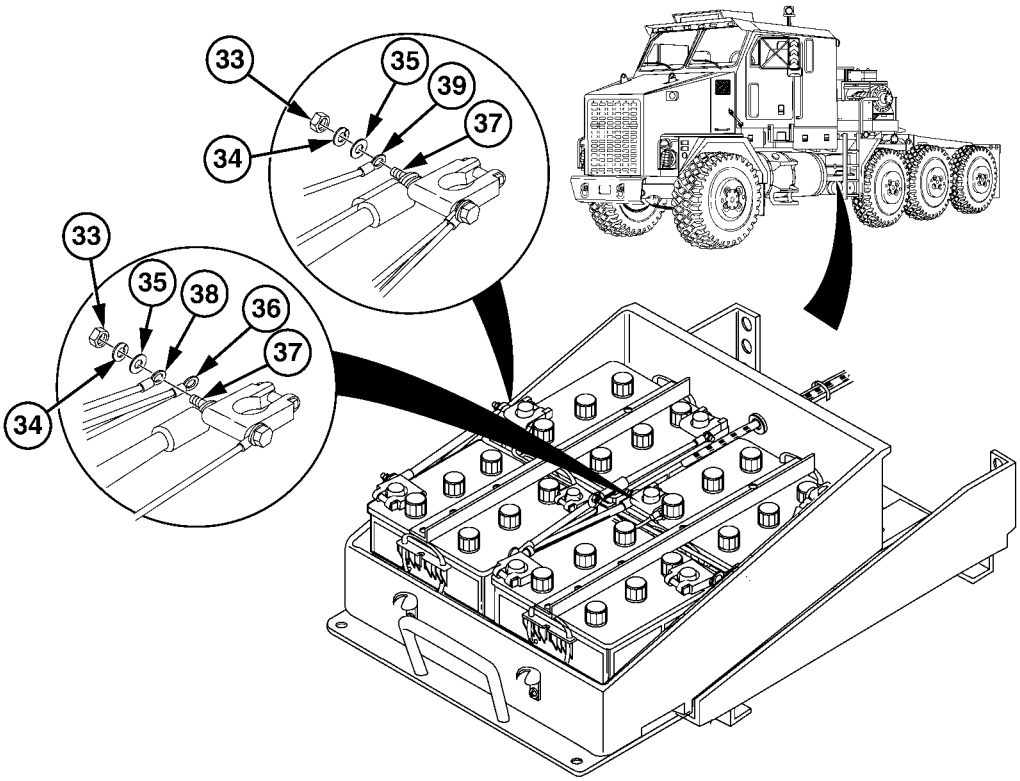


(24) Install wire no. 241 (31) from new harness on circuit breaker CB21 (30) with lockwasher (26) and screw (25).

(25) Install wire no. 240 (32) from new harness on circuit breaker CB20 (28) with lockwasher (26) and screw (25).

(26) Install cover (23) on electronic control box assembly (24) with eight screws (22).

19-11. BATTERY DISCONNECT SWITCH KIT INSTALLATION (CONT).



AT BATTERY BOX

(27) Remove nut (33), lockwasher (34), washer (35), and wire no. 240/241 (36) from screw (37). Discard lockwasher.

(28) Cut ring terminal off of wire no. 240/241 (36). Cap wires and tie back to DDEC harness.

(29) Install wire no. 1622 (38) from battery disconnect harness on screw (37) with washer (35), lockwasher (34), and nut (33). Torque to 144–192 lb-in. (16.1–21.5 N•m).

(30) Remove nut (33), lockwasher (34), and washer (35) from screw (37). Discard lockwasher.

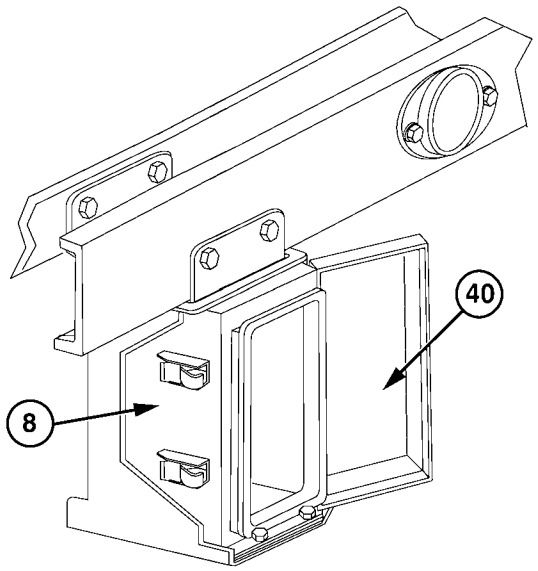
(31) Install wire no. 1274 (39) from battery disconnect harness on screw (37) with washer (35), lockwasher (34), and nut (33). Torque to 144–192 lb-in. (16.1–21.5 N•m).

(32) Route battery disconnect harness to disconnect switch box.

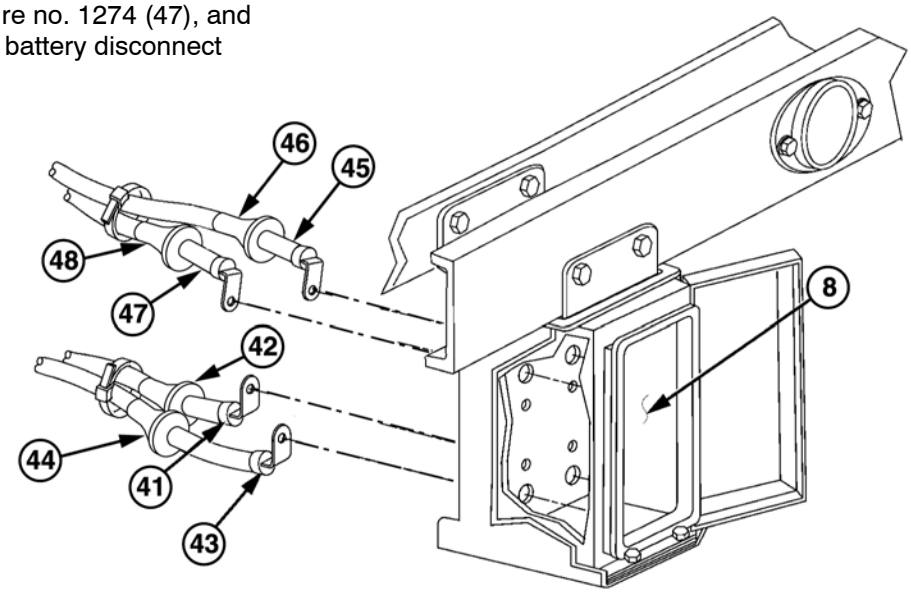
(33) Open door (40) on battery disconnect switch box (8).

(34) Deleted.

(35) Deleted.

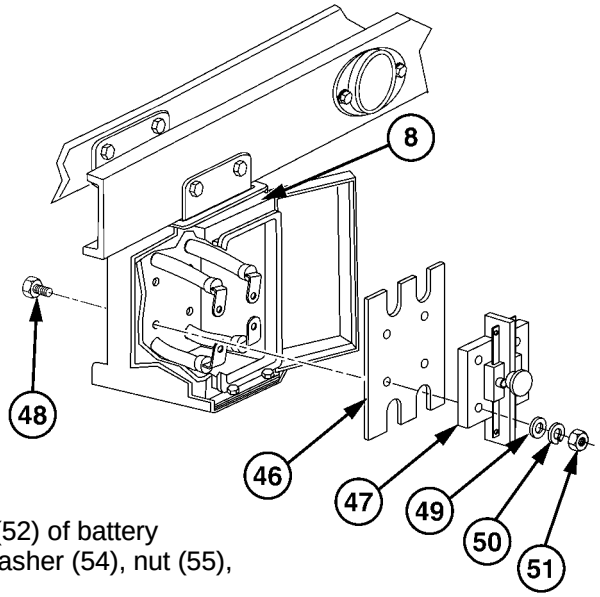


(36) Pull wire no. 1622A (41), grommet (42), wire no. 1274A (43), grommet (44), wire no. 1622 (45), grommet (46), wire no. 1274 (47), and grommet (48) through battery disconnect switch box (8).

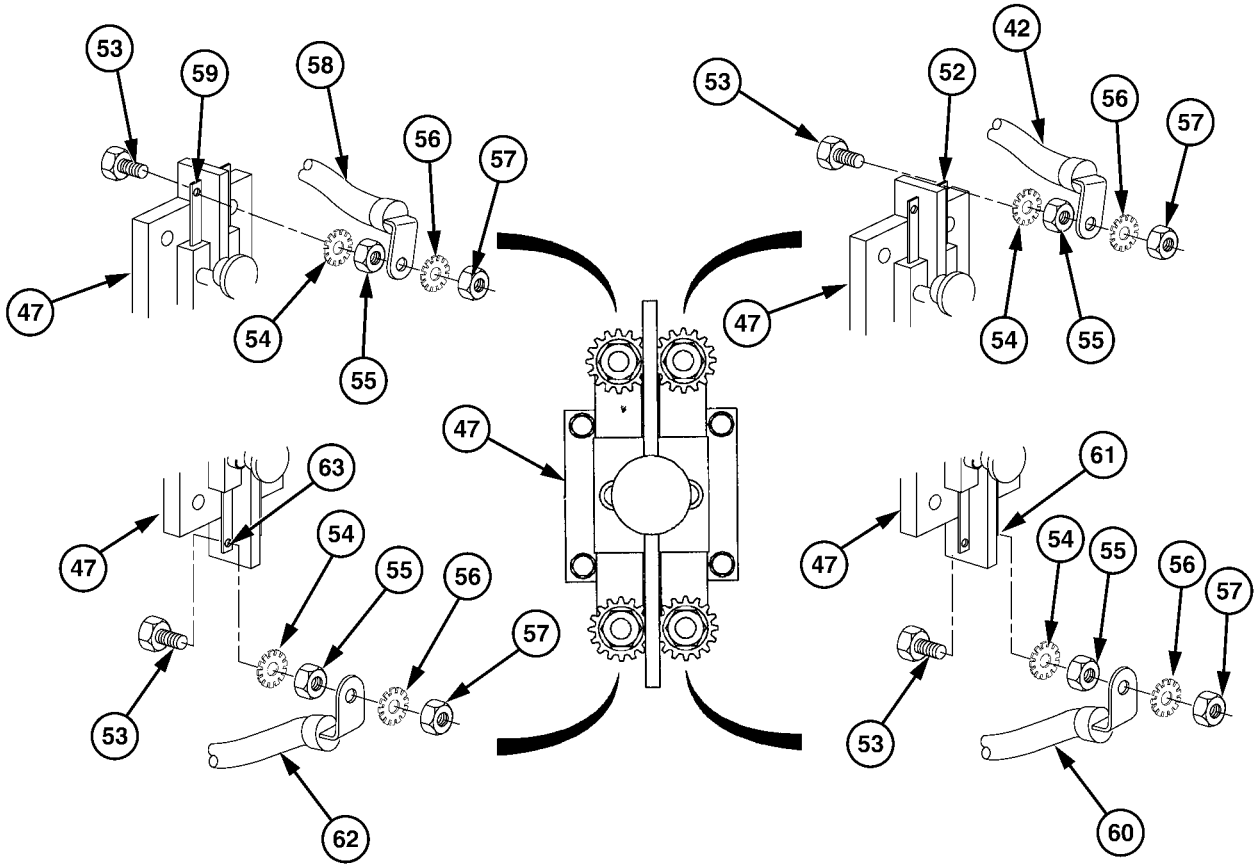


19-11. BATTERY DISCONNECT SWITCH KIT INSTALLATION (CONT).

(37) Install isolator plate (46), and battery disconnect switch (47), in battery disconnect switch box (8) with four screws (48), washers (49), lockwashers (50), and nuts (51). Torque to 15 lb-ft (20 N•m).



(38) Install wire no. 1622 (42) on upper right post (52) of battery disconnect switch (47) with screw (53), lockwasher (54), nut (55), lockwasher (56), and nut (57).



(39) Install wire no. 1274 (58) on upper left post (59) of battery disconnect switch (47) with screw (53), lockwasher (54), nut (55), lockwasher (56), and nut (57).

(40) Install wire no. 1622A (60) on lower right post (61) of battery disconnect switch (47) with screw (53), lockwasher (54), nut (55), lockwasher (56), and nut (57).

(41) Install wire no. 1274A (62) on lower left post (63) of battery disconnect switch (47) with screw (53), lockwasher (54), nut (55), lockwasher (56), and nut (57).

(42) Torque nuts to 15 lb–ft (20 N•m).

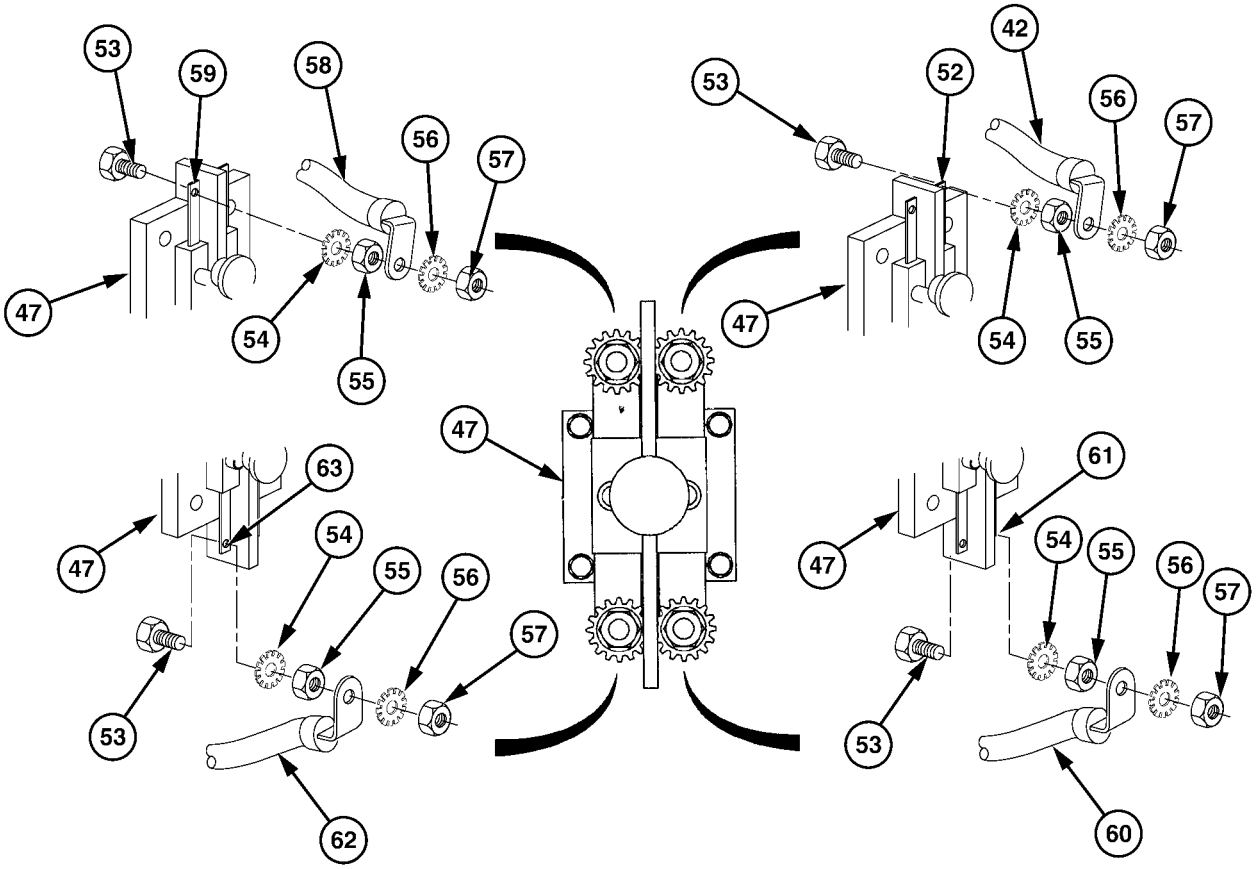
WARNING

- **Adhesive-sealants 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 sealing compound gets on skin or clothing, wash immediately with soap and water.**

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

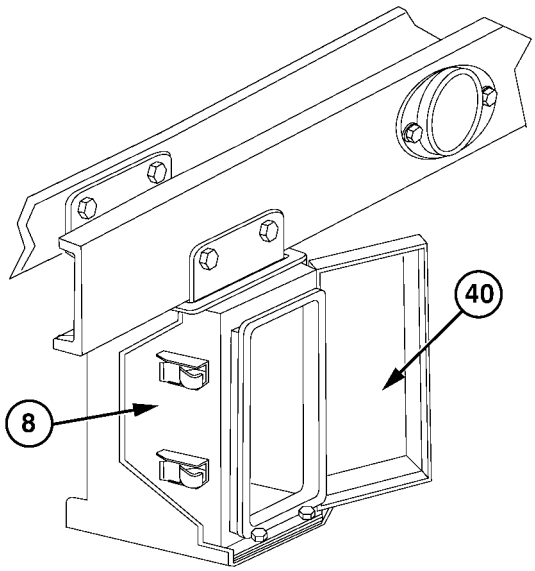
- **On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.**

(43) Apply electrical sealant to ends of four screws (53).



19-11. BATTERY DISCONNECT SWITCH KIT INSTALLATION (CONT).

(44) Close door (40) on battery disconnect switch box (8).



b. Follow-On Maintenance

(1) Connect arctic kit batteries if installed (Para 19-2).

(2) Connect batteries (TM 9-2320-360-20).

(3) Remove wheel chocks.

CHAPTER 20
NON-ELECTRIC GAGES MAINTENANCE

Contents

	Para	Page
Introduction	20-1	20-1
Air Cleaner Restriction Indicator Replacement	20-2	20-2
Air Pressure Gage Replacement	20-3	20-4
Deleted	20-4	
Deleted	20-5	
Deleted	20-6	
Deleted	20-7	

Section I. INTRODUCTION

20-1. INTRODUCTION

This chapter contains instructions for replacement of non-electric gages at the Unit maintenance level. Some parts must be removed before non-electric gages can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

20-2. AIR CLEANER RESTRICTION INDICATOR REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

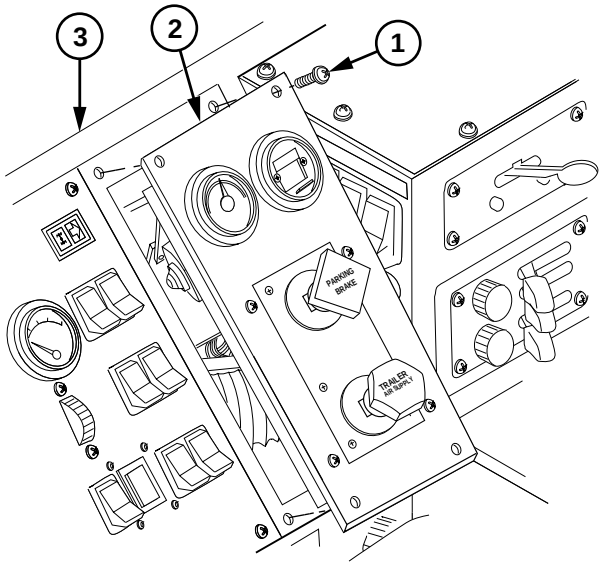
Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

CAUTION
Use care when handling panel. Failure to comply may result in damage to parking brake pressure switch.

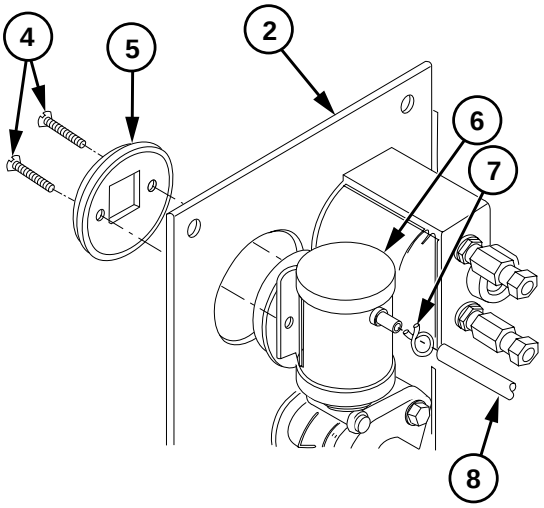
(1) Remove four screws (1) and panel (2) from dash (3).



(2) Remove two screws (4) from bezel (5).

(3) Remove indicator (6) and bezel (5) from panel (2).

(4) Remove clamp (7) and disconnect hose (8) from back of indicator (6).



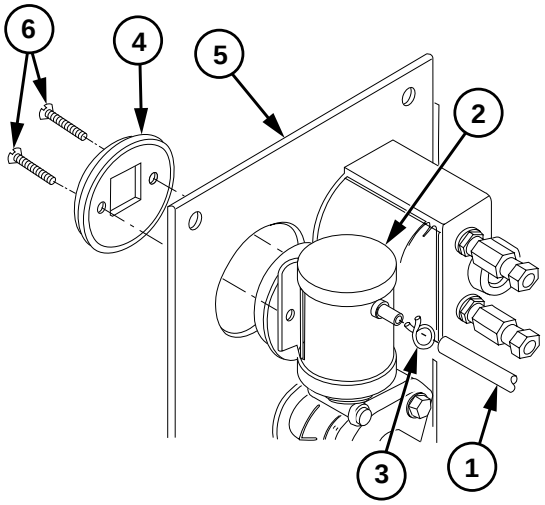
b. Installation

(1) Connect hose (1) on back of AIR CLEANER RESTRICTION indicator (2). Secure with clamp (3).

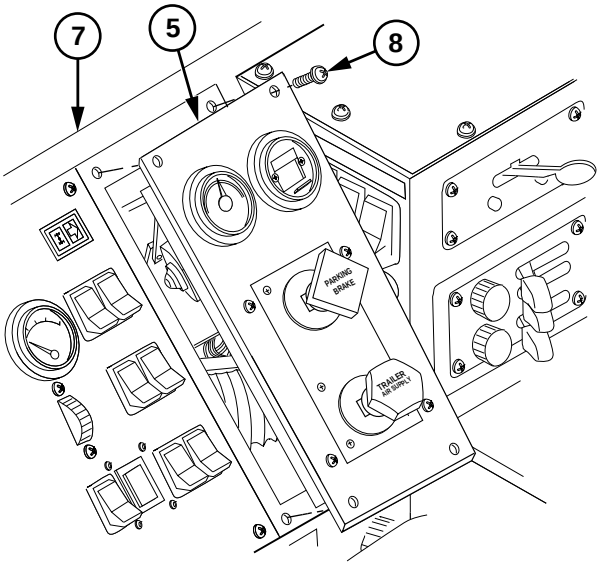
CAUTION

RESET button must be inserted through slot in bezel to prevent button from breaking.

(2) Install bezel (4) and indicator (2) on panel (5) with two screws (6).



(3) Install panel (5) on dash (7) with four screws (8).



c. Follow-On Maintenance

(1) Push RESET button on indicator (TM 9-2320-360-10).

(2) Start engine (TM 9-2320-360-10).

(3) Check indicator level is within green area.

(4) Shut off engine (TM 9-2320-360-10).

(5) Remove wheel chocks.

20-3. AIR PRESSURE GAGE REPLACEMENT

This task covers:
a. Removal
b. Installation
c. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Air system drained (TM 9-2320-360-10).
Wheels chocked.

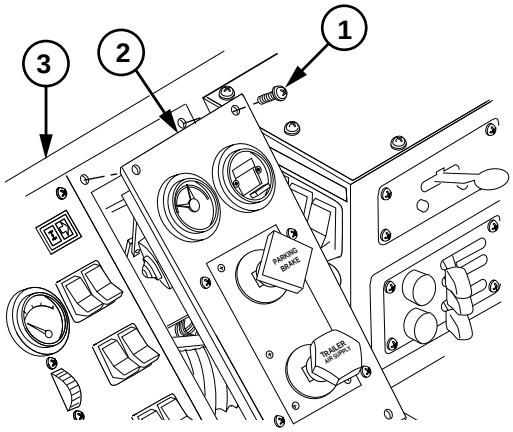
Materials/Parts
Compound, Sealing, Pipe Thread (Item 15, Appendix C)
Tags, Identification (Item 32, Appendix C)
Lockwashers (2) (Item 88, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

a. Removal

CAUTION
Use care when handling panel. Failure to comply may result in damage to parking brake pressure switch.

(1) Remove four screws (1) and panel (2) from dash (3).



(2) Remove socket (4) and lamp (5) as one unit from air pressure gage (6).

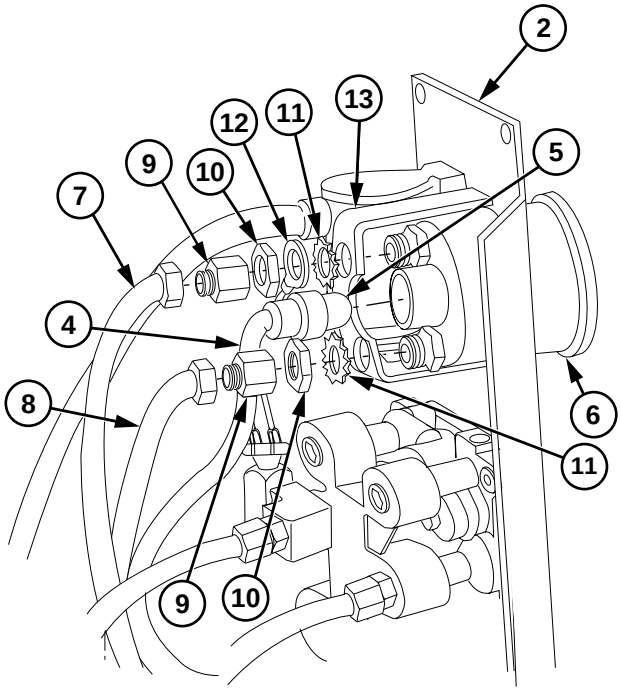
NOTE
Tag and mark hoses before removal.

(3) Remove hoses no. 2041 (7) and no. 2610 (8) from two fittings (9).

(4) Remove two fittings (9) from gage (6).

(5) Remove two nuts (10), lockwashers (11), wire no. 1435 (12), and clamp (13) from gage (6). Discard lockwashers.

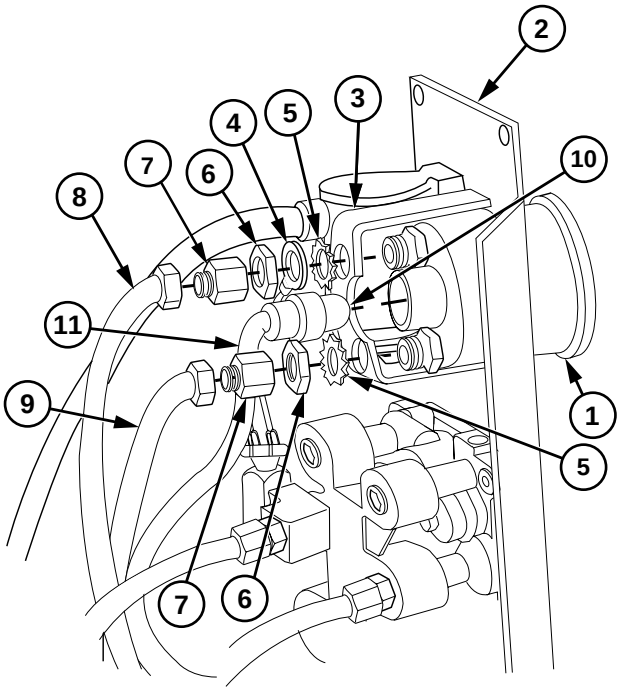
(6) Remove gage (6) from panel (2).



b. Installation

(1) Position air pressure gage (1) on panel (2).

(2) Install clamp (3) and wire no. 1435 (4) on gage (1) with two new lockwashers (5) and nuts (6).



WARNING

Pipe thread sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well ventilated area. If pipe thread sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use pipe thread sealing compound sparingly only on pipe threads. Do not apply pipe thread sealing compound to hose connections. Damage to equipment may result.

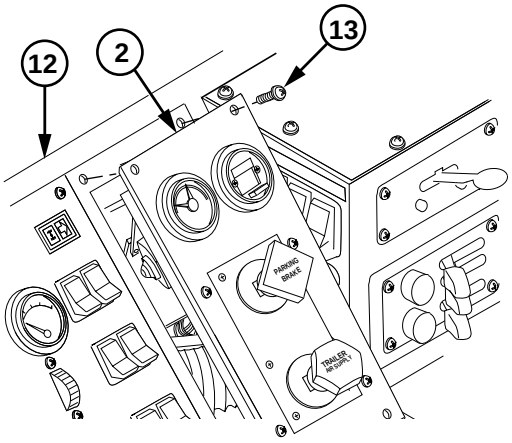
(3) Coat threads of gage (1) with pipe thread sealing compound.

(4) Install two fittings (7) on gage (1).

(5) Install hose no. 2041 (8) and hose no. 2610 (9) on two fittings (7).

(6) Install lamp (10) and socket (11) as one unit in gage (1).

(7) Install panel (2) on dash (12) with four screws (13).



c. Follow-On Maintenance

(1) Start engine (TM 9-2320-360-10).

(2) Build up air pressure to 120-125 psi (827-862 kPa).

(3) Shut off engine (TM 9-2320-360-10).

(4) Check for leaks (TM 9-2320-360-10).

(5) Remove wheel chocks.

PARAGRAPH 20-4, 20-5, 20-6, and 20-7 DELETED

All data on pages 20-6 thru 20-16 deleted.

CHAPTER 21
CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL (CBR) EQUIPMENT MAINTENANCE

Contents

	Para	Page
Introduction	21-1	21-1
Gas Particulate Filter Unit Repair	21-2	21-2
Decontamination Unit Installation	21-3	21-13
Chemical Alarm Installation	21-4	21-14

Section I. INTRODUCTION

21-1. INTRODUCTION

This chapter contains instructions for replacement of chemical, biological, and radiological (CBR) equipment at the Unit maintenance level. Some parts must be removed before CBR equipment can be accessed. They are referenced to other paragraphs of this manual or TM 9-2320-360-10.

Section II. MAINTENANCE PROCEDURES

21-2. GAS PARTICULATE FILTER UNIT REPAIR

This task covers:

a. Precleaner and Bracket Removal
b. Precleaner Cleaning/Inspection
c. Precleaner and Bracket Installation
d. Air Hose, Pipe, and Bracket Removal
e. Tube Assembly
f. Air Hose, Pipe, and Bracket Installation
g. Uncontaminated Filter Removal
h. Uncontaminated Filter Installation
i. Tube Removal
j. Tube Installation
k. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)
Goggles, Industrial (Item 14, Appendix F)
Pliers, Retaining Ring (Item 27, Appendix F)

Materials/Parts
Cement, CPVC Bonding (Item 11, Appendix C)
Methyl Ethyl Ketone (Item 18, Appendix C)
Locknuts (13) (Item 72, Appendix G)
Ring, Retaining (Item 157, Appendix G)

Special Environmental Conditions
Contaminated filters shall be placed in double-lined plastic bags, moved swiftly away from worksite, temporarily stored, and disposed of in accordance with local SOP. Decontamination operations shall be performed according to TM 3-220.

General Safety Instructions
After nuclear, biological, or chemical exposure of vehicle, air filter shall be handled with extreme caution. Wear protective clothing during this operation (TM 10-277).

Personnel Required
Two

WARNING

After Nuclear, Biological, or Chemical (NBC) exposure of vehicle, all air filters shall be handled with extreme caution. Unprotected personnel may experience injury or death if residual toxic agents or radioactive material are present. If vehicle is exposed to chemical or biological agents, servicing personnel shall wear protective mask, hood, protective overgarments, and chemical protective gloves and boots in accordance with FM 3-11.4. All contaminated air filters shall be placed in double-lined plastic bags and moved swiftly to a segregation area away from the worksite. The same procedure applies for radioactive dust contamination. The Company NBC team should measure radiation prior to filter removal to determine extent of safety procedures required per the NBC Annex to the unit Standard Operating Procedures (SOP). The segregation area in which the contaminated air filters are temporarily stored shall be marked with appropriate NBC placards. Final disposal of contaminated air filters shall be in accordance with local SOP. Decontamination operation shall be in accordance with FM 3-11.5 and local SOP.

a. Precleaner and Bracket Removal

(1) Convert backseat to bed (TM 9-2320-360-10).

(2) Disconnect receptacle (1) from precleaner (2).

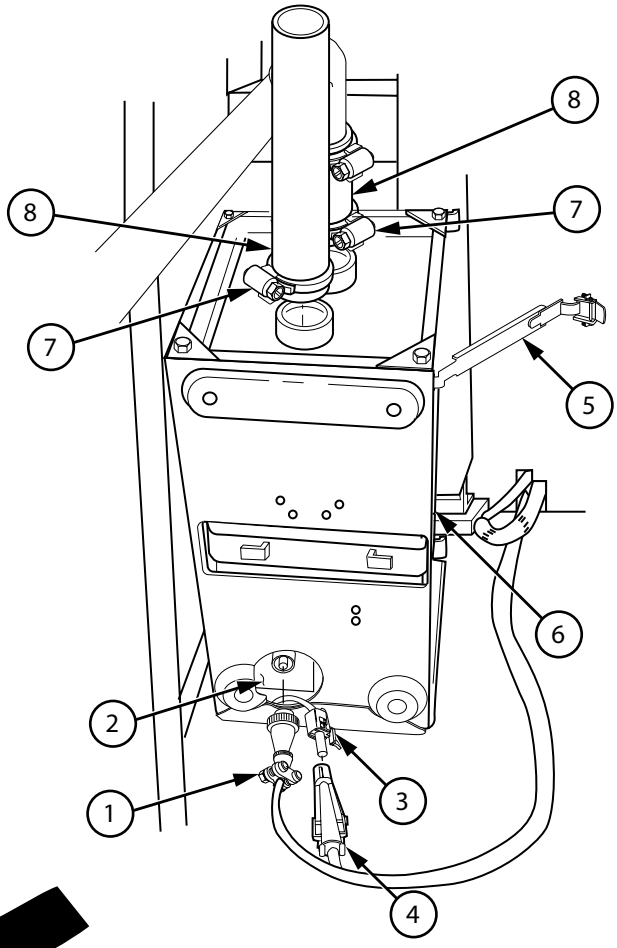
(3) Disconnect plug (3) from receptacle (4).

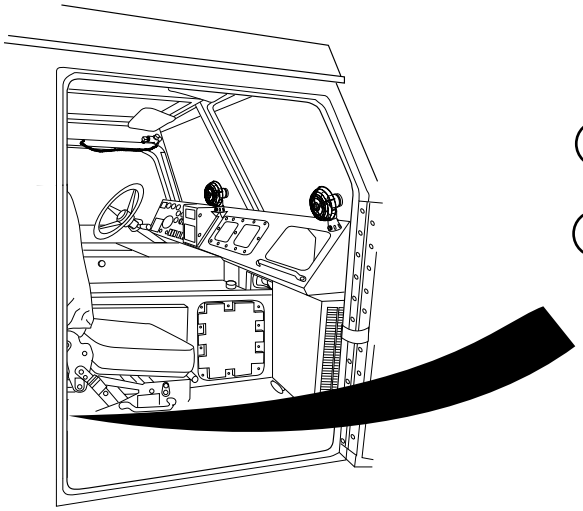
(4) Pull clamp (5) on precleaner frame (6) forward to open position.

(5) Loosen two clamps (7) on hoses (8).

(6) Remove hoses (8) from precleaner (2).

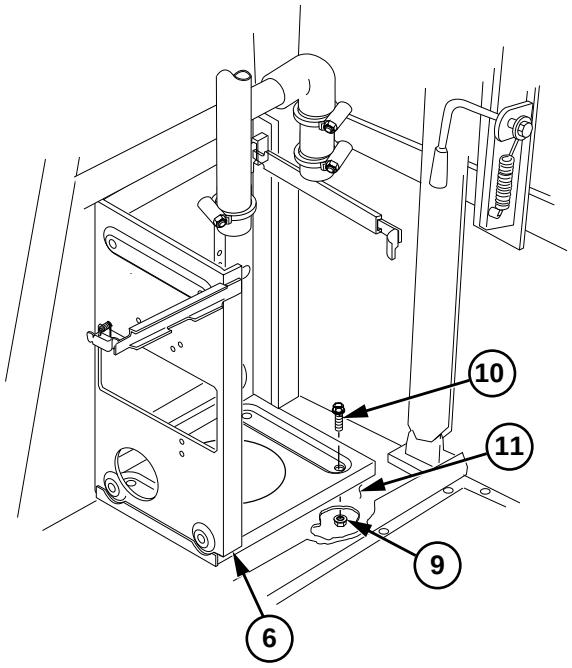
(7) Remove precleaner (2) from frame (6).



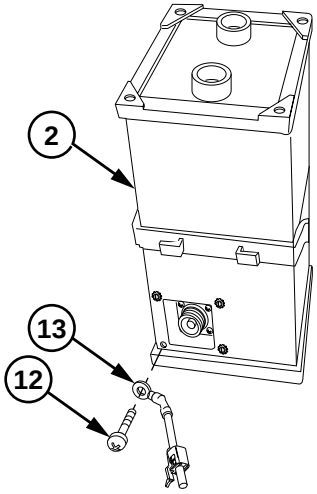


21-2. GAS PARTICULATE FILTER UNIT REPAIR (CONT)

(8) Remove four locknuts (9), screws (10), and frame (6) from cab floor (11) with aid of assistant. Discard locknuts.

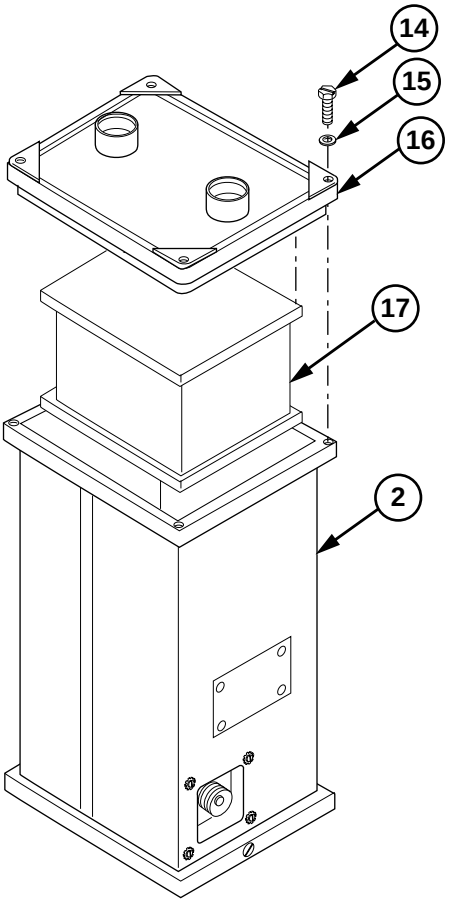


(9) Remove screw (12) and ground wire (13) from precleaner (2).



(10) Remove four screws (14), lockwashers (15), and manifold (16) from precleaner (2). Discard lockwashers.

(11) Remove particulate filter (17) from precleaner (2).



b. Precleaner Cleaning/Inspection

Inspect manifold, particulate filter, and all gaskets for damage. Ensure gaskets will make an air tight seal. Replace damaged parts.

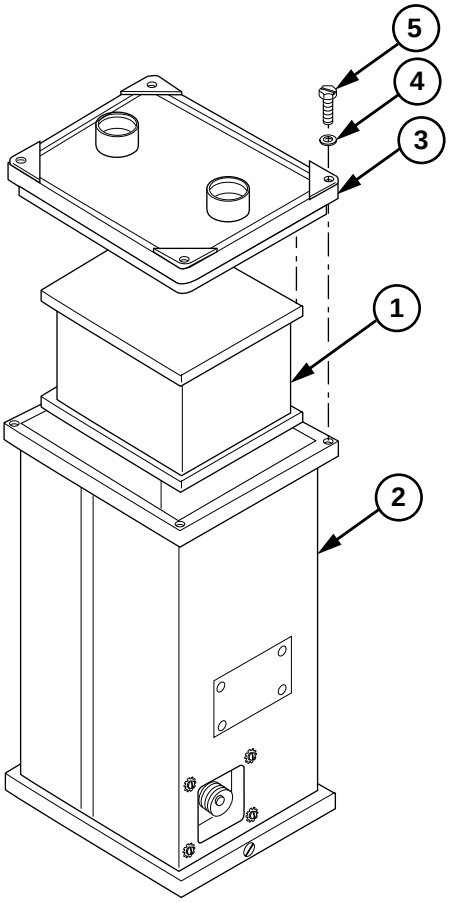
c. Precleaner and Bracket Installation

NOTE

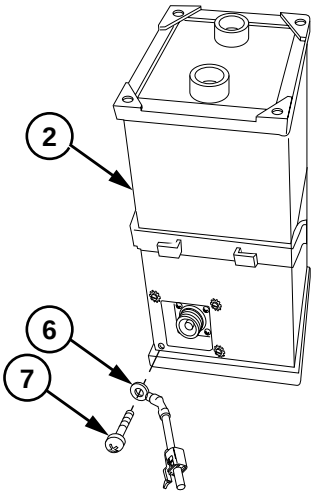
- Arrow on particulate filter must be in direction of air flow.
- Felt gasket must be positioned against manifold.

(1) Install particulate filter (1) in precleaner (2).

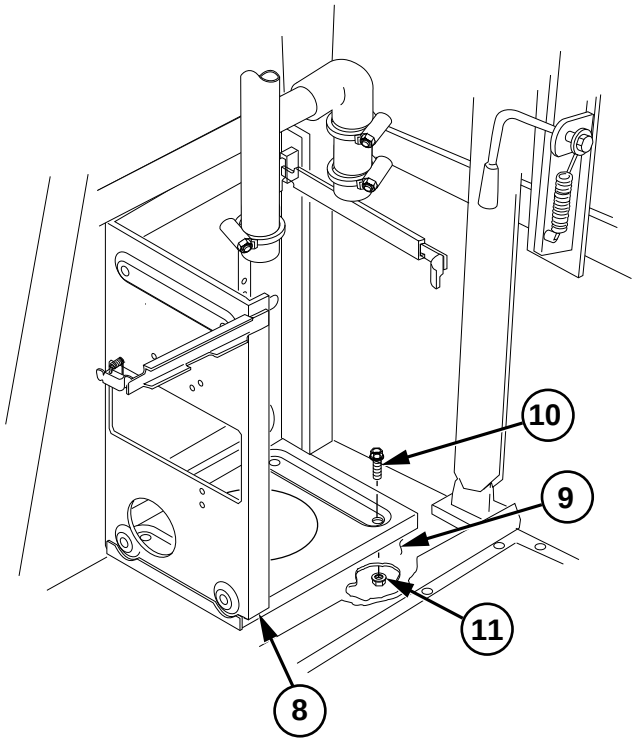
(2) Install manifold (3) on precleaner (2) with four new lockwashers (4) and screws (5).



(3) Install ground wire (6) on precleaner (2) with screw (7).



(4) Install precleaner frame (8) on cab floor (9) with four screws (10) and new locknuts (11).



21-2. GAS PARTICULATE FILTER UNIT REPAIR (CONT)

(5) Position precleaner (2) in frame (8) with electrical plug (12) toward front of cab.

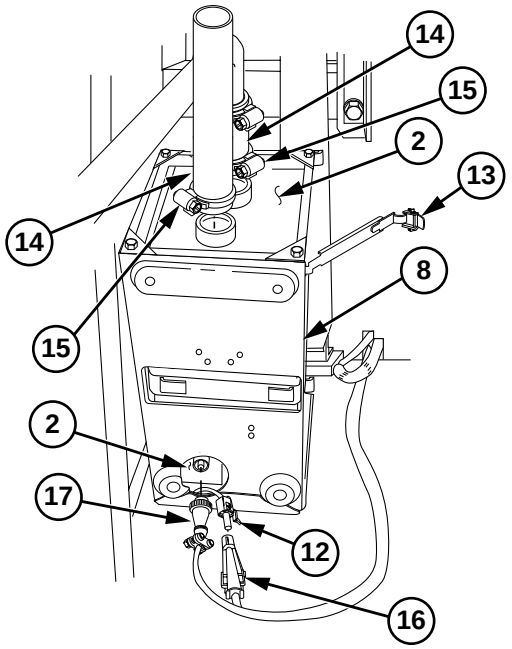
(6) Close clamp (13) on frame (8).

(7) Install two hoses (14) on precleaner (2) with clamps (15).

(8) Install plug (12) in receptacle (16).

(9) Install receptacle (17) in precleaner (2).

(10) Convert beds to backseat (TM 9-2320-360-10).



d. Air Hose, Pipe, and Bracket Removal

NOTE

All air hoses and brackets are replaced the same way.

(1) Loosen clamp (1) on air hose (2).

(2) Remove air hose (2) from pipe (3).

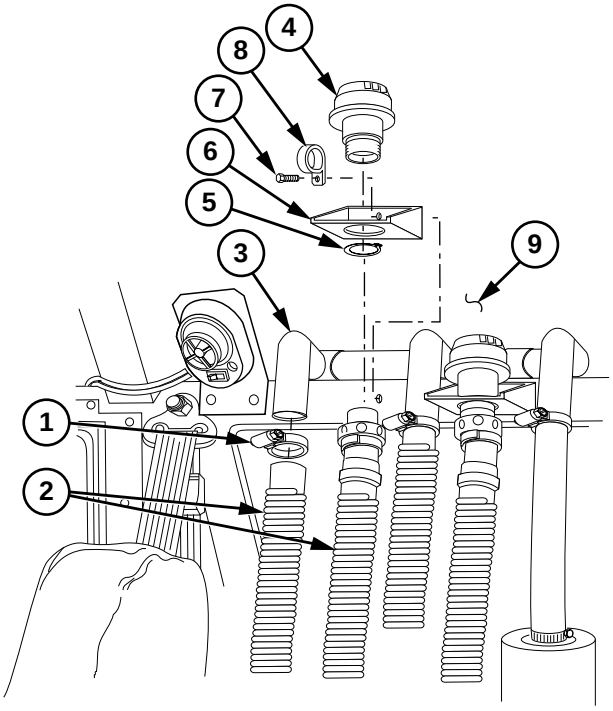
(3) Disconnect air hose (2) from orifice connector (4).

WARNING

Wear eye protection and use care when removing retaining rings. Retaining rings are under spring tension and can act as projectiles when released and may cause severe eye injury.

(4) Remove retaining ring (5) and orifice connector (4) from angle bracket (6). Discard retaining ring.

(5) Remove screw (7), clip (8), and angle bracket (6) from cab wall (9).

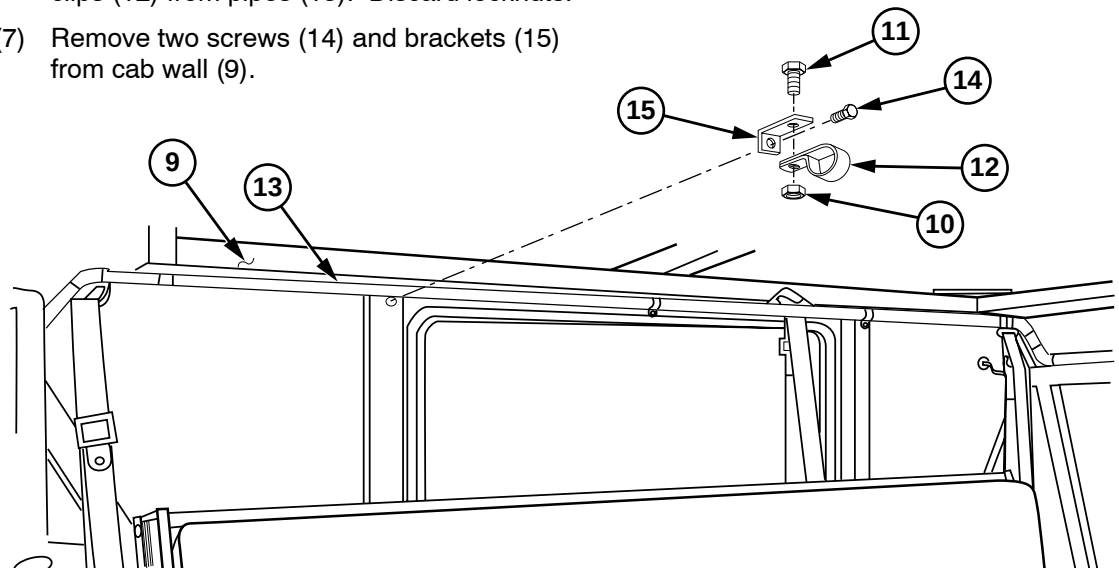


NOTE

- Do steps (6) thru (10) to remove pipes.
- All hoses must be removed from pipe being replaced.

(6) Remove five locknuts (10), screws (11), and clips (12) from pipes (13). Discard locknuts.

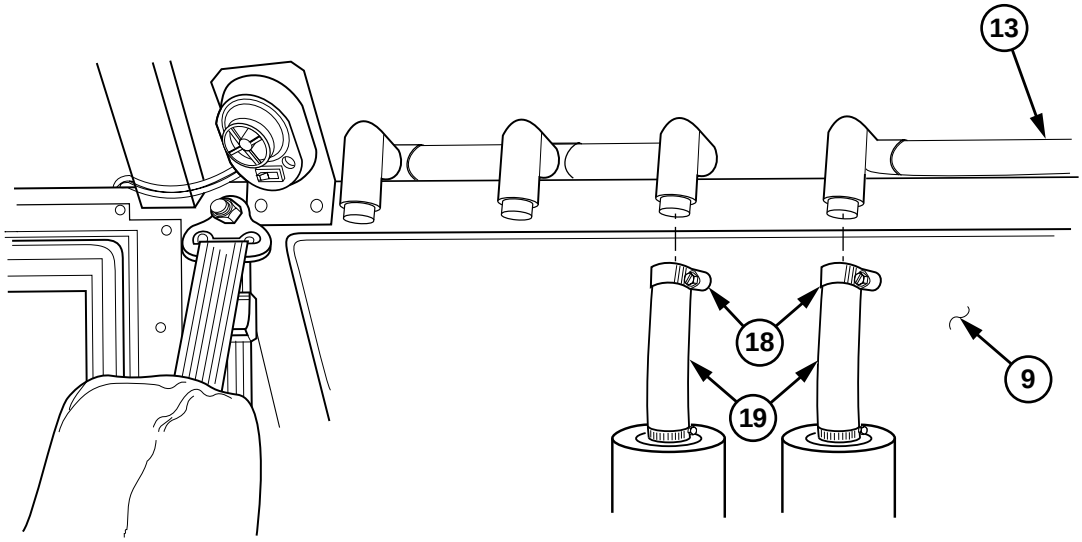
(7) Remove two screws (14) and brackets (15) from cab wall (9).



(8) Deleted.

(9) Loosen two clamps (18) and remove hoses (19) from pipe (13).

(10) Remove pipe (13) from cab wall (9).



21-2. GAS PARTICULATE FILTER UNIT REPAIR (CONT)

e. Tube Assembly

WARNING

Sealing compound can burn easily, can give off harmful vapors, and is harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

- Ensure mating ends of tube are smooth (free from ridges and burrs).
- Ensure mating ends of tubes fit properly before proceeding.

(1) Wipe mating ends of tubes with methyl ethyl ketone.

NOTE

Tubes must be installed before bonding cement dries.
If bonding cement dries before installation, apply a new coat.

(2) Apply thick coat of bonding cement to male end of tube.

(3) Apply thin coat of bonding cement to female end of tube.

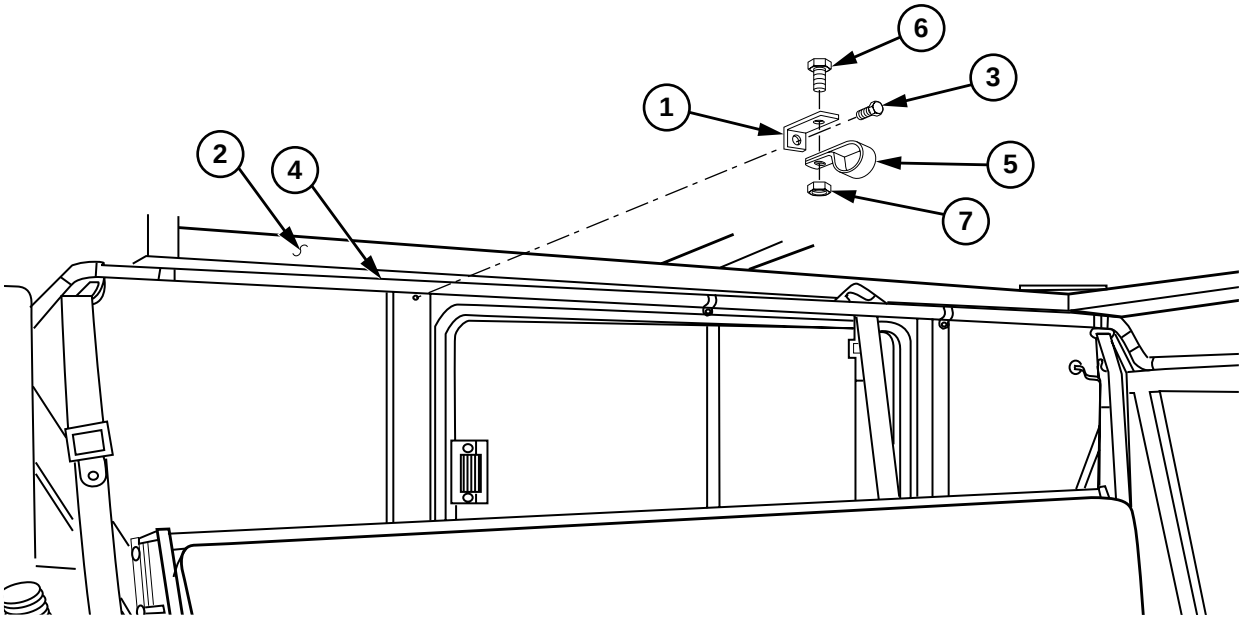
(4) Twist male end of tube into female end until fully seated. Hold until set.

f. Air Hose, Pipe, and Bracket Installation

NOTE

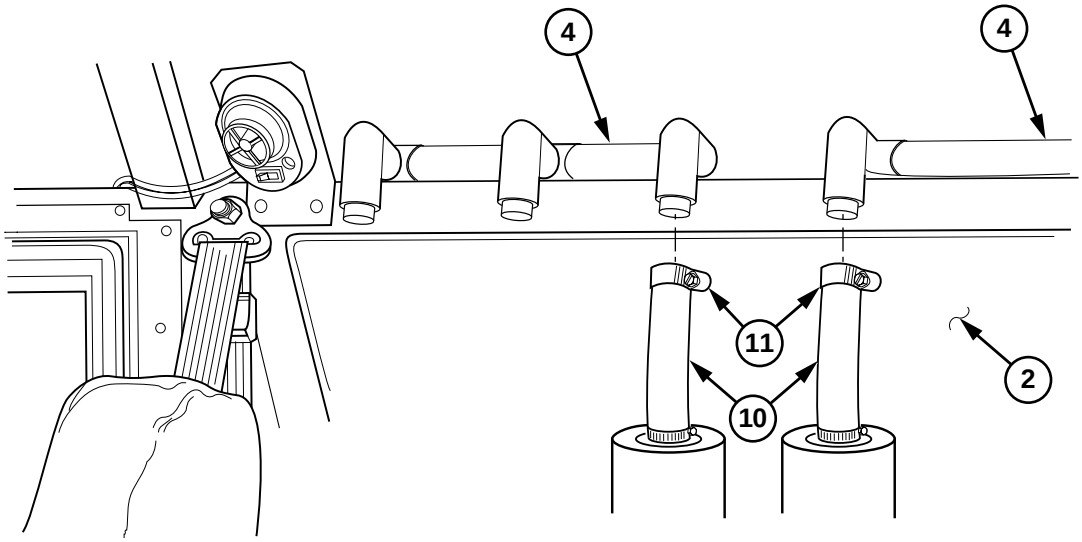
If pipes were removed, do steps (1) thru (5).

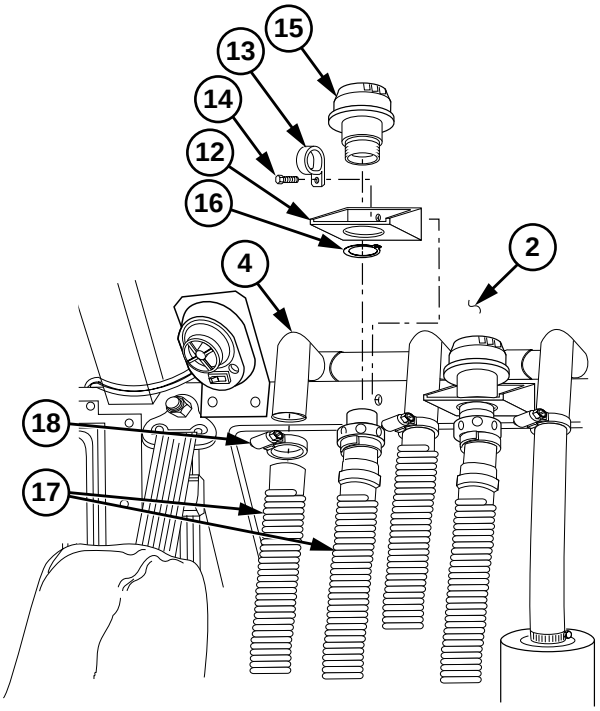
(1) Install two brackets (1) on cab wall (2) with two screws (3).



(3) Deleted.

(4) Install two hoses (10) to pipes (4) and tighten clamps (11).





(5) Install angle bracket (12) and clip (13) on cab wall (2) with screw (14).

WARNING

Wear eye protection and use care when installing retaining rings. Retaining rings are under spring tension and can act as projectiles when released and may cause severe eye injury.

(6) Install orifice connector (15) on angle bracket (12) with new retaining ring (16).

(7) Install air hose (17) on orifice connector (15).

(8) Install air hose (17) on pipe (4) with clamp (18).

21-2. GAS PARTICULATE FILTER UNIT REPAIR (CONT)

g. Uncontaminated Filter Removal

WARNING

After Nuclear, Biological, or Chemical (NBC) exposure of vehicle, all air filters shall be handled with extreme caution. Unprotected personnel may experience injury or death if residual toxic agents or radioactive material are present. If vehicle is exposed to chemical or biological agents, servicing personnel shall wear protective mask, hood, protective overgarments, and chemical protective gloves and boots in accordance with FM 3-11.4. All contaminated air filters shall be placed in double-lined plastic bags and moved swiftly to a segregation area away from the worksite. The same procedure applies for radioactive dust contamination. The Company NBC team should measure radiation prior to filter removal to determine extent of safety procedures required per the NBC Annex to the unit Standard Operating Procedures (SOP). The segregation area in which the contaminated air filters are temporarily stored shall be marked with appropriate NBC placards. Final disposal of contaminated air filters shall be in accordance with local SOP. Decontamination operation shall be in accordance with FM 3-11.5 and local SOP.

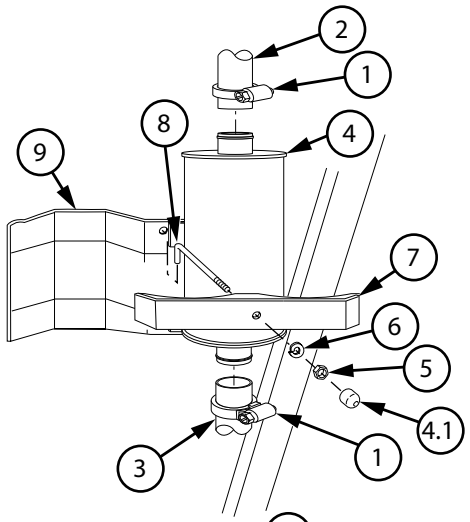
NOTE

Both filters are replaced the same way.

(1) Loosen two clamps (1) on hoses (2 and 3)

(2) Remove two hoses (2 and 3) from filter (4).

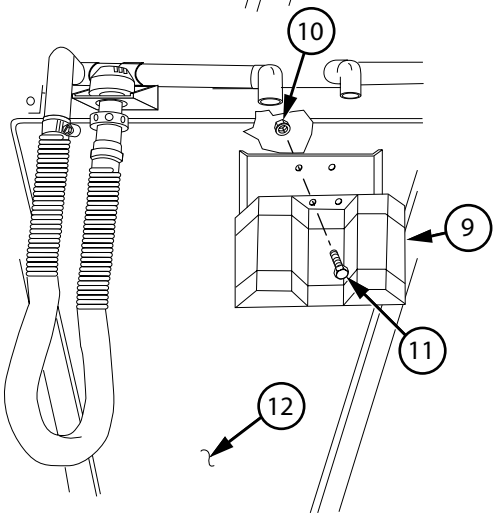
(3) Remove cap (4.1), nut (5), lockwasher (6), bracket (7), screw (8), and filter (4) from bracket (9). Discard lockwasher.



NOTE

If replacing bracket, do step (4).

(4) Remove four locknuts (10), screws (11), and bracket (9) from side of cab (12) with aid of assistant. Discard locknuts.

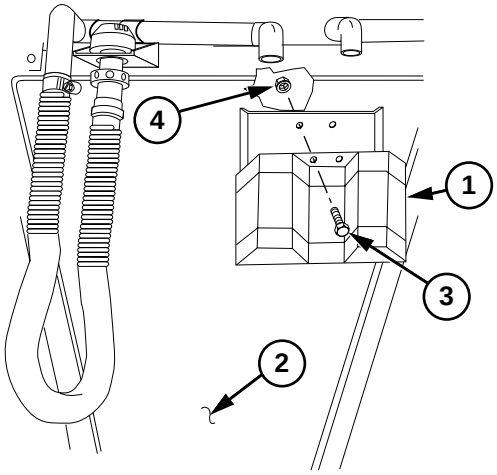


h. Uncontaminated Filter Installation

NOTE

- If bracket was removed, do step (1).
- Outlet filter faces top of cab when installed.

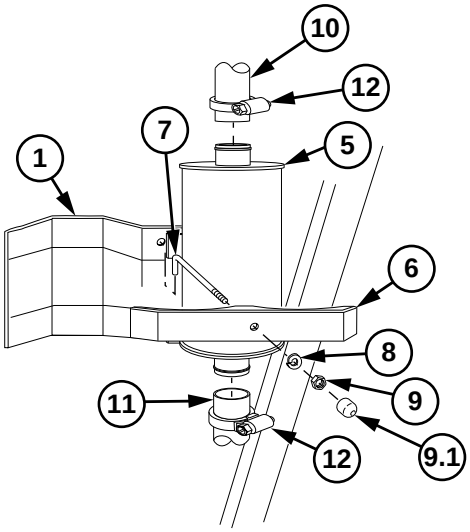
(1) Install bracket (1) on cab wall (2) with four screws (3) and new locknuts (4) with aid of assistant.



(2) Install filter (5) and bracket (6) on bracket (1) with screw (7), new lockwasher (8), and nut (9).

(2.1) Install cap (9.1) on screw (7).

(3) Install hoses (10 and 11) on filter (5) with two clamps (12).



21-2. GAS PARTICULATE FILTER UNIT REPAIR (CONT)

i. Tube Removal

NOTE

All tubes are replaced the same way.

(1) Loosen two clamps (1 and 2) on hose (3).

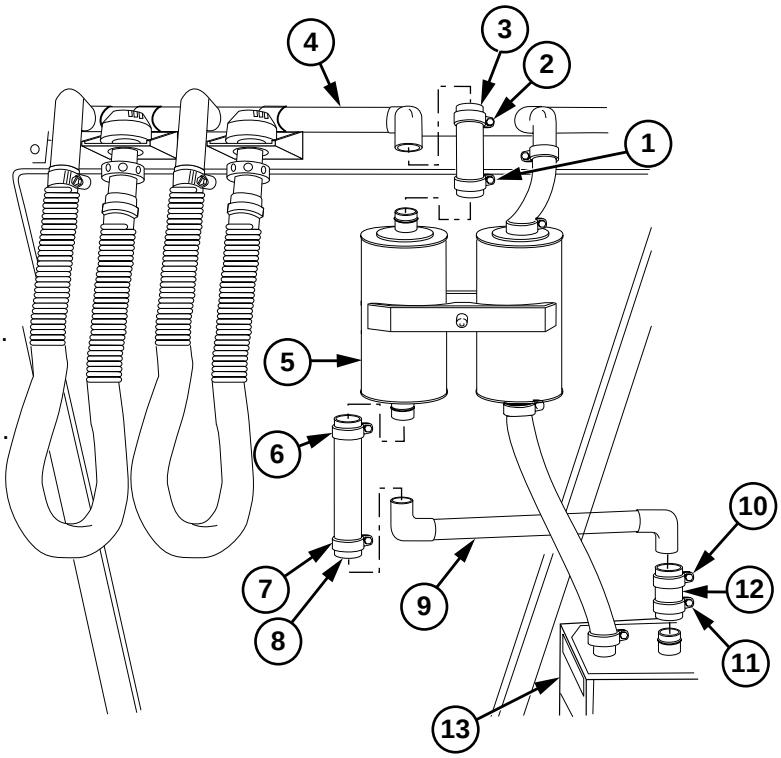
(2) Remove hose (3) from pipe (4) and filter (5).

(3) Loosen two clamps (6 and 7) on hose (8).

(4) Remove hose (8) from filter (5) and tube (9).

(5) Loosen two clamps (10 and 11) on hose (12).

(6) Remove hose (12) from tube (9) and precleaner (13).

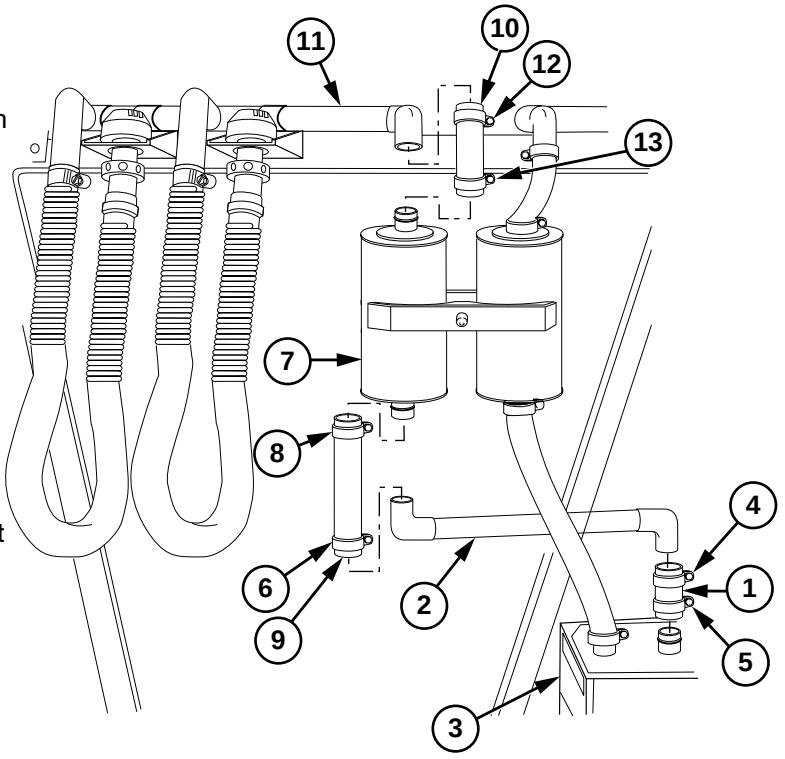


j. Tube Installation

(1) Install hose (1) on tube (2) and precleaner (3) with two clamps (4 and 5).

(2) Install hose (6) on filter (7) and tube (2) with two clamps (8 and 9).

(3) Install tube (10) on filter (7) and pipe (11) with two clamps (12 and 13).



k. Follow-On Maintenance

(1) Turn ENGINE switch to ON position (TM 9-2320-360-10).

(2) Check operation of gas particulate filter unit (TM 9-2320-360-10).

(3) Turn ENGINE switch to OFF position (TM 9-2320-360-10).

(4) Remove wheel chocks.

21-3. DECONTAMINATION UNIT INSTALLATION

This task covers:
a. Installation
b. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Engine shut off (TM 9-2320-360-10).
Parking brake on (TM 9-2320-360-10).
Wheels chocked.

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (4) (Item 58, Appendix G)

a. Installation

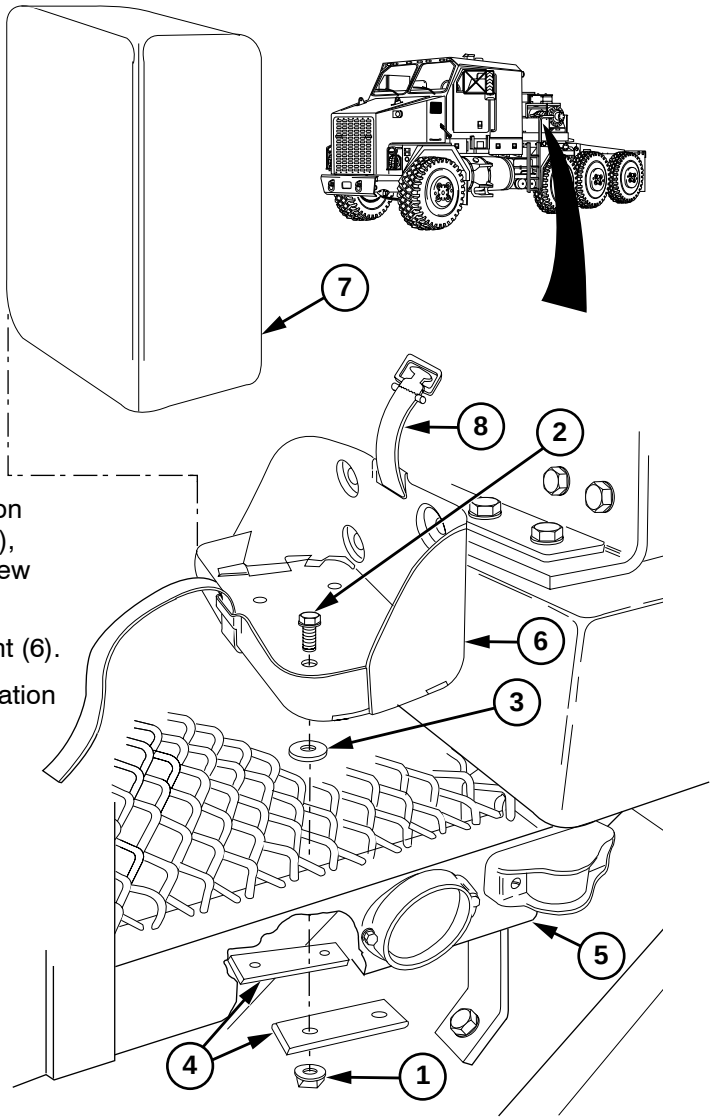
NOTE
Screws, washers, spacers, and locknuts are furnished with HET Tractor.

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

(2) Install decontamination unit mount (6) on winch platform (5) with four washers (3), screws (2), two spacers (4), and four new locknuts (1).

(3) Install decontamination unit (7) in mount (6).

(4) Tighten strap (8) to secure decontamination unit (7) in mount (6).



b. Follow-On Maintenance

Remove wheel chocks.

21-4. CHEMICAL ALARM INSTALLATION

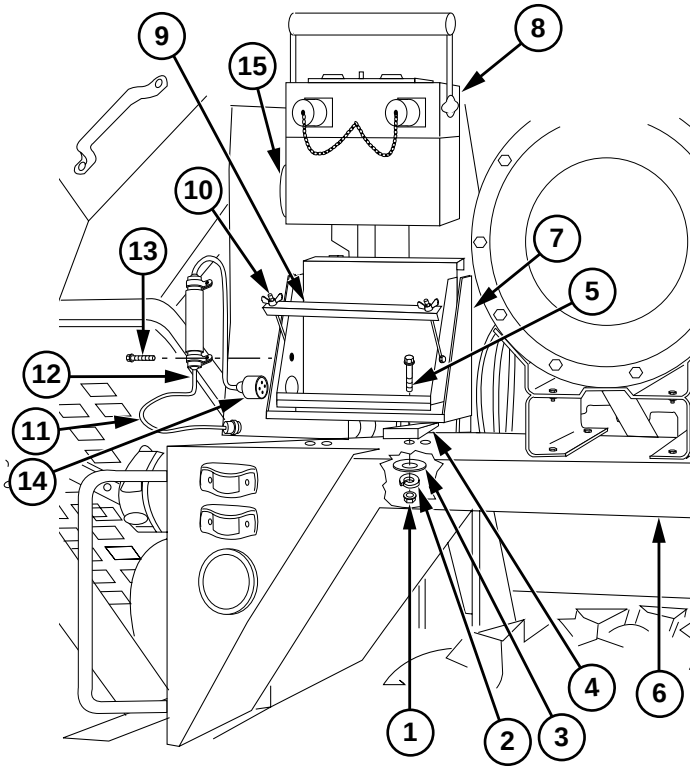
This task covers:
a. Installation
b. Follow-On Maintenance

INITIAL SETUP

Equipment Conditions
Batteries disconnected (para 7-61).

Tools and Special Tools
Tool Kit, Genl Mech (Item 54, Appendix F)

Materials/Parts
Locknuts (4) (Item 72, Appendix G)
Lockwashers (4) (Item 107, Appendix G)



a. Installation

(1) Remove four nuts (1), lockwashers (2), washers (3), spacers (4), and screws (5) from left front fender (6). Discard lockwashers.

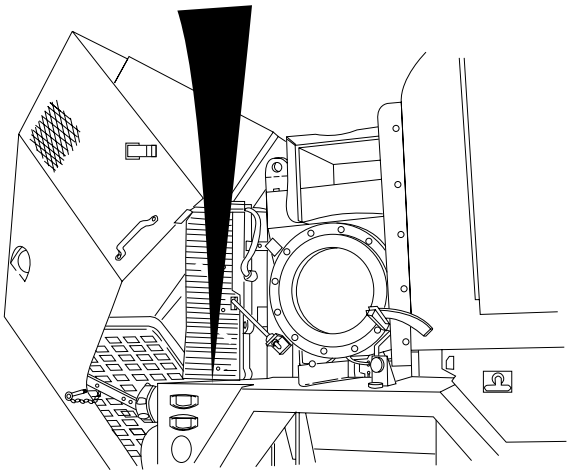
(2) Install detector mount (7) on fender (6) with four spacers (4), screws (5), washers (3), new lockwashers (2), and nuts (1).

(3) Install detector (8) in mount (7).

(4) Position holder (9) on detector (8) and tighten two nuts (10).

(5) Install power input cable (11) on detector mount (7) with two clips (12) and screws (13).

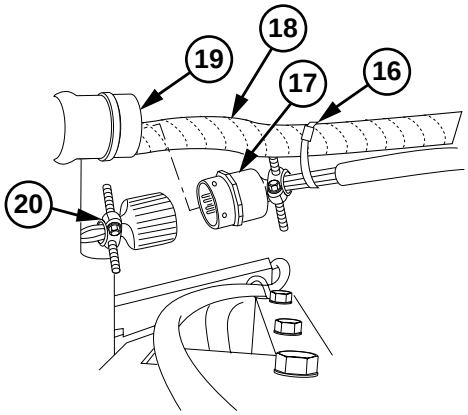
(6) Install electrical connector (14) and electrical connector (15) on mount (7).

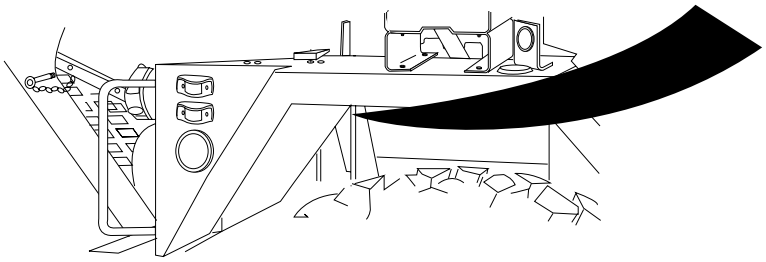


(7) Remove plastic cable tie (16) securing electrical connector (17) to harness (18).

(8) Remove boot (19) from electrical connector (17).

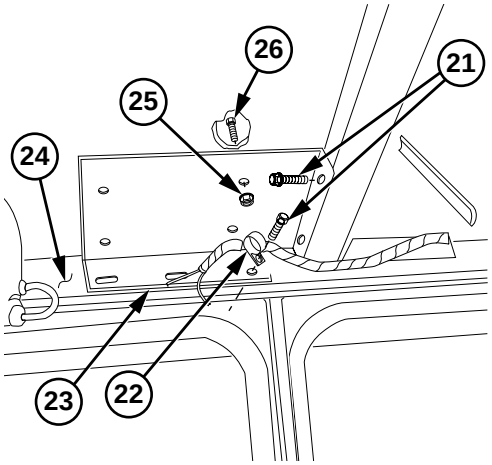
(9) Install electrical connector (20) on electrical connector (17).

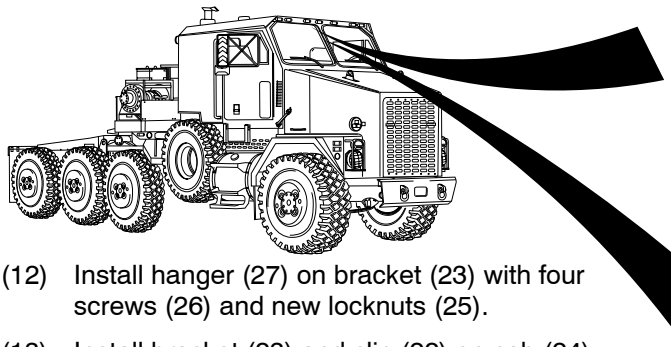




(10) Remove five screws (21), clip (22), and bracket (23) from cab (24).

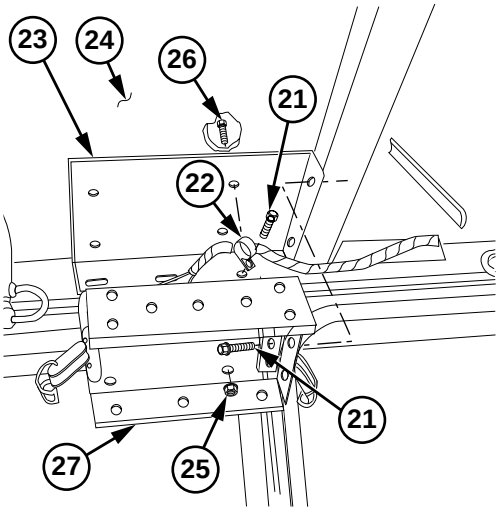
(11) Remove four locknuts (25) and screws (26) from bracket (23). Discard locknuts.





(12) Install hanger (27) on bracket (23) with four screws (26) and new locknuts (25).

(13) Install bracket (23) and clip (22) on cab (24) with five screws (21).

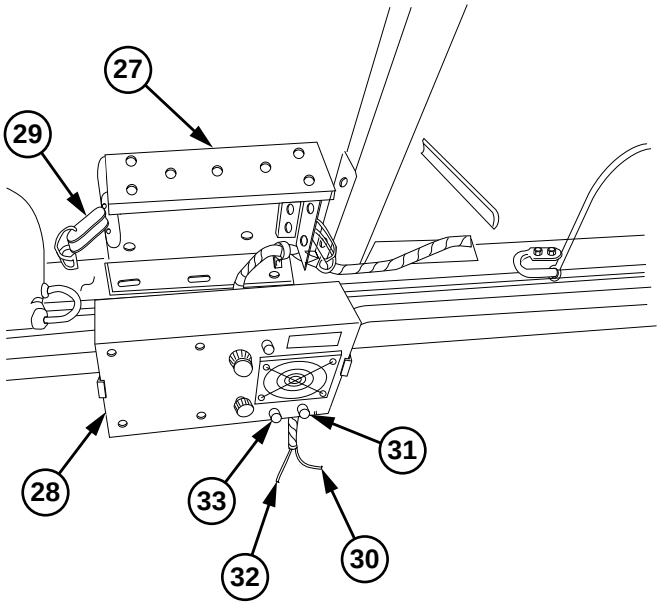


21-4. CHEMICAL ALARM INSTALLATION (CONT)

(14) Install alarm (28) in hanger (27) and secure with two clamps (29).

(15) Install wire no. 1746 (30) on post (31).

(16) Install wire no. 1747 (32) on post (33).



b. Follow-On Maintenance

Connect batteries (para 7-61).

APPENDIX A
REFERENCES

A-1. SCOPE

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

A-2. PUBLICATIONS INDEX

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

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

A-3. FORMS

The following forms pertain to this manual. See DA Pam 25-30 for index of blank forms. See DA Pam 750-8 The Army Maintenance Management System (TAMMS), for instructions on the use of maintenance forms pertaining to this material.

Recommended Changes to DA Publications and Blank Forms ..... DA Form 2028
Equipment Inspection and Maintenance Worksheet ..... DA Form 2404
Maintenance Request ..... DA Form 2407
Equipment Control Record ..... DA Form 2408-9
Processing and Deprocessing Record of Shipping, Storage, and Issue of Vehicles and Spare Engines ..... DD Form 1397
Report of Item Discrepancy (ROD) ..... SF 364
Quality Deficiency Report (Category II) ..... SF 368

A-4. OTHER PUBLICATIONS

The following publications contain information pertinent to the HET Tractor and associated equipment.

a. Department of Army Pamphlets

Hearing Conservation ..... DA Pam 40-501

b. Field Manuals

Color, Marking and Camouflage Painting of Military Vehicles, Construction Equipment and Materials Handling Equipment ..... TB 43-0209
Repair of Tents, Canvas, and Webbing ..... FM 10-16
Concepts and Equipment of Petroleum Operations ..... FM 10-67-1
Recovery and Battlefield Damage Assessment and Repair ..... FM 9-43-2
First Aid for Soldiers ..... FM 4-25.11
Manual for the Wheeled Vehicle Driver ..... FM 21-305
Basic Cold Weather Manual ..... FM 31-70
Northern Operations ..... FM 31-71
Metal Body Repair and Related Operations ..... TC 9-510
Army Motor Transport Units and Operations ..... FM 55-30

A-4. OTHER PUBLICATIONS (CONT)

c. Lubrication Order

Lubrication Order for Truck, Tractor, M1070, 8 x 8, Heavy Equipment Transporter	LO 9-2320-360-12

d. Technical Bulletins

Security of Tactical Wheeled Vehicles	TB 9-2300-422-20
Warranty Technical Bulletin for Truck, Tractor, M1070, 8 x 8, Heavy Equipment Transporter	TB 9-2320-360-14
Equipment Improvement Report and Maintenance Digest: TACOM Equipment	TB 43-001-39
Safety Inspection and Testing of Lifting Devices	TB 43-0142
Color, Marking, and Camouflage Painting of Military Vehicles	TB 43-0209
Purging, Cleaning, and Coating Interior Ferrous and Terne Sheet Vehicle Fuel Tanks	TB 43-0212
Use of Antifreeze Solutions and Cleaning Compounds in Engine Cooling Systems	TB 750-651

e. Technical Manuals

Operator and Organizational Maintenance Manual Including Repair Parts and Special Tools List for Decontamination Apparatus	TM 3-4230-214-12&P
Operator and Organizational Maintenance Manual for Chemical Alarm	TM 3-6665-225-12
Rigging Techniques, Procedures and Applications	FM 5-125
Welding Theory and Application	TC 9-237
Care and Use of Handtools and Measuring Tools	TM 9-243
Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel and Related Materiels Including Chemicals	TM 9-247
Operator's Manual for Truck, Tractor, M1070, 8 x 8, Heavy Equipment Transporter	TM 9-2320-360-10
Hand Receipt Manual for Truck, Tractor, M1070, 8 x 8, Heavy Equipment Transporter	TM 9-2320-360-10-HR
Operator's, Organizational, Direct Support, and General Support Maintenance Manual for Lead-Acid Storage Batteries	TM 9-6140-200-14
Operator's Unit, Direct Support and General Support Maintenance Manual for Care, Maintenance, Repair and Inspection of Pneumatic Tires and Inner Tubes	TM 9-2610-200-14
Principles of Automotive Vehicles	TM 9-8000
Painting Instructions for Field Use	TM 43-0139
Equipment Improvement Report and Maintenance Summary	TM 43-1043
Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use	TM 750-244-6
Cooling Systems: Tactical Vehicles	TM 750-254

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL

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

b. The maintenance allocation chart (MAC) in section II designates overall authority and responsibility for the performance of maintenance functions on the Truck, Tractor, M1070, 8 X 8, Heavy Equipment Transporter (HET). The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance categories.

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

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

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

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

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

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

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

B-2. MAINTENANCE FUNCTIONS (CONT)

i. Repair. The application of maintenance services[1], including fault location/troubleshooting[2], removal/installation, and disassembly/assembly[3] procedures, and maintenance actions[4] to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

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

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

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

a. Column 1, Group Number. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "00."

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

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

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

C . . . . . Operator or crew

O . . . . . Unit maintenance

F . . . . . Direct support maintenance

H . . . . . General support maintenance

D . . . . . Depot maintenance

---

[1]Services - inspect, test, service, adjust, align, calibrate, and/or replace.
[2]Fault locate/troubleshoot - the process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).
[3]Disassemble/assemble - encompasses the step-by-step taking apart (or breakdown) of a spare/functional group coded item to the level of its least componency identified as maintenance significant (i.e., assigned an SMR code) for the category of maintenance under consideration.
[4]Actions - welding, grinding, riveting, straightening, facing, remachinery, and/or resurfacing.

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

f. Column 6, Remarks. This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in section IV.

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

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

b. Column 2, Maintenance Category. The lowest category of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National Stock Number. The National stock number of the tool or test equipment.

e. Column 5, Tool Number. The manufacturer's part number.

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

a. Column 1, Reference Code. The code recorded in column 6, section II.

b. Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, section II.

Section II. MAINTENANCE ALLOCATION CHART FOR THE HET TRACTOR

(1)	(2)	(3)	(4) MAINTENANCE LEVELS					(5)	(6)
			UNIT		DIRECT	GENERAL		TOOLS	
GROUP		MAINTENANCE			SUPPORT	SUPPORT	DEPOT	AND	
NUMBER	COMPONENT/ASSEMBLY	FUNCTION	C	O	F	H	D	EQPT	REMARKS
01	Engine								
0100	Engine Assembly	Inspect	0.4						
		Test	0.1	0.5				38	
		Service		1.0				11	
		Adjust			8.5			1, 11, 106	
		Replace			29.8			1, 11	G
		Repair				65.4		1, 2, 3, 6, 10, 11, 13, 14, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 30, 31, 32, 33, 34, 35, 42, 59, 60, 61, 62, 81, 98, 103, 105, 109, 119, 120, 121, 122, 123, 126,127	
0101	Cylinder Block	Inspect				1.0		11	
		Repair				40.7		1, 11, 13, 14, 59, 60, 61, 62, 105, 126	A
	Cylinder Head	Inspect			1.0			1	
		Replace			12.6			1, 11, 15, 16, 17	
		Repair				8.0		1, 3, 10, 11, 18, 19, 20, 21, 22, 23, 25, 26, 81, 121, 122, 123	
0102	Crankshaft and Main Bearing	Inspect				1.0		1	
		Repair				3.4		1, 3, 11, 42	
	Crankshaft Vibration Damper	Repair			1.9			1, 11	
0103	Rear Oil Seal	Replace			30.8			1, 11, 28, 29, 42	
0104	Piston and Connecting Rod Assembly	Repair				6.4		3, 11, 30, 31, 32, 33, 98, 103, 105, 120	

Section II. MAINTENANCE ALLOCATION CHART FOR THE HET TRACTOR (CONT)

(1)	(2)	(3)	(4) MAINTENANCE LEVELS					(5)	(6)
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT	TOOLS AND	
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	C	O	F	H	D	EQPT	REMARKS
0105	Rocker Cover and Gasket	Repair		4.5				6, 11	
	Camshaft	Repair				8.3		1, 3, 11, 34, 35, 42	
	Idler Gear	Repair				3.3		1, 6, 11, 42	
0106	Oil Cooler	Repair			9.1			1, 8, 11, 127	
	Oil Pump	Repair				13.4		1, 3, 11	
0108	Exhaust Manifold and Gasket	Inspect Replace		0.3	 1.5			 1, 11	
0109	Blower Drive Support	Repair			18.1			1, 11	
0112	Engine Brake	Replace Repair			5.1	 0.8		1, 11 1, 11	
03	Fuel System								
0301	Injector	Replace			6.3			1, 11	
0302	Fuel Supply Pump	Inspect Repair	0.1		 4.1			 1, 11, 41	
0304	Air Cleaner	Inspect Service Repair	0.1	 0.2 1.0				 8, 11 6, 11	
0305	Blower Assembly	Replace Repair			16.9	 3.0		1, 11, 43 11, 36	
	Turbocharger	Inspect Replace Repair	0.1		 2.5	 1.5		 1, 11 3, 11, 42, 107	
0306	Left Side Fuel Tank	Repair		2.5				6, 11	
	Right Side Fuel Tank	Repair		2.0				6, 11	
0309	Fuel/Water Separator	Inspect Service Repair	0.1	 0.3 1.5				 6, 11 6, 11	
0311	Ether Starting Aid	Inspect Service Repair	0.1	 0.2 1.2				 8, 11	
04	Exhaust System								
0401	Muffler	Inspect Replace	0.1	 1.5				 11	

Section II. MAINTENANCE ALLOCATION CHART FOR THE HET TRACTOR (CONT)

(1)	(2)	(3)	(4) MAINTENANCE LEVELS					(5)	(6)
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT	TOOLS AND	
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	C	O	F	H	D	EQPT	REMARKS
05	Cooling System								
0501	Radiator	Service		0.7					
		Test			1.0			12, 104, 108	
		Replace		4.0				6, 7, 11	
		Repair			5.0			11, 104, 108	
0502	Fan Shroud	Inspect		0.2					
		Replace		2.0				11	
0503	Thermostat (each)	Replace		3.1				6, 8, 11, 39, 40	
0504	Water Pump	Replace			4.5			1, 11, 42	
		Repair				0.5		1, 11, 37, 40, 118, 135, 136	
0505	Fan Clutch	Inspect		0.2					
		Replace		4.8				11	
		Repair			4.3			1, 11, 64	
0508	Coolant Filter	Replace		0.5				11	
06	Electrical System								
0601	Alternator (12V)	Test		0.9				6	
		Adjust		0.4				6, 8, 11	
		Replace		2.5				11, 63	
		Repair			2.0			5, 9	
	Alternator (24V)	Test		0.6				6	
		Adjust		0.4				6, 8, 11	
		Replace		2.5				8, 11, 63	
		Repair			2.0			5, 9	
0603	Starter	Replace		3.5				8, 11, 128	
		Repair			3.2			5, 9	
0606	Cooling System Switch	Replace		0.5				8, 11	
0607	Instrument Panel Harness	Replace		2.5				11	
		Repair			*			1, 3	A
0608	Engine Electronic Module (DDEC)	Test		0.5					
		Repair		2.5				6, 8, 11	

Section II. MAINTENANCE ALLOCATION CHART FOR THE HET TRACTOR (CONT)

(1)	(2)	(3)	(4) MAINTENANCE LEVELS					(5)	(6)
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT	TOOLS AND	
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	C	O	F	H	D	EQPT	REMARKS
0609	Headlights	Inspect	0.1						
		Adjust		0.5				8, 11	
		Repair		0.8				11	
	Clearance Light	Inspect	0.1						
		Repair		0.3				11	
	Dome Light	Inspect	0.1						
		Repair		0.2				11	
	Work Light	Inspect	0.1						
		Repair		0.3				11	
	Blackout Light	Inspect	0.1						
		Repair		0.4				6, 11	
	Front Composite Light	Inspect	0.1						
		Repair		0.4				11	
	Rear Composite Light	Inspect	0.1						
		Repair		0.3				11	
	Backup Light	Inspect	0.1						
		Repair		0.3				11	
	Beacon Light	Inspect	0.1						
		Replace		0.6				11	
		Repair		0.1				11	
0610	Sending Units	Test		0.2				11	
		Replace		0.2				11, 142	
0612	Battery Box	Inspect	0.1						
		Service		0.3				6, 8, 11	
		Repair		1.4				6, 8, 11	
0613	Cab Wire Harness	Replace			13.5			11	C
		Repair		*	*			6, 11	A, B
	Chassis Wire Harness	Inspect	0.1						
		Replace			14.0			11	C
		Repair			*			6, 11	A, B
	STE/ICE Wire Harness	Inspect	0.1						
		Replace			7.5			11	C
		Repair		*	*			6, 11	A, B
	Engine Electronic Control Module Wire Harness	Inspect	0.1						
		Replace			1.5			11	C
		Repair		0.6	*			6, 11, 110, 111, 112, 113, 114, 115, 116, 117,148	A, B

Section II. MAINTENANCE ALLOCATION CHART FOR THE HET TRACTOR (CONT)

(1)	(2)	(3)	(4) MAINTENANCE LEVELS					(5)	(6)
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT	TOOLS AND	
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	C	O	F	H	D	EQPT	REMARKS
0616	Ventilator	Repair		2.0				11	
07	Transmission								
0705	Transmission Shifter	Replace		1.0				6, 11	
0708	Flywheel Assembly	Repair				2.3		1, 11, 65	
	Stator Assembly	Repair				3.3		11, 50	
	Converter Housing Assembly	Repair				8.0		11, 68, 71, 79, 137, 138, 143, 144	
0710	Transmission Assembly	Inspect	0.1						
		Service	0.1	0.8				11	
		Test			*				A
		Replace			25.5			1, 8, 11	
		Repair				25.5		1, 11, 48, 49, 51, 57, 59, 66, 73, 74, 75, 80	
	Control Valve Body	Repair				6.2		1, 11, 82	
	Rear Cover and First Clutch Assembly	Repair				24.7		1, 3, 11, 46, 48, 51, 52, 70, 72, 79, 82, 141	
0713	Forward Clutch Assembly	Repair				15.3		1, 3, 10, 11, 52, 53, 54, 55, 56, 78	
	Fifth Clutch Assembly	Repair				16.8		11, 69, 82	
	Fourth Clutch	Repair				17.1		3, 10, 11	
	Second Clutch and Adapter Housing	Repair				25.2		3, 11, 82	
	Center Support	Repair				18.6		1, 11, 58, 67, 76, 82	
0714	Lockup Cutoff Valve Body	Repair				3.4		1, 11	
	Planetary Gearing and Third Clutch	Repair				22.5		1, 3, 11, 45, 46, 139, 140	
	First Shift Valve Body	Repair				3.7		11	
	Trimmer Valve	Repair				3.5		1, 11	

Section II. MAINTENANCE ALLOCATION CHART FOR THE HET TRACTOR (CONT)

(1)	(2)	(3)	(4) MAINTENANCE LEVELS					(5)	(6)
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT	TOOLS AND	
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	C	O	F	H	D	EQPT	REMARKS
0721	Transmission Oil Lines	Replace		*				6, 11, 101	A
		Repair		*				11	A
08	Transfer Case								
0801	Transfer Case Assembly	Inspect	0.1						
		Service		0.3				11	
		Replace			7.0			1, 11	
		Repair				8.5		1, 11, 59, 85, 86, 131	
0803	Lockup Air Chamber	Replace		1.3				6, 8, 11	
0804	Lube Pump	Replace			0.6			1, 11	
		Repair				0.4		11	
09	Propeller Shafts								
0900	Propeller Shafts	Inspect	0.2						
		Service		0.1				6	
		Replace		0.6				6, 11	
		Repair		0.6				6, 11	
10	Front Axle								
1000	No. 1 Axle Assembly	Inspect	0.1						
		Service		0.6				6, 11	
		Replace			6.0			1, 11	
		Repair				6.0		1, 11, 59, 130, 145	
1002	Input Shaft Oil Seal	Replace			0.8			1, 11, 145	
1003	Planetary and Hub Assembly	Inspect	0.1						
		Service		0.4				6, 11	
		Replace			2.5			1, 11 83, 90, 94, 95, 96	
1004	Pivot, Spindle, and Axle Assembly	Repair			8.4			1, 2, 10, 11, 87, 88, 89	
11	Rear Axles								
1100	No. 2, No. 3, and No. 4 Axle Assemblies	Inspect	0.1						
		Service		0.5				6, 11	
		Replace			6.5			1, 11	
		Repair				8.0		1, 3, 11, 59, 91, 92, 93, 130, 145, 146	
1102	Axle Carrier Oil Seal	Replace			0.8			1, 11, 145, 146	

Section II. MAINTENANCE ALLOCATION CHART FOR THE HET TRACTOR (CONT)

(1)	(2)	(3)	(4) MAINTENANCE LEVELS					(5)	(6)
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT	TOOLS AND	
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	C	O	F	H	D	EQPT	REMARKS
1103	Planetary and Hub Assembly	Inspect	0.1						
		Service		0.4				6, 11	
		Replace			2.5			1, 11, 83, 90, 94, 95, 96	
1104	No. 4 Axle Pivot, Spindle, and Axle Assembly	Repair			8.4			1, 2, 10, 11, 87, 88, 89	
12	Brake System								
1202	Brake Shoes	Replace		1.0				6, 8, 11, 132	
		Repair			0.6			1, 11	
	Brake Camshaft and Bracket	Service		0.1				6	
		Repair			4.2			1, 11	
1208	Brake Treadle Valve	Repair		2.0	2.5			1, 11	
1209	Air Dryer	Inspect	0.1						
		Service		1.4				8, 11	
		Repair		1.0				8, 11	
	Coalescing Filter	Service		0.3					
		Repair		0.5				11	
	Aftercooler	Inspect	0.1						
		Service		1.4				8, 11	
		Repair		1.0				8, 11	
	Air Compressor	Inspect	0.1						
		Replace			5.4			1, 11, 127	
		Repair				3.0		1, 3, 11, 98, 129	
13	Wheels and Tires								
1311	Drum Assembly	Replace		2.0				6, 8, 11, 132	
		Repair			1.0			1, 11, 147	
	CTI Controller Module	Replace		0.8				11	
		Repair		0.1				11	
	CTI Power Manifold	Replace		0.7				11, 99	
		Repair		1.2				11	
	CTI Wheel Valve	Repair		0.5				6, 11	
1313	Tire	Service	0.2						
		Repair		*				6, 11	A

Section II. MAINTENANCE ALLOCATION CHART FOR THE HET TRACTOR (CONT)

(1)	(2)	(3)	(4) MAINTENANCE LEVELS					(5)	(6)
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT	TOOLS AND	
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	C	O	F	H	D	EQPT	REMARKS
14	Steering System								
1401	Steering Column	Repair		1.0				6, 11	
	Steering Shafts	Inspect		0.5					
		Service		0.2				6	
		Repair		1.3				6, 8, 11	
	No. 1 Axle Tie Rod	Inspect		0.1					
		Service		0.2				6	
		Adjust		1.0				6, 11	
		Repair		1.8				6, 11	
	No. 4 Axle Tie Rod	Inspect		0.1					
		Service		0.2				6	
		Adjust		1.0				6, 11	
		Repair		1.8				6, 11	
	Steering Tee Box	Inspect	0.1						
		Replace		1.5				6, 8, 11	
		Repair				2.0		1, 11	
	Steering Reduction Gearbox	Service		0.3				11	
		Replace		1.0				11	
		Repair				0.5		1, 11	
1407	No. 1 and No. 4 Axle Steering Gears	Inspect		0.1					
		Replace			4.8			1, 11, 125	
		Repair				2.0		1, 11	
1410	Steering Pump	Inspect	0.1						
		Replace			5.4			1, 11, 127, 128	
		Repair				4.0		1, 3, 11, 100	
	Auxiliary Steering Pump Manifold	Replace			0.5			1, 11	
		Repair				1.0		1, 11	
	Auxiliary Steering Pump	Replace			0.8			1, 11	
		Repair				1.5		1, 11	
1411	Steering System Hoses and Fittings	Replace		*				6, 11, 133, 134	A
1413	Steering Reservoir	Inspect	0.1						
		Service	0.1	0.6				6, 11	
		Replace		0.9				6, 11, 133, 134	

Section II. MAINTENANCE ALLOCATION CHART FOR THE HET TRACTOR (CONT)

(1)	(2)	(3)	(4) MAINTENANCE LEVELS					(5)	(6)
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT	TOOLS AND	
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	C	O	F	H	D	EQPT	REMARKS
15	Frame								
1501	Frame Assembly	Inspect	0.4						
		Repair			*			1, 11	A
1503	Pintle Hook	Inspect	0.1						
		Service	0.1					6	
		Repair		1.0				6, 11	
1506	Fifth Wheel	Inspect	0.1						
		Service	0.3					6	
		Adjust		0.9				6, 11, 24	
		Replace			2.1			1, 11	
		Repair			3.0			1, 6, 11	
16	Suspension								
1601	Spring Assembly	Inspect		0.1					
		Repair			3.5			1, 11	
1604	Shock Absorbers and	Inspect	0.1						
	Bushings	Replace		0.3				6, 11	
1605	Torque Rod	Inspect	0.1						
		Replace			4.1			1, 11	
18	Cab and Body								
1801	Cab	Inspect	0.1						
		Replace			13.8			1, 11	
		Repair			*			4, 11	A
	Door	Adjust		0.3				11	
		Replace		1.0				11	
		Repair		1.5				11	
	Hood Assembly	Repair		0.9				11	
1802	Windshield	Inspect	0.1						
		Replace		1.0				11	
1806	Driver's Seat	Repair		0.6				11	
	Passenger's Seat	Repair		0.6				11	
	Rear Seat	Repair		0.6				11	
1808	Stowage Box	Replace		0.4				11	
		Repair		0.1				6, 11	
20	Winches								
2001	Winch, Main 55K	Inspect	0.1						
		Service	1.0	0.3				6	
		Replace			2.2			1, 11	
		Repair				4.0		1, 11	

Section II. MAINTENANCE ALLOCATION CHART FOR THE HET TRACTOR (CONT)

(1)	(2)	(3)	(4) MAINTENANCE LEVELS					(5)	(6)
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT	TOOLS AND	
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	C	O	F	H	D	EQPT	REMARKS
	Counterbalance Valve (Retrieval Winch)	Repair			1.3			11	
	Motor, Winch Drive (Retrieval Winch)	Replace Repair			1.9	 1.0		11 1, 11	
	Control Valves, 4-Way	Repair			1.2			1, 11	
	Auxiliary Winch	Service Replace Repair	0.1	 1.5		 2.0		 6, 11 1, 11	
2004	Power Take-Off Assembly	Replace Repair			4.6	 1.0		1, 11 1, 11	
	PTO Shafts	Repair		5.0				6, 11	
22	Body Accessory Items								
2202	Heater	Repair		2.0				8, 11	
2210	Data Plates	Replace		0.2				6, 11	
24	Hydraulic and Fluid Systems								
2401	Hydraulic Pump	Inspect Replace Repair		0.1	 2.4	 3.0		 1, 11 1, 11	
2406	Hydraulic Lines and Fittings	Replace		*				11	A
2408	Hydraulic Reservoir	Service Replace Repair	0.1	0.5 2.0 0.2				11, 102 11 11, 102	
33	Special Purpose Kits								
3301	Engine Container	Repair				1.5		1, 11	
	Transmission Container	Repair				1.5		1, 11	
	Transfer Case Container	Repair				1.5		1, 11	
3303	Engine Arctic Kit	Inspect Repair Install	0.2	 4.5	 6.0			 6, 8, 11 1, 11	
47	Non-Electric Gages								
4701	Cable (Speedometer/ Tachometer)	Replace		1.0				11	

Section II. MAINTENANCE ALLOCATION CHART FOR THE HET TRACTOR (CONT)

(1)	(2)	(3)	(4) MAINTENANCE LEVELS					(5)	(6)
			UNIT		DIRECT	GENERAL		TOOLS	
GROUP		MAINTENANCE			SUPPORT	SUPPORT	DEPOT	AND	
NUMBER	COMPONENT/ASSEMBLY	FUNCTION	C	O	F	H	D	EQPT	REMARKS
4702	Air Pressure Gage	Inspect	0.1						
		Replace		0.4				11	
91	Chemical, Biological, and Radiological (CBR) Equipment								
9111	Gas Particulate Filter Unit	Inspect	0.1						
		Service	0.1						
		Repair		2.2				6, 11	D
9120	Decontamination Unit	Install		0.5				11	F
9130	Chemical Alarm	Install		1.6				11	E

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR THE HET TRACTOR

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/ NATO STOCK NUMBER	TOOL NUMBER
1	F	SHOP EQUIPMENT, AUTOMOTIVE MAINTENANCE & REPAIR: FIELD MAINTENANCE, BASIC, LESS POWER	4910-00-754-0705	
2	F	SHOP EQUIPMENT, AUTOMOTIVE MAINTENANCE & REPAIR: FIELD MAINTENANCE, SUPPLEMENTAL NO. 1	4910-00-754-0706	
3	F	SHOP EQUIPMENT, AUTOMOTIVE MAINTENANCE & REPAIR: FIELD MAINTENANCE, SUPPLEMENTAL SET NO. 2, LESS POWER	4910-00-754-0707	
4	O	TOOL KIT, BODY AND FENDER REPAIR	5180-00-754-0643	
5	O	TOOL KIT, AUTOMOTIVE FUEL AND ELECTRICAL SYSTEM REPAIR	5180-00-754-0655	
6	O	SHOP EQUIPMENT, AUTOMOTIVE MAINTENANCE AND REPAIR; ORGANIZATIONAL MAINTENANCE COMMON NO. 1, LESS POWER	4190-00-754-0654	
7	O	SHOP EQUIPMENT, AUTOMOTIVE MAINTENANCE AND REPAIR; ORGANIZATIONAL MAINTENANCE SUPPLEMENTAL NO. 1, LESS POWER	4910-00-754-0653	
8	O	SHOP EQUIPMENT, AUTOMOTIVE AND REPAIR; ORGANIZATIONAL MAINTENANCE COMMON NO. 2, LESS POWER	4910-00-754-0650	
9	F	SHOP EQUIPMENT, FUEL AND ELECTRICAL SYSTEM, ENGINE; FIELD MAINTENANCE, BASIC, LESS POWER	4940-00-754-0714	
10	F	SHOP EQUIPMENT, MACHINE SHOP; FIELD MAINTENANCE, BASIC, LESS POWER	3470-00-754-0708	
11	O	TOOL KIT, GENERAL MECHANIC'S, AUTOMOTIVE	5180-00-177-7033	
12	F	PLUG SET, RADIATOR	4910-00-273-3660	
13	H	ENGINE STAND ADAPTER PLATE	4910-00-146-9624	J33850
14	H	WATER INLET ADAPTER REMOVER/INSTALLER	5120-01-048-2180	J25275
15	F	CYLINDER HEAD GUIDE STUD SET	4910-01-162-3630	J24748
16	F	CYLINDER HEAD LIFTING FIXTURE	4910-00-456-7620	J22062-01
17	F	FUEL LINE NUT WRENCH	5120-00-019-5232	J8932-B
18	H	CYLINDER HEAD PRESSURE TEST FIXTURE	4910-01-158-3985	J28454
19	H	INJECTOR TUBE RECONDITIONING TOOL SET	2910-01-146-9616	J22525-B
20	H	VALVE GUIDE BRIDGE INSTALLER	5120-00-999-8616	J7482
21	H	VALVE GUIDE REMOVER	5120-00-733-8880	J6569
22	H	VALVE GUIDE INSTALLER	5120-00-999-8617	J21520
23	H	VALVE SEAT INSERT INSTALLER	5120-01-048-3118	J24357
24	O	FIFTH WHEEL LOCK TESTER	4910-01-157-3572	TLN-1500

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR THE HET TRACTOR (CONT)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/ NATO STOCK NUMBER	TOOL NUMBER
25	H	PULLER ASSEMBLY	5120-01-352-5531	J23479-A492
26	H	WATER NOZZLE INSTALLER	5120-01-048-3119	J24857-A
27	F	ALIGNMENT STUD SET	5120-00-629-9781	J1927-01
28	F	FLYWHEEL HOUSING SEAL INSTALLER	4910-01-176-4230	J21112-B
29	F	CRANKSHAFT REAR OIL SEAL EXPANDER	5120-00-336-0445	J4239
30	H	CYLINDER LINER REMOVER ASSEMBLY	4910-01-158-3982	J24563-A
31	H	CYLINDER LINER HOLDDOWN CLAMPS	4910-01-158-3984	J24565-02
32	H	PISTON PIN RETAINING TOOL	5120-00-127-7757	J23762-A
33	H	PISTON GROOVE GAGE	5120-01-028-1109	J24599
34	H	CAMSHAFT GEAR PULLER	5120-00-219-8397	J1902-B
35	F	CAMSHAFT GEAR/WATER PUMP PULLEY REMOVER	5120-00-733-8890	J7932
36	H	BLOWER SERVICE SET	5120-00-936-4376	J6270-G
37	H	WATER PUMP DRIVE GEAR INSTALLER	5120-01-033-8902	J25257
38	F	CYLINDER COMPRESSION GAGE	4910-01-148-1236	J7334-E
39	O	THERMOSTAT SEAL INSTALLER	5120-00-977-5579	J8550
40	O	THERMOSTAT SEAL INSTALLER HANDLE	5120-00-977-5578	J7079-2
41	F	FUEL PUMP TOOL SET	5180-00-219-8407	J1508-E
42	F	MAGNETIC BASE DIAL INDICATOR	5120-00-402-9619	J7872
43	F	BLOWER SHAFT ALIGNMENT TOOL	4910-01-158-3991	J33001
44	H	BRASS WIRE BRUSH	5130-00-937-7281	J7944
45	H	SUN GEAR REAMING SET	5110-01-150-9755	J28489
46	H	BUSHING INSTALLER	4910-01-158-3986	J24201
47	H	BUSHING SWAGING TOOL	4910-01-158-3970	J26997-A
48	F	TRANSMISSION OIL SEAL INSTALLER	5120-01-054-4042	J24202-1A
49	H	TRANSMISSION HOLDING FIXTURE	5120-01-115-1165	J24310
50	H	STATOR ROLLER HOLDER	5120-01-115-1158	J24218-2
51	F	DRIVE HANDLE	5129-01-054-4048	J24202-4
52	H	CLUTCH SPRING COMPRESSOR	5120-01-048-3129	J24204
53	H	COLLECTOR RING INSTALLER AND STAKING SET	5120-01-048-3124	J24200
54	H	FORWARD CLUTCH PISTON INNER SEAL PROTECTOR	5120-01-048-2157	J24216-01
55	H	PTO GEAR REMOVING FIXTURE	4910-01-158-3969	J26899
56	H	FIFTH CLUTCH ALIGNMENT FIXTURE	5120-01-115-1156	J24221
57	H	MAIN SHAFT OIL SEAL REMOVER/INSTALLER	5120-01-115-1161	J26282

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR THE HET TRACTOR (CONT)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/ NATO STOCK NUMBER	TOOL NUMBER
58	H	CENTER SUPPORT COMPRESSOR SET	5120-01-116-5016	J24208-D
59	H	ENGINE STAND	4910-00-808-3372	J29109
60	H	CORE PLUG REMOVER/INSTALLER	5120-01-130-8864	J23019
61	H	GAGE, DIAL, CYLINDER BORE	5120-01-070-4543	J5347-B
62	H	CYLINDER BLOCK TEST KIT	5180-01-252-9800	2SK737
63	O	BELT TENSION GAGE	6635-01-093-3710	J23600-B
64	F	FAN DRIVE OVERHAUL TOOL KIT	4910-01-163-1340	3-462-902-24460
65	F	FLYWHEEL LIFTING BRACKET	5120-01-116-6049	J24365
66	H	FORCING SCREW	5305-01-142-9397	J22214-4
67	H	BRACKET, LIFTING	5120-01-116-6048	J24195
68	H	INSTALLER, BEARING	5120-01-115-1160	J24197
69	H	FIXTURE, LIFTING	5120-01-115-1159	J24209
70	H	PROTECTOR, SEAL	5120-01-048-2156	J24210
71	H	SET, GUIDE PIN	5120-01-115-1163	J24315
72	H	INSTALLER, BEARING		J24447
73	H	SLEEVE	5120-01-385-2795	J25007-4
74	H	REMOVER/INSTALLER, SNAP RING	4910-01-158-3996	J26598-A
75	H	PULLER BOLT	5120-01-185-6811	J26901-A
76	H	SET, BUSHING INSTALLER AND STAKING	4910-01-158-3971	J28525
77	H	GROOVE GAGE, SEAL RING	5210-01-133-6888	J29198-3
78	H	TOOL, LIFTING	5120-01-159-1736	J33079
79	H	HANDLE, DRIVER	5120-00-677-2259	J8092
80	H	BAR, CROSS	5120-00-143-4492	J8433-1
81	H	COMPRESSOR, VALVE SPRING	5120-00-297-2397	J7455-A
82	H	TESTER, SPRING	6635-01-170-5001	J29196
83	F	SOCKET, 33MM, 3/4 IN. DRIVE		07533M
84		DELETED		
85	H	DUMMY SHAFT, TRANSFER CASE		1975300
86	H	ADAPTER, TRANSFER CASE		1975890U
87	F	COVER, KING PIN PRELOAD		2HE225
88	F	INTERNAL EXTRACTOR, KING PIN		2HE226
89	F	SLIDE HAMMER		2HE227

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR THE HET TRACTOR (CONT)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/ NATO STOCK NUMBER	TOOL NUMBER
90	F	SPANNER SOCKET, SPINDLE	5120-01-354-9451	2HE228
91	H	SOCKET, SPANNER, NO. 2 DIFFERENTIAL	5120-01-354-9452	2HE229
92	H	SOCKET, SPANNER, NO. 2 DIFFERENTIAL	5120-01-354-9450	2HE230
93	H	SOCKET, SPANNER, NO. 2 DIFFERENTIAL	5120-01-354-9449	2HE231
94	F	CTIS SEAL DRIVER		2HE232
95	F	CTIS SEAL DRIVER		2HE233
96	F	CTIS GUIDE SLEEVE		2HE234
97	F	HYDRAULIC TEST KIT		3SK867
98	H	PISTON RING REMOVER & REPLACER	5120-00-494-1846	7950177
99	O	WRENCH, COMBINATION, 2 IN.	5120-00-957-3115	CL64
100	H	SOCKET, POWER STEERING	5120-01-347-3234	E12-V
101	O	WRENCH, CROW'S FOOT, 1-11/2 IN.		FC48A
102	O	WRENCH, CROW'S FOOT, 2-3/4 IN.	5120-01-335-1114	FC88A
103	H	DETECTOR SET, LEAK	6685-01-061-4253	J23987-B
104	O	PRESSURE TESTER, RADIATOR	4910-00-728-8227	J24460-01
105	H	GAGE, CYLINDER LINER DEPTH	5120-01-174-4498	J24898
106	F	GAGE, INJECTOR (1.520 IN.)	5220-01-348-1638	J25502
107	H	SNAP RING PLIER, TURBO	5120-01-371-3269	J28507
108	O	ADAPTER, RADIATOR (USE WITH #14)	4910-01-170-4929	J29003-A
109	O	WRENCH, OIL FILTER	5120-01-354-7622	J29917
110	O	TERMINAL REMOVER	5120-01-353-2534	J33095
111	O	SRS/TRS ALIGNMENT TOOL	5120-00-343-1001	J34729
112	F	TIMING TOOL, CRANK POSITION	2815-01-355-6628	J34930-A
113	O	METRI-PACK TERMINAL CRIMPER	5120-01-355-0844	J35123
114	O	CASE	5140-01-355-3013	J35547
115	O	WEATHER PACK TERMINAL CRIMPER	5120-01-374-8936	J35606
116	O	TERMINAL CRIMPER	5120-01-355-0845	J35688
117	O	METRI-PACK TERMINAL REMOVER	5120-01-357-2937	J35689-A
118	H	SEAL INSTALLER, WATER PUMP	5120-01-365-4079	J38858
119	F	PULLER, THREE-LEG	5120-00-740-3345	J4871
120	H	FEELER GAGE SET, PISTON	5120-00-116-1631	J5438-01
121	H	VALVE BRIDGE GUIDE REMOVER	5120-00-999-8614	J7091-01
122	H	VALVE BRIDGE GUIDE REMOVER	5120-00-999-8615	J7453

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR THE HET TRACTOR (CONT)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/ NATO STOCK NUMBER	TOOL NUMBER
123	H	DIAL GAGE	4910-00-779-7103	J8165-2
124	F	SEAL INSTALLER, FRONT CRANKSHAFT	5120-00-936-4377	J9783
125	F	DRIVER, HEX HEAD, 3/4 IN. (19MM)	5120-01-024-0168	LAW124A
126	H	SOCKET, PIPE PLUG, 1/4 IN.	5120-01-380-6433	PPM408
127	O	WRENCH, TORQUE, 15-100 LB-FT		QJR2100E
128	O	WRENCH, TORQUE, 30-250 LB-FT		QJR3250A
129	H	COMPRESSOR, PISTON RING		RCL30
130	H	ADAPTER, DIFFERENTIAL MAINTENANCE		J39929
131	H	ADAPTER KIT, TRANSFER CASE		J39911
132	O	SOCKET, SOCKETHEAD SCREW, 6MM	5120-01-102-1670	
133	O	WRENCH, OPEN END, 1-5/8 & 1-13/16 IN.	5120-00-081-9099	
134	O	WRENCH, OPEN END, 1-11/16 & 1-7/8 IN.	5120-00-081-9100	
135	H	ADAPTER, IMPELLER SLIP TEST	5935-01-297-2481	J33765
136	H	INSTALLER, OIL SEAL	5120-00-937-7267	J8501
137	H	COMPRESSOR, SPRING	5120-01-048-2160	J24219
138	H	REMOVER TOOL, BEARING	5120-01-117-2523	J28557
139	H	BRACKET, LIFTING, MAIN SHAFT	5120-01-115-1157	J24196
140	H	TOOL, LIFTING, REAR PLANETARY		J24408-A
141	H	INSTALLER, OUTPUT SHAFT NEEDLE BEARING	5120-01-158-3946	J25562
142	O	SOCKET, SOCKET WRENCH, 1 IN. OPENING, 1/2 IN. DRIVE	5130-00-227-6696	
143	H	REMOVER, VALVE PIN	5120-01-048-3128	J24412-2
144	H	HAMMER, SLIDE TYPE	5120-01-112-2165	J6125-1B
145	F	SOCKET, 55 MM		J39938
146	F	SOCKET, 63 MM		J39939
147	F	GAGE, BRAKE DRUM MICROMETER	5210-00-861-9117	8500-50
148	O	SRS/TRS ALIGNMENT TOOL (DDEC III/IV)	5120-01-343-1001	J39815

Section IV. REMARKS

Reference Code	Remarks
A	No specific times established. Time required for replacement or repair will depend on extent of work required.
B	Repair at unit level is limited to splicing wires, taping harness or wires, or replacing wire ends.
C	At direct support level, entire wire harness is replaced.
D	Repair of gas particulate filter is covered in TM 9-4240-280-10.
E	Repair of M-42 chemical alarm is covered in TM 3-6665-225-12.
F	Repair of decontamination unit is covered in TM 3-4230-214-12&P.
G	Replacement of engine consists of separating engine from transmission after engine/ transmission assemby is removed from HET Tractor.

APPENDIX C
EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists expendable and durable items that you will need to operate and maintain the HET Tractor. This listing is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-790, Expendable/Durable Items (except medical, class V repair parts, and heraldic items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

C-2. EXPLANATION OF COLUMNS

a. Column (1) - Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the item, e.g., "Oil, Lubricating (Item 19, Appendix C)."

b. Column (2) - Level. This column identifies the lowest level of maintenance that requires the item.

c. Column (3) - National Stock Number. This is the national stock number assigned to the item which you can use to requisition it.

d. Column (4) - Item Name, Description, Commercial and Government Entity Code (CAGEC), and Part Number. This provides the other information you need to identify the item.

e. Column (5) - Unit of Measure. This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
1	O	8040-00-273-8717	Adhesive (81348) MMM-A-121	pt
1.1	O	8040-01-284-3984	Adhesive (05972) 38050	ml
1.2	O		Adhesive (05972) 409	gm
2	O		Adhesive (45152) 1586850	
2.1	O	8040-01-515-1050	Adhesive, Insulation (28112) 540	ml
2.2	O		Adhesive, Rubber/Gasket (28712) 1300-5	oz
2.3	O	8040-01-282-1332	Adhesive-Sealant, RTV 732 Clear Dow Corning (71984)	tu
3	O	8040-00-843-0802	Adhesive-Sealant, Silicone, RTV, General Purpose (MIL-A-46106A) (01139) 108	oz
4	O	5330-01-325-6993	Adhesive-Sealant (05972) 515	ml
5	O	8030-00-148-9833	Adhesive-Sealant (MIL-S-46163) (05972) 271	ml
6	O	8040-01-250-3969	Adhesive-Sealant (05972) 242	ml

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
7	O		Adhesive Spray (28112) 3M 62-4434-4935-0	
8	C		Antifreeze, Arctic Type (MIL-A-11755) (81349)	
		6850-00-243-1992	1 gal can	gl
		6850-00-174-1806	55 gal drum	gl
9	C		Antifreeze Extender Additive	gl
10	C	6850-00-181-7940	Antifreeze, Permanent, Glycol, Inhibited (MIL-A-46153) (81349)	gl
10.1	O		Biocide, Fuel Preservative (OU7J1) Biobar J.F.	
		6840-00-300-6373	1 quart	qt
		6840-01-173-6940	5 gallon	gl
11	O		Cement, CPVC Bonding (53472) 30757	
12	O		Cement, General Purpose, Synthetic Base (MIL-A-4003) (81349)	
13	C	7930-00-634-3935	Chips, Soap (81348) P-S-579	
13.1	O	6850-01-304-6632	Compound, Anticorrosion (MIL-S-8660)	
14	O	8030-00-597-5367	Compound, Antiseize, High Temperature (MIL-A-907) 2-1/2 lb can	lb
14.1	O		Compound, Corosion Preventive (45152) 65123BX	
15	O		Compound, Sealing, Pipe Thread (05972) 702350-X	
16	O	9150-00-223-4004	Grease, Anticorrosion (Molybdenum) (MIL-G-21164) (81349)	lb
17	C		Grease, Automotive and Artillery (GAA) (MIL-G-10924) (81349)	
		9150-00-065-0029	2-1/4 oz tube	oz
		9150-00-935-1017	14 oz cartridge	oz
		9150-00-190-0904	1 lb can	lb
		9150-00-190-0905	5 lb can	lb
		9150-00-190-0907	35 lb can	lb
17.1	O		Lubricant, Tire and Rim (96980) AA17	
		2640-00-256-5526	1 qt can	qt
		2640-00-256-5527	1 gal can	gl
		2640-00-256-5529	(5) 1 gal containers in carton	gl
18	O		Methyl Ethyl Ketone, TT-M-261 (MIL-T-27602)	
19	C		Oil, Fuel, Diesel, DF-1, Winter (VV-F-800) (81348)	
		9140-00-286-5286	Bulk	gl
		9140-00-286-5287	5 gal can	gl
		9140-00-286-5288	55 gal drum, 16 gage	gl
		9140-00-286-5289	55 gal drum, 18 gage	gl

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
20	C		Oil, Fuel, Diesel, DF-2, Regular (VV-F-800) (81348)	
		9140-00-286-5294	Bulk	gl
		9140-00-286-5295	5 gal can	gl
		9140-00-286-5296	55 gal drum, 16 gage	gl
		9140-00-286-5297	55 gal drum, 18 gage	gl
21	C		Oil, Lubricating Gear, GO 75 (MIL-L-2105C)	
		9150-01-035-5390	1 qt can	qt
		9150-01-035-5391	5 gal drum	gl
22	C		Oil, Lubricating Gear, GO 80/90 (MIL-L-2105C)	
		9150-01-035-5392	1 qt can	qt
		9150-01-035-5393	5 gal drum	gl
		9150-01-035-5394	55 gal drum	gl
23	O		Oil, Lubricating OEA ICE, Subzero (MIL-L-46167)	
		9150-00-402-4478	1 qt can	qt
		9150-00-402-2372	5 gal drum	gl
		9150-00-491-7197	55 gal drum, 16 gage	gl
24	C		Oil, Lubricating, OE/HDO 10 (MIL-L-2104)	
		9150-00-189-6727	1 qt can	qt
		9150-00-186-6668	5 gal drum	gl
			55 gal drum, 16 gage	gl
		9150-00-191-2772	55 gal drum, 18 gage	gl
25	C	9150-01-178-4725	Oil, Lubricating, OE/HDO 15/40 (MIL-L-2104)	
			1 qt can	qt
26	C		Oil, Lubricating, OE/HDO 30 (SAE 30) (MIL-L-2104)	
		9150-00-186-6681	1 qt can	qt
		9150-00-188-9858	5 gal drum	gl
		9150-00-265-9436	55 gal drum, 16 gage	gl
		9150-00-189-6729	55 gal drum, 18 gage	gl
27	C		Oil, Lubricating, OE/HDO 40 (MIL-L-2104)	
		9150-00-189-6730	1 qt can	qt
		9150-00-188-9862	5 gal drum	gl
		9150-00-405-2987	55 gal drum, 16 gage	gl
27.1	O		Paint, Acid Resistant, Black (MIL-C-450C)	gl

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
28	O	7920-00-205-1711	Rags, Wiping, Cotton and Cotton-Synthetic (A-A-531)	lb
29	O	8030-01-026-1538	Sealant, Hydraulic (05972) 569	oz
30	O		Silicone Spray	
31	C		Cleaning Compound, Solvent (MIL-PRF 680)	
		6850-01-474-2319	1 gal (Type II)	gl
		6850-01-474-2318	1 gal (Type III)	gl
32	O	8135-00-178-9200	Tags, Identification (MIL-T-12755) pk/1000	mx
32.1	O		Tape, Adhesive (28112) 969	yd
33	O	5970-00-644-3167	Tape, Insulation, Electrical (MIL-T-50886)	ft
34	O	5975-01-273-8133	Ties, Cable, Plastic (96906) MS3367	hd
35	O		Ties, Cable, Plastic (5S327) TY29MX	hd

APPENDIX D
ILLUSTRATED LIST OF MANUFACTURED ITEMS

Section I. INTRODUCTION

This appendix includes complete instructions for making items authorized to be manufactured or fabricated at the unit maintenance level.

A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers fabrication criteria.

All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

Section II. MANUFACTURED ITEMS PART NUMBER INDEX

PART NUMBER	DESCRIPTION	FIGURE NO.
104190B-17	CHAIN AIR HORN	D-2
109972A13U	HOSE ASSEMBLY	D-4
115411AW-10	CABLE ASSEMBLY	D-1
120025A-120	SLEEVE, PROTECTIVE	D-15
124623A-52	STRAP, LINER	D-16
125865A-172	SEAL, NONMETALLIC	D-12
1342FX-16	CHAIN	D-2
1342FX-6	CHAIN, WELDLESS	D-2
1342FX-8	CHAIN	D-2
1343990-2	INSULATION, SLEEVING	D-7
1371120-150	SEAL,NONMETALLIC	D-11
1467160-6	QUICKEDGE MOLDING	D-8
1467160-8	QUICKEDGE MOLDING	D-8
1467160-9	QUICKEDGE MOLDING	D-8
1467160-AR	MOLDING, QUICKEDGE	D-8
1467170-15	QUICKEDGE MOLDING	D-8
1467170-AR	QUICKEDGE MOLDING	D-8
1530030-12	HEATSHRINK	D-7
1530040-12	HEATSHRINK	D-7
1533100-2	WIRE ROPE	D-14
1605160-12	TUBING, NYLON	D-6
1605160-14	TUBING, NYLON	D-6
1605160-143	TUBING, NYLON	D-6
1605160-15	TUBING, NYLON	D-6
1605160-153	TUBING, NYLON	D-6
1605160-18	TUBING, NYLON	D-6
1605160-187	TUBING, NYLON	D-6
1605160-20	TUBING, NYLON	D-6
1605160-27	TUBING, NYLON	D-6
1605160-38	TUBING, NYLON	D-6

Section II. MANUFACTURED ITEMS PART NUMBER INDEX (CONT)

PART NUMBER	DESCRIPTION	FIGURE NO.
1605160-44	TUBING, NYLON	D-6
1605160-46	TUBING, NYLON	D-6
1605160-62	TUBING, NYLON	D-6
1605160-7	TUBING, NYLON	D-6
1605160-76	TUBING, NYLON	D-6
1605160-83	TUBING, NYLON	D-6
1605170-42	TUBING, NYLON	D-6
1605260-43	TUBING, NYLON	D-6
1605270-10	TUBING, NYLON	D-6
1605270-114	TUBING, NYLON	D-6
1605270-14	TUBING, NYLON	D-6
1605270-25	TUBING, NYLON	D-6
1605270-44	TUBING, NYLON	D-6
1605270-47	TUBING, NYLON	D-6
1605270-50	TUBING, NYLON	D-6
1605270-86	TUBING, NYLON	D-6
1605300-10	TUBING, NYLON	D-6
1605300-12	TUBING, NYLON	D-6
1605300-130	TUBING, NYLON	D-6
1605300-137	TUBING, NYLON	D-6
1605300-41	TUBING, NYLON	D-6
1605300-46	TUBING, NYLON	D-6
1605300-48	TUBING, NYLON	D-6
1656490-107	TUBING, NYLON	D-6
1656490-160	TUBING, NYLON	D-6
1656490-22	TUBING, NYLON	D-6
1656490-63	TUBING, NYLON	D-6
1656490-67	TUBING, NYLON	D-6
1656490-75	TUBING, NYLON	D-6
1656500-64	TUBING, NYLON	D-6
1656500-75	TUBING, NYLON	D-6
1656500-87	TUBING, NYLON	D-6
1704950-1	HEATSHRINK	D-7
1715900-1	HEATSHRINK	D-7
1760120U104	HOSE ASSEMBLY	D-4
1802060-110	HOSE, EXHAUST	D-5
1805610W-14	WIRE ASSY	D-3
1805610W-18	WIRE ASSY	D-3
1805620W-12	WIRE ASSY	D-3
1805630W-122	WIRE ASSY	D-3
1805640W-18	WIRE ASSY	D-3
1805650W-110	WIRE ASSY	D-3
1805690-96	GASKET, DOOR	D-12
1805700-43	GASKET, DOOR	D-12
1806450W-60	WIRE ASSY	D-3
1870470W-27	WIRE ASSY	D-3
1870480W-6	WIRE ASSY	D-3
1870480W-8	WIRE ASSY	D-3
1870490W-10	WIRE ASSY	D-3
1870490W-15	WIRE ASSY	D-3

Section II. MANUFACTURED ITEMS PART NUMBER INDEX (CONT)

PART NUMBER	DESCRIPTION	FIGURE NO.
1870490W-5	WIRE ASSY	D-3
1870540W-8	WIRE ASSY	D-3
1890560-115	SEAL,WINDOW	D-11
1890570-115	STRIP, LOCKING	D-11
1896010-16	HOSE, SILICONE	D-5
1901280-3	TUBING, CPVC	D-6
1901280-12	TUBING, CPVC	D-6
1901280-17	TUBING, CPVC	D-6
1901280-4	TUBING, CPVC	D-6
1901280-5	TUBING, CPVC	D-6
1901280-6	TUBING, CPVC	D-6
1901280-83	TUBING, CPVC	D-6
1901280-9	TUBING, CPVC	D-6
1901470W-64	WIRE ASSY	D-3
1902220-24	CHAIN	D-2
1904710U-28	CHAIN, SAFETY	D-2
1908330W-32	WIRE ASSEMBLY	D-3
1921850-6	FOAM	D-10
1921860-8	FOAM	D-10
1924500-21	STRIP, WEAR RESIST	D-13
1924950-25	STRIP, WEAR RESIST	D-13
2001310-20	HOSE ASSEMBLY	D-4
2012500-28	HOSE ASSEMBLY	D-4
2012520-13	HOSE ASSEMBLY	D-4
2012540-20	HOSE ASSEMBLY	D-4
2012560-28	HOSE ASSEMBLY	D-4
2012600-25	HOSE ASSEMBLY NO. 8	D-4
2012630-50	HOSE ASSY	D-4
2012640-12	HOSE ASSEMBLY	D-4
2012650-13	HOSE ASSY	D-4
2012660-5	HOSE ASSY	D-4
2012670-6	HOSE ASSEMBLY	D-4
2012680-8	HOSE ASSEMBLY	D-4
2012690-23	HOSE ASSEMBLY	D-4
2012710-96	HOSE ASSY	D-4
2012720-116	HOSE ASSEMBLY LOW P	D-4
2012730-24	HOSE ASSEMBLY	D-4
2012740-74	HOSE ASSEMBLY	D-4
2012750-212	HOSE ASSEMBLY	D-4
2012760-182	HOSE ASSEMBLY	D-4
2012770-274	HOSE ASSEMBLY	D-4
2012790-120	HOSE ASSEMBLY	D-4
2012800-38	HOSE ASSEMBLY	D-4
2012810-78	HOSE ASSEMBLY	D-4
2012820-18	HOSE ASSEMBLY	D-4
2012830-88	HOSE ASSEMBLY	D-4
2012840-108	HOSE ASSEMBLY	D-4
2012850-15	HOSE ASSEMBLY	D-4

Section II. MANUFACTURED ITEMS PART NUMBER INDEX (CONT)

PART NUMBER	DESCRIPTION	FIGURE NO.
2012860-32	HOSE ASSEMBLY	D-4
2012880-35	HOSE ASSEMBLY	D-4
2012890-25	HOSE ASSEMBLY	D-4
2012900-42	HOSE ASSEMBLY	D-4
2012910-14	HOSE ASSEMBLY	D-4
2012920-49	HOSE ASSEMBLY	D-4
2013250-30	HOSE ASSEMBLY	D-4
2013270-19	HOSE ASSEMBLY	D-4
2013280-24	HOSE ASSEMBLY	D-4
2013300-39	HOSE ASSEMBLY	D-4
2013310-77	HOSE ASSEMBLY	D-4
2013320-32	HOSE ASSEMBLY	D-4
2013340-38	HOSE ASSEMBLY	D-4
2013350-22	HOSE ASSEMBLY	D-4
2013360-33	HOSE ASSEMBLY	D-4
2013370-77	HOSE ASSEMBLY	D-4
2013380-75	HOSE ASSEMBLY	D-4
2013390-24	HOSE ASSEMBLY	D-4
2013400-23	HOSE ASSEMBLY	D-4
2013410-110	HOSE ASSEMBLY	D-4
2013420-57	HOSE ASSEMBLY	D-4
2013430-7	HOSE ASSEMBLY	D-4
2013440-16	HOSE ASSEMBLY	D-4
2013450-60	HOSE ASSEMBLY	D-4
2013470-50	HOSE ASSEMBLY	D-4
2013480-20	HOSE ASSEMBLY	D-4
2013500-41	HOSE ASSEMBLY	D-4
2013510-30	HOSE ASSEMBLY	D-4
2013520-40	HOSE ASSEMBLY	D-4
2013530-23	HOSE ASSEMBLY	D-4
2013540-60	HOSE ASSEMBLY	D-4
2013550-13	HOSE ASSEMBLY	D-4
2013560-38	HOSE ASSEMBLY	D-4
2013580-22	HOSE ASSEMBLY	D-4
2013590-55	HOSE ASSEMBLY	D-4
2013610-92	HOSE ASSEMBLY	D-4
2013630-28	HOSE ASSEMBLY	D-4
2013640-21	HOSE ASSEMBLY	D-4
2013650-16	HOSE ASSEMBLY	D-4
2013660-86	HOSE ASSEMBLY	D-4
2013670-66	HOSE ASSEMBLY	D-4
2013680-10	HOSE ASSEMBLY	D-4
2013690-48	HOSE ASSEMBLY	D-4
2018180-128	HOSE ASSEMBLY	D-4
2080810-18	DUCTING, FLEXIBLE	D-23
2BH944	EYE, LIFTING	D-21
23319FX-10	TUBING, NYLON	D-6
23319FX-108	TUBING, NYLON	D-6
23319FX-117	TUBING, NYLON	D-6
23319FX-12	TUBING, NYLON	D-6

Section II. MANUFACTURED ITEMS PART NUMBER INDEX (CONT)

PART NUMBER	DESCRIPTION	FIGURE NO.
23319FX-123	TUBING, NYLON	D-6
23319FX-131	TUBING, NYLON	D-6
23319FX-14	TUBING, NYLON	D-6
23319FX-15	TUBING, NYLON	D-6
23319FX-157	TUBING, NONMETALLIC	D-6
23319FX-170	TUBING, NYLON	D-6
23319FX-18	TUBING, NYLON	D-6
23319FX-20	TUBING, NYLON	D-6
23319FX-28	TUBING, NYLON	D-6
23319FX-4	TUBING, NYLON	D-6
23319FX-5	TUBING, NYLON	D-6
23319FX-6	TUBING, NYLON	D-6
23319FX-72	TUBING, NYLON	D-6
23319FX-8	TUBING, NYLON	D-6
23319FX-80	TUBING, NYLON	D-6
23319FX-81	TUBING, NYLON	D-6
23319FX-92	TUBING, NYLON	D-6
23319FX2	TUBING, NYLON	D-6
23319FX36	TUBING, NYLON	D-6
23319FX56	TUBING, NYLON	D-6
23319FX64	TUBING, NYLON	D-6
23323FX-111	TUBING, NYLON	D-6
23323FX-12	TUBING, NYLON	D-6
23323FX-128	TUBING, NYLON	D-6
23323FX-14	TUBING, NYLON	D-6
23323FX-15	TUBING, NYLON	D-6
23323FX-156	TUBING, NYLON	D-6
23323FX-157	TUBING, NYLON	D-6
23323FX-160	TUBING, NYLON	D-6
23323FX-19	TUBING, NYLON	D-6
2008530-26	CABLE, DRAIN VALVE	D-6.1
2008530-32	CABLE, DRAIN VALVE	D-6.1
2008530-40	CABLE, DRAIN VALVE	D-6.1
2008530-45	CABLE, DRAIN VALVE	D-6.1
2008530-53	CABLE, DRAIN VALVE	D-6.1
23323FX-195	TUBING, NYLON	D-6
23323FX-20	TUBING, NYLON	D-6
23323FX-40	TUBING, NYLON	D-6
23323FX-44	TUBING, NYLON	D-6
23323FX-47	TUBING, NYLON	D-6
23323FX-54	TUBING, NYLON	D-6
23323FX-60	TUBING, NYLON	D-6
23323FX-28	TUBING, NYLON	D-6
23323FX-74	TUBING, NYLON	D-6
23323FX-8	TUBING, NYLON	D-6
23323FX-89	TUBING, NYLON	D-6
23323FX-9	TUBING, NYLON	D-6

Section II. MANUFACTURED ITEMS PART NUMBER INDEX (CONT)

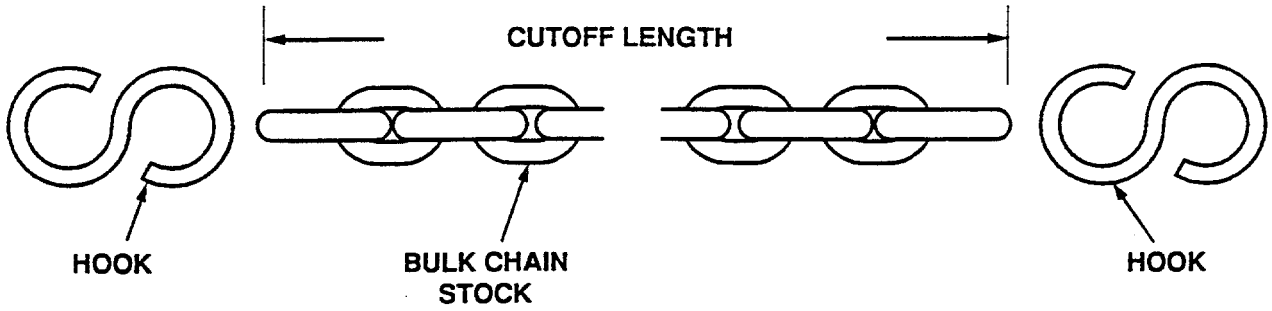
PART NUMBER	DESCRIPTION	FIGURE NO.
23323FX-25	TUBING, NYLON	D-6
23323FX-37	TUBING, NYLON	D-6
23323FX-93	TUBING, NYLON	D-6
26927AX-26	WEATHERSTRIP	D-18
26947BX-3	MOLDING, QUICKEDGE	D-8
26947BX-4	MOLDING, QUICKEDGE	D-8
26947BX-5	MOLDING, QUICKEDGE	D-8
26947BX-9	MOLDING, QUICKEDGE	D-8
26947BX-10	MOLDING, QUICKEDGE	D-8
26987AX-136	STRIP, RUBBER	D-8
27022AX-28	GASKET, STRIP	D-9
27022AX-76	GASKET, STRIP	D-9
2794HX-10	HOSE	D-5
2794HX-7	HOSE	D-5
31271AX-11	TUBING, NYLON	D-6
31271AX-16	TUBING, NYLON	D-6
31271AX-37	TUBING, NYLON	D-6
31271AX-43	TUBING, NYLON	D-6
31271AX-48	TUBING, NYLON	D-6
31271AX-71	TUBING, NYLON	D-6
31271AX-76	TUBING, NYLON	D-6
31271AX-85	TUBING, NYLON	D-6
31271AX-86	TUBING, NYLON	D-6
3152179	FELT	D-17
32850AX-17	HOSE, AIR DUCT	D-5
32850AX-27	HOSE, AIR DUCT	D-5
32850AX-48	HOSE, AIR DUCT	D-5
32850AX-57	HOSE, AIR DUCT	D-5
32850AX-60	HOSE, AIR DUCT	D-5
32850AX-72	HOSE, AIR DUCT	D-5
350700-36	NEOPRENE	D-10
351100-1	NEOPRENE	D-10
351744-18	NEOPRENE	D-10
351758-24	FOAM, URETHANE	D-10
351759-102	FOAM, URETHANE	D-10
351900-18	NEOPRENE	D-10
352300-20	FOAM, URETHANE	D-10
352500-14	FOAM, URETHANE	D-10
352500-34	URE.P.S..25X.25	D-10
352700-7	FOAM, URETHANE	D-10
352700-9	FOAM, URETHANE	D-10
352700-27	FOAM, URETHANE	D-10
352700-37	FOAM, URETHANE	D-10
352700-96	FOAM, URETHANE	D-10
354621-30	FOAM, URETHANE	D-10
3TC-100	FELT	D-17
40AW168-21	TUBING, NONMETALLIC	D-6
40AW168-36	TUBING, NONMETALLIC	D-6
40AW168-45	TUBING, NONMETALLIC	D-6
40AW168-50	TUBING, NONMETALLIC	D-6

Section II. MANUFACTURED ITEMS PART NUMBER INDEX (CONT)

PART NUMBER	DESCRIPTION	FIGURE NO.
40AW168-7	TUBING, NONMETALLIC	D-6
42925AX-5	PAD, RUBBER	D-9
47213AX-22	TUBING, NYLON	D-6
47213AX-104	TUBING, NYLON	D-6
47213AX-26	TUBING, NYLON	D-6
47213AX-53	TUBING, NYLON	D-6
47213AX-7	TUBING, NYLON	D-6
47213AX-89	TUBING, NYLON	D-6
4TC-23	RUBBER, STRIP	D-9
59747AX-55	SEAL, NONMETALLIC	D-11
59747AX-61	SEAL, NONMETALLIC	D-11
60580AX120	HOSE	D-5
65058AX-24	HOSE, NONMETALLIC	D-5
69851AX-29	HOSE, NONMETALLIC	D-5
69851AX-40	HOSE, NONMETALLIC	D-5
69851AX-65	HOSE, NONMETALLIC	D-5
69851AX39	HOSE, NONMETALLIC	D-5
69851AX40	HOSE,HEATER	D-5
69940AX-111	HOSE	D-5
69940AX-16	HOSE, HOT WATER	D-5
69940AX-22	HOSE, NONMETALLIC	D-5
69940AX-30	HOSE	D-5
69940AX-81	HOSE	D-5
69940AX40	HOSE, HOT WATER	D-5
9TC-12	RUBBER STRIP	D-9
9TC-19	RUBBER STRIP	D-9
9TC-26	RUBBER STRIP	D-9
FG1087KKK0153	HOSE ASSY	D-4
(NONE)	BLOCKS, WOODEN	D-19
(NONE)	WIRE, JUMPER	D-20

All data on page D-8, including Figure D-1 and Table D-1, deleted.

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



(1) Fabricate from bulk chain stock listed in table D-2.

(2) Using hacksaw or suitable cutting device, cut chain to length required in table D-2.

(3) For chains with hooks do the following steps:

(d) Place hook through end link in chain.

(e) Using machinist's vise, close end of hook to retain chain.

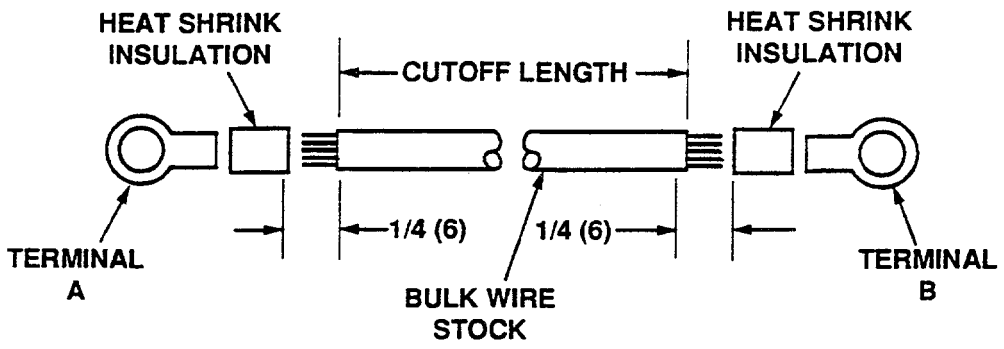
(f) Repeat steps (a) and (b) for other end of chain.

Figure D-2. Chains

Table D-2. Chains

CHAIN PART NO.	BULK CHAIN PART NO.	CUTOFF LENGTH IN. (CM)	HOOK PART NO.
104190B-17	75014-327	17 (43)	NONE
1342FX-16	75014-327	16 (41)	NONE
1342FX-6	75014-327	6 (15)	NONE
1342FX-8	75014-327	8 (20)	NONE
1902220-24	75012-327	24 (61)	NONE
1904710U-28	70105-32	28 (71)	9427K10

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



(1) Fabricate from bulk wire stock listed in table D-3.

(2) Using wire cutters, cut wire to length required in table D-3.

(3) Strip ends of wire 1/4 in. (6 mm).

(4) Slide heatshrink insulation sleeving listed in table D-3 over wire.

(5) Crimp terminals listed in table D-3 onto ends of wire.

(6) Slide heatshrink insulation over crimped area and shrink to fit using heat gun.

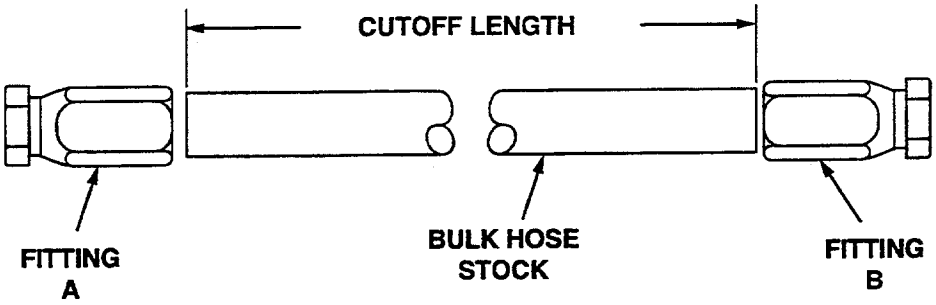
(7) Dimensions in figure D-3 are in inches (millimeters).

Figure D-3. Wire Assemblies

Table D-3. Wire Assemblies

WIRE ASSY PART NO.	BULK WIRE PART NO.	CUTOFF LENGTH IN. (CM)	TERMINAL A	TERMINAL B	HEATSHRINK INSULATION
1805610W-14	10516FX	14 (36)	MS20659-132	33469	1530040-12
1805610W-18	10516FX	18 (46)	MS20659-132	33469	1530040-12
1805620W-12	10516FX	12 (30)	33469	MS20659-145	1530040-12
1805630W-122	10516FX	122 (310)	33469	MS25036-125	1530040-12
1805640W-18	10516FX	18 (46)	MS20659-132	MS20659-145	1530030-12
1805650W-110	1987FX	110 (279)	MS20659-108	MS20659-108	1343990-2
1806450W-60	2264FX	60 (152)	MS20659-131	MS20659-131	1343990-2
1870470W-27	4127FX	27 (69)	MS20659-106	32994	1715900-1
1870480W-6	1245FX	6 (15)	MS20659-106	MS20659-106	1715900-1
1870480W-8	1245FX	8 (20)	MS20659-106	MS20659-106	1715900-1
1870490W-10	1244FX	10 (25)	34125	34123	1704950-1
1870490W-15	1244FX	15 (38)	34123	34125	1704950-1
1870490W-5	1244FX	5 (13)	34123	34125	1704950-1
1870540W-8	1927FX	8 (20)	34123	34123	1704950-1
1901470W-64	10516FX	64 (163)	MS20659-132	MS25036-125	1530030-12
1908330W-32	1244FX	32 (81)	C-50-501	C-50-501	NONE

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



(1) Fabricate from bulk hose stock listed in table D-4.

(2) Using fine-toothed hacksaw, cut hose to length required in table D-4.

(2.1) Clean debris from inside hose and around hose end.

(3) Place fitting A in vise and screw hose counterclockwise until hose bottoms in fitting. Back off one-quarter turn.

(4) Place fitting B in vise and screw hose counterclockwise until hose bottoms in fitting. Back off one-quarter turn.

Figure D-4. Hose Assemblies

Table D-4. Hose Assemblies

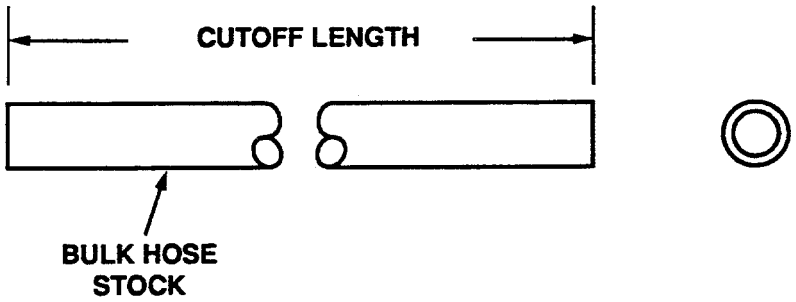
HOSE ASSY PART NO.	BULK HOSE PART NO.	CUTOFF LENGTH IN. (CM)	FITTING A	FITTING B
FG1087KKK0153	2807-12	12 (30)	FITTING 63-190600-12	FITTING 63-190600-12
109972A13U	FC300-04	13 (33)	FITTING 411-4S	FITTING 411-4S
1760120U104	FC350-08	104 (264)	FITTING 190235-8S	FITTING 190111-8S
2001310-20	FC300-04	20 (51)	ADAPTER 411-4S	ADAPTER 411-4S
2012500-28	FC300-04	28 (71)	FITTING 411-4S	FITTING 411-4S
2012520-13	FC300-04	13 (33)	FITTING 411-4S	FITTING 190296-4S
2012540-20	FC300-04	20 (51)	FITTING 411-6S	ELBOW 190261-6S
2012560-28	FC350-08	28 (71)	ADAPTER 411-8S	FITTING 190297-8S
2012600-25	FC350-08	25 (64)	ADAPTER 411-8S	FITTING 190297-8S
2012630-50	FC350-16	50 (127)	ELBOW 190261-16S	ADAPTER 411-16S
2012640-12	FC300-06	12 (30)	ADAPTER 412-4-6B	ELBOW 190261-6S
2012650-13	FC350-04	13 (33)	FITTING 401-4B	FITTING 401-4B
2012660-5	FC350-04	5 (13)	FITTING 401-4B	FITTING 401-4B
2012670-6	FC350-04	6 (15)	ADAPTER 401-4S	ELBOW 190296-4S
2012680-8	FC350-04	8 (20)	ELBOW 190296-4S	ADAPTER 401-4S
2012690-23	FC350-10	23 (58)	ADAPTER 411-10S	ELBOW 190297-10S
2012710-96	11512FX	96 (244)	ELBOW 190261-20S	NONE
2012720-116	FC350-10	116 (295)	ADAPTER 401-10B	ADAPTER 401-10B
2012730-24	FC350-10	24 (61)	ADAPTER 401-10B	ADAPTER 401-10B
2012740-74	FC350-12	74 (188)	ADAPTER 401-12B	ADAPTER 401-12B
2012750-212	FC350-12	212 (538)	ADAPTER 411-12S	ADAPTER 411-12S
2012760-182	FC350-12	182 (462)	ADAPTER 411-12S	ADAPTER 411-12S
2012770-274	FC350-12	247 (627)	ADAPTER 411-12S	ADAPTER 411-12S
2012790-120	FC350-04	120 (305)	ADAPTER 401-4S	ADAPTER 401-4S
2012800-38	FC350-04	10 (25)	ADAPTER 401-4S	ADAPTER 401-4S

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)

Table D-4. Hose Assemblies (Cont)

HOSE ASSY PART NO.	BULK HOSE PART NO.	CUTOFF LENGTH IN. (CM)	FITTING A	FITTING B
2012820-18	FC350-04	18 (46)	ADAPTER 401-4S	ADAPTER 401-4S
2012810-78	FC350-04	78 (198)	ADAPTER 401-4S	ADAPTER 401-4S
2012830-88	FC350-16	88 (224)	ADAPTER 411-16S	ADAPTER 411-16S
2012840-108	FC350-16	108 (274)	ADAPTER 411-16S	ADAPTER 411-16S
2012850-15	FC350-06	15 (38)	FITTING 411-6S	FITTING 411-6S
2012860-32	FC350-06	32 (81)	FITTING 411-6S	FITTING 411-6S
2013270-19	FC350-10	19 (48)	ADAPTER 411-10S	ADAPTER 411-10S
2012880-35	FC350-06	35 (89)	FITTING 411-6S	FITTING 411-6S
2012890-25	FC350-06	25 (64)	FITTING 411-6S	FITTING 411-6S
2012900-42	FC350-06	42 (107)	FITTING 411-6S	FITTING 411-6S
2012910-14	FC350-06	14 (36)	FITTING 411-6S	FITTING 411-6S
2012920-49	FC350-06	49 (124)	FITTING 411-6S	FITTING 411-6S
2013250-30	FC350-16	16 (41)	ELBOW 190261-16S	ADAPTER 411-16S
2013280-24	FC350-10	24 (61)	ADAPTER 411-10S	ADAPTER 411-10S
2013300-39	FC350-10	39 (99)	ADAPTER 411-10S	ADAPTER 411-10S
2013310-77	FC350-10	77 (196)	ADAPTER 411-10S	ADAPTER 411-10S
2013320-32	FC350-10	32 (81)	ADAPTER 411-10S	ADAPTER 411-10S
2013340-38	FC350-10	38 (97)	ADAPTER 411-10S	ADAPTER 411-10S
2013350-22	1503-5	22 (56)	ADAPTER MS24587-5	ADAPTER MS24587-5
2013360-33	FC350-04	33 (84)	ADAPTER 411-4S	ADAPTER 411-4S
2013370-77	FC350-04	77 (196)	ADAPTER 411-4S	ADAPTER 411-4S
2013380-75	FC350-04	75 (191)	ADAPTER 411-4S	ADAPTER 411-4S
2013390-24	FC350-04	24 (61)	FITTING 411-4S	FITTING 411-4S
2013400-23	FC350-06	23 (58)	ELBOW 190261-6S	ADAPTER 411-6S
2013410-110	FC350-04	110 (279)	ELBOW 190295-4S	FITTING 411-4S
2013420-57	FC350-04	57 (145)	FITTING 190296S-4	FITTING 411-4S
2013430-7	FC350-04	7 (18)	ADAPTER 411-4S	ELBOW 190296-4S
2013440-16	FC350-10	16 (41)	ADAPTER 411-10S	ELBOW 190296-10S
2013450-60	FC350-10	60 (152)	ADAPTER 411-10S	ADAPTER 411-10S
2013470-50	FC350-10	50 (127)	ADAPTER 411-10S	ADAPTER 411-10S
2013480-20	FC350-10	20 (51)	ADAPTER 411-10S	ELBOW 190296-10S
2013500-41	FC350-10	41 (104)	ADAPTER 411-10S	ADAPTER 411-10S
2013510-30	FC350-10	30 (76)	ADAPTER 411-10S	ADAPTER 411-10S
2013520-40	FC350-08	40 (102)	ADAPTER 411-8S	ADAPTER 411-8S
2013530-23	FC350-08	23 (58)	ADAPTER 411-8S	ADAPTER 411-8S
2013540-60	FC350-08	60 (152)	ADAPTER 411-8S	ADAPTER 411-8S
2013550-13	FC350-08	13 (33)	ADAPTER 411-8S	ADAPTER 411-8S
2013560-38	FC350-08	38 (97)	ADAPTER 411-8S	ADAPTER 411-8S
2013580-22	FC350-08	22 (56)	ADAPTER 411-8S	ADAPTER 411-8S
2013590-55	FC350-08	55 (140)	ADAPTER 411-8S	ADAPTER 411-8S
2013610-92	FC350-08	92 (234)	ADAPTER 411-8S	ADAPTER 411-8S
2013630-28	FC350-08	28 (71)	ADAPTER 411-8S	ADAPTER 411-8S
2013640-21	FC350-08	21 (53)	ADAPTER 411-8S	ADAPTER 411-8S
2013650-16	FC350-08	16 (41)	ADAPTER 411-8S	ADAPTER 411-8S
2013660-86	FC350-08	86 (218)	ADAPTER 411-8S	ADAPTER 411-8S
2013670-66	FC350-06	66 (168)	ADAPTER 401-6B	ADAPTER 401-6B
2013680-10	FC350-06	10 (25)	ADAPTER 401-6B	ADAPTER 401-6B
2013690-48	FC350-06	48 (122)	ADAPTER 401-6B	ADAPTER 401-6B
2018180-128	FC350-12	128 (325)	ADAPTER 411-12S	ELBOW 190261-12S

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



(1) Fabricate from bulk hose stock listed in table D-5.

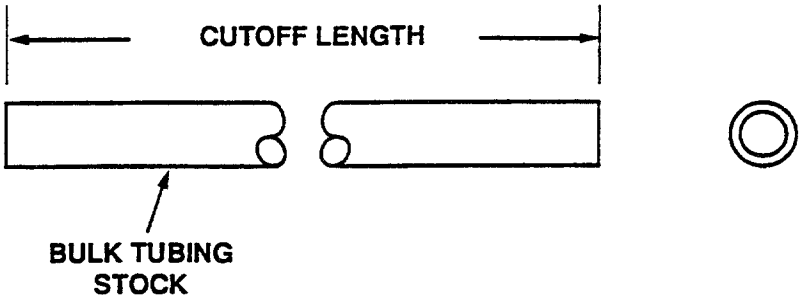
(2) Using fine-toothed hacksaw, cut hose to length required in table D-5.

Figure D-5. Hoses

Table D-5. Hoses

HOSE PART NO.	BULK HOSE PART NO.	CUTOFF LENGTH IN. (CM)
1802060-110	4663-4010	116 (295)
1896010-16	70-038X36	16 (41)
2794HX-10	300116	10 (25)
2794HX-7	300116	7 (18)
32850AX-17	32850AX	17 (43)
32850AX-27	32850AX	27 (69)
32850AX-48	32850AX	48 (122)
32850AX-57	32850AX	57 (145)
32850AX-60	32850AX	60 (152)
32850AX-72	32850AX	72 (183)
60580AX120	4004	120 (305)
65058AX-24	2575-4	24 (61)
69851AX-29	26241	29 (74)
69851AX-40	26241	40 (102)
69851AX-65	26241	65 (165)
69851AX39	26241	39 (99)
69851AX40	26241	40 (102)
69940AX-111	3230-0293	111 (282)
69940AX-16	3230-0293	16 (41)
69940AX-22	3230-0293	22 (56)
69940AX-30	3230-0293	30 (76)
69940AX-81	3230-0293	81 (206)
69940AX40	3230-0293	40 (102)

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



(1) Fabricate from bulk stock listed in table D-6.

(2) Using fine-toothed hacksaw, cut tubing to length required in table D-6.

Figure D-6. Tubing

Table D-6. Tubing

TUBING PART NO.	BULK TUBING PART NO.	CUTOFF LENGTH IN. (CM)
1605160-12	PFT-6B-RED-500	12 (30)
1605160-14	PFT-6B-RED-500	14 (36)
1605160-143	PFT-6B-RED-500	143 (363)
1605160-15	PFT-6B-RED-500	15 (38)
1605160-153	PFT-6B-RED-500	153 (389)
1605160-18	PFT-6B-RED-500	18 (46)
1605160-187	PFT-6B-RED-500	187 (475)
1605160-20	PFT-6B-RED-500	20 (51)
1605160-27	PFT-6B-RED-500	27 (69)
1605160-38	PFT-6B-RED-500	38 (97)
1605160-44	PFT-6B-RED-500	44 (112)
1605160-46	PFT-6B-RED-500	46 (117)
1605160-62	PFT-6B-RED-500	62 (157)
1605160-7	PFT-6B-RED-500	7 (18)
1605160-76	PFT-6B-RED-500	76 (193)
1605160-83	PFT-6B-RED-500	83 (211)
1605170-42	PFT-4A-RED-100	42 (107)
1605260-43	PFT-4A-GRN-100	43 (109)
1605270-10	PFT-6B-GRN-500	10 (25)
1605270-112	PFT-6B-GRN-500	112 (284)
1605270-14	PFT-6B-GRN-500	14 (36)
1605270-25	PFT-6B-GRN-500	25 (64)
1605270-44	PFT-6B-GRN-500	44 (112)
1605270-47	PFT-6B-GRN-500	47 (119)
1605270-50	PFT-6B-GRN-500	50 (127)
1605270-86	PFT-6B-GRN-500	86 (218)
1605300-10	PFT-6B-YEL-500	10 (25)
1605300-12	PFT-6B-YEL-500	12 (30)
1605300-130	PFT-6B-YEL-500	130 (330)

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)

Table D-6. Tubing (Cont)

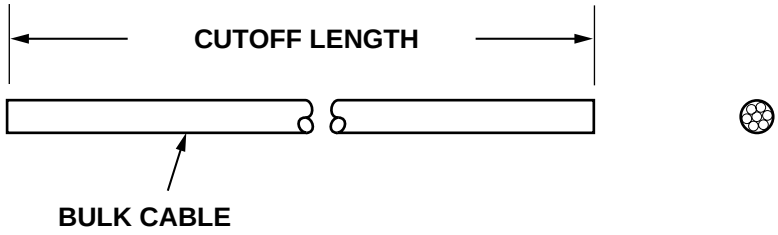
TUBING PART NO.	BULK TUBING PART NO.	CUTOFF LENGTH IN. (CM)
1605300-137	PFT-6B-YEL-500	137 (348)
1605300-41	PFT-6B-YEL-500	41 (104)
1605300-46	PFT-6B-YEL-500	46 (117)
1605300-48	PFT-6B-YEL-500	48 (122)
1656490-107	PFT-10B-RED-250	107 (272)
1656490-160	PFT-10B-RED-250	160 (406)
1656490-22	PFT-10B-RED-250	22 (56)
1656490-63	PFT-10B-RED-250	63 (160)
1656490-67	PFT-10B-RED-250	67 (170)
1656490-75	PFT-10B-RED-250	75 (191)
1656500-64	PFT-10B-GRN-250	64 (163)
1656500-75	PFT-10B-GRN-250	75 (191)
1656500-87	PFT-10B-GRN-250	87 (221)
1901280-3	50146	2.75 (7)
1901280-12	50146	12.25 (31.1)
1901280-17	50146	16.75 (42.5)
1901280-4	50146	4 (10.2)
1901280-5	50146	4.75 (12.1)
1901280-6	50146	6 (15.2)
1901280-83	50146	82.75 (210.2)
1901280-9	50146	9.5 (24.1)
23319FX-10	920069-1	10 (25)
23319FX-108	920069-1	108 (274)
23319FX-117	920069-1	117 (297)
23319FX-12	920069-1	12 (30)
23319FX-123	920069-1	123 (312)
23319FX-131	920069-1	131 (333)
23319FX-14	920069-1	14 (36)
23319FX-15	920069-1	15 (38)
23319FX-157	920069-1	157 (399)
23319FX-168	920069-1	168 (427)
23319FX-18	920069-1	18 (46)
23319FX-20	920069-1	20 (51)
23319FX-28	920069-1	28 (71)
23319FX-4	920069-1	4 (10)
23319FX-5	920069-1	5 (13)
23319FX-6	920069-1	6 (15)
23319FX-72	920069-1	72 (183)
23319FX-8	920069-1	8 (20)
23319FX-80	920069-1	80 (203)
23319FX-81	920069-1	81 (206)
23319FX-92	920069-1	92 (234)
23319FX2	920069-1	2 (5)
23319FX36	920069-1	36 (91)
23319FX56	920069-1	56 (142)
23319FX64	920069-1	64 (163)
23323FX-111	920070-1	111 (282)
23323FX-12	920070-1	12 (30)
23323FX-128	920070-1	128 (325)

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)

Table D-6. Tubing (Cont)

TUBING PART NO.	BULK TUBING PART NO.	CUTOFF LENGTH IN. (CM)
23323FX-14	920070-1	14 (36)
23323FX-15	920070-1	15 (38)
23323FX-156	920070-1	156 (396)
23323FX-157	920070-1	157 (399)
23323FX-160	920070-1	160 (406)
23323FX-19	920070-1	19 (48)
23323FX-195	920070-1	195 (495)
23323FX-20	920070-1	20 (51)
23323FX-25	920070-1	25 (64)
23323FX-37	920070-1	37 (94)
23323FX-40	920070-1	40 (102)
23323FX-44	920070-1	44 (112)
23323FX-47	920070-1	47 (119)
23323FX-54	920070-1	54 (137)
23323FX-60	920070-1	60 (152)
23323FX-65	920070-1	65 (165)
23323FX-74	920070-1	74 (188)
23323FX-8	920070-1	8 (20)
23323FX-89	920070-1	89 (226)
23323FX-9	920070-1	9 (23)
23323FX-90	920070-1	90 (229)
23323FX-93	920070-1	93 (236)
31271AX-11	C610-100	11 (28)
31271AX-16	C610-100	16 (41)
31271AX-37	C610-100	37 (94)
31271AX-43	C610-100	43 (109)
31271AX-48	C610-100	48 (122)
31271AX-71	C610-100	71 (180)
31271AX-76	C610-100	76 (193)
31271AX-85	C610-100	85 (216)
31271AX-86	C610-100	86 (218)
40AW168-21	W-22-L	21 (53)
40AW168-36	W-22-L	36 (91)
40AW168-45	W-22-L	45 (114)
40AW168-50	W-22-L	50 (127)
40AW168-7	W-22-L	7 (18)
47213AX-104	PFT-12B-BLK-250	104 (264)
47213AX-26	PFT-12B-BLK-250	26 (66)
47213AX-58	PFT-12B-BLK-250	58 (147)
47213AX-7	PFT-12B-BLK-250	7 (18)
47213AX-89	PFT-12B-BLK-250	89 (226)
47213AX-22	PFT-12B-BLK-250	22 (56)
47213AX-53	PFT-12B-BLK-250	53 (135)

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



(1) Fabricate from bulk cable stock listed in table D-6.1.

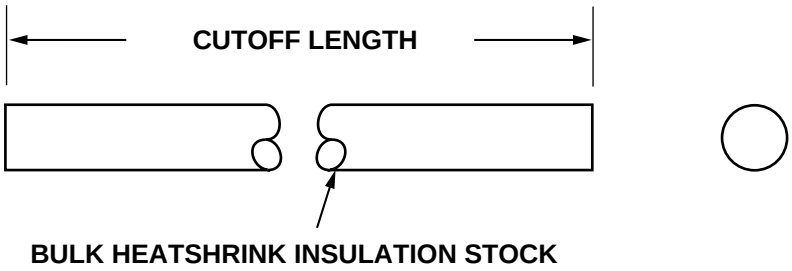
(2) Using suitable cutting tool, cut cable to length required in table D-6.1.

Figure D-6.1. Coated Cable

Table D-6.1. Coated Cable

CABLE PART NO.	BULK CABLE PART NO.	CUTOFF LENGTH IN. (CM)
2008530-26	3691T39	26 (66)
2008530-32	3691T39	32 (81)
2008530-40	3691T39	40 (102)
2008530-45	3691T39	45 (114)
2008530-53	3691T39	53 (135)

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



(1) Fabricate from bulk heatshrink insulation stock listed in table D-7.

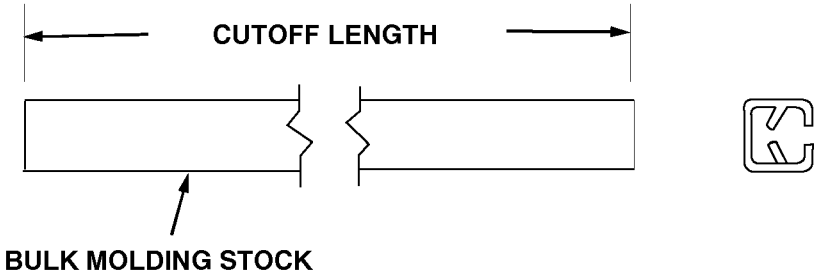
(2) Using wire cutters, cut insulation to length required in table D-7.

Figure D-7. Heatshrink Insulation Sleeving

Table D-7. Heatshrink Insulation Sleeving

HEATSHRINK INSULATION PART NO.	BULK INSULATION PART NO.	CUTOFF LENGTH IN. (CM)
1343990-2	53706	2 (51)
1530030-12	53711-5	12 (305)
1530040-12	54053-3	12 (305)
1704950-1	603313-4	1 (25)
1715900-1	603314-4	1 (25)

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



(1) Fabricate from bulk molding stock listed in table D-8.

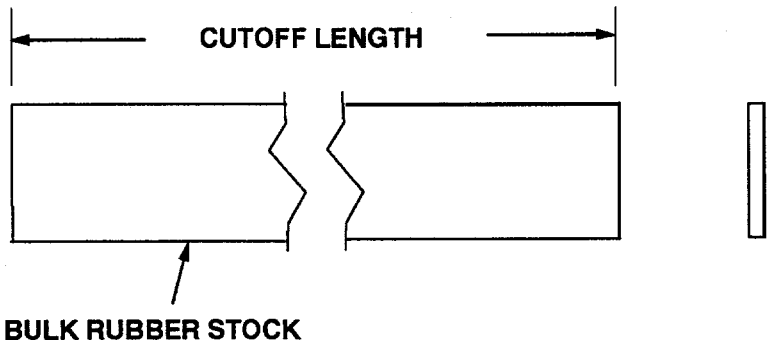
(2) Using suitable cutting tool, cut to length required in table D-8.

Figure D-8. Quickedge Molding

Table D-8. Quickedge Molding

MOLDING PART NO.	BULK MOLDING PART NO.	CUTOFF LENGTH IN. (CM)
1467160-6	75000343	6 (15)
1467160-8	75000343	8 (20)
1467160-9	75000343	9 (23)
1467160-AR	75000353	AS REQUIRED
1467170-15	75000349	15 (38)
1467170-AR	75000349	AS REQUIRED
26947BX-3	75000317	3 (8)
26947BX-4	75000317	4 (10)
26947BX-5	75000317	5 (13)
26947BX-9	75000317	9 (23)
26947BX-10	75000317	10 (25)

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



(1) Fabricate from bulk rubber stock listed in table D-9.

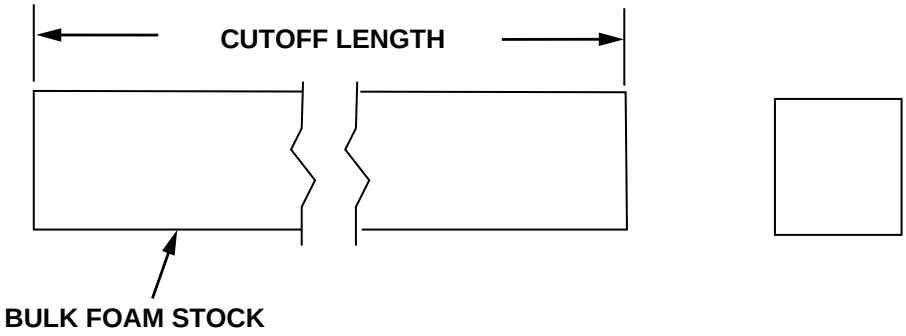
(2) Using suitable cutting tool, cut rubber to length required in table D-9.

Figure D-9. Rubber Strips

Table D-9. Rubber Strips

RUBBER STRIP PART NO.	BULK RUBBER PART NO.	CUTOFF LENGTH IN. (CM)
27022AX-28	R-422-N	28 (71)
27022AX-76	R-422-N	76 (193)
42925AX-5	42925AX	5 (13)
4TC-23	4TC	23 (58)
9TC-12	9TC	12 (30)
9TC-19	9TC	19 (48)
9TC-26	9TC	26 (66)

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



(1) Fabricate from bulk foam stock listed in table D-10.

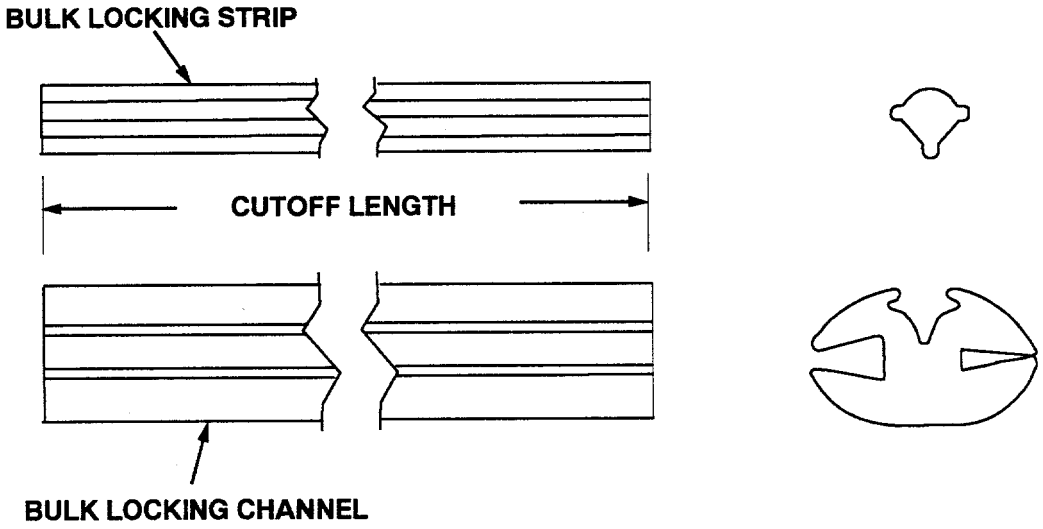
(2) Using suitable cutting tool, cut foam to length required in table D-10.

Figure D-10. Urethane and Neoprene Foam

Table D-10. Urethane and Neoprene Foam

FOAM PART NO.	BULK FOAM PART NO.	CUTOFF LENGTH IN. (CM)
1921850-6	MC5294	6 (15)
1921860-8	MC5294	8 (20)
350700-36	350700	36 (91)
351100-1	351100	1 (3)
351744-18	351744	18 (46)
351758-24	351758	24 (61)
351759-102	351759	102 (259)
351900-18	351900	18 (46)
352300-20	352300	20 (51)
352500-14	352500	14 (36)
352500-34	352500	34 (86)
352700-7	352700	7 (18)
352700-9	352700	9 (23)
352700-27	352700	27 (69)
352700-37	352700	37 (94)
352700-96	352700	96 (244)
354621-30	354621	30 (76)

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



(1) Fabricate from bulk locking channel/strip stock listed in table D-11.

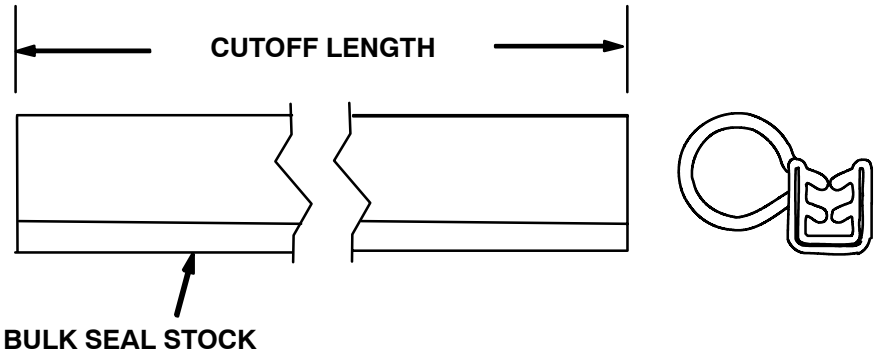
(2) Using suitable cutting tool, cut to length required in table D-11.

Figure D-11. Window Seals

Table D-11. Window Seals

WINDOW SEAL PART NO.	BULK LOCKING CHANNEL/STRIP PART NO.	CUTOFF LENGTH IN. (CM)
1371120-150	AS-987	150 (381)
1890560-115	1030-02	115 (292)
1890570-115	1030-05	115 (292)
59745AX-55	75000519	55 (140)
59747AX-55	AS-1035	55 (140)

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



(1) Fabricate from bulk door seal stock listed in table D-12.

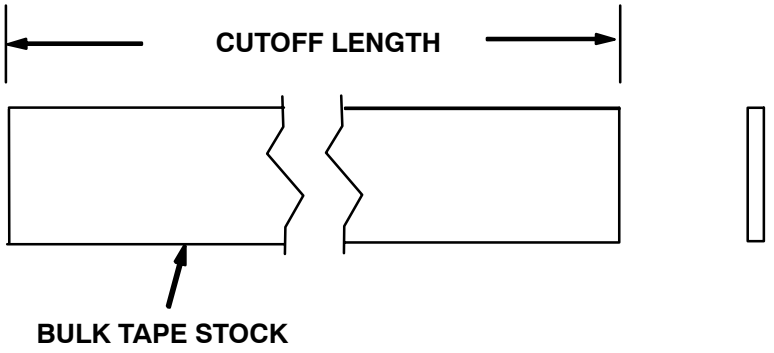
(2) Using suitable cutting tool, cut to length required in table D-12.

Figure D-12. Door Seals

Table D-12. Door Seals

DOOR SEAL PART NO.	BULK SEAL PART NO.	CUTOFF LENGTH IN. (CM)
125865A-172	75001366	172 (437)
1805690-96	0268	96 (244)
1805700-43	0268	43 (109)

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



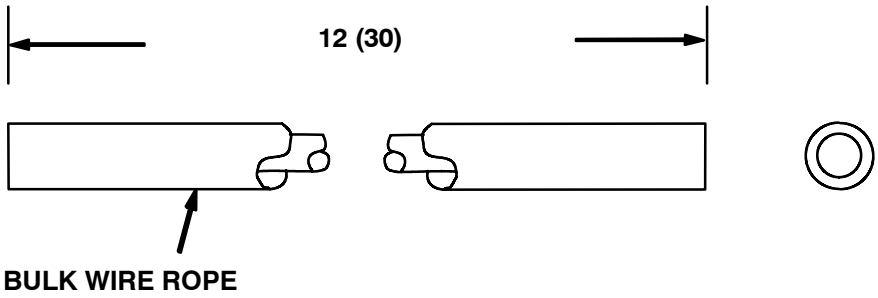
(1) Fabricate from bulk tape stock listed in table D-13.

(2) Using suitable cutting tool, cut tape to length required in table D-13.

Figure D-13. Wear Resistant Strips

Table D-13. Wear Resistant Strips

WEAR RESISTANT STRIP PART NO.	BULK TAPE PART NO.	CUTOFF LENGTH IN. (CM)
1924500-21	B*006	21 (533)
1924950-25	B*006	25 (635)



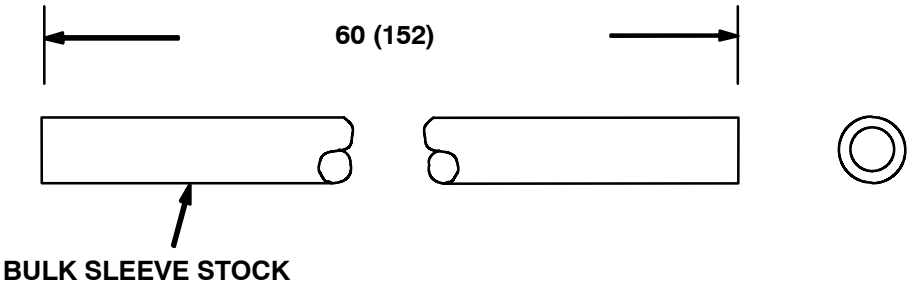
(1) Fabricate from bulk wire rope stock part number 1533100.

(2) Using wire cutters, cut to 12 in. (30 cm) long.

(3) Dimensions are in inches (centimeters).

Figure D-14. Wire Rope

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)

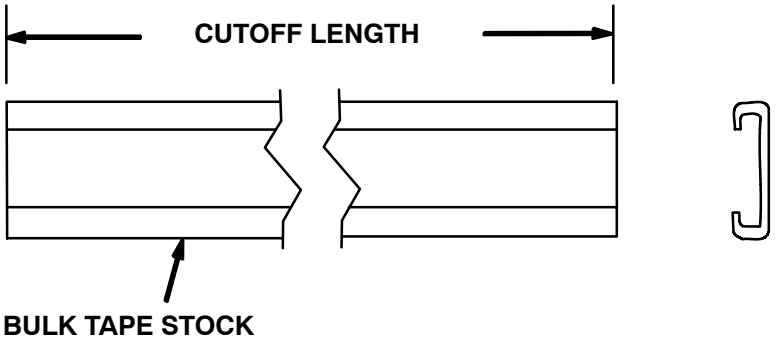


(1) Fabricate from bulk sleeve stock part number 6755001.

(2) Using suitable cutting tool, cut sleeve to 60 in. (152 cm) long.

(3) Dimensions are in inches (centimeters).

Figure D-15. Protective Sleeve



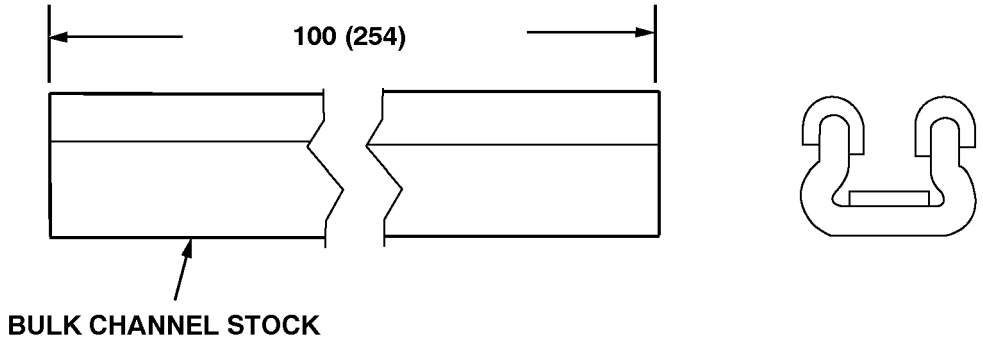
(1) Fabricate from bulk liner stock part number 85A4347.

(2) Using suitable cutting tool, cut liner to 52 in. (132 cm) long.

(3) Dimensions are in inches (centimeters).

Figure D-16. Fuel Tank Strap Liner

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)

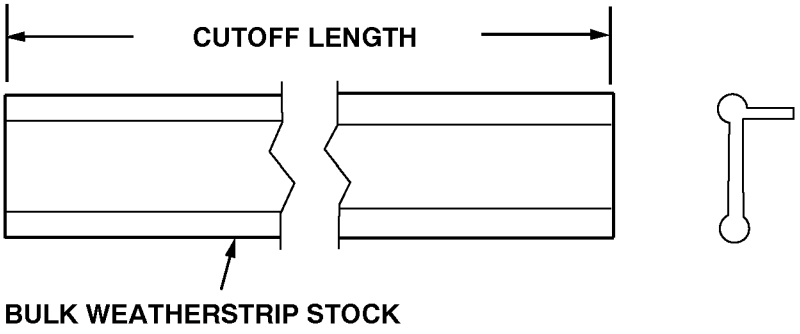


(1) Fabricate from bulk channel stock part number 3152179.

(2) Using suitable cutting tool, cut channel to 100 in. (254 cm) long.

(3) Dimensions are in inches (centimeters).

Figure D-17. Felt Window Glass Channel

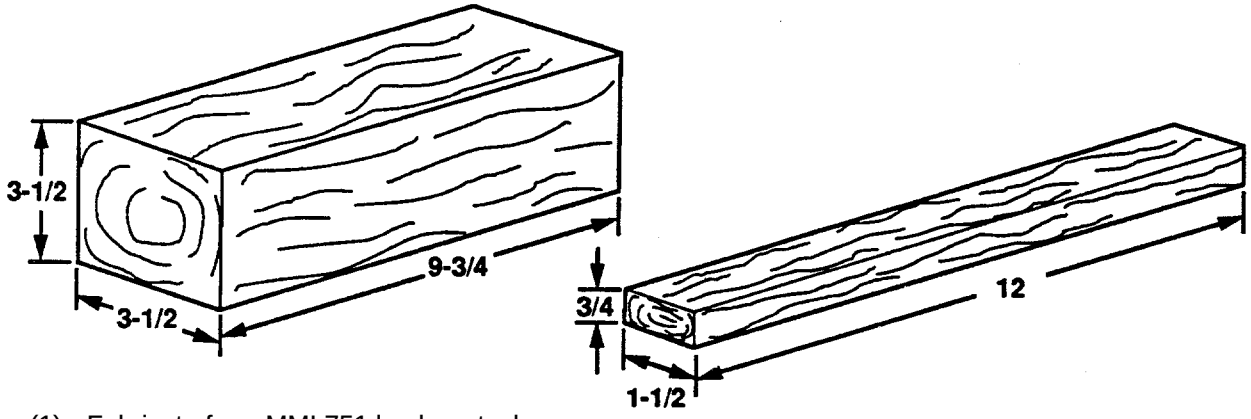


(1) Fabricate from bulk weather strip part number MR172X.

(2) Using suitable cutting tool, cut weatherstrip to 26 in. (66 cm) long.

Figure D-18. Weatherstrip

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



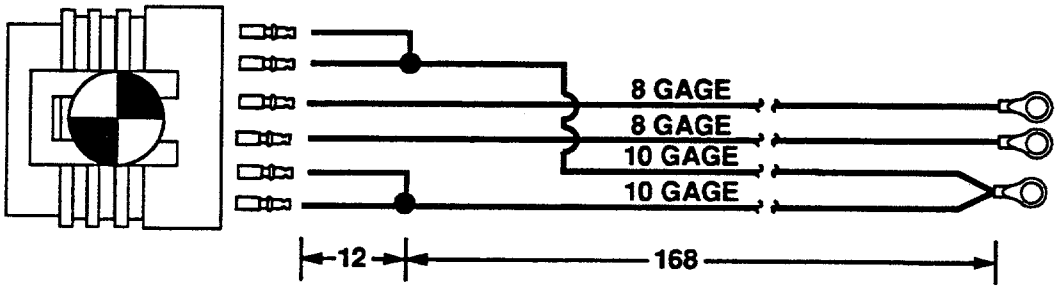
(1) Fabricate from MML751 lumber stock.

(2) Using saw and standard planing machine, cut stock to size required in table D-14.

Figure D-19. Wooden Blocks

Table D-14. Wooden Blocks

PARAGRAPH NO.	FINISHED DIMENSIONS OF BLOCK IN. (CM)
12-5	1-1/2 x 3-1/2 x 8 (3.8 x 8.9 x 20.3)
14-4	3-1/2 x 3-1/2 x 9-3/4 (8.9 x 8.9 x 24.8)
15-2	3/4 x 1-1/2 x 12 (1.9 x 3.8 x 30.5)



(1) Fabricate from 8-gage and 10-gage wire.

(2) Using wire cutters, cut two pieces of 8-gage wire to 180 in. (457 cm) and two pieces of 10-gage wire to 180 in. (457 cm).

(3) Splice two 12 in. (305 mm) pieces of 8-gage wire to existing 8-gage wires.

(4) Strip ends of wire 1/4 in. (6.4 mm).

(5) Attach terminals D-351-38 to 8-gage wire.

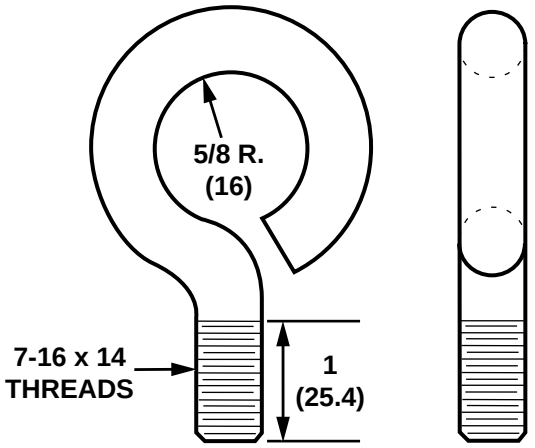
(6) Attach terminal C-340-38 to both 10-gage wires.

(7) Crimp six terminals 12047680 to end of wires.

(8) Install six terminals 12047680 in connector 12066317.

Figure D-20. Jumper Wire

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



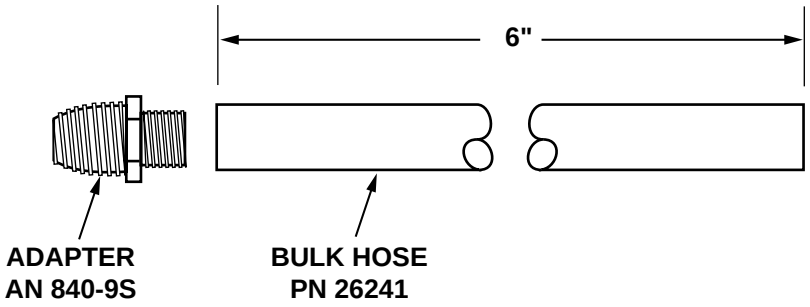
(1) Fabricate from 1/2 x 6 in. (12.7 x 152 mm) cold rolled steel.

(2) Thread size 7/16 x 14 x 1 in. (25.4 mm) long.

(3) Heat unthreaded end and bend over 1-1/4 in. (32 mm) diameter rod.

(4) Dimensions are in inches (millimeters).

Figure D-21. Lifting Eye



(1) Fabricate from bulk hose part number 26241.

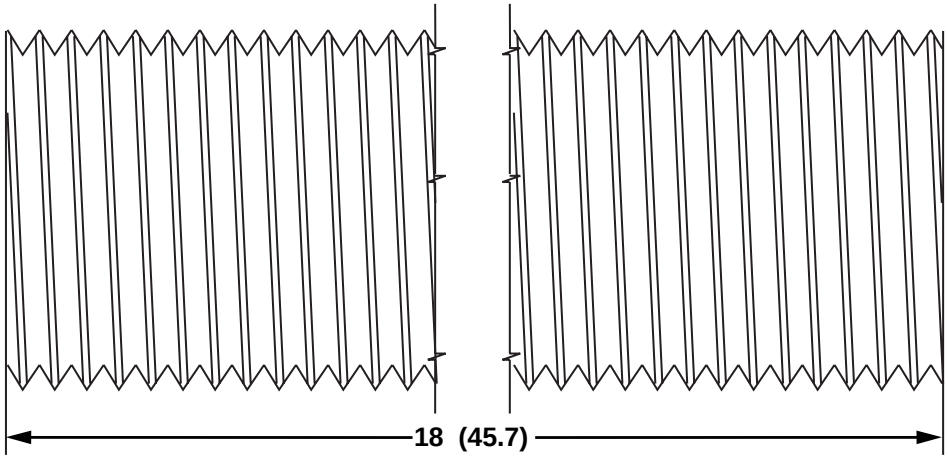
(2) Using suitable cutting device, cut hose to 6 in. (152.4 mm).

(3) Install hose/pipe straight adapter, part number AN 840-9S, on hose.

(4) Dimensions are in inches (millimeters).

Figure D-22. Funnel Adapter

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



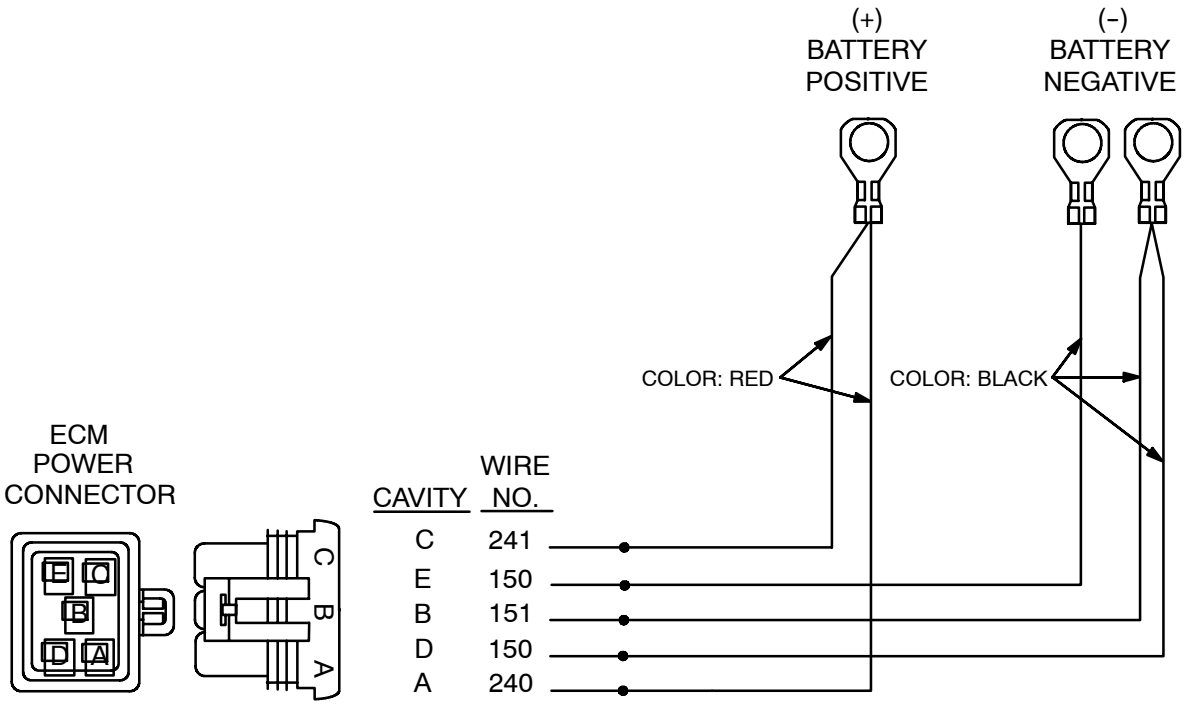
(1) Fabricate from bulk flexible ducting stock part number 316000.

(2) Using suitable cutting tool, cut ducting to 18 in. (45.7 cm) long.

(3) Dimensions are in inches (centimeters)

Figure D-23. Flexible Ducting

Section III. ILLUSTRATED LIST OF MANUFACTURED ITEMS (CONT)



(1) Fabricate from 16-gage wire.

(2) Using wire cutters, cut five pieces of 16-gage wire to 180 in. (457 cm).

(3) Strip both ends of each wire .25 inch (6.4 mm).

(4) Crimp five terminals (PN 12077413) and five cable seals (PN 12015193) on wires.

(5) Insert terminals and cable seals into connector body (PN 12124634) as illustrated.

(6) Secure terminals and cable seals in connector body with secondary lock (PN 12052816).

(7) Attach terminals (PN D-351-38) to other end of wires 150, 150 & 151, and 240 & 241, as illustrated.

Figure D-24. Jumper Harness (DDEC III/IV)

APPENDIX E
TORQUE VALUES

E-1. GENERAL

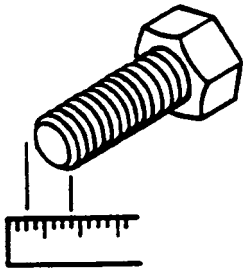
This appendix provides general torque limits for screws used on the HET Tractor. Special torque limits are shown in the maintenance procedures for applicable components. Use the general torque limits given in this appendix when specific torque limits are not given in the maintenance procedure. These general torque limits cannot be applied to screws that retain rubber components. The rubber components will be damaged before the torque limit is reached. If a special torque limit is not given in the maintenance instruction, tighten the screw or nut until it touches the metal bracket, then tighten it one more turn.

E-2. TORQUE LIMITS

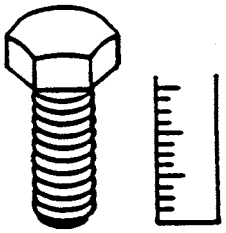
Table E-1 lists dry torque limits. Dry torque limits are used on screws that do not have lubricants applied to the threads. Table E-2 lists wet torque limits. Wet torque limits are used on screws that have high pressure lubricants applied to the threads. Table E-3 lists dry torque limits for metric screws.

E-3. USE OF TORQUE TABLES

(1) Measure the diameter of the screw you are installing.



(2) Count the number of threads per inch.



(3) Under the heading DIAMETER look down the column until you find the diameter of the screw. (There are usually two lines beginning with the same diameter.)

NOTE

Step (4) is not required for metric screws.

(4) Under the heading THREADS PER INCH, find the number of threads per inch that matches the number you counted in step (2).

(5) To find the grade of the screw, match the markings on the head to the correct picture under CAPSCREW HEAD MARKINGS on the torque table.

(6) Look down the column under the picture your found in step (5) until you find the torque limit (lb-ft or N·m) for the diameter and threads per inch of the screw.

Table E-1. Torque Limits for Dry Fasteners



NOTE
Manufacturer's marks may vary. These are all SAE Grade 5.

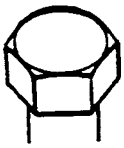
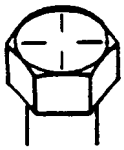
DIAMETER		THREADS PER INCH	CAPSCREW HEAD MARKINGS							
			 SAE GRADE NO. 2		 SAE GRADE NO. 5		 SAE GRADE NO. 6 OR 7		 SAE GRADE NO. 8	
			TORQUE							
IN.	MM		LB-FT	N·M	LB-FT	N·M	LB-FT	N·M	LB-FT	N·M
1/4	6.35	20	5	7	8	11	10	14	12	16
1/4	6.35	28	6	9	10	14	12	16	14	19
5/16	7.94	18	11	15	17	23	21	28	25	34
5/16	7.94	24	12	16	19	26	24	33	25	34
3/8	9.53	16	20	27	30	41	40	54	45	61
3/8	9.53	24	23	31	35	47	45	61	50	68
7/16	11.11	14	30	41	50	68	60	81	70	95
7/16		20	35	47	55	75	70	95	80	108
1/2	12.70	13	50	68	75	102	95	129	110	149
1/2		20	55	75	90	122	100	136	120	163
9/16	14.29	12	65	88	110	149	135	183	150	203
9/16		18	75	102	120	163	150	203	170	231
5/8	15.88	11	90	122	150	203	190	258	220	298
5/8		18	100	136	180	244	210	285	240	325
3/4	19.05	10	160	217	260	353	320	434	380	515
3/4		16	180	244	300	407	360	488	420	597
7/8	22.23	9	140	190	400	542	520	705	600	814
7/8		14	155	210	440	597	580	786	660	895
1	25.40	8	220	298	580	786	800	1085	900	1220
1		12	240	325	640	868	860	1166	1000	1356
1-1/8	25.58	7	300	407	800	1085	1120	1519	1280	1736
1-1/8		12	340	461	880	1193	1260	1709	1440	1953
1-1/4	31.75	7	420	570	1120	1519	1580	2142	1820	2468
1-1/4		12	460	624	1240	1681	1760	2387	2000	2712
1-3/8	34.93	6	560	759	1460	1980	2080	2820	2380	3227
1-3/8		12	640	868	1680	2278	2380	3227	2720	3688
1-1/2	38.10	6	740	1003	1940	2631	2780	3770	3160	4285
1-1/2		12	840	1139	2200	2983	3100	4204	3560	4827

Table E-2. Torque Limits for Wet Fasteners



NOTE
Manufacturer's marks may vary. These are all SAE Grade 5.

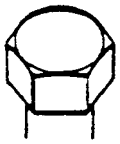
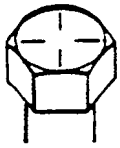
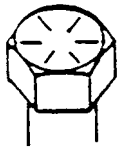
DIAMETER		THREADS PER INCH	CAPSCREW HEAD MARKINGS							
			 SAE GRADE NO. 2		 SAE GRADE NO. 5		 SAE GRADE NO. 6 OR 7		 SAE GRADE NO. 8	
			TORQUE							
IN.	MM		LB-FT	N·M	LB-FT	N·M	LB-FT	N·M	LB-FT	N·M
1/4	6.35	20	4	6	6	8	8	11	9	12
1/4	6.35	28	5	7	7	9	9	12	10	14
5/16	7.94	18	8	11	13	18	16	22	18	24
5/16	7.94	24	9	12	14	19	18	24	20	27
3/8	9.53	16	15	20	23	31	30	41	35	47
3/8	9.53	24	17	23	25	34	30	41	35	47
7/16	11.11	14	24	33	35	47	45	61	55	75
7/16		20	25	34	40	54	50	68	60	81
1/2	12.70	13	35	47	55	75	70	95	80	108
1/2		20	40	54	65	88	80	108	90	122
9/16	14.29	12	50	68	80	108	100	136	110	149
9/16		18	55	75	90	122	110	149	130	176
5/8	15.88	11	70	95	110	149	140	190	170	231
5/8		18	80	108	130	176	160	217	180	244
3/4	19.05	10	120	163	200	271	240	325	280	380
3/4		16	140	190	220	298	280	380	320	434
7/8	22.23	9	110	149	300	407	400	542	460	624
7/8		14	120	163	320	434	440	597	500	678
1	25.40	8	160	217	440	597	600	814	680	922
1		12	170	231	480	651	660	895	740	1003
1-1/8	25.58	7	220	298	600	814	840	1139	960	1302
1-1/8		12	260	353	660	895	940	1275	1080	1464
1-1/4	31.75	7	320	434	840	1139	1100	1492	1360	1844
1-1/4		12	360	488	920	1248	1320	1790	1500	2034
1-3/8	34.93	6	420	570	1100	1492	1560	2115	1780	2414
1-3/8		12	460	624	1260	1709	1780	2414	2040	2766
1-1/2	38.10	6	560	760	1460	1980	2080	2820	2360	3200
1-1/2		12	620	841	1640	2224	2320	3146	2660	3607

Table E-3. Torque Limits for Dry Metric Fasteners

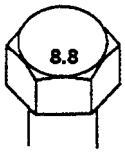
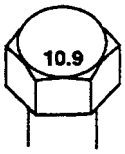
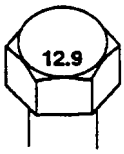
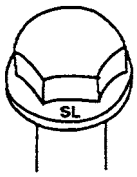
		CAPSCREW HEAD MARKINGS					
							
		METRIC GRADE 8.8		METRIC GRADE 10.9		METRIC GRADE 12.9	
DIAMETER		TORQUE					
IN.	MM	LB-FT	N·M	LB-FT	N·M	LB-FT	N·M
0.157	4	2	3	3	4	4	5
0.197	5	4	5	6	8	7	9
0.237	6	7	9	10	14	11	15
0.276	7	11	15	16	22	20	27
0.315	8	18	24	25	34	29	39
0.394	10	32	43	47	64	58	79
0.473	12	58	79	83	113	100	136
0.552	14	94	127	133	180	159	216
0.630	16	144	195	196	266	235	319
0.709	18	190	258	269	365	323	438
0.788	20	260	353	366	496	440	597
0.867	22	368	499	520	705	678	919
0.946	24	470	637	664	900	794	1077
1.064	27	707	959	996	1351	1235	1675
1.182	30	967	1311	1357	1840	1630	2210

Table E-4. Torque Limits for Wet Flange Nuts

SPIRALOCK FLANGE NUT MARKINGS GRADE 8 	DIAMETER		THREADS PER INCH	TORQUE	
	IN.	MM		LB-FT	N·M
	1/4	6.35	20	15	20
	5/16	7.94	18	25	34
	3/8	9.65	16	45	61
	1/2	12.70	13	110	149
	5/8	15.75	11	210	285
	3/4	19.05	10	375	508

APPENDIX F
COMMON TOOLS, SUPPLEMENTS, AND SPECIAL TOOLS/FIXTURES LIST

Section I. INTRODUCTION

F-1. INTRODUCTION

This appendix lists common tools, supplements, and special tools/fixtures that are required for maintenance tasks performed at the organizational maintenance level.

F-2. EXPLANATION OF COLUMNS

a. Column (1) - Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the item, e.g., “Adapter, Radiator (Item 1, Appendix F).”

b. Column (2) - Item Name. This column contains the nomenclature for the item.

c. Column (3) - National Stock Number. This is the national stock number assigned to the item which you can use to requisition it.

d. Column (4) - Part Number. This provides the Government, manufacturer, or vendor part number for the item.

e. Column (5) - Reference. This column contains the shop catalog (sc), technical manual, or other publication which provides an illustration and description of the item, or lists whether the item is fabricated.

Section II. COMMON TOOLS, SUPPLEMENTS, AND SPECIAL TOOLS/FIXTURES LIST

(1) ITEM NUMBER	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) REFERENCE
1	ADAPTER, RADIATOR	4910-01-170-4928	J29003-A	TM 9-2320-360-20P
1.1	BIT SET, SCREWDRIVER	5210-01-170-4454		SC 4910-95-CL-A72
2	BRUSH, WIRE	7920-00-291-5815	8078883	SC 4910-95-CL-A74
2.1	CAPS, VISE JAW	5120-00-221-1506		SC 4910-95-CL-A72
3	COMPRESSOR UNIT, AIR			SC 4910-95-CL-A74
3.1	CONTACT TEST SET			
4	CRIMPER, TERMINAL, METRI-PACK		J35123	TM 9-2320-360-20P
5	CRIMPER, TERMINAL, WEATHER PACK		J35606	TM 9-2320-360-20P
6	CRIMPER, TERMINAL		J35668	TM 9-2320-360-20P
7	DELETED			
8	DRILL, ELECTRIC, PORTABLE, 3/8 IN.	5130-00-203-1849	W-D-661	SC 4910-95-CL-A74
9	DRILL SET, TWIST, 1/16 - 1/2 IN. (BY 64THS)	5133-00-293-0983	800434	SC 4910-95-CL-A74
10	EYE, LIFTING			APPENDIX C
11	FUNNEL	7240-00-559-7364		SC 4910-95-CL-A72
12	GAGE, BELT TENSION (TENSIOMETER)	6635-01-093-3710	J23600-B	TM 9-2320-360-20P
13	GAGE, TIRE PRESSURE	4910-95-CL-A72		SC 4910-95-CL-A72
13.1	GLOVES, HEAVY DUTY	8415-00-268-7859	A-A-50022	SC 4910-95-A72-HR
14	GOGGLES, INDUSTRIAL	4240-00-816-3819		SC 4910-95-CL-A72
15	HANDLE, INSTALLER	5120-00-977-5578	J7079-2	TM 9-2320-360-20P
16	INSTALLER, THERMOSTAT SEAL	5120-00-977-5579	J8550	TM 9-2320-360-20P
17	JACK, HYDRAULIC, 12-TON (BOTTLE)	5120-00-224-7330	5029209-111-101	SC 4910-95-CL-A74
18	JACKSTANDS, 7-TON	4910-00-251-8013	306	SC 4910-95-CL-A74
19	MIRROR, INSPECTION	5120-00-892-5709	UH 1487	TM 9-2320-360-10
20	MULTIMETER	6625-01-139-2512	T00377	SC 4910-95-CL-A74
21	NUT, PLAIN, #10-24		MS35649-103	
22	NUT, PLAIN, #10-32		MS35650-103	

Section II. COMMON TOOLS, SUPPLEMENTS, AND SPECIAL TOOLS/FIXTURES LIST

(1) ITEM NUMBER	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) REFERENCE
23	NUT, PLAIN, 0.25-20		MS51967-32	
24	NUT, PLAIN, 0.38-16		MS51967-38	
25	NUT, PLAIN, 0.31-18		MS51967-35	
26	PAN, OIL DRAIN	4910-00-387-9592	450	SC 4910-95-CL-A74
27	PLIERS, RETAINING RING, EXTERNAL	5120-00-595-9551	J-8039-A	SC 4910-95-CL-A74
28	PLIERS, SNAP RING	5120-00-293-0049		SC 4910-95-CL-A72
28.1	PLUG		FF9767-08S	
29	PLUG, LIMP HOME		MS20913-4S	TM 9-2320-360-10
30	PULLER, BATTERY TERMINAL	5120-00-944-4268	54000	SC 4910-95-CL-A74
31	PULLER KIT, MECHANICAL, GEAR AND BEARING	5120-00-423-1596	PE12	SC 4910-95-CL-A73
32	PRESSURE TESTER, RADIATOR	4910-01-170-4929	J24460-01	TM 9-2320-360-20P
33	REMOVER AND SETTER, STUD	5120-00-596-0980	4515	SC 4910-95-CL-A73
34	REMOVER, TERMINAL		J33095	TM 9-2320-360-20P
35	REMOVER, TERMINAL, METRI-PACK		J35689-A	TM 9-2320-360-20P
36	REPAIR TOOL, VALVE, PNEUMATIC TIRE	5120-00-308-3809	3522	SC 4910-95-CL-A74
36.1	RIVETER, BLIND, HAND	5120-00-758-9304	120B	SC 4910-95-CL-A74
37	SCREW, MACHINE HEAD, #10-24 X 1		MS35206-267	
38	SCREW, MACHINE HEAD, #10-32 X 1		MS35207-267	
39	SCREW, CAP, 0.25-20 X 1		MS90725-8	
40	SCREW, CAP, 0.38-16 X 1		MS90725-60	
41	SCREW, CAP, 0.31-18 X 1		MS90725-34	
40.1	SCREW, CAP, HEX HEAD 10MM	5305-01-138-9548	423-550	

Section II. COMMON TOOLS, SUPPLEMENTS, AND SPECIAL TOOLS/FIXTURES LIST (CONT)

(1) ITEM NUMBER	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) REFERENCE
42	SOCKET, DRIVE, 1 IN., 6 PT	5130-00-227-6696	P320-1-2	SC 4910-95-CL-A01
43	SOCKET SET, SOCKET WRENCH, 1/2 IN. DRIVE, DEEP STYLE	5120-00-596-8622	GGG-W-641	SC 4910-95-CL-A74
44	SOCKET, SOCKETHEAD SCREW, 6 MM	5120-01-102-1670		SC 4910-95-A31
45	SOCKET WRENCH SET, 3/8 IN. DRIVE	5120-00-322-6231	51200017510	SC 4910-95-CL-A74
46	SOCKET WRENCH SET, 3/4 IN. DRIVE	5120-00-204-1999	GGG-W-641	SC 4910-95-CL-A74
47	STE/ICE-R	4910-01-222-6589	12259266	TM 9-4910-571-12&P
48	TAPE, MEASURING	5120-00-554-7085		SC 4910-95-CL-A72
49	TESTER, BATTERY AND ANTIFREEZE	6630-00-105-1418	10425	SC 4910-95-CL-A74
50	TESTER, FIFTH WHEEL LOCK	4910-01-061-5594	TLN-1500	TM 9-2320-360-20P
51	TEST KIT, RESERVE ALKALINITY	6630-01-011-5039		TB 750-651
52	TIRE IRON	5120-00-580-8924		SC 4910-95-CL-A74
52.1	TOOL KIT, BLIND FASTENER INSTALLATION	5180-01-201-4978	D-100-1	
53	TOOL KIT, ELECTRICAL REPAIR	5180-00-876-9336	7550526	SC 4910-95-CL-A74
54	TOOL KIT, GENERAL MECHANIC'S	5180-00-177-7033	SC5180-90-CL-N26	SC 5180-90-CL-N26
55	TRS/SRS ALIGNMENT TOOL		J34729	TM 9-2320-360-20P
56	TRUCK, LIFT, WHEEL	4910-00-554-5983		SC 4910-95-CL-A74
57	VISE, MACHINIST'S, 4 IN. JAW, 6 IN. OPENING	5120-00-293-1439	504M2	SC 4910-95-CL-A74
58	WASHER, FLAT, #10		MS27183-7	
59	WASHER, FLAT, 0.25		MS27183-10	
60	WASHER, FLAT, 0.38		MS27183-57	
61	WASHER, FLAT, 0.31		MS27183-8	

Section II. COMMON TOOLS, SUPPLEMENTS, AND SPECIAL TOOLS/FIXTURES LIST (CONT)

(1) ITEM NUMBER	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) REFERENCE
61.1	WRENCH, ADJUSTABLE, AUTOMOBILE	5120-00-264-3793	WA615	SC 4910-95-A31
62	WRENCH, COMBINATION, 1-3/8 IN.	5120-00-277-8833	1244	SC 4910-95-CL-A74
63	WRENCH, COMBINATION, 1-1/2 IN.	5120-00-277-8834	A-A-1358	SC 4910-95-CL-A74
63.1	WRENCH, COMBINATION, 1-1/4 IN.	5120-00-228-9517		SC 4910-95-CL-A72
64	WRENCH, COMBINATION, 2 IN.		CL64	TM 9-2320-360-20P
65	WRENCH, CROW'S FOOT, 1-1/2 IN.		FC48A	TM 9-2320-360-20P
66	WRENCH, CROW'S FOOT, 2-3/4 IN.	5120-01-328-2504	FC88A	TM 9-2320-360-20P
67	WRENCH, OIL FILTER		J29917	TM 9-2320-360-20P
68	WRENCH, OPEN END, 1-7/8 IN. AND 1-11/16 IN.	5120-00-081-9100	ANSI B107.6	SC 4910-95-A31
69	WRENCH, OPEN END, 1-5/8 IN. AND 1-13/16 IN.	5120-00-081-9099	ANSI B107.6	SC 4910-95-A31
70	WRENCH SET, COMBINATION	5120-00-895-9566	GGG-W-00645	SC 4910-95-CL-A74
71	WRENCH, TORQUE, 0-75 LB-IN., 1/4 IN. DRIVE	5120-01-112-9532	TQSC6A	SC 4910-95-CL-A72
72	WRENCH, TORQUE, 0-200 LB-IN., 3/8 IN. DRIVE	5120-00-853-4538	F200-1	SC 4910-95-CL-A72
73	WRENCH, TORQUE, 0-175 LB-FT, 1/2 IN. DRIVE	5120-00-640-6364	A-A-2411	SC 4910-95-CL-A74
74	WRENCH, TORQUE, 0-600 LB-FT, 3/4 IN. DRIVE	5120-00-221-7983	TE602A	SC 4910-95-CL-A74
75	WRENCH, TORQUE, 30-250 LB-FT, 1/2 IN. DRIVE, CLICK-TYPE		QJR3250A	TM 9-2320-360-20P
76	WRENCH, TORQUE, 15-100 LB-FT, 3/8 IN. DRIVE, CLICK-TYPE		QJR2100E	TM 9-2320-360-20P

APPENDIX G
MANDATORY REPLACEMENT PARTS LIST

Section I. INTRODUCTION

G-1. SCOPE

This appendix lists mandatory replacement parts you will need to maintain the HET Tractor.

G-2. EXPLANATION OF COLUMNS

a. Column (1) - Item Number. This number is assigned to each entry in the listing and is referenced in the Initial Setup of the applicable task under Materials/Parts.

b. Column (2) - Nomenclature. Name or identification of the part.

c. Column (3) - Part Number. The manufacturer's part number.

d. Column (4) - National Stock Number. The National stock number of the part.

Section II. MANDATORY REPLACEMENT PARTS LIST

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
1	BREATHER ASSEMBLY	74004-G	4330-01-085-6291
2	BUSHING	1460X4	
3	BUSHING	1460X6	
4	BUSHING	1460X8	
5	BUSHING	1460X10	
6	BUSHING	1460X12	
7	BOOT, DUST	12010293	5975-01-226-8078
8	BOOT, DUST	12015323	5975-01-310-5011
9	CABLE KIT	175220-60	4010-01-348-6039
10	CAP	12298661	5340-01-110-4036
11	DELETED		
12	CLAMP	5132650	5340-01-048-7743
13	CLAMP	5137620	5340-01-114-5623
14	CLAMP	700-88	5340-01-355-7648
15	CLAMP	700-118	4730-01-212-8276
16	CLAMP	89560-K	5340-01-351-1948
16.1	CLIPS, PANEL RETAINING	2077440	
17	CONTACT, ELECTRICAL	12010182	5999-01-214-9682
18	CONTACT, ELECTRICAL	12034051	5940-01-342-0712

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
19	CONTACT, ELECTRICAL	12089305	5999-01-319-7394
20	ELBOW WITH GASKET	102651	4730-01-367-9967
21	ELEMENT, AIR CLEANER	W-250D59	2940-01-338-2384
22	ELEMENT, FILTER	22004-01	4330-01-356-0851
23	ELEMENT, FILTER	25013192	2940-01-314-1345
24	ELEMENT, FILTER	87447-A	2940-01-341-0202
25	FASTENER, RATCHET	PC 47516	5305-01-222-4344
26	FILTER	LE-10	4330-01-104-6341
27	FILTER	25010643	4330-01-245-0276
28	FILTER, COOLANT	PFC-24A	
28.1	FILTER, COOLANT	PFC-8A	
29	FILTER, FUEL	25014342	
30	GASKET	MS25988/1-246	
31	GASKET	O-615C46XA	5330-01-348-8345
32	GASKET	QS11811	
33	GASKET	1922510	5330-01-348-8346
34	GASKET	236577	5330-00-531-3197
34.1	GASKET	369	
35	GASKET	4N1059	5330-00-980-1546
36	GASKET	5104081	5330-01-078-7186
37	GASKET	5104105	5330-01-163-8178
38	GASKET	543	
38.1	GASKET	5939841	5330-00-353-0959
39	GASKET	8422A388	5330-01-205-8991
40	GASKET	8921312	5330-01-206-3263
40.1	GASKET, MOUNTING	385	
41	GASKET, THERMOSTAT, LEFT	5117786	5330-00-781-7117
42	GASKET, THERMOSTAT, RIGHT	5100860	5330-01-058-8267
42.1	GROMMET	MS35489-49	5325-00-276-5954
43	GROMMET	459-A	
43.0.1	ISOLATOR	23512307	
43.1	KIT, MANTLE	MTP-95-551	4330-01-026-6371

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
43.2	KIT, PARTS	RN-60-T	
43.3	KIT, PARTS	RN-60-V	
43.4	KIT, SERVICE	50009501	5340-01-363-9215
44	LOCKNUT	AN-365-1024A	5310-00-208-1918
45	LOCKNUT	C-972	5310-01-210-7427
46	LOCKNUT	D-528251	
47	LOCKNUT	MS17829-7C	5310-00-241-6659
48	LOCKNUT	MS51922-1	5310-00-088-1251
49	LOCKNUT	MS51922-9	
49.1	LOCKNUT	MS51922-37	
50	LOCKNUT	MS51943-31	5310-00-061-4650
51	LOCKNUT	MS51967-8	5310-00-732-0558
52	LOCKNUT	MS51986-5	
53	LOCKNUT	L-10-MNS-500-X-1	
54	LOCKNUT	TLA-1213-S-GRC	5310-01-186-5162
55	LOCKNUT	TLA-3410-S-GRC	5310-00-269-6340
56	LOCKNUT	TLA-3816-S-GRC	5310-01-222-9097
57	LOCKNUT	TLA-5811-GRC	5310-01-082-6166
58	LOCKNUT	T893R	5310-01-228-1116
59	LOCKNUT	XB-769	5310-01-150-8599
60	LOCKNUT	101089	5310-01-354-2509
60.1	LOCKNUT	102695	
61	LOCKNUT	110310A	5310-01-159-8178
62	LOCKNUT	110311A	5310-01-111-0645
63	LOCKNUT	110312A	5310-01-150-5918
64	LOCKNUT	115303A	5310-01-155-1905
65	LOCKNUT	115307A	5310-01-151-1036
66	LOCKNUT	11675	
67	LOCKNUT	11711	
68	LOCKNUT	1333510	5310-01-340-5671

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
69	LOCKNUT	1488-G	5310-01-358-3664
70	LOCKNUT	1571850	5310-01-288-5096
71	LOCKNUT	1598030	5310-01-342-8595
72	LOCKNUT	1600460	5310-01-346-9445
73	LOCKNUT	1599210	5310-01-354-2376
73.1	LOCKNUT	203103	
73.2	LOCKNUT	203767	
74	LOCKNUT	21NE-040	5310-01-066-6759
74.1	LOCKNUT	2560HX	
75	LOCKNUT	37331	5310-01-161-9123
76	LOCKNUT	4015-G	5310-01-344-4292
77	LOCKNUT	707161	
78	LOCKNUT	707163	
78.1	LOCKNUT	707214	
79	LOCKNUT	707562	
80	LOCKNUT	707565	
81	LOCKNUT	707568	5310-01-342-2559
82	LOCKNUT	707845	5310-01-368-8665
83	LOCKNUT WITH WASHER	9002001	5310-01-316-5096
84	LOCKPIN	10166	5315-01-284-9812
85	LOCKSTRAP	230323	5340-00-759-4742
86	LOCKSTRAP	98-741	5340-00-521-4479
87	LOCKWASHER	C-1423	
88	LOCKWASHER	L051275	5310-01-244-8747
89	LOCKWASHER	L58	5310-00-820-6653
90	LOCKWASHER	MS35333-37	5310-00-579-0079
91	LOCKWASHER	MS35333-39	5310-00-576-5752
92	LOCKWASHER	MS35333-41	5310-00-167-0721
93	LOCKWASHER	MS35333-42	5310-00-595-7237
93.0.1	LOCKWASHER	MS35333-43	5310-00-685-3228

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
93.1	LOCKWASHER	MS35333-51	5310-00-655-6927
94	LOCKWASHER	MS35335-31	5310-00-596-7693
95	LOCKWASHER	MS35335-32	5310-00-596-7691
96	LOCKWASHER	MS35338-8	5310-00-261-7340
97	LOCKWASHER	MS35338-41	5310-00-045-4007
98	LOCKWASHER	MS35338-42	5310-00-045-3299
99	LOCKWASHER	MS35338-43	5310-00-045-3296
100	LOCKWASHER	MS35338-44	5310-00-582-5965
101	LOCKWASHER	MS35338-45	5310-00-407-9566
102	LOCKWASHER	MS35338-46	5310-00-637-9541
103	LOCKWASHER	MS35338-47	5310-00-209-0965
104	LOCKWASHER	MS35338-48	5310-00-584-5272
105	LOCKWASHER	MS35338-50	5310-00-004-5034
106	LOCKWASHER	MS35338-51	5310-00-584-7888
107	LOCKWASHER	MS35338-63	5310-00-582-5965
108	LOCKWASHER	MS35338-100	5310-00-261-8278
109	LOCKWASHER	MS35338-103	5310-00-184-8971
110	LOCKWASHER	MS45904-60	5310-00-080-9786
110.1	LOCKWASHER	MS45904-84	5310-00-935-8984
111	LOCKWASHER	SA-1600-4	
112	LOCKWASHER	10050	5310-01-158-6781
113	LOCKWASHER	10109	
114	LOCKWASHER	101363	5310-01-K49-0906
115	LOCKWASHER	1613	
116	LOCKWASHER	P/O 215672	
117	LOCKWASHER	P/O 11682888	
118	LOCKWASHER	202105	
119	LOCKWASHER	2239HX	5310-00-209-1218
120	LOCKWASHER	2293HX	5310-00-595-7237
121	LOCKWASHER	2434	5310-00-775-5139

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
122	LOCKWASHER	3231	5310-00-032-1814
123	LOCKWASHER	4-X-134	5310-01-349-0780
124	LOCKWASHER	500357-13	5310-00-671-4109
125	LOCKWASHER	707293	
126	NUT	1571870	5310-01-352-7732
126.1	NUT, PUSH	290012	
127	NUT, PUSH-ON	62229	5310-01-161-7308
128	NUT	79024	5310-01-077-9437
129	PACKING ASSORTMENT	C-7-88	5330-01-125-5704
130	PACKING, PREFORMED	FF9446-14	5330-01-269-8580
131	PACKING, PREFORMED	FF9446-16	5330-01-115-8225
132	PACKING, PREFORMED	FF9446-18	5330-01-092-5503
133	PACKING, PREFORMED	FF9446-21	5330-01-269-4323
134	PACKING, PREFORMED	FF9446-25	5330-01-269-6152
135	PACKING, PREFORMED	Q-58403	5330-01-340-9884
136	PACKING, PREFORMED	VS-1087-4	5330-01-K49-1008
137	PACKING, PREFORMED	P/O WM775B	
138	PACKING, PREFORMED	22617-6	5330-01-198-8439
139	PACKING, PREFORMED	22617-8	5330-01-244-2273
140	PACKING, PREFORMED	22617-12	5330-00-228-7196
141	PACKING, PREFORMED	22617-16	5330-01-168-0885
142	PACKING, PREFORMED	22617-20	5330-01-168-1802
143	PACKING, PREFORMED	235063	5330-00-454-0370
144	PACKING, PREFORMED	9647-G	5330-01-328-4138
145	PIN, COTTER	AN380-8-12	5315-00-846-0126
146	PIN, COTTER	MS24665-283	5315-00-842-3044
147	PIN, COTTER	MS24665-291	5315-00-019-0777
148	PIN, COTTER	MS24665-353	5315-00-839-5822
149	PIN, COTTER	MS24665-418	5315-00-187-9549
150	PIN, COTTER	MS24665-624	5315-00-059-0217

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
151	PIN, COTTER	MS24665-627	5315-00-013-7308
152	PIN, COTTER	MS24665-704	5315-00-150-4007
153	PIN, COTTER	XB-119-1	5315-01-153-1451
154	PIN, COTTER	XB-773	5315-00-234-1848
154.0.1	PIN, COTTER	146	
154.0.2	PIN, COTTER	148	
154.1	PIN, COTTER	356AX	
155	PIN, COTTER	8151001	
156	REPAIR KIT, IDLER SHAFT	GS-2655	5340-01-K48-9555
157	RING, RETAINING	MS16624-4087	5365-00-514-0393
158	RING, RETAINING	2-7-29	5365-00-174-9829
158.0.1	RIVET, DRIVE	38-106-02-13	
158.1	RIVETS, POP	206057	
158.2	RIVET, BLIND	STST440	5320-01-354-0269
159	SCREW	12690FX	5305-01-065-5890
160	SCREW	1362300	5306-01-158-6232
160.1	SCREW	23512308	
161	SCREW	454787	5305-00-285-5295
161.1	SCREW, MACHINE	BZ-223024	
162	SEAL	5103646	5330-01-088-2740
163	SEAL	52-49529-00	5330-01-348-8331
164	SEAL KIT	50009502	5330-01-368-5303
164.0.1	SEAL RING	355157	
164.0.2	SNAP FASTENER, MALE	1805560	5325-01-1504-1549
164.1	WASHER, COPPER SEAL	23513842	
165	SEAL, FUEL FITTING	23504641	5330-01-336-2997
166	SEAL, THERMOSTAT	5132155	5330-01-330-9591
167	SERVICE KIT	RN-60-A	4440-01-337-7324
167.1	SLEEVE, CRIMPING	1737095	
168	STRAINER	74045-G	
169	SPACER	1348960	5365-01-160-4736

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
170	SPACER, RUBBER	8422A010	5365-01-191-8104
171	SPEEDNUT	20491FX1	5310-00-110-8742
172	STUD	1320480	5307-01-154-9587
173	TUBE	1484X4	4730-01-070-7962
174	TUBE	1484X6	4730-01-056-4990
175	TUBE	1484X8	4730-01-048-5261
176	TUBE	1484X10	
177	TUBE	1484X12	
178	U-BOLT ASSEMBLY	2-94-28X	5306-00-097-9701
179	WASHER, COPPER	230156	5310-01-078-6442
180	WASHER, RUBBER	1938500	5330-01-354-4250

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By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
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ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON (Provide exact wording of recommended changes, if possible).
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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

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

WEIGHTS

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

LIQUID MEASURE

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

SQUARE MEASURE

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

CUBIC MEASURE

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

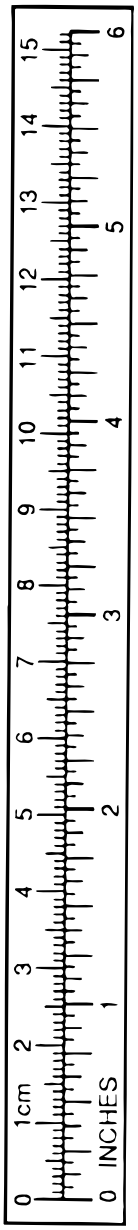
TEMPERATURE

5/9 (^oF - 32) = ^oC
212^o Fahrenheit is equivalent to 100^o Celsius
90^o Fahrenheit is equivalent to 32.2^o Celsius
32^o Fahrenheit is equivalent to 0^o Celsius
9/5 C^o + 32) = F^o

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



PIN: 072608-000