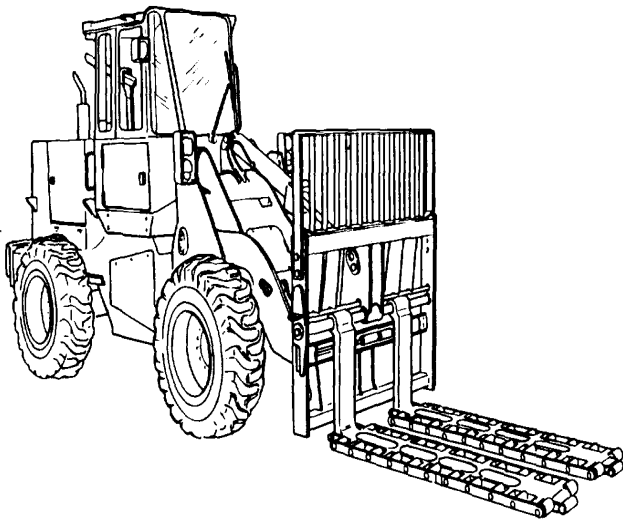


TECHNICAL MANUAL
UNIT MAINTENANCE MANUAL
FOR
TRUCK, FORKLIFT: ADVERSE TERRAIN,
10,000 LB CAPACITY, M544E
(NSN 3930-01-301-8250)



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FOR INFORMATION ON FIRST AID, REFER TO FM 21-11.

WARNING

CARBON MONOXIDE (EXHAUST GASES) CAN KILLI

Carbon monoxide is a colorless, odorless, deadly poisonous gas which, when breathed, deprives the body of oxygen and causes suffocation. Exposure to air containing carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, apparent drowsiness, and coma. Permanent brain damage or death can result from severe

Carbon monoxide occurs in exhaust fumes of internal combustion engines. Carbon monoxide can become dangerously concentrated under conditions of inadequate ventilation. The following precautions must be observed to ensure safety of personnel when engine of forklift truck is operated for any purpose.

- (1) DO NOT operate forklift truck engine in enclosed areas.
- (2) DO NOT idle forklift truck engine with cab windows closed and without defroster fan operating.
- (3) BE ALERT at all times for exhaust odors.
- (4) BE ALERT for exhaust poisoning symptoms. They are:
 - Headache
 - Dizziness

 - Sleepiness

 - Loss of muscular control
- (5) If you see another person with exhaust poisoning symptoms:
 - Remove person from area
 - Expose to fresh air
 - Keep person warm

 - Do not permit physical exercise

 - Administer artificial respiration, if necessary
 - Notify a medic
- (6) BE AWARE: The field protective mask for nuclear-biological-chemical (NBC) protection will not protect you from carbon monoxide poisoning.

The Best Defense Against Carbon Monoxide Poisoning Is Good Ventilation.

WARNING**BATTERIES**

- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry contacts battery terminal, a direct short will result, causing instant heating of jewelry which will result in severe injury to personnel.
- Battery gases can explode. DO NOT smoke or allow sparks or open flames near batteries. Wear safety glasses or goggles when checking batteries. Failure to follow this warning may result in death or serious injury to personnel.
- Sulfuric acid contained in batteries can cause serious burns. If battery corrosion or electrolyte makes contact with skin, eyes, or clothing, take immediate action to stop the corrosive burning effects. Failure to follow these procedures may result in death or serious injury to personnel.
 - a. Eyes. Flush with cold water for no less than 15 minutes and seek medical attention immediately.
 - b. Skin. Flush with large amounts of cold water until all acid is removed. Seek medical attention as required.
 - c. Internal. If corrosion or electrolyte is ingested, drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Seek medical attention immediately.
 - d. Clothing/Equipment. Wash area with large amounts of cold water. Neutralize acid with baking soda or household ammonia.

WARNING**BRAKE SYSTEM**

Pressure stored in accumulator is approximately 500 psi (3448 kPa). Ensure that accumulator pressure is relieved before removing service brake hoses or components. Failure to follow this warning may result in serious injury or death to personnel.

WARNING**CLEANING AGENTS**

- Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.
- Cleaning compound, trichlorotrifluoroethane, for electrical parts is toxic and flammable, and reacts violently with aluminum, titanium, barium, lithium, samarium, sodium, and potassium. Always wear protective goggles and rubber gloves, and use only in a well-ventilated area. DO NOT wear jewelry while using cleaning compound. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. Cleaning compound fumes or vapors can take the place of air and may become a cancer producing agent. DO NOT use near open flame or excessive heat. The compound's boiling point is 114 °F (460C). If you become dizzy while using cleaning compound, immediately get fresh air and medical help. If compound contacts eyes, immediately wash your eyes with water and get medical aid.

WARNING**COMPRESSED AIR**

Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.

WARNING**DIESEL FUEL HANDLING**

- DO NOT smoke or permit any open flame in area of forklift truck while you are servicing diesel fuel system. Be sure hose nozzle is grounded against filler tube during refueling to prevent static electricity. Failure to follow this warning will result in injury to personnel or equipment damage.
- Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel system. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

WARNING**ELECTRICAL SYSTEM**

When troubleshooting an electrical malfunction or when performing electrical maintenance, ALWAYS place battery disconnect switch in OFF position. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

WARNING**EXHAUST PIPE AND MUFFLER**

DO NOT touch hot exhaust pipe or muffler with bare hands. Severe injury to personnel will result.

WARNING**EYE PROTECTION**

Wear eye protection when performing the following maintenance:

- Working under forklift truck
- Cleaning with wire brushes
- Striking metal parts with hammer or chisel
- Welding or heating forklift truck components
- Using chisel or drill
- Using compressed air

WARNING**HANDLING HEAVY COMPONENTS**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

WARNING**HYDRAULIC FLUID**

Fire resistant hydraulic fluid may contain Tricresyl Phosphate. If taken Internally, paralysis may occur. Always wear protective goggles, face shield, rubber gloves, and long sleeves. Should hydraulic fluid make contact with skin or clothing, thoroughly wash with soap and water. Thoroughly wash hands prior to eating, drinking, or smoking. Failure to follow this warning may result in serious Injury to personnel.

WARNING**HYDRAULIC LINES**

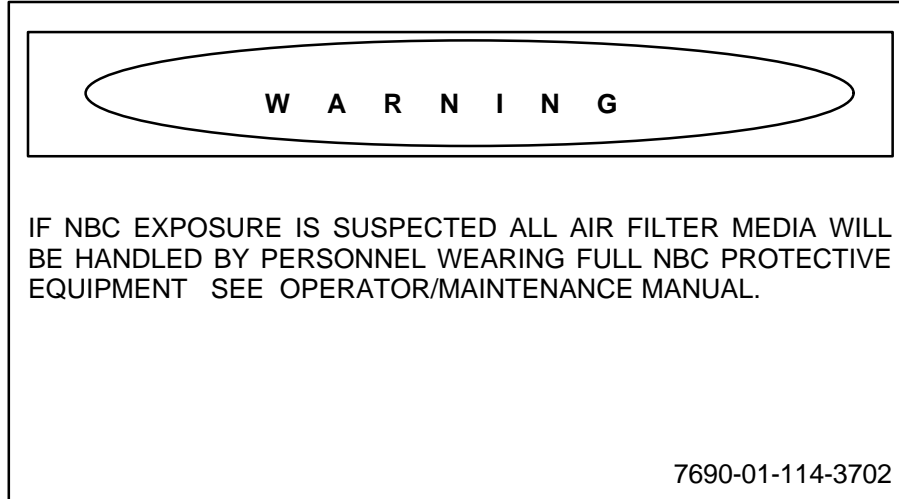
DO NOT attempt to disconnect hydraulic lines and fittings while engine is running or before hydraulic system pressure has been released. When engine is running, hydraulic system is under pressure. Hydraulic system pressure should be 0 psi (0 kPa) before lines are disconnected. A line or fitting disconnected under pressure will explode with great force and can cause Injury to personnel.

WARNING**LIVE STEAM**

Avoid contact with live steam. Live steam can burn skin, cause blindness, and cause other serious injury. Be sure to wear protective apron, gloves, and safety goggles when using live steam.

WARNING**NBC EXPOSURE**

If NBC exposure is suspected, all engine air cleaner air filter media should be handled by personnel wearing protective equipment. Consult your NBC Officer or NBC NCO for appropriate handling or disposal procedures.



To order this NBC decal use:

National Stock Number (NSN) - 7690-01-114-3702

Part Number (PN) - 12296626

Commercial and Government Entity Code (CAGEC) - 19207

WARNING**ON-BOARD CRANE OPERATION**

On-board crane is heavy. Assistant is required to raise or lower on-board crane to various operating positions. Assistant may be required to help raise or lower load. Failure to follow this warning may result in injury to personnel.

WARNING**PRESSURIZED COOLING SYSTEM**

- DO NOT remove radiator fill cap unless engine is cold. This is a pressurized cooling system and escaping steam, hot water, or coolant will cause serious burns.
- Servicing of engine cooling system should only be performed on a cool engine. NEVER remove clamps or hoses when engine is hot. Pressurized steam, hot water, or coolant will cause serious burns.

WARNING

STARTING FLUID

Starting fluid is toxic and highly flammable. Container is pressurized to act as an expellent. DO NOT heat container and DO NOT discharge starting fluid in confined areas or near an open flame. Failure to follow this procedure may result in serious injury to personnel.

WARNING

UNAUTHORIZED CLEANING METHODS

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and damage equipment. To prevent this, refer to TM 9-247 for further instructions.

WARNING

VEHICLE MOVEMENT

- Before moving forklift truck, ensure that all personnel are away from danger areas of forklift truck. Specifically, check to ensure that no one is between forward and rear sections of forklift truck. Failure to follow this warning may result in injury or death to personnel.
- DO NOT move forklift truck with frame locking bar installed. Forklift truck will be unsteerable and may result in injury to personnel.

TECHNICAL MANUAL

TM 10-3930-659-20

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D.C., 29 December 1993

**UNIT MAINTENANCE MANUAL
FOR
TRUCK, FORKLIFT: ADVERSE TERRAIN,
10,000 LB CAPACITY, M544E
(NSN 3930-01-301-8250)**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or If you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (*Recommended Changes to Publications and Blank Forms*), or DA Form 2028-2, located in the back of this manual, direct to: Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-MB, Warren, MI 48397-5000. A reply will be furnished to you.

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*This manual and TM 10-3930-659-34 supersede Air Force T.O. 36M2-2-203-2/Army TM 10-3930-659-24, dated 1 September 1990.

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HOW TO USE THIS MANUAL

This manual is designed to help maintain the M544E Forklift Truck. It describes in detail the Unit Maintenance prescribed by the Maintenance Allocation Chart (Appendix B) and the Source, Maintenance, and Recoverability (SMR) Codes (TM 10-3930-659-24P).

FEATURES OF THIS MANUAL:

- Bleed-to-edge indicators on the cover and on the edge of the applicable manual pages provide quick access to chapters most often used.
- A table of contents is provided at the beginning of most chapters and sections.
- WARNINGS, CAUTIONS, and NOTES, subject headings, and other important information are highlighted in BOLD print as a visual aid.

WARNING

A WARNING indicates a hazard which can result in death or serious injury.

CAUTION

A CAUTION is a reminder of safety practices or directs attention to usage practices that may result in damage to equipment.

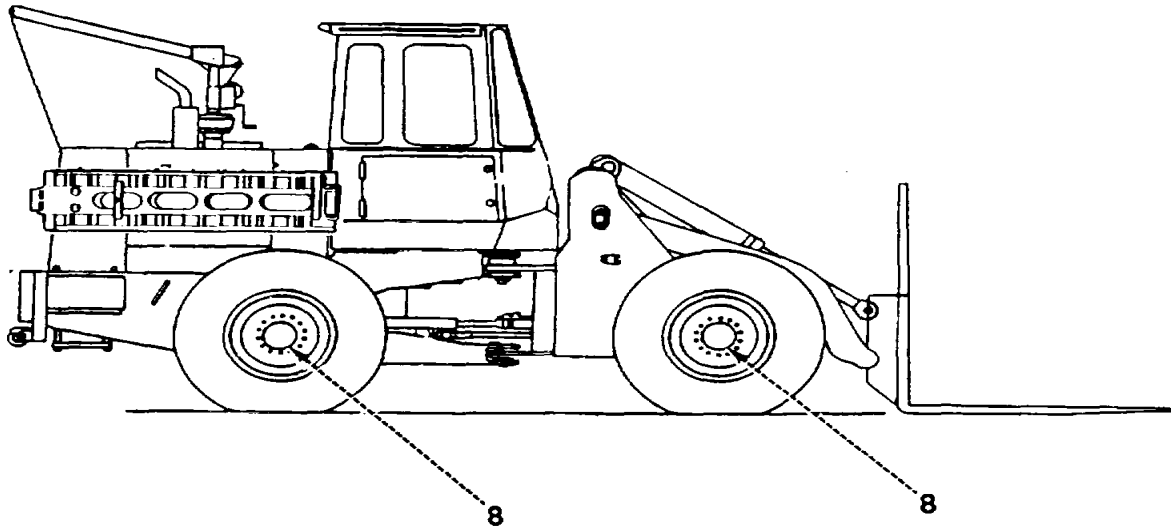
NOTE

A NOTE is a statement containing information that will make the procedure easier to perform.

- Statements and words of particular importance are printed in capital letters to create emphasis.
- Instructions are located together with illustrations that show the specific task on which the technician is working.
- Equipment locator illustrations are provided throughout the maintenance procedures. These illustrations are for use in locating components and assemblies of the overall equipment. It should be noted that the locator illustrations do not always reflect the equipment condition listed in the Initial Setup at the beginning of each task.

HOW TO USE THIS MANUAL (Con't)

- Dashed leader lines used in illustrations indicate that called out items are not visible (i.e., they are located *within* the structure). The example illustrates that the drive axles (8) are located within the axle.



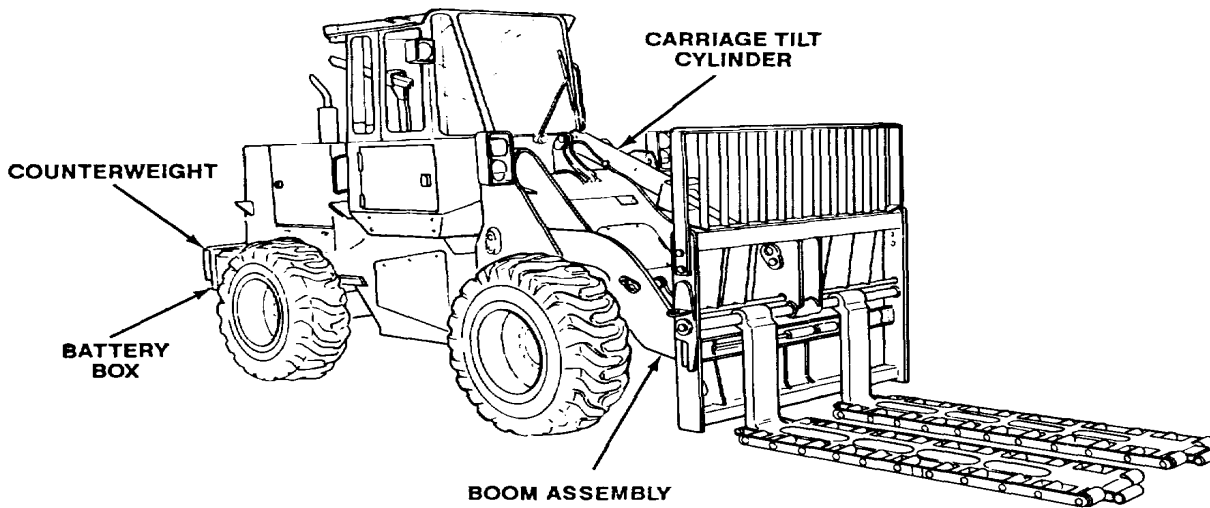
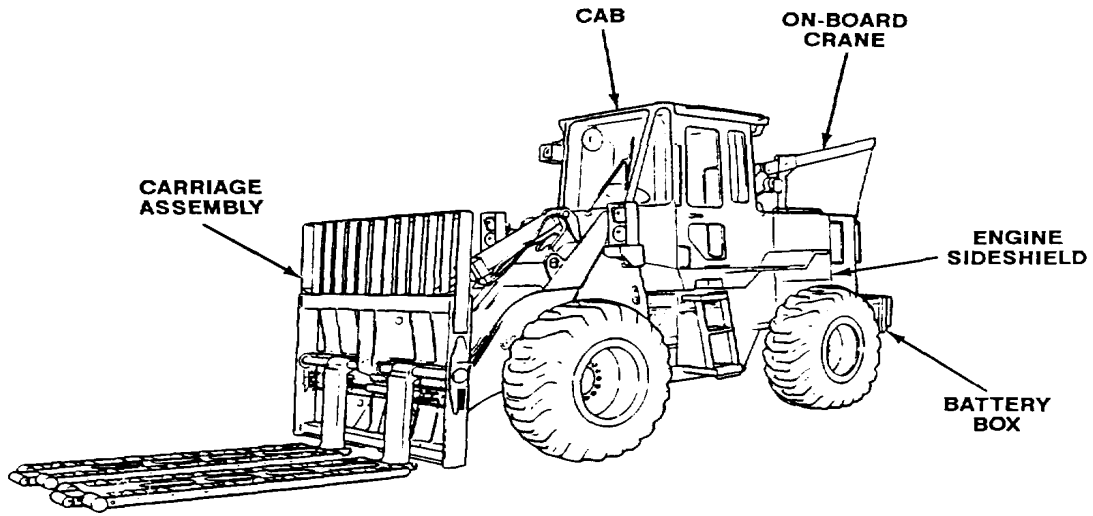
Dashed Leader Line Example

- Technical instructions include metric In addition to standard units. A metric conversion chart is provided on the inside back cover.
- A standard torque chart is provided at Appendix E.
- An alphabetical index is provided at the end of the manual to assist in locating information not readily found in the table of contents.

FOLLOW THESE GUIDELINES WHEN YOU USE THIS MANUAL:

- Read through this manual and become familiar with its contents before proceeding to specific maintenance tasks.
- A warning summary is provided at the beginning of this manual and should be read before performing any maintenance tasks.
- In the actual maintenance tasks, follow all **WARNINGS**, **CAUTIONS**, and **NOTES**. These are given immediately preceding the procedural steps to which they apply. If these instructions are not followed or care is not taken, injury to personnel or equipment damage may result.
- Within a chapter, section, or paragraph, headings are used to help group the material and assist you in quickly finding tasks. Read all preliminary information found at the beginning of each task. After completing a task, **ALWAYS** perform the follow-on maintenance at the end of the task.

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CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

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1-3	Destruction of Army Materiel to Prevent Enemy Use	1-1
1-4	Preparation for Storage or Shipment	1-1
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1-7	Safety, Care, and Handling	1-2
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1-1. SCOPE.

- a. **Type of Manual.** Unit Maintenance Manual.
- b. **Equipment Name and Model Number.** Truck, Forklift: Adverse Terrain, 10,000 Lb Capacity, M544E.
- c. **Purpose of Equipment.** The forklift truck is designed for conventional loading and unloading or stacking and unstacking of suitably packaged materiel.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS.

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

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.

For destruction of Army materiel to prevent enemy use, refer to TM 750-244-3.

1-4. PREPARATION FOR STORAGE OR SHIPMENT.

For information on preparing the forklift truck for storage or shipment, refer to Chapter 22.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs).

If your forklift truck needs Improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF Form 368 (*Product Quality Deficiency Report*). Mail it to us at: Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-MP, Warren, MI 48397-5000. We'll send you a reply.

1-6. WARRANTY INFORMATION.

The forklift truck is under warranty by the John Deere Company in accordance with TB 10-3930-659-14.

1-7. SAFETY, CARE, AND HANDLING.

a. General. Refer to FM 21-11, *First Aid for Soldiers*, for first aid treatments of injured personnel. IMMEDIATELY seek medical attention for any injury. The following first aid procedures should be used to prevent further injury until medical attention is available.

(1) **Exhaust Gases or Toxic Fumes.** Expose person to fresh air and keep warm. DO NOT permit person to move. If necessary, administer artificial respiration and immediately seek medical attention.

(2) **Chemical Burns.**

(a) Eyes. Flush eyes with cold water for no less than 15 minutes. Immediately seek medical attention.

(b) Skin. Flush area with large amounts of cold water until all acid is removed. Seek medical attention as required.

(c) Internal. Drink large amounts of water or milk followed by milk of magnesia, beaten egg, or vegetable oil. Immediately seek medical attention.

(d) Clothing or Equipment. Immediately wash area with large amounts of cold water. Neutralize acid with baking soda or household ammonia.

(3) **Foreign Object In Eye.** DO NOT attempt to remove foreign object from eye as object may cause cuts and abrasions. Close eye, cover with gauze and tape, and immediately seek medical attention.

b. **Personnel Precautions.**

(1) Read and become familiar with all WARNINGS in the warning summary at the front of this manual.

(2) Throughout this manual, WARNINGS are given immediately preceding the procedural steps to which they apply. Read these WARNINGS and follow them exactly.

(3) WARNING decals may be found on the forklift truck (see TM 10-3930-659-10) to provide safety instructions and identify specific hazards which if not followed may result in serious injury or death to personnel.

(4) Protect yourself against injury. Wear protective gear such as safety goggles or lenses, safety shoes, rubber apron, gloves, etc.

(5) Stay clear of moving parts. Remove watches, rings, and other jewelry which could catch on moving parts and cause injury. Keep hands, feet, and clothing away from all moving parts.

(6) Notify others in the area if you are handling flammable materials. Know location of fire extinguishers and emergency procedures in case of accident or fire.

(7) Never operate engine or heater in a closed area unless area is properly ventilated. If symptoms of carbon monoxide poisoning are noticed, immediately evacuate and ventilate area.

(8) When lifting heavy parts, have someone help you. Ensure that lifting or jacking equipment is properly working, is suitable for the assigned task, and is secure against slipping.

1-7. SAFETY, CARE, AND HANDLING (Con't).

(9) Never leave forklift truck unattended while engine is running. Observe all equipment conditions before performing maintenance.

(10) DO NOT climb on tires. Use mounted steps and ladders when climbing onto forklift truck. If needed, use a sturdy stepladder to perform maintenance on equipment not safely within your reach.

c. Forklift Truck Precautions.

(1) Throughout this manual, CAUTIONs are placed as they pertain to specific maintenance procedures. Read these CAUTIONs and follow them exactly.

(2) Ensure that the battery disconnect switch is turned to the OFF position when performing any maintenance on the forklift truck.

(3) Disconnect battery as required.

(4) Use lifting equipment of sufficient capacity to remove and support heavy items.

1-8. CORROSION PREVENTION AND CONTROL.

a. Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with the forklift truck be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

b. While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.

c. If a corrosion problem is identified, it can be reported using SF Form 368 (*Product Quality Deficiency Report*). Use of key words such as "corrosion," "rust," "deterioration," or "cracking" will ensure that the information is identified as a CPC problem. The form should be submitted to the address specified in DA Pam 738-750.

Section II. EQUIPMENT DESCRIPTION AND DATA

Paragraph Number	Paragraph Title	Page Number
1-9	Equipment Characteristics, Capabilities, and Features	1-4
1-10	Location and Description of Major Components	1-4
1-11	Equipment Data	1-5

1-9. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

- a. The forklift truck is a commercial adverse terrain vehicle designed for loading and unloading or stacking and unstacking of suitably packaged materiel.
- b. The forklift truck has a lifting capacity of 10,000 pounds (4540 kg) for raising, lowering, and transporting loads.
- c. Features of the forklift truck:
 - (1) Turbocharged six-cylinder diesel engine.
 - (2) Power shift transmission with four forward and three reverse speeds.
 - (3) Full-time four-wheel drive.
 - (4) Articulating frame steering.
 - (5) Removable cab assembly to facilitate air transport.
 - (6) Conveyorized fork attachments.
 - (7) On-board crane to facilitate the removal and installation of the cab, counterweight, and conveyorized fork attachments.
 - (8) A 24-volt electrical system capable of operating under standard and blackout modes.
 - (9) A NATO slave cable receptacle for slave starting the engine.
 - (10) Air compressor to facilitate inflation of the forklift truck tires under emergency conditions.
 - (11) Winterization package to protect the forklift truck systems down to -65OF (-540C).

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

Refer to TM 10-3930-659-10 for information on location and description of major components.

1-11. EQUIPMENT DATA.

Table 1-1. General Characteristics and Specifications.

General Vehicle Specifications:	
Lifting Capacity.....	10,000 lb (4540 kg)
Vehicle Weight	24,220 lb (10996 kg)
Overall:	
Length	303 in. (769.6 cm)
Width	100 in. (254.0 cm)
Height (Boom Raised)	190 in. (482.6 cm)
Wheelbase.....	114 in. (289.6 cm)
Wheel Tread	83 in. (210.8 cm)
Ground Clearance	16 in. (40.6 cm)
Steering Radius	195 in. (495.3 cm)
Load Lift Height	75 in. (190.5 cm)
Travel Speeds (Maximum):	
Forward Gears:	
First	4.5 mph (7.2 kph)
Second	7.6 mph (12.2 kph)
Third.....	17.2 mph (27.7 kph)
Fourth	24.6 mph (39.6 kph)
Reverse Gears:	
First	4.5 mph (7.2 kph)
Second	7.6 mph (12.2 kph)
Third	7.2 mph (27.7 kph)
Fluid Capacities:	
Fuel Tank.....	55 gl (208 l)
Engine:	
Oil	205 qt (19 l)
Coolant.....	25 qt (24 gl)
Transmission Oil	10 qt (gl)
Differential Oil (Each).....	17 qt (16 l)
Hydraulic Reservoir	20 gl (76 l)
Engine Specifications:	
Engine Type.....	John Deere
.....	Turbocharged Diesel
Cycle	Four
Number of Cylinders	Six
Piston Displacement	359 cu In.
Rated Horsepower	115 @ 2200 rpm
Fuel Types	No.1 or No. 2
	Grade Diesel Fuel

1-11. EQUIPMENT DATA (Con't).

Table 1-1. General Characteristics and Specifications (Con't).

Transmission Specifications:	
Type	ZF of North America, Countershaft, Power Shift
Forward Speeds	Four
Reverse Speeds	Three
Torque Converter Type	Single Phase, Single Stage
System Pressure @ 1500° ± 100 and 1500 rpm	213-242 psi (1469-1669 kPa)
Axle and Differentials Specifications:	
Type	John Deere, Inboard Planetary Axle with Standard Spiral Bevel Gear Differential
Differential Gear Reduction Ratio	4.333:1
Inboard Planetary Drive Reduction Ratio	4.800:1
Overall Axle Reduction Ratio	20.798:1
Service Brake Specifications:	
Type	Wet Disc
Operation	Hydraulic, Foot Pedal
Accumulators:	
Charging Medium	Dry Nitrogen
Charging Pressure	475-525 psi (3275-3620 kPa)
Parking Brake Specifications:	
Type	ZF of North America
Operation	Manual Foot Pedal
Mounting	Transmission
Tire Specifications:	
Size	17.5-25
Type	Tubeless
Ply Rating	16
Recommended Inflation Pressure:	
Front	55 psi (379 kPa)
Rear	40 psi (276 kPa)

1-11. EQUIPMENT DATA (Con't).

Table 1-1. General Characteristics and Specifications (Con't).

Hydraulic System Specifications:	
Main Hydraulic Pump:	
Type	Commercial Steering, Gear, Constant Displacement
Output (Maximum).....	34 gpm @ 2000 psi
Fork/Brake Hydraulic Pump:	
Type	Sunstrand Piston, Variable Displacement, Pressure Compensated
Output (Minimum).....	18.6 gpm @ 2000 psi
Steering System Relief Pressures:	
Priority Valve Relief Setting	2500 psi (17,238 kPa)
Crossover Relief Valve Setting	2900 psi (19,996 kPa)
Forklift Control Valve Setting	2750 psi (18,961 kPa)

Section III. PRINCIPLES OF OPERATION

Paragraph Number	Paragraph Title	Page Number
1-12	Drive Train System	1-8
1-13	Service Brake System	1-8
1-14	Steering System	1-9
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1-16	Electrical System.....	1-9
1-17	On-board Crane.....	1-10
1-18	Forklift Winterization Package	1-10

1-12. DRIVE TRAIN SYSTEM.

a. **Engine.** The engine is a six-cylinder turbocharged diesel which supplies rotational power to the transmission. The cooling system is pressurized and includes a thermostat, controlled bypass, and coolant recovery bottle. Engine lubrication is pressurized and oil is continuously cleaned by full-flow filters.

b. **Drive Dampener.** The drive dampener connects the engine to the transmission and absorbs torque spikes that could develop in the drive train.

c. **Transmission.** The transmission input shaft turns at engine speed. A speed reduction takes place within the transmission according to the speed range selected by the operator. The direction of forklift truck travel is also determined by the transmission. Both speed and direction selection are made by hydraulically operated clutches in the transmission.

d. **Drive Shafts.** The drive shafts transmit rotation of the transmission output to the front and rear axles. Connections at both ends are made through universal joints to compensate for any misalignment.

e. **Front and Rear Axles.** The front and rear axles are identical in operating principle. The rear axle is different in that it oscillates 11 ° above and below horizontal. Both axles drive whenever the transmission is engaged. Neither axle can be independently disconnected.

1-13. SERVICE BRAKE SYSTEM.

a. Introduction. The service brakes are foot controlled, hydraulic-type brakes. The system is supplied pressurized hydraulic oil by a pressure compensated pump that is driven by the engine.

b. Fork/Brake Hydraulic Pump. The fork/brake hydraulic pump is a variable displacement, pressure compensated, piston-type pump. It supplies flow to both the service brake system and to the fork attachment cylinder circuits.

c. Accumulators. The accumulators in the brake system store a charge of pressurized oil which allows a number of brake applications in the event of pump failure or engine shutdown.

d. Brake Valves. The two brake valves are identical and are operated by separate foot pedals. Depressing either foot pedal will cause all four wheel brakes to operate.

1-13. SERVICE BRAKE SYSTEM (Con't).

e. **Wheel Brakes.** The wheel brakes are a wet disc-type brake arrangement. When hydraulic pressure is routed to the brake pistons via the brake valves, the pistons move outward and compress the brake disc against the stationary backing plate, slowing or stopping the forklift truck.

f. **Parking Brake.** The parking brake mechanism is mounted on the transmission. The actuating pedal and release handle are located in the operator's cab. A red light flashes and an audible alarm sounds if the parking brake is applied while the engine is running and the transmission is in gear; a yellow light flashes if the parking brake is applied and the transmission is in N (Neutral).

1-14. STEERING SYSTEM.

a. **General.** The steering system is a full-time power assist-type. A secondary electrically operated pump is included to provide emergency steering. The other components of the system are the steering valve, cylinders, and crossover relief valve.

b. **Main Hydraulic Pump.** The main hydraulic pump supplies the steering system only. It is mounted on the transmission and is driven by the engine. It is a fixed displacement, external gear-type pump.

c. **Secondary Steering Pump.** The secondary steering pump is electrically powered. It operates when the key switch is in the ON position and low steering system pressure is sensed by a pressure switch.

1-15. FORKLIFT HYDRAULIC SYSTEM.

a. **General.** The forklift hydraulic system includes the service brake system, steering system, hydraulic reservoir, and attachment components. The service brake and steering systems are described in paragraphs 1-13 and 1-14. The attachment components consist of the forklift control valve, oil cooler, and two oil filters.

b. **Hydraulic Reservoir.** The hydraulic reservoir is a 20 gal (76 l) tank, located just ahead of the engine.

c. **Forklift Control Valve.** The forklift control valve controls the operation of the forks for boom raise and lower, tilt, and spacing.

d. **Oil Cooler.** The oil cooler is mounted alongside the engine radiator and cools both the hydraulic system oil and the transmission oil in separate sections.

e. **Oil Filters.** There are two filters that are contained in the hydraulic system. The hydraulic reservoir suction filter, located at the hydraulic reservoir, filters larger contaminants and uses a washable screen. The hydraulic oil return filter contains a bypass valve and a replaceable cartridge-type filter. It filters contaminants entering the hydraulic reservoir from the components of the system. Should the hydraulic oil return filter become clogged, a hydraulic oil filter restriction switch will light and the bypass valve will open.

1-16. ELECTRICAL SYSTEM.

a. **Charging System.** The 24-volt charging system consists of the batteries and an alternator with an internal regulator.

b. **Lighting System.** The lighting system is protected by a circuit breaker and contains two front driving lights, an adjustable floodlight, two rear cab mounted worklights, front and rear turn signals, taillights, a domelight, front and rear blackout lights, and instrument panel lights.

1-16. ELECTRICAL SYSTEM (Con't).

c. **Monitoring System.** The monitoring system includes a variety of electrical senders, and associated gages and indicators located in the cab. This allows the operator to be aware of the status of the forklift truck during operation. For a description of the function of each monitor within the system, see TM 10-3930-659-10.

d. **Windshield Wipers and Washers.** Separate wipers, washers, and controls are provided for the front windshield and rear cab window.

1-17. ON-BOARD CRANE.

The 900 lb (409 kg) capacity crane is used to remove and install the conveyORIZED forks, cab upper section, and counterweight. It is hand-operated and can be raised or lowered to three different operating positions with quick-release pins.

1-18. FORKLIFT WINTERIZATION PACKAGE.

a. The forklift truck is equipped with a winterization package that protects the forklift truck systems down to, -65°F (-540C).

b. The winterization package consists of an engine coolant heater, engine oil pan heater, battery heaters, and 110-volt junction box. Heaters are operated by an external 110-volt AC power source and are equipped with a thermostat for overheat protection. An extension cord has been provided to connect the forklift truck to the power source.

c. The engine coolant heater is located in the engine cylinder head just behind the hydraulic reservoir.

d. The engine oil pan heater is located in the engine oil pan.

e. Each battery has a blanket-type heater wrapped around the battery case and a tray heater or warmer underneath it. The battery warmers are mounted on wooden insulators.

**CHAPTER 2
GENERAL MAINTENANCE INFORMATION**

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

Paragraph Number	Paragraph Title	Page Number
2-1	Common Tools and Equipment.....	2-1
2-2	Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment	2-1
2-3	Repair Parts	2-1

2-1. COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment, refer to Appendix F, Tool Identification List, and to the *Modified Table of Organization and Equipment (MTOE)* applicable to your unit.

2-2. SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT.

Refer to Appendix B, Maintenance Allocation Chart, and TM 10-3930-659-24P for information on special tools and support equipment for the M544E Forklift Truck.

2-3. REPAIR PARTS.

Repair parts are listed and illustrated in TM 10-3930-659-24P

Section II. SERVICE UPON RECEIPT

Paragraph Number	Paragraph Title	Page Number
2-4	General	2-2
2-5	Inspection Instructions	2-2
2-6	Servicing Instructions	2-2

2-4. GENERAL.

When a new, used, or reconditioned M544E Forklift Truck is first received, determine whether it has been properly prepared for service and is in condition to perform its mission. Follow the inspection instructions in paragraph 2-5 and servicing instructions in paragraph 2-6.

2-5. INSPECTION INSTRUCTIONS.

- a. Read and follow all instructions on DD Form 1397.
- b. Remove all straps, plywood, tape, seals, wrapping, or any other shipping material.

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

- c. If any exterior parts are coated with rust preventive compound, remove with dry cleaning solvent (Item 31, Appendix C) and rags (Item 27, Appendix C).
- d. Inspect the equipment for any damage incurred during shipment. Also check to see if the equipment has been modified.
- e. Check the equipment against the packing slip to ensure that the shipment is complete. Report any discrepancies on SF Form 364.

2-6. SERVICING INSTRUCTIONS.

- a. Perform all Unit Maintenance PMCS. Schedule the next PMCS on DD Form 314.
- b. Perform all lubrication, regardless of interval, as described in LO 10-3930-659-12.
- c. Report any problems on DA Form 2404.

Section III. GENERAL MAINTENANCE INSTRUCTIONS

Paragraph Number	Paragraph Title	Page Number
2-7	General	2-3
2-8	Work Safety	2-4
2-9	Cleaning Instructions	2-4
2-10	Preservation of Parts	2-6
2-11	Painting	2-6
2-12	Inspection Instructions	2-6
2-13	Disassembly and Assembly Instructions.....	2-7
2-14	Repair Instructions	2-7
2-15	Lubrication Instructions	2-8
2-16	Application of Adhesives	2-8
2-17	Standard Tool Requirements	2-9
2-18	Tagging Wires and Hoses	2-9
2-19	Soldering	2-10
2-20	Heat Shrinkable Tubing	2-11
2-21	Electrical Ground Points	2-11
2-22	Lines and Ports	2-12
2-23	Antiseizing Tape	2-12
2-24	Tubes and Compression Fittings.....	2-13
2-25	Lockwire	2-13
2-26	Fluid Disposal	2-14
2-27	Multimeter	2-15
2-28	Electrical Repair	2-20
2-29	Hydraulic System Warm-up	2-25

2-7. GENERAL.

a. These general maintenance Instructions contain general shop practices and specific methods you must be familiar with to properly maintain the M544E Forklift Truck. You should read and understand these practices and methods before performing any Unit Maintenance procedures.

b. Before beginning a task, find out how much repair, modification, or replacement is needed to fix the equipment. Sometimes the reason for equipment failure can be seen right away and complete teardown is not necessary. Disassemble equipment only as far as necessary to repair or replace damaged parts.

c. In some cases, a part may be damaged during removal. If the part appears to be good, and other parts behind it are not defective, leave it in place and continue with the procedure. Here are a few simple rules:

- (1) Do not remove dowel pins or studs unless loose, bent, broken, or otherwise damaged.
- (2) Do not remove bearings or bushings unless damaged. If you need to remove them to access parts behind, carefully pull out bearings and bushings.
- (3) Replace all gaskets, lockwashers, locknuts, seals, cotter pins, and preformed packings.

2-7. GENERAL (Con't).

- d. The following "Initial Setup" information applies to all maintenance procedures:
 - (1) Resources are not listed unless they apply to the procedure.
 - (2) "Personnel Required" is listed only if more than one mechanic is required to complete the procedure.
- e. All tags and forms attached to the equipment must be checked to learn the reason for removal of equipment from service. Modification Work Orders (MWOs) and Technical Bulletins (TBs) must also be checked for equipment changes and updates.

2-8. WORK SAFETY.

- a. Before beginning a procedure, think about the safety risks and hazards to yourself and to others. Wear protective gear such as safety goggles or lenses, safety shoes, rubber apron, or gloves.
- b. Before beginning a procedure, ensure that the following conditions have been observed, unless otherwise specified:
 - (1) Forklift truck must be parked on level ground with parking brake applied.
 - (2) Forks must be lowered to ground.
 - (3) Transmission must be in N (Neutral) and locked.
 - (4) Engine must be off.
 - (5) Battery disconnect switch must be in OFF position.
 - (6) Components must be at operating temperature to be tested.
- c. Immediately clean up spilled fluids to avoid slipping.
- d. When lifting heavy parts, have someone help you. Ensure that lifting equipment or jack is working properly, that it meets weight requirement of part being lifted, and that it is securely fastened to part.
- e. Always use power tools carefully.
- f. Observe all WARNINGS and CAUTIONS.

2-9. CLEANING INSTRUCTIONS.

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and damage equipment. To prevent this, refer to TM 9-247 for further instructions.

- a. General. Cleaning instructions will be the same for the majority of parts and components which make up the forklift truck. The following applies to all cleaning operations:
 - (1) Clean all parts before inspection, after repair, and before assembly.

2-9. CLEANING INSTRUCTIONS (Con't).

(2) Keep hands free of grease which can collect dust, dirt, and grit.

(3) After cleaning, all parts should be covered or wrapped to protect them from dust and dirt. Parts that are subject to rust should be lightly oiled after cleaning (see paragraph 2-10).

b. **Steam Cleaning.**

CAUTION

DO NOT direct water or steam, under pressure, against unsealed electrical systems or any exterior opening. Failure to follow this caution may result in damage to equipment.

(1) Before steam cleaning the forklift truck, protect all electrical equipment which could be damaged by steam or moisture.

WARNING

Avoid contact with live steam. Live steam can burn skin, cause blindness, and cause other serious injury. Be sure to wear protective apron, gloves, and safety goggles when using live steam.

(2) Place disassembled parts in a suitable container to steam clean. Parts that are subject to rust should be dried and lightly oiled after cleaning (see paragraph 2-10).

c. **Castings, Forgings, and Machined Metal Parts.**

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

(1) Clean inner and outer surfaces with dry cleaning solvent (Item 31, Appendix C) and dry with clean rags (Item 27, Appendix C).

(2) Remove grease and accumulated deposits with a scrub brush (Item 5, Appendix C).

WARNING

Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.

(3) Clear all threaded holes with compressed air to remove dirt and cleaning fluids.

2-9. CLEANING INSTRUCTIONS (Con't).

CAUTION

DO NOT wash oil seals, electrical cables, and flexible hoses with dry cleaning solvent or mineral spirits. Serious damage or destruction of material will result.

- d. **Oil Seals, Electrical Cables, and Flexible Hoses.** Wash oil seals, electrical cables, and flexible hoses with a solution of detergent (Item 17, Appendix C) and water, and wipe dry with a clean rag (Item 27, Appendix C).
- e. **Bearings.** Clean bearings in accordance with TM 9-214.
- f. **General Cleaning Covered by Other Manuals.**
- (1) **TB 43-0212:** *Purging, Cleaning and Coating Interior Ferrous and Non-Ferrous Vehicle Fuel Tanks.*
- (2) **TB 750-1047:** *Elimination of Combustibles from Interiors of Metal or Plastic Gasoline and Diesel Fuel Tanks.*
- (3) **TM 9-247:** *Materials Used for Cleaning, Preserving, Abrading and Cementing Ordnance Materiel and Related Materials Including Chemicals.*

2-10. PRESERVATION OF PARTS.

Unpainted metal parts that will not be installed immediately after cleaning may be covered with a thin coat of lubricating oil (Item 26, Appendix C).

2-11. PAINTING.

- a. On painted areas where paint has been removed, paint in accordance with procedures outlined in TM 43-0139 and TB 43-0209.
- b. For camouflage painting instructions, refer to FM 20-3.

2-12. INSPECTION INSTRUCTIONS.

NOTE

All damaged areas should be marked for repair or replacement.

- a. All components and parts must be carefully checked to determine if they are serviceable for use, can be repaired, or must be scrapped.
- b. Inspect drilled and tapped (threaded) holes for the following:
- (1) Wear, distortion, cracks, and any other damage in or around holes.
- (2) Threaded areas for wear distortion (stretching) and evidence of cross-threading.

2-12. INSPECTION INSTRUCTIONS (Con't).

- c. Inspect metal lines, flexible lines or hoses, and metal fittings and connectors for the following:
 - (1) Metal lines for sharp kinks, cracks, bad bends, and dents.
 - (2) Flexible lines or hoses for fraying, evidence of leakage, and loose metal fittings or connectors.
 - (3) Metal fittings and connectors for thread damage and worn or rounded hex heads.
- d. Inspect castings, forgings, and machined metal parts for the following:
 - (1) Machined surfaces for nicks, burrs, raised metal wear, and other damage.
 - (2) Inner and outer surfaces for breaks and cracks.
- e. Inspect bearings in accordance with TM 9-214.

2-13. DISASSEMBLY AND ASSEMBLY INSTRUCTIONS.

Follow these general practices when performing disassembly and assembly procedures:

- (1) Keep major components together whenever possible and practical.
- (2) Tag hoses, electrical wires, cables, and harnesses to identify them and aid during installation.
- (3) Keep related parts together for identification purposes.
- (4) Temporarily install attaching hardware such as screws, bolts, washers, and nuts to prevent loss.
- (5) Only disassemble to the point of the problem.
- (6) Ensure that parts are clean and lubricated before assembly.

2-14. REPAIR INSTRUCTIONS.

- a. Repair castings, forgings, and machined parts using the following Instructions:
 - (1) Repair minor cracked castings or forgings in accordance with TM 9-237.
 - (2) Repair minor damage to machined surfaces with an abrasive cloth (Item 7, Appendix C) dipped in dry cleaning solvent (Item 31, Appendix C).
 - (3) Replace any deeply nicked machined surface that could affect the assembly operation.
 - (4) Repair minor damage to threaded capscrew holes with thread tap of same size to prevent cutting oversize.
- b. After repair, thoroughly clean all parts to prevent dirt, metal chips, or other foreign material from entering any working parts.

2-15. LUBRICATION INSTRUCTIONS.

Refer to LO 10-3930659-12 for detailed, illustrated instructions on proper lubrication. Some general practices to remember:

- (1) Use the correct lubricant.
- (2) Keep lubricants clean.
- (3) Clean all fittings prior to lubrication.
- (4) Lubricate clean disassembled and new parts to prevent rust (see paragraph 2-10).

2-16. APPLICATION OF ADHESIVES.

a. **General.** Adhesives are recommended in some tasks to ensure and strengthen seals. The following information describes their correct use and application.

b. **Silicone Sealing Compound.** Silicone sealing compound (item 11, Appendix C) is used to seal parts against moisture. Use the following instructions when applying:

- (1) Anytime a seal is broken, the part must be thoroughly cleaned to remove any remaining sealing compound and dirt.
- (2) Thoroughly clean surface before applying silicone sealing compound.
- (3) When applying silicone sealing compound, ensure that the area is completely covered. Press silicone sealing compound into and around parts as necessary.
- (4) Silicone sealing compound will set in 15-30 minutes depending on temperature and humidity.

c. **Loctite Adhesive.** Loctite adhesive (Item 2, Appendix C) provides a seal against leakage and a resistance to loosening when used in the assembly of threaded, slip-fitted, or press-fitted parts. Always use grade of Loctite adhesive specified and never use when other retaining means are provided, such as lockwires, lockwashers, lockplates, and fasteners. DO NOT use Loctite adhesive on brass fittings, plugs, or items that need frequent servicing, or when operating temperatures exceed 300F (149°C). Apply Loctite adhesive as follows:

- (1) Before application, clean threads to remove oil, grease, and metal chips.
- (2) Apply Loctite adhesive to second and third threads. DO NOT apply to first thread to ensure system cleanliness.
- (3) Loctite adhesive will dry in 6-24 hours at room temperature.
- (4) Adjustments for elbows, gages, and valves can be made up to 24 hours after application without affecting the seal.

2-17. STANDARD TOOL REQUIREMENTS.

- a. The following are general practices regarding the use of tools:
- (1) Always use the proper tool kit and tools for the procedure being performed.
 - (2) Ensure that tools are clean and lubricated to reduce wear and to prevent rust.
 - (3) Keep track of tools. Do not be careless with them.
 - (4) Return tools to toolbox when finished with repair or maintenance.
 - (5) Return toolboxes and tools to tool storage when not in use.
 - (6) Inventory tools before and after each use.

b. Some maintenance tasks may require special or fabricated tools. The "Initial Setup" of the procedure will specify any special or fabricated tools needed to perform that procedure. Use these special tools only for the maintenance procedures for which they are designed or called out. If you are unfamiliar with a required tool, see your supervisor.

2-18. TAGGING WIRES AND HOSES.

a. Use marker tags (Item 33, Appendix C) to identify all electrical wires, hydraulic, fuel, oil, and coolant lines, and any other parts which may be hard to identify or replace later. Fasten tags to parts during removal by wrapping wire fasteners around or through parts and twisting ends together. Position tags to be out of the way during cleaning, inspection, and repair. Mark tags with a pencil, pen, or marker.

b. Whenever possible, identify electrical wires with the number of the terminal or wire to which it connects. If no markings can be found, tag both wires or wire and terminal, and use the same identifying mark for both. If you cannot tag a wire because it must fit through a small hole or you cannot reach it, write down the description of the wire and the point to which it connects or draw a simple diagram on paper. Be sure to write down enough information so you will be able to properly connect the wires during assembly. If you need to identify a loose wire, look for identifying numbers near the end of the wire, stamped on a permanent metal tag. Compare this number to wire numbers on the appropriate electrical schematic.

c. Identify hydraulic, fuel, oil, and coolant lines when you are taking off more than one line at the same time. Mark tags with points to which lines and hoses must be connected. If it is not obvious which end of a line goes where, tag each end of the line.

- d. Identify and tag other parts as required by name and installed location.

2-19. SOLDERING.

WARNING

Cleaning compound, trichlorotrifluoroethane, for electrical parts is toxic and flammable, and reacts violently with aluminum, titanium, barium, lithium, samarium, sodium, and potassium. Always wear protective goggles and rubber gloves, and use only in a well-ventilated area. DO NOT wear Jewelry while using cleaning compound. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. Cleaning compound fumes or vapors can take the place of air and may become a cancer producing agent. DO NOT use near open flame or excessive heat. The compound's boiling point is 114°F (460C). If you become dizzy while using cleaning compound, immediately get fresh air and medical help. If compound contacts eyes, immediately wash your eyes with water and get medical aid.

CAUTION

Use low wattage soldering gun when soldering electrical wires, connectors, terminal lugs, and receptacles. High wattage soldering guns may damage parts by overheating.

a. Solder connection must be bright and clean before soldering. Remove dirt and grease with trichlorotrifluoroethane (Item 38, Appendix C). Solder used must be of lead alloy (Item 30, Appendix C) with soldering flux (Item 20, Appendix C). All wires, parts, and soldering gun (Item 36, Appendix F) must be tinned for good connection and maximum transfer of heat.

b. To prevent overheating damage to electrical parts when soldering and unsoldering connections, hold bare wire, lead, or terminal lug close to soldering point with long roundnose pliers (Item 44, Appendix F). Pliers act as heat sink and absorb excess heat.

WARNING

Cleaning compound, trichlorotrifluoroethane, for electrical parts is toxic and flammable, and reacts violently with aluminum, titanium, barium, lithium, samarium, sodium, and potassium. Always wear protective goggles and rubber gloves, and use only in a well-ventilated area. DO NOT wear Jewelry while using cleaning compound. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. Cleaning compound fumes or vapors can take the place of air and may become a cancer producing agent. DO NOT use near open flame or excessive heat. The compound's boiling point is 114°F (460C). If you become dizzy while using cleaning compound, immediately get fresh air and medical help. If compound contacts eyes, immediately wash your eyes with water and get medical aid.

c. Clean all solder joints with a scrub brush (Item 5, Appendix C) and electrical parts with trichlorotrifluoroethane (Item 38, Appendix C) after soldering to get a bright, clean surface.

2-20. HEAT SHRINKABLE TUBING.

Use heat shrinkable tubing (Item 39, Appendix C) to insulate soldered and crimped electrical connections as follows:

- (1) Cut desired length of new heat shrinkable tubing twice the diameter of the connection to be covered.
- (2) Slide the heat shrinkable tubing onto the wire and out of the way before making electrical connection.
- (3) After making electrical connection, slide heat shrinkable tubing into place over electrical connection.

WARNING

DO NOT touch heat shrinkable tubing for at least 30 seconds after heating. Heat shrinkable tubing is hot and will burn you.

(4) Hold heat gun (Item 19, Appendix F) 4-5 in. (10.2-12.7 cm) away from heat shrinkable tubing and apply heat for approximately 30 seconds. Stop applying heat as soon as heat shrinkable tubing forms to the shape of the electrical connection.

2-21. ELECTRICAL GROUND POINTS.

Many electrical problems are the result of poor ground connections. You can ensure that ground connections are good by performing the following steps:

WARNING

Although battery disconnect switch must be on and battery ground cable connected in order to test electrical circuit voltage, turn off battery disconnect switch or disconnect battery ground cable before performing resistance tests or replacing parts. This will prevent shock to personnel, and damage to parts and equipment.

- (1) Remove hardware connecting ground cable terminal lug to ground point.

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

- (2) Clean mounting hardware, ground cable terminal lugs, and ground point with dry cleaning solvent (Item 31, Appendix C) and scrub brush (Item 5, Appendix C).
- (3) Remove any rust with wire brush (Item 6, Appendix C) and crocus cloth (Item 8, Appendix C).

2-21. ELECTRICAL GROUND POINTS (Con't).

- (4) Look for cracks, loose terminal lugs, and stripped threads. Replace any defective parts.
- (5) Install hardware connecting ground cable terminal lug to ground point. Ensure that all hardware is tight.

2-22. LINES AND PORTS.

To keep dirt from contaminating fluid systems when removing and installing hydraulic, fuel, oil, and coolant lines, perform the following steps:

- (1) Clean fittings and surrounding area before disconnecting lines.
- (2) Cover, cap, plug, or tape lines and ports after disconnecting lines. When these are not available, use hand-carved wooden plugs, clean rags (Item 27, Appendix C), duct tape (Item 35, Appendix C), or other similar materials to prevent dirt from entering system.
- (3) Ensure that new and used parts are clean before installing.
- (4) Wait to remove cover, cap, plug, or tape from lines and ports until just before installing lines.

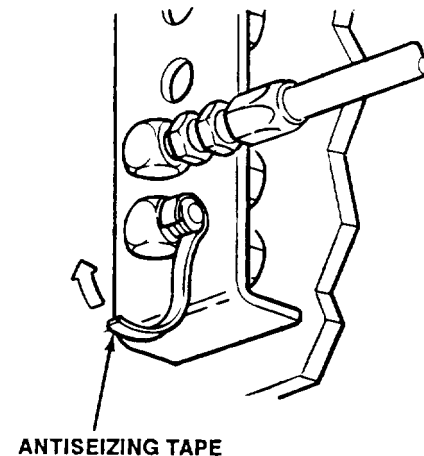
2-23. ANTISEIZING TAPE.

When connecting hydraulic, fuel, and oil lines and fittings without compression sleeves or packings, antiseizing tape (Item 34, Appendix C) may be used to keep connections from leaking. Use as follows:

- (1) Ensure that threads are clean and dry.
- (2) Start antiseizing tape one or two threads from small or leading edge of fitting, joining tape together with an overlap of about X in. (3.18 mm) for fittings with fine threads. For fittings with coarse threads, tape should be wrapped around threads two or three times.
- (3) Tightly wrap antiseizing tape in same direction as you would tighten a nut. Tape must be pressed into threads without cutting or ripping.

CAUTION

DO NOT exceed specified torque or use power tools to tighten fittings taped with antiseizing tape. Overtightening could damage fitting threads and cause connection to leak. (4) Using hand tools, tighten fittings to specified torque.



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2-24. TUBES AND COMPRESSION FITTINGS.

a. Tubes with inverted nuts and compression fittings are designed for one time assembly. Once assembled, they must be replaced as a unit if any parts are found defective. Used parts may not seal properly when used with new ones.

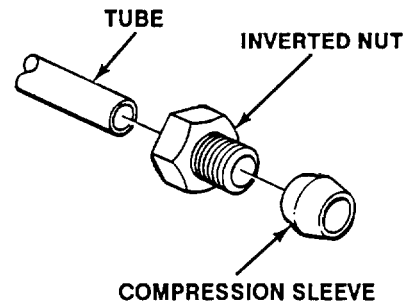
b. Used tube assemblies in good condition can be installed to their original location without leaking.

c. Assemble new tubes, compression sleeves, and inverted nuts as follows:

- (1) Slide inverted nut onto end of tube.
- (2) Slide compression sleeve onto end of

tube.

(3) Repeat previous two steps for other end of tube as required.

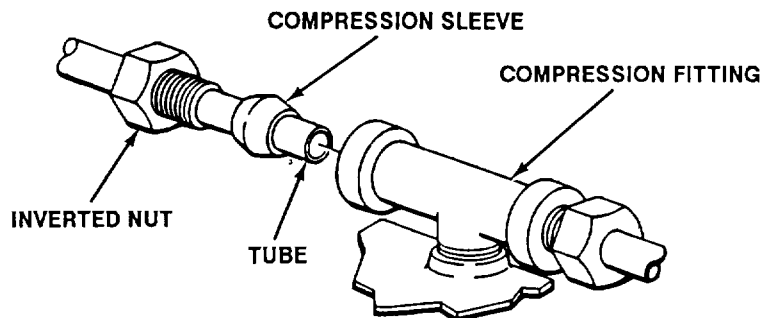


d. Install new tube assemblies as follows:

(1) Insert end of tube as far as it will go into compression fitting to which tube is being installed.

(2) Twist inverted nut into compression fitting and tighten inverted nut against compression sleeve with open-end wrench (Item 44, Appendix F). Compression sleeve will clamp down around tube and conform to internal surface of compression fitting and inverted nut.

(3) Repeat previous two steps for other end of tube as required.



2-25. LOCKWIRE.

a. Always use nonelectrical wire (Item 41, Appendix C).

b. Drilled head screws and bolts usually do not require lockwiring if they are installed with self-locking nuts or lockwashers.

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2-25. LOCKWIRE (Con't)

c. Three screws or bolts are the maximum number that may be lockwired in a series when they are spaced 4-6 in. (10.2-15.2 cm) apart. The maximum number of closely spaced multiple groups of screws or bolts to be lockwired is limited to the number of units that can be lockwired with a 24 in. (61 cm) length of wire.

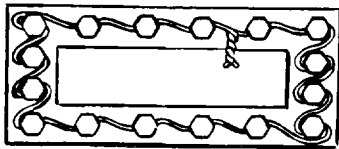
d. Do not secure screws, bolts, or fittings which are spaced more than 6 in. (15.2 cm) apart. Lockwire these fasteners to tie points 6 in. (15.2 cm) or less away.

e. Lockwire parts so that tension will be on lockwire when parts tend to loosen. Lockwire should be installed and twisted tight so that loop around head stays down and does not come up overhead of screw or bolt. This does not apply to castellated nuts when slot is close to top of nuts; wire is more secure when made to pass along the side of stud. Ensure that lockwire is tight but not overstressed.

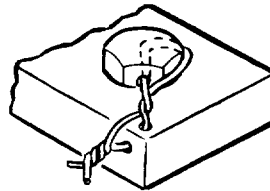
f. Make pigtail of 4-X in. (6.4-12.7 mm) at end of lockwire. Bend pigtail down so it will not become a snag.

g. When lockwiring castellated nuts, tighten castellated nut to low side of torque range, then continue tightening until slot lines up with hole.

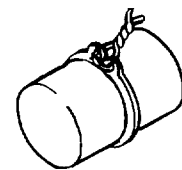
h. In blind, tapped hole application of bolts, castellated nuts, or studs, lockwire as illustrated.



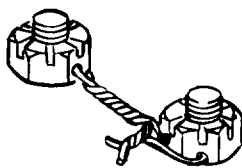
**SMALL SCREWS IN CLOSELY SPACED,
CLOSED GEOMETRICAL PATTERN:
SINGLE WIRE METHOD**



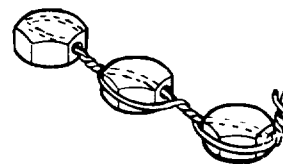
**SINGLE FASTENER APPLICATION:
DOUBLE TWIST METHOD**



**EXTERNAL RETAINER RING:
SINGLE WIRE METHOD**



**CASTELLATED NUTS ON UNDRILLED STUDS:
DOUBLE TWIST METHOD**



**MULTIPLE FASTENER APPLICATION:
DOUBLE TWIST METHOD**

2-26. FLUID DISPOSAL.

Dispose of contaminated drained fluids in accordance with the Standard Operating Procedures (SOP) of your unit.

2-27. MULTIMETER.

a. **General.** The digital multimeter (Item 22, Appendix F) can be found in the Common Number 1 and Common Number 2 Organizational Maintenance Automotive Shop sets and is used to troubleshoot the electrical system of the forklift truck. The multimeter's ohms scale is used to test for continuity, shorts, and resistance and the voltmeter scale is used to test voltage levels at any point in the electrical system.

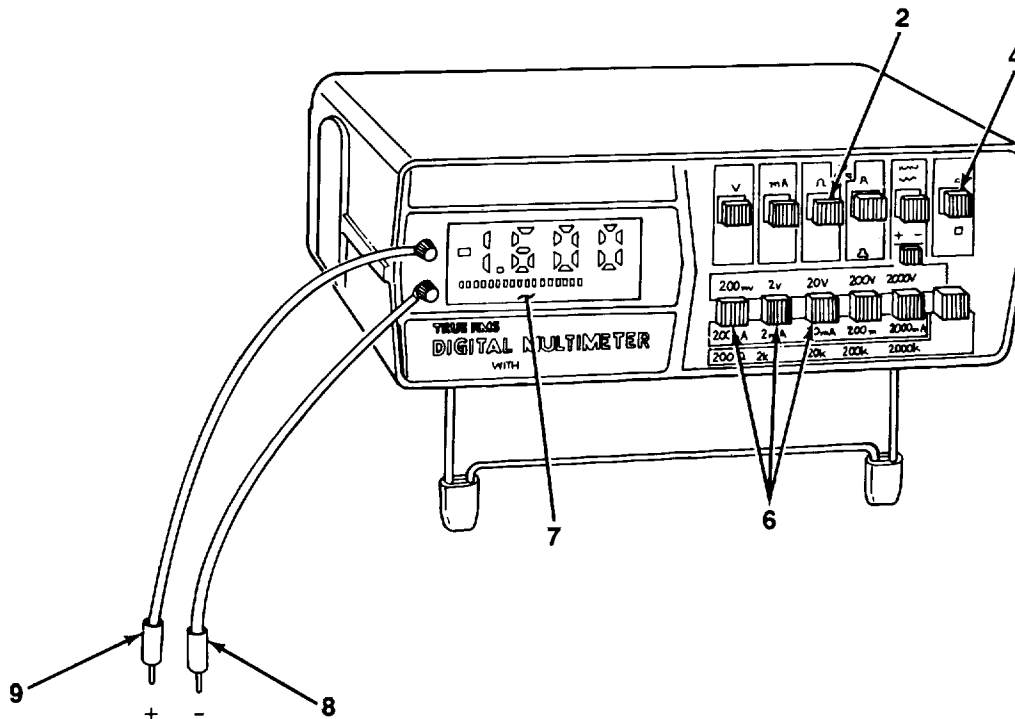
b. **Continuity Tests.** Continuity tests are performed to check for breaks in a circuit (such as a fuse, switch, light bulb, or electrical cable).

NOTE

If digital readout will not zero properly, replace batteries and repeat zeroing procedure. If digital readout will not zero after batteries have been replaced, notify your supervisor.

(1) Zero the Multimeter.

- (a) Set multimeter ON/OFF switch (4) to ON position.
- (b) Press OHMS FUNCTION switch (2).
- (c) Press LOWEST VOLTAGE/OHMS selector switch (6).
- (d) Touch black and red probes (8 and 9) together and check for a zero reading on digital readout (7).

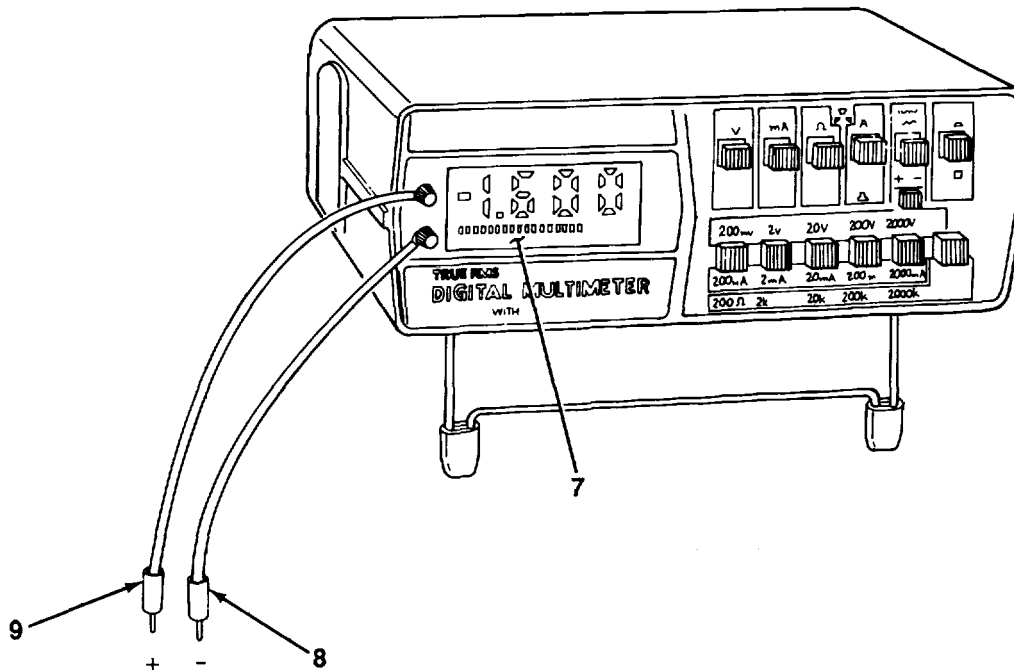


TA706720

2-27. MULTIMETER (Con't).**CAUTION**

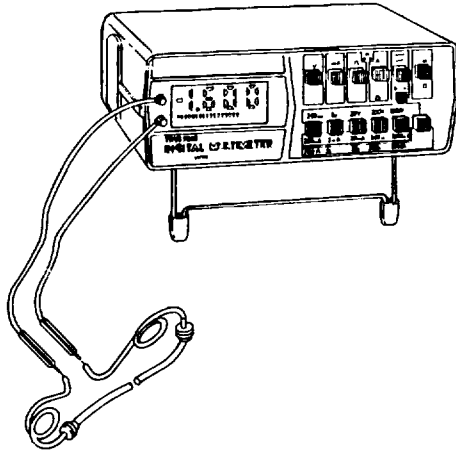
Before performing a continuity test, always disconnect the forklift truck battery ground cable and the circuit to be tested. Failure to follow this caution may damage the multimeter.

- (2) Testing for Continuity.
 - (a) Zero multimeter [see subparagraph (1)].
 - (b) Connect black and red probes (8 and 9) to both terminals of circuit being tested.
 - (c) Read digital readout (7) and interpret the results as follows:
 1. If digital readout (7) indicates 0 (zero), circuit has continuity.
 2. If digital readout (7) indicates resistance, circuit is open.

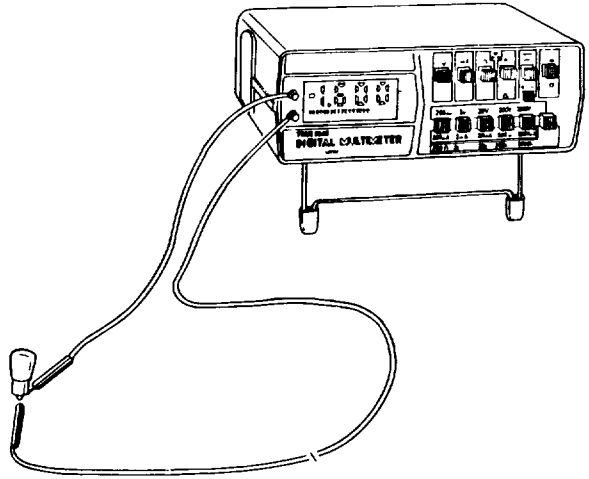


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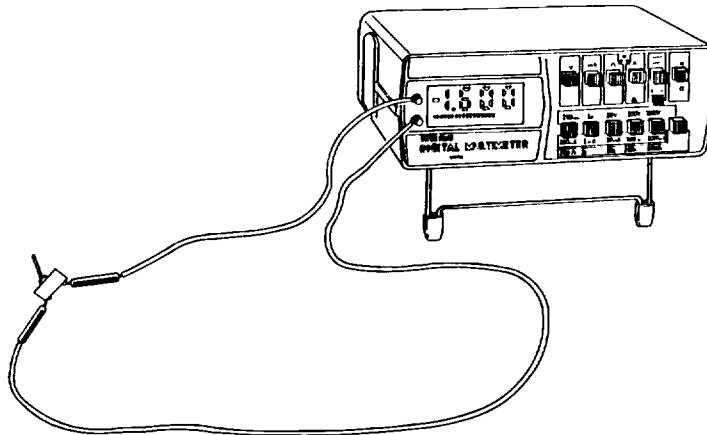
2-27. MULTIMETER (Con't)



TESTING AN ELECTRICAL CABLE



TESTING A BULB



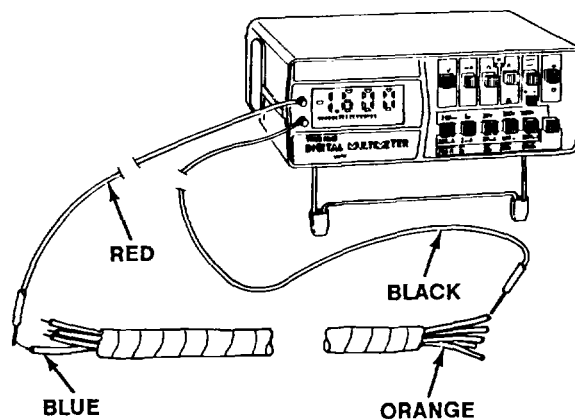
TESTING A SWITCH

TA706722

2-27. MULTIMETER (Con't).**CAUTION**

Before performing a continuity test, always disconnect the forklift truck battery ground cable and the circuit to be tested. Failure to follow this caution may damage the multimeter.

(3) **Testing for Shorts.** A short (or short circuit) occurs when two circuits that should not be connected have metal-to-metal contact with each other. A short also occurs when a circuit that should not touch ground has metal-to-metal contact with ground.

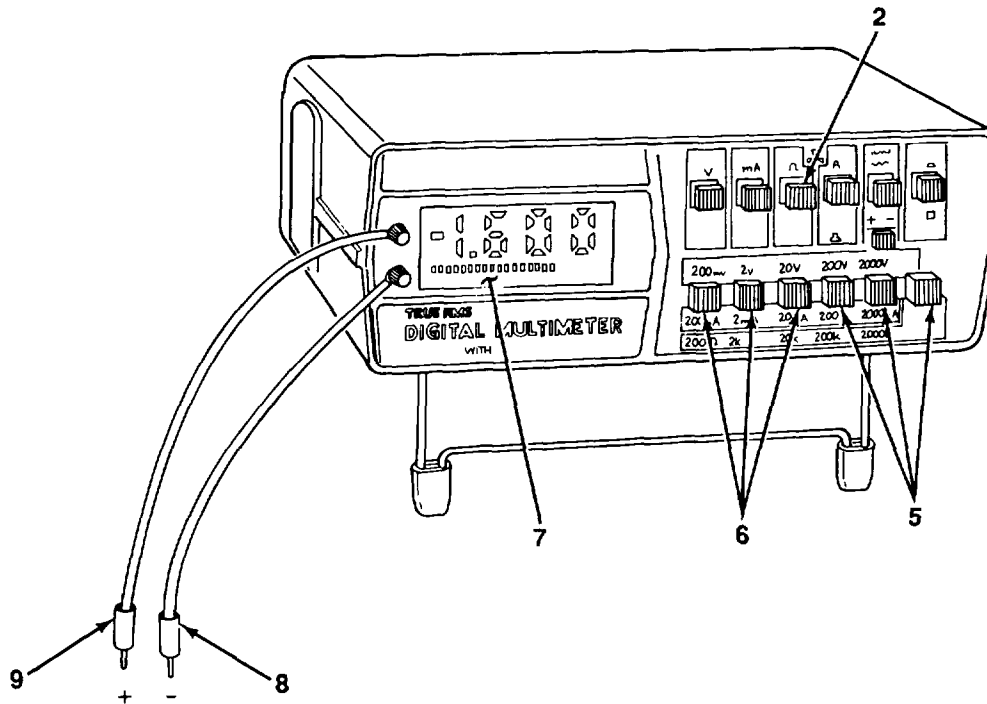


TESTING FOR SHORTS

- (a) Zero multimeter [see subparagraph (1)].
- (b) Connect black probe (8) to one circuit and red probe (9) to either a ground or another circuit.
- (c) Read digital readout (7) and interpret the results as follows:
 1. If digital readout (7) indicates 0 (zero), circuits are shorted or circuit is grounded if testing to ground.
 2. If digital readout (7) does not indicate 0 (zero), circuits are not shorted.
 3. If digital readout (7) jumps or flickers, circuits are shorted or grounded intermittently.

TA706723

2-27. MULTIMETER (Con't).

**CAUTION**

Before performing a continuity test, always disconnect the forklift truck battery ground cable and the circuit to be tested. Failure to follow this caution may damage the multimeter.

(4) **Testing for Resistance.** Allowable resistance readings depend on circuit being tested. Refer to the particular section dealing with that circuit or component for allowable readings.

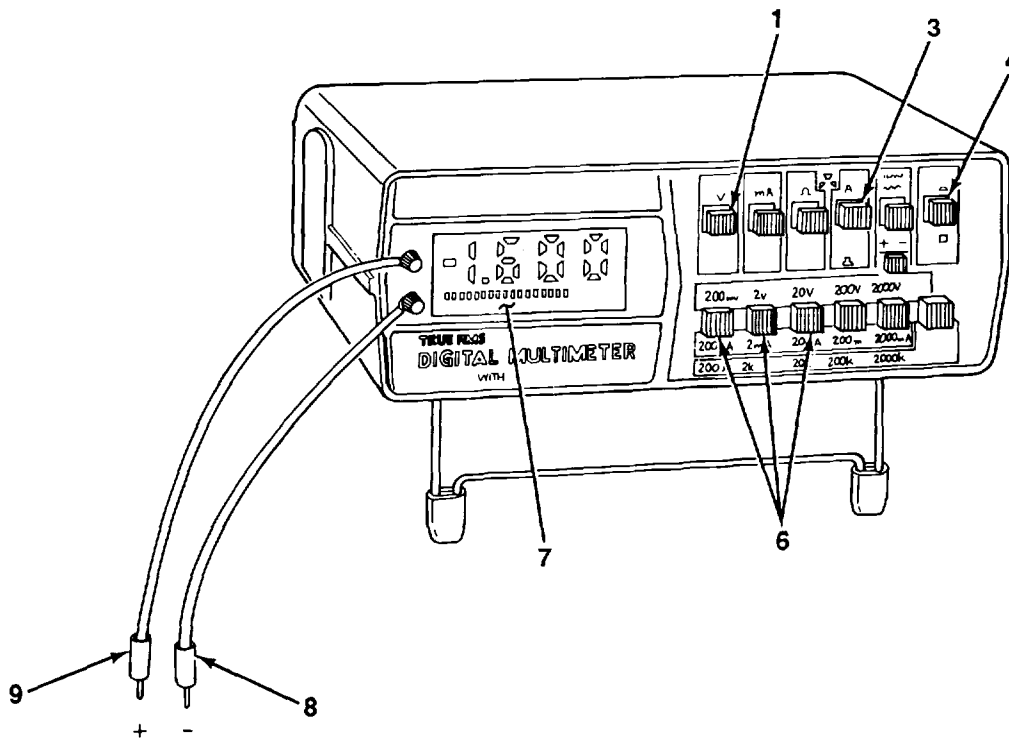
- (a) Zero multimeter [see subparagraph (1)1.
- (b) Press OHMS FUNCTION switch (2).
- (c) Press LOWEST VOLTAGE/OHMS selector switch (6). If test calls for ohms range other than RX1, set RANGE SELECTOR switch (5) to the required range.
- (d) Connect black and red probes (8 and 9) across circuit to be tested.
- (e) Read digital readout (7) and interpret the results as circuit resistance.

TA706724

2-27. MULTIMETER (Con't).

c. Measuring DC Voltage.

- (1) Set multimeter ON/OFF switch (4) to ON position.
- (2) Press VOLTS FUNCTION switch (1).
- (3) Set AC/DC selector switch (3) to DC.
- (4) Select and press LOWEST VOLTAGE/OHMS selector switch (6) for voltage range higher than the volts to be measured.
- (5) Connect red probe (9) to positive (+) side of circuit and black probe (8) to negative (-) side of circuit.
- (6) Read digital readout (7) and interpret the results as DC voltage in the circuit being tested.



2-28. ELECTRICAL REPAIR.

- a. **General.** Specific electrical system maintenance tasks are covered in Chapter 6 of this manual. The following are general electrical practices and procedures.

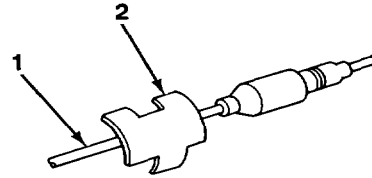
TA706725

2-28. ELECTRICAL REPAIR (Con't).**b. Identification Band Replacement.**

(1) Remove identification band (2) from wire lead (1) and discard.

(2) Mark new identification band (2) with proper Identification number.

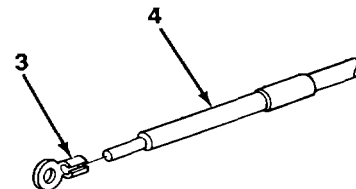
(3) Position new identification band (2) on wire lead (1) and bend tabs over wire lead.

**c. Terminal Lead Replacement.**

(1) Cut terminal lead (3) off wire lead (4) and discard.

(2) Remove insulation from wire lead (4) equal to depth of new terminal lead (3).

(3) Position new terminal lead (3) on wire lead (4) and crimp (Item 43, Appendix F).

**d. Flag Terminal Replacement.**

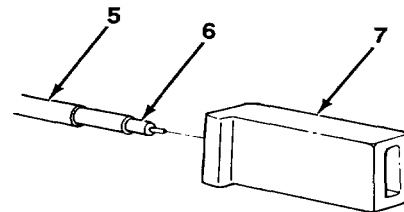
(1) Cut terminal (7) off wire lead (6) and discard.

(2) Remove insulation from wire lead (6) equal to depth of new terminal (7).

(3) Slide back insulator (5) on wire lead (6).

(4) Position new terminal (7) on wire lead (6) and crimp (Item 43, Appendix F).

(5) Slide insulator (5) over crimped end of terminal (7).



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2-28. ELECTRICAL REPAIR (Con't).**e. Male Connector Repair.**

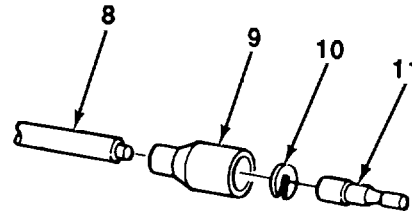
(1) Slide back shell (9) and remove washer (10) from wire lead (8). Cut ferrule (11) from wire lead and discard. Remove shell.

(2) Remove Insulation from wire lead (8) equal to depth of new ferrule (11).

(3) Slide shell (9) on wire lead (8).

(4) Position new ferrule (11) on wire lead (8) and crimp (Item 43, Appendix F).

(5) Position washer (10) on wire lead (8) near crimping. Slide shell (9) over washer and ferrule (11).

**f. Female Connector Repair.**

(1) Slide back shell (13) and sleeve (14), and cut terminal (15) from wire lead (12). Discard terminal.

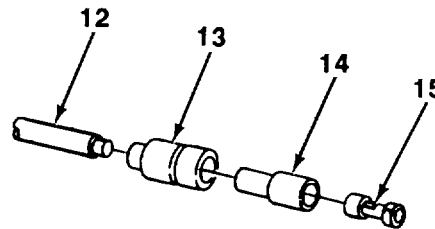
(2) Remove sleeve (14) and shell (13) from wire lead (12).

(3) Remove insulation from wire lead (12) equal to depth of new terminal (15).

(4) Slide shell (13) and sleeve (14) on wire lead (12).

(5) Position new terminal (15) on wire lead (12) and crimp (Item 43, Appendix F).

(6) Slide sleeve (14) and shell (13) over terminal (15).

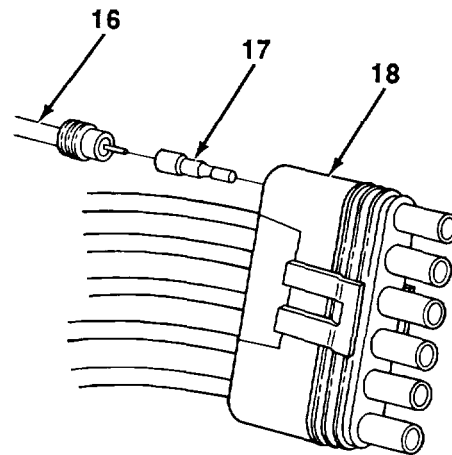


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2-28. ELECTRICAL REPAIR (Con't).**g. Wiring Harness Receptacle Repair.****NOTE**

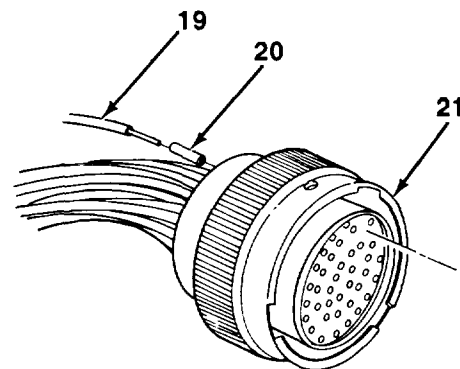
Male and female Inserts are replaced the same way. Male Insert is Illustrated.

- (1) Open connector body (18).
- (2) Remove wire lead (16) from connector body (
- (3) Cut insert (17) off wire lead (16) and discard.
- (4) Remove insulation from wire lead (16) equal to depth of new insert (17).
- (5) Position new insert (17) on wire lead (16) and crimp (Item 43, Appendix F).
- (6) Press insert (17) into connector body (18) until fully seated.
- (7) Pull on wire lead (16) slightly to ensure that insert (17) is locked in place.
- (8) Close connector body (18).

**h. Plug Assembly Repair.****NOTE**

Male and female Inserts are replaced the same way. Female Insert Is Illustrated.

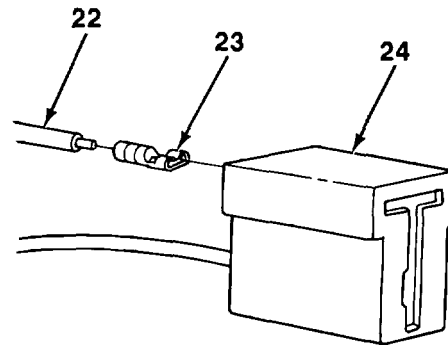
- (1) Remove wire lead (19) from plug (21).
- (2) Cut insert (20) off wire lead (19) and discard.
- (3) Remove insulation from wire lead (19) equal to depth of new insert (20).
- (4) Position new insert (20) on wire lead (19) and crimp (Item 43, Appendix F).
- (5) Press wire lead (19) into plug (21) until fully seated.
- (6) Pull on wire lead (19) slightly to ensure that insert (20) is locked in place.



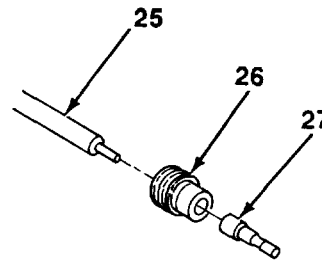
TA706728

2-28. ELECTRICAL REPAIR (Con't).**i. Plug Connector Repair.**

- (1) Remove wire lead (22) from plug connector (24).
- (2) Cut insert (23) off wire lead (22) and discard.
- (3) Remove Insulation from wire lead (22) equal to depth of new Insert (23).
- (4) Position new Insert (23) on wire lead (22) and crimp (Item 43, Appendix F).
- (5) Press insert (23) into plug connector (24) until fully seated.
- (6) Pull on wire lead (22) slightly to ensure that insert (23) is locked in place.

**j. Connector Body Contact Replacement.**

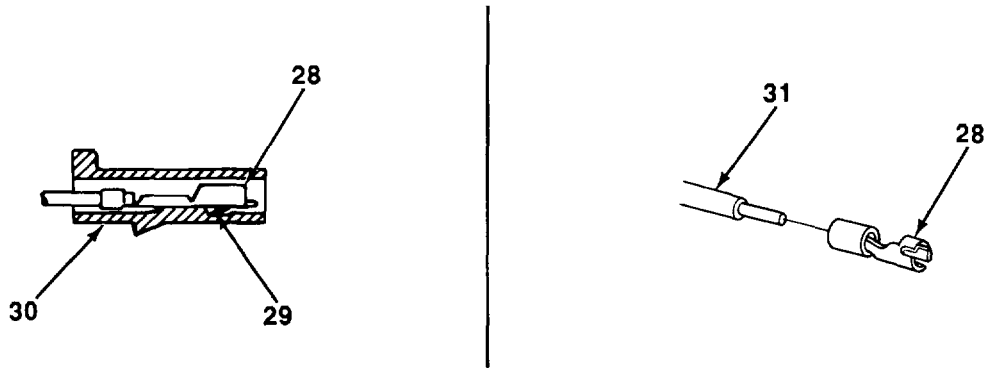
- (1) Cut contact (27) and cable seal (26) off wire lead (25). Discard contact.
- (2) Remove approximately 1/4 In. (6 mm) of insulation from wire lead (25).
- (3) Align cable seal (26) with edge of insulation on wire lead (25).
- (4) Position new contact (27) on wire lead (25) and crimp (Item 43, Appendix F).
- (5) Position cable seal (26) over wire lead (25) and contact (27).



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2-28. ELECTRICAL REPAIR (Con't).**k. Connector Body Terminal Replacement.**

- (1) Depress locking tang (29) on terminal (28).
- (2) Slide connector body (30) off terminal (28).
- (3) Cut terminal (28) off wire lead (31) and discard.
- (4) Remove Insulation from wire lead (31) equal to depth of new terminal (28).
- (5) Position new terminal (28) on wire lead (31) and crimp (Item 43, Appendix F).
- (6) Bend locking tang (29) on terminal (28) to original position.
- (7) Install terminal (28) on connector body (30).

**2-29. HYDRAULIC SYSTEM WARM-UP**

a. This procedure is to be performed when hydraulic system warm-up is required for maintenance reasons and under normal conditions.

- (1) Start engine (see TM 10-3930-659-10).
- (2) Slowly cycle lift, tilt, and spacing functions of forklift truck a number of times.
- (3) Slowly turn steering wheel in either direction until steer limit is reached. Hold steering wheel in position for a short time.
- (4) Turn steering wheel in other direction until steer limit is met. Hold steering wheel in position for a short time.
- (5) Repeat this procedure until hydraulic fluid reaches normal operating temperature.
- (6) Shut down engine (see TM 10-3930-659-10).

b. If hydraulic system warm-up is required in extreme cold situations, extra precautions and requirements must be performed (see TM 10-3930-659-10).

TA706730

CHAPTER 3

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Paragraph Number	Paragraph Title	Page Number
3-1	General.....	3-1
3-2	WARNINGS and CAUTIONS	3-1
3-3	Explanation of Table Entries	3-1
3-4	Other Table Entries	3-2
3-5	Reporting Repairs	3-2
3-6	General PMCS Procedures	3-2
Table 3-1	Preventive Maintenance Checks and Services (PMCS)	3-4

3-1. GENERAL.

To ensure that the M544E Forklift Truck is ready for operation at all times, it must be inspected on a regular basis so that defects may be found before they result in serious damage, equipment failure, or injury to personnel. Table 3-1 contains systematic instructions on inspections, adjustments, and corrections to be performed by Unit Maintenance.

3-2. WARNINGS AND CAUTIONS.

Always observe the WARNINGS and CAUTIONS appearing in your PMCS table. WARNINGS and CAUTIONS appear before applicable procedures. You must observe these WARNINGS and CAUTIONS to prevent serious Injury to yourself and others or to prevent your equipment from being damaged.

3-3. EXPLANATION OF TABLE ENTRIES.

a. **Item Number Column.** Numbers in this column are for reference. When completing DA Form 2404 (*Equipment Inspection and Maintenance Worksheet*), include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must perform checks and services for the interval listed.

b. **Interval Column.** This column tells you when you must perform the procedure in the procedure column.

- (1) *Quarterly* procedures must be done once every three months.
- (2) *Semiannual* procedures must be done once every six months.
- (3) *Annual* procedures must be done once each year.
- (4) *Hourly* procedures must be done based upon number of operating hours listed in column.

c. **Item To Be Checked or Serviced Column.** This column identifies the item to be checked or serviced.

3-3. EXPLANATION OF TABLE ENTRIES (Con't).

d. **Procedure Column.** This column gives the procedure you must perform to check or service the item listed in the Item To Be Checked or Serviced column to know if the equipment is ready or available for its intended mission or for operation. You must perform the procedure at the time stated in the interval column.

e. **Not Fully Mission Capable If: Column.** Information in this column tells you what faults will keep your equipment from being capable of performing its primary mission. If you make check and service procedures that show faults listed in this column, the equipment is not mission-capable. Follow standard operating procedures for maintaining the equipment or reporting equipment failure.

3-4. OTHER TABLE ENTRIES.

Be sure to observe all special information and notes that appear in your table.

3-5. REPORTING REPAIRS.

Report all defects and corrective actions on DA Form 2404. If a serious problem is found, immediately report it to your supervisor.

3-6. GENERAL PMCS PROCEDURES.

a. Always perform PMCS in the same order so it gets to be a habit. Once you've had some practice, you'll spot anything wrong in a hurry. If any deficiency is discovered, perform the appropriate troubleshooting task in Chapter 4. If any component or system is not serviceable, or if given service does not correct the deficiency, notify your supervisor.

b. Before performing preventive maintenance, read all the checks required for the applicable interval and prepare all tools needed to make all checks. Have several clean rags (Item 27, Appendix C) handy. Perform ALL inspections at the applicable interval.

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

(1) **Keep Equipment Clean.** Dirt, oil, and debris get in the way and may cover up a serious problem. Clean as you work and as needed. Use dry cleaning solvent (Item 31, Appendix C) on all metal surfaces. Use dishwashing compound (Item 10, Appendix C) and water when you clean rubber, plastic, and painted surfaces.

(2) **Rust and Corrosion.** Check metal parts of forklift truck and frame for rust and corrosion. If any bare metal or corrosion exists, clean and apply a light coat of oil (see paragraph 2-10). Report it to your supervisor.

3-6. GENERAL PMCS PROCEDURES (Con't).

(3) **Bolts, Nuts, and Screws.** Check bolts, nuts, and screws for obvious looseness, missing, bent, or broken condition. You can't try them all with a tool, of course, but look for chipped paint, bare metal, or rust around bolt heads. If you find one you think is loose, tighten it.

(4) **Welds.** Look for loose or chipped paint, rust, or gaps where parts are welded together. If you find a bad weld, report it to your supervisor.

(5) **Electrical Wires and Connectors.** Look for cracked or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors and ensure that wires are in good condition.

(6) **Hydraulic Hoses and Lines.** Look for wear, damage, and signs of leaks. Ensure that clamps and fittings are tight. Wet spots indicate leaks, of course, but a stain around a fitting or connector can also mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, correct it if authorized by the Maintenance Allocation Chart (Appendix B). If not authorized, report it to your supervisor.

(7) **Fluid Leakage.** It is necessary for you to know how fluid leakage affects the status of your forklift truck. The following are definitions of the types/classes of leakage you need to know to be able to determine whether the forklift truck is mission-capable. Learn and be familiar with them, and remember - when in doubt, notify your supervisor!

CAUTION

Equipment operation is allowable with minor (Class I or II) leakage. Fluid levels in an item/system affected with such leakage must be checked more frequently than required in PMCS. When in doubt, notify your supervisor. IMMEDIATELY report Class III leaks to your supervisor.

Leakage Definitions for Unit PMCS

<i>Class I</i>	Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
<i>Class I</i>	Leakage of fluid great enough to form drops, but not enough to cause drops to drip from the item being inspected.
<i>Class III</i>	Leakage of fluid great enough to form drops that fall from the item being inspected.

Table 3-1. Preventive Maintenance Checks and Services (PMCS).

Item No.	Interval	<u>Location</u> Item to Check/ Service	Procedure	Not Fully Mission Capable If:
1	Quarterly	Cab Fresh Air Filter	<p style="text-align: center;">NOTE</p> <ul style="list-style-type: none"> • Prior to beginning PMCS, perform all applicable lubrication procedures in LO 10-3930-659-12. • If AOAP laboratory support is not available, additional PMCS procedures may have to be scheduled in accordance with hard time intervals contained in LO 10-3930-659-12. <p style="text-align: center;"><u>WARNING</u></p> <p>If NBC exposure is suspected, all engine air cleaner air filter media should be handled by personnel wearing protective equipment. Consult your NBC Officer or NBC NCO for appropriate handling or disposal procedures.</p> <p>Check cab fresh air filter for contamination and damage. Clean or replace cab fresh air filter (see paragraph 14-13). Clean cab recirculating filter (see paragraph 14-14).</p>	
2	Quarterly	Cab Recirculating Filter	<p>Clean cab recirculating filter (see paragraph 14-14).</p>	
3	Quarterly	Air Cleaner Intake Cover	<p>Check air cleaner intake cover for damage and buildup of dirt or contamination. If dirty, clean with detergent (Item 17, Appendix C) and water.</p>	

Table 3-1. Preventive Maintenance Checks and Services (PMCS) (Con't).

Item No.	Interval	<u>Location</u> Item to Check/ Service	Procedure	Not Fully Mission Capable If:
4	Quarterly	Engine Radiator Coolant Level	<p style="text-align: center;"><u>WARNING</u></p> <p>DO NOT remove radiator fill cap unless engine is cold. This is a pressurized cooling system and escaping steam, hot water, or coolant will cause serious burns.</p> <p>Check coolant level in engine radiator (see TM 10-3930-659-10). Coolant level must be at bottom of filler neck. Add antifreeze (Item 3, Appendix C) as required to obtain proper level (see paragraph 5-38).</p>	
5	Quarterly	Fuel Filter	<p style="text-align: center;"><u>WARNING</u></p> <p>Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel filter. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.</p> <p>Drain water and sediment from fuel filter (see paragraph 5-17).</p>	
6	Quarterly	Parking Brake	<p>Push down on parking brake pedal. Parking pawl should not engage in last notch. If parking pawl does engage last notch, adjust parking brake (see paragraph 10-2).</p>	Parking pawl engages in last notch.
7	Quarterly	Tires	<p>Check tires for proper air pressure:</p> <p>Front..... 55 psi (379 kPa)</p> <p>Rear 40 psi (276 kPa)</p>	

Table 3-1. Preventive Maintenance Checks and Services (PMCS) (Con't).

Item No.	Interval	<u>Location</u> Item to Check/ Service	Procedure	Not Fully Mission Capable If:
8	Quarterly	Gages and Indicators	Visually inspect all gages, indicators, and warning lights for loose connections, proper operation, and other defects.	
9	Semiannually	Wiring and Switches	a. Inspect wiring for defective insulation, breaks, and loose or corroded connections. b. Check switches for proper operation and defects.	
10	Semiannually	Fuel Filter	<p style="text-align: center;"><u>WARNING</u></p> <p>Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel filter. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.</p> <p>Replace fuel filter (see paragraph 5-17).</p>	
11	Semiannually	Engine Radiator	Add corrosion inhibitor (Item 24, Appendix C) to engine radiator through filler neck (see TM 750-254).	
12	Semiannually	Batteries	<p style="text-align: center;"><u>WARNING</u></p> <p>Remove all Jewelry such as rings, dog tags, bracelets, etc. If Jewelry contacts battery terminal, a direct short will result, causing instant heating of Jewelry which will result in severe injury to personnel.</p>	

Table 3-1. Preventive Maintenance Checks and Services (PMCS) (Con't).

Item No.	Interval	<u>Location</u> Item to Check/ Service	Procedure	Not Fully Mission Capable If:
12 (Con't)	Semiannually	Batteries	<p style="text-align: center;">WARNING</p> <ul style="list-style-type: none"> • Battery gases can explode. DO NOT smoke or allow sparks or open flames near batteries. Wear safety glasses or goggles when checking batteries. Failure to follow this warning may result in death or serious injury to personnel. • Sulfuric acid contained in batteries can cause serious burns. If battery corrosion or electrolyte makes contact with skin, eyes, or clothing, take immediate action to stop the corrosive burning effects. Failure to follow these procedures may result in death or serious injury to personnel. <ul style="list-style-type: none"> a. <u>Eyes</u>. Flush with cold water for no less than 15 minutes and seek medical attention immediately. b. <u>Skin</u>. Flush with large amounts of cold water until all acid is removed. Seek medical attention as required. c. <u>Internal</u>. If corrosion or electrolyte is ingested, drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Seek medical attention immediately. d. <u>Clothing/Equipment</u>. Wash area with large amounts of cold water. Neutralize acid with baking soda or household ammonia. 	

Table 3-1. Preventive Maintenance Checks and Services (PMCS) (Con't).

Item No.	Interval	<u>Location</u> Item to Check/ Service	Procedure	Not Fully Mission Capable If:
12 (Con't)	Semiannually	Batteries	a. Clean battery posts and cable terminals using a scrub brush (Item 5, Appendix C). b. Apply a small amount of grease (Item 23, Appendix C) only around base of each battery post. c. Test batteries for specific gravity (see TM 9-6140-200-14). d. Check level of distilled water in battery and fill as required (see TM 9-6140-200-14). Distilled water should be to bottom of filler neck in each cell. e. Inspect battery cables and clamps for corrosion and tightness.	
13	Semiannually	Fan Belts	<p style="text-align: center;">NOTE</p> <p>Fan belts should be replaced in matched sets even if only one belt is worn.</p> a. Check for missing, broken, cracked, frayed fan belts. Replace if one or more fan belts are damaged (see paragraph 5-37). b. Check and adjust fan belt tension (see paragraph 5-37)	a. Belt is frayed, or cracked, missing, broken, or b. Belt deflection is more than 0.5 in. (12.7 mm).
14	Semiannually	Front and Rear Differential Oil Levels	Check oil levels in front and rear differentials and fill as required (see paragraph 9-3).	

Table 3-1. Preventive Maintenance Checks and Services (PMCS) (Con't).

Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
15	Annually	Air Cleaner	<p style="text-align: center;"><u>WARNING</u></p> <p>If NBC exposure is suspected, all engine air cleaner air filter media should be handled by personnel wearing protective equipment. Consult your NBC Officer or NBC NCO for appropriate handling or disposal procedures.</p> <p>Change both primary and secondary air filters (see paragraph 5-9).</p>	
16	Annually	Low and High Engine Idle Speeds	<p>Check and adjust low and high engine idle speeds as required (see paragraph 5-25).</p>	
17	Annually	Engine Radiator	<p style="text-align: center;"><u>WARNING</u></p> <p>DO NOT remove radiator fill cap unless engine is cold. This is a pressurized cooling system and escaping steam, hot water, or coolant will cause serious burns.</p> <p>Drain and flush engine radiator (see paragraph 5-38) and overflow tank (see TM 750-254). Fill engine radiator with antifreeze (see paragraph 5-38).</p>	
18	Annually	Brake Linings	<p>a. Check brake linings for wear (see paragraph 10-7).</p> <p>b. Inspect brake linings on each linings are worn to pressure plate and on each brake backing plate for excessive wear (see paragraph 10-7).</p>	<p>b. One or more bottom of oil grooves.</p>

Table 3-1. Preventive Maintenance Checks and Services (PMCS) (Con't).

Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
19	Annually	On-board Crane Cable	Check on-board crane cable for kinks, broken strands, corrosion, and other damage. Replace cable as required (see paragraph 15-1).	On-board crane cable has kinks, broken strands, rust, or other damage.
20	1000 Hours	Cylinder Head Valve Clearance	Check and adjust cylinder head valve clearance (see paragraph 5-1).	

CHAPTER 4
TROUBLESHOOTING PROCEDURES

Section I. MECHANICAL, ELECTRICAL, AND
HYDRAULIC TROUBLESHOOTING

Paragraph Number	Paragraph Title	Page Number
4-1	General	4-1
4-2	Explanation of Columns.....	4-2
4-3	Troubleshooting Symptom Index	4-2
Table 4-1	Mechanical Troubleshooting	4-7
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4-1. GENERAL.

a. This section provides information for identifying and correcting malfunctions which may develop when operating or maintaining the M544E Forklift Truck. Electrical malfunctions are isolated to an individual circuit or component.

b. The Troubleshooting Symptom Index (see paragraph 4-3) lists common malfunctions which may occur and refers you to the proper page in Table 4-1, 4-2, or 4-3 for a troubleshooting procedure.

c. This section cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed, or is not corrected by the listed corrective actions, notify your supervisor.

d. The condition of the storage batteries should be checked prior to performing any electrical checks (see TM 9-6140-200-14).

e. When troubleshooting a malfunction:

(1) Question the operator to obtain any information that might help determine the cause of the problem. before continuing, ensure that all applicable operator/crew troubleshooting was performed.

(2) Locate the symptom or symptoms in paragraph 4-3 that best describe the malfunction. If the appropriate symptom is not listed, notify your supervisor.

(3) Turn to the page in Table 4-1, 4-2, or 4-3 where the troubleshooting procedures for the malfunction in question are described. Headings at the top of each page show how each troubleshooting procedure is organized: *Malfunction, Test or Inspection* (in step number order), and *Corrective Action*.

(4) Perform each step in the order listed until the malfunction is corrected. Do not perform any maintenance task unless the troubleshooting procedure tells you to do so.

4-2. EXPLANATIONS OF COLUMNS.

The columns in Tables 4-1, 4-2, and 4-3 are defined as follows:

- (1) **MALFUNCTION.** A visual or operational indication that something is wrong with the forklift truck.
- (2) **TEST OR INSPECTION.** A procedure to isolate the problem in a component or system.
- (3) **CORRECTIVE ACTION.** A procedure to correct the problem.

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Table 4-1. Mechanical Troubleshooting.

**MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION**

ENGINE SYSTEM

1. ENGINE TURNS OVER BUT WILL NOT START.

Step 1. Check engine cranking speed (see STE/ICE-R Test NG30).

WARNING

Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel tank. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

Step 2. Inspect fuel tank vent line for restrictions.

Replace restricted or damaged fuel tank vent line (see paragraph 5-15).

Table 4-1. Mechanical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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WARNING

Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel tank. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

- Step 3. Inspect fuel filter for presence of water or restrictions.
 Drain water from fuel filter (see paragraph 5-17).
 Bleed fuel filter and lines (see paragraph 5-16).
 Replace damaged fuel filter (see paragraph 5-17).
- Step 4. Inspect fuel lines for leaks or damage.
 Tighten all loose connections.
 Replace damaged fuel lines (see paragraph 5-15).
- Step 5. Inspect fuel tank-to-fuel transfer pump fuel line for leakage.
 Tighten all loose connections.
 Bleed fuel filter and lines (see paragraph 5-16).
 Replace damaged fuel lines (see paragraph 5-15).

WARNING

If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your NBC Officer or NBC NCO for appropriate handling or disposal procedures.

- Step 6. Check air filters for restrictions (see TM 10-3930-659-10).
 Replace clogged or damaged air filters (see paragraph 5-9).
- Step 7. Check fuel injection pump fuse marked ALTERNATOR EXCITATION for continuity (see paragraph 2-27).
 Replace defective fuse (see paragraph 6-13).
- Step 8. Test fuel system pressure (see STE/ICE-R Tests NG31 and GO10).
- Step 9. Test fuel shutoff solenoid (see STE/ICE-R Test NG31).

Table 4-1. Mechanical Troubleshooting (Con't).

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

WARNING

Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel tank. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

- Step 10. Check fuel injection pump metering valve for sticking.
Lightly tap fuel injection pump housing with a soft hammer. If engine starts, notify Direct Support Maintenance.
- Step 11. Check fuel injection pump static timing (see paragraph 5-26).
Adjust fuel injection pump static timing (see paragraph 5-26).
If engine still will not start, notify Direct Support Maintenance.

2. ENGINE SURGES, STALLS, OR MISSES FREQUENTLY.

- Step 1. Check engine idle speed (see STE/ICE-R Test G04).

WARNING

Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel tank. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

- Step 2. Inspect fuel tank vent line for restrictions.
Replace restricted or damaged fuel tank vent line (see paragraph 5-15).
- Step 3. Inspect fuel filter for presence of water or restrictions.
Drain water from fuel filter (see paragraph 5-17).
Bleed fuel filter and lines (see paragraph 5-16).
Replace damaged fuel filter (see paragraph 5-17).
- Step 4. Inspect fuel tank-to-fuel transfer pump fuel line for leakage.
Tighten all loose connections.
Bleed fuel filter and lines (see paragraph 5-16).
Replace damaged fuel lines (see paragraph 5-15).
- Step 5. Perform fuel system tests (see STE/ICE-R Tests NG31 and GO10).
- Step 6. Inspect for restricted fuel injection pump-to-fuel tank fuel line by disconnecting fuel line from fuel injection pump. Connect a hose to fuel injection pump and route fuel into suitable container.

If engine operates normally, replace fuel injection pump-to-fuel tank fuel line (see paragraph 5-15).

Table 4-1. Mechanical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<u>WARNING</u>		
Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel tank. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.		
Step 7.	Check fuel injection pump metering valve for sticking.	Lightly tap fuel injection pump housing with a soft hammer. If engine starts, notify Direct Support Maintenance.
Step 8.	Inspect cylinder head valve for proper clearance (see paragraph 5-1).	Adjust cylinder head valves (see paragraph 5-1).
Step 9.	Check fuel injection pump static timing (see paragraph 5-26).	Adjust fuel injection pump static timing (see paragraph 5-26).
If engine still will not remain running, notify Direct Support Maintenance.		

3. ENGINE DOES NOT DEVELOP FULL POWER.

- Step 1. Check for lit engine air filter indicator light.
Perform engine power check (see STE/ICE-R Test G06).

WARNING

Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel tank. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

- Step 2. Inspect fuel tank vent line for restrictions.
Replace restricted or damaged fuel tank vent line (see paragraph 5-15).
- Step 3. Inspect fuel filter for presence of water or restrictions.
Drain water from fuel filter (see paragraph 5-17).
Bleed fuel filter and lines (see paragraph 5-16).
Replace damaged fuel filter (see paragraph 5-17).
- Step 4. Inspect for pinched, twisted, or leaking fuel lines.
Replace damaged fuel lines (see paragraph 5-15).

Table 4-1. Mechanical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 5.	Check engine Idle speed (see STE/ICE-R Test G04).	<p style="text-align: center;"><u>WARNING</u></p> <p>Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel tank. Failure to follow this warning will result in death or serious Injury to personnel. If you are burned, Immediately seek medical aid.</p>
Step 6.	Perform fuel system tests (see STE/ICE-R Tests NG31 and GO10).	
Step 7.	Check fuel injection pump metering valve for sticking. Lightly tap fuel injection pump housing with soft hammer. If engine starts, notify Direct Support Maintenance.	
Step 8.	Inspect cylinder head valve for proper clearance (see paragraph 5-1). Adjust cylinder head valves (see paragraph 5-1).	<p style="text-align: center;"><u>WARNING</u></p> <p>Before attempting to remove or replace any part of exhaust system, allow exhaust system to cool. Failure to follow this warning will result in serious burns.</p>
Step 9.	Inspect muffler for restrictions. Remove muffler (see paragraph 5-27) and run engine (see TM 10-3930-659-10). If engine operation is normal, replace muffler (see paragraph 5-27).	
Step 10.	Check fuel injection pump static timing (see paragraph 5-26). Adjust fuel injection pump static timing (see paragraph 5-26). If engine still does not develop full power, notify Direct Support Maintenance.	
4. ENGINE EMITS EXCESSIVE BLACK OR GRAY EXHAUST SMOKE.		
<p style="text-align: center;"><u>WARNING</u></p>		
<p style="text-align: center;">If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your NBC Officer or NBC NCO for appropriate handling or disposal procedures.</p>		
Step 1.	Check for lit engine air filter indicator light. If engine air filter indicator light is lit, clean or replace air cleaner (see paragraph 5-9).	

Table 4-1. Mechanical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	Step 2.	Check fuel injection pump static timing (see paragraph 5-26). Adjust fuel injection pump static timing (see paragraph 5-26). If engine still emits excessive exhaust smoke, notify Direct Support Maintenance.
5. ENGINE EMITS EXCESSIVE BLUE OR WHITE EXHAUST SMOKE.		
<u>WARNING</u>		
Servicing of engine cooling system should only be performed on a cool engine. NEVER remove clamps or hoses when engine is hot. Pressurized steam, hot water, or coolant will cause serious burns.		
	Step 1.	Inspect for faulty engine thermostats. Remove engine thermostats (see paragraph 5-34) and check for an open valve (see TM 750-254). If valve is opened, replace engine thermostats (see paragraph 5-34).
	Step 2.	Check fuel injection pump static timing (see paragraph 5-26). Adjust fuel injection pump static timing (see paragraph 5-26). If engine still emits excessive exhaust smoke, notify Direct Support Maintenance.
6. ENGINE NOISE IS ABNORMAL.		
	Step 1.	Inspect for low engine oil (see TM 10-3930-659-10) or incorrect engine oil (see LO 10-3930-659-12). Add or change engine oil (see TM 10-3930-659-10 and LO 10-3930-659-12).
	Step 2.	Check engine oil for contamination. If engine oil is contaminated, notify Direct Support Maintenance.
	Step 3.	Perform engine oil pressure tests (see STE/ICE-R Tests GO08 and GO09).
	Step 4.	Inspect cylinder head valve for proper clearance (see paragraph 5-1). Adjust cylinder head valves (see paragraph 5-1).
	Step 5.	Check fuel injection pump static timing (see paragraph 5-26). Adjust fuel injection pump static timing (see paragraph 5-26). If engine is still noisy, notify Direct Support Maintenance.
7. ENGINE OIL PRESSURE IS LOW.		
WARNING		
Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel tank. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.		
	Step 1.	Check for engine oil diluted with fuel. If engine oil is diluted with fuel, notify Direct Support Maintenance.

Table 4-1. Mechanical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	Step 2.	Perform engine oil pressure tests (see STE/ICE-R Tests G08 and G09).
	Step 3.	Test engine oil low pressure indicator and sensor (see STE/ICE-R Test G03).
8. ENGINE OIL PRESSURE IS HIGH.		
		Perform engine oil pressure tests (see STE/ICE-R Tests G08 and G09). If engine oil pressure is high, notify Direct Support Maintenance.
9. FUEL CONSUMPTION IS EXCESSIVE.		
WARNING		
If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your NBC Officer or NBC NCO for appropriate handling or disposal procedures.		
	Step 1.	Check for lit engine air filter indicator light. If engine air filter indicator light is lit, clean or replace air cleaner (see paragraph 5-9).
WARNING		
Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel tank. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.		
	Step 2.	Inspect for leaking or damaged fuel lines. Tighten all loose connections. Replace damaged fuel lines (see paragraph 5-15).
	Step 3.	Check fuel injection pump static timing (see paragraph 5-26). Adjust fuel injection pump static timing (see paragraph 5-26). If fuel consumption is still excessive, notify Direct Support Maintenance.

Table 4-1. Mechanical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<i>COOLING SYSTEM</i>		
10. ENGINE OVERHEATS.		
<u>WARNING</u>		
<ul style="list-style-type: none"> • Servicing of engine cooling system should only be performed on a cool engine. NEVER remove clamps or hoses when engine is hot. Pressurized steam, hot water, or coolant will cause serious burns. 		
<ul style="list-style-type: none"> • DO NOT remove radiator fill cap unless engine is cold. This is a pressurized cooling system and escaping steam, hot water, or coolant will cause serious burns. 		
Step 1.	Remove radiator fill cap (see paragraph 5-38) and inspect for damaged seal, gasket, or vacuum release valve.	Replace radiator fill cap (see paragraph 5-38).
Step 2.	Check for correct coolant level in radiator (see TM 10-3930-659-10).	Add antifreeze to engine cooling system (see paragraph 5-38).
Step 3.	Inspect engine cooling system for proper protection level and for contaminants (see TM 750-254).	Drain, flush, and fill engine cooling system (see paragraph 5-38)
Step 4.	Inspect engine radiator hoses and clamps for looseness, damage, or signs of leakage.	Tighten loose clamps. Replace damaged or leaking hoses (see paragraph 5-29).
Step 5.	Inspect fan belts for proper tension and condition (see paragraph 5-37).	Adjust fan belt tension (see paragraph 5-37).
NOTE		
<p>Fan belts should be replaced in matched sets even if only one belt is worn or damaged.</p>		
<p>Replace damaged or worn fan belts (see paragraph 5-37).</p>		
Step 6.	Inspect engine radiator for debris or damage.	Clean debris from radiator fins. Repair damaged or leaking radiator fins (see TM 750-254). Replace engine radiator (see paragraph 5-28).

Table 4-1. Mechanical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 7.	Inspect fan for looseness and bent or damaged fan blades.	Torque screws to 35 lb.-ft. (47 Norm). Replace damaged fan (see paragraph 5-36).
Step 8.	Inspect for faulty engine thermostats.	Remove engine thermostats (see paragraph 5-34) and check for a closed valve (see TM 750-254). If valve is closed, replace engine thermostats (see paragraph 5-34).
Step 9.	Inspect water pump for signs of looseness or leakage.	Torque screws to 35 lb.-ft. (47 N-m). Replace damaged water pump (see paragraph 5-35).

11. ENGINE RUNS COLD.

Inspect for faulty engine thermostats.

Remove engine thermostats (see paragraph 5-34) and check for an open valve (see TM 750-254). If valve is opened, replace engine thermostats (see paragraph 5-34).

TRANSMISSION

12. FORKLIFT TRUCK WILL NOT MOVE IN F (FORWARD) OR IN R (REVERSE) GEARS.

- Step 1. Inspect transmission direction selector cable for proper adjustment and damage.
Adjust direction selector linkage (see paragraph 7-5).
Replace damaged direction selector cable (see paragraph 7-4).
- Step 2. Inspect transmission speed range selector cable for proper adjustment and damage.
Adjust speed range selector linkage (see paragraph 7-5).
Replace damaged speed range selector cable (see paragraph 7-4).
- Step 3. Check clutch cutoff microswitch and transmission clutch cutoff valve on clutch cutoff valve solenoid wiring harness for continuity (see paragraphs 2-27 and 6-73).
Replace damaged clutch cutoff microswitch (see paragraph 6-54).
Replace damaged wire or connector (see paragraph 2-28).

Table 4-1. Mechanical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
13. TRANSMISSION HYDRAULIC SYSTEM OVERHEATS.		
Step 1.	Inspect transmission oil cooler for restricted air flow.	Remove all exterior restrictions from transmission oil cooler.
Step 2.	Perform transmission fluid pressure test (see STE/ICE-R Test GO11).	
Step 3.	Test transmission thermal bypass valve element (see paragraph 7-12).	Replace transmission thermal bypass valve element (see paragraph 7-13).
Step 4.	Perform transmission oil cooler backflush (see paragraph 7-16).	
14. TRANSMISSION HYDRAULIC FLUID FOAMS.		
Step 1.	Inspect for air in hydraulic fluid, proper fluid level, and correct type of fluid in transmission (see LO 10-3930-659-12).	
	Add or drain hydraulic fluid as required (see TM 10-3930-659-10 or LO 10-3930-659-12).	
Step 2.	Inspect transmission oil suction tube for leaks or damage.	
	Replace leaking or damaged transmission suction tube (see paragraph 7-7).	
15. FORKLIFT TRUCK LACKS POWER AND ACCELERATION.		
Step 1.	Inspect for air in hydraulic fluid, proper fluid level, and correct type of fluid in transmission (see LO 10-3930-659-12).	
	Add or drain hydraulic fluid as required (see TM 10-3930-659-10 or LO 10-3930-659-12).	
Step 2.	Perform transmission fluid pressure test (see STE/ICE-R Test GO11).	
Step 3.	Inspect transmission clutch cutoff valve for sticking or damage.	Replace sticking or damaged transmission clutch cutoff valve (see paragraph 7-11).
16. TRANSMISSION SHIFTS TOO SLOWLY.		
	Inspect transmission clutch cutoff valve for sticking or damage.	
	Replace sticking or damaged transmission clutch cutoff valve (see paragraph 7-11).	
<i>PROPELLER SHAFT</i>		
17. FRONT UNIVERSAL JOINTS OR SUPPORT BEARING VIBRATION OR NOISE IS EXCESSIVE.		
Step 1.	Inspect front universal joints or support bearing for improper lubrication.	
	Lubricate front universal joints or support bearing (see LO 10-3930-659-12).	

Table 4-1. Mechanical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 2.	Inspect front and rear universal joints for bends or damage.	Replace bent or damaged universal joints (see paragraphs 8-1 and 8-2).
Step 3.	Inspect for worn support bearing.	Replace worn support bearing (see paragraph 8-1).
Step 4.	Inspect for loose or missing mounting bolts.	Tighten or replace mounting bolts (see paragraphs 8-1 and 8-2).
Step 5.	Inspect front and rear universal joints for proper alignment.	Align universal joints (see paragraphs 8-1 and 8-2).

*AXLE***18. DIFFERENTIAL OVERFILLED WITH HYDRAULIC FLUID.**

Remove differential fill plug (see paragraph 9-3) and apply service brakes. Check for leakage from fill plug. If differential oil leaks from fill plug, notify Direct Support Maintenance.

19. DIFFERENTIAL OR AXLE NOISE IS EXCESSIVE.

- Step 1. Inspect differential for low differential oil level (see paragraph 9-3).
Fill differential with differential oil as required (see paragraph 9-3).
- Step 2. Drain differential oil (see paragraph 9-3) and inspect magnetic drain plug for metal shavings.
If drain plug has metal shavings, notify Direct Support Maintenance.
- Step 3. Inspect service brake disc (see paragraph 10-7).
If service brake disc is damaged, notify Direct Support Maintenance.

*BRAKE SYSTEM***20. BRAKING IS POOR OR NONEXISTENT.**

- Step 1. Bleed brake system (see paragraph 10-17).
- Step 2. Test fork/brake hydraulic pump standby pressure (see paragraph 17-3).
Adjust fork/brake hydraulic pump (see paragraph 17-3).

Table 4-1. Mechanical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 3.	Test fork/brake hydraulic pump flow (see paragraph 17-2).	Replace damaged fork/brake hydraulic pump (see paragraph 17-5).
Step 4.	Test right and left brake valves for leakage (see paragraph 10-6).	Replace defective brake valve (see paragraph 10-9).
Step 5.	Inspect service brake disc (see paragraph 10-7).	If service brake disc is damaged, notify Direct Support Maintenance.
Step 6.	Inspect brake system for leakage by removing differential fill plug and checking for overfilled differential. Apply service brakes and check for leakage from fill plug.	If differential oil leaks from fill plug, notify Direct Support Maintenance.

21. BRAKES DRAG.

- Step 1. Inspect right and left brake pedals for free movement.
Remove any debris preventing pedal movement.
- Step 2. Inspect parking brake cable for proper adjustment (see paragraph 10-2) or damage.
Adjust parking brake (see paragraph 10-2).
Replace damaged parking brake cable (see paragraph 10-4).
- Step 3. Test right and left brake valves for leakage (see paragraph 10-6).
Replace defective brake valve (see paragraph 10-9).
- Step 4. Inspect service brake disc (see paragraph 10-7).
If service brake disc is damaged, notify Direct Support Maintenance.
- Step 5. Check brake drag by driving forklift truck for five minutes.
If differential is hot around fill plug, notify Direct Support Maintenance.

22. BRAKES CHATTER.

- Step 1. Bleed brake system (see paragraph 10-17).
- Step 2. Inspect service brake disc (see paragraph 10-7).
If service brake disc is damaged, notify Direct Support Maintenance.

23. HISSING NOISE WITH BRAKE PEDAL DEPRESSED AND ENGINE STOPPED.

- Test right and left brake valves for leakage (see paragraph 10-6).
Replace defective brake valve (see paragraph 10-9).
If hissing noise still exists, notify Direct Support Maintenance.

Table 4-1. Mechanical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
24. BRAKE PRESSURE WARNING LIGHT REMAINS LIT.		
Step 1.	Inspect complete brake system for leakage. Tighten all loose connections.	Replace damaged brake hoses or line (see paragraph 10-10, 10-11, 10-12, 10-13, 10-14, 10-15, or 10-16).
Step 2.	Check low brake pressure switch for continuity (see paragraph 2-27). Replace damaged low brake pressure switch (see paragraph 6-36).	
Step 3.	Test fork/brake hydraulic pump standby pressure (see paragraph 17-3). Adjust fork/brake hydraulic pump (see paragraph 17-3).	
Step 4.	Test fork/brake hydraulic pump flow (see paragraph 17-2). Replace damaged fork/brake hydraulic pump (see paragraph 17-5).	
25. PARKING BRAKE WILL NOT HOLD FORKLIFT TRUCK.		
Step 1.	Inspect parking brake cable for proper adjustment (see paragraph 10-2) or damage. Adjust parking brake (see paragraph 10-2). Replace damaged parking brake cable (see paragraph 10-4).	
Step 2.	Inspect brakedrum and brakeshoes for wear and damage. Remove parking brake assembly and replace worn or damaged parts (see paragraph 10-1).	
26. PARKING BRAKE BRAKEDRUM OVERHEATS.		
Step 1.	Inspect parking brake cable for proper adjustment (see paragraph 10-2) or damage. Adjust parking brake (see paragraph 10-2). Replace damaged parking brake cable (see paragraph 10-4).	
Step 2.	Inspect brakedrum and brakeshoes for wear and damage. Remove parking brake assembly and replace worn or damaged parts (see paragraph 10-1).	

Table 4-1. Mechanical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
27. PARKING BRAKE WILL NOT APPLY.		
Step 1.	Inspect parking brake cable for proper adjustment (see paragraph 10-2) or damage. Adjust parking brake (see paragraph 10-2).	Replace damaged parking brake cable (see paragraph 10-4).
Step 2.	Inspect brakedrum and brakeshoes for wear and damage.	Remove parking brake assembly and replace worn or damaged parts (see paragraph 10-1).
28. PARKING BRAKE INDICATOR LIGHT WILL NOT LIGHT WHEN PARKING BRAKE IS APPLIED.		
Step 1.	Inspect parking brake light switch for proper adjustment (see paragraph 6-55). Adjust parking brake light switch (see paragraph 6-55).	
Step 2.	Inspect parking brake light switch and wiring for damage.	Replace damaged parking brake light switch (see paragraph 6-55). Replace damaged fault monitor and dash wiring harness (see paragraph 6-14).

Table 4-2. Electrical Troubleshooting.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<i>ELECTRICAL SYSTEM</i>		
1. ALTERNATOR IS NOISY.		
Step 1.	Inspect fan belts for proper tension and defects.	Adjust fan belt tension (see paragraph 5-37).
NOTE		
Fan belts should be replaced in matched sets even if only one belt is worn or damaged.		
Replace worn or damaged fan belts (see paragraph 5-37).		
Step 2.	Inspect alternator for correct alignment and loose pulley.	Loosen alternator mounting hardware and align alternator (see paragraph 6-1). Tighten alternator pulley locknut (see paragraph 6-2).
Step 3.	With engine running, listen for high pitched whine from alternator.	If high pitched whine is present replace alternator (see paragraph 6-1).
Step 4.	Remove alternator (see paragraph 6-1) and inspect for worn bearings.	Replace damaged alternator (see paragraph 6-1).
2. BATTERY CHARGING INDICATOR REMAINS LIT WITH ENGINE RUNNING (LOW VOLTAGE).		
Step 1.	Inspect fan belts for proper tension and defects.	Adjust fan belt tension (see paragraph 5-37).
NOTE		
Fan belts should be replaced in matched sets even if only one belt is worn or damaged.		
Replace worn or damaged fan belts (see paragraph 5-37).		
Step 2.	Inspect for corroded or loose terminal connections at starter motor, alternator, batteries, ignition switch, or ground straps.	Remove, clean, and tighten all corroded or loose connections.
Step 3.	Check alternator circuit within STE/ICE alternator, starter motor, and fuel injection pump wiring harness for continuity (see paragraphs 2-27 and 6-73).	Repair or replace damaged wiring harness connectors (see paragraph 2-28). Replace damaged STE/ICE alternator, starter motor, and fuel injection pump wiring harness (see paragraph 6-57).

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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WARNING

- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry contacts battery terminal, a direct short will result, causing Instant heating of jewelry which will result In severe injury to personnel.

- Battery gases can explode. DO NOT smoke or allow sparks or open flames near batteries. Wear safety glasses or goggles when checking batteries. Failure to follow this warning may result in death or serious Injury to personnel.

- Sulfuric acid contained In batteries can cause serious burns. If battery corrosion or electrolyte makes contact with skin, eyes, or clothing, take Immediate action to stop the corrosive burning effects. Failure to follow these procedures may result In death or serious Injury to personnel.

a. Eyes. Flush with cold water for no less than 15 minutes and seek medical attention Immediately.

b. Skin. Flush with large amounts of cold water until all acid Is removed. Seek medical attention as required.

c. Internal. If corrosion or electrolyte is Ingested, drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Seek medical attention Immediately.

d. Clothing/Equipment. Wash area with large amounts of cold water. Neutralize acid with baking soda or household ammonia.

Step 4. Check level of distilled water in each battery (see TM 9-6140-200-14) and inspect batteries for proper charge (see STE/ICE-R Test GO5).

Fill batteries with distilled water to proper level (see TM 9-6140-200-14).

Charge batteries (see TM 9-6140-200-14).

Step 5. Test battery charging indicator and fault monitor circuit (see STE/ICE-R Test GO3.).

Step 6. Test alternator output voltage (see STE/ICE-R Test NG50).

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
3. BATTERY CHARGING INDICATOR REMAINS LIT WITH ENGINE RUNNING (HIGH VOLTAGE).	<u>WARNING</u>	<ul style="list-style-type: none"> • Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry contacts battery terminal, a direct short will result, causing Instant heating of Jewelry which will result In severe Injury to personnel.
		<ul style="list-style-type: none"> • Battery gases can explode. DO NOT smoke or allow sparks or open flames near batteries. Wear safety glasses or goggles when checking batteries. Failure to follow this warning may result In death or serious injury to personnel.
		<p>Step 1. Test for overcharged batteries (see STE/ICE-R Test G05).</p> <p>Step 2. Test battery charging indicator and fault monitor circuit (see STE/ICE-R Test G03).</p> <p>Step 3. Test alternator output voltage (see STE/ICE-R Test NG50).</p>
4. BATTERY ELECTROLYTE LEVEL IS LOW OR IS USING TOO MUCH WATER.	<u>WARNING</u>	<ul style="list-style-type: none"> • Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry contacts battery terminal, a direct short will result, causing Instant heating of jewelry which will result in severe Injury to personnel.
		<ul style="list-style-type: none"> • Battery gases can explode. DO NOT smoke or allow sparks or open flames near batteries. Wear safety glasses or goggles when checking batteries. Failure to follow this warning may result in death or serious injury to personnel.
		<ul style="list-style-type: none"> • Sulfuric acid contained in batteries can cause serious burns. If battery corrosion or electrolyte makes contact with skin, eyes, or clothing, take Immediate action to stop the corrosive burning effects. Failure to follow these procedures may result in death or serious Injury to personnel. <p>a. <u>Eyes.</u> Flush with cold water for no less than 1 5 minutes and seek medical attention Immediately.</p> <p>b. <u>Skin.</u> Flush with large amounts of cold water until all acid is removed. Seek medical attention as required.</p> <p>c. <u>Internal.</u> If corrosion or electrolyte Is Ingested, drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Seek medical attention Immediately.</p> <p>d. <u>Clothing/Equipment.</u> Wash area with large amounts of cold water. Neutralize acid with baking soda or household ammonia.</p>
<p>Step 1. Inspect batteries for cracked or damaged case. Replace damaged batteries (see paragraph 6-42).</p>		

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 2. Test batteries for shorted cell(s) (see STE/ICE-R Test NG81).

Step 3. Test alternator output voltage (see STE/ICE-R Test NG50).

5. BATTERIES UNDERCHARGED (LOW SPECIFIC GRAVITY READING).

WARNING

- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry contacts battery terminal, a direct short will result, causing Instant heating of jewelry which will result In severe Injury to personnel.

- Battery gases can explode. DO NOT smoke or allow sparks or open flames near batteries. Wear safety glasses or goggles when checking batteries. Failure to follow this warning may result In death or serious injury to personnel.

- Sulfuric acid contained in batteries can cause serious burns. If battery corrosion or electrolyte makes contact with skin, eyes, or clothing, take immediate action to stop the corrosive burning effects. Failure to follow these procedures may result in death or serious injury to personnel.

a. **Eyes.** Flush with cold water for no less than 15 minutes and seek medical attention Immediately.

b. **Skin.** Flush with large amounts of cold water until all acid is removed. Seek medical attention as required.

c. **Internal.** If corrosion or electrolyte Is Ingested, drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Seek medical attention Immediately.

d. **Clothing/Equipment.** Wash area with large amounts of cold water. Neutralize acid with baking soda or household ammonia.

Step 1. Check level of distilled water in each battery (see TM 9-6140-200-14).
Fill batteries with distilled water to proper level (see TM 9-6140-200-14).

Step 2. Inspect battery cables for looseness, corrosion, or damage.

Remove battery cables, and clean or replace battery cables as necessary (see paragraph 6-43).

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 3.	Inspect fan belts for proper tension and defects. Adjust fan belt tension (see paragraph 5-37).	<p style="text-align: center;">NOTE</p> <p>Fan belts should be replaced in matched sets even if only one belt is worn or damaged.</p> <p style="text-align: center;">Replace worn or damaged fan belts (see paragraph 5-37).</p> <p style="text-align: center;"><u>WARNING</u></p> <ul style="list-style-type: none"> • Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry contacts battery terminal, a direct short will result, causing instant heating of jewelry which will result in severe injury to personnel. • Battery gases can explode. DO NOT smoke or allow sparks or open flames near batteries. Wear safety glasses or goggles when checking batteries. Failure to follow this warning may result in death or serious injury to personnel. • Sulfuric acid contained in batteries can cause serious burns. If battery corrosion or electrolyte makes contact with skin, eyes, or clothing, take immediate action to stop the corrosive burning effects. Failure to follow these procedures may result in death or serious injury to personnel. <ol style="list-style-type: none"> a. <u>Eyes.</u> Flush with cold water for no less than 15 minutes and seek medical attention immediately. b. <u>Skin.</u> Flush with large amounts of cold water until all acid is removed. Seek medical attention as required. c. <u>Internal.</u> If corrosion or electrolyte is ingested, drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Seek medical attention immediately. d. <u>Clothing/Equipment.</u> Wash area with large amounts of cold water. Neutralize acid with baking soda or household ammonia.
Step 4.	Test batteries for shorted cell(s) (see STE/ICE-R Test NG81).	
Step 5.	Test alternator output voltage (see STE/ICE-R Test NG50).	
6. BATTERIES OVERCHARGED (HIGH SPECIFIC GRAVITY READING).		
	Test alternator output voltage (see STE/ICE-R Test NG50).	

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
7. STARTER MOTOR WILL NOT CRANK ENGINE.		
<u>WARNING</u>		
<ul style="list-style-type: none"> • Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry contacts battery terminal, a direct short will result, causing Instant heating of jewelry which will result In severe Injury to personnel. 		
<ul style="list-style-type: none"> • Battery gases can explode. DO NOT smoke or allow sparks or open flames near batteries. Wear safety glasses or goggles when checking batteries. Failure to follow this warning may result in death or serious injury to personnel. 		
<ul style="list-style-type: none"> • Sulfuric acid contained in batteries can cause serious burns. If battery corrosion or electrolyte makes contact with skin, eyes, or clothing, take Immediate action to stop the corrosive burning effects. Failure to follow these procedures may result in death or serious Injury to personnel. 		
<ul style="list-style-type: none"> a. <u>Eyes.</u> Flush with cold water for no less than 15 minutes and seek medical attention Immediately. 		
<ul style="list-style-type: none"> b. <u>Skin.</u> Flush with large amounts of cold water until all acid Is removed. Seek medical attention as required. 		
<ul style="list-style-type: none"> c. <u>Internal.</u> If corrosion or electrolyte Is ingested, drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Seek medical attention Immediately. 		
<ul style="list-style-type: none"> d. <u>Clothing/Equipment.</u> Wash area with large amounts of cold water. Neutralize acid with baking soda or household ammonia. 		
Step 1.	Check level of distilled water in each battery (see TM 9-6140-200-14) and inspect batteries for proper charge (see STE/ICE-R Test G05).	Fill batteries with distilled water to proper level (see TM 9-6140-200-14). Charge batteries (see TM 9-6140-200-14).
Step 2.	Inspect for corroded or loose terminal connections at starter motor, alternator, batteries, ignition switch, or ground straps.	Remove, clean, and tighten all corroded or loose connections.
Step 3.	Check starting circuit within load center wiring harness and STE/ICE alternator, starter motor, and fuel injection pump wiring harness for continuity (see paragraphs 2-27 and 6-73).	Repair or replace damaged wiring harness connectors (see paragraph 2-28). Replace damaged load center wiring harness and damaged STE/ICE alternator, starter motor, and fuel injection pump wiring harness (see paragraphs 6-17 and 6-57).

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 4.	Check neutral start switch and reverse warning alarm fuses for continuity (see paragraph 2-27). Replace damaged 10 amp fuse (see paragraph 6-13).	
Step 5.	Check ignition switch for shorts (see paragraph 2-27). Replace damaged ignition switch (see paragraph 6-10).	
Step 6.	Check transmission direction selector lever linkage adjustment. Adjust direction selector lever linkage (see paragraph 7-5).	
Step 7.	Check neutral start switch for continuity (see paragraph 2-27). Replace damaged neutral start switch (see paragraph 6-4).	
Step 8.	Check starter motor relay for voltage and continuity (see paragraph 2-27). Replace damaged starter motor relay (see paragraph 6-12).	
Step 9.	Check three starter interlock relays for voltage and continuity (see paragraph 2-27). Replace damaged starter interlock relays as necessary (see paragraph 6-12).	
Step 10.	Perform starter motor tests (see STE/ICE-R Test NG90).	
Step 11.	Remove starter motor (see paragraph 6-3) and inspect starter motor pinion gear. If pinion gear is frozen or damaged, replace starter motor (see paragraph 6-3).	
8. STARTER MOTOR TURNS BUT WILL NOT START ENGINE.		
Step 1.	Test fuel injection pump fuel shutoff solenoid (see STE/ICE-R Test NG31). If solenoid is not working, notify Direct Support Maintenance.	
Step 2.	Remove starter motor (see paragraph 6-3), and inspect starter motor pinion gear teeth and fly-wheel gear teeth. If pinion gear is frozen or teeth are damaged, replace starter motor (see paragraph 6-3). If flywheel gear teeth are damaged, notify Direct Support Maintenance.	

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
9. ENGINE CRANKS SLOWLY.		
<u>WARNING</u>		
<ul style="list-style-type: none"> • Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry contacts battery terminal, a direct short will result, causing Instant heating of jewelry which will result In severe Injury to personnel. 		
<ul style="list-style-type: none"> • Battery gases can explode. DO NOT smoke or allow sparks or open flames near batteries. Wear safety glasses or goggles when checking batteries. Failure to follow this warning may result in death or serious Injury to personnel. 		
<ul style="list-style-type: none"> • Sulfuric acid contained in batteries can cause serious burns. If battery corrosion or electrolyte makes contact with skin, eyes, or clothing, take Immediate action to stop the corrosive burning effects. Failure to follow these procedures may result In death or serious injury to personnel. 		
<ul style="list-style-type: none"> a. <u>Eyes.</u> Flush with cold water for no less than 15 minutes and seek medical attention Immediately. 		
<ul style="list-style-type: none"> b. <u>Skin.</u> Flush with large amounts of cold water until all acid is removed. Seek medical attention as required. 		
<ul style="list-style-type: none"> c. <u>Internal.</u> If corrosion or electrolyte Is Ingested, drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Seek medical attention Immediately. 		
<ul style="list-style-type: none"> d. <u>Clothing/Equipment.</u> Wash area with large amounts of cold water. Neutralize acid with baking soda or household ammonia. 		
Step 1.	Check level of distilled water in each battery (see TM 9-6140-200-14).	Fill batteries with distilled water to proper level (see TM 9-6140-200-14).
Step 2.	Inspect battery cables for looseness, corrosion, or damage.	Remove battery cables, and clean or replace battery cables as necessary (see paragraph 6-43).
Step 3.	Perform battery voltage tests at each battery (see STE/ICE-R Test G05).	
Step 4.	Test for dragging starter motor (see STE/ICE-R Test NG80).	
10. STARTER MOTOR CONTINUES TO RUN AFTER ENGINE IS STARTED.		
Step 1.	Check starter motor relay for sticking by lightly tapping starter motor relay (see paragraph 6-73). If starter motor relay is sticking, replace starter motor relay (see paragraph 6-12).	

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	Step 2. Check starter motor solenoid for sticking by lightly tapping starter motor solenoid.	If starter motor solenoid is sticking, replace starter motor (see paragraph 6-3).
11. ENGINE STARTUP PRODUCES EXCESSIVE NOISE.		
	Remove starter motor (see paragraph 6-3), and inspect starter motor pinion gear teeth and flywheel gear teeth.	If pinion gear is frozen or teeth are damaged, replace starter motor (see paragraph 6-3).
		If flywheel gear teeth are damaged, notify Direct Support Maintenance.
12. ENGINE STARTING AID IS NOT WORKING.		
<u>WARNING</u>		
Starting fluid is toxic and highly flammable. Container is pressurized to act as an expellent. DO NOT heat container and DO NOT discharge starting fluid in confined areas or near an open flame. Failure to follow this procedure may result in serious injury to personnel.		
	Step 1. Check for empty engine starting aid cylinder by removing engine starting aid cylinder (see paragraph 5-20) and shaking it.	If engine starting aid cylinder is empty, replace engine starting aid cylinder (see paragraph 5-20).
	Step 2. Check engine starting aid circuit fuse for continuity (see paragraph 2-27).	Replace damaged 10 amp fuse (see paragraph 6-13).
	Step 3. Test for 24 v at engine starting aid valve wiring harness connector (see paragraph 2-27).	Replace damaged engine starting aid valve (see paragraph 5-19).
	Step 4. Check engine starting aid switch for continuity when pressed (see paragraph 2-27).	Replace damaged engine starting aid switch (see paragraph 6-53).
	Step 5. Check engine starting aid circuit within engine wiring harness for continuity (see paragraphs 2-27 and 6-73).	Repair or replace damaged engine wiring harness connectors (see paragraph 2-28).
		Replace damaged engine wiring harness (see paragraph 6-59).
13. FUEL GAGE IS NOT WORKING.		
	Step 1. Check fuel gage fuse for continuity (see paragraph 2-27).	Replace damaged 10 amp fuse (see paragraph 6-13).

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 2.	Check fuel level sending unit for continuity (see paragraph 2-27).	Replace damaged fuel level sending unit (see paragraph 6-52).
Step 3.	Check fuel gage for continuity (see paragraph 2-27).	Replace damaged fuel gage (see paragraph 6-7).
Step 4.	Check accessory relay within gages, Indicators, horn, and engine hourmeter circuit of right panel wiring harness for voltage and continuity (see paragraphs 2-27 and 6-73).	Replace damaged accessory relay (see paragraph 6-12).
Step 5.	Check fuel gage wiring harness within gages, indicators, horn, and engine hourmeter circuit of right panel wiring harness for continuity (see paragraphs 2-27 and 6-73).	Repair or replace damaged wiring harness connectors or wires (see paragraph 2-28).
14. HORN IS NOT WORKING.		
Step 1.	Check horn fuse for continuity (see paragraph 2-27).	Replace damaged 10 amp fuse (see paragraph 6-13).
Step 2.	Check horn switch for continuity when pushed (see paragraph 2-27).	Replace damaged horn switch (see paragraph 6-41).
Step 3.	Check accessory relay within gages, indicators, horn, and engine hourmeter circuit of right panel wiring harness for voltage and continuity (see paragraphs 2-27 and 6-73).	Replace damaged accessory relay (see paragraph 6-12).
Step 4.	Check horn wiring harness within gages, indicators, horn, and engine hourmeter circuit of right panel wiring harness for continuity (see paragraphs 2-27 and 6-73).	Repair or replace damaged wiring harness connectors or wires (see paragraph 2-28).
		Replace damaged horn (see paragraph 6-40).
15. TRANSMISSION OIL TEMPERATURE GAGE IS NOT WORKING.		
Step 1.	Check transmission oil temperature gage fuse for continuity (see paragraph 2-27).	Replace damaged 10 amp fuse (see paragraph 6-13).
Step 2.	Remove transmission oil temperature sender (see paragraph 6-33) and test for internal shorting (see paragraph 2-27).	Replace damaged transmission oil temperature sender (see paragraph 6-33).

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 3. Check transmission oil temperature gage for continuity (see paragraph 2-27).	Replace damaged transmission oil temperature gage (see paragraph 6-7).	
Step 4. Check accessory relay within gages, indicators, horn, and engine hourmeter circuit of right panel wiring harness for voltage and continuity (see paragraphs 2-27 and 6-73).	Replace damaged accessory relay (see paragraph 6-12).	
Step 5. Check transmission oil temperature sender and transmission oil temperature gage wiring harness within gages, indicators, horn, and engine hourmeter circuit of right panel wiring harness for continuity (see paragraphs 2-27 and 6-73).	Repair or replace damaged wiring harness connectors or wires (see paragraph 2-28).	
16. ENGINE HOURMETER IS NOT WORKING.		
Step 1. Check accessory relay within gages, indicators, horn, and engine hourmeter circuit of right panel wiring harness for voltage and continuity (see paragraphs 2-27 and 6-73).	Replace damaged accessory relay (see paragraph 6-12).	
Step 2. Check for shorted ignition switch (see paragraph 2-27).	Replace damaged ignition switch (see paragraph 6-10).	
	Replace damaged engine hourmeter (see paragraph 6-8).	
Step 3. Check engine hourmeter wiring harness within gages, indicators, horn, and engine hourmeter circuit of right panel wiring harness for continuity (see paragraphs 2-27 and 6-73).	Repair or replace damaged wiring harness connectors or wires (see paragraph 2-28).	
17. TURN SIGNALS OR EMERGENCY FLASHERS ARE NOT WORKING.		
Step 1. Check turn signal/emergency flashers fuse for continuity (see paragraph 2-27).	Replace damaged 10 amp fuse (see paragraph 6-13).	
Step 2. Remove flasher (see paragraph 6-12) and test for 24 v at socket (see paragraph 2-27).	Replace damaged flasher (see paragraph 6-12).	
Step 3. Check accessory relay within brake light and turn signal/emergency flashers circuit of load center wiring harness for voltage and continuity (see paragraphs 2-27 and 6-73).	Replace accessory relay (see paragraph 6-12).	

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 4. Inspect turn signal/emergency flashers for burned out lamps or damaged turn signal/emergency flashers.	Replace burned out lamps (see paragraph 6-22 or 6-25).	Replace damaged turn signal/emergency flashers (see paragraph 6-22 or 6-25).
Step 5. Check turn signal/emergency flashers switch for continuity (see paragraph 2-27).	Replace damaged turn signal/emergency flashers switch (see paragraph 6-19).	
Step 6. Check wiring harnesses for brake light and turn signals/emergency flashers circuit for continuity (see paragraphs 2-27 and 6-73).	Repair or replace damaged connectors or wires (see paragraph 2-28).	
18. DRIVING LIGHTS ARE NOT WORKING.		
Step 1. Check driving light and taillight fuse for continuity (see paragraph 2-27).	Replace damaged 15 amp fuse (see paragraph 6-13).	
Step 2. Check accessory relay within driving light and taillight circuit of load center wiring harness for voltage and continuity (see paragraphs 2-27 and 6-73).	Replace damaged accessory relay (see paragraph 6-12).	
Step 3. Inspect driving lights for burned out lamps or damaged driving lights.	Replace burned out lamps (see paragraph 6-21).	Replace damaged driving lights (see paragraph 6-21).
Step 4. Check driving light switch for continuity (see paragraph 2-27).	Replace damaged driving light switch (see paragraph 6-11).	
Step 5. Check wiring harnesses for driving light and taillight circuit for continuity (see paragraphs 2-27 and 6-73).	Repair or replace damaged connectors or wires (see paragraph 2-28).	
19. BRAKE LIGHTS ARE NOT WORKING.		
Step 1. Check brake light fuse for continuity (see paragraph 2-27).	Replace damaged 10 amp fuse (see paragraph 6-13).	
Step 2. Check accessory relay within brake light and turn signal/emergency flashers circuit of load center wiring harness for voltage and continuity (see paragraphs 2-27 and 6-73).	Replace damaged accessory relay (see paragraph 6-12).	

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 3. Inspect taillight and rear turn signal/emergency flashers for burned out lamps or damaged taillight and rear turn signal/emergency flashers.		Replace burned out lamps (see paragraph 6-25).
		Replace damaged taillight and rear turn signal/emergency flashers (see paragraph 6-25).
Step 4. Check brake light switch for continuity (see paragraph 2-27).		Replace damaged brake light switch (see paragraph 6-30).
Step 5. Check wiring harnesses for brake light and turn signal/emergency flashers circuit for continuity (see paragraphs 2-27 and 6-73).		Repair or replace damaged connectors or wires (see paragraph 2-28).
20. BLACKOUT LIGHTS ARE NOT WORKING.		
Step 1. Check blackout light fuse for continuity (see paragraph 2-27).		Replace damaged 15 amp fuse (see paragraph 6-13).
Step 2. Check accessory relay within blackout light circuit of load center wiring harness for voltage and continuity (see paragraphs 2-27 and 6-73).		Replace damaged accessory relay (see paragraph 6-12).
Step 3. Inspect blackout lights for burned out lamps or damaged blackout lights.		Replace burned out lamps (see paragraph 6-22, 6-23, or 6-26).
		Replace damaged blackout lights (see paragraph 6-22, 6-23, or 6-26).
Step 4. Check blackout light switch for continuity (see paragraph 2-27).		Replace damaged blackout light switch (see paragraph 6-11).
Step 5. Check wiring harnesses within blackout light circuit for continuity (see paragraphs 2-27 and 6-73).		Replace damaged connector or wire (see paragraph 2-28).
21. DOMELIGHT IS NOT WORKING.		
Step 1. Check domelight fuse for continuity (see paragraph 2-27)		Replace damaged 10 amp fuse (see paragraph 6-13).
Step 2. Check accessory relay within domelight and rear worklight circuit of load center wiring harness for continuity (see paragraphs 2-27 and 6-73).		Replace damaged accessory relay (see paragraph 6-12).

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 3. Inspect domelight for burned out lamp or damaged domelight.	Replace burned out lamp (see paragraph 6-20).	Replace damaged domelight (see paragraph 6-20).
Step 4. Check domelight switch for continuity (see paragraph 2-27).	Replace damaged domelight (see paragraph 6-20).	
Step 5. Check wiring harnesses within domelight and worklight circuit for continuity (see paragraphs 2-27 and 6-73).	Repair or replace damaged connectors or wires (see paragraph 2-28).	
22. ADJUSTABLE FLOODLIGHT OR REAR WORKLIGHTS ARE NOT WORKING.		
Step 1. Check adjustable floodlight fuse or rear worklight fuse for continuity (see paragraph 2-27).	If adjustable floodlight fuse is damaged, replace 10 amp fuse (see paragraph 6-13).	If rear worklight fuse is damaged, replace 15 amp fuse (see paragraph 6-13).
Step 2. Check accessory relay within load center panel circuit of load center wiring harness for continuity (see paragraphs 2-27 and 6-73).	Replace damaged accessory relay (see paragraph 6-12).	
Step 3. Inspect adjustable floodlight or rear worklights for burned out lamps or damage.	Replace burned out lamps (see paragraph 6-24 or 6-27).	Replace damaged adjustable floodlight (see paragraph 6-24) or damaged rear worklights (see paragraph 6-27).
Step 4. Check adjustable floodlight switch or rear worklight switch for continuity (see paragraph 2-27)	Replace damaged adjustable floodlight switch or damaged rear worklight switch (see paragraph 6-11).	
Step 5. Check wiring harnesses within worklight circuits for continuity (see paragraphs 2-27 and 6-73).	Repair or replace damaged connectors or wires (see paragraph 2-28).	
23. HEATER FAN IS NOT WORKING.		
Step 1. Check heater fan fuse for continuity (see paragraph 2-27).	Replace damaged 15 amp fuse (see paragraph 6-13).	

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 2. Check accessory relay within heater circuit of load center wiring harness for voltage and continuity (see paragraphs 2-27 and 6-73).		Replace damaged accessory relay (see paragraph 6-12).
Step 3. Check heater blower control for continuity (see paragraph 2-27).		Replace damaged heater blower control (see paragraph 16-4).
Step 4. Disconnect left panel wiring harness at heater blower motor and test for 24 v at socket (see paragraph 2-27).		Replace damaged heater blower motor (see paragraph 16-12).
Step 5. Check wiring harnesses within heater circuits for continuity (see paragraphs 2-27 and 6-73).		Repair or replace damaged connector or wire (see paragraph 2-28).
24. DEFROSTER BLOWER MOTOR IS NOT WORKING.		
Step 1. Check defroster fan fuse and defroster circuit fuse for continuity (see paragraph 2-27).		Replace damaged 10 amp fuse (see paragraph 6-13).
		Replace damaged 15 amp fuse (see paragraph 6-13).
Step 2. Check accessory relay within defroster circuit of load center wiring harness for voltage and continuity (see paragraphs 2-27 and 6-73).		Replace damaged accessory relay (see paragraph 6-12).
Step 3. Check defroster blower control for continuity (see paragraph 2-27).		Replace damaged defroster blower control (see paragraph 16-4).
Step 4. Disconnect left panel wiring harness at defroster blower motor and test for 24 v at socket (see paragraph 2-27).		Replace damaged defroster blower motor (see paragraph 16-2).
Step 5. Check wiring harnesses within defroster circuits for continuity (see paragraphs 2-27 and 6-73).		Repair or replace damaged connectors or wires (see paragraph 2-28).
25. FRONT WINDSHIELD OR REAR WINDOW WIPER MOTOR IS NOT WORKING.		
Step 1. Check front windshield/rear window wiper motor and washer fuse for continuity (see paragraph 2-27).		Replace damaged 10 amp fuse (see paragraph 6-13).

Table 4-2. Electrical Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 2.	Check accessory relay within front windshield/rear window wiper motor circuit of load center wiring harness for voltage and continuity (see paragraphs 2-27 and 6-73).	Replace damaged accessory relay (see paragraph 6-12).
Step 3.	Check front or rear wiper/washer switches for continuity (see paragraph 2-27).	Replace damaged front or rear wiper/washer switch (see paragraph 6-56).
Step 4.	Disconnect right panel wiring harness at front windshield/rear window wiper motor and test for 24 v at socket (see paragraph 2-27).	Replace damaged front windshield or rear window wiper motor (see paragraph 16-6 or 16-8).
Step 5.	Check wiring harnesses within front windshield/rear window wiper motor circuits for continuity (see paragraph 2-27)	Repair or replace damaged connectors or wires (see paragraph 2-28).

Table 4-3. Hydraulic Troubleshooting.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<i>HYDRAULIC SYSTEM</i>		
1. HYDRAULIC PUMP IS NOISY.		
Step 1. Check for foamy hydraulic fluid and leaking hydraulic lines, hoses, and fittings.		
Tighten all lines, hoses, and fittings.		
Replace worn or leaking preformed packings, lines, hoses, or fittings (see paragraph 17-14, 17-15, 17-16, 17-17, 17-18, 17-19, 17-20, 17-21, 17-22, 17-23, 17-24, 17-25, 17-26, 17-27, 17-37, 17-38, or 17-39).		
Step 2. Inspect hydraulic reservoir-to-oil return filter line for restrictions or damage.		
Replace restricted or damaged hydraulic reservoir-to-oil return filter line and fittings (see paragraph 17-37).		
Step 3. Inspect hydraulic reservoir suction filter for restrictions.		
Drain hydraulic reservoir (see LO 10-3930-659-12), and clean or replace hydraulic reservoir suction filter (see paragraph 17-29).		
Step 4. Test fork/brake hydraulic pump flow (see paragraph 17-2).		
Replace damaged fork/brake hydraulic pump (see paragraph 17-5).		
Step 5. Test main hydraulic pump flow (see paragraph 17-1).		
Replace damaged main hydraulic pump (see paragraph 17-6).		
2. HYDRAULIC FUNCTIONS ARE SLOW.		
Step 1. Check for foamy hydraulic fluid and leaking hydraulic lines, hoses, and fittings.		
Tighten all lines, hoses, and fittings.		
Replace worn or leaking preformed packings, lines, hoses, or fittings (see paragraph 17-14, 17-15, 17-16, 17-17, 17-18, 17-19, 17-20, 17-21, 17-22, 17-23, 17-24, 17-25, 17-26, 17-27, 17-37, 17-38, or 17-39).		
Step 2. Check engine idle speed (see STE/ICE-R Test GO4).		
Step 3. Test fork/brake hydraulic pump standby pressure (see paragraph 17-3).		
Adjust fork/brake hydraulic pump standby pressure (see paragraph 17-3).		
Replace damaged fork/brake hydraulic pump (see paragraph 17-5).		

Table 4-3. Hydraulic Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
3. STEERING OR HYDRAULIC FUNCTIONS ARE NONEXISTENT.		
Step 1. Test main hydraulic pump flow (see paragraph 17-1).	Replace damaged main hydraulic pump (see paragraph 17-6).	
Step 2. Inspect hydraulic reservoir suction filter for restrictions.	Drain hydraulic reservoir (see LO 10-3930-659-12), and clean or replace hydraulic reservoir suction filter (see paragraph 17-29).	
Step 3. Remove main hydraulic pump (see paragraph 17-6) and inspect drive shaft for damage.	If drive shaft is damaged, notify Direct Support Maintenance.	
4. STEERING IS NORMAL AND HYDRAULIC FUNCTIONS ARE NONEXISTENT.		
Test fork/brake hydraulic pump standby pressure (see paragraph 17-3).	Adjust fork/brake hydraulic pump standby pressure (see paragraph 17-3)	Replace damaged fork/brake hydraulic pump (see paragraph 17-5).
5. ONE HYDRAULIC FUNCTION DOES NOT WORK.		
Step 1. Test hydraulic cylinders for drift/leakage (see paragraph 17-4).	Replace damaged hydraulic cylinder (see paragraph 17-9 or 17-32).	
Step 2. Check forklift control valve for sticking or damage.	Replace sticking or damaged forklift control valve (see paragraph 17-8).	
6. HYDRAULIC POWER IS LOW.		
Step 1. Test hydraulic cylinders for drift/leakage (see paragraph 17-4).	Replace damaged hydraulic cylinder (see paragraph 17-9 or 17-32).	
Step 2. Test fork/brake hydraulic pump standby pressure (see paragraph 17-3).	Adjust fork/brake hydraulic pump standby pressure (see paragraph 17-3).	Replace damaged fork/brake hydraulic pump (see paragraph 17-5).
7. FORK/BOOM DRIFTS.		
Step 1. Test hydraulic cylinders for drift/leakage (see paragraph 17-4).	Replace damaged hydraulic cylinder (see paragraph 17-9 or 17-32).	

Table 4-3. Hydraulic Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 2. Check forklift control valve for sticking or damage.	Replace sticking or damaged forklift control valve (see paragraph 17-8).	
8. HYDRAULIC FLUID OVERHEATS.		
Step 1. Inspect transmission oil cooler for clogged fins.	Remove all exterior restrictions from transmission oil cooler.	
Step 2. Inspect hydraulic system lines and hoses for dents or twists.	Replace damaged lines or hoses (see paragraph 17-14, 17-15, 17-16, 17-17, 17-18, 17-19, 17-20, 17-21, 17-22, 17-23, 17-24, 17-25, 17-26, 17-27, 17-37, 17-38, or 17-39).	
Step 3. Test fork/brake hydraulic pump standby pressure (see paragraph 17-3).	Adjust fork/brake hydraulic pump standby pressure (see paragraph 17-3).	Replace damaged fork/brake hydraulic pump (see paragraph 17-5).
Step 4. Test main hydraulic pump flow (see paragraph 17-1).	Replace damaged main hydraulic pump (see paragraph 17-6).	
9. HYDRAULIC FLUID FOAMS.		
Step 1. Check hydraulic fluid for contaminants.	Drain hydraulic reservoir (see LO 10-3930-659-12), replace hydraulic reservoir suction filter (see paragraph 17-29) and hydraulic oil return filter (see paragraph 17-31), and fill hydraulic reservoir with hydraulic fluid (Item 19, Appendix C) (see TM 10-3930-659-10).	
Step 2. Check for foamy hydraulic fluid and leaking hydraulic lines, hoses, and fittings.	Tighten all lines, hoses, and fittings.	Replace worn or leaking preformed packings, lines, hoses, or fittings (see paragraph 17-14, 17-15, 17-16, 17-17, 17-18, 17-19, 17-20, 17-21, 17-22, 17-23, 17-24, 17-25, 17-26, 17-27, 17-37, 17-38, or 17-39).

STEERING SYSTEM

10. SLOW OR HARD STEERING.

Step 1. Test priority valve relief pressure (see paragraph 12-27).

Adjust priority valve relief pressure (see paragraph 12-27).

Replace damaged priority valve (see paragraph 12-28).

Table 4-3. Hydraulic Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 2. Test secondary steering manifold secondary check valve for leakage (see paragraph 12-21).	Replace damaged secondary steering manifold (see paragraph 12-22).	
11. STEERING IS NONEXISTENT.		
Test priority valve relief pressure (see paragraph 12-27).	Adjust priority valve relief pressure (see paragraph 12-27).	Replace damaged priority valve (see paragraph 12-28).
12. CONSTANT STEERING REQUIRED TO MAINTAIN STRAIGHT TRAVEL.		
Step 1. Test steering system for leakage (see paragraph 12-1).	Tighten all hydraulic lines, hoses, and fittings.	Replace worn or leaking preformed packings, lines, hoses, or fittings (see paragraph 12-6, 12-7, 12-8, 12-9, 12-10, 12-11, 12-12, 12-13, 12-14, 12-15, 12-16, 12-17, or 12-18).
Step 2. Test steering valve for leakage in center position (see paragraph 12-23).	Replace damaged steering valve (see paragraph 12-24).	
13. STEERING IS ERRATIC.		
Step 1. Check for foamy hydraulic fluid and leaking hydraulic lines, hoses, and fittings.	Tighten all hydraulic lines, hoses, and fittings.	Replace worn or leaking preformed packings, lines, hoses, or fittings (see paragraph 17-14, 17-15, 17-16, 17-17, 17-18, 17-19, 17-20, 17-21, 17-22, 17-23, 17-24, 17-25, 17-26, 17-27, 17-37, 17-38, or 17-39).
Step 2. Test priority valve relief pressure (see paragraph 12-27).	Adjust priority valve relief pressure (see paragraph 12-27).	Replace damaged priority valve (see paragraph 12-28).
Step 3. Check steering cylinder piston rod for leaks or looseness.	Replace damaged steering cylinder (see paragraph 12-19).	
Step 4. Test steering valve for leakage in center position (see paragraph 12-23).	Replace damaged steering valve (see paragraph 12-24).	

Table 4-3. Hydraulic Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
14. STEERING IS SPONGY OR SOFT.	Check for foamy hydraulic fluid and leaking hydraulic lines, hoses, and fittings.	Tighten all hydraulic lines, hoses, and fittings.
		Replace worn or leaking preformed packings, lines, hoses, or fittings (see paragraph 17-14, 17-15, 17-16, 17-17, 17-18, 17-19, 17-20, 17-21, 17-22, 17-23, 17-24, 17-25, 17-26, 17-27, 17-37, 17-38, or 17-39).
15. STEERING WHEEL HAS EXCESSIVE PLAY.	Step 1. Check steering wheel retaining nut for looseness (see paragraph 12-2).	Torque nut to 50 lb.-ft. (68 N•m).
	Step 2. Check steering support mounting screws for looseness (see paragraph 12-3).	Torque mounting screws to 42 lb.-ft. (57 N•m).
	Step 3. Inspect splines on top of steering shaft and on top of steering valve column for damage (see paragraph 12-3).	Replace damaged steering column (see paragraph 12-3).
16. STEERING WHEEL TURNS WITH NO RESISTANCE AND CAUSES NO FRAME MOVEMENT.	Step 1. Check steering wheel retaining nut for looseness (see paragraph 12-2).	Torque nut to 50 lb. ft. (68 N•m).
	Step 2. Inspect steering column and steering support for damage or broken parts (see paragraph 12-3).	Replace damaged steering column (see paragraph 12-3).
	Step 3. Inspect for leaking hydraulic lines, hoses, and fittings.	Tighten all hydraulic lines, hoses, and fittings.
		Replace worn or leaking preformed packings, lines, hoses, or fittings (see paragraph 17-14, 17-15, 17-16, 17-17, 17-18, 17-19, 17-20, 17-21, 17-22, 17-23, 17-24, 17-25, 17-26, 17-27, 17-37, 17-38, or 17-39).
	Step 4. Test steering valve for leakage in center position (see paragraph 12-23).	Replace damaged steering valve (see paragraph 12-24).

Table 4-3. Hydraulic Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
17. STEERING WHEEL CAN BE TURNED WITH FRAMES AGAINST STEERING STOP.	Inspect for leaking hydraulic lines, hoses, and fittings.	Tighten all hydraulic lines, hoses, and fittings. Replace worn or leaking preformed packings, lines, hoses, or fittings (see paragraph 17-14, 17-15, 17-16, 17-17, 17-18, 17-19, 17-20, 17-21, 17-22, 17-23, 17-24, 17-25, 17-26, 17-27, 17-37, 17-38, or 17-39).
		Replace damaged crossover relief valve (see paragraph 12-25).
18. STEERING SYSTEM VIBRATES.	Test priority valve relief pressure (see paragraph 12-27).	Adjust priority valve relief pressure (see paragraph 12-27). Replace damaged priority valve (see paragraph 12-28). Replace damaged crossover relief valve (see paragraph 12-25).
19. STEERING VALVE BINDS OR STEERING WHEEL DOES NOT RETURN TO CENTER POSITION WHEN RELEASED.	Inspect steering column for binding by removing steering column (see paragraph 12-3) and checking for free rotation.	If steering column is binding, replace steering column (see paragraph 12-3).
20. STEERING VALVE LOCKS UP.	Step 1. Remove hydraulic reservoir suction filter and hydraulic oil return filter, and inspect for contamination (see paragraphs 17-29 and 17-31).	Drain hydraulic reservoir (see LO 10-3930-659-12), replace hydraulic reservoir suction filter (see paragraph 17-29) and hydraulic oil return filter (see paragraph 17-31), and fill hydraulic reservoir with hydraulic fluid (Item 19, Appendix C) (see TM 10-3930-659-10).
	Step 2. Test steering valve for leakage in center position (see paragraph 12-23).	Replace damaged steering valve (see paragraph 12-24).
21. FORKLIFT TRUCK TURNS WHEN STEERING VALVE IS IN CENTER POSITION.	Test steering valve for leakage in center position (see paragraph 12-23).	Replace damaged steering valve (see paragraph 12-24).

Section II. STE/ICE-R TROUBLESHOOTING

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4.4 GENERAL.

a. This section contains information and tests which may be used with STE/ICE-R (Simplified Test Equipment for Internal Combustion Engines - Reprogrammable) to locate malfunctions that may occur in the M544E Forklift Truck. These tests can be used during electrical troubleshooting, corrective maintenance, or after parts replacement to isolate malfunctions and to ensure that proper repairs have been made.

b. The STE/ICE-R is used primarily In conjunction with the forklift truck's electrical system. This section cannot list all malfunctions that may occur. If a malfunction is not listed, or is not corrected by the tests and checks provided, refer to the troubleshooting tables in Section I of this chapter or notify your supervisor.

4-4. GENERAL (Con't).

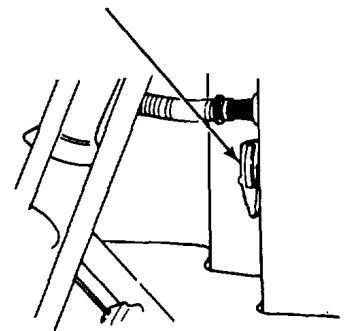
c. Refer to TM 9-4910-571-12&P for STE/ICE-R set-up, operation, and fault isolation procedures. This manual outlines general tests and maintenance procedures to help you keep the STE/ICE-R working properly. Refer to Table 4-4 for the M544E Forklift Truck test card.

4-5. DESCRIPTION AND OPERATION.

The STE/ICE-R is portable and operates on the forklift truck's 24-volt system. It consists of a Vehicle Test Meter (VTM), a Transducer Kit (TK), five electrical cables, a transit case, and technical publications. Refer to the manual provided with the STE/ICE-R for VTM and TK descriptions and operating information.

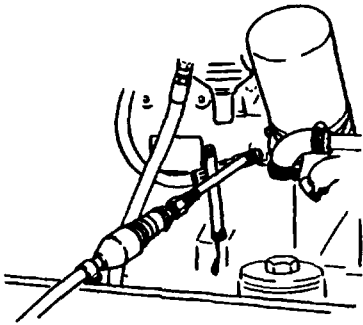
4-6. TEST PROCEDURES.

- a. The VTM provides the method to test the forklift truck's electrical and mechanical components. Readings are either GO or NO-GO (pass/fail) indications or digital displays in units (psi, rpm, volts, Vdc, ohms, amps, etc.).
- b. GO and NO-GO Chain sequences are presented in Tables 4-5, 4-6, and 4-7 as illustrated flowcharts, with test branching controlled by YES and NO decisions. A YES response usually leads to the next test; a NO response directs the technician to NO-GO testing and corrective actions.
- c. When the VTM interfaces with the forklift truck through the Diagnostic Connector Assembly (DCA), the test is referred to as DCA Mode testing. When the VTM interfaces with the forklift truck through the use of the Transducer Kit (TK), the test is referred to as TK Mode testing. DCA and TK Mode testing can be used at the same time.
- d. The DCA is mounted on the front of the right side console near the cab floor and is accessible from the operator's seat.

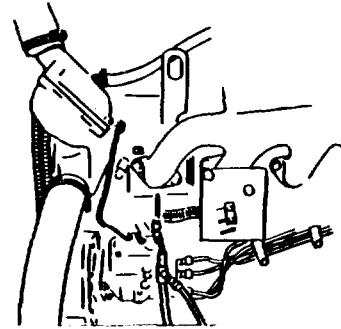
DCA TEST LOCATION

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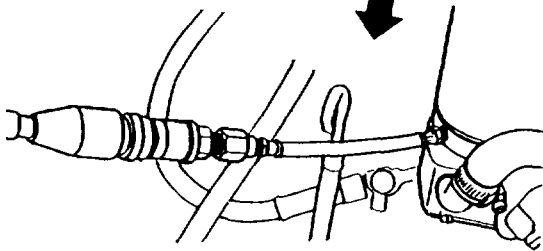
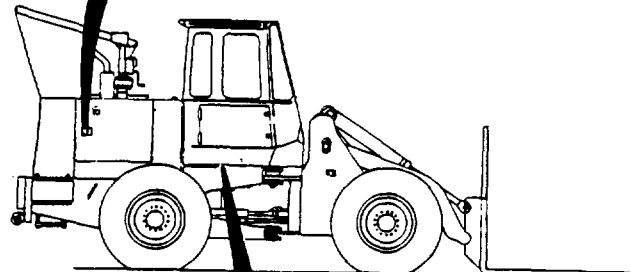
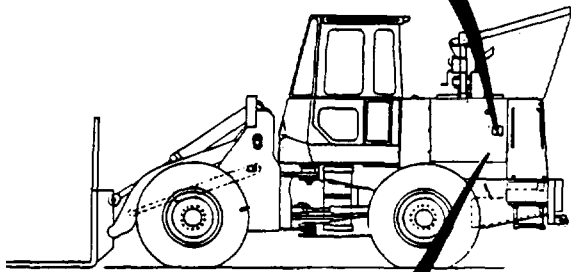
4-6. TEST PROCEDURES (Con't).



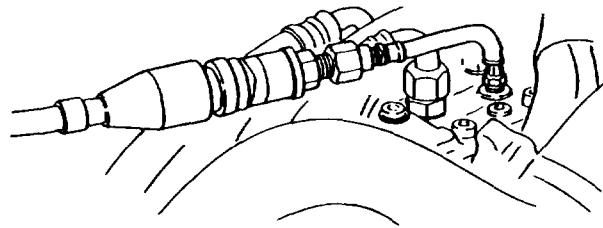
ENGINE OIL PRESSURE TEST (GO8)



ENGINE FUEL RETURN PRESSURE TEST (GO10)



ENGINE OIL FILTER PRESSURE DROP TEST (GO9)



TRANSMISSION FLUID PRESSURE TEST (GO11)

TK TEST LOCATIONS

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4-7. DCA MODE AND TK MODE TESTING.

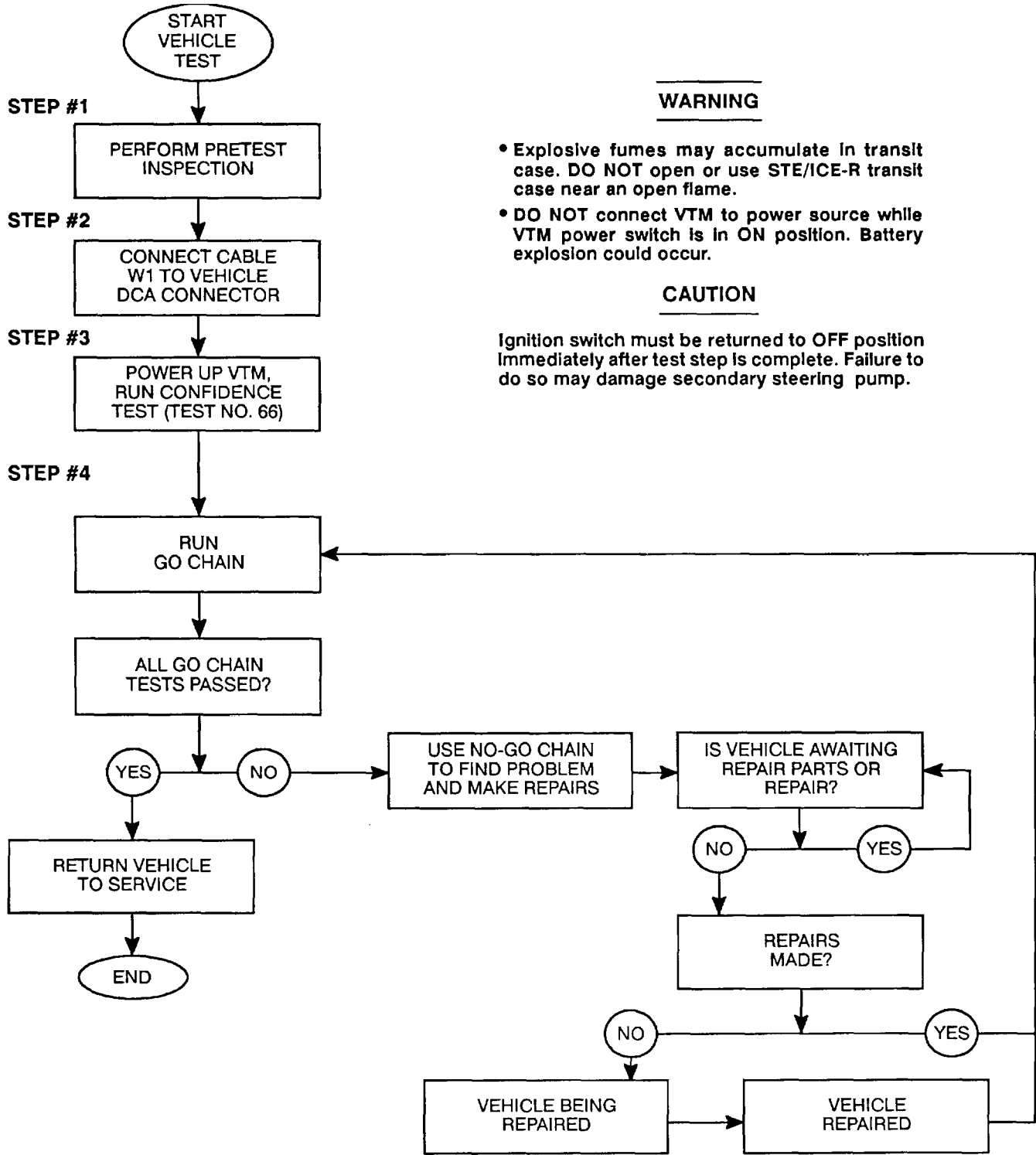
a. **Pretest Inspection.** Ensure that the following pretest inspections have been completed before beginning DCA or TK Mode testing:

- (1) Fan belts
- (2) Hydraulic fluid level
- (3) Coolant level
- (4) Fuel level
- (5) Batteries

b. **Powering Up the VTM.**

- (1) Connect the VTM to cable W1. Cable W1 connects to the batteries.
- (2) Perform Confidence Test, Test No. 66 (second entry 99).
- (3) Enter VIN into VTM using Test No. 60.

4-7. DCA AND TK MODE TESTING (Con't).



WARNING

- Explosive fumes may accumulate in transit case. DO NOT open or use STE/ICE-R transit case near an open flame.
- DO NOT connect VTM to power source while VTM power switch is in ON position. Battery explosion could occur.

CAUTION

Ignition switch must be returned to OFF position immediately after test step is complete. Failure to do so may damage secondary steering pump.

STE/ICE-R DCA AND TK MODE TESTING PROCEDURE FLOWCHART

4-7. DCA AND TK MODE TESTING (Con't).

Table 4-4. M544E Forklift Truck Test Card.

Measurement Name	VTM Test No.	VTM Offset Limits	Operating Condition	Connections Required	Limits			Units
					Min.	Norm.	Max.	
Engine rpm (average)	10	---	Engine Idle Speed	DCA: Cable W1	825	825-875	875	rpm (average)
Power Test	12	---	Low Engine Idle Speed	DCA: Cable W1	2300	2400-2700	2400	rpm
Fuel Supply Pressure	24	---	Engine Idle Speed	DCA: Cable W1	2	2-8	8	psi
Fuel Filter Pressure Drop (pass/fail)	26	---	Engine Idle Speed	DCA: Cable W1				Pass/Fail
Fuel Solenoid Voltage	27	---	Engine Off	DCA: Cable W1	20	20-28	28	V dc
Battery Voltage	67	---	Engine Off	DCA: Cable W1	26	26-29	29	V dc
Starter Motor Voltage	68	---	Cranking	DCA: Cable W1	20	20-22.5	24.5	V dc
Starter Motor Solenoid Voltage	70	---	Cranking	DCA: Cable W1	20	20-22.5	24.5	V dc
Starter Motor Current (average)	71	---	Crank on GO	DCA: Cable W1	100	100-750	1000	amps
Starter Motor Current (first peak)	72	±225	Crank on GO	DCA: Cable W1	100	100-2000	2500	amps (peak)
Battery Internal Resistance	73	±225	Crank on GO	DCA: Cable W1	0	4-15	25	milliohms
Starter Motor Circuit Resistance	74	±225	Crank on GO	DCA: Cable W1	0	0-15	20	milliohms
Battery Resistance Change	75	±225	Crank on GO	DCA: Cable W1	0	0-50	100	milliohms/sec
Alternator Output Voltage	82	---	2385 rpm	DCA: Cable W1	27.5	27.5-28.5	28.5	V dc
Alternator Field Voltage	83	---	2385 rpm	DCA: Cable W1	24	24-28.5	28.5	V dc
Alternator Negative Cable Voltage Drop	84	---	2385 rpm	DCA: Cable W1	0	0-0.5	0.05	V dc

4-7. DCA AND TK MODE TESTING (Con't).

Table 4-4. M544E Forklift Truck Test Card (Con't)

Measurement Name	VTM Test No.	VTM Offset Limits	Operating Condition	Connections Required	Limits			Units
					Min.	Norm.	Max.	
Engine Oil Pressure Test	50	±150	850 rpm	DCA: Cable W1 TK: Cable W4, Hose 35, Fuel Pressure Transducer 17, Coupling 19	10	40-60	70	psi
Engine Oil Filter Pressure Drop Test	50	±150	2375 rpm	DCA: Cable W1 TK: Cable W4, Hose 35, Fuel Pressure Transducer 17, Coupling 19	0	0-10	10	psi
Engine Fuel Return Pressure Test	50	±150	2375 rpm	DCA: Cable W1 TK: Cable W4, Fuel Pressure Transducer 22, Coupling 19	0	0-2	2	psi
Transmission Fluid Pressure Test	50	±150	1500 rpm	DCA: Cable W1 TK: Cable W4, Hose 35, Fuel Pressure Transducer 17, Coupling 19	213	213-240	240	psi

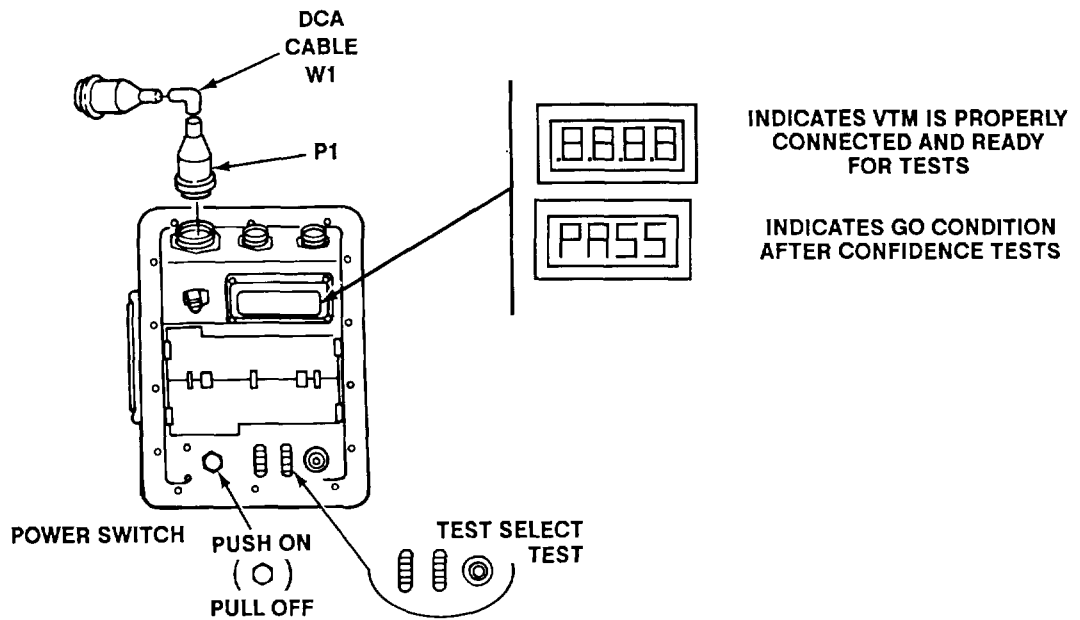
4-8. STE/ICE-R GO CHAIN TESTS - DCA MODE.

a. The following GO Chain Tests are made using the forklift truck's DCA connector. All tests must be performed sequentially.

b. For normal readings, refer to the M544E Forklift Truck Test Card at Table 4-4. For DCA test location, refer to paragraph 4-6.

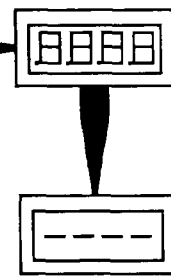
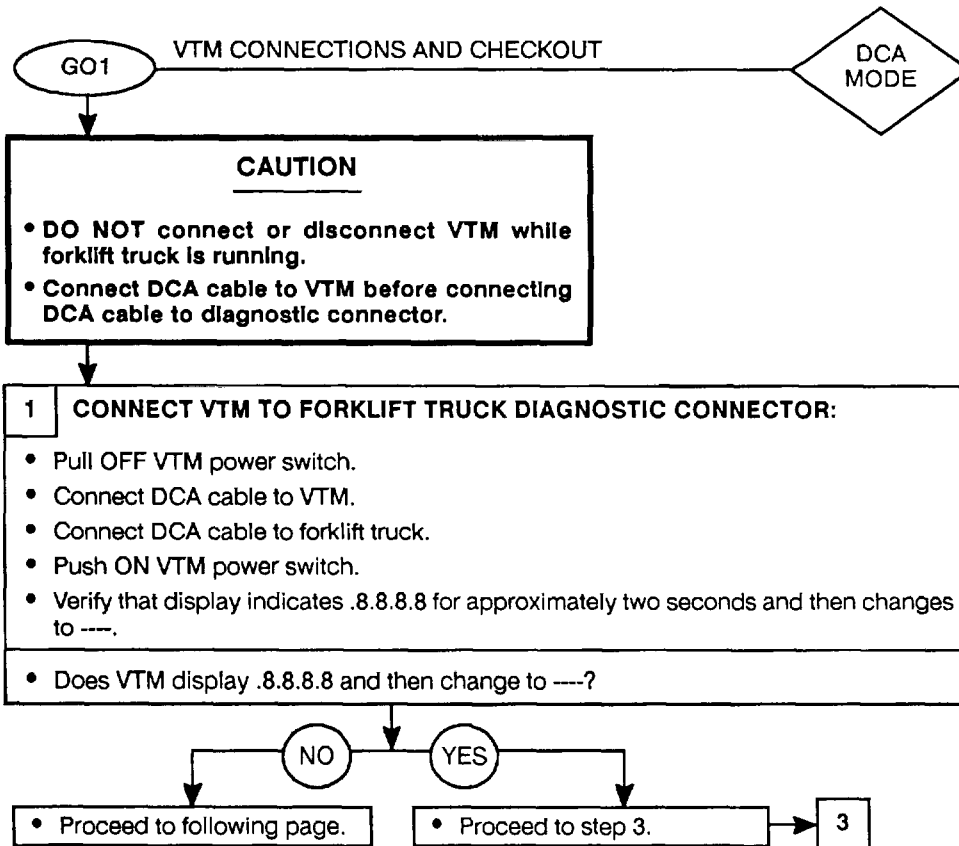
GO Test Number	Test Title	Page Number
G01	VTM Connections and Checkout	4-51
G02	First Peak Test - Starter Motor Current.....	4-55
G03	Forklift Truck Gages and Indicators Check.....	4-57
G04	Engine Idle Speed Check.....	4-60
G05	Battery Voltage Check.....	4-61
G06	Engine Power Check.....	4-62

Table 4-5. STE/ICE-R GO Chain Tests - DCA Mode.



NOTE

Perform all GO steps until a NO-GO condition exists, then perform the NO-GO step indicated.



AFTER 2 SECONDS

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Table 4-5. STE/ICE-R GO Chain Tests - DCA Mode (Con't).

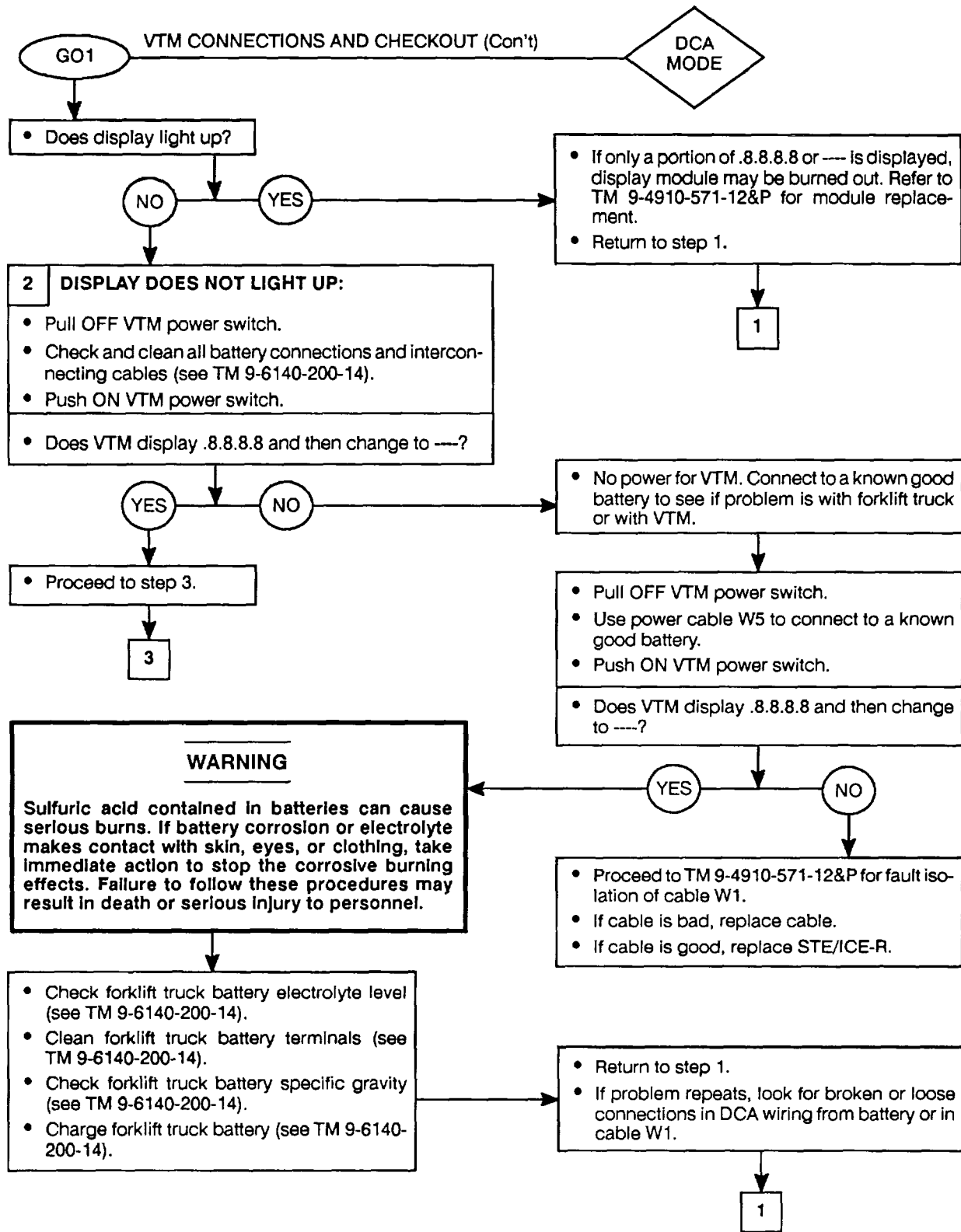
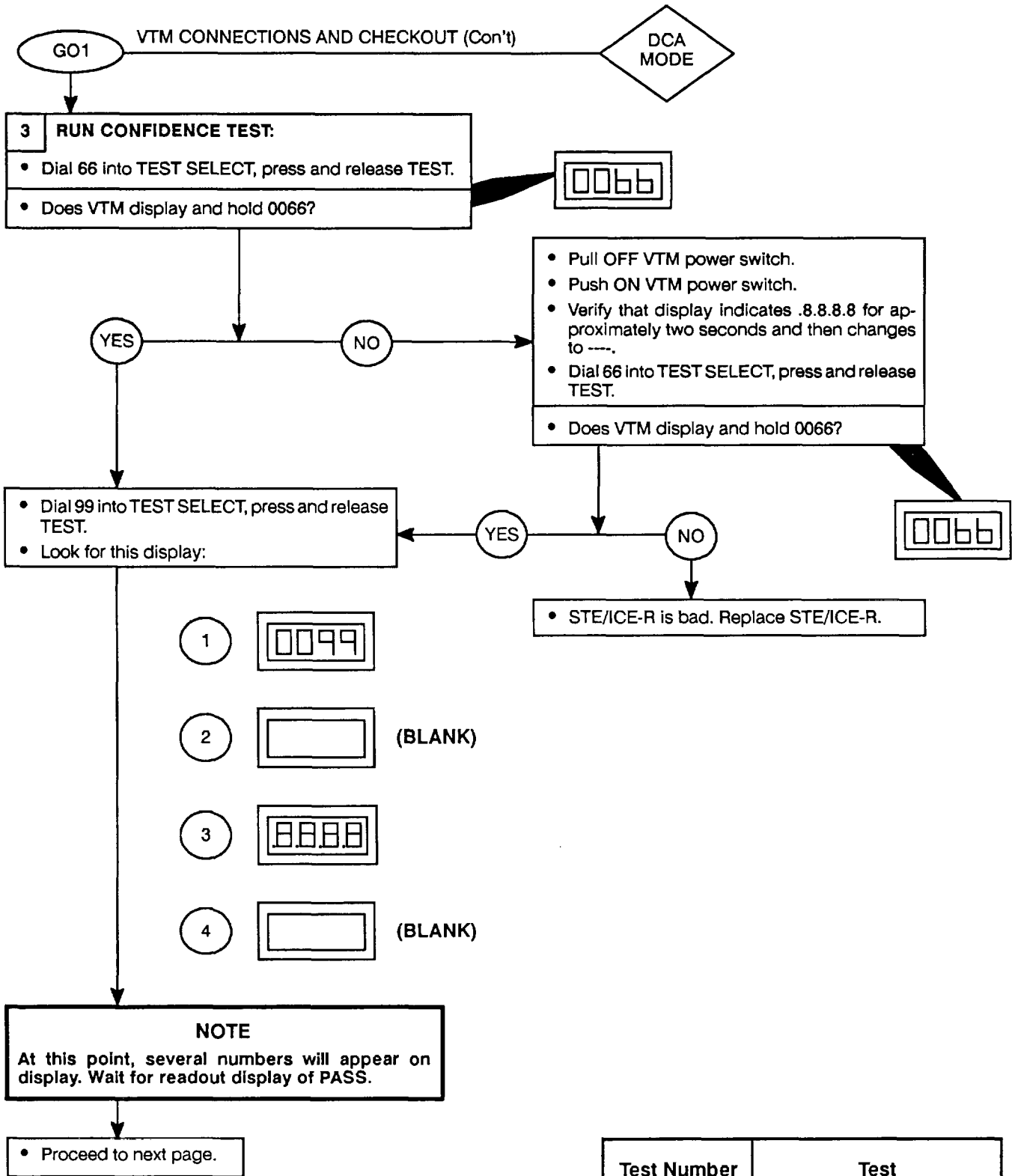
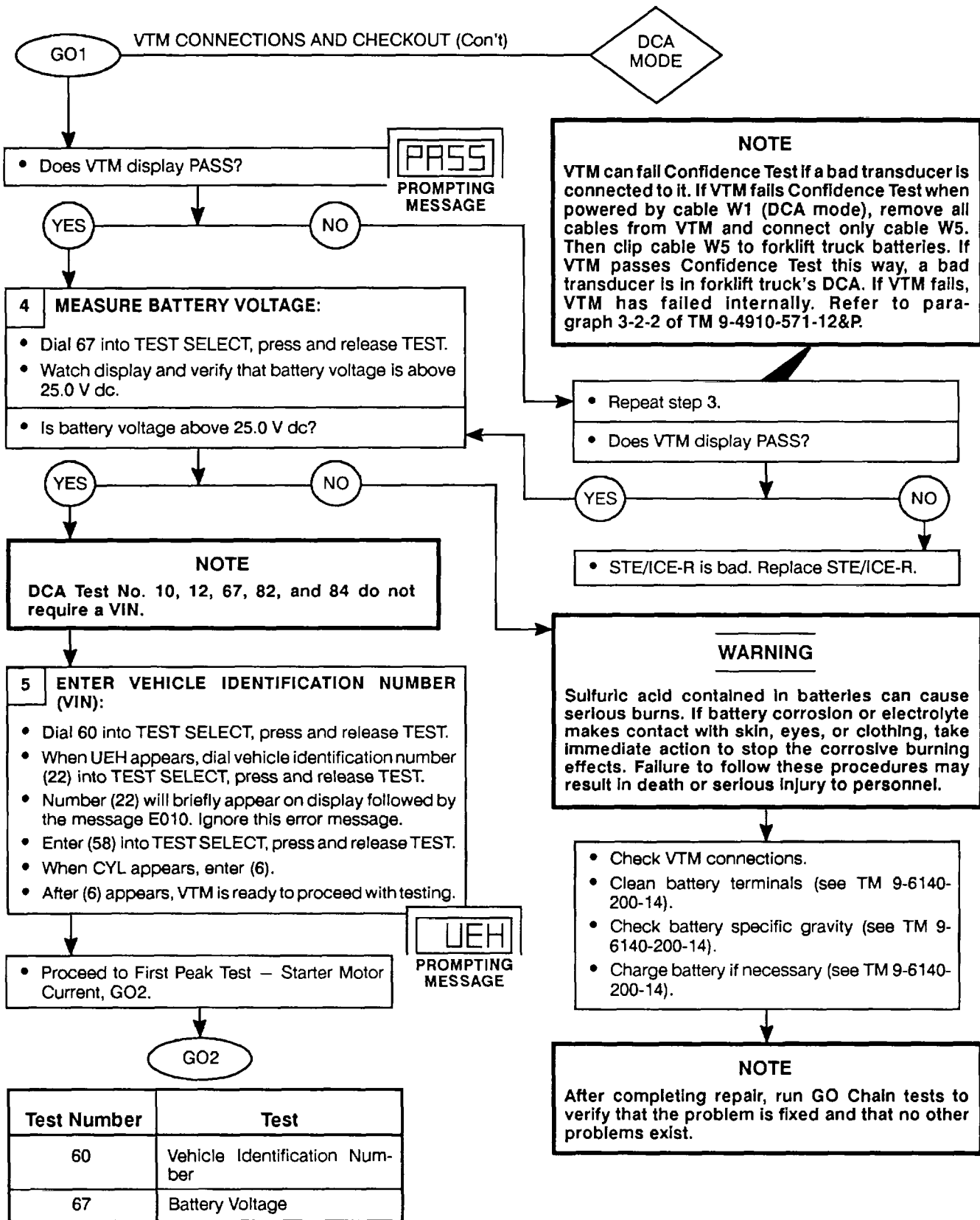


Table 4-5. STE/ICE-R GO Chain Tests - DCA Mode (Con't).



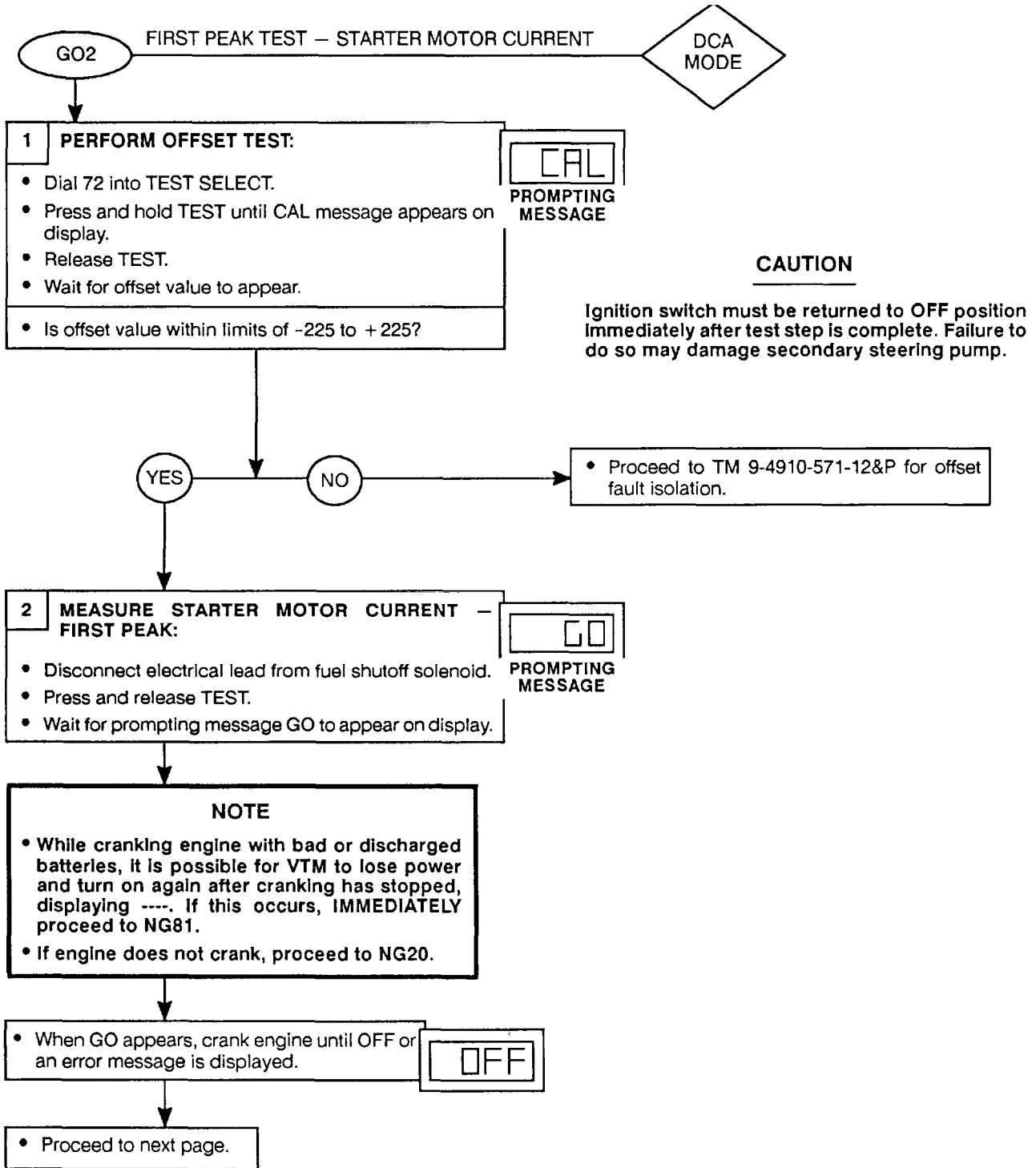
Test Number	Test
66/99	Confidence Test

Table 4-5. STE/ICE-R GO Chain Tests - DCA Mode (Con't).



Test Number	Test
60	Vehicle Identification Number
67	Battery Voltage

Table 4-5. STE/ICE-R GO Chain Tests - DCA Mode (Con't).



Test Number	Test
72	Starter Motor Current - First Peak

Table 4-5. STE/ICE-R GO Chain Tests - DCA Mode (Con't)

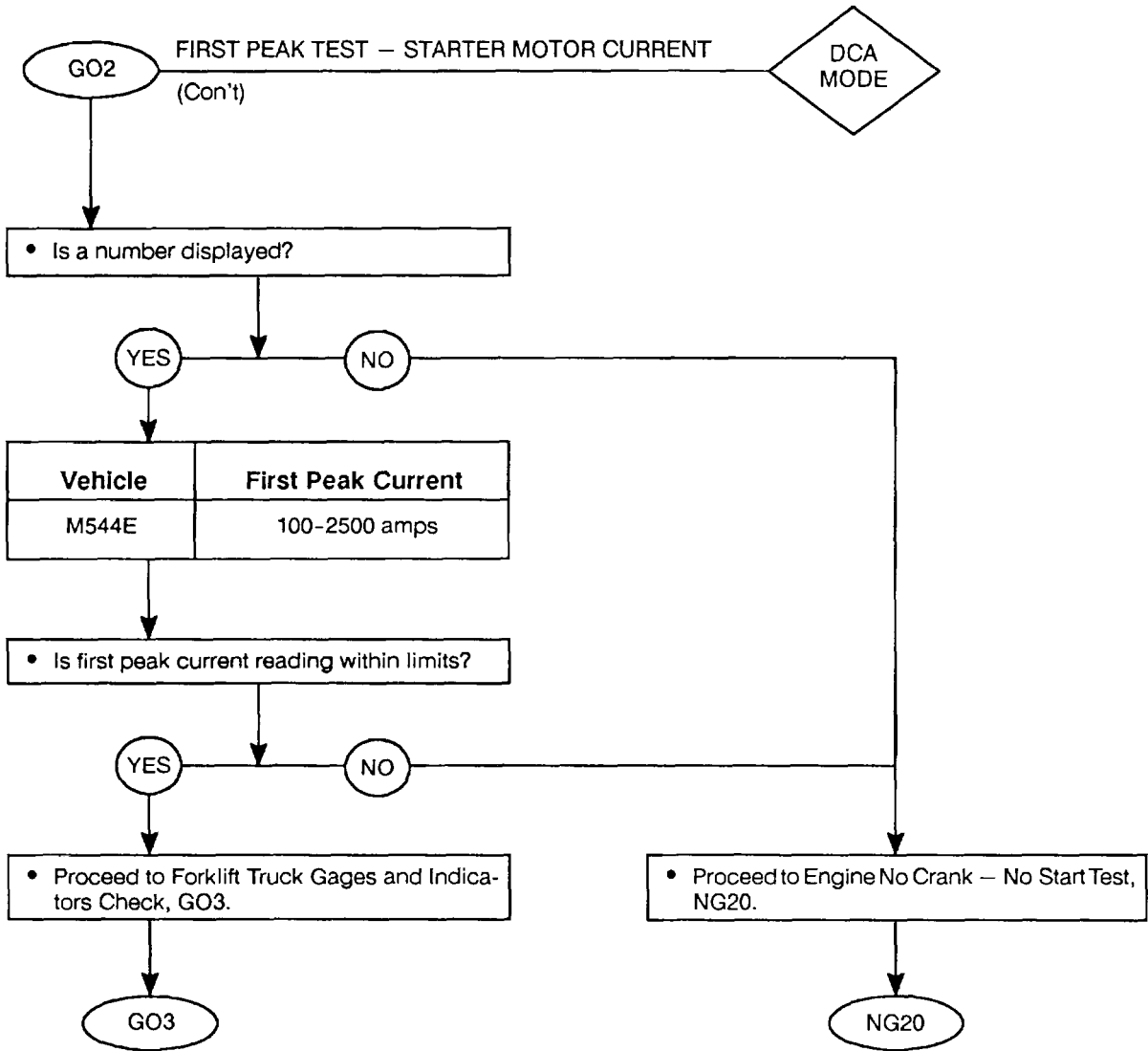


Table 4-5. STE/ICE-R GO Chain Tests - DCA Mode (Con't)

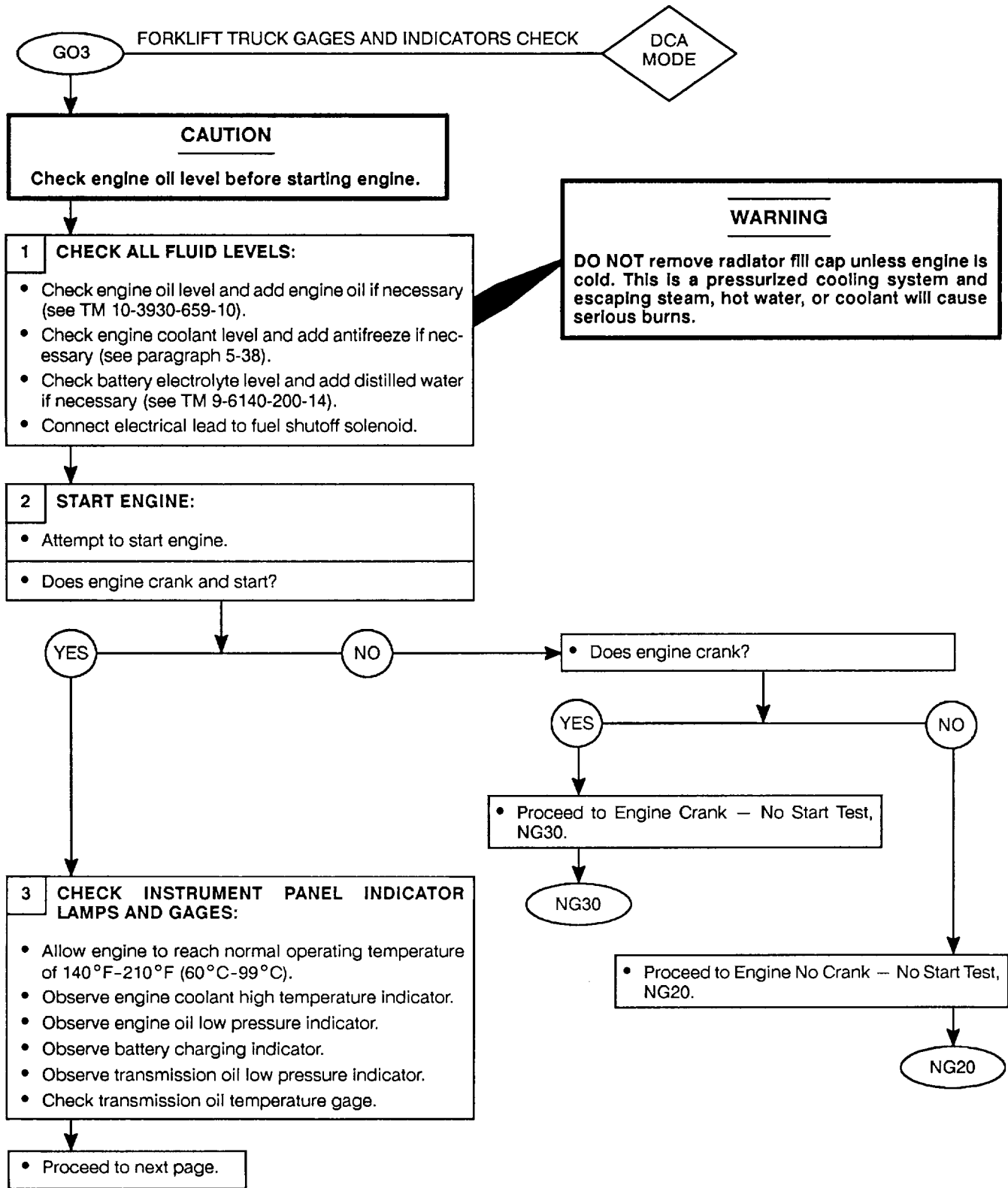


Table 4-5. STE/ICE-R GO Chain Tests -DCA Mode (Con't)

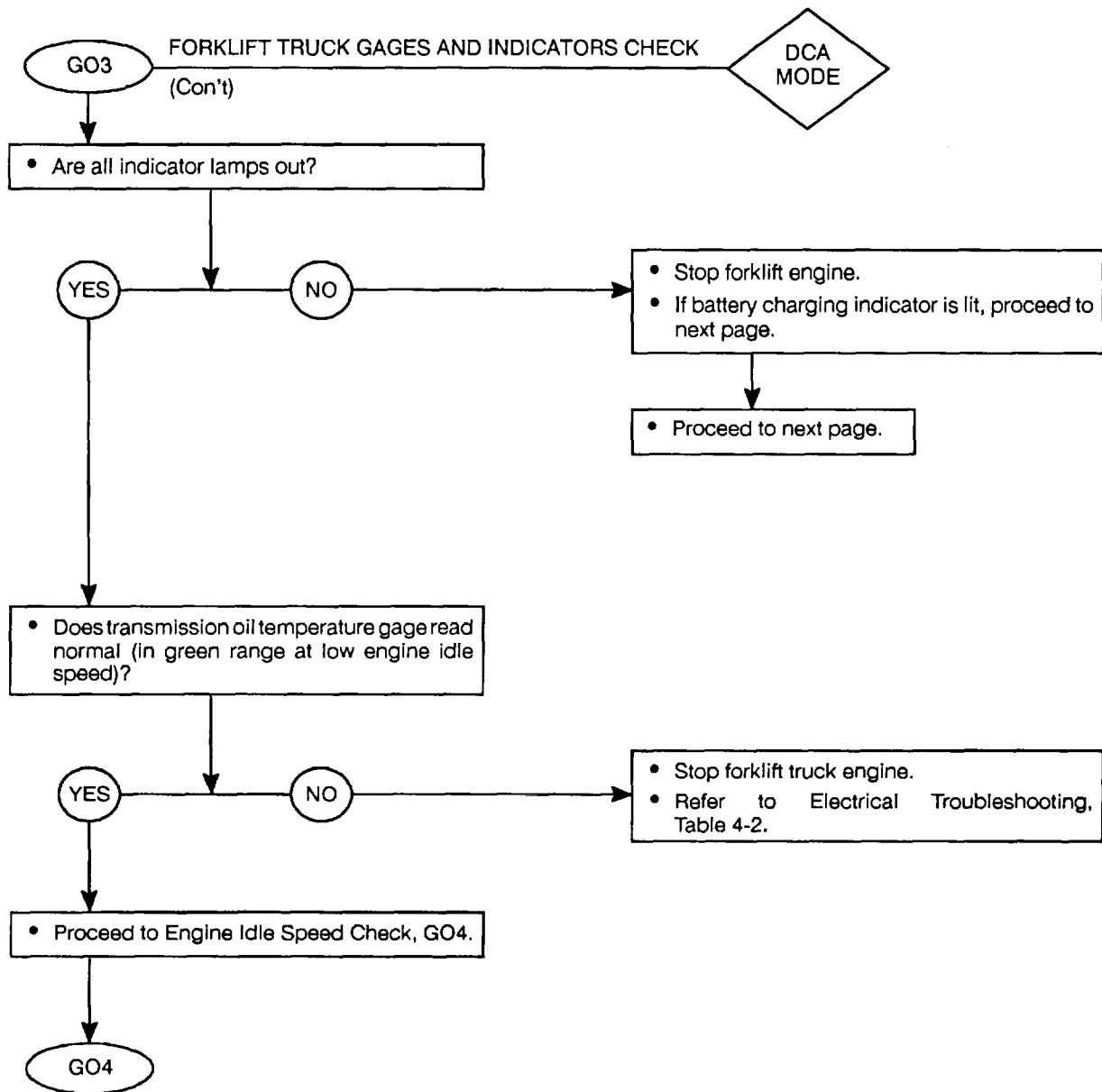


Table 4-5. STE/ICE-R GO Chain Tests - DCA Mode (Con't)

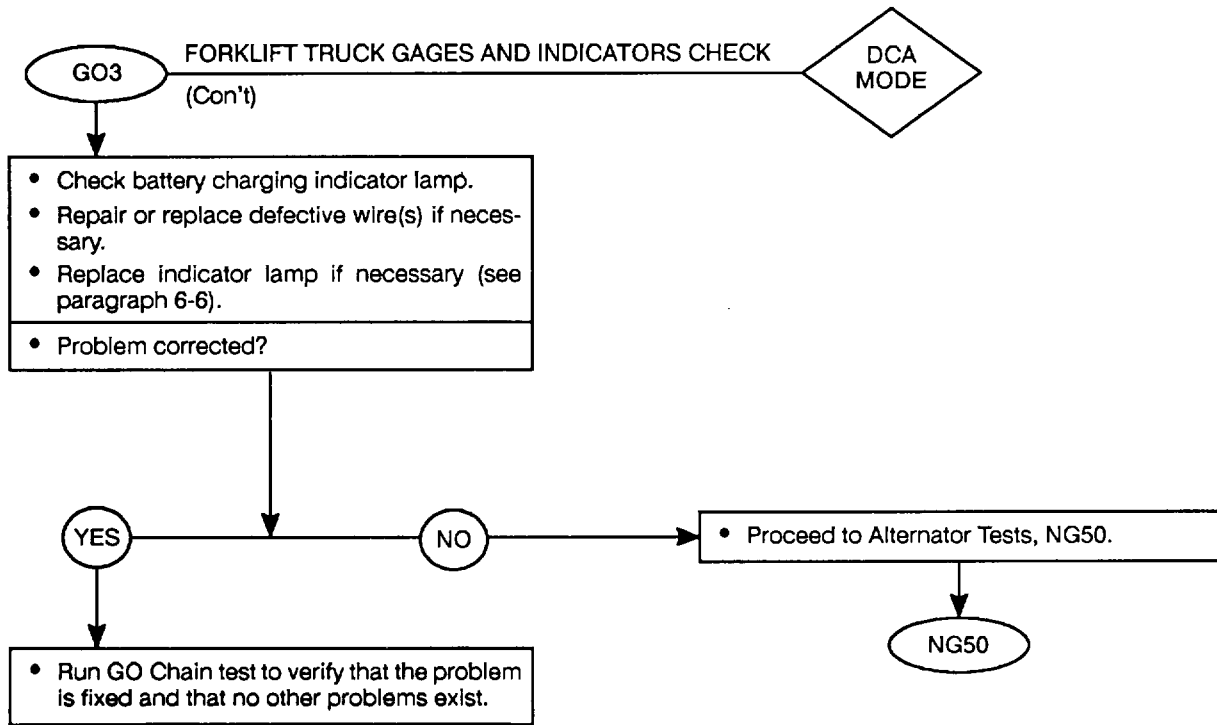
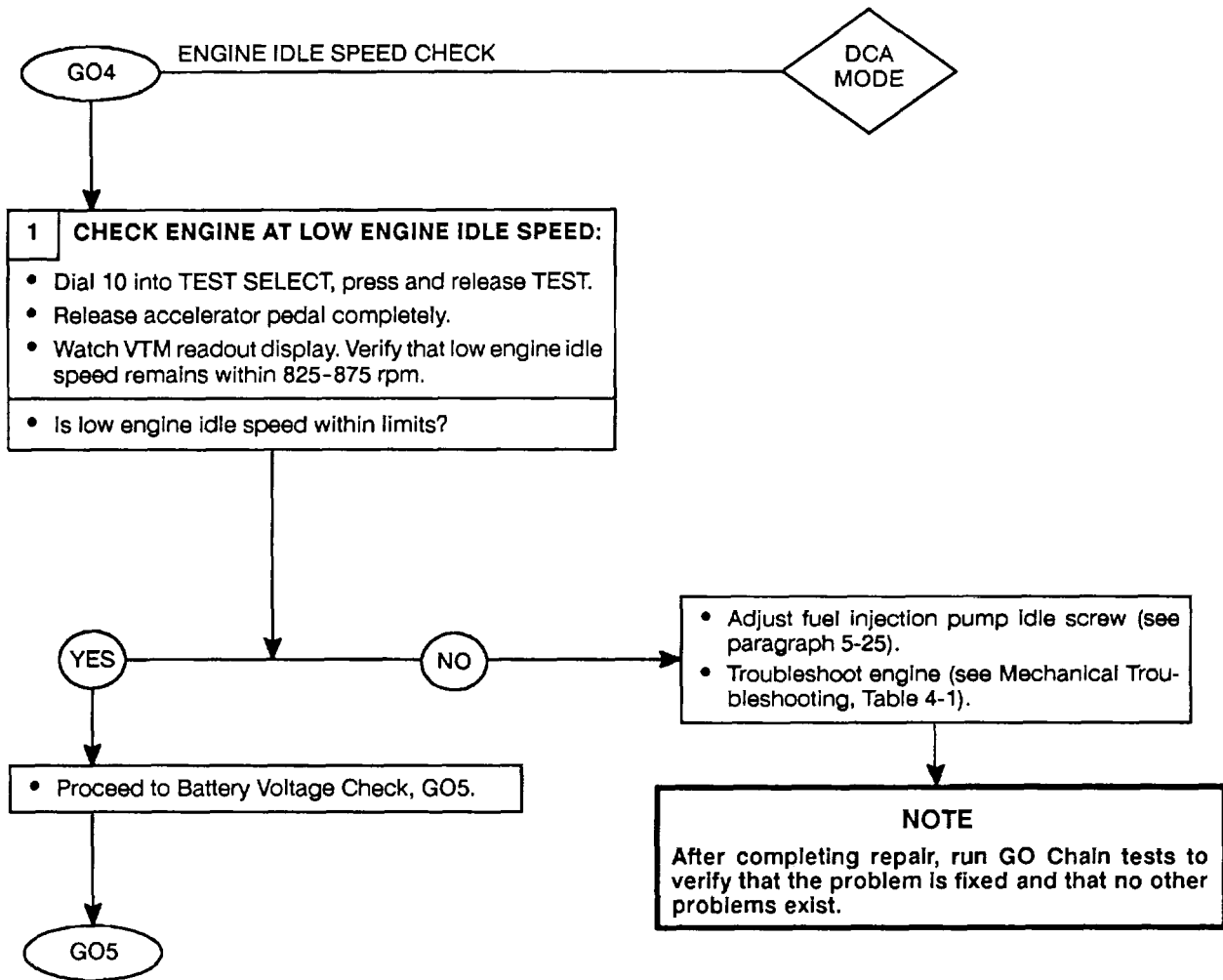
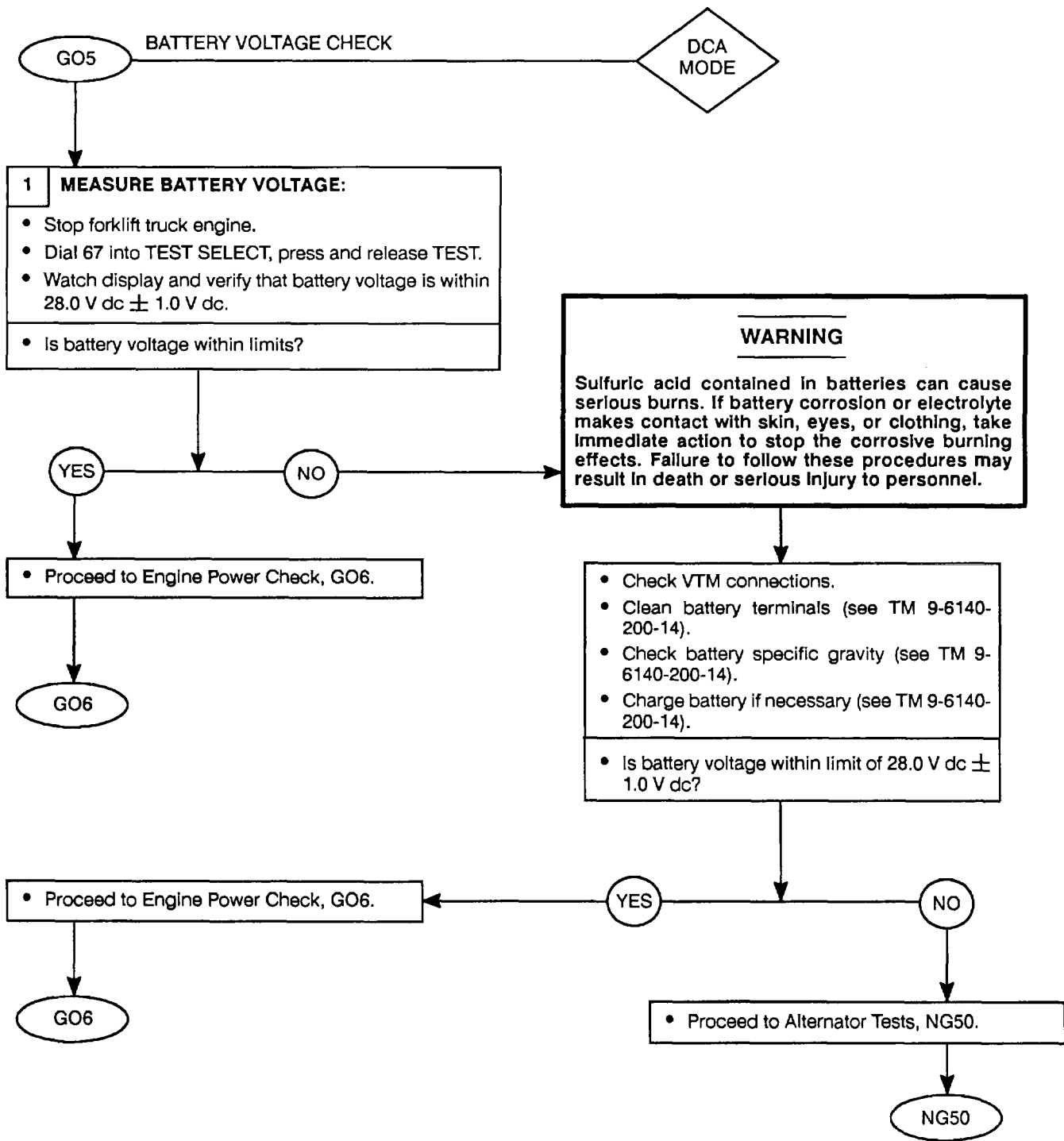


Table 4-5. STE/ICE-R GO Chain Tests - DCA Mode (Con't)



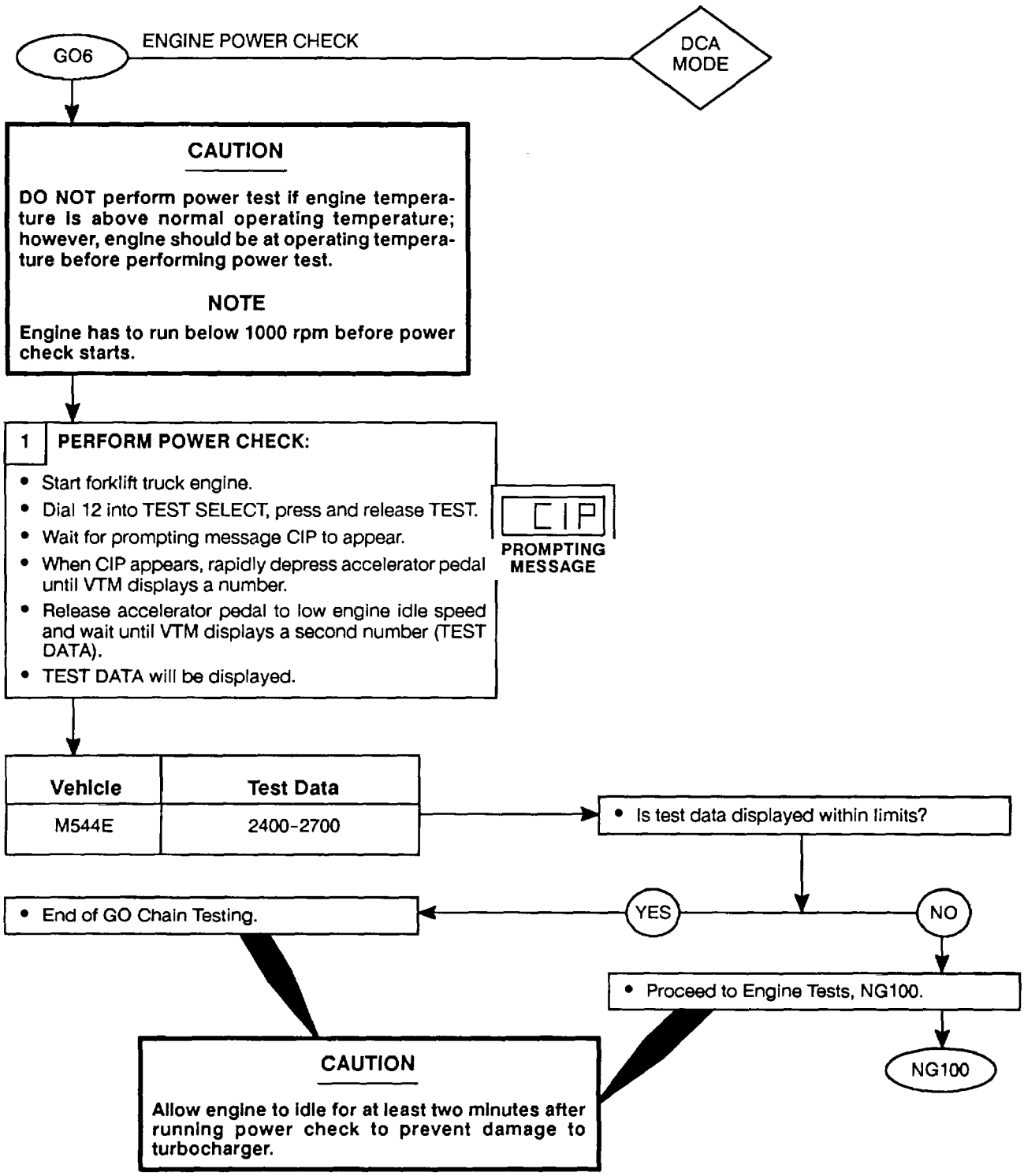
Test Number	Test
10	Engine rpm (average)

Table 4-5. STE/ICE-R GO Chain Tests - DCA Mode (Con't)



Test Number	Test
67	Battery Voltage

Table 4-5. STE/ICE-R GO Chain Tests - DCA Mode (Con't)



Test Number	Test
12	Engine Power Check

4-9. STE/ICE-R NO-GO CHAIN TESTS - DCA MODE.

a. The following NO-GO Chain Tests are made using the forklift truck's DCA connector. Each test is referenced from the GO Chain testing sequence. Do not perform any of these tests unless you are instructed to do so by the GO Chain testing procedure or by Table 4-1,4-2, or 4-3. All testing is referenced by the NG (NO-GO) number.

b. For normal readings, refer to the M544E Forklift Truck Test Card at Table 4-4. For DCA test location, refer to paragraph 4-6.

GO Test Number	Test Title	Page Number
NG20	Engine No Crank - No Start Test	4-64
NG30	Engine Crank - No Start Test	4-65
NG31	Fuel System Tests	4-66
NG50	Alternator Tests.....	4-69
NG80	Starter Motor Circuit Tests	4-71
NG81	Battery Tests.....	4-75
NG90	Starter Motor Tests	4-78
NG100	Engine Tests	4-79
NG110	Starter Motor Current Test.....	4-81
NG150	Engine Rotation Check.....	4-82

Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)

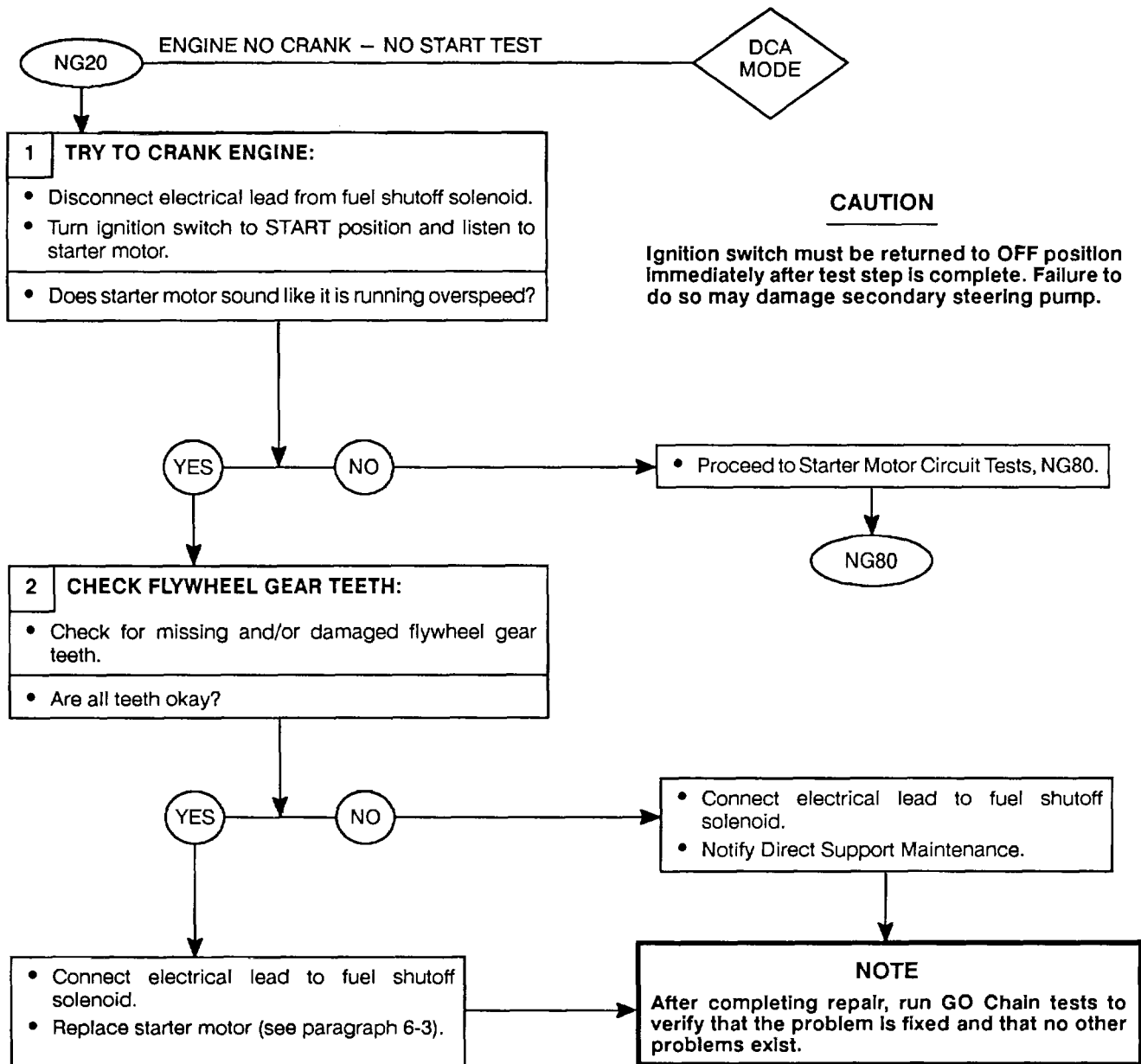
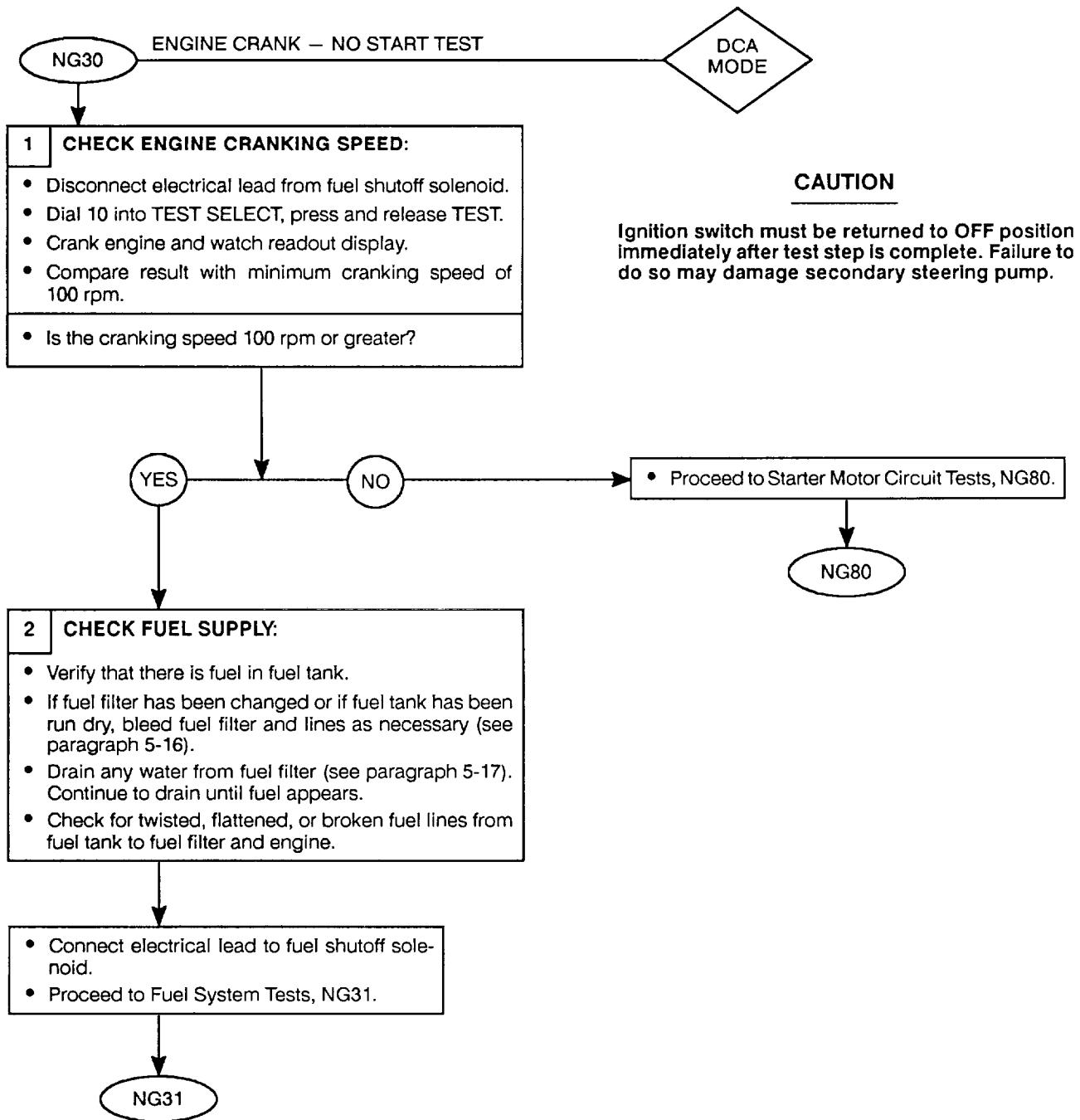
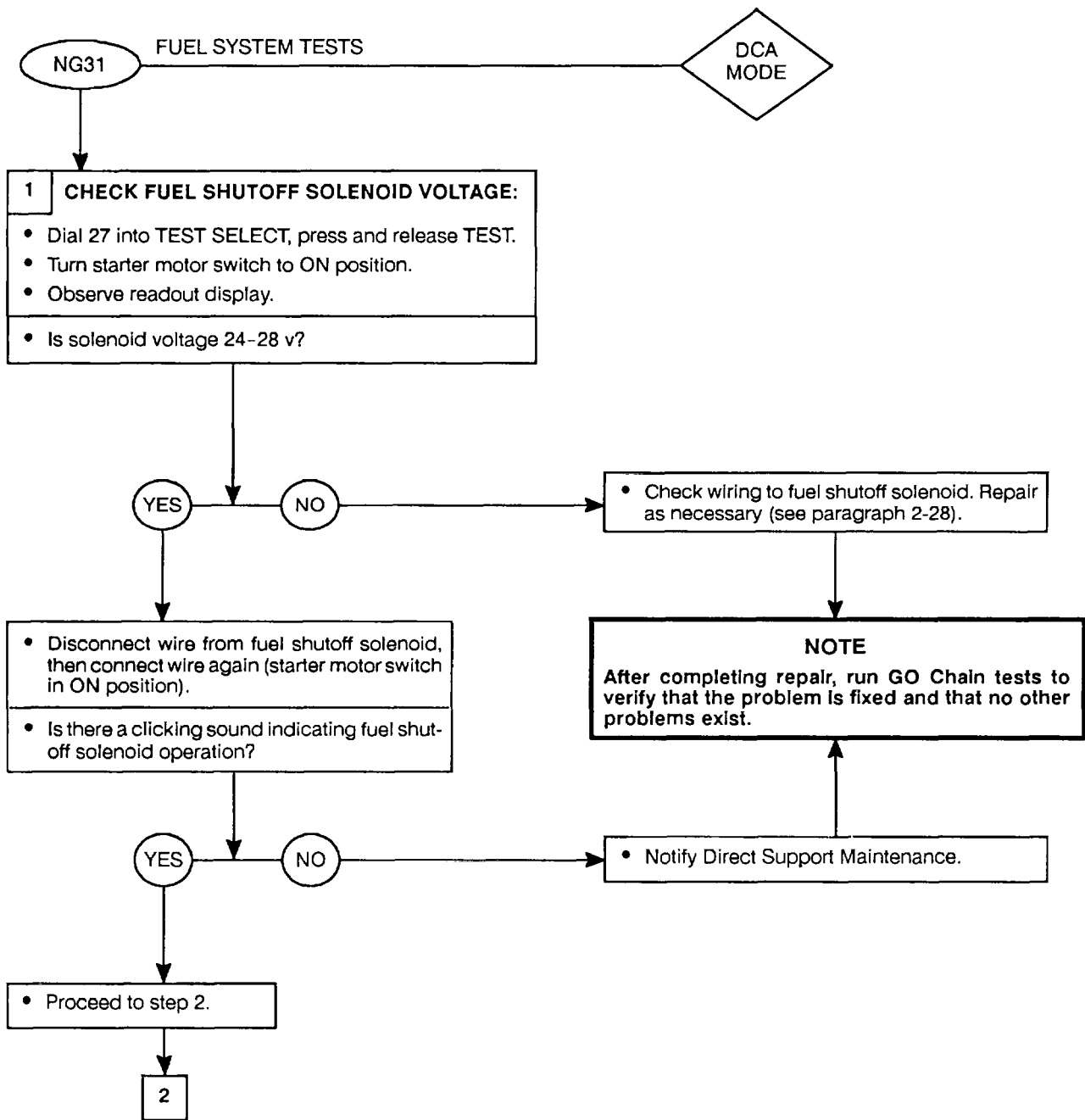


Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)



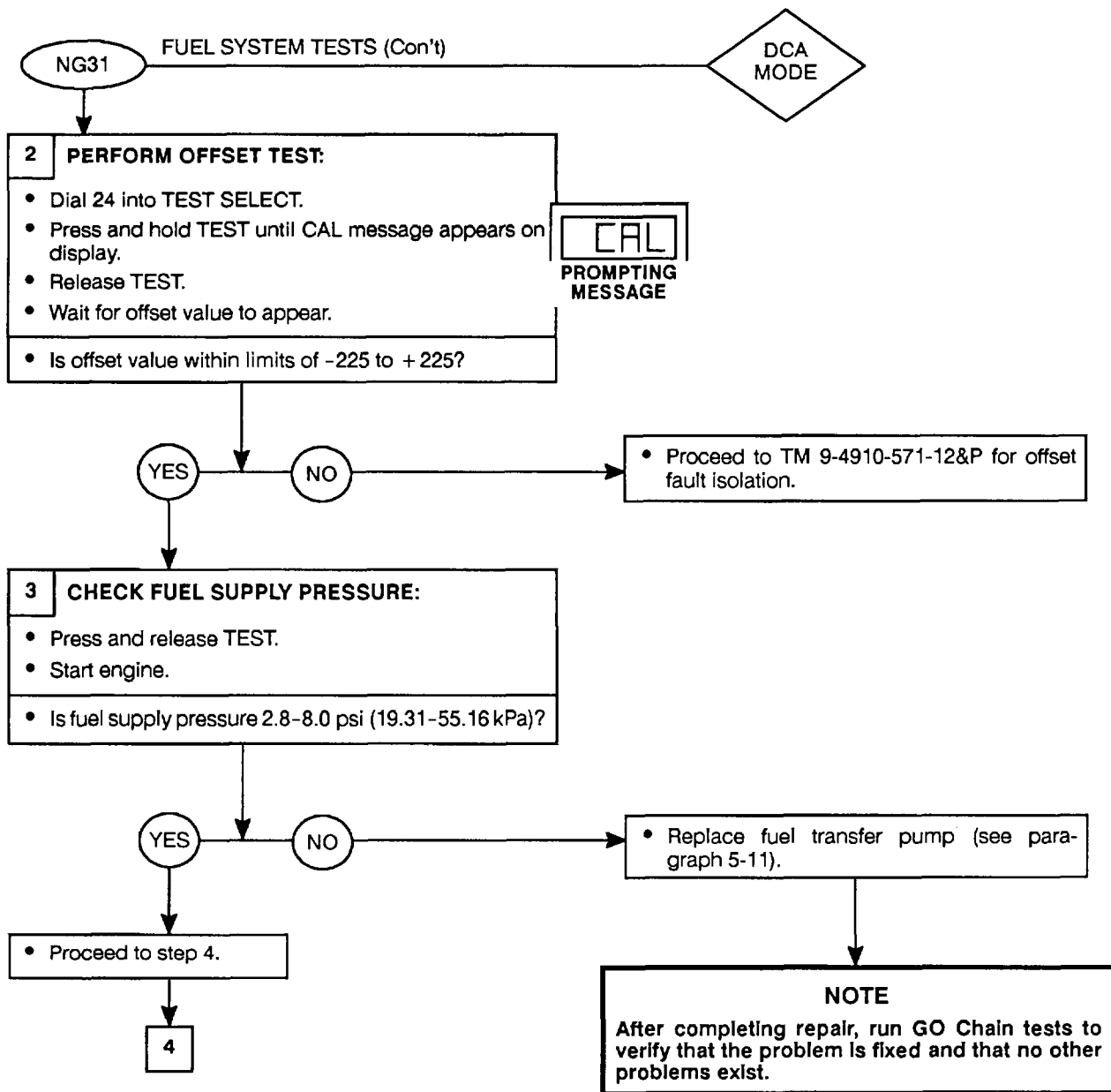
Test Number	Test
10	Engine rpm (average)

Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)



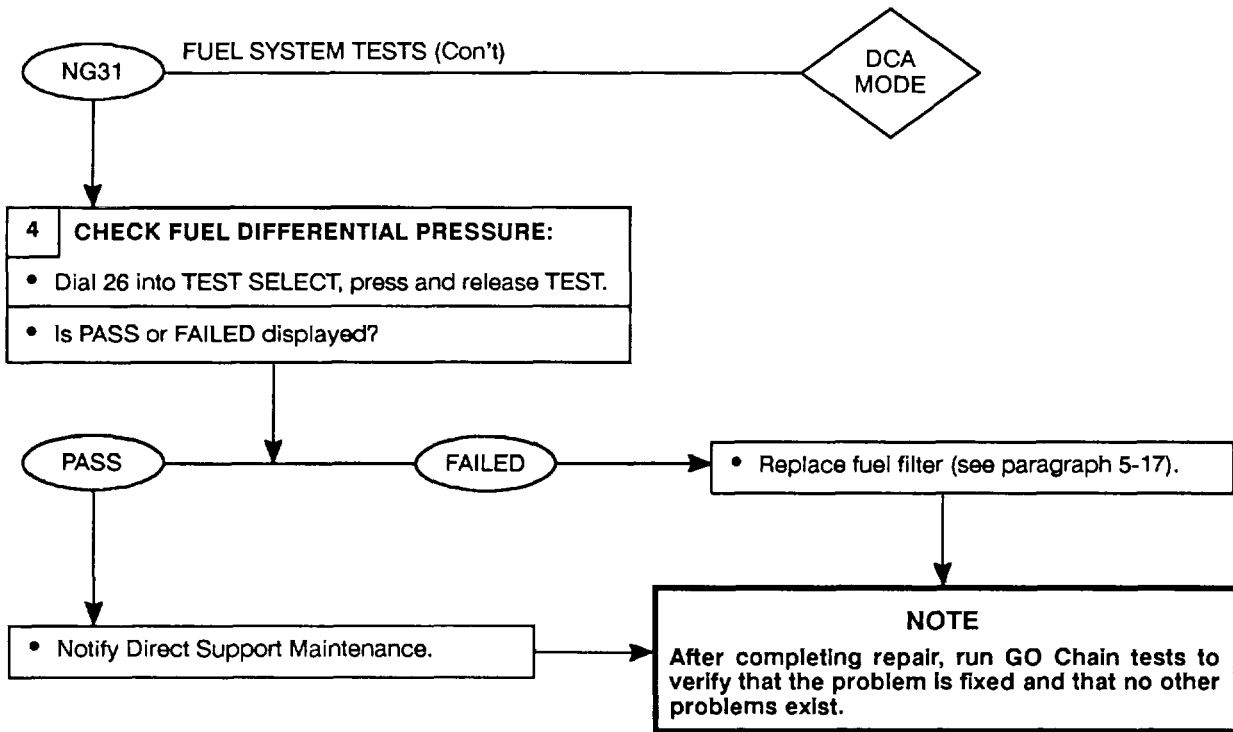
Test Number	Test
27	Fuel Shutoff Solenoid Voltage

Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)



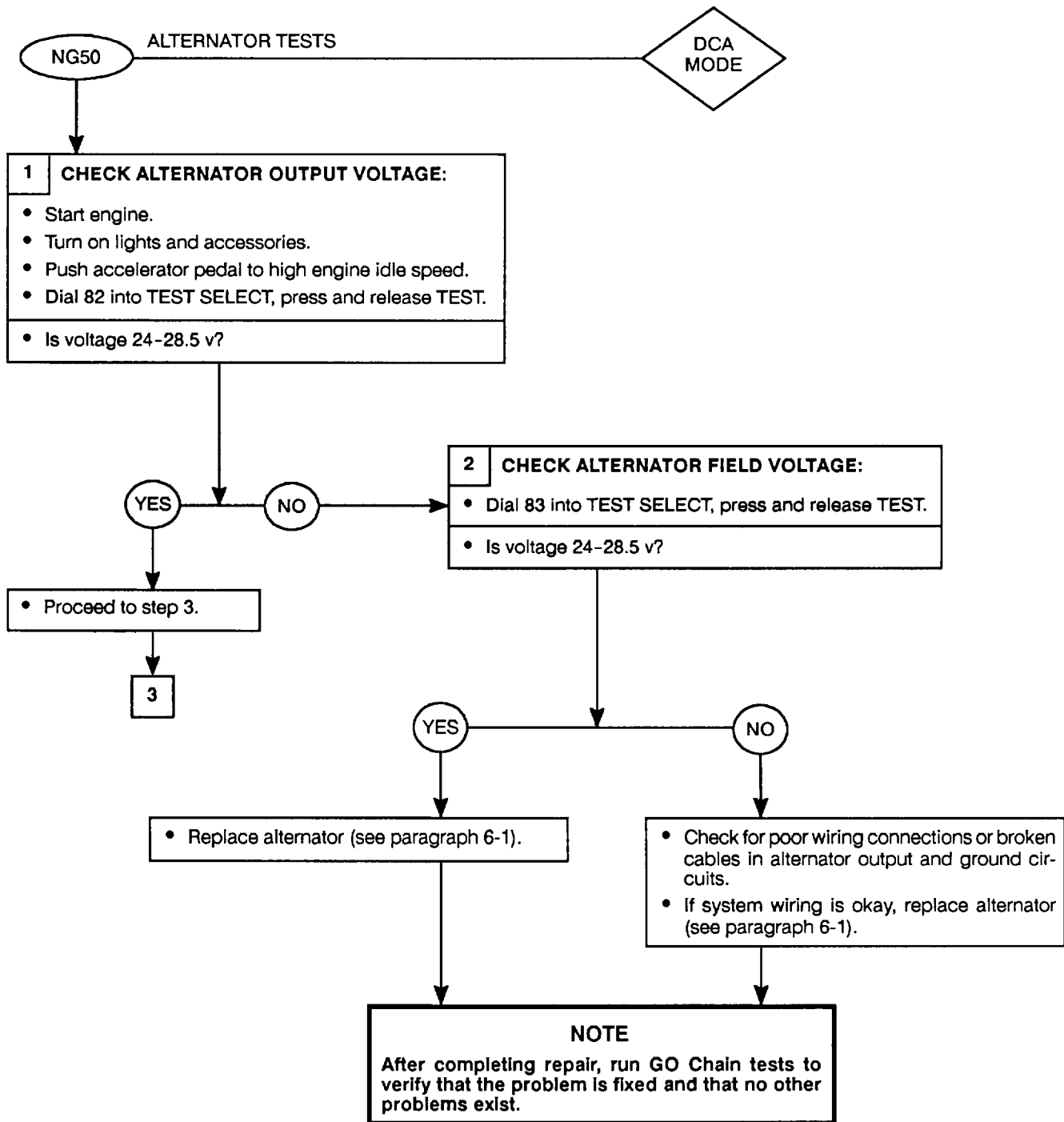
Test Number	Test
24	Fuel Supply Pressure

Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)



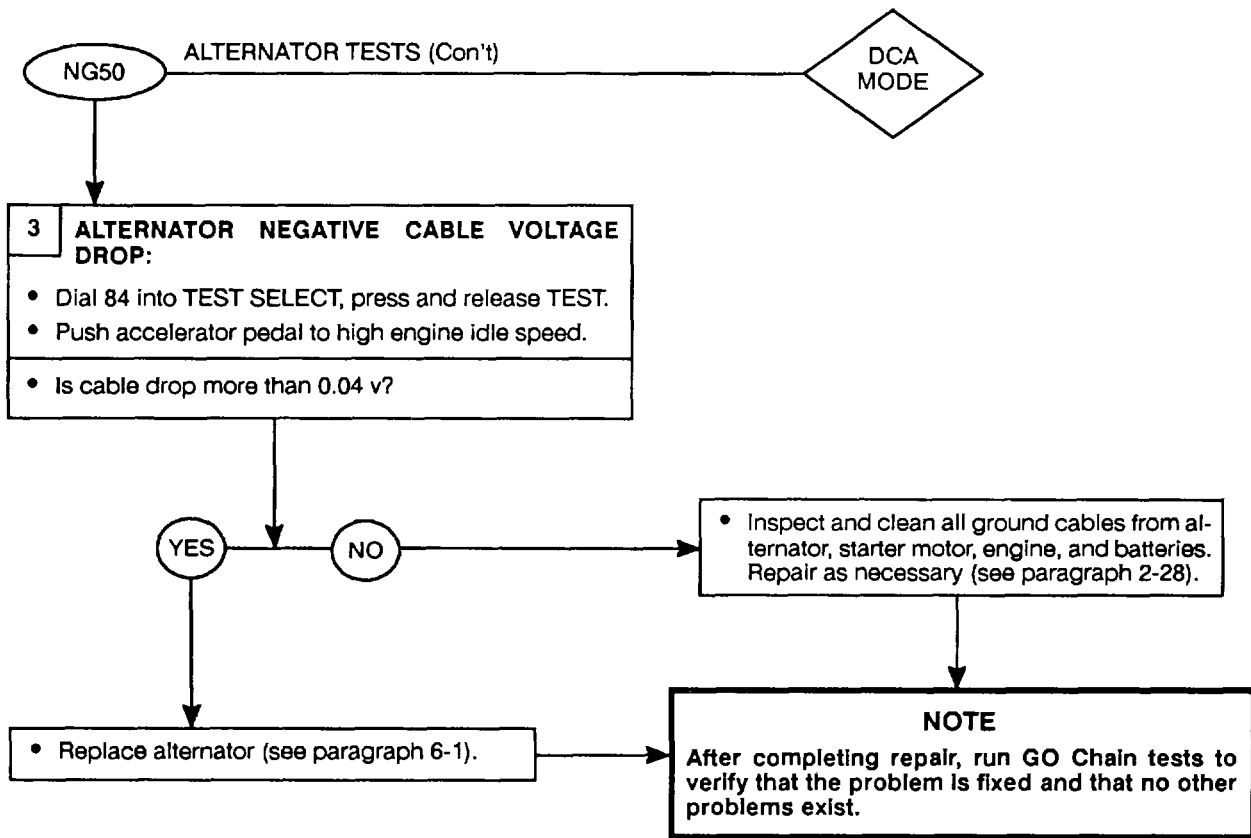
Test Number	Test
26	Fuel Filter Differential Pressure.

Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)



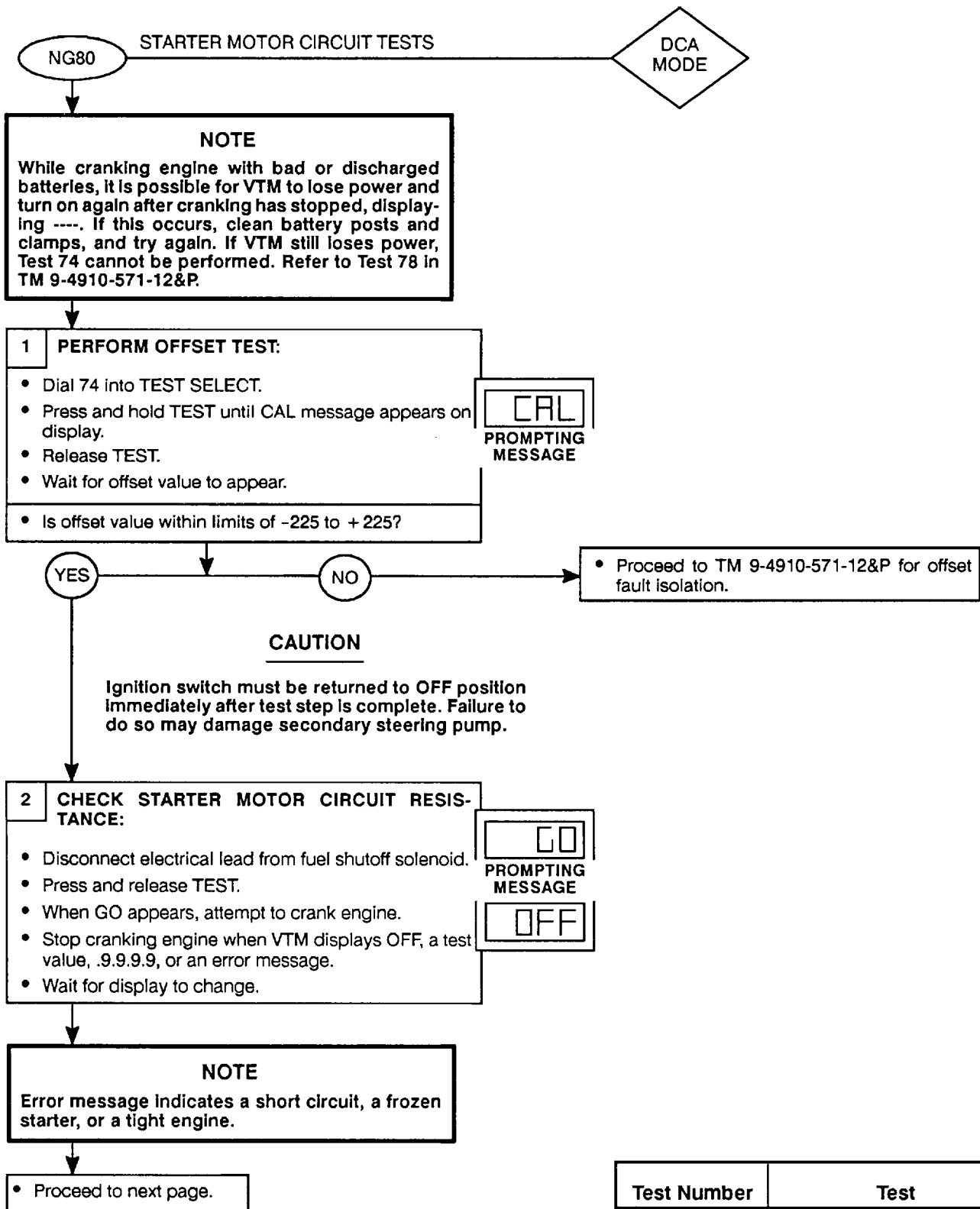
Test Number	Test
82	Alternator Output Voltage
83	Alternator Field Voltage

Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)



Test Number	Test
84	Alternator Negative Cable Voltage Drop

Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)



Test Number	Test
74	Starter Motor Circuit Resistance

Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)

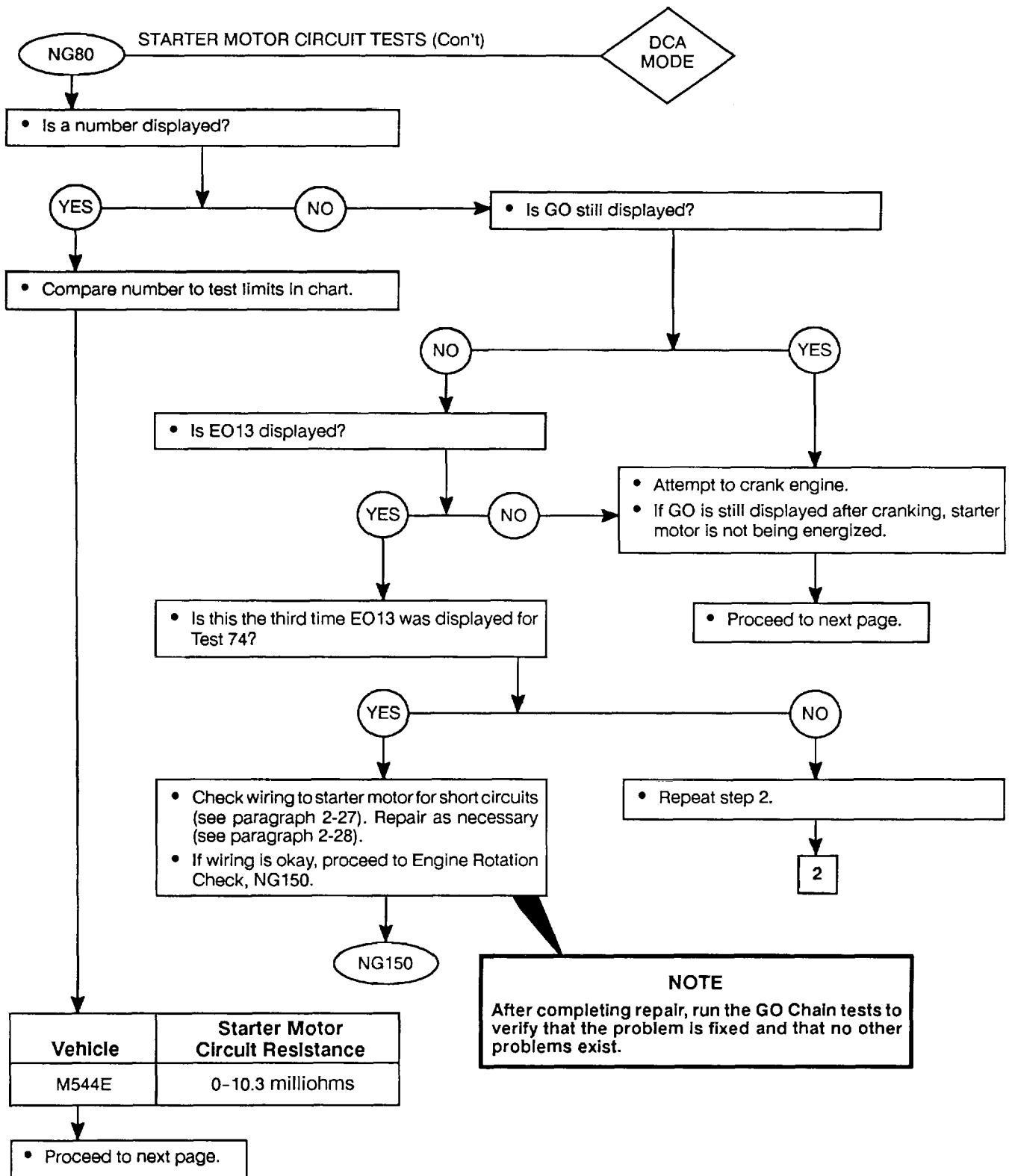


Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)

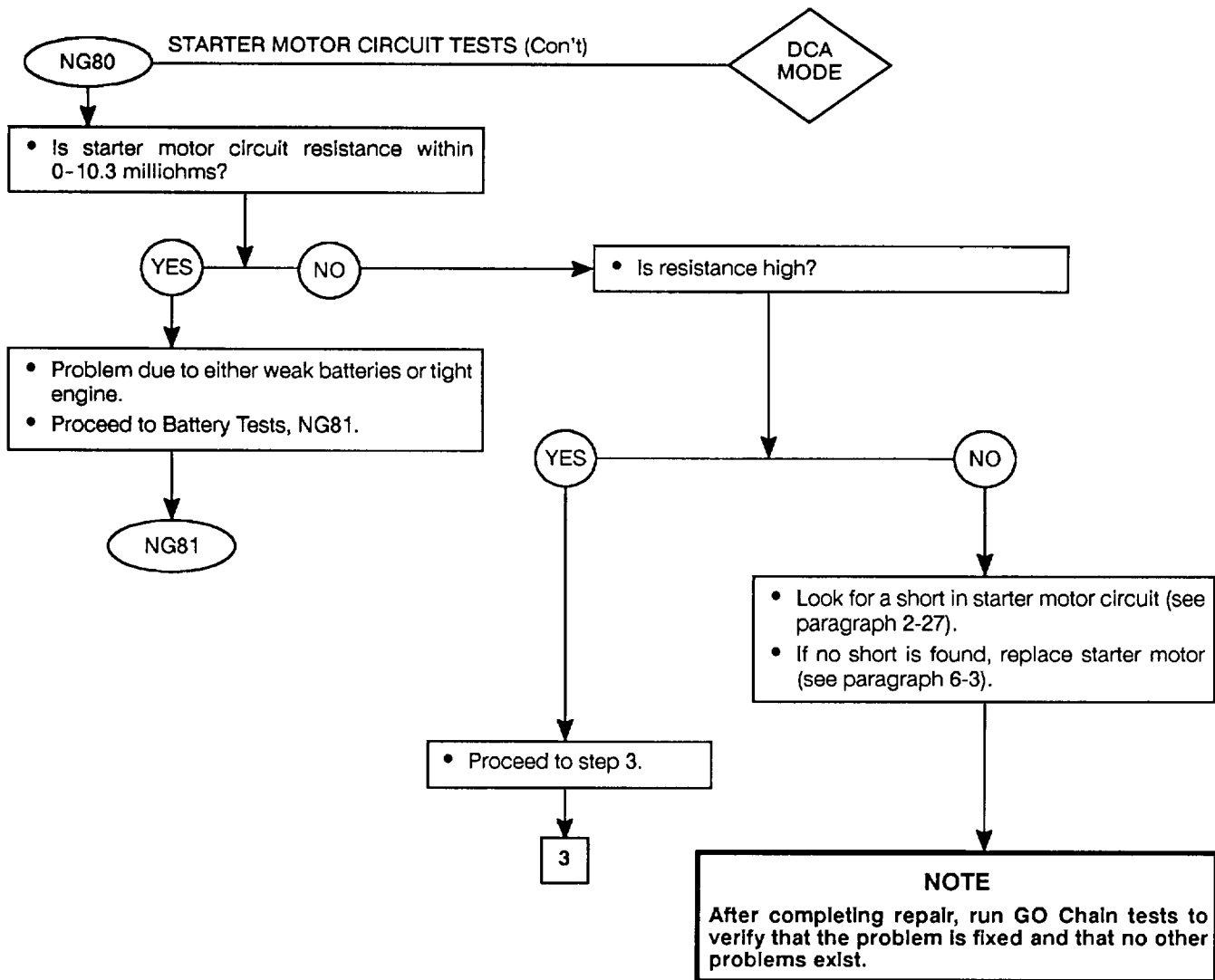
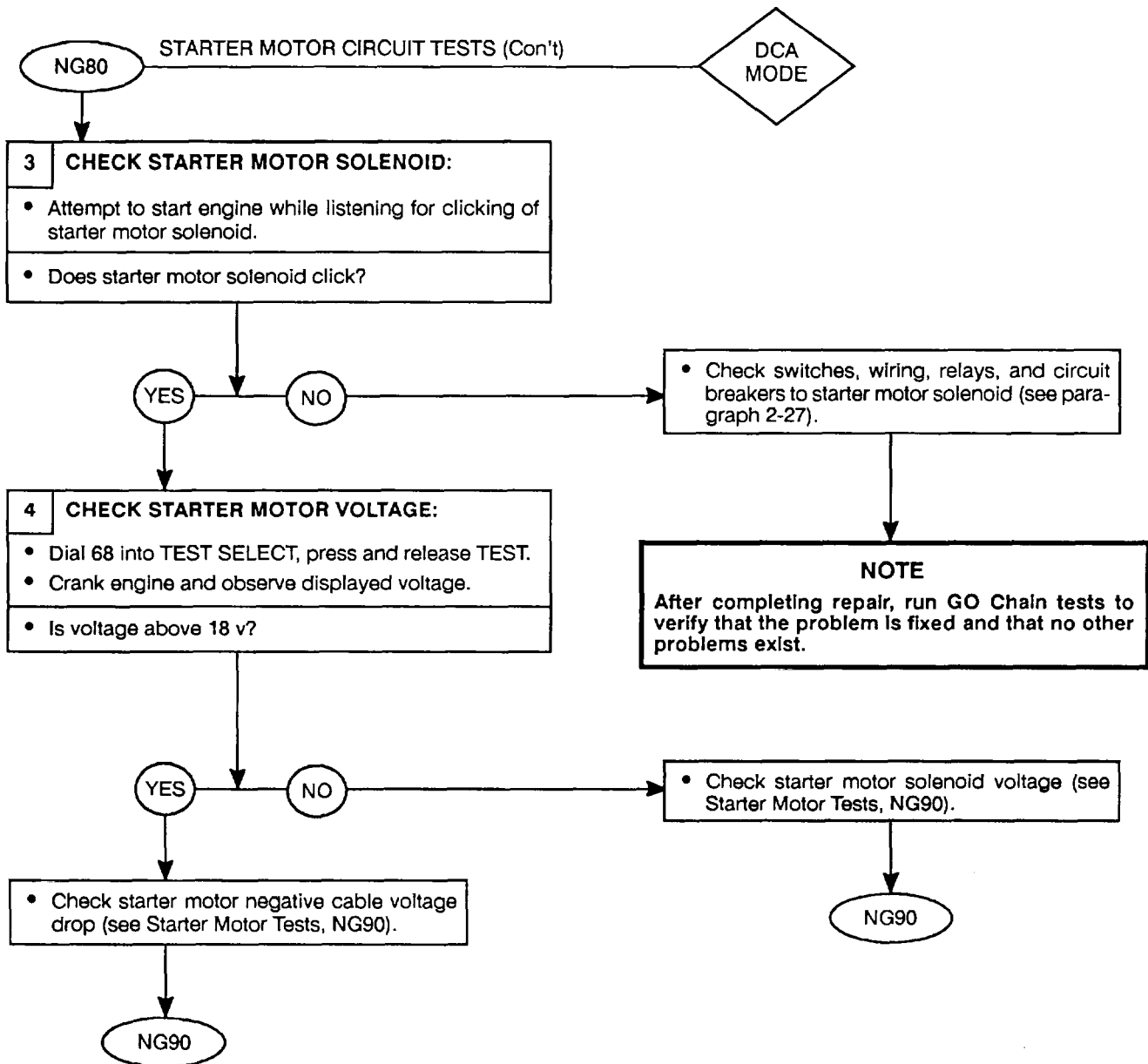


Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)



Test Number	Test
68	Starter Motor Voltage

Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)

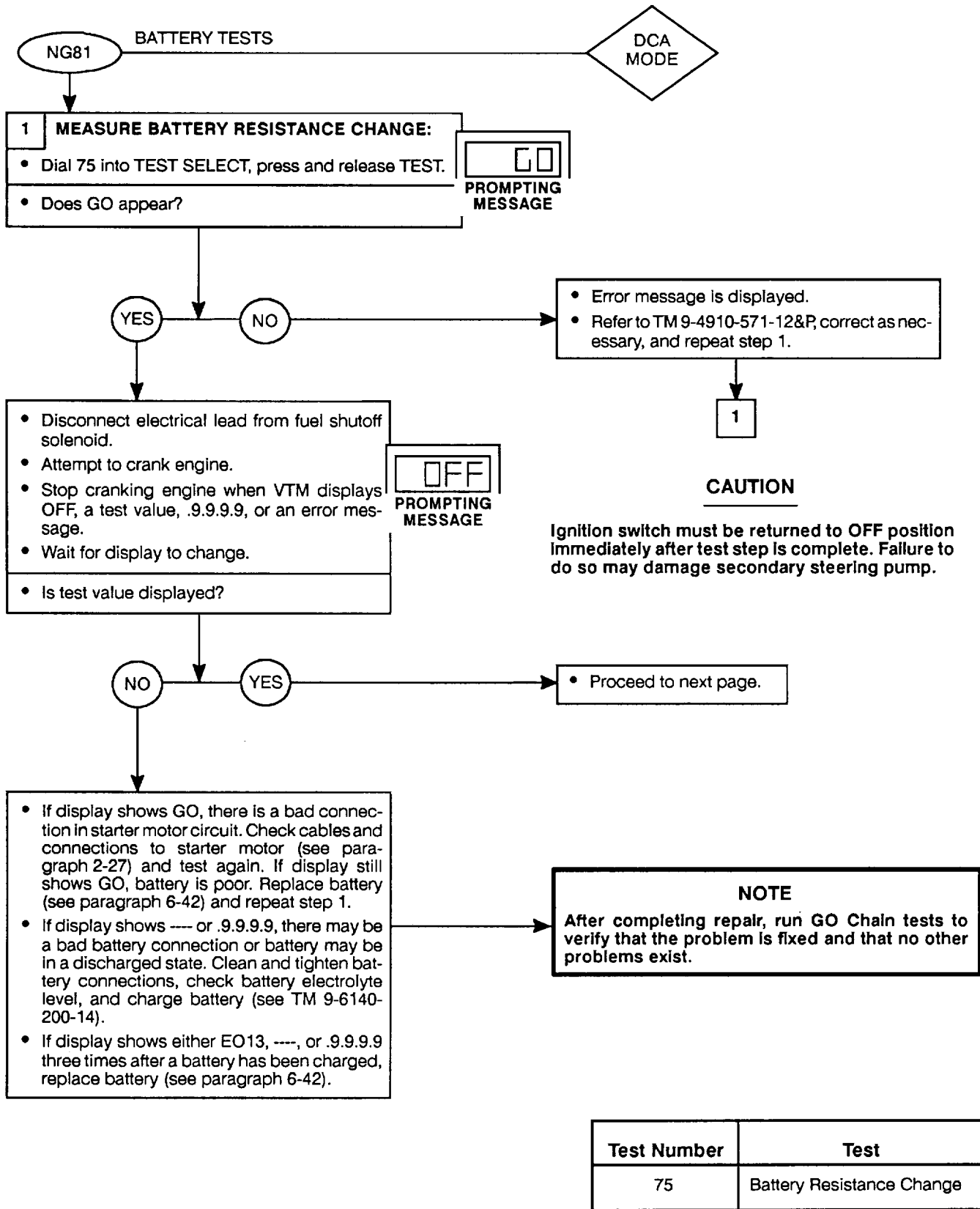
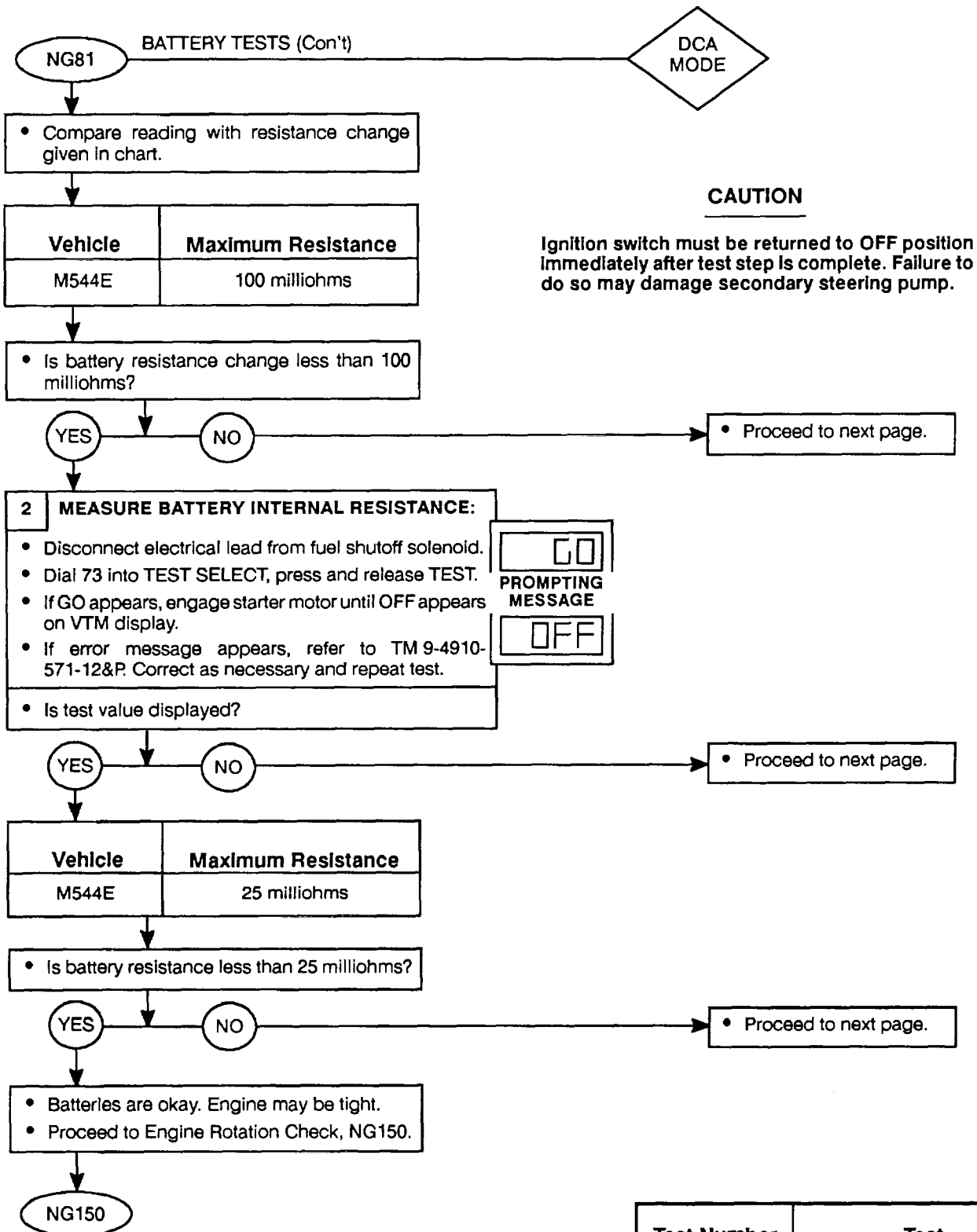


Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)



CAUTION

Ignition switch must be returned to OFF position immediately after test step is complete. Failure to do so may damage secondary steering pump.

Test Number	Test
73	Battery Internal Resistance

Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)

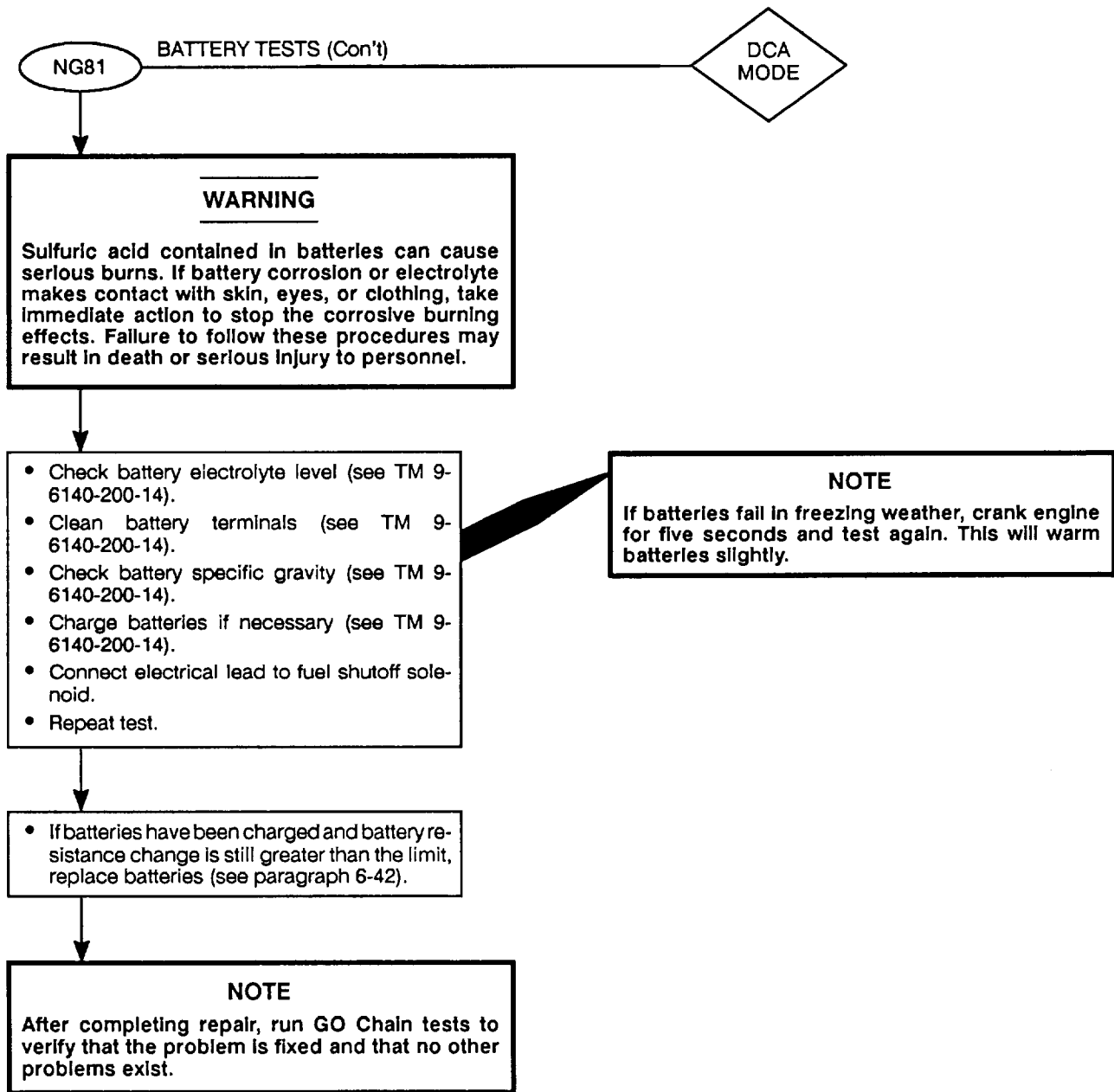
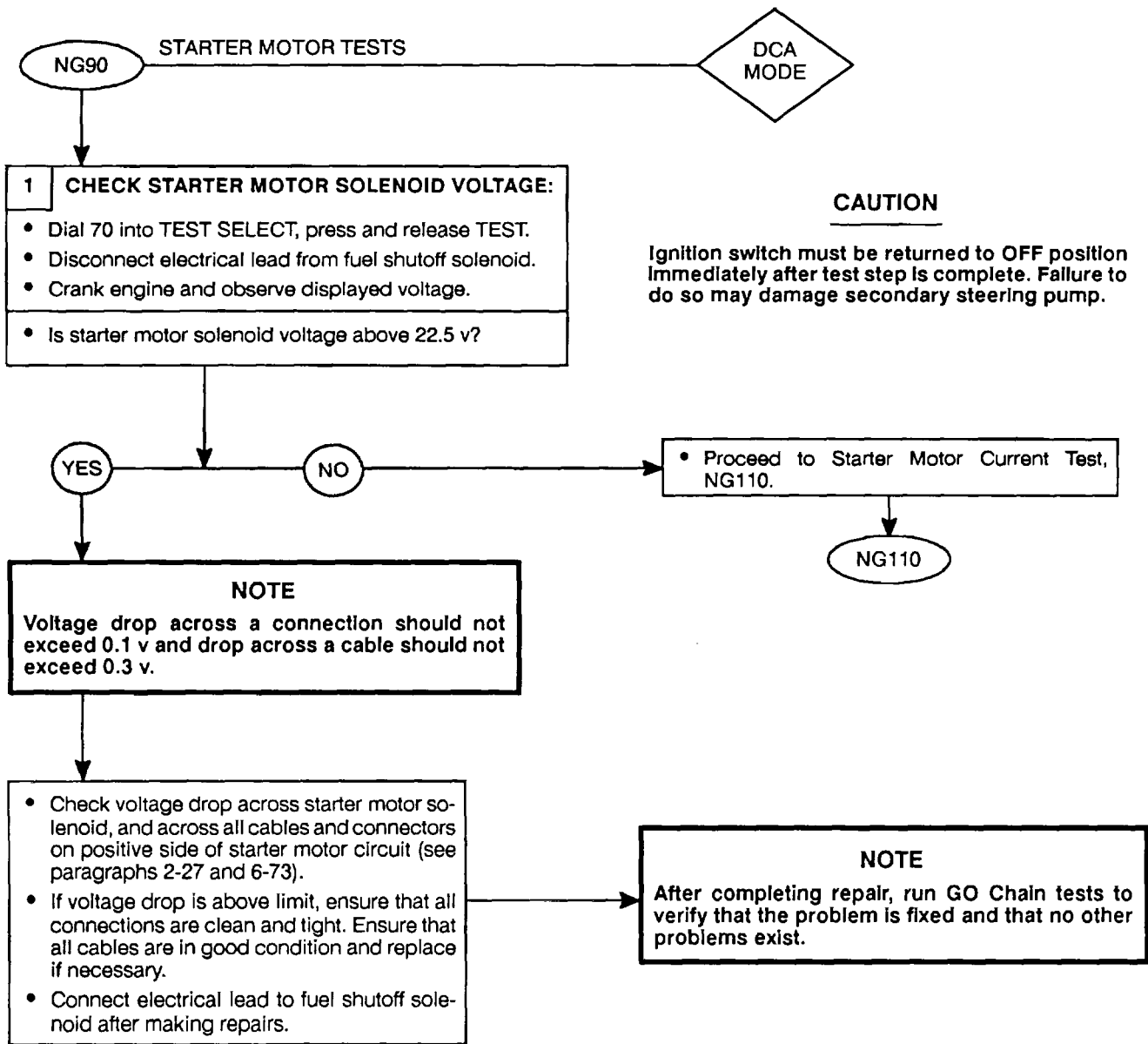


Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)



Test Number	Test
70	Starter Motor Solenoid Voltage

Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)

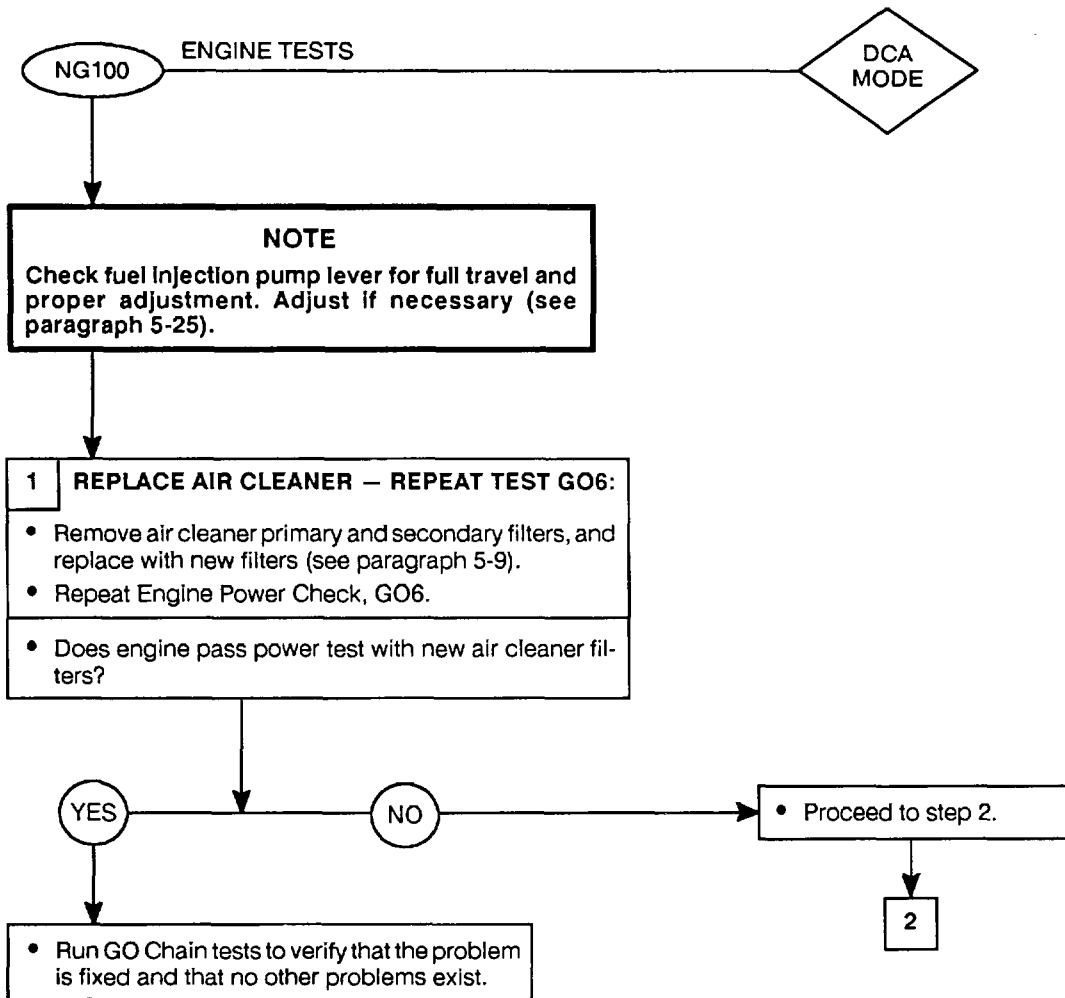


Table 4-6 . STE/ICE-R GO Chain Tests - DCA Mode (Con't)

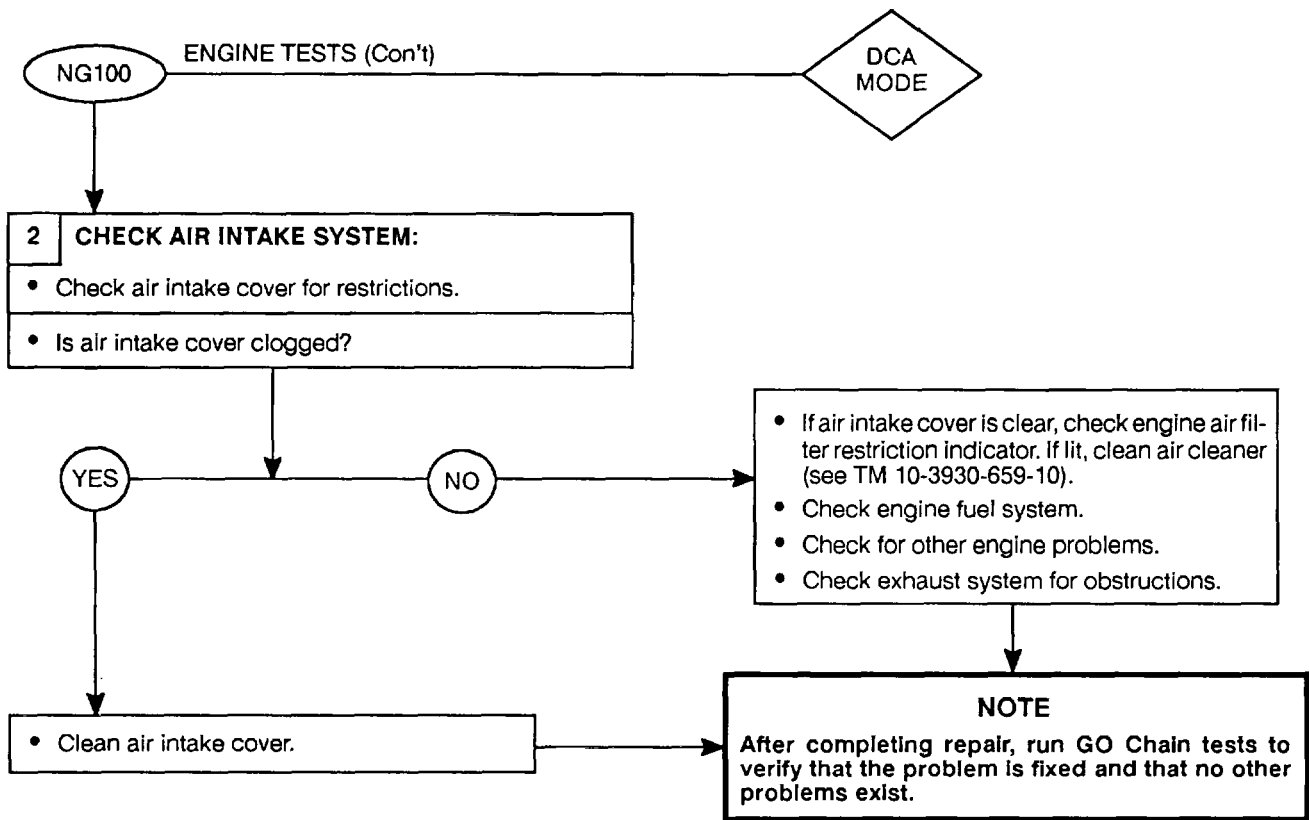
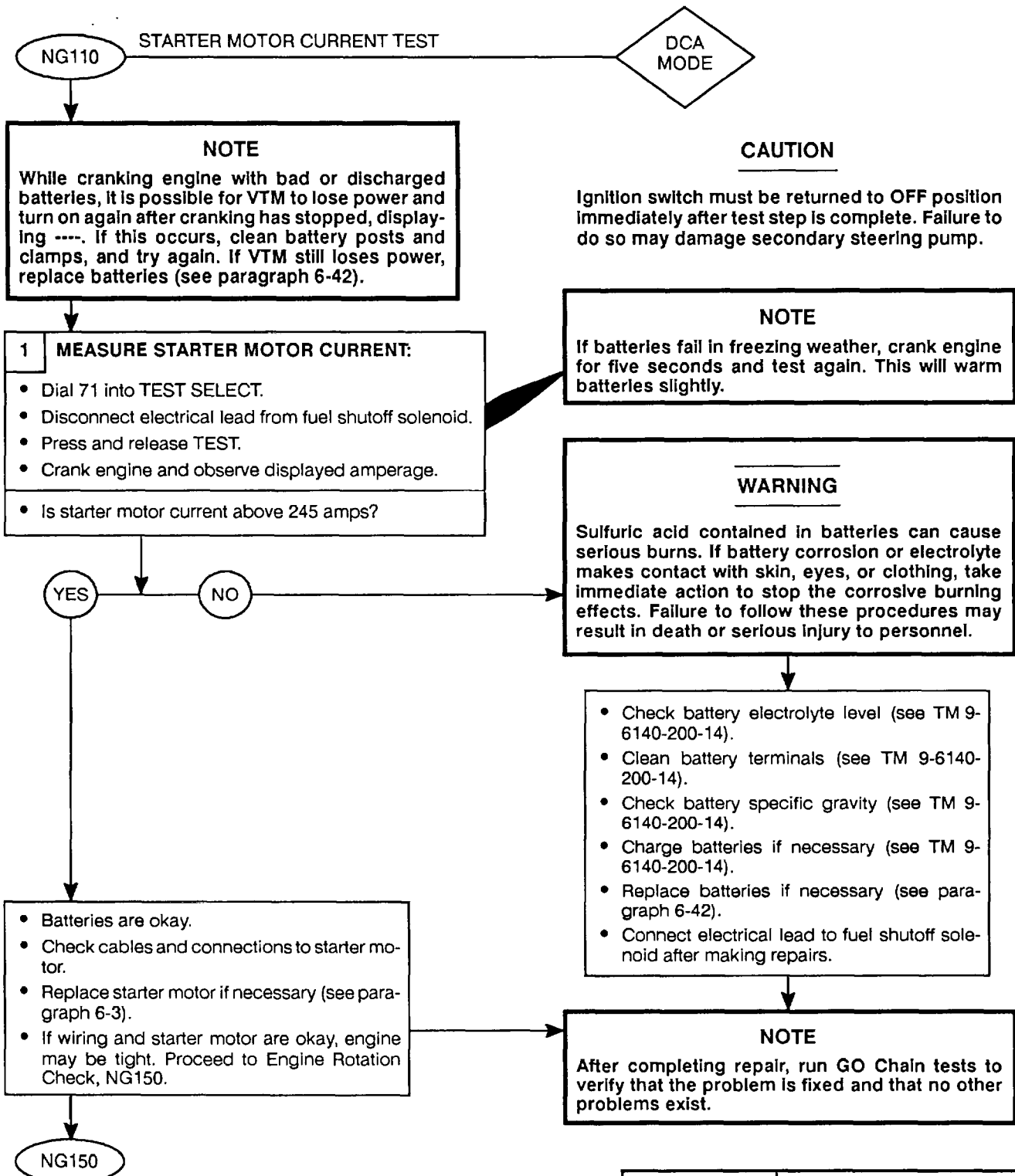
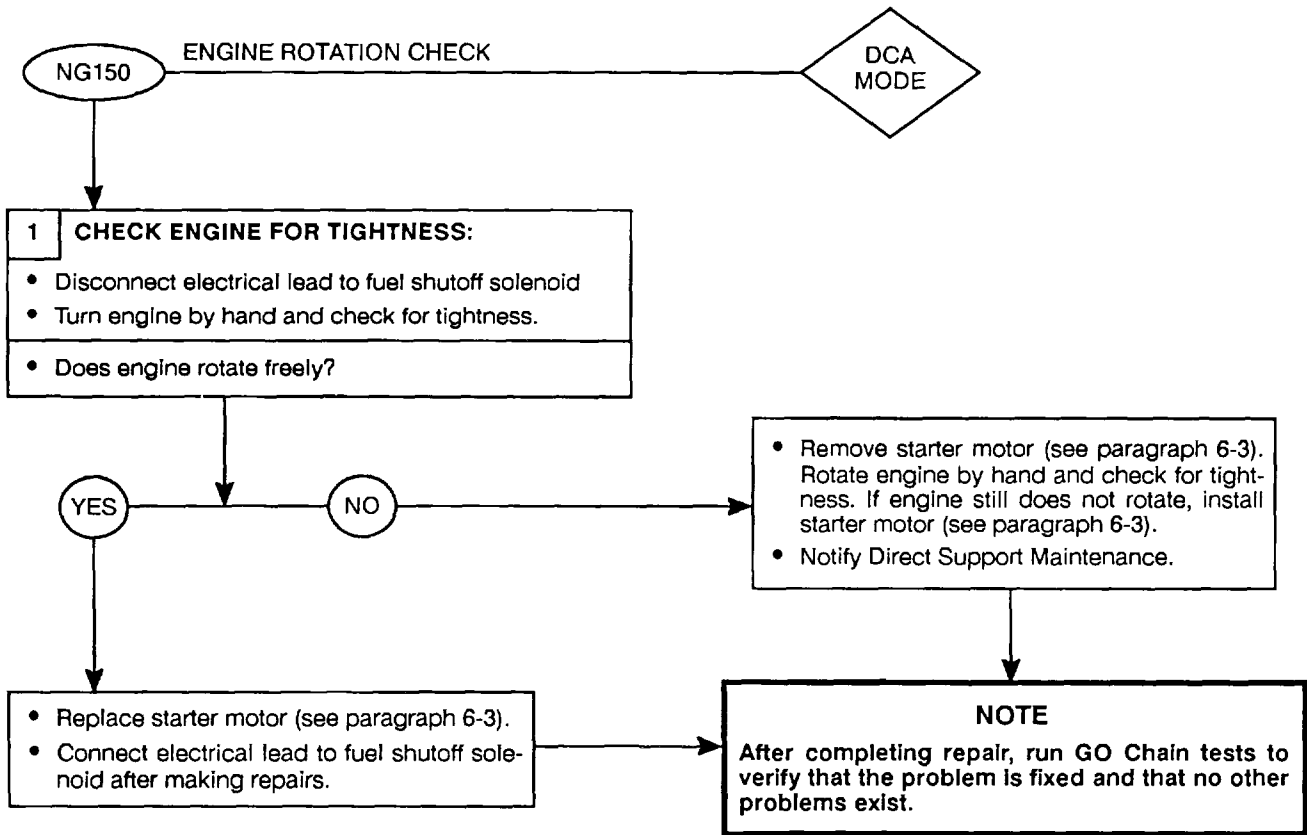


Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)



Test Number	Test
71	Starter Motor Current (average)

Table 4-6. STE/ICE-R GO Chain Tests - DCA Mode (Con't)

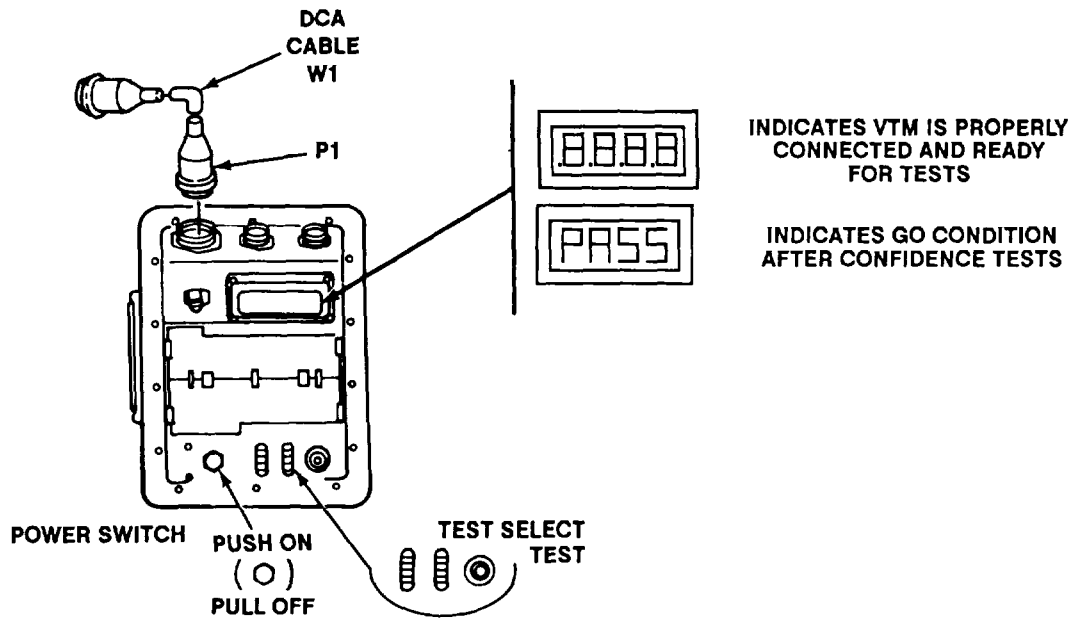


4-10. STE/ICE-R GO CHAIN TESTS - TK MODE.

- a. The following GO Chain Tests are made using the Transducer Kit (TK). All tests must be performed
- b. For normal readings, refer to the M544E Forklift Truck Test Card at Table 4-4. For TK test locations, refer to paragraph 4-6.

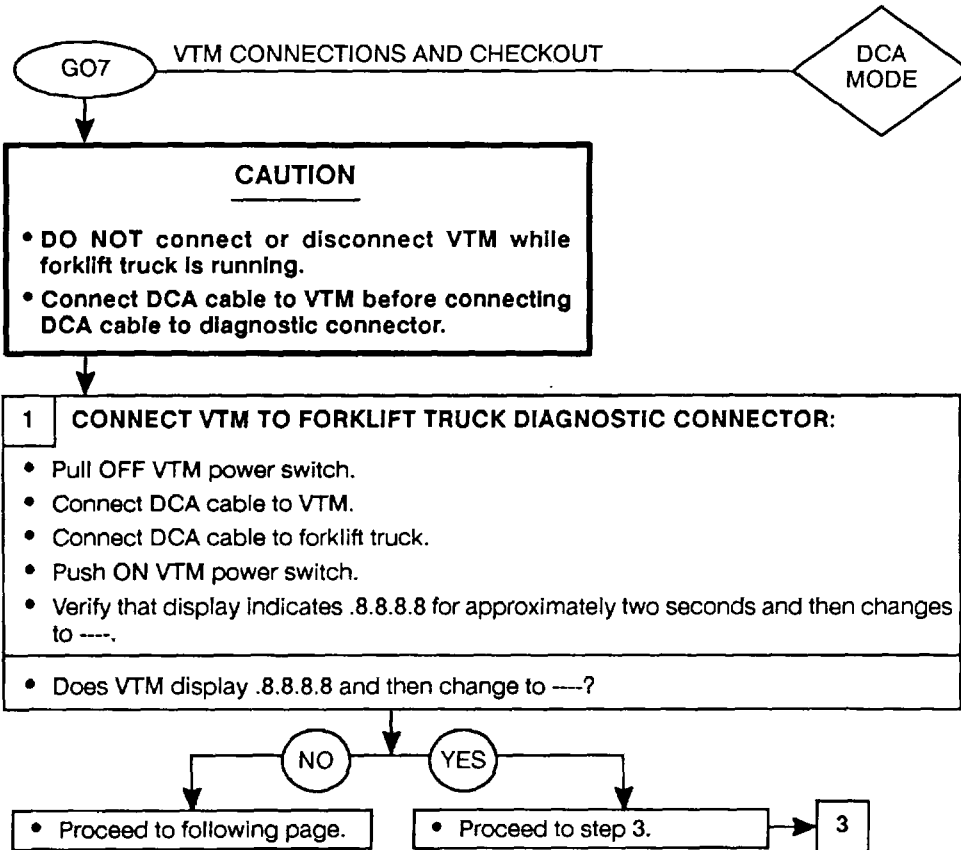
GO Test Number	Test Title	Page Number
G07	VTM Connections and Checkout	4-84
G08	Engine Oil Pressure Test.....	4-88
G09	Engine Oil Filter Pressure Drop Test	4-91
G10	Engine Fuel Return Pressure Test.....	4-93
G011	Transmission Fluid Pressure Test	4-95

Table 4-7. STE/ICE-R GO Chain Tests - TK Mode



NOTE

Perform all GO steps until a NO-GO condition exists, then perform the NO-GO step indicated.



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Table 4-7. STE/ICE-R GO Chain Tests - TK Mode (Con't)

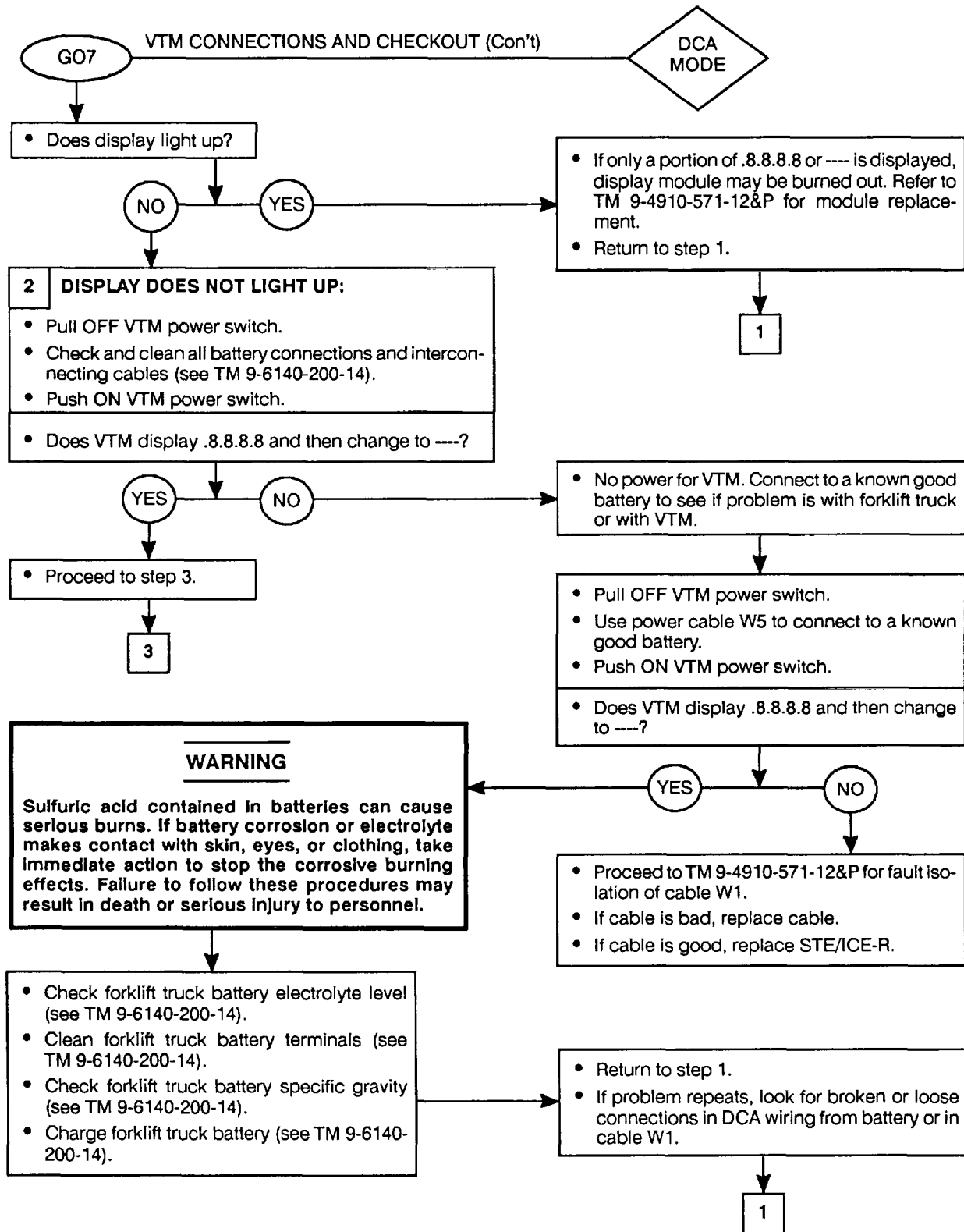


Table 4-7. STE/ICE-R GO Chain Tests - TK Mode (Con't)

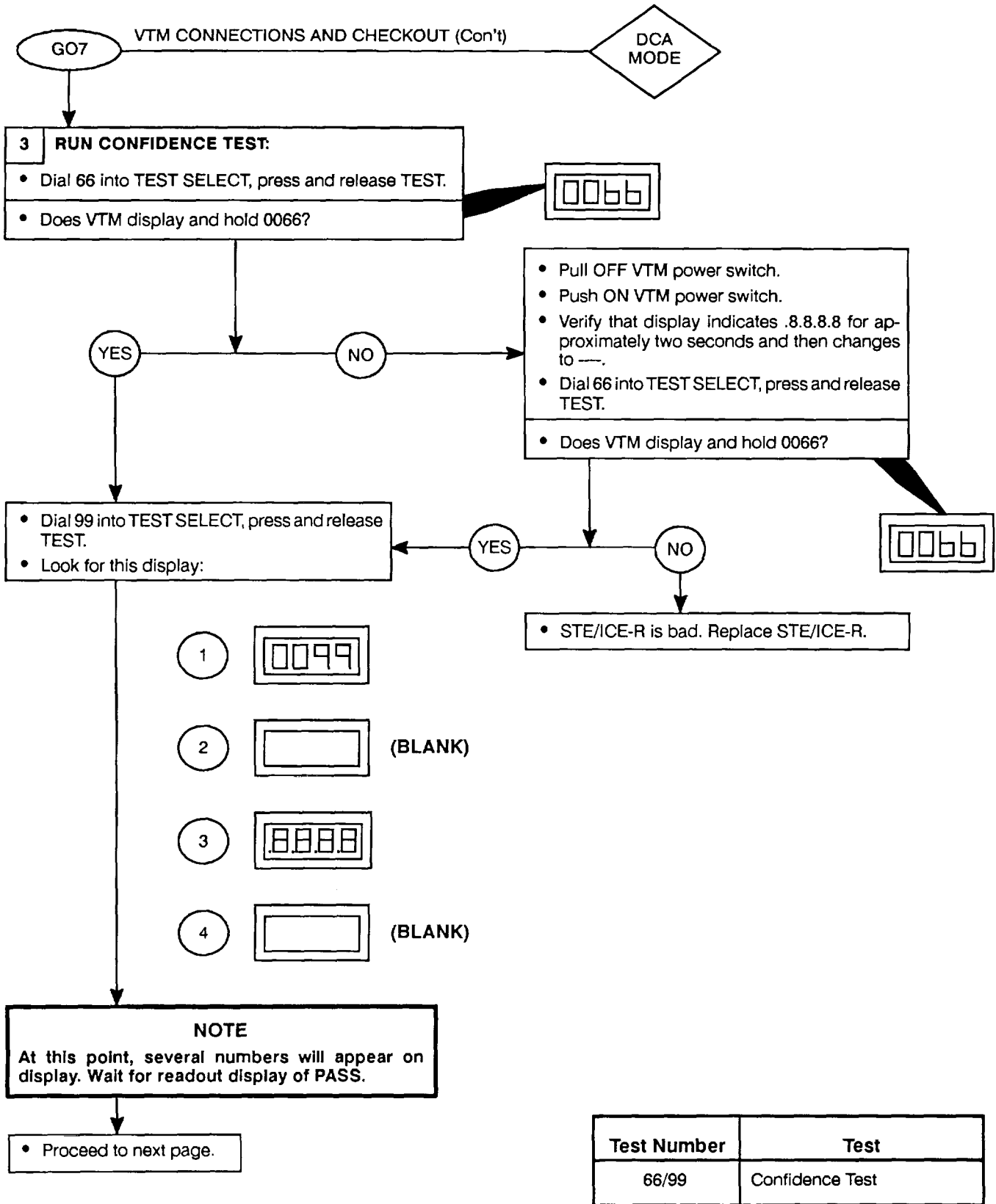
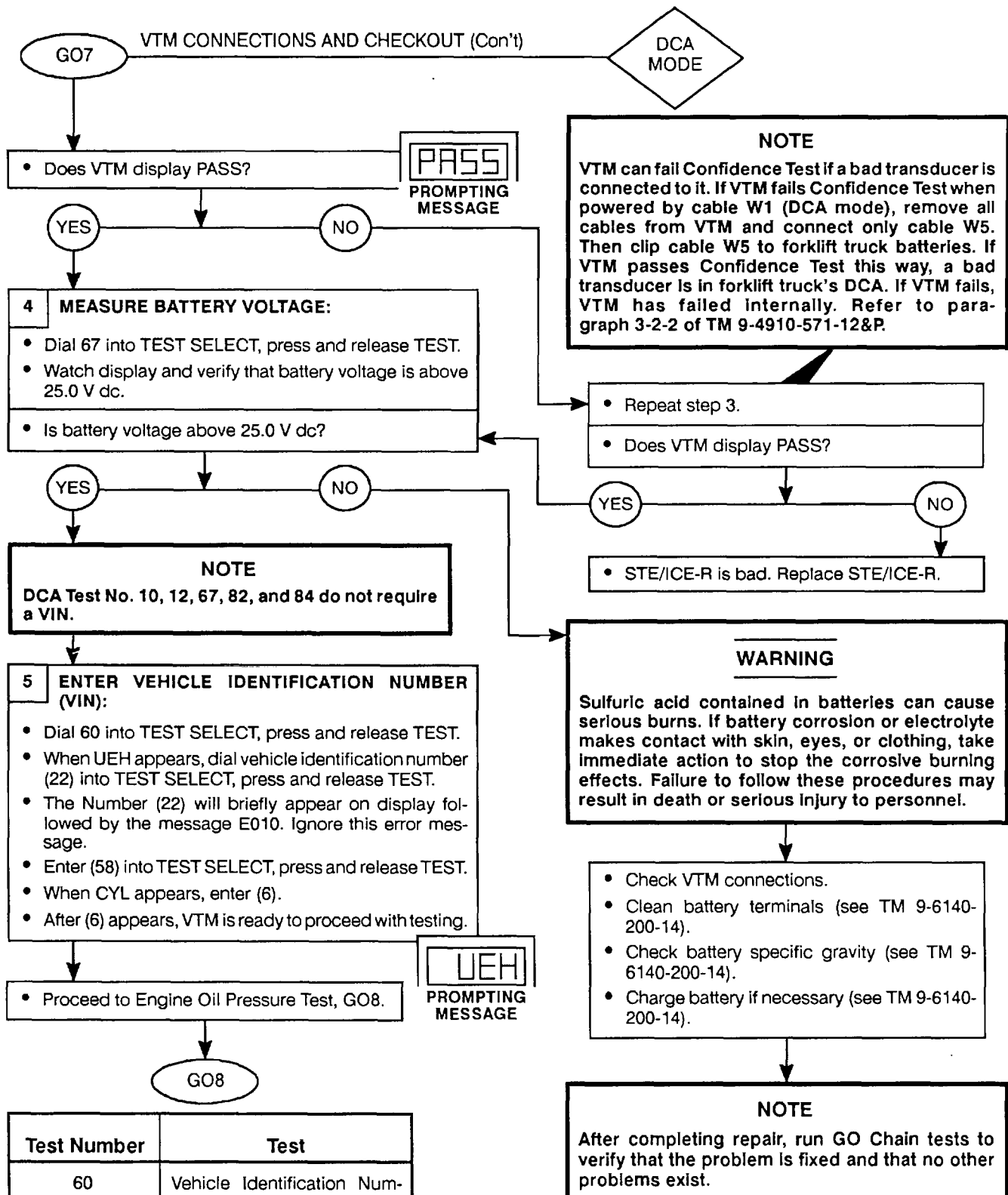
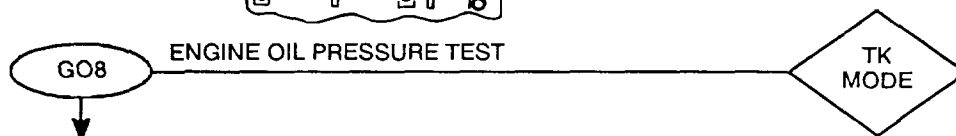
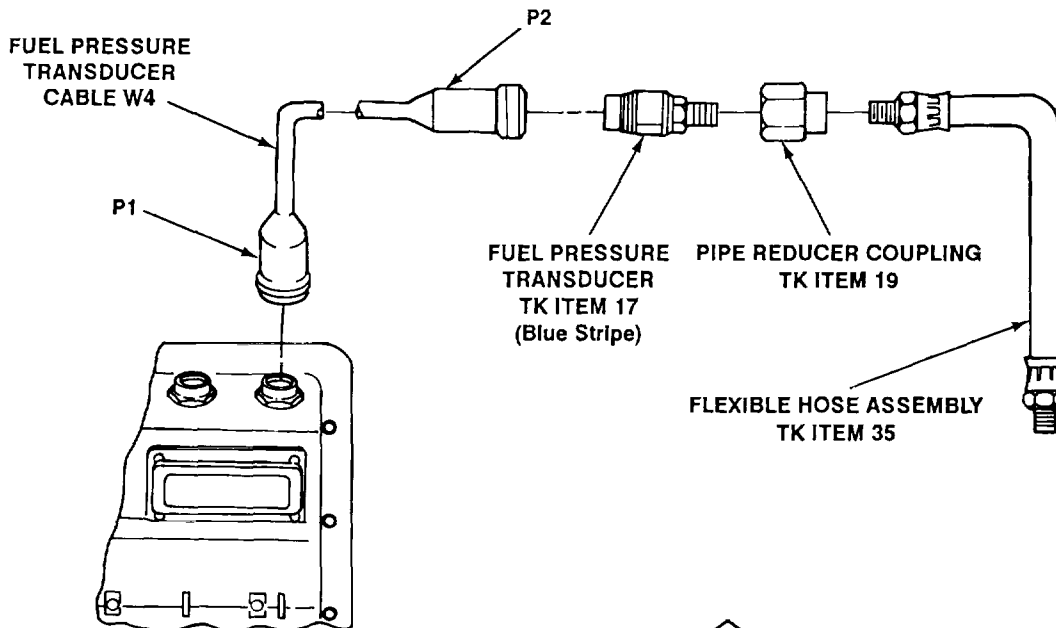


Table 4-7. STE/ICE-R GO Chain Tests - TK Mode (Con't)



Test Number	Test
60	Vehicle Identification Number
67	Battery Voltage

Table 4-7. STE/ICE-R GO Chain Tests - TK Mode (Con't)



1 INSTALL FUEL PRESSURE TRANSDUCER, PERFORM OFFSET TEST:

- Remove engine oil sampling valve (see paragraph 5-7).
- Install flexible hose assembly (TK Item 35) in tee.
- Install pipe reducer coupling (TK Item 19) on flexible hose assembly.
- Install fuel pressure transducer (TK Item 17, blue stripe) to pipe reducer coupling.
- Connect P1 of fuel pressure transducer cable W4 to J1 or J2 on VTM.
- Connect P2 of fuel pressure transducer cable W4 to connector on fuel pressure transducer (TK Item 17, blue stripe).

- Dial 50 into TEST SELECT.
- Press and hold TEST until CAL message appears on display.
- Release TEST.
- Wait for offset value to appear on display.

Is offset value within limits of -150 to +150?



Test Number	Test
50	0-1000 psig Pressure

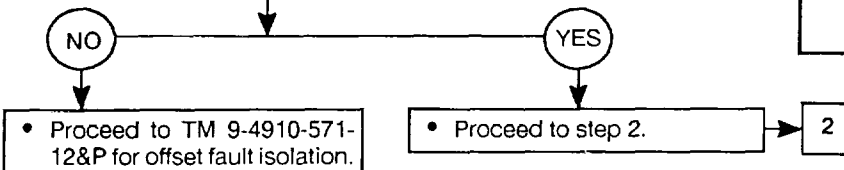
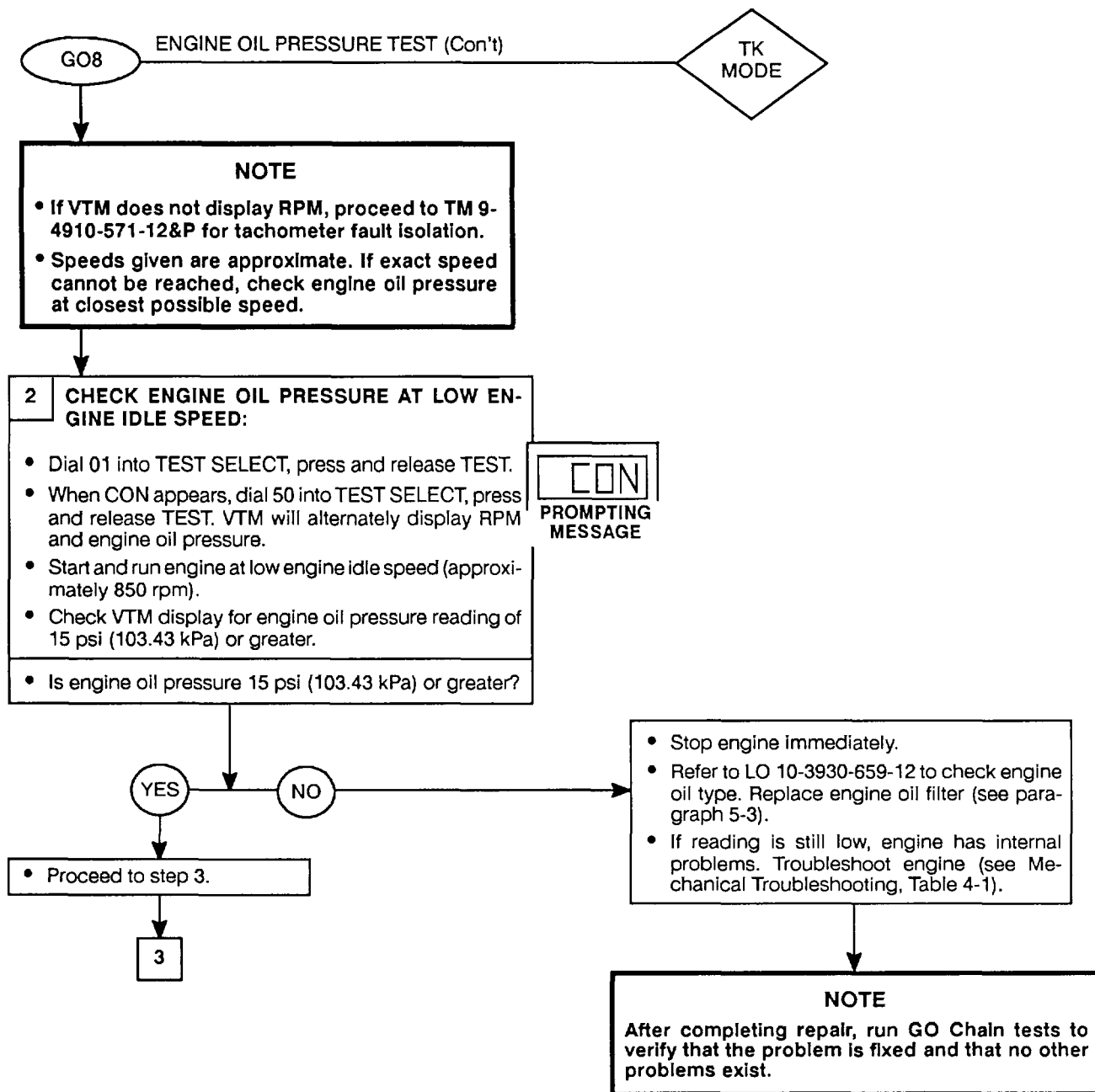


Table 4-7. STE/ICE-R GO Chain Tests - TK Mode (Con't)



Test Number	Test
01	Interleave
50	0-1000 psig Pressure

Table 4-7. STE/ICE-R GO Chain Tests - TK Mode (Con't)

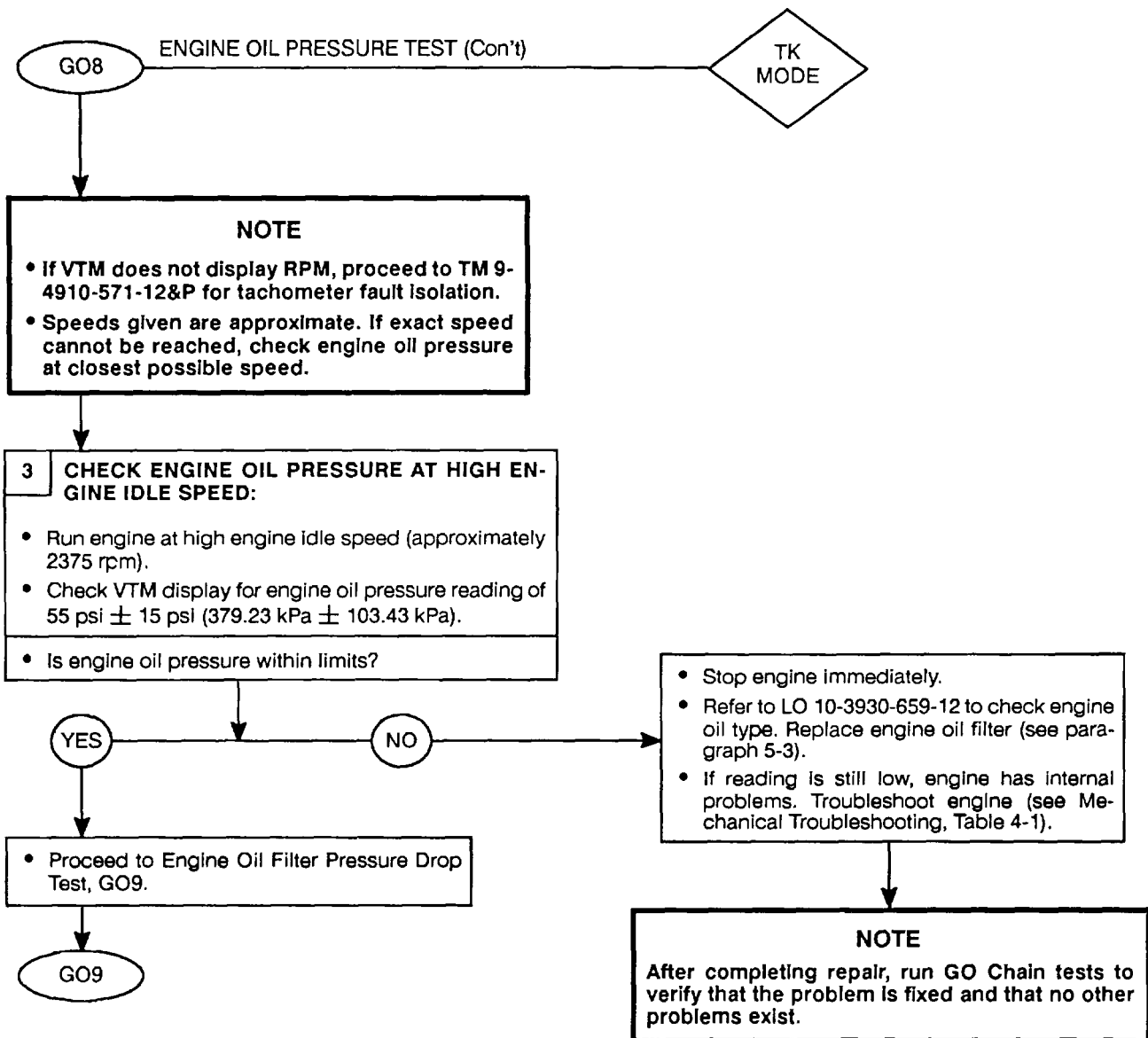
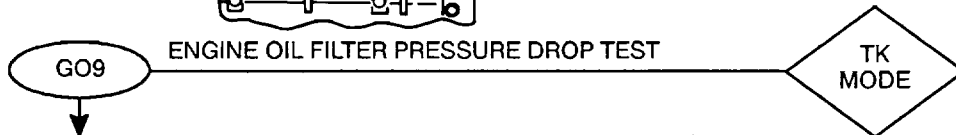
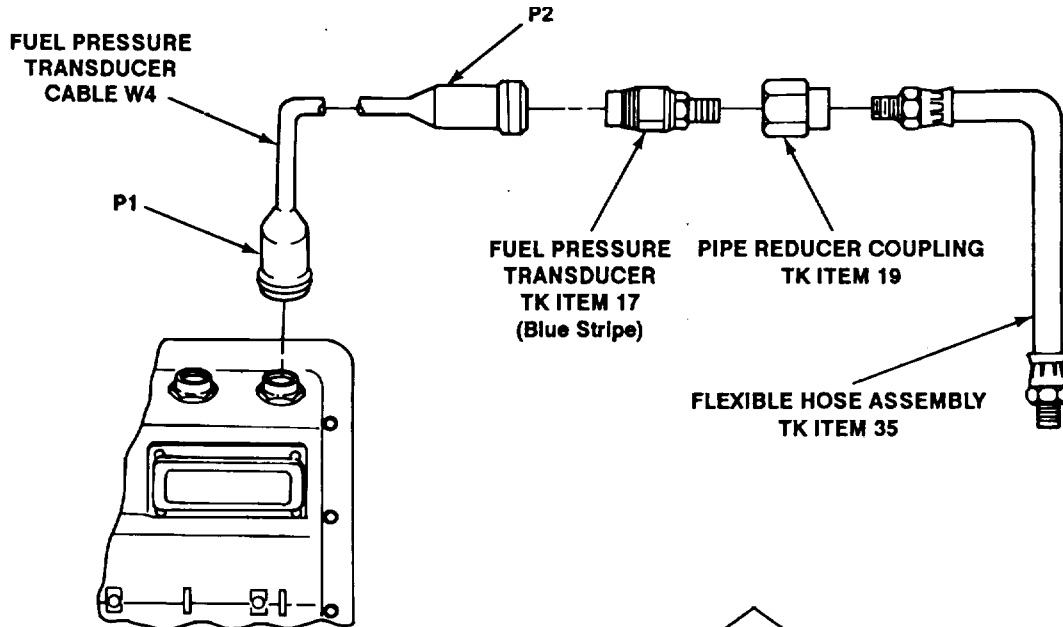


Table 4-7. STE/ICE-R GO Chain Tests - TK Mode (Con't)



1 INSTALL FUEL TRANSDUCER, PERFORM OFFSET TEST.

- Stop engine.
- Remove plug from engine oil filter base.
- Install flexible hose assembly (TK Item 35) to engine oil filter base.
- Install pipe reducer coupling (TK Item 19) to flexible hose assembly.
- Install fuel pressure transducer (TK Item 17, blue stripe) to pipe reducer coupling.
- Connect P1 of fuel pressure transducer cable W4 to J1 or J2 on VTМ.
- Connect P2 of fuel pressure transducer cable W4 to connector on fuel pressure transducer (TK Item 17, blue stripe).

- Dial 50 into TEST SELECT.
- Press and hold TEST until CAL message appears on display.
- Release TEST.
- Wait for offset value to appear on display.

