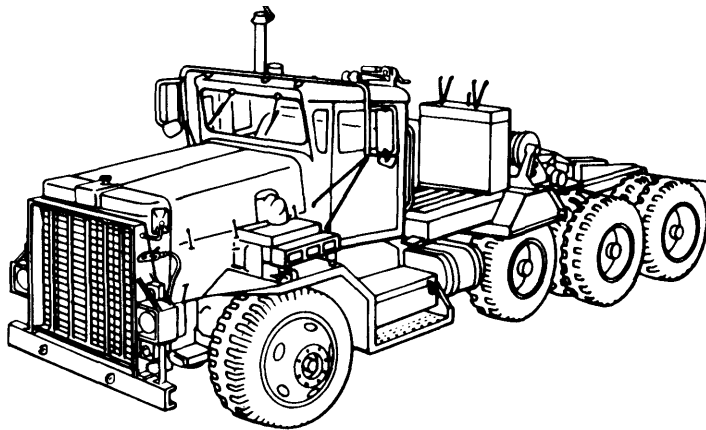


TECHNICAL MANUAL

**ORGANIZATIONAL MAINTENANCE**

**VOLUME 2 OF 3**



MAINTENANCE INSTRUCTIONS -  
CONTINUED  
PAGE 4-525

INDEX  
PAGE Index-1

**TRUCK, TRACTOR, COMMERCIAL  
HEAVY EQUIPMENT TRANSPORTER  
(C-HET) 85,000 GVWR, 8 X 6, M911  
(NSN 2320-01-025-3733)**

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JUNE 86

HEADQUARTERS, DEPARTMENT OF THE ARMY



**WARNING**

Some parts are heavy. Be careful when handling them. Lifting equipment is needed when parts weigh over 50 pounds (23 kg) for a single person lift, over 100 pounds (45 kg) for a two person lift, and over 150 pounds (68 kg) for a three or more person lift. Do not try to handle heavy parts without lifting equipment. Keep clear of heavy parts supported only by lifting equipment. Failure to observe this precaution could cause serious injury or death of personnel.

**WARNING**

Parts of brake assembly will be coated with asbestos dust. Breathing this dust maybe hazardous to your health. Use a filter mask approved for use against asbestos dust. Never use compressed air or dry brush to clean these assemblies. Dust shall be removed using an industrial type vacuum cleaner equipped with a high efficiency filter system. Clean dirt or mud from brake assemblies with a bristle brush or cloth, and water.

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**WARNING**

Do not attempt to repair damaged air reservoir. When pressurized, it may explode causing injuries to personnel.

**WARNING**

Rubber cement and its fumes burn easily. Do not smoke or have open flame nearby while using. Use in well-ventilated area. Failure to observe these precautions can cause serious burns to personnel.

**WARNING**

Tandem axle wheels must be chocked (TM 9-2320-270-10) before attempting to replace tandem axle brake chambers. Tandem axle brakes are parking brakes.

Spring brake spring must be caged (TM 9-2320-270-10) on unit which you are repairing or replacing. Spring brake spring holds enormous force and can cause serious injury.

**WARNING**

Make sure all pressure is drained from system before removing valve. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**WARNING**

Eye protection, heavy leather gloves, and long-sleeved shirt must be worn when clearing clogged valves. Air pressure can force water and debris out of valve, hard enough to penetrate skin.

**WARNING**

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat. The flashpoint is 100°F to 138°F (38° to 59°C). If you become dizzy while using cleaning solvent, get fresh air immediately and get medical aid. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

**WARNING**

Methyl alcohol/methanol is toxic and burns easily. Fumes are explosive. Do not smoke or allow open flame nearby when using methyl alcohol/methanol. Do not drink methyl alcohol/methanol, it is extremely poisonous. If methyl alcohol/methanol is swallowed, get medical aid immediately.

**WARNING**

Make sure no grease remains on brakedrum and that no grease contacts brake linings. If linings become contaminated with grease, brakes on that wheel will fail and could cause serious accident. Contaminated linings cannot be cleaned and must be replaced.

**WARNING**

Do not mix lockrings and side rings between pusher axle wheels and other wheels on truck. These parts look the same but are not interchangeable. Mixing parts will result in either lockring and side ring blowing off with explosive force during inflation, or their coming off while truck is traveling, causing injury or death.

TECHNICAL MANUAL

NO. 9-2320-270-20-2

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington, D. C., 10 June 1986

**ORGANIZATIONAL MAINTENANCE MANUAL**

**TRUCK, TRACTOR, COMMERCIAL  
HEAVY EQUIPMENT TRANSPORTER (C-HET)  
85,000 GVWR, 8 X 6, M911  
(NSN 2320-01-025-3733)**

**CURRENT AS OF NOVEMBER 1985**

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, US Army Tank-Automotive Command, ATTN: AMSTA-MB, Warren, MI 48397-5000. A reply will be sent to you.

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\* This manual supersedes TM 9-2320-270-20, dated 15 November 1977.



CHAPTER 4 - CONTINUED

MAINTENANCE INSTRUCTIONS - CONTINUED

Section VII. TRANSMISSION MAINTENANCE

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**MAIN TRANSMISSION SHIFT CONTROL**

---

This task covers:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>a. Removal (page 4-526)</li> <li>b. Cleaning/Inspection (page 4-528)</li> </ul> | <ul style="list-style-type: none"> <li>c. Installation (page 4-528)</li> <li>d. Adjustment (page 4-533)</li> </ul> |
|--|--|
- 

**INITIAL SETUP**

**Tools**

- Handle, ratchet, 3/8-inch drive
- Screwdriver, cross-tip, number 3
- Screwdriver, flat-tip
- Socket, 7/16-inch, 3/8-inch drive
- Socket, 9/16-inch, 3/8-inch drive
- Socket, 3/4-inch, 3/8-inch drive
- Wrench, open-end, 7/16-inch (two required)
- Wrench, open-end, 1/2-inch (two required)
- Wrench, open-end, 9/16-inch
- Wrench, open-end, 3/4-inch

**Materials/Parts**

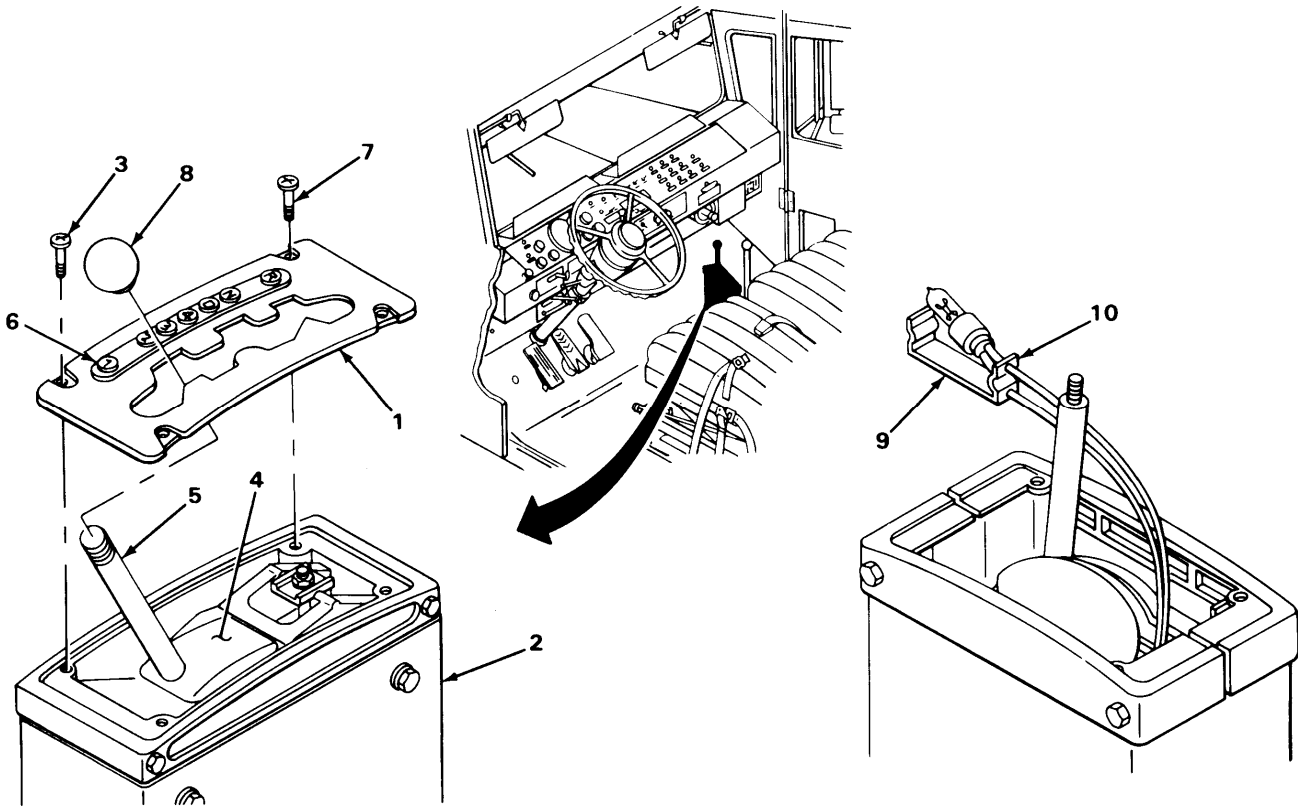
- Lockwasher, bracket to transmission
- Lockwasher, cable to lever
- Lockwasher, housing to cab floor (two required)
- Lockwasher, housing to shift control (four required)
- Lockwasher, lever
- Lockwasher, U-bolt to bracket (two required)
- Lockwasher, U-bolt to hanger (two required)
- Tag, marking (item 18, appendix C)

**Personnel Required**

Two

MAIN TRANSMISSION SHIFT CONTROL - CONTINUED

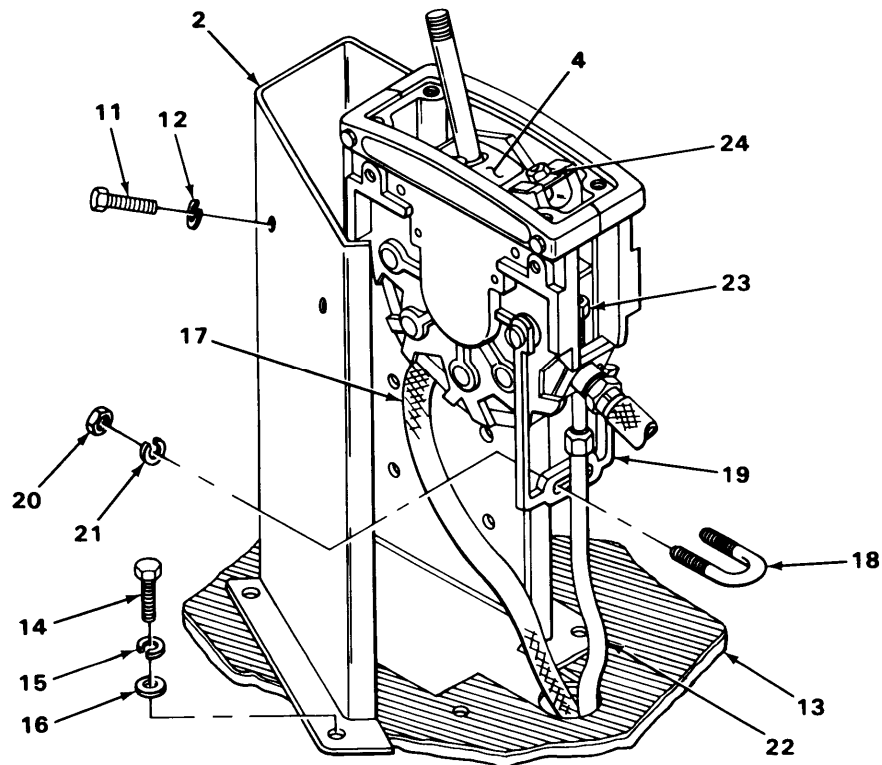
LOCATION	ITEM	ACTION REMARKS
REMOVAL		
1. Gate assembly (1) to housing (2)	Two screws (3)	Using cross-tip screwdriver, unscrew and take out.
2. Shift control (4)	Shift lever (5)	Move to first gear (6).
3. Gate assembly (1) to housing (2)	Two screws (7)	Using cross-tip screwdriver, unscrew and take out.
4. Shift lever (5)	Knob (8)	Unscrew and take off.
5. Housing (2)	Gate assembly (1)	Take off.
6. Gate assembly (1)	Lampholder bracket (9)	a. Using flat-tip screwdriver, pry leg (10) away from gate assembly (1). b. pull off.
7. Housing (2) to shift control (4)	Four screws (11) and lockwasher (12)	a. Using 7/16-inch socket and handle, un- screw and take out. b. Get rid of lockwashers (12).





MAIN TRANSMISSION SHIFT CONTROL - CONTINUED

LOCATION	ITEM	ACTION REMARKS
8. Housing (2) to cab floor (13)	Two screws (14), lockwashers (15), and washers (16)	a. Using 7/16-inch open-end wrench, unscrew and take out. b. Get rid of lockwashers (15).
9. Housing (2)	Shift control (4)	Spread housing (2) far enough to pull shift control (4) forward and out.
10. Shift control (4)	Five wires (17)	Take off. <b>Tag wires if needed (page 4-1).</b>
11. U-bolts (18) to hanger (19)	Two nuts (20) and lockwashers (21)	a. Using 7/16-inch wrench, unscrew and take off. b. Get rid of lockwashers (21).
12. Hanger (19)	U-bolt (18)	Take out.
13. Cable (22) and shift control (4)	Nut (23) and nut (24)	Using two 1/2-inch open-end wrenches, unscrew until cable (22) is free.
14. Cable (22)	Shift control (4)	Take off.

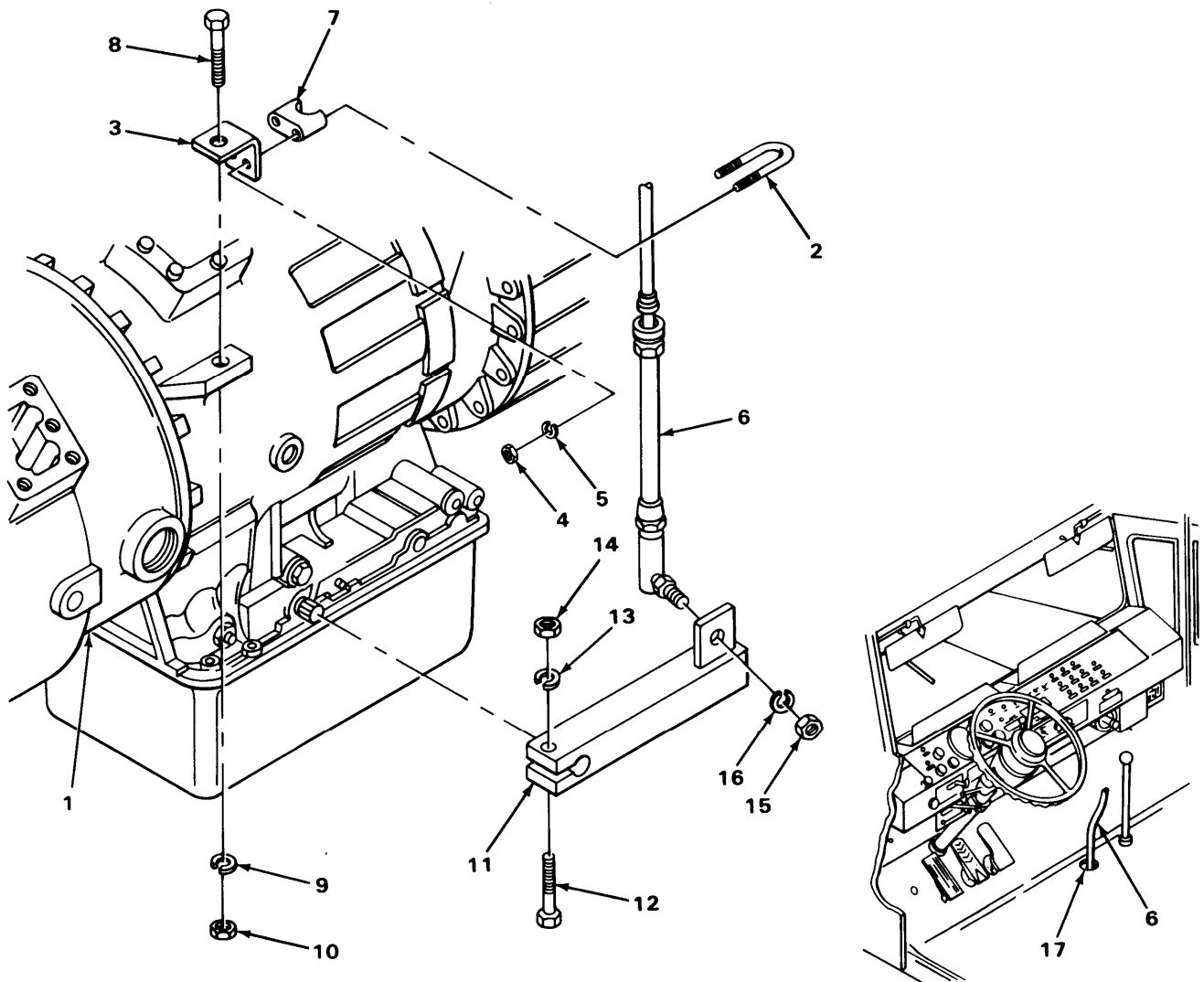


**MAIN TRANSMISSION SHIFT CONTROL - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL – CONTINUED</b>		
15. Underneath transmission (1)/U-bolt (2) to bracket (3)	Two nuts (4) and lockwashers (5)	a. Using 7/16-inch wrench, unscrew and take out. b. Get rid of lockwashers (5).
16. Bracket (3) and cable (6)	U-bolt (2) and base (7)	Take off.
17. Bracket (3) to transmission (1)	Screw (8), lock-washer (9), and nut (10)	a. Using 3/4-inch socket, handle, and 3/4-inch wrench, unscrew and take out. b. Get rid of lockwashers (10).
18. Transmission (1)	Bracket (3)	Take off.
19. Lever (11)	Screw (12), lock-washer (13), and nut (14)	a. Using 9/16-inch socket, handle, and 9/16-inch wrench, unscrew and take out. b. Get rid of lockwasher (13).
20. Cable (6) to lever (11)	Nut (15) and lock-washer (16)	a. Using two 7/16-inch wrenches, unscrew and take off. b. Get rid of lockwasher (16).
21. Transmission (1) and cable (6)	Lever (11)	Take off.
22. Inside cab	Cable (6)	Pull through hole (17).
<b>CLEANING/INSPECTION</b>		
23.	All parts except shift control	Clean as shown in the general maintenance instructions (page 4-1).
24.	All parts	Inspect as shown in the general maintenance instructions (page 4-1).
<b>INSTALLATION</b>		
25. Inside cab	Cable (6)	Push through hole (17).
26. Transmission (1) and cable (6)	Lever (11)	Put on.

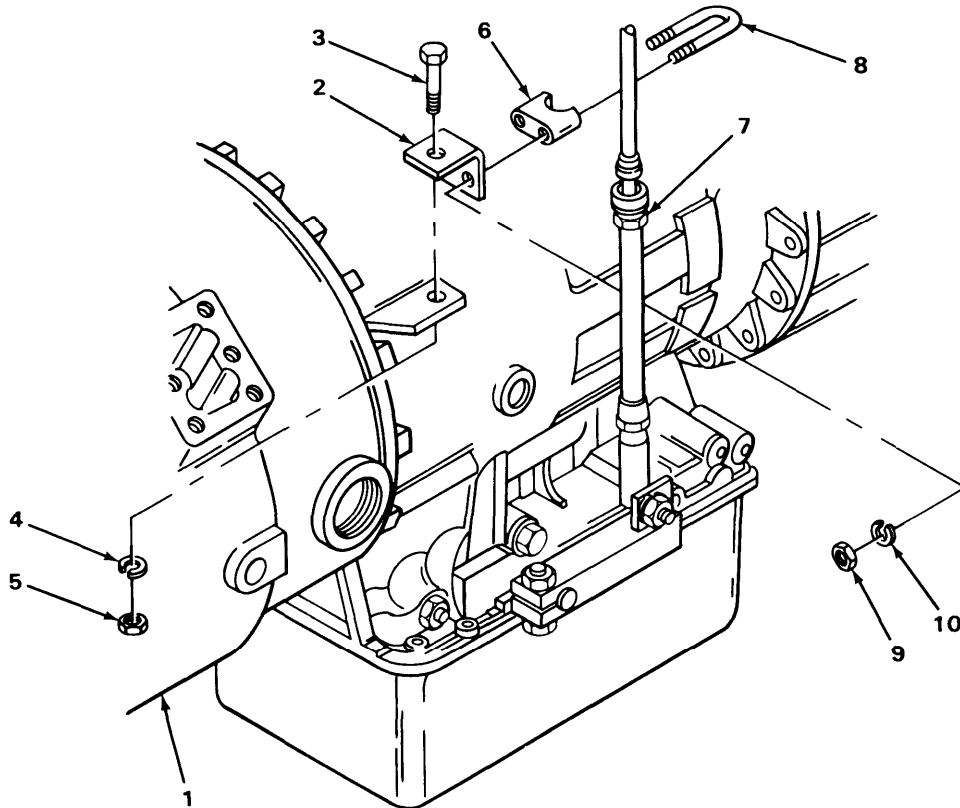
MAIN TRANSMISSION SHIFT CONTROL - CONTINUED

LOCATION	ITEM	ACTION REMARKS
27. Cable (6) to lever (11)	Nut (15) and new lockwasher (16)	Screw on and tighten using two 7/16-inch wrenches.
28. Lever (11)	Screw (12), new lockwasher (13), and nut (14)	Screw on and tighten using 9/16-inch socket, handle, and 9/16-inch wrench.



MAIN TRANSMISSION SHIFT CONTROL- CONTINUED

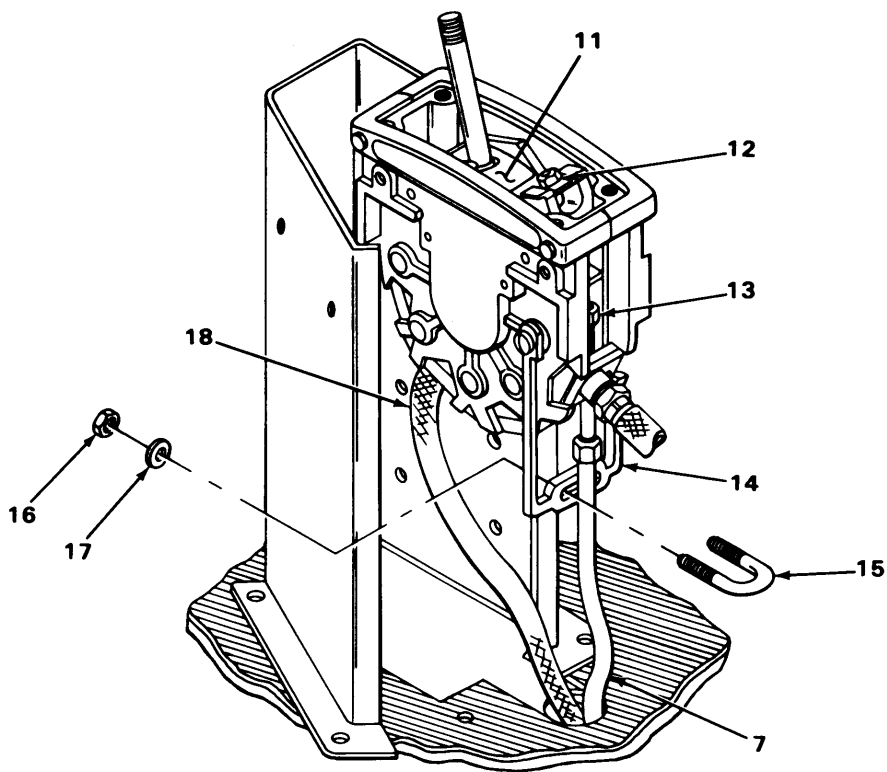
LOCATION	ITEM	ACTION	REMARKS
INSTALLATION – CONTINUED			
29. Underneath transmission (1)	Bracket (2)	Put on.	
30. Bracket (2) to transmission (1)	Screw (3), new lock-washer (4), and nut (5)	Screw in and tighten using 3/4-inch socket, handle, and 3/4-inch wrench.	
31. Bracket (2)	Base (6)	Put on.	
32. Base (6)	Cable (7)	Put on.	
33. Base (6) and bracket (2)	U-bolt (8)	Place in position.	
34. U-bolt (8) to bracket (2)	Two nuts (9) and new lockwashers (10)	Screw on and tighten using 7/16-inch wrench.	



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**MAIN TRANSMISSION SHIFT CONTROL - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
35. Cable (7)	Shift control (11)	Put on.
36. Nut (12)	Cable (7)	a. Put cable (7) into nut (12). b. Screw in nut (12) using 1/2-inch wrench until nut (12) is approximately one turn from nut (13). c. Tighten nut (13) to nut (12) using two 1/2-inch wrenches.
37. Hanger (14)	U-bolt (15)	Put in.
38. U-bolt (15) to hanger (14)	Two nuts (16) and new lockwashers (17)	Screw on and tighten using 7/16-inch wrench.
39. Shift control (11)	Five wires (18)	Put on.



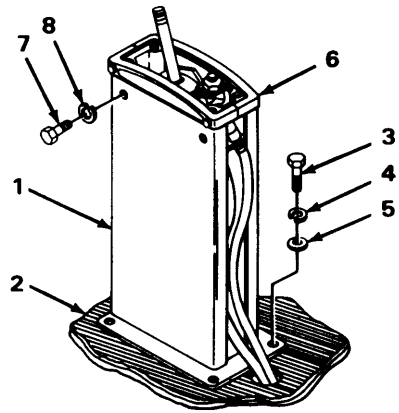
**MAIN TRANSMISSION SHIFT CONTROL - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
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INSTALLATION - CONTINUED

40. Housing (1) to cab floor (2) Two screws (3), new lockwashers (4), and washers (5) Screw in and tighten using 7/16-inch socket and handle.

41. Housing (1) to shift control (6) Four screws (7) and new lockwashers (8) Screw in and tighten using 7/16-inch socket and handle.

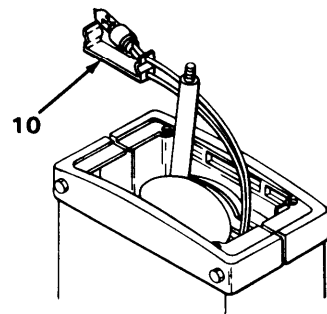
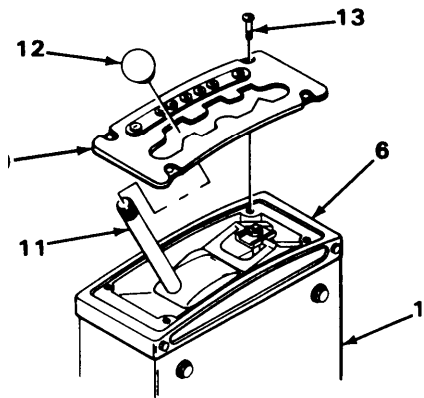


42. Gate assembly (9) Lampholder bracket (10) Snap on.

43. Housing (1) Gate assembly (9) Put on.

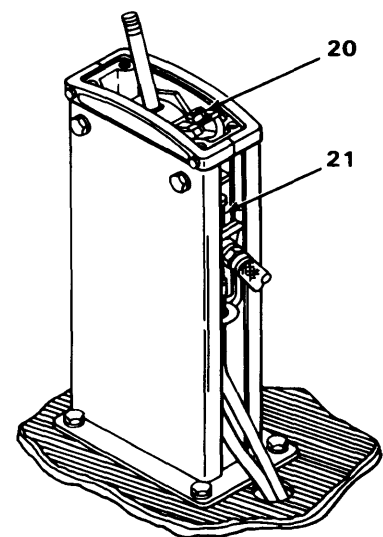
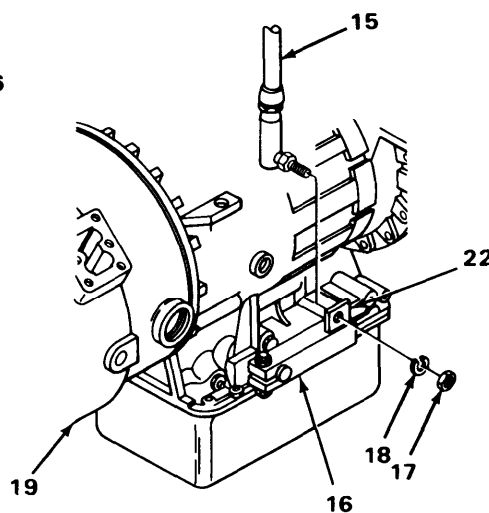
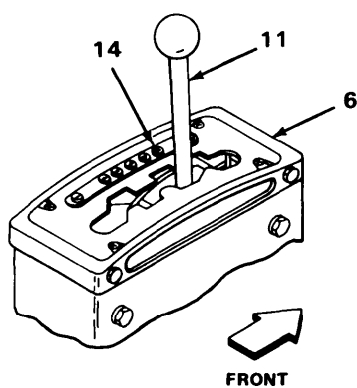
44. Shift lever (11) Knob (12) Screw on and tighten.

45. Gate assembly (9) to housing (1) Four screws (13) Screw in and tighten using flat-tip screwdriver.



MAIN TRANSMISSION SHIFT CONTROL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
ADJUSTMENT			
46. Shift control (6)	Shift lever (11)	Move to neutral (14).	
47. Cable (15) to lever (16)	Nut (17) and lockwasher (18)	s. Using two 7/16-inch wrenches, unscrew and take off. b. Get rid of lockwasher (19).	
48. Transmission (19)	Lever (16)	a. Pull down to lowest position. b. Move up to next position.	
49. Lever (16)	Cable (15), nut (20) and nut (21)	a. Using two 1/2-inch open-end wrenches, unscrew nut (21). b. With the aid of an assistant, turn nut (20) clockwise or counterclockwise until cable (16) lines up with hole in bracket (22).	
50. Cable (15) to lever (16)	Nut (17) and new lockwasher (18)	a. Screw on and tighten using two 7/16-inch wrenches. b. Check operation (TM 9-2320-270-10). <b>Nut may have to be turned clockwise or counterclockwise to reach proper adjustment.</b>	
51. Lever (16)	Cable (15), nut (20), and nut (21)	Using two 1/2-inch open-end wrenches, tighten nut (21).	



TASK ENDS HERE

TA240354

**AUXILIARY TRANSMISSION SHIFT CONTROL**

---

This task covers:

- a. Removal (page 4-534)
  - b. Cleaning/Inspection (page 4-536)
  - c. Installation (page 4-536)
- 

**INITIAL SETUP**

**Tools**

- Extension, 3-inch, 3/8-inch drive
- Hammer, ball-peen, 2 lb
- Handle, ratchet, 3/8-inch drive
- Pliers, slip-joint
- Punch, 5/16-inch
- Socket, 7/16-inch, 3/8-inch drive
- Vise
- Wrench, open-end, 7/16-inch
- Wrench, open-end, 15/16-inch
- Wrench, pipe

**Materials/Parts**

- Lockwashers, shift bracket (four required)
- Pin, cotter (four required)

**Personnel Required**

Two

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LOCATION	ITEM	ACTION REMARKS
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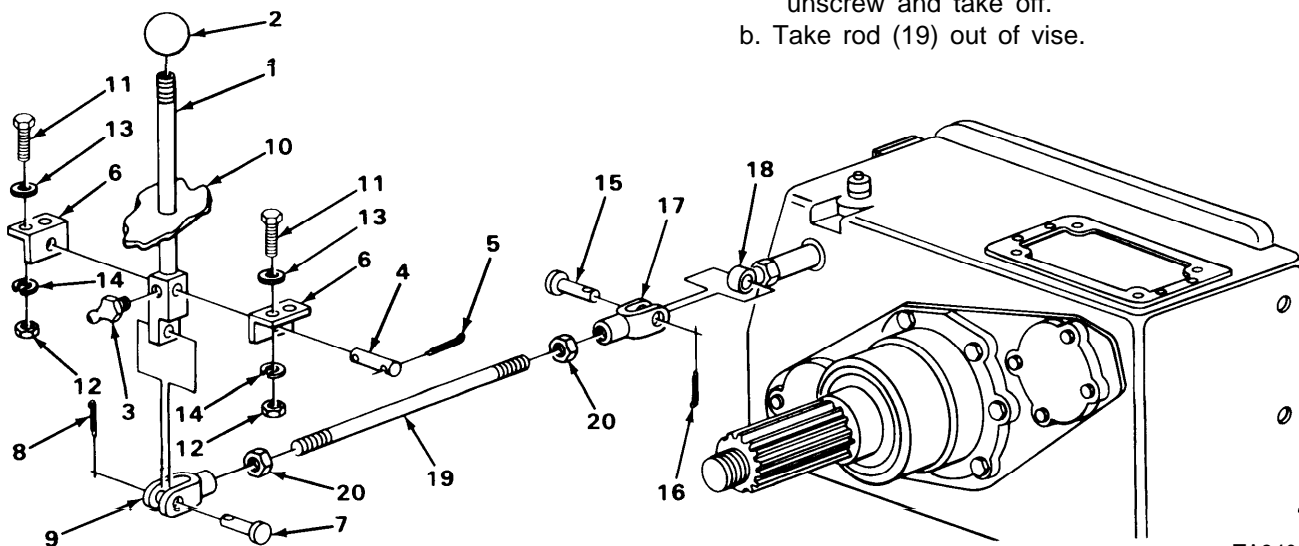
**REMOVAL**

- |   |                     |  |
|---|---------------------|--|
| 1. Shift lever (1)                      | Knob (2)            | Unscrew and take off.  |
| 2.                                      | Lube fitting (3)    | Using 7/16-inch wrench, unscrew and take off.                          |
| 3. Shaft (4)                            | Two cotter pins (5) | a. Using slip-joint pliers, straighten and pull out.<br>b. Get rid of. |
| 4. Two brackets (6) and shift lever (1) | Shaft (4)           | Using hammer and 5/16-inch punch, drive out.                           |
| 5. Pin (7)                              | Cotter pin (8)      | a. Using slip-joint pliers, straighten and pull out.<br>b. Get rid of. |
| 6. Yoke (9) and shift lever (1)         | Pin (7)             | Using slip-joint pliers, pull out.                                     |
| 7. Cab floor (10) and two brackets (6)  | Shift lever (1)     | Pull out.  |



AUXILIARY TRANSMISSION SHIFT CONTROL - CONTINUED

LOCATION	ITEM	ACTION REMARKS
8.	Four screws (11), nuts (12), washers (13), and lock-washers (14)	a. With the aid of an assistant, using 7/16-inch socket, 3-inch extension, handle and 7/16-inch wrench, unscrew and take out. b. Get rid of lockwashers (14). <b>Floor mat may have to be moved to get to screws.</b>
9. Cab floor (10)	Two brackets (6)	Take off.
10. Pin (15)	Cotter pin (16)	a. Using slip-joint pliers, straighten and pull out. b. Get rid of.
11. Yoke (17) and rod (18)	Pin (15)	Using slip-joint pliers, pull out.
12. Rod (18)	Shift rod (19)	a. Take off. b. Put in vise.
13. Shift rod (19) and two yokes (9) and (17)	Two nuts (20)	Using 15/16-inch open-end wrench, unscrew part way.
14. Shift rod (19)	Two yokes (9) and (17)	Using pipe wrench, unscrew and take off. <b>Note number of turns needed to take off each yoke.</b>
15.	Two nuts (20)	a. Using 15/16-inch open-end wrench, unscrew and take off. b. Take rod (19) out of vise.



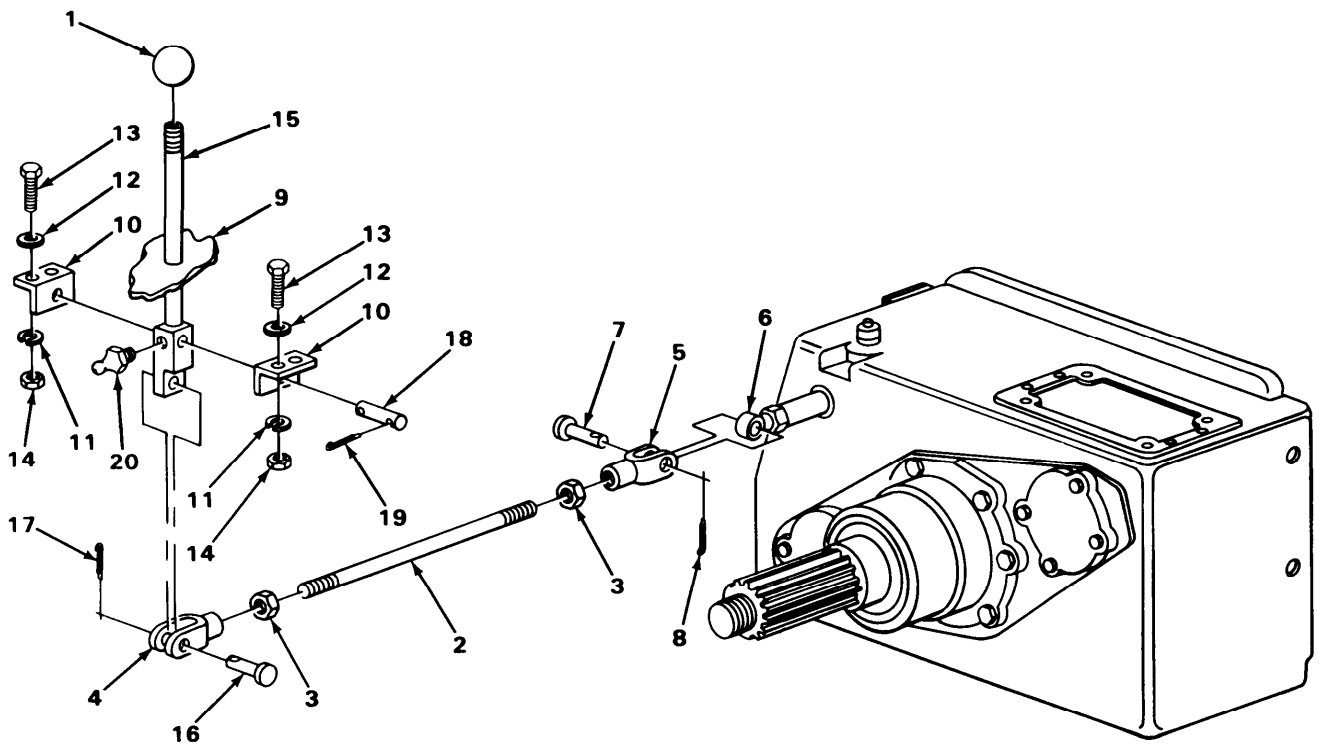
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## AUXILIARY TRANSMISSION SHIFT CONTROL - CONTINUED

LOCATION	ITEM	ACTION REMARKS
CLEANING/INSPECTION		
16.	All parts, except knob (1)	Clean as shown in the general maintenance instructions (page 4-1).
17.	All parts	Inspect as shown in the general maintenance instructions (page 4-1).
INSTALLATION		
18. Shift rod (2)	Two nuts (3)	a. Put rod (3) in vise. b. Screw in as far as possible using 15/16-inch open-end wrench.
19.	Two yokes (4) and (5)	Screw in number of turns noted during removal using pipe wrench.
20. Shift rod (2) and two yokes (4) and (5)	Two nuts (2)	Screw in and tighten using 15/16-inch open-end wrench and pipe wrench.
21. Rod (6)	Shift rod (2)	a. Take out of vise. b. Put in place.
22. Yoke (5) and rod (6)	Pin (7)	Put in place.
23. Pin (7)	New cotter pin (8)	Using slip-joint pliers, put in.
24. Cab floor (9)	Two brackets (10)	Put in place.
25. Cab floor (9) and two brackets (10)	Four new lockwashers (11), washers (12), screws (13), and nuts (14)	With the aid of an assistant, screw in and tighten using 7/16-inch socket, 3-inch extension, handle, and 7/16-inch wrench.
26.	Shift lever (15)	Put in place.
27. Yoke (4) and shift lever (15)	Pin (16)	Put in place.
28. Pin (16)	New cotter pin (17)	Using slip-joint pliers, put in.
29. Two brackets (10) and shift lever (15)	Shaft (18)	Using hammer and 5/16-inch punch, tap in place.

**AUXILIARY TRANSMISSION SHIFT CONTROL - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
30. Shaft (18)	Two new cotter pins (19)	Using slip-joint pliers, put in.
31. Shift lever (15)	Lube fitting (20)	Screw in and tighten using 7/18-inch wrench.
32.	Knob (1)	Screw on and tighten.



**NOTE**

FOLLOW-ON MAINTENANCE: Check operation (TM 9-2320-270-10).

**TASK ENDS HERE**

**SHIFT CONTROL HOUSING AND SUPPORT**

---

This task covers:

- a. Removal (page 4-538)
  - b. Cleaning/Inspection (page 4-540)
  - c. Installation (page 4-540)
- 

**INITIAL SETUP**

**Tools**

- Handle, ratchet, 3/8-inch drive
- Screwdriver, flat-tip, 1/4-inch
- Socket, 7/16-inch, 3/8-inch drive
- Wrench, open-end, 7/16-inch

**Materials/Parts**

- Lockwasher, housing to cab floor  
(four required)
- Lockwasher, housing to shift control  
(four required)

**Materials/Parts – Continued**

- Lockwasher, support to housing  
(four required)
- Lockwasher, support to seat  
(four required)

**Personnel Required**

One

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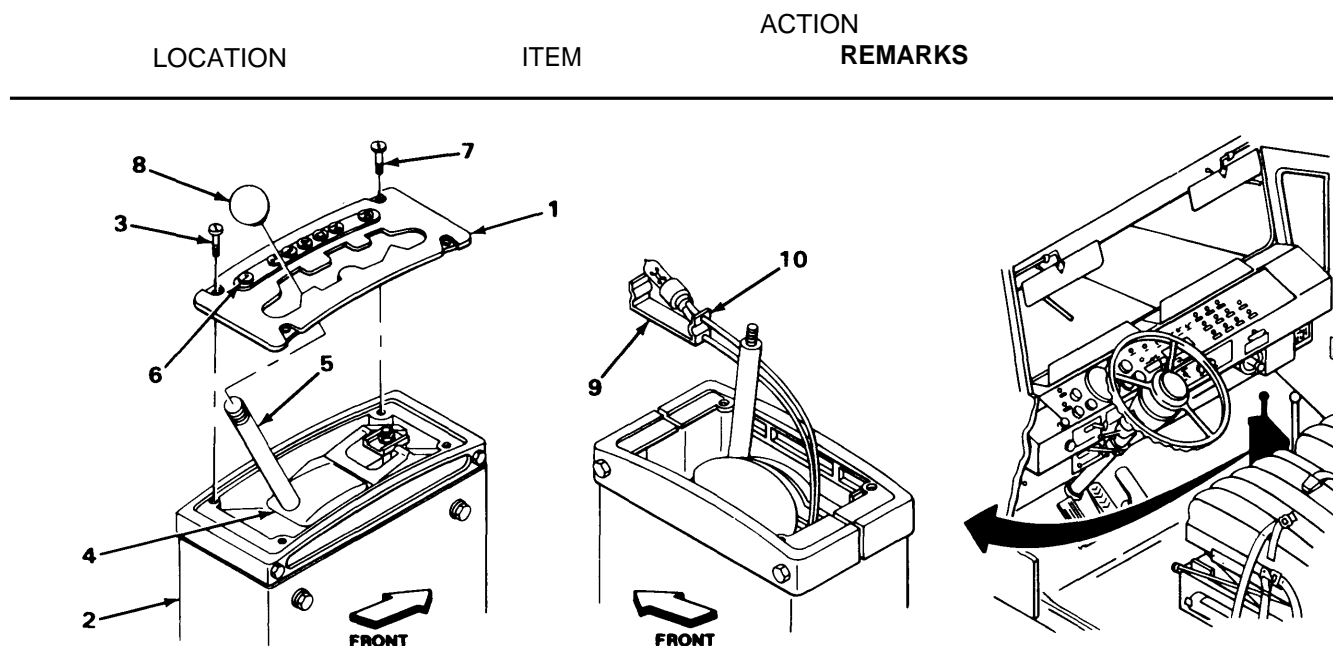
LOCATION	ITEM	ACTION REMARKS
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**REMOVAL**

1. Gate assembly (1) to housing (2)	Two screws (3)	Using flat-tip screwdriver, unscrew and take out.
2. Shift control (4)	Shift lever (5)	Move to first gear (6).
3. Gate assembly (1) to housing (2)	Two screws (7)	Using flat-tip screwdriver, unscrew and take out.
4. Shift lever (5)	Knob (8)	Unscrew and take off.
5. Gate assembly (1)	Lampholder bracket (9)	a. Using flat-tip screwdriver, pry leg (10) of lampholder bracket (9) away from gate assembly (1). b. Pull off gate assembly (1).
6. Housing (2)	Gate assembly (1)	Take off.

SHIFT CONTROL HOUSING AND SUPPORT - CONTINUED



7. Housing (2) to shift control (4)

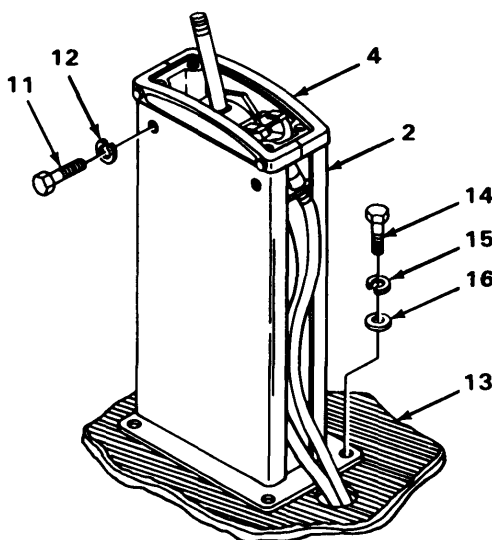
Four screws (11) and lockwashers (12)

- a. Using 7/16-inch socket and handle, unscrew and take out.
- b. Get rid of lockwashers (12).

8. Housing (2) to cab floor (13)

Four screws (14), lockwashers (15), and washers (16)

- a. Using 7/16-inch wrench, unscrew and take out.
- b. Get rid of lockwashers (15).

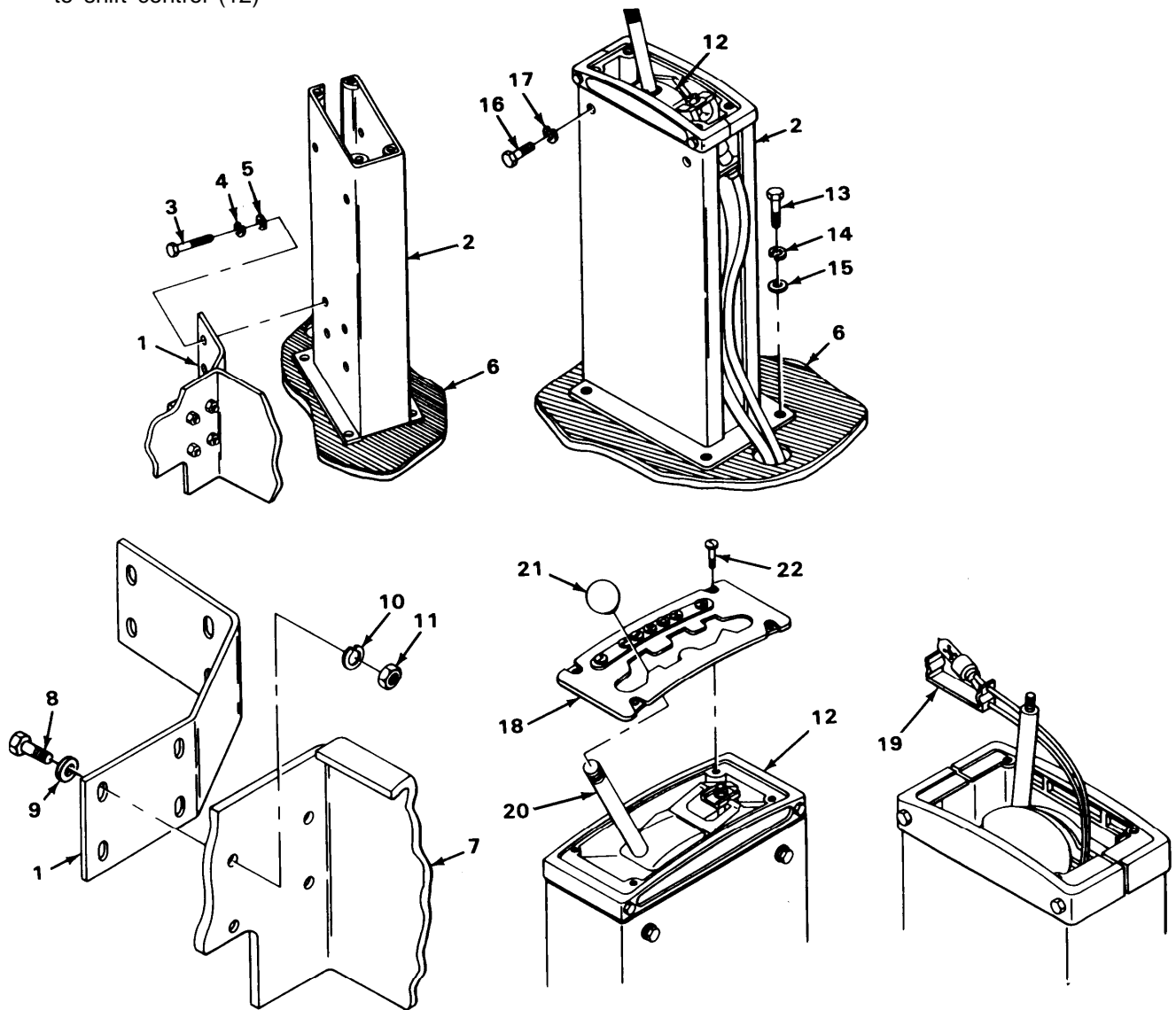


**SHIFT CONTROL HOUSING AND SUPPORT - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL – CONTINUED</b>		
9. Support (1) to housing (2)	Four screws (3), lockwashers (4), and washers (5)	a. Using 7/16-inch socket and handle, unscrew and take out. b. Get rid of lockwashers (4).
10. Cab floor (6) and support (1)	Housing (2)	Take off.
11. Support (1) to seat (7)	Four screws (8), washers (9), lockwashers (10), and nuts (11)	a. Using 7/16-inch socket, handle, and 7/16-inch wrench, unscrew and take out. b. Get rid of lockwashers (10).
12. Seat (7)	Support (1)	Take off.
<b>CLEANING/INSPECTION</b>		
13.	All parts	Clean and inspect as shown in the general maintenance instructions (page 4-1).
<b>INSTALLATION</b>		
14. Seat (7)	Support (1)	Put on.
15. Support (1) to seat (7)	Four screws (8), washers (9), new lockwashers (10), and nuts (11)	Screw in and tighten using 7/16-inch socket, handle, and 7/16-inch wrench.
16. Cab floor (6) and support (1)	Housing (2)	Place in position.
17. Support (1) to housing (2)	Four screws (3), new lockwashers (4), and washers (5)	Screw in and tighten using 7/16-inch socket and handle.
18. Housing (2)	Shift control (12)	Put in place.
19. Housing (2) to cab floor (6)	Four screws (13), new lockwashers (14), and washers (15)	Screw in and tighten using 7/16-inch wrench.
20. Housing (2) to shift control (12)	Four screws (16) and new lockwashers (17)	Screw in and tighten using 7/16-inch socket and handle.

SHIFT CONTROL HOUSING AND SUPPORT - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
21. Gate assembly (18)	Lamp holder bracket (19)	Snap on.	
22. Shift control (12)	Gate assembly (18)	Put on.	
23. Shift lever (20)	Knob (21)	Screw on and tighten.	
24. Gate assembly (18) to shift control (12)	Four screws (22)	Screw in and shift tighten using flat-tip screwdriver.	



TASK ENDS HERE

TA240358

**TRANSMISSION DIPSTICK**

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This task covers:

- a. Removal (page 4-542)
  - b. Cleaning/Inspection (page 4-544)
  - c. Installation (page 4-544)
- 

**INITIAL SETUP**

**Tools**

- Extension, 3-inch, 3/8-inch drive
- Handle, ratchet, 3/8-inch drive
- Pan, drain
- Socket, 7/16-inch, 3/8-inch drive
- Socket, 1/2-inch, 3/8-inch drive
- Wrench, open-end, 7/16-inch
- Wrench, open-end, 7/8-inch

**Materials/Parts**

- Gasket, plug to pan
- Gasket, tube to pan

**Materials/Parts – Continued**

- Lockwasher, clip to bracket
- Lockwasher, tube to pan (two required)

**Personnel Required**

One

**Equipment Condition**

Right side of hood open and right side panel removed (TM 9-2320-270-10).

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LOCATION	ITEM	ACTION REMARKS
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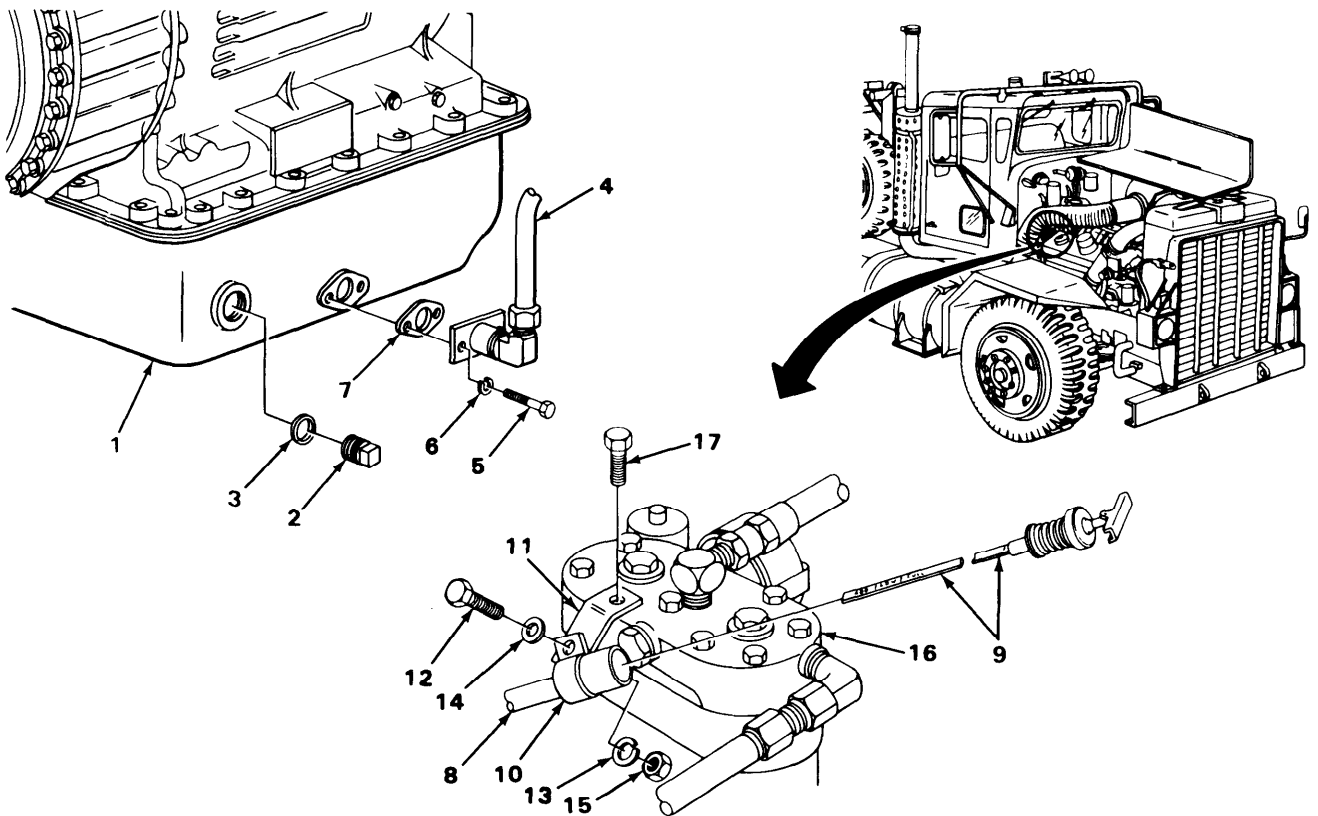
**REMOVAL**

- |   |                                    |  |
|---|------------------------------------|--|
| 1. Transmission oil pan (1)             | Plug (2) and gasket (3)            | <ul style="list-style-type: none"> <li>a. Put drain pan underneath.</li> <li>b. Using 7/8-inch wrench, unscrew and take out.</li> <li>c. Get rid of gasket (3).</li> </ul> |
| 2.                                      | Plug (2) and new gasket (3)        | <ul style="list-style-type: none"> <li>a. When oil stops draining, screw in and tighten using 7/8-inch wrench.</li> <li>b. Get rid of fluid (page 4-1).</li> </ul>         |
| 3. Tube (4) to transmission oil pan (1) | Two screws (5) and lockwashers (6) | <ul style="list-style-type: none"> <li>a. Using 1/2-inch socket, extension, and handle, unscrew and take out.</li> <li>b. Get rid of lockwashers (6).</li> </ul>           |
| 4. Transmission oil pan (1)             | Tube (4) and gasket (7)            | <ul style="list-style-type: none"> <li>a. Pull off.</li> <li>b. Get rid of gasket (7).</li> </ul>  |
| 5. Right side of engine/tube (8)        | Dipstick (9)                       | Unscrew and pull out.  |



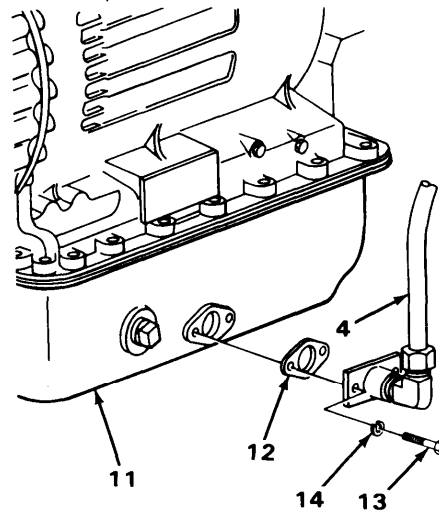
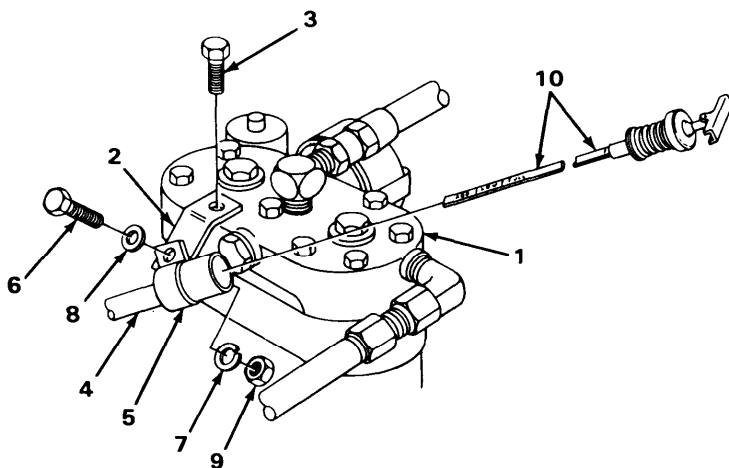
**TRANSMISSION DIPSTICK - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
<b>REMOVAL - CONTINUED</b>			
6.	Clip (10) to bracket (11)	Screw (12), lock-washer (13), washer (14), and nut (15)	a. Using 7/16-inch socket, extension, handle, and 7/16-inch wrench, unscrew and take out. b. Get rid of lockwasher (13).
7.	Tube (8)	Clip (10)	Take off.
8.	Engine compartment	Tube (8)	Take out.
9.	Bracket (11) to air compressor	Screw (17)	Using 1/2-inch socket and handle, unscrew and take out.
10.	Air compressor (16)	Bracket (11)	Take off.



**TRANSMISSION DIPSTICK - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>CLEANING/INSPECTION</b>		
11.	All parts	Clean and inspect as shown in the general maintenance instructions (page 4-1).
<b>INSTALLATION</b>		
12. Air compressor (1)	Bracket (2)	Put on.
13. Bracket (2) to air compressor (1)	Screw (3)	Screw in and tighten using 1/2-inch socket and handle.
14. Tube (4)	Clip (5)	Put on.
15. Bracket (2)	Clip (5)	Place in position.
16. Clip (5) to bracket (2)	Screw (6), new lockwasher (7), washer (8), and nut (9)	Screw in and tighten using 7/16-inch socket, extension, handle, and 7/16-inch wrench.
17. Tube (4)	Dipstick (10)	Screw in.
18. Transmission oil pan (11)	Tube (4) and new gasket (12)	Put on.
19. Tube (4) to transmission oil pan (11)	Two screws (13) and new lockwashers (14)	Screw in and tighten using 1/2-inch socket, extension, and handle.



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**TRANSMISSION DIPSTICK - CONTINUED****NOTE****FOLLOW-ON MAINTENANCE:**

1. Fill transmission (TM 9-2320-270-10).
2. Install right side panel and close right side of hood (TM 92320-270-10).
3. Check for leaks (page 4-1).

**TASK ENDS HERE****TRANSMISSION OIL PAN**

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This task covers:

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>a. Removal (page 4-546)</li> <li>b. Cleaning/inspection (page 4-548)</li> </ol> | <ol style="list-style-type: none"> <li>c. Installation (page 4-548)</li> </ol> |
|--|--|
- 

**INITIAL SETUP****Tools**

Extension, 3-inch, 3/8-inch drive  
 Extension, 5-inch, 3/8-inch drive  
 Handle, ratchet, 3/8-inch drive  
 Pan, drain  
 Socket, 1/2-inch, 3/8-inch drive  
 Wrench, open-end, 7/8-inch

**Materials/Parts**

Gasket, pan to transmission

**Materials/Parts - Continued**

Gasket, plug to pan  
 Gasket, tube to pan  
 Lockwasher, tube to pan  
 (two required)

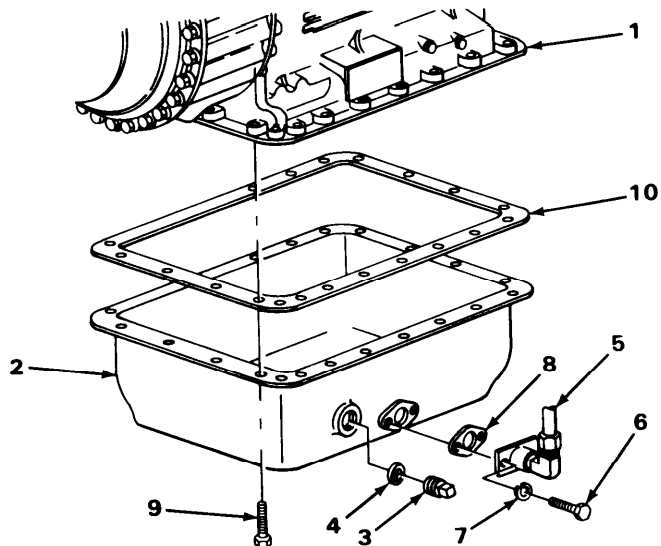
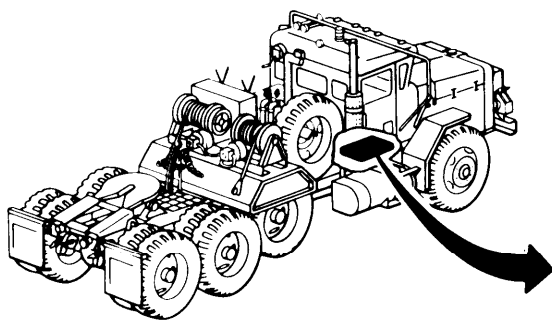
**Personnel Required**

One

## TRANSMISSION OIL PAN - CONTINUED

LOCATION	ITEM	ACTION REMARKS
REMOVAL		
1. Transmission (1) and oil pan (2)	Plug (3) and gasket (4)	a. Put drain pan underneath. b. Using 7/8-inch wrench, unscrew and take out. c. Let fluid drain. d. Get rid of gasket (4). e. Get rid of fluid (page 4-1).
2. Tube (5) to oil pan (2)	Two screws (6) and lockwashers (7)	a. Using 1/2-inch socket, 3-inch exten- sion and handle, unscrew and take out. b. Get rid of lockwashers (7).
3. Oil pan (2)	Tube (5) and gasket (8)	a. Pull off. b. Get rid of gasket (8).
4. Oil pan (2) to transmission (1)	23 screws (9)	Using 1/2-inch socket, 5-inch extension and handle, unscrew and take out.
5. Transmission (1)	Oil pan (2) and gasket (10)	a. Take off. b. Get rid of gasket (10).
CLEANING/INSPECTION		
6.	All parts	Clean and inspect as shown in the general maintenance instructions (page 4-1).
INSTALLATION		
7. Transmission (1)	Oil pan (2) and new gasket (10)	Put on.
8. Oil pan (2) to transmission (1)	23 screws (9)	Screw in and tighten using 1/2-inch socket, 5-inch extension, and handle.
9. Oil pan (2)	Tube (5) and new gasket (8)	Put on.
10. Tube (5) to oil pan (2)	Two screws (6) and new lockwashers (7)	Screw in and tighten using 1/2-inch socket, 3-inch extension, and handle.
11. Oil pan (2)	Plug (3) and new gasket (4)	Screw in and tighten using 7/8-inch wrench.

**TRANSMISSION OIL PAN - CONTINUED**



**NOTE**

**FOLLOW-ON MAINTENANCE:**

1. Fill transmission with fluid (TM 9-2320-270-10).
2. Check for leaks (page 4-1).

**TASK ENDS HERE**

**RETARDER CONTROL LINKAGE**

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This task covers:

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>a. Removal (page 4-548)</li> <li>b. Disassembly (page 4-551)</li> <li>c. Cleaning/Inspection (page 4-552)</li> </ul> | <ul style="list-style-type: none"> <li>d. Assembly (page 4-552)</li> <li>e. Installation (page 4-552)</li> <li>f. Adjustment (page 4-556)</li> </ul> |
|---|--|
- 

**INITIAL SETUP**

**Tools**

- Pliers, long roundnose
- Vise, machinist's
- Wrench, open-end, 3/8-inch
- Wrench, open-end, 7/16-inch  
(two required)
- Wrench, open-end, 1/2-inch
- Wrench, open-end, 3/4-inch

**Materials/Parts**

- Cotter pin, clevis pins (two required)
- Cotter pin, pedal pin (two required)
- Lockwasher, anchor (four required)
- Lockwasher, mounting bracket (two required)
- Lockwasher, pedal ball joint

**Personnel Required**

One

**Equipment Condition**

Right side hood open (TM 9-2320-270-10).

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**RETARDER CONTROL LINKAGE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
REMOVAL		
1. Pedal pin (1)	Two cotter pins (2)	a. Using long roundnose pliers, straighten and pull out. b. Get rid of.
2. Control pedal (3) and mounting bracket (4)	Pedal pin (1)	Pull out.
3. Mounting bracket (4) and detachable balljoint (5)	Control pedal (3)	Tip up to access joint (5).
4. Detachable balljoint (5) and control pedal (3)	Nut (6) and lock-washer (7)	a. Using 1/2-inch and 7/16-inch open-end wrenches, unscrew and take off. b. Get rid of lockwasher (7).
5. Detachable ball-joint (5)	Control pedal (3)	Take off.
6. Cab floor (8), mounting bracket (4), stop screw (9), and dimmer switch (10)	Fliormat (11)	a. Pull up. b. Move aside.

**NOTE**

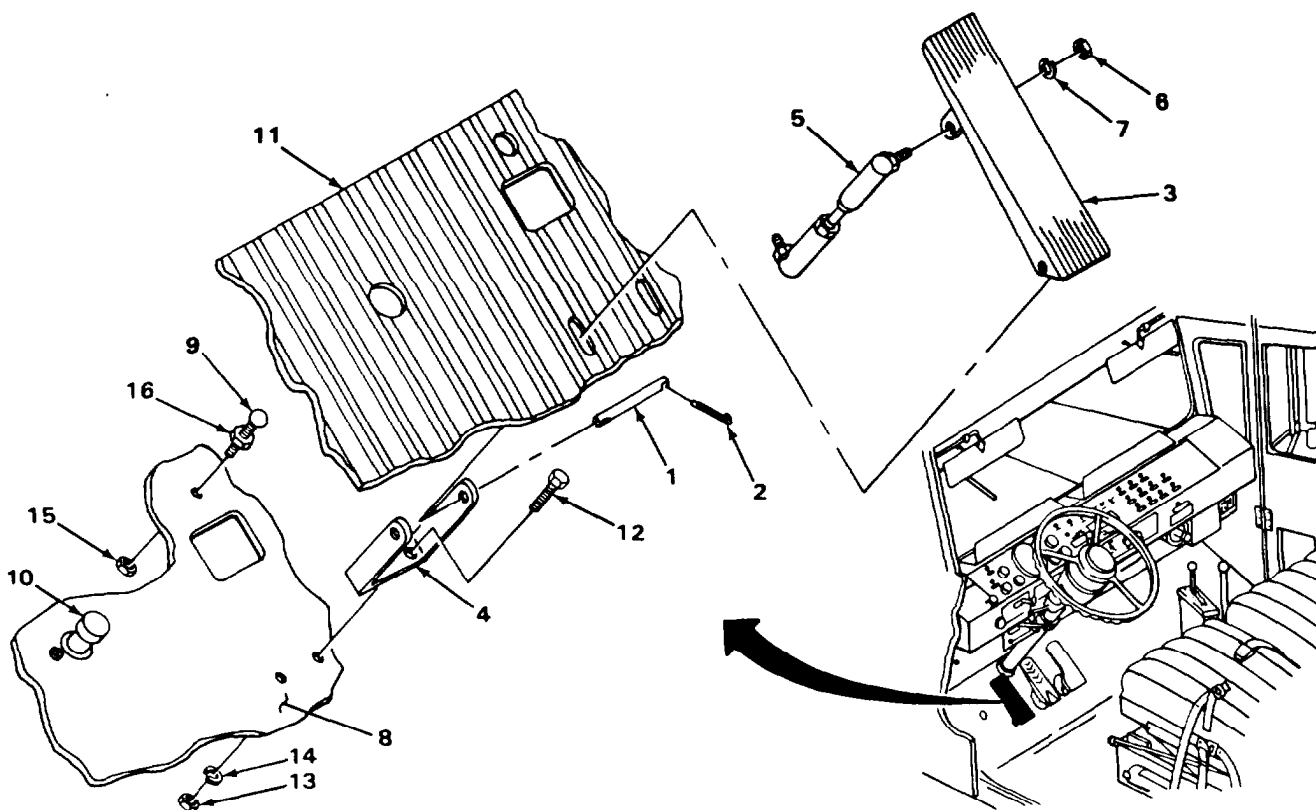
Perform steps 7 and 8 only if mounting bracket is damaged or needs to be removed.

Perform steps 9 and 10 only if stop screw is damaged or needs to be removed.

7. Mounting bracket (4) and cab floor (8)	Two screws (12), nuts (13), and lockwashers (14)	a. Using two 7/16-inch open-end wrenches, unscrew and take apart. b. Get rid of lockwashers (14).
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**RETARDER CONTROL LINKAGE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
8. Cab floor (8)	Mounting bracket (4)	Take off.
9. Cab floor (8) and stop screw (9)	Nut (15)	Using 1/2-inch open-end wrench, through cab floor (8), unscrew and take off.
10. Cab floor (8)	Stop screw (9) with assembled nut (16)	Take out.



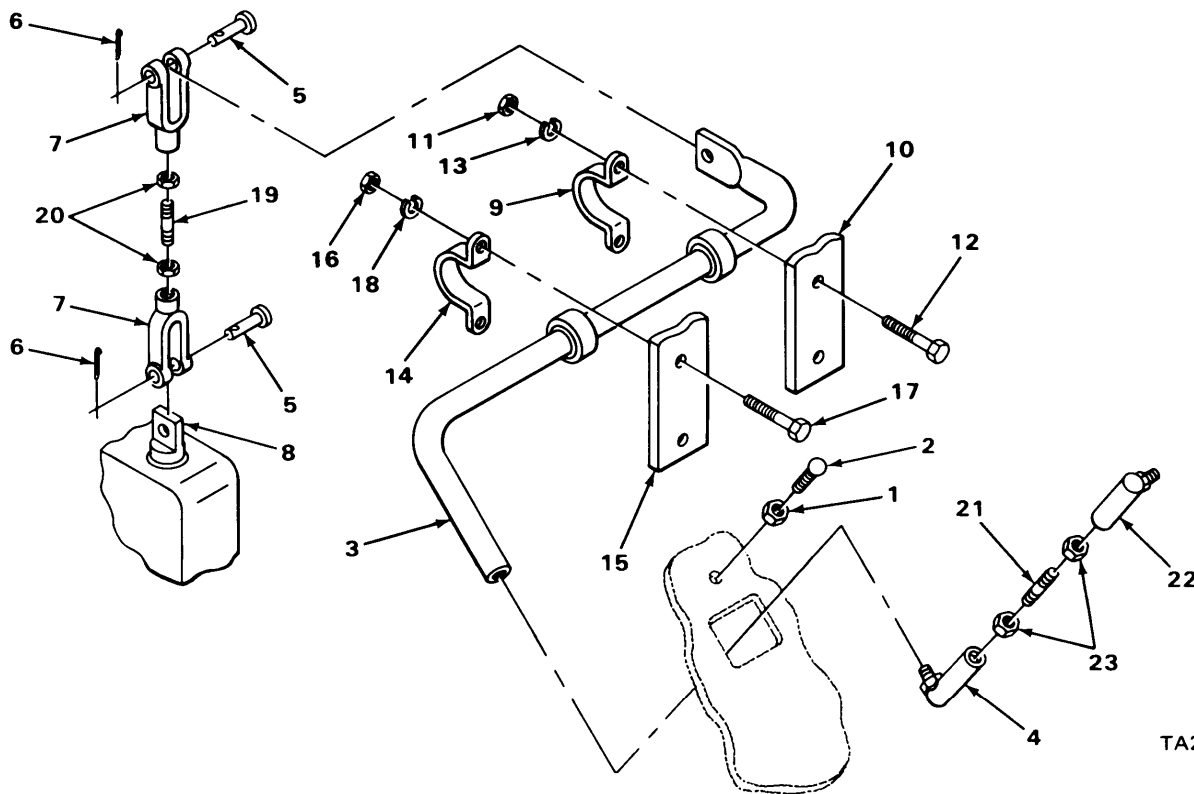
## RETARDER CONTROL LINKAGE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
REMOVAL – CONTINUED		
11. Nut (1)	Stop screw (2)	a. Place nut (1) in machinist's vise. b. Using 3/8-inch open-end wrench, unscrew and take out. c. Take nut (1) out of machinist's vise.
12. Retarder control lever (3)	Non-detachable ball-joint (4) with assembled parts	Using 7/16-inch open-end wrench, unscrew and take out.
13. Two clevis pins (5)	Two cotter pins (6)	a. Using long roundnose pliers, straighten and pull out. b. Get rid of.
14. Two clevises (7)	Two clevis pins (5)	Take out.
15. Retarder control lever (3) and retarder control valve (8)	Two clevises (7) with assembled parts	Take off.
16. Anchor (9) and plate (10)	Two nuts (11), screws (12), and lockwashers (13)	a. Using two 7/16-inch open-end wrenches, unscrew and take apart. b. Get rid of lockwashers (13).
17. Plate (10) and retarder control lever (3)	Anchor (9)	Take off.
18. Engine compartment	Right side hood	Close (TM 9-2320-270-10).
19.	Left side hood	Open (TM 9-2320-270-10).
20. Anchor (14) and plate (15)	Two nuts (16), screws (17), and lockwashers (18)	a. Using two 7/16-inch open-end wrenches, unscrew and take apart. b. Get rid of lockwashers (18).
21. Plate (15)	Anchor (14) and retarder control lever (3)	Take off.



RETARDER CONTROL LINKAGE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>DISASSEMBLY</b>		
22. Two clevises (7) and connecting rod yoke (19)	Two nuts (20)	a. Place one clevis (7) in machinist's vise. b. Using 3/4-inch open-end wrench, unscrew part way. c. Take clevis (7) out of machinist's vise. Repeat step 22 for other clevis.
23. Connecting rod yoke (19)	Two clevises (7) and two nuts (20)	Unscrew and take off.
24. Pedal rod (21) with non-detachable and detachable ballpoints (4) and (22)	Two nuts (23)	a. Place ball joint (4) in machinist's vise. b. Using 1/2-inch open-end wrench, unscrew part way. c. Take ball joint (4) out of machinist's vise. Repeat step 24 for other balljoint.
25. Pedal rod (21)	Non-detachable and detachable ballpoints (4) and (22)	Unscrew and take off.



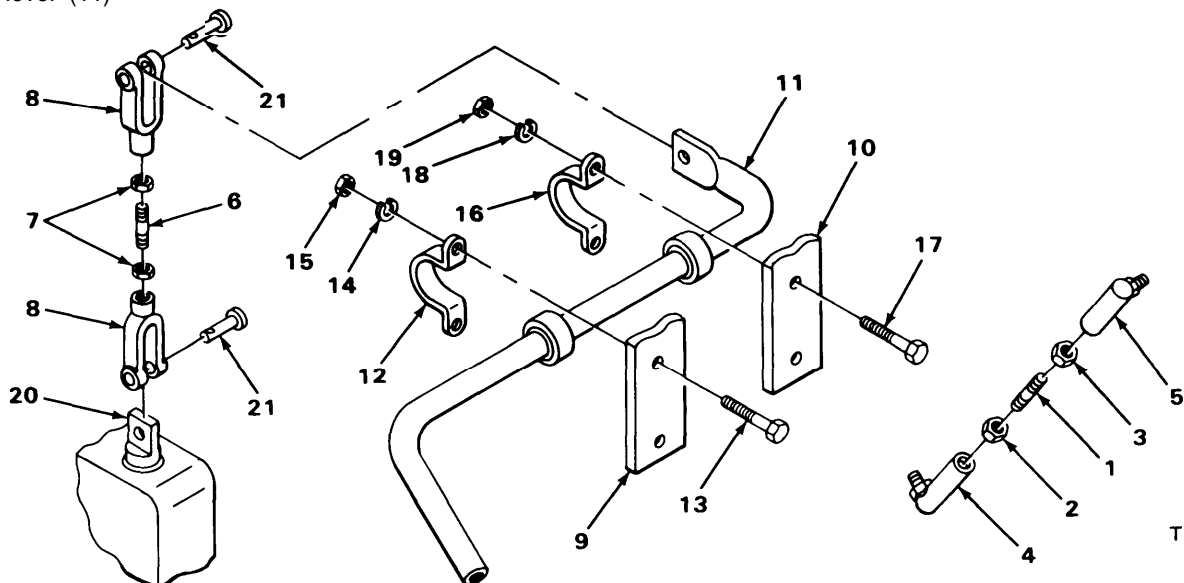
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**RETARDER CONTROL LINKAGE- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>CLEANING/INSPECTION</b>		
26.	All parts	Clean as shown in General Maintenance Instructions (page 4-1).
27.	All parts	Inspect as shown in General Maintenance Instructions (page 4-1).
<b>ASSEMBLY</b>		
28. Pedal rod (1)	Two nuts (2) and (3)	Screw one on each end as far as possible.
<b>NOTE</b>		
There are two different ballpoints on pedal rod. One is spring loaded so that threaded end with ball may be detached from joint. Do not tighten detachable ball joint to pedal rod.		
29. Pedal rod (1) and two nuts (2) and (3)	Non-detachable ball joint (4) and detachable ball joint (5)	<ul style="list-style-type: none"> <li>a. Screw on as far as possible with threaded ends at right angles to one another.</li> <li>b. Place non-detachable balljoint (4) in machinist's vise.</li> <li>c. Using 1/2-inch open-end wrench, tighten nut (2) against non-detachable ball joint (4).</li> <li>d. Take out of machinist's vise. <b>Other nut will be tightened during adjustment.</b></li> </ul>
30. Connecting rod yoke (6)	Two nuts (7)	Screw one on each end as far as possible.
31. Connecting rod yoke (6) and two nuts (7)	Two clevises (8)	<ul style="list-style-type: none"> <li>a. Screw on until yoke ends are flush with inside surface and aligned.</li> <li>b. Place one clevis (8) in machinist's vise.</li> <li>c. Using 3/4-inch open-end wrench, tighten nut (7) against clevis (8).</li> <li>d. Take of of machinist's vise. Repeat step 31 b, c, and d for other nut making sure clevises are inline with one another.</li> </ul>
<b>INSTALLATION</b>		
32. Two plates (9) and (10)	Retarder control lever (11).	Place in position.

RETARDER CONTROL LINKAGE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
33. Retarder control lever (11) and plate (9)	Anchor (12)	Place in position.
34. Anchor (12) and plate (9)	Two screws (13), new lockwashers (14), and nuts (15)	Screw together and tighten using two 7/16-inch open-end wrenches.
35.	Left side hood	Close (TM 9-2320-270-10).
36.	Right side hood	Open (TM 9-2320-270-10).
37. Retarder control lever (11) and plate (10)	Anchor (16)	Place in position.
38. Anchor (16) and plate (10)	Two screws (17), new lockwashers (18), and nuts (19)	Screw together and tighten using two 7/16-inch open-end wrenches. <b>Be sure retarder control lever moves freely in anchors.</b>
39. Retarder control valve (20) and retarder control lever (11)	Two clevises (8) with assembled parts	Place in position.
40. Two clevises (8), retarder control valve (20), and retarder control lever (11)	Two clevis pins (21)	Place in position.



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**RETARDER CONTROL LINKAGE - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
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INSTALLATION – CONTINUED

- |                         |                         |   |
|-------------------------|-------------------------|---|
| 41. Two clevis pins (1) | Two new cotter pins (2) | <ul style="list-style-type: none"> <li>a. Slide in position.</li> <li>b. Using long roundnose pliers, bend ends.</li> </ul> |
|-------------------------|-------------------------|---|

**NOTE**

Perform steps 42 thru 44 only if stop screw was found damaged, or needed to be removed.

- |                                      |                                       |   |
|--------------------------------------|---------------------------------------|---|
| 42. Stop screw (3)                   | Nut (4)                               | Screw on as far as possible.  |
| 43. Cab floor (5)                    | Stop screw (3) with assembled nut (4) | Slide in position.  |
| 44. Stop screw (3) and cab floor (5) | Nut (6)                               | Screw on about two full turns.<br><b>Stop screw and two nuts will be tightened during adjustment.</b> |

**NOTE**

Perform steps 45 and 46 only if mounting bracket was removed.

Pedal pin mounting holes in mounting bracket are set off center. Position bracket so that pedal pin mounting holes are toward front of vehicle.

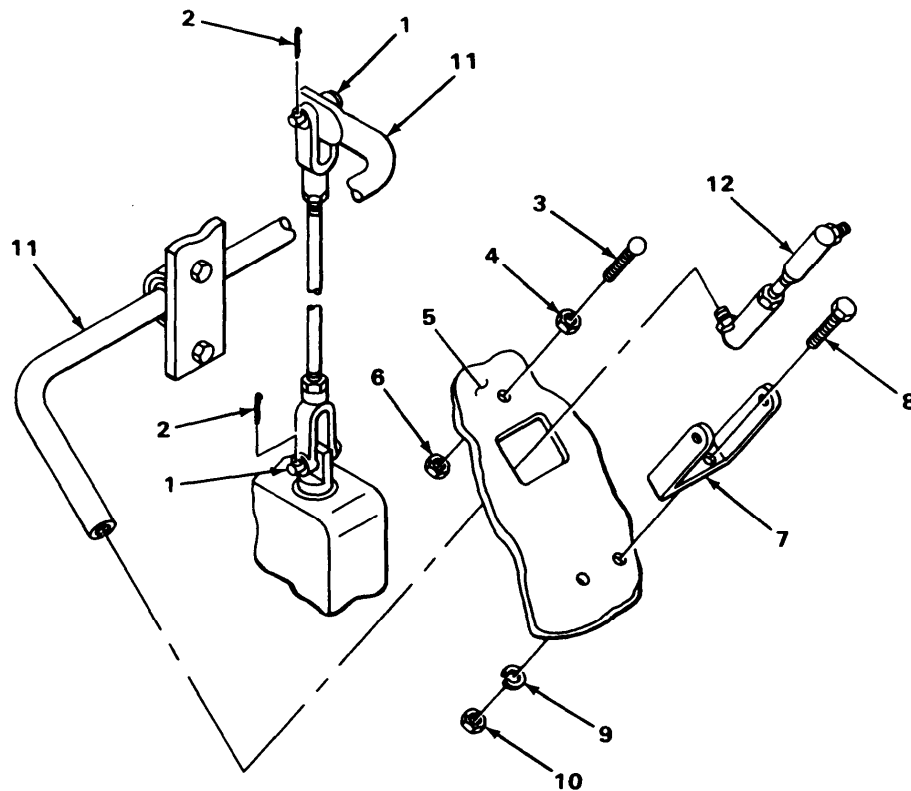
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|--|--|---|
| 45. Cab floor (5)                          | Mounting bracket (7)                               | Place in position.<br><b>Be sure pedal pin mounting holes are closer toward front of vehicle.</b> |
| 46. Mounting bracket (7) and cab floor (5) | Two screws (8), new lockwashers (9), and nuts (10) | Screw together and tighten using two 7/16-inch open-end wrenches.                                 |

**RETARDER CONTROL LINKAGE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

There are two ballpoints on pedal rod. One balljoint is spring loaded so that threaded end with ball may be detached from joint. Detachable ball joint will be connected to pedal to allow adjustment.

- |                                 |                                |   |
|---------------------------------|--------------------------------|---|
| 47. Retarder control lever (11) | Non-detachable ball joint (12) | a. Place in position through cab floor (5).<br>b. Screw in and tighten using 7/16-inch open-end wrench. |
|---------------------------------|--------------------------------|---|



**RETARDER CONTROL LINKAGE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
INSTALLATION – CONTINUED		
48. Cab floor (1)	Floormat (2)	Place in position over mounting bracket (3), stop screw (4), and dimmer switch (5).
49. Detachable ball-joint (6)	Control pedal (7)	Place in position.
50.	New lockwasher (8) and nut (9)	Screw on and tighten using 1/2-inch and 7/16-inch open-end wrenches.
51. Mounting bracket (3)	Control pedal (7)	Place in position.
52. Mounting bracket (3) and control pedal (7)	Pedal pin (10)	Slide in position.
53. Pedal pin (10)	Two new cotter pins(n)	a. Place in position. b. Using long roundnose pliers, bend ends out.

ADJUSTMENT

**CAUTION**

If control pedal stop screw is not adjusted properly, damage to retarder control valve could result.

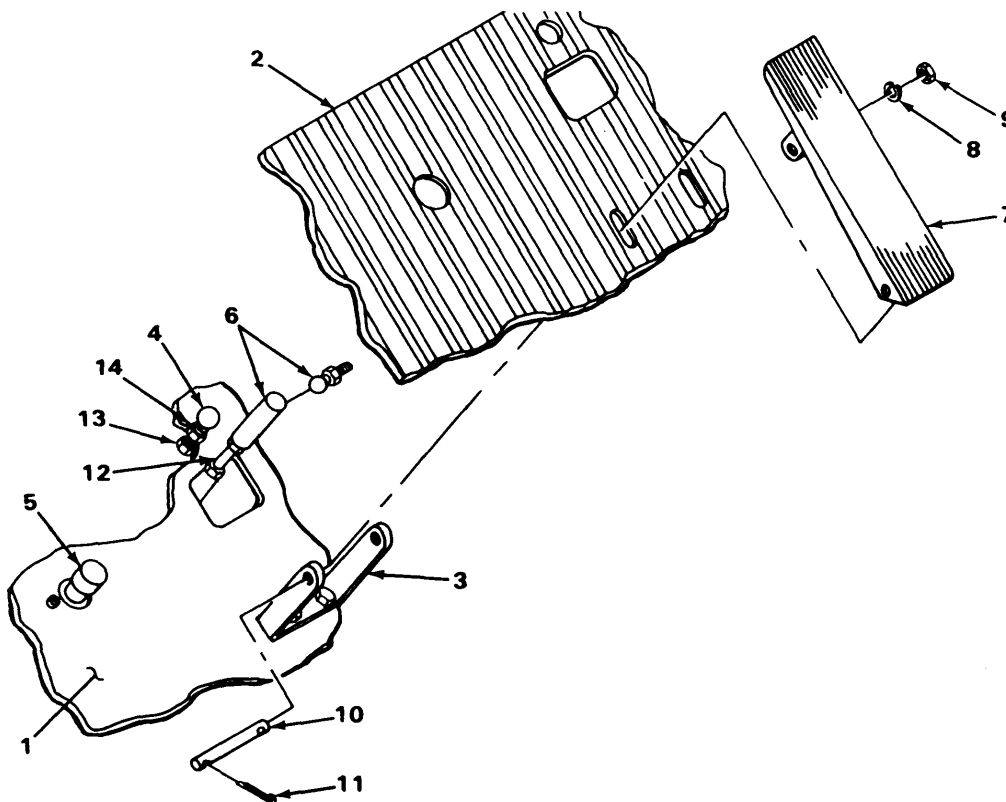
**NOTE**

If retarder control linkage was removed and disassembled, skip steps 54 thru 61.

54. Control pedal (7) and pedal rod (12)	Detachable ball-joint (6)	a. Pull down on joint socket. b. Pull joint socket off of joint ball.
55. Mounting bracket (3)	Control pedal (7) with assembled parts	Pull back.
56. Cab floor (1), stop screw (4), and dimmer switch (5)	Floormat (2)	a. Pull up. b. Move back.
57. Cab floor (1) and stop screw (4)	Nut (13)	Using 1/2-inch open-end wrench, unscrew part way.

RETARDER CONTROL LINKAGE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
56.	Nut (14)	Using 3/8-inch and 1/2-inch open-end wrenches, turn counterclockwise until nut (14) contacts stop screw head.
59. Cab floor (1), stop screw (4), and dimmer switch (5)	Floormat (2)	Place in position.
60. Mounting bracket (3)	Control pedal (7) with assembled parts	Move forward to operating position.
61. Control pedal (7) and pedal rod (12)	Detachable ball-joint (6)	a. Pull down on joint socket. b. Push joint socket onto joint ball.



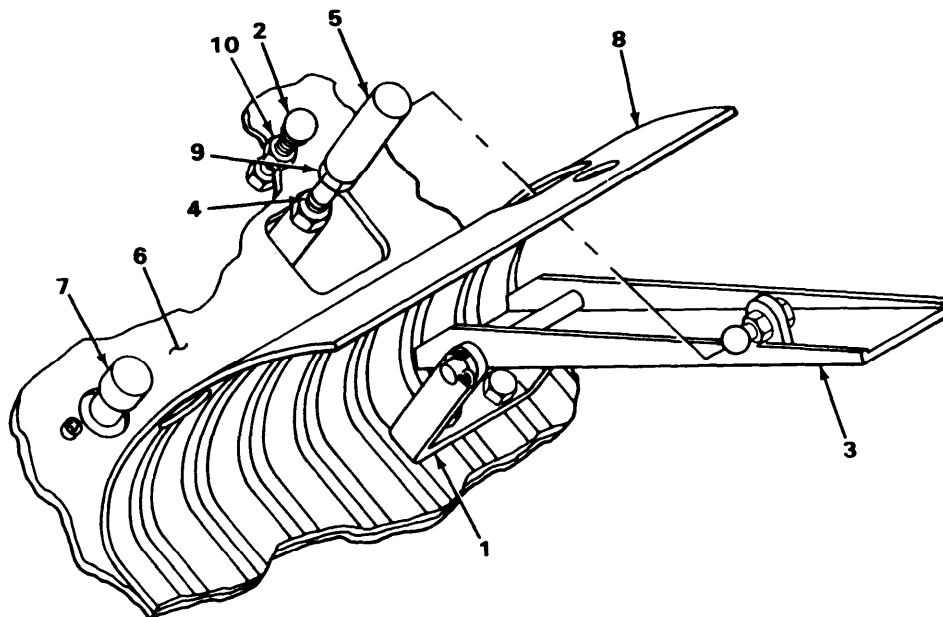
## RETARDER CONTROL LINKAGE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
ADJUSTMENT - CONTINUED		
62. Mounting bracket (1) and stop screw (2)	Control pedal (3)	a. Depress as far as possible. Retarder control valve should reach end of travel before pedal touches stop screw. b. Release.
<b>NOTE</b>		
If retarder control valve reaches end of travel when control pedal is depressed, skip steps 83 thru 71.		
63. Control pedal (3) and pedal rod (4)	Detachable ball- joint (5)	a. Pull down on joint socket. b. Pull joint socket off of joint ball.
64. Mounting bracket (1)	Control pedal (3) with assembled parts	Pull back.
65. Cab floor (6), stop screw (2), and dimmer switch (7)	Floormat (8)	a. Pull up. b. Move back.
66. Socket part of detachable balljoint (5) and pedal rod (4)	Nut (9)	if not already loose, using 1/2-inch open-end wrench, unscrew part way.
67. Pedal rod (4)	Socket part of detachable ball- joint (5)	Unscrew two turns.
68. Socket part of detachable balljoint (5) and pedal rod (4)	Nut (9)	Using 1/2-inch open-end wrench, tighten against joint socket.
69. Cab floor (6), stop screw (2), and dimmer switch (7)	Floormat (8)	Place in position.
70. Mounting bracket (1)	Control pedal (3)	Move forward to operating position.
71. Control pedal (3) and pedal rod (4)	Detachable ball- joint (5)	a. Pull down on joint socket. b. Push joint socket onto joint ball. c. Repeat steps 62 thru 71.



## RETARDER CONTROL LINKAGE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
72. Cab floor (6), stop screw (2), and dimmer switch (7)	Floormat (8)	Pull up.
73. Floormat (8), stop screw (2), and cab floor (6)	Nut (10)	a. Using 3/8-inch open-end wrench, hold stop screw (2) from turning. b. Using 1/2-inch open-end wrench, turn nut (10) clockwise to raise stop screw (2).
74. Cab floor (6), stop screw (2), and dimmer switch (7)	Floormat (8)	Push down.

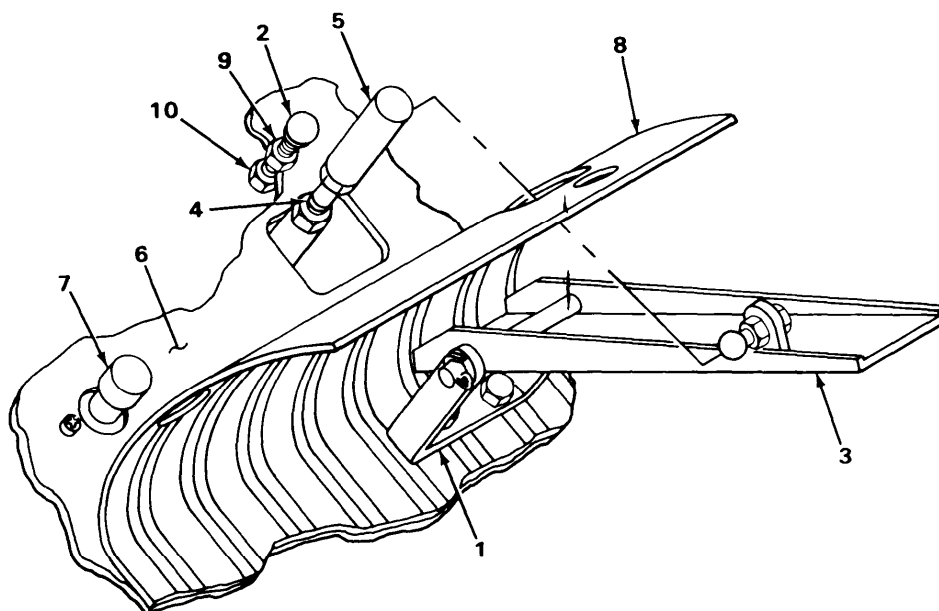


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RETARDER CONTROL LINKAGE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
ADJUSTMENT – CONTINUED		
75. Mounting bracket (1) and stop screw (2)	Control pedal (3)	a. Depress as far as possible. <b>Pedal should just touch stop screw as retarder control valve reaches end of travel.</b> b. Release. c. Repeat steps 72 thru 75 until stop screw adjustment is correct.
76. Control pedal (3) and pedal rod (4)	Detachable ball-joint (5)	a. Pull down on joint socket. b. Pull joint socket off of joint ball.
77. Mounting bracket (1)	Control pedal (3) with assembled parts	Pull back.
78. Cab floor (6), stop screw (2), and dimmer switch (7)	Floormat (8)	a. Pull up. b. Move back.
79. Stop screw (2) and cab floor (6)	Nut (9)	a. Using 3/8-inch open-end wrench, hold stop screw (2) from turning. b. Using 1/2-inch open-end wrench, turn nut (9) one more full turn. This will prevent strain on retarder control valve.
80. Cab floor (6)	Stop screw (2) and nut (10)	a. Using 3/8-inch open-end wrench, hold stop screw (2) from turning. b. Using 1/2-inch open-end wrench, through cab floor (6), tighten nut (10).
81. Cab floor (6), stop screw (2), and dimmer switch (7)	Floormat (8)	a. Put in place. b. Push down over screw (2) and switch (7).
82. Mounting bracket (1)	Control pedal (3)	Move forward to operating position.
83. Control pedal (3) and pedal rod (4)	Detachable ball-joint (5)	a. Pull down on joint socket. b. Push joint socket onto joint ball.

## RETARDER CONTROL LINKAGE - CONTINUED

**NOTE**

## FOLLOW-ON MAINTENANCE:

1. Close right side hood (TM 9-2320-270-10).
2. Check operation of retarder (TM 9-2320-270-10).

**TASK ENDS HERE**

**INTERNAL OIL FILTER**

---

This task covers:

- a. Removal (page 4-562)
  - b. Cleaning/Inspection (page 4-562)
  - c. Installation (page 4-562)
- 

**INITIAL SETUP**

**Tools**

- Extension, 5-inch, 3/8-inch drive
- Handle, ratchet, 3/8-inch drive
- Socket, 1/2-inch, 3/8-inch drive
- Wrench, torque, 3/8-inch drive

**Personnel Required**

One

**Equipment Condition**

Transmission oil pan removed (page 4-545).

**Materials/Parts**

- Packing
  - Screw, self-locking
- 

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

---

**REMOVAL**

- |                                   |                            |  |
|-----------------------------------|----------------------------|--|
| 1. Filter (1) to transmission (2) | Screw (3) and washer (4)   | a. Using 1/2-inch socket, extension, and handle, unscrew and take out.<br>b. Get rid of screw (3). |
| 2. Transmission (2)               | Filter (1) and packing (5) | a. Take out.<br>b. Get rid of packing (5).   |
| 3. Filter (1)                     | Two spacers (6)            | Take out.  |

**CLEANING/INSPECTION**

- |    |           |  |
|----|-----------|--|
| 4. | All parts | Clean and inspect as shown in the general maintenance instructions (page 4-1). |
|----|-----------|--|

**INSTALLATION**

- |                     |                                |         |
|---------------------|--------------------------------|---------|
| 5. Filter (1)       | Two spacers (6)                | Put in. |
| 6. Transmission (2) | Filter (1) and new packing (5) | Put in. |

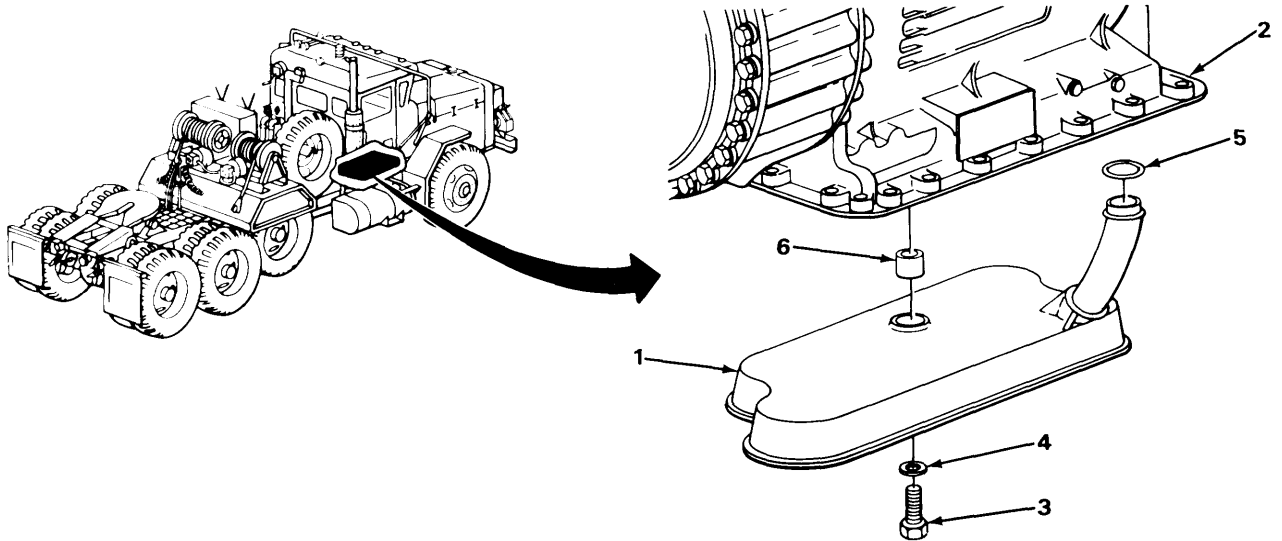
**INTERNAL OIL FILTER - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

7. Filter (1) to transmission (2)

New screw (3) and washer (4)

Screw in and tighten to 17-20 ft-lb (23-27 Nm) using 1/2-inch socket, extension, and torque wrench.



**NOTE**

**FOLLOW-ON MAINTENANCE:**

1. Install transmission oil pan (page 4-545).
2. Fill transmission with fluid (TM 9-2320-270-10).
3. Check for leaks (page 4-1).

**TASK ENDS HERE**

**EXTERNAL OIL FILTER**

This task covers:

- |                                     |                              |
|-------------------------------------|------------------------------|
| a. Removal (page 4-564)             | d. Assembly (page 4-566)     |
| b. Disassembly (page 4-564)         | e. Installation (page 4-567) |
| c. Cleaning/Inspection (page 4-566) |                              |

**EXTERNAL OIL FILTER - CONTINUED**

INITIAL SETUP

Tools

- Extension, 6-inch, 3/8-inch drive
- Hammer, plastic-face
- Handle, ratchet, 3/8-inch drive
- Pliers, retaining ring
- Socket, 7/16-inch, 3/8-inch drive
- Socket, 9/16-inch, 3/8-inch drive
- Socket, 1 1/8-inch, 1/2-inch drive
- Wrench, adjustable, 15-inch
- Wrench, open-end, 9/16-inch
- Wrench, open-end, 15/16-inch
- Wrench, open-end, 1 1/8-inch
- Wrench, torque, 1/2-inch drive

Materials/Parts

- Container
- Gasket, base
- Gasket, plug
- Gasket, retainer
- Lockwasher (six required)
- Retainer clip

Personnel Required

One

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

REMOVAL

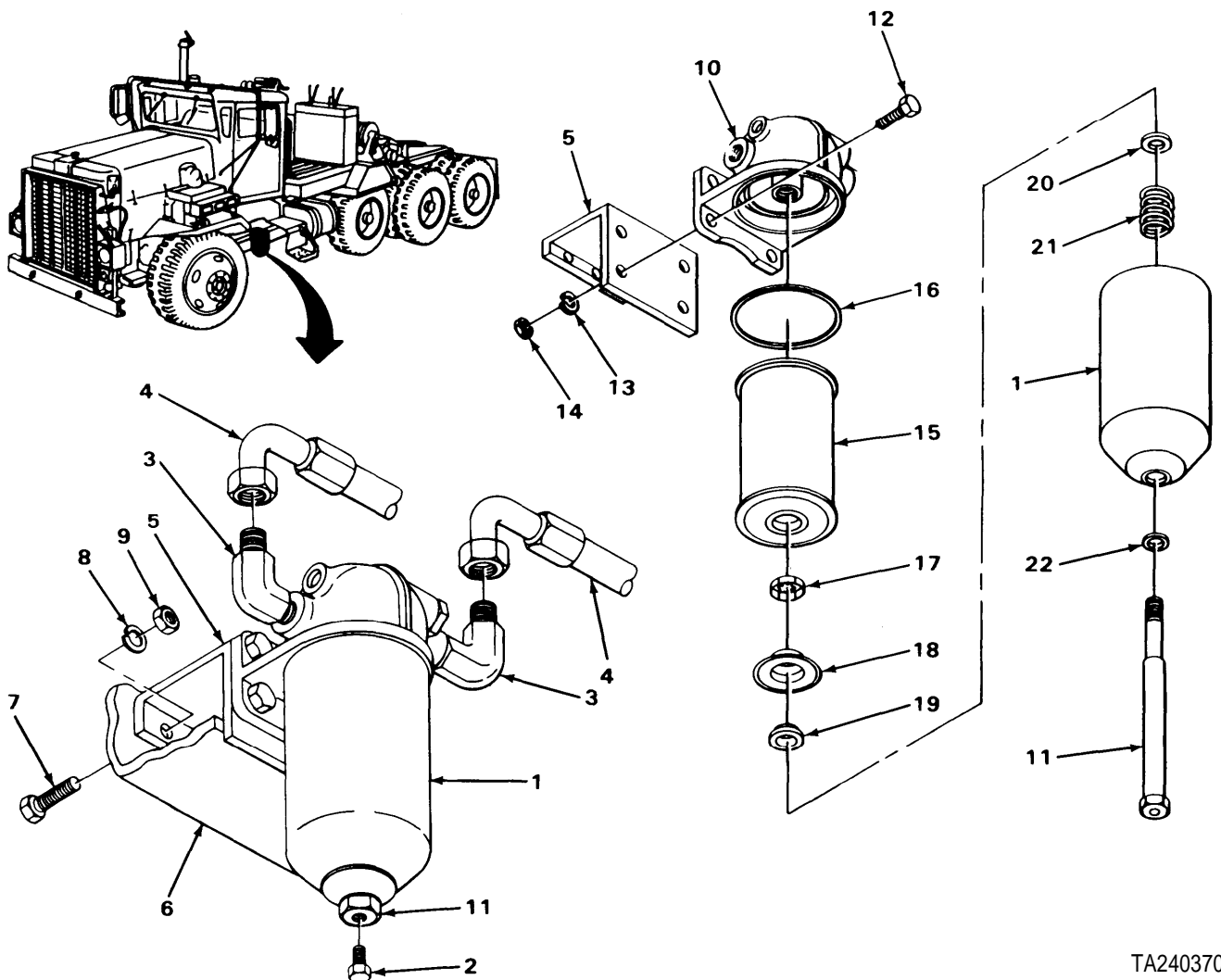
- |                             |   |  |
|-----------------------------|---|--|
| 1. Filter shell (1)         | Plug (2)                                      | <ul style="list-style-type: none"> <li>a. Put container underneath.</li> <li>b. Using 1 1/8-inch wrench, 7/16-inch socket and handle, unscrew and take out.</li> <li>c. Let fluid drain out.</li> <li>d. Get rid of fluid (page 4-1-l).</li> </ul> |
| 2. Two elbows (3)           | Two fittings (4)                              | Using adjustable wrench, unscrew and take off.   |
| 3. Bracket (5) to frame (6) | Two screws (7), lockwashers (8), and nuts (9) | <ul style="list-style-type: none"> <li>a. Using 9/16-inch socket, handle, extension and 9/16-inch wrench, unscrew and take out.</li> <li>b. Get rid of lockwashers (8).</li> </ul>   |
| 4. Frame (6)                | Bracket (5) and filter shell (1)              | Take off.  |

DISASSEMBLY

- |                                  |   |   |
|----------------------------------|---|---|
| 5. Filter shell (1) to base (10) | Stud(n)   | <ul style="list-style-type: none"> <li>a. Using 1 1/8-inch open-end wrench, unscrew part way.</li> <li>b. Using plastic hammer, tap loose.</li> </ul>                               |
| 6. Base (10) to bracket (5)      | Four screws (12), lockwashers (13), and nuts (14) | <ul style="list-style-type: none"> <li>a. Using 9/16-inch socket, handle, extension and 9/16-inch wrench, unscrew and take out.</li> <li>b. Get rid of lockwashers (13).</li> </ul> |

EXTERNAL OIL FILTER - CONTINUED

LOCATION	ITEM	ACTION REMARKS
7. Base (10)	Bracket (5)	Take off.
8. Filter shell (1)	Filter element (15) and gasket (16)	a. Take out. b. Get rid of gasket (16).
9. Stud (11)	Retainer clip (17)	a. Using pliers, take off. b. Get rid of.
10.	Retainer, gasket (19), washer (20), and spring (21)	a. Take off. b. Get rid of gasket.
11. Filter shell (1)	Stud (11) and washer (22)	Take out.



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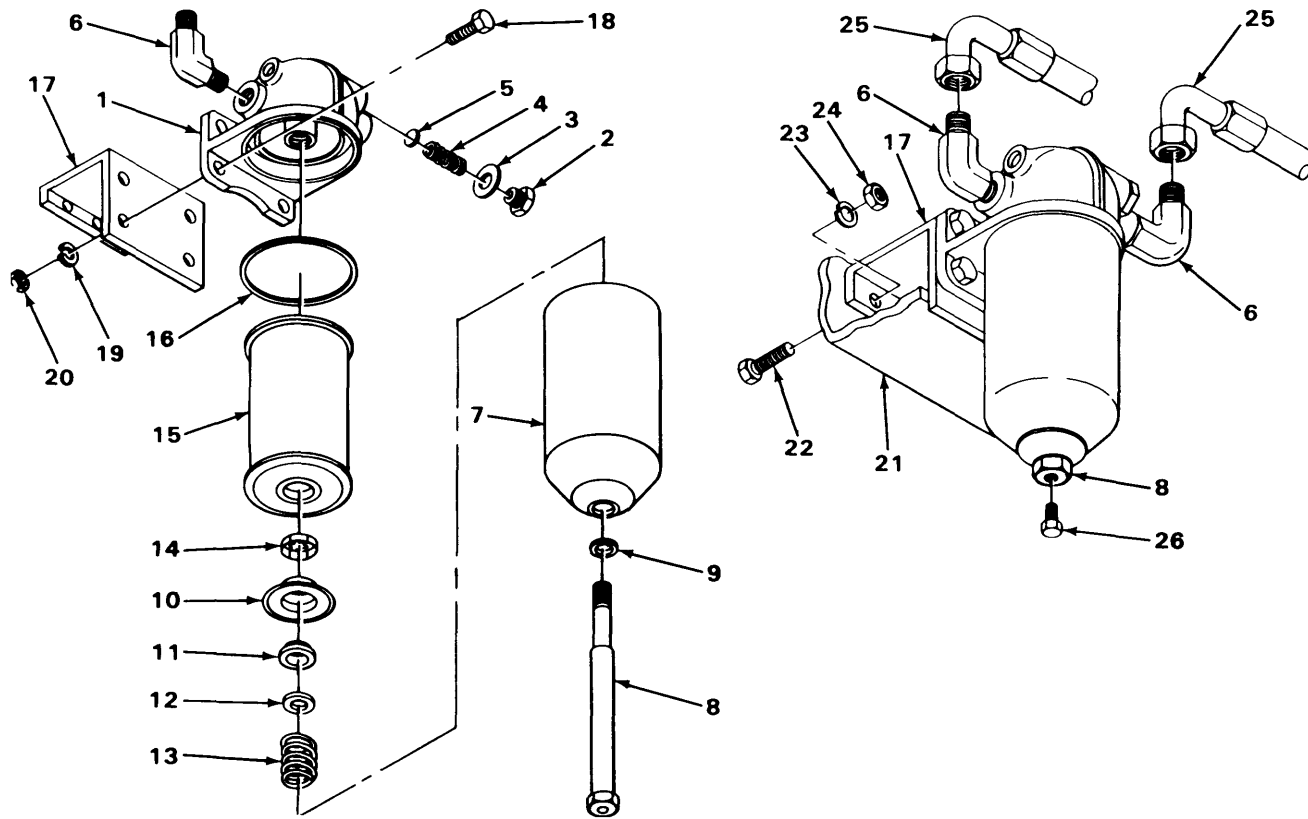
**EXTERNAL OIL FILTER - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
DISASSEMBLY – CONTINUED		
<b>NOTE</b>		
Plug is under spring tension.		
12. Base (1)	Plug (2), gasket (3), spring (4), and valve (5)	a. Using adjustable wrench, unscrew and take out. b. Get rid of gasket (3).
13.	Two elbows (6)	Using adjustable wrench, unscrew and take out.
CLEANING/INSPECTION		
14.	All parts	Clean and inspect as shown in the general maintenance instructions (page 4-1).
ASSEMBLY		
15. Base (1)	Two elbows (6)	Screw in and tighten using adjustable wrench.
16.	Plug (2), new gasket (3), spring (4), and valve (5)	Screw in and tighten using adjustable wrench.
17. Shell (7)	Stud (8) and washer (9)	Put in.
18. Stud (8)	Retainer (10), new gasket (11), washer (12), and spring (13)	Put on.
19.	New retainer clip (14)	Screw on and tighten using 15/16-inch and 1 1/8-inch wrenches.
20. Shell (7)	Filter element (15)	Put in.
21. Base (1)	New gasket (16)	Put in.
22. Shell (7) to base (1)	Stud (8)	Screw in and tighten to 22-25 ft-lb (30-34 Nm) using 1 1/8-inch socket and torque wrench.
23. Base (1)	Bracket (17)	Place in position.
24. Base (1) to bracket (17)	Four screws (18), new lockwashers (19) and nuts (20)	Screw in and tighten using 9/16-inch socket, handle, extension, and 9/16-inch wrench.



EXTERNAL OIL FILTER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
25. Frame (21)	Bracket (17)	Put on.	
26. Bracket (17) to frame (21)	Two screws (22), new lockwashers (23), and nuts (24)	Screw in and tighten using 9/16-inch socket, handle, extension, and 9/16-wrench.	
27. Two elbows (6)	Two fittings (25)	Screw on and tighten using adjustable wrench.	
28. Stud (8)	Plug (26)	Screw in and tighten using 7/16-inch socket and handle.	



NOTE

FOLLOW-ON MAINTENANCE:

1. Fill transmission (TM 9-2320-270-10).
2. Check for leaks (page 4-1).

TASK ENDS HERE

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**HEAT EXCHANGER TO TRANSMISSION LINES AND FITTINGS**

---

This task covers:

- a. Removal (page 4-568)
  - b. Cleaning/Inspection (page 4-569)
  - c. Installation (page 4-570)
- 

**INITIAL SETUP**

**Tools**

- Extension, 5-inch, 3/8-inch drive
- Handle, ratchet, 3/8-inch drive
- Pan, drain
- Socket, 9/16-inch, 3/8-inch drive
- Socket, 1/2-inch, 3/8-inch drive
- Wrench, adjustable, 15-inch (two required)
- Wrench, open-end, 7/16-inch
- Wrench, open-end, 1/2-inch

**Materials/Parts**

- Lockwasher, bracket to transmission
- Lockwasher, clip to bracket
- Tape, teflon (item 22, appendix C)

**Personnel Required**

One

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LOCATION	ITEM	ACTION REMARKS
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**REMOVAL**

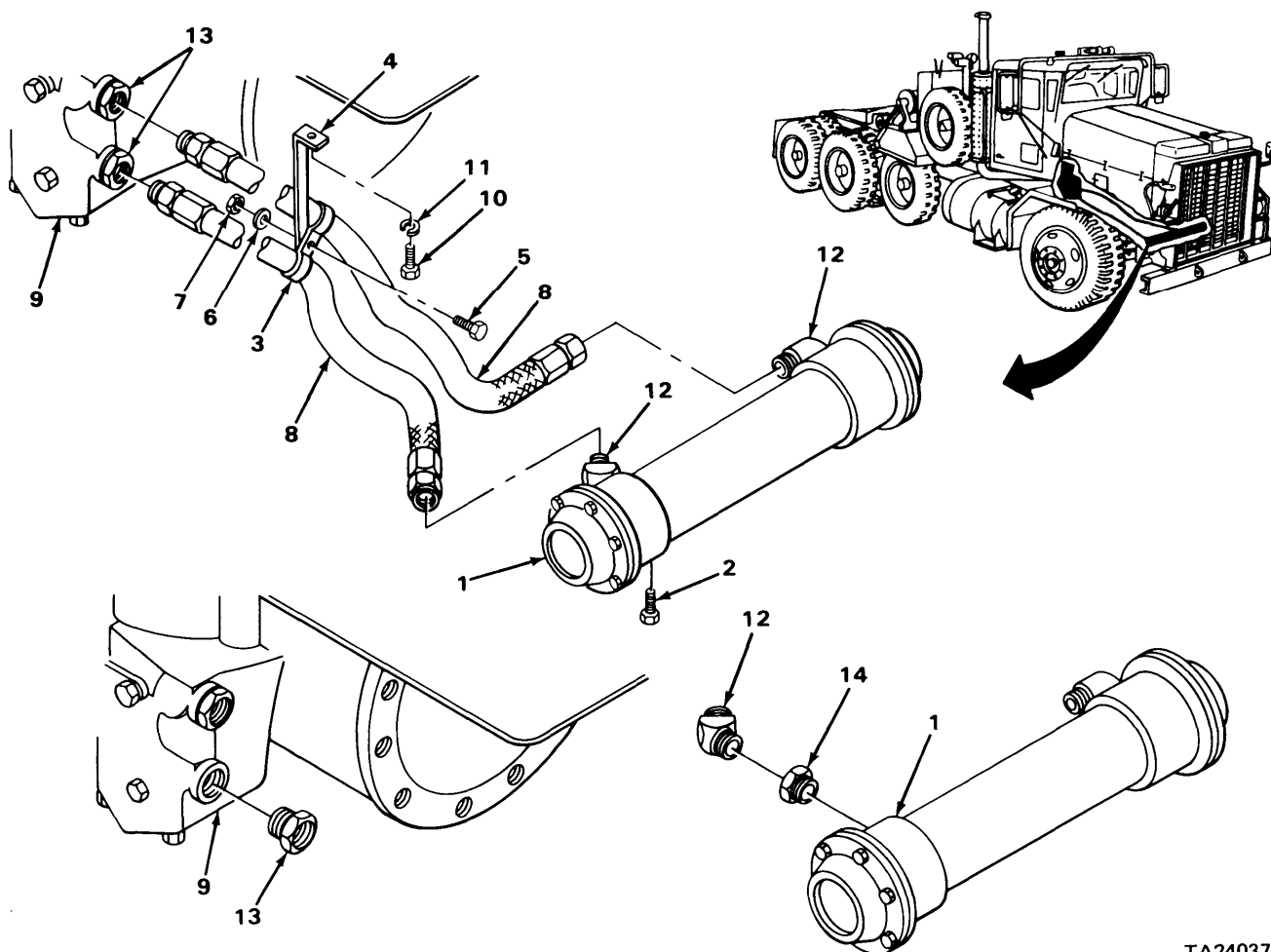
1. Heat exchanger (1)	Two draincocks (2)	<ul style="list-style-type: none"> <li>a. Put drain pan underneath.</li> <li>b. Using 7/16-inch wrench, unscrew and take out.</li> <li>c. When fluid stops draining, screw in and tighten using 7/16-inch wrench.</li> <li>d. Get rid of fluid (page 4-1).</li> </ul>
2. Two clips (3) to bracket (4)	Screw (5), lockwasher (6), and nut (7)	<ul style="list-style-type: none"> <li>a. Using 1/2-inch socket, handle, and 1/2-inch wrench, unscrew and take out.</li> <li>b. Get rid of lockwasher (6).</li> </ul>
3. Bracket (4) and two hoses (8)	Two clips (3)	Take off.
4. Bracket (4) to transmission (9)	Screw (10) and lockwasher (11)	<ul style="list-style-type: none"> <li>a. Using 9/16-inch socket, extension, and handle, unscrew and take out.</li> <li>b. Get rid of lockwasher (11).</li> </ul>
5. Transmission (9)	Bracket (4)	Take off.
6. Two elbows (12)	Two hoses (8)	Using two adjustable wrenches, unscrew and take off.

HEAT EXCHANGER TO TRANSMISSION LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION REMARKS
7. Two reducers (13)	Two hoses (8)	Using two adjustable wrenches, unscrew and take off.
8. Transmission (9)	Two reducers (13)	Using adjustable wrench, unscrew and take out.
9. Heat exchanger (1) and two reducers (14)	Two elbows (12)	Using two adjustable wrenches, unscrew and take out.
10. Heat exchanger (1)	Two reducers (14)	Using adjustable wrench, unscrew and take out.

CLEANING/inspection

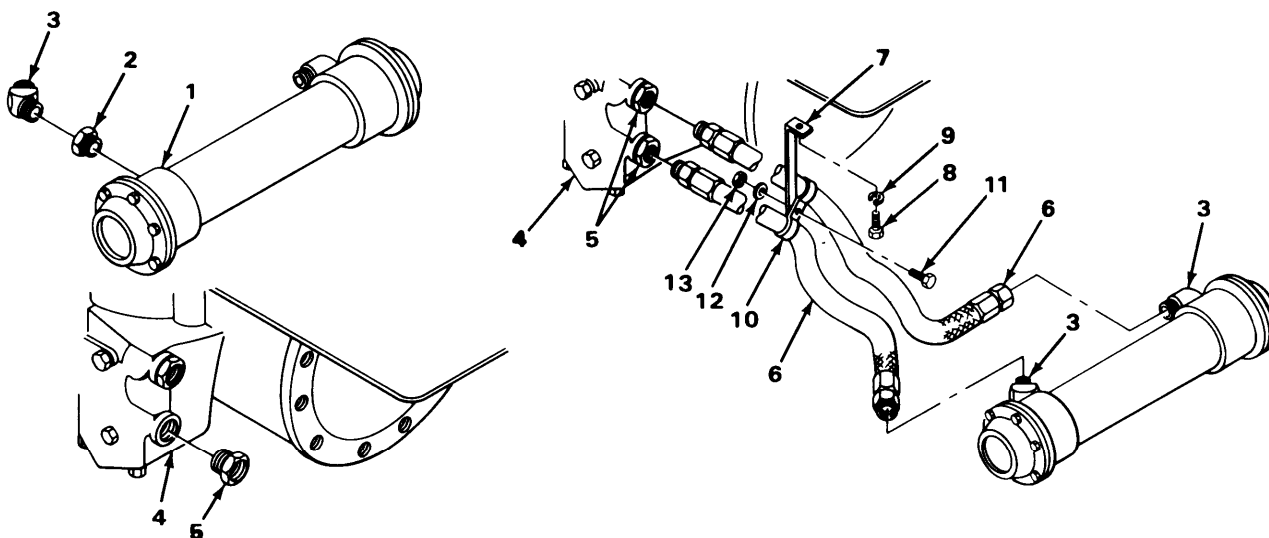
11. All parts  
Clean and inspect as shown in the general maintenance instructions (page 4-1).



**HEAT EXCHANGER TO TRANSMISSION LINES AND FITTINGS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
12. Heat exchanger (1)	Two reducers (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using adjustable wrench.
13. Two reducers (2)	Two elbows (3)	a. Wrap threads with teflon tape (page 4-1). b. Screw in using adjustable wrench. Make sure elbows face center of vehicle.
14. Transmission (4)	Two reducers (5)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using adjustable wrench.
15. Two reducers (5)	Two hoses (6)	Screw in and tighten using adjustable wrench.
16. Two elbows (3)	Two hoses (6)	Screw in and tighten using adjustable wrench.
17. Transmission (4)	Bracket (7)	Put on.
18. Bracket (7) to transmission (4)	Screw (8) and new lockwasher (9)	Screw in and tighten using 9/16-inch socket, extension, and handle.
19. Bracket (7) and two hoses (6)	Two clips (10)	Put on.
20. Two clips (10) to bracket (7)	Screw (11), new lockwasher(12), and nut (13)	Screw in and tighten using 1/2-inch socket, handle, and 1/2-inch wrench.

## HEAT EXCHANGER TO TRANSMISSION LINES AND FITTINGS - CONTINUED



### NOTE

#### FOLLOW-ON MAINTENANCE:

1. Fill transmission with fluid (TM 9-2320-270-10).
2. Check for leaks (page 4-1).

**TASK ENDS HERE**

## OIL FILTER TO TRANSMISSION LINES AND FITTINGS

---

This task covers:

- |                                     |                              |
|-------------------------------------|------------------------------|
| a. Removal (page 4-572)             | c. Installation (page 4-572) |
| b. Cleaning/Inspection (page 4-572) |                              |
- 

### INITIAL SETUP

#### Tools

Extension, 5-inch, 3/8-inch drive  
 Handle, ratchet, 3/8-inch drive  
 Pan, drain  
 Socket, 7/16-inch, 3/8-inch drive  
 Wrench, adjustable, 15-inch (two  
 required)  
 Wrench, open-end, 1 1/8-inch

#### Personnel Required

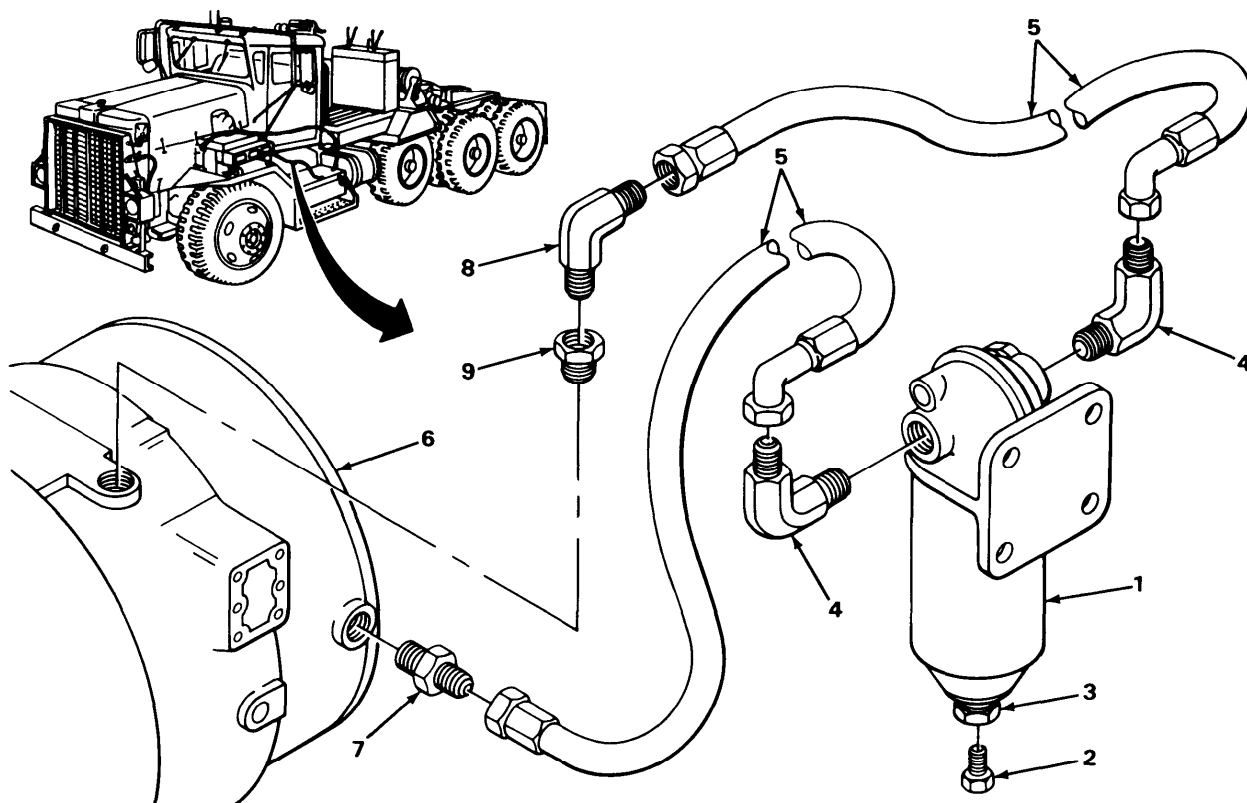
One

**OIL FILTER TO TRANSMISSION LINES AND FITTINGS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL</b>		
1. Oil filter(1)	Plug (2)	a. Put drain pan underneath. b. Using 1 1/8-inch wrench, 7/16-inch socket, extension, and handle, unscrew stud (3) and take out. c. When fluid stops draining, screw in and tighten using 7/16-inch socket, extension, and handle. d. Get rid of fluid (page 4-1).
2. Two elbows (4)	Two hoses (5)	Using adjustable wrench, unscrew and take out.
3. Transmission (6), reducer (7), and elbow (8)	Two hoses (5)	Using adjustable wrench, unscrew and take out.
4. Reducer(9)	Elbow (8)	Using two adjustable wrenches, unscrew and take out.
5. Transmission (6)	Two reducers (7) and (9)	Using adjustable wrench, unscrew and take out.
6. Oil filter(1)	Two elbows (4)	Using adjustable wrench, unscrew and take out.
<b>CLEANING/INSPECTION</b>		
7.	All parts	Clean and inspect as shown in the general maintenance instructions (page 4-1).
<b>INSTALLATION</b>		
8. Oil filter(1)	Two elbows (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using adjustable wrench. <b>Make sure elbow openings are on top.</b>
9. Transmission (6)	Two reducers (7) and (9)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using adjustable wrench.

**OIL FILTER TO TRANSMISSION LINES AND FITTINGS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
10. Reducer (9)	Elbow (8)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using adjustable wrench. <b>Make sure elbow opening faces rear or left side of vehicle.</b>
11. Reducer (7) and elbow (8)	Two hoses (5)	Screw in and tighten using adjustable wrench.
12. Two elbows (4)	Two hoses (5)	Screw in and tighten using adjustable wrench.



**NOTE**

**FOLLOW-ON MAINTENANCE:**

1. Fill transmission with fluid (TM 9-2320-270-10).
2. Check for leaks (page 4-1).

**TASK ENDS HERE**

## Section VIII. PROPELLER SHAFTS MAINTENANCE

	Page		Page
Auxiliary Transmission to Transfer Case Propeller Shaft .....	4-584	Interaxle, Transfer Case to Front Axle and Tandem Axle Propeller Shafts.....	4-590
Main Transmission to Auxiliary Transmission Propeller Shaft .....	4-574		

### MAIN TRANSMISSION TO AUXILIARY TRANSMISSION PROPELLER SHAFT

---

This task covers:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>a. Removal (page 4-575)</li> <li>b. Cleaning/Inspection (page 4-578)</li> </ul> | <ul style="list-style-type: none"> <li>c. Installation (page 4-578)</li> </ul> |
|--|--|
- 

### INITIAL SETUP

#### Tools

- Bar, pry
- Hammer, hard plastic-face
- Handle, ratchet, 1/2-inch drive
- Pliers, slip-joint, angle-nose
- Punch, 3/32-inch
- Scriber, machinist's
- Socket, 9/16-inch, 1/2-inch drive
- Socket, 5/8-inch, 1/2-inch drive
- Wood, block
- Wrench, box, 7/16-inch

#### Tools – Continued

- Wrench, box, 1 1/16-inch
- Wrench, pipe, 18-inch

#### Materials/Parts

- Lockwasher (12 required)

#### Personnel Required

- Two



MAIN TRANSMISSION TO AUXILIARY TRANSMISSION PROPELLER SHAFT - CONTINUED

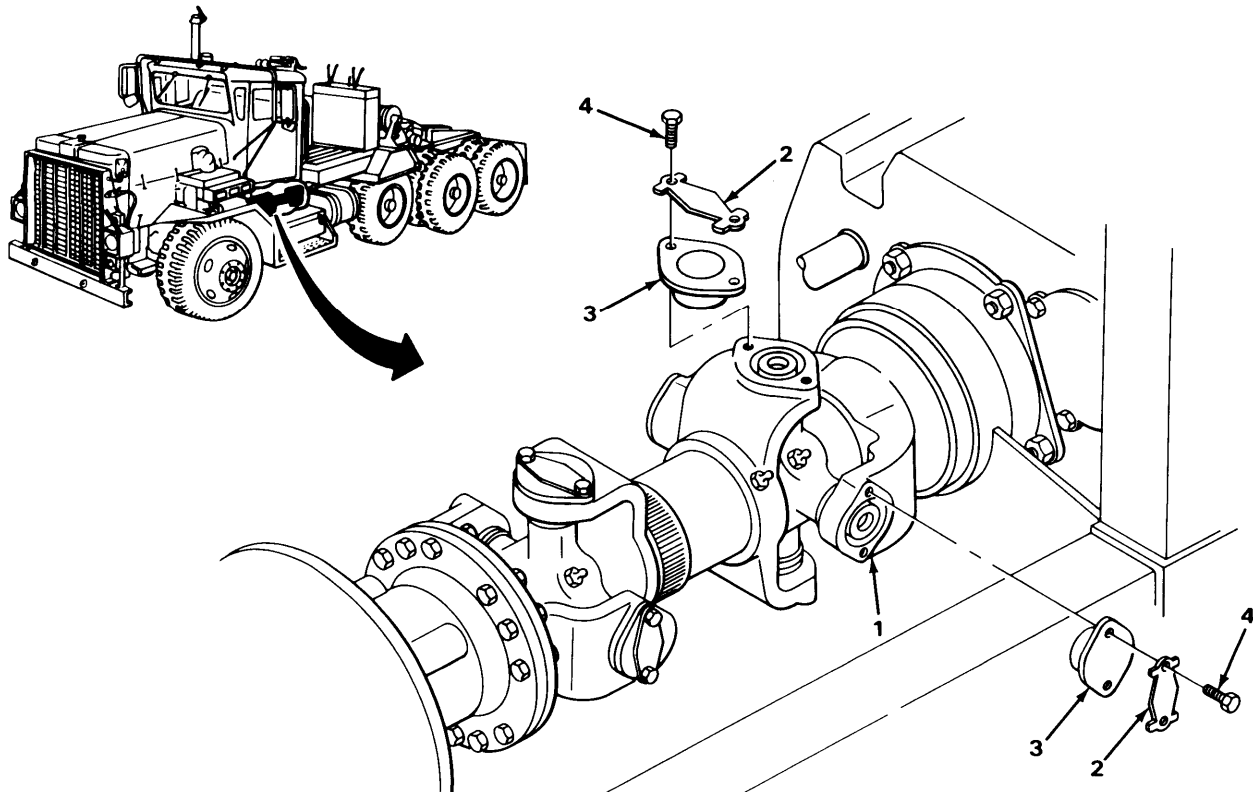
LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

REMOVAL

**NOTE**

**Jack one wheel on forward tandem axle off the ground (TM 9-2320-270-10) to relieve any windup.**

- |  |   |   |
|--|---|---|
| 1. Auxiliary transmission yoke (1)                                       | Four lock plates (2)                      | Using hammer and punch, bend down tabs.   |
| 2. Two bearing and cap assemblies (3) to auxiliary transmission yoke (1) | Eight screws (4) and four lock plates (2) | Using 9/16-inch socket and handle, unscrew and take out.  |
| 3. Auxiliary transmission yoke (1)                                       | Four bearing and cap assemblies (3)       | Using pliers, hammer, and block of wood, drive and pull out.<br>It maybe necessary to rotate drive shaft. |



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**MAIN TRANSMISSION TO AUXILIARY TRANSMISSION PROPELLER SHAFT - CONTINUED**

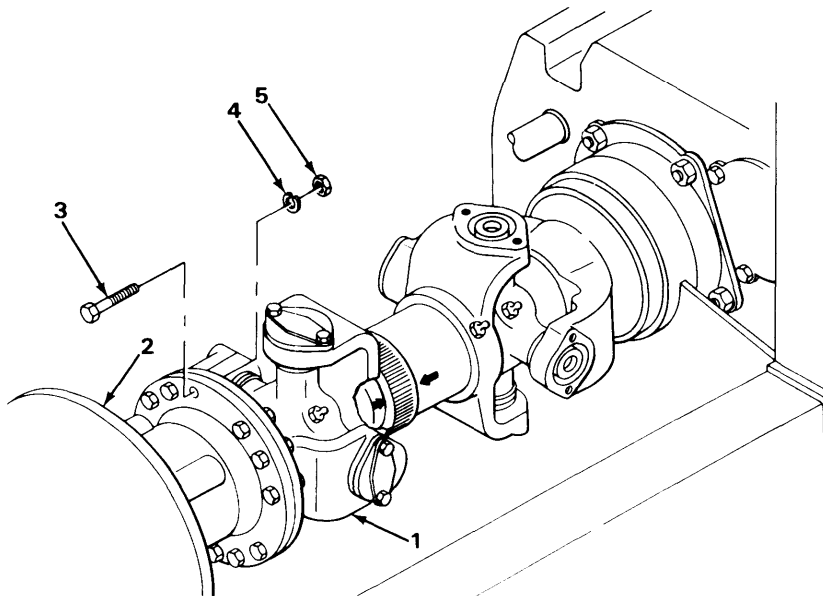
LOCATION	ITEM	ACTION	REMARKS
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REMOVAL – CONTINUED

**NOTE**

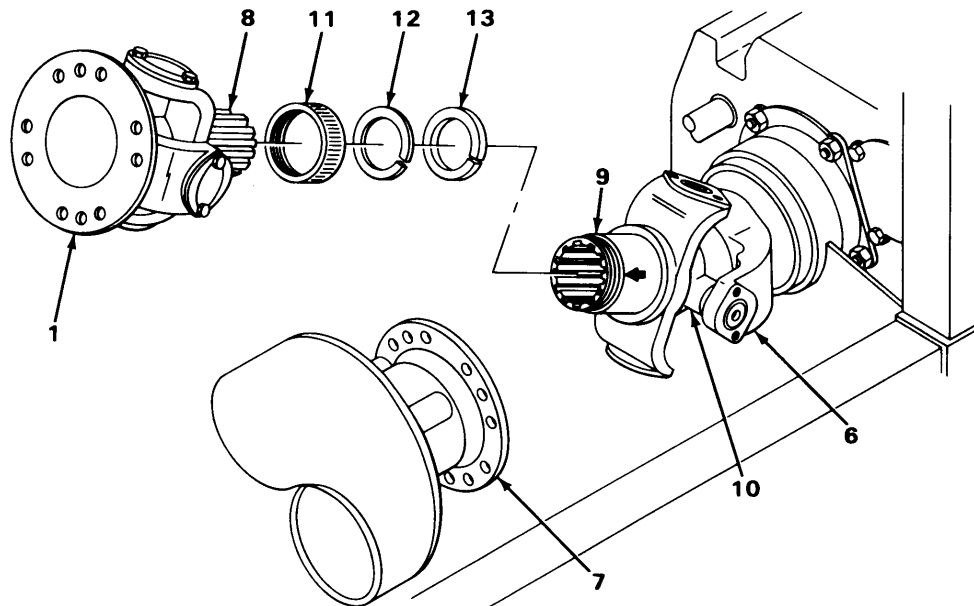
**Arrow marks are stamped on splined shaft and sleeve yoke. If arrow marks cannot be seen, use scriber to mark splined shaft and sleeve yoke.**

- |  |   |   |
|--|---|---|
| <p>4. Main transmission flange yoke (1) to main transmission (2)</p> | <p>12 screws (3), lockwashers (4), and nuts (5)</p> | <p>a. Using 5/8-inch socket, handle, and 1 1/16-inch wrench, unscrew and take out.<br/>b. Get rid of lockwashers (4).</p> |
|--|---|---|



**MAIN TRANSMISSION TO AUXILIARY TRANSMISSION PROPELLER SHAFT - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
5. Auxiliary transmission yoke (6) and main transmission flange (7)	Splined shaft (8) with sleeve yoke (9) and main transmission flange yoke (1)	a. With the aid of an assistant and using pry bar, rotate up and pull out. b. Tip cross(10) out of yoke and take out.
6.	Dust cap (11), steel washer (12), and cork washer (13)	a. Using pipe wrench, unscrew. b. Slide off sleeve yoke (9) and onto splined shaft (8).
7. Splined shaft (8)	Sleeve yoke (9) with flange yoke (1)	Pull off.
8.	Dust cap (11), steel washer (12), and cork washer (13)	Take off.

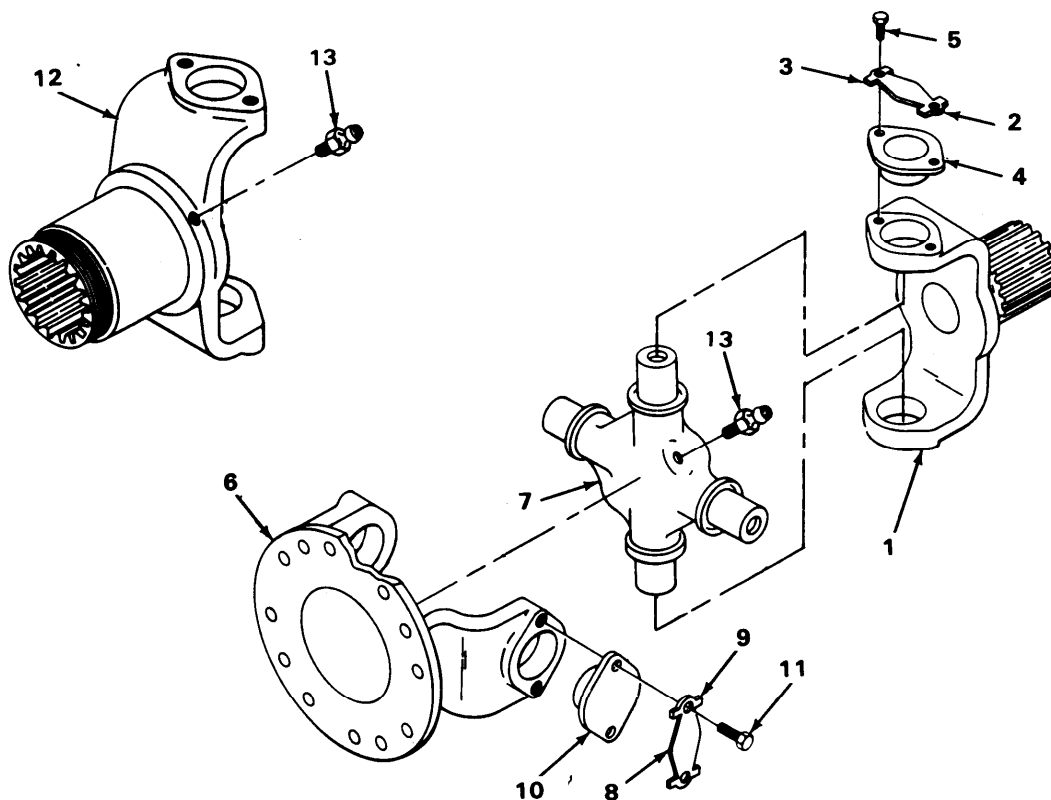


**MAIN TRANSMISSION TO AUXILIARY TRANSMISSION PROPELLER SHAFT - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL – CONTINUED</b>		
9. Splined shaft (1)	Two lock plates (2)	Using hammer and punch, bend down four tabs (3).
10. Two bearing and cap assemblies (4) to splined shaft (1)	Four screws (5) and two lock plates (2)	Using 9/16-inch socket and handle, unscrew and take out.
11. Splined shaft (1)	Two bearing and cap assemblies (4)	Using pliers, hammer, and woodblock, drive and pull out.
12.	Flange yoke (6)	Tip cross (7) out of shaft (1) and take out.
13. Flange yoke (6)	Two lock plates (8)	Using hammer and punch, bend down four tabs (9).
14. Two bearing and cap assemblies (10) to flange yoke (6)	Four screws (11) and two lock plates (8)	Using 9/16-inch socket and handle, unscrew and take out.
15. Flange yoke (6)	Two bearing and cap assemblies (10)	Using pliers, hammer, and woodblock, drive and pull out.
16.	Cross (7)	Take out.
17. Sleeve yoke (12) and two crosses (7)	Three lubrication fittings	Using 7/16-inch wrench, unscrew and take out.
<b>CLEANING/inspection</b>		
18.	All parts	Clean and inspect as shown in the general maintenance instructions (page 4-1).
<b>INSTALLATION</b>		
19. Sleeve yoke (12) and two crosses (7)	Three lubrication fittings	Screw in and tighten using 7/16-inch wrench.

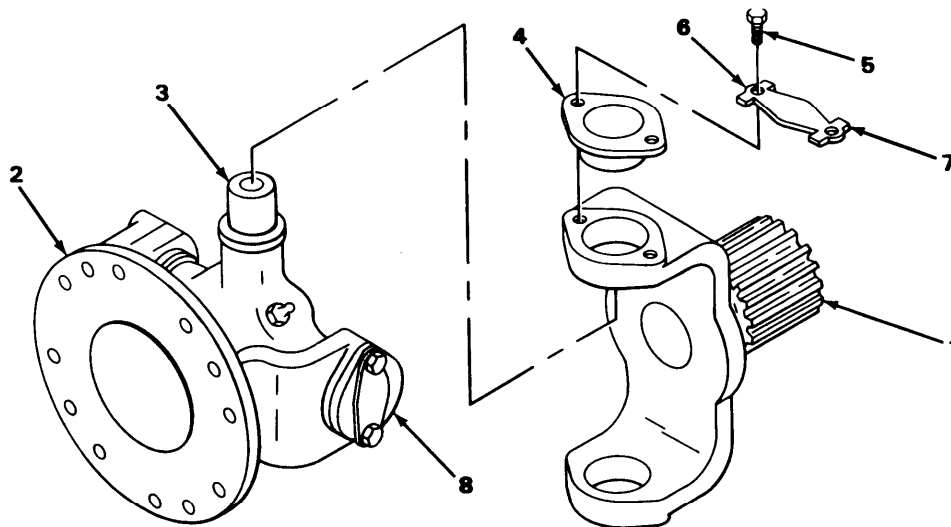
**MAIN TRANSMISSION TO AUXILIARY TRANSMISSION PROPELLER SHAFT - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
20. Flange yoke (6)	Cross (7)	Put in.
21.	Two bearing and cap assemblies (10)	Using hammer, tap in.
22. Two bearing and cap assemblies (10) to flange yoke (6)	Four screws (11) and two lock plates (8)	Screw in and tighten using 9/16-inch socket and handle.
23. Flange yoke (6)	Two lock plates (8)	Using hammer and punch, bend up two tabs (9).



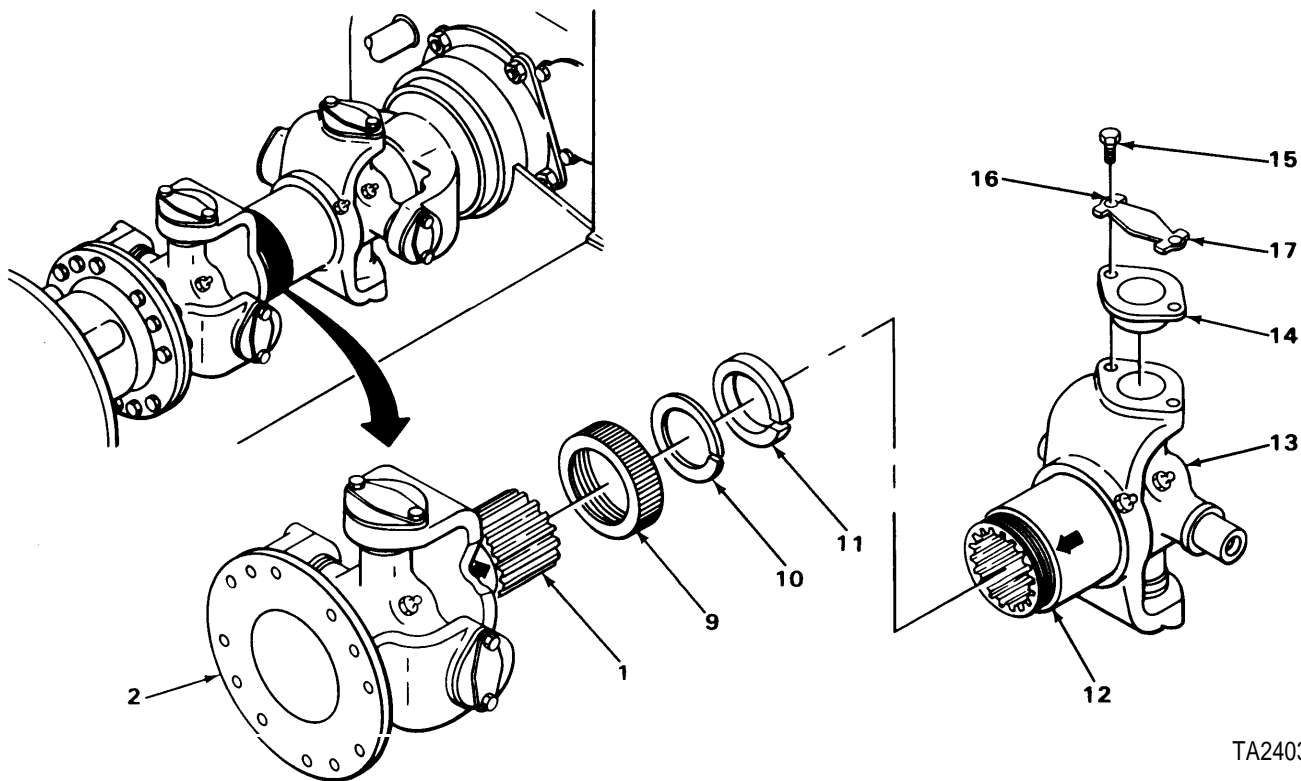
**MAIN TRANSMISSION TO AUXILIARY TRANSMISSION PROPELLER SHAFT - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
INSTALLATION – CONTINUED		
24. Splined shaft (1)	Flange yoke (2)	Put cross (3) into splined shaft (1).
25.	Two bearing and cap assemblies (4)	Using hammer, tap in.
26. Two bearing and cap assemblies (4) to splined shaft (1)	Four screws (5) and two lock plates (6)	Screw in and tighten using 9/16-inch socket and handle.
27. Splined shaft (1)	Two lock plates (6)	Using hammer and punch, bend up tabs (7).
28. Splined shaft (1) and flange yoke (2)	Cross (3), and four bearing and cap assemblies (4) and (8)	Rotate and check operation of joints. If any joints bind, tap with hammer to relieve pressure.



**MAIN TRANSMISSION TO AUXILIARY TRANSMISSION PROPELLER SHAFT CONTINUED**

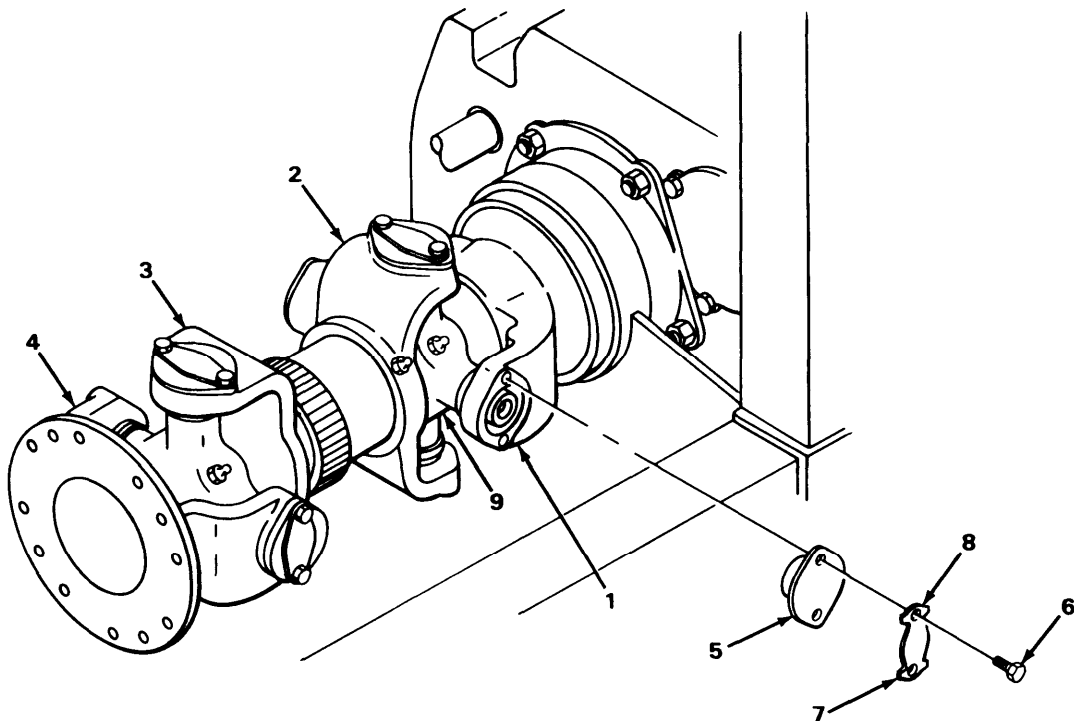
LOCATION	ITEM	ACTION REMARKS
29. Splined shaft (1)	Dust cap (9), steel washer (10), and cork washer (11)	Put on.
30. Sleeve yoke (12)	Cross (13)	Put into sleeve yoke (12).
31.	Two bearing and cap assemblies (14)	Using hammer, tap in.
32. Two bearing and cap assemblies to sleeve yoke (12)	Four screws (15) and two lock plates (16)	Screw in and tighten using 9/16-inch socket and handle.
33. Sleeve yoke (12)	Two lock plates (16)	Using hammer and punch, bend up tabs (17).
34.	Splined shaft (1), and flange yoke (2)	a. Lineup marks. b. Push splined shaft (1) into sleeve yoke (12) as far as possible.
35.	Dust cap (9), steel washer (10), and cork washer (11)	Screw on and tighten using pipe wrench.



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**MAIN TRANSMISSION TO AUXILIARY TRANSMISSION PROPELLER SHAFT - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION – CONTINUED</b>		
38. Auxiliary transmission yoke (1)	Sleeve yoke (2) with splined shaft (3) and flange yoke (4)	With the aid of an assistant, and using pry bar, place in position.
37. Auxiliary transmission yoke (1)	Four bearing and cap assemblies (5)	Using hammer, tap in. <b>It maybe necessary to rotate drive shaft.</b>
38. Two bearing and cap assemblies (5) to auxiliary transmission yoke (1)	Eight screws (6) and four lock plates (7)	Screw in and tighten using 9/16-inch socket and handle.
39. Auxiliary transmission yoke (1)	Four lock plates (7)	Using hammer and punch, bend up tabs (8).
40. Sleeve yoke (2) and auxiliary transmission yoke (1)	Cross (9) and four bearing and cap assemblies (5)	Rotate and check operation of joints. <b>If any joints bind, tap with hammer to relieve pressure.</b>

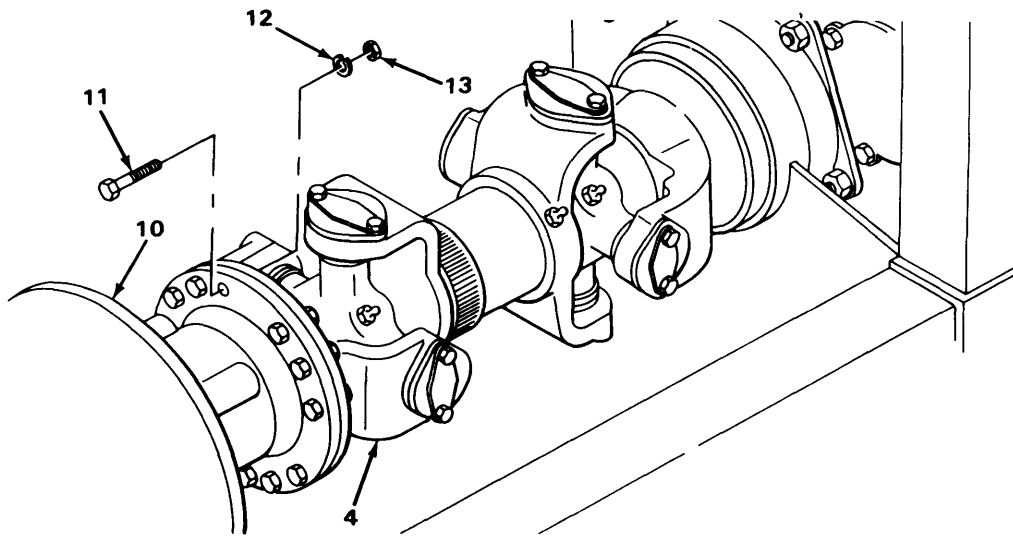


TA240381



**MAIN TRANSMISSION TO AUXILIARY TRANSMISSION PROPELLER SHAFT - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
41. Flange yoke (4) to main trans- mission (10)	12 screws (11), new lockwashers (12) and nuts (13)	a. With help from assistant, screw in and tighten using 5/8-inch socket, handle, and 1 1/18-inch wrench. b. Remove jack (TM 9-2320-270-10).



**NOTE**

FOLLOW-ON MAINTENANCE: Lubricate propeller shaft (LO 9-2320-270-12).

**TASK ENDS HERE**

**AUXILIARY TRANSMISSION TO TRANSFER CASE PROPELLER SHAFT**

---

This task covers:

- a. Removal (page 4-584)
  - b. Cleaning/Inspection (page 4-586)
  - c. Installation (page 4-586)
- 

**INITIAL SETUP**

Tools

- Bar, pry
- Woodblock
- Punch, 3/32-inch
- Hammer, hard plastic-face
- Handle, ratchet, 1/2-inch drive
- Pliers, slip-joint, angle-nose
- Scriber, machinist's
- Socket, 5/8-inch, 1/2-inch drive
- Socket, 15/16-inch, 1/2-inch drive
- Wrench, box, 7/16-inch
- Wrench, torque, 1/2-inch drive

Tools – Continued

- Wrench, box, 15/16-inch
- Wrench, pipe, 18-inch
- Materials/Parts
- Lockwashers (eight required)

Personnel Required

Two

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LOCATION	ITEM	ACTION	REMARKS
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**REMOVAL**

**NOTE**

**Jack one wheel on forward tandem axle off ground (TM 9-2320-270-10) to relieve any windup.**

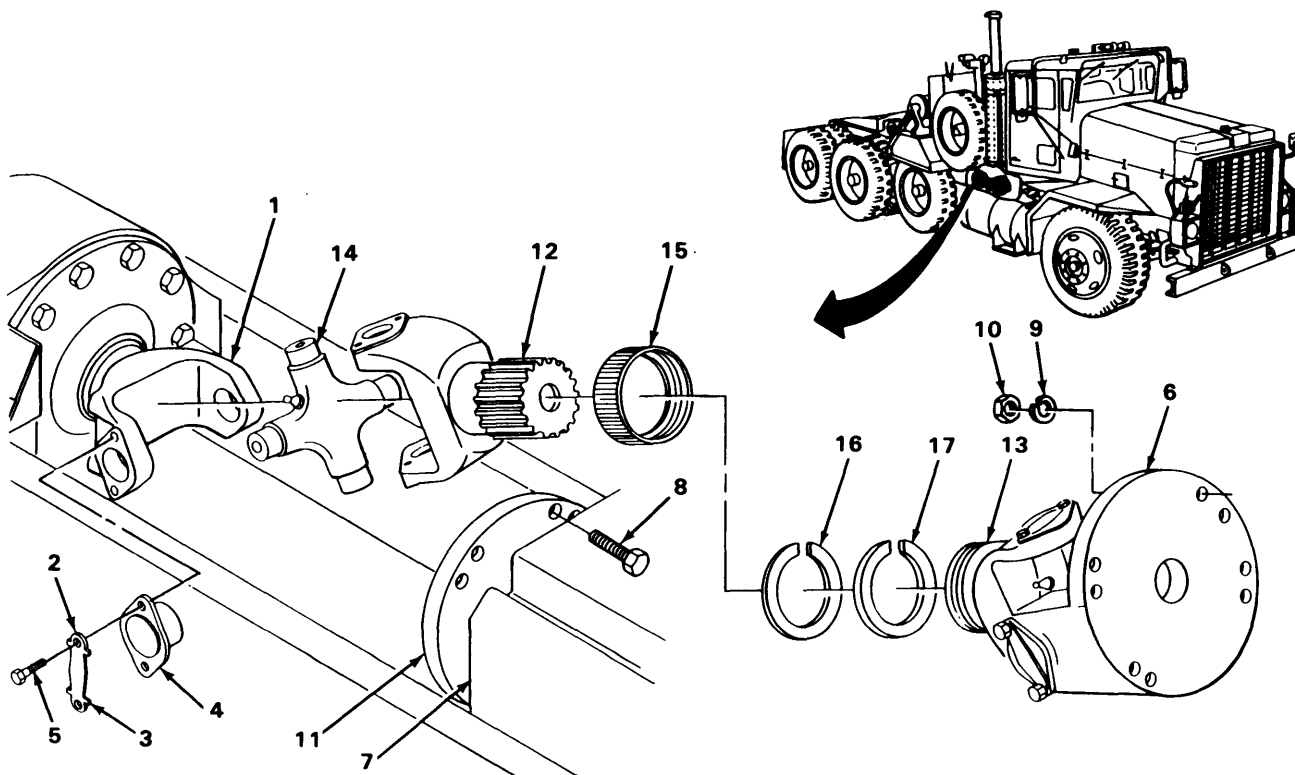
- |    |  |   |  |
|----|--|---|--|
| 1. | Transfer case yoke (1)                                       | Four lock plates (2)                      | Using hammer and punch, bend down four tabs (3).   |
| 2. | Two bearing and cap assemblies (4) to transfer case yoke (1) | Eight screws (5) and four lock plates (2) | Using 5/8-inch socket and handle, unscrew and take out.  |
| 3. | Transfer case yoke (1)                                       | Four bearing and cap assemblies (4)       | Using pliers, hammer and woodblock, drive and pull out.<br>It maybe necessary to rotate drive shaft. |

**NOTE**

**Arrow marks are stamped on sleeve yoke and splined shaft. If arrow marks cannot be seen, use scriber to mark sleeve yoke and splined shaft.**

**AUXILIARY TRANSMISSION TO TRANSFER CASE PROPELLER SHAFT' - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
4. Flange yoke (6) to auxiliary transmission (7)	Eight screws (8), lockwashers (9), and nuts (10)	a. Using 15/16-inch socket, handle, and 15/16-inch wrench, unscrew and take out. b. Get rid of lockwashers (9).
5. Transfer case yoke (1) and auxiliary transmission flange yoke (11)	Splined shaft (12) with sleeve yoke (13) and flange yoke (6)	a. With the aid of an assistant, and using pry bar, rotate up and take out. b. Tip cross (14) out of yoke (1) and take out.
6.	Dust cap (15), steel washer (16) and cork washer (17)	a. Using pipe wrench, unscrew. b. Slide off sleeve yoke(13) and onto splined shaft (12).
7. Splined shaft (12)	Sleeve yoke (13) with flange yoke (6)	Pull off.
8.	Dust cap (15), steel washer (16), and cork washer (17)	Take off.

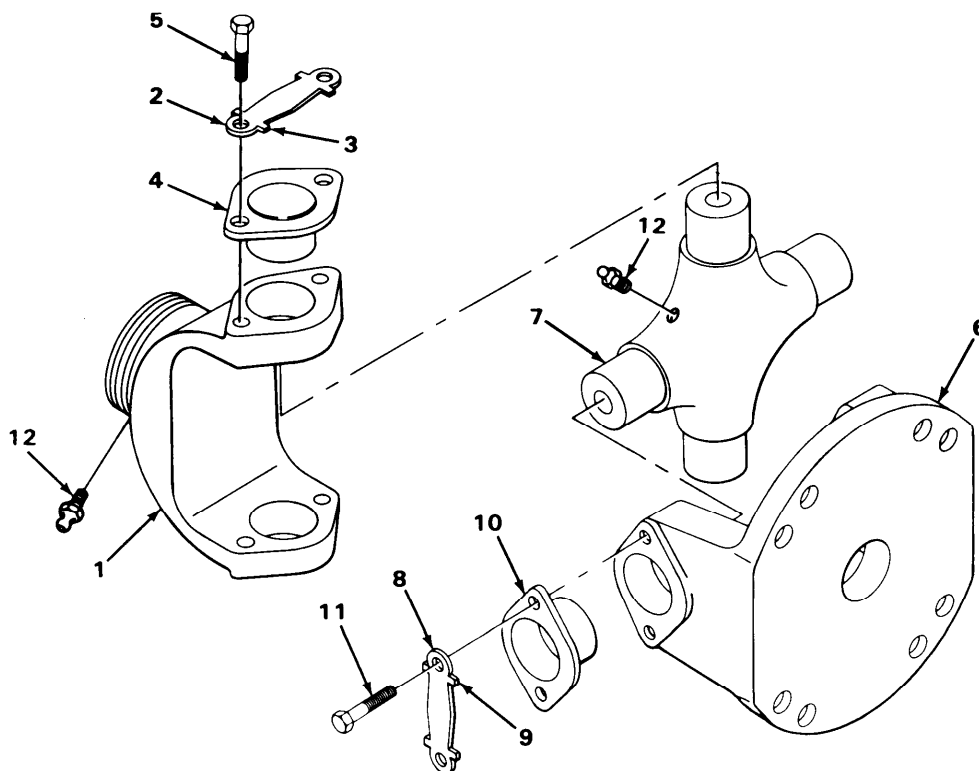


**AUXILIARY TRANSMISSION TO TRANSFER CASE PROPELLER SHAFT CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL - CONTINUED</b>		
9. Sleeve yoke (1)	Two lock plates (2)	Using hammer and punch, bend down four tabs (3).
10. Two bearing and cap assemblies (4) to sleeve yoke (1)	Four screws (5) and two lock plates (2)	Using 5/8-inch socket and handle, unscrew and take out.
11. Sleeve yoke (1)	Two bearing and cap assemblies (4)	Using pliers, hammer and woodblock, drive and pull out.
12.	Flange yoke (6)	Tip cross (7) out of yoke (1) and take out.
13. Flange yoke (6)	Two lock plates (8)	Using hammer and punch, bend down four tabs (9).
14. Two bearing and cap assemblies (10) to flange yoke (6)	Four screws (11) and two lock plates (8)	Using 5/8-inch socket and handle, unscrew and take out.
15. Flange yoke (6)	Two bearing and cap assemblies (10)	Using pliers, hammer and woodblock, drive and pull but.
16.	Cross (7)	Tip out.
17. Sleeve yoke (1) and two crosses (7)	Three lubrication fittings (12)	Using 7/16-inch wrench, unscrew and take out.
<b>CLEANING/INSPECTION</b>		
18.	All parts	Clean and inspect as shown in the general maintenance instructions (page 4-1).
<b>INSTALLATION</b>		
19. Sleeve yoke (1) and two crosses (7)	Three lubrication fittings (12)	Screw in and tighten using 7/16-inch wrench.
20. Flange yoke (6)	Cross (7)	Center and put in.
21.	Two bearing and cap assemblies (10)	Using hammer, tap in.

**AUXILIARY TRANSMISSION TO TRANSFER CASE PROPELLER SHAFT - CONTINUED**

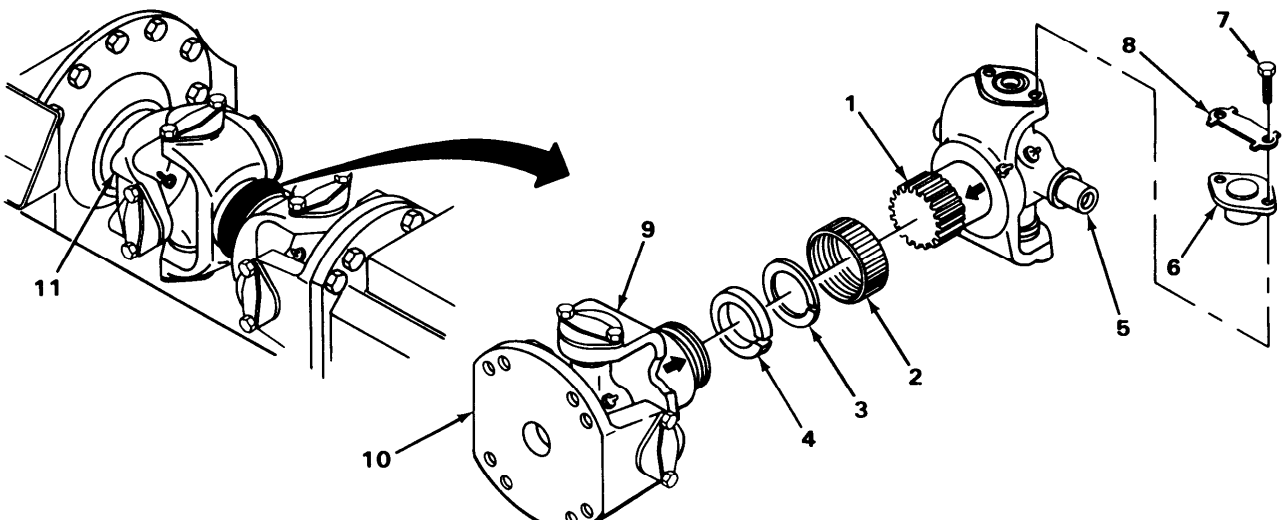
LOCATION	ITEM	ACTION REMARKS
22. Two bearing and cap assemblies (10) to flange yoke (6)	Four screws (11) and two lock plates (8)	Screw in and tighten using 5/8-inch socket and handle.
23. Flange yoke (6)	Two lock plates (8)	Using hammer and punch, bend up tabs.
24. Sleeve yoke (1)	Flange yoke (6)	Put cross (7) into sleeve yoke (1).
25.	Two bearing and cap assemblies (4)	Using hammer, tap in.
28. Two bearing and cap assemblies (4) to sleeve yoke (1)	Four screws (5) and two lock plates (2)	Screw in and tighten using 5/8-inch socket and handle.
27. Sleeve yoke (1)	Two lock plates (2)	Using hammer and punch, bend up tabs.
28. Sleeve yoke (1) and flange yoke (6)	Cross (7) and four bearing and cap assemblies (4) and (10)	Rotate and check operation of joints. If any joints bind, tap with hammer to relieve pressure.



TA240384

**AUXILIARY TRANSMISSION TO TRANSFER CASE PROPELLER SHAFT - CONTINUED**

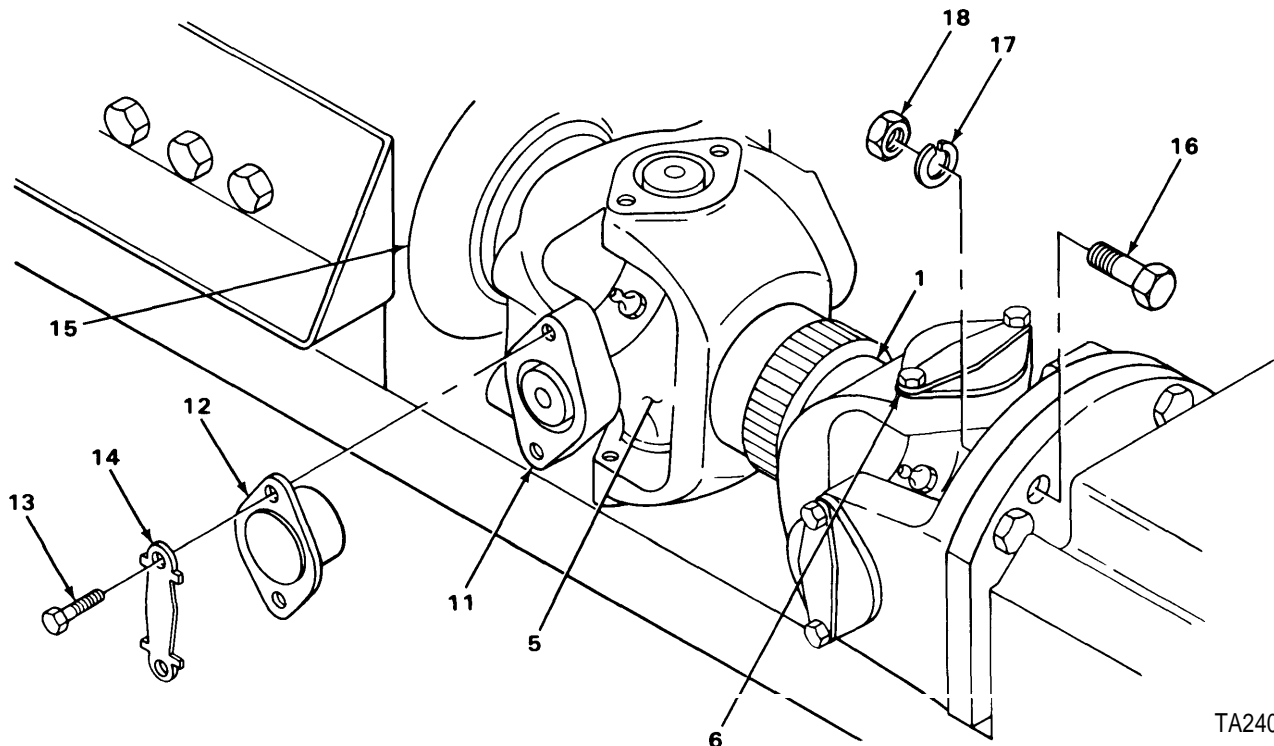
LOCATION	ITEM	ACTION REMARKS
INSTALLATION - CONTINUED		
29. Splined shaft (1)	Dust cap (2), steel washer (3), and cork washer (4)	Put on.
30.	Cross (5)	Put in.
31.	Two bearing and cap assemblies (6)	Using hammer, tap in.
32. Two bearing and cap assemblies (6) to splined shaft (1)	Four screws (7) and two lock plates (8)	Screw in and tighten using 5/8-inch socket and handle.
33. Splined shaft (2)	Two lock plates (8)	Using hammer and punch, bend up tabs.
34.	Sleeve yoke (9) and flange yoke (10)	Line up marks and push on.
35. Sleeve yoke (9)	Dust cap (2), steel washer (3), and cork washer (4)	Screw on and tighten using pipe wrench.
36. Transfer case yoke (11)	Splined shaft (1) with sleeve yoke (9) and flange yoke (10)	With help from assistant, put in position.



TA240385

**AUXILIARY TRANSMISSION TO TRANSFER CASE PROPELLER SHAFT - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
37. Transfer case yoke (11)	Two bearing and cap assemblies (12)	Using hammer, tap in.	<b>It maybe necessary to rotate drive shaft.</b>
38. Two bearing and cap assemblies (12) to transfer case yoke (11)	Four screws (13) and two lock plates (14)	Screw in and tighten using 5/8-inch socket and handle.	
39. Transfer case yoke (11)	Two lock plates (14)	Using hammer and punch, bend up tabs.	
40. Splined shaft (1) and transfer case yoke (11)	Cross (5) and four bearing and cap assemblies (6) and (12)	Rotate and check operation of joints.	<b>If any joints bind, tap with hammer to relieve pressure.</b>
41. Flange yoke (10) to transmission (15)	Eight screws (16), new lockwashers (17), and nuts (18)	a. Screw in and tighten using 15/16-inch socket, handle, and 15/16-inch wrench. b. Using 15/16-inch socket, torque wrench, and 15/16-inch wrench, torque to 45-48 ft-lb (61-45 N•m) c. Remove jack (TM 9-2320-270-10).	



TA240386

**AUXILIARY TRANSMISSION TO TRANSFER CASE PROPELLER SHAFT CONTINUED**

INSTALLATION – CONTINUED

**NOTE**

FOLLOW-ON MAINTENANCE: Lubricate propeller shaft (LO 9-2320-270-12).

**TASK ENDS HERE**

**INTERAXLE, TRANSFER CASE TO FRONT AXLE AND TANDEM AXLE PROPELLER SHAFTS**

---

This task covers:

- a. Removal (page 4-590)
  - b. Cleaning/Inspection (page 4-594)
  - c. Installation (page 4-594)
- 

**INITIAL SETUP**

Tools

- Bar, pry
- Block, hydraulic jack support
- Hammer, hand
- Handle, ratchet, 1/2-inch drive
- Jack, hydraulic, 10 ton
- Pliers, slip-joint, angle-nose
- Punch, 3/32-inch
- Scriber, machinist's
- Socket, 9/16-inch, 1/2-inch
- Woodblock 2" X 4"

Tools – Continued

- Wrench, box, 5/16-inch
- Wrench, box, 7/16-inch
- Wrench, pipe, 16-inch

Personnel Required

Two

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LOCATION	ITEM	ACTION REMARKS
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**NOTE**

**Interaxle, transfer case to front axle, and transfer case to tandem axle propeller shafts are maintained the same way. Transfer case to front axle propeller shaft is shown.**

**REMOVAL**

- |                           |  |  |
|---------------------------|--|--|
| <p>1. Sleeve yoke (1)</p> | <p>Dust cap (2), steel washer (3), and cork washer (4)</p> | <ul style="list-style-type: none"> <li>a. Using pipe wrench and pry bar, unscrew.</li> <li>b. Slide onto splined shaft (5).</li> </ul> |
|---------------------------|--|--|



**INTERAXLE, TRANSFER CASE TO FRONT AXLE AND TANDEM AXLE PROPELLER SHAFTS - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
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**NOTE**

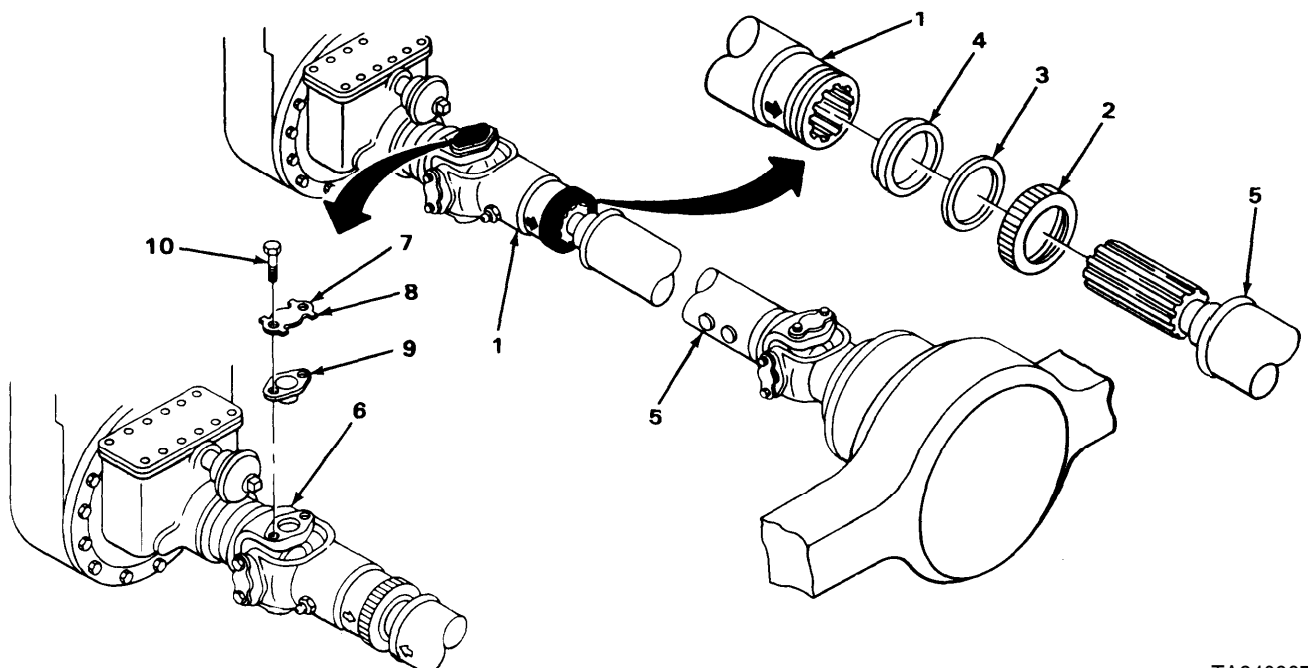
If removing transfer case to front axle propeller shaft, jack one wheel or front axle off ground (TM 9-2320-270-10) to relieve windup.

If removing interaxle propeller shaft, jack one wheel on either tandem axle off ground (TM 9-2320-270-10) to relieve windup.

If removing transfer case to tandem axle propeller shaft, jack one wheel on forward tandem axle off ground (TM 9-2320-270-10) to relieve windup.

Arrow marks are stamped on sleeve yoke and splined shaft. If arrow marks cannot be seen, use scriber to mark sleeve yoke and splined shaft.

- |   |  |  |
|---|--|--|
| 2. Transfer case yoke (6)                                       | Two lock plates (7)                      | Using hammer and punch, bend down four tabs (11).                    |
| 3. Two bearing and cap assemblies (9) to transfer case yoke (6) | Four screws (10) and two lock plates (7) | Using 9/16-inch socket and handle, unscrew and take out.             |
| 4. Transfer case yoke (6)                                       | Two bearing and cap assemblies (9)       | Using jack and woodblock push out. It maybe necessary to use pliers. |



TA240387

**INTERAXLE, TRANSFER CASE TO FRONT AXLE AND TANDEM AXLE PROPELLER SHAFTS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
REMOVAL- CONTINUED		
5. Transfer case yoke (1) and splined shaft (2)	Sleeve yoke (3)	Tip cross (4) out of transfer case yoke (1) and pull sleeve yoke (3) off shaft (2).
6. Splined shaft (2)	Dust cap (5), steel washer (6), and cork washer (7)	Take off.
7. Front axle yoke (8)	Two lock plates (9)	Using hammer and punch, bend down four tabs (10).
8. Two bearing and cap assemblies (11) to front axle yoke (8)	Four screws (12) and two lock plates (9)	Using 9/16-inch socket and handle, unscrew and take out.
9. Front axle yoke (8)	Two bearing and cap assemblies (11)	Using jack and woodblock, push out. It maybe necessary to use pliers to turn and pull out.

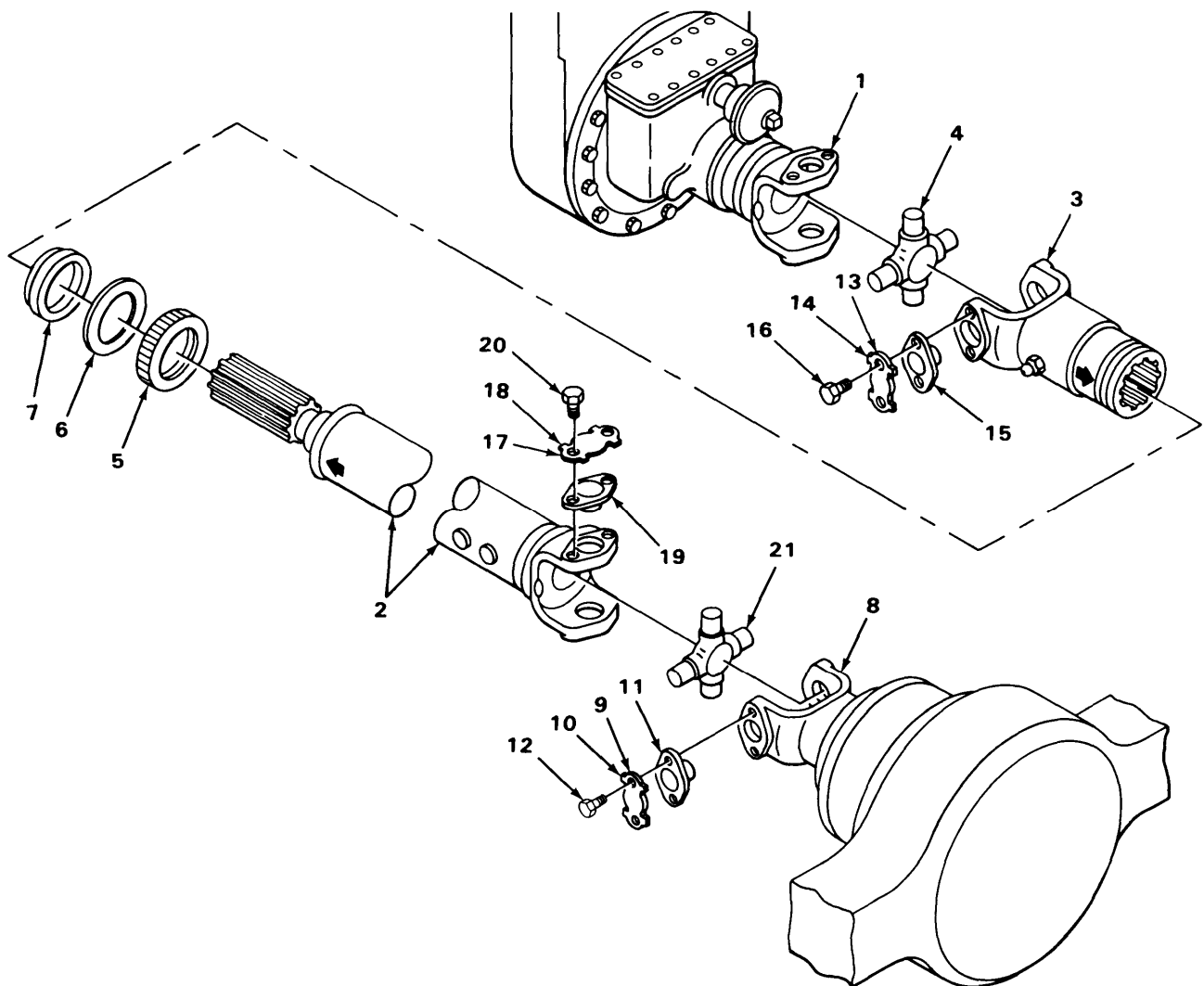
**WARNING**

Some parts are heavy. Be careful when handling them. Lifting equipment is needed when parts weigh over 50 pounds (23 kg) for a single person lift, over 100 pounds (45 kg) for a two person lift, and over 150 pounds (68 kg) for a three or more person lift. Do not try to handle heavy parts without lifting equipment. Keep clear of heavy parts supported only by lifting equipment. Failure to observe this precaution could cause serious injury or death of personnel.

10. Front axle yoke (8)	Splined shaft (2)	Tip cross (4) out of yoke (8) and take out.
11. Sleeve yoke (3)	Two lock plates (13)	Using hammer and punch, bend down four tabs (14).
12. Two bearing and cap assemblies (15) to sleeve yoke (3)	Four screws (16) and two lock plates (13)	Using 9/16-inch socket and handle, unscrew and take out.
13. Sleeve yoke (3)	Two bearing and cap assemblies (15)	Using hammer and woodblock, drive out.
14.	Cross (6)	Tip out.
15. Splined shaft (2)	Two lock plates (17)	Using hammer and punch, bend down four tabs (18).

**INTERAXLE, TRANSFER CASE TO FRONT AXLE AND TANDEM AXLE PROPELLER SHAFTS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
16. Two bearing and cap assemblies (19) to splined shaft (2)	Four screws (20) and two lock plates (17)	Using 9/16-inch socket and handle, un-screw and take out.
17. Splined shaft (2)	Two bearing and cap assemblies (19)	Using hammer and woodblock, drive out.
18.	Cross (21)	Tip out.



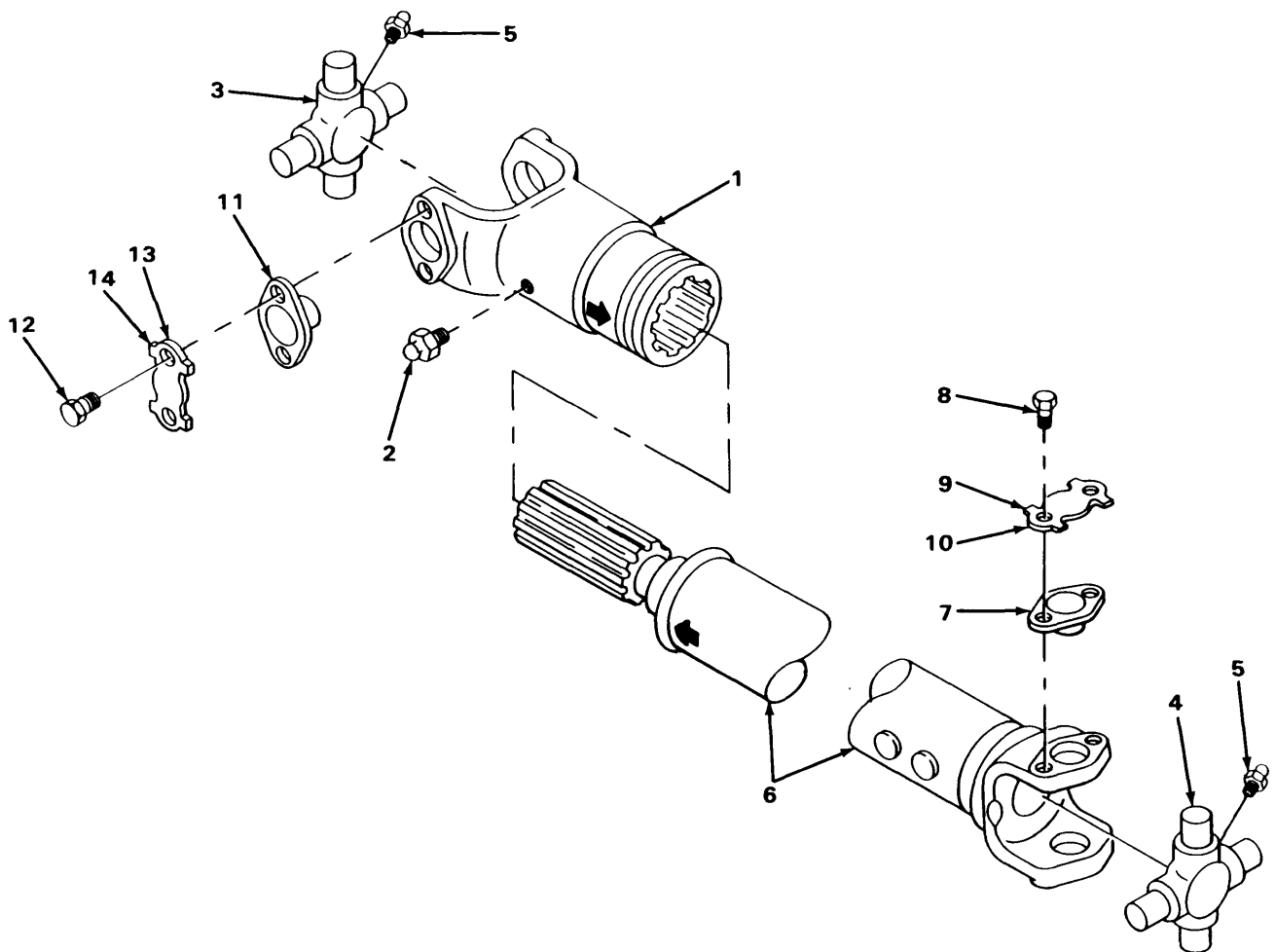
## INTERAXLE, TRANSFER CASE TO FRONT AXLE AND TANDEM AXLE PROPELLER SHAFTS - CONTINUED

LOCATION	ITEM	ACTION REMARKS	
REMOVAL – CONTINUED			
19.	Sleeve yoke (1)	Lubrication fitting (2)	Using 7/16-inch wrench, unscrew and take out.
20.	Two crosses (3) and (4)	Two lubrication fittings (5)	Using 5/16-inch wrench, unscrew and take out.
CLEANING/inspection			
21.	All parts		Clean and inspect as shown in the general maintenance instructions (page 4-1).
INSTALLATION			
22.	Sleeve yoke (1)	Lubrication fitting (2)	Screw in and tighten using 7/16-inch wrench.
23.	Two crosses (3) and (4)	Two lubrication fittings (5)	Screw in and tighten using 5/16-inch wrench.
24.	Splined shaft (6)	Cross (4)	Put in.
25.		Two bearing and cap assemblies (7)	Using hammer, tap in.
26.	Two bearing and cap assemblies (7) to splined shaft (6)	Four screws (8) and two lock plates (9)	Screw in and tighten using 9/16-inch socket and handle.
27.	Splined shaft (6)	Two lock plates (9)	Using hammer and punch, bend up tabs (10).
28.	Sleeve yoke (1)	Cross (3)	Put in.
29.		Two bearing and cap assemblies (11)	Using hammer, tap in.
30.	Two bearing and cap assemblies (11) to sleeve yoke (1)	Four screws (12) and two lock plates (13)	Screw in and tighten using 9/16-inch socket and handle.
31.	Sleeve yoke (1)	Two lock plates (5)	Using hammer and punch, bend up tabs (14).

**INTERAXLE, TRANSFER CASE TO FRONT AXLE AND TANDEM AXLE PROPELLER SHAFT - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
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<p><b>32.</b> Sleeve yoke (1) and splined shaft (6)</p>	<p>Two crosses (4) and (3) and four bearing and cap assemblies (7) and (11)</p>	<p>Rotate and check operation of joints. If any joints bind, tap with hammer to relieve pressure.</p>
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**INTERAXLE, TRANSFER CASE TO FRONT AXLE AND TANDEM AXLE PROPELLER SHAFTS - CONTINUED**

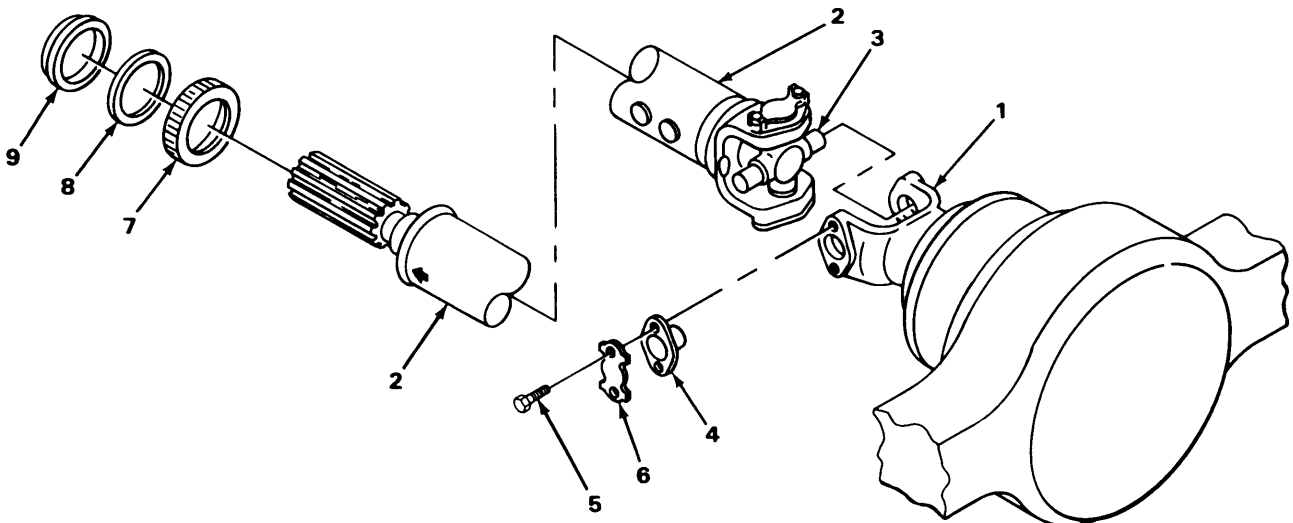
LOCATION	ITEM	ACTION	REMARKS
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INSTALLATION – CONTINUED

**W A R N I N G**

Some parts are heavy. Be careful when handling them. Lifting equipment is needed when parts weigh over 50 pounds (23 kg) for a single person lift, over 100 pounds (45 kg) for a two person lift, and over 150 pounds (68 kg) for a three or more person lift. Do not try to handle heavy parts without lifting equipment. Keep clear of heavy parts supported only by lifting equipment. Failure to observe this precaution could cause serious injury or death of personnel.

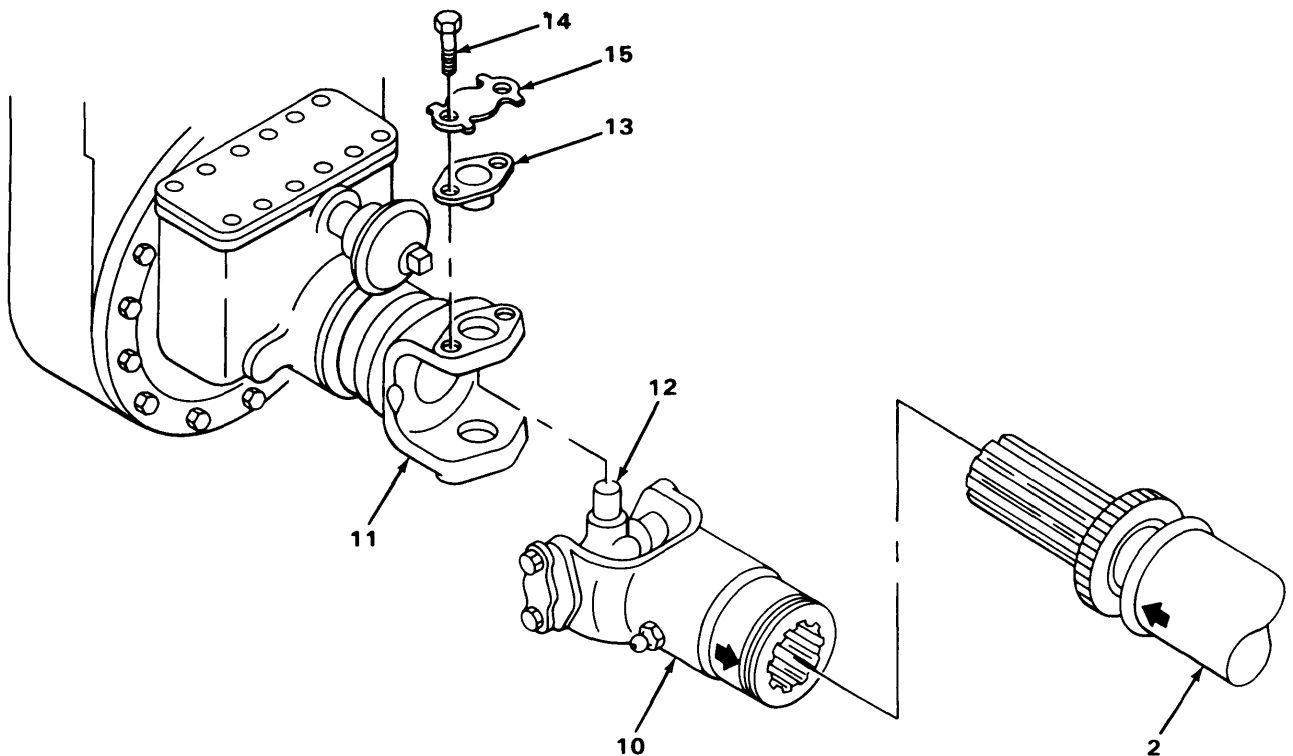
- |     |   |   |   |
|-----|---|---|---|
| 33. | Front axle yoke (1)                                       | Splined shaft (2)                                   | Put cross (3) into front axle yoke (1).   |
| 34. |   | Two bearing and cap assemblies (4)                  | Using hammer, tap in.   |
| 35. | Two bearing and cap assemblies (4) to front axle yoke (1) | Four screws (5) and two lock plates (6)             | Screw in and tighten using 9/16-inch socket and handle.   |
| 36. | Front axle yoke (1)                                       | Two lock plates (6)                                 | Using hammer and punch, bend up tabs.   |
| 37. | Splined shaft (2) and front axle yoke (1)                 | Cross (3) and two bearing and cap assemblies (4)    | Rotate and check operation of joints.<br>If any joints bind, tap with hammer to relieve pressure. |
| 33. | Splined shaft (2)   | Dust cap (7), steel washer (8), and cork washer (9) | Put on.   |



TA240390

**INTERAXLE, TRANSFER CASE TO FRONT AXLE AND TANDEM AXLE PROPELLER SHAFTS - CONTINUED**

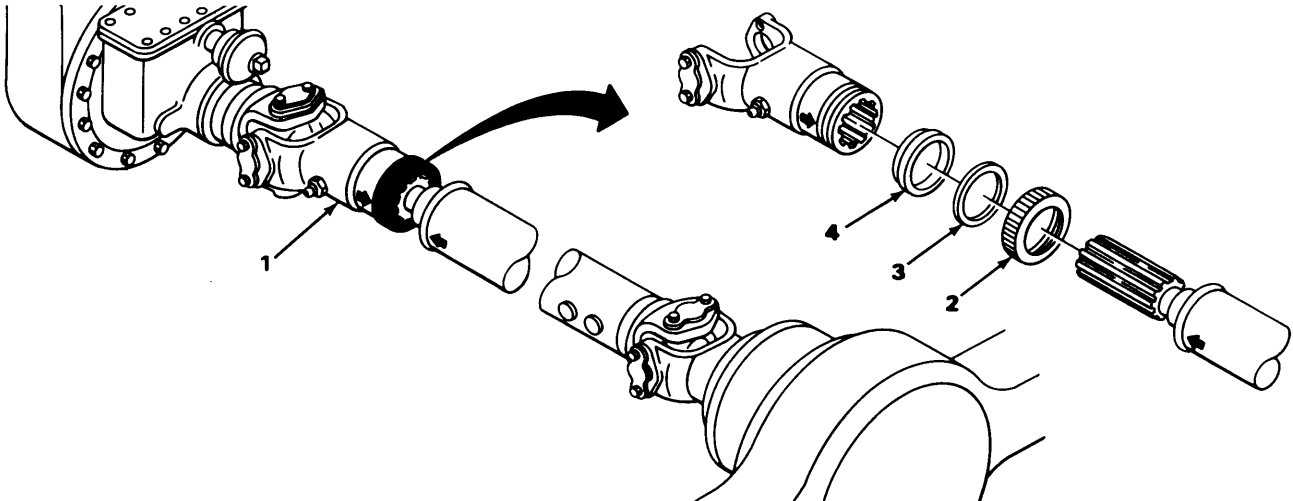
LOCATION	ITEM	ACTION	REMARKS
30. Splined shaft (2)	Sleeve yoke (10)	Line up marks and push on.	
40. Transfer case yoke (11)	Sleeve yoke (10)	Put cross (12) in.	
41.	Two bearing and cap assemblies (13)	Using hammer, tap in.	
42. Two bearing and cap assemblies (13) to transfer case yoke (11)	Four screws (14) and two lock plates (15)	Screw in and tighten using 9/16-inch socket and handle.	
43. Transfer case yoke (11)	Two lock plates (15)	Using hammer and punch, bend up tabs.	
44. Sleeve yoke (10) and transfer case yoke (11)	Cross (12) and two bearing and cap assemblies (13)	Rotate and check operation of joints. <b>If any joint bind, tap with hammer to relieve pressure.</b>	



TA240391

**INTERAXLE TRANSFER CASE TO FRONT AXLE AND TANDEM AXLE PROPELLER SHAFT - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
45. Sleeve yoke (1)	Dust cap (2), steel washer (3), and cork washer (4)	a. Screw onto sleeve yoke (1) and tighten using pipe wrench and pry bar. b. Remove jack (TM 92320-270-10).



**NOTE**

FOLLOW-ON MAINTENANCE: Lubricate propeller shaft (LO 9-2320-270-12).

**TASK ENDS HERE**

**Section IX. FRONT AXLE MAINTENANCE**

Page

Front Axle Assembly ..... 4-598

**FRONT AXLE ASSEMBLY**

This task covers:

Service (page 4-598)

**INITIAL SETUP**

Tools

Personnel Required

- Extension, 5-inch, 1/2-inch drive
- Handle, ratchet, 1/2-inch drive
- Pan, drain
- Wrench, open-end, 1 1/16-inch

One

TA240392



FRONT AXLE ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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SERVICE

NOTE

Drain oil after truck has been driven and oil is warm.

1. Front axle differential (1)

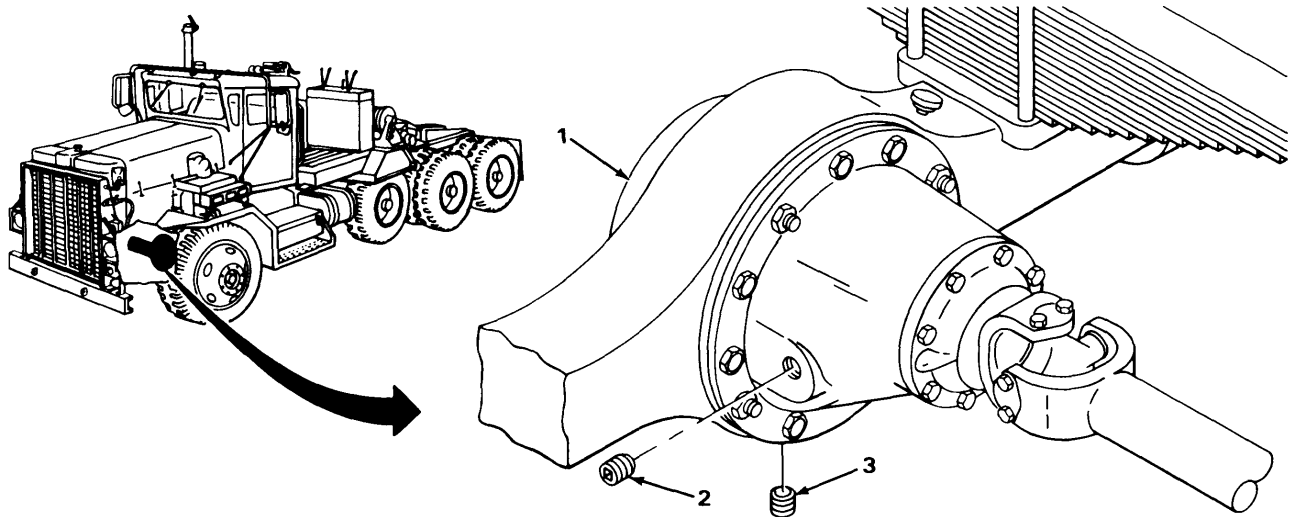
Fill plug (2)

- a. Put drain pan underneath.
- b. Using extension and handle, unscrew and take out.
- c. Look for metal chips on plug (2).  
**If metal chips are found, notify direct support maintenance.**

2.

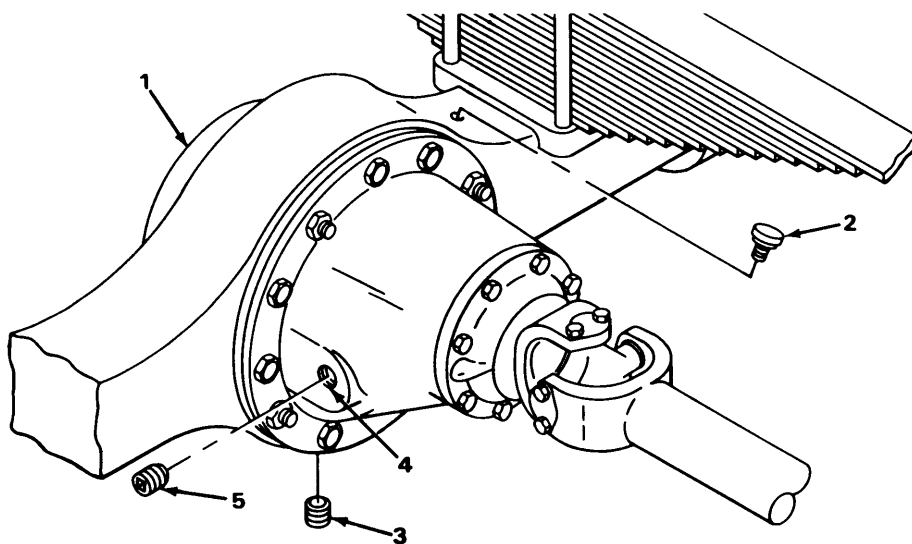
Drainplug (3)

- a. Put drain pan underneath.
- b. Using extension and handle, unscrew and take out.
- c. Let lubricating oil drain out.
- d. Look for metal chips on plug (3).  
**If metal chips are found, notify direct support maintenance.**
- e. Get rid of fluid (page 4-1).



**FRONT AXLE ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
SERVICE - CONTINUED		
3. Front axle (1)	Breather (2)	Using wrench, unscrew and take out.
4.	All parts	Clean and inspect as shown in the general maintenance instructions (page 4-1).
5.	Breather (2)	Screw in and tighten using wrench.
6.	Drainplug (3)	Screw in until flush using extension and handle.
7.	Fill hole (4)	Fill (LO 9-2320-270-12).
8.	Fill plug (5)	Screw in until flush using extension and handle.



**TASK ENDS HERE**

**Section X. TANDEM AXLE MAINTENANCE**

	Page		Page
Axle Shaft.....	4-603	Filter .....	4-605
Breather Valve.....	4-607	Tandem Axle Assemblies .....	4-601

**TANDEM AXLE ASSEMBLIES**

---

This task covers:

Service (page 4-602)

---

**INITIAL SETUP**

Tools	Personnel Required
Extension, 5-inch, 1/2-inch drive Handle, ratchet, 1/2-inch drive Pan, drain	One

---

		ACTION	
LOCATION	ITEM	REMARKS	

---

**SERVICE**

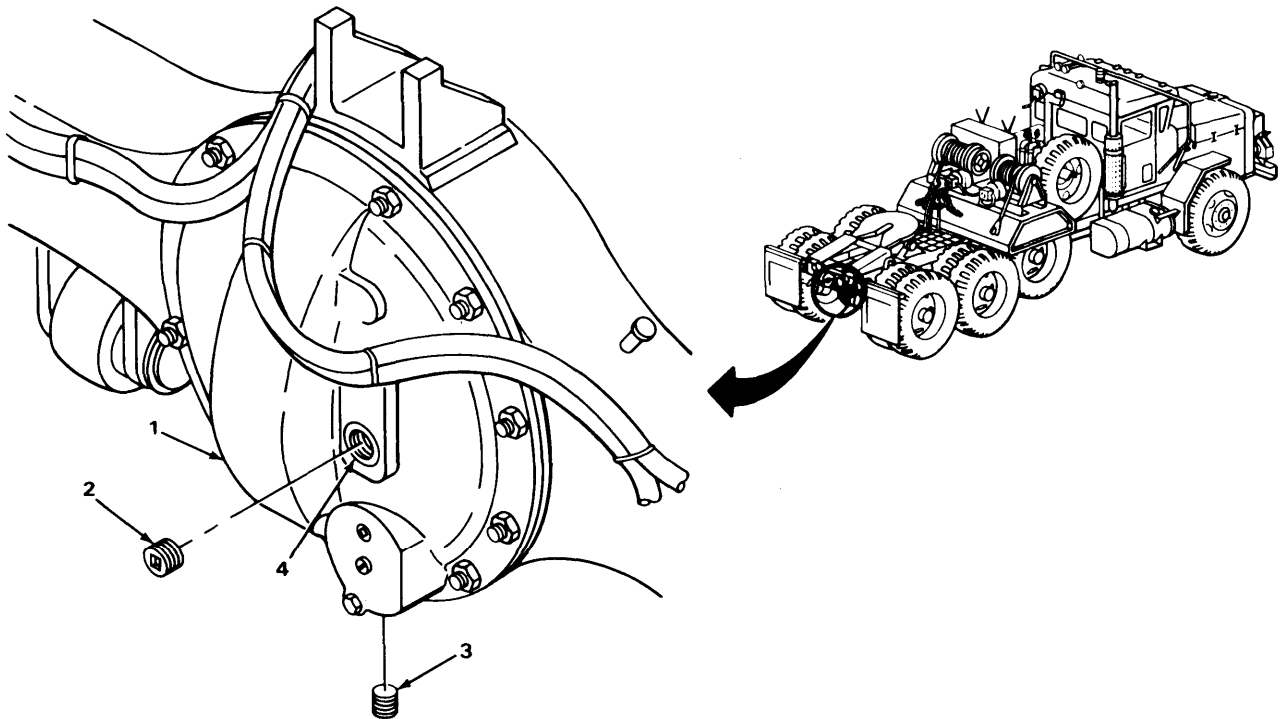
**NOTE**

**Drain oil after truck has been driven and oil is warm.**

**This task applies to both tandem axles.**

**TANDEM ASSEMBLIES - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
SERVICE - CONTINUED		
1. Rear tandem axle (1)	Fill plug (2)	a. Put drain pan underneath. b. Using extension and handle, unscrew and take out.
2	Drainplug (3)	a. Put drain pan underneath. b. Using extension and handle, unscrew and take out. c. Let lubricating oil drain out. d. Get rid of fluid (page 4-1).
3.	Drainplug (3) and fill plug (2)	Look for metal chips. If metal chips are found, notify direct support maintenance.
4.	Drainplug (3)	Screw in until flush using extension and handle.
5.	Fill hole (4)	Fill (LO 9-2320-270-12).
6.	Fill plug (2)	Screw in until flush using extension and handle.



**TASK ENDS HERE**

TA240395

## AXLE SHAFT

This task covers:

- a. Removal (page 4-603)
- b. Cleaning/Inspection (page 4-604)
- c. Installation (page 4-604)

## INITIAL SETUP

### Tools

Extension, 16-inch, 3/4-inch drive  
 Handle, ratchet, 3/4-inch drive  
 Knife, putty  
 Pliers, axle stud cone  
 Sledge hammer, 12-pound  
 Socket, 15/16-inch, 3/4-inch drive  
 Wrench, torque, 3/4-inch drive

### Materