

\*This publication supersedes TM 9-2320-260-34-1, TM 9-2320-260-34-2-1, TM 9-2320-260-34-2-2, TM 9-2320-260-34-2-3, TM 9-2320-260-34-2-4, and TM 9-2320-260-34-2-5, 31 December 1980, for M809 series vehicles.

**TECHNICAL MANUAL  
VOLUME 2 OF 2  
DIRECT SUPPORT AND  
GENERAL SUPPORT MAINTENANCE  
FOR  
5-TON, 6X6, M809 SERIES TRUCKS  
(DIESEL)**

TRUCK, CARGO: 5-TON, 6X6,  
M813 (2320-00-050-8902) (EIC:BSB);  
(2320-00-050-8890) (EIC:BSA)  
M813A1 (2320-00-050-8913) (EIC:BSD);  
(2320-00-050-8905) (EIC:BSC)  
M814 (2320-00-050-8988) (EIC:BSK);  
(2320-00-050-8987) (EIC:BSJ)

TRUCK, BOLSTER, LOGGING: 5-TON, 6X6  
M815 (2320-00-050-8927) (EIC:BSE)

TRUCK, WRECKER, MEDIUM: 5-TON, 6X6  
M816 (2320-00-051-0489) (EIC:BSQ)

TRUCK, DUMP: 5-TON, 6X6  
M817 (2320-00-050-8970) (EIC:BSF);  
(2320-00-051-0589) (EIC:BSR)

TRUCK, TRACTOR: 5-TON, 6X6  
M818 (2320-00-050-8984) (EIC:BSH);  
(2320-00-050-8978) (EIC:BSG)

TRUCK, TRACTOR, WRECKER: 5-TON, 6X6  
M819 (2320-00-050-9004) (EIC:BSL)

TRUCK, VAN EXPANSIBLE: 5-TON, 6X6  
M820 (2326-00-050-9006) (EIC:BSM)  
M820A1 (2320-00-050-9007)  
M820A2 (2320-00-050-9010) (EIC:BSN)

TRUCK, STAKE, BRIDGE TRANSPORTING: 5-TON, 6X6  
M821 (2320-00-050-9015) (EIC:BSP)

**STEERING SYSTEM  
MAINTENANCE 12-1**

**FRAME MAINTENANCE 13-1**

**BODY, CAB, AND HOOD  
MAINTENANCE 14-1**

**SPECIAL PURPOSE  
BODIES MAINTENANCE 15-1**

**WINCH AND POWER  
TAKEOFF MAINTENANCE 16-1**

**SPECIAL PURPOSE KITS  
MAINTENANCE 17-1**

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distribution is unlimited.

**DEPARTMENTS OF THE ARMY AND THE AIR FORCE  
JUNE 1994**

## **WARNING**

### **EXHAUST GASES CAN KILL**

1. DO NOT operate your vehicle engine in enclosed area.
2. DO NOT idle vehicle engine with cab windows closed.
3. DO NOT drive vehicle with inspection plates or cover plates removed.
4. BE ALERT at all times for exhaust odors.
5. BE ALERT for exhaust poisoning symptoms. They are:
  - Headache
  - Dizziness
  - Sleepiness
  - Loss of muscular control
6. If YOU SEE another person with exhaust poisoning symptoms:
  - Remove person from area
  - Expose to open air
  - Keep person warm
  - Do not permit person to move
  - Administer artificial respiration, if necessary\*

\* For artificial respiration, refer to FM 21-11.

### **WARNING SUMMARY**

- All personnel must stand clear during lifting operations. A swinging or shifting load may cause injury or death to personnel.
- Eye protection must be worn when removing and installing springs under tension. Failure to do so may result in injury to personnel.
- Plunger rack is under spring tension. Keep hands clear of plunger rack during removal. Failure to do so may cause injury to personnel.
- Drycleaning solvent is flammable and will not be used near open flame. Use only in well-ventilated places. Failure to do so may result in injury to personnel.
- Ensure lifting capacity is greater than weight of fifth wheel. Failure to do so may result in injury to personnel or damage to equipment.
- Plunger is under spring tension. Keep hands clear of plunger during removal. Failure to do so may cause injury to personnel.
- Eye protection is required when using wire brush for cleaning. Failure to do so may result in injury to personnel.
- Stabilize winch while sitting vertical. Failure to do so may result in injury to personnel.

## WARNING SUMMARY (Contd)

- Never work under raised dump body until safety braces are properly positioned. Injury to personnel may result if dump body suddenly lowers.
- Do not operate dump controls when dump body is removed. Injury to personnel may result if lift cylinder is operated when not secured.
- Bypass plugs are under tension. Remove plugs slowly. Failure to do so may result in injury to personnel.
- Spring is under tension. Release tension slowly. Failure to do so may result in injury to personnel.
- Ensure lifting capacity is greater than weight (465 lb (211 kg)) of cab protector shield. Failure to do so may result in injury to personnel or damage to equipment.
- Ensure lifting capacity is greater than weight (500 lb (227 kg)) of hoist cylinder. Failure to do so may result in injury to personnel or damage to equipment.
- Ensure lifting capacity is greater than weight (9,055 lb (4,111 kg)) of van body. Failure to do so may result in injury to personnel or damage to equipment.
- Support capacity must be greater than weight of van body, Ensure support capacity is not less than 9,055 lb (4,111 kg). Failure to ensure this may result in injury to personnel or damage to equipment.
- Van body is insulated with fibrous glass felt insulation. Gloves, eyeshields, and dust mask must be worn during van body maintenance. Failure to do so may result in injury to personnel.
- Compressed air source will not exceed 30 psi (207 kPa). When cleaning with compressed air, eyeshields must be worn. Failure to wear eyeshields may result in injury to personnel.
- Do not perform engine coolant heater testing while smoking or within 50 feet of sparks or open flame. Fuel is flammable and can explode easily, causing injury or death to personnel and damage to equipment.
- Do not handle hot heater with bare hands; wear hand protection at all times. Failure to do so may cause injury to personnel.
- Exhaust gases can kill. Do not perform this task in enclosed areas. Ensure work area is well-ventilated and exhaust fumes are directed away from test area.
- Allow time for heater to cool before removing from test equipment. Failure to do so may result in injury to personnel or damage to equipment.
- Ensure lifting capacity is greater than weight (1,800 lb (817 kg)) of cargo body. Failure to do so may result in injury to personnel or damage to equipment.
- Ensure lifting capacity is greater than weight (2,700 lb (1,226 kg)) of dump body. Failure to do so may result in injury to personnel or damage to equipment.
- Ensure lifting capacity is greater than weight (1,800 lb (817 kg)) of wrecker body. Failure to do so may result in injury to personnel or damage to equipment.
- Ensure lifting capacity is greater than weight (1,800 lb (817 kg)) of tractor wrecker body. Failure to do so may result in injury to personnel or damage to equipment.
- Ensure lifting capacity is greater than weight (2,700 lb (1,226 kg)) of subframe. Failure to do so may result in injury to personnel or damage to equipment.
- All personnel must be clear of vehicle when vehicle engine is running. Vehicle could suddenly move and cause injury to personnel.
- Platform is heavy and bulky; handle with care. Failure to do so may result in injury to personnel or damage to equipment,
- Do not disconnect air lines before draining air reservoirs. Small parts under pressure may shoot out with high velocity, causing injury to personnel.

### Warning b

\* ARMY TM 9-2320 -260-34-2  
AIR FORCE TO 36A12-1C-1122-2

TECHNICAL MANUAL  
NO. 9-2320-260-34-2

DEPARTMENTS OF THE ARMY  
AND THE AIR FORCE

TECHNICAL ORDER  
NO. 36A12-1C-1122-2

WASHINGTON, D.C. 1 June 1994

TECHNICAL MANUAL  
VOLUME 2 OF 2  
DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE  
5-TON, 6X6, M809 SERIES TRUCKS  
(DIESEL)

Model		NSN Without Winch	(EIC)	NSN With Winch	(EIC)
Truck, Cargo	M813	2320-00-050-8902	(BSB)	2320-00-050-8890	(BSA)
	M813A1	2320-00-050-8913	(BSD)	2320-00-050-8905	(BSC)
	M814	2320-00-050-8988	(BSK)	2320-00-050-8987	(BSJ)
Truck, Bolster, Logging	M815			2320-00-050-8927	(BSE)
Truck, Wrecker, Medium	M816			2320-00-051-0489	(BSQ)
Truck, Dump	M817	2320-00-050-8970	(BSF)	2320-00-051-0589	(BSR)
Truck, Tractor	M818	2320-00-050-8984	(BSH)	2320-00-050-8978	(BSG)
Truck, Tractor, Wrecker	M819			2320-00-050-9004	(BSL)
Truck, Van, Expansibile	M820	2320-00-050-9006	(BSM)		
	M820A1	2320-00-050-9007			
	M820A2	2320-00-050-9010	(BSN)		
Truck, Stake, Bridge Transporting	M821			2320-00-050-9015	(BSP)

This manual is published in two parts. TM 9-2320-260-34-1 contains chapters 1 through 11, and TM 9-2320-260-34-2 contains chapters 12 through 17 and appendices A, B, C, D, E, and F.

This manual contains a table of contents and an alphabetized index for chapters 1 through 17.

\* This publication supersedes TM 9-2320-260-34-1. TM 9-2320-260-34-2-1. TM 9-2320-260-34-2-2. TM 9-2320-260-34-2-3, TM 9-2320-260-34-2-4, and TM 9-2320-260-34-2-5, dated 31 December 1980, for M809 series vehicles.

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**REPORTING OF ERRORS**

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 back of this manual, direct to: Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-MB, Warren, Michigan 48397-5000. A reply will be furnished to you.

**VOLUME 2 OF 2**

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## CHAPTER 12

### STEERING SYSTEM MAINTENANCE

Section I. Mechanical and Power Steering System Maintenance (page 12-1)  
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#### Section I. MECHANICAL AND POWER STEERING SYSTEM MAINTENANCE

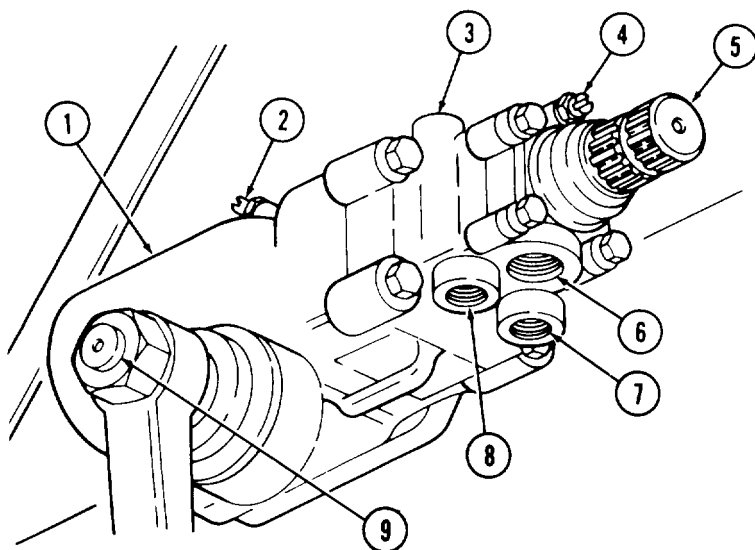
#### 12-1. MECHANICAL AND POWER STEERING SYSTEM MAINTENANCE INDEX

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#### 12-2. DESCRIPTION

This paragraph describes the power steering gear and power steering pump with oil reservoir.

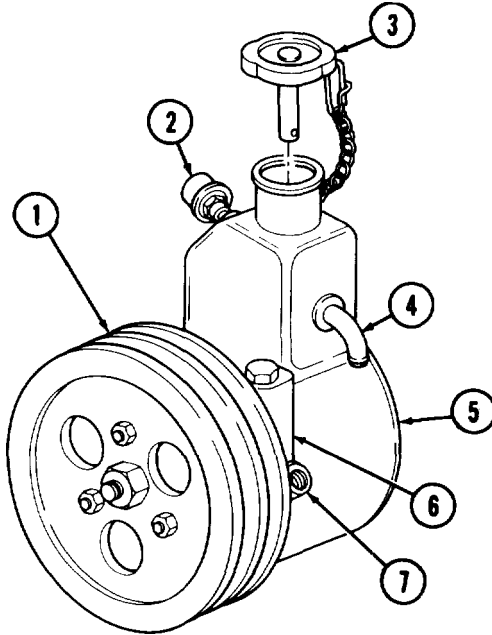
a. The M809 series vehicles utilize a power steering system consisting of a power steering gear which is a fully integral power unit incorporating a hydraulic control valve, hydraulic power cylinders, and a mechanical steering mechanism. Now of oil from the engine-driven pump is directed to the power assist cylinder by the control valve.



1. Power steering gear assembly
2. Poppet valve adjustment
3. Hydraulic pressure inlet
4. Poppet valve adjustment screw
5. Input shaft
6. Hydraulic oil return
7. Assist cylinder port
8. Assist cylinder port
9. Sector shaft

## 12-2. DESCRIPTION (Contd)

b. The power steering pump and reservoir are incorporated into a single assembly. The oil reservoir encloses the pump housing and provides a reserve supply of oil to assure complete filling of hydraulic system. Atmospheric pressure in the reservoir is maintained through a breather near filler neck of reservoir. A filter is installed near intake of pump to prevent dirt and other foreign matter from entering hydraulic system. Two V-belts transfer power from the engine accessory drive to a double pulley which drives the power steering pump.



1. Power steering pump pulley
2. Breather
3. Reservoir cap
4. Reservoir return line tube
5. Power steering pump reservoir
6. Power steering pump
7. Reservoir inlet port

## 12-3. PRELIMINARY MAINTENANCE CHECKLIST

1. Check steering linkage and components for wear before performing hydraulic tests and adjustments.
2. Check tire pressures. Ensure pressures are correct and equal (TM 9-2320-260-10).
3. Check slip joint on steering column. Ensure it is free and lubricated. A tight slip joint can cause steering problems.
4. Check oil reservoir for proper oil level. (LO 9-2320-260-12).
5. Check oil pump drivebelts for tightness, wear, and slippage (TM 9-2320-260-20).
6. If problems cannot be determined during the preliminary check, you will have to test the hydraulic system.

## 12-4. MAINTENANCE PRECAUTIONS

1. Always use a puller to remove steering arms. Never use a torch or hammer.
2. Do not weld any broken steering components. Replace defective or broken parts.
3. Do not cold straighten, hot straighten, or bend any steering system part.
4. Excessive heat will develop if power steering is held in extreme right or left turns longer than a few seconds. This heat will damage seals and/or pump.
5. Prevent dirt and foreign matter from entering hydraulic steering system. Always clean around filler caps, hose, and fitting connections before removing.

## 12-5. POWER STEERING GEAR REPLACEMENT

### THIS TASK COVERS:

#### a. Removal

#### b. Installation

### INITIAL SETUP

#### APPLICABLE MODELS

All

#### TOOLS

General mechanic's tool kit

(Appendix B, Item 1)

Socket set, 3/4-in. dr.

(Appendix B, Item 24)

Torque wrench, 3/8-in. dr.

(Appendix B, Item 4)

Torque wrench, 3/4-in. dr.

(Appendix B, Item 2)

#### MATERIALS/PARTS

Lockwasher (Appendix D, Item 248)

Safety wire (Appendix D, Item 373)

Cap and plug set (Appendix C, Item 6)

Antiseize tape (Appendix C, Item 50)

#### REFERENCES (TM)

LO- 9-2320-260-12

TM 9-2320-260-10

TM 9-2320-260-20

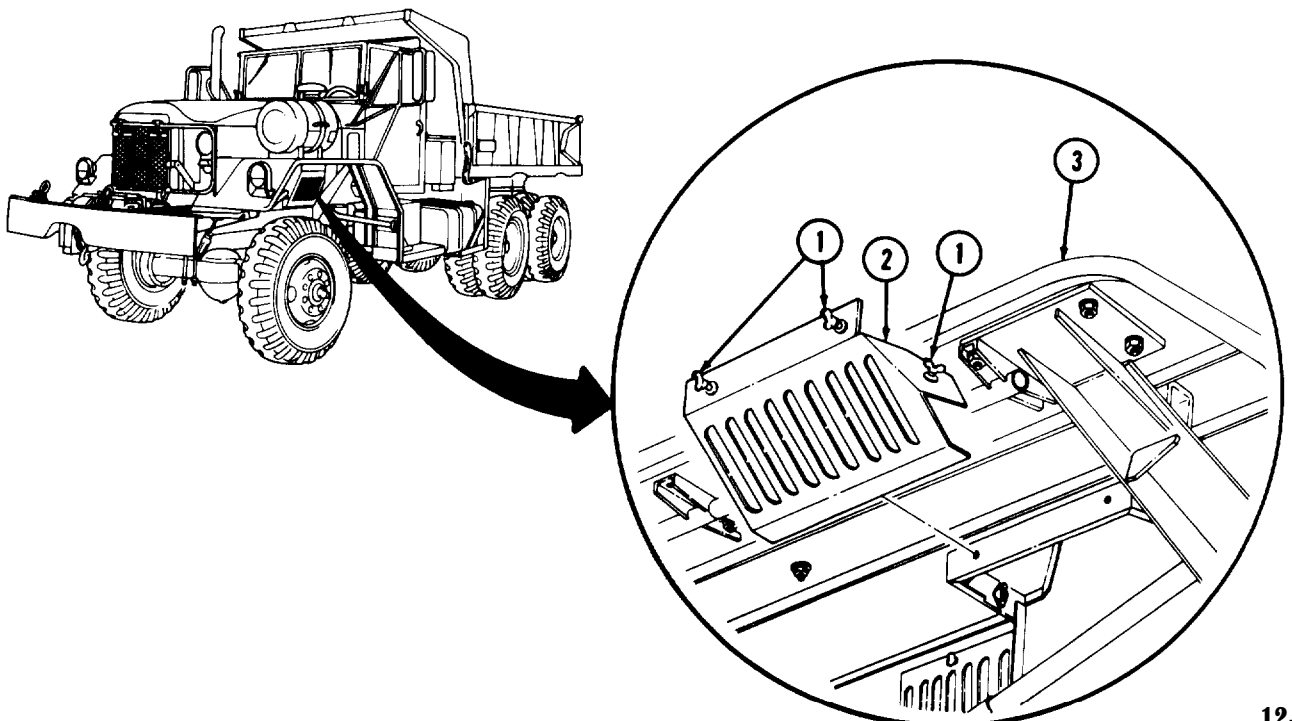
TM 9-2320-260-34P-1

#### EQUIPMENT CONDITION

- Left front wheel assembly removed (TM 9-2320-260-10).
- Power steering pump reservoir drained (TM 9-2320-260-10).
- Radiator removed (TM 9-2320-260-20).
- Steering gear shield removed (TM 9-2320-260-20).
- Pitman arm removed (TM 9-2320-260-20).

### a. Removal

1. Turn five fasteners (1) counterclockwise and remove access panel (2) from fender (3).





## 12-5. POWER STEERING GEAR REPLACEMENT (Contd)

2. Remove nut (12), lockwasher (11), and screw (7) from universal joint (6). Discard lockwasher (11).
3. Remove universal joint (6) from shaft (2) by pushing lower section (10) into upper section (9) of lower steering column (8).
4. Remove safety wire (5) from four screws (4). Discard safety wire (5).

### **CAUTION**

- Clean area around hoses and lines before removal to prevent entry of dirt. Damage will occur if dirt or dust enters power steering system.
- Cap or plug all openings immediately after disconnecting lines and hoses to prevent contamination. Remove caps or plugs prior to connection. Failure to do so may result in damage to equipment.

### **NOTE**

- Tag hydraulic lines and ports for installation.
  - Have drainage container ready to catch hydraulic fluid.
  - Assistant will help with step 5.
5. Remove four screws (4), washers (3), power steering gear (1), and mounting plate (15) from frame (13) and bracket (14).
  6. Remove pressure hose (17) and elbow (16) from power steering gear (1).
  7. Remove return tube (19) and adapter (18) from power steering gear (1).
  8. Disconnect power steering pressure lines (20) and (22) from adapters (21) and (23).
  9. Remove adapters (21) and (23) from power steering gear (1).

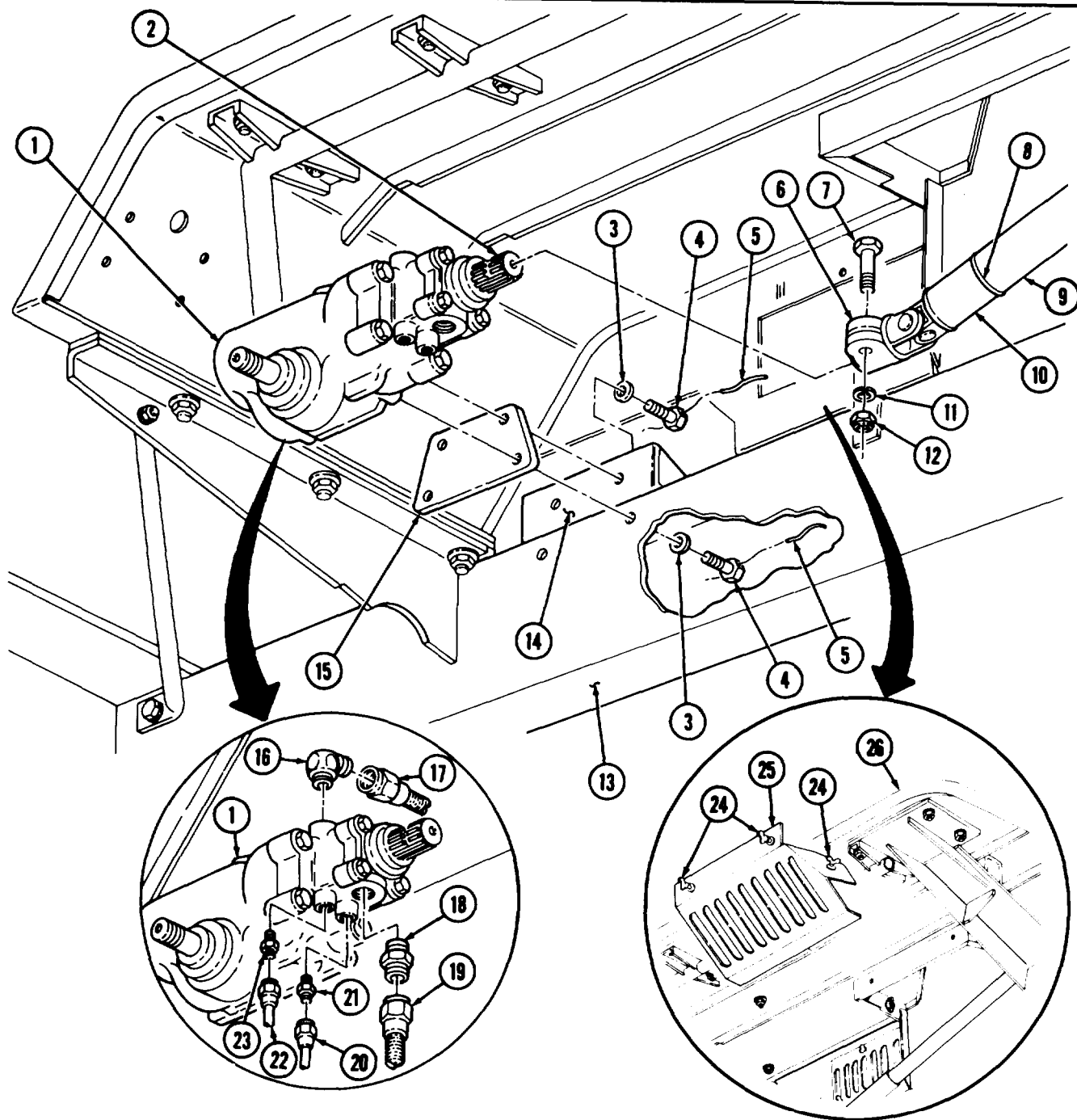
### **b. Installation**

### **NOTE**

Assistant will help with step 2.

1. Wrap adapters (18), (21), and (23), and elbow (16) with anti seize tape before installation.
2. Install mounting plate (15) and power steering gear (1) on bracket (14) and frame (13) with four washers (3) and screws (4). Tighten screws (4) 260-280 lb-ft (353-380 N-m).
3. Install new safety wire (5) through four screws (4) on bracket (14) and frame (13).
4. Install adapters (18), (21), and (23), and elbow (16) on power steering gear (1).
5. Install power steering lines (20) and (22) on power steering gear (1).
6. Install return tube (19) on power steering gear (1).
7. Install pressure hose (17) on power steering gear (1).
8. Install lower steering column universal joint (6) on power steering gear shaft (2) with screw (7), new lockwasher (11), and nut (12). Tighten nut (12) 28-34 lb-ft (38-46 N-m).
9. Install access panel (25) on fender (26) with five fasteners (24).

**12-5. POWER STEERING GEAR REPLACEMENT (Contd)**



- FOLLOW-ON TASKS:**
- Install pitman arm (TM 9-2320-260-20).
  - Install steering gear shield (TM 9-2320-260-20).
  - Install left front wheel assembly (TM 9-2320-260-10).
  - Install radiator (TM 9-2320-260-20).
  - Fill power steering reservoir to proper level (LO 9-2320-260-12) and check for leaks.
  - Bleed hydraulic power steering system (TM 9-2320-260-20).
  - Check power steering left and right travel.
  - Road test vehicle for proper power steering system operation (TM 9-2320-260-10).

## 12-6. POWER STEERING TEST AND ADJUSTMENT

### THIS TASK COVERS:

- |   |  |
|---|--|
| <p>a. Steering Pump Test Equipment Installation<br/>                 b. Steering Pump Pressure Test<br/>                 c. Steering Pump Flow Test<br/>                 d. Steering Gear Internal Leakage Test</p> | <p>e. Poppet Adjustment<br/>                 f. Sector Shaft Adjustment<br/>                 g. Steering Pump Test Equipment Removal</p> |
|---|--|

### INITIAL SETUP

#### APPLICABLE MODELS

All

#### TOOLS

General mechanic's tool kit  
 (Appendix B, Item 1)  
 Torque wrench, 3/8-in. dr.  
 (Appendix B, Item 4)

#### TEST EQUIPMENT

Power steering test set (Appendix B, Item 145)  
 Flowmeter (Appendix B, Item 146)  
 Thermometer (Appendix B, Item 147)

#### MATERIALS/PARTS

Cap and plug set (Appendix C, Item 6)

#### REFERENCES (TM)

LO 9-2320-260-12  
 TM 9-2320-260-10  
 TM 9-2320-260-20  
 TM 9-2320-260-34P-1

#### EQUIPMENT CONDITION

Steering gear shield removed (TM 9-2320-260-20).

#### GENERAL SAFETY INSTRUCTIONS

All personnel must be clear of vehicle when vehicle engine is running.

### WARNING

All personnel must be clear of vehicle when vehicle engine is running. Vehicle could suddenly move and cause injury to personnel.

#### **NOTE**

Do not begin this procedure before performing all preliminary maintenance checks (para. 12-3).

### a. Steering Pump Test Equipment Installation

#### CAUTION

- Clean area around hoses and lines before removal to prevent entry of dirt. Damage will occur if dirt or dust enters the steering system.
- Cap or plug all openings immediately after disconnecting lines and hoses to prevent contamination. Remove caps or plugs prior to connection. Failure to do so may result in damage to equipment.

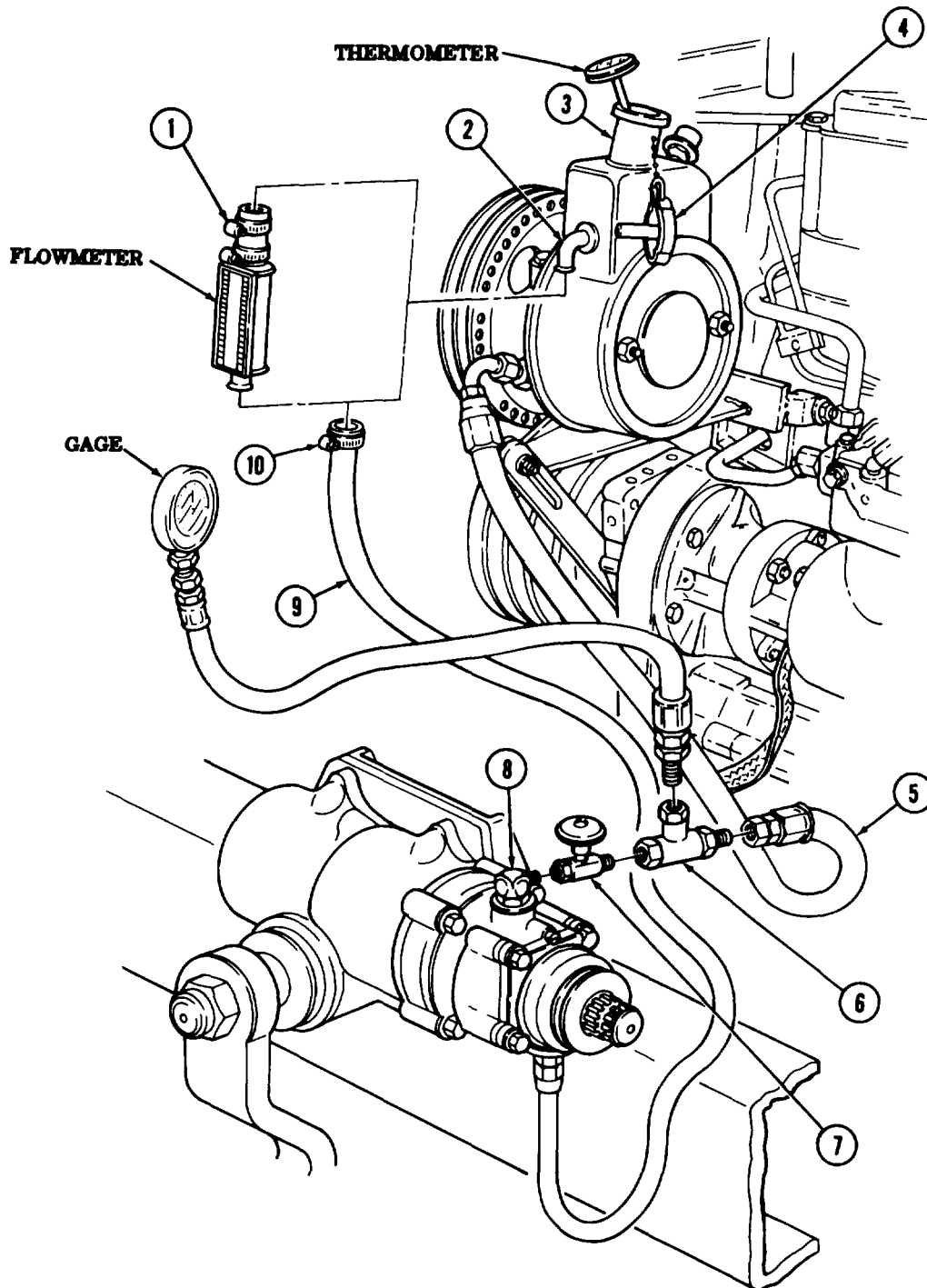
#### **NOTE**

Have drainage container ready to catch power steering fluid.

1. Remove pressure hose (5) from elbow (8).
2. Install load shutoff valve (7) on elbow (8).
3. Install tee (6) on load shutoff valve (7).
4. Install pressure hose (5) and gage on tee (6).

## 12-6. POWER STEERING TEST AND ADJUSTMENT (Contd)

5. Loosen clamp (10) and remove return hose (9) from return tube (2).
6. Install flowmeter on return tube (2) and tighten clamp (1).
7. Install return hose (9) on flowmeter and tighten clamp (10).
8. Remove filler cap (4) and place thermometer in filler neck (3).



## 12-6. POWER STEERING TEST AND ADJUSTMENT (Contd)

### b. Steering Pump Pressure Test

1. Start engine (TM 9-2320-260-10) and warm engine to operating temperature. Let engine run at idle until end of test.

#### **CAUTION**

Power steering oil temperature cannot exceed 200°F (93°C).  
Damage to equipment may result.

2. Partially close load shutoff valve (2) until gage reads 1000 psi (6895 kPa).
3. Observe temperature reading on thermometer. Temperature must be 165°- 175°F (74°-79°C).  
If temperature reading is not between 165°- 175°F (74°-79°C), refer to Chapter 2, Mechanical Troubleshooting, Steering Gear.
4. Fully open load shutoff valve (2).

#### **CAUTION**

Do not keep load shutoff valve closed for more than 5 seconds.  
Failure to do so may result in damage to power steering pump.

5. Close load shutoff valve (2) and observe gage. Replace pump (1) if gage reads below 1250 psi (8619 kPa) (TM 9-2320-260-20).
6. Open load shutoff valve (2).
7. Shut down engine (TM 9-2320-260-10).

### c. Steering Pump Flow Test

1. Start engine (TM 9-2320-260-10) and warm engine to operating temperature. Engine at idle.

#### **CAUTION**

Power steering gear oil temperature cannot exceed 200°F (93°C).  
Damage to equipment may result.

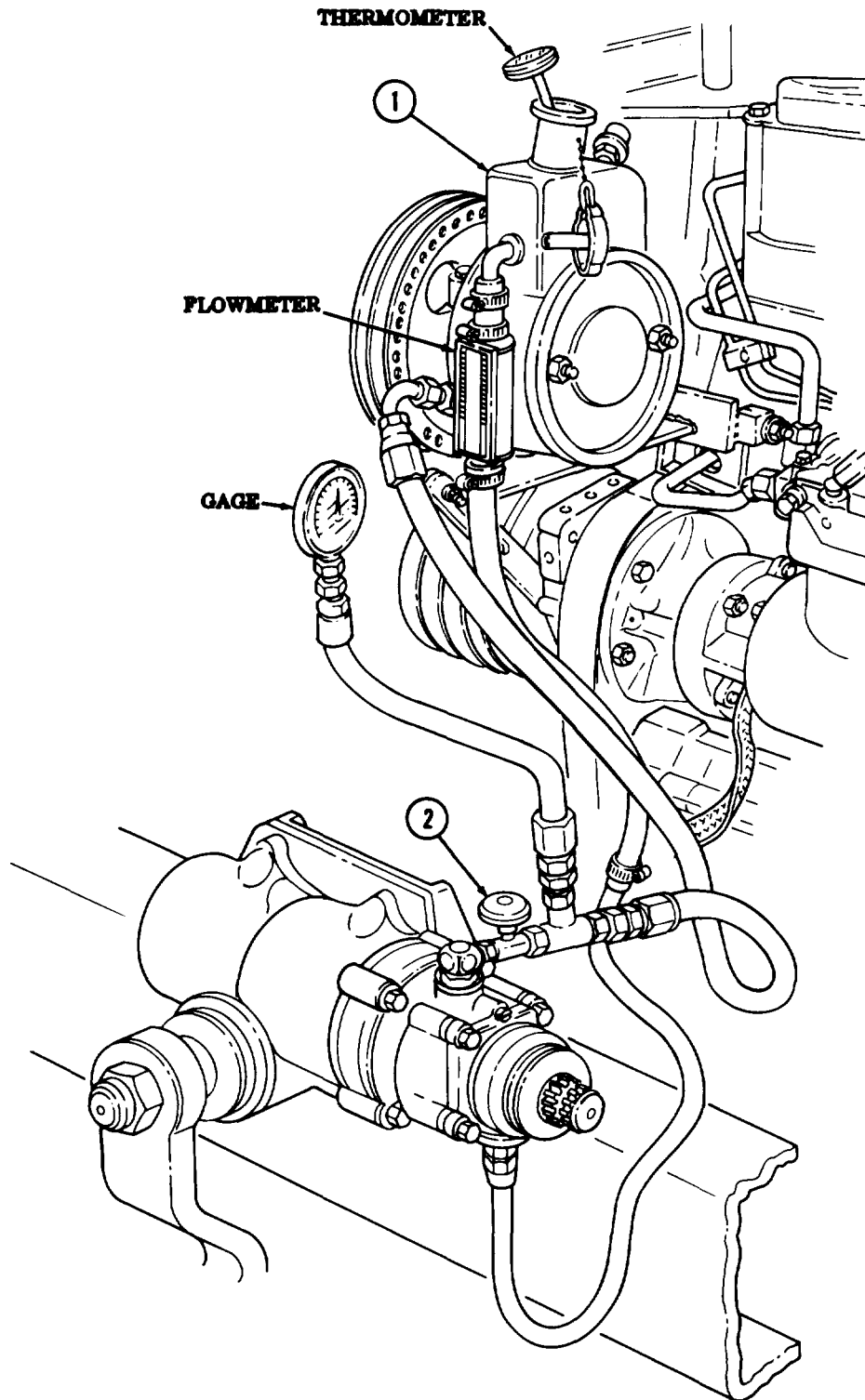
2. With engine idling, observe temperature reading on thermometer. Temperature must be 165°-175°F (74°-79°C). If temperature reading is not between 165°- 175°F (74°-79°C), refer to Chapter 2, Mechanical Troubleshooting, Steering Gear.
3. Observe flow rate on flowmeter. Replace pump (1) if flowmeter reads below 4.3 gpm (16.3 lpm) (TM 9-2320-260-20).

#### **CAUTION**

Do not keep load shutoff valve closed for more than 5 seconds.  
Failure to do so may result in damage to power steering pump.

4. Close load shutoff valve (2) and observe reading on gage and flowmeter. Gage should read 1250 psi (8619 kPa). Flowmeter should read zero. Replace pump (1) if gage reads below 1250 psi (8619 kPa) (TM 9-2320-260-20).
5. Open load shutoff valve (2) and observe flowmeter. Replace pump (1) if flow rate is below 4.3 gpm (16.3 lpm) (TM 9-2320-260-20).
6. Run engine at 3000 rpm.
7. Close load shutoff valve (2) and observe gage and flowmeter. Gage should read 1525 psi (10514 kPa). Flowmeter should read zero. Replace pump (1) if gage reads above 1525 psi (10514 kPa) (TM 9-2320-260-20).
8. Open load shutoff valve (2) and observe flowmeter. Replace pump (1) if flow rate is below 8 gpm (30.3 lpm) (TM 9-2320-260-20).
9. Shut down engine (TM 9-2320-260-10).

**12-6. POWER STEERING TEST AND ADJUSTMENT (Contd)**



## 12-6. POWER STEERING TEST AND ADJUSTMENT (Contd)

### d. Steering Gear Internal Leakage Test

1. Start engine (TM 9-2320-260-10) and warm to operating temperature. Let engine idle to end of test.

#### **CAUTION**

Power steering oil temperature cannot exceed 200°F (93°C).  
Damage to equipment may result.

2. With engine idling, observe temperature reading on thermometer. Temperature must be 165°-175°F (74°-79°C). If temperature is not between 165°-175°F (74-79°C), refer to Chapter 2, Mechanical Troubleshooting, Steering Gear.

#### **CAUTION**

Do not hold steering wheel in full turn position for more than 10 seconds. Pump damage may result.

#### **NOTE**

Assistant will help with step 3.

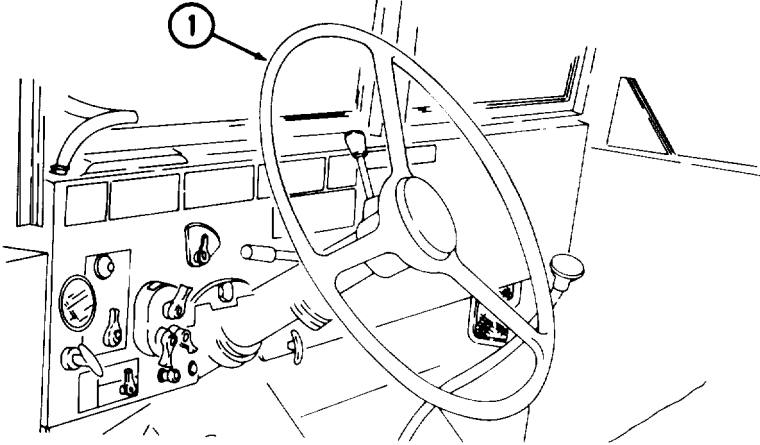
3. With steering wheel (1) at center position, turn steering wheel (1) a half turn to right. Hold steering wheel (1) for 3-10 seconds.
4. Observe gage and flowmeter. Gage should read 1350-1500 psi (9308-10342 kPa), if not, refer to chapter 2, Mechanical Troubleshooting, Steering Gear. Replace steering gear (2) if flowmeter reads greater than 0.75 gpm (2.84 lpm) (para. 12-5).

#### **NOTE**

Assistant will help with step 5.

5. With steering wheel (1) at center position, turn wheel (1) one half turn to left. Hold steering wheel (1) for 3-10 seconds.
6. Observe gage and flowmeter. Gage should read 1350-1500 psi (9308-10342 kPa), if not, refer to Chapter 2, Mechanical Troubleshooting, Steering Gear. Replace steering gear (2) if flowmeter reads greater than 0.75 gpm (2.84 lpm) (para. 12-5).
7. Shut down engine (TM 9-2320-260-10).

**12-6. POWER STEERING TEST AND ADJUSTMENT (Contd)**

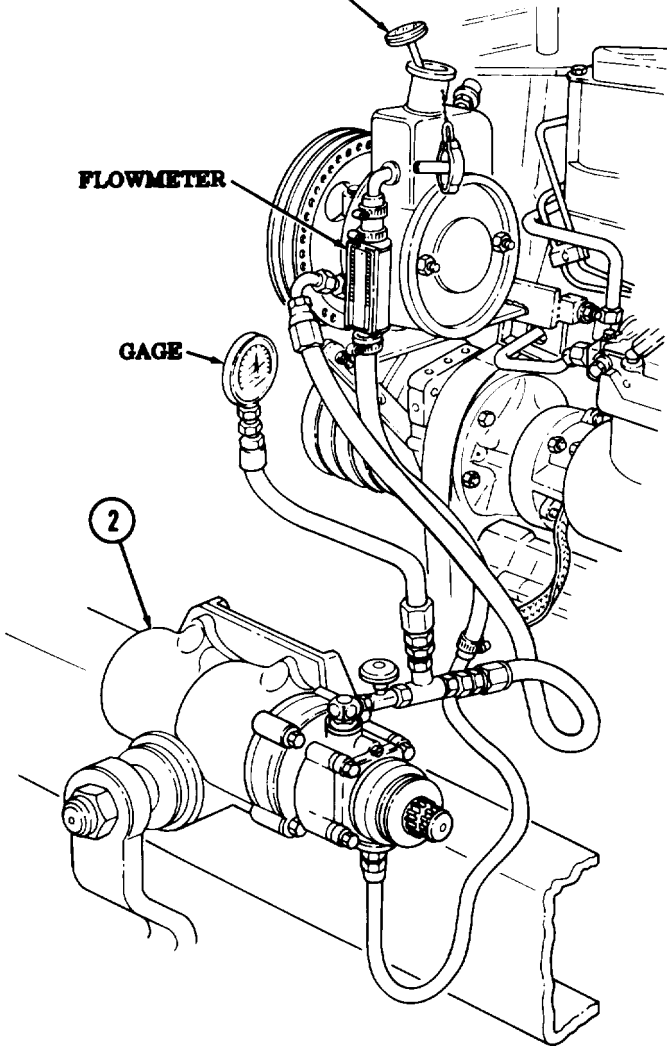


**THERMOMETER**

**FLOWMETER**

**GAGE**

**2**





## 12-6. POWER STEERING TEST AND ADJUSTMENT (Contd)

### e. Poppet Adjustment

1. Start engine (TM 9-2320-260-10) and warm to operating temperature. Let engine idle until end of test.

#### **CAUTION**

Do not hold steering wheel in full turn position for more than 10 seconds. Pump damage may result.

#### **NOTE**

Assistant will help with steps 2 through 12.

2. Rotate steering wheel (1) to full turn right position.
3. Loosen jamnut (5).
4. Turn poppet adjusting screw (4) counterclockwise until gage shows maximum pressure.
5. Turn poppet adjusting screw (4) clockwise until gage shows a 200-400 psi (1379-2758 kPa) drop in pressure.
6. Tighten jamnut (5) 10-15 lb-ft (14-20 N•m).
7. Rotate steering wheel (1) to full turn left position.
8. Loosen jamnut (6).
9. Turn poppet adjusting screw (7) counterclockwise until gage shows maximum pressure.
10. Turn poppet adjusting screw (7) clockwise until gage shows a 200-400 psi (1379-2758 kPa) drop in pressure.
11. Tighten jamnut (6) 20-25 lb-ft (27-34 N•m).
12. Shut down engine (TM 9-2320-260-10).

### f. Sector Shaft Adjustment

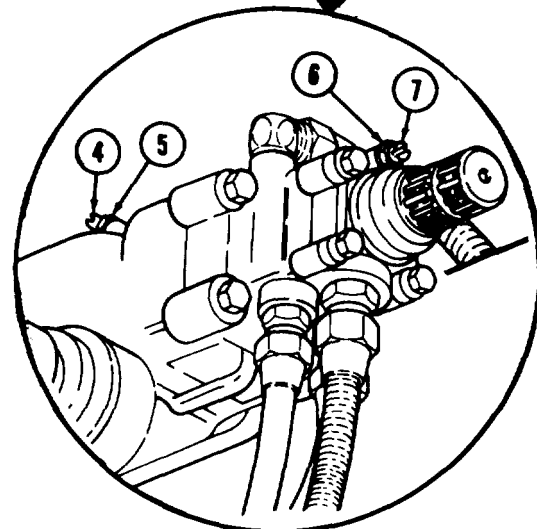
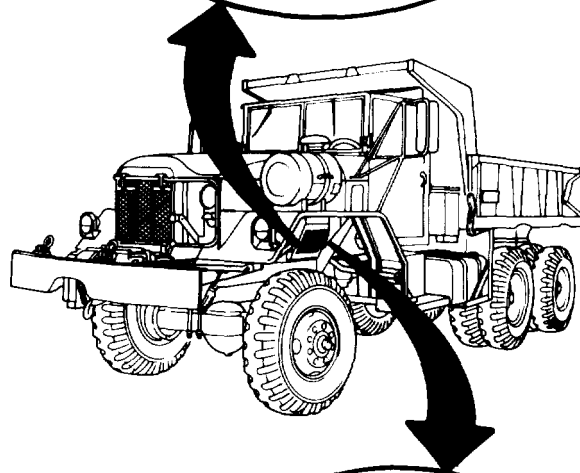
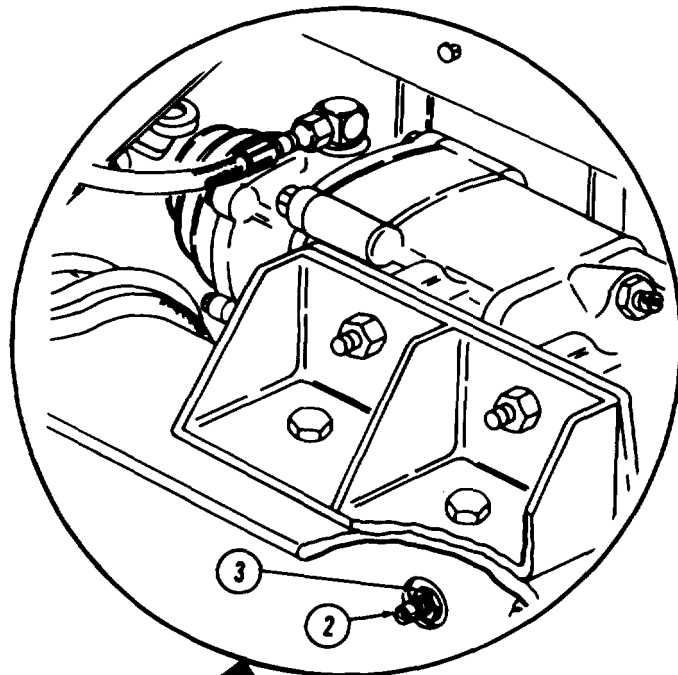
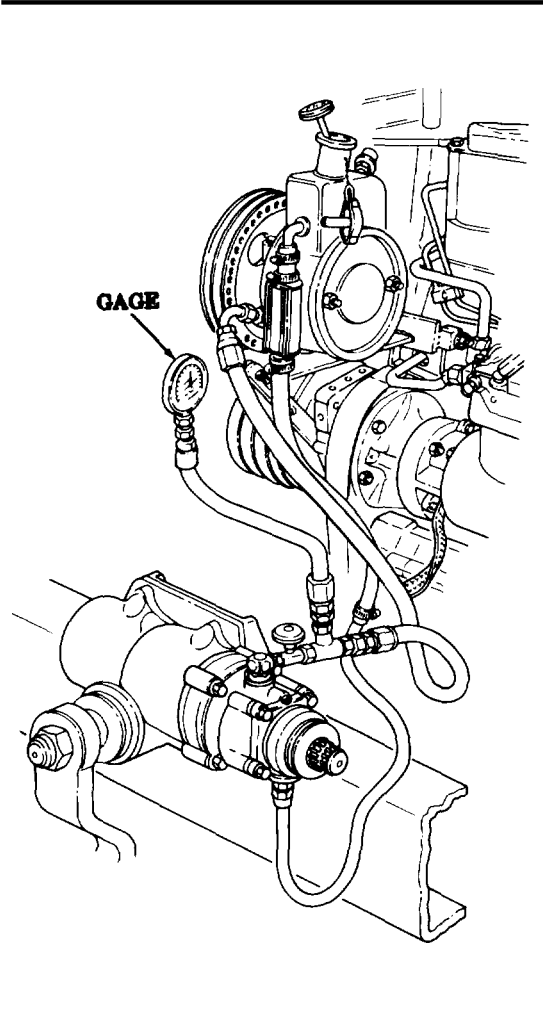
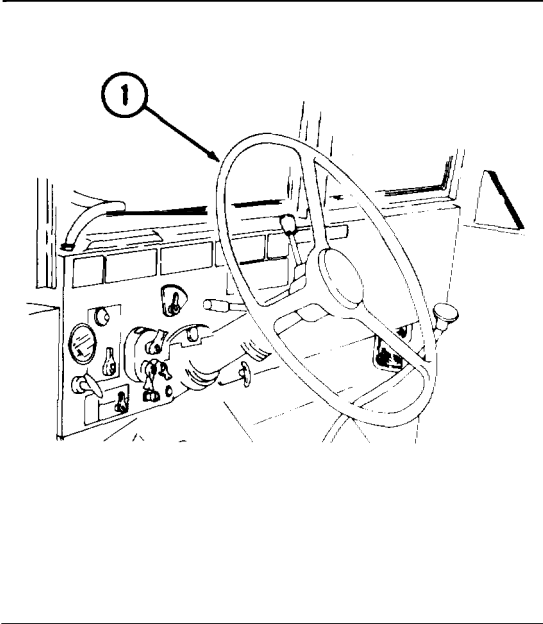
1. Remove drag link (TM 9-2320-260-20).

#### **NOTE**

Assistant will help with step 2.

2. Rotate steering wheel (1) full travel in both directions and note halfway (midway) point. Position to halfway point.
3. Loosen jamnut (3).
4. Tighten adjusting screw (2) 15 lb-in. (2 N•m).
5. Turn adjusting screw (2) counterclockwise one turn.
6. Tighten jamnut (3) 20-25 lb-ft (27-34 N•m).
7. Rotate steering wheel (1) in both directions. If pulsations are felt, repeat steps 1 through 7. If pulsations continue, refer to general troubleshooting instructions (para. 2-6).
8. Install drag link (TM 9-2320-260-20).

**12-6. POWER STEERING TEST AND ADJUSTMENT (Contd)**



## 12-6. POWER STEERING TEST AND ADJUSTMENT (Contd)

### g. Steering Pump Test Equipment Removal

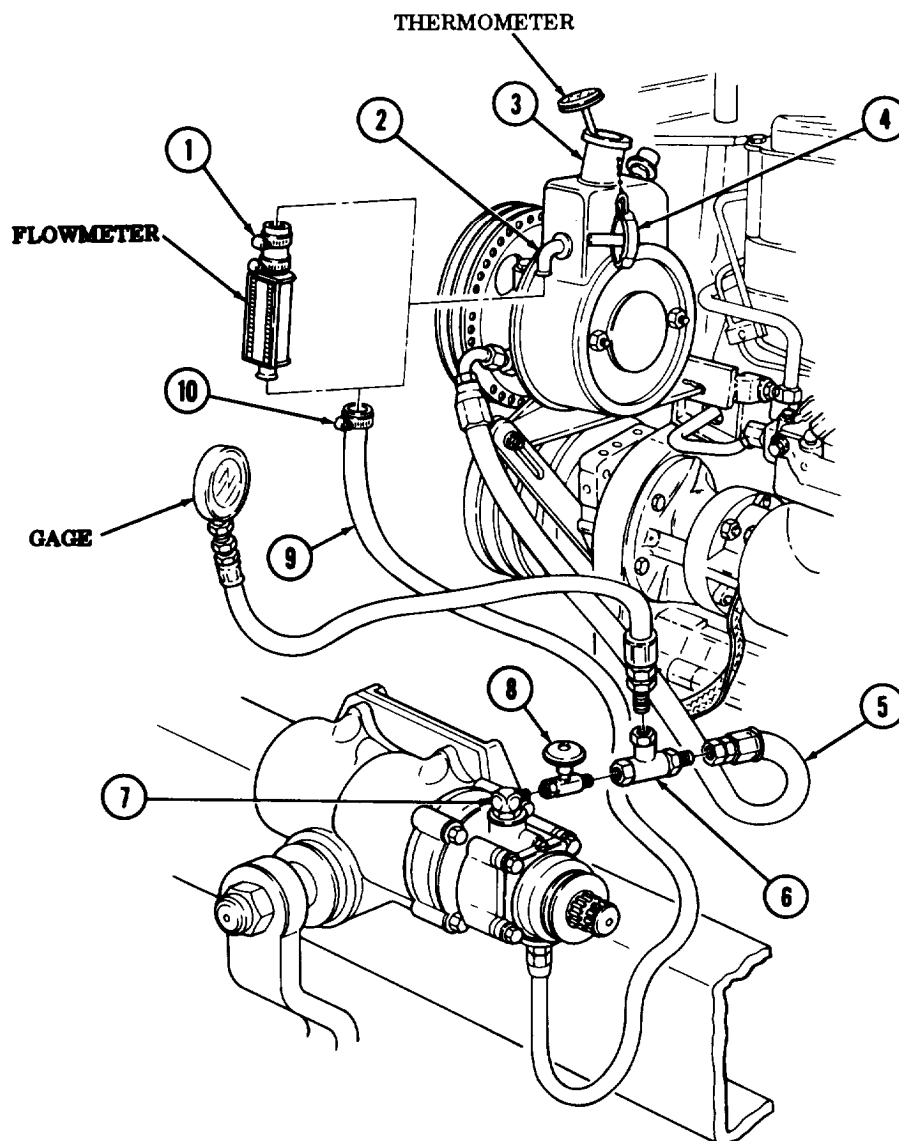
1. Remove thermometer from filler neck (3).
2. Install filler cap (4) on filler neck (3).

#### NOTE

Have drainage container ready to catch power steering fluid.

3. Loosen clamp (10) and remove return hose (9) from flowmeter.
4. Loosen clamp (1) and remove flowmeter from return tube (2).
5. Install return hose (9) on return tube (2) and tighten clamp (10).
6. Disconnect pressure hose (5) and gage from tee (6).
7. Remove tee (6) from load shutoff valve (8).
8. Remove load shutoff valve (8) from elbow (7).
9. Install pressure hose (5) on elbow (7).

## 12-6. POWER STEERING TEST AND ADJUSTMENT (Contd)



- FOLLOW-ON TASKS:**
- Install steering gear shield (TM 9-2320-260-20).
  - Fill power steering reservoir to proper level (LO 9-2320-260-12) and check for leaks.
  - Bleed hydraulic power steering system (TM 9-2320-260-20).
  - Road test vehicle for proper power steering system operation (TM 9-2320-260-10).

## 12-7. POWER STEERING ASSIST CYLINDER MAINTENANCE

### THIS TASK COVERS:

- |   |                           |
|---|---------------------------|
| <p><b>a. Disassembly</b></p> <p><b>b. Cleaning and Inspection</b></p> | <p><b>c. Assembly</b></p> |
|---|---------------------------|

### INITIAL SETUP

#### APPLICABLE MODELS

All

#### TOOLS

General mechanic's tool kit  
(Appendix B, Item 1)  
Retaining ring pliers (Appendix B, Item 116)

#### MATERIALS/PARTS

Seal (Appendix D, Item 435)  
Wiper ring (Appendix D, Item 345)  
Back-up ring (Appendix D, Item 344)  
preformed packing (Appendix D, Item **306**)

#### MATERIALS/PARTS (Contd)

Helical spring (Appendix D, Item 522)  
Lubricating oil (Appendix C, Item 21)

#### REFERENCES (TM)

LO 9-2320-260-12  
TM 9-2320-260-20  
TM 9-2320-260-34P-1

#### EQUIPMENT CONDITION

Power steering assist cylinder removed  
(TM 9-2320-260-20).

### a. Disassembly

1. Thoroughly clean exterior of steering assist cylinder (3).

#### NOTE

Have drainage container ready to catch oil.

2. Hold ports downward and push piston rod (7) in and out to remove oil from steering assist cylinder (3).
3. Remove three screws (12), seal retainer (11), wiper ring (10), and retainer plate (9) from steering assist cylinder (3). Discard wiper ring (10).
4. Push gland (6) in and remove retaining ring (8) from large end of steering assist cylinder (3).
5. Remove gland (6), piston (5), and piston rod (7) as an assembly from large end of steering assist cylinder (3).
6. Remove power cylinder nut (4) from piston rod (7).
7. Turn piston assembly (5) counterclockwise to remove from piston rod (7).
8. Remove gland (6) from piston rod (7).
9. Using retaining ring pliers, remove retaining ring (16) from gland (6).
10. Remove flat washer (18), seal (15), flat washer (17), ring spacer (14), backup ring (19), and preformed packing (13) from gland (6). Discard seal (15), backup ring (19), and preformed packing (13).
11. Remove two ball seats (1) and helical spring (2) from steering assist cylinder (3). Discard helical spring (2).

### b. Cleaning and Inspection

#### NOTE

No repairs are to be made on parts. If parts are damaged, install new power steering assist cylinder.

1. For general cleaning instructions, refer to para. 2-8.
2. For general inspection instructions, refer to para. 2-9.

## 12-7. POWER STEERING ASSIST CYLINDER MAINTENANCE (Contd)

### c. Assembly

#### NOTE

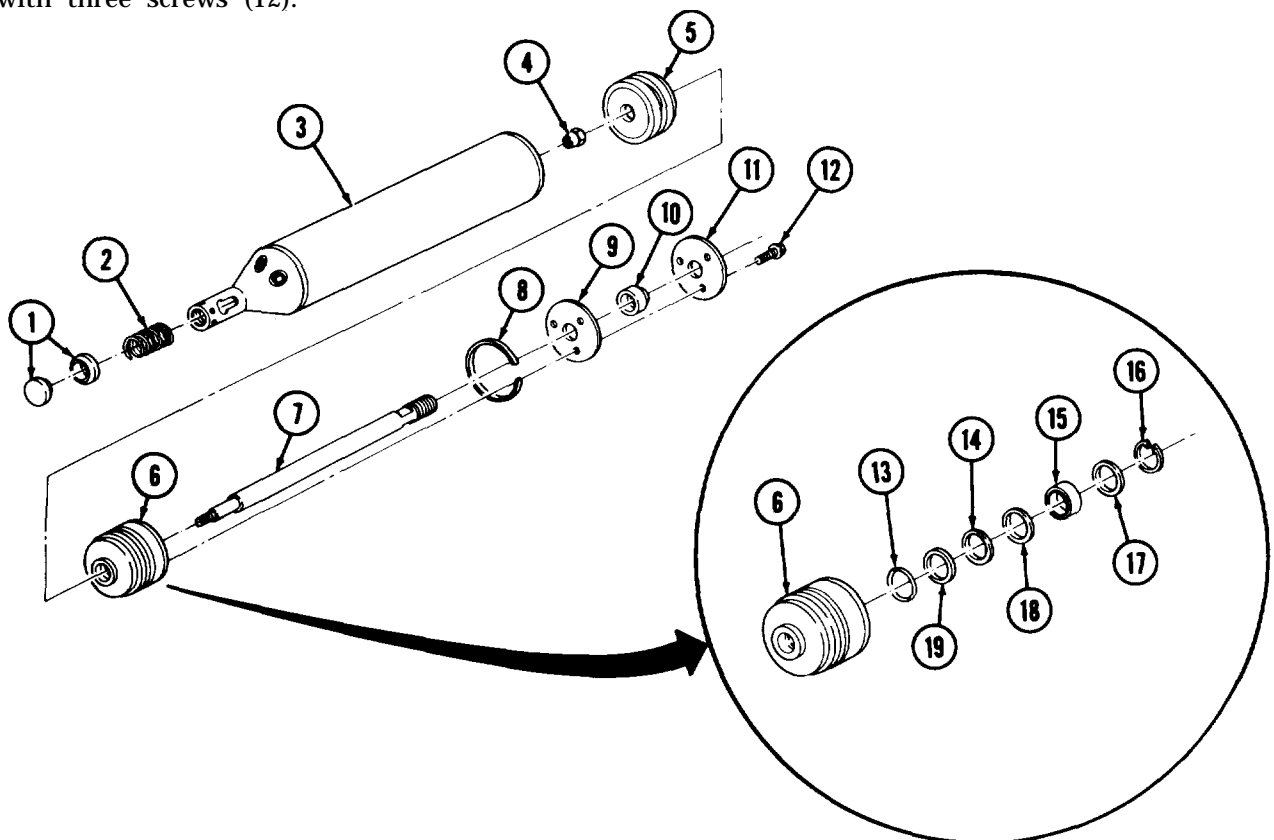
Coat all power steering assist cylinder components with clean lubricating oil before assembly.

1. Install new helical spring (2) and two ball seats (1) in steering assist cylinder (3).
2. Install new preformed packing (13), new backup ring (19), ring spacer (14), flat washer (18), new seal (15), and flat washer (17).
3. Using retaining ring pliers, install retaining ring (16) on gland (6).
4. Install piston assembly (5) on piston rod (7) with power cylinder nut (4). Tighten nut (4).
5. Install piston assembly (5) and piston rod (7) in steering assist cylinder (3).

#### CAUTION

Use care not to damage seals when passing gland assembly *over* threads on piston rod. Failure to do this may result in oil leaks.

6. Slide gland (6) over piston rod (7) and into steering assist cylinder (3).
7. Install retaining ring (8) at large end of steering assist cylinder (3). Be sure retaining ring (8) is seated in groove at top of steering assist cylinder (3).
8. Install retainer plate (9), new wiper ring (10), and seal retainer (11) on steering assist cylinder (3) with three screws (12).



- FOLLOW-ON TASKS:
- Install power steering assist cylinder (TM 9-2320-260-20).
  - Fill power steering assist cylinder with lubricant (LO 9-2320-260-12).

**Section II. TIRE MAINTENANCE**

**12-8. TIRE MAINTENANCE**

Refer to TM 9-2320-260-20 and TM 9-2610-200-24 for repair of tires and tubes.

## CHAPTER 13

### FRAME MAINTENANCE

#### 13-1. FRAME MAINTENANCE INDEX

PARA. NO.	TITLE	PAGE NO.
13-2.	Frame Repair	13-1
13-3.	Fifth Wheel Maintenance (M818)	13-1
13-4.	Fifth Wheel Maintenance (M815)	13-11
13-5.	Fifth Wheel Maintenance (M819)	13-14
13-6.	Frame Alinement Inspection	13-24

#### 13-2. FRAME REPAIR

Refer to TB 9-2300-247-40 for maintenance and repairs on frames used on the M809 series vehicles.  
Refer to TM 9-2320-260-34P for authorized replacement parts used in frame repair.

#### 13-3. FIFTH WHEEL MAINTENANCE (M818)

THIS TASK COVERS:

- |   |                           |
|---|---------------------------|
| <p><b>a. Disassembly</b></p> <p><b>b. Cleaning and Inspection</b></p> | <p><b>c. Assembly</b></p> |
|---|---------------------------|

##### INITIAL SETUP

##### APPLICABLE MODELS

M818

##### TOOLS

General mechanic's tool kit (Appendix B, Item 1)  
 Socket set, 3/4-in. dr. (Appendix B, Item 24)  
 Torque wrench, 3/4-in. dr. (Appendix B, Item 2)  
 Socket set, 3/8-in. dr. (Appendix B, Item 144)  
 Inside micrometer (Appendix B, Item 9)  
 Outside micrometer (Appendix B, Item 8)  
 Lifting device  
 Four washers (Appendix C, Item 56)  
 Two screws (Appendix C, Item 33)  
 Two nuts (Appendix C, Item 24)  
 Chain

##### MATERIALS/PARTS

Cotter pin (Appendix D, Item 28)  
 Cotter pin (Appendix D, Item 30)  
 Two locknuts (Appendix D, Item 192)  
 Locknut (Appendix D, Item 184)  
 Two lockwashers (Appendix D, Item 249)

##### MATERIALS/PARTS (Contd)

Lockwasher (Appendix D, Item 219)  
 Locknut (Appendix D, Item 170)  
 Safety wire (Appendix D, Item 372)

##### PERSONNEL REQUIRED

Two

##### REFERECES (TM)

LO-9-2320-260-12  
 TM9-2320-260-20  
 TM9-2320-260-34P-1

##### EQUIPMENT CONDITION

Fifth wheel removed (M818, TM 9-2320-260-20).

##### GENERAL SAFETY INSTRUCTIONS

- All personnel must stand clear during lifting operations.
- Eye protection must be worn when removing or installing springs under tension.
- Personnel must stand clear during release of plunger rack.
- Ensure lifting capacity is greater than weight of fifth wheel.



### 13-3. FIFTH WHEEL MAINTENANCE (M818) (Contd)

#### NOTE

Assistant will help with entire procedure.

#### a. Disassembly

1. Attach chain to fifth wheel housing (1) with four washers (2), two screws (4), and nuts (3).
2. Attach lifting device to chain. Apply tension to chain.
3. Remove two lubrication fittings (8) from fifth wheel housing (1).

#### CAUTION

Do not use heat to remove pivot pins from fifth wheel housing.  
Damage to equipment will result.

4. Remove two retaining pins (6) and pivot pins (7) from fifth wheel housing (1) and base (5),

#### WARNING

- All personnel must stand clear during lifting operations.  
A swinging or shifting load may cause injury to personnel.
  - Ensure lifting capacity is greater than weight (600 lb (272 kg)) of fifth wheel. Failure to do so may result in injury to personnel or damage to equipment.
5. Remove fifth wheel housing (1) from base (5).

#### NOTE

- Three personnel are required for step 6,
  - Fifth wheel housing must be 6 in. (15 cm) above workbench for bushing removal.
6. Position fifth wheel housing (1) on workbench with trailer mating surface (9) side down.