Is offset value within limits of -150 to +150?



Test Number	Test
50	0-1000 psig Pressure

NO

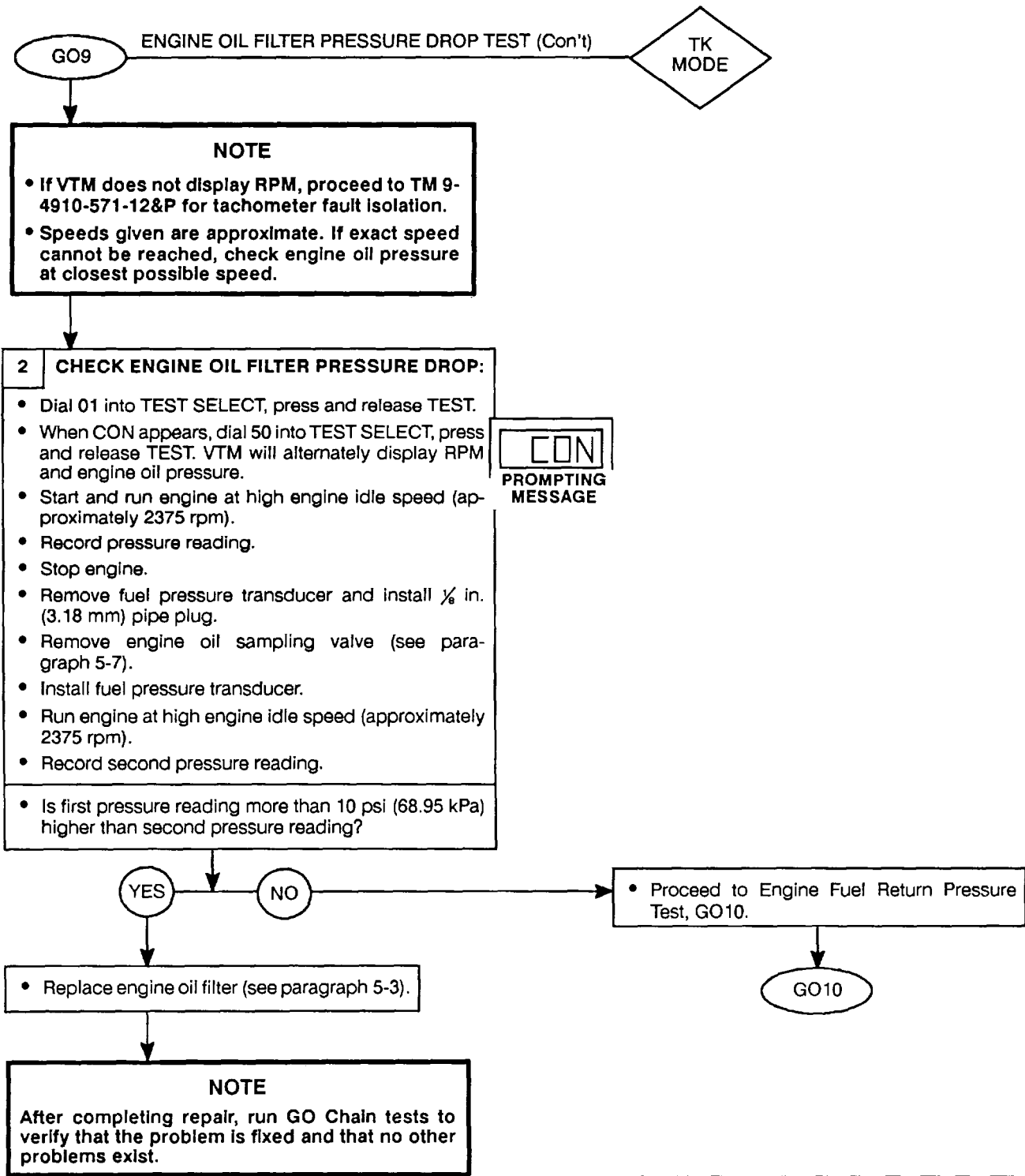
- Proceed to TM 9-4910-571-12&P for offset fault isolation.

YES

- Proceed to step 2.

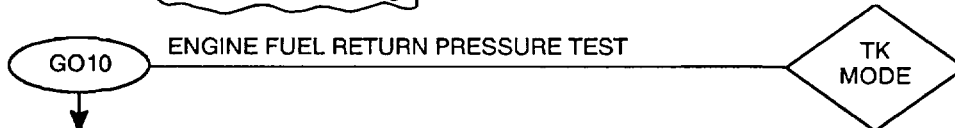
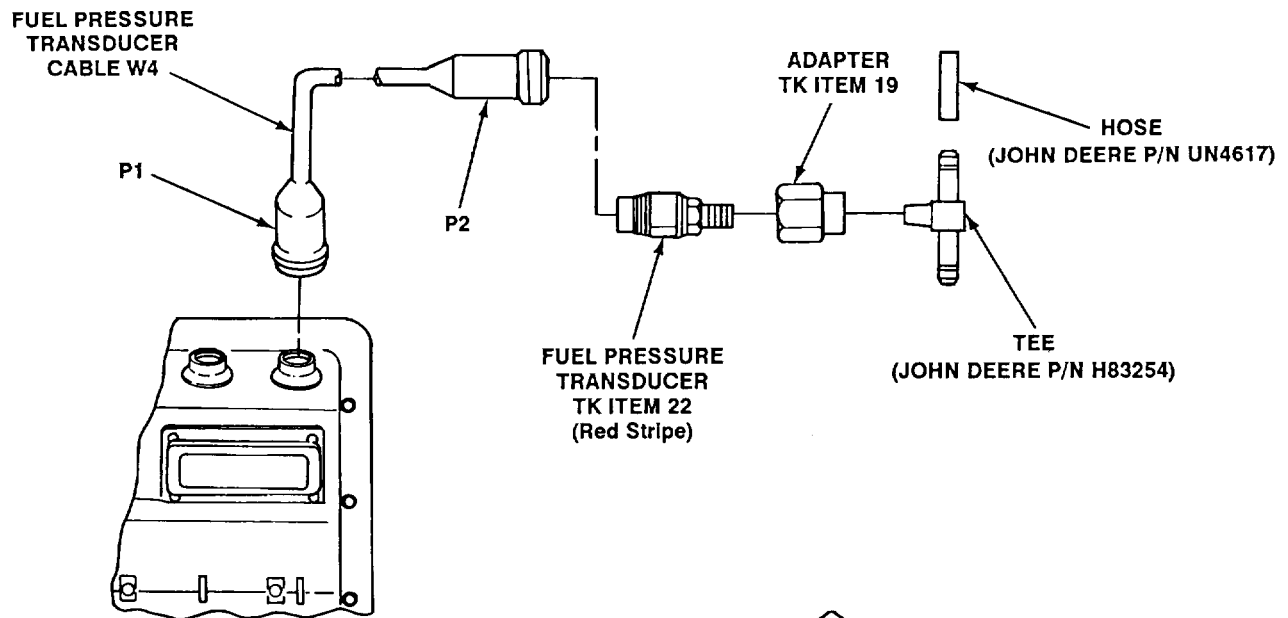
2

Table 4-7. STE/ICE-R GO Chain Tests - TK Mode (Con't)



Test Number	Test
01	Interleave
50	0-1000 psig Pressure

Table 4-7. STE/ICE-R GO Chain Tests - TK Mode (Con't)



1 INSTALL FUEL PRESSURE TRANSDUCER, PERFORM OFFSET TEST:

- Remove fuel injection pump-to-fuel tank fuel line (see paragraph 5-15).
- Install special tee (John Deere P/N H83254) and special hose (John Deere P/N UN4617) between fuel injection pump and fuel injection pump-to-fuel tank fuel line.
- Install adapter (TK Item 19) to special tee.
- Install fuel pressure transducer (TK Item 22, red stripe) to adapter.
- Connect P1 of fuel pressure transducer cable W4 to J1 or J2 of VTMs.
- Connect P2 of fuel pressure transducer cable W4 to fuel pressure transducer (TK Item 22, red stripe).

- Dial 50 into TEST SELECT.
- Press and hold TEST until CAL message appears on display.
- Release TEST.
- Wait for offset value to appear on display.

Is offset value within limits of -150 to +150?



NOTE
Special tee (John Deere P/N H83254) and special hose (John Deere P/N UN4617) are stored in toolbox under operator's seat.

Test Number	Test
50	0-1000 psig Pressure

NO

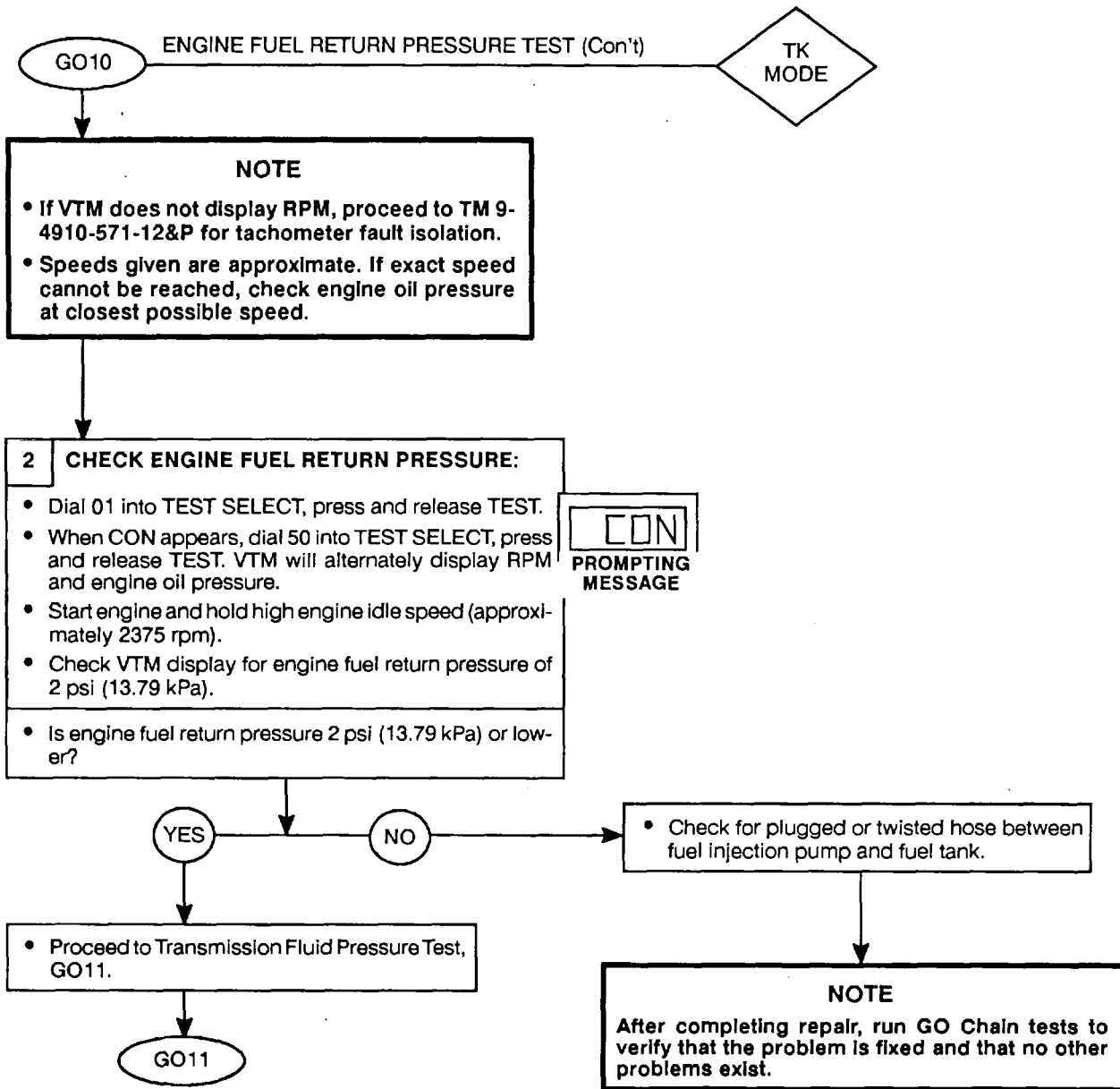
• Proceed to TM 9-4910-571-12&P for offset fault isolation.

YES

• Proceed to step 2.

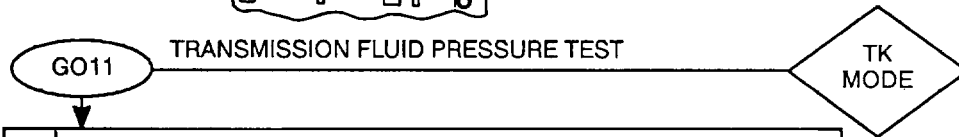
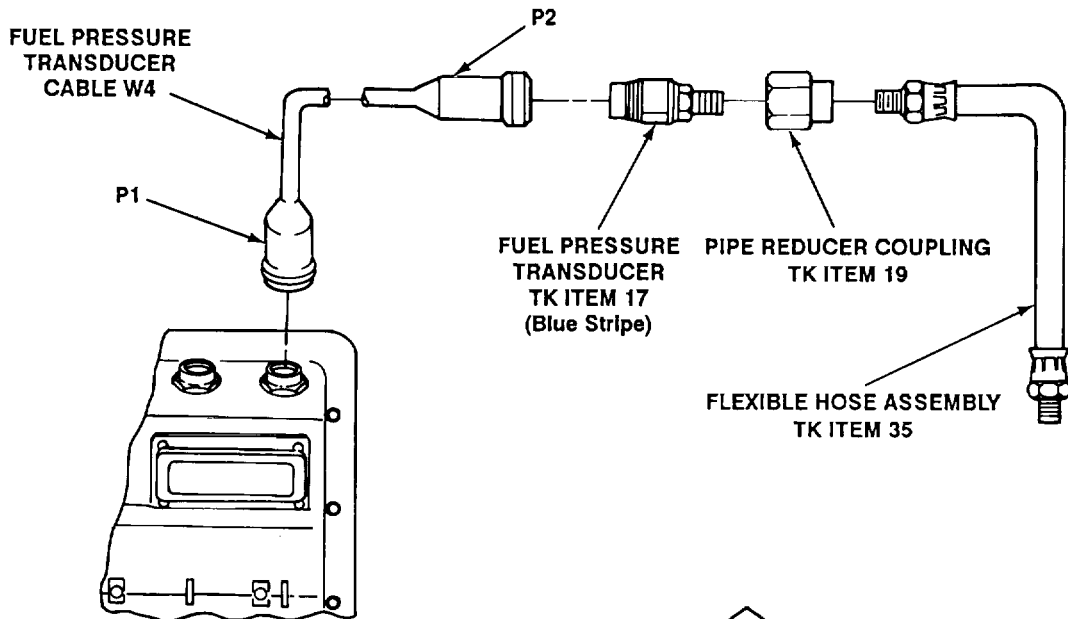
2

Table 4-7. STE/ICE-R GO Chain Tests - TK Mode (Con't)



Test Number	Test
01	Interleave
50	0-1000 psig Pressure

Table 4-7. STE/ICE-R GO Chain Tests - TK Mode (Con't)



1 INSTALL FUEL PRESSURE TRANSDUCER, PERFORM OFFSET TEST:

- Stop forklift truck engine.
- Remove right transmission side guard (see paragraph 14-7).
- Remove transmission oil pressure switch from transmission control valve (see paragraph 6-32).
- Install flexible hose assembly (TK Item 35) to transmission control valve.
- Install pipe reducer coupling (TK Item 19) to flexible hose assembly.
- Install fuel pressure transducer (TK Item 17, blue stripe) to pipe reducer coupling.
- Connect P1 of fuel pressure transducer cable W4 to J1 or J2 on fuel VTM.
- Connect P2 of fuel pressure transducer cable W4 to fuel pressure transducer (TK Item 17, blue stripe).

- Dial 50 into TEST SELECT.
- Press and hold TEST until CAL message appears on display.
- Release TEST.
- Wait for offset value to appear on display.



• Is offset value within limits of -150 to +150?

NO

YES

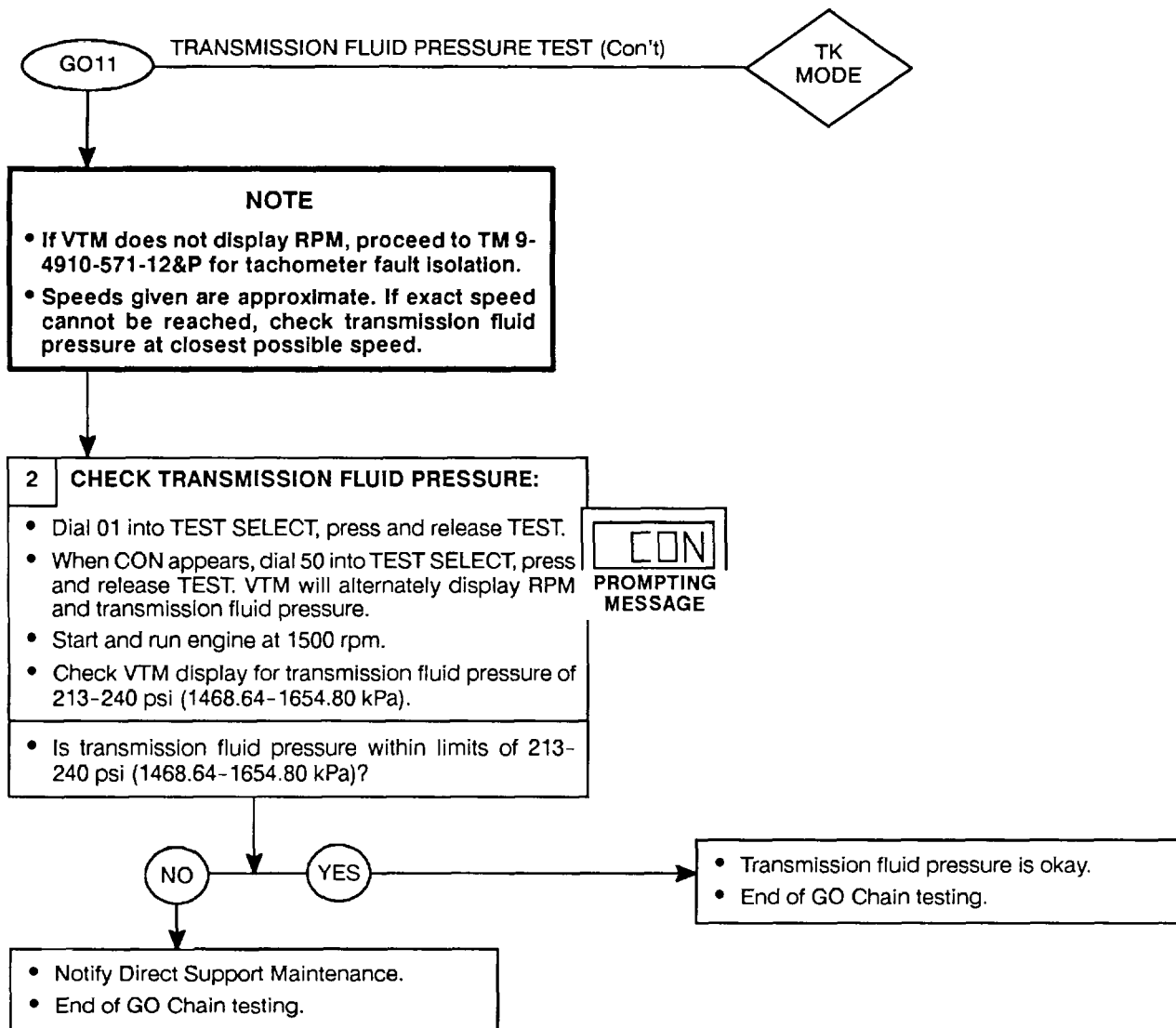
• Proceed to TM 9-4910-571-12&P for offset fault isolation.

• Proceed to step 2.

2

Test Number	Test
50	0-1000 psig Pressure

Table 4-7. STE/ICE-R GO Chain Tests - TK Mode (Con't)



Test Number	Test
01	Interleave
50	0-1000 psig Pressure

CHAPTER 5

ENGINE SYSTEMS MAINTENANCE

Section I. ENGINE ASSEMBLY MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
5-1	Cylinder Head Valves Adjustment.....	5-1
5-2	Engine Rocker Arm Cover and Vent Tube Replacement.....	5-7
5-3	Engine Oil Filter Replacement.....	5-10
5-4	Engine Oil Filler Neck Replacement.....	5-11
5-5	Engine Oil Level Gage Tube Replacement.....	5-12
5-6	Turbocharger Oil Lines and Fittings Replacement.....	5-14
5-7	Engine Oil Sampling Valve Replacement.....	5-17
5-8	Engine Oil Cooler Tubes and Hoses Replacement.....	5-18

5-1. CYLINDER HEAD VALVES ADJUSTMENT.

This Task Covers: Adjustment

Initial Setup:

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Engine rocker arm cover removed (see paragraph 5-2).

Materials/Parts:

- One gasket

Personnel Required: Two

References:

- TM 10-3930-659-10

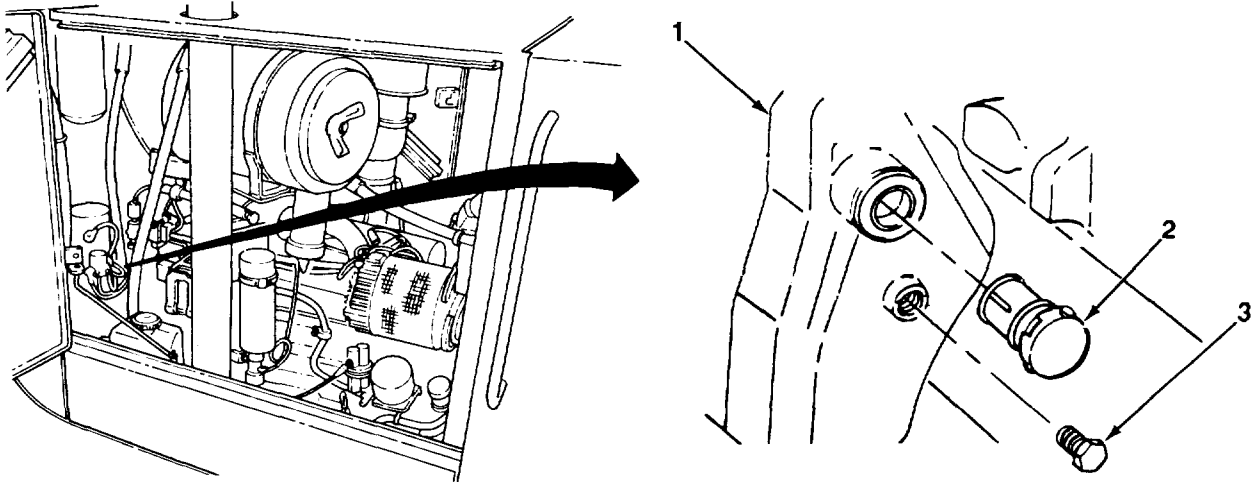
Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Flywheel turning tool (Item 16, Appendix F)
- Feeler gage (Item 17, Appendix F)
- Timing pin (Item 42, Appendix F)

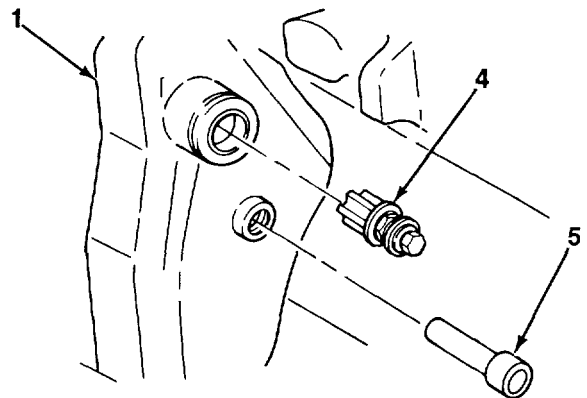
5-1. CYLINDER HEAD VALVES ADJUSTMENT (Con't).

ADJUSTMENT

1. Remove plugs (2 and 3) from engine (1).



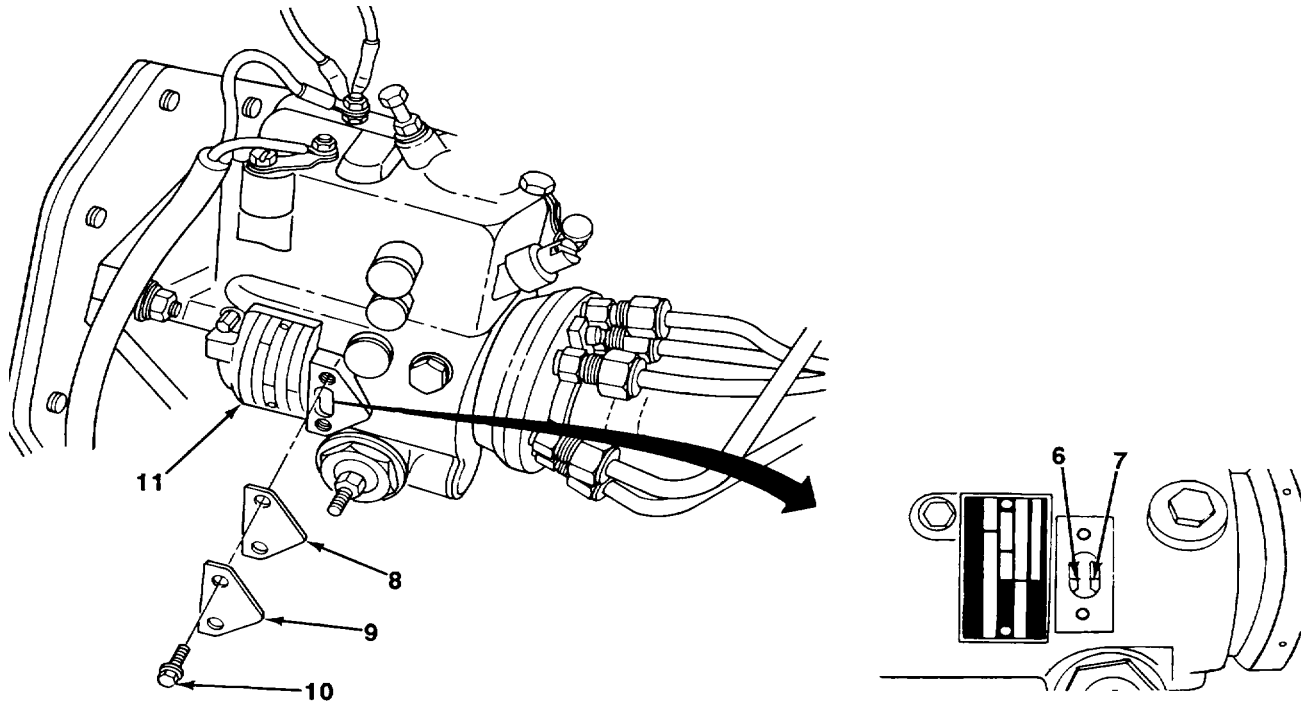
2. Install flywheel turning tool (4) on engine (1).
3. Turn flywheel turning tool (4) clockwise until timing pin (5) can be installed on engine (1) and engages flywheel.



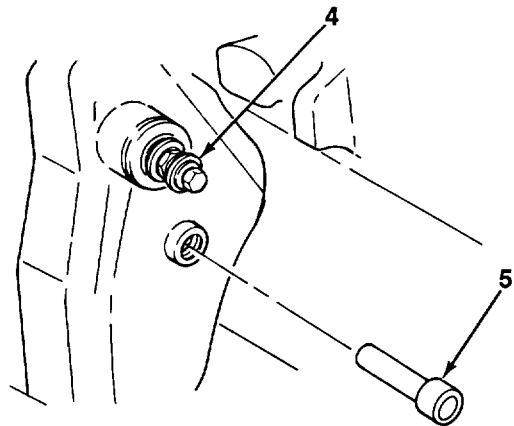
4. Remove two screws (10), cover (9), and gasket (8) from fuel injection pump (11). Discard gasket.
5. Note timing marks (6 and 7).
 - (a) If timing mark (6) is visible, No. 1 piston is at top dead center (TDC) on the compression stroke. Skip step 6 and perform step 7.
 - (b) If timing mark (6) is not visible, perform step 6.

TA706843

5-1 CYLINDER HEAD VALVES ADJUSTMENT (Con't)



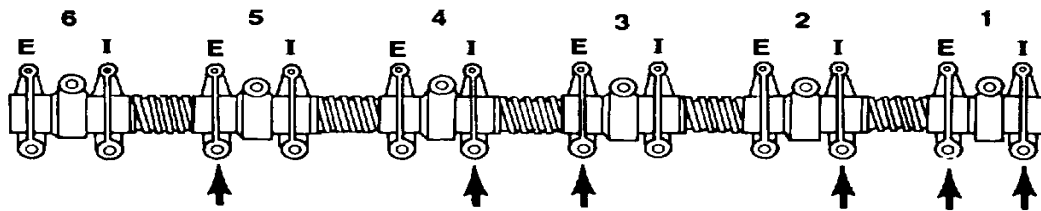
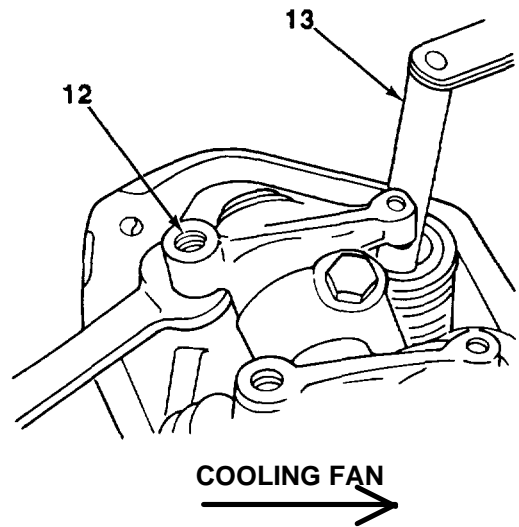
6. Remove timing pin (5) and, using flywheel turning tool (4), rotate flywheel one complete turn to place No. 1 piston at TDC. Install timing pin.



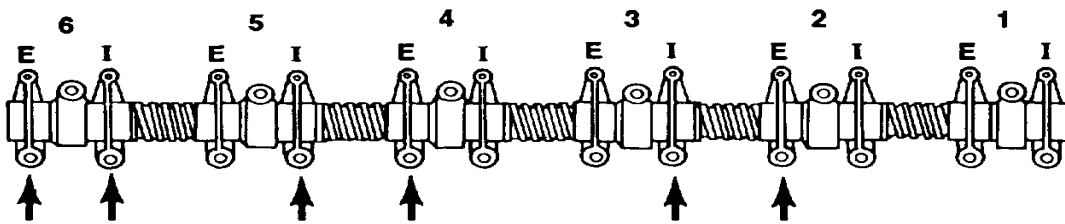
TA706844

5-1. CYLINDER HEAD VALVES ADJUSTMENT (Con't).

7. With No. 1 piston at TDC, measure clearance with feeler gage (13) and turn screws (12) until 0.014 in. (0.36 mm) clearance is obtained on intake (I) valves 1,2, and 4 and 0.018 in. (0.46 mm) clearance is obtained on exhaust (E) valves 1, 3 and 5.
8. Repeat step 6 and rotate crankshaft 360° to place No. 6 piston at TDC.
9. With No. 6 piston at TDC, measure clearance with feeler gage (13) and turn screws (12) until 0.014 in. (0.36 mm) clearance is obtained on intake (I) valves 6,5, and 3 and 0.018 in. (0.46 mm) clearance is obtained on exhaust (E) valves 6, 4 and 2.



No. 1 PISTON: TDC COMPRESSION STROKE

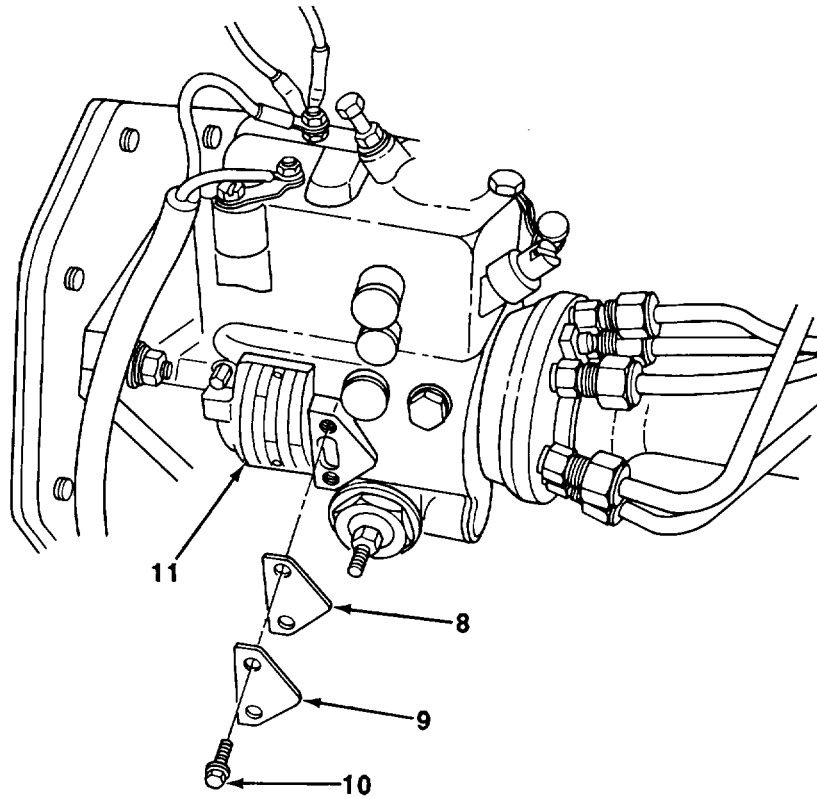


No. 6 PISTON: TDC COMPRESSION STROKE

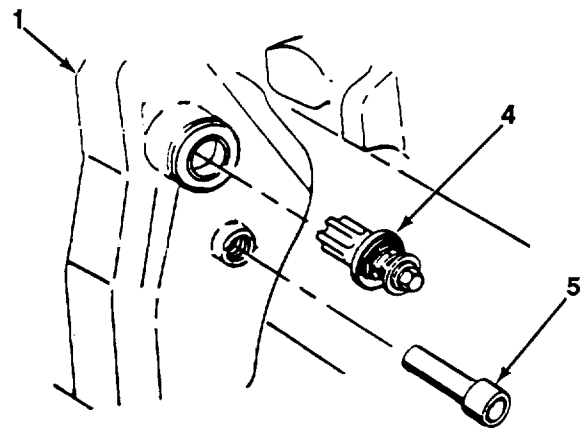
TA706845

5-1. CYLINDER HEAD VALVES ADJUSTMENT (Con't).

10. Install new gasket (8) and cover (9) on fuel injection pump (11) with two screws (10).



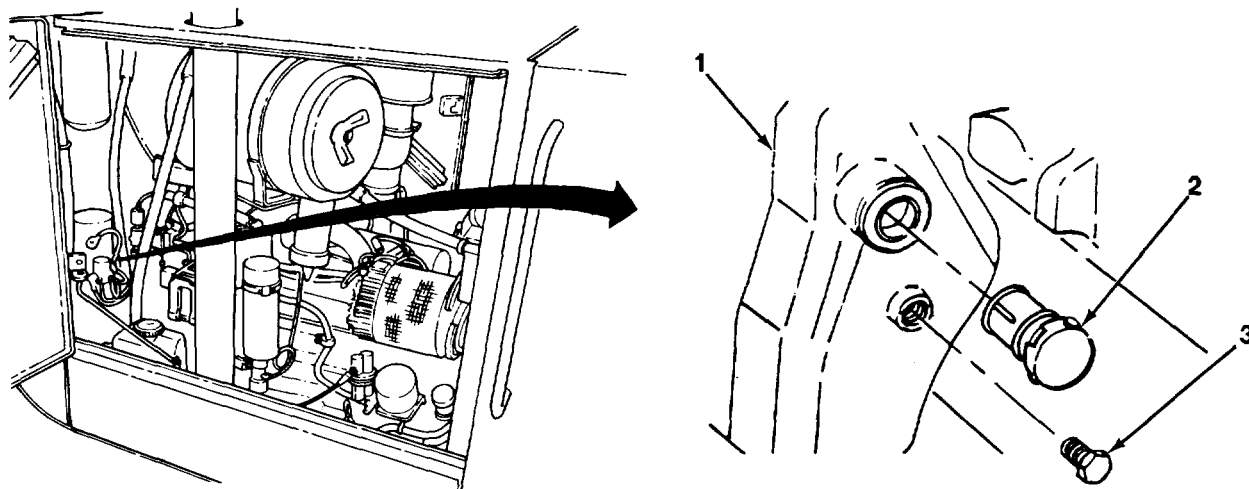
11. Remove timing pin (5) and flywheel turning tool (4) from engine (1).



TA706846

5-1. CYLINDER HEAD VALVES ADJUSTMENT (Con't).

12. Install plugs (2 and 3) on engine (1).

**FOLLOW-ON TASKS:**

- Install engine rocker arm cover (see paragraph 5-2).

TA706847

5-2. ENGINE ROCKER ARM COVER AND VENT TUBE REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup:

Equipment Conditions:

- Engine hood removed (see paragraph 14-17).
- Engine starting aid bracket removed (see paragraph 5-22).
- Air cleaner and bracket removed (see paragraph 5-9).
- Air intake tube removed (see paragraph 5-10).

Materials/Parts:

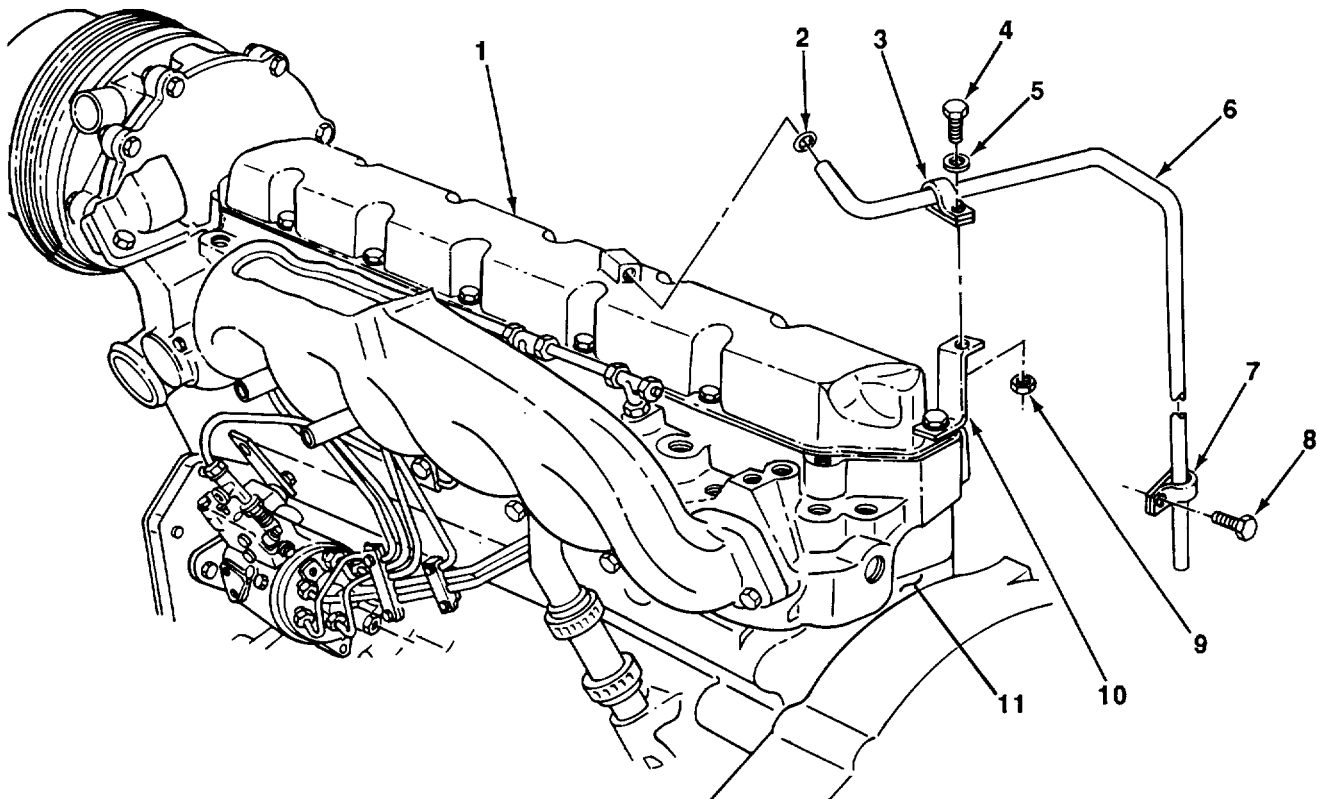
- One gasket
- One preformed packing

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Torque wrench, 0-200 lb.-in. (Item 51, Appendix F)

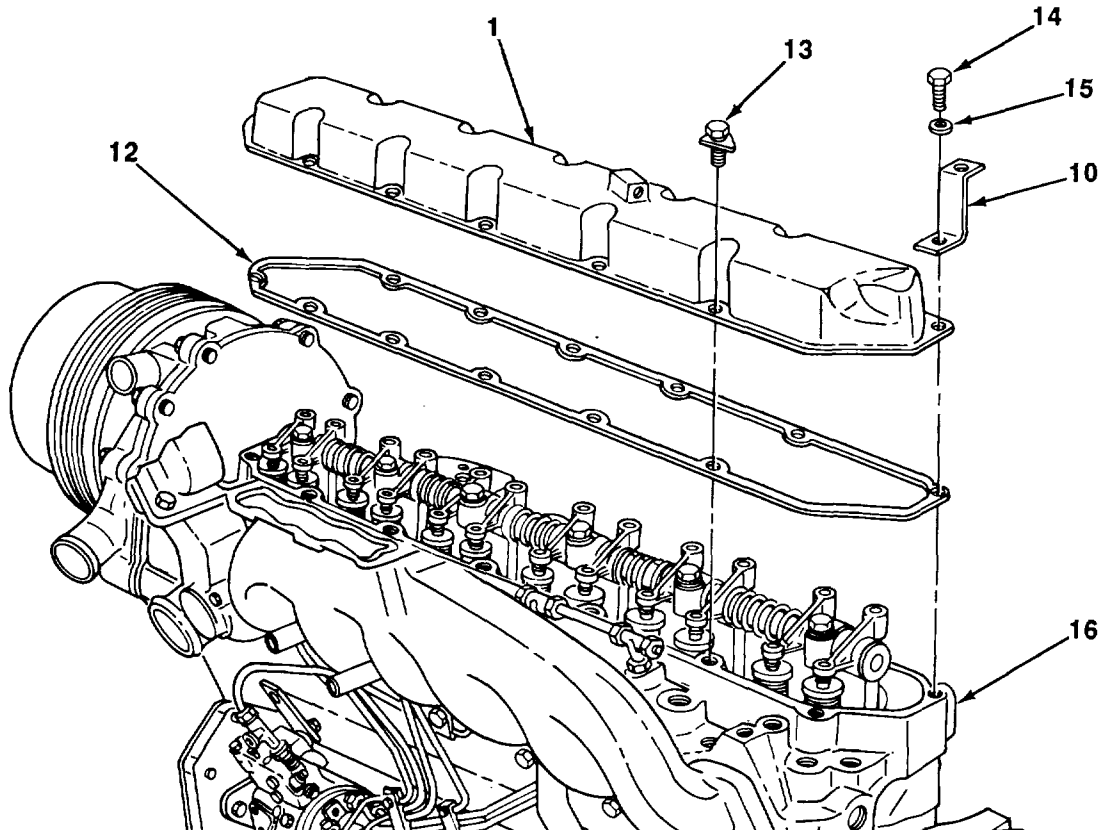
a. REMOVAL

1. Remove nut (9), screw (4), washer (5), and clamp (3) from bracket (10).
2. Remove screw (8) and clamp (7) from engine block (11).
3. Remove vent tube (6) and preformed packing (2) from engine rocker arm cover (1). Discard preformed packing.



5-2. ENGINE ROCKER ARM COVER AND VENT TUBE REPLACEMENT (Con't).

4. Remove screw (14), spacer (15), and bracket (10) from engine rocker arm cover (1).
5. Remove 11 screws (13), engine rocker arm cover (1), and gasket (12) from cylinder head (16). Discard gasket.

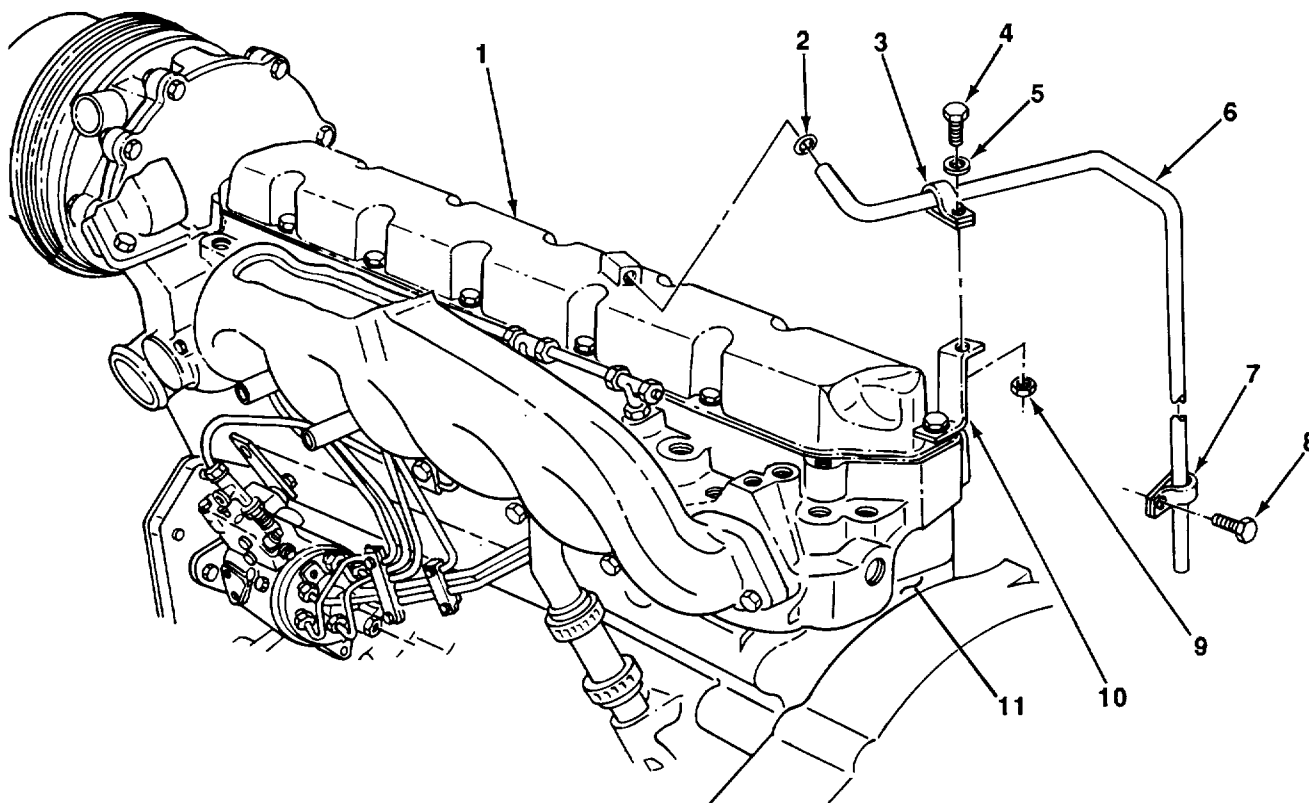
**b. INSTALLATION**

1. Install new gasket (12) and engine rocker arm cover (1) on cylinder head (16) with 11 screws (13). Torque screws to 96 lb.-in. (11 N•m).
2. Install bracket (10) on engine rocker arm cover (1) with spacer (15) and screw (14). Torque screw to 96 lb.-in. (11 N•m).

TA706849

5-2. ENGINE ROCKER ARM COVER AND VENT TUBE REPLACEMENT (Con't).

3. Install new preformed packing (2) and vent tube (6) on engine rocker arm cover (1).
4. Install clamp (7) on engine block (11) with screw (8).
5. Install clamp (3) on bracket (10) with washer (5), screw (4), and nut (9).

**FOLLOW-ON TASKS:**

- Install air intake tube (see paragraph 5-10).
- Install air cleaner and bracket (see paragraph 5-9).
- Install engine starting aid bracket (see paragraph 5-22).
- Install engine hood (see paragraph 14-17).

TA706850

5-3. ENGINE OIL FILTER REPLACEMENT.

This Task Covers:

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|
-

Initial Setup:

Equipment Conditions:

- Battery disconnect switch In OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Lubricating oil (Item 26, Appendix C)

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Oil filter removal tool (Item 33, Appendix F)

References:

- TM 10-3930-659-10
-

a. REMOVAL

Remove engine oil filter (1) from engine oil cooler (2).

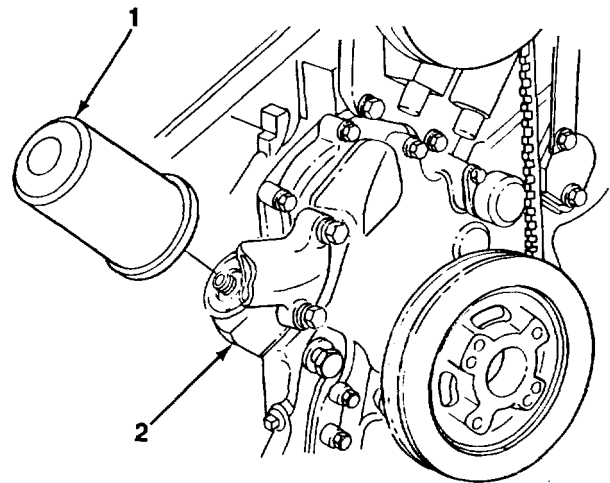
b. INSTALLATION

1. Coat new engine oil filter seal with clean lubricating oil.

CAUTION

Use care not to overtighten engine oil filter during installation. Overtightening may damage engine oil filter.

2. Install engine oil filter (1) on engine oil cooler (2).



FOLLOW-ON TASKS:

- Close left engine upper sideshield (see TM 10-3930-659-10).

TA706851

5-4. ENGINE OIL FILLER NECK REPLACEMENT.*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:***Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- One gasket

References:

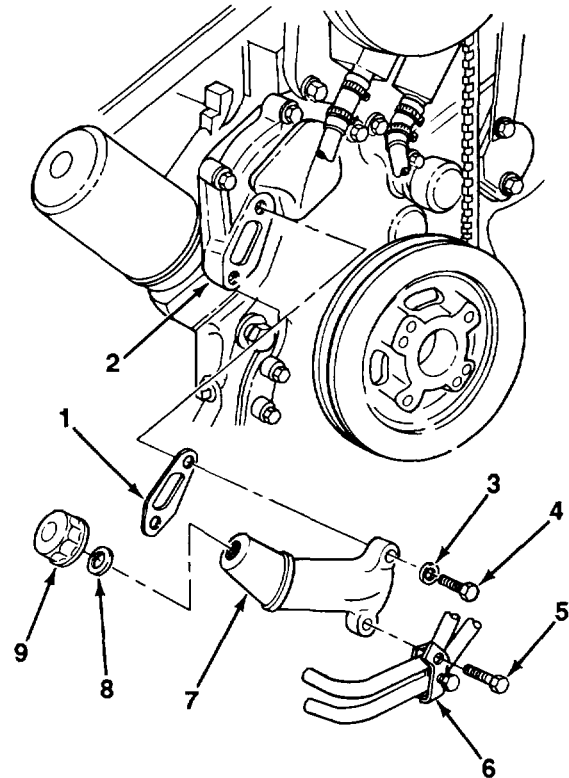
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

1. Remove cap (9) from engine oil filler neck (7).
2. If damaged, remove gasket (8) from cap (9). Discard gasket.
3. Remove screw (4) and washer (3) from engine oil filler neck (7).
4. Remove screw (5) and bracket (6) from engine oil filler neck (7).
5. Remove engine oil filler neck (7) and gasket (1) from engine timing gear cover (2). Discard gasket.

**b. INSTALLATION**

1. Position new gasket (1) and engine oil filler neck (7) on engine timing gear cover (2), and install bracket (6) with screw (5).
2. Install washer (3) and screw (4) on engine oil filler neck (7).
3. If removed, install new gasket (8) on cap (9).
4. Install cap (9) on engine oil filler neck (7).

FOLLOW-ON TASKS:

- Close left engine upper sideshield (see TM 10-3930-659-10).

TA706852

5-5. ENGINE OIL LEVEL GAGE TUBE REPLACEMENT.

This Task Covers:

a. Removal

b. Installation

Initial Setup:

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- One preformed packing

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

a. REMOVAL

1. Remove engine oil level gage (2) from tube (4).

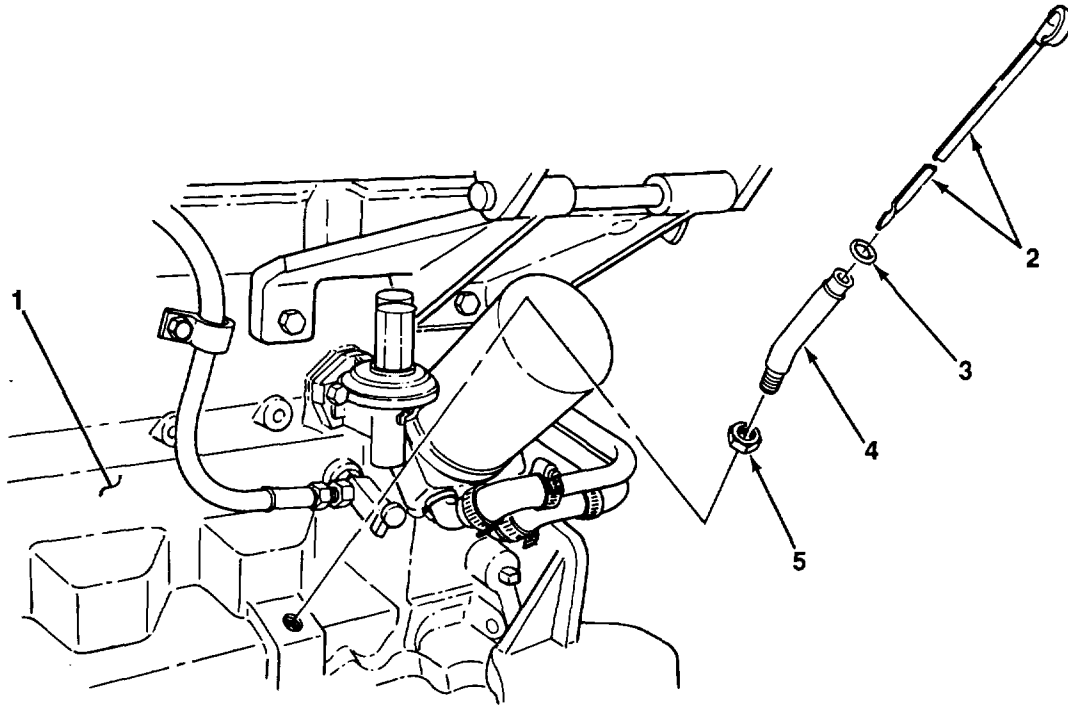
NOTE

Note position and measure height of tube to aid during Installation.

2. Loosen jamnut (5) and remove tube (4) from engine block (1).
3. Remove preformed packing (3) and jamnut (5) from tube (4). Discard preformed packing.

b. INSTALLATION

1. Install new preformed packing (3) and jamnut (5) on tube (4).
2. Install tube (4) on engine block (1).
3. Tighten jamnut (5) on tube (4).
4. Install engine oil level gage (2) in tube (4).

5-5. ENGINE OIL LEVEL GAGE TUBE REPLACEMENT (Con't).**FOLLOW-ON TASKS:**

- Close left engine upper sideshield (see TM 10-3930-659-10).

TA706853

5-6. TURBOCHARGER OIL LINES AND FITTINGS REPLACEMENT.

This Task Covers:

- | | |
|--|--|
| a. Turbocharger Oil Supply Line and Fittings Replacement | b. Turbocharger Oil Return Line and Fittings Replacement |
|--|--|

Initial Setup:

Equipment Conditions:

- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right and left engine upper sideshields opened (see TM 10-3930-659-10).

Materials/Parts:

- One gasket
- Three lockwashers

References:

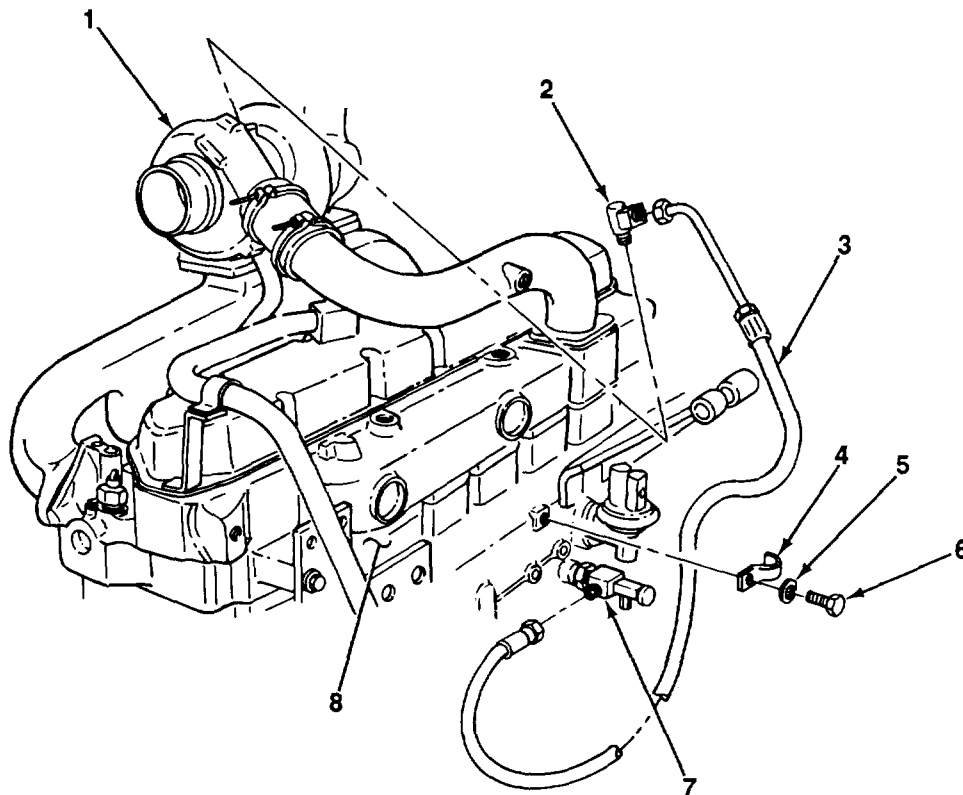
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. TURBOCHARGER OIL SUPPLY LINE AND FITTINGS REPLACEMENT

1. Remove turbocharger oil supply line (3) from elbow (2) and engine oil sampling valve (7).



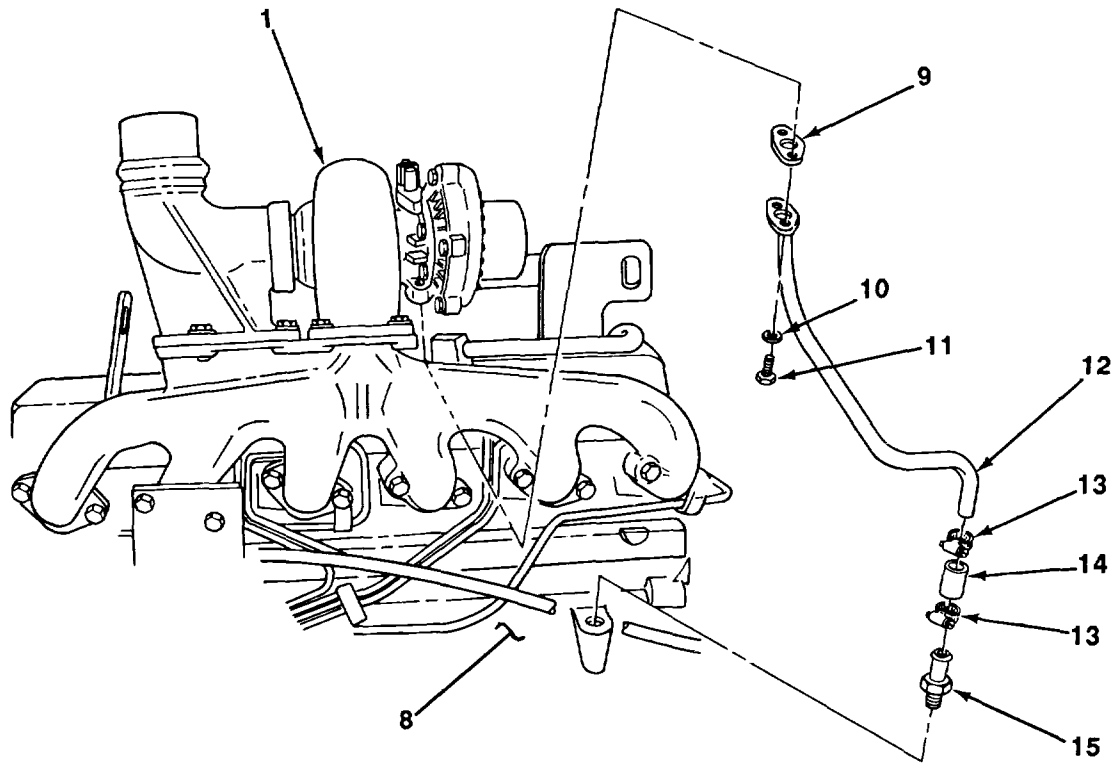
TA706854

5-6. TURBOCHARGER OIL LINES AND FITTINGS REPLACEMENT (Con't).

2. Remove screw (6), lockwasher (5), clamp (4), and turbocharger oil supply line (3) from engine block (8). Discard lockwasher.
3. If damaged, remove elbow (2) from turbocharger (1).
4. If removed, install elbow (2) on turbocharger (1).
5. Install turbocharger oil supply line (3) on elbow (2) and engine oil sampling valve (7).
6. Install clamp (4) on turbocharger oil supply line (3) and engine block (8) with new lockwasher (5) and screw (6).

b. TURBOCHARGER OIL RETURN LINE AND FITTINGS REPLACEMENT

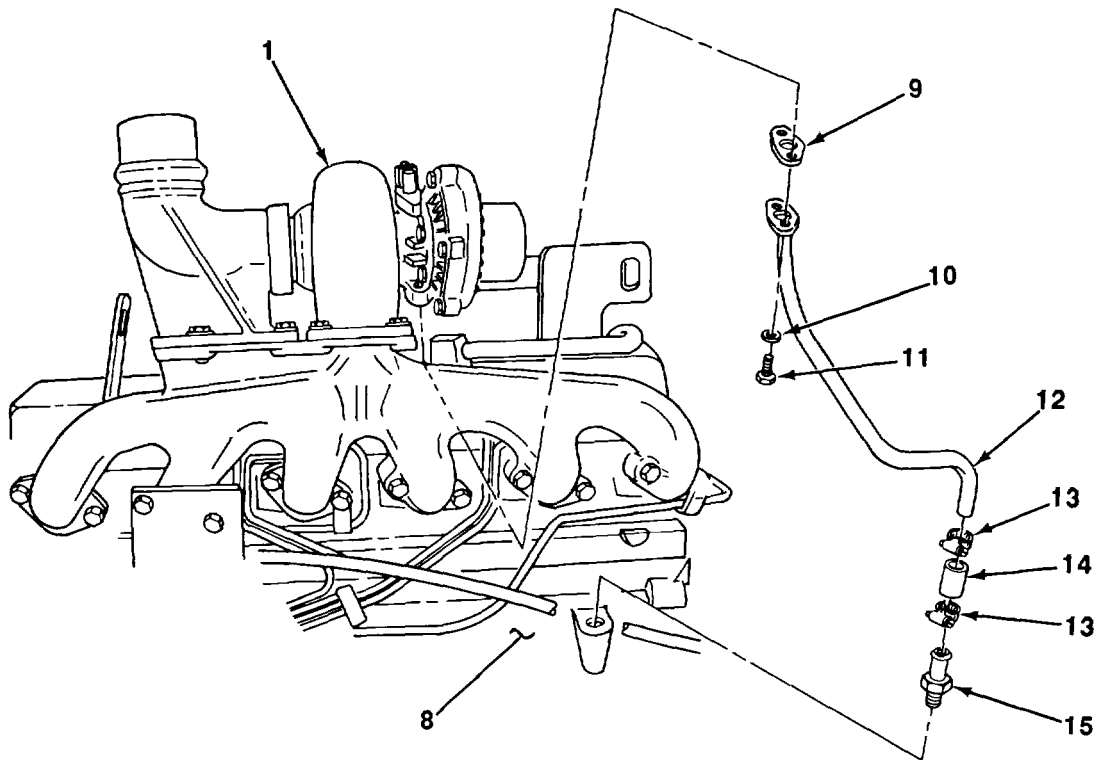
1. Loosen two clamps (13), and remove hose (14) and turbocharger oil return line (12) from adapter (15).
2. Remove two screws (11), lockwashers (10), turbocharger oil return line (12), and gasket (9) from turbocharger (1). Discard gasket and lockwashers.
3. If damaged, remove adapter (15) from engine block (8).



TA706855

5-6. TURBOCHARGER OIL LINES AND FITTINGS REPLACEMENT (Con't).

4. If removed, install adapter (15) on engine block (8).
5. Install new gasket (9) and turbocharger oil return line (12) on turbocharger (1) with two new lockwashers (10) and screws (11).
6. Install hose (14) and turbocharger oil return line (12) on adapter (15), and tighten two clamps (13).

**FOLLOW-ON TASKS:**

- Close right and left engine upper sashes (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

TA706856

5-7. ENGINE OIL SAMPLING VALVE REPLACEMENT.*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:***Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Tools/Test Equipment:

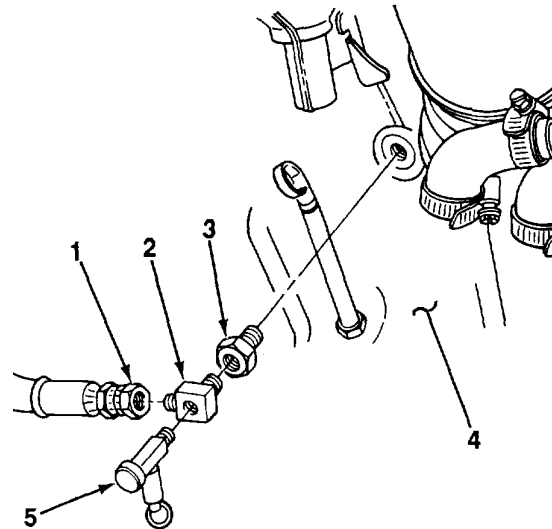
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL

1. Disconnect turbocharger oil supply line (1) from tee (2).
2. Remove engine oil sampling valve (5), tee (2), and bushing (3) from engine block (4).

**b. INSTALLATION****NOTE**

Ensure that engine oil sampling valve is facing down when installed.

1. Install bushing (3), tee (2), and engine oil sampling valve (5) on engine block (4).
2. Connect turbocharger oil supply line (1) to tee (2).

FOLLOW-ON TASKS:

- Close left engine upper sideshield (see TM 10-3930-659-10).

5-8. ENGINE OIL COOLER TUBES AND HOSES REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Equipment Conditions:

- Engine cool.
- Left engine upper sideshield opened (see TM 10-3930-659-10).
- Engine cooling system drained (see paragraph 5-38).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

- One lockwasher

References:

- TM 10-3930-659-10

General Safety Instructions:

- DO NOT perform engine cooling system maintenance unless engine is cold.
-

WARNING

Servicing of engine cooling system should only be performed on a cool engine. NEVER remove clamps or hoses when engine is hot. Pressurized steam, hot water, or coolant will cause serious burns.

a. REMOVAL

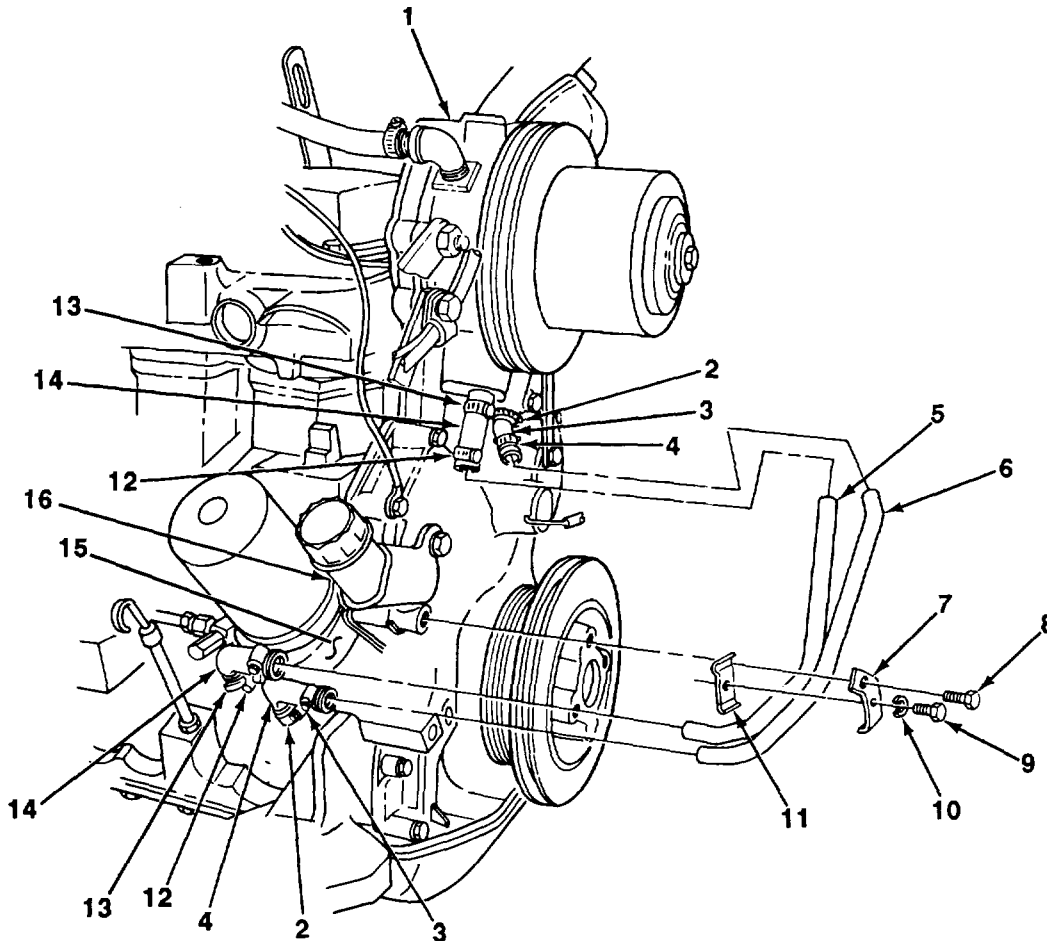
1. Remove screw (8) and retaining strap (7) from engine oil filler neck (16).
2. Remove screw (9), lockwasher (10), clamp (11), and retaining strap (7) from two engine oil cooler tubes (5 and 6). Discard lockwasher.
3. Loosen two clamps (3) and remove engine oil cooler tube (6) from two hoses (4).
4. Loosen two clamps (2) and remove two hoses (4) from engine oil cooler (15) and water pump (1).
5. Loosen two clamps (12) and remove engine oil cooler tube (5) from two hoses (14).
6. Loosen two clamps (13) and remove two hoses (14) from engine oil cooler (15) and water pump (1).

b. INSTALLATION

1. Position two hoses (14) on engine oil cooler (15) and water pump (1), and tighten two clamps (13).
2. Position engine oil cooler tube (5) on two hoses (14) and tighten two clamps (12).
3. Position two hoses (4) on engine oil cooler (15) and water pump (1), and tighten two clamps (2).

5-8. ENGINE OIL COOLER TUBES AND HOSES REPLACEMENT (Con't).

4. Position engine oil cooler tube (6) on two hoses (4) and tighten two clamps (3).
5. Install retaining strap (7) on engine oil filler neck (16) with screw (8).
6. Install clamp (11) and retaining strap (7) on two engine oil cooler tubes (5 and 6) with new lockwasher (10) and screw (9).

**FOLLOW-ON TASKS:**

- Fill engine cooling system with antifreeze (see paragraph 5-38).
- Close left engine upper sideshield (see TM 10-3930-659-10).

TA706858

Section II. FUEL SYSTEMS MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
5-9	Air Cleaner and Bracket Maintenance	5-21
5-10	Air Intake Tube Replacement	5-26
5-11	Fuel Transfer Pump Replacement	5-28
5-12	Fuel Primer Pump Replacement	5-32
5-13	Fuel Pressure Differential Switch Replacement	5-34
5-14	Fuel Tank Filler Cap and Strainer Replacement	5-38
5-15	Fuel Lines and Fittings Replacement	5-40
5-16	Bleeding Fuel Filter and Lines	5-48
5-17	Fuel Filter Replacement	5-50
5-18	Fuel Filter Housing Replacement	5-52
5-19	Engine Starting Aid Valve Replacement	5-56
5-20	Engine Starting Aid Cylinder Replacement	5-58
5-21	Engine Starting Aid Line Replacement	5-60
5-22	Engine Starting Aid Bracket Replacement	5-62
5-23	Accelerator Cable Replacement	5-64
5-24	Accelerator Pedal Replacement	5-69
5-25	Engine Idle Speed and Speed Control Linkage Adjustments	5-72
5-26	Fuel Injection Pump Static Timing Adjustment	5-75

5-9. AIR CLEANER AND BRACKET MAINTENANCE.

This Task Covers:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. Air Filters Replacement b. Removal | <ul style="list-style-type: none"> c. Installation |
|--|---|

Initial Setup:

Equipment Conditions:

- Air cleaner restriction sensor and fittings removed (air cleaner replacement only) (see paragraph 6-34).
- Fuel pressure differential switch removed (see paragraph 5-13).

Tools/Test Equipment:

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

- Rags (Item 27, Appendix C)

General Safety Instructions:

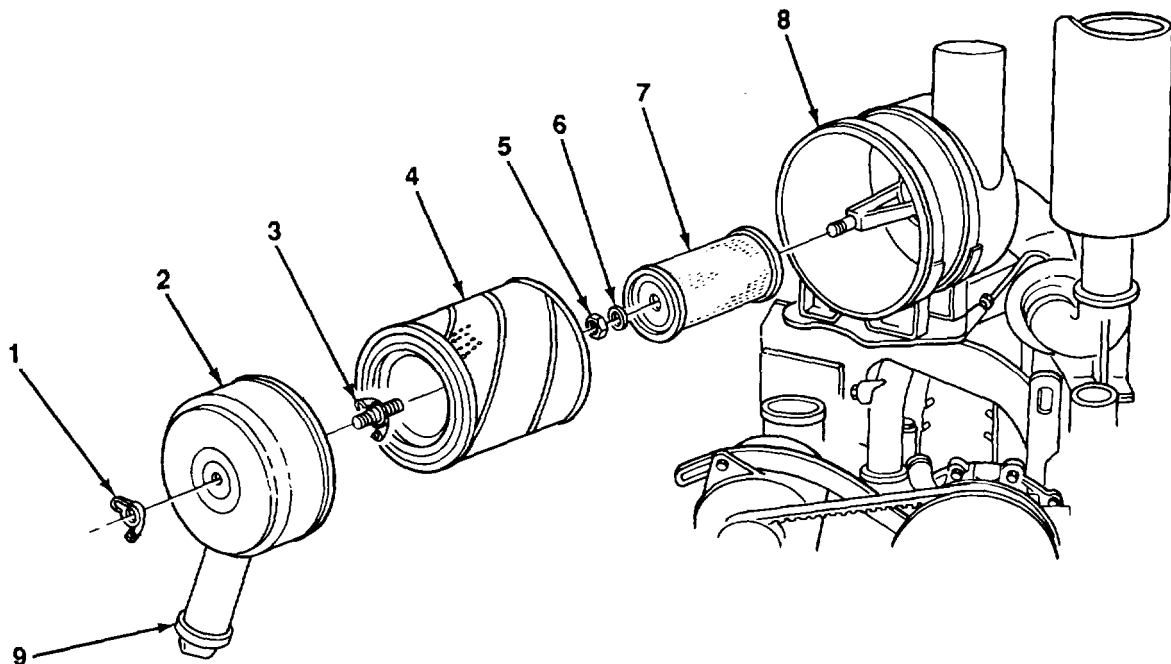
- If NBC exposure is suspected, all engine air cleaner air filter media must be handled by personnel wearing protective equipment.

5-9. AIR CLEANER MAINTENANCE (Con't).**WARNING**

If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your NBC Officer or NBC NCO for appropriate handling or disposal procedures.

a. AIR FILTERS REPLACEMENT

1. Remove wingnut (1) and cover (2) from air cleaner housing (8).
2. Remove wingbolt (3) and primary air filter (4) from air cleaner housing (8).
3. Remove nut (5), seal (6), and secondary air filter (7) from air cleaner housing (8).
4. Remove dust valve (9) from cover (2).
5. Install dust valve (9) on cover (2).
6. Install secondary air filter (7) in air cleaner housing (8) with seal (6) and nut (5).
7. Install primary air filter (4) in air cleaner housing (8) with wingbolt (3).
8. Install cover (2) on air cleaner housing (8) with wingnut (1).



TA706859

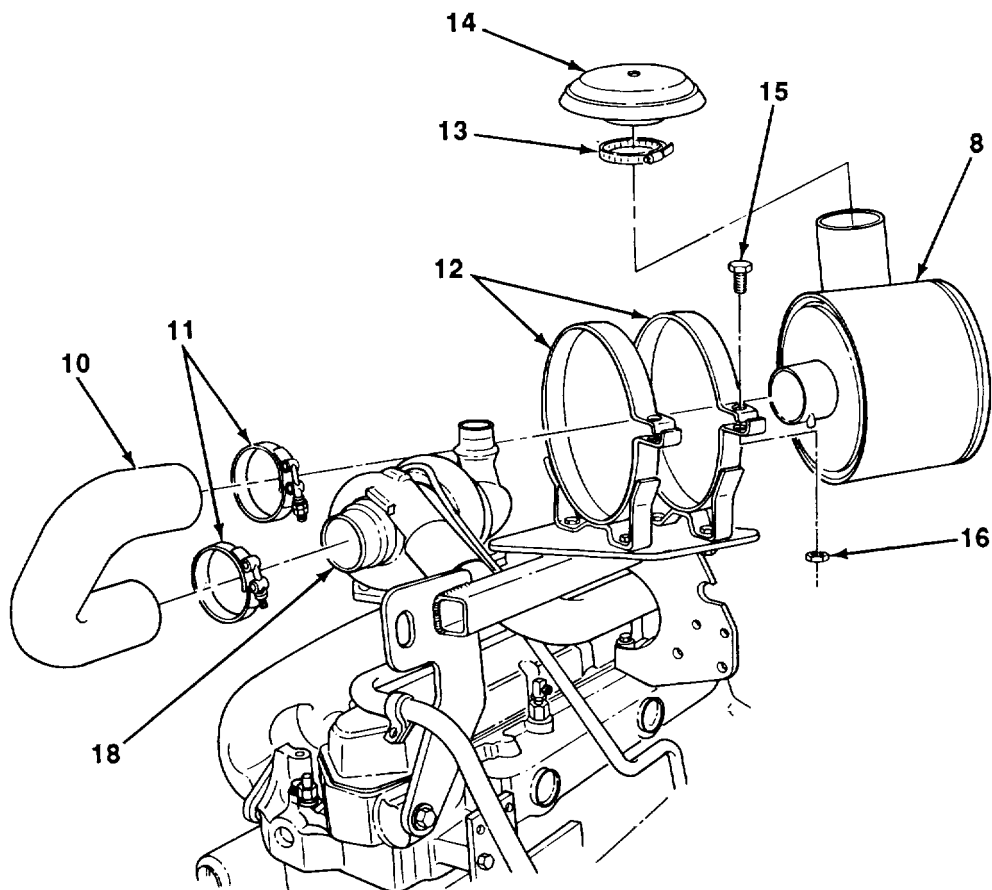
5-9. AIR CLEANER MAINTENANCE (Con't).**b. REMOVAL**

1. Remove primary and secondary air filters (see subparagraph a).
2. Loosen clamp (13) and remove air cleaner intake cover (14) from air cleaner housing (8).
3. Remove engine hood (see paragraph 14-17).

NOTE

Cover turbocharger opening with a clean rag to prevent contaminants from entering turbocharger system.

4. Loosen two clamps (11) and remove hose (10) from air cleaner housing (8) and turbocharger (18).
5. Remove two nuts (16) and screws (15) from two loop clamps (12).
6. Remove air cleaner housing (8) from two loop clamps (12).



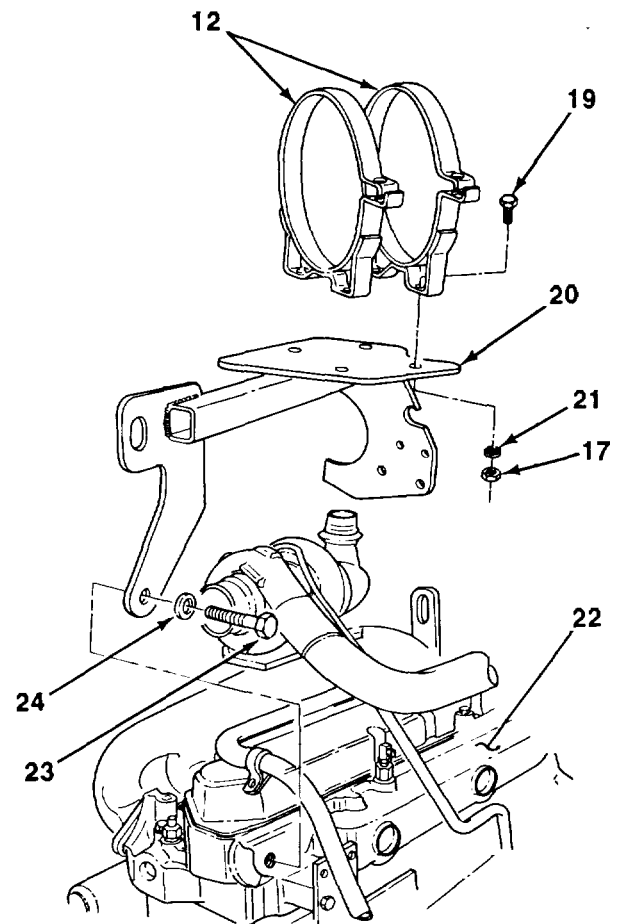
5-9. AIR CLEANER MAINTENANCE (Con't).

7. If loop clamps (12) are damaged, remove four nuts (17), washers (21), screws (19), and two loop clamps from bracket (20).

NOTE

Perform steps 8 through 10 only if bracket is damaged.

8. Remove fuel primer pump (see paragraph 5-12).
9. Remove engine starting aid bracket (see paragraph 5-22).
10. Remove three screws (23), washers (24), and bracket (20) from engine block (22).

**c. INSTALLATION****NOTE**

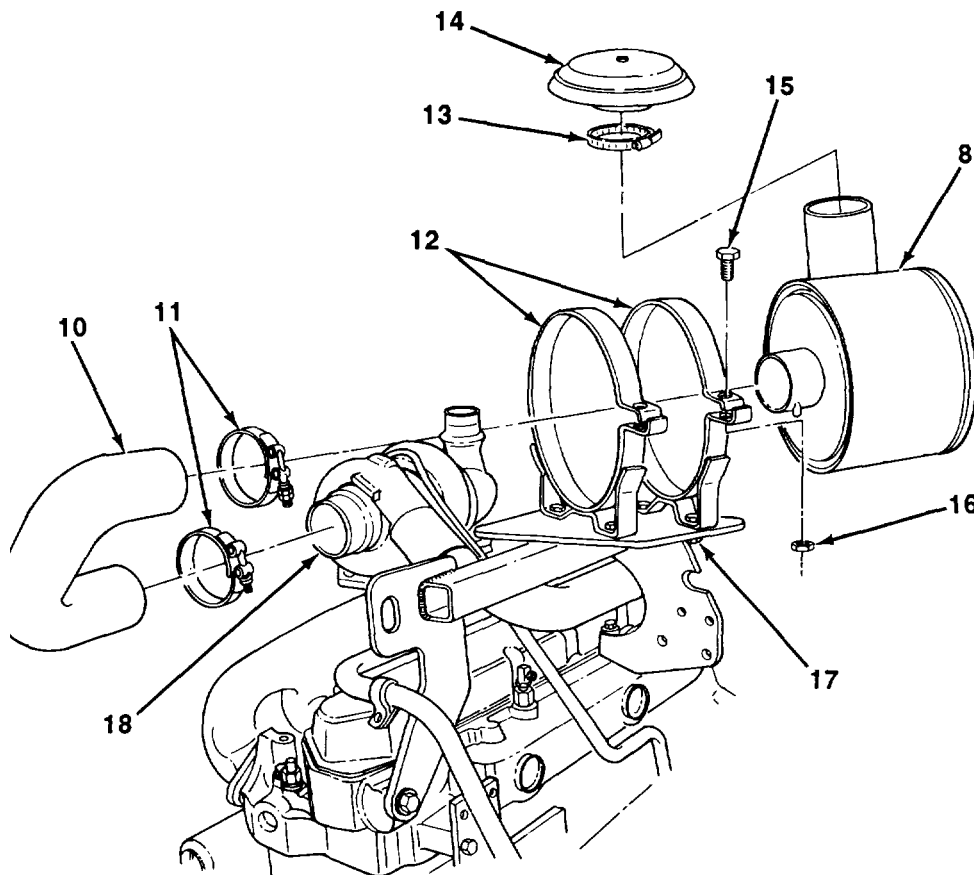
Perform steps 1 through 3 only if bracket was removed.

1. Install bracket (20) on engine block (22) with three washers (24) and screws (23).
2. Install engine starting aid bracket (see paragraph 5-22).
3. Install fuel primer pump (see paragraph 5-12).
4. If removed, install two loop clamps (12) on bracket (20) with four screws (19), washers (21), and nuts (17). Do not tighten nuts.

TA706861

5-9. AIR CLEANER MAINTENANCE (Con't).

5. Install air cleaner housing (8) in two loop clamps (12) with two screws (15) and nuts (16).
6. Install hose (10) on air cleaner housing (8) and turbocharger (18). Tighten two clamps (11).
7. Install engine hood (see paragraph 14-17).
8. Install air cleaner intake cover (14) on air cleaner housing (8). Tighten clamp (13).
9. Install primary and secondary air filters (see subparagraph a).
10. If removed, tighten nuts (17).

**FOLLOW-ON TASKS:**

- Install air cleaner restriction sensor and fittings (air cleaner replacement only) (see paragraph 6-34).
- Install fuel pressure differential switch (see paragraph 5-13).

5-10. AIR INTAKE TUBE REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Equipment Conditions:

- Engine starting aid line removed (see paragraph 5-21).

Materials/Parts:

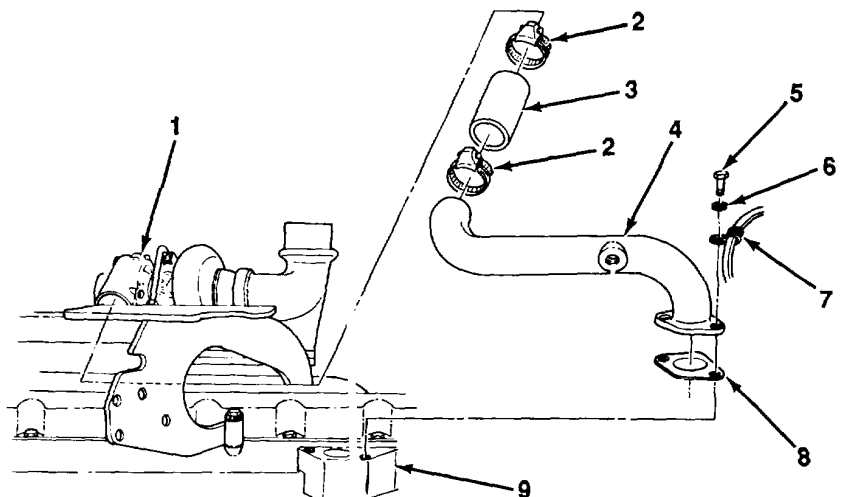
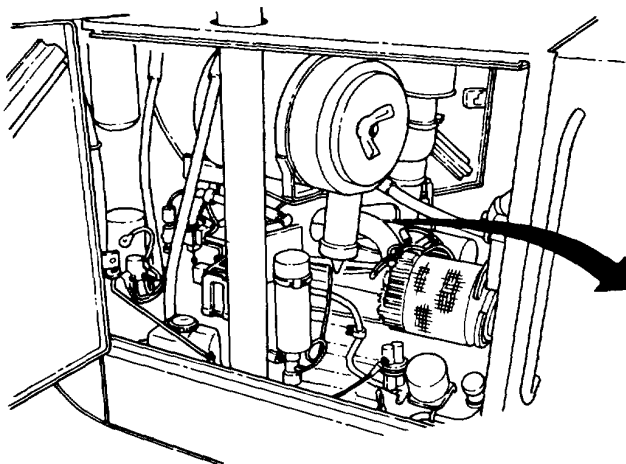
- One gasket
- Two lockwashers

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Torque wrench, 0-175 lb.-ft. (Item 52, Appendix F)

a. REMOVAL

1. Loosen two clamps (2) and remove hose (3) from turbocharger (1) and air intake tube (4).
2. Remove two screws (5), lockwashers (6), clamp (7), air intake tube (4), and gasket (8) from cylinder head (9). Discard lockwashers and gasket.



5-10. AIR INTAKE TUBE REPLACEMENT.

b. INSTALLATION

1. Position hose (3) and two clamps (2) on air intake tube (4).
2. Install new gasket (8), air intake tube (4), and clamp (7) on cylinder head (9) with two new lockwashers (6) and screws (5). Torque screws to 35 lb.-ft. (47 N-m).
3. Position hose (3) on turbocharger (1) and tighten two clamps (2).

FOLLOW-ON TASKS:

- Install engine starting aid line (see paragraph 5-21).

5-11. FUEL TRANSFER PUMP REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Rags (Item 27, Appendix C)
- One gasket

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

General Safety Instructions:

- DO NOT perform this procedure near fire, flames, or sparks.
-

WARNING

Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel transfer pump. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

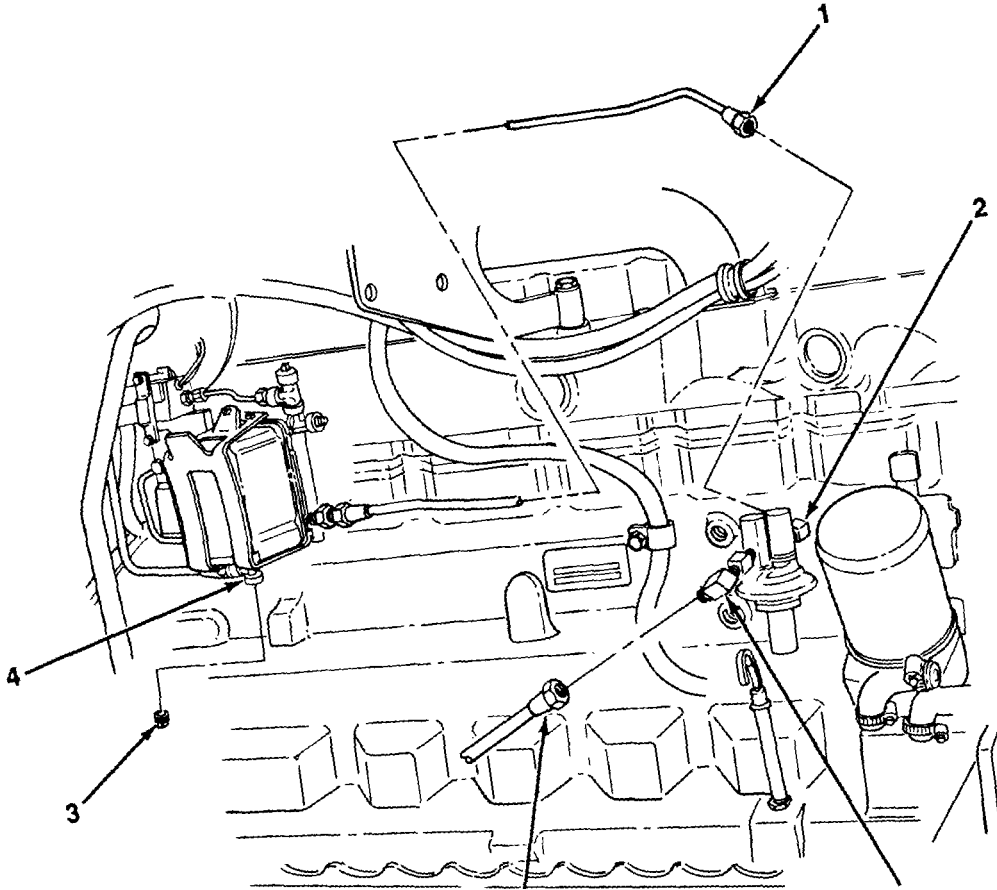
NOTE

A suitable container should be used to catch any draining fuel. Ensure that all spills are properly cleaned.

a. REMOVAL

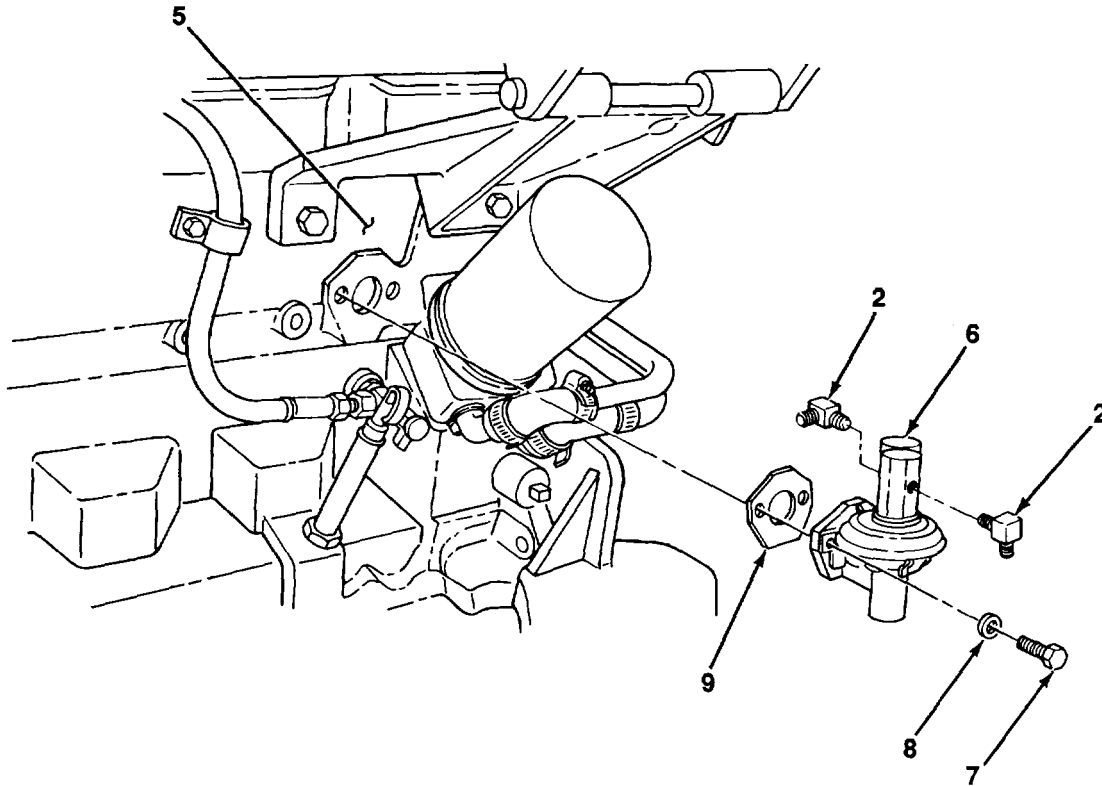
1. Remove drain plug (3) from tee (4). Allow fuel to drain.
2. Disconnect two fuel lines (1) from elbows (2).

5-11. FUEL TRANSFER PUMP REPLACEMENT.(Con't)



5-11. FUEL TRANSFER PUMP REPLACEMENT.(Con't)

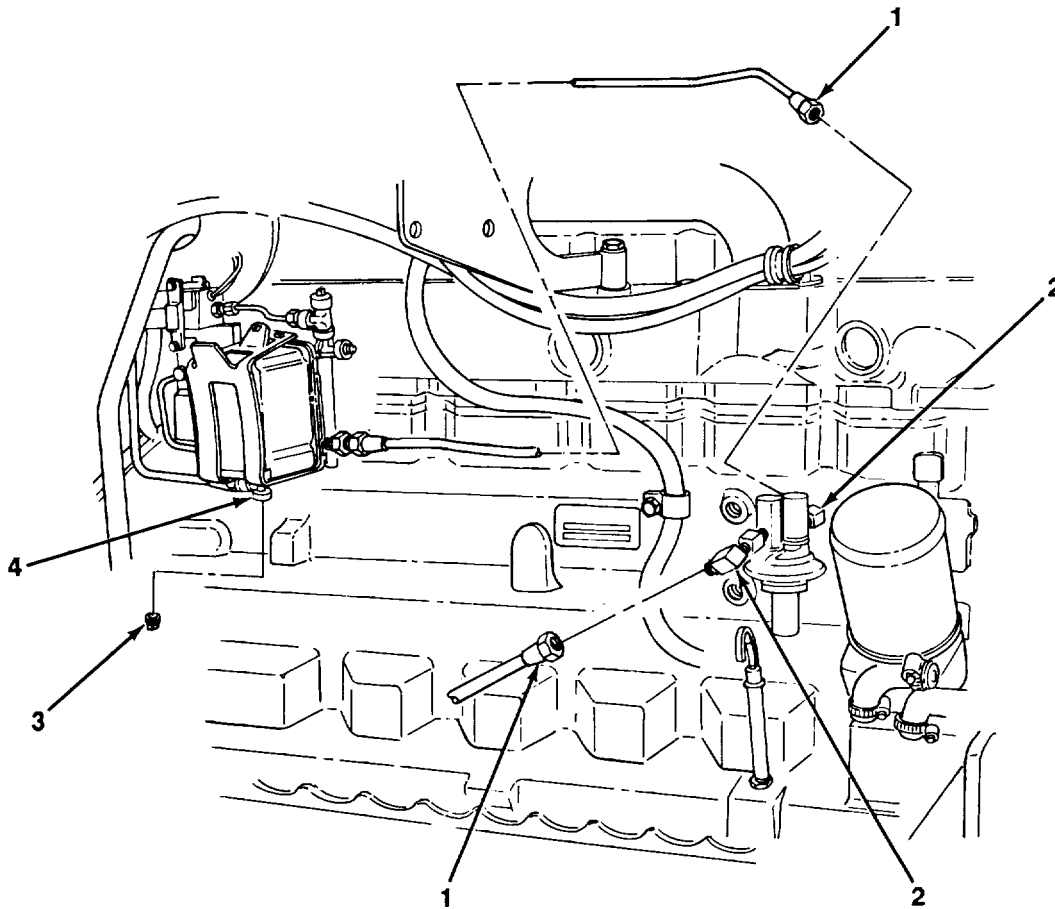
3. Remove two screws (7), washers (8), fuel transfer pump (6), and gasket (9) from engine (5). Discard gasket.
4. Remove two elbows (2) from fuel transfer pump (6).

**b. INSTALLATION**

1. Install two elbows (2) on fuel transfer pump (6).
2. Install new gasket (9) and fuel transfer pump (6) on engine (5) with two washers (8) and screws (7).

5-11. FUEL TRANSFER PUMP REPLACEMENT.(Con't)

3. Install two fuel lines (1) on elbows (2).
4. Install drain plug (3) on tee (4).

**FOLLOW-ON TASKS:**

- Bleed fuel filter and lines (see paragraph 5-16).
- Close left engine upper sideshield (see TM 10-3930-659-10).

5-12. FUEL PRIMER PUMP REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Rags (Item 27, Appendix C)
- References:
 - TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

General Safety Instructions:

- DO NOT perform this procedure near fire, flames, or sparks.
-

WARNING

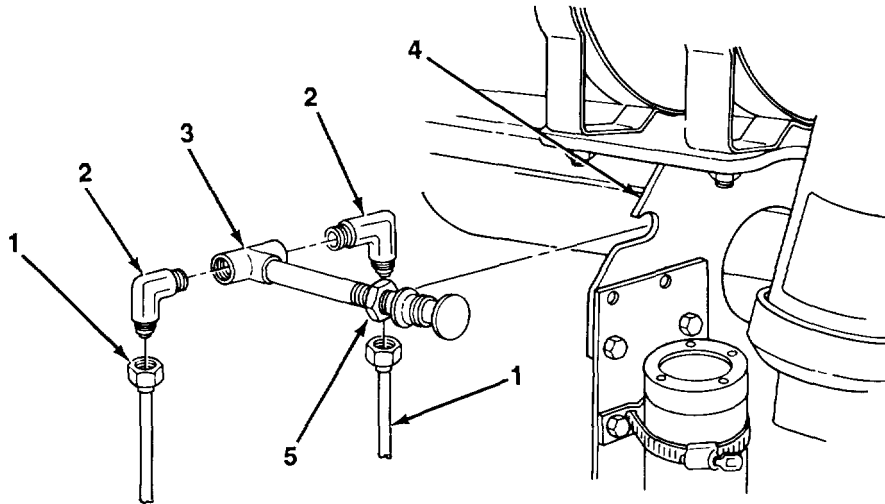
Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel primer pump. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

NOTE

A suitable container should be used to catch any draining fuel. Ensure that all spills are properly cleaned.

a. REMOVAL

1. Disconnect two fuel lines (1) and remove elbows (2) from fuel primer pump (3).
2. Loosen Jamnut (5) and remove fuel primer pump (3) from bracket (4).

5-12. FUEL PRIMER PUMP REPLACEMENT.(Con't)**b. INSTALLATION**

- 1 Position fuel primer pump (3) on bracket (4) and tighten jamnut (5).
2. Install two elbows (2) on fuel primer pump (3). Connect two fuel lines (1).

FOLLOW-ON TASKS:

- Bleed fuel filter and lines (see paragraph 5-16).
- Close left engine upper sideshield (see TM 10-3930-659-10).

5-13. FUEL PRESSURE DIFFERENTIAL SWITCH REPLACEMENT.

This task covers:**a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Marker tags (Item 33, Appendix C)
- Two locknuts

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

General Safety Instructions:

- DO NOT perform this procedure near fire, flames, or sparks.

WARNING

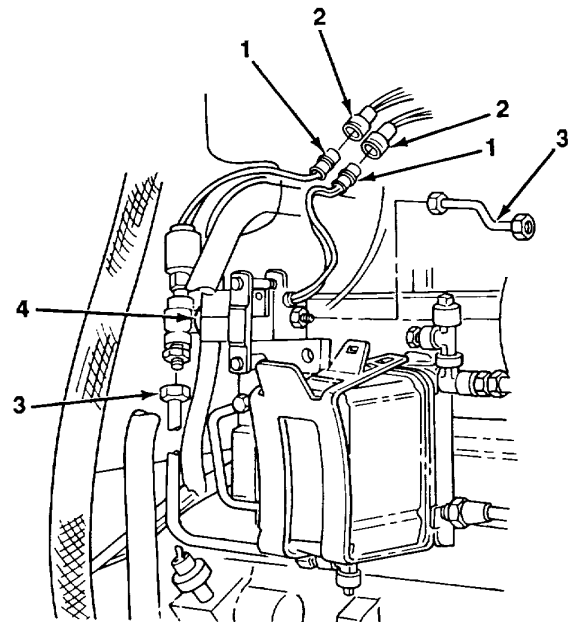
Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel pressure differential switch. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

NOTE

- A suitable container should be used to catch any draining fuel. Ensure that all spills are properly cleaned.
- Connectors should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

a. REMOVAL

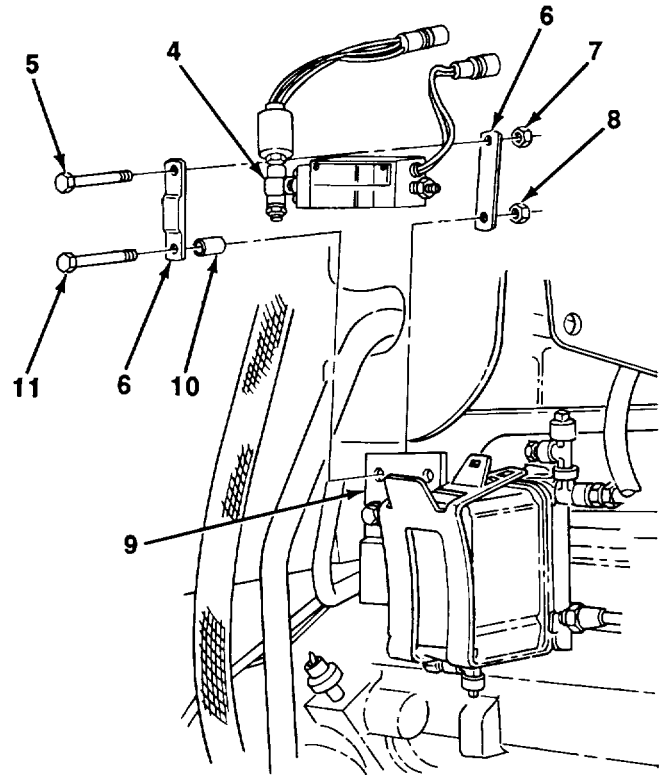
1. Tag and disconnect two connectors (2) from fuel pressure differential switch connectors (1).
2. Disconnect two fuel lines (3) from fuel pressure differential switch (4).



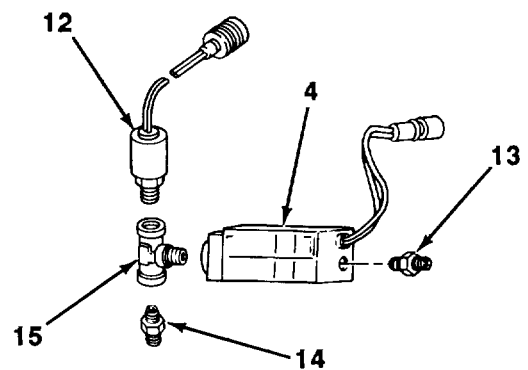
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5-13. FUEL PRESSURE DIFFERENTIAL SWITCH REPLACEMENT.(Con't)

3. Remove locknut (8), screw (11), spacer (10), and fuel pressure differential switch (4) from bracket (9). Discard locknut.
4. Remove locknut (7), screw (5), and two brackets (6) from fuel pressure differential switch (4). Discard locknut.



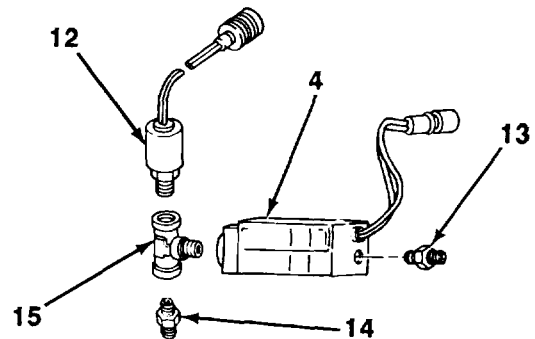
5. Remove adapter (13) from fuel pressure differential switch (4).
6. Remove fuel pressure transducer (12) and adapter (14) from tee (15).
7. Remove tee (15) from fuel pressure differential switch (4).



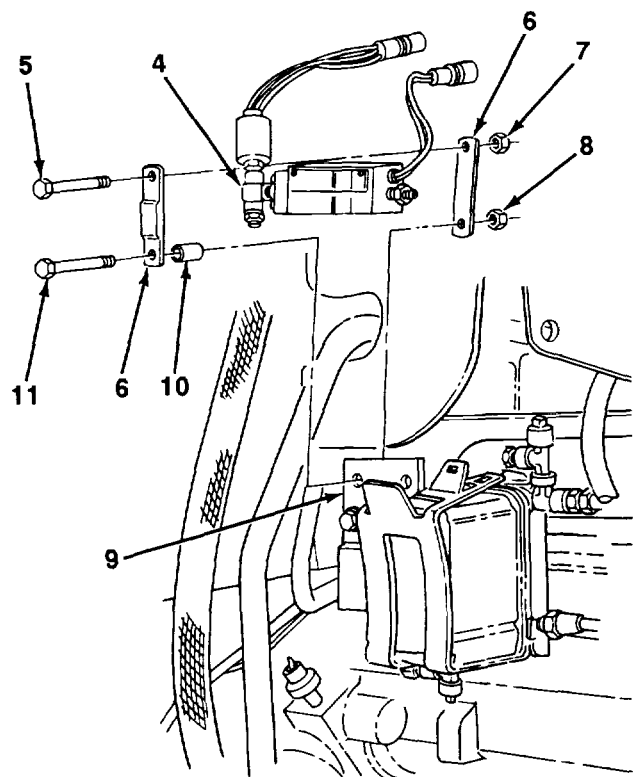
5-13. FUEL PRESSURE DIFFERENTIAL SWITCH REPLACEMENT.(Con't).

b. INSTALLATION

1. Install tee (15) on fuel pressure differential switch (4).
2. Install adapter (14) and fuel pressure transducer (12) on tee (15).
3. Install adapter (13) on fuel pressure differential switch (4).

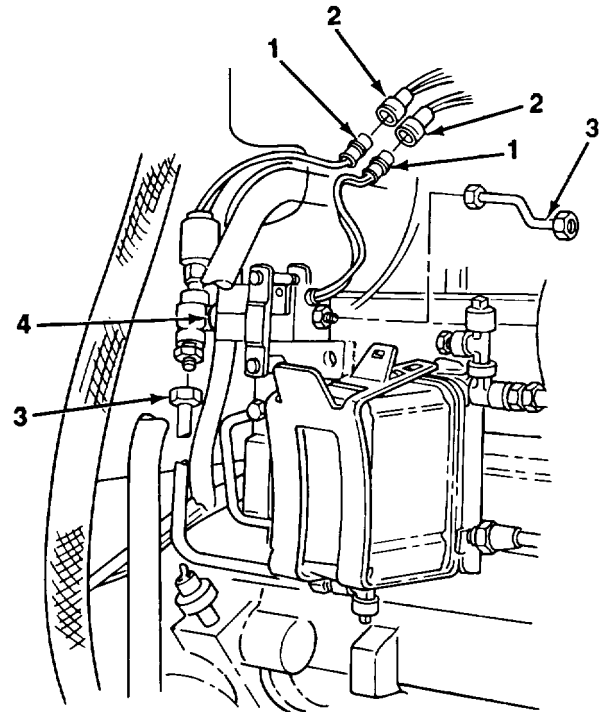


4. Install two brackets (6) on fuel pressure differential switch (4) with screw (5) and new locknut (7).
5. Install fuel pressure differential switch (4) and two brackets (6) on bracket (9) with spacer (10), screw (11), and new locknut (8).



5-13. FUEL PRESSURE DIFFERENTIAL SWITCH REPLACEMENT (Con't).

6. Connect two fuel lines (3) to fuel pressure differential switch (4).
7. Connect two connectors (2) to fuel pressure differential switch connectors (1).

**FOLLOW-ON TASKS:**

- Bleed fuel filter and lines (see paragraph 5-16).
- Close left engine upper sideshield (see TM 10-3930-659-10).

5-14. FUEL TANK FILLER CAP AND STRAINER REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Radiator grille door opened (see TM 10-3930-659-10).

Tools/Test Equipment:

- Pipe wrench, strap (Item 50, Appendix F)

General Safety Instructions:

- DO NOT perform this procedure near fire, flames, or sparks.

References:

- TM 10-3930-659-10
-

WARNING

Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel tank. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

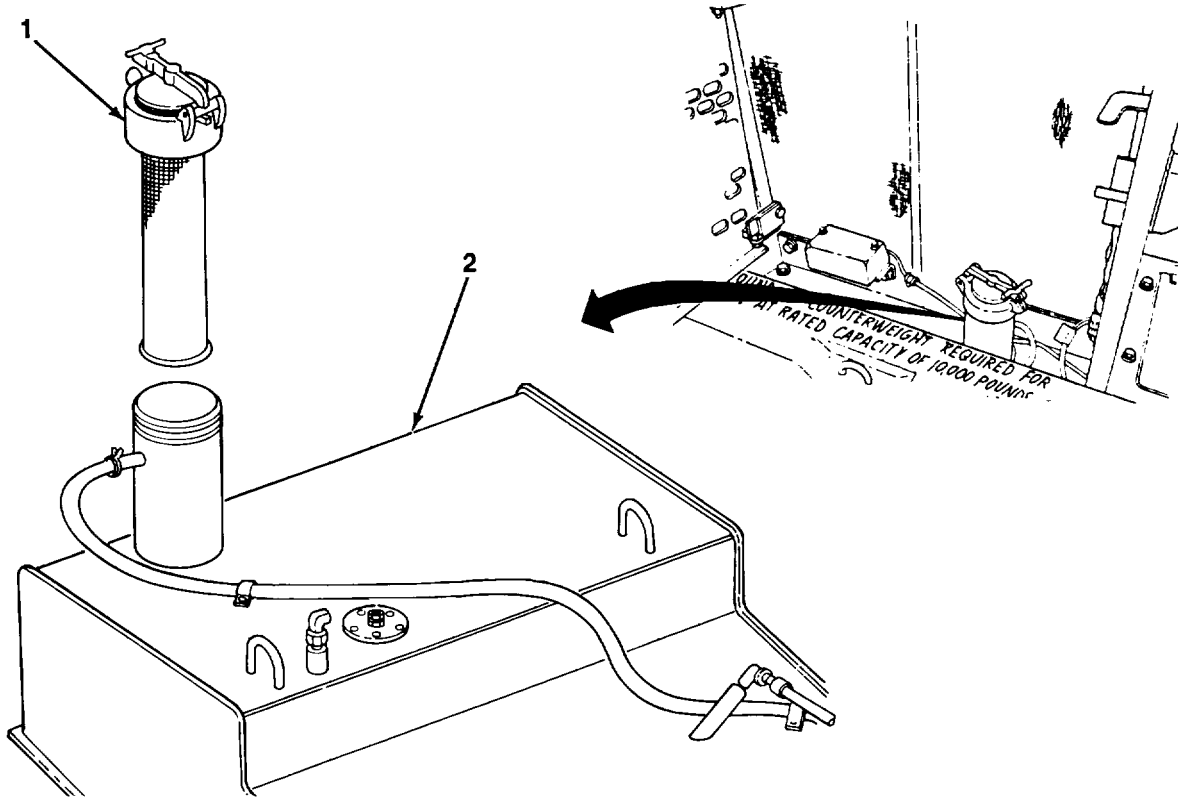
a. REMOVAL

Remove fuel tank filler cap and strainer (1) from fuel tank (2).

b. INSTALLATION

Install fuel tank filler cap and strainer (1) in fuel tank (2).

5-14. FUEL TANK FILLER CAP AND STRAINER REPLACEMENT.(Con't).



FOLLOW-ON TASKS:

- Close radiator grille door (see TM 10-3930-659-10).

5-15. FUEL LINES AND FITTINGS REPLACEMENT.*This Task Covers:*

- | | |
|--|---|
| a. Fuel Tank-to-Fuel Transfer Pump Fuel Line and Fittings Replacement | e. Fuel Filter Housing-to-Fuel Pressure Transducer Fuel Line and Fittings Replacement |
| b. Fuel Transfer Pump-to-Fuel Filter Housing Fuel Line and Fittings Replacement | f. Fuel Filter Housing-to-Fuel Injection Pump Fuel Line and Fittings Replacement |
| c. Fuel Filter Housing-to-Fuel Pressure Differential Switch Fuel Line and Fittings Replacement | g. Fuel Injection Pump-to-Fuel Tank Fuel Line and Fittings Replacement |
| d. Fuel Filter Housing-to-Fuel Primer Pump Fuel Line and Fittings Replacement | h. Fuel Tank Vent Line Replacement |

*Initial Setup:***Equipment Conditions:**

- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right and left engine upper sashes opened (see TM 10-3930-659-10).
- Battery cables disconnected (see paragraph 6-43).
- Left engine lower sash removed (see paragraph 14-16).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

- Rags (Item 27, Appendix C)

References:

- TM 10-3930-659-10

General Safety Instructions:

- DO NOT perform this procedure near fire, flames, or sparks.

WARNING

Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel lines. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

NOTE

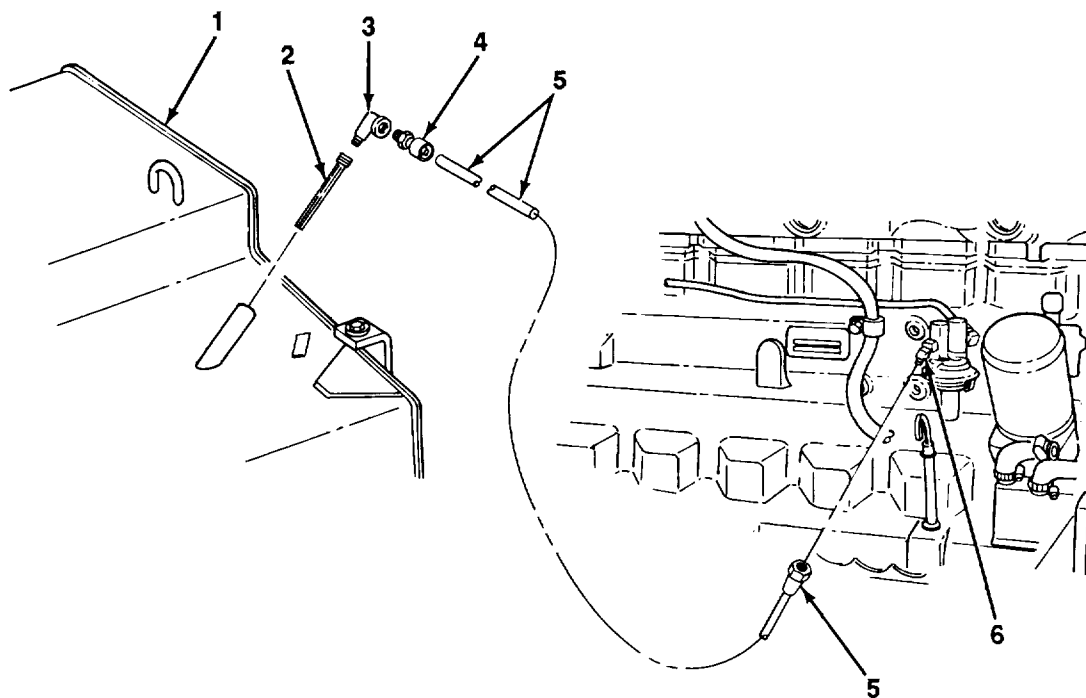
A suitable container should be used to catch any draining fuel. Ensure that all spills are properly cleaned.

a. FUEL TANK-TO-FUEL TRANSFER PUMP FUEL LINE AND FITTINGS REPLACEMENT

1. Remove fuel line (5) from fitting (4) and elbow (6).

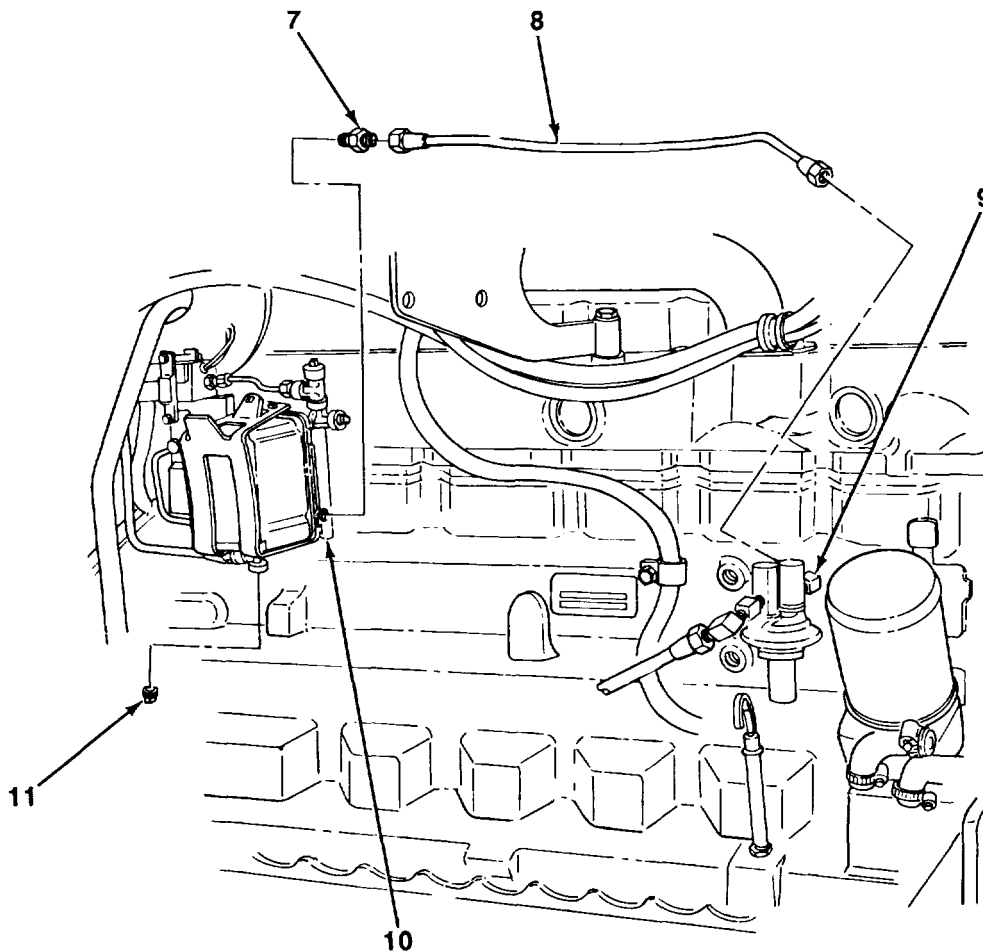
5-15. FUEL LINES AND FITTINGS REPLACEMENT.(Con't).

2. Remove fitting (4), elbow (3), and filter (2) from fuel tank (1). Discard filter if damaged or plugged.
3. Install filter (2), elbow (3), and fitting (4) on fuel tank (1).
4. Install fuel line (5) on elbow (6) and fitting (4).



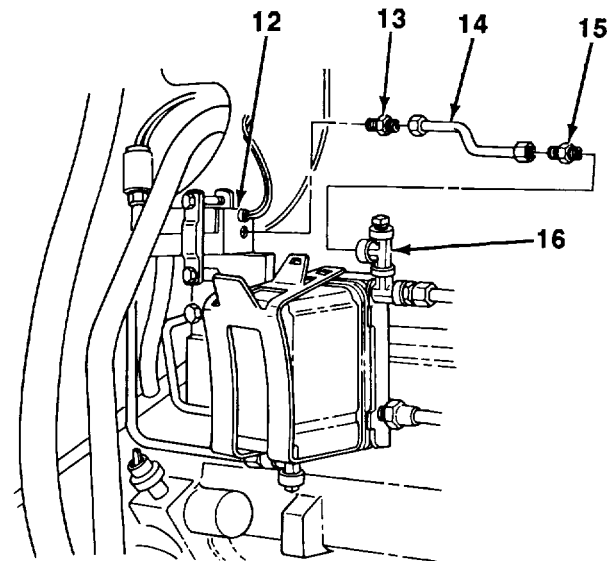
5-15. FUEL LINES AND FITTINGS REPLACEMENT.(Con't).**b. FUEL TRANSFER PUMP-TO-FUEL FILTER HOUSING FUEL LINE AND FITTINGS REPLACEMENT**

1. Remove drain plug (11) from fuel filter housing (10).
2. Remove fuel line (8) from elbow (9) and adapter (7).
3. Remove adapter (7) from fuel filter housing (10).
4. Install adapter (7) on fuel filter housing (10).
5. Install fuel line (8) on adapter (7) and elbow (9).
6. Install drain plug (11) in fuel filter housing (10).

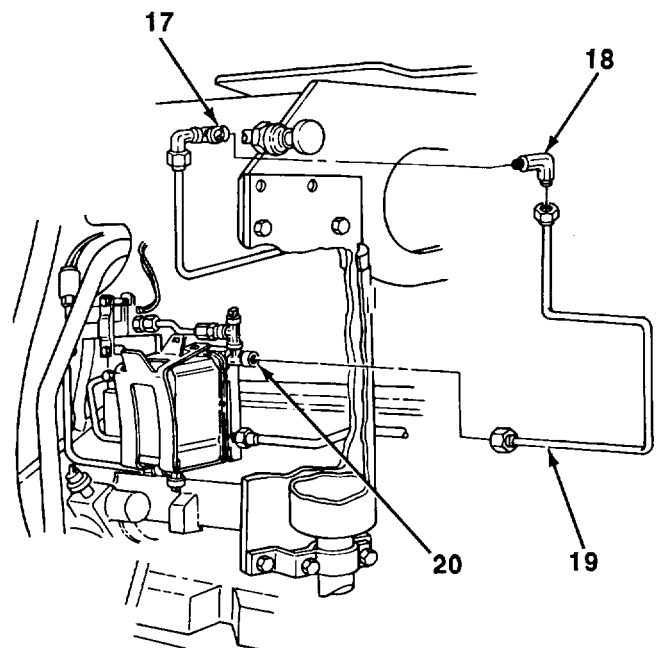


5-15. FUEL LINES AND FITTINGS REPLACEMENT.(Con't).**c. FUEL FILTER HOUSING-TO-FUEL PRESSURE DIFFERENTIAL SWITCH FUEL LINE AND FITTINGS REPLACEMENT**

1. Remove fuel line (14) from adapters (13 and 15).
2. Remove adapter (13) from fuel pressure differential switch (12).
3. Remove adapter (15) from tee (16).
4. Install adapter (15) on tee (16).
5. Install adapter (13) on fuel pressure differential switch (12).
6. Install fuel line (14) on adapters (13 and 15).

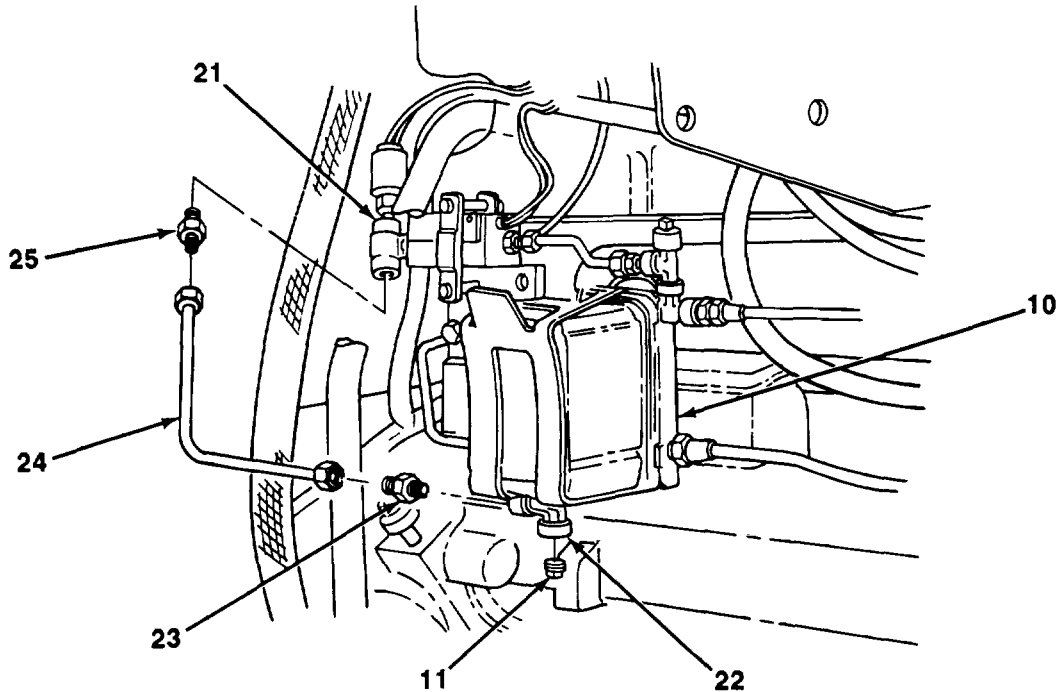
**d. FUEL FILTER HOUSING-TO-FUEL PRIMER PUMP FUEL LINE AND FITTINGS REPLACEMENT**

1. Remove fuel line (19) from elbow (18) and tee (20).
2. Remove elbow (18) from fuel primer pump (17).
3. Install elbow (18) on fuel primer pump (17).
4. Install fuel line (19) on elbow (18) and tee (20).



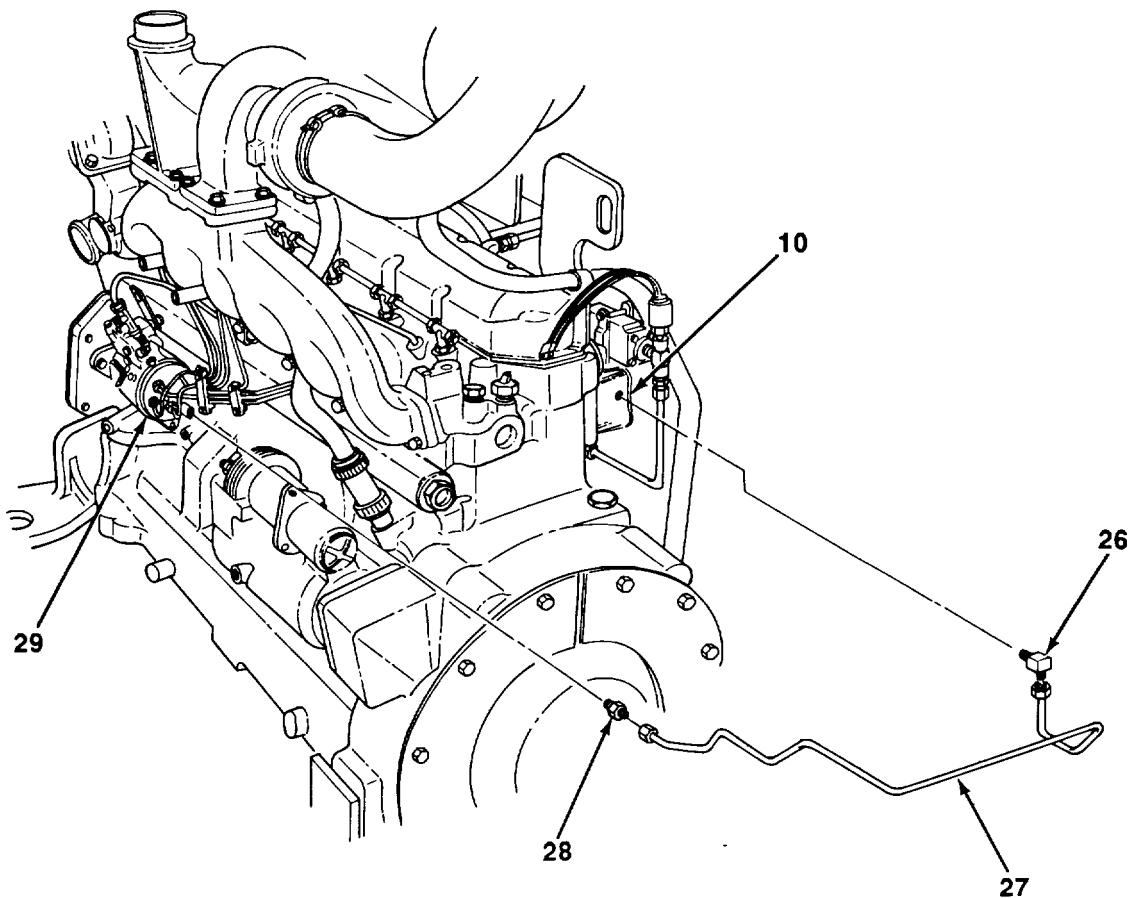
5-15. FUEL LINES AND FITTINGS REPLACEMENT.(Con't).**e. FUEL FILTER HOUSING-TO-FUEL PRESSURE TRANSDUCER FUEL LINE AND FITTINGS REPLACEMENT**

1. Remove drain plug (11) from fuel filter housing (10).
2. Remove fuel line (24) from adapters (23 and 25).
3. Remove adapter (23) from tee (22).
4. Remove adapter (25) from tee (21).
5. Install adapter (25) on tee (21).
6. Install adapter (23) on tee (22).
7. Install fuel line (24) on adapters (23 and 25).
8. Install drain plug (11) in fuel filter housing (10).



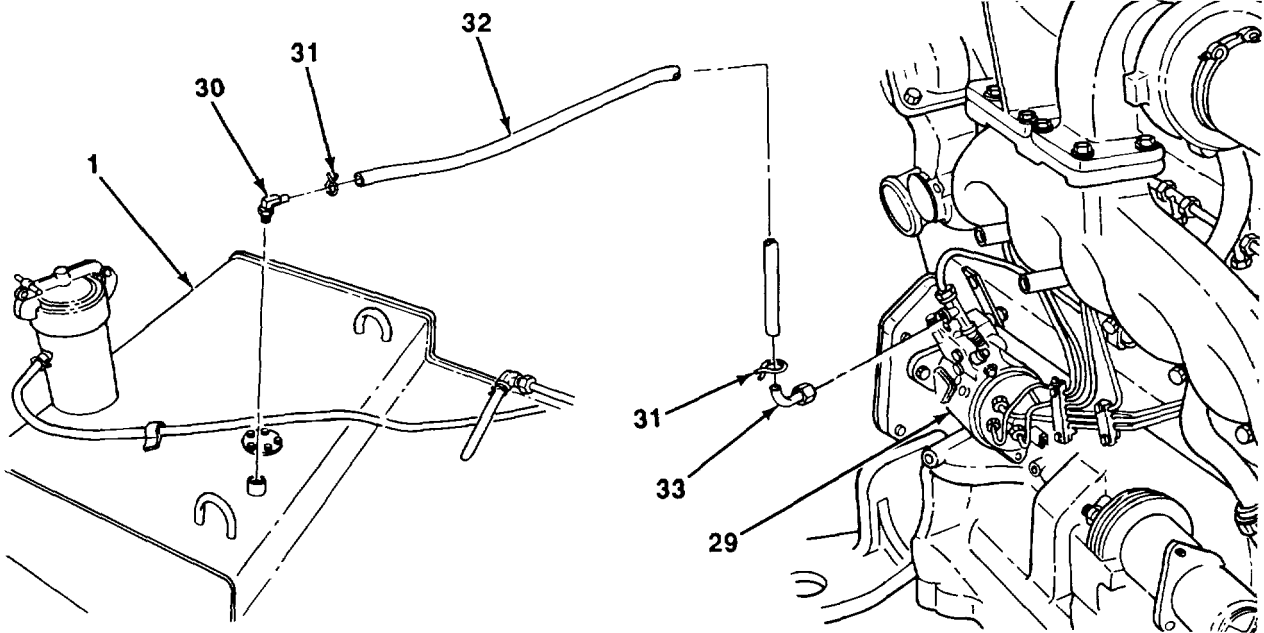
5-15. FUEL LINES AND FITTINGS REPLACEMENT.(Con't).**f. FUEL FILTER HOUSING-TO-FUEL INJECTION PUMP FUEL LINE AND FITTINGS REPLACEMENT**

1. Remove fuel line (27) from elbow (26) and adapter (28).
2. Remove elbow (26) from fuel filter housing (10).
3. Remove adapter (28) from fuel injection pump (29).
4. Install adapter (28) on fuel injection pump (29).
5. Install elbow (26) on fuel filter housing (10).
6. Install fuel line (27) on adapter (28) and elbow (26).



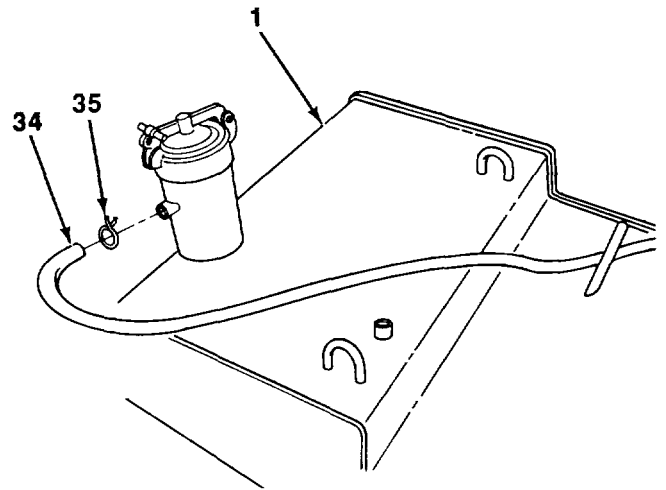
5-15. FUEL LINES AND FITTINGS REPLACEMENT.(Con't).**g. FUEL INJECTION PUMP-TO-FUEL TANK FUEL LINE AND FITTINGS REPLACEMENT**

1. Slide two clamps (31) on fuel line (32) and remove fuel line from elbows (30 and 33).
2. Remove elbow (30) from fuel tank (1).
3. Remove elbow (33) from fuel injection pump (29).
4. Install elbow (33) on fuel injection pump (29).
5. Install elbow (30) on fuel tank (1).
6. Install fuel line (32) on elbows (30 and 33) with two clamps (31).



5-15. FUEL LINES AND FITTINGS REPLACEMENT.(Con't).**h. FUEL TANK VENT LINE REPLACEMENT I**

1. Slide clamp (35) on fuel line (34) and remove fuel line from fuel tank (1).
2. Install fuel line (34) on fuel tank (1) with clamp (35).

**FOLLOW-ON TASKS:**

- Bleed fuel filter and lines (see paragraph 5-16).
- Install left engine lower sideshield (see paragraph 14-16).
- Connect battery cables (see paragraph 6-43).
- Close right and left engine upper sideshields (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

5-16. BLEEDING FUEL FILTER AND LINES.

This task covers: Bleeding

INITIAL SETUP:**Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Rags (Item 27, Appendix C)

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

General Safety Instructions:

- DO NOT perform this procedure near fire, flames, or sparks.
-

WARNING

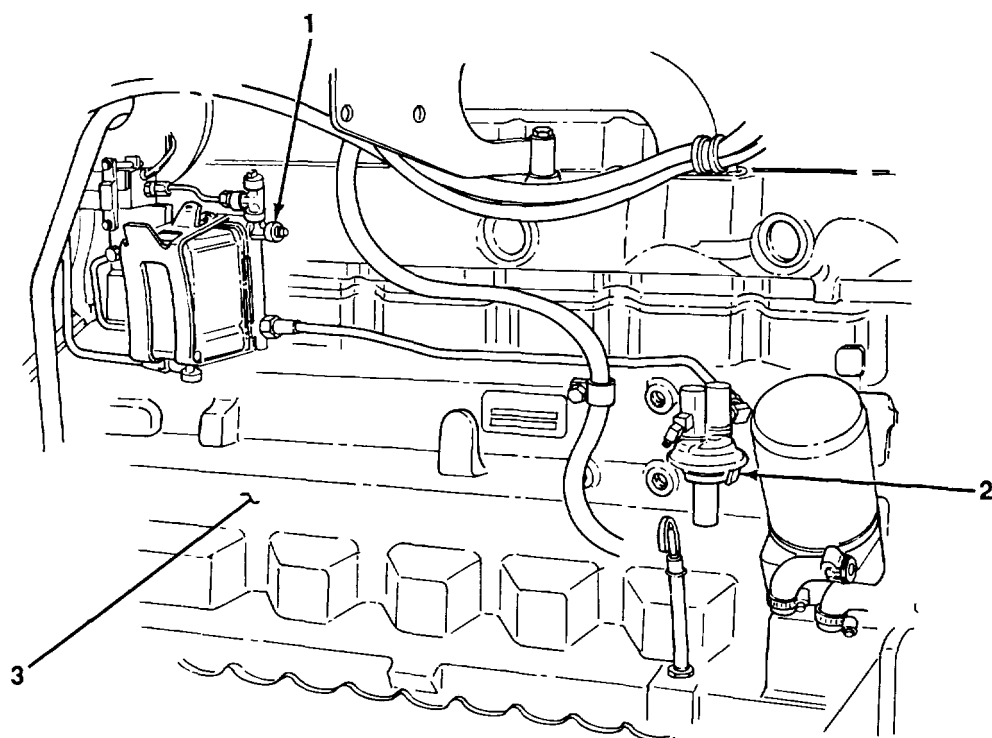
Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel filter. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

NOTE

A suitable container should be used to catch any draining fuel. Ensure that all spills are properly cleaned.

BLEEDING

1. Loosen bleed screw (1).
2. Operate primer lever (2) until fuel flow from bleed screw (1) is free of air bubbles.
3. Tighten bleed screw (1).
4. Push primer lever (2) toward engine (3).

5-16. BLEEDING FUEL FILTER AND LINES.**FOLLOW-ON TASKS:**

- Close left engine upper sideshield (see TM 10-3930-659-10).

5-17. FUEL FILTER REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Rags (Item 27, Appendix C) References
- TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

General Safety Instructions:

- DO NOT perform this procedure near fire, flames, or sparks.
-

WARNING

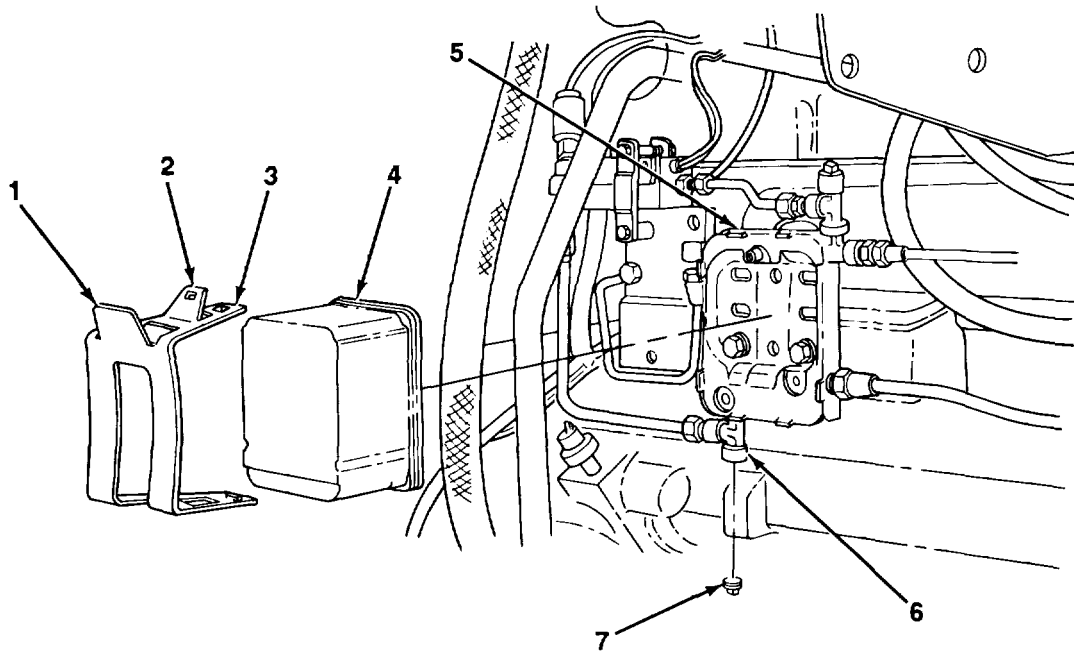
Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel filter. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

NOTE

A suitable container should be used to catch any draining fuel. Ensure that all spills are properly cleaned.

a. REMOVAL

1. Remove drain plug (7) from tee (6).
2. Press tab (1), lift tab (2), and remove spring retainer (3) and fuel filter (4) from fuel filter housing (5).

5-17. FUEL FILTER REPLACEMENT.**b. INSTALLATION**

1. Position fuel filter (4) In spring retainer (3) and Install on fuel filter housing (5).
2. Install drain plug (7) on tee (6).

FOLLOW-ON TASKS:

- Bleed fuel filter and lines (see paragraph 5-16).
- Close left engine upper sideshield (see TM 10-3930-659-10).

5-18. FUEL FILTER HOUSING REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Fuel filter removed (see paragraph 5-17).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Two lockwashers

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

General Safety Instructions:

- DO NOT perform this procedure near fire, flames, or sparks.

WARNING

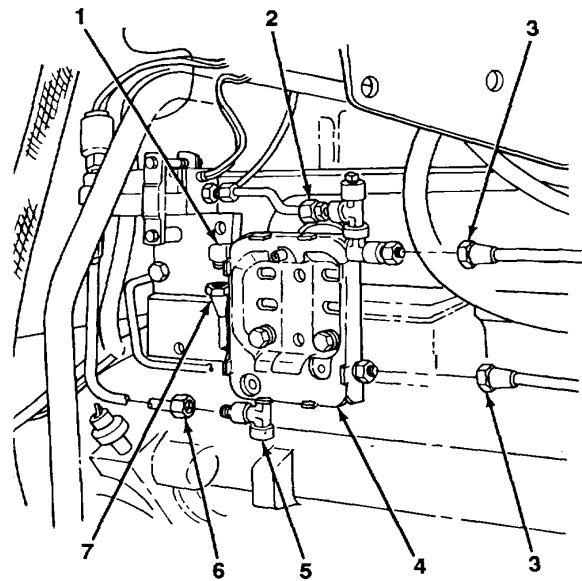
Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel filter housing. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

NOTE

A suitable container should be used to catch any draining fuel. Ensure that all spills are properly cleaned.

a. REMOVAL

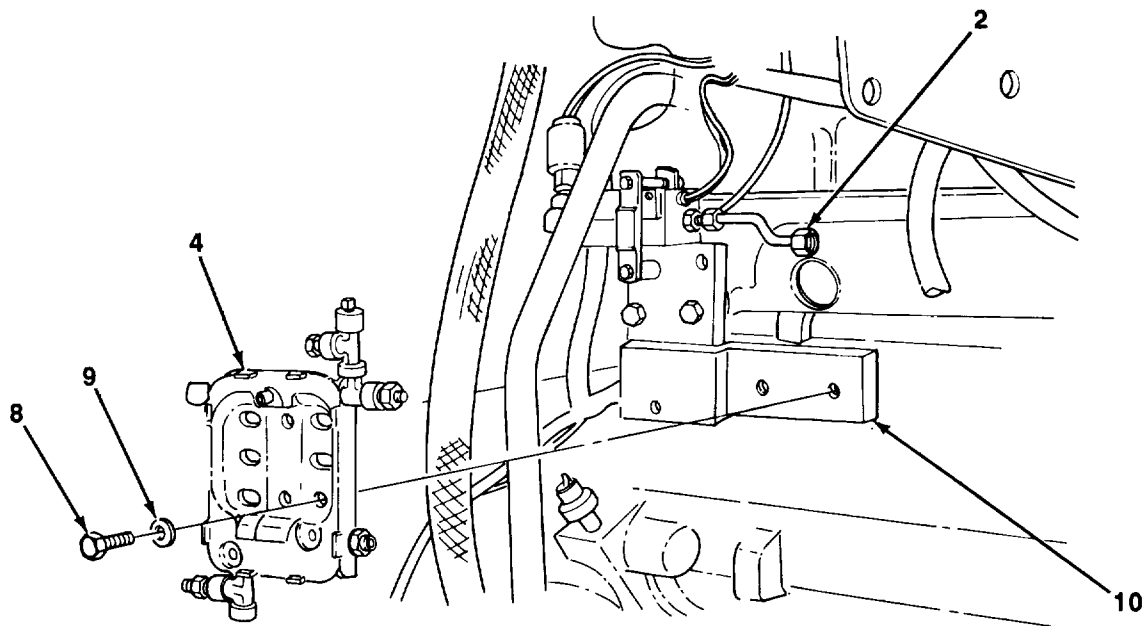
1. Loosen fuel line (2).
2. Remove two fuel lines (3) from fuel filter housing (4).
3. Remove fuel line (6) from tee (5).
4. Remove fuel line (7) from elbow (1).



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5-18. FUEL FILTER HOUSING REPLACEMENT (Con't).

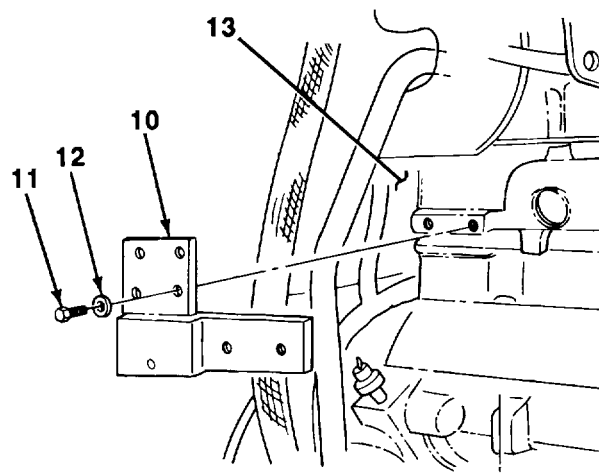
5. Remove two screws (8), washers (9), and fuel filter housing (4) from bracket (10).



NOTE

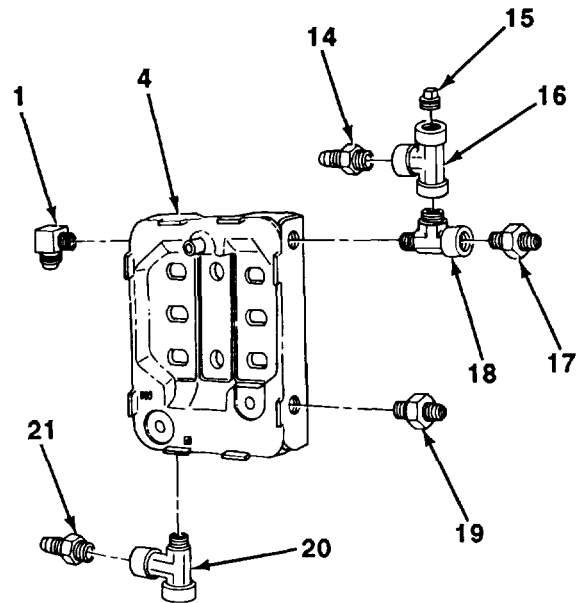
Perform steps 6 and 7 only if bracket is damaged.

6. Remove fuel pressure differential switch (see paragraph 5-13).
7. Remove two screws (11), lockwashers (12), and bracket (10) from engine (13). Discard lockwashers.



5-18. FUEL FILTER HOUSING REPLACEMENT (Con't).

8. Remove elbow (1) from fuel filter housing (4).
9. Remove adapter (21) and tee (20) from fuel filter housing (4).
10. Remove adapter (19) from fuel filter housing (4).
11. Remove adapter (14) and plug (15) from tee (16).
12. Remove tee (16) and adapter (17) from tee (18).
13. Remove tee (18) from fuel filter housing (4).



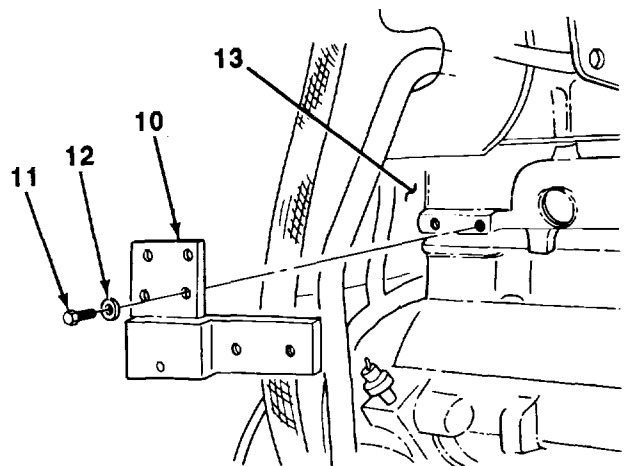
b. INSTALLATION

1. Install tee (18) on fuel filter housing (4).
2. Install adapter (17) and tee (16) on tee (18).
3. Install plug (15) and adapter (14) on tee (16).
4. Install adapter (19) on fuel filter housing (4).
5. Install tee (20) and adapter (21) on fuel filter housing (4).
6. Install elbow (1) on fuel filter housing (4).

NOTE

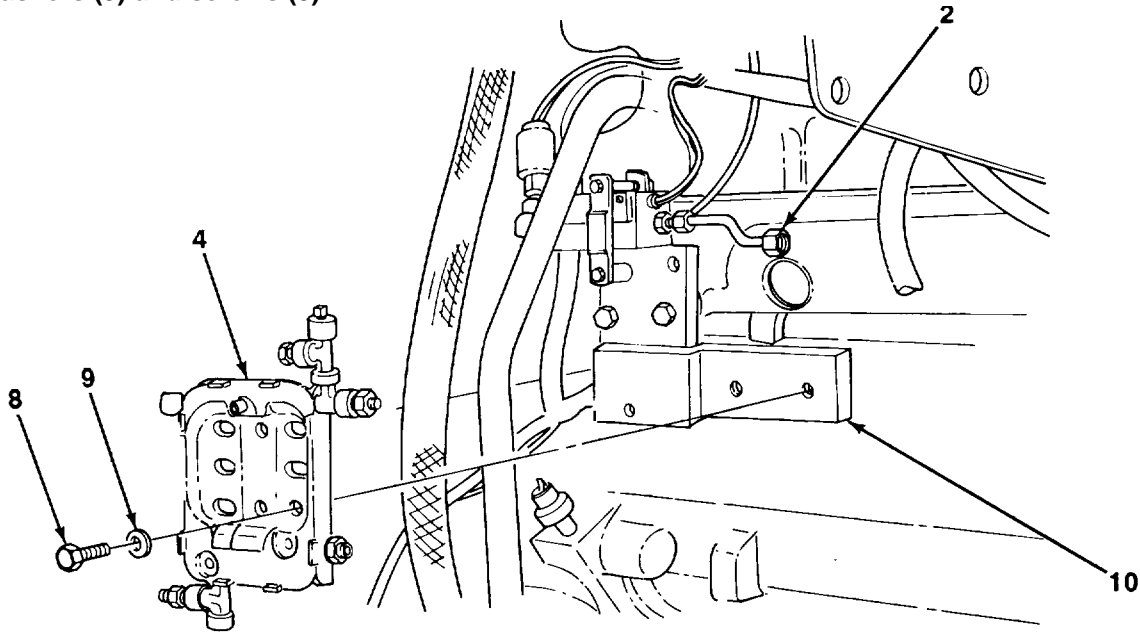
Perform steps 7 and 8 only if bracket was removed.

7. Install bracket (10) on engine (13) with two new lockwashers (12) and screws (11).
8. Install fuel pressure differential switch (see para- graph 5-13).

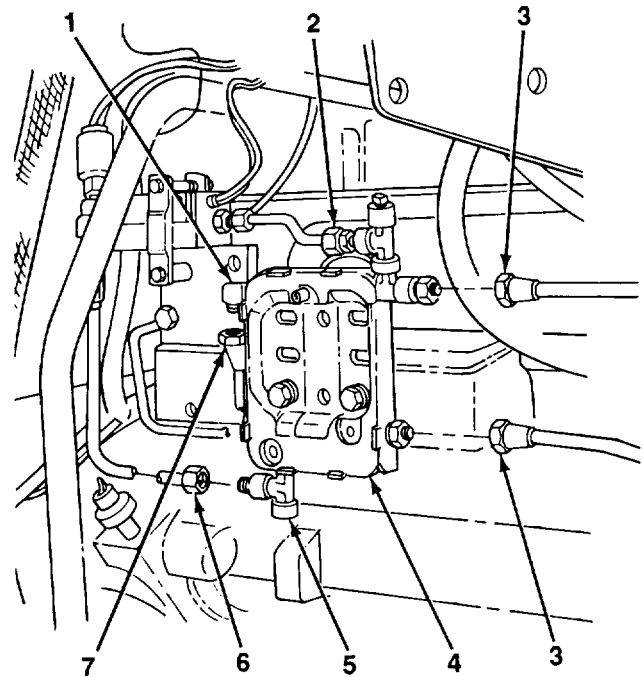


5-18. FUEL FILTER HOUSING REPLACEMENT (Con't).

9. Position fuel line (2) on fuel filter housing (4) and install fuel filter housing on bracket (10) with two washers (9) and screws (8).



10. Install fuel line (7) on elbow (1).
 11. Install fuel line (6) on tee (5).
 12. Install two fuel lines (3) on fuel filter housing (4).
 13. Tighten fuel line (2).



FOLLOW-ON TASKS:

- Install fuel filter (see paragraph 5-17)

5-19. ENGINE STARTING AID VALVE REPLACEMENT.

This task covers:**a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Engine starting aid line removed (see paragraph 5-21).
- Engine starting aid cylinder removed (see paragraph 5-20).

Materials/Parts:

- Two lockwashers

References:

- TM 10-3930-659-10

General Safety Instructions:

- DO NOT perform this procedure near fire, flames, or sparks. Use only in a well-ventilated area.

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

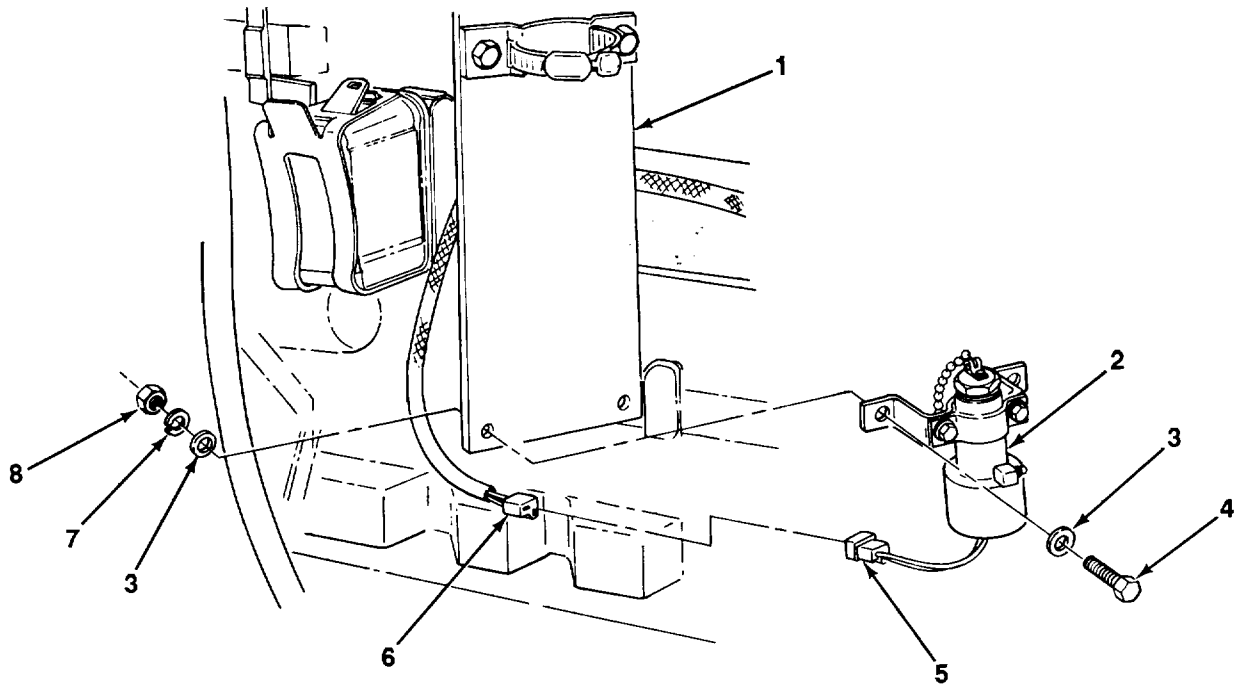
WARNING

Starting fluid is toxic and highly flammable. Container is pressurized to act as an expellant. DO NOT heat container and DO NOT discharge starting fluid in confined areas or near an open flame. Failure to follow this procedure may result in serious injury to personnel.

a. REMOVAL

1. **Disconnect valve connector (5) from harness connector (6).**
2. **Remove two nuts (8), lockwashers (7), screws (4), four washers (3), and engine starting aid valve (2) from engine starting aid bracket (1). Discard lockwashers.**

5-19. ENGINE STARTING AID VALVE REPLACEMENT (Con't).



b. INSTALLATION

1. Install engine starting aid valve (2) on engine starting aid bracket (1) with four washers (3), two screws (4), new lockwashers (7), and nuts (8).
2. Connect valve connector (5) to harness connector (6).

FOLLOW-ON TASKS:

- Install engine starting aid cylinder (see paragraph 5-20).
- Install engine starting aid line (see paragraph 5-21).

5-20. ENGINE STARTING AID CYLINDER REPLACEMENT.

This task covers:**a. Removal****b. Installation**

INITIAL SETUP:**Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).
- Left engine lower sideshield removed (see paragraph 14-16).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

General Safety Instructions:

- DO NOT perform this procedure near fire, flames, or sparks. Use only in a well-ventilated area.
-

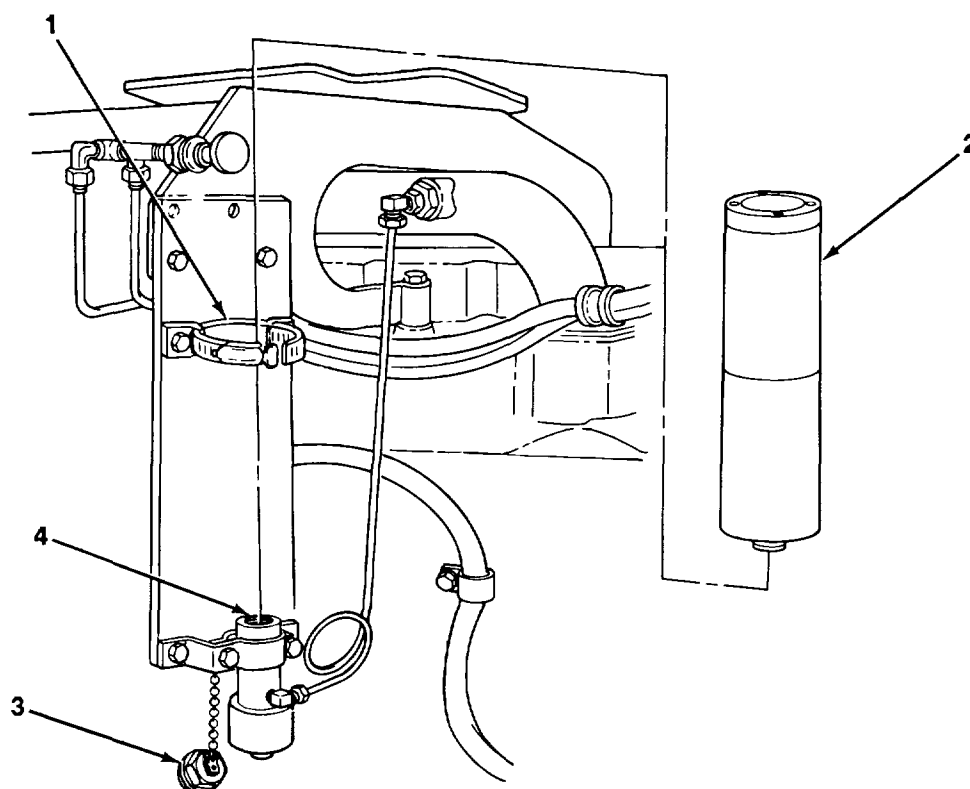
WARNING

Starting fluid is toxic and highly flammable. Container is pressurized to act as an expellant. DO NOT heat container and DO NOT discharge starting fluid in confined areas or near an open flame. Failure to follow this procedure may result in serious injury to personnel.

a. REMOVAL

1. Loosen clamp (1) and remove engine starting aid cylinder (2) from engine starting aid valve (4) and clamp.
2. Install cap (3) on engine starting aid valve (4).

5-20. ENGINE STARTING AID CYLINDER REPLACEMENT (Con't).

**b. INSTALLATION**

1. Remove cap (3) from engine starting aid valve (4).
2. Position engine starting aid cylinder (2) in clamp (1).
3. Install engine starting aid cylinder (2) on engine starting aid valve (4).
4. Tighten clamp (1).

FOLLOW-ON TASKS:

- Install left engine lower sideshield (see paragraph 14-16).
- Close left engine upper sideshield (see TM 10-3930-659-10).

5-21. ENGINE STARTING AID LINE REPLACEMENT.

This task covers:**a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).
- Left engine lower sideshield removed (see paragraph 14-16).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

General Safety Instructions:

- DO NOT perform this procedure near fire, flames, or sparks. Use only in a well-ventilated area.

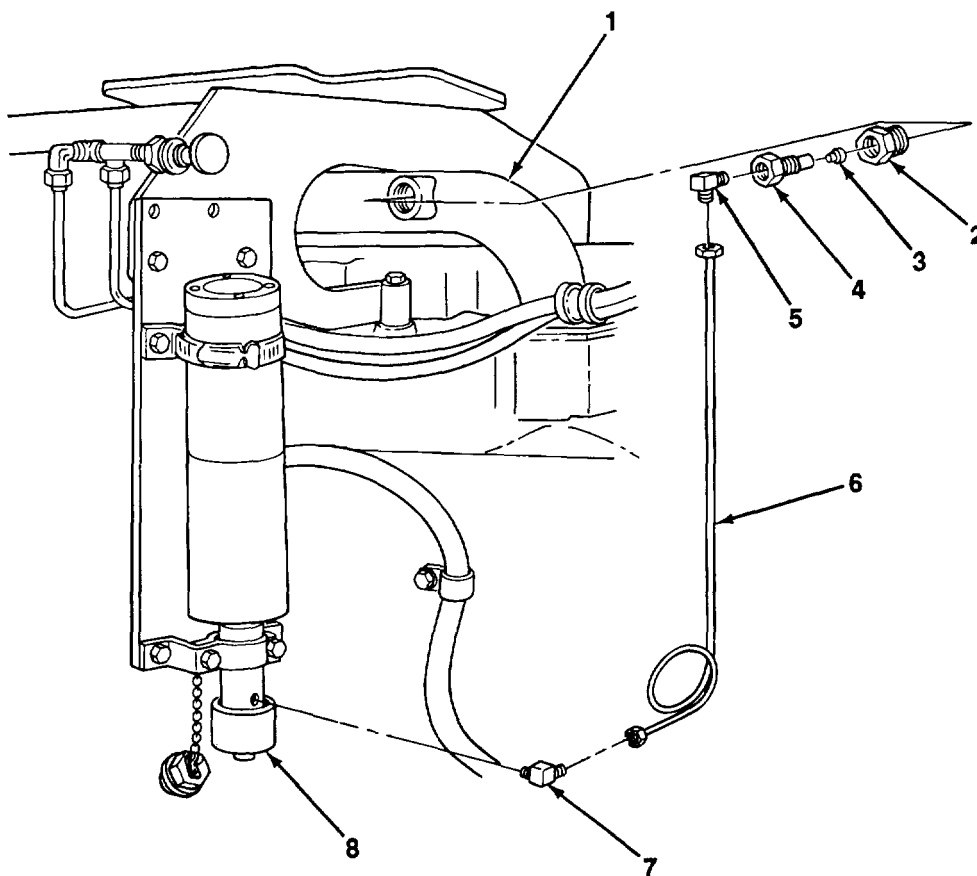
WARNING

Starting fluid is toxic and highly flammable. Container is pressurized to act as an expellant. DO NOT heat container and DO NOT discharge starting fluid in confined areas or near an open flame. Failure to follow this procedure may result in serious injury to personnel.

a. REMOVAL

- 1. Remove engine starting aid line (6) from two elbows (5 and 7).**
- 2. If damaged, remove elbow (7) from engine starting aid valve (8).**
- 3. If either nozzle (3 or 4) is damaged, remove elbow (5), nozzles (3 and 4), and reducer (2) from air intake tube (1).**

5-21. ENGINE STARTING AID LINE REPLACEMENT.



1. If removed, install reducer (2), nozzles (3 and 4), and elbow (5) on air Intake tube (1).
2. If removed, install elbow (7) on engine starting aid valve (8).
3. Install engine starting aid line (6) on two elbows (5 and 7).

FOLLOW-ON TASKS:

- Install left engine lower sideshield (see paragraph 14-16).
- Close left engine upper sideshield (see TM 10-3930-659-10).

5-22. ENGINE STARTING AID BRACKET REPLACEMENT.

Equipment Conditions:

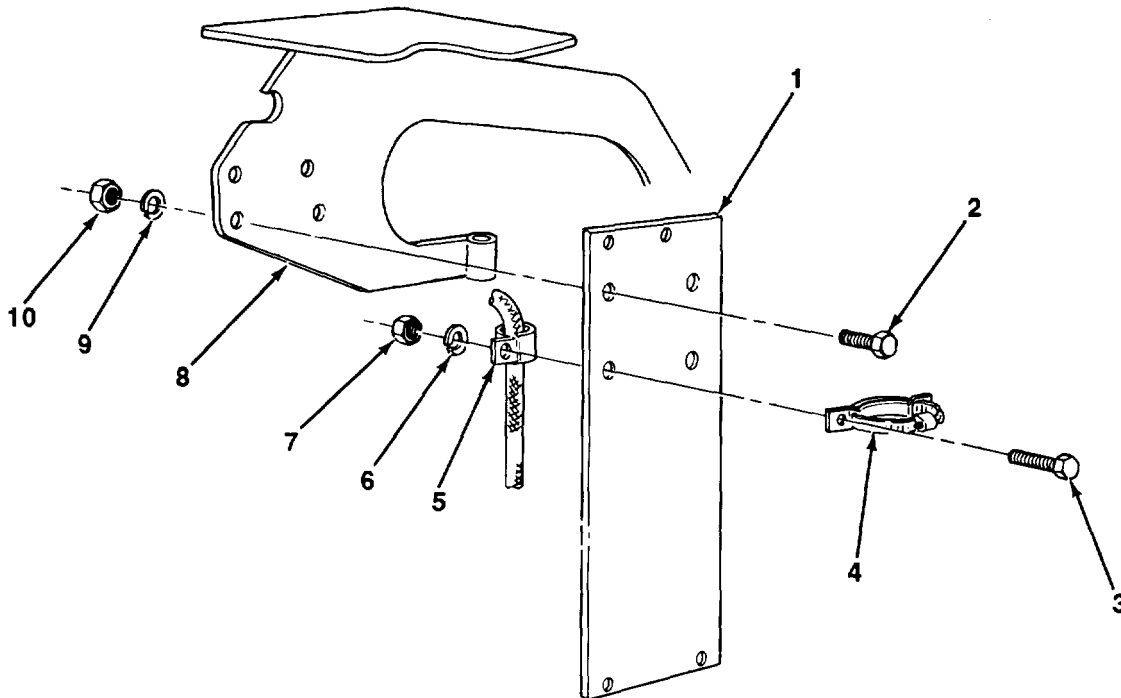
- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Engine starting aid line removed (see paragraph 5-21).
- Engine starting aid cylinder removed (see paragraph 5-20).
- Engine starting aid valve removed (see paragraph 5-19).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- **References:**
- TM 10-3930-659-10

a. REMOVAL

1. Remove two nuts (7), washers (6), clamp (5), two bolts (3), and clamp (4) from engine starting aid bracket (1).
2. Remove two nuts (10), washers (9), bolts (2), and engine starting aid bracket (1) from bracket (8).



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5-22. ENGINE STARTING AID BRACKET REPLACEMENT (Con't).

b. INSTALLATION

- 1. Install engine starting aid bracket (1) on bracket (8) with two bolts (2), washers (9), and nuts (10).**
- 2. Install clamp (4) and clamp (5) on engine starting aid bracket (1) with two screws (3), washers (6), and nuts (7).**

FOLLOW-ON TASKS:

- **Install engine starting aid valve (see paragraph 5-19).**
- **Install engine starting aid cylinder (see paragraph 5-20).**
- **Install engine starting aid line (see paragraph 5-21).**

5-23. ACCELERATOR CABLE REPLACEMENT.

This task covers:**a. Removal****b. Installation**

INITIAL SETUP:**Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see 3930-659-10).
- Right side and front cab skirts removed (see paragraph 14-6).

Materials/Parts:

- Two special shaped spacers

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-M 10-3930-659-10
-

a. REMOVAL

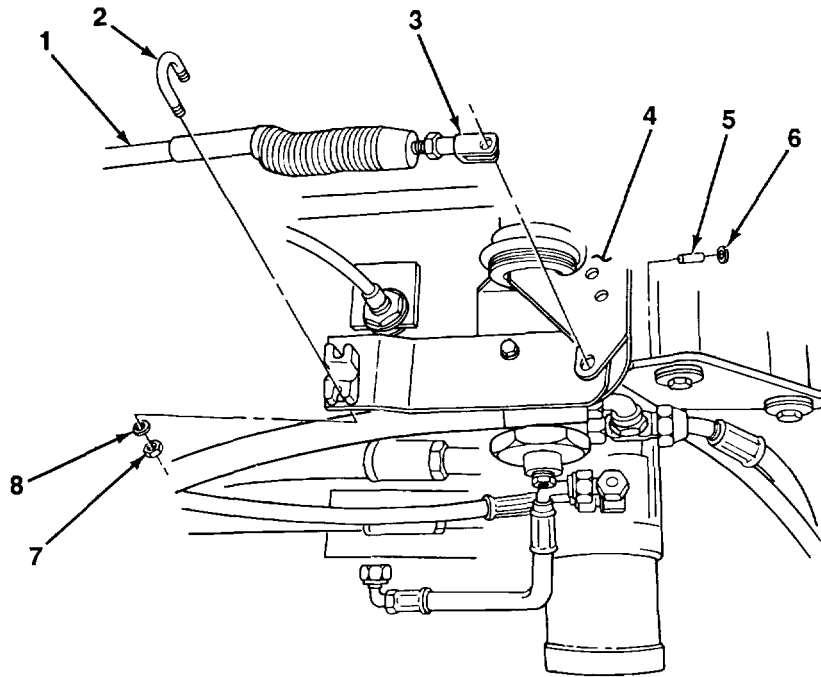
1. **Remove retainer (6), pin (5), and clevis (3) from bracket (4).**

NOTE

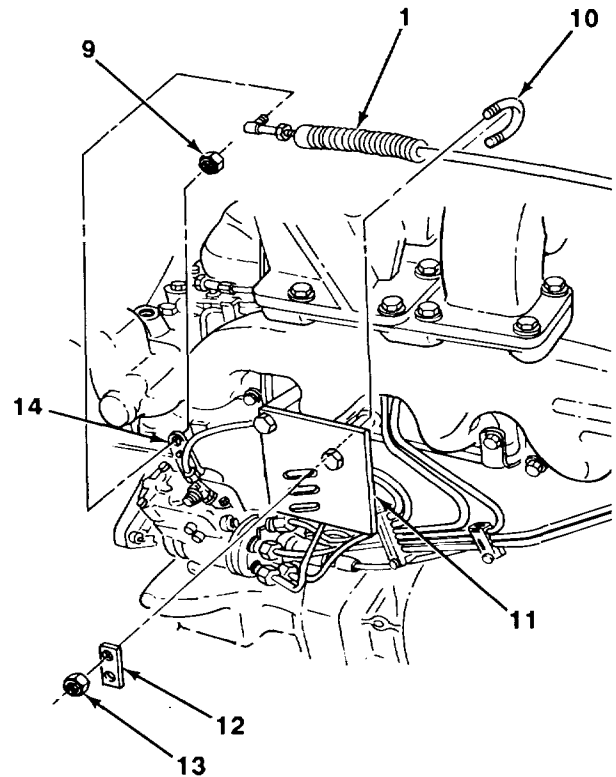
Note position of accelerator cable to aid during Installation.

2. **Remove two locknuts (7), washers (8), U-bolt (2), and accelerator cable (1) from bracket (4). Discard locknuts, washers, and U-bolt.**

5-23. ACCELERATOR CABLE REPLACEMENT.



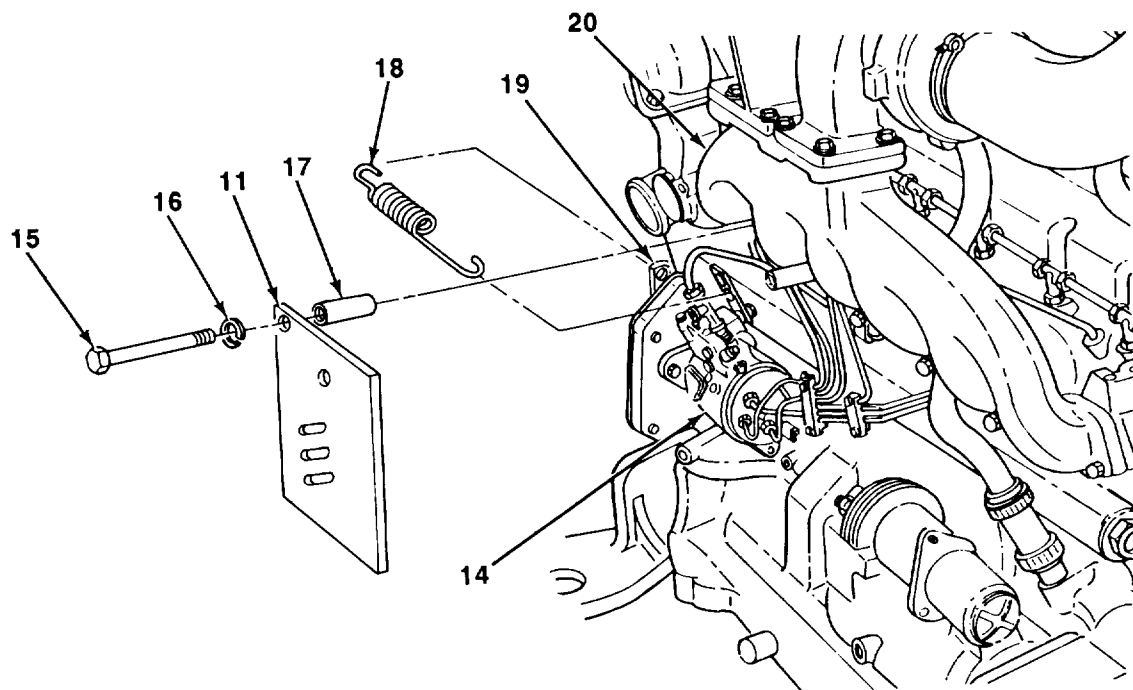
3. Remove two locknuts (13), U-bolt (10), bracket (12), and accelerator cable (1) from bracket (11). Discard locknuts, bracket (12), and U-bolt.
4. Remove nut (9) and accelerator cable (1) from fuel injection pump (14).
5. Remove accelerator cable (1) from forklift truck.



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5-23. ACCELERATOR CABLE REPLACEMENT.

6. Remove two bolts (15), washers (16), bracket (11), and two spacers (17) from exhaust manifold (20).
7. If damaged, remove spring (18) from fuel injection pump (14) and bracket (19).

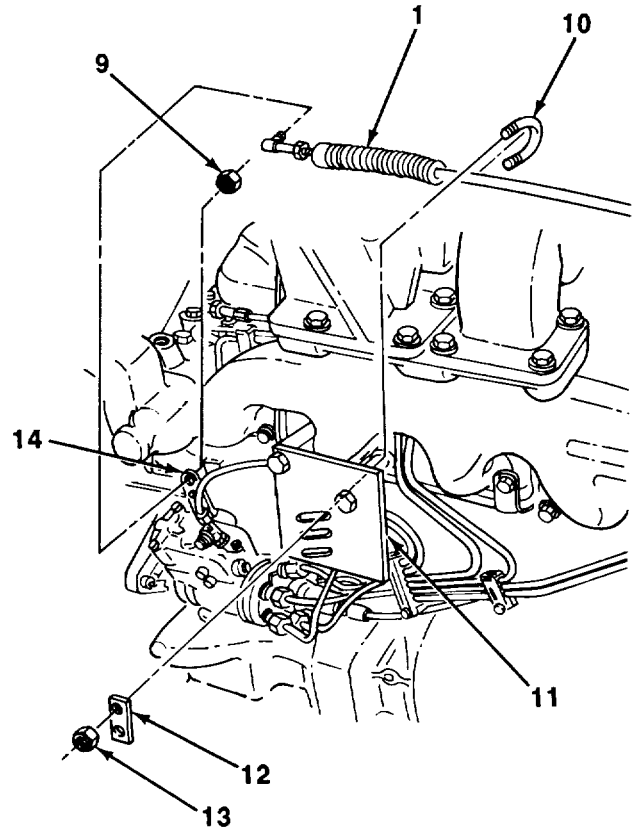


b. INSTALLATION

1. If removed, install spring (18) on bracket (19) and fuel injection pump (14).
2. Install two spacers (17) and bracket (11) on exhaust manifold (20) with two washers (16) and bolts (15). Torque bolts to 35 lb.-ft. (47 N-m).

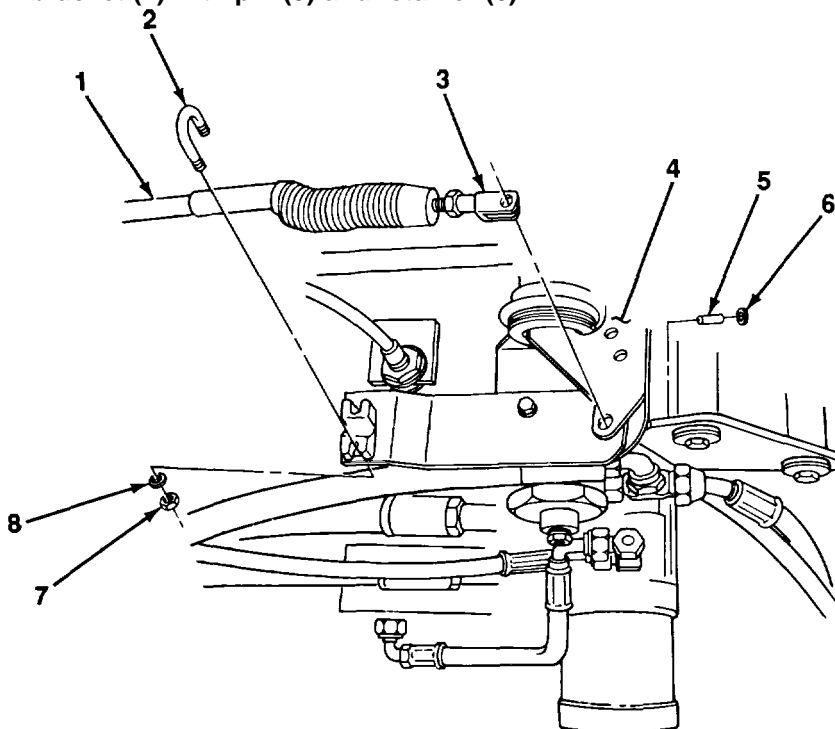
5-23. ACCELERATOR CABLE REPLACEMENT.

3. Position accelerator cable (1) on forklift truck.
4. Install accelerator cable (1) on fuel injection pump (14) with nut (9).
5. Install new bracket (12) and accelerator cable (1) on bracket (11) with new U-bolt (10) and two new locknuts (13).



5-23. ACCELERATOR CABLE REPLACEMENT.

6. Install accelerator cable (1) on bracket (4) with new U-bolt (2), two new washers (8), and new locknuts (7).
7. Install clevis (3) on bracket (4) with pin (5) and retainer (6).



FOLLOW-ON TASKS:

- Adjust engine idle speed (see paragraph 5-25).
- Install right side and front cab skirts (see paragraph 14-6).
- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).
- Remove frame locking bar (see TM 10-3930-659-10).

5-24. ACCELERATOR PEDAL REPLACEMENT.

This task covers:**a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Right side and front cab skirts removed (see paragraph 14-6).

Materials/Parts:

- One special shaped spacer

References:

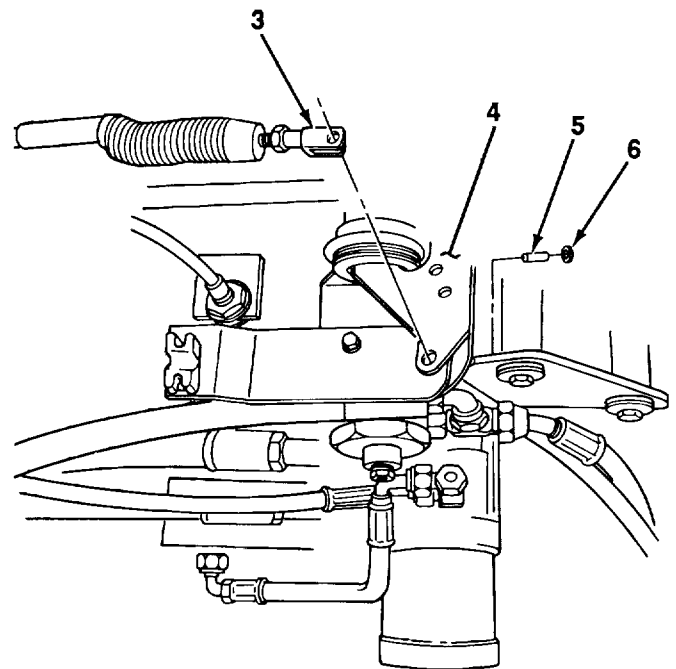
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

1. Remove retainer (6), pin (5), and clevis (3) from bracket (4).

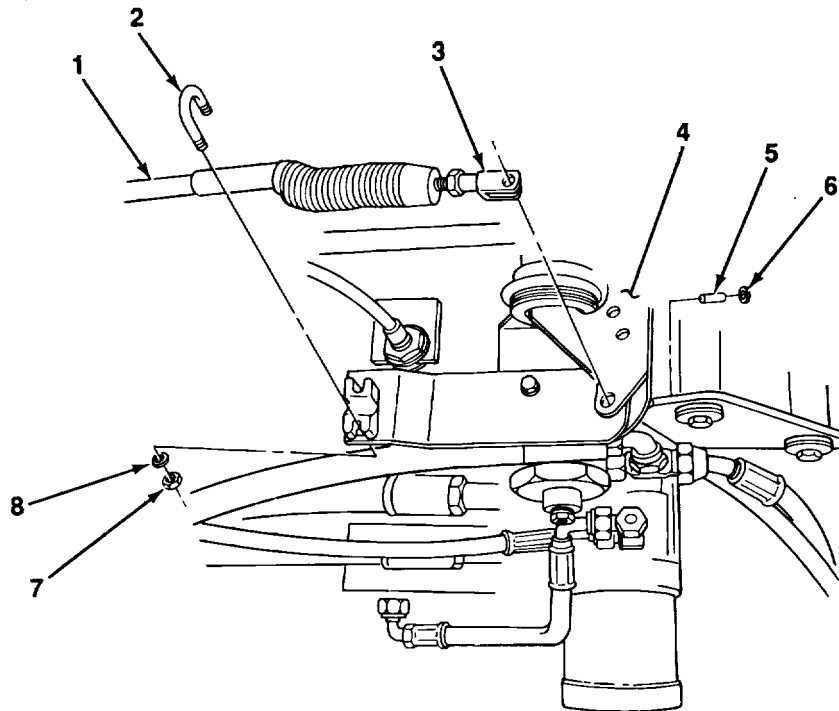


5-24. ACCELERATOR PEDAL REPLACEMENT.

NOTE

Note position of accelerator cable to aid during Installation.

2. Remove two locknuts (7), washers (8), U-bolt (2), and accelerator cable (1) from bracket (4). Discard locknuts, washers, and U-bolt.

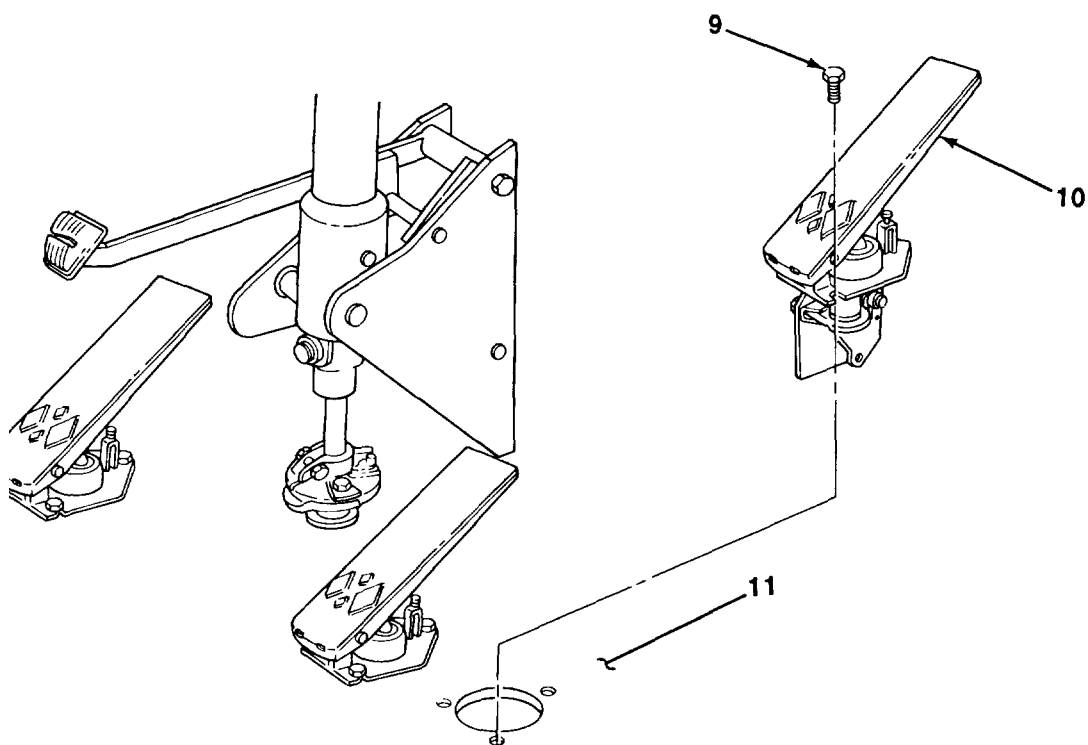


3. Remove three bolts (9) and accelerator pedal (10) from cab floor (11).

b. INSTALLATION

1. Install accelerator pedal (10) on cab floor (11) with three bolts (9).

5-24. ACCELERATOR PEDAL REPLACEMENT.



2. Install accelerator cable (1) on bracket (4) with new U-bolt (2), two new washers (8), and new locknuts (7).
3. Install clevis (3) on bracket (4) with pin (5) and retainer (6).

FOLLOW-ON TASKS:

- Adjust engine idle speed (see paragraph 5-25).
- Install right side and front cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

5-25. ENGINE IDLE SPEED AND SPEED CONTROL LINKAGE ADJUSTMENTS.

This task covers:**a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10 3930- 659-10).
- Tools/Test Equipment:
 - General mechanic's tool kit (Item 44, Appendix F)
 - STE/ICE (Item 35, Appendix F)

Materials/Parts:

- Seal (Item 28, Appendix C)

References:

- Personnel Required: Two
- TM 10-3930-659-10

a. ENGINE IDLE SPEED ADJUSTMENT

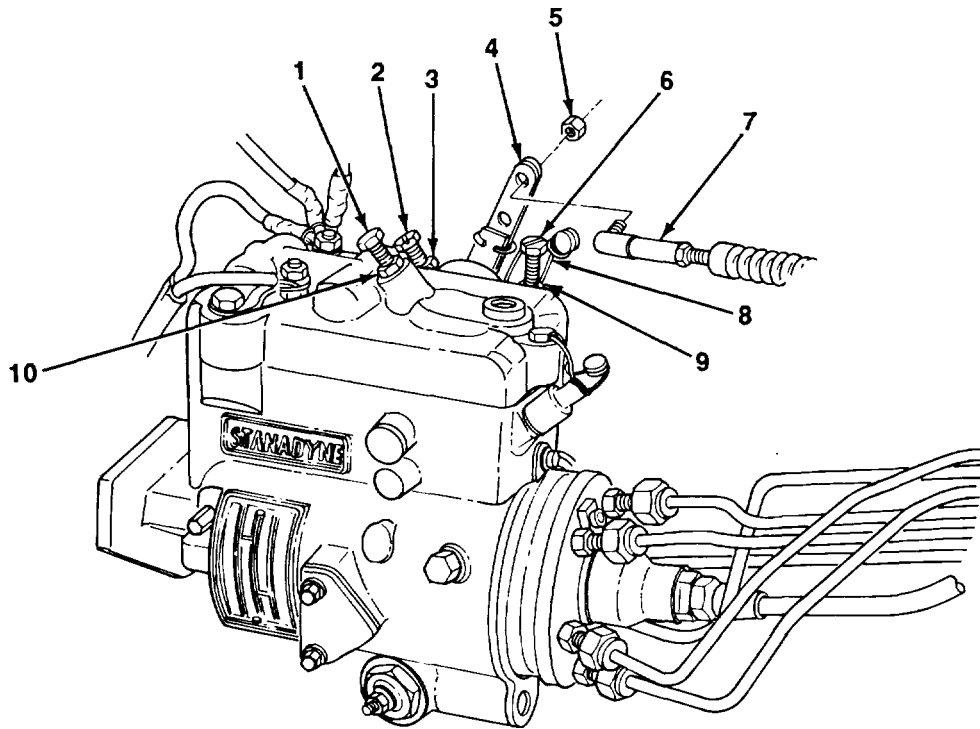
1. **Connect STE/ICE equipment (see paragraph 4-4).**
2. **Remove nut (5) and accelerator cable (7) from fuel Injection pump lever (4).**
3. **Start engine and run at engine idle speed (see TM 10-3930-659-10).**
4. **Hold fuel Injection pump lever (4) toward radiator and read STE/ICE digital display. Engine idle speed should be 775-825 rpm ("slow idle speed").**

NOTE

Perform steps 5 through 8 only if slow Idle speed is not within specification.

5. **Loosen locknut (3) and turn screw (2) counterclockwise one or two turns. Tighten locknut.**
6. **Loosen locknut (10) and turn screw (1) until slow idle speed is within specification.**
7. **Loosen locknut (3) and turn screw (2) until engine idle speed begins to increase, then turn screw counterclockwise one full turn. Tighten locknut.**
8. **Tighten locknut (10).**
9. **Hold fuel Injection pump lever (4) away from radiator and read STE/ICE digital display. Engine idle speed should be 2350-2400 rpm ("fast idle speed").**

5-25. ENGINE IDLE SPEED AND SPEED CONTROL LINKAGE ADJUSTMENTS (Con't).



NOTE

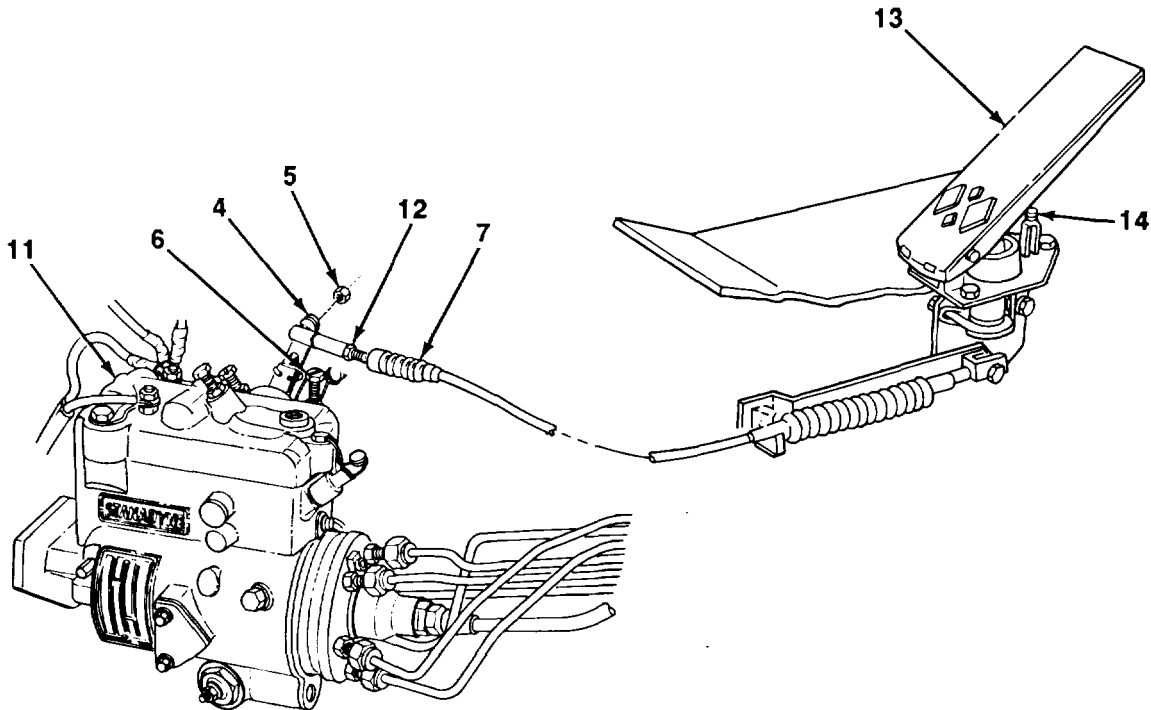
Perform steps 10 through 12 only if fast idle speed is not within specification.

10. Remove seal (8) from high idle stopscrew (6). Discard seal.
11. Loosen locknut (9) and turn high idle stopscrew (6) counterclockwise to increase rpm or clockwise to decrease rpm. Tighten locknut.
12. Install new seal (8) on high idle stopscrew (6).
13. Install accelerator cable (7) on fuel injection pump lever (4) with nut (5).

5-25. ENGINE IDLE SPEED AND SPEED CONTROL LINKAGE ADJUSTMENTS (Con't).

b. SPEED CONTROL LINKAGE ADJUSTMENT

1. With accelerator pedal (13) at idle position, remove nut (5) and accelerator cable (7) from fuel injection pump lever (4).
2. Adjust accelerator cable (7) by turning nut (12) until fuel injection pump lever (4) has movement of 0.08-0.16 in. (2.03-4.06 mm) at idle position.
3. Install accelerator cable (7) on fuel injection pump lever (4) with nut (5).
4. Apply accelerator pedal (13) until fuel injection pump lever (4) contacts high idle stopscrew (6) on fuel injection
5. Hold accelerator pedal (13) in high idle position and adjust accelerator pedal stopscrew (14) until it contacts accelerator pedal. Release accelerator pedal.
6. Lower accelerator pedal stopscrew (14) until a movement of 0.09-0.16 in. (2.29-4.06 mm) is obtained at fuel injection pump (11).



- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

5-26. FUEL INJECTION PUMP STATIC TIMING ADJUSTMENT.

This task covers: Adjustment

INITIAL SETUP:**Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right and left engine upper sideshields opened (see TM 10-3930-659-10).

Materials/Parts:

- One gasket

Personnel Required: Two

References:

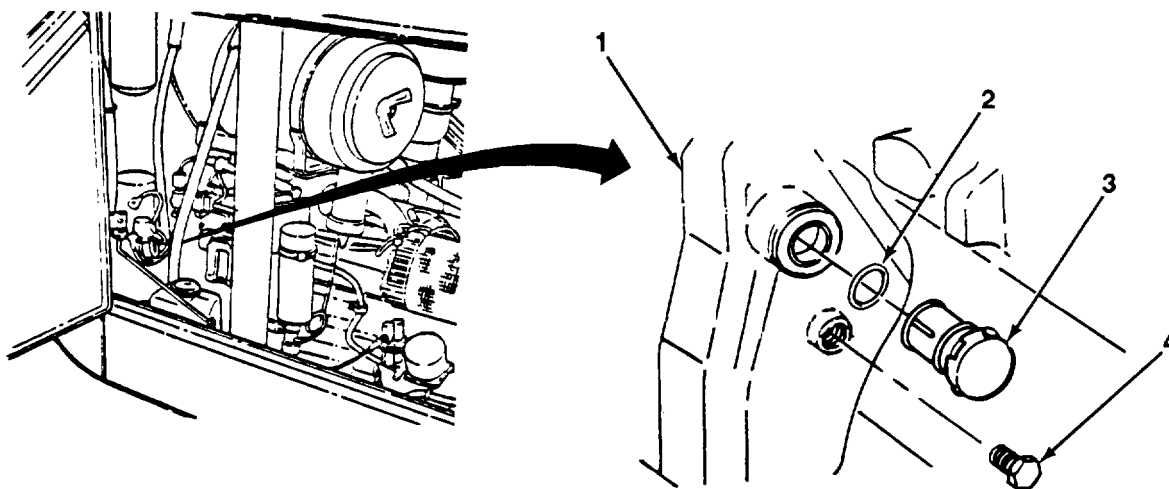
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Flywheel turning tool (Item 16, Appendix F)
- Timing pin (Item 42, Appendix F)
- Torque wrench, 0-175 lb.-ft. (Item 52, Appendix F)

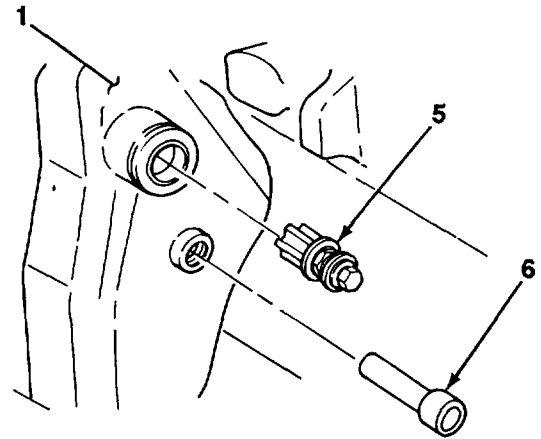
ADJUSTMENT

1. Remove plugs (3 and 4) from engine (1).
2. If damaged, remove performed packing (2) from plug (3). Discard performed packing.

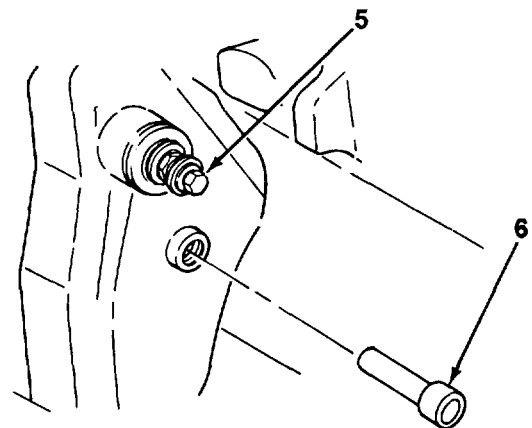


5-26. FUEL INJECTION PUMP STATIC TIMING ADJUSTMENT. (Con't).

3. Install flywheel turning tool (5) on engine (1).
4. Turn flywheel turning tool (5) clockwise until timing pin (6) can be installed on engine (1) and engages flywheel.

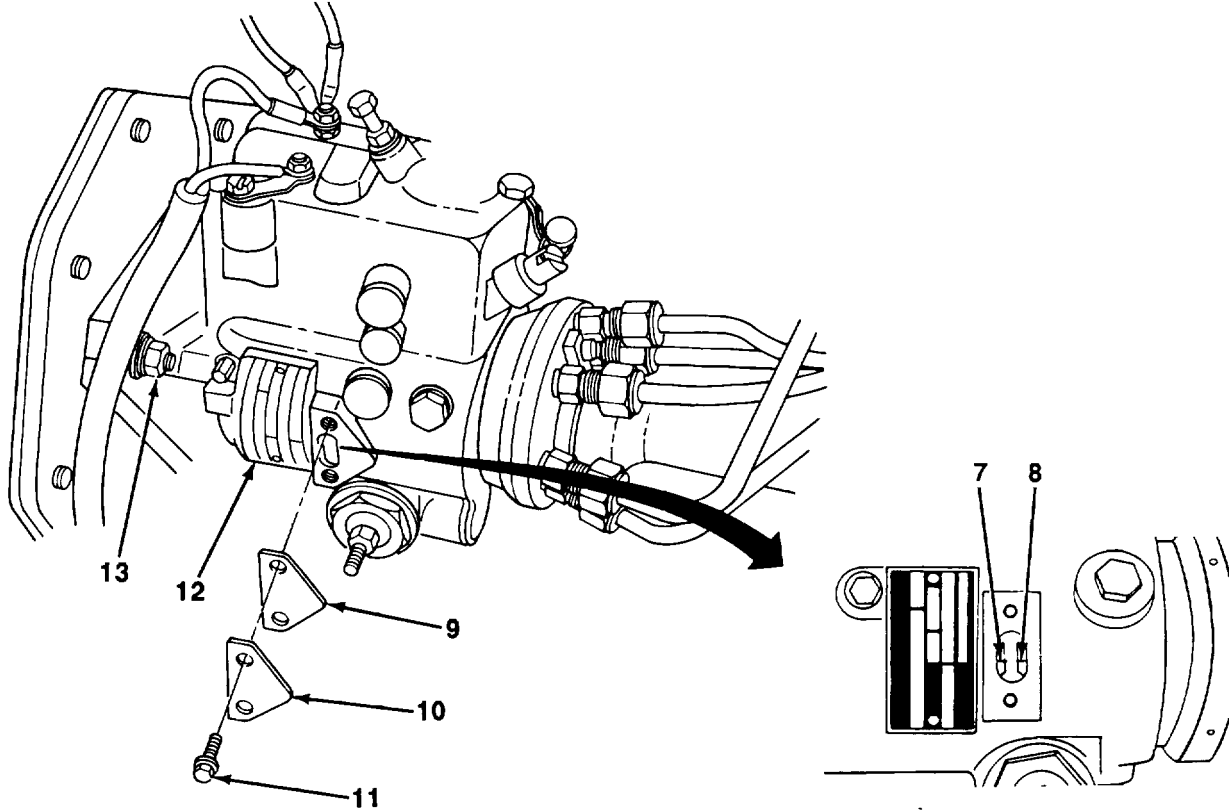


5. Remove two screws (11), cover (10), and gasket (9) from fuel injection pump (12). Discard gasket.
 - (a) If timing mark (7) is visible, No.1 piston is at top dead center TDC) on the compression stroke. Skip step 7 and perform step 8.
 - (b) If timing mark (7) is not visible, perform step
6. Note timing marks (7 and 8).
- (b) If timing mark (7) is not visible, perform step
7. Remove timing pin (6) and, using flywheel turning tool (5), rotate flywheel one complete turn to place No. 1 piston at TDC. Install timing pin.



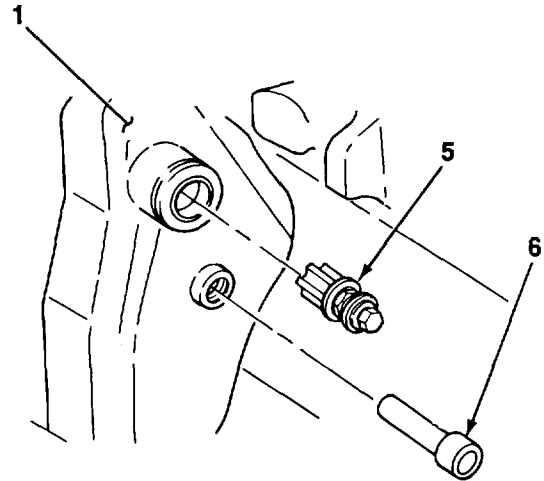
5-26. FUEL INJECTION PUMP STATIC TIMING ADJUSTMENT. (Con't).

8. Check that timing mark (7) is alined with timing mark (8). If timing marks are not alined, loosen three nuts (13) and rotate fuel injection pump (12) until timing marks are alined. Torque nuts to 20 lb.-ft. (27 N-m).
9. Install new gasket (9) and cover (10) on fuel injection pump (12) with two screws (11).



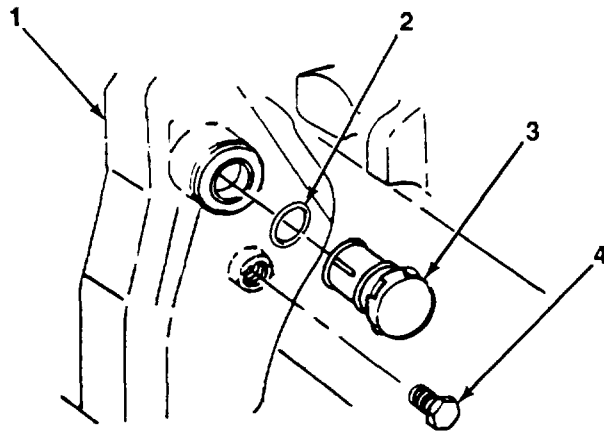
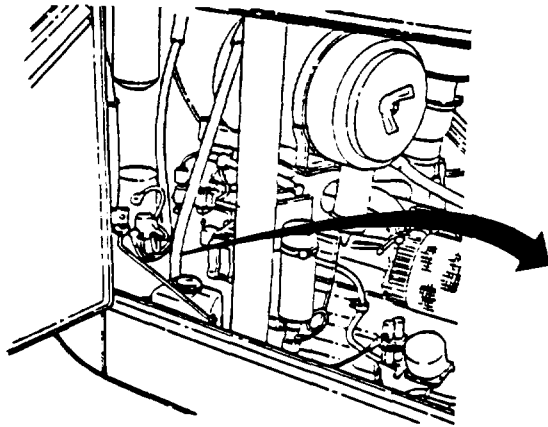
5-26. FUEL INJECTION PUMP STATIC TIMING ADJUSTMENT. (Con't).

10. Remove timing pin (6) and flywheel turning tool (5) from engine (1).



11. If removed, Install new performed packing (2) on plug (3).

12. Install plugs (3 and 4) on engine (1).



FOLLOW-ON TASKS:

- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

Section III. EXHAUST SYSTEM MAINTENANCE

5-27. MUFFLER REPLACEMENT.

This task covers:**a. Removal****b. Installation**

INITIAL SETUP:**Equipment Conditions:**

- Engine cool.
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- One clamp

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

General Safety Instructions:

- Allow exhaust system to cool before attempting to service.
-

5-27. MUFFLER REPLACEMENT (Con't).

WARNING

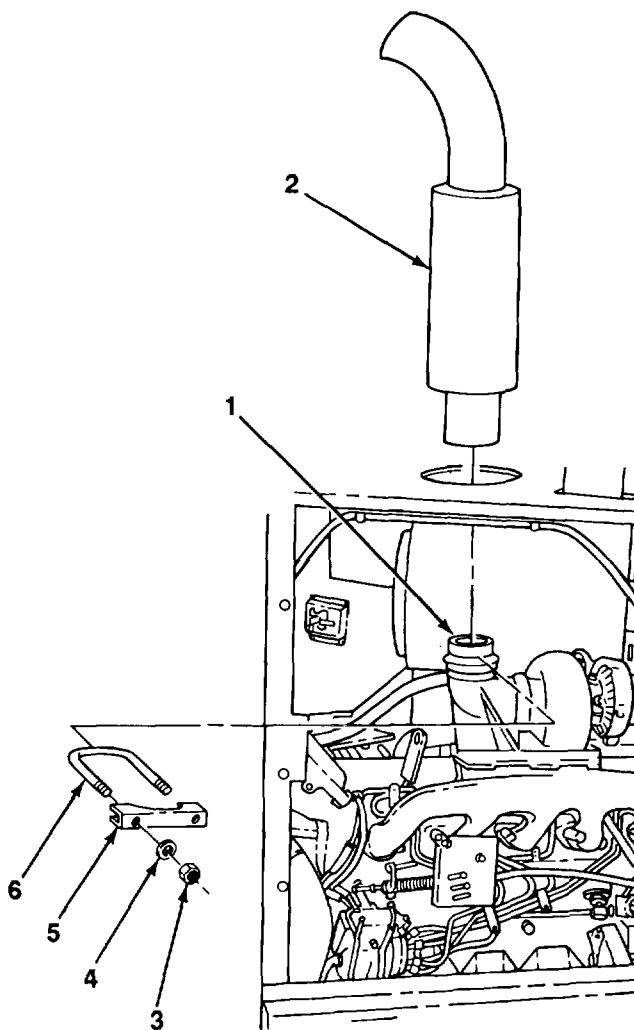
Before attempting to replace any part of exhaust system, allow exhaust system to cool. Failure to follow this warning will result in serious burns.

a. REMOVAL

Remove two nuts (3), lockwashers (4), U-bolt (6), bracket (5), and muffler (2) from turbocharger exhaust elbow (1). Discard lockwashers, nuts, U-bolt, and bracket.

b. INSTALLATION

Install muffler (2) on turbocharger exhaust elbow (1) with new U-bolt (6), new bracket (5), two new lockwashers (4), and new nuts (3).



FOLLOW-ON TASKS:

- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

Section IV. COOLING SYSTEM MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
5-28	Engine Radiator Replacement	5-81
5-29	Engine Radiator Hoses Replacement	5-84
5-30	Coolant Recovery Tank and Hoses Replacement.....	5-86
5-31	Engine Radiator Shroud Replacement	5-88
5-32	Radiator Grille Housing and Cover Replacement	5-89
5-33	Radiator Grille Door and Lever Replacement	5-92
5-34	Engine Thermostat and Housing Maintenance	5-96
5-35	Water Pump Replacement	5-100
5-36	Fan Replacement.....	5-104
5-37	Fan Belt Maintenance.....	5-106
5-38	Engine Cooling System Draining, Flushing, and Filling	5-109

5-28. ENGINE RADIATOR REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Equipment Conditions:

- Engine cool.
- Engine cooling system drained (see paragraph 5-38).
- Engine radiator shroud removed (see paragraph 5-31).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Personnel Required: Two

General Safety Instructions:

- DO NOT perform engine cooling system maintenance unless engine is cold.

5-28. ENGINE RADIATOR REPLACEMENT (Con't).

WARNING

Servicing of engine cooling system should only be performed on a cool engine. NEVER remove clamps or hoses when engine is hot. Pressurized steam, hot water, or coolant will cause serious burns.

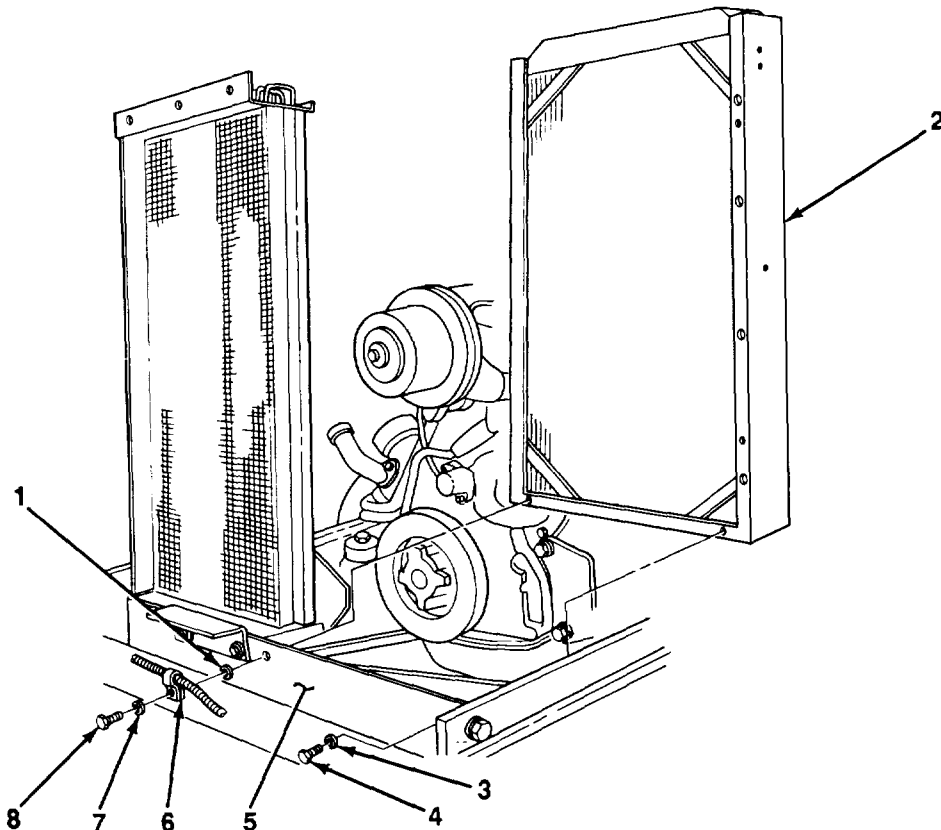
a. REMOVAL

1. Remove screw (8), washer (7), clip (6), and washer (1) from frame (5) and engine radiator (2).

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

2. Remove screw (4), washer (3), and engine radiator (2) from frame (5).



5-28. ENGINE RADIATOR REPLACEMENT (Con't).

b. INSTALLATION

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

1. Install engine radiator (2) on frame (5) with washer (3) and screw (4).
2. Install washer (1), clip (6), washer (7), and screw (8) on frame (5) and engine radiator (2).

FOLLOW-ON TASKS:

- Install engine radiator shroud (see paragraph 5-31).
- Fill engine cooling system (see paragraph 5-38).

5-29. ENGINE RADIATOR HOSES REPLACEMENT.*This Task Covers:*

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial Setup:

Equipment Conditions:

- **Engine cool.**
- **Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).**
- **Right engine upper sideshield opened (see TM 10-3930-659-10).**
- **Engine cooling system drained (see paragraph 5-38).**

Tools/Test Equipment:

- **General mechanic's tool kit (Item 44, Appendix F)**

References:

- **TM 10393659-10**

General Safety Instructions:

- **DO NOT perform engine cooling system maintenance unless engine is cold.**

WARNING

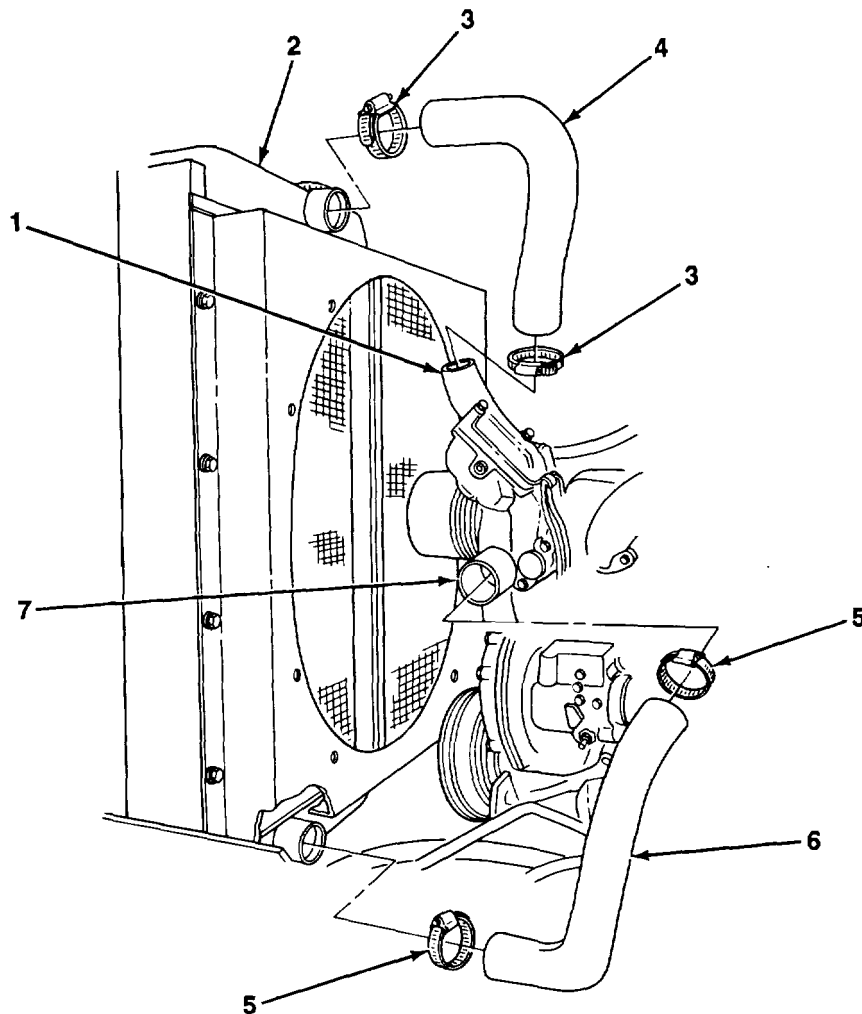
Servicing of engine cooling system should only be performed on a cool engine. NEVER remove clamps or hoses when engine is hot. Pressurized steam, hot water, or coolant will cause serious burns.

a. REMOVAL

1. Loosen two clamps (3) and remove upper engine radiator hose (4) from engine radiator (2) and engine thermostat housing cover (1).
2. Loosen two clamps (5) and remove lower engine radiator hose (6) from engine radiator (2) and water pump (7).

b. INSTALLATION

1. Position lower engine radiator hose (6) on engine radiator (2) and water pump (7), and tighten two clamps (5).
2. Position upper engine radiator hose (4) on engine radiator (2) and engine thermostat housing cover (1), and tighten two clamps (3).

5-29. ENGINE RADIATOR HOSES REPLACEMENT (Con't).**FOLLOW-ON TASKS**

- Fill engine cooling system (see paragraph 5-38).
- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

TA706905

5-30. COOLANT RECOVERY TANK AND HOSES REPLACEMENT.*This Task Covers:*

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial Setup:

Equipment Conditions:

- Engine cool.
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Rags (Item 27, Appendix C)

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

General Safety Instructions:

- **DO NOT perform engine cooling system maintenance unless engine is cold.**

WARNING

Service of engine cooling system should only be performed on a cool engine. NEVER remove clamps or hoses when engine is hot. Pressurized steam, hot water, or coolant will cause serious burns.

NOTE

A suitable container should be used to catch any draining coolant. Ensure that all spills are properly cleaned.

a. REMOVAL

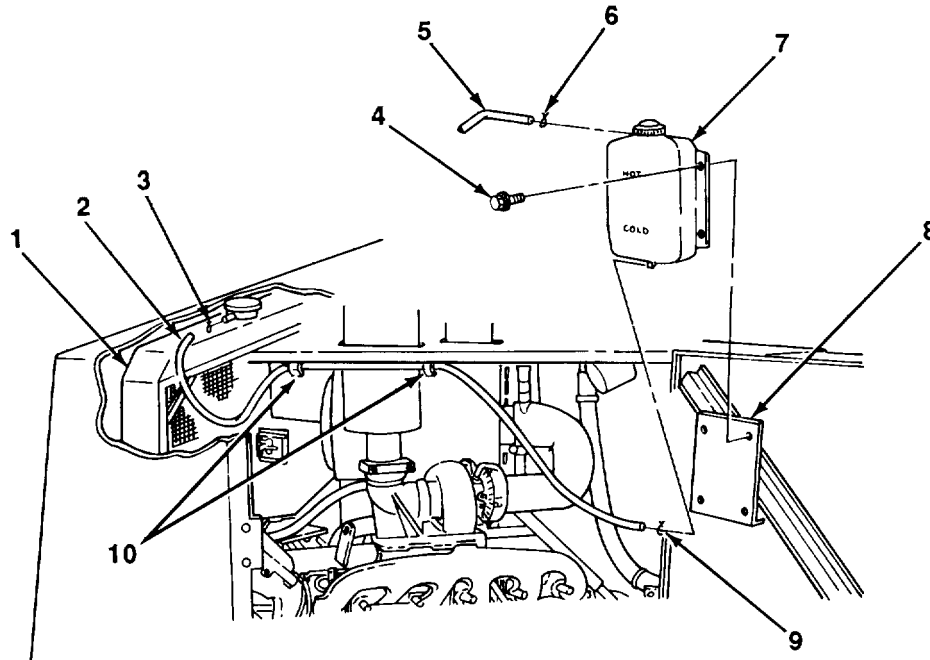
1. Slide back clamp (9) and remove coolant recovery hose (2) from coolant recovery tank (7). Allow coolant to drain.

CAUTION

Caution should be used when removing coolant recovery hose at clips. Clips should be lifted gently and only enough to release coolant recovery hose. Improper handling of clips will cause clips to break.

2. Gently lift two clips (10) and release coolant recovery hose (2).
3. Slide back clamp (3) and remove coolant recovery hose (2) from engine radiator (1).
4. Slide back clamp (6) and remove coolant overflow hose (5) from coolant recovery tank (7).
5. Remove coolant overflow hose (5) from engine compartment.
6. Remove four screws (4) and coolant recovery tank (7) from bracket (8).

5-30. COOLANT RECOVERY TANK AND HOSES REPLACEMENT (Con't).


b. INSTALLATION

1. Install coolant recovery tank (7) on bracket (8) with four screws (4).
2. Position coolant overflow hose (5) through engine compartment.
3. Install coolant overflow hose (5) on coolant recovery tank (7) with clamp (6).
4. Install coolant recovery hose (2) on engine radiator (1) with clamp (3).
5. Install coolant recovery hose (2) in two clips (10).
6. Install coolant recovery hose (2) on coolant recovery tank (7) with clamp (9).

FOLLOW-ON TASKS:

- Fill engine cooling system (see paragraph 5-38).
- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

TA706906

5-31. ENGINE RADIATOR SHROUD REPLACEMENT.*This Task Covers:*

a. Removal

b. Installation

Initial Setup:

Equipment Conditions:

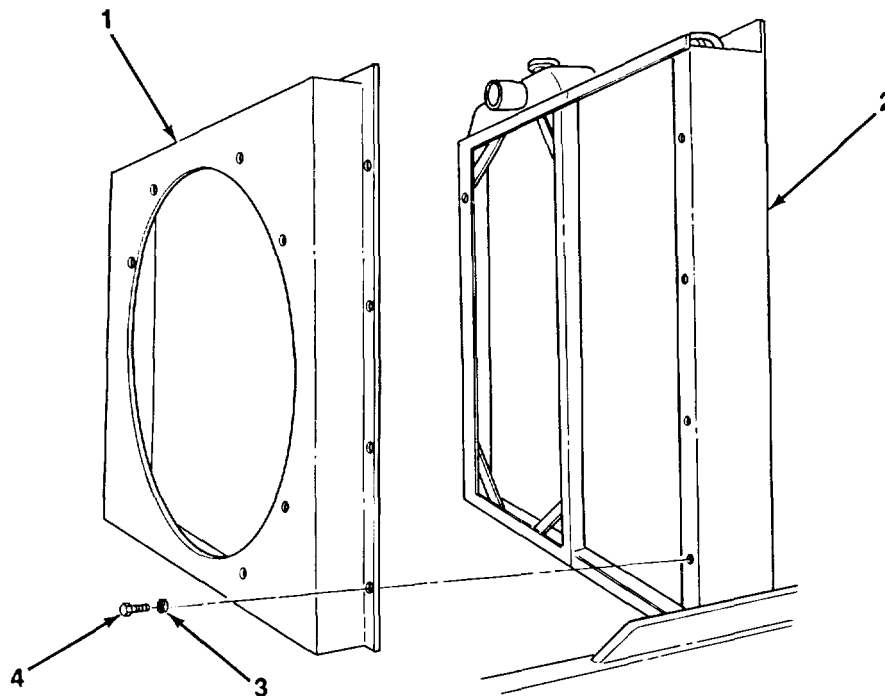
- Engine radiator hoses removed (see paragraph 5-29).
- Radiator grille housing removed (see paragraph 5-32).
- Fan removed (see paragraph 5-36).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix

a. REMOVAL

Remove eight screws (4), washers (3), and engine radiator shroud (1) from engine radiator (2).

**b. INSTALLATION**

Install engine radiator shroud (1) on engine radiator (2) with eight washers (3) and screws (4).

FOLLOW-ON TASKS:

- Install fan (see paragraph 5-36).
- Install radiator grille housing (see paragraph 5-32).
- Install engine radiator hoses (see paragraph 5-29).

5-32. RADIATOR GRILLE HOUSING AND COVER REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Equipment Conditions:

- Engine hood removed (see paragraph 14-17).
F)
- Radiator grille door removed (see paragraph 5-33).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix

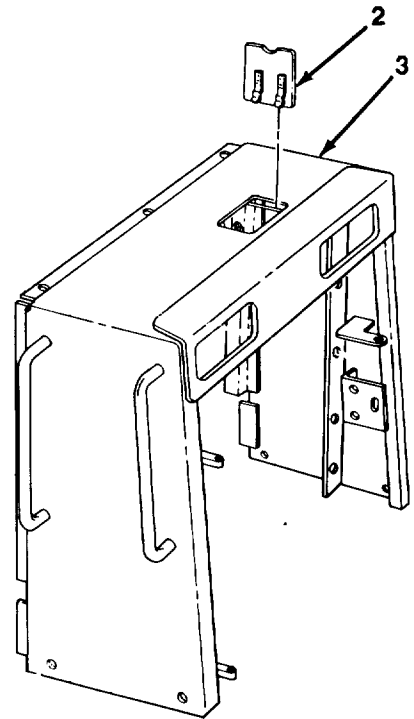
Personnel Required: **Two**

a. REMOVAL

NOTE

Perform step 1 if only replacing cover.

1. Remove cover (2) from radiator grille housing (3).



TA706908

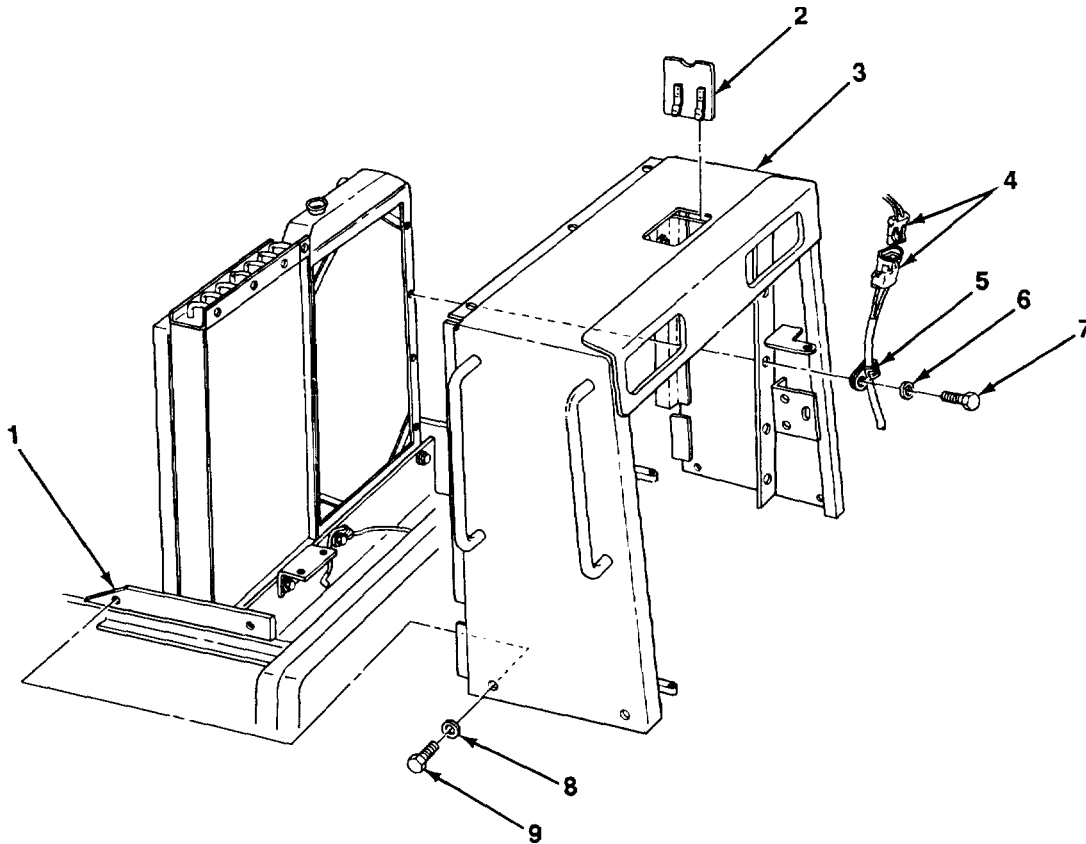
5-32. RADIATOR GRILLE HOUSING AND COVER REPLACEMENT (Con't).

2. Disconnect two connectors (4).
3. Remove nine screws (7), washers (6), and six clips (5) from radiator grille housing (3).
4. Attach suitable lifting device to center of radiator grille housing (3).
5. Remove four screws (9) and washers (8) from radiator grille housing (3).

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

6. Remove radiator grille housing (3) from two brackets (1).



TA706909

5-32. RADIATOR GRILLE HOUSING' AND COVER REPLACEMENT (Con't).

NOTE

Perform steps 7 and 8 only if radiator grille housing is to be replaced.

7. Remove taillight and rear turn signal/emergency flashers (see paragraph 6-25).
8. Remove engine upper sideshield latches and bumpers (see paragraph 14-15).

b. INSTALLATION**NOTE**

Perform steps 1 and 2 only if installing radiator grille housing.

1. Install engine upper sideshield latches and bumpers (see paragraph 14-15).
2. Install taillight and rear turn signal/emergency flashers (see paragraph 6-25).

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

3. Attach suitable lifting device to center of radiator grille housing (3) and position radiator grille housing on two brackets (1).
4. Install four washers (8) and screws (9) on radiator grille housing (3).
5. Remove suitable lifting device from radiator grille housing (3).
6. Install six clips (5), nine washers (6), and screws (7) on radiator grille housing (3).
7. Connect two connectors (4).

NOTE

Perform step 8 if only installing cover.

8. Install cover (2) on radiator grille housing (3).

FOLLOW-ON TASKS:

- Install radiator grille door (see paragraph 5-33).
- Install engine hood (see paragraph 14-17).

5-33. RADIATOR GRILLE DOOR AND LEVER REPLACEMENT.

This Task Covers:

a. Removal

b. Installation

Initial Setup:

Equipment Conditions:

- **Rear blackout lights and bracket removed (see paragraph 6-26).**

Materials/Parts:

- **Two locknuts**

Personnel Required: **Two**

Tools/Test Equipment:

- **General mechanic's tool kit (Item 44, Appendix F)**
-

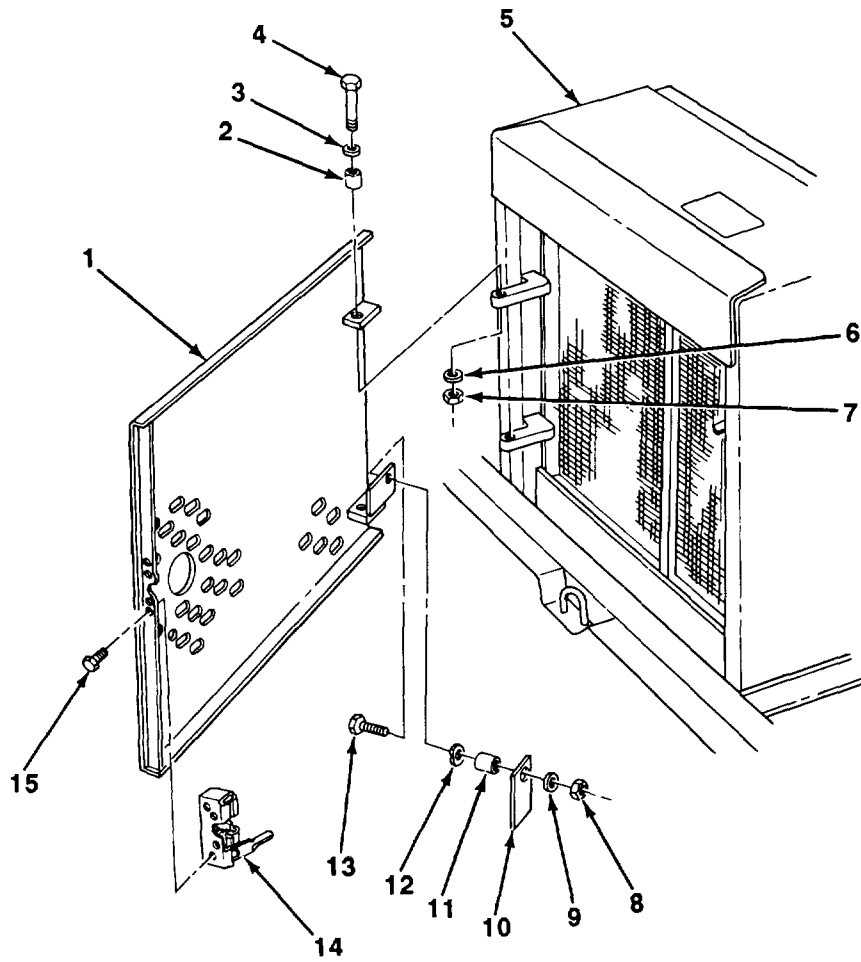
a. REMOVAL

NOTE

- **Perform step 1 if only replacing lever.**
- **Perform step 2 if only replacing clamp.**
- **Perform step 3 if only replacing radiator grille door.**
- **Perform step 4 if only replacing angle bracket.**
- **Perform step 5 if only replacing sleeve bushing.**

1. Remove four screws (15) and lever (14) from radiator grille door (1).
2. Remove nut (8), washer (9), clamp (10), spacer (11), springwasher (12), and bolt (13) from radiator grille door (1).
3. Remove two locknuts (7), washers (6), bolts (4), washers (3), spacers (2), and radiator grille door (1) from radiator grille housing (5). Discard locknuts.

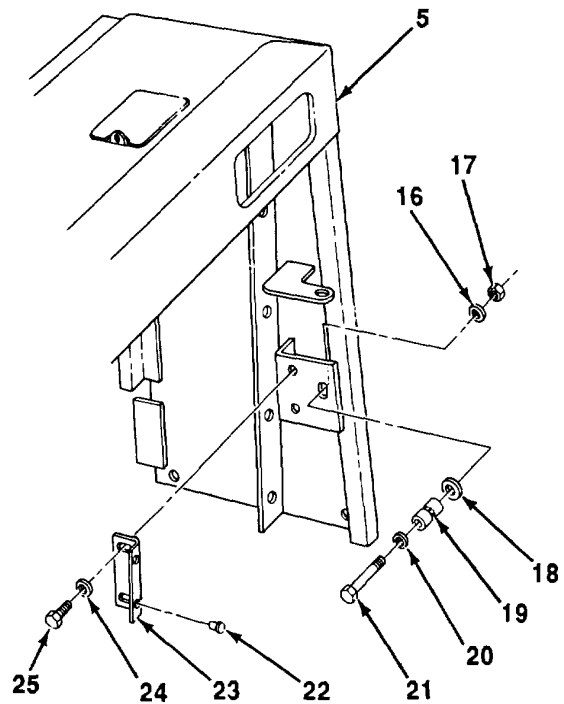
5-33. RADIATOR GRILLE DOOR AND LATCH REPLACEMENT (Con't).



TA706910

5-33. RADIATOR GRILLE DOOR AND LATCH REPLACEMENT (Con't).

4. Remove two screws (25), washers (24), and angle bracket (23) from radiator grille housing (5). Remove two plugs (22) from angle bracket.
5. Remove nut (17), washer (16), bolt (21), washer (20), sleeve bushing (19), and spacer (18) from radiator grille housing (5).

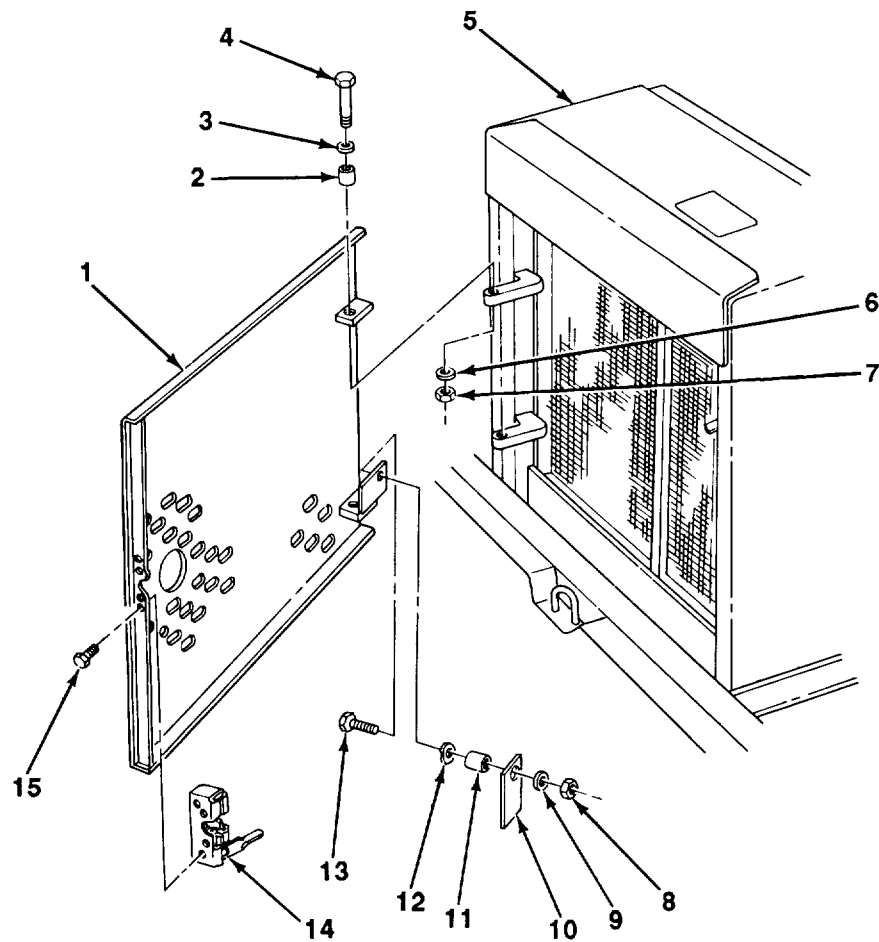
**b. INSTALLATION****NOTE**

- Perform step 1 if only Installing lever.
- Perform step 2 if only Installing clamp.
- Perform step 3 if only installing radiator grille door.
- Perform step 4 if only Installing angle bracket.
- Perform step 5 if only Installing sleeve bushing.

1. Install lever (14) on radiator grille door (1) with four screws (15).
2. Install springwasher (12), spacer (11), and clamp (10) on radiator grille door (1) with bolt (13), washer (9), and nut (8).
3. Install radiator grille door (1) on radiator grille housing (5) with two spacers (2), washers (3), bolts (4), washers (6), and two new locknuts (7).

TA706911

5-33 RADIATOR GRILLE DOOR AND LATCH REPLACEMENT (Con't).



4. Install angle bracket (23) on radiator grille housing (5) with two washers (24) and screws (25). Install two plugs (22) in angle bracket.
5. Install spacer (18), sleeve bushing (19), washer (20), bolt (21), washer (16), and nut (17) on radiator grille housing (5).

FOLLOW-ON TASKS:

- Install rear blackout lights and bracket (see paragraph 6-26).

TA706912

5-34. ENGINE THERMOSTAT AND HOUSING MAINTENANCE.*This Task Covers:*

- | | |
|--------------------------------------|---|
| a. Engine Thermostat Replacement | c. Engine Thermostat Housing Installation |
| b. Engine Thermostat Housing Removal | |

Initial Setup:

Equipment Conditions:

- **Engine cool.**
- **Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).**
- **Right engine upper sideshield opened (see TM 10-3930-659-10).**
- **Engine cooling system drained (see paragraph 5-38).**

Materials/Parts:

- **Two gaskets**
- **Two preformed packings**
- **Five lockwashers**

References:

- **TM 10-3930-659-10**

Tools/Test Equipment:

- **General mechanic's tool kit (Item 44, Appendix F)**
- **Torque wrench, 0-175 lb. -ft. (Item 52, Appendix F)**

General Safety Instructions:

- **DO NOT perform engine cooling system maintenance unless engine is cold.**

a. ENGINE THERMOSTAT REPLACEMENT**WARNING**

Servicing of engine cooling system should only be performed on a cool engine. NEVER remove clamps or hoses when engine is hot. Pressurized steam, hot water, or coolant will cause serious burns.

1. Loosen clamp (11) and remove upper engine radiator hose (1) from engine thermostat housing cover (10).
2. Remove screw (5), lockwasher (4), and clamp (6) from engine thermostat housing cover (10). Discard lockwasher.
3. Remove two screws (3), lockwashers (2), engine thermostat housing cover (10), and gasket (8) from engine thermostat housing (7). Discard lockwashers and gasket.

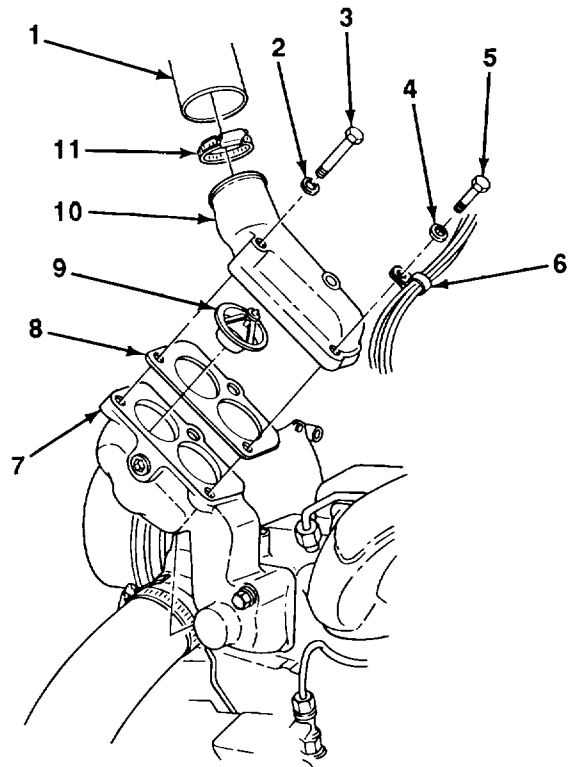
NOTE

Note position of thermostats to aid during installation.

4. Remove two engine thermostats (9) from engine thermostat housing (7).
5. Install two engine thermostats (9) in engine thermostat housing (7).

5-34. ENGINE THERMOSTAT AND HOUSING MAINTENANCE (Con't).

6. Install new gasket (8) and engine thermostat housing cover (10) on engine thermostat housing (7) with two new lockwashers (2) and screws (3).
7. Install clamp (6) on engine thermostat housing cover (10) with new lockwasher (4) and screw (5).
8. Install upper engine radiator hose (1) on engine thermostat housing cover (10) and tighten clamp (11).

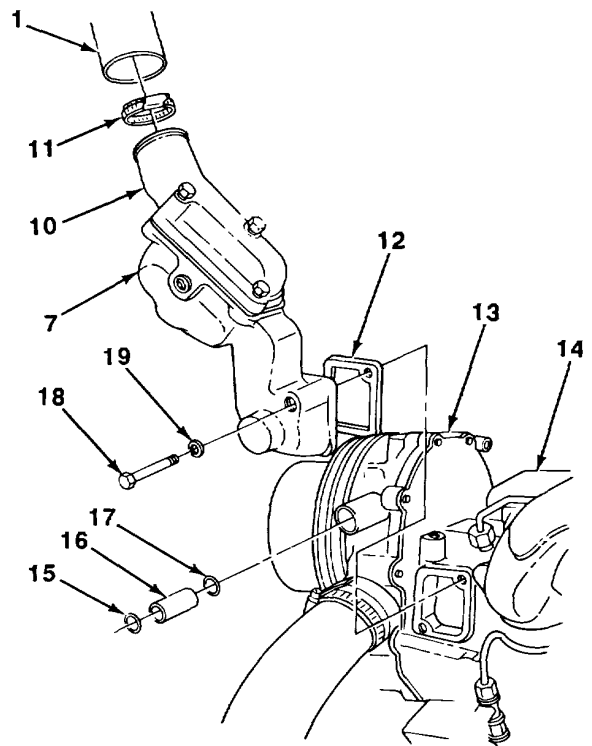


TA706913

5-34. ENGINE THERMOSTAT AND HOUSING MAINTENANCE (Con't).**b. ENGINE THERMOSTAT HOUSING REMOVAL****WARNING**

Servicing of engine cooling system should only be performed on a cool engine. NEVER remove clamps or hoses when engine is hot. Pressurized steam, hot water, or coolant will cause serious burns.

1. Loosen clamp (11) and remove upper engine radiator hose (1) from engine thermostat housing cover (10).
2. Remove two screws (18), lockwashers (19), engine thermostat housing (7), and gasket (12) from engine (14). Discard lockwashers and gasket.
3. Remove preformed packing (15) from water pump (13). Discard preformed packing.
4. Remove tube (16) and preformed packing (17) from water pump (13). Discard preformed packing.



TA706914

5-34. ENGINE THERMOSTAT AND HOUSING MAINTENANCE (Con't).

c. ENGINE THERMOSTAT HOUSING INSTALLATION

1. Install new preformed packing (17) and tube (16) in water pump (13).
2. Install new preformed packing (15) in water pump (13).
3. Install new gasket (12) and engine thermostat housing (7) on engine (14) with two new lockwashers (19) and screws (18). Torque screws to 35 lb.-ft. (47 N•m).
4. Install upper engine radiator hose (1) on engine thermostat housing cover (10) and tighten clamp (11).

FOLLOW-ON TASKS:

- Fill engine cooling system (see paragraph 5-38).
- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

5-35. WATER PUMP REPLACEMENT.*This Task Covers:*

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial Setup:

Equipment Conditions:

- Fan removed (see paragraph 5-36).
- Lower engine radiator hose disconnected from water pump (see paragraph 5-29).
- Engine thermostat housing removed (see paragraph 5-34).
- Outside cab heater hose disconnected from water pump (see paragraph 16-14).
- Engine oil cooler tubes and hoses removed (see paragraph 5-8).

Materials/Parts:

- One gasket
- Four lockwashers

Personnel Required: **Two**

General Safety Instructions:

- **DO NOT** perform engine cooling system maintenance unless engine is cold.

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Torque wrench, 0-175 lb.-ft. (Item 52, Appendix F)

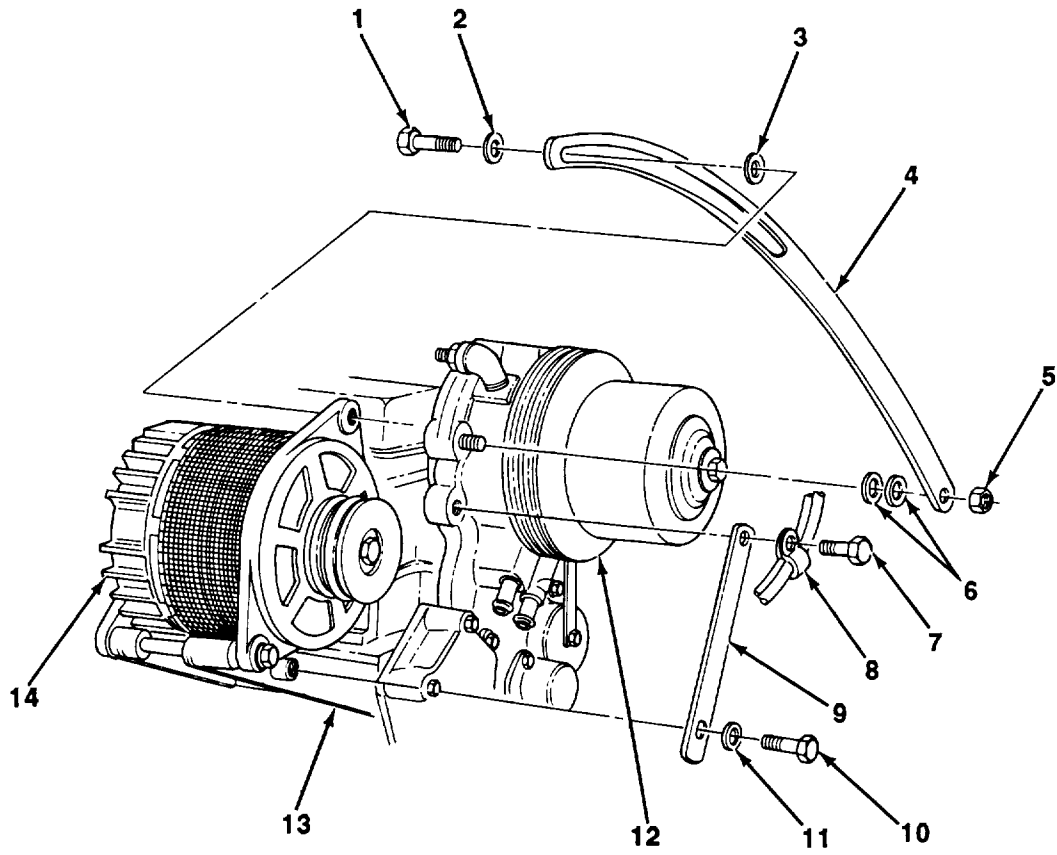
WARNING

Servicing of engine cooling system should only be performed on a cool engine. NEVER remove clamps or hoses when engine is hot. Pressurized steam, hot water, or coolant will cause serious burns.

a. REMOVAL

1. Remove screw (7), clamp (8), and strap (9) from water pump (12).
2. Remove screw (10), washer (11), and strap (9) from alternator bracket (13).
3. Remove screw (1), washer (2), strap (4), and washer (3) from alternator (14).
4. Remove nut (5), strap (4), and two washers (6) from water pump (12).

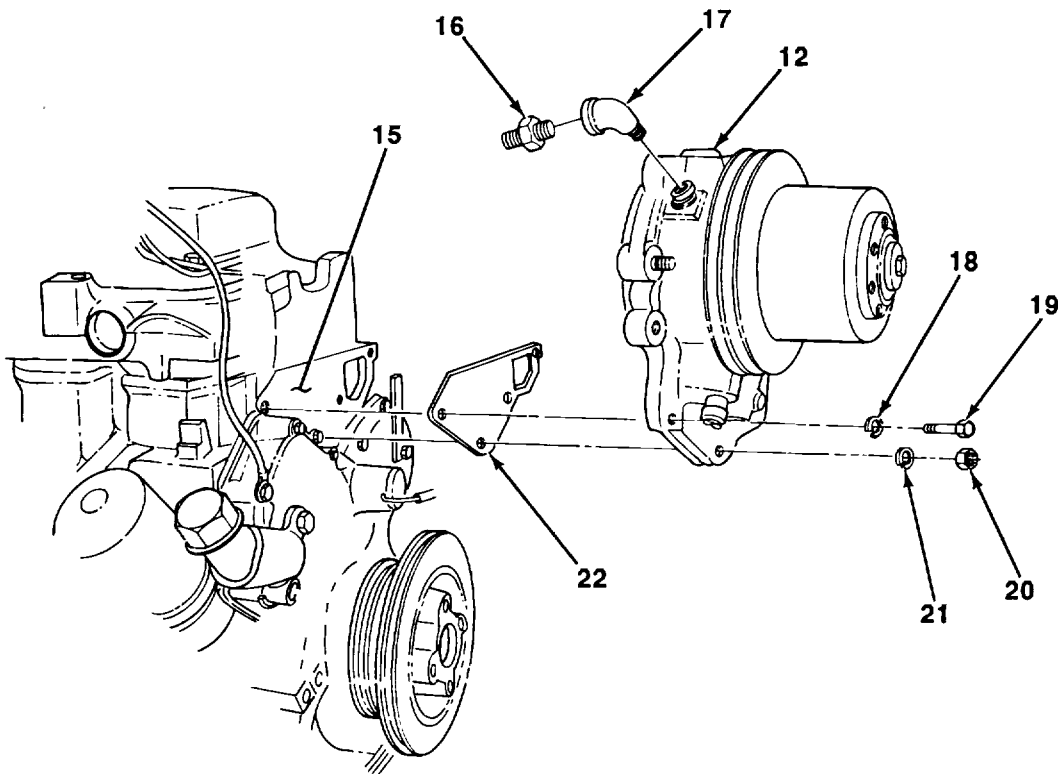
5-35. WATER PUMP REPLACEMENT (Con't).



TA706915

5-35. WATER PUMP REPLACEMENT (Con't).

5. Remove three screws (19) and lockwashers (18) from water pump (12). Discard lockwashers.
6. Remove nut (20), lockwasher (21), water pump (12), and gasket (22) from engine block (15). Discard lockwasher and gasket.
7. Remove connector (16) and elbow (17) from water pump (12).

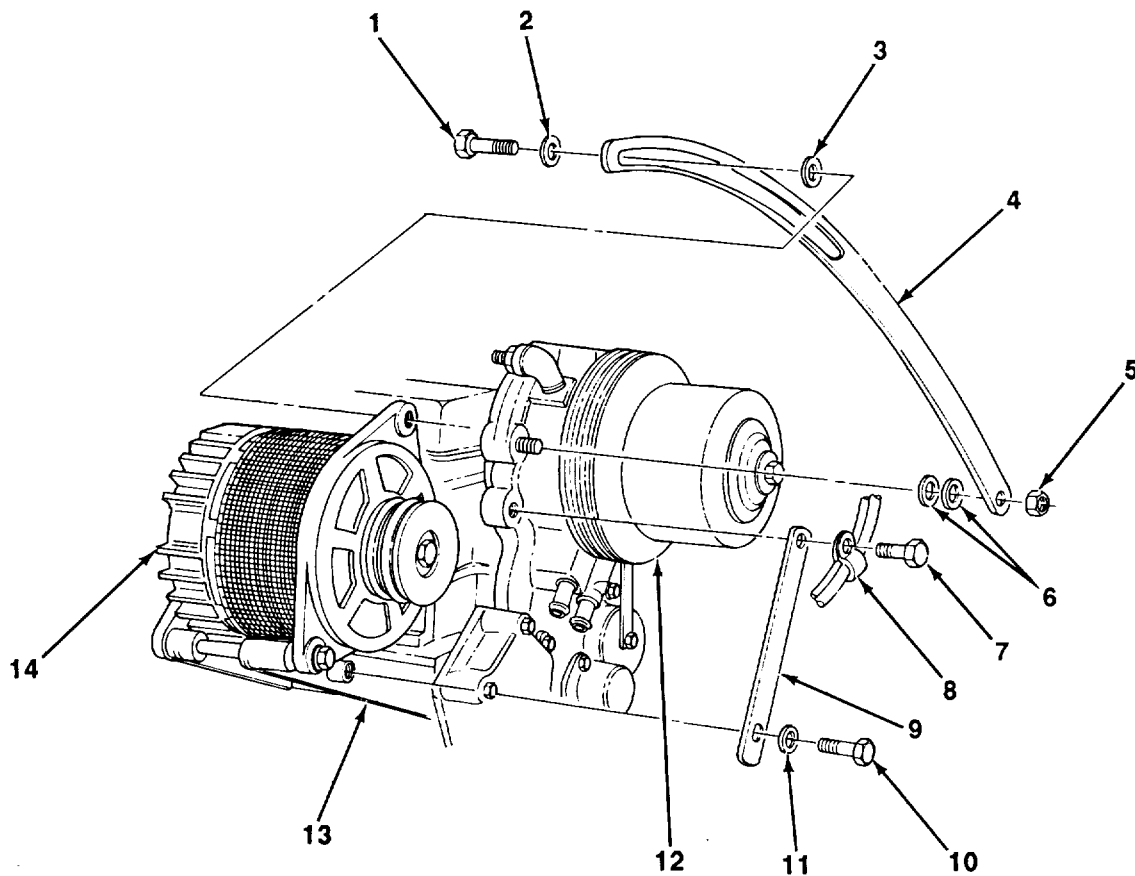
**b. INSTALLATION**

1. Install elbow (17) and connector (16) on water pump (12).
2. Install new gasket (22) and water pump (12) on engine block (15) with new lockwasher (21) and nut (20).
3. Install three new lockwashers (18) and screws (19) on water pump (12). Torque screws to 35 lb.-ft. (47 N-m).

TA706916

5-35. WATER PUMP REPLACEMENT (Con't).

4. Install two washers (6) and strap (4) on water pump (12) with nut (5).
5. Install strap (4) on alternator (14) with washer (3), washer (2), and screw (1).
6. Install strap (9) on alternator bracket (13) with washer (11) and screw (10).
7. Install strap (9) and clamp (8) on water pump (12) with screw (7).

**FOLLOW-ON TASKS:**

- Install engine oil cooler tubes and hoses (see paragraph 5-8).
- Connect outside cab heater hose to water pump (see paragraph 16-14).
- Install engine thermostat housing (see paragraph 5-34).
- Connect lower engine radiator hose to water pump (see paragraph 5-29).
- Install fan (see paragraph 5-36).

TA706917

5-36. FAN REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

Initial Setup:

Equipment Conditions:

- Fan belts removed (see paragraph 5-37).
F)
- F)

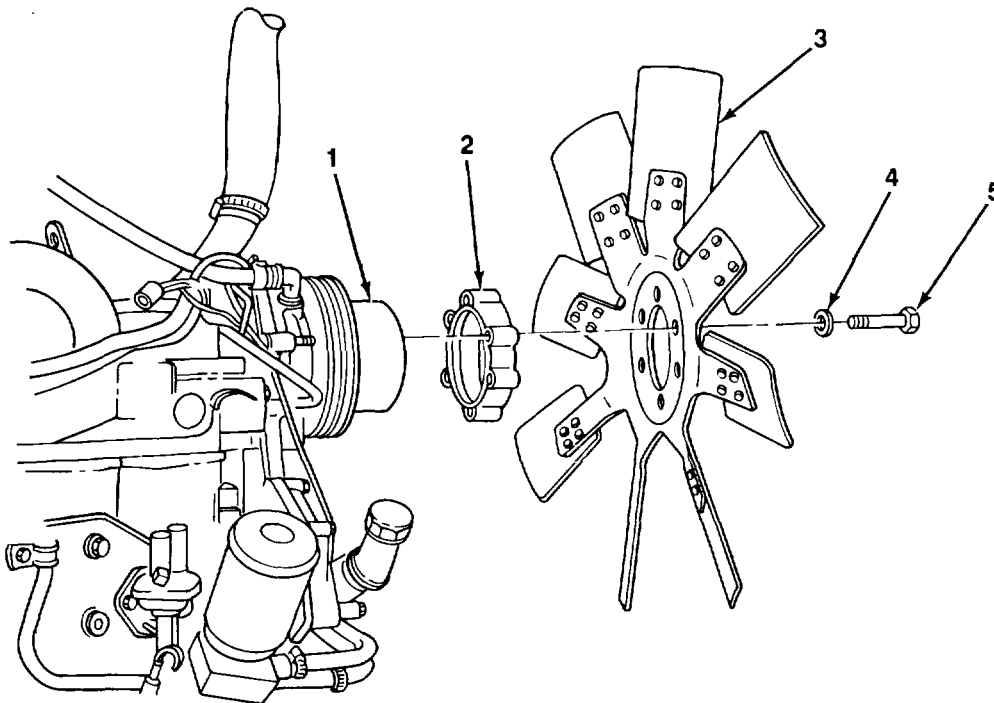
Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix
- Torque wrench, 0-175 lb.-ft. (Item 52, Appendix

a. REMOVAL**CAUTION**

Use care when removing fan to prevent damage to radiator fins.

1. Remove six screws (5), washers (4), and fan (3) from fan hub (2).
2. Remove fan hub (2) from water pump pulley (1).



TA706918

5-36. FAN REPLACEMENT (Con't).

b. INSTALLATION

Install fan hub (2) and fan (3) on water pump pulley (1) with six washers (4) and screws (5). Torque screws to 35 lb.-ft. (47 N-m).

FOLLOW-ON TASKS:

- Install fan belts (see paragraph 5-37).

5-37. FAN BELT MAINTENANCE.

This Task Covers:

- a. Removal
- b. Installation
- c. Adjustment

Initial Setup:

Equipment Conditions:

Tools/Test Equipment:

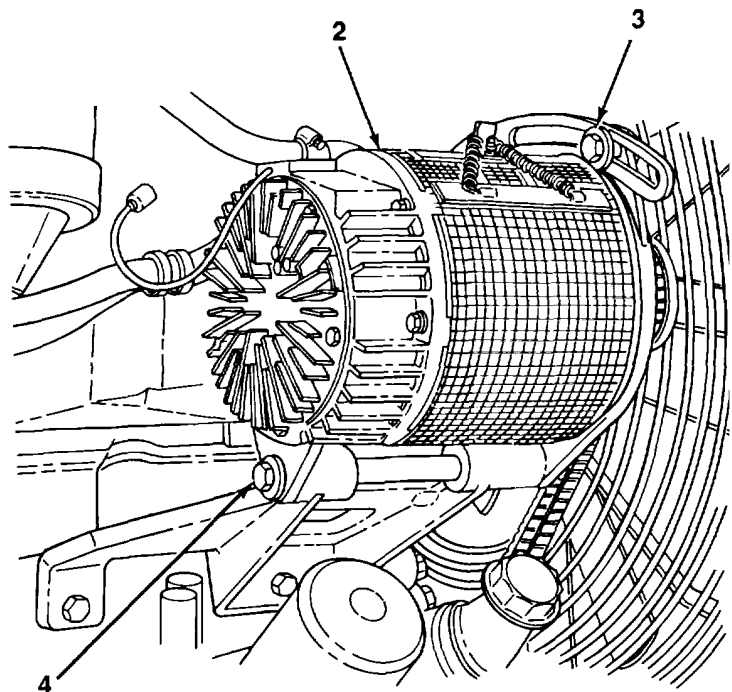
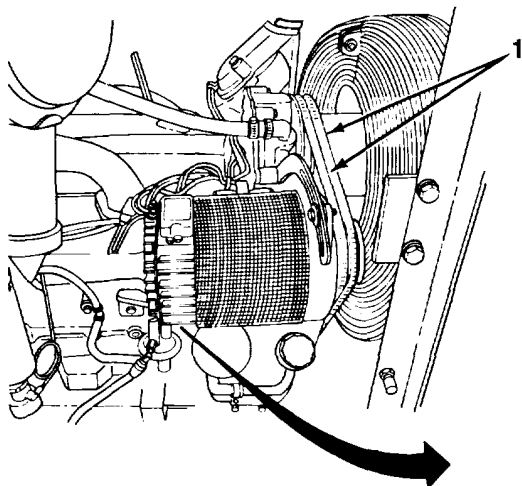
- Battery disconnect switch in OFF position (see F) TM 10-3930-659-10).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right and left engine upper sideshields opened (see TM 10-3930-659-10).
- General mechanic's tool kit (Item 44, Appendix F)
- References:
 - TM 10-3930-659-10

NOTE

Fan belts should be replaced in matched sets even if only one belt is worn.

a. REMOVAL

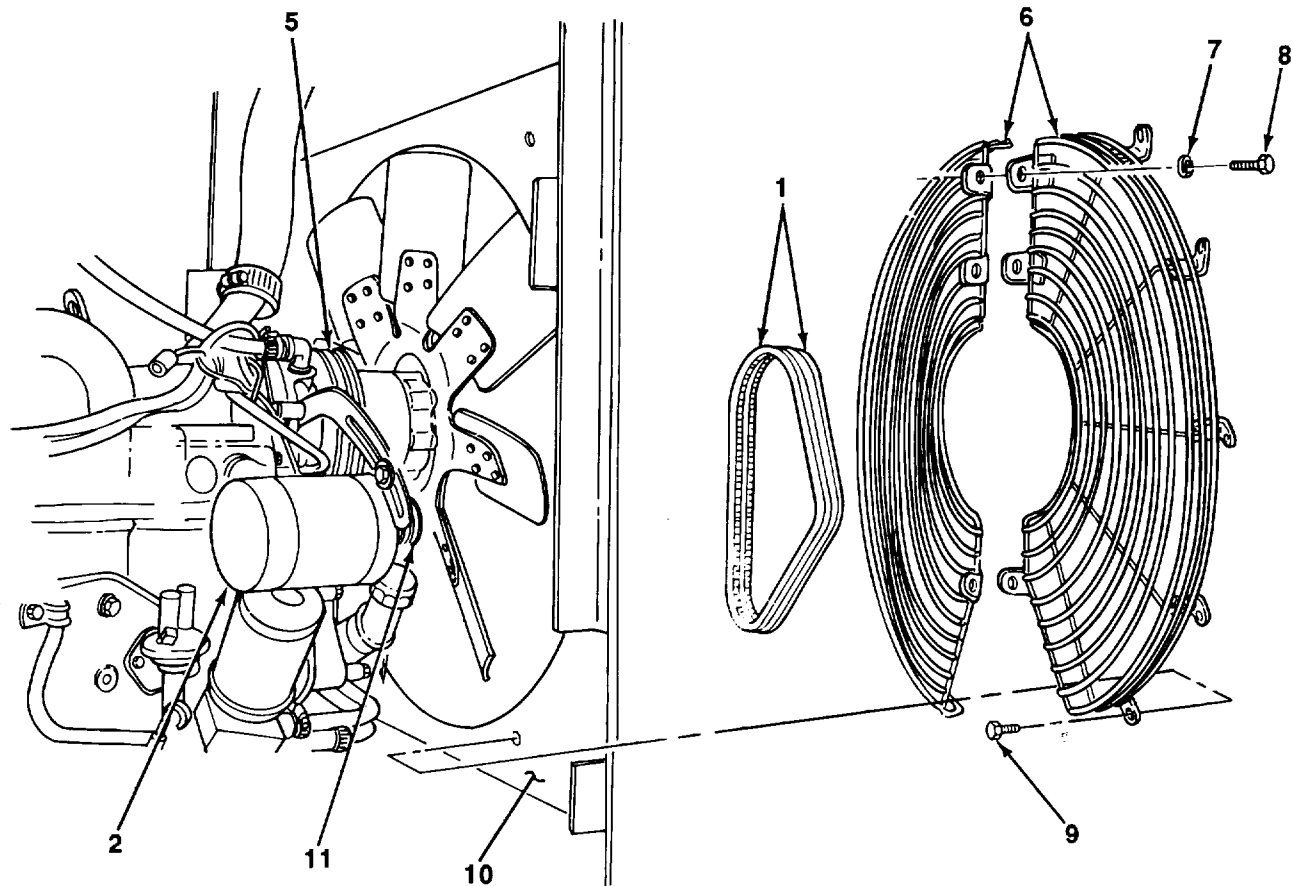
1. Loosen bolts (3 and 4) and push alternator (2) inward until two fan belts (1) are loose.



TA706919

5-37. FAN BELT MAINTENANCE (Con't).

2. Remove three screws (8) and washers (7) from two fan guard halves (6).
3. Remove eight screws (9) and two fan guard halves (6) from fan shroud (10).
4. Remove two fan belts (1) from alternator pulley (11), water pump pulley (5), and crankshaft dampener.

**b. INSTALLATION**

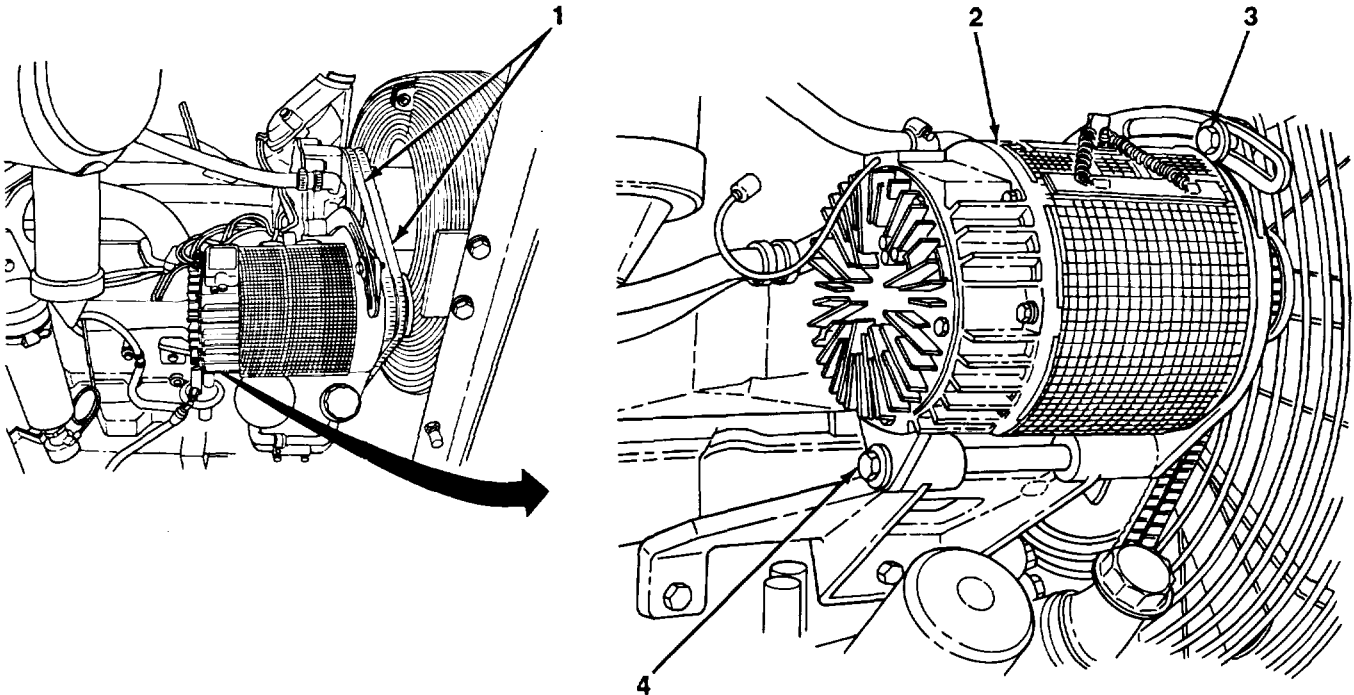
1. Install two fan belts (1) on alternator pulley (11), water pump pulley (5), and crankshaft dampener.
2. Install two fan guard halves (6) on fan shroud (10) with eight screws (9).
3. Install three washers (7) and screws (8) on two fan guard halves (6).

TA706920

5-37. FAN BELT MAINTENANCE (Con't).**c. ADJUSTMENT****NOTE**

If fan belts were not replaced, bolts must be loosened.

1. Press down on two fan belts (1) with thumb and adjust position of alternator (2) until fan belts deflect no more than 0.5 in. (12.7 mm).
2. Tighten bolts (3 and 4).

**FOLLOW-ON TASKS:**

- Close right and left engine upper sideshields (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

TA706921

5-38. ENGINE COOLING SYSTEM DRAINING, FLUSHING, AND FILLING.

This Task Covers:

- a. Draining
 - b. Flushing
 - c. Filling
-

Initial Setup:

Equipment Conditions:

- Forklift truck parked on level surface.
- Engine cool.
- Parking brake set (see TM 10-3930-659-10).
- Conveyorizer fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Antifreeze (Item 3, Appendix C)
- Rags (Item 27, Appendix C)

References:

- TM 10-3930-659-10
- TM 750-254

General Safety Instructions:

- **DO NOT perform engine cooling system maintenance unless engine is cold.**

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

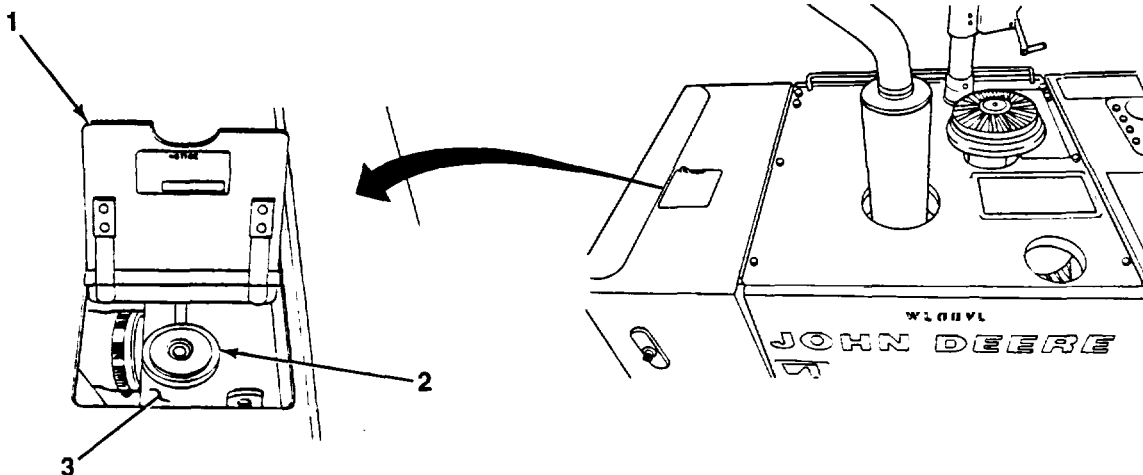
NOTE

A suitable container should be used to catch any draining antifreeze. Ensure that all spills are properly cleaned.

5-38. ENGINE COOLING SYSTEM DRAINING, FLUSHING, AND FILLING (Con't).**a. DRAINING****WARNING**

DO NOT remove radiator fill cap unless engine is cold. This is a pressurized cooling system and escaping steam, hot water, or coolant will cause serious burns.

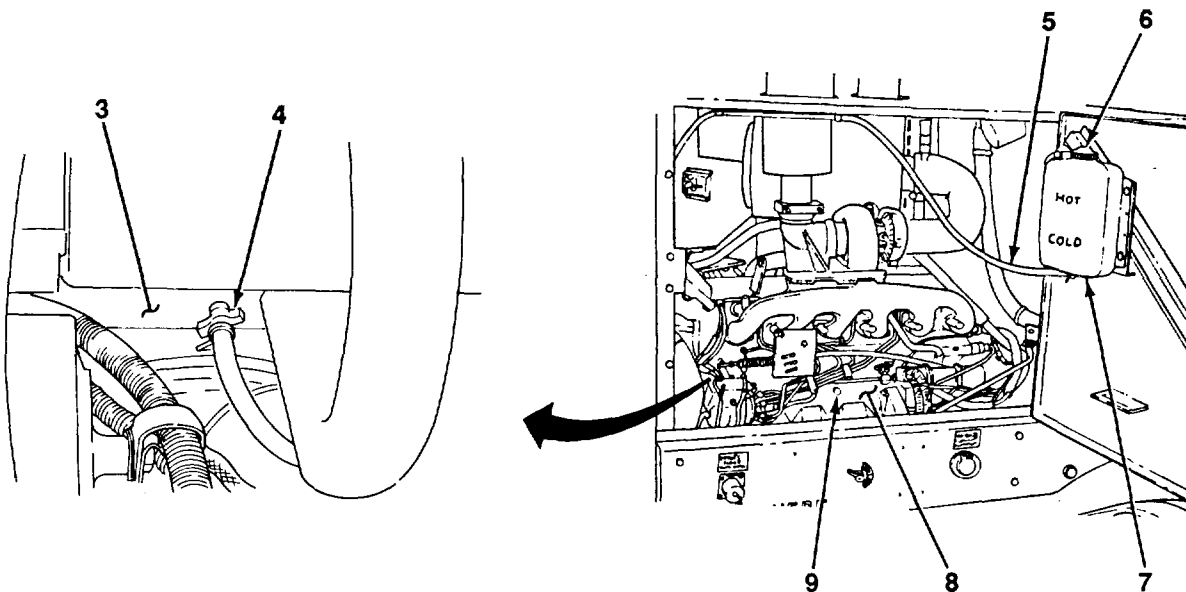
1. Open cover (1) and remove radiator fill cap (2) from radiator (3).



2. Open draincock (4) at bottom of radiator (3) and allow antifreeze to drain.
3. Remove plug (9) from engine (8) and allow antifreeze to drain.
4. Remove coolant recovery hose (5) from coolant recovery tank (7) and allow antifreeze to drain.
5. Close draincock (4).
6. Install plug (9) on engine (8).
7. Install coolant recovery hose (5) on coolant recovery tank (7).

TA706922

5-38. ENGINE COOLING SYSTEM DRAINING, FLUSHING, AND FILLING (Con't)

**b. FLUSHING****NOTE**

Engine cooling system should be flushed if antifreeze drained from forklift truck contains excessive contaminants.

Refer to TM 750-254 for instructions on flushing engine cooling system.

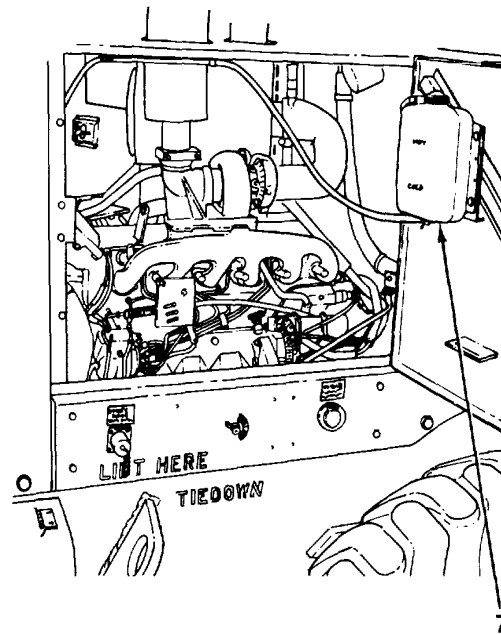
c. FILLING

1. Fill radiator (3) with antifreeze.
2. Install radiator fill cap (2) on radiator (3) and close cover (1).
3. Remove cap (6) from coolant recovery tank (7) and fill with antifreeze until fluid level is between COLD and HOT markings on coolant recovery tank.
4. Install cap (6) on coolant recovery tank (7).
5. Start engine (see TM 10-3930-659-10) and allow engine to reach operating temperature.
6. Stop engine (see TM 10-3930-659-10) and allow engine to cool.

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5-38. ENGINE COOLING SYSTEM DRAINING, FLUSHING, AND FILLING (Con't).

7. Check and fill antifreeze as necessary until in coolant recovery tank (7) is at or slightly above COLD marking.

**FOLLOW-ON TASKS:**

- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

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CHAPTER 6
ELECTRICAL SYSTEM MAINTENANCE

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6-1. ALTERNATOR REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
 - Left engine upper sideshield opened (see TM 10-3930-659-10).
 - Fan belts removed (see paragraph 5-37).
- Tools/Test Equipment:**
- General mechanic's tool kit (Item 44, Appendix F)
 - Wrench set, y In. drive (Item 54, Appendix F)

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- Seven lockwashers

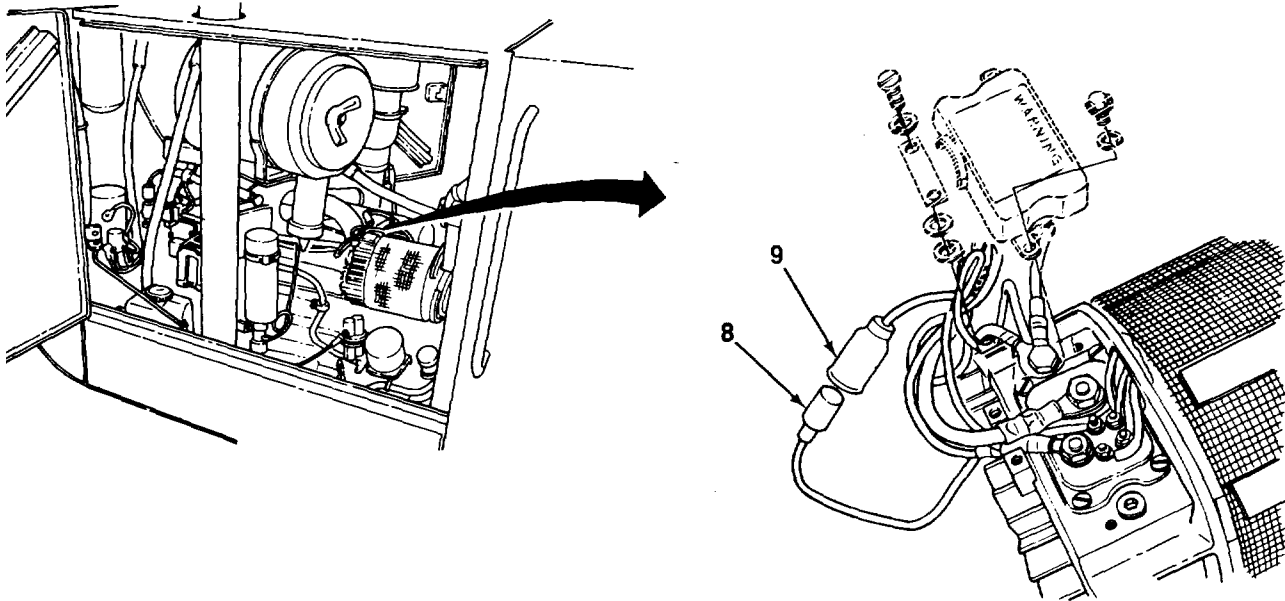
Personnel Required: Two**References:**

- TM 10-3930659-10

a. REMOVAL**NOTE**

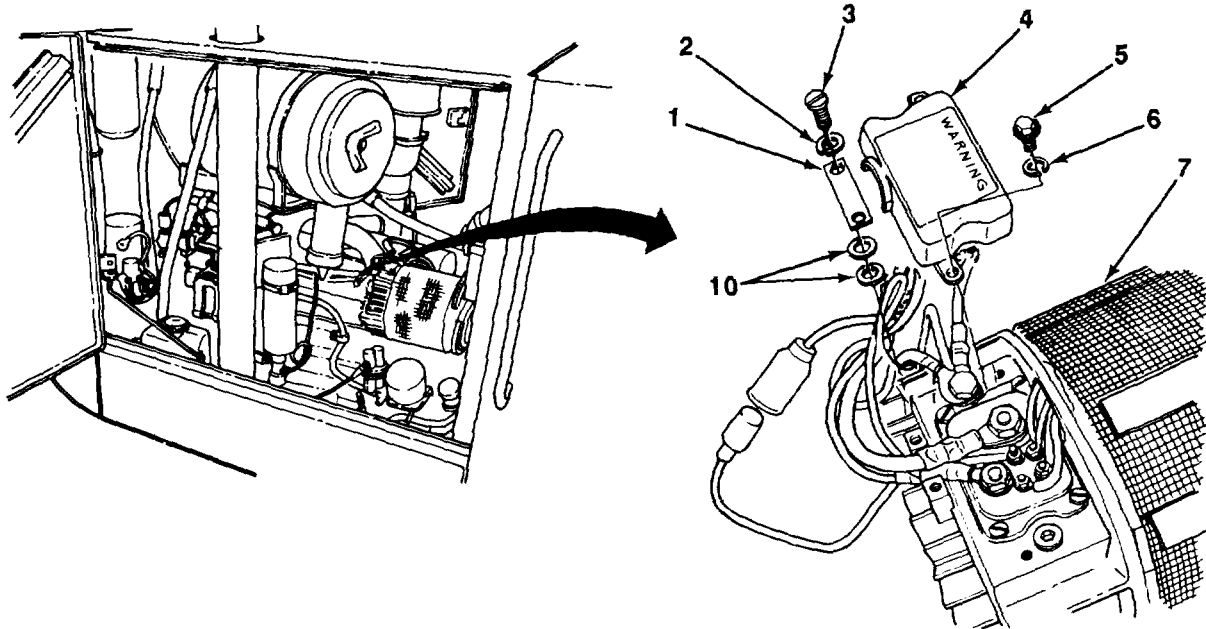
All wires should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

1. Disconnect alternator wiring harness connector (8) from engine wiring harness connector (9).

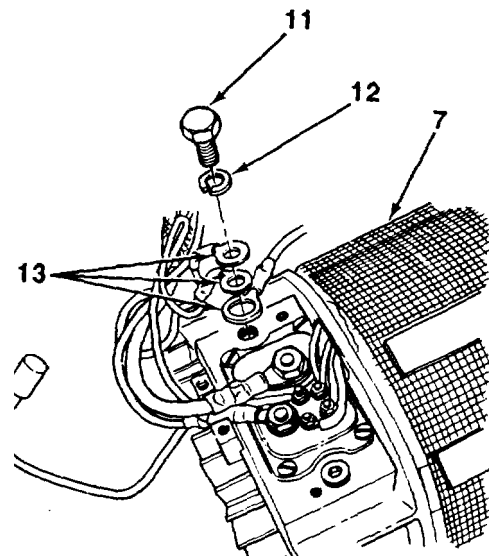


6-1. ALTERNATOR REPLACEMENT.(Con't).

2. Remove two screws (3), lockwashers (2), strap (1), and four washers (10) from alternator (7). Discard
3. Remove two screws (5), lockwashers (6), and cover (4) from alternator (7). Discard lockwashers.



4. Remove bolt (11), lockwasher (12), and three terminal leads (13) from alternator (7). Discard lock-washer.

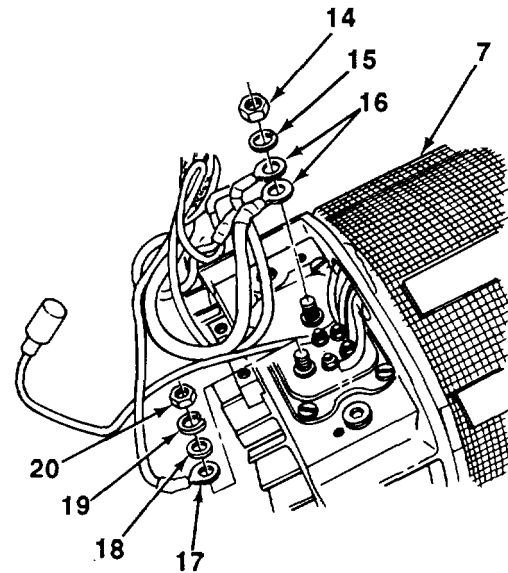


6-1. ALTERNATOR REPLACEMENT.(Con't).

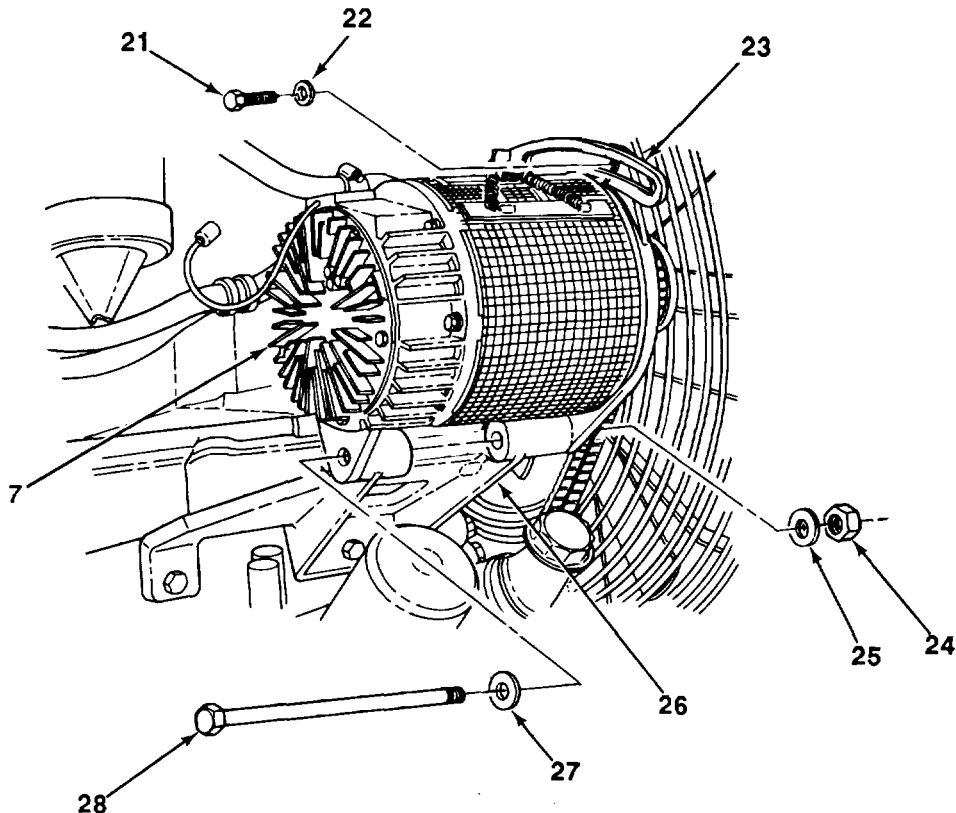
5. Remove nut (14), lockwasher (15), and two terminal leads (16) from alternator (7). Discard lock-washer.
6. Remove nut (20), lockwasher (19), washer (18), and terminal lead (17) from alternator (7). Discard lockwasher.
7. Remove bolt (21) and washer (22) from alternator (7) and strap (23).

WARNING

Alternator is heavy. Ensure that alternator is supported when bolt is removed. Failure to follow this warning may result in injury to personnel or damage to equipment.



8. Remove nut (24), washer (25), bolt (28), washer (27), and alternator (7) from bracket (26).



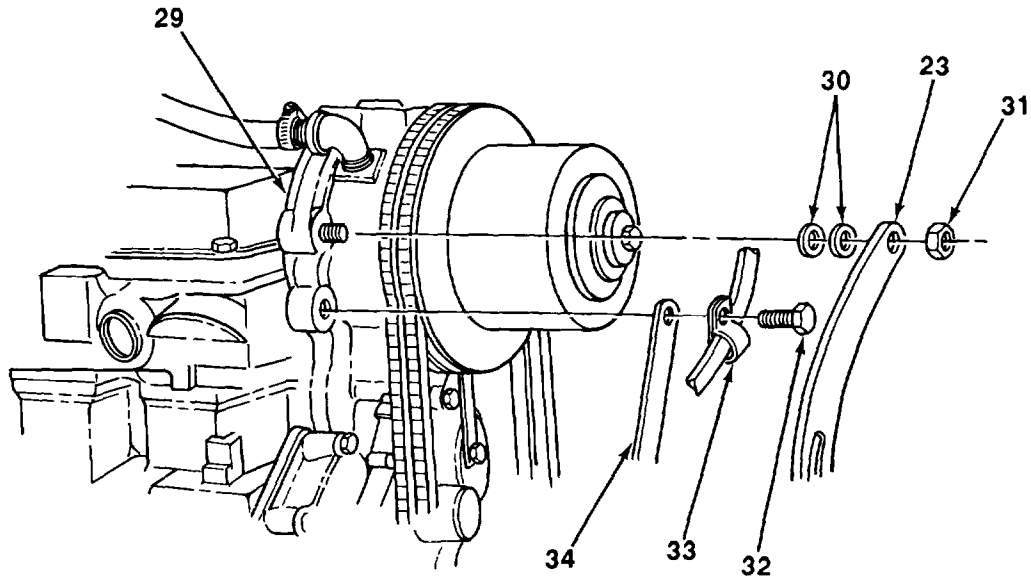
6-1. ALTERNATOR REPLACEMENT.(Con't).

9. Remove alternator pulley (see paragraph 6-2).

NOTE

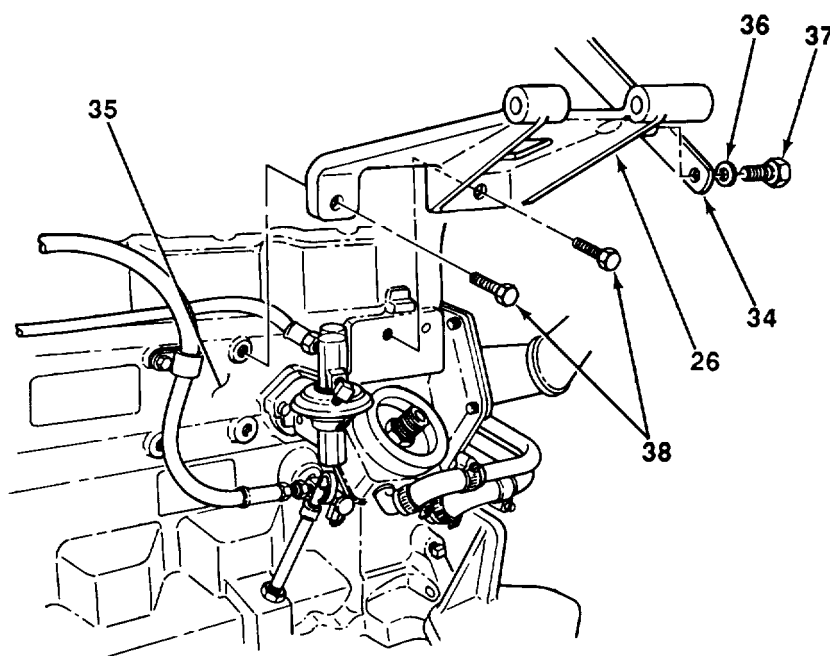
Perform steps 10 through 14 only if bracket or straps are damaged.

10. Remove nut (31), strap (23), and two washers (30) from water pump (29).
 11. Remove bolt (32), clamp (33), and strap (34) from water pump (29).



12. Remove bolt (37), washer (36), and strap (34) from bracket (26).
 13. Remove engine oil filter (see paragraph 5-3).
 14. Remove two bolts (38) and bracket (26) from engine block (35).

6-1. ALTERNATOR REPLACEMENT.(Con't).



b. INSTALLATION I

NOTE

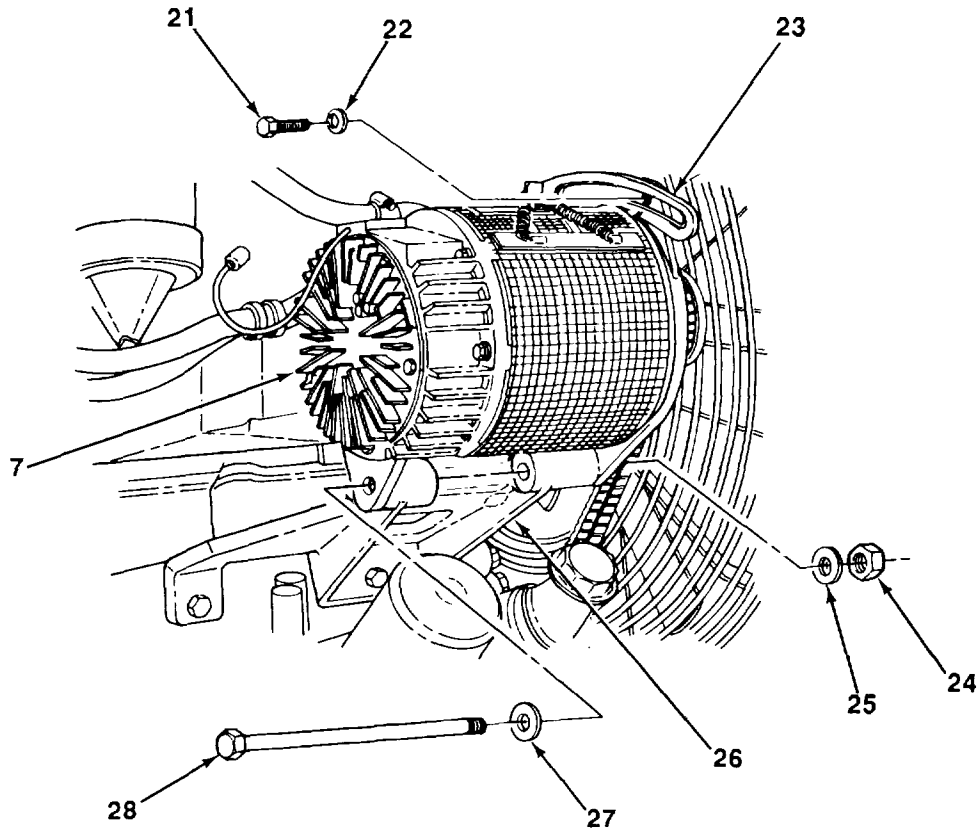
Perform steps 1 through 5 only if bracket or straps were removed.

1. Install bracket (26) to engine block (35) with two bolts (38).
2. Install engine oil filter (see paragraph 5-3).
3. Install strap (34) on bracket (26) with washer (36) and bolt (37).
4. Install strap (34) and clamp (33) on water pump (29) with bolt (32).
5. Install two washers (30) and strap (23) on water pump (29) with nut (31).
6. Install alternator pulley (see paragraph 6-2).

6-1. ALTERNATOR REPLACEMENT.(Con't).**WARNING**

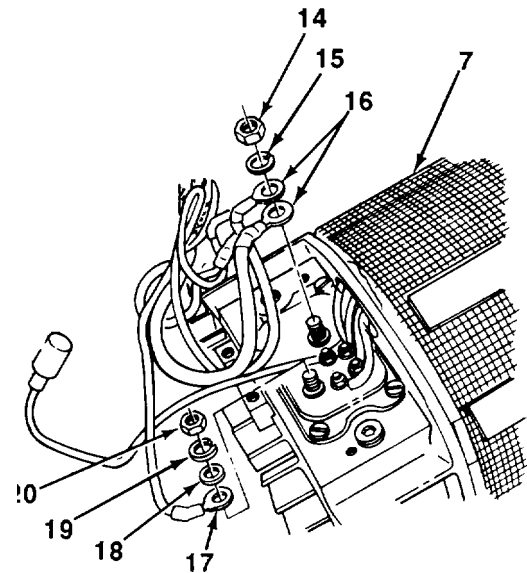
Alternator is heavy. Ensure that alternator is supported when bolt is installed. Failure to follow this warning may result in injury to personnel or damage to equipment.

7. Install alternator (7) on bracket (26) with washer (27), bolt (28), washer (25), and nut (24).
8. Install washer (22) and bolt (21) on strap (23) and alternator (7).

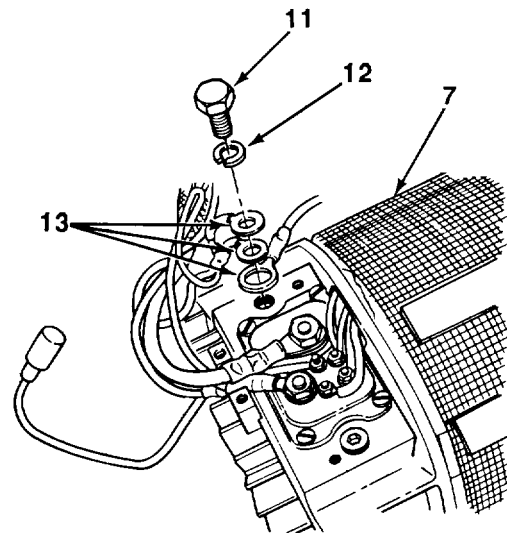


6-1. ALTERNATOR REPLACEMENT.(Con't).

9. Install terminal lead (17) on alternator (7) with washer (18), new lockwasher (19), and nut (20).
10. Install two terminal leads (16) on alternator (7) with new lockwasher (15) and nut (14).

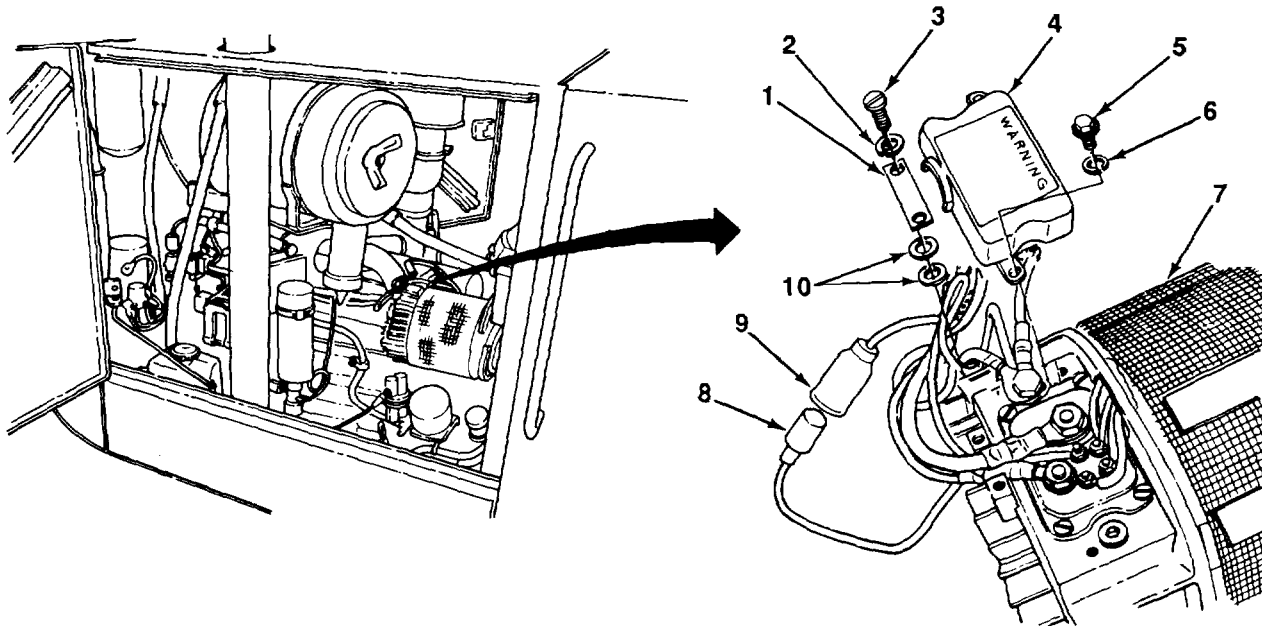


11. Install three terminal leads (13) on alternator (7) with new lockwasher (12) and bolt (11).



6-1. ALTERNATOR REPLACEMENT.(Con't).

12. Install cover (4) on alternator (7) with two new lockwashers (6) and screws (5).
13. Install four washers (10) and strap (1) on alternator (7) with two new lockwashers (2) and screws (3).
14. Connect alternator wiring harness connector (8) to engine wiring harness connector (9).

**FOLLOW-ON TASKS:**

- Install fan belts (see paragraph 5-37).
- Close left engine upper sideshield (see TM 10-3930-659-10).

6-2. ALTERNATOR PULLEY REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Alternator removed (see paragraph 6-1).

Materials/Parts:

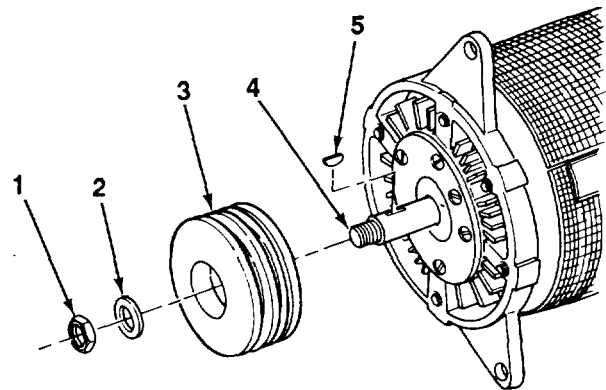
- One locknut

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Mechanical puller kit (Item 32, Appendix F)

a. REMOVAL

1. Remove locknut (1) and washer (2) from alternator shaft (4). Discard locknut.
2. Remove alternator pulley (3) from alternator shaft (4).
3. Remove key (5) from alternator shaft (4).

**b. INSTALLATION**

1. Install key (5) on alternator shaft (4).
2. Press alternator pulley (3) on alternator shaft (4) and install washer (2) and new locknut (1).

FOLLOW-ON TASKS:

- Install alternator (see paragraph 6-1).

6-3. STARTER MOTOR REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Negative battery cables disconnected (see paragraph 6-43).
- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- One gasket
- Two lockwashers

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Torque wrench, 0-175 lb.-ft. (Item 52, Appendix F)
- Socket wrench set, Y in. drive (Item 54, Appendix F)

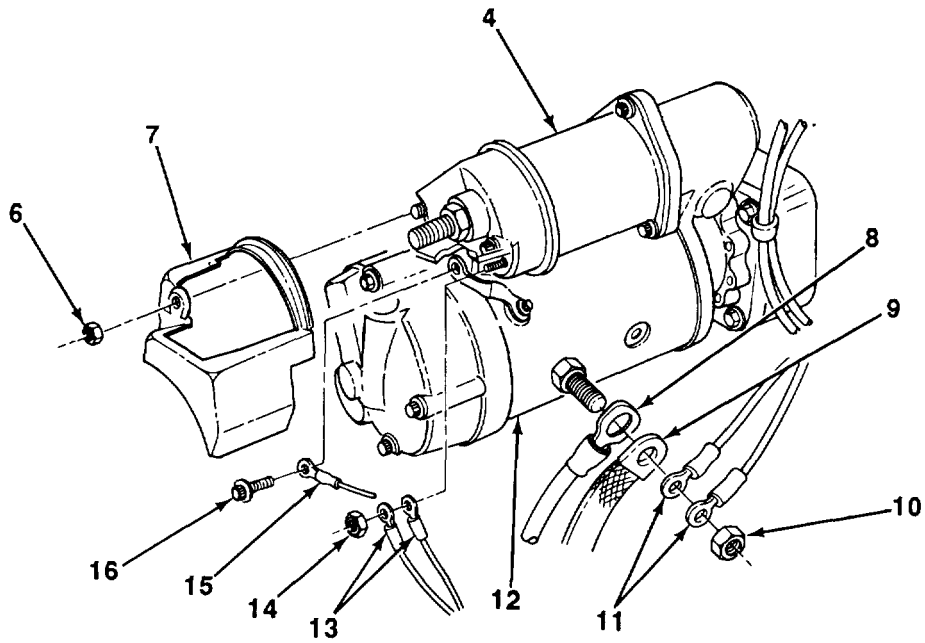
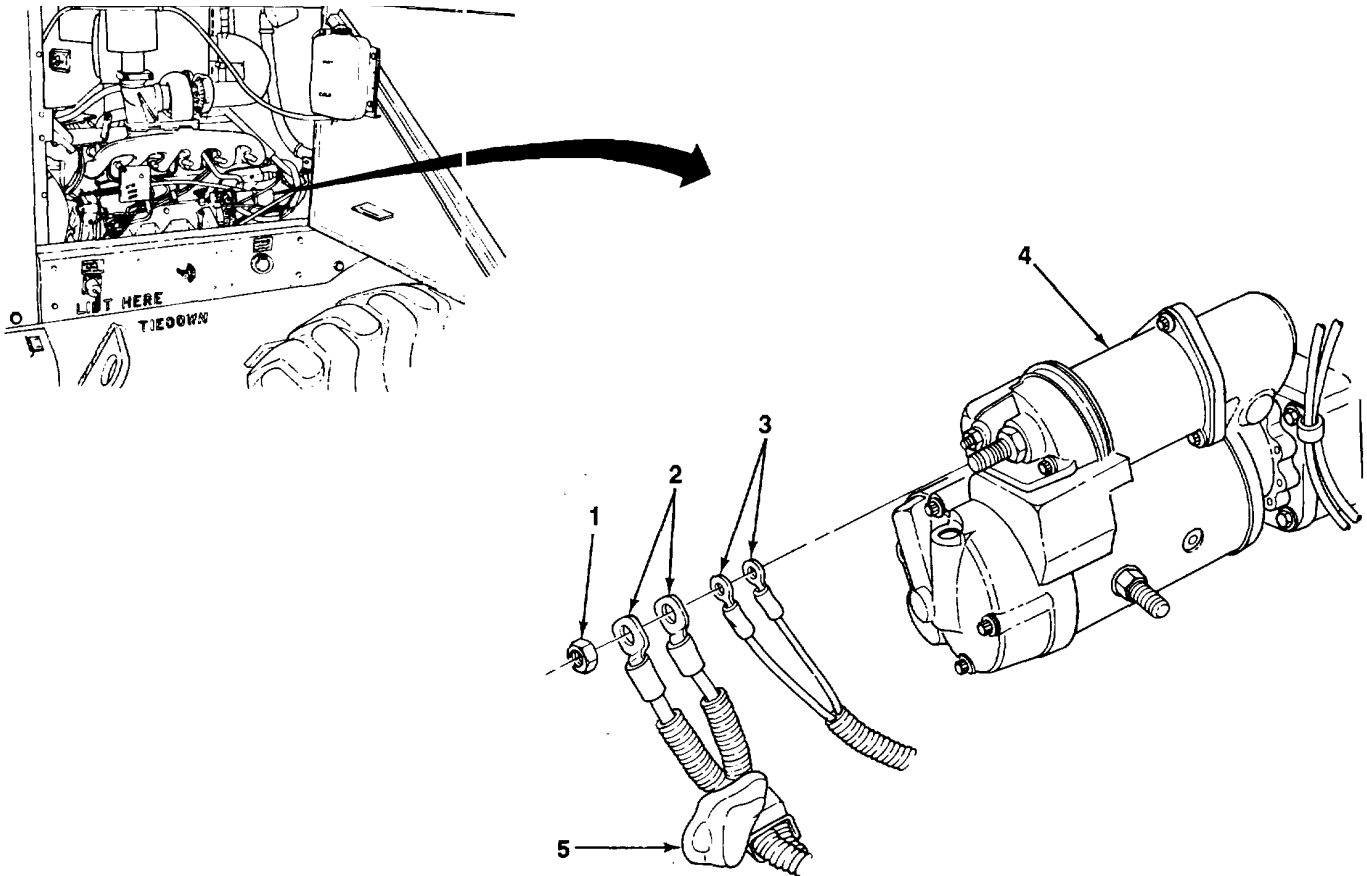
a. REMOVAL**NOTE**

• **All wires and cables should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.**

• **Remove tie-down straps as necessary.**

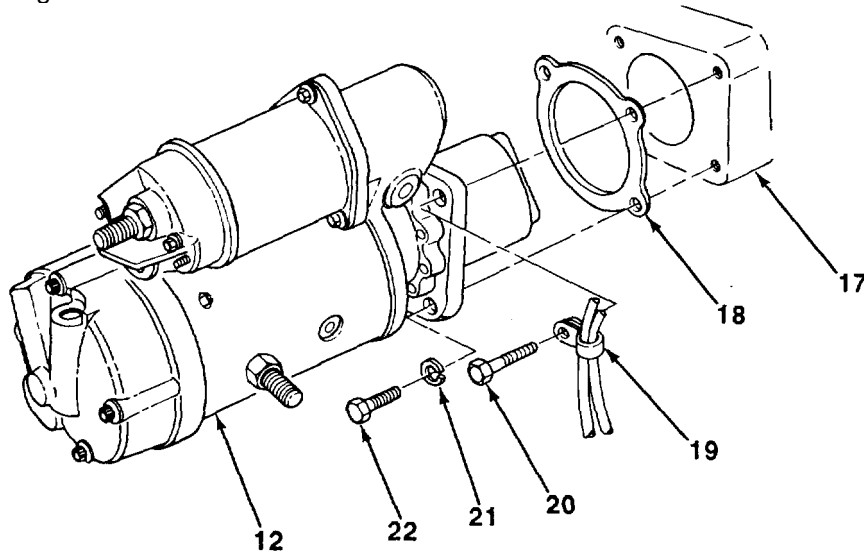
1. Pull back rubber boot (5) and remove nut (1), two cables (2), and secondary steering wiring harness terminal leads (3) from starter motor solenoid (4).
2. Remove nut (6) and cover (7) from starter motor solenoid (4).
3. Remove nut (14) and two terminal leads (13) from starter motor solenoid (4).
4. Remove screw (16) and terminal lead (15) from starter motor solenoid (4).
5. Remove nut (10), two terminal leads (11), ground strap (9), and cable (8) from starter motor (12).

6-3. STARTER MOTOR REPLACEMENT.



6-3. STARTER MOTOR REPLACEMENT.

6. Remove screw (20) and clamp (19) from starter motor (12).
7. Remove two screws (22), lockwashers (21), starter motor (12), and gasket (18) from engine (17). Discard lockwashers and gasket.

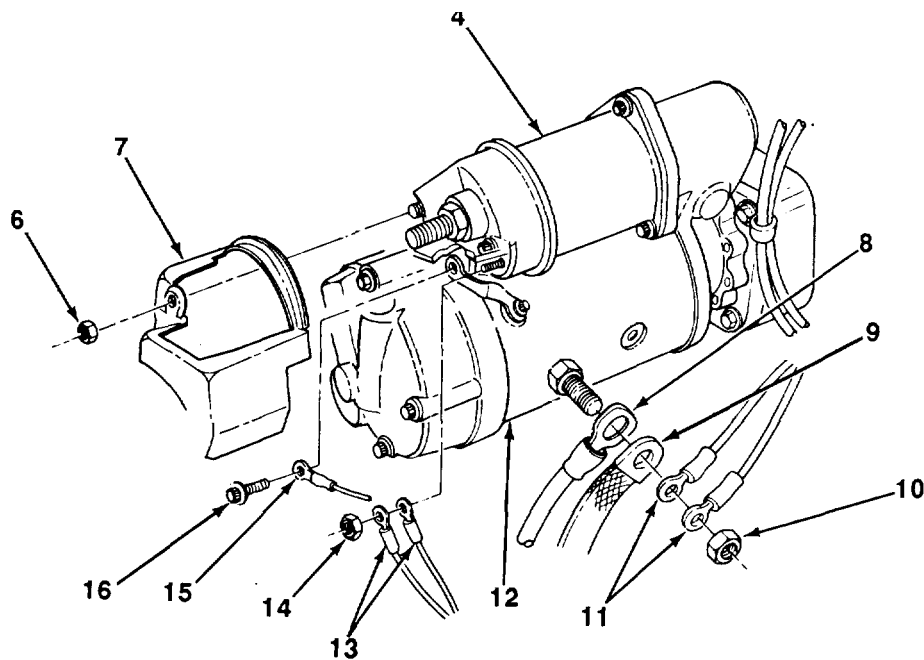
**b. INSTALLATION****NOTE**

Install tie-down straps as necessary.

1. Install new gasket (18) and starter motor (12) on engine (17) with two new lockwashers (21) and screws (22).
2. Install clamp (19) on starter motor (12) with screw (20).
3. Torque three screws (20 and 22) to 35 lb.-ft. (47 N.m).

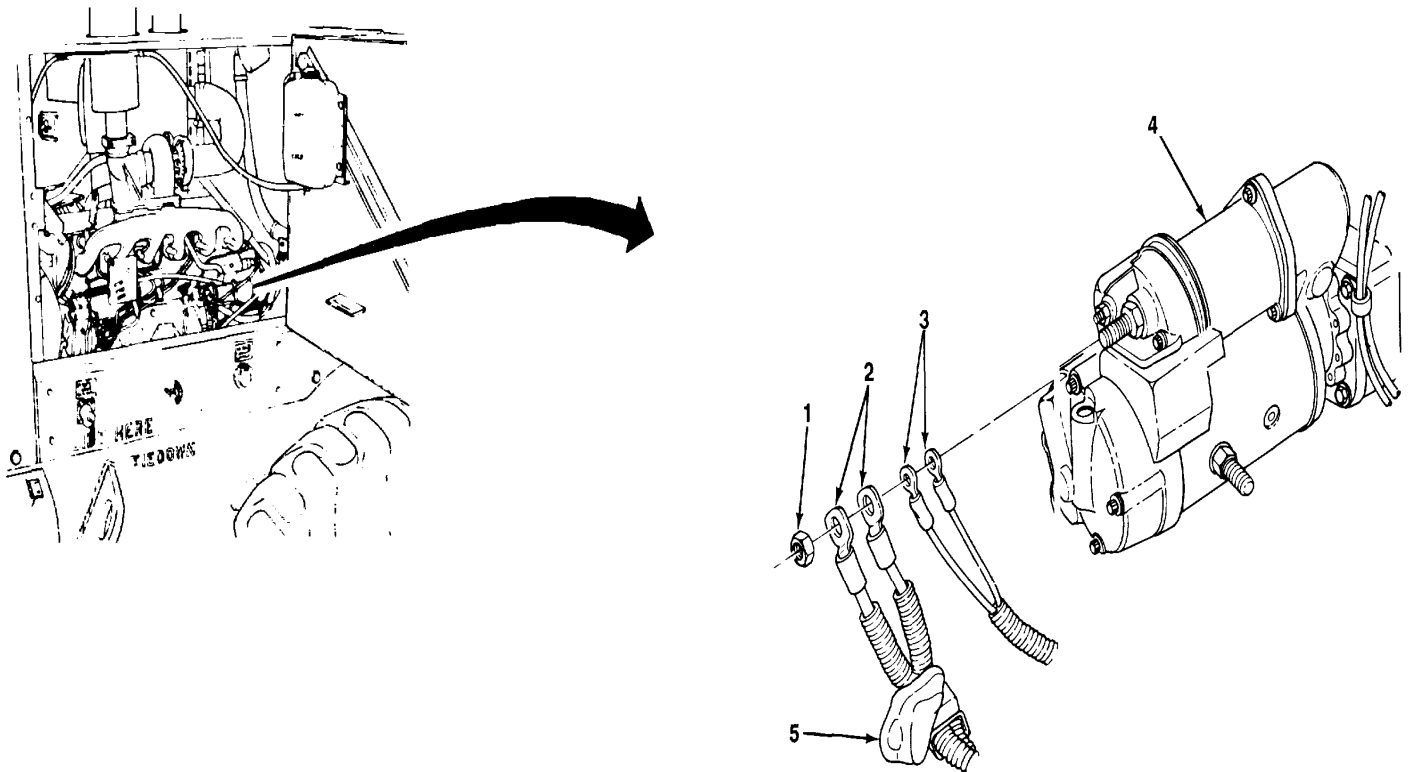
6-3. STARTER MOTOR REPLACEMENT.

4. Install cable (8), ground strap (9), and two terminal leads (11) on starter motor (12) with nut (10).
5. Install terminal lead (15) on starter motor solenoid (4) with screw (16).
6. Install two terminal leads (13) on starter motor solenoid (4) with nut (14).
7. Install cover (7) on starter motor solenoid (4) with nut (6).



6-3. STARTER MOTOR REPLACEMENT.

8. Install two secondary steering wiring harness terminal leads (3) and cables (2) on starter motor solenoid (4) with nut (1).
9. Install rubber boot (5) over nut (1).

**FOLLOW-ON TASKS:**

- Close right upper sideshield (see TM 10-3930-659-10)
- Install conveyerized fork attachment on side of forklift (see paragraph 17-13).
- Connect negative cable (see paragraph 6-43).

6-4. NEUTRAL START SWITCH REPLACEMENT.**Equipment Conditions:**

- Battery disconnect switch In OFF position (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).
- Reverse warning alarm switch removed (see paragraph 6-37).

Materials/Parts:

- One performed packing

References:

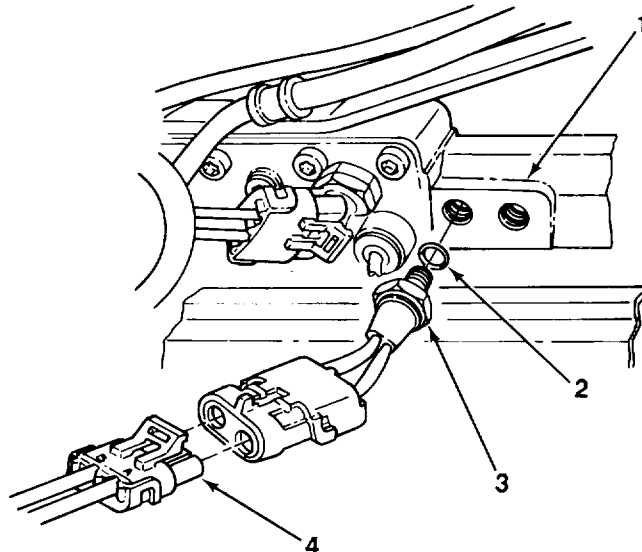
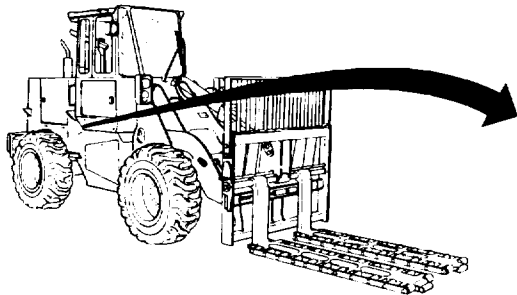
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

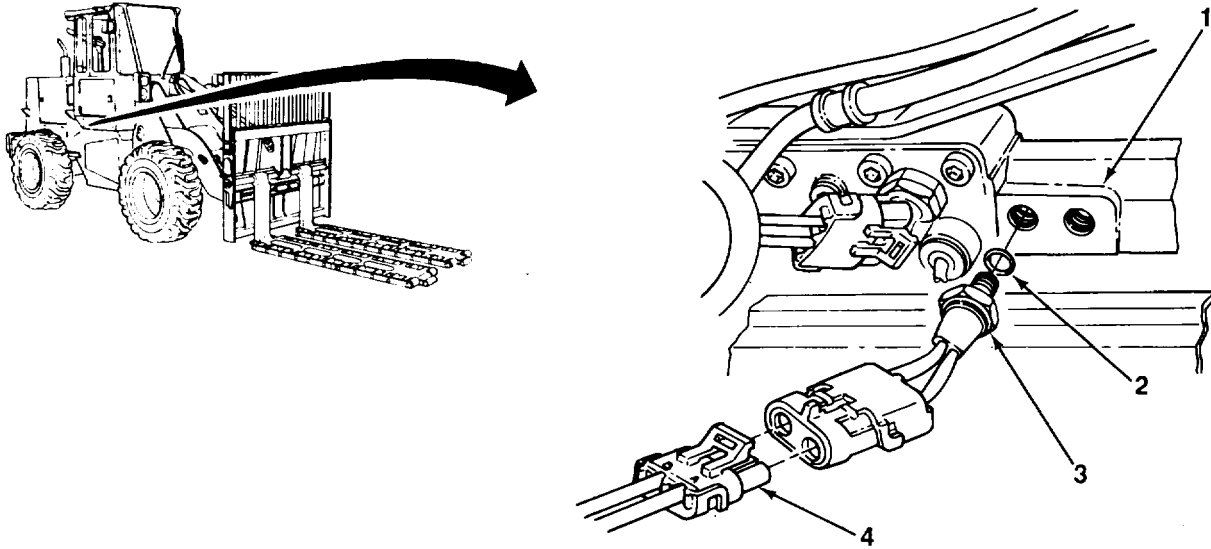
a. REMOVAL

1. Disconnect transmission wiring harness connector (4) from neutral start switch (3).
2. Remove neutral start switch (3) and preformed packing (2) from transmission control valve (1). Discard preformed packing.



6-4. NEUTRAL START SWITCH REPLACEMENT.(Con't).

1. Install new preformed packing (2) and neutral start switch (3) on transmission control valve (1).
2. Connect transmission wiring harness connector (4) to neutral start switch (3).

**FOLLOW-ON TASKS:**

- Install reverse warning alarm switch (see paragraph 6-37).
- Install right side cab skirt (see paragraph 14-6).

6-5. FAULT MONITOR MODULE REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- Three gaskets

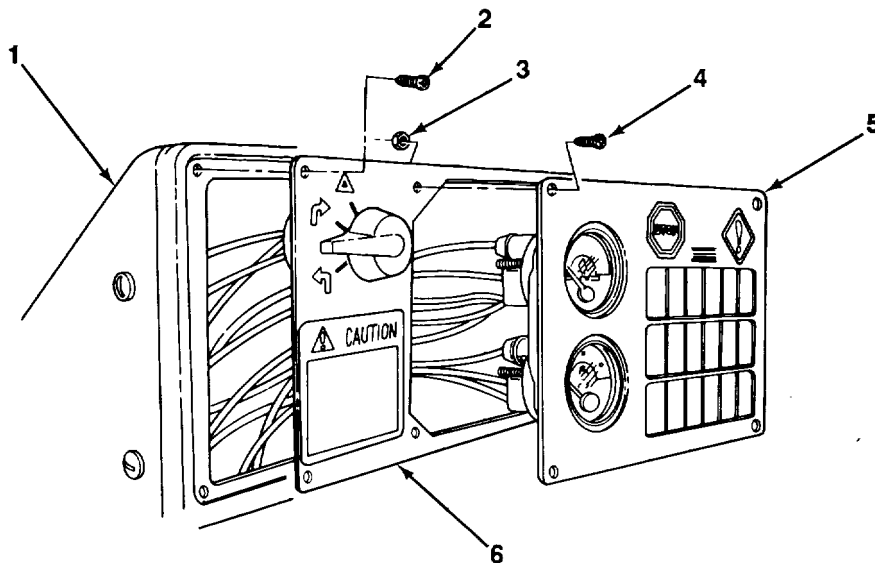
Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F) * TM 10-3930-659-10

References:**a. REMOVAL****NOTE**

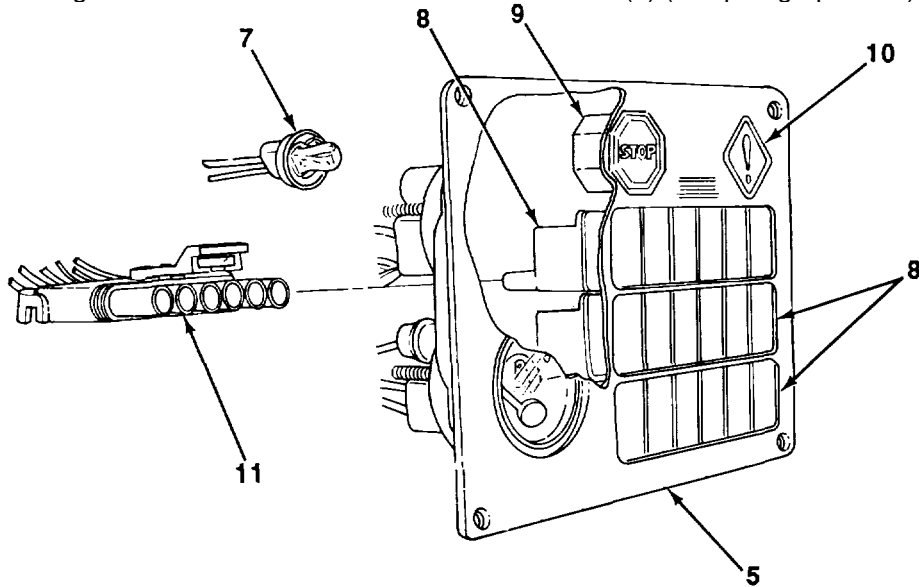
All connectors should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

1. Remove four screws (2) and lift dash plate (6) from dash housing (1).
2. Remove four nuts (3), screws (4), and fault monitor console (5) from dash plate (6).
3. Place dash plate (6) back in original position against dash housing (1).

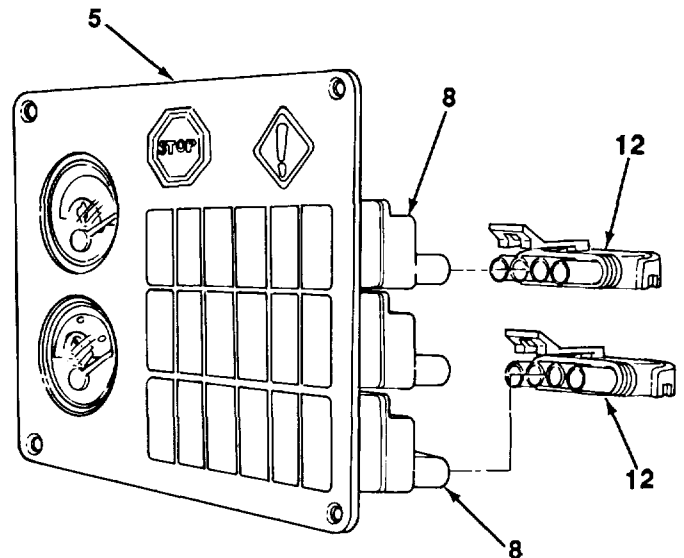


6-5. FAULT MONITOR MODULE REPLACEMENT.(Con't).

4. Remove two sockets (7) from stop engine indicator (9) and service required indicator (10).
5. Disconnect seven fault monitor and dash wiring harness connectors (11) from three fault monitor modules (8).
6. Disconnect transmission oil temperature gage connectors and fuel gage from fault monitor console (5) (see paragraph 6-7).
7. Disconnect warning buzzer connector from fault monitor console (5) (see paragraph 6-38).



8. Disconnect two connectors (12) from two fault monitor modules (8).



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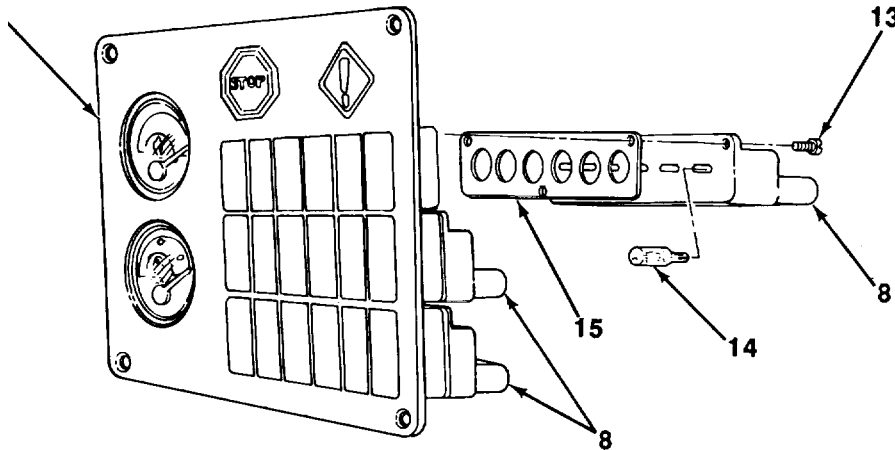
6-5. FAULT MONITOR MODULE REPLACEMENT.

9. Remove nine screws (13), three fault monitor modules (8), and gaskets (15) from fault monitor console (5). Discard three gaskets.

NOTE

Each fault monitor module has six bulbs. Bulbs are removed by pulling straight out from fault monitor module.

10. Remove 18 bulbs (14) from three fault monitor modules (8).

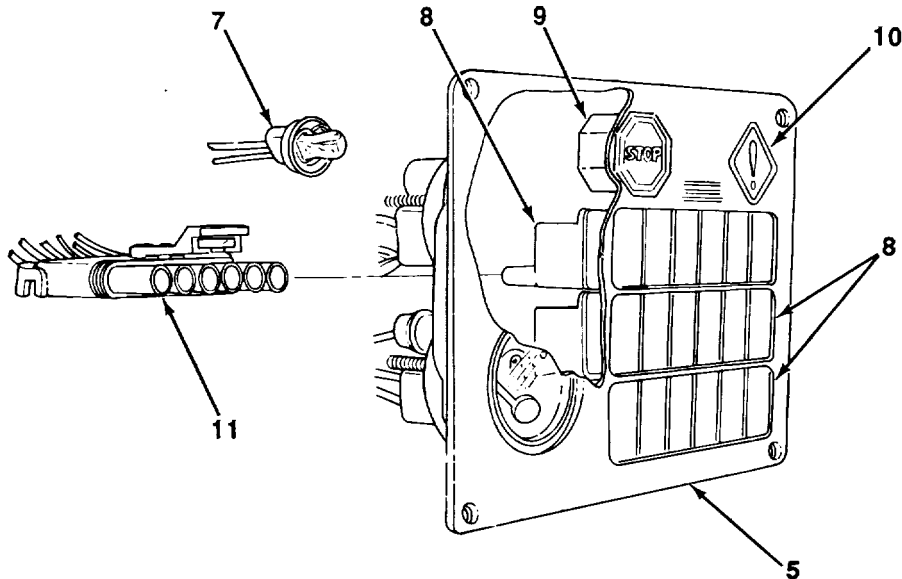
**b. INSTALLATION****NOTE**

Each fault monitor module has six bulbs.

1. Install 18 bulbs (14) on three fault monitor modules (8).
2. Install three new gaskets (15) and fault monitor modules (8) on fault monitor console (5) with nine screws (13).
3. Connect two connectors (12) to two fault monitor modules (8).

6-5. FAULT MONITOR MODULE REPLACEMENT.

4. Position fault monitor console (5) on dash plate (6).
5. Connect warning buzzer connector on fault monitor console (5) (see paragraph 6-38).
6. Connect transmission oil temperature gage connectors and fuel gage on fault monitor console (5) (see paragraph 6-7).
7. Connect seven fault monitor and dash wiring harness connectors (11) to three fault monitor modules (8).
8. Install two sockets (7) on service required indicator (10) and stop engine indicator (9).



9. Lift dash plate (6) from dash housing (1), and install fault monitor console (5) on dash plate with four screws (4) and nuts (3).

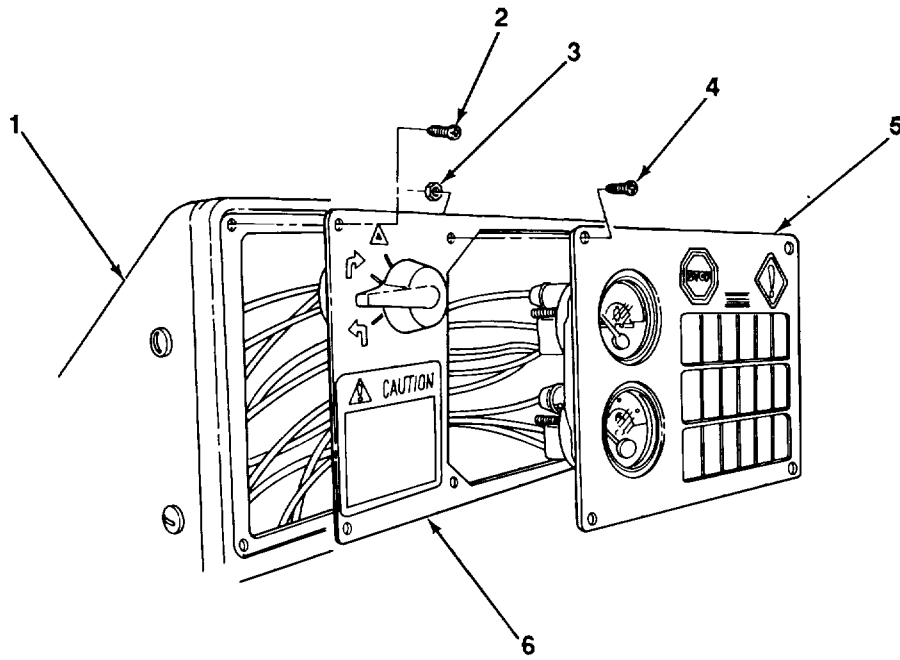
CAUTION

Use care not to overtighten screws when installing dash plate. Dash plate is plastic and may be damaged if screws are overtightened.

10. Install dash plate (6) on dash housing (1) with four screws (2).

TA707715

6-5. FAULT MONITOR MODULE REPLACEMENT.



6-6. FAULT MONITOR BULB REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).

Materials/Parts:

- One gasket

Tools/Test Equipment:

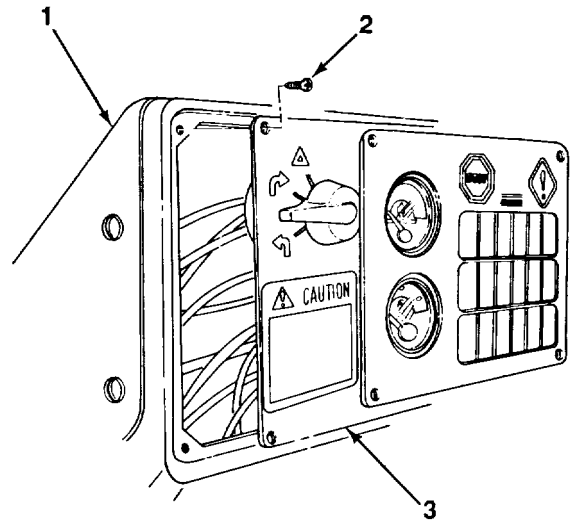
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL

1. Remove four screws (2) and lift dash plate (3) from dash housing (1).

**NOTE**

Fault monitor console has three fault monitor modules. Determine location of bulb needing replacement and remove only that fault monitor module.

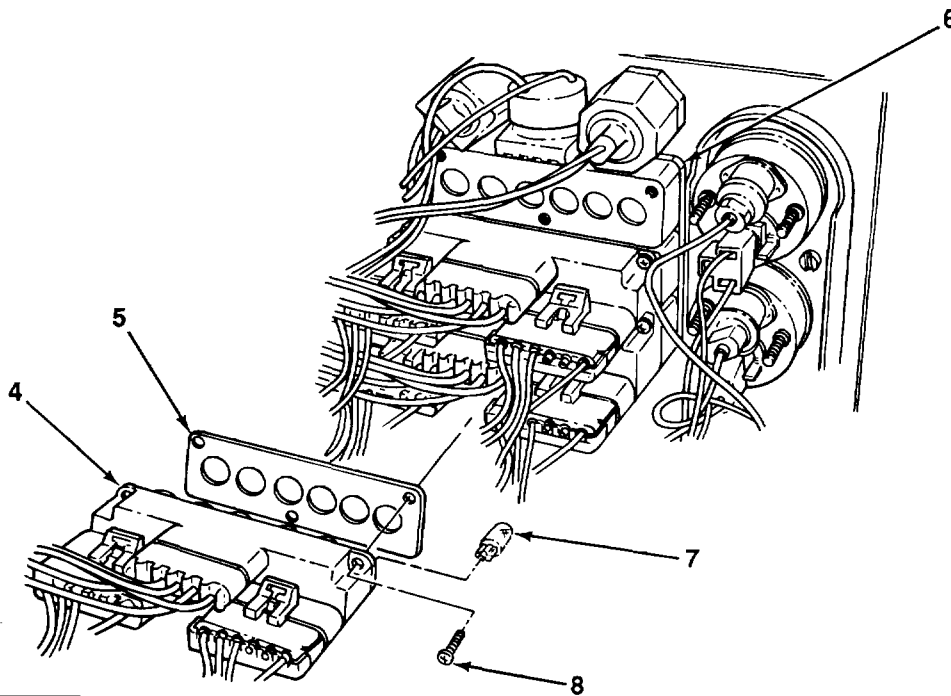
2. Remove three screws (8), fault monitor module (4), and gasket (5) from fault monitor console (6). Discard gasket.

NOTE

Each fault monitor module has six bulbs. Bulbs are removed by pulling straight out from fault monitor module.

3. Remove bulb (7) from fault monitor module (4).

6-6. FAULT MONITOR BULB REPLACEMENT (Con't).

**b. INSTALLATION**

1. Install bulb (7) on fault monitor module (4).
2. Install new gasket (5) and fault monitor module (4) on fault monitor console (6) with three screws (8).

CAUTION

Use care not to overtighten screws when installing dash plate. Dash plate is plastic and may be damaged if screws are overtightened.

3. Install dash plate (3) on dash housing (1) with four screws (2).

6-7. TRANSMISSION OIL TEMPERATURE GAGE AND FUEL GAGE MAINTENANCE.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

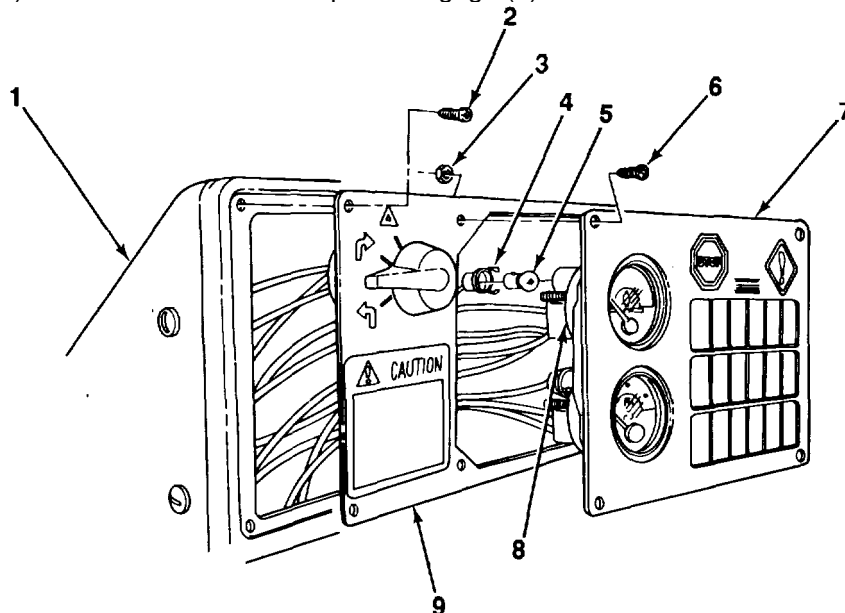
- TM 10-3930-659-10

NOTE

Transmission oil temperature gage and fuel gage are maintained the same way. Transmission oil temperature gage is illustrated.

a. LAMP REPLACEMENT

1. Remove four screws (2) and lift dash plate (9) from dash housing (1).
2. Remove four nuts (3), screws (6), and fault monitor console (7) from dash plate (9).
3. Remove socket (4) from transmission oil temperature gage (8).



6-7. TRANSMISSION OIL TEMPERATURE GAGE AND FUEL GAGE MAINTENANCE (Con't).

4. Remove lamp (5) from socket (4) by pushing lamp in and turning counterclockwise.
5. Install lamp (5) in socket (4) by pushing lamp in and turning clockwise.
6. Install socket (4) in transmission oil temperature gage (8).
7. Install fault monitor console (7) on dash plate (9) with four screws (6) and nuts (3).

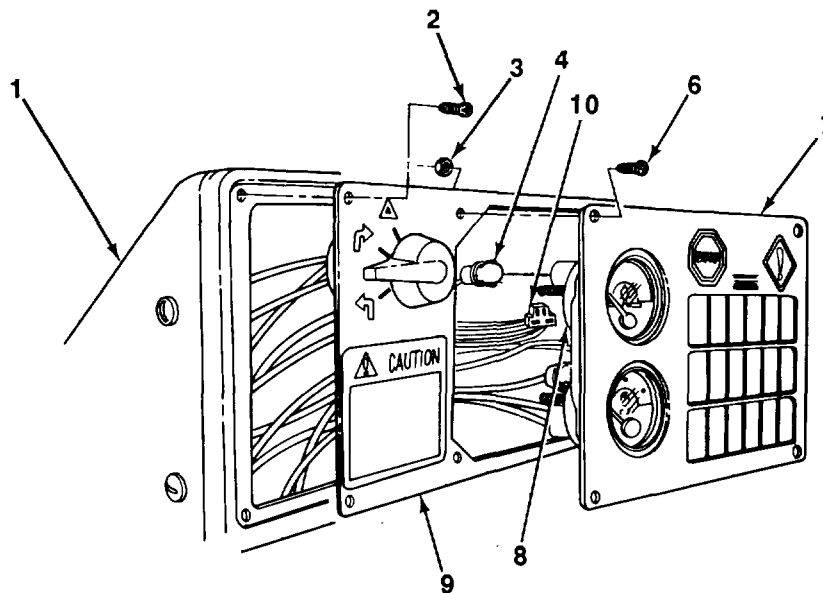
CAUTION

Use care not to overtighten screws when installing dash plate. Dash plate is plastic and may be damaged if screws are overtightened.

8. Install dash plate (9) on dash housing (1) with four screws (2).

b. REMOVAL

1. Remove four screws (2) and lift dash plate (9) from dash housing (1).
2. Remove four nuts (3), screws (6), and fault monitor console (7) from dash plate (9).
3. Remove socket (4) from transmission oil temperature gage (8).
4. Remove connector (10) from transmission oil temperature gage (8).

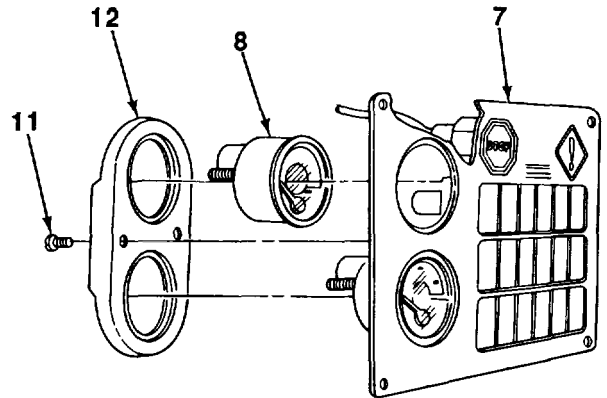


6-7. TRANSMISSION OIL TEMPERATURE GAGE AND FUEL GAGE MAINTENANCE.

- Remove two screws (11), bracket (12), and transmission oil temperature gage (8) from fault monitor console (7).

c. INSTALLATION

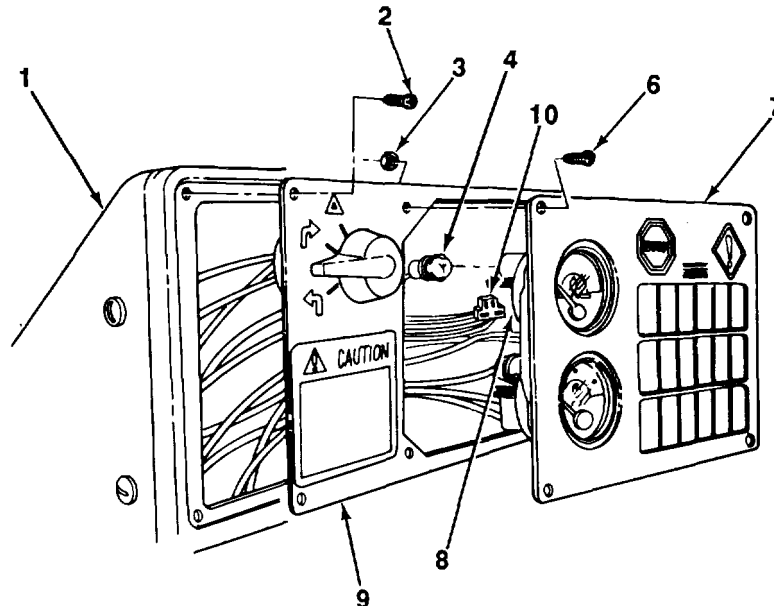
- Position transmission oil temperature gage (8) on fault monitor console (7) and install bracket (12) with two screws (11).
- Install connector (10) on transmission oil temperature gage (8).
- Install socket (4) on transmission oil temperature gage (8).
- Install fault monitor console (7) on dash plate (9) with four screws (6) and nuts (3).



CAUTION

Use care not to overtighten screws when installing dash plate. Dash plate is plastic and may be damaged if screws are overtightened.

- Install dash plate (9) on dash housing (1) with four screws (2).



6-8. ENGINE HOURMETER REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

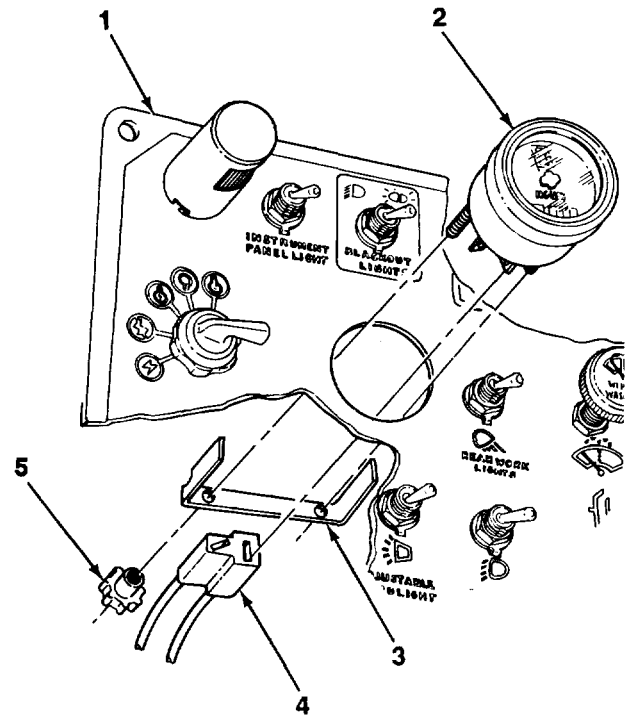
- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Right access door opened (see TM 10-3930-659-10).
- Cab window opened (see TM 10-3930-659-10).

References:

- TM 10-3930-659-10
- TM 10-3930-659-10).

a. REMOVAL

1. Disconnect right panel wiring harness connector (4) from engine hourmeter (2).
2. Remove two nuts (5), bracket (3), and engine hourmeter (2) from right panel cover (1).



1. Install engine hourmeter (2) and bracket (3) on right panel cover (1) with two nuts (5).
2. Connect right panel wiring harness connector (4) to engine hourmeter (2).

FOLLOW-ON TASKS:

- Close cab window (see TM 10-3930-659-10).
- Close right access door (see TM 10-3930-659-10).

6-9. INSTRUMENT PANEL LIGHT MAINTENANCE.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Right access door opened (see TM 10-3930-659-10).
- Cab window opened (see TM 10-3930-659-10).

Tools/Test Equipment:

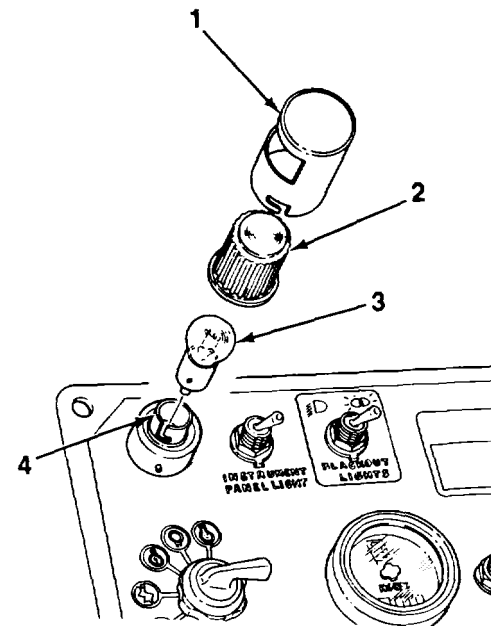
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

a. LAMP REPLACEMENT

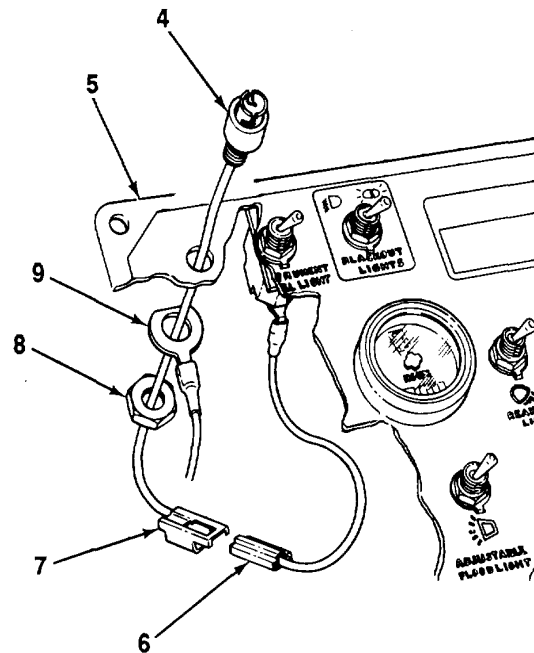
1. Remove lamp housing (1) and lens (2) from socket (4).
2. Remove lamp (3) from socket (4) by pushing lamp in and turning counterclockwise.
3. Install lamp (3) in socket (4) by pushing lamp in and turning clockwise.
4. Install lens (2) and lamp housing (1) on socket (4).

**b. REMOVAL**

1. Remove lamp housing (1) and lens (2) from socket (4).
2. Remove lamp (3) from socket (4) by pushing lamp in and turning counterclockwise.

6-9. INSTRUMENT PANEL LIGHT MAINTENANCE (Con't).

3. Disconnect lamp socket connector (7) from instrument panel light switch connector (6).
4. Remove nut (8), right panel wiring harness wire (9), and socket (4) from right panel cover (5).

**c. INSTALLATION**

1. Install socket (4) and right panel wiring harness wire (9) on right panel cover (5) with nut (8).
2. Connect lamp socket connector (7) to instrument panel light switch connector (6).
3. Install lamp (3) in socket (4) by pushing lamp in and turning clockwise.
4. Install lens (2) and lamp housing (1) on socket (4).

FOLLOW-ON TASKS:

- Close cab window (see TM 10-3930-659-10).
- Close right access door (see TM 10-3930-659-10).

TA707724

6-10. IGNITION SWITCH REPLACEMENT

This Task Covers:

a. Removal

b. Installation

Initial Setup:

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Right access door opened (see TM 10-3930-659-10).
- Cab window opened (see TM 10-3930-659-10)

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

a. REMOVAL**NOTE**

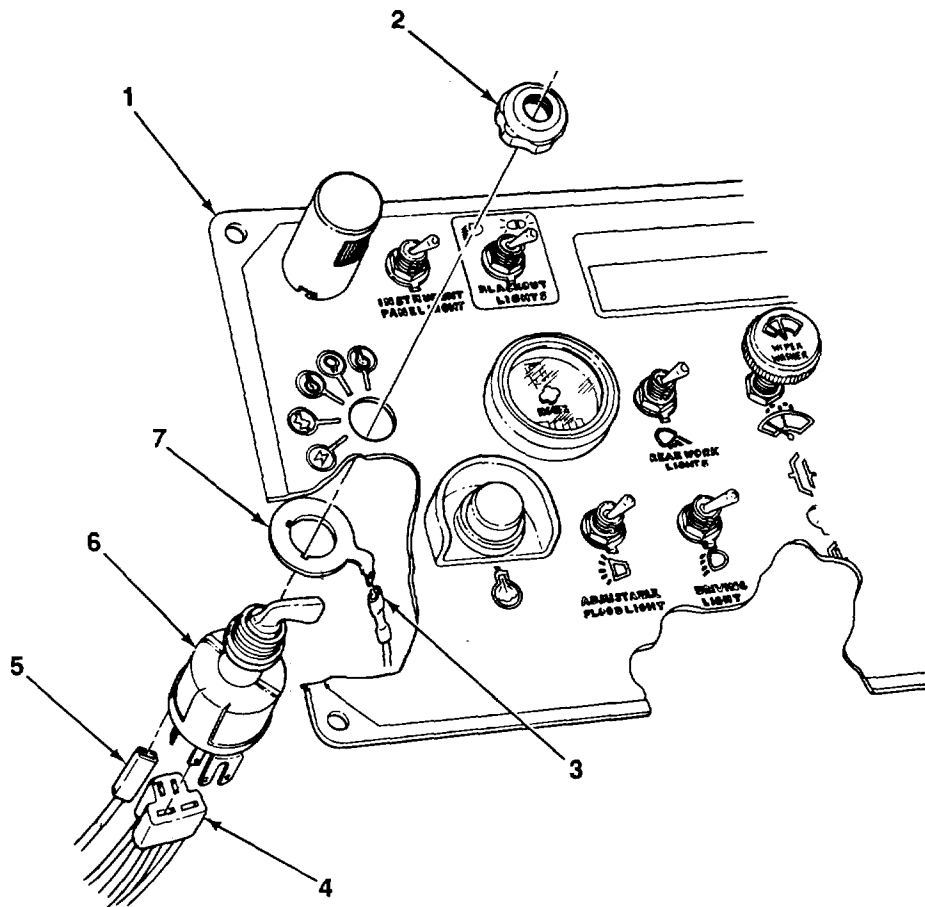
All wires and connectors should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

1. Remove right panel wiring harness wire (3) from ground connector (7).
2. Disconnect two right panel wiring harness connectors (4 and 5) from Ignition switch (6).
3. Remove nut (2) and ignition switch (6) from right panel cover (1).
4. Remove ground connector (7) from ignition switch (6).

b. INSTALLATION

1. Position ground connector (7) on ignition switch (6).
2. Install ignition switch (6) on right panel cover (1) with nut (2).
3. Connect two right panel wiring harness connectors (4 and 5) to ignition switch (6).
4. Install right panel wiring harness wire (3) on ground connector (7).

6-10. IGNITION SWITCH REPLACEMENT (Con't).



FOLLOW-ON TASKS:

- Close cab window (see TM 10-3930-659-10).
- Close right access door (see TM 10-3930-659-10).

TA707725

6-11. INSTRUMENT PANEL LIGHT SWITCH, BLACKOUT LIGHTS SWITCH, REAR WORKLIGHT SWITCH, CLUTCH CUTOFF SWITCH, DRIVING LIGHTS SWITCH, ADJUSTABLE FLOODLIGHT SWITCH, AND AIR COMPRESSOR SWITCH REPLACEMENT.

This Task Covers:

a. Removal

b. Installation

Initial Setup:

Equipment Conditions:

- Battery disconnect switch In OFF position (see TM 10-3930-659-10).
- Right access door opened (see TM 10-3930-659-10).
- Cab window opened (see TM 10-3930-659-10)

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:

- TM 103930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

NOTE

- Instrument panel light switch, blackout lights switch, rear worklight switch, clutch cutoff switch, driving lights switch, adjustable floodlight switch, and air compressor switch are removed and installed the same way except quantity of wires may vary. Clutch cutoff switch is illustrated.
- All terminal leads should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

a. REMOVAL

1. Remove two screws (6) and terminal leads (5) from clutch cutoff switch (4).

NOTE

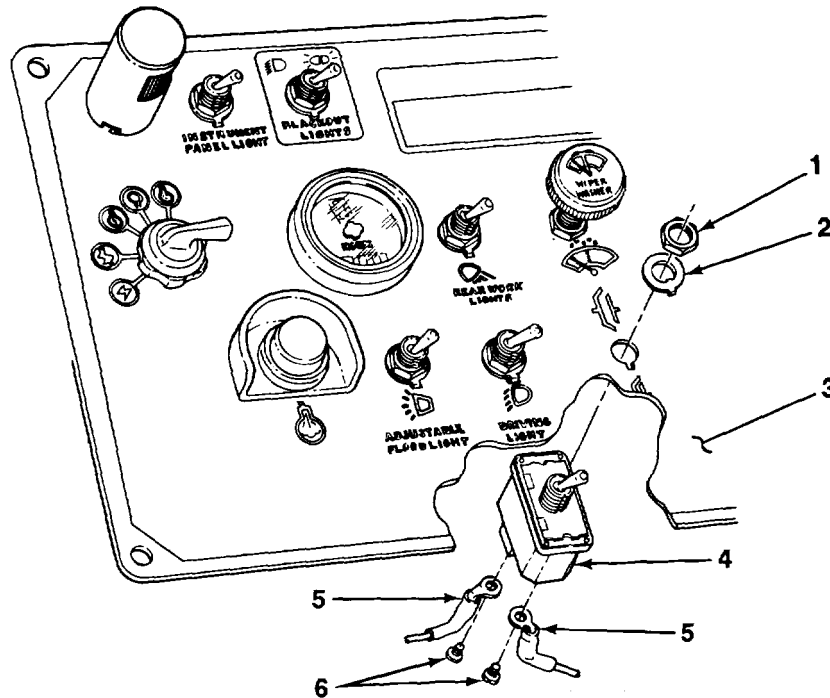
Note position of clutch cutoff switch to aid during installation.

2. Remove nut (1), lockring (2), and clutch cutoff switch (4) from right panel cover (3).

b. INSTALLATION

1. Install clutch cutoff switch (4) on right panel cover (3) with lockring (2) and nut (1).
2. Install two terminal leads (5) on clutch cutoff switch (4) with two screws (6).

6-11. INSTRUMENT PANEL LIGHT SWITCH, BLACKOUT LIGHTS SWITCH, REAR WORKLIGHT SWITCH, CLUTCH CUTOFF SWITCH, DRIVING LIGHTS SWITCH, ADJUSTABLE FLOODLIGHT SWITCH, AND AIR COMPRESSOR SWITCH REPLACEMENT (Con't).



FOLLOW-ON TASKS:

- Close cab window (see TM 10-3930-659-10).
- Close right access door (see TM 10-3930-659-10).

TA707726

6-12. ELECTRICAL LOAD CENTER REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Air compressor assembly removed (see paragraph 20-1).

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- Four lockwashers

References:

- TM 10-3930-659-10

Tools/Test Equipment:

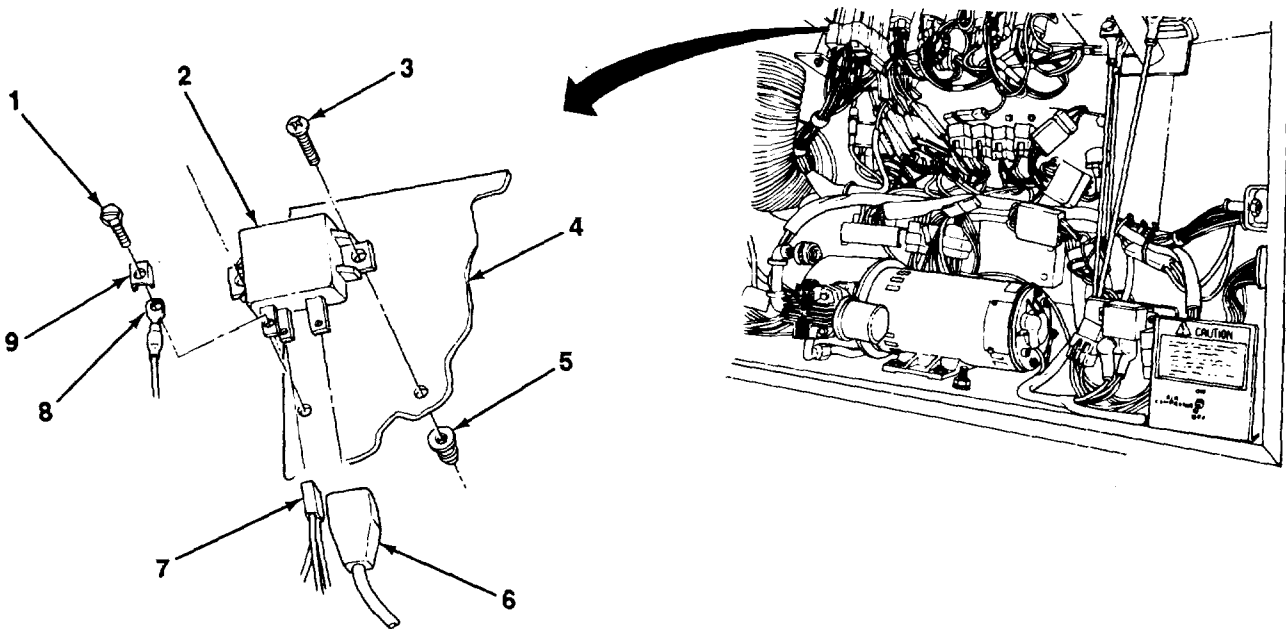
- General mechanic's tool kit (Item 44, Appendix F)

NOTE

- All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.
- Refer to wiring diagrams for assistance (see paragraph 6-73).

a. REMOVAL

1. Disconnect two connectors (6 and 7) from starter relay (2).
2. Remove screw (1), clip (9), and terminal lead (8) from starter relay (2).
3. Remove two nuts (5), screws (3), and starter relay (2) from load center plate (4).



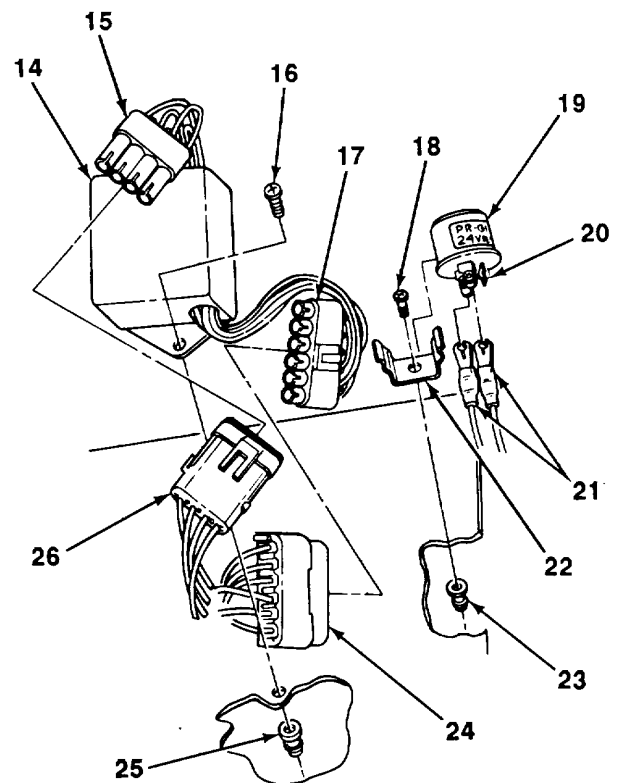
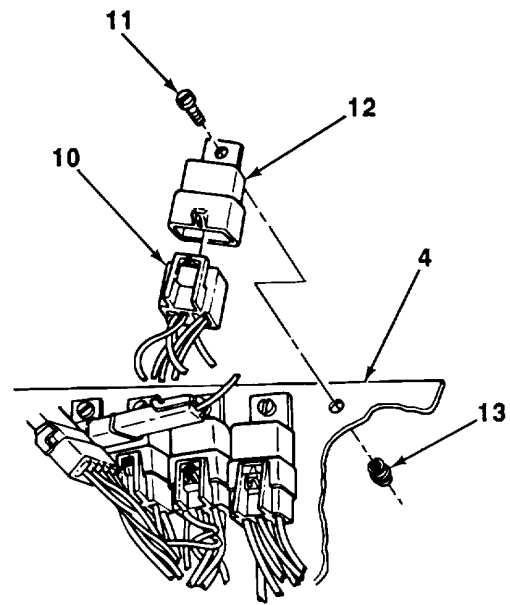
TA707727

6-12. ELECTRICAL LOAD CENTER REPLACEMENT (Con't).

NOTE

Relays of electrical load center are removed the same way. Perform steps 4 and 5 for each of 11 relays.

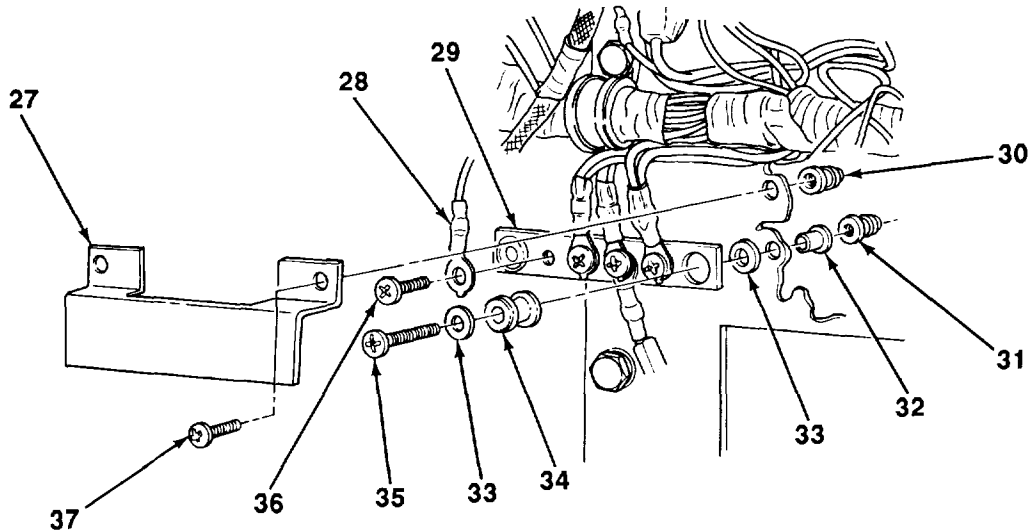
4. Disconnect load center wiring harness connector (10) from relay (12).
5. Remove nut (13), screw (11), and relay (12) from load center plate (4).
6. Disconnect two 24-volt module connectors (15 and 17) from load center wiring harness connectors (24 and 26).
7. Remove two nuts (25), screws (16), and 24-volt module (14).
8. Loosen two screws (20) and remove two load center wiring harness terminal leads (21) from flasher (19).
9. Remove flasher (19) from spring clip (22).
10. Remove nut (23), screw (18), and spring clip (22).



TA707728

6-12. ELECTRICAL LOAD CENTER REPLACEMENT (Con't).

11. Remove two nuts (30), screws (37), and cover (27) from buss bar (29).
12. Remove four screws (36) and eight load center wiring harness terminal leads (28) from buss bar (29).
13. Remove two nuts (31), seals (32), screws (35), four washers (33), two grommets (34), and buss bar (29).



14. Disconnect secondary steering controller connector (39) from load center wiring harness connector (38).

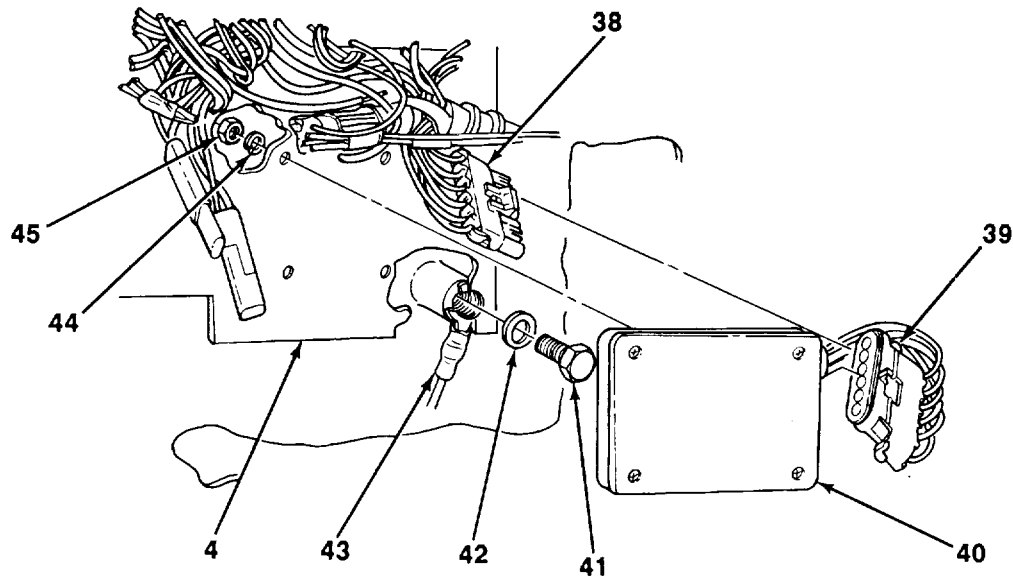
NOTE

Remove two clamps as necessary.

15. Remove four screws (41), washers (42), load center plate (4), and air compressor wiring harness ground wire
16. Remove four nuts (45), lockwashers (44), and secondary steering controller (40) from load center plate (4). Discard lockwashers.

TA707729

6-12. ELECTRICAL LOAD CENTER REPLACEMENT (Con't).

**b. INSTALLATION**

1. Install secondary steering controller (40) to load center plate (4) with four new lockwashers (44) and nuts (45).

NOTE

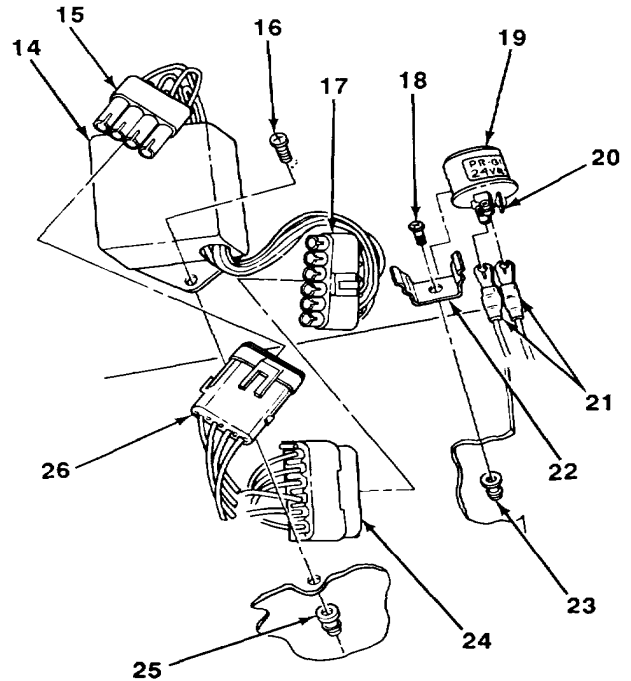
Install two clamps as necessary.

2. Install air compressor wiring harness ground wire (43) and load center plate (4) on cab with four washers (42)
3. Connect secondary steering controller connector (39) to load center wiring harness connector (38).
4. Install two grommets (34), four washers (33), two seals (32), and buss bar (29) with two screws (35) and nuts
5. Install eight load center wiring harness terminal leads (28) on buss bar (29) with four screws (36).
6. Install cover (27) on buss bar (29) with two screws (37) and nuts (30).

TA707730

6-12. ELECTRICAL LOAD CENTER REPLACEMENT (Con't).

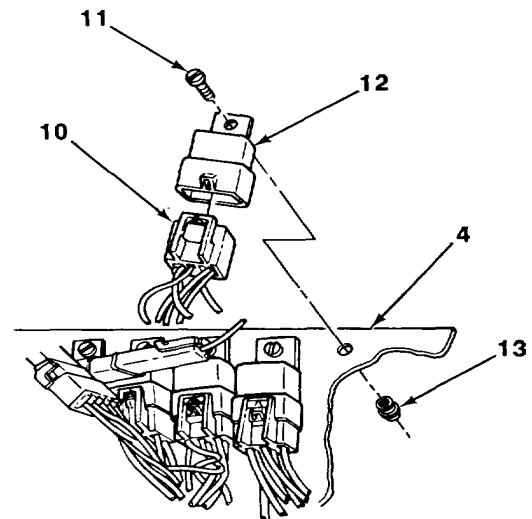
7. Install spring clip (22) with screw (18) and nut (23).
8. Install flasher (19) on spring clip (22).
9. Install two load center wiring harness terminal leads (21) on flasher (19). Tighten two screws (20).
10. Install 24-volt module (14) with two screws (16) and nuts (25).
11. Connect two 24-volt module connectors (15 and 17) to load center wiring harness connectors (24 and 26).



NOTE

Relays of electrical load center are Installed the same way. Perform steps 12 and 13 for each of 11 relays.

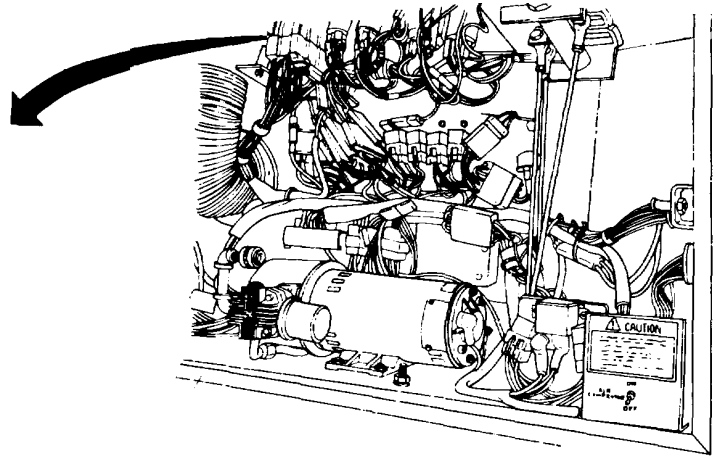
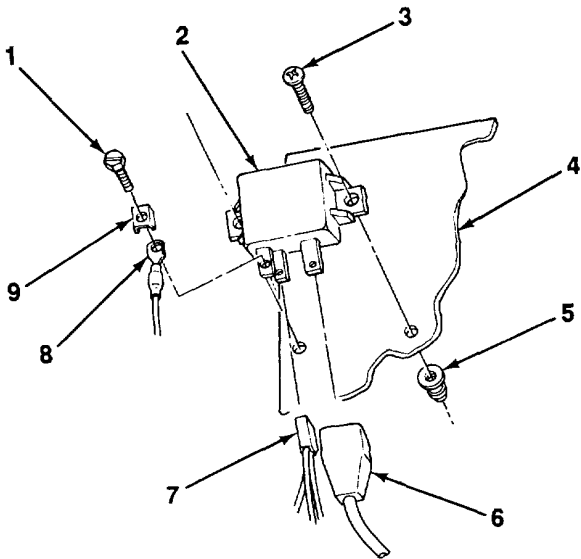
12. Install relay (12) on load center plate (4) with screw (11) and nut (13).
13. Connect load center wiring harness connector (10) to relay (12).



TA707731

6-12. ELECTRICAL LOAD CENTER REPLACEMENT (Con't).

14. Install starter relay (2) on load center plate (4) with two screws (3) and nuts (5).
15. Install terminal lead (8) on starter relay (2) with clip (9) and screw (1).
16. Connect two connectors (6 and 7) to starter relay (2).

**FOLLOW-ON TASKS:**

- Install air compressor assembly (see paragraph 20-1).

TA707732

6-13. FUSE BLOCK REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup.

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Right access door opened (see TM 10-3930-659-10).
- Cab window opened (see TM 10-3930-659-10).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:

- TM 10-3930-659-10

Tools/Test Equipment:

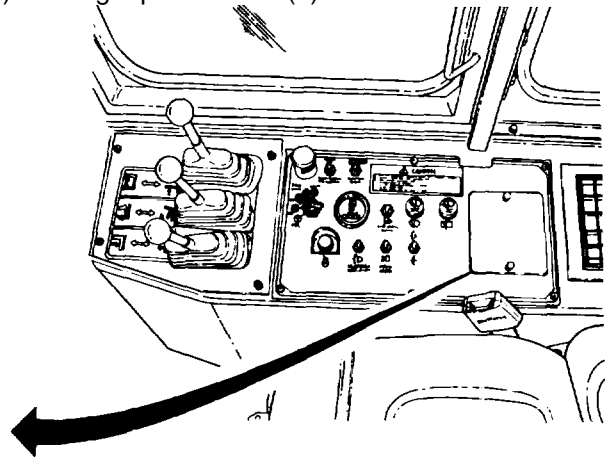
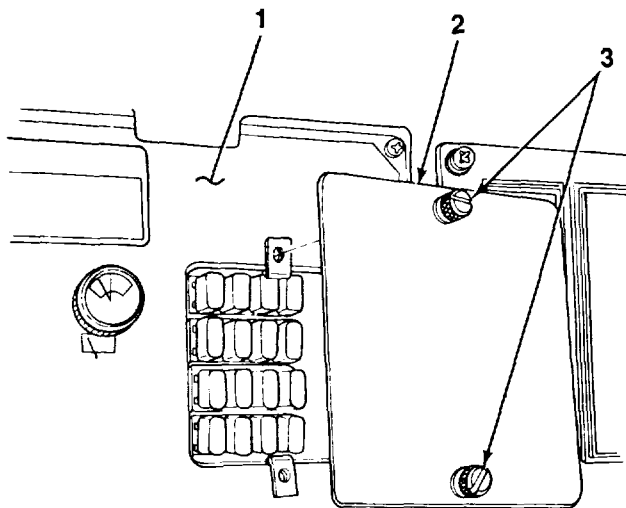
- General mechanic's tool kit (Item 44, Appendix F)

NOTE

- All wires should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.
- Refer to wiring diagrams for assistance (see paragraph 6-73).

a. REMOVAL

1. Loosen two screws (3) and remove fuse block cover (2) from right panel cover (1).



TA707733

6-13. FUSE BLOCK REPLACEMENT (Con't).

2. Disconnect two fuse block connectors (9 and 12) from STF/ICE load center wiring harness connectors (10 and 11).
3. Remove four screws (6), nuts (14), and fuse block (5) from load center plate (4).

NOTE

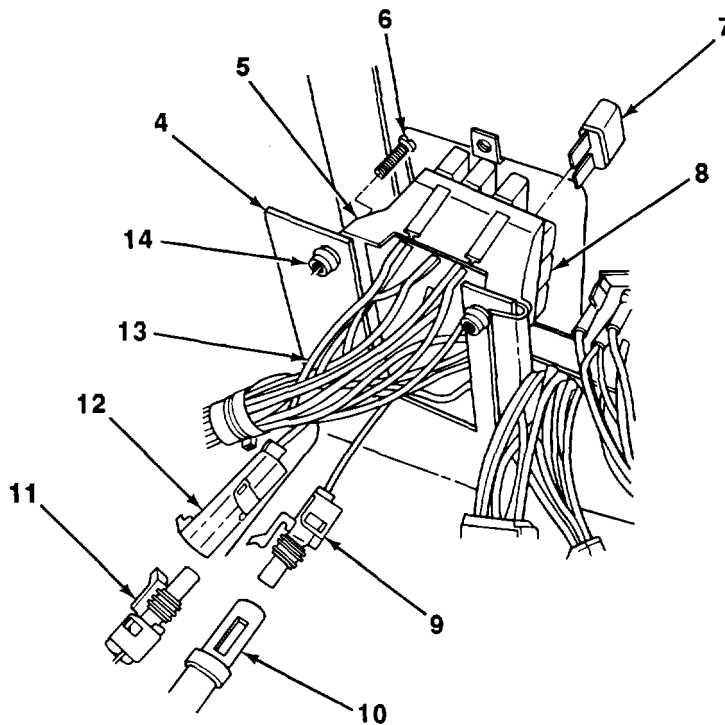
Fuse block has ten 10 amp fuses and six 15 amp fuses. Note location of fuses for installation.

4. Remove 16 fuses (7) from fuse block (5).

NOTE

Fuse block consists of four sections, each fitted into one another.

5. Disconnect four sections (8) of fuse block (5) as required.
6. Remove wires and terminals of STE/ICE load center wiring harness (13).
7. Replace terminals and connectors on wires of STE/ICE load center wiring harness (13) (see paragraph 2-28).

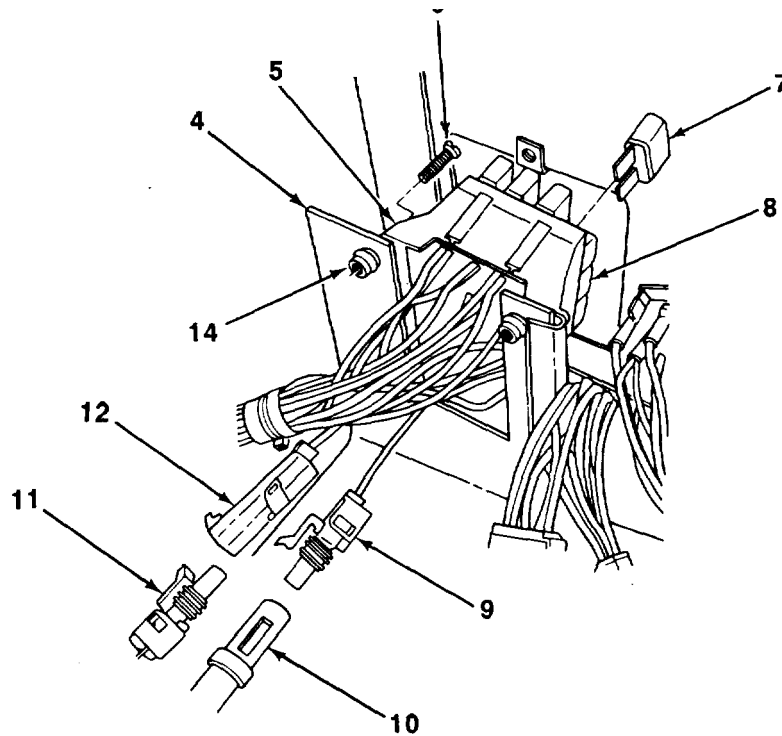
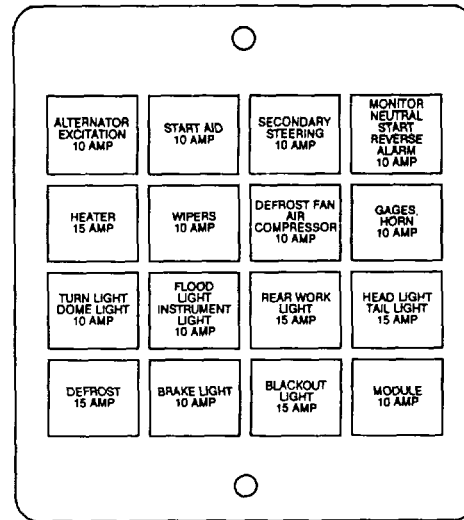


TA707734

6-13. FUSE BLOCK REPLACEMENT (Con't)

b. INSTALLATION

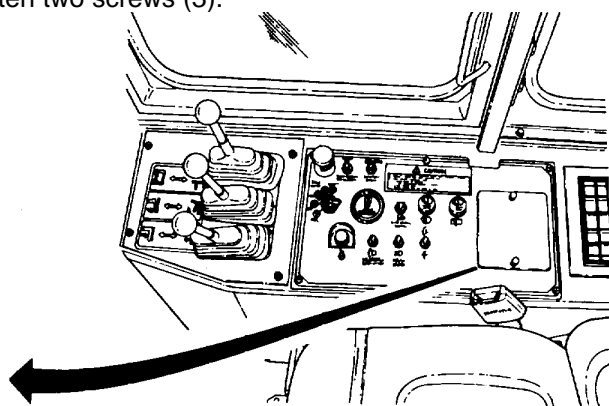
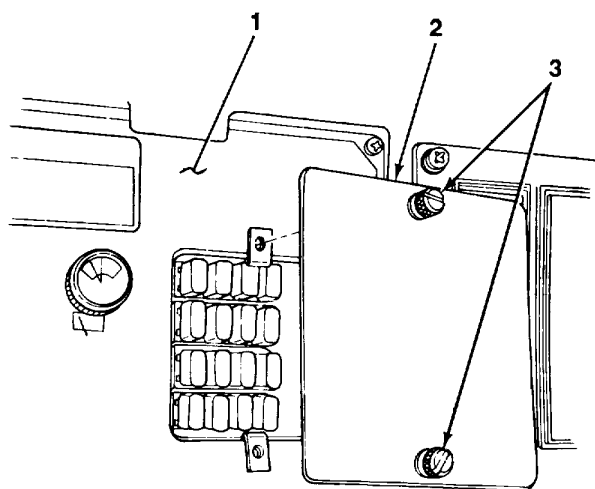
1. Connect four sections (8) of fuse block (5) together.
2. Install 16 fuses (7) on fuse block (5) as noted during removal and as illustrated.
3. Install fuse block (5) on load center plate (4) with four screws (6) and nuts (14).
4. Connect two fuse block connectors (9 and 12) to STE/ICE load center wiring harness connectors (10 and 11).



TA707735

6-13. FUSE BLOCK REPLACEMENT (Con't).

5. Install fuse block cover (2) on right panel cover (1) and tighten two screws (3).

**FOLLOW-ON TASKS:**

- Close cab window (see TM 10-3930-659-10).
- Close right access door (see TM 10-3930-659-10).

TA707736

6-14. FAULT MONITOR AND DASH WIRING HARNESS MAINTENANCE.*This Task Covers:*

- | | |
|------------|-----------------|
| a. Repair | c. Installation |
| b. Removal | |

*Initial Setup:***Equipment Conditions:**

- Negative battery cables disconnected (see para-
- Right access door opened (see TM 1 0-3930-659-10).
- Fault monitor module removed (see paragraph 6-5).
- Lower dash cover removed (see paragraph 14-23)

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:

- TM 10-3930659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

NOTE

- **All wires should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.**
- **Refer to wiring diagrams for assistance (see paragraph 6-73).**

a. REPAIR**NOTE**

- **Fault monitor and dash wiring harness does not need to be removed from forklift truck to perform repair.**
- **Repair of fault monitor and dash wiring harness consists of replacement of identification bands, terminals, and connectors.**

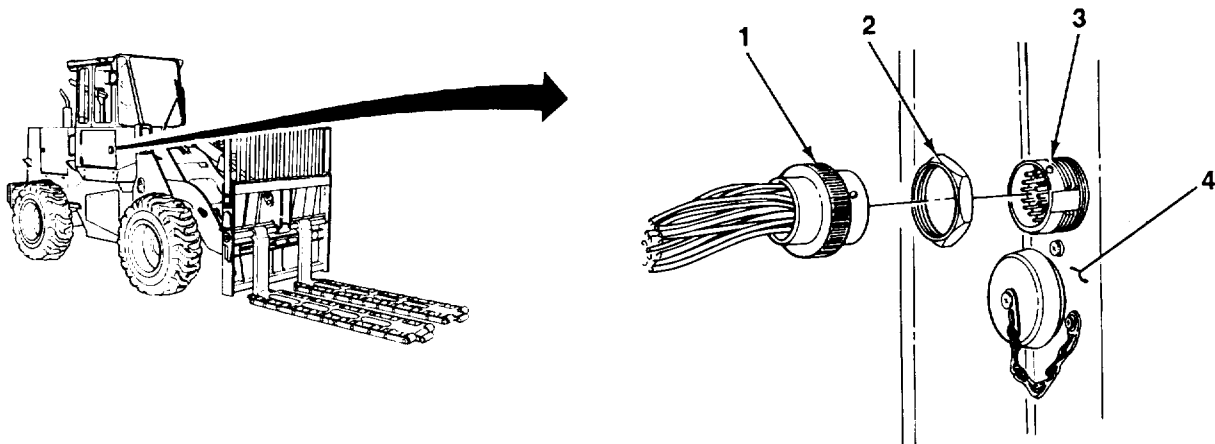
Refer to paragraph 2-28 for repair instructions.

b. REMOVAL**NOTE**

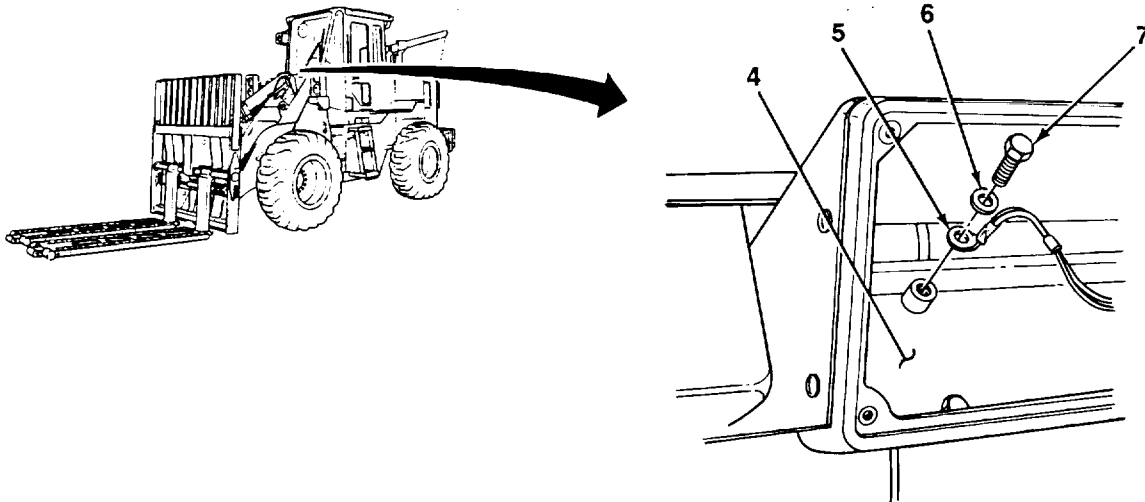
Remove clamps and tie-down straps as necessary.

1. Disconnect fault monitor and dash wiring harness (1) from fault monitor and dash wiring harness connector (3).
2. Remove nut (2) and fault monitor and dash wiring harness connector (3) from cab (4).

6-14. FAULT MONITOR AND DASH WIRING HARNESS MAINTENANCE (Con't).



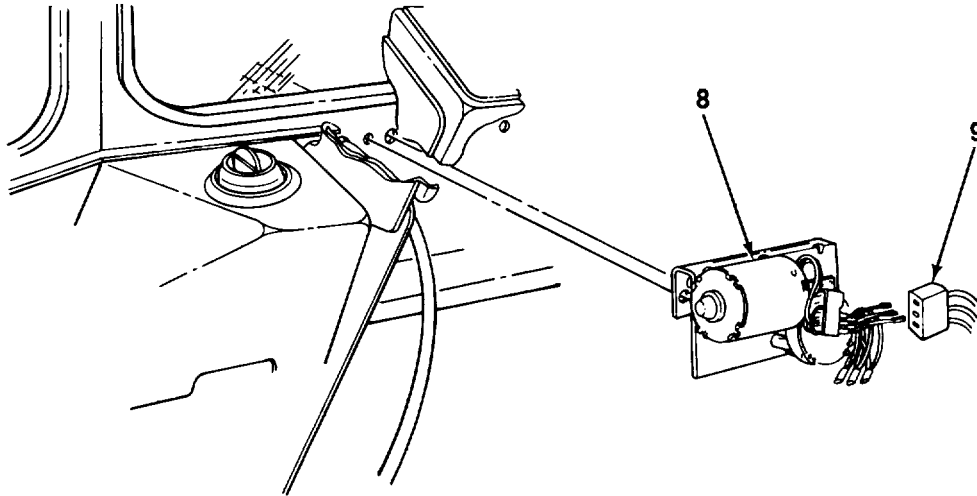
3. Tilt steering wheel to lowest position (see TM 10-3930-659-10).
4. Remove screw (7), washer (6), and fault monitor and dash wiring harness ground terminal (5) from cab (4).



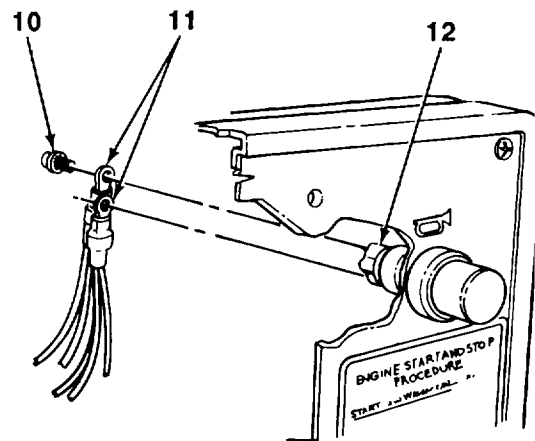
TA707737

6-14. FAULT MONITOR AND DASH WIRING HARNESS MAINTENANCE (Con't).

5. Remove front windshield wiper motor connector (9) from front windshield wiper motor (8).



6. Remove two screws (10) and terminal leads (11) from horn switch (12).

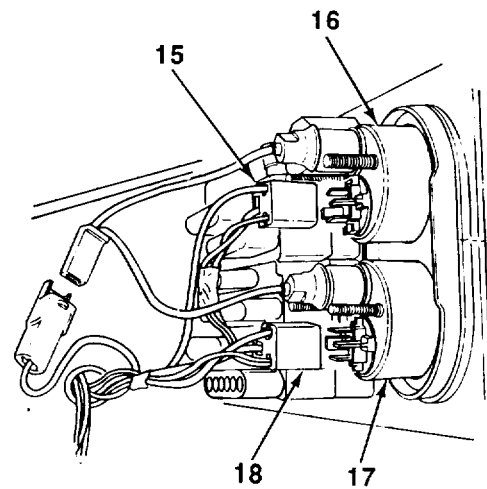
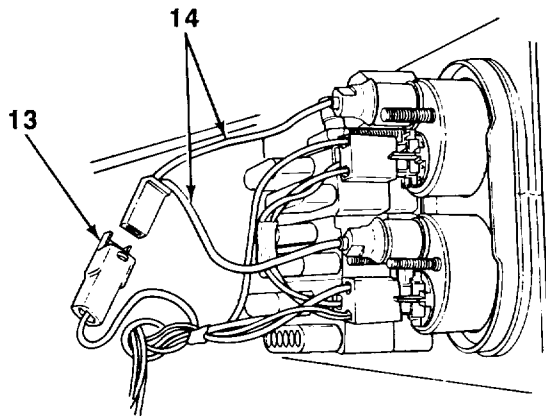
**NOTE**

Transmission oil temperature gage and fuel gage socket leads should not be removed from gages.

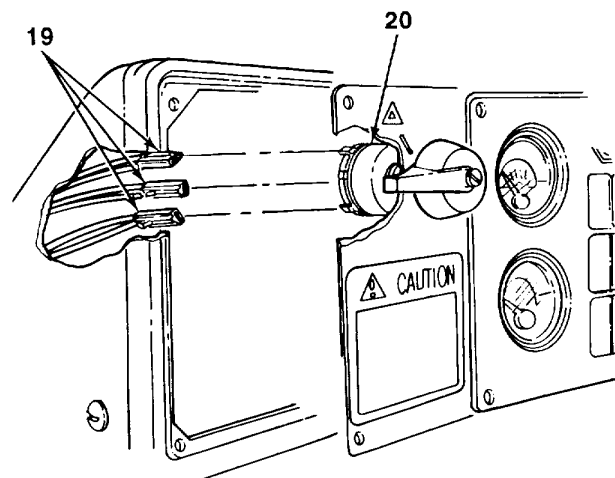
7. Disconnect connector (13) from two socket leads (14).
 8. Disconnect connector (15) from transmission oil temperature gage (16).
 9. Disconnect connector (18) from fuel gage (17).

TA707738

6-14. FAULT MONITOR AND DASH WIRING HARNESS MAINTENANCE (Con't).



10. Disconnect three fault monitor and dash wiring harness connectors (19) from turn signal/emergency flashers switch (20).
11. Remove fault monitor and dash wiring harness from forklift truck.



c. INSTALLATION

NOTE

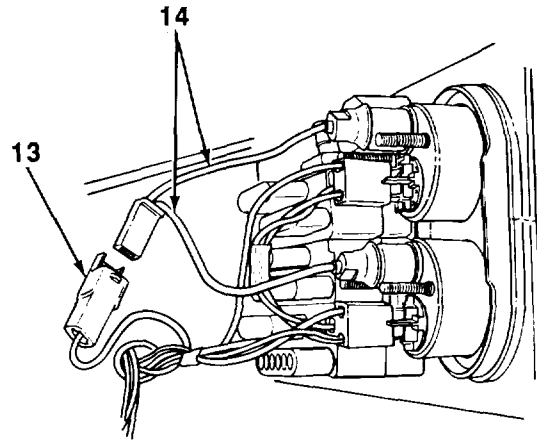
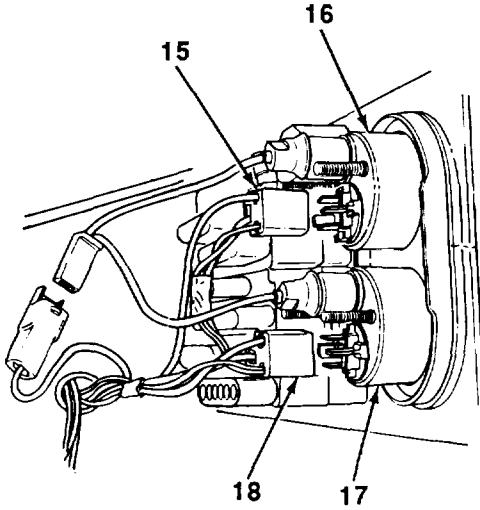
Install clamps and new tie-down straps as necessary.

1. Position fault monitor and dash wiring harness on forklift truck.
2. Connect three fault monitor and dash wiring harness connectors (19) to turn signal/emergency flashers switch (20).

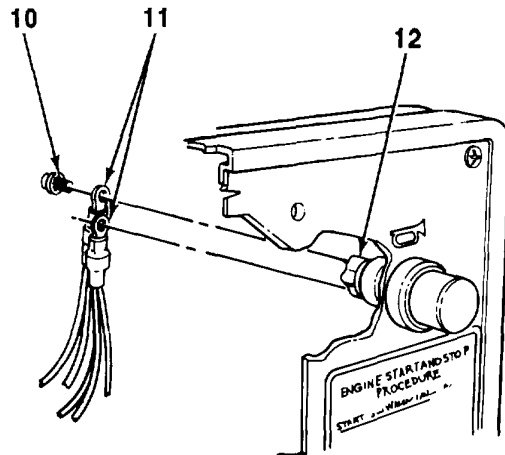
TA707739

6-14. FAULT MONITOR AND DASH WIRING HARNESS MAINTENANCE (Con't).

3. Connect connector (18) to fuel gage (17).
4. Connect connector (15) to transmission oil temperature gage (16).
5. Connect connector (13) to two socket leads (14).



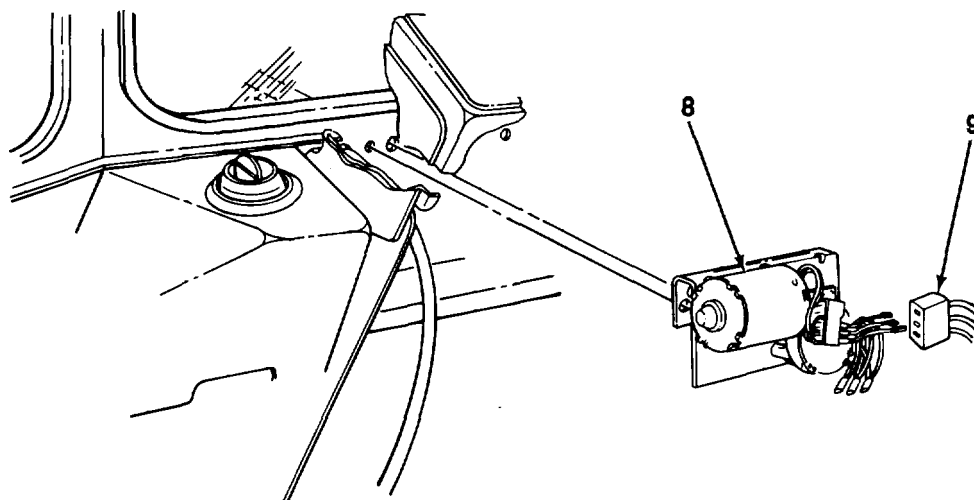
6. Install two terminal leads (11) on horn switch (12) with two screws (10).



TA707740

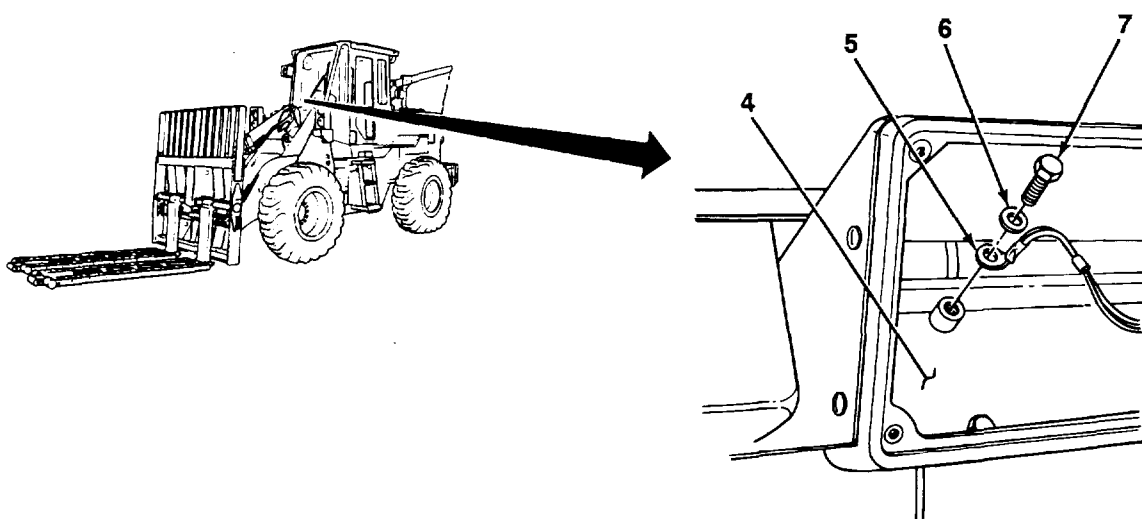
6-14. FAULT MONITOR AND DASH WIRING HARNESS MAINTENANCE (Con't).

7. Install front windshield wiper motor connector (9) on front windshield wiper motor (8).



8. Install fault monitor and dash wiring harness ground terminal (5) on cab (4) with washer (6) and screw (7).

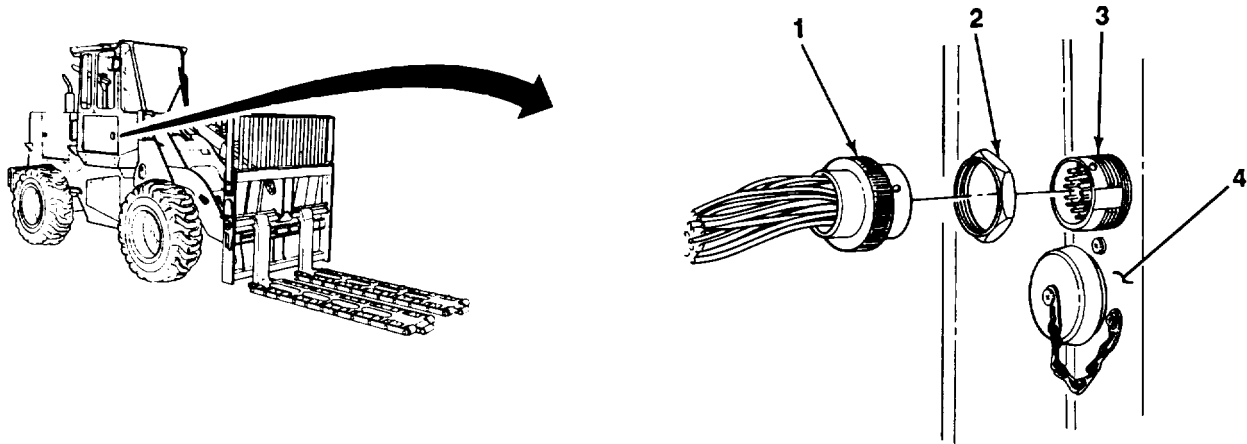
9. Tilt steering wheel to highest position (see TM 10-3930-659-10).



TA707741

6-14. FAULT MONITOR AND DASH WIRING HARNESS MAINTENANCE (Con't).

10. Install fault monitor and dash wiring harness connector (3) on cab (4) with nut (2).
11. Connect fault monitor and dash wiring harness (1) to fault monitor and dash wiring harness connector (3).

**FOLLOW-ON TASKS:**

- Install lower dash cover (see paragraph 14-23).
- Install fault monitor module (see paragraph 6-5).
- Close right access door (see TM 10-3930-659-10).
- Connect negative battery cables (see paragraph 6-43).

TA707742

6-15. RIGHT PANEL WIRING HARNESS MAINTENANCE.

This Task Covers:

- | | |
|------------|-----------------|
| a. Repair | c. Installation |
| b. Removal | |
-

Initial Setup:

Equipment Conditions:

- Negative battery cables disconnected (see para-
- ConveyORIZED fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

Personnel Required: Two**References:**

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

NOTE

- **All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.**
- **Refer to wiring diagrams for assistance (see paragraph 6-73).**

a. REPAIR

NOTE

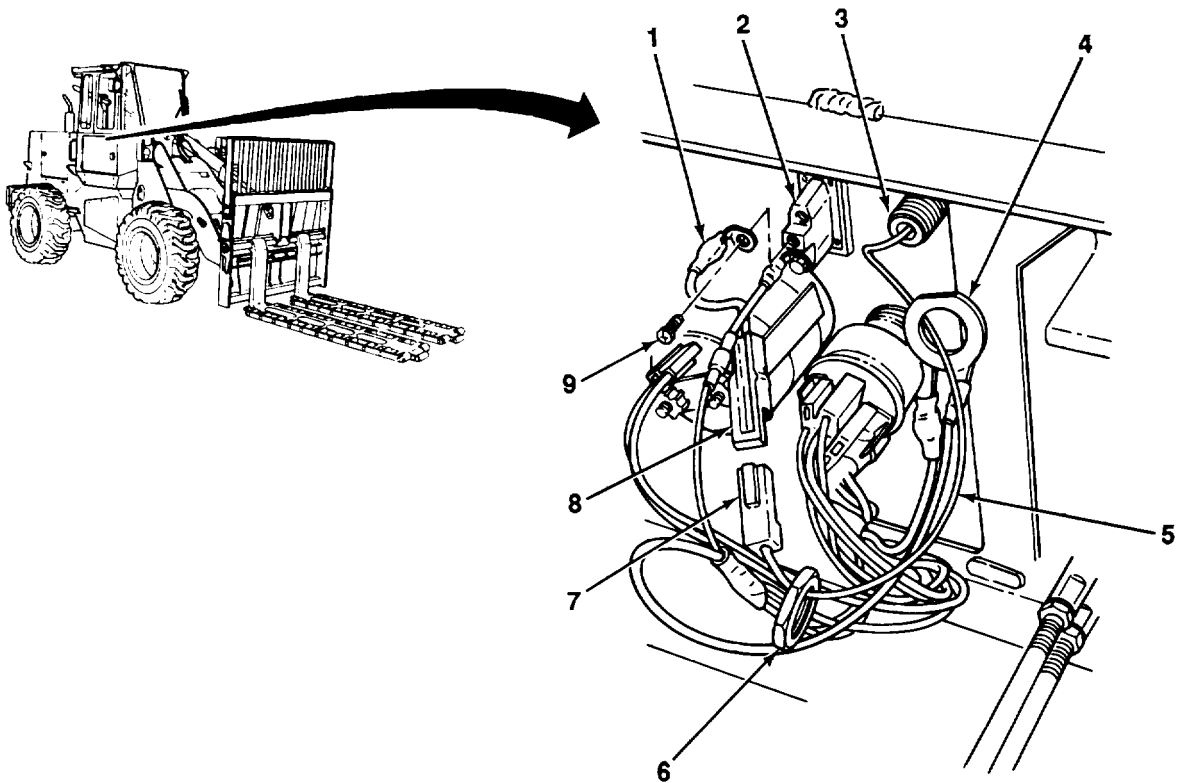
- **Right panel wiring harness does not need to be removed from forklift truck to perform repair.**
- **Repair of right panel wiring harness consists of replacement of Identification bands, terminals, and connectors.**

Refer to paragraph 2-28 for repair instructions.

6-15. RIGHT PANEL WIRING HARNESS MAINTENANCE (Con't).**b. REMOVAL****NOTE**

Remove clamps and tie-down straps as necessary.

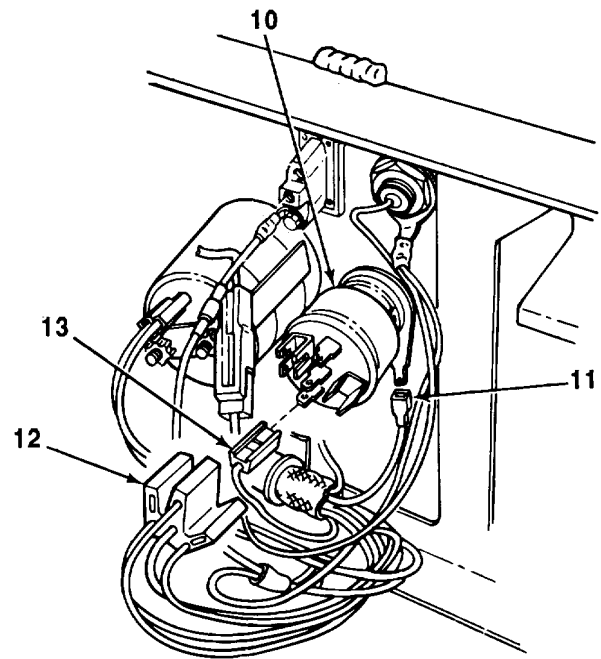
1. Remove nut (6) and instrument panel light terminal lead (4) from instrument panel light (3).
2. Disconnect connector (8) of instrument panel light switch terminal lead (1) from connector (7) of instrument panel light terminal lead (5).
3. Remove instrument panel light terminal lead (4) from connector (7).
4. Remove screw (9) and Instrument panel light switch terminal lead (1) from instrument panel light switch (2).



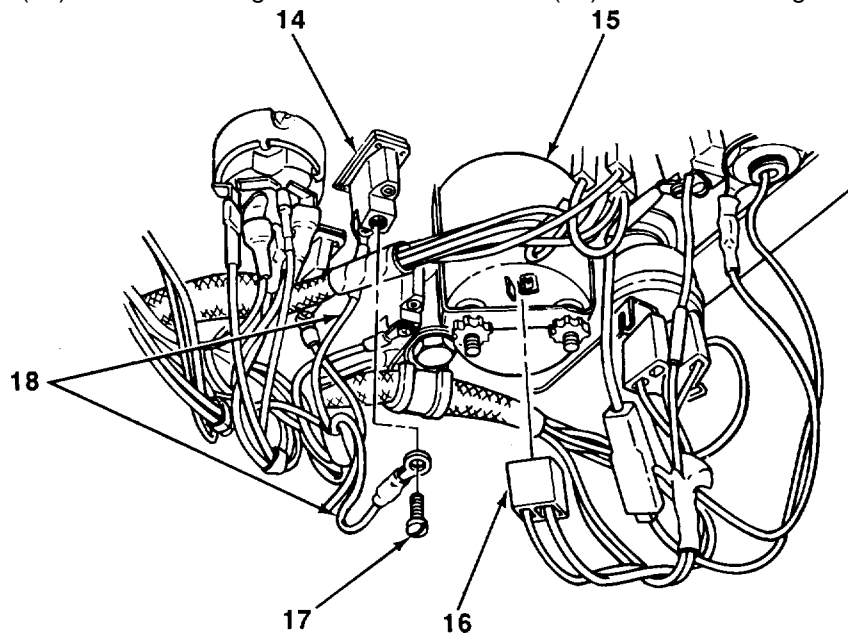
TA707743

6-15. RIGHT PANEL WIRING HARNESS MAINTENANCE (Con't).

5. Disconnect two ignition switch connectors (12 and 13) from Ignition switch (10).
6. Remove ignition switch terminal lead (11) from Ignition switch (10).



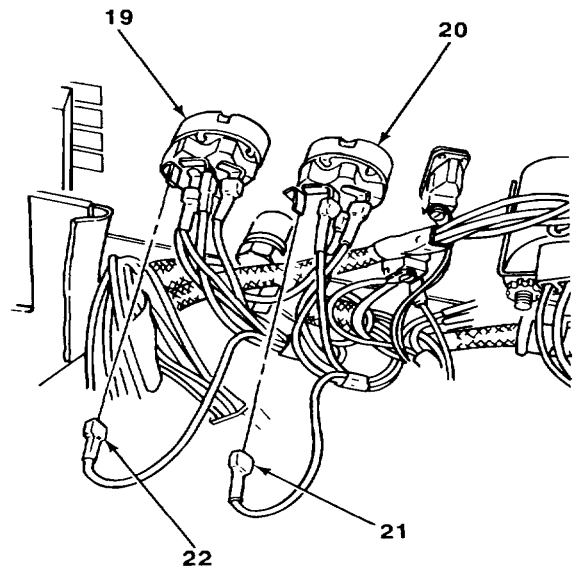
7. Disconnect engine hourmeter connector (16) from engine hourmeter (15).
8. Remove two screws (17) and rear worklight switch terminal leads (18) from rear worklight switch (14).



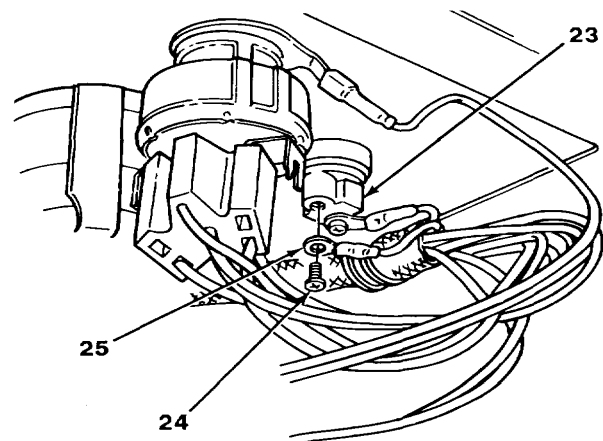
TA707744

6-15. RIGHT PANEL WIRING HARNESS MAINTENANCE (Con't).

9. Disconnect five front windshield wiper/washer switch connectors (21) from front windshield wiper/washer switch (20).
10. Disconnect five rear window wiper/washer switch connectors (22) from rear window wiper/washer switch (19).



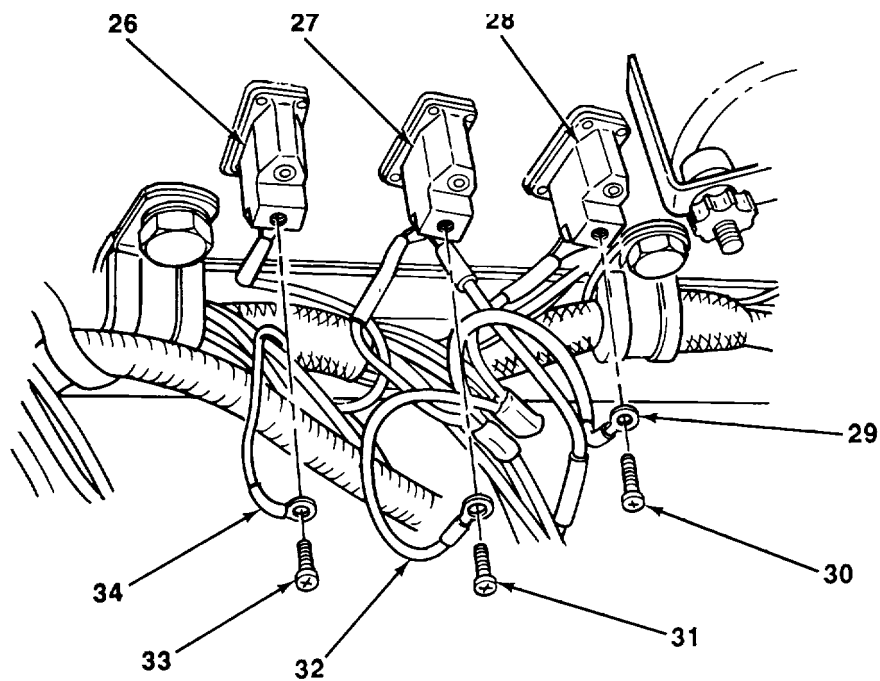
11. Remove two screws (24) and engine starting aid switch terminal leads (25) from engine starting aid switch (23).



TA707745

6-15. RIGHT PANEL WIRING HARNESS MAINTENANCE (Con't).

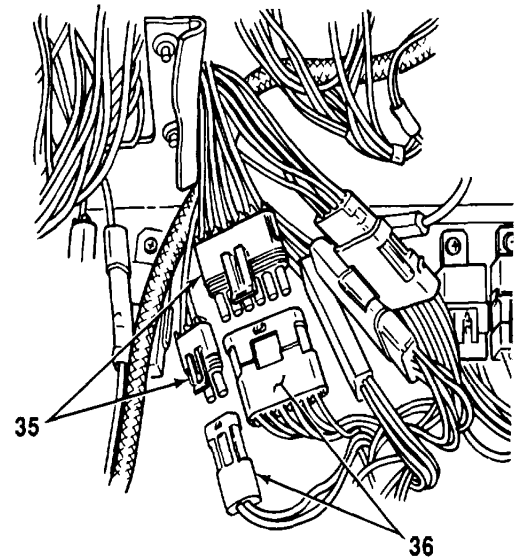
12. Remove two screws (30) and adjustable floodlight switch terminal leads (29) from adjustable floodlight switch
13. Remove two screws (31) and three driving lights switch terminal leads (32) from driving lights switch (27).
14. Remove two screws (33) and clutch cutoff switch terminal leads (34) from clutch cutoff switch (26).



TA707746

6-15. RIGHT PANEL WIRING HARNESS MAINTENANCE (Con't).

15. Disconnect five right panel wiring harness connectors (35) from load center wiring harness connectors (36).
16. Remove right panel wiring harness from forklift truck.

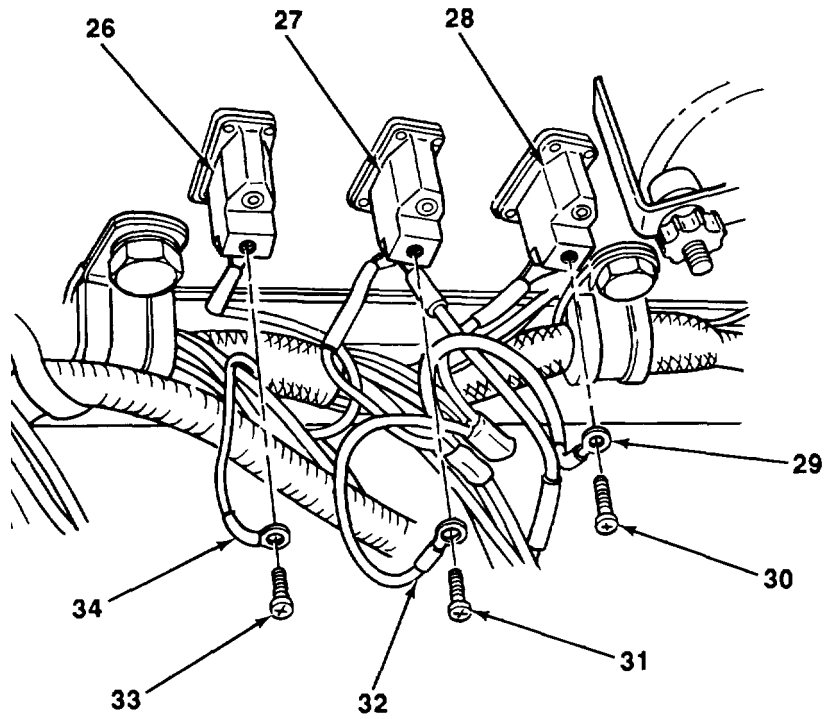
**c. INSTALLATION****NOTE**

Install clamps and new tie-down straps as necessary.

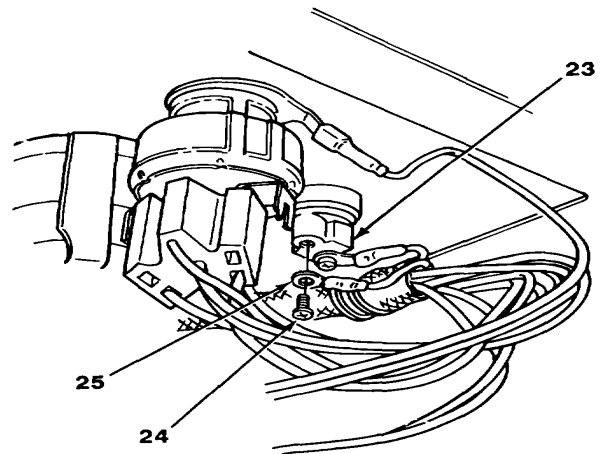
1. Position right panel wiring harness on forklift truck.
2. Connect five right panel wiring harness connectors (35) to load center wiring harness connectors (36).
3. Install two clutch cutoff switch terminal leads (34) on clutch cutoff switch (26) with two screws (33).
4. Install three driving lights switch terminal leads (32) on driving lights switch (27) with two screws (31).
5. Install two adjustable floodlight switch terminal leads (29) on adjustable floodlight switch (28) with two screws (30).

TA707747

6-15. RIGHT PANEL WIRING HARNESS MAINTENANCE (Con't).



6. Install two engine starting aid switch terminal leads (25) on engine starting aid switch (23) with two screws (24).

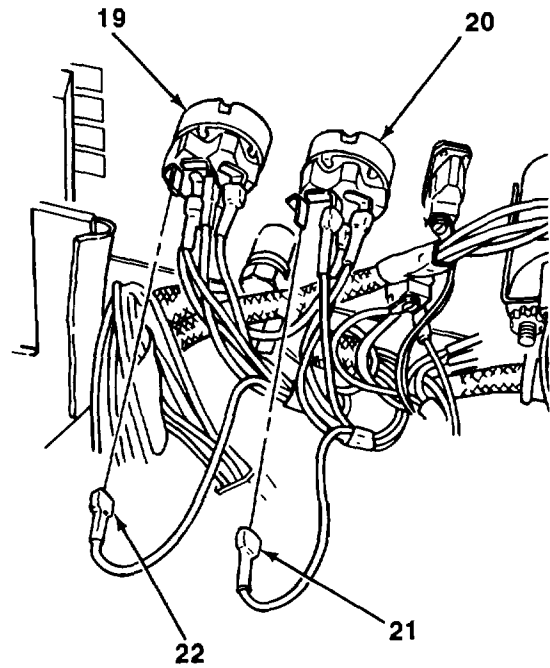


TA707748

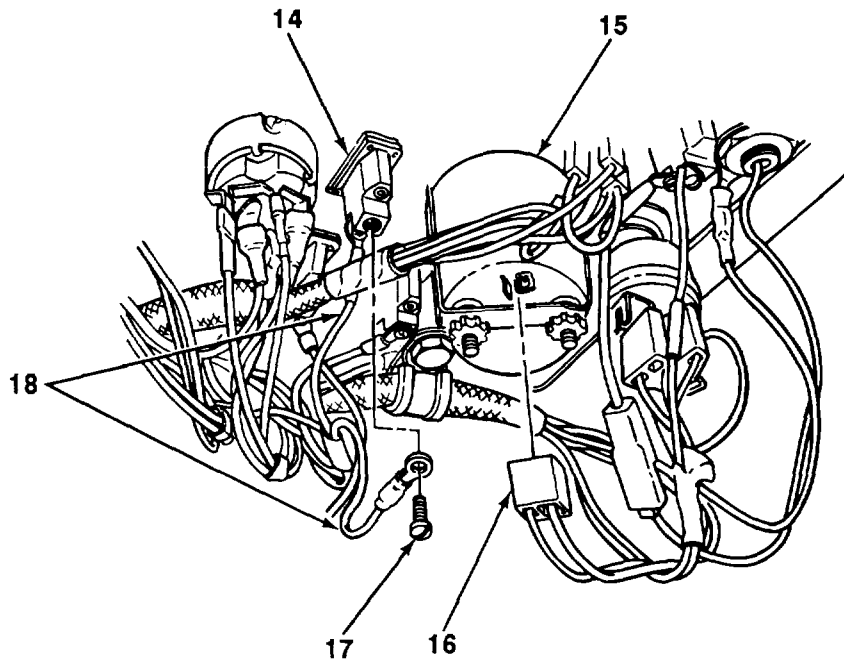
TA707748

6-15. RIGHT PANEL WIRING HARNESS MAINTENANCE (Con't).

7. Connect five rear window wiper/washer switch connectors (22) to rear window wiper/washer switch (19).
8. Connect five front windshield wiper/washer switch connectors (21) to front windshield wiper/washer switch (20).



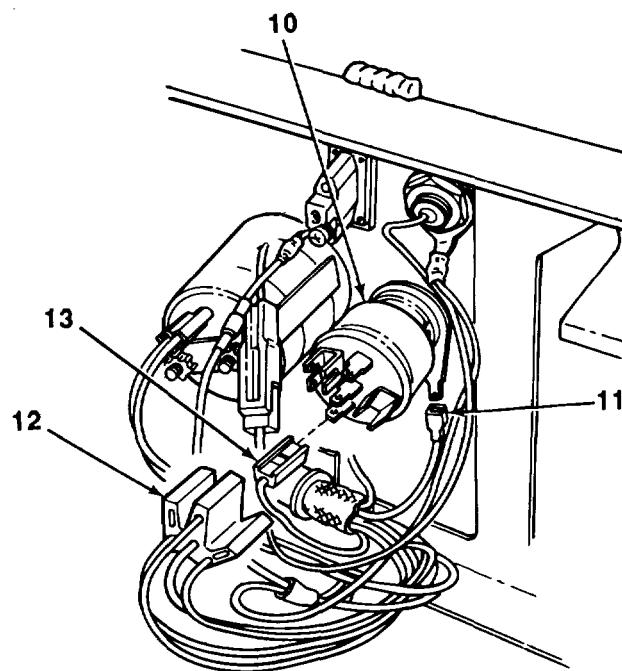
9. Install two rear worklight switch terminal leads (18) on rear worklight switch (14) with two screws (17).
10. Connect engine hourmeter connector (16) to engine hourmeter (15).



TA707749

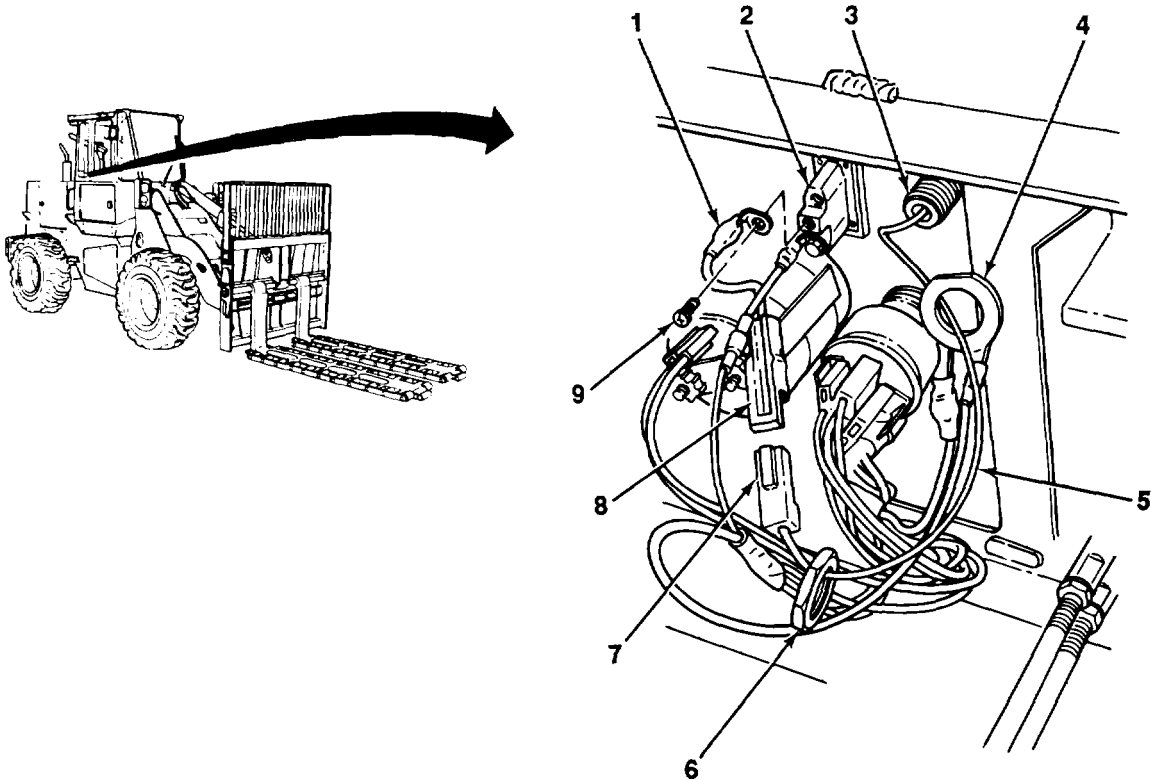
6-15. RIGHT PANEL WIRING HARNESS MAINTENANCE (Con't).

11. Install ignition switch terminal lead (11) on Ignition switch (10).
12. Connect two Ignition switch connectors (12 and 13) to Ignition switch (10).



6-15. RIGHT PANEL WIRING HARNESS MAINTENANCE (Con't).

13. Install instrument panel light switch terminal lead (1) on instrument panel light switch (2) with screw (9).
14. Install instrument panel terminal lead (4) on connector (7).
15. Connect connector (8) of Instrument panel light switch terminal lead (1) to connector (7) of instrument panel light terminal lead (5).
16. Install instrument panel light terminal lead (4) on instrument panel light (3) with nut (6).



FOLLOW-ON TASKS:

- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments to side of forklift truck (see paragraph 17-13).
- Connect negative battery cables (see paragraph 6-43).

6-16. LEFT PANEL WIRING HARNESS MAINTENANCE.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Equipment Conditions:

- Negative battery cables disconnected (see paragraph 6-43).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).
- Cab fresh air filter door opened (see TM 10-3930-659-10).
- Left side cab skirt removed (see paragraph 14-6).
- Cab rear panel removed (see paragraph 14-22).
- Seat assembly removed (see paragraph 14-25).

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- One lockwasher

Tools/Test Equipment:

- General mechanic's tool kit item 44, Appendix F)

References:

- TM 10-3930-659-10

NOTE

- All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.
- Refer to wiring diagrams for assistance (see paragraph 6-73).

a. REPAIR

NOTE

- Left panel wiring harness does not need to be removed from forklift truck to perform repair.
- Repair of left panel wiring harness consists of replacement of Identification bands, terminals, and connectors.

Refer to paragraph 2-28 for repair instructions.

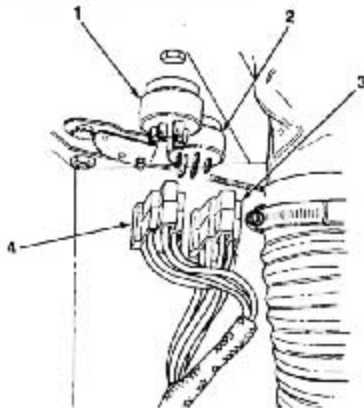
6-16. LEFT PANEL WIRING HARNESS MAINTENANCE.

b. REMOVAL

NOTE

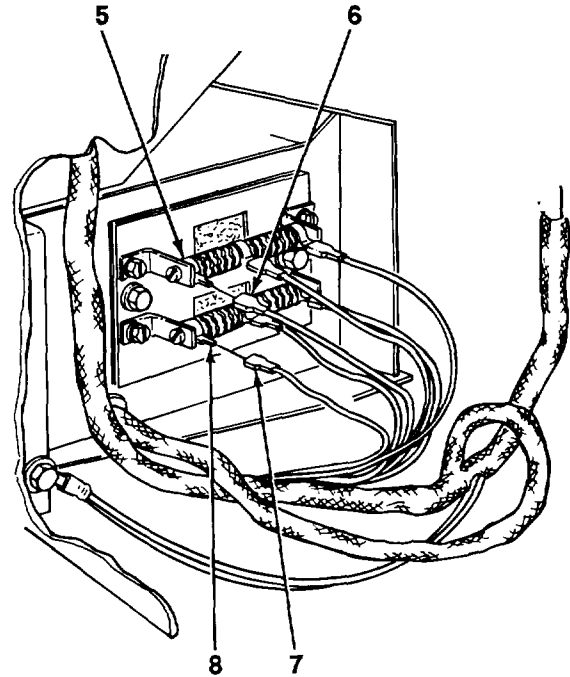
Remove clamps and tie-down straps as necessary.

1. Disconnect heater control connector (4) from heater control (1).
2. Disconnect heater blower control connector (3) from heater blower control (2).

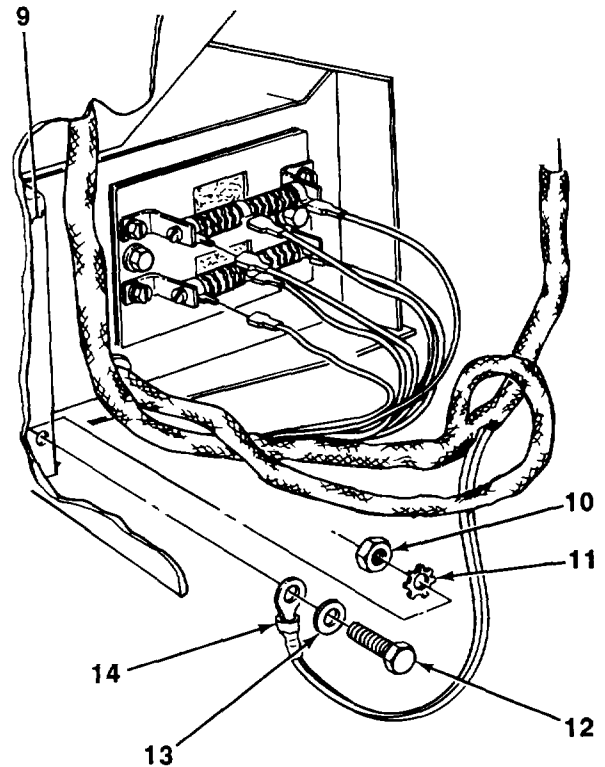


6-16. LEFT PANEL WIRING HARNESS MAINTENANCE (Con't).

3. Disconnect three heater resistor leads (6) from heater resistor (5).
4. Disconnect three defroster resistor leads (7) from defroster resistor (8).



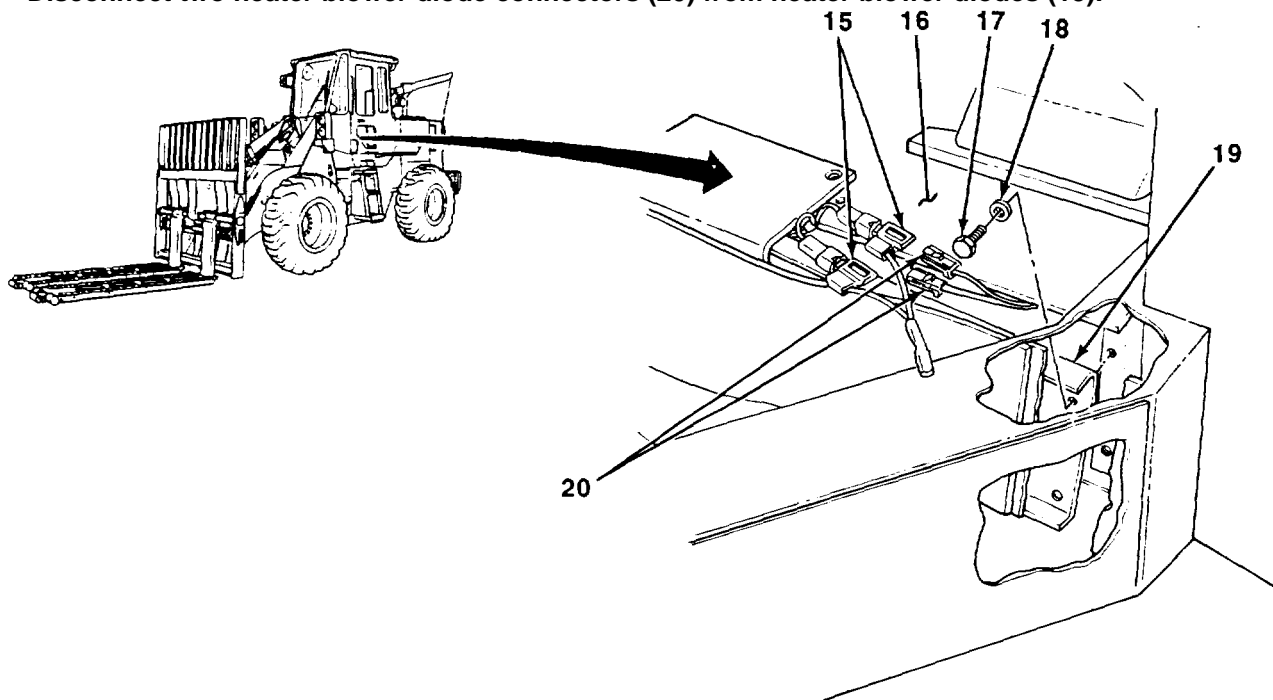
5. Remove nut (10), lockwasher (11), screw (12), washer (13), and cab ground terminal lead (14) from cab (9). Discard lockwasher.



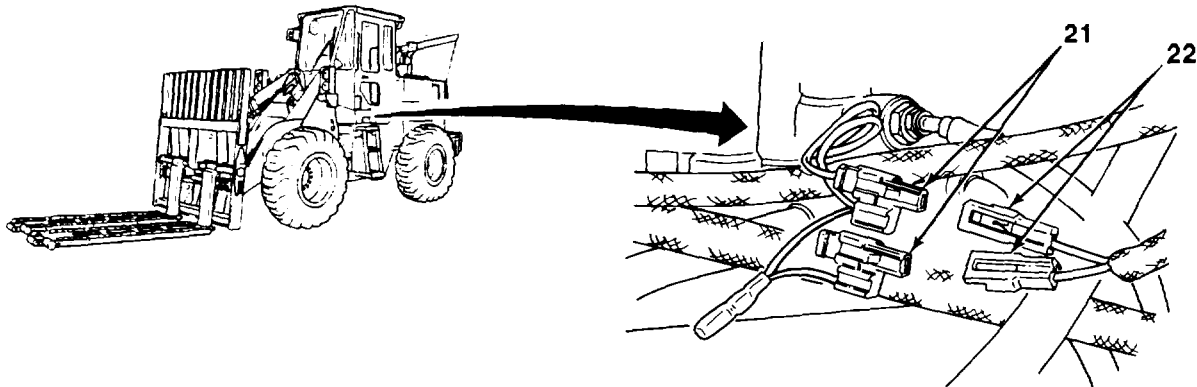
TA707753

6-16. LEFT PANEL WIRING HARNESS MAINTENANCE (Con't).

6. Remove four screws (17), washers (18), and cover (19) from heater housing (16).
7. Disconnect two heater blower diode connectors (20) from heater blower diodes (15).



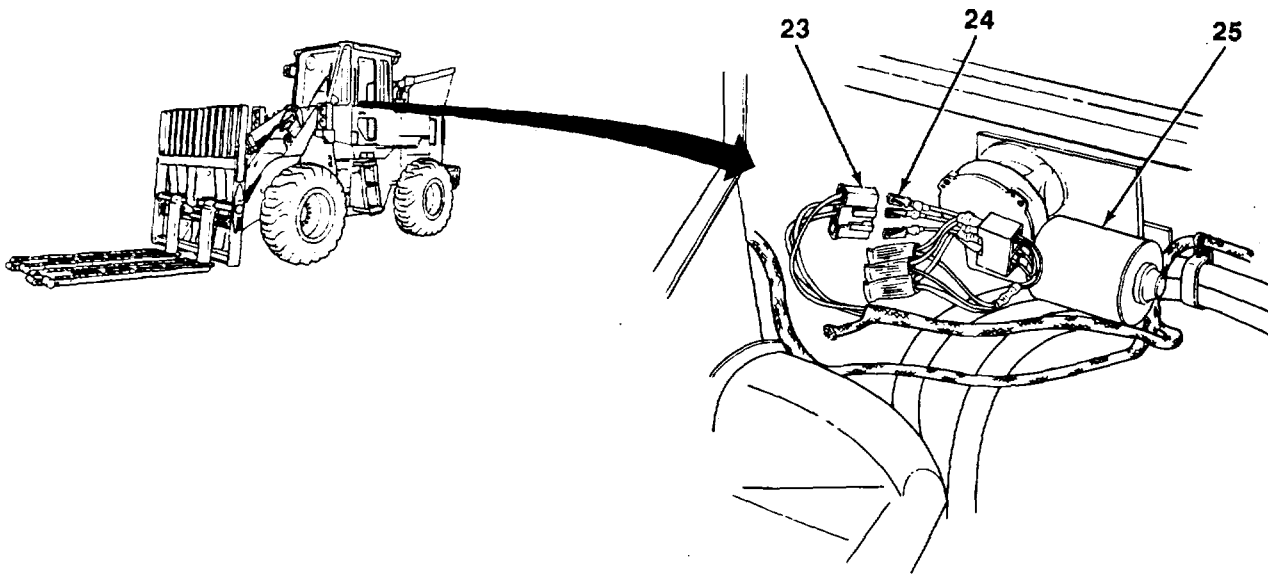
8. Disconnect two defroster blower diode connectors (22) from defroster blower diodes (21).



TA707754

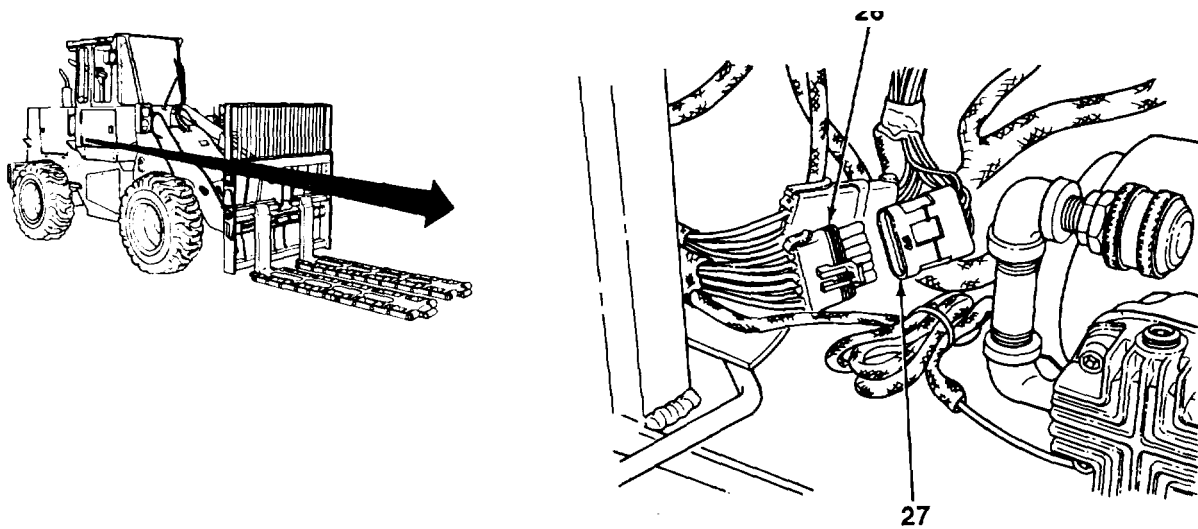
6-16. LEFT PANEL WIRING HARNESS MAINTENANCE (Con't).

9. Disconnect rear window wiper motor connector (23) from three terminal lead (24) of rear window wiper motor (25).



10. Disconnect left panel wiring harness connector (26) from load center wiring harness connector (27).

11. Remove left panel wiring harness from forklift truck.



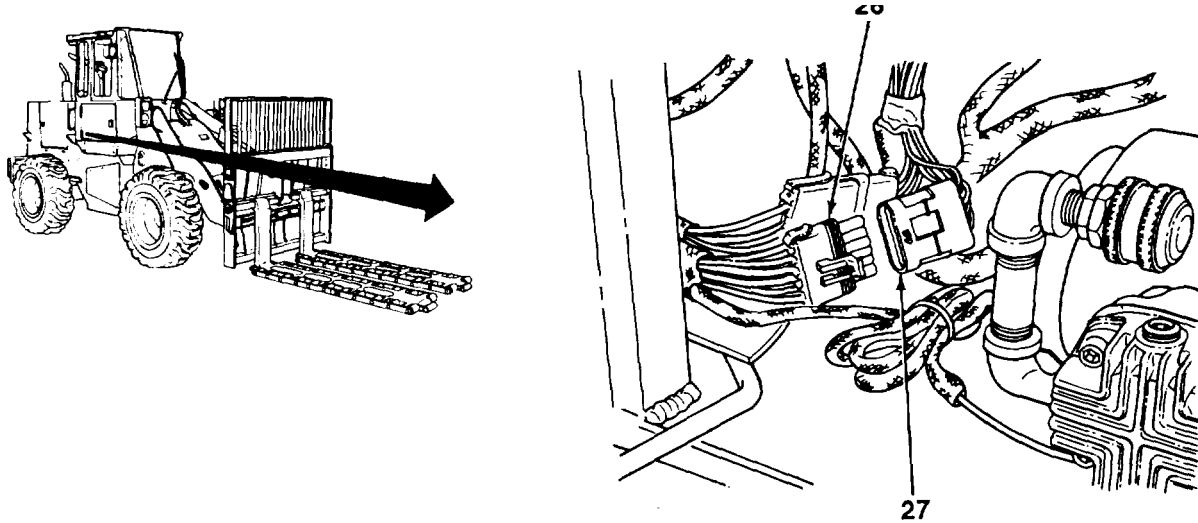
6-16. LEFT PANEL WIRING HARNESS MAINTENANCE (Con't)

c. INSTALLATION

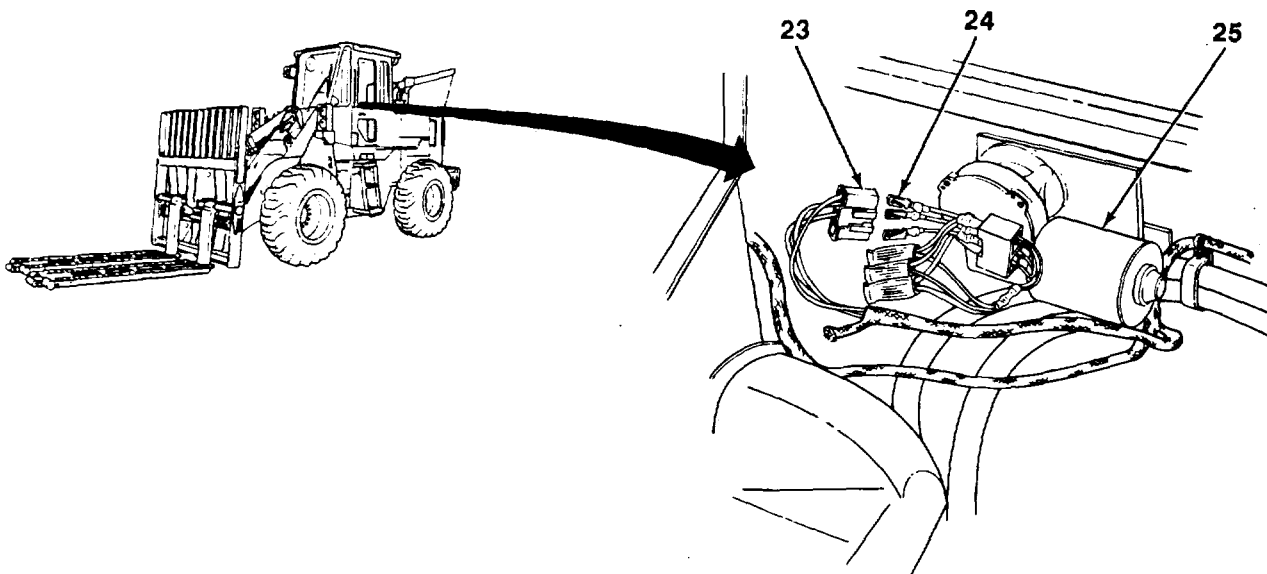
NOTE

Install clamps and new tie-down straps as necessary.

1. Position left panel wiring harness on forklift truck.
2. Connect left panel wiring harness connector (26) to load center wiring harness connector (27).

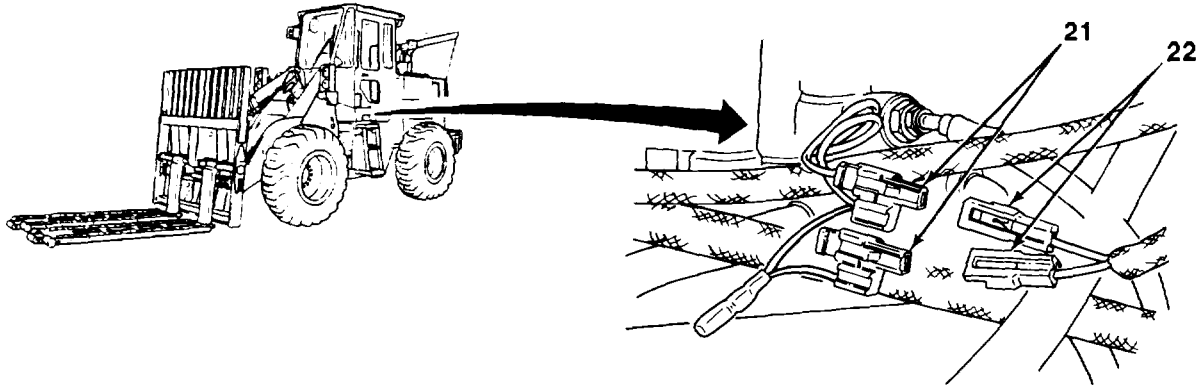


3. Connect rear window wiper motor connector (23) to three terminal leads (24) of rear window wiper motor (25).

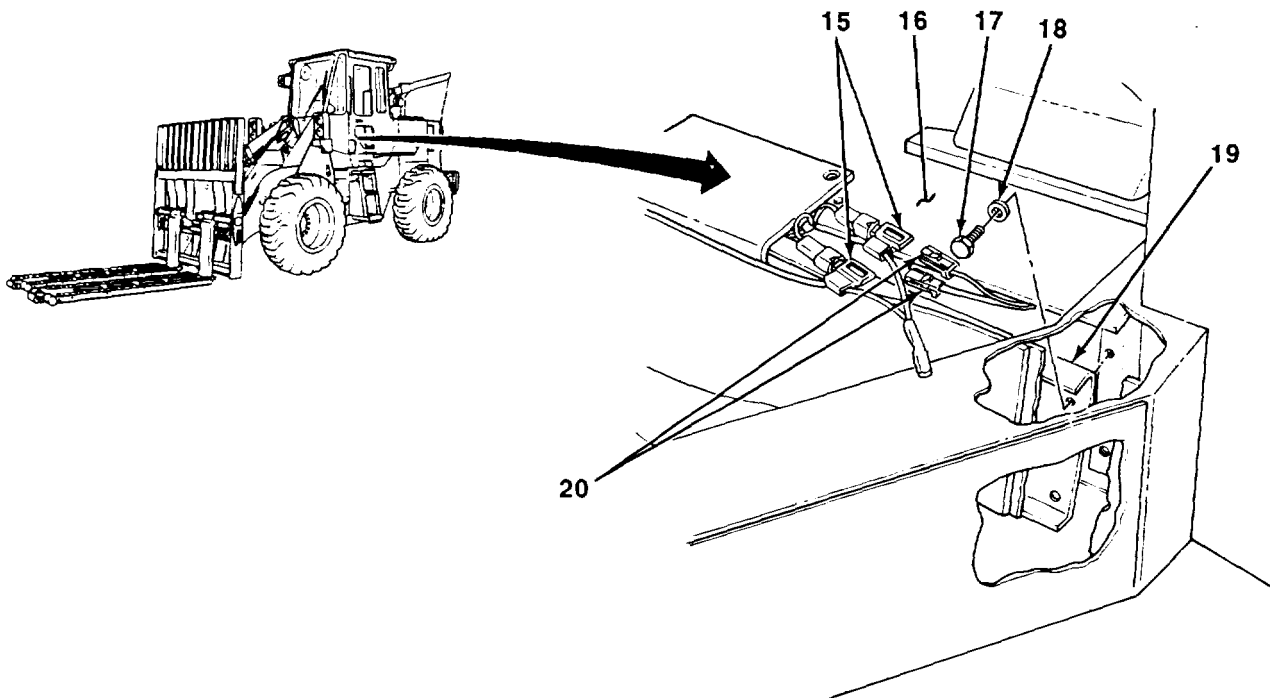


6-16. LEFT PANEL WIRING HARNESS MAINTENANCE (Con't)

4. Connect two defroster blower diode connectors (22) to defroster blower diodes (21).

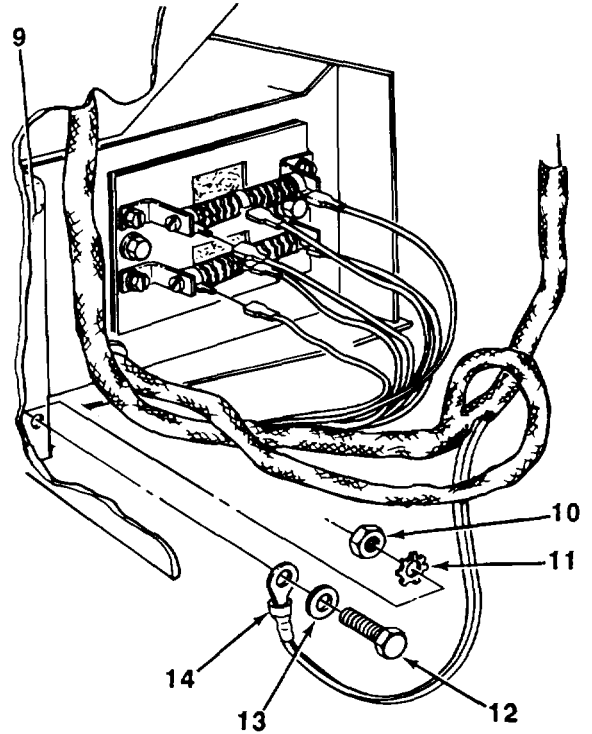


5. Connect two heater blower diode connectors (20) to heater blower diodes (15).
6. Install cover (19) on heater housing (16) with four washers (18) and screw (17).

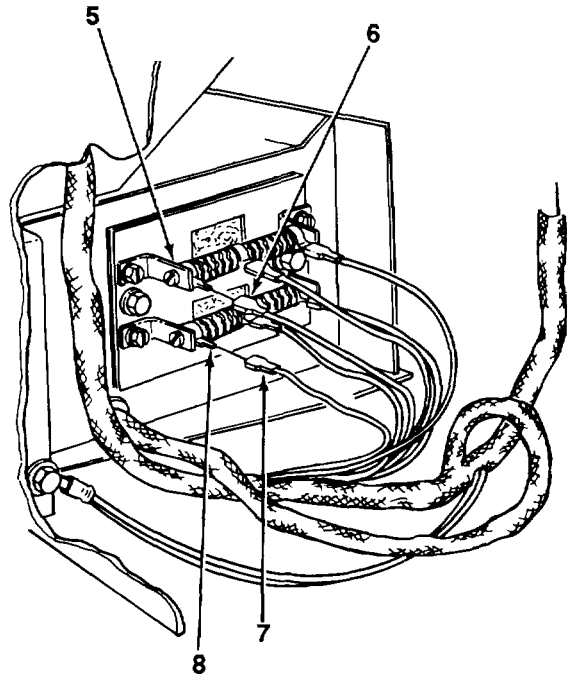


6-16. LEFT PANEL WIRING HARNESS MAINTENANCE (Con't).

7. Install cab ground terminal lead (14) on cab (9) with screw (12), washer (13), new lockwasher (11), and nut (10).



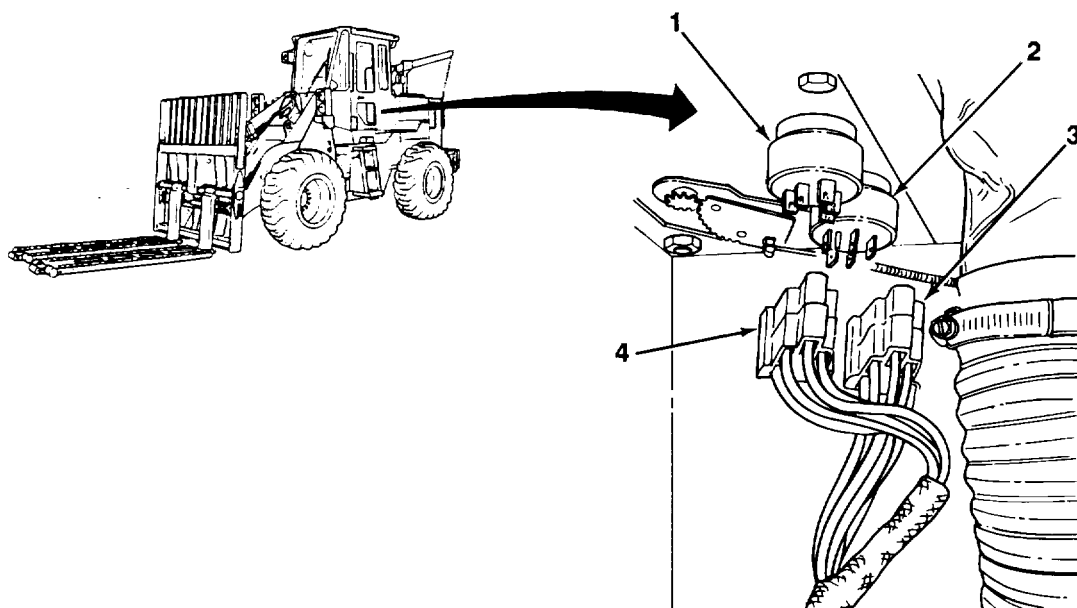
8. Connect three' defroster resistor leads (7) to de-froster resistor (8).
9. Connect three heater resistor leads (6) to heater resistor (5).



TA707758

6-16. LEFT PANEL WIRING HARNESS MAINTENANCE (Con't).

10. Connect heater blower control connector (3) to heater blower control (2).
11. Connect heater control connector (4) to heater control (1).

**FOLLOW - N TASKS:**

- Install seat assembly (see paragraph 14-25).
- Install cab rear panel (see paragraph 14-22).
- Install left side cab skirt (see paragraph 14-6).
- Close cab fresh air filter door (see TM 10-3930-659-10).
- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).
- Connect negative battery cables (see paragraph 6-43).

6-17. LOAD CENTER WIRING HARNESS MAINTENANCE.

This task covers:

- | | |
|---|---|
| <ul style="list-style-type: none"> a. Repair b. Removal | <ul style="list-style-type: none"> c. Installation |
|---|---|

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected (see paragraph 6-43).
- Right access door opened (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).
- Fuse block cover removed (see paragraph 6-13).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:

- **TM 10-3930-659-10**

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

NOTE

- All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.
- Refer to wiring diagrams for assistance (see paragraph 6-73).
- Taped wires and terminal leads are for engine tachometer. These items are not used on this forklift truck.

a. REPAIR

NOTE

- Load center wiring harness does not need to be removed from forklift truck to perform repair.
- Repair of load center wiring harness consists of replacement of identification bands, terminals, and connectors.

Refer to paragraph 2-28 for repair instructions.

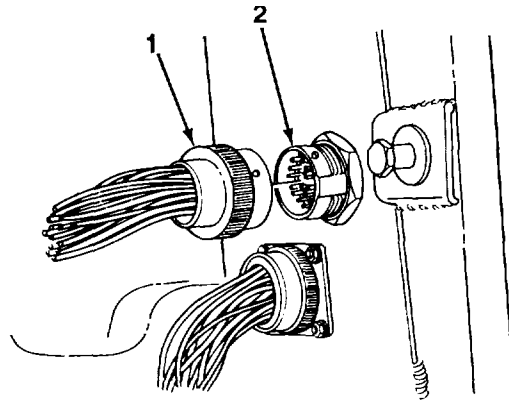
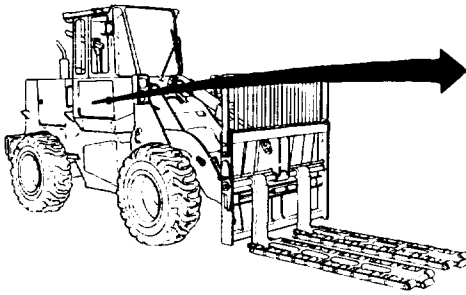
6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

b. REMOVAL

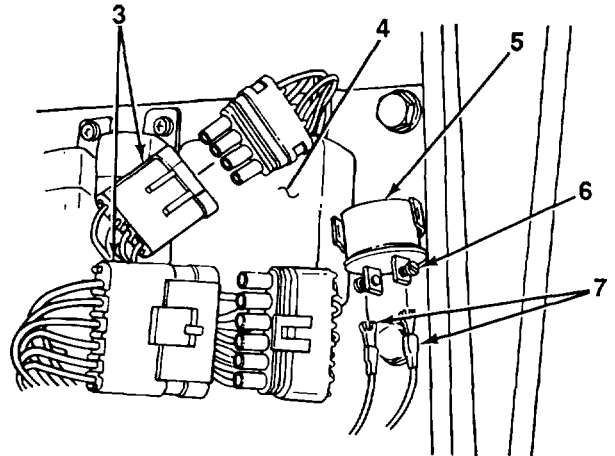
NOTE

Remove clamps as necessary.

1. Disconnect fault monitor and dash wiring harness (1) from fault monitor and dash wiring harness connector (2).

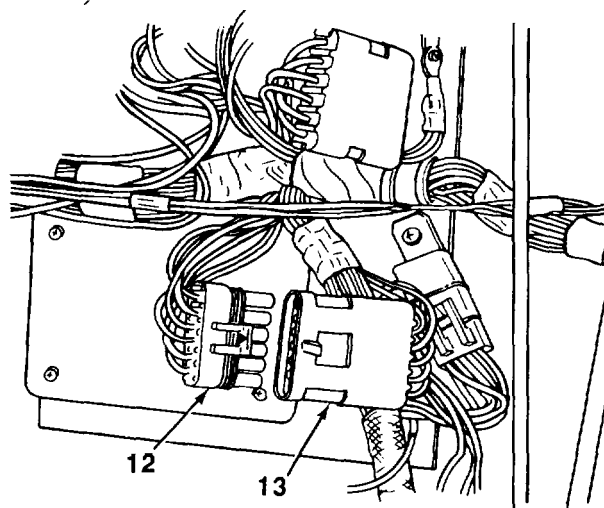
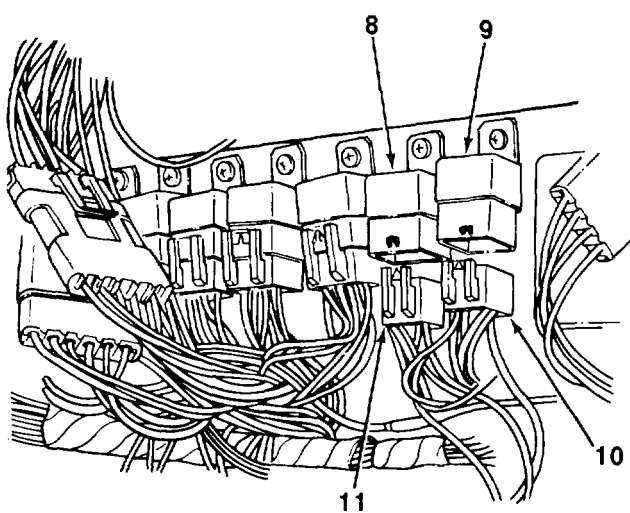


2. Loosen two screws (6) and remove emergency flasher terminals (7) from emergency flasher (5).
3. Disconnect two 24-volt module connectors (3) from 24-volt module (4).

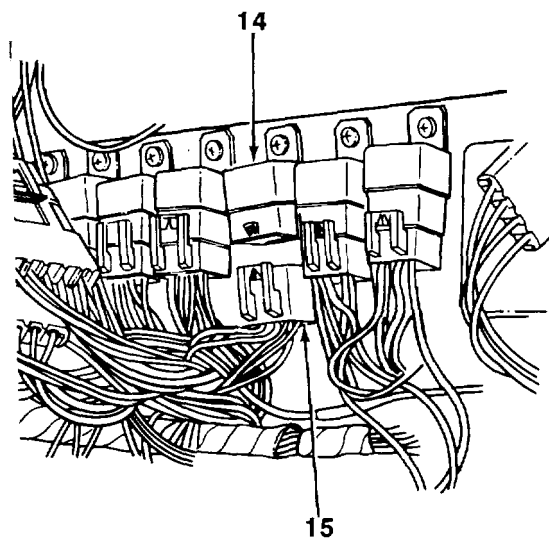


6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

4. Disconnect starter interlock relay connector (10) from starter interlock relay (9).
5. Disconnect starter circuit relay connector (11) from starter circuit relay (8).
6. Disconnect secondary steering controller connector (12) from secondary steering controller (13).

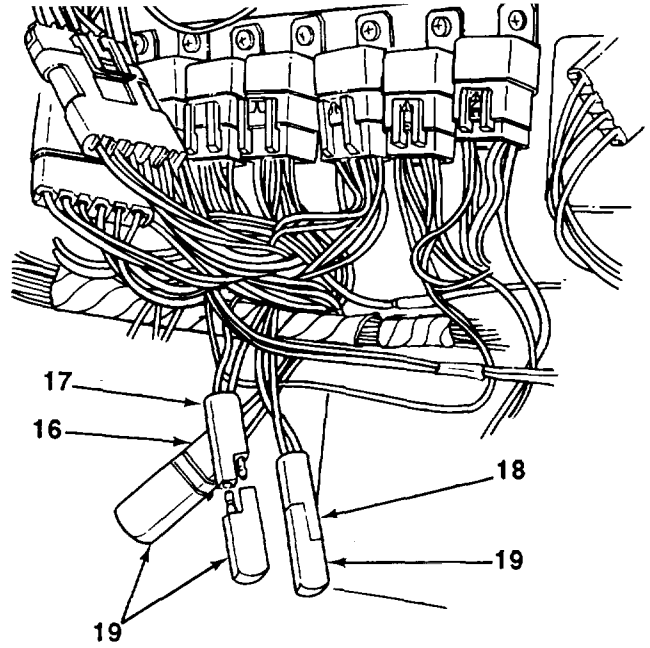


7. Disconnect engine hourmeter relay connector (15) from engine hourmeter relay (14).

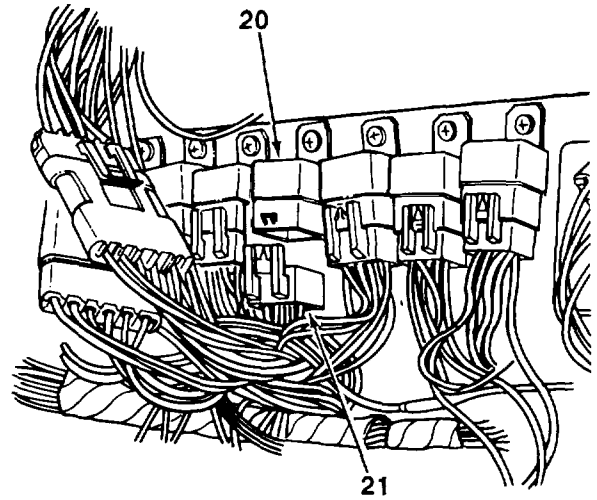


6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

8. Disconnect three diode connectors (16, 17, and 18) from diodes (19).



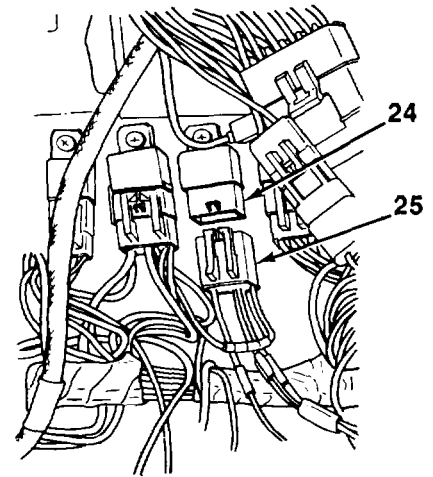
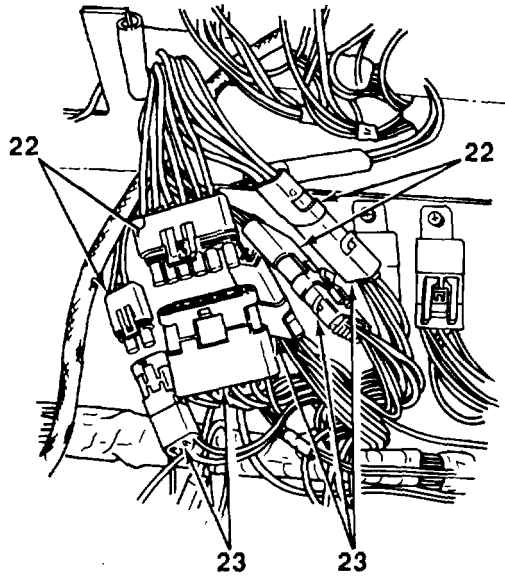
9. Disconnect accessory relay #3 connector (21) from accessory relay #3 (20).



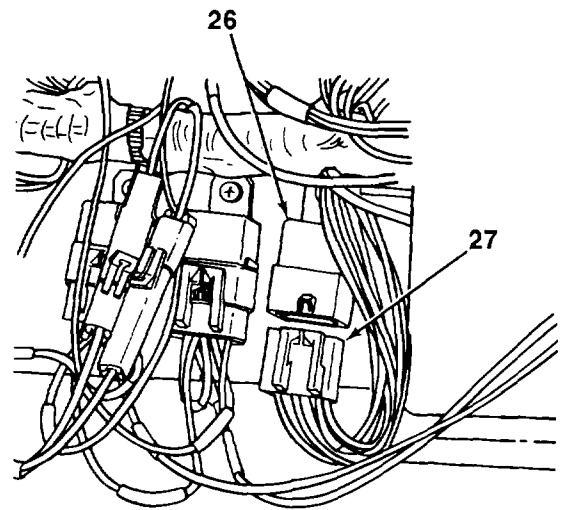
6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

10. Disconnect five load center wiring harness connectors (23) from right panel wiring harness connectors (22).

11. Disconnect parking brake light relay connector (25) from parking brake light relay (24).

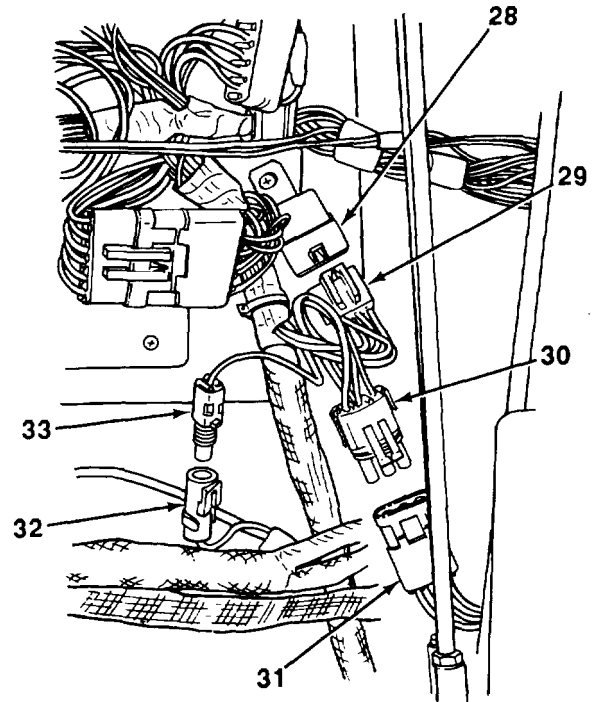


12. Disconnect alternator relay connector (27) from alternator relay (26).

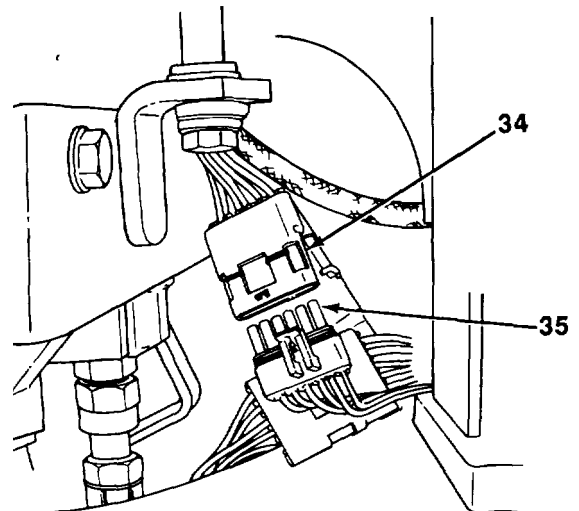


6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

- 13. Disconnect secondary steering relay connector (29) from secondary steering relay (28).
- 14. Disconnect load center wiring harness connector (33) from air compressor wiring harness connector (32).
- 15. Disconnect load center wiring harness connector (30) from STE/ICE load center wiring harness connector (31).

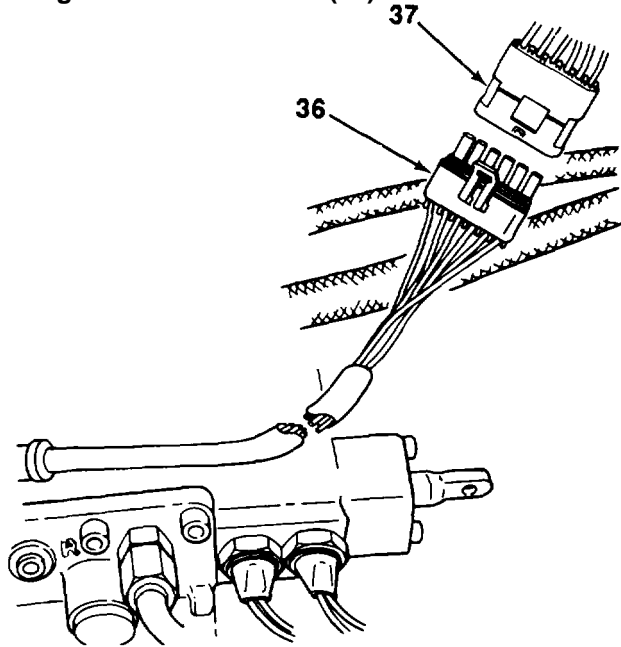


- 16. Disconnect two load center wiring harness connectors (34) from under cab wiring harness connectors (35).

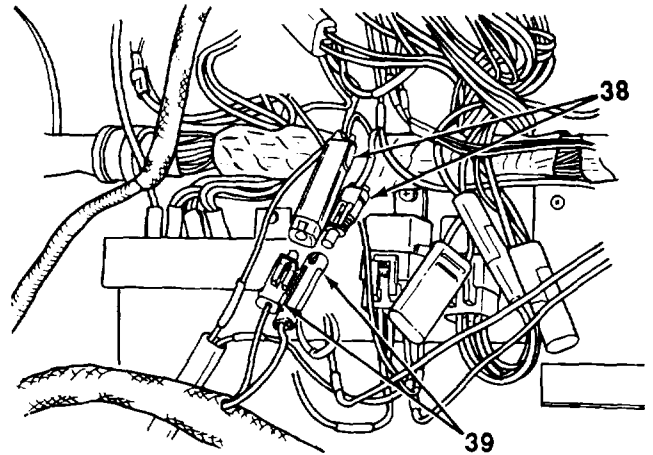


6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

17. Disconnect load center wiring harness connector (37) from transmission wiring harness connector (36).

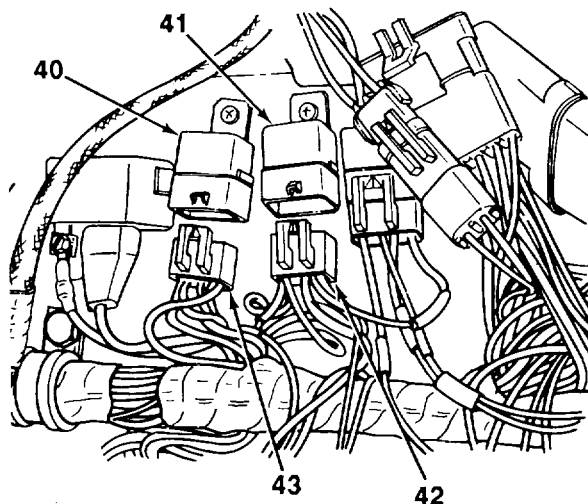


18. Disconnect two load center wiring harness connectors (38) from STE/ICE chassis wiring harness, connectors (39).

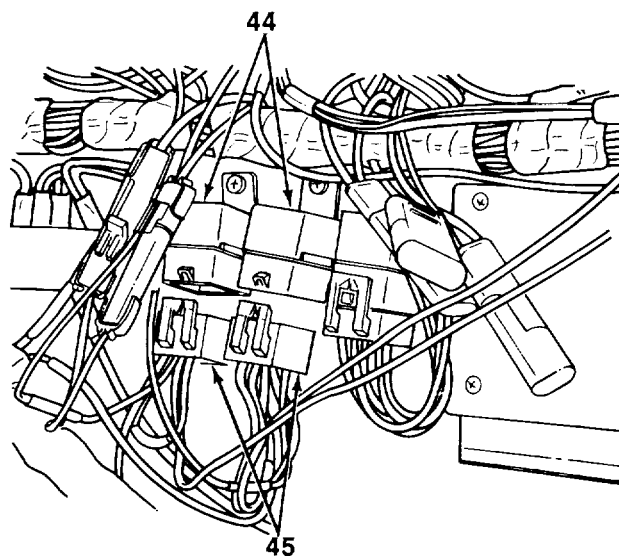


6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

19. Disconnect accessory relay #2 connector (42) from accessory relay #2 (41).
20. Disconnect accessory relay #1 connector (43) from accessory relay #1 (40).

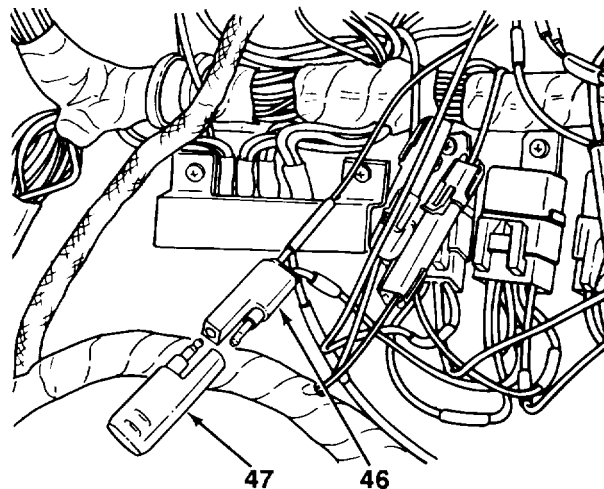


21. Disconnect two starter interlock relay connectors (45) from starter interlock relays (44).

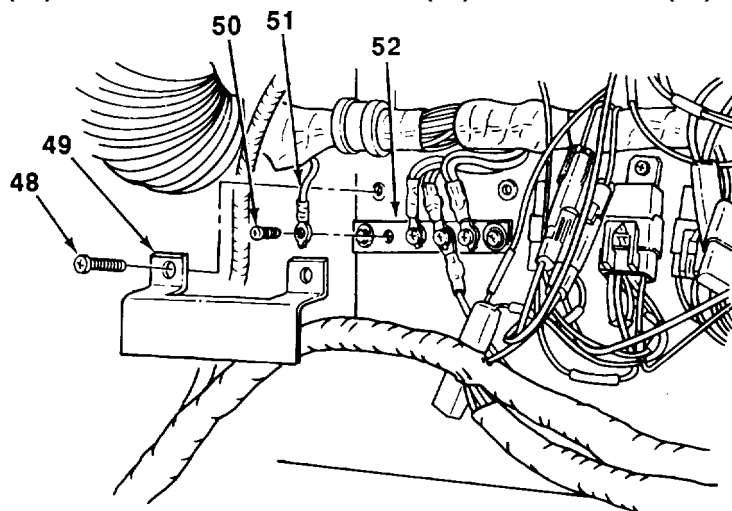


6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

22. Disconnect diode connector (46) from diode (47).

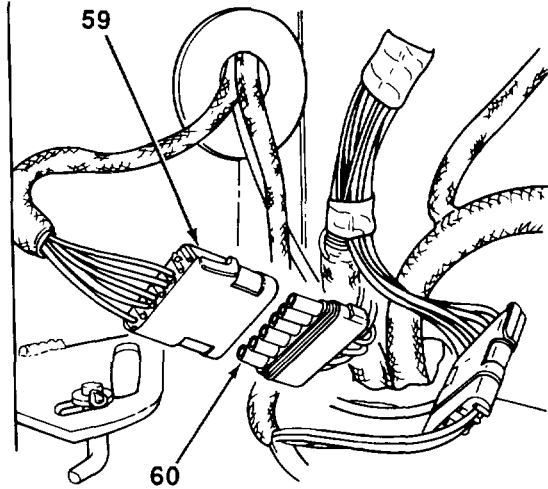
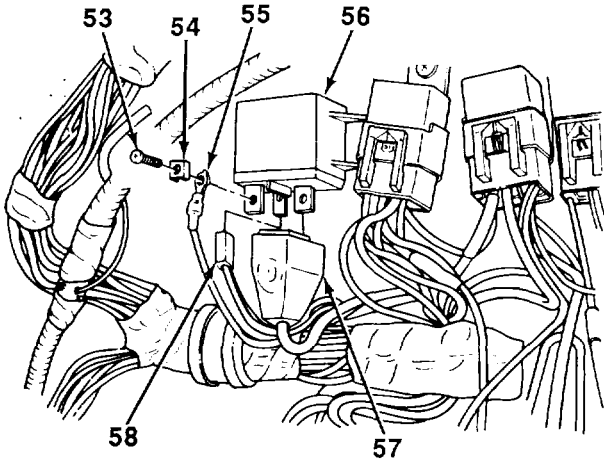


23. Remove two screws (48) and cover (49) from buss bar (52).
24. Remove four screws (50) and buss bar terminal leads (51) from buss bar (52).

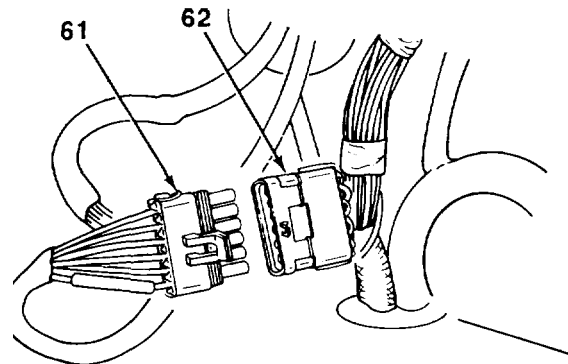


6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

25. Remove screw (53), clip (54), and starter relay terminal lead (55) from starter relay (56).
26. Disconnect two starter relay connectors (57 and 58) from starter relay (56).
27. Remove fuse block from load center plate (see paragraph 6-13).
28. Disconnect load center wiring harness connector (60) from lower worklight wiring harness connector (59).

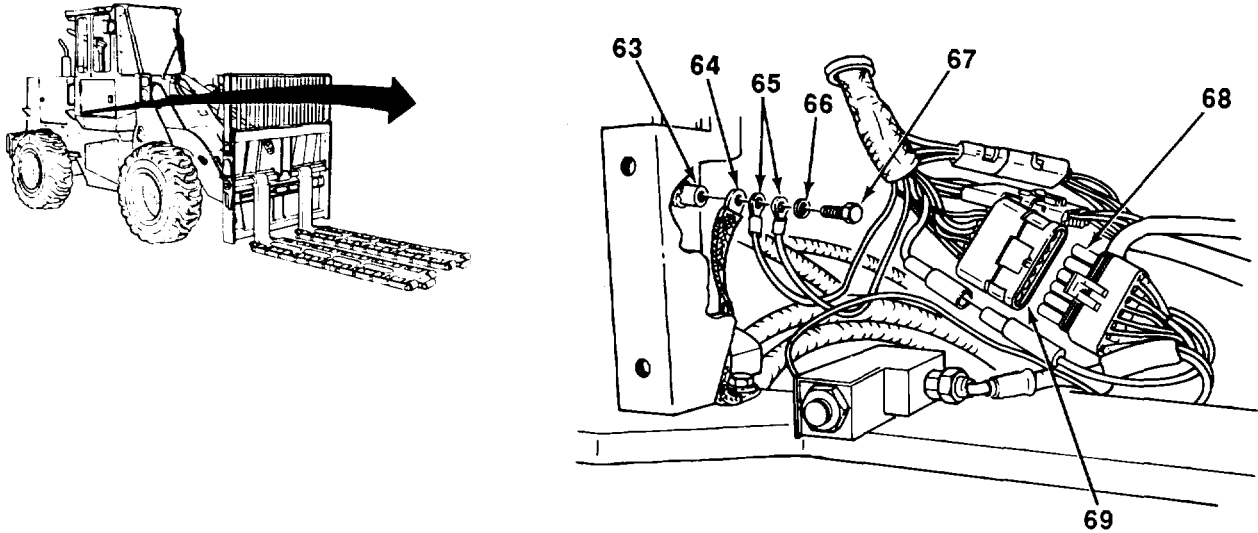


29. Disconnect load center wiring harness connector (62) from left panel wiring harness connector (61).



6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

30. Disconnect four load center wiring harness connectors (69) from engine frame wiring harness connectors (68).
31. Remove screw (67), washer (66), two ground terminal leads (65), and ground strap (64) from cab (63).
32. Remove load center wiring harness from forklift truck.



c. INSTALLATION

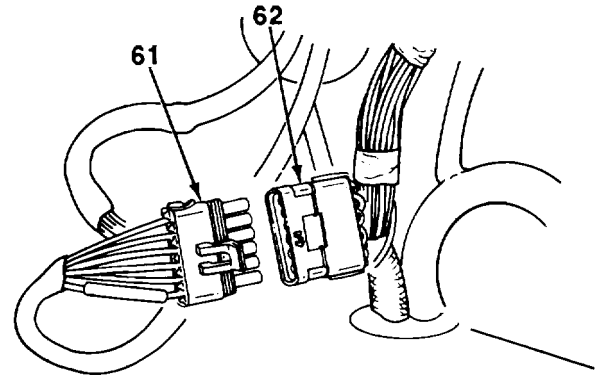
NOTE

Install clamps as necessary.

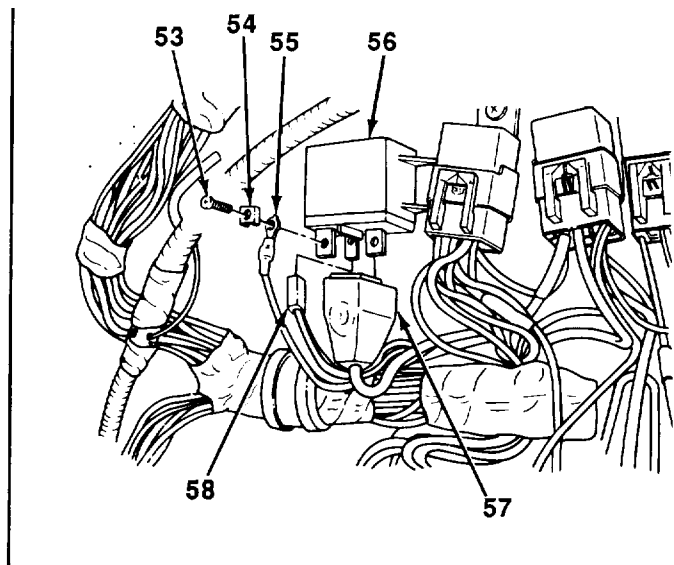
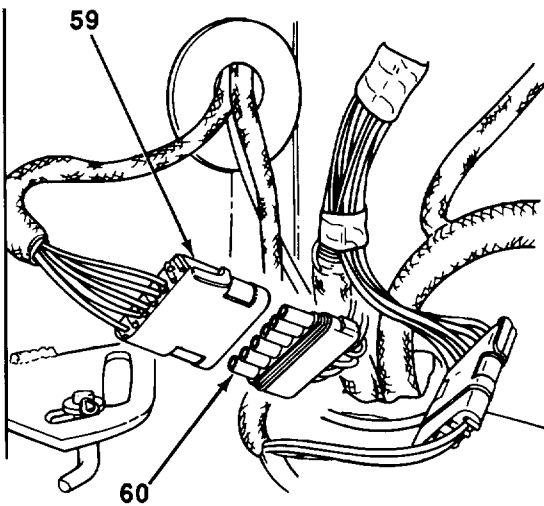
1. Position load center wiring harness on forklift truck.
2. Install ground strap (64) and two ground terminal leads (65) on cab (63) with washer (66) and screw (67).
3. Connect four load center wiring harness connectors (69) to engine frame wiring harness connectors (68).

6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

4. Connect load center wiring harness connector (62) to left panel wiring harness connector (61).

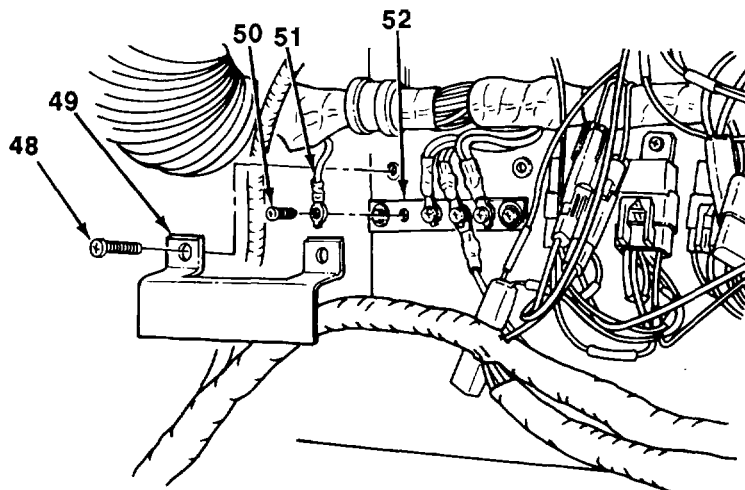


5. Connect load center wiring harness connector (60) to lower worklight wiring harness connector (59).
6. Install fuse block on load center plate (see paragraph 6-13).
7. Connect two starter relay connectors (57 and 58) to starter relay (56).
8. Install starter relay terminal lead (55) on starter relay (56) with clip (54) and screw (53).

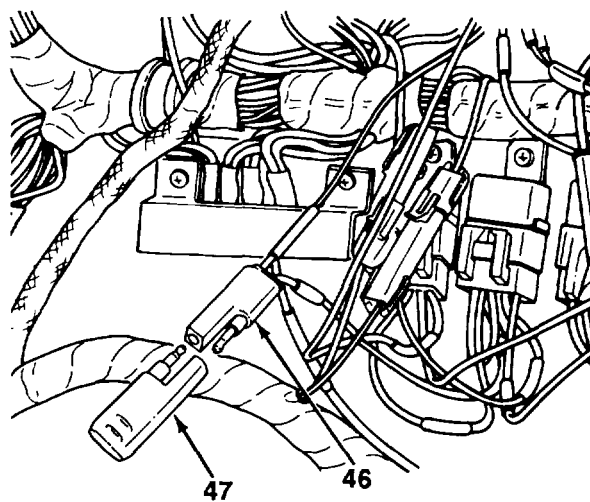


6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

9. Install four buss bar terminal leads (51) on buss bar (52) with four screws (50).
10. Install cover (49) on buss bar (52) with two screws (48).

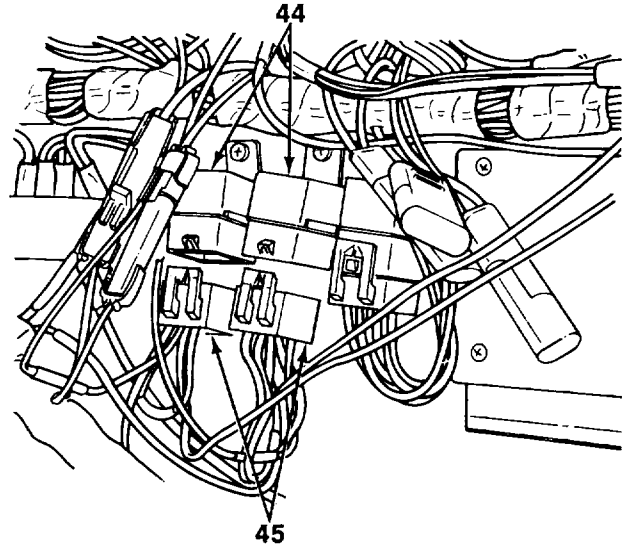


11. Connect diode connector (46) to diode (47)

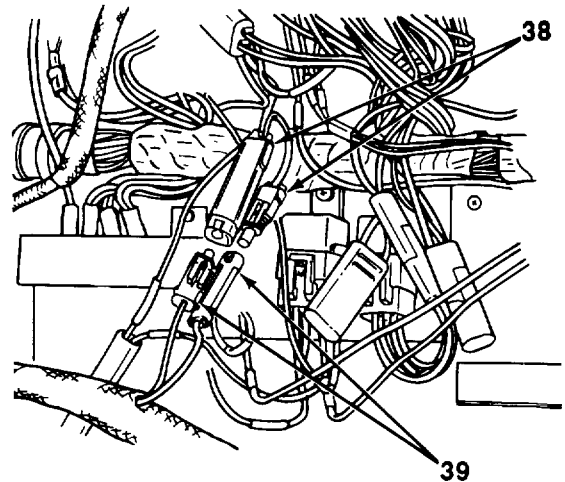
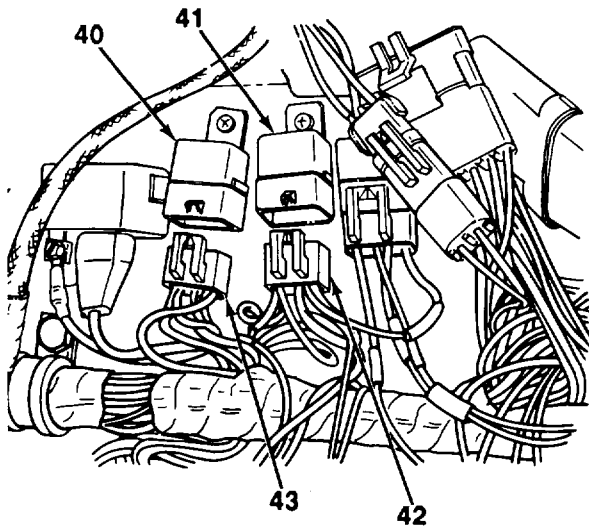


6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

12. Connect two starter interlock relay connectors (45) to starter interlock relays (44).

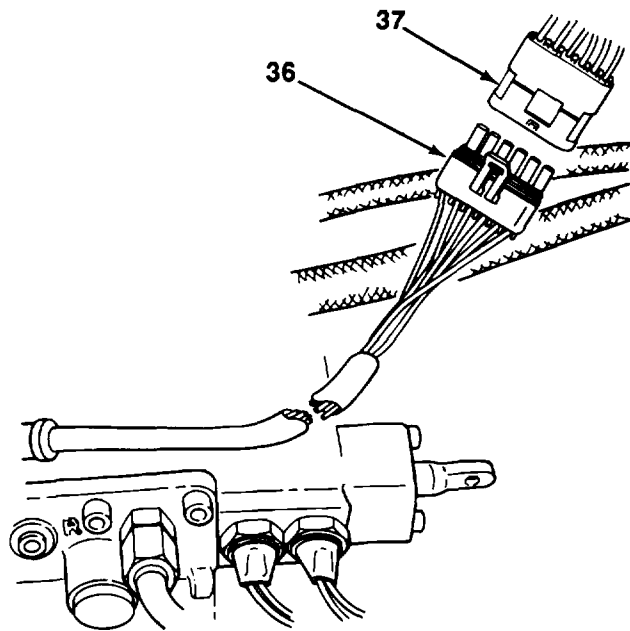


13. Connect accessory relay #1 connector (43) to accessory relay #1 (40).
14. Connect accessory relay #2 connector (42) to accessory relay #2 (41).
15. Connect two load center wiring harness connectors (38) to STE/ICE chassis wiring harness connectors (39).

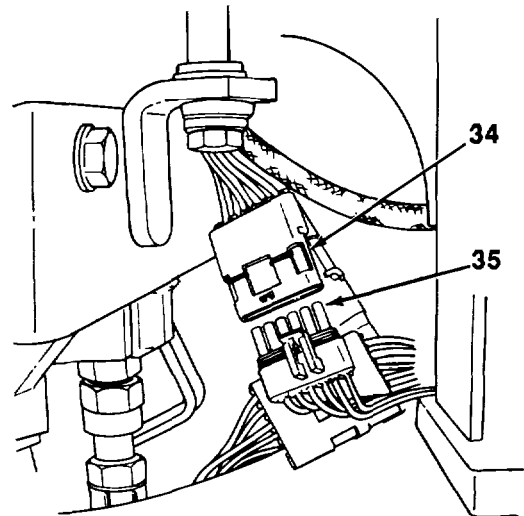


6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

16. Connect load center wiring harness connector (37) to transmission wiring harness connector (36).

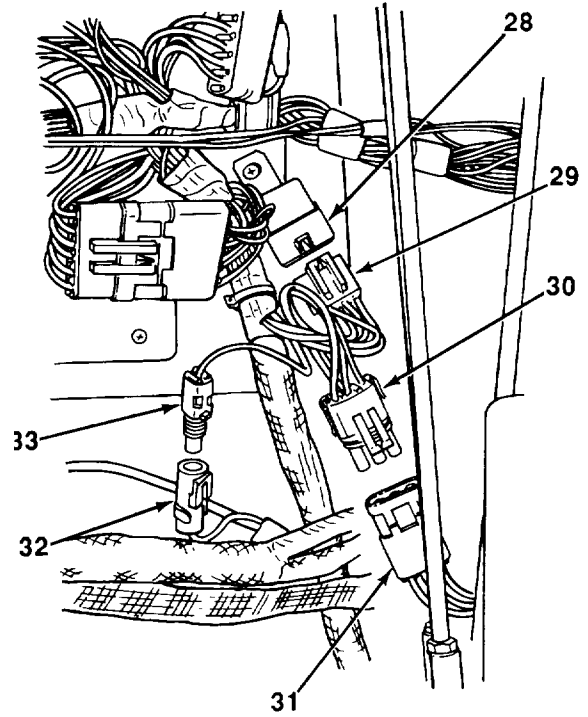


17. Connect two load center wiring harness connectors (34) to under cab wiring harness connectors (35).

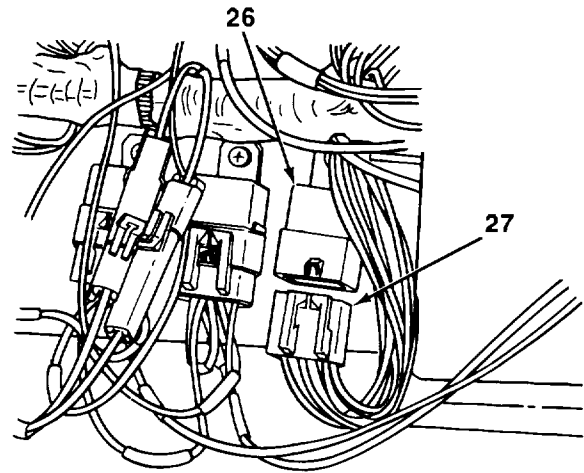


6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

- 18. Connect load center wiring harness connector (30) to STE/ICE load center wiring harness connector (31).
- 19. Connect load center wiring harness connector (33) to air compressor wiring harness connector (32).
- 20. Connect secondary steering relay connector (29) to secondary steering relay (28).

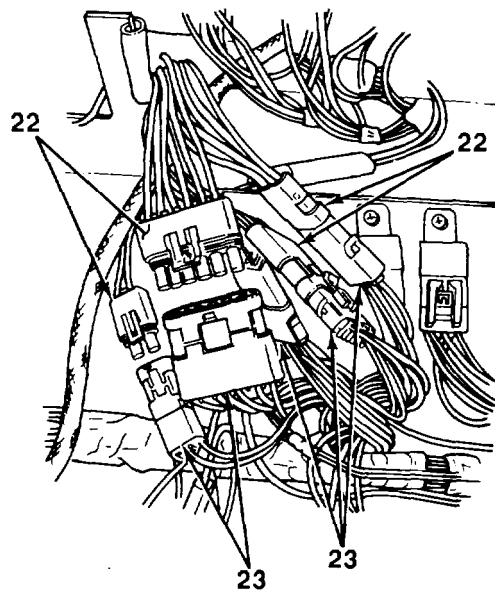
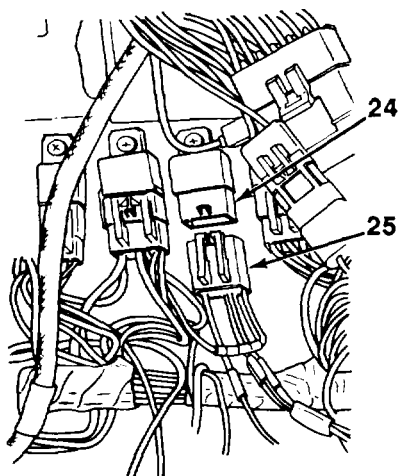


- 21. Connect alternator relay connector (27) to alternator relay (26).

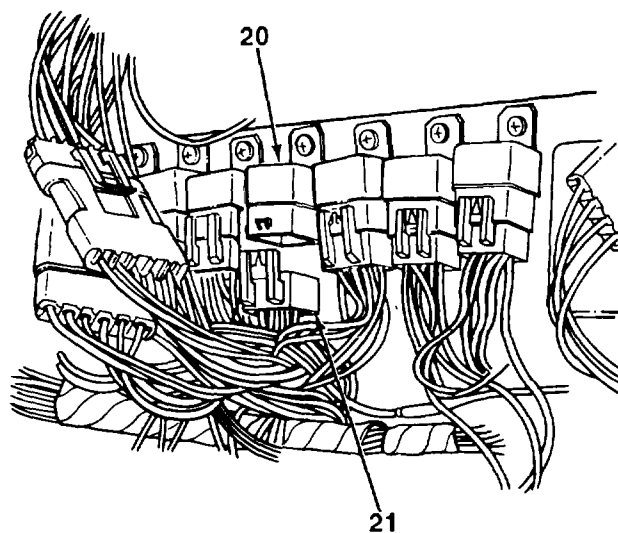


6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

- 22. Connect parking brake light relay connector (25) to parking brake light relay (24).
- 23. Connect five load center wiring harness connectors (23) to right panel wiring harness connectors (22).

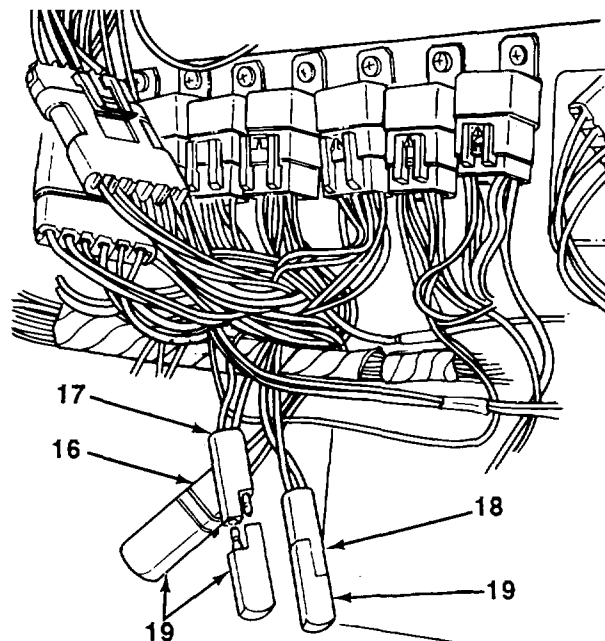


- 24. Connect accessory relay #3 connector (21) to accessory relay #3 (20).

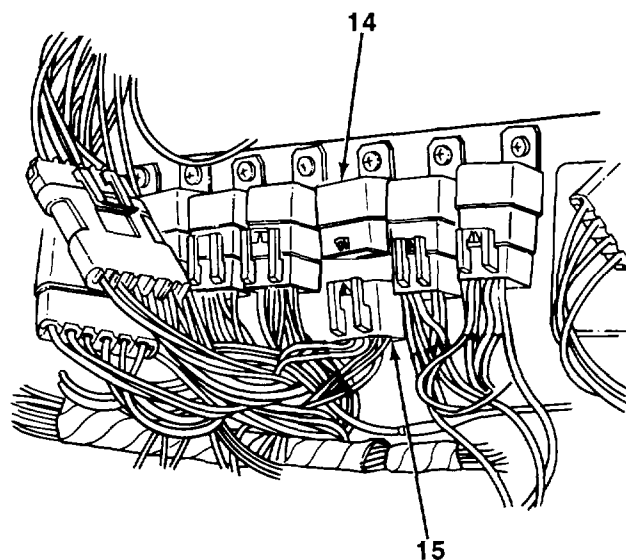


6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

25. Connect three diode connectors (16, 17, and 18) to diodes (19).

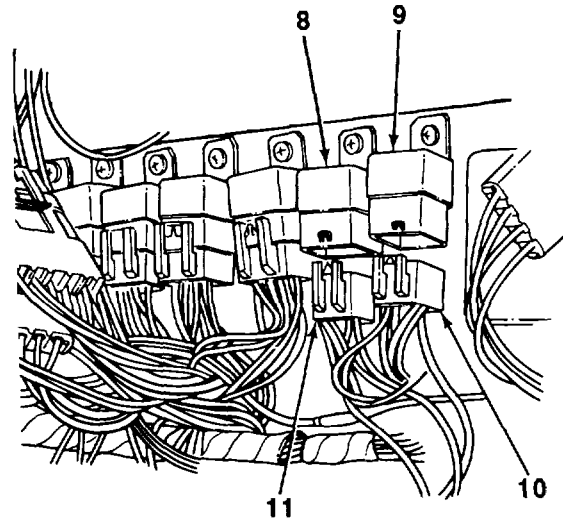
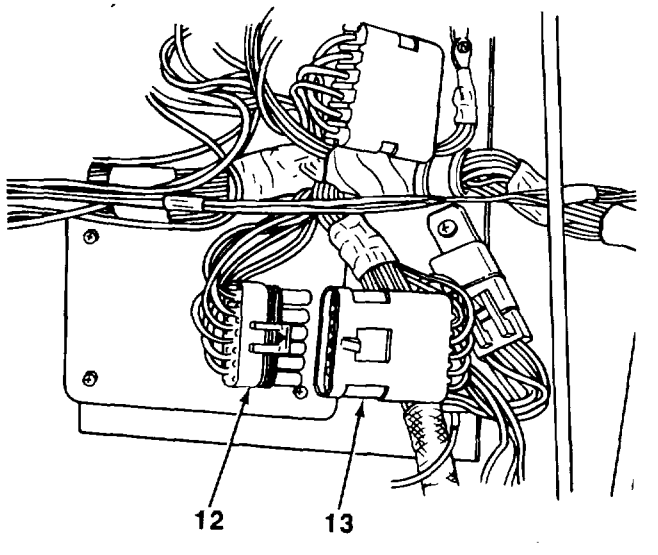


26. Connect engine hourmeter relay connector (15) to engine hourmeter relay (14).

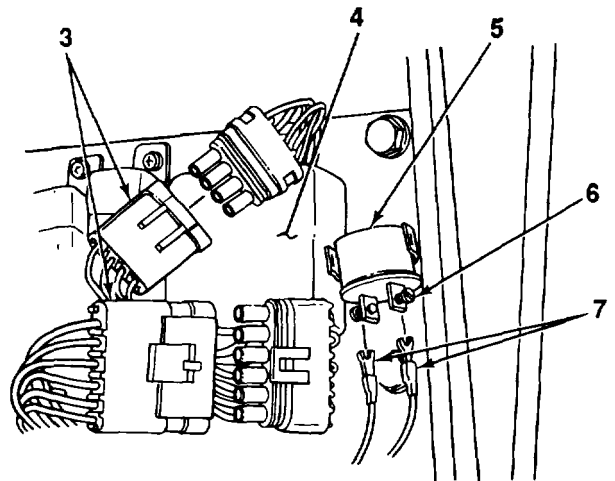


6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

- 27. Connect secondary steering controller connector (12) to secondary steering controller (13).
- 28. Connect starter circuit relay connector (11) to starter circuit relay (8).
- 29. Connect starter interlock relay connector (10) to starter interlock relay (9).

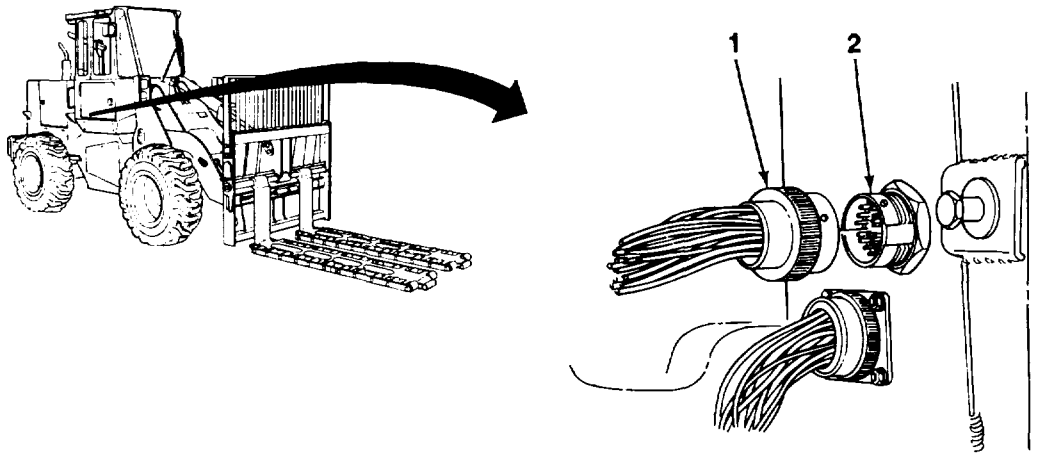


- 30. Connect two 24-volt module connectors (3) to 24-volt module (4).
- 31. Install two emergency flasher terminals (7) or emergency flasher (5) and tighten two screws (6).



6-17. LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

32. Connect fault monitor and dash wiring harness (1) to fault monitor and dash wiring harness connector (2).

**FOLLOW-ON TASKS:**

- Install fuse block cover (see paragraph 6-13).
- Install right side cab skirt (see paragraph 14-6).
- Close right access door (see TM 10-3930-659-10).
- Connect negative battery cables (see paragraph 6-43).

TA70778

6-18. AIR COMPRESSOR WIRING HARNESS MAINTENANCE.

This Task Covers:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. b. | <ul style="list-style-type: none"> Repair c. Installation Removal |
|--|---|

Initial Setup:

Equipment Conditions:

Materials/Parts:

- | | |
|--|---|
| <ul style="list-style-type: none"> • Negative battery cables disconnected (see para- • Right access door opened (see TM 10-3930-659-10). • Air compressor switch removed (see para-
graph 6-1 1). | <p>References:</p> <ul style="list-style-type: none"> • Marker tags (Item 33, Appendix C) • TM 10-3930-659-10 |
|--|---|

Tools/Test Equipment:

- **General mechanic's tool kit (Item 44, Appendix F)**

NOTE

- **All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.**
- **Refer to wiring diagrams for assistance (see paragraph 6-73).**

a. REPAIR

NOTE

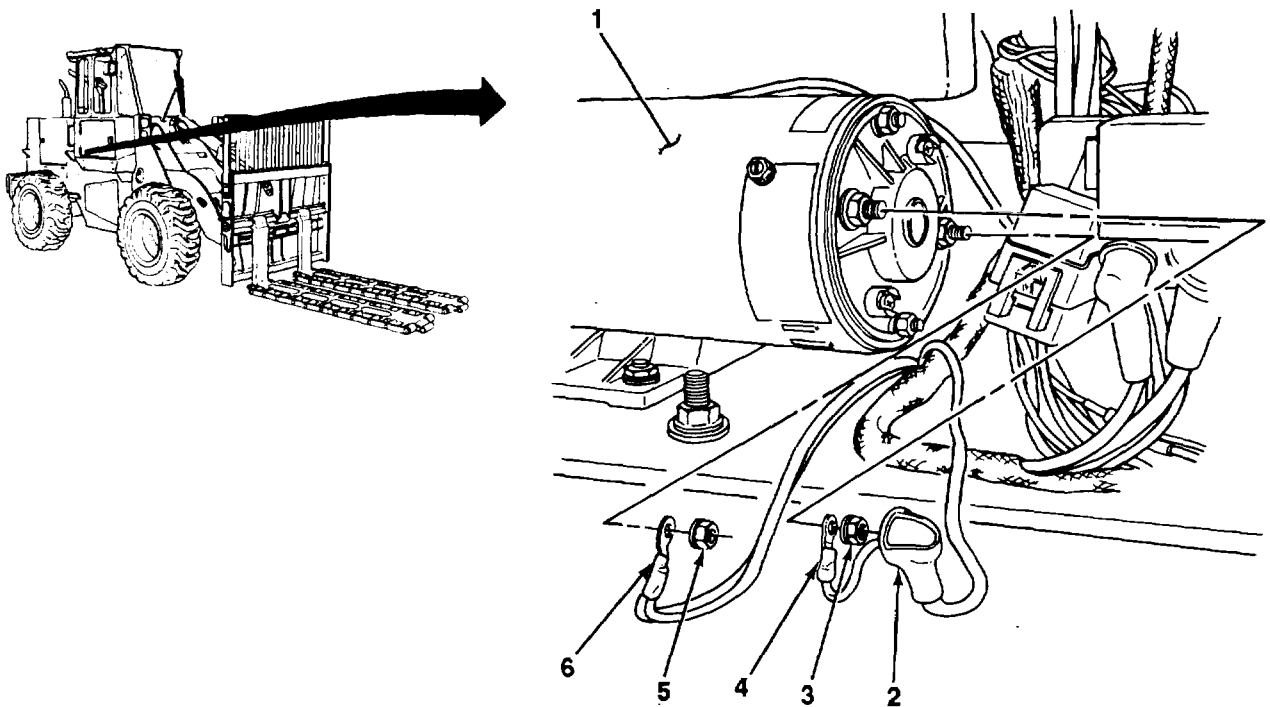
- **Air compressor wiring harness does not need to be removed from forklift truck to perform repair.**
- **Repair of air compressor wiring harness consists of replacement of identification bands, terminals, and connectors.**

Refer to paragraph 2-28 for repair instructions.

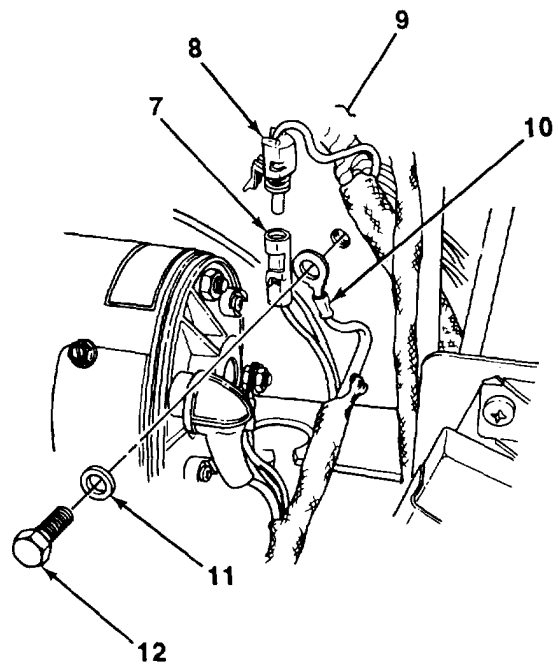
b. REMOVAL

1. Remove rubber boot (2), nut (3), and air compressor wiring harness terminal lead (4) from air compressor (1).
2. Remove nut (5) and air compressor wiring harness terminal lead (6) from air compressor (1).

6-18. AIR COMPRESSOR WIRING HARNESS MAINTENANCE (Con't).



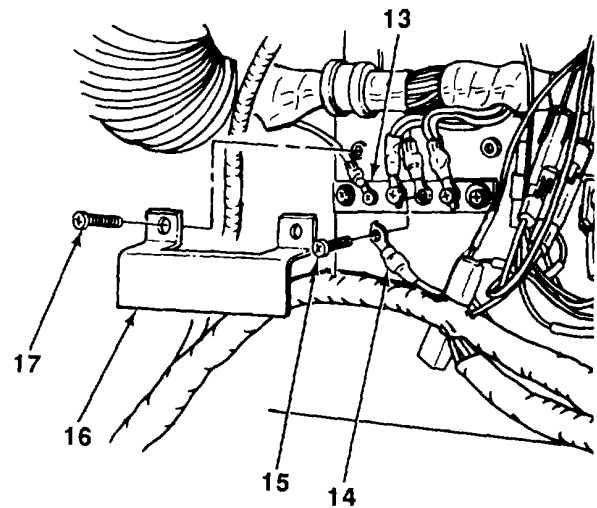
3. Disconnect air compressor wiring harness connector (7) from load center wiring harness connector (8).
4. Remove screw (12), washer (11), and load center plate terminal lead (10) from load center plate (9).



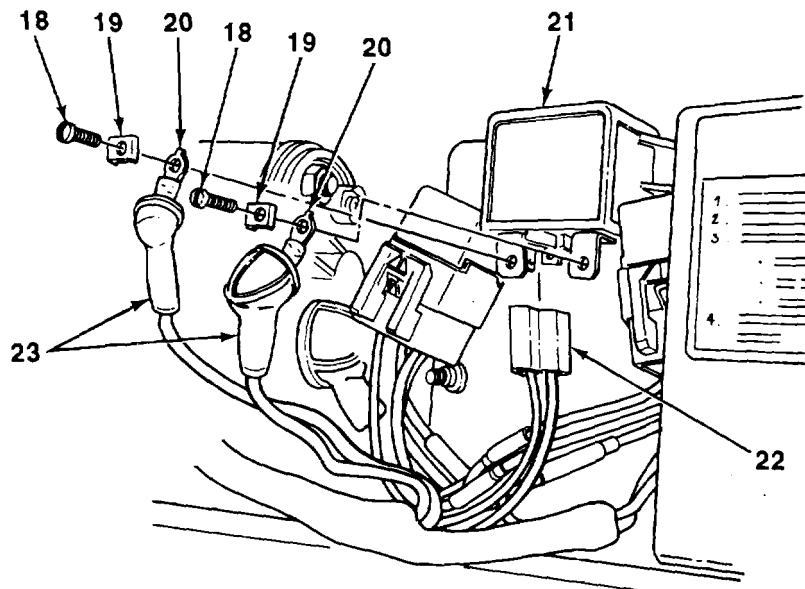
TA707779

6-18. AIR COMPRESSOR WIRING HAR

5. Remove two screws (17) and cover (16) from buss bar (13).
6. Remove screw (15) and air compressor terminal lead (14) from buss bar (13).



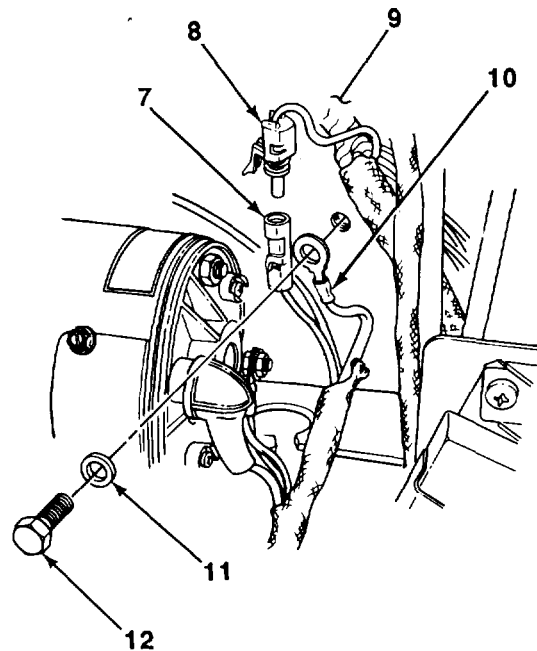
7. Remove two rubber boots (23), screws (18), clips (19), and air compressor relay terminal leads (20) from air compressor relay (21).
8. Disconnect air compressor relay connector (22) from air compressor relay (21).
9. Remove air compressor wiring harness from forklift truck.



TA707780

6-18. AIR COMPRESSOR WIRING HARNESS MAINTENANCE (Con't).**c. INSTALLATION**

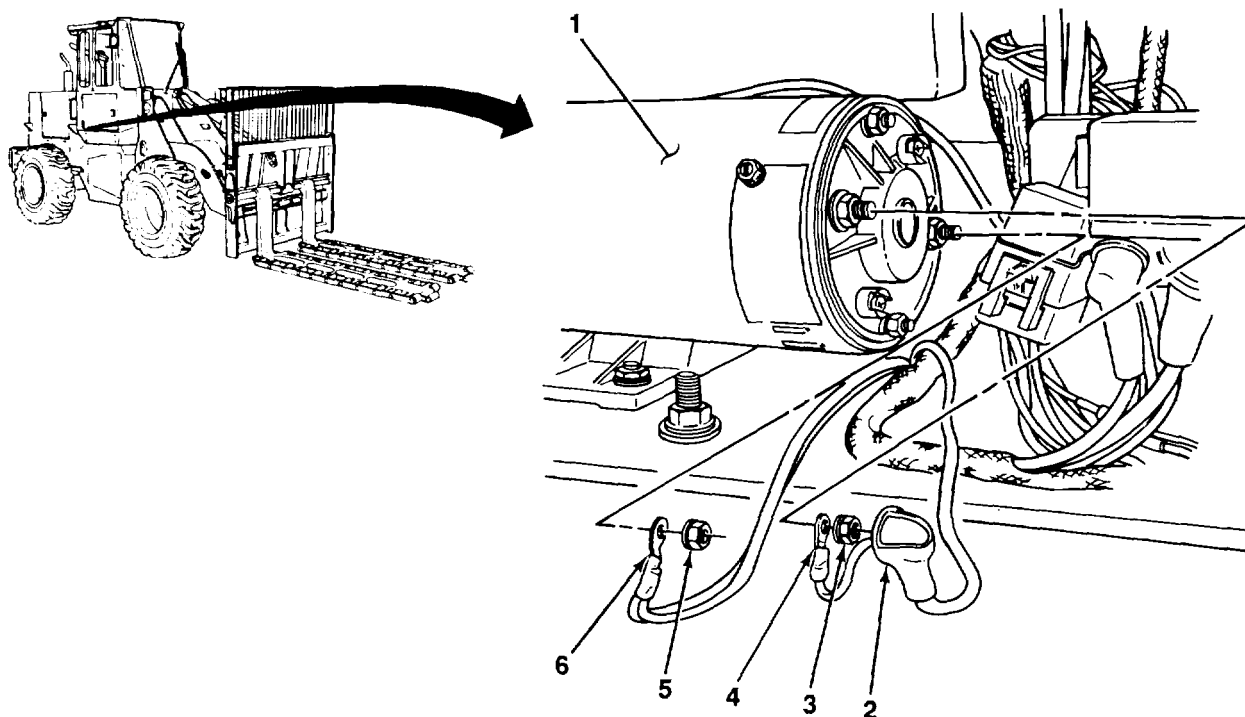
1. Position air compressor wiring harness on forklift truck.
2. Connect air compressor relay connector (22) to air compressor relay (21).
3. Install two air compressor relay terminal leads (20) on air compressor relay (21) with two clips (19) and screws (18).
4. Install two rubber boots (23) over screws (18).
6. Install cover (16) on buss bar (13) with two screws (17).
7. Install load center plate terminal lead (10) on load center plate (9) with washer (11) and screw (12).
8. Connect air compressor wiring harness connector (7) to load center wiring harness connector (8).



TA707781

6-18. AIR COMPRESSOR WIRING HARNESS MAINTENANCE (Con't).

9. Install air compressor wiring harness terminal lead (6) on air compressor (1) with nut (5).
10. Install air compressor wiring harness terminal lead (4) on air compressor (1) with nut (3).
11. Install rubber boot (2) over nut (3).

**FOLLOW-ON TASKS**

- Close right access door (see TM 10-3930-659-10).
- Connect negative battery cables (see paragraph 6-43).

TA707782

6-19. TURN SIGNAL/EMERGENCY FLASHERS SWITCH REPLACEMENT.*This Task Covers:*

- a. Removal b. Installation

*Initial Setup:***Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- One lockwasher

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

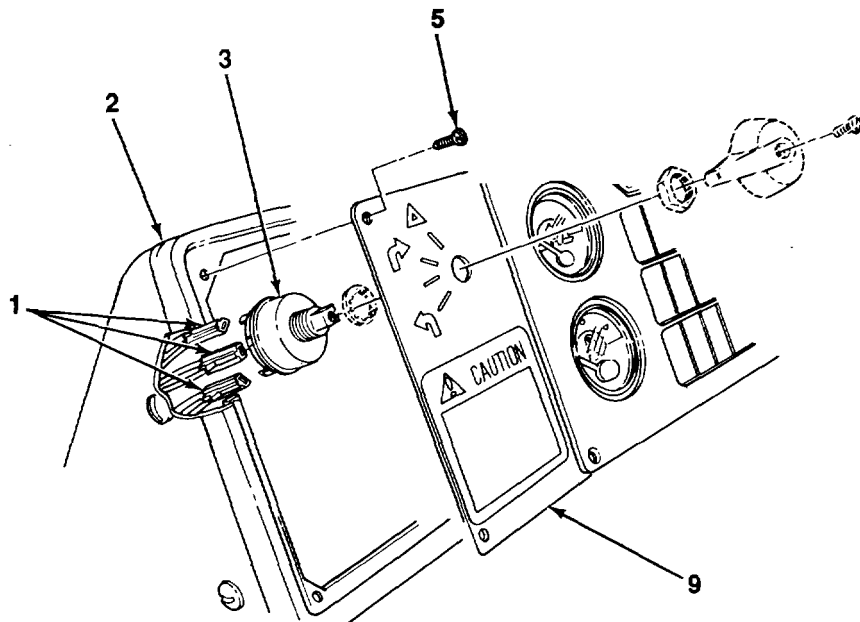
References:

- TM 10-3930-659-10

a. REMOVAL**NOTE**

All connectors should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.

1. Remove four screws (5) and lift dash plate (9) from dash housing (2).
2. Disconnect three fault monitor and dash wiring harness connectors (1) from turn signal/emergency flashers switch (3).

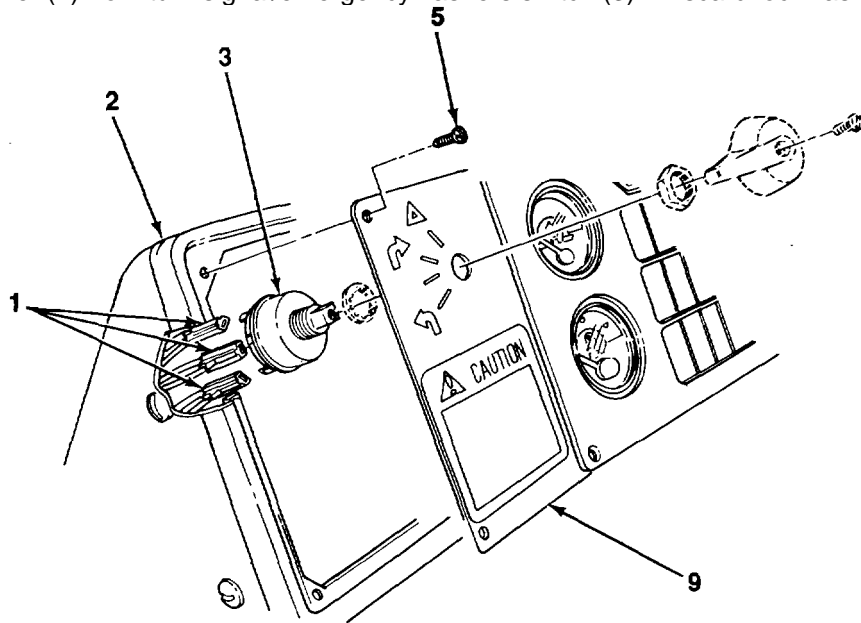


TA707783

6-19. TURN SIGNAL/EMERGENCY FLASHERS SWITCH REPLACEMENT (Con't).**NOTE**

Note position of turn signal/emergency flashers switch to aid during Installation.

3. Remove screw (8), handle (7), nut (6), and turn signal/emergency flashers switch (3) from dash plate (9).
4. Remove lockwasher (4) from turn signal/emergency flashers switch (3). Discard lockwasher.

**b. INSTALLATION**

1. Position new lockwasher (4) on turn signal/emergency flashers switch (3).
2. Install turn signal/emergency flashers switch (3) on dash plate (9) with nut (6).
3. Install handle (7) on turn signal/emergency flashers switch (3) with screw (8).
4. Connect three fault monitor and dash wiring harness connectors (1) to turn signal/emergency flashers switch (3).

CAUTION

Use care not to overtighten screws when installing dash plate. Dash plate is plastic and may be damaged if screws are overtightened.

5. Install dash plate (9) on dash housing (2) with four screws (5).

TA707784

6-20. DOMELIGHT MAINTENANCE.

This Task Covers:

- | | |
|---------------------|-----------------|
| a. Lamp Replacement | c. Installation |
| b. Removal | |
-

Initial Setup:

Equipment Conditions:

- **Battery disconnect switch in OFF position (see F) TM 10-3930-659-10).**

Tools/Test Equipment:

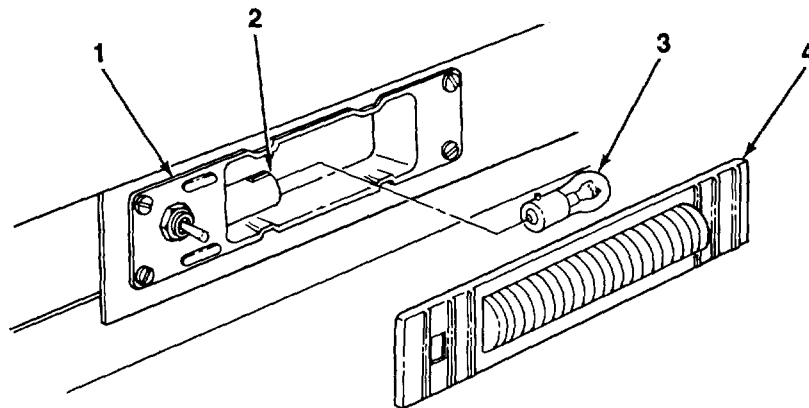
- **General mechanic's tool kit (Item 44, Appendix**

References:

- **TM 10-3930659-10**
-

a. LAMP REPLACEMENT

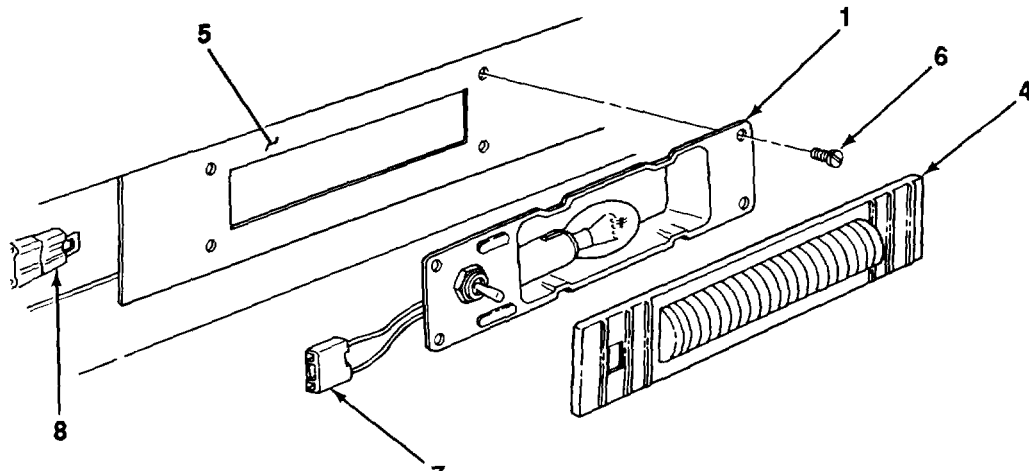
1. Remove lens (4) from body (1).
2. Remove lamp (3) from socket (2) by pushing lamp in and turning counterclockwise.
3. Install lamp (3) in socket (2) by pushing lamp in and turning clockwise.



TA707785

6-20. DOMELIGHT MAINTENANCE (Con't).**b. REMOVAL**

1. Remove side sound Isolator (see paragraph 14-12).
2. Disconnect connector (7) from upper worklight wiring harness connector (8).
3. Remove lens (4) from body (1).
4. Remove four screws (6) and body (1) from cab side (5).

**c. INSTALLATION**

1. If removed, Install connector (7) on body (1) (see paragraph 2-18).
2. Install body (1) on cab side (5) with four screws (6).
3. Connect connector (7) to upper worklight wiring harness connector (8).
4. Install side sound isolator (see paragraph 14-12).

TA707786

6-21. DRIVING LIGHTS MAINTENANCE.*This Task Covers:*

- | | |
|---------------------|-----------------|
| a. Lamp Replacement | c. Installation |
| b. Removal | |

Initial Setup:

Equipment Conditions:

- Battery disconnect switch In OFF position (see F) TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix

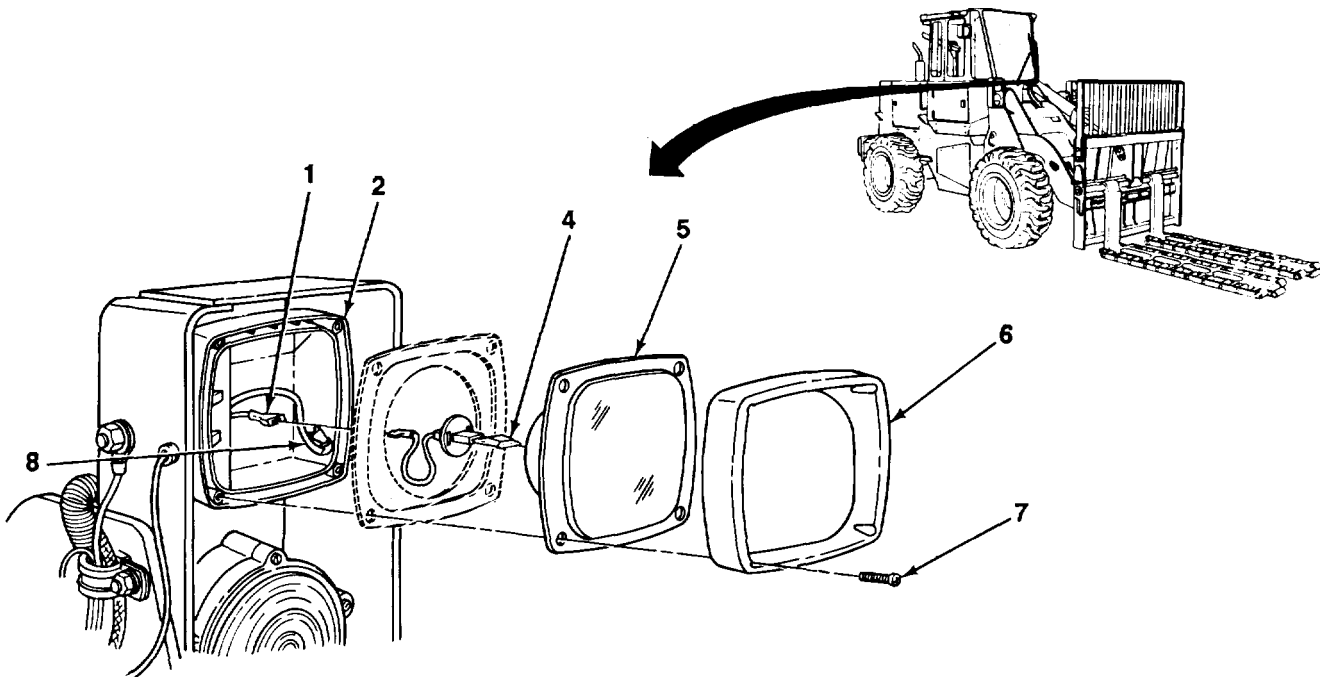
References:

- TM 10-3930-659-10

a. LAMP REPLACEMENT**NOTE**

- Lamps of left and right driving lights are replaced the same way. Left front driving light is illustrated.
- Note position of bezel to aid during Installation.

1. Remove four screws (7), bezel (6), and lens (5) from housing (2).
2. Disconnect connector (1) from lamp (4) and ground wire (8) from lens (5).



TA707787

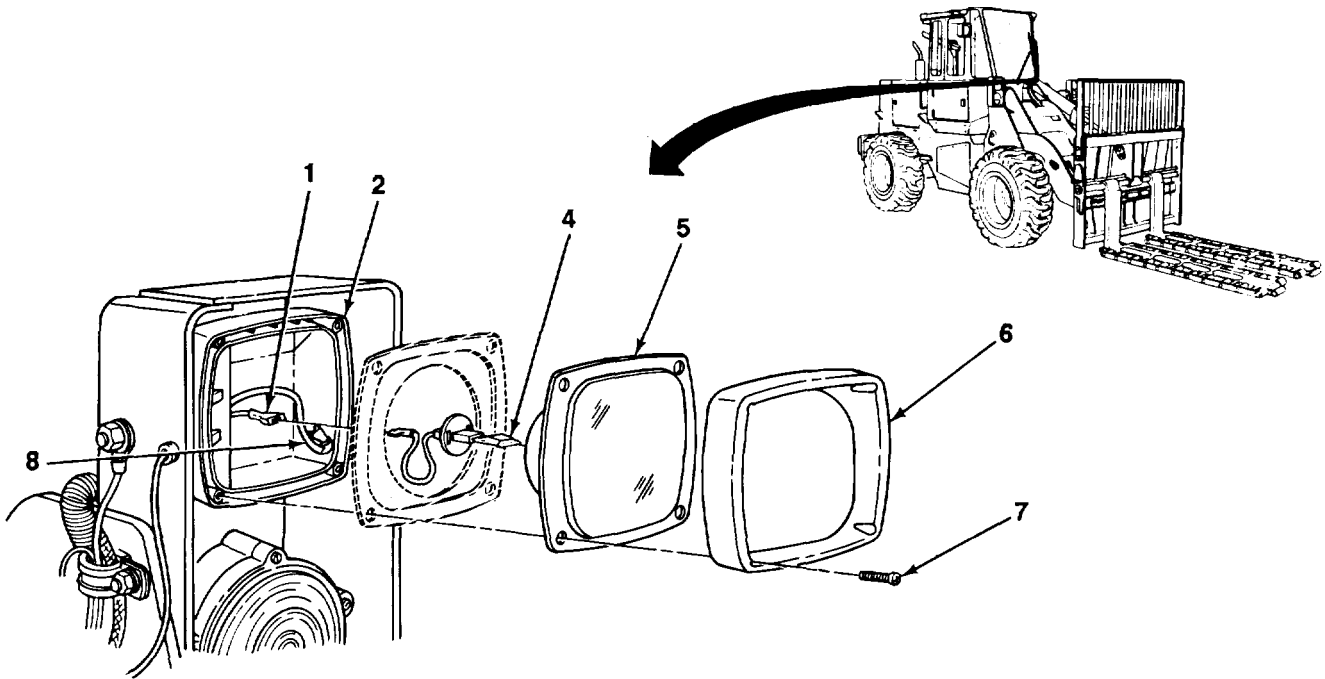
6-21. DRIVING LIGHTS MAINTENANCE (Con't).

3. Remove lamp (4) from lens (5).
4. If damaged, remove gasket (3) and discard.
5. If removed, install new gasket (3) on housing (2).

CAUTION

Driving lights use halogen lamps. Avoid touching glass as skin oils will severely shorten service life of lamp.

6. Install lamp (4) on lens (5).
7. Connect connector (1) to lamp (4) and ground wire (8) to lens (5).
8. Install (5) and bezel (6) on housing (2) with four screws (7).

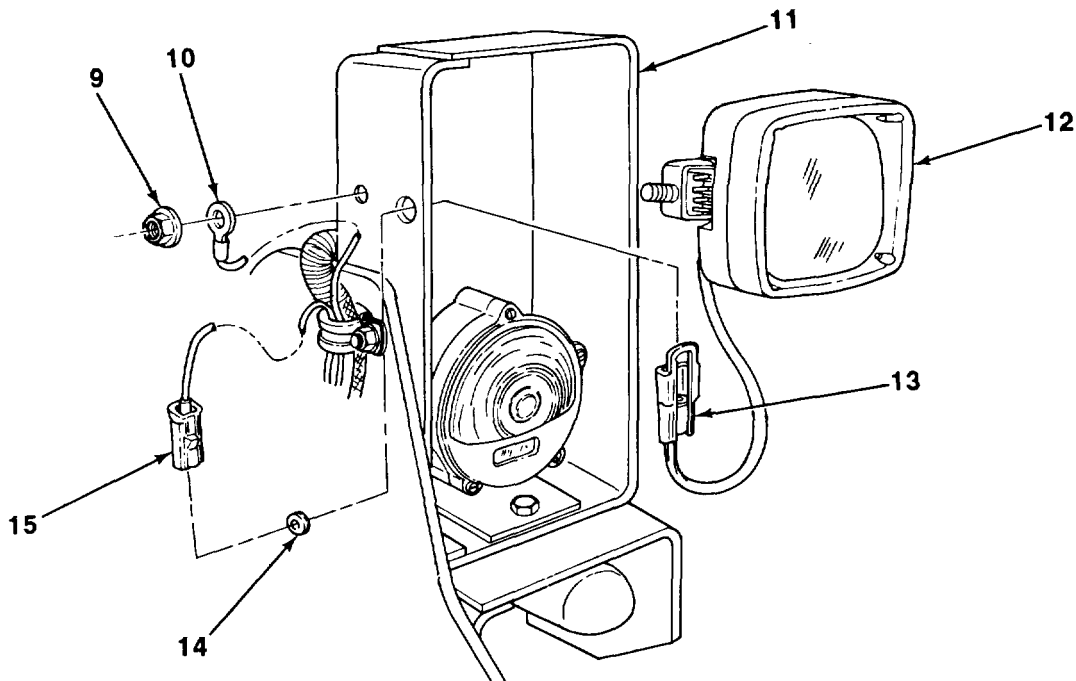


TA707788

6-21. DRIVING LIGHTS MAINTENANCE (Con't).**b. REMOVAL****NOTE**

Left and right driving lights are removed and installed the same way. Left driving light is illustrated.

1. Disconnect driving light housing connector (13) from loader frame wiring harness connector (15).
2. Remove flange nut (9), ground wire (10), driving light assembly (12), and grommet (14) from bracket (11).

**c. INSTALLATION**

1. Install grommet (14) and driving light housing connector (13) on bracket (11).
2. Install driving light assembly (12) and ground wire (10) on bracket (11) with flange nut (9).
3. Connect driving light housing connector (13) to loader frame wiring harness connector (15).

TA707789

6-22. FRONT TURN SIGNAL/EMERGENCY FLASHERS AND FRONT BLACKOUT LIGHT MAINTENANCE.

This Task Covers:

- | | |
|---------------------|-----------------|
| a. Lamp Replacement | c. Installation |
| b. Removal | |

Initial Setup:

Equipment Conditions:

- Battery disconnect switch in OFF position (see

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:

- TM 10-3930-659-10).

Tools/Test Equipment

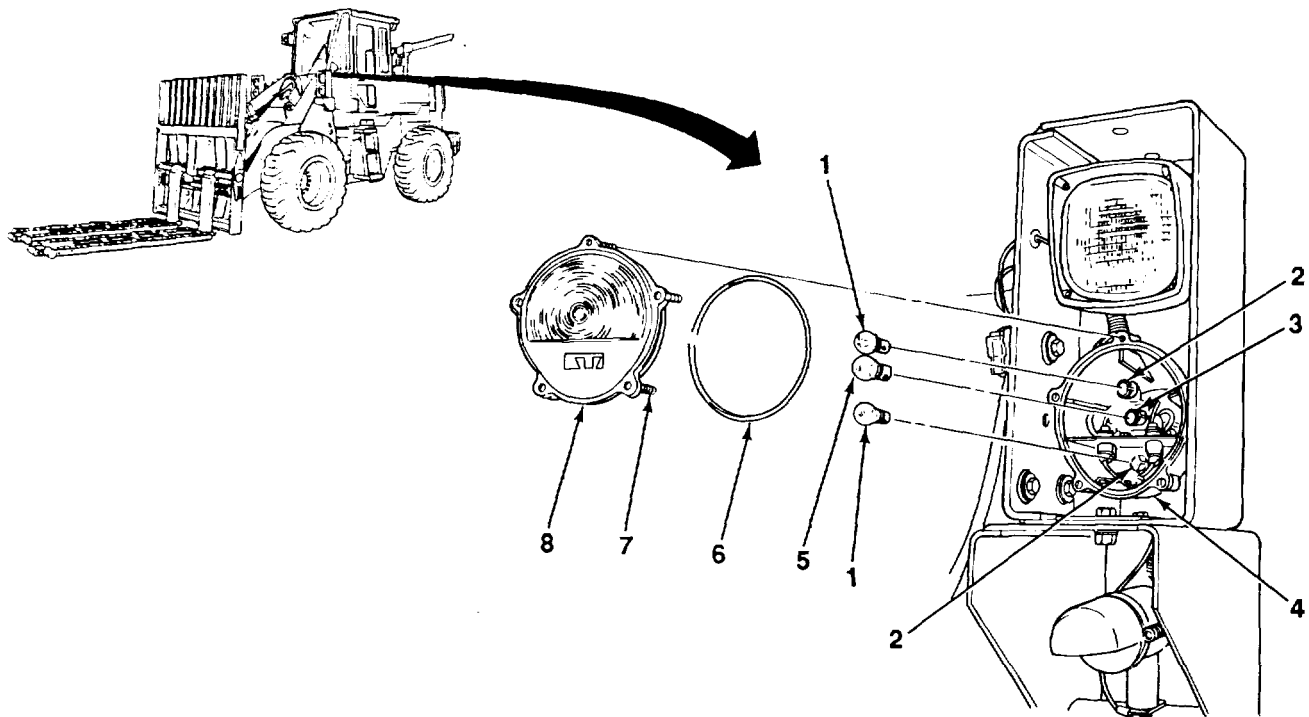
- General mechanic's tool kit (Item 44, Appendix F)

a. LAMP REPLACEMENT

NOTE

Left and right front turn signal/emergency flashers and front blackout lights are replaced the same way. Left front light is illustrated.

1. Loosen five screws (7) and remove door (8) from housing (4).



TA707790

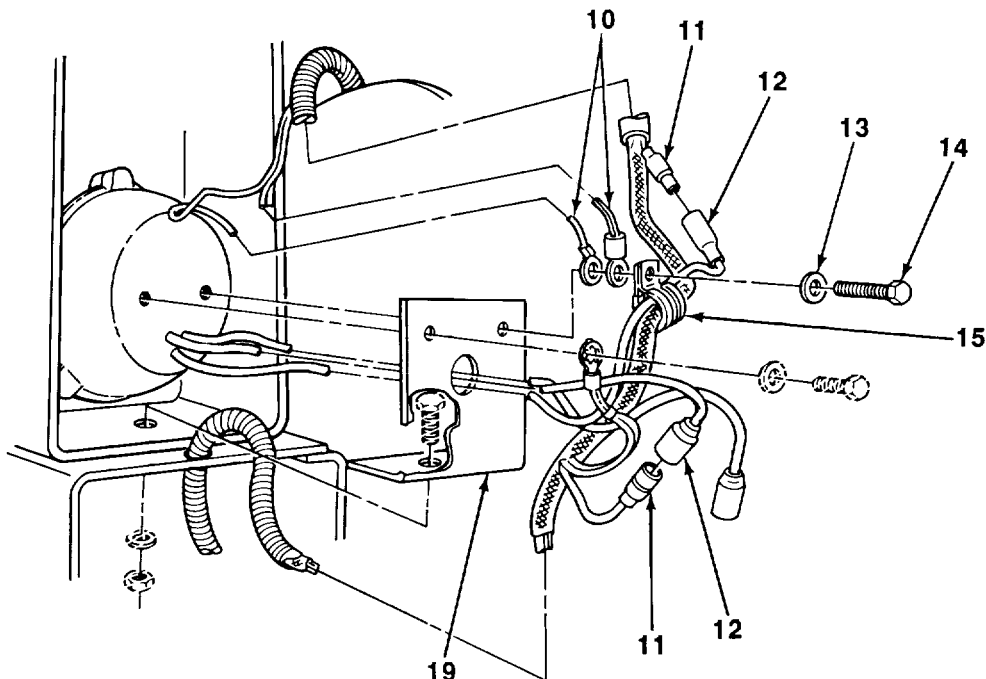
6-22. FRONT TURN SIGNAL/EMERGENCY FLASHERS AND FRONT BLACKOUT LIGHT MAINTENANCE (Con't).

2. If damaged, remove preformed packing (6) and discard.
3. Remove two lamps (1) from two sockets (2) and lamp (5) from socket (3) by pushing lamps in and turning counterclockwise.
4. Install two lamps (1) in two sockets (2) and lamp (5) in socket (3) by pushing lamps in and turning clockwise.
5. If removed, install new preformed packing (6) on door (8).
6. Install door (8) on housing (4) and tighten five screws (7).

b. REMOVAL**NOTE**

- All wires and connectors should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.
- Left and right front turn signal/emergency flashers and front blackout lights are removed and installed the same way. Left front light is illustrated.
- One wire of housing is not used.

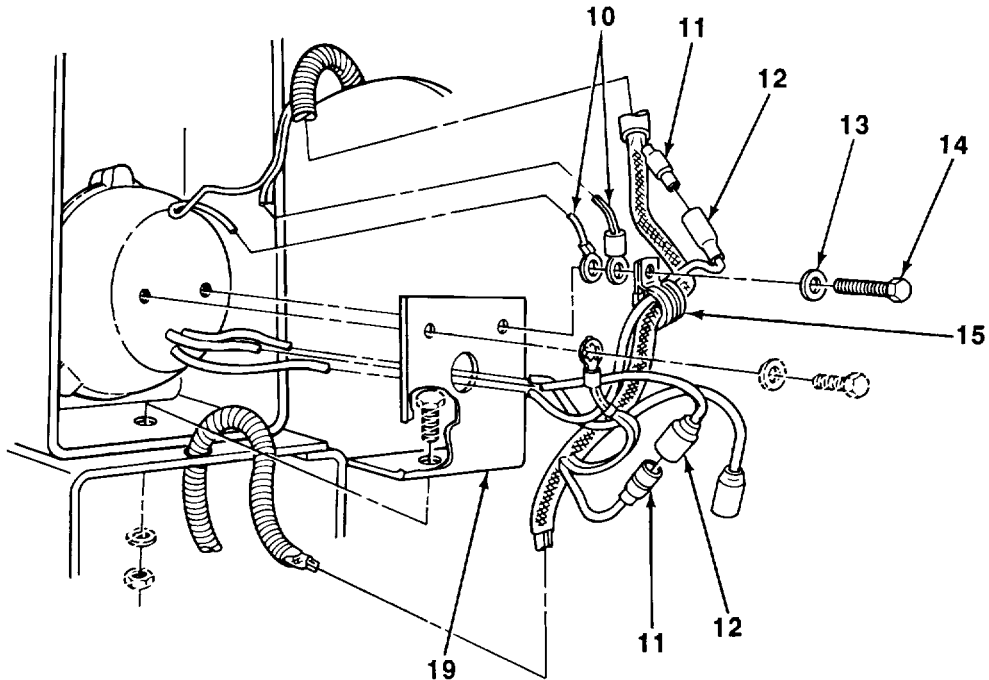
1. Disconnect two connectors (11) from connectors (12).
2. Remove screw (14), washer (13), clamp (15), and two loader frame wiring harness wires (10) from bracket (19).



TA707791

6-22. FRONT TURN SIGNAL/EMERGENCY FLASHERS AND FRONT BLACKOUT LIGHT MAINTENANCE (Con't).

3. Remove screw (17), washer (18), terminal lead (16), and light assembly (9) from bracket (19).
4. Remove two nuts (21), washers (22), screws (20), and bracket (19) from bracket (23).

**c. INSTALLATION**

1. Install bracket (19) on bracket (23) with two screws (20), washers (22), and nuts (21).
2. Install terminal lead (16) on bracket (19) with washer (18) and screw (17).
3. Install light assembly (9), two loader frame wiring harness wires (10), and clamp (15) on bracket (19) with washer (13) and screw (14).
4. Connect two connectors (11) to connectors (12).

TA707792

6-23. BLACKOUT DRIVING LIGHT MAINTENANCE.

This Task Covers:

- | | |
|---------------------|-----------------|
| a. Lamp Replacement | c. Installation |
| b. Removal | |

Initial Setup:

Equipment Conditions:

- **Battery disconnect switch in OFF position (see**

Materials/Parts:

- **One lockwasher**

References:

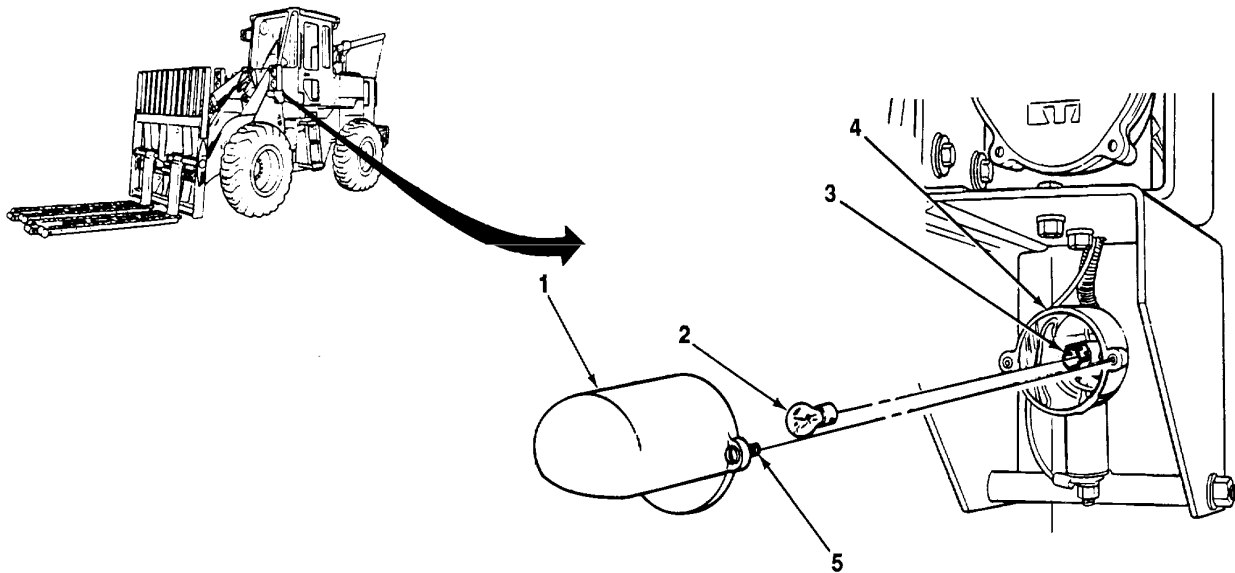
- **TM 10-3930-659-10**

Tools/Test Equipment:

- **General mechanic's tool kit (Item 44, Appendix F)**

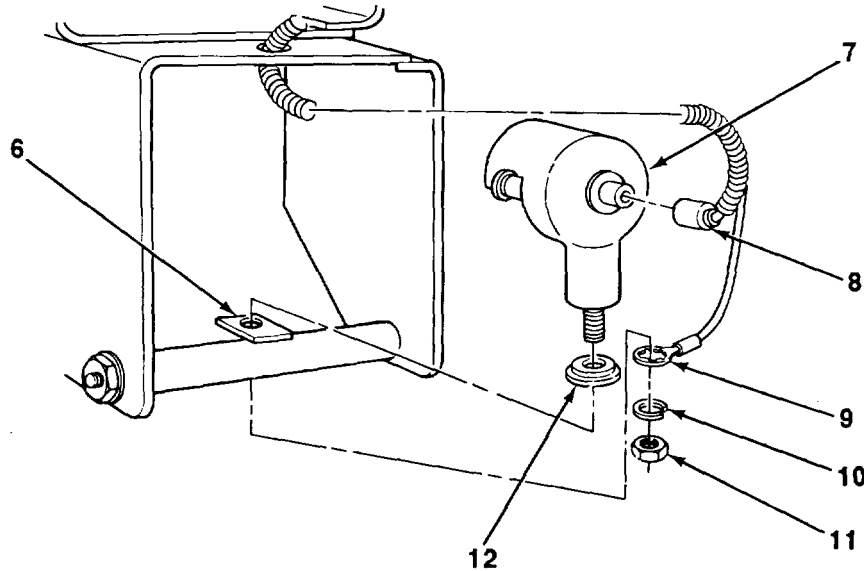
a. LAMP REPLACEMENT

1. Loosen two screws (5) and remove door (1) from housing (4).
2. Remove lamp (2) from socket (3) by pushing lamp in and turning counterclockwise.
3. Install lamp (2) in socket (3) by pushing lamp in and turning clockwise.
4. Install door (1) on housing (4) and tighten two screws (5).



6-23. BLACKOUT DRIVING LIGHT MAINTENANCE (Con't).**b. REMOVAL**

1. Disconnect connector (8) from blackout driving light assembly (7).
2. Remove nut (11), lockwasher (10), terminal lead (9), special washer (12), and blackout driving light assembly

**c. INSTALLATION**

1. Install blackout driving light assembly (7), special washer (12), and terminal lead (9) on mount (6) with new lockwasher (10) and nut (11).
2. Connect connector (8) to blackout driving light assembly (7).

TA707794

6-24. ADJUSTABLE FLOODLIGHT MAINTENANCE.*This Task Covers:*

- a. Lamp Replacement
- b. Removal

c. Installation

Initial Setup:

Equipment Conditions:

- **Battery disconnect switch in OFF position (see**

Materials/Parts:

- **Two locknuts**

References:

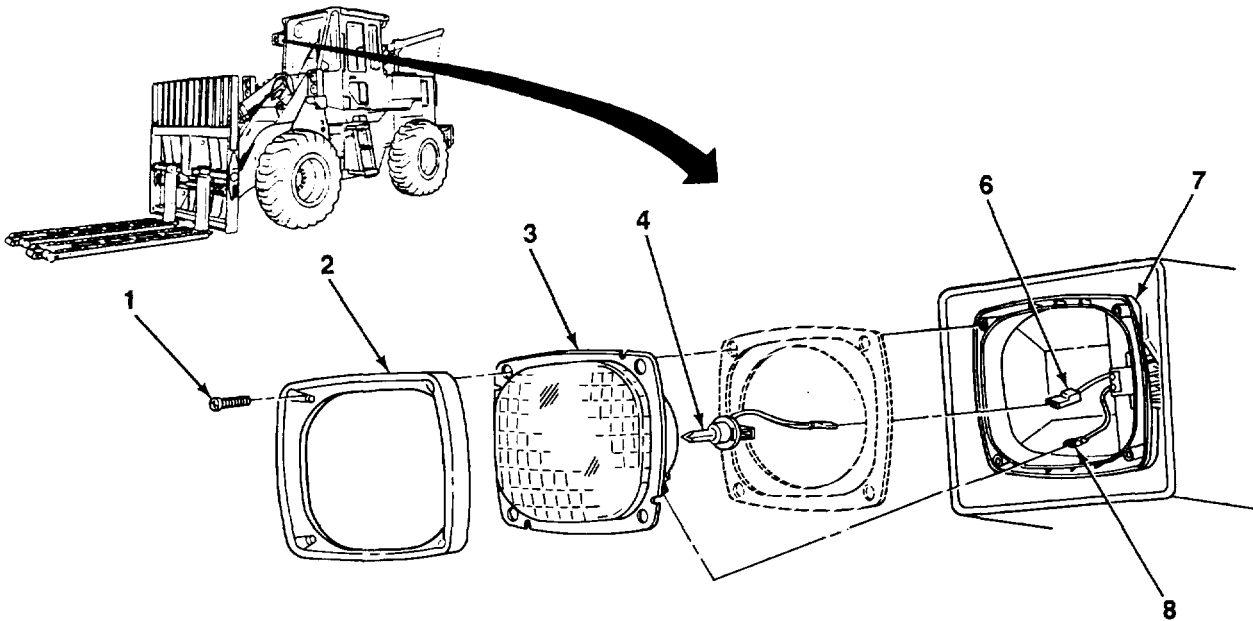
- **TM 10-3930-659-10**

Tools/Test Equipment:

•

General mechanic's tool kit (Item 44, Appendix F)**a. LAMP REPLACEMENT****NOTE****Note position of bezel to aid during installation.**

1. Remove four screws (1), bezel (2), and lens (3) from housing (7).
2. Disconnect connector (6) from lamp (4) and ground wire (8) from lens (3).
3. Remove lamp (4) from lens (3).



TA707795

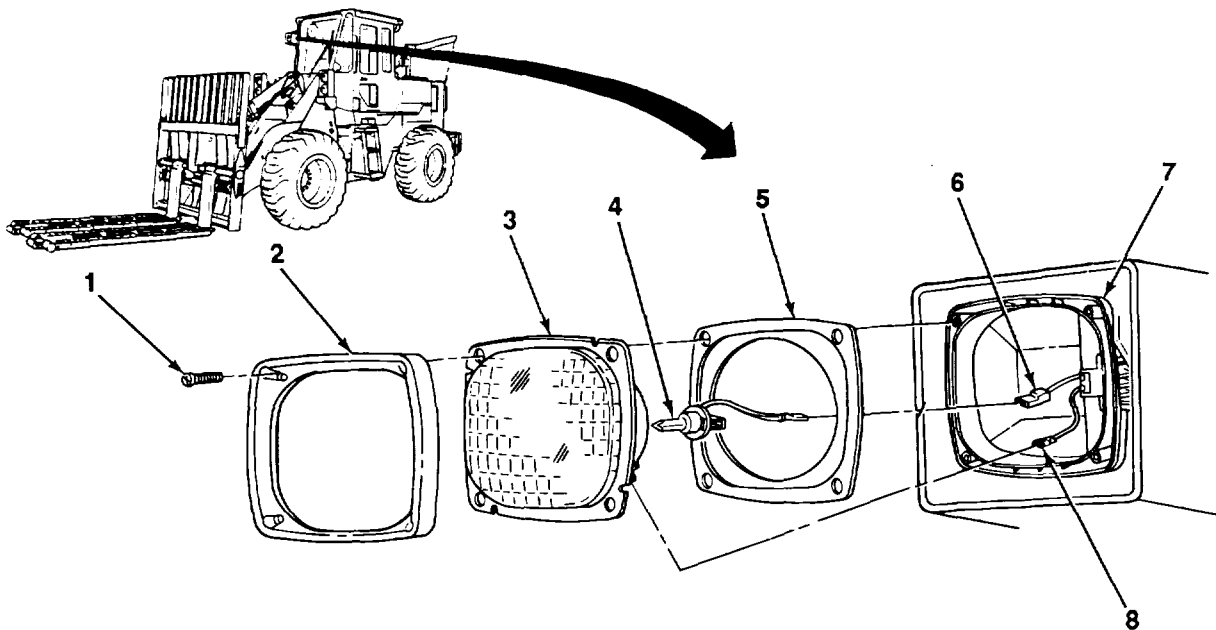
6-24. ADJUSTABLE FLOODLIGHT MAINTENANCE (Con't).

4. If damaged, remove gasket (5) and discard.
5. If removed, install new gasket (5) on housing (7).

CAUTION

Adjustable floodlight uses halogen lamps. Avoid touching glass as skin oils will severely shorten service life of lamp.

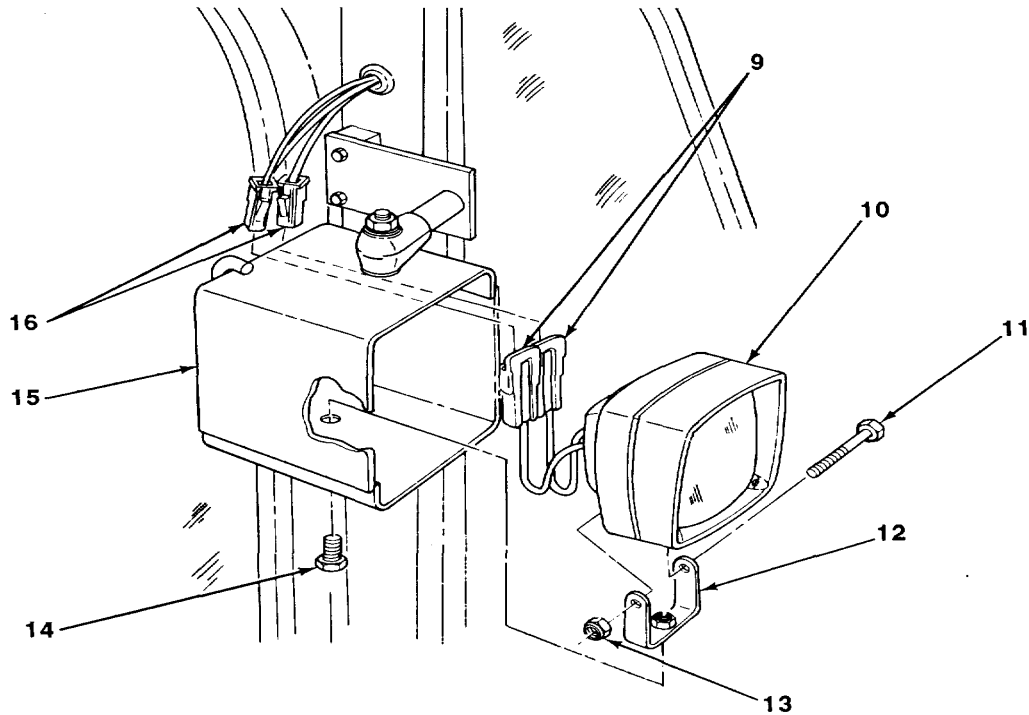
6. Install lamp (4) on lens (3).
7. Connect connector (6) to lamp (4) and ground wire (8) to lens (3).
8. Install lens (3) and bezel (2) on housing (7) with four screws (1).

**b. REMOVAL**

1. Disconnect four connectors (9 and 16).
2. Remove screw (14) and adjustable floodlight assembly (10) from adjustable bracket (15).
3. Remove locknut (13), screw (11), and bracket (12) from adjustable floodlight assembly (10). Discard locknut.

TA707796

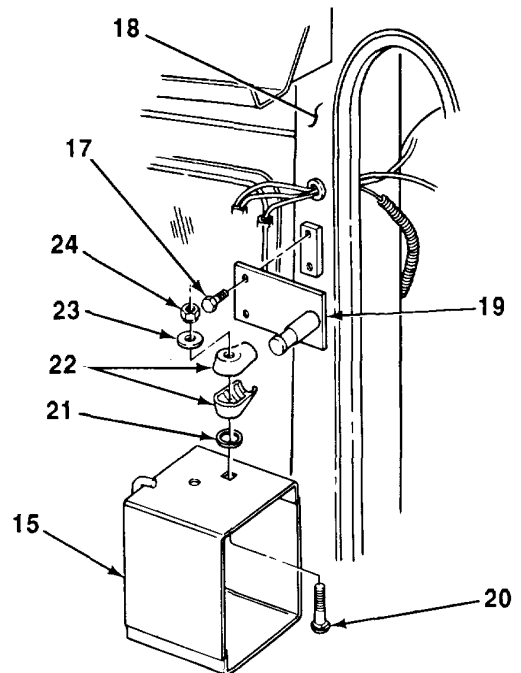
6-24. ADJUSTABLE FLOODLIGHT MAINTENANCE (Con't)



4. Remove locknut (24), washer (23), bolt (20), two clamp halves (22), washer (21), and adjustable bracket (15) from support (19). Discard locknut.
5. Remove two screws (17) and support (19) from cab (18).

c. INSTALLATION

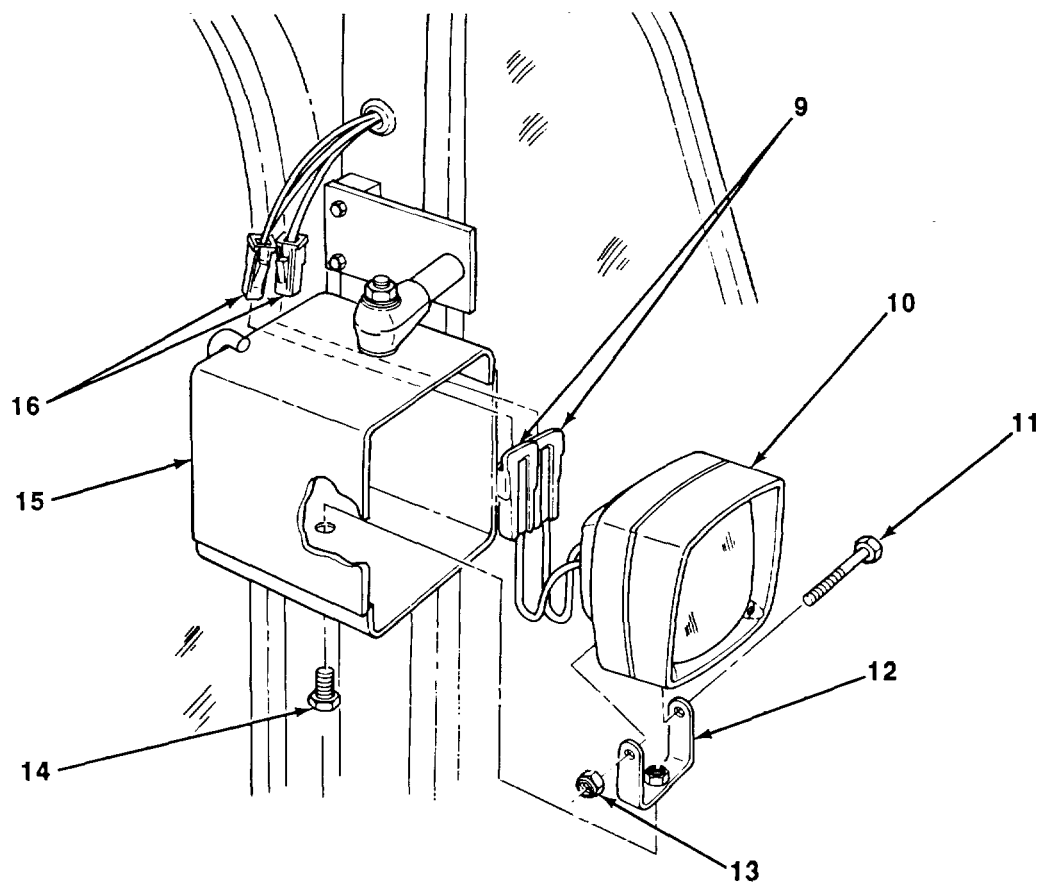
1. Install support (19) on cab (18) with two screws (17).
2. Install adjustable bracket (15), washer (21), and two clamp halves (22) on support (19) with bolt (20), washer (23), and new locknut (24).



TA707797

6-24. ADJUSTABLE FLOODLIGHT MAINTENANCE (Con't).

3. Install bracket (12) on adjustable floodlight assembly (10) with screw (11) and new locknut (13).
4. Install adjustable floodlight assembly (10) on adjustable bracket (15) with screw (14).
5. Connect four connectors (9 and 16).



TA707798

6-25. TAILLIGHT AND REAR TURN SIGNAL/EMERGENCY FLASHERS MAINTENANCE.*This Task Covers:*

- | | |
|---------------------|-----------------|
| a. Lamp Replacement | c. Installation |
| b. Removal | |

Initial Setup:

Equipment Conditions:

- Battery disconnect switch in OFF position (see F) TM 10-3930-659-10).
- Radiator grille door opened (see TM 10-3930-659-100

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix

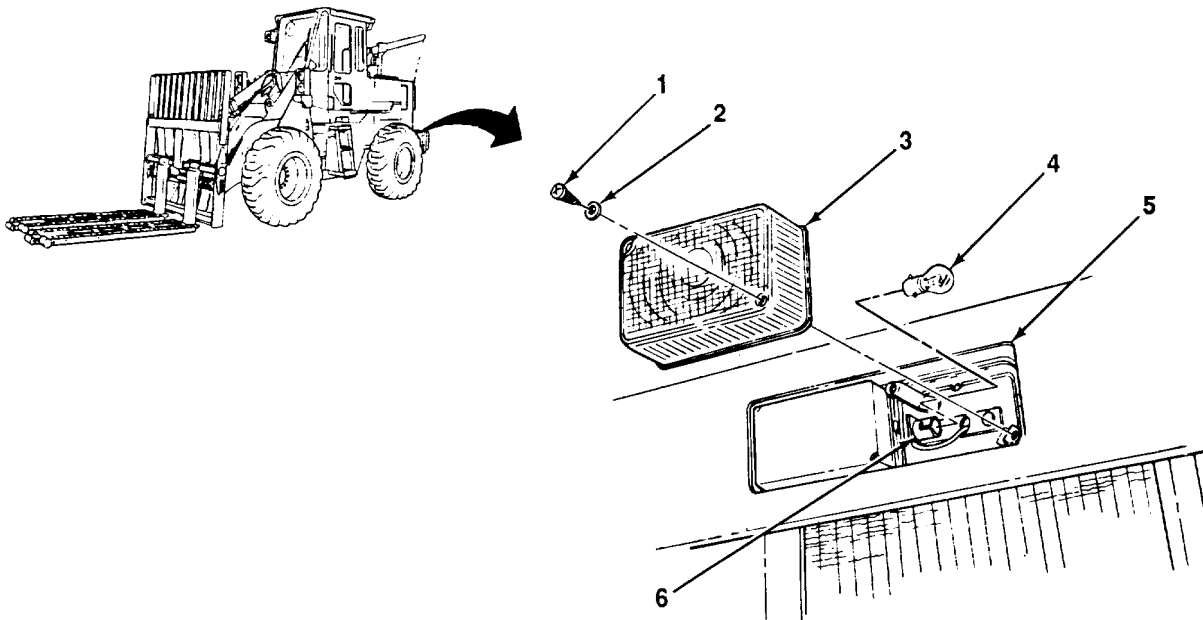
References:

- TM 10-3930-659-10

a. LAMP REPLACEMENT**NOTE**

Lamps of left and right taillights and rear turn signal/emergency flashers are replaced the same way. Left taillight is illustrated.

1. Remove two screws (1), plastic washers (2), and lens (3) from housing (5).
2. Remove lamp (4) from socket (6) by pushing lamp in and turning counterclockwise.



TA707799

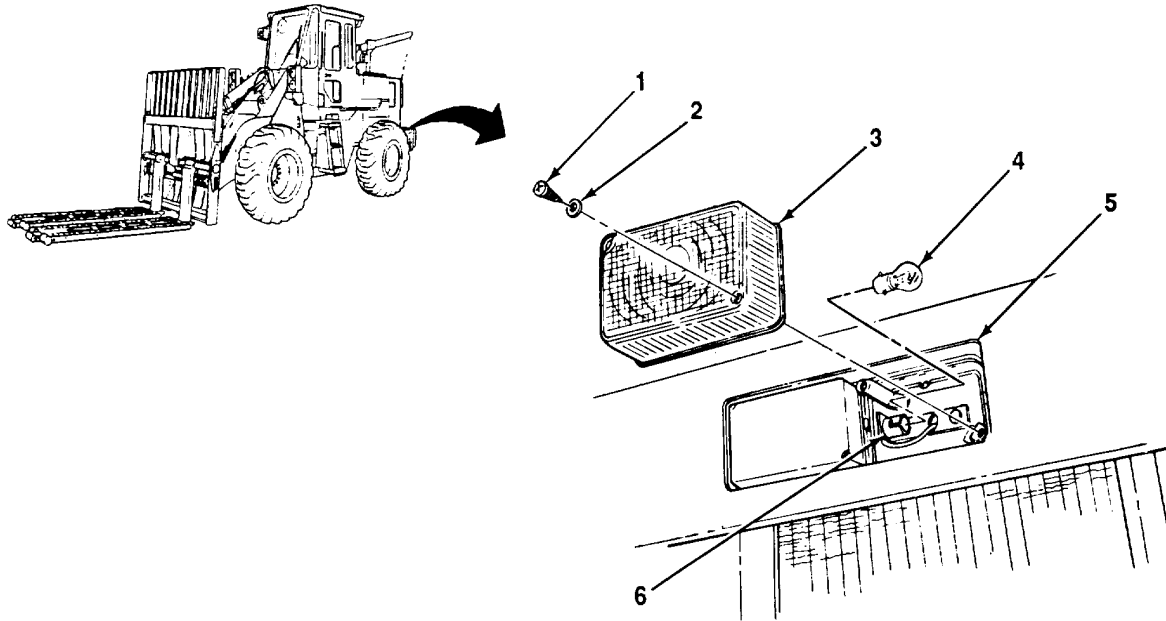
6-25. TAILLIGHT AND REAR TURN SIGNAL/EMERGENCY FLASHERS MAINTENANCE (Con't).

3. Install new lamp (4) in socket (6) by pushing lamp in and turning clockwise.

CAUTION

Use care not to overtighten screws when installing lens. Lens is plastic and may be damaged if screws are overtightened.

4. Install lens (3) on housing (5) with two plastic washers (2) and screws (1).

**b. REMOVAL**

- Left and right taillights and rear turn signal/emergency flashers are removed and installed the same way. Left taillight is illustrated.
- For access to clamps, light plate holding taillights and rear turn signal/emergency flashers must be lowered from radiator grille housing.

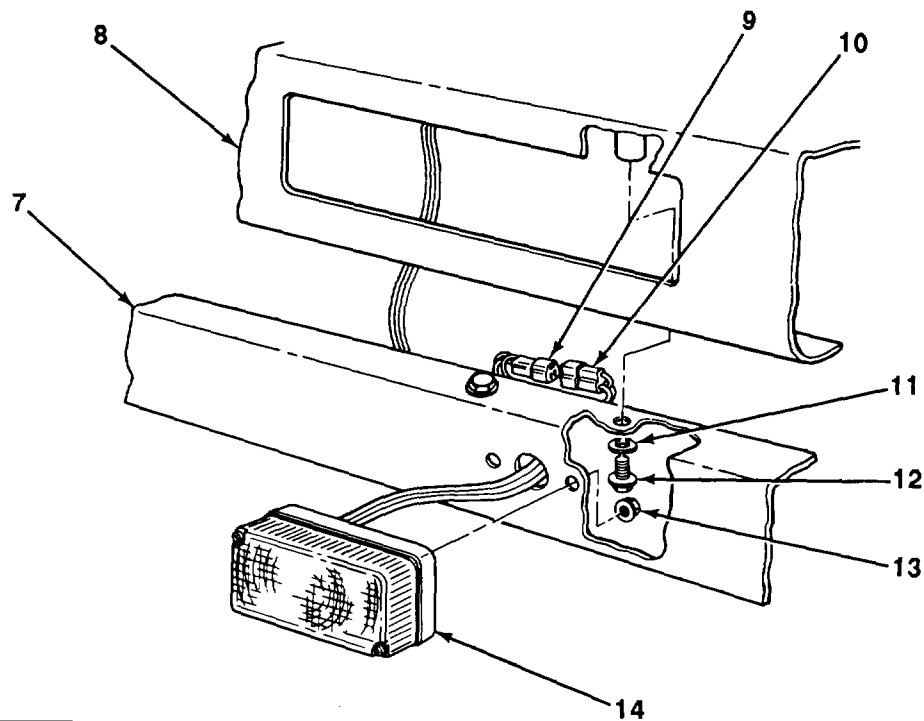
1. Remove four screws (12) and washers (11), and slightly lower light plate (7) from radiator grille housing (8).
2. Disconnect taillight connector (10) from rear frame wiring harness connector (9).

NOTE

Remove clamps as necessary.

3. Remove two flange nuts (13) and light assembly (14) from light plate (7).

TA707800

6-25. TAILLIGHT AND REAR TURN SIGNAL/EMERGENCY FLASHERS MAINTENANCE (Con't).**c. INSTALLATION****NOTE**

Install clamps as necessary.

1. Install light assembly (14) on light plate (7) with two flange nuts (13).
2. Connect taillight connector (10) to rear frame wiring harness connector (9).
3. Install light plate (7) on radiator grille housing (8) with four washers (11) and screws (12).

FOLLOW-ON TASKS:

- Close radiator grille door (see TM 10-3930-659-10).

TA707801

6-26. REAR BLACKOUT LIGHT MAINTENANCE.*This Task Covers:*

- | | |
|---------------------|-----------------|
| a. Lamp Replacement | c. Installation |
| b. Removal | |

Initial Setup:

Equipment Conditions:

- Battery disconnect switch In OFF position (see TM 10-3930-659-10).
- Radiator grille door opened (see TM 10-3930-659-10)

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:

- TM 10-3930-659-10

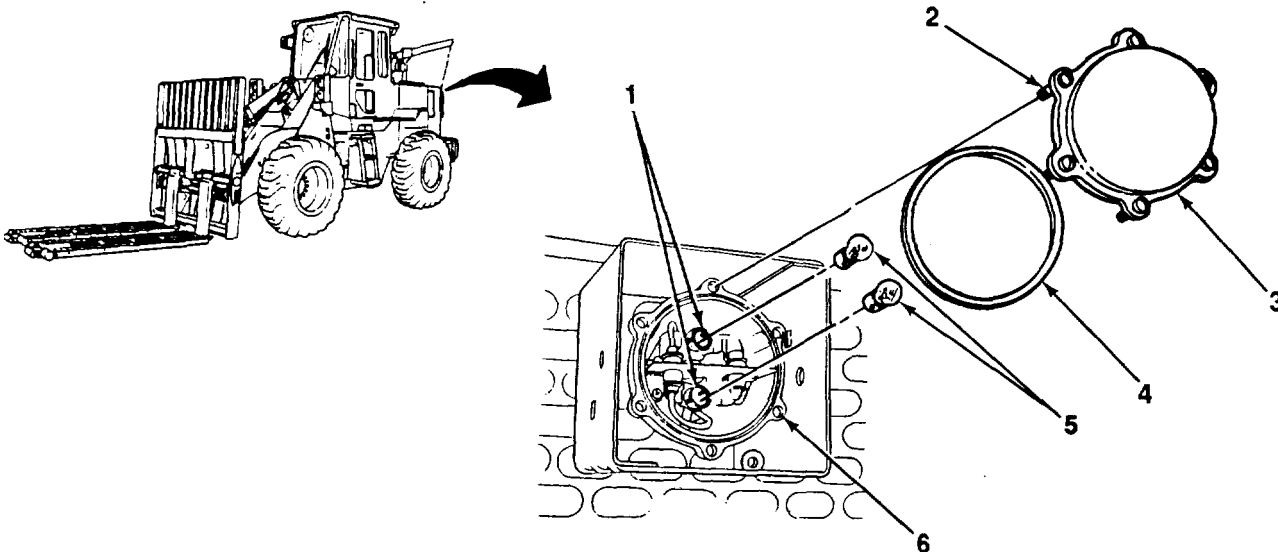
Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. LAMP REPLACEMENT**NOTE**

Lamps of left and right rear blackout lights are replaced the same way. Left rear blackout light is illustrated.

1. Loosen six screws (2) and remove door (3) from housing (6).
2. If damaged, remove preformed packing (4) and discard.
3. Remove two lamps (5) from sockets (1) by pushing lamps in and turning counterclockwise.



TA707802

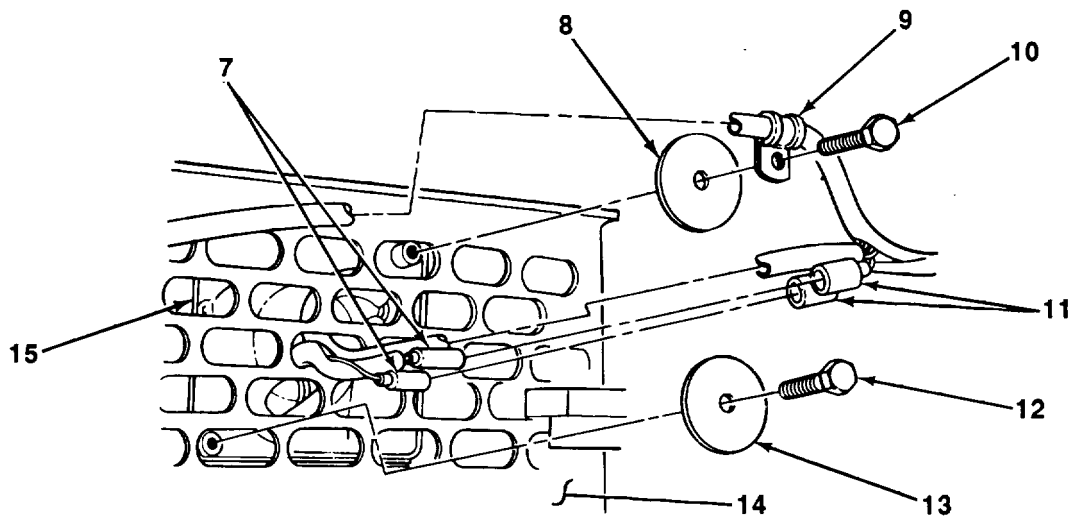
6-26. REAR BLACKOUT LIGHT MAINTENANCE (Con't).

4. Install two lamps (5) in sockets (1) by pushing lamps in and turning clockwise.
5. If removed, install new preformed packing (4) on door (3).
6. Install door (3) on housing (6) and tighten six screws (2).

b. REMOVAL**NOTE**

- **Left and right rear blackout lights are removed and installed the same way. Left rear blackout light is illustrated.**
- **All wires should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.**

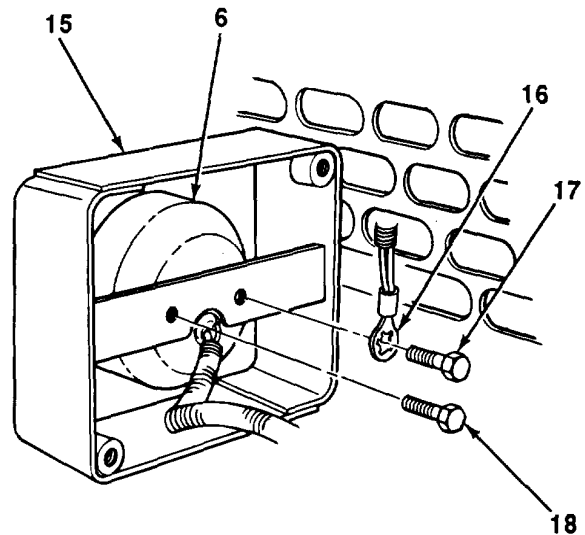
1. Disconnect two connectors (7) from STE/ICE batteries and blackout lights wiring harness connectors (11).
2. Remove bolt (10), clamp (9), and washer (8) from bracket (15).
3. Remove screw (12), washer (13), and bracket (15) from radiator grille door (14).



TA707803

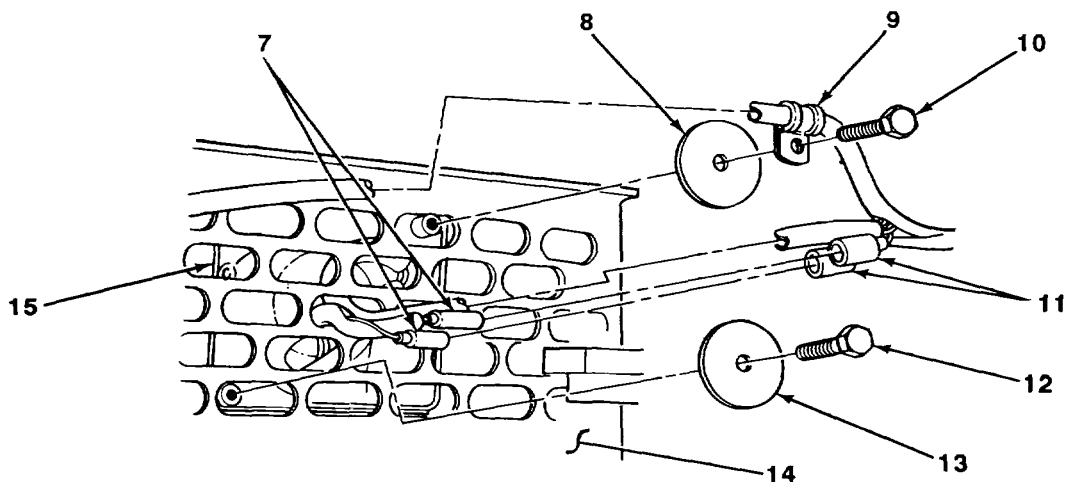
6-26. REAR BLACKOUT LIGHT MAINTENJ

4. Remove screw (17) and STF/ICE batteries and blackout lights wiring harness terminal lead (16) from bracket (15).
5. Remove screw (18) and housing (6) from bracket (15).



c. INSTALLATION

1. Install housing (6) on bracket (15) with screw (18).
2. Install STE/ICE batteries and blackout lights wiring harness terminal lead (16) on bracket (15) with screw (17).
3. Install bracket (15) on radiator grille door (14) with washer (13) and screw (12).
4. Connect two connectors (7) to STE/ICE batteries and blackout lights wiring harness connectors (11).
5. Install washer (8), clamp (9), and bolt (10) on bracket (15).



FOLLOW-ON TASKS:

- Close radiator grille door (see TM 10-3930-659-10).

6-27. WORKLIGHT MAINTENANCE.

This Task Covers:

- | | |
|---------------------|-----------------|
| a. Lamp Replacement | c. Installation |
| b. Removal | |

Initial Setup:

Equipment Conditions:

- **Battery disconnect switch in OFF position (see TM 10-3930-659-10).**

Materials/Parts:

- **One lockwasher**

References:

- **TM 10-3930-659-10**

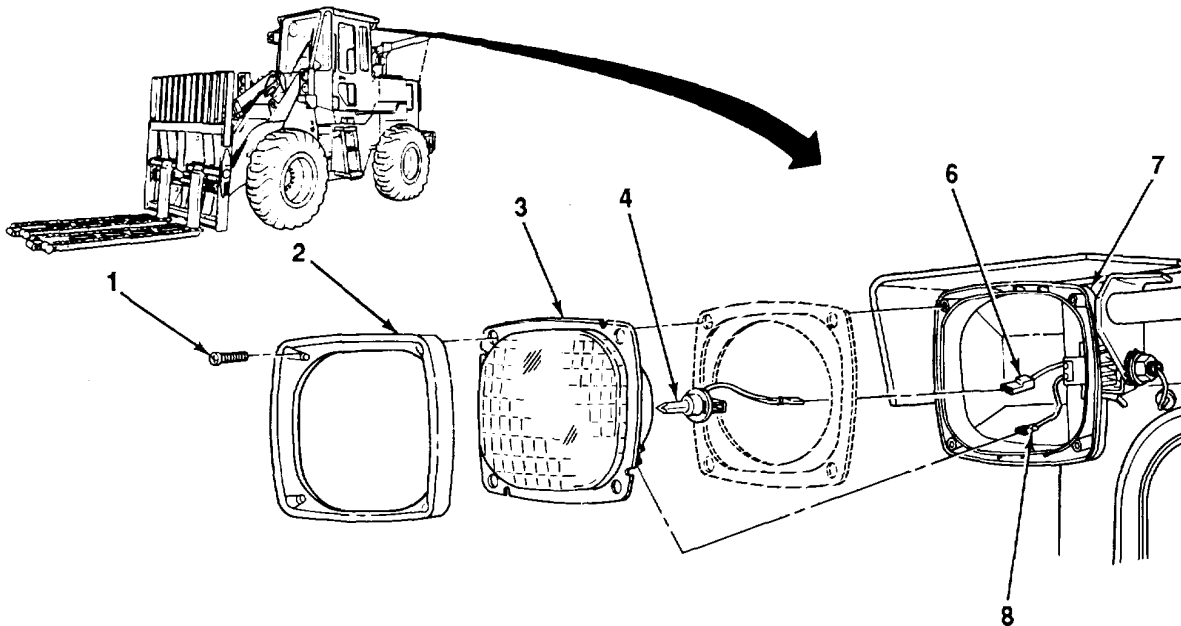
Tools/Test Equipment:

- **General mechanic's tool kit (Item 44, Appendix F)**

a. LAMP REPLACEMENT**NOTE**

- **Lamps of left and right worklights are replaced the same way. Left worklight is illustrated.**
- **Note position of bezel to aid during installation.**

1. Remove four screws (1), bezel (2), and lens (3) from housing (7).
2. Disconnect connector (6) from lamp (4) and ground wire (8) from lens (3).



TA707805

6-119

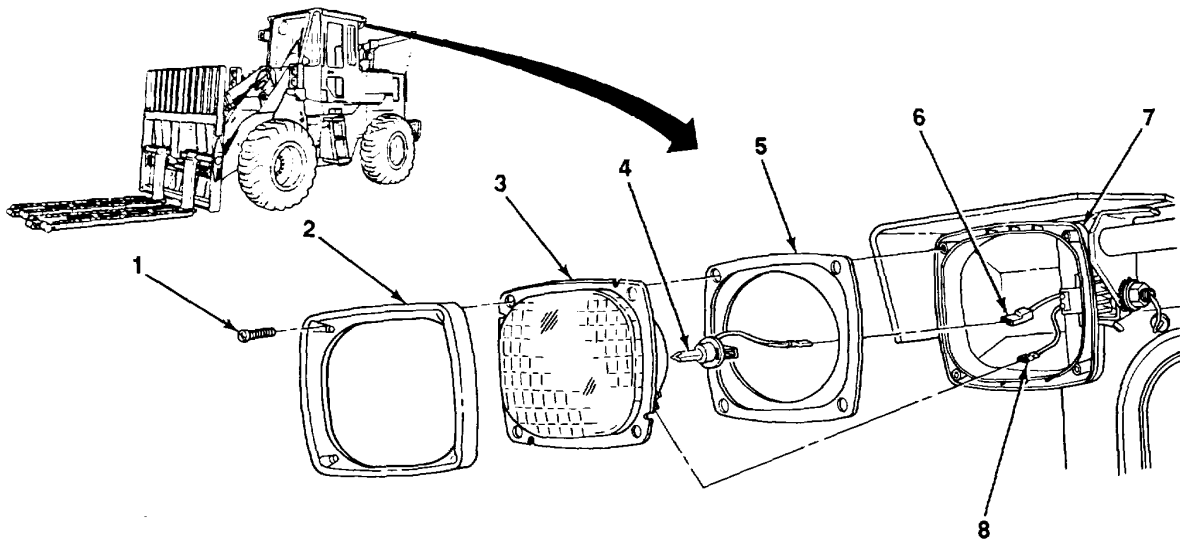
6-27. WORKLIGHT MAINTENANCE (Con't).

3. Remove lamp (4) from lens (3).
4. If damaged, remove gasket (5) and discard.
5. If removed, install new gasket (5) on housing (7).

CAUTION

Worklights use halogen lamps. Avoid touching glass as skin oils will severely shorten service life of lamp.

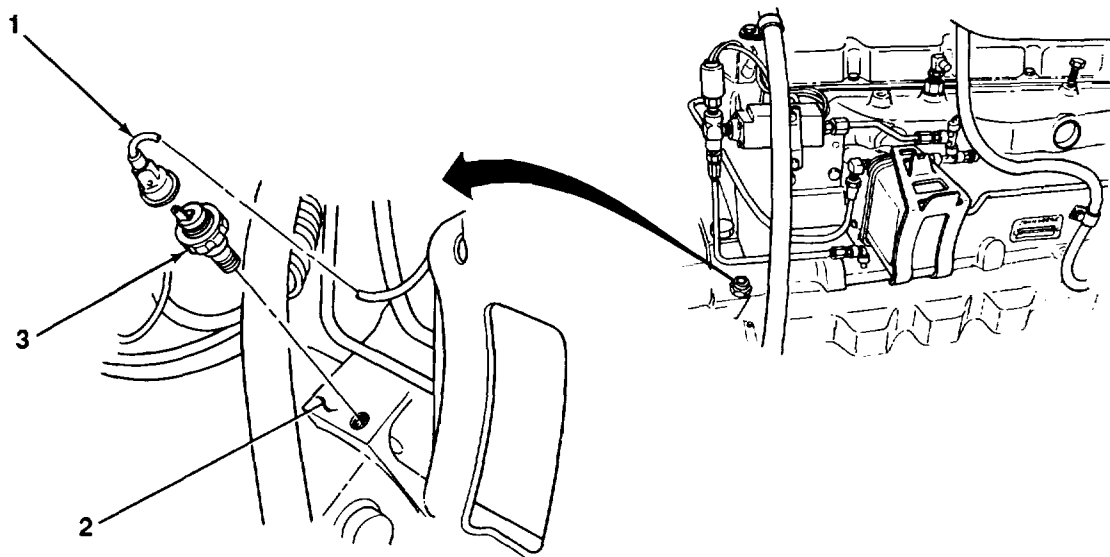
6. Install lamp (4) on lens (3).
7. Connect connector (6) to lamp (4) and ground wire (8) to lens (3).
8. Install lens (3) and bezel (2) on housing (7) with four screws (1).

**b. REMOVAL****NOTE**

Left and right worklights are removed and installed the same way. Left worklight is illustrated.

1. Disconnect wire (10) from connector (12).
2. Remove wire (10) and grommet (13) from bracket (11).
3. Remove nut (14), lockwasher (15), and worklight assembly (9) from bracket (11). Discard lockwasher.

TA707806

6-27. WORKLIGHT MAINTENANCE (Con't).**c. INSTALLATION**

1. Install worklight assembly (9) on bracket (11) with new lockwasher (15) and nut (14).
2. Install grommet (13) and wire (10) on bracket (11).
3. Connect wire (10) to connector (12).

6-28. ENGINE OIL PRESSURE SWITCH REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Tools/Test Equipment:

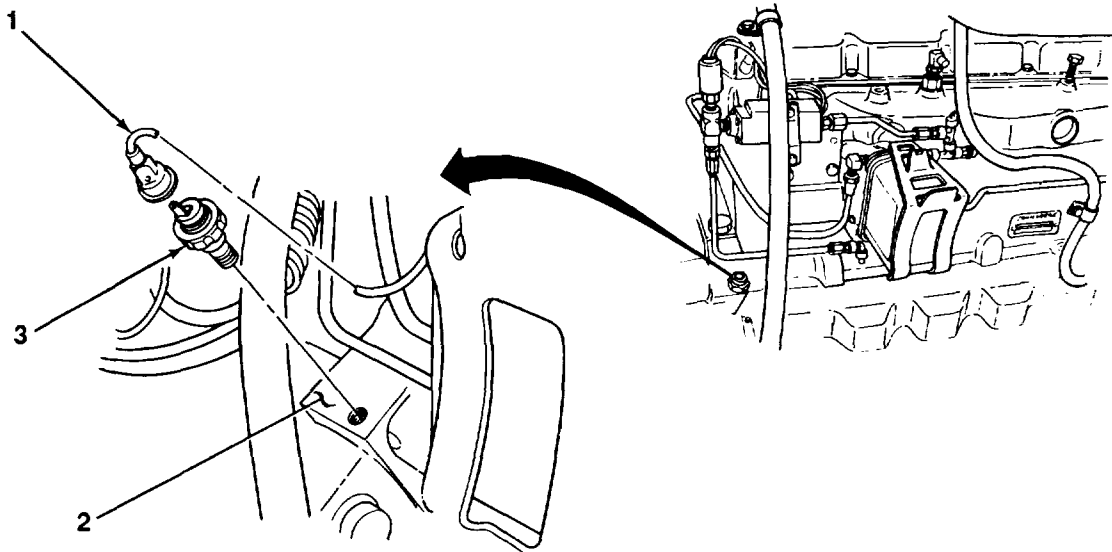
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL

1. Disconnect engine wiring harness connector (1) from engine oil pressure switch (3).
2. Remove engine oil pressure switch (3) from engine (2).

**b. INSTALLATION**

1. Install engine oil pressure switch (3) on engine (2).
2. Connect engine wiring harness connector (1) to engine oil pressure switch (3).

FOLLOW-ON TASKS:

- Close left engine upper sideshield (see TM 10-3930-659-10).

TA707808

6-29. ENGINE HIGH TEMPERATURE SWITCH REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).
- Cooling system drained (see paragraph 5-38).

Tools/Test Equipment:

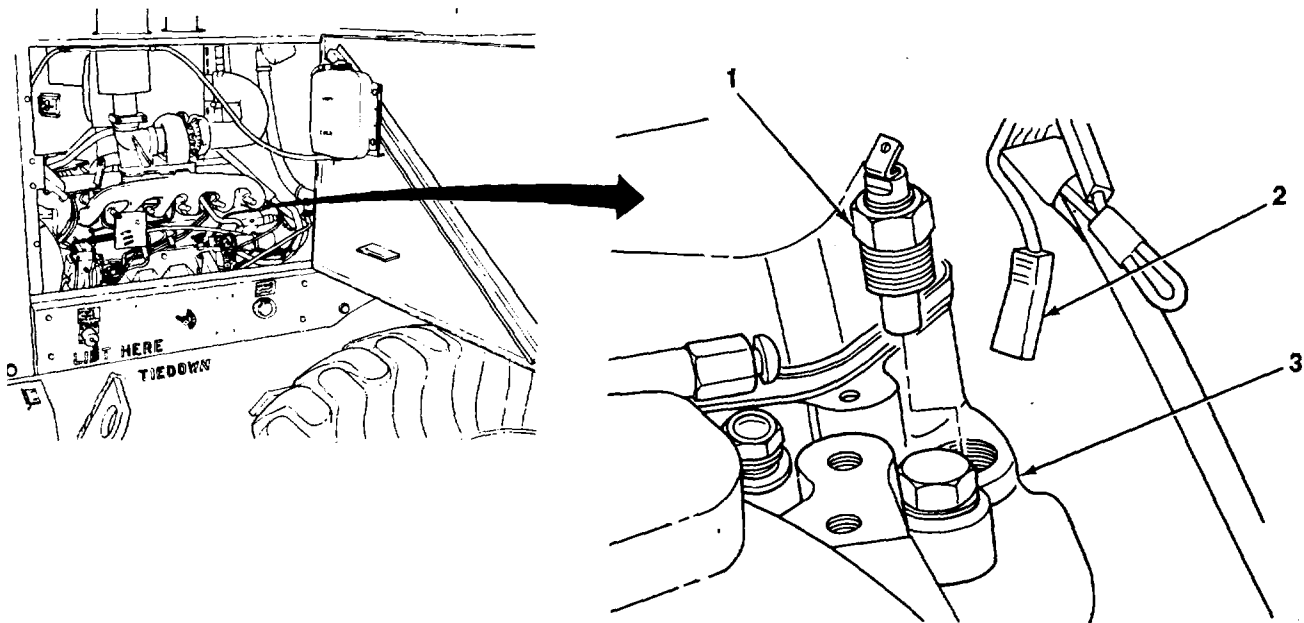
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

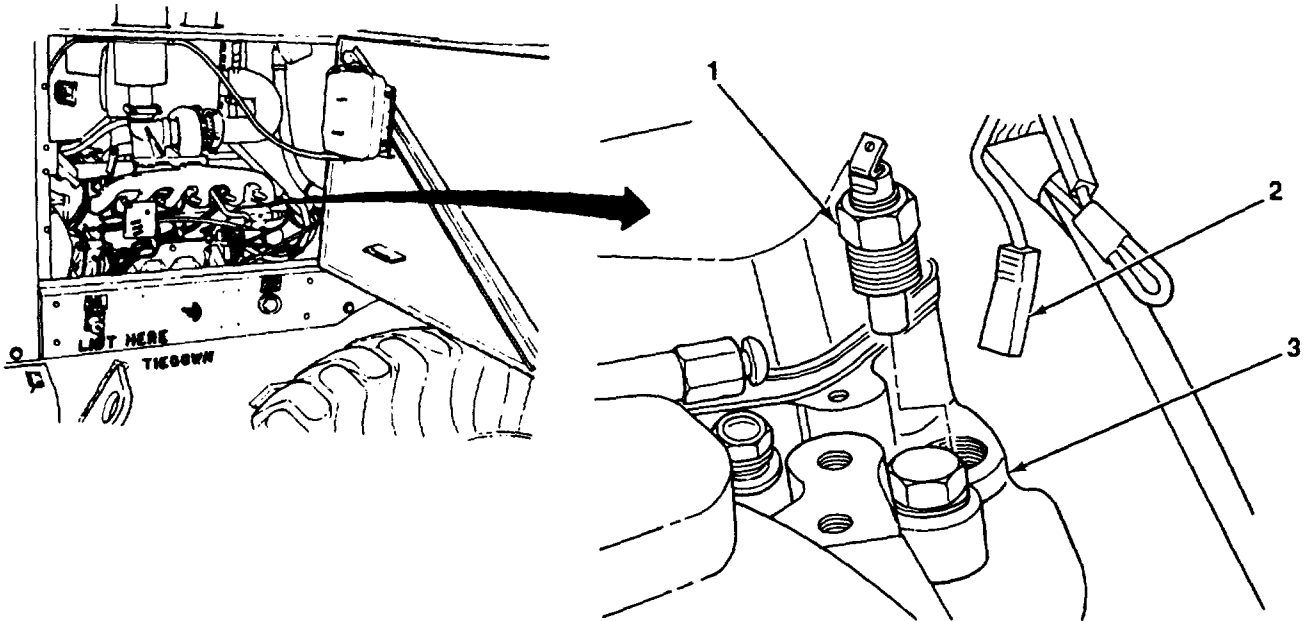
a. REMOVAL

1. Disconnect engine wiring harness connector (2) from engine high temperature switch (1).
2. Remove engine high temperature switch (1) from engine (3).



6-29. ENGINE HIGH TEMPERATURE SWITCH REPLACEMENT.**b. INSTALLATION**

1. Install engine high temperature switch (1) on engine (3).
2. Connect engine wiring harness connector (2) to engine high temperature switch (1).

**FOLLOW-ON TASKS:****FOLLOW - ON TASKS:**

- Fill cooling system with antifreeze (see paragraph 5-38).
- Close right engine upper sashield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments to side of forklift truck (see paragraph 17-13).

6-30. BRAKE LIGHT SWITCH REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Front and left side cab skirts removed (see paragraph 14-6).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

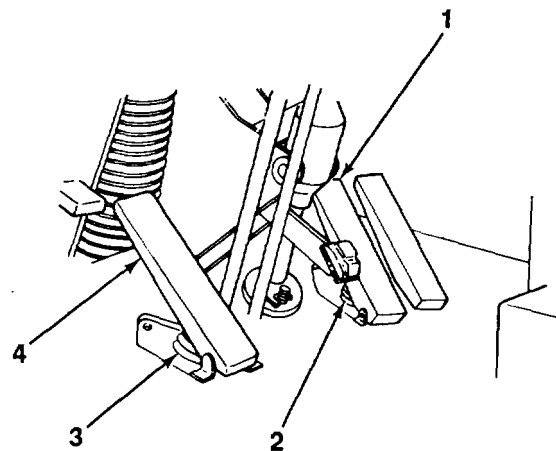
a. REMOVAL**WARNING**

Pressure stored in accumulator is approximately 500 psi (3448 kPa). Ensure that accumulator pressure is relieved before removing service brake hoses or components. Failure to follow this warning may result in serious injury or death to personnel.

NOTE

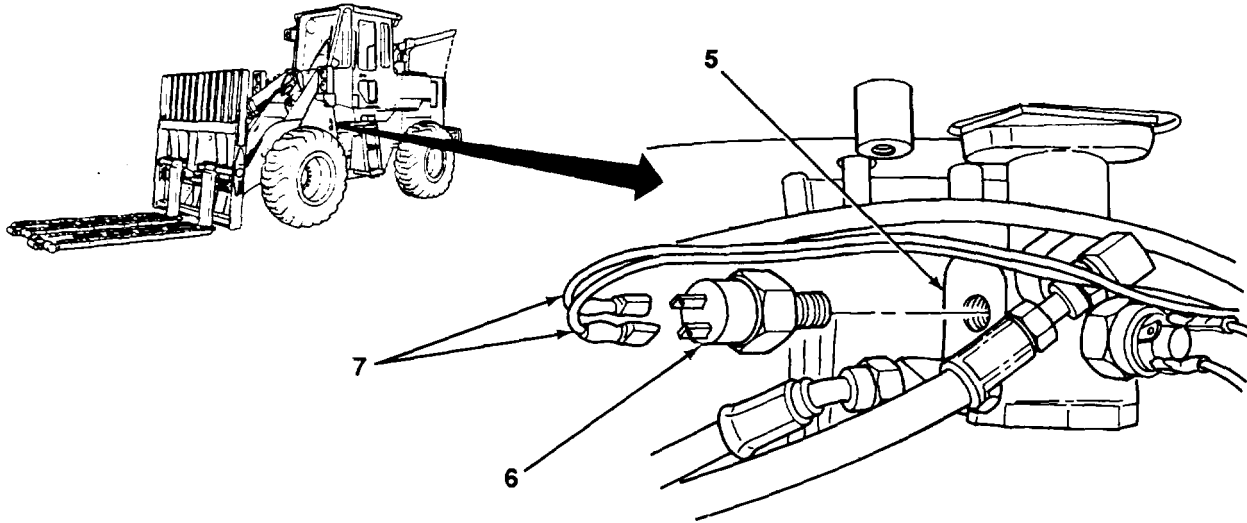
- It is necessary to hold boot of one brake pedal with hand while opposite brake pedal is pumped. Movement inside boot will be felt as opposite brake pedal is pumped. Accumulator pressure is relieved when movement stops.
- Each brake pedal should be pumped a full 75 times even if no movement is felt after pumping brake pedal several times.

1. Hold boot (3) of left brake pedal (4) with hand and pump right brake pedal (1) 75 times. Release boot.
2. Hold boot (2) of right brake pedal (1) with hand and pump left brake pedal (4) 75 times. Release boot.



6-30. BRAKE LIGHT SWITCH REPLACEMENT.

3. Disconnect two under cab wiring harness connectors (7) from brake light switch (6).
4. Remove brake light switch (6) from left brake valve (5).

**b. INSTALLATION**

1. Install brake light switch (6) on left brake valve (5).
2. Connect two under cab wiring harness connectors (7) to brake light switch (6).

FOLLOW-ON TASKS:

- Install front and left side cab skirts (see paragraph 14-6).

6-31. SECONDARY STEERING SWITCH REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).

Materials/Parts:

- Two preformed packings

References:

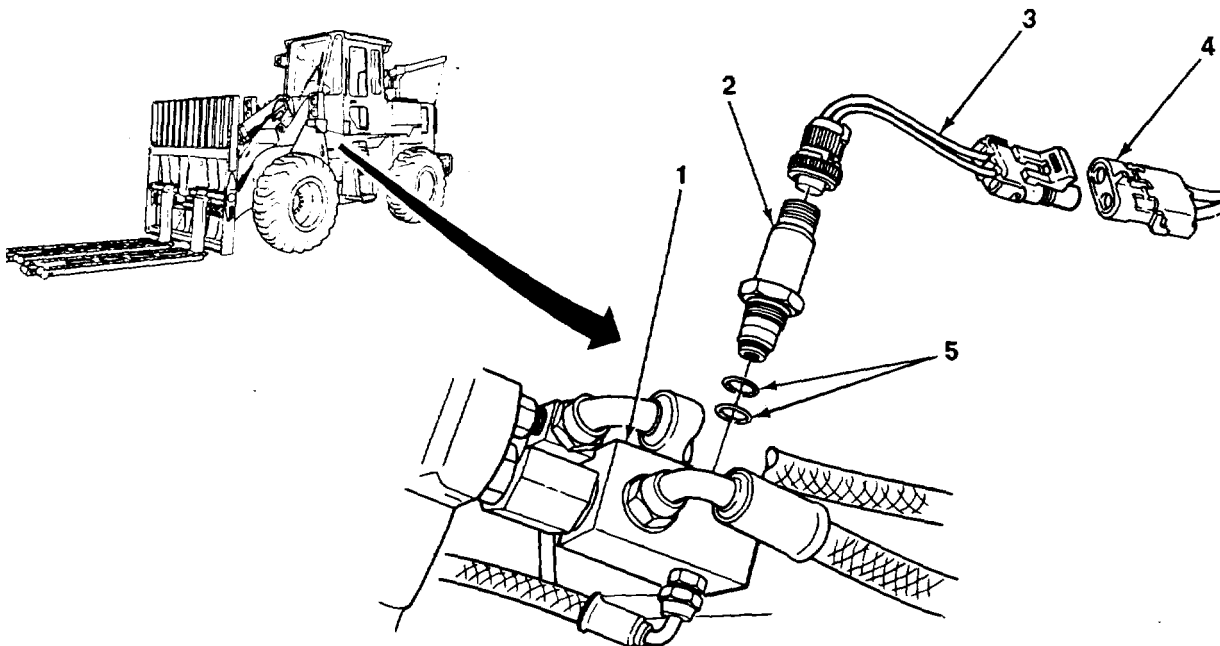
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

1. Disconnect engine frame wiring harness (3) from under cab wiring harness connector (4).
2. Remove engine frame wiring harness (3) from secondary steering switch (2).
3. Remove secondary steering switch (2) from inlet manifold (1).
4. Remove two preformed packings (5) from secondary steering switch (2). Discard preformed packings.

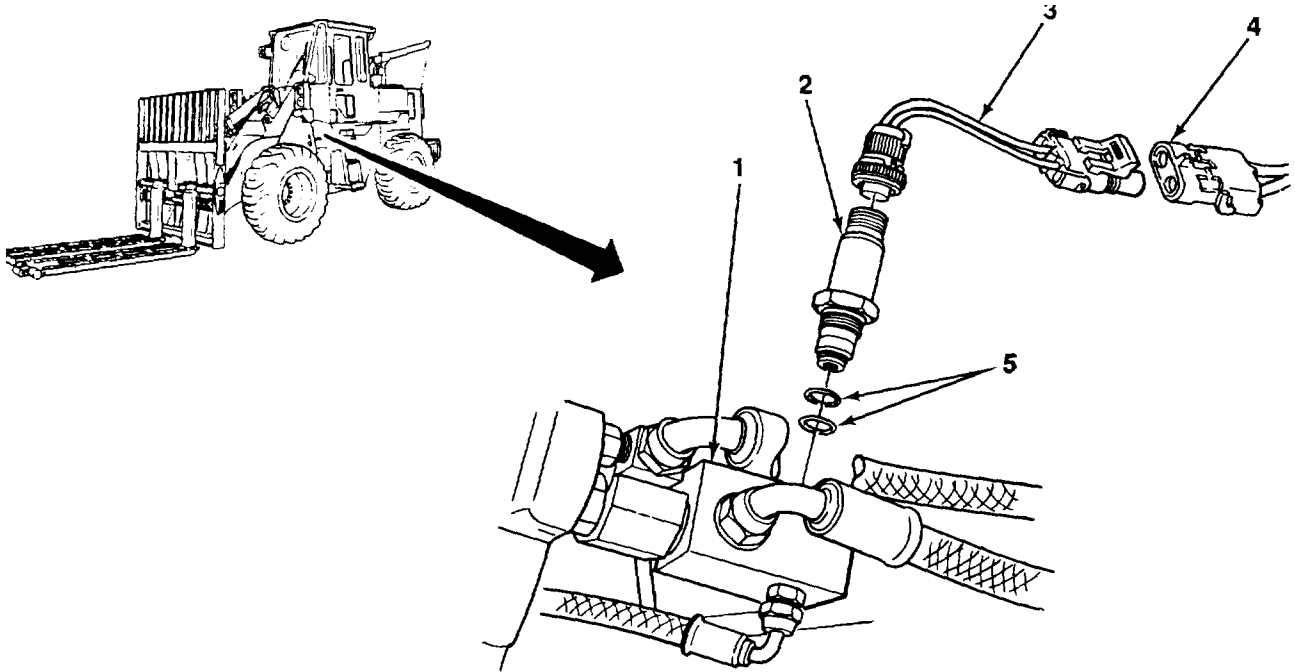


TA707813

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6-31. SECONDARY STEERING SWITCH REPLACEMENT.**b. INSTALLATION**

1. Install two new preformed packings (5) on secondary steering switch (2).
2. Install secondary steering switch (2) on inlet manifold (1).
3. Install engine frame wiring harness (3) on secondary steering switch (2).
4. Connect engine frame wiring harness (3) to under cab wiring harness connector (4).

**FOLLOW-ON TASKS:**

- Install cab skirts (see paragraph 14-6).

6-32. TRANSMISSION OIL PRESSURE SWITCH REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see 10-3930-659-10).
- Right transmission side guard removed (see paragraph 14-7).

Tools/Test Equipment:

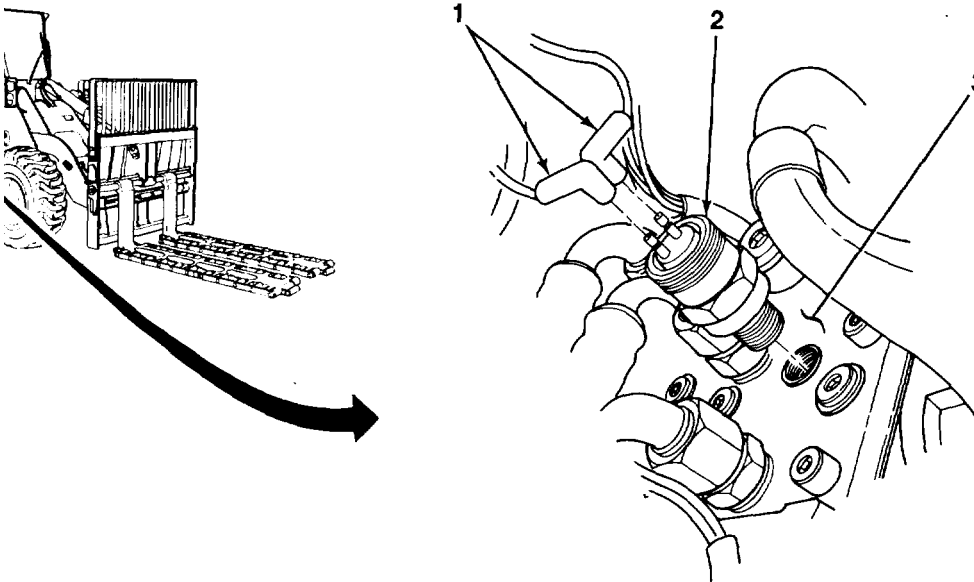
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL

1. Disconnect two transmission wiring harness connectors (1) from transmission oil pressure switch (2).
2. Remove transmission oil pressure switch (2) from transmission control valve (3).

**b. INSTALLATION**

1. Install transmission oil pressure switch (2) on transmission control valve (3).
2. Connect two transmission wiring harness connectors (1) to transmission oil pressure switch (2).

FOLLOW-ON TASKS:

- Install right transmission side guard (see paragraph 14-7).

6-33. TRANSMISSION OIL TEMPERATURE SENDER REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Right transmission side guard removed (see paragraph 14-7).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

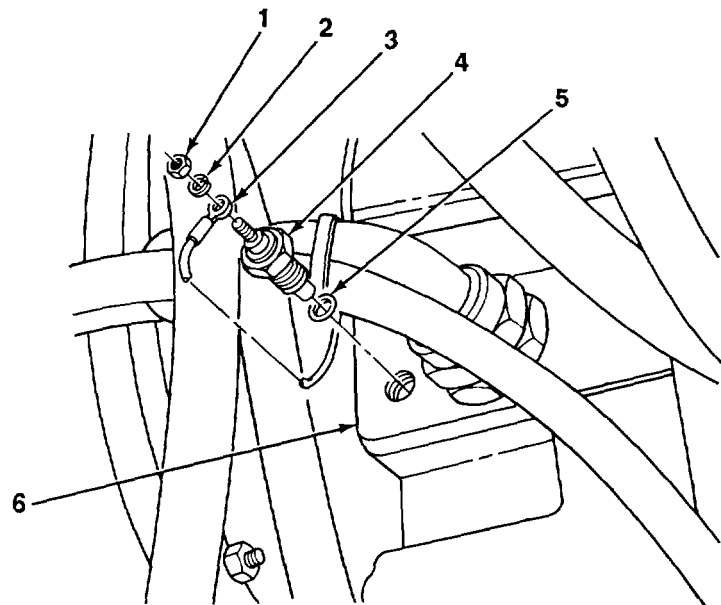
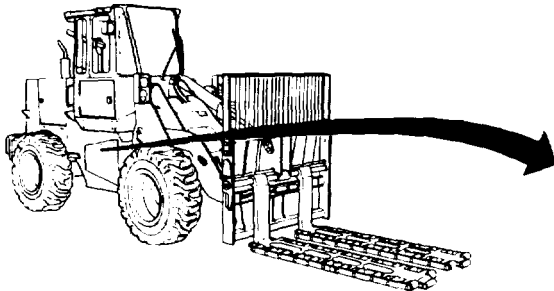
- One lockwasher
- One preformed packing

References:

- TM 10-3930-659-10

a. REMOVAL

1. Remove nut (1), lockwasher (2), and transmission wiring harness terminal lead (3) from transmission oil temperature sender (4). Discard lockwasher.
2. Remove transmission oil temperature sender (4) and preformed packing (5) from transmission (6). Discard preformed packing.



TA707816

6-33. TRANSMISSION OIL TEMPERATURE SENDER REPLACEMENT (Con't).

b. INSTALLATION

1. Install new preformed packing (5) and transmission oil temperature sender (4) on transmission (6).
2. Install transmission wiring harness terminal lead (3) on transmission oil temperature sender (4) with new lockwasher (2) and nut (1).

FOLLOW-ON TASKS:

- Install right transmission side guard (see paragraph 14-7).

6-34. AIR CLEANER RESTRICTION SENSOR REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- One preformed packing

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

a. REMOVAL

1. Disconnect air cleaner restriction sensor (1) from engine wiring harness connector (6).

CAUTION

Wrench should be placed on hex flats to prevent damage to air cleaner restriction sensor.

2. Remove air cleaner restriction sensor (1) from pipe reducer (3).
3. Remove preformed packing (2) from air cleaner sensor (1) Discard preformed packing.
4. Remove pipe reducer (3) and elbow (4) from air cleaner (5).

b. INSTALLATION

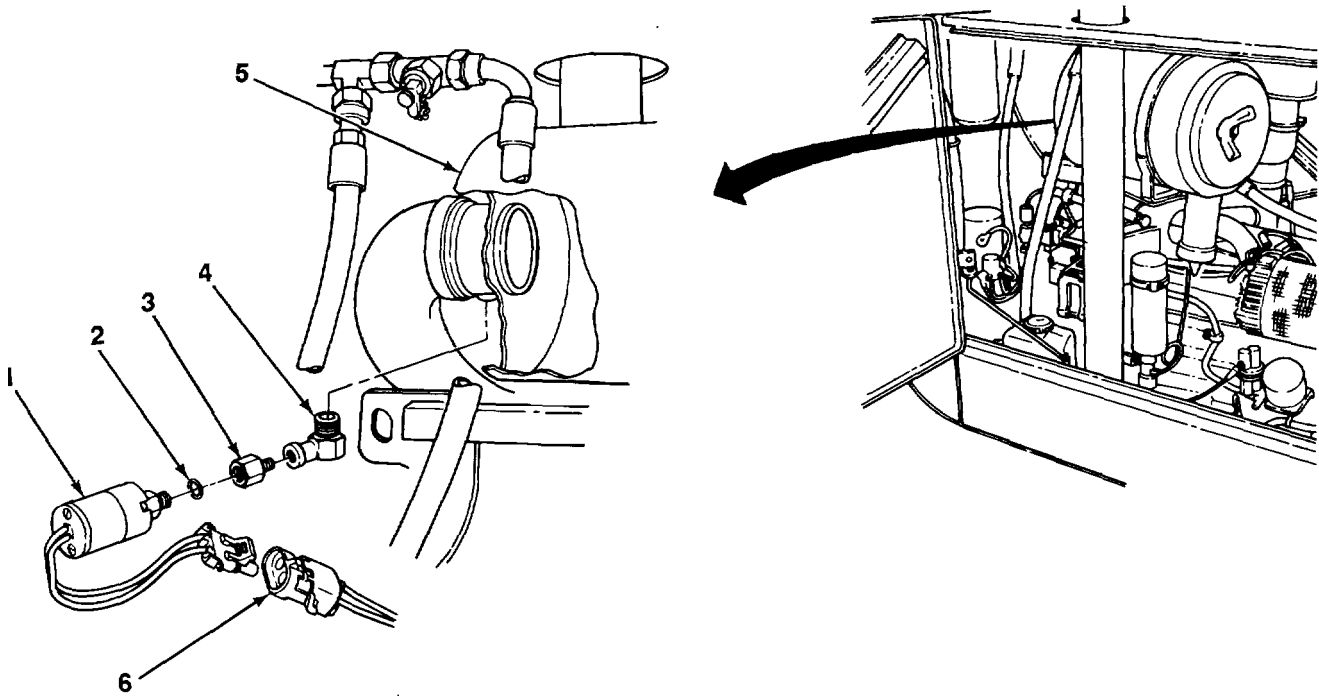
1. Install elbow (4) and pipe reducer (3) on air cleaner (5).
2. Install new preformed packing (2) on air cleaner restriction sensor (1).

CAUTION

Wrench should be placed on hex flats to prevent damage to air cleaner restriction sensor.

3. Install air cleaner restriction sensor (1) on pipe reducer (3).
4. Connect air cleaner restriction sensor (1) to engine wiring harness connector (6).

6-34. AIR CLEANER RESTRICTION SENSOR REPLACEMENT.



FOLLOW-ON TASKS:

- Close left engine upper sideshield (see TM 10-3930-659-10).

6-35. HYDRAULIC OIL FILTER RESTRICTION SWITCH REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

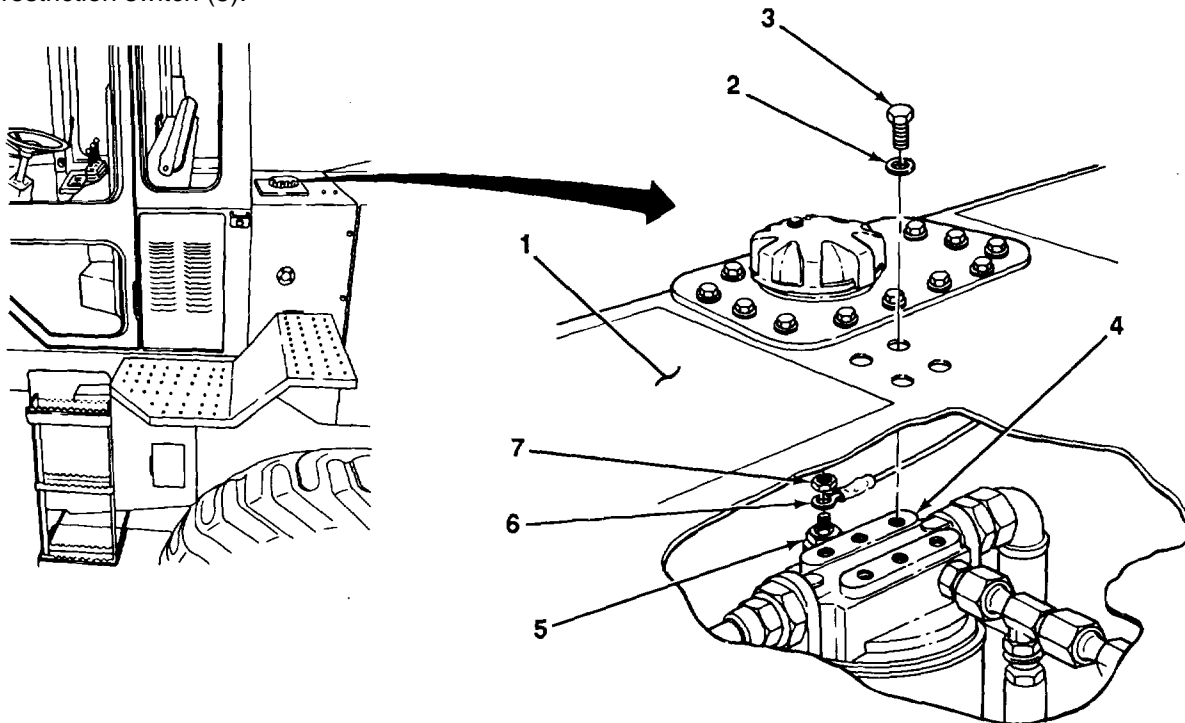
- Two preformed packings

Personnel Required: Two**References:**

- TM 10-3930-659-10

a. REMOVAL

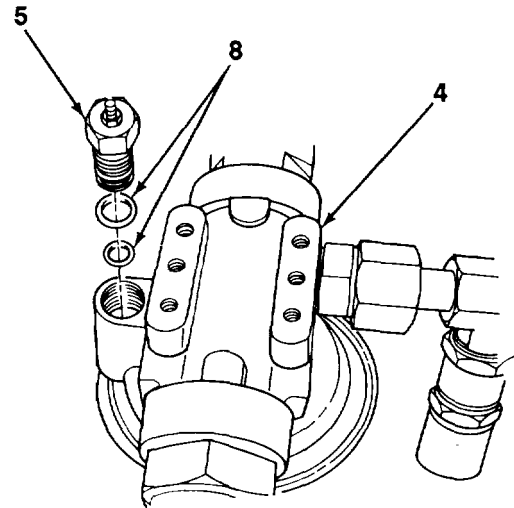
1. Remove four screws (3) and washers (2) from hydraulic reservoir (1).
2. Pull down hydraulic oil return filter (4) slightly, and remove nut (7) and terminal lead (6) from hydraulic oil filter restriction switch (5).



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6-35. HYDRAULIC OIL FILTER RESTRICTION SWITCH REPLACEMENT.

3. Remove hydraulic oil filter restriction switch (5) from hydraulic oil return filter (4).
4. Remove two preformed packings (8) from hydraulic oil filter restriction switch (5). Discard pre-formed packings.

**b. INSTALLATION**

1. Install two new preformed packings (8) on hydraulic oil filter restriction switch (5).
2. Install hydraulic oil filter restriction switch (5) on hydraulic oil return filter (4).
3. Install terminal lead (6) on hydraulic oil filter restriction switch (5) with nut (7).
4. Install hydraulic oil return filter (4) on hydraulic reservoir (1) with four washers (2) and screws (3).

FOLLOW-ON TASKS:

- Close left engine upper sideshield (see TM 10-3930-659-10).

6-36. LOW BRAKE PRESSURE SWITCH REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-1 0).
- Left side cab skirt removed (see paragraph 14-6).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

TM 10-3930-659-10

NOTE

Right and left low brake pressure switches are removed and installed the same way except right low brake pressure switch has three under cab wiring harness connectors and left low brake pressure switch has two under cab wiring harness connectors. Left low brake pressure switch is illustrated.

a. REMOVAL**WARNING**

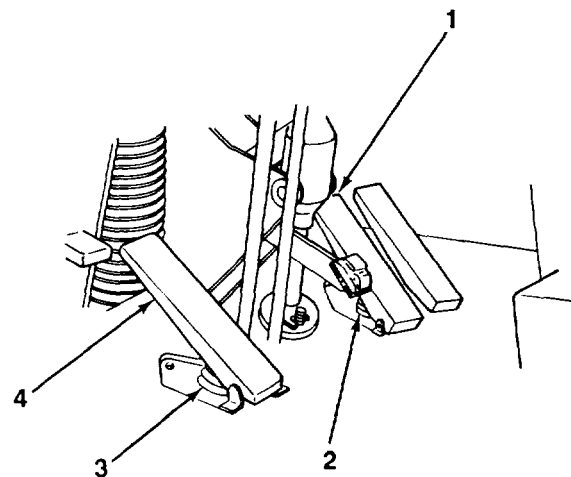
Pressure stored in accumulator is approximately 500 psi (3448 kPa). Ensure that accumulator pressure is relieved before removing service brake hoses or components. Failure to follow this warning may result in serious injury or death to personnel.

NOTE

- It is necessary to hold boot of one brake pedal with hand while opposite brake pedal is pumped. Movement inside boot will be felt as opposite brake pedal is pumped. Accumulator pressure is relieved when movement stops.

- Each brake pedal should be pumped a full 75 times even if no movement is felt after pumping brake pedal several times.

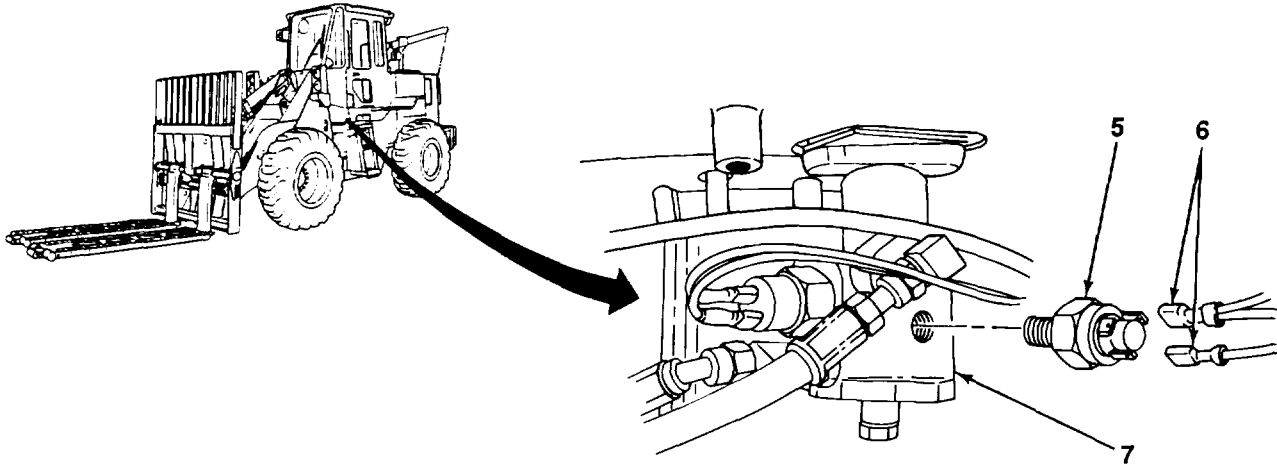
1. Hold boot (3) of left brake pedal (4) with hand and pump right brake pedal (1) 75 times. Release boot.
2. Hold boot (2) of right brake pedal (1) with hand and pump left brake pedal (4) 75 times. Release boot.



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6-36. LOW BRAKE PRESSURE SWITCH REPLACEMENT (Con't).

3. Disconnect two under cab wiring harness connectors (6) from low brake pressure switch (5).
4. Remove low brake pressure switch (5) from left brake valve *m*.

**b. INSTALLATION**

1. Install low brake pressure switch (5) on left brake valve (7).
2. Connect two under cab wiring harness connectors (6) to low brake pressure switch (5).

FOLLOW-ON TASKS:

- Install left side cab skirt (see paragraph 14-6).

6-37. REVERSE WARNING ALARM SWITCH REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).
- Right transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- One preformed packing

References

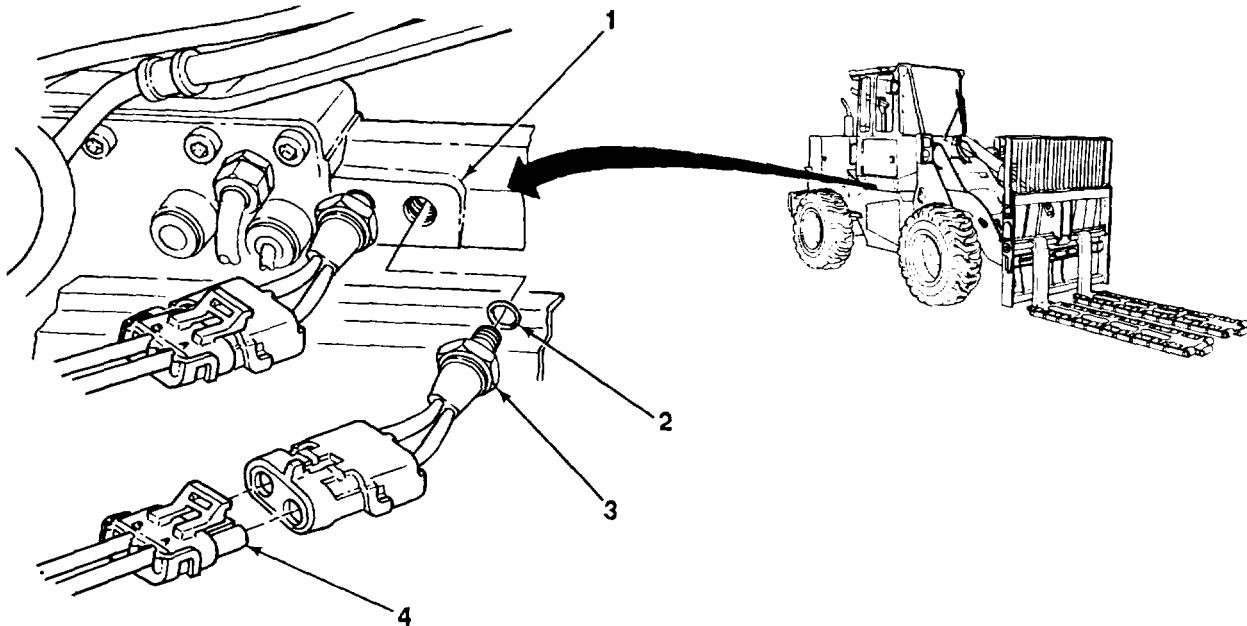
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

1. Disconnect transmission wiring harness (4) from reverse warning alarm switch (3).
2. Remove reverse warning alarm switch (3) and preformed packing (2) from transmission control valve (1). Discard preformed packing.



6-37. REVERSE WARNING ALARM SWITCH REPLACEMENT.

1. Install new preformed packing (2) and reverse warning alarm switch (3) on transmission control valve (1).
2. Connect transmission harness (4) to reverse warning alarm switch (3).

FOLLOW-ON TASKS:

- Install right transmission side guard (see paragraph 14-7).
- Install right side cab skirt (see paragraph 14-6).

6-38. WARNING BUZZER REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).

Tools/Test Equipment:

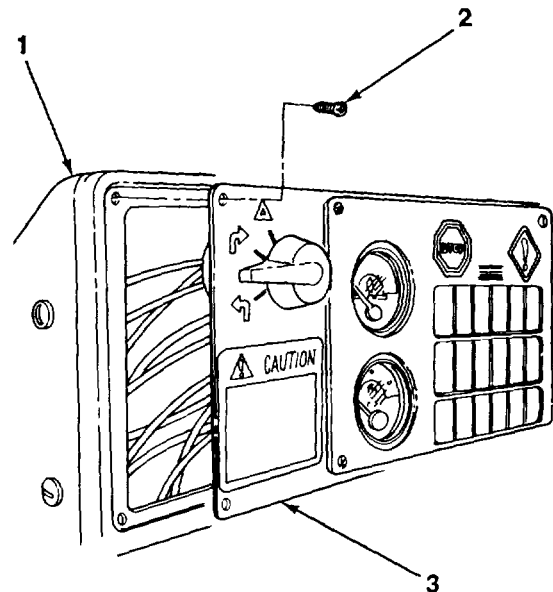
- General mechanic's tool kit (Item 44, Appendix F)

References:

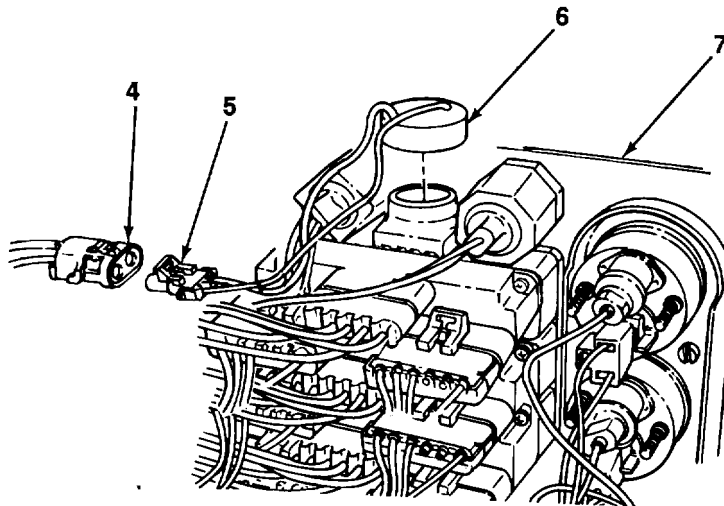
- TM 10-3930-659-10

a. REMOVAL

1. Remove four screws (2) and lift dash plate (3) from dash housing (1).



2. Disconnect warning buzzer connector (5) from fault monitor and dash wiring harness connector (4).
3. Turn warning buzzer (6) counterclockwise and remove from fault monitor console (7).

6-38. WARNING BUZZER REPLACEMENT (Con't).**b. INSTALLATION**

1. Install warning buzzer (6) on fault monitor console (7) by turning clockwise.
2. Connect warning buzzer connector (5) to fault monitor and dash wiring harness connector (4).

CAUTION

Use care not to overtighten screws when installing dash plate. Dash plate is plastic and may be damaged if screws are overtightened.

3. Install dash plate (3) on dash housing (1) with four screws (2).

6-39. REVERSE WARNING ALARM AND BRACKET REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Battery disconnect switch In OFF position (see TM 10-3930-659-10).
- Radiator grille door opened (see TM 10-3930-659-10).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

a. REMOVAL**NOTE**

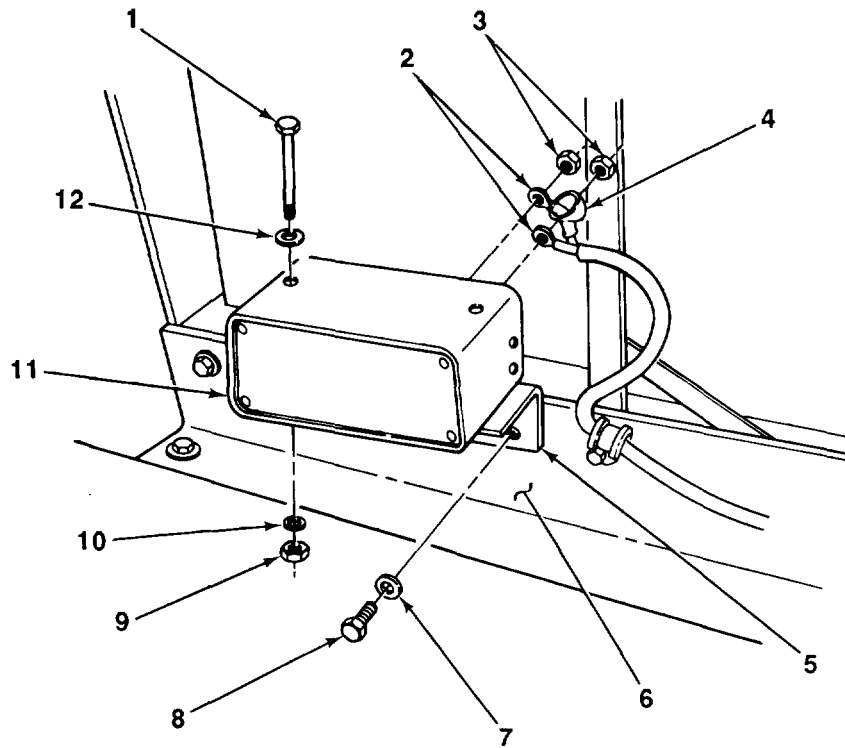
All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.

1. Remove two nuts (9), washers (10), screws (1), washers (12), and reverse warning alarm (11) from bracket (5).
2. Pull back rubber boot (4) and remove two nuts (3) and engine frame wiring harness terminal leads (2) from reverse warning alarm (11).
3. If damaged, remove two screws (8), washers (7), and bracket (5) from frame (6).

b. INSTALLATION

1. If removed, Install bracket (5) on frame (6) with two washers (7) and screws (8).
2. Install two engine frame wiring harness terminal leads (2) on reverse warning alarm (11) with two nuts (3).
3. Install rubber boot (4) over engine frame wiring harness terminal leads (2).
4. Install reverse warning alarm (11) on bracket (5) with two washers (12), screws (1), washers (10), and nuts (9).

6-39. REVERSE WARNING ALARM AND BRACKET REPLACEMENT (Con't).



FOLLOW-ON TASKS:

- Close radiator grille door (see TM 10-3930-659-10).

6-40. HORN REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Loader frame cover removed (see paragraph 14-11).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

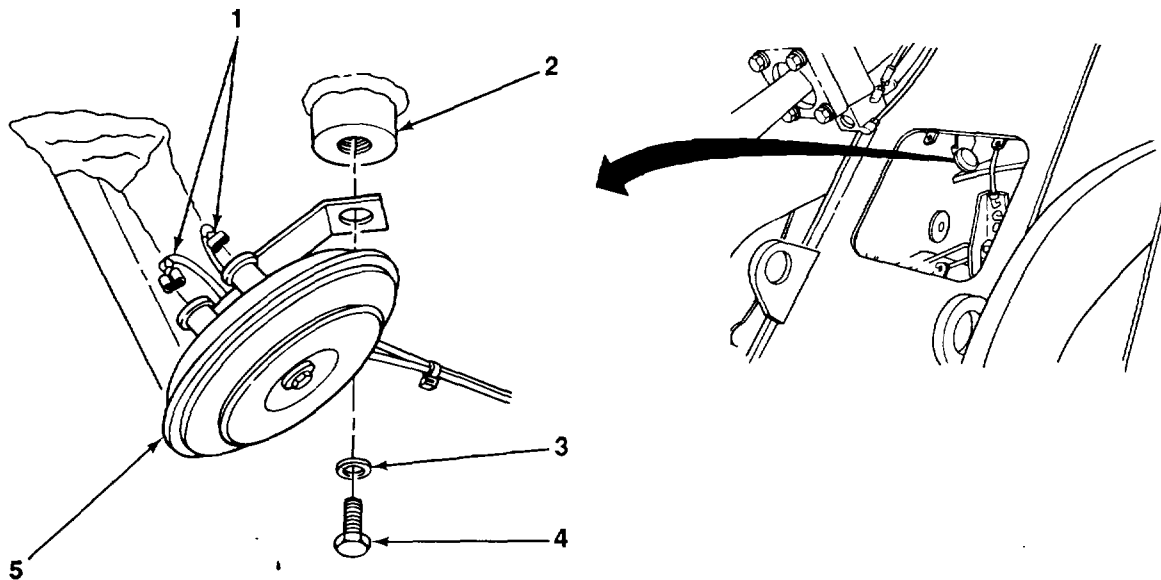
Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL**NOTE**

All connectors should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

1. Disconnect two loader frame wiring harness connectors (1) from horn (5).
2. Remove screw (4), washer (3), and horn (5) from loader frame (2).



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6-40. HORN REPLACEMENT.

b. INSTALLATION

1. Install horn (5) on loader frame (2) with washer (3) and screw (4).
2. Connect two loader frame wiring harness connectors (1) to horn (5).

FOLLOW-ON TASKS:

- Install loader frame cover (see paragraph 14-11).

6-41. HORN SWITCH REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).

Tools/Test Equipment:

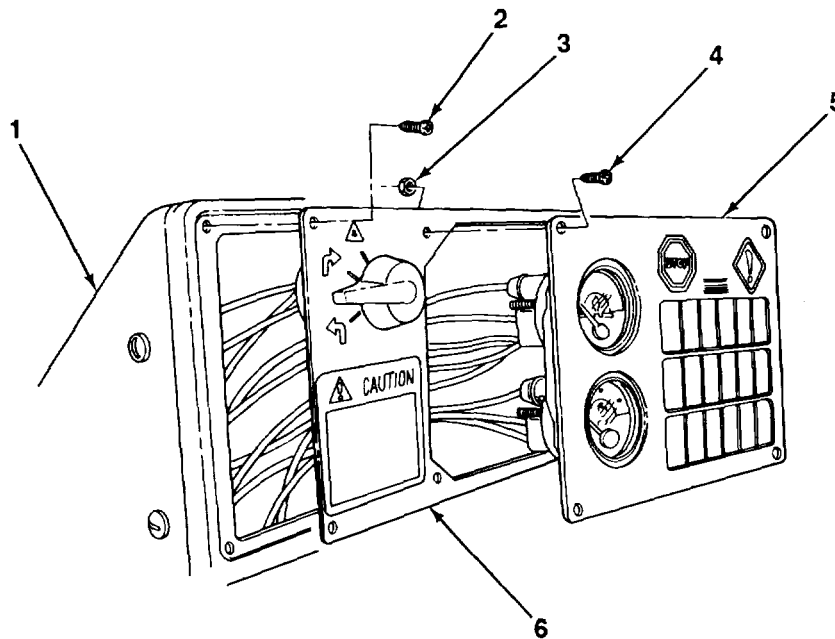
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL

1. Remove four screws (2) and lift dash plate (6) from dash housing (1).
2. Remove four nuts (3), screws (4), and fault monitor console (5) from dash plate (6).



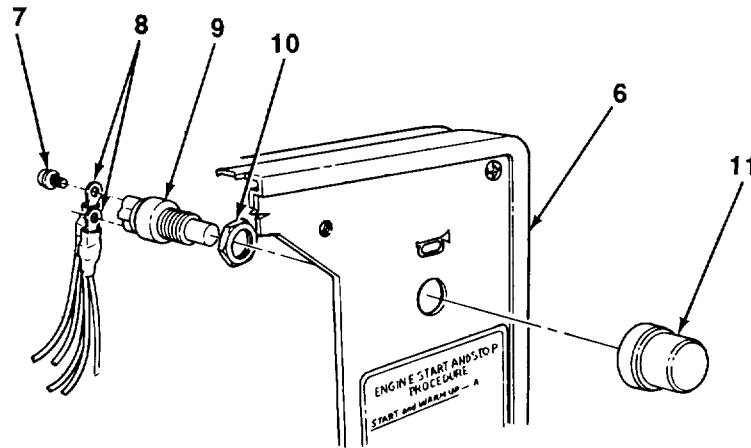
6-41. HORN SWITCH REPLACEMENT (Con't).

3. Remove two screws (7) and fault monitor and dash wiring harness terminal leads (8) from horn switch (9).
4. Remove cover (11) and horn switch (9) from dash plate (6).

NOTE

Note position of nut to aid during Installation.

5. Remove nut (10) from horn switch (9).

**b. INSTALLATION**

1. Install nut (10) on horn switch (9).
2. Install horn switch (9) on dash plate (6) with cover (11).
3. Install two fault monitor and dash wiring harness terminal leads (8) on horn switch (9) with two screws (7).
4. Install fault monitor console (5) on dash plate (6) with four screws (4) and nuts (3).

CAUTION

Use care not to overtighten screws when installing dash plate. Dash plate is plastic and may be damaged if screws are overtightened.

5. Install dash plate (6) on dash housing (1) with four screws (2).

6-42. BATTERY MAINTENANCE.

This task covers:

- a. Removal
 - b. Service
 - c. Installation
-

INITIAL SETUP:**Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Battery box cover removed (see paragraph 6-48).
- Battery cables disconnected (see paragraph 6-43).
- TM 10-3930-659-10

Materials/Parts:

- Two locknuts

References:

- TM 9-6140-200-14

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

General Safety Instructions:

- DO NOT perform battery system maintenance while smoking or near fire, flames, or sparks.
-

WARNING

• Remove all Jewelry such as rings, dog tags, bracelets, etc. If Jewelry contacts battery terminal, a direct short will result, causing Instant heating of Jewelry which will result In severe Injury to personnel.

• Battery gases can explode. DO NOT smoke or allow sparks or open flames near batteries. Wear safety glasses or goggles when checking batteries. Failure to follow this warning may result In death or serious Injury to personnel.

• Sulfuric acid contained In batteries can cause serious burns. If battery corrosion or electrolyte makes contact with the skin, eyes, or clothing, take Immediate action to stop burning effects. Failure to follow these procedures may result in death or serious Injury to personnel.

a. Eyes. Flush with cold water for no less than 15 minutes and seek medical attention immediately.

b. Skin. Flush with large amounts of cold water until all acid is removed. Seek medical attention as required.

c. Internal. If corrosion or electrolyte is Ingested, drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Seek medical attention Immediately.

d. Clothing/Equipment. Wash area with large amounts of cold water. Neutralize acid with baking soda or household ammonia.

6-42. BATTERY MAINTENANCE.

NOTE

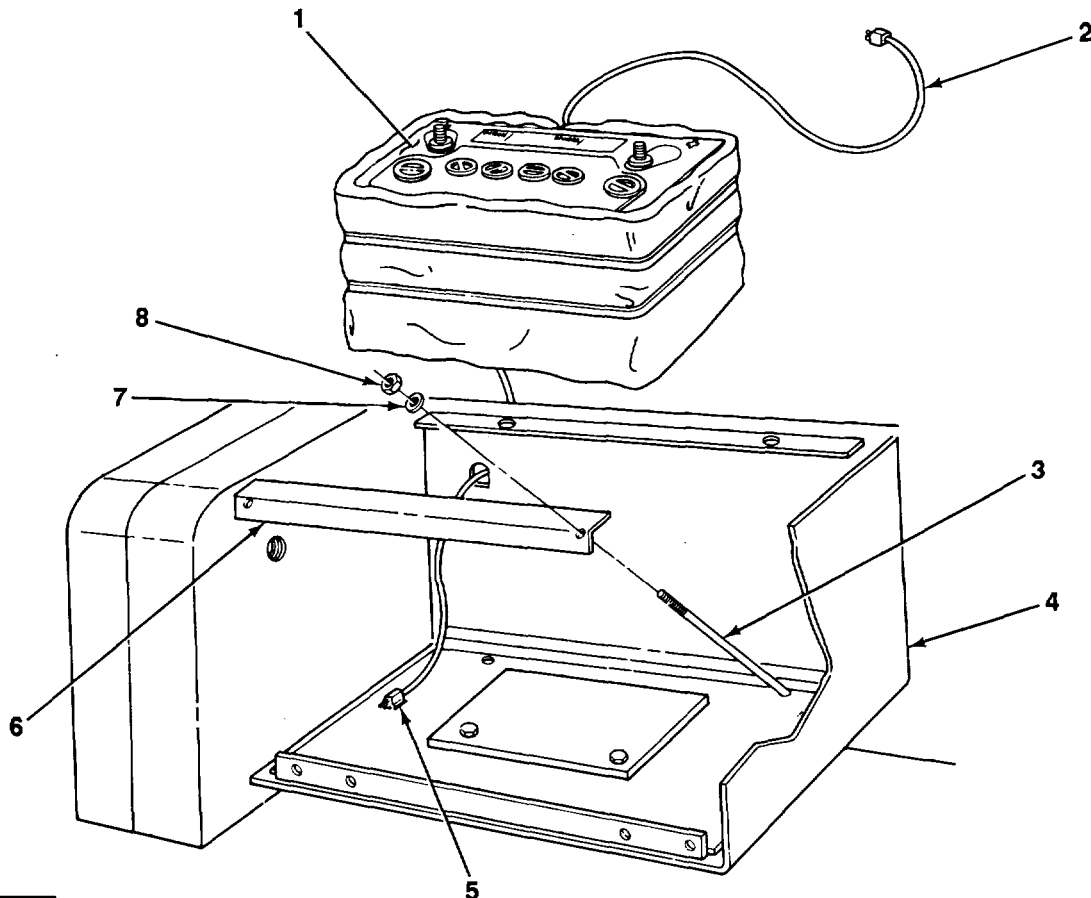
Left and right batteries are removed and installed the same way. Right battery is illustrated.

a. REMOVAL

NOTE

Note position (polarity) of battery to aid during installation.

1. Remove two locknuts (8), washers (7), clamp (6), and two clamp rods (3) from battery box (4). Discard locknuts.
2. Pull out battery (1) slightly and disconnect battery heater blanket plug (2) from plug (5).
3. Remove battery (1) from battery box (4).
4. Remove battery heater blanket (see paragraph 18-1).

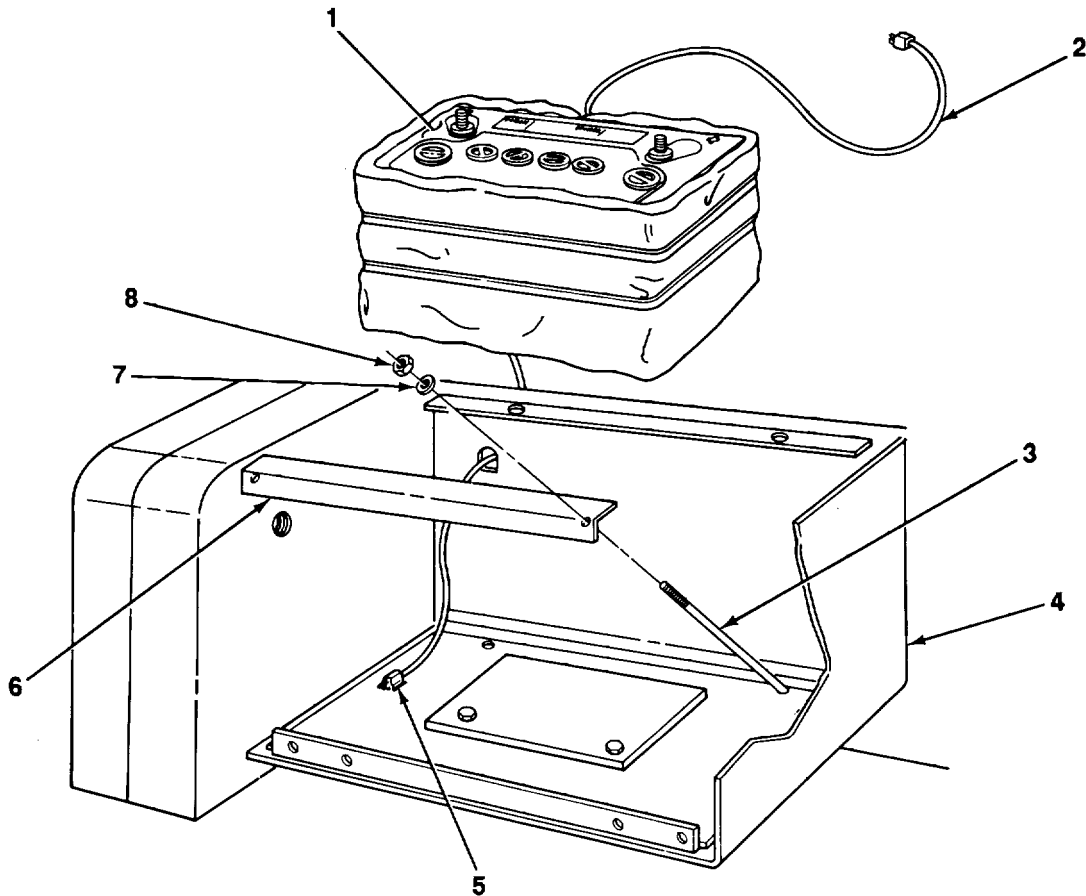


b. SERVICE

Refer to TM 9-6140-200-14 for instructions on servicing battery.

6-42. BATTERY MAINTENANCE.**c. INSTALLATION**

1. Install battery heater blanket (see paragraph 18-1).
2. Position battery (1) on battery box (4).
3. Connect battery heater blanket plug (2) to plug (5).
4. Position two clamp rods (3) on battery box (4) and install clamp (6) with two washers (7) and new locknuts (8).

**FOLLOW-ON TASKS:**

- Connect battery cables (see paragraph 6-43).
- Install battery box cover (see paragraph 6-48).

6-43. BATTERY CABLES REPLACEMENT.

This Task Covers:

a. Removal

b. Installation

Initial Setup:

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Conveyorized fork attachments removed from forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).
- Radiator grille door opened (see TM 10-3930-659-10).
- Battery box covers removed (see paragraph 6-48).

Materials/Parts:

- Tie-down straps (Item 32, Appendix C)
- Marker tags (Item 33, Appendix C)
- One lockwasher

References:

- TM 10-3930-659-10

General Safety Instructions:

- DO NOT perform battery system maintenance while smoking or near fire, flames, or sparks.

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

WARNING

- **Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry contacts battery terminal, a direct short will result, causing instant heating of jewelry which will result in severe injury to personnel.**
- **Battery gases can explode. DO NOT smoke or allow sparks or open flames near batteries. Wear safety glasses or goggles when checking batteries. Failure to follow this warning may result in death or serious injury to personnel.**

6-43. BATTERY CABLES REPLACEMENT (Con't).

a. REMOVAL**NOTE**

Battery cables should be tagged and routing noted before removal. Refer to paragraph 2-18 for tagging instructions.

1. Remove nut (20), STE/ICE batteries and blackout lights wiring harness terminal lead (19), and negative (-) battery cable (11) from negative (-) terminal of left battery (18).
2. Remove screw (13), lockwasher (12), and negative (-) battery cable (11) from shunt (10). Discard lockwasher.
3. Remove negative (-) battery cable (11) from forklift truck and remove conduit from battery cable. If damaged, discard conduit.
4. Pull back cover (15), and remove nut (17) and positive (+) end of battery cable (14) from positive (+) terminal of left battery (18).
5. Remove tie-down strap (16) and cover (15) from positive (+) end of battery cable (14).
6. Pull back cover (8), and remove nut (7) and negative (-) end of battery cable (14) from negative (-) terminal of right battery (21).
7. Remove tie-down strap (9) and cover (8) from negative (-) end of battery cable (14).
8. Remove battery cable (14) from forklift truck and remove conduit from battery cable. If damaged, discard.
9. Pull back cover (5), and remove nut (6) and positive (+) battery cable (22) from positive (+) terminal of right battery (21).
10. Remove tie-down strap (4) and cover (5) from positive (+) battery cable (22).

NOTE

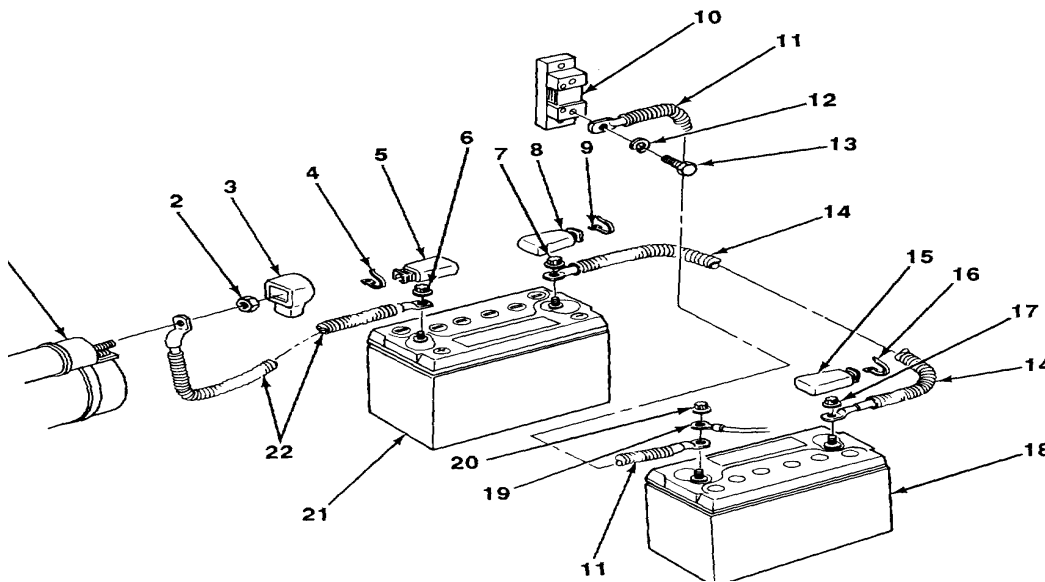
Cable from starter to slave receptacle, wires of engine frame wiring harness, and wires of engine wiring harness are removed as positive (+) battery cable is removed.

11. Pull back cover (3), and remove nut (2) and positive (+) battery cable (22) from starter motor solenoid (1).
12. Remove cover (3) from positive (+) battery cable (22).
13. Remove positive (+) battery cable (22) from forklift truck and remove conduit from battery cable. If damaged, discard conduit.

b. INSTALLATION

1. Install conduit on positive (+) battery cable (22) and route battery cable between starter motor solenoid (1) and positive (+) terminal of right battery (21).

6-43. BATTERY CABLES REPLACEMENT (Con't).

**NOTE**

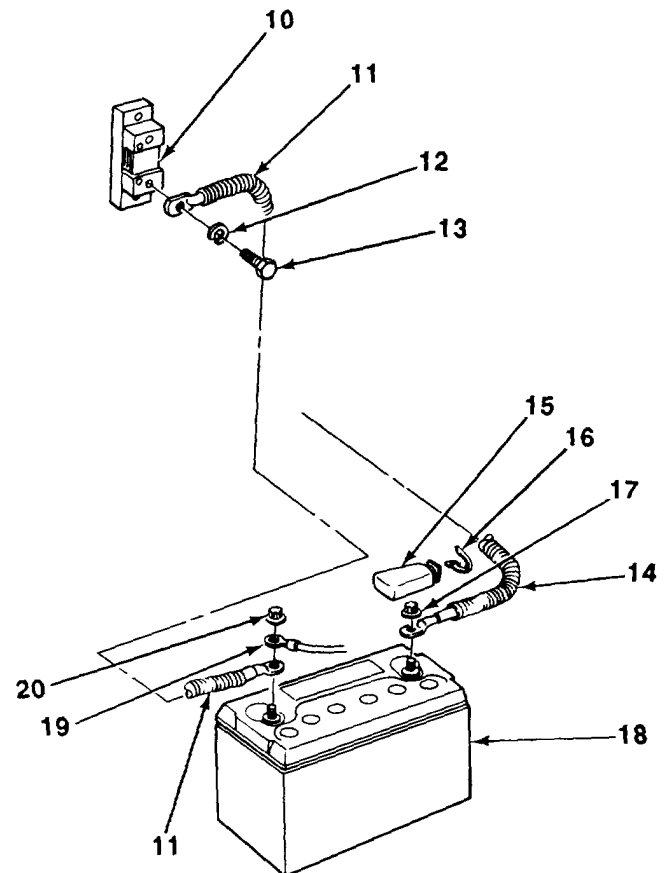
Cable from starter to slave receptacle, wires of engine frame wiring harness, and wires of engine wiring harness are installed as positive (+) battery cable is installed.

2. Install cover (3) on positive (+) battery cable (22) and install battery cable on starter motor solenoid (1) with nut (2). Install cover over nut.
3. Install cover (5) on positive (+) battery cable (22) with tie-down strap (4).
4. Install positive (+) battery cable (22) on positive (+) terminal of right battery (21) with nut (6). Install cover (5) over nut.
5. Install conduit on battery cable (14).
6. Route battery cable (14) between left battery (18) and right battery (21).
7. Install cover (8) on negative (-) end of battery cable (14) with tie-down strap (9).
8. Install negative (-) end of battery cable (14) to negative (-) terminal of right battery (21) with nut (7). Install cover (8) over nut.

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6-43. BATTERY CABLES REPLACEMENT (Con't).

9. Install cover (15) on positive (+) end of battery cable (14) with tie-down strap (16).
10. Install positive (+) end of battery cable (14) on positive (+) terminal of left battery (18) with nut (17). Install cover (15) over nut.
11. Install conduit on battery cable (11).
12. Route negative (-) battery cable (11) between left battery (18) and shunt (10).
13. Install negative (-) battery cable (11) on shunt (10) with new lockwasher (12) and screw (13).
14. Install STE/ICE batteries and blackout lights wiring harness terminal lead (19) and negative (-) battery cable (11) on negative (-) terminal of left battery (18) with nut (20).

**FOLLOW-ON TASKS:**

- Install battery box covers (see paragraph 6-48).
- Close radiator grille door (see TM 10-3930-659-10).
- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments to side of forklift truck (see paragraph 17-13).

TA707832

6-44. STARTER MOTOR GROUND CABLE REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected (see paragraph 6-43).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:

- TM 10-3930-659-10

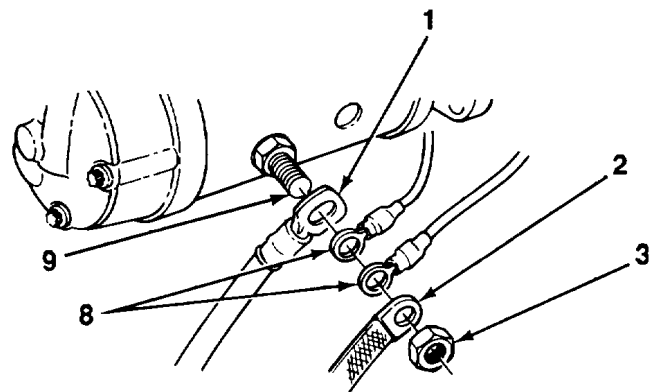
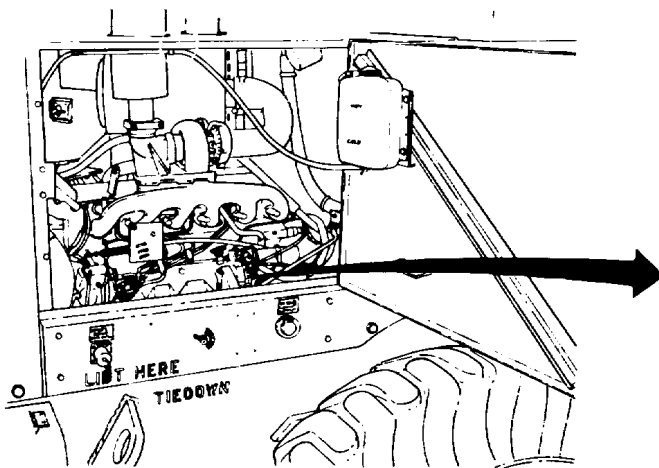
Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL**NOTE**

All leads should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

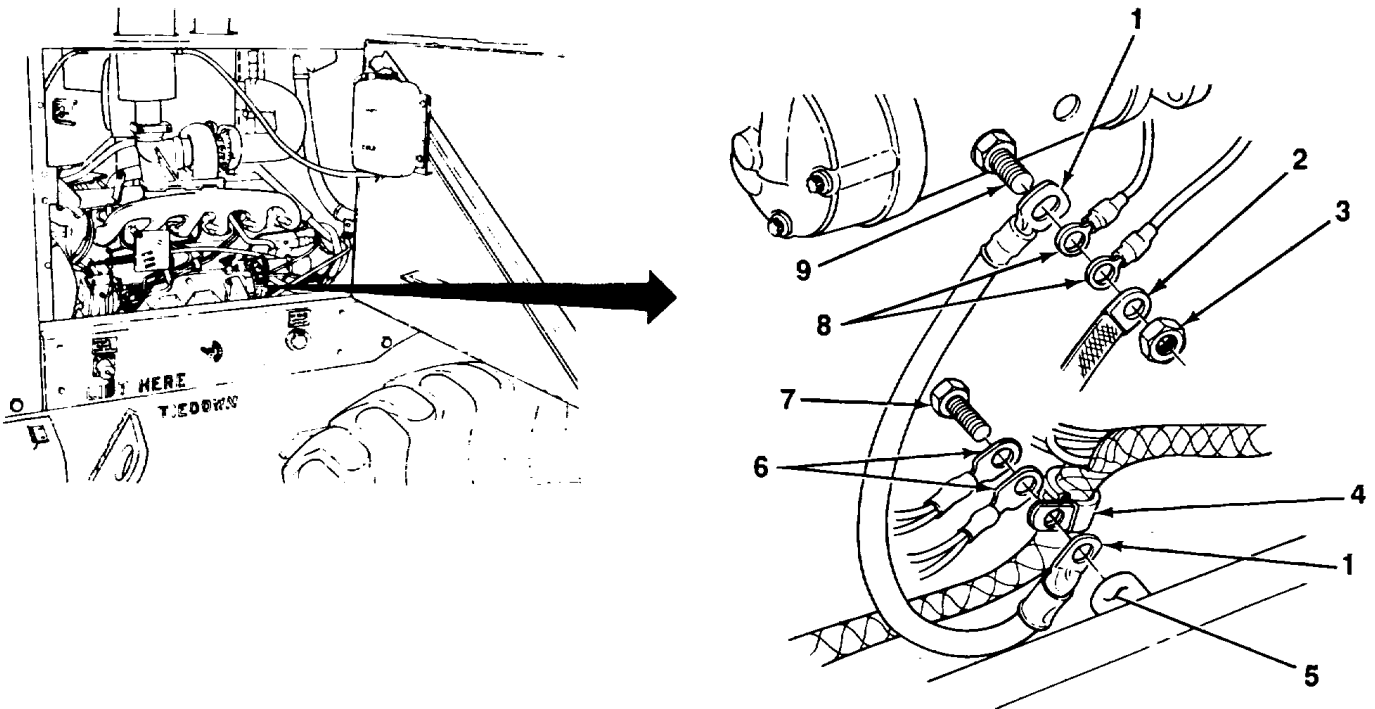
1. Remove nut (3), ground strap (2), two terminal leads (8), and starter motor ground cable (1) from starter motor ground terminal (9).



TA707833

6-44. STARTER MOTOR GROUND CABLE REPLACEMENT (Con't).

- Remove screw (7), two terminal leads (6), clamp (4), and starter motor ground cable (1) from frame (5).

**b. INSTALLATION**

- Install starter motor ground cable (1), clamp (4), and two terminal leads (6) on frame (5) with screw (7).
- Install starter motor ground cable (1), two terminal leads (8), and ground strap (2) on starter motor ground terminal (9) with nut (3).

FOLLOW-ON TASKS:

- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).
- Connect negative battery cables (see paragraph 6-43).

TA707834

6-45. BATTERY DISCONNECT SWITCH GROUND STRAP REPLACEMENT.

This task covers:

- a. Removal b. Installation

Initial Setup:

Equipment Conditions:

- Negative battery cables disconnected (see paragraph 6-43).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- One lockwasher

References:

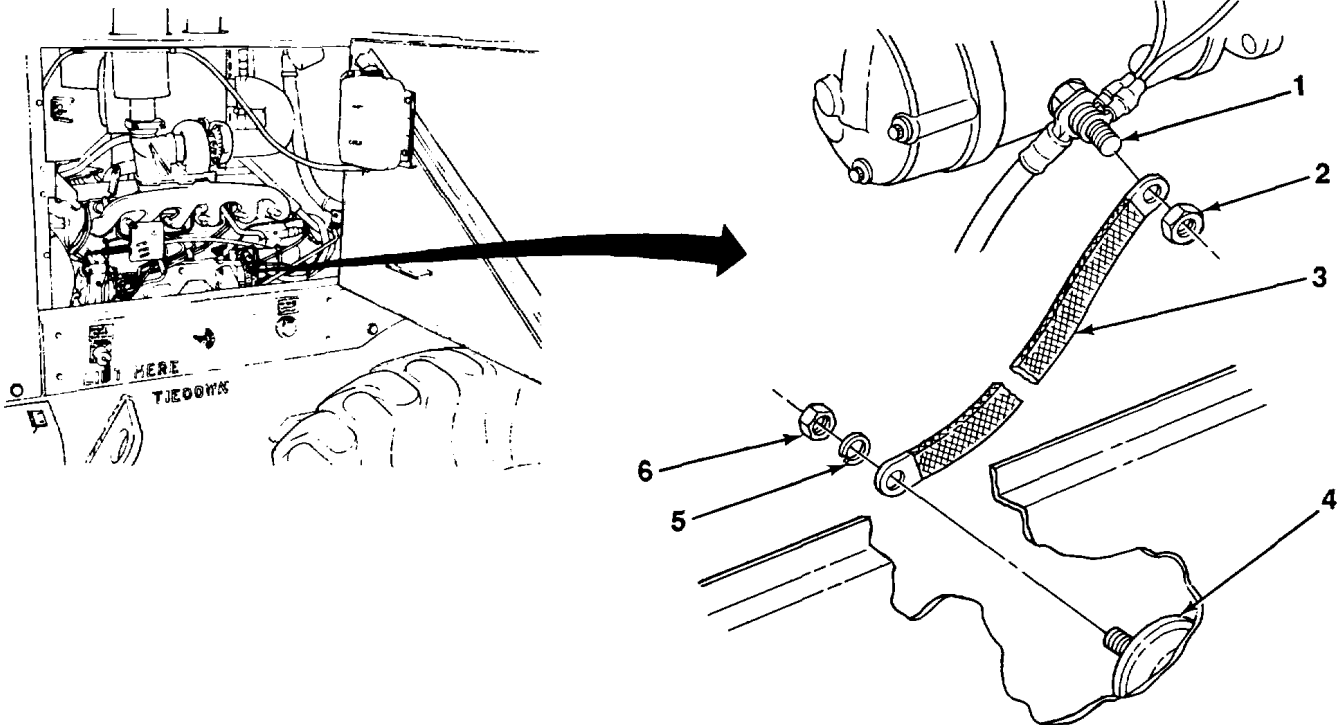
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

1. Remove nut (2) and battery disconnect switch ground strap (3) from starter motor ground terminal (1).
2. Remove nut (6), lockwasher (5), and battery disconnect switch ground strap (3) from battery disconnect switch (4). Discard lockwasher.

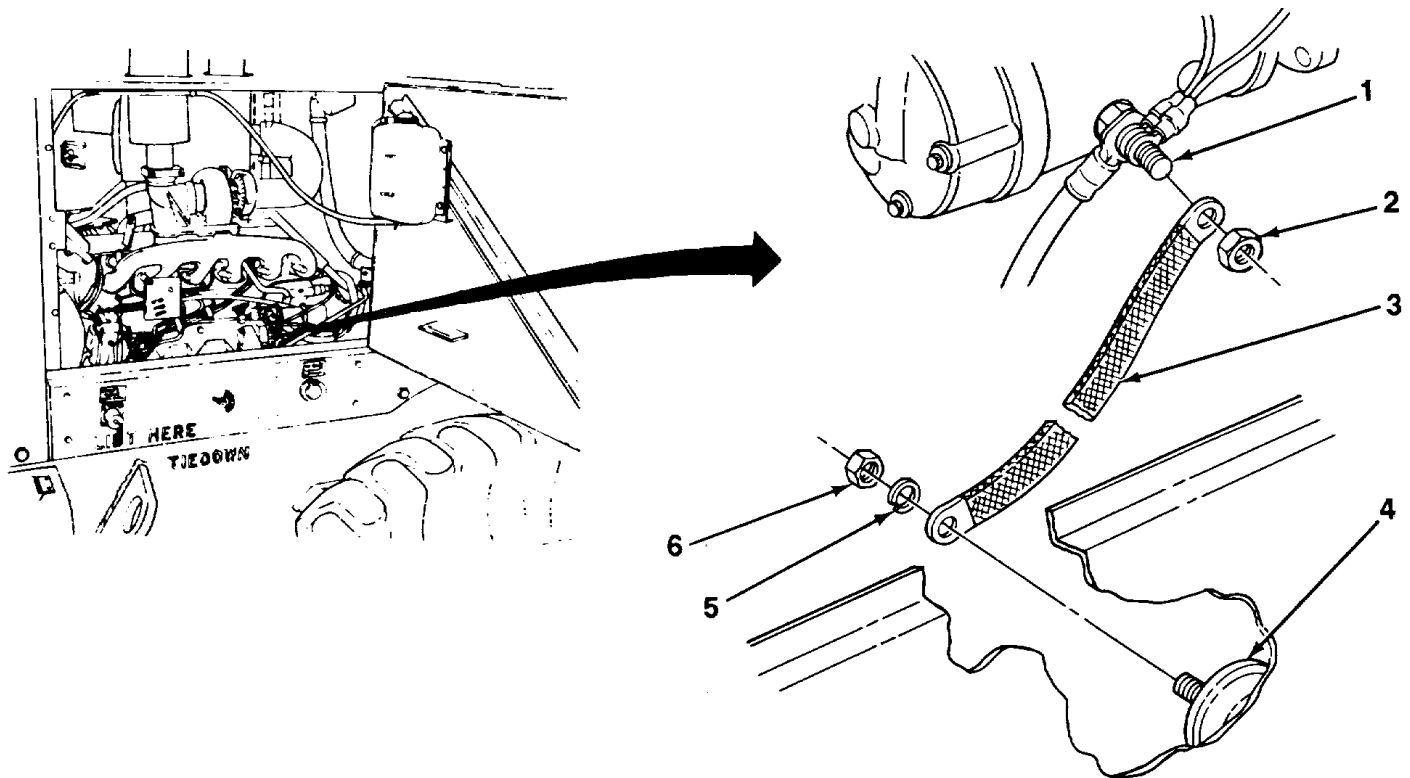


TA707835

6-45. BATTERY DISCONNECT SWITCH GROUND STRAP REPLACEMENT (Con't).

b. INSTALLATION

1. Install battery disconnect switch ground strap (3) on battery disconnect switch (4) with new lockwasher (5) and nut (6).
2. Install battery disconnect switch ground strap (3) on starter motor ground terminal (1) with nut (2).


FOLLOW-ON TASKS:

- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).
- Connect negative battery cables (see paragraph 6-43).

TA707836

6-46. BATTERY DISCONNECT SWITCH REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup

Equipment Conditions:

- Negative battery cables disconnected (see paragraph 6-43).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 103930-659-10).

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- Three lockwashers

References:

- TM 10-3930-659-10

Tools/Test Equipment:

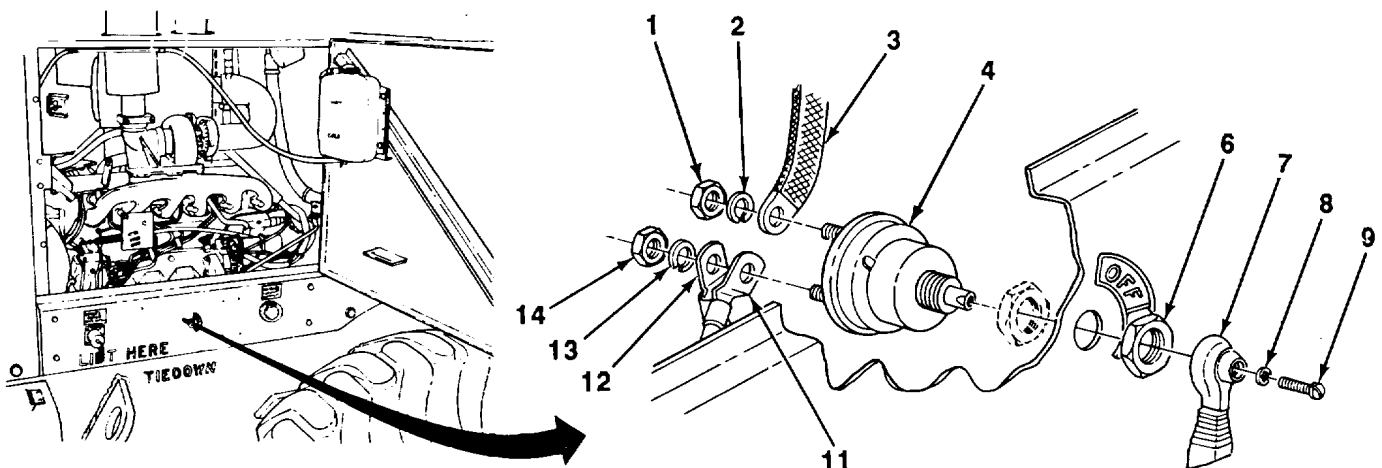
- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

NOTE

All cables should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.

1. Remove nut (1), lockwasher (2), and battery disconnect switch ground strap (3) from battery disconnect switch (4). Discard lockwasher.
2. Remove nut (14), lockwasher (13), shunt cable (12), and negative slave receptacle cable (11) from battery disconnect switch (4). Discard lockwasher.
3. Remove screw (9), lockwasher (8), handle (7), and nut (6) from battery disconnect switch (4). Discard lockwasher.

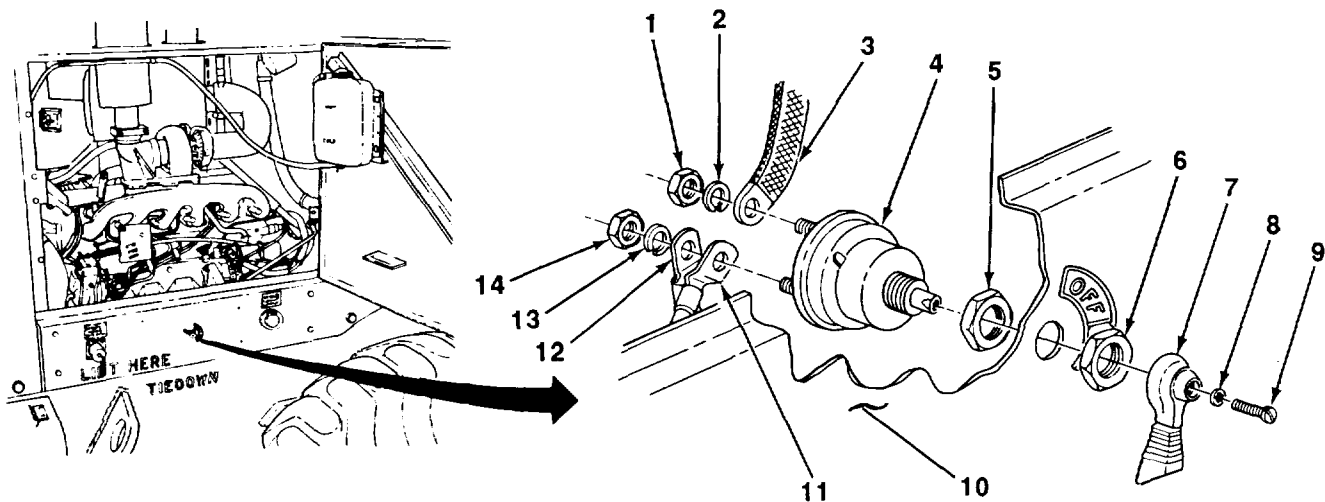


TA707837

6-46. BATTERY DISCONNECT SWITCH REPLACEMENT (Con't).**NOTE**

Note position of battery disconnect switch to aid during installation.

4. Remove battery disconnect switch (4) from right engine lower sideshield (10).
5. Remove nut (5) from battery disconnect switch (4).



1. Install nut (5) on battery disconnect switch (4).
2. Install battery disconnect switch (4) on right engine lower sideshield (10) with nut (6), handle (7), new lockwasher (8), and screw (9).
3. Install negative slave receptacle cable (11) and shunt cable (12) on battery disconnect switch (4) with new lockwasher (13) and nut (14).
4. Install battery disconnect switch ground strap (3) on battery disconnect switch (4) with new lockwasher (2) and nut (1).

FOLLOW-ON TASKS:

- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).
- Connect negative battery cables (see paragraph 6-43).

TA707838

6-47. SLAVE RECEPTACLE REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Negative battery cables disconnected - (see paragraph 6-43).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Sealant (Item 29, Appendix C)
- Marker tags (Item 33, Appendix C)
- Three lockwashers

References:

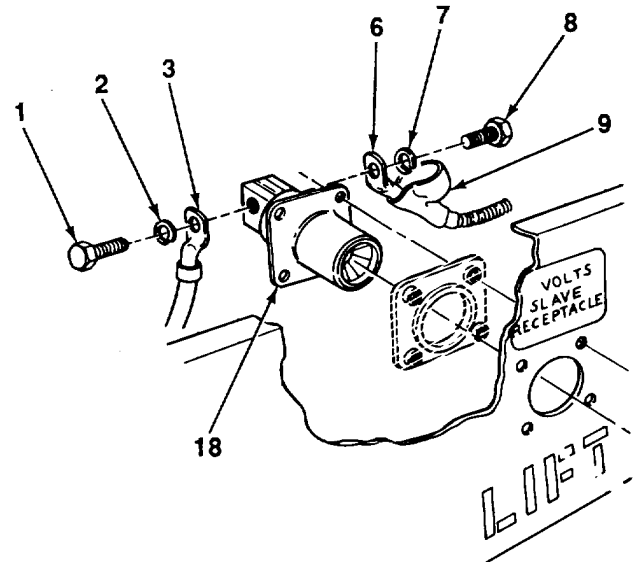
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

1. Remove sealant from rear of slave receptacle (18).
2. Pull back rubber boot (9) and remove screw (8), lockwasher (7), and cable (6) from slave receptacle (18). Discard lockwasher.
3. Remove screw (1), lockwasher (2), and ground cable (3) from slave receptacle (18). Discard lockwasher.



TA707839

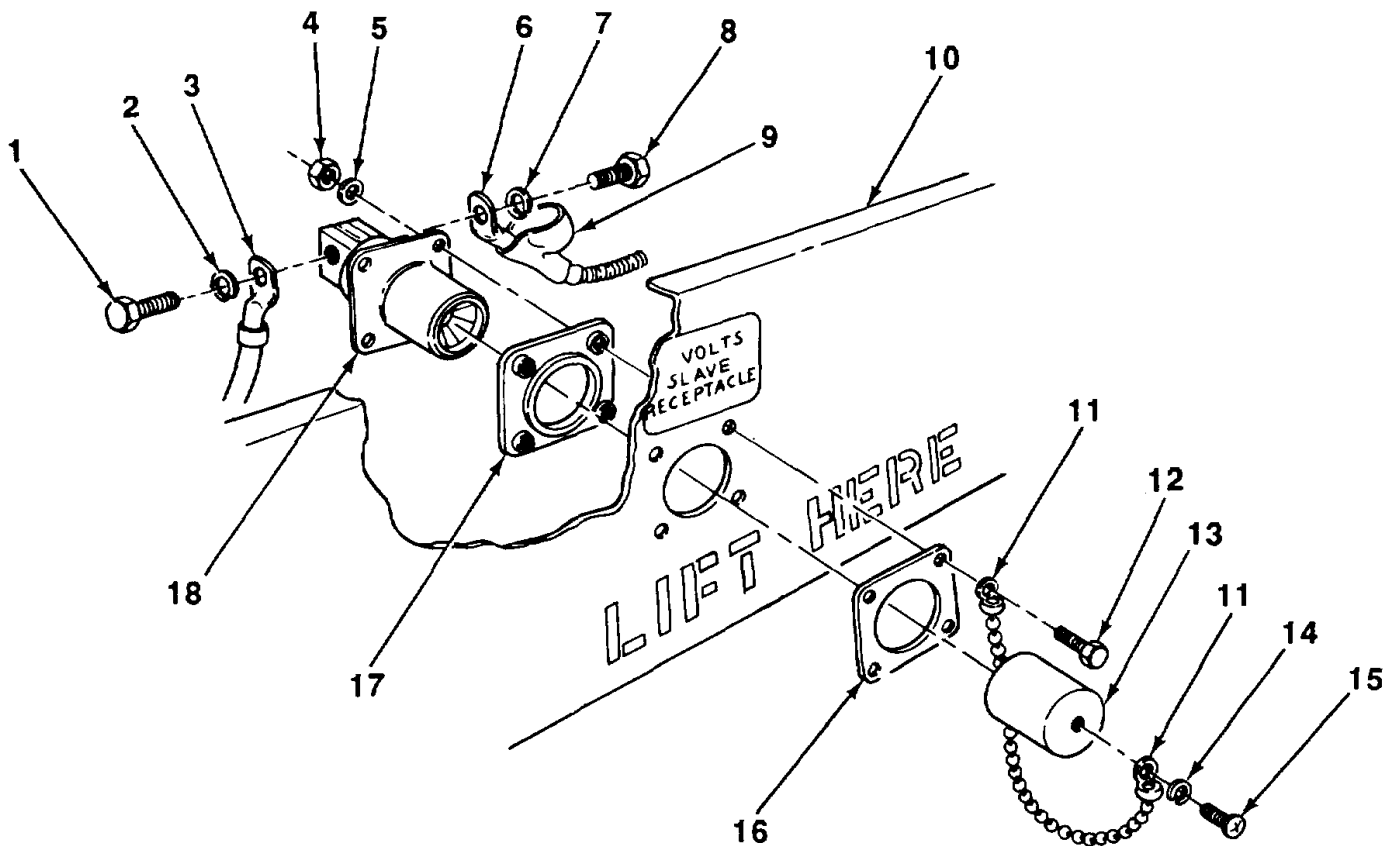
6-47. SLAVE RECEPTACLE REPLACEMENT (Con't).

4. Remove cap (13) from slave receptacle (18).
5. Remove four nuts (4), washers (5), screws (12), chain (11), and plastic Insulator (16) from slave receptacle (18).
6. Remove screw (15), lockwasher (14), and chain (11) from cap (13). Discard lockwasher.

CAUTION

Slave receptacle connector should be tagged and position noted before removal. Refer to paragraph 2-18 for tagging Instructions. Failure to Install slave receptacle In proper position may result in Improper polarity and damage to equipment.

7. Remove slave receptacle (18) and plastic insulator (17) from right engine lower sideshield (10).



TA707840

6-47. SLAVE RECEPTACLE REPLACEMENT (Con't).

b. INSTALLATION

1. Position plastic Insulator (17) and slave receptacle (18) on right engine lower sideshield (10).
2. Install chain (11) on cap (13) with new lockwasher (14) and screw (15).
3. Install plastic insulator (16) and chain (11) on right engine lower sideshield (10) with four screws (12), washers (5), and nuts (4).
4. Install ground cable (3) on slave receptacle (18) with new lockwasher (2) and screw (1).
5. Install cable (6) on slave receptacle (18) with new lockwasher (7) and screw (8).
6. Install rubber boot (9) over battery cable (6).
7. Apply sealant on slave receptacle (18), two screws (1 and 8), and rubber boot (9).

FOLLOW-ON TASKS:

- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments to side of forklift truck (see paragraph 17-13).
- Connect negative battery cables (see paragraph 6-43).

6-48. BATTERY BOX COVERS REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

NOTE

Left and right battery box covers are removed and installed the same way. Right battery box cover is illustrated.

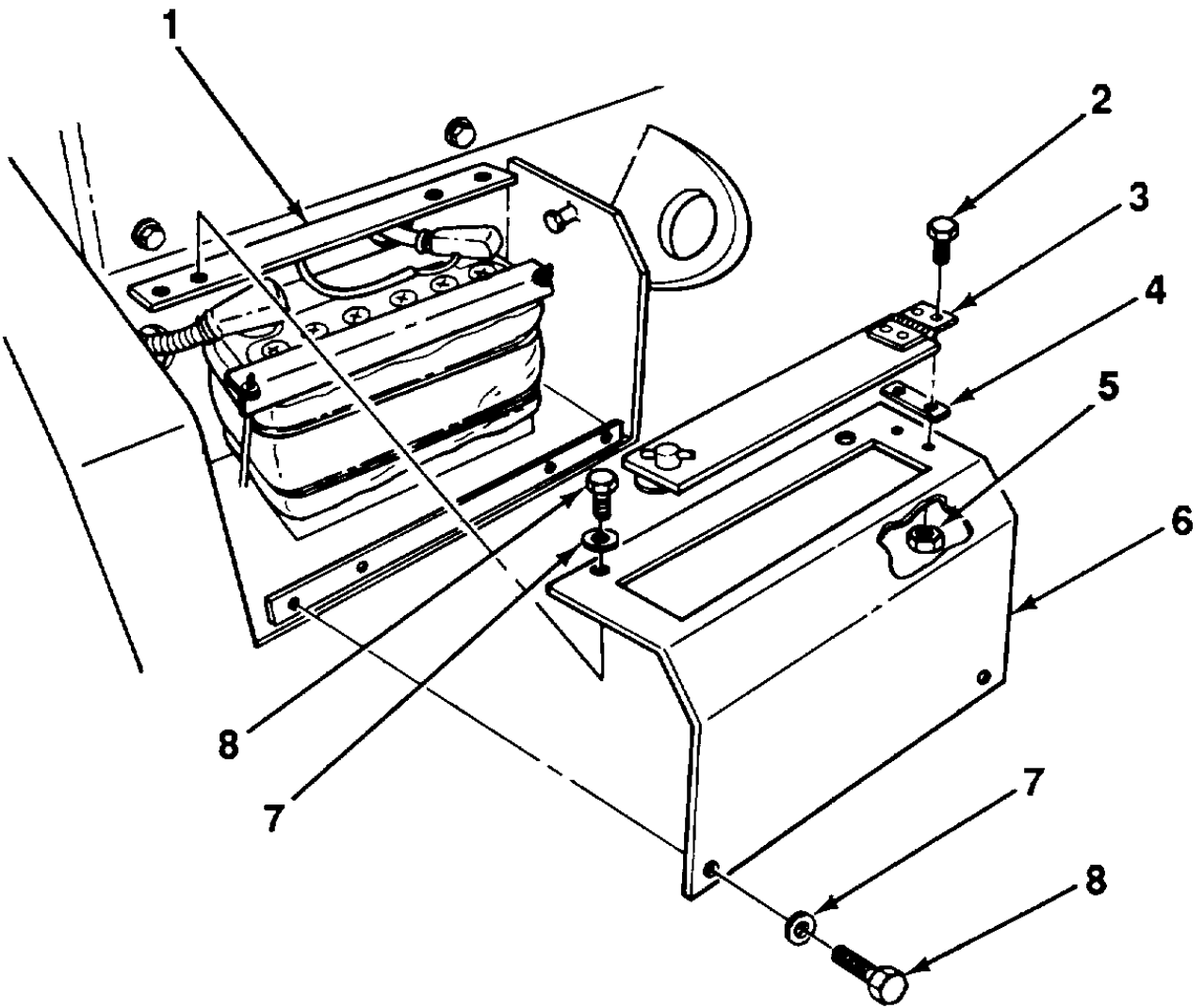
a. REMOVAL

1. Remove four screws (8), washers (7), and battery box cover (6) from engine frame (1).
2. Remove two nuts (5), screws (2), door (3), and shim (4) from battery box cover (6).

b. INSTALLATION

1. Install shim (4) and door (3) on battery box cover (6) with two screws (2) and nuts (5).
2. Install battery box cover (6) on engine frame (1) with four washers (7) and screws (8).

6-48. BATTERY BOX COVERS REPLACEMENT (Con't).



TA707841

6-49. CAB GROUND STRAP REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).

Tools/Test Equipment:

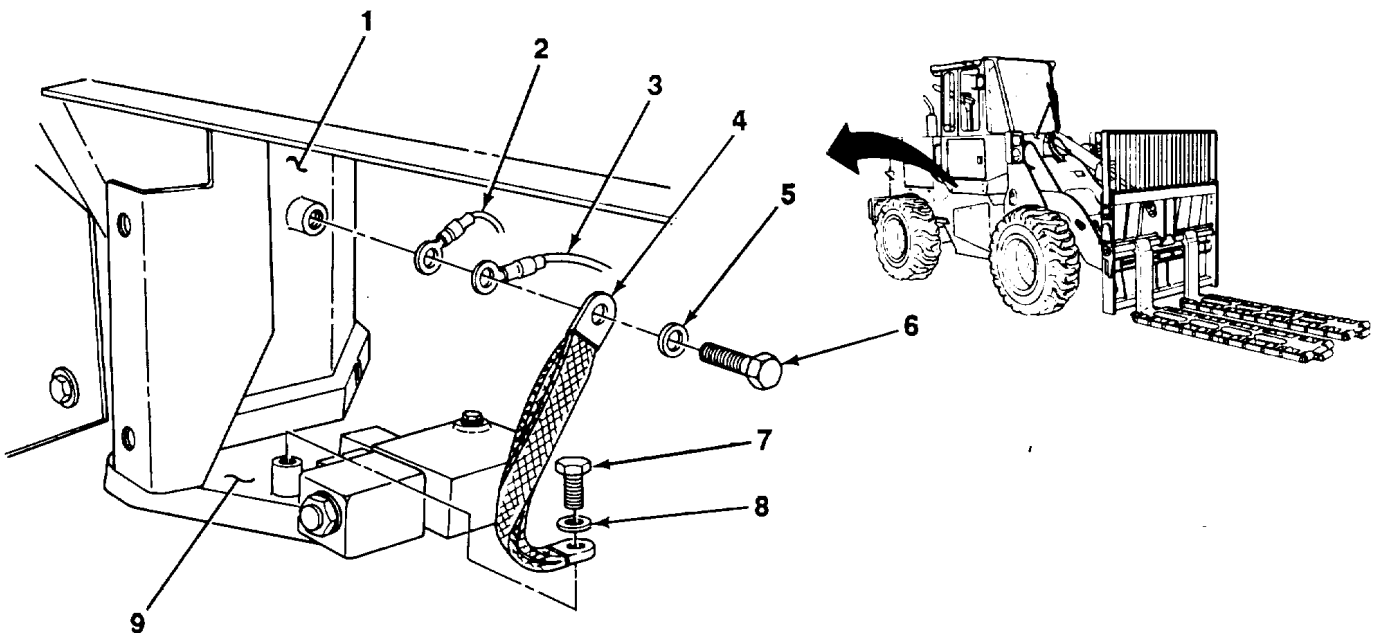
- General mechanic's tool kit (Item 44, Appendix F)

References

- TM 10-3930-659-10

a. REMOVAL

1. Remove screw (6), washer (5), cab ground strap (4), STE/ICE load center wiring harness terminal lead (3), and load center wiring harness terminal lead (2) from cab (1).
2. Remove screw (7), washer (8), and cab ground strap (4) from frame (9).



b. INSTALLATION

1. Install cab ground strap (4) on frame (9) with washer (8) and screw (7).
2. Install load center wiring harness terminal lead (2), STE/ICE load center wiring harness terminal lead (3), and cab ground strap (4) on cab (1) with washer (5) and screw (6).

FOLLOW-ON TASKS:

- Install right side cab skirt (see paragraph 14-6).

TA707842

6-50. SHUNT REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Negative battery cables disconnected (see paragraph 6-43).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened - (see TM 10-3930-659-10)

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- Four lockwashers

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

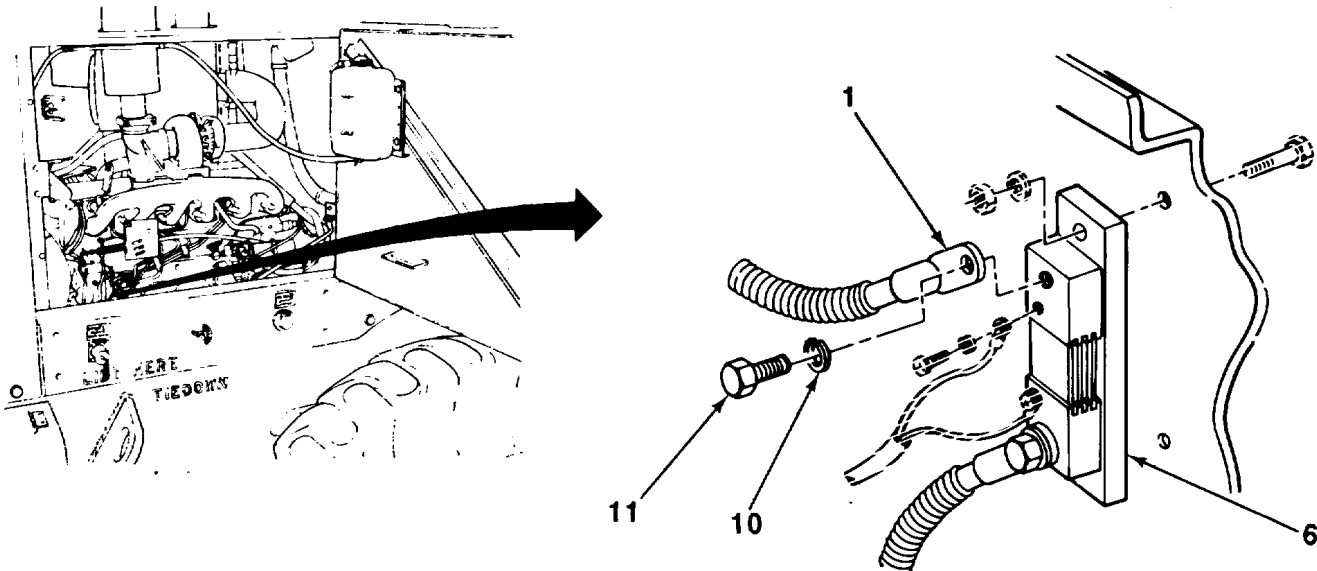
- TM 10-3930-659-10

a. REMOVAL

NOTE

All cables and wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.

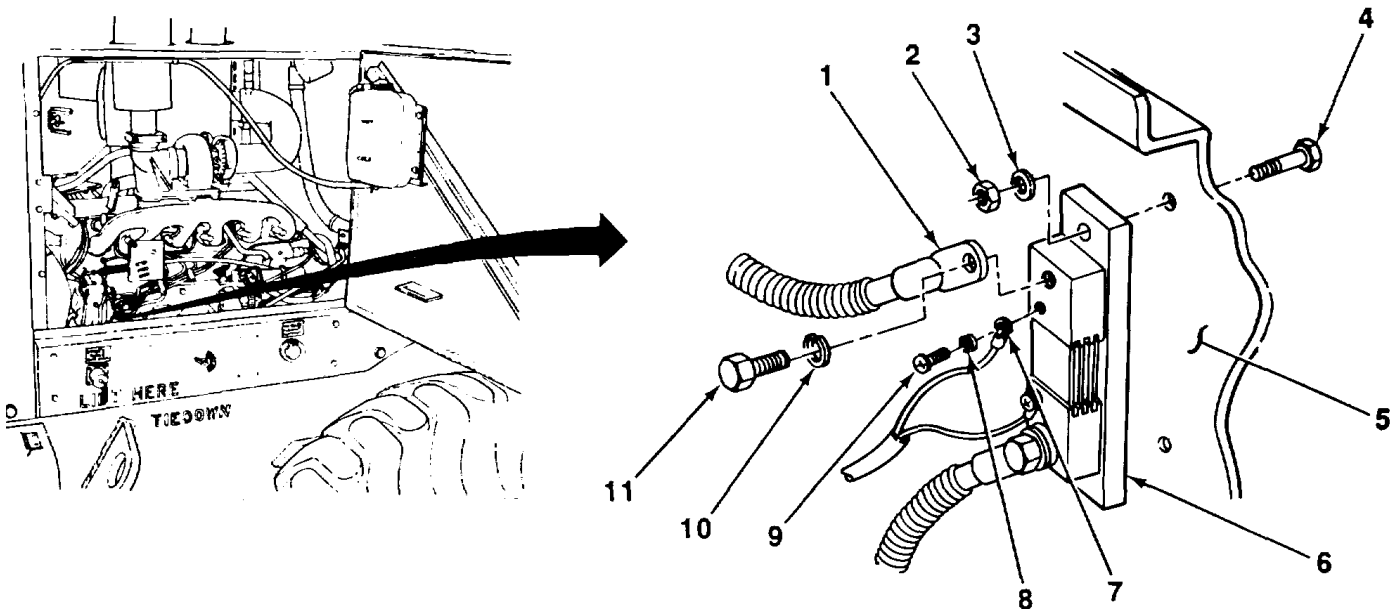
1. Remove two screws (11), lockwashers (10), and cables (1) from shunt (6). Discard lockwashers.



TA70784:

6-50. SHUNT REPLACEMENT (Con't).

2. Remove two screws (9), lockwashers (8), and STE/ICE battery wiring harness terminal leads (7) from shunt (6). Discard lockwashers.
3. Remove two nuts (2), washers (3), screws (4), and shunt (6) from right engine lower sideshield (5).



1. Install shunt (6) on right engine lower sideshield (5) with two screws (4), washers (3), and nuts (2).
2. Install two STE/ICE battery wiring harness terminal leads (7) on shunt (6) with two new lockwashers (8) and screws (9).
3. Install two cables (1) on shunt (6) with two new lockwashers (10) and screws (11).

FOLLOW-ON TASKS:

- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments to side of forklift truck (see paragraph 17-13).
- Connect negative battery cables (see paragraph 6-43).

TA707844

6-51. MAGNETIC PICKUP REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup

Equipment Conditions:

- Battery disconnect switch In OFF position (see TM 10-3930-659-10).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right and left engine upper sashes opened (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

- One preformed packing

References:

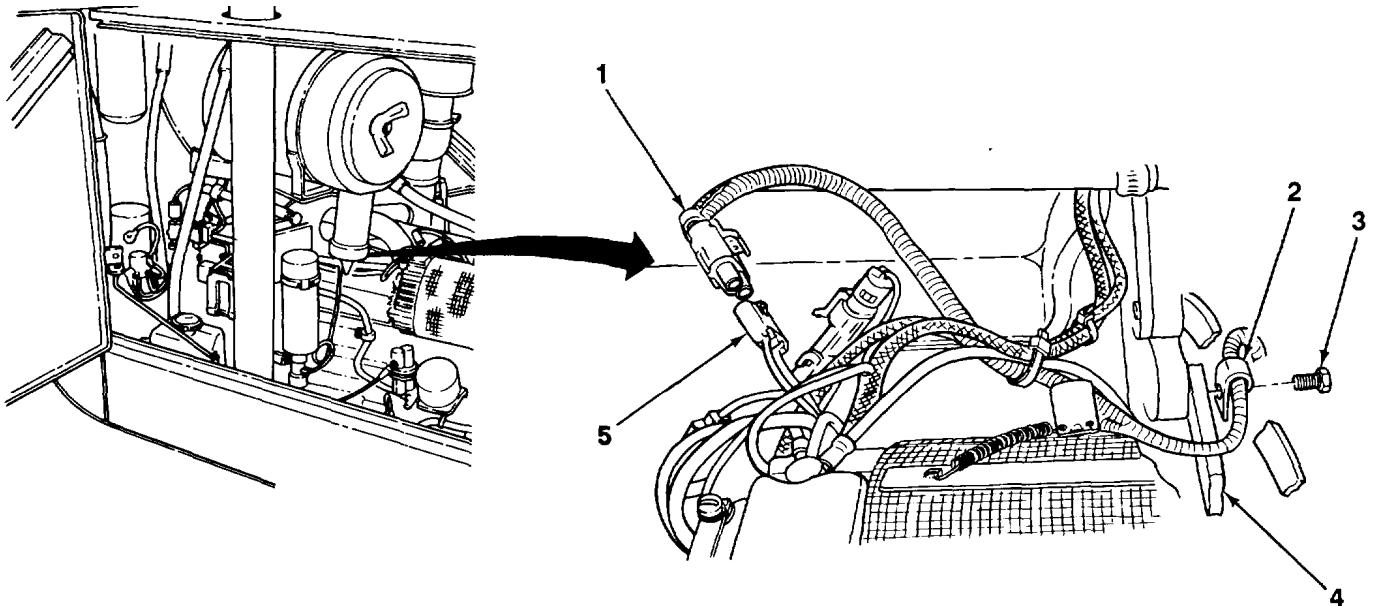
- TM 10-3930-659-10

a. REMOVAL

NOTE

Remove tie-down straps as necessary.

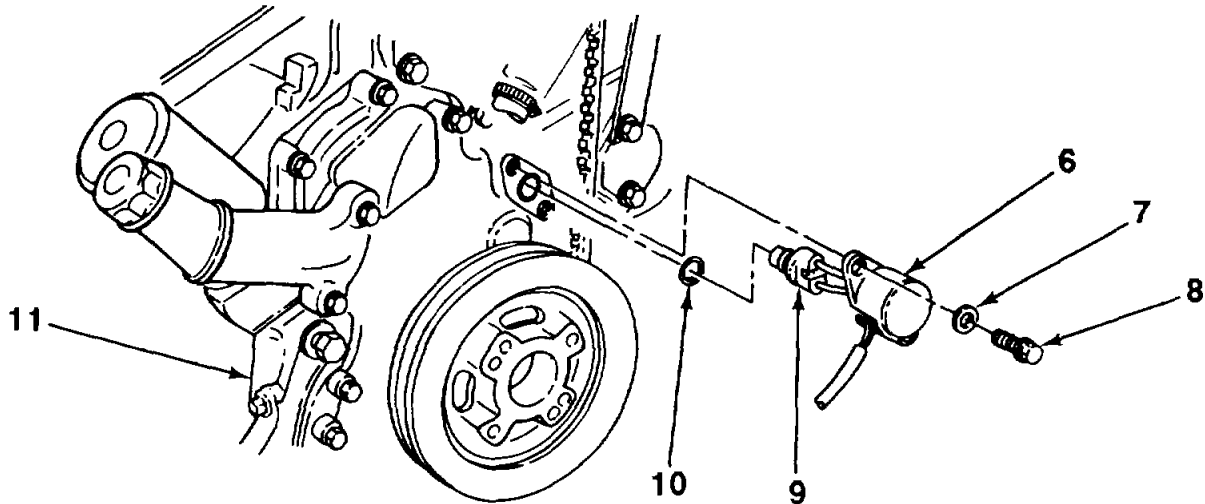
1. Disconnect magnetic pickup connector (1) from engine wiring harness connector (5).
2. Remove screw (3) and clamp (2) from water pump (4).



TA707845

6-51. MAGNETIC PICKUP REPLACEMENT (Con't).

3. Remove two screws (8), washers (7), and cover (6) from engine timing gear cover (11).
4. Remove magnetic pickup (9) and preformed packing (10) from engine timing gear cover (11). Discard preformed packing.

**b. INSTALLATION**

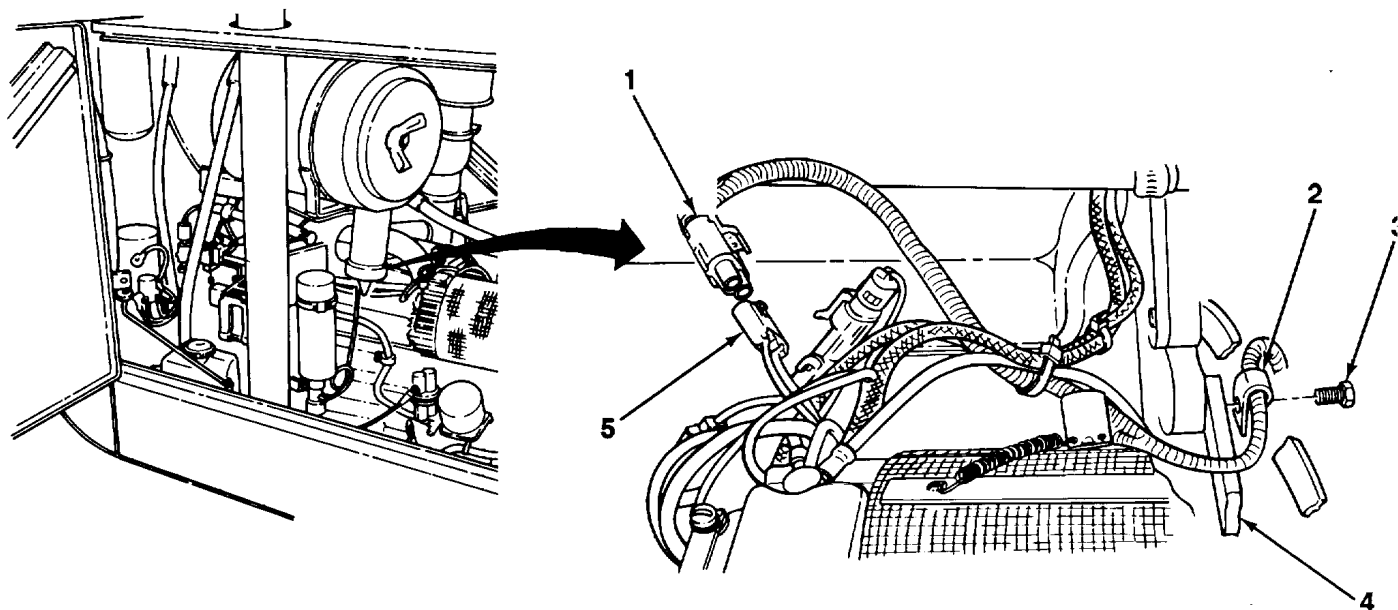
1. Position new preformed packing (10) and magnetic pickup (9) on engine timing gear cover (11).
2. Install cover (6) on engine timing gear cover (11) with two washers (7) and screws (8).
3. Install clamp (2) on water pump (4) with screw (3).

NOTE

Install new tie-down straps as necessary.

4. Connect magnetic pickup connector (1) to engine wiring harness connector (5).

TA707846

6-51. MAGNETIC PICKUP REPLACEMENT (Con't).**FOLLOW-ON TASKS:**

- Close right and left engine upper sideshields (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments to side of forklift truck (see paragraph 17-13).

TA707847

6-52. FUEL LEVEL SENDING UNIT REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup

Equipment Conditions:

- Battery disconnect switch In OFF position (see TM 10-3930-659-10).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13)
- Right engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Adhesive (Item 1, Appendix C)

References:

General Safety Instructions:

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- DO NOT perform this procedure near fire, flames, or sparks.

WARNING

Diesel fuel is combustible. DO NOT smoke or allow open flame near fuel tank. Failure to follow this warning will result in death or serious injury to personnel. If you are burned, immediately seek medical aid.

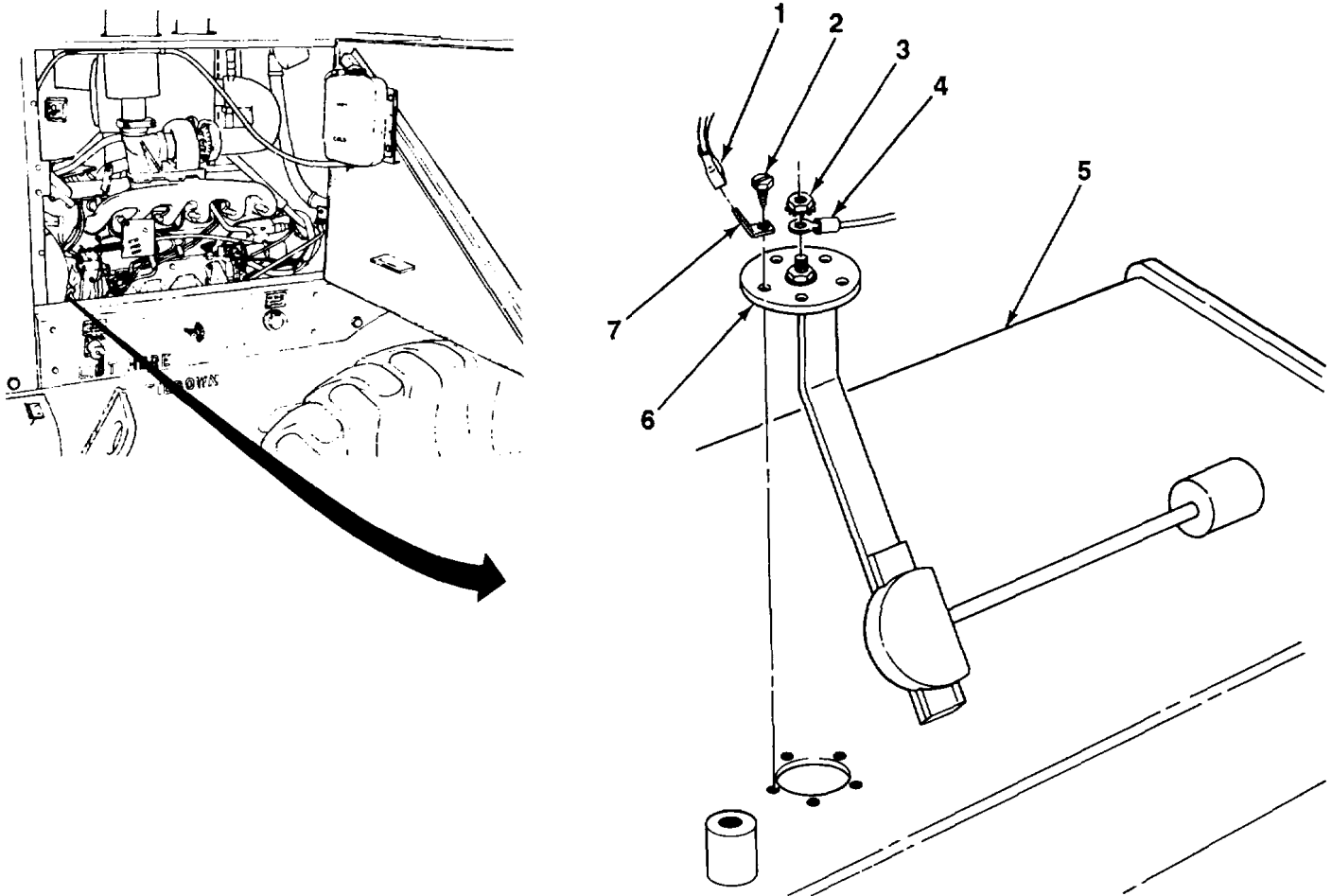
a. REMOVAL

1. Remove nut (3) and engine frame wiring harness terminal lead (4) from fuel level sending unit (6).
2. Disconnect engine frame wiring harness connector (1) from connector (7).
3. Remove five screws (2) and connector (7) from fuel level sending unit (6).

NOTE

Note position of fuel level sending unit to aid during installation.

4. Remove fuel level sending unit (6) from fuel tank (5).
5. Carefully remove any remaining adhesive from fuel tank (5).

6-52. FUEL LEVEL SENDING UNIT REPLACEMENT (Con't).**b. INSTALLATION**

1. Apply adhesive to mating surface of fuel level sending unit (6) and fuel tank (5).
2. Position fuel level sending unit (6) on fuel tank (5).
3. Install connector (7) and five screws (2) on fuel level sending unit (6).
4. Connect engine frame wiring harness connector (1) to connector (7).
5. Install engine frame wiring harness terminal lead (4) on fuel level sending unit (6) with nut (3).

FOLLOW-ON TASKS:

- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments to side of forklift truck (see paragraph 17-13).

TA707848

6-53. ENGINE STARTING AID SWITCH REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Right access door opened. (see TM 10-3930-659-10)
- Cab window opened (see TM 10-3930-659-10).

Tools/Test Equipment:

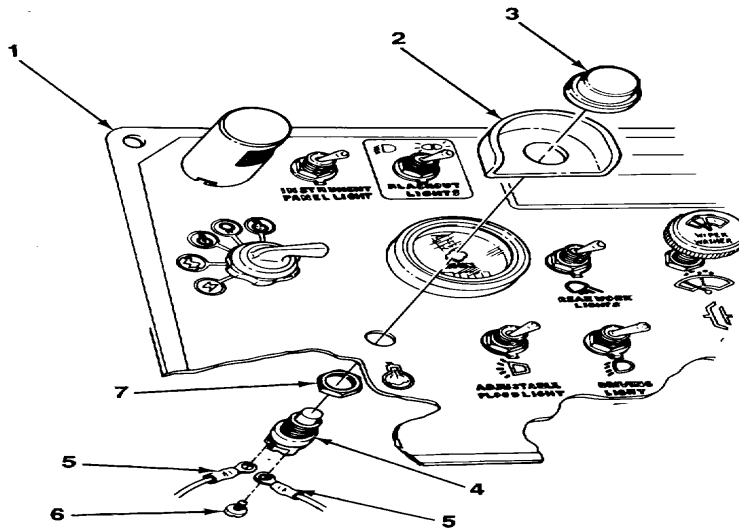
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL

1. Remove two screws (6) and right panel wiring harness wires (5) from engine starting aid switch (4).
2. Remove cover (3), guard (2), and engine starting aid switch (4) from right panel cover (1).



TA707849

6-53. STARTING AID SWITCH REPLACEMENT (Con't).

NOTE

Note position of nut to aid during Installation.

3. Remove nut (7) from engine starting aid switch (4).

b. INSTALLATION

1. Install nut (7) on engine starting aid switch (4).
2. Install engine starting aid switch (4) and guard (2) on right panel cover (1) with cover (3).
3. Install two right panel wiring harness wires (5) on engine starting aid switch (4) with two screws (6).

FOLLOW-ON TASKS:

- Close cab window (see TM 10-3930-659-10).
- Close right access door (see TM 10-3930-659-10).

6-54. CLUTCH CUTOFF MICROSWITCH REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- Two locknuts

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

*TM 10-3930-659-10

a. REMOVAL**NOTE**

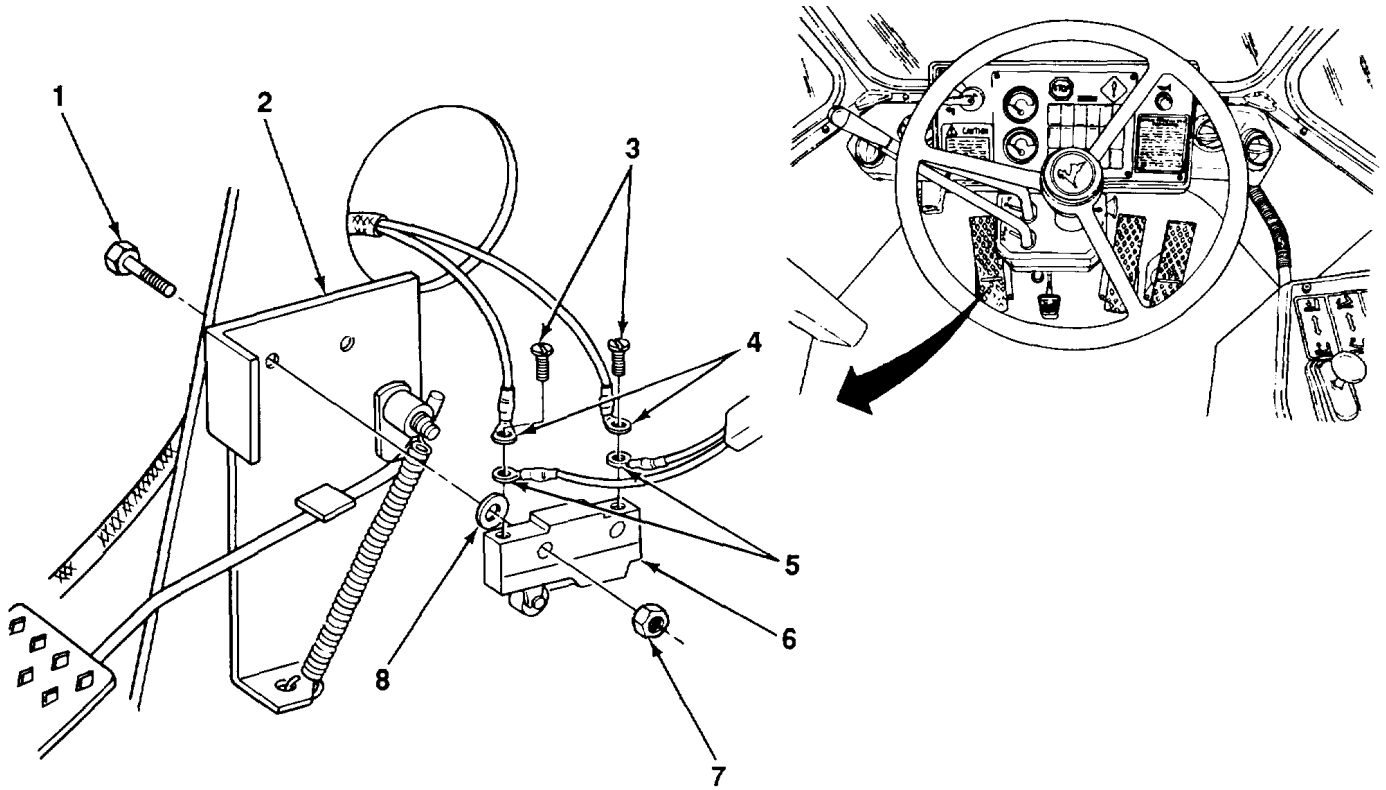
All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.

1. Remove two screws (3), two under cab wiring harness terminal leads (4), and suppressor wires (5) from clutch cutoff microswitch (6).
2. Remove two locknuts (7), screws (1), clutch cutoff microswitch (6), and two washers (8) from bracket (2). Discard locknuts.

b. INSTALLATION

1. Install two washers (8) and clutch cutoff microswitch (6) on bracket (2) with two screws (1) and new locknuts (7).
2. Install two suppressor wires (5) and two under cab wiring harness terminal leads (4) on clutch cutoff microswitch (6) with two screws (3).

6-54. CLUTCH CUTOFF MICROSWITCH REPLACEMENT (Con't).



FOLLOW-ON TASKS:

- Adjust transmission clutch cutoff control assembly (see paragraph 7-9).

TA707850

6-55. PARKING BRAKE LIGHT SWITCH REPLACEMENT.

This task covers:

- | | |
|-----------------|---------------|
| a. Removal | c. Adjustment |
| b. Installation | |

Initial Setup**Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Parking brake set (see TM 10-3930-659-10).

Materials/Parts:

- Two locknuts

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

1. Remove two locknuts (2), screws (6), parking brake light switch (1), and spacer (8) from bracket (7). Discard locknuts.
2. Gently pull down parking brake light switch (1), and remove two screws (5) and under cab wiring harness terminal leads (3) from parking brake light switch.

b. INSTALLATION

1. Install two under cab wiring harness terminal leads (3) on parking brake light switch (1) with two screws (5).
2. Install spacer (8) and parking brake light switch (1) on bracket (7) with two screws (6) and new locknuts (2).

c. ADJUSTMENT

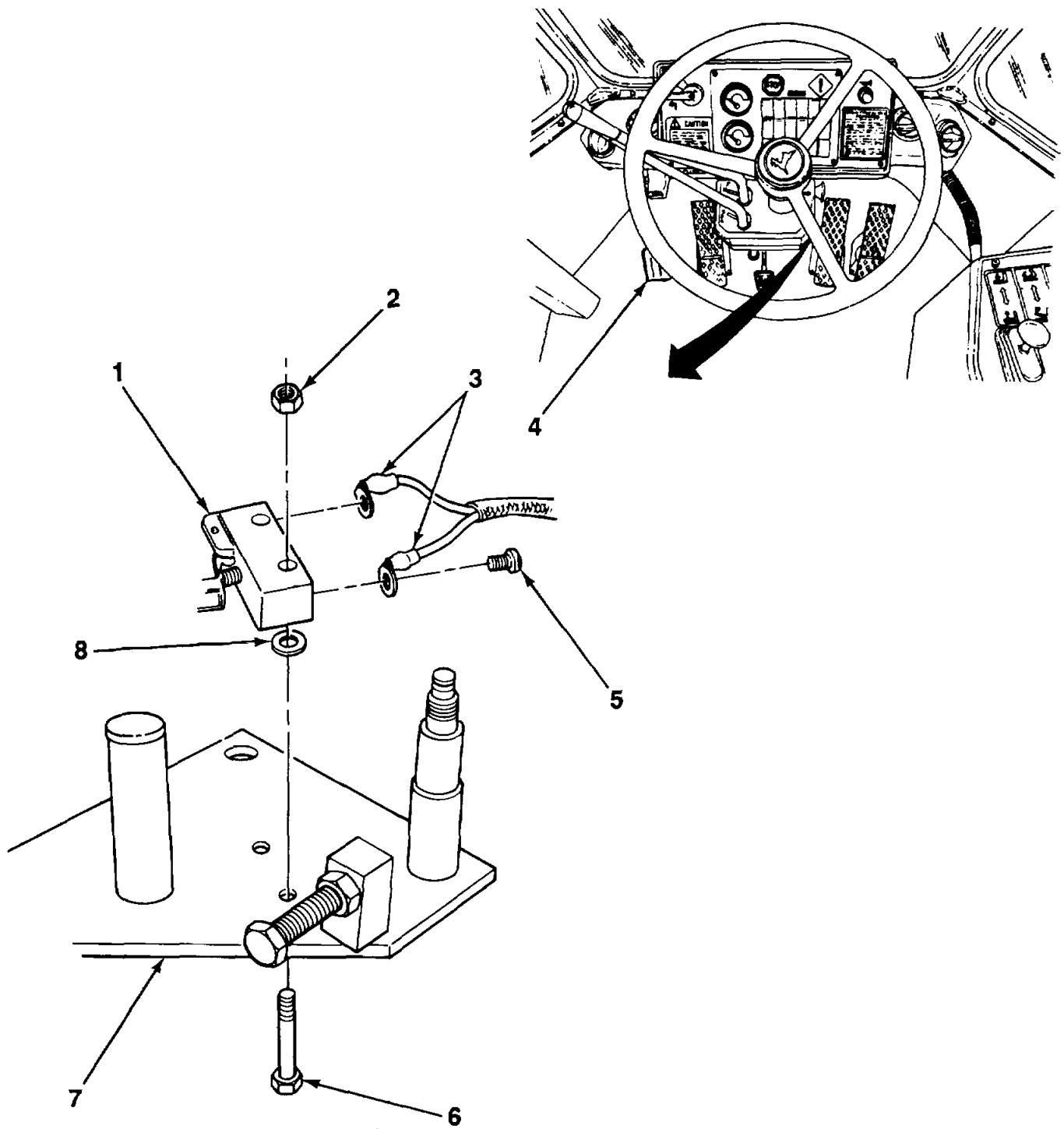
1. Loosen two screws (5).

NOTE

Parking brake light switch contacts must open when parking brake pedal is engaged in first notch. Parking brake light switch indicator will light and transmission will disengage when parking brake light switch contacts are opened. Parking brake light switch contacts must close when parking brake is released.

2. Position parking brake light switch (1) so contacts are opened when parking brake pedal (4) is engaged in first notch and contacts are closed when parking brake is released.
3. Tighten two screws (6).
4. Check that parking brake light switch indicator lights when parking brake pedal (4) is engaged in first notch.

6-55. PARKING BRAKE LIGHT SWITCH REPLACEMENT (Con't).



TA070851

6-56. FRONT WINDSHIELD AND REAR WINDOW WIPER/WASHER SWITCHES REPLACEMENT.

This task covers:

a. Removal

b. Installation

*Initial Setup***Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Right access door opened (see TM 10-3930-659-10).
- Cab window opened (see TM 10-3930-659-10).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

NOTE

- **Front windshield and rear window wiper/washer switches are removed and installed the same way. Front windshield wiper/washer switch is illustrated.**
- **All wires and connectors should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.**

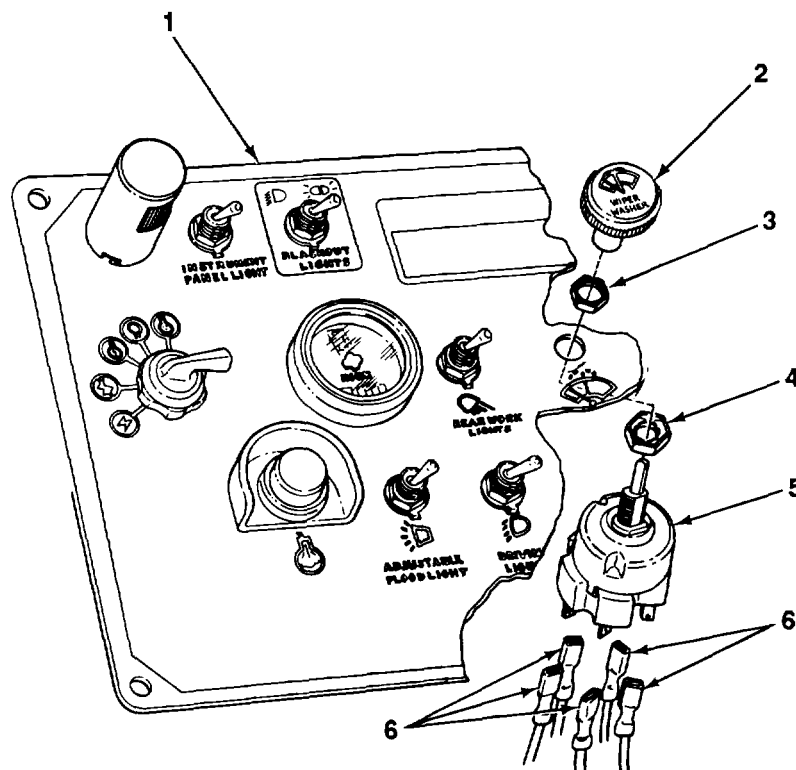
a. REMOVAL

1. Disconnect five right panel wiring harness wires (6) from front windshield wiper/washer switch (5).
2. Remove knob (2), nut (3), and front windshield wiper/washer switch (5) from right panel cover (1).
3. Remove nut (4) from front windshield wiper/washer switch (5).

b. INSTALLATION

1. Install nut (4) on front windshield wiper/washer switch (5).
2. Install front windshield wiper/washer switch (5) on right panel cover (1) with nut (3).
3. Install knob (2) on front windshield wiper/washer switch (5).
4. Connect five right panel wiring harness wires (6) to front windshield wiper/washer switch (5).

6-56. FRONT WINDSHIELD AND REAR WINDOW WIPER/WASHER SWITCHES REPLACEMENT (Con't).



FOLLOW - ON TASKS:

- Close cab window (see TM 10-3930-659-10).
- Close right access door (see TM 10-3930-659-10).

TA707852

6-57. STE/ICE ALTERNATOR, STARTER MOTOR, AND FUEL INJECTION PUMP WIRING HARNESS MAINTENANCE.

This task covers:

- a. Repair
 - b. Removal
 - c. Installation
-

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected (see paragraph 6-43).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right and left engine upper sideshields opened (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- One locknut
- Six lockwashers

References:

- TM 103930659-10
-

NOTE

- All cables and wires should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.
- Refer to wiring diagrams for assistance (see paragraph 6-73).

a. REPAIR

NOTE

- STE/ICE alternator, starter motor, and fuel Injection pump wiring harness does not need to be removed from forklift truck to perform repair.
- Repair of STE/ICE alternator, starter motor, and fuel Injection pump wiring harness consists of replacement of Identification bands, terminals, and connectors.

Refer to paragraph 2-28 for repair instructions.

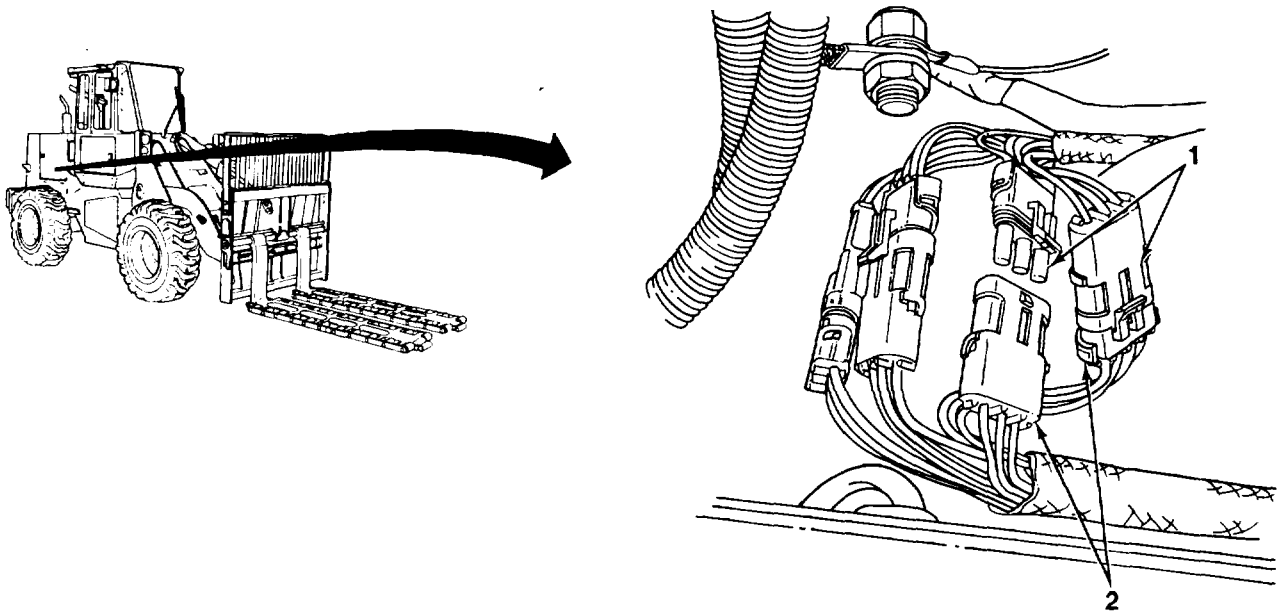
b. REMOVAL

NOTE

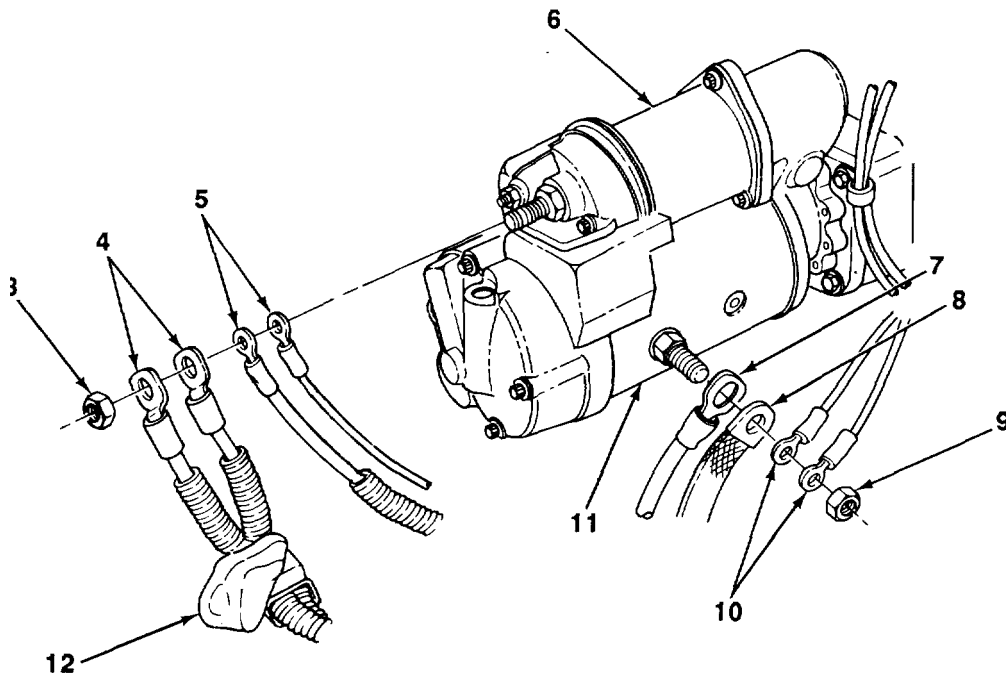
Remove clamps and tie-down straps as necessary.

1. Disconnect four STE/ICE alternator, starter motor, and fuel Injection pump wiring harness connectors (1) from engine frame wiring harness connectors (2).

6-57. STE/ICE ALTERNATOR, STARTER MOTOR, AND FUEL INJECTION PUMP WIRING HARNESS MAINTENANCE (Con't).

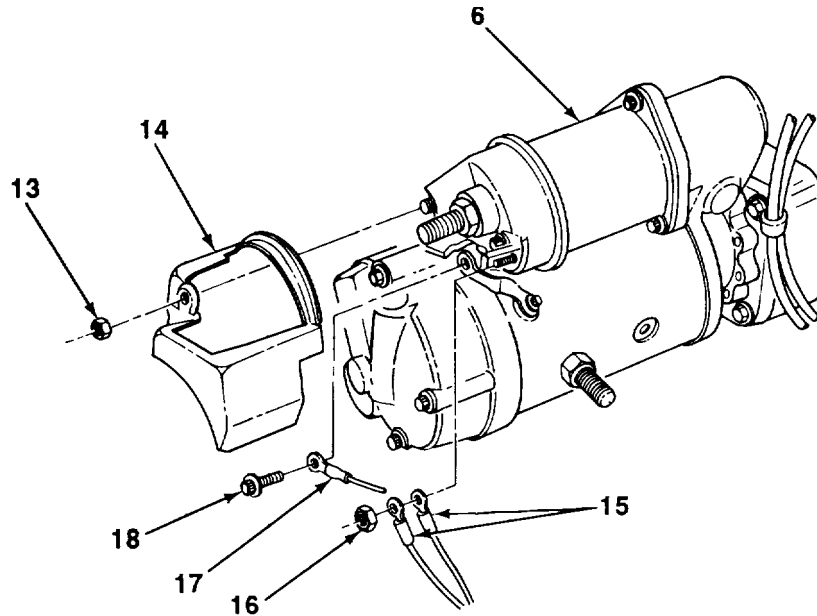


2. Remove nut (9), two secondary steering wiring harness terminal leads (10), ground strap (8), and cable (7) from
3. Pull back rubber boot (12) and remove nut (3), two cables (4), and secondary steering wiring harness terminal leads (5) from starter motor solenoid (6).

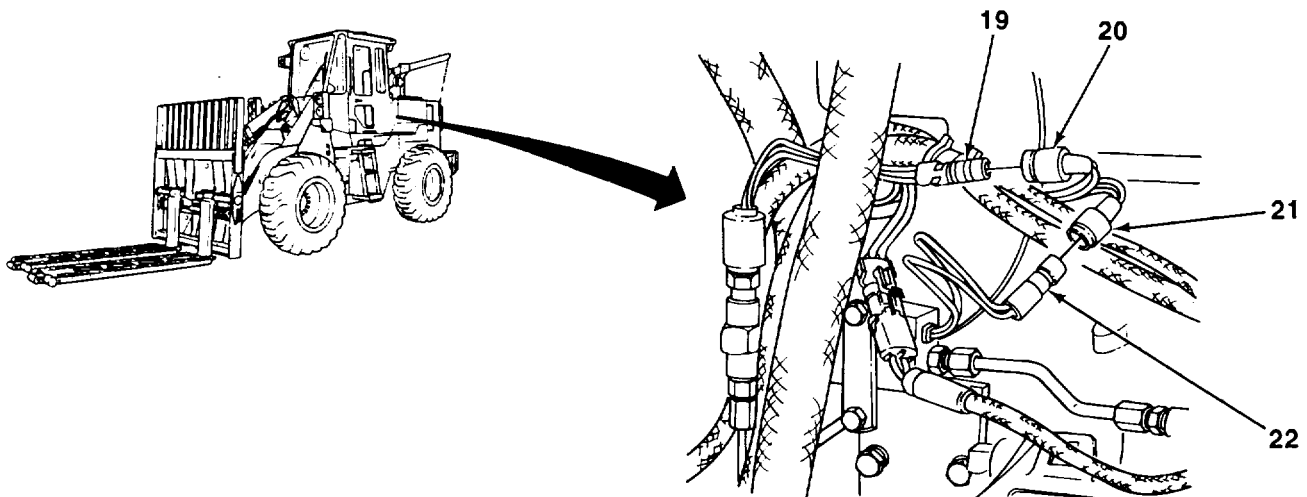


6-57. STE/ICE ALTERNATOR, STARTER MOTOR, AND FUEL INJECTION PUMP WIRING HARNESS MAINTENANCE. (Con't).

4. Remove nut (13) and cover (14) from starter motor solenoid (6).
5. Remove nut (16) and two terminal leads (15) from starter motor solenoid (6).
6. Remove screw (18) and terminal lead (17) from starter motor solenoid (6).



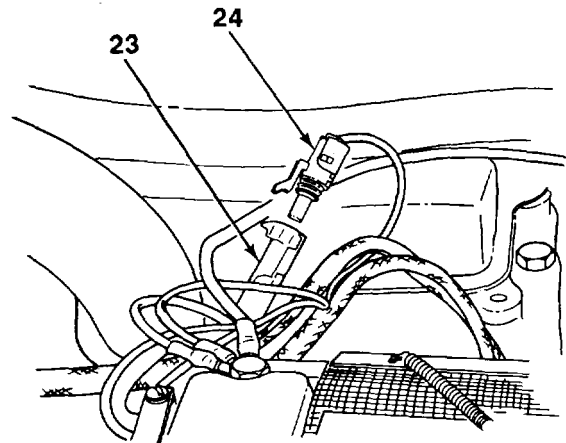
7. Disconnect fuel pressure transducer connector (20) from fuel pressure transducer (19).
8. Disconnect connector (21) from fuel pressure differential switch connector (22).



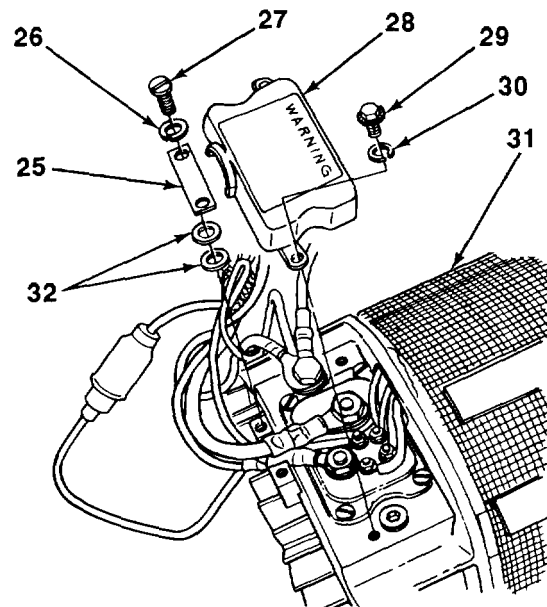
TA707855

6-57. STE/ICE ALTERNATOR, STARTER MOTOR, AND FUEL INJECTION PUMP WIRING HARNESS MAINTENANCE. (Con't).

9. Disconnect STE/ICE alternator, starter motor, and fuel injection pump wiring harness connector (23) from engine wiring harness connector (24).



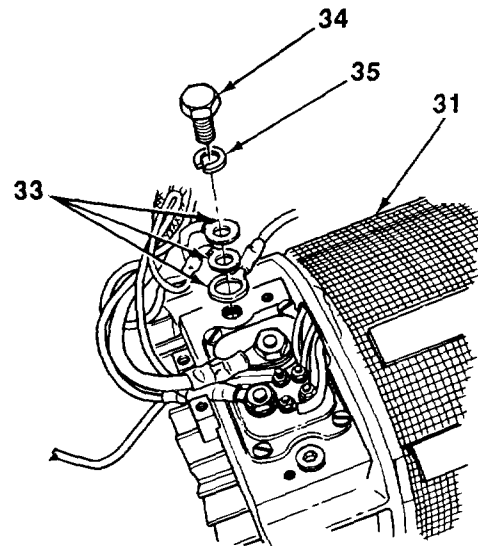
10. Remove two screws (27), lockwashers (26), strap (25), and four washers (32) from alternator (31). Discard lockwashers.
11. Remove two screws (29), lockwashers (30), and cover (28) from alternator (31). Discard lockwashers.



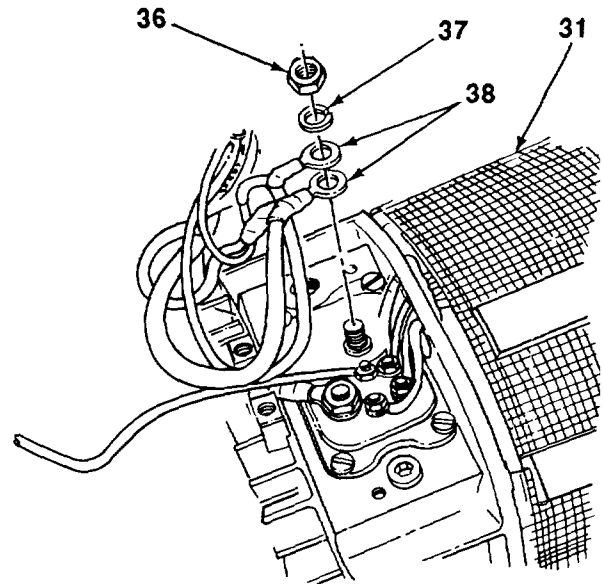
TA707855

6-57. STE/ICE ALTERNATOR, STARTER MOTOR, AND FUEL INJECTION PUMP WIRING HARNESS MAINTENANCE. (Con't).

12. Remove bolt (34), lockwasher (35), and three terminal leads (33) from alternator (31). Discard lockwasher.



13. Remove nut (36), lockwasher (37), and two terminal leads (38) from alternator (31). Discard lock washer.

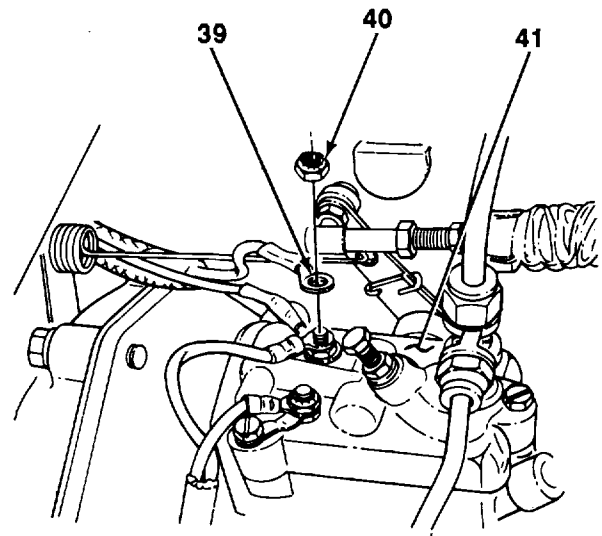


TA707857

6-57. STE/ICE ALTERNATOR, STARTER MOTOR, AND FUEL INJECTION PUMP WIRING HARNESS MAINTENANCE. (Con't).

14. Remove locknut (40) and fuel injection pump terminal lead (39) from fuel injection pump (41). Discard locknut.

15. Remove STE/ICE alternator, starter motor, and fuel injection pump wiring harness from forklift truck.

**c. INSTALLATION****NOTE**

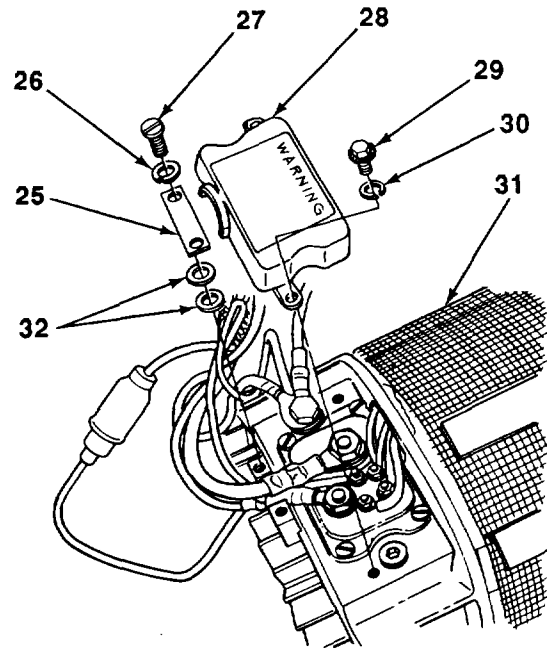
Install clamps and new tie-down straps as necessary.

1. Position STE/ICE alternator, starter motor, and fuel Injection pump wiring harness on forklift truck.
2. Install fuel Injection pump terminal lead (39) on fuel injection pump (41) with new locknut (40).
3. Install two terminal leads (38) on alternator (31) with new lockwasher (37) and nut (36).
4. Install three terminal leads (33) on alternator (31) with new lockwasher (35) and bolt (34).

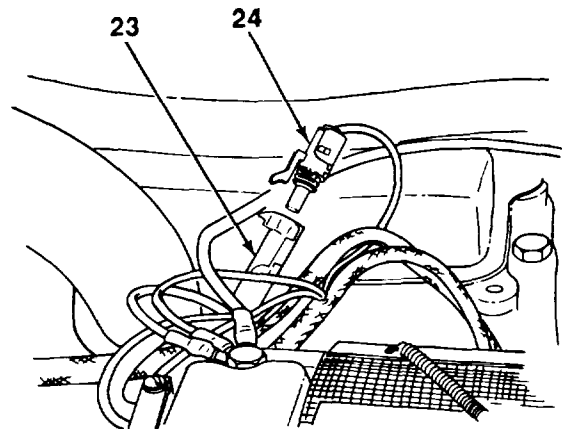
TA707858

6-57. STE/ICE ALTERNATOR, STARTER MOTOR, AND FUEL INJECTION PUMP WIRING HARNESS MAINTENANCE. (Con't).

5. Install cover (28) on alternator (31) with two new lockwashers (30) and screws (29).
6. Install four washers (32) and strap (25) on alternator (31) with two new lockwashers (26) and screws (27).



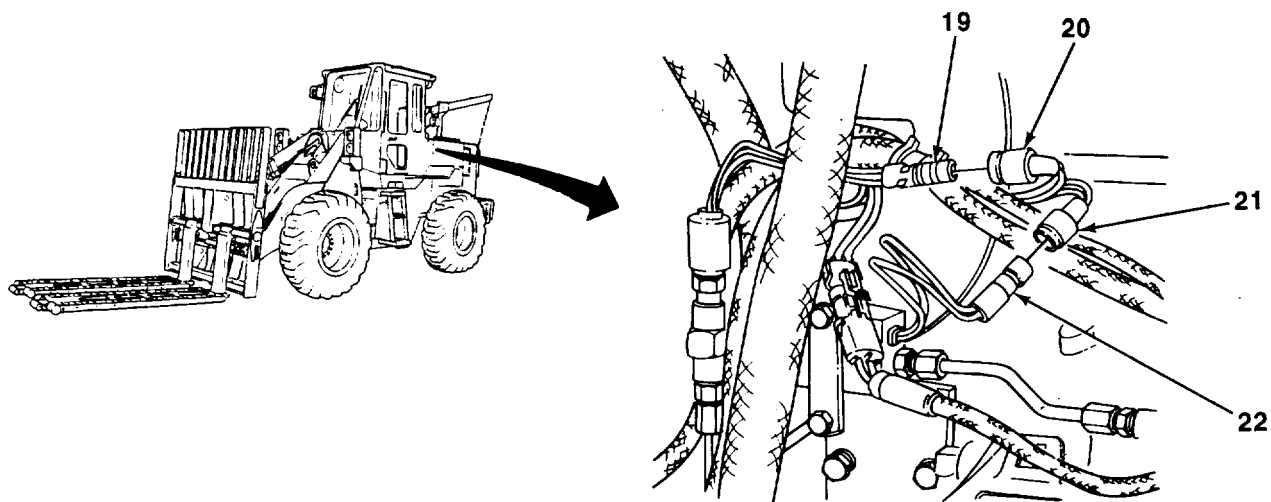
7. Connect STE/ICE alternator, starter motor, and fuel injection pump wiring harness connector (23) to engine wiring harness connector (24).



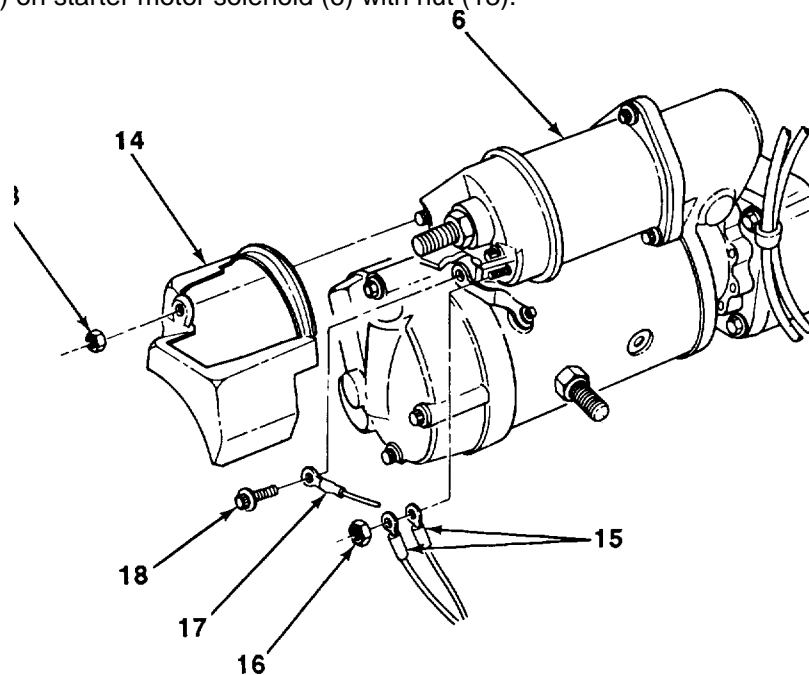
8. Connect connector (21) to fuel pressure differential switch connector (22).
9. Connect fuel pressure transducer connector (20) to fuel pressure transducer (19).

TA707859

6-57. STE/ICE ALTERNATOR, STARTER MOTOR, AND FUEL INJECTION PUMP WIRING HARNESS MAINTENANCE. (Con't).



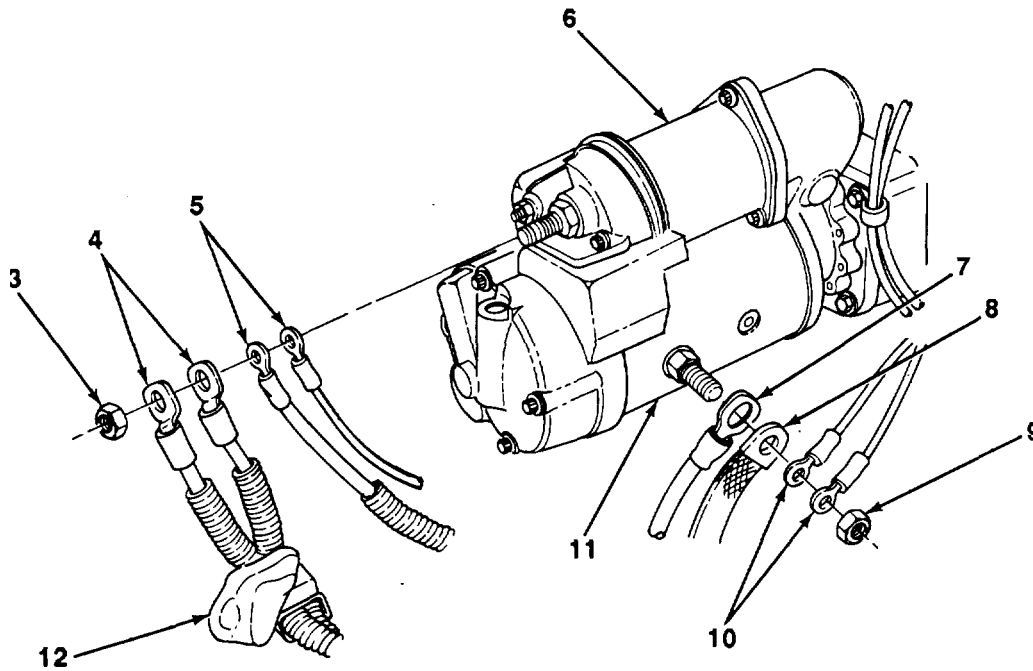
10. Install terminal lead (17) on starter motor solenoid (6) with screw (18).
11. Install two terminal leads (15) on starter motor solenoid (6) with nut (16).
12. Install cover (14) on starter motor solenoid (6) with nut (13).



TA707860

6-57. STE/ICE ALTERNATOR, STARTER MOTOR, AND FUEL INJECTION PUMP WIRING HARNESS MAINTENANCE. (Con't).

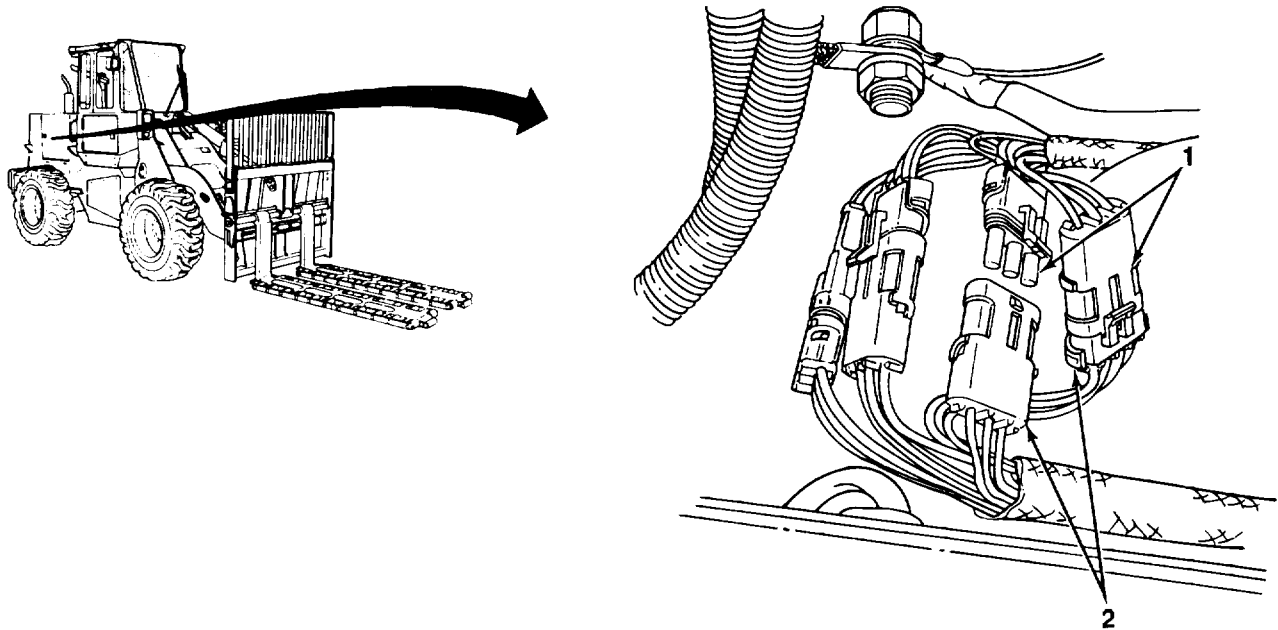
13. Install two secondary steering wiring harness terminal leads (5) and cables (4) on starter motor solenoid (6) with nut (3).
14. Install rubber boot (12) over nut (3).
15. Install cable (7), ground strap (8), and two secondary steering wiring harness terminal leads (10) on starter motor (11) with nut (9).



TA707861

6-57. STE/ICE ALTERNATOR, STARTER MOTOR, AND FUEL INJECTION PUMP WIRING HARNESS MAINTENANCE. (Con't).

16. Connect four STE/ICE alternator, starter motor, and fuel injection pump wiring harness connectors (1) to engine frame wiring harness connectors (2).

**FOLLOW-ON TASKS:**

- Close right and left engine upper sashes (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).
- Connect negative battery cables (see paragraph 6-43).

TA707862

6-58. UNDER CAB WIRING HARNESS MAINTENANCE.**This task covers:**

- a. Repair
- b. Removal
- c. Installation

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected (see paragraph 6-43).
- Cab skirts removed (see paragraph 14-6).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

NOTE

- All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.
- Refer to wiring diagrams for assistance (see paragraph 6-73).

a. REPAIR**NOTE**

- Under cab wiring harness does not need to be removed from forklift truck to perform repair.
- Repair of under cab wiring harness consists of replacement of Identification bands, terminals, and connectors.

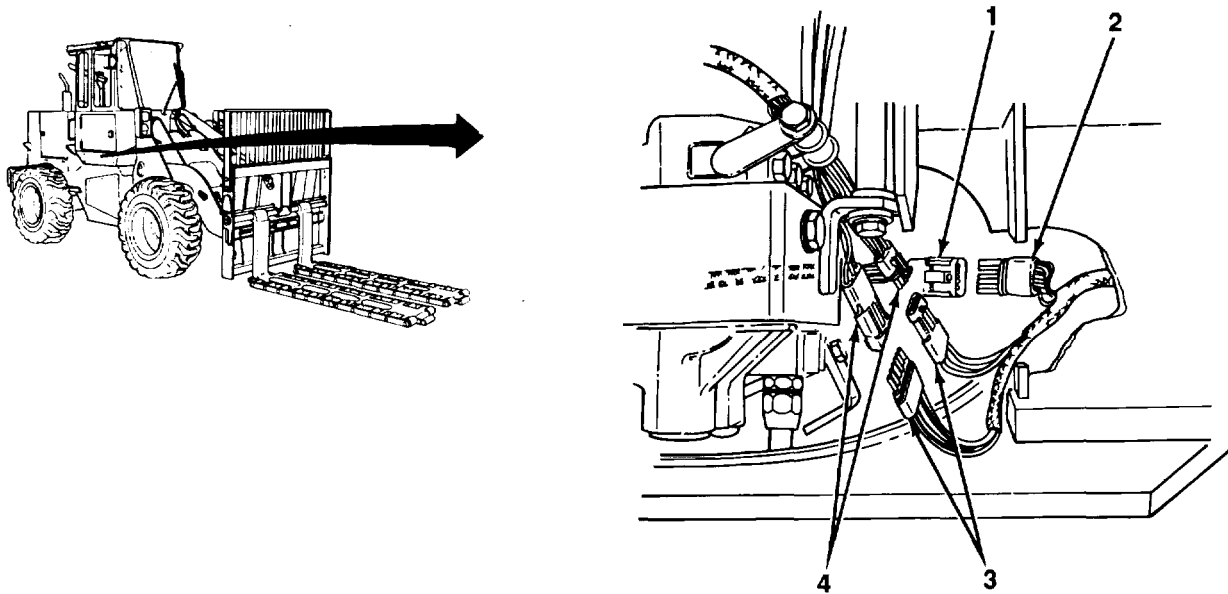
Refer to paragraph 2-28 for repair instructions.

b. REMOVAL**NOTE**

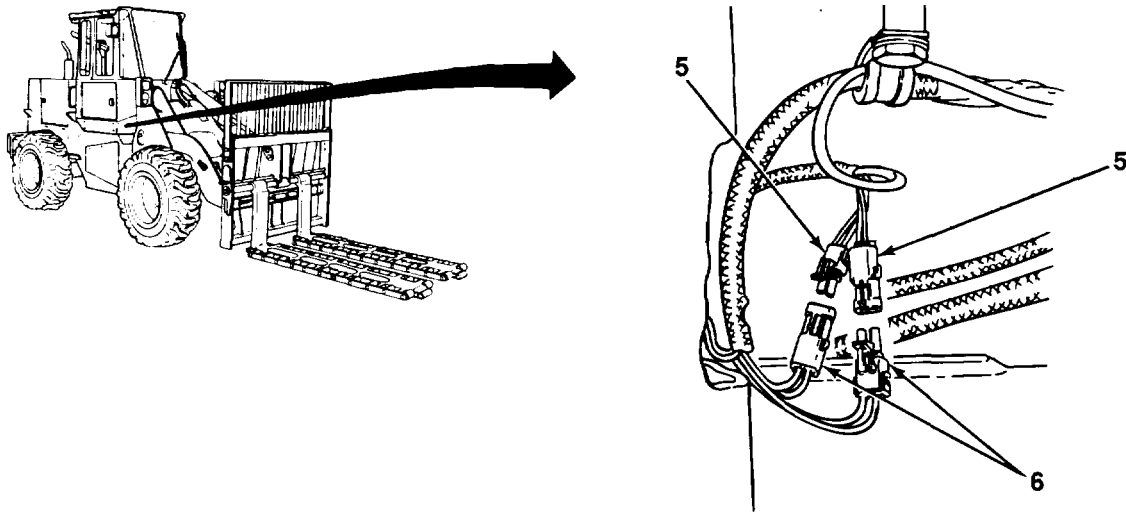
Remove clamps and tie-down straps as necessary.

1. Disconnect two under cab wiring harness connectors (3) from load center wiring harness connectors (4).
2. Disconnect under cab wiring harness connector (2) from engine frame wiring harness connector (1).

6-58. UNDER CAB WIRING HARNESS MAINTENANCE (Con't).



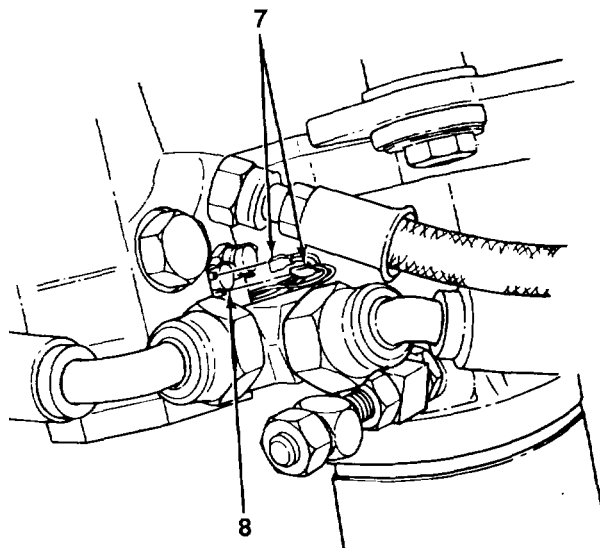
3. Disconnect two under cab wiring harness connectors (6) from STE/ICE chassis wiring harness connectors (5).



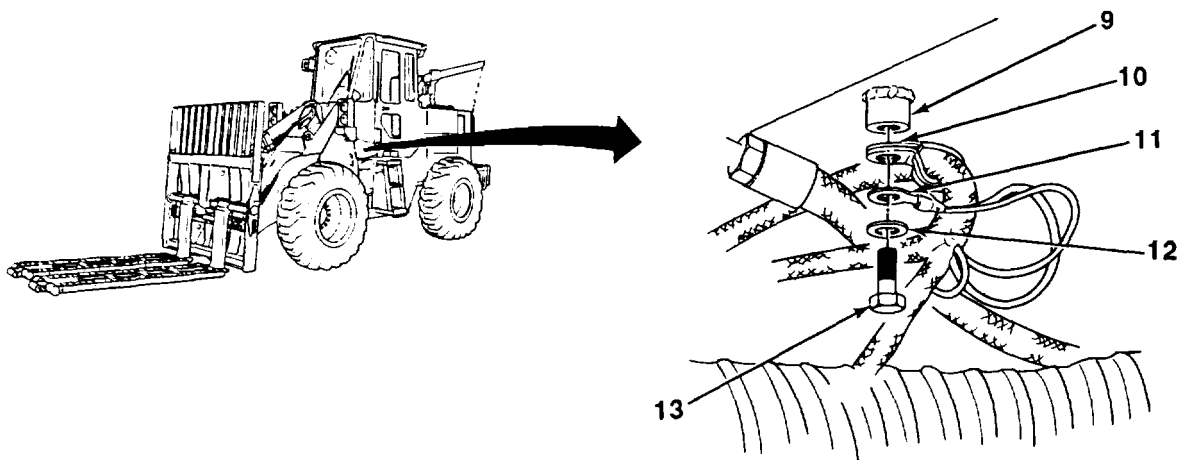
TA707863

6-58. UNDER CAB WIRING HARNESS MAINTENANCE (Con't).

4. Disconnect two under cab wiring harness connectors (7) from right low brake pressure switch (8).



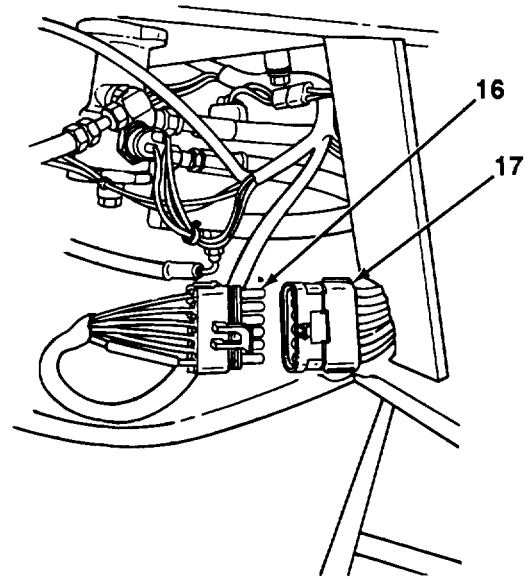
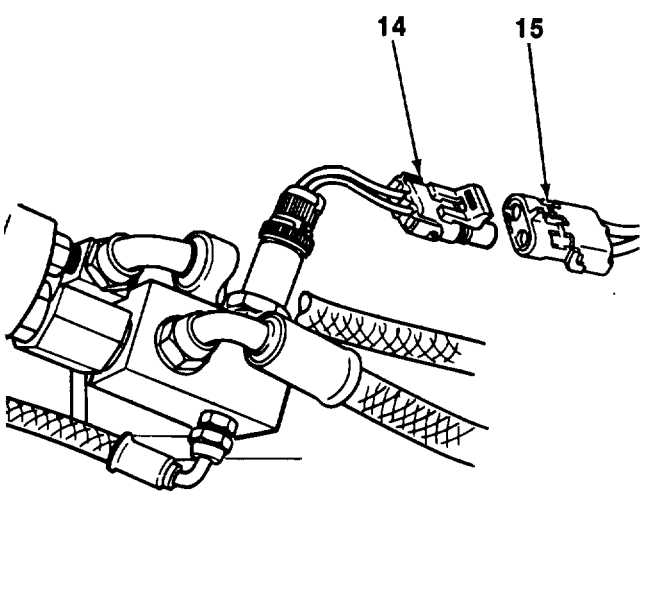
5. Remove screw (13), washer (12), cab ground terminal lead (11), and under cab wiring harness (10) from cab (9).



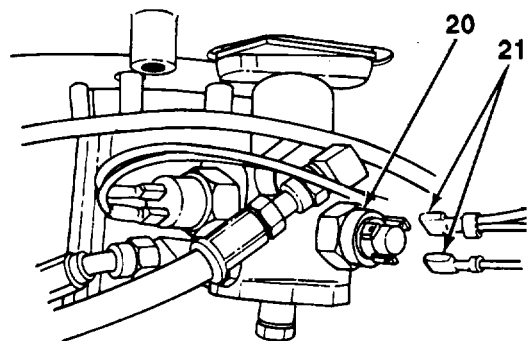
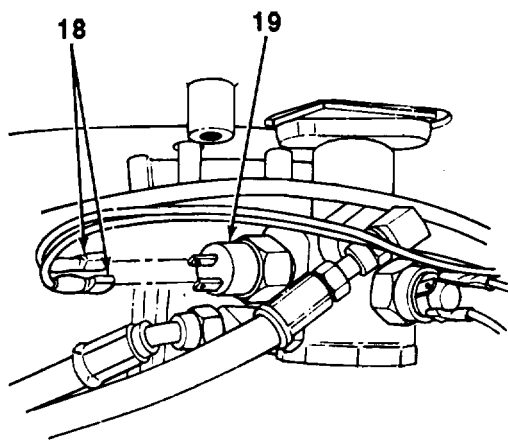
TA707864

6-58. UNDER CAB WIRING HARNESS MAINTENANCE Con't).

6. Disconnect under cab wiring harness connector (15) from engine frame wiring harness connector (14).
7. Disconnect under cab wiring harness connector (16) from loader frame wiring harness connector (17).



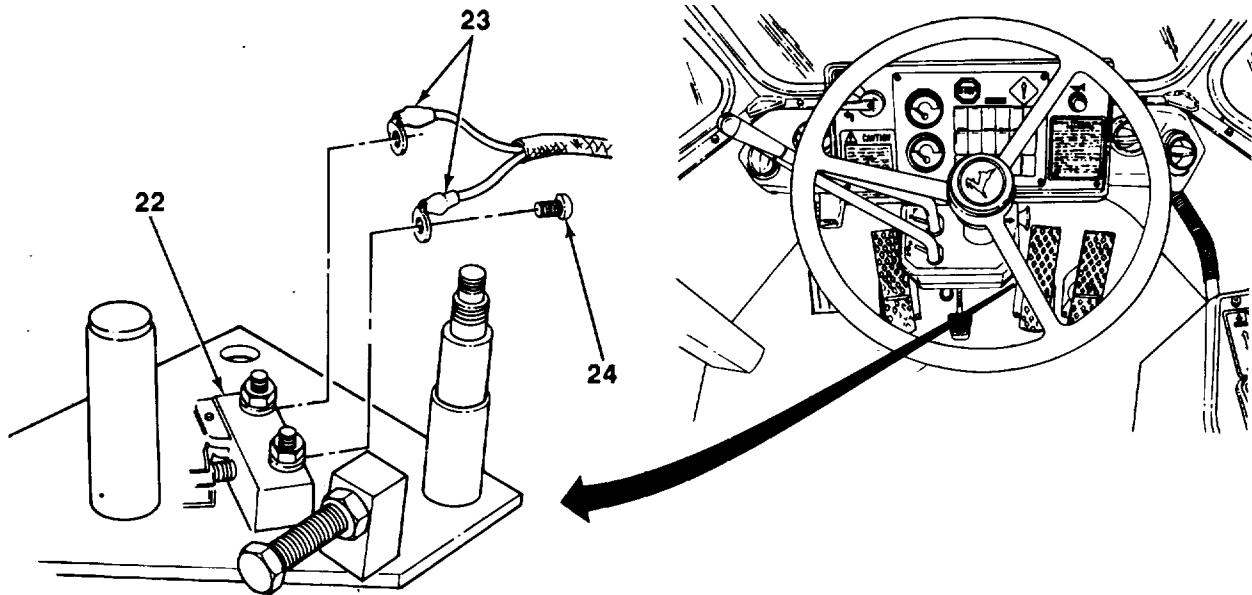
8. Disconnect two under cab wiring harness connectors (18) from brake light switch (19).
9. Disconnect two under cab wiring harness connectors (21) from left low brake pressure switch (20).



TA707865

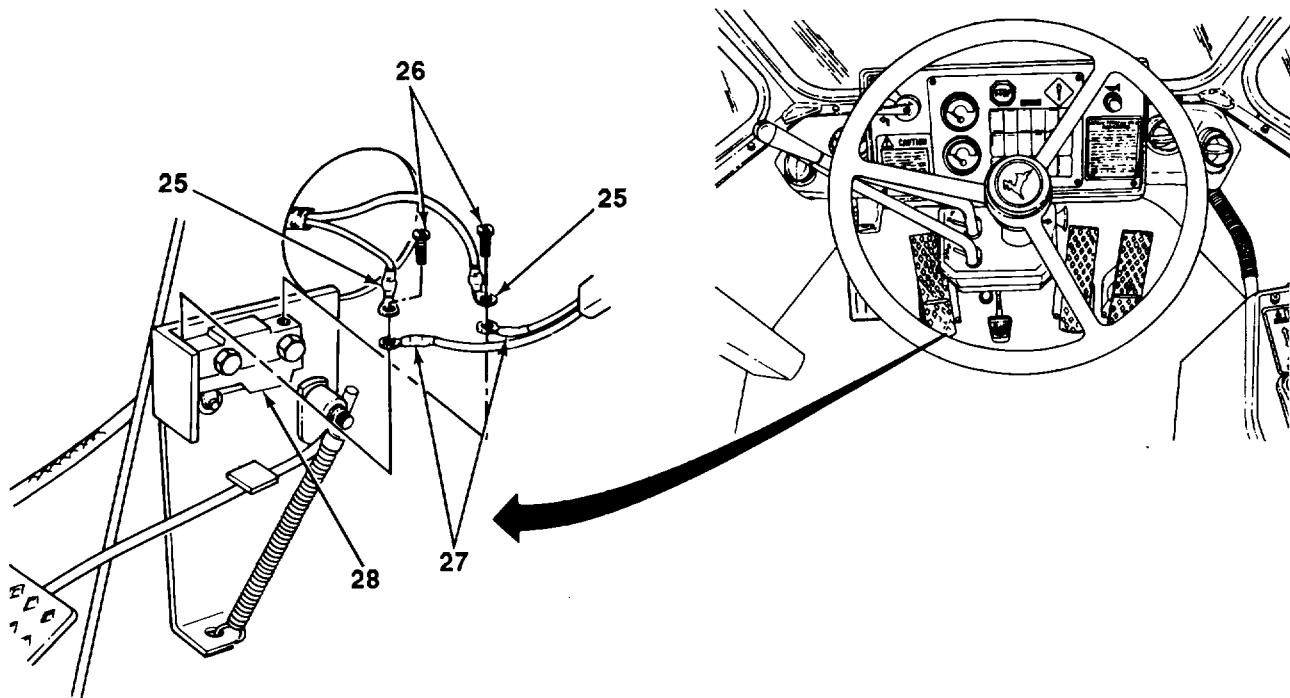
6-58. UNDER CAB WIRING HARNESS MAINTENANCE (Con't).

10. Remove two screws (24) and under cab wiring harness terminal leads (23) from parking brake light switch (22).



11. Remove two screws (26), under cab wiring harness terminal leads (25), and suppressor wires (27) from clutch cutoff microswitch (28).

12. Remove under cab wiring harness from forklift truck.

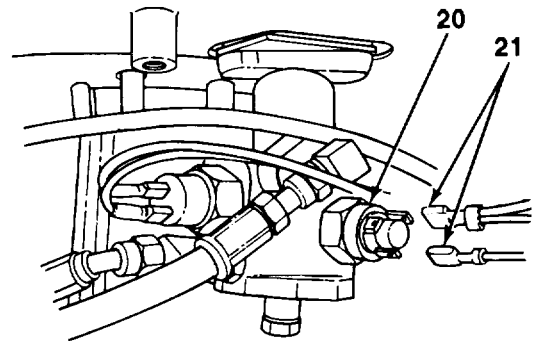


TA707866

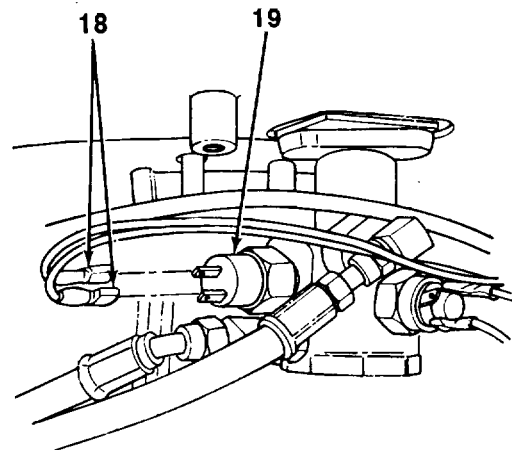
6-58. UNDER CAB WIRING HARNESS MAINTENANCE Con't).**c. INSTALLATION****NOTE**

Install clamps and new tie-down straps as necessary.

1. Position under cab wiring harness on forklift truck.
2. Install two suppressor wires (27) and under cab wiring harness terminal leads (25) on clutch cutoff microswitch
3. Install two under cab wiring harness terminal leads (23) on parking brake light switch (22) with two screws (24).
4. Connect two under cab wiring harness connectors (21) to left low brake pressure switch (20).



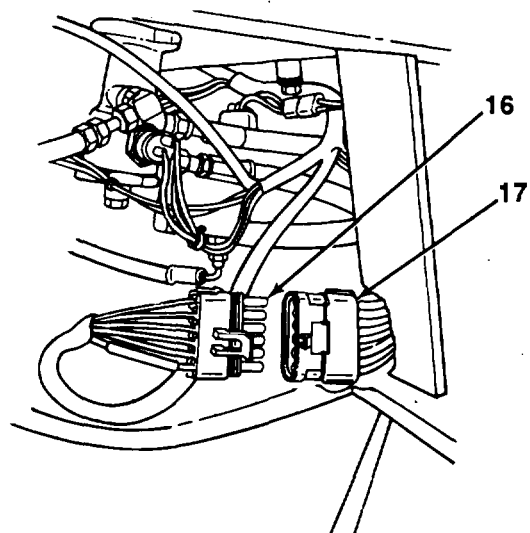
5. Connect two under cab wiring harness connectors (18) to brake light switch (19).



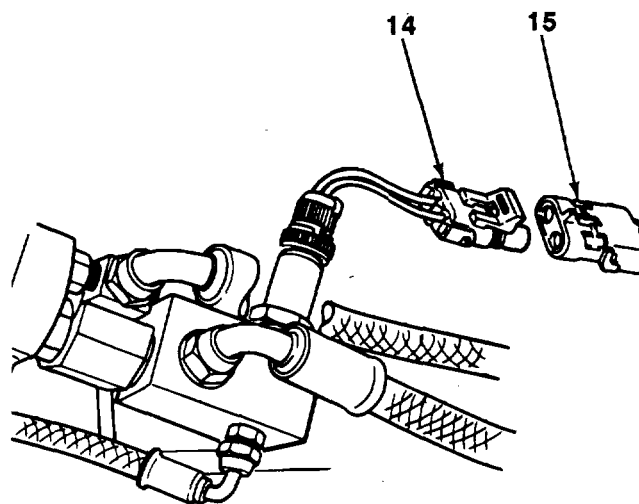
TA707867

6-58. UNDER CAB WIRING HARNESS MAINTENANCE Con't).

6. Connect under cab wiring harness connector (16) to loader frame wiring harness connector (17).



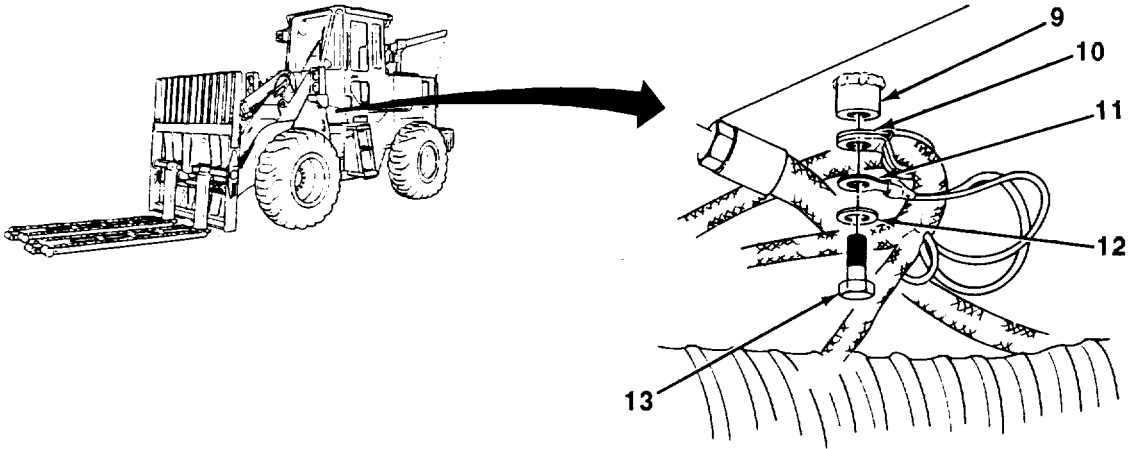
7. Connect under cab wiring harness connector (15) to engine frame wiring harness connector (14).



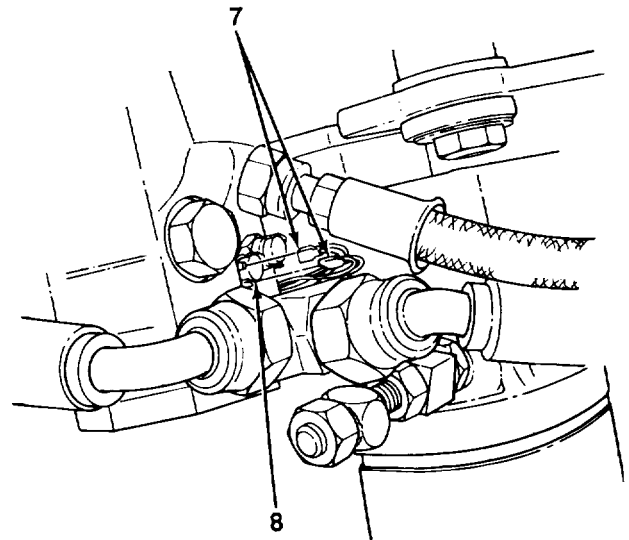
TA707868

6-58. UNDER CAB WIRING HARNESS MAINTENANCE Con't).

8. Install under cab wiring harness (10) and cab ground terminal lead (11) on cab (9) with washer (12) and screw (13).



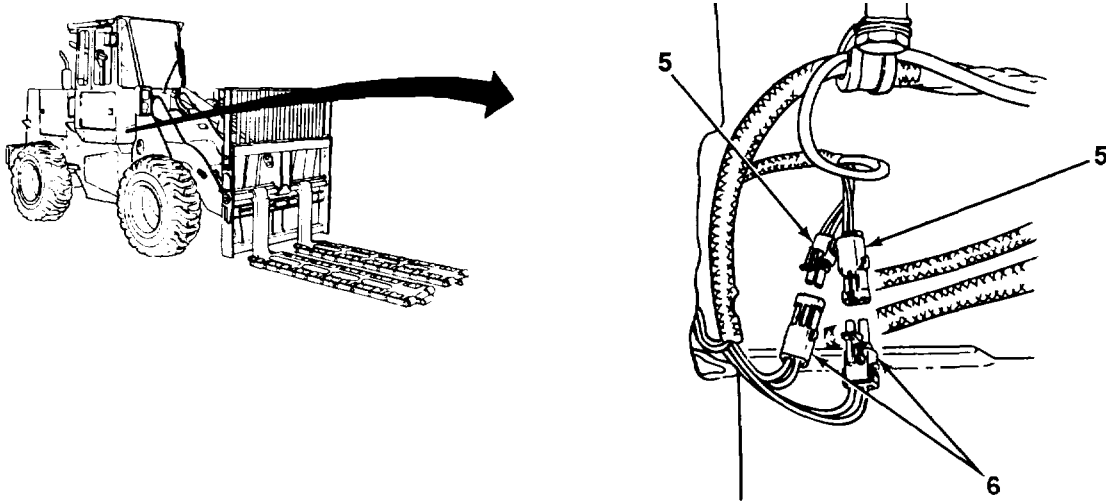
9. Connect two under cab wiring harness connectors (7) to right low brake pressure switch (8).



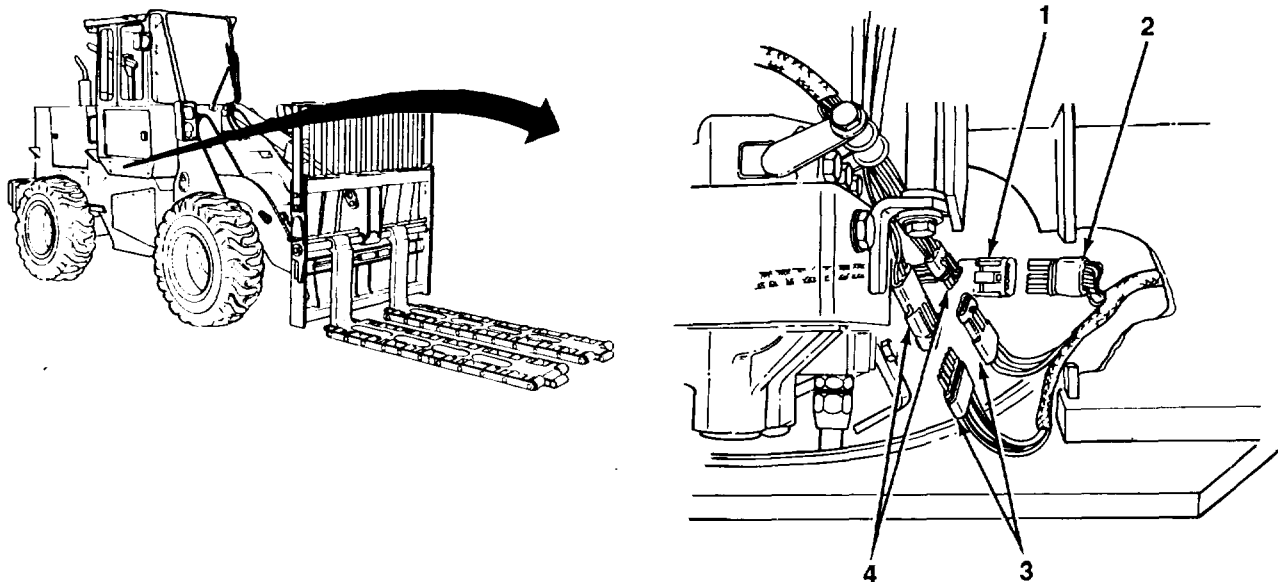
TA707869

6-58. UNDER CAB WIRING HARNESS MAINTENANCE Con't).

10. Connect two under cab wiring harness connectors (6) to STE/ICE chassis wiring harness connectors (5).



11. Connect under cab wiring harness connector (2) to engine frame wiring harness connector (1).
12. Connect two under cab wiring harness connectors (3) to load center wiring harness connectors (4).

**FOLLOW-ON TASKS:**

- Install cab skirts (see paragraph 14-6)
- Connect negative battery cables (see paragraph 6-43).

TA707870

6-59. ENGINE WIRING HARNESS MAINTENANCE.

This task covers:

- a. Repair
 - b. Removal
 - c. Installation
-

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected (see paragraph 6-43).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right and left engine upper sideshields opened (see TM 10-3930-659-10).

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- Seven lockwashers

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

NOTE

- All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.
- Refer to wiring diagrams for assistance (see paragraph 6-73).

a. REPAIR**NOTE**

- Engine wiring harness does not need to be removed from forklift truck to perform repair.
- Repair of engine wiring harness consists of replacement of Identification bands, terminals, and connectors.

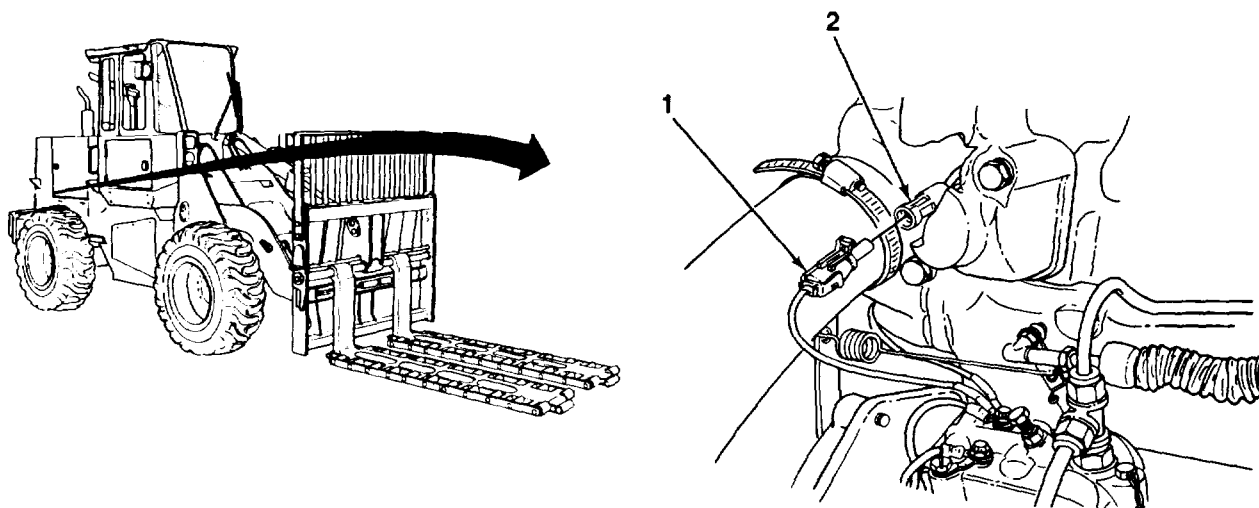
Refer to paragraph 2-28 for repair instructions.

6-59. ENGINE WIRING HARNESS MAINTENANCE (Con't).

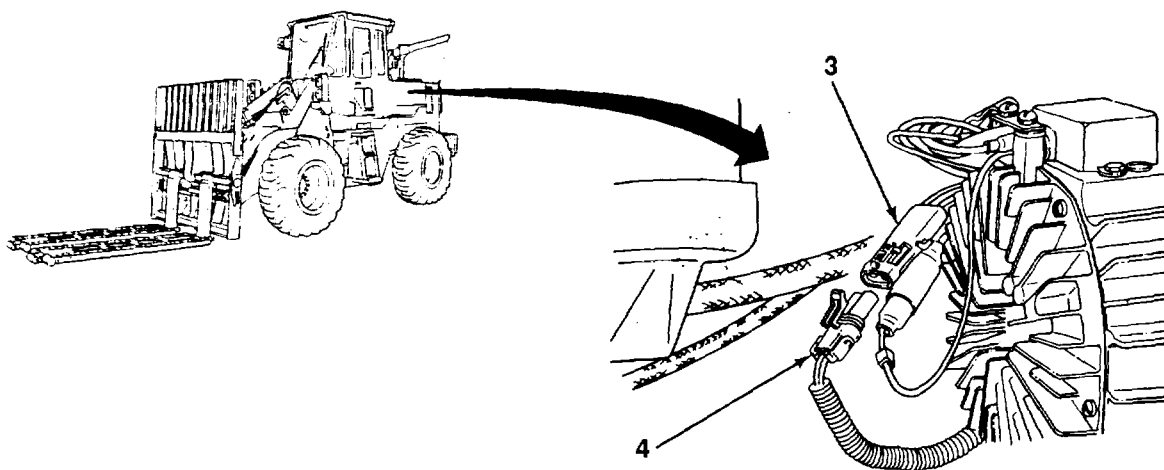
b. REMOVAL**NOTE**

Remove clamps and tie-down straps as necessary.

1. Disconnect engine wiring harness connector (2) from fuel injection pump lead (1).



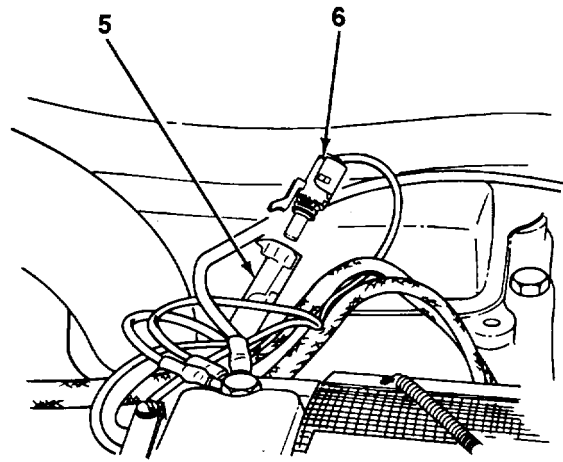
2. Disconnect magnetic pickup connector (3) from engine wiring harness connector (4).



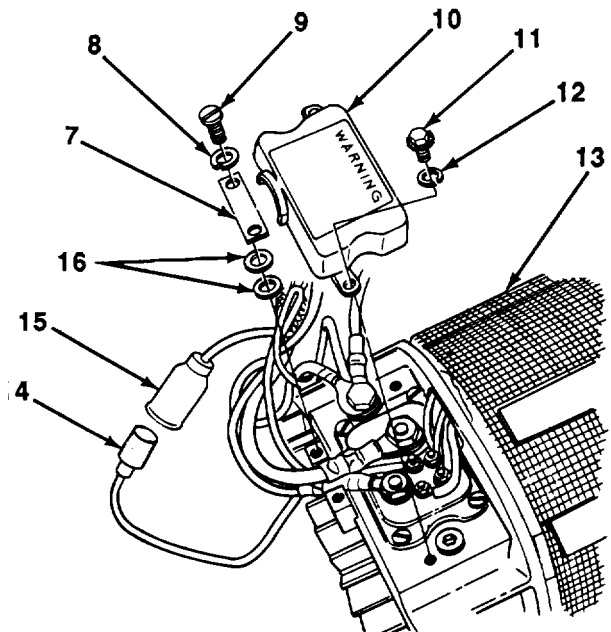
TA707871

6-59. ENGINE WIRING HARNESS MAINTENANCE (Con't).

3. Disconnect STE/ICE alternator, starter motor, and fuel injection pump wiring harness connector (5) from engine wiring harness connector (6).

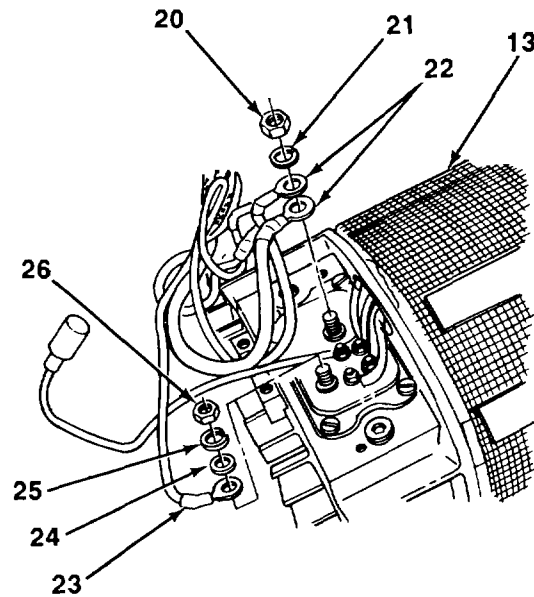
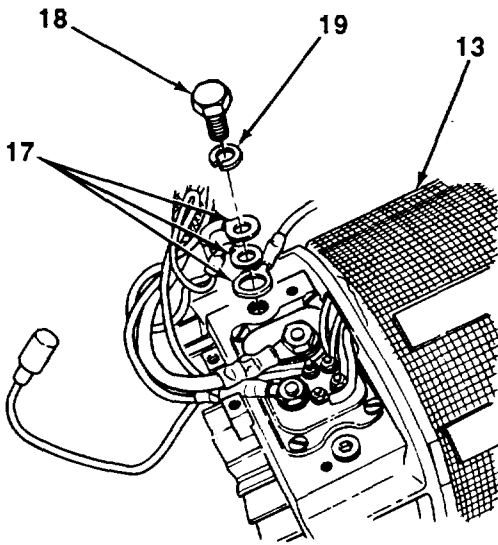


4. Disconnect alternator wiring harness connector (14) from engine wiring harness connector (15).
5. Remove two screws (9), lockwashers (8), strap (7), and four washers (16) from alternator (13). Discard lockwashers.
6. Remove two screws (11), lockwashers (12), and cover (10) from alternator (13). Discard lockwashers.

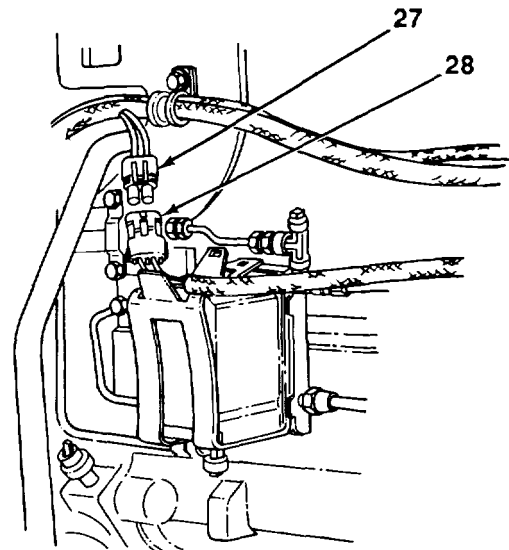


6-59. ENGINE WIRING HARNESS MAINTENANCE (Con't).

7. Remove bolt (18), lockwasher (19), and three terminal leads (17) from alternator (13). Discard lockwasher.
8. Remove nut (20), lockwasher (21), and two terminal leads (22) from alternator (13). Discard lockwasher
9. Remove nut (26), lockwasher(25),washer (24), and terminal lead (23) from alternator (13). Discard lockwasher.

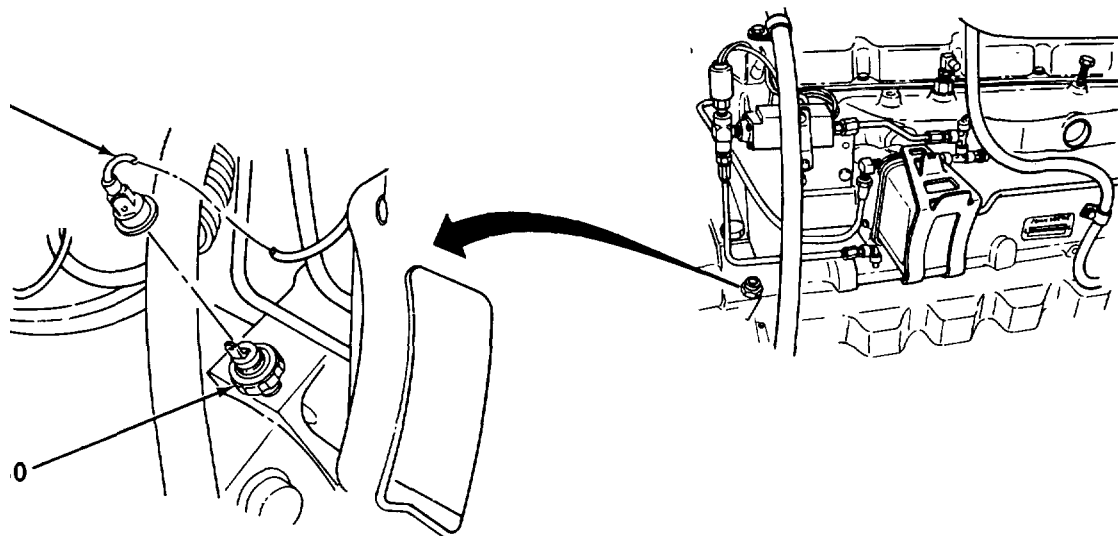


10. Disconnect engine wiring harness connector (27) from engine starting aid connector (28).

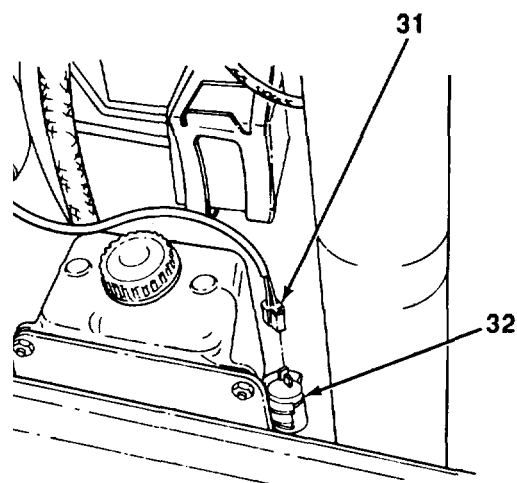


6-59. ENGINE WIRING HARNESS MAINTENANCE (Con't).

11. Disconnect engine wiring harness connector (29) from engine oil pressure switch (30).



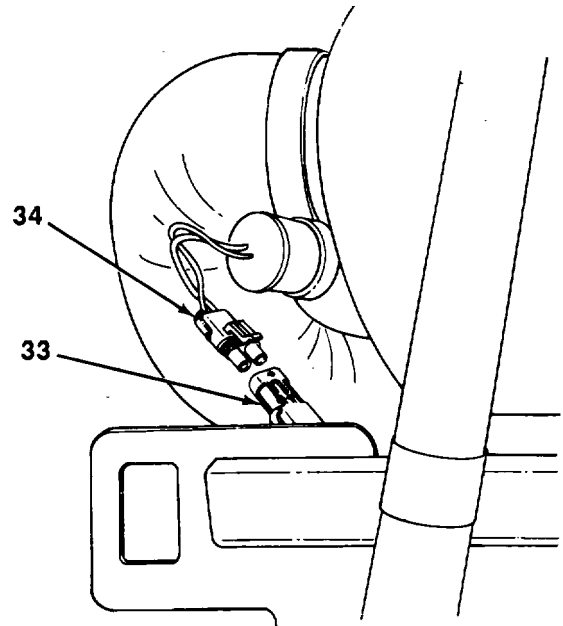
12. Disconnect two engine wiring harness connectors (31) from pumps (32).



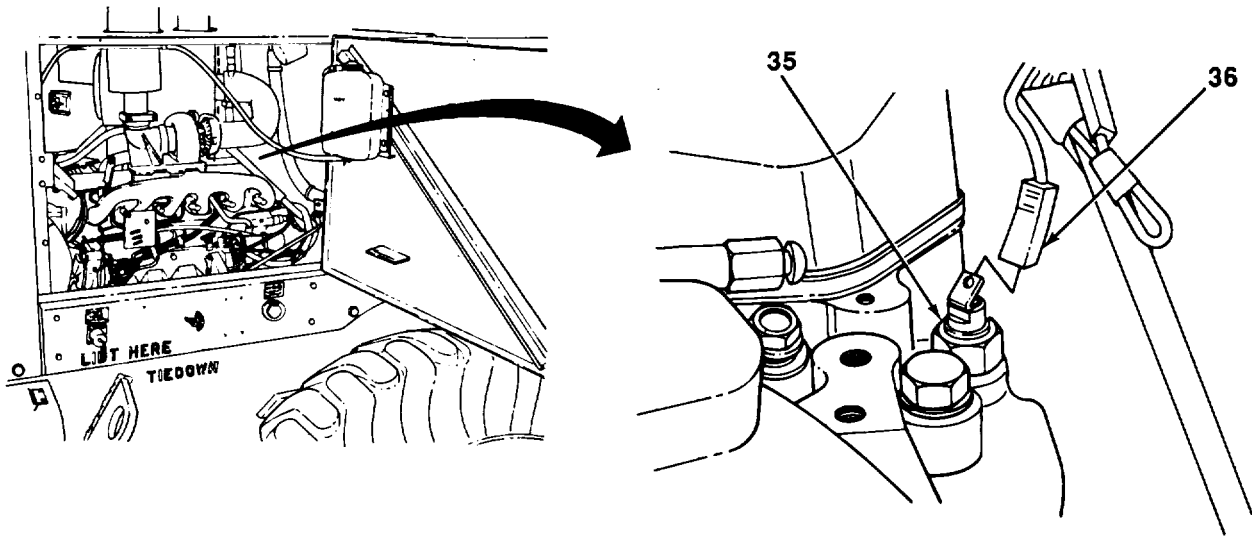
TA707874

6-59. ENGINE WIRING HARNESS MAINTENANCE (Con't).

13. Disconnect engine wiring harness connector (33) from air cleaner restriction sensor connector (34).



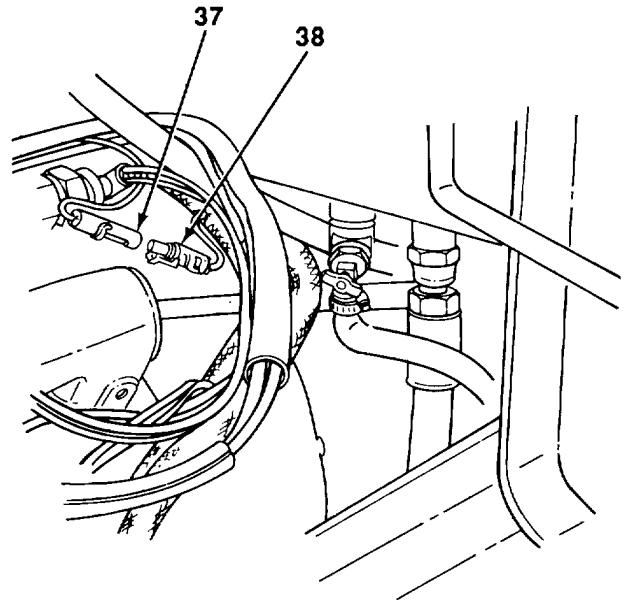
14. Disconnect engine wiring harness connector (36) from engine high temperature switch (35).



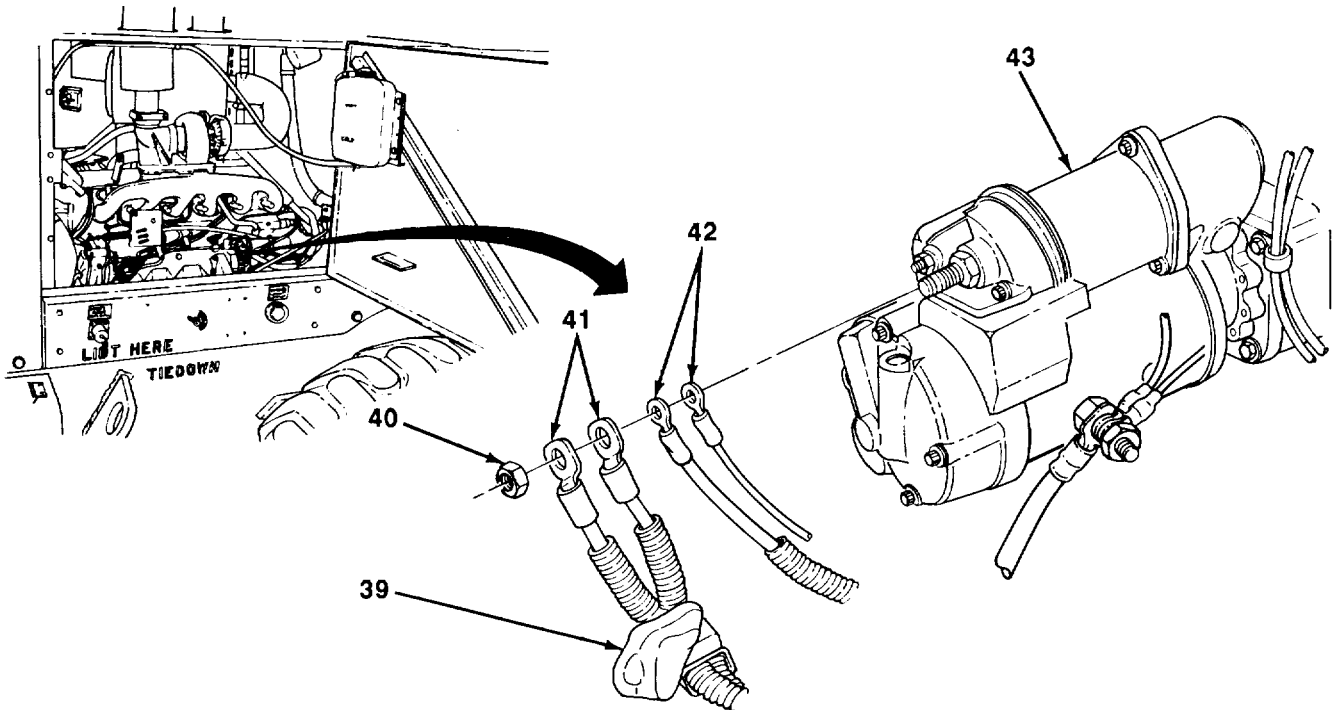
TA707875

6-59. ENGINE WIRING HARNESS MAINTENANCE (Con't).

15. Disconnect engine wiring harness connector (38) from secondary steering wiring harness connector (37).



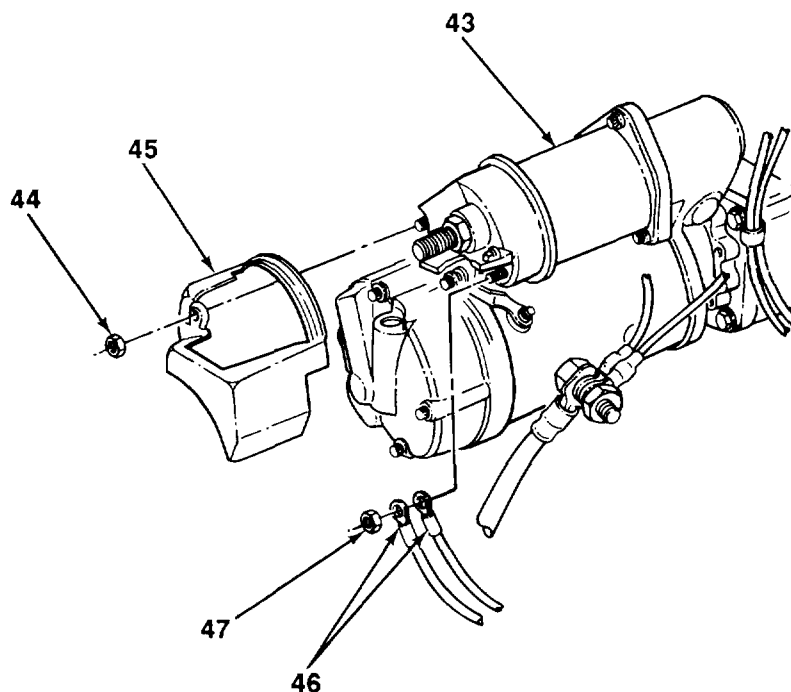
16. Pull back rubber boot (39) and remove nut (40), two cables (41), and terminal leads (42) from starter motor solenoid (43).



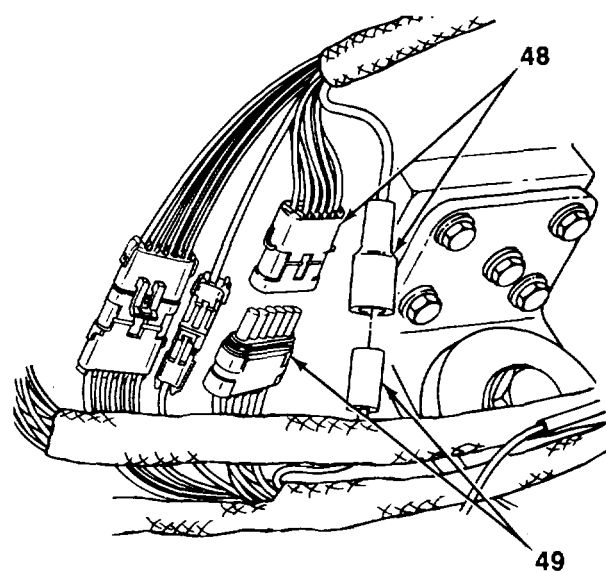
TA707876

6-59. ENGINE WIRING HARNESS MAINTENANCE (Con't).

17. Remove nut (44) and cover (45) from starter motor solenoid (43).
18. Remove nut (47) and two terminal leads (46) from starter motor solenoid (43).



19. Disconnect four engine wiring harness connectors (48) from engine frame wiring harness connectors (49).
20. Remove engine wiring harness from forklift truck.

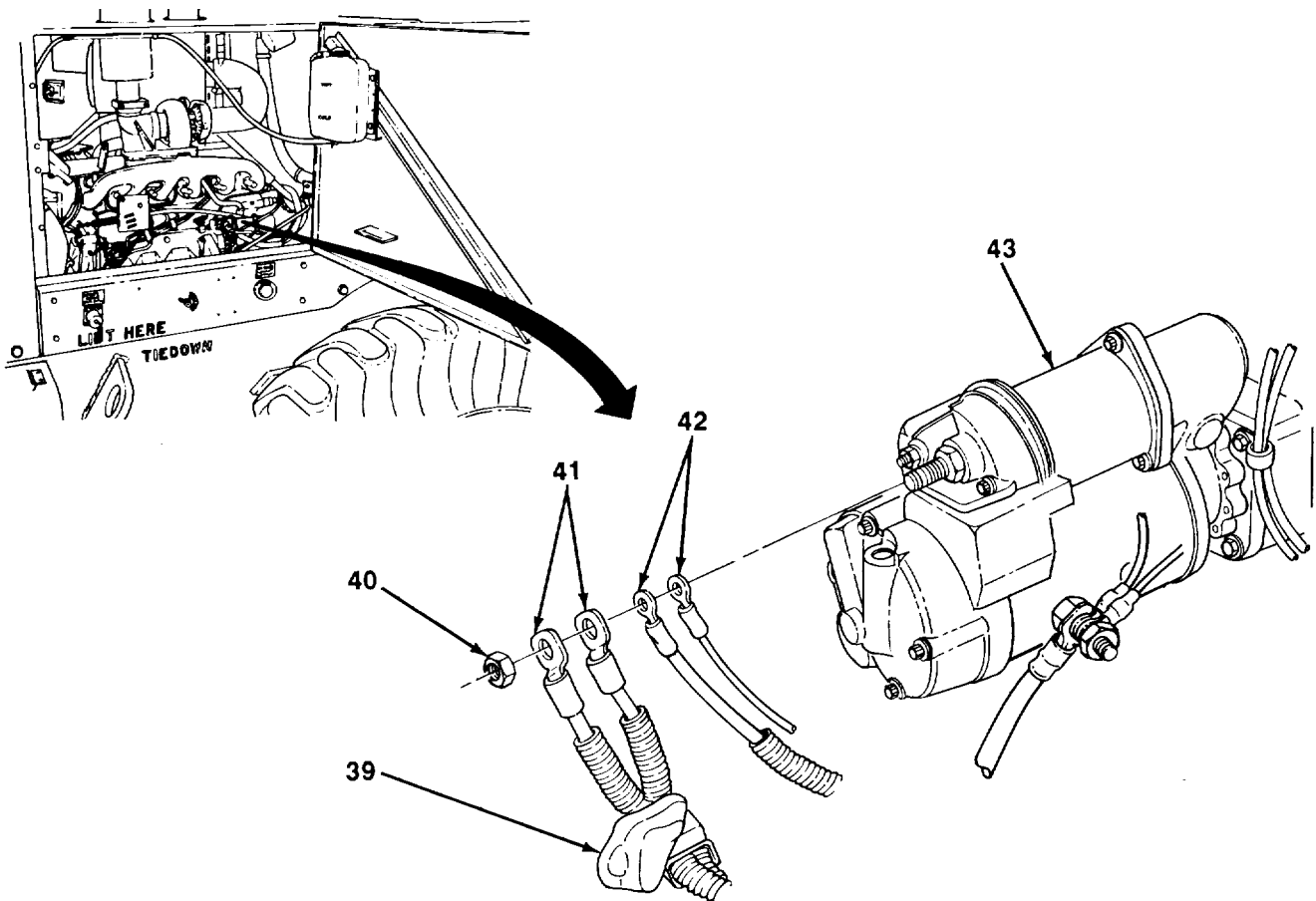


TA707877

6-59. ENGINE WIRING HARNESS MAINTENANCE (Con't).**c. INSTALLATION****NOTE**

Install clamps and new tie-down straps as necessary.

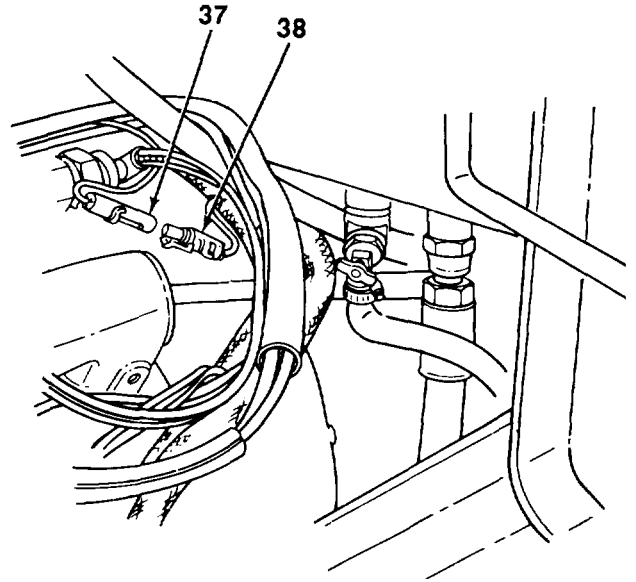
1. Position engine wiring harness on forklift truck.
2. Connect four engine wiring harness connectors (48) to engine frame wiring harness connectors (49).
3. Install two terminal leads (46) on starter motor solenoid (43) with nut (47).
4. Install cover (45) on starter motor solenoid (43) with nut (44).
5. Install two terminal leads (42) and cables (41) on starter motor solenoid (43) with nut (40).
6. Install rubber boot (39) over nut (40).



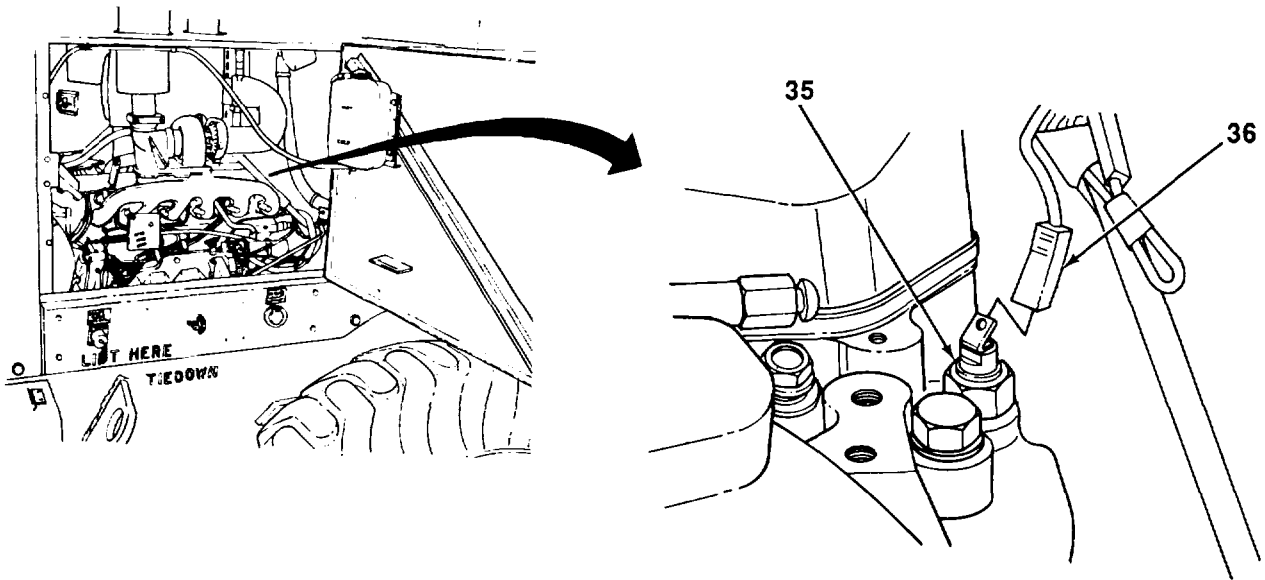
TA707878

6-59. ENGINE WIRING HARNESS MAINTENANCE (Con't).

7. Connect engine wiring harness connector (38) to secondary steering wiring harness connector (37).



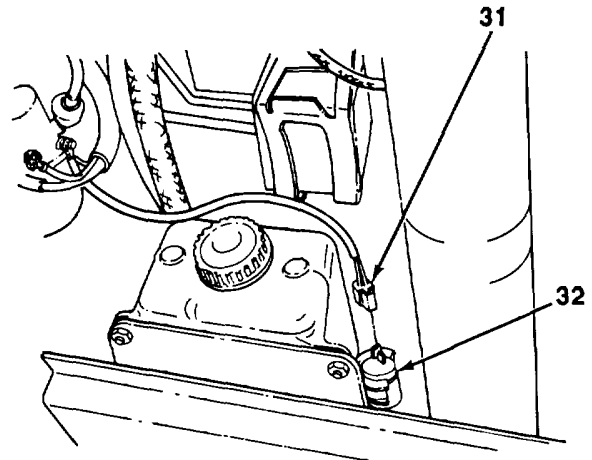
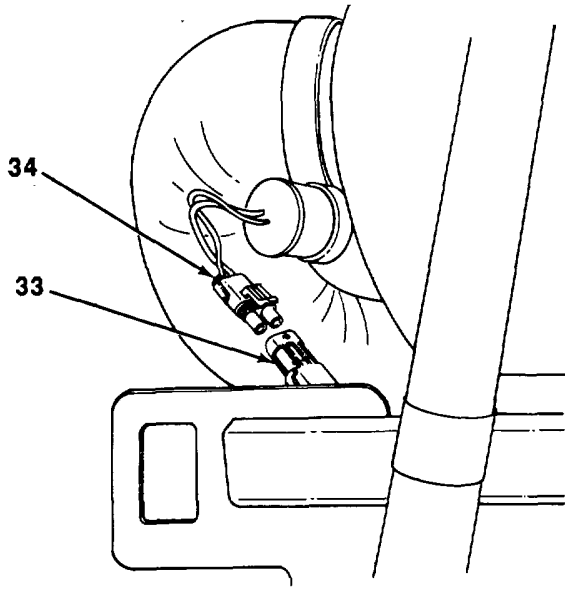
8. Connect engine wiring harness connector (36) to engine high temperature switch (35).



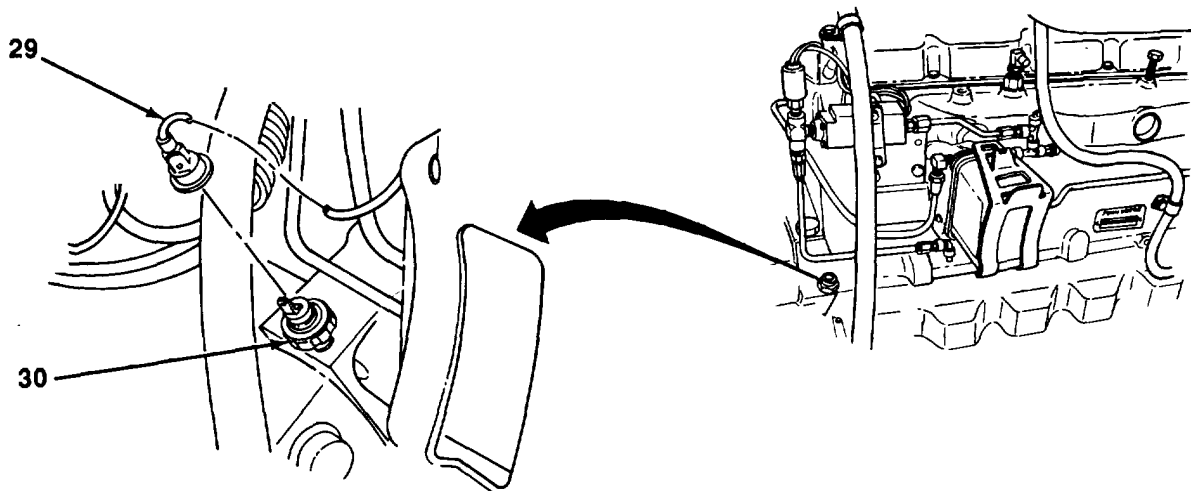
TA707879

6-59. ENGINE WIRING HARNESS MAINTENANCE (Con't).

9. Connect engine wiring harness connector (33) to air cleaner restriction sensor connector (34).
10. Connect two engine wiring harness connectors (31) to pumps (32).



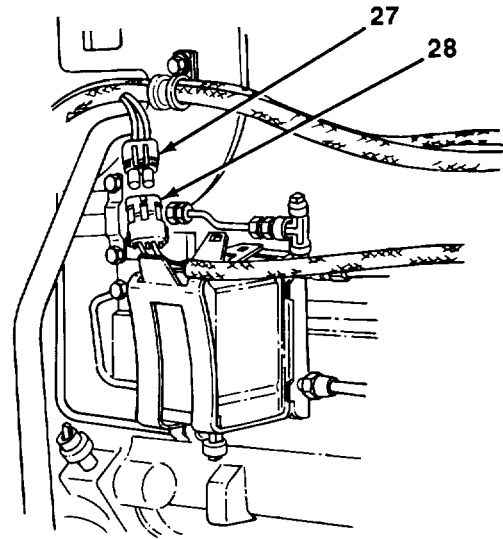
11. Connect engine wiring harness connector (29) to engine oil pressure switch (30).



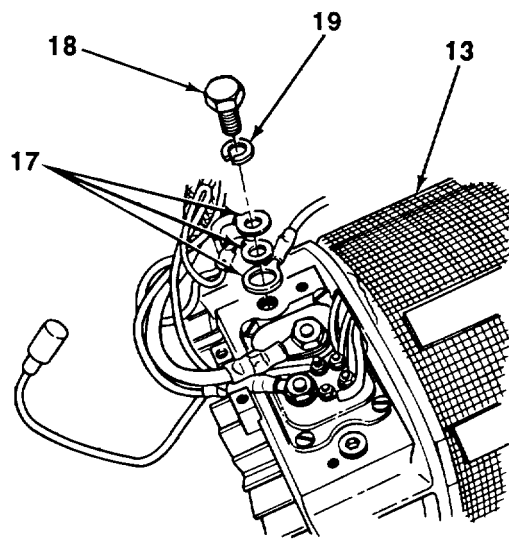
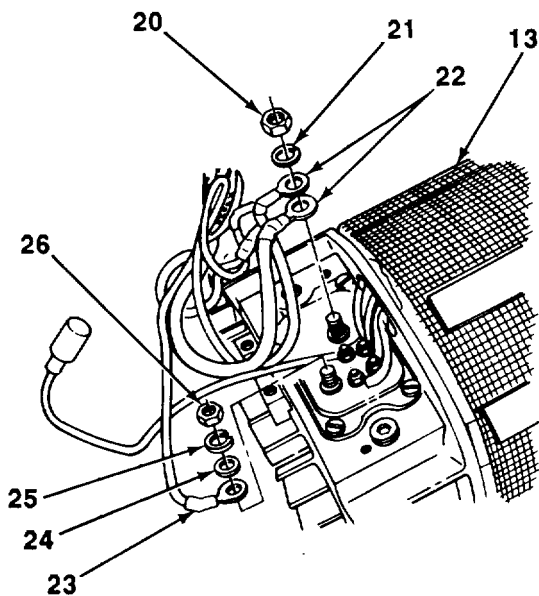
TA707880

6-59. ENGINE WIRING HARNESS MAINTENANCE (Con't).

12. Connect engine wiring harness connector (27) to engine starting aid connector (28).



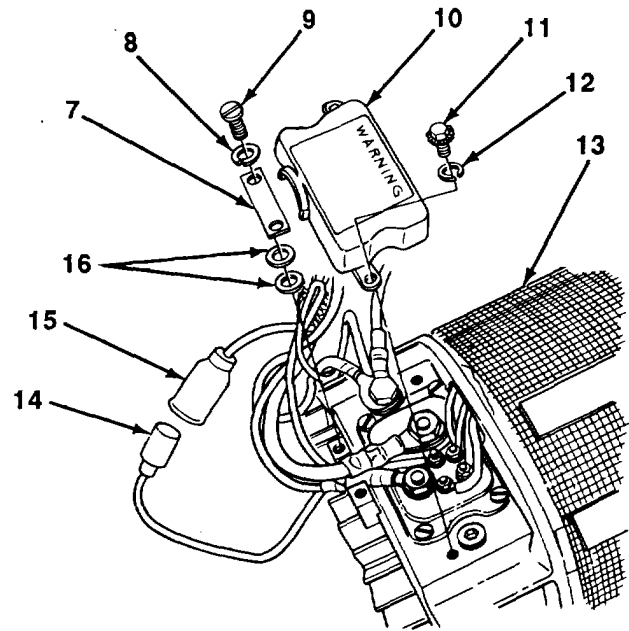
13. Install terminal lead (23) on alternator (13) with washer (24), new lockwasher (25), and nut (26).
14. Install two terminal leads (22) on alternator (13) with new lockwasher (21) and nut (20).
15. Install three terminal leads (17) on alternator (13) with new lockwasher (19) and bolt (18).



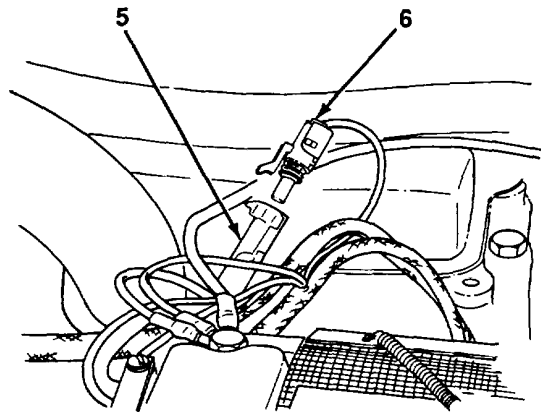
TA707881

6-59. ENGINE WIRING HARNESS MAINTENANCE (Con't).

- 16. Install cover (10) on alternator (13) with two new lockwashers (12) and screws (11).
- 17. Install four washers (16) and strap (7) on alternator (13) with two new lockwashers (8) and screws (9)
- 18. Connect alternator wiring harness connector (14) to engine wiring harness connector (15).



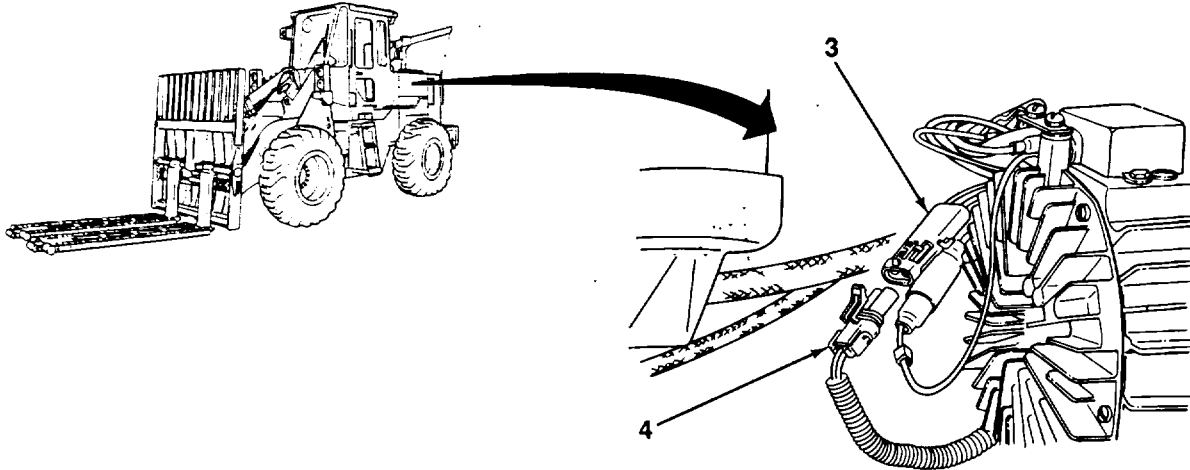
- 19. Connect STE/ICE alternator, starter motor, and fuel injection pump wiring harness connector (5) to STE/ICE engine wiring harness connector (6)



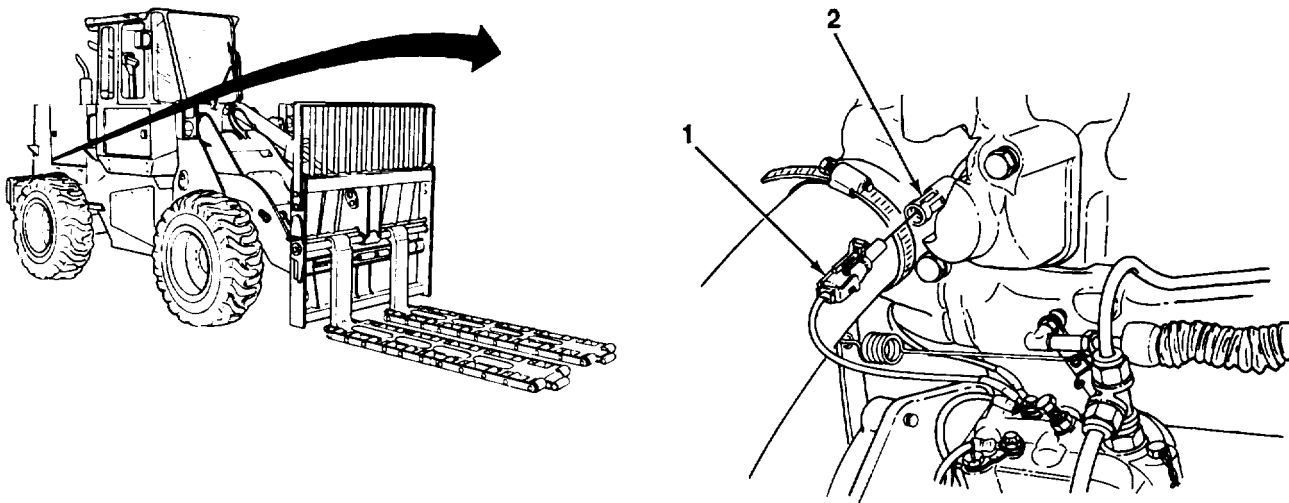
TA707882

6-59. ENGINE WIRING HARNESS MAINTENANCE (Con't).

20. Connect magnetic pickup connector (3) to engine wiring harness connector (4).



21. Connect engine wiring harness connector (2) to fuel injection pump lead (1).

**FOLLOW-ON TASKS:**

- Close right and left engine upper sideshields (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments to side of forklift truck (see paragraph 17-13).
- Connect negative battery cables (see paragraph 6-43).

TA707883

6-60. ENGINE FRAME WIRING HARNESS MAINTENANCE.

This task covers:

- a. Repair
 - b. Removal
 - c. Installation
-

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected - (see paragraph 6-43).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).
- Right access door opened (see TM 10-3930-659-10). * Right side cab skirt removed (see paragraph 14-6).
- Reverse warning alarm removed (see paragraph 6-39).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10
-

NOTE

- **All wires should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.**
- **Refer to wiring diagrams for assistance (see paragraph 6-73).**

a. REPAIR**NOTE**

- **Engine frame wiring harness does not need to be removed from forklift truck to perform repair.**
- **Repair of engine frame wiring harness consists of replacement of identification bands, terminals, and connectors.**

Refer to paragraph 2-28 for repair instructions.

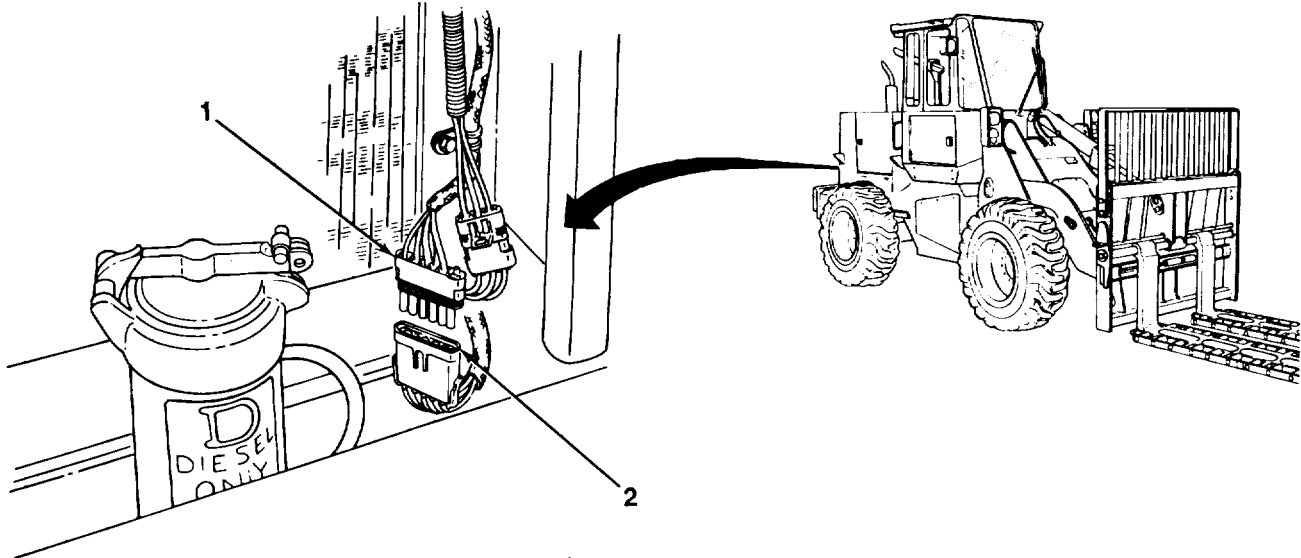
6-60. ENGINE FRAME WIRING HARNESS MAINTENANCE (Con't).

b. REMOVAL

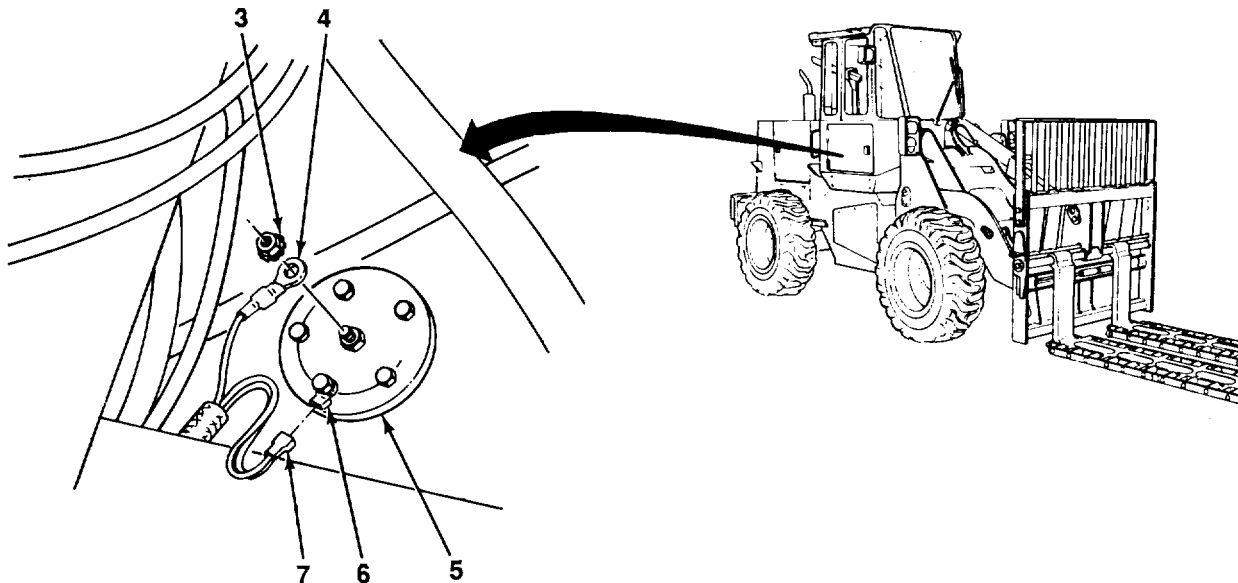
NOTE

Remove clamps as necessary.

1. Disconnect engine frame wiring harness connector (2) from rear frame wiring harness connector (1).

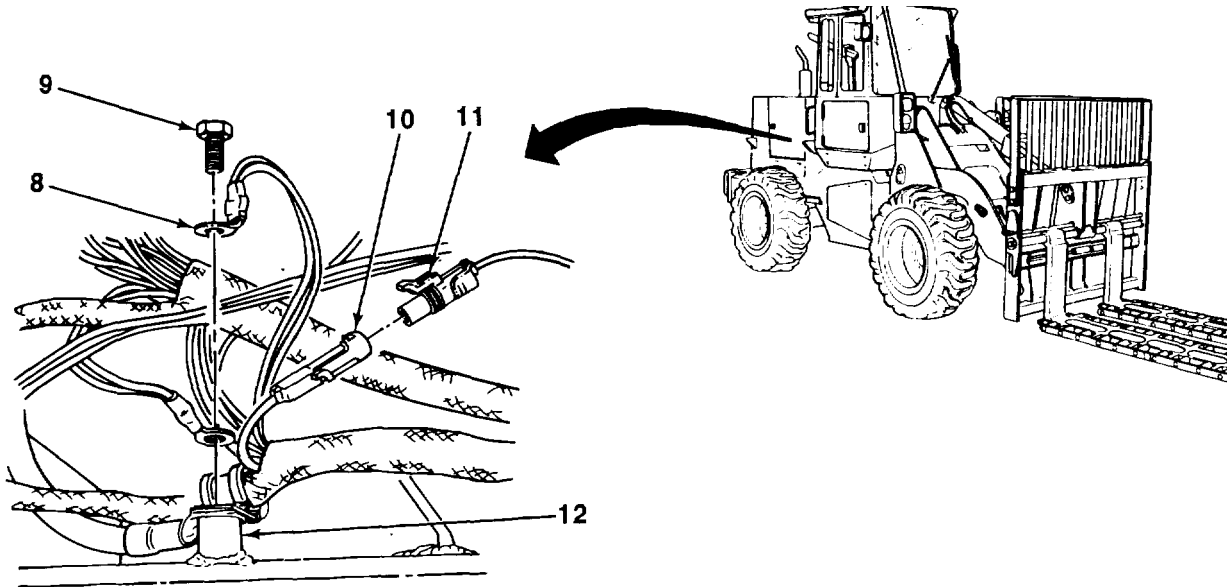


2. Disconnect engine frame wiring harness connector (7) from connector (6).
3. Remove nut (3) and engine frame wiring harness terminal lead (4) from fuel level sending unit (5).

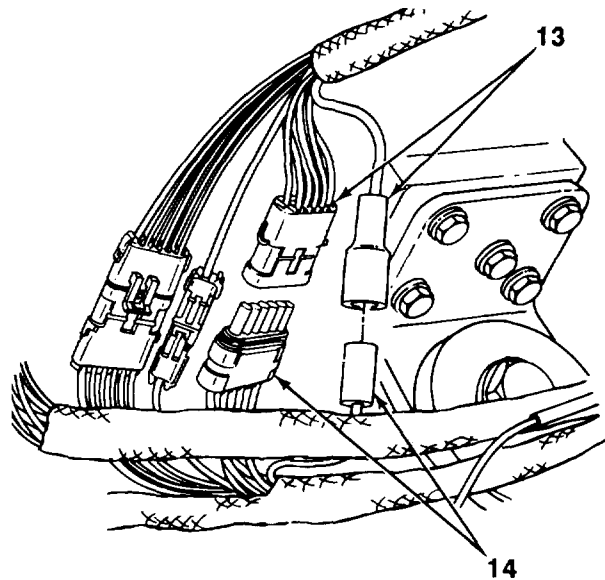


6-60. ENGINE FRAME WIRING HARNESS MAINTENANCE (Con't).

4. Remove screw (9) and frame ground terminal lead (8) from frame (12).
5. Disconnect hydraulic oil filter restriction switch lead connector (10) from hydraulic oil filter restriction switch lead (11).

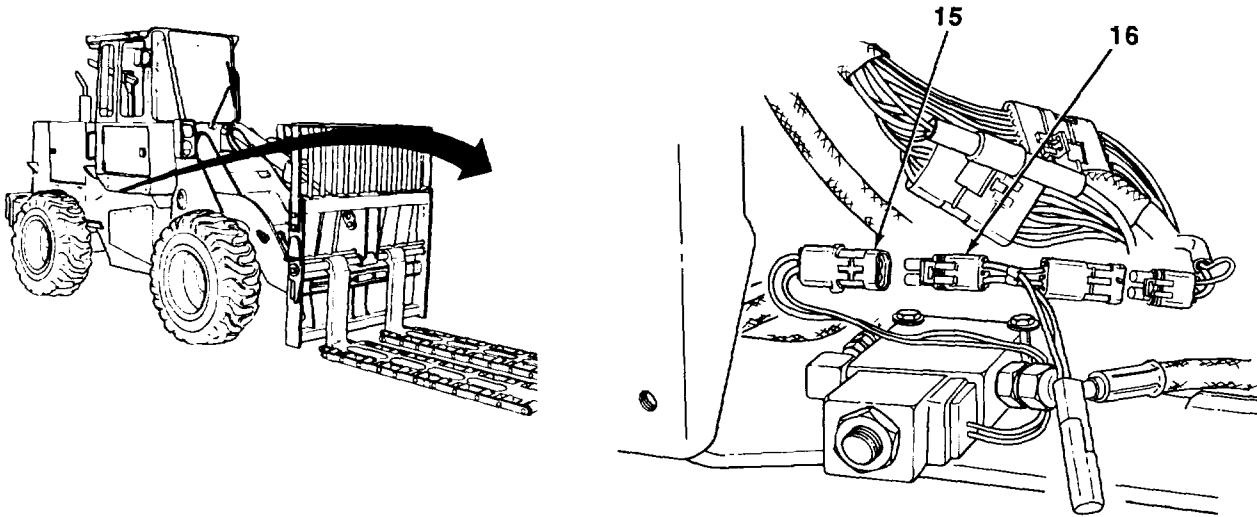


6. Disconnect four engine frame wiring harness connectors (14) from engine wiring harness connectors (13).

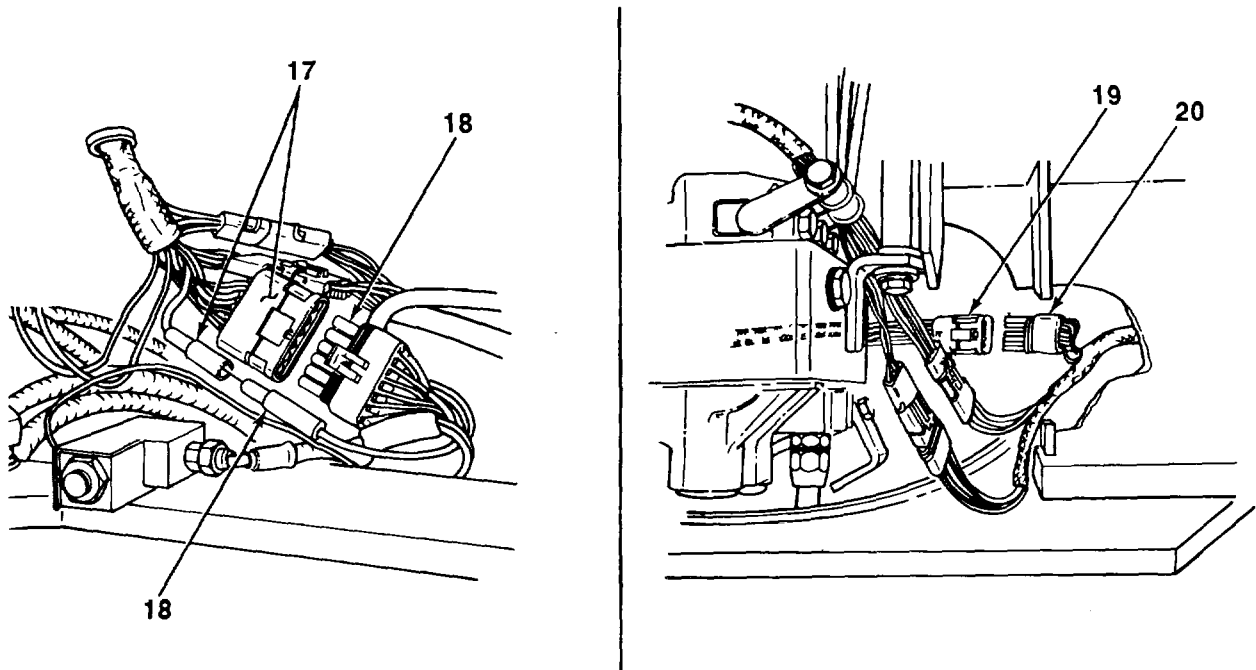


6-60. ENGINE FRAME WIRING HARNESS MAINTENANCE (Con't).

7. Disconnect transmission clutch cutoff valve solenoid wiring harness connector (16) from transmission clutch



8. Disconnect four engine frame wiring harness connectors (18) from load center wiring harness connectors (17).
9. Disconnect engine frame wiring harness connector (19) from under cab wiring harness connector (20).
10. Remove engine frame wiring harness from forklift truck.

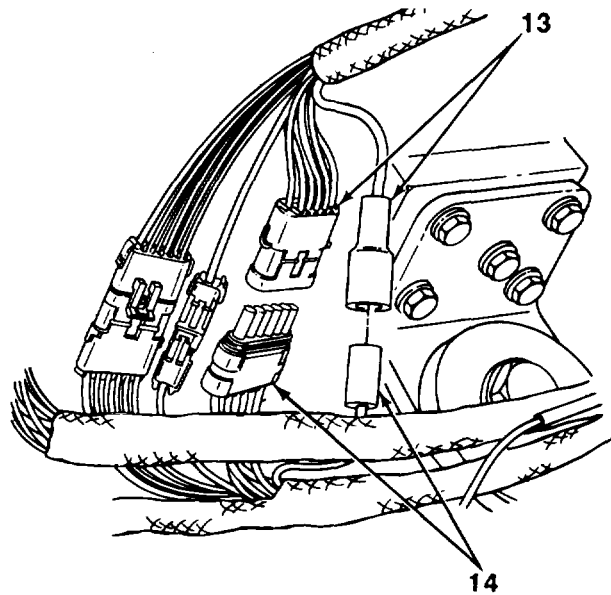


6-60. ENGINE FRAME WIRING HARNESS MAINTENANCE (Con't).

c. INSTALLATION**NOTE**

Install clamps as necessary.

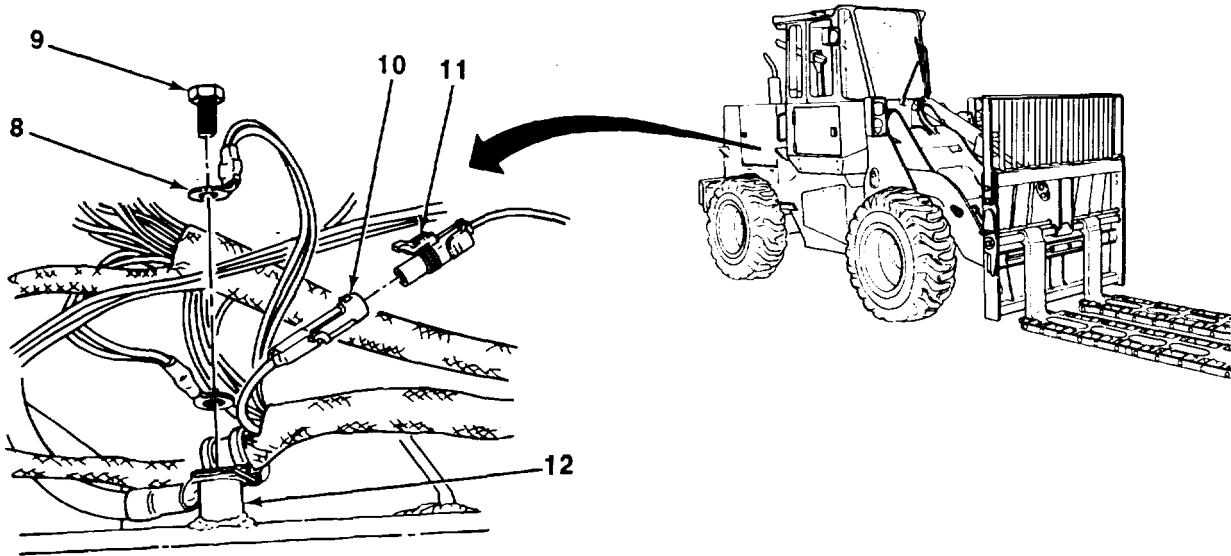
1. Position engine frame wiring harness on forklift truck.
2. Connect engine frame wiring harness connector (19) to under cab wiring harness connector (20).
3. Connect four engine frame wiring harness connectors (18) to load center wiring harness connectors (17).
4. Connect transmission clutch cutoff valve solenoid wiring harness connector (16) to transmission clutch cutoff valve solenoid lead (15).
5. Connect four engine frame wiring harness connectors (14) to engine wiring harness connectors (13).



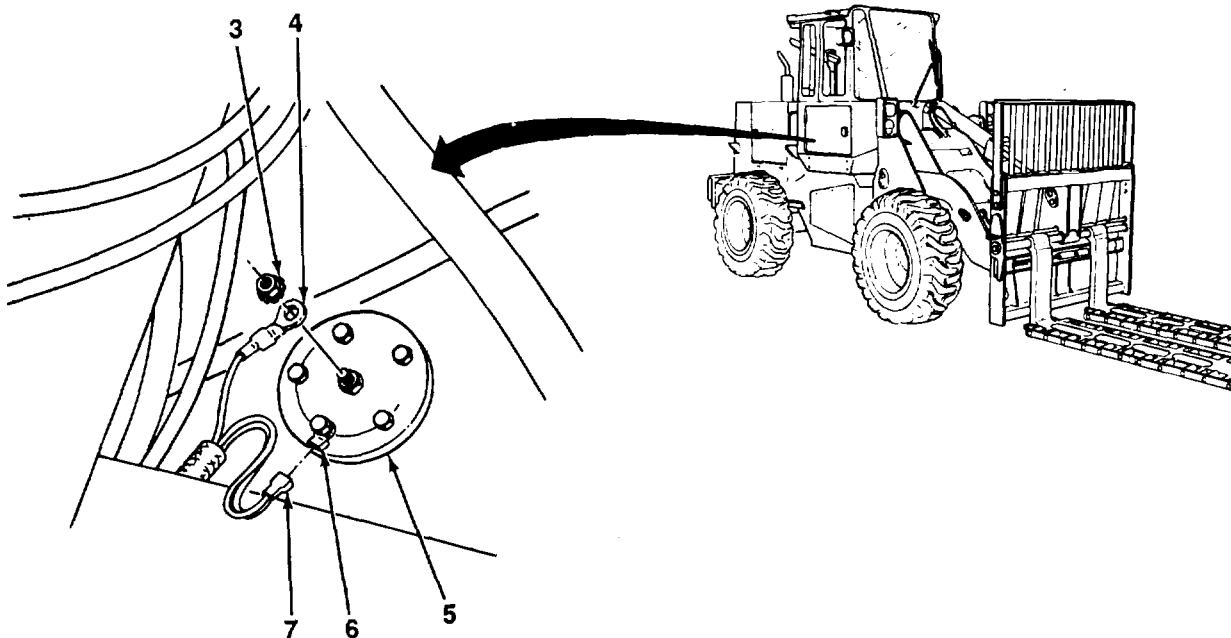
TA707887

6-60. ENGINE FRAME WIRING HARNESS MAINTENANCE (Con't).

6. Connect hydraulic oil filter restriction switch lead connector (10) to hydraulic oil filter restriction switch lead (11).
7. Install frame ground terminal lead (8) on frame (12) with screw (9).



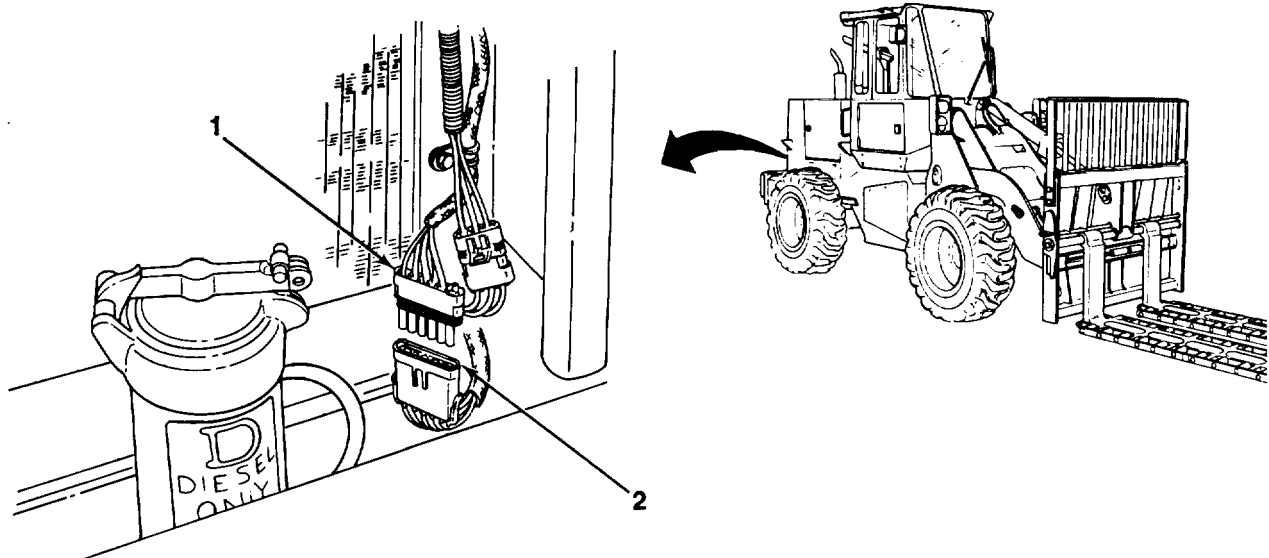
8. Connect engine frame wiring harness connector (7) to connector (6).
9. Install engine frame wiring harness terminal lead (4) on fuel level sending unit (5) with nut (3).



TA707888

6-60. ENGINE FRAME WIRING HARNESS MAINTENANCE (Con't).

10. Connect engine frame wiring harness connector (2) to rear frame wiring harness connector (1).

**FOLLOW - ON TASKS:**

- Install reverse warning alarm (see paragraph 6-39).
- Install right side cab skirt (see paragraph 14-6).
- Close right access door (see TM 10-3930-659-10).
- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments to side of forklift truck (see paragraph 17-13).
- Connect negative battery cables (see paragraph 6-43).

TA707889

6-61. TRANSMISSION CLUTCH CUTOFF VALVE SOLENOID WIRING HARNESS MAINTENANCE.**This task covers:**

- | | |
|------------|-----------------|
| a. Repair | c. Installation |
| b. Removal | |

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected - (see paragraph 6-43).
- Right side cab skirt removed (see paragraph 14-6).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

NOTE

- **All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.**
- **Refer to wiring diagrams for assistance (see paragraph 6-73).**

a. REPAIR₁**NOTE**

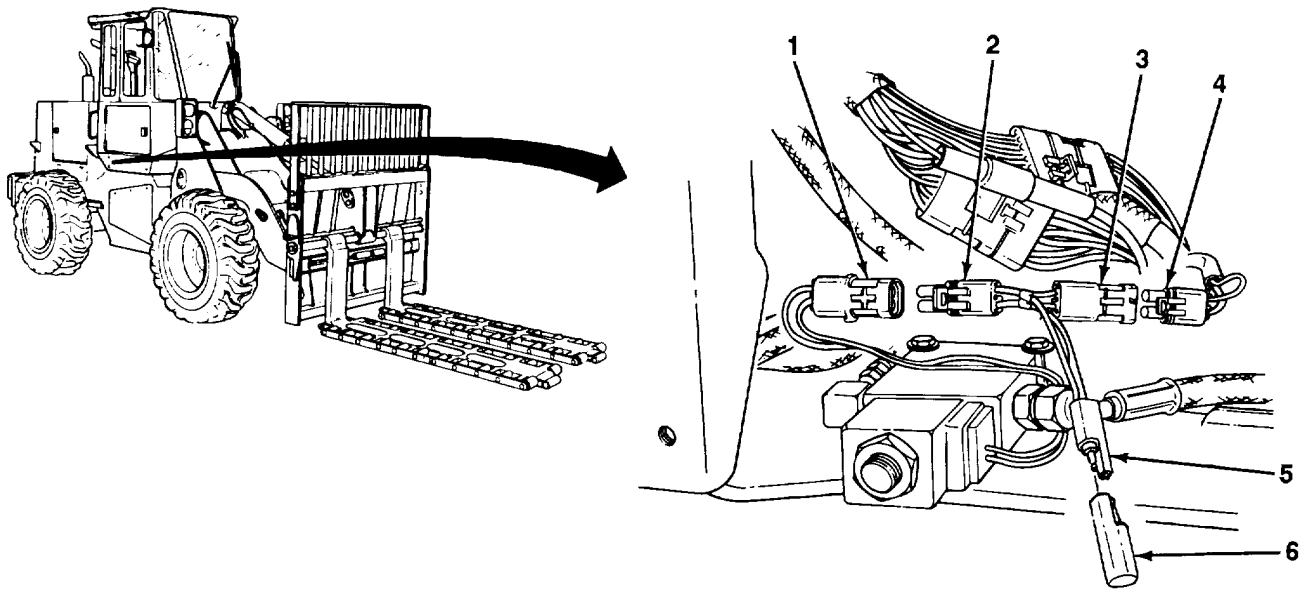
- **Transmission clutch cutoff valve solenoid wiring harness does not need to be removed from forklift truck to perform repair.**
- **Repair of transmission clutch cutoff valve solenoid wiring harness consists of replacement of identification bands and connectors.**

Refer to paragraph 2-28 for repair Instructions.

b. REMOVAL

1. Disconnect transmission clutch cutoff valve solenoid wiring harness connector (2) from transmission clutch cutoff valve solenoid lead (1).
2. Disconnect transmission clutch cutoff valve solenoid wiring harness connector (3) from engine frame wiring harness connector (4).
3. Remove transmission clutch cutoff valve solenoid wiring harness from forklift truck.
4. Remove diode (6) from transmission clutch cutoff valve solenoid wiring harness diode lead (5).

6-61. TRANSMISSION CLUTCH CUTOFF VALVE SOLENOID WIRING HARNESS MAINTENANCE (Con't).

**c. INSTALLATION**

1. Install diode (6) on transmission clutch cutoff valve solenoid wiring harness diode lead (5).
2. Position transmission clutch cutoff valve solenoid wiring harness on forklift truck.
3. Connect transmission clutch cutoff valve solenoid wiring harness connector (3) to engine frame wiring harness connector (4).
4. Connect transmission clutch cutoff valve solenoid wiring harness connector (2) to transmission clutch cutoff valve solenoid lead (1).

FOLLOW-ON TASKS:

- Install right side cab skirt (see paragraph 14-6).
- Connect negative battery cables (see paragraph 6-43).

TA707890

6-62. TRANSMISSION WIRING HARNESS MAINTENANCE.

This task covers:

- a. Repair
 - b. Removal
 - c. Installation
-

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected (see paragraph 6-43).
- Right side cab skirt removed (see paragraph 14-6).
- Right transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- One lockwasher

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

NOTE

- **All wires should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.**
- **Refer to wiring diagrams for assistance (see paragraph 6-73).**

a. REPAIR**NOTE**

- **Transmission wiring harness does not need to be removed from forklift truck to perform repair.**
- **Repair of transmission wiring harness consists of replacement of identification bands, terminals, and connectors.**

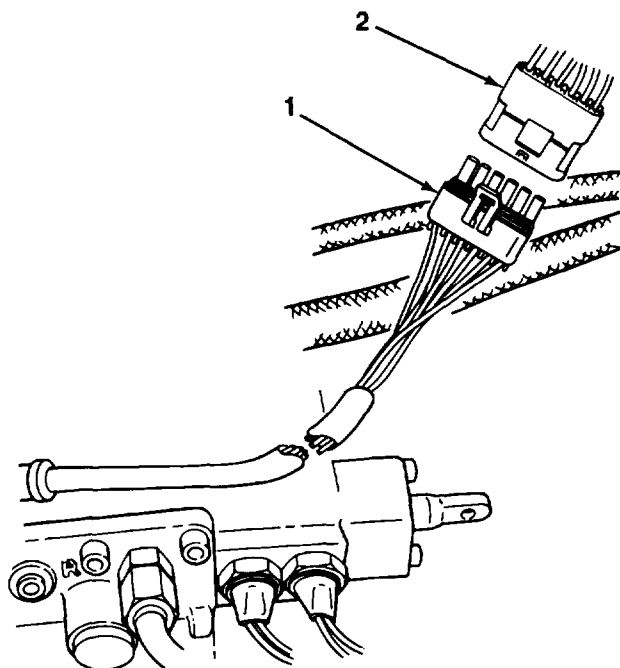
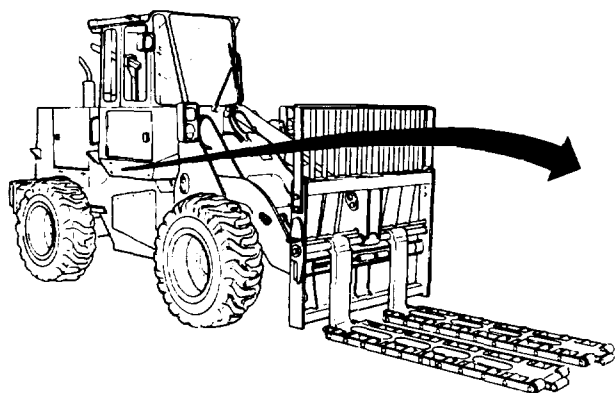
Refer to paragraph 2-28 for repair instructions.

b. REMOVAL**NOTE**

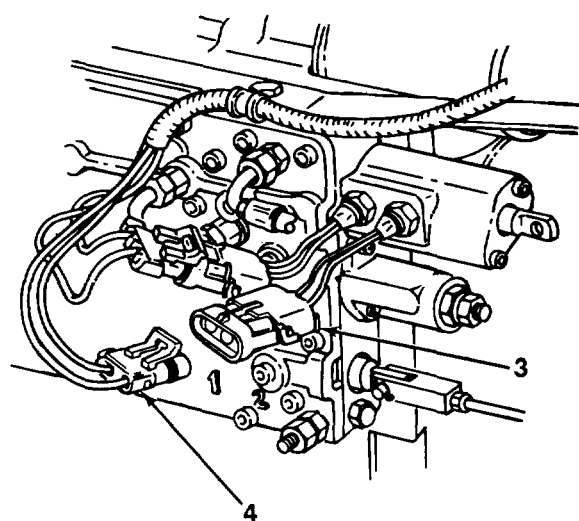
Remove clamps as necessary.

1. Disconnect transmission wiring harness connector (1) from load center wiring harness connector (2).

6-62. TRANSMISSION WIRING HARNESS MAINTENANCE (Con't).



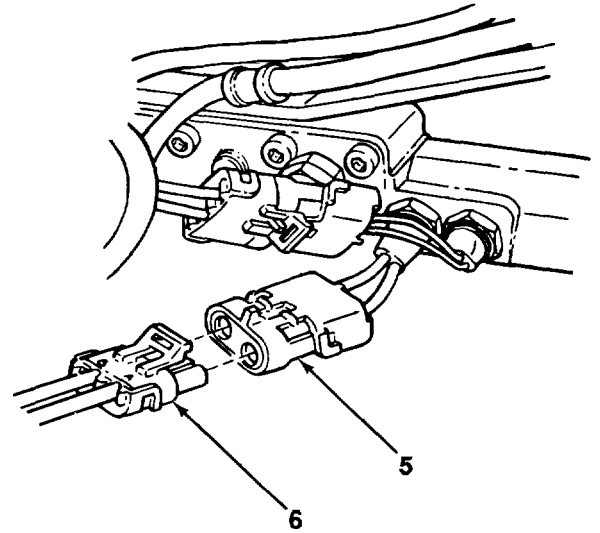
2. Disconnect transmission wiring harness connector (4) from reverse warning alarm switch connector (3).



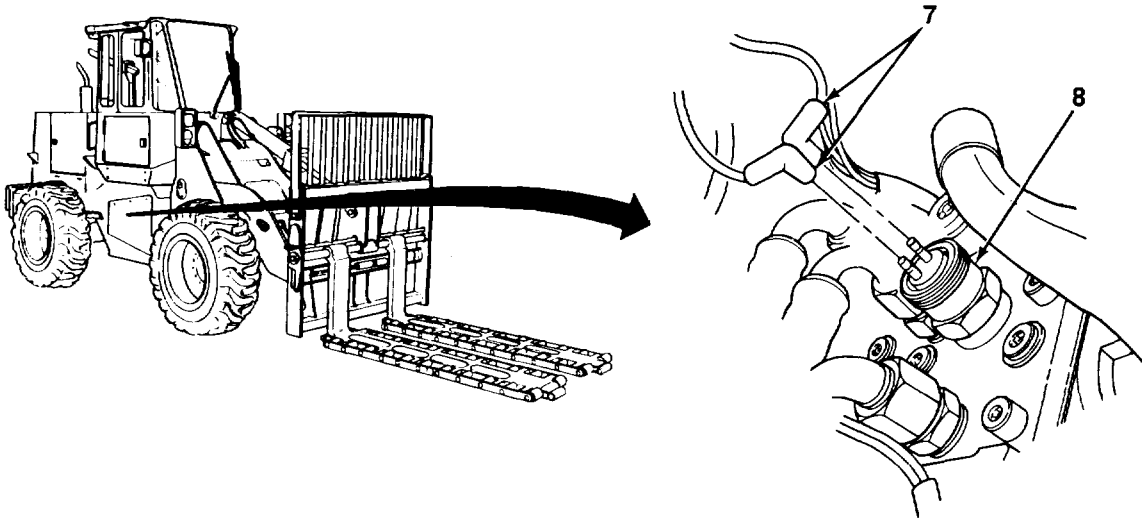
TA707891

6-62. TRANSMISSION WIRING HARNES MAINTENANCE (Con't).

3. Disconnect transmission wiring harness connector (6) from neutral start switch connector (5).



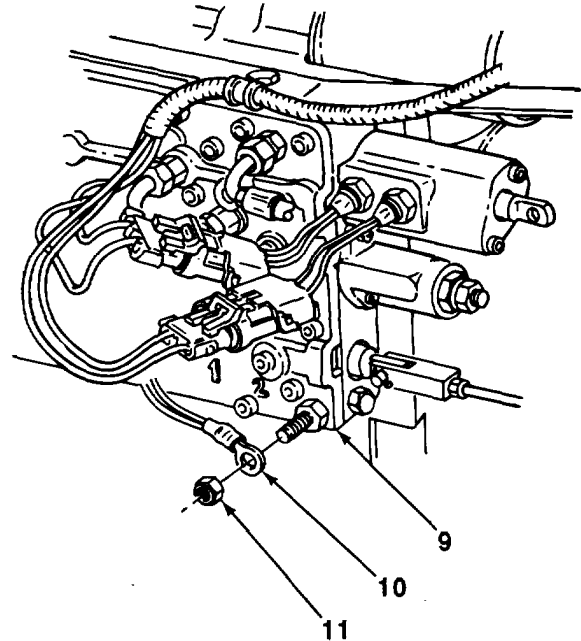
4. Disconnect two transmission wiring harness connectors (7) from transmission oil pressure switch (8).



TA707892

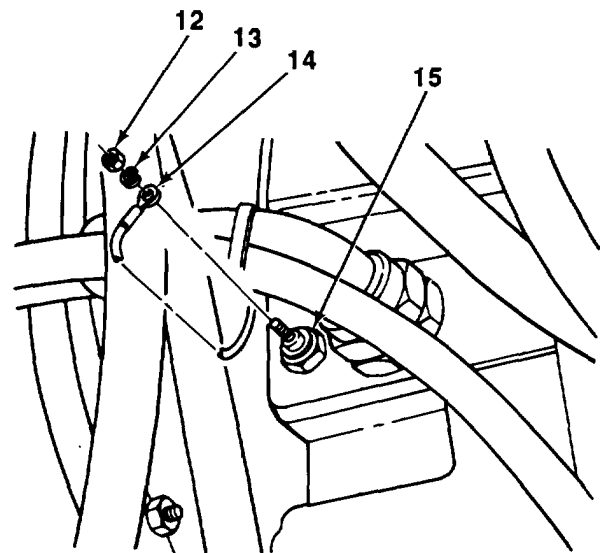
6-62. TRANSMISSION WIRING HARNESS MAINTENANCE (Con't).

5. Remove nut (11) and transmission ground wire terminal lead (10) from transmission control valve (9).



6. Remove nut (12), lockwasher (13), and transmission wiring harness terminal lead (14) from transmission oil temperature sender (15). Discard lockwasher.

7. Remove transmission wiring harness from forklift truck.



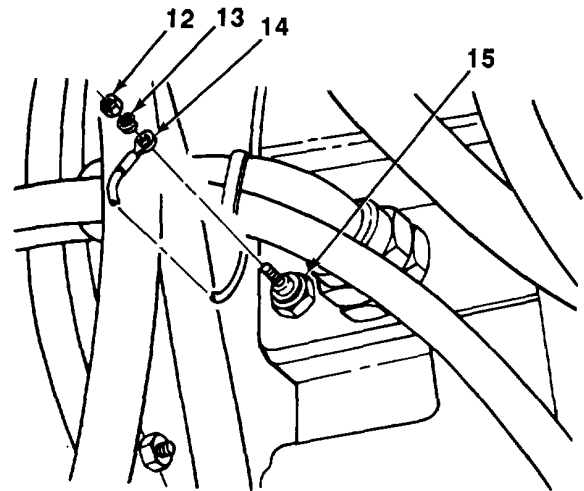
TA707893

6-62. TRANSMISSION WIRING HARNESS MAINTENANCE (Con't).

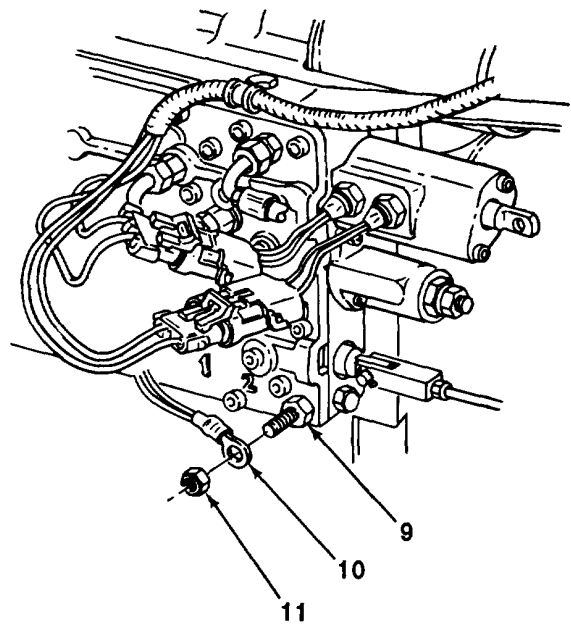
c. INSTALLATION**NOTE**

Install clamps as necessary.

1. Position transmission wiring harness on forklift truck.
2. Install transmission wiring harness terminal lee (14) on transmission oil temperature sender (1 with new lockwasher (13) and nut (12).



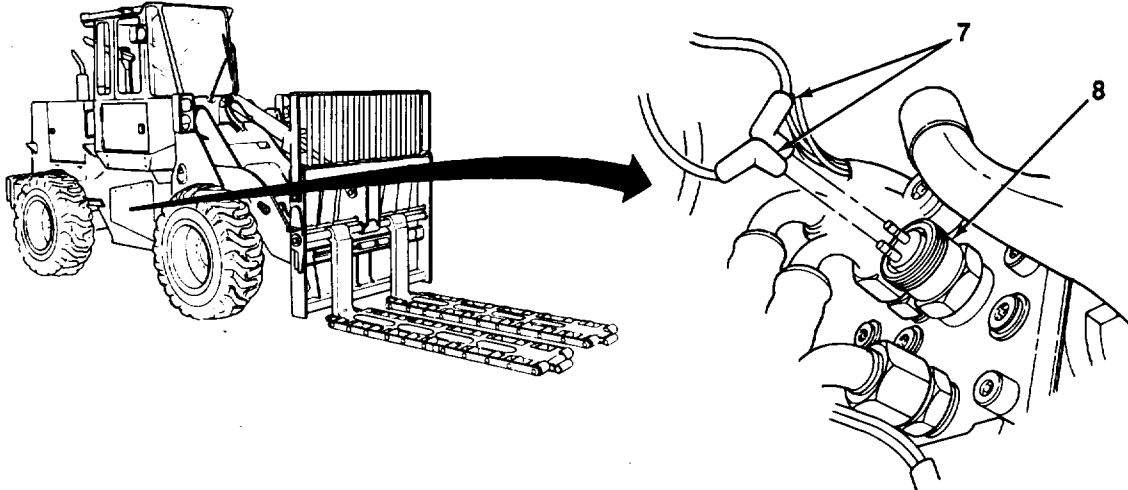
3. Install transmission ground wire terminal lead (1 C on transmission control valve (9) with nut (11).



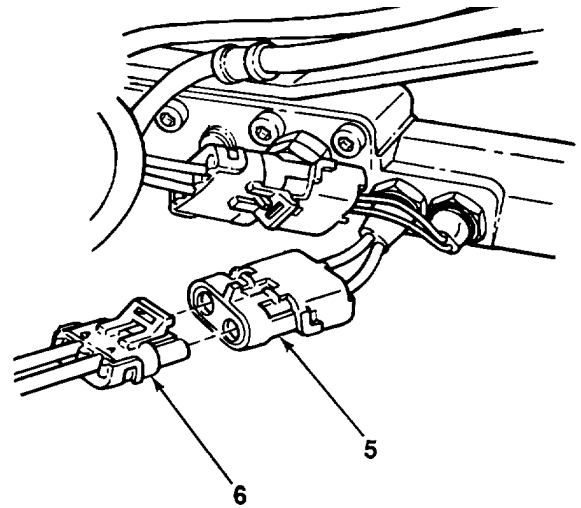
TA707894

6-62. TRANSMISSION WIRING HARNESS MAINTENANCE (Con't).

4. Connect two transmission wiring harness connectors (7) to transmission oil pressure switch (8).



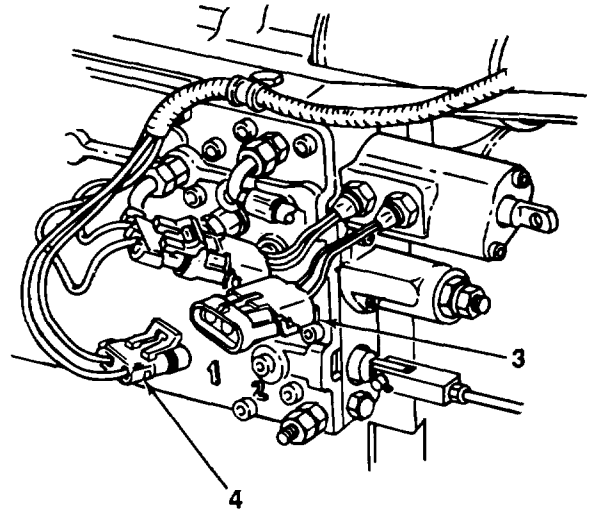
5. Connect transmission wiring harness connector (6) to neutral start switch connector (5).



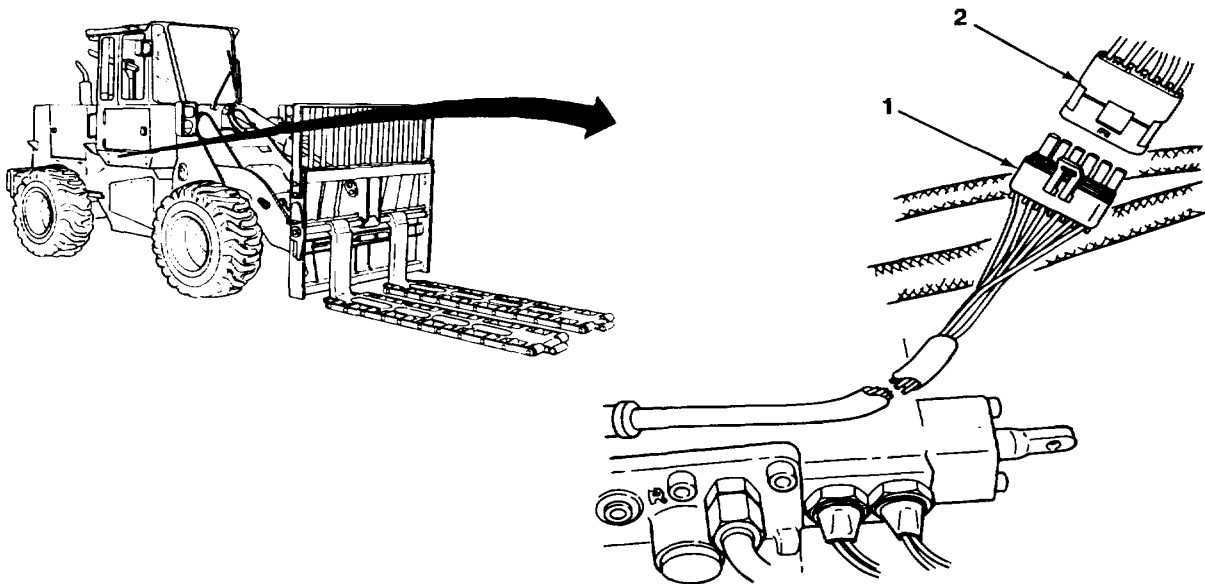
TA707895

6-62. TRANSMISSION WIRING HARNESS MAINTENANCE (Con't).

6. Connect transmission wiring harness connector (4) to reverse warning alarm switch connector (3)



7. Connect transmission wiring harness connector (1) to load center wiring harness connector (2).



FOLLOW-ON TASKS:

- Install right transmission side guard (see paragraph 14-7).
- Install right side cab skirt (see paragraph 14-6).
- Connect negative battery cables (see paragraph 6-43).

TA707896

6-63. LOADER FRAME WIRING HARNESS MAINTENANCE.

This task covers:

- a. Repair
 - b. Removal
 - c. Installation
-

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected (see - paragraph 6-43).
- Cab skirts removed (see paragraph 14-6).
- Loader frame cover removed (see paragraph 14-11).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

NOTE

- **All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.**
- **Refer to wiring diagrams for assistance (see paragraph 6-73).**

a. REPAIR**NOTE**

- **Loader frame wiring harness does not need to be removed from forklift truck to perform repair.**
- **Repair of loader frame wiring harness consists of replacement of identification bands, terminals, and connectors.**

Refer to paragraph 2-28 for repair instructions.

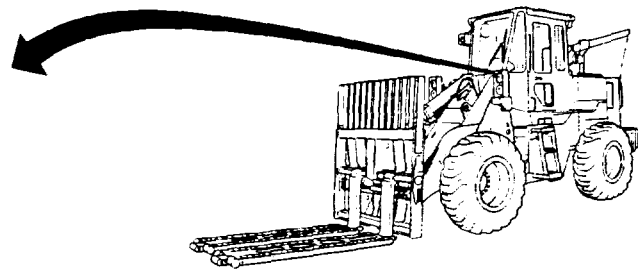
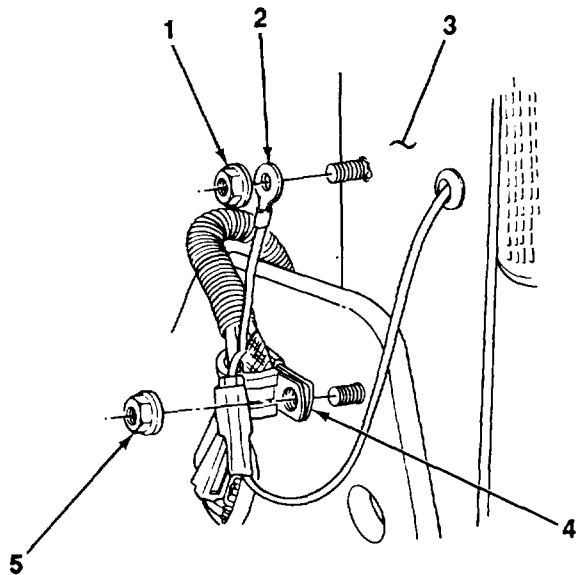
6-63. LOADER FRAME WIRING HARNESS MAINTENANCE (Con't).

b. REMOVAL

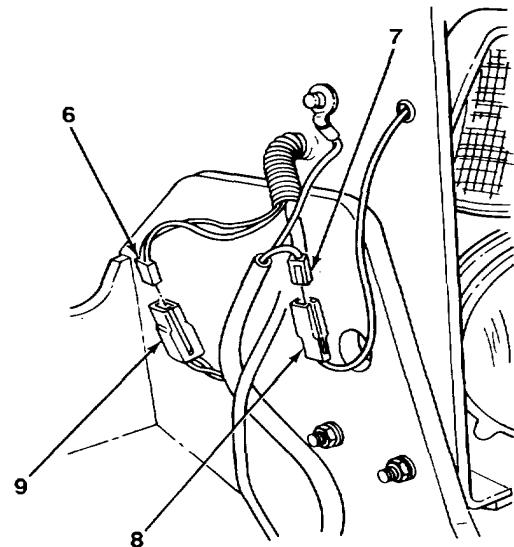
NOTE

Remove clamps as necessary.

1. Remove nut (1) and ground wire (2) from left front driving light bracket (3).
2. Remove nut (5) and clamp (4) from left front driving light bracket (3).



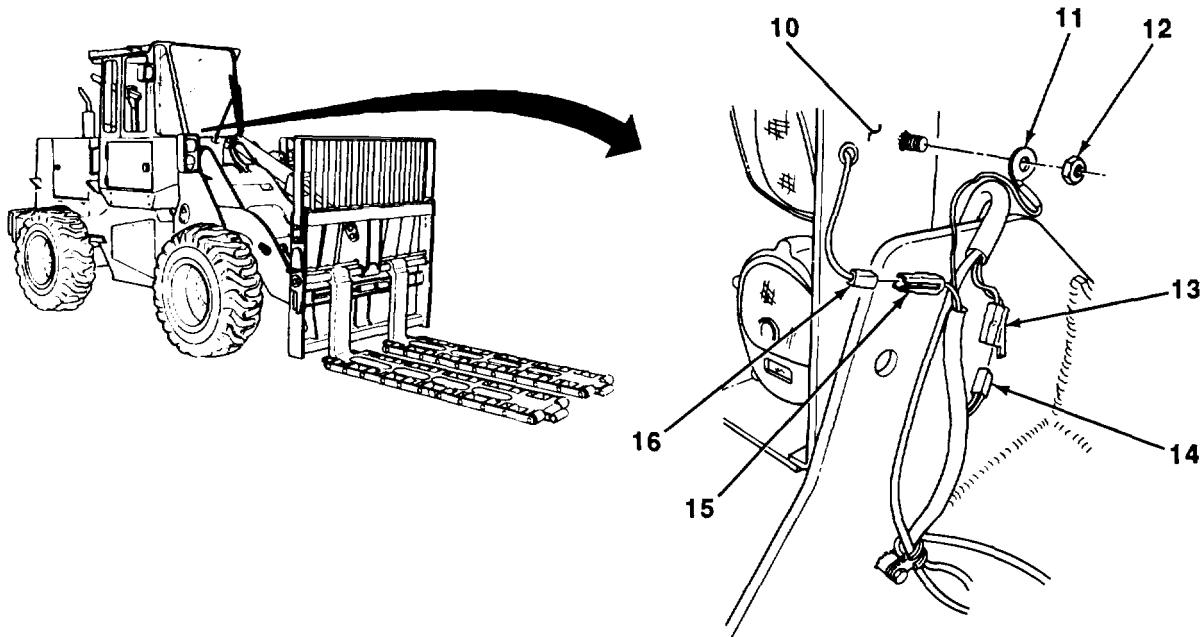
3. Disconnect loader frame wiring harness connector (7) from left front driving light housing connector (8).
4. Disconnect left front turn signal/emergency flashers and front blackout lights wiring harness connector (9) from loader frame wiring harness connector (6).



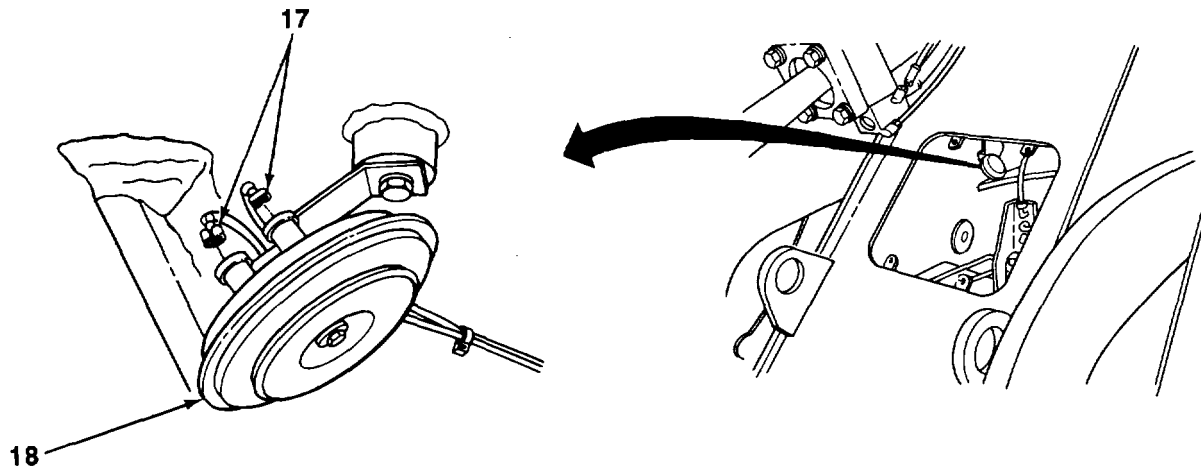
TA707897

6-63. LOADER FRAME WIRING HARNESS MAINTENANCE (Con't).

5. Remove nut (12) and ground wire (11) from right front driving light bracket (10).
6. Disconnect loader frame wiring harness connector (15) from right front driving light housing connector (16).
7. Disconnect loader frame wiring harness connector (14) from right front turn signal/emergency flashers and front blackout lights connector (13).

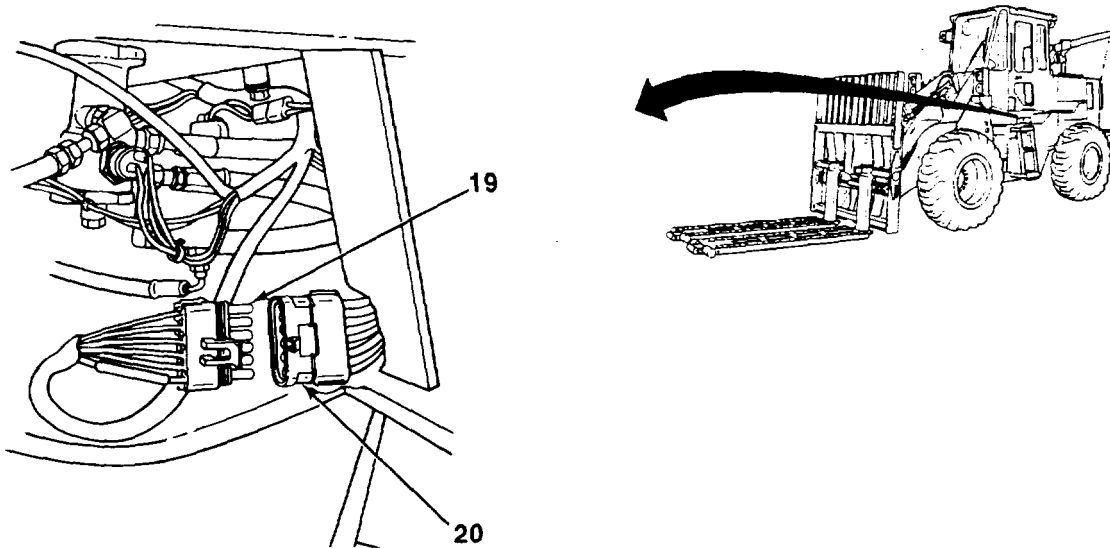


8. Disconnect two loader frame wiring harness connectors (17) from horn (18).



6-63. LOADER FRAME WIRING HARNESS MAINTENANCE (Con't).

9. Disconnect loader frame wiring harness connector (20) from under cab wiring harness connector (19).
10. Remove loader frame wiring harness from forklift truck.

**c. INSTALLATION****NOTE**

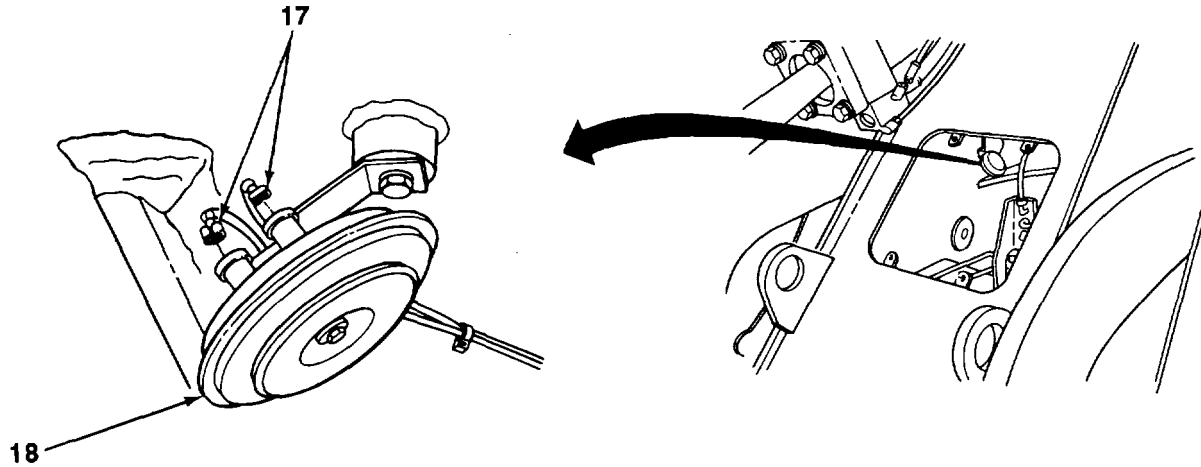
Install clamps as necessary.

1. Position loader frame wiring harness on forklift truck.
2. Connect loader frame wiring harness connector (20) to under cab wiring harness connector (19).

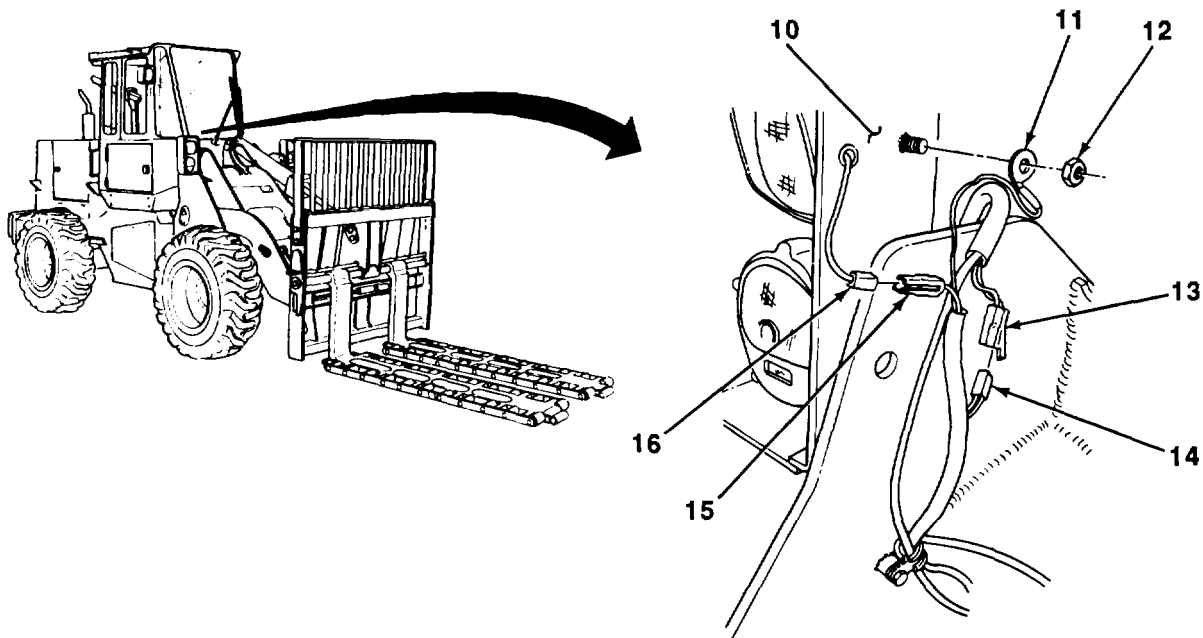
TA707899

6-63. LOADER FRAME WIRING HARNESS MAINTENANCE (Con't).

3. Connect two loader frame wiring harness connectors (17) to horn (18).



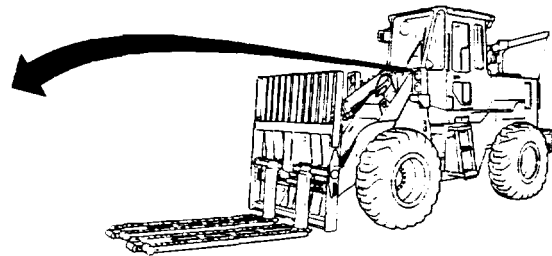
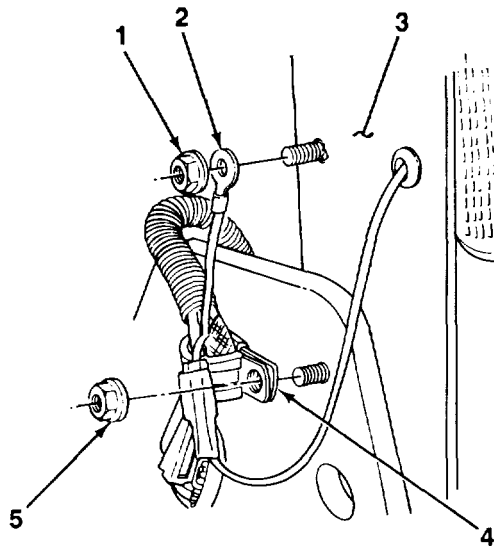
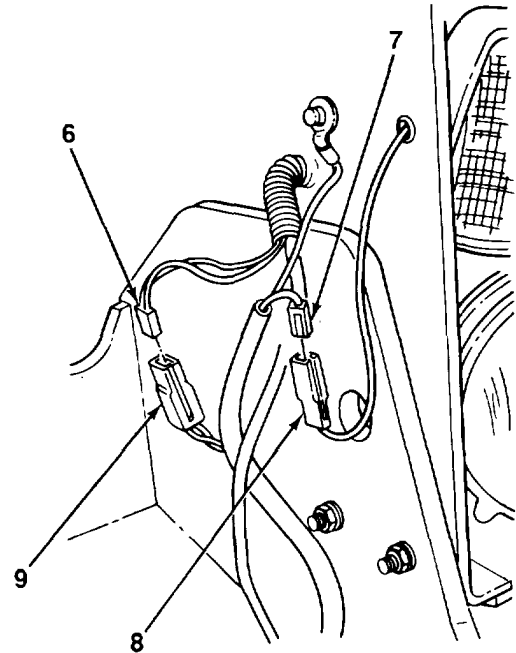
4. Connect loader frame wiring harness connector (14) to right front turn signal/emergency flashers and front blackout lights connector (13).
5. Connect loader frame wiring harness connector (15) to right front driving light housing connector (16).
6. Install ground wire (11) on right front driving light bracket (10) with nut (12).



TA707900

6-63. LOADER FRAME WIRING HARNESS MAINTENANCE (Con't)

7. Connect left front turn signal/emergency flashers and front blackout lights wiring harness connector (9) to loader frame wiring harness connector (6).
8. Connect loader frame wiring harness connector(7) to left front driving light housing connector (8).
9. Install clamp (4) on left front driving light bracket(3) with nut (5).
10. Install ground wire (2) on left front driving light bracket (3) with nut (1).



FOLLOW-ON TASKS:

- Install loader frame cover (see paragraph 14-11).
- Install cab skirts (see paragraph 14-6).
- Connect negative battery cables (see paragraph 6-43).

6-64. UPPER WORKLIGHT WIRING HARNESS MAINTENANCE.

This task covers:

- a. Repair
 - b. Removal
 - c. Installation
-

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected (see paragraph 6-43).
- Cab sound isolators removed from right side cab interior (see paragraph 14-12).
- Defroster fan removed (see paragraph 16-3).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

NOTE

- All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.
- Refer to wiring diagrams for assistance (see paragraph 6-73).

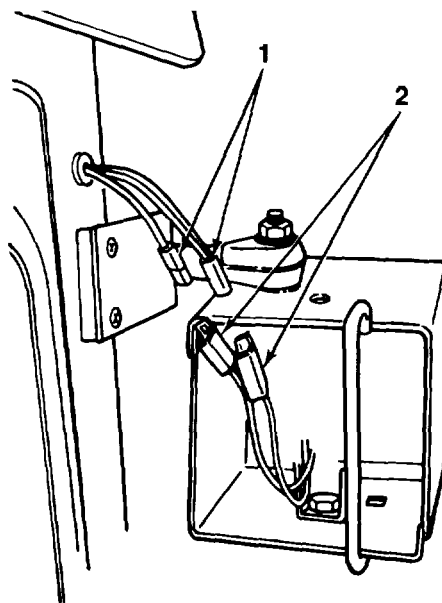
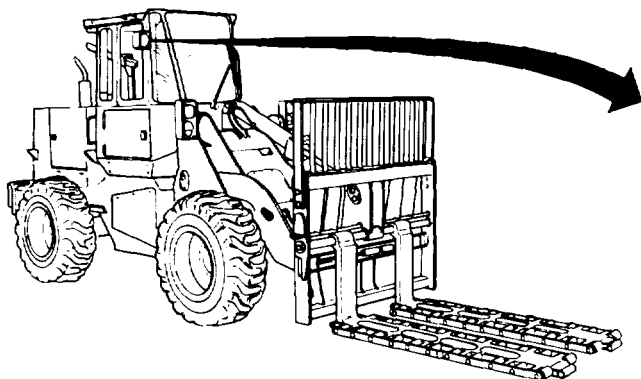
a. REPAIR**NOTE**

- Upper worklight wiring harness does not need to be removed from forklift truck to perform repair.
- Repair of upper worklight wiring harness consists of replacement of Identification bands, terminals, and connectors.

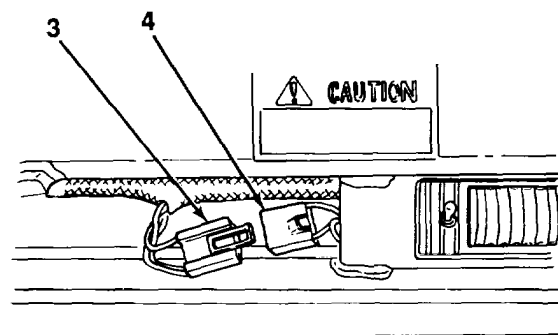
Refer to paragraph 2-28 for repair instructions.

6-64. UPPER WORKLIGHT WIRING HARNESS MAINTENANCE (Con't).**b. REMOVAL**

1. Disconnect two connectors (1) from adjustable floodlight bracket connectors (2).



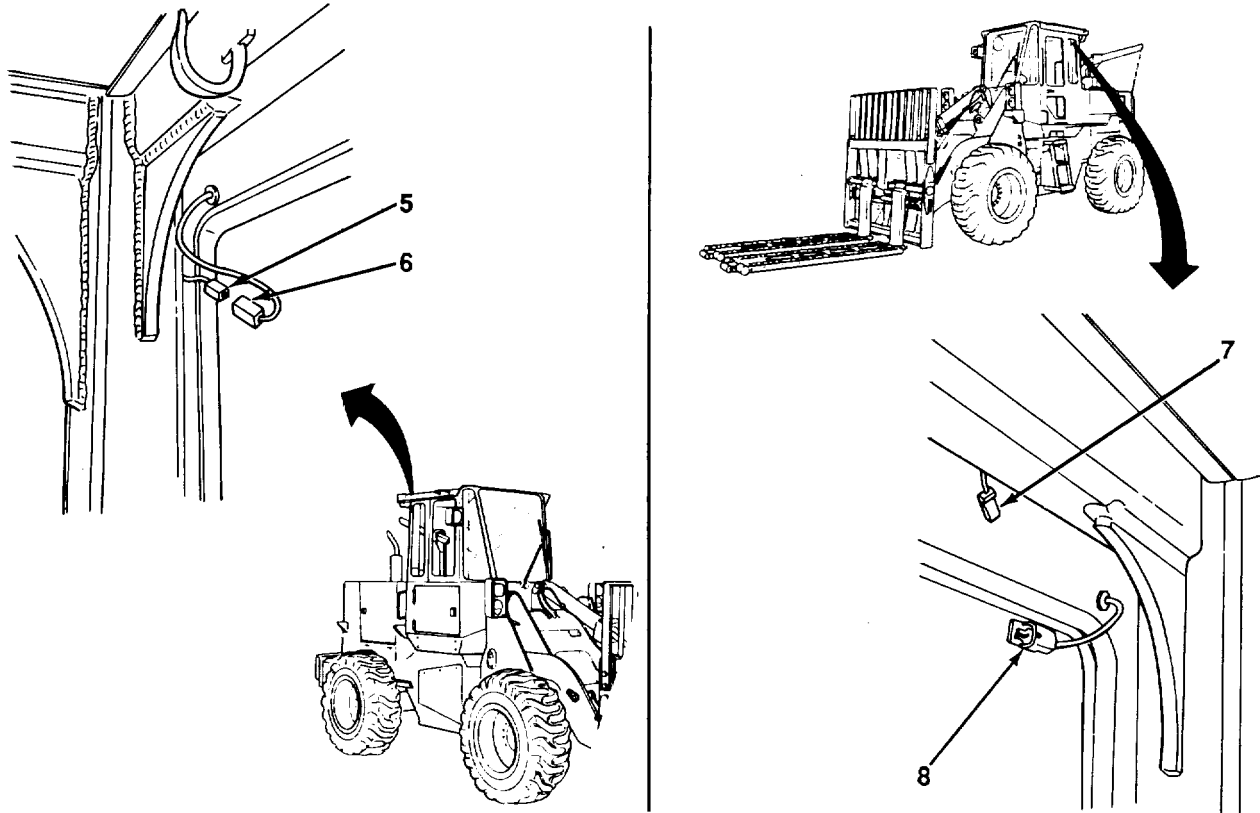
2. Disconnect upper worklight wiring harness connector (3) from domelight connector (4).



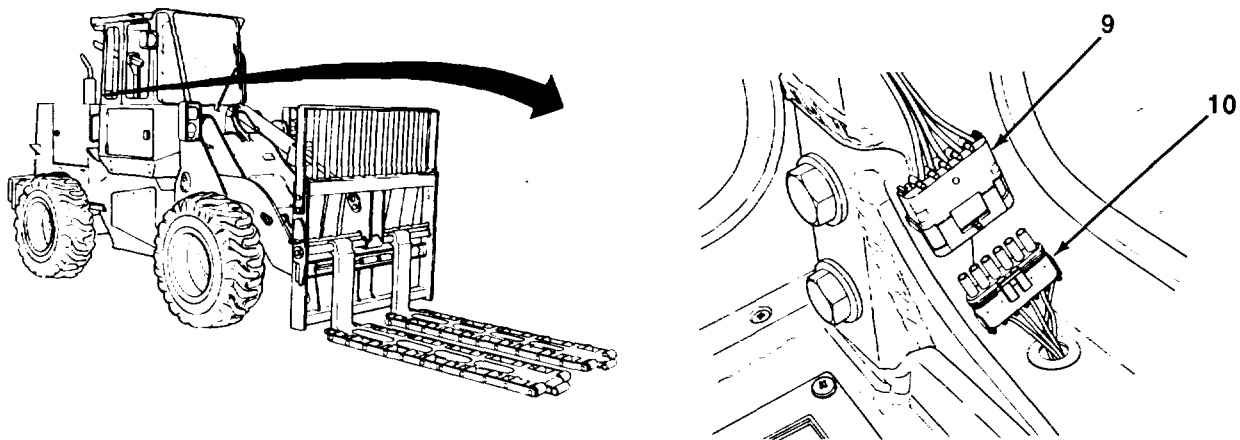
TA707902

6-64. UPPER WORKLIGHT WIRING HARNESS MAINTENANCE (Con't).

3. Disconnect upper worklight wiring harness connector (5) from right rear worklight connector (6).
4. Disconnect upper worklight wiring harness connector (7) from left rear worklight connector (8).

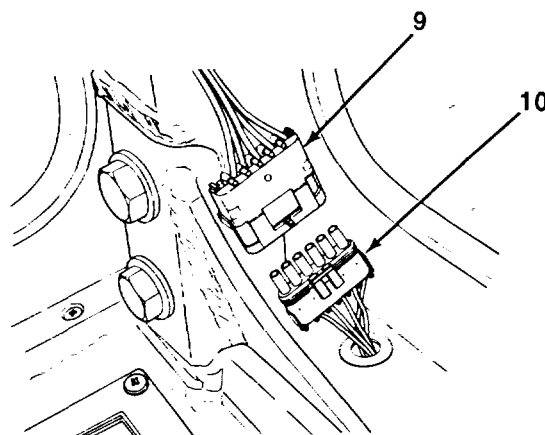
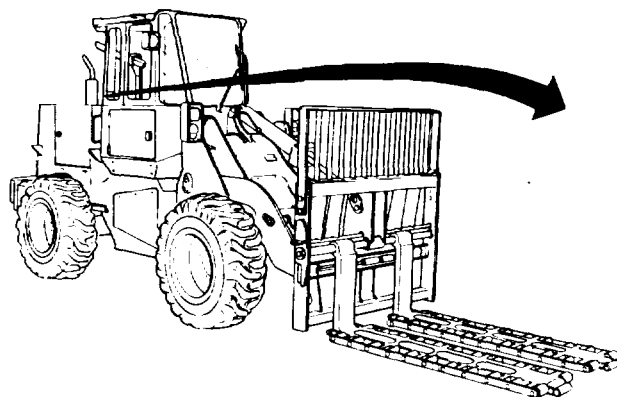


5. Disconnect upper worklight wiring harness connector (9) from lower worklight wiring harness (10).
6. Remove upper worklight wiring harness from forklift truck.

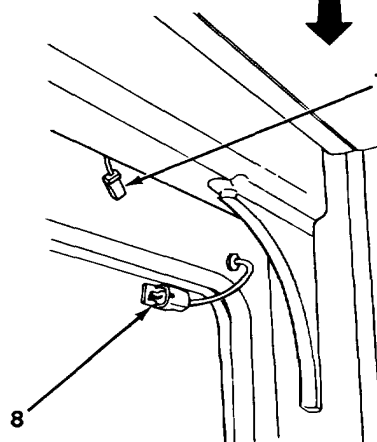
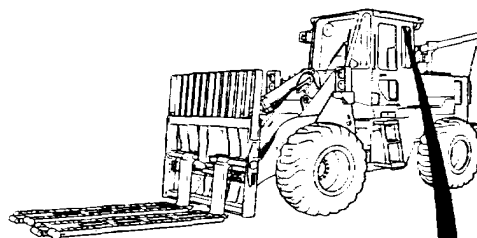


6-64. UPPER WORKLIGHT WIRING HARNESS MAINTENANCE (Con't).**c. INSTALLATION**

1. Position upper worklight wiring harness on forklift truck.
2. Connect upper worklight wiring harness connector (9) to lower worklight wiring harness (10).



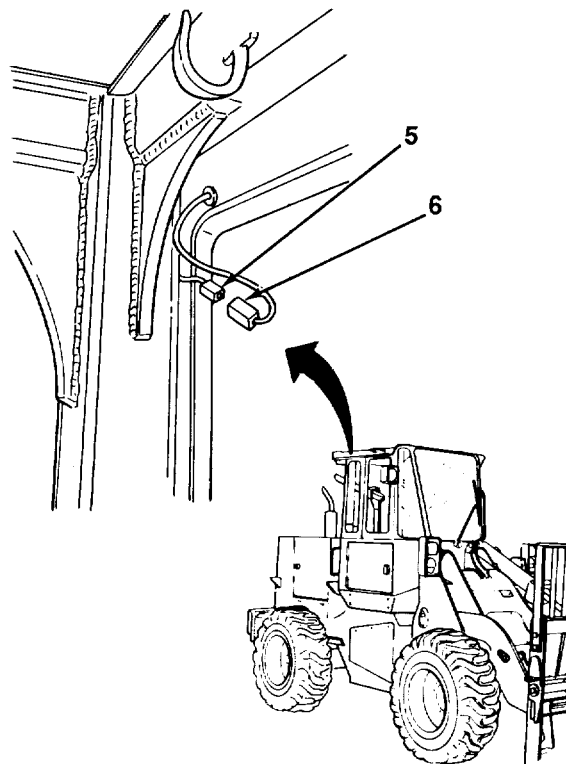
3. Connect upper worklight wiring harness connector (7) to left rear worklight connector (8).



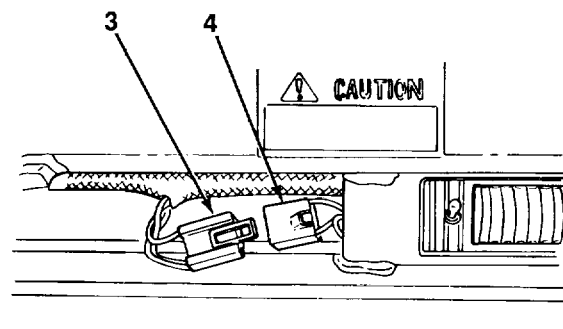
TA707904

6-64. UPPER WORKLIGHT WIRING HARNESS MAINTENANCE (Con't).

4. Connect upper worklight wiring harness connector (5) to right rear worklight connector (6).



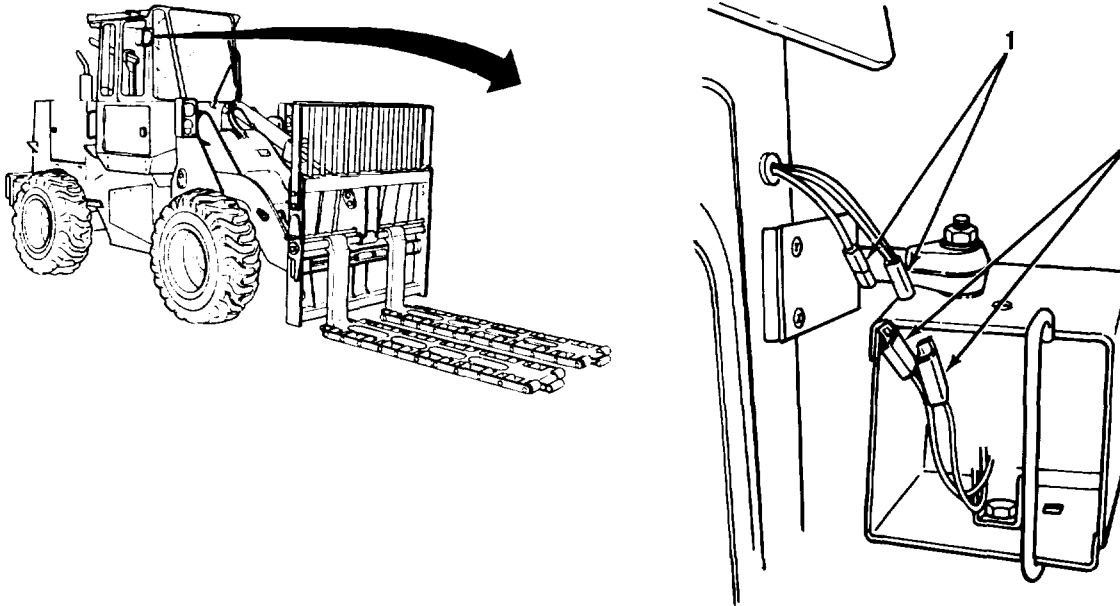
5. Connect upper worklight wiring harness connector (3) to domelight connector (4).



TA707905

6-64. UPPER WORKLIGHT WIRING HARNESS MAINTENANCE (Con't).

6. Connect two connectors (1) to adjustable floodlight bracket connectors (2).

**FOLLOW-ON TASKS:**

- Install defroster fan (see paragraph 16-3).
- Install cab sound isolators on right side cab interior (see paragraph 14-12).
- Connect negative battery cables (see paragraph 6-43).

TA707906

6-65. LOWER WORKLIGHT WIRING HARNESS MAINTENANCE.

This task covers:

- a. Repair
- b. Removal
- c. Installation

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected (see para-
- Right access door opened (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:

- TM 10-3930-659-10

NOTE

- All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.
- Refer to wiring diagrams for assistance (see paragraph 6-73).

a. REPAIR

NOTE

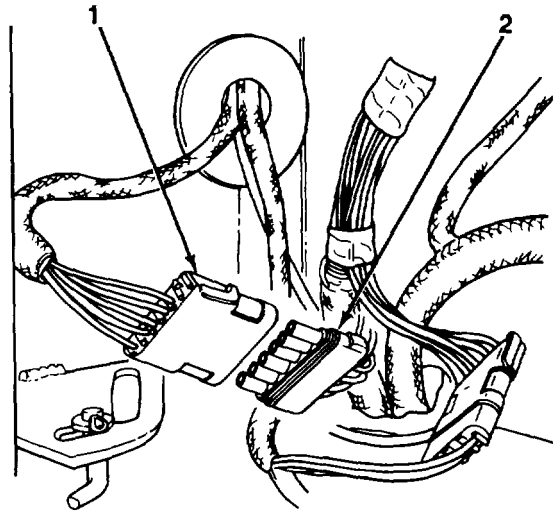
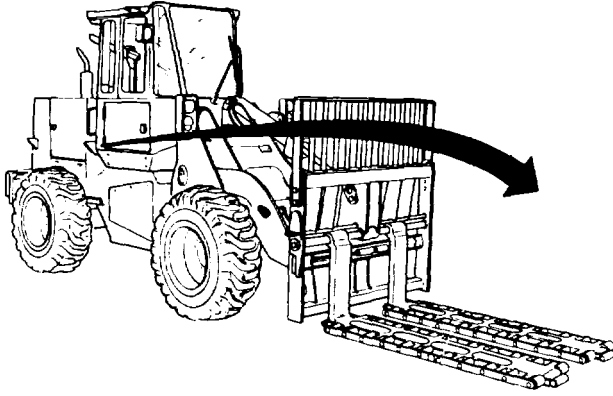
- Lower worklight wiring harness does not need to be removed from forklift truck to perform repair.
- Repair of lower worklight wiring harness consists of replacement of identification bands, terminals, and connectors.

Refer to paragraph 2-28 for repair Instructions.

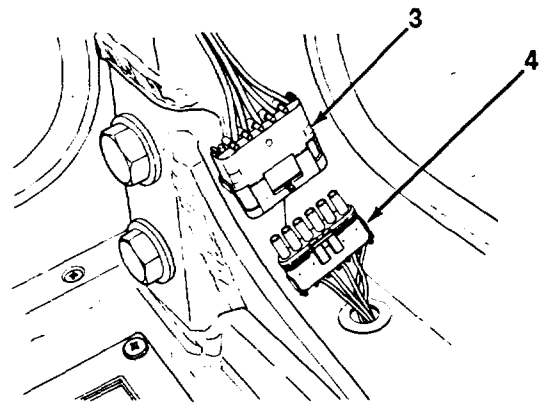
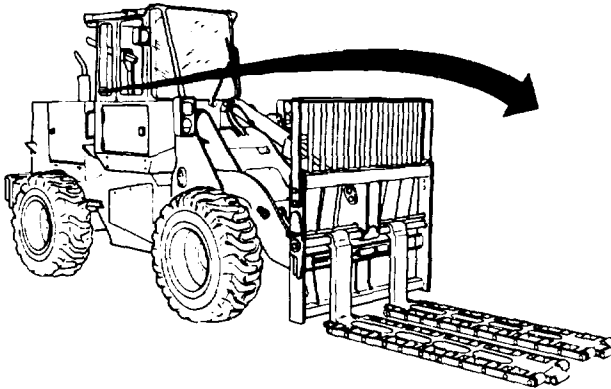
6-65. LOWER WORKLIGHT WIRING HARNESS MAINTENANCE.

b. REMOVAL

1. Disconnect lower worklight wiring harness connector (1) from load center wiring harness connector (2).



2. Disconnect lower worklight wiring harness connector (4) from upper worklight wiring harness connector (3).
3. Remove lower worklight wiring harness from forklift truck.



TA707907

6-65. LOWER WORKLIGHT WIRING HARNESS MAINTENANCE.

c. INSTALLATION

1. Position lower worklight wiring harness on forklift truck.
2. Connect lower worklight wiring harness connector (4) to upper worklight wiring harness connector (3).
3. Connect lower worklight wiring harness connector (1) to load center wiring harness (2).

FOLLOW-ON TASKS:

- Close right access door (see TM 10-3930-659-10).
- Connect negative battery cables (see paragraph 6-43).

6-66. STE/ICE LOAD CENTER WIRING HARNESS MAINTENANCE.**This task covers:**

- a. Repair
- b. Removal
- c. Installation

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected (see paragraph 6-43).
- Right access door opened (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References

- TM 10-3930-659-10

NOTE

- All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.
- Refer to wiring diagrams for assistance (see paragraph 6-73).

a. REPAIR**NOTE**

- STE/ICE load center wiring harness does not need to be removed from forklift truck to perform repair.
- Repair of STE/ICE load center wiring harness consists of replacement of Identification bands, terminals, and connectors.

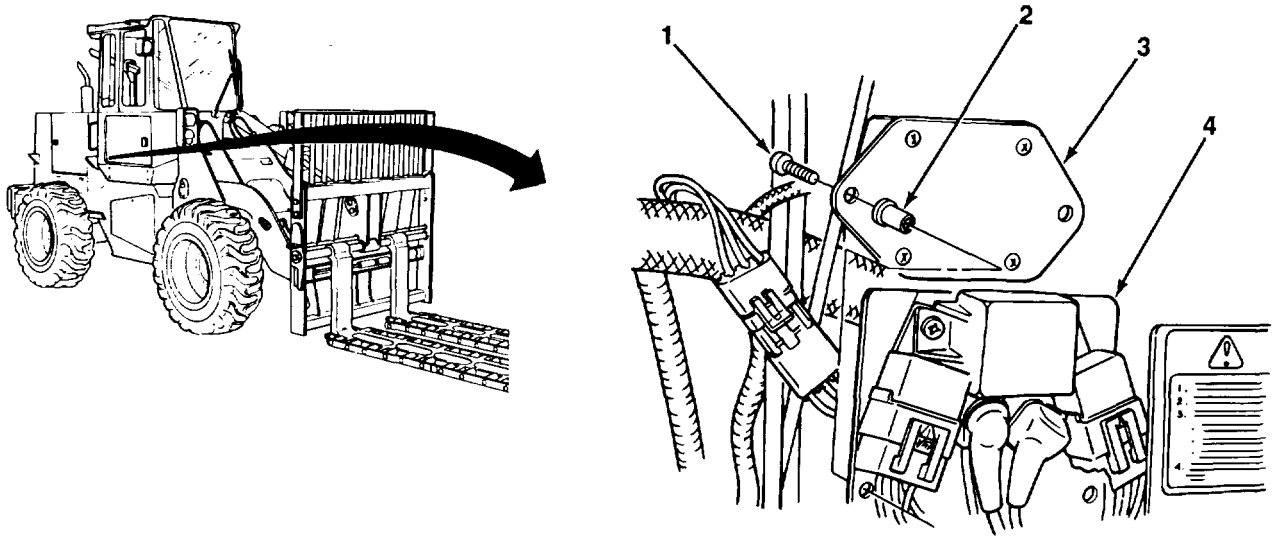
Refer to paragraph 2-28 for repair Instructions.

b. REMOVAL**NOTE**

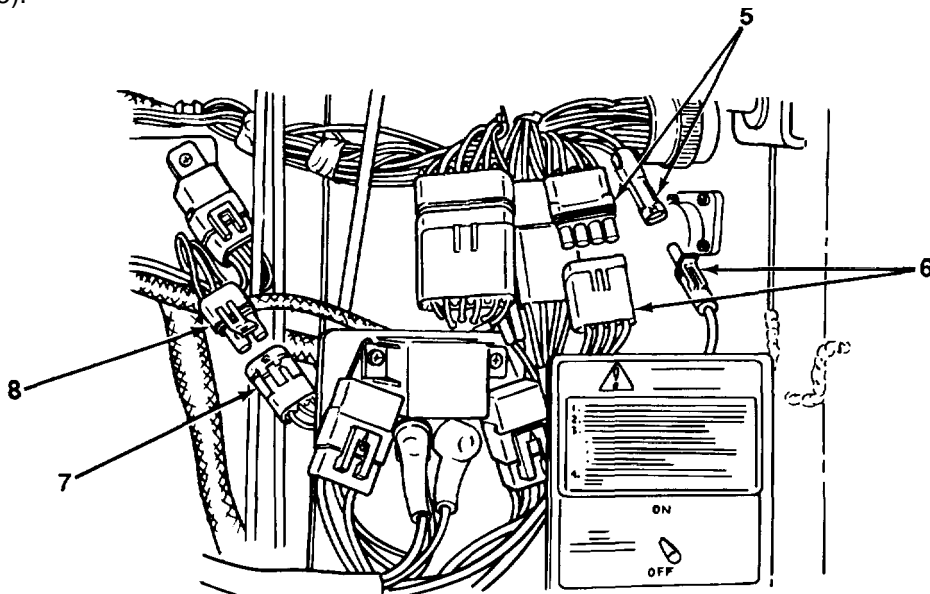
Remove tie-down straps as necessary.

1. Remove two nut fasteners (2), screws (1), and resistor assembly (3) from cab (4).

6-66. STE/ICE LOAD CENTER WIRING HARNESS MAINTENANCE Con't).



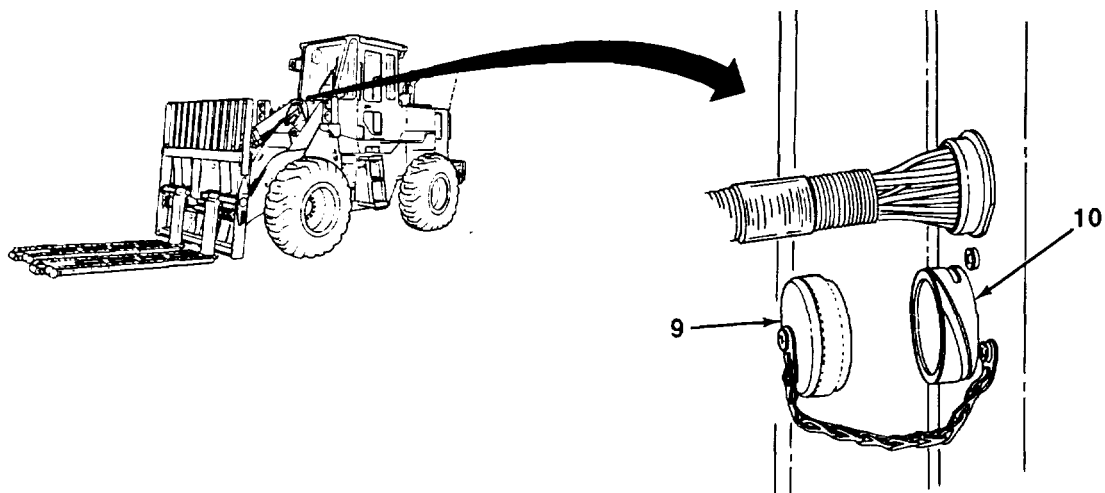
2. Disconnect STE/ICE load center wiring harness connector (7) from load center wiring harness connector (8).
3. Disconnect five STE/ICE load center wiring harness connectors (6) from STE/ICE chassis wiring harness connectors (5).



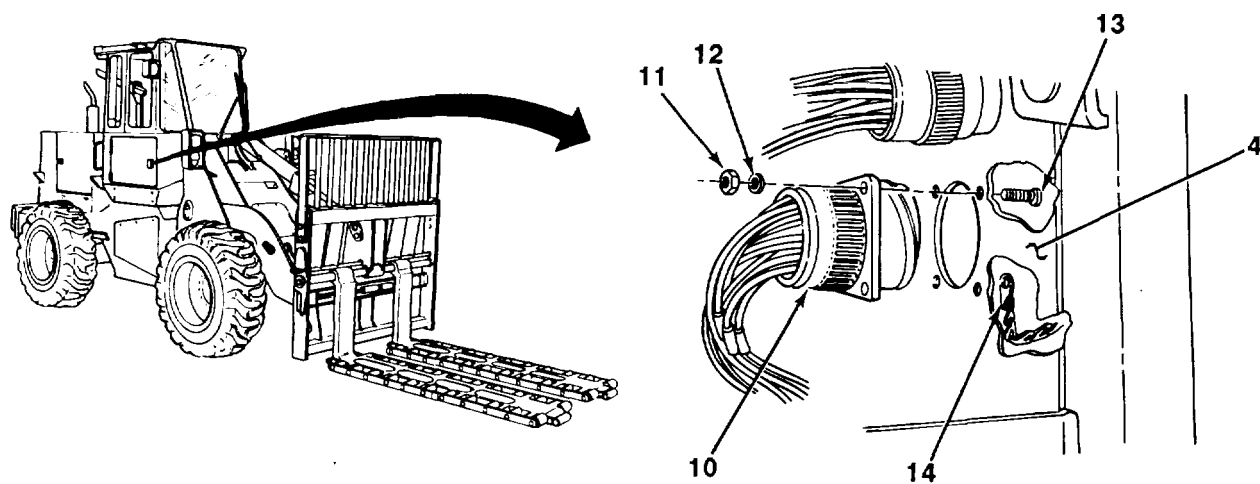
TA707908

6-66. STE/ICE LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

4. Remove cap (9) from connector (10).



5. Remove four nuts (11), washers (12), screws (13), connector (10), and chain (14) from cab (4).
6. Remove STE/ICE load center wiring harness from forklift truck.

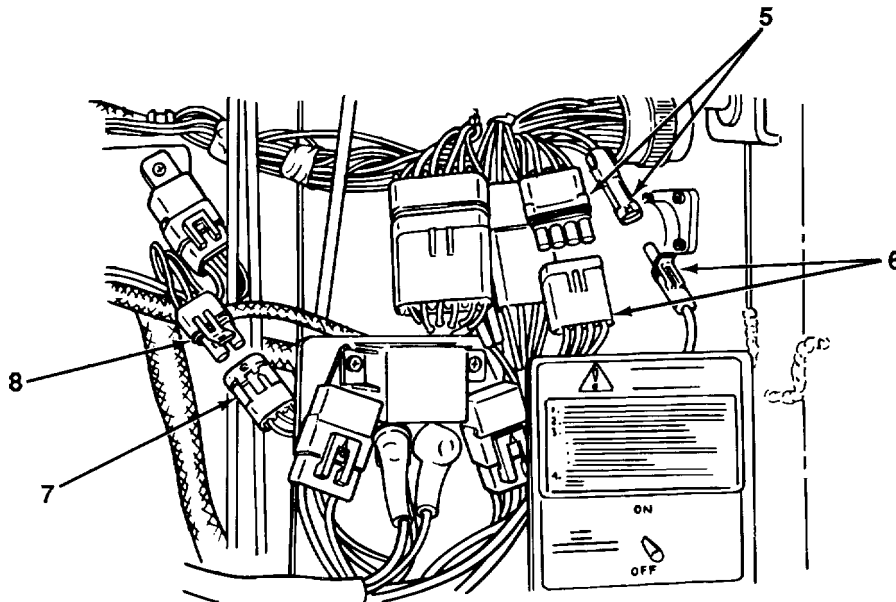


TA707909

6-66. STE/ICE LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).**c. INSTALLATION****NOTE**

Install new tie-down straps as necessary.

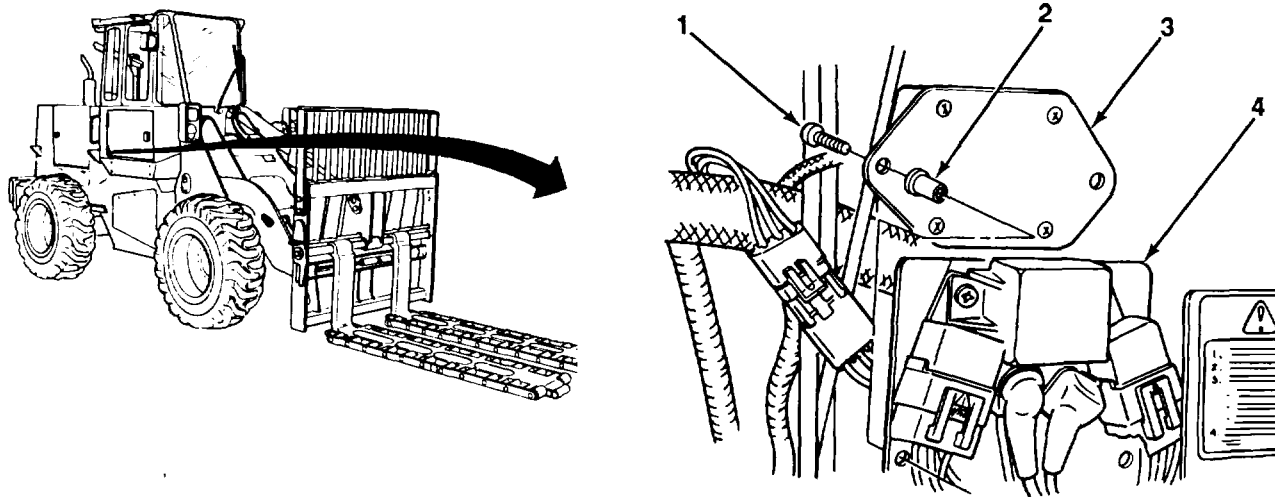
1. Position STE/ICE load center wiring harness on forklift truck.
2. Install connector (10) and chain (14) on cab (4) with four screws (13), washers (12), and nuts (11).
3. Install cap (9) on connector (10).
4. Connect five STE/ICE load center wiring harness connectors (6) to STE/ICE chassis wiring harness connectors
5. Connect STE/ICE load center wiring harness connector (7) to load center wiring harness connector (8). (5).



TA707910

6-66. STE/ICE LOAD CENTER WIRING HARNESS MAINTENANCE (Con't).

6. Install resistor assembly (3) on cab (4) with two screws (1) and nut fasteners (2).

**FOLLOW-ON TASKS:**

- Close right access door (see TM 10-3930-659-10).
- Connect negative battery cables (see paragraph 6-43).

TA707911

6-67. STE/ICE CHASSIS WIRING HARNESS MAINTENANCE.

This task covers:

- a. Repair
 - b. Removal
 - c. Installation
-

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected (see paragraph 6-43).
- Right access door opened (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:

- TM 10-3930659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

NOTE

- All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.
- Refer to wiring diagrams for assistance (see paragraph 6-73).

a. REPAIR

NOTE

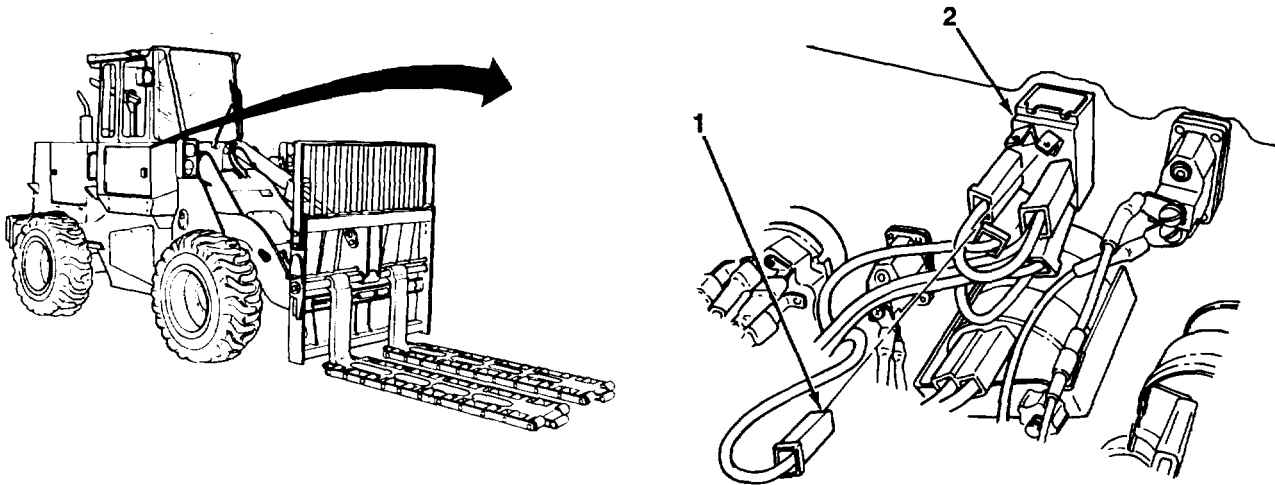
- STE/ICE chassis wiring harness does not need to be removed from forklift truck to perform repair.
- Repair of STE/ICE chassis wiring harness consists of replacement of identification bands, terminals, and connectors.

Refer to paragraph 2-28 for repair Instructions.

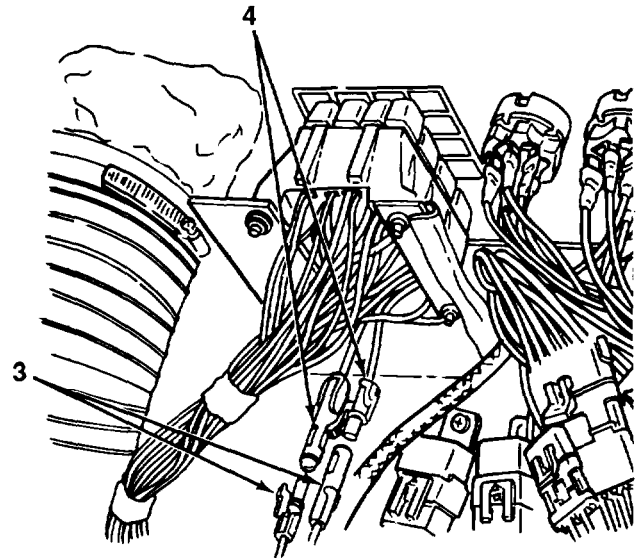
6-67. STE/ICE CHASSIS WIRING HARNESS MAINTENANCE (Con't).**b. REMOVAL****NOTE**

Remove clamps and tie-down straps as necessary.

1. Disconnect five blackout light switch connectors (1) from blackout light switch (2).



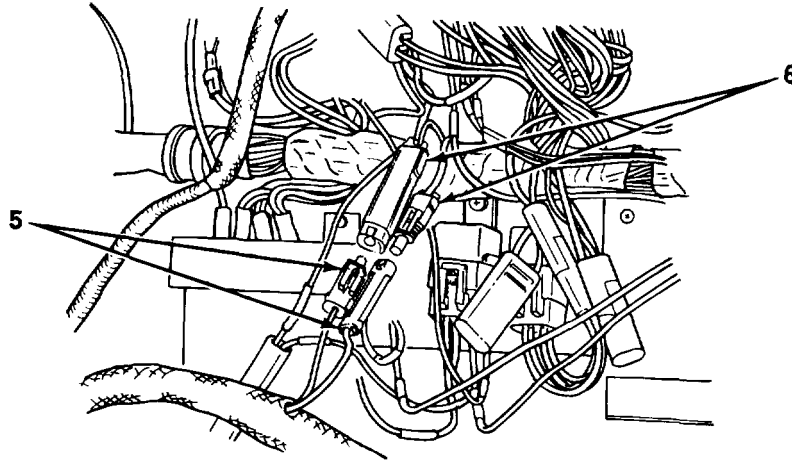
2. Disconnect two fuse block connectors (4) from STE/ICE chassis wiring harness connectors (3).



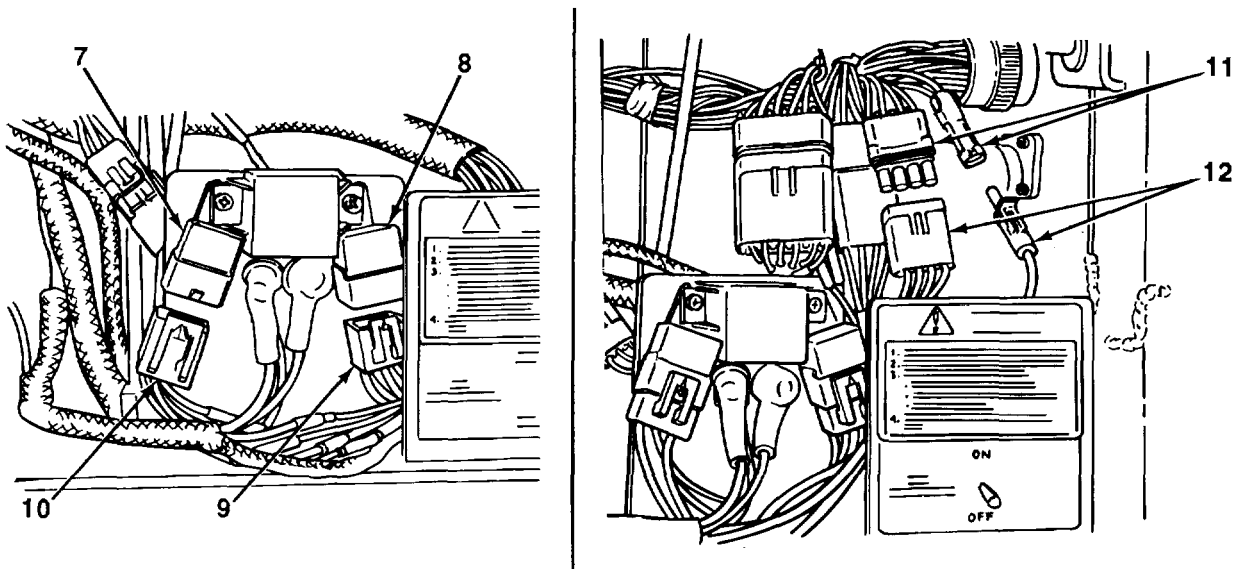
TA707912

6-67. STE/ICE CHASSIS WIRING HARNESS MAINTENANCE (Con't).

3. Disconnect two STE/ICE chassis wiring harness connectors (5) from STE/ICE load center wiring harness connectors (6).



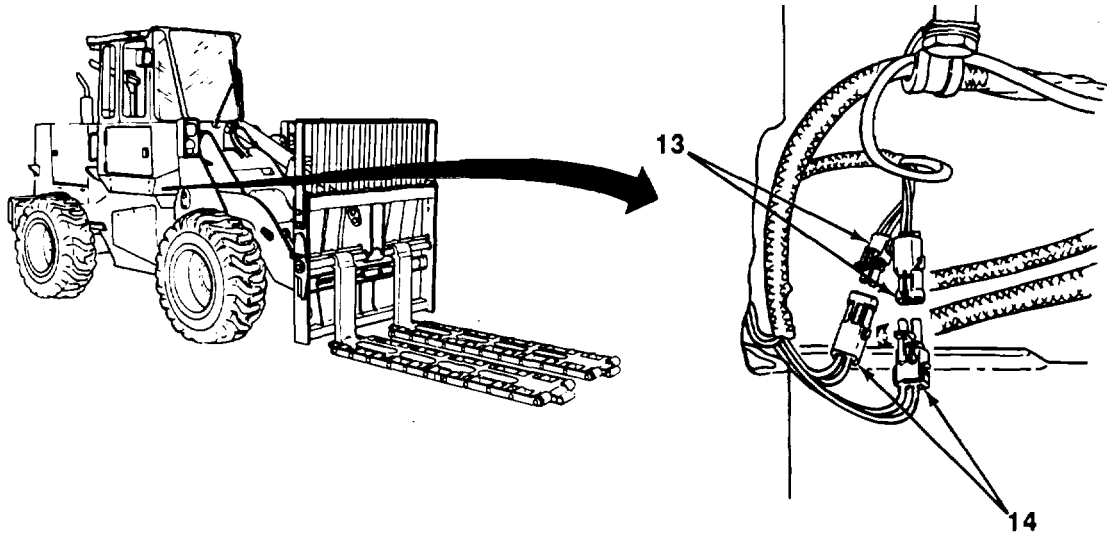
4. Disconnect reverse warning alarm relay connector (10) from reverse warning alarm relay (7).
5. Disconnect brake lights relay connector (9) from brake lights relay (8).
6. Disconnect five STE/ICE chassis wiring harness connectors (11) from STE/ICE load center wiring harness connectors (12).



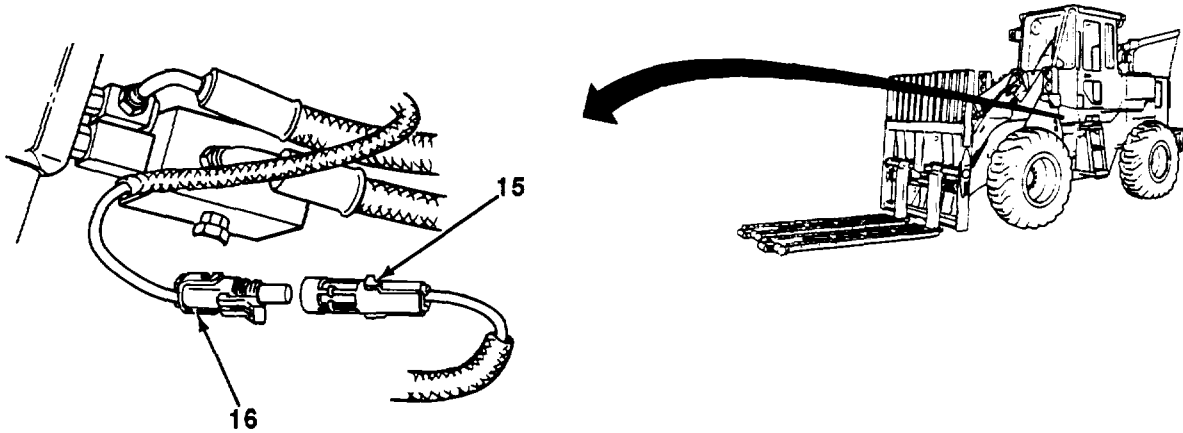
TA707913

6-67. STE/ICE CHASSIS WIRING HARNESS MAINTENANCE (Con't).

7. Disconnect two STE/ICE chassis wiring harness connectors (13) from under cab wiring harness connectors (14).



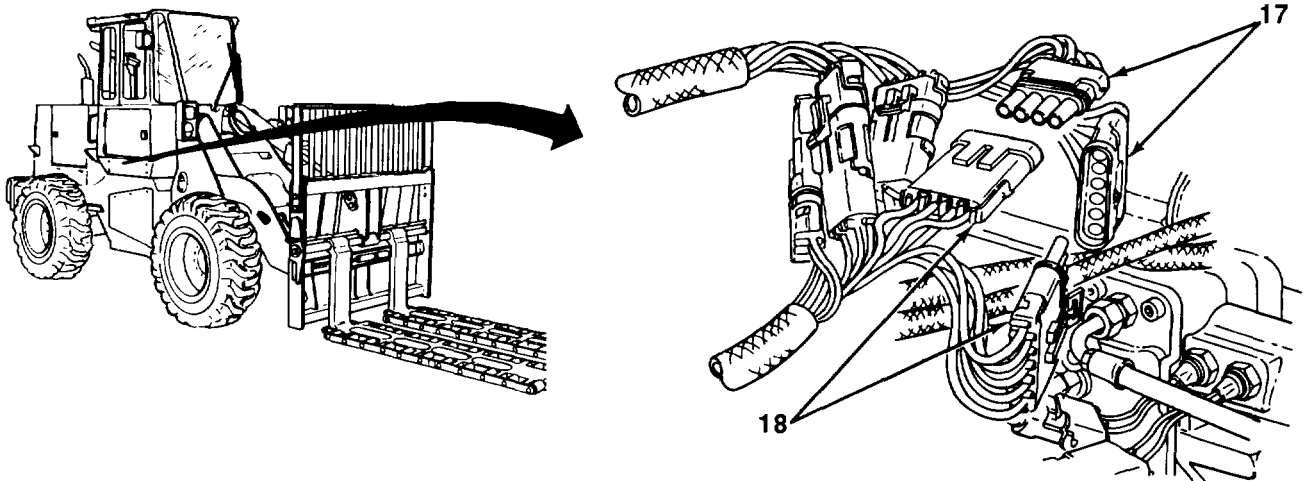
8. Disconnect STE/ICE chassis wiring harness connector (16) from STE/ICE turn signal/emergency flashers and blackout lights wiring harness connector (15).



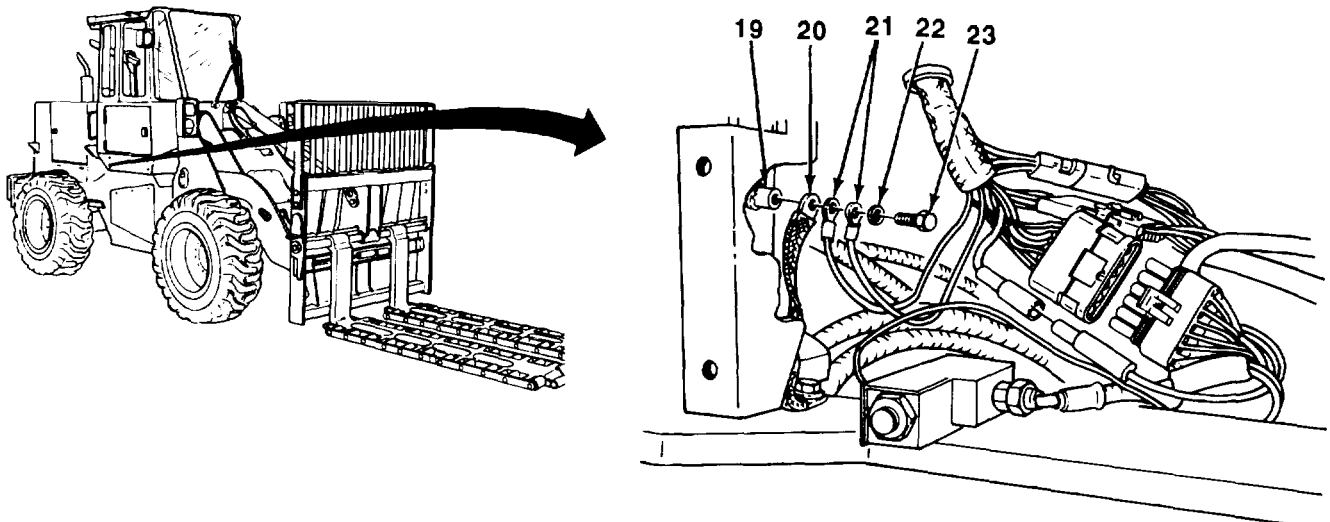
TA707914

6-67. STE/ICE CHASSIS WIRING HARNESS MAINTENANCE (Con't).

9. Disconnect five STE/ICE chassis wiring harness connectors (18) from STE/ICE battery wiring harness connectors (17).



10. Remove screw (23), washer (22), two cab ground terminal leads (21), and ground strap (20) from cab (19).
11. Remove STE/ICE chassis wiring harness from forklift truck.

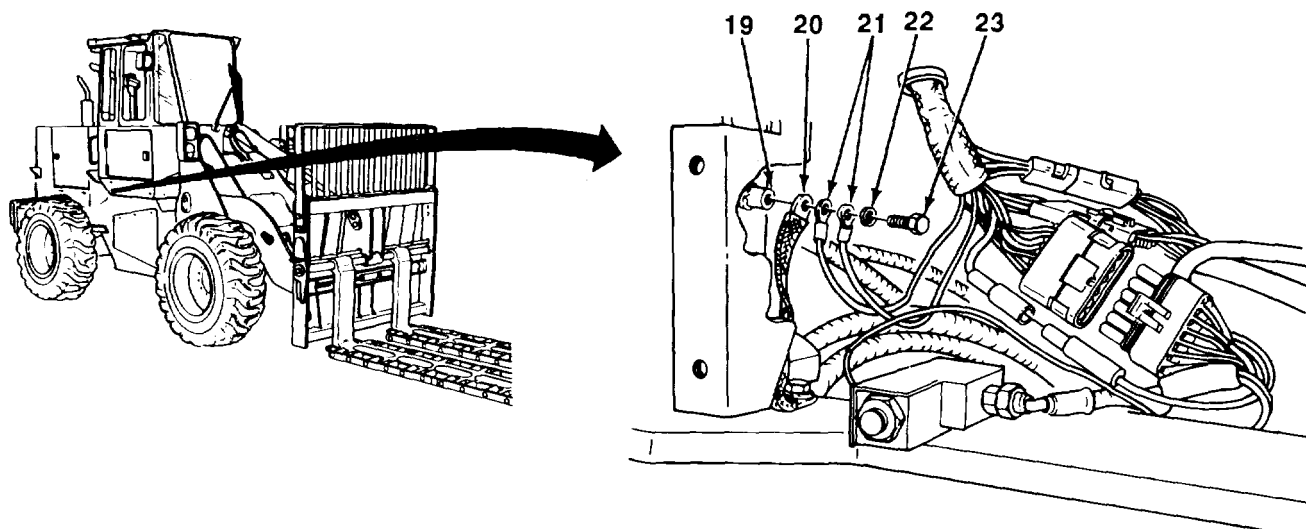


TA707915

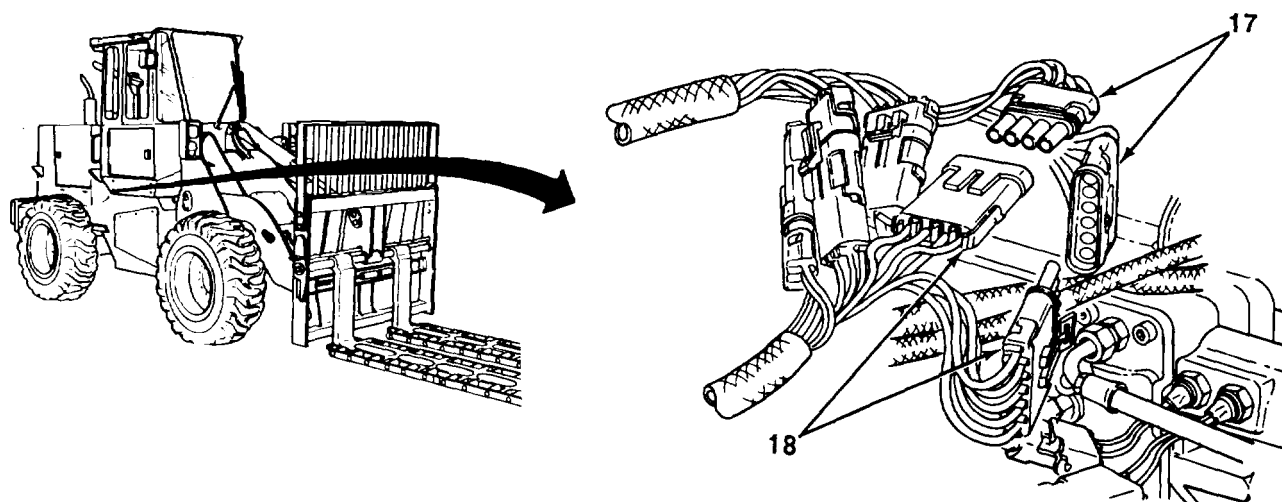
6-67. STE/ICE CHASSIS WIRING HARNESS MAINTENANCE (Con't).**c. INSTALLATION****NOTE**

Install clamps and new tie-down straps as necessary.

1. Position STE/ICE chassis wiring harness on forklift truck.
2. Install ground strap (20) and two cab ground terminal leads (21) to cab (19) with washer (22) and screw (23).



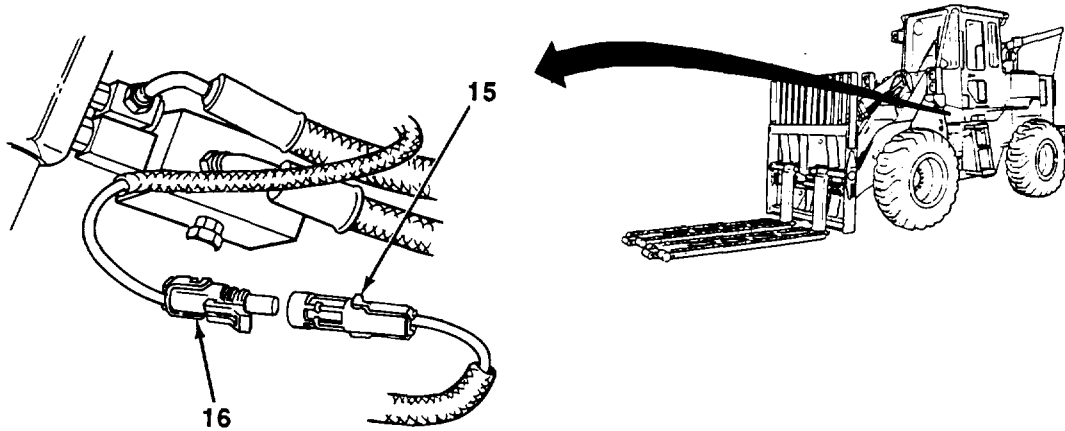
3. Connect five STE/ICE chassis wiring harness connectors (18) to STE/ICE battery wiring harness connectors (17).



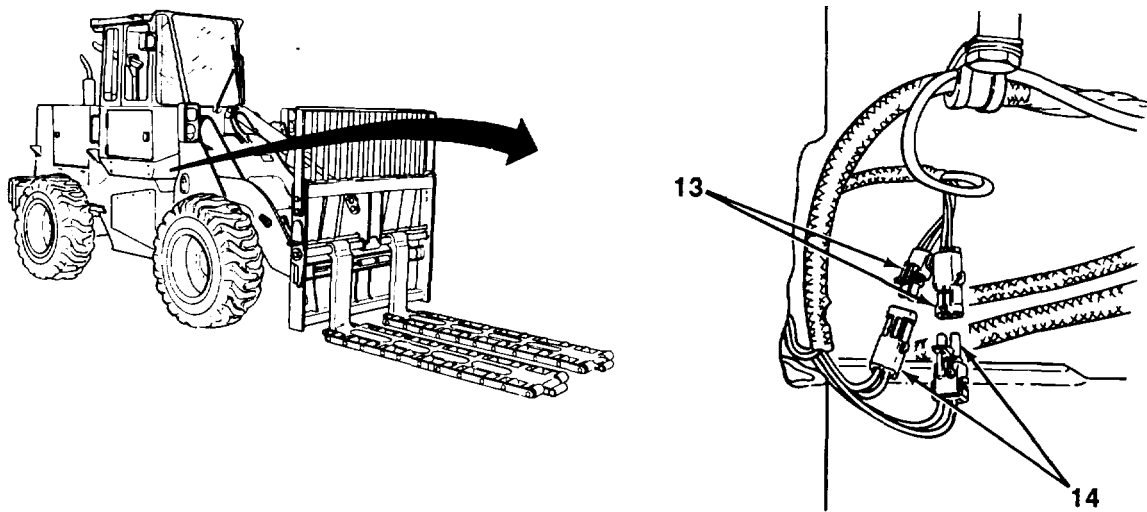
TA707916

6-67. STE/ICE CHASSIS WIRING HARNESS MAINTENANCE (Con't).

4. Connect STE/ICE chassis wiring harness connector (16) to STE/ICE turn signal/emergency flashers and blackout lights wiring harness connector (15).



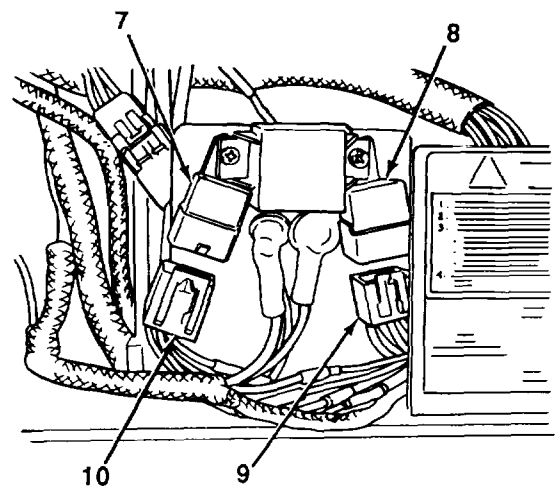
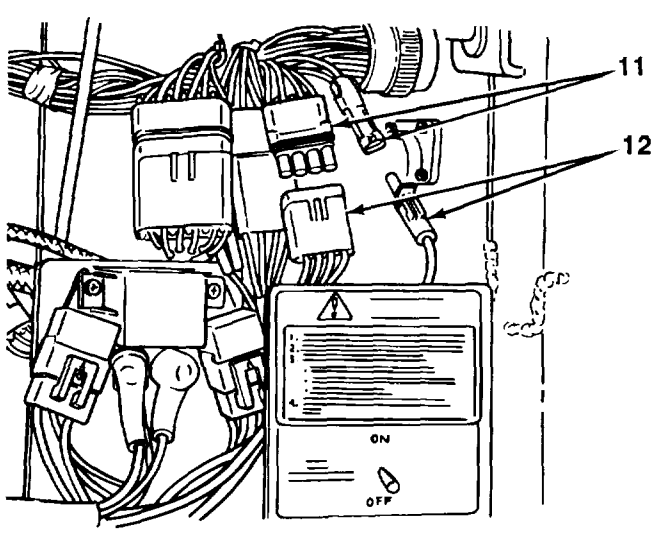
5. Connect two STE/ICE chassis wiring harness connectors (13) to under cab wiring harness connectors (14).



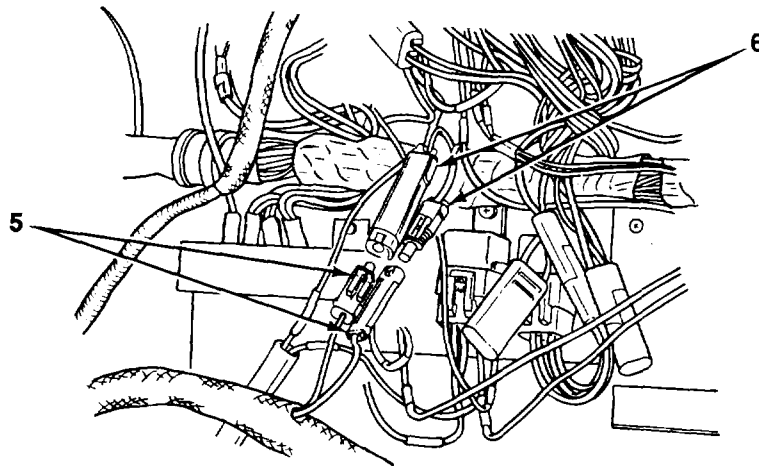
TA707917

6-67. STE/ICE CHASSIS WIRING HARNESS MAINTENANCE (Con't).

6. Connect five STE/ICE chassis wiring harness connectors (11) to STE/ICE load center wiring harness connectors (12).
7. Connect brake lights relay connector (9) to brake lights relay (8).
8. Connect reverse warning alarm relay connector (10) to reverse warning alarm relay (7).



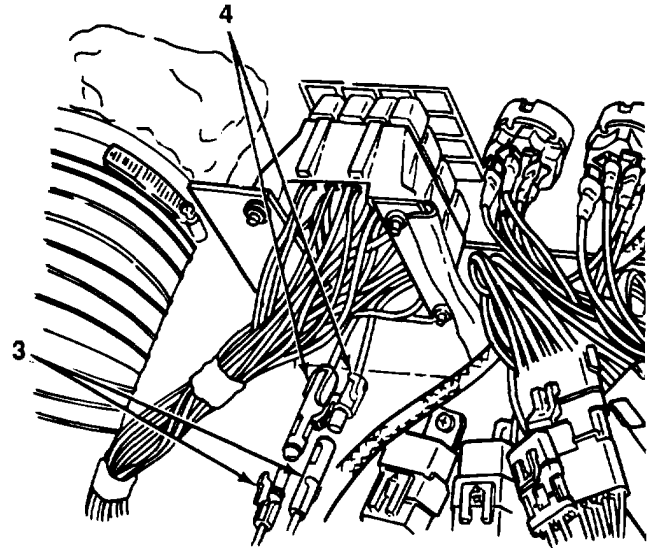
9. Connect two STE/ICE chassis wiring harness connectors (5) to STE/ICE load center wiring harness connectors (6).



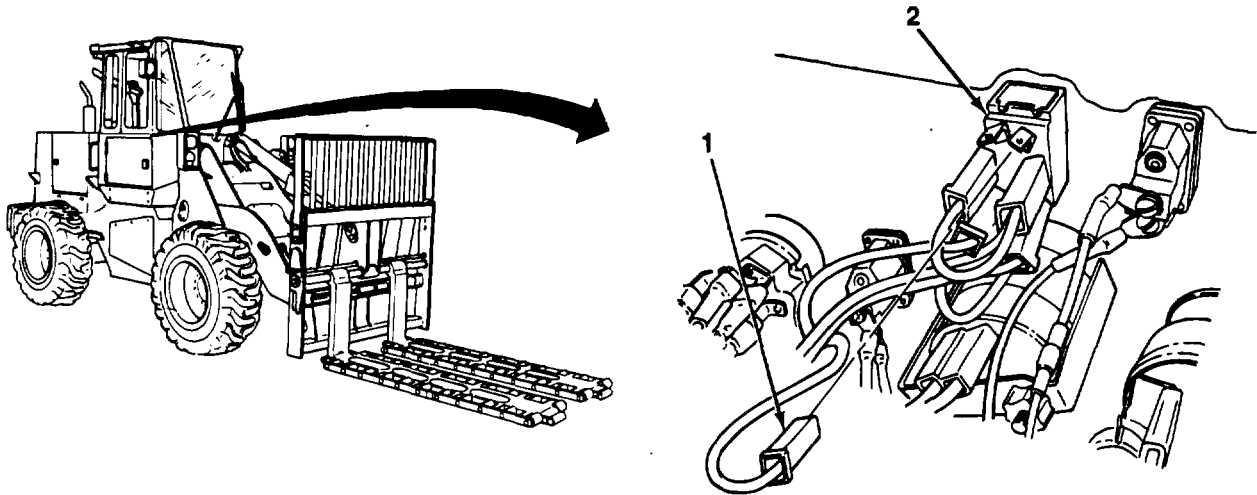
TA707918

6-67. STE/ICE CHASSIS WIRING HARNESS MAINTENANCE (Con't).

10. Connect two fuse block connectors (4) to STE/ICE chassis wiring harness connectors (3).



11. Connect five blackout light switch connectors (1) to blackout light switch (2).

**FOLLOW-ON TASKS:**

- Install cab skirts (see paragraph 14-6).
- Close right access door (see TM 10-3930-659-10).
- Connect negative battery cables (see paragraph 6-43).

TA707919

6-68. STE/ICE BATTERY WIRING HARNESS MAINTENANCE.**This task covers:**

- | | |
|---|---|
| <ul style="list-style-type: none"> a. Repair b. Removal | <ul style="list-style-type: none"> c. Installation |
|---|---|

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected (see paragraph 6-43).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).
- Radiator grille door opened (see TM 10-3930-659-10).

Materials/Parts:

Marker tags (Item 33, Appendix C)

- Two lockwashers
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

NOTE

- All wires should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.
- Refer to wiring diagrams for assistance (see paragraph 6-73).

a. REPAIR**NOTE**

- STE/ICE battery wiring harness does not need to be removed from forklift truck to perform repair.
- Repair of STE/ICE battery wiring harness consists of replacement of identification bands, terminals, and connectors.

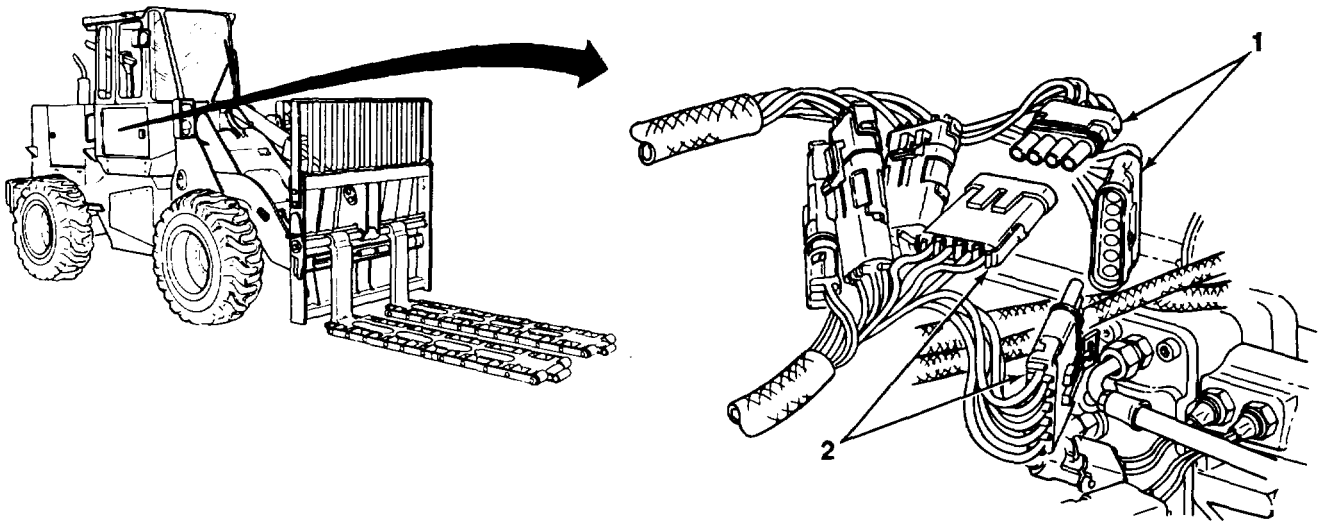
Refer to paragraph 2-28 for repair instructions.

b. REMOVAL**NOTE**

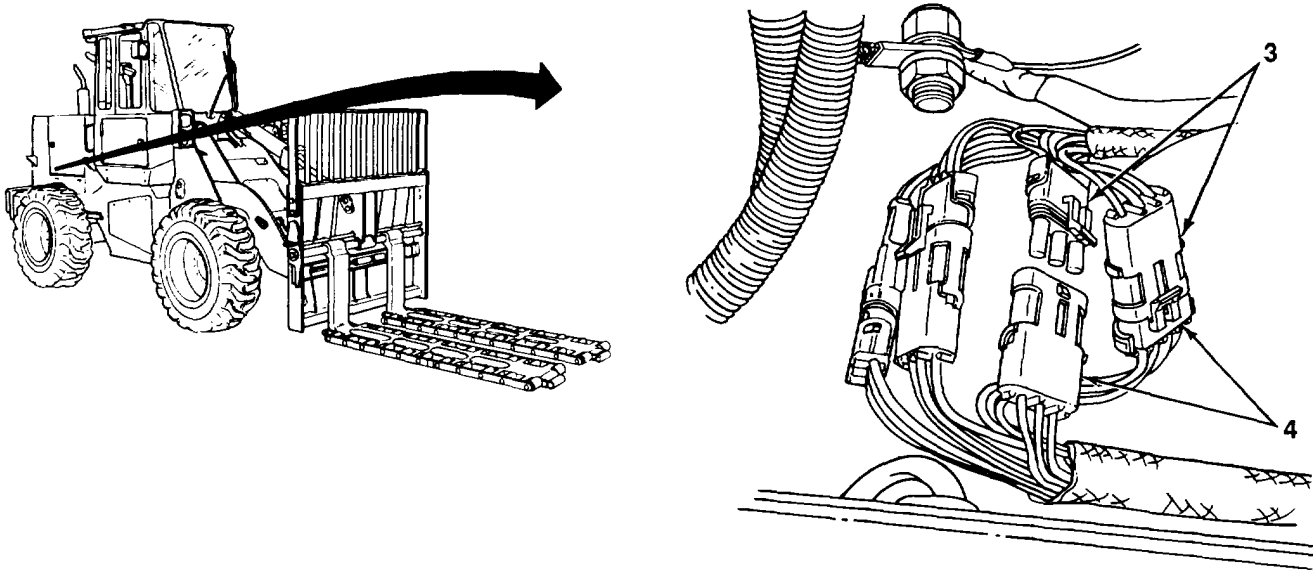
Remove clamps as necessary.

1. Disconnect five STE/ICE battery wiring harness connectors (1) from STE/ICE chassis wiring harness connectors (2).

6-68. STE/ICE BATTERY WIRING HARNESS MAINTENANCE (Con't).



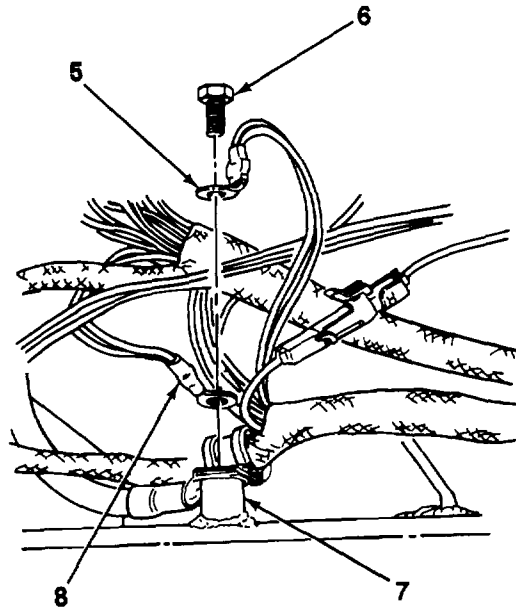
2. Disconnect four STE/ICE engine frame wiring harness connectors (4) from STE/ICE alternator, starter motor, and fuel injection pump wiring harness connectors (3).



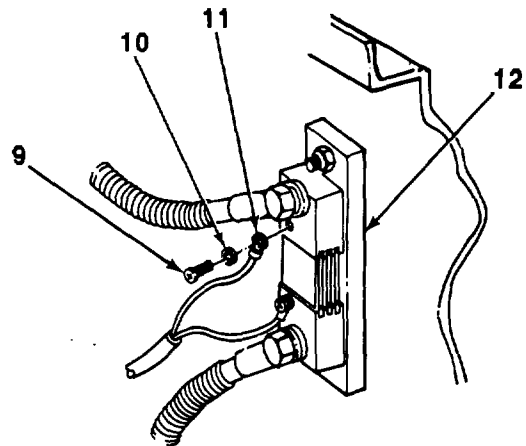
TA707920

6-68. STE/ICE BATTERY WIRING HARNESS MAINTENANCE (Con't).

3. Remove screw (6) STE/ICE battery wiring harness ground terminal lead (5), and frame ground terminal lead (8) from frame (7).



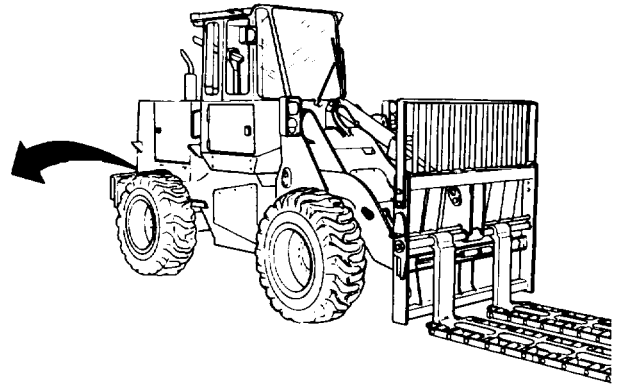
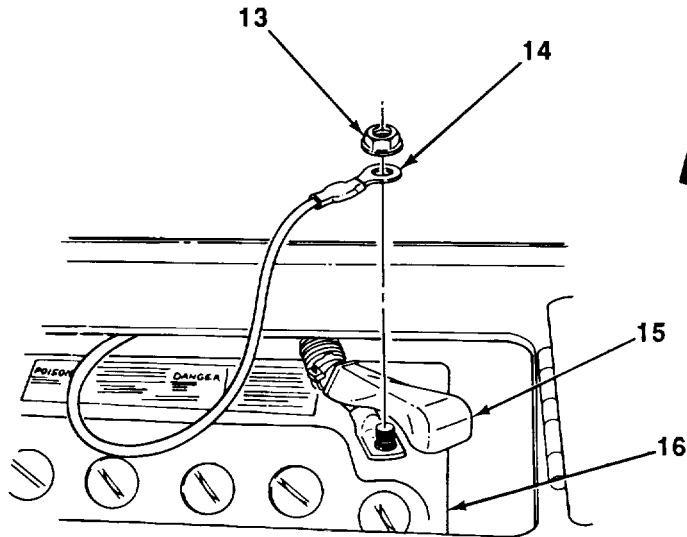
4. Remove two screws (9), lockwashers (10), and STE/ICE battery terminal leads (11) from shunt (12). Discard lockwashers.



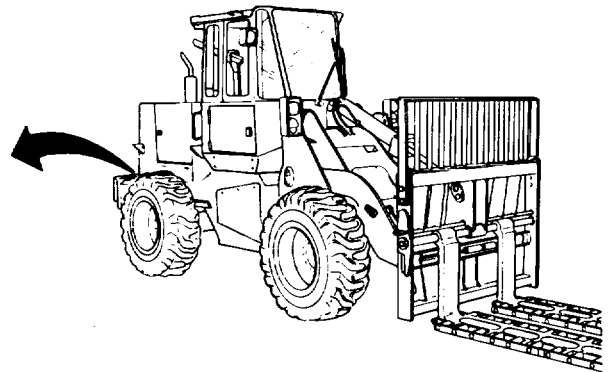
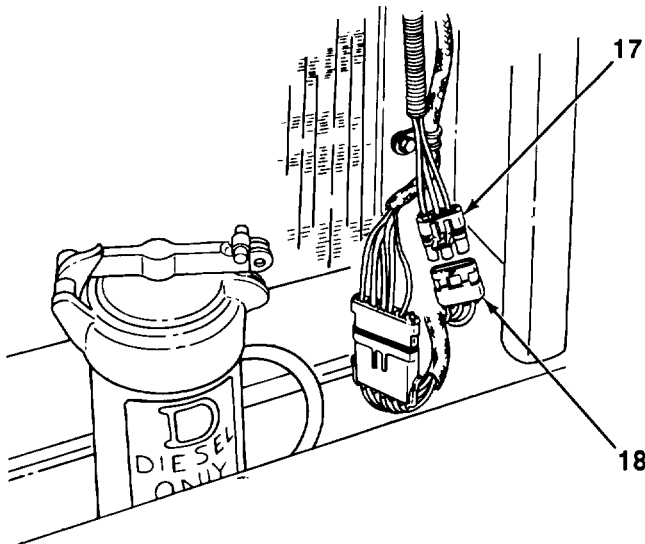
TA707921

6-68. STE/ICE BATTERY WIRING HARNESS MAINTENANCE (Con't).

5. Pull back cover (15), and remove nut (13) and positive (+) terminal lead (14) from positive (+) terminal of right battery (16).



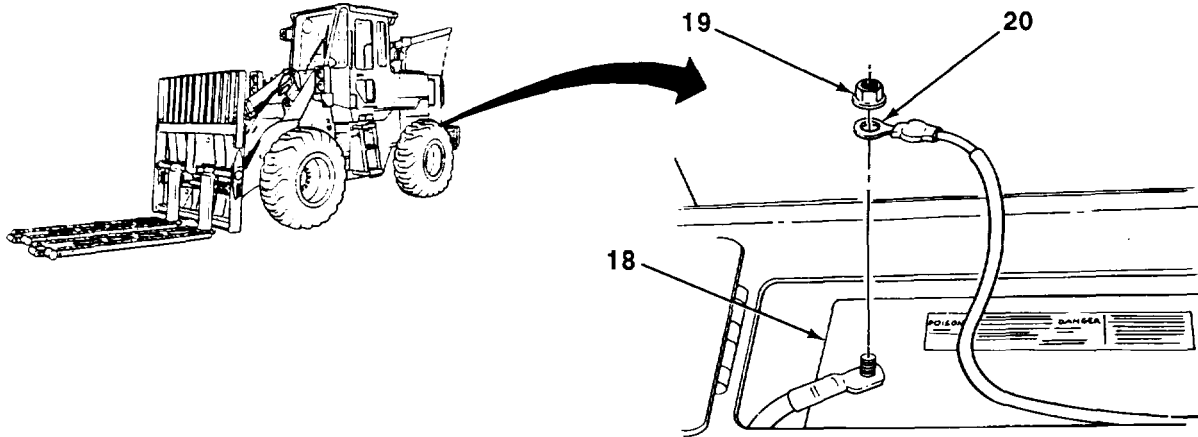
6. Disconnect STE/ICE battery wiring harness connector (18) from STE/ICE blackout light wiring harness connector (17).



TA707922

6-68. STE/ICE BATTERY WIRING HARNESS MAINTENANCE (Con't).

7. Remove nut (19) and STE/ICE battery wiring harness terminal lead (20) from negative (-) terminal of left battery (18).
8. Remove STE/ICE battery wiring harness from forklift truck.

**c. INSTALLATION****NOTE**

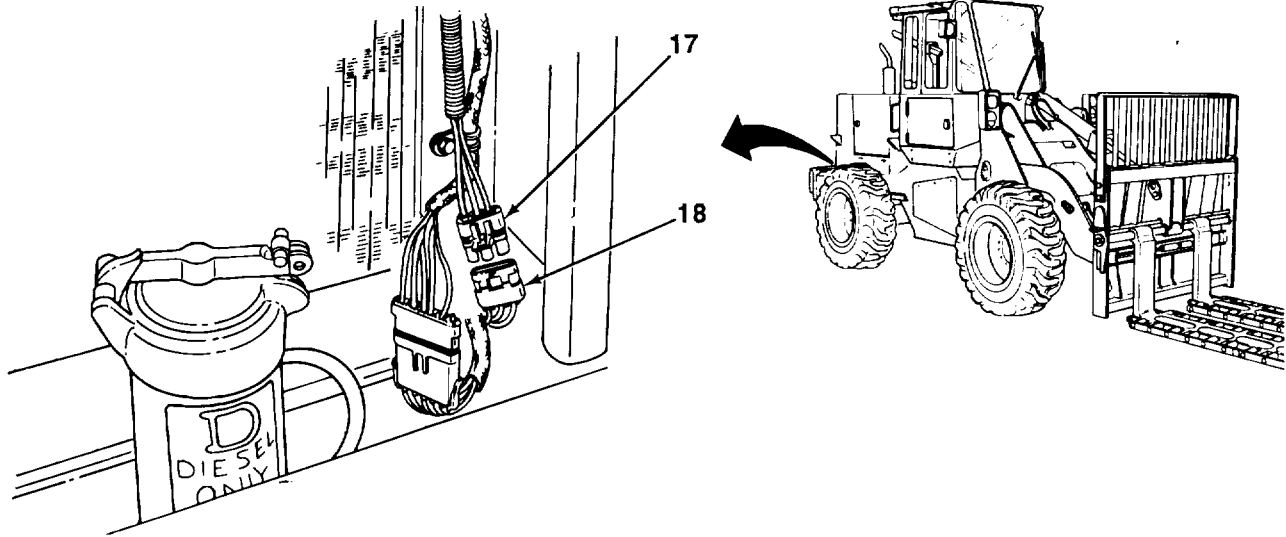
Install clamps as necessary.

1. Position STE/ICE battery wiring harness on forklift truck.
2. Install STE/ICE battery wiring harness terminal lead (20) on negative (-) terminal of left battery (18) with nut (19).

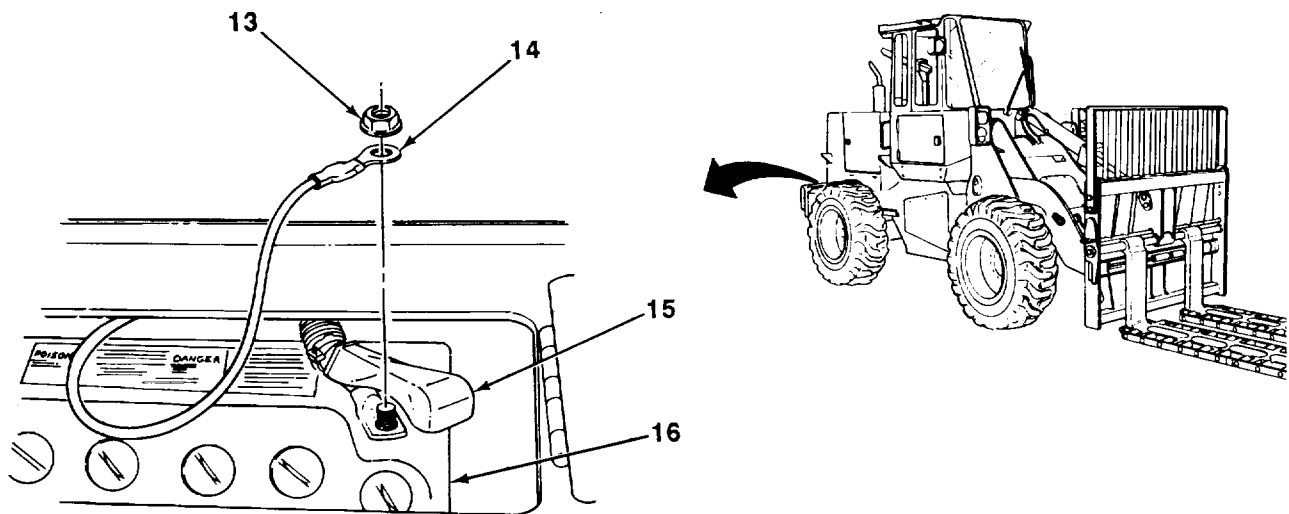
TA707923

6-68. STE/ICE BATTERY WIRING HARNESS MAINTENANCE (Con't).

3. Connect STE/ICE battery wiring harness connector (18) to STE/ICE blackout light wiring harness connector (17).



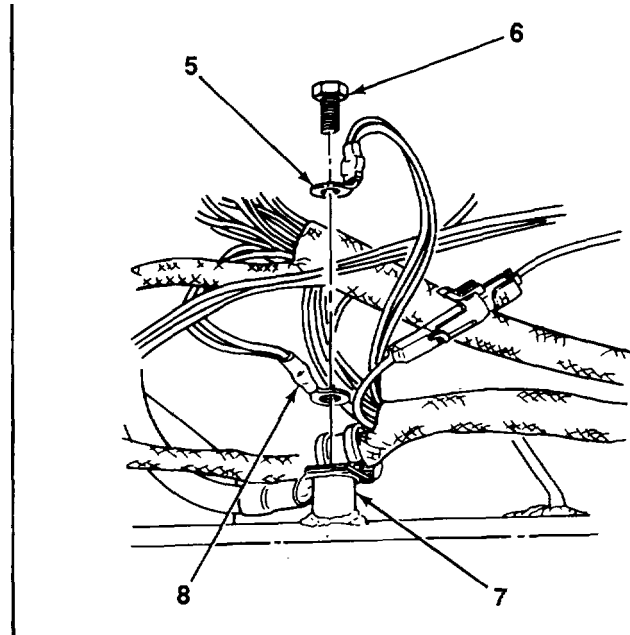
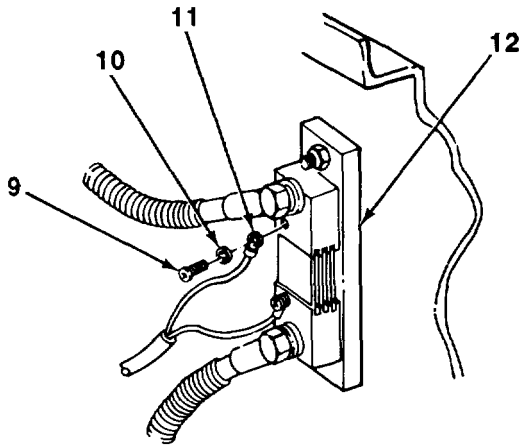
4. Install positive (+) terminal lead (14) on positive (+) terminal of right battery (16) with nut (13).
5. Install cover (15) over nut (13).



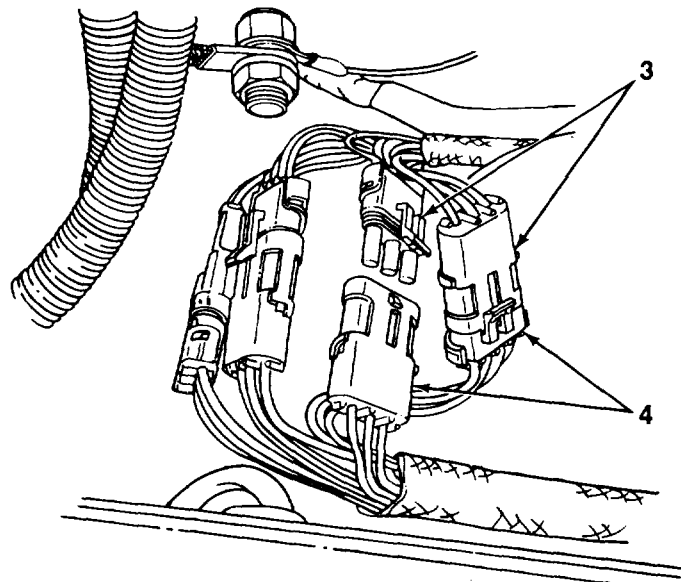
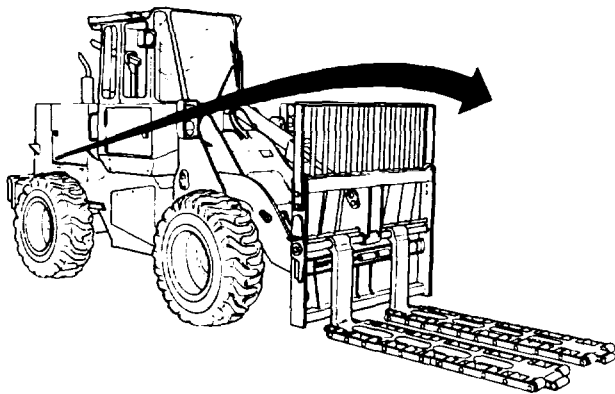
TA707924

6-68. STE/ICE BATTERY WIRING HARNESS MAINTENANCE (Con't).

6. Install two STE/ICE battery terminal leads (11) on shunt (12) with two new lockwashers (10) and screws (9).
7. Install frame ground terminal lead (8) and STE/ICE battery wiring harness ground terminal lead (5) on frame (7) with screw (6).



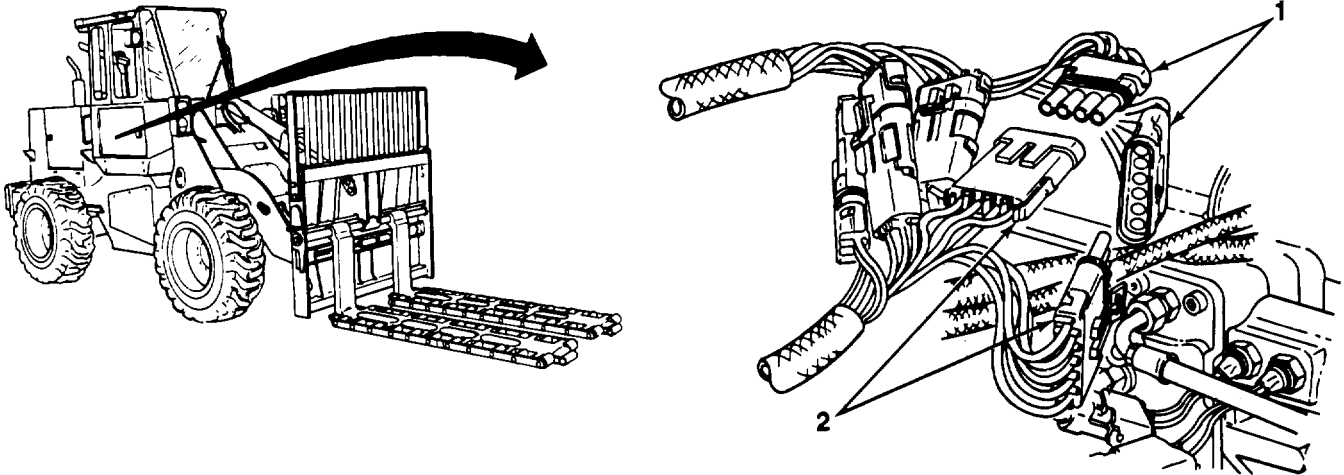
8. Connect four STE/ICE engine frame wiring harness connectors (4) to STE/ICE alternator, starter motor, and fuel injection pump wiring harness connectors (3).



TA707925

6-68. STE/ICE BATTERY WIRING HARNESS MAINTENANCE (Con't).

9. Connect five STE/ICE battery wiring harness connectors (1) to STE/ICE chassis wiring harness connectors (2).

**FOLLOW-ON TASKS:**

- Close radiator grille door (see TM 10-3930-659-10).
- Install right side cab skirt (see paragraph 14-6).
- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).
- Connect negative battery cables (see paragraph 6-43).

TA707926

6-69. STE/ICE TURN SIGNAL/EMERGENCY FLASHERS AND BLACKOUT LIGHTS WIRING HARNESS MAINTENANCE.

This task covers:

- a. Repair
 - b. Removal
 - c. Installation
-

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected (see paragraph 6-43)
- Cab skirts removed (see paragraph 14-6).
- Front turn signal/emergency flashers and front black out lights removed (see paragraph 6-22).
- Blackout driving light removed (see paragraph 6-23).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

NOTE

- **All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.**
- **Refer to wiring diagrams for assistance (see paragraph 6-73).**

a. REPAIR

NOTE

- **STE/ICE turn signal/emergency flashers and blackout lights wiring harness does not need to be removed from forklift truck to perform repair.**
- **Repair of STE/ICE turn signal/emergency flashers and blackout lights wiring harness consists of replacement of identification bands, terminals, and connectors.**

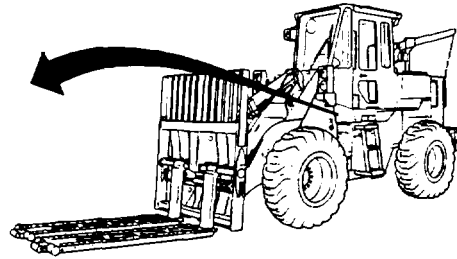
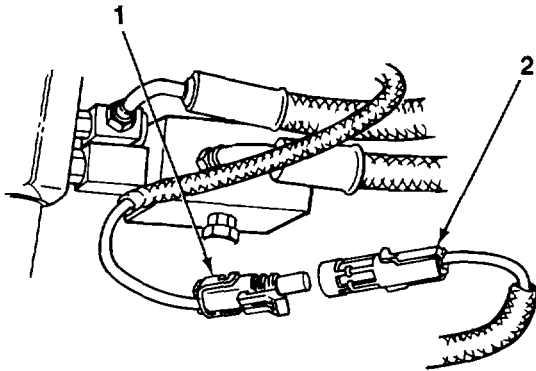
Refer to paragraph 2-28 for repair instructions.

b. REMOVAL

NOTE

Remove clamps as necessary.

1. Disconnect STE/ICE turn signal/emergency flashers and blackout lights wiring harness connector (2) from STE/ICE chassis wiring harness connector (1).
2. Remove STE/ICE turn signal/emergency flashers and blackout lights wiring harness from forklift truck.

6-69. STE/ICE TURN SIGNAL/EMERGENCY FLASHERS AND BLACKOUT LIGHTS WIRING HARNESS MAINTENANCE (Con't).**c. INSTALLATION****NOTE**

Install clamps as necessary.

1. Position STE/ICE turn signal/emergency flashers and blackout lights wiring harness on forklift truck.
2. Connect STE/ICE turn signal/emergency flashers and blackout lights wiring harness connector (2) to STE/ICE chassis wiring harness connector (1).

FOLLOW-ON TASKS:

- Install blackout driving light (see paragraph 6-23).
- Install turn signal/emergency flashers and front blackout lights (see paragraph 6-22).
- Install cab skirts (see paragraph 14-6).
- Connect negative battery cables (see paragraph 6-43).

TA707927

6-70. STE/ICE BLACKOUT LIGHT WIRING HARNESS MAINTENANCE.**This task covers:**

- a. Repair
- b. Removal
- c. Installation

INITIAL SETUP:**Equipment Conditions:**

- Negative battery cables disconnected (see - paragraph 6-43)
- Radiator grille door opened (see TM 10-3930-659-10).
- Rear blackout lights removed (see paragraph 6-26).

Materials/Parts:

- Marker tags item 33, Appendix C)

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

NOTE

- All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.
- Refer to wiring diagrams for assistance (see paragraph 6-73).

a. REPAIR**NOTE**

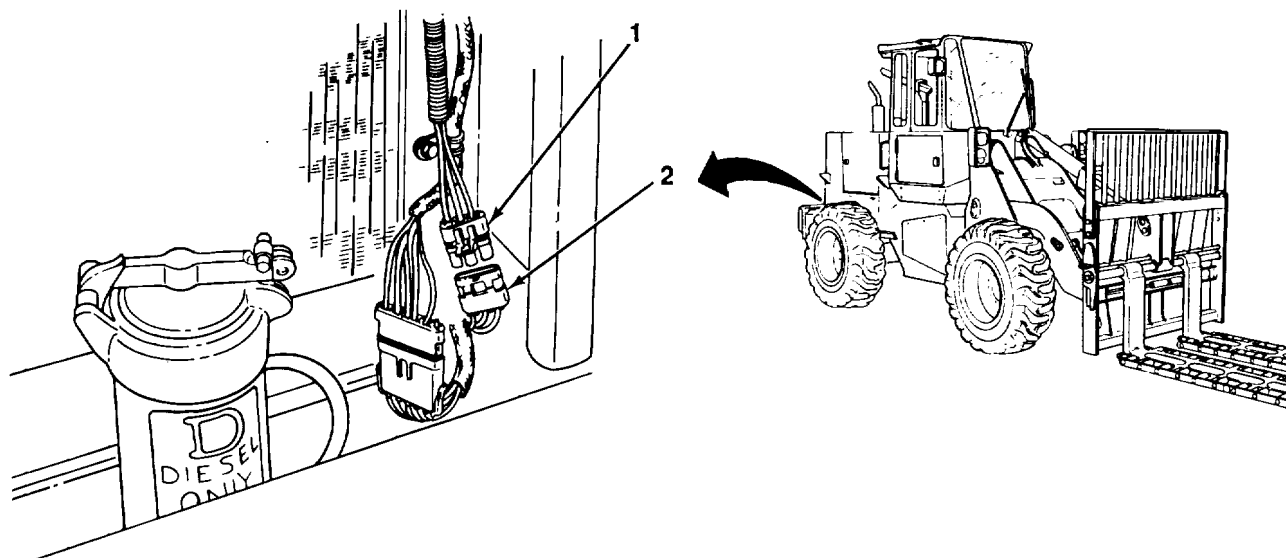
- STE/ICE blackout light wiring harness does not need to be removed from forklift truck to perform repair.
- Repair of STE/ICE blackout light wiring harness consists of replacement of Identification bands, terminals, and connectors.

Refer to paragraph 2-28 for repair instructions.

b. REMOVAL**NOTE**

Remove clamps as necessary.

1. Disconnect STE/ICE blackout light wiring harness connector (1) from STE/ICE battery wiring harness connector (2).
2. Remove STE/ICE blackout light wiring harness from forklift truck.

6-70. STE/ICE BLACKOUT LIGHT WIRING HARNESS MAINTENANCE (Con't).**c. INSTALLATION**

NOTE
Install clamps as necessary.

1. Position STE/ICE blackout light wiring harness on forklift truck.
2. Connect STE/ICE blackout light wiring harness connector (1) to STE/ICE battery wiring harness connector (2).

FOLLOW-ON TASKS:

- Install rear blackout lights (see paragraph 6-26).
- Close radiator grille door (see TM 10-3930-659-10).
- Connect negative battery cables (see paragraph 6-43).

TA707928

6-71. REAR FRAME WIRING HARNESS MAINTENANCE.*This task covers:*

- a. Repair
- b. Removal
- c. Installation

*Initial Setup:***Equipment Conditions:**

- Negative battery cables disconnected (see paragraph 6-43).
- Radiator grille door opened (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:

- TM 10-3930-659-10

NOTE

- **All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.**
- **Refer to wiring diagrams for assistance (see paragraph 6-73).**

a. REPAIR**NOTE**

- **Rear frame wiring harness does not need to be removed from forklift truck to perform repair.**
- **Repair of rear frame wiring harness consists of replacement of identification bands, terminals, and connectors.**

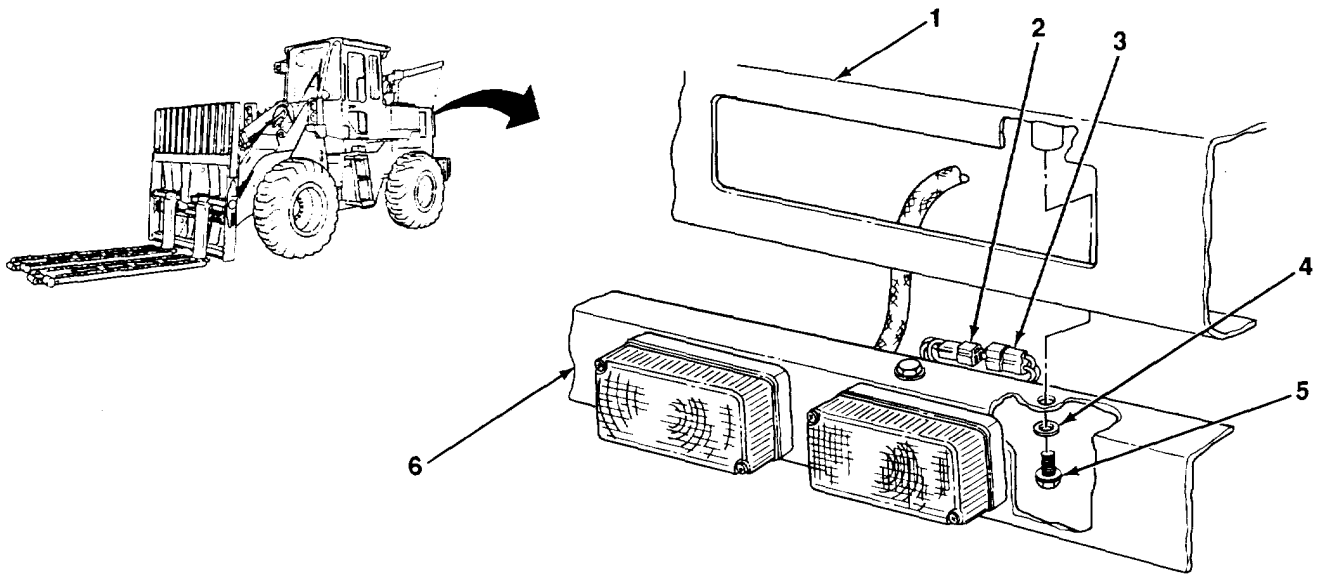
Refer to paragraph 2-28 for repair instructions.

b. REMOVAL**NOTE**

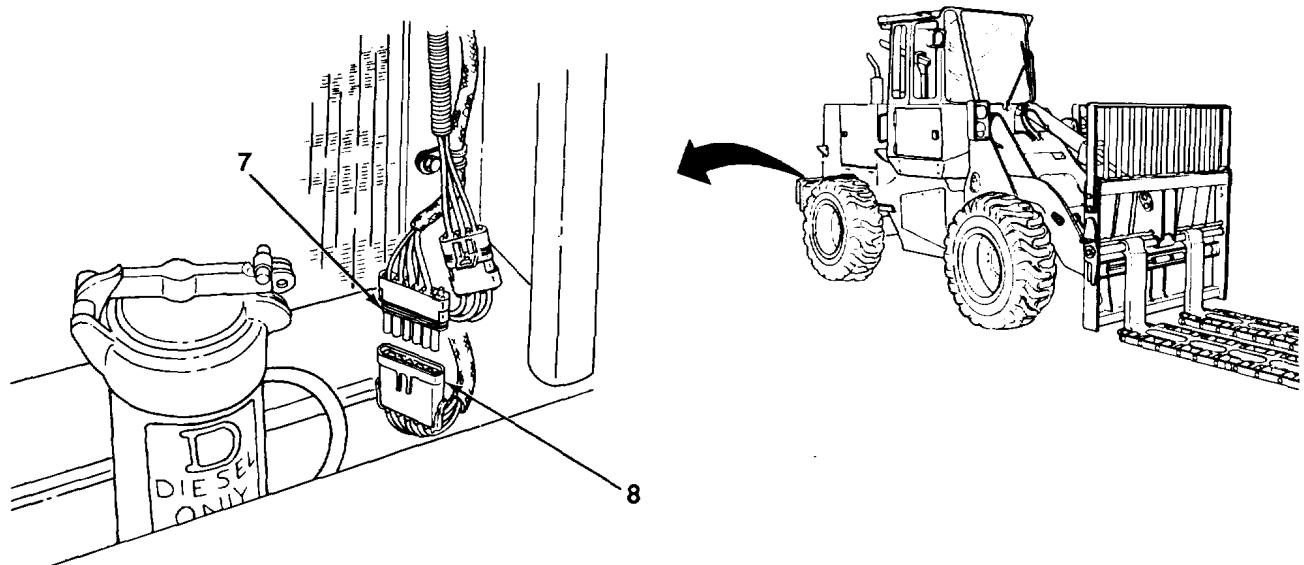
- **Four connectors of left and right taillights and rear turn signal/emergency flashers are disconnected and connected the same way. Left taillight is illustrated.**
- **Remove clamps as necessary. For access to clamps, light plate holding taillights and rear turn signal/emergency flashers must be lowered from radiator grille housing.**

1. Remove four screws (5) and washers (4), and slightly lower light plate (6) from radiator grille housing (1).
2. Disconnect rear frame wiring harness connector (2) from taillight connector (3).

6.71. REAR FRAME WIRING HARNESS MAINTENANCE (Con't)



3. Disconnect rear frame wiring harness connector (7) from engine frame wiring harness connector (8).
4. Remove rear frame wiring harness from forklift truck.

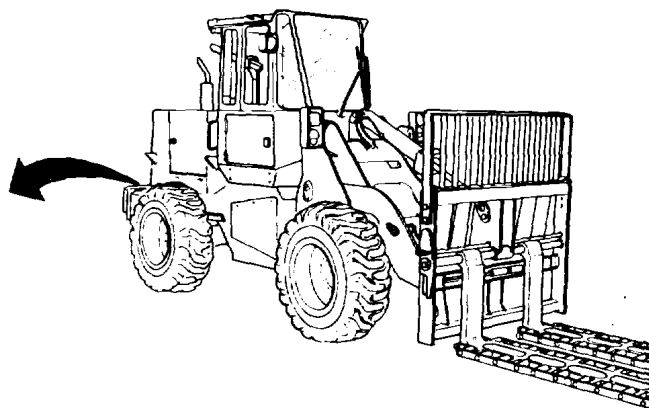
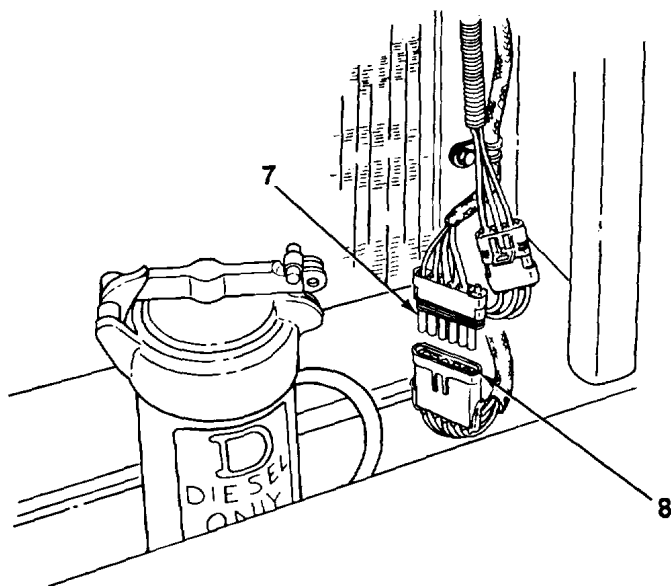


TA707929

6-71. REAR FRAME WIRING HARNESS MAINTENANCE (Con't).**c. INSTALLATION****NOTE**

Install clamps as necessary.

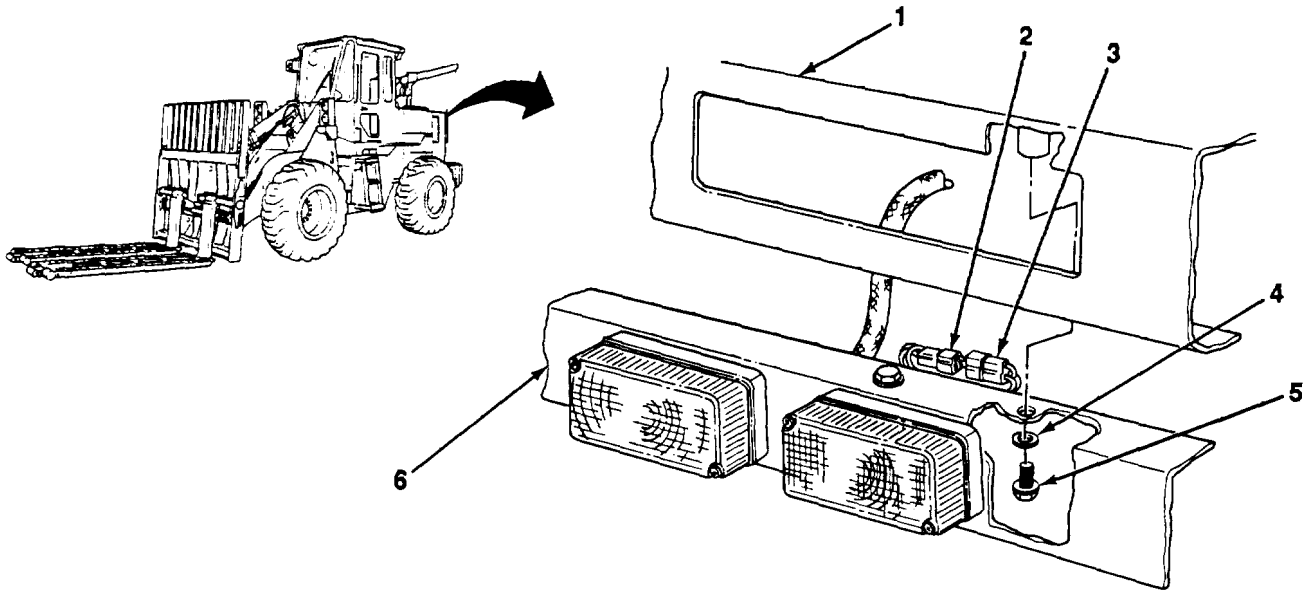
1. Position rear frame wiring harness on forklift truck.
2. Connect rear frame wiring harness connector (7) to engine frame wiring harness connector (8).



TA707930

6-71. REAR FRAME WIRING HARNESS MAINTENANCE (Con't).

3. Connect rear frame wiring harness connector (2) to taillight connector (3).
4. Install light plate (6) on radiator grille housing (1) with four washers (4) and screws (5).

**FOLLOW-ON TASKS:**

- Close radiator grille door (see TM 10-3930-659-10).
- Connect negative battery cables (see paragraph 6-43).

TA707931

6-72. SECONDARY STEERING WIRING HARNESS MAINTENANCE.

This task covers:

- a. Repair
 - b. Removal
 - c. Installation
-

Initial Setup:

Equipment Conditions:

- Negative battery cables disconnected - (see paragraph 6-43).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right and left engine upper sashes opened (see TM 10-3930-659-10).

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- One lockwasher

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

NOTE

- **All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.**
- **Refer to wiring diagrams for assistance (see paragraph 6-73).**

a. REPAIR**NOTE**

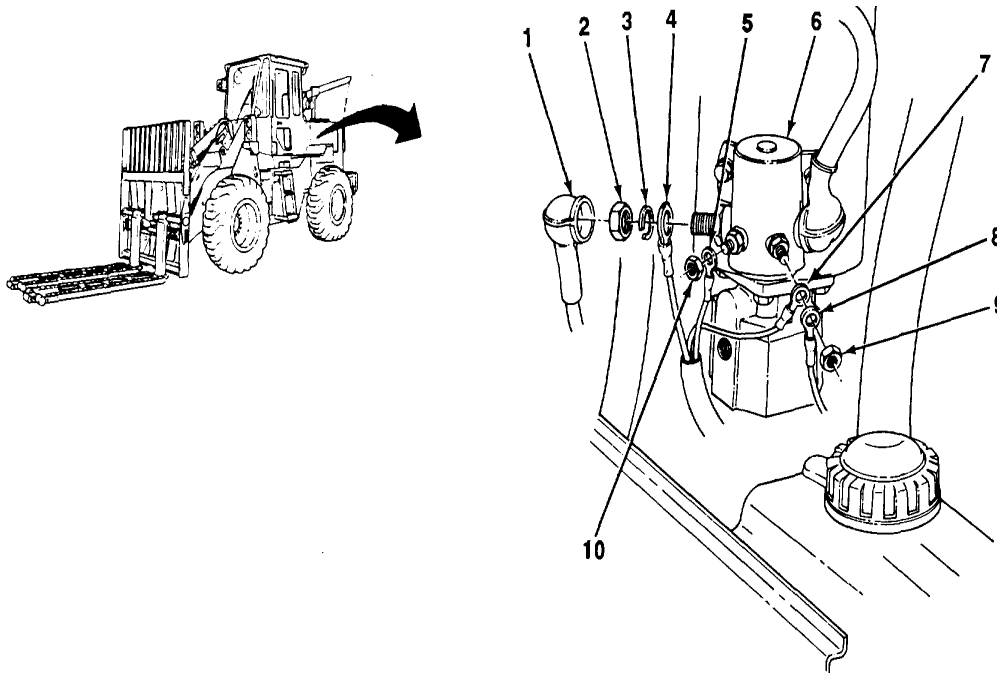
- **Secondary steering wiring harness does not need to be removed from forklift truck to perform repair.**
- **Repair of secondary steering wiring harness consists of replacement of Identification bands, terminals, and connectors.**

Refer to paragraph 2-28 for repair instructions.

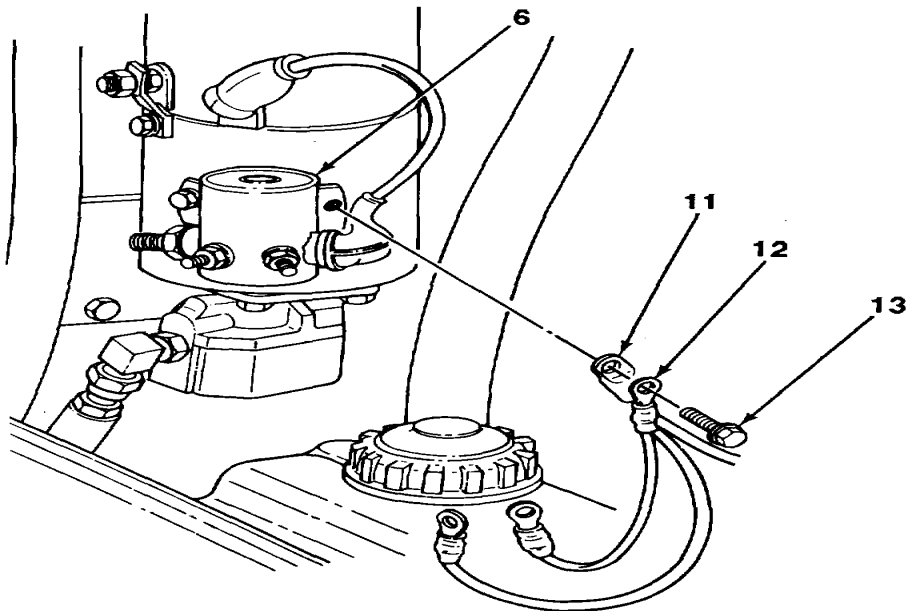
b. REMOVAL

1. Pull back rubber boot (1), and remove nut (2), lockwasher (3), and secondary steering wiring harness terminal lead (4) from solenoid (6). Discard lockwasher.
2. Remove nut (10) and secondary steering wiring harness terminal lead (5) from solenoid (6).
3. Remove nut (9), wire (8), and secondary steering wiring harness terminal lead (7) from solenoid (6).

6-72. SECONDARY STEERING WIRING HARNESS MAINTENANCE (Con't)

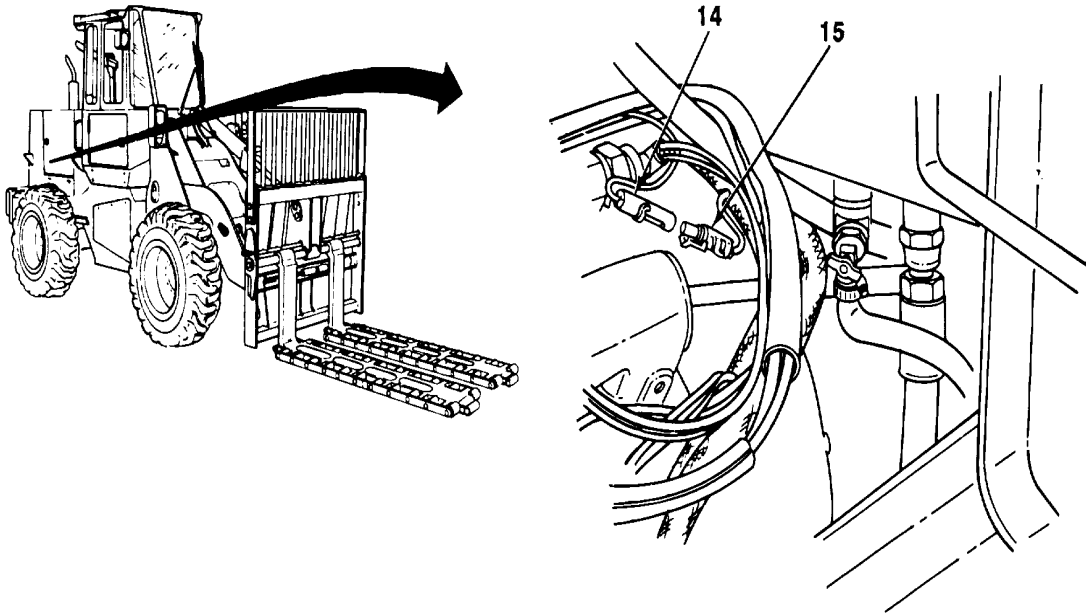


4. Remove screw (13), wire (12), and secondary steering wiring harness terminal lead (11) from solenoid (6).

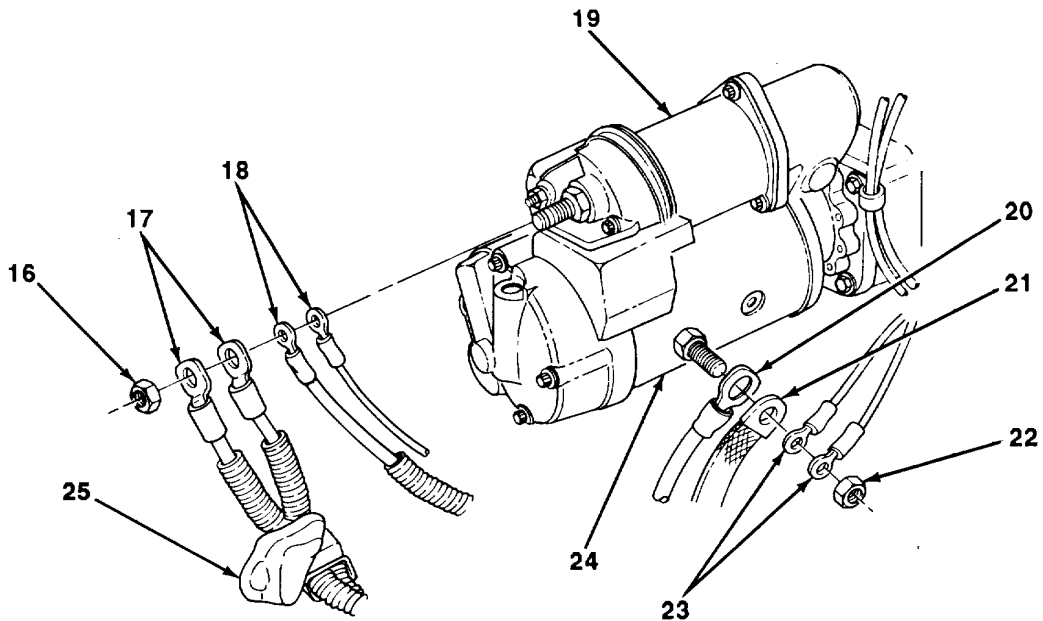


6-72. SECONDARY STEERING WIRING HARNESS MAINTENANCE (Con't)

5. Disconnect secondary steering wiring harness connector (14) from engine wiring harness connector (15).



6. Pull back rubber boot (25), and remove nut (16), two cables (17), and secondary steering wiring harness terminal leads (18) from starter motor solenoid (19).

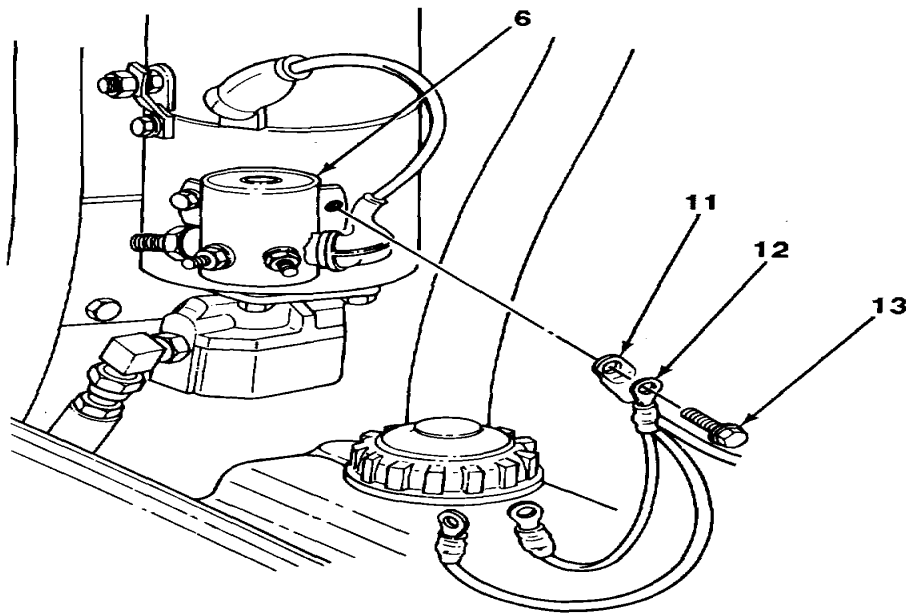


6-72. SECONDARY STEERING WIRING HARNESS MAINTENANCE (Con't).

7. Remove nut (22), two secondary steering wiring harness terminal leads (23), ground strap (21), and cable (20) from starter motor (24).
8. Remove secondary steering wiring harness from forklift truck.

c. INSTALLATION

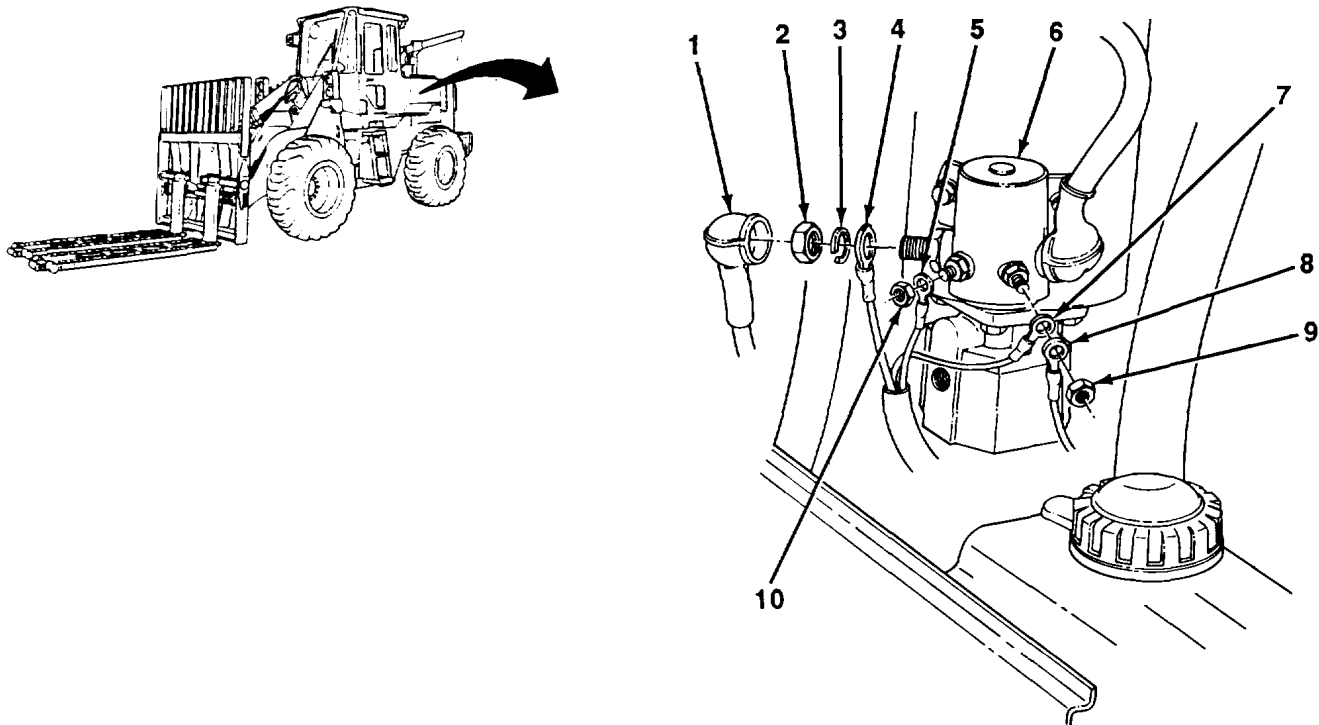
1. Position secondary steering wiring harness on forklift truck.
2. Install cable (20), ground strap (21), and two secondary steering wiring harness terminal leads (23) to starter motor (24) with nut (22).
3. Install two secondary steering wiring harness terminal leads (18) and two cables (17) on starter motor solenoid (19) with nut (16).
4. Install rubber boot (25) over nut (16).
5. Connect secondary steering wiring harness connector (14) to engine wiring harness connector (15).
6. Install secondary steering wiring harness terminal lead (11) and wire (12) on solenoid (6) with screw (13).



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6-72. SECONDARY STEERING WIRING HARNESS MAINTENANCE (Con't).

7. Install secondary steering wiring harness terminal lead (7) and wire (8) on solenoid (6) with nut (9).
8. Install secondary steering wiring harness terminal lead (5) on solenoid (6) with nut (10).
9. Install secondary steering wiring harness terminal lead (4) on solenoid (6) with new lockwasher (3) and nut (2).
10. Install rubber boot (1) over nut (2).

**FOLLOW-ON TASKS:**

- Close right and left engine upper sideshields (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments to side of forklift truck (see paragraph 17-13).
- Connect negative battery cables (see paragraph 6-43).

TA707935

6-73. WIRING DIAGRAMS.**WARNING**

When troubleshooting an electrical malfunction or when performing electrical maintenance, **ALWAYS** place battery disconnect switch in **OFF** position. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

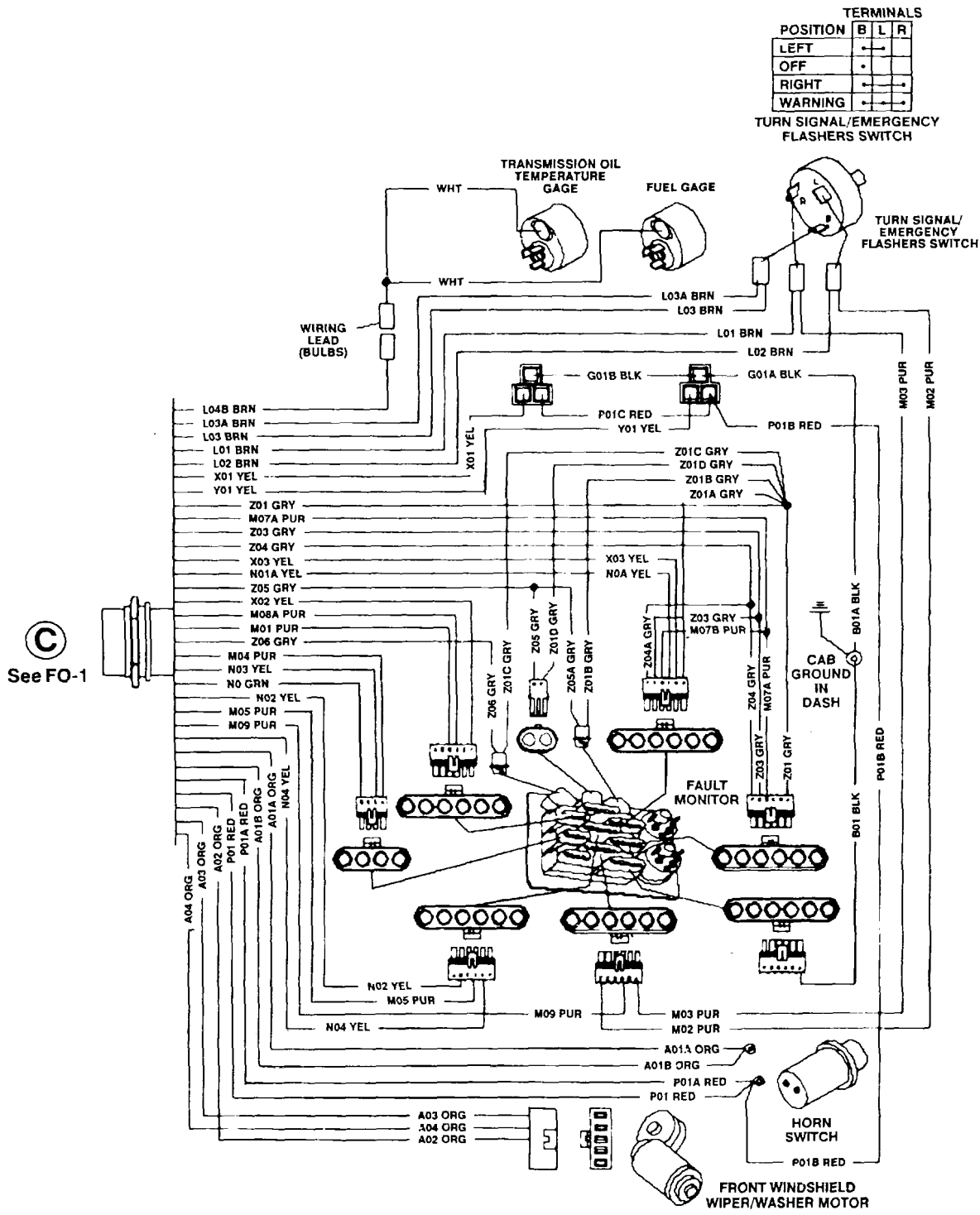
NOTE

This paragraph contains the forklift truck wiring diagrams. Refer to these wiring diagrams when performing electrical and STE/ICE troubleshooting.

Table 6-1. Wiring Diagram Cross-reference Index.

Figure Number	Figure Title	Page Number
Figure 1.	Fault Monitor and Dash Wiring Diagram	6-282
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Figure 3.	Left Panel, Upper Worklight, and Lower Worklight Wiring Diagram	6-284
Figure 4.	Transmission, Loader Frame, and Under Cab Wiring Diagram	6-285
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Figure 8.	STE/ICE Resistor Wiring Diagram	6-289
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FO-1	Load Center and Air Compressor Wiring Diagram	FP-1

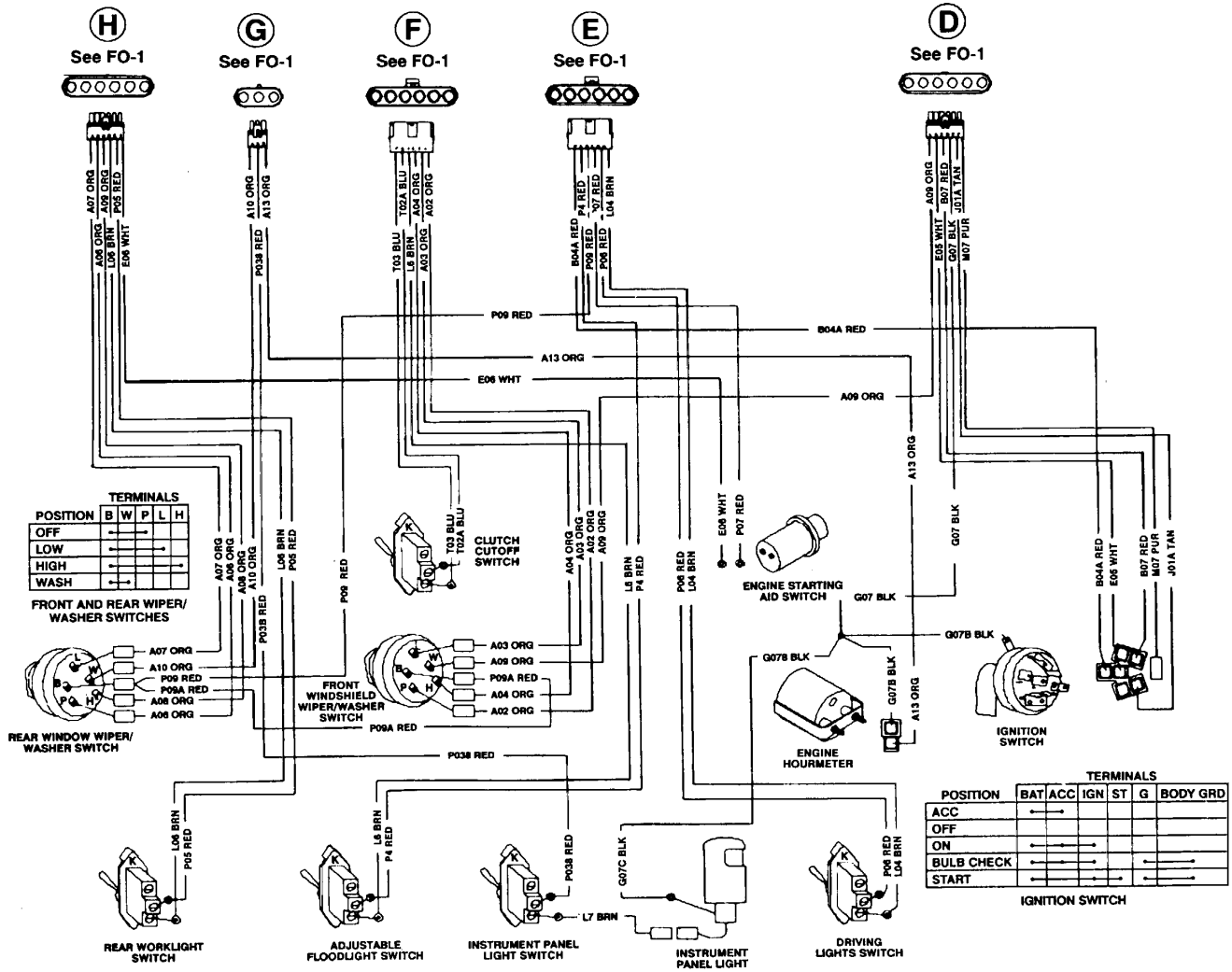
6-73. WIRING DIAGRAMS (Con't).



TA707936

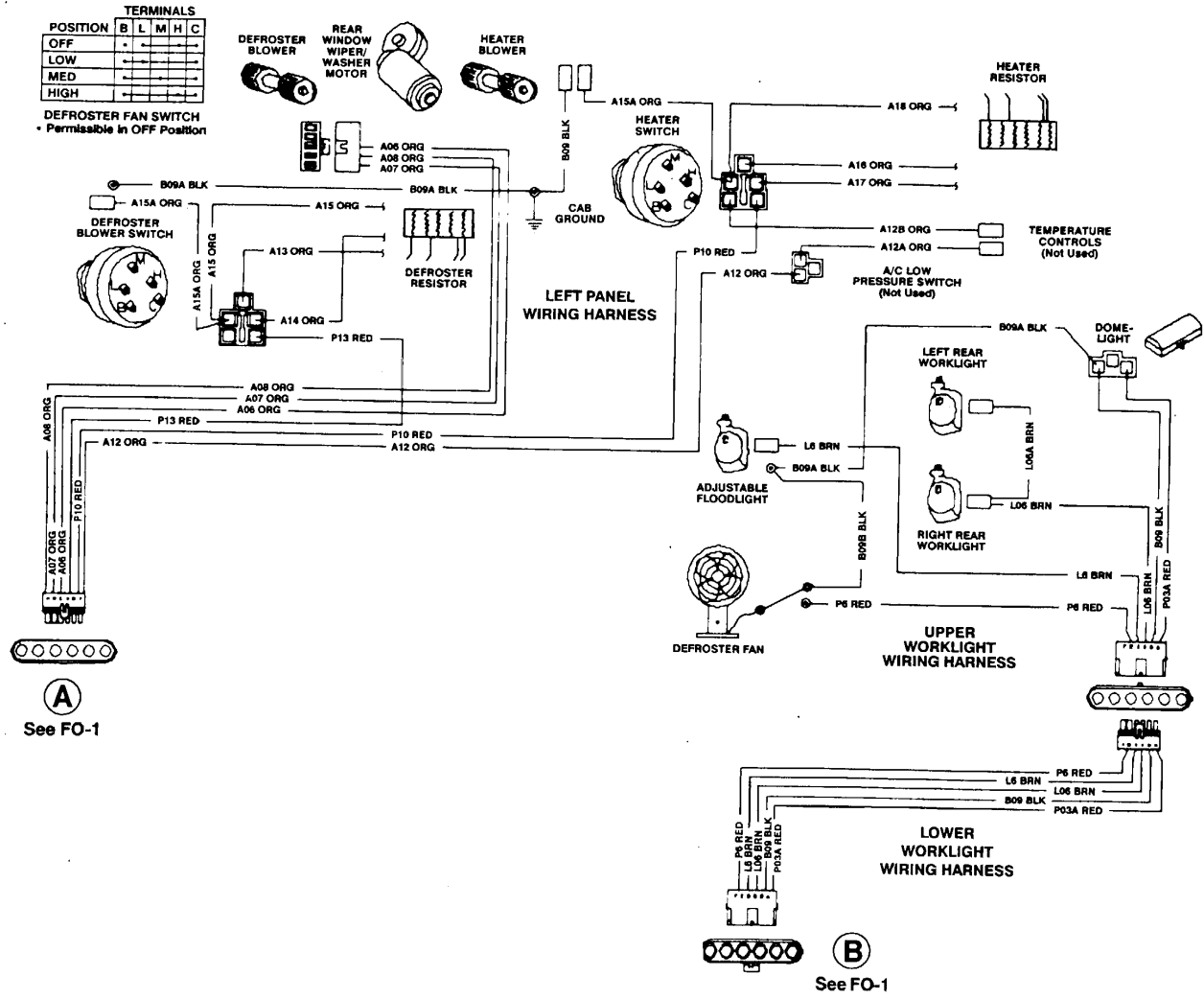
Figure 1. Fault Monitor and Dash Wiring Diagram.

6-73. WIRING DIAGRAMS (Con't).



TA707937

6-73. WIRING DIAGRAMS (Con't).



TA707938

6-73. WIRING DIAGRAMS (Con't).

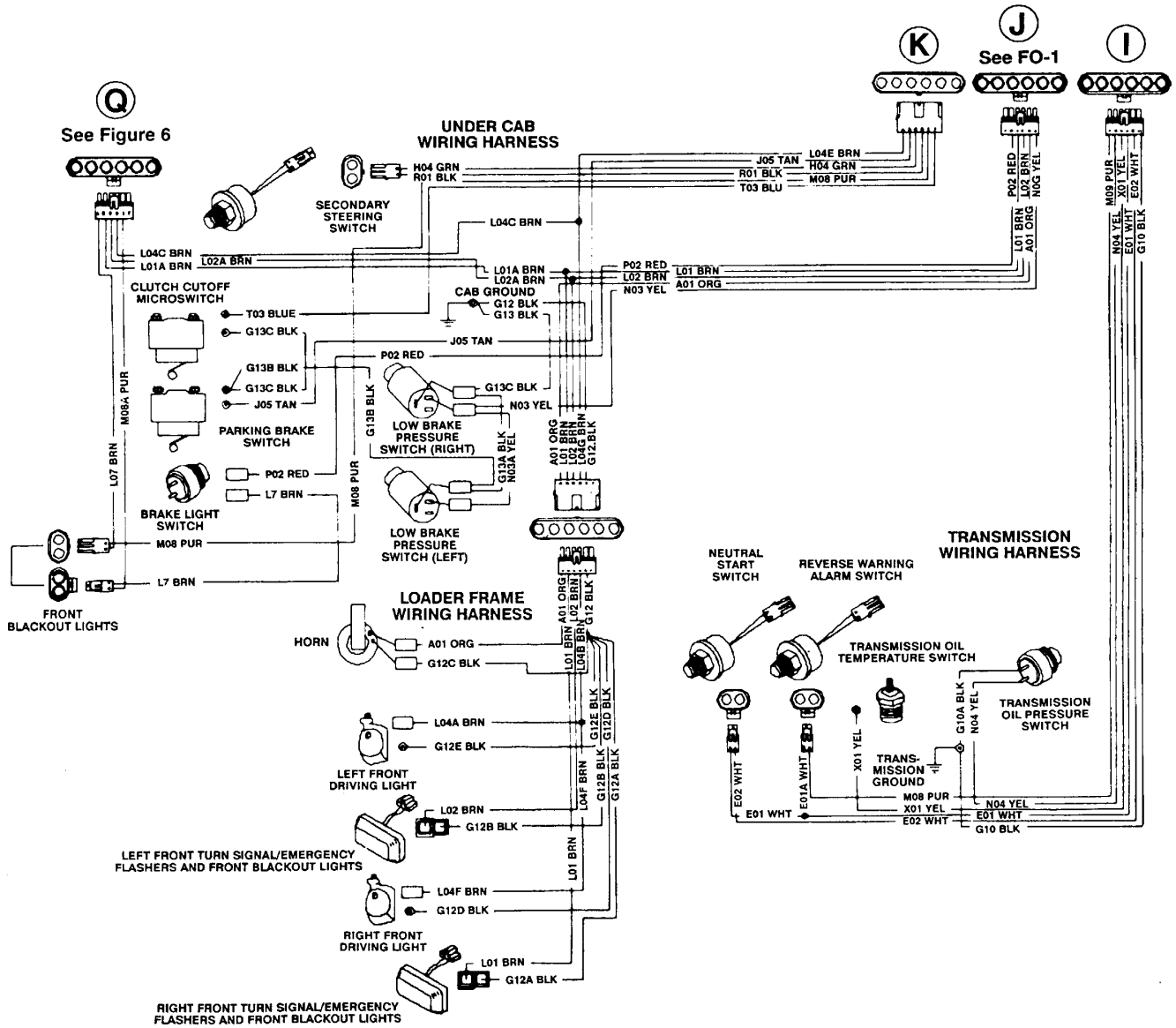


Figure 4. Transmission, Loader Frame, and Under Cab Wiring Diagram.

TA707939

6-73. WIRING DIAGRAMS (Con't).

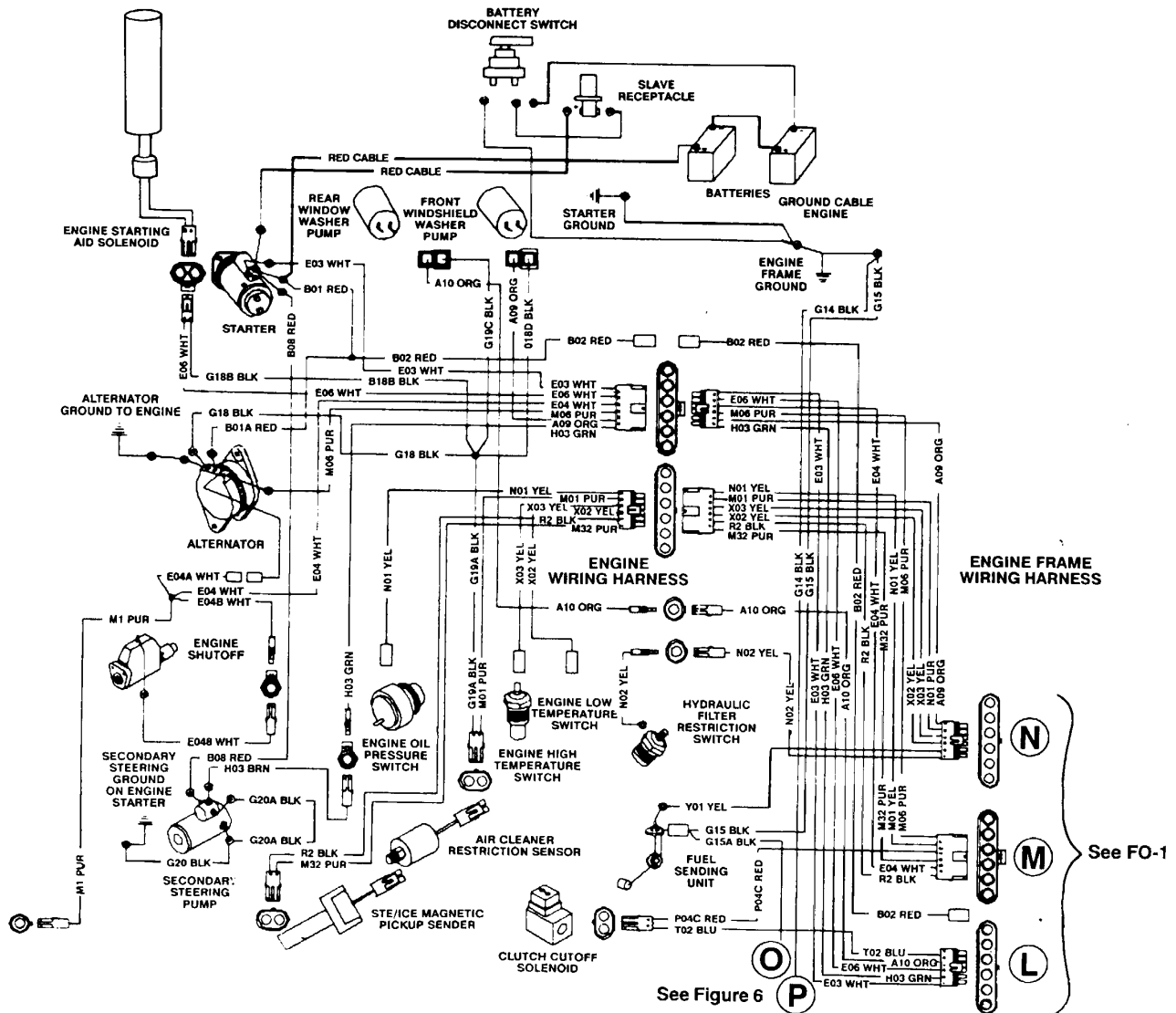


Figure 5. Engine and Engine Frame Wiring Diagram.

TA707940

6-73. WIRING DIAGRAMS (Con't).

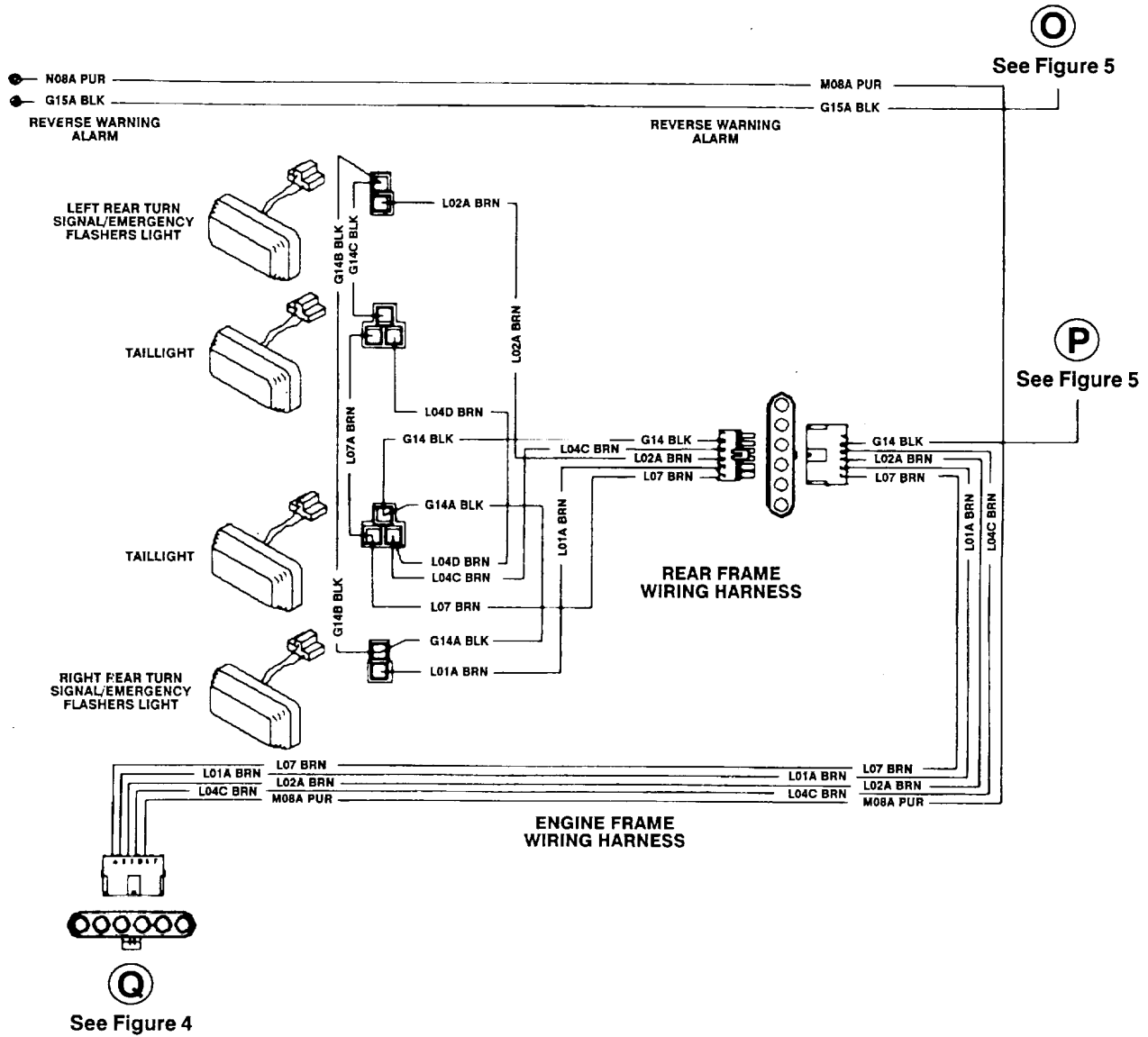


Figure 6. Rear Frame and Engine Frame Wiring Diagram.

TA707941

6-73. WIRING DIAGRAMS (Con't).

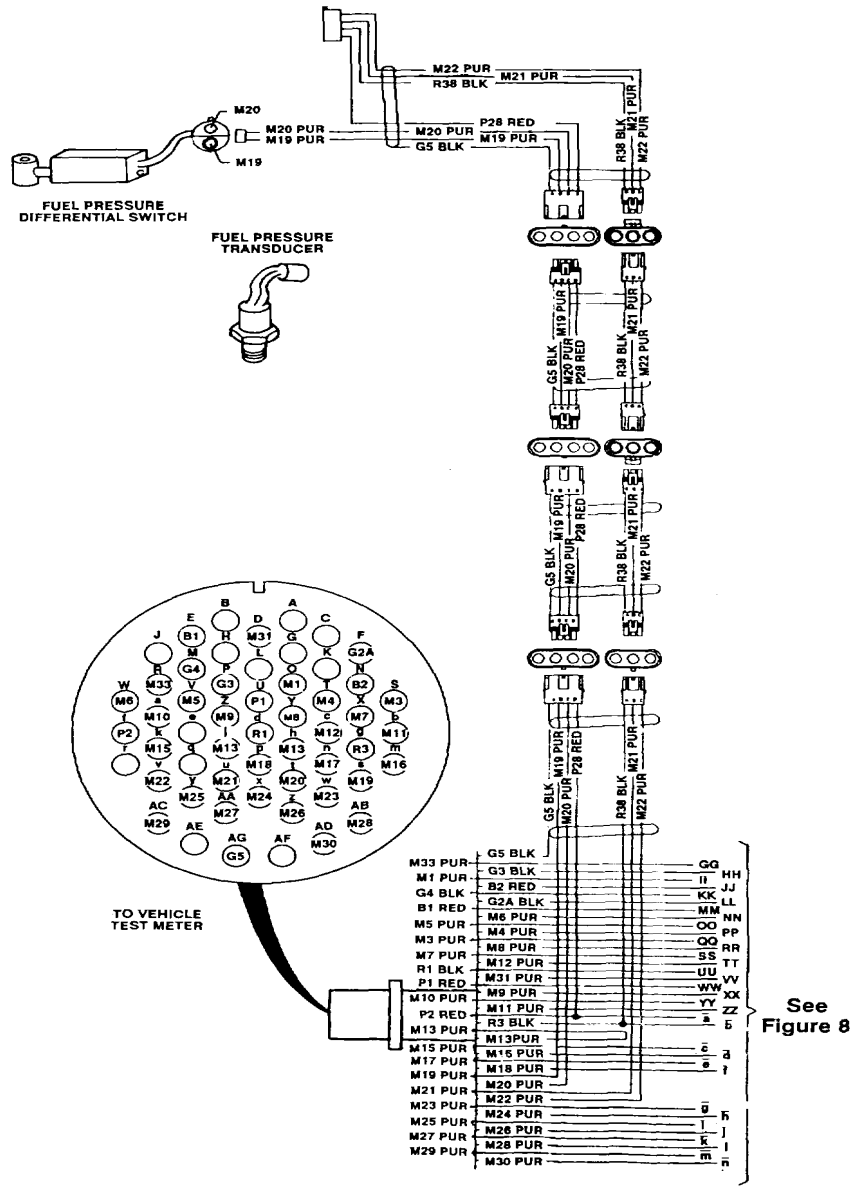


Figure 7. STE/ICE Load Center Wiring Diagram

TA707942

6-73. WIRING DIAGRAMS (Con't).

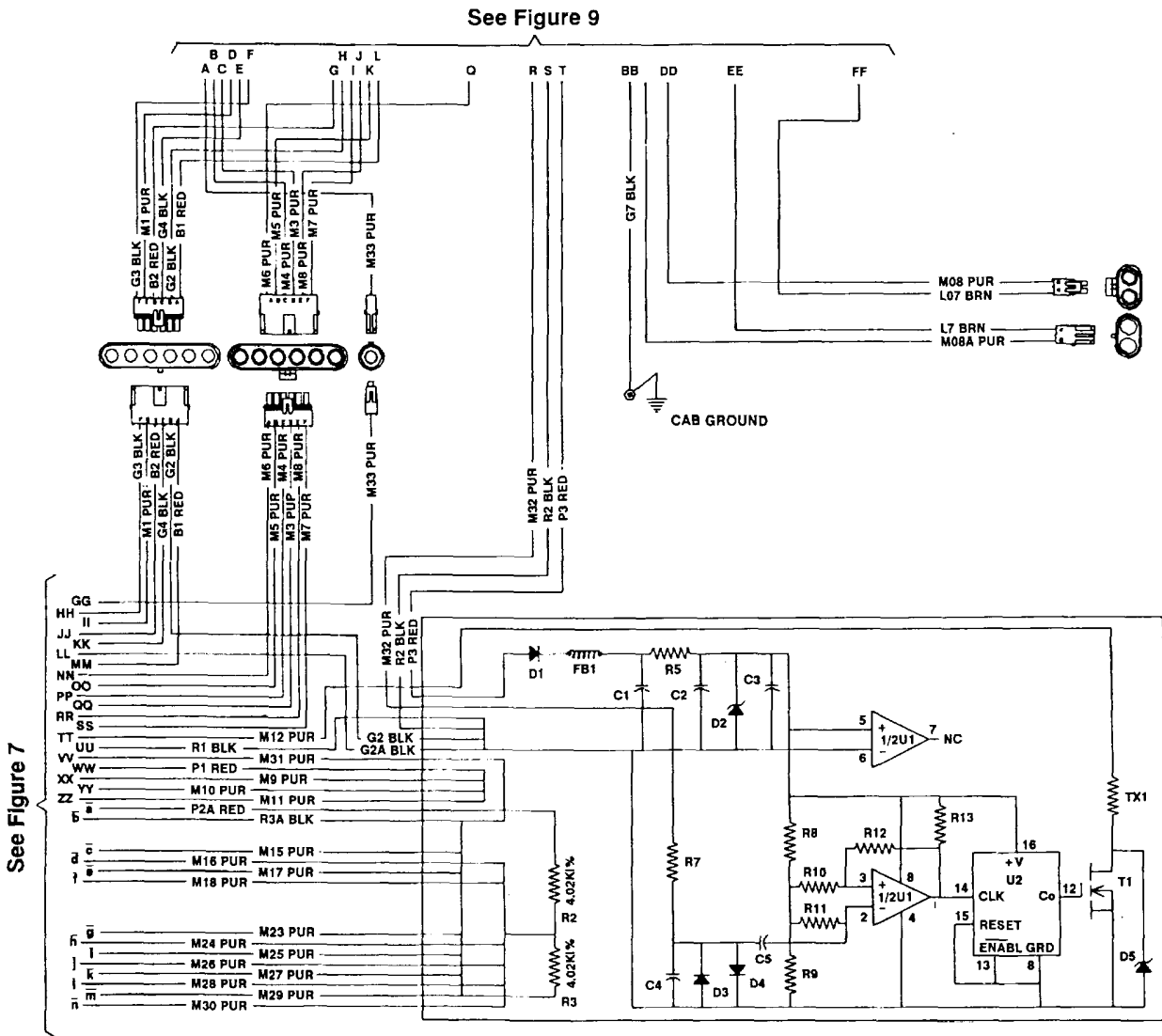


Figure 8. STE/ICE Resistor Wiring Diagram.

TA707943

6-73. WIRING DIAGRAMS (Con't).

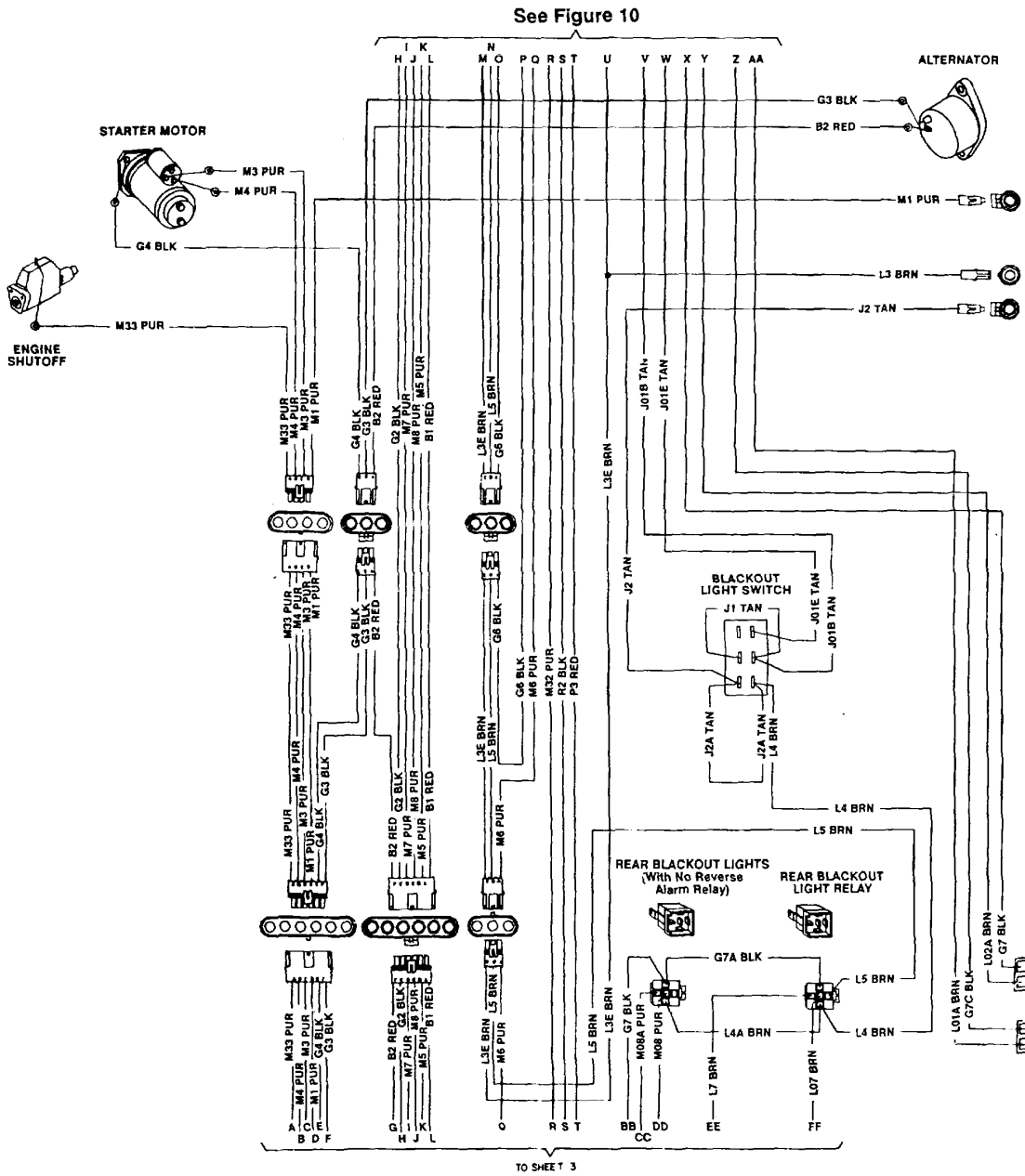


Figure 9. STE/ICE Starter Motor and Alternator Wiring Diagram.

TA707944

6-73. WIRING DIAGRAMS (Con't).

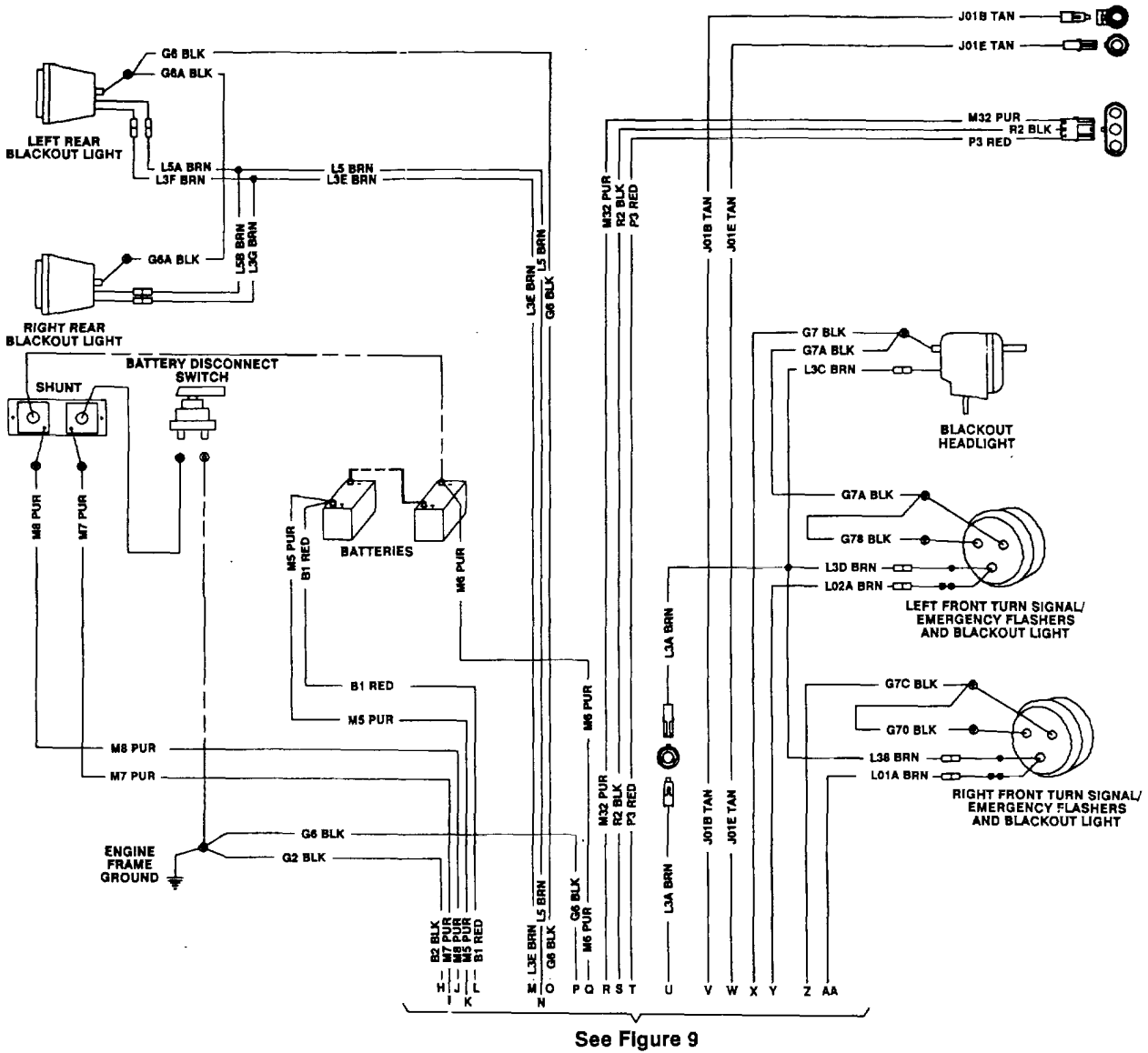


Figure 10. STE/ICE Batteries and Blackout Lights Wiring Diagram.

TA707945

**CHAPTER 7
TRANSMISSION MAINTENANCE**

Paragraph Number	Paragraph Title	Page Number
7-1	Transmission Shift Linkage Replacement	7-1
7-2	Transmission Shift Linkage Bracket Replacement	7-6
7-3	Transmission Shift Rods Replacement	7-8
7-4	Transmission Shift Cables and Ball Joints Replacement	7-13
7-5	Transmission Shift Linkage Adjustments	7-16
7-6	Transmission Oil Level Tube Replacement	7-18
7-7	Transmission Suction Tube Replacement	7-20
7-8	Transmission Hydraulic Hoses and Fittings Replacement	7-22
7-9	Transmission Clutch Cutoff Control Assembly Maintenance	7-24
7-10	Transmission Clutch Cutoff Valve Pressure Test	7-26
7-11	Transmission Clutch Cutoff Valve Maintenance	7-30
7-12	Transmission Thermal Bypass Valve Pressure Test	7-35
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7-19	Transmission Draining	7-58

7-1. TRANSMISSION SHIFT LINKAGE REPLACEMENT.

This task covers:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. Removal | <ul style="list-style-type: none"> c. Installation |
|--|---|

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).
- Transmission shift cables disconnected from bell-crank (see paragraph 7-4).

Materials/Parts:

- Two cotter pins

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

7-1. TRANSMISSION SHIFT LINKAGE REPLACEMENT (Con't).

1. Remove two cotter pins (2) and pins (3) from yokes (4 and 24) and transmission control valve (1). Discard cotter pins.

NOTE

Note position of levers to aid during Installation.

2. Remove pivot bolt (20) from two levers (10 and 16) and bracket (19), and remove levers and transmission shift linkages as an assembly.
3. Remove nut (11), washer (9), screw (13), and assembled transmission shift linkage from lever (10).

NOTE

- **Perform steps 4 through 6 only if rod, yoke, or ball Joint Is damaged.**
- **Note position of nuts to aid during Installation.**

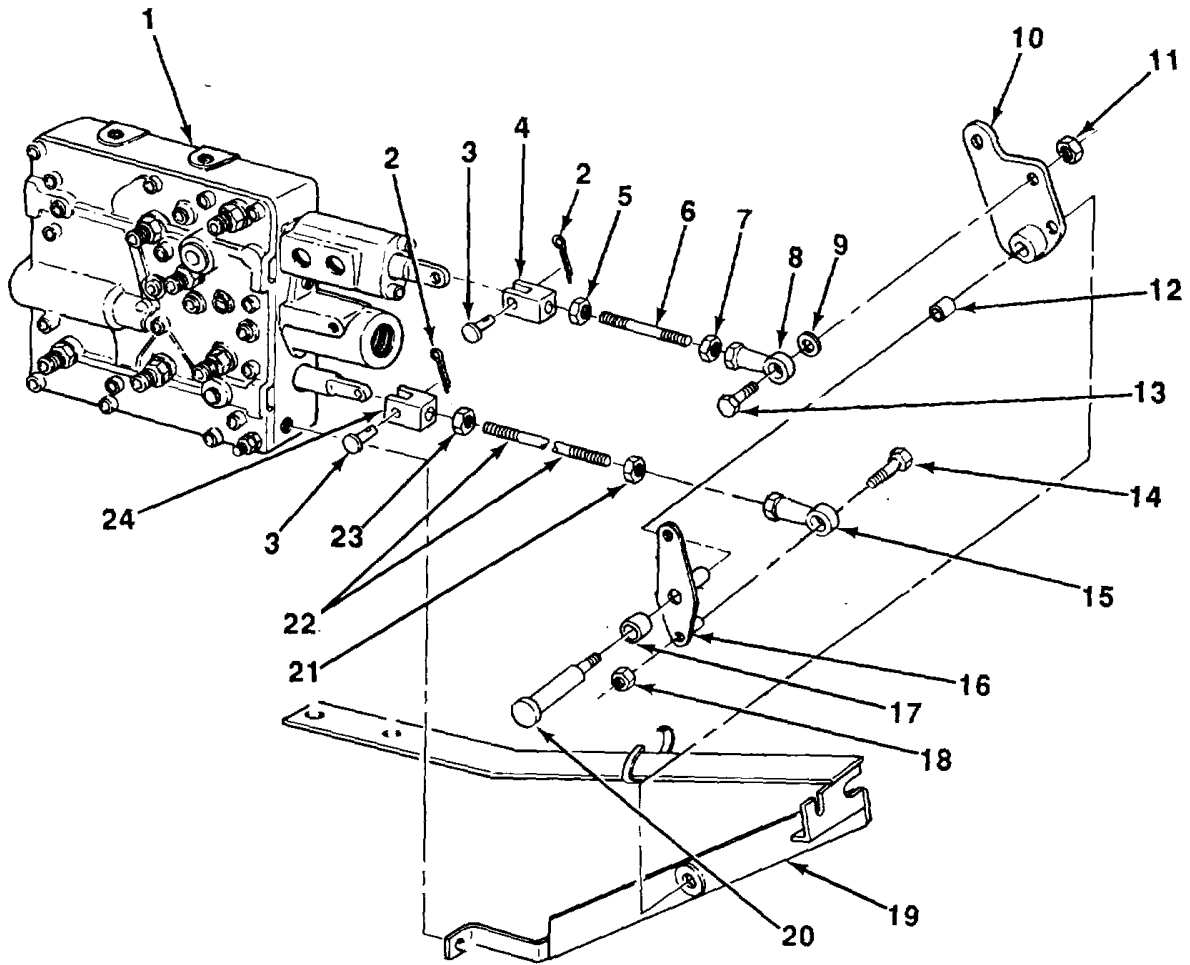
4. Loosen nut (5) and remove yoke (4) from rod (6).
5. Loosen nut (7) and remove ball joint (8) from rod (6).
6. Remove two nuts (5 and 7) from rod (6).
7. If damaged, remove bushing (12) from lever (10).
8. Remove nut (18), screw (14), and assembled transmission shift linkage from lever (16).

NOTE

- **Perform steps 9 through 11 only If rod, yoke, or ball Joint Is damaged.**
- **Note position of nuts to aid during Installation.**

9. Loosen nut (23) and remove yoke (24) from rod (22).
10. Loosen nut (21) and remove ball joint (15) from rod (22).
11. Remove two nuts (21 and 23) from rod (22).
12. If damaged, remove bushing (17) from lever (16).

7-1. TRANSMISSION SHIFT LINKAGE REPLACEMENT (Con't).



TA707323

7-1. TRANSMISSION SHIFT LINKAGE REPLACEMENT (Con't).

b. INSTALLATION

1. If removed, install bushing (17) on lever (16).

NOTE

Perform steps 2 through 4 only if rod, yoke, or ball joint was removed.

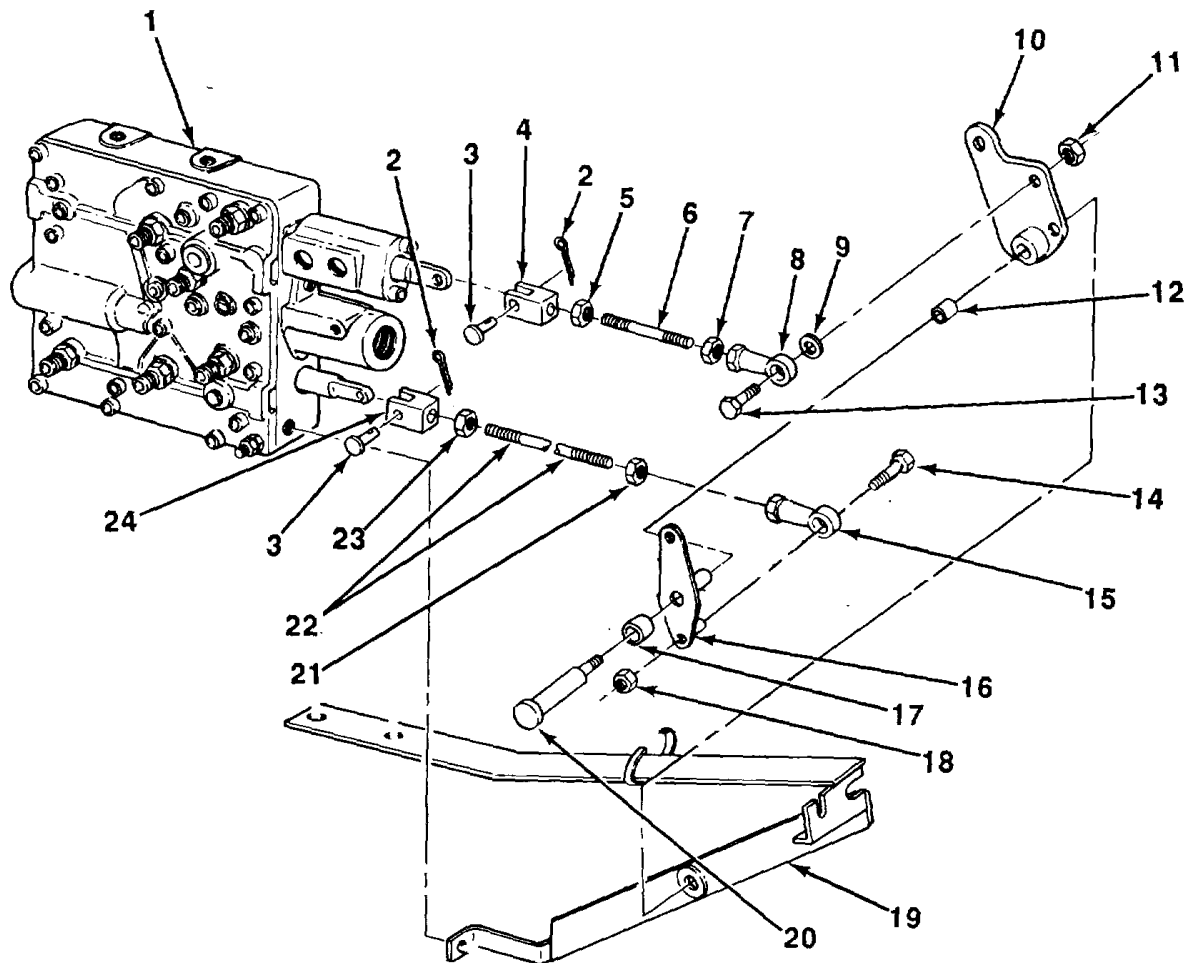
2. Install two nuts (21 and 23) on rod (22).
3. Install ball joint (15) on rod (22) and tighten nut (21) as noted during removal.
4. Install yoke (24) on rod (22) and tighten nut (23) as noted during removal.
5. Install assembled transmission shift linkage on lever (16) with screw (14) and nut (18).
6. If removed, install bushing (12) on lever (10).

NOTE

Perform steps 7 through 9 only if rod, yoke, or ball joint was removed.

7. Install two nuts (5 and 7) on rod (6).
8. Install ball joint (8) on rod (6) and tighten nut (7) as noted during removal.
9. Install yoke (4) on rod (6) and tighten nut (5) as noted during removal.
10. Install assembled transmission shift linkage on lever (10) with washer (9), screw (13), and nut (11).
11. Install two levers (10 and 16) and assembled transmission shift linkages on bracket (19) with pivot bolt (20).
12. Install two pins (3) and new cotter pins (2) on yokes (4 and 24) and transmission control valve (1).
13. Check position of levers for proper position.

7-1. TRANSMISSION SHIFT LINKAGE REPLACEMENT (Con't).



FOLLOW-ON TASKS:

- Connect transmission shift cables to bellcrank (see paragraph 7-4).
- Adjust transmission shift linkages (see paragraph 7-5).
- Install right side cab skirt (see paragraph 14-6).

TA707324

7-2. TRANSMISSION SHIFT LINKAGE BRACKET REPLACEMENT.

This task covers:

- a. Removal b. Installation

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Transmission shift linkage disconnected from transmission control valve (see paragraph 7-1).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

- Tie-down strap (Item 32, Appendix C)

References:

- TM 103930659-10
-

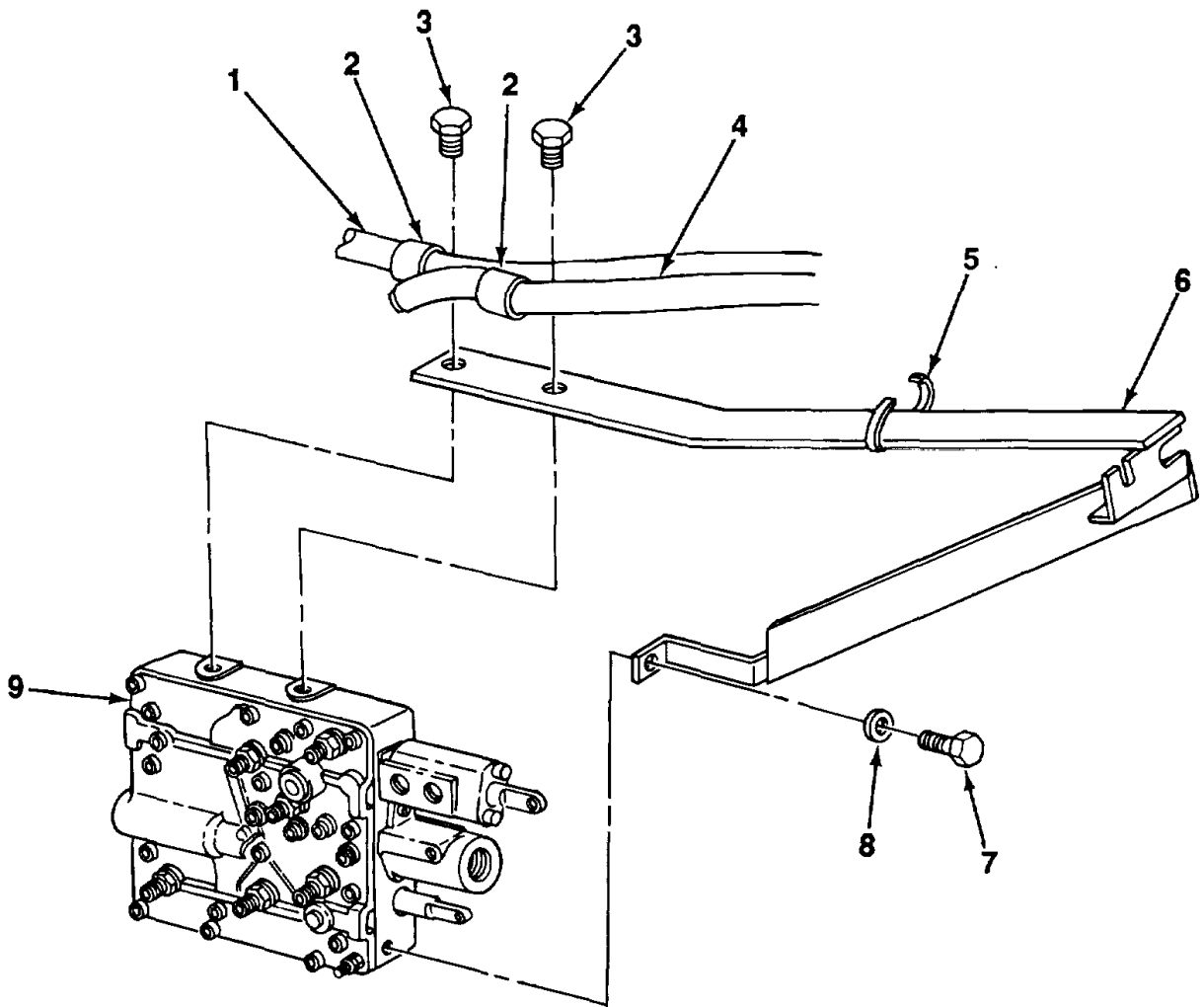
a. REMOVAL

1. Cut tie-down strap (5). Discard tie-down strap.
2. Remove two screws (3) and clamps (2) from transmission shift linkage bracket (6). Move hose (1) and transmission wiring harness (4) aside.
3. Remove screw (7), washer (8), and transmission shift linkage bracket (6) from transmission control valve (9).

b. INSTALLATION

1. Install transmission shift linkage bracket (6) on transmission control valve (9) with washer (8) and screw (7).
2. Install two clamps (2) on transmission shift linkage bracket (6) with two screws (3).
3. Install new tie-down strap (5) around hose (1), transmission wiring harness (4), and shift linkage bracket (6).

7-2. TRANSMISSION SHIFT LINKAGE BRACKET REPLACEMENT.



FOLLOW-ON TASKS:

- Connect transmission shift linkage to transmission control valve (see paragraph 7-1)

TA707325

7-3. TRANSMISSION SHIFT RODS REPLACEMENT.

This task covers:

- a. Removal b. Installation

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Steering wheel removed (see paragraph 12-2).
- Transmission shift cables disconnected from bell

Materials/Parts:

- Two Indicator springpins
- Two springpins

Personnel Required: Two**References:**

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Retaining ring pliers (Item 24, Appendix F)

a. REMOVAL

1. Move steering column to rearmost position (see TM 10-3930-659-10).

NOTE

- **Retaining ring cannot be removed from shaft until shaft is removed from cover.**
- **Retaining ring can be accessed by reaching into front of cover.**

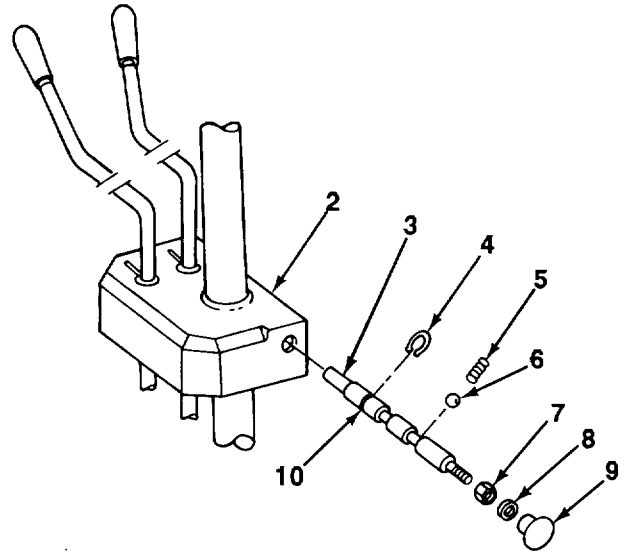
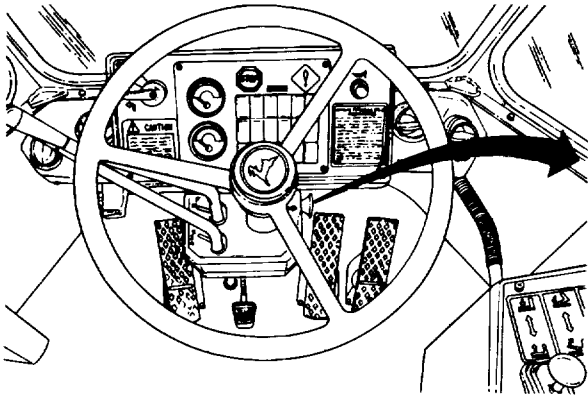
2. Remove retaining ring (4) from groove (10) and slide retaining ring onto shaft (3).

NOTE

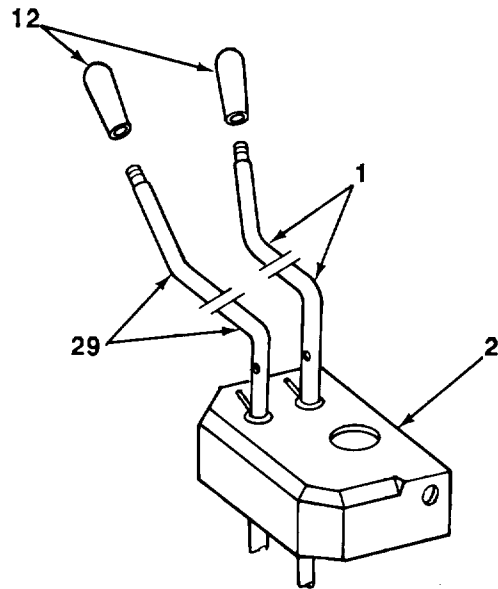
Note position of ball and spring in cover to aid during installation.

3. Remove shaft (3) and retaining ring (4) from cover (2), and remove ball (6) and spring (5) from shaft.
4. If damaged, remove knob (9), washer (8), and nut (7) from shaft (3).

7-3. TRANSMISSION SHIFT RODS REPLACEMENT (Con't)



- 5. Remove two knobs (12) from direction selector lever (1) and speed range selector lever (29).



TA707326

7-3. TRANSMISSION SHIFT RODS REPLACEMENT (Con't).

NOTE

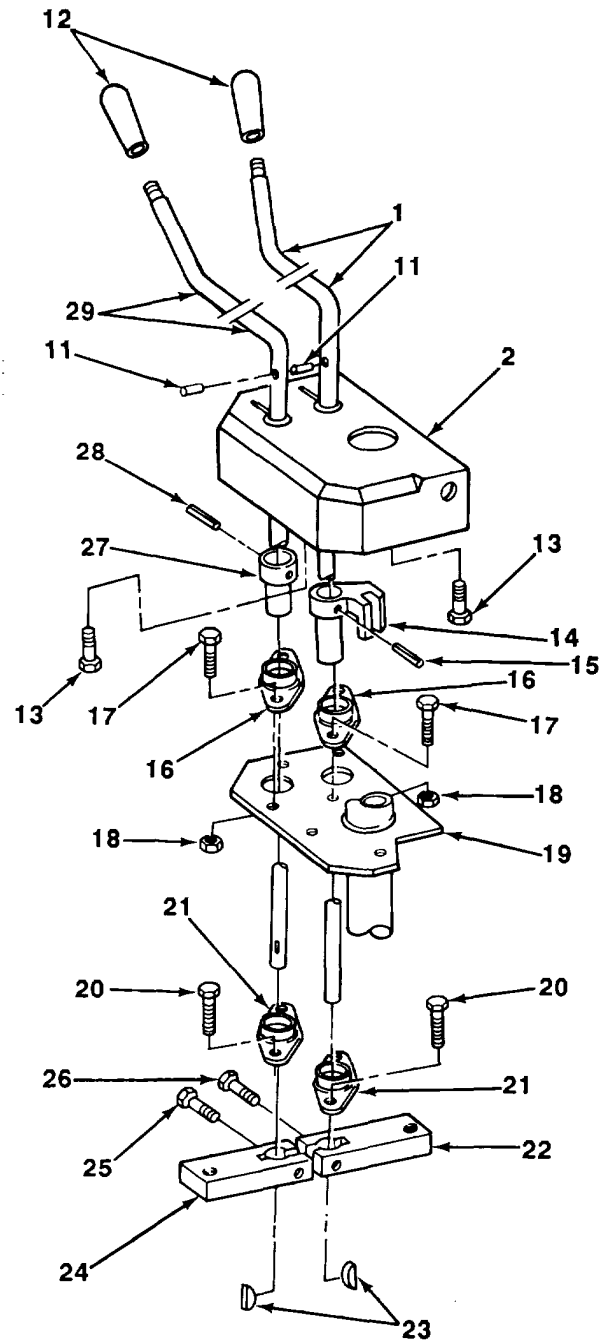
Speed range selector lever and direction selector lever are different sizes. Note position of levers to aid during installation.

6. Remove screw (25) and bellcrank (24) from speed range selector lever (29).
7. Remove screw (26) and bellcrank (22) from direction selector lever (1).
8. Remove two indicator springpins (11) from direction selector lever (1) and speed range selector lever (29). Discard indicator springpins.
9. Remove two screws (13) and cover (2) from steering column flange (19).
10. Remove two keys (23) from direction selector lever (1) and speed range selector lever (29).
11. Remove direction selector lever (1) and speed range selector lever (29) from steering column flange (19).

NOTE

Perform steps 12 through 15 only if bushings or bearings are damaged.

12. Drive out springpin (15) and remove direction bushing (14) from direction selector lever (1). Discard springpin.
13. Drive out springpin (28) and remove speed bushing (27) from speed range selector lever (29). Discard springpin.
14. Remove four nuts (18), screws (17), and two upper bearings (16) from steering column flange (19).
15. Remove four screws (20) and two lower bearings (21) from cab floor.



TA707327

7-3. TRANSMISSION SHIFT RODS REPLACEMENT (Con't).

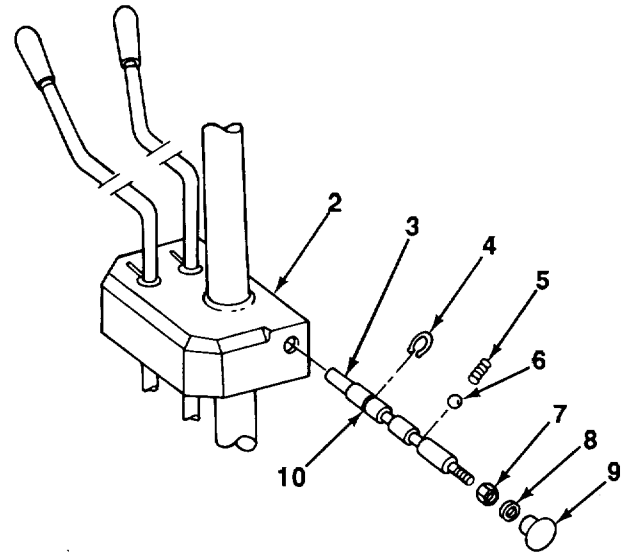
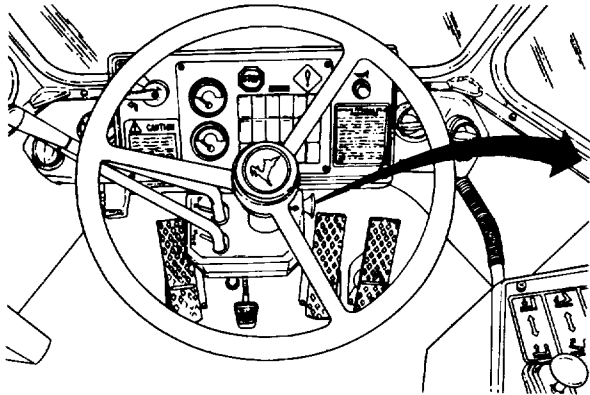
b. INSTALLATION**NOTE**

Perform steps 1 through 4 only if bushings or bearings were removed.

1. Install two lower bearings (21) on cab floor with four screws (20).
2. Install two upper bearings (16) on steering column flange (19) with four screws (17) and nuts (18).
3. Install speed bushing (27) on speed range selector lever (29) with new springpin (28).
4. Install direction bushing (14) on direction selector lever (1) with new springpin (15).
5. Position direction selector lever (1) and speed range selector lever (29) on cover (2).
6. Install two new indicator springpins (11) into direction selector lever (1) and speed range selector lever (29).
7. Install direction selector lever (1) and speed range selector lever (29) through two upper bearings (16) and lower bearings (21).
8. Lower cover (2) to steering column flange (19).
9. Install two keys (23) on direction selector lever (1) and speed range selector lever (29).
10. Install bellcrank (22) on direction selector lever (1).
11. Install bellcrank (24) on speed range selector lever (29).
12. Install screw (25) on bellcrank (24).
13. Install screw (26) on bellcrank (22).
14. Install cover (2) on steering column flange (19) with two screws (13).
15. Install two knobs (12) on direction selector lever (1) and speed range selector lever (29).

7-3. TRANSMISSION SHIFT RODS REPLACEMENT (Con't).

16. If removed, install nut (7), washer (8), and knob (9) on shaft (3).
17. Install ball (6), spring (5), shaft (3), and retaining ring (4) in cover (2).
18. Install retaining ring (4) in groove (10) on shaft (3).
19. Check that shaft (3) engages direction selector lever (1) when indicator springpin (11) is in N (Neutral).

**FOLLOW-ON TASKS:**

- Connect transmission shift cables to bellcrank (see paragraph 7-4).
- Adjust transmission shift linkage (see paragraph 7-5).
- Install steering wheel (see paragraph 12-2).

TA707328

7-4. TRANSMISSION SHIFT CABLES AND BALL JOINTS REPLACEMENT.

This task covers:**a. Removal****b. Installation****INITIAL SETUP:**

Equipment Conditions

- Parking brake set (see TM 10-3930-659-10).
- Direction selector lever in N (Neutral) and neutral lock button pushed in (see TM 10-3930-659-10).
- Speed range selector lever in "2" (see TM 10-3930659-10).
- Cab skirts removed (see paragraph 14-6).

Materials/Parts:

- One locknut

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

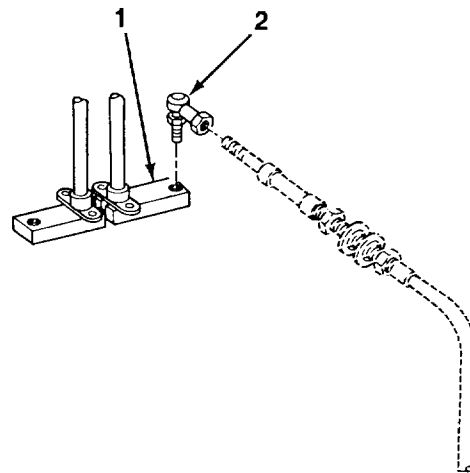
- TM 10-3930-659-10
-

NOTE

Direction selector cable and speed range selector cable are removed and installed the same way. Direction selector cable is illustrated.

a. REMOVAL

1. Remove ball joint (2) from bellcrank (1).



TA707329

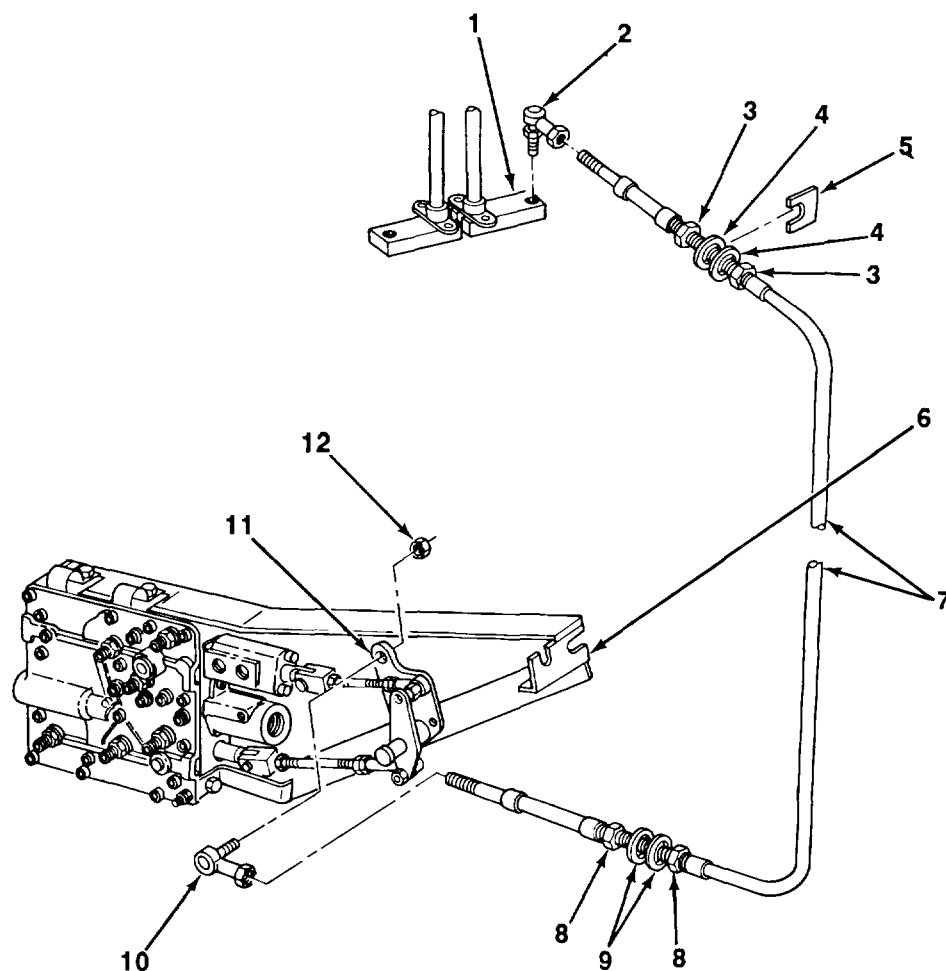
7-4. TRANSMISSION SHIFT CABLES AND BALL JOINTS REPLACEMENT (Con't).

2. Remove locknut (12) and ball joint (10) from lever (11). Discard locknut.

NOTE

Nuts and washers In steps 3 and 4 cannot be removed from cable. If nuts or washers are damaged, cable must be replaced.

3. Loosen two nuts (3) and remove cable (7) from bracket (5).
4. Loosen two nuts (8) and remove cable (7) from bracket (6).
5. Remove two ball joints (2 and 10) from cable (7).



TA707330

7-4. TRANSMISSION SHIFT CABLES AND BALL JOINTS REPLACEMENT (Con't).

b. INSTALLATION

1. Install two ball joints (2 and 10) on cable (7).
2. Position cable (7) on bracket (6) with one washer (9) on each side of bracket and tighten two nuts (8).
3. Position cable (7) on bracket (5) with one washer (4) on each side of bracket and tighten two nuts (3).
4. Install ball joint (10) on lever (11) with new locknut (12).
5. Install ball joint (2) on bellcrank (1).

FOLLOW-ON TASKS:

- Adjust transmission shift linkage (see paragraph 7-5).
- Install cab skirts (see paragraph 14-6).

7-5. TRANSMISSION SHIFT LINKAGE ADJUSTMENTS.

This task covers:

a. Direction Selector Linkage Adjustment

b. Speed Range Selector Linkage Adjustment

INITIAL SETUP:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

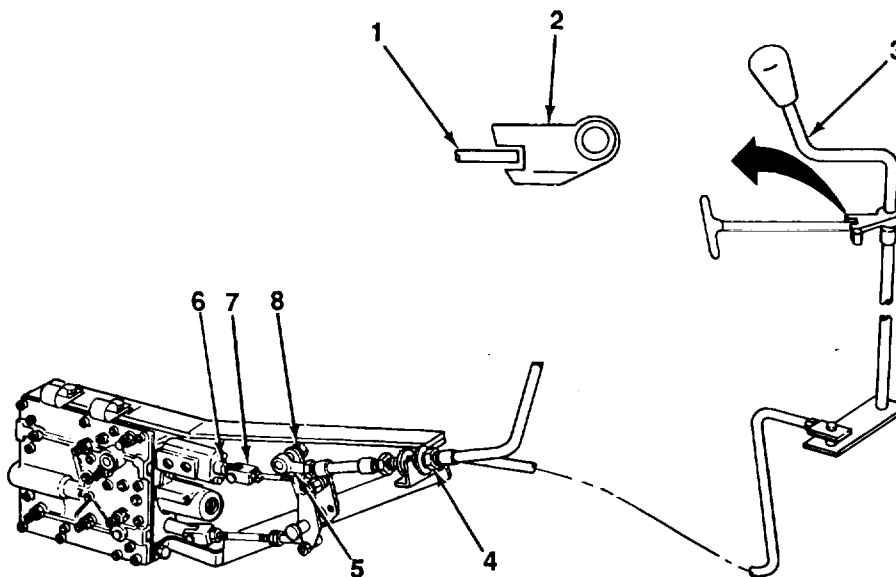
References:

Personnel Required: Two

- TM 10-3930-659-10

a. DIRECTION SELECTOR LINKAGE ADJUSTMENT

1. Move steering column into middle position (see TM 10-3930-659-10).
2. Place reversing shift valve plunger (6) in center or neutral position.
3. Push in neutral lock button (see TM 10-3930-659-10) so that shaft (1) engages slot in bushing (2).
4. Adjust lever (8) or direction selector lever (3) by adjusting nut (4), yoke (5), or yoke (7) until indicator springpin points to N (Neutral).

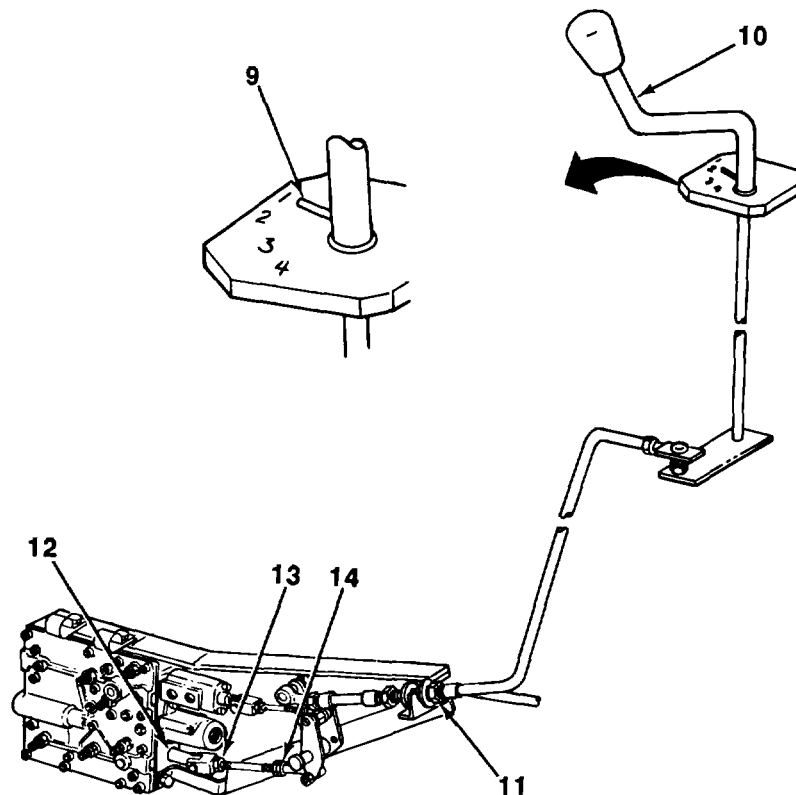


TA707331

7-5. TRANSMISSION SHIFT LINKAGE ADJUSTMENTS (Con't).

b. SPEED RANGE SELECTOR LINKAGE ADJUSTMENT

1. Move steering column to rearmost position (see TM 10-3930-659-10).
2. Move speed range selector lever (10) until indicator springpin (9) points to "1".
3. Push In gearshift valve plunger (12) completely to place transmission in first gear.
4. Adjust speed range selector lever (10) by adjusting nuts (11), yoke (13), or yoke (14) until indicator springpin (9) points to "1"

**FOLLOW - ON TASKS:**

- Install cab skirts (see paragraph 14-6).

TA707332

7-6. TRANSMISSION OIL LEVEL TUBE REPLACEMENT.

This task covers:**a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Transmission drained (see paragraph 7-19).
- Left transmission side guard removed (see paragraph 14-7).

Tools/Test Equipment:

- Rags (Item 27, Appendix C)
- Two gaskets

References:

- Transmission bottom guard removed (see paragraph 14-8).
- TM 10-3930-659-10

Tools/Test Equipment:

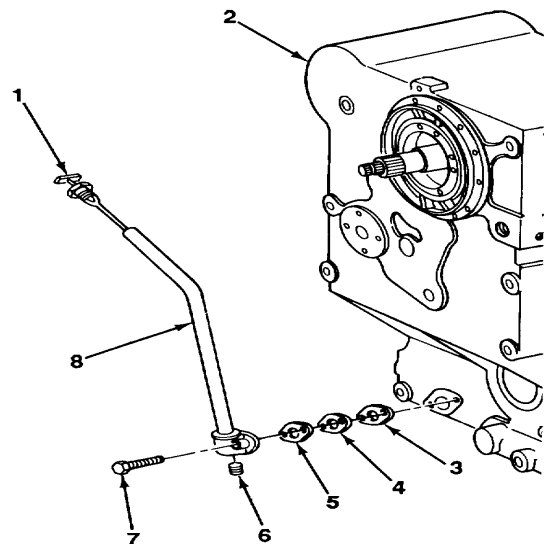
- General mechanic's tool kit (Item 44, Appendix F)

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

1. Remove transmission oil level gage (1) from transmission oil level tube (8).
2. Remove two screws (7), transmission oil level tube (8), gasket (5), baffle plate (4), and gasket (3) from transmission assembly (2). Discard gaskets.
3. Remove plug (6) from transmission oil level tube (8).



TA707333

7-6. TRANSMISSION OIL LEVEL TUBE REPLACEMENT (Con't).

b. INSTALLATION

1. Install plug (6) in transmission oil level tube (8).
2. Install new gasket (3), baffle plate (4), new gasket (5), and transmission oil level tube (8) on transmission assembly (2) with two screws (7).
3. Install transmission oil level gage (1) in transmission oil level tube (8).

FOLLOW-ON TASKS:

- Fill transmission with hydraulic fluid (see TM 10-3930-659-10).
- Install transmission bottom guard (see paragraph 14-8).
- Install left transmission side guard (see paragraph 14-7).

7-7. TRANSMISSION SUCTION TUBE REPLACEMENT.

This task covers:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. Removal b. Cleaning and Inspection | <ul style="list-style-type: none"> c. Installation |
|--|---|
-

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Transmission drained (see paragraph 7-19).
- Right transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Dry cleaning solvent (Item 31, Appendix C)
- Two gaskets

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Compressor unit (Item 8, Appendix F)

References:

- TM 1 03930659-10

General Safety Instructions:

- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.
 - Compressed air used for cleaning purposes should never exceed 30 psi (207 kPa).
-

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

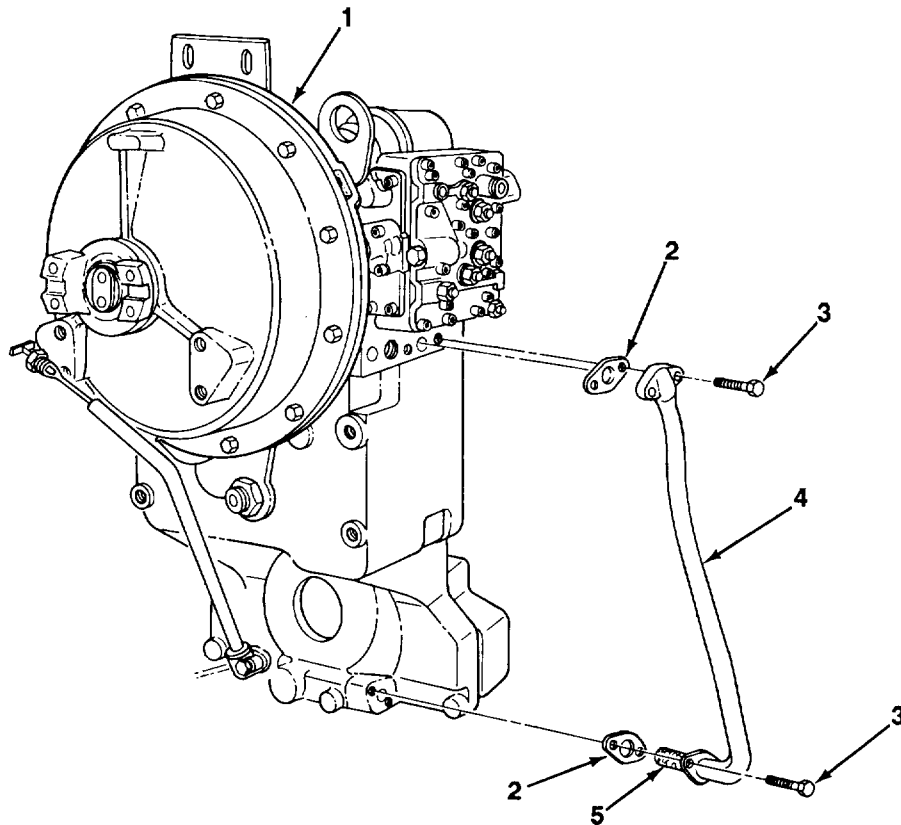
a. REMOVAL

1. Remove four screws (3) from transmission suction tube (4).
2. Remove transmission suction tube (4) and two gaskets (2) from transmission assembly (1). Discard gaskets.

b. CLEANING AND INSPECTION**WARNING**

- Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 1000F-1380F (38°C-590C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.
- Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.

Clean transmission suction tube screen (5) with dry cleaning solvent and dry with compressed air.

7-7. TRANSMISSION SUCTION TUBE REPLACEMENT (Con't).**c. INSTALLATION**

Install two new gaskets (2) and transmission suction tube (4) on transmission assembly (1) with four screws (3).

FOLLOW-ON TASKS:

- Fill transmission with hydraulic fluid (see TM 10-3930-659-10).
- Install right transmission side guard (see paragraph 14-7).

TA707334

7-8. TRANSMISSION HYDRAULIC HOSES AND FITTINGS REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Transmission drained (see paragraph 7-19).
- Right side cab skirt removed (see paragraph 14-6).
- Right and left transmission side guards removed (see paragraph 14-7)

Materials/Parts:

- Rags (Item 27, Appendix C)
- Four preformed packings

References:

- TM 10-3930659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

NOTE

- **Six hydraulic hoses and fittings from transmission control valve ports-to-clutch pack ports are removed and installed the same way. One hydraulic hose is illustrated.**
- **Transmission control valve ports and clutch pack ports are marked to aid during installation.**
- **A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.**

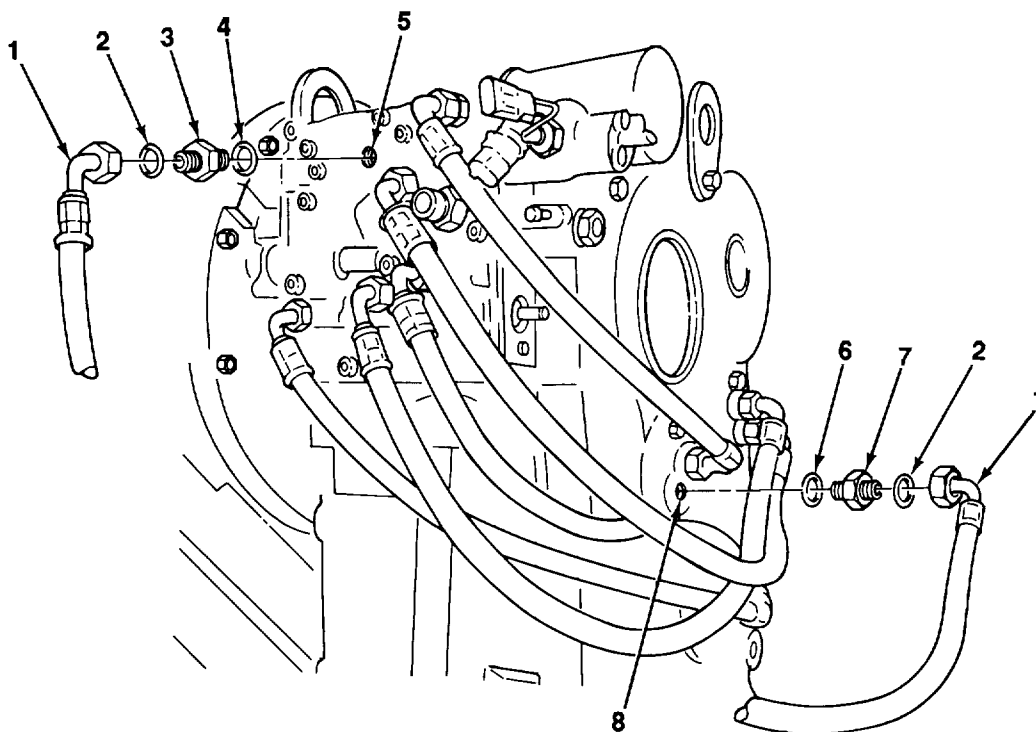
a. REMOVAL

1. Remove hydraulic hose (1) and two preformed packings (2) from adapters (3 and 7). Discard preformed
2. Remove adapter (3) and preformed packing (4) from transmission control valve port (5). Discard preformed
3. Remove adapter (7) and preformed packing (6) from clutch pack port (8). Discard preformed packing.

b. INSTALLATION

1. Install new preformed packing (6) and adapter (7) in clutch pack port (8).
2. Install new preformed packing (4) and adapter (3) in transmission control valve port (5).
3. Install two new preformed packings (2) and hydraulic hose (1) on two adapters (3 and 7).

7-8. TRANSMISSION HYDRAULIC HOSES AND FITTINGS REPLACEMENT (Con't).

**FOLLOW-ON TASKS:**

- Fill transmission with hydraulic fluid (see TM 10-3930-659-10).
- Install right and left transmission side guards (see paragraph 14-7).
- Install right side cab skirt (see paragraph 14-6).

TA707335

7-9. TRANSMISSION CLUTCH CUTOFF CONTROL ASSEMBLY MAINTENANCE.

This task covers:

- a. Removal
 - b. Installation
 - c. Adjustment
-

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Battery cables disconnected (see paragraph 6-43)

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- Two locknuts

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

a. REMOVAL**NOTE**

All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.

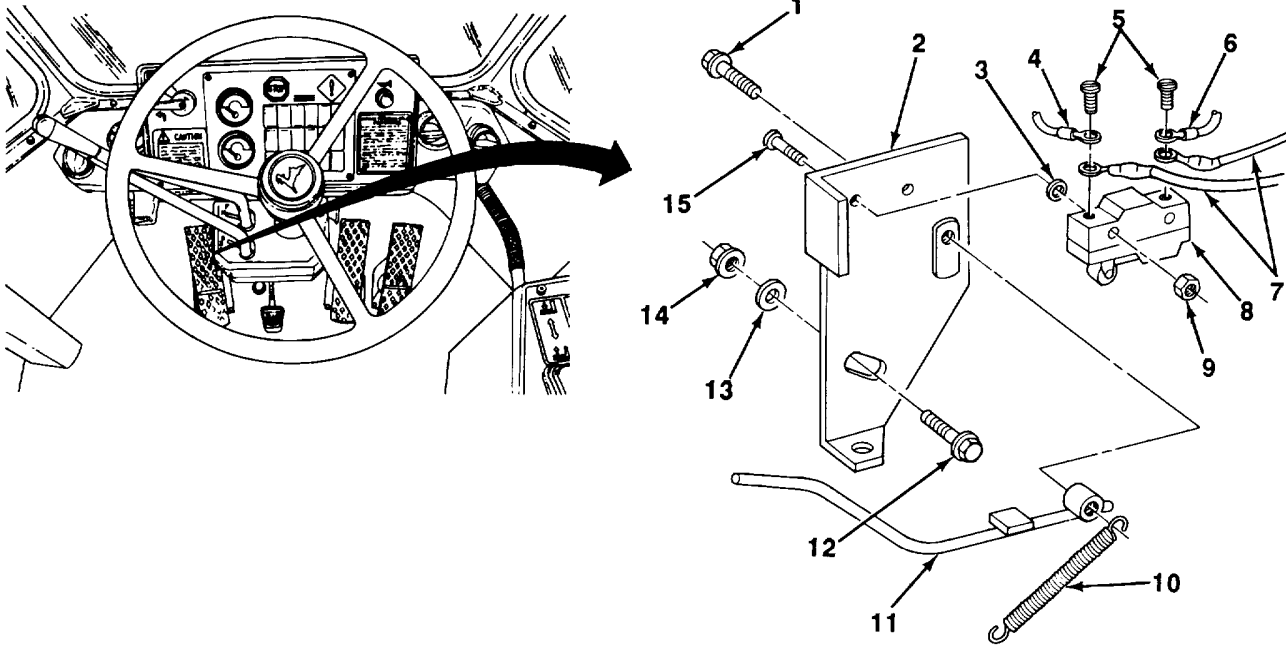
1. Remove two screws (5), under cab wiring harness leads (4 and 6), and suppressor wires (7) from clutch cutoff microswitch (8).
2. Remove nut (14), washer (13), screw (12), and assembled transmission clutch cutoff control assembly.
3. Remove two locknuts (9), clutch cutoff microswitch (8), two washers (3), and screws (15). Discard locknuts.
4. Remove spring (10) from lever (11) and bracket (2).
5. Remove screw (1) and lever (11) from bracket (2).

b. INSTALLATION

1. Install lever (11) on bracket (2) with screw (1).
2. Install spring (10) on lever (11) and bracket (2).
3. Install two washers (3) and clutch cutoff microswitch (8) on bracket (2) with two screws (15) and new locknuts
4. Install assembled transmission clutch cutoff control assembly with screw (12), washer (13), and nut (14).
5. Position tip of lever (11) under edge of left brake pedal.

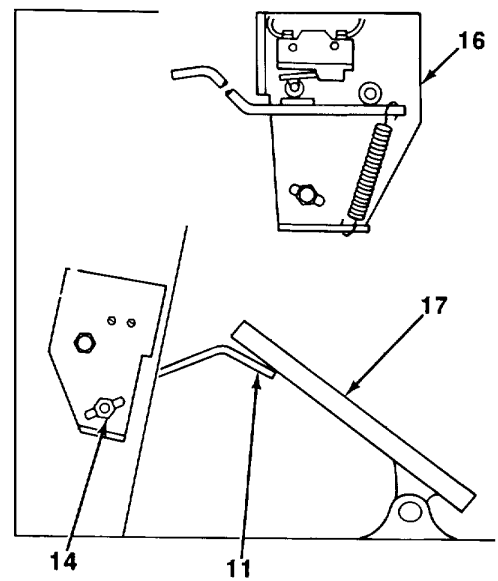
7-9. TRANSMISSION CLUTCH CUTOFF CONTROL ASSEMBLY MAINTENANCE (Con't).

6. Install two suppressor wires (7) and under cab wiring harness leads (4 and 6) on clutch cutoff microswitch (8) with two screws (5).
7. Connect battery cables (see paragraph 6-43).



c. ADJUSTMENT

1. Ensure that lever (11) is positioned under let brake pedal (17).
2. Disengage transmission clutch cutoff switch (see TM 10-3930-659-10).
3. Operate forklift truck in first gear on level ground (see TM 10-3930-659-10).
4. Slowly depress left brake pedal (17). Transmission should disengage.
5. If transmission does not disengage, loosen nut (14) and move transmission clutch cutoff control assembly (16) in or out until transmission disengages. Tighten nut.



TA707336

7-10. TRANSMISSION CLUTCH CUTOFF VALVE PRESSURE TEST.

This task covers: Pressure Test

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).
- Right transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- Two preformed packings

Personnel Required: Two**References:**

- TM 10-3930-659-10

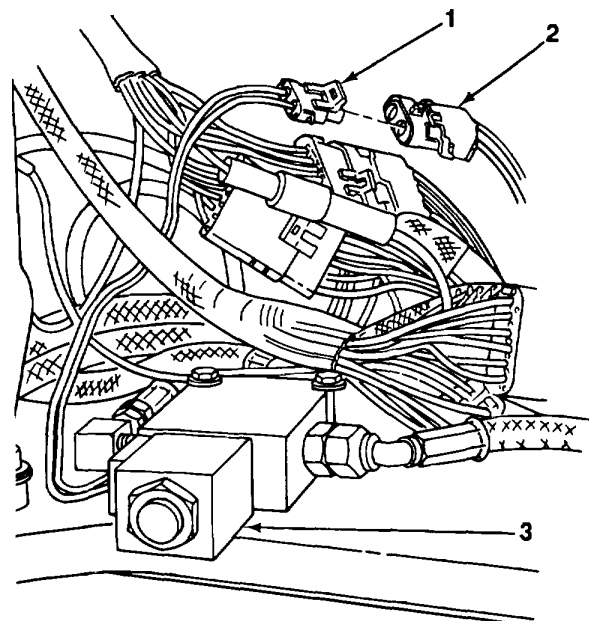
Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Adapter (Item 1, Appendix F)
- Adapter (Item 2, Appendix F)
- Pressure gage (Item 18, Appendix F)
- Hose assembly (Item 20, Appendix F)
- Multimeter (Item 22, Appendix F)
- Tee (Item 37, Appendix F)

PRESSURE TEST**NOTE**

Step 1 checks resistance of coil. Resistance must be checked before performing pressure test.

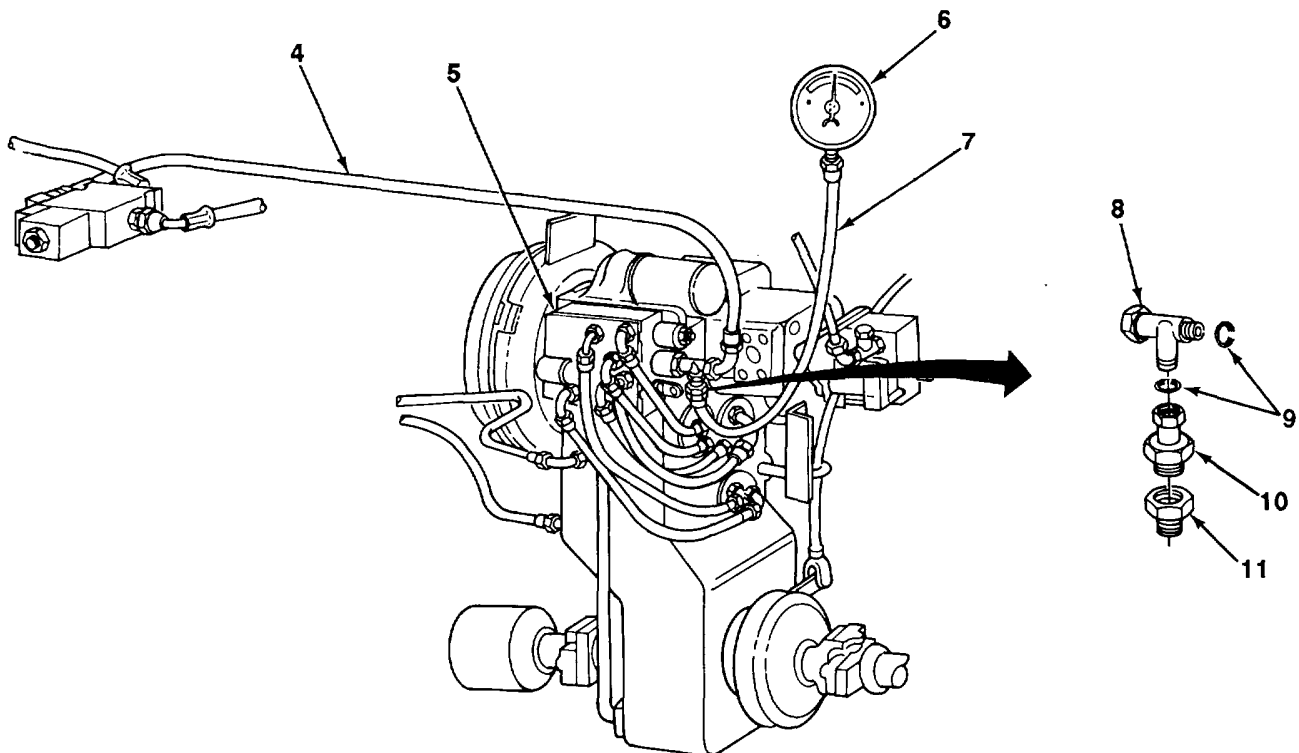
1. Disconnect wiring harness connector (2) from solenoid connector (1) and check resistance of (3). Resistance should be 8.5-9.5 ohms. If resistance is not within specification, replace coil (paragraph 7-11).



TA707337

7-10. TRANSMISSION CLUTCH CUTOFF VALVE PRESSURE TEST (Con't).

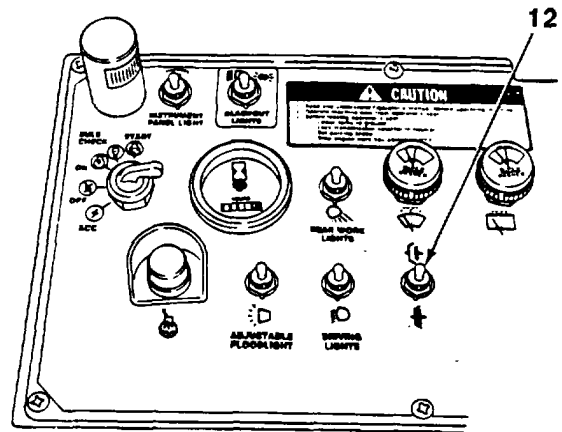
2. Remove hose (4) from transmission control valve (5).
3. Install two preformed packings (9) on tee (8).
4. Install two adapters (10 and 11) on tee (8).
5. Install tee (8) on transmission control valve (5).
6. Install hose (7) on adapter (11).
7. Install pressure gage (6) on hose (7).
8. Install hose (4) on tee (8).
9. Warm hydraulic system to operating temperature (see paragraph 2-29).
10. Operate engine at slow engine idle speed (see TM 10-3930-659-10).



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7-10. TRANSMISSION CLUTCH CUTOFF VALVE PRESSURE TEST (Con't).

11. Disengage transmission clutch cutoff switch (1, and press down on left brake pedal (see TM 10-3930-659-10).



12. Note pressure reading on pressure gage (6). Reading should be approximately 2350 psi (16203 kPa). If pressure reading is 0 (zero), replace valve body (see paragraph 7-11).

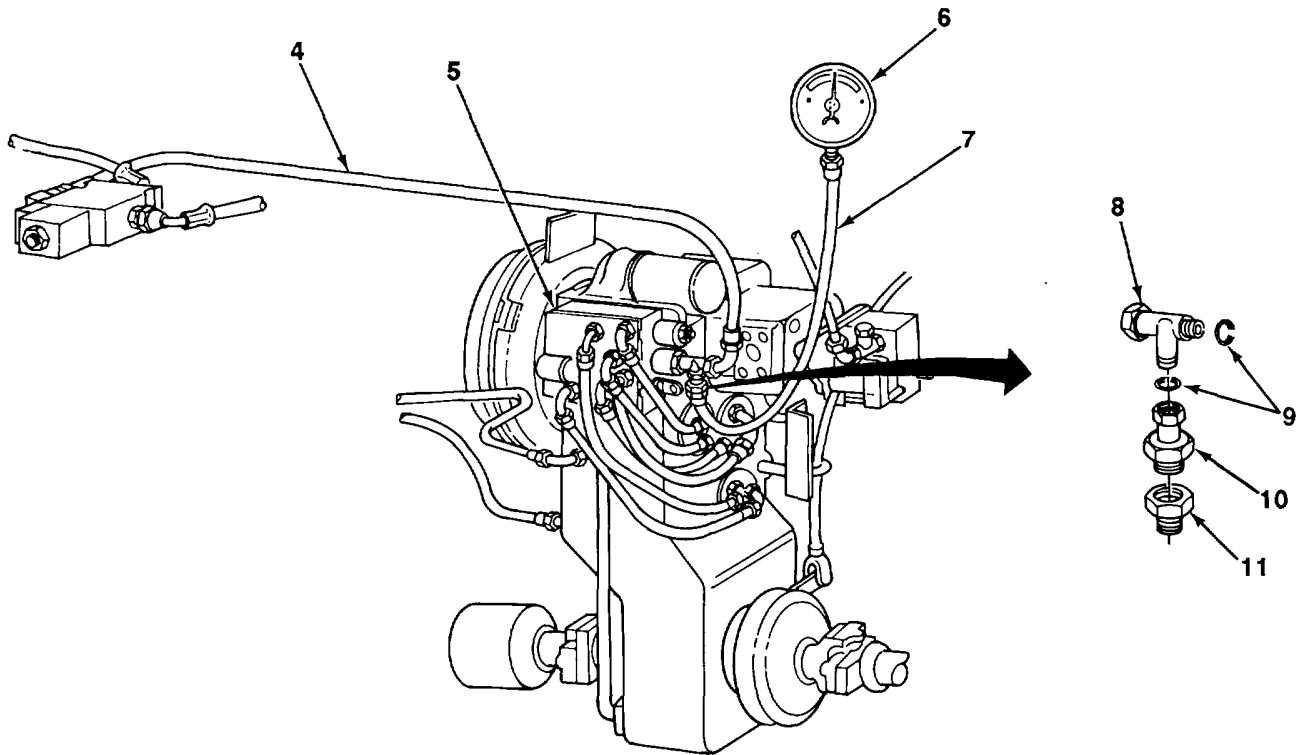
NOTE

Forklift truck must not move while transmission is shifted through various speed ranges.

13. Move speed range selection lever through all speed ranges (see TM 10-3930-659-10). If transmission does not disengage, replace transmission clutch cutoff valve (see paragraph 7-11).
14. Release left brake pedal (see TM 10-3930-659-10). If pressure reading on pressure gage (6) does not drop to 0 (zero), replace solenoid valve (see paragraph 7-11).
15. Shut down engine (see TM 10-3930-659-10).
16. Remove pressure gage (6) and hose (7) from adapter (11).
17. Remove hose (4) from tee (8).
18. Remove tee (8) from transmission control valve (5).
19. Install hose (4) on transmission control valve (5).
20. Remove two adapters (10 and 11) and preformed packings (9) from tee (8). Discard preformed packings.

TA707339

7-10. TRANSMISSION CLUTCH CUTOFF VALVE PRESSURE TEST (Con't).



FOLLOW - ON TASKS:

- Install right transmission side guard (see paragraph 14-7).
- Install right side cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-39330-659-10).

TA707340

7-11. TRANSMISSION CLUTCH CUTOFF VALVE MAINTENANCE.

This task covers:

- | | |
|----------------------------|-----------------|
| a. Removal | d. Assembly |
| b. Disassembly | e. Installation |
| c. Cleaning and Inspection | |
-

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Hydraulic reservoir drained (see LO 10-3930-659-12).
- Right side cab skirt removed (see paragraph 14-6).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Dry cleaning solvent (Item 31, Appendix C)
- Marker tags (Item 33, Appendix C)
- Seven preformed packings

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

- LO 10-3930-659-12

General Safety Instructions:

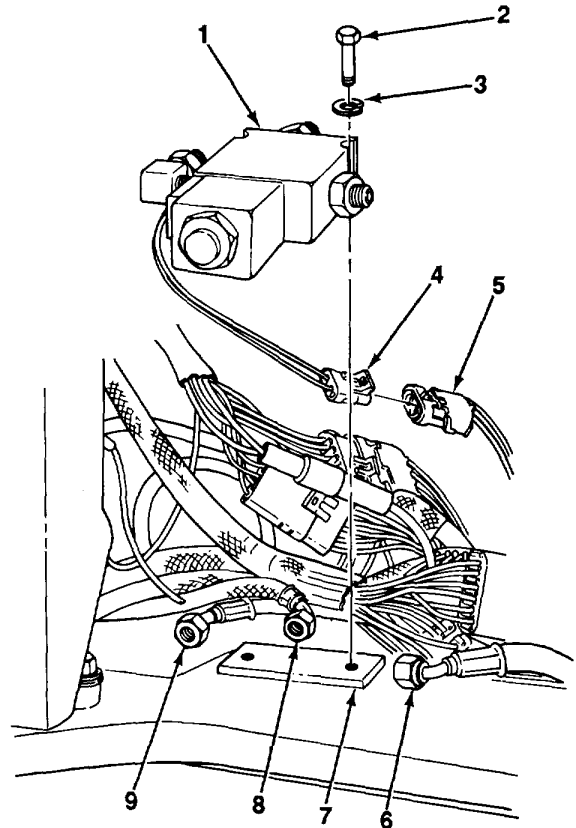
- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.
-

NOTE

- **All hoses should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.**
- **A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.**

7-11. TRANSMISSION CLUTCH CUTOFF**a. REMOVAL**

1. Disconnect solenoid connector (4) from wiring harness connector (5).
2. Disconnect three hoses (6, 8, and 9) from transmission clutch cutoff valve (1).
3. Remove two screws (2), washers (3), and transmission clutch cutoff valve (1) from bracket (7).

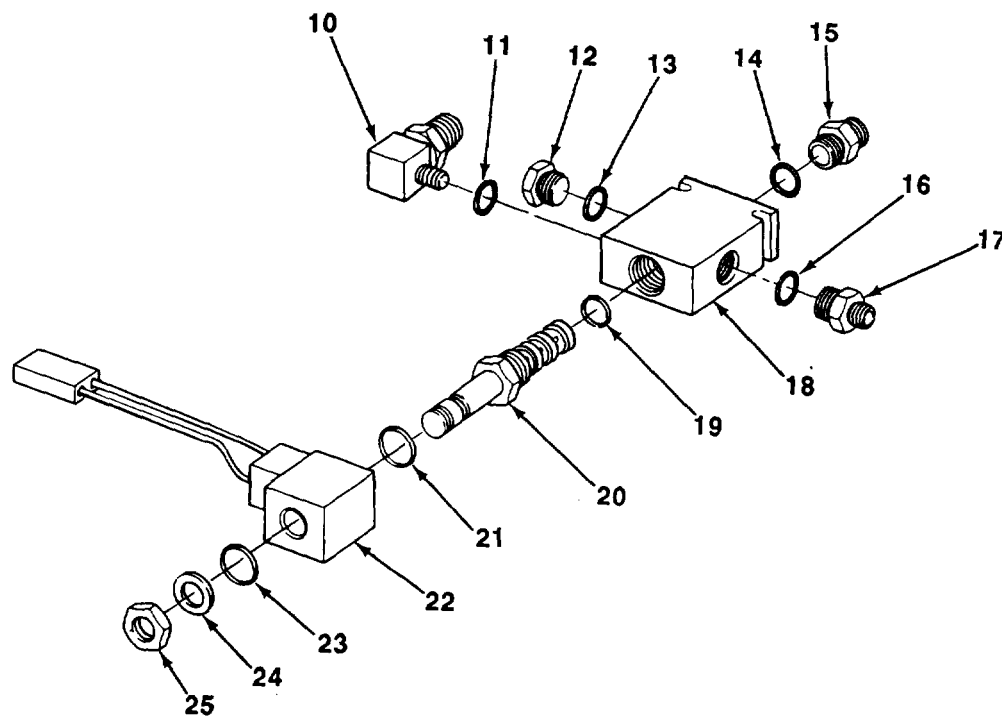


TA707341

7-11. TRANSMISSION CLUTCH CUTOFF VALVE MAINTENANCE (Con't).

b. DISASSEMBLY

1. Remove nut (25), washer (24), coil (22), and two preformed packings (21 and 23) from solenoid valve (20). Discard preformed packings.
2. Remove solenoid valve (20) and preformed packing (19) from valve body (18). Discard preformed packing.
3. Remove elbow (10) and preformed packing (11) from valve body (18). Discard preformed packing.
4. Remove plug (12) and preformed packing (13) from valve body (18). Discard preformed packing.
5. Remove two adapters (15 and 17) and preformed packings (14 and 16) from valve body (18). Discard



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7-11. TRANSMISSION CLUTCH CUTOFF VALVE MAINTENANCE (Con't).

c. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

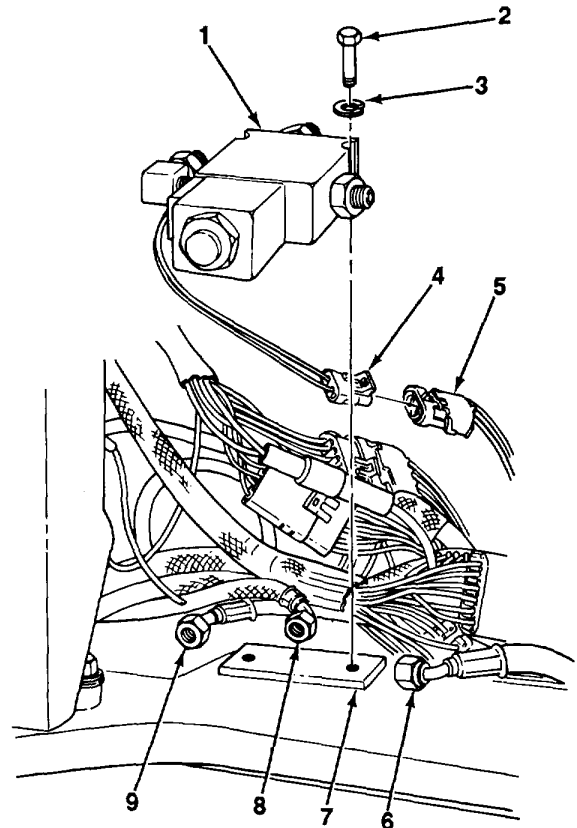
1. Clean parts with dry cleaning solvent and dry with clean rags.
2. Inspect parts for damage. Replace damaged parts.

d. ASSEMBLY

1. Install two new preformed packings (14 and 16) and adapters (15 and 17) on valve body (18).
2. Install new preformed packing (13) and plug (12) on valve body (18).
3. Install new preformed packing (11) and elbow (10) on valve body (18).
4. Install new preformed packing (19) and solenoid valve (20) on valve body (18).
5. Install new preformed packing (21) and coil (22) on solenoid valve (20) with new preformed packing (23), washer (24), and nut (25).

7-11. TRANSMISSION CLUTCH CUTOFF VALVE MAINTENANCE (Con't)**e. INSTALLATION**

1. Install transmission clutch cutoff valve (1) on bracket (7) with two washers (3) and screws (2).
2. Connect three hoses (6, 8, and 9) to transmission clutch cutoff valve (1).
3. Connect solenoid connector (4) to wiring harness connector (5).



TA707343

FOLLOW-ON TASKS:

- Fill hydraulic reservoir with hydraulic fluid (see TM
- Install right side cab skirt (see paragraph 14-6).

7-12. TRANSMISSION THERMAL BYPASS VALVE PRESSURE TEST.

This Task Covers: Pressure Test

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10)
- Left engine lower sideshield removed (see paragraph 14-16).

Materials/Parts:

- Six preformed packings

Personnel Required: Two

References:

- TM 10-3930-659-10

Tools/Test Equipment:

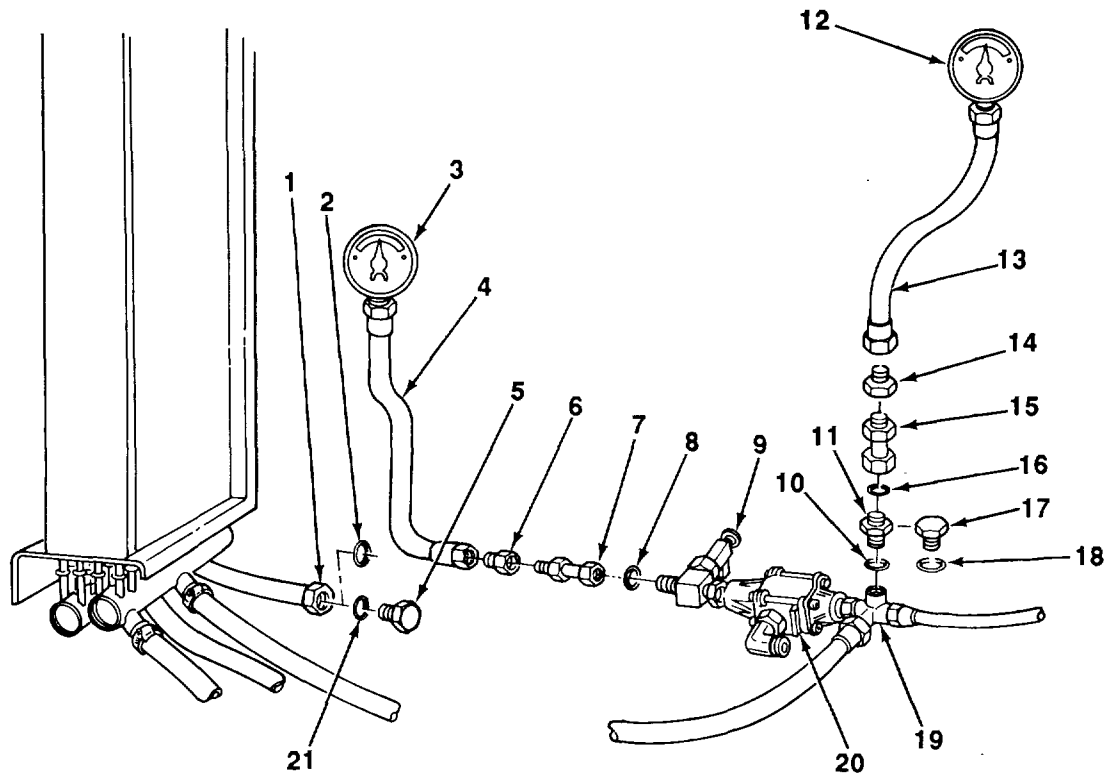
- General mechanic's tool kit (Item 44, Appendix F)
 - Adapter (Item 3, Appendix F)
 - Coupler (Item 9, Appendix F)
 - Pressure gage (two) (Item 18, Appendix F)
 - Hose assembly (Item 20, Appendix F)
 - Plug (Item 26, Appendix F)
 - Union (Item 47, Appendix F)
-

7-12. TRANSMISSION THERMAL BYPASS VALVE PRESSURE TEST (Con't).

PRESSURE TEST

1. Remove hose (1) and preformed packing (2) from transmission oil sampling valve (9). Discard preformed packing.
2. Install preformed packing (21) and plug (5) in hose (1).
3. Install preformed packing (8), union (7), adapter (6), hose (4), and pressure gage (3) on transmission oil sampling valve (9).
4. Remove plug (17) and preformed packing (18) from tee (19). Discard preformed packing.
5. Install two preformed packings (10 and 16) on adapter (11), and install adapter, union (15), adapter (14), hose (13), and pressure gage (12) on tee (19).
6. Warm hydraulic system fluid to operating temperature (see paragraph 2-29) and observe readings on two pressure gages (3 and 12). Readings on pressure gages must start out low and increase as hydraulic system fluid is warmed and transmission thermal bypass valve (20) opens.
7. Shift transmission to N (Neutral) and run engine at fast engine idle speed (see TM 10-3930-659-10). If reading on two pressure gages (3 and 12) is 31-39 psi (214-269 kPa), replace transmission thermal bypass valve (20) (see paragraph 7-13).
8. Shut down engine (see TM 10-3930-659-10).
9. Remove pressure gage (12), hose (13), adapter (14), union (15), and adapter (11) from tee (19).
10. Remove two preformed packings (10 and 16) from adapter (11). Discard preformed packings.
11. Install new preformed packing (18) and plug (17) on tee (19).
12. Remove pressure gage (3), hose (4), adapter (6), union (7), and preformed packing (8) from transmission oil sampling valve (9). Discard preformed packing.
13. Remove plug (5) and preformed packing (20) from hose (1). Discard preformed packing.
14. Install new preformed packing (2) and hose (1) on transmission oil sampling valve (9).

7-12. TRANSMISSION THERMAL BYPASS VALVE PRESSURE TEST (Con't).



FOLLOW - ON TASKS:

- Install left engine lower sideshield (see paragraph 14-16).
- Close left engine upper sideshield (see TM 10-3930-659-10)
- Remove frame locking bar (see TM 10-3930-659-10).

TA707344

7-13. TRANSMISSION THERMAL BYPASS VALVE MAINTENANCE.

This task covers:

- | | |
|----------------------------|-----------------|
| a. Removal | d. Assembly |
| b. Disassembly | e. Installation |
| c. Cleaning and Inspection | |

INITIAL SETUP:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Transmission oil sampling valve removed (see paragraph 7-18).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Machinist's vise (Item 48, Appendix F)

Materials/Parts:

- Rags (item 27, Appendix C)
- Dry cleaning solvent (Item 31, Appendix C)
- One repair kit
- Six preformed packings

References:

- TM 10-3930-659-10

General Safety Instructions:

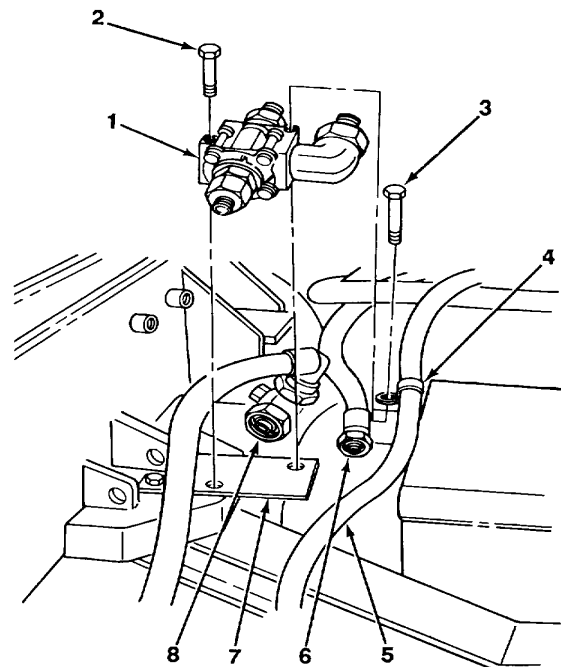
- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

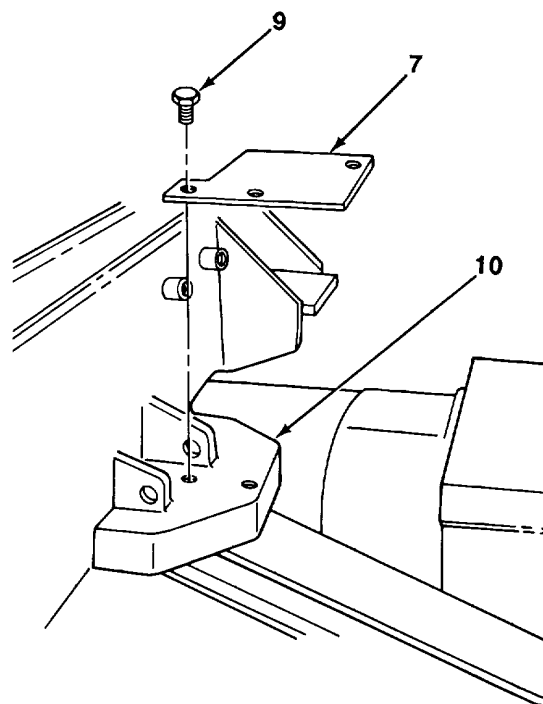
1. Remove screw (3) and clamp (4) from transmission thermal bypass valve (1). Move hose (5) aside.
2. Disconnect two hoses (6 and 8) from transmission thermal bypass valve (1).
3. Remove screw (2) and transmission thermal bypass valve (1) from plate (7).



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7-13. TRANSMISSION THERMAL BYPASS VALVE MAINTENANCE (Con't).

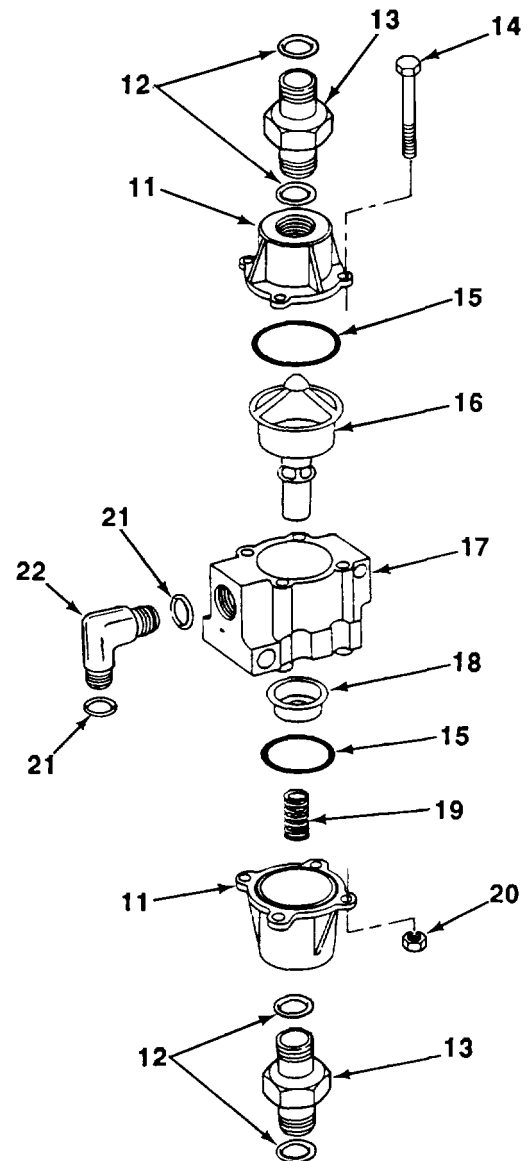
4. If damaged, remove screw (9) and plate (7) from frame (10).



7-13. TRANSMISSION THERMAL BYPASS VALVE MAINTENANCE (Con't).

b. DISASSEMBLY

1. Remove two adapters (13) and four preformed packings (12) from two end caps (11). Discard preformed packings.
2. Remove elbow (22) and two preformed packings (21) from valve body (17). Discard preformed packings.
3. Remove four nuts (20) and screws (14), and slowly release spring pressure from valve body (17).
4. Remove two end caps (11) and preformed packings (15) from valve body (17). Discard preformed packings.
5. Remove spring (19), valve element (16), and seal (18) from valve body (17). Discard seal, valve element, and spring.



7-13. TRANSMISSION THERMAL BYPASS VALVE MAINTENANCE (Con't).

c. CLEANING AND INSPECTION**WARNING**

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

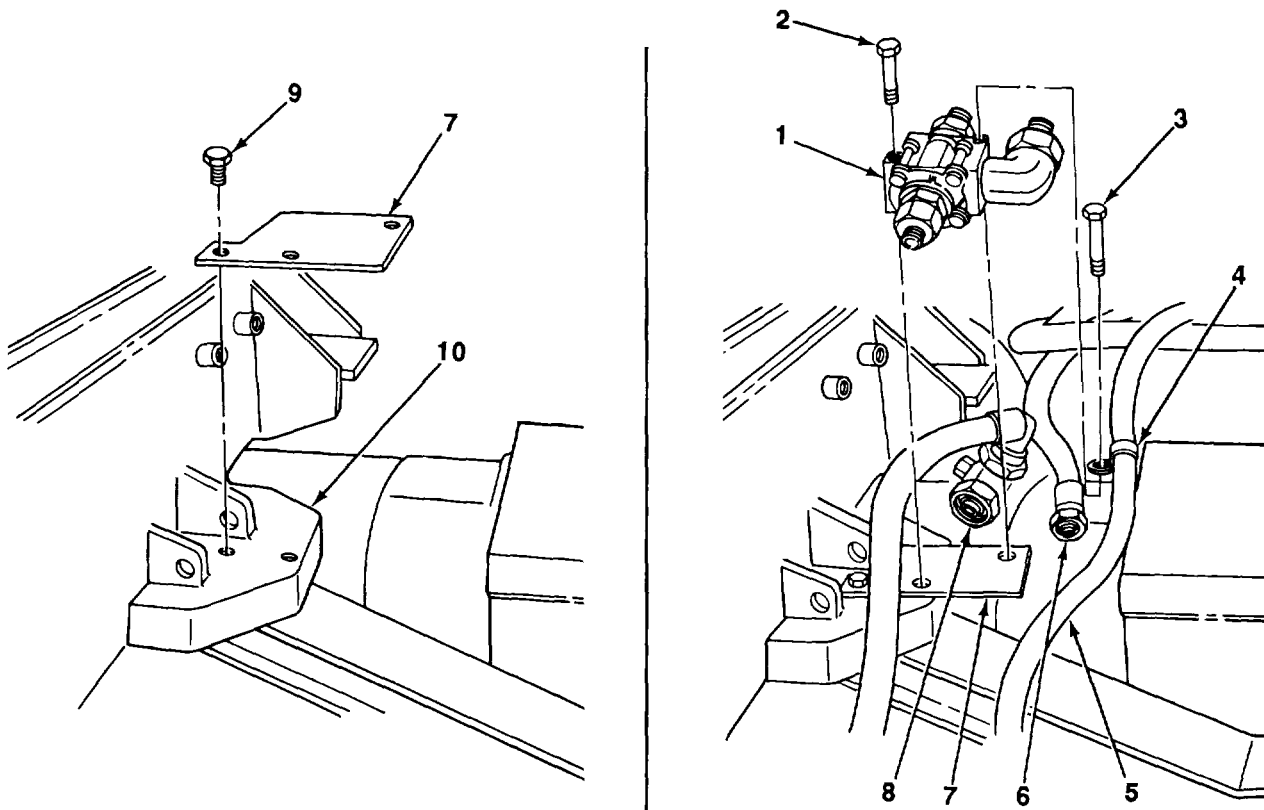
1. Clean parts with dry cleaning solvent and dry with clean rags.
2. Inspect parts for damage. Replace damaged parts.

d. ASSEMBLY

1. Install new seal (18), new valve element (16), and new spring (19) on valve body (17).
2. Install two new preformed packings (15) on end caps (11).
3. Install two end caps (11) on valve body (17) with four screws (14) and nuts (20).
4. Install two new preformed packings (21) and elbow (22) on valve body (17).
5. Install four new preformed packings (12) and two adapters (13) on end caps (11).

7-13. TRANSMISSION THERMAL BYPASS VALVE MAINTENANCE (Con't).**e. INSTALLATION**

1. If removed, install plate (7) on frame (10) with screw (9).
2. Install transmission thermal bypass valve (1) on plate (7) with screw (2).
3. Connect two hoses (6 and 8) on transmission thermal bypass valve (1).
 - Install transmission oil sampling valve (see paragraph 7-18).
 - Check transmission fluid level and fill as necessary (see TM 10-3930-659-10).

**FOLLOW-ON TASKS:**

- Install transmission oil sampling valve (see paragraph 7-18).
- Check transmission oil fluid and fill as necessary (see TM 10-3930-659-10).

TA707348

7-14. TRANSMISSION OIL COOLER REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Hydraulic reservoir drained (see LO 10-3930-659-12).
- Radiator grille housing removed (see paragraph 532).
- Reverse warning alarm removed (see paragraph 6-39).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Marker tags item 33, Appendix C)

Personnel Required: Two**References:**

- LO 10-3930-659-12
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

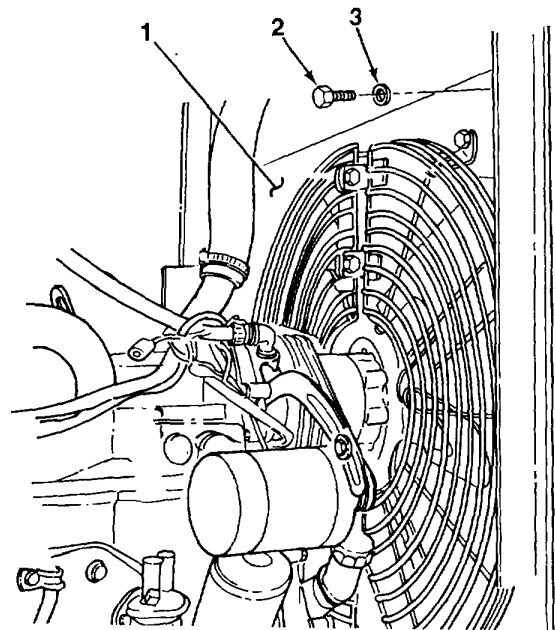
NOTE

• All hoses should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

• A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned

a. REMOVAL

1. Remove eight screws (2) and washers (3), and 1 engine radiator shroud (1) toward engine.



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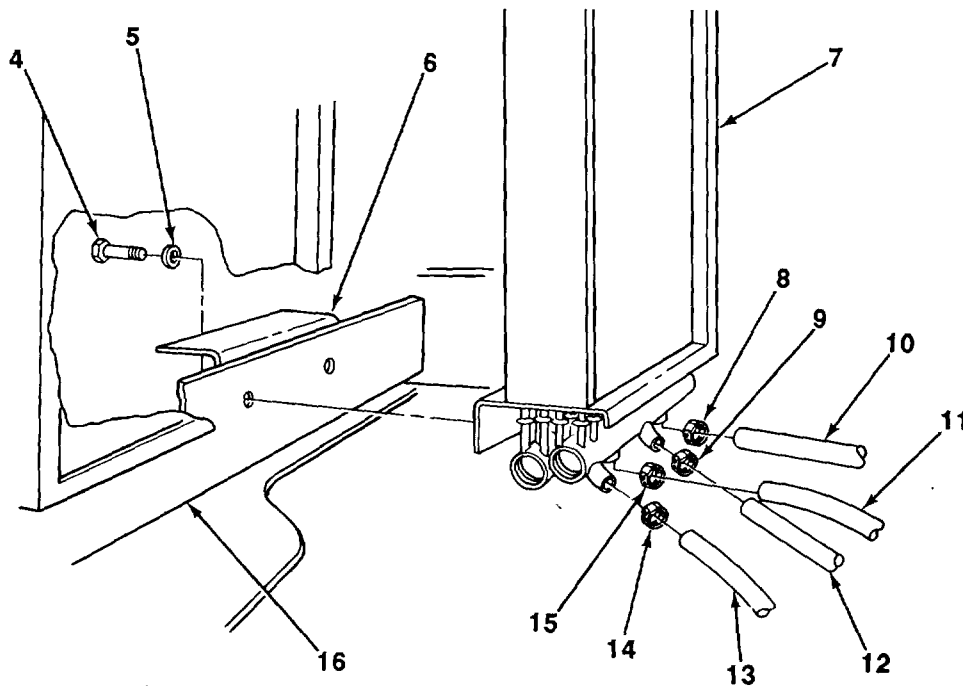
7-14. TRANSMISSION OIL COOLER REPLACEMENT (Con't).

2. Loosen clamp (8) and remove transmission oil sampling valve-to-transmission oil cooler hose (10) from transmission oil cooler (7).
3. Loosen clamp (9) and remove transmission oil cooler bypass hose (12) from transmission oil cooler (7).
4. Loosen clamp (15) and remove hydraulic system return filter-to-transmission oil cooler hose (11) from transmission oil cooler (7).
5. Loosen clamp (14) and remove hydraulic reservoir-to-transmission oil cooler hose (13) from transmission oil cooler (7).

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

6. Remove three screws (4), washers (5), reverse warning alarm bracket (6), and transmission oil cooler from



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7-14. TRANSMISSION OIL COOLER REPLACEMENT (Con't).

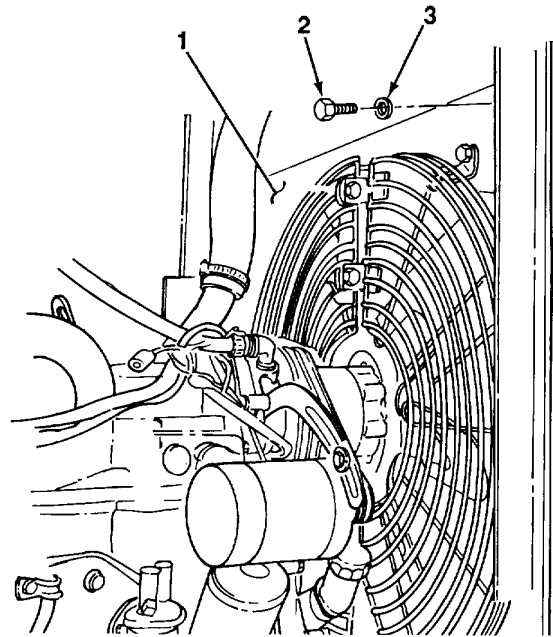
b. INSTALLATION**WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

1. Install transmission oil cooler (7) and reverse warning alarm bracket (6) on bracket (16) with three washers (5) and screws (4).
2. Position hydraulic reservoir-to-transmission oil cooler hose (13) on transmission oil cooler (7) and tighten clamp (14).
3. Position hydraulic system return filter-to-transmission oil cooler hose (11) on transmission oil cooler (7) and tighten clamp (15).
4. Position transmission oil cooler bypass hose (12) on transmission oil cooler (7) and tighten clamp (9). Tighten clamp (8).
6. Install eight washers (3) and screws (2) on engine radiator shroud (1).

FOLLOW-ON TASKS:

- Install reverse warning alarm (see paragraph 6-39).
- Install radiator grille housing (see paragraph 5-32).
- Fill hydraulic reservoir with hydraulic fluid (see TM 10-3930-659-10).
- Check transmission fluid level and fill as necessary (see TM 10-3930-659-10).
- Start engine and check for leaks (see TM 10-3930-659-10).
- Shut down engine (see TM 10-3930-659-10). Check hydraulic reservoir and transmission fluid levels and fill as necessary (see TM 10-3930-659-10).



7-15. TRANSMISSION OIL COOLER HOSES REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- ConveyORIZED fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right and left engine upper sidershields opened (see TM 10-3930-659-10).
- Right and left transmission side guards removed (see paragraph 14-7).
- Transmission bottom guard removed (see paragraph 14-8).
- Left engine lower sidershield removed (see paragraph 14-16).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Ten preformed packings

Tools/Test Equipment

- General mechanic's tool kit (Item 44, Appendix F)
- Adjustable wrench (Item 49, Appendix F)

References:

- TM 10-3930-659-10

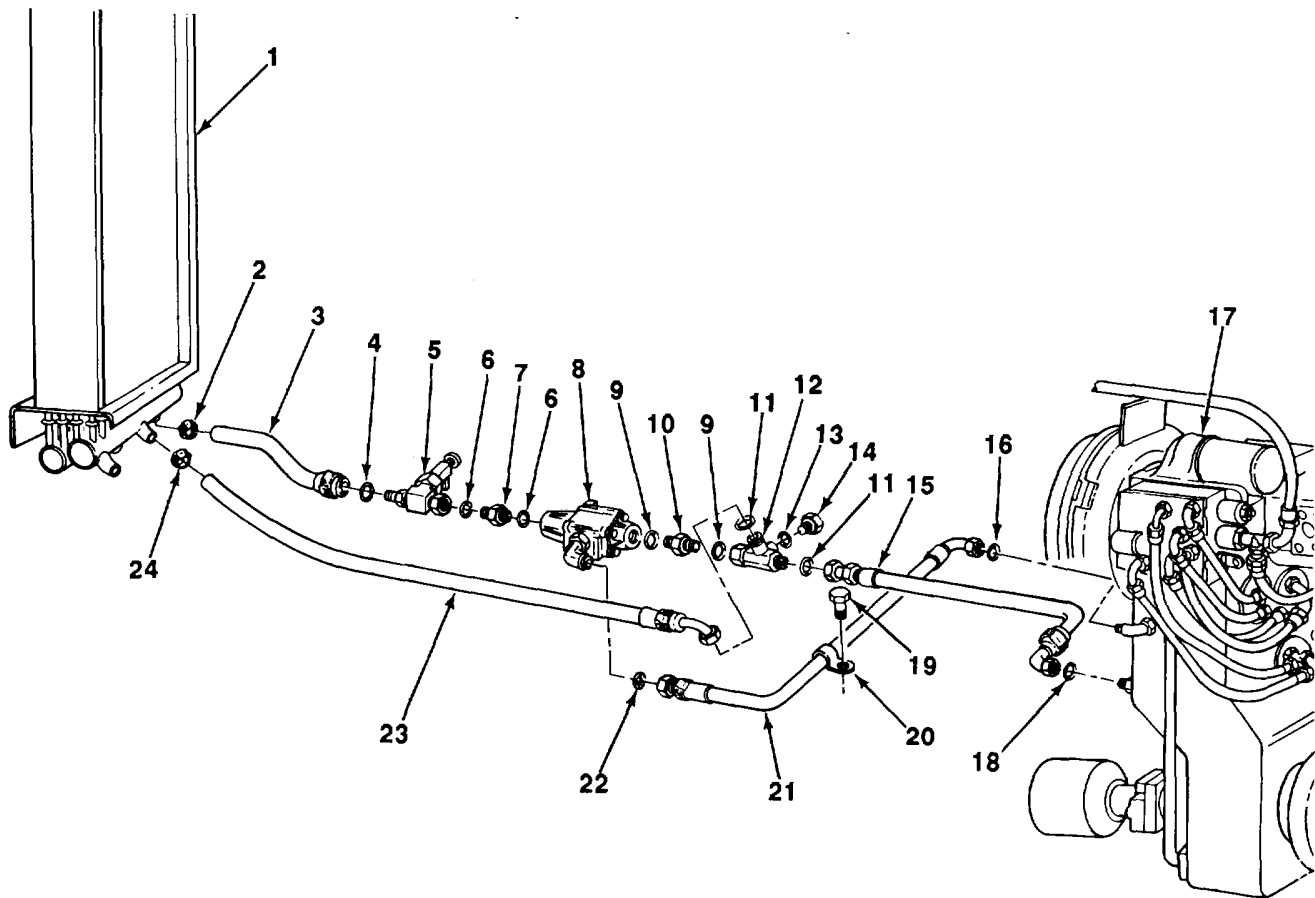
NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

1. Remove hose (23) from tee (12). Drain hydraulic fluid from transmission oil cooler (1).
2. Remove clamp (24) and hose (23) from transmission oil cooler (1).
3. Remove hose (21) and preformed packing (22) from transmission thermal bypass valve (8). Discard preformed packing.
4. Remove hose (21) and preformed packing (16) from transmission (17). Discard preformed packing.
5. Remove bolt (19), clamp (20), and hose (21) from transmission (17).
6. Remove hose (15) from tee (12) and transmission (17).
7. Remove preformed packing (18) from transmission (17). Discard preformed packing.
8. Remove hose (3) and preformed packing (4) from transmission oil sampling valve (5). Discard preformed packing.
9. Remove clamp (2) and hose (3) from transmission oil cooler (1).
10. Remove transmission oil sampling valve (5) from adapter (7).
11. Remove adapter (7) and two preformed packings (6) from transmission thermal bypass valve (8). Discard preformed packings.
12. Remove tee (12) from transmission thermal bypass valve (8).

7-15. TRANSMISSION OIL COOLER HOSES REPLACEMENT (Con't).



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13. Remove adapter (10) and two preformed packings (9) from tee (12). Discard preformed packings.
14. Remove two preformed packings (11) from tee (12). Discard preformed packings.
15. If damaged, remove plug (14) and preformed packing (13) from tee (12). Discard preformed packing.

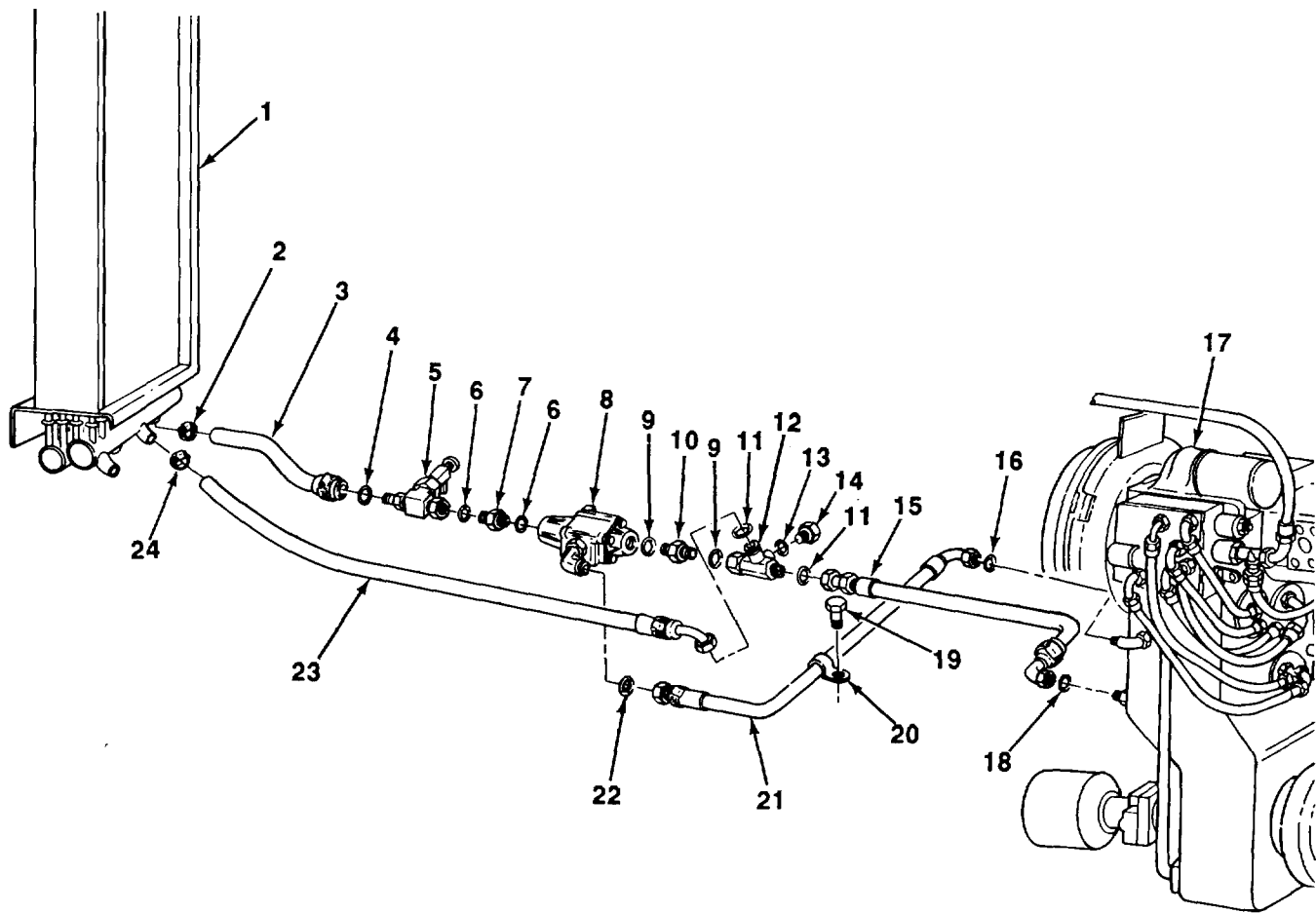
7-15. TRANSMISSION OIL COOLER HOSES REPLACEMENT (Con't).

b. INSTALLATION

1. If removed, install new preformed packing (13) and plug (14) on tee (12).
2. Install two new preformed packings (11) on tee (12).
3. Install two new preformed packings (9) and adapter (10) on tee (12).

4. Install tee (12) on transmission thermal bypass valve (8).
5. Install two new preformed packings (6) and adapter (7) on transmission thermal bypass valve (8).
6. Install transmission oil sampling valve (5) on adapter (7).
7. Install hose (3) on transmission oil cooler (1) with clamp (2).
8. Install new preformed packing (4) and hose (3) on transmission oil sampling valve (5).
9. Install new preformed packing (18) on transmission (17).
10. Install hose (15) on transmission (17) and tee (12).
11. Install new preformed packing (22) and hose (21) on transmission thermal bypass valve (8).
12. Install new preformed packing (16) and hose (21) on transmission (17).
13. Install clamp (20) on hose (21) and transmission (17) with bolt (19).
14. Install hose (23) on transmission oil cooler (1) with clamp (24).
15. Install hose (23) to tee (12).

7-15. TRANSMISSION OIL COOLER HOSES REPLACEMENT (Con't).



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FOLLOW-ON TASKS:

- Check transmission fluid level and fill as necessary (see TM 10-3930-659-10).
- Start engine and check for leaks (see TM 10-3930-659-10).
- Install left engine lower sideshield (see paragraph 14-16).
- Install transmission bottom guard (see paragraph 14-8).
- Install right and left transmission side guards (see paragraph 14-7).
- Close right and left engine upper sideshields (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

7-16. TRANSMISSION OIL COOLER BACKFLUSH.

This task Backflush

INITIAL SETUP:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).
- Left engine lower sideshield removed (see paragraph 14-16).
- Window washer plate removed (see paragraph 16-9).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Plug (three) (Item 31, Appendix F)

Materials/Parts:

- Rags (Item 27, Appendix C)
- Eight preformed packings

Personnel Required: Two

References:

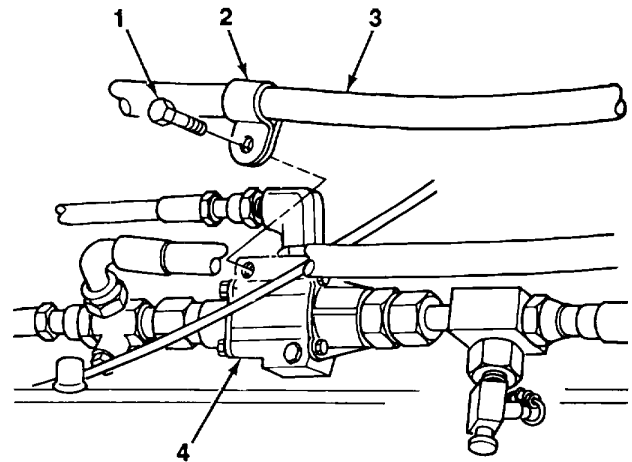
- TM 10-3930-659-10

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

BACKFLUSH

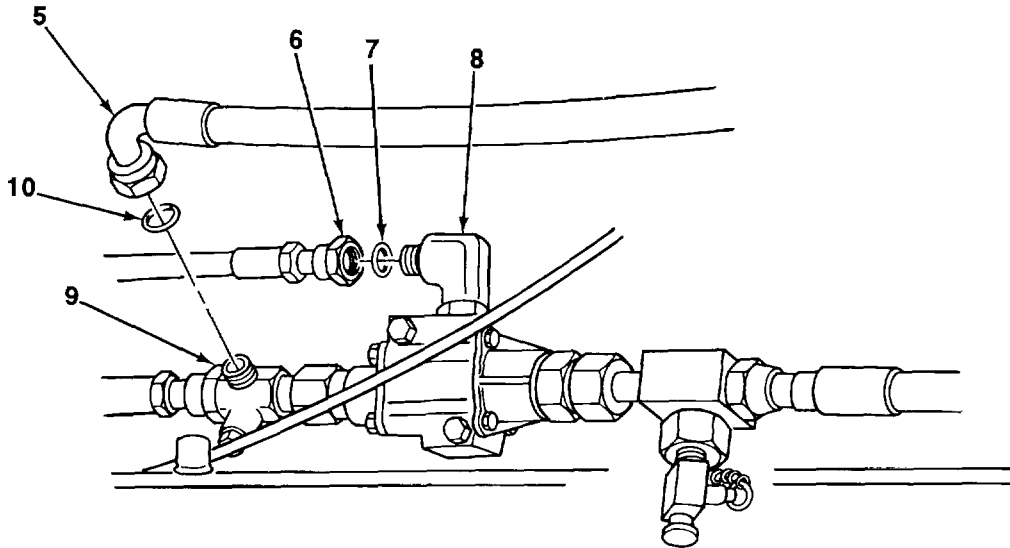
1. Remove screw (1) and clamp (2) from transmission thermal bypass valve (4). Move hose aside.



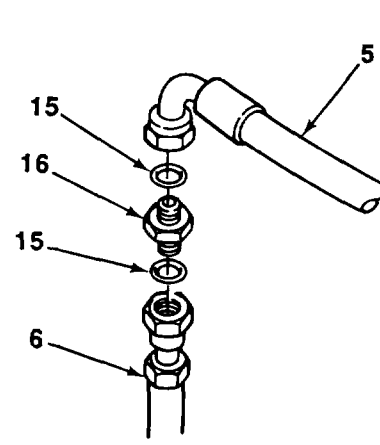
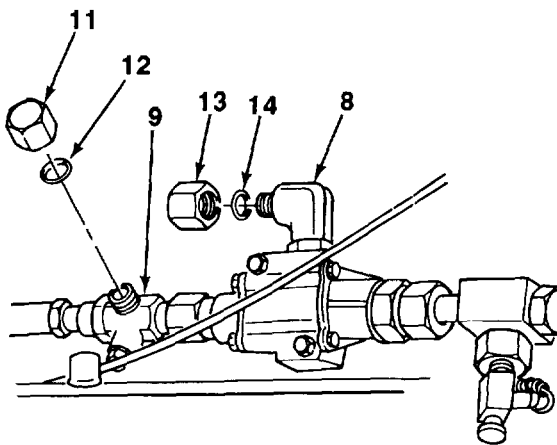
TA707354

7-16. TRANSMISSION OIL COOLER BACKFLUSH (Con't).

2. Remove hose (6) and preformed packing (7) from elbow (8). Discard preformed packing.
3. Remove hose (5) and preformed packing (10) from tee(9). Discard preformed packing.



4. Install preformed packing (12) and plug (11) on tee (9).
5. Install preformed packing (14) and plug (13) on elbow (8).
6. Install two preformed packings (15), adapter (16), and hose (5) on hose (6).



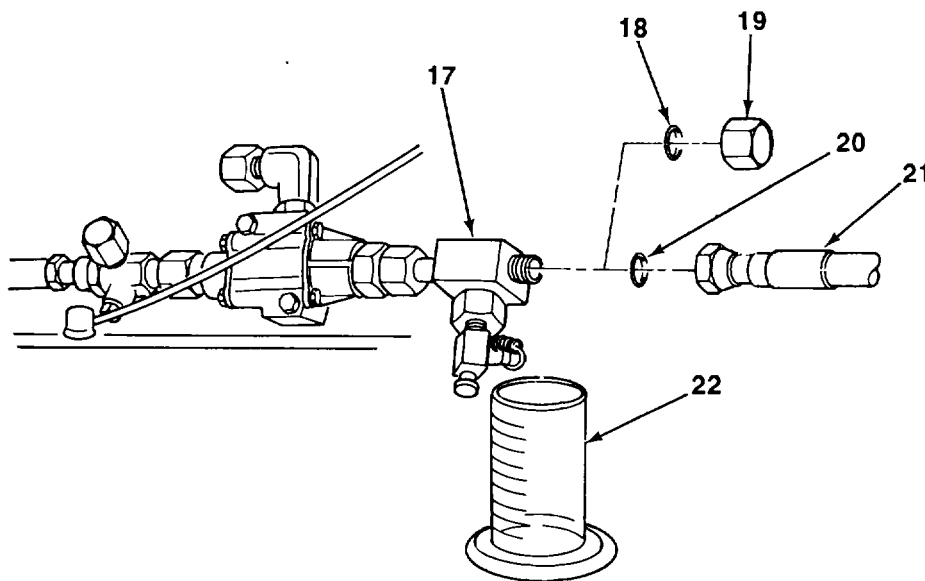
7-16. TRANSMISSION OIL COOLER BACKFLUSH (Con't).

7. Remove hydraulic hose (21) and preformed packing (20) from transmission oil sampling valve (17). Discard preformed packing.
8. Install preformed packing (18) and plug (19) on transmission oil sampling valve (17).
9. Place hydraulic hose (21) in suitable container (22).

WARNING

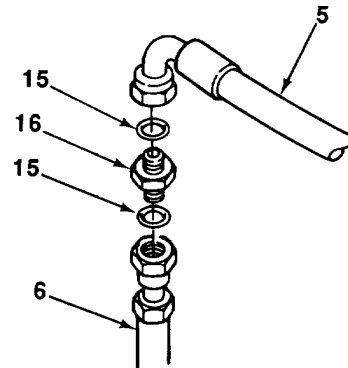
Hydraulic fluid is under pressure. Contact with flow of hydraulic fluid may result in injury to personnel.

10. Start engine (see TM 10-3930-659-10) and run until suitable container (22) is full. Stop engine (see TM 10-3930-659-10).
11. Remove plug (19) and preformed packing (18) from transmission oil sampling valve (17). Discard preformed packing.
12. Install new preformed packing (20) and hydraulic hose (21) on transmission oil sampling valve (17).

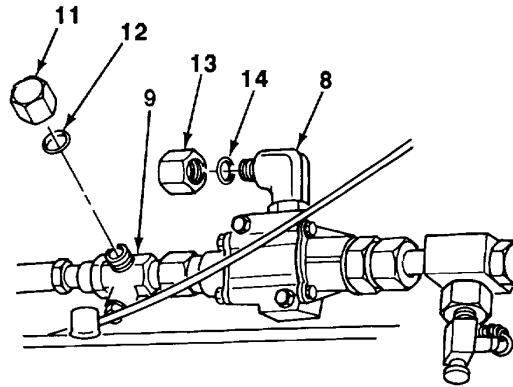


7-16. TRANSMISSION OIL COOLER BACKFLUSH (Con't).

13. Remove two hoses (5 and 6) from adapter (1)
14. Remove two preformed packings (15) from adapter (16). Discard preformed packings.

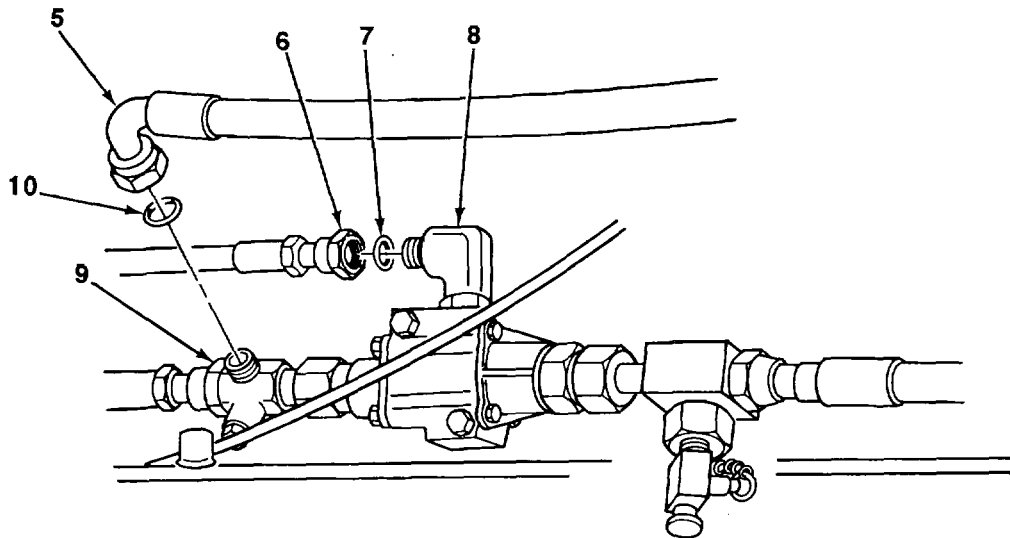


15. Remove plug (13) and preformed packing from elbow (8). Discard preformed packing.
16. Remove plug (11) and preformed packing from tee (9). Discard preformed packing.



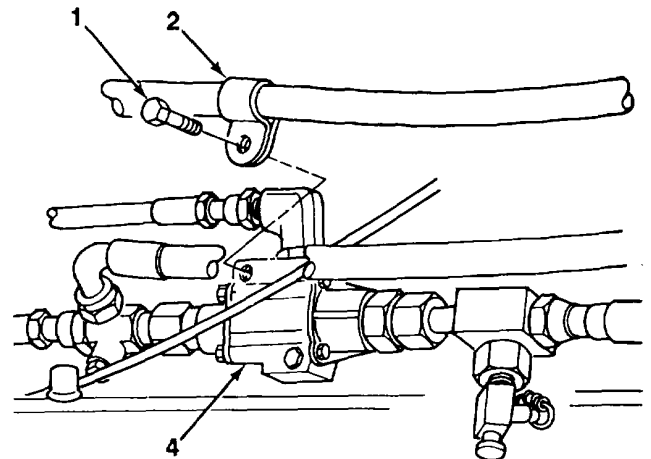
7-16. TRANSMISSION OIL COOLER BACKFLUSH (Con't).

17. Install new preformed packing (10) and hose (5) on tee (9).
18. Install new preformed packing (7) and hose (6) on tee (8).



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19. Install clamp (2) on transmission thermal bypa valve (4) with screw (1).



FOLLOW-ON TASKS:

- Check transmission fluid level and fill as necessary (see TM 10-3930659-10).
- Start engine and check for leaks (see TM 1 3930-659-10).
- Install window washer plate (see paragraph 16-
- Install left engine lower sideshield (see pa graph 14-16).
- Close left engine upper sideshield (see TM 3930-659-10)

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7-17. TRANSMISSION OIL FILTER REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).

Materials/Parts:

- Lubricating oil (Item 26, Appendix C)

References:

- TM 10-3930-659-10

Tools/Test Equipment:

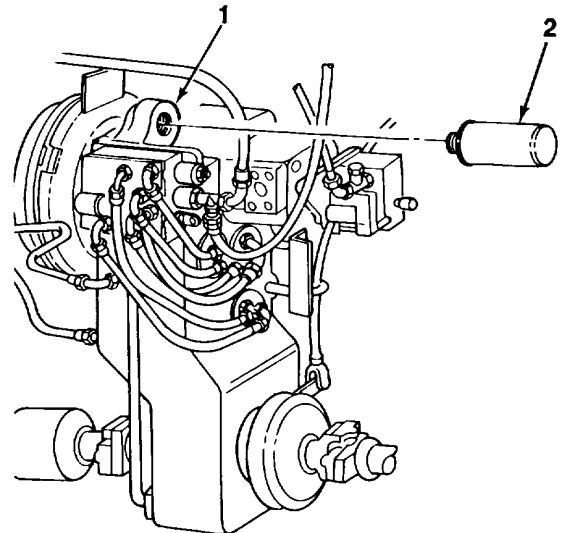
- General mechanic's tool kit (Item 44, Appendix F)
- Oil filter removal tool (Item 33, Appendix F)

a. REMOVAL

Remove transmission oil filter (2) from transmission (1).

b. INSTALLATION

1. Apply thin film of lubricating oil around gasket C transmission oil filter (2).
2. Install transmission oil filter (2) on transmission (1) until gasket touches mounting surface, the turn another one-half to three-quarters of a turn.

**FOLLOW-ON TASKS:**

- Check transmission fluid level and fill as necessary(see TM 10-3930-659-10).
- Start engine and check transmission oil filter for leaks (see TM 10-3930-659-10).
- Install right side cab skirt (see paragraph 14-6).

7-18. TRANSMISSION OIL SAMPLING VALVE REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Rags (Item 27, Appendix C)
- *Two preformed packings

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

- * TM 103930-659-10
-

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

1. Remove hose (1) from tee (5).
2. Remove tee (5) from transmission thermal bypass valve (6).
3. Remove transmission oil sampling valve (4) from special plug (3).
4. Remove special plug (3) from tee (5).
5. Remove two preformed packings (2) from tee (5). Discard preformed packings.

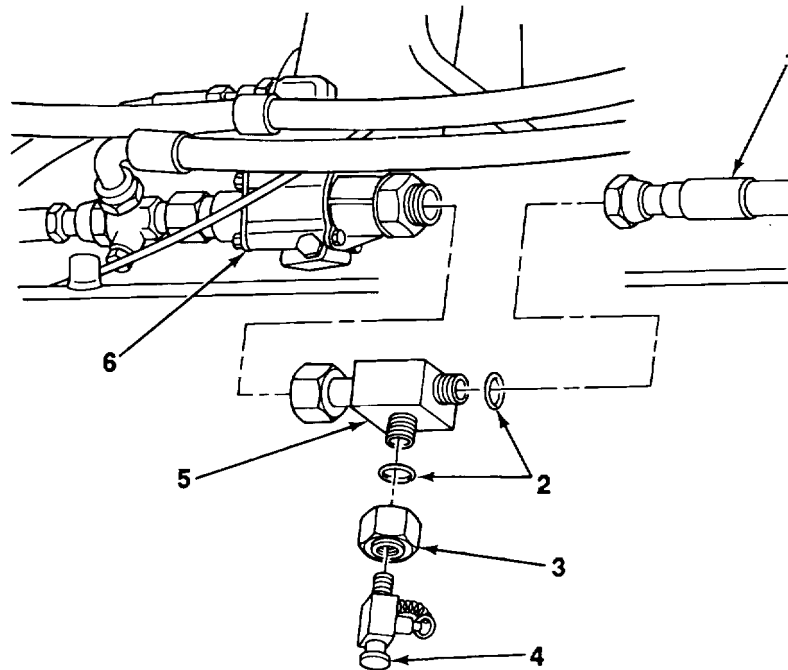
b. INSTALLATION

1. Install two new preformed packings (2) on tee (5).
2. Install special plug (3) on tee (5).
3. Install transmission oil sampling valve (4) on special plug (3).

NOTE

Ensure that transmission oil sampling valve drain is facing down when installed.

4. Install tee (5) on transmission thermal bypass valve (6).
5. Install hose (1) on tee (5).

7-18. TRANSMISSION OIL SAMPLING VALVE REPLACEMENT.

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FOLLOW-ON TASKS:

- Check transmission fluid level and fill as necessary (see TM 10-3930-659-10).
- Start engine and check for leaks (see TM 10-3930-659-10).
- Close left engine upper sideshield (see TM 10-3930-659-10).

7-19. TRANSMISSION DRAINING.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).

Materials/Parts:

- Rags (Item 27, Appendix C)

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

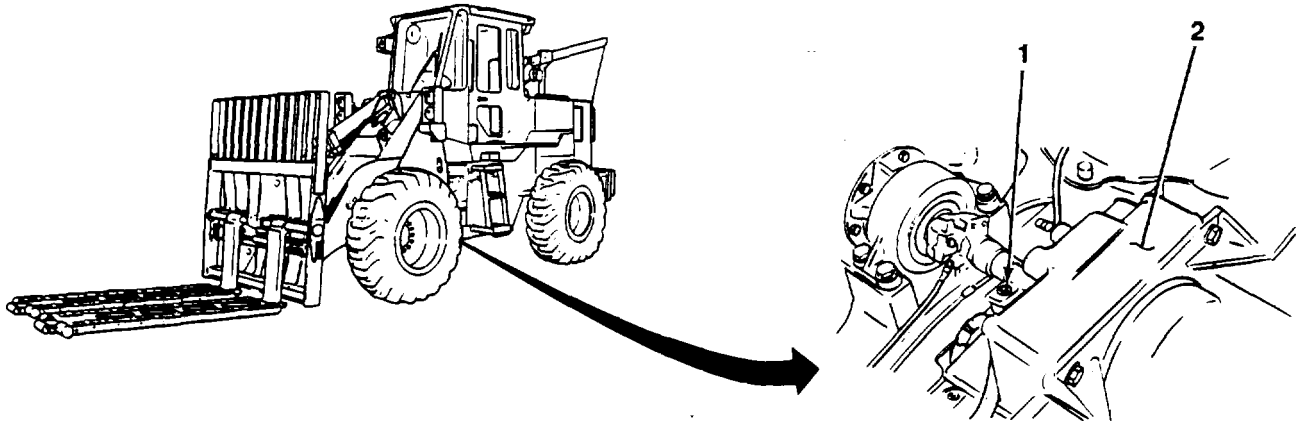
- TM 10-3930-659-10
-

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

DRAINING

1. Remove drain plug (1). Drain hydraulic fluid from transmission (2).
2. Install drain plug (1) in transmission (2).



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(Transmission Bottom Guard Removed for Clarity)

FOLLOW-ON TASKS:

- Fill transmission with hydraulic fluid (see TM 10-3930-659-10).

**CHAPTER 8
PROPELLER SHAFT MAINTENANCE**

Paragraph Number	Paragraph Title	Page Number
8-1	Front Universal Joints and Support Bearing Maintenance	8-1
8-2	Rear Universal Joints Maintenance	8-8

8-1. FRONT UNIVERSAL JOINTS AND SUPPORT BEARING MAINTENANCE.

This Task Covers:

- | | |
|--|--|
| <ul style="list-style-type: none"> a. Removal b. Disassembly c. Cleaning and Inspection | <ul style="list-style-type: none"> d. Assembly e. Installation |
|--|--|
-

Initial Setup:

Equipment Conditions:

- Wheels chocked.
- Transmission side guards removed (see paragraph 14-7).
- Front bottom guard removed (see paragraph 14-9).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Torque wrench, 0-175 lb.-ft. (Item 52, Appendix F)

Materials/Parts:

- Dry cleaning solvent (Item 31, Appendix C)
- Two retaining rings

References:

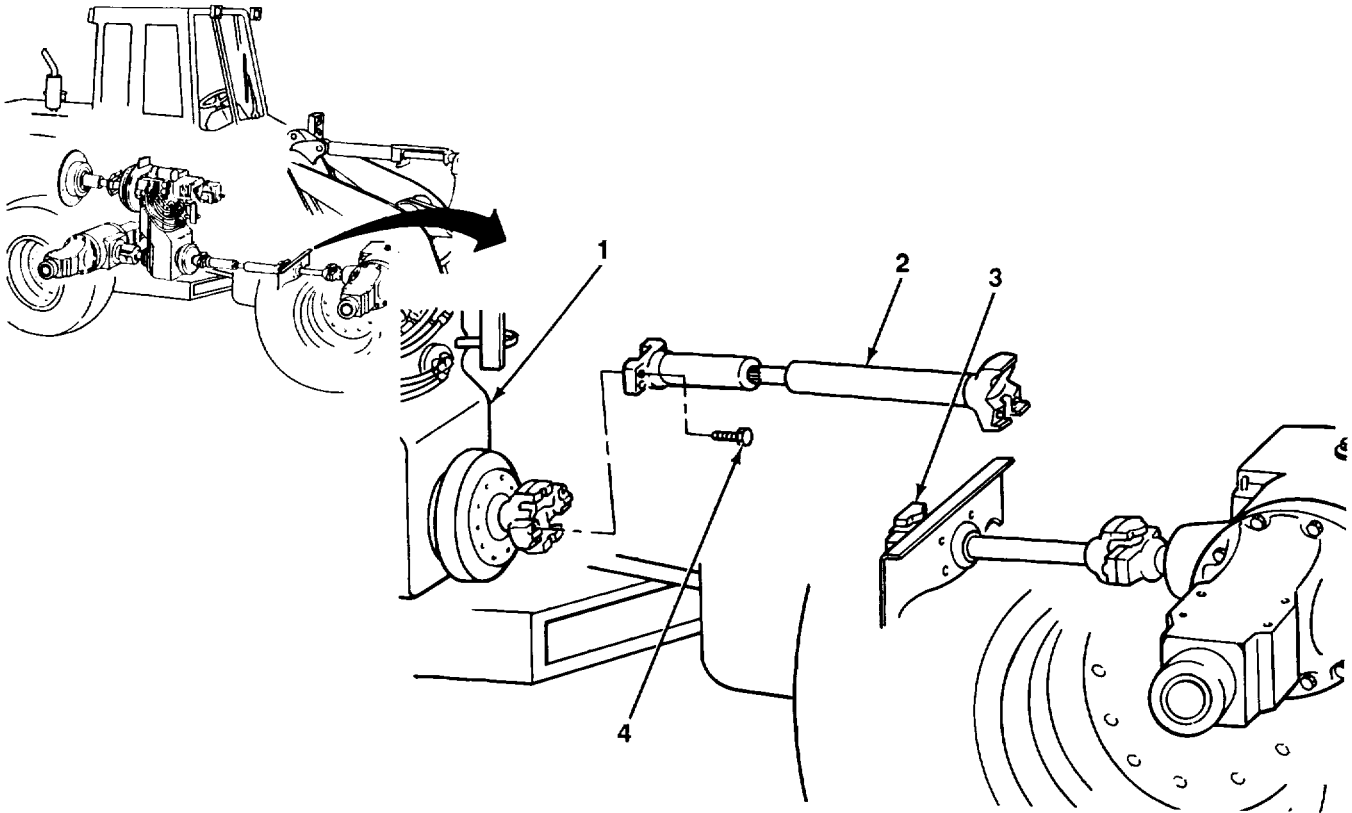
- LO 10-3930-659-12

General Safety Instructions:

- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.
-

8-1. FRONT UNIVERSAL JOINTS AND SUPPORT BEARING MAINTENANCE (Con't).**a. REMOVAL**

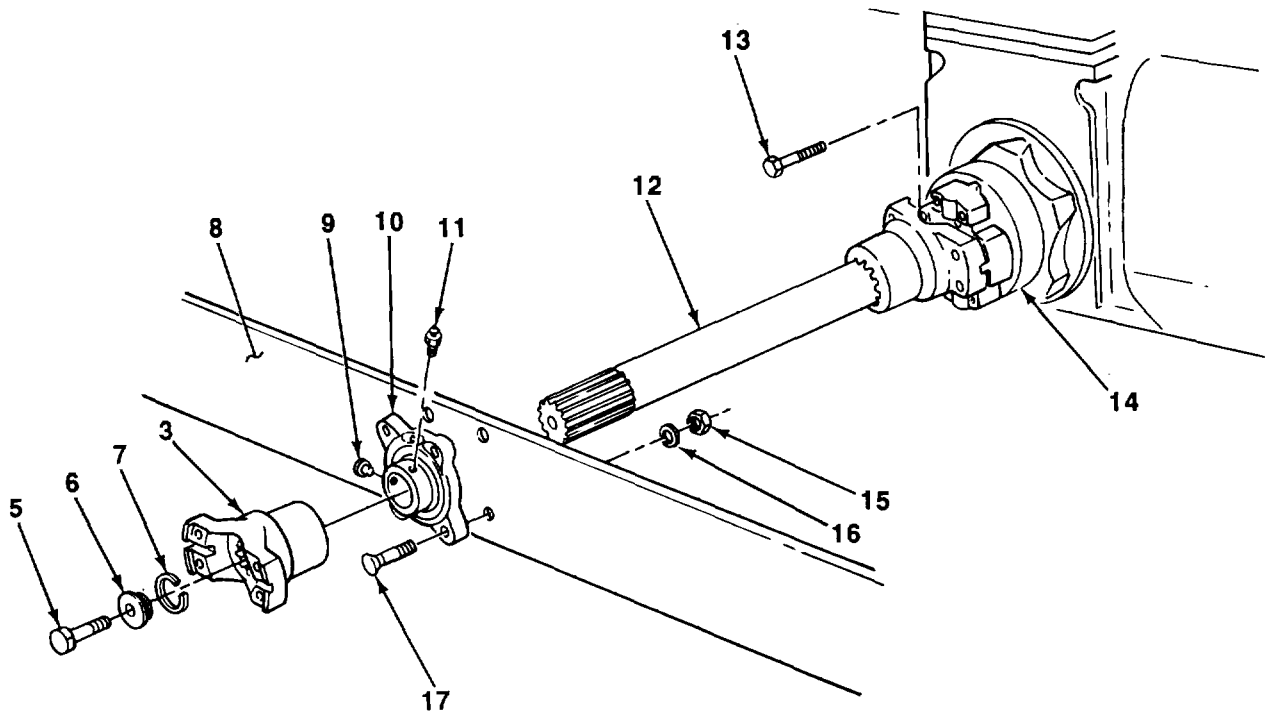
1. Remove eight bolt (4) and universal joint (2) from transmission (1) and yoke (3)



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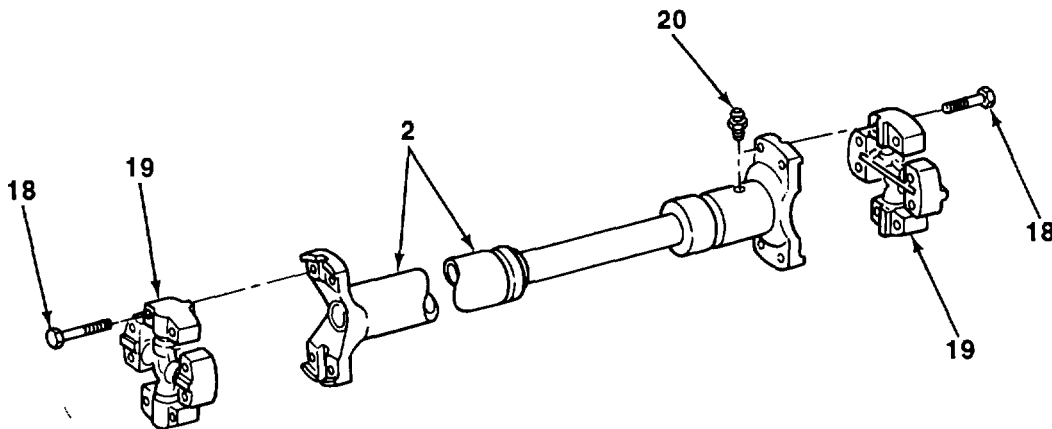
2. Remove bolt (5) spacer (6) retaining ring (7) and yoke (3) from shaft (12) Discard retaining ring.
3. Remove four nuts (15), washers (16), bolts (17), and support bearing (10) from support (8).
4. If damaged, remove lubrication fitting (11) and pin (9) from support bearing (10).
5. Remove four bolts (13) and shaft (12) from front axle yoke (14).

8-1. FRONT UNIVERSAL JOINTS AND SUPPORT BEARING MAINTENANCE (Con't).



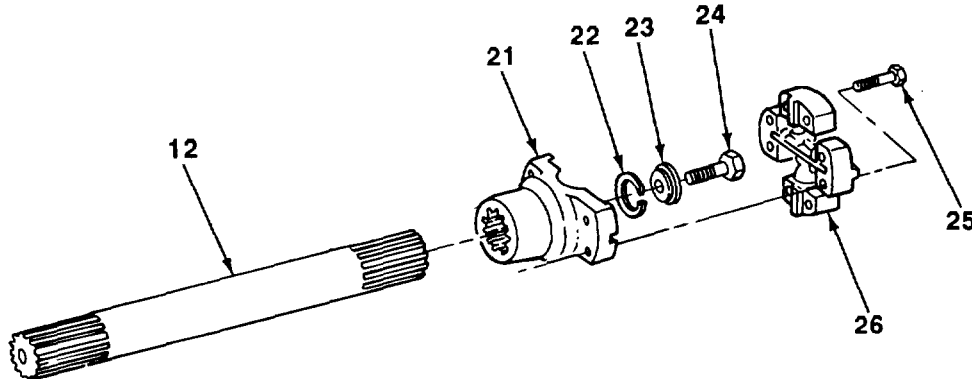
b. DISASSEMBLY

1. Remove eight bolts (18) and two spider bearing assemblies (19) from universal joint (2).
2. If damaged, remove lubrication fitting (20) from universal joint (2).



8-1. FRONT UNIVERSAL JOINTS AND SUPPORT BEARING MAINTENANCE (Con't).

3. Remove four bolts (25) and spider bearing assembly (26) from shaft (12).
4. Remove bolt (24), spacer (23), retaining ring (22), and yoke (21) from shaft (12). Discard retaining ring.

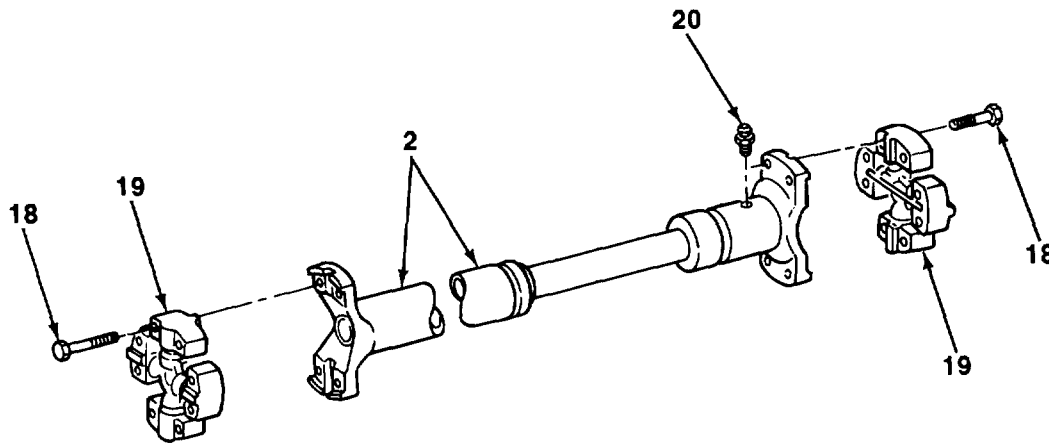
**c. CLEANING AND INSPECTION****WARNING**

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean parts with dry cleaning solvent and allow to dry.
2. Inspect spider bearing assemblies for broken or missing parts. Replace if parts are broken or missing.
3. Inspect spider bearing assemblies for free movement. Replace if either assembly does not move freely.

8-1. FRONT UNIVERSAL JOINTS AND SUPPORT BEARING MAINTENANCE (Con't).**d. ASSEMBLY**

1. Install yoke (21) on shaft (12) with new retaining ring (22), spacer (23), and bolt (24). Torque bolt to 170 lb.-ft. (231 N-m).
2. Install spider bearing assembly (26) on yoke (21) with four bolts (25). Torque bolts to 50 lb.-ft. (68 N.m).
3. If removed, install lubrication fitting (20) on universal joint (2).
4. Install two slider bearing assemblies (19) on universal joint (2) with eight bolts (18). Torque bolts to 50 lb.-ft.



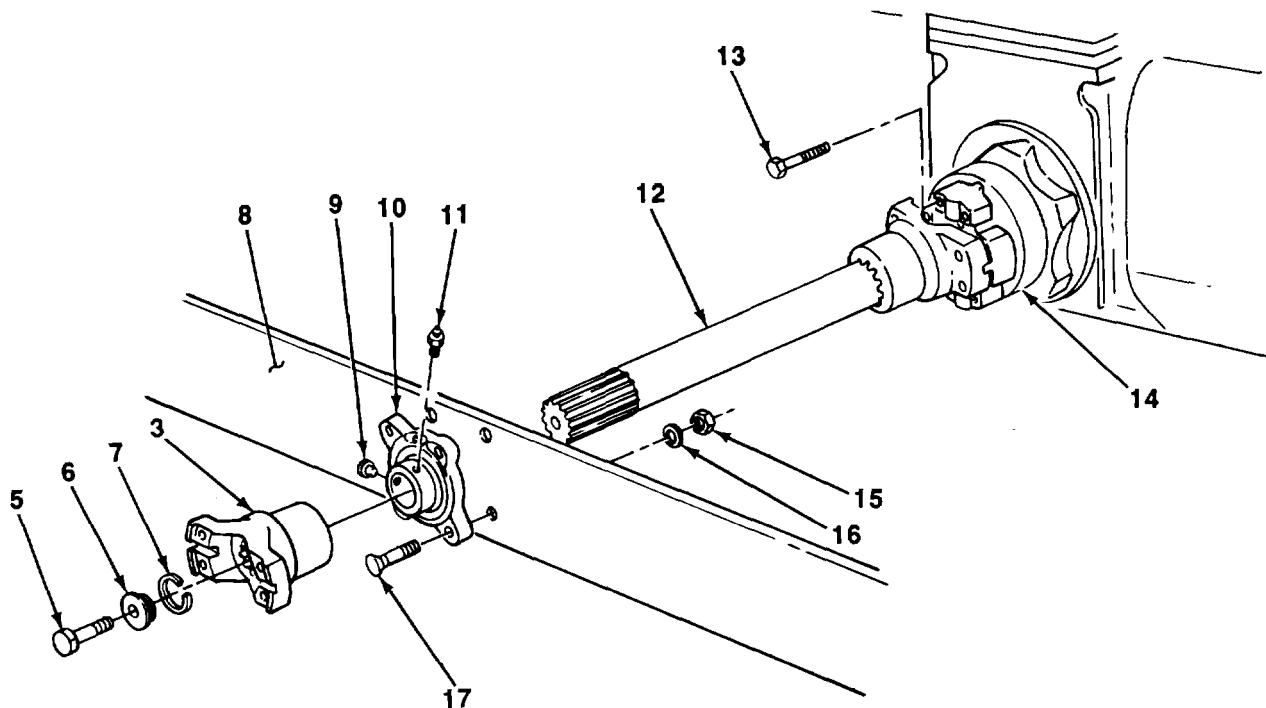
8-1. FRONT UNIVERSAL JOINTS AND SUPPORT BEARING MAINTENANCE (Con't).

e. INSTALLATION

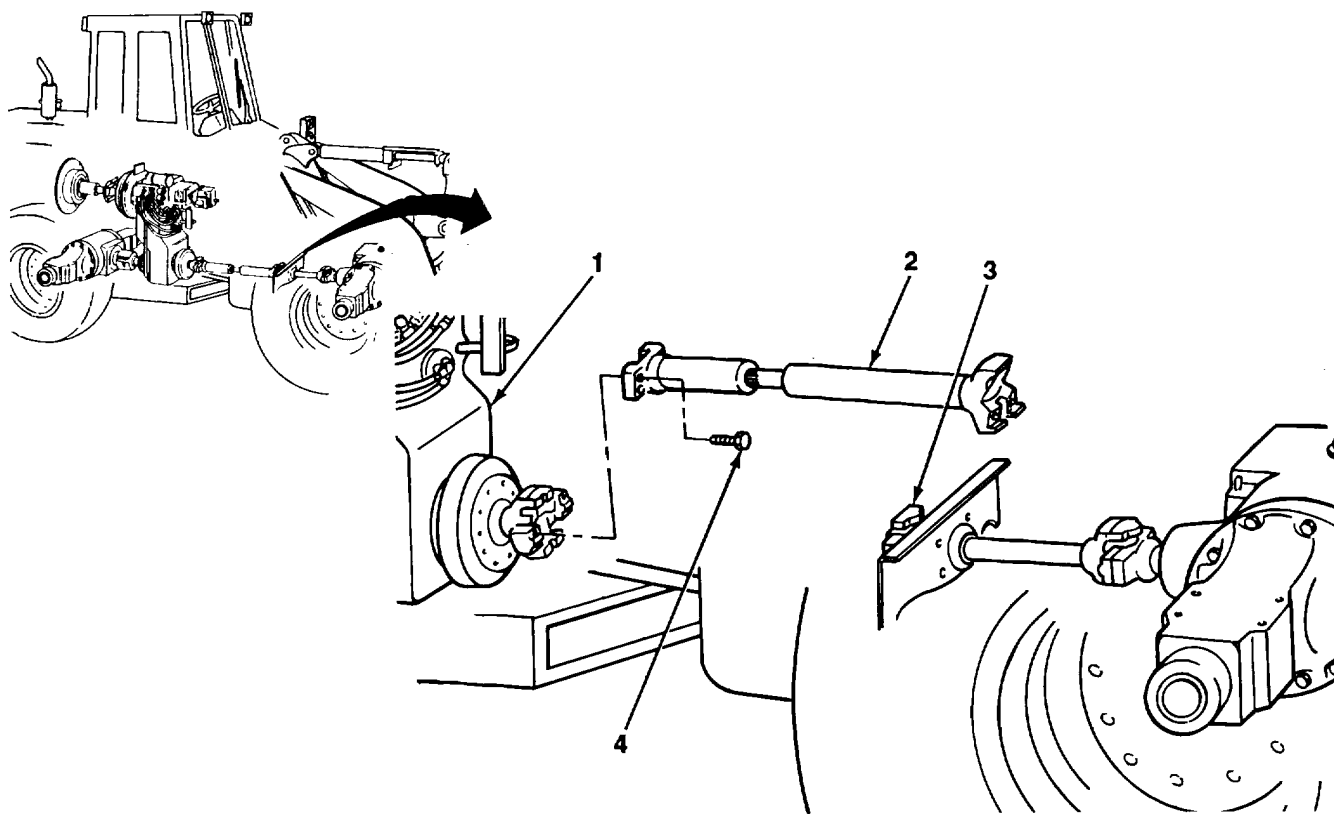
CAUTION

Yokes must be alined during Installation. Failure to properly Install yokes may result in damage to universal joint.

1. Install shaft (12) on front axle yoke (14) with four bolts (13). Torque bolts to 50 lb.-ft. (68 N-m).
2. If removed, Install lubrication fitting (11) and pin (9) on support bearing (10).



3. Install support bearing (10) on support (8) with four bolts (17), washers (16), and nuts (15). Torque nuts to
4. Install yoke (3) on shaft (12) with new retaining ring (7), spacer (6), and bolt (5). Torque bolt to 170 lb.-ft.
5. Install universal joint (2) on transmission (1) and yoke (3) with eight bolts (4). Torque bolts to 50 lb.-ft. (68 N-m).

8-1. FRONT UNIVERSAL JOINTS AND SUPPORT BEARING MAINTENANCE (Con't).**FOLLOW-ON TASKS:**

- Install front bottom guard (see paragraph 14-9).
- Install transmission side guards (see paragraph 14-7).
- Lubricate front universal joints and support bearings (see LO 10-3930-659-12).

8-2. REAR UNIVERSAL JOINTS MAINTENANCE.

This task covers:

- | | |
|-----------------------------------|------------------------|
| a. Removal | b. Installation |
| b. Disassembly | e. Installation |
| c. Cleaning and Inspection | |
-

INITIAL SETUP:**Equipment Conditions:**

- Wheels chocked.
- Transmission side guards removed (see paragraph 14-7)
- Transmission bottom guard removed (see paragraph 14-8).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Torque wrench, 0-175 lb.-ft. (Item 52, Appendix F)

Materials/Parts:

- Dry cleaning solvent (Item 31, Appendix C)

References:

- LO 10-3930-659-12

General Safety Instructions:

Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.

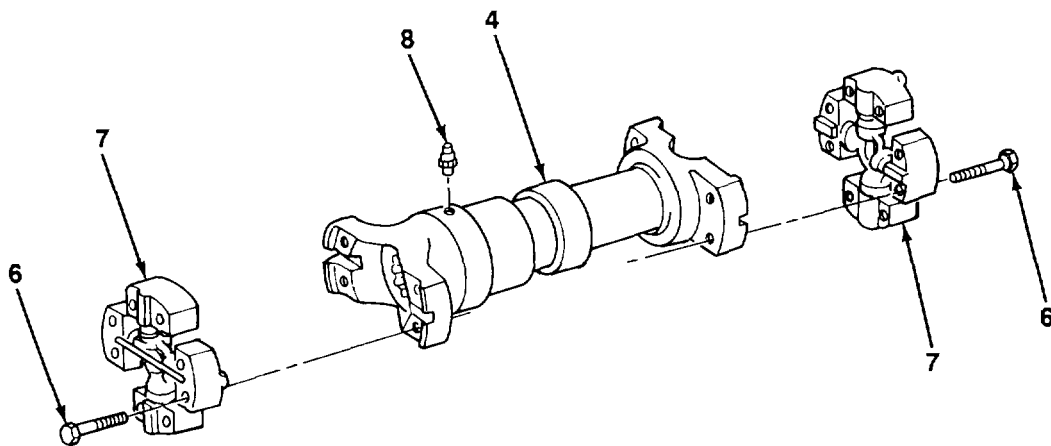
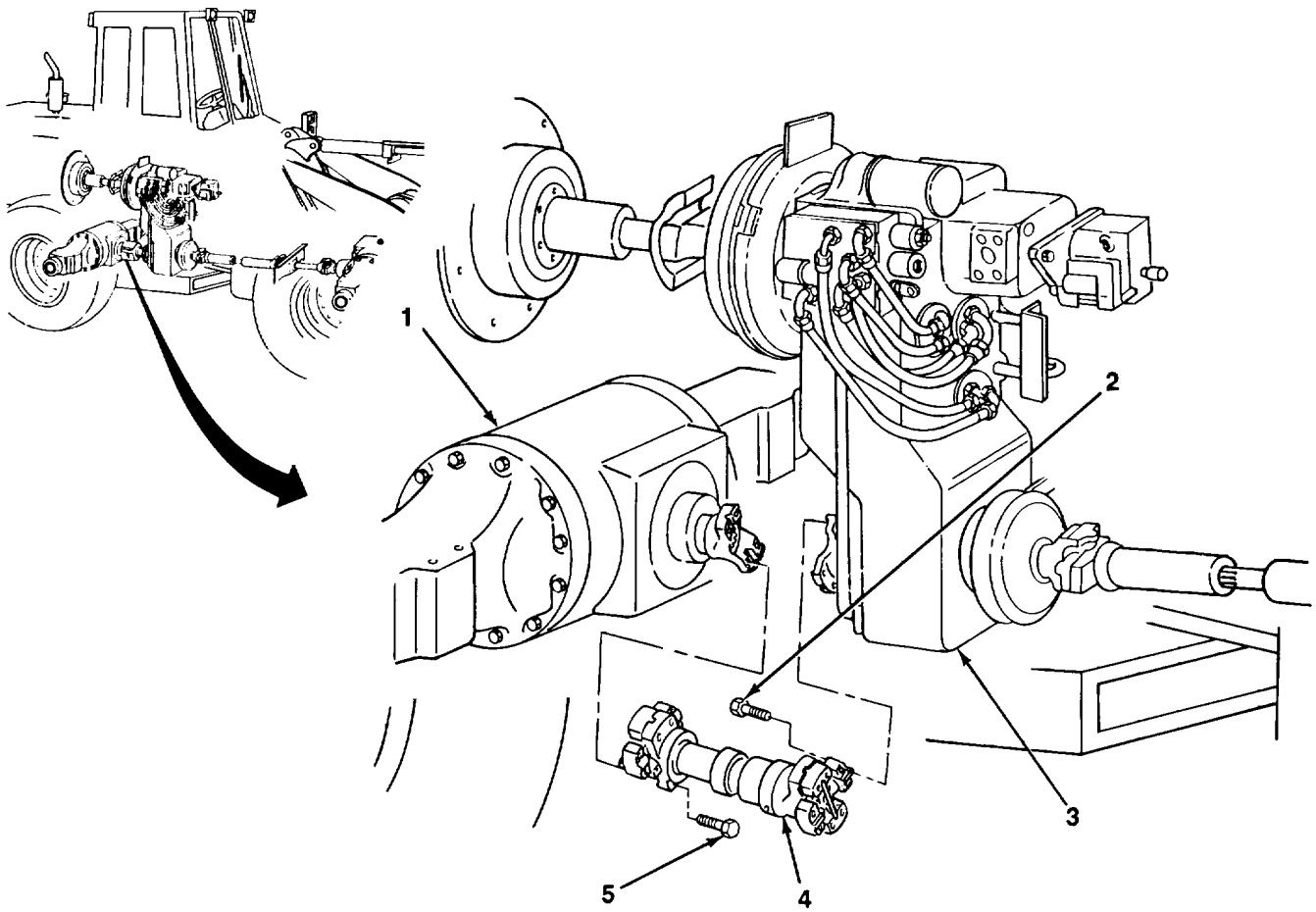
a. REMOVAL

1. Remove four bolts (5) from universal joint (4) and rear axle (1).
2. Remove four bolts (2) and universal joint (4) from transmission (3).

b. DISASSEMBLY

1. Remove eight bolts (6) and two spider bearing assemblies (7) from universal joint (4).
2. If damaged, remove lubrication fitting (8) from universal joint (4).

8-2. REAR UNIVERSAL JOINTS MAINTENANCE (Con't).



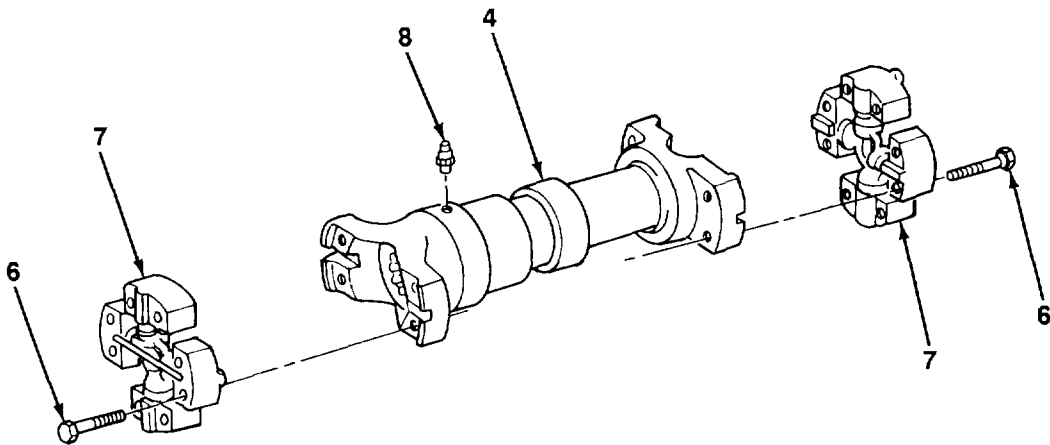
8-2. REAR UNIVERSAL JOINTS MAINTENANCE (Con't).**c. CLEANING AND INSPECTION****WARNING**

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean parts with dry cleaning solvent and allow to dry.
2. Inspect all parts for damage. Replace damaged parts.

d. ASSEMBLY

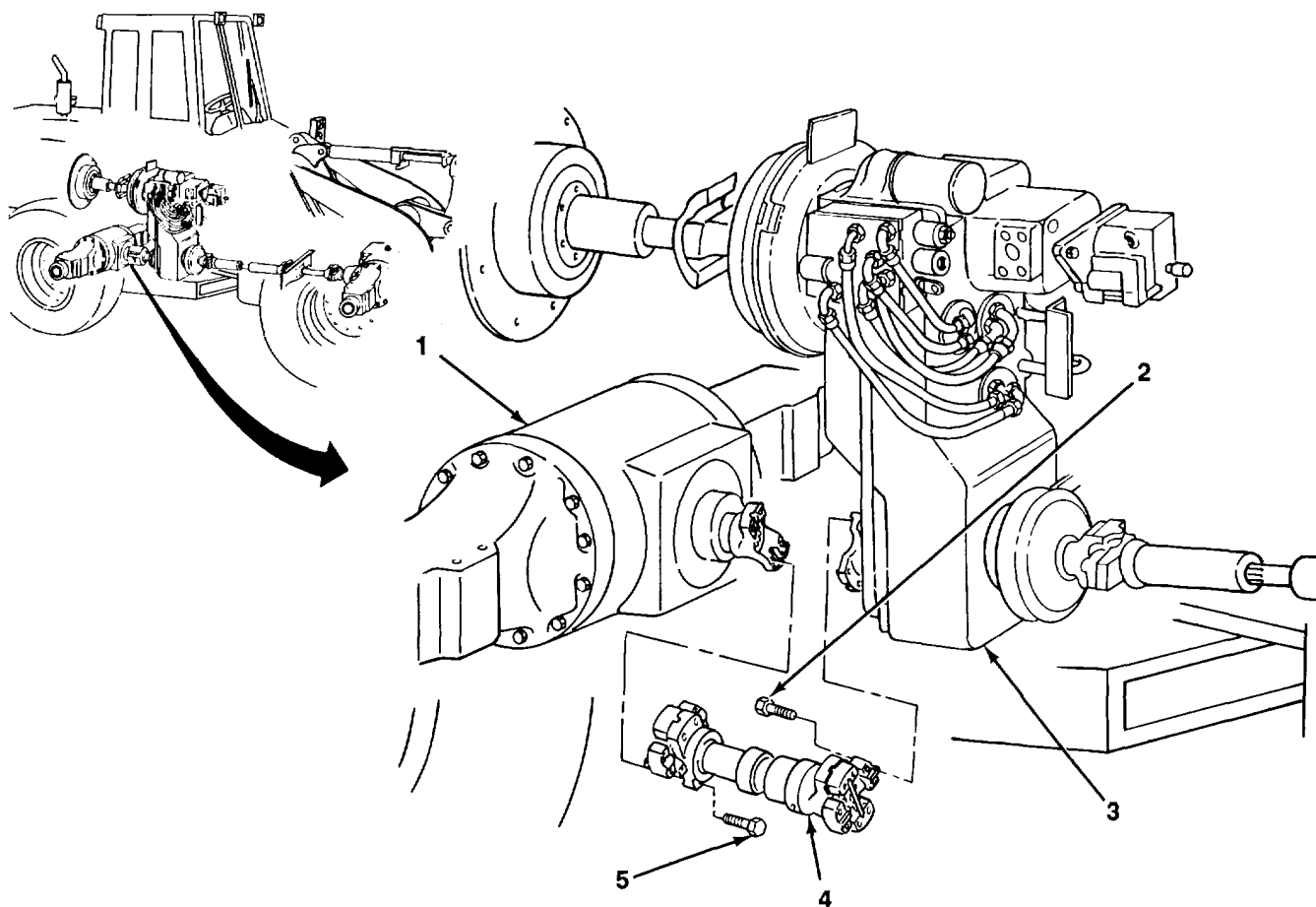
1. If removed, install lubrication fitting (8) on universal joint (4).
2. Install two spider bearing assemblies (7) on universal joint (4) with eight bolts (6). Torque bolts to 50 lb.-ft. (68 N•m).



TA706740

8-2. REAR UNIVERSAL JOINTS MAINTENANCE (Con't).**e. INSTALLATION**

1. Install universal joint (4) on transmission (3) with four bolts (2). Torque bolts to 50 lb.-ft. (68 N•m).
2. Install four bolts (5) on universal joint (4) and rear axle (1). Torque bolts to 50 lb.-ft. (68 N•m)

**FOLLOW-ON TASKS:**

- Install transmission bottom guard (see paragraph 14-8).
- Install transmission side guards (see paragraph 14-7).
- Lubricate rear universal joint (see LO 10-3930-659-12).

TA706741

**CHAPTER 9
AXLE MAINTENANCE**

Paragraph Number	Paragraph Title	Page Number
9-1	Remote Differential Support Lubrication Hoses Replacement.....	9-1
9-2	Front and Rear Differential Breathers Replacement	9-4
9-3	Differential Oil Replacement	9-6

9-1. REMOTE DIFFERENTIAL SUPPORT LUBRICATION HOSES REPLACEMENT.

This task covers:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. Removal | <ul style="list-style-type: none"> b. Installation |
|--|---|

Initial Setup.

Equipment Conditions:

- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right and left engine upper sashes opened (see

TM 10-3930659-10).

* Transmission side guards removed (see paragraph (14-7).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

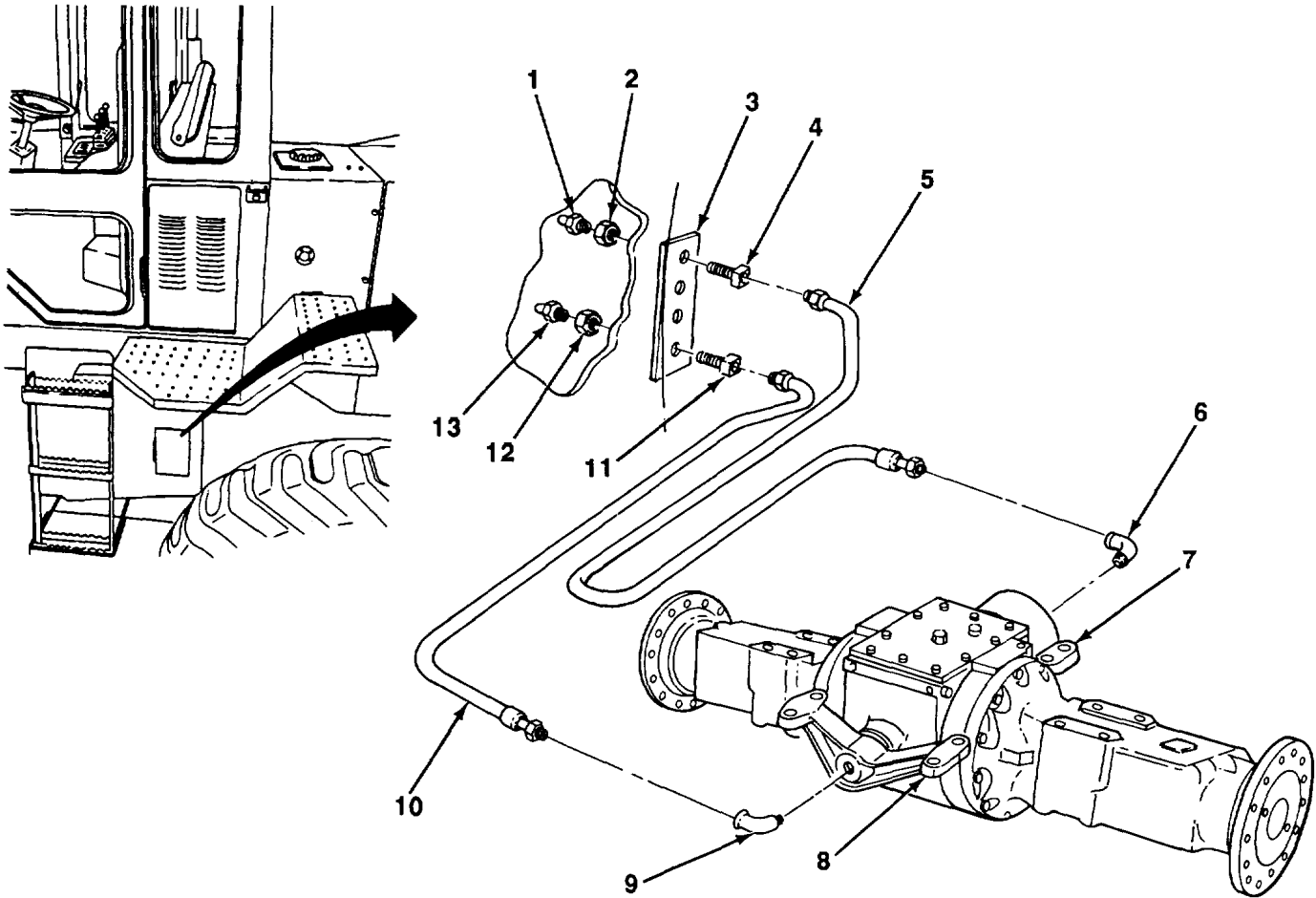
LO 1 3930-659-10).2

*TM 10-3930-659-10

9-1. REMOTE DIFFERENTIAL SUPPORT LUBRICATION HOSES REPLACEMENT (Con't).

a. REMOVAL

1. Disconnect hose (10) from adapter (11) and elbow (9).
2. Remove elbow (9) from rear-rear differential swivel (8).
3. Remove adapter (11), nut (12), and fitting (13) from bracket (3)



4. Disconnect hose (5) from adapter (4) and elbow (6).
5. Remove elbow (6) from front-rear differential swivel (7).
6. Remove adapter (4), nut (2), and fitting (1) from bracket (3).

TA706742

**9-1. REMOTE DIFFERENTIAL SUPPORT LUBRICATION HOSES REPLACEMENT
(Con't).**

b. INSTALLATIONI

1. Install fitting (1), nut (2), and adapter (4) on bracket (3).
2. Install elbow (6) on front-rear differential swivel (7).
3. Connect hose (5) to elbow (6) and adapter (4).
4. Install fitting (13), nut (12), and adapter (11) on bracket (3).
5. Install elbow (9) on rear-rear differential swivel (8).
6. Connect hose (10) to elbow (9) and adapter (11).

FOLLOW-ON TASKS:

- Install transmission side guards (see paragraph 14-7).
- Lubricate rear differential (see LO 10-3930-659-12).
- Close right and left engine upper sideshields (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

9-2. FRONT AND REAR DIFFERENTIAL BREATHERS REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup.

Equipment Conditions:

- Loader frame cover removed (front differential breather only) (see paragraph 14-11).
- Transmission bottom guard removed (rear differential breather only) (see paragraph 14-8)

Materials/Parts:

- One preformed packing

Tools/Test Equipment:

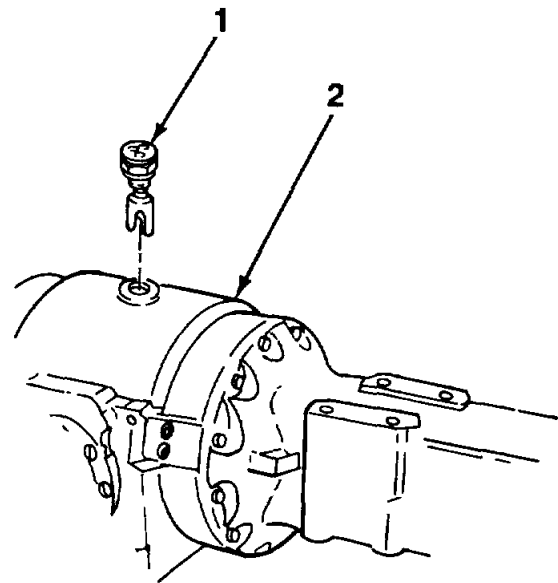
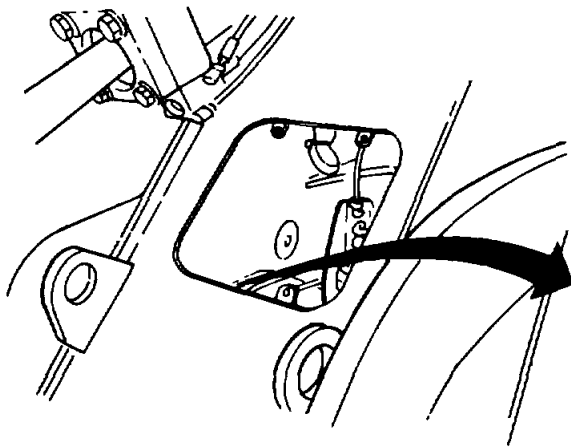
- General mechanic's tool kit (Item 44, Appendix F)

NOTE

Front and rear differential breathers are removed and installed the same way. Front differential breather is illustrated.

a. REMOVAL

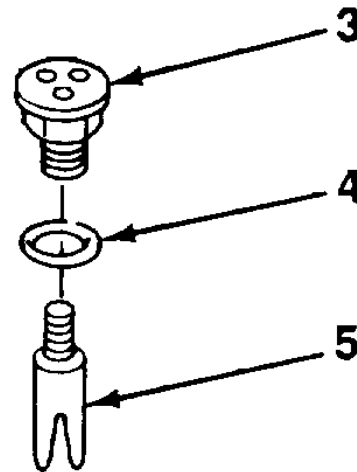
1. Remove breather assembly (1) from differential (2).



TA706743

9-2. FRONT AND REAR DIFFERENTIAL BREATHERS REPLACEMENT (Con't).

2. Remove breather (5) and preformed packing (4) from cover (3). Discard preformed packing.

**b. INSTALLATION**

1. Install breather (5) and new preformed packing (4) on cover (3)

NOTE

Groove In breather must be positioned parallel to axle shaft when installing breather assembly on differential.

2. Install breather assembly (1) on differential (2).

FOLLOW-ON TASKS:

- Install transmission bottom guard (rear differential breather only) (see paragraph 14-8).
- Install loader frame cover (front differential breather only) (see paragraph 14-11).

TA706744

9-3. DIFFERENTIAL OIL REPLACEMENT.

This task covers:

- a. Inspection
- b. Draining

c.. Filling

Initial Setup.

Equipment Conditions:

- Forklift truck parked on level surface.
- Parking brake set (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

- Lubricating oil (Item 25, Appendix C)

References:

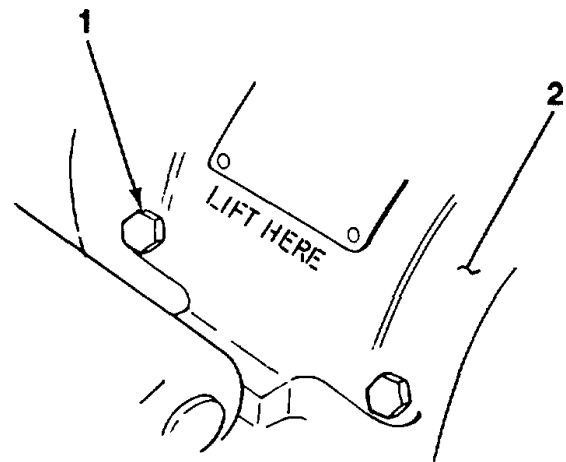
- TM 10-3930-659-10

NOTE

Front and rear differential oil level is inspected, drained, and filled the same way. Front differential is illustrated

a. INSPECTION

1. Remove fill plug (1) from front differential (2).
2. Inspect oil level. Oil level should be up to fill plug (1) hole in front differential (2).
3. Add oil as necessary (see subparagraph c).
4. Install fill plug (1) on front differential (2).



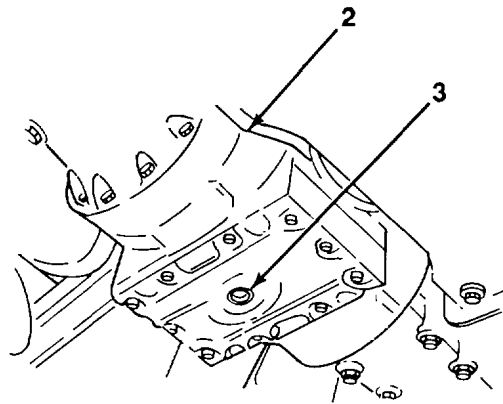
TA706745

9-3. DIFFERENTIAL OIL REPLACEMENT (Con't).

b. DRAINING**NOTE**

**A suitable container should be used to catch any draining oil.
Ensure that all spills are**

1. Remove drain plug (3) from front differential (2) and allow oil to drain.
2. Install drain plug (3) on front differential (2).

**c. FILLING**

1. Remove fill plug (1) from front differential (2).

NOTE

**Differential housings have three sumps. Slowly fill center sump
and allow oil to drain into all sumps**

2. Fill front differential (2) with oil up to fill plug (1) hole.
3. Install fill plug (1) on front differential (2).

TA706746

CHAPTER 10
BRAKE SYSTEM MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
10-1	Parking Brake Replacement	10-1
10-2	Parking Brake Adjustment	10-6
10-3	Parking Brake Pedal and Handle Replacement	10-9
10-4	Parking Brake Cable Replacement	10-12
10-5	Brake Valves Pressure Test	10-15
10-6	Brake Valves Leakage Test	10-18
10-7	Service Brake Disc Inspection	10-20
10-8	Service Brake Residual Pressure Test	10-21
10-9	Brake Valves Maintenance	10-25
10-10	Left Brake Valve-to-Front Brake Hose and Fittings Replacement	10-29
10-11	Right Brake Valve-to-Rear Brake Hose and Fittings Replacement	10-32
10-12	Left Brake Valve-to-Right Brake Valve Hoses and Fittings Replacement	10-35
10-13	Brake Valves-to-Hydraulic Reservoir Hoses and Fittings Replacement	10-38
10-14	Brake Valve-to-Accumulator Hose and Fittings Replacement	10-41
10-15	Accumulator-to-Fork/Brake Hydraulic Pump Hose and Fittings Replacement .	10-44
10-16	Accumulator-to-Accumulator Crossover Line Replacement	10-47
10-17	Brake System Bleeding	10-49

10-1. PARKING BRAKE REPLACEMENT.

This task covers:

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial Setup.

Equipment Conditions:

- Wheels chocked.
- Front universal joint disconnected from transmission (see paragraph 8-1).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Retaining ring pliers (Item 24, Appendix F)

Materials/Parts:

- One cotter pin

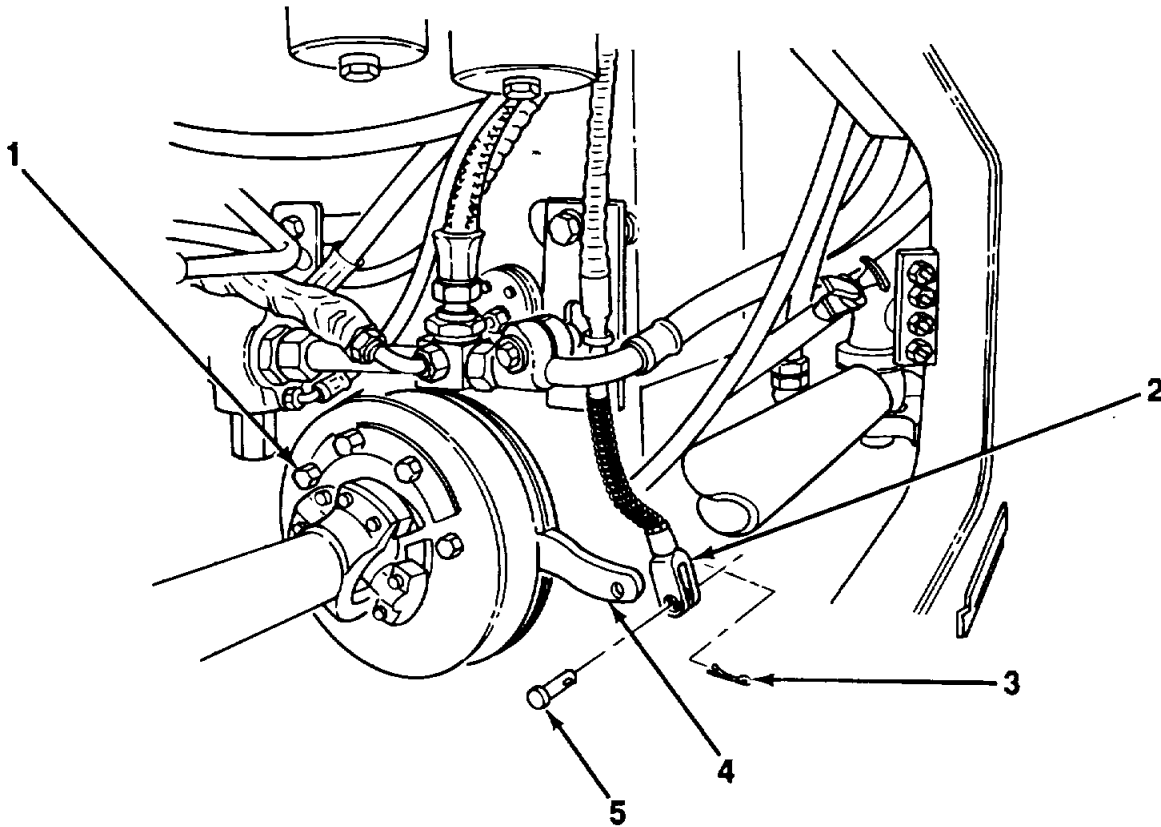
References:

- TM 10-3930-659-10

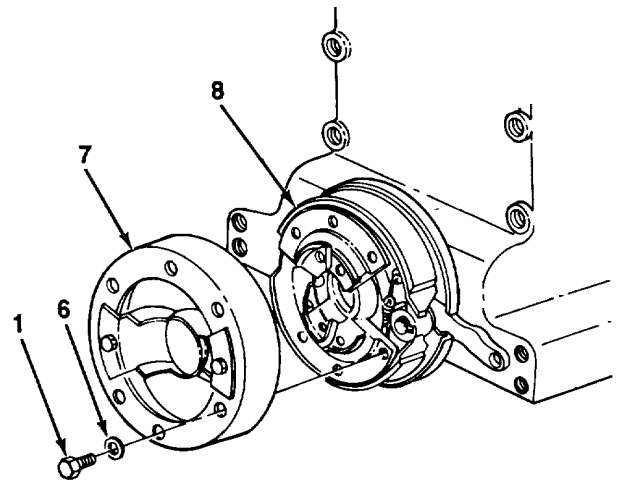
10-1. PARKING BRAKE REPLACEMENT (Con't).

a. REMOVAL

1. Set parking brake (see TM 10-3930-659-10).
2. Loosen six screws (1) and release parking brake (see TM 10-3930-659-10).
3. Remove cotter pin (3), clevis pin (5) and clevis (2) from brake cam lever (4). Discard cotter pin.

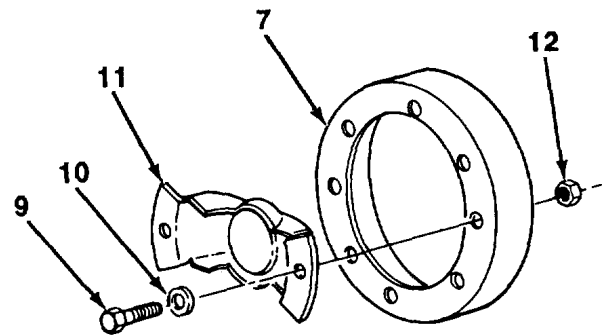


4. Remove six screws (1), washers (6), and brake drum (7) from brakeshoes (8).



10-1. PARKING BRAKE REPLACEMENT

5. Remove two nuts (12), screws (9), washers (10) and cover plate (11) from brake drum (7).

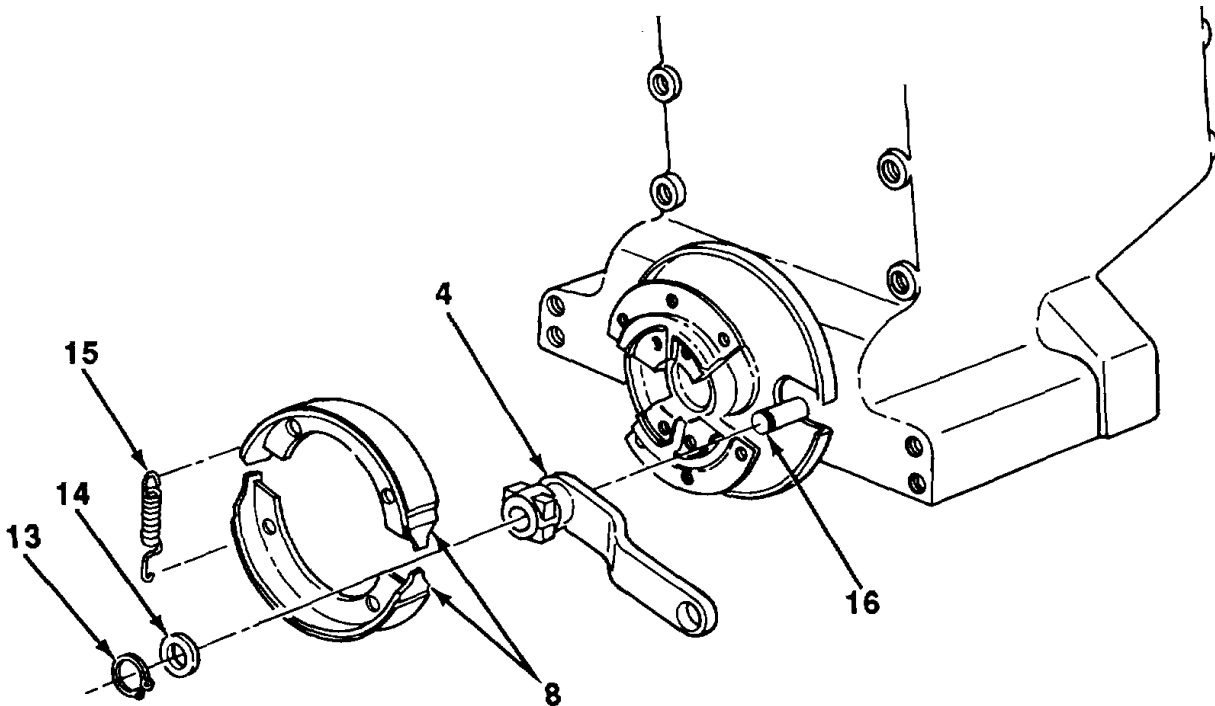


6. Remove two springs (15) and brakeshoes (8) from brake cam lever (4) and pin (16).

7. If brake cam lever (4) is damaged, remove retaining ring (13), washer (14), and brake cam lever from pin (16).

1. If removed, install brake cam lever (4) on pin (16) with washer (14) and retaining ring (13).

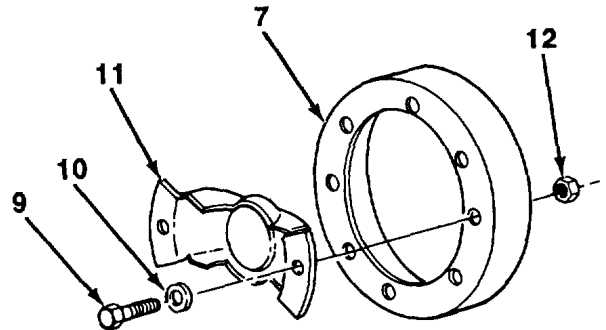
2. Position two brakeshoes (8) on brake cam lever (4) and pin (16), and install two springs (15).



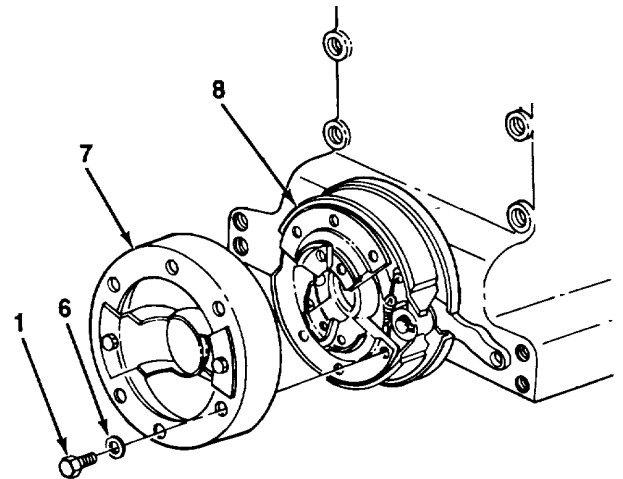
TA706927

10-1. PARKING BRAKE REPLACEMENT (Con't)

3. Install cover plate (11) on brakedrum (7) with washers (10), screws (9), and nuts (12).



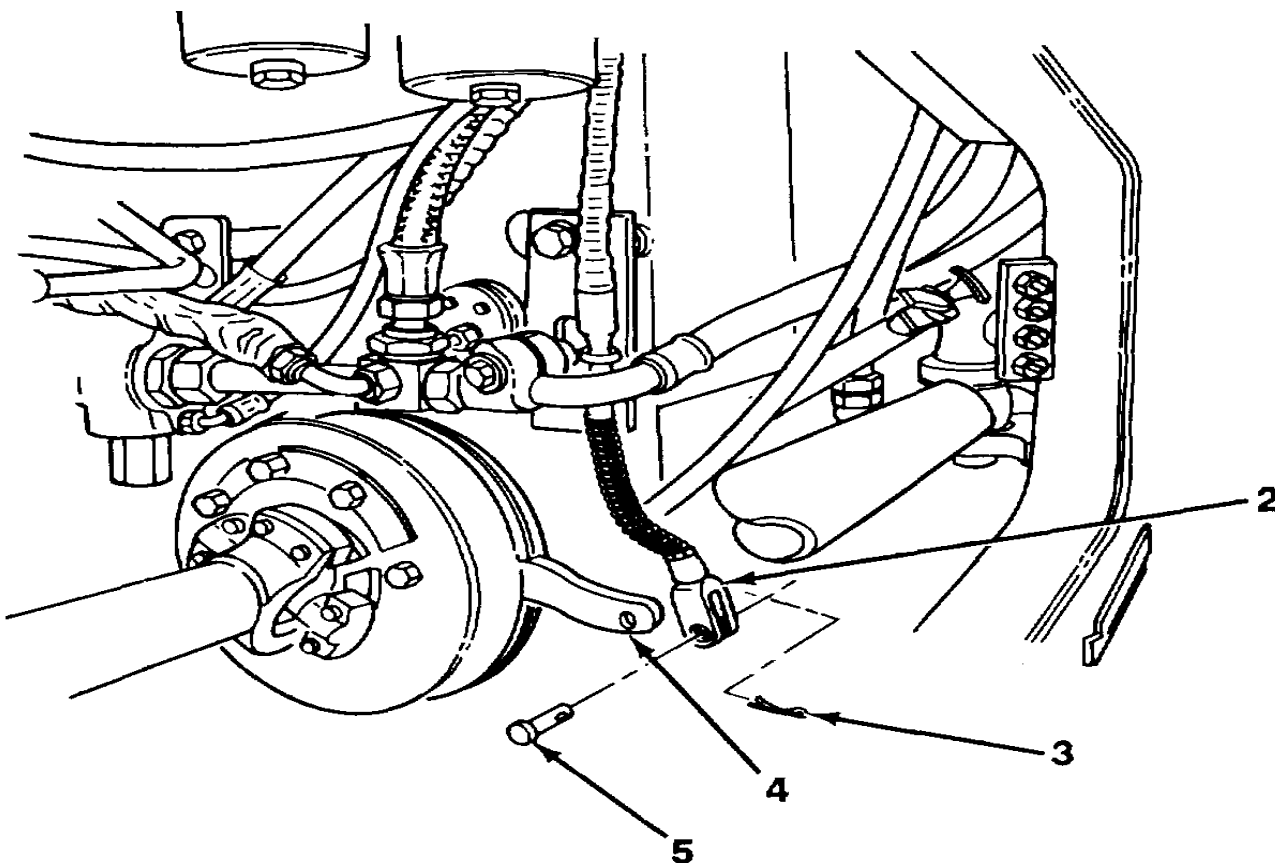
4. Install brakedrum (7) on brakeshoes (8) with washers (6) and screws (1).



TA706928

10-1. PARKING BRAKE REPLACEMENT (Con't).

5. Install clevis (2) on brake cam lever (4) with clevis pin (5) and new cotter pin (3).

**FOLLOW-ON TASKS:**

- Adjust parking brake (see paragraph 10-2).
- Connect front universal joint to transmission (see paragraph 8-1).

TA706929

10-2. PARKING BRAKE ADJUSTMENT.

This task covers: Adjustment

Initial Setup.

Equipment Conditions:

- Wheels chocked.
- Left transmission side guard removed (see paragraph 14-7).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

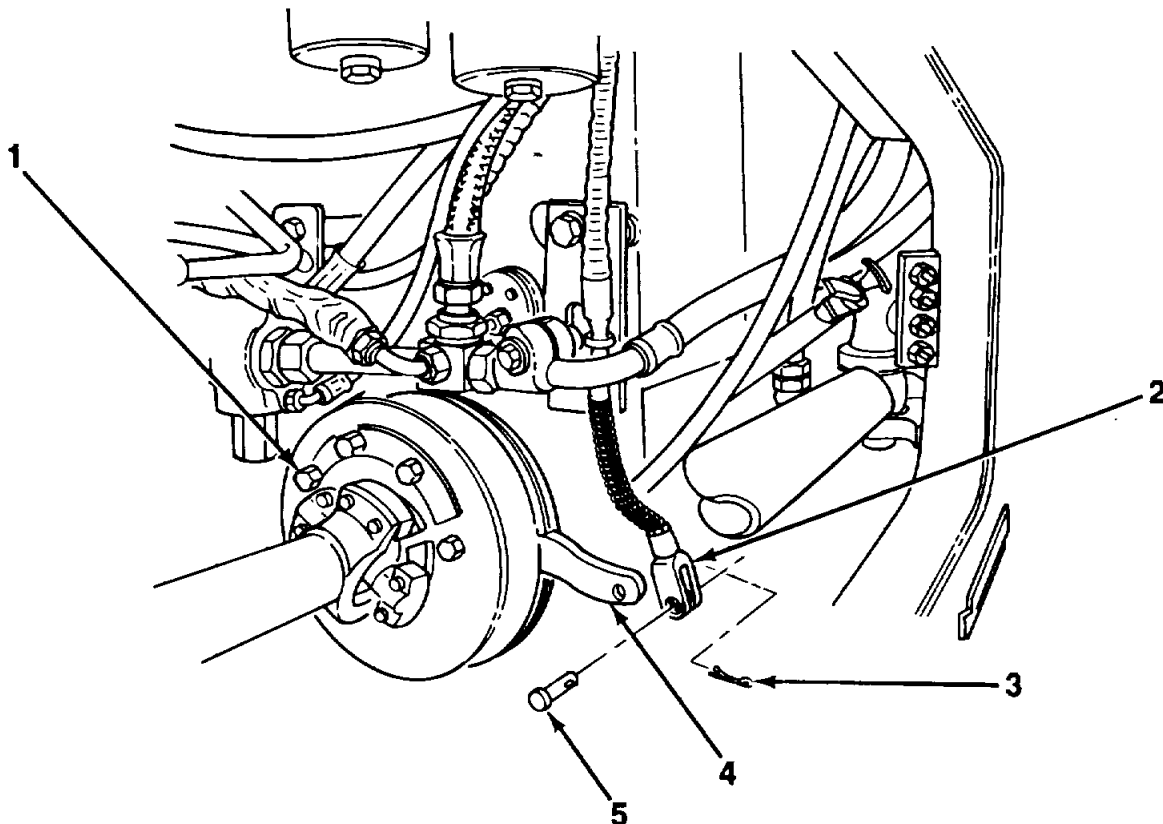
- Two cotter pins

References:

- TM 10-3930-659-10

ADJUSTMENT

1. Release parking brake (see TM 10-3930-659-10).
2. Loosen nut (1) and remove cotter pin (3), clevis pin (5), and clevis (2) from brake cam lever (4). Discard cotter pin.
3. Raise brake cam lever (4) until brake linings contact brakedrum. Hold this position and adjust clevis (2) so that clevis pin (5) just goes through clevis and brake cam lever.



TA706930

10-2. PARKING BRAKE ADJUSTMENT (Con't).

5. Tighten nut (1) against clevis (2).
6. Install new cotter pin (3).

NOTE

Parking brake must hold forklift truck on an Incline.

7. Park forklift truck on an incline and set parking brake (see TM 10-3930-659-10). If parking brake does not hold forklift truck, repeat steps 1 through 6 until parking brake holds forklift truck on an Incline.

WARNING

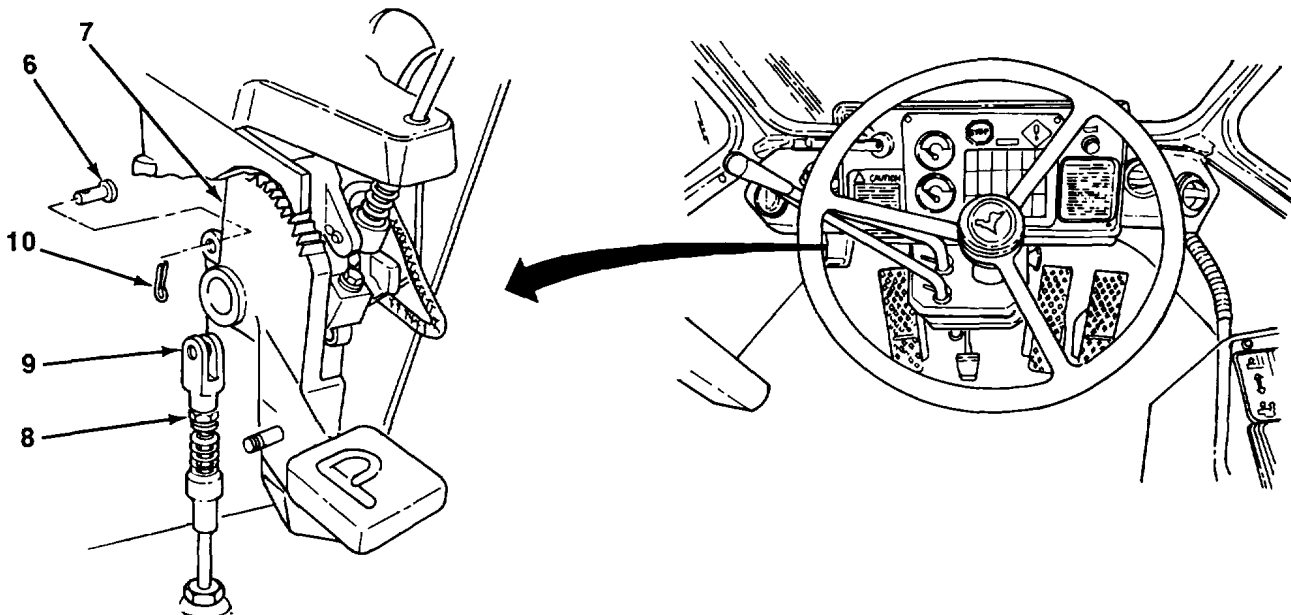
Forklift truck will move forward if parking brake is not properly adjusted. All personnel should stay clear of forklift truck when checking for proper adjustment.

8. Park forklift truck on a level surface, start engine, depress parking brake pedal (7), and shift transmission into forward fourth gear (see TM 10-3930-659-10).
9. Operate engine at fast engine idle speed (see TM 10-3930-659-10). Forklift truck must not move.

NOTE

Perform steps 10 through 14 only if proper adjustment was not obtained.

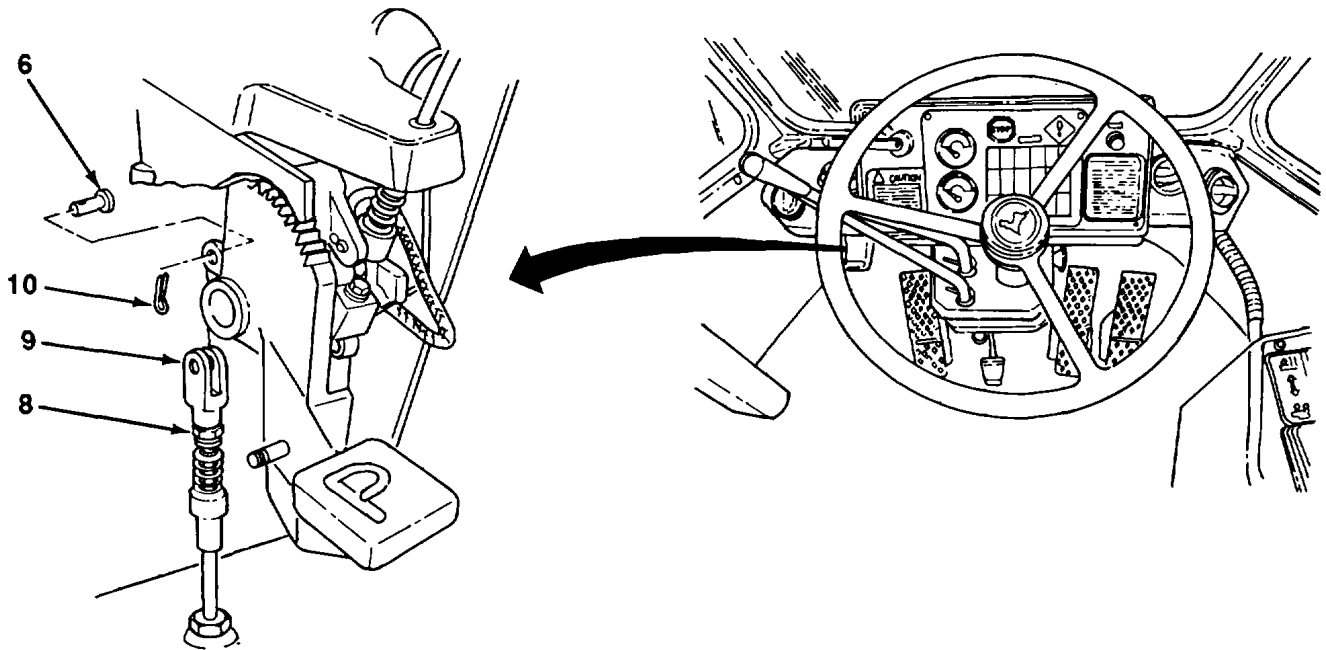
10. Loosen nut (8) and remove cotter pin (10), clevis pin (6), and clevis (9) from parking brake pedal (7). Discard cotter pin.



TA706931

10-2. PARKING BRAKE ADJUSTMENT (Con't).

11. Rotate clevis (9) counterclockwise one full turn. Install clevis pin (6).
12. Tighten nut (8) against clevis (9).
13. Install new cotter pin (10) on clevis pin (6).
14. Repeat steps 7 through 9.



TA706932

10-3. PARKING BRAKE PEDAL AND HANDLE REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup.

Equipment Conditions:

- Wheels chocked.
- Parking brake cable removed from parking brake pedal (see paragraph 10-4).

Materials/Parts:

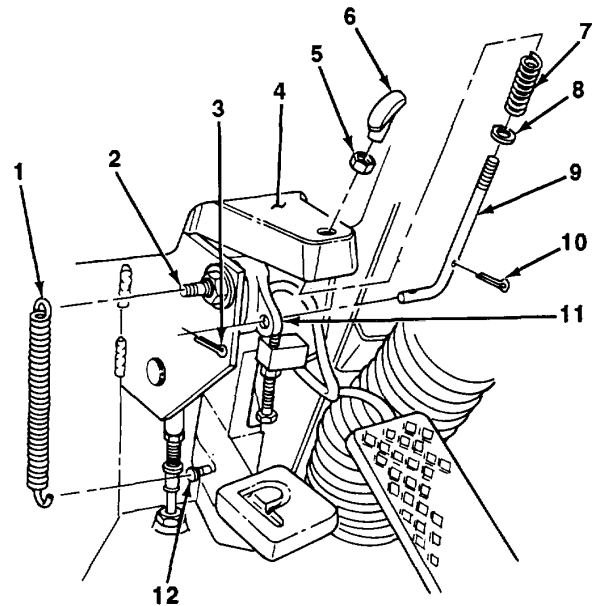
- Two cotter pins

Tools/Test Equipment

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

1. Loosen nut (5) and remove handle (6) from release lever (9).
2. Remove nut (5) from release lever (9).
3. Remove cotter pin (3) and release lever (9) from parking pawl (11). Discard cotter pin.
4. Remove release lever (9) from bracket (4).
5. Remove spring (7), washer (8), and cotter pin (11) from release lever (9). Discard cotter pin.
6. Remove spring (1) from two pins (2 and 12).



TA706933

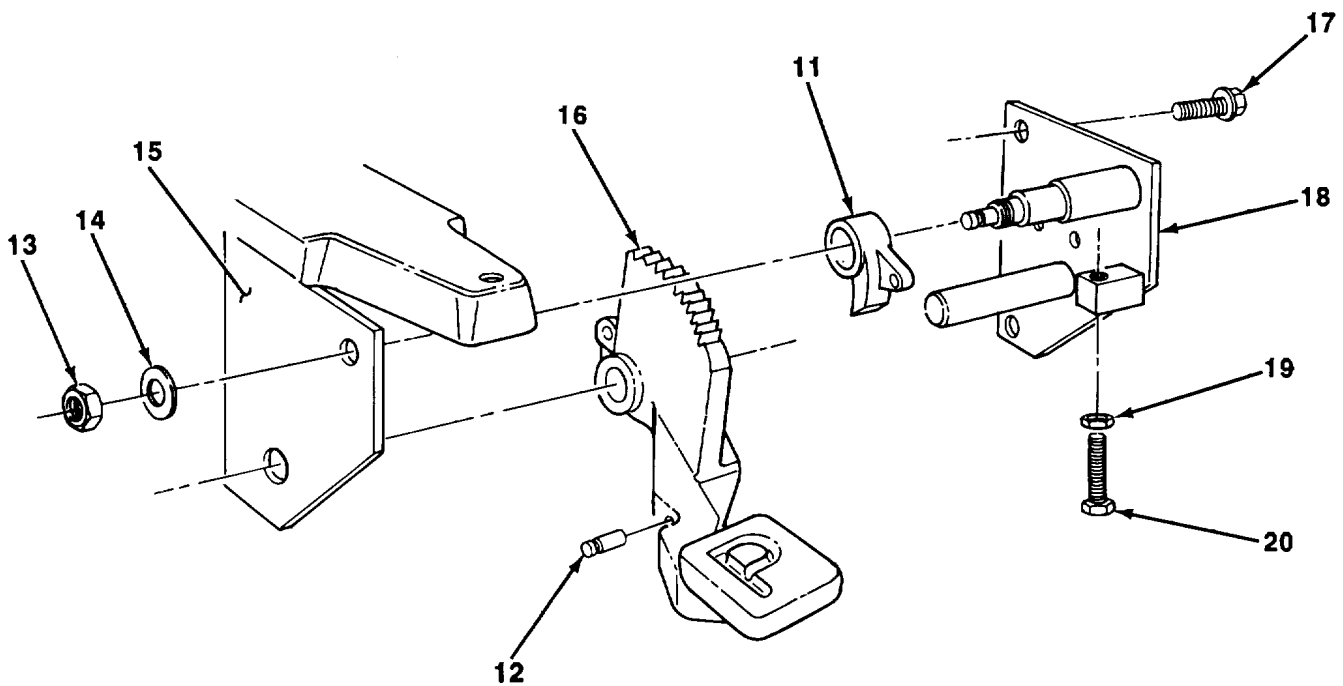
10-3. PARKING BRAKE PEDAL AND HANDLE REPLACEMENT (Con't).

7. Remove nut (13), washer (14), two screws (17), and bracket (18) from bracket (15).
8. Remove parking brake pedal (16) and parking pawl (11) from bracket (18).
9. Remove parking brake light switch (see paragraph 6-55).

NOTE

Note length of adjusting screw from bottom of head to nut before removing.

10. Remove adjusting screw (20) and nut (19) from bracket (18).
11. Remove pin (12) from parking brake pedal (16)

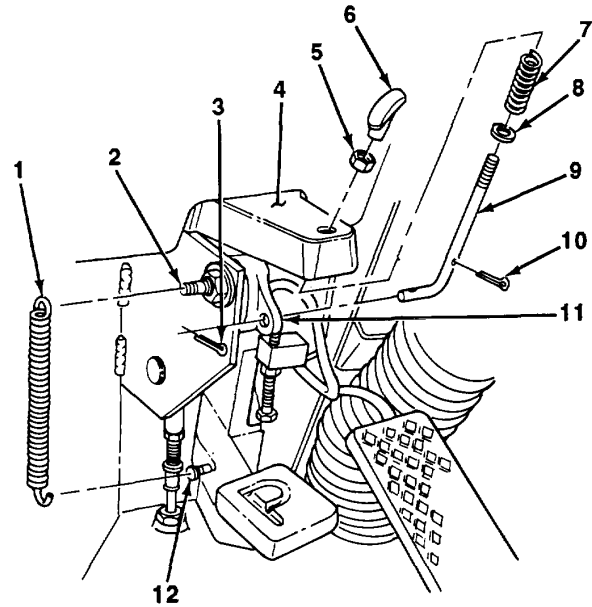
**b. INSTALLATION**

1. Install pin (12) on parking brake pedal (16).
2. Install nut (19) on adjusting screw (20) as noted during removal.
3. Install adjusting screw (20) on bracket (18).
4. Install parking brake light switch (see paragraph 6-55).

TA706934

10-3. PARKING BRAKE PEDAL AND HANDLE REPLACEMENT (Con't).

5. Position parking pawl (11) and parking brake pedal (16) on bracket (18).
6. Install bracket (18) on bracket (15) with two screws (17), washer (14), and nut (13).
7. Install spring (1) on two pins (2 and 12).
8. Install new cotter pin (10), washer (8), and (7) on release lever (9).
9. Position release lever (9) on bracket (4) parking pawl (11), and install new cotter pin (3)
10. Install nut (5) and handle (6) on release lever (9)

**FOLLOW-ON TASKS:**

- Install parking brake cable on parking brake pedal (see paragraph 104).

TA706935

10-4. PARKING BRAKE CABLE REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Equipment Conditions:

- Wheels chocked.
- Parking brake released (see TM 10-3930-659-10).
- Left transmission side guard removed (see paragraph 14-7).
- Left side and front cab skirts removed (see paragraph 14-6).

Materials/Parts:

- Two cotter pins

References:

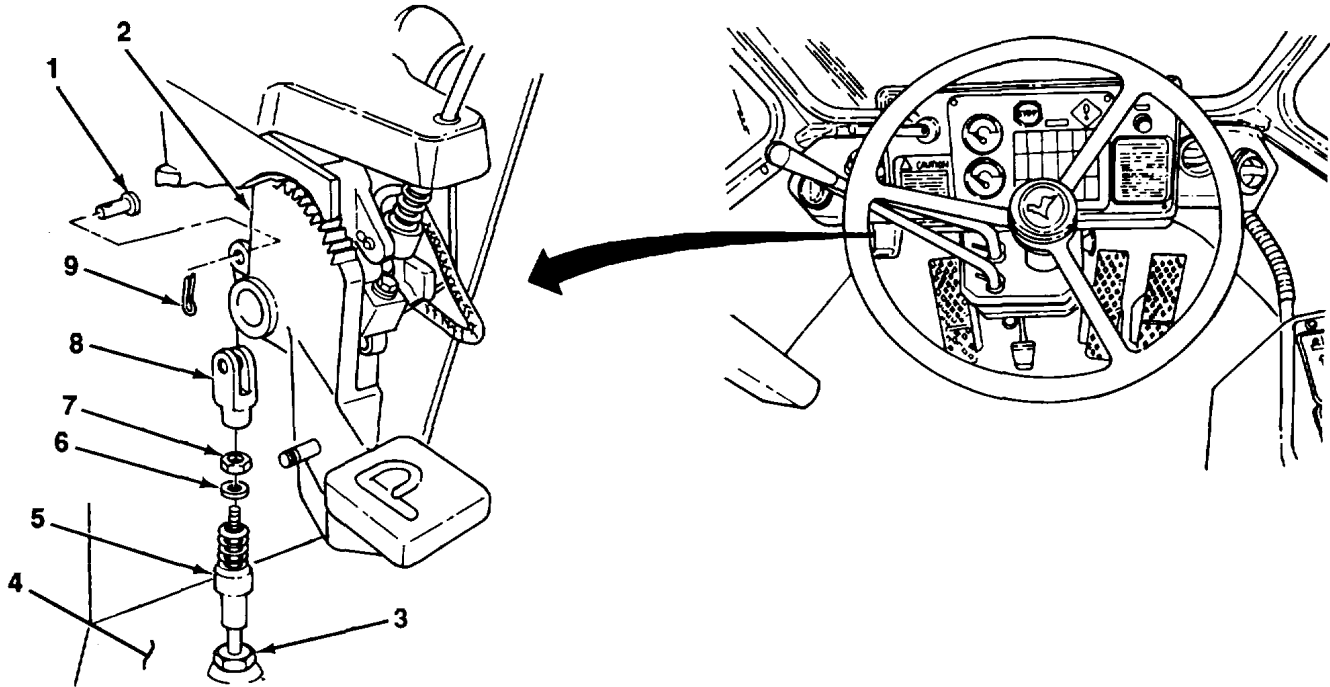
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

1. Remove cotter Din (9), clevis Din (1). and clevis (8) from Parking brake pedal (2). Discard cotter Pin.
2. Loosen nut (7) and remove clevis (8), nut and washer (6) from parking brake cable (5).



TA706936

10-4. PARKING BRAKE CABLE REPLACEMENT (Con't).

3. Loosen nut (3) and remove parking brake cable (5) from cab floor (4).
4. Remove cotter pin (19), clevis pin (21), and clevis (20) from brake cam lever (15). Discard cotter pin.
5. Remove two nuts (16), washers (17), U-bolt (22), parking brake cable (5), and connecting link (18) from bracket (12).

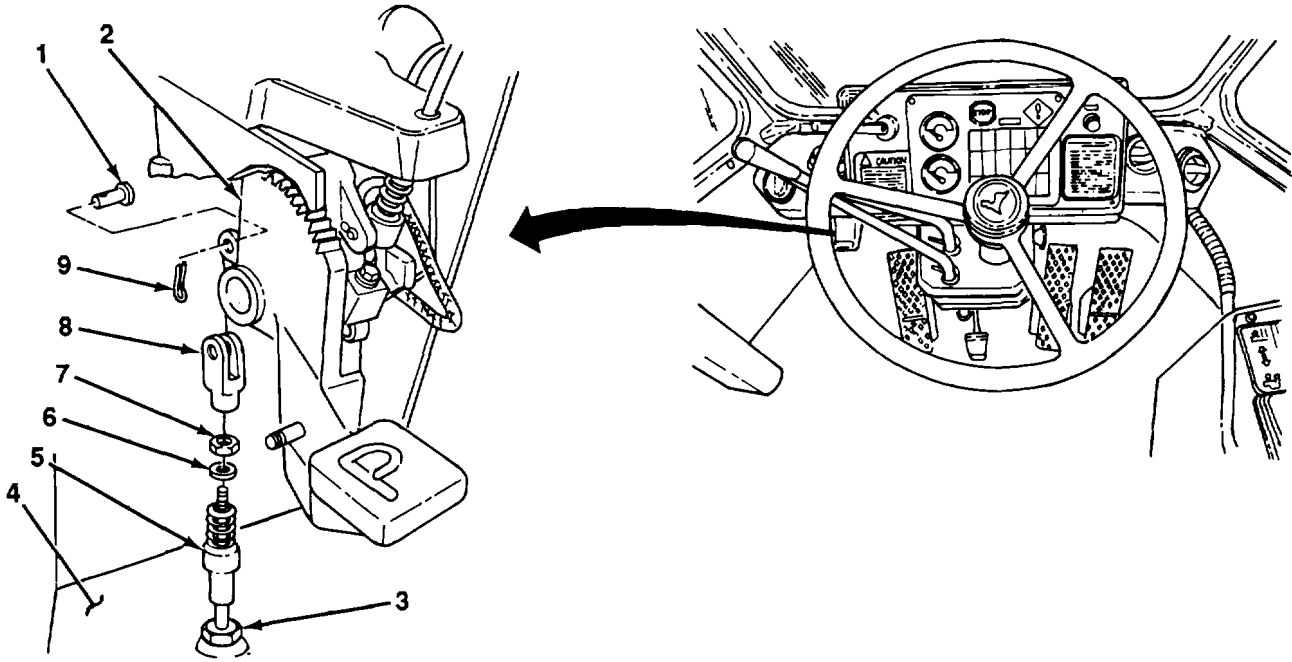
b. INSTALLATION

1. If removed, install bushing (13) and bracket (12) on transmission (14) with two washers (11) and bolts (10).
2. Install connecting link (18) and parking brake cable (5) on bracket (12) with U-bolt (22), two washers (17), and
3. Install clevis (20) on brake cam lever (15) with clevis pin (21) and new cotter pin (19).

TA706937

10-4. PARKING BRAKE CABLE REPLACEMENT (Con't).

4. Thread parking brake cable (5) through cab floor (4).
5. Install washer (6), nut (7), and clevis (8) on parking brake cable (5).
6. Install clevis (8) on parking brake pedal (2) with clevis pin (1) and new cotter pin (9).

**FOLLOW-ON TASKS:**

- Adjust parking brake (see paragraph 10-2).
- Install left side and front cab skirts (see paragraph 14-6).
- Install left transmission side guard (see paragraph 14-7).

TA706938

10-5. BRAKE VALVES PRESSURE TEST.

This task covers: Pressure Test

Initial Setup.

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Front cab skirt removed (see paragraph 14-6).
- Hydraulic system warmed to operating temperature (see paragraph 2-29).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Three preformed packings

Personnel Required: Two

References:

- TM 10-3930659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Adapter (Item 2, Appendix F)
- Quick coupler (Item 10, Appendix F)
- Pressure gage (Item 18, Appendix F)
- Hose assembly (Item 20, Appendix F)
- Tee (Item 39, Appendix F)

NOTE

- **Right and left brake valve pressure tests are performed the same way. Right brake valve is illustrated.**
- **If brake valve pressure test is performed for one brake valve, procedure MUST be repeated for other brake valve.**

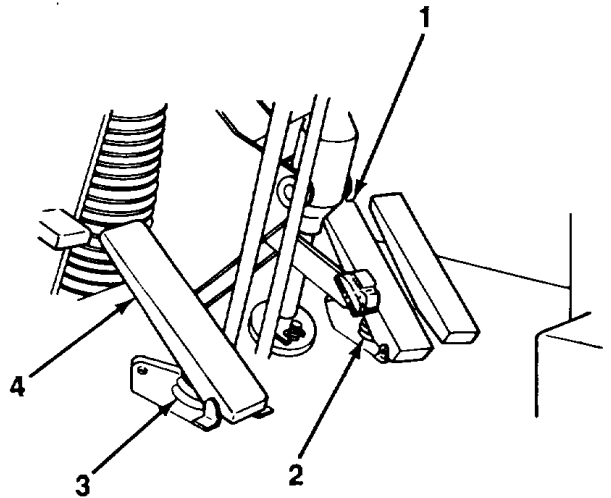
PRESSURE TEST**WARNING**

Pressure stored in accumulator is approximately 500 psi (3448 kPa). Ensure that accumulator pressure is relieved before removing service brake hoses or components. Failure to follow this warning may result in serious injury or death to personnel.

10-5. BRAKE VALVES PRESSURE TEST (Con't).**NOTE**

It is necessary to hold boot of one brake pedal with hand while opposite brake pedal is pumped. Movement inside boot will be felt as opposite brake pedal is pumped. Accumulator pressure is relieved when movement stops.

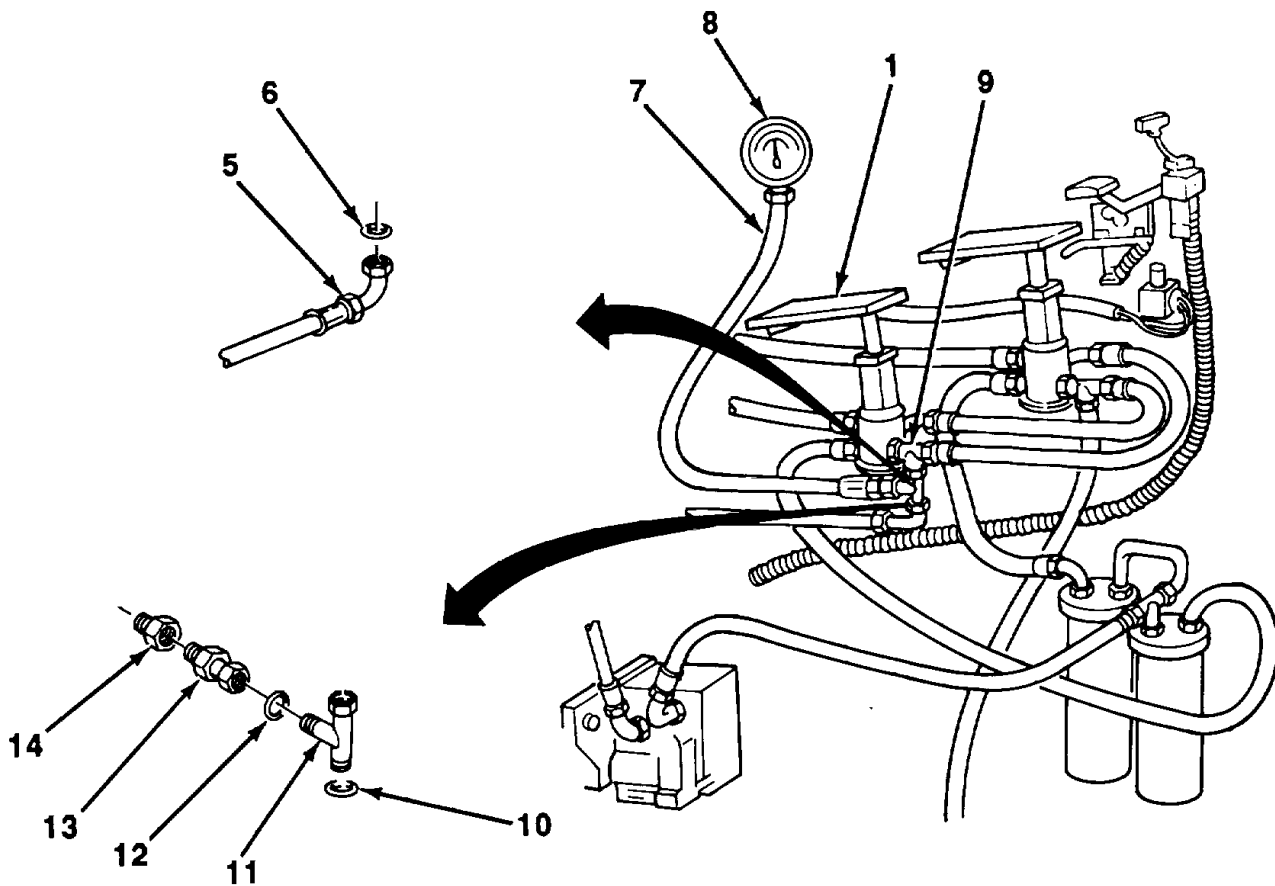
1. Hold boot (3) of left brake pedal (4) with hand and pump right brake pedal (1) 75 times. Release boot.
2. Hold boot (2) of right brake pedal (1) with hand and pump left brake pedal (4) 75 times. Release boot.



3. Remove hose (5) and preformed packing (6) from tee (9). Discard preformed packing.
4. Install two preformed packings (10 and 12) on tee (11).
5. Install quick coupler (13) and adapter (14) on tee (11).
6. Install tee (11) on tee (9).
7. Install hose (5) on tee (11).
8. Install hose (7) and pressure gage (8) on adapter (14).
9. Start engine and run at slow engine idle speed (see TM 10-3930-659-10).
10. Press right brake pedal (1) and note reading on pressure gage (8). Reading must be 1350-1600 psi (9308-11032 kPa). If brake valve pressure is not within specification, perform fork/brake hydraulic pump standby pressure test (see paragraph 17-3). If standby pressure test is within specification, replace brake valve (see paragraph 10-9).
11. Shut down engine (see TM 10-3930-659-10).
12. Repeat steps 1 and 2.
13. Remove pressure gage (8) and hose (7) from adapter (14).

TA706939

10-5. BRAKE VALVES PRESSURE TEST (Con't).



15. Remove tee (11) from tee (9).
16. Remove adapter (14), quick coupler (13), and preformed packing (12) from tee (11). Discard preformed packing.
17. Install new preformed packing (6) and hose (5) on tee (9).

FOLLOW-ON TASKS:

- Bleed brakes (see paragraph 10-17).
- Install front cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

TA706940

10-6. BRAKE VALVES LEAKAGE TEST.

This task covers: Leakage Test

*Initial Setup.***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10)
- Front cab skirt removed (see paragraph 14-6)
- Hydraulic system warmed to operating temperature (see paragraph 2-29).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Plug (two) (Item 28, Appendix F)

Materials/Parts:

- Rags (Item 27, Appendix C)
- Two preformed packings

Personnel Required: Two**References:**

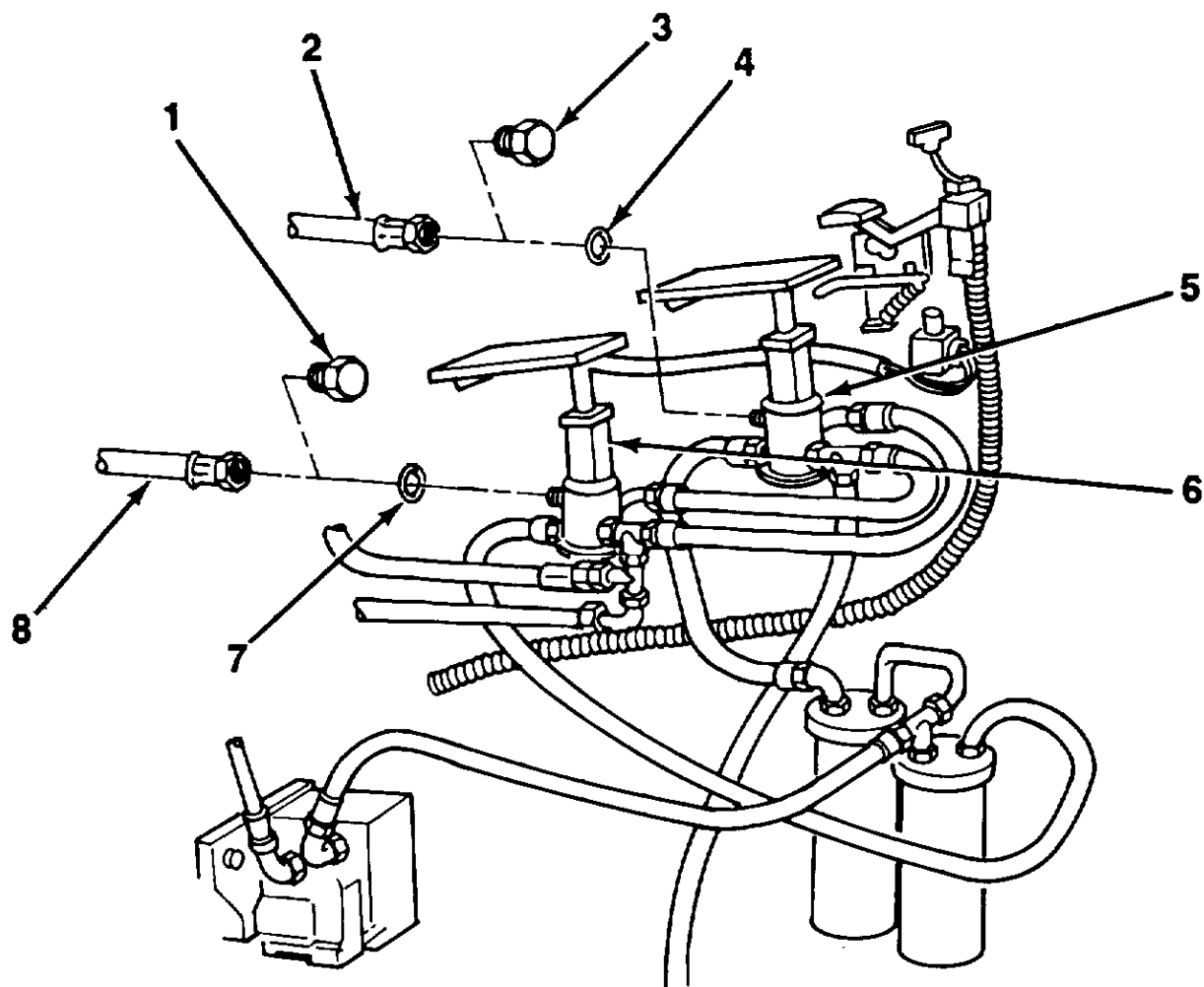
- TM 10-3930659-10

NOTE

- **Accumulator pressure should not be relieved prior to performing leakage test. Pressing brake pedal will cause test to be inaccurate.**
- **A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.**

LEAKAGE TEST

1. Remove hose (2) and preformed packing (4) from left brake valve (5). Discard preformed packing.
2. Install plug (3) on hose (2).
3. Remove hose (8) and preformed packing (7) from right brake valve (6). Discard preformed packing.
4. Install plug (1) on hose (8).
5. Place suitable containers under left and right brake valves (5 and 6). Measure amount of hydraulic fluid leakage from brake valves for one minute. Replace brake valve if leakage is more than 0.5 oz (14.8 ml) per minute (see paragraph 10-9).
6. Remove plug (1) from hose (8).
7. Install new preformed packing (7) and hose (8) on right brake valve (6).
8. Remove plug (3) from hose (2).
9. Install new preformed packing (4) and hose (2) on left brake valve (5).

10-6. BRAKE VALVES LEAKAGE TEST (Con't).**FOLLOW-ON TASKS:**

- Bleed brake system (see paragraph 10-17).
- Install front cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10)

TA706941

10-7. SERVICE BRAKE DISC INSPECTION.

This task covers: Inspection

Initial Setup.

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Trestle, 7 ton (two) (Item 45, Appendix F)

Materials/Parts:

- One preformed packing

References:

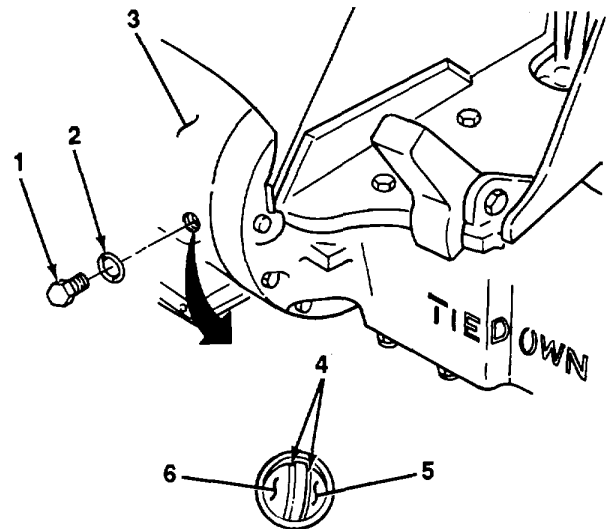
- TM 10-3930-659-10

NOTE

Front and rear service brake discs are inspected the same way except front axle has two plugs and rear axle has one plug. Front service brake disc is illustrated.

INSPECTION

1. Raise forks (see TM 10-3930-659-10) and position two trestles under carriage. Lower forks onto trestles.
2. Remove plug (1) and preformed packing (2) from differential (3). Discard preformed packing.
3. Measure thickness of brake linings (4) on pressure plate (6) and brake backing plate (5). Measurement must not be less than 0.040 in (1.016 mm). If measurement is less than specified, pressure plate and brake backing plate must be replaced. Notify Direct Support Maintenance
4. Install plug (1) and new preformed packing (2) on differential (3).
5. Raise forks (see TM 10-3930-659-10) and remove two trestles from under carriage. Lower forks to ground (see TM 10-3930-659-10).



TA706942

10-8. SERVICE BRAKE RESIDUAL PRESSURE TEST.

This Task Covers: Pressure Test

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Front cab skirt removed (see paragraph 14-6).
- Hydraulic system warmed to operating temperature (see paragraph 2-29).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Adapter (Item 2, Appendix F)
- Quick coupler (Item 10, Appendix F)
- Pressure gage (Item 18, Appendix F)
- Hose assembly (Item 20, Appendix F)
- Tee (Item 39, Appendix F)

Materials/Parts:

- Three preformed packings

Personnel Required: Two**References:**

- TM 10-3930-659-10

NOTE

• Service brake residual pressure test is performed for both right and left brake valves the same way. Right brake valve is illustrated.

• If service brake residual pressure test is performed for one brake valve, procedure **MUST** be repeated for other brake valve.

PRESSURE TEST

WARNING

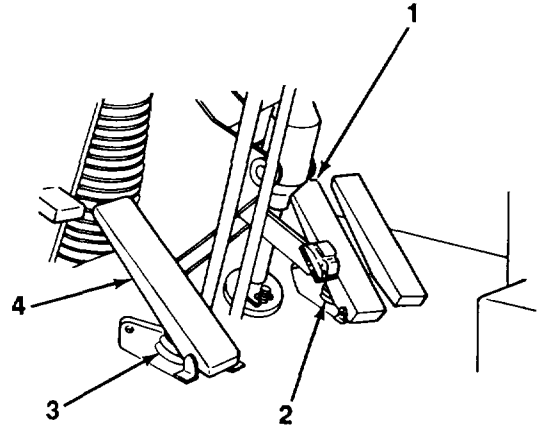
Pressure stored in accumulator is approximately 500 psi (3448 kPa). Ensure that accumulator pressure is relieved before removing service brake hoses or components. Failure to follow this warning may result in serious injury or death to personnel.

10-8. SERVICE BRAKE RESIDUAL PRESSURE TEST (Con't).**NOTE**

• It is necessary to hold boot of one brake pedal with hand while opposite brake pedal is pumped. Movement inside boot will be felt as opposite brake pedal is pumped. Accumulator pressure is relieved when movement stops.

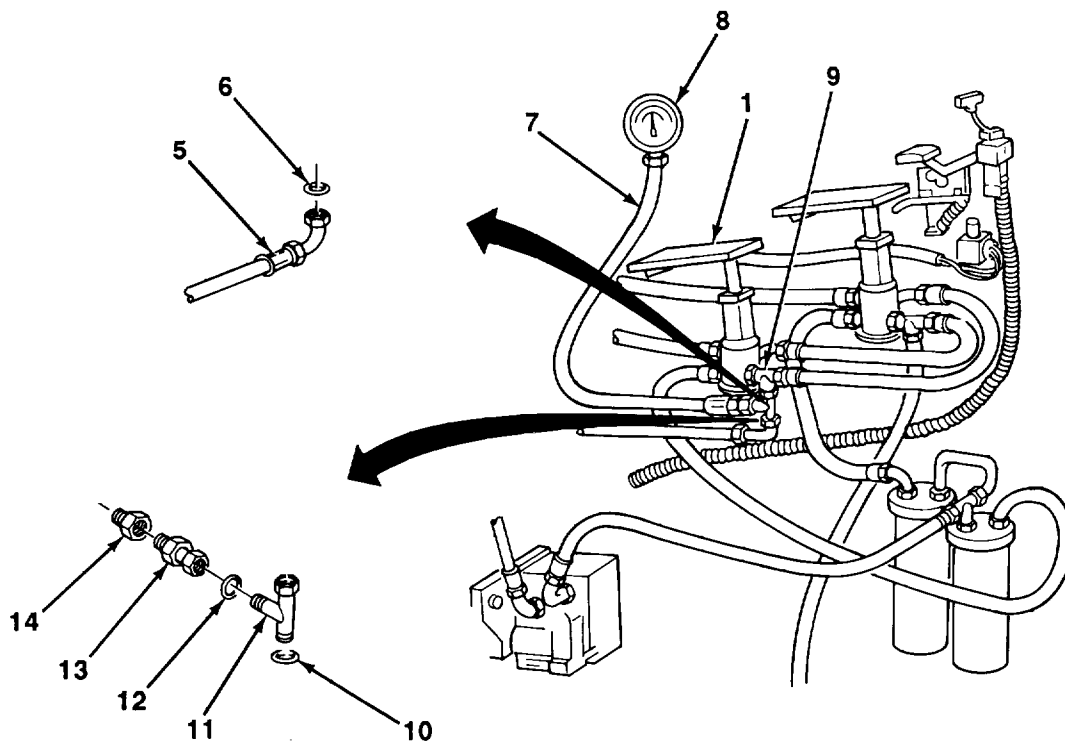
• Each brake pedal should be pumped a full 75 times even if no movement is felt after pumping brake pedal several times.

1. Hold boot (3) of left brake pedal (4) with hand and pump right brake pedal (1) 75 times. Release boot.
2. Hold boot (2) of right brake pedal (1) with hand and pump left brake pedal (4) 75 times. Release boot.



3. Remove hose (5) and preformed packing (6) from tee (9). Discard preformed packing.
4. Install two preformed packings (10 and 12) on tee (11).
5. Install quick coupler (13) and adapter (14) on tee (11).
6. Install tee (11) on tee (9).
7. Install hose (5) on tee (11).
8. Install hose (7) and pressure gage (8) on adapter (14).
9. Start engine and allow brake system pressure to reach operating pressure (see TM 10-3930-659-10).
10. Shut down engine (see TM 10-3930-659-10).

10-8. SERVICE BRAKE RESIDUAL PRESSURE TEST (Con't).

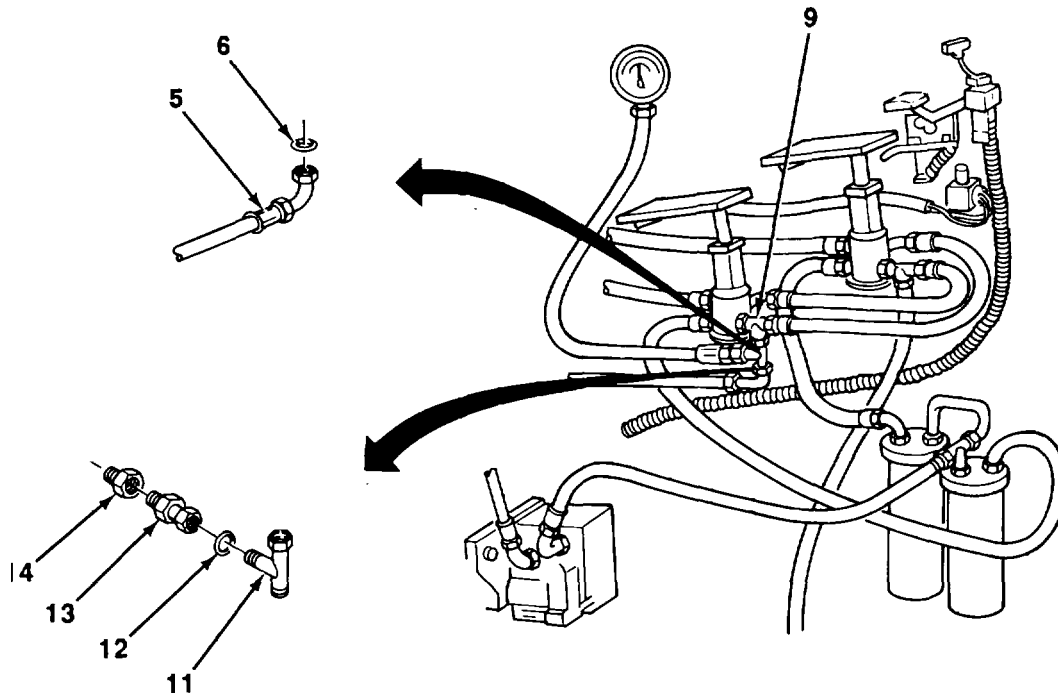
**CAUTION**

Brake pedal must be released when reading on pressure gage reaches 30 psi (207 kPa). Damage to brake valve may occur if brake pedal is not released.

11. Press and hold right brake pedal (1) until reading on pressure gage (8) reaches 30 psi (207 kPa). Release brake pedal and note amount of time required for pressure to drop from 30 psi (207 kPa) to 5 psi (34 kPa). If pressure drops to 5 psi (34 kPa) within 10 seconds, residual pressure is within specification. If amount of time required for pressure to drop is more than 10 seconds, replace brake valve (see paragraph 10-9).
12. Repeat steps 1 and 2.
13. Remove pressure gage (8) and hose (7) from adapter (14).
14. Remove hose (5) and preformed packing (10) from tee (11). Discard preformed packing.

10-8. SERVICE BRAKE RESIDUAL PRESSURE TEST (Con't).

15. Remove tee (11) from tee (9).
16. Remove adapter (14), quick coupler (13), and preformed packing (12) from tee (11). Discard preformed packing.
17. Install new preformed packing (6) and hose (5) on tee (9).

**FOLLOW-ON TASKS:**

- Bleed brakes (see paragraph 10-17).
- Install front cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

10-9. BRAKE VALVES MAINTENANCE.

This task covers:

- | | |
|--|--|
| <ul style="list-style-type: none"> a. Removal b. Disassembly | <ul style="list-style-type: none"> c. Assembly d. Installation |
|--|--|

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Low brake pressure switch removed (see paragraph 6-36).
- Left brake valve-to-right brake valve hose and fittings removed (see paragraph 10-12).
- Right and left brake valves-to-accumulator hoses and fittings removed (see paragraph 10-14).
- Brake light switch removed (left brake valve only) (see paragraph 6-30).
- Left brake valve-to-front brake hose and fittings removed (left brake valve only) (see paragraph 10-10).
- Left brake valve-to-hydraulic reservoir hose and fittings removed (left brake valve only) (see paragraph 10-13).TM 1393659-1

Equipment Conditions (Con't):

- Right brake valve-to-rear brake hose and fittings removed (right brake valve only) (see paragraph 10 11).
- Right brake valve-to-hydraulic reservoir hose and fittings removed (right brake valve only) (see paragraph 10-13).

Materials/Parts:

- Brake valve seal kit

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Personnel Required: Two

References:

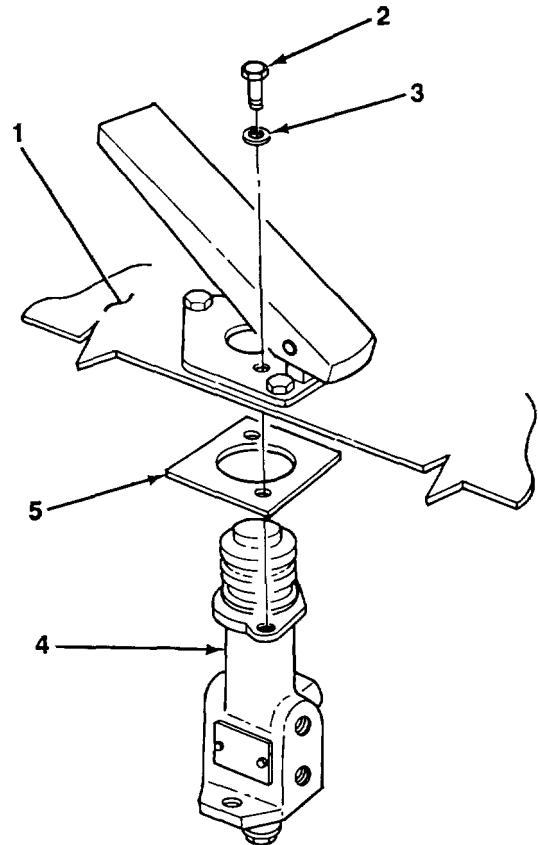
- TM 10-3930-659-10

10-9. BRAKE VALVES MAINTENANCE (Con't).**NOTE**

Left and right brake valves are maintained the same way. Right brake valve is illustrated.

a. REMOVAL

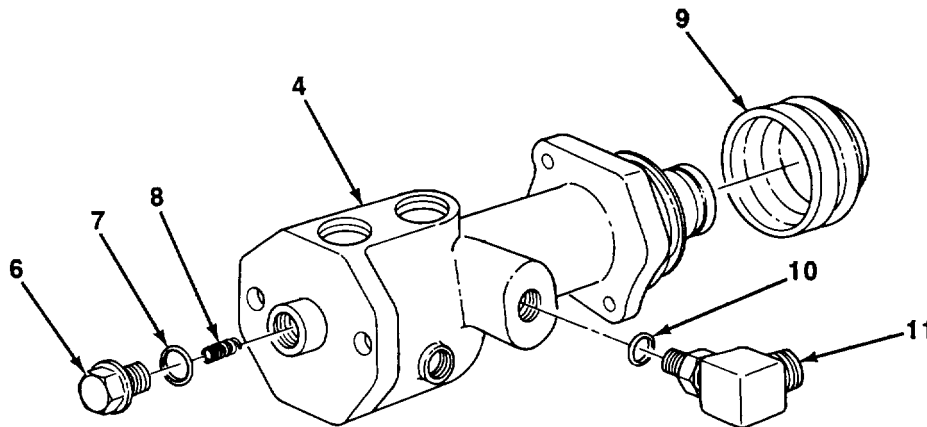
Remove two screws (2), washers (3), brake valve (4), and spacer (5) from cab floor (1).



10-9. BRAKE VALVES MAINTENANCE (Con't).**b. DISASSEMBLY****NOTE**

Repair of brake valve is limited to replacement of dust cover and preformed packings contained in brake valve seal kit.

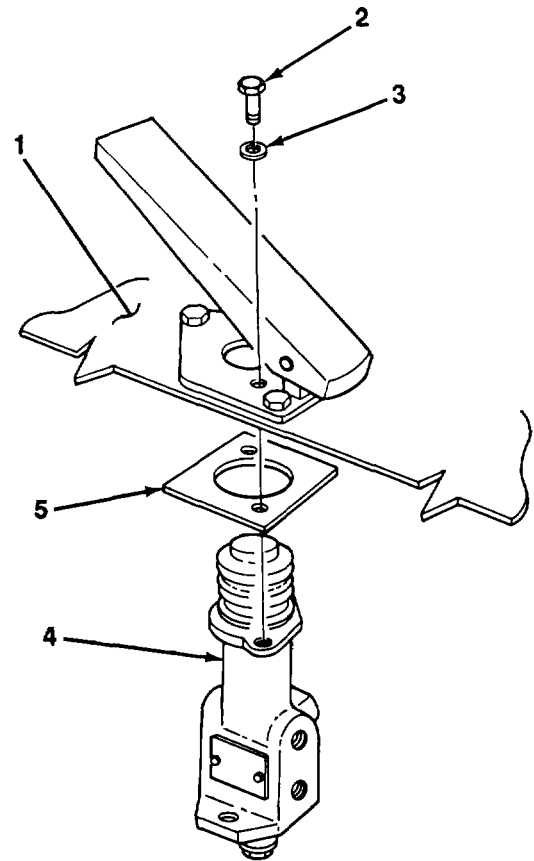
1. Remove dust cover (9) from brake valve (4). Discard dust cover.
2. Remove adapter (11) from brake valve (4).
3. Remove preformed packing (10) from adapter (11). Discard preformed packing.
4. Remove plug (6) and spring (8) from brake valve (4).
5. Remove preformed packing (7) from plug (6). Discard preformed packing.

**c. ASSEMBLY**

1. Install new preformed packing (7) on plug (6).
2. Install spring (8) and plug (6) on brake valve (4).
3. Install new preformed packing (10) on adapter (11).
4. Install adapter (11) on brake valve (4).
5. Install new dust cover (9) on brake valve (4).

10-9. BRAKE VALVES MAINTENANCE (Con't).**d. INSTALLATION**

Install spacer (5) and brake valve (4) on cab floor (1) with two washers (3) and screws (2).

**FOLLOW-ON TASKS:**

- Install right brake valve-to-hydraulic reservoir hose and fittings (right brake valve only) (see paragraph 10-13).
- Install right brake valve-to-rear brake hose and fittings (right brake valve only) (see paragraph 10-11).
- Install left brake valve-to-hydraulic reservoir hose and fittings (left brake valve only) (see paragraph 10-13).
- Install left brake valve-to-front brake hose and fittings (left brake valve only) (see paragraph 10-10).
- Install brake light switch (left brake valve only) (see paragraph 6-30).
- Install right and left brake valves-to-accumulator hoses and fittings (see paragraph 10-14).
- Install left brake valve-to-right brake valve hose and fittings (see paragraph 10-12).
- Install low brake pressure switch (see paragraph 6-36).
- Bleed brakes (see paragraph 10-17).

10-10. LEFT BRAKE VALVE-TO-FRONT BRAKE HOSE AND FITTINGS REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-

Materials/Parts:

- Rags (Item 27, Appendix C)
- Five preformed packings

Tools/Test Equipment:

- 659-10).
- Left side cab skirt removed (see paragraph 14-6).
- Left transmission side guard removed (see paragraph 14-7).
- Loader frame cover removed (see paragraph 14-11).
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:**NOTE**

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL**WARNING**

Pressure stored in accumulator is approximately 500 psi (3448 kPa). Ensure that accumulator pressure is relieved before removing service brake hoses or components. Failure to follow this warning may result in serious injury or death to personnel.

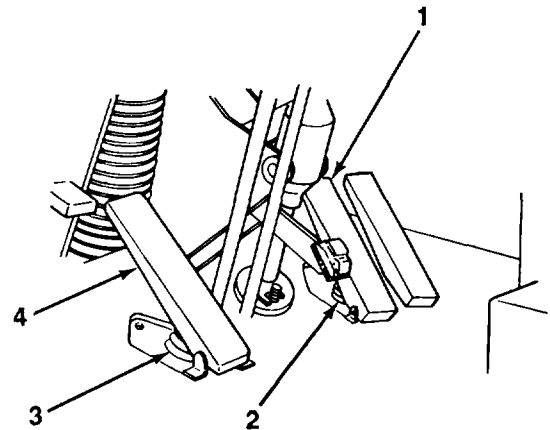
10-10. LEFT BRAKE VALVE-TO-FRONT BRAKE HOSE AND FITTINGS REPLACEMENT (Con't).

NOTE

• It is necessary to hold boot of one brake pedal with hand while opposite brake pedal is pumped. Movement inside boot will be felt as opposite brake pedal is pumped. Accumulator pressure is relieved when movement stops.

• Each brake pedal should be pumped a full 75 times even if no movement is felt after pumping brake pedal several times.

1. Hold boot (3) of left brake pedal (4) with hand and pump right brake pedal (1) 75 times. Release boot.
2. Hold boot (2) of right brake pedal (1) with hand and pump left brake pedal (4) 75 times. Release boot.

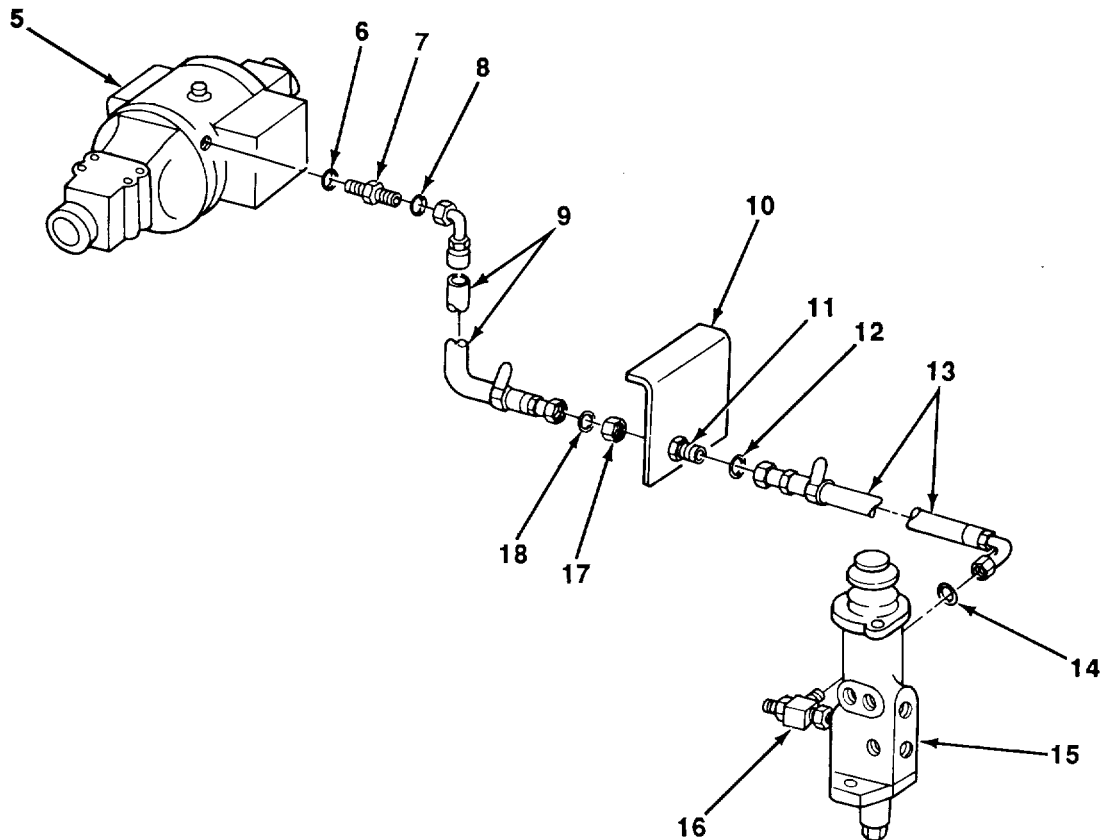


3. Remove hose (13) and preformed packing (14) from tee (16) on left brake valve (15). Discard preformed
4. Remove hose (13) and preformed packing (12) from bulkhead union (11). Discard preformed packing. packing.
5. Remove hose (9) and preformed packing (18) from bulkhead union (11). Discard preformed packing.
6. Remove nut (17) and bulkhead union (11) from plate (10).
7. Remove hose (9) and preformed packing (8) from adapter (7). Discard preformed packing.
8. Remove adapter (7) and preformed packing (6) from front differential (5). Discard preformed packing.

b. INSTALLATION

1. Install new preformed packing (6) and adapter (7) on front differential (5).
2. Install new preformed packing (8) and hose (9) on adapter (7).
3. Install bulkhead union (11) on plate (10) with nut (17).
4. Install new preformed packing (18) and hose (9) on bulkhead union (11).

10-10. LEFT BRAKE VALVE-TO-FRONT BRAKE HOSE AND FITTINGS REPLACEMENT (Con't).



5. Install new preformed packing (12) and hose (13) on bulkhead union (11).
6. Install new preformed packing (14) and hose (13) on tee (16).

FOLLOW-ON TASKS:

- Bleed brakes (see paragraph 10-17).
- Install loader frame cover (see paragraph 14-11).
- Install left transmission side guard (see paragraph 14-7).
- Install left side cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

10-11. RIGHT BRAKE VALVE-TO-REAR BRAKE HOSE AND FITTINGS REPLACEMENT.**This task covers:**

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).
- Right transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Three preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL**WARNING**

Pressure stored in accumulator is approximately 500 psi (3448 kPa). Ensure that accumulator pressure is relieved before removing service brake hoses or components. Failure to follow this warning may result in serious injury or death to personnel.

NOTE

- It is necessary to hold boot of one brake pedal with hand while opposite brake pedal is pumped. Movement inside boot will be felt as opposite brake pedal is pumped. Accumulator pressure is relieved when movement stops.
- Each brake pedal should be pumped a full 75 times even if no movement is felt after pumping brake pedal several times.

1. Hold boot (3) of left brake pedal (4) with hand and pump right brake pedal (1) 75 times. Release boot.

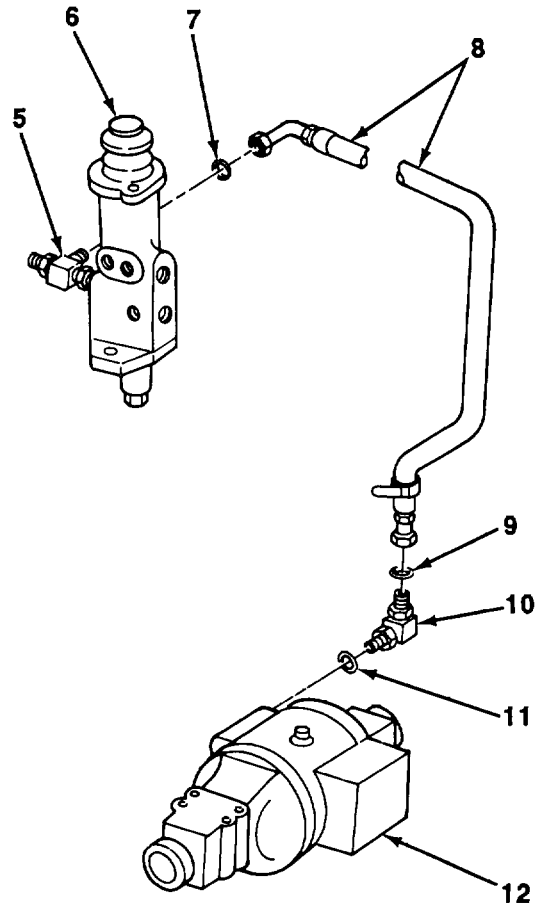
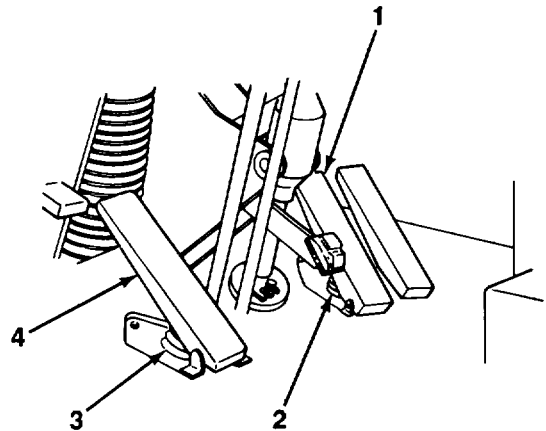
10-11. RIGHT BRAKE VALVE-TO-REAR BRAKE HOSE AND FITTINGS REPLACEMENT (Con't).

2. Hold boot (2) of right brake pedal (1) with hand and pump left brake pedal (4) 75 times. Release boot.

3. Remove hose (8) and preformed packing (9) from elbow (10). Discard preformed packing.

4. Remove elbow (10) and preformed packing (11) from rear differential (12). Discard preformed packing.

5. Remove hose (8) and preformed packing (7) from tee (5) on right brake valve (6). Discard preformed packing.



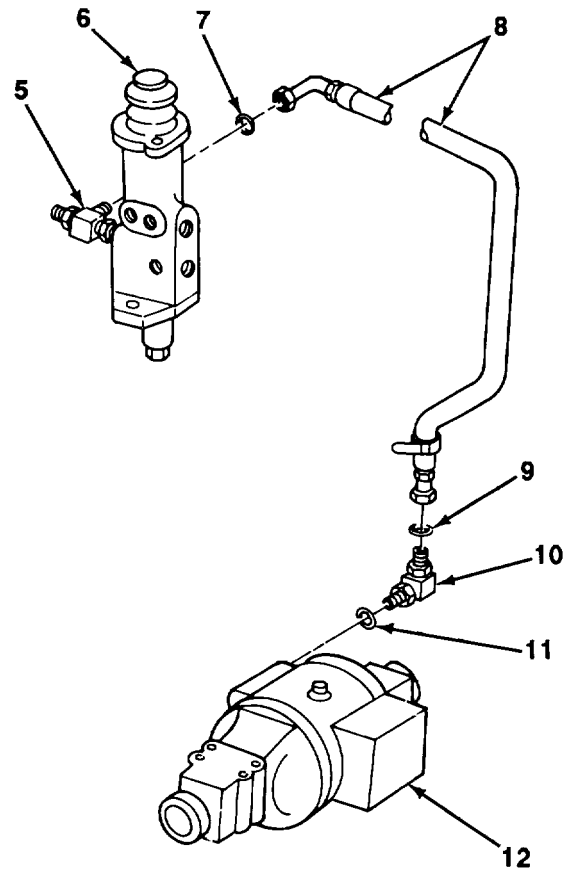
TA706951

10-11. RIGHT BRAKE VALVE-TO-REAR BRAKE HOSE AND FITTINGS REPLACEMENT (Con't).**b. INSTALLATION**

1. Install new preformed packing (7) and hose (8) on tee (5).
2. Install new preformed packing (11) and elbow (10) on rear differential (12).
3. Install new preformed packing (9) and hose (8) on elbow (10).

FOLLOW-ON TASKS:

- Bleed brakes (see paragraph 10-17). Install right transmission side guard (see paragraph 14-7).
- Install right side cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).



10-12. LEFT BRAKE VALVE-TO-RIGHT BRAKE VALVE HOSES AND FITTINGS REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).
- Low brake pressure switch removed (see paragraph 6-36).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Eight preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

WARNING

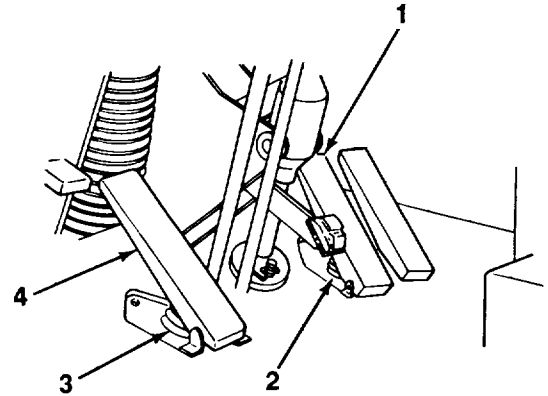
Pressure stored in accumulator is approximately 500 psi (3448 kPa). Ensure that accumulator pressure is relieved before removing service brake hoses or components. Failure to follow this warning may result in serious injury or death to personnel.

10-12. LEFT BRAKE VALVE-TO-RIGHT BRAKE VALVE HOSES AND FITTINGS REPLACEMENT.**NOTE**

• It is necessary to hold boot of one brake pedal with hand while opposite brake pedal is pumped. Movement inside boot will be felt as opposite brake pedal is pumped. Accumulator pressure is relieved when movement stops.

• Each brake pedal should be pumped a full 75 times even if no movement is felt after pumping brake pedal several times.

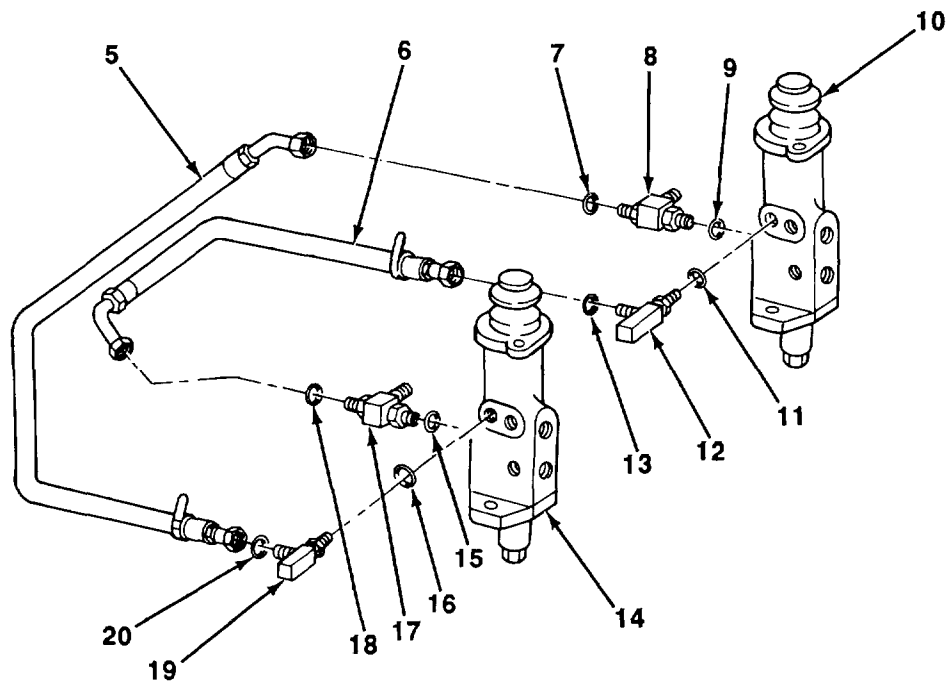
1. Hold boot (3) of left brake pedal (4) with hand and pump right brake pedal (1) 75 times. Release boot.
2. Hold boot (2) of right brake pedal (1) with hand and pump left brake pedal (4) 75 times. Release boot.



3. Remove hose (5) and two preformed packings (7 and 20) from tee (8) and elbow (19). Discard preformed
4. Remove tee (8) and preformed packing (9) from right brake valve (10). Discard preformed packing. packings.
5. Remove elbow (19) and preformed packing (16) from left brake valve (14). Discard preformed packing.
6. Remove hose (6) and two preformed packings (13 and 18) from elbow (12) and tee (17). Discard preformed
7. Remove elbow (12) and preformed packing (11) from right brake valve (10). Discard preformed packing. packings.
8. Remove tee (17) and preformed packing (15) from left brake valve (14). Discard preformed packing.

b. INSTALLATION

1. Install new preformed packing (15) and tee (17) on left brake valve (14).
2. Install new preformed packing (11) and elbow (12) on right brake valve (10).
3. Install two new preformed packings (13 and 18) and hose (6) on elbow (12) and tee (17).

10-12. LEFT BRAKE VALVE-TO-RIGHT BRAKE VALVE HOSES AND FITTINGS REPLACEMENT.

4. Install new preformed packing (16) and elbow (19) on left brake valve (14).
5. Install new preformed packing (9) and tee (8) on right brake valve (10).
6. Install two new preformed packings (7 and 20) and hose (5) on tee (8) and elbow (19).

FOLLOW-ON TASKS:

- Install low brake pressure switch (see paragraph 6-36).
- Bleed brakes (see paragraph 10-17).
- Install right side cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

10-13. BRAKE VALVES-TO-HYDRAULIC RESERVOIR HOSES AND FITTINGS REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Hydraulic reservoir drained (see LO 10-3930-659-12).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right and left engine upper sideshields opened (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Eight preformed packings

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

- LO 10-3930-659-12
- TM 10-3930-659-10

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL**WARNING**

Pressure stored in accumulator is approximately 500 psi (3448 kPa). Ensure that accumulator pressure is relieved before removing service brake hoses or components. Failure to follow this warning may result in serious injury or death to personnel.

NOTE

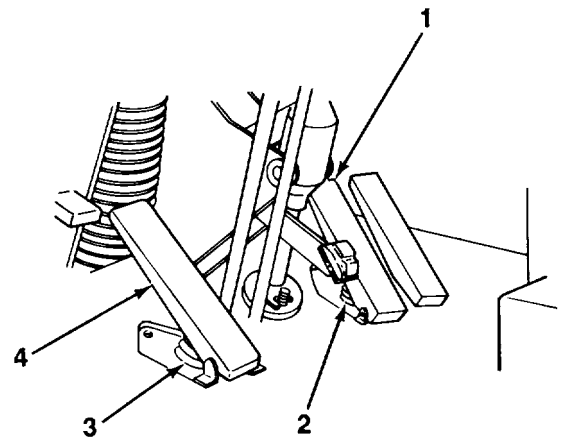
* It is necessary to hold boot of one brake pedal with hand while opposite brake pedal is pumped. Movement inside boot will be felt as opposite brake pedal is pumped. Accumulator pressure is relieved when movement stops.

* Each brake pedal should be pumped a full 75 times even if no movement is felt after pumping brake pedal several times.

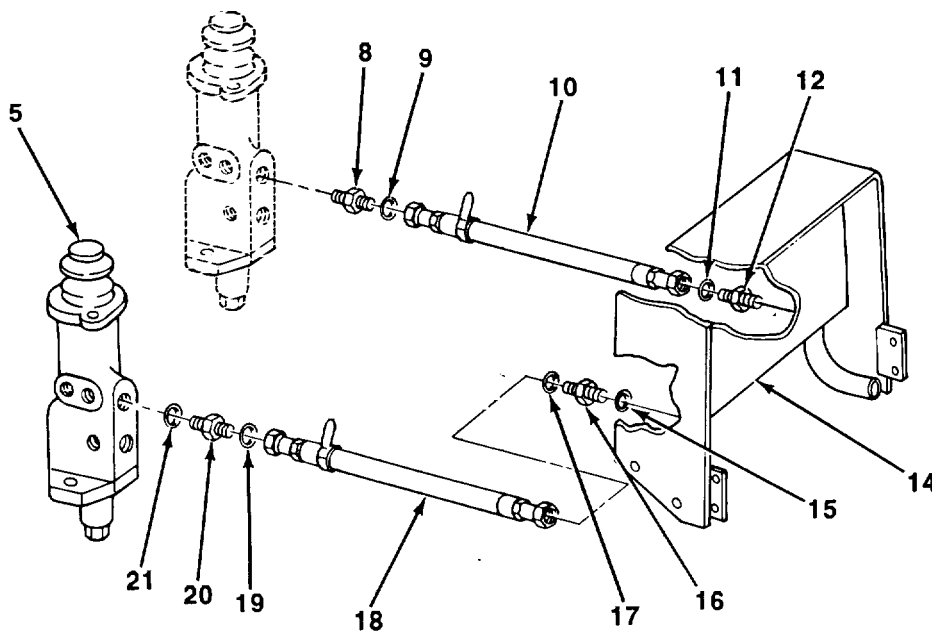
1. Hold boot (3) of left brake pedal (4) with hand and pump right brake pedal (1) 75 times. Release boot.

10-13. BRAKE VALVES-TO-HYDRAULIC RESERVOIR HOSES AND FITTINGS REPLACEMENT (Con't).

2. Hold boot (2) of right brake pedal (1) with hand and pump left brake pedal (4) 75 times. Release boot.



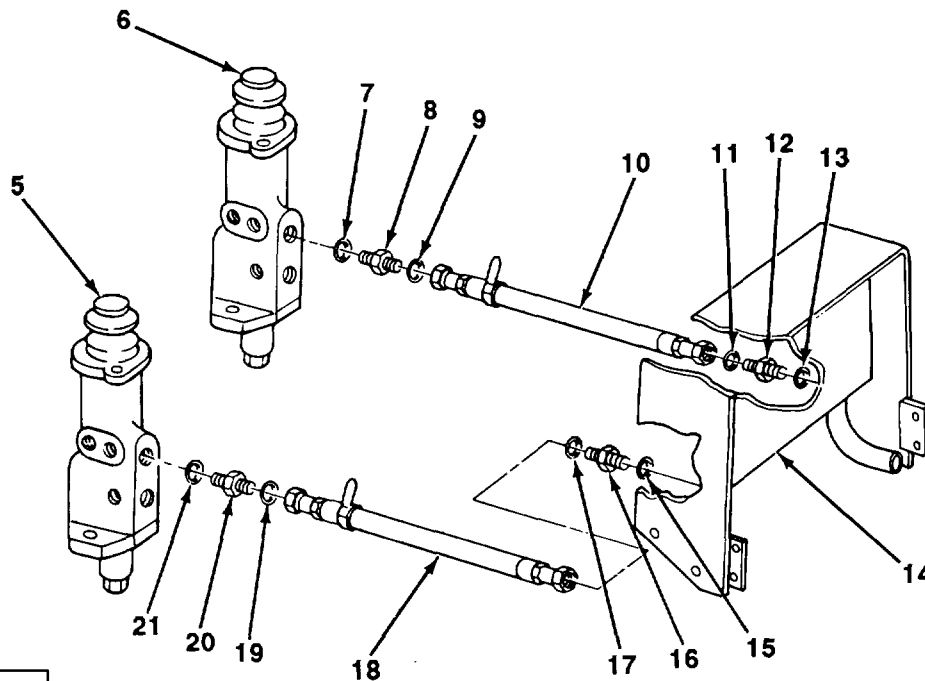
3. Remove hose (18) and two preformed packings (17 and 19) from adapters (16 and 20). Discard preformed
4. Remove adapter (16) and preformed packing (15) from hydraulic reservoir (14). Discard preformed packing.
5. Remove adapter (20) and preformed packing (21) from left brake valve (5). Discard preformed packing.
6. Remove hose (10) and two preformed packings (9 and 11) from adapters (8 and 12). Discard preformed packings.



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10-13. BRAKE VALVES-TO-HYDRAULIC RESERVOIR HOSES AND FITTINGS REPLACEMENT (Con't).

7. Remove adapter (12) and preformed packing (13) from hydraulic reservoir (14). Discard preformed packing.
8. Remove adapter (8) and preformed packing (7) from right brake valve (6). Discard preformed packing.

**b. INSTALLATION**

1. Install new preformed packing (7) and adapter (8) on right brake valve (6).
2. Install new preformed packing (13) and adapter (12) on hydraulic reservoir (14).
3. Install two new preformed packings (9 and 11) and hose (10) on two adapters (8 and 12).
4. Install new preformed packing (21) and adapter (20) on left brake valve (5).
5. Install new preformed packing (15) and adapter (16) on hydraulic reservoir (14).
6. Install two new preformed packings (17 and 19) and hose (18) on two adapters (16 and 20).

FOLLOW-ON TASKS:

- Fill hydraulic reservoir with hydraulic fluid (see TM 10-3930-659-10).
- Bleed brakes (see paragraph 10-17).
- Install cab skirts (see paragraph 14-6).
- Close right and left engine upper sideshields (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).
- Remove frame locking bar (see TM 10-3930-659-10).

10-14. BRAKE VALVE-TO-ACCUMULATOR HOSE AND FITTINGS REPLACEMENT.**This task covers:**

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Four preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

NOTE

• Right and left brake valves-to-accumulator hoses and fittings are replaced the same way. Right brake valve-to-accumulator hose and fittings are illustrated.

• A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. **REMOVAL****WARNING**

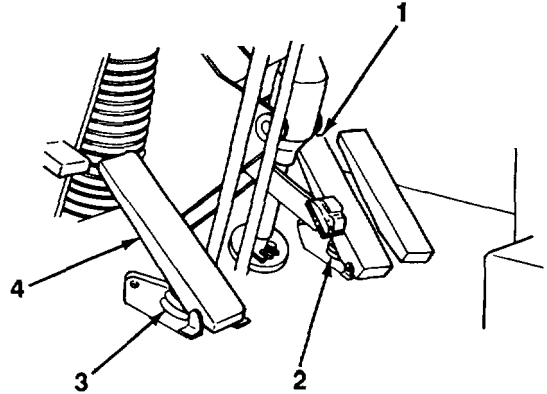
Pressure stored in accumulator is approximately 500 psi (3448 kPa). Ensure that accumulator pressure is relieved before removing service brake hoses or components. Failure to follow this warning may result in serious injury or death to personnel.

10-14. BRAKE VALVE-TO-ACCUMULATOR HOSE AND FITTINGS REPLACEMENT (Con't).**NOTE**

* It is necessary to hold boot of one brake pedal with hand while opposite brake pedal is pumped. Movement inside boot will be felt as opposite brake pedal is pumped. Accumulator pressure is relieved when movement stops.

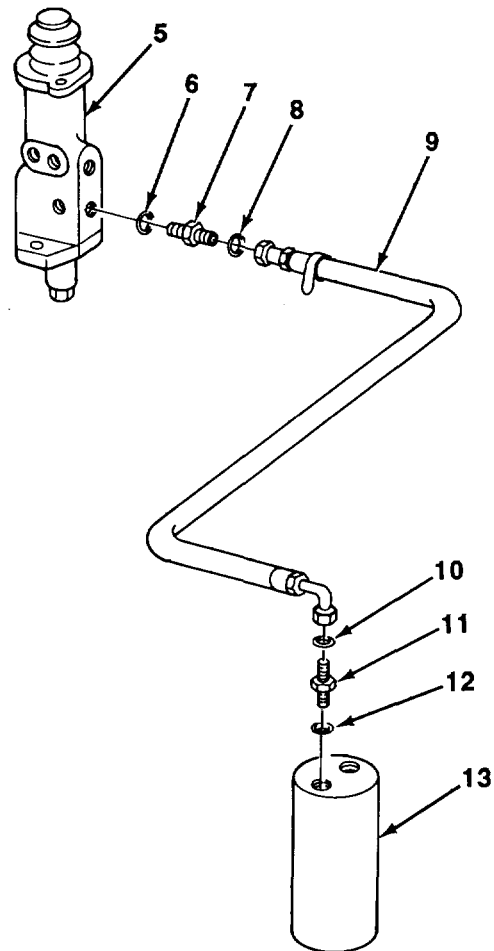
* Each brake pedal should be pumped a full 75 times even if no movement is felt after pumping brake pedal several times.

1. Hold boot (3) of left brake pedal (4) with hand and pump right brake pedal (1) 75 times. Release boot.
2. Hold boot (2) of right brake pedal (1) with hand and pump left brake pedal (4) 75 times. Release boot.



10-14. BRAKE VALVE-TO-ACCUMULATOR HOSE AND FITTINGS REPLACEMENT (Con't).

3. Remove hose (9) and preformed packing (10) from adapter (11). Discard preformed packing.
4. Remove hose (9) and preformed packing (8) from adapter (7). Discard preformed packing.
5. Remove adapter (7) and preformed packing (6) from right brake valve (5). Discard preformed packing.
6. Remove adapter (11) and preformed packing (12) from accumulator (13). Discard preformed packing.

**b. INSTALLATION**

1. Install new preformed packing (12) and adapter (11) on accumulator (13).
2. Install new preformed packing (6) and adapter (7) on right brake valve (5).
3. Install new preformed packing (8) and hose (9) on adapter (7).
4. Install new preformed packing (10) and hose (9) on adapter (11).

FOLLOW-ON TASKS:

- Bleed brakes (see paragraph 10-17).
- Install cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

10-15. ACCUMULATOR-TO-FORK/BRAKE HYDRAULIC PUMP HOSE AND FITTINGS REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Left side cab skirt removed (see paragraph 14-6).
- Right transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Three preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL**WARNING**

Pressure stored in accumulator is approximately 500 psi (3448 kPa). Ensure that accumulator pressure is relieved before removing service brake hoses or components. Failure to follow this warning may result in serious injury or death to personnel.

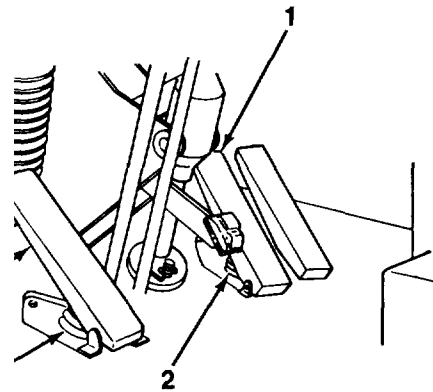
NOTE

- It is necessary to hold boot of one brake pedal with hand while opposite brake pedal is pumped. Movement inside boot will be felt as opposite brake pedal is pumped. Accumulator pressure is relieved when movement stops.
- Each brake pedal should be pumped a full 75 times even if no movement is felt after pumping brake pedal several times.

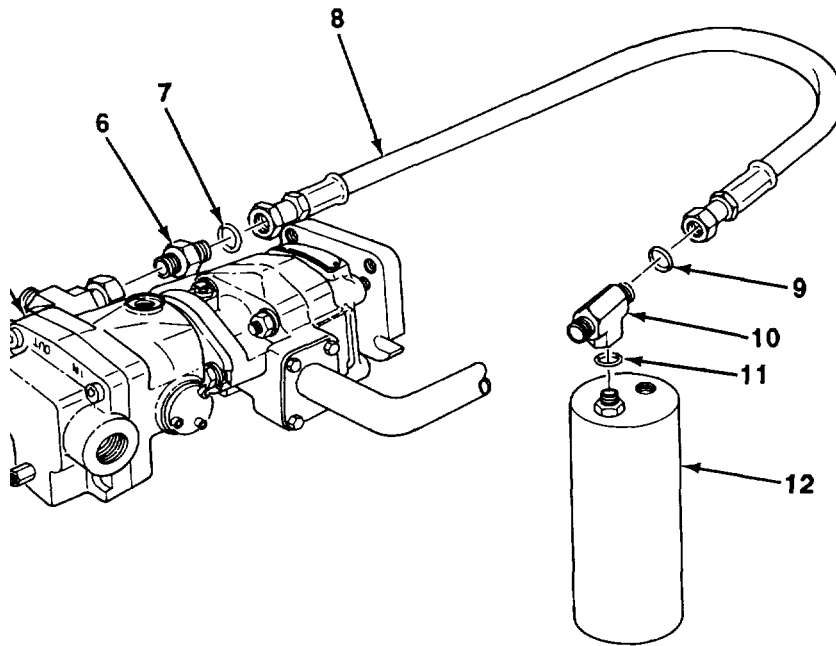
1. Hold boot (3) of left brake pedal (4) with hand and pump right brake pedal (1) 75 times. Release boot.

10-15. ACCUMULATOR-TO-FORK/BRAKE HYDRAULIC PUMP HOSE AND FITTINGS REPLACEMENT (Con't).

2. Hold boot (2) of right brake pedal (1) with hand and pump left brake pedal (4) 75 times. Release boot.

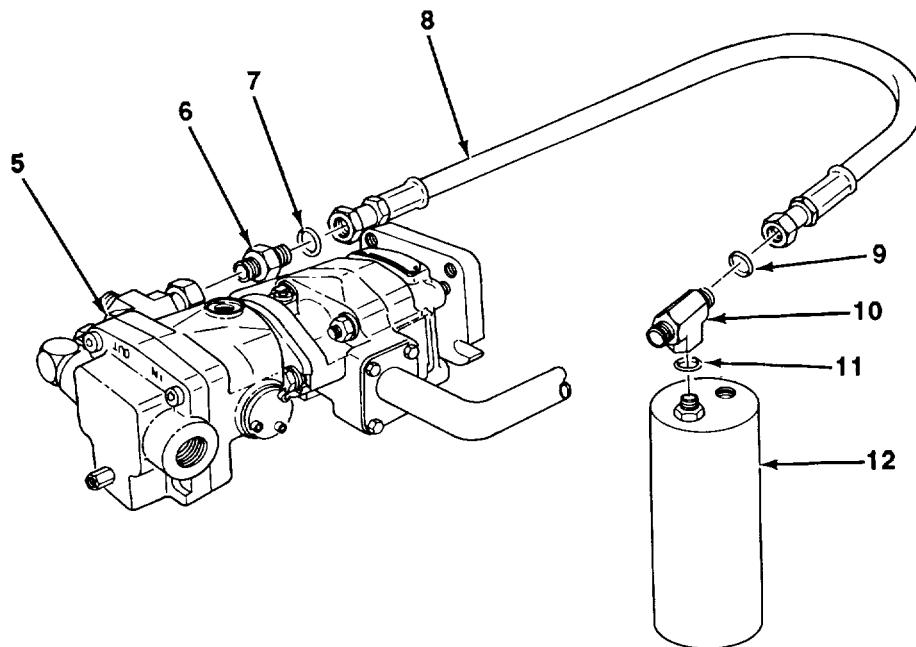


3. Remove hose (8) and preformed packing (9) from tee (10). Discard preformed packing.
4. Remove hose (8) and preformed packing (7) from adapter (6). Discard preformed packing.
5. Remove adapter (6) from fork/brake hydraulic pump (5).
6. Remove tee (10) and preformed packing (11) from accumulator (12). Discard preformed packing.



10-15. ACCUMULATOR-TO-FORK/BRAKE HYDRAULIC PUMP HOSE AND FITTINGS REPLACEMENT (Con't).**b. INSTALLATION**

1. Install new preformed packing (11) and tee (10) on accumulator (12).
2. Install adapter (6) on fork/brake hydraulic pump (5).
3. Install new preformed packing (7) and hose (8) on adapter (6).
4. Install new preformed packing (9) and hose (8) on tee (10).

**FOLLOW-ON TASKS:**

- Bleed brakes (see paragraph 10-17).
- Install right transmission side guard (see paragraph 14-7).
- Install left side cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

10-16. ACCUMULATOR-TO-ACCUMULATOR CROSSOVER LINE REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Left side cab skirt removed (see paragraph 14-6).

Materials/Parts:

- Two performed packings

References:

- TM 103930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

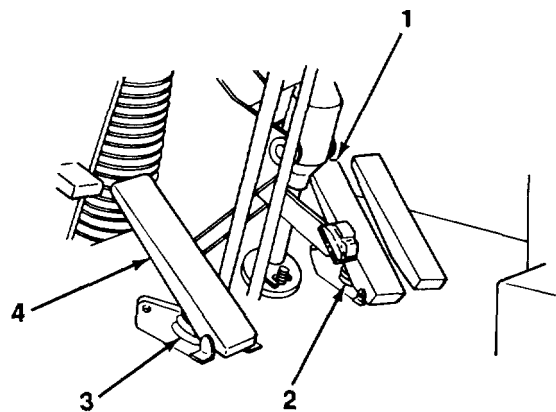
a. REMOVAL**WARNING**

Pressure stored in accumulator is approximately 500 psi (3448 kPa). Ensure that accumulator pressure is relieved before removing service brake hoses or components. Failure to follow this warning may result in serious injury or death to personnel.

NOTE

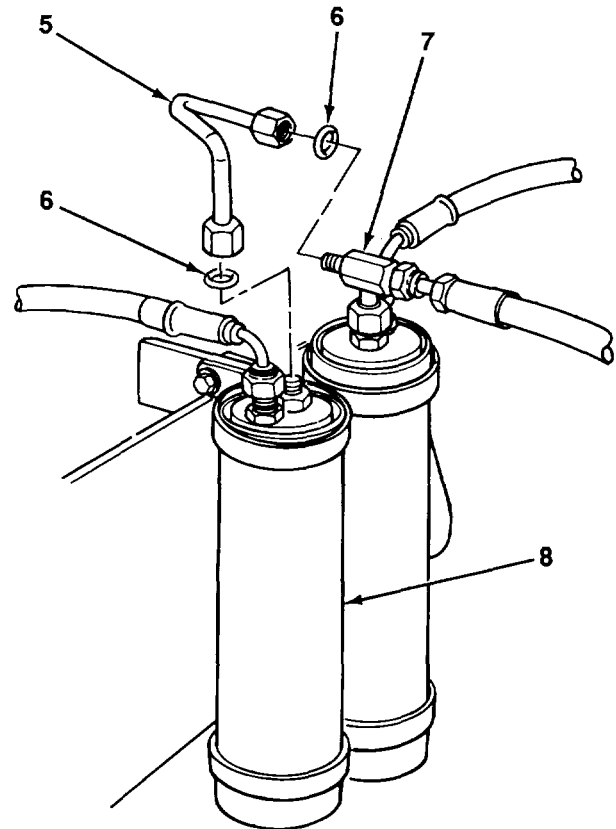
- It is necessary to hold boot of one brake pedal with hand while opposite brake pedal is pumped. Movement inside boot will be felt as opposite brake pedal is pumped. Accumulator pressure is relieved when movement stops.
- Each brake pedal should be pumped a full 75 times even if no movement is felt after pumping brake pedal several times.

1. Hold boot (3) of left brake pedal (4) with hand and pump right brake pedal (1) 75 times. Release boot.
2. Hold boot (2) of right brake pedal (1) with hand and pump left brake pedal (4) 75 times. Release boot.



10-16. ACCUMULATOR-TO-ACCUMULATOR CROSSOVER LINE REPLACEMENT (Con't).

3. Remove crossover line (5) from accumulator (8) and tee (7).
4. Remove two preformed packings (6) from accumulator (8) and tee (7).

**b. INSTALLATION**

1. Install two new preformed packings (6) on tee (7) and accumulator (8).
2. Install crossover line (5) on tee (7) and accumulator (8).
 - Bleed brake system (see paragraph 10-17).
 - Install left side cab skirt (see paragraph 14-6).
 - Remove frame locking bar (see TM 10-3930-659-10).

10-17. BRAKE SYSTEM BLEEDING.

This task covers: **Bleeding**

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-
- Loader frame cover removed (see paragraph 14-11).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Nonmetallic tubing (Item 40, Appendix C)

Personnel Required: Two**References:**

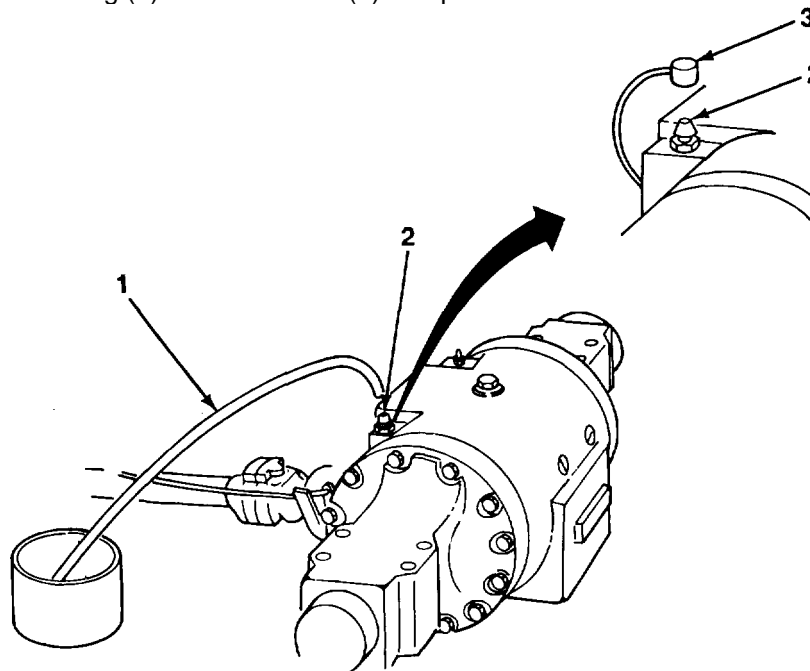
- TM 10-3930-659-10

NOTE

- A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.
- There are two bleed screws located on each differential. Repeat procedure for all bleed screws.

BLEEDING

1. Remove cap (3) from bleed screw (2).
2. Connect nonmetallic tubing (1) to bleed screw (2) and place free end of nonmetallic tubing in suitable container.



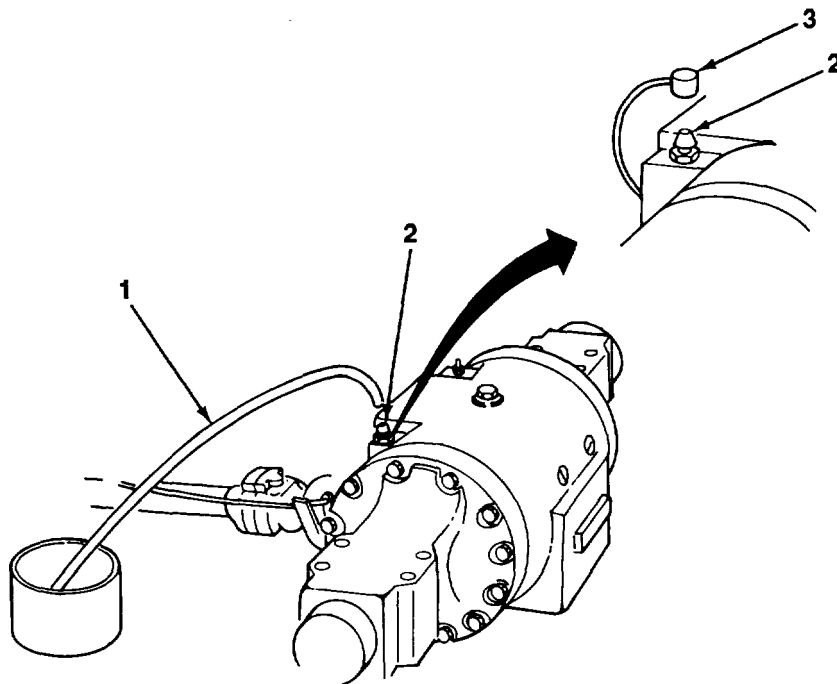
10-17. BRAKE SYSTEM BLEEDING.

3. Start engine and run at slow engine idle speed (see TM 10-3930-659-10).
4. Press and hold brake pedal. Open bleed screw (2) allowing hydraulic fluid to flow into suitable container.

NOTE

If air bubbles are present for more than three minutes, stop bleeding procedure and check for loose connections or leaks.

5. When hydraulic fluid contains no air bubbles, close bleed screw (2) and disconnect nonmetallic tubing (1).
6. Install cap (3) on bleed screw (2).
7. Release brake pedal and shut down engine (see TM 10-3930-659-10).

**FOLLOW-ON TASKS:**

- Check hydraulic reservoir fluid level and fill as necessary (see TM 10-3930-659-10).
- Install loader frame cover (see paragraph 14-11).
- Remove frame locking bar (see TM 10-3930-659-10).

**CHAPTER 11
WHEEL AND TIRE MAINTENANCE**

11-1. WHEEL AND TIRE MAINTENANCE.

This Task Covers:

- | | |
|------------|-----------------|
| a. Removal | c. Installation |
| b. Repair | |

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).

Personnel Required: Two

References:

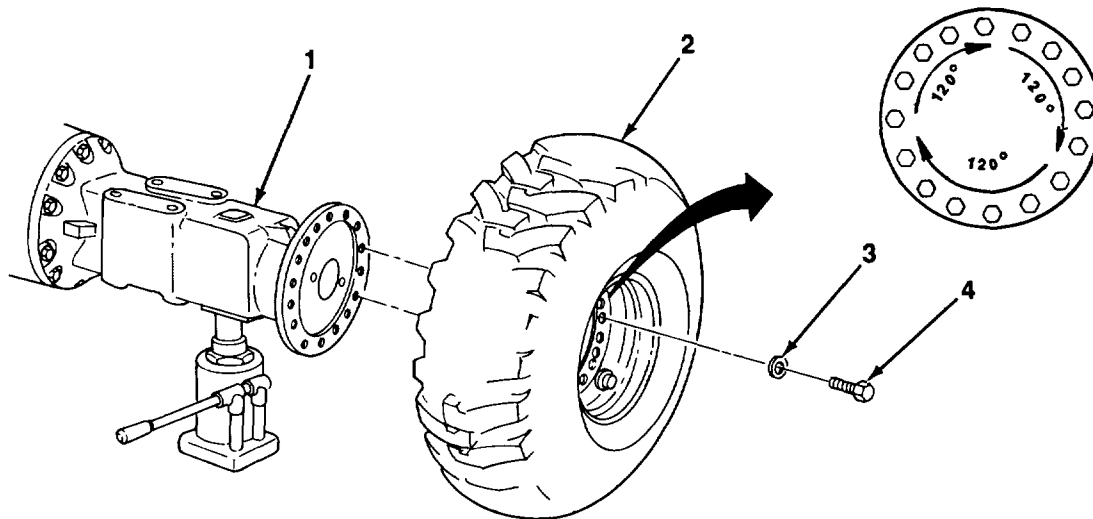
- TM 9-2610-200-14
- TM 10-3930-659-10

Tools/Test Equipment:

- Hydraulic jack, 12 ton (Item 21, Appendix F)
- Wheel lift truck (Item 46, Appendix F)
- Torque wrench, 0-600 lb.-ft. (Item 53, Appendix F)
- Socket wrench set, X in. drive (Item 55, Appendix F)
- Wheel alining studs (see TM 10-3930-659-10)

a. REMOVAL

1. Loosen, but do not remove, 16 capscrews (4) from wheel (2).
2. Position hydraulic jack under axle (1) near wheel (2) to be removed and raise forklift truck until wheel is off ground.
3. Position wheel lift truck under wheel (2) to be removed.



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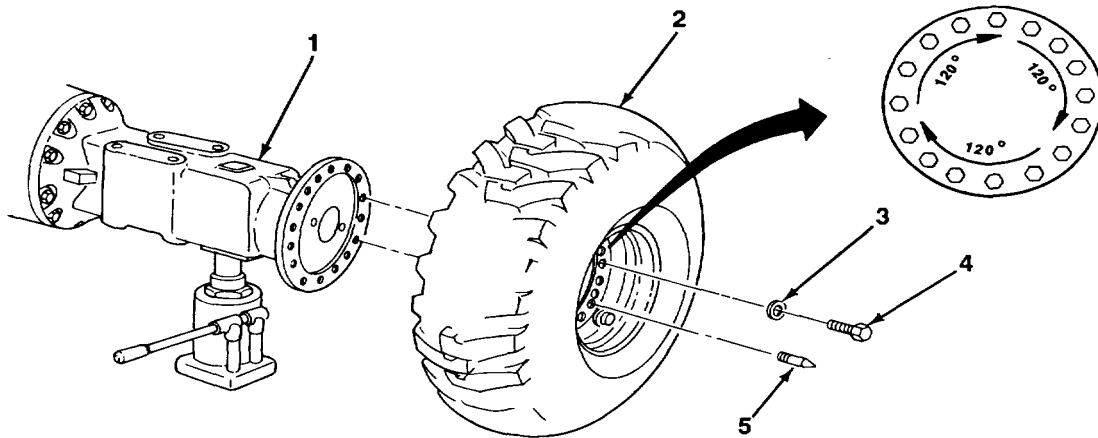
11-1. WHEELAND TIRE MAINTENANCE (Con't).

5. Install three wheel alining studs (5) in wheel (2).
6. Remove 13 capscrews (4) and washers (3) from wheel (2).

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

7. Using wheel lift truck, remove wheel (2) from axle (1).
8. Remove three wheel alining studs (5) from axle (1).

**b. REPAIR**

Refer to TM 9-2610-200-14 for instructions on dismounting and mounting tire, and for repairing tire.

c. INSTALLATION

1. Install three wheel alining studs (5), approximately 120° apart, in axle (1).

WARNING

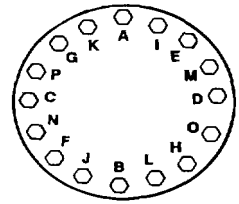
Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

2. Using wheel lift truck, position wheel (2) on axle (1).

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11-1. WHEEL AND TIRE MAINTENANCE (Con't).

3. Install 13 washers (3) and capscrews (4) on wheel (2).
4. Remove three wheel alining studs (5) from axle (1).
5. Install three washers (3) and capscrews (4) on wheel (2).
6. Remove wheel lift truck from under wheel (2).
7. Lower hydraulic lack until wheel (2) is on around. Remove hydraulic lack from under forklift truck.
8. Torque 16 capscrews (4) to 315 lb.-ft. (427 N•m) in sequence shown.

**TORQUE SEQUENCE**

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CHAPTER 12
STEERING SYSTEM MAINTENANCE

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12-1. STEERING SYSTEM LEAKAGE TEST.

This Task Covers:

- a. Steering System Leakage Test
- b. Crossover Relief Valve Pressure Test

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 103930659-10).
- Direction selector lever in N (Neutral) position and locked (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Hydraulic system warmed to operating temperature (see paragraph 2-29).
- Right and left side cab skirts removed (see paragraph 4-6).
- Right and left transmission side guards removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Fifteen preformed packings

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Cap (Item 5, Appendix F)
- Cap (Item 6, Appendix F)
- Pressure gage (Item 18, Appendix F)
- Hose assembly (Item 20, Appendix F)
- Plug (Item 29, Appendix F)
- Plug (Item 30, Appendix F)

Personnel Required: Two

References:

- TM 10-3930659-10

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. STEERING SYSTEM LEAKAGE TEST

1. Start engine and operate at fast engine idle speed (see TM 103930-659-10).

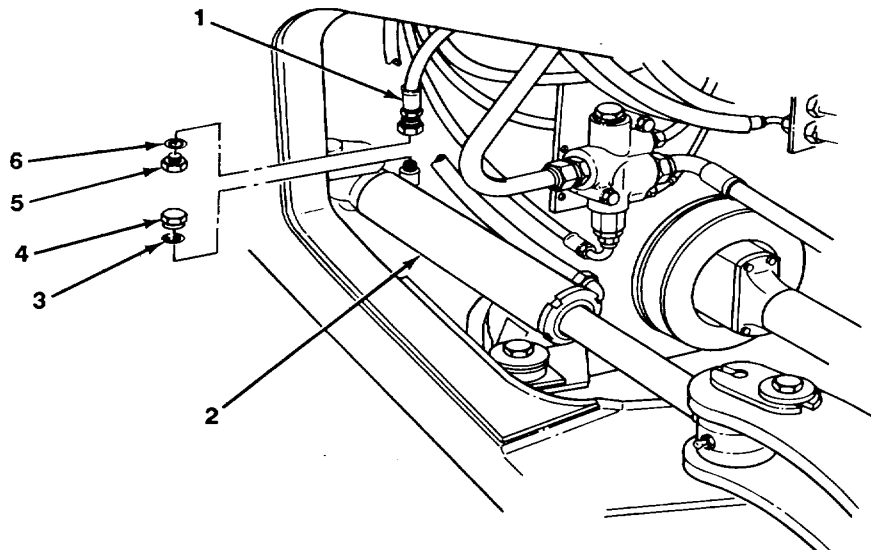
NOTE

- **Some rotation of steering wheel is normal. Excessive rotation of steering wheel while frame is locked indicates leakage in steering system. This test will identify which steering system component is leaking.**
- **Steering wheel must be turned rapidly to obtain an accurate count of the revolutions per minute.**

2. Holding firm, constant pressure on steering wheel, turn steering wheel rapidly for one minute counting number of steering wheel revolutions. Repeat step turning steering wheel in opposite direction. Steering wheel must rotate less than 5 revolutions per minute in each direction. If steering wheel revolutions per minute count is within specification, test is complete and no leakage is indicated. If steering wheel revolutions per minute count is not within specification, perform step 3.
3. Shut down engine (see TM 103930-659-10).

12-1. STEERING SYSTEM LEAKAGE TEST (Con't).

4. Remove hose (1) and preformed packing (6) from steering cylinder (2). Discard preformed packing.
5. Install new preformed packing (6) and plug (5) on hose (1).
6. Install preformed packing (3) and cap (4) on steering cylinder (2).
7. Repeat steps 4 through 6 for other steering cylinder (2).
8. Repeat steps 1 and 2. If steering wheel revolutions per minute count is within specification, crossover relief valve is leaking or priority valve pressure setting is low.
9. Remove cap (4) and preformed packing (3) from steering cylinder (2). Discard preformed packing.
10. Remove plug (5) and preformed packing (6) from hose (1). Discard preformed packing.
11. Install new preformed packing (6) and hose (1) on steering cylinder (2).
12. Repeat steps 9 through 11 for other steering cylinder (2).

**NOTE**

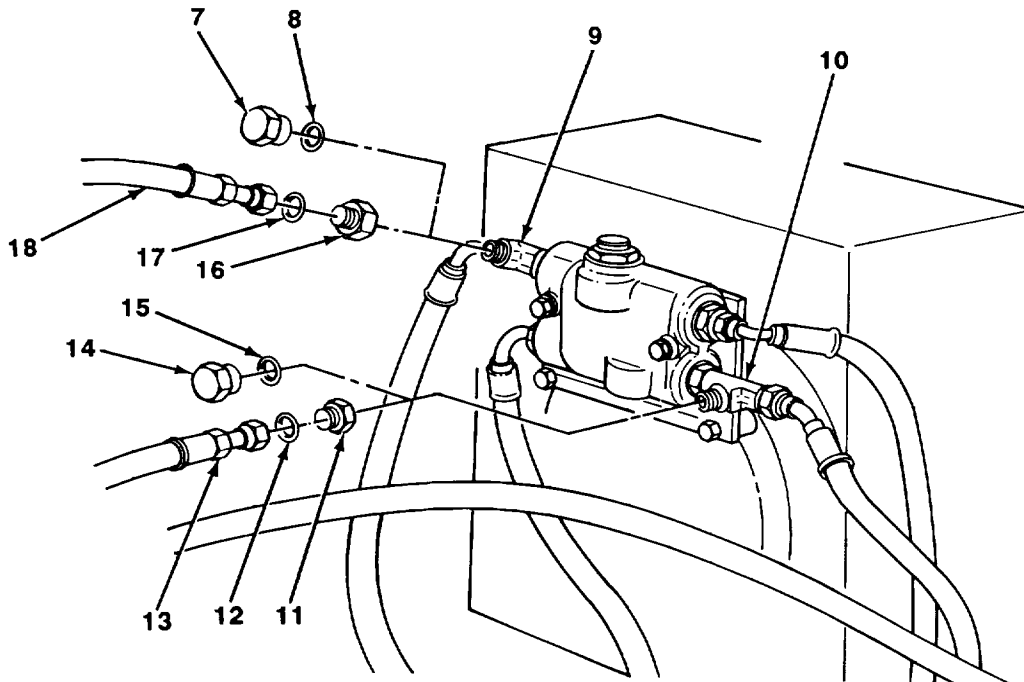
- Perform step 13 only if steering wheel revolutions per minute count was within specification in step 8.
- Perform steps 14 through 26 only if steering wheel revolutions per minute count was not within specification in step 8.

13. Perform crossover relief valve pressure test (see subparagraph b).

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12-1. STEERING SYSTEM LEAKAGE TEST (Con't).

14. Remove hose (18) and preformed packing (17) from tee (9). Discard preformed packing.
15. Install preformed packing (8) and plug (7) on tee (9).
16. Install new preformed packing (17) and plug (16) on hose (18).
17. Remove hose (13) and preformed packing (12) from tee (10). Discard preformed packing.
18. Install preformed packing (15) and cap (14) on tee (10).
19. Install new preformed packing (12) and plug (11) on hose (13).
20. Repeat steps 1 and 2. If steering wheel revolutions per minute count is greater than specification, notify Direct Support Maintenance. If steering wheel revolutions per minute count is within specification, test is complete and no longer is indicated.



21. Remove plug (11) and preformed packing (12) from hose (13). Discard preformed packing.
22. Remove cap (14) and preformed packing (15) from tee (10). Discard preformed packing.
23. Install new preformed packing (12) and hose (13) on tee (10).
24. Remove plug (16) and preformed packing (17) from hose (18). Discard preformed packing.

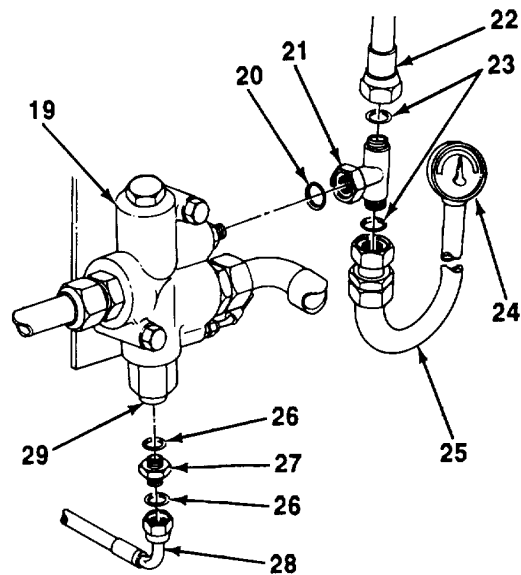
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12-1. STEERING SYSTEM LEAKAGE TEST (Con't).

25. Remove plug (7) and preformed packing (8) from tee (9). Discard preformed packing.
26. Install new preformed packing (17) and hose (18) on tee (9).

b. CROSSOVER RELIEF VALVE PRESSURE TEST

1. Warm hydraulic system to operating temperature (see paragraph 2-29).
2. Remove hose (22) and preformed packing (20) from priority valve (19). Discard preformed packing.
3. Install tee (21) and new preformed packing (20) on priority valve (19).
4. Install two preformed packings (23) on tee (21).
5. Install hose (22) on tee (21).
6. Install hose (25) and pressure gage (24) on tee (21).
7. Remove hose (28) from adapter (27).
8. Remove adapter (27) and two preformed packings (26) from priority valve (19). Discard preformed packings.
9. Turn adjusting screw (29) clockwise one-eighth turn.
10. Install two new preformed packings (26) and adapter (27) on priority valve (19).
11. Install hose (28) on adapter (27).
12. Start engine and run at slow engine idle speed (see TM 10-3930-659-10).

**NOTE**

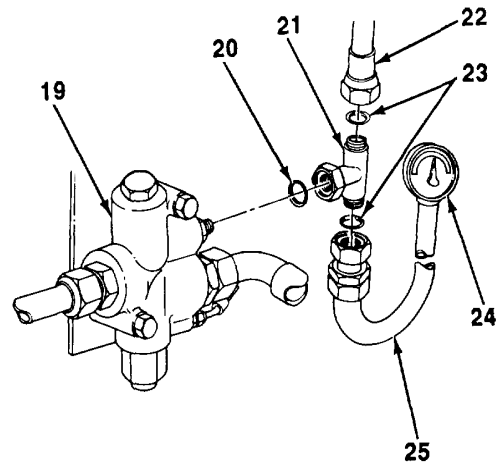
Steering wheel must be turned rapidly to obtain accurate pressure reading.

13. Holding firm, constant pressure on steering wheel, turn steering wheel rapidly and note reading on pressure gage (24).
14. Repeat steps 7 through 13 until pressure reading on pressure gage (24) does not increase from previous reading.

TA707549

12-1. STEERING SYSTEM LEAKAGE TEST (Con't).

15. Holding firm, constant pressure on steering wheel, turn steering wheel rapidly and note pressure reading on pressure gage (24). Repeat step turning steering wheel in opposite direction. Pressure gage should read 3000-3200 psi (20,685-22,064 kPa). If pressure reading is not within specification, replace crossover relief valve (see paragraph 12-25).
16. Shut down engine (see TM 10-3930-659-10).
17. Remove pressure gage (24) and hose (25) from tee (21).
18. Remove hose (22) from tee (21).
19. Remove two preformed packings (23) from tee (21). Discard preformed packings.
20. Remove tee (21) and preformed packing (20) from priority valve (19). Discard preformed packing.
21. Install new preformed packing (20) and hose (22) on priority valve (19).
22. Perform priority valve relief pressure test (see paragraph 12-27).

**FOLLOW-ON TASKS:**

- Install right and left transmission side guards (see paragraph 14-7).
- Install right and left side cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707550

12-2. STEERING WHEEL REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).

Materials/Parts:

- Antiseizing tape (Item 34, Appendix C)

Tools/Test Equipment:

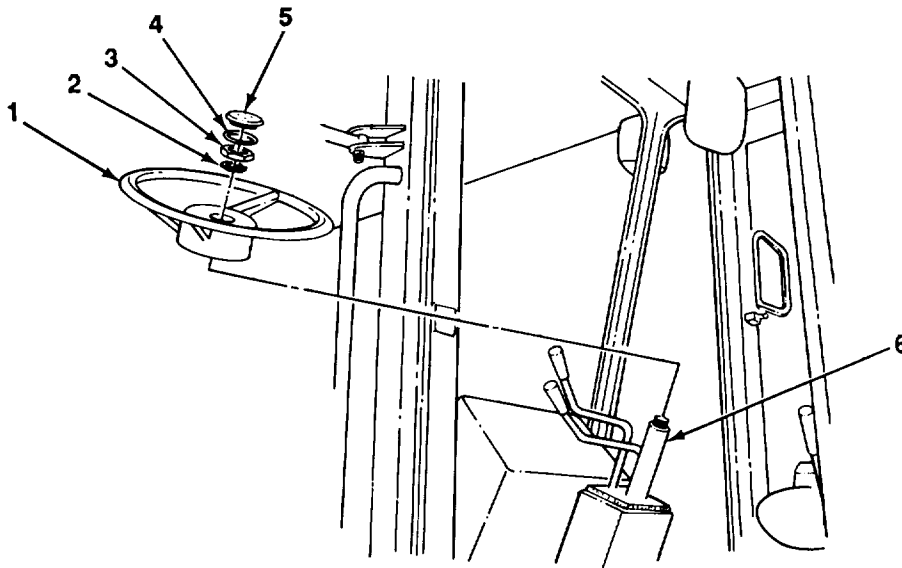
- General mechanic's tool kit (Item 44, Appendix F)
- Mechanical puller kit (Item 32, Appendix F)
- Torque wrench, 0-175 lb.-ft. (Item 52, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL

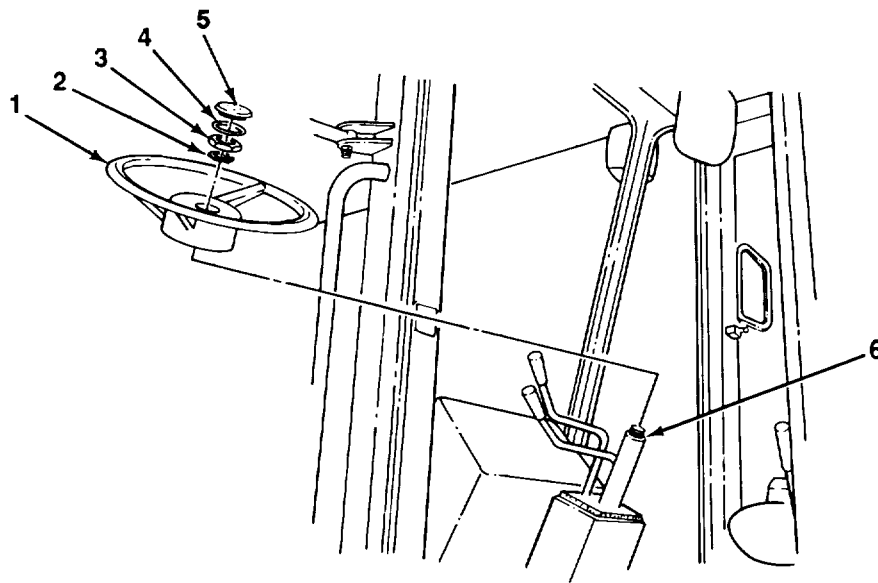
1. Remove access cover (5) from steering wheel (1).
2. If damaged, remove preformed packing (4) from access cover (5). Discard preformed packing.
3. Bend tab of lockwasher (2), and remove nut (3) and lockwasher from steering column (6).
4. Remove steering wheel (1) from steering column (6).



TA707551

12-2. STEERING WHEEL REPLACEMENT (Con't).**b. INSTALLATION**

1. Install steering wheel (1) and lockwasher (2) on steering column (6).
2. Apply antiseizing tape to threads on steering column (6).
3. Install nut (3) on steering column (6). Torque nut to 50 lb.-ft. (68 Nom).
4. Bend tab of lockwasher (2) over nut (3).
5. If removed, install new preformed packing (4) on access cover (5).
6. Install access cover (5) on steering wheel (1).



TA707552

12-3. STEERING COLUMN MAINTENANCE.

This Task Covers:

- | | |
|----------------|-----------------|
| a. Removal | c. Assembly |
| b. Disassembly | d. Installation |

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Steering wheel removed (see paragraph 12-2).
- Transmission shift rods removed (see paragraph 7-3).

Materials/Parts:

- Three locknuts
- Seven springpins

References:

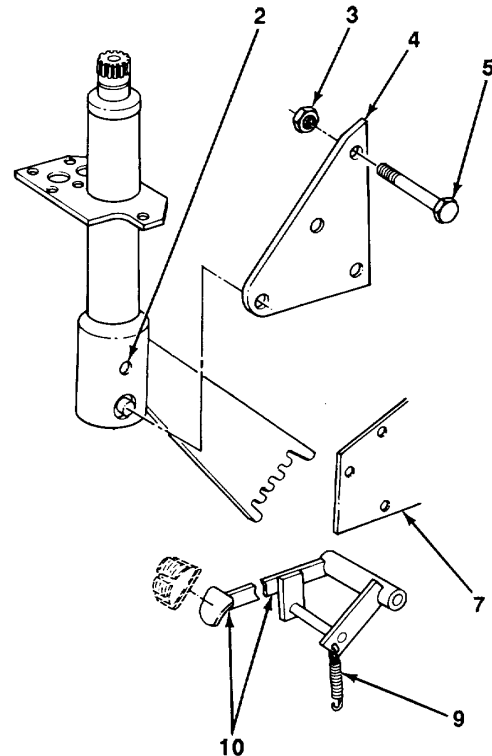
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Torque wrench, 0-175 lb.-ft. (Item 52, Appendix F)

a. REMOVAL

1. Disconnect spring (9) from steering column pin (2).
2. Remove three locknuts (3), screws (5), steering column latch (10), and steering plate (4) from bracket (7). Discard locknuts.



TA707553

12-3. STEERING COLUMN MAINTENANCE (Con't).

3. Loosen two screws (14) and remove steering support (13) from shaft (15) and column (12).

b. DISASSEMBLY**NOTE**

- **Access to springpins is through hole in steering column housing.**
- **Steering column is not repairable. If damaged it must be replaced.**

1. Remove three springpins (17) and steering shaft (1) from universal joint (18). Discard springpins.
2. Remove three springpins (16) and universal joint (18) from shaft (15). Discard springpins.
3. Remove spring (9) from steering column latch (10).
4. Remove pad (11) from steering column latch (10).
5. Remove springpin (8) from steering column latch (10). Discard springpin.

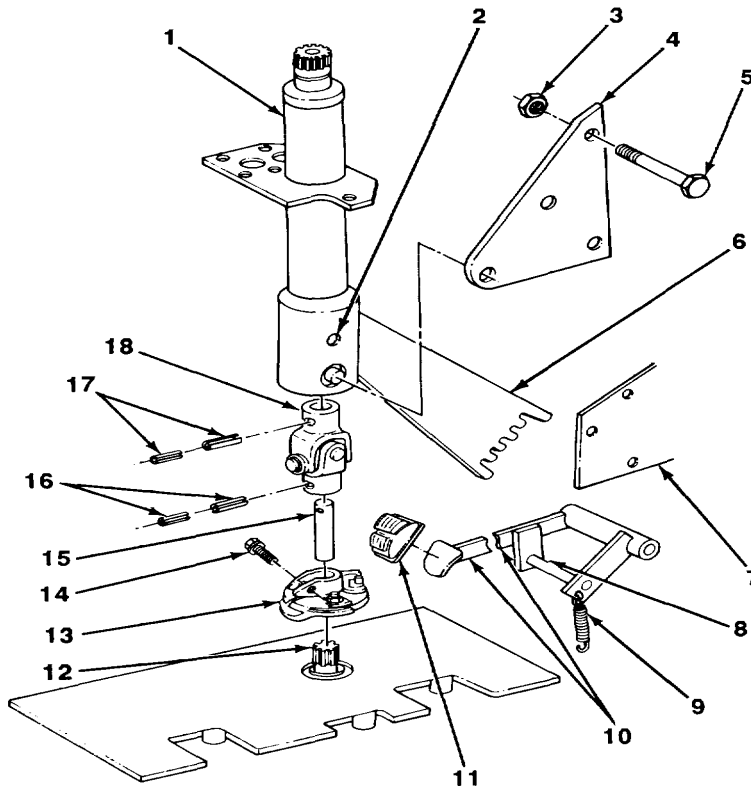
c. ASSEMBLY

1. Install new springpin (8) on steering column latch (10).
2. Install pad (11) on steering column latch (10).
3. Install spring (9) on steering column latch (10).
4. Install universal joint (18) on shaft (15) with three new springpins (16).
5. Install steering shaft (1) on universal joint (18) with three new springpins (17).

d. INSTALLATION

1. Position steering support (13) and shaft (15) on column (12), and install two screws (14). Torque screws to
2. Position steering shaft (1) so that notches in extension (6) are engaged with springpin (8).
3. Move steering shaft (1) through full range of pivot travel. Ensure that in forward position, steering shaft does not hit dash panel. If it does, repeat step 2.
4. Install steering column latch (10) and steering plate (4) on bracket (7) and steering shaft (1) with three screws (5) and new locknuts (3).
5. Connect spring (9) on steering column pin (2).

12-3. STEERING COLUMN MAINTENANCE (Con't).



FOLLOW-ON TASKS:

- Install transmission shift rods (see paragraph 7-3).
- Install steering wheel (see paragraph 12-2).

TA707554

12-4. SECONDARY STEERING PUMP RELIEF VALVE PRESSURE TEST.

This Task Covers: Pressure Test

Initial Setup

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-10).
- Hydraulic system warmed to operating temperature (see paragraph 2-29).
- Cab skirts removed (see paragraph 14-6).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Four preformed packings

Personnel Required: Two**References:**

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
 - Pressure gage (Item 18, Appendix F)
 - Hose assembly (Item 20, Appendix F)
 - Tee (Item 38, Appendix F)
-

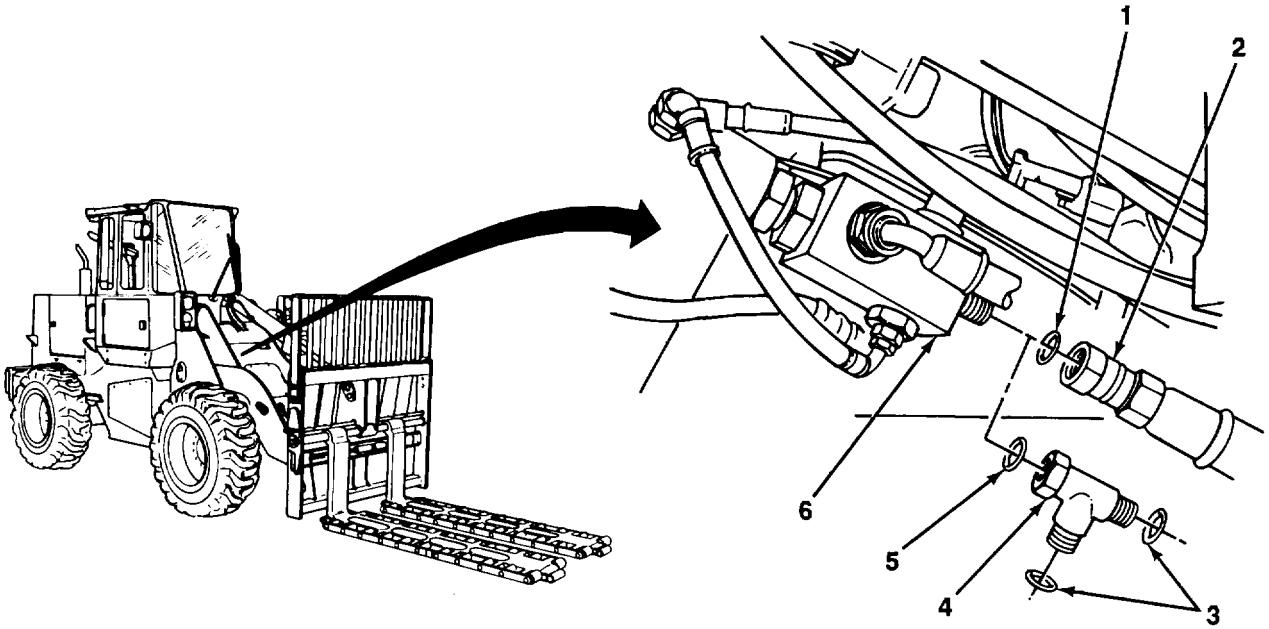
NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

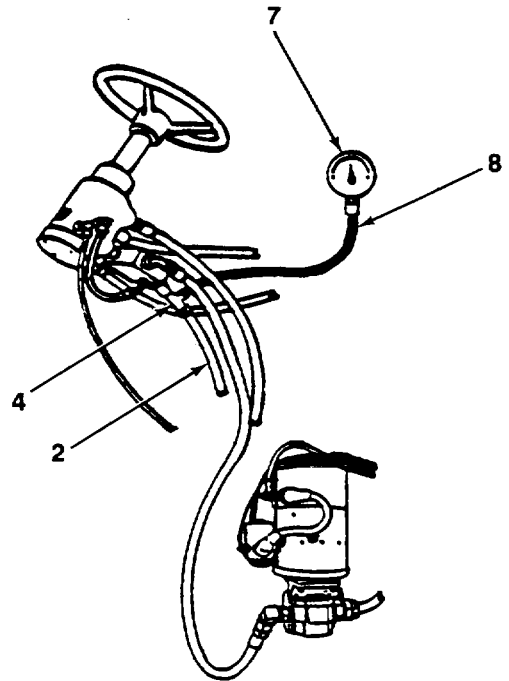
PRESSURE TEST

1. Remove hose (2) and preformed packing (1) from secondary steering manifold (6). Discard preformed packing.
2. Install preformed packing (5) and tee (4) on secondary steering manifold (6).
3. Install two preformed packings (3) on tee (4).

12-4. SECONDARY STEERING PUMP RELIEF VALVE PRESSURE TEST (Con't).



4. Install hose (8) and pressure gage (7) on tee (4).
5. Install hose (2) on tee (4).



TA707555

12-4. SECONDARY STEERING PUMP RELIEF VALVE PRESSURE TEST (Con't).**CAUTION**

DO NOT operate secondary steering pump and secondary steering pump motor for more than 15 seconds. Failure to follow this caution may damage secondary steering pump and secondary steering pump motor.

NOTE

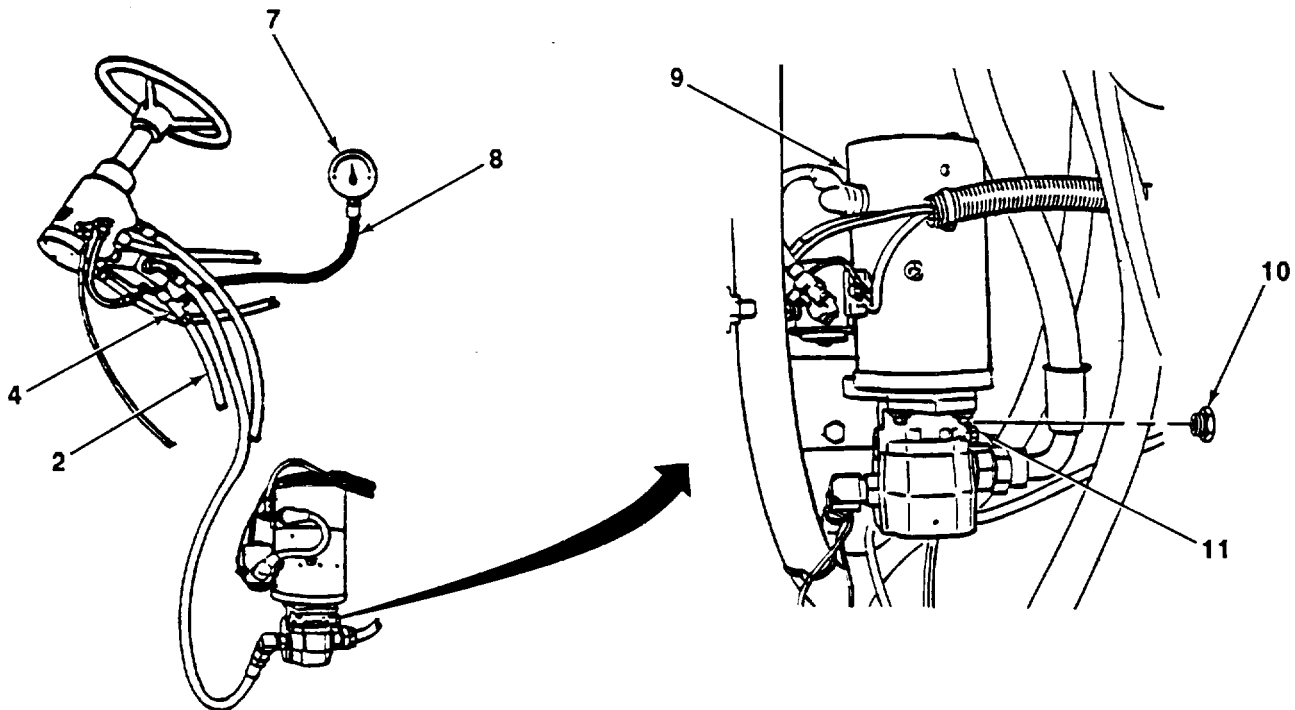
Ensure that engine does not start when operating ignition switch.

6. Turn ignition switch to START position and release to activate secondary steering pump.
7. Note pressure reading on pressure gage (7). Pressure reading must be 500-600 psi (3448-4137 kPa).

NOTE

Perform steps 8 through 13 only if pressure reading is not within specification.

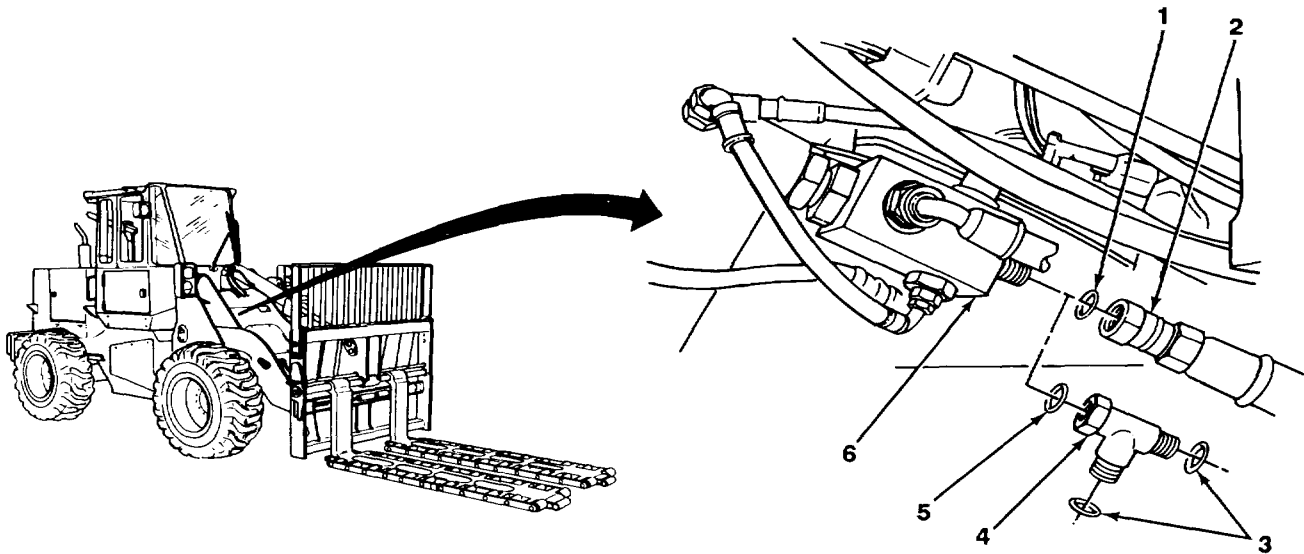
8. Open left engine upper sideshield (see TM 10-3930-659-10).
9. Remove plug (10) and turn adjusting screw (11) until pressure reading on pressure gage (7) is within specification.
10. Install plug (10) on secondary steering pump (9).



TA707556

12-4. SECONDARY STEERING PUMP RELIEF VALVE PRESSURE TEST (Con't).

11. If pressure cannot be adjusted, perform secondary steering manifold primary check valve leakage test (see paragraph 12-20) and steering valve neutral leakage test (see paragraph 12-23).
12. Repeat steps 6 and 7.
13. If pressure reading on pressure gage (7) is not within specification, replace secondary steering pump (see paragraph 12-5).
14. Remove pressure gage (7) and hose (8) from tee (4).
15. Remove hose (2) from tee (4).
16. Remove tee (4), two preformed packings, (3), and preformed packing (5) from secondary steering manifold (6). Discard preformed packings.
17. Install new preformed packing (1) and hose (2) on secondary steering manifold (6).

**FOLLOW-ON TASKS:**

- Install cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707557

12-5. SECONDARY STEERING PUMP, MOTOR, AND SOLENOID MAINTENANCE.

This Task Covers:

- | | |
|----------------|-----------------|
| a. Removal | c. Assembly |
| b. Disassembly | d. Installation |

Initial Setup:

Equipment Conditions:

- Frame locking bar installed (see TM 10-3930-659-10).
- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).
- Left engine lower sideshield removed (see paragraph 14-16).
- Secondary steering pump-to-secondary steering manifold hose and fittings removed (see paragraph 12-17).
- Secondary steering pump-to-hydraulic return oil filter hose and fittings removed (see paragraph 12-18).

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- One gasket
- One seal
- One starwasher
- Seven lockwashers

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Personnel Required: Two

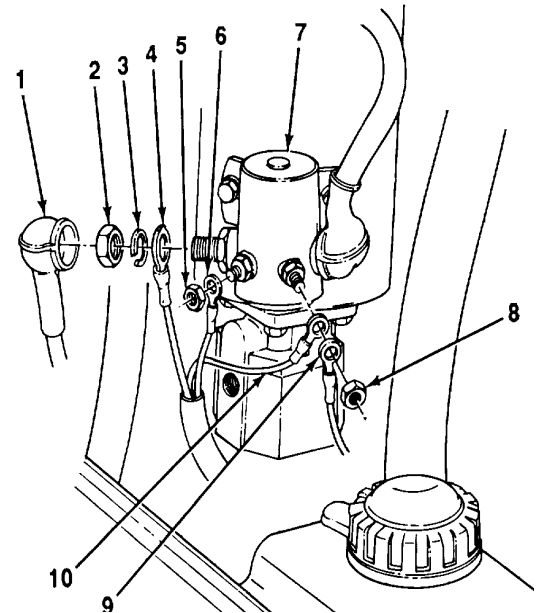
References:

a. REMOVAL

NOTE

All wires should be tagged before removal. Refer to paragraph 2-18 for tagging instruction

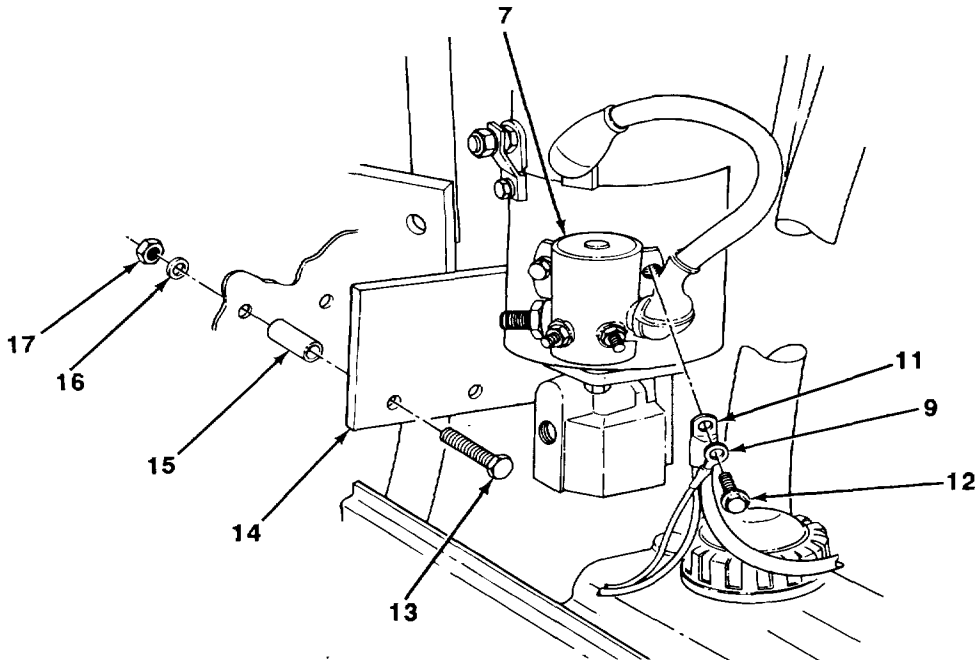
1. Pull back rubber boot (1) and remove nut (2), washer (3), and secondary steering wiring harness wire (4) from solenoid (7). Discard lockwasher.
2. Remove nut (5) and secondary steering harness wire (6) from solenoid (7).
3. Remove nut (8), wire (9), and secondary steering wiring harness wire (10) from solenoid (7).



TA707558

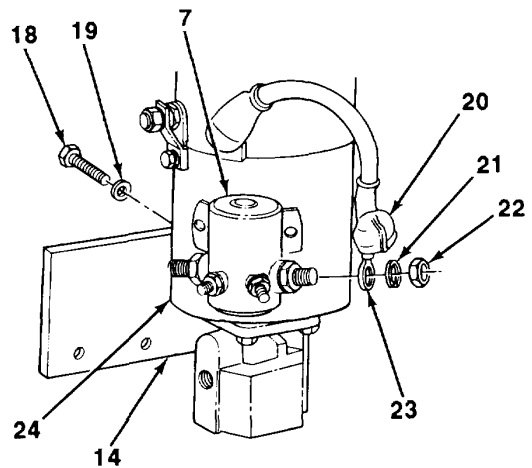
12-5. SECONDARY STEERING PUMP, MOTOR, AND SOLENOID MAINTENANCE (Con't).

4. Remove screw (12), wire (9), and secondary steering wiring harness wire (11) from solenoid (7).
5. Remove two nuts (17), washers (16), spacers (15), screws (13), and plate (14) from forklift truck.



b. DISASSEMBLY

1. Remove two screws (18), washers (19), and secondary steering pump motor (24) from plate (14).
2. Pull back rubber boot (20) and remove nut (22), lockwasher (21), and jumper wire (23) from solenoid (7). Discard lockwasher.



TA707559

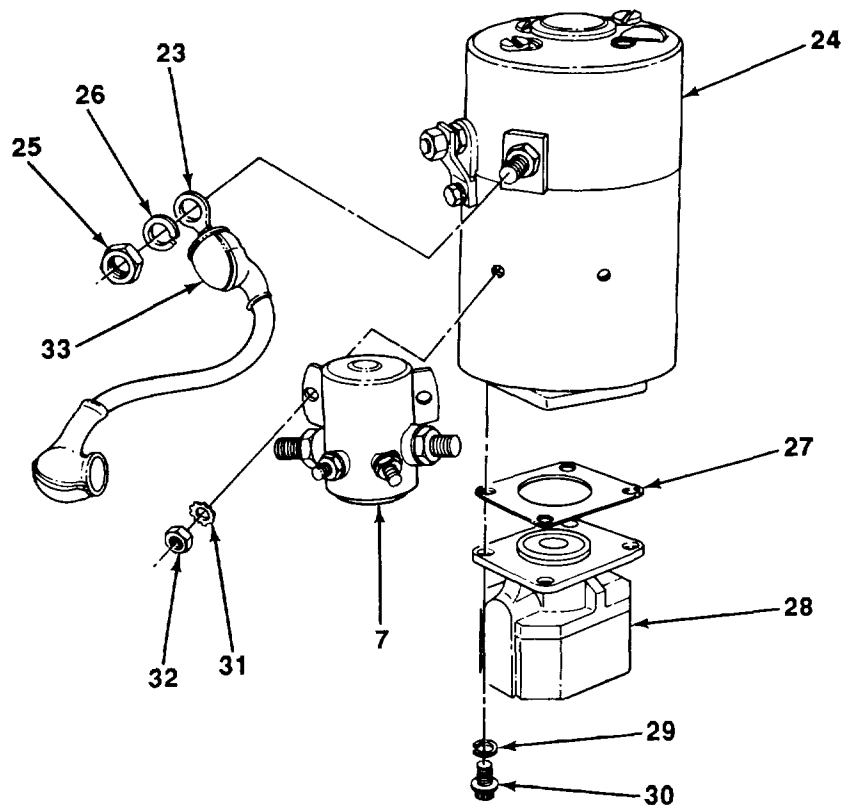
12-5. SECONDARY STEERING PUMP, MOTOR, AND SOLENOID MAINTENANCE (Con't).

3. Pull back rubber boot (33) and remove nut (25), lockwasher (26), Jumper wire (23), and rubber boot from secondary steering pump motor (24). Discard lockwasher.
4. Remove screw (32), starwasher (31), and solenoid (7) from secondary steering pump motor (24). Discard starwasher.

NOTE

Secondary steering pump and secondary steering pump motor should be marked to aid during installation.

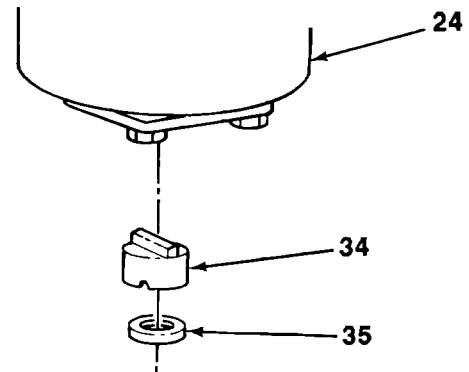
5. Remove four screws (30), lockwashers (29), secondary steering pump (28), and gasket (27) from secondary steering pump motor (24). Discard gasket and lockwashers.



TA707560

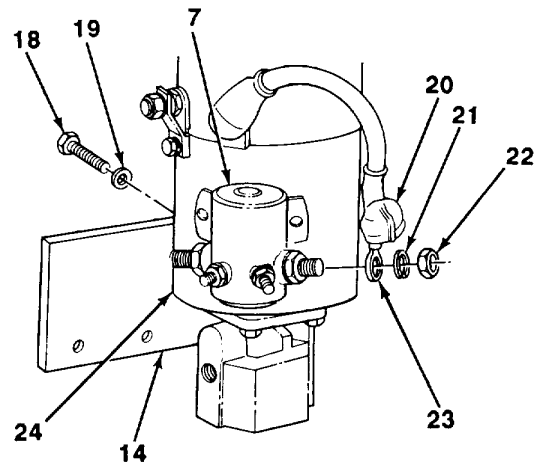
12-5. SECONDARY STEERING PUMP, MOTOR, AND SOLENOID MAINTENANCE (Con't).

6. Remove coupling (34) and seal (35) from secondary steering pump motor (24). Discard seal.



c. ASSEMBLY

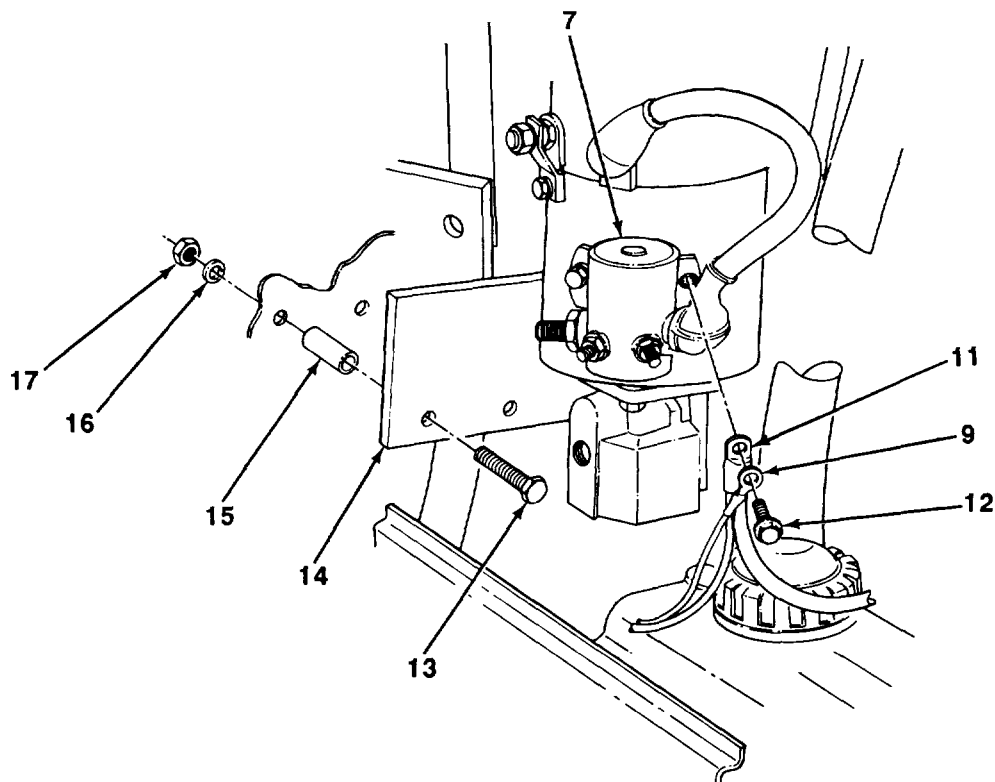
1. Install new seal (35) and coupling (34) on secondary steering pump motor (24).
2. Install new gasket (27) and secondary steering pump (28) on secondary steering pump motor (24) with four new lockwashers (29) and screws (30).
3. Install solenoid (7) on secondary steering pump motor (24) with new starwasher (31) and screw (32).
4. Install jumper wire (23) on secondary steering pump motor (24) with new lockwasher (26) and nut (25).
5. Install rubber boot (33) over nut (25).
6. Install jumper wire (23) on solenoid (7) with new lockwasher (21) and nut (22).
7. Install boot (20) over nut (22).
8. Install secondary steering pump motor (24) on plate (14) with two washers (19) and screws (18).



TA707561

12-5. SECONDARY STEERING PUMP, MOTOR, AND SOLENOID MAINTENANCE (Con't).**d. INSTALLATION**

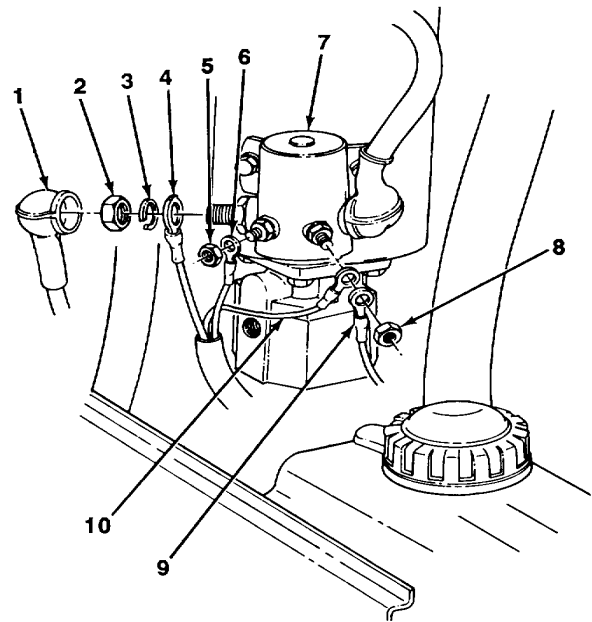
1. Install plate (14) on forklift truck with two spacers (15), screws (13), washers (16), and nuts (17).
2. Install secondary steering wiring harness wire (11) and wire (9) on solenoid (7) with screw (12).



TA707562

12-5. SECONDARY STEERING PUMP, MOTOR, AND SOLENOID MAINTENANCE (Con't).

3. Install secondary steering wiring harness (10) and wire (9) on solenoid (7) with nut (8).
4. Install secondary steering wiring harness wire on solenoid (7) with nut (5).
5. Install secondary steering wiring harness wire on solenoid (7) with new lockwasher (3) and (2).
6. Install rubber boot (1) over nut (2).

**FOLLOW-ON TASKS**

- Install secondary steering pump-to-hydraulic return oil filter hose and fittings (see paragraph 12-18).
- Install secondary steering pump-to-secondary steering manifold hose and fittings (see paragraph 12-17).
- Install left engine lower sideshield (see paragraph 14-16).
- Close left engine upper sideshield (see TM 10-3930-659-10).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707563

12-6. PRIORITY VALVE-TO-HYDRAULIC RESERVOIR RETURN HOSE REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Equipment Conditions:

- Frame locking bar Installed (see TM 10-3930-659-10).
- Hydraulic reservoir drained (see LO 10-3930-659-12).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).
- Right transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Four preformed packings

Tools/Test Equipment:

- General mechanic's tool kit (Item 44 Appendix F)

References:

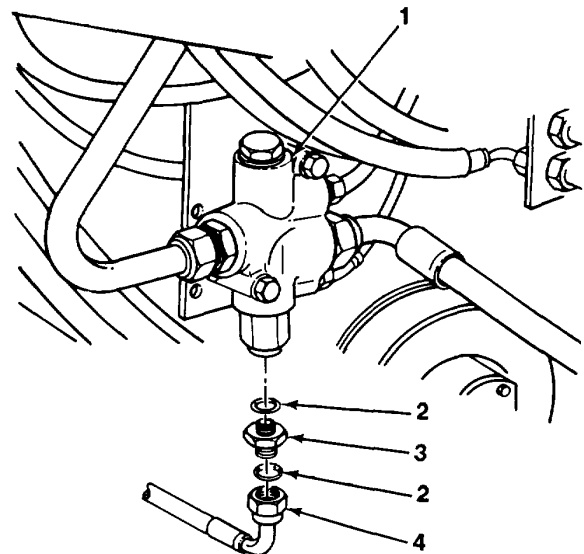
- LO 103930-659-12
- TM 10-3930-659-10

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

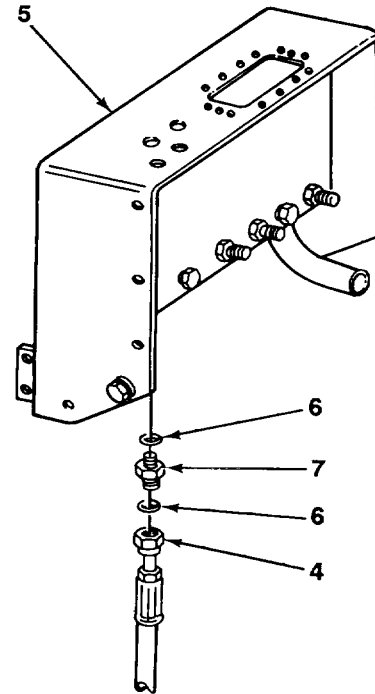
1. Remove hose (4) from adapter (3).
2. Remove adapter (3) and two preformed packings (2) from priority valve (1). Discard preformed packings.



TA707564

12-6. PRIORITY VALVE-TO-HYDRAULIC RESERVOIR RETURN HOSE REPLACEMENT (Con't).

3. Remove hose (4) from adapter (7).
4. Remove adapter (7) and two preformed packings (6) from hydraulic reservoir (5). Discard preformed packings.

**b. INSTALLATION**

1. Install two new preformed packings (6) and adapter (7) on hydraulic reservoir (5).
2. Install hose (4) on adapter (7).
3. Install two new preformed packings (2) and adapter (3) on priority valve (1).
4. Install hose (4) on adapter (3).

FOLLOW-ON TASKS:

- Fill hydraulic reservoir with hydraulic fluid and check for leaks (see TM 10-3930-659-10).
- Install right transmission side guard (see paragraph 14-7).
- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707565

12-7. HYDRAULIC OIL RETURN TUBE REPLACEMENT.*This Task Covers:*

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

*Initial Setup:***Equipment Conditions:**

- Frame locking bar installed (see TM 10-3930-659-10).
- Hydraulic reservoir drained (see LO 10-3930-659-12).
- Hydraulic oil return tube-to-forklift control valve hose and fittings removed (see paragraph 12-14).
- Hydraulic oil return tube-to-steering valve hose and fittings removed (see paragraph 12-16).
- Hydraulic oil return filter-to-priority valve line and fittings removed (see paragraph 17-38).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Two preformed packings

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Adjustable wrench (Item 49, Appendix F)

References:

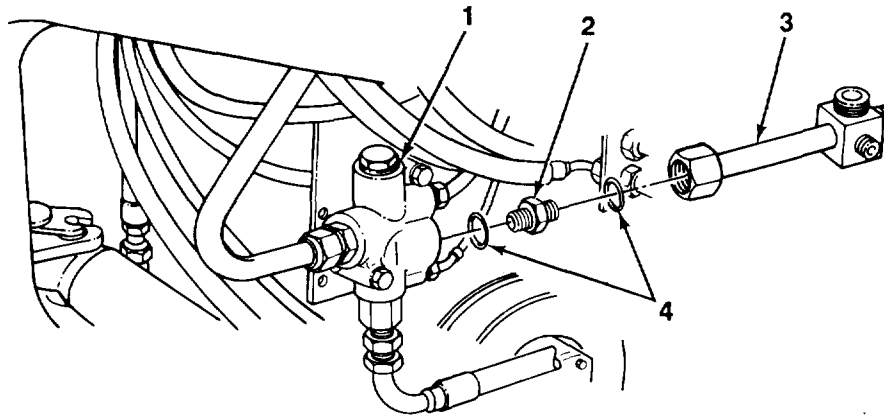
- LO 13930659-12
- TM 103930-659-10

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

1. Remove hydraulic oil return tube (3) from adapter (2).
2. Remove adapter (2) and two preformed packings (4) from priority valve (1). Discard preformed packings>



TA707566

12-7. HYDRAULIC OIL RETURN TUBE REPLACEMENT (Con't).

b. INSTALLATION

1. Install two new preformed packings (4) and adapter (2) on priority valve (1).
2. Install hydraulic oil return tube (3) on adapter (2).

FOLLOW-ON TASKS:

- Install hydraulic oil return filter-to-priority valve line and fittings (see paragraph 17-38).
- Install hydraulic oil return tube-to-steering valve hose and fittings (see paragraph 12-16).
- Install hydraulic oil return tube-to-forklift control valve hose and fittings (see paragraph 12-14).
- Fill hydraulic reservoir with hydraulic fluid and check for leaks (see TM 10-3930-659-10).
- Remove frame locking bar (see TM 10-3930-659-10).

12-8. PRIORITY VALVE-TO-MAIN HYDRAULIC PUMP LINE REPLACEMENT.*This Task Covers:*

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

*Initial Setup:***Equipment Conditions:**

- Frame locking bar installed (see TM 10-3930-659-10).
- Hydraulic reservoir drained (see LO 10-3930-659-12)
- Right transmission side guard removed (see paragraph 14-7)

Materials/Parts:

- Rags (Item 27, Appendix C)
- Three preformed packings

References:

- LO 10-3930-659-12
- TM 10-3930659-10

Tools/Test Equipment:

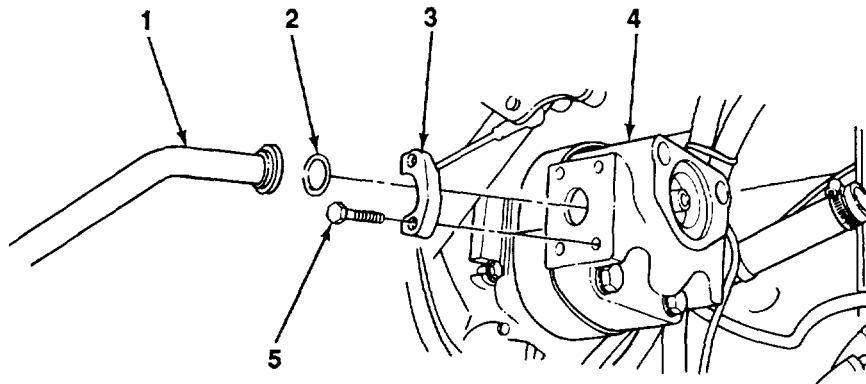
- General mechanic's tool kit (Item 44, Appendix F)
- Adjustable wrench (Item 49, Appendix F)

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

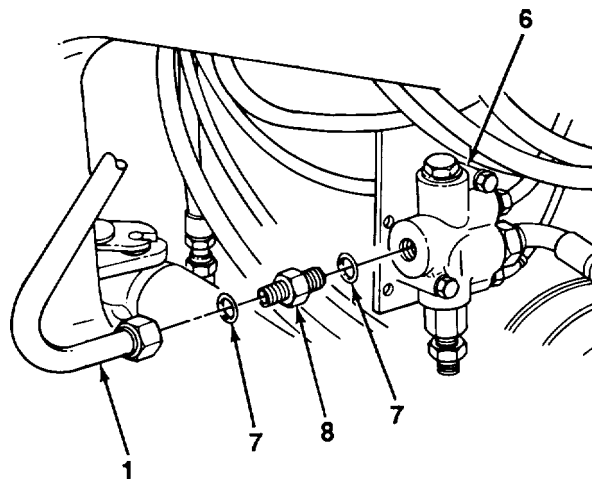
1. Remove four screws (5), two flanges (3), line (1), and preformed packing (2) from main hydraulic pump (4). Discard preformed packing.



TA707567

12-8. PRIORITY VALVE-TO-MAIN HYDRAULIC PUMP LINE REPLACEMENT (Con't).

2. Remove line (1) from adapter (8).
3. Remove adapter (8) and two preformed packings (7) from priority valve (6). Discard preformed packings.

**b. INSTALLATION**

1. Install two new preformed packings (7) and adapter (8) on priority valve (6).
2. Install line (1) on adapter (8).
3. Position new preformed packing (2) and line (1) on main hydraulic pump (4), and install two flanges (3) with four screws (5).

FOLLOW - ON TASKS:

- Fill hydraulic reservoir with hydraulic fluid (see TM 10-3930-659-10).
- Install right transmission side guard (see paragraph 14-7).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707568

12-9. PRIORITYVALVE-TO-SECONDARY STEERING MANIFOLD HOSE REPLACEMENT.*This task covers:*

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Frame locking bar installed (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).
- Right transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Four preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

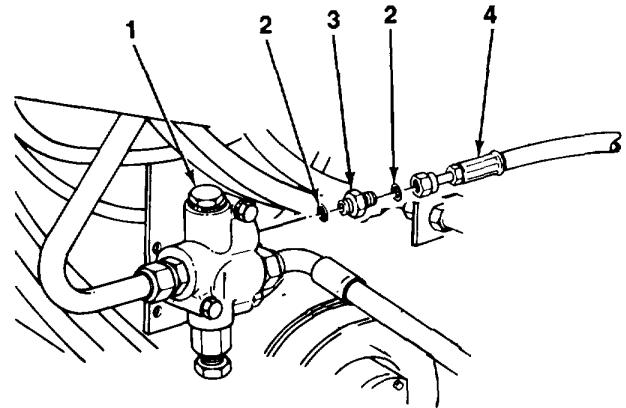
- General mechanic's tool kit (Item 44, Appendix F)

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

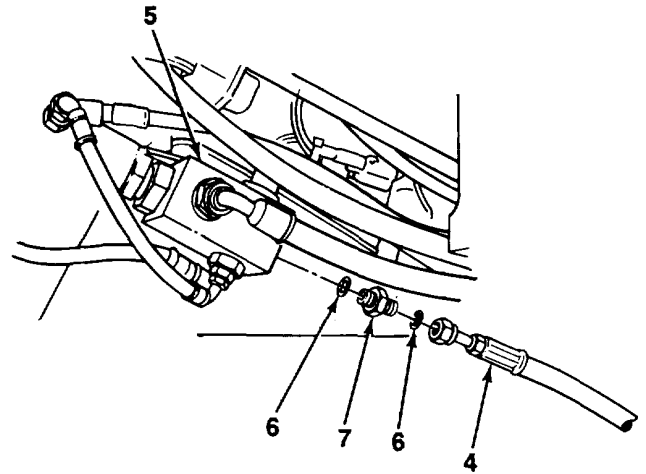
1. Remove hose (4) from adapter (3).
2. Remove adapter (3) and two preformed packings from priority valve (1). Discard preformed packings.



TA707569

12-9. PRIORITY VALVE-TO-SECONDARY STEERING MANIFOLD HOSE REPLACEMENT (Con't).

3. Remove hose (4) from adapter (7).
4. Remove adapter (7) and two preformed packings (6) from secondary steering manifold (5). Discard preformed packings.

**b. INSTALLATION**

1. Install two new preformed packings (6) and adapter (7) on secondary steering manifold (5).
2. Install hose (4) on adapter (7).
3. Install two new preformed packings (2) and adapter (3) on priority valve (1).
4. Install hose (4) on adapter (3).

FOLLOW-ON TASKS:

- Install right transmission side guard (see paragraph 14-7).
- Install cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707570

12-10. PRIORITY VALVE-TO-STEERING VALVE HOSE REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Frame locking bar installed (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).
- Right transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Three preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

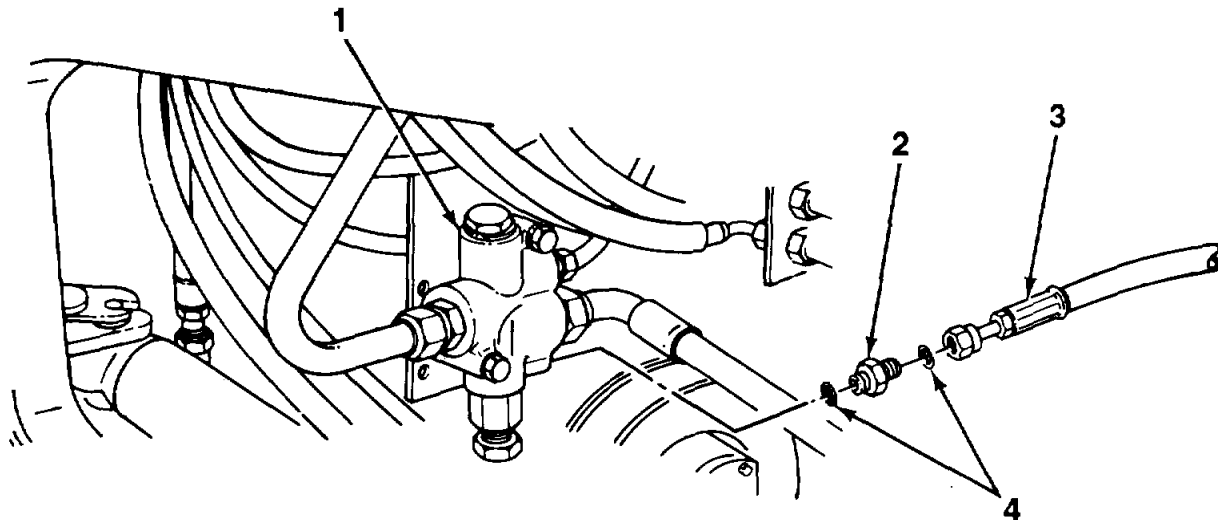
- General mechanic's tool kit (Item 44, Appendix F)

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

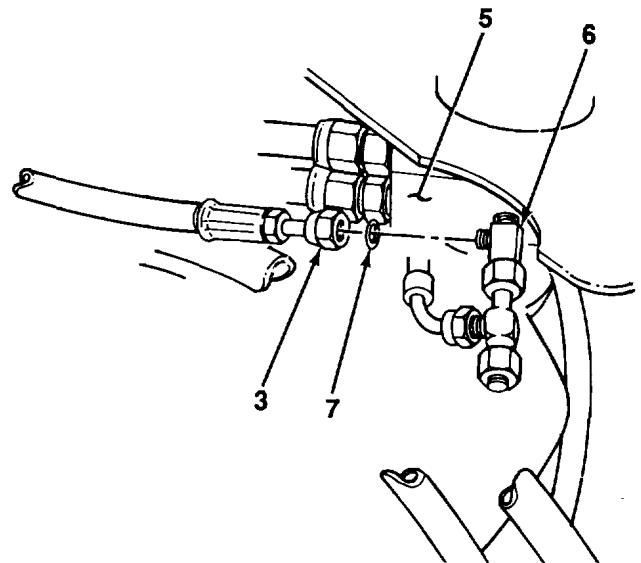
1. Remove hose (3) from adapter (2).
2. Remove adapter (2) and two preformed packings (4) from priority valve (1). Discard preformed packings.



TA707571

12-10. PRIORITY VALVE-TO-STEERING VALVE HOSE REPLACEMENT (Con't).

3. Remove hose (3) and preformed packing (7) from adapter (6) at steering valve (5). Discard preformed packing.

**b. INSTALLATION**

1. Install new preformed packing (7) and hose (3) on adapter (6).
2. Install two new preformed packings (4) and adapter (2) on priority valve (1).
3. Install hose (3) on adapter (2).

FOLLOW-ON TASKS:

- Install right transmission side guard (see paragraph 14-7).
- Install cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707572

12-11. CROSSOVER RELIEF VALVE-TO-STEERING CYLINDER HOSES REPLACEMENT.*This task covers:*

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Frame locking bar installed (see TM 10-393 659-10).
- Right and left side cab skirts removed (see paragraph 14-6).
- Right transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Four preformed packings

References:

- TM 10-393S659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

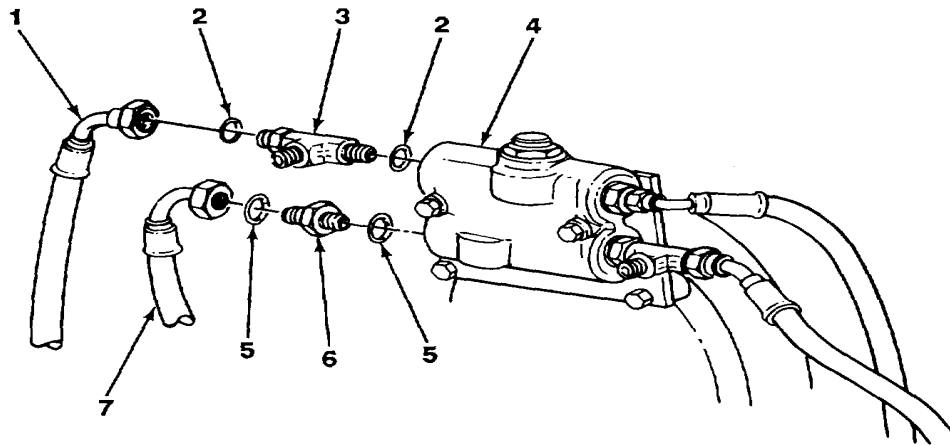
NOTE

- Right and left crossover relief valve-to-steering cylinder hoses are removed and Installed the same way. Right side is Illustrated.
- A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

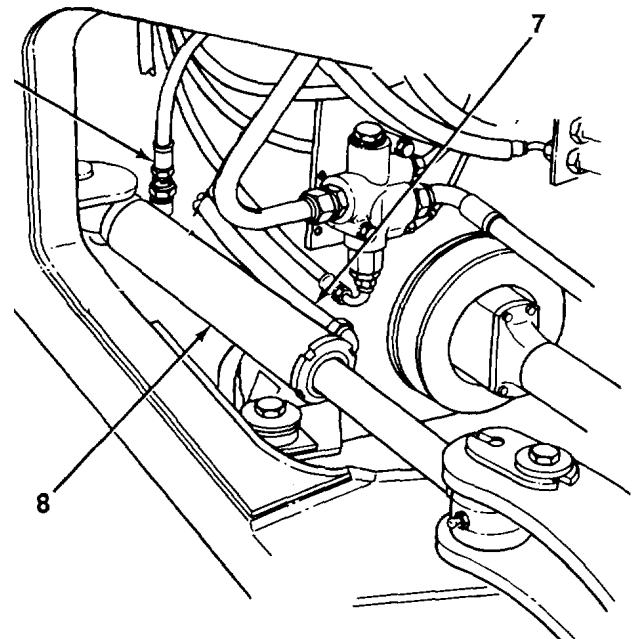
a. REMOVAL

1. Remove hose (7) from adapter (6).
2. Remove adapter (6) and two preformed packings (5) from crossover relief valve (4). Discard preformed packings.
3. Disconnect hose (1) from tee (3).
4. Remove tee (3) and two preformed packings (2) from crossover relief valve (4). Discard preformed packings.

12-11. CROSSOVER RELIEF VALVE-TO-STEERING CYLINDER HOSES REPLACEMENT (Con't).



5. Disconnect hose (7) from rod end of steering cylinder (8).
6. Remove hose (1) from head end of steering cylinder (8).



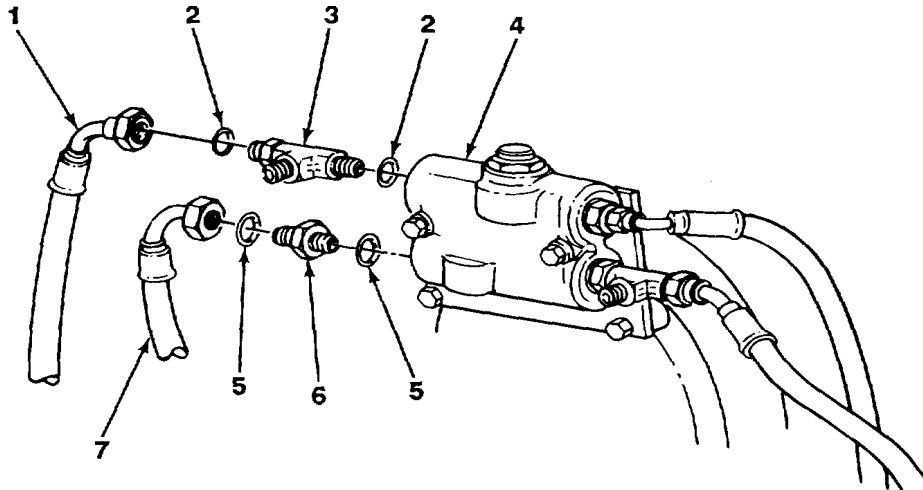
b. INSTALLATION

1. Install hose (1) on head end of steering cylinder (8).
2. Install hose (7) on rod end of steering cylinder (8).

TA707573

12-11. CROSSOVER RELIEF VALVE-TO-STEERING CYLINDER HOSES REPLACEMENT (Con't).

3. Install two new preformed packings (2) and tee (3) on crossover relief valve (4).
4. Install hose (1) on tee (3)
5. Install two new preformed packings (5) and adapter (6) on crossover relief valve (4).
6. Install hose (7) on adapter (6).

**FOLLOW-ON TASKS:**

- Install right transmission side guard (see paragraph 14-7).
- Install right and left side cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707574

12-12. CROSSOVER RELIEF VALVE-TO-STEERING VALVE HOSES REPLACEMENT.*This task covers:*

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Frame locking bar Installed (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Six preformed packings

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

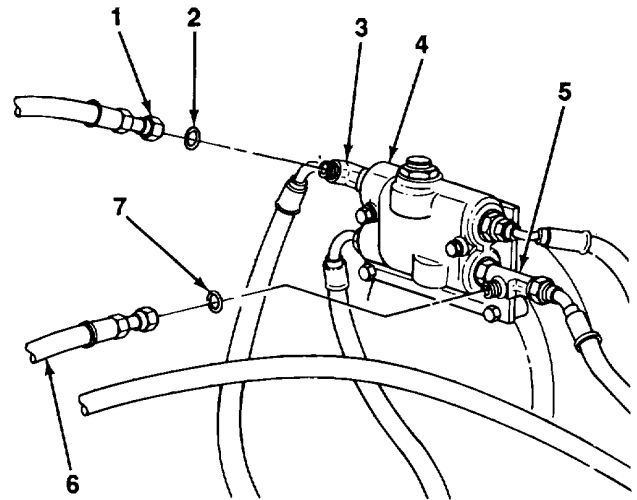
- TM 103930659-10

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

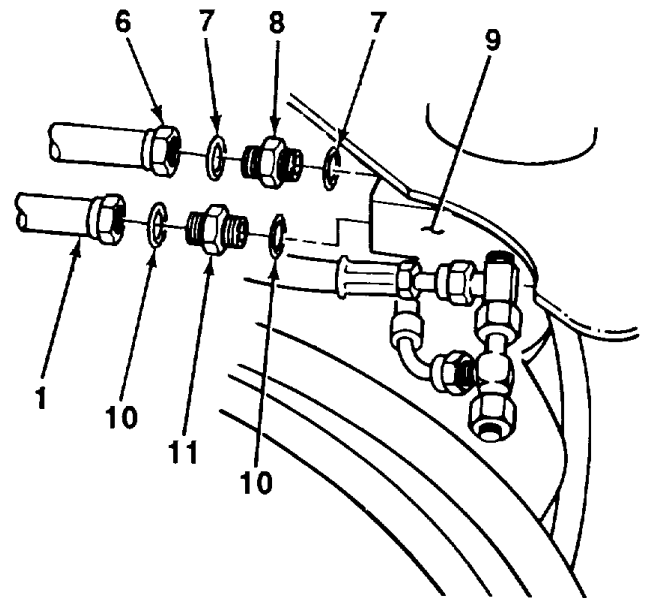
1. Remove hose (6) and preformed packing (7) from tee (5) at crossover relief valve (4). Discard preformed packing.
2. Remove hose (1) and preformed packing (2) from tee (3) at crossover relief valve (4). Discard preformed packing.



TA707575

12-12. CROSSOVER RELIEF VALVE-TO-STEERING VALVE HOSES REPLACEMENT (Con't).

3. Remove hose (6) from adapter (8).
4. Remove two preformed packings (7) and adapter (8) from steering valve (9). Discard preformed packings.
5. Remove hose (1) from adapter (11).
6. Remove two preformed packings (10) and adapter (11) from steering valve (9). Discard preformed packings.

**b. INSTALLATION**

1. Install adapter (11) and two new preformed packings (10) on steering valve (9).
2. Install hose (1) on adapter (11).
3. Install adapter (8) and two new preformed packings (7) on steering valve (9).
4. Install hose (6) on adapter (8).

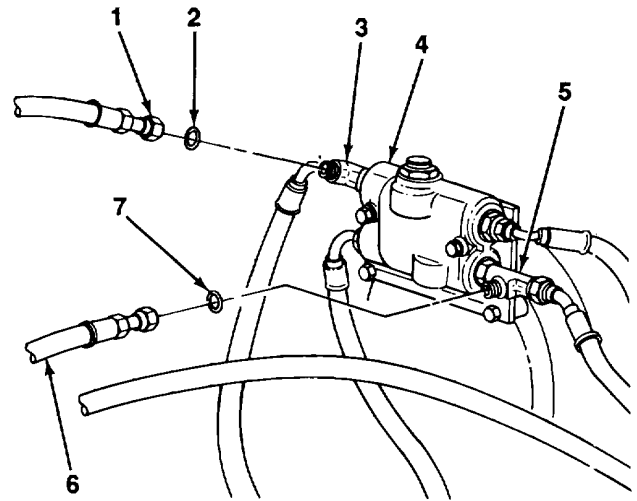
TA707576

12-12. CROSSOVER RELIEF VALVE-TO-STEERING VALVE HOSES REPLACEMENT (Con't).

5. Install new preformed packing (2) and hose (1) on tee (3).
6. Install new preformed packing (7) and hose (6) on tee (5).

FOLLOW - ON TASKS:

- Install cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).



TA707577

12-13. SECONDARY STEERING MANIFOLD-TO-STEERING VALVE HOSE REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Frame locking bar installed (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).
- Priority valve-to-steering valve hoses and fittings removed (see paragraph 12-10).

Materials/Parts:

- Rags (tem 27, Appendix C)
- Four preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

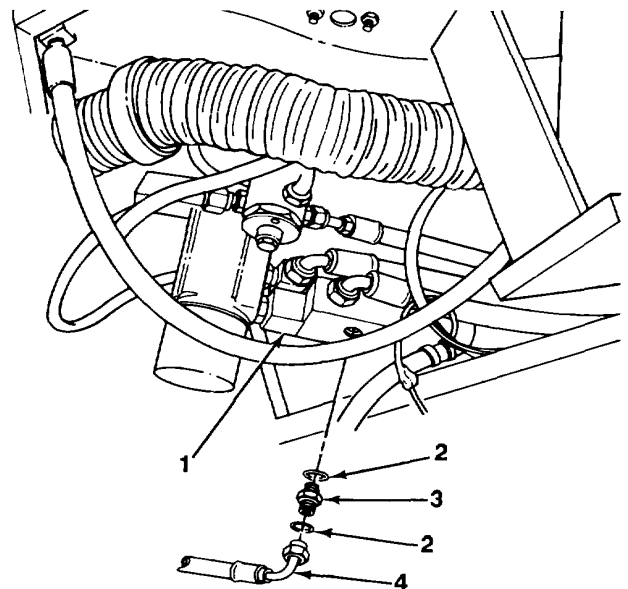
- General mechanic's tool kit (Item 44, Appendix F)

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

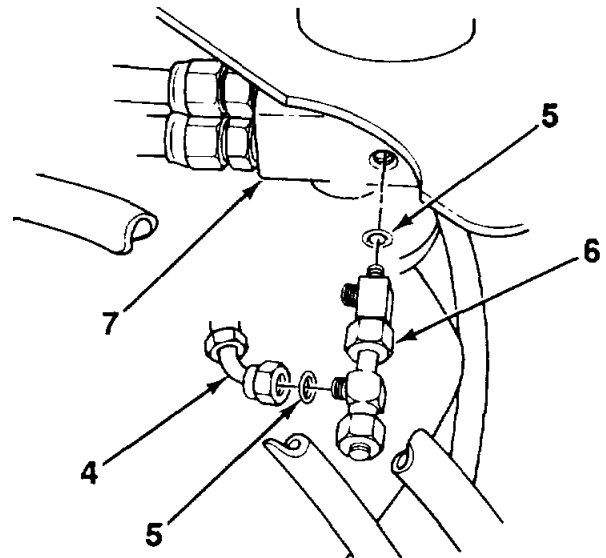
1. Remove hose (4) from adapter (3).
2. Remove adapter (3) and two preformed packing,(2) from secondary steering manifold (1). Discard preformed packings.



TA707578

12-13. SECONDARY STEERING MANIFOLD-TO-STEERING VALVE HOSE REPLACEMENT (Con't).

3. Remove hose (4) from tee (6).
4. Remove tee (6) and two preformed packings (5) from steering valve (7). Discard preformed packings.

**b. INSTALLATION**

1. Install two new preformed packings (5) and tee (6) on steering valve (7).
2. Install hose (4) on tee (6).
3. Install two new preformed packings (2) and adapter (3) on secondary steering manifold (1).
4. Install hose (4) on adapter (3).

FOLLOW - ON TASKS:

- Install priority valve-to-steering valve hoses and fittings (see paragraph 12-10).
- Install cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707579

12-14. HYDRAULIC OIL RETURN TUBE-TO-FORKLIFT CONTROL VALVE HOSE REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Frame locking bar Installed (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).
- Transmission side guards removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Three preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

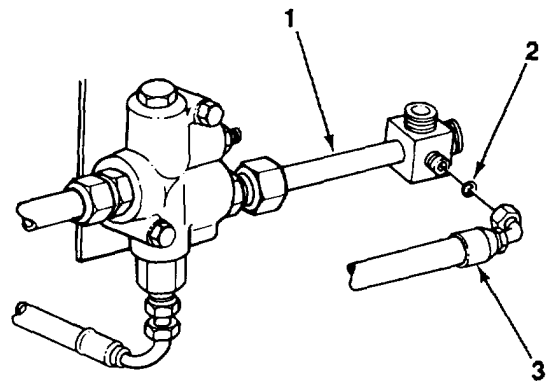
- General mechanic's tool kit (Item 44, Appendix F)
-

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

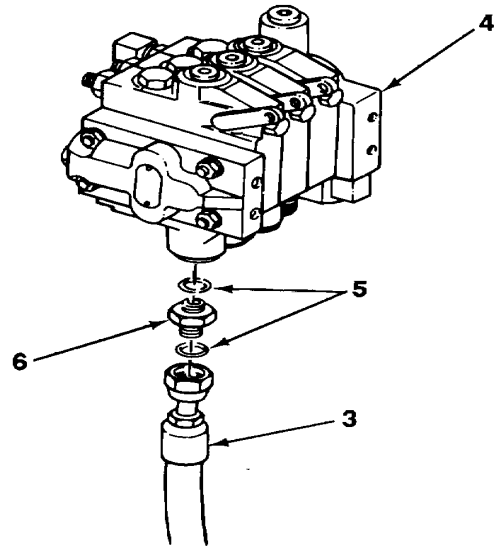
1. Remove hose (3) and preformed packing (2) from hydraulic oil return tube (1). Discard preformed packing.



TA707580

12-14. HYDRAULIC OIL RETURN TUBE-TO-FORKLIFT CONTROL VALVE HOSE REPLACEMENT (Con't).

2. Remove hose (3) from adapter (6).
3. Remove adapter (6) and two preformed packings (5) from forklift control valve (4). Discard preformed packings.

**b. INSTALLATION**

1. Install two new preformed packings (5) and adapter (6) on forklift control valve (4).
2. Install hose (3) on adapter (6).
3. Install new preformed packing (2) and hose (3) on hydraulic oil return tube (1).

FOLLOW-ON TASKS:

- Install transmission side guards (see paragraph 14-7).
- Install cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707581

12-15. REMOTE STEERING CYLINDER LUBRICATION HOSES REPLACEMENT.*This task covers:*

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Frame locking bar installed (see TM 10-3930-659-10).
- Transmission side guards removed (see paragraph 14-7) .
- Transmission bottom guard removed (see paragraph 14-8).

Materials/Parts:

- Rags (Item 27, Appendix C)

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F).

NOTE

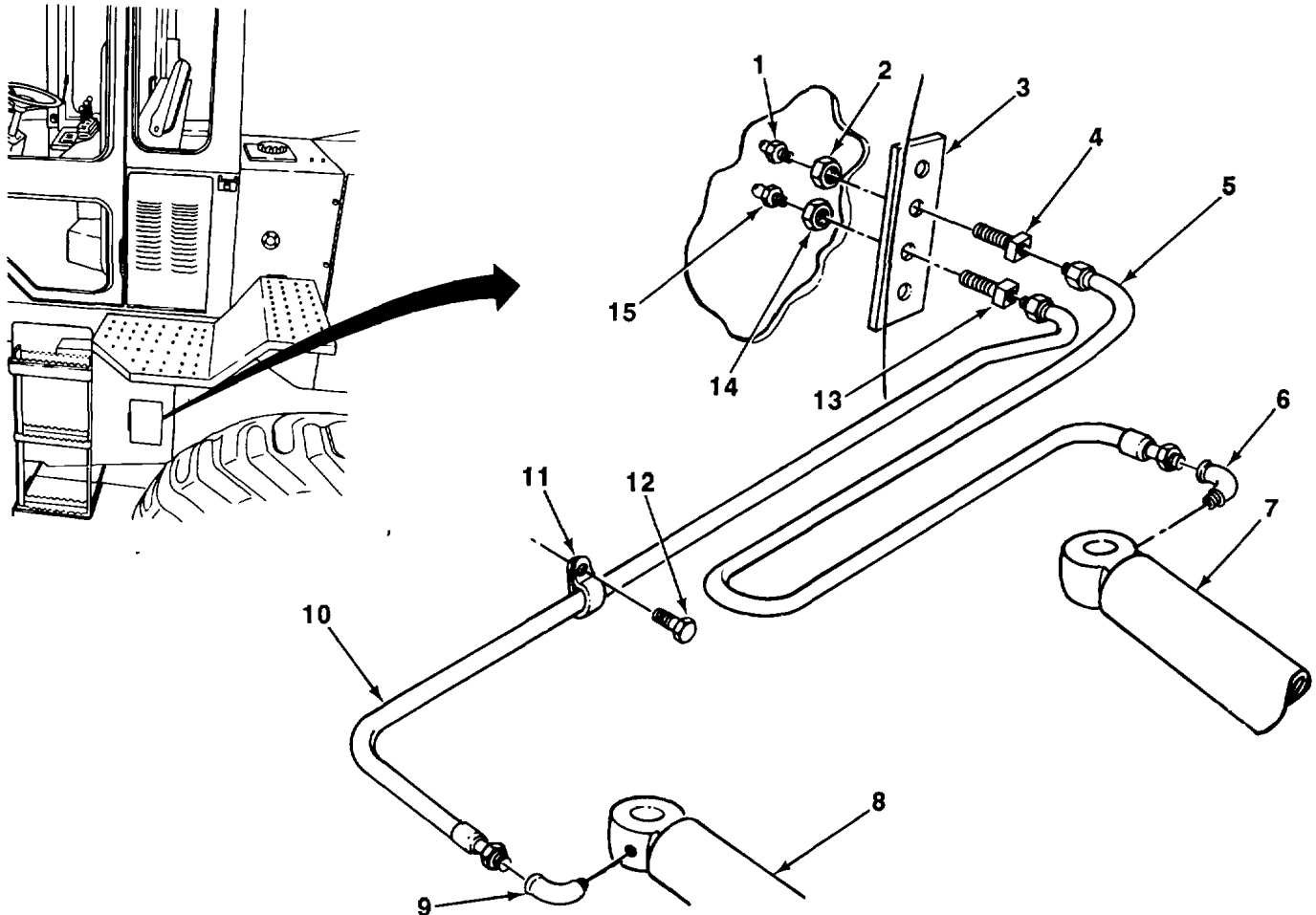
A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL**NOTE**

- **Perform steps 1 through 5 to remove right steering cylinder lubrication hose.**
- **Perform steps 6 through 9 to remove left steering cylinder lubrication hose.**

1. Remove hose (10) and elbow (9) from right steering cylinder (8).
2. Remove hose (10) from fitting (13).
3. Remove screw (12), clamp (11), and hose (10) from forklift truck.
4. Remove fitting (15) from fitting (13).
5. Remove nut (14) and fitting (13) from bracket (3).
6. Remove hose (5) and elbow (6) from left steering cylinder (7).
7. Remove hose (5) from fitting (4) and remove hose from forklift truck.
8. Remove fitting (1) from fitting (4).
9. Remove nut (2) and fitting (4) from bracket (3).

12-15. REMOTE STEERING CYLINDER LUBRICATION HOSES REPLACEMENT (Con't).



b. INSTALLATION

NOTE

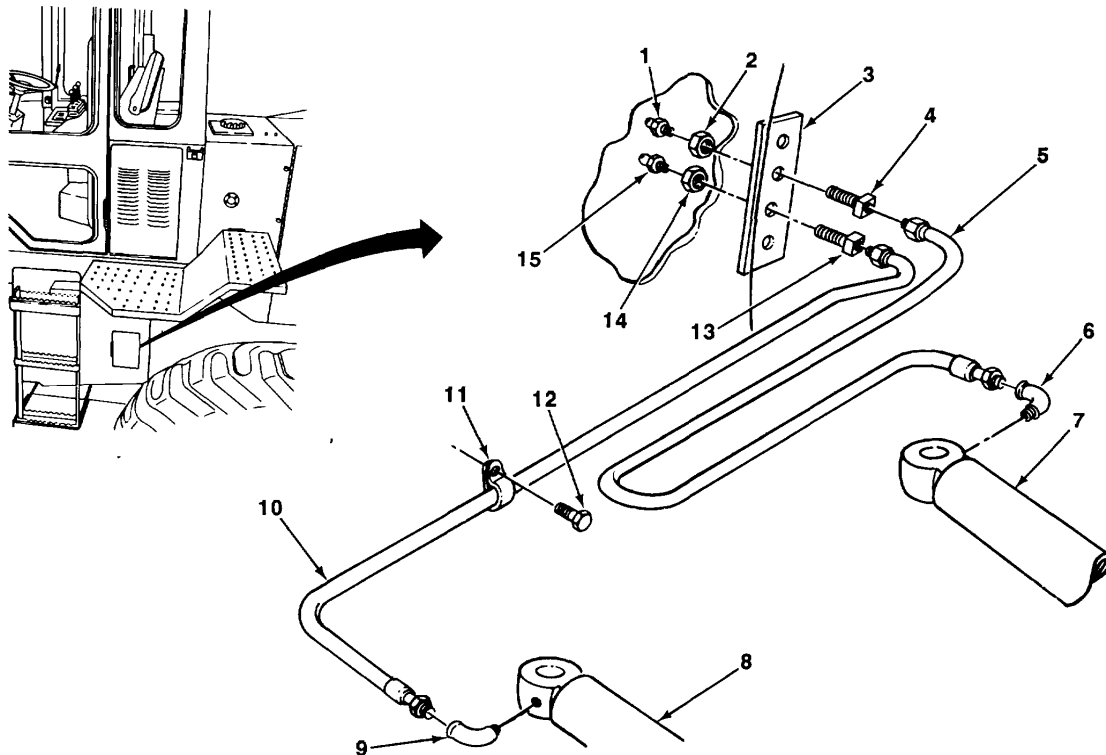
- Perform steps 1 through 4 to install left steering cylinder lubrication hose.
- Perform steps 5 through 9 to Install right steering cylinder lubrication hose.

1. Install fitting (4) and nut (2) on bracket (3).
2. Install fitting (1) on fitting (4).
3. Install hose (5) on fitting (4).
4. Install elbow (6) and hose (5) on left steering cylinder (7).

TA707582

12-15. REMOTE STEERING CYLINDER LUBRICATION HOSES REPLACEMENT (Con't).

5. Install fitting (13) and nut (14) on bracket (3).
6. Install fitting (15) on fitting (13).
7. Install hose (10) on fitting (13).
8. Install hose (10) and clamp (11) on forklift truck with screw (12).
9. Install elbow (9) and hose (10) on right steering cylinder (8).

**FOLLOW-ON TASKS:**

- Install transmission bottom guard (see paragraph 14-8).
- Install transmission side guards (see paragraph 14-7).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707583

12-16. HYDRAULIC OIL RETURN TUBE-TO-STEERING VALVE HOSE REPLACEMENT.*This task covers:*

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Frame locking bar installed (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).
- Transmission side guards removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Three preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

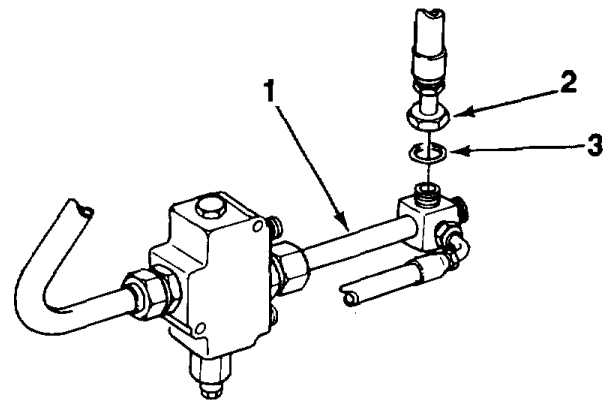
- General mechanic's tool kit (Item 44, Appendix F)

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

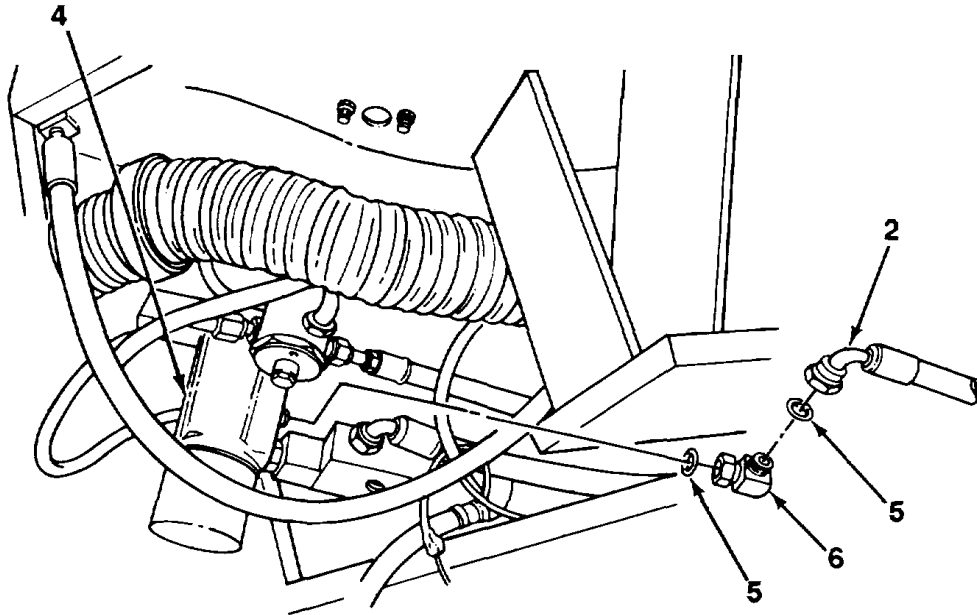
1. Remove hose (2) from hydraulic oil return tube (1).
2. Remove preformed packing (3) from hydraulic oil return tube (1). Discard preformed packing.



TA707584

12-16. HYDRAULIC OIL RETURN TUBE-TO-STEERING VALVE HOSE REPLACEMENT (Con't).

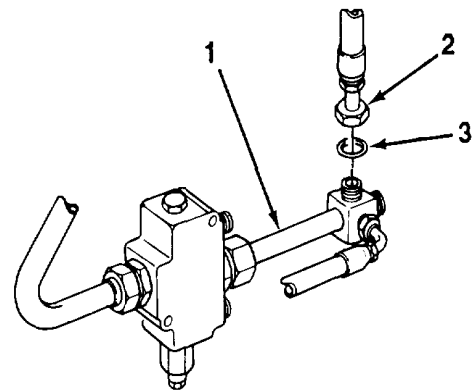
3. Remove hose (2) from elbow (6).
4. Remove elbow (6) and two preformed packings (5) from steering valve (4). Discard preformed packings.

**b. INSTALLATION**

1. Install two new preformed packings (5) and elbow (6) on steering valve (4).
2. Install hose (2) on elbow (6).
3. Install new preformed packing (3) and hose (2) on hydraulic oil return tube (1).

FOLLOW-ON TASKS:

- Install transmission side guards (see paragraph 14-7).
- Install cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).



TA707585

12-17. SECONDARY STEERING PUMP-TO-SECONDARY STEERING MANIFOLD HOSE REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Frame locking bar installed (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Four preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

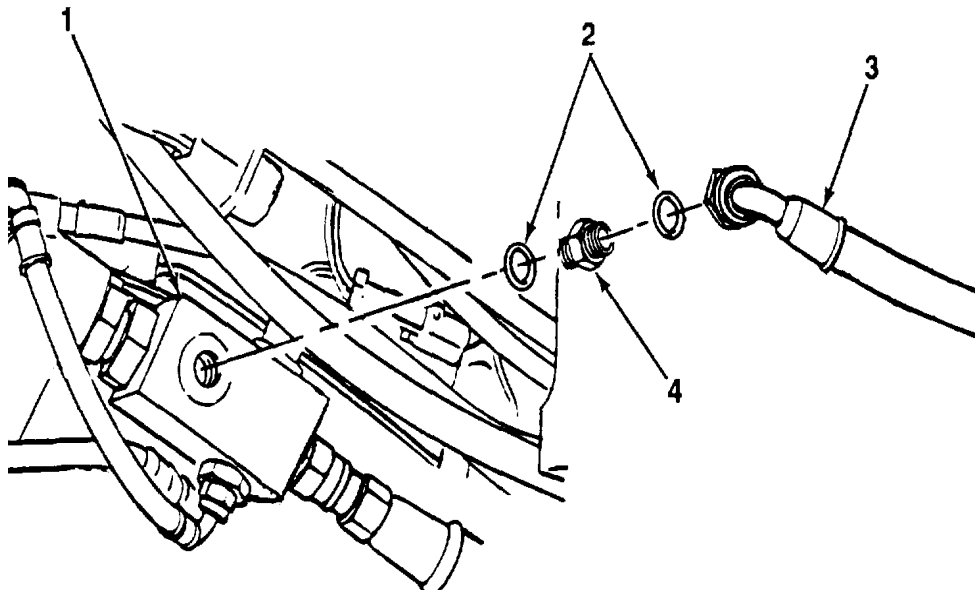
- General mechanic's tool kit (Item 44, Appendix F).

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

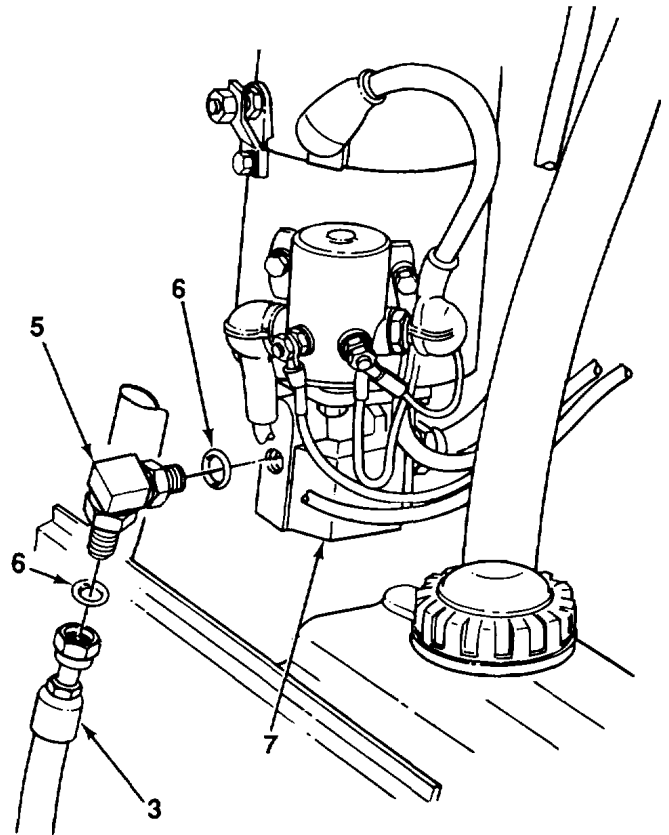
1. Remove hose (3) from adapter (4).
2. Remove adapter (4) and two preformed packings (2) from secondary steering manifold (1). Discard preformed packings.



TA707586

12-17. SECONDARY STEERING PUMP-TO-SECONDARY STEERING MANIFOLD HOSE REPLACEMENT (Con't).

3. Remove hose (3) from elbow (5).
4. Remove elbow (5) and two preformed packings (6) from secondary steering pump (7). Discard preformed packings.

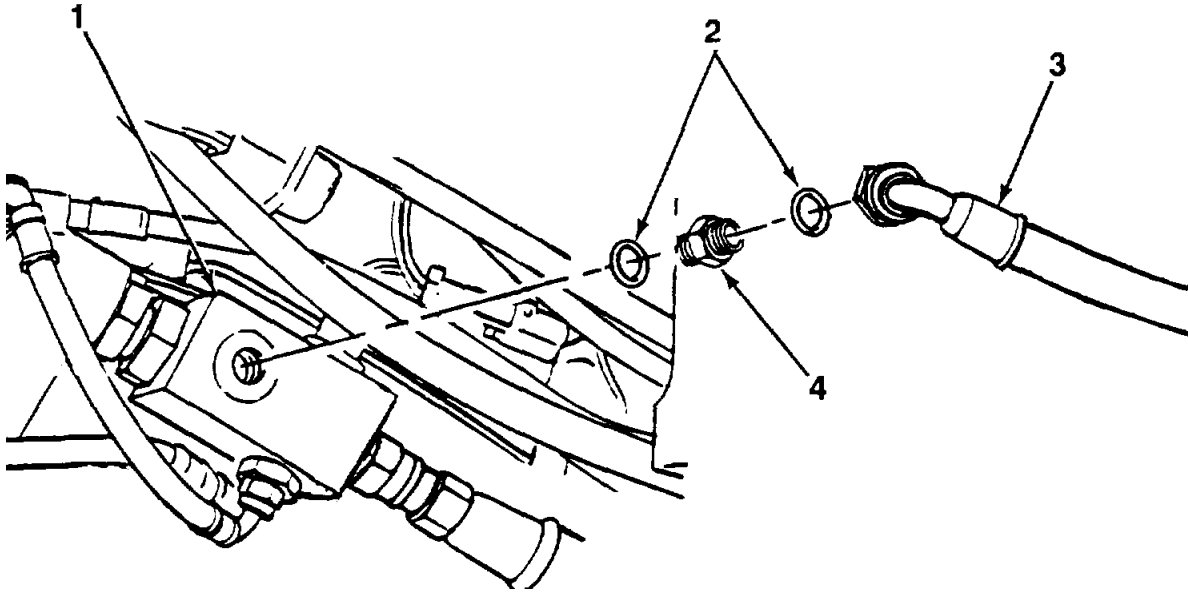
**b. INSTALLATION**

1. Install two new preformed packings (6) and elbow (5) on secondary steering pump (7).
2. Install hose (3) on elbow (5).

TA707587

12-17. SECONDARY STEERING PUMP-TO-SECONDARY STEERING MANIFOLD HOSE REPLACEMENT (Con't).

3. Install two new preformed packings (2) and adapter (4) on secondary steering manifold (1).
4. Install hose (3) on adapter (4).

**FOLLOW-ON TASKS:**

- Install cab skirts (see paragraph 14-6).
- Close left engine upper sideshield (see TM 10-3930-659-10).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707588

12-18. SECONDARY STEERING PUMP-TO-HYDRAULIC OIL RETURN FILTER HOSE REPLACEMENT.*This task covers:*

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Frame locking bar installed (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Adjustable wrench (Item 49, Appendix F)

Materials/Parts:

- Rags (Item 27, Appendix C)
- Three preformed packings

References:

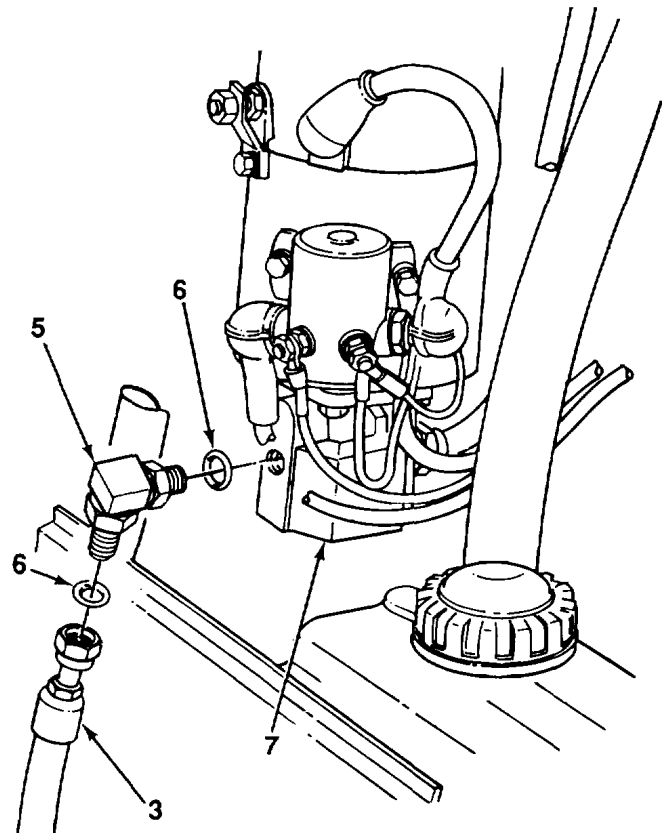
- TM 10-3930-659-10

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

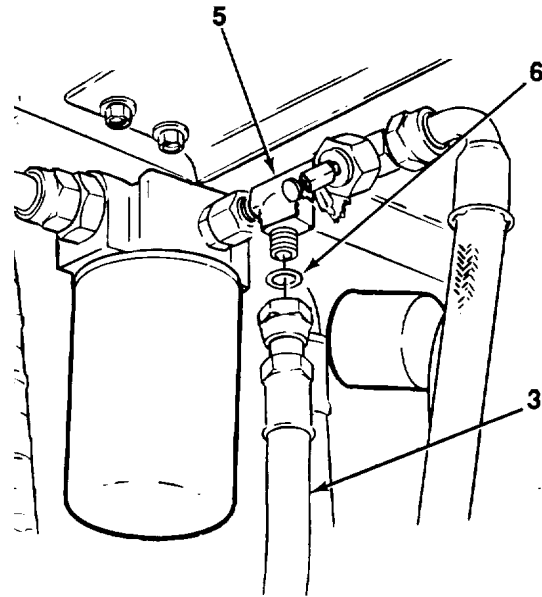
1. Remove hose (3) from adapter (2).
2. Remove adapter (2) and two preformed packings (1) from secondary steering pump (4). Discard preformed packings.



TA707589

12-18. SECONDARY STEERING PUMP-TO-HYDRAULIC OIL RETURN FILTER HOSE REPLACEMENT (Con't).

3. Remove hose (3) and preformed packing (6) from tee (5). Discard preformed packing.

**b. INSTALLATION**

1. Install new preformed packing (6) and hose (3) on tee (5).
2. Install two new preformed packings (1) and adapter (2) on secondary steering pump (4).
3. Install hose (3) on adapter (2).

FOLLOW-ON TASKS:

- Close left engine upper sideshield (see TM 10-3930-659-10).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707590

12-19. STEERING CYLINDERS REPLACEMENT.*This task covers:*

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Frame locking bar installed (see TM 10-3930-659-10).
- Transmission side guards removed (see paragraph 14-7).
- Remote steering cylinder lubrication hoses and fittings removed (see paragraph 12-15).

Materials/Parts:

- Grease (Item 23, Appendix C)
- Rags (Item 27, Appendix C)
- Personnel Required: Two

References:

- TM 10-3930-659-10
- LO 10-3930-659-12

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

NOTE

- Right and left steering cylinders are removed and installed the same way. Right steering cylinder is illustrated.
- A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

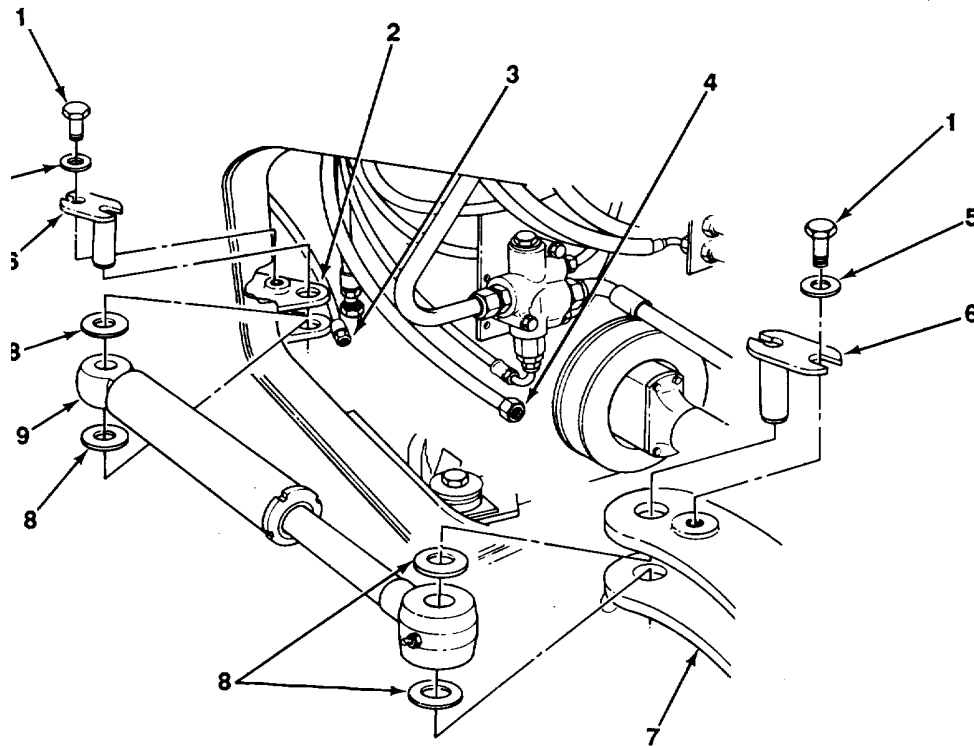
1. Remove hose (3) from steering cylinder (9).
2. Remove hose (4) from steering cylinder (9).
3. Remove two screws (1) and washers (5) from pins (6).

NOTE

Quantity of washers (8) may vary. Note quantity and location of washers to aid during installation.

4. Remove two pins (6), washers (8), and steering cylinder (9) from rear frame (2) and forward frame (7).

12-19. STEERING CYLINDERS REPLACEMENT (Con't).

**b. INSTALLATION**

1. Apply a coat of grease to two pins (6).
2. Install steering cylinder (9) and washers (8), as noted during removal, on rear frame (2) with pin (6), washer (5), and screw (1).
3. Pull rod end of steering cylinder (9) out of housing.
4. Install steering cylinder (9) and washers (8), as noted during removal, on forward frame (7) with pin (6), washer (5), and screw (1).
5. Install hose (3) on steering cylinder (9).
6. Install hose (4) on steering cylinder (9).

FOLLOW-ON TASKS:

- Lubricate steering cylinder pivots (see LO 10-3930-659-12).
- Install remote steering cylinder lubrication hoses and fittings (see paragraph 12-15).
- Install transmission side guards (see paragraph 14-7).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707591

12-20. SECONDARY STEERING MANIFOLD PRIMARY CHECK VALVE LEAKAGE TEST.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-10).
- Hydraulic system warmed to operating temperature (see paragraph 2-29).
- Right transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Two preformed packings

Personnel Required: Two

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Cap (Item 6, Appendix F)

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

LEAKAGE TEST

1. Remove hose (3) and preformed packing (2) from priority valve (1). Discard preformed packing.
2. Install preformed packing (5) and cap (4) on priority valve (1).

CAUTION

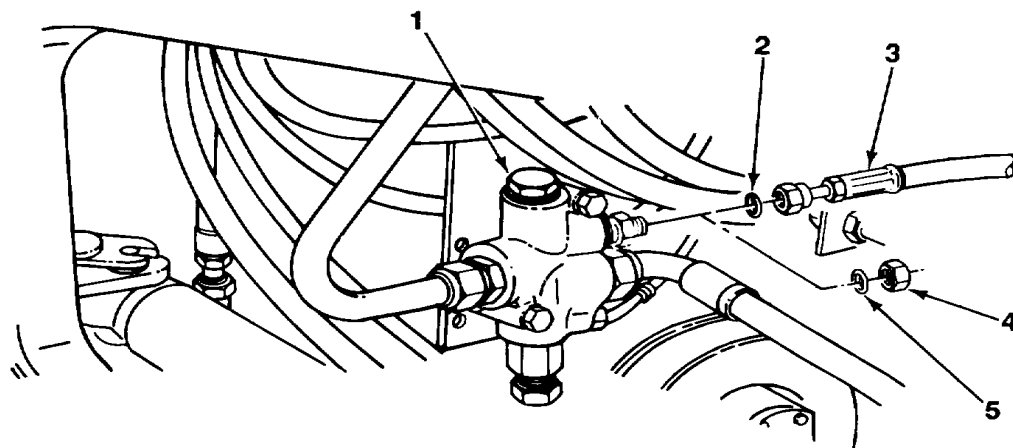
DO NOT operate secondary steering pump and secondary steering pump motor for more than 15 seconds. Failure to follow this caution may damage secondary steering pump and secondary steering pump motor.

NOTE

Ensure that engine does not start when operating Ignition switch.

3. Turn ignition switch to START position and release to activate secondary steering pump.
4. If hose (3) leaks a steady stream of hydraulic fluid, replace secondary steering manifold (see paragraph 12-22).
5. Remove cap (4) and preformed packing (5) from priority valve (1). Discard preformed packing.
6. Install new preformed packing (2) and hose (3) on priority valve (1).

12-20. SECONDARY STEERING MANIFOLD PRIMARY CHECK VALVE LEAKAGE TEST (Con't).

**FOLLOW-ON TASKS:**

- Install right transmission side guard (see paragraph 14-7).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707592

12-21. SECONDARY STEERING MANIFOLD SECONDARY CHECK VALVE LEAKAGE TEST.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Hydraulic system warmed to operating temperature (see paragraph 2-29).
- Cab skirts removed (see paragraph 14-6).

Materials/Parts:

- Rags (Item 27, Appendix C)
- One preformed packing

Personnel Required: Two

References:

- TM 10-3930-659-10

Tools/Test Equipment:

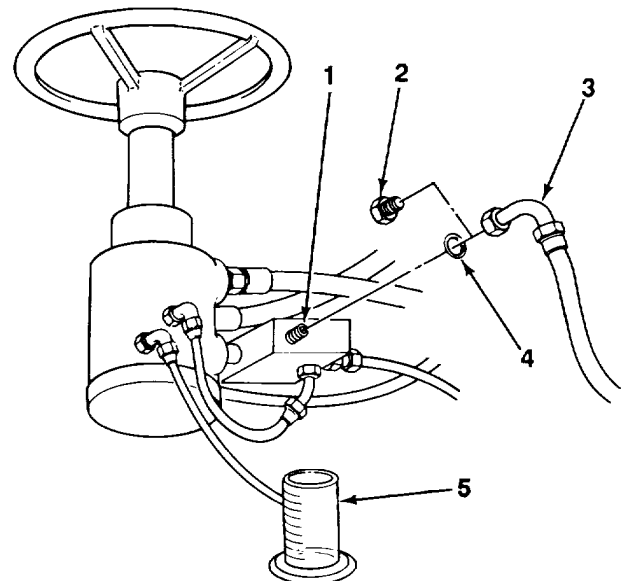
- General mechanic's tool kit (Item 44, Appendix F)
- Plug (Item 29, Appendix F)

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

LEAKAGE TEST

1. Remove hose (3) and preformed packing (4) from check valve (1). Discard preformed packing.
2. Install plug (2) on hose (3).
3. Place suitable container (5) under check valve (1).
4. Start engine and run at slow engine idle speed (see TM 10-3930-659-10). If check valve (1) leaks a steady stream of hydraulic fluid, replace secondary steering manifold (see paragraph 12-22).
5. Remove plug (2) from hose (3).
6. Install new preformed packing (4) and hose (3) on check valve (1).

**FOLLOW-ON TASKS:**

- Install cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10 3930-659-10).

TA707593

12-22. SECONDARY STEERING MANIFOLD REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).
- Secondary steering switch removed (see paragraph 6-31).
- Priority valve-to-secondary steering manifold hose and fittings removed (see paragraph 12-9).
- Secondary steering manifold-to-steering valve hose and fittings removed (see paragraph 12-13).
- Secondary steering pump-to-secondary steering manifold hose and fittings removed (see paragraph 12-17).

Materials/Parts:

- Two preformed packings

Tools/Test Equipment:

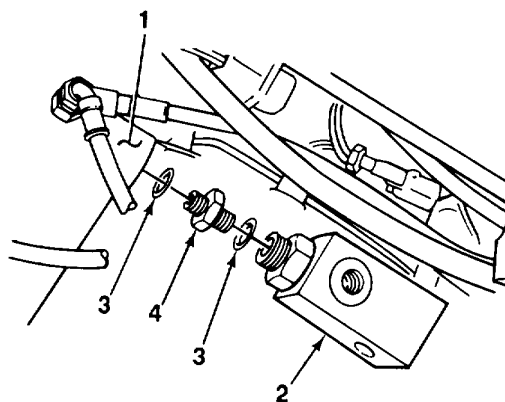
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10
-

a. REMOVAL

1. Remove secondary steering manifold (2) from adapter (4).
2. Remove adapter (4) and two preformed packings (3) from steering valve (1). Discard preformed packings.

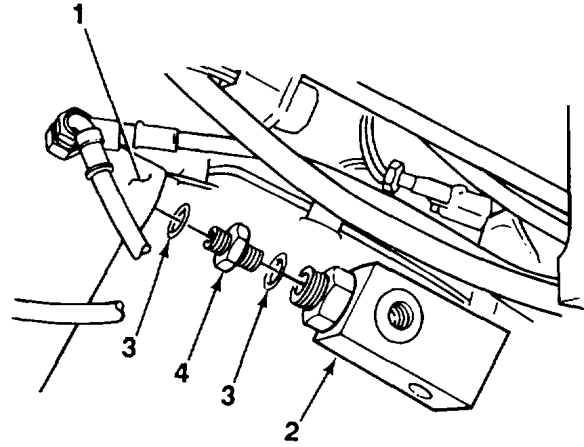


TA707594

12-22. SECONDARY STEERING MANIFOLD REPLACEMENT (Con't).

b. INSTALLATION

1. Install two new preformed packings (3) and adapter (4) on steering valve (1).
2. Install secondary steering manifold (2) on adapter (4).

**FOLLOW-ON TASKS:**

- Install secondary steering pump-to-secondary steering manifold hose and fittings (see paragraph 12-17).
- Install secondary steering manifold-to-steering valve hose and fittings (see paragraph 12-13).
- Install priority valve-to-secondary steering manifold hose and fittings (see paragraph 12-9).
- Install secondary steering switch (see paragraph 6-31).
- Install cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707595

12-23. STEERING VALVE NEUTRAL LEAKAGE TEST.

This task covers: Leakage Test

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Hydraulic system warmed to operating temperature (see paragraph 2-29).
- Cab skirts removed (see paragraph 14-6).
- Transmission side guards removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)
- One preformed packing

Personnel Required: Two**References:**

- TM 10-3930-659-10

Tools/Test Equipment:

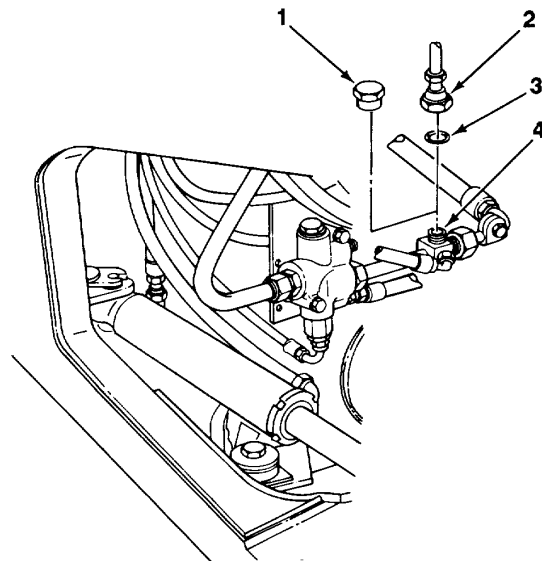
- General mechanic's tool kit (Item 44, Appendix F)
- Cap (Item 7, Appendix F)

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

LEAKAGE TEST

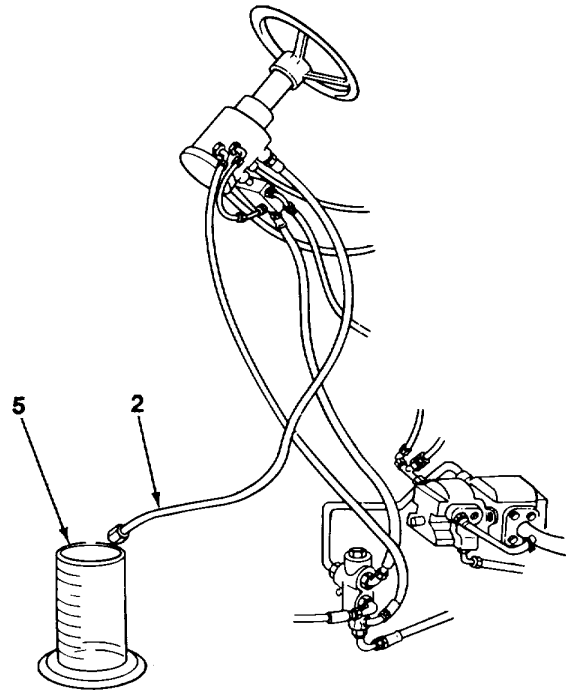
1. Remove hose (2) and preformed packing (3) from tee (4). Discard preformed packing.
2. Install cap (1) on tee (4).



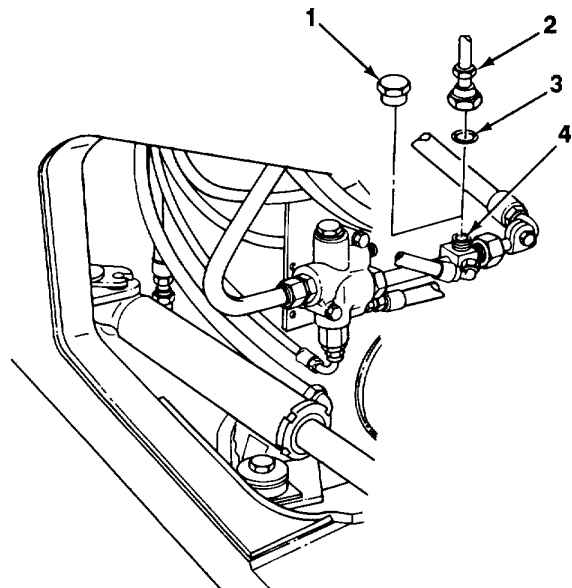
TA707596

12-23. STEERING VALVE NEUTRAL LEAKAGE TEST (Con't).

3. Place suitable container (5) under hose (2).
4. Start engine and run at fast engine idle speed (see TM 10-3930-659-10) for one minute.
5. If hose (2) leaks more than 0.4 gallons (1.5 one minute, replace steering valve (see paragraph 12-24).
6. Shut down engine (see TM 10-3930-659-10).



7. Remove cap (1) from tee (4).
8. Install new preformed packing (3) and hose (2) tee (4).

**FOLLOW-ON TASKS:**

- Install transmission side guards (see paragraph 14-7).
- Install cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707597

12-24. STEERING VALVE REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup:

Equipment Conditions:

- Frame locking bar installed (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6)

NOTE

All hoses should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

- Priority valve-to-steering valve hose and fittings removed (see paragraph 12-10).
- Secondary steering manifold-to-steering valve hose and fittings removed (see paragraph 12-13).
- Crossover relief valve-to-steering valve hoses and fittings removed (see paragraph 12-12)

Equipment Conditions (Con't):

- Secondary steering manifold removed (see paragraph 12-22).

Materials/Parts:

- One gasket

Tools/Test Equipment:

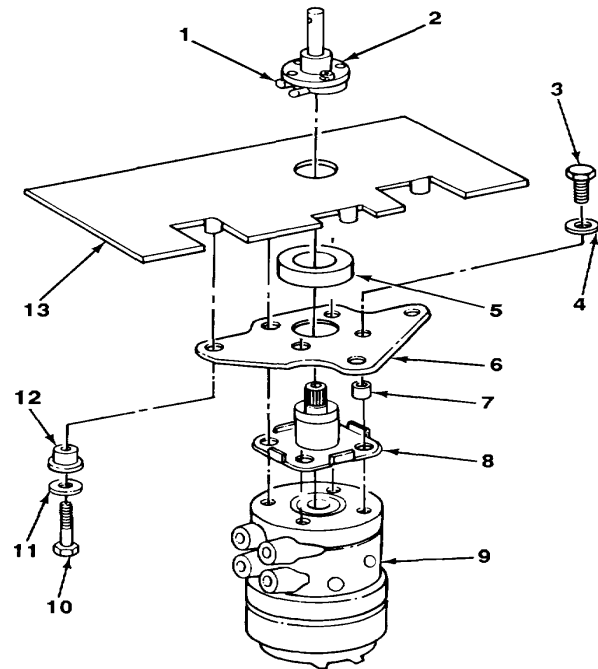
- General mechanic's tool kit (Item 44, Appendix F)

Personnel Required: Two**References:**

- TM 10-3930-659-10

a. REMOVAL

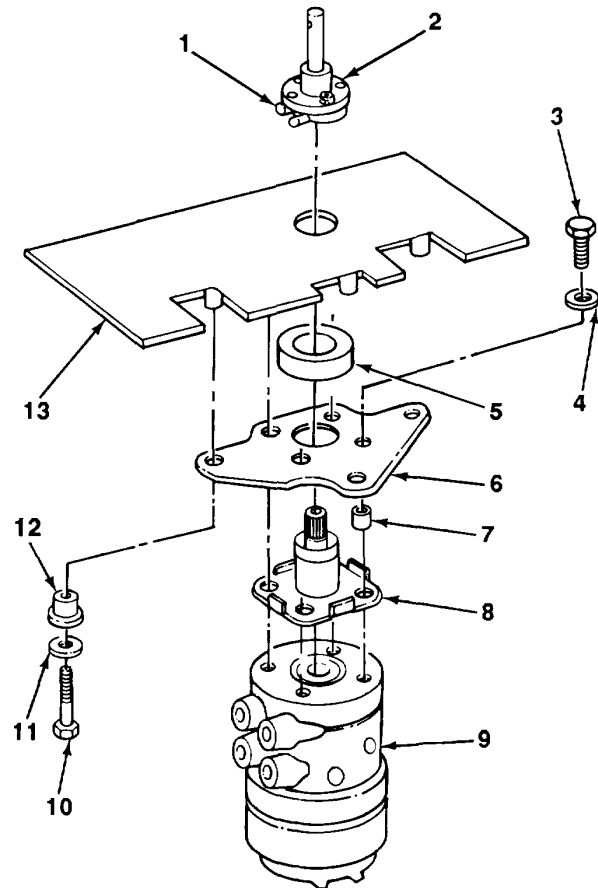
1. Loosen screw (1) and remove steering support from column (8).
2. Remove three screws (10), washers (11), a steering valve (9) from cab floor (13).
3. Remove gasket (5) from column (8). Discard gasket.
4. Remove four screws (3), washers (4), bracket (6) four spacers (7), and column (8) from steering valve (9).
5. Remove three resilient mounts (12) from bracket (6).



TA707598

12-24. STEERING VALVE REPLACEMENT (Con't)**b. INSTALLATION**

1. Install three resilient mounts (12) on bracket
2. Install column (8), four spacers (7), and bracket (6) on steering valve (9) with four washers (4) screws (3).
3. Install new gasket (5) on column (8).
4. Install steering valve (9) on cab floor (13) three washers (11) and screws (10).
5. Install steering support (2) on column (8) tighten screw (1).

**FOLLOW-ON TASKS:**

- Install secondary steering manifold (see paragraph 12-22).
- Install crossover relief valve-to-steering valve hoses and fittings (see paragraph 12-12).
- Install secondary steering manifold-to-steering valve hose and fittings (see paragraph 12-13).
- Install priority valve-to-steering valve hose and fittings (see paragraph 12-10).
- Install cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707599

12-25. CROSSOVER RELIEF VALVE REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup:

Equipment Conditions:

- Frame locking bar installed (see TM 10-3930-659-10).

NOTE

All hoses should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

- Crossover relief valve-to-steering cylinder hoses and fittings removed (see paragraph 12-11).
- Crossover relief valve-to-steering valve hoses and fittings removed (see paragraph 12-12).

Materials/Parts:

- Two locknuts

Tools/Test Equipment:

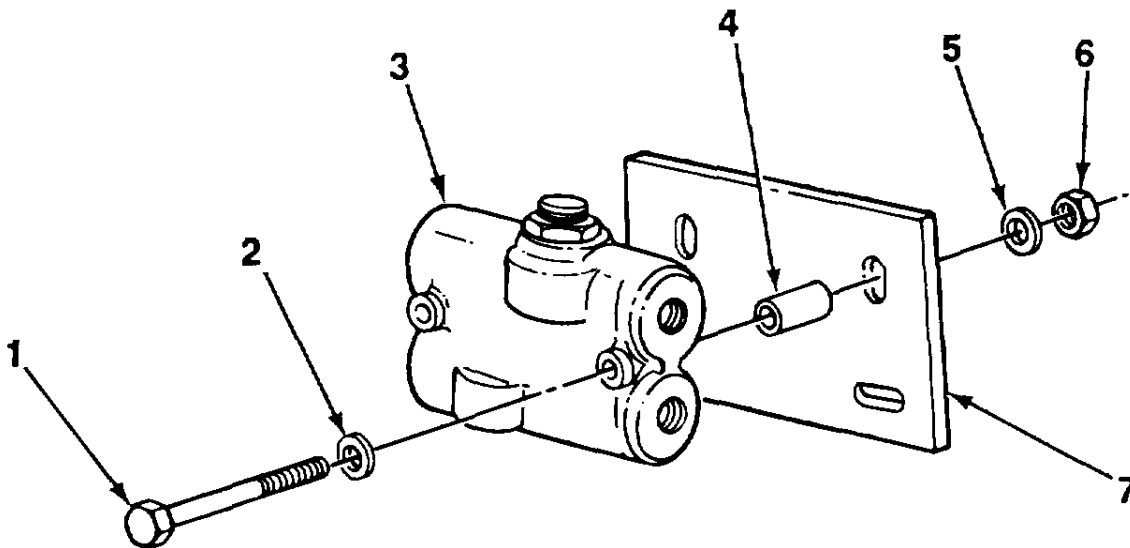
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL

Remove two locknuts (6), washers (5), screws (1), washers (2), crossover relief valve (3), and two spacers (4) from plate (7). Discard locknuts.

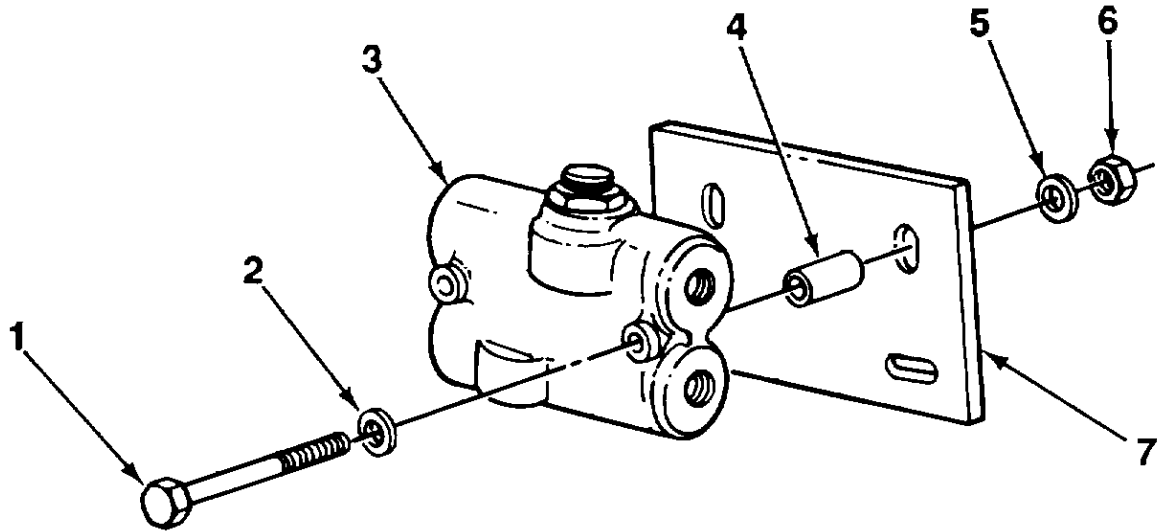


TA707600

12-25. CROSSOVER RELIEF VALVE REPLACEMENT (Con't).

b. INSTALLATION

Install two spacers (4) and cross over relief valve (3) on plate (7) with two washers (2), screws (1), washers (5), and new locknuts (6).

**FOLLOW-ON TASKS:**

- Install crossover relief valve-to-steering valve hoses and fittings (see paragraph 12-12).
- Install crossover relief valve-to-steering cylinder hoses and fittings (see paragraph 12-11).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707601

12-26. PRIORITY VALVE RELIEF CARTRIDGE VALVE LEAKAGE TEST.

This task covers: Leakage Test

Initial Setup:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-10).
- Hydraulic system warmed to operating temperature (see paragraph 2-29).
- Right transmission side guard removed - (see paragraph 14-7).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Plug (Item 27, Appendix F)

Materials/Parts:

- Rags (Item 27, Appendix C)
- One preformed packing

Personnel Required: Two**References:**

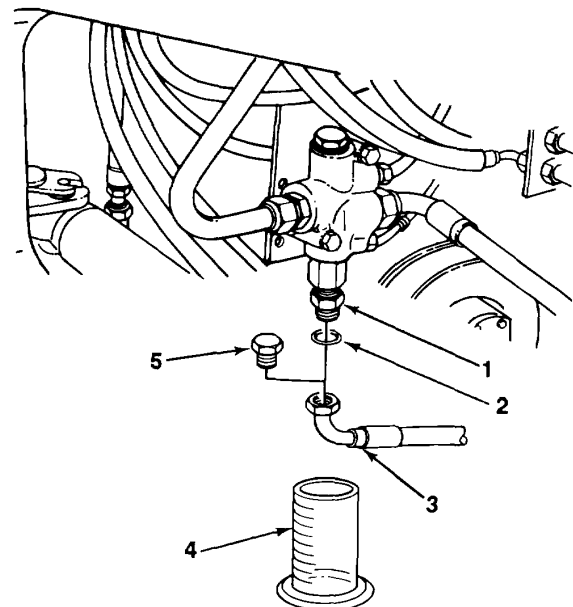
- TM 10-3930-659-10

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

LEAKAGE TEST

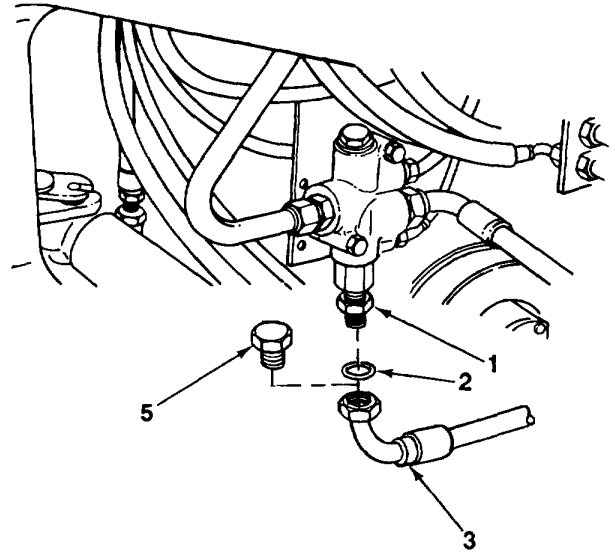
1. Remove hose (3) and preformed packing (2) from adapter (1). Discard preformed packing.
2. Install plug (5) on hose (3).
3. Place suitable container (4) under adapter (1)
4. Start engine and run at fast engine idle speed (see TM 10-3930-659-10).
5. Count number of drops of hydraulic fluid falling from adapter (1) in one minute. If more than drops of fluid leak from adapter in one minute, place priority valve (see paragraph 12-28).



TA707602

12-26. PRIORITY VALVE RELIEF CARTRIDGE VALVE LEAKAGE TEST.

6. Remove plug (5) from hose (3).
7. Install new preformed packing (2) and hose (3) on adapter (1).

**FOLLOW-ON TASKS:**

- Install right transmission side guard (see paragraph 14-7)
- Remove frame locking bar (see TM 10-3930-659)

TA707603

12-27. PRIORITY VALVE RELIEF PRESSURE TEST.

This Task Covers: Pressure Test

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-33930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- General mechanic's tool kit (item 44, Appendix F) 659-10).
- Hydraulic system warmed to operating temperature (see paragraph 2-29).
- Right transmission side guard removed - (see paragraph 14-7).

Materials/Parts:

- Five preformed packings

Tools/Test Equipment:

- General mechanic's tool kit (tem 44, Appendix F)
- Pressure gage (Item 18, Appendix F)
- Hose assembly (Item 20, Appendix F)
- Tee (Item 38, Appendix F)

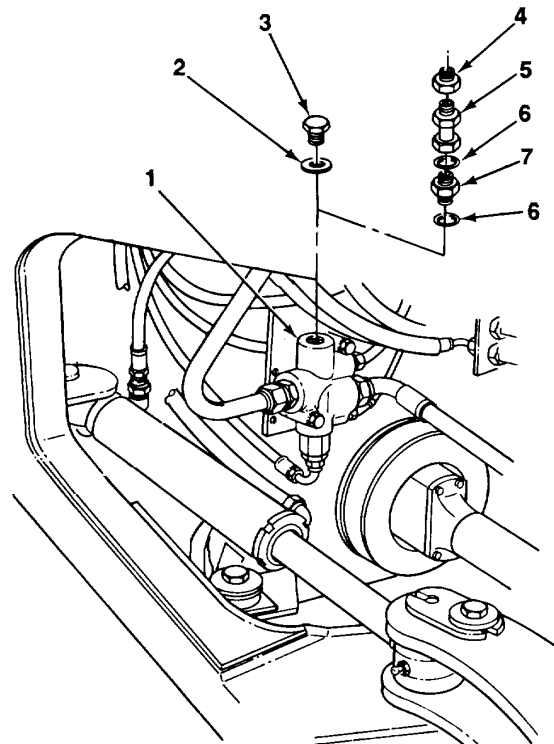
Personnel Required: Two

References:

- TM 1 0-3930-659-10

PRESSURE TEST

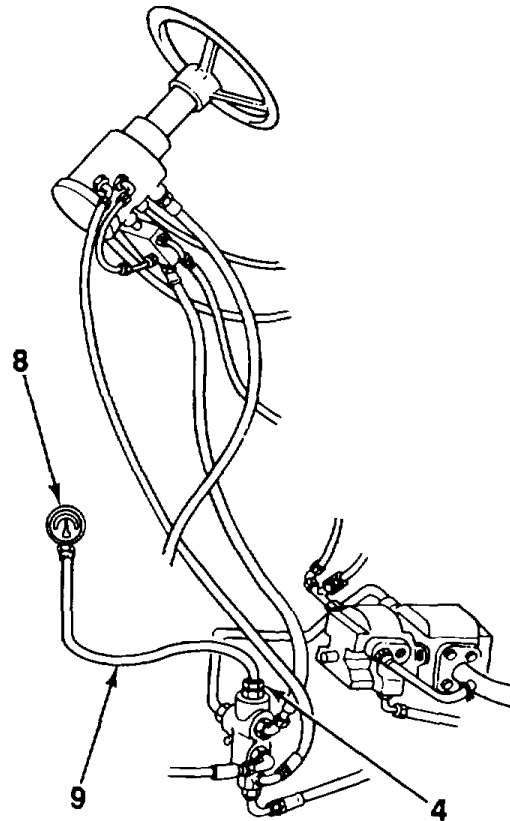
1. Remove plug (3) and preformed packing (2) priority valve (1). Discard preformed packing.
2. Install two preformed packings (6), adapter (7), union (5), and adapter (4) on priority valve (1).



TA707604

12-27. PRIORITY VALVE RELIEF PRESSURE TEST (Con't).

3. Install hose (9) and pressure gage (8) on adapter (4).
4. Start engine and operate at fast engine Idle speed (see TM 10-3930-659-10).

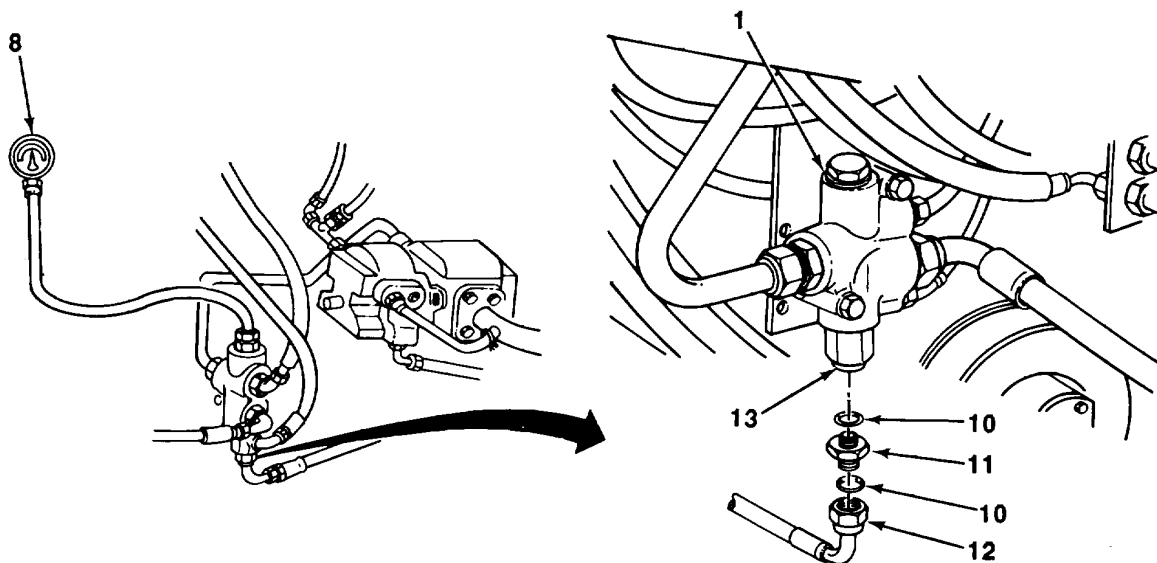
**NOTE**

- **Some rotation of steering wheel is normal. Excessive rotation of steering wheel while frame is locked indicates leakage in steering system.**
 - **Steering wheel must be turned rapidly to obtain accurate reading on pressure gage.**
5. Holding firm, constant pressure on steering wheel, turn steering wheel rapidly. Note pressure reading on pressure gage (8). Reading must be 2500-2600 psi (17,238-17,927 kPa).
 6. Shut down engine (see TM 10-3930-659-10). If pressure reading was within specification in step 5, perform step 11.

TA707605

12-27. PRIORITY VALVE RELIEF PRESSURE TEST (Con't).

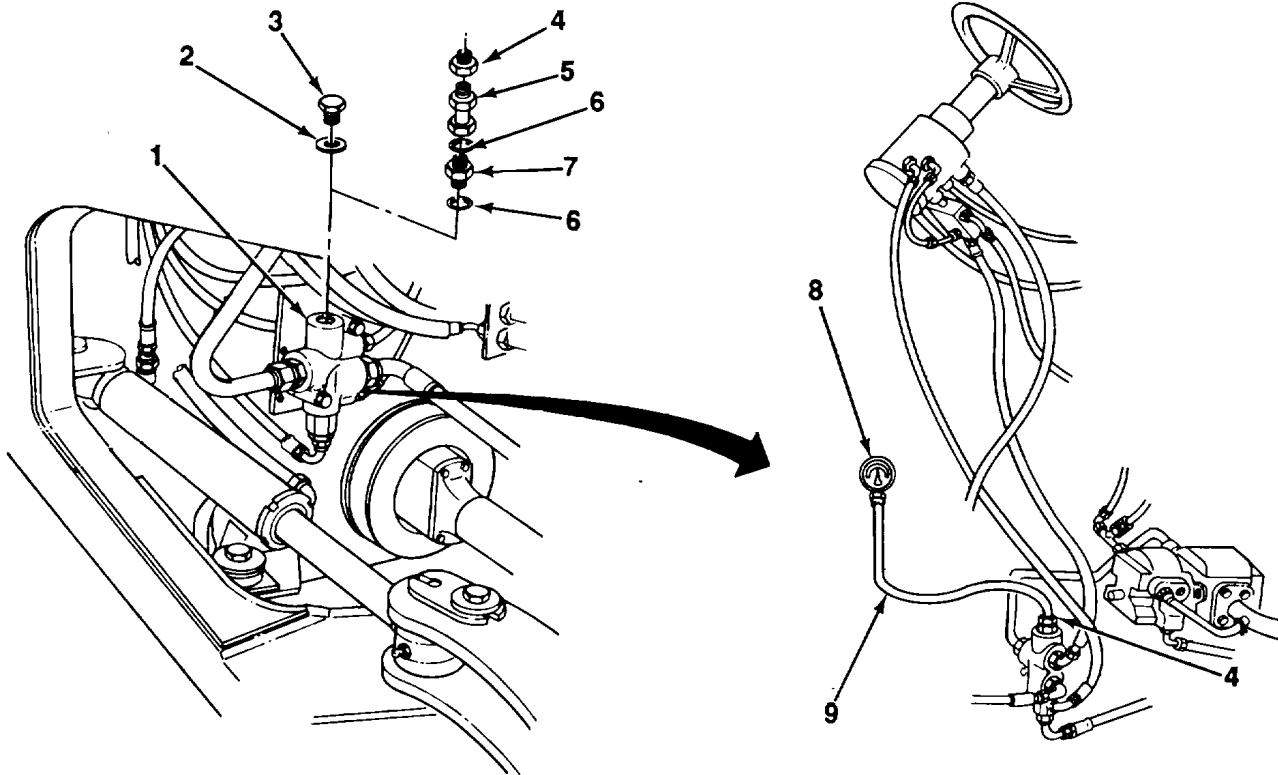
7. Remove hose (12), adapter (11), and two preformed packings (10) from priority valve (1). Discard preformed packings.
8. Turn adjusting screw (13) clockwise to increase pressure or counterclockwise to decrease pressure until pressure reading is within specification.
9. Install adapter (11), two new preformed packings (10), and hose (12) on priority valve (1).
10. Repeat steps 4 through 9 until pressure reading is within specification. If pressure cannot be adjusted to



TA707606

12-27. PRIORITY VALVE RELIEF PRESSURE TEST (Con't).

11. Remove pressure gage (8) and hose (9) from adapter (4).
12. Remove adapter (4), union (5), adapter (7), and two preformed packings (6) from priority valve (1). Discard preformed packings.
13. Install new preformed packing (2) and plug (3) on priority valve (1).

**FOLLOW-ON TASKS:**

- Install right transmission side guard (see paragraph 14-7).
- Remove frame locking bar (see TM 10-3930-659-10)

TA707607

12-28. PRIORITY VALVE AND MOUNTING PLATE REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Hydraulic reservoir drained (see LO 10-3930-659-12).
- Right transmission side guard removed (see paragraph 14-7).

NOTE

All hoses should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

- Priority valve-to-hydraulic reservoir return hose and fittings removed (see paragraph 12-6).
- Hydraulic oil return tube and fittings removed (see paragraph 12-7).

Equipment Conditions (Con't):

- Priority valve-to-main hydraulic pump line and fittings removed (see paragraph 12-8).
- Priority valve-to-secondary steering manifold hose and fittings removed (see paragraph 12-9).
- Priority valve-to-steering valve hose and fittings removed (see paragraph 12-10).

Tools/Test Equipment:

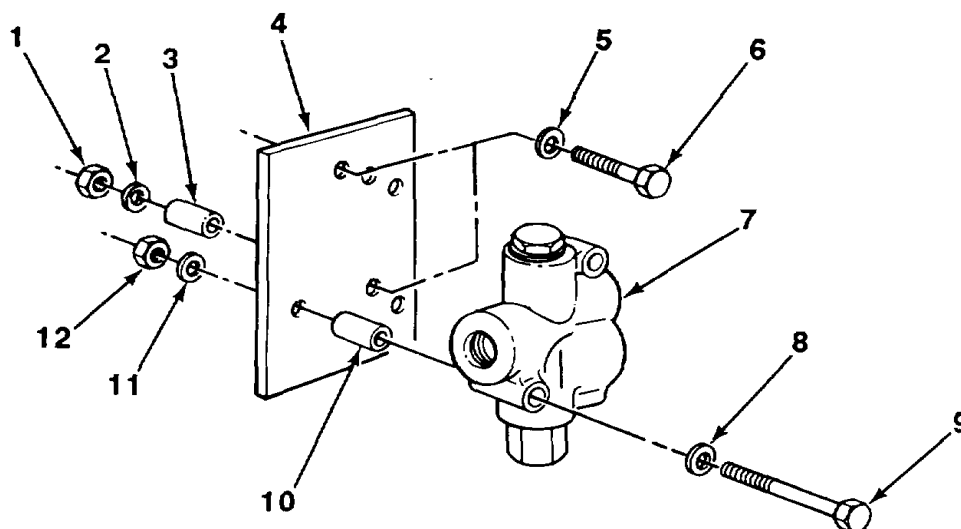
- General mechanic's tool kit (Item 44, Appendix F)

References:

- LO 10-3930-659-12
- TM 10-3930-659-10

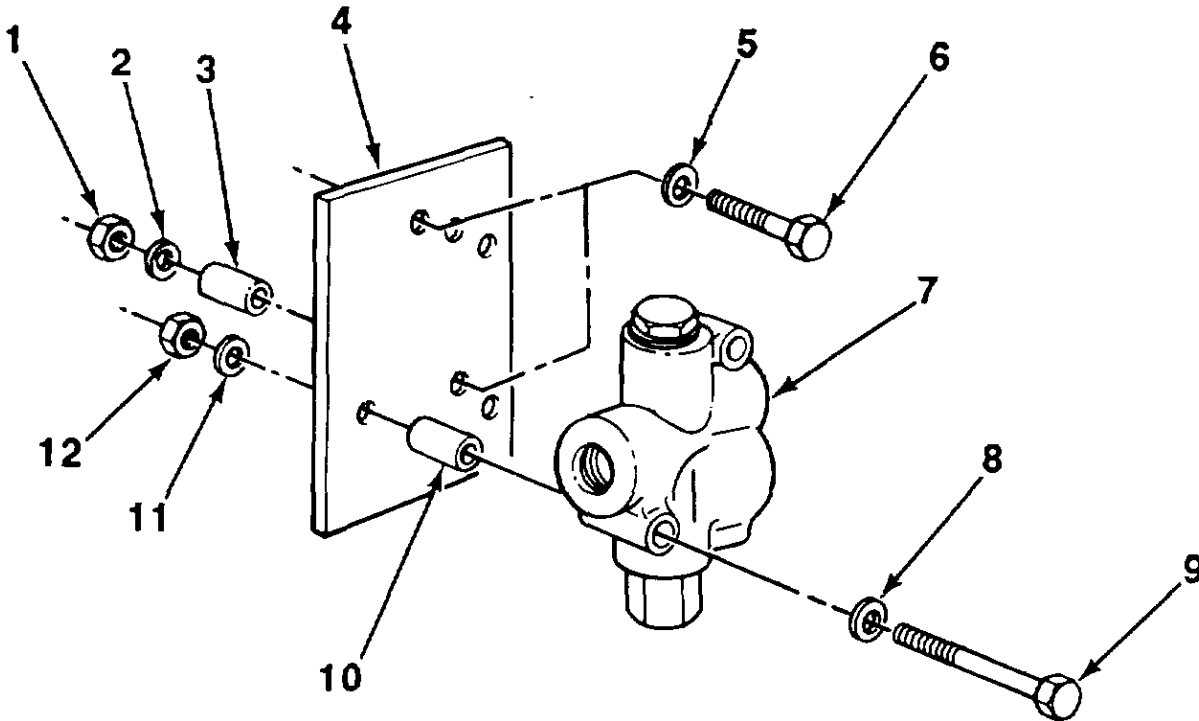
a. REMOVAL

1. Remove two nuts (12), washers (11), screws (9), washers (8), priority valve (7), and two spacers (10) from mounting plate (4).



12-28. PRIORITY VALVE AND MOUNTING PLATE REPLACEMENT (Con't).

2. Remove four nuts (1), washers (2), spacers (3), screws (6), washers (5), and mounting plate (4) from forklift truck.

**b. INSTALLATION**

1. Install mounting plate (4) on forklift truck with four washers (5), screws (6), spacers (3), washers (2), and nuts (1).
2. Install two spacers (10) and priority valve (7) on mounting plate (4) with two washers (8), screws (9), washers (11), and nuts (12).

FOLLOW-ON TASKS:

- Install priority valve-to-steering valve hose and fittings (see paragraph 12-10).
- Install priority valve-to-secondary steering manifold hose and fittings (see paragraph 12-9).
- Install priority valve-to-main hydraulic pump line and fittings (see paragraph 12-8).
- Install hydraulic oil return tube and fittings (see paragraph 12-7).
- Install priority valve-to-hydraulic reservoir return hose and fittings (see paragraph 12-6).
- Fill hydraulic reservoir with hydraulic fluid (see TM 10-3930-659-10).
- Perform priority valve relief pressure test and adjust as necessary (see paragraph 12-27).
- Install right transmission side guard (see paragraph 14-7).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707609

CHAPTER 13
FRAME AND TOWING ATTACHMENTS MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
13-1	Engine Frame Stepladder Replacement.....	13-1
13-2	Engine Compartment Step Maintenance	13-3
13-3	Counterweight Replacement	13-6
13-4	Pintle Hook Maintenance	13-8
13-5	Boom Lock Replacement	13-11

13-1. ENGINE FRAME STEPLADDER REPLACEMENT.

This task covers:

- a. Removal
- b. Installation

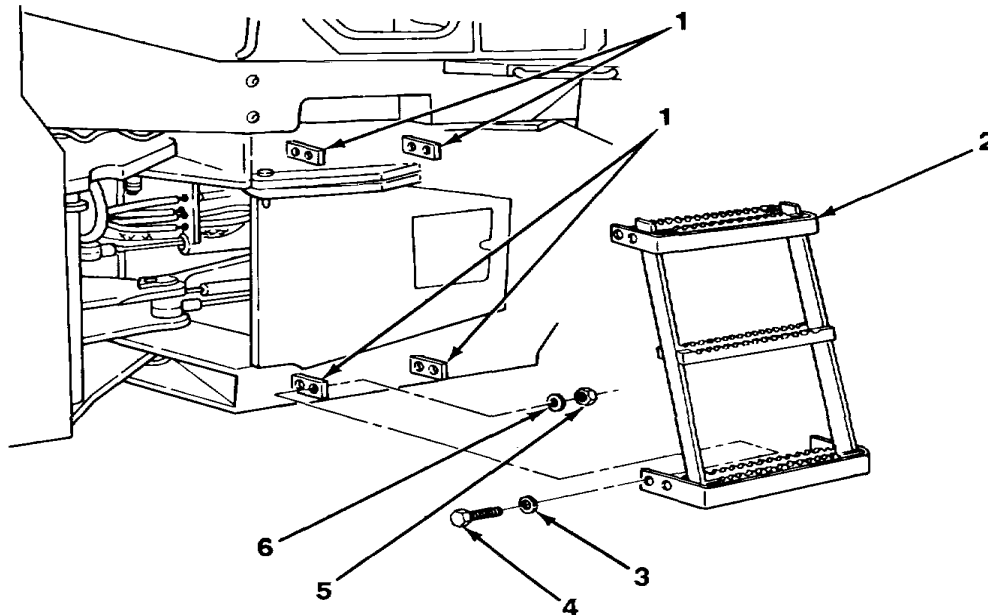
Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

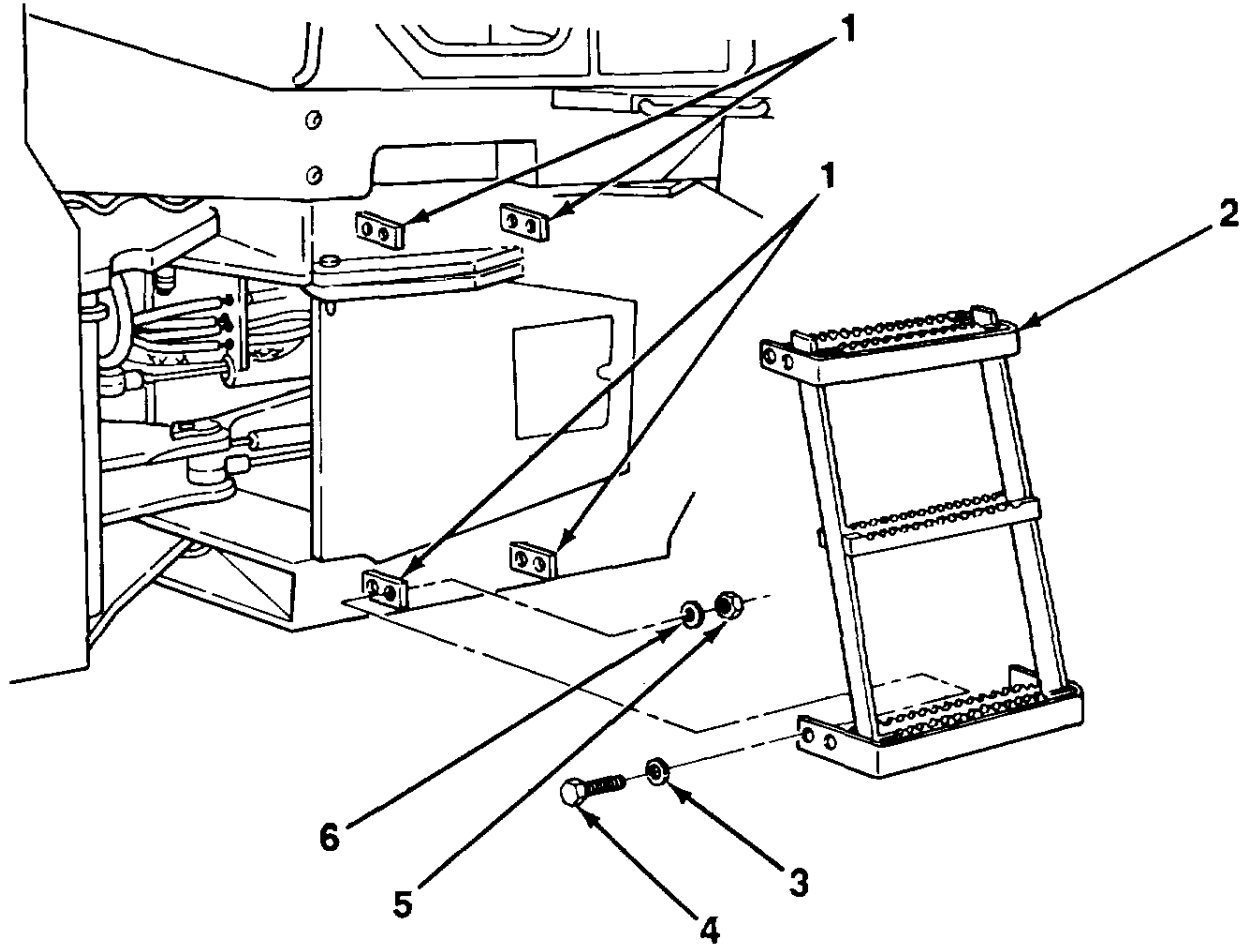
Remove eight nuts (5), washers (6), bolts (4), washers (3), and stepladder (2) from four brackets (1).



13-1. ENGINE FRAME STEPLADDER REPLACEMENT (Con't).

b. INSTALLATION

Install stepladder (2) on four brackets (1) with eight washers (3), bolts (4), washers (6), and nuts (5).



TA706751

13-2. ENGINE COMPARTMENT STEP MAINTENANCE.

This task covers:

- | | |
|----------------|-----------------|
| a. Removal | b. Assembly |
| b. Disassembly | e. Installation |
| c. Cleaning | |
-

Initial Setup:

Materials/Parts:

- Rags (Item 27, Appendix C)
- Dry cleaning solvent (Item 31, Appendix C)

General Safety Instructions:

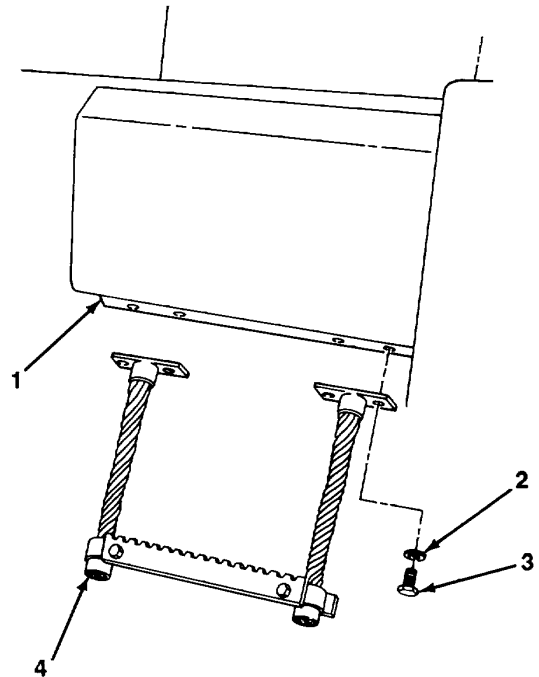
- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.
-

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

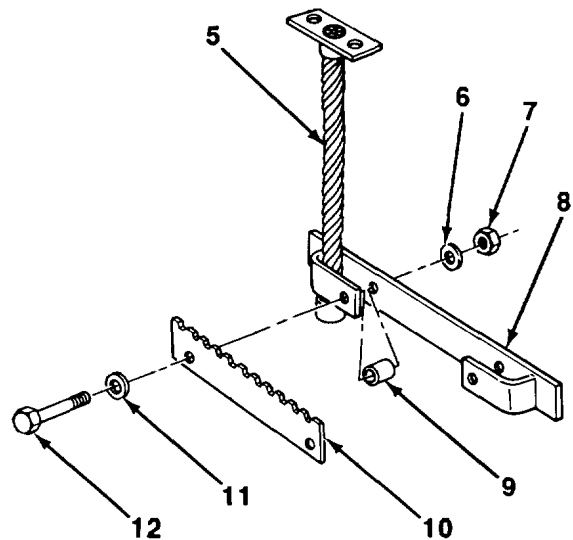
Remove four bolts (3), washers (2), and engine compartment step assembly (4) from frame (1).



TA706752

13-2. ENGINE COMPARTMENT STEP MAINTENANCE.**b. DISASSEMBLY**

1. Remove two nuts (7), washers (6), screws (12), washers (11), spacers (9), and tread (10) from tread (8).
2. Remove two cables (5) from tread (8).

**c. CLEANING AND INSPECTION****WARNING**

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and **DO NOT** breathe vapors. **DO NOT** use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry with clean rags.
2. Inspect two cables for fraying and damage. Replace if frayed or damaged.
3. Inspect all parts for damage. Replace damaged parts.

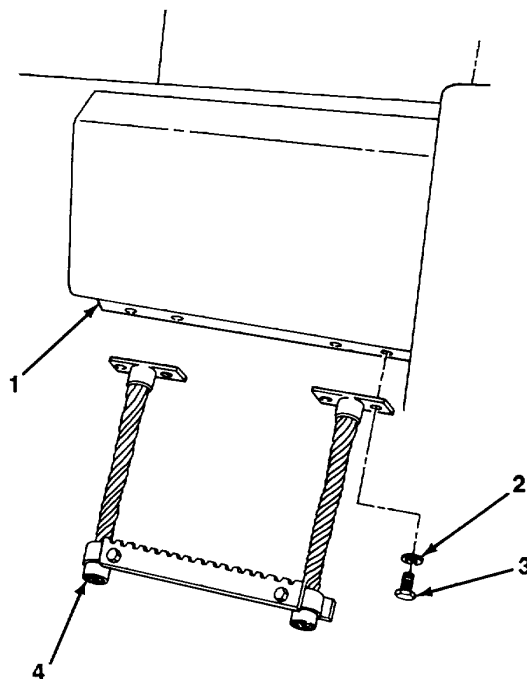
d. ASSEMBLY

1. Position two cables (5) in tread (8).
2. Install tread (10) and two spacers (9) on tread (8) with two washers (11), screws (12), washers (6), and nuts (7).

TA706753

13-2. ENGINE COMPARTMENT STEP MAINTENANCE (Con't).**e. INSTALLATION**

Install engine compartment step assembly (4)
on frame (1) with four washers (2) and bolts (3).



TA706754

13-3. COUNTERWEIGHT REPLACEMENT.

This task covers:

- a. Removal b. Installation

Initial Setup:

Tools/Test Equipment:

- Torque wrench multiplier (Item 23, Appendix F)
- Socket wrench set, y In. drive (Item 55, Appendix F)

Personnel Required: Three**References:**

- TM 10-3930-659-10

a. REMOVAL

1. Attach on-board crane cable (1) to counterweight (2) (see TM 10-3930-659-10). Remove slack from crane cable.

WARNING

- **Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.**
 - **On-board crane is heavy. Assistant is required to raise or lower on-board crane to various operating positions. Assistant is required to help lower load. Failure to follow this warning may result in injury to personnel.**
2. Remove four bolts (4), washers (3), and counterweight (2) from frame (5). Using on-board crane, lower counterweight to ground.
 3. Remove on-board crane cable (1) from counterweight (2) (see TM 10-3930-659-10).

b. INSTALLATION

1. Attach on-board crane cable (1) to counterweight (2) (see TM 10-3930-659-10).

13-3. COUNTERWEIGHT REPLACEMENT (Con't).

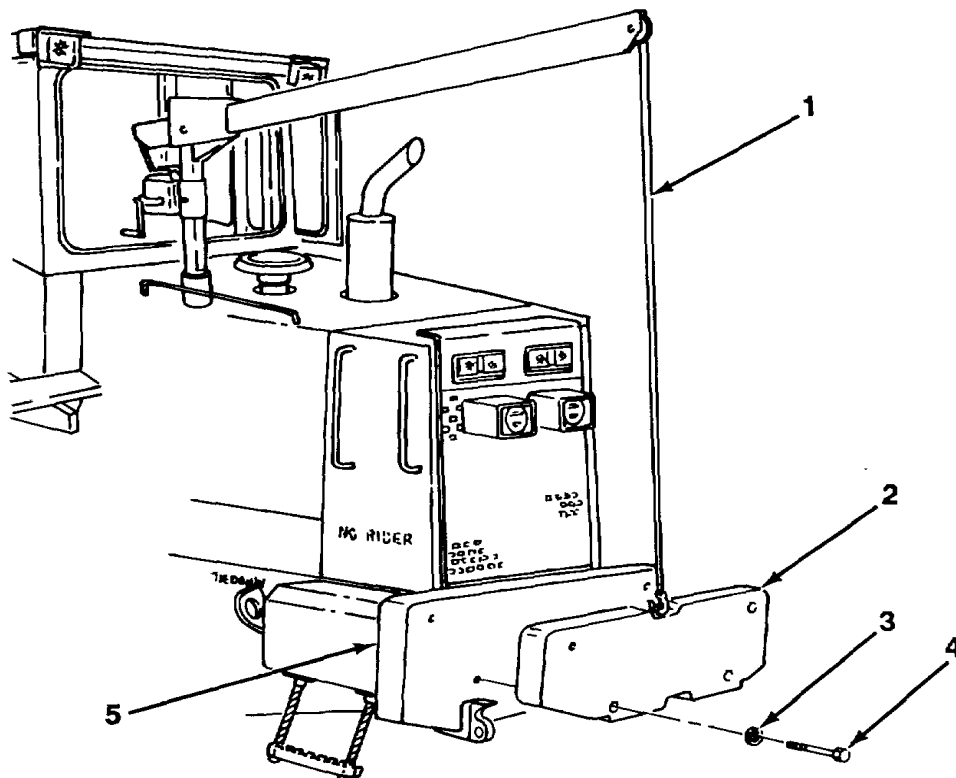
WARNING

- Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.
 - On-board crane is heavy. Assistant is required to raise or lower on-board crane to various operating positions. Assistant is required to help raise load. Failure to follow this warning may result in injury to personnel.
2. Using on-board crane, lift counterweight (2) into position on frame (5).

NOTE

Ensure that all bolts are started before tightening.

3. Install four washers (3) and bolts (4) on counterweight (2). Torque bolts to 800 lb.-ft. (1085 N•m).
4. Remove on-board crane cable (1) from counterweight (2) (see TM 10-3930-659-10)



TA706755

13-4. PINTLE HOOK MAINTENANCE.

This task covers:

- | | |
|----------------------------|-----------------|
| a. Removal | b. Assembly |
| b. Disassembly | e. Installation |
| c. Cleaning and Inspection | |

Initial Setup:

Materials/Parts:

- Rags (Item 27, Appendix C)
- Dry cleaning solvent (Item 31, Appendix C)
- One drive pin

Tools/Test Equipment:

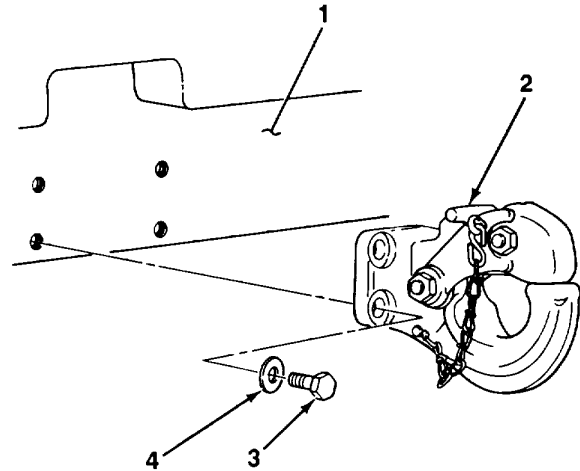
- General mechanic's tool kit (Item 44, Appendix F)
- Torque wrench, 0-175 lb.-ft. (Item 52, Appendix F)

General Safety Instructions:

- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.

a. REMOVAL

Remove four bolts (3), washers (4), and pintle hook (2) from frame (1).

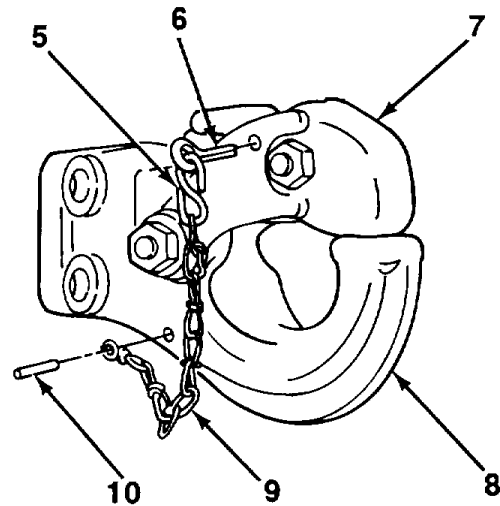


TA706756

13-4. PINTLE HOOK MAINTENANCE (Con't)

b. DISASSEMBLY

1. Remove cotter pin (6) and chain (9) from upper jaw (7).
2. Remove drive pin (10) from lower jaw (8).
3. Remove cotter pin (6) and S-hook (5) from chain (9).
4. Remove chain (9) from drive pin (10). Discard drive pin.

**c. CLEANING AND INSPECTION****WARNING**

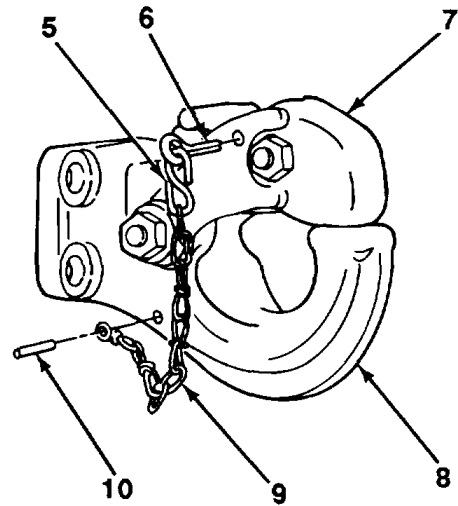
Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry with clean rags.
2. Inspect all parts for damage. Replace damaged parts.

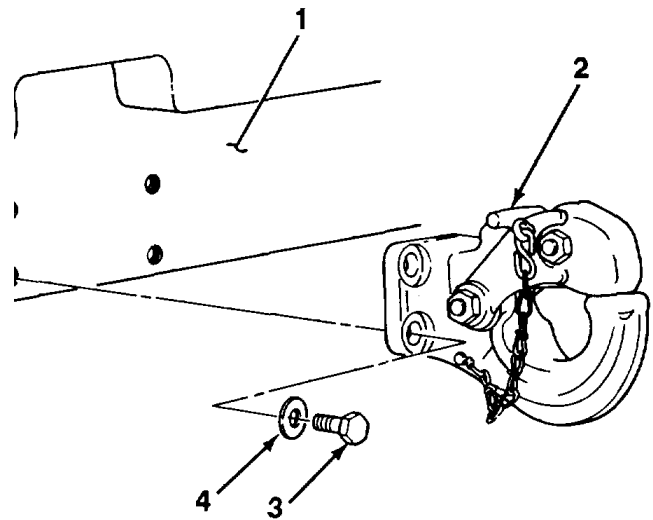
TA706757

13-4. PINTLE HOOK MAINTENANCE (Con't)**d. ASSEMBLY**

1. Install chain (9) on new drive pin (10).
2. Install S-hook (5) and cotter pin (6) on chain (9).
3. Install drive pin (10) on lower jaw (8).
4. Install cotter pin (6) and chain (9) in upper jaw (7).

**e. INSTALLATION**

Install pintle hook (2) on frame (1) with four washers (4) and bolts (3). Torque bolts to 100 lb.-ft. (136 N•m).



TA706758

13-5. BOOM LOCK REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup:

Tools/Test Equipment:

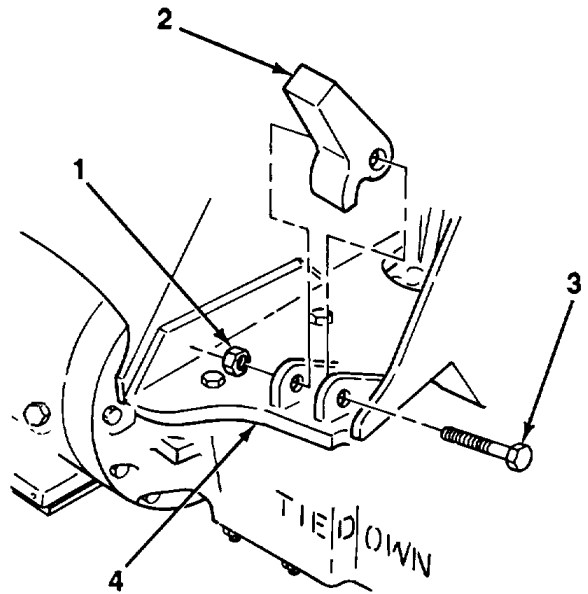
- General mechanic's tool kit (Item 44. Appendix F)
-

a. REMOVAL

Remove nut (1), screw (3), and boom lock (2) from frame (4).

b. INSTALLATION

Install boom lock (2) on frame (4) with screw (3) and nut (1)



TA706759

CHAPTER 14
BODY AND CAB MAINTENANCE

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14-1. ACCESS COVER REPLACEMENT.

This task covers:

a. Removal

b. Installation

Initial Setup:

Tools/Test Equipment:

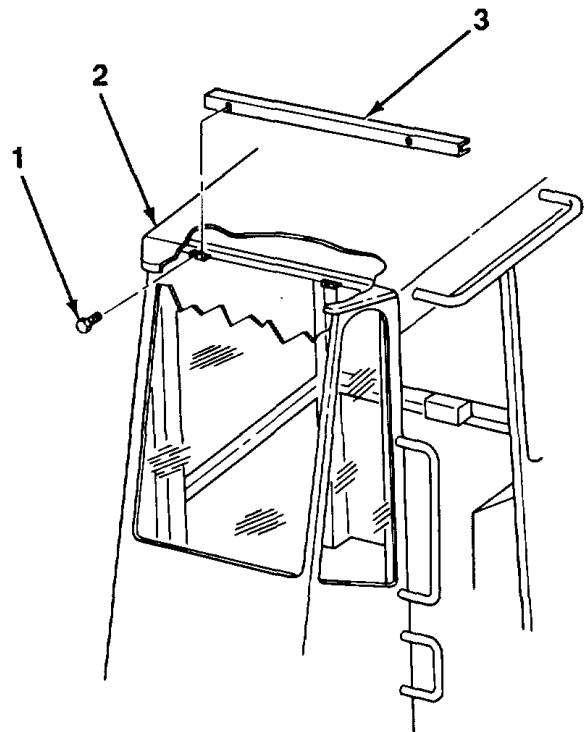
- General mechanic's tool kit (Item 44, Appendix F)
-

a. REMOVAL

Remove two screws (1) and access cover (3) from cab (2).

b. INSTALLATION

Install access cover (3) on cab (2) with two screws (1).



TA706793

14-2. CAB DOOR REPLACEMENT.

This Task Covers:

a. Removal

b. Installation

Initial Setup:

Equipment Conditions:

- Cab fresh air filter door opened (see TM 10-3930-659-10).

Personnel Required: Two

Tools/Test Equipment:

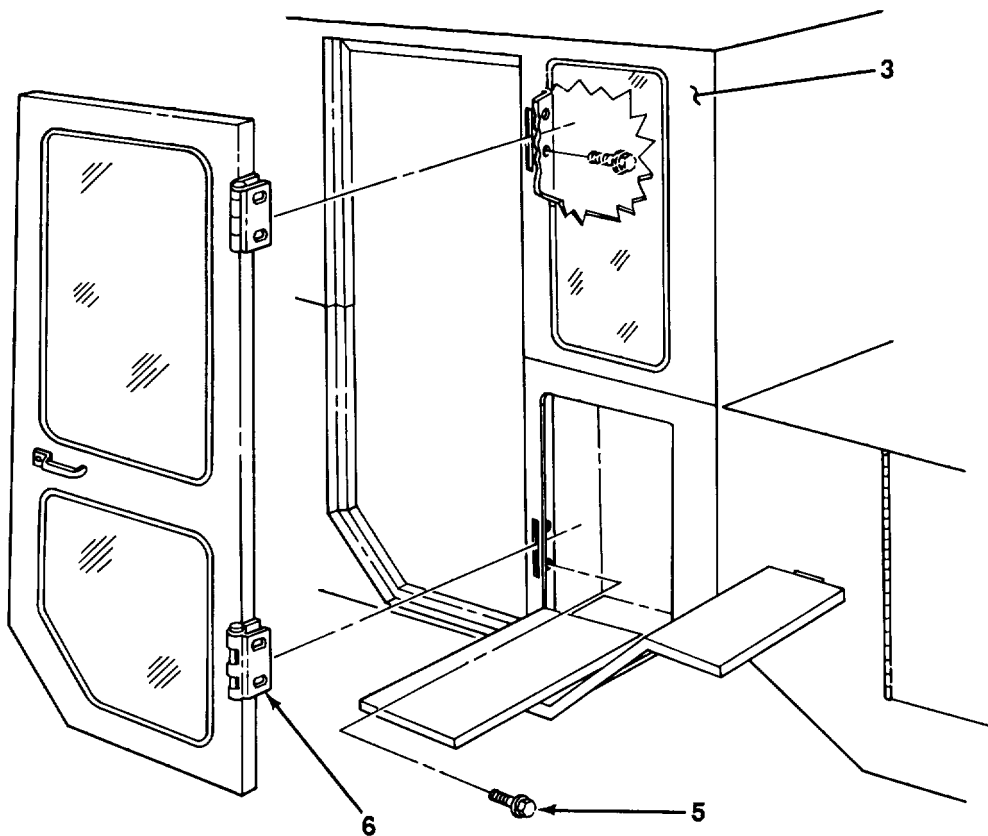
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL

1. Remove two screws (5) from lower hinge (6) and cab (3).

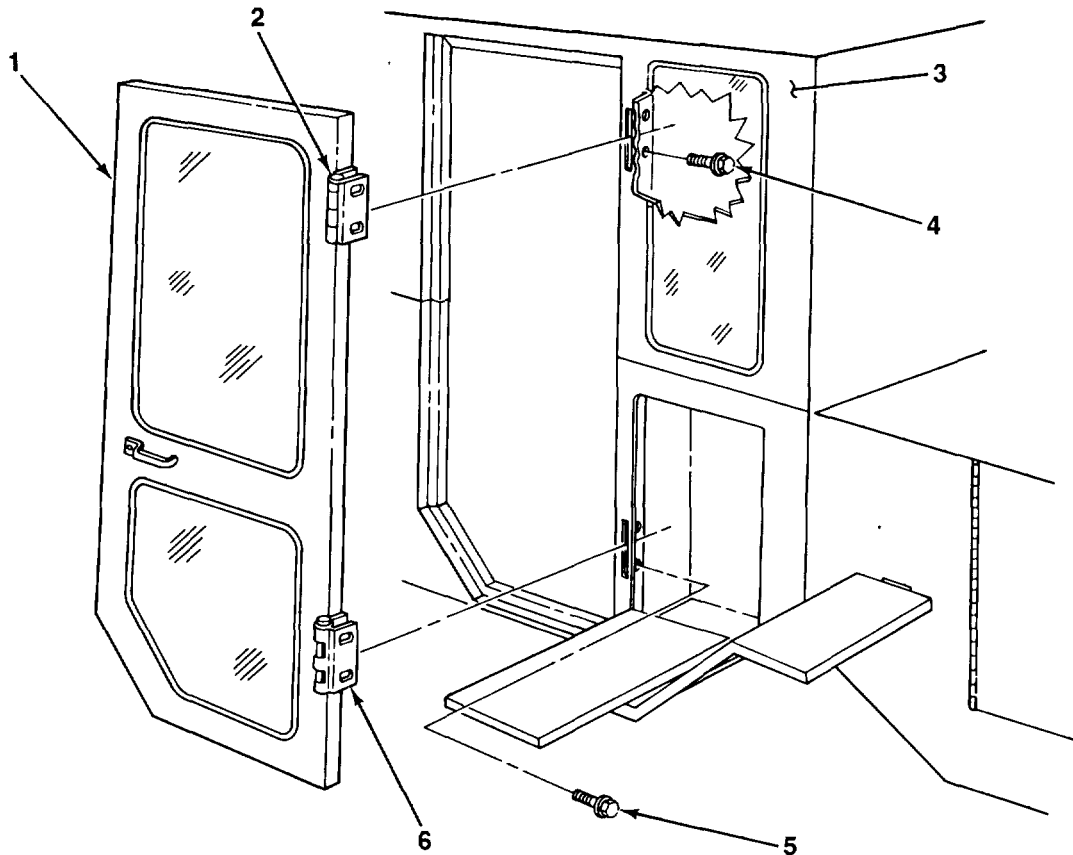


TA706794

14-2. CAB DOOR REPLACEMENT (Con't).**WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

2. Open cab door (1) and remove two screws (4) from upper hinge (2) and cab (3). Remove cab door from cab.



TA706795

14-2. CAB DOOR REPLACEMENT (Con't).

b. INSTALLATION**WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

1. Position cab door (1) on cab (3) and loosely install two screws (4) on upper hinge (2) and cab.
2. Loosely install two screws (5) on lower hinge (6) and cab (3).
3. Close cab door (1) and ensure that latch properly engages. Tighten four screws (4 and 5).

FOLLOW-ON TASKS:

- Close cab fresh air filter door (see TM 10-3930-659-10).

14-3. CAB DOOR REPAIR.

This Task Covers:

- a. Disassembly
- b. Cleaning and Inspection
- c. Assembly

Initial Setup:

Materials/Parts:

- Rags (Item 27, Appendix C)
- Dry cleaning solvent (Item 31, Appendix C)
- One locknut
- Two cotter pins
- Two lockwashers

Tools/Test Equipment:

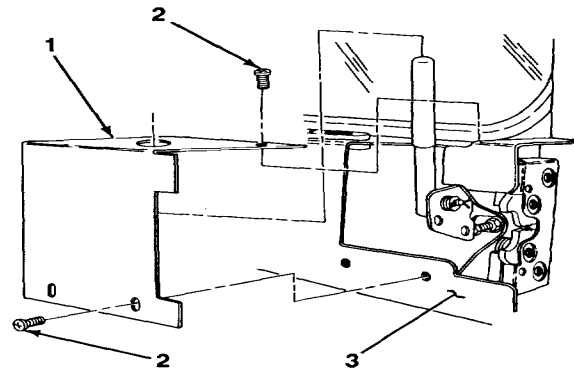
- General mechanic's tool kit (Item 44, Appendix F)

General Safety Instructions:

- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.

a. DISASSEMBLY

1. Remove four screws (2) and cover (1) from cab door (3).



TA706796

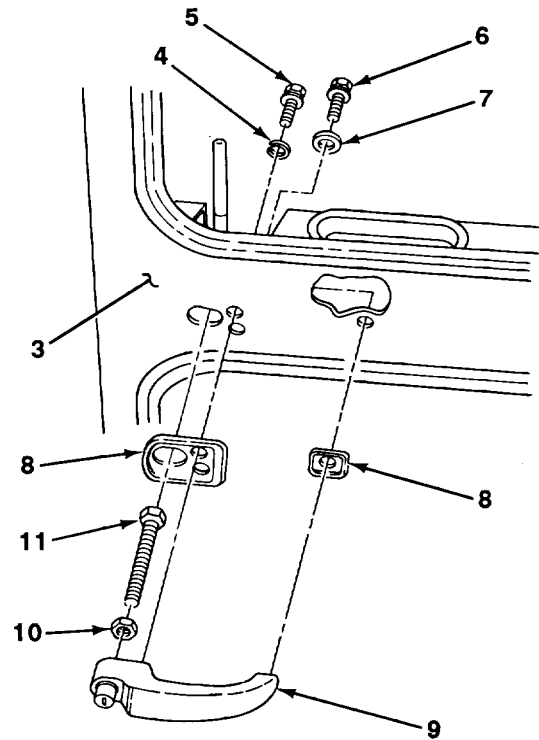
14-3. CAB DOOR REPAIR (Con't).

2. Remove two screws (5), lockwashers (4), screw (6), rubber washer (7), outside door handle (9), and two grommets (8) from cab door (3). Discard lockwashers.

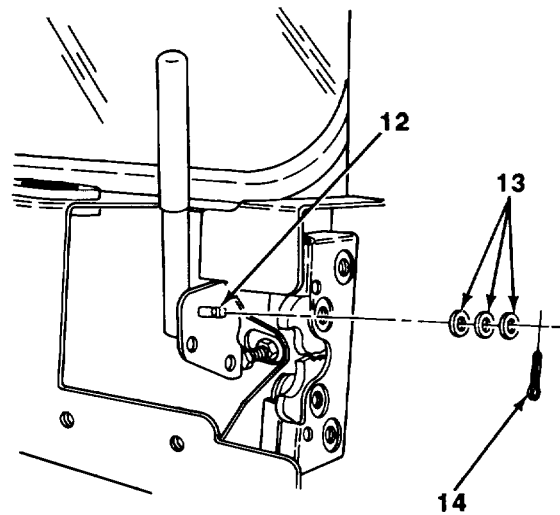
NOTE

Note position of screw in outside door handle.

3. Loosen nut (10), and remove screw (11) and nut from outside door handle (9).



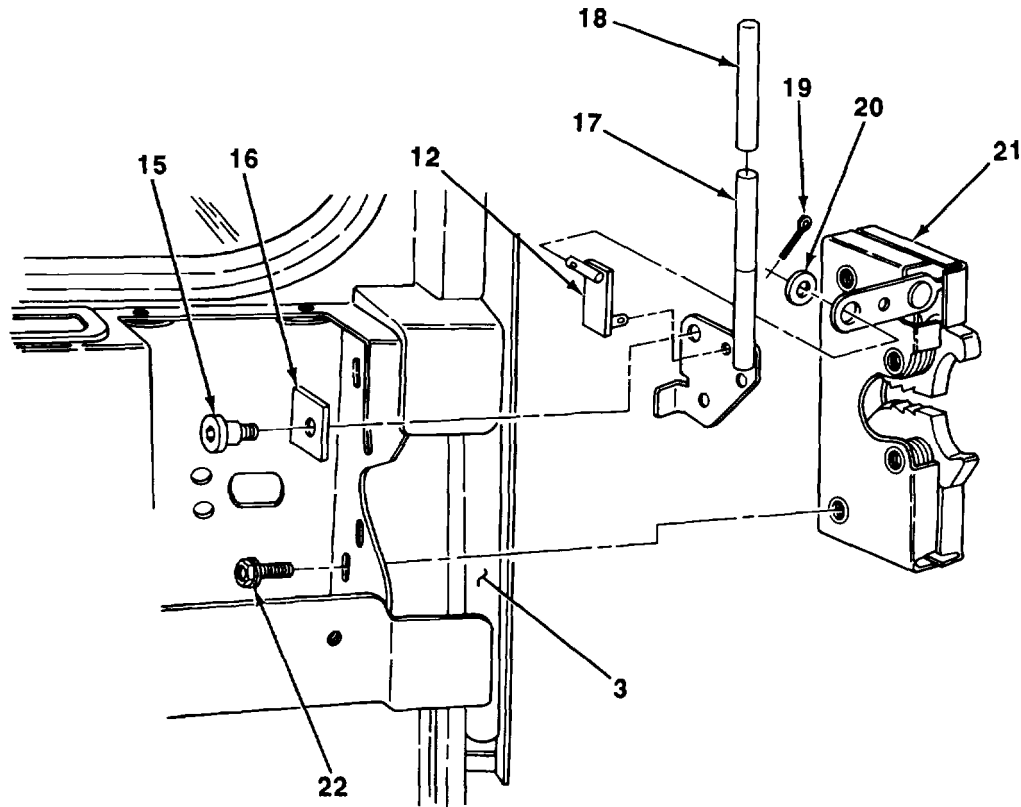
4. Remove cotter pin (14) and three washers (13) from latch linkage (12). Discard cotter pin.



TA706797

14-3. CAB DOOR REPAIR (Con't).

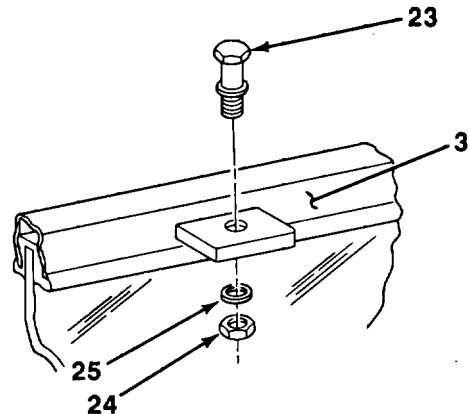
5. Remove shoulder bolt (15) and Inside door handle (17) from cab door (3).
6. Remove handle grip (18) from Inside door handle (17).
7. Remove cotter pin (19), washer (20), and latch linkage (12) from latch (21). Discard cotter pin.
8. Remove four screws (22) and latch (21) from cab door (3).
9. Remove grommet (16) from cab door (3).



TA706798

14-3. CAB DOOR REPAIR (Con't).

10. Remove locknut (24), washer (25), and striker in (23) from cab door (3). Discard locknut.

**b. CLEANING AND INSPECTION****WARNING**

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-1380F (380C-590C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all metal parts with dry cleaning solvent and dry with clean rags.
2. Inspect parts for cracks, wear, and damage. Replace cracked, worn, or damaged parts.

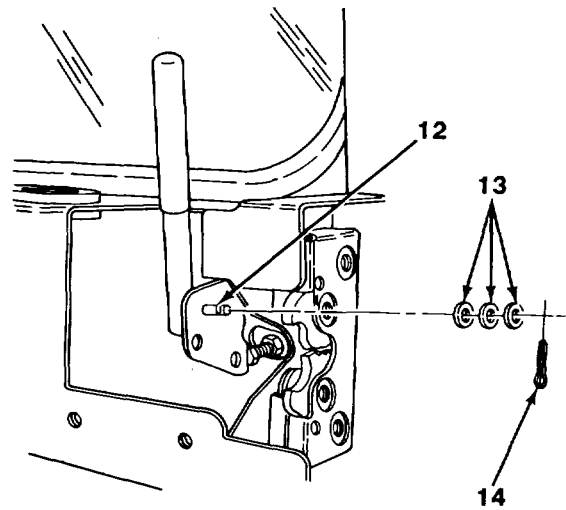
c. ASSEMBLY

1. Install striker pin (23) on cab door (3) with washer (25) and new locknut (24).
2. Install grommet (16) on cab door (3).
3. Install latch (21) on cab door (3) with four screws (22).
4. Install latch linkage (12) on latch (21) with washer (20) and new cotter pin (19).
5. Install handle grip (18) on inside door handle (17).
6. Install inside door handle (17) on cab door (3) with shoulder bolt (15).

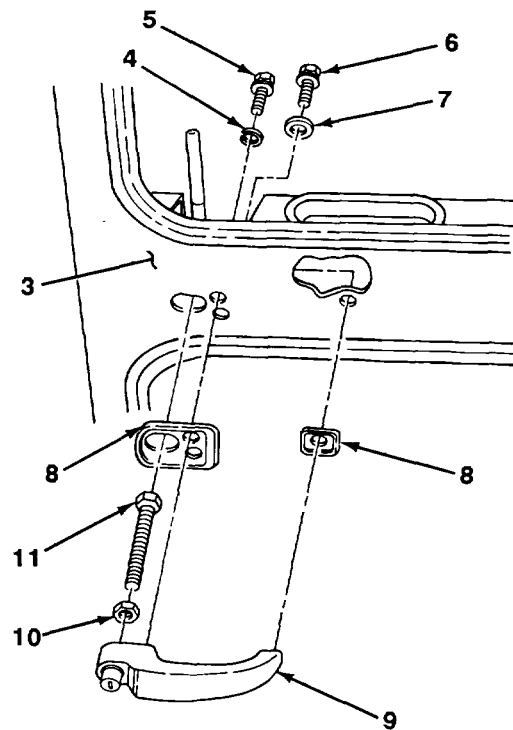
TA706799

14-3. CAB DOOR REPAIR (Con't).

7. Install three washers (13) and new cotter pin (14) on latch linkage (12).



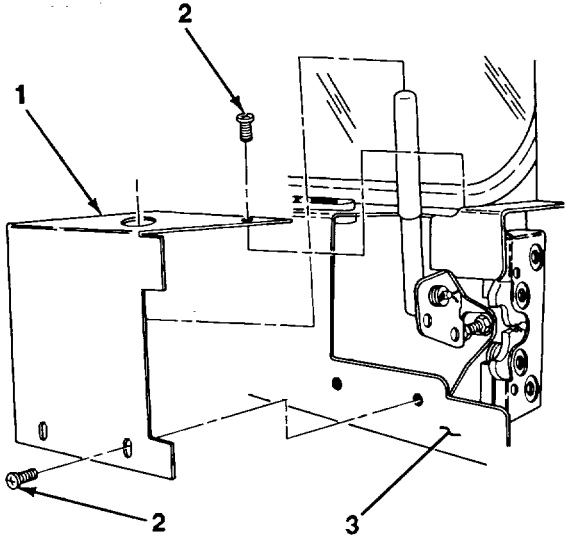
8. Install screw (11) and nut (10) on outside door handle (9). Tighten nut.
9. Install two grommets (8) and outside door handle (9) on cab door (3) with rubber washer (7), screw (6), two new lockwashers (4), and screws (5).



TA706800

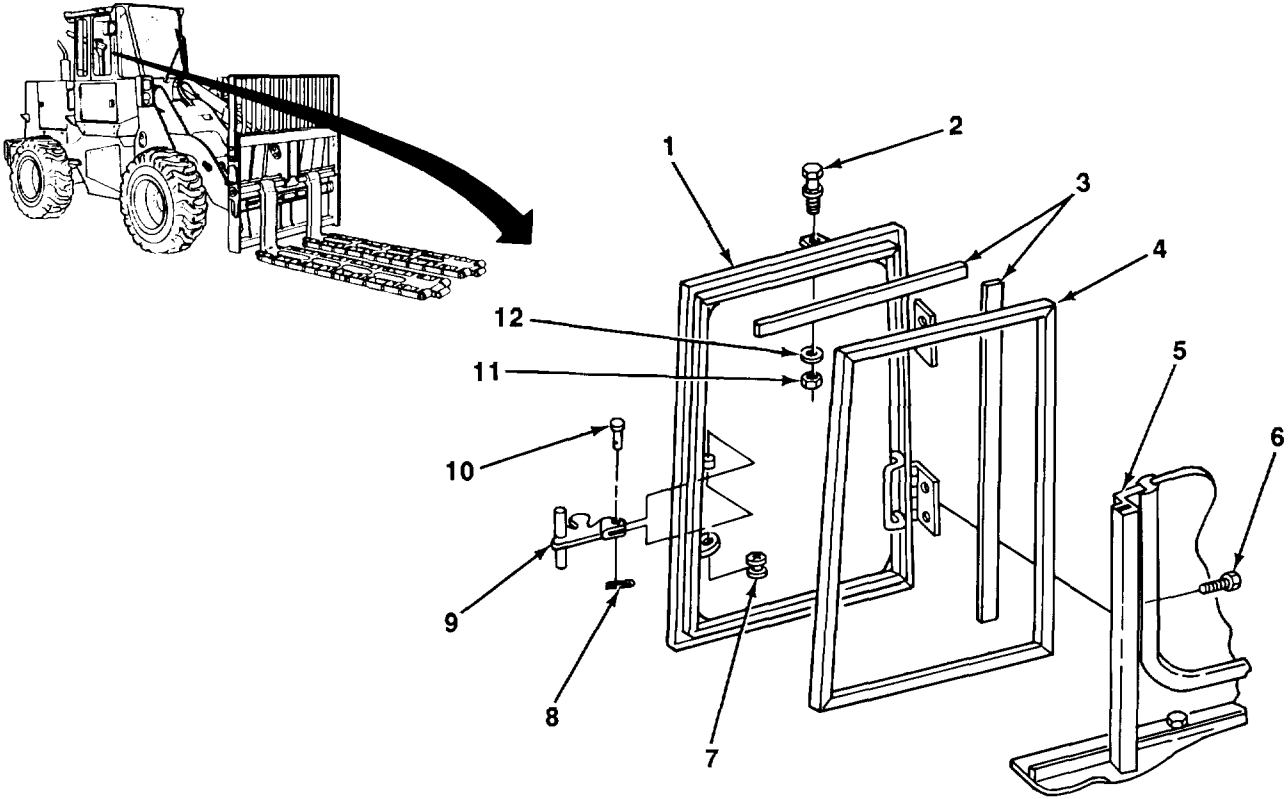
14-3. CAB DOOR REPAIR (Con't).

- 10. Install cover (1) on cab door (3) with four screw (2).



TA706801

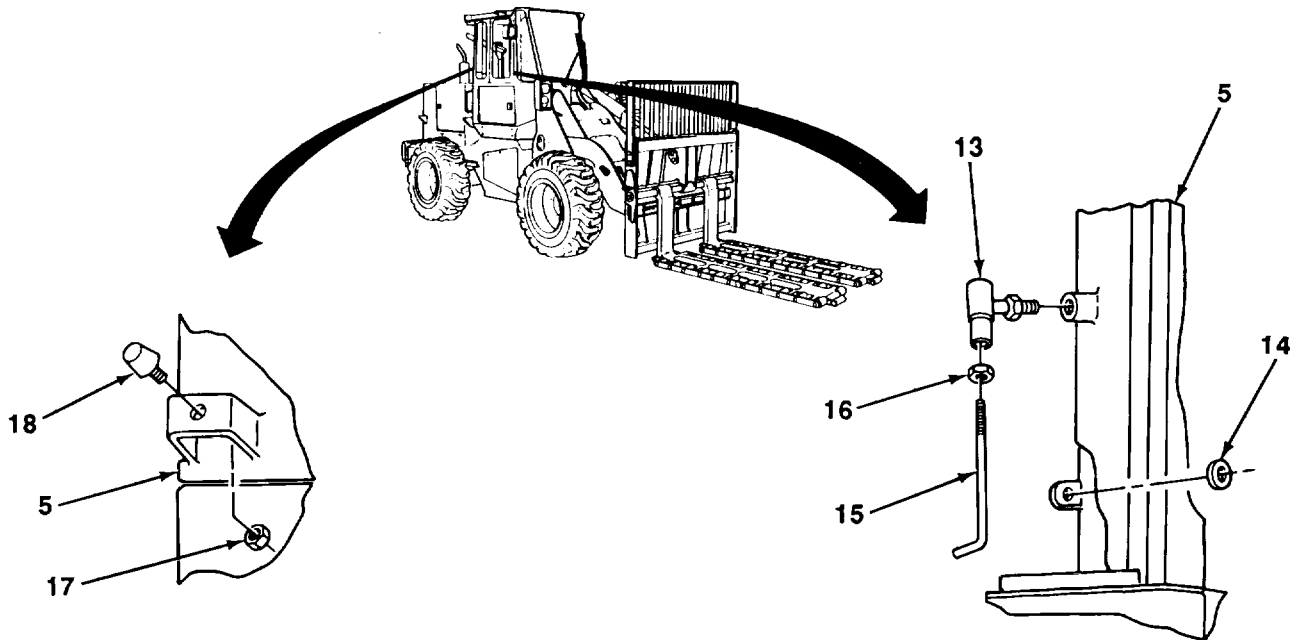
14-4. CAB WINDOW REPLACEMENT (Con't).



TA706802

14-4. CAB WINDOW REPLACEMENT (Con't).

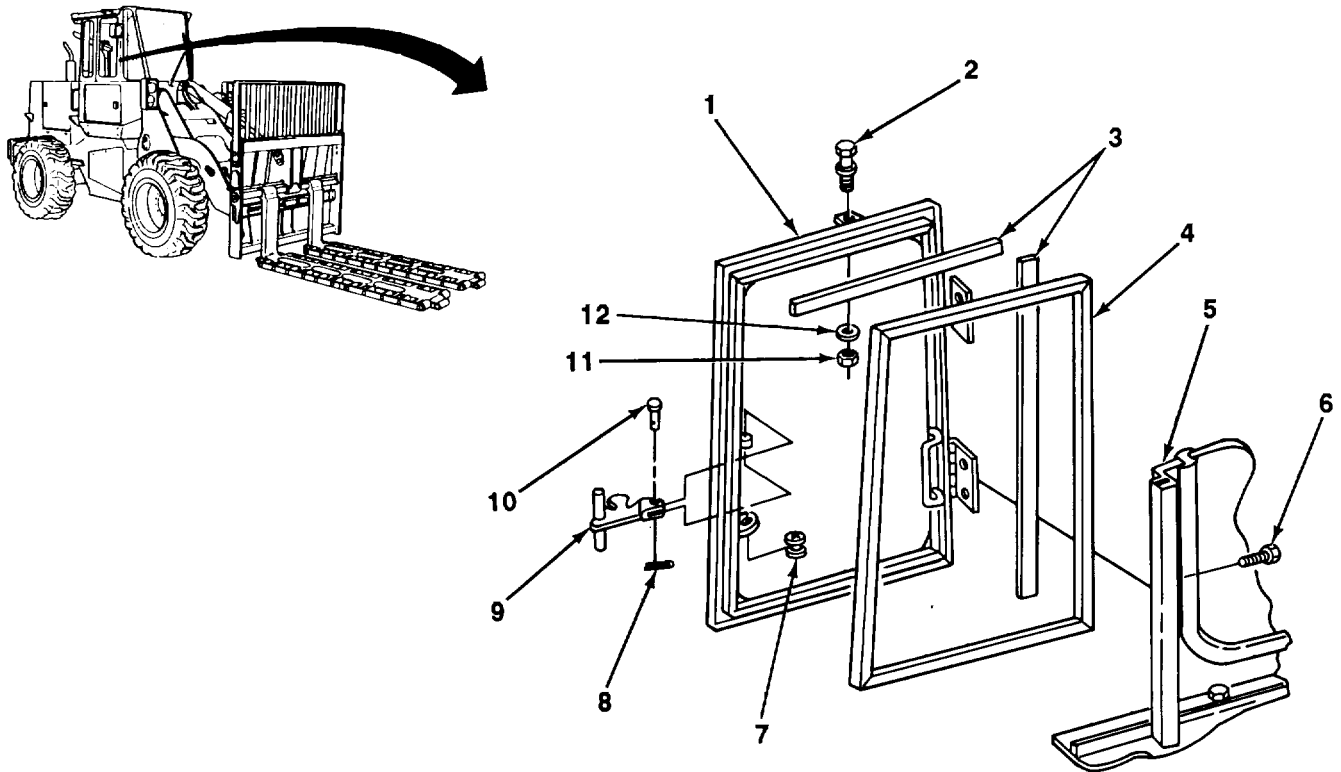
6. Remove grommet (14) and ball joint (13) assembly from cab (5).
7. Loosen Jamnut (16), and remove latch rod (15) and Jamnut from ball joint (13).
8. Remove nut (17) and rubber bumper (18) from cab (5).

**b. INSTALLATION**

1. Install rubber bumper (18) on cab (5) with nut (17).
2. Install jamnut (16) and latch rod (15) on ball joint (13). Tighten Jamnut.
3. Install ball Joint (13) assembly on cab (5).
4. Install grommet (14) on cab (5).
5. Install striker pin (2) on cab window (1) with washer (12) and new locknut (11).
6. Install four new double-coated tapes (3) and isolator (4) on cab window (1).
7. Install grommet (7) on cab window (1).
8. Install latch (9) on cab window (1) with pin (10) and new cotter pin (8).
9. Install cab window (1) on cab (5) with four bolts (6).

TA706803

14-4. CAB WINDOW REPLACEMENT (Con't).



FOLLOW-ON TASKS:

- Close cab window (see TM 10-3930-659-10).

TA706804

14-5. CAB DOOR AND CAB WINDOW RETAINING LATCHES REPLACEMENT.

This Task Covers:

a. Removal

b. Installation

Initial Setup:

Materials/Parts:

- One grooved pin
- One locknut
- One springpin

Tools/Test Equipment:

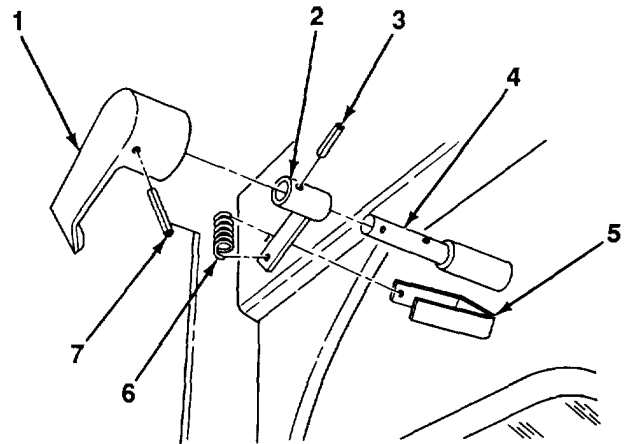
- General mechanic's tool kit (Item 44, Appendix F)

NOTE

**Cab door latch and cab window retaining latch are removed and installed the same way.
Cab door latch is illustrated.**

a. REMOVAL

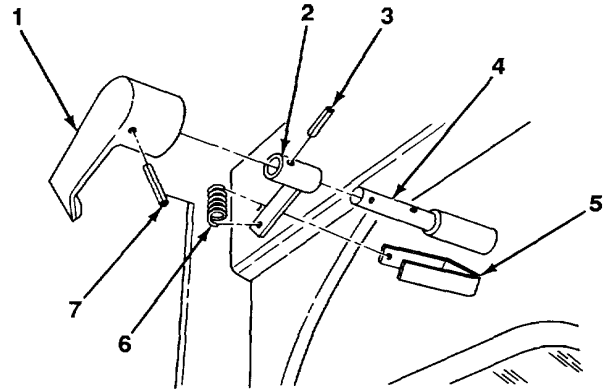
1. Remove grooved pin (7) and handle (1) from release rod (4). Discard grooved pin.
2. Remove spring (6) from tab (2) and bracket (5).
3. Remove springpin (3) and tab (2) from release rod (4). Discard springpin.



TA706805

14-5. CAB DOOR AND CAB WINDOW RETAINING LATCHES REPLACEMENT (Con't).

4. Remove locknut (12), screw (8), and release rod (4) from retaining latch (9). Discard locknut.
5. Remove release rod (4) from cab (11).
6. Remove four screws (10) and retaining latch (9) from cab (11).

**b. INSTALLATION**

1. Install retaining latch (9) on cab (11) with four screws (10).
2. Install release rod (4) on retaining latch (9) with screw (8) and new locknut (12).
3. Install tab (2) on release rod (4) with new springpin (3).
4. Install spring (6) on bracket (5) and tab (2).
5. Install handle (1) on release rod (4) with new grooved pin (7).

TA706806

14-6. CAB SKIRTS REPLACEMENT.

This Task Covers:

a. Side Cab Skirts Replacement

b. Front Cab Skirt Replacement

Initial Setup:

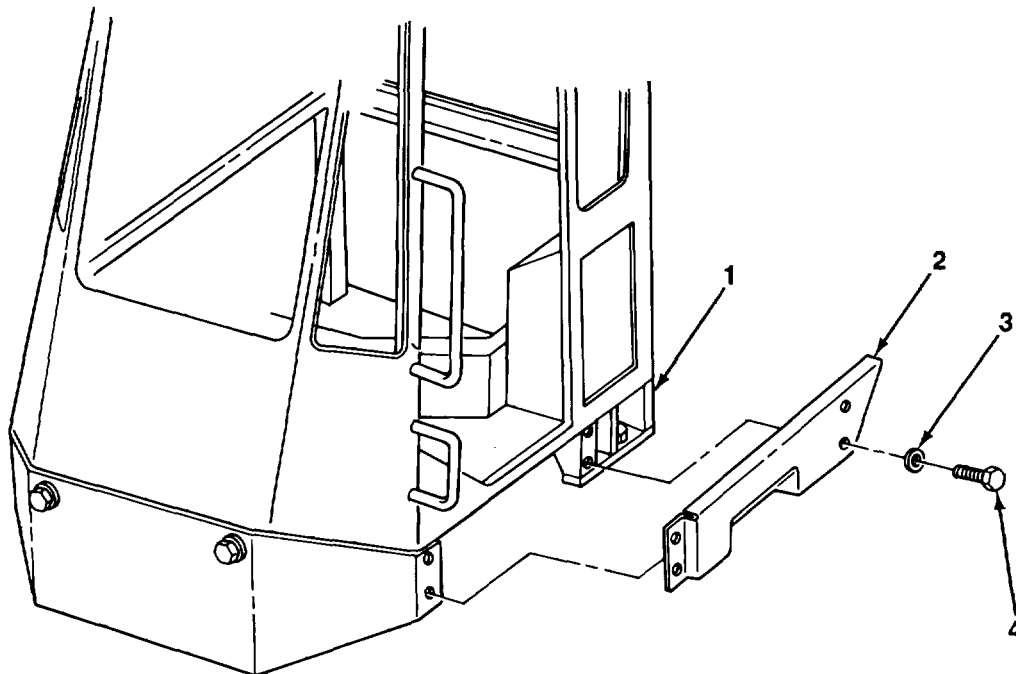
Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. SIDE CAB SKIRTS REPLACEMENT**NOTE**

Right and left side cab skirts are removed and installed the same way. Left side cab skirt is illustrated.

1. Remove four screws (4), washers (3), and cab skirt (2) from cab (1).
2. Install cab skirt (2) on cab (1) with four washers (3) and screws (4).

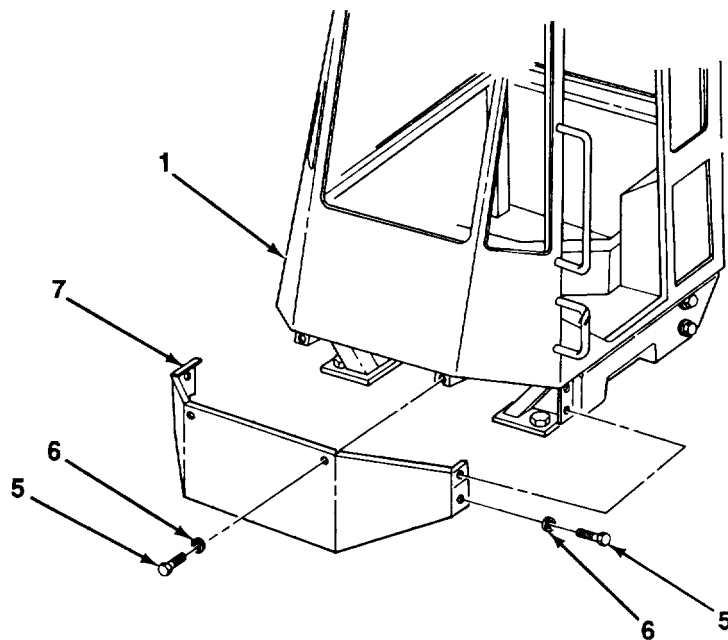


TA706807

14-6. CAB SKIRTS REPLACEMENT (Con't).

b. FRONT CAB SKIRT REPLACEMENT

1. Remove six screws (5), washers (6), and cab skirt (7) from cab (1).
2. Install cab skirt (7) on cab (1) with six washers (6) and screws (5).



TA706808

14-7. TRANSMISSION SIDE GUARDS REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

Initial Setup:

Materials/Parts:

- Adhesive (Item 1, Appendix C)

Tools/Test Equipment:

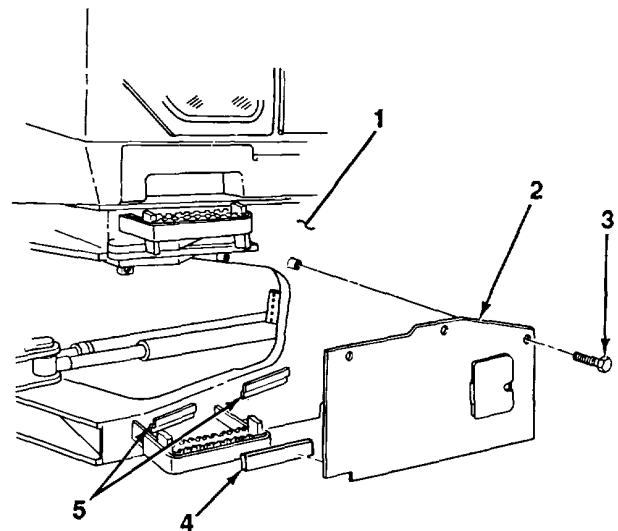
- General mechanic's tool kit (Item 44, Appendix F)

NOTE

Right and left transmission side guards are removed and installed the same way, except as noted. Left transmission side guard is illustrated.

a. REMOVAL

1. Remove three screws (3) and transmission side guard (2) from body (1).
2. If damaged, remove two rubber strips (4) from body (1). Discard rubber strips.

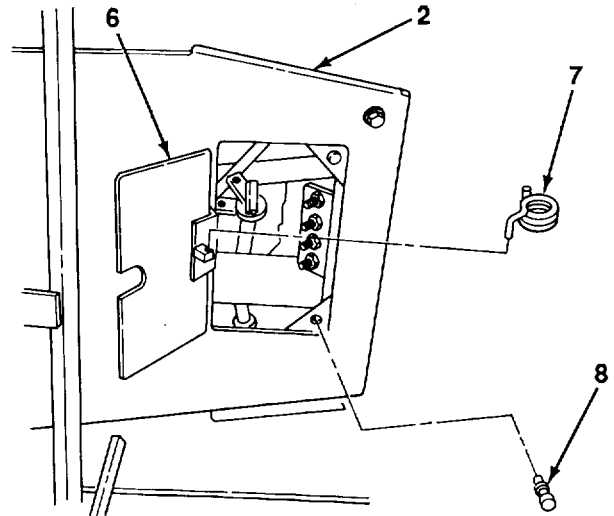


TA706809

14-7. TRANSMISSION SIDE GUARDS REPLACEMENT (Con't).**NOTE**

Perform steps 3 and 4 for left transmission side guard only.

3. If damaged, remove spring (7) from door (6).
4. If damaged, remove three bumpers (8) from transmission side guard (2) and door (6).

**b. INSTALLATION****NOTE**

Perform steps 1 and 2 for left transmission side guard only.

1. If removed, install three bumpers (8) on transmission side guard (2) and door (6).
2. If removed, install spring (7) on door (6).
3. If removed, apply adhesive to two new rubber strips (4) and install rubber strips on body (1).
4. Position transmission side guard (2) in two channels (5) and install three screws (3) in transmission side guard and body (1).

TA706810

14-8. TRANSMISSION BOTTOM GUARD REPLACEMENT.*This Task Covers:*

- a. Removal b. Installation

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Battery disconnect switch in OFF position (see TM 10-3930-659-10).

Personnel Required: Two**Tools/Test Equipment:**

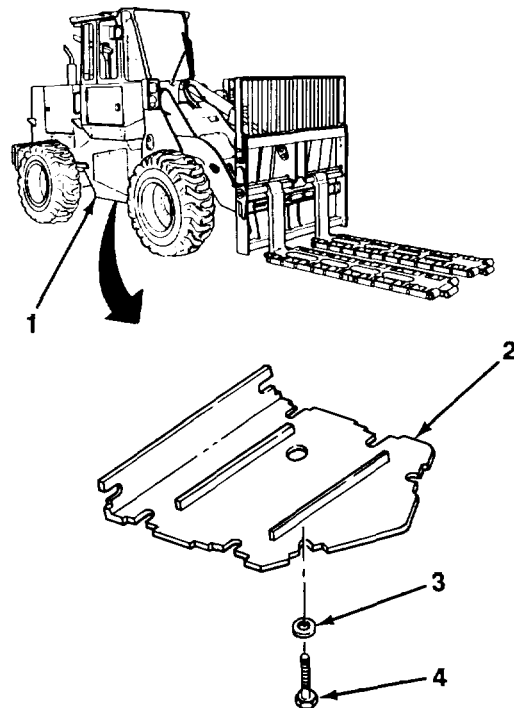
- General mechanic's tool kit (Item 44, Appendix F)
- Hydraulic jacks, 12 ton (two) (Item 21, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL

1. Position two hydraulic jacks under transmission bottom guard (2). Raise hydraulic jacks until weight of transmission bottom guard is supported.
2. Remove six screws (4) and washers (3) from transmission bottom guard (2) and frame (1).



TA706811

14-8. TRANSMISSION BOTTOM GUARD REPLACEMENT (Con't).

WARNING

- **Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.**
 - **Use care to keep transmission bottom guard balanced on hydraulic jacks at all times. Failure to follow this warning may cause transmission bottom guard to slip from hydraulic jacks, resulting in serious injury to personnel.**
3. Lower transmission bottom guard (2) from frame (1) with hydraulic jacks and remove from under frame.
 4. Remove transmission bottom guard (2) from hydraulic jacks.

b. INSTALLATION**WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

- **Use care to keep transmission bottom guard balanced on hydraulic jacks at all times. Failure to follow this warning may cause transmission bottom guard to slip from hydraulic jacks, resulting in serious injury to personnel.**
1. Position transmission bottom guard (2) on two hydraulic jacks.
 2. Position transmission bottom guard (2) under frame (1) and raise into position with hydraulic jacks.
 3. Install six washers (3) and screws (4) on transmission bottom guard (2) and frame (1).
 4. Lower and remove two hydraulic jacks from under transmission bottom guard (2).

14-9. FRONT BOTTOM GUARD REPLACEMENT.*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Battery disconnect switch in OFF position (see TM 10-3930-659-10).

Tools/Test Equipment:

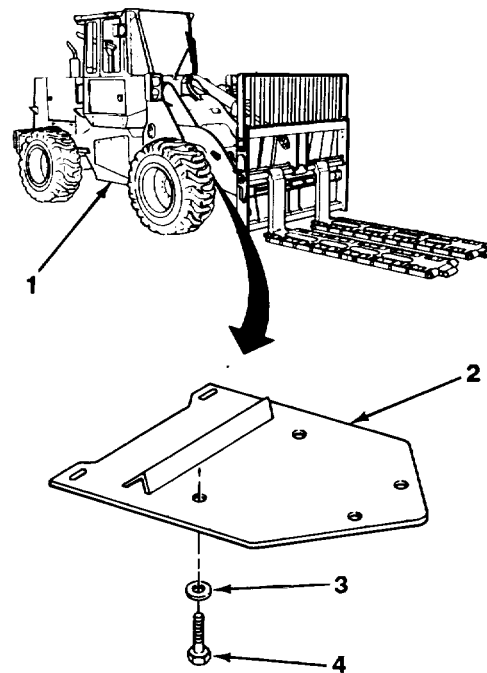
- General mechanic's tool kit (Item 44, Appendix F)
- Hydraulic Jacks, 12 ton (two) (Item 21, Appendix F)

References:**Personnel Required:** Two

- TM 10-3930-659-10

a. REMOVAL

1. Position two hydraulic Jacks under front bottom guard (2). Raise hydraulic jacks until weight of front bottom guard is supported.
2. Remove six screws (4) and washers (3) from front bottom guard (2) and frame (1).



TA706812

14-9. FRONT BOTTOM GUARD REPLACEMENT (Con't).

WARNING

- **Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.**
 - **Use care to keep front bottom guard balanced on hydraulic jacks at all times. Failure to follow this warning may cause front bottom guard to slip from hydraulic jacks, resulting in serious injury to personnel.**
3. Lower front bottom guard (2) from frame (1) with hydraulic jacks and remove from under frame.
 4. Remove front bottom guard (2) from hydraulic jacks.

b. INSTALLATION**WARNING**

- **Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.**
 - **Use care to keep front bottom guard balanced on hydraulic jacks at all times. Failure to follow this warning may cause front bottom guard to slip from hydraulic jacks, resulting in serious injury to personnel.**
1. Position front bottom guard (2) on two hydraulic jacks.
 2. Position front bottom guard (2) under frame (1) and raise into position with hydraulic jacks.
 3. Install six washers (3) and screws (4) on front bottom guard (2) and frame (1).
 4. Lower and remove two hydraulic jacks from under front bottom guard (2).

14-10. REAR BOTTOM GUARD REPLACEMENT.*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Battery disconnect switch in OFF position (see TM 10-3930-659-10).

Tools/Test Equipment:

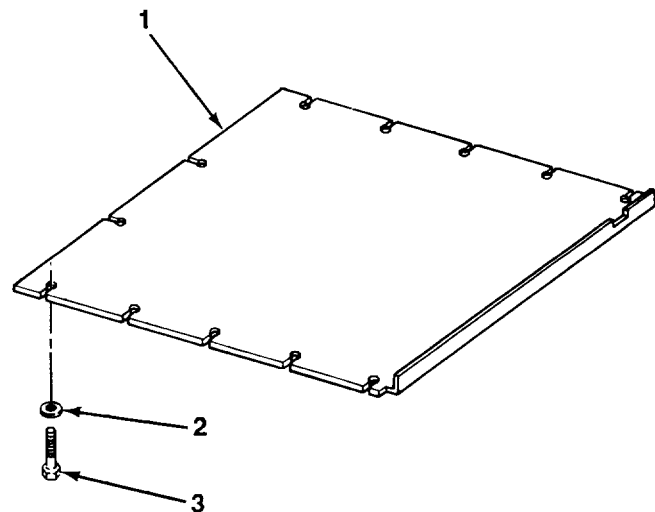
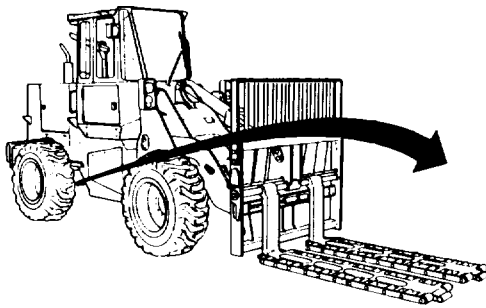
- General mechanic's tool kit (Item 44, Appendix F)
- Hydraulic jacks, 12 ton (two) (Item 21, Appendix F)

References:

TM 10-3930-659-10

Personnel Required: Two**a. REMOVAL**

1. Position two hydraulic Jacks under rear bottom guard (1). Raise hydraulic jacks until weight of rear bottom guard is supported.
2. Remove 12 screws (3) and washers (2) from rear bottom guard (1) and frame (4).



TA706813

14-10. REAR BOTTOM GUARD REPLACEMENT (Con't).

WARNING

- **Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.**
 - **Use care to keep rear bottom guard balanced on hydraulic jacks at all times. Failure to follow this warning may cause rear bottom guard to slip from hydraulic jacks, resulting in serious injury to personnel.**
3. Lower rear bottom guard (1) from frame (4) with hydraulic jacks and remove from under frame.
 4. Remove rear bottom guard (1) from hydraulic jacks.

b. INSTALLATION**WARNING**

- **Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.**
 - **Use care to keep rear bottom guard balanced on hydraulic jacks at all times. Failure to follow this warning may cause rear bottom guard to slip from hydraulic jacks, resulting in serious injury to personnel.**
1. Position rear bottom guard (1) on two hydraulic jacks.
 2. Position rear bottom guard (1) under frame (4) and raise into position with hydraulic jacks.
 3. Install 12 washers (2) and screws (3) on rear bottom guard (1) and frame (4).
 4. Lower and remove two hydraulic jacks from under rear bottom guard (1).

14-11. LOADER FRAME COVER REPLACEMENT.

This Task Covers:

a. Removal

b. Installation

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

a. REMOVAL

Remove four screws (4), washers (3), and loader frame cover (1) from loader frame (2).

b. INSTALLATION

Install loader frame cover (1) on loader frame (2) with four washers (3) and screws (4).

TA706814

14-12. CAB SOUND ISOLATORS REPLACEMENT.

This Task Covers:

a. Side Sound Isolator Replacement

b. Roof Sound Isolator Replacement

Initial Setup:

Tools/Test Equipment:

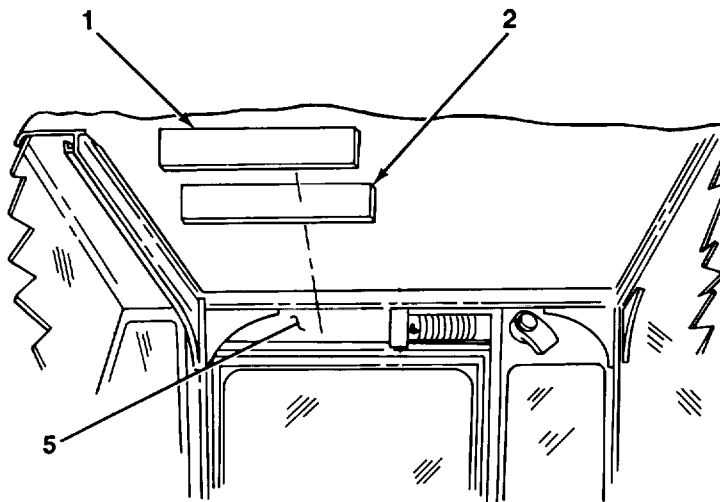
- General mechanic's tool kit (Item 44, Appendix F)
-

a. SIDE SOUND ISOLATOR REPLACEMENT

NOTE

Right and left side sound Isolators are removed and Installed the same way. Right side sound isolator Is Illustrated.

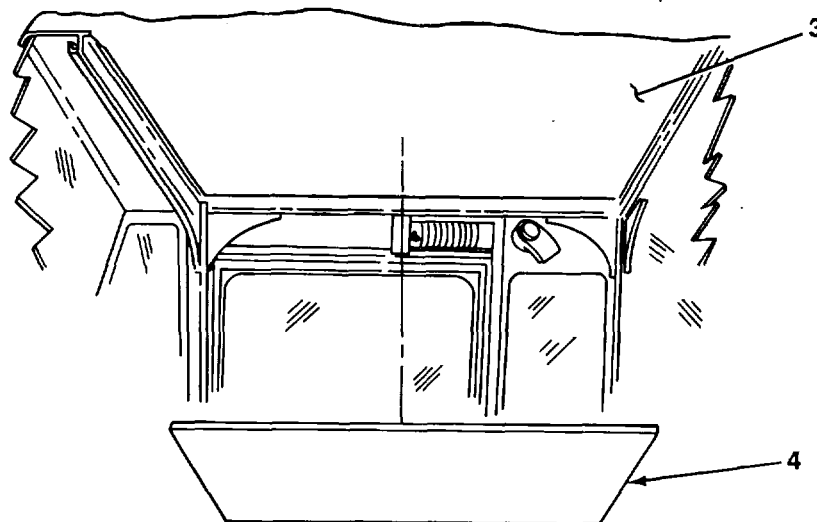
1. Remove side sound isolator (1) and header (2) from cab side (5).
2. Install header (2) and side sound isolator (1) on cab side (5).



TA706815

14-12. CAB SOUND ISOLATORS REPLACEMENT (Con't).**b. ROOF SOUND ISOLATOR REPLACEMENT**

1. Remove roof sound isolator (4) from cab roof (3).
2. Install roof sound isolator (4) on cab roof (3).



TA706816

14-13. CAB FRESH AIR FILTER AND DOOR REPLACEMENT.*This Task Covers:*

a. Cab Fresh Air Filter Replacement

b. Cab Fresh Air Filter Door Replacement

*Initial Setup:***Materials/Parts:**

- Adhesive (Item 1, Appendix C)
- Two seals

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Compressor unit (Item 8, Appendix F)

General Safety Instructions:

- Compressed air used for cleaning purposes should never exceed 30 psi (207 kPa).
- If NBC exposure is suspected, all air filter media must be handled by personnel wearing protective equipment.

WARNING

If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your NBC Officer or NBC NCO for appropriate handling or disposal procedures.

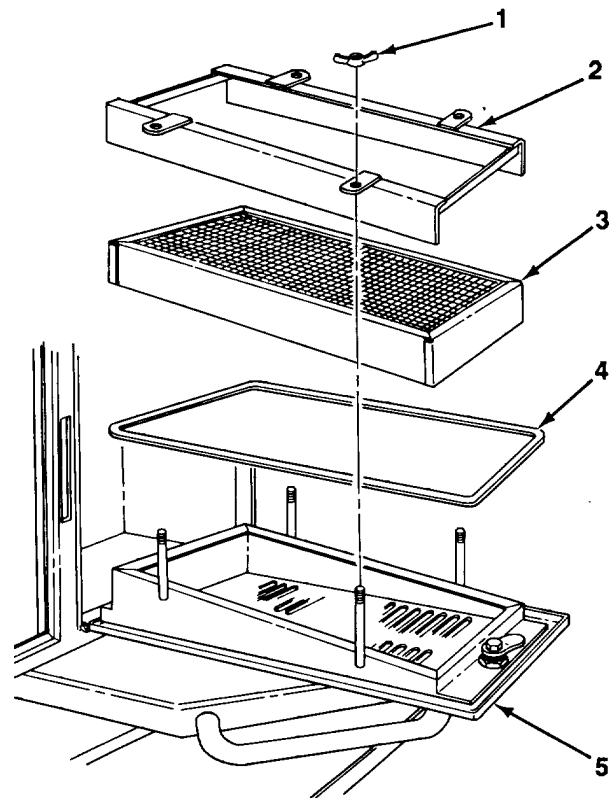
a. CAB FRESH AIR FILTER REPLACEMENT

1. Open door (5).
2. Remove four wingnuts (1), frame (2), and cab fresh air filter (3) from door (5).
3. If damaged, remove seal (4) from door (5). Discard seal.

WARNING

Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.

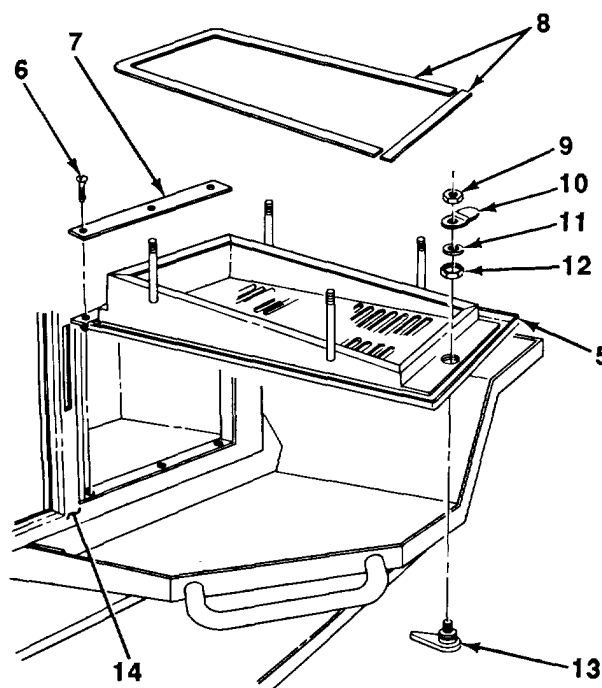
4. Clean cab fresh air filter (3) using compressed air.
5. Inspect cab fresh air filter (3) for damage. Replace cab fresh air filter if damaged.
6. If removed, install new seal (4) on door (5).
7. Install cab fresh air filter (3) and frame (2) on door (5) with four wingnuts (1).
8. Close door (5).



TA706817

14-13. CAB FRESH AIR FILTER AND DOOR REPLACEMENT (Con't).**b. CAB FRESH AIR FILTER DOOR REPLACEMENT**

1. Remove cab fresh air filter (see subparagraph a).
2. Remove nut (9), plate (10), washer (11), nut (12), and latch (13) from door (5).
3. Remove two seals (8) from door (5). Discard seals.
4. Remove three screws (6), strap (7), and door (5) from cab body (14).
5. Install door (5) and strap (7) on cab body (14) with three screws (6).
6. Apply adhesive to two new seals (8) and install seals on door (5).
7. Install latch (13) on door (5) with nut (12), washer (11), plate (10), and nut (9).



TA706818

14-14. CAB RECIRCULATING FILTER REPLACEMENT.*This Task Covers:*

- | | |
|----------------------------|-----------------|
| a. Removal | c. Installation |
| b. Cleaning and Inspection | |

*Initial Setup:***Materials/Parts:**

- Detergent (Item 17, Appendix C)

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

General Safety Instructions:

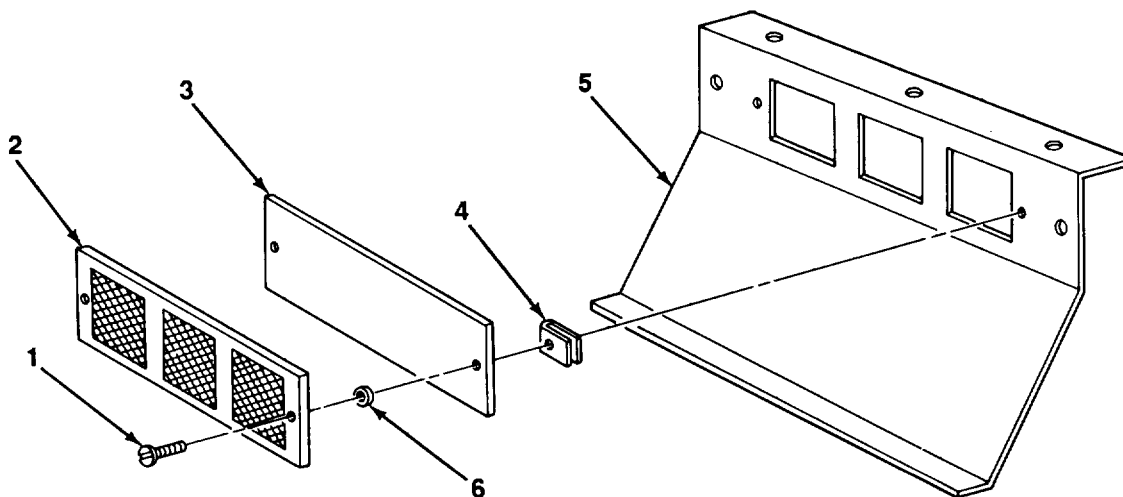
- If NBC exposure is suspected, all air filter media must be handled by personnel wearing protective equipment.

WARNING

If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your NBC Officer or NBC NCO for appropriate handling or disposal procedures.

a. REMOVAL

1. Loosen two screws (1), and remove cover (2) and foam filter (3) from cab rear panel (5).
2. If damaged, remove two washers (6) and screws (1) from cover (2).
3. If damaged, remove two clips (4) from cab rear panel (5).



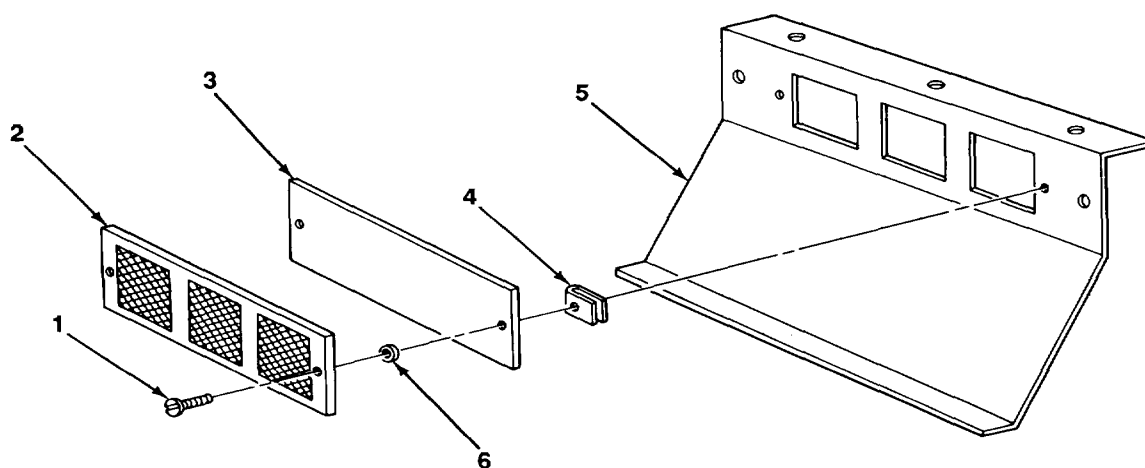
TA706819

14-14. CAB RECIRCULATING FILTER REPLACEMENT (Con't).**b. CLEANING AND INSPECTION**

1. Clean foam filter with detergent and water.
2. Inspect foam filter for damage. Replace if damaged.

c. INSTALLATION

1. If removed, install two clips (4) on cab rear panel (5).
2. If removed, install two screws (1) and washers (6) on cover (2).
3. Position foam filter (3) and cover (2) on cab rear panel (5) and tighten two screws (1).



TA706820

14-15. ENGINE UPPER SIDESHIELDS REPLACEMENT.*This Task Covers:*

- a. Removal b. Installation

*Initial Setup:***Equipment Conditions:**

- Conveyorized fork attachments removed from side of forklift truck (right engine upper sideshield only) (see paragraph 17-13).
- Coolant recovery tank removed (right engine upper sideshield only) (see paragraph 5-30).

Tools/Test Equipment:

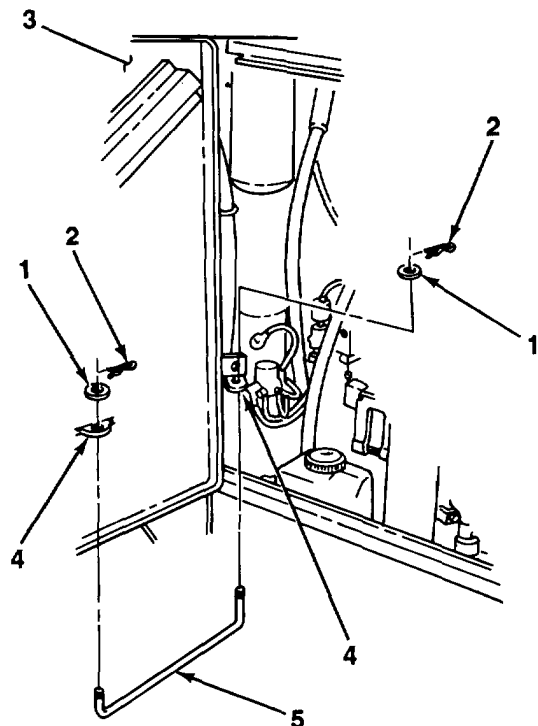
- General mechanic's tool kit (Item 44, Appendix F)
- Electric drill, portable (Item 11, Appendix F)
- Twist drill set (Item 12, Appendix F)
- Blind hand riveter (Item 34, Appendix F)

Personnel Required: Two**NOTE**

Right and left engine upper sideshield are removed and installed the same way. Left engine upper sideshield is illustrated.

a. REMOVAL

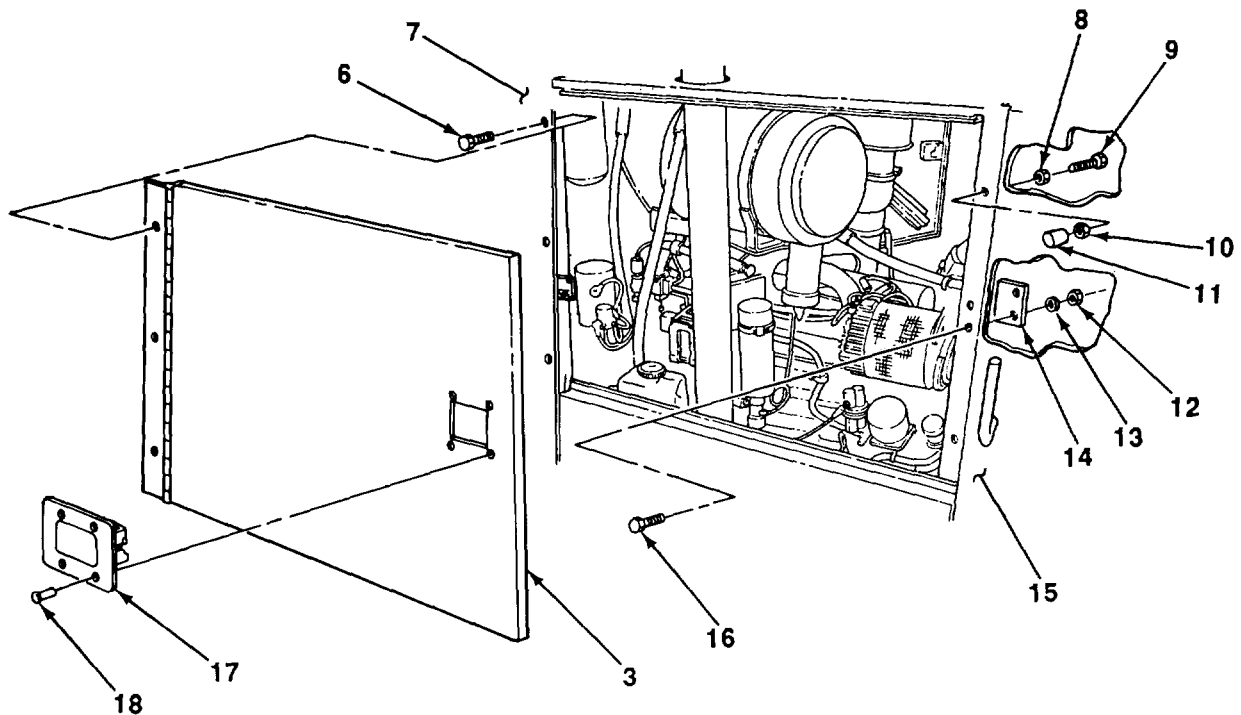
1. Open engine upper sideshield (3).
2. Remove two lockpins (2), washers (1), and rod from two brackets (4).



TA706821

14-15. ENGINE UPPER SIDESHIELDS REPLACEMENT (Con't).

3. Remove three screws (6) and engine upper sideshield (3) from hydraulic reservoir (7).
4. If damaged, remove four rivets (18) and latch (17) from engine upper sideshield (3). Discard rivets.
5. If damaged, remove two nuts (12), washers (13), screws (16), and plate (14) from radiator housing (15).
6. If damaged, remove bumper (11), nut (10), screw (9), and nut (8) from radiator housing (15).

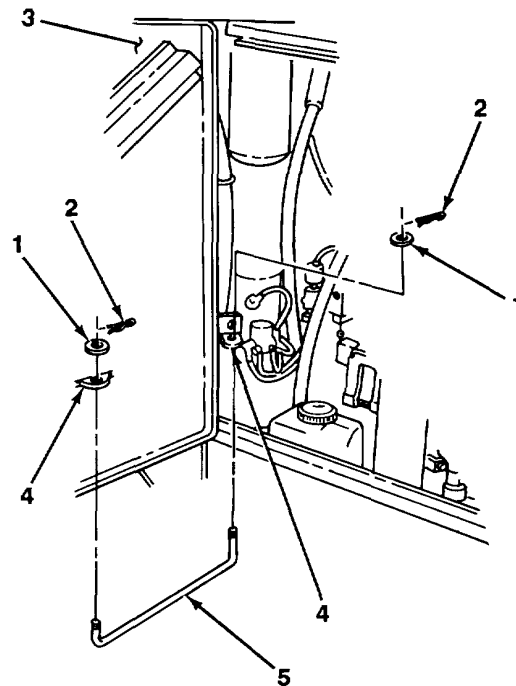
**b. INSTALLATION**

1. If removed, install nut (8), screw (9), nut (10), and bumper (11) on radiator housing (15).
2. If removed, install plate (14) on radiator housing (15) with two screws (16), washers (13), and nuts (12).
3. If removed, install latch (17) on engine upper sideshield (3) with four new rivets (18).
4. Install engine upper sideshield (3) on hydraulic reservoir (7) with three screws (6).

TA706822

14-15. ENGINE UPPER SIDESHIELDS REP

5. Install rod (5) on two brackets (4) with two washers (1) and lockpins (2).

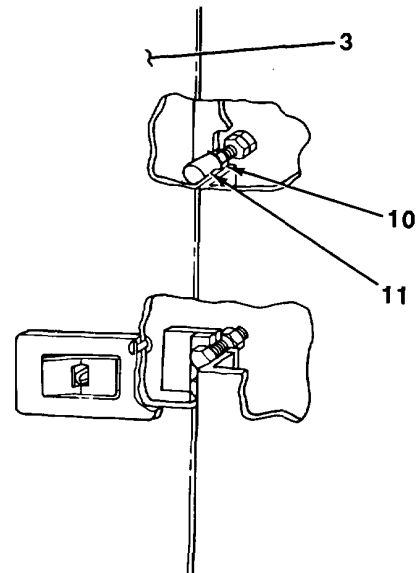
**NOTE**

Perform steps 6 and 7 only if bumper was removed.

6. Close engine upper sideshield (3) and check that it latches properly.
7. If engine upper sideshield (3) does not latch properly, turn nut (10) clockwise to raise bumper (11) or counterclockwise to lower bumper until engine upper sideshield latches properly.
8. Close engine upper sideshield (3).

FOLLOW-ON TASKS:

- Install coolant recovery tank (right engine upper sideshield only) (see paragraph 5-30).
- Install conveyORIZED fork attachments to side of forklift truck (right engine upper sideshield only) (see paragraph 17-13).



TA706823

14-16. ENGINE LOWER SIDESHIELDS REPLACEMENT.*This Task Covers:*

- a. Right Engine Lower Sideshield Replacement b. Left Engine Lower Sideshield Replacement

*Initial Setup:***Equipment Conditions:**

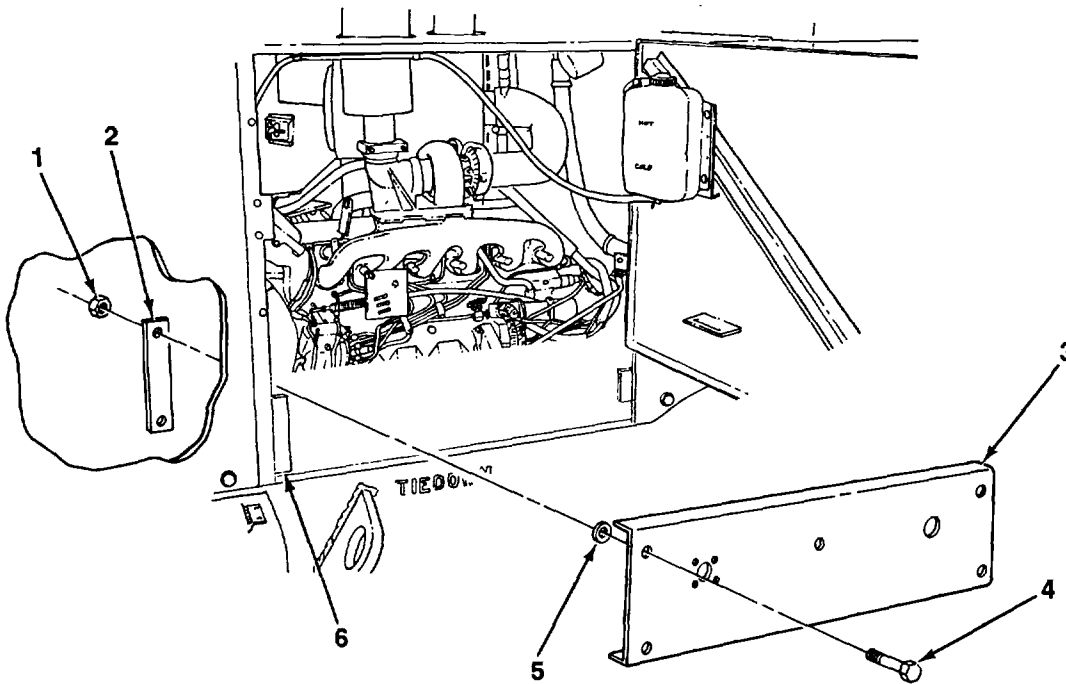
- Slave receptacle removed (right engine lower sideshield only) (see paragraph 6-47).
- Battery disconnect switch removed (right engine lower sideshield only) (see paragraph 6-46).
- 110-volt AC receptacle removed (right engine lower sideshield only) (see paragraph 18-4).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. RIGHT ENGINE LOWER SIDESHIELD REPLACEMENT

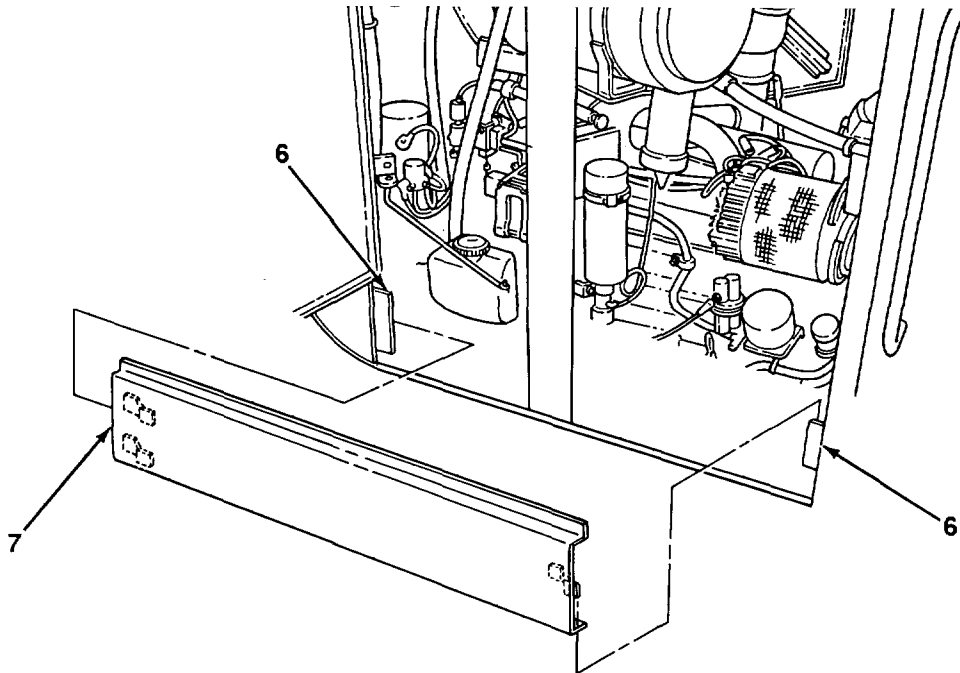
1. Remove four nuts (1), screws (4), washers (5), two straps (2), and engine lower sideshield (3) from flange (6).
2. Install engine lower sideshield (3) on flange (6) with four washers (5), screws (4), two straps (2), and four nuts (1).



TA706824

14-16. ENGINE LOWER SIDESHIELDS REPLACEMENT (Con't).**b. LEFT ENGINE LOWER SIDESHIELD REPLACEMENT**

1. Slide engine lower sideshield (7) up and remove from two flanges (6).
2. Slide engine lower sideshield (7) on two flanges (6).

**FOLLOW-ON TASKS:**

- Install 110-volt AC receptacle (right engine lower sideshield only) (see paragraph 18-4).
- Install battery disconnect switch (right engine lower sideshield only) (see paragraph 6-46).
- Install slave receptacle (right engine lower sideshield only) (see paragraph 6-47).

TA706825

14-17. ENGINE HOOD REPLACEMENT.*This Task Covers:*

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

*Initial Setup:***Equipment Conditions:**

- Coolant overflow hose removed from brackets (see
- Air cleaner intake cover removed (see paragraph 5-9).
- Engine hood handle removed (see paragraph 14-18).
- On-board crane removed (see paragraph 15-1).

Materials/Parts:

- Eight locknuts

General Safety Instructions:

- Allow exhaust system to cool before attempting to service.

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

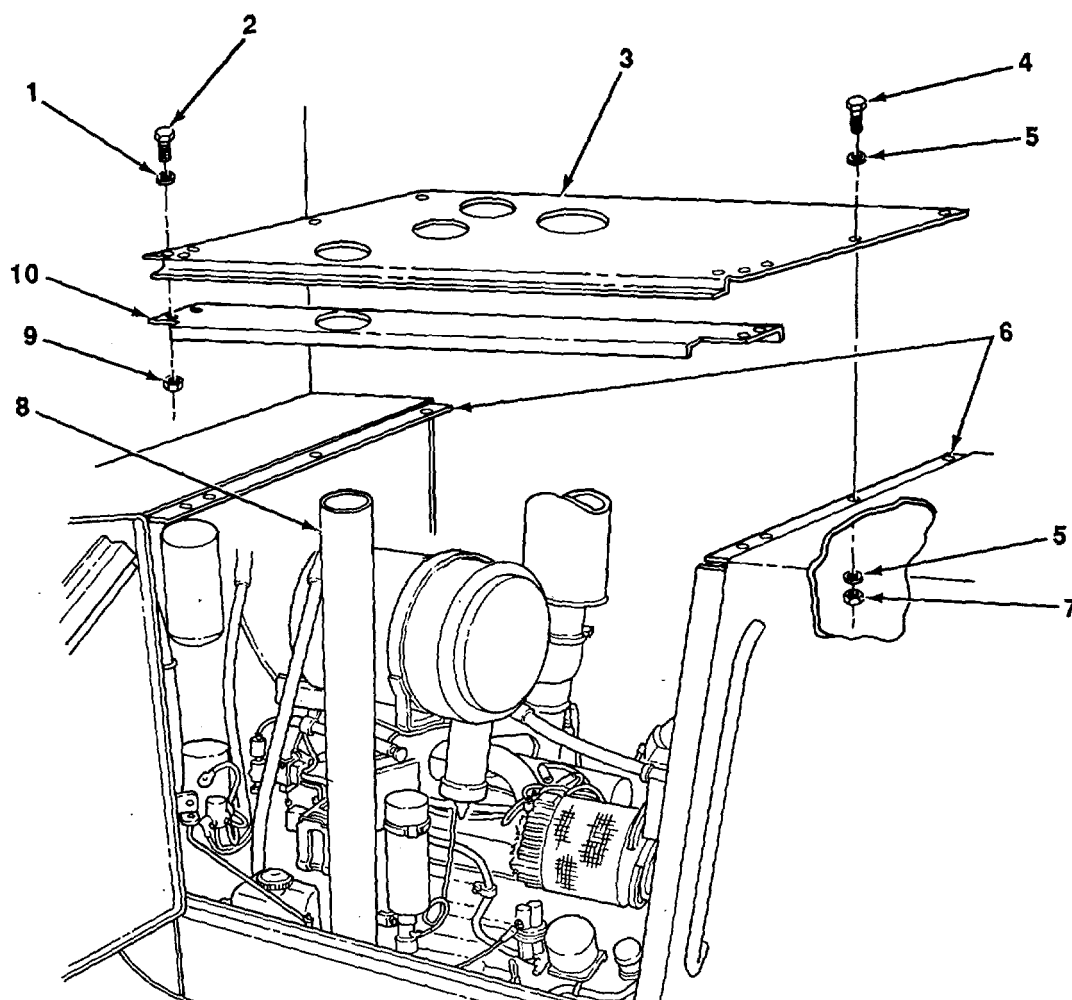
a. REMOVAL**WARNING**

Allow exhaust system to cool before removing engine hood. Failure to follow this warning will result in serious burns.

1. Remove four locknuts (9), screws (2), and washers (1) from support beam (10) and engine hood (3). Discard locknuts.
2. Remove four locknuts (7), screws (4), eight washers (5), and engine hood (3) from two flanges (6). Discard locknuts.
3. If damaged, remove support beam (10) from support cylinder (8).

b. INSTALLATION

1. If removed, position support beam (10) on support cylinder (8).
2. Install engine hood (3) on two flanges (6) with eight washers (5), four screws (4), and new locknuts (7).
3. Install support beam (10) on engine hood (3) with four washers (1), screws (2), and new locknuts (9).

14-17. ENGINE HOOD REPLACEMENT (Con't).**FOLLOW-ON TASKS:**

- Install on-board crane (see paragraph 15-1).
- Install engine hood handle (see paragraph 14-18).
- Install air cleaner intake cover (see paragraph 5-9).
- Install coolant overflow hose on brackets (see paragraph 5-30).

TA706826

14-18. ENGINE HOOD HANDLE REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Equipment Conditions:

- Left engine upper sideshield opened (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

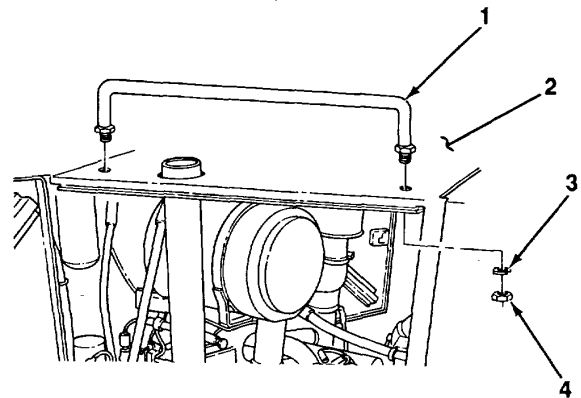
- TM 10-3930-659-10
-

a. REMOVAL

Remove two nuts (4), washers (3), and engine hood handle (1) from engine hood (2).

b. INSTALLATION

Install engine hood handle (1) on engine hood (2) with two washers (3) and nuts (4).

**FOLLOW-ON TASKS:**

- Close left engine upper sideshield (see TM 10-39-10).

TA706827

14-19. RIGHT PANEL COVER AND FUSE BLOCK COVER REPLACEMENT.*This Task Covers:*

- a. Removal
- b. Installation

*Initial Setup:***Equipment Conditions:**

- Instrument panel light switch removed (see paragraph 6-11).
- Blackout lights switch removed (see paragraph 6-11).
- Rear worklight switch removed (see paragraph 6-11).
- Clutch cutoff switch removed (see paragraph 6-11).
- Driving lights switch removed (see paragraph 6-11).
- Adjustable floodlight switch removed (see paragraph 6-11).

Equipment Conditions (Con't):

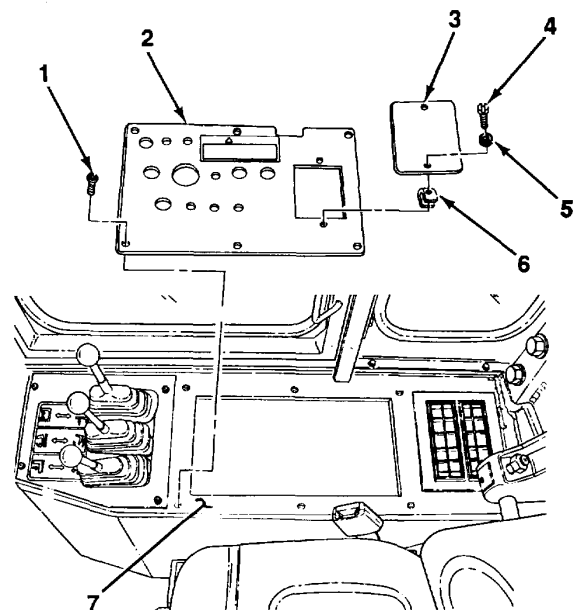
- Ignition switch removed (see paragraph 6-10).
- Front and rear wiper/washer switches removed (see paragraph 6-56).
- Engine starting aid switch removed (see paragraph 6-53).
- Engine hourmeter removed (see paragraph 6-8).

Tools/Test Equipment

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

1. Remove six screws (1) and right panel cover (2) from cab (7).
2. Remove two screws (4), washers (5), fuse block cover (3), and two clips (6) from right panel cover (2).

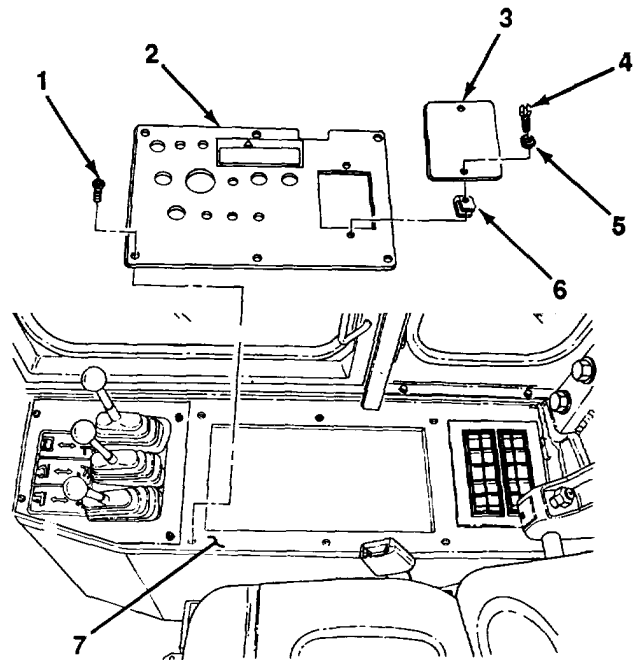


TA706828

14-19. RIGHT PANEL COVER AND FUSE I

b. INSTALLATION

1. Position two clips (6) on right panel cover (2) and install fuse block cover (3) with two washers (5) and screws (4).
2. Install right panel cover (2) on cab (7) with six screws (1).

**FOLLOW-ON TASKS:**

- Install engine hourmeter (see paragraph 6-8).
- Install engine starting aid switch (see paragraph 6-9).
- Install front and rear wiper/washer switches (see paragraph 6-10).
- Install ignition switch (see paragraph 6-10).
- Install adjustable floodlight switch (see paragraph 6-11).
- Install driving lights switch (see paragraph 6-11).
- Install clutch cutoff switch (see paragraph 6-11).
- Install rear worklight switch (see paragraph 6-11).
- Install blackout lights switch (see paragraph 6-11).
- Install instrument panel light switch (see paragraph 6-11).

TA706829

14-20. HEATER CONTROL PANEL REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Equipment Conditions:

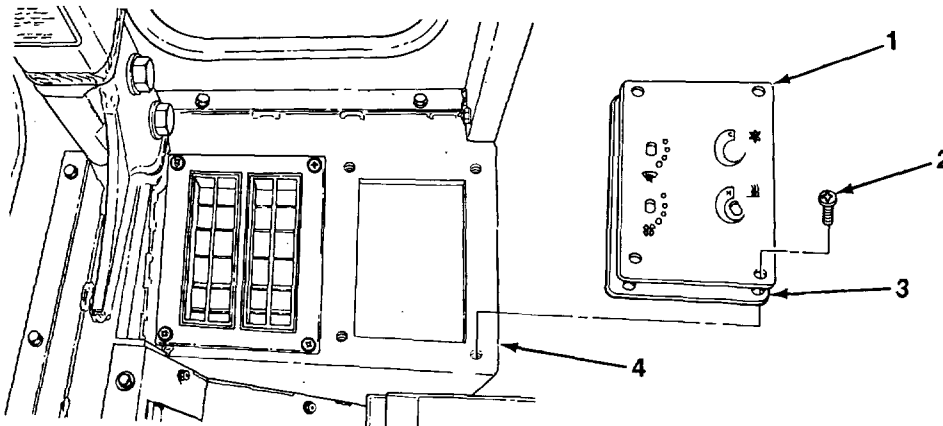
- Defroster blower control removed (see paragraph 16-4).
- Heater control removed (see paragraph 16-16).
- Heater blower control removed (see paragraph 16-4).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

a. REMOVAL

1. Remove four screws (2) and heater control panel (3) from cab (4).
2. If damaged, remove identification marker (1) from heater control panel (3).



b. INSTALLATION

1. If removed, install identification marker (1) on heater control panel (3).
2. Install heater control panel (3) on cab (4) with four screws (2).

FOLLOW-ON TASKS:

- Install heater blower control (see paragraph 16-4).
- Install heater control (see paragraph 16-16).
- Install defroster blower control (see paragraph 16-4).

TA706830

14-21. DASH PLATE REPLACEMENT.*This Task Covers:*

- a. Removal
- b. Installation

*Initial Setup:***Equipment Conditions:**

- Turn signal/emergency flashers switch removed (see paragraph 6-19).
- Transmission oil temperature gage removed (see paragraph 6-7).
- Fuel gage removed (see paragraph 6-7).
- Horn switch removed (see paragraph 6-41).
- Fault monitor module removed (see paragraph 6-5).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

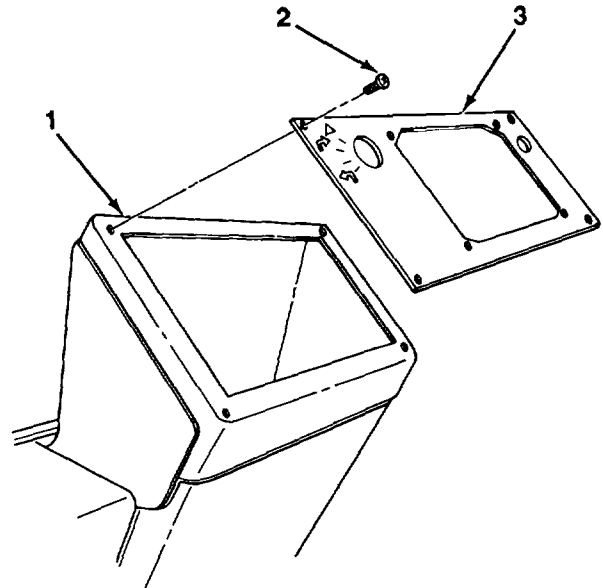
a. REMOVAL

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

b. INSTALLATION**CAUTION**

Use care not to overtighten screws when installing dash plate. Dash plate is plastic and may be damaged if screws are overtightened.

Install dash plate (3) on dash housing (1) with four screws (2).

**FOLLOW-ON TASKS:**

- Install fault monitor module (see paragraph 6-5).
- Install horn switch (see paragraph 6-41).
- Install fuel gage (see paragraph 6-7).
- Install transmission oil temperature gage (see paragraph 6-7).
- Install turn signal/emergency flashers switch (see paragraph 6-19).

TA706831

14-22. CAB REAR PANEL REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Equipment Conditions:

- Cab recirculating filter removed (see paragraph 14-14).

Materials/Parts:

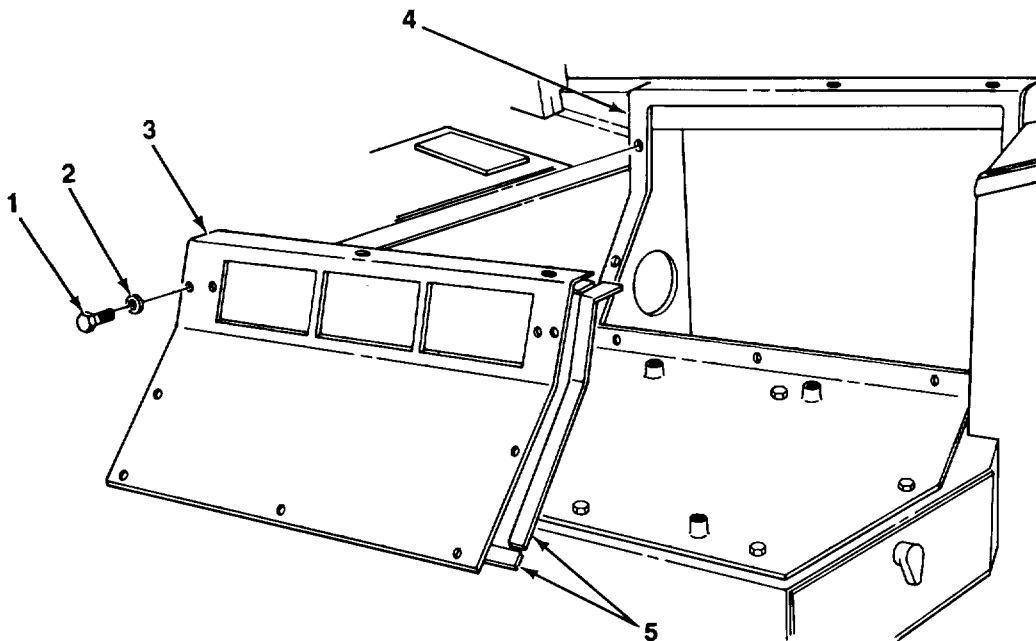
- Adhesive (Item 1, Appendix C)

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

a. REMOVAL

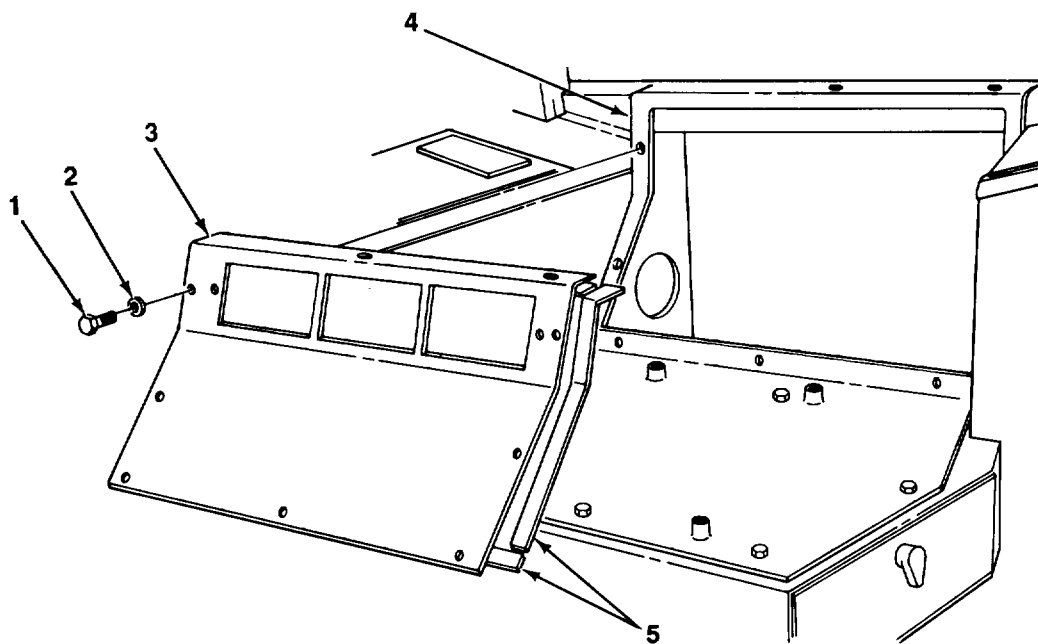
1. Remove ten screws (1), washers (2), and cab rear panel (3) from cab (4).
2. If damaged, remove four rubber strips (5) from cab rear panel (3). Discard rubber strips.



TA706832

14-22. CAB REAR PANEL REPLACEMENT (Con't).**b. INSTALLATION**

1. If removed, apply adhesive to four new rubber strips (5) and install rubber strips on cab rear panel (3).
2. Install cab rear panel (3) on cab (4) with ten washers (2) and screws (1).

**FOLLOW-ON TASKS:**

- Install cab recirculating filter (see paragraph 14-14).

TA706833

14-23. LOWER DASH COVER REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Tools/Test Equipment:

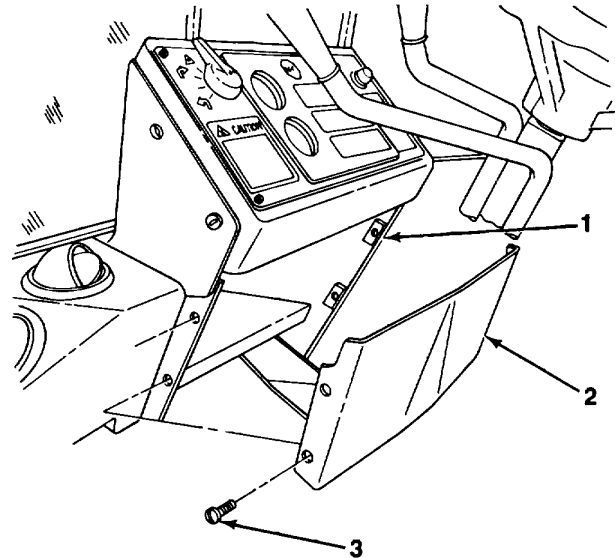
- General mechanic's tool kit (Item 44, Appendix F).
-

a. REMOVAL

Remove four screws (3) and lower dash cover (2) from cab (1).

b. INSTALLATION

Install lower dash cover (2) on cab (1) with four screws(3).



TA706834

14-24. REAR FENDER REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

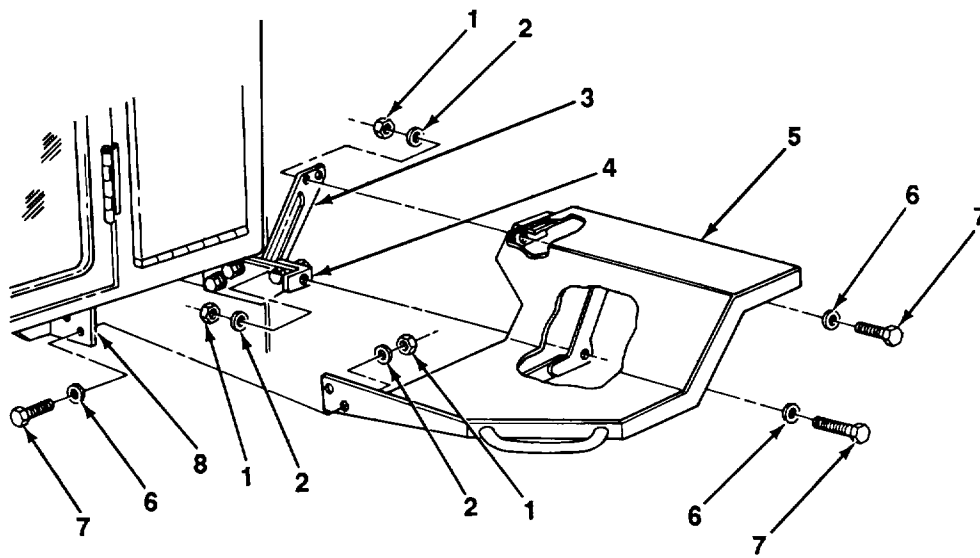
Tools/Test Equipment:

Personnel Required: Two

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

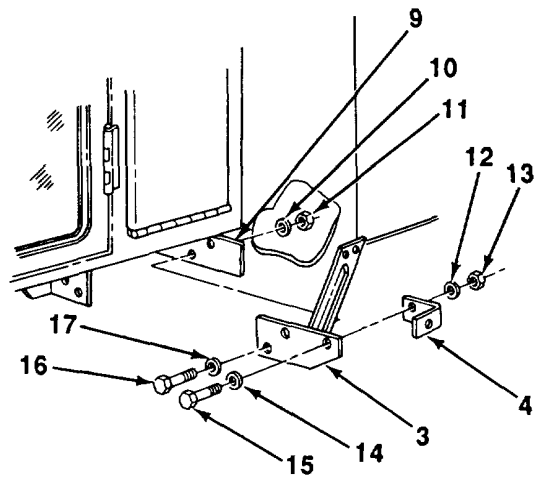
1. Remove five nuts (1), washers (2), screws (7), washers (6), and rear fender (5) from brackets (3, 4, and 8).



TA706835

14-24. REAR FENDER REPLACEMENT (Con

2. If bracket (4) is damaged, remove nut (13), washer (12), screw (15), washer (14), and bracket (4) from bracket (3).
3. If bracket (3) is damaged, remove two nuts (11), washers (10), screws (16), washers (17), and bracket from body (9).

**b. INSTALLATION**

1. If removed, install bracket (3) on body (9) with two washers (17), screws (16), washers (10), and nuts (11).
2. If removed, install bracket (4) on bracket (3) with washer (14), screw (15), washer (12), and nut (13).
3. Install rear fender (5) on brackets (3, 4, and 8) with five washers (6), screws (7), washers (2), and nuts (1).

TA706836

14-25. SEAT ASSEMBLY REPLACEMENT.*This Task Covers:*

- a. Removal b. Installation

Initial Setup:

Tools/Test Equipment:

Personnel Required: Two

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

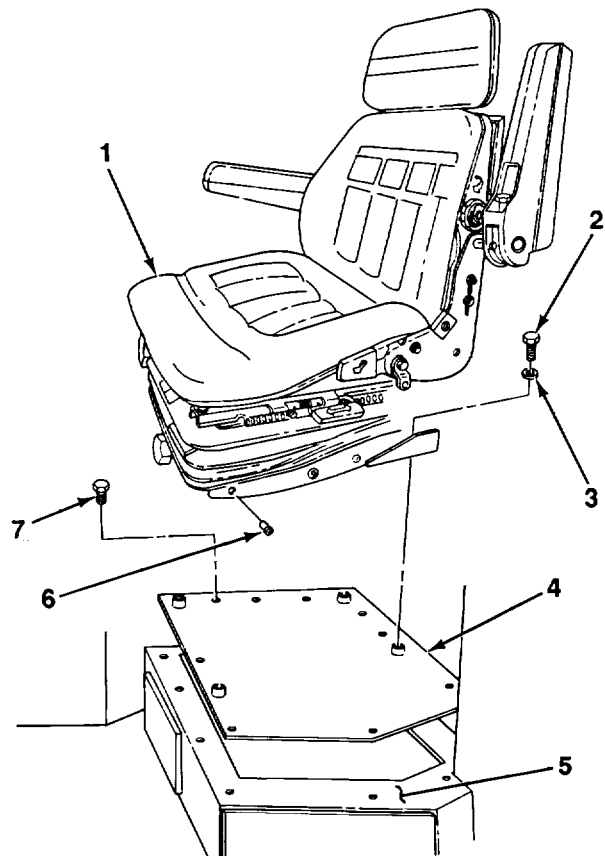
1. If required, remove four plugs (6) from seat assembly (1) to access screws (2).
2. Remove four screws (2), washers (3), and seat assembly (1) from seat support (4).
3. If damaged, remove nine screws (7) and seat support (4) from heater housing (5).

NOTE**Perform step 4 only if replacing seat.**

4. Remove seatbelts (see paragraph 14-26) and operator's manual holder (see paragraph 14-27).

b. INSTALLATION

1. If removed, install seatbelts (see paragraph 14-26) and operator's manual holder (see paragraph 14-27).
2. If removed, install seat support (4) on heater housing (5) with nine screws (7).
3. Install seat assembly (1) on seat support (4) with four washers (3) and screws (2).
4. If removed, install four plugs (6) on seat assembly (1).



TA706837

14-26. SEATBELT REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

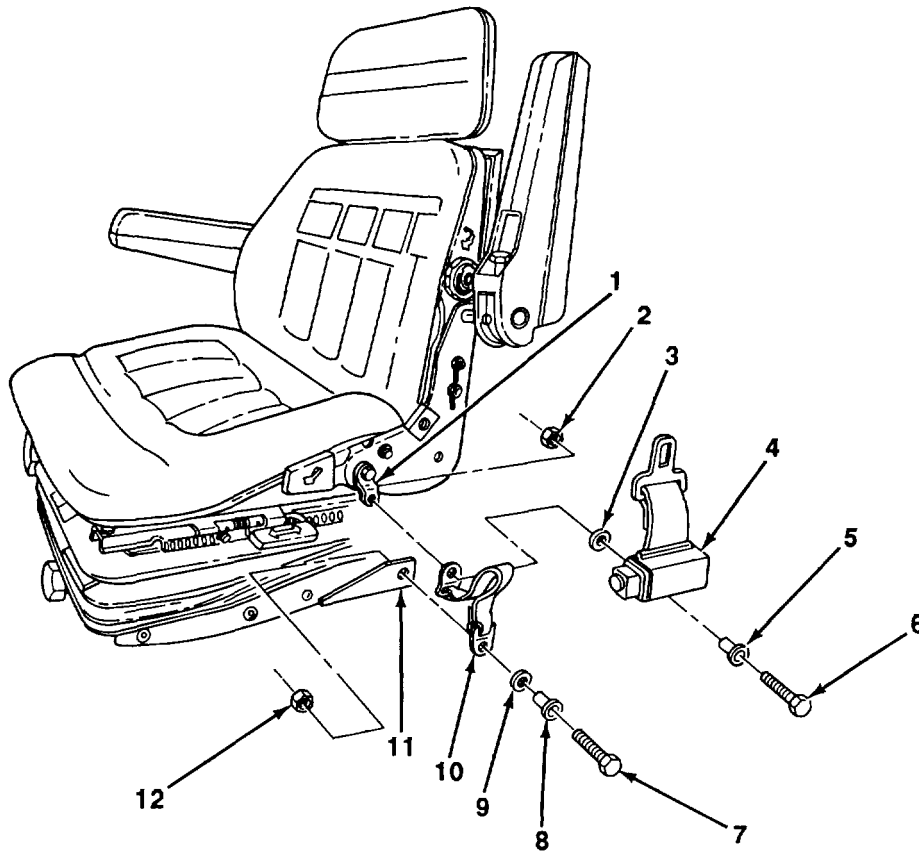
Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

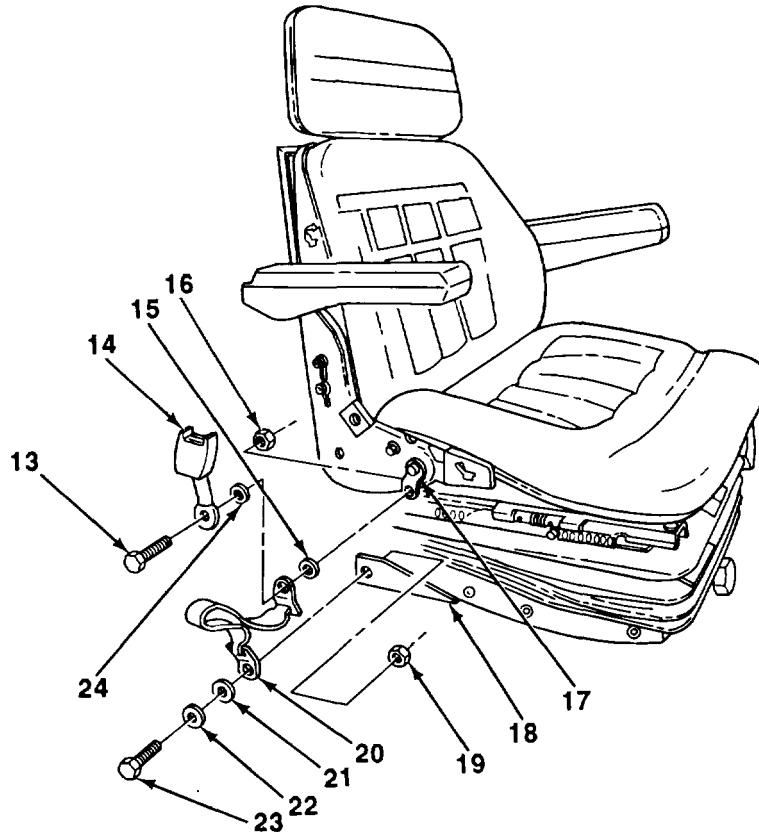
1. Remove nut (12), screw (7), spacer (8), washer (9), and tether strap (10) from bracket (11).
2. Remove nut (2), screw (6), spacer (5), seatbelt reel (4), spacer (3), and tether strap (10) from bracket (1).



TA706838

14-26. SEATBELT REPLACEMENT (Con't).

3. Remove nut (19), screw (23), spacer (22), washer (21), and tether strap (20) from bracket (18).
4. Remove nut (16), screw (13), seatbelt fastener (14), spacer (24), tether strap (20), and spacer (15) from bracket (17).

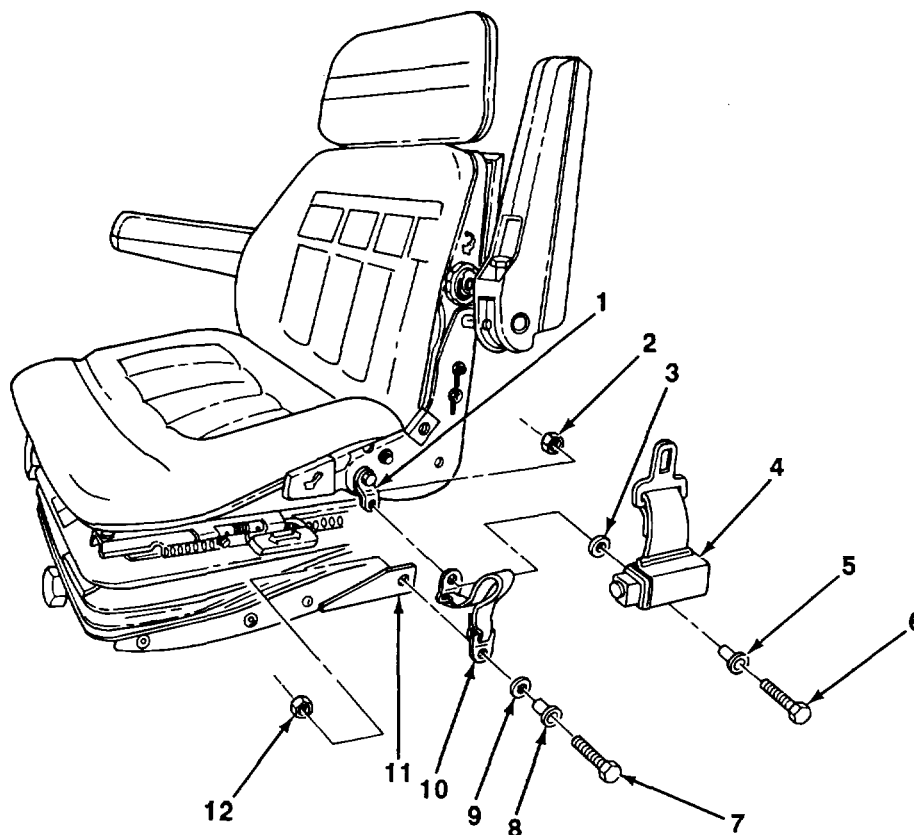
**b. INSTALLATION**

1. Install spacer (15), tether strap (20), spacer (24), and seatbelt fastener (14) on bracket (17) with screw (13) and nut (16).
2. Install tether strap (20) on bracket (18) with washer (21), spacer (22), screw (23), and nut (19).

TA706839

14-26. SEATBELT REPLACEMENT (Con't).

3. Install tether strap (10), spacer (3), spacer (5), and seatbelt reel (4) on bracket (1) with screw (6) and nut (2).
4. Install tether strap (10) on bracket (11) with washer (9), spacer (8), screw (7), and nut (12).



TA706840

14-27. OPERATOR'S MANUAL HOLDER REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

Initial Setup:

Materials/Parts:

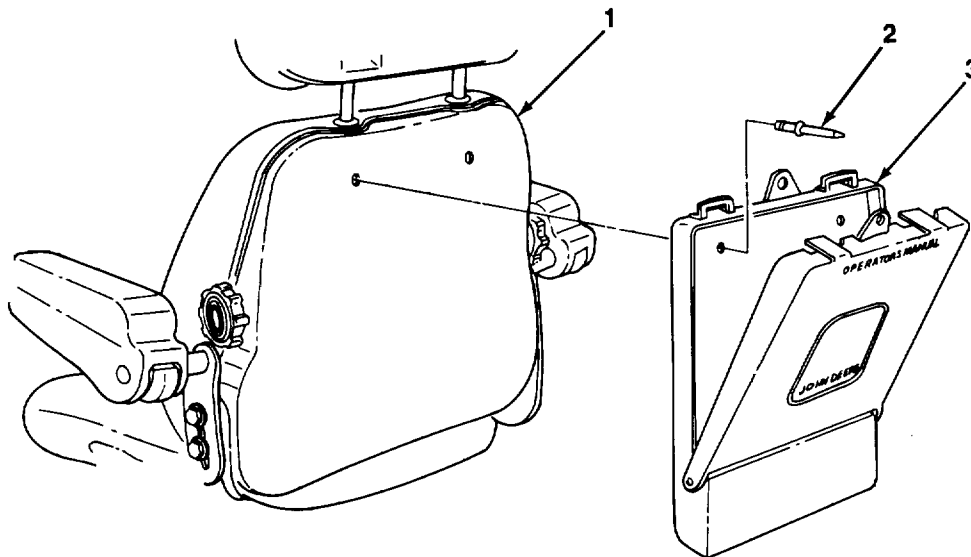
- Two rivets
- Blind hand riveter (Item 34, Appendix F)

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

1. Open operator's manual holder (3).
2. Remove two rivets (2) and operator's manual holder (3) from seat assembly (1). Discard rivets.

**b. INSTALLATION**

1. Install operator's manual holder (3) on seat assembly (1) with two new rivets (2).
2. Close operator's manual holder (3).

TA706841

14-28. BARRIER REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Equipment Conditions:

- Seat assembly removed (see paragraph 14-25).
- Cab rear panel removed (see paragraph 14-22).

Materials/Parts:

- Six fasteners

Tools/Test Equipment:

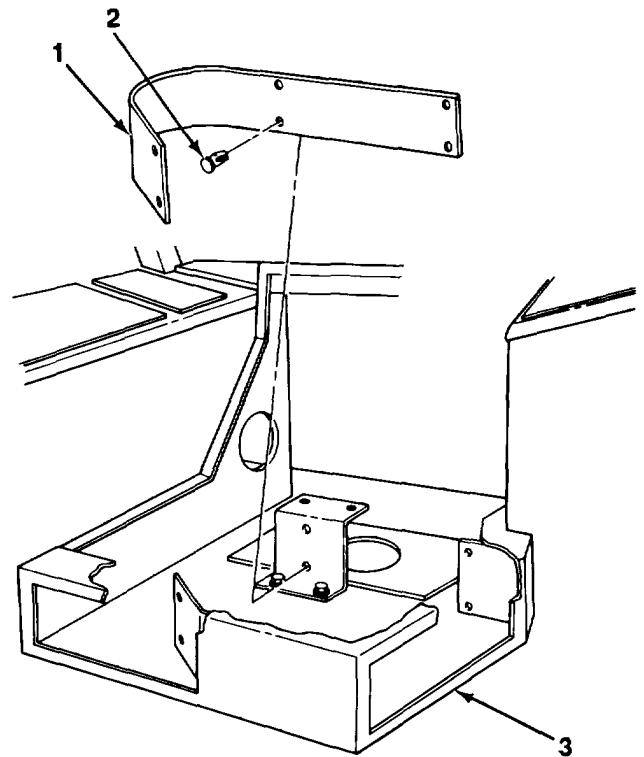
- General mechanic's tool kit (Item 44, Appendix F)
-

a. REMOVAL

Remove six fasteners (2) and barrier (1) from heater housing (3). Discard fasteners.

b. INSTALLATION

Install barrier (1) on heater housing (3) with six new fasteners (2).

**FOLLOW-ON TASKS:**

- Install cab rear panel (see paragraph 14-22).
- Install seat assembly (see paragraph 14-25).

TA706842

**CHAPTER 15
HOIST AND CRANE MAINTENANCE**

Paragraph Number	Paragraph Title	Page Number
15-1	On-board Crane Maintenance	15-1
15-2	On-board Crane Support Cylinder Replacement	15-11

15-1. ON-BOARD CRANE MAINTENANCE.

This Task Covers:

- | | |
|--|--|
| <ul style="list-style-type: none"> a. Removal b. Disassembly c. Cleaning and Inspection | <ul style="list-style-type: none"> d. Assembly e. Installation |
|--|--|

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Personnel Required: Two

Materials/Parts:

- Gloves (Item 22, Appendix C)
- Rags (Item 27, Appendix C)
- Dry cleaning solvent (Item 31, Appendix C)
- Two cotter pins

References:

- TM 10-3930-659-10

General Safety Instructions:

- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.

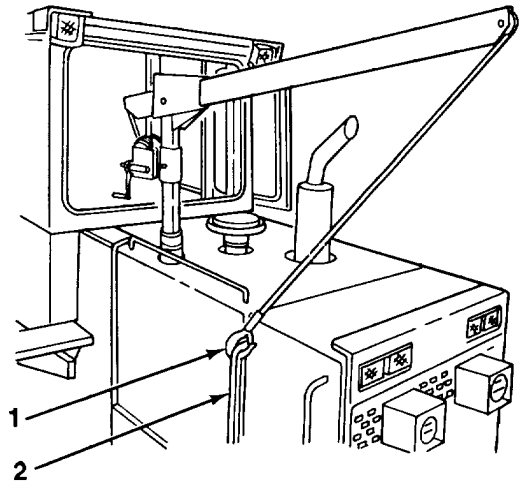
15-1. ON-BOARD CRANE MAINTENANCE (Con't).

WARNING

- Cables can become frayed or can contain broken wires. Wear heavy, leather-palmed work gloves when handling cables. Frayed or broken wires can injure your hands.
- NEVER let a moving cable slide through your hand, even when wearing gloves. A broken wire could cut through glove and cut your hand.

a. REMOVAL

1. Remove crane cable hook (1) from handle (2).



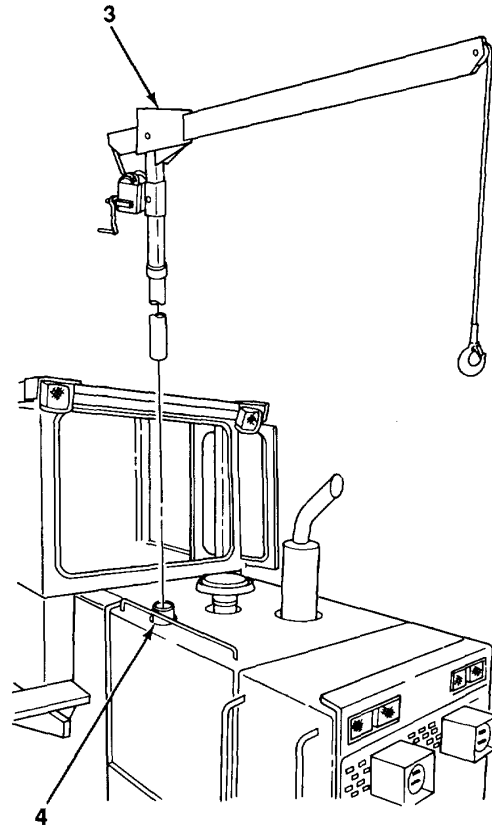
TA706760

15-1. ON-BOARD CRANE MAINTENANCE (Con't).

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

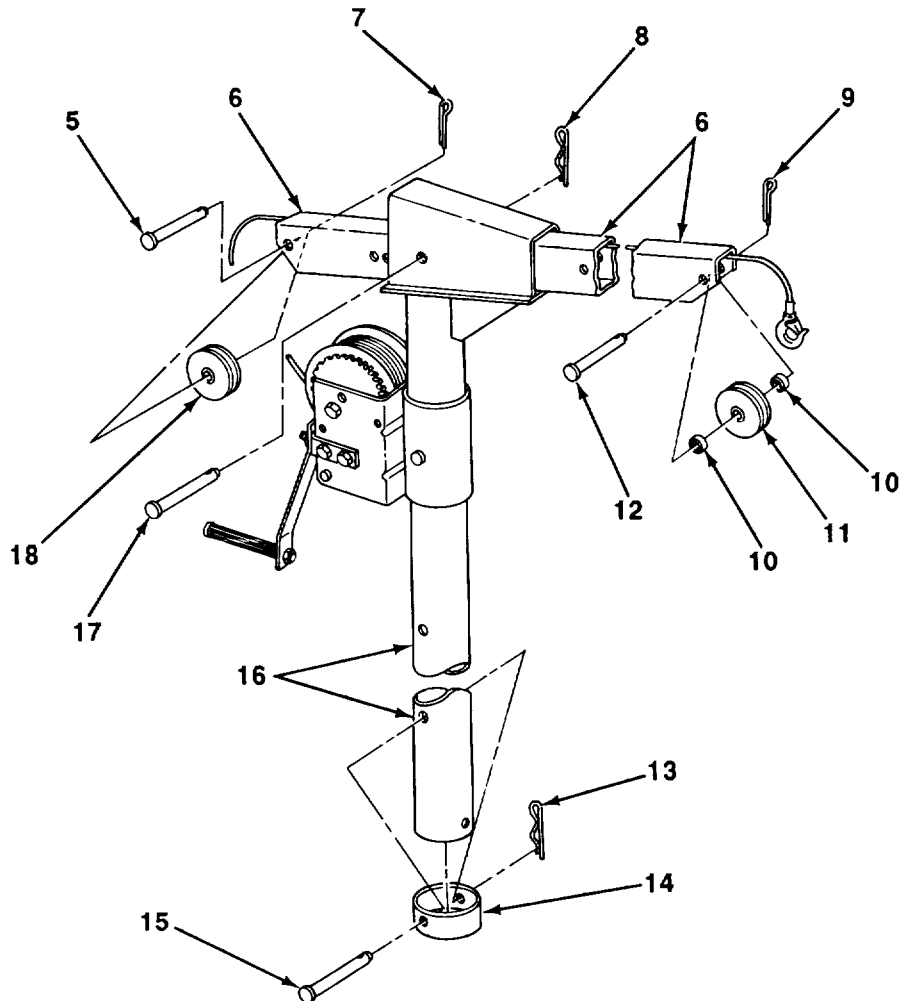
2. Remove on-board crane (3) from support cylinder (4).



TA706761

15-1. ON-BOARD CRANE MAINTENANCE (Con't).**b. DISASSEMBLY**

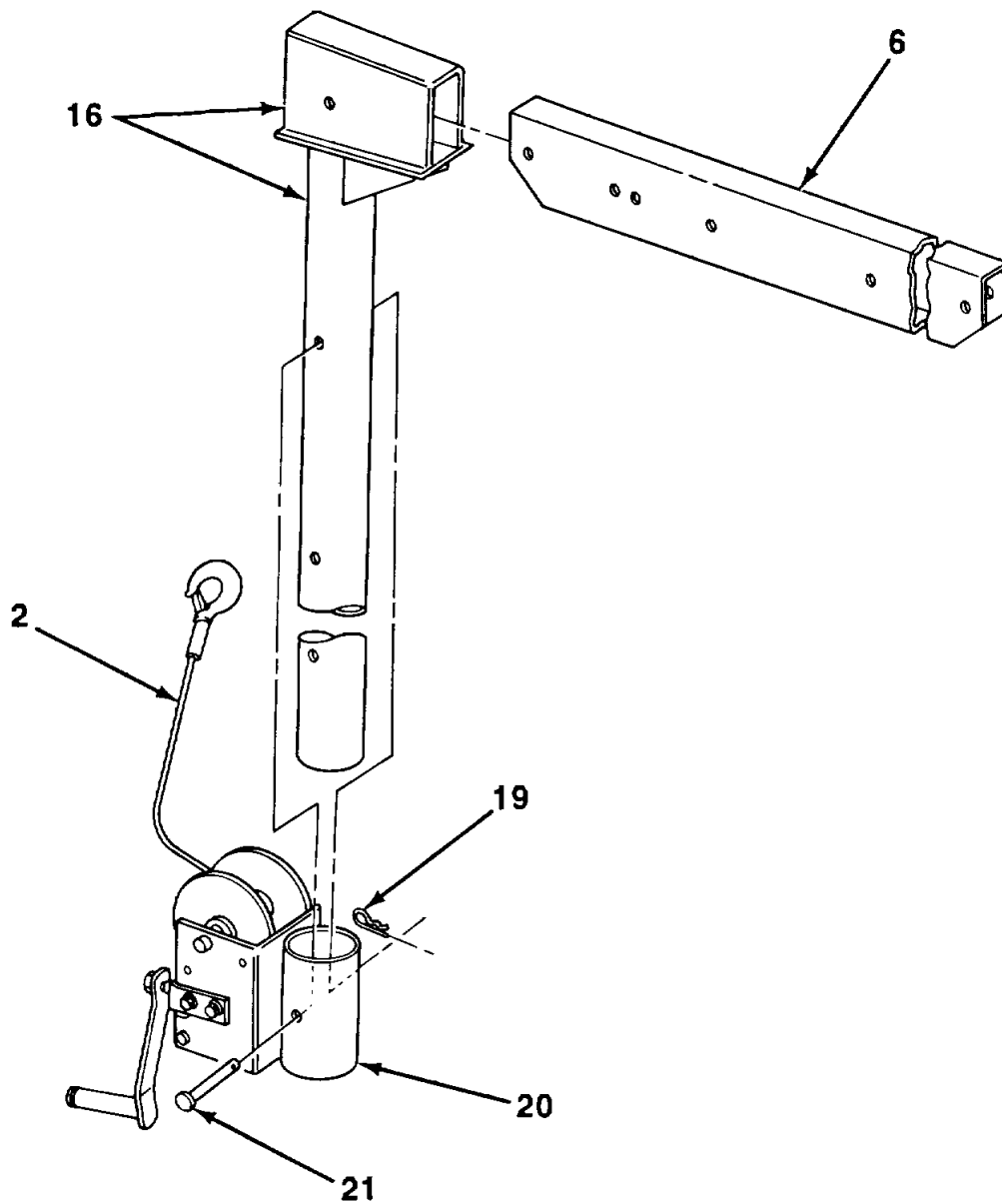
1. Remove cotter pin (9), pin (12), two spacers (10), and front groove pulley (11) from boom (6). Discard cotter pin.
2. Remove spring lockpin (8) and pin (17) from boom (6) and mast (16).
3. Remove cotter pin (7), pin (5), and rear groove pulley (18) from boom (6). Discard cotter pin.
4. Remove spring lockpin (13), pin (15), and shaft collar (14) from mast (16).



TA706762

15-1. ON-BOARD CRANE MAINTENANCE (Con't).

5. Remove cable (2) from boom (6).
6. Remove boom (6) from mast (16).
7. Remove spring lockpin (19), pin (21), and wire rope hoist (20) from mast (16).



TA706763

15-1. ON-BOARD CRANE MAINTENANCE (Con't).

8. If damaged, remove crane cable (2) from wire rope hoist (20).
9. If damaged, remove locknut (23) and handle (22) from wire rope hoist (20). Discard locknut.

c. CLEANING AND INSPECTION**WARNING**

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-1380F (38°C-590C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry with clean rags.
2. Inspect parts for damage. Replace damaged parts.

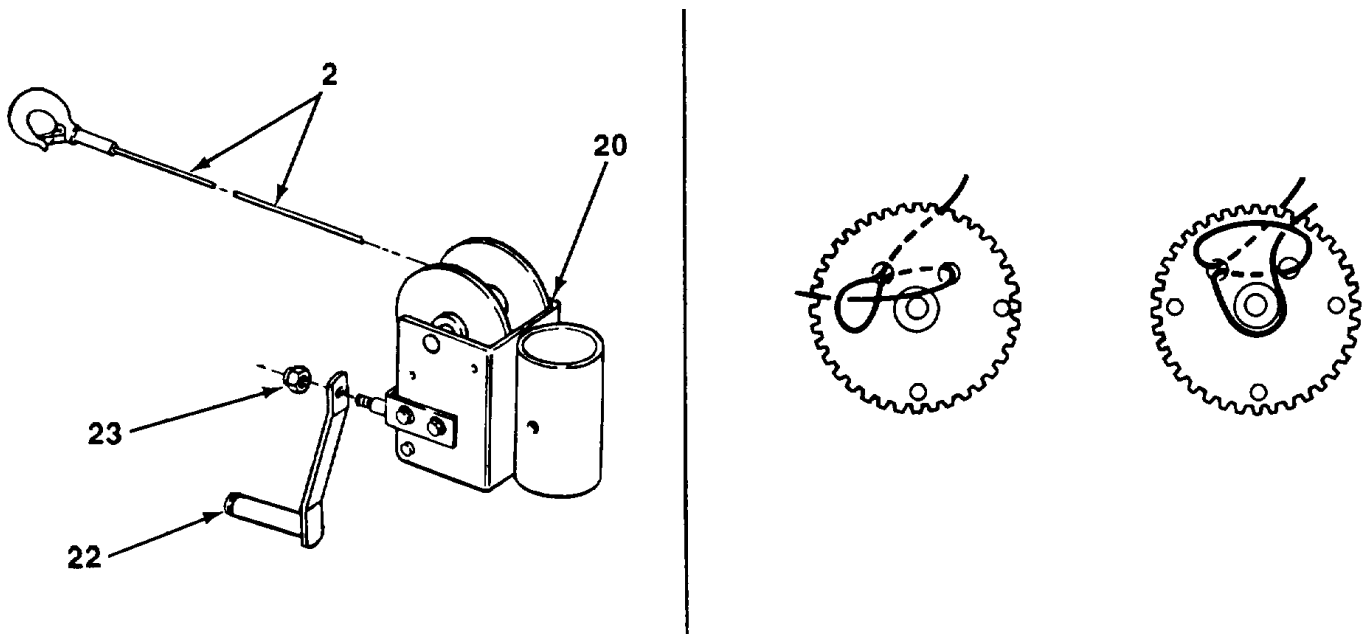
d. ASSEMBLY

1. If removed, install handle (22) on wire rope hoist (20) with new locknut (23).

NOTE

When installing cable on wire rope hoist, ensure that cable is evenly wound.

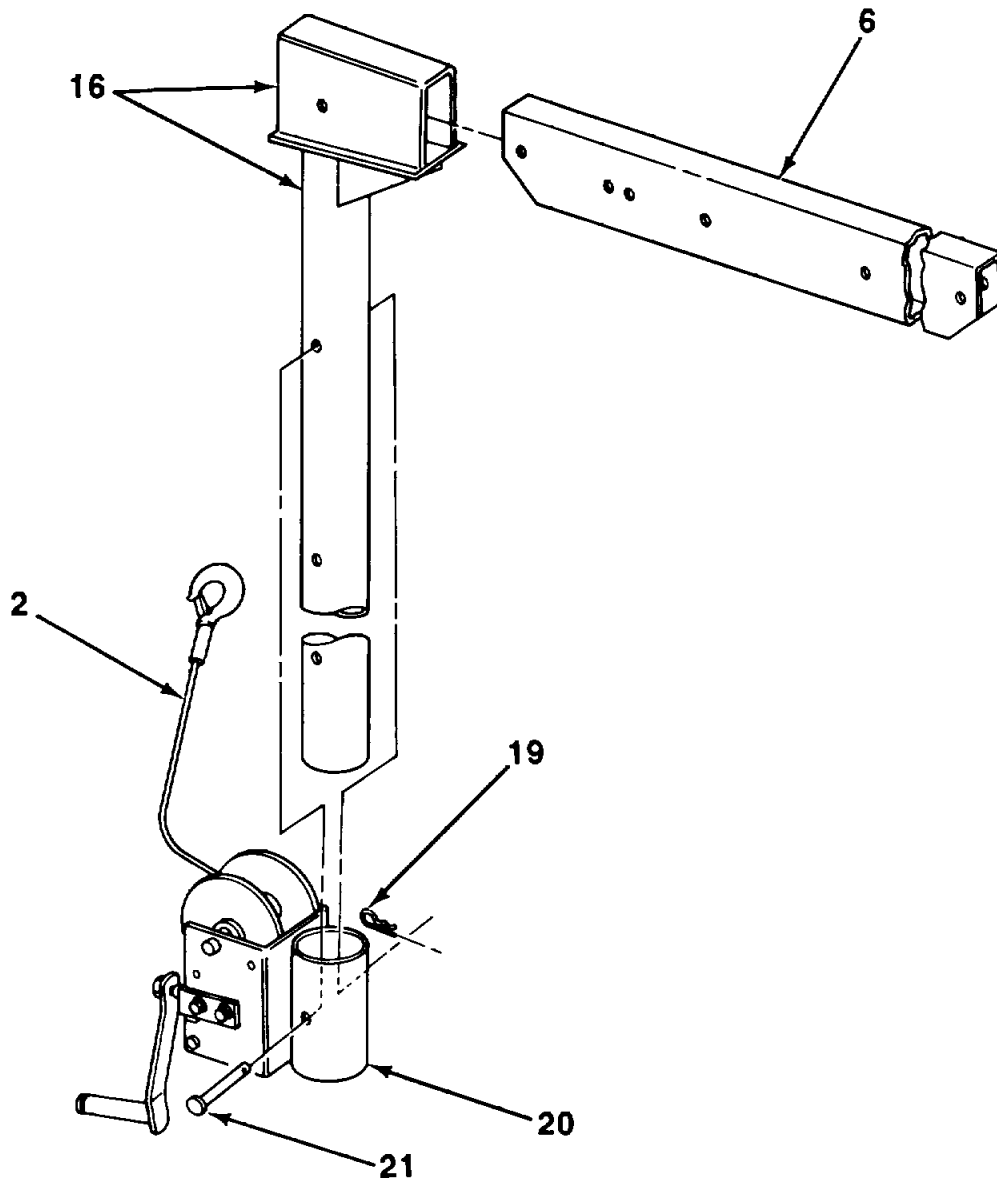
2. If removed, install crane cable (2) on wire rope hoist (20) as illustrated.



TA706764

15-1. ON-BOARD CRANE MAINTENANCE (Con't).

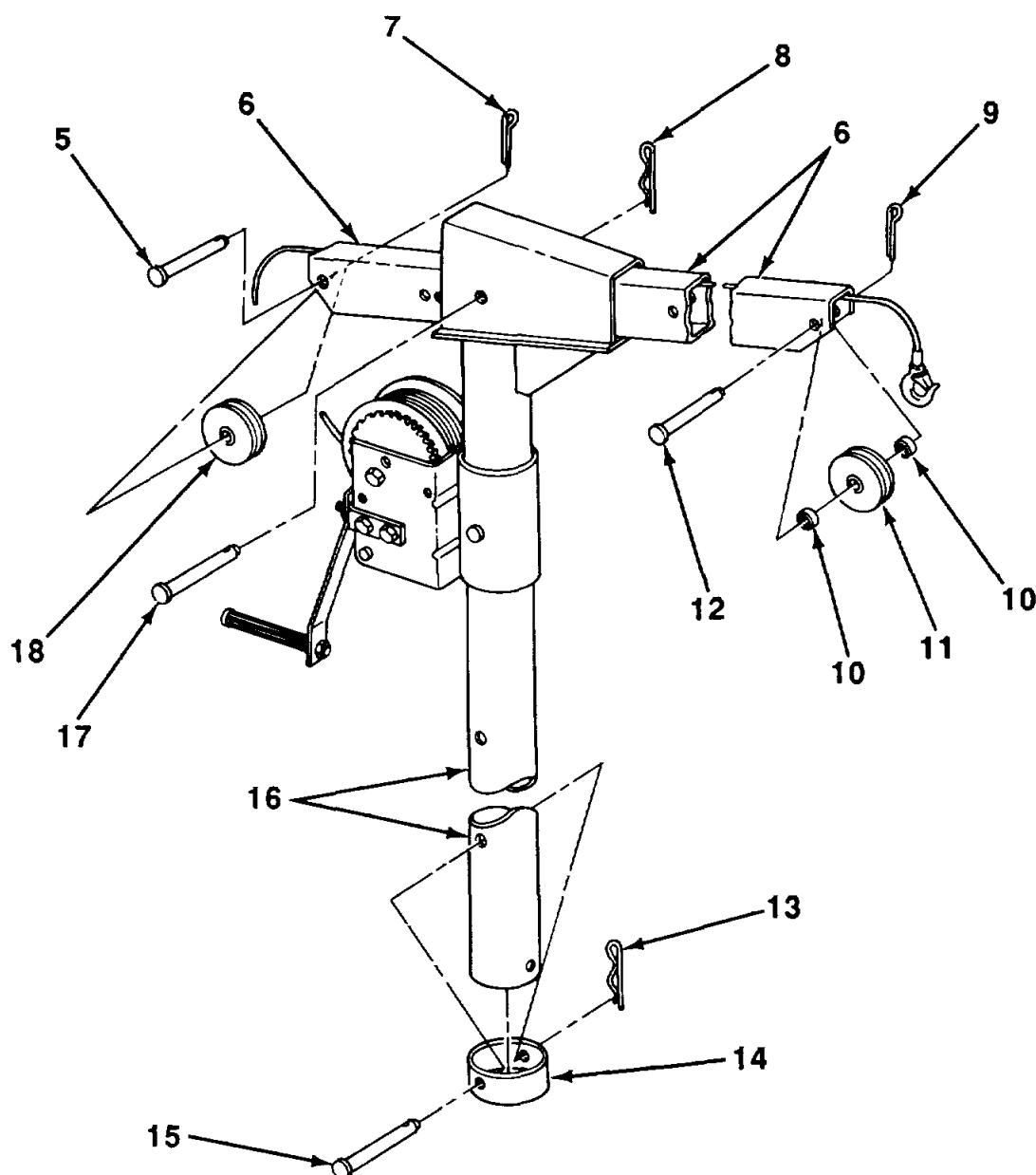
3. Install wire rope hoist (20) on mast (16) with pin (21) and spring lockpin (19).
4. Position boom (6) on mast (16).
5. Install cable (2) through boom (6).



TA706765

15-1. ON-BOARD CRANE MAINTENANCE (Con't).

6. Install shaft collar (14) on mast (16) with pin (15) and spring lockpin (13).
7. Install rear groove pulley (18) on boom (6) with pin (5) and new cotter pin (7).
8. Install pin (17) and spring lockpin (8) on mast (16) and boom (6).
9. Install two spacers (10) and front groove pulley (11) on boom (6) with pin (12) and new cotter pin (9).



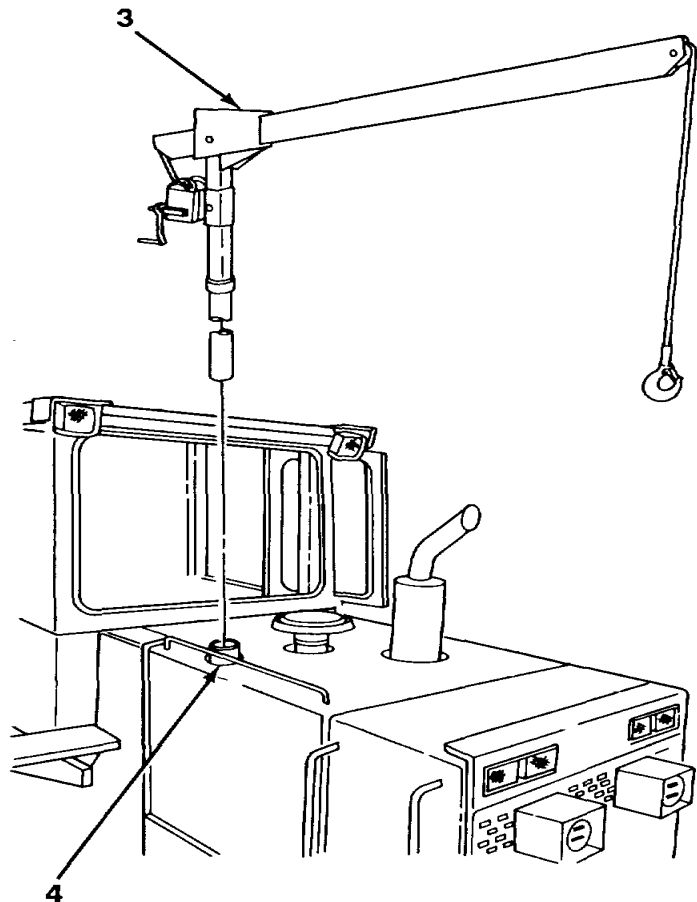
TA706766

15-1. ON-BOARD CRANE MAINTENANCE (Con't).

e. INSTALLATION**WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

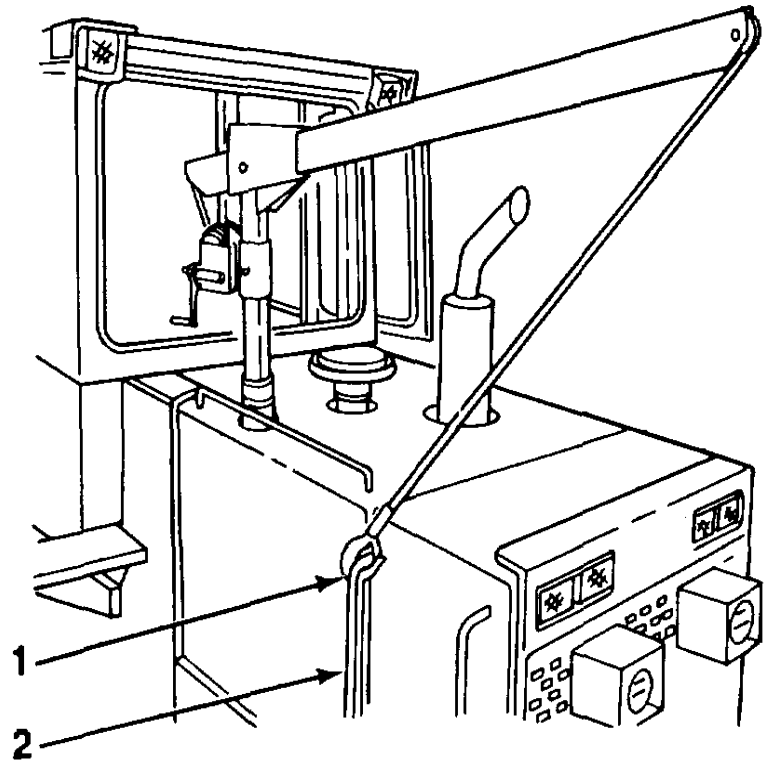
1. Position on-board crane (3) on support cylinder (4).



TA706767

15-1. ON-BOARD CRANE MAINTENANCE (Con't).

2. Install crane cable hook (1) on handle (2). Remove slack from crane cable.



TA706768

15-2. ON-BOARD CRANE SUPPORT CYLINDER REPLACEMENT.

This task covers:

a. Removal

b.. Installation

Initial Setup:

Equipment Conditions:

- On-board crane removed (see paragraph 15-1).
- Left engine lower sideshield removed (see paragraph 14-16).

Materials/Parts:

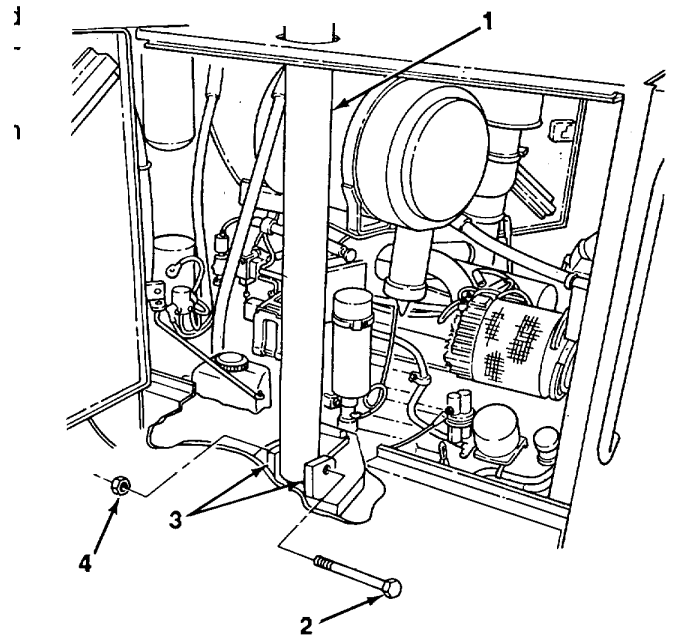
- One locknut

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix C)

a. REMOVAL

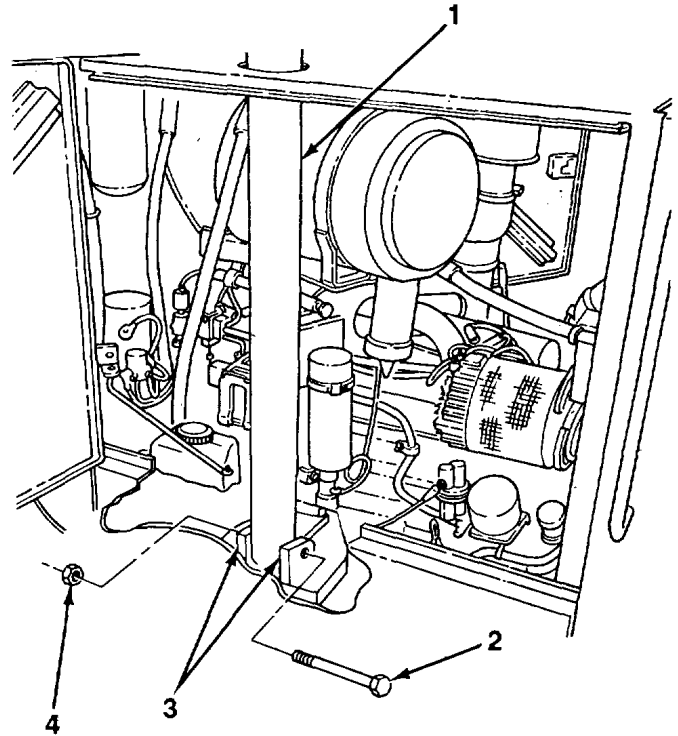
1. Remove locknut (4), screw (2), and on-board crane support cylinder (1) from bracket (3). Discard locknut.
2. Remove on-board crane support cylinder (1) from engine compartment.



TA706769

15-2. ON-BOARD CRANE SUPPORT CYLINDER REPLACEMENT (Con't).**b. INSTALLATION**

1. Position on-board crane support cylinder (1) in engine compartment.
2. Install on-board crane support cylinder (1) in bracket (3) with screw (2) and new locknut (4).

**FOLLOW-ON TASKS:**

- Install left engine lower sideshield (see paragraph 14-16).
- Install on-board crane (see paragraph 15-1).

TA706770

CHAPTER 16
BODY AND CHASSIS ACCESSORY ITEMS MAINTENANCE

Paragraph Number	Paragraph Title	Page Number
16-1	Inside Mirror Replacement	16-2
16-2	Defroster Blower Motor Maintenance.....	16-3
16-3	Defroster Fan Maintenance	16-7
16-4	Heater Blower and Defroster Blower Controls Replacement	16-14
16-5	Defroster Blower Ducts and Duct Hose Replacement	16-16
16-6	Front Windshield Wiper Arm, Blade, and Motor Maintenance	16-19
16-7	Rear Window Wiper Arm and Blade Maintenance	16-22
16-8	Rear Window Wiper Motor Replacement	16-27
16-9	Window Washer Assembly Replacement.....	16-28
16-10	Heater Housing Replacement.....	16-33
16-11	Heater Core Replacement	16-36
16-12	Heater Blower Motor Maintenance	16-38
16-13	Inside Cab Heater Hoses and Heater Control Valve Replacement	16-43
16-14	Outside Cab Heater Hoses Replacement	16-47
16-15	Heater Ventilators and Duct Hoses Replacement	16-50
16-16	Heater Control and Heater Control Valve Cable Replacement	16-56
16-17	Heater Resistor and Defroster Resistor Replacement	16-57
16-18	Data Plates Replacement.....	16-60

16-2. DEFROSTER BLOWER MOTOR MAINTENANCE.

This Task Covers:

- | | |
|----------------------|-----------------|
| a. Removal | d. Assembly |
| b. Brush Replacement | e. Installation |
| c. Disassembly | |

Initial Setup:

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).
- Heater housing removed (see paragraph 16-10).

Tools/Test Equipment:

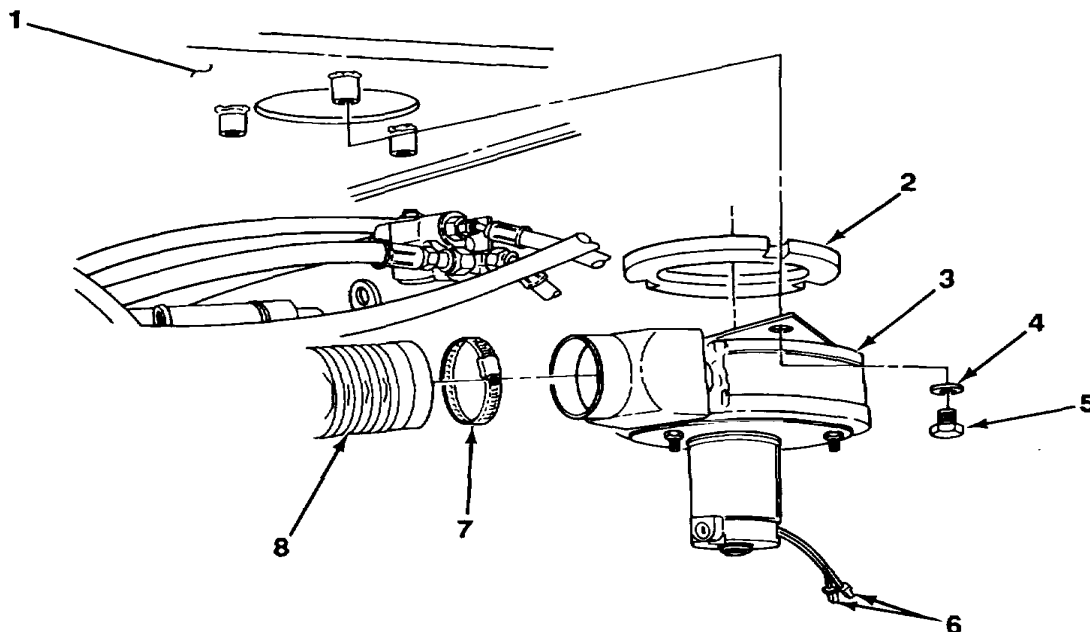
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL

1. Loosen clamp (7) and remove duct hose (8) and clamp from defroster blower motor assembly (3).
2. Disconnect two connectors (6) from left panel wiring harness.
3. Remove three screws (5), washers (4), defroster blower motor assembly (3), and pad (2) from cab (1).



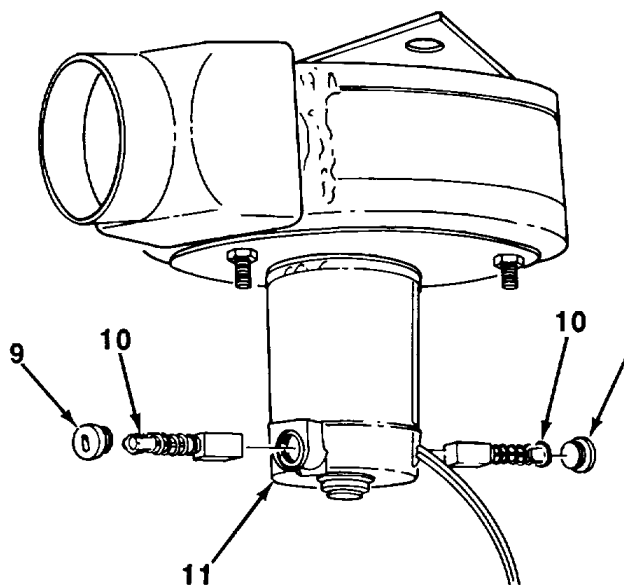
TA706966

16-2. DEFROSTER BLOWER MOTOR MAINTENANCE (Con't).

b. BRUSH REPLACEMENT**NOTE**

Brushes should be replaced in a matched set even if only one brush is damaged.

1. Remove two caps (9) and brushes (10) from defroster blower motor (11).
2. Install two brushes (10) and caps (9) on defroster blower motor (11).



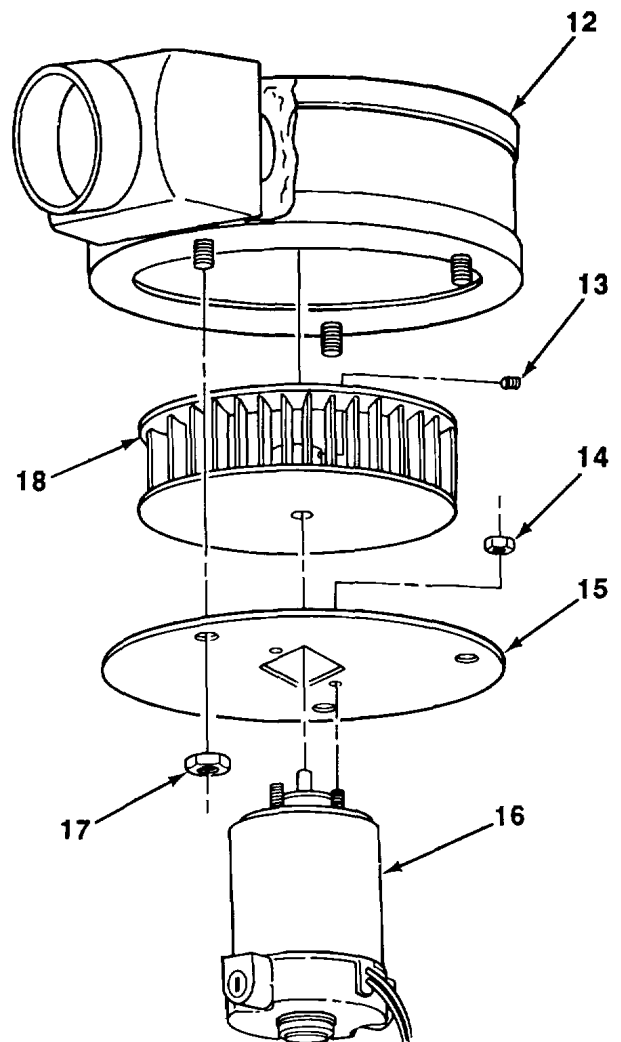
TA706967

16-2. DEFROSTER BLOWER MOTOR MAINTENANCE (Con't).**c. DISASSEMBLY**

1. Remove three nuts (17) and defroster blower motor (16) from housing (12).
2. Remove setscrew (13) and impeller (18) from defroster blower motor (16).
3. Remove two nuts (14) and plate (15) from defroster blower motor (16).

d. ASSEMBLY

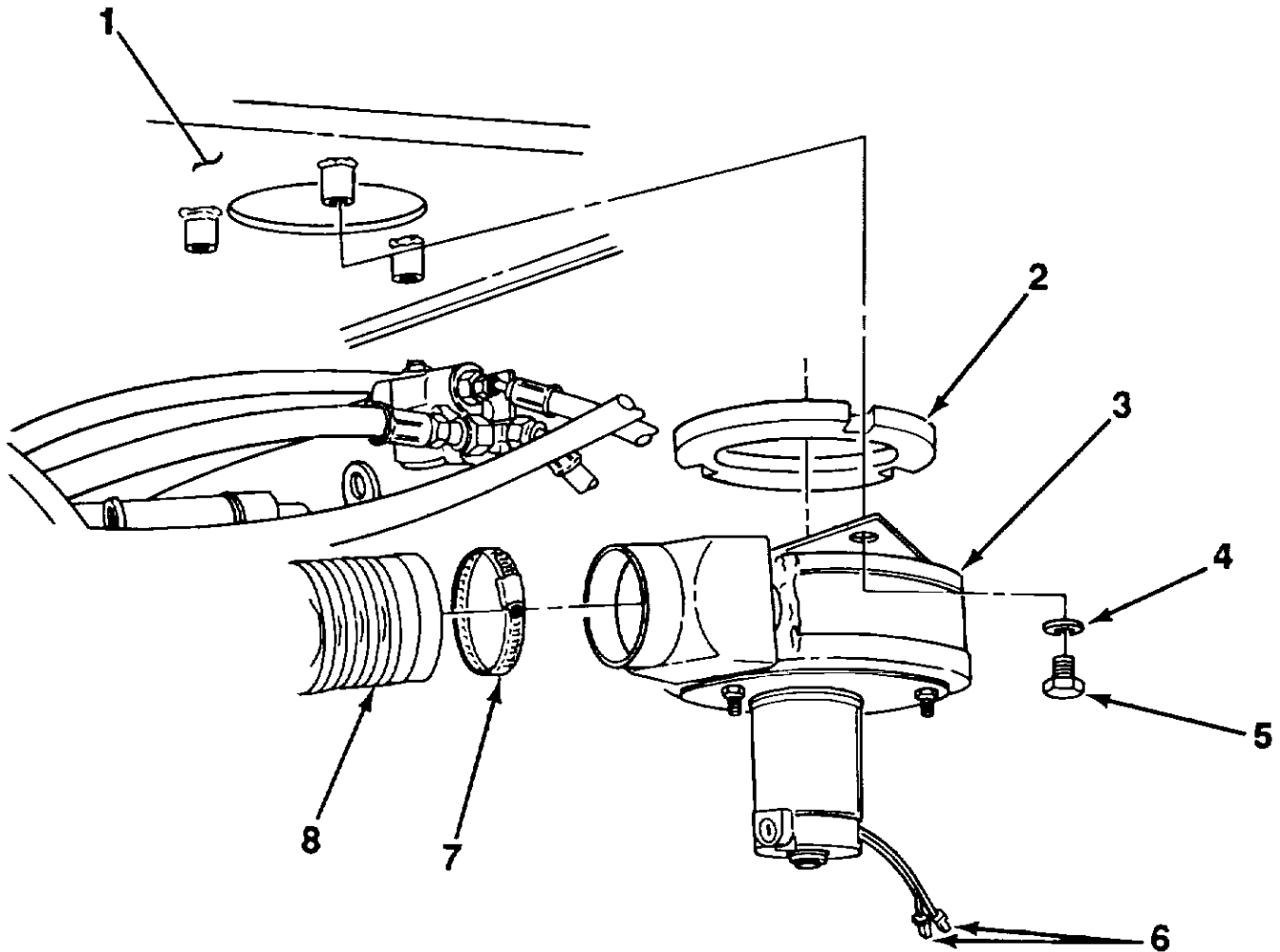
1. Install plate (15) on defroster blower motor (16) with two nuts (14).
2. Install impeller (18) on defroster blower motor (16) with setscrew (13).
3. Install defroster blower motor (16) on housing (12) with three nuts (17).



TA706968

16-2. DEFROSTER BLOWER MOTOR MAINTENANCE (Con't).**e. INSTALLATION**

1. Install pad (2) and defroster blower motor assembly (3) on cab (1) with three washers (4) and screws (5).
2. Connect two leads (6) to left panel wiring harness.
3. Position duct hose (8) on defroster blower motor assembly (3) and tighten clamp (7).

**FOLLOW-ON TASKS:**

- Install heater housing (see paragraph 16-10).
- Install cab skirts (see paragraph 14-6).

TA706969

16-3. DEFROSTER FAN MAINTENANCE.*This Task Covers:*

- | | |
|----------------|-----------------|
| a. Removal | c. Assembly |
| b. Disassembly | d. Installation |

*Initial Setup:***Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).

Materials/Parts:

- Marker tags (Item 33, Appendix C)
- Electrical tape (Item 36, Appendix C)
- Two lockwashers
- Four locknuts

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

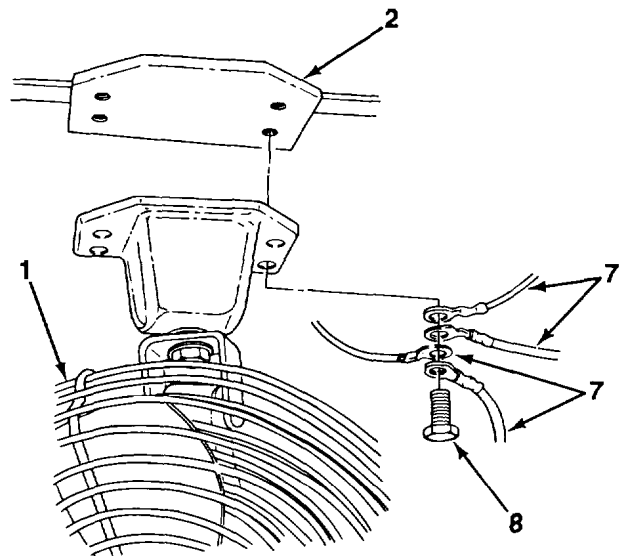
References:

- TM 10-3930-659-10

a. REMOVAL**NOTE**

- **All wires should be tagged before removal. Refer to paragraph 2-18 for tagging Instructions.**
- **Note position of terminal leads to aid during Installation.**

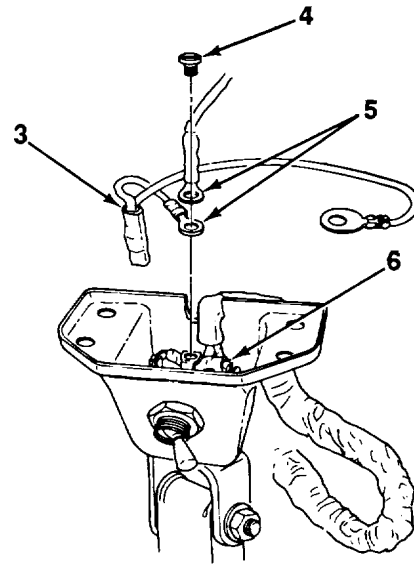
1. Remove four screws (8), four terminal leads (7), and defroster fan (1) from bracket (2).



TA706970

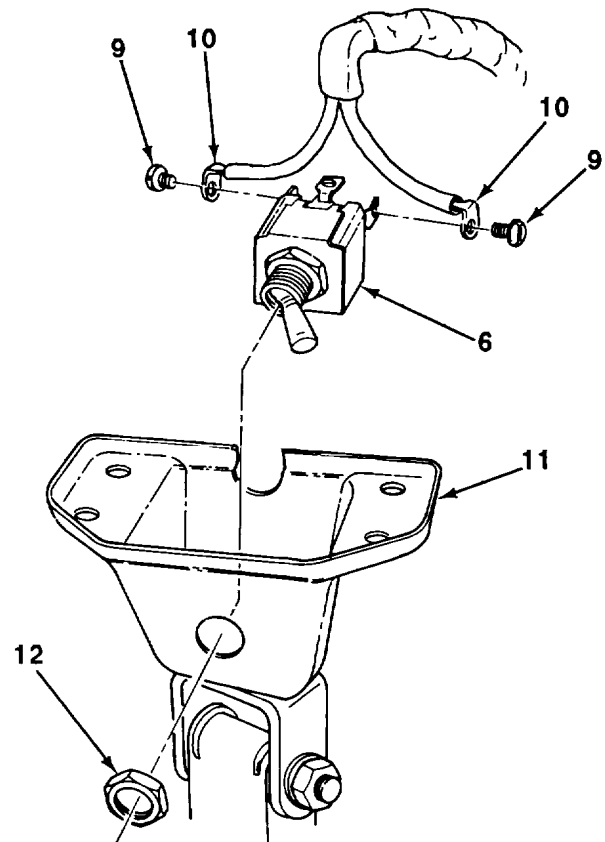
16-3. DEFROSTER FAN MAINTENANCE (Con't).

2. Remove screw (4), two terminal leads (5), and suppressor (3) from defroster fan switch (6).



b. DISASSEMBLY

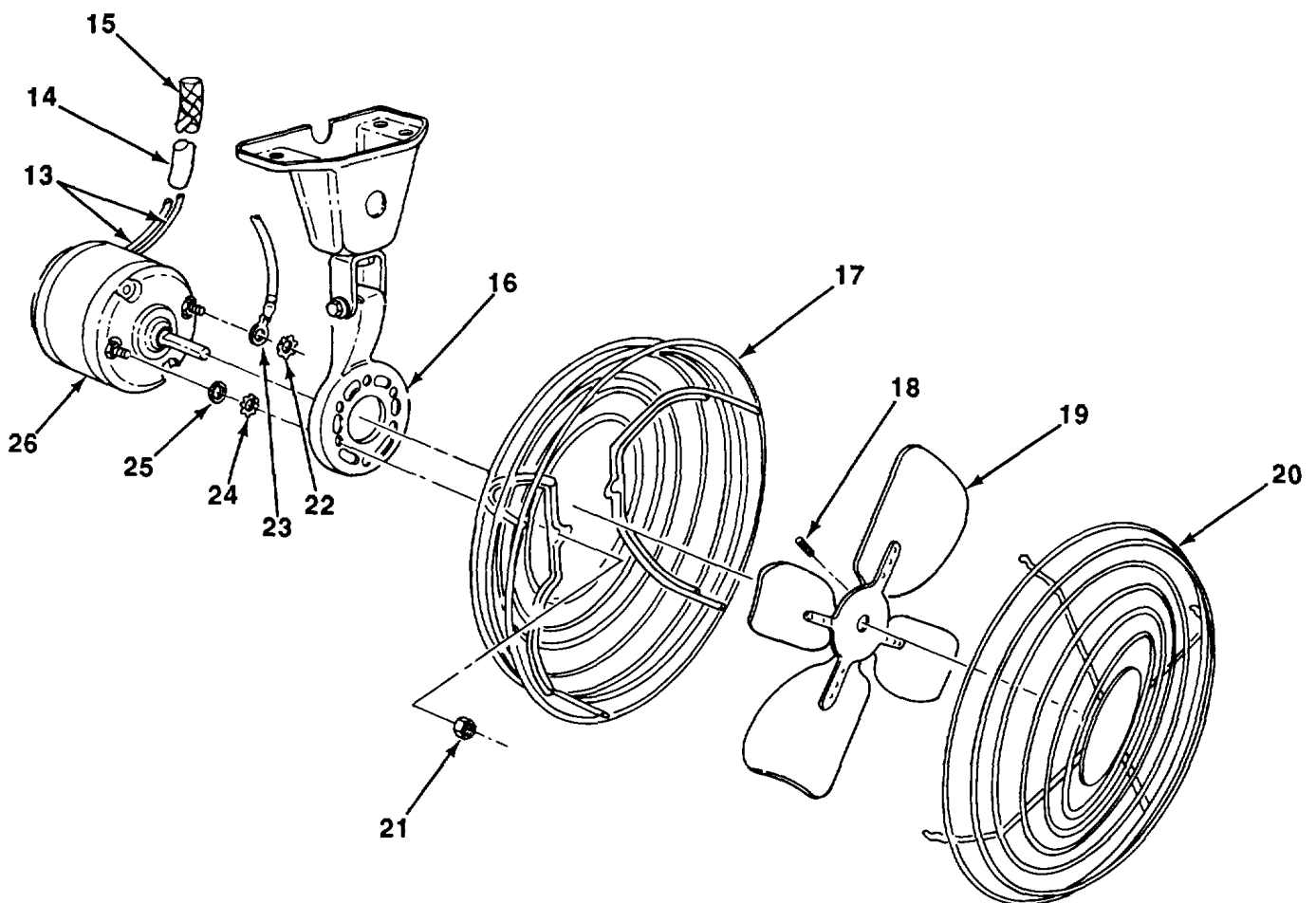
1. Remove nut (12) and defroster fan switch (6) from defroster fan base (11).
2. Remove two screws (9) and terminal leads (10) from defroster fan switch (6).



TA706971

16-3. DEFROSTER FAN MAINTENANCE (Con't).

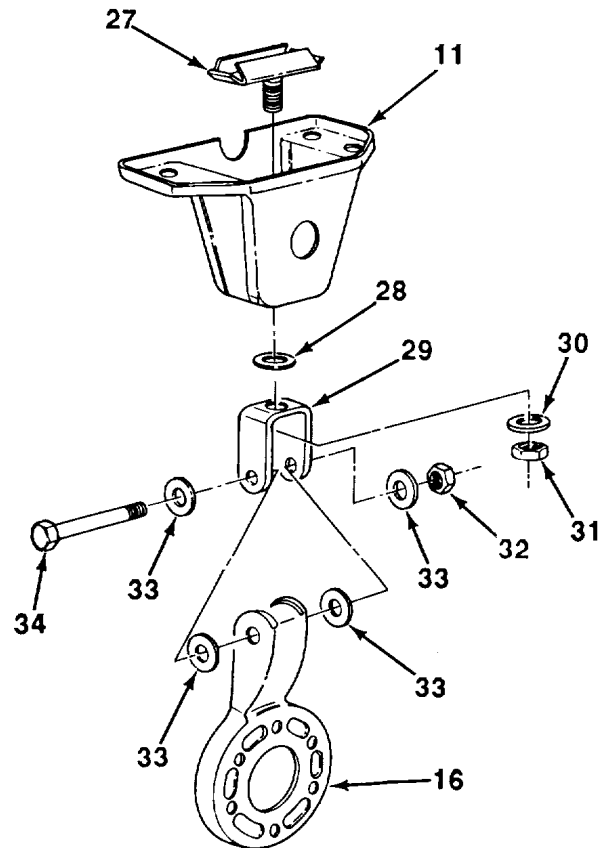
3. Remove front blade guard (20) from rear blade guard (17).
4. Loosen setscrew (18) and remove fan blade (19) from motor (26).
5. Remove two locknuts (21), rear blade guard (17) and motor (26) from bracket (16). Discard locknuts.
6. Remove lockwasher (22) and terminal lead (23) from motor (26). Discard lockwasher.
7. Remove lockwasher (24) and washer (25) from motor (26). Discard lockwasher.
8. Remove electrical tape and wire mesh shielding (15) from insulation tube (14).
9. Remove insulation tube (14) from two wires (13).



TA706972

16-3. DEFROSTER FAN MAINTENANCE (Con't).

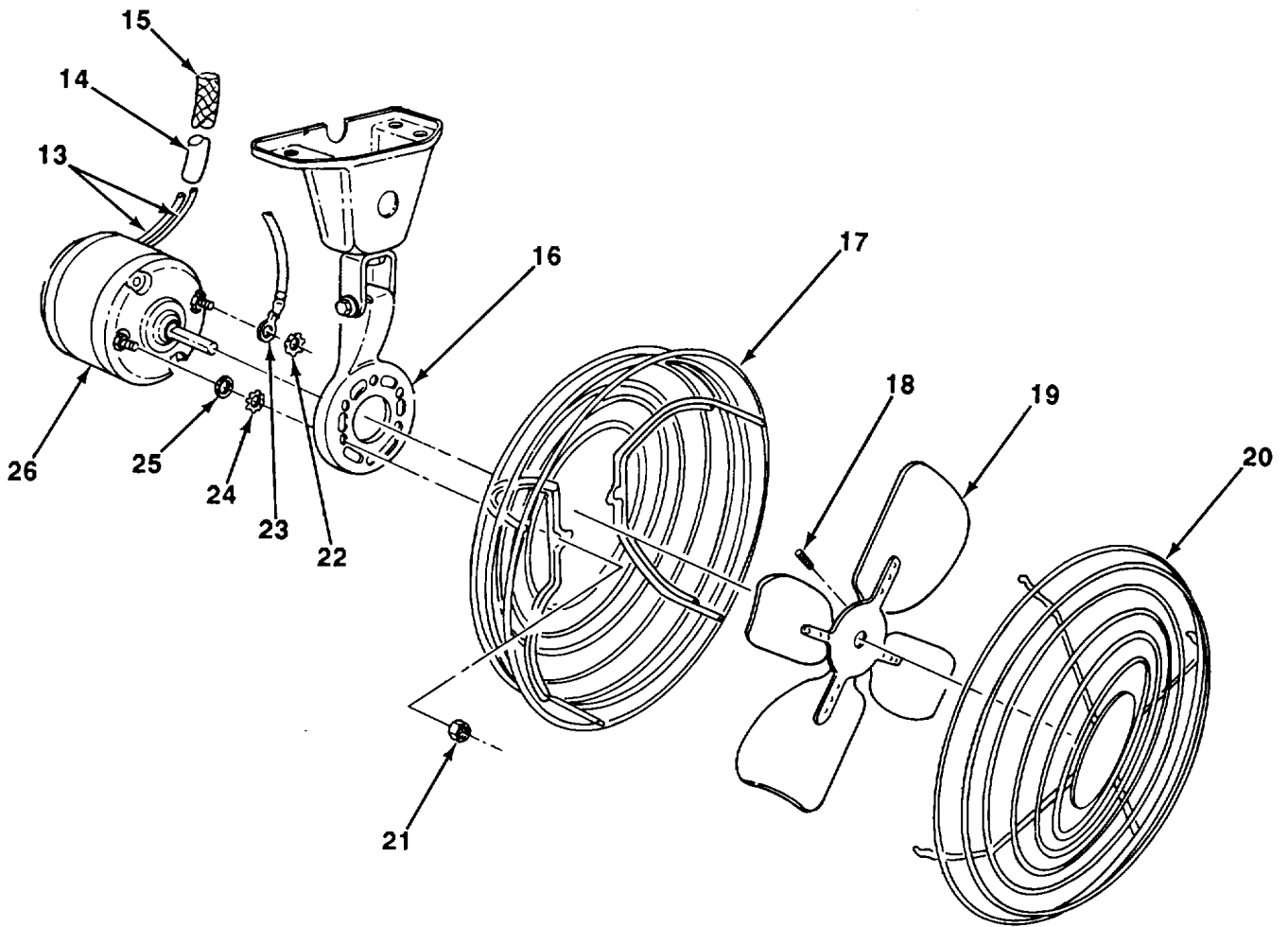
10. Remove locknut (32), screw (34), four washers (33), and bracket (16) from bracket (29). Discard locknut.
11. Remove locknut (31), washer (30), bracket (29), nylon washer (28), and bolt (27) from defroster fan base (11). Discard locknut.

**c. ASSEMBLY I**

1. Install nylon washer (28) and bracket (29) on defroster fan base (11) with bolt (27), washer (30), and new locknut (31).
2. Install bracket (16) on bracket (29) with four washers (33), screw (34), and new locknut (32).
3. Install insulation tube (14) over two wires (13).
4. Install wire mesh shielding (15) on insulation tube (14) with electrical tape.
5. Position washer (25), terminal lead (23), and two new lockwashers (22 and 24) on motor (26).
6. Install bracket (16) and rear blade guard (17) on motor (26) with two new locknuts (21).
7. Position fan blade (19) on motor (26) and tighten setscrew (18).
8. Attach front blade guard (20) to rear blade guard (17).

TA706973

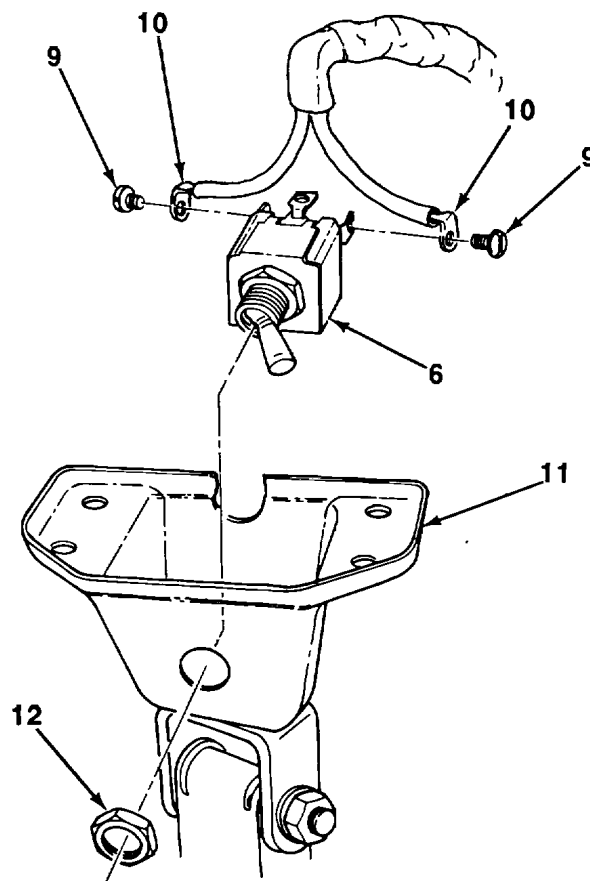
16-3. DEFROSTER FAN MAINTENANCE (Con't).



TA706974

16-3. DEFROSTER FAN MAINTENANCE (Con't).

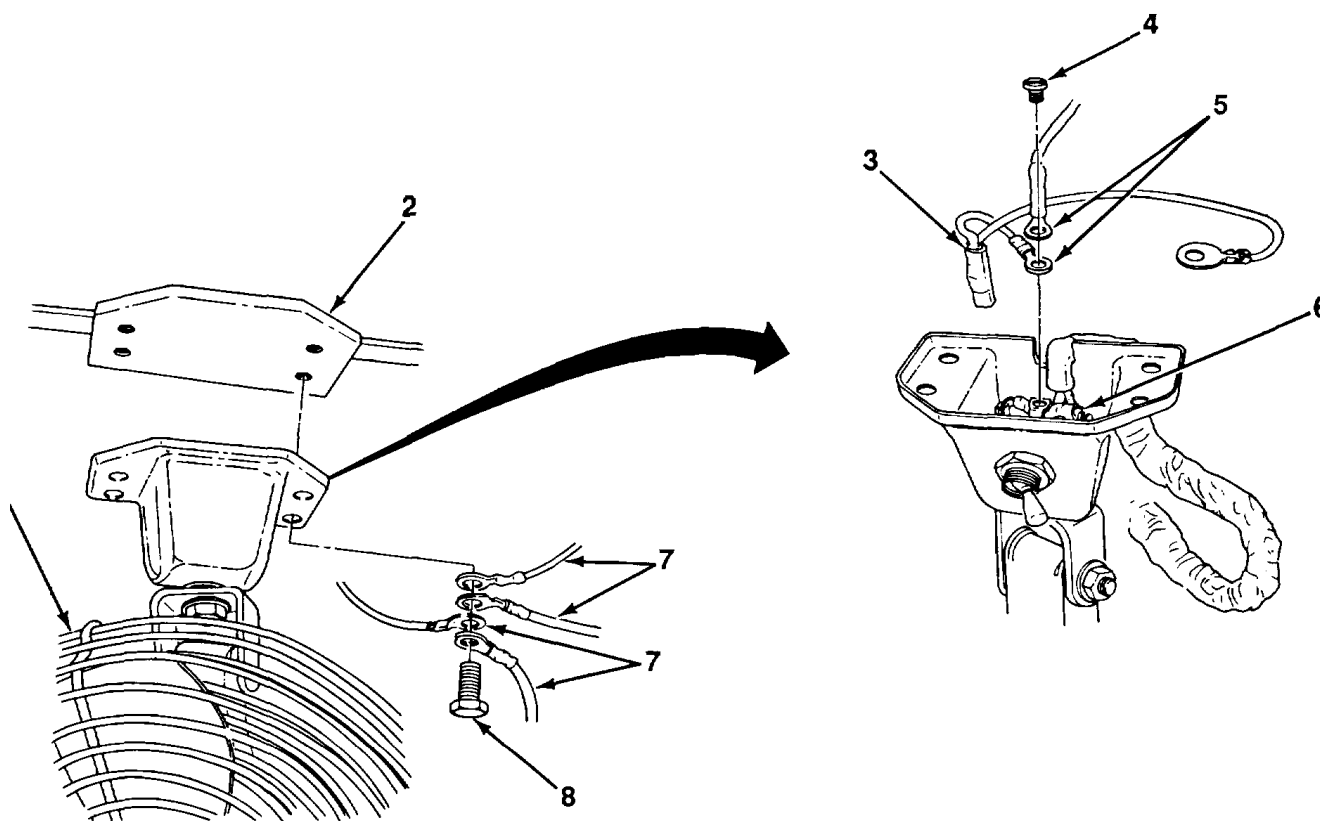
9. Install two terminal leads (10) on defroster fan switch (6) with two screws (9).
10. Install defroster fan switch (6) on defroster fan base (11) with nut (12).



TA706975

16-3. DEFROSTER FAN MAINTENANCE (Con't).**d. INSTALLATION**

1. Position suppressor (3) on defroster fan switch (6).
2. Install two terminal leads (5) on defroster fan switch (6) with screw (4).
3. Install defroster fan (1) and four terminal leads (7), as noted during removal, on bracket (2) with four screws (8).



TA706976

16-4. HEATER BLOWER AND DEFROSTER BLOWER CONTROLS REPLACEMENT.*This Task Covers:*

- a. Removal b. Installation

*Initial Setup:***Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Cab fresh air filter door opened (see TM - 10-3930-659-10)

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

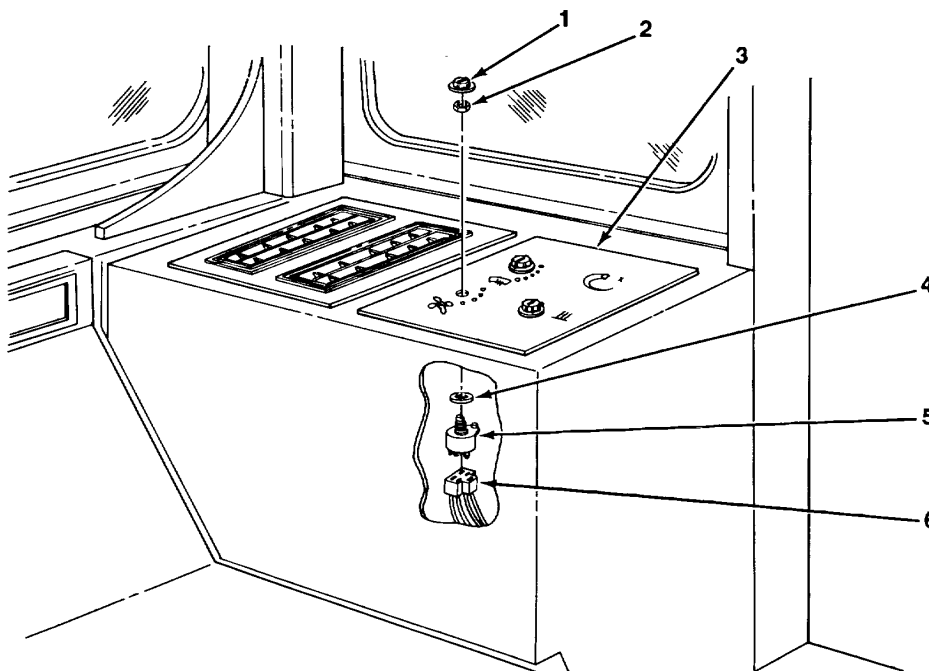
- TM 10-3930-659-10

NOTE

Heater blower and defroster blower controls are replaced the same way. Heater blower control is illustrated.

a. REMOVAL

1. Remove connector (6) from switch (5).
2. Remove knob (1), nut (2), switch (5), and washer (4) from heater control panel (3).



TA706977

16-4. HEATER BLOWER AND DEFROSTER BLOWER CONTROLS REPLACEMENT (Con't).

b. INSTALLATION

1. Install washer (4) and switch (5) on heater control panel (3) with nut (2).
2. Install knob (1) on nut (2).
3. Install connector (6) on switch (5).

FOLLOW-ON TASKS:

- Close cab fresh air filter door (see TM 10-3930-659-10).

16-5. DEFROSTER BLOWER DUCTS AND DUCT HOSE REPLACEMENT.*This Task Covers:*

a. Removal

b. Installation

*Initial Setup:***Equipment Conditions:**

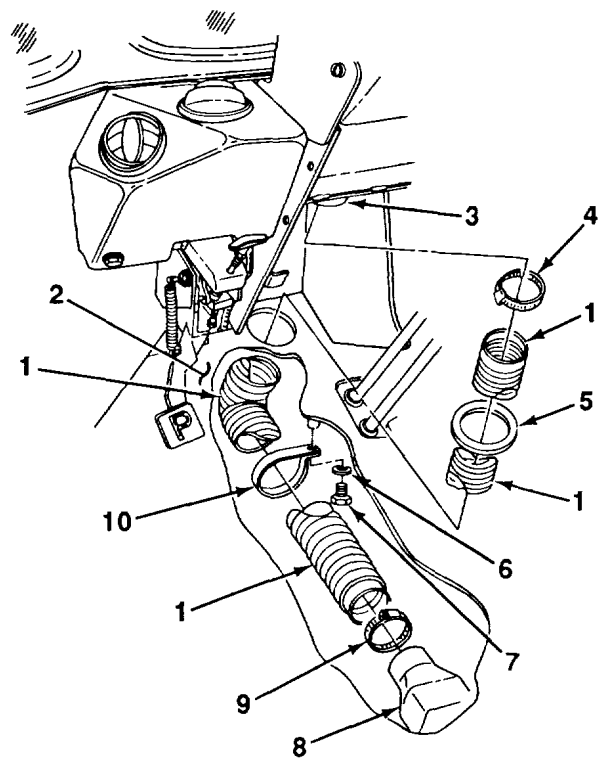
- Cab skirts removed (see paragraph 14-6).
- Lower dash cover removed (see paragraph 14-23).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

1. Remove two screws (7), washers (6), and clamps (10) from cab floor (2).
2. Loosen clamp (9) and remove duct hose (1) from defroster blower (8).
3. Loosen clamp (4) and remove duct hose (1) from cab duct (3).
4. Remove duct hose (1) and seal (5) from cab floor (2).
5. Remove two clamps (10) and clamps (4 and 9) from duct hose (1).

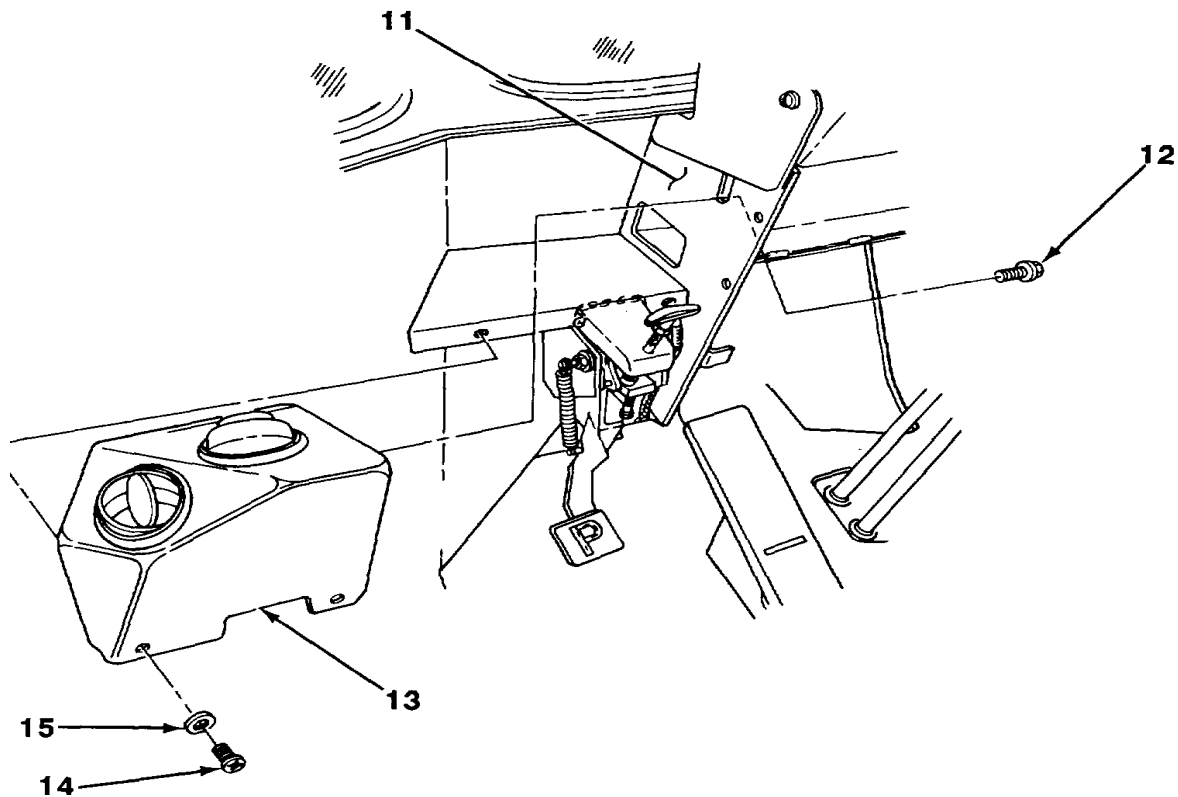
**NOTE**

**Left and right defroster blower ducts are removed the same way.
Left defroster blower duct is illustrated.**

6. Remove two screws (14) and washers (15) from defroster blower duct (13).
7. Remove screw (12) and defroster blower duct (13) from cab panel (11).

TA706978

16-5. DEFROSTER BLOWER DUCTS AND DUCT HOSE REPLACEMENT (Con't).



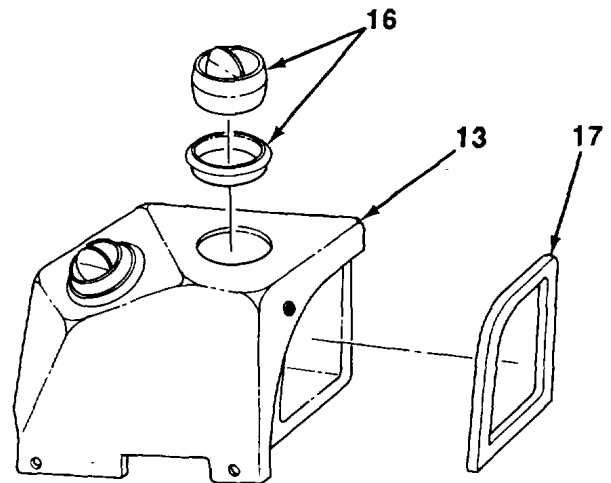
8. If damaged, remove isolator (17) from defroster blower duct (13).
9. Remove two louvers (16) from defroster blower duct (13).

b. INSTALLATION

NOTE

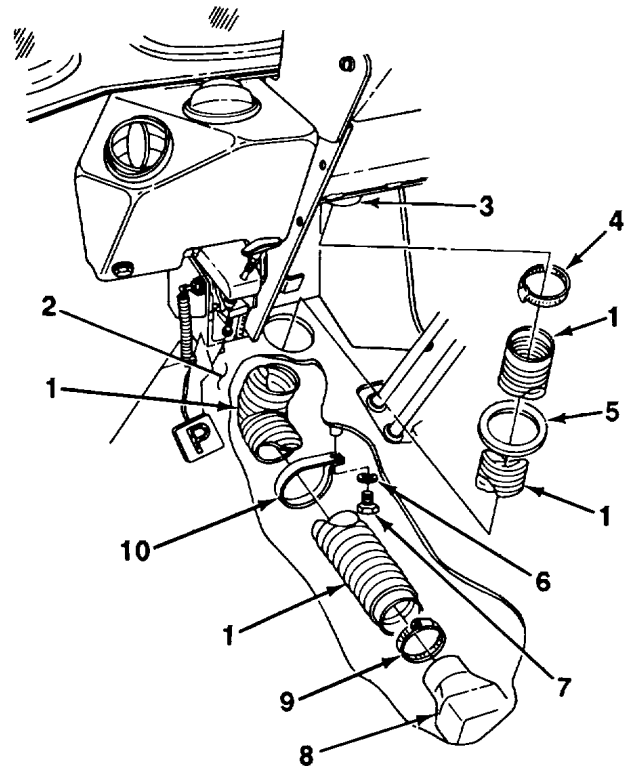
Left and right defroster blower ducts are installed the same way. Left defroster blower duct is illustrated.

1. Install two louvers (16) on defroster blower duct (13).
2. If removed, apply adhesive (Item 1, Appendix C) to isolator (17) and install isolator on defroster blower duct (13).
3. Install defroster blower duct (13) on cab panel (11) with screw (1).
4. Install two washers (15) and screws (14) on defroster blower duct (13).



16-5. DEFROSTER BLOWER DUCTS AND DUCT HOSE REPLACEMENT (Con't).

5. Position seal (5) on cab floor (2) and thread duct hose (1) through seal and cab floor.
6. Slide clamp (4) on duct hose (1) and position duct hose on cab duct (3). Tighten clamp.
7. Slide two clamps (10) and clamp (9) on duct hog (1), and position duct hose on defroster blow (8).
8. Tighten clamp (9) and install two clamps (10) on cab floor (2) with two washers (6) and screws (7)

**FOLLOW-ON TASKS:**

- Install lower dash cover (see paragraph 14-23).
- Install cab skirts (see paragraph 14-6).

TA706980

16-6. FRONT WINDSHIELD WIPER ARM, BLADE, AND MOTOR MAINTENANCE.*This Task Covers:*

- | | |
|--------------------------------|-----------------|
| a. Wiper Arm Blade Replacement | c. Installation |
| b. Removal | |

*Initial Setup:***Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10)
- Lower dash cover removed (see paragraph 14-23).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

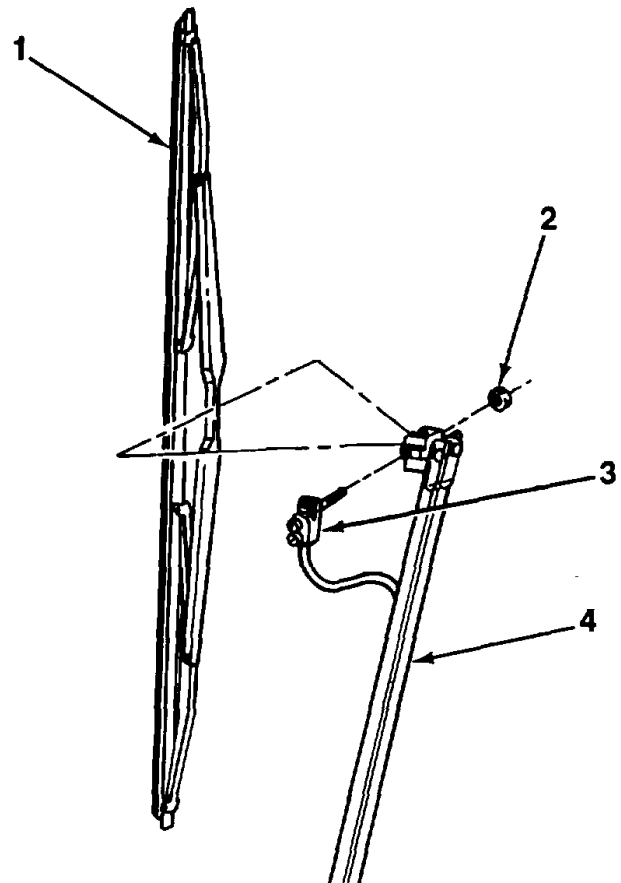
- Marker tags (Item 33, Appendix C)
- One locknut
- One lockwasher

References:

- TM 10-3930-659-10

a. WIPER ARM BLADE REPLACEMENT

1. Remove locknut (2), nozzle (3), and wiper arm blade (1) from windshield wiper arm (4). Discard locknut.
2. Install wiper arm blade (1) on windshield wiper arm (4) with nozzle (3) and new locknut (2).

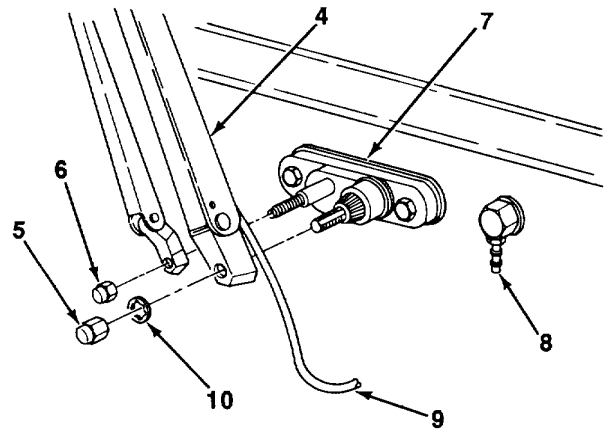


TA706981

16-6. FRONT WINDSHIELD WIPER ARM, BLADE, AND MOTOR MAINTENANCE (Con't).**b. REMOVAL****NOTE**

All wires should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

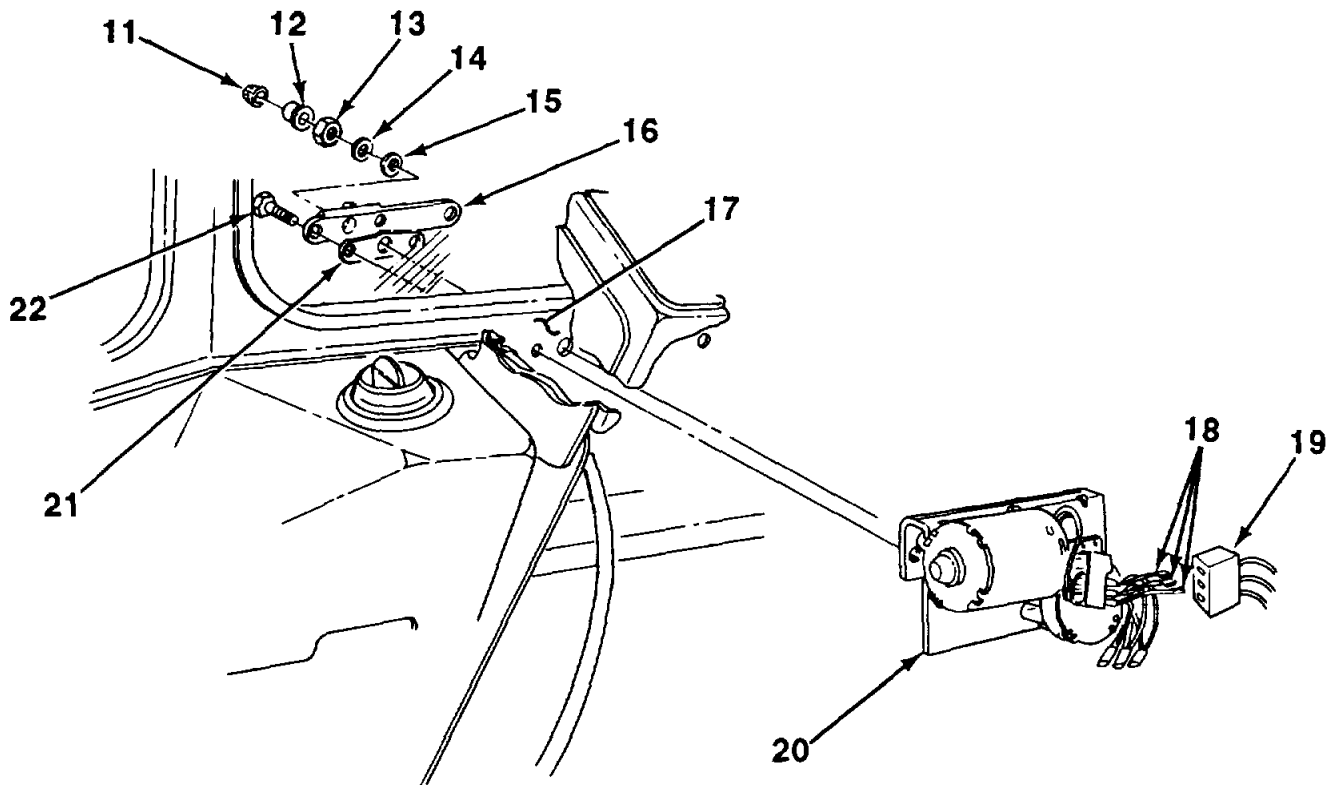
1. Remove tube (9) from fitting (8).
2. Remove nut (6) from windshield wiper arm (4).
3. Remove nut (5), lockwasher (10), and windshield wiper arm (4) from pivot assembly (7). Discard lockwasher.



4. Remove three terminal leads (18) from connector (19).
5. Remove adapter bushing (11), rubber cap (12), nut (13), washer (14), and flatwasher (15) from plate (16)
6. Remove two screws (22), plate (16), gasket (21), and windshield wiper motor (20) from cab (17).

TA706982

16-6. FRONT WINDSHIELD WIPER ARM, BLADE, AND MOTOR MAINTENANCE (Con't).


c. INSTALLATION

1. Install windshield wiper motor (20), gasket (21), and plate (16) on cab (17) with two screws (22).
2. Install flatwasher (15), washer (14), nut (13), rubber cap (12), and adapter bushing (11) on plate (16).
3. Install three terminal leads (18) on connector (19).
4. Install windshield wiper arm (4) on pivot assembly (7) with new lockwasher (10) and nut (5).
5. Install nut (6) on windshield wiper arm (4).
6. Install tube (9) on fitting (8).

FOLLOW-ON TASKS:

- Install lower dash cover (see paragraph 14-23).

TA706983

16-7. REAR WINDOW WIPER ARM AND BLADE MAINTENANCE.*This Task Covers:*

- | | |
|--------------------------------|-----------------|
| a. Wiper Arm Blade Replacement | c. Installation |
| b. Removal | |

*Initial Setup:***Materials/Parts:**

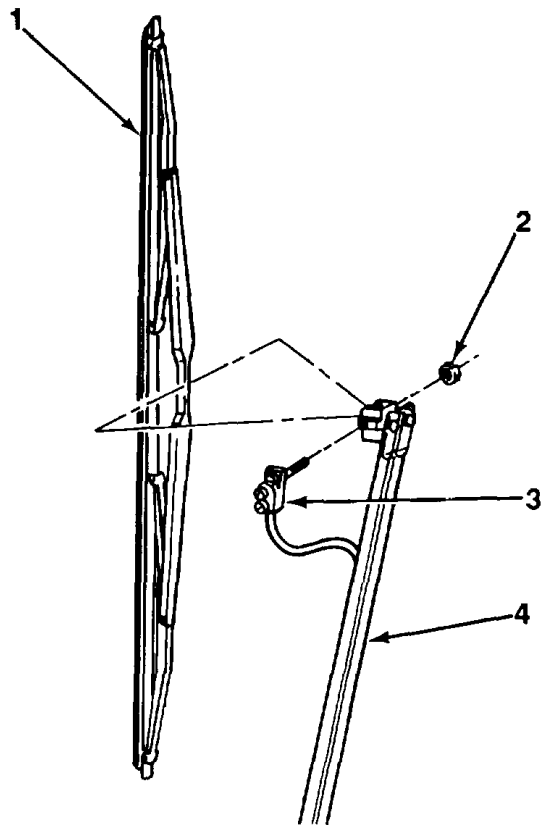
- One gasket
- One locknut
- Three lockwashers

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. WIPER ARM BLADE REPLACEMENT

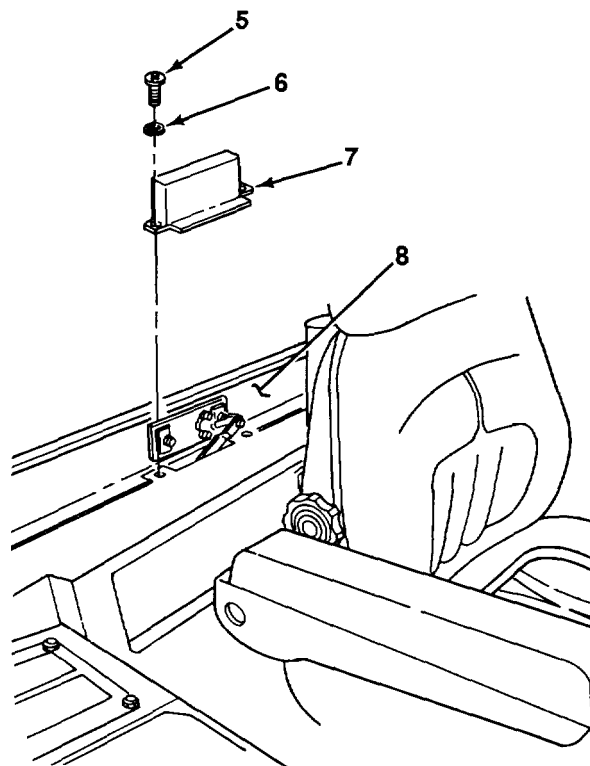
1. Remove locknut (2), nozzle (3), and wiper arm blade (1) from window wiper arm (4). Discard locknut.
2. Install wiper arm blade (1) on window wiper arm (4) with nozzle (3) and new locknut (2).



TA706984

16-7. REAR WINDOW WIPER ARM AND BLADE MAINTENANCE (Con't).**b. REMOVAL**

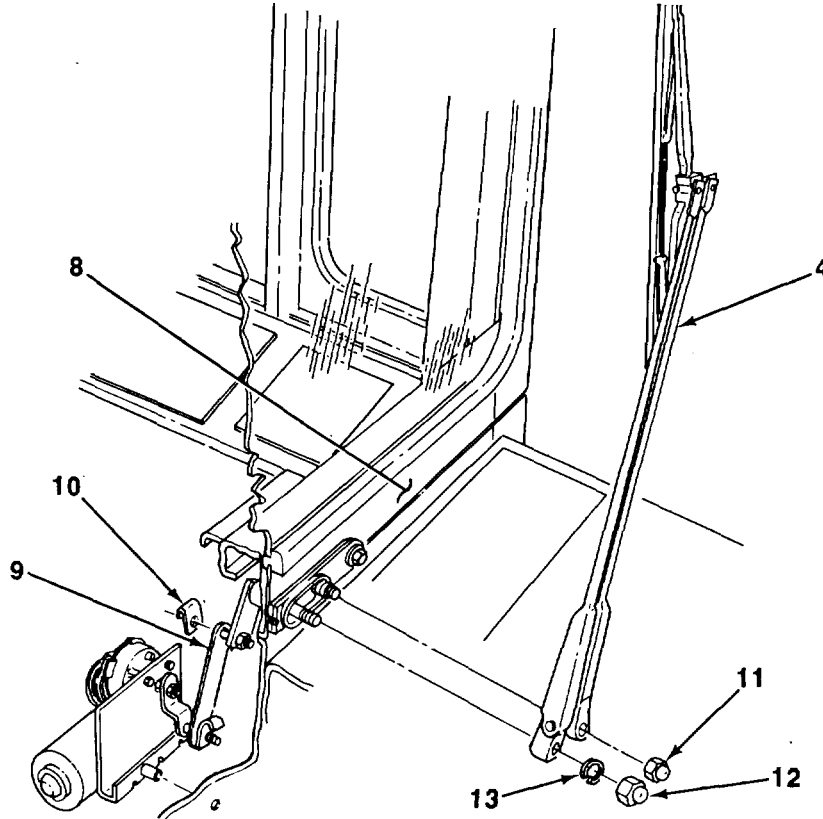
1. Remove two screws (5), lockwashers (6), and window wiper arm cover (7) from cab (8). Discard lockwashers.



TA706985

16-7. REAR WINDOW WIPER ARM AND BLADE MAINTENANCE (Con't).

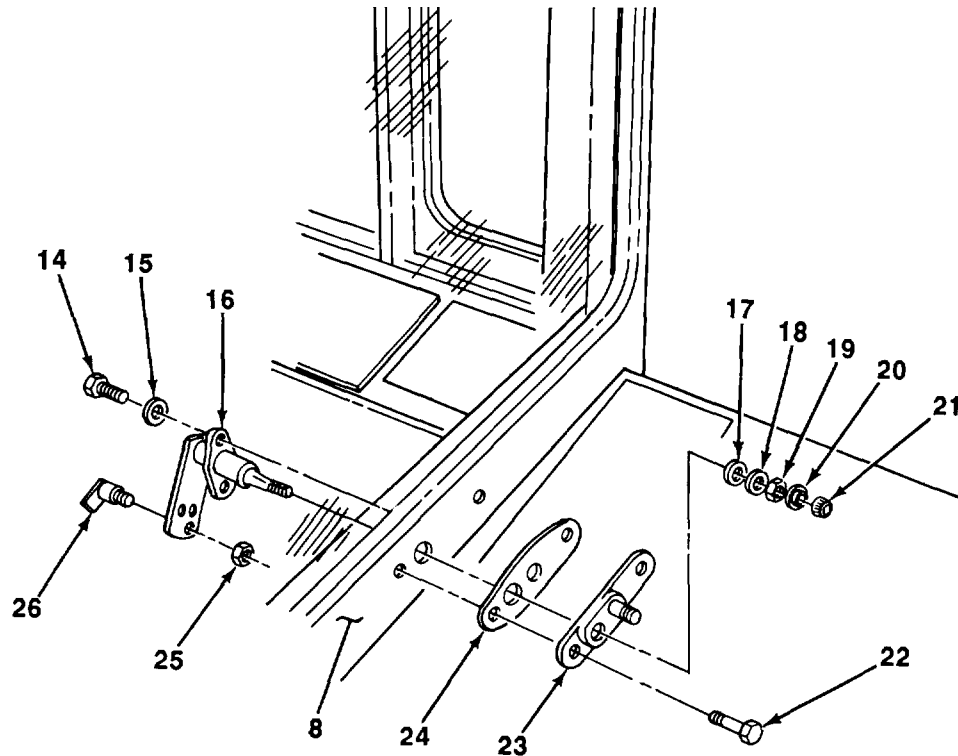
2. Remove retainer (10) and plate (9) from cab (8).
3. Remove two nuts (11 and 12), lockwasher (13), and window wiper arm (4) from cab (8). Discard lockwasher.



4. Remove nut (21), cap (20), nut (19), washer (18), and gasket (17) from pivot assembly (16). Discard gasket.
5. Remove two screws (22), plate (23), and gasket (24) from cab (8).
6. Remove two screws (14), washers (15), and pivot assembly (16) from cab (8).
7. Remove nut (25) and crankpin (26) from pivot assembly (16).

TA706986

16-7. REAR WINDOW WIPER ARM AND BLADE MAINTENANCE (Con't).

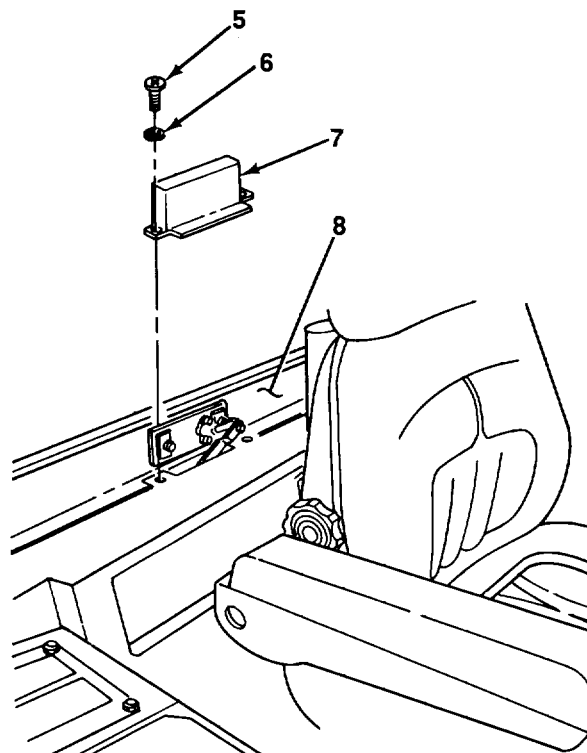
**c. INSTALLATION**

1. Install crankpin (26) on pivot assembly (16) with nut (25).
2. Install pivot assembly (16) on cab (8) with two washers (15) and screws (14).
3. Install gasket (24) and plate (23) on cab (8) with two screws (22).
4. Install new gasket (17), washer (18), nut (19), cap (20), and nut (21) on pivot assembly (16).
5. Install window wiper arm (4) on cab (8) with new lockwasher (13) and two nuts (11 and 12).
6. Install plate (9) on cab (8) with retainer (10).

TA706987

16-7. REAR WINDOW WIPER ARM AND BLADE MAINTENANCE (Con't).

7. Install window wiper arm cover (7) on cab (8) with two new lockwashers (6) and screws (5).



TA706988

16-8. REAR WINDOW WIPER MOTOR REPLACEMENT.**This task covers:**

- a. Removal
- b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10)
- Cab rear panel removed (see paragraph 14-22).
- TM 10-3930-659-10

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:**Tools/Test Equipment:**

- General mechanic's tool kit (Item 44, Appendix F)

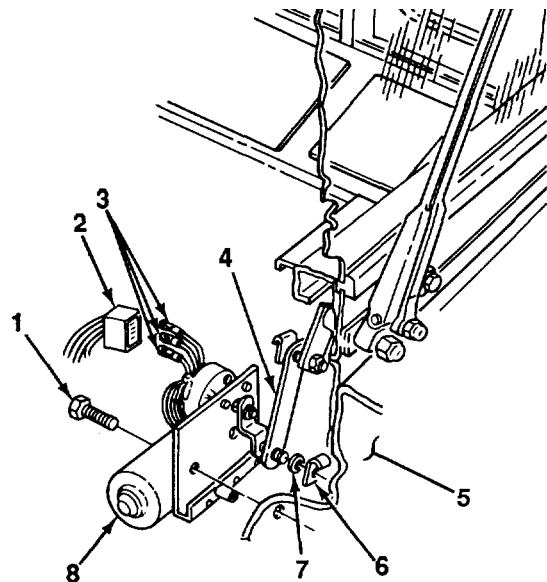
a. REMOVAL**NOTE**

All wires should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

1. Remove retainer (6), washer (7), and plate (4) from rear window wiper motor (8).
2. Disconnect three terminal leads (3) from connector (2).
3. Remove two screws (1) and rear window wiper motor (8) from cab (5).

b. INSTALLATION

1. Install rear window wiper motor (8) on cab (5) with two screws (1).
2. Connect three terminal leads (3) to connector (2).
3. Install plate (4) on rear window wiper motor (8) with washer (7) and retainer (6).

**FOLLOW-ON TASKS:**

- Install cab rear panel (see paragraph 14-22).

TA706989

16-9. WINDOW WASHER ASSEMBLY REPLACEMENT.**This task covers:**

- a. Removal b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10)
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right and left engine upper sideshields opened (see TM 10-3930-659-10).
- Left engine lower sideshield removed (see paragraph 14-16).
- Cab skirts removed (see paragraph 14-6).
- Lower dash cover removed (see paragraph 14-23).
- Cab recirculating filter removed (see paragraph 14-14).

Materials/Parts:

- Rags item 27, Appendix C
- Two lockwashers

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

*TM 10-3930-659-10

NOTE

• All hoses should be tagged for removal. Refer to paragraph 2-18 for tagging instructions.

• A suitable container should be used to catch all draining windshield cleaning compound. Ensure that all spills are properly cleaned.

• Remove tie-down straps as necessary.

a. REMOVAL

1. Disconnect hose (9) from elbow (10) and allow all windshield cleaning compound to drain from tank (3).

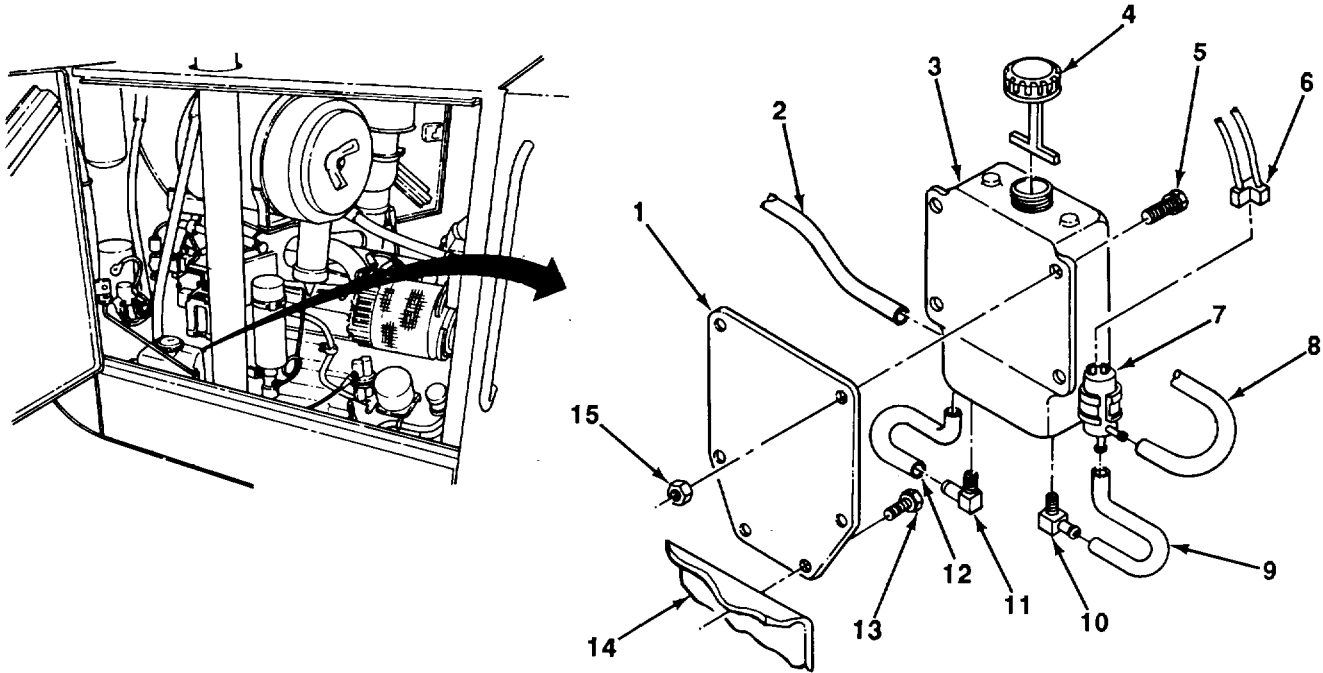
NOTE

Tank has two pumps, each located on opposite sides of tank.

2. Disconnect two engine wiring harness connectors (6) from pumps (7).
3. Remove two hoses (2 and 8) from pumps (7).
4. Remove four nuts (15), screws (5), and tank (3) from plate (1) and engine compartment.
5. Remove hose (12) from elbow (11) and pump (7).
6. Remove hose (9) from elbow (10) and pump (7).

16-9. WINDOW WASHER ASSEMBLY REPLACEMENT (Con't).

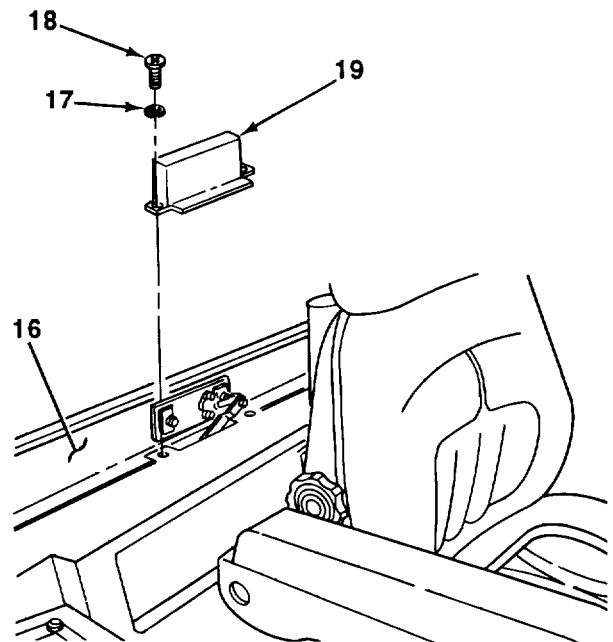
7. Remove two pumps (7), elbows (10 and 11), and cap (4) from tank (3).
8. If plate (1) is damaged, remove two screws (13) and plate from engine frame (14).



NOTE

Steps 9 through 11 are performed at rear of cab.

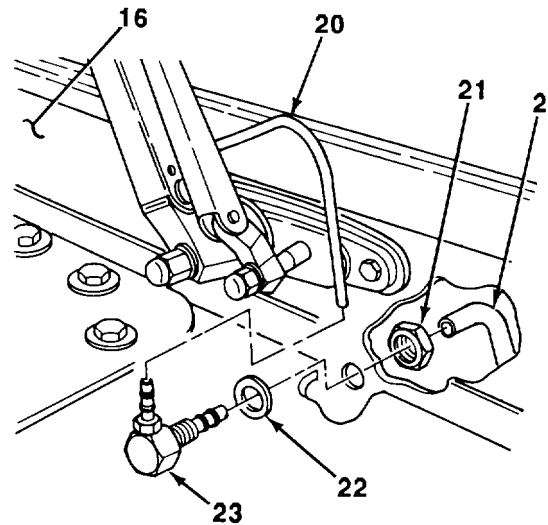
9. Remove two screws (18), lockwashers (17), and window wiper arm cover (19) from cab (16). Discard lockwashers.



TA706990

16-9. WINDOW WASHER ASSEMBLY REPLACEMENT (Con't).

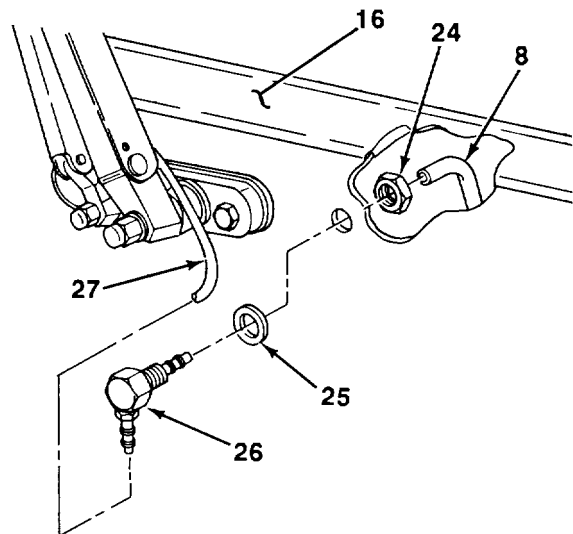
10. Remove two hoses (2 and 20) from elbow (23).
11. Remove nut (21), elbow (23), and rubber washer (22) from cab (16).



NOTE

Steps 12 and 13 are performed at front of cab.

12. Remove two hoses (8 and 27) from elbow (26).
13. Remove nut (24), elbow (26), and rubber washer (25) from cab (16).



TA706991

16-9. WINDOW WASHER ASSEMBLY REPLACEMENT (Con't).**b. INSTALLATION****NOTE**

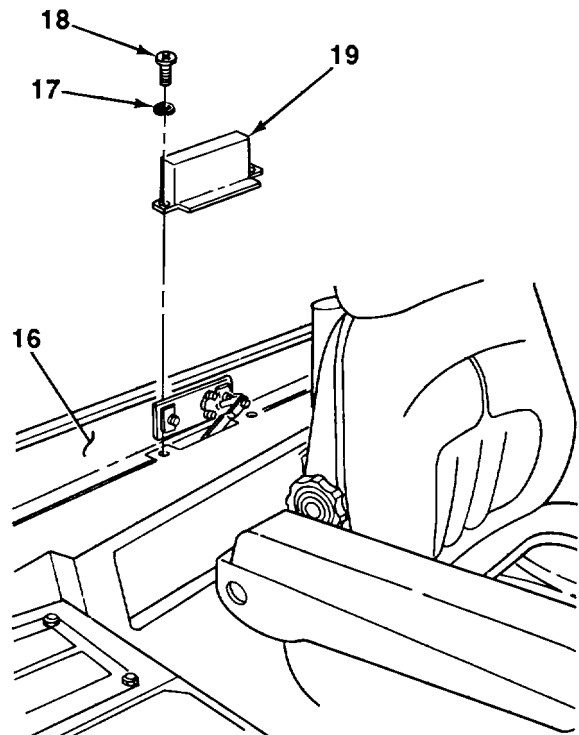
Steps 1 and 2 are performed at front of cab.

1. Install rubber washer (25) and elbow (26) on cab (16) with nut (24).
2. Install two hoses (8 and 27) on elbow (26).

NOTE

Steps 3 through 5 are performed at rear of cab.

3. Install rubber washer (22) and elbow (23) on cab (16) with nut (21).
4. Install two noses (2 and 20) on elbow (23).
5. Install window wiper arm cover (19) on cab (16) with two new lockwashers (17) and screws (18).



TA706992

16-9. WINDOW WASHER ASSEMBLY REPLACEMENT (Con't).

6. If removed, install plate (1) on engine frame (14) with two screws (13).

NOTE

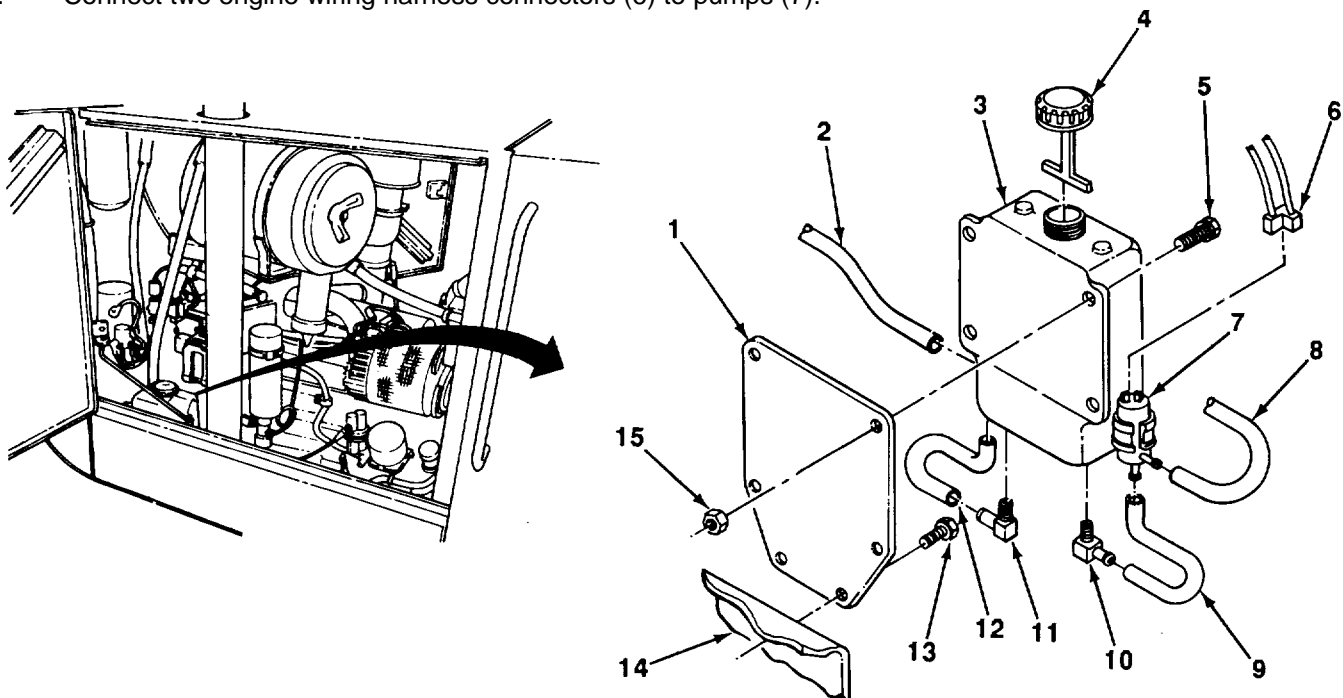
Tank has two pumps, each located on opposite side of tank.

7. Install cap (4), two elbows (10 and 11), and pumps (7) on tank (3).
 8. Install hose (9) on elbow (10) and pump (7).
 9. Install hose (12) on elbow (11) and pump (7).
 10. Install tank (3) on plate (1) with four screws (5) and nuts (15).
 11. Install two hoses (2 and 8) on pumps (7).

NOTE

Install tie-down straps as necessary.

12. Connect two engine wiring harness connectors (6) to pumps (7).

**FOLLOW-ON TASKS:**

- Fill tank with windshield cleaning compound (see TM 10-3930-659-10).
- Install cab recirculating filter (see paragraph 14-14).
- Install lower dash cover (see paragraph 14-23).
- Install cab skirts (see paragraph 14-6).
- Install left engine lower sideshield (see paragraph 14-16).
- Close right and left engine upper sideshields (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

TA706993

16-10. HEATER HOUSING REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10)
- Heater ventilators and duct hoses removed (see paragraph 16-15).
- Heater core removed (see paragraph 16-11).
- Heater and defroster resistors removed (see paragraph 16-17).
- Heater blower motor removed (see paragraph 16-12).

Materials/Parts:

- Adhesive (item 1, Appendix C)

Tools/Test Equipment:

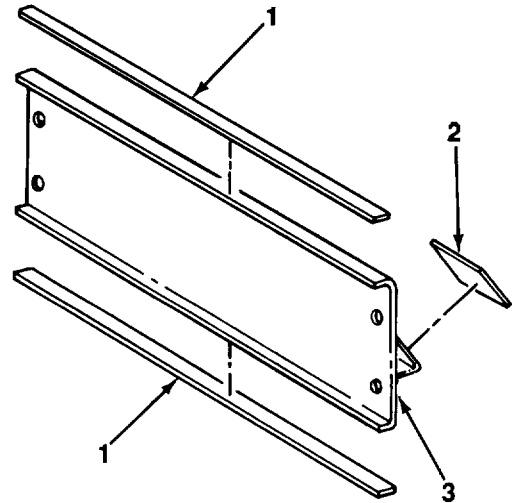
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10
-

a. REMOVAL

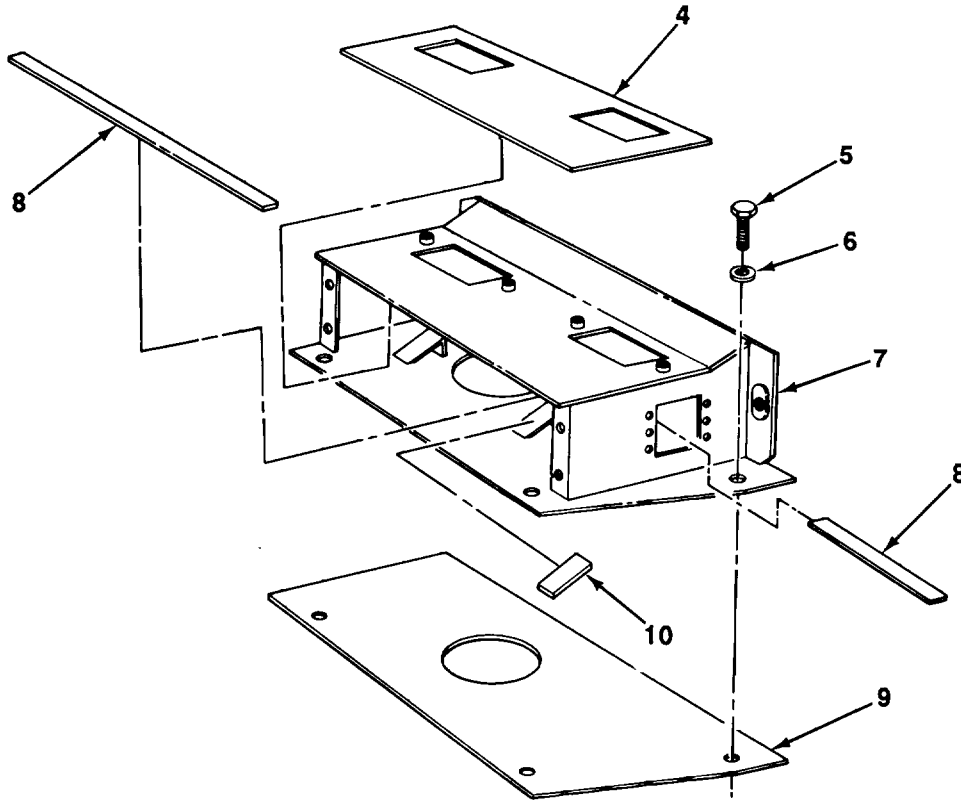
1. Remove two rubber strips (1) and cushions (2) from cover (3).



TA706994

16-10. HEATER HOUSING REPLACEMENT (Con't).

2. Remove four screws (5), washers (6), heater housing (7), and isolator (9) from cab floor.
3. Remove two cushions (10) and rubber strips (8) from heater housing (7).
4. Remove blower cushion (4) from heater housing (7).

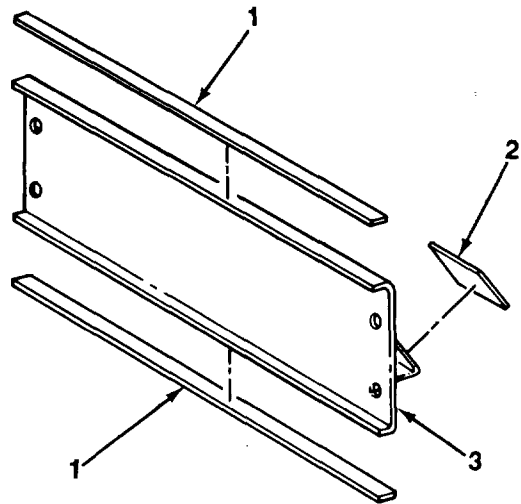
**b. INSTALLATION**

1. Install blower cushion (4) on heater housing (7).
2. Apply adhesive to two rubber strips (8) and cushions (10), and install rubber strips and cushions on heater housing (7).
3. Install isolator (9) and heater housing (7) on cab floor with four washers (6) and screws (5).

TA706995

16-10. HEATER HOUSING REPLACEMENT (Con't).

4. Apply adhesive to two cushions (2) and rubber strips (1), and install cushions and rubber strips on cover (3).

**FOLLOW-ON TASKS:**

- Install heater blower motor (see paragraph 16-12).
- Install heater and defroster resistors (see paragraph 16-17).
- Install heater core (see paragraph 16-11).
- Install heater ventilators and duct hoses (see paragraph 16-15).

TA706996

16-11. HEATER CORE REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Engine cooling system drained (see paragraph 5-38).
- Cab fresh air filter door opened (see TM 10-3930-14-22).
- Cab rear panel removed (see paragraph 14-22).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

- Rags (Item 27, Appendix C)

References:**General Safety Instructions:**

- DO NOT perform heater core maintenance unless engine is cold.
-

NOTE

A suitable container should be used to catch any draining antifreeze. Ensure that all spills are properly cleaned.

a. REMOVAL

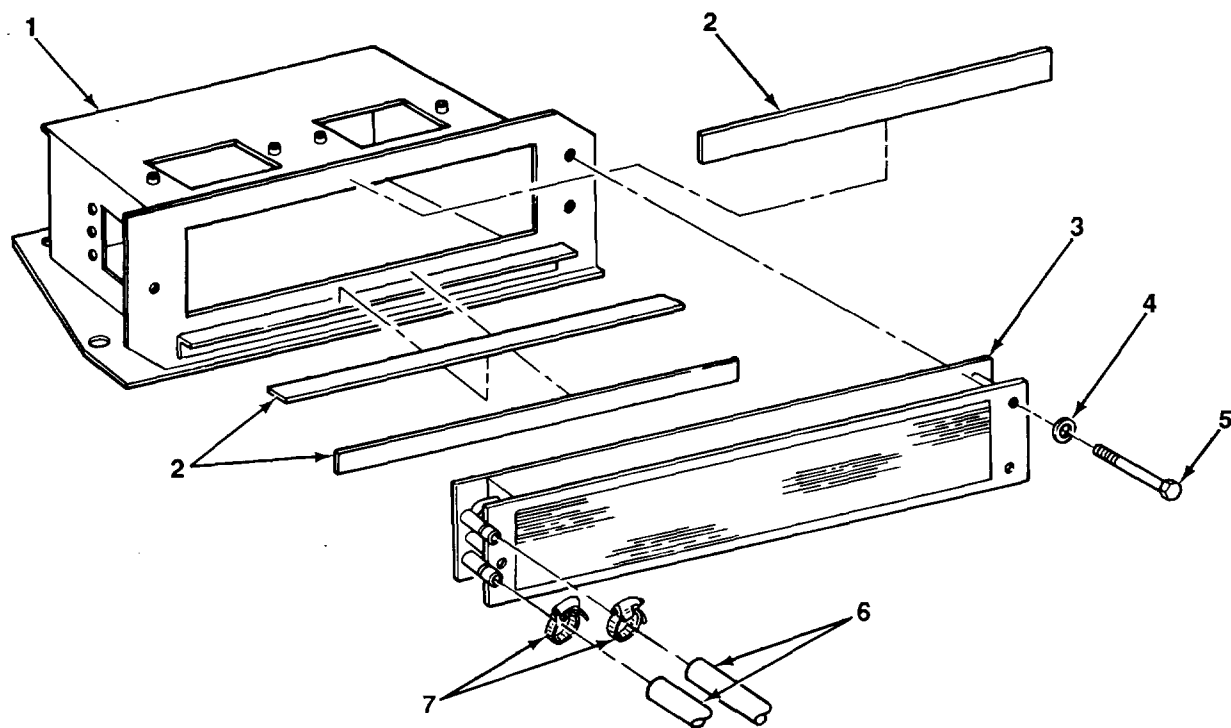
WARNING

Replacement of heater core should only be performed when engine is cool. NEVER remove clamps or heater hoses when engine is hot. Pressurized steam, hot water, or coolant will cause serious burns.

1. Loosen two clamps (7) and remove water lines (6) from heater core (3).
2. Remove three screws (5), washers (4), and heater core (3) from heater housing (1).
3. If damaged, remove three seals (2) from heater housing (1).

b. INSTALLATION

1. If removed, apply adhesive (Item 1, Appendix C) to three seals (2) and install seals on heater housing (1).
2. Install heater core (3) on heater housing (1) with three washers (4) and screws (5).
3. Install two water lines (6) on heater core (3) and tighten two clamps (7).

16-11. HEATER CORE REPLACEMENT.**FOLLOW-ON TASKS:**

- Fill engine cooling system with antifreeze (see paragraph 5-38).
- Install cab rear panel (see paragraph 14-22).
- Close cab fresh air filter door (see TM 10-3930-659-10).

TA706997

16-12. HEATER BLOWER MOTOR MAINTENANCE.

This task covers:

- a. Removal
- b. Disassembly
- c. Cleaning and Inspection
- d. Assembly
- e. Installation

INITIAL SETUP:**Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10)

Materials/Parts:

- Dishwashing compound (Item 10, Appendix C)
- Rags (Item 27, Appendix C)

References:

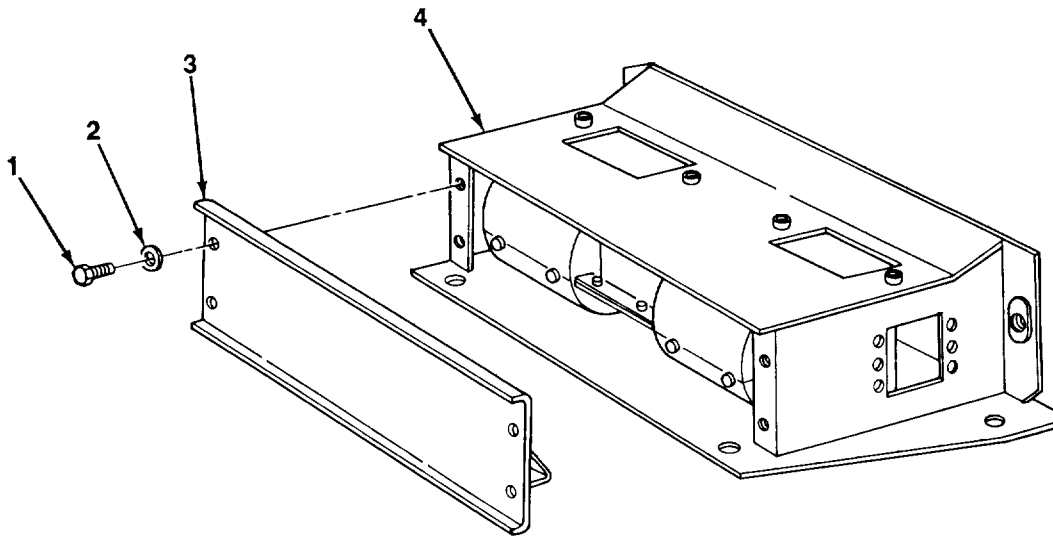
- Cab rear panel removed (see paragraph 14-22).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
 - TM 10-3930-659-10
-

a. REMOVAL

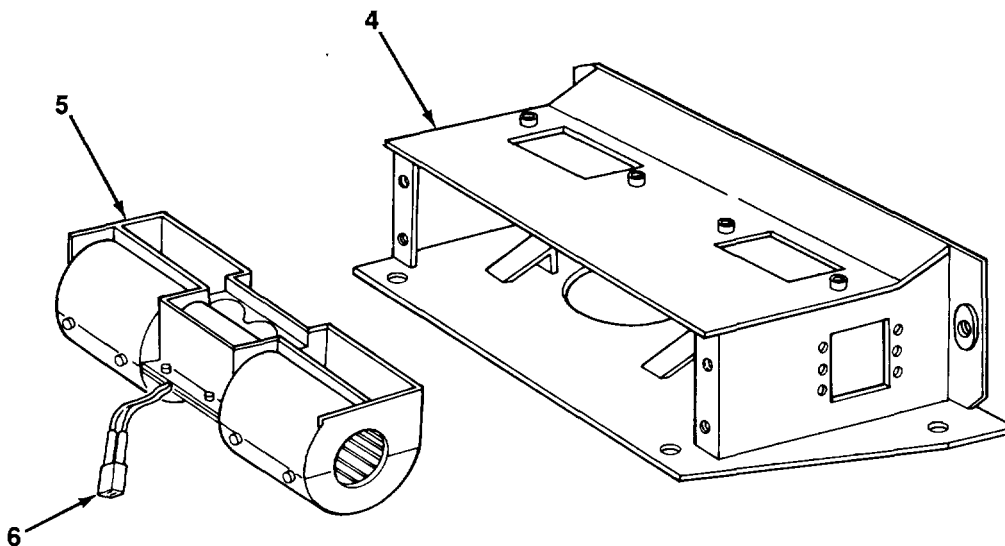
1. Remove four screws (1), washers (2), and cover (3) from heater housing (4).



TA706998

16-12. HEATER BLOWER MOTOR MAINTENANCE (Con't).

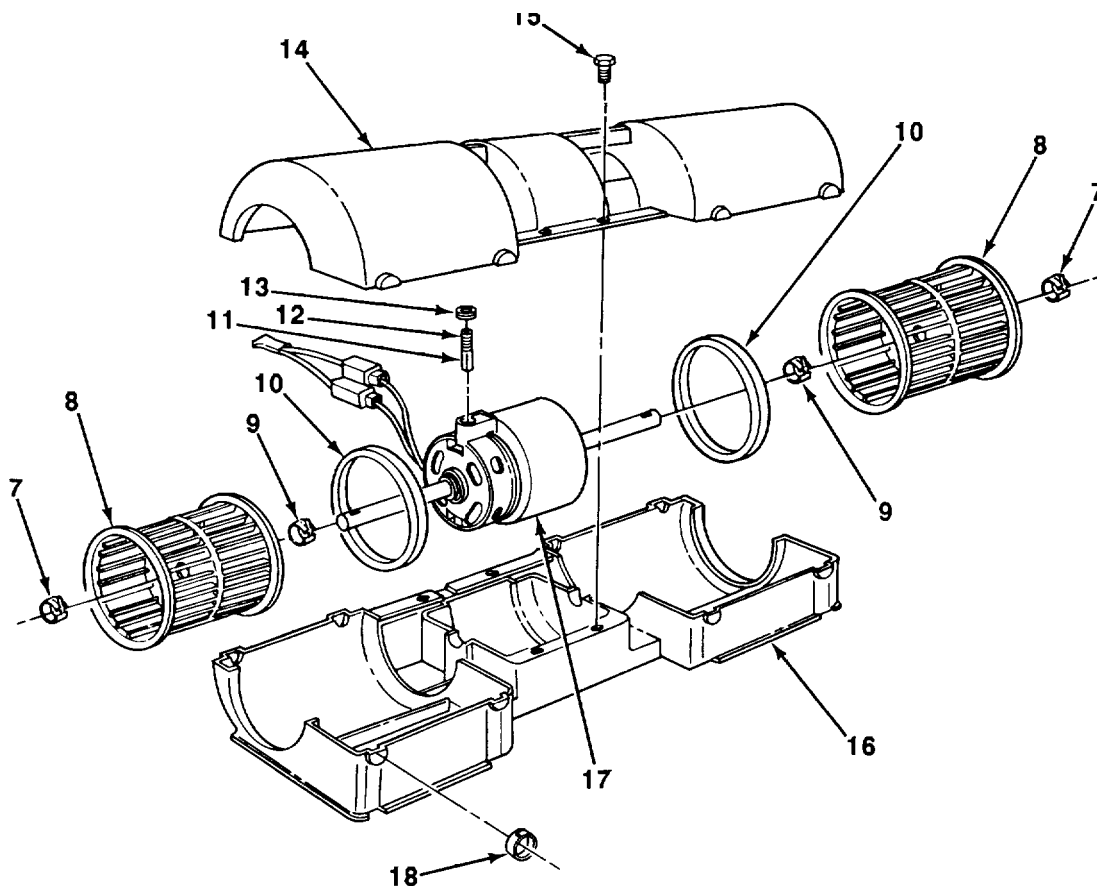
2. Disconnect connector (6) from left panel wiring harness.
3. Remove heater blower assembly (5) from heater housing (4).



TA706999

16-12. HEATER BLOWER MOTOR MAINTENANCE (Con't).**b. DISASSEMBLY**

1. Remove eight compression rings (18) from upper heater blower housing (14) and lower heater blower housing
2. Remove four screws (15) and upper heater blower housing (14) from lower heater blower housing (16).
3. Remove heater blower motor (17) from lower heater blower housing (16).
4. Remove two clamps (7) and impellers (8) from heater blower motor (17).
5. Remove two clamps (9) and retainer packings (10) from heater blower motor (17).
6. Remove brush cover (13), spring (12), and brush (11) from heater blower motor (17).

**c. CLEANING AND INSPECTION**

1. Clean heater blower motor with a clean, dry rag.
2. Clean plastic parts with dishwashing compound and water, and dry with clean rags.

TA707000

16-12. HEATER BLOWER MOTOR MAINTENANCE (Con't).

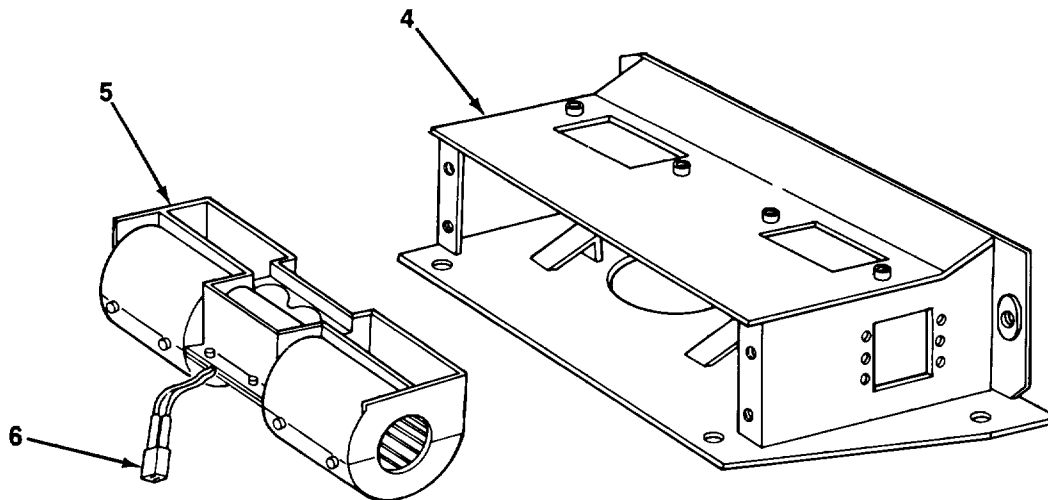
3. Inspect impellers for damaged blades and out-of-round. Replace if damaged or out-of-round.
4. Inspect heater blower motor shaft for free movement. Replace heater blower motor if heater blower motor shaft
5. Inspect upper and lower heater blower housings for cracks, breaks, or other damage. Replace if damaged. does not turn freely.
6. Inspect retainer packings for damage. Replace if damaged.

d. ASSEMBLY

1. Install brush (11), spring (12), and brush cover (13) on heater blower motor (17).
2. Install two retainer packings (10) and clamps (9) on heater blower motor (17).
3. Install two impellers (8) and clamps (7) on heater blower motor (17).
4. Position heater blower motor (17) on lower heater blower housing (16).
5. Install upper heater blower housing (14) on lower heater blower housing (16) with four screws (15) and eight compression rings (18).

e. INSTALLATION

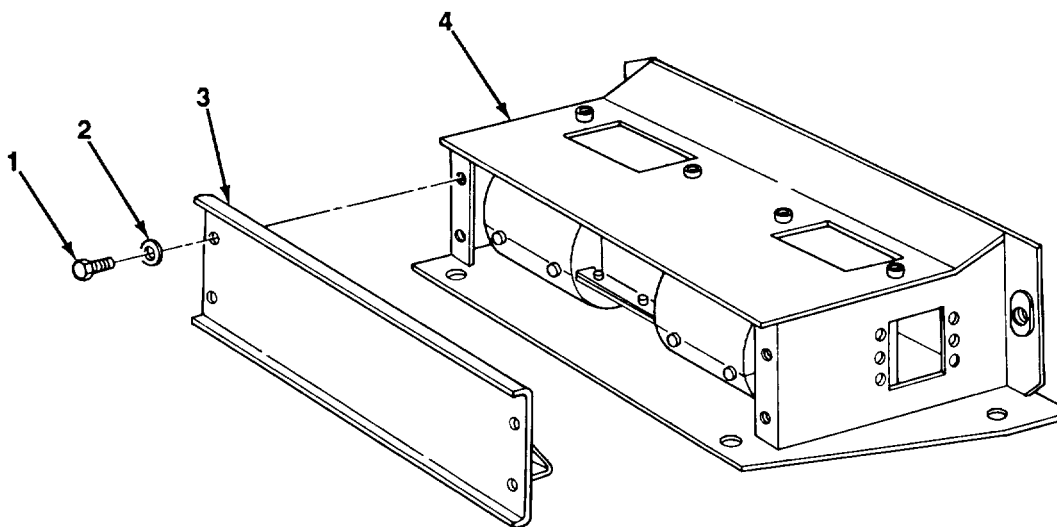
1. Install heater blower assembly (5) in heater housing (4).
2. Connect connector (6) to left panel wiring harness.



TA707001

16-12. HEATER BLOWER MOTOR MAINTENANCE (Con't).

3. Install cover (3) on heater housing (4) with four washers (2) and screws (1).

**FOLLOW-ON TASKS:**

- Install cab rear panel (see paragraph 14-22).

TA707002

16-13. INSIDE CAB HEATER HOSES AND HEATER CONTROL VALVE REPLACEMENT.**This task covers:**

- a. Removal b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Engine cooling system drained (see paragraph 5-38).
- Cab fresh air filter door opened (see TM 10-3930-659-10).

Tools/Test Equipment:

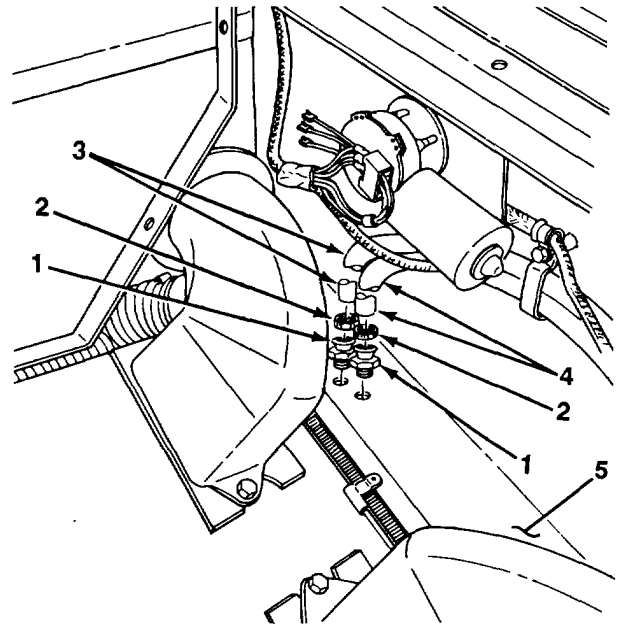
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL

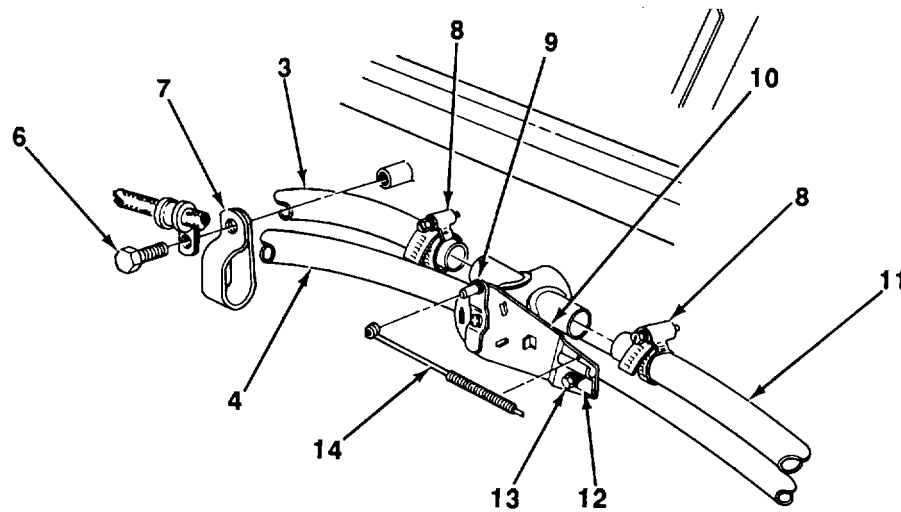
1. Loosen two clamps (2) and remove hoses (3 and 4) from nipples (1).
2. Remove two nipples (1) from cab floor (5).



TA707003

16-13. INSIDE CAB HEATER HOSES AND HEATER CONTROL VALVE REPLACEMENT (Con't).

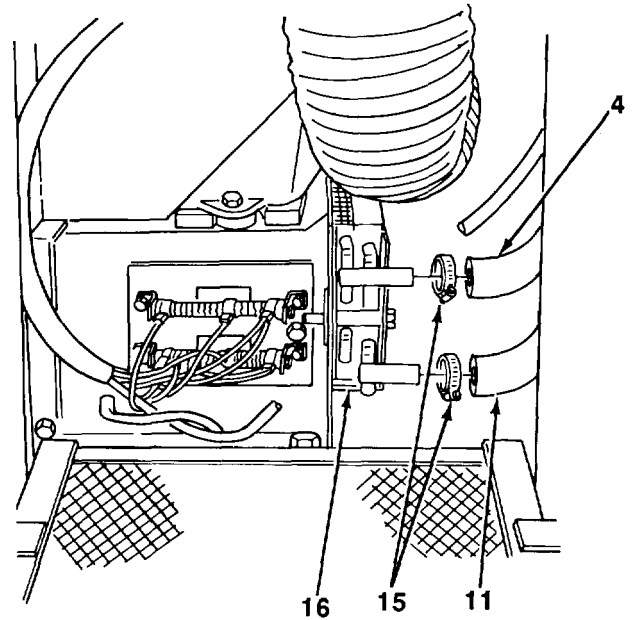
3. Remove screw (6) and clamp (7) from two hoses (3 and 4).
4. Loosen screw (13) and clamp (12).
5. Remove cable (14) from pin (9) and move cable out of way.
6. Loosen two clamps (8) and remove hoses (3 and 11) from heater control valve (10).



TA707004

16-13. INSIDE CAB HEATER HOSES AND HEATER CONTROL VALVE REPLACEMENT (Con't).

7. Loosen two clamps (15) and remove hoses (4 and 11) from heater core (16).

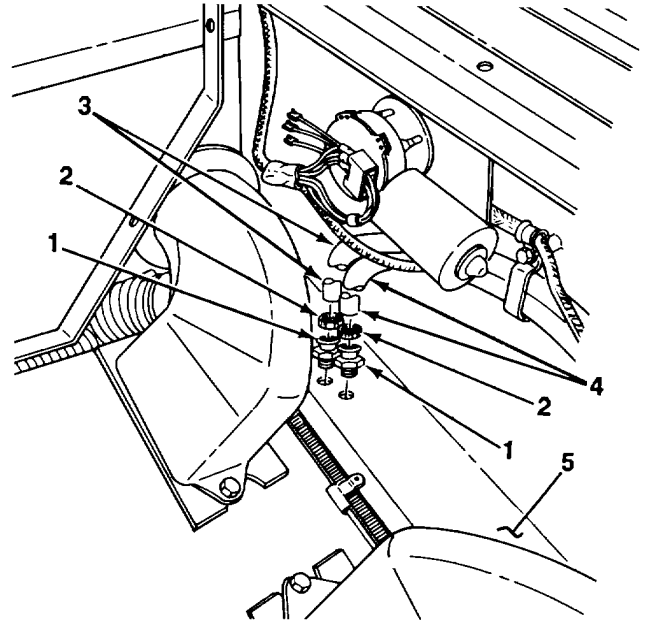
**b. INSTALLATION**

1. Install two hoses (4 and 11) on heater core (16). Tighten two clamps (15).
2. Install two hoses (3 and 11) on heater control valve (10). Tighten two clamps (8).
3. Install cable (14) on pin (9).
4. Install cable (14) into clamp (12) and tighten screw (13).
5. Install two hoses (3 and 4) in clamp (7) and install clamp with screw (6).

TA707005

16-13. INSIDE CAB HEATER HOSES AND HEATER CONTROL VALVE REPLACEMENT (Con't).

6. Install two nipples (1) on cab floor (5).
7. Install two hoses (3 and 4) on nipples (1) and tighten clamps (2).

**FOLLOW-ON TASKS:**

- Fill engine cooling system with antifreeze (see paragraph 5-38).
- Close cab fresh air filter door (see TM 10-3930-659-10).

TA707006

16-14. OUTSIDE CAB HEATER HOSES REPLACEMENT.**This task covers:**

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Engine cooling system drained (see paragraph 16-13).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).

Tools/Test Equipment:

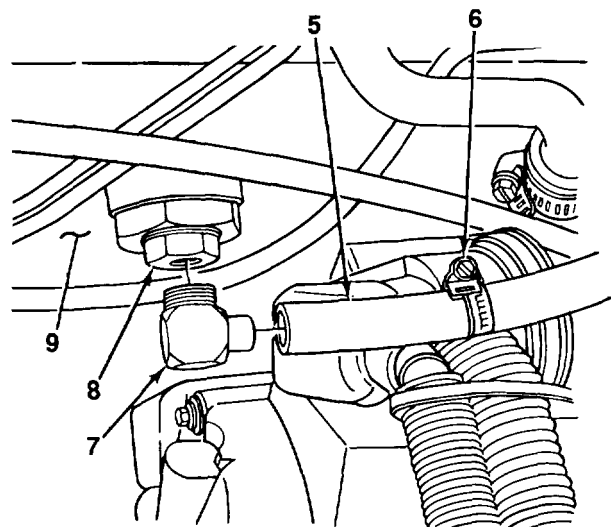
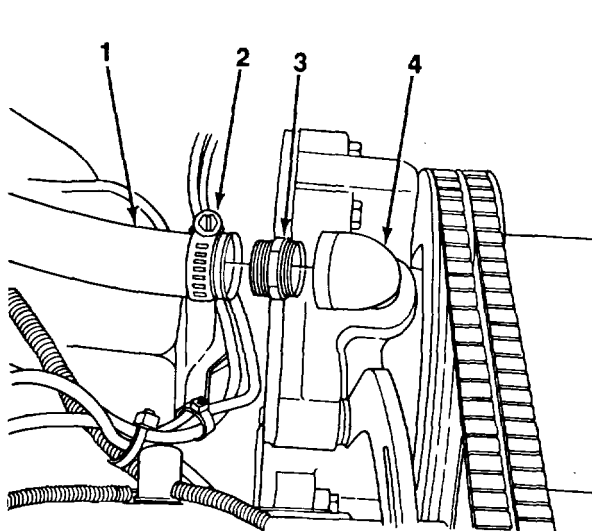
- General mechanic's tool kit (Item 44, Appendix F)

References:

- * TM 10-3930-659-10

a. REMOVAL

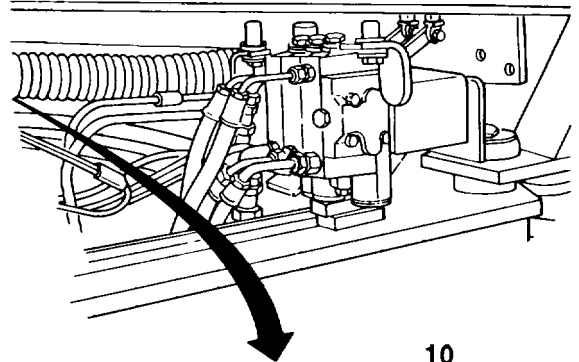
1. Loosen clamp (2) and remove hose (1) from connector (3).
2. Remove connector (3) from elbow (4).
3. Loosen clamp (6) and remove hose (5) from elbow (7).
4. Remove elbow (7) and connector (8) from engine block (9).



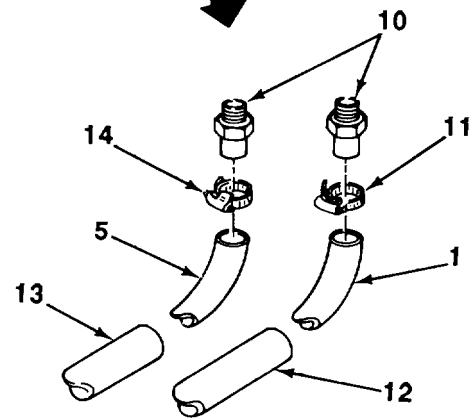
TA707007

16-14. OUTSIDE CAB HEATER HOSES REPLACEMENT (Con't).

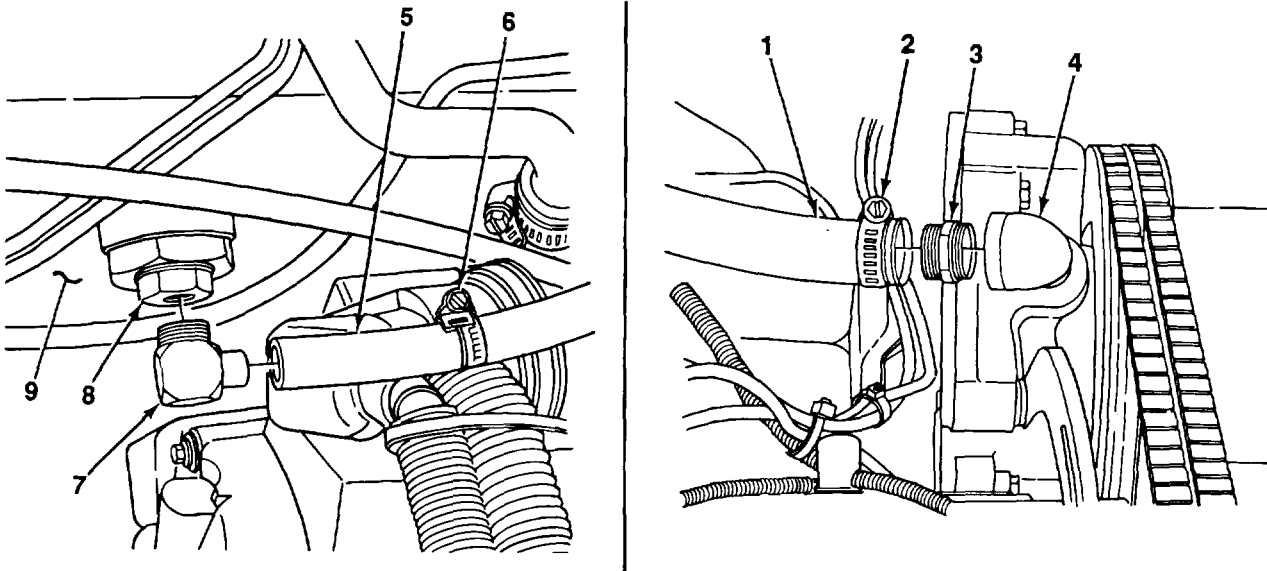
5. Loosen clamp (11) and remove hose (1) from connector (10).
6. Remove Isolator tube (12) from hose (1).
7. Loosen clamp (14) and remove hose (5) from connector (10).
8. Remove Isolator tube (13) from hose (5).
9. Remove two connectors (10) from cab floor.

**b. INSTALLATION**

1. Install two connectors (10) on cab floor.
2. Install isolator tube (13) on hose (5).
3. Install hose (5) on connector (10) and tighten clamp (14).
4. Install isolator tube (12) on hose (1).
5. Install hose (1) on connector (10) and tighten clamp (11).
6. Install connector (8) and elbow (7) on engine block (9).
7. Install hose (5) on elbow (7) and tighten clamp (6).
8. Install connector (3) on elbow (4).
9. Install hose (1) on connector (3) and tighten clamp (2).



TA707008

16-14. OUTSIDE CAB HEATER HOSES REPLACEMENT (Con't).**FOLLOW-ON TASKS:**

- Fill engine cooling system with antifreeze (see paragraph 538).
- Install right side cab skirt (see paragraph 14-6).
- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

TA707009

16-15. HEATER VENTILATORS AND DUCT HOSES REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Right access door opened (see TM 10-3930-659-10).
- Cab fresh air filter door opened (see TM 10-3930-659-10).
- Cab rear panel removed (see paragraph 14-22).
- Seat assembly and seat support removed (see paragraph 14-25).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

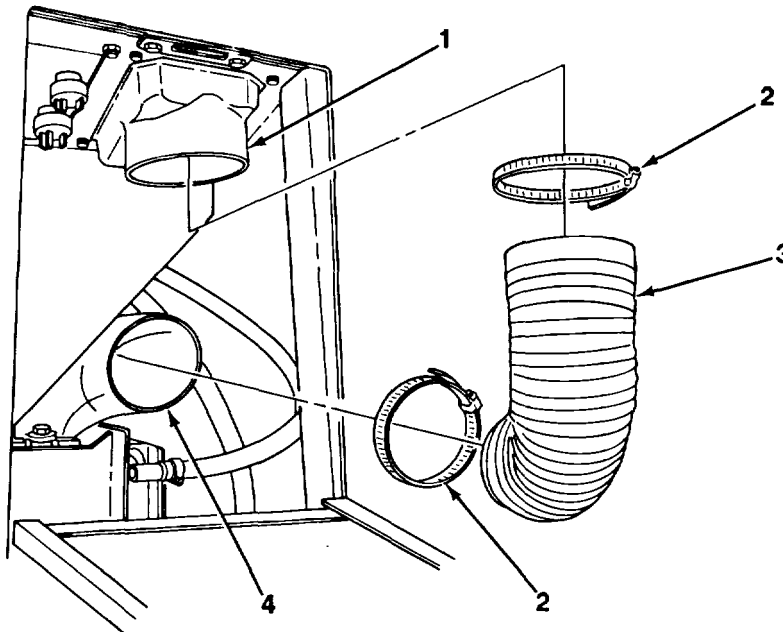
References:

- TM 10-3930-659-10

a. REMOVAL**NOTE**

Perform steps 1 through 5 to remove heater ventilators and duct hoses from cab.

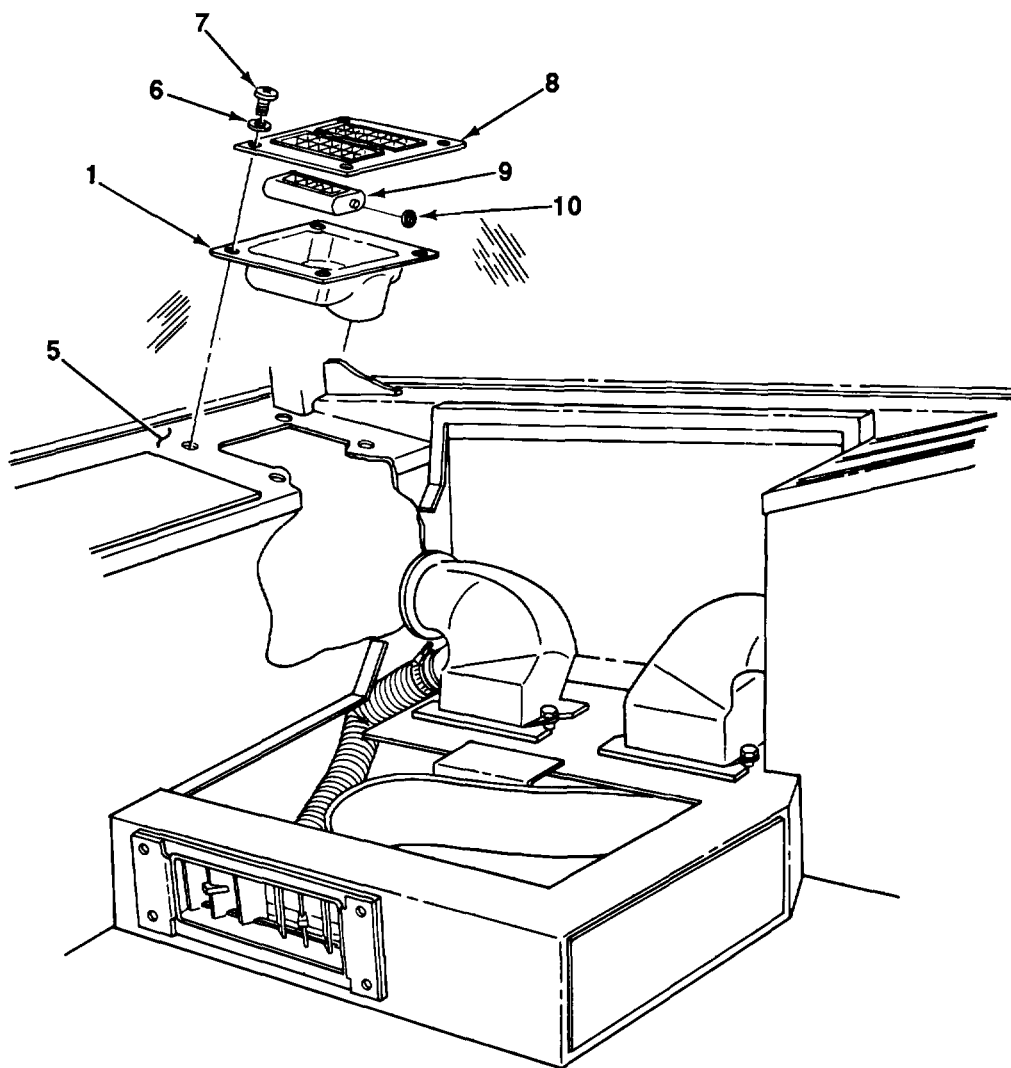
1. Loosen two hose clamps (2) and remove duct hose (3) from louver housing (1) and duct (4).
2. Remove two hose clamps (2) from duct hose (3).



TA707010

16-15. HEATER VENTILATORS AND DUCT HOSES REPLACEMENT (Con't).

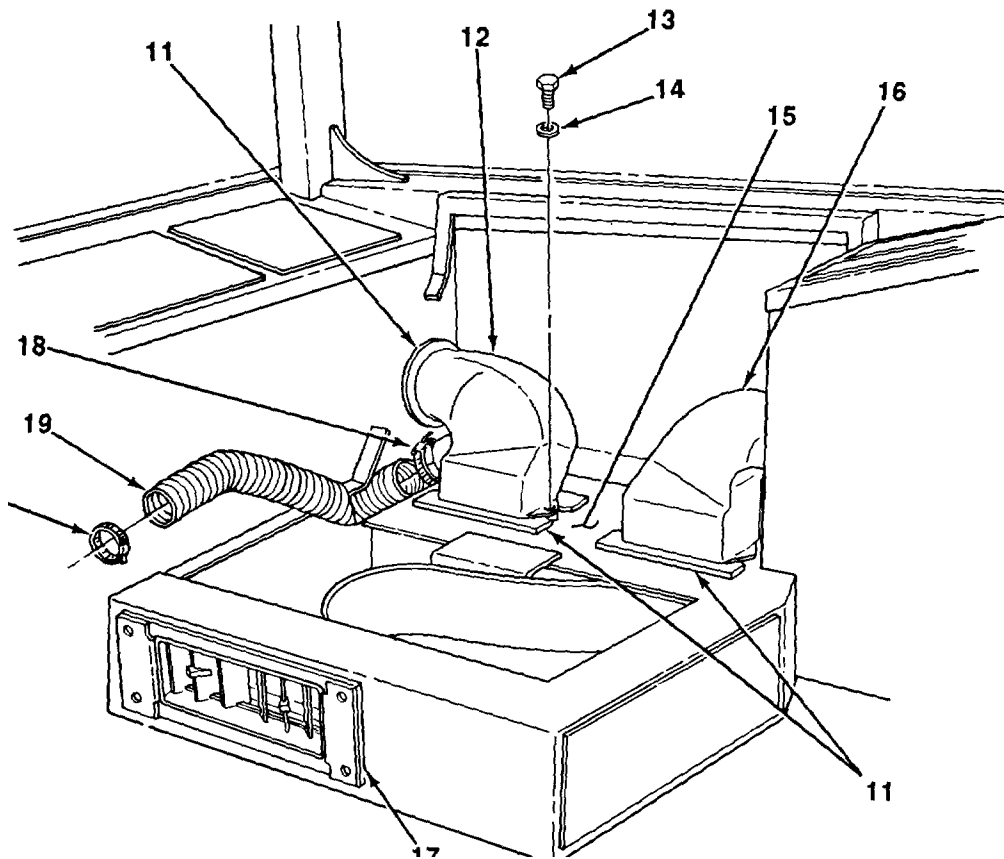
3. Remove four screws (7), plastic washers (6), heater ventilator (8), and louver housing (1) from cab (5).
4. If damaged, remove two heater ventilators (9) and four spacers (10) from heater ventilator (8).
5. Repeat steps 1 through 4 for other side.



TA707011

16-15. HEATER VENTILATORS AND DUCT HOSES REPLACEMENT.

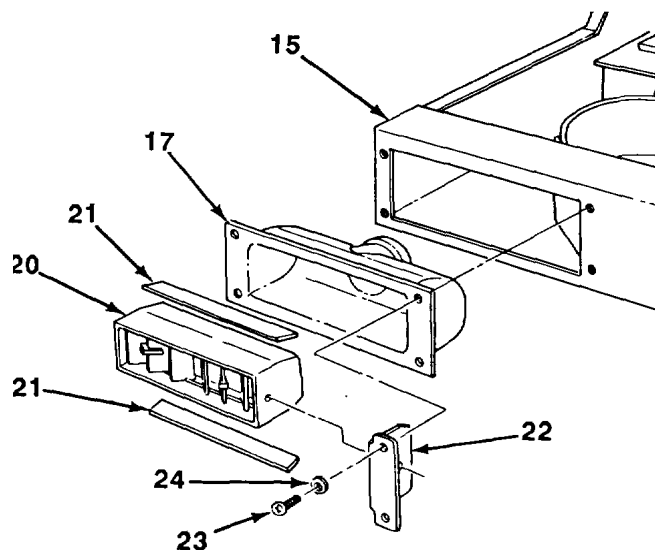
6. Loosen two hose clamps (18) and remove duct hose (19) from right duct (12) and louver housing (17).
7. Remove two hose clamps (18) from hose (19).
8. Remove four screws (13), washers (14), left duct (16), right duct (12), and three isolators (11) from heater housing (15).



TA707012

16-15. HEATER VENTILATORS AND DUCT HOSES REPLACEMENT (Con't).

9. Remove four screws (23), washers (24), two brackets (22), ventilator (20), two rubber strips (21), and louver housing (17) from heater housing (15).

**b. INSTALLATION**

1. Install louver housing (17), two rubber strips (21), ventilator (20), and two brackets (22) on heater housing (15) with four washers (24) and screws (23).
2. Install three isolators (11), right duct (12), and left duct (16) on heater housing (15) with four washers (14) and screws (13).
3. Position two hose clamps (18) on duct hose (19).
4. Install duct hose (19) on louver housing (17) and right duct (12), and tighten two hose clamps (18).

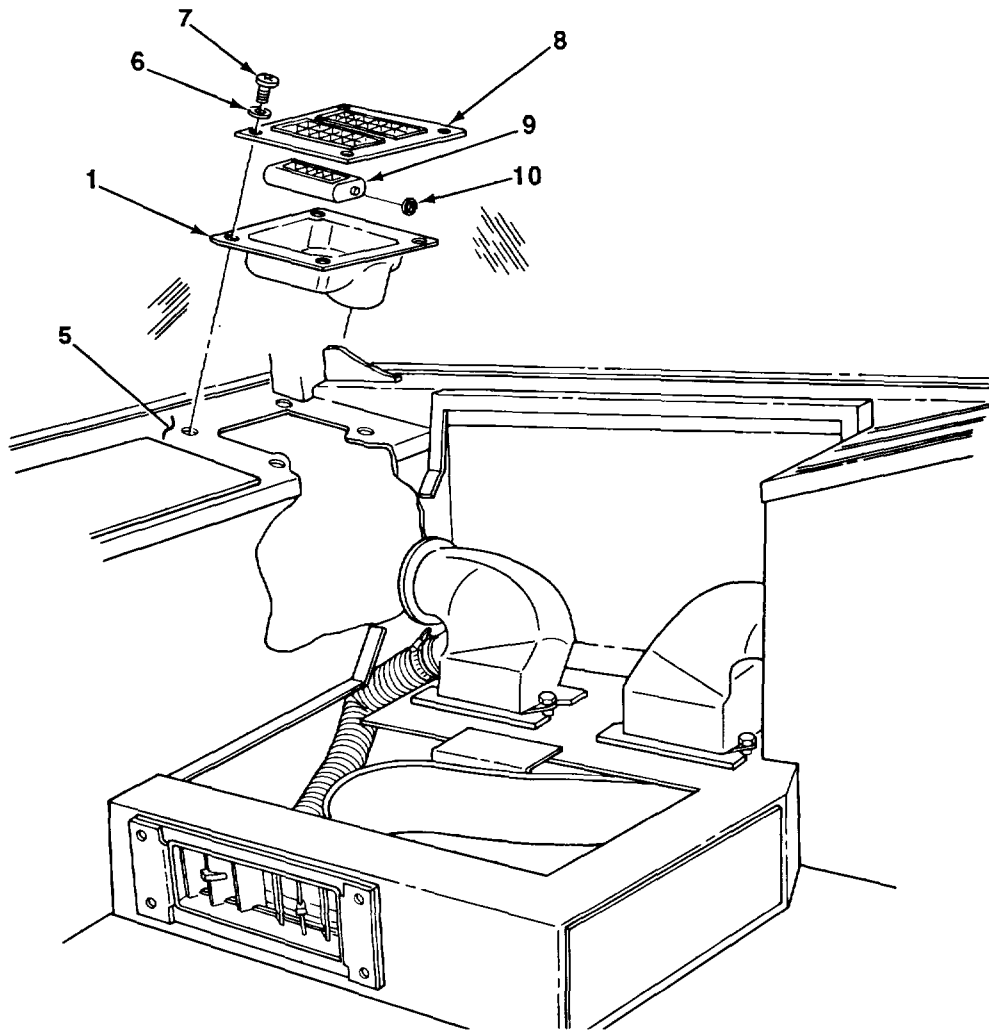
TA707013

16-15. HEATER VENTILATORS AND DUCT HOSES REPLACEMENT (Con't).

NOTE

Perform steps 5 through 9 to install heater ventilators and duct hoses on cab.

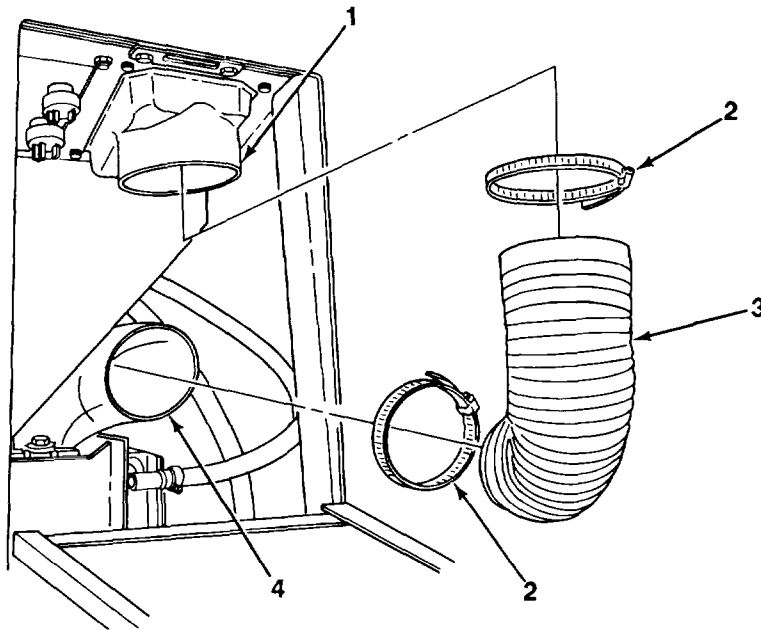
5. If removed, install four spacers (10) and two heater ventilators (9) on heater ventilator (8).
6. Install louver housing (1) and heater ventilator (8) to cab (5) with four plastic washers (6) and screws (7).



7. Position two hose clamps (2) on duct hose (3).
8. Install duct hose (3) on louver housing (1) and duct (4), and tighten two hose clamps (2).
9. Repeat steps 5 through 8 for other side.

TA707014

16-15. HEATER VENTILATORS AND DUCT HOSES REPLACEMENT (Con't).

**FOLLOW-ON TASKS:**

- Install seat assembly and seat support (see paragraph 14-25).
- Install cab rear panel (see paragraph 14-22).
- Close cab fresh air filter door (see TM 10-3930-659-10).
- Close right access door (see TM 10-3930-659-10).

TA707015

16-16. HEATER CONTROL AND HEATER CONTROL VALVE CABLE REPLACEMENT.*This Task Covers:*

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

*Initial Setup:***Equipment Conditions:**

- Cab fresh air filter door opened (see TM 10-3930-659-10).
- Cab rear panel removed (see paragraph 14-22).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

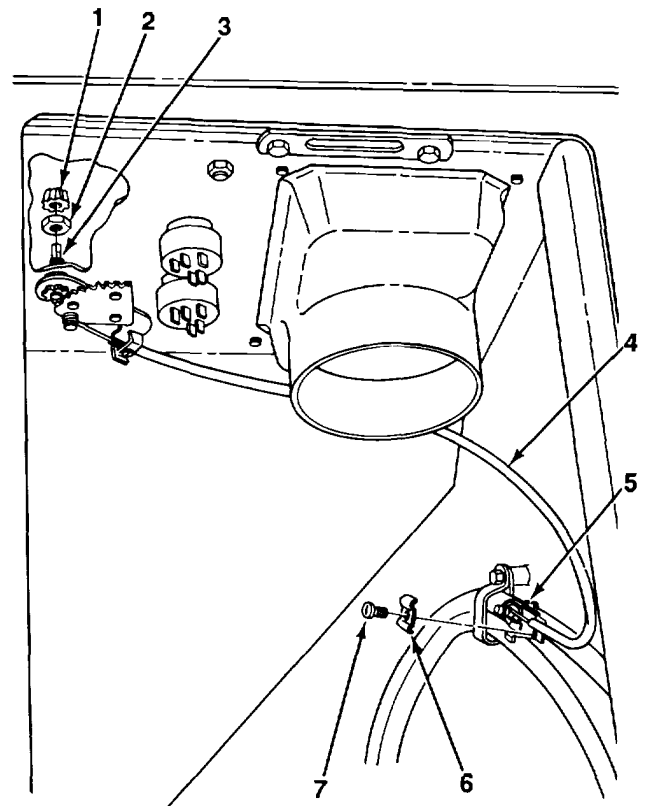
- TM 10-3930-659-10

a. REMOVAL

1. Remove screw (7) and clip (6) from heater control valve (5).
2. Remove heater control valve cable (4) from heater control valve (5).
3. Remove knob (1), jamnut (2), and heater control (3) with heater control valve cable (4).

b. INSTALLATION

1. Install heater control valve cable (4) and heater control (3) with Jamnut (2). Install knob (1) on jamnut.
2. Install heater control valve cable (4) on heater control valve (5).
3. Install clip (6) on heater control valve (5) with screw (7).

**FOLLOW-ON TASKS:**

- Install cab rear panel (see paragraph 14-22).
- Close cab fresh air filter door (see TM 10-3930-659-10).

TA707016

16-17. HEATER RESISTOR AND DEFROSTER RESISTOR REPLACEMENT.*This Task Covers:*

- a. Removal b. Installation

*Initial Setup:***Equipment Conditions:**

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Cab fresh air filter door opened (see TM 10-3930-659-10).

Materials/Parts:

- Marker tags (Item 33, Appendix C)

References:

- TM 10-3930-659-10

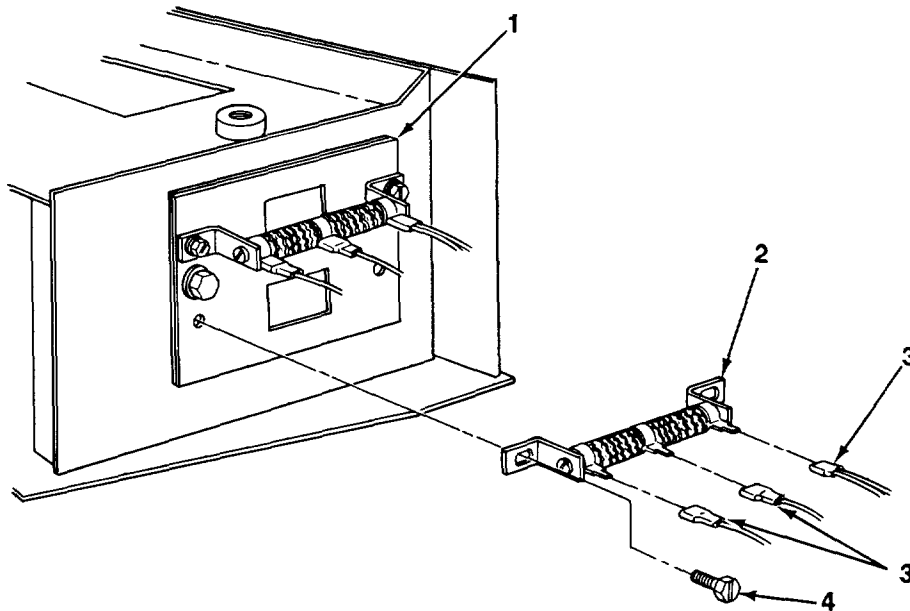
Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL**NOTE**

All leads should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

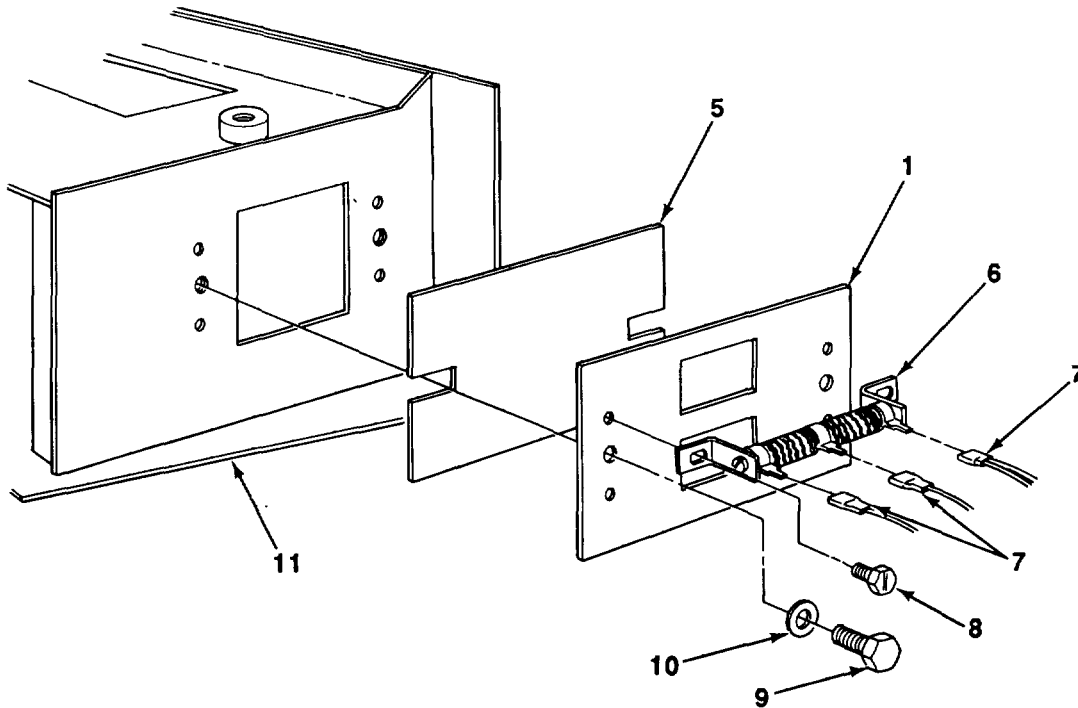
1. Remove three leads (3) from defroster resistor (2).
2. Remove two screws (4) and defroster resistor (2) from plate (1).



TA707017

16-17. HEATER RESISTOR AND DEFROSTER RESISTOR REPLACEMENT (Con't).

3. Remove three leads (7) from heater resistor (6).
4. Remove two screws (8) and heater resistor (6) from plate (1).
5. If plate (1) is damaged, remove two screws (9), washers (10), plate, and isolator (5) from heater housing (11).

**b. INSTALLATION****NOTE**

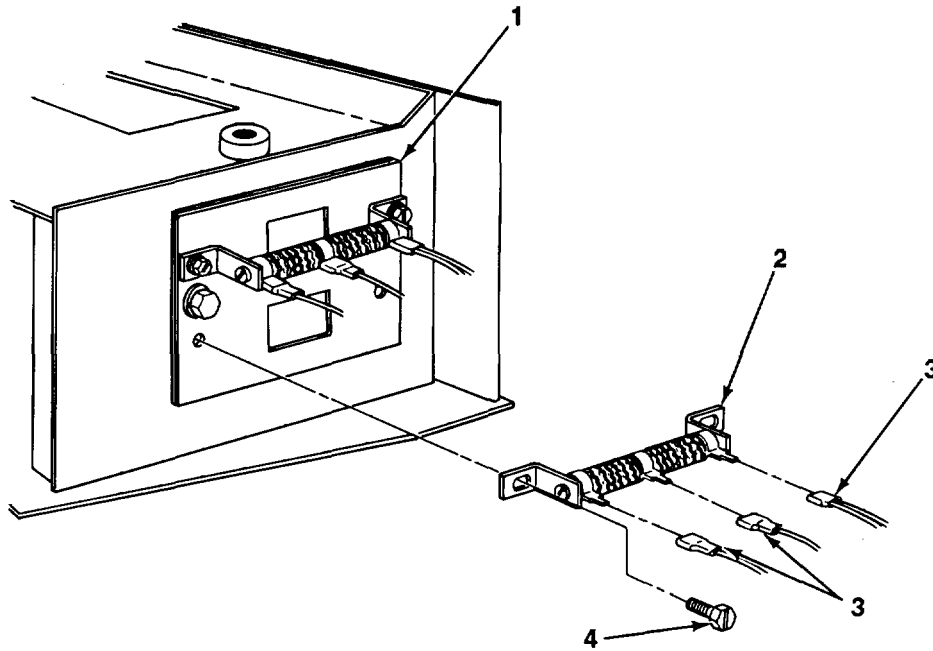
Perform steps 1 and 2 only if plate was removed.

1. Apply adhesive (Item 1, Appendix C) to isolator (5) and install Isolator on plate (1).
2. Install plate (1) on heater housing (11) with two washers (10) and screws (9).
3. Install heater resistor (6) on plate (1) with two screws (8).
4. Install three leads (7) on heater resistor (6).

TA707018

16-17. HEATER RESISTOR AND DEFROSTER RESISTOR REPLACEMENT (Con't).

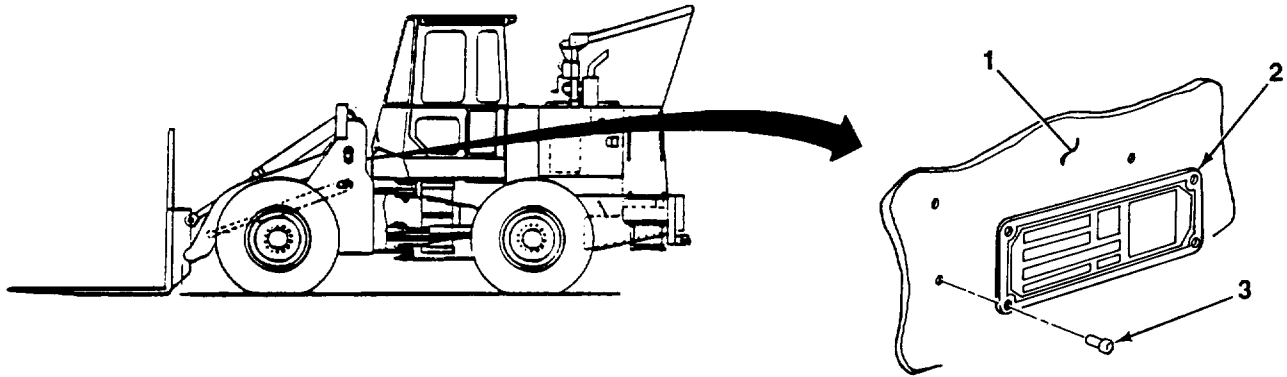
5. Install defroster resistor (2) on plate (1) with two screws (4).
6. Install three leads (3) on defroster resistor (2).

**FOLLOW-ON TASKS:**

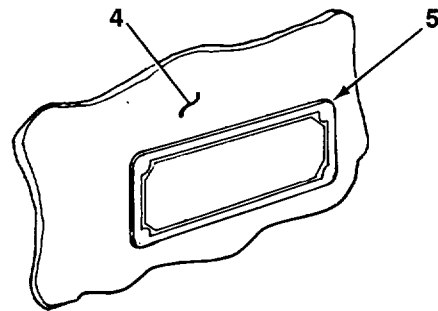
- Close cab fresh air filter door (see TM 10-3930-659-10).

TA707019

16-18. DATA PLATES REPLACEMENT (Con't).



2. Remove data plate (5) from forklift truck (4).



WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (380C-590C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

3. Clean remaining adhesive from forklift truck with dry cleaning solvent and dry with clean rags.

TA707020

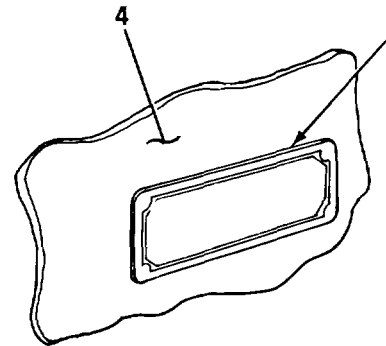
16-18. DATA PLATES REPLACEMENT (Con't).

b. INSTALLATION

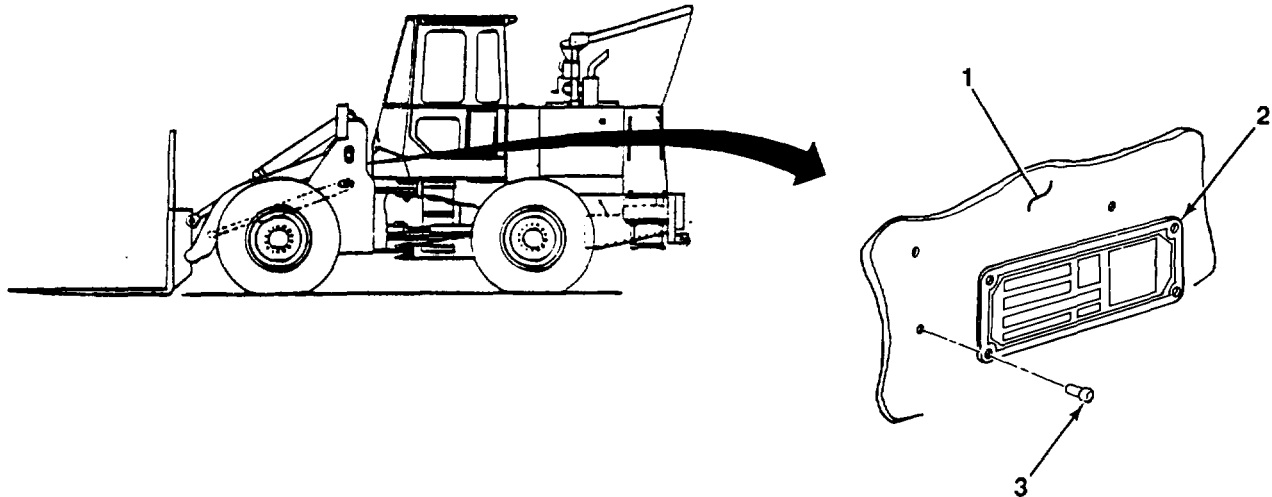
NOTE

- Perform step 1 only if data plate is secured with adhesive.
- Perform step 2 only if data plate is secured with rivets. Loader frame data plate is illustrated.

1. Apply adhesive to back of data plate (5) and install data plate on forklift truck (4).



2. Install loader frame data plate (2) on loader frame (1) with four new rivets (3).



TA707021

CHAPTER 17
HYDRAULIC SYSTEM MAINTENANCE

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17-1. MAIN HYDRAULIC PUMP FLOW TEST.

This Task Covers: Flow Test

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930 659-10).
- Right side cab skirt removed (see paragraph 14-6).
- Right transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Five preformed packings

Personnel Required: Two**References:**

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Fitting (Item 13, Appendix F)
- Fitting (Item 14, Appendix F)
- Fitting (Item 15, Appendix F)
- Pressure gage (Item 18, Appendix F)
- Hose assembly (Item 20, Appendix F)
- Tee (Item 40, Appendix F)
- Hydraulic tester (Item 41, Appendix F)

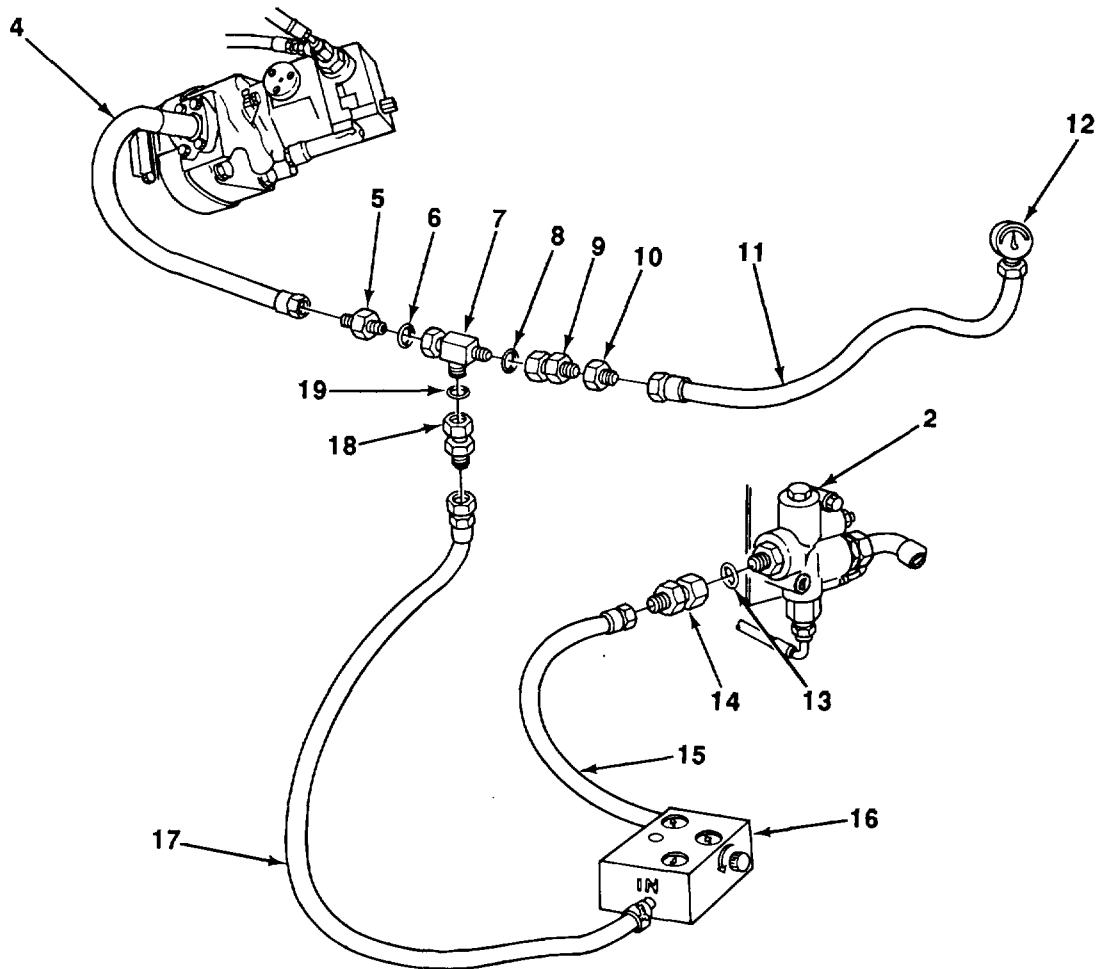
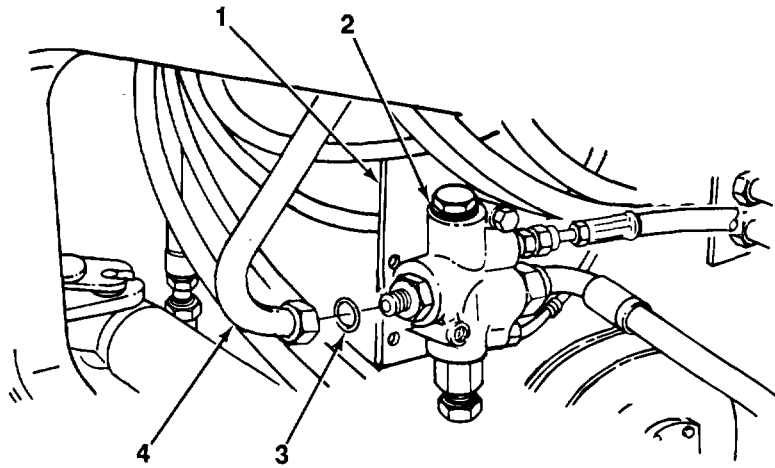
NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

FLOW TEST

1. Remove line (4) and preformed packing (3) from priority valve (2). Discard preformed packing.
2. Remove priority valve (2) from mounting plate (1) (see paragraph 12-28).
3. Install fitting (5), preformed packing (6), and tee (7) on line (4).
4. Install preformed packing (19), fitting (18), and hydraulic tester inlet hose (17) on tee (7).
5. Install preformed packing (13), fitting (14), and hydraulic tester outlet hose (15) on priority valve (2).
6. Check that hydraulic tester (16) loading valve is in OPEN position.
7. Install preformed packing (8), two fittings (9 and 10), hose (11), and pressure gage (12) on tee (7).
8. Warm hydraulic system to operating temperature (see paragraph 2-29).
9. Start engine and run at high engine idle speed (see TM 10-3930-659-10).

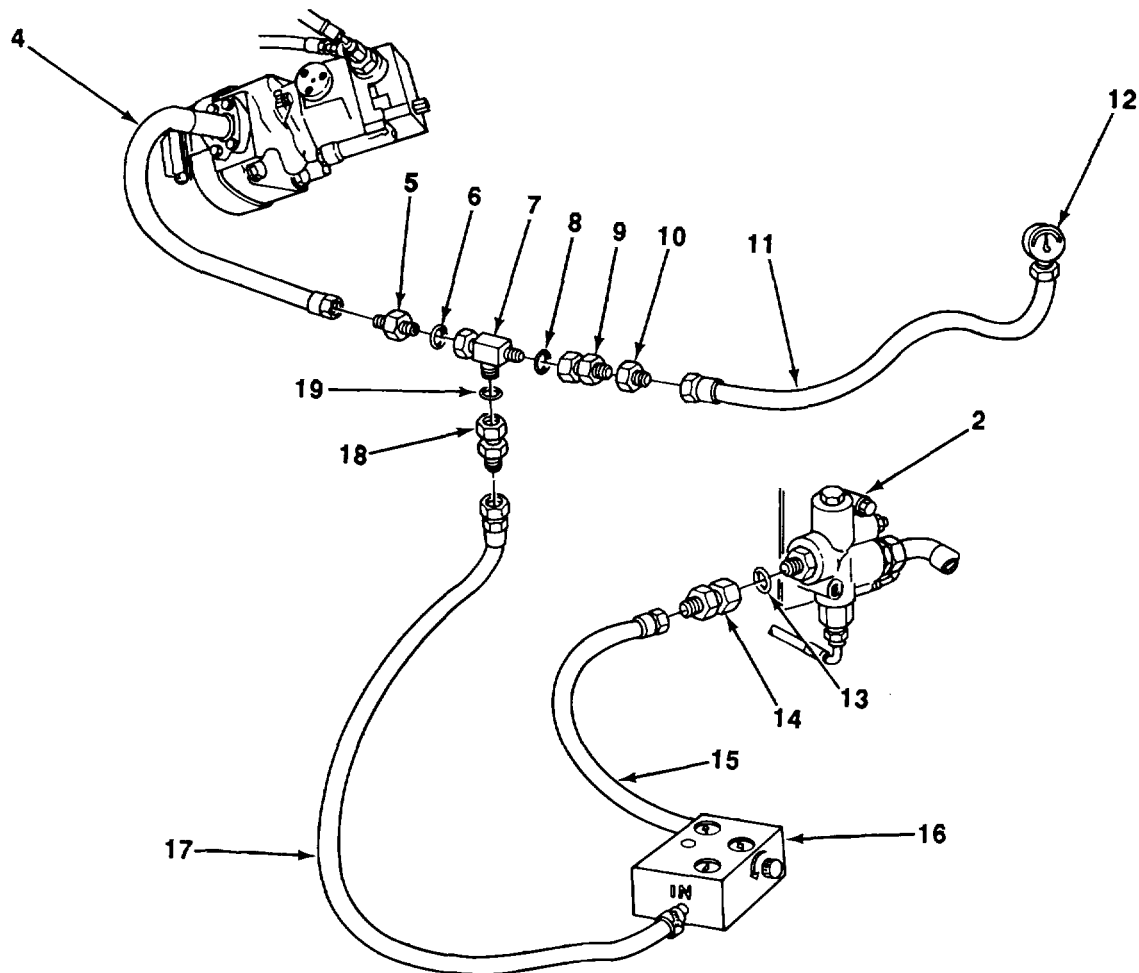
17-1. MAIN HYDRAULIC PUMP FLOW TEST (Con't).



TA707610

17-1. MAIN HYDRAULIC PUMP FLOW TEST (Con't).

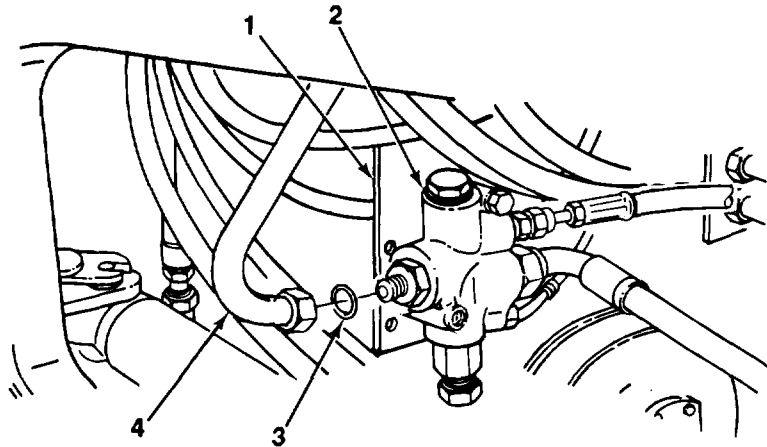
10. Close hydraulic tester (16) loading valve until pressure gage (12) reads 2000 psi (13790 kPa). Hydraulic tester should indicate a pump flow of 28 gpm (106 lpm) or more. If pump flow is less than specification, check for restrictions in hydraulic reservoir-to-main hydraulic pump hose or hydraulic reservoir suction filter. If no restriction is found, replace main hydraulic pump (see paragraph 17-6).
11. Shut down engine (see TM 10-3930-659-10).
12. Remove pressure gage (12), hose (11), two fittings (9 and 10), and preformed packing (8) from tee (7). Discard preformed packing.
13. Remove hydraulic tester outlet hose (15), fitting (14), and preformed packing (13) from priority valve (2). Discard preformed packing.
14. Remove hydraulic tester inlet hose (17), fitting (18), and preformed packing (19) from tee (7). Discard preformed packing.
15. Remove tee (7), preformed packing (6), and fitting (5) from line (4). Discard preformed packing.



TA707611

17-1. MAIN HYDRAULIC PUMP FLOW TEST (Con't).

16. Install priority valve (2) on mounting plate (1) (see paragraph 12-28).
17. Install line (4) and new preformed packing (3) on priority valve (2).

**FOLLOW-ON TASKS:**

- Check and fill hydraulic reservoir with hydraulic fluid as necessary (see TM 10-3930-659-10).
- Install right transmission side guard (see paragraph 14-7).
- Install right side cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707612

17-2. FORK/BRAKE HYDRAULIC PUMP FLOW TEST.

This Task Covers: Flow Test

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10)
- Hydraulic system warmed to operating temperature (see paragraph 2-29).
- Right side cab skirt removed (see paragraph 14-6).
- Right transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Adapter (Item 2, Appendix F)
- Hose assembly (Item 20, Appendix F)
- Plug (Item 25, Appendix F)
- Hydraulic tester (Item 41, Appendix F)

Personnel Required: Two

References:

- TM 10-3930-659-10
-

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

FLOW TEST**WARNING**

Pressure stored in accumulator is approximately 500 psi (3448 kPa). Ensure that accumulator pressure is relieved before removing service brake hoses or components. Failure to follow this warning may result in serious injury or death to personnel.

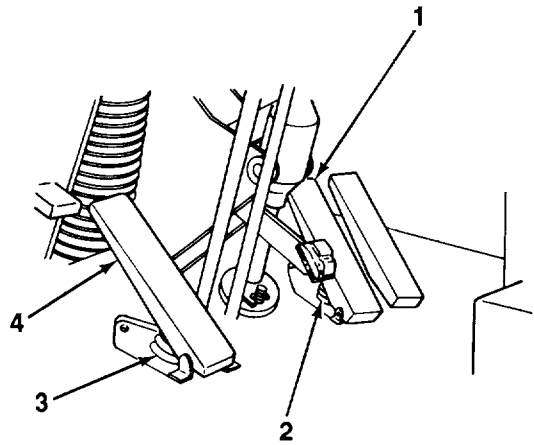
NOTE

- It is necessary to hold boot of one brake pedal with hand while opposite brake pedal is pumped. Movement inside boot will be felt as opposite brake pedal is pumped. Accumulator pressure is relieved when movement stops.
- Each brake pedal should be pumped a full 75 times even if no movement is felt after pumping brake pedal several times.

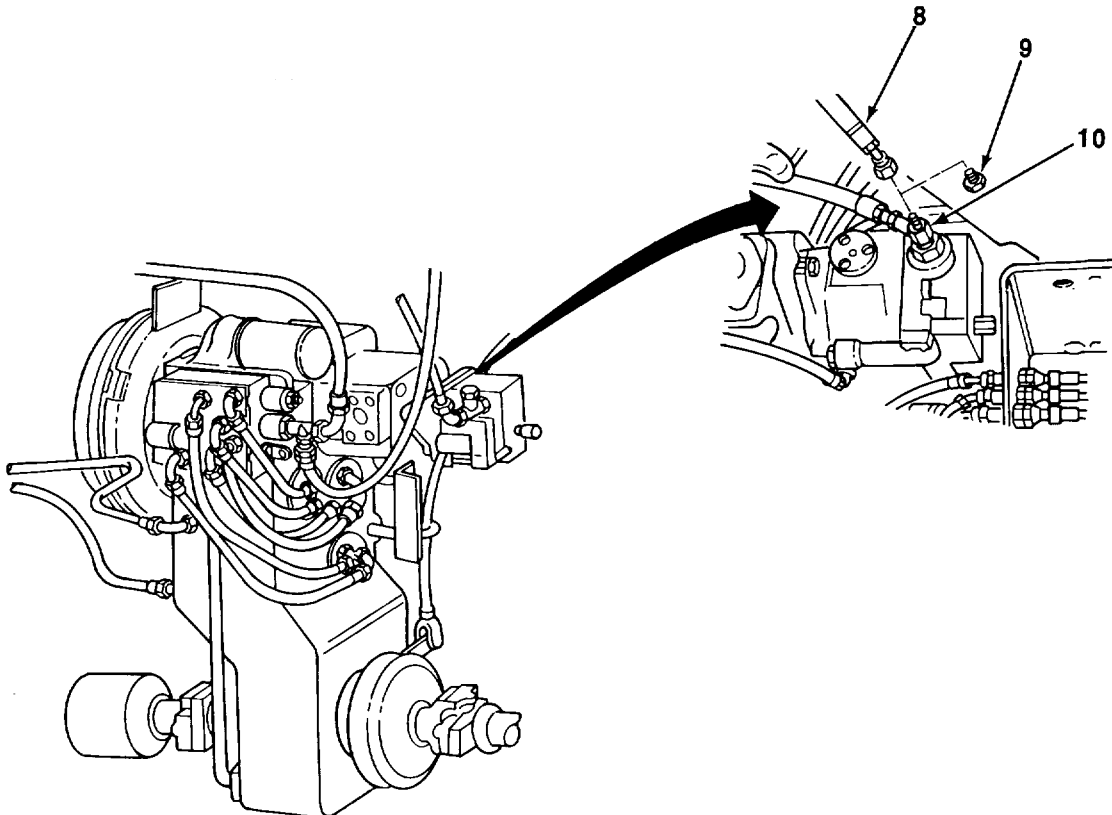
1. Hold boot (3) of left brake pedal (4) with hand and pump right brake pedal (1) 75 times. Release boot.

17-2. FORK/BRAKE HYDRAULIC PUMP FLOW TEST (Con't).

2. Hold boot (2) of right brake pedal (1) with hand and pump left brake pedal (4) 75 times. Release boot.



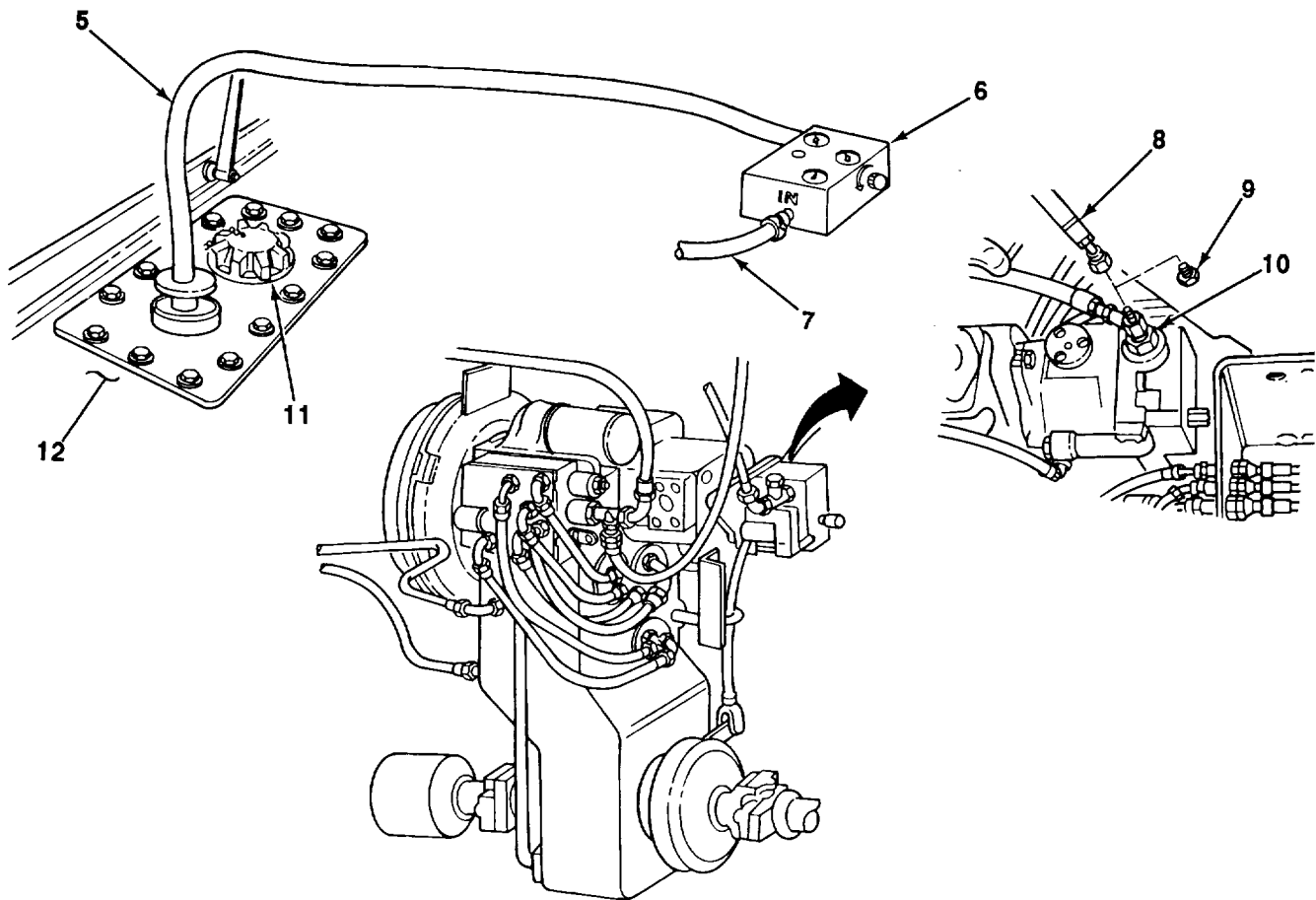
3. Remove hose (8) from adapter (10).
4. Install plug (9) on hose (8).



TA707613

17-2. FORK/BRAKE HYDRAULIC PUMP FLOW TEST (Con't).

5. Connect hydraulic tester Inlet hose (7) to adapter (10).
6. Check that hydraulic tester (6) loading valve is in OPEN position.
7. Remove hydraulic reservoir filler cap (11) and insert hydraulic tester outlet hose (5) in hydraulic reservoir (12).
8. Start engine and run at fast engine idle speed (see TM 10-3930-659-10).
9. Close hydraulic tester (6) loading valve until hydraulic tester gage reads 2000 psi (13790 kPa). Hydraulic tester should indicate a pump flow of 17.6 gpm (66.6 lpm) minimum.



TA707614

17-2. FORK/BRAKE HYDRAULIC PUMP FLOW TEST (Con't).**NOTE**

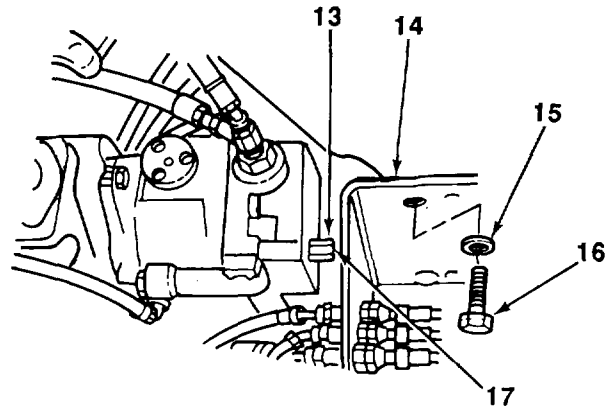
Perform steps 10 through 12 only if pump flow is not within specification.

10. Remove two screws (16), washers (15), and plate (14) to gain access to cap (13) and adjustment screw (17).

NOTE

Step 11 sets maximum displacement.

11. Turn adjustment screw (17) into cap (13) until one or two threads of cap are visible.



12. Repeat step 9. If pump flow is not within specification, perform fork/brake hydraulic pump standby pressure test (see paragraph 17-3).
13. Shut down engine (see TM 10-3930-659-10).
14. Install plate (14) with two washers (15) and screws (16).
15. Repeat steps 1 and 2.
16. Remove hydraulic tester outlet hose (5) from hydraulic reservoir (12).
17. Install hydraulic reservoir filler cap (11) on hydraulic reservoir (12).
18. Remove hydraulic tester inlet hose (7) from adapter (10).
19. Remove plug (9) from hose (8).
20. Install hose (8) on adapter (10).

FOLLOW-ON TASKS:

- Install right transmission side guard (see paragraph 14-7).
- Install right side cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707615

17-3. FORK/BRAKE HYDRAULIC PUMP STANDBY PRESSURE TEST.

This Task Covers: Pressure Test

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).
- Right transmission side guard removed (see paragraph 14-7).
- Fork/brake hydraulic pump flow test performed (see paragraph 17-2).

Materials/Parts:

- Rags (Item 27, Appendix C)
- One preformed packing

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Pressure gage (Item 18, Appendix F)
- Hose assembly (Item 20, Appendix F)

References:

- TM 10-3930-659-10

Personnel Required: Two

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

PRESSURE TEST

WARNING

Pressure stored in accumulator is approximately 500 psi (3448 kPa). Ensure that accumulator pressure is relieved before removing service brake hoses or components. Failure to follow this warning may result in serious injury or death to personnel.

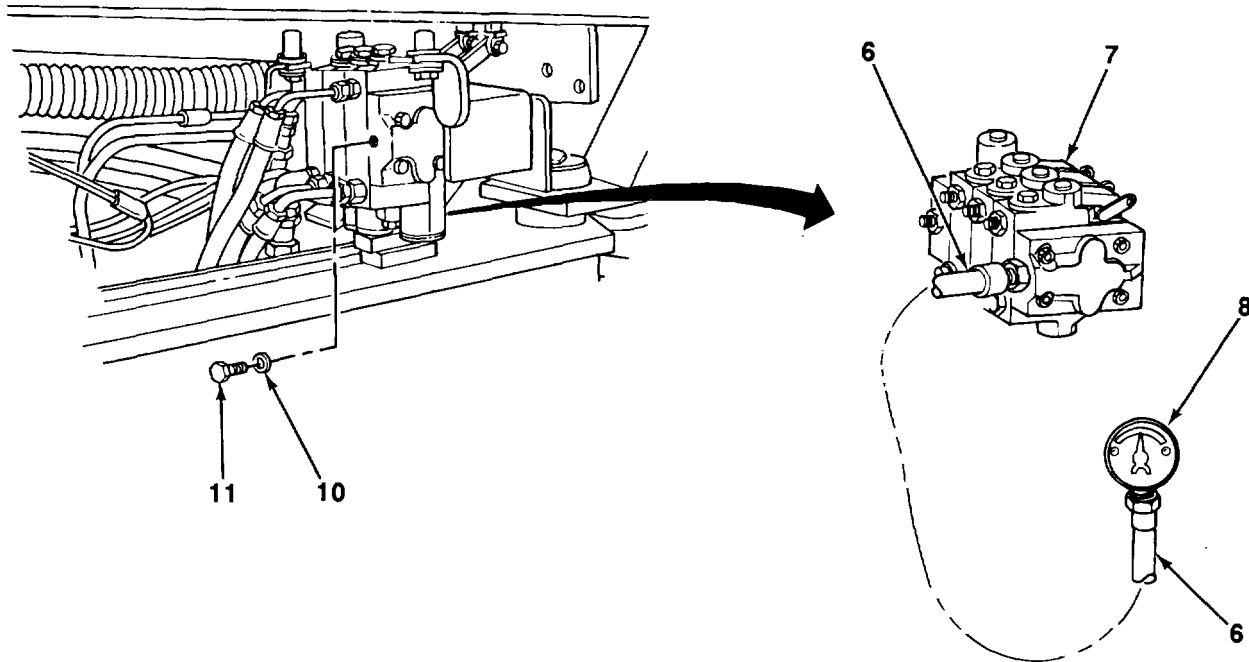
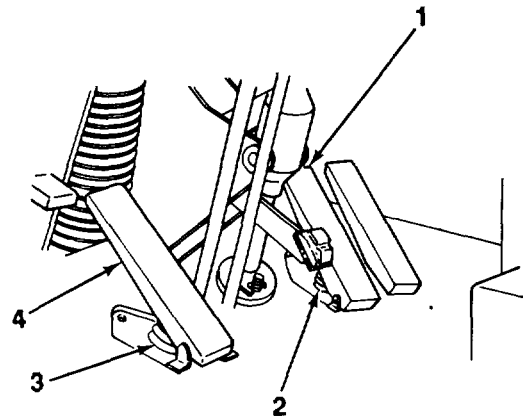
NOTE

- It is necessary to hold boot of one brake pedal with hand while opposite brake pedal is pumped. Movement inside boot will be felt as opposite brake pedal is pumped. Accumulator pressure is relieved when movement stops.
- Each brake pedal should be pumped a full 75 times even if no movement is felt after pumping brake pedal several times.

1. Hold boot (3) of left brake pedal (4) with hand and pump right brake pedal (1) 75 times. Release boot.

17-3. FORK/BRAKE HYDRAULIC PUMP STANDBY PRESSURE TEST (Con't).

2. Hold boot (2) of right brake pedal (1) with hand and pump left brake pedal (4) 75 times. Release boot.
3. Remove plug (11) and preformed packing (10) from forklift control valve (7), Discard preformed packing.
4. Install hose (6) on forklift control valve (7).
5. Install pressure gage (8) on hose (6).
6. Start engine (see TM 10-3930-659-10) and note pressure reading on pressure gage (8). Reading must be 2650-2750 psi (18272-18961 kPa).

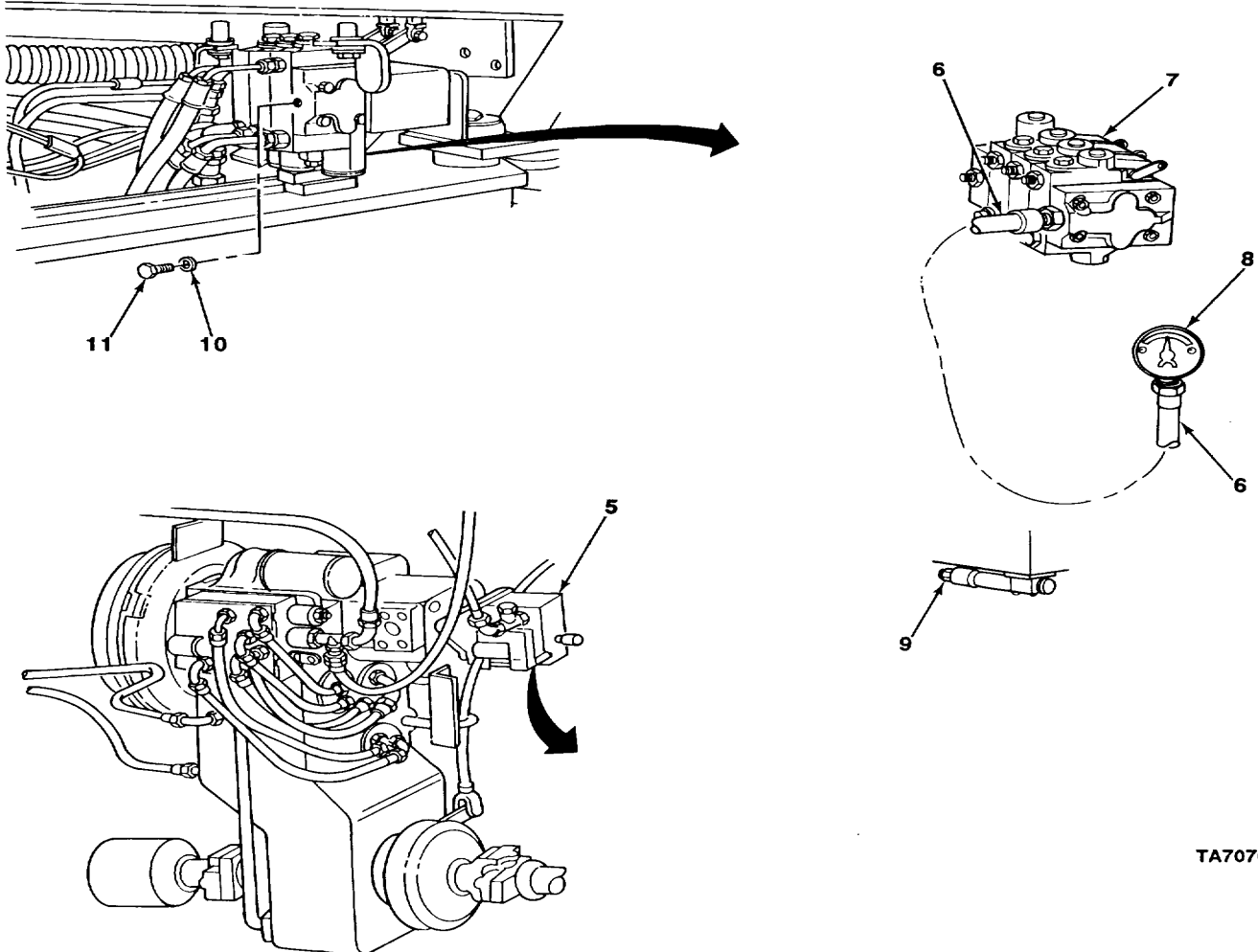


TA707616

17-3. FORK/BRAKE HYDRAULIC PUMP STANDBY PRESSURE TEST (Con't).**NOTE**

Perform step 7 only if pressure reading is not within specification.

7. Turn compensator adjustment screw (9) clockwise to increase pressure. If correct pressure reading is still not obtained, replace fork/brake hydraulic pump (5) (see paragraph 17-5).
8. Shut down engine (see TM 10-3930-659-10).
9. Repeat steps 1 and 2.
10. Remove pressure gage (8) and hose (6) from forklift control valve (7).
11. Install new preformed packing (10) and plug (11) on forklift control valve (7).



TA707617

FOLLOW-ON TASKS:

- Install right transmission side guard (see paragraph 14*7).
- Install right side cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

17-4. HYDRAULIC CYLINDER DRIFT/LEAKAGE TESTS.

This Task Covers:

- a. Carriage Tilt Cylinder Drift/Leakage Test b. Fork/Boom Cylinder Drift/Leakage Test
-

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Hydraulic system warmed to operating temperature (see paragraph 2-29).

Materials/Parts:

- Masking tape (Item 37, Appendix C)

References:

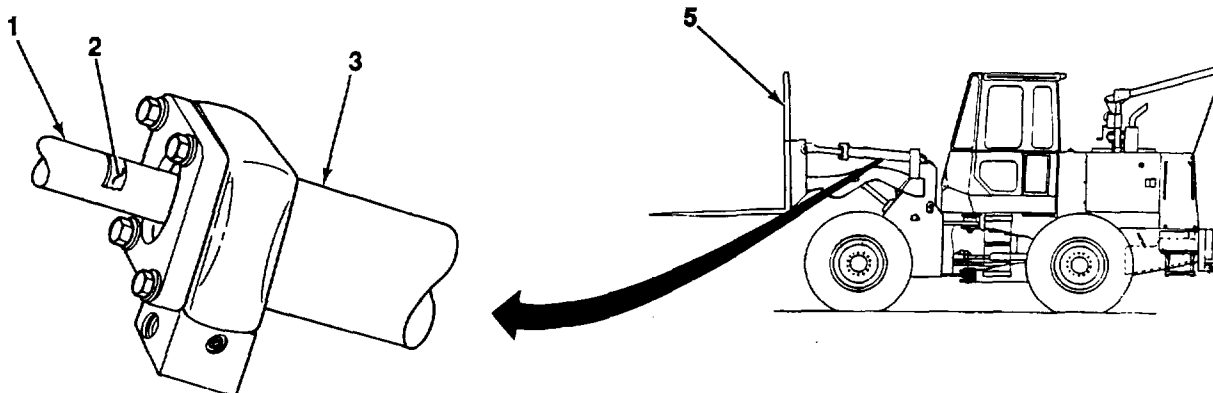
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
 - Trestle, 7 ton (two) (Item 45, Appendix F)
-

a. CARRIAGE TILT CYLINDER DRIFT/LEAKAGE TEST

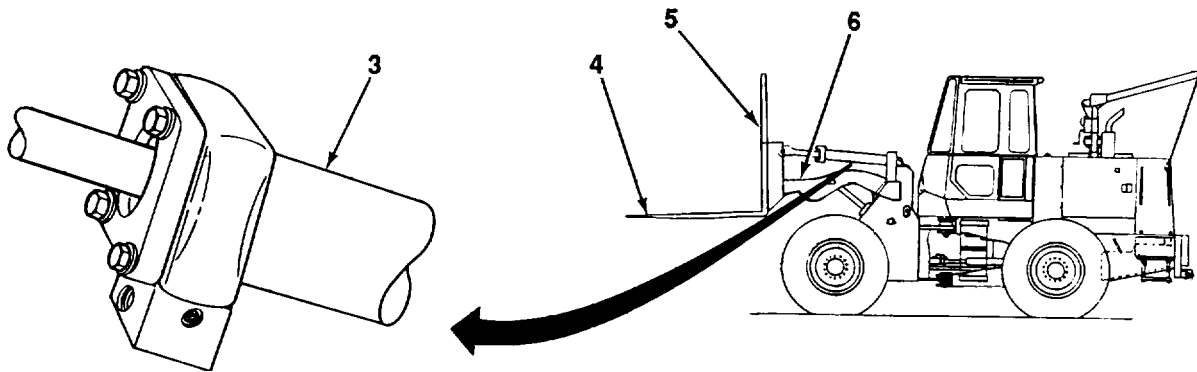
1. Start engine (see TM 10-3930-659-10).
2. Park forklift truck on a firm surface and raise carriage assembly (5) 1 ft (31 cm) above ground.
3. Shut down engine (see TM 10-3930-659-10).
4. Attach masking tape (2) to rod (1) exactly 2 in. (5 cm) in front of carriage tilt cylinder (3).
5. Wait one minute and measure distance between masking tape (2) and carriage tilt cylinder (3). Distance change must be less than 0.27 in. (7 mm). If measurement is within specification, check is complete and tape can be removed. If measurement is not within specification, continue with test.



TA707618

17-4. HYDRAULIC CYLINDER DRIFT/LEAKAGE TESTS (Con't).

6. Start engine (see TM 10-3930-659-10).
7. Raise carriage assembly (5) 3 ft (1 m) above ground and place two trestles under fork/boom assembly (6).
8. Shut down engine (see TM 10-3930-659-10).
9. Measure distance between one fork (4) and ground. Wait one minute and repeat measurement. Record change in distance.
10. Wait 10 minutes and repeat measurement in step 9. Wait one minute and take measurement again. Record change in distance.
11. Compare changes in measurements in steps 9 and 10. If drift is same for each of the two one minute periods, replace forklift control valve (see paragraph 17-8). If drift is less for second one minute period, replace carriage tilt cylinder (3) (see paragraph 17-9).
12. Remove two trestles from under fork/boom assembly (6).

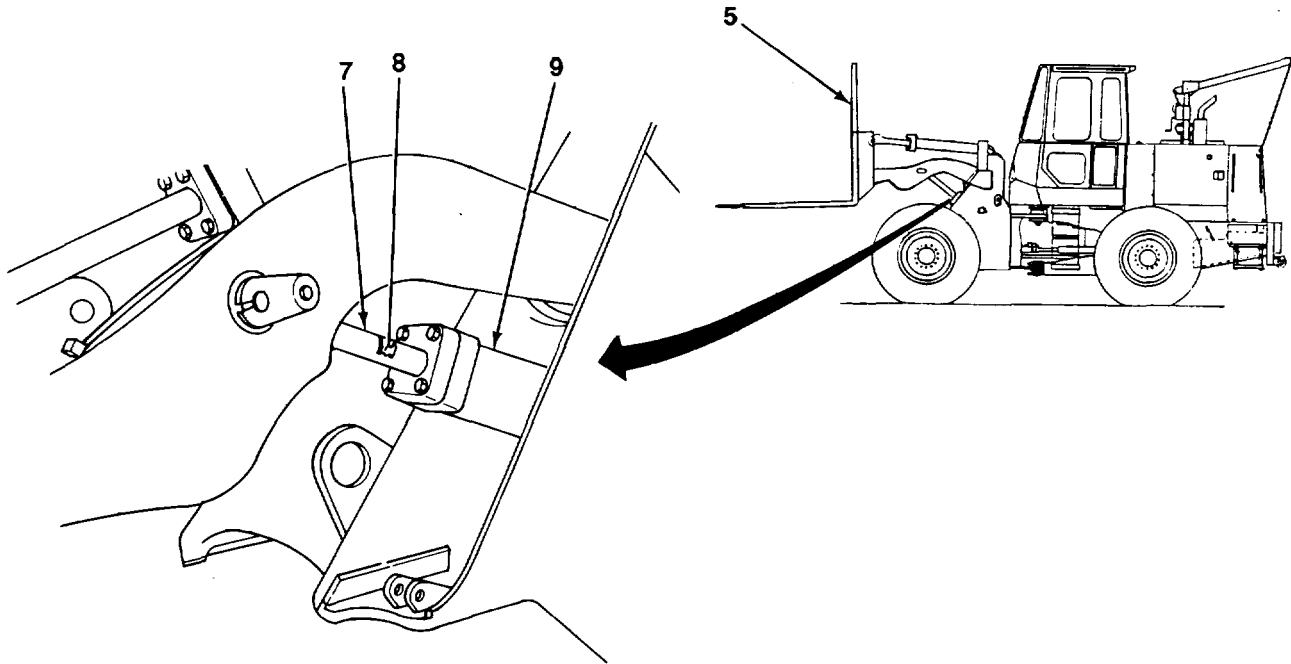
**b. FORK/BOOM CYLINDER DRIFT/LEAKAGE TEST**

1. Start engine (see TM 10-3930-659-10).
2. Park forklift truck on a firm surface and raise carriage assembly (5) 3 ft (1 m) above ground.
3. Shut down engine (see TM 10-3930-659-10).
4. Attach masking tape (8) to rod (7) exactly 2 in. (5 cm) in front of fork/boom cylinder (9).
5. Wait one minute and measure distance between masking tape (8) and fork/boom cylinder (9). Distance change must be less than 0.12 in. (3 mm). If measurement is within specification, check is complete and tape can be removed. If measurement is not within specification, continue with test.

TA707619

17-4. HYDRAULIC CYLINDER DRIFT/LEAKAGE TESTS (Con't).

6. Start engine (see TM 10-3930-659-10).
7. Raise and lower carriage assembly (5) a few times and position carriage assembly 3 ft (1 m) above ground.
8. Shut down engine (see TM 10-3930-659-10).



9. Measure distance between bottom of carriage assembly (5) and ground. Wait one minute and repeat measurement. Record change in distance.
10. Wait 10 minutes and repeat measurement in step 9. Wait one minute and take measurement again. Record change in distance.
11. Compare changes in measurements in steps 9 and 10. If drift is same for each of the two one minute periods, replace forklift control valve (see paragraph 17-8). If drift is less for second one minute period, replace fork/boom cylinder (9) (see paragraph 17-32).

TA707620

17-5. FORK/BRAKE HYDRAULIC PUMP REPLACEMENT.

This Task Covers:

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|
-

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-10).
- Cab skirts removed (see paragraph 14-6).
- Transmission side guards removed (see paragraph 14-7).
- Accumulator-to-fork/brake hydraulic pump hose and fittings removed (see paragraph 10-15).
- Fork/brake hydraulic pump outlet-to-forklift control valve hose and fittings removed (see paragraph 17-14).
- Fork/brake hydraulic pump drain-to-hydraulic reservoir hose and fittings removed (see paragraph 17-15).
- Main hydraulic pump-to-fork/brake hydraulic pump hose and fittings removed (see paragraph 17-16).
- Fork/brake hydraulic pump-to-hydraulic reservoir hose and fittings removed (see paragraph 17-17).

Materials/Parts:

- Two preformed packings

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Personnel Required: Two

References:

- TM 10-3930-659-10
-

a. REMOVAL

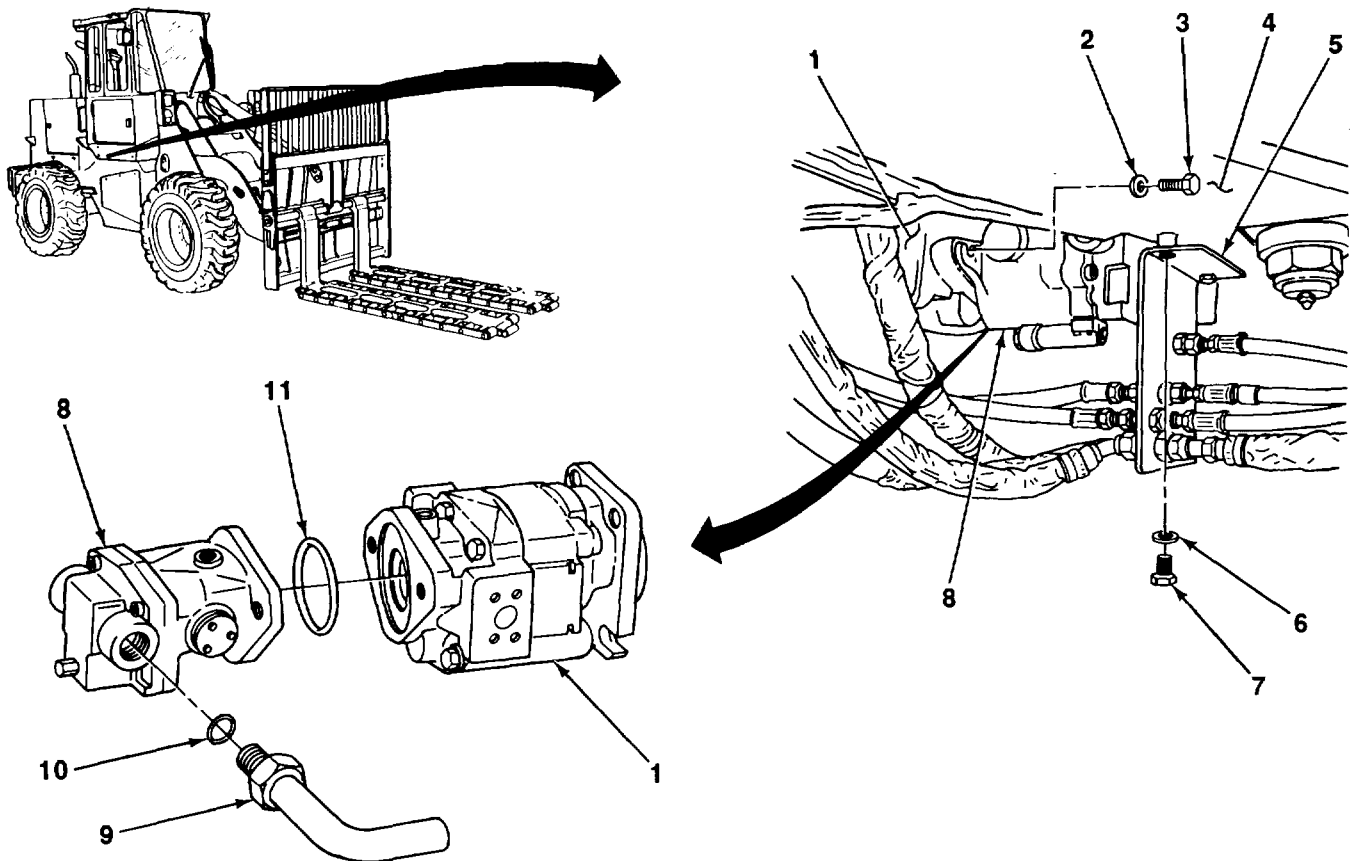
1. Remove two screws (7), washers (6), and plate (5) from engine frame (4).

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

2. Remove two screws (3), washers (2), fork/brake hydraulic pump (8), and preformed packing (11) from main hydraulic pump (1). Discard preformed packing.
3. Remove elbow (9) and preformed packing (10) from fork/brake hydraulic pump (8). Discard preformed packing.

17-5. FORK/BRAKE HYDRAULIC PUMP REPLACEMENT (Con't).



b. INSTALLATION

WARNING

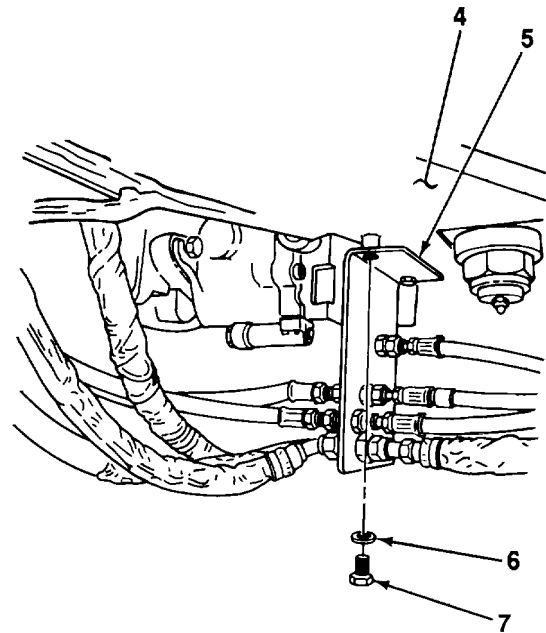
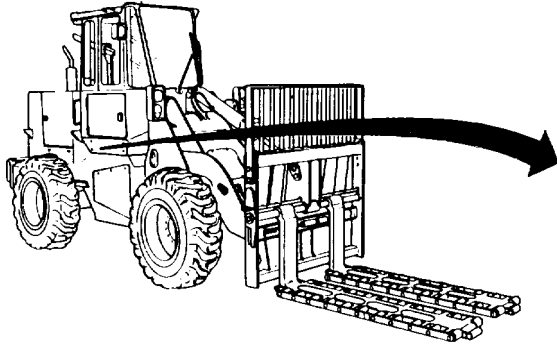
Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

1. Install new preformed packing (10) and elbow (9) on fork/brake hydraulic pump (8).
2. Install new preformed packing (11) and fork/brake hydraulic pump (8) on main hydraulic pump (1) with two washers (2) and screws (3).

TA707621

17-5. FORK/BRAKE HYDRAULIC PUMP REPLACEMENT (Con't).

3. Install plate (5) on engine frame (4) with two washers (6) and screws (7).

**FOLLOW-ON TASKS:**

- Install fork/brake hydraulic pump-to-hydraulic reservoir hose and fittings (see paragraph 17-17).
- Install main hydraulic pump-to-fork/brake hydraulic pump hose and fittings (see paragraph 17-16).
- Install fork/brake hydraulic pump drain-to-hydraulic reservoir hose and fittings (see paragraph 17-15).
- Install fork/brake hydraulic pump outlet-to-forklift control valve hose and fittings (see paragraph 17-14).
- Install accumulator-to-fork/brake hydraulic pump hose and fittings (see paragraph 10-15).
- Install transmission side guards (see paragraph 14-7).
- Install cab skirts (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707622

17-6. MAIN HYDRAULIC PUMP REPLACEMENT.*This Task Covers:*

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Fork/brake hydraulic pump removed (see paragraph 17-5).
- Hydraulic reservoir-to-main hydraulic pump line and fittings removed (see paragraph 17-18).
- Priority valve-to-main hydraulic pump line and fittings removed (see paragraph 12-8).

Materials/Parts:

- One gasket

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

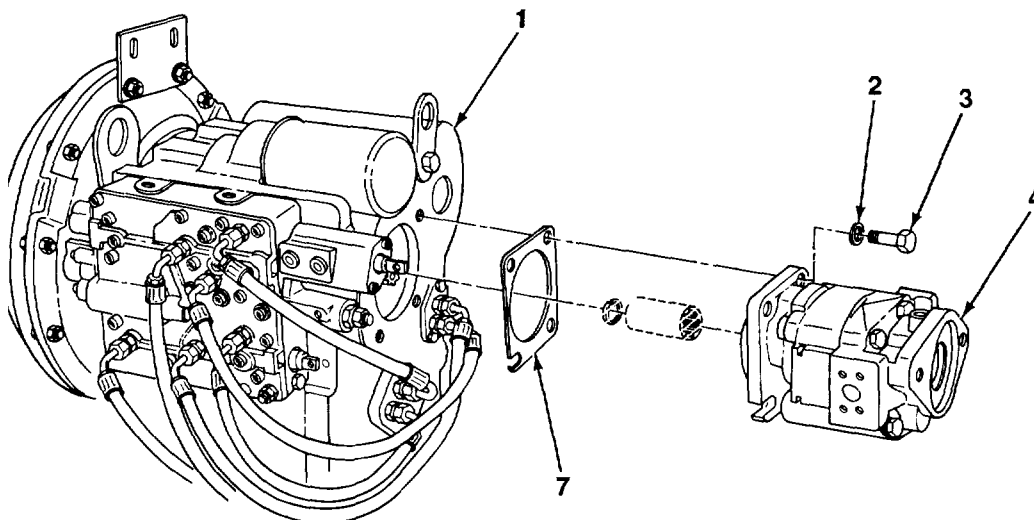
Personnel Required: Two**References:**

- TM 10-3930-659-10

a. REMOVAL**WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

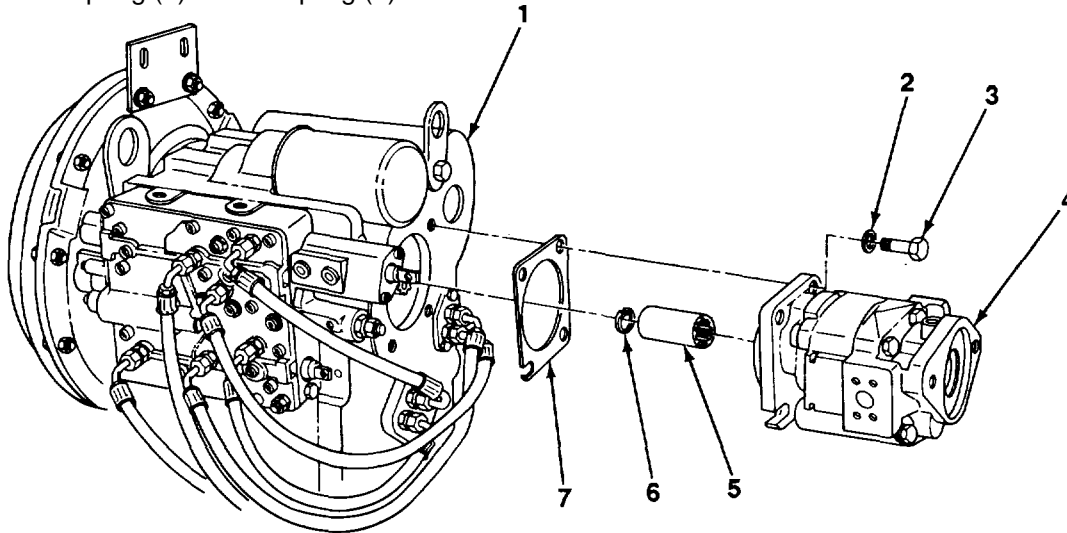
1. Remove four screws (3), washers (2), main hydraulic pump (4), and gasket (7) from transmission (1). Discard gasket.



TA707623

17-6. MAIN HYDRAULIC PUMP REPLACEMENT (Con't).

2. Remove coupling (5) from main hydraulic pump (4) or transmission (1).
3. Remove snapping (6) from coupling (5).

**b. INSTALLATION****WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

1. Install snapping (6) in coupling (5).
2. Position coupling (5) on main hydraulic pump (4).

NOTE

Bottom two screws should be held in position against flange of main hydraulic pump during installation.

3. Install new gasket (7) and main hydraulic pump (4) on transmission (1) with four washers (2) and screws (3).

FOLLOW-ON TASKS:

- Install priority valve-to-main hydraulic pump line and fittings (see paragraph 12-8).
- Install hydraulic reservoir-to-main hydraulic pump line and fittings (see paragraph 17-18).
- Install fork/brake hydraulic pump (see paragraph 17-5).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707624

17-7. FORKLIFT CONTROL VALVE LEVERS REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Adjustment

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Right access door opened (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).

Materials/Parts:

- Seven locknuts

References:

- TM 10-3930-659-10

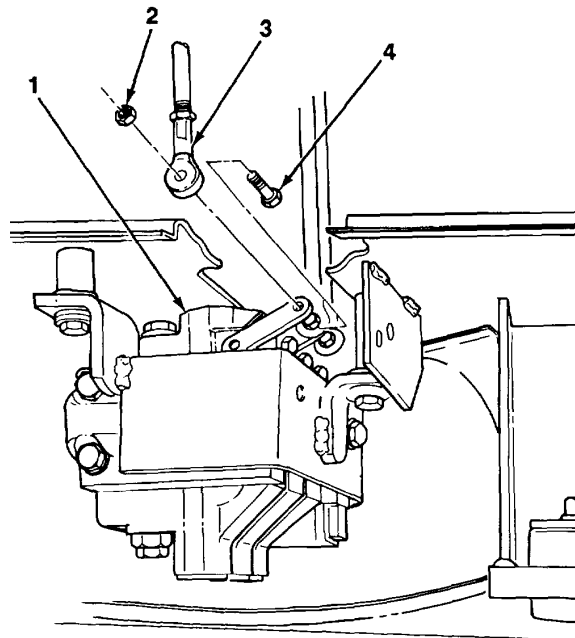
Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL**NOTE**

Locknut and screw on right side of forklift truck should be removed first.

1. Remove three locknuts (2), screws (4), and rod end bearings (3) from forklift control valve (1). Discard locknuts.



TA707625

17-7. FORKLIFT CONTROL VALVE LEVERS REPLACEMENT (Con't).

2. Remove four screws (7), washers (6), and control plate (13) from cab.
3. Remove three plastic knobs (11) from forklift control valve levers (8 and 9).
4. Remove three boots (10) from forklift control valve levers (8 and 9).

NOTE

Note position of each control valve lever, rod, and flanged bearings to aid during installation. One rod is longer than other two.

5. Remove locknut (12), bolt (5), two washers (14), forklift control valve lever (8), two forklift control valve levers (9), six bushings (15), and flanged bearings (16) from control plate (13). Discard locknut.
6. Remove three locknuts (17) and ball joints (18) from forklift control valve levers (8 and 9). Discard locknuts.

NOTE

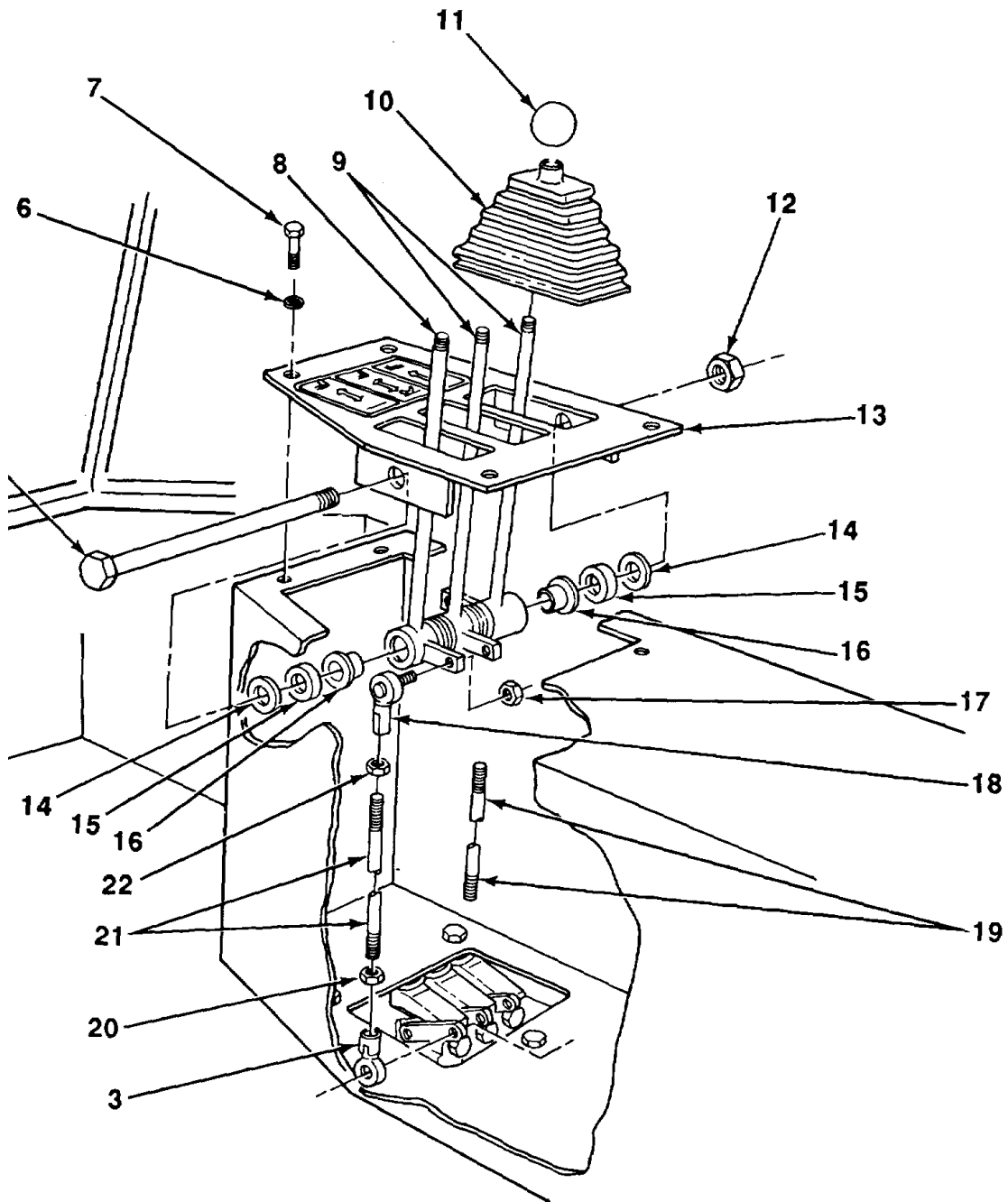
Upper end of each rod has left-hand threads.

7. Remove three ball joints (18), rod end bearings (3), and six nuts (20 and 22) from rod (21) and two rods (19).

b. INSTALLATION

1. Loosely install six nuts (20 and 22), three ball joints (18), and rod end bearings (3) on two rods (19) and rod (21).
2. Install three ball joints (18) on forklift control valve levers (8 and 9) with three locknuts (17).
3. Install six flanged bearings (16), bushings (15), two forklift control valve levers (9), forklift control valve lever (8), and two washers (14) on control plate (13) with bolt (5) and new locknut (12).
4. Install three boots (10) on forklift control valve levers (8 and 9).
5. Install three plastic knobs (11) on forklift control valve levers (8 and 9).
6. Install control plate (13) on cab with four washers (6) and screws (7).

17-7. FORKLIFT CONTROL VALVE LEVERS REPLACEMENT (Con't).

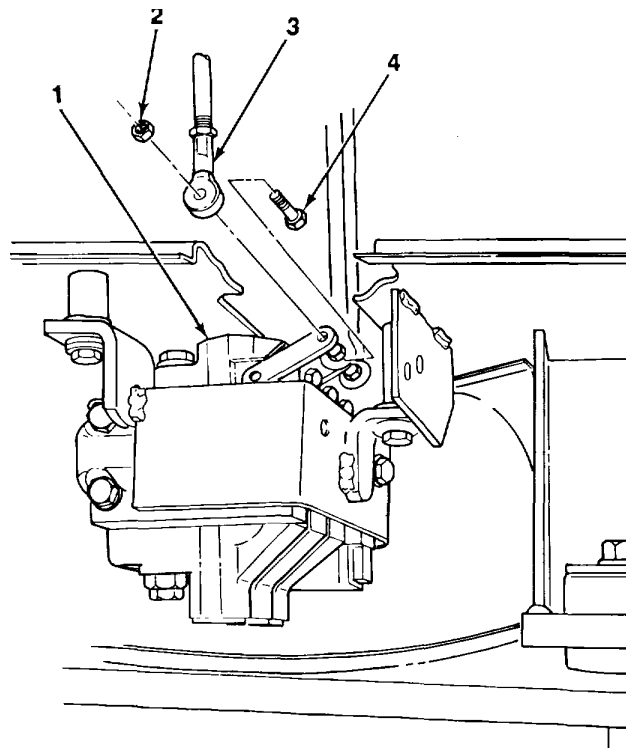


TA707626

17-7. FORKLIFT CONTROL VALVE LEVERS REPLACEMENT (Con't).**NOTE**

Locknut and screw on left side of forklift truck should be installed first.

7. Install three rod end bearings (3) on forklift control valve (1) with three screws (4) and new locknuts (2).

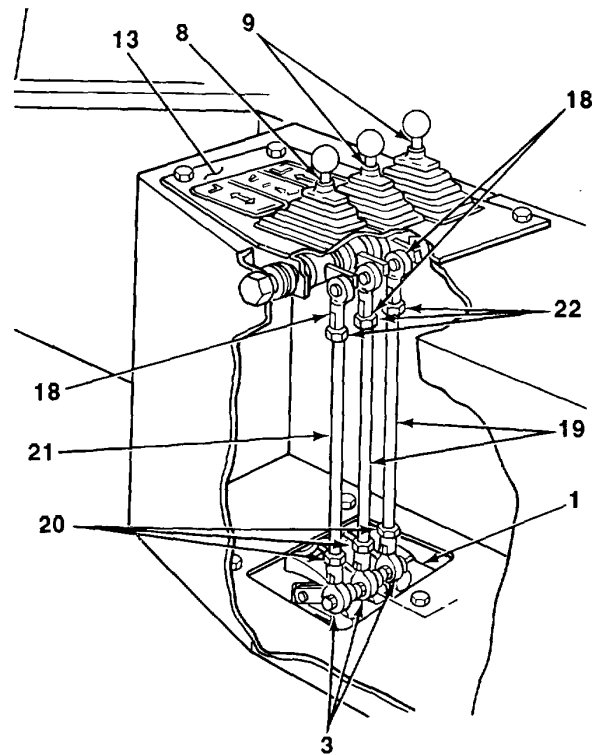


TA707627

7-7. FORKLIFT CONTROL VALVE LEVERS REPLACEMENT (Con't).

c. ADJUSTMENT

1. With forklift control valve (1) in center position, rotate rod (21) and two rods (19) until three forklift control valve levers (8 and 9) are in line and level with top surface of control plate (13).
2. Tighten three nuts (22) against three ball joints (18).
3. Tighten three nuts (20) against three rod end bearings (3).


FOLLOW-ON TASKS:

- Install right side cab skirt (see paragraph 14-6).
- Close right access door (see TM 10-3930-659-10).

TA707628

17-8. FORKLIFT CONTROL VALVE REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Right access door opened (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).
- Fork/brake hydraulic pump outlet-to-forklift control valve hose and fittings removed (see paragraph 17-14).
- Forklift control valve-to-plate hoses and fittings removed (see paragraph 17-19).
- Forklift control valve-to-transmission clutch cutoff valve hose and fittings removed (see paragraph 17-20).

Materials/Parts:

- Three locknuts

Tools/Test Equipment:

- General mechanic's tool kit tem 44, Appendix F)

References:

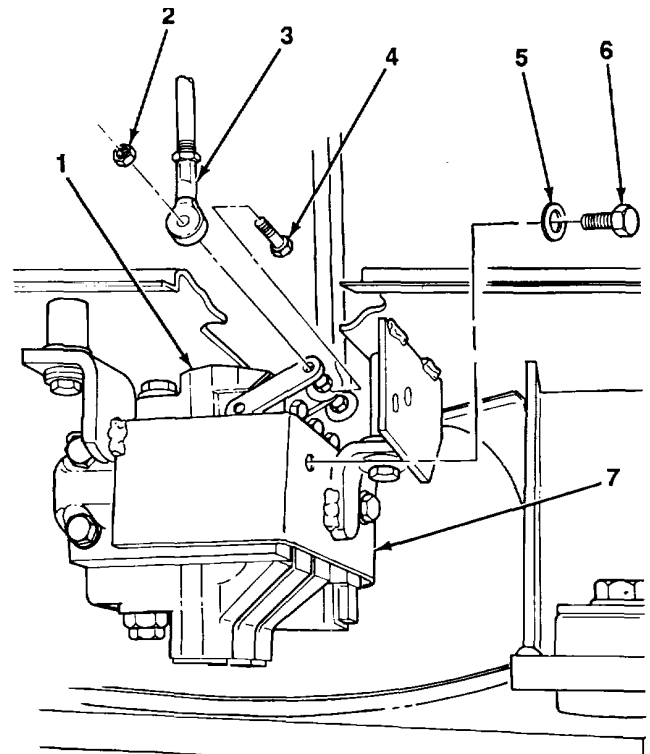
- TM 10-3930-659-10

a. REMOVAL

NOTE

Locknut and screw on right side of forklift truck should be removed first.

1. Remove three locknuts (2), screws (4), and rod end bearings (3) from forklift control valve (1). Discard locknuts.
2. Remove two screws (6), washers (5), and forklift control valve (1) from bracket (7).



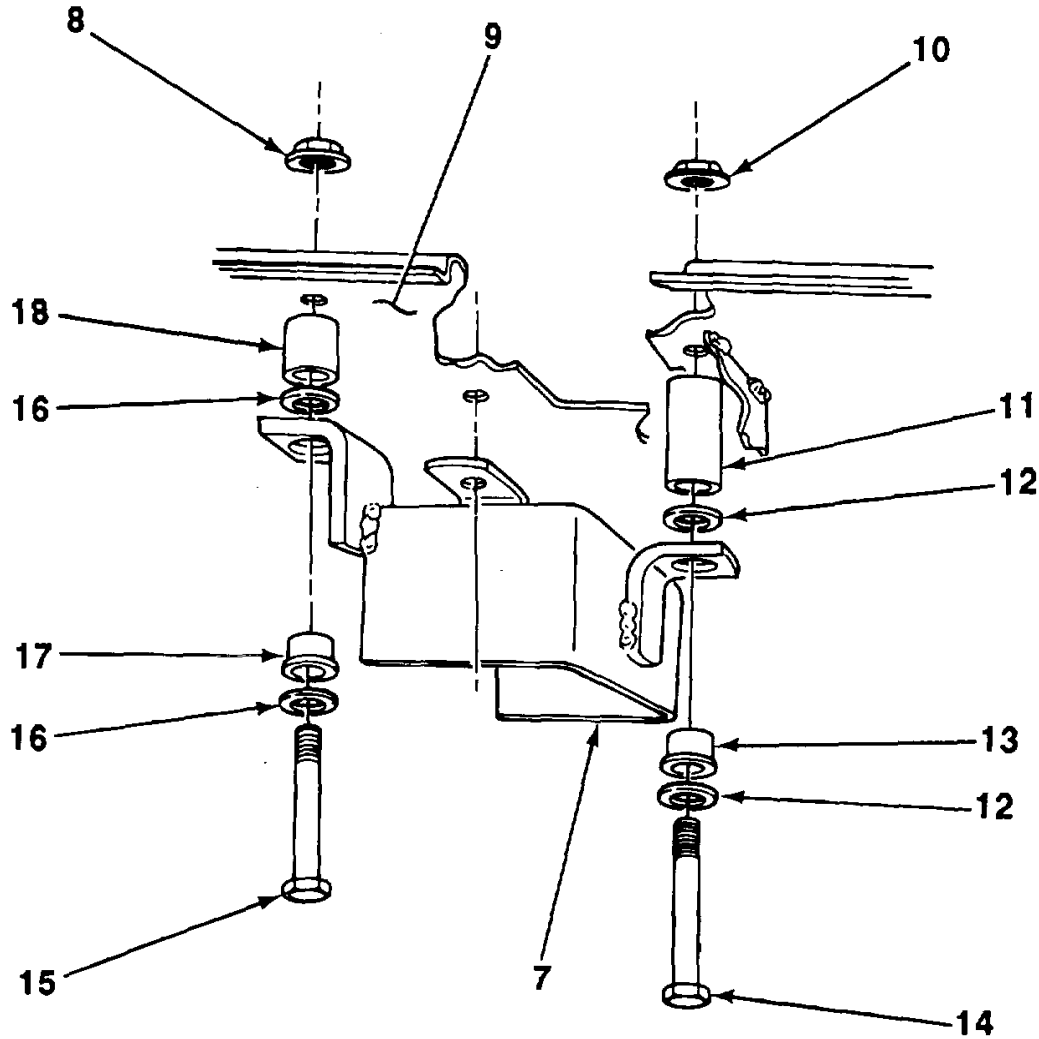
TA707629

17-8. FORKLIFT CONTROL VALVE REPLACEMENT (Con't).

NOTE

Perform steps 3 through 5 only if bracket is damaged.

3. Remove flange nut (10), long screw (14), two washers (12), and long spacer (11) from bracket (7).
4. Remove two flange nuts (8), screws (15), four washers (16), two spacers (18), and bracket (7) from cab (9).
5. Remove three rubber mountings (13 and 17) from bracket (7).



TA707630

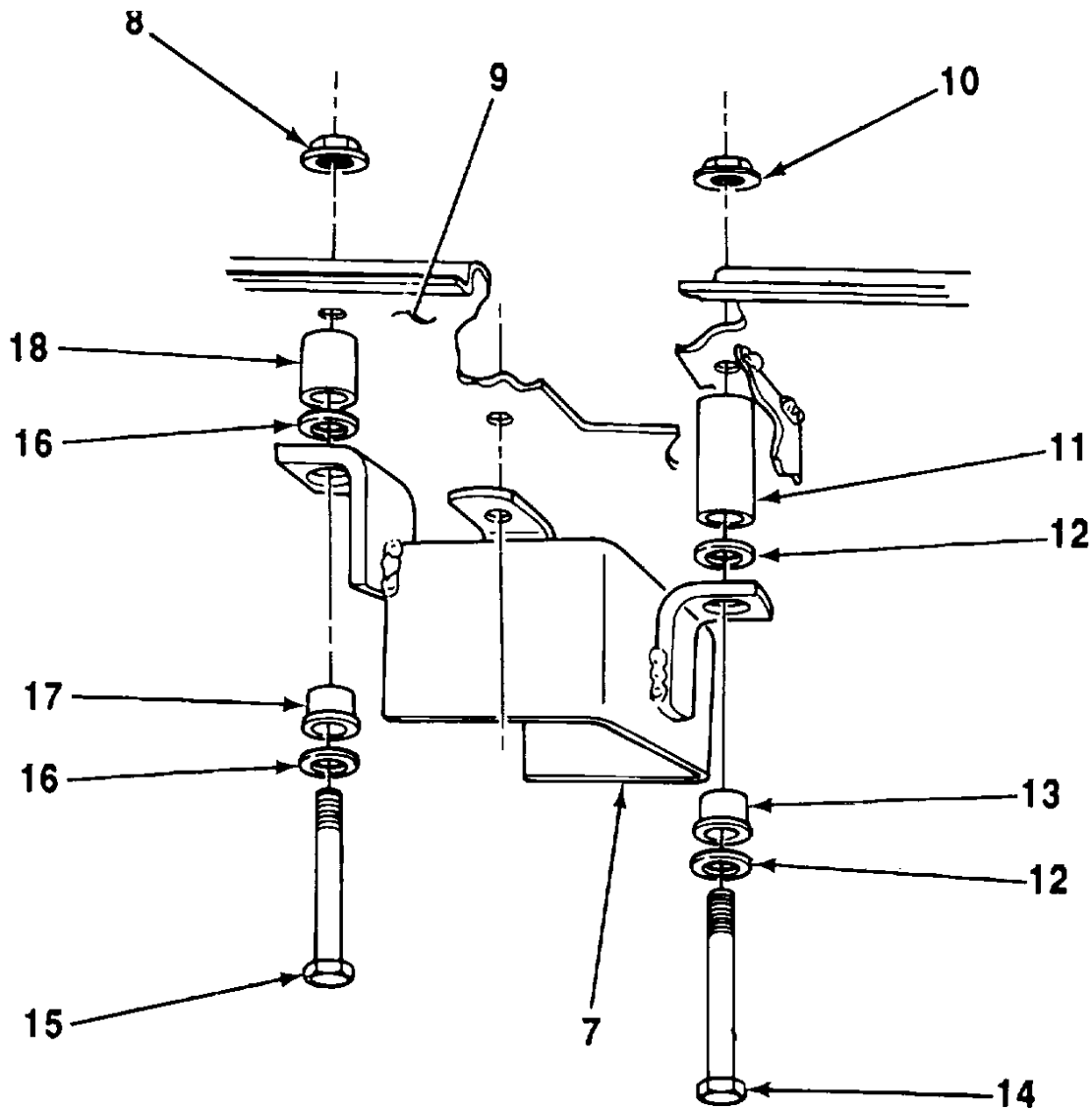
17-8. FORKLIFT CONTROL VALVE REPLACEMENT (Con't).

b. INSTALLATION

NOTE

Perform steps 1 through 3 only if bracket was removed.

1. Install three rubber mountings (13 and 17) on bracket (7).
2. Install two spacers (18) on bracket (7) and cab (9) with four washers (16), two screws (15), and flange nuts (8).
3. Install long spacer (11) on bracket (7) and cab (9) with two washers (12), long screw (14), and flange nut (10).



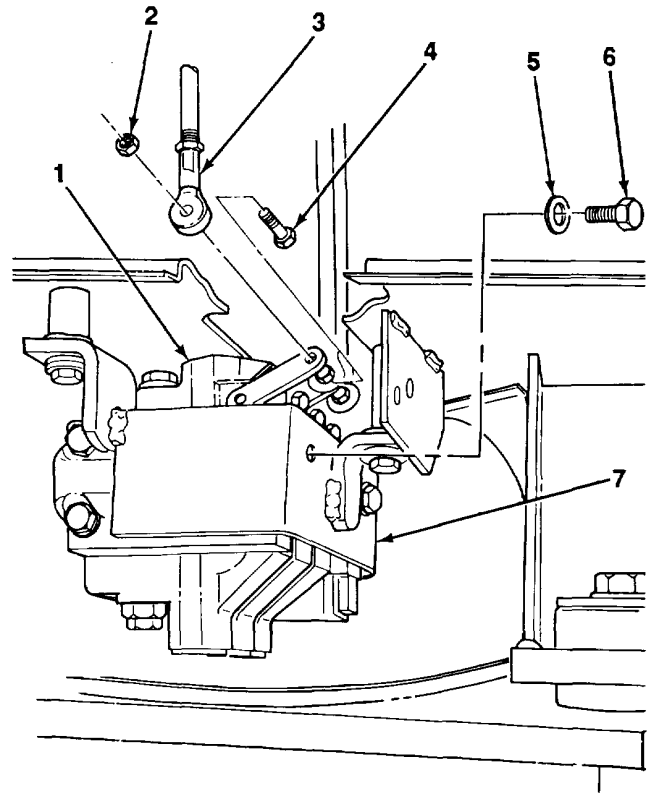
17-8. FORKLIFT CONTROL VALVE REPLACEMENT (Con't).

4. Install forklift control valve (1) on bracket (7) with two washers (5) and screws (6).

NOTE

Locknut and screw on left side of forklift truck should be installed first.

5. Install three rod end bearings (3) on forklift control valve (1) with three screws (4) and new locknuts (2).

**FOLLOW-ON TASKS:**

- Install forklift control valve-to-transmission clutch cutoff valve hose and fittings (see paragraph 17-20).
- Adjust forklift control valve levers (see paragraph 17-7).
- Install forklift control valve-to-plate hoses and fittings (see paragraph 17-19).
- Install fork/brake hydraulic pump outlet-to-forklift control valve hose and fittings (see paragraph 17-14).
- Install right side cab skirt (see paragraph 14-6).
- Close right access door (see TM 10-3930-659-10).

TA707632

17-9. CARRIAGE TILT CYLINDER REPLACEMENT.

This Task Covers:

a. Removal

b. Installation

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Carriage assembly lowered to ground (see TM 10-3930-659-10).
- Locking control valve removed (see paragraph 17-10).

Materials/Parts:

- Grease (Item 23, Appendix C)

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

a. REMOVAL

1. Attach suitable lifting device to carriage tilt cylinder (3) and raise lifting device enough to support weight of carriage tilt cylinder.
2. Remove screw (9), washer (8), spacer (7), and pin (6) from carriage assembly (5).
3. Remove screw (12), washer (11), spacer (10), and pin (1) from loader frame (2).

WARNING

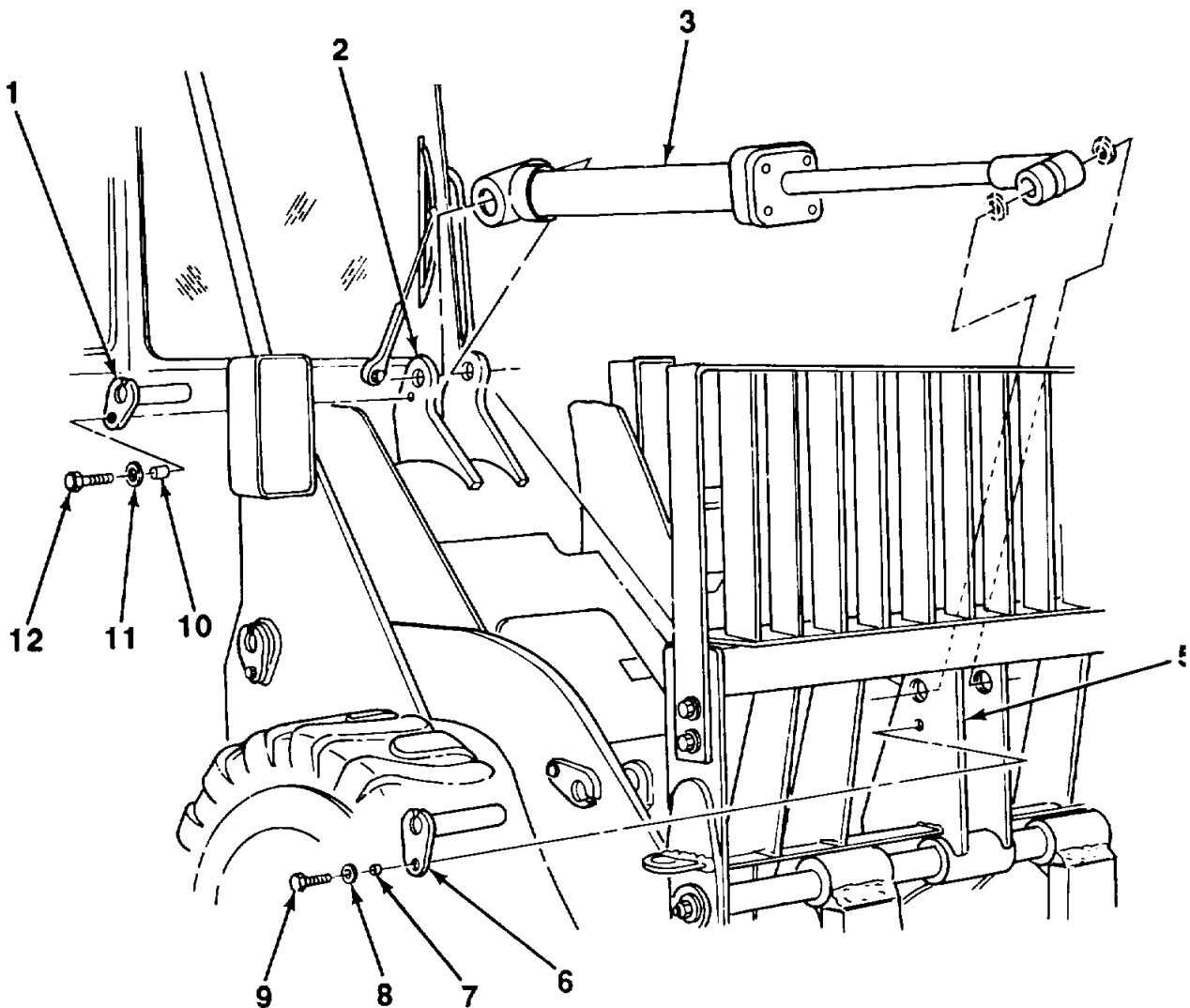
Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

NOTE

Quantity of spacers may vary. Note number and position of spacers to aid during installation.

4. Remove carriage tilt cylinder (3) and spacers (4) from loader frame (2) and carriage assembly (5).
5. Remove suitable lifting device from carriage tilt cylinder (3).

17-9. CARRIAGE TILT CYLINDER REPLACEMENT.



b. INSTALLATION

WARNING

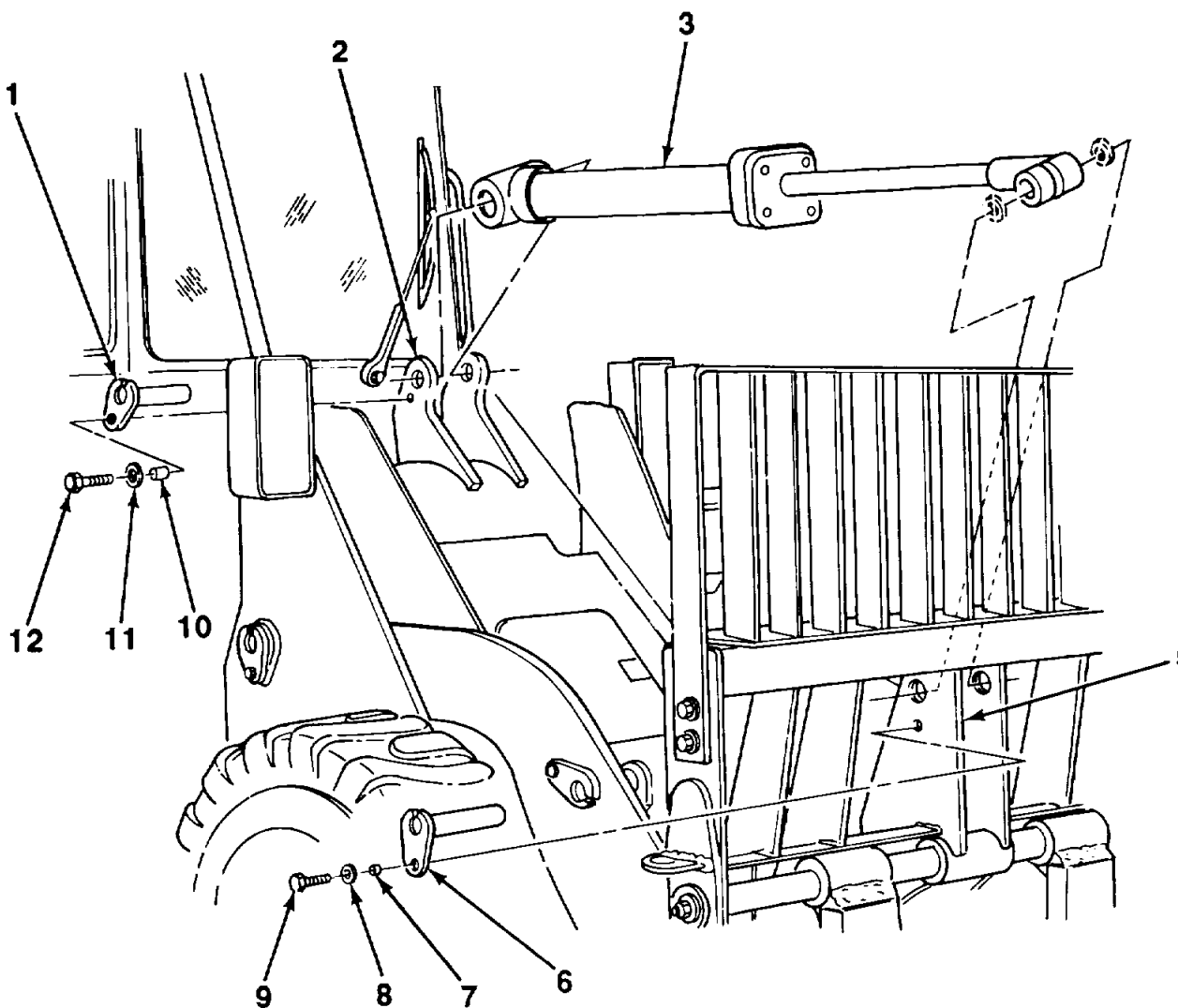
Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

1. Attach suitable lifting device to carriage tilt cylinder (3).
2. Position carriage tilt cylinder (3) and spacers (4), as noted during removal, on carriage assembly (5) and loader frame (2).
3. Apply a coat of grease to surface of two pins (1 and 6).

TA707633

17-9. CARRIAGE TILT CYLINDER REPLACEMENT (Con't).

4. Install pin (1) and spacer (10) on loader frame (2) with washer (11) and screw (12).
5. Install pin (6) and spacer (7) on carriage assembly (5) with washer (8) and screw (9).
6. Remove suitable lifting device from carriage tilt cylinder (3).

**FOLLOW-ON TASKS:**

- Install locking control valve (see paragraph 17-10).

TA707634

17-10. LOCKING CONTROL VALVE REPLACEMENT.*This Task Covers:*

- a. Removal
- b. Installation

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Carriage assembly lowered to ground (see TM 10-3930-659-10).
- Carriage tilt cylinder hoses, lines, and fittings removed (see paragraph 17-23).
- Carriage tilt cylinder lubrication hose and fittings removed (see paragraph 17-24).

Materials/Parts:

- One preformed packing

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL**NOTE**

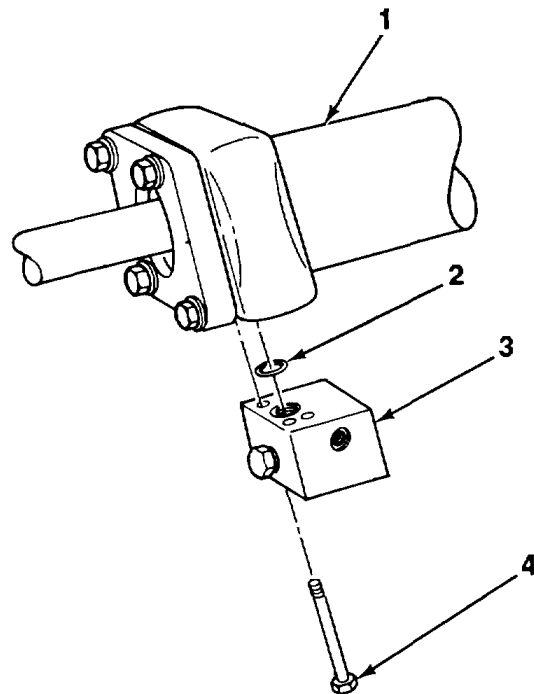
One mounting screw was removed when carriage tilt cylinder lubrication hose was removed.

Remove three screws (4), locking control valve (3), and preformed packing (2) from carriage tilt cylinder (1). Discard preformed packing.

b. INSTALLATION**NOTE**

Fourth mounting screw will be installed when carriage tilt cylinder lubrication hose is installed.

Install new preformed packing (2) and locking control valve (3) on carriage tilt cylinder (1) with three screws (4).

**FOLLOW-ON TASKS:**

- Install carriage tilt cylinder lubrication hose and fittings (see paragraph 17-24).
- Install carriage tilt cylinder hoses, lines, and fittings (see paragraph 17-23).

TA707635

17-11. CARRIAGE ASSEMBLY REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Equipment Conditions:

- Parking brake set (see TM 10-3930-659-10).
- Fork spacing chains removed (see paragraph 17-34). Required: Three
- Fork spacing cylinder removed (see paragraph 17-33).
- Forks removed (see paragraph 17-12).

Materials/Parts:

- Grease (Item 23, Appendix C)
- Five locknuts

Personnel Required Three

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

a. REMOVAL

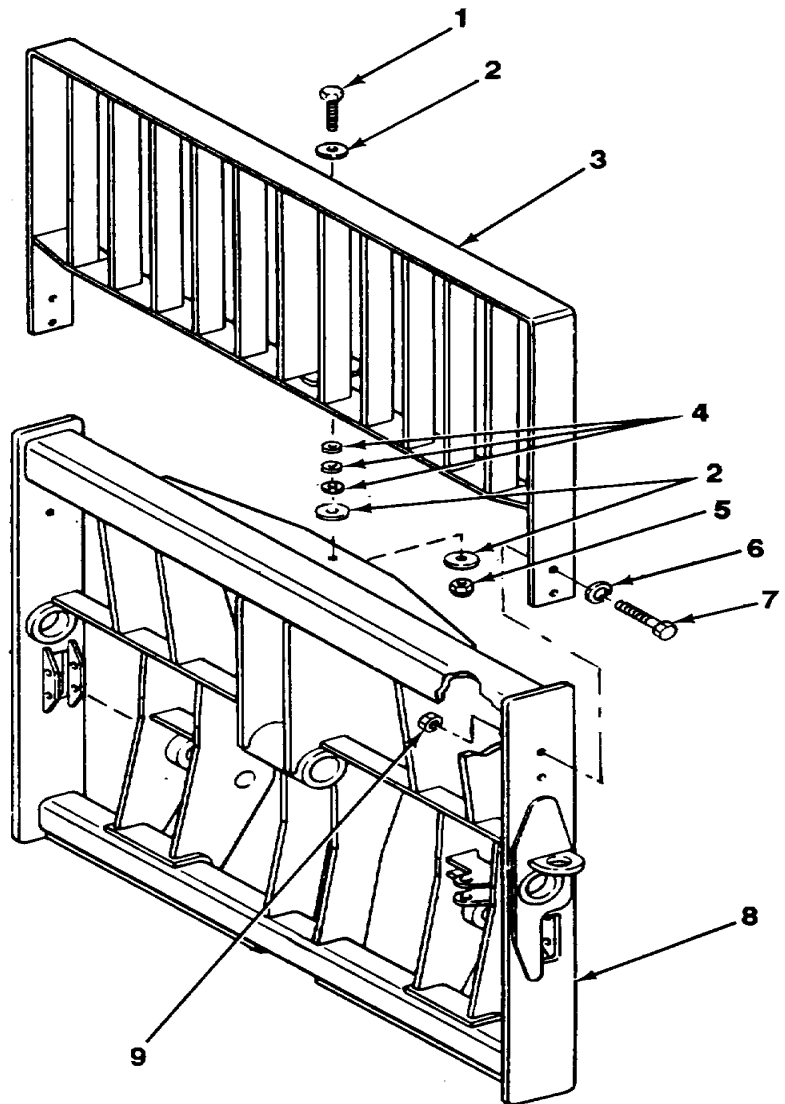
1. Remove locknut (5), three washers (2), screw (1), and three spacers (4) from backguard (3). Discard locknut.
2. Attach suitable lifting device to backguard (3) and raise lifting device enough to support weight of backguard.
3. Remove four locknuts (9), screws (7), washers (6), and backguard (3) from carriage (8). Discard locknuts.

17-11. CARRIAGE ASSEMBLY REPLACEMENT (Con't).

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

4. Remove lifting device from backguard (3).



TA707636

17-11. CARRIAGE ASSEMBLY REPLACEMENT (Con't).

5. Attach suitable lifting device to carriage tilt cylinder (15) and raise lifting device enough to support weight of carriage tilt cylinder.

NOTE

Quantity of spacers (14) may vary. Note number and position of spacers to aid during Installation.

6. Remove screw (10), washer (11), spacer (12), pin (13), carriage tilt cylinder (15), and spacers (14) from carriage (8). Lower and rest carriage tilt cylinder on wooden blocks. Remove lifting device from carriage tilt cylinder.
7. Attach suitable lifting device to carriage (8) and raise lifting device enough to support weight of carriage.

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

NOTE

Quantity of washers (16) may vary. Note number and position of washers to aid during Installation.

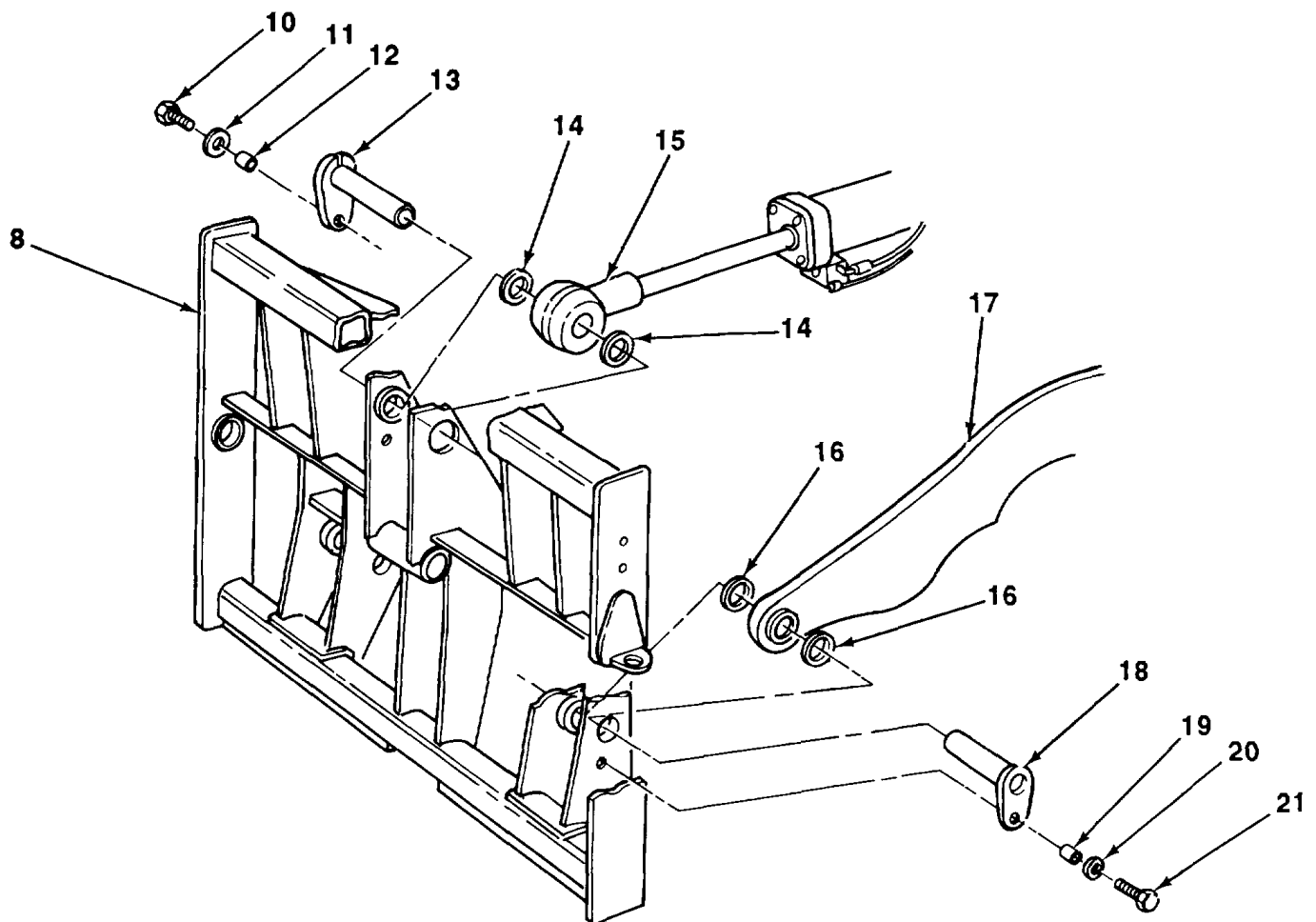
8. Remove two screws (21), washers (20), spacers (19), pins (18), washers (16), and carriage (8) from two fork/boom assemblies (17).
9. Remove lifting device from carriage (8).

b. INSTALLATION**WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

1. Attach suitable lifting device to carriage (8) and position carriage on two fork/boom assemblies (17).
2. Apply a coat of grease to surface of two pins (18).

17-11. CARRIAGE ASSEMBLY REPLACEMENT (Con't).



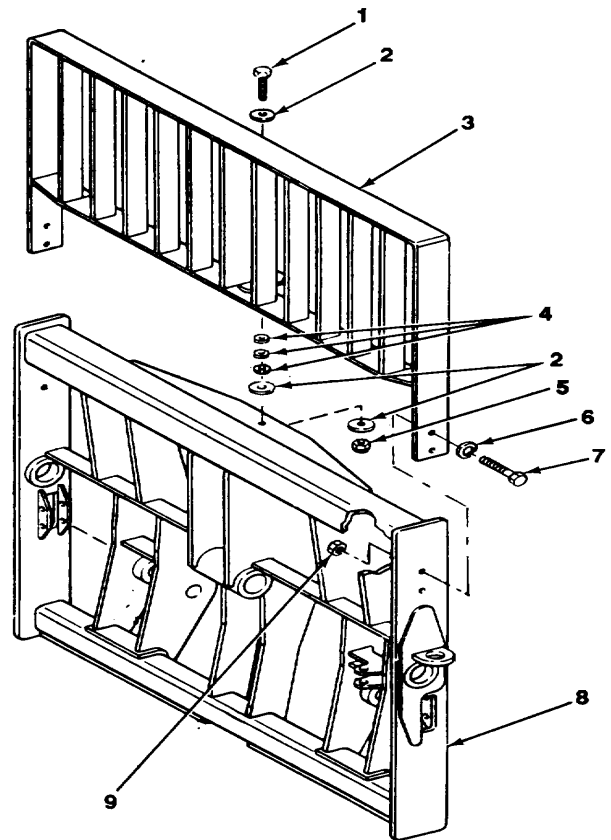
3. Position carriage (8) on two fork/boom assemblies (17) with washers (16), as noted during removal.
4. Install two pins (18), spacers (19), washers (20), and screws (21) on carriage (8). Remove lifting device from carriage.
5. Apply a coat of grease to surface of pin (13).
6. Attach suitable lifting device to carriage tilt cylinder (15) and position carriage tilt cylinder and spacers (14), as noted during removal, on carriage (8).
7. Install carriage tilt cylinder (15) on carriage (8) with pin (13), spacer (12), washer (11), and screw (10).
8. Remove wooden blocks supporting carriage tilt cylinder (15).
9. Remove lifting device from carriage tilt cylinder (15).

TA707637

17-11. CARRIAGE ASSEMBLY REPLACEMENT (Con't).**WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

10. Attach suitable lifting device to backguard (3) and position backguard on carriage (8).
11. Install backguard (3) on carriage (8) with four washers (6), screws (7), and new locknuts (9).
12. Remove lifting device from backguard (3).
13. Install three spacers (4), washers (2), screw (1), and new locknut (5) on backguard (3)

**FOLLOW-ON TASKS:**

- Install forks (see paragraph 17-12).
- Install fork spacing cylinder (see paragraph 17-33).

TA707638

17-12. FORKS REPLACEMENT.*This Task Covers:*

- a. Removal
- b. Installation

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Fork spacing chains removed (see paragraph 17-34).
- Carriage assembly raised (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

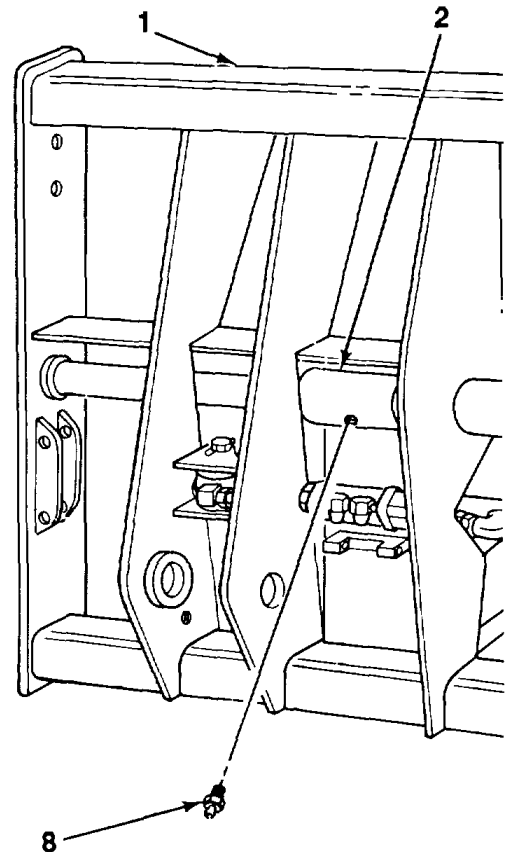
1. Position wooden blocks under carriage assembly (1).
2. Remove lubrication fitting (8) from left fork (2).

Materials/Parts:

- Grease (Item 23, Appendix C)
- Two locknuts
- Two springpins

Personnel Required: Three**References:**

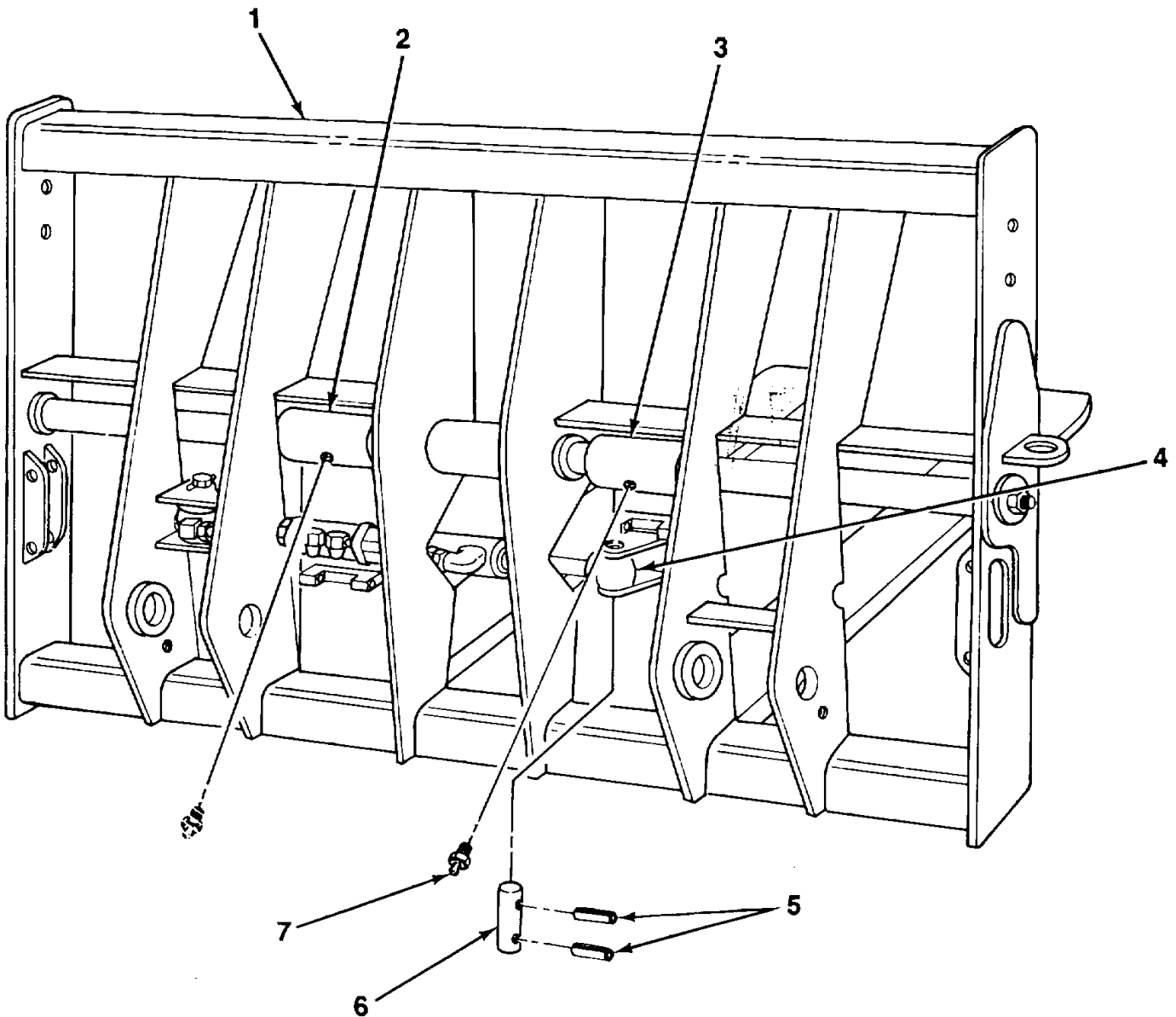
- TM 10-3930-659-10



TA707639

17-12. FORKS REPLACEMENT (Con't).

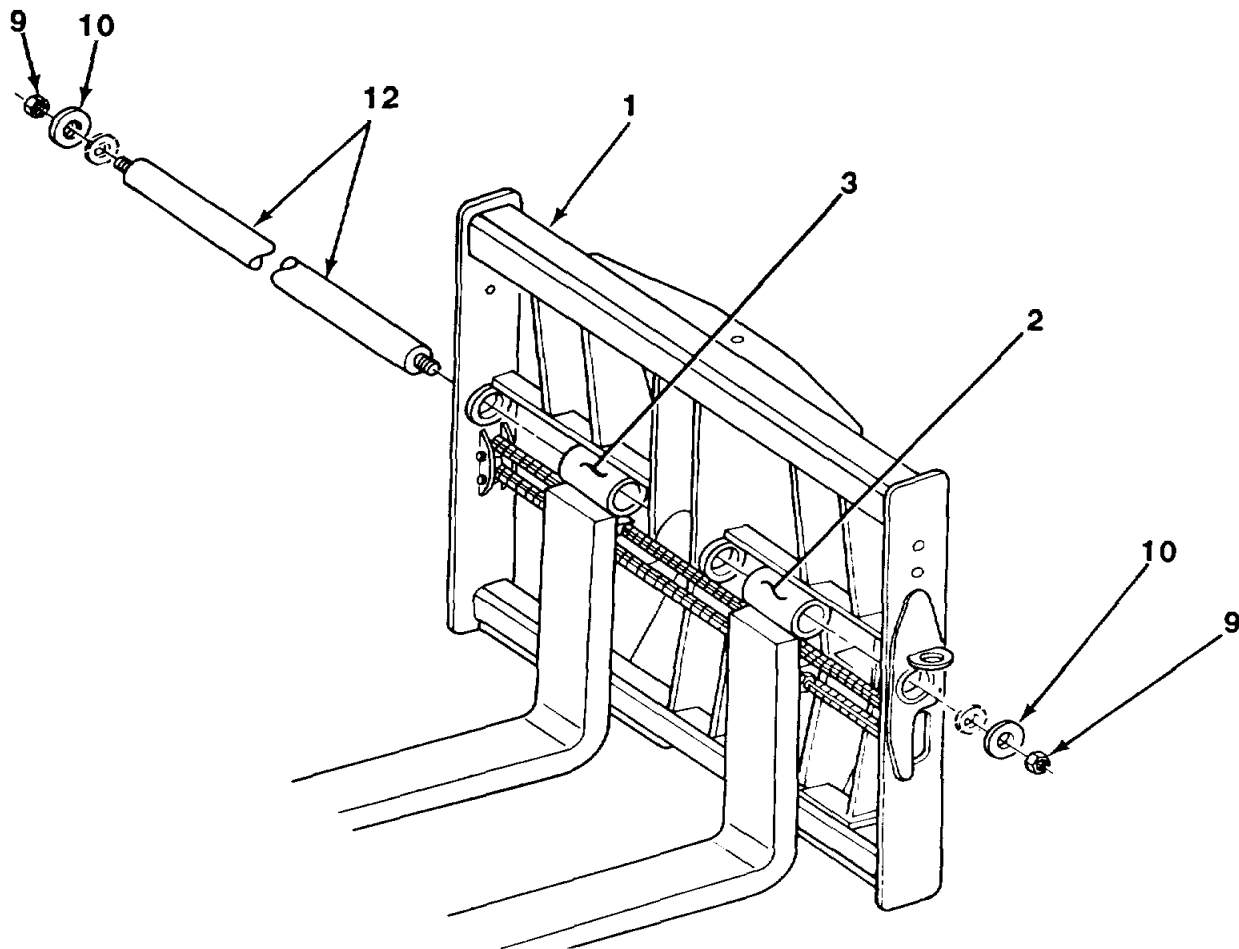
3. Remove lubrication fitting (7) from right fork (3).
4. Remove two springpins (5), pin (6), and fork spacing cylinder (4) from right fork (3). Discard springpins.



5. Remove two locknuts (9) and end caps (10) from bar (12). Discard locknuts.
6. Attach suitable lifting device to left fork (2) and raise enough to support weight of left fork.

TA707640

17-12. FORKS REPLACEMENT (Con't).

**WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

NOTE

Note position of left and right forks to aid during installation.

7. Remove bar (12) halfway from carriage assembly (1) to free left fork (2). Remove left fork from carriage assembly (1).
8. Remove lifting device from left fork (2).

TA707641

17-12. FORKS REPLACEMENT (Con't).

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

9. Remove bar (12) and two spacers (11) from carriage assembly (1).
10. Repeat steps 6 and 7 to remove right fork (3).

b. INSTALLATION**WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

NOTE

When both forks are installed, they should be approximately 15 in. (38 cm) apart.

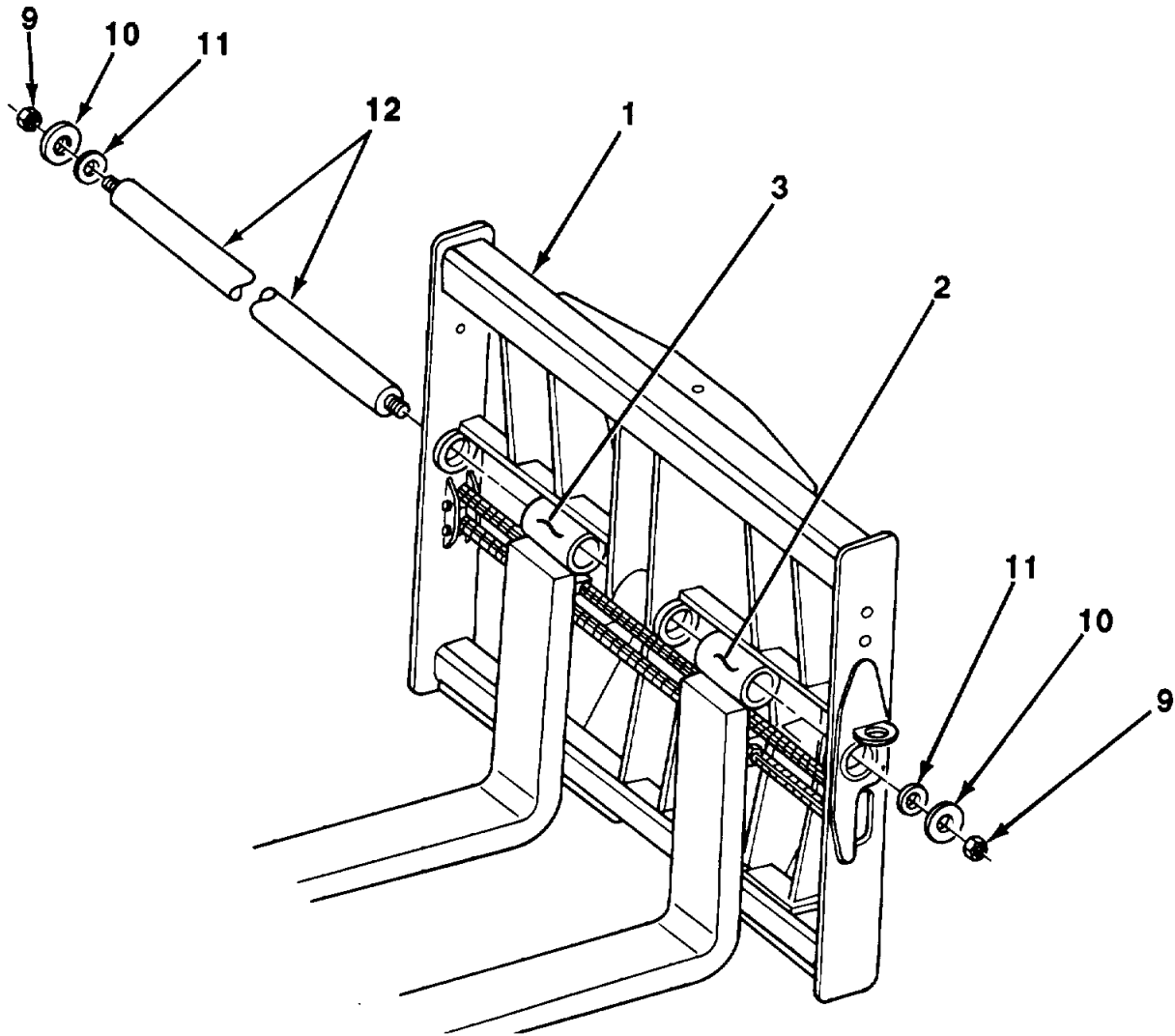
1. Attach suitable lifting device to right fork (3) and position fork on carriage assembly (1).
2. Remove lifting device from right fork (3) and apply a coat of grease to bore of fork.

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

3. Install bar (12) halfway through carriage assembly (1) to install right fork (3) on carriage assembly.
4. Remove lifting device from right fork (3).
5. Repeat steps 1 through 4 for left fork (2).
6. Install two spacers (11) and end caps (10) on bar (12) with two new locknuts (9).

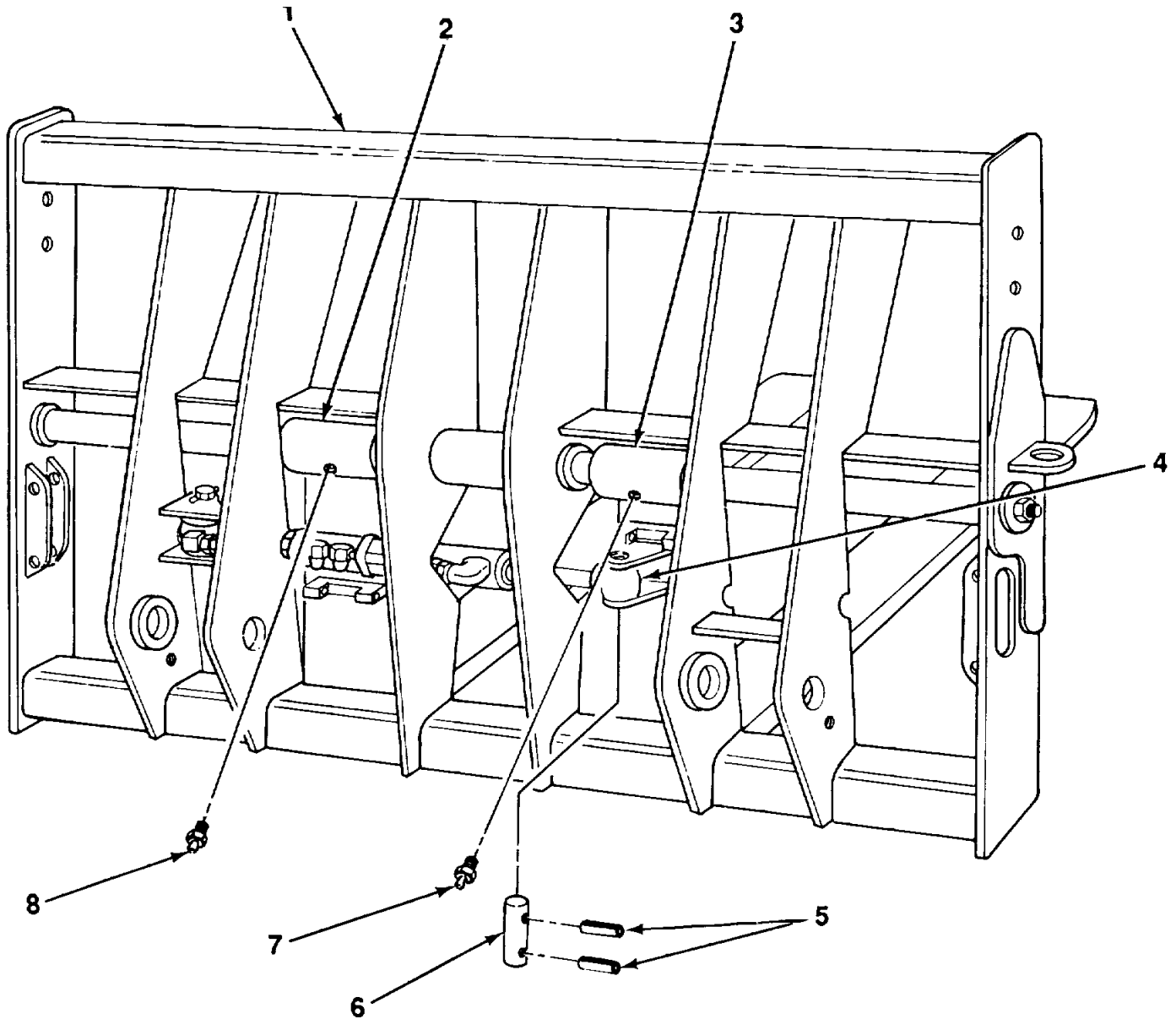
17-12. FORKS REPLACEMENT (Con't).



TA707642

17-12. FORKS REPLACEMENT (Con't).

7. Install fork spacing cylinder (4) on right fork (3) with pin (6) and two new springpins (5).
8. Install lubrication fitting (7) on right fork (3).
9. Install lubrication fitting (8) on left fork (2).
10. Remove wooden blocks from under carriage assembly (1).

**FOLLOW-ON TASKS:**

- Lower carriage assembly (see TM 10-3930-659-10).
- Install fork spacing chains (see paragraph 17-34).

TA707643

17-13. CONVEYORIZED FORK ATTACHMENTS MAINTENANCE.*This Task Covers:*

- | | |
|----------------------------|-----------------|
| a. Removal | d. Assembly |
| b. Disassembly | e. Installation |
| c. Cleaning and Inspection | |

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- On-board crane raised (see TM 10-3930-659-10).
- Two lockwashers

Materials/Parts:

- Rags (Item 27, Appendix C)
- Dry cleaning solvent (Item 31, Appendix C)

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Retaining ring pliers (Item 24, Appendix F)

Personnel Required: Two**General Safety Instructions:**

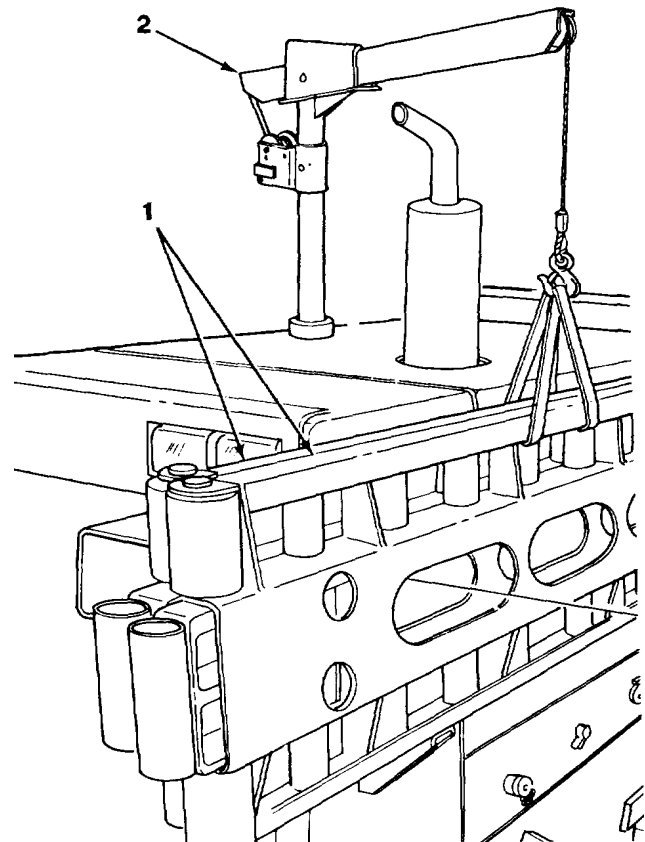
- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.

References:

- TM 10-3930-659-10

a. REMOVAL

1. Attach on-board crane (2) to two conveyORIZED fork attachments (1).
2. Raise on-board crane (2) enough to support weight of conveyORIZED fork attachments (1).

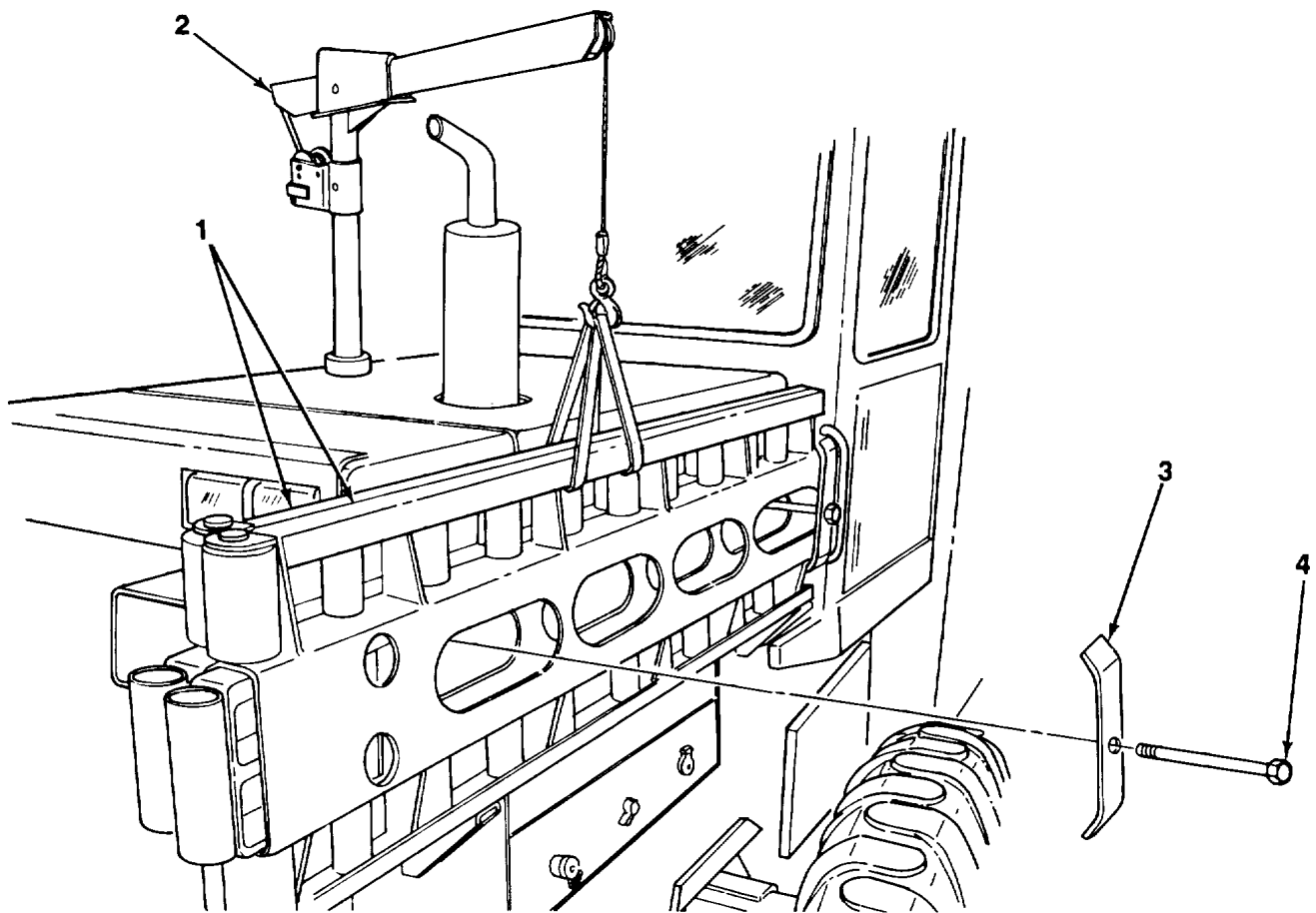


TA707644

17-13. CONVEYORIZED FORK ATTACHMENTS MAINTENANCE (Con't).**WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

3. Remove two screws (4), clamps (3), and conveyORIZED fork attachments (1) from side of forklift truck.
4. Using on-board crane (2), lower conveyORIZED fork attachments (1) to ground and remove on-board crane from conveyORIZED fork attachments (see TM 10-3930-659-10).



TA707645

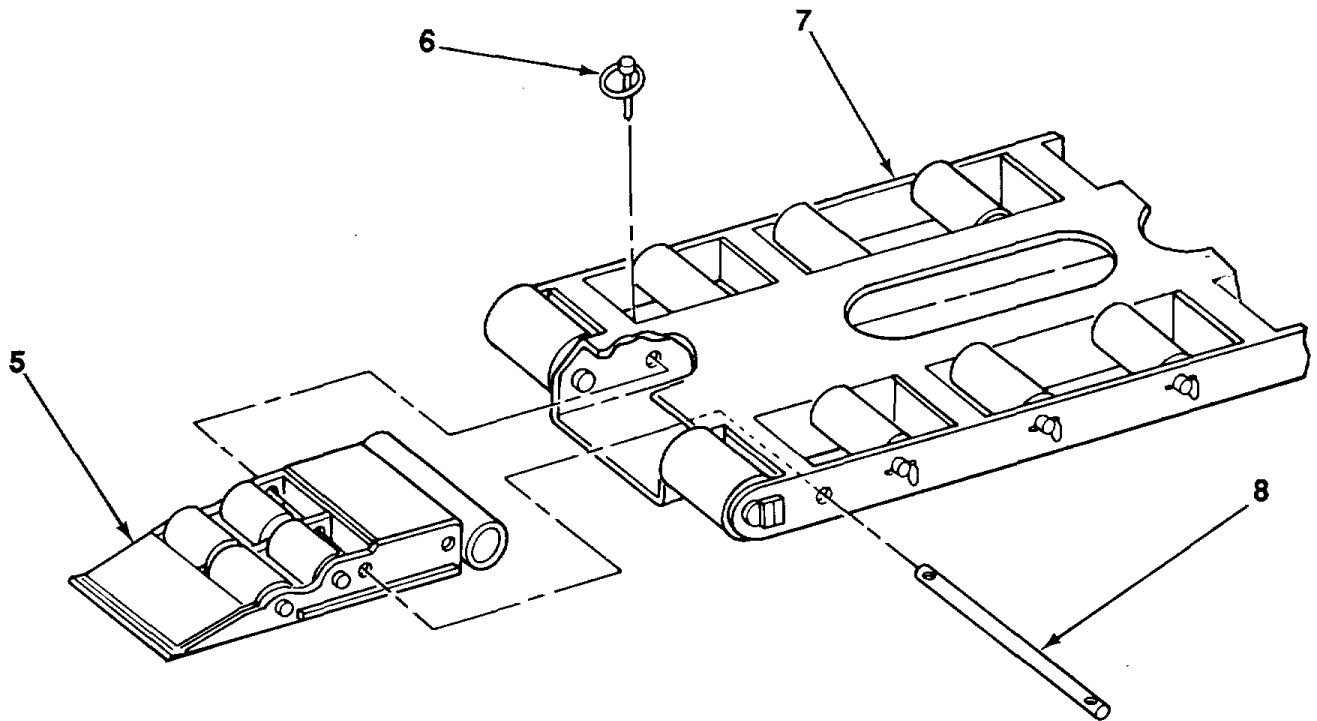
17-13. CONVEYORIZED FORK ATTACHMENTS MAINTENANCE (Con't).

b. DISASSEMBLY

NOTE

Both conveyORIZED fork attachments are disassembled the same way. One conveyORIZED fork attachment is illustrated.

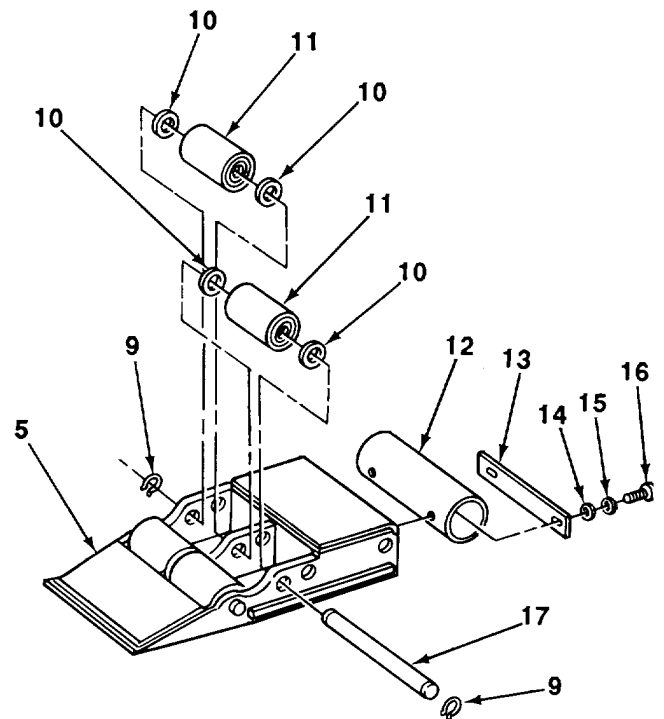
1. Remove two pins (6), pin (8), and conveyor tip (5) from conveyor frame (7).



TA707646

17-13. CONVEYORIZED FORK ATTACHMENTS MAINTENANCE (Con't).

2. Remove four retaining rings (9), two pins (17), four bearing units (11), and eight spacers (10) from conveyor tip (5).
3. Remove two screws (16), lockwashers (15), washers (14), mounting plate (13), and bumper (12) from conveyor tip (5). Discard lockwashers.



4. Remove two retaining rings (21), pins (18), bearing units (20), and four spacers (19) from conveyor frame (7).

NOTE

Perform step 5 to remove each of 20 bearing units.

5. Remove retaining ring (25), pin (22), bearing unit (24), and two spacers (23) from conveyor frame (7).

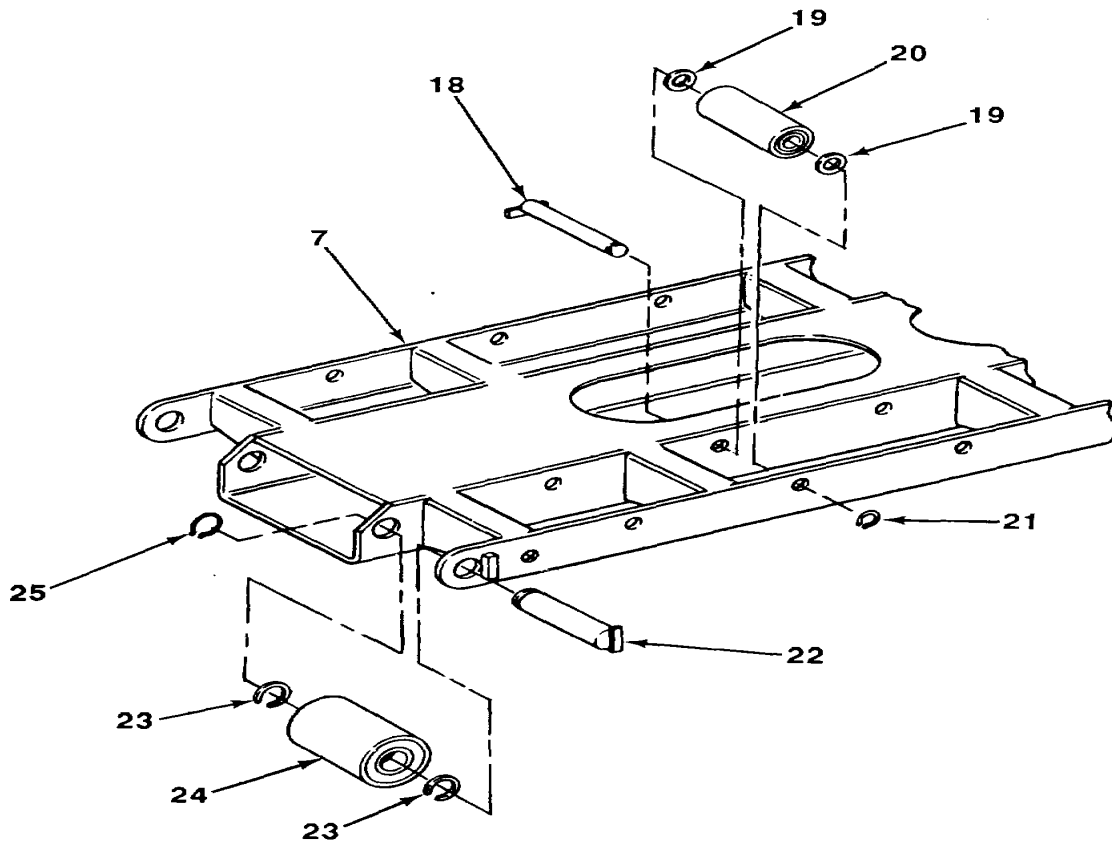
c. CLEANING AND INSPECTION**WARNING**

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean parts with dry cleaning solvent and dry with clean rags.
2. Inspect parts for cracks, wear, and damage. Replace cracked, worn, or damaged parts.

TA707647

17-13. CONVEYORIZED FORK ATTACHMENTS MAINTENANCE (Con't).



3. Inspect pins for bends. Replace bent pins.
4. Inspect conveyor frame for distortion. Replace conveyor frame if distorted.

d. ASSEMBLY**NOTE**

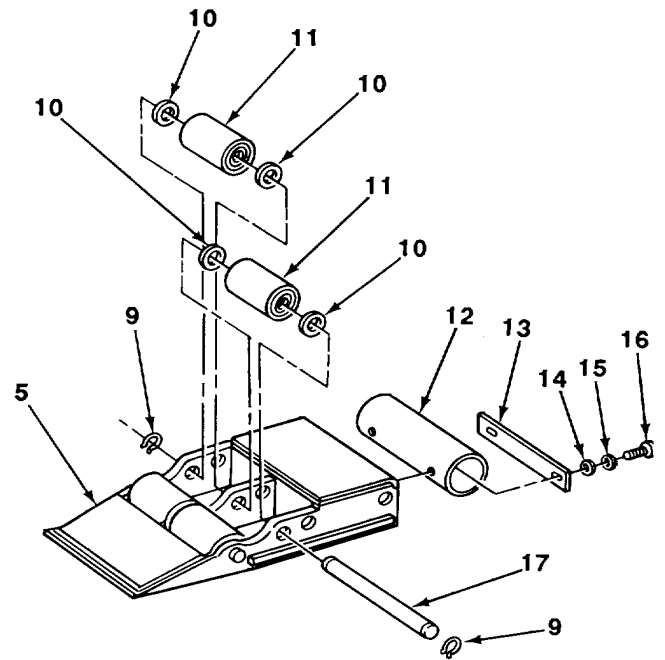
- Both conveyORIZED fork attachments are assembled the same way. One conveyORIZED fork attachment is illustrated.
- Perform step 1 to Install each of 20 bearing units.

1. Install bearing unit (24) and two spacers (23) on conveyor frame (7) with pin (22) and retaining ring (25).
2. Install two bearing units (20) and four spacers (19) on conveyor frame (7) with two pins (18) and retaining rings (21)

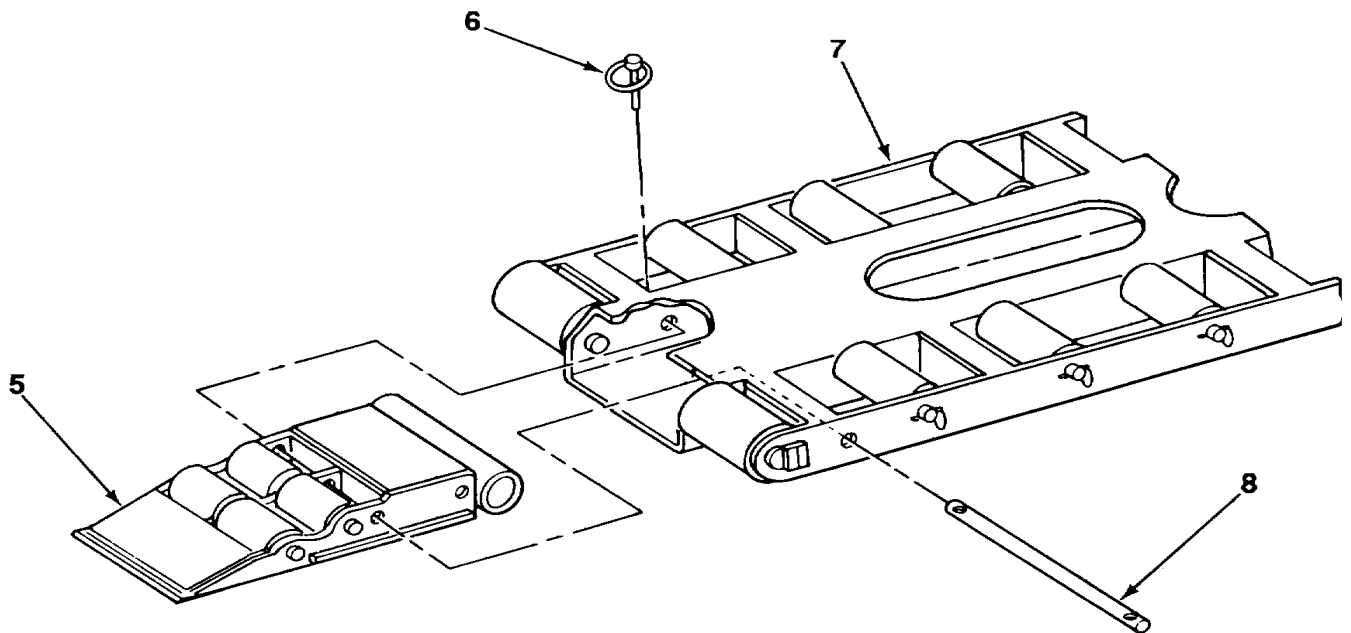
TA707648

17-13. CONVEYORIZED FORK ATTACHMENTS MAINTENANCE (Con't).

3. Install bumper (12) and mounting plate (13) on conveyor tip (5) with two washers (14), new lock washers (15), and screws (16).
4. Install four bearing units (11) and eight spacer (10) on conveyor tip (5) with two pins (17) and four retaining rings (9).



5. Install conveyor tip (5) on conveyor frame (7) with pin (8) and two pins (6).



TA707649

17-13. CONVEYORIZED FORK ATTACHMENTS MAINTENANCE (Con't).

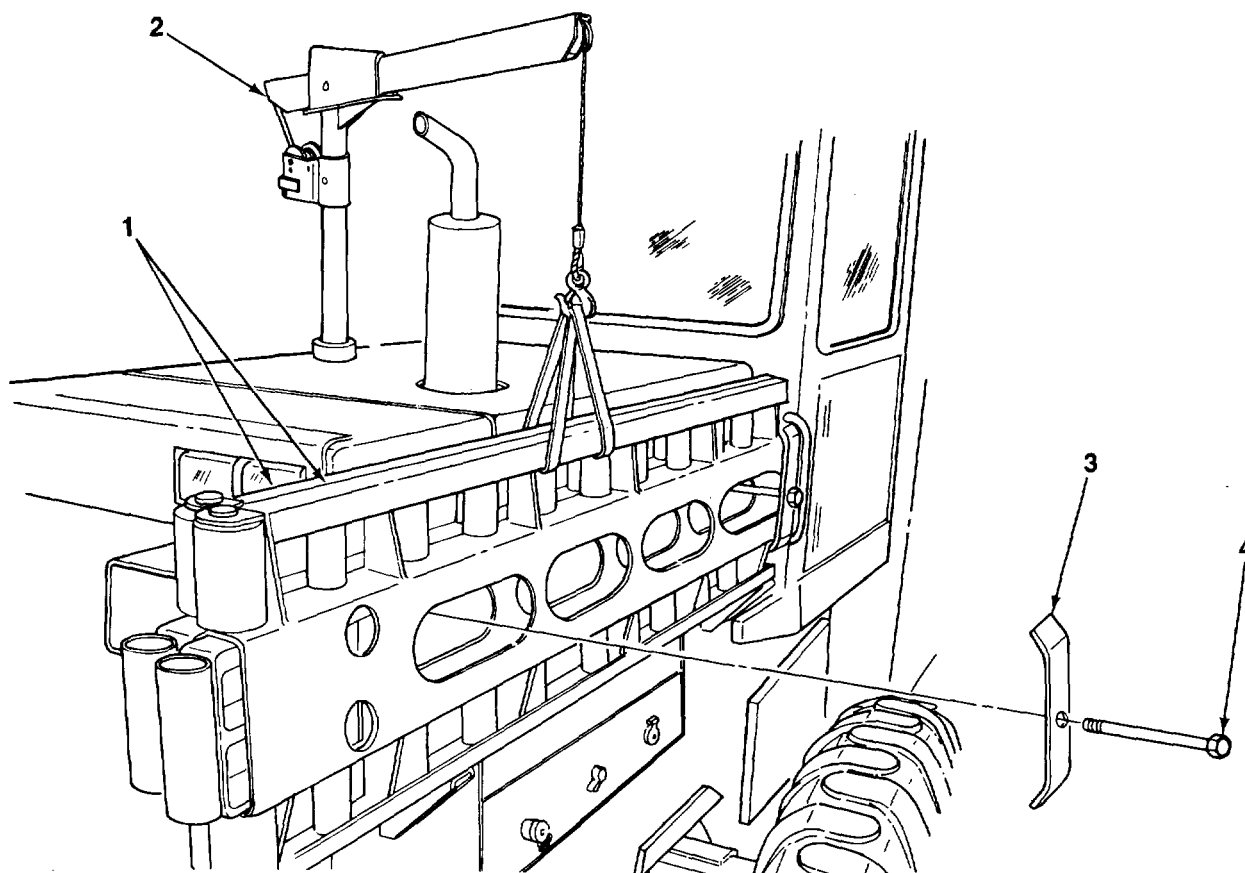
e. INSTALLATION

1. Attach on-board crane (2) to two conveyORIZED fork attachments (1).

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

2. Using on-board crane (2), raise conveyORIZED fork attachments (1) (see TM 10-3930-659-10) and position conveyORIZED fork attachments on forklift truck.
3. Install two clamps (3) and screws (4) on conveyORIZED fork attachments (1) and forklift truck.
4. Remove on-board crane (2) from conveyORIZED fork attachments (1).

**FOLLOW-ON TASKS:**

- Lower on-board crane (see TM 10-3930-659-10).

17-14. FORK/BRAKE HYDRAULIC PUMP OUTLET-TO-FORKLIFT CONTROL VALVE HOSE REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-
- Right side cab skirt removed (see paragraph 14-6).
- Right transmission side guard removed (see paragraph 14-7).
- Accumulator-to-fork/brake hydraulic pump hose and fittings removed (see paragraph 10-15).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Seven preformed packings

Tools/Test Equipment

- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

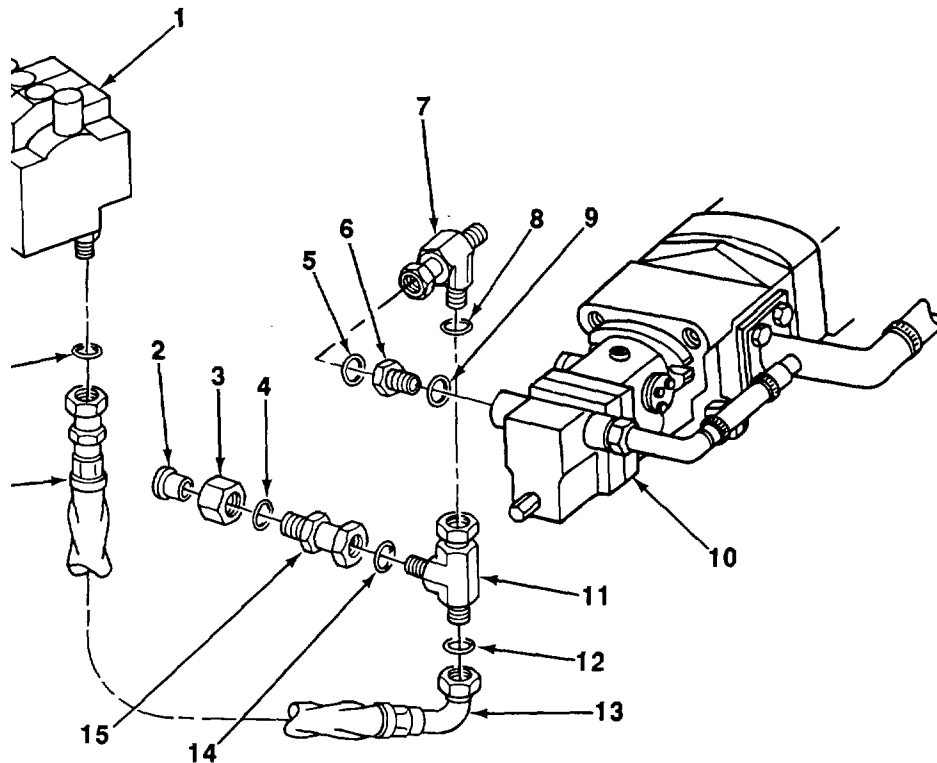
a. REMOVAL

1. Remove hose (13) and preformed packing (16) from forklift control valve (1).Discard preformed packing.
2. Remove hose (13) and preformed packing (12) from tee (11).Discard preformed packing.
3. Remove tube nut (3), reducer (2), preformed packing (4), fitting (15), and preformed packing (14) from tee (11). Discard preformed packings.
4. Remove tee (11) and preformed packing (8) from tee (7).Discard preformed packing.
5. Remove tee (7) and preformed packing (5) from reducer bushing (6).Discard preformed packing.
6. Remove reducer bushing (6) and preformed packing (9) from fork/brake hydraulic pump (10).Discard preformed packing.

b. INSTALLATION

1. Install new preformed packing (9) and reducer bushing (6) on fork/brake hydraulic pump (10).
2. Install new preformed packing (5) and tee (7) on reducer bushing (6).
3. Install new preformed packing (8) and tee (11) on tee (7).
4. Install new preformed packing (14), fitting (15), preformed packing (4), tube nut (3), and reducer (2) on tee (11).

17-14. FORK/BRAKE HYDRAULIC PUMP OUTLET-TO-FORKLIFT CONTROL VALVE HOSE REPLACEMENT (Con't).



5. Install new preformed packing (12) and hose (13) on tee (11).
6. Install new preformed packing (16) and hose (13) on forklift control valve (1).

FOLLOW-ON TASKS:

- Install accumulator-to-fork/brake hydraulic pump hose and fittings (see paragraph 10-15).
- Install right transmission side guard (see paragraph 14-7).
- Install right side cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

17-15. FORK/BRAKE HYDRAULIC PUMP DRAIN-TO-HYDRAULIC RESERVOIR HOSE REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-12).
- Hydraulic reservoir drained(see LO 10-3930-659-12).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).
- Right side cab skirt removed (see paragraph 14-6).
- Right transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Four preformed packings

Tools/Test Equipment

- General mechanic's tool kit (Item 44, Appendix F)

References:

- LO 10-3930-659-12
- TM 10-3930-659-10

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

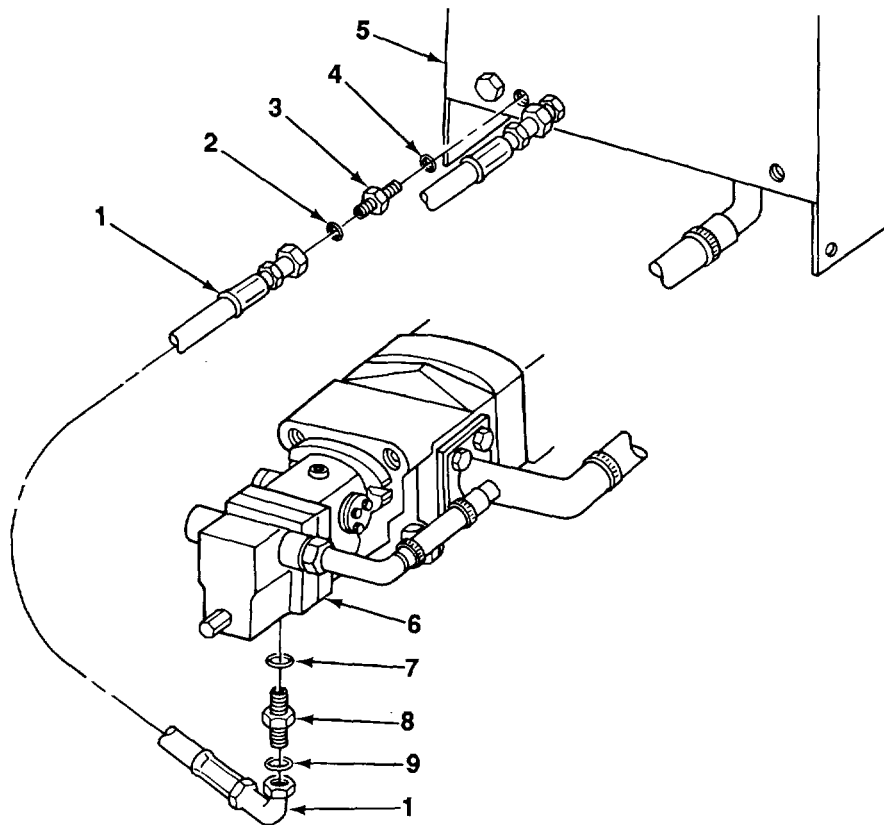
a. REMOVAL

1. Remove hose (1) and preformed packing (9) from adapter (8).Discard preformed packing.
2. Remove adapter (8) and preformed packing (7) from fork/brake hydraulic pump (6).Discard preformed packing.
3. Remove hose (1) and preformed packing (2) from adapter (3).Discard preformed packing.
4. Remove adapter (3) and preformed packing (4) from hydraulic reservoir (5).Discard preformed packing.

b. INSTALLATION

1. Install new preformed packing (4) and adapter (3) on hydraulic reservoir (5).
2. Install new preformed packing (2) and hose (1) on adapter (3).
3. Install new preformed packing (7) and adapter (8) on fork/brake hydraulic pump (6).
4. Install new preformed packing (9) and hose (1) on adapter (8).

17-15. FORK/BRAKE HYDRAULIC PUMP DRAIN-TO-HYDRAULIC RESERVOIR HOSE REPLACEMENT (Con't).

**FOLLOW-ON TASKS:**

- Fill hydraulic reservoir with hydraulic fluid (see TM 10-3930-659-10).
- Install right transmission side guard (see paragraph 14-7).
- Install right side cab skirt (see paragraph 14-6).
- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments to side of forklift truck (see paragraph 17-13).
- Remove frame locking bar (see TM 10-3930-659-10).

17-16. MAIN HYDRAULIC PUMP-TO-FORK/BRAKE HYDRAULIC PUMP HOSE REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-10).
- Hydraulic reservoir drained(see LO 10-3930 659-12).
- Left transmission side guard removed (see paragraph 14-7).

Materials/Parts:

- Rags (Item 27, Appendix C)

References:

- LO 10-3930-659-12
- TM 10-3930-659-10

Tools/Test Equipment:

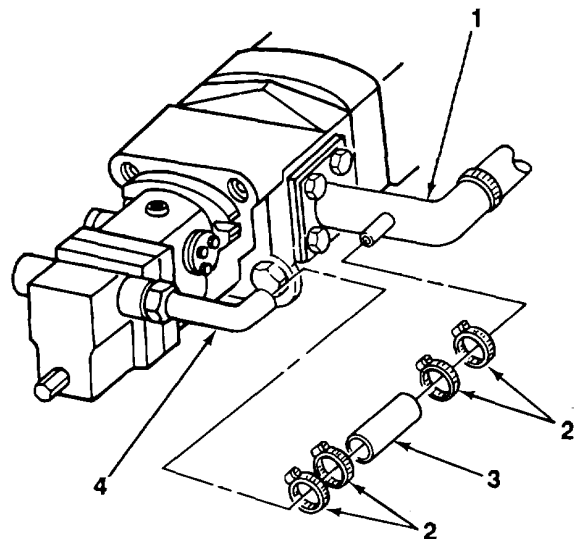
- General mechanic's tool kit (Item 44, Appendix F)
- Adjustable wrench (Item 49, Appendix F)

NOTE

**A suitable container should be used to catch any draining hydraulic fluid.
Ensure that all spills are properly cleaned.**

a. REMOVAL

Loosen four hose clamps (2), and remove hose (3) and clamps from main hydraulic pump line (1) and elbow (4).



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17-16. MAIN HYDRAULIC PUMP-TO-FORK/BRAKE HYDRAULIC PUMP HOSE REPLACEMENT.

b. INSTALLATION

Position hose (3) and four clamps (2) on main hydraulic pump line (1) and elbow (4). Tighten clamps.

FOLLOW-ON TASKS:

- Fill hydraulic reservoir with hydraulic fluid (see TM 10-3930-659-10).
- Install left transmission side guard (see paragraph 14-7).
- Remove frame locking bar (see TM 10-3930-659-10).

17-17. FORK/BRAKE HYDRAULIC PUMP-TO-HYDRAULIC RESERVOIR HOSE REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Hydraulic reservoir drained(see LO 10-3930-659-12).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Four preformed packings

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References

- LO 10-3930-659-12
 - TM 10-3930-659-10
-

NOTE

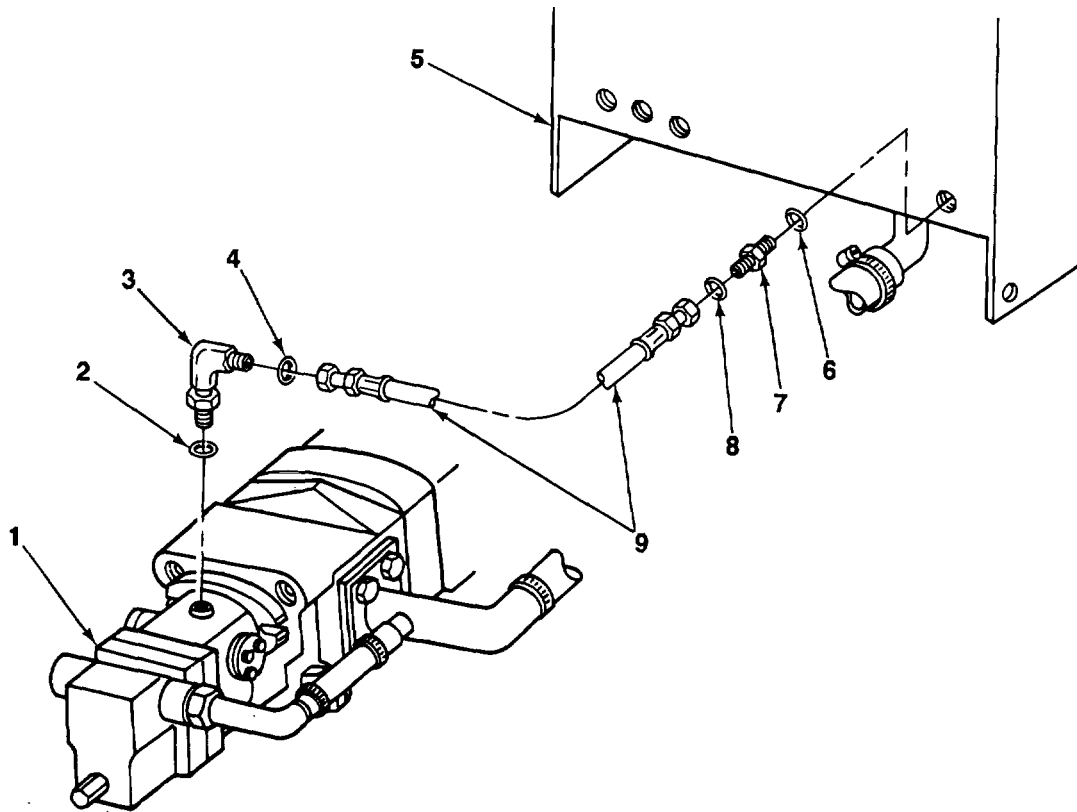
A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

1. Remove hose (9) and preformed packing (4) from elbow (3).Discard preformed packing.
2. Remove elbow (3) and preformed packing (2) from fork/brake hydraulic pump (1).Discard preformed packing.
3. Remove hose (9) and preformed packing (8) from adapter (7).Discard preformed packing.
4. Remove adapter (7) and preformed packing (6) from hydraulic reservoir (5).Discard preformed packing.

b. INSTALLATION

1. Install new performed packing (6) and adapter (7) on hydraulic reservoir (5).
2. Install new preformed packing (8) and hose (9) on adapter (7).
3. Install new preformed packing (2) and elbow (3) on fork/brake hydraulic pump (1).
4. Install new preformed packing (4) and hose (9) on elbow (3).

17-17. FORK/BRAKE HYDRAULIC PUMP-TO-HYDRAULIC RESERVOIR HOSE REPLACEMENT (Con't).**FOLLOW-ON TASKS:**

- Fill hydraulic reservoir with hydraulic fluid (see TM 10-3930-659-10).
- Install left side cab skirt (see paragraph 14-6).
- Close left engine upper sideshield (see TM 10-3930-659-10).
- Remove frame locking bar (see TM 10-3930-659-10).

17-18. HYDRAULIC RESERVOIR-TO-MAIN HYDRAULIC PUMP LINE REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Hydraulic reservoir drained(see LO 10-3930-659-12).
- Left engine upper sideshield opened (see TM 10-3930-659-10)
- Left transmission side guard removed (see paragraph 14-7).
- Left side cab skirt removed (see paragraph 14-6).

Materials/Parts:

- Rags (Item 27, Appendix C)
- One preformed packing

Tools/Test Equipment:

- General mechanic's tool kit (item 44, Appendix F)

References:

- LO 10-3930-659-12
- TM 10-3930-659-10

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

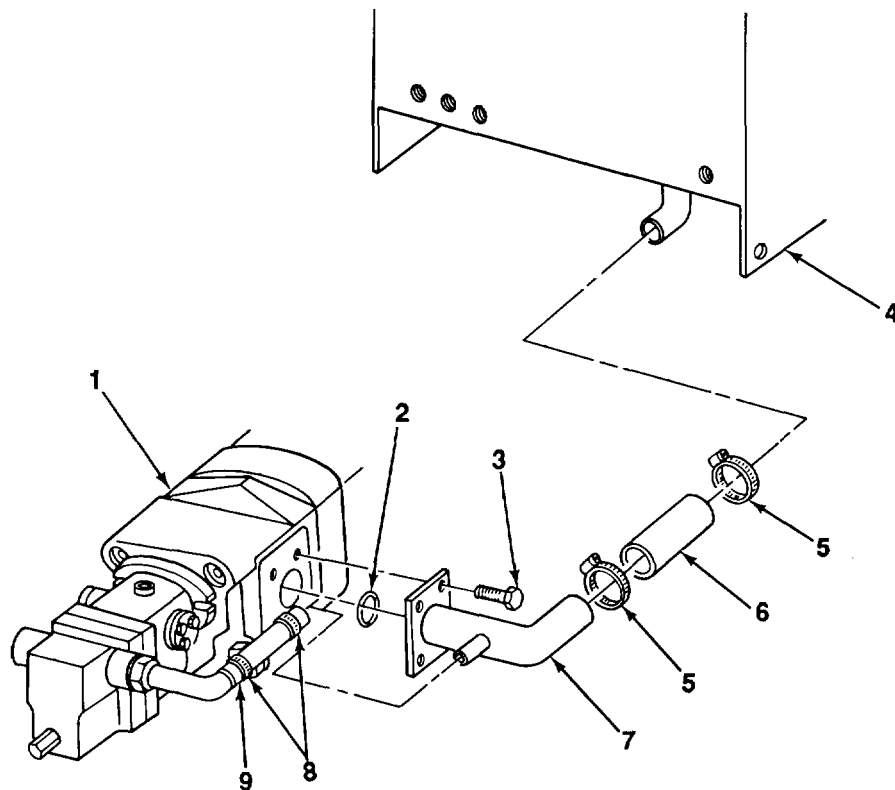
a. REMOVAL

1. Loosen two clamps (5), and remove hose (6) and clamps from hydraulic reservoir (4) and main hydraulic pump line (7).
2. Loosen two clamps (8).
3. Remove four screws (3), main hydraulic pump line (7), and preformed packing (2) from main hydraulic pump (1) and hose (9).Discard preformed packing.

b. INSTALLATION

1. Install new preformed packing (2) and main hydraulic pump line (7) on hose (9) and main hydraulic pump (1) with four screws (3).
2. Tighten two clamps (8).
3. Position hose (6) and two clamps (5) on main hydraulic pump line (7) and hydraulic reservoir (4).Tighten clamps.

17-18. HYDRAULIC RESERVOIR-TO-MAIN HYDRAULIC PUMP LINE REPLACEMENT (Con't).

**FOLLOW-ON TASKS:**

- Fill hydraulic reservoir with hydraulic fluid (see TM 10-3930-659-10).
- Install left side cab skirt (see paragraph 14-6).
- Install left transmission side guard (see paragraph 14-7).
- Close left engine upper sideshield (see TM 10-3930-659-10).
- Remove frame locking bar (see TM 10-3930-659-10).

17-19. FORKLIFT CONTROL VALVE-TO-PLATE HOSES REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-
- Transmission side guards removed(see para-graph 14-7).
- Right side cab skirt removed (see paragraph 14-6).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Eighteen preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

NOTE

• **Six forklift control valve-to-plate hoses and fittings are removed and Installed the same way, except only two hoses have elbows. One forklift control valve-to-plate hose and fittings is illustrated.**

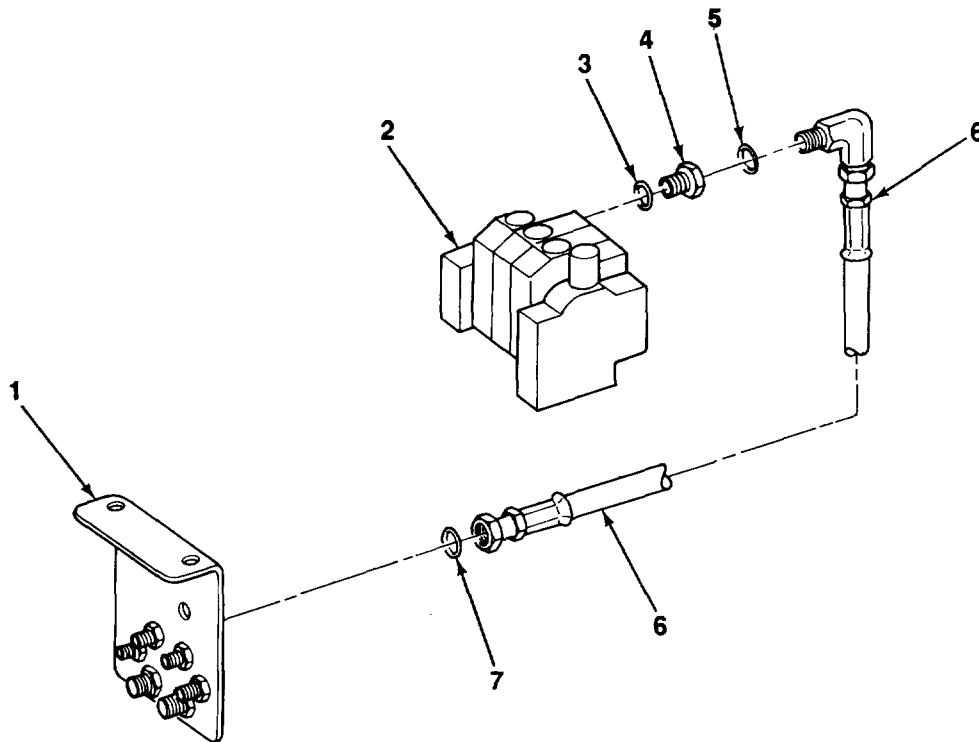
• **A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.**

a. REMOVAL

1. Remove hose (6) and preformed packing (5) from adapter (4).Discard preformed packing.
2. Remove adapter (4) and preformed packing (3) from forklift control valve (2).Discard preformed packing.
3. Remove hose (6) and preformed packing (7) from plate (1).Discard preformed packing.
4. Repeat steps 1 through 3 for other five hoses (6).

b. INSTALLATION

1. Install new preformed packing (3) and adapter (4) on forklift control valve (2).
2. Install new preformed packing (7) and hose (6) on plate (1).
3. Install new preformed packing (5) and hose (6) on adapter (4)
4. Repeat steps 1 through 3 for other five hoses (6).

17-19. FORKLIFT CONTROL VALVE-TO-PLATE HOSES REPLACEMENT (Con't).**FOLLOW-ON TASKS:**

- Install transmission side guards (see paragraph 14-7).
- Install right side cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

17-20. FORKLIFT CONTROL VALVE-TO-TRANSMISSION CLUTCH CUTOFF VALVE HOSE REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-
- Right side cab skirt removed (see paragraph 14-6).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Four preformed packings

References:**Tools/Test Equipment:**

- General mechanic's tool kit (Item 44, Appendix F)
-

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

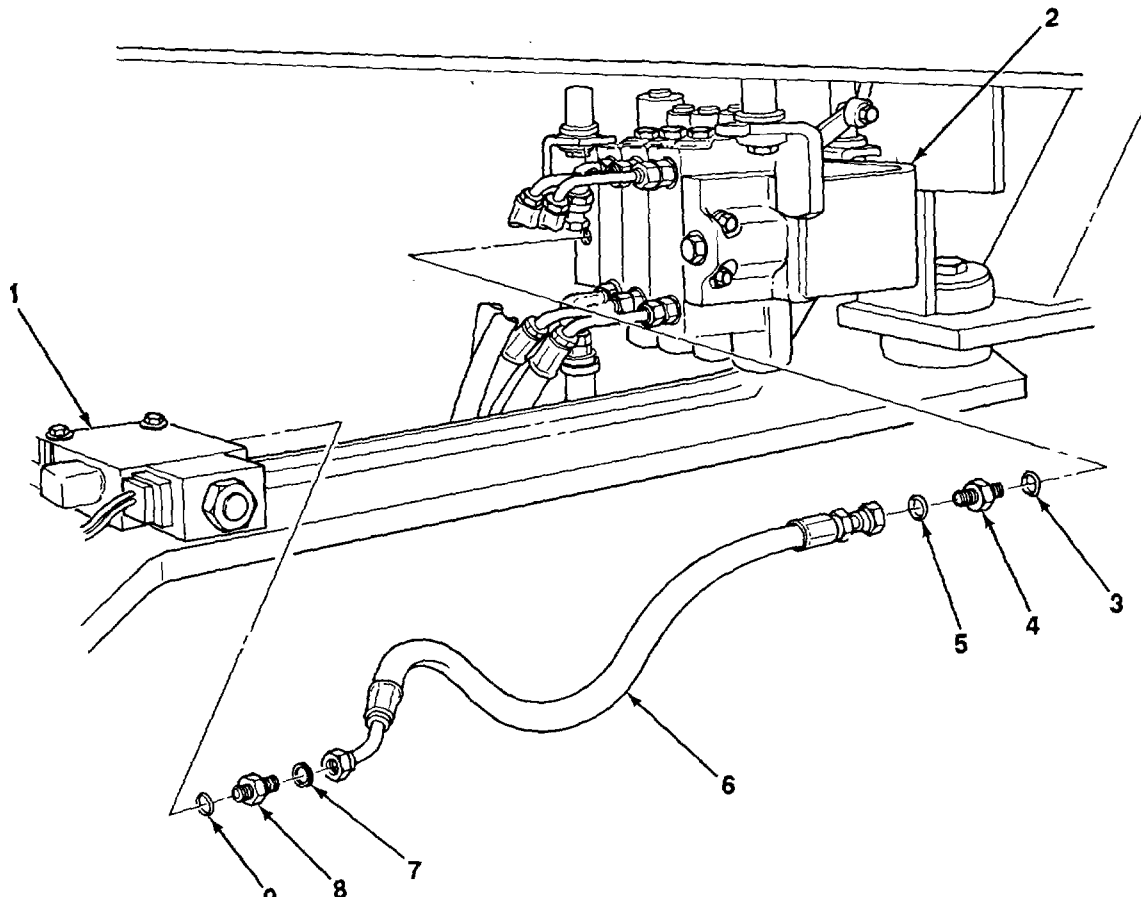
a. REMOVAL

1. Remove hose (6) and preformed packing (5) from adapter (4). Discard preformed packing.
2. Remove adapter (4) and preformed packing (3) from forklift control valve (2). Discard preformed packing.
3. Remove hose (6) and preformed packing (7) from adapter (8). Discard preformed packing.
4. Remove adapter (8) and preformed packing (9) from transmission clutch cutoff valve (1). Discard preformed packing.

b. INSTALLATION

1. Install new preformed packing (9) and adapter (8) on transmission clutch cutoff valve (1).
2. Install new preformed packing (7) and hose (6) on adapter (8).
3. Install new preformed packing (3) and adapter (4) on forklift control valve (2).
4. Install new preformed packing (5) and hose (6) on adapter (4).

17-20. FORKLIFT CONTROL VALVE-TO-TRANSMISSION CLUTCH CUTOFF VALVE HOSE REPLACEMENT
(Con't).



FOLLOW-ON TASKS:

- Install right side cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

17-21. TRANSMISSION CLUTCH CUT OFF VALVE-TO-TRANSMISSION CONTROL VALVE- HOSE REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930-659-10).
- Right transmission side guard removed (see paragraph 14-7).
- Right side cab skirt removed (see paragraph 14-6).

Materials/Parts:

- Four preformed packings

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

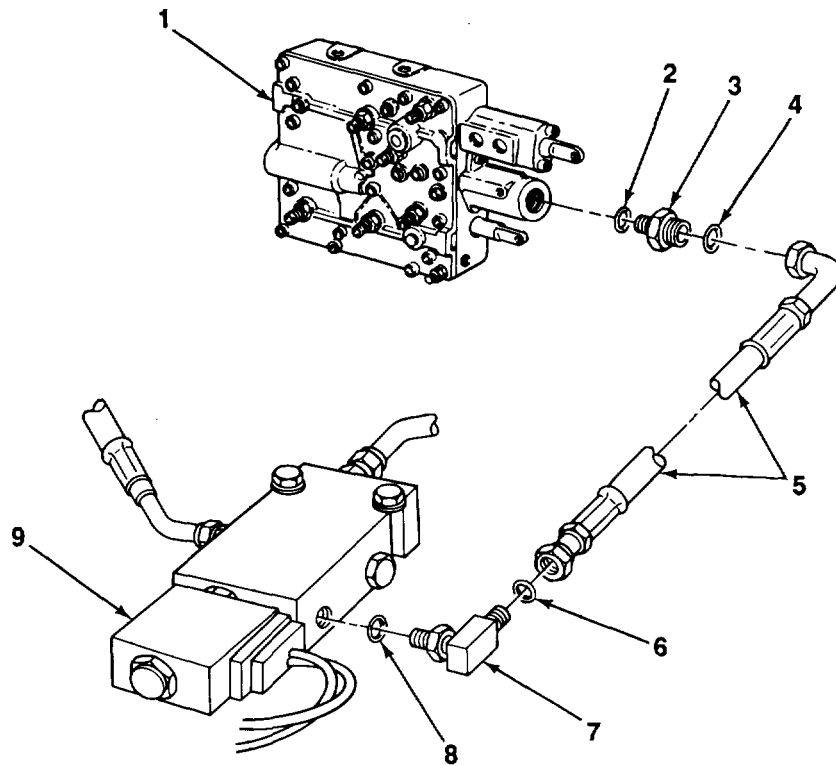
- TM 10-3930-659-10
-

a. REMOVAL

1. Remove hose (5) and preformed packing (6) from elbow (7).Discard preformed packing.
2. Remove elbow (7) and preformed packing (8) from transmission clutch cutoff valve (9).Discard preformed packing.
3. Remove hose (5) and preformed packing (4) from check valve (3).Discard preformed packing.
4. Remove check valve (3) and preformed packing (2) from transmission control valve (1).Discard preformed packing.

b. INSTALLATION

1. Install new preformed packing (2) and check valve (3) on transmission control valve (1).
2. Install new preformed packing (4) and hose (5) on check valve (3).
3. Install new preformed packing (8) and elbow (7) on transmission clutch cutoff valve (9).
4. Install new preformed packing (6) and hose (5) on elbow (7).

**17-21. TRANSMISSION CLUTCH CUTOFF VALVE-TO-TRANSMISSION CONTROL VALVE- HOSE REPLACEMENT
(Con't).****FOLLOW-ON TASKS:**

- Install right side cab skirt (see paragraph 14-6).
- Install right transmission side guard (see paragraph 14-7).
- Remove frame locking bar (see TM 10-3930-659-10).

17-22. TRANSMISSION CLUTCH CUTOFF VALVE-TO-HYDRAULIC RESERVOIR HOSE REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed(see TM 10-3930-659-12).
- Hydraulic reservoir drained(see LO 10-3930-659-12).
- Right side cab skirt removed (see paragraph 14-6).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Four preformed packings

References:

- LO 10-3930-659-12
- TM 10-3930659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

NOTE

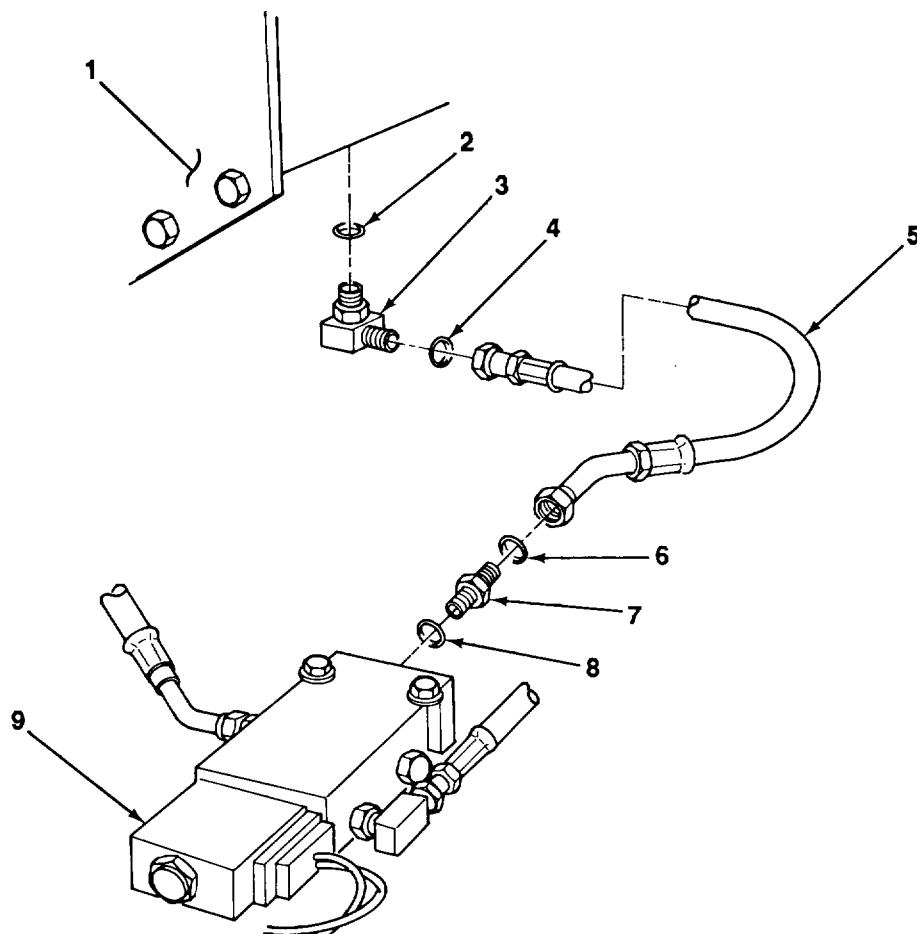
A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

1. Remove hose (5) and preformed packing (6) from adapter (7).Discard preformed packing.
2. Remove adapter (7) and preformed packing (8) from transmission clutch cutoff valve (9).Discard preformed packing.
3. Remove hose (5) and preformed packing (4) from elbow (3).Discard preformed packing.
4. Remove elbow (3) and preformed packing (2) from hydraulic reservoir (1).Discard preformed packing.

b. INSTALLATION

1. Install new preformed packing (2) and elbow (3) on hydraulic reservoir (1).
2. Install new preformed packing (4) and hose (5) on elbow (3).
3. Install new preformed packing (8) and adapter (7) on transmission clutch cutoff valve (9).
4. Install new preformed packing (6) and hose (5) on adapter (7).

17-22. TRANSMISSION CLUTCH CUTOFF VALVE-TO-HYDRAULIC RESERVOIR HOSE REPLACEMENT (Con't).**FOLLOW-ON TASKS:**

- Fill hydraulic reservoir with hydraulic fluid (see TM 10-3930-659-10).
- Install right side cab skirt (see paragraph 14-6).
- Remove frame locking bar (see TM 10-3930-659-10).

17-23. CARRIAGE TILT CYLINDER HOSES AND LINES REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-10).
- Loader frame cover removed (see paragraph 14-11).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Marker tags (Item 33, Appendix C)
- Nine preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
-

NOTE

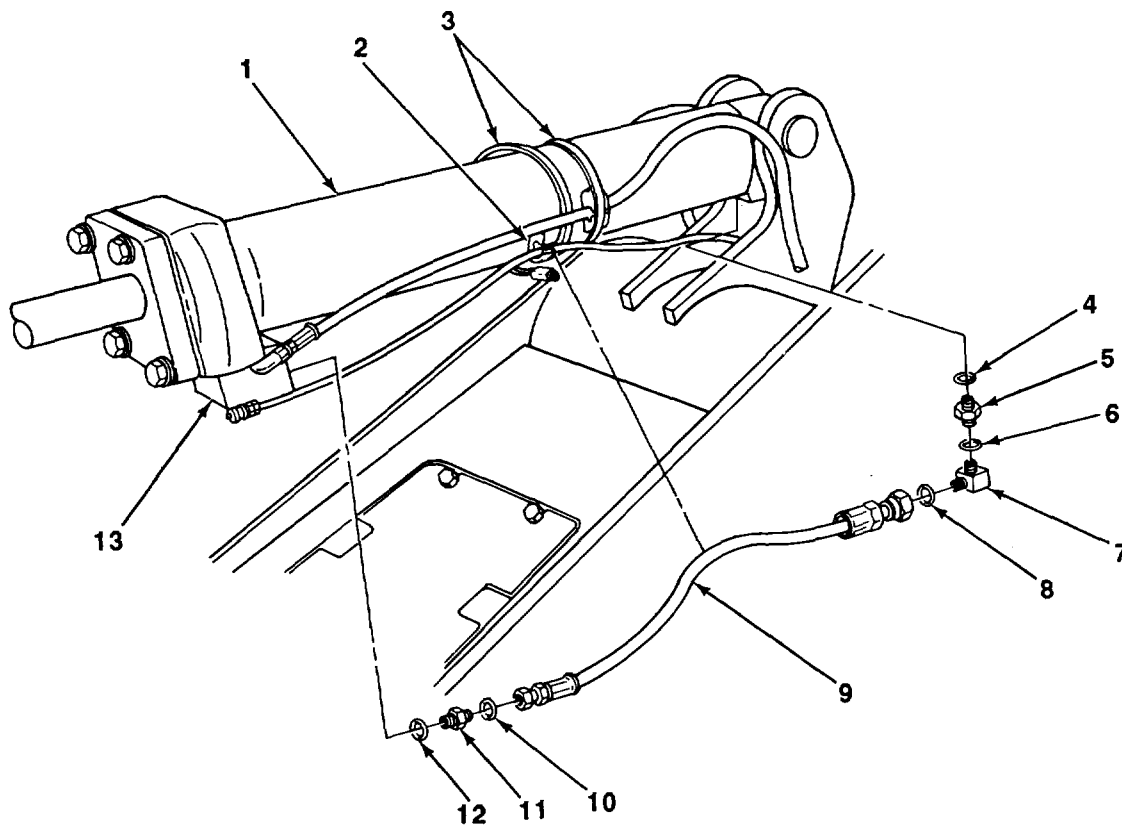
• **All hoses and lines should be tagged before removed. Refer to paragraph 2-18 for tagging instructions.**

• **A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.**

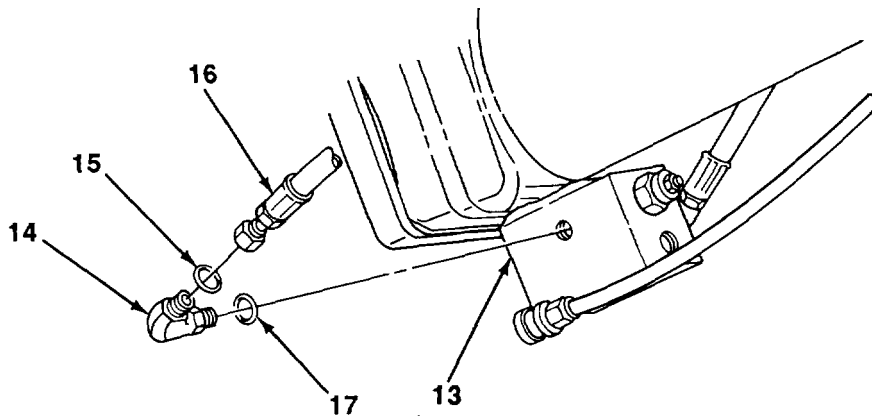
a. REMOVAL

1. Remove two hose clamps (3) and three guides (2) from carriage tilt cylinder (1).
2. Remove hose (9) and preformed packing (10) from adapter (11).Discard preformed packing.
3. Remove adapter (11) and preformed packing (12) from locking control valve (13).Discard preformed packing.
4. Remove hose (9) and preformed packing (8) from elbow (7).Discard preformed packing.
5. Remove elbow (7) and preformed packing (6) from adapter (5).Discard preformed packing.
6. Remove adapter (5) and preformed packing (4) from carriage tilt cylinder (1).Discard preformed packing.

17-23. CARRIAGE TILT CYLINDER HOSES AND LINES REPLACEMENT (Con't).

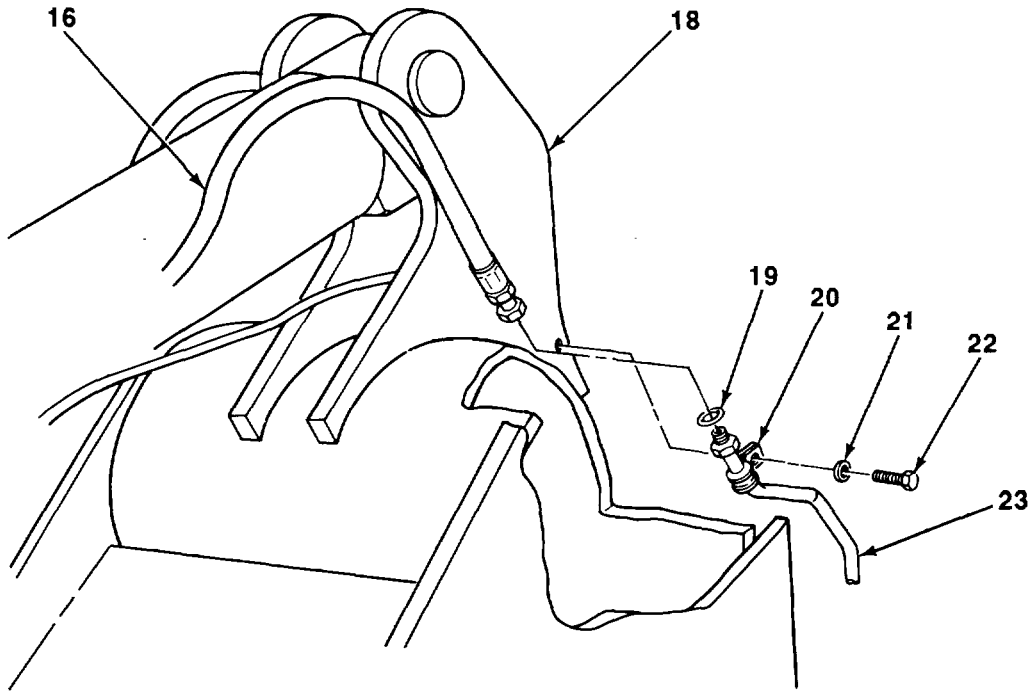


7. Remove hose (16) and preformed packing (15) from elbow (14). Discard preformed packing.
8. Remove elbow (14) and preformed packing (17) from locking control valve (13). Discard preformed packing.



17-23. CARRIAGE TILT CYLINDER HOSES AND LINES REPLACEMENT Con't).

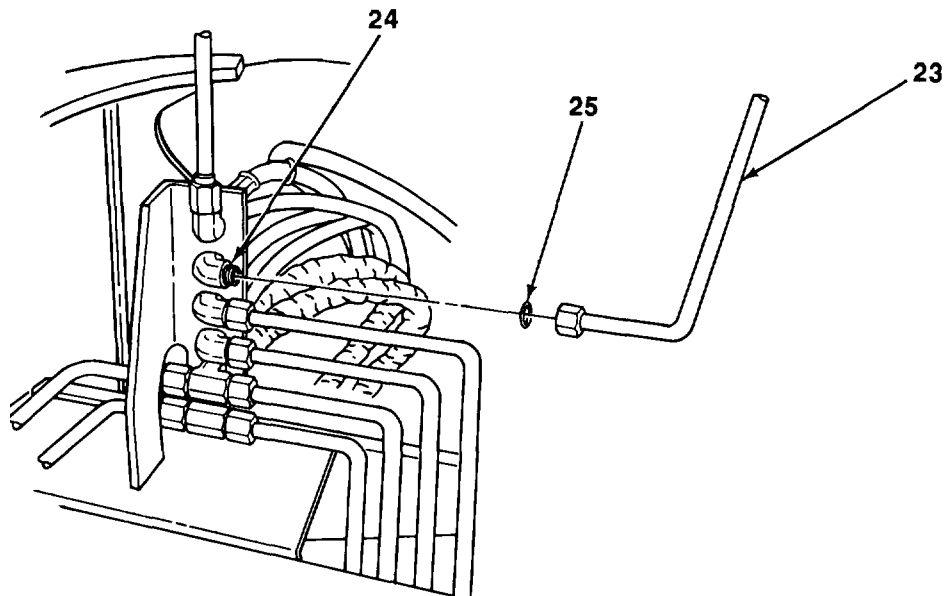
9. Remove screw (22), washer (21), and clamp (20) from loader frame (18).
10. Remove line (23) and preformed packing (19) from hose (16). Discard preformed packing.
11. Remove clamp (20) from line (23).



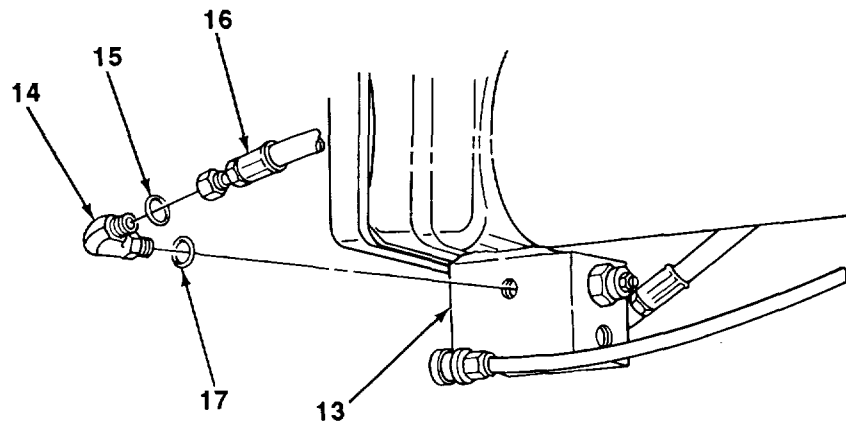
12. Remove line (23) and preformed packing (25) from elbow (24). Discard preformed packing.

b. INSTALLATION

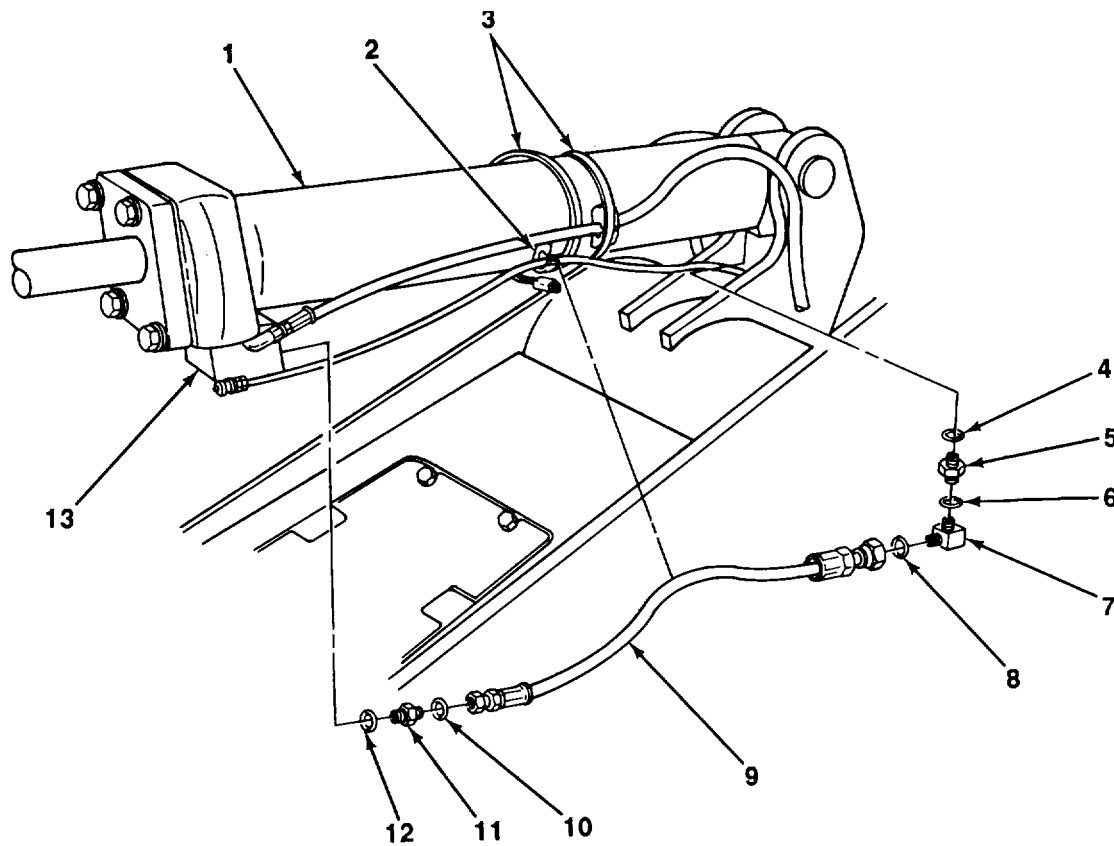
1. Install new preformed packing (25) and line (23) on elbow (24).

17-23. CARRIAGE TILT CYLINDER HOSES AND LINES REPLACEMENT (Con't).

2. Install clamp (20) and new preformed packing (19) on line (23).
3. Install line (23) on hose (16).
4. Install clamp (20) to loader frame (18) with washer (21) and screw (22).

17-23. CARRIAGE TILT CYLINDER HOSES AND LINES REPLACEMENT (Con't).

5. Install new preformed packing (17) and elbow (14) on locking control valve (13).
6. Install new preformed packing (15) and hose (16) on elbow (14).
7. Install new preformed packing (4) and adapter (5) on carriage tilt cylinder (1).
8. Install new preformed packing (6) and elbow (7) on adapter (5).
9. Install new preformed packing (8) and hose (9) on elbow (7).
10. Install new preformed packing (12) and adapter (11) on locking control valve (13).
11. Install new preformed packing (10) and hose (9) on adapter (11).
12. Install three guides (2) and two hose clamps (3) on carriage tilt cylinder (1).

17-23. CARRIAGE TILT CYLINDER HOSES AND LINES REPLACEMENT Con't).**FOLLOW-ON TASKS:**

- Check hydraulic fluid level and fill as necessary (see TM 10-3930-659-10).
- Install loader frame cover (see paragraph 14-11).
- Remove frame locking bar (see TM 10-3930-659-10).

17-24. CARRIAGE TILT CYLINDER LUBRICATION HOSE REPLACEMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

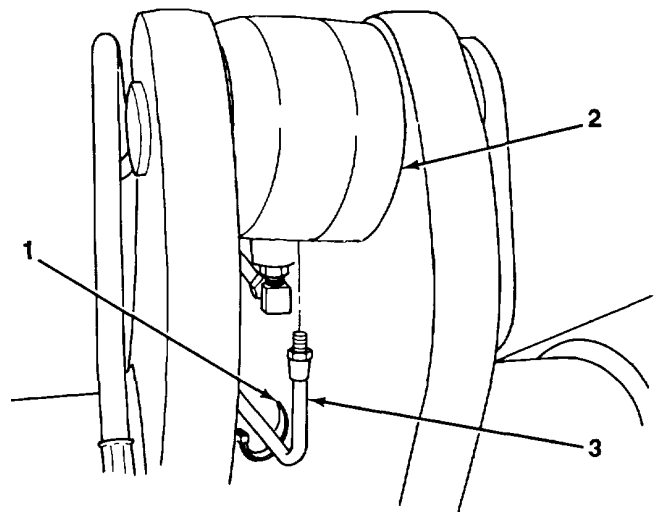
- Tie-down strap (Item 32, Appendix C)

References:

- LO 10-3930-659-12
 - TM 10-3930-659-10
-

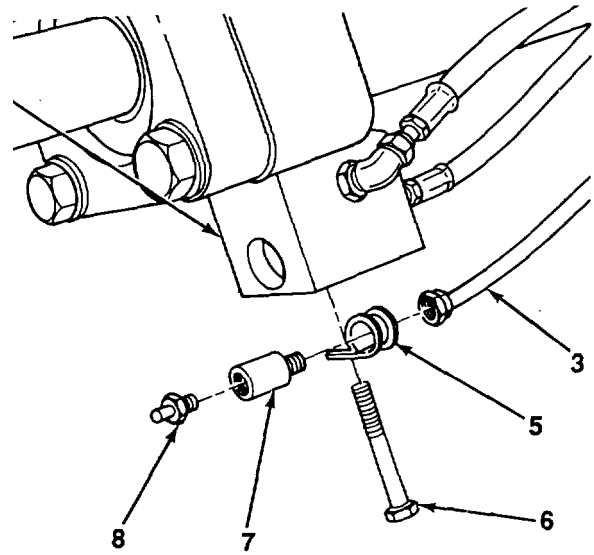
a. REMOVAL

1. Remove tie-down strap (1) and hose (3) from carriage tilt cylinder (2). Discard tie-down strap.



17-24. CARRIAGE TILT CYLINDER LUBRICATION HOSE REPLACEMENT (Con't).

2. Remove screw (6) and clamp (5) from locking control valve (4).
3. Remove clamp (5), lubrication fitting (8), and pipe coupling (7) from hose (3).

**b. INSTALLATION**

1. Install clamp (5), pipe coupling (7), and lubrication fitting (8) on hose (3).
2. Install clamp (5) on locking control valve (4) with screw (6).
3. Install hose (3) on carriage tilt cylinder (2).
4. Install new tie-down strap (1) on hose (3).

FOLLOW-ON TASKS:

- Lubricate carriage tilt cylinder pivot point (see LO 10-3930-659-12).

17-25. FORK/BOOM CYLINDER HOSES AND LINES REPLACEMENT.**This task covers:****a. Removal****b. Installation****INITIAL SETUP:****Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-10).
- Front bottom guard removed (see paragraph 14-9).
- Loader frame cover removed (see paragraph 14-11).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Marker tags (Item 33, Appendix C)
- Eight preformed packings
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

NOTE

• **Left and right fork/boom cylinder hoses, lines, and fittings are removed and installed the same way. One set of hoses, lines, and fittings is illustrated.**

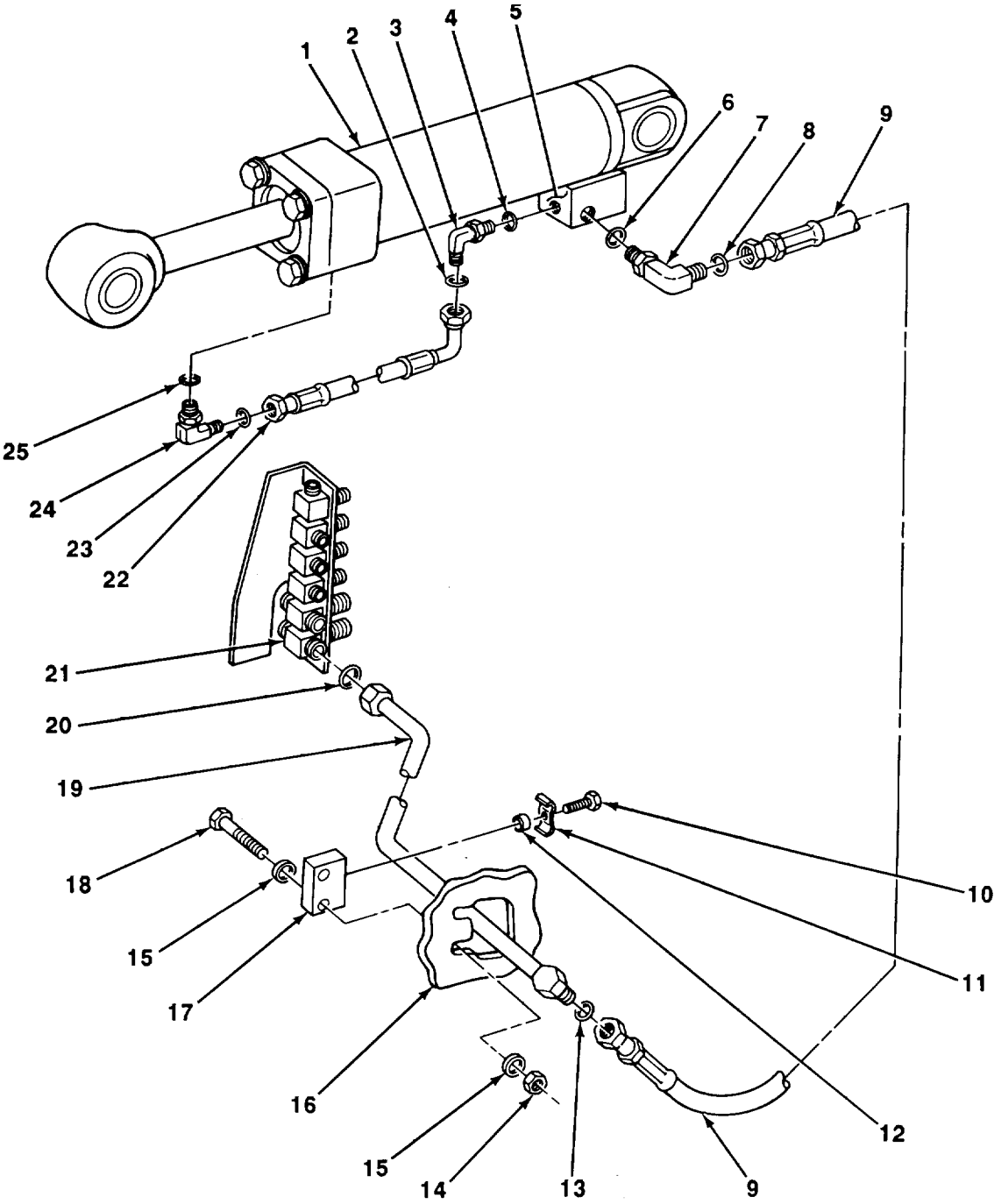
• **All hoses and lines should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.**

• **A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.**

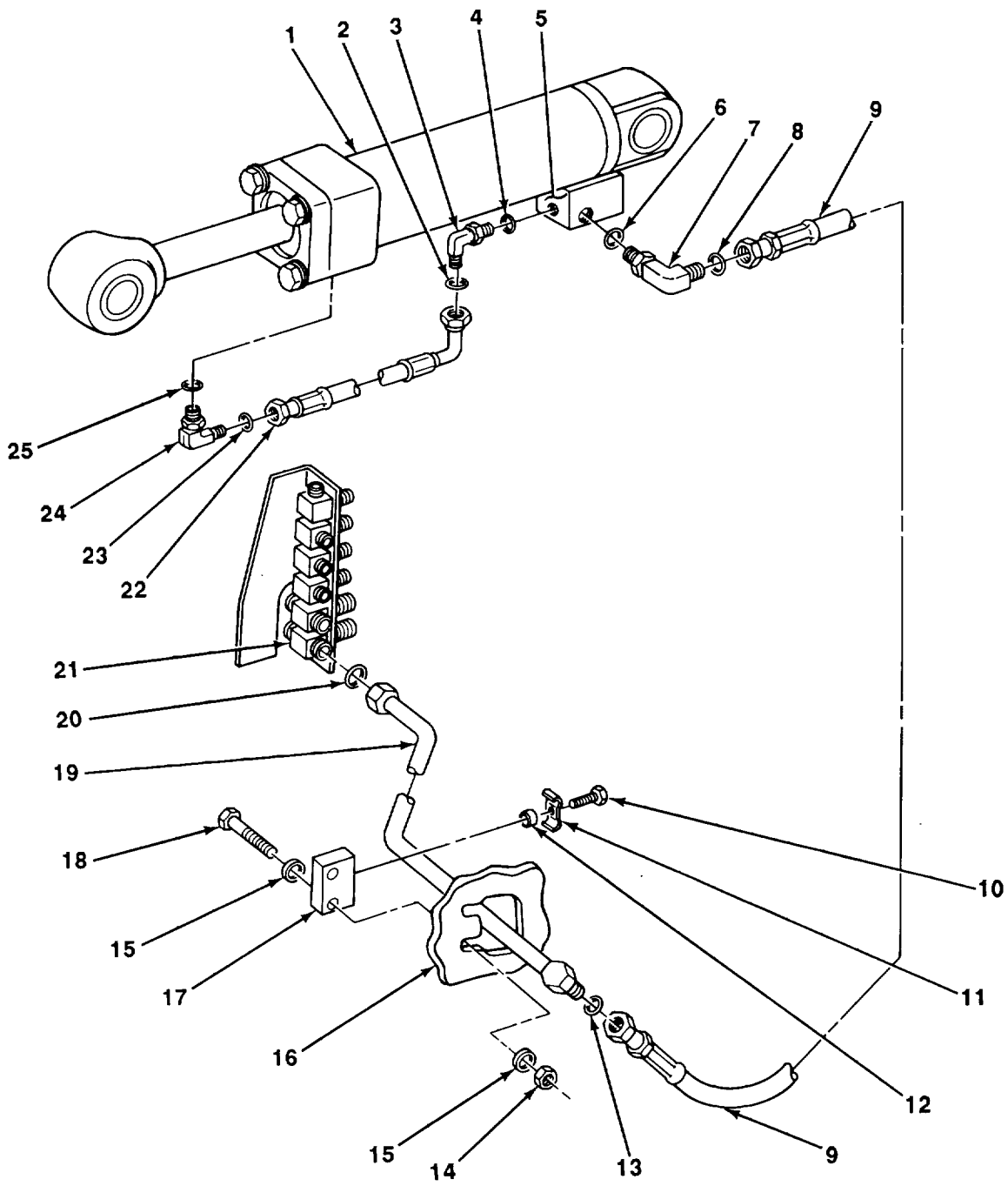
a. REMOVAL

1. Remove hose (22) and preformed packing (23) from elbow (24). Discard preformed packing.
2. Remove elbow (24) and preformed packing (25) from fork/boom cylinder (1). Discard preformed packing.
3. Remove hose (22) and preformed packing (2) from elbow (3). Discard preformed packing.
4. Remove elbow (3) and preformed packing (4) from locking control valve (5). Discard preformed packing.
5. Remove hose (9) and preformed packing (8) from elbow (7). Discard preformed packing.
6. Remove elbow (7) and preformed packing (6) from locking control valve (5). Discard preformed packing.
7. Remove hose (9) and preformed packing (13) from line (19). Discard preformed packing.
8. Remove screw (10), clamp (11), and spacer (12) from clamp bar (17).
9. Remove line (19) and preformed packing (20) from tee (21). Discard preformed packing.
10. Remove two nuts (14), four washers (15), two screws (18), and clamp bar (17) from loader frame (16).

17-25. FORK/BOOM CYLINDER HOSES AND LINES REPLACEMENT (Con't).



17-25. FORK/BOOM CYLINDER HOSES AND LINES REPLACEMENT (Con't).



17-25. FORK/BOOM CYLINDER HOSES AND LINES REPLACEMENT (Con't).

b. INSTALLATION

1. Install clamp bar (17) on loader frame (16) with four washers (15), two screws (18), and nuts (14).
2. Install new preformed packing (20) and line (19) on tee (21).
3. Install spacer (12) and clamp (11) on clamp bar (17) with screw (10).
4. Install new preformed packing (13) and hose (9) on line (19).
5. Install new preformed packing (6) and elbow (7) on locking control valve (5).
6. Install new preformed packing (8) and hose (9) on elbow (7).
7. Install new preformed packing (4) and elbow (3) on locking control valve (5).
8. Install new preformed packing (2) and hose (22) on elbow (3).
9. Install new preformed packing (25) and elbow (24) on fork/boom cylinder (1).
10. Install new preformed packing (23) and hose (22) on elbow (24).

FOLLOW-ON TASKS:

- Check hydraulic fluid level and fill as necessary (see TM 10-3930-659-10).
- Install loader frame cover (see paragraph 14-11).
- Install front bottom guard (see paragraph 14-9).
- Remove frame locking bar (see TM 10-3930-659-10).

17-26. FORK SPACING CYLINDER HOSES AND LINES REPLACEMENT.*This Task Covers:*

- a. Removal b. Installation

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-10).
- Front bottom guard removed (see paragraph 14-9).
- Loader frame cover removed (see paragraph 14-11).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Marker tags (Item 33, Appendix C)
- Six preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

General mechanic's tool kit (Item 44, Appendix F)

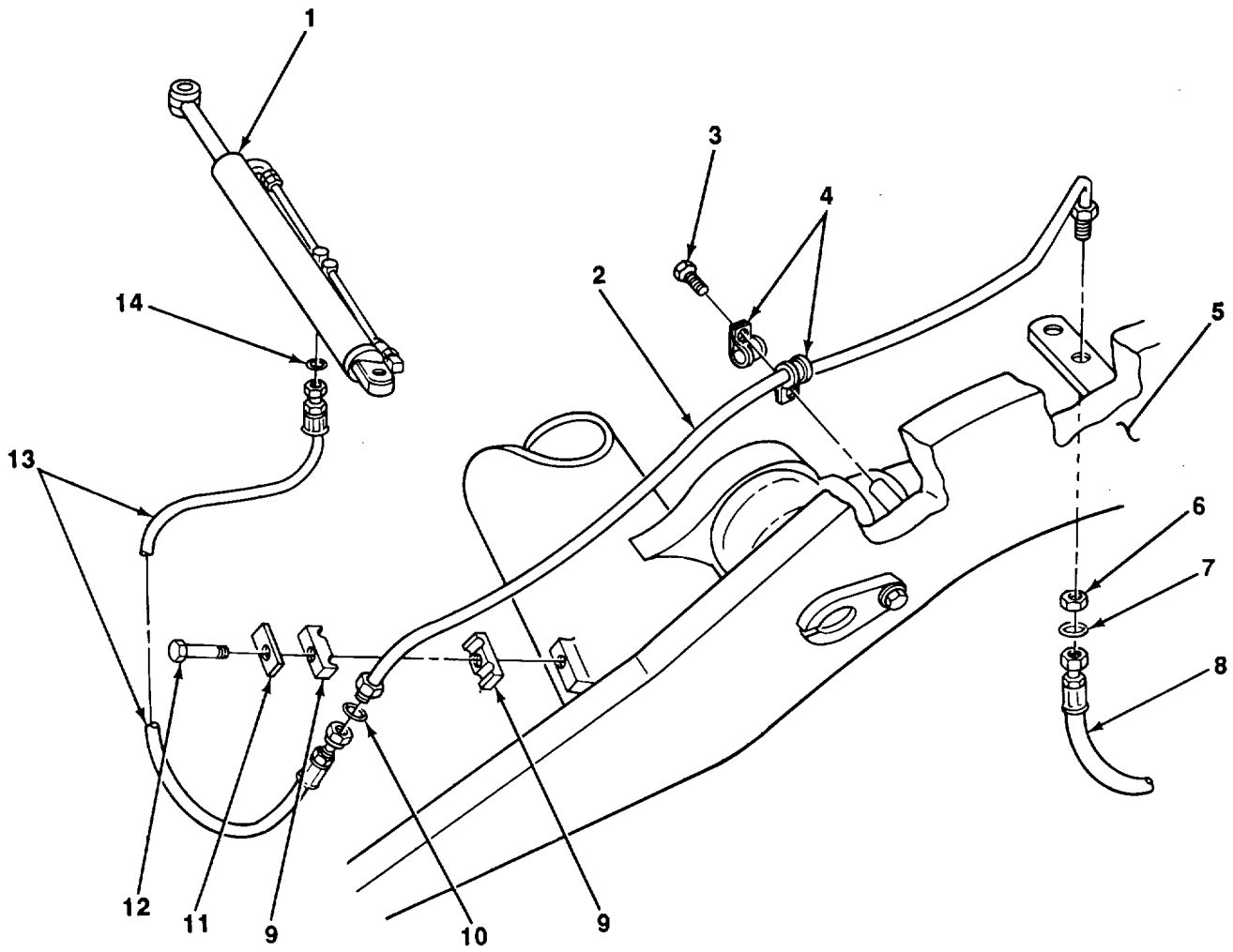
NOTE

- **Four fork spacing cylinder hoses, lines, and fittings are removed and installed the same way. One set of hoses, lines, and fittings is illustrated.**
- **All hoses and lines should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.**
- **A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.**

a. REMOVAL

1. Remove hose (13) and preformed packing (14) from fork spacing cylinder (1). Discard preformed packing.
2. Remove hose (13) and preformed packing (10) from line (2). Discard preformed packing.
3. Remove screw (12), plate (11), and two clamps (9) from line (2).
4. Remove screw (3) and two clamps (4) from line (2).
5. Remove hose (8) and preformed packing (7) from line (2). Discard preformed packing.
6. Remove nut (6) and line (2) from fork/boom assembly (5).

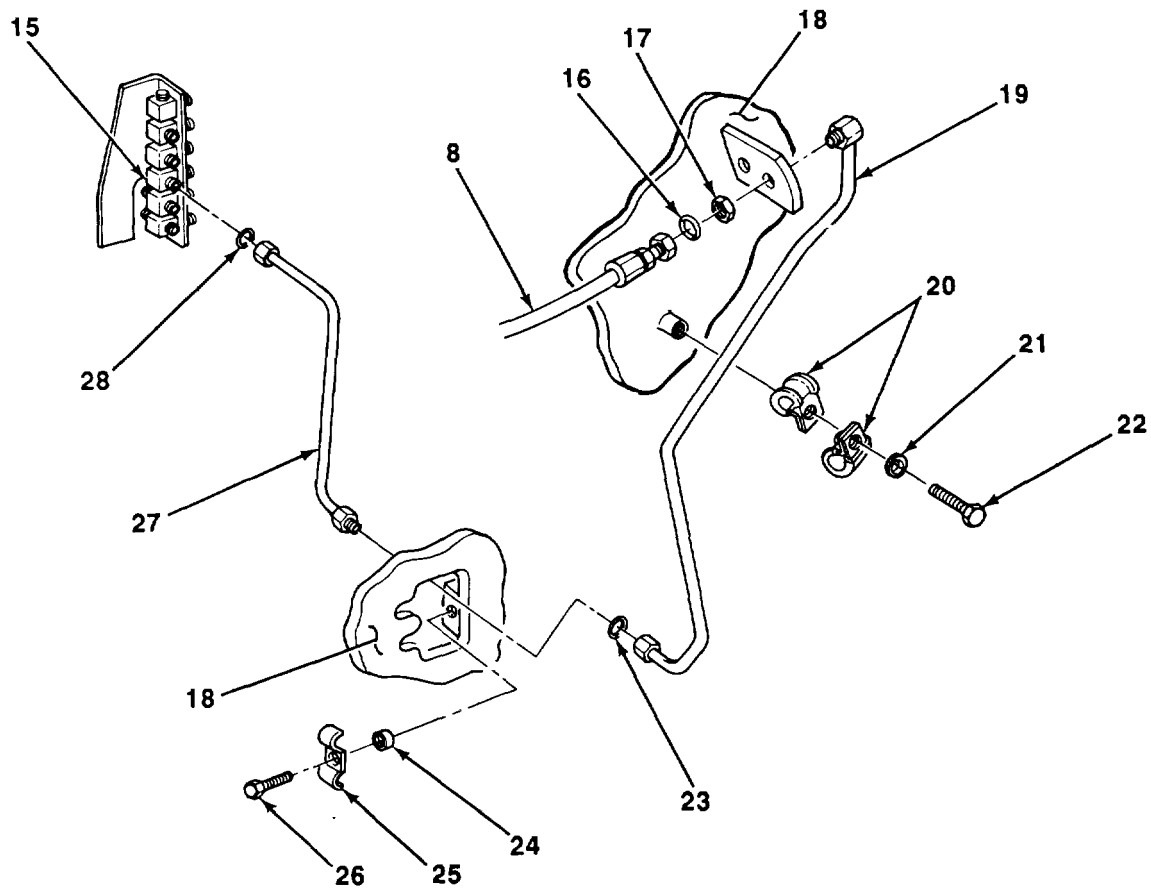
17-26. FORK SPACING CYLINDER HOSES AND LINES REPLACEMENT (Con't).



TA707669

17-26. FORK SPACING CYLINDER HOSES AND LINES REPLACEMENT (Con't).

7. Remove hose (8) and preformed packing (16) from line (19). Discard preformed packing.
8. Remove nut (17) and line (19) from loader frame (18).
9. Remove screw (22), washer (21), and two clamps (20) from line (19) and loader frame (18).
10. Remove screw (26), clamp (25), spacer (24), and line (19) from loader frame (18).
11. Remove line (19) and preformed packing (23) from line (27). Discard preformed packing.
12. Remove line (27) and preformed packing (28) from elbow (15). Discard preformed packing.

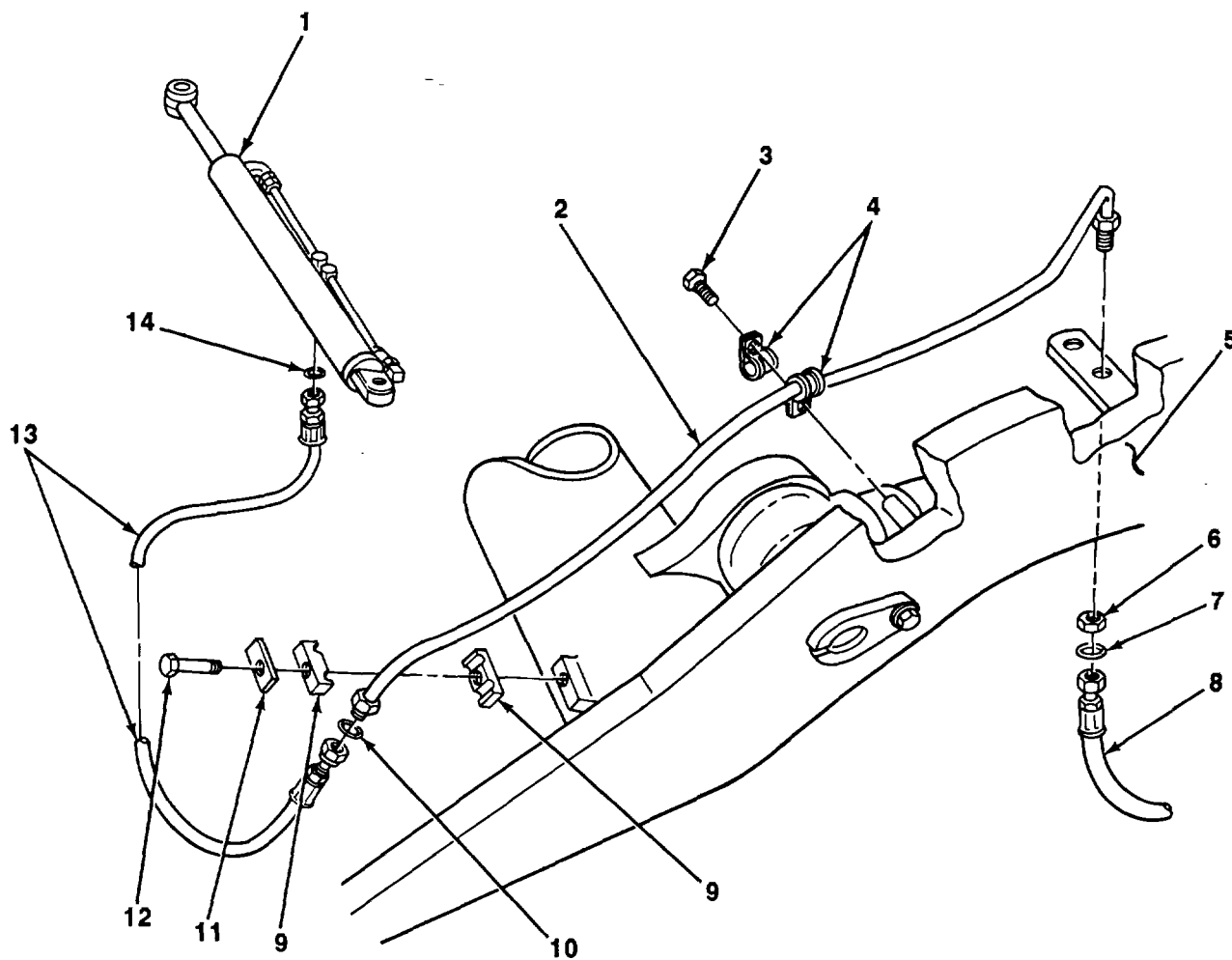
**b. INSTALLATION**

1. Install new preformed packing (28) and line (27) on elbow (15).
2. Install new preformed packing (23) and line (19) on line (27).
3. Install spacer (24) and clamp (25) on line (19) and loader frame (18) with screw (26).
4. Install two clamps (20) on line (19) and loader frame (18) with washer (21) and screw (22).
5. Install line (19) on loader frame (18) with nut (17).

TA707670

17-26. FORK SPACING CYLINDER HOSES AND LINES REPLACEMENT (Con't).

6. Install new preformed packing (16) and hose (8) on line (19).
7. Install line (2) on fork/boom assembly (5) with nut (6).
8. Install new preformed packing (7) and hose (8) on line (2).
9. Install two clamps (4) on line (2) with screw (3).
10. Install two clamps (9) and plate (11) on line (2) with screw (12).
11. Install new preformed packing (10) and hose (13) on line (2).
12. Install new preformed packing (14) and hose (13) on fork spacing cylinder (1).

**FOLLOW-ON TASKS:**

- Check hydraulic fluid level and fill as necessary (see TM 10-3930-659-10).
- Install loader frame cover (see paragraph 14-11).
- Install front bottom guard (see paragraph 14-9).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707671

17-27. PLATE-TO-LOADER FRAME BRACKET HOSES REPLACEMENT.*This Task Covers:*

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-10).
- Transmission side guards removed (see paragraph 14-7).
- Loader frame cover removed (see paragraph 14-1 1).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Marker tags (Item 33, Appendix C)
- Four preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

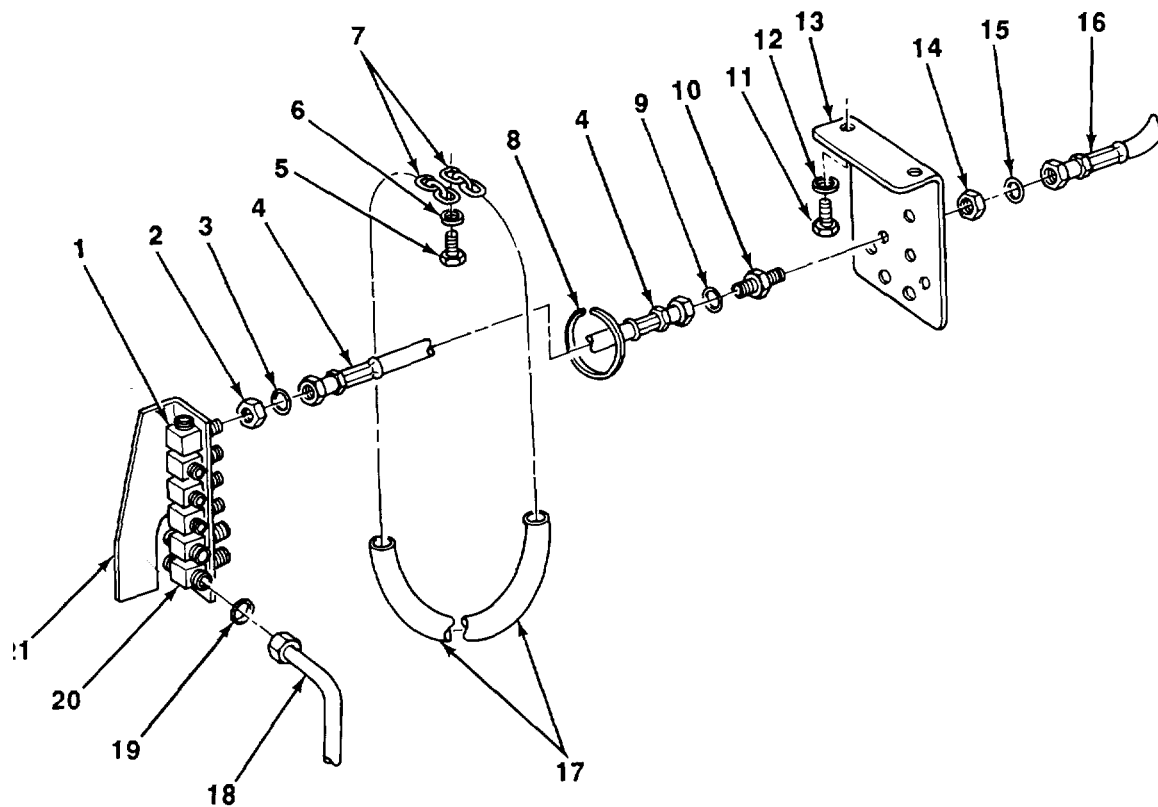
NOTE

- **Six plate-to-loader frame bracket hoses and fittings are removed and installed the same way, except fittings may vary. One set of plate-to-loader frame hose and fittings is illustrated.**
- **All hoses should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.**
- **A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.**

a. REMOVAL

1. Remove screw (5), washer (6), and chain (7) from loader frame.
2. Remove hose (17) from chain (7).
3. If required, remove tie-down strap (8). Discard tie-down strap.
4. Remove hose (4) and preformed packing (9) from adapter (10). Discard preformed packing.
5. Remove hose (4), preformed packing (3), and nut (2) from elbow (1) at loader frame bracket (21). Discard preformed packing.
6. Remove hose (16), preformed packing (15), nut (14), and adapter (10) from plate (13). Discard preformed packing.
7. Remove line (18) and preformed packing (19) from tee (20). Discard preformed packing.
8. If plate (13) is damaged, remove two screws (11), washers (12), and plate from loader frame.

17-27. PLATE-TO-LOADER FRAME BRACKET HOSES REPLACEMENT (Con't).

**b. INSTALLATION**

1. If removed, install plate (13) on loader frame with two washers (12) and screws (11).
2. Install new preformed packing (19) and line (18) on tee (20).
3. Install adapter (10) on plate (13) with nut (14).
4. Install new preformed packing (15) and hose (16) on adapter (10).
5. Install nut (2), new preformed packing (3), and hose (4) on elbow (1).
6. Install new preformed packing (9) and hose (4) on adapter (10).
7. If removed, install new tie-down strap (8).
8. Install hose (17) on chain (7).
9. Install chain (7) on loader frame with washer (6) and screw (5).

FOLLOW-ON TASKS:

- Install loader frame cover (see paragraph 14-11).
- Install transmission side guards (see paragraph 14-7).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707672

17-28. HYDRAULIC OIL SAMPLING VALVE REPLACEMENT.*This Task Covers:*

- a. Removal b. Installation

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Three preformed packings

References:

- TM 10-3930-659-10

Tools/Test Equipment:

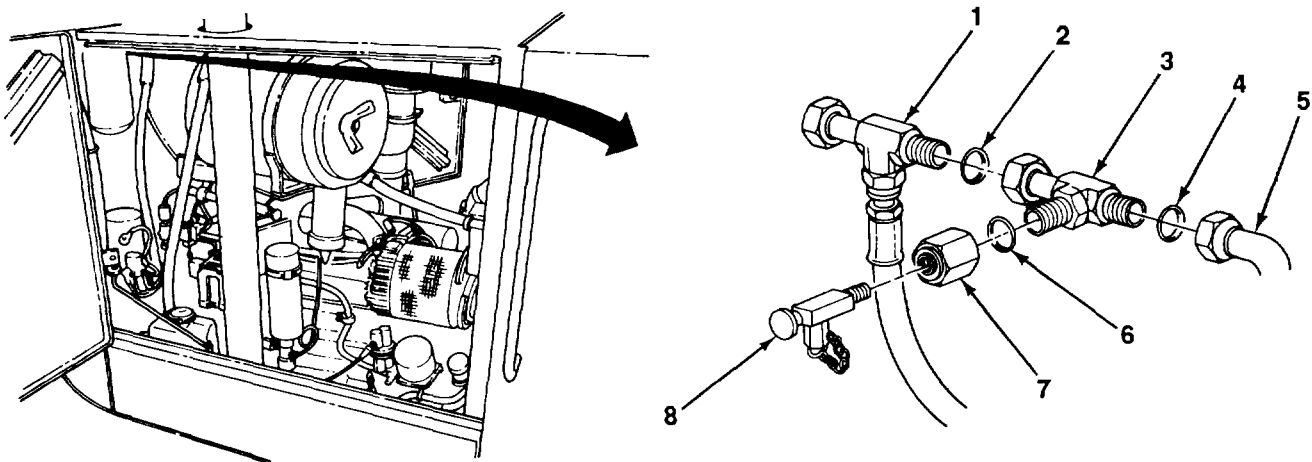
- General mechanic's tool kit (Item 44, Appendix F)

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

1. Remove hose (5) and preformed packing (4) from tee (3). Discard preformed packing.
2. Remove tee (3) and preformed packing (2) from tee (1). Discard preformed packing.
3. Remove hydraulic oil sampling valve (8), special plug (7), and preformed packing (6) from tee (3). Discard preformed packing.



TA707673

17-28. HYDRAULIC OIL SAMPLING VALVE REPLACEMENT (Con't).

b. INSTALLATION

1. Install new preformed packing (6), special plug (7), and hydraulic oil sampling valve (8) on tee (3).

NOTE

Ensure that hydraulic oil sampling valve drain is facing down when Installed.

2. Install new preformed packing (2) and tee (3) on tee (1).
3. Install new preformed packing (4) and hose (5) on tee (3).

FOLLOW-ON TASKS:

- Close left engine upper sideshield (see TM 10-3930-659-10).

17-29. HYDRAULIC RESERVOIR SUCTION FILTER REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

Initial Setup:

Equipment Conditions:

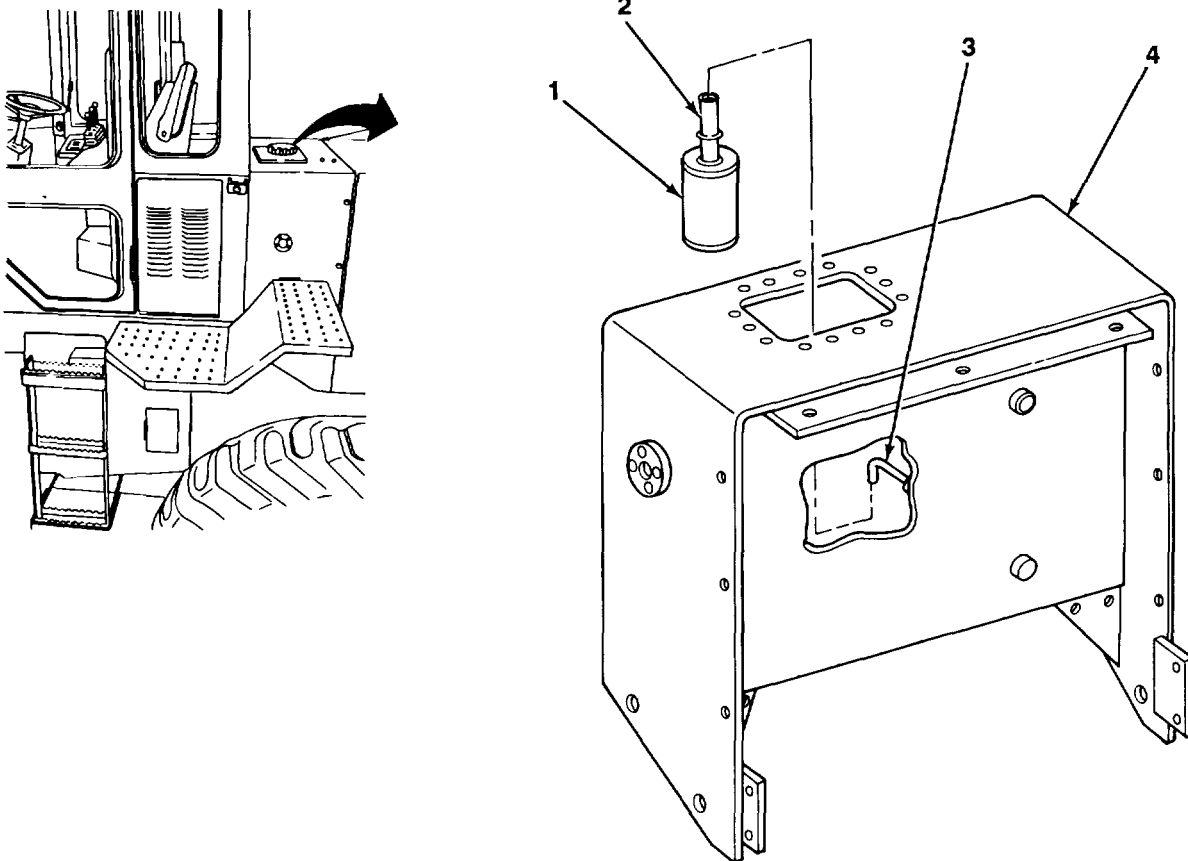
- Hydraulic reservoir drained (see LO 10-3930-659-12).
- Hydraulic reservoir filler cap and cover removed (see paragraph 17-35).

References:

- LO 10-3930-659-12
- TM 10-3939-659-10

a. REMOVAL

1. Push down on collar (2) and remove hydraulic reservoir suction filter (1) from hook (3).
2. Remove hydraulic reservoir suction filter (1) from hydraulic reservoir (4).



TA707674

17-29. HYDRAULIC RESERVOIR SUCTION FILTER REPLACEMENT (Con't).

b. INSTALLATION

1. Position hydraulic reservoir suction filter (1) in hydraulic reservoir (4) with bottom of suction filter over hole in bottom of hydraulic reservoir.
2. Push down on collar (2) and align top of hydraulic reservoir suction filter (1) with hook (3). Release collar.
3. Check that hydraulic reservoir suction filter (1) is firmly secured on hook (3).

FOLLOW-ON TASKS:

- Fill hydraulic reservoir with hydraulic fluid (see TM 10-3930-659-10).
- Install hydraulic reservoir filler cap and cover (see paragraph 17-35).

17-30. HYDRAULIC RESERVOIR BREATHER FILTER REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

Initial Setup:

Equipment Conditions:

- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).

Tools/Test Equipment:

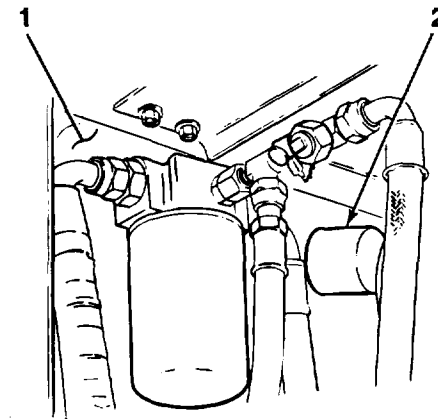
- General mechanic's tool kit (Item 44, Appendix F)
- Oil filter removal tool (Item 33, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL

Remove hydraulic reservoir breather filter (2) from hydraulic reservoir (1).

**b. INSTALLATION**

Install hydraulic reservoir breather filter (2) on hydraulic reservoir (1) and turn until tight.

FOLLOW-ON TASKS:

- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyorized fork attachments on side of forklift truck (see paragraph 17-13).

TA707675

17-31. HYDRAULIC OIL RETURN FILTER ASSEMBLY REPLACEMENT.*This Task Covers:*

- | | |
|------------------------|-----------------------------|
| a. Filter Replacement | c. Filter Head Installation |
| b. Filter Head Removal | |

*Initial Setup:***Equipment Conditions:**

- Hydraulic reservoir drained (filter head replacement only) (see LO 10-3930-659-12).
- Left engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Hydraulic fluid (Item 18, Appendix C)
- Rags (Item 27, Appendix C)
- Marker tags (Item 33, Appendix C)
- Five preformed packings

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Adjustable wrench (Item 49, Appendix F)
- Pipe wrench, strap (Item 50, Appendix F)

References:

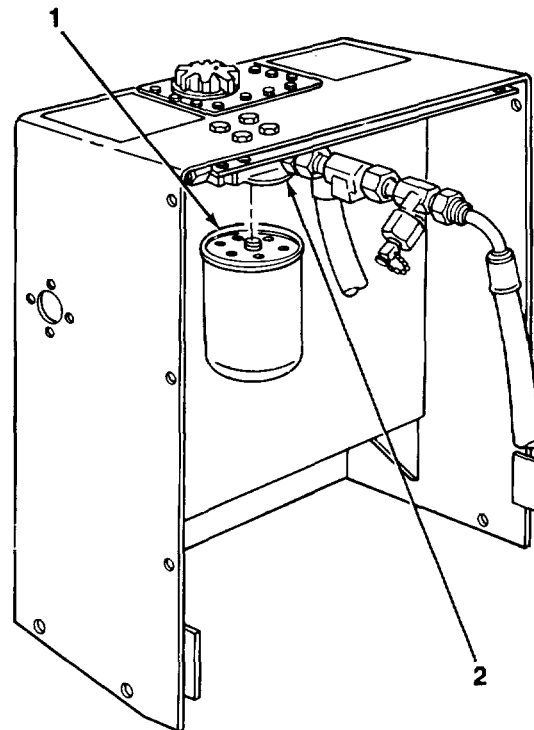
- LO 10-3930659-12
- TM 10-3930-659-10

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. FILTER REPLACEMENT

1. Remove hydraulic oil return filter element (1) from hydraulic oil return filter head (2).
2. Fill hydraulic oil return filter element (1) with clean hydraulic fluid and install hydraulic oil return filter element on hydraulic oil return filter head (2).



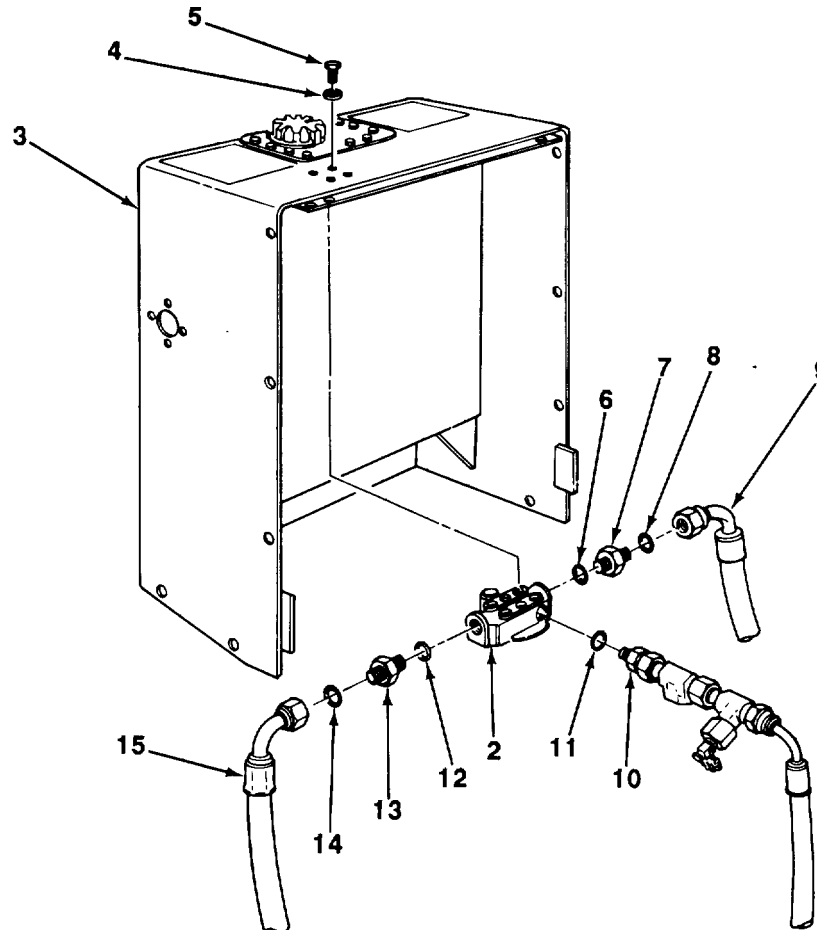
TA707676

17-31. HYDRAULIC OIL RETURN FILTER ASSEMBLY REPLACEMENT (Con't).

b. FILTER HEAD REMOVAL**NOTE**

All hoses should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

1. Remove hydraulic oil return filter element (see subparagraph a).
2. Remove hose (15) and preformed packing (14) from adapter (13). Discard preformed packing.
3. Remove adapter (13) and preformed packing (12) from hydraulic oil return filter head (2). Discard preformed packing.
4. Remove hose (9) and preformed packing (8) from adapter (7). Discard preformed packing.
5. Remove adapter (7) and preformed packing (6) from hydraulic oil return filter head (2). Discard preformed packing.



TA707677

17-31. HYDRAULIC OIL RETURN FILTER ASSEMBLY REPLACEMENT (Con't).

- 6 Remove adapter (10) and preformed packing (11) from hydraulic oil return filter head (2). Discard preformed packing.

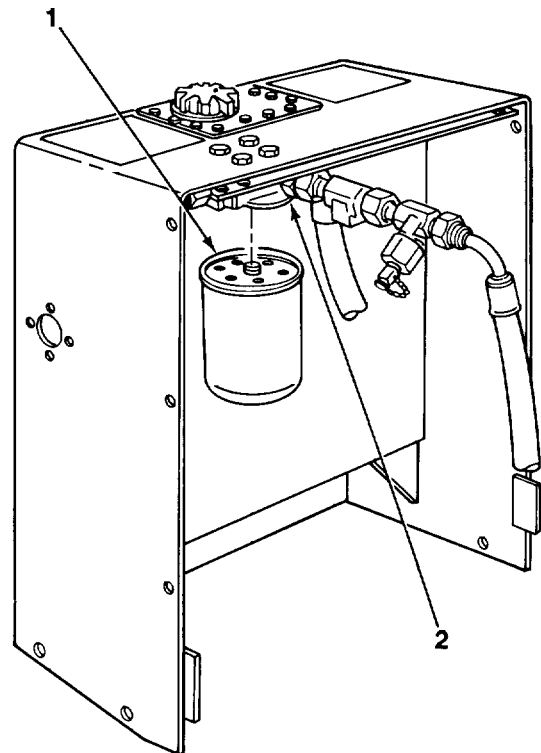
CAUTION

Use care not to damage hydraulic oil filter restriction switch when removing bolts.

7. Remove four bolts (5), washers (4), and hydraulic oil return filter head (2) from hydraulic reservoir (3).
8. Lower hydraulic oil return filter head (2) from hydraulic reservoir (3) and remove hydraulic oil filter restriction switch (see paragraph 6-35).

c. FILTER HEAD INSTALLATION

1. Install hydraulic oil filter restriction switch (see paragraph 6-35).
2. Install hydraulic oil return filter head (2) on hydraulic reservoir (3) with four washers (4) and bolts (5).
3. Install new preformed packing (11) and adapter (10) on hydraulic oil return filter head (2).
4. Install new preformed packing (6) and adapter (7) on hydraulic oil return filter head (2).
5. Install new preformed packing (8) and hose (9) on adapter (7).
6. Install new preformed packing (12) and adapter (13) on hydraulic oil return filter head (2).
7. Install new preformed packing (14) and hose (15) on adapter (13).
8. Fill hydraulic oil return filter element (1) with clean hydraulic fluid and install hydraulic oil return filter element on hydraulic oil return filter head (2).

**FOLLOW-ON TASKS:**

- Check hydraulic fluid level and fill as necessary (see TM 10-3930-659-10).
- Close left engine upper sideshield (see TM 10-3930-659-10).

TA707678

17-32. FORK/BOOM CYLINDER REPLACEMENT.*This Task Covers:*

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Frame locking bar installed (see TM 10-3930 659-10).

Materials/Parts:

- Grease (Item 23, Appendix C)
- Rags (Item 27, Appendix C)

Personnel Required: Two**Tools/Test Equipment:**

- General mechanic's tool kit (Item 44, Appendix F)
- Trestle, 7 ton (two) (Item 45, Appendix F)

References:

- TM 10-3930-659-10

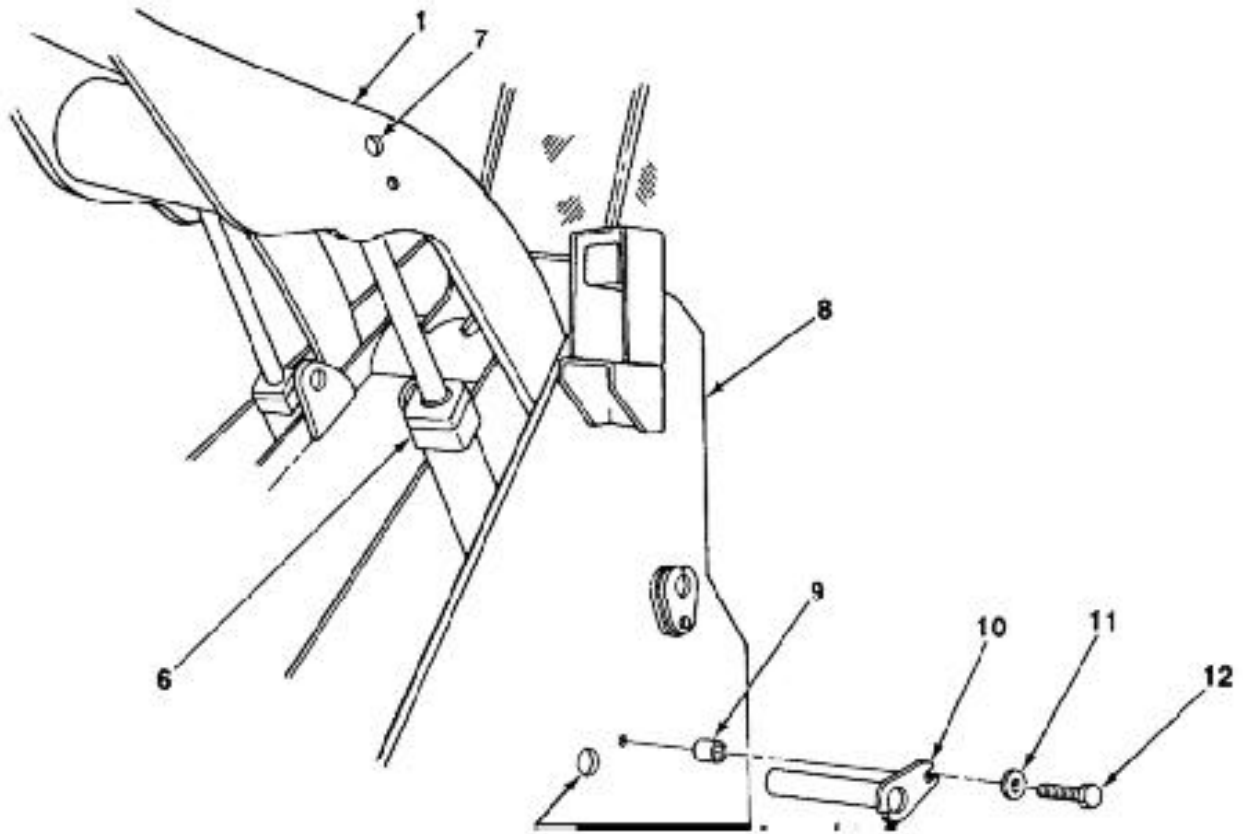
NOTE

- **Right and left fork/boom cylinders are removed and installed the same way. Left fork/boom cylinder is illustrated.**
- **A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.**

a. REMOVAL

1. Raise forks (see TM 10-3930-659-10) and position two trestles under carriage assembly.
2. Attach suitable lifting device to fork/boom cylinder (6) and raise lifting device enough to support weight of fork/boom cylinder.
3. Remove fork/boom cylinder hoses, lines, and fittings (see paragraph 17-25).
4. Remove screw (5), washer (4), pin (3), and two washers (2) from fork/boom assembly (1) and fork/boom cylinder (6).

17-32. FORK/BOOM CYLINDER REPLACEMENT (Con't).



TA707679

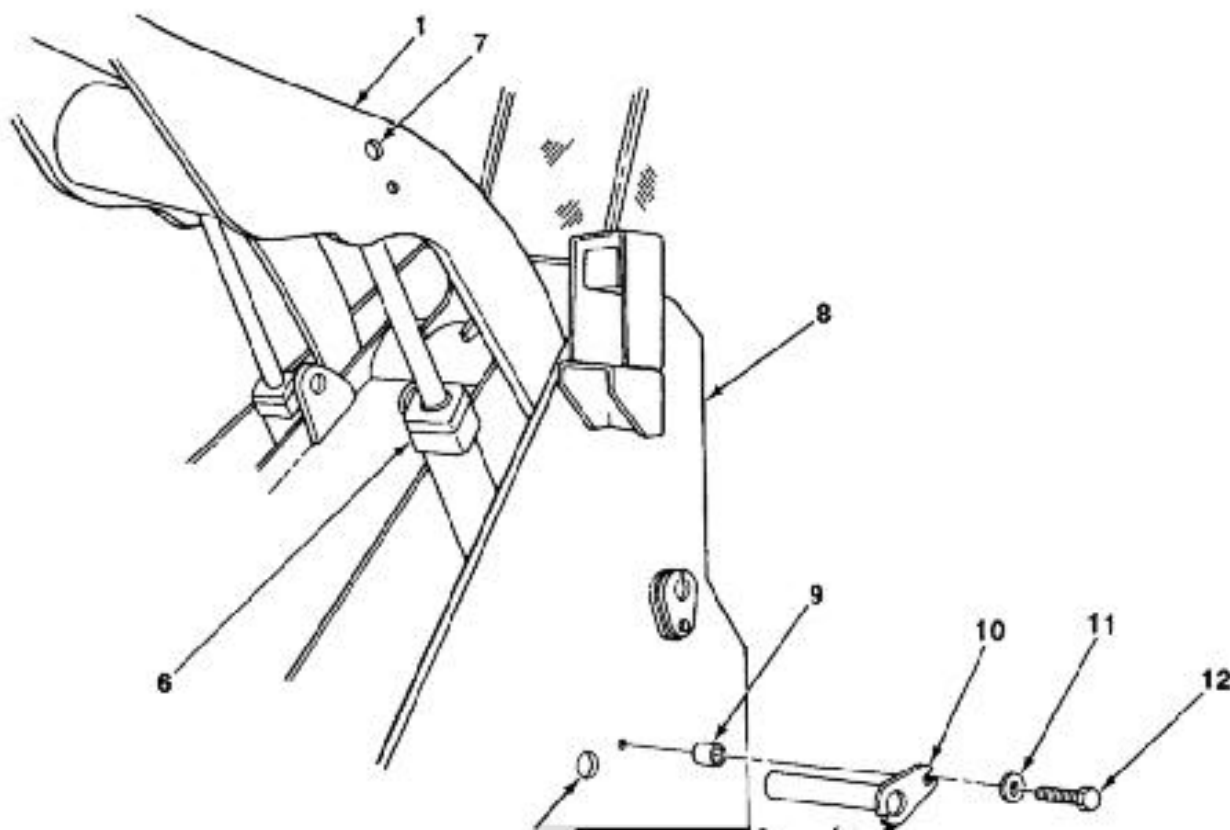
17-32. FORK/BOOM CYLINDER REPLACEMENT (Con't).

5. Remove screw (12), washer (11), pin (10), and spacer (9) from loader frame (8) and fork/boom cylinder (6).

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

6. Remove fork/boom cylinder (6) from loader frame (8) and fork/boom assembly (1).
7. Remove locking control valve from fork/boom cylinder (see paragraph 17-10).



b. INSTALLATION

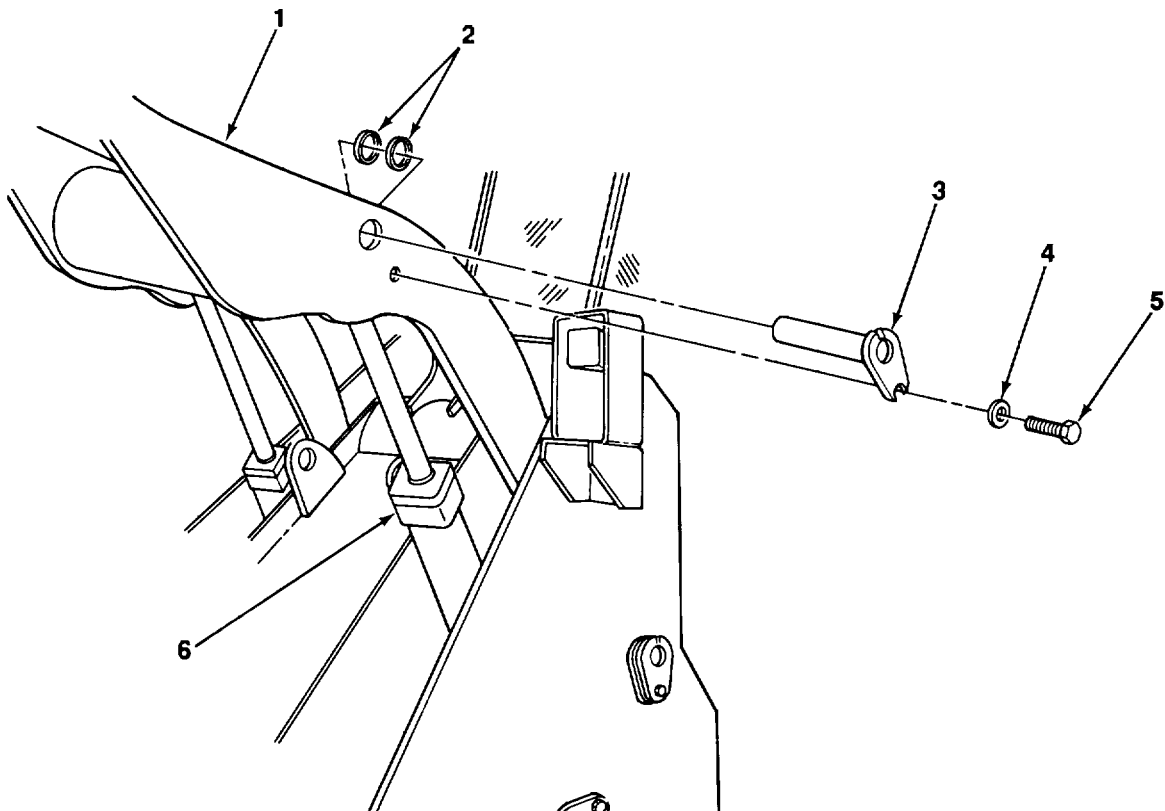
1. Measure distance between mounting pin holes (7 and 13) and position fork/boom cylinder (6) piston rod length so that it is approximately same length.

TA707680

17-32. FORK/BOOM CYLINDER REPLACEMENT (Con't).**WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

2. Position fork/boom cylinder (6) on loader frame (8) and fork/boom assembly (1).
3. Apply a coat of grease to surface of pin (10).
4. Install spacer (9) and pin (10) on loader frame (8) and fork/boom assembly (1) with washer (11) and screw (12).
5. Install fork/boom cylinder hoses, lines, and fittings (see paragraph 17-25).
6. Apply a coat of grease to surface of pin (3).
7. Install two washers (2) and pin (3) on fork/boom assembly (1) and fork/boom cylinder (6) with washer (4) and screw (5).
8. Install locking control valve on fork/boom cylinder (see paragraph 17-10).

**FOLLOW-ON TASKS**

- Remove frame locking bar (see TM 10-3930-659-10).

TA707681

17-33. FORK SPACING CYLINDER REPLACEMENT.*This Task Covers:*

- | | |
|------------|-----------------|
| a. Removal | b. installation |
|------------|-----------------|

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Forks positioned fully apart and resting on ground (see TM 10-3930-659-10).

Materials/Parts:

- Grease (Item 23, Appendix C)
- Rags (Item 27, Appendix C)
- Marker tags (Item 33, Appendix C)
- Two locknuts
- Four springpins

Tools/Test Equipment

- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

NOTE

- **All hoses and lines should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.**
- **A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.**

a. REMOVAL

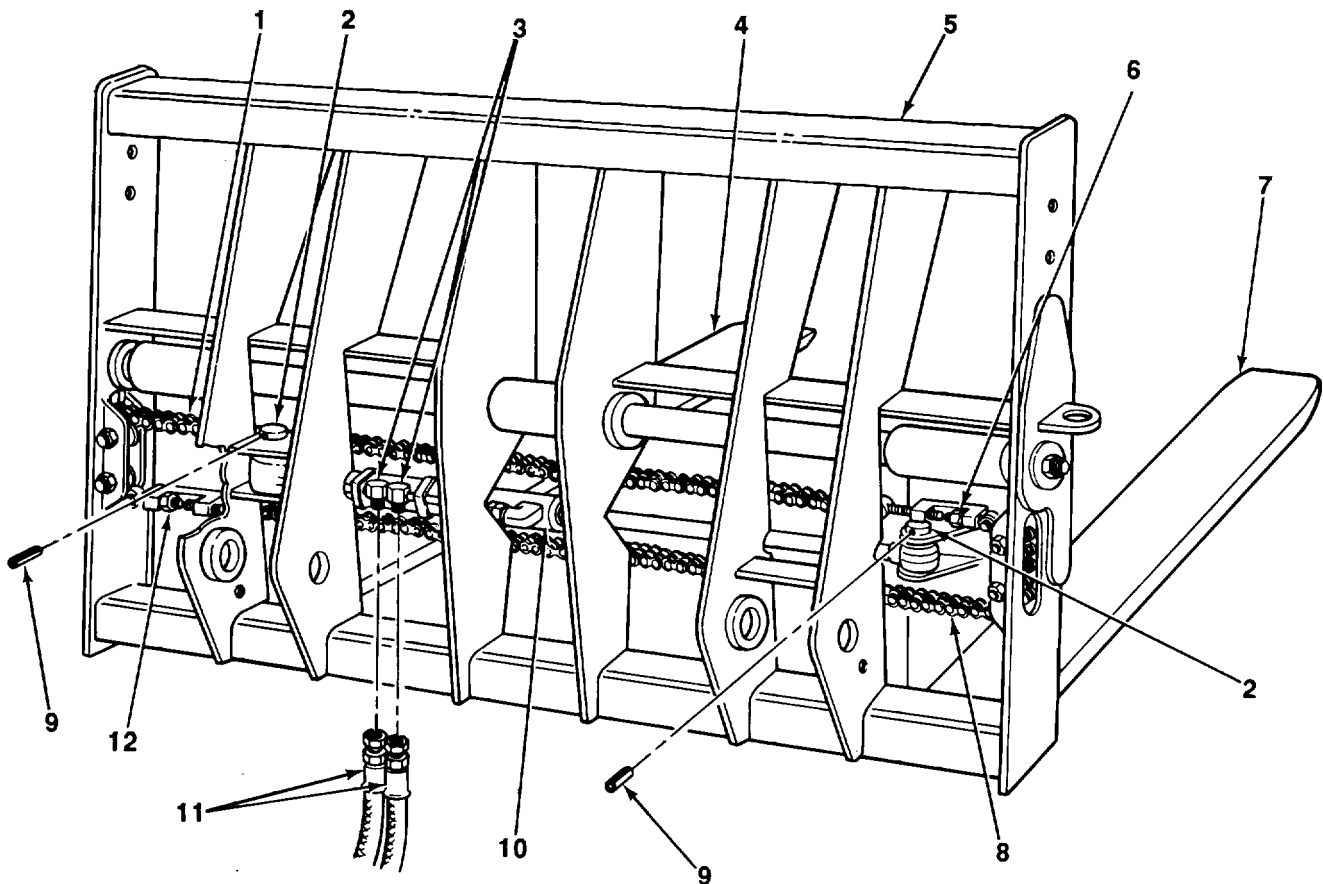
1. Loosen two locknuts (6 and 12).
2. Remove two hoses (11) from lines (3).

NOTE

Perform step 3 only if fork spacing cylinder is not operational.

3. Remove two locknuts (6 and 12) and chains (1 and 8) from forks (4 and 7). Discard locknuts.
4. Remove four springpins (9) and two pins (2) from fork spacing cylinder (10). Discard springpins.
5. Remove fork spacing cylinder (10) from carriage assembly (5).
6. Remove fork spacing cylinder hoses, lines, and fittings (see paragraph 17-26).

17-33. FORK SPACING CYLINDER REPLACEMENT (Con't).

**b. INSTALLATION**

1. Install fork spacing cylinder hoses, lines, and fittings (see paragraph 17-26).
2. Position fork spacing cylinder (10) on carriage assembly (5).
3. Apply a coat of grease to two pins (2).
4. Install fork spacing cylinder (10) on carriage assembly (5) with two pins (2) and four new springpins (9).
5. Install two hoses (11) on lines (3).

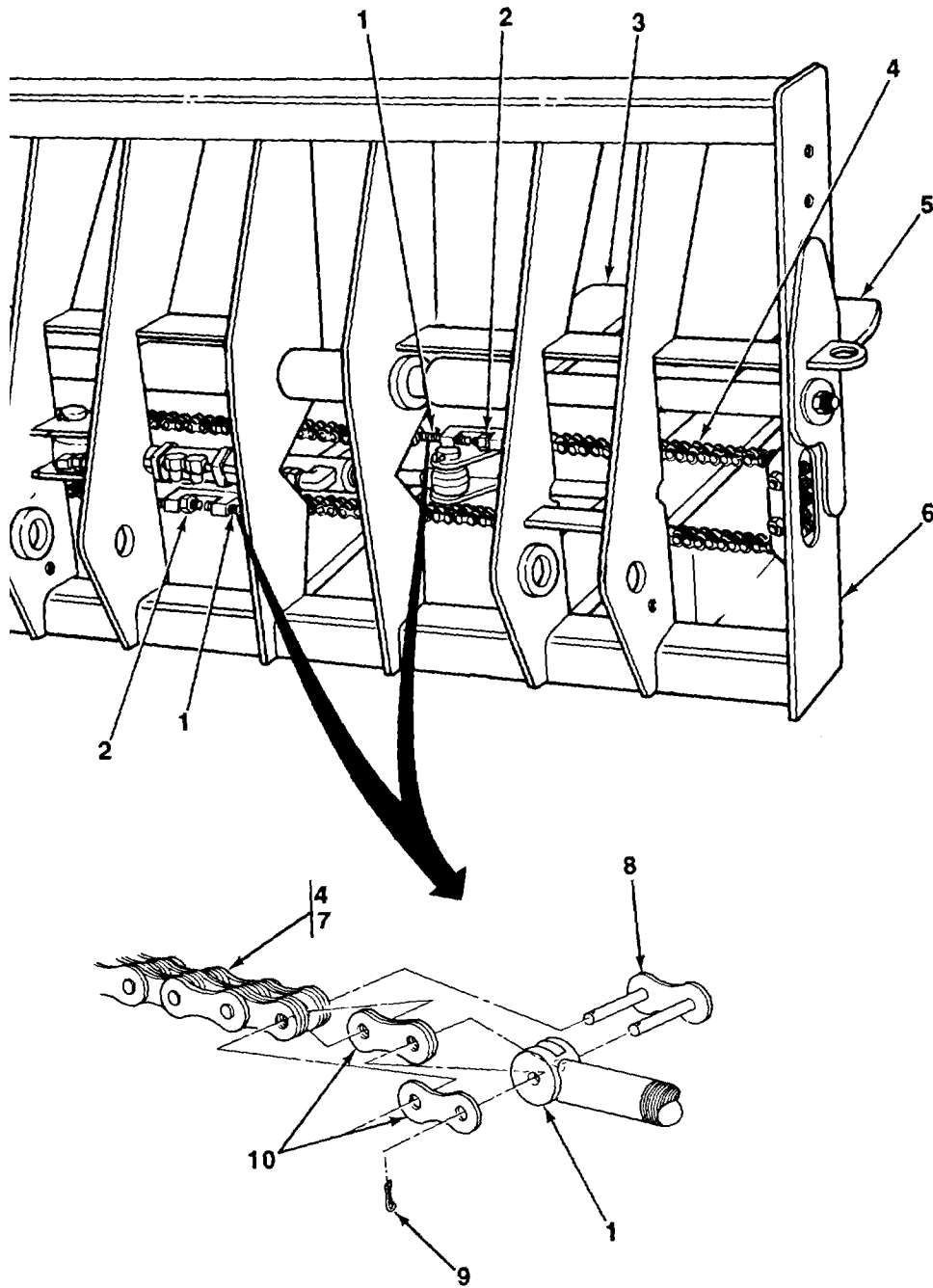
NOTE

Perform step 6 only if chains were removed.

6. Position two chains (1 and 8) and locknuts (6 and 12) on forks (4 and 7).
7. Evenly tighten two locknuts (6 and 12) until there is no slack in chains (1 and 8).

TA707682

17-34. FORK SPACING CHAINS REPLACEMENT (Con't)

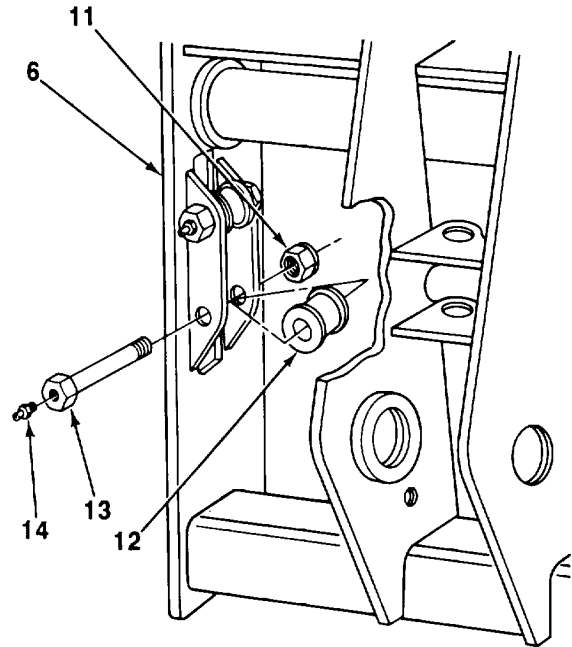


TA707683

17-34. FORK SPACING CHAINS REPLACEMENT (Con't).**NOTE**

Perform steps 6 and 7 at right and left sides of carriage assembly. Each side has two rollers, pins, and locknuts.

6. Remove four locknuts (11), pins (13), and rollers (12) from carriage assembly (6). Discard locknuts.
7. If damaged, remove four lubrication fittings (14) from pins (13).

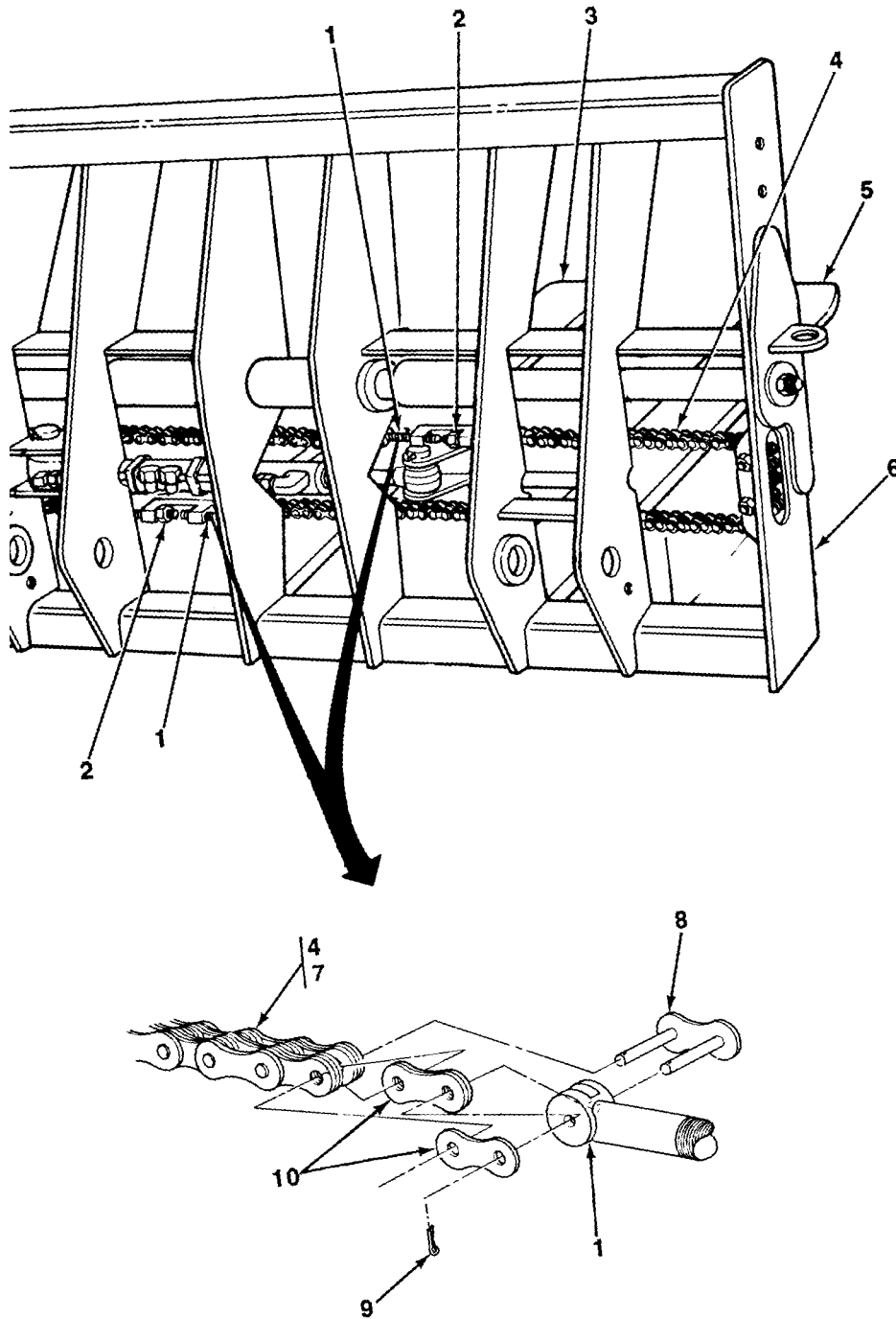
**b. INSTALLATION****NOTE**

Perform steps 1 through 3 at right and left sides of carriage assembly. Each side has two rollers, pins, and locknuts.

1. If removed, install four lubrication fittings (14) on pins (13).
2. Apply a coat of grease to surface of four pins (13).
3. Install four rollers (12) on carriage assembly (6) with four pins (13) and new locknuts (11).
4. Position two chains (4 and 7) on carriage assembly (6).
5. Install two chains (4 and 7) on chain adjusters (1) with six flat links (10), two links (8), and eight new cotter pins (9).
6. Install two chain adjusters (1) on left and right forks (3 and 5) with two new locknuts (2). Do not fully tighten locknuts.
7. Tighten two locknuts (2) evenly until there is no slack in chains (4 and 7).

TA707684

17-34. FORK SPACING CHAINS REPLACEMENT (Con't)



FOLLOW-ON TASKS:

- Apply grease to lubrication fittings (see LO 10-3930-659-12).

TA707685

17-35. HYDRAULIC RESERVOIR FILLER CAP AND COVER REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Materials/Parts:

- One screw
- Two gaskets

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
 - Electric drill, portable (Item 11, Appendix F)
 - Twist drill set (Item 12, Appendix F)
-

a. REMOVAL

1. Remove 14 screws (3), washers (2), bracket (1), hydraulic reservoir cover (9), and gasket (7) from hydraulic reservoir (8). Discard gasket.

NOTE

Perform steps 2 through 6 only if hydraulic reservoir filler cap or hydraulic reservoir cover is damaged.

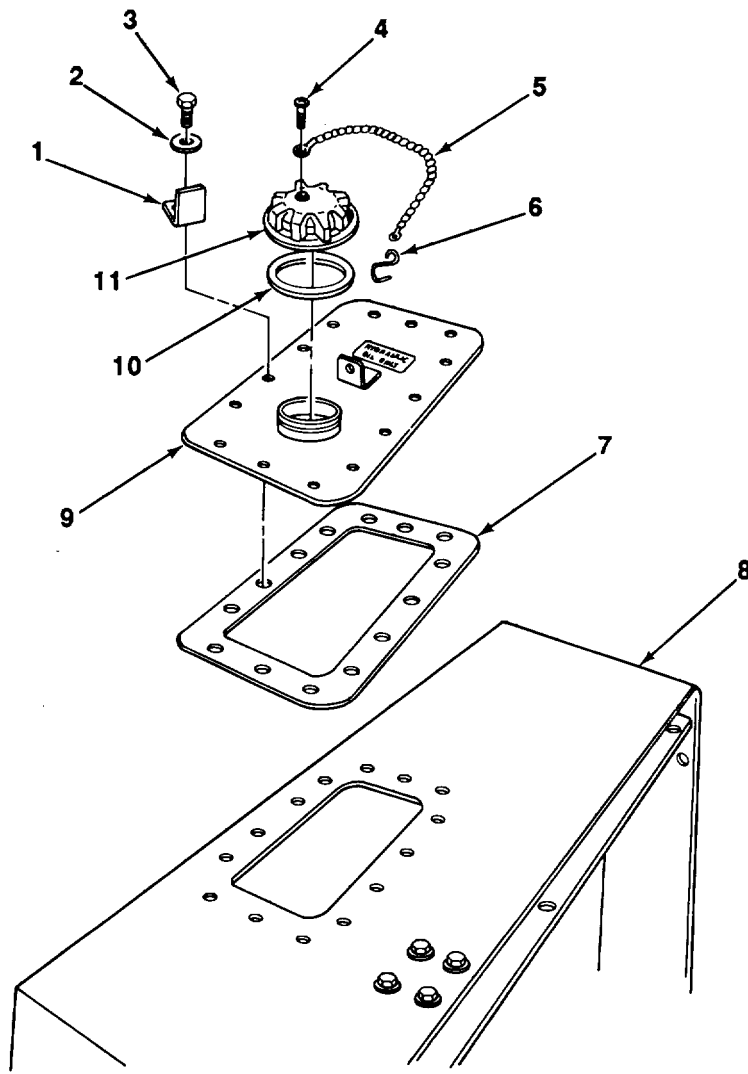
2. Remove hook (6) from bracket (1).
3. Remove hydraulic reservoir filler cap (11) from hydraulic reservoir cover (9).
4. Remove gasket (10) from hydraulic reservoir filler cap (11). Discard gasket.
5. Remove hook (6) from chain (5).
6. Remove screw (4) and chain (5) from hydraulic reservoir filler cap (11). Discard screw.

b. INSTALLATION**NOTE**

Perform steps 1 through 5 only if hydraulic reservoir filler cap or hydraulic reservoir cover was removed.

1. Install chain (5) on hydraulic reservoir filler cap (11) with new screw (4).
2. Install hook (6) on chain (5).
3. Install new gasket (10) on hydraulic reservoir filler cap (11).
4. Install hydraulic reservoir filler cap (11) and chain (5) as an assembly on hydraulic reservoir cover (9).
5. Install hook (6) on bracket (1).
6. Install new gasket (7), hydraulic reservoir cover (9), and bracket (1) on hydraulic reservoir (8) with 14 washers (2) and screws (3).

17-35. HYDRAULIC RESERVOIR FILLER CAP AND COVER REPLACEMENT (Con't).



TA707686

17-36. HYDRAULIC RESERVOIR REPLACEMENT.*This Task Covers:*

- a. Removal b. Installation

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 13930-659-10).
- Frame locking bar Installed (see TM 10-3930-659-10).
- Hydraulic reservoir drained (see LO 10-3930-659-12).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Engine upper sashes removed (see paragraph 14-15).
- Right engine lower sash removed (see paragraph 14-16).
- Cab skirts remove (see paragraph 14-6).
- Engine hood removed (see paragraph 14-6).
- Secondary steering pump removed (see paragraph 12-5).
- Hydraulic reservoir suction filter removed (see paragraph 17-29).
- Hydraulic reservoir breather filter removed (see paragraph 17-30).
- Hydraulic oil return filter assembly removed (see paragraph 17-31).
- Hydraulic reservoir filler cap and cover removed (see paragraph 17-35).
- Hydraulic reservoir-to-oil return filter line and fittings removed (see paragraph 17-37).

Equipment Conditions (Con't):

- Hydraulic reservoir drain valve and line removed (see paragraph 17-39).
- Hydraulic oil level sight gage removed (see paragraph 19-1).

Materials/Parts:

- Rags (item 27, Appendix C)
- Marker tags (Item 33, Appendix C)
- Fourteen preformed packings

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Adjustable wrench (Item 49, Appendix F)

References:

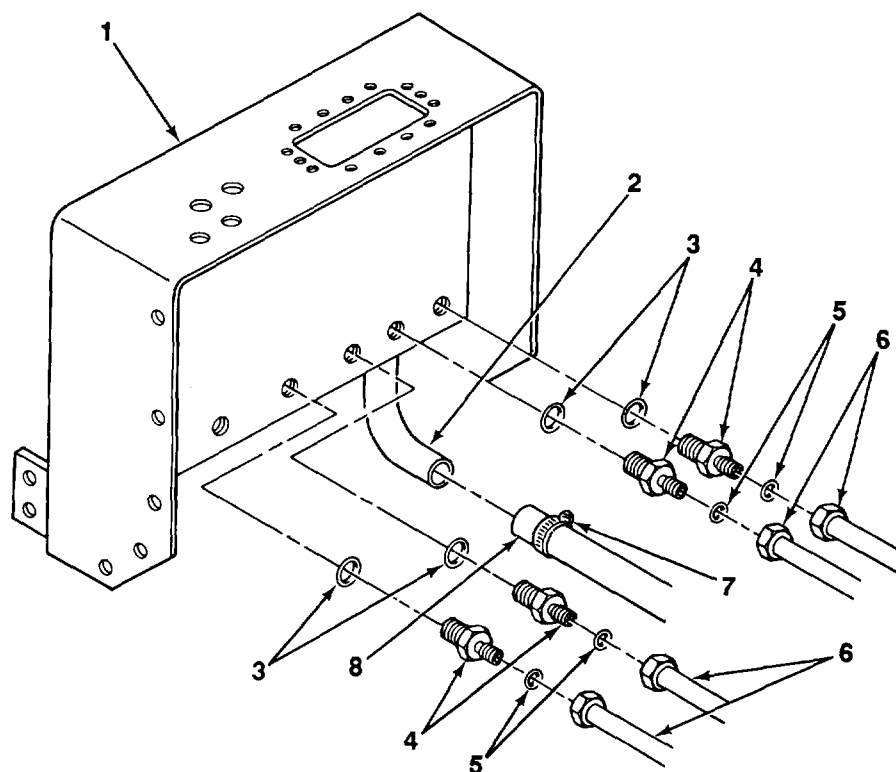
- LO 10-3930-659-12
- TM 10-3930-659-10

NOTE

- **All hoses should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.**
- **A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.**

a. REMOVAL

1. Loosen clamp (7) and remove hose (8) from elbow (2).
2. Remove four hoses (6) from connectors (4).

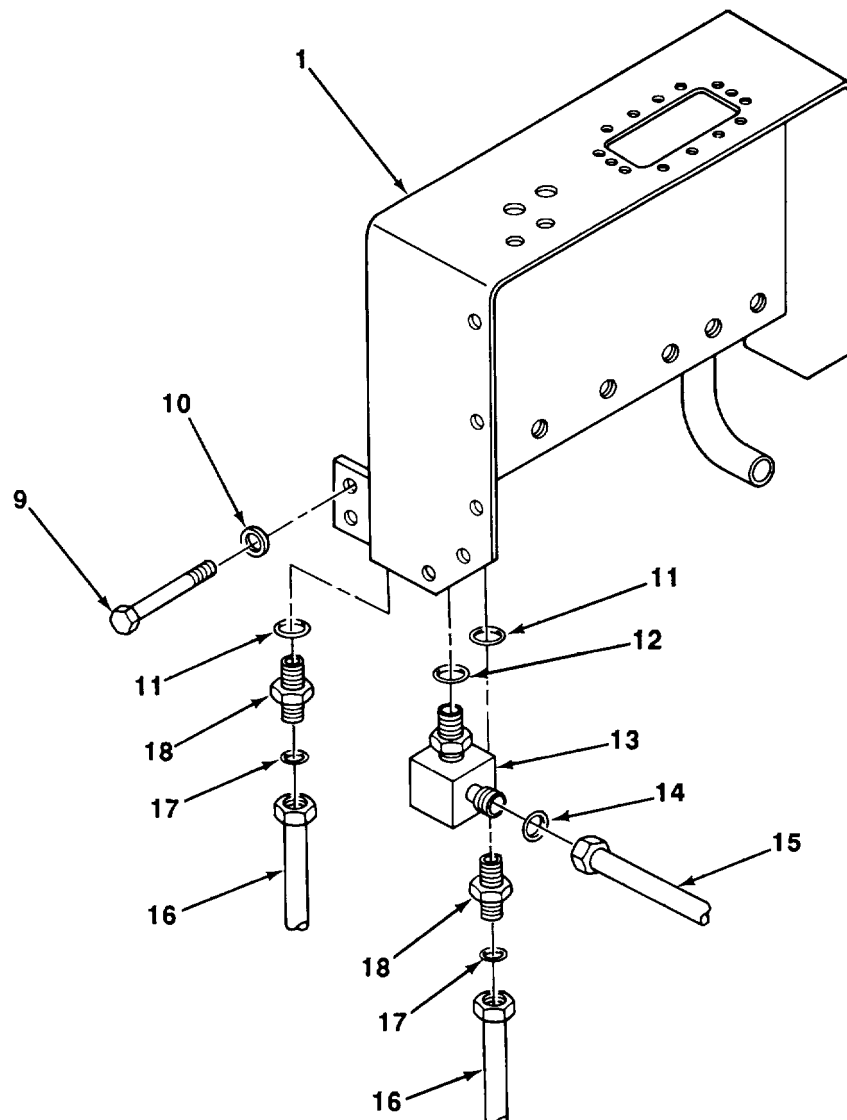
17-36. HYDRAULIC RESERVOIR REPLACEMENT (Con't).

3. Remove four connectors (4) from hydraulic reservoir (1).
4. Remove eight preformed packings (3 and 5) from four connectors (4). Discard preformed packings.

TA707687

17-36. HYDRAULIC RESERVOIR REPLACEMENT (Con't).

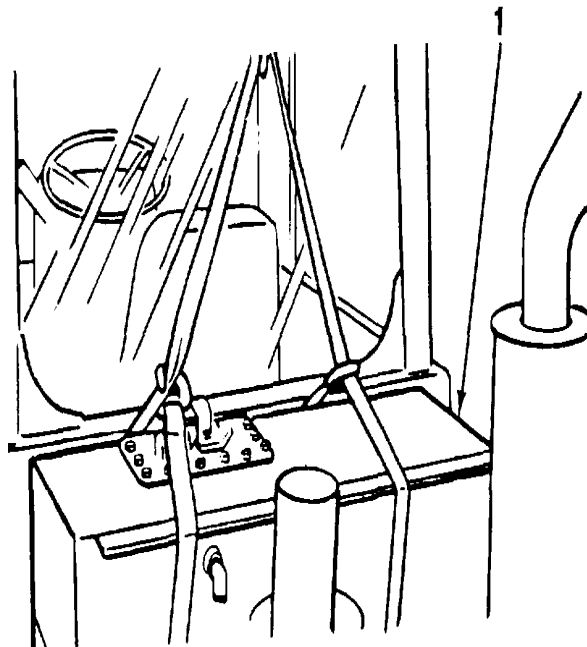
5. Remove two hoses (16) from connectors (18).
6. Remove hose (15) from elbow (13).
7. Remove elbow (13) from hydraulic reservoir (1).
8. Remove two preformed packings (12 and 14) from elbow (13). Discard preformed packings.
9. Remove two connectors (18) from hydraulic reservoir (1).
10. Remove four preformed packings (11 and 17) from two connectors (18). Discard preformed packings.



TA707688

17-36. HYDRAULIC RESERVOIR REPLACEMENT (Con't).

11. Attach suitable lifting device to hydraulic reservoir (1).

**WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

12. Remove four screws (9), washers (10), and hydraulic reservoir (1) from forklift truck.
13. Remove lifting device from hydraulic reservoir (1).

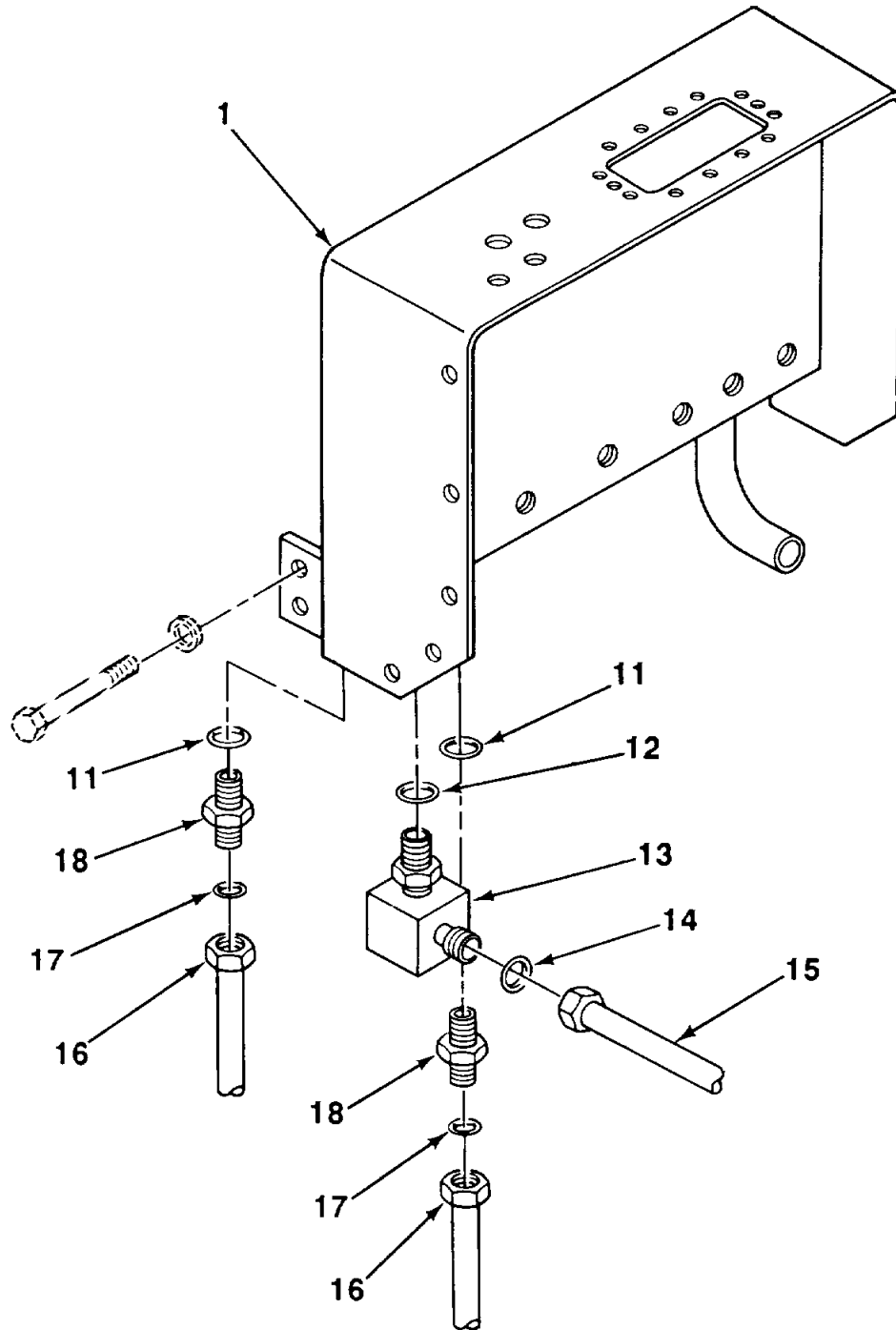
b. INSTALLATION**WARNING**

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

1. Attach suitable lifting device to hydraulic reservoir (1) and position hydraulic reservoir on forklift truck.
2. Install four washers (10) and screws (9) on hydraulic reservoir (1).
3. Remove lifting device from hydraulic reservoir (1).

17-36. HYDRAULIC RESERVOIR REPLACEMENT (Con't).

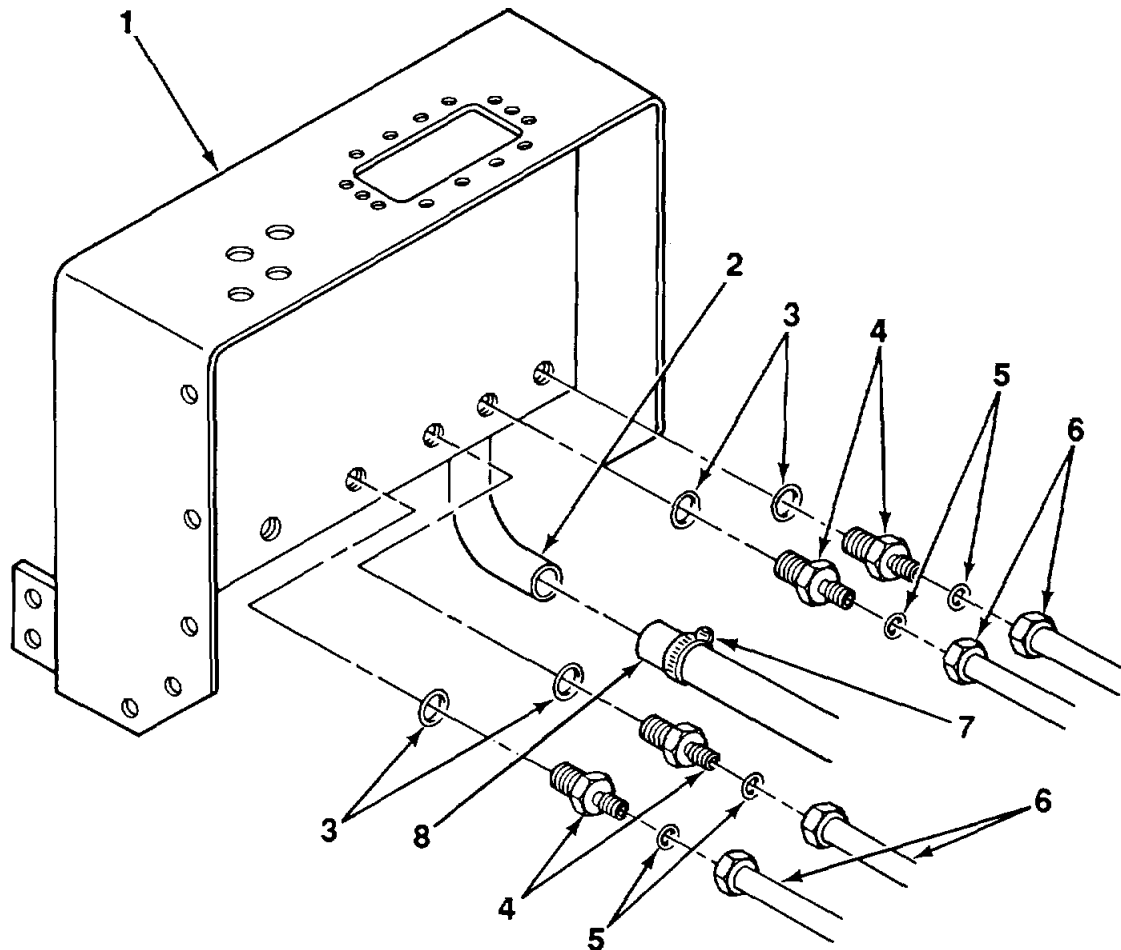
4. Install four new preformed packings (11 and 17) on two connectors (18).
5. Install two connectors (18) on hydraulic reservoir (1).
6. Install two new preformed packings (12 and 14) on elbow (13).
7. Install elbow (13) on hydraulic reservoir (1).
8. Install two hoses (16) on connectors (18).
9. Install hose (15) on elbow (13).



10. Install eight new preformed packings (3 and 5) on four connectors (4).
11. Install four connectors (4) on hydraulic reservoir (1).

17-36. HYDRAULIC RESERVOIR REPLACEMENT (Con't).

12. Install four hoses (6) on connectors (4).
13. Install hose (8) on elbow (2) and tighten clamp (7).

**FOLLOW-ON TASKS:**

- Install hydraulic reservoir drain valve and line (see paragraph 17-39).
- Install hydraulic reservoir-to-oil return filter line and fittings (see paragraph 17-37).
- Install hydraulic reservoir filler cap and cover (see paragraph 17-35).
- Install hydraulic oil return filter assembly (see paragraph 17-31).
- Install hydraulic reservoir breather filter (see paragraph 17-30).
- Install hydraulic reservoir suction filter (see paragraph 17-29).
- Install secondary steering pump (see paragraph 12-5).
- Install hydraulic oil level sight gage (see paragraph 19-1).
- Fill hydraulic reservoir with hydraulic fluid (see TM 10-3930-659-10).
- Install engine hood (see paragraph 14-17).
- Install cab skirts (see paragraph 14-6).
- Install right engine lower sideshield (see paragraph 14-16).
- Install engine upper sideshields (see paragraph 14-15).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).
- Remove frame locking bar (see TM 10-3930-659-10).

TA707691

17-37. HYDRAULIC RESERVOIR-TO-OIL RETURN FILTER LINE REPLACEMENT.*This task covers:*

a. Removal

Installation

*Initial Setup:***Equipment Conditions:**

- Parking brake set (see TM 10-3930-659-10).
- Hydraulic reservoir drained (see LO 10-3930-659-10).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Engine upper sideshields opened (see TM 10-3930-659-10).

Materials/Parts:

- Rags (Item 27, Appendix C)
- Four preformed packings

References:

- LO 10-3930-659-12
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
- Adjustable wrench (Item 49, Appendix F)

NOTE

A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

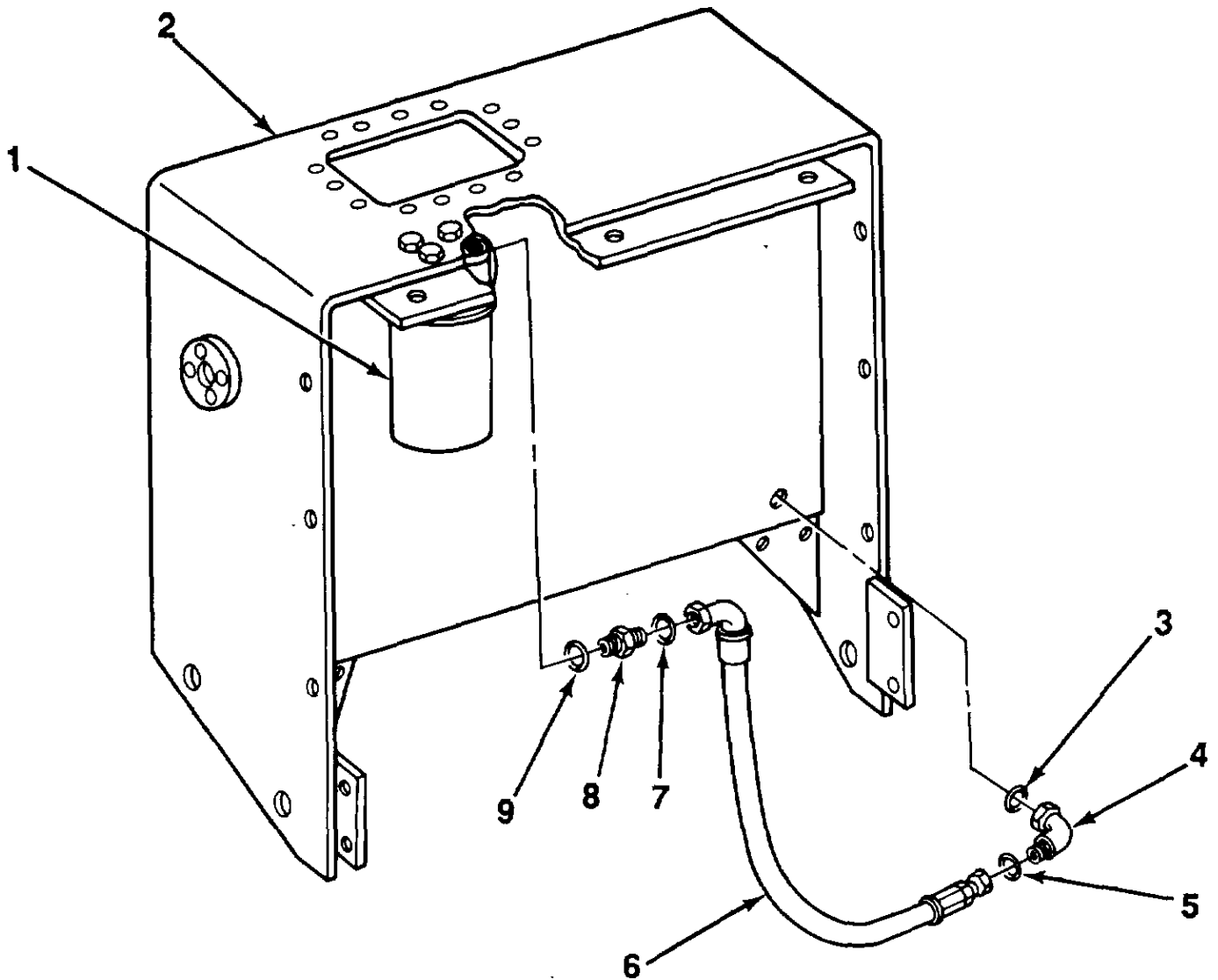
a. REMOVAL

1. Remove hose (6) and preformed packing (7) from adapter (8). Discard preformed packing.
2. Remove adapter (8) and preformed packing (9) from hydraulic oil return filter (1). Discard preformed packing.
3. Remove hose (6) and preformed packing (5) from elbow (4). Discard preformed packing.
4. Remove elbow (4) and preformed packing (3) from hydraulic reservoir (2). Discard preformed packing.

b. INSTALLATION

1. Install new preformed packing (3) and elbow (4) on hydraulic reservoir (2).
2. Install new preformed packing (5) and hose (6) on elbow (4).
3. Install new preformed packing (9) and adapter (8) on hydraulic oil return filter (1).
4. Install new preformed packing (7) and hose (6) on adapter (8).

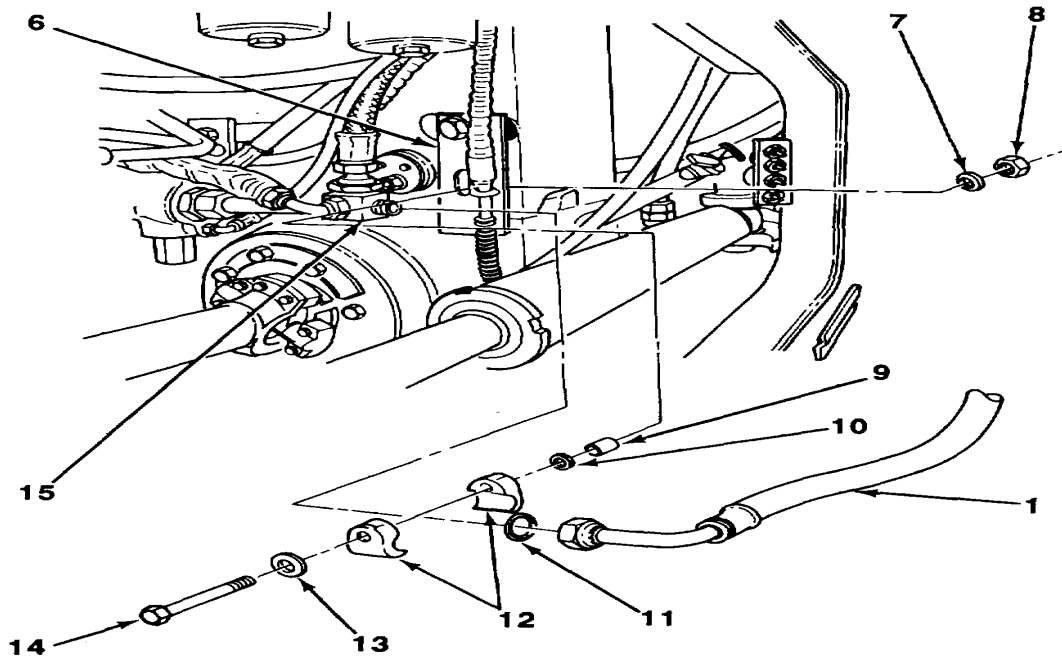
17-37. HYDRAULIC RESERVOIR-TO-OIL RETURN FILTER LINE REPLACEMENT (Con't).

**FOLLOW-ON TASKS:**

- Fill hydraulic reservoir with hydraulic fluid (see TM 10-3930-659-10).
- Close engine upper sideshields (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

TA707692

17-38. HYDRAULIC OIL RETURN FILTER-TO-PRIORITY VALVE LINE REPLACEMENT (Con't).



b. INSTALLATION

1. Install new preformed packing (11) and hose (1) on hydraulic oil return tube (15).
2. Position two clamp halves (12) around hose (1) and Install washer (10), spacer (9), and clamp halves on parking brake bracket (6) with washer (13), screw (14), washer (7), and nut (8).
3. Install new preformed packing (4) and adapter (3) on hydraulic oil return filter head (5).
4. Install new preformed packing (2) and hose (1) on adapter (3).

FOLLOW-ON TASKS:

- Fill hydraulic reservoir with hydraulic fluid as necessary (see TM 10-3930-659-10).
- Install left transmission side guard (see paragraph 14-7).
- Close left engine upper sideshield (see TM 10-3930-659-10).

TA707894

17-39. HYDRAULIC RESERVOIR DRAIN VALVE AND LINE REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Equipment Conditions:

- Hydraulic reservoir drained (see LO 10-3930-659-12).
- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).

Materials/Parts:

- Rags (Item 27, Appendix C)
- One preformed packing

References:

- LO 10-3930-659-12
- TM 10-3930-659-10

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
 - Adjustable wrench (Item 49, Appendix F)
-

NOTE

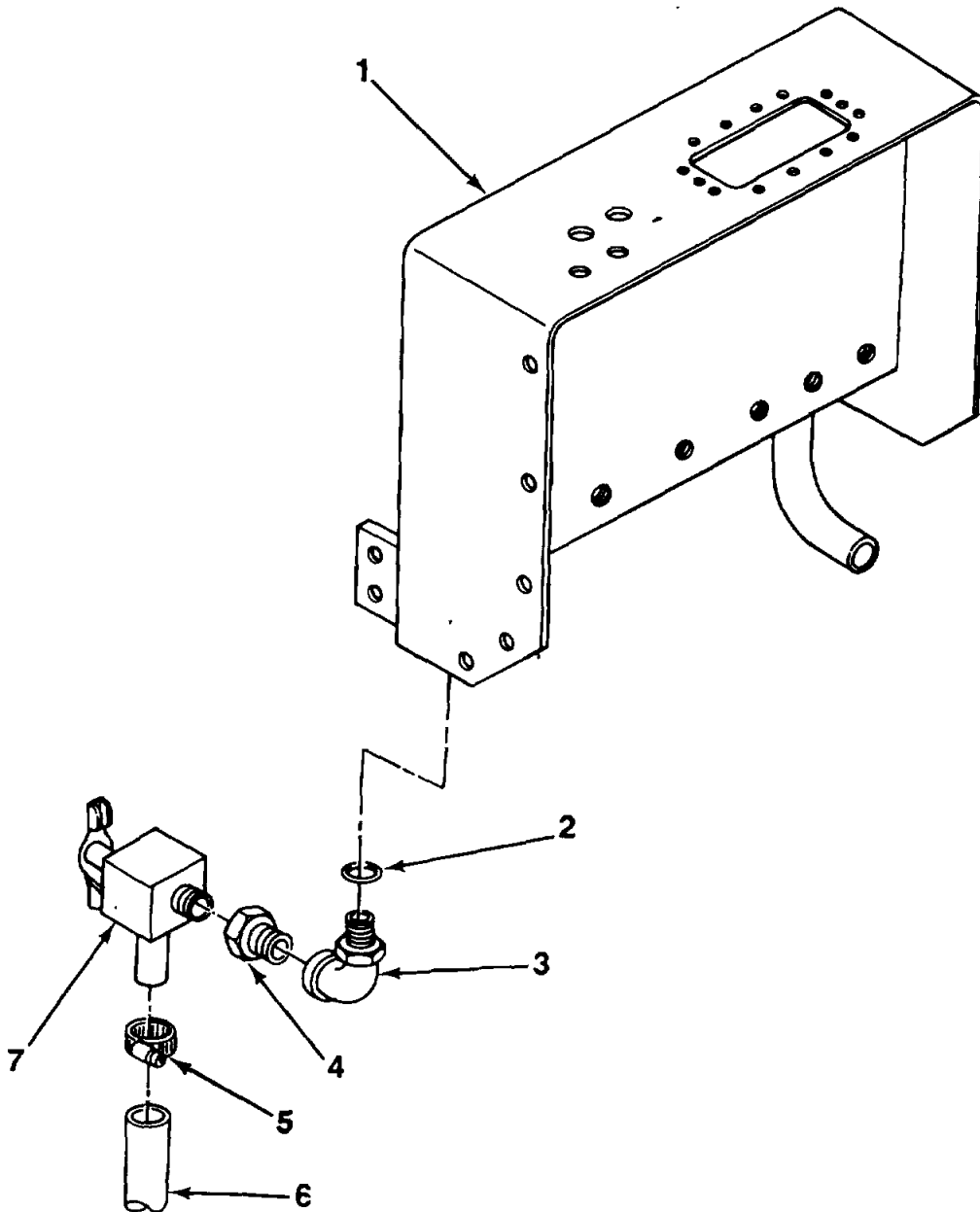
A suitable container should be used to catch any draining hydraulic fluid. Ensure that all spills are properly cleaned.

a. REMOVAL

1. Loosen clamp (5) and remove hose (6) and clamp from hydraulic reservoir drain valve (7).
2. Remove hydraulic reservoir drain valve (7), connector (4), elbow (3), and preformed packing (2) from hydraulic reservoir (1). Discard preformed packing.

b. INSTALLATION

1. Install new preformed packing (2), elbow (3), connector (4), and hydraulic reservoir drain valve (7) on hydraulic reservoir (1).
2. Slide clamp (5) on hose (6) and install hose on hydraulic reservoir drain valve (7). Tighten clamp.

17-39. HYDRAULIC RESERVOIR DRAIN VALVE AND LINE REPLACEMENT (Con't).**FOLLOW-ON TASKS:**

- Fill hydraulic reservoir with hydraulic fluid (see TM 10-3930-659-10).
- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

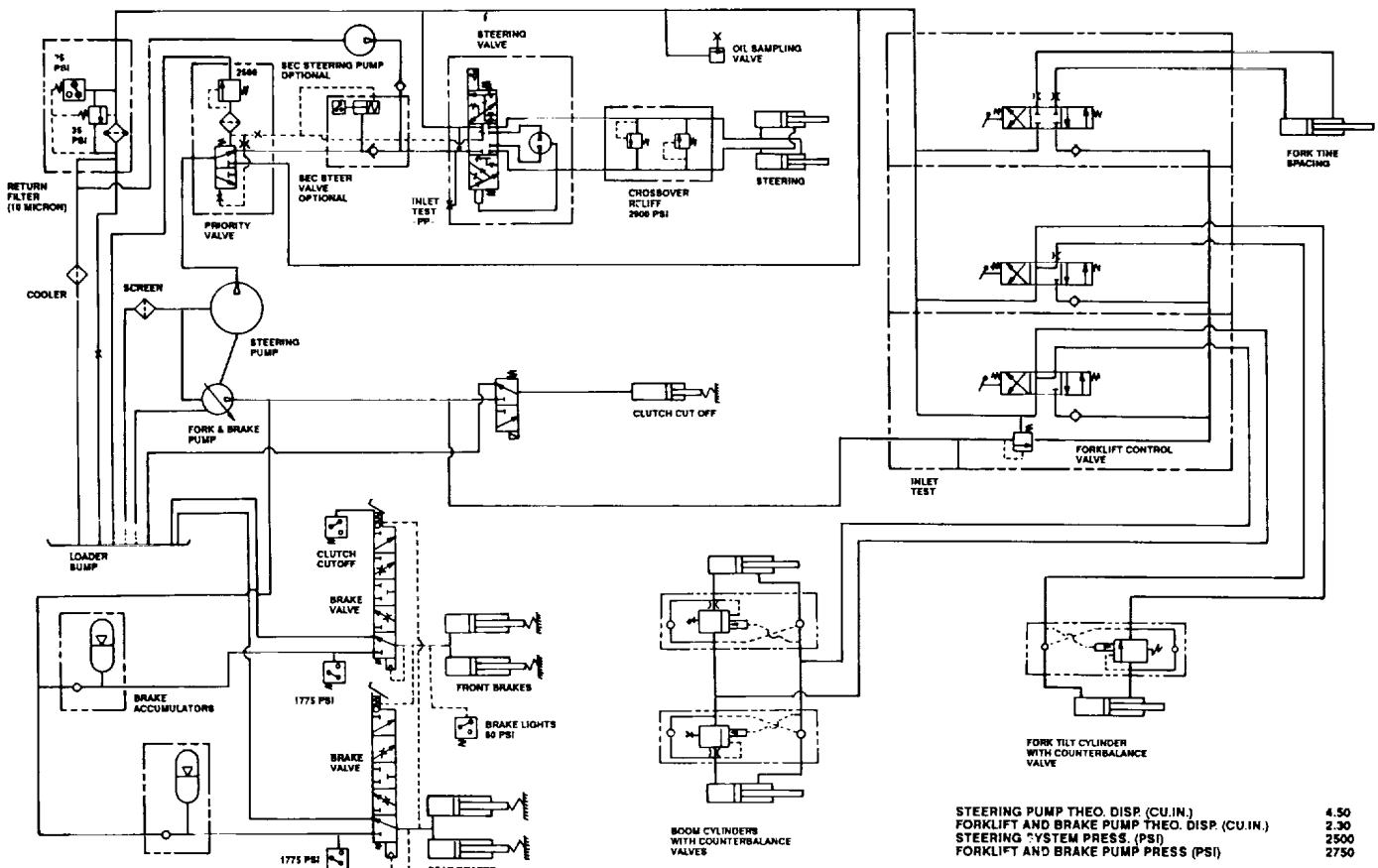
TA707695

17-40. HYDRAULIC SCHEMATIC.

NOTE

This paragraph contains the forklift truck hydraulic schematic. Refer to this schematic when performing hydraulic troubleshooting and maintenance procedures.

HYDRAULIC SCHEMATIC



STEERING PUMP THEO. DISP. (CU. IN.)	4.50
FORKLIFT AND BRAKE PUMP THEO. DISP. (CU. IN.)	2.30
STEERING SYSTEM PRESS. (PSI)	2500
FORKLIFT AND BRAKE PUMP PRESS. (PSI)	2750

TA707696

**CHAPTER 18
WINTERIZATION KITS MAINTENANCE**

Paragraph Number	Paragraph Title	Page Number
18-1	Battery Heater Blanket Replacement.....	18-1
18-2	Battery Warmer and Cable Replacement	18-3
18-3	Engine Coolant Heater and Cable Replacement.....	18-6
18-4	110-volt Junction Box Replacement	18-8
18-5	Engine Oil Pan Heater, Thermostat, and Cable Replacement	18-10

18-1. BATTERY HEATER BLANKET REPLACEMENT.

This Task Covers:

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial Setup:

Equipment Conditions:

- Battery removed (see paragraph 6-42).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

- Tie-down straps (two) (Item 32, Appendix C)

General Safety Instructions:

- DO NOT perform battery system maintenance while smoking or near fire, flames, or sparks.

18-1

18-1. BATTERY HEATER BLANKET REPLACEMENT (Con't).**WARNING**

- Remove all Jewelry such as rings, dog tags, bracelets, etc. If Jewelry contacts battery terminal, a direct short will result, causing Instant heating of Jewelry which will result In severe Injury to personnel.
- Battery gases can explode. DO NOT smoke or allow sparks or open flames near batteries. Wear safety glasses or goggles when checking batteries. Failure to follow this warning may result In death or serious Injury to personnel.

NOTE

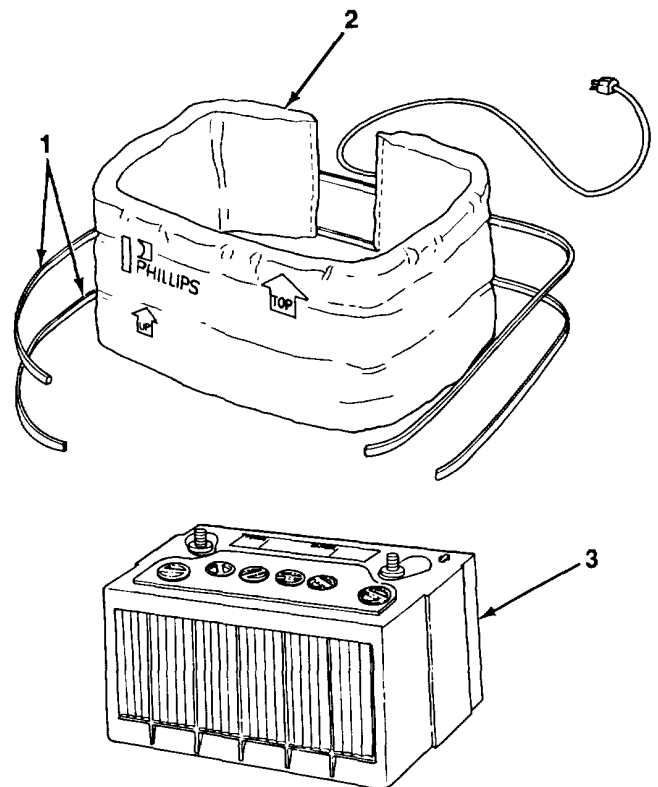
Right and left battery heater blankets are removed and Installed the same way. Right battery heater blanket is Illustrated.

a. REMOVAL

Remove two tie-down straps (1) and battery heater blanket (2) from battery (3). Discard tie-down straps.

b. INSTALLATION

Install battery heater blanket (2) on battery (3) with two new tie-down straps (1).

**FOLLOW-ON TASKS:**

- Install battery (see paragraph 6-42).

TA706771

18-2. BATTERY WARMER AND CABLE REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Conveyorized fork attachments removed from side of forklift truck (right engine upper sideshield only) (see paragraph 17-13).
- Right and left engine upper sideshields opened (see TM 10-3930-659-10).
- Battery removed (see paragraph 642).

Materials/Parts:

- Two locknuts

Tools/Test Equipment:

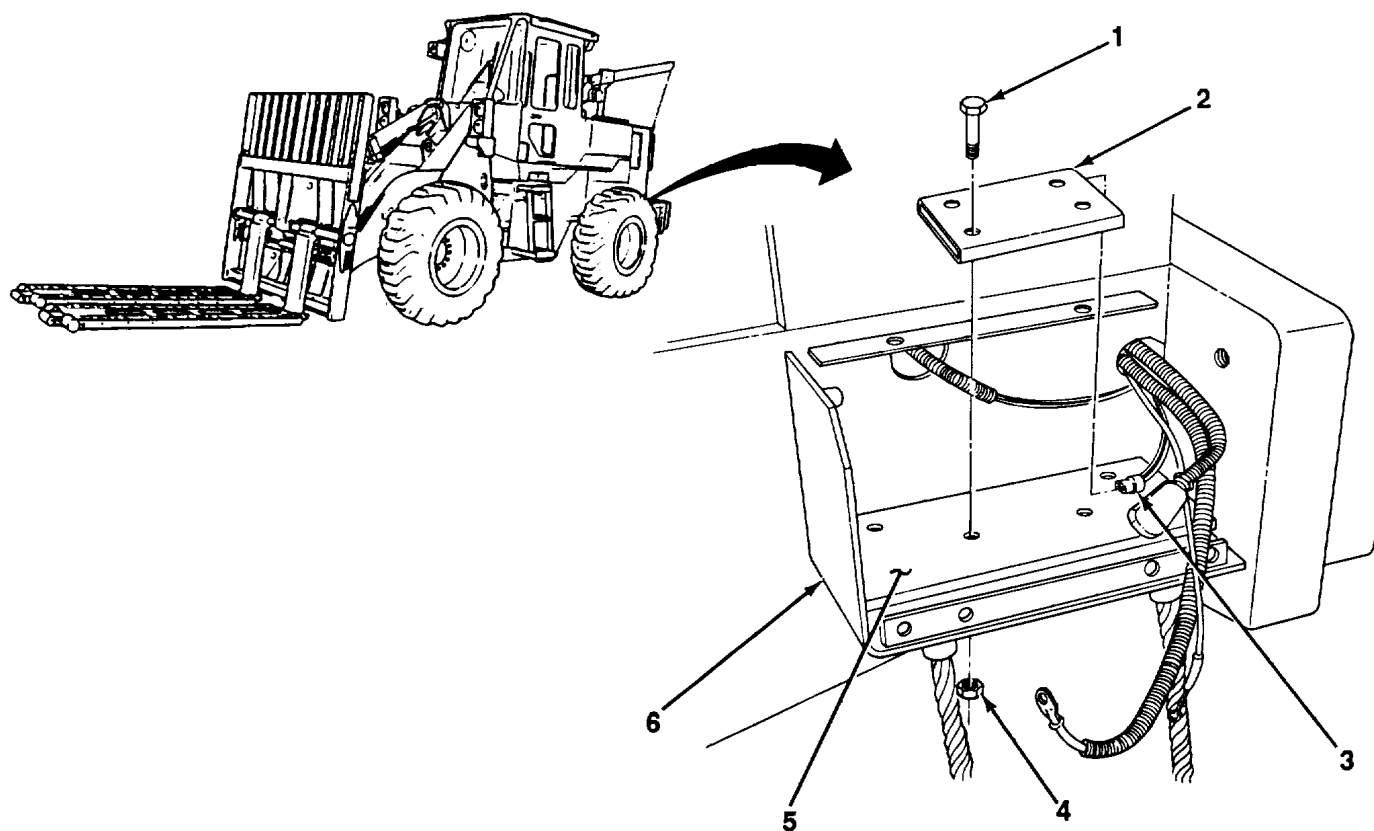
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

NOTE

Right and left battery warmers are removed and installed the same way. Left battery warmer is illustrated.

18-2. BATTERY WARMER AND CABLE REPLACEMENT (Con't.)**a. REMOVAL**

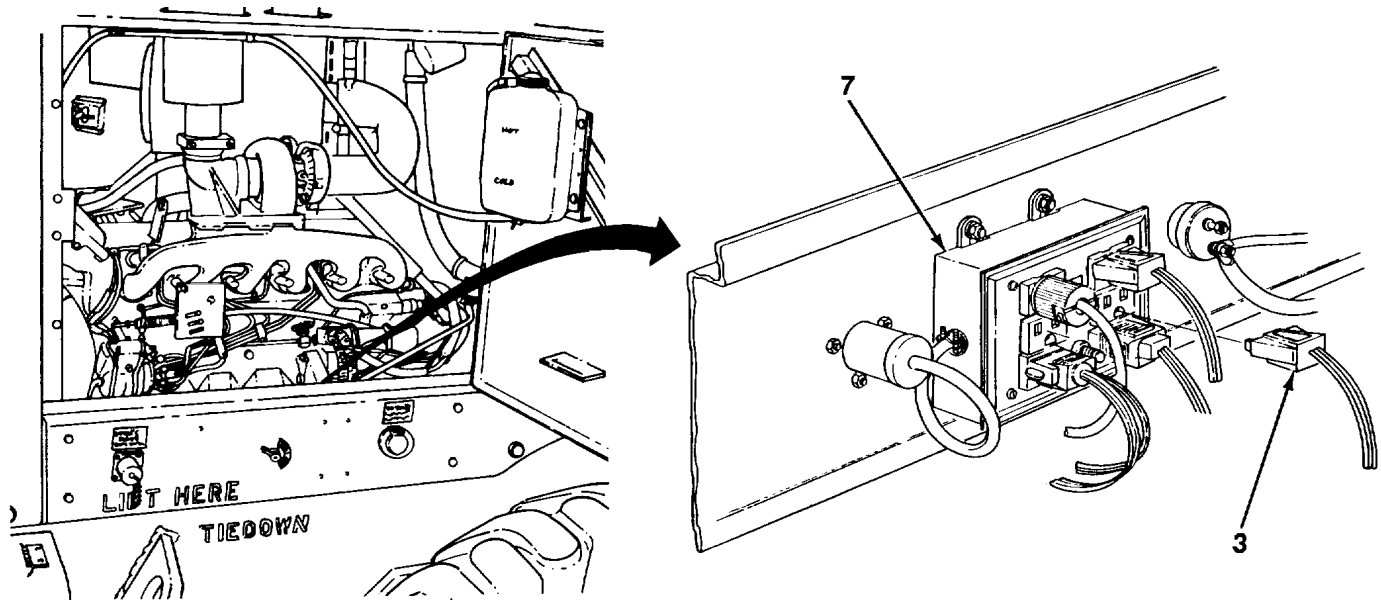
1. Remove battery warmer cable (3) from battery warmer (2).
2. Remove two locknuts (4), screws (1), and battery warmer (2) from battery box (6). Discard locknuts.
3. If damaged, remove wooden Insulator (5) from battery box (6).

TA706772

18-2. BATTERY WARMER AND CABLE REPLACEMENT (Con't).**NOTE**

Battery warmer cable of RIGHT battery warmer is located in conduit with right battery heater blanket cable.

4. Remove battery warmer cable (3) from 110-volt junction box (7) and remove battery warmer cable from forklift truck.

**b. INSTALLATION**

1. Position battery warmer cable (3) on forklift truck.
2. Install battery warmer cable (3) on 110-volt junction box (7).
3. If removed, install wooden insulator (5) on battery box (6).
4. Install battery warmer (2) on battery box (6) with two screws (1) and new locknuts (4).
5. Install battery warmer cable (3) on battery warmer (2).

FOLLOW-ON TASKS:

- Install battery (see paragraph 6-42).
- Close right and left engine upper sideshields (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

TA706773

18-3. ENGINE COOLANT HEATER AND CABLE REPLACEMENT.*This Task Covers:*

- a. Removal b. Installation

*Initial Setup:***Equipment Conditions:**

- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).
- Engine cooling system drained (see paragraph 5-38).

Tools/Test Equipment:

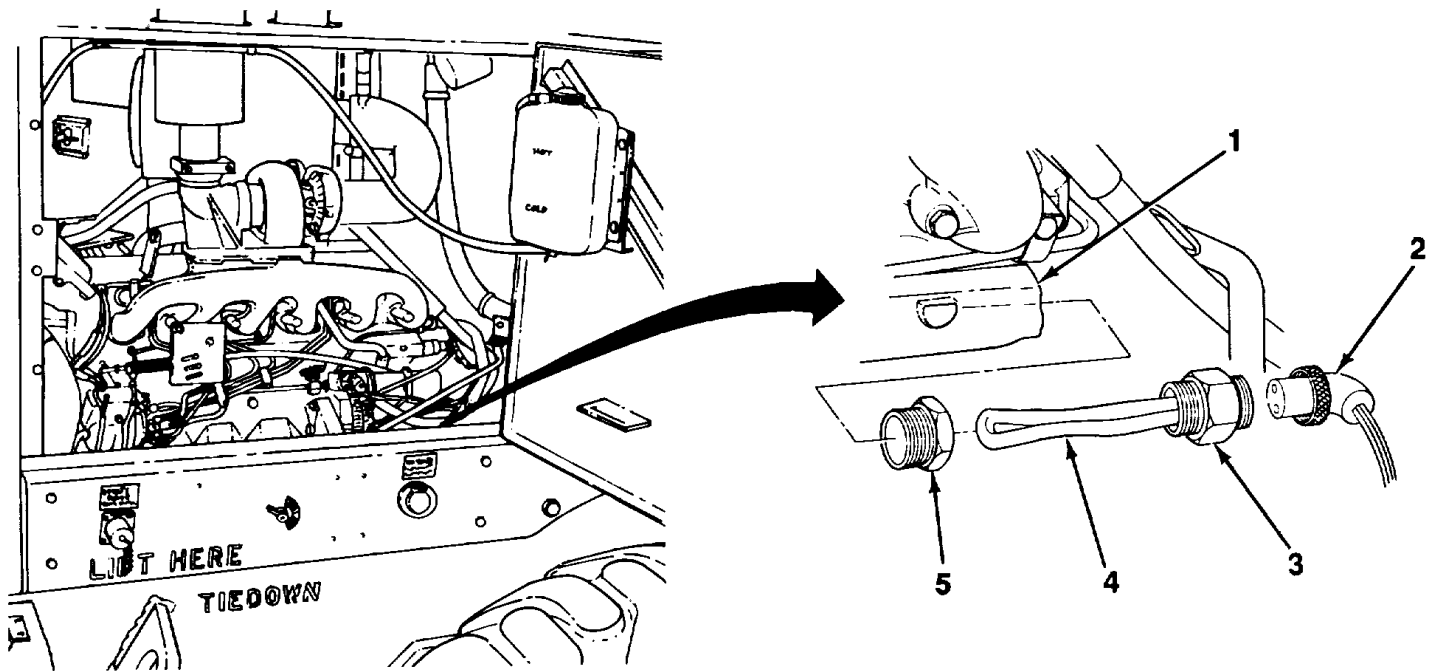
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10- 3930-659-10

a. REMOVAL

1. Remove engine coolant heater cable (2) from engine coolant heater (3).
2. Remove engine coolant heater (3) and adapter (5) from cylinder block (1).

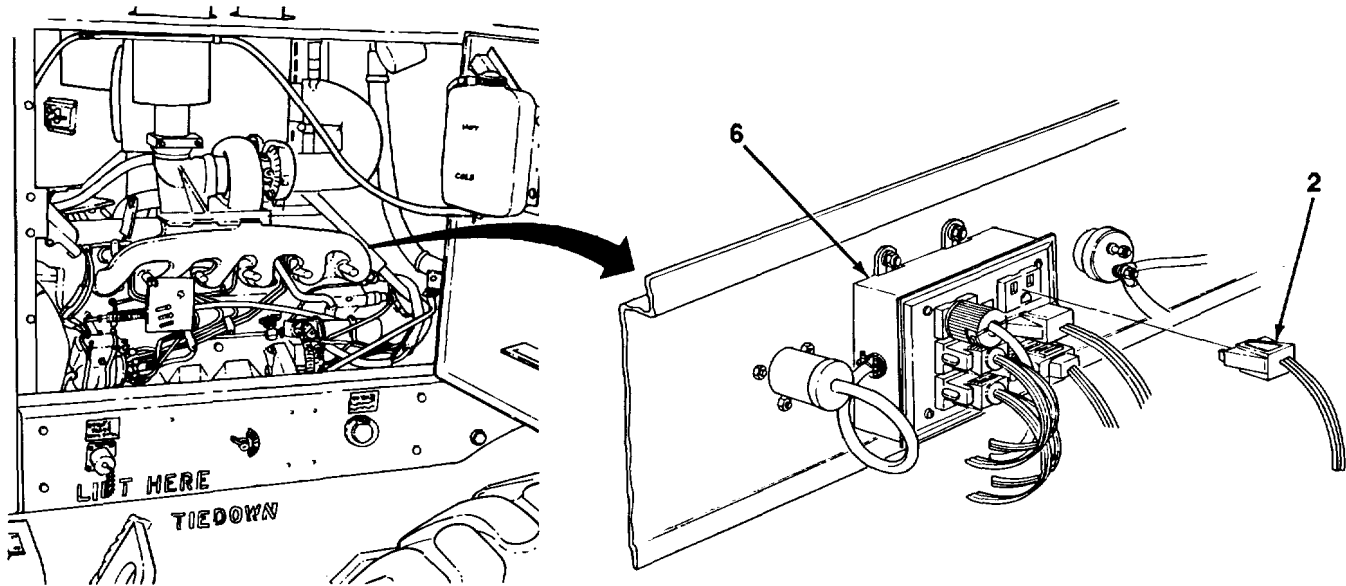


TA706774

18-3. ENGINE COOLANT HEATER AND CABLE REPLACEMENT (Con't).**NOTE**

Remove tie-down straps as necessary.

3. Remove engine coolant heater cable (2) from 110-volt junction box (6) and remove engine coolant heater cable from forklift truck

**b. INSTALLATION**

1. Position engine coolant heater cable (2) on forklift truck.

NOTE

Install new tie-down straps as necessary.

2. Install engine coolant heater cable (2) on 110-volt junction box (6).
3. Install adapter (5) and engine coolant heater (3) on cylinder block (1). Turn engine coolant heater clockwise until element (4) contacts cylinder block, then turn engine coolant heater counterclockwise until element contacts cylinder block. Move element to center position.
4. Install engine coolant heater cable (2) on engine coolant heater (3).

FOLLOW-ON TASKS:

- Fill engine cooling system (see paragraph 5-38).
- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install coveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

TA706775

18-4. 110-VOLT JUNCTION BOX REPLACEMENT.*This Task Covers:*

- a. Removal
- b. Installation

*Initial Setup:***Equipment Conditions:**

- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10).

Tools/Test Equipment:

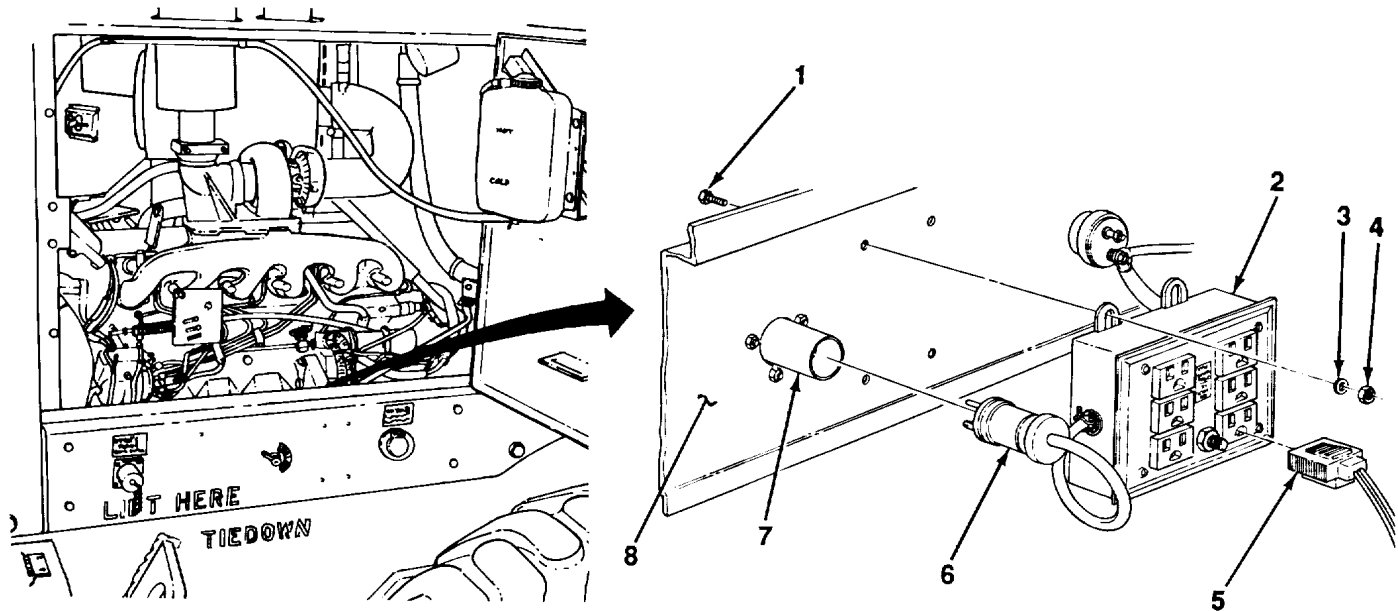
- General mechanic's tool kit (Item 44, Appendix F)

References:

- TM 10-3930-659-10

a. REMOVAL

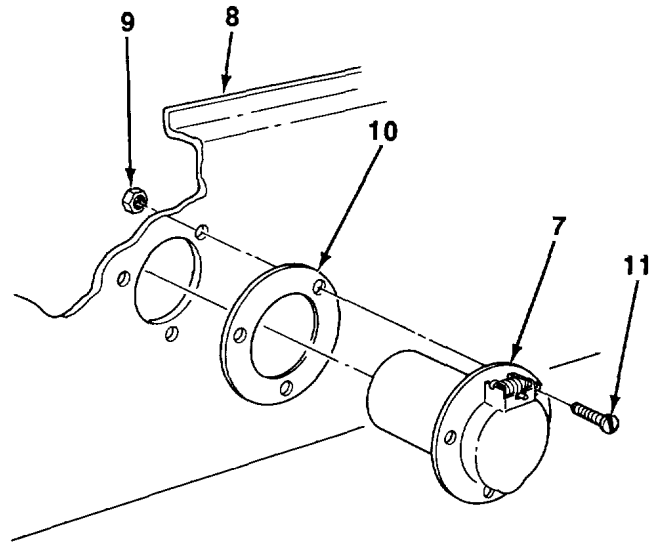
1. Remove six plugs (5) from 1 10-volt junction box (2).
2. Remove plug (6) from 110-volt AC receptacle (7).
3. Remove four nuts (4), washers (3), screws (1), and 1 10-volt junction box (2) from right engine lower sideshield (8).



TA706776

18-4. 110-VOLT JUNCTION BOX REPLACEMENT (Con't).

4. Remove three nuts (9), screws (11), 110-volt AC receptacle (7), and gasket (10) from right engine lower sideshield (8).

**b. INSTALLATION**

1. Install gasket (10) and 110-volt AC receptacle (7) on right engine lower sideshield (8) with three screws (11) and nuts (9).
2. Install 110-volt junction box (2) on right engine lower sideshield (8) with four screws (1), washers (3), and nuts (4).
3. Install plug (6) on 110-volt AC receptacle (7).
4. Install six plugs (5) on 110-volt junction box (2).

FOLLOW-ON TASKS:

- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

TA706777

18-5. ENGINE OIL PAN HEATER, THERMOSTAT, AND CABLE REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Equipment Conditions:

- Conveyorized fork attachments removed from side of forklift truck (see paragraph 17-13).
- Right engine upper sideshield opened (see TM 10-3930-659-10)
- Engine oil drained (see LO 10-3930-659-12).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

References:

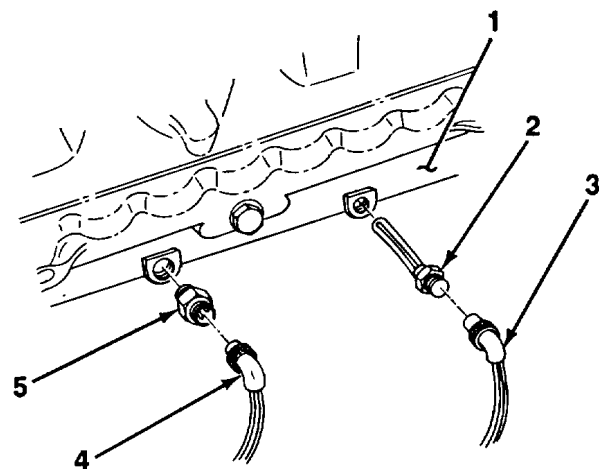
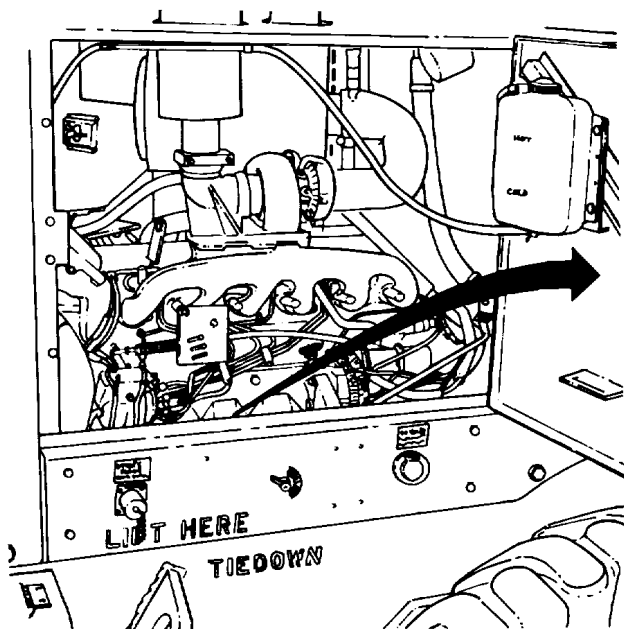
- LO 10-3930-659-12
- TM 10-3930-659-10

a. REMOVAL

NOTE

Remove tie-down straps as necessary.

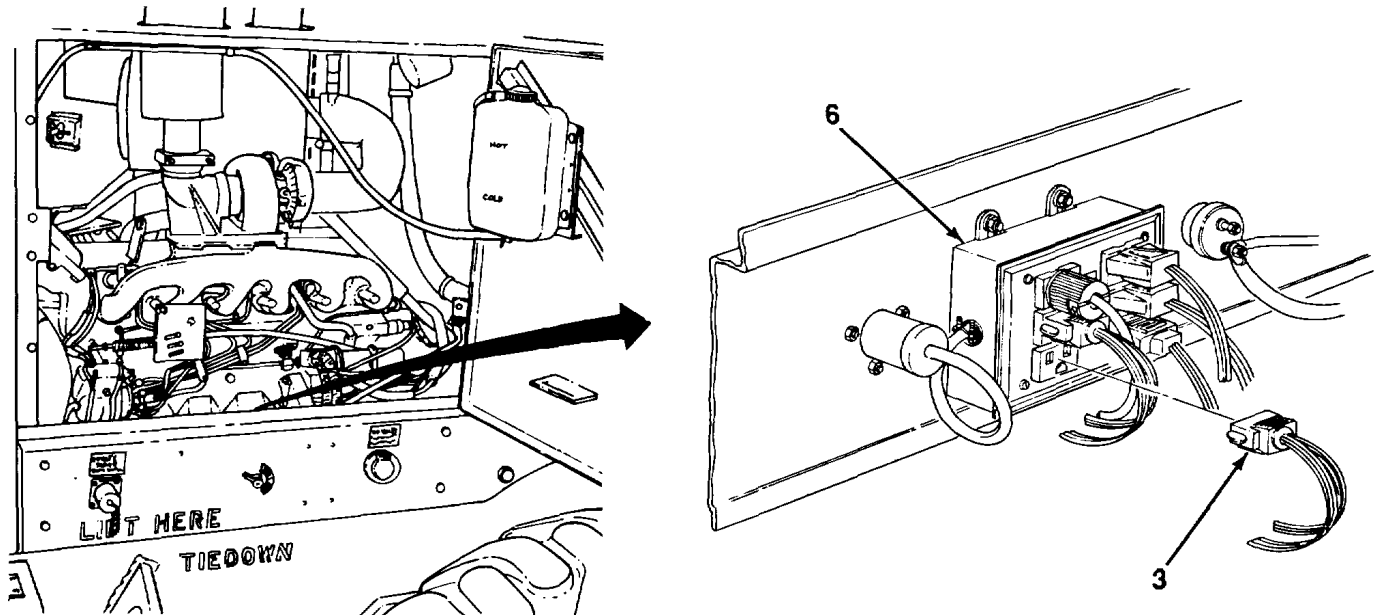
1. Remove engine oil pan heater and thermostat cable (3) from engine oil pan heater (2).
2. Remove engine oil pan heater (2) from engine oil pan (1).



TA706778

18-5. ENGINE OIL PAN HEATER, THERMOSTAT, AND CABLE REPLACEMENT (Con't).

3. Remove connector (4) from thermostat (5).
4. Remove thermostat (5) from engine oil pan (1).
5. Remove engine oil pan heater and thermostat cable (3) from 110-volt junction box (6) and remove engine oil pan heater and thermostat cable from forklift truck.

**b. INSTALLATION**

1. Position engine oil pan heater and thermostat cable (3) on forklift truck.

NOTE

Install new tie-down straps as necessary.

2. Install engine oil pan heater and thermostat cable (3) on 110-volt junction box (6).
3. Install thermostat (5) on engine oil pan (1).
4. Install connector (4) on thermostat (5).
5. Install engine oil pan heater (2) on engine oil pan (1).
6. Install engine oil pan heater and thermostat cable (3) on engine oil pan heater (2).

FOLLOW-ON TASKS:

- Fill engine with engine oil (see LO 10-3930-659-12).
- Close right engine upper sideshield (see TM 10-3930-659-10).
- Install conveyORIZED fork attachments on side of forklift truck (see paragraph 17-13).

TA706779

CHAPTER 19
NONELECTRICAL GAGES MAINTENANCE

19-1. HYDRAULIC OIL LEVEL SIGHT GAGE REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Equipment Conditions:

- Hydraulic reservoir drained (see LO 10-3930-659-12).

Materials/Parts:

- Two preformed packings
- Four lockwashers

Tools/Test Equipment:

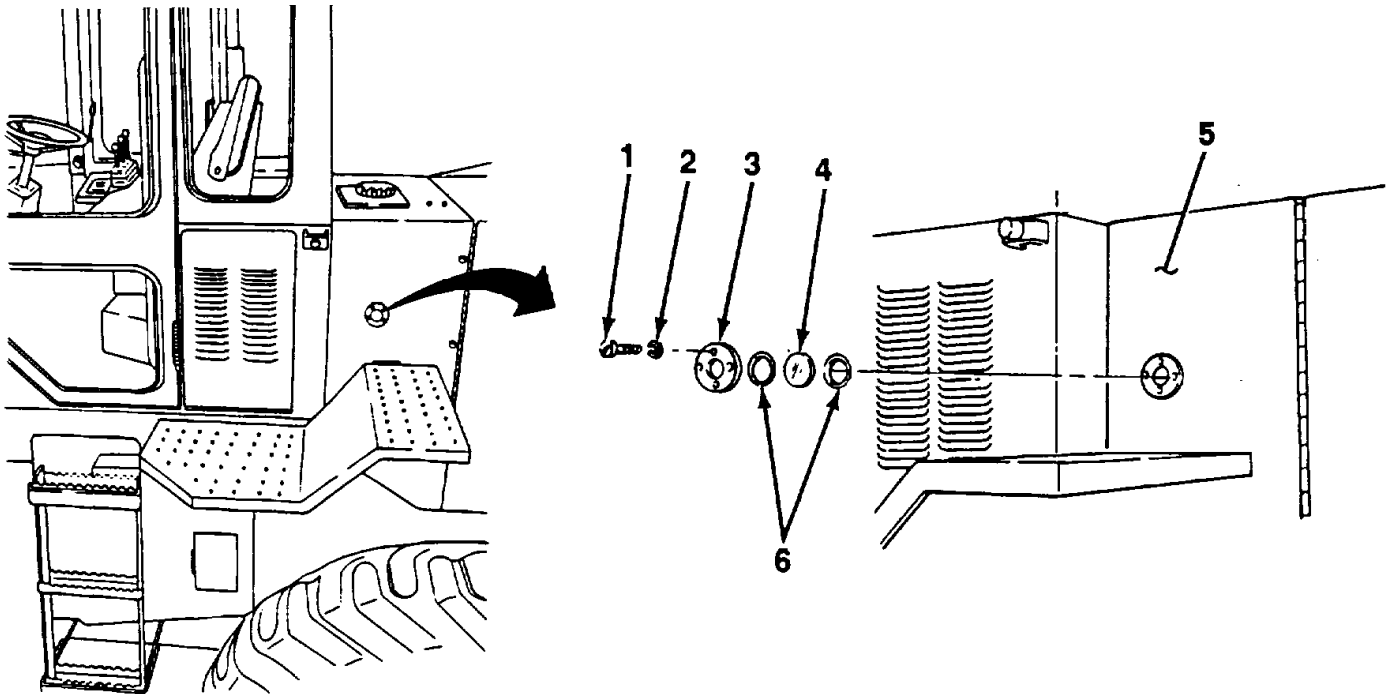
- General mechanic's tool kit (Item 44, Appendix F)

References:

- LO 10-3930-659-12

a. REMOVAL

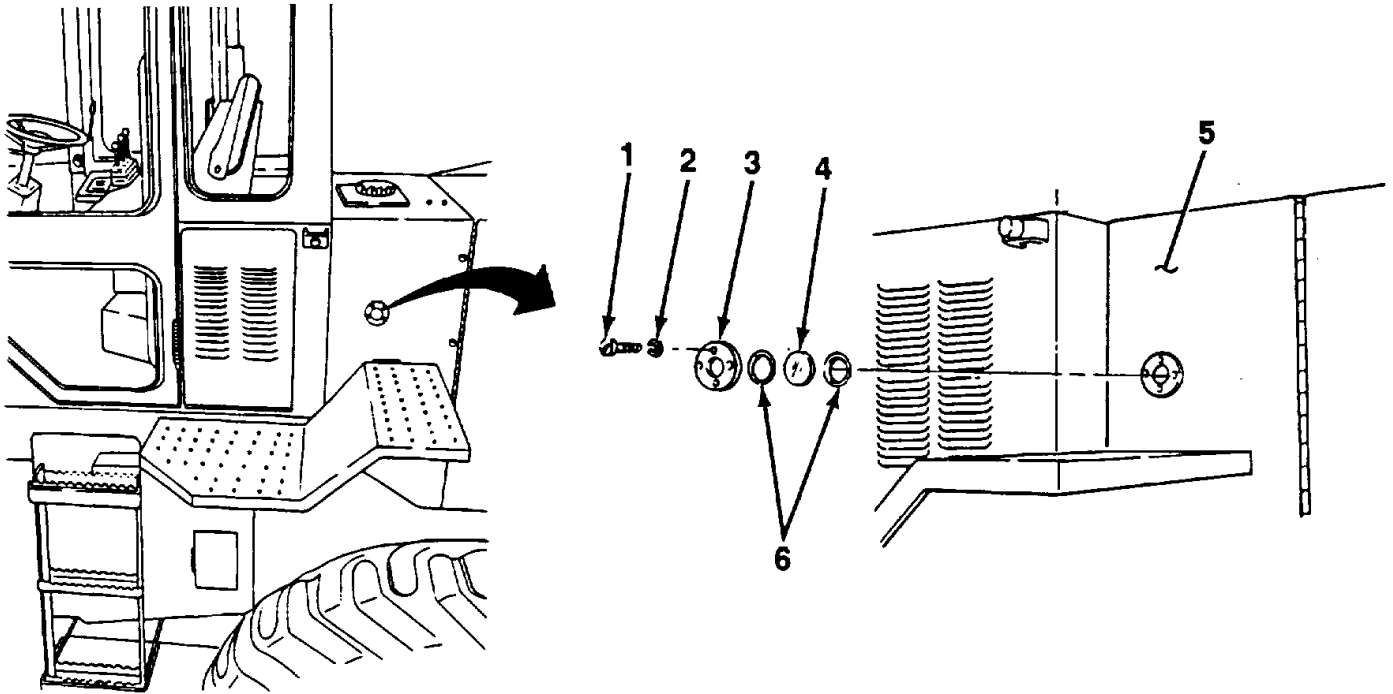
Remove four screws (1), lockwashers (2), spacer plate (3), window (4), and two preformed packings (6) from hydraulic reservoir (5). Discard lockwashers and preformed packings.



TA706780

19-1. HYDRAULIC OIL LEVEL SIGHT GAGE REPLACEMENT (Con't).**b. INSTALLATION**

Install two new preformed packings (6), window (4), and spacer plate (3) on hydraulic reservoir (5) with four new lockwashers (2) and screws (1).

**FOLLOW-ON TASKS:**

- Fill hydraulic reservoir with hydraulic fluid (see LO 10-3930-659-12).

TA706781

CHAPTER 20
AIR COMPRESSOR ASSEMBLY MAINTENANCE

20-1. AIR COMPRESSOR ASSEMBLY MAINTENANCE.

This Task Covers:

- | | |
|---|---|
| <ul style="list-style-type: none"> a. Filter Replacement b. Removal | <ul style="list-style-type: none"> c. Installation |
|---|---|

Initial Setup:

Equipment Conditions:

- Battery disconnect switch in OFF position (see TM 10-3930-659-10).
- Right access door opened (see TM 10-3930-659-10).

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

Materials/Parts:

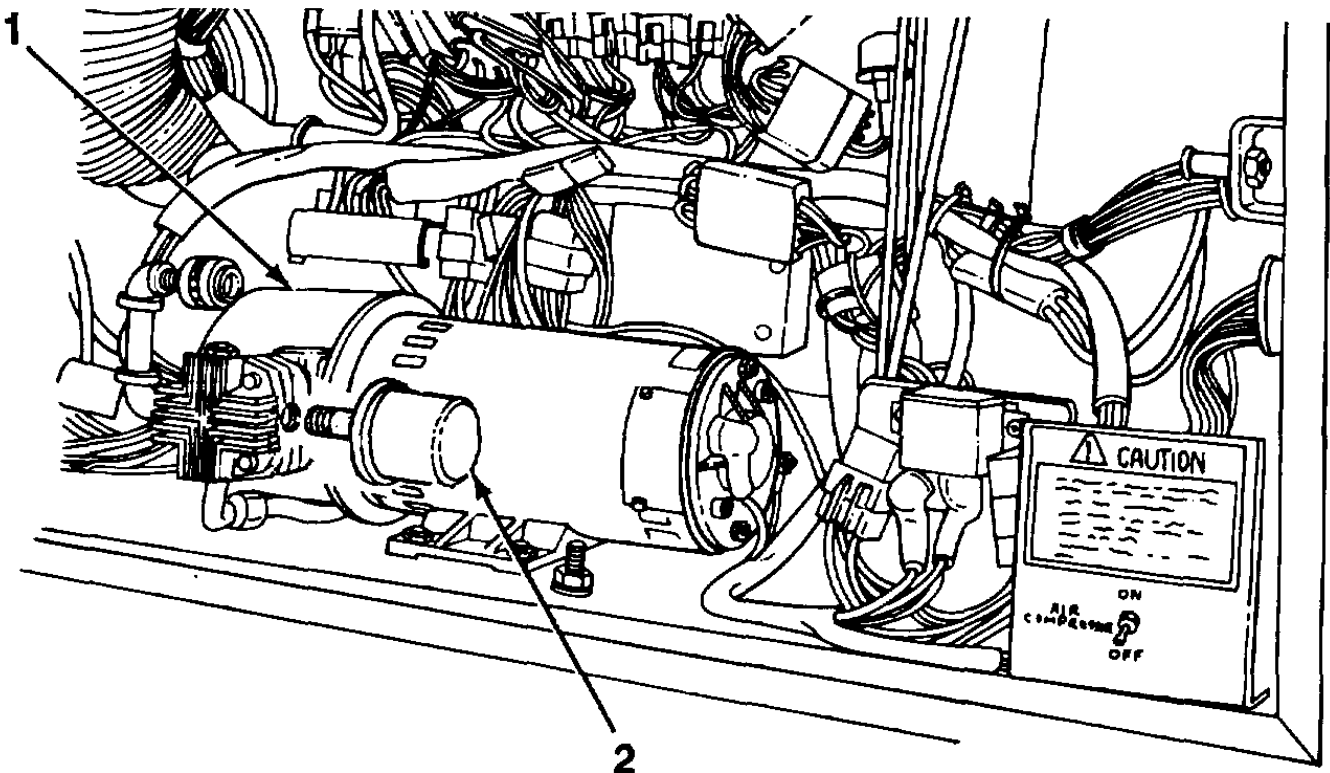
- Marker tags (Item 33, Appendix C)
- Four lockwashers

References:

- TM 10-3930-659-10

a. FILTER REPLACEMENT

1. Remove filter (2) from air compressor assembly (1).
2. Install filter (2) on air compressor assembly (1).



TA706782

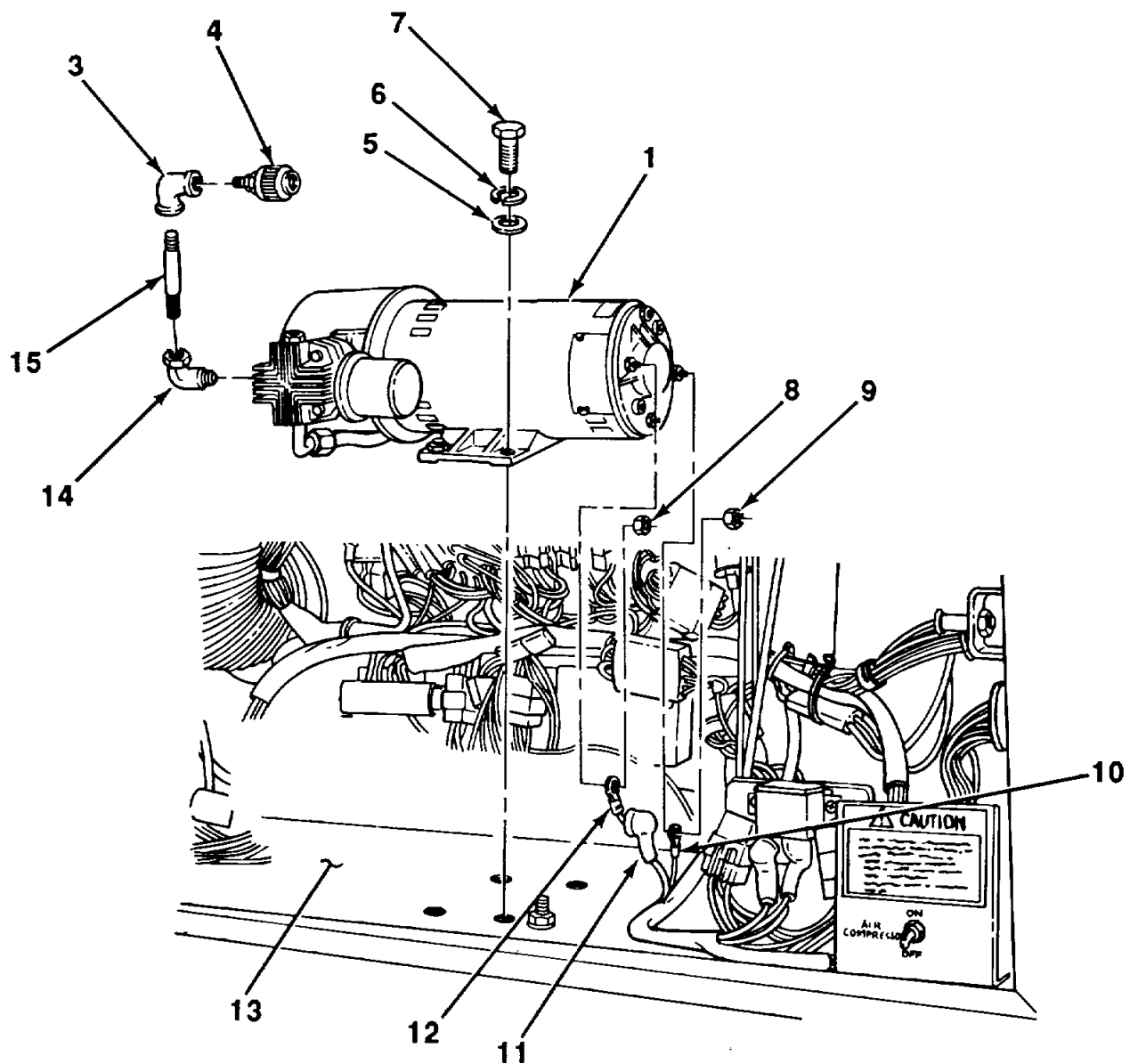
20-1. AIR COMPRESSOR ASSEMBLY MAINTENANCE (Con't).

b. REMOVAL

NOTE

All wires should be tagged before removal. Refer to paragraph 2-18 for tagging instructions.

1. Remove boot (11), nut (8), and wire (12) from air compressor assembly (1).
2. Remove nut (9) and wire (10) from air compressor assembly (1).
3. Remove four bolts (7), lockwashers (6), washers (5), and air compressor assembly (1) from cabinet (13). Discard lockwashers.
4. Remove coupling (4), elbow (3), nipple (15), and elbow (14) from air compressor assembly (1).



TA706783

20-1. AIR COMPRESSOR ASSEMBLY MAINTENANCE (Con't).

c. INSTALLATION

1. Install elbow (14), nipple (15), elbow (3), and coupling (4) on air compressor assembly (1).
2. Install air compressor assembly (1) on cabinet (13) with four washers (5), new lockwashers (6), and bolts (7).
3. Install wire (10) on air compressor assembly (1) with nut (9).
4. Install wire (12) on air compressor assembly (1) with nut (8).
5. Install boot (11) on nut (8).

FOLLOW-ON TASKS:

- Close right access door (see TM 10-3930-659-10).

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CHAPTER 21
DECONTAMINATION EQUIPMENT MAINTENANCE

21-1. DECONTAMINATION BRACKET ASSEMBLY REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

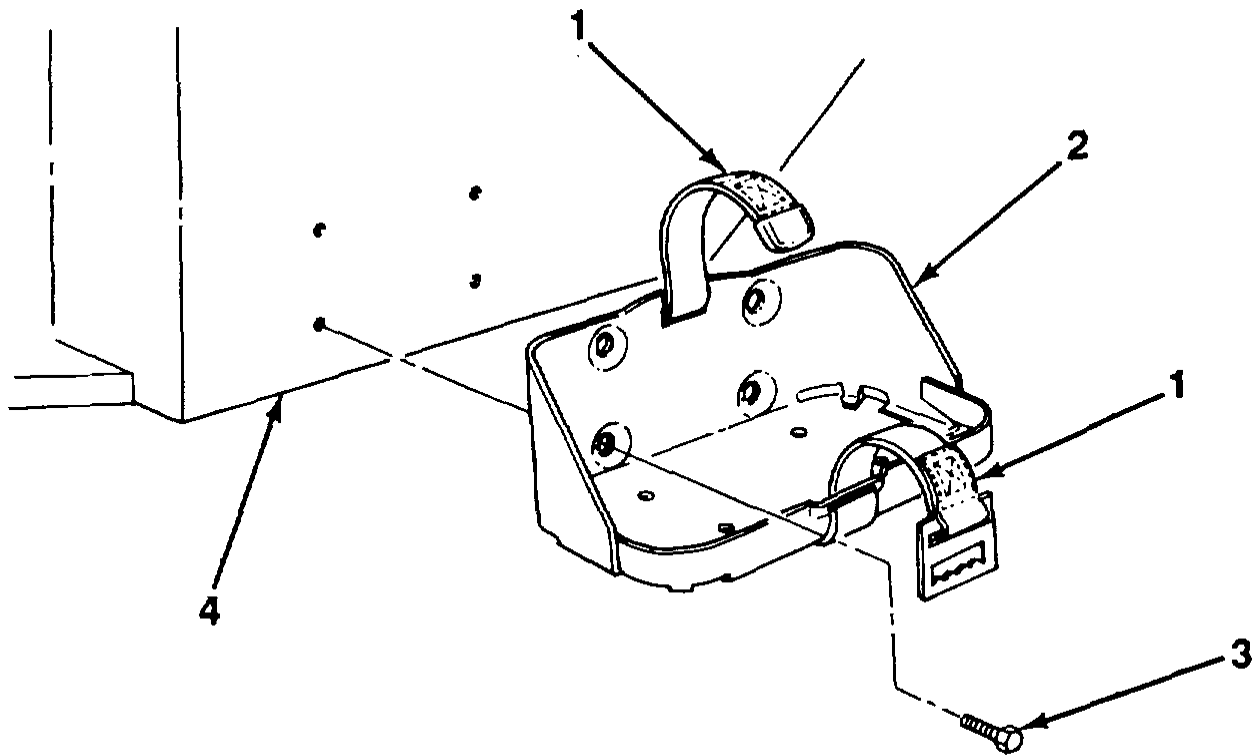
Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)

a. REMOVAL

1. Remove four bolts (3) and decontamination bracket assembly (2) from frame (4).
2. If damaged, remove strap (1) from decontamination bracket assembly (2).



b. INSTALLATION

1. If removed, install new strap (1) on decontamination bracket assembly (2).
2. Install decontamination bracket assembly (2) on frame (4) with four bolts (3).

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**CHAPTER 22
PREPARATION FOR STORAGE OR SHIPMENT**

Paragraph Number	Paragraph Title	Page Number
22-1	General	22-1
22-2	Definition of Administrative Storage	22-1
22-3	Preparation of Equipment for Administrative Storage	22-2
22-4	Care of Equipment in Administrative Storage	22-3
22-5	Procedures for Common Components and Miscellaneous Items	22-4
22-6	Removal of Equipment From Administrative Storage	22-4
22-7	Preparation of Equipment for Shipment	22-5
22-8	Preparation of Equipment for Air Shipment	22-6
Table 22-1	Exercise Schedule	22-4

22-1. GENERAL.

- a. This chapter contains requirements and procedures for administrative storage of equipment that is Issued to and in use by Army activities worldwide.
 - b. The requirements specified herein are necessary to maintain equipment in administrative storage in such a way as to achieve the maximum readiness condition.
 - c. Equipment that is placed in administrative storage should be capable of being readied to perform its mission within a 24-hour period, or as otherwise may be prescribed by the approving authority. Before equipment is placed in administrative storage, a current Preventive Maintenance Checks and Services (PMCS) should be completed and deficiencies corrected.
 - d. Report equipment in administrative storage as prescribed for all reportable equipment.
 - e. Perform inspections, maintenance services, and lubrication as specified herein.
 - f. Records and reports to be maintained for equipment in administrative storage are those prescribed by DA Pam 738-750 for equipment in use.
 - g. A 10% variance is acceptable on time, running hours, or mileage used to determine the required maintenance actions.
 - h. Accomplishment of applicable PMCS, as mentioned throughout this chapter, will be on a quarterly basis.
-

22-2. DEFINITION OF ADMINISTRATIVE STORAGE.

The placement of equipment in administrative storage can be for short periods of time when a shortage of maintenance effort exists. Items should be ready for use within the time factors as determined by the directing authority. During the storage period, appropriate maintenance records will be kept.

22-3. PREPARATION OF EQUIPMENT FOR ADMINISTRATIVE STORAGE.

a. Storage Site.

(1) Select the best available site for administrative storage. Separate stored equipment from equipment in use. Conspicuously mark the area "Administrative Storage".

(2) Covered space is preferred.

(3) Open sites should be improved hardstand, if available. Unimproved sites should be firm, well-drained, and free of excessive vegetation.

b. Storage Plan.

(1) Store equipment so as to provide maximum protection from the elements and to provide access for inspection, maintenance, and exercising. Anticipate removal or deployment problems and take suitable precautions.

(2) Take into consideration environmental conditions, such as extreme heat or cold; high humidity; blowing sand, dust, or loose debris; soft ground; mud; heavy snows; or any combination thereof, and take adequate precautions.

(3) Establish a fire plan and provide for adequate fire fighting equipment and personnel.

c. Maintenance Services and Inspection.

(1) **Maintenance Services.** Prior to storage, perform the next scheduled PMCS.

(2) **Inspection.** Inspect and approve the equipment prior to storage. Do not place nonmissioncapable equipment in storage.

d. Auxiliary Equipment and Basic Issue Items.

(1) Process auxiliary and basic issue items simultaneously with the major item to which they are assigned.

(2) If possible, store auxiliary and basic issue items with the major item.

(3) If stored apart from the major item, mark auxiliary and basic issue items with tags indicating the major item, its registration or serial number and location, and store in protective type closures. In addition, place a tag or list indicating the location of the removed items in a conspicuous place on the major item.

e. **Correction of Shortcomings and Deficiencies.** Correct all shortcomings and deficiencies prior to storage, or obtain a deferment from the approving authority.

f. **Lubrication.** Lubricate equipment in accordance with LO 10-3930-659-12.

g. General Cleaning, Painting, and Preservation.**CAUTION**

DO NOT direct water or steam, under pressure, against unsealed electrical systems or any exterior opening. Failure to follow this caution may result in damage to equipment.

(1) Cleaning. Clean the equipment of dirt, grease, and other contaminants, but do not use vapor degreasing.

22-3. PREPARATION OF EQUIPMENT FOR ADMINISTRATIVE STORAGE (Con't).

(2) **Painting.** Remove rust and damaged paint by scraping, wire brushing, sanding, or buffing. Sand to a smooth finish and spot paint as necessary (see TB 43-0209).

(3) **Preservation.** After cleaning and drying, immediately coat unpainted metal surfaces with oil or grease, as appropriate (see LO 10-3930-659-12).

CAUTION

Place a piece of barrier material (Item 4, Appendix C) between desiccant bags and metal surfaces.

NOTE

Air circulation under draped covers reduces deterioration from moisture or heat.

(4) **Weatherproofing.** Sunlight, heat, moisture (humidity), and dirt tend to accelerate deterioration. Install all covers (including forklift truck protective closures) authorized for the equipment. Close and secure all openings except those required for venting and draining. Seal openings to prevent the entry of rain, snow, or dust. Insert desiccant when complete seal is required. Place equipment, and provide blocking or framing, to allow for ventilation and water drainage. Support cover away from item surfaces which may rust, rot, or mildew.

22-4. CARE OF EQUIPMENT IN ADMINISTRATIVE STORAGE.

a. **Maintenance Services.** After equipment has been placed in administrative storage, inspect, service, and exercise as specified herein.

b. **Inspection.** Inspection will usually be visual and must consist of at least a walkaround examination of all equipment to detect any deficiencies. Inspect equipment in open storage weekly and equipment in covered storage monthly. Inspect all equipment immediately after any severe storm or environmental change. The following are examples of things to look for during a visual inspection:

- (1) Low or flat tires.
- (2) Coolant, fuel, or oil leaks.
- (3) Condition of preservatives, seals, and wraps.
- (4) Corrosion or other deterioration.
- (5) Missing or damaged parts.
- (6) Water in compartments.
- (7) Any other readily recognizable shortcomings or deficiencies.

c. **Repair During Administrative Storage.** Keep equipment in an optimum state of readiness. Accomplish the required services and repairs as quickly as possible. Whenever possible, perform all maintenance on-site.

22-4. CARE OF EQUIPMENT IN ADMINISTRATIVE STORAGE (Con't).

d. Exercising. Exercise equipment in accordance with Table 22-1, Exercise Schedule, and the following

(1) **Vehicle Major Exercise.** Depreserve equipment by removing only that material restricting instructions: exercise. Close all drains, remove blocks, and perform all *Before* operational checks. Make several right and left 90° turns. Make several hard braking stops without skidding. While exercising, and when it is safe and convenient, operate all other functional components and perform all *During* and *After* operational checks.

(2) **Scheduled Services.** Scheduled services will include inspection per subparagraph b and will be conducted in accordance with Chapter 3, Preventive Maintenance Checks and Services (PMCS). Lubricate in accordance with Instructions In LO 10-3930-659-12.

(3) **Corrective Action.** Immediately take action to correct shortcomings and deficiencies noted. Record inspection and exercise results on DA Form 2404. Record and report all maintenance actions on DA Form 2407. After exercising, restore the preservation to the original condition. Replenish lubricants used during exercising and note the amount on DA Form 2408.

Table 22-1. Exercise Schedule.

Weeks	2.	4	6	8	10	12	14	16	18	20	22	24
PMCS						X						X
Scheduled Services		X		X		X		X		X		
Major Exercise												X

e. Rotation. Rotate items in accordance with any rotational plan that will keep the equipment in an operational condition and reduce the maintenance effort.

22-5. PROCEDURES FOR COMMON COMPONENTS AND MISCELLANEOUS ITEMS.

a. **Tires.** Visually inspect tires during each walkaround inspection. This inspection includes checking tires with a tire gage. Inflate, repair, or replace as necessary those found to be low, damaged, or excessively worn. Mark inflated and repaired tires with a crayon for checking at the next inspection.

b. **Batteries.** Leave batteries in place in equipment. Disconnect one terminal. Ensure that batteries are fully charged when equipment is stored and are returned to a full charge during each equipment exercising.

c. **Hydraulic Systems.** Retract hydraulic systems linkage and coat exposed portion of shafts with grease (Item 23, Appendix C). Exercise all hydraulic units when exercising the equipment on which they are assembled.

d. **Seals.** Seals may develop leaks during storage or shortly thereafter. If leaking persists, refer to the applicable maintenance chapter in this manual for corrective maintenance procedures.

22-6. REMOVAL OF EQUIPMENT FROM ADMINISTRATIVE STORAGE.

a. **Activation.** Restore the equipment to normal operating condition in accordance with the instructions contained in Chapter 2, Section II.

b. **Servicing.** Resume the maintenance service schedule in effect at the commencement of storage or service the equipment before the scheduled dates in order to produce a staggered maintenance workload.

22-7. PREPARATION OF EQUIPMENT FOR SHIPMENT.

a. Refer to FM 55-21, TM 55-601, and TM 743-200-1 for additional instructions on processing, storage, and shipment of materiel.

b. Forklift trucks that have been removed from storage for shipment do not have to be reprocessed if they will reach their destination within the administrative storage period. Reprocess only if inspection reveals any corrosion or if anticipated in-transit weather conditions make it necessary.

c. When a forklift truck is received and has already been processed for domestic shipment, as indicated on DD Form 1397, the forklift truck does not have to be reprocessed for storage unless corrosion and deterioration are found during the inspection upon receipt. List on SF Form 364 all discrepancies found because of poor preservation, packaging, packing, marking, handling, loading, storage, or excessive preservation. Repairs that cannot be handled by the receiving unit must have tags attached listing needed repairs. A report of these conditions will be submitted by the unit commander for action by an ordnance maintenance unit.

22-8. PREPARATION OF EQUIPMENT FOR AIR SHIPMENT.

This task covers:

a. Removal

b. Installation

INITIAL SETUP:**Equipment Conditions:**

- Counterweight removed (see paragraph 13-3).
- Cab door removed (see paragraph 14-2).
- Front windshield wiper arm removed (see paragraph 16-6).

Materials/Parts:

- Two lockwashers

Personnel Required: Three

References:

- TM 10-3930-659-10

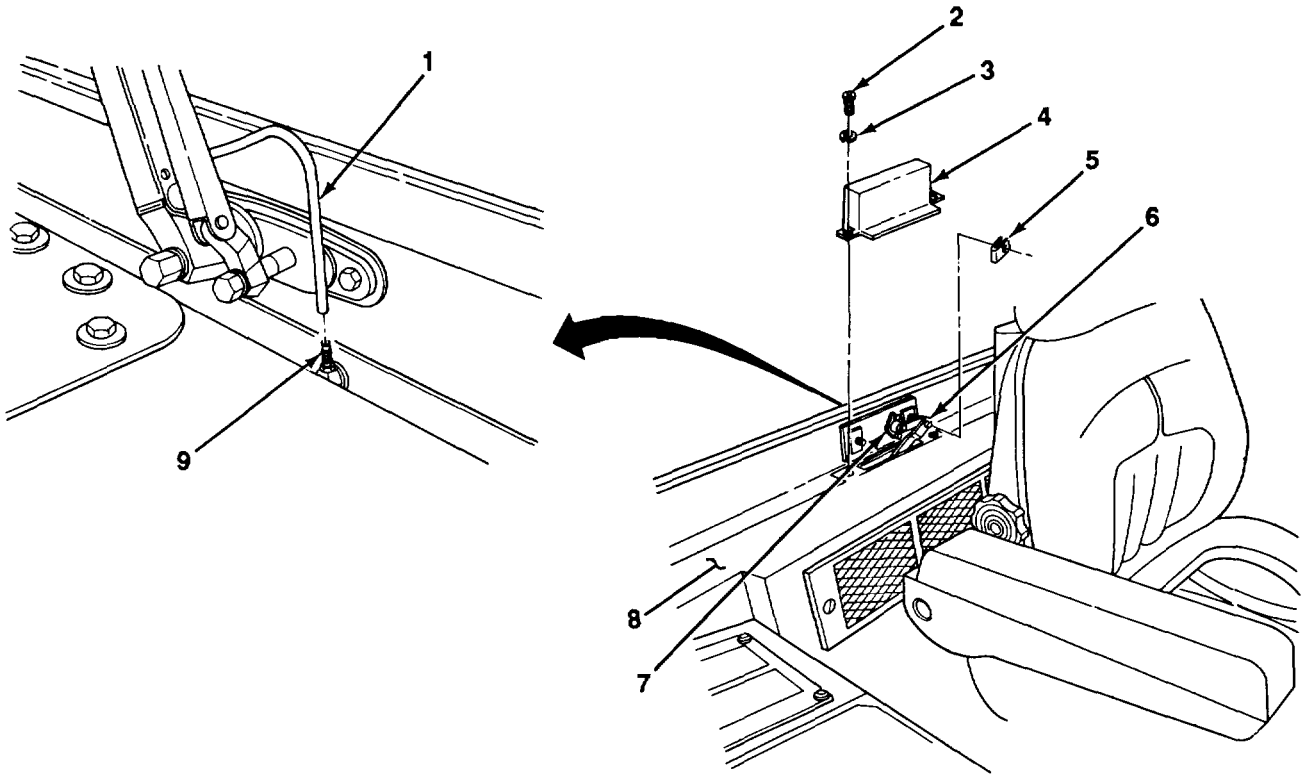
Tools/Test Equipment:

- General mechanic's tool kit (Item 44, Appendix F)
 - Wrecking bar (Item 4, Appendix F)
 - Torque wrench, 0-600 lb.-ft. (item 53, Appendix F)
 - Socket wrench set, X in. drive (Item 55, Appendix F)
-

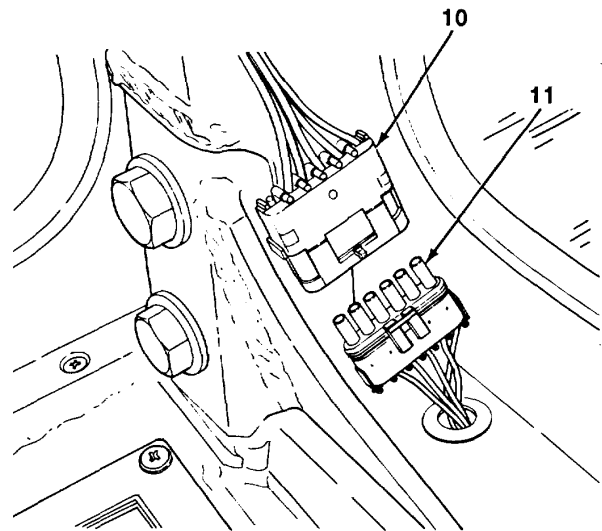
a. REMOVAL

1. Remove two screws (2), lockwashers (3), and rear window wiper arm cover (4) from lower cab (8). Discard lockwashers.
2. Remove retainer (5) and pivot assembly (6) from rear window wiper arm (7).
3. Remove rear window washer hose (1) from elbow (9).

22-8. PREPARATION OF EQUIPMENT FOR AIR SHIPMENT (Con't).



4. Disconnect upper worklight wiring harness connector (11) from connector (10).



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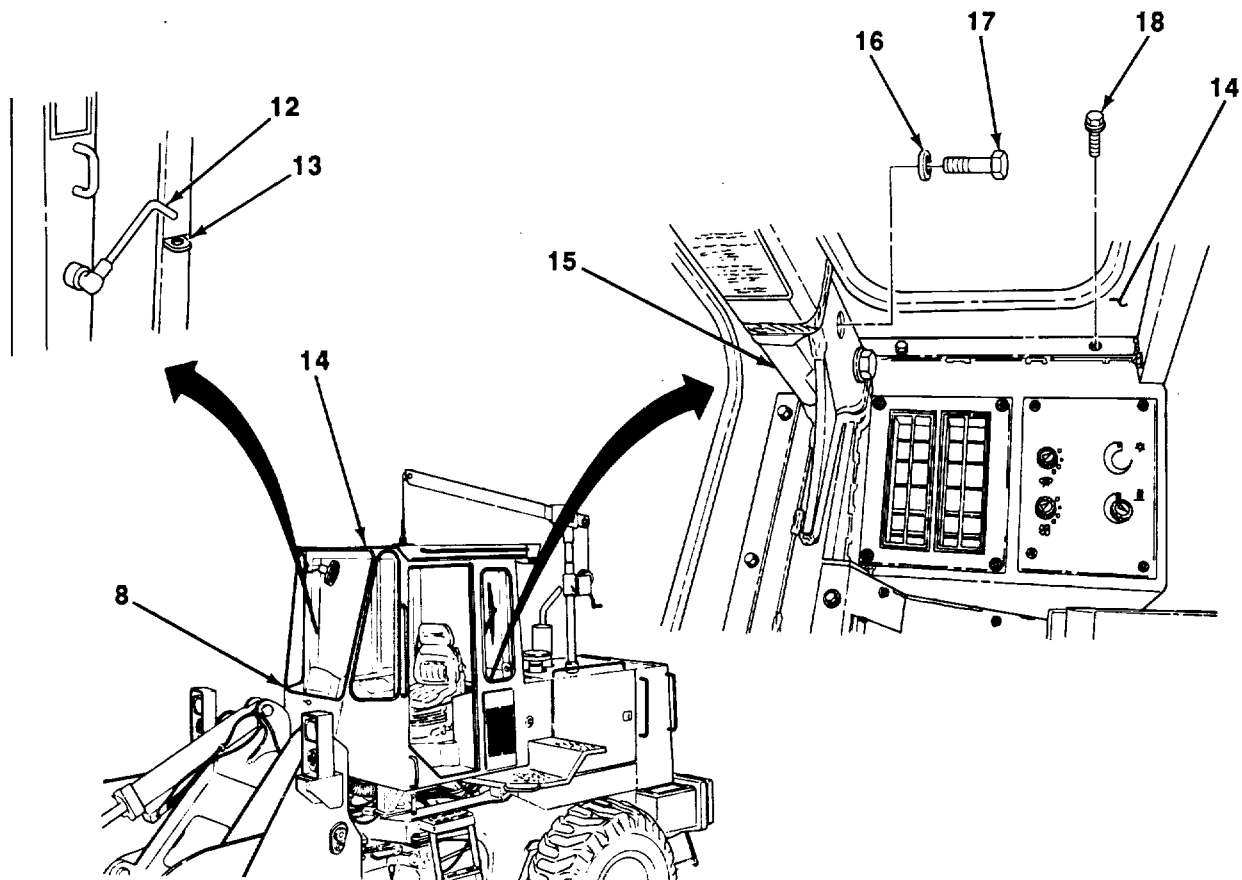
22-8. PREPARATION OF EQUIPMENT FOR AIR SHIPMENT (Con't).

5. Remove latch rod (12) from catch (13).
6. Remove 22 screws (18) from upper cab (14).
7. Raise on-board crane to highest position and install hook on cab lifting bracket (see TM 10-3930-659-10).
8. Remove eight screws (17) and washers (16) from four corner post joints (15).
9. Adjust steering wheel to rearmost position, set driver's seat to lowest position, and tip driver's seat backrest cushion forward (see TM 10-3930-659-10).

WARNING

Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

10. Using wrecking bar and on-board crane, remove upper cab (14) from lower cab (8). Lift upper cab until clear of steering wheel.
11. Move upper cab (14) over left side of forklift truck and lower to ground.



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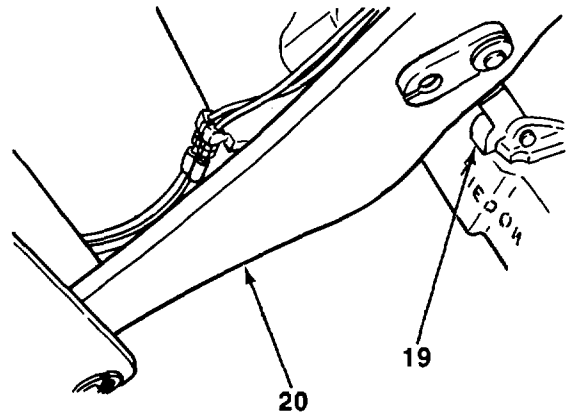
22-8. PREPARATION OF EQUIPMENT FOR AIR SHIPMENT (Con't).

12. Remove on-board crane from cab lifting bracket and place in stowed position (see TM 10-3930-659-10).
13. Lift driver's seat backrest cushion to upright position (see TM 10-3930-659-10).

NOTE

Raise forks only high enough to position boom stop.

14. Start engine and raise forks (see TM 10-3930-659-10).
15. Position boom stop (19) forward and lower forks until boom (20) rests on boom stop.
16. Shut down engine (see TM 10-3930-659-10).
17. If installed, remove conveyORIZED fork attachments from forks (see TM 10-3930-659-10).
18. Remove muffler (see paragraph 5-27).

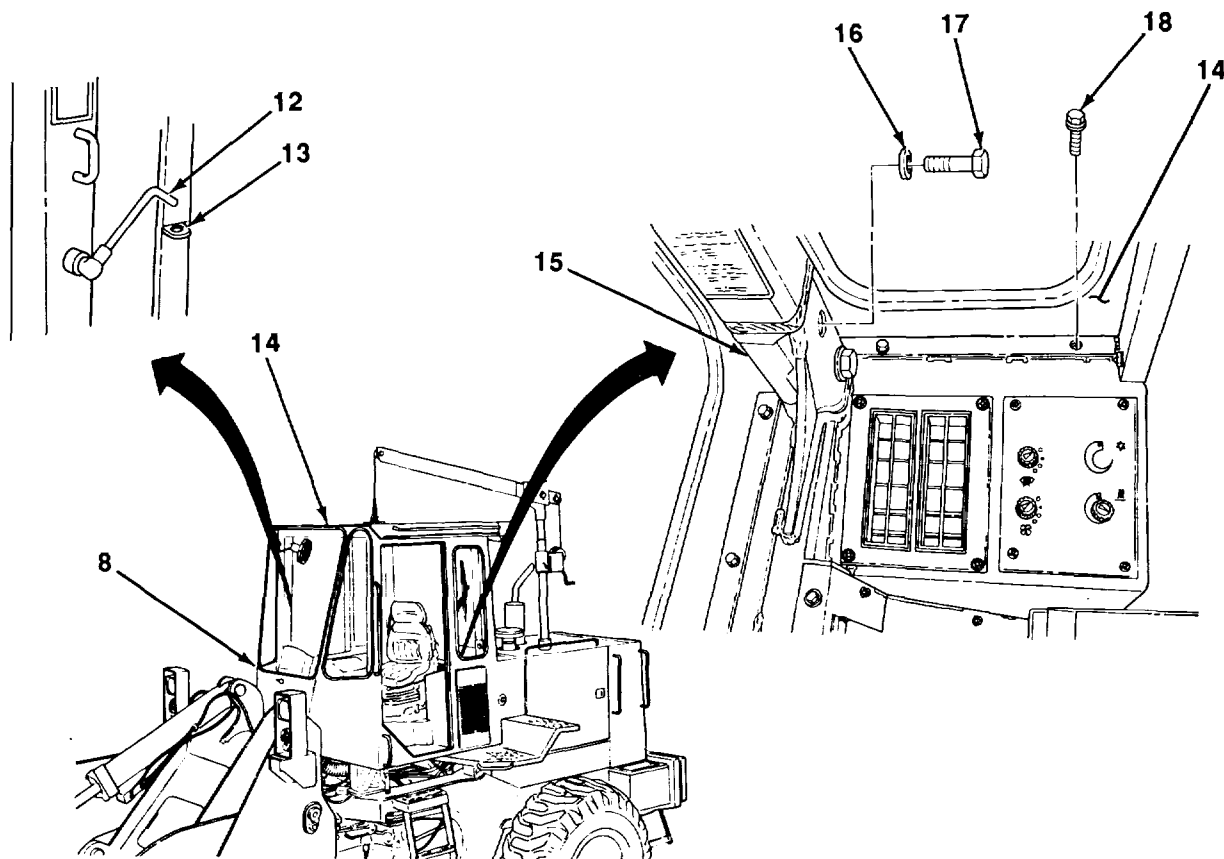
**b. INSTALLATION**

1. Adjust steering wheel to rearmost position, set driver's seat to lowest position, and tip driver's seat backrest cushion forward (see TM 10-3930-659-10).
2. Raise on-board crane to highest position and install hook on cab lifting bracket (see TM 10-3930-659-10).

22-8. PREPARATION OF EQUIPMENT FOR AIR SHIPMENT (Con't).**WARNING**

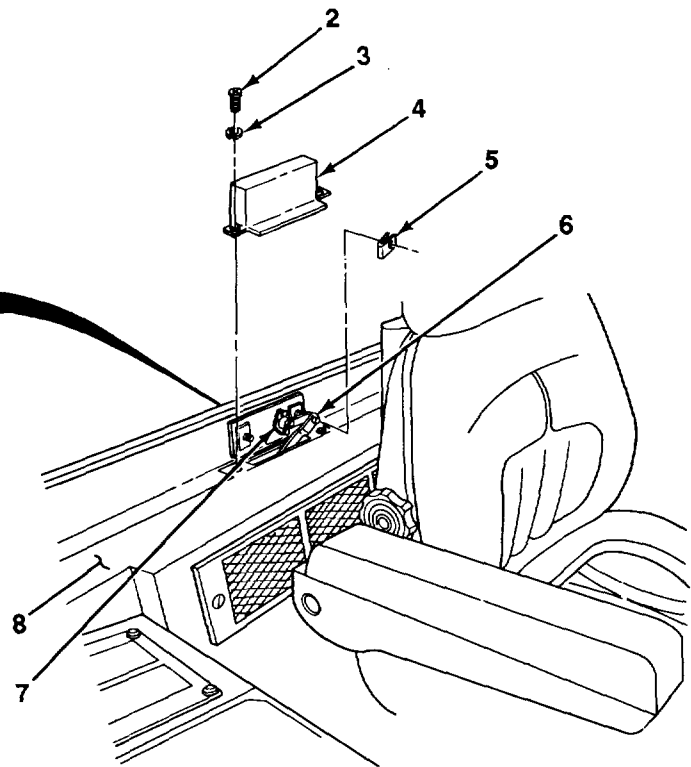
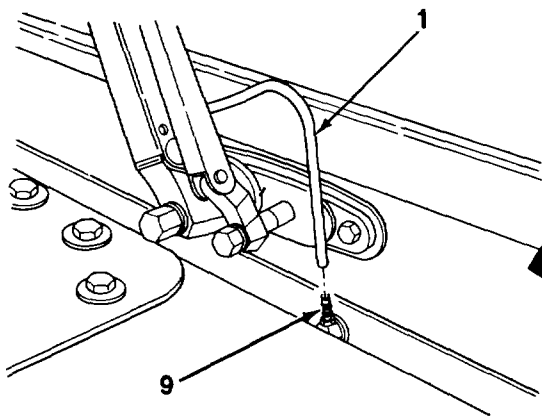
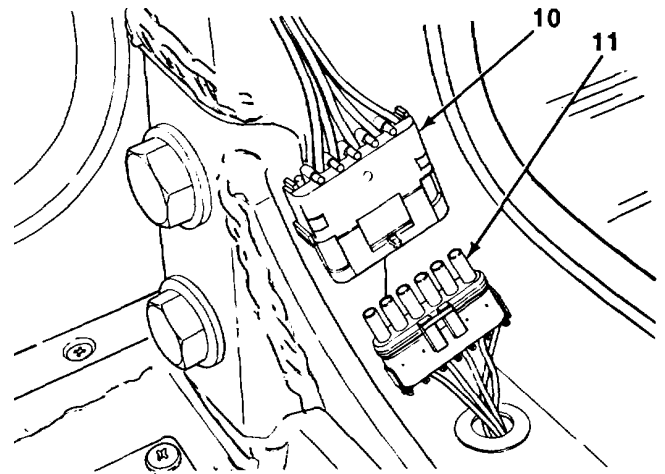
Use extreme caution when handling heavy parts. Lifting device is required when parts weigh over 50 lb (23 kg) for a single person lift, over 100 lb (45 kg) for a two person lift, and over 150 lb (68 kg) for a three or more person lift. Keep clear of heavy parts supported only by lifting device. Failure to follow this warning may cause serious injury or death to personnel.

3. Using on-board crane, lift and position upper cab (14) over lower cab (8).
4. Align four corner post joints (15) of upper cab (14) with corner post joints of lower cab (8).
5. Install eight washers (16) and screws (17) in four corner post joints (15). Torque screws to 500 lb.-ft. (678 N.m).
6. Install 22 screws (18) in upper cab (14).
7. Install latch rod (12) in catch (13).



22-8. PREPARATION OF EQUIPMENT FOR AIR SHIPMENT (Con't).

8. Connect connector (10) to upper worklight wiring harness connector (11).
9. Connect rear window washer hose (1) to elbow (9).
10. Install pivot assembly (6) on rear window wiper arm (7) with retainer (5).
11. Install rear window wiper arm cover (4) on lower cab (8) with two new lockwashers (3) and screws (2).



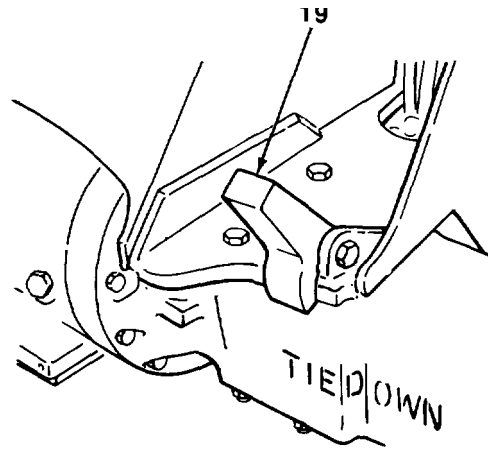
22-8. PREPARATION OF EQUIPMENT FOR AIR SHIPMENT (Con't).

12. Remove on-board crane hook from cab lifting bracket and place on-board crane in stowed position (see TM 10-3930-659-10).
13. Adjust driver's seat and steering wheel for operation (see TM 10-3930-659-10).
14. Install muffler (see paragraph 5-27).

NOTE

Raise forks until free of boom stop.

15. Start engine and raise forks (see TM 10-3930-659-10).
16. Position boom stop (19) rearward and lower forks to ground (see TM 10-3930-659-10).
17. Shut down engine (see TM 10-3930-659-10).

**FOLLOW-ON TASKS:**

- Install front windshield wiper arm (see paragraph 16-6).
- Install cab door (see paragraph 14-2).
- Install counterweight (see paragraph 13-3).

**APPENDIX A
REFERENCES**

A-1. SCOPE.

This appendix lists all forms, field manuals, technical bulletins, technical manuals, and other publications referenced in this manual and those that apply to the Unit Maintenance of the M554E Forklift Truck.

A-2. PUBLICATION INDEX.

DA Pam 25-30, *Consolidated Index of Army Publications and Blank Forms*, should be consulted frequently for latest changes or revisions and for new publications relating to materiel covered in this technical manual.

A-3. FORMS.

Refer to DA Pam 738-750, *The Army Maintenance Management System (TAMMS)*, for instructions on the use of maintenance forms.

Equipment Inspection and Maintenance Worksheet.....	DA Form 2404
Equipment Log Assembly (Records).....	DA Form 2408
Maintenance Request Form.....	DA Form 2407
Preventive Maintenance Schedule and Record.....	DD Form 314
Processing and Deprocessing Record for Shipment, Storage and Issue of Vehicles and Spare Engines	DD Form 1397
Product Quality Deficiency Report	SF Form 368
Recommended Changes to Equipment Technical Publications.....	DA Form 2028-2
Recommended Changes to Publications and Blank Forms	DA Form 2028
Report of Discrepancy (ROD)	SF Form 364

A-4. FIELD MANUALS.

Camouflage	FM 20-3
First Aid for Soldiers	FM 21-11
NBC Contamination Avoidance	FM 3-3
NBC Decontamination	FM 3-5
NBC Protection.....	FM 3-4
Railway Operating and Safety Rules.....	FM 55-21

A-5. TECHNICAL BULLETINS.

Color, Marking and Camouflage Painting of Military Vehicles, Construction Equipment, and Materials Handling Equipment	TB 43-0209
Elimination of Combustibles from Interiors of Metal or Plastic Gasoline and Diesel Fuel Tanks	TB 750-1047
Purging, Cleaning and Coating Interior Ferrous and Terne Sheet Vehicle Fuel Tanks	TB 43-0212
Warranty Program for Forklift, Adverse Terrain, 10,000 Lb Capacity, Diesel Engine Driven, MHE-268 (NSN 3930-01-298-5737)	TB 10-3930-659-14

A-6. TECHNICAL MANUALS.

Cooling Systems: Tactical Vehicles	TM 750-254
Inspection, Care and Maintenance of Antifriction Bearings.....	TM 9-214
Materials Used for Cleaning, Preserving, Abrading and Cementing Ordnance Materiel and Related Materials Including Chemicals	TM 9-247
Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools List for Simplified Test Equipment for Internal Combustion Engines.....	TM 9-4910-571-12&P
Operator's Manual for Truck, Forklift: Adverse Terrain, 10,000 Lb Capacity, M544E (NSN 3930-01-301-8250)	TM 10-3930-659-10
Operator's Manual for Welding Theory and Application.....	TM 9-237
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
Operator's, Unit, Intermediate Direct Support and Intermediate General Support Maintenance Manual for Lead-Acid Storage Batteries.....	TM 9-6140-200-14
Painting Instructions for Army Materiel	TM 43-0139
Procedures for Destruction of Equipment to Prevent Enemy Use (Mobility Equipment Command).....	TM 750-244-3
Railcar Loading Procedures	TM 55601
Storage and Materials Handling	TM 743-200-1
Unit, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools Lists) for Truck, Forklift: Adverse Terrain, 10,000 Lb Capacity, M544E (NSN 3930-01-301-8250).....	TM 10-3930-659-24P

A-7. OTHER PUBLICATIONS.

Army Logistics Readiness and Sustainability AR 700138
Army Medical Department Expendable/Durable Items CTA 8-100
Expendable/Durable Items (Except Medical, Class V, Repair Parts,
and Heraldic Items)CTA 50-970
Lubrication Order: Truck, Forklift: Adverse Terrain, 10,000 Lb Capacity,
M544E (NSN 3930-01-301-8250) LO 10-3930-659-12

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**APPENDIX B
MAINTENANCE ALLOCATION CHART**

Section 1. INTRODUCTION

B-1. GENERAL.

a. This section provides a general explanation of all maintenance and repair functions authorized at the various maintenance levels.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels.

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. **Aline.** 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 of the SMR code.

B-2. MAINTENANCE FUNCTIONS (Con't).

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

J. **Overhaul.** 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 a detailed explanation of these functions, refer to paragraph B-2.)

d. **Column 4, Maintenance Level.** Column 4 specifies, by the listing of a *work time* figure in the appropriate subcolumn(s), the level 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 level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures will be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the Maintenance Allocation Chart. The symbol designations for the various maintenance levels are as follows:

C..... *Unit (Operator or Crew)*
 O..... *Unit Maintenance*
 F..... *Direct Support Maintenance*
 H..... *General Support Maintenance*
 D..... *Depot Maintenance*

e. **Column 5, Tools and Equipment.** Column 5 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 V.

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

- a. **Column 1, Tool or Test Equipment Reference Code.** The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.
- b. **Column 2, Maintenance Level.** The lowest level of maintenance authorized to use the tool or test
- c. **Column 3, Nomenclature.** Name or identification of the tool or test equipment.
- d. **Column 4, National/NATO Stock Number.** The National or NATO Stock Number of the tool or test
- e. **Column 5, Tool Number.** The manufacturer's part number. equipment.

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 11. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
00 01 0100	M544E FORKLIFT TRUCK ENGINE Engine Assembly	Test Service Replace Repair Overhaul Replace	0.1	0.5 2.0	7.0	20.0	40.0	4 1,2,3 1,5 1,5,8,9,12	
0101	Engine Mounts Crankcase, Block, Cylin- der Head Engine Block Cylinder Liners	Repair Replace			2.0			1,5 8.0 8.0 1,5 1,5,8,9, 12,22,23	

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE	
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT			
			C	O	F	H	D			
0101	Crankcase, Block, Cylinder Head (Con 't) Cylinder Head Assembly	Replace			2.0			1,5		
		Repair			8.0			1,6,8,20		
0102	Crankshaft Crankshaft Main Bearings Crankshaft Dampener Idle Gears Rear Oil Seal	Replace					6.0	1,8,14,26		
		Replace					6.0	1,8		
		Replace			4.0				1,5,9	
		Replace			4.0				1,5,16	
		Replace			2.0				1,4,18	
0103	Flywheel Assembly Engine Flywheel Engine Ring Gear	Replace			4.0			1,5		
		Replace			6.0			1,8		
		Replace			4.0			1,5		
0104	Pistons and Connecting Rods Pistons, Piston Pins, and Piston Rings	Replace					10.0	1,7,24,25		
		Replace					10.0	1,8		
0105	Valves, Camshafts, and Timing System Replace Camshaft Cylinder Head Valves Engine Rocker Arm Cover Rocker Arm Assembly	2.0						1,8		
		Replace					2.0	1,5,9,16		
		Adjust	1.0						1,2,9,12	A,B
		Replace			20				1,8	
		Replace		1.0					1	
		Replace			4.0				1,5	
		Repair			2.0				1,6	
0106	Tappets Pushrods Engine Front Cover Engine Lubrication System Oil Cooler	Replace			4.0			1,5,6		
		Replace			4.0			1		
		Replace			4.0				1,5,14	
		Replace			4.0				1,5,14	
		Replace			1.0				1,5	
		Replace								

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE	
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT			
			C	O	F	H	D			
0106	Engne Lubrication System (Con't)									
	Engine Oil Pan	Replace			4.0			1,5		
	Oil Pump Intake Tube	Replace			1.0			1,5		
	Engine Oil Pump	Replace			1.0			1,5		
	Engine Oil Filter	Replace		0.2				1,2		
	Engine Oil Level Gage Tube	Replace		0.1				1		
	Regulating Valve	Replace			0.5			1,5		
	Engine Oil Pressure Oil Filter Bypass Valve	Replace				0.5		1		
	Engine Oil Sampling Valve	Replace		0.1				1		
	Turbocharger Oil Lines Manifolds	Replace		0.2				1		
	0108	Exhaust Manifold	Replace			1.0			1,5	
		FUEL SYSTEM								
0302	Fuel Pumps									
	Fuel Injection Pump	Adjust Replace Overhaul		2.0	1.0		8.0	1,2,9,12 1,5,9,12	C	
0304	Fuel Transfer Pump	Replace		1.0				1		
	Fuel Injection Lines	Replace			1.0			1		
	Air Cleaner									
0304	Air Cleaner Assembly	Replace Repair		0.7 1.0				1		
	Air Cleaner Filters	Service Replace	0.5	0.5 0.2				1 1		
	0305	Supercharger, Blower, Turbocharger, or Altitude Compensator								
Turbocharger		Replace Repair			2.0	4.0		1,5 1,5,6		
			B-5							

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
0501	Radiator, Evaporative Cooler, or Heat Exchanger (Con't)								
	Radiator Grille Housing and Cover	Replace		1.0				1,2	
0502	Cowling, Deflectors, Air Ducts, Shrouds, Etc.								
	Engine Radiator Shroud	Replace		2.0				1	
0503	Water Manifold, Headers, Thermostats, and Housing								
	Engine Thermostat	Replace		0.5				1	
	Engine Thermostat Housing	Replace		1.0				1	
	Engine Radiator Hoses	Inspect	0.1						
		Replace		0.5				1	
0504	Water Pump	Replace		2.0				1	
0505	Fan Assembly	Replace		1.5				1,2	
	Fan Guard	Replace		1.0				1	
	Fan Belts	Adjust		0.5				1	
		Replace		1.0				1	
06	ELECTRICAL SYSTEM								
0601	Generator, Alternator								
	Altemnator	Test		0.5				4	
		Replace		0.4				1	
		Repair			4.0			1,6,7	
	Alternator Pulley	Replace		1.0				1,2	
0603	Starting Motor								
	Starter Motor	Test		0.5				4	
		Replace		0.4				1,2	
		Repair			4.0			1,7	
	starter Motor Solenoid Switch	Replace			0.5			1,7	
				B-7					

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
0611	Horn, Siren								
	Horn	Replace		0.1				1	
0612	Batteries, Storage								
	Batteries	Test		0.5				4	
		Service		0.5				1,2	
		Replace		0.5				1	
	Battery Cables	Replace		0.5				1	
	Battery Box Covers	Replace		0.5				1	
	Slave Receptacle	Replace		0.3				1	
0613	Hull or Chassis Wiring								
	Harness	Repair		2.0				1,2	
	Loader Frame Wiring	Replace		8.0				1	
	Harness	Repair		2.0				1,2	
	Transmission Wiring	Replace		8.0				1	
	Harnesses	Repair		2.0				1,2	
	Upper and Lower								
	Worklight Wiring	Replace		8.0				1	
	Rear Frame Wiring	Replace		8.0				1	
	Harness	Repair		2.0				1,2	
	Under Cab Wiring	Replace		8.0				1	
	Harness	Repair		2.0				1,2	
		Repair		2.0				1,2	
	Engine Wiring Harness	Replace		8.0				1	
	Engine Frame Wiring	Replace		8.0				1	
	Harness	Repair		2.0				1,2	
	STE/ICE Wiring	Replace		8.0				1	
	Harnesses	Repair		2.0				1,2	
07	TRANSMISSION								
0705	Transmission Shifting								
	Components								
	Transmission Shift Rods	Replace		2.5				1	
	Transmission Shift Cables	Adjust		1.0				1	
		Replace		2.0				1	
				B-9					

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
0705	Transmission Shifting Components (Con't)								
	Transmission Clutch Cutoff Control Assembly	Adjust		1.0				1	
	Transmission Clutch Cutoff Valve	Replace		2.0				1	
		Replace		0.5				1	
0708	Torque Converter or Fluid Coupling	Repair		1.0				1,3	
	Torque Converter	Replace			8.0			1,5,8	
0710	Transmission Assembly and Associated Parts	Service	0.1	0.5				1,2,11	
		Replace			8.0			1,5,8	
		Repair				8.0		1,8,15	
		Overhaul					16.0		
	Transmission Oil Pump	Replace				4.0		1,8	
		Repair				1.5		1,8	
	Mounting Brackets	Replace			2.0			1,5	
	Clutch Packs	Replace				4.0		1,8	
		Repair				3.0		1,8	
	Output Shaft Assembly	Replace				4.0		1,8	
	Repair				3.0		1,8		
0714	Pressure Regulator	Replace			8.0			1,5	
	Transmission Housing	Replace				2.0		1,8	
	Input Shaft Assembly	Replace				4.0		1,8	
	Gears	Replace				8.0		1,8	
0721	Servo Unit								
	Transmission Control Valve	Replace				2.0		1	
		Repair				4.0		1	
0721	Coolers, Pumps, Motors								
	Transmission Oil Cooler	Replace		2.0				1,2	
	Transmission Oil Filter	Replace		0.2				1,2	
	Transmission Oil Sampling Valve	Replace		0.1				1	
			B-10						

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
0721	Coolers, Pumps, Motors (Con 't)								
	Transmission Thermal	Replace		0.5				1	
	Bypass Valve	Repair		0.5				1,2	
09	PROPELLER, PROPELLER SHAFTS, UNIVERSAL JOINTS, COUPLER, AND CLAMP ASSEMBLY								
0900	Propeller Shafts	Service		0.1				2	
	Front and Rear Universal Joints	Replace		0.3				1,2	
		Repair		0.3				1,2	
	Engine-to-Transmission Universal Joint	Service		0.1				2	
	Drive Dampener	Replace			0.3			1,5	
		Replace			1.0			1,5	
10	FRONT AXLE								
1000	Front Axle Assembly	Service		0.1				2	
		Replace			2.0			1,5	
		Repair				8.0		1,5,8	
		Overhaul					14.0		
1002	Differential								
	Front Differential Assembly	Service		0.3				1,2	
		Replace				4.0		1,5	
	Repair					2.0		1,5,8	
	Front Axle Yoke and Input Quill	Replace				1.0		1,8	
		Repair				1.0		1,8	
1003	Planetary or Final Drive Front Planetary Carrier and Axle Housing Assembly	Replace				1.0		1,8	
		Repair				4.0		1,8	
					B-11				

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
11	REAR AXLE								
1100	Rear Axle Assembly	Service Replace Repair Overhaul		0.1	2.0	8.0	14.0	2 1,5 1,4,8	
1102	Differential Rear Differential Assembly	Service Replace Repair		0.3		4.0 2.0		1,2 1,5 1,5,8	
	Rear Axle Front Oscillating Support Yoke	Replace Repair				1.0 4.0		1,8 1,8	
	Remote Differential Support Lubrication Hoses	Replace		1.0				1	
	Rear Axle Rear Oscillating Support Assembly	Replace Repair			1.0 1.0			1,5 1,5	
1103	Planetary or Final Drive Rear Planetary Carrier and Axle Housing Assembly	Replace Repair				4.0 4.0		1,8 1,8	
12	BRAKES								
1201	Handbrakes Parking Brake	Adjust Replace Repair		1.0 1.0 2.0				1 1,2 1,2	
	Parking Brake Cable	Replace		1.0				1	
1202	Service Brakes Service Brake Disc	Inspect Replace		0.5	8.0			1 1,5	
				B-12					

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
1204	Hydraulic Brake System Brake Accumulator	Service Replace Repair			0.5 0.5 0.5			1,13 1 1,5	
1206	Brake Hoses, Lines, and Fittings Mechanical Brake System Brake Valves	Replace Replace Repair		1.0 0.5 1.0				1 1 1,2	
13	WHEELS AND TRACKS								
1311	Wheel Assembly	Replace Repair Repair		1.0 1.0 1.0				1,2 1,2 1,5	
1313	Tires, Tubes, Tire Chains	Replace			1.0			1,2	
14	STEERING								
1401	Mechanical Steering Gear Assembly Steering Wheel Steering Column	Replace Replace		0.5 1.0				1 1,3	
1410	Hydraulic Pump or Fluid Motor Assembly Secondary Steering Pump	Replace Repair		1.0 1.0				1 1	
1411	Hoses, Lines, Fittings Remote Steering Cylinder	Replace		0.5				1	
1412	Lubrication Hoses Hydraulic or Air Cylinders Steering Cylinders	Replace Replace Repair		0.5 1.0				1 1 1,5	
1414	Steering System Valves Steering Valve Assembly	Replace Repair		1.0		1.0		1 1,5	
				B-13					

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
1414	Steering System Valves (Con't) Crossover Relief Valve	Replace		1.0				1	
		Repair			1.5			1,5	
	Priority Valve	Replace		1.0				1	
		Repair			1.5			1,5	
15	FRAME, TOWING AT- TACHMENTS, DRAW- BARS, AND ARTICULA- TION SYSTEMS								
1501	Frame Assembly	Repair				2.0		1,8	
	Pivot Pins	Replace			1.0			1,5	
	Engine Frame Stepladder	Replace		1.0				1	D
	Engine Compartment	Replace		1.0				1	
	Step	Repair		1.0				1	
1502	Counterweights	Replace		0.3				2	
1503	Pintles and Towing Attachments								
	Pintle Hook	Replace		0.5				1	
18	BODY, CAB, HOOD, AND HULL								
1801	Body, Cab, Hood, and Hull Assemblies								
	Engine Hood	Replace		0.3				1	
	Engine Sideshields	Replace		0.3				1	
	Transmission Side Guards	Replace		0.2				1	
	Transmission Front and Rear Bottom Guards	Replace		0.3				1,2	
	Dash Plate	Replace		4.0				1	
	Right Panel Cover	Replace		4.0				1	
	Cab Assembly with ROPS	Replace			8.0			1,5,19	E
	Cab Sound Isolators	Replace		0.5				1	
				B-14					

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
1801	<i>Body, Cab, Hood, and Hull Assemblies (Con 't)</i>								
	Cab Door	Replace Repair		0.2 1.0				1 1	
1802	<i>Fenders, Running Boards With Mounting and At- taching Parts, Outriggers, Windshield, Glass, Etc. Rear Fender</i>	Replace		0.2				1	
	Fender Brackets	Replace		0.2				1	
1806	<i>Cab Window Glass Upholstery, Seats, and Carpets</i>	Replace			2.0			1,8,21	
	Seat Assembly	Replace Repair		1.0	1.0			1	
	Seatbelt	Replace		0.2				1	
1808	<i>Stowage Racks, Boxes, Straps, Carrying Cases, Cable Reels, Hose Reels, Etc.</i>								
	Operator's Manual Holder	Replace		0.5					
20	HOIST, WINCH, CAP- STAN, WINDLASS, POWER CONTROL UNIT, AND POWER TAKE-OFF								
2001	<i>Hoist, Capstan, Windlass, Crane, or Winch Assembly</i>								
	On-board Crane	Replace Repair		0.5 1.0				1 1	

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
22	BODY, CHASSIS, AND HULL ACCESSORY ITEMS								
2202	Accessory Items								
	Window Wiper Assemblies	Replace Repair		1.0 0.5				1 1	
	Window Washer Assemblies	Service Replace Repair	0.2	0.5 0.5				1 1	
	Defroster Assembly	Replace Repair		1.0 1.0				1 1	
2207	<i>Winterization Equipment</i>								
	Heater Assembly	Replace Repair		1.0 1.5				1 1	
	Heater Blower and Hoses, Ducts, and Controls	Replace		1.0				1	
	Heater and Defroster Hoses, Ducts, and Isolators	Replace		1.0				1	
2210	<i>Data Plates and Instruc- tion holders</i>								
	Data Plates	Replace		0.2				1,2	
24	HYDRAULIC AND FLUID SYSTEMS								
2401	<i>Pump and Motor</i>								
	Main Hydraulic Pump	Replace Repair		1.5	2.0			1,3 1,5	
	Fork/Brake Hydraulic Pump	Replace Repair		1.0	0.5			1 1,5	

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
2402	<i>Manifold and/or Control Valves</i> Forklift Control Valve	Replace Repair		0.5	1.0			1 1,5,8	
2404	<i>Tilt Cylinders and Tilt Crank</i> Carriage Tilt Cylinder	Replace Repair		1.0	1.0			1 1,5	
	Locking Control Valve	Replace Repair		1.0	1.0			1 1,8	
2405	<i>Mast Column</i> Carriage Assembly	Replace		1.5				1,3	
	Fork/Boom Assembly	Replace Repair			1.5 2.0			1,5 1,5	
	Forks	Replace		1.0				1	
	Fork/Boom Bushings	Replace			0.5			1,2	
	Conveyorized Fork Attachments	Replace Repair		0.1 1.0				1 1,2	
2406	<i>Strainers, Filters, Lines and Fittings, Etc.</i> Hoses, Lines, and Fittings	Replace		1.0				1	
	Hydraulic Oil Sampling Valve	Replace		0.1				1	
	Hydraulic Filters	Replace		0.2				1,11	
2407	<i>Hydraulic Cylinders</i> Fork/Boom Cylinder	Replace Repair		0.5	1.0			1,2 1,5	
	Fork Spacing Cylinder	Replace Repair		0.5	1.0			1,2 1,5	
2408	<i>Liquid Tanks or Reservoirs</i> Hydraulic Reservoir	Service Replace Repair	0.1	2.0	1.0			2 1,2 1,8	
			B-17						

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
33	SPECIAL PURPOSE KITS								
3303	<i>Winterization Kits</i>								
	Battery Heater Blanket	Replace		1.0				1	
	Battery Warmer	Replace		1.0				1	
	Engine Coolant Heater	Replace		1.0				1	
	110-volt Junction Box	Replace		1.0				1	
	Engine Oil Pan Heater and Thermostat	Replace		1.0				1	
47	GAGES (NONELECTRI- CAL), WEIGHING AND MEASURING DEVICES								
4702	<i>Gages, Mountings, Lines and Fittings</i>								
	Hydraulic Oil Level Sight Gage	Replace		0.5				1	
50	PNEUMATIC EQUIP- MENT								
5000	<i>Air Compressor Assembly</i>	Replace Repair		1.0	2.0			1 1,5	
91	CHEMICAL, BIOLOGI- CAL, AND RADIOLOG- ICAL (CBR) EQUIP- MENT								
9120	<i>Decontamination Equip- ment</i>								
	Decontamination Bracket Assembly	Replace		0.1				1	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/ NATO STOCK NUMBER	TOOL NUMBER
1	O,F,H	Tool Kit, General Mechanic: Automotive	5180-00-177-7033	W33004
2	0	Shop Equipment, Automotive Maintenance and Repair: Common No. 1, Less Power	4910-00-754-0654	W32593
3	0	Shop Equipment, Automotive Maintenance and Repair: Common No. 2, Less Power	4910-00-754-0650	W32730
4	0	Simplified Test Equipment for Internal Combustion Engines (STE/ICE)	4910 00-222-6589	12259266
5	F,H	Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Basic Less Power	4910-00-754-0705	T24660
6	F,H	Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Supplemental No. 1, Less Power	4910-00-754-0706	T25619
7	F,H	Shop Equipment, Fuel and Electrical System Engine: Field Maintenance, Basic, Less Power	4910-00-754-0714	T30414
8	F,H	Shop Equipment, General Purpose Repair, Semitrailer Mounted	4940-00-287-4984	MILS45538
UNIT LEVEL SPECIAL TOOLS				
9	O,F,H	Flywheel Turning Tool	5120-01-335-5827	JDE81-1
10	0	Hydraulic Pressure Gage	4940-01-086-8756	13221E6828
11	0	Pipe Wrench, Strap	5120-00-640-6364	5576345
12	O,FH	Timing Pin	5315-01-321-6068	JDE81-4

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS (Con't)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/ NATO STOCK NUMBER	TOOL NUMBER
DIRECT SUPPORT LEVEL SPECIAL TOOLS				
13	F	Accumulator Charging Kit	4930-01-046-7109	1252157
14	F	Crankshaft Front Oil Seal Driver	None	JD250
15	F	Filter Adapter	Not assigned	JDG-596
16	F	Gear Timing Tool	Not assigned	JD-254
17	F	Hydraulic Flowmeter	4940-01-079-5263	13221E6829
18	F	Inserter and Remover, Seal	5120-01-334-7012	JT30040
19	F	Lifting Brackets	Not assigned	JT01748
20	F	Spring Tester	5120O937-7265	J9666
21	F	Window Glass Installation Tool	5180{X}329-3318	201-1021
GENERAL SUPPORT LEVEL SPECIAL TOOLS				
22	H	Piston Liner Height Gage	Not assigned	JDG-451
23	H	Piston Liner Puller	5120-01-346-0983	D01073AA
24	H	Piston Pin Bushing Remover and Installer	None	JDE286
25	H	Ring Groove Wear Gage	None	JDE-62
26	H	Seal and Wear Sleeve Installer Set	Not assigned	JT30040

Section IV. REMARKS

REFERENCE CODE	REMARKS
A	Consists of cylinder head valve clearance adjustment.
B	Adjustment of cylinder head valves must be accomplished every 1000 hours of operation.
C	Includes timing the fuel injection pump using a timing pin method.
D	Repair is limited to welding at Direct Support Maintenance.
E	Repair is not authorized for ROPS frame assembly.

**APPENDIX C
EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST**

Section I. INTRODUCTION

C-1. SCOPE.

This appendix lists expendable/durable supplies and materials you will need to operate and maintain the M544E Forklift Truck. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, *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 "Initial Setup" of maintenance paragraphs or narrative instructions to identify the material needed (e.g., Dry cleaning solvent, Item 31, Appendix C).

b. **Column (2) - Level**. This column identifies the lowest level of maintenance that requires the listed item.

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

c. **Column (3)- National Stock Number**. This is the National Stock Number assigned to the item. Use it to request or requisition the item.

d. **Column (4) - Description**. Indicates the Federal Item Name and, if required, a description to identify the item. The last line for each item indicates the Commercial and Government Entity (CAGE) Code in parentheses followed by the part number, if applicable.

e. **Column (5)-Unit of Measure (U/M)**. Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION (CAGE) Part Number	(5) U/M
1	O	8040-00-262-9028	ADHESIVE: General Purpose, Type I (19203) 829899 1 Pint Can	Pt
2	O	8040-01-024-6991	ADHESIVE: Loctite (05972) 312-31 50 Milliliter Bottle	ml
4	O	6850-00-181-7929 6850-00-181-7933 6850-00-181-7940	ANTIFREEZE: Ethylene Glycol, Inhibited, Heavy-duty, Single Package (81349) MIL-A-46153 1 Gallon Can 5 Gallon Can 55 Gallon Drum	gl gl gl
5	O	8135-00-171-0930	BARRIER MATERIAL: Greaseproof-waterproofed Flexible (81349) MIL-B-121 100 Yard Roll	yd
6	O	7920-00-061-0038	BRUSH: Scrub (83421) 7920-00-061-0038	ea
7	O	7920-00-900-3577	BRUSH: Wire (17987) 15SS	ea
8	O	5350-00-187-6294	CLOTH: Abrasive 50 Yard Roll	yd
9	C	5350-00-221-0872	CLOTH: Abrasive, Crocus (58536) A-A-1206 Package of 50	ea
9	C	6850-00-926-2275	COMPOUND: Cleaning, Windshield (81348) O-C-1901 1 Pint Bottle	pt
9	C	6850-01-347-0073	(81349) O-C-1901 1 Gallon Can	g

**Section II. EXPENDABLE/DURABLE SUPPLIES AND
MATERIALS LIST (Con't)**

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION (CAGE) Part Number	(5) U/M
10	O	7930-00-899-9534	COMPOUND: Dishwashing, Hand (83421) 7930-00-899-9534 5 Gallon Can	gl
11	O	8030-01-159-4844	COMPOUND: Silicone, Sealant, RTV (11862)1052914 10 1/7 Ounce Tube	oz
12	O	5975-00-335-2588	CONDUIT: Nonmetallic, Flexible, 0.25 Inch Inner Diameter (81348) HHT791 15 Foot Roll	ft
13	O	5975-00-275-1960	CONDUIT: Nonmetallic, Flexible, 0.50 Inch Inner Diameter (06090) CONVOLEX-1/2 15 Foot Roll	ft
14	O	5975-01-191-9851	CONDUIT: Nonmetallic, Flexible, 0.75 Inch Inner Diameter (11862) 8919356 15 Foot Roll	ft
15	O	5975-00-275-1962	CONDUIT: Nonmetallic, Flexible, 1.00 Inch Inner Diameter (80378) CVC2597-32-48 15 Foot Roll	ft
16	O	5975-01-203-0263	CONDUIT: Nonmetallic, Flexible, 1.25 Inch Inner Diameter (81482) C10000-080 15 Foot Roll	ft
17	O	7930-00-282-9699	DETERGENT: General Purpose, Liquid (83421) 7930-00-282-9699 1 Gallon Can	gl

**Section II. EXPENDABLE/DURABLE SUPPLIES AND
MATERIALS LIST (Con't)**

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION (CAGE) Part Number	(5) U/M
18	O		FLUID: Hydraulic, Fire Resistant (81349) MIL-H-46170 1 Quart Can	qt
19	C	9150-00-111-6256	FLUID: Hydraulic, Petroleum Base (81349) MIL-H-6083 1 Quart Can	qt
		9150-00-935-9807	5 Gallon Can	gl
		9150-00-935-9809	55 Gallon Drum	gl
		9150-00-935-9810		
20	O		FLUX: Soldering (58536) A-A-51145 TY 1 FORM A 1 Pound Can	lb
21	C		FUEL OIL, DIESEL: DF-2, Regular (81348) VV-F-800 GRADEDF2RE 5 Gallon Can	gl
		9140-00-286-5295	55 Gallon Drum, 16 Gage	gl
		9140-00-286-5296	55 Gallon Drum, 18 Gage	g9
		9140-00-286-5297		
22	O		GLOVES: Barbed Wire Handlers (12036) 27-600 1 Pair	pr
23	C		GREASE: Automotive and Artillery, GAA (81349) MIL-G-10924 14 Ounce Cartridge	oz
		9150-01-197-7693	1 ¾ Pound Can	lb
		9150-01-197-7690	6 1/2 Pound Can	lb
		9150-01-197-7689	35 Pound Can	lb
		9150-01-197-7692		
24	O		INHIBITOR: Corrosion, Liquid Cooling System (81349) MIL-A-53009 1 Quart Can	qt
		6850-01-160-3868		

**Section II. EXPENDABLE/DURABLE SUPPLIES AND
MATERIALS LIST (Con't)**

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION (CAGE) Part Number	(5) U/M
25	C	9150-00-189-6727 9150-00-186-6668 9150-00-191-2772	OIL: Lubricating, Engine, OE/HDO 10 (81349) MIL-L-2104 1 Quart Can 5 Gallon Can 55 Gallon Drum	qt gl gl
26	C	9150-00-186-6681 9150-00-188-9858 9150-00-189-6729	OIL: Lubricating, Engine, OE/HDO 30 (81349) MIL-L-2104 1 Quart Can 5 Gallon Can 55 Gallon Drum	qt gl gl
27	C		RAG: Wiping, Cotton (64067) 7920-00-205-1711	
28	O	7920-00-205-1711 5340-00-391-4240	50 Pound Bale SEAL: Antipilferage (62142) 15262 Package of 100	lb ea
29	O		SEALANT: Adhesive, Silicon Rubber, RTV Type I, Clear (80244) MIL-A-46106 TY1 Adhesive Kit	kt
30	O	8040-00-833-9563 3439-00-247-6921 3439-00-265-7102	SOLDER: Lead Alloy (81348) QQ-S-571 1 Pound Bar 1 Pound Spool	lb lb
31	C	6850-00-110-4498 6850-00-664-5685 6850-00-281-1985 6850-00-274-5421 6850-00-285-8012 6850-00-331-3350	SOLVENT: Dry Cleaning, Type II (81348) P-D-680 1 Pint Can 1 Quart Can 1 Gallon Can 5 Gallon Can 55 Gallon Drum 55 Gallon Drum	pt qt gl gl gl gl

**Section II. EXPENDABLE/DURABLE SUPPLIES AND
MATERIALS LIST (Con't)**

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION (CAGE) Part Number	(5) U/M
32	O	5975-00-074-2072	STRAP: Tie-down, Electrical Components (96906) MS3367-1-9 Box of 100	ea
33	O	9905-00-537-8954	Tag: Marker (64067) 9905-W537-8954 Bundle of 50	ea
34	O	8030-00-889-3535	TAPE: Antiseizing, X Inch Width (81755) P5025-2R 260 Inch Roll	in.
35	O	5640-00-103-2254	TAPE: Duct, 2 Inch Width (39428) 1791K70 60 Yard Roll	yd
36	O	5970-00-198-8621	TAPE: Insulation, Electrical, 11 Inch Width (58536) A-A-2094 85 Foot Roll	ft
37	O	7510-00-473-9513	TAPE: Pressure Sensitive Adhesive, 2 Inch Width (81349) MIL-T-23397 60 Yard Roll	yd
38	O	6830-01-325-5586	TRICHLOROTRIFLUOROETHANE: Technical (22527) T-180 4 Liter Can	li
39	O	5970-00-815-1295	TUBING: Heat Shrinkable (81349) M23053/5-106-0	ft
40	O	4720-00-414-5072	TUBING: Nonmetallic, Plastic, Clear, 0.315 Inch Inner Diameter (61501) S50HL3-8X1-2X50	ft
41	O	9505-00-596-0191	WIRE: Nonelectrical (81346) ASTM A641 5 Pound Coil	lb

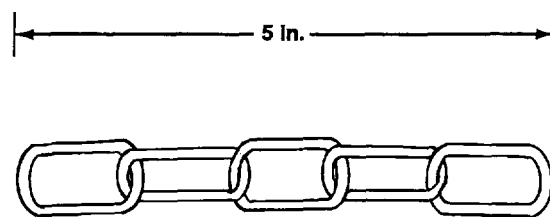
**APPENDIX D
ILLUSTRATED LIST OF MANUFACTURED ITEMS**

Section I. INTRODUCTION

D-1. SCOPE.

- a. This appendix includes complete instructions for making items authorized to be manufactured or fabricated.
- b. All bulk materials needed for manufacture of an item are listed by National Stock Number (NSN), part number, or specification number in the manufacturing instructions. All dimensions given are in standard units.

Section III. Section II. MANUFACTURING INSTRUCTIONS



1. Make from chain, NSN 4010-00-129-3221, Part Number RRC 271.
2. Cut to 5.00 in. (12.70 cm) long.

Figure D-1. Pintle Chain.

TA706785

D-1/(D-2 Blank)

**APPENDIX E
TORQUE LIMITS**

E-1. SCOPE.

This appendix lists standard torque values, as shown in Table E-1, and provides general information for applying torque. Special torque values and tightening sequences are indicated in the maintenance procedures for applicable components.









E-2. GENERAL.

- a. Always use the torque values listed in Table E-1 when the maintenance procedure does not give a specific torque value.
- b. Unless otherwise indicated, standard torque tolerance shall be $\pm 10\%$.
- c. Torque values listed are based on clean, dry threads. Reduce torque by 10% when engine oil is used as a lubricant. Reduce torque by 20% if new plated capscrews are used.
- d. Capscrews threaded into aluminum may require reductions in torque of 30% or more of Grade 5 capscrews torque. Capscrew threaded into aluminum must also attain two capscrew diameters of thread engagement.

CAUTION

If replacement capscrews are of higher grade than originally supplied, use torque specifications for the original. This will prevent equipment damage due to overtorquing.

Table E-1. Torque Limits

Current Usage	Much Used	Much Used	Used at Times	Used at Times	
Quality of Material	Indeterminate	Minimum Commercial	Medium Commercial	Best Commercial	
SAE Grade Number	1 or 2	5	6 or 7	8	
Capscrew Head Markings			 	  	
Manufacturer's marks may vary					
These are all SAE Grade 5 (3 line)					
Capscrew Body Size Inches - Thread	Torque lb.-ft. (N•m)	Torque lb.-ft. (N•m)	Torque lb.-ft. (N•m)	Torque lb.-ft. (N•m)	
¼	20	5 (7)	8 (11)	10 (14)	12 (16)
	28	6 (8)	10 (14)		14 (19)
⅜	18	11 (15)	17 (23)	19 (26)	24 (33)
	24	13 (18)	19 (26)		27 (37)
½	16	18 (24)	31 (42)	34 (46)	44 (60)
	24	20 (27)	35 (47)		49 (66)
⅝	14	28 (38)	49 (66)	55 (75)	70 (95)
	20	30 (41)	55 (75)		78 (106)
¾	13	39 (53)	75 (102)	85 (115)	105 (142)
	20	41 (56)	85 (115)		120 (163)
⅞	12	51 (69)	110 (149)	120 (163)	155 (210)
	18	55 (75)	120 (163)		170 (231)
1	11	83 (113)	150 (203)	167 (226)	210 (285)
	18	95 (129)	170 (231)		240 (325)
1 ¼	10	105 (142)	270 (366)	280 (380)	375 (508)
	16	115 (156)	295 (400)		420 (569)
1 ½	9	160 (217)	395 (536)	440 (597)	605 (820)
	14	175 (237)	435 (590)		675 (915)
2	8	235 (319)	590 (800)	660 (895)	910 (1234)
	14	250 (339)	660 (895)		990 (1342)

**APPENDIX F
TOOL IDENTIFICATION LIST**

Section I. INTRODUCTION

F-1. GENERAL.

This appendix lists tools you will need to maintain the M544E Forklift Truck. This listing is for informational purposes only and is not authority to requisition the tools. Common tools are found in the supply catalogs and special tools are found in TM 10-3930-659-24P.

F-2. DEFINITION OF COLUMNS.

- a. **Column (1) - Item Number.** This number is assigned to the entry in the listing and is referenced in the "Initial Setup" of maintenance paragraphs or narrative instructions to identify the tool needed (e.g., General mechanic's tool kit, Item 44, Appendix F).
- b. **Column (2) - Item Name.** Indicates the tool or tool set name and, if required, a description to identify the tool.
- c. **Column (3) - National Stock Number.** This is the National Stock Number (NSN) assigned to the tool. Use it to request or requisition the tool.
- d. **Column (4) - (CAGE) Part Number.** When no NSN is available, a Commercial and Government Entity (CAGE) Code followed by a part number will be used where possible.
- e. **Column (5) - Reference.** Indicates the technical manual or supply catalog in which the tool can be found.

Section II. TOOL IDENTIFICATION LIST

(1) Item No.	(2) Item Name	(3) National Stock Number	(4) (CAGE) Part Number	(5) Reference
1	Adapter		(06021) JT03103	TM 10-3930-659-24P
2	Adapter		(06021) JT05687	TM 10-3930-659-24P
3	Adapter		(06021) JT05690	TM 10-3930-659-24P
4	Bar, wrecking: 30 In. length	5120-00-293-0665	(57068) 55130	SC 49195-CL-A72

Section II. TOOL IDENTIFICATION LIST (Con't)

(1) Item No.	(2) Item Name	(3) National Stock Number	(4) (CAGE) Part Number	(5) Reference
5	Cap		(06021) 38H1416	TM 10-3930659-24P
6	Cap		(06021) 38H1417	TM 10-3930-659-24P
7	Cap		(06021) 38H1419	TM 10-3930-659-24P
8	Compressor Unit	4310-00-752-9633	(81349) MIL-C-13874	SC 4910-95-CL-A74
9	Coupler		(06021) JT03051	TM 10-3930-659-24P
10	Coupler, Quick		(06021) JT01608	TM 10-3930-659-24P
11	Drill, Electric, Portable	5130-00-293-1849	(81348) W-D-661	SC 4910-95-CL-A74
12	Drill Set, Twist	5133-00-293-0983	(81348) GGG-D-751	SC 4910-95-CL-A74
13	Fitting		(06021) JT03251	TM 10-3930-659-24P
14	Fitting		(06021) JT05692	TM 10-3930659-24P
15	Fitting		(06021) 38H1282	TM 10-3930-659-24P
16	Flywheel Turning Tool	5120-01-335-5827	(45225) JDE81-1	TM 10-3930-659-24P
17	Gage, Feeler: 0-5000 psi	5210-01-045-3526	(55719) FBM320	SC 4910-95-CL-A72
18	Gage, Pressure: 0.05-1.00 mm	4940-01-086-8756	(97403)13221E6828	TM 10-3930-659-24P
19	Heat Gun	3439-01-037-7268	(78976) 6966C	TM 10-3930-659-24P
20	Hose Assembly	4720-00-449-6636	(01276) FG2074AEE1200	TM 1-3930-659-24P
21	Jack, Hydraulic: 12 ton capacity	5120-00-224-7330	(07505) 67224	SC 4910-95-CL-A74
22	Multimeter, Digital	6625-01-139-2512	(80058) AN/PSM-45	SC 4910-95-CL-A74
23	Multiplier, Torque Wrench:	5120-00-574-9318	(03763) TD-1000	SC 4910-95-CL-A72
24	Pliers, Retaining Ring: external, 0.038-1.000 In. diameter	5120-00-288-9717	(79136) 0200	SC 4910-95CL-A72
25	Plug		(06021) 38H1139	TM 10-3930-659-24P

Section II. TOOL IDENTIFICATION LIST (Con't)

(1) Item No.	(2) Item Name	(3) National Stock Number	(4) (CAGE) Part Number	(5) Reference
26	Plug		(06021) 38H1142	TM 10-3930-659-24P
27	Plug		(06021) 38H1145	TM 10-3930-659-24P
28	Plug		(06021) 38H1146	TM 10-3930-659-24P
29	Plug		(06021) 38H1147	TM 10-3930-659-24P
30	Plug		(06021) 38H1148	TM 113930-659-24P
31	Plug		(06021) 38H 1356	TM 10-3930-659-24P
32	Puller Kit, Mechanical	5120-00-313-9496	(45225) 1178	SC 4910-95-CL-A72
33	Removal Tool, Oil Filter	5120-00-865-0933	(93389) 2304	TM 10-3930-659-24P
34	Riveter, Blind Hand: 3/32 in., 1/8 in., 5/32 in., and 3/16 in. diameters	5120-00-017-2849	(10054) 250K	SC 4910-95-CL-A74
35	Simplified Test Equipment for Internal Combustion Engines (STE/ICE)	4910-00-124-2554	(49671) 2389409	TM 94910-571-34&P
36	Soldering Gun	3439-00-618-6623	(97049) D550-3	SC 4910-95-CL-A74
37	Tee	4730-01-354-2654	(01276) FF2114T1-1010S	TM 10-3930-659-24P
38	Tee		(06021) JT05488	TM 10-3930-659-24P
39	Tee	4730-01-331-7802	(75755) 38H1 030	TM 10-3930-659-24P
40	Tee		(06021) 38H1034	TM 10-3930-659-24P
41	Tester, Hydraulic	4910-00-868-6871	(08832) PHT-100-6-G585	TM 10-3930-659-24P
42	Timing Pin	5315-01-321-6068	(75160) JDE81-4	TM 10-3930-659-24P
43	Tool Kit, Electrical Connector Repair	5180-00-876-9336	(19204) 7550526	SC 4910-95-CL-A74
44	Tool Kit, General Mechanic's: Automotive	5180-00-177-7033	(50980) SC5180-90-N26	SC 5180-90-N26
45	Trestle, Motor Vehicle Maintenance: 7 ton capacity	4910-00-251-8013	(79805) 306	SC 4910-95CL-A72

Section II. TOOL IDENTIFICATION LIST (Con't)

(1) Item No.	(2) Item Name	(3) National Stock Number	(4) (CAGE) Part Number	(5) Reference
46	Truck, Lift, Wheel: 2400 lb lifting capacity	4910-00-554-5983	(81349) MIL-T-14537	SC 4910-95-CL-A74
47	Union		(06021) 38H1272	TM 10-3930-659-24P
48	Vise, Machinist's	5120-00-293-1439	(79416) 504M2	SC 4910-95-CL-A74
49	Wrench, Adjustable: 0-3% In. Jaw opening	5120-00-264-3793	(24617) 2117080	SC 4910-95-CL-A72
50	Wrench, Pipe: strap	5120-00-262-8491	(19207) 5576345	TM 103930659-24P
51	Wrench, Torque: 3/8 in. drive, 0-200 lb.-in. capacity	5120-00-853-4538	(26848) F200-1	SC 491095-CL-A72
52	Wrench, Torque: 1/2 in. drive, 0-175 lb.-ft. capacity	5120-00-640-6364	(58536) A-A-2411	SC 4910-95-CL-A74
53	Wrench, Torque: 3/4 in. drive, 0-600 lb.-ft. capacity	5120-00-221-7983	(55719) TE602A	SC 4910-95-CL-A72
54	Wrench Set, Socket: 1/4 in. drive	5120-00-181-2305	(81348) GGG-W-641	SC 4910-95-CL-A72
55	Wrench Set, Socket: 3-4 in. drive	5120-00-204-1999	(06542) FEDSTD353	SC 4910-95-CL-A72

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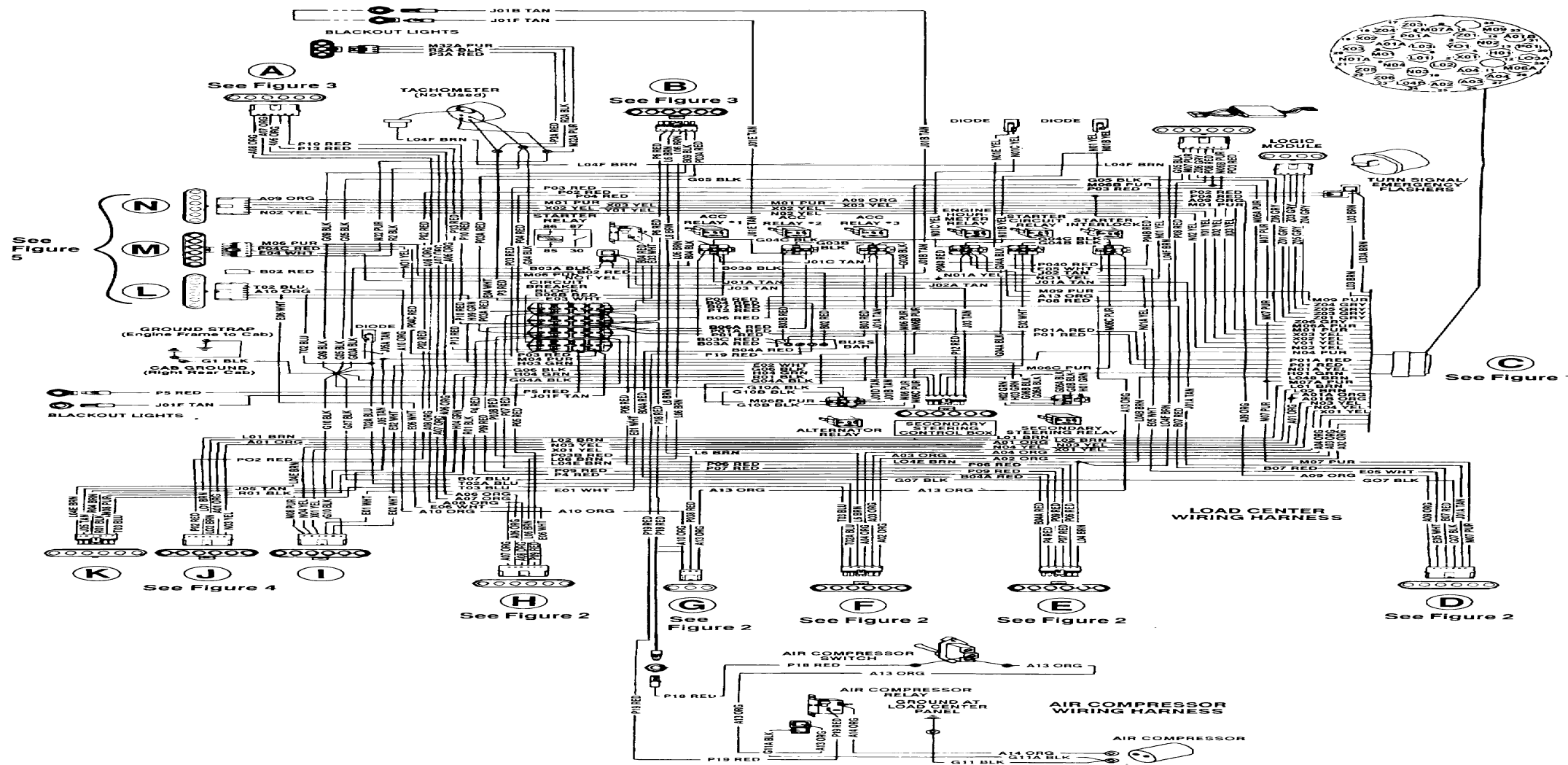


Figure FO-1. Load Center and Air Compressor Wiring Diagram.

TM 10-3930-659-20

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:



MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
05838

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To be distribution in accordance with DA Form 12-25 E (Block 6065)
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GOVERNMENT PRINTING OFFICE: 1994-546-017/0002

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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 = 1.000 Millimeters = 39.37 Inches
- 1 Kilometer = 1.000 Meters = 0.621 Miles

SQUARE MEASURE

- 1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
- 1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
- 1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

- 1 Cu Centimeter = 1,000 Cu Millimeters = 0.06 Cu Inches
- 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

LIQUID MEASURE

- 1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
- 1 Liter = 1,000 Milliliters = 33.82 Fluid Ounces

TEMPERATURE

- $5/9 (°F - 32) = °C$
- 212° Fahrenheit is equivalent to 100° Celsius
- 90° Fahrenheit is equivalent to 32.2° Celsius
- 32° Fahrenheit is equivalent to 0° Celsius
- $9/5 C° + 32 = F°$

WEIGHTS

- 1 Gram = 0.001 Kilograms = 1,000 Milligrams = 0.035 Ounces
- 1 Kilogram = 1,000 Grams = 2.2 Lb.
- 1 Metric Ton = 1,000 Kilograms = 1 Megagram = 1.1 Short Tons

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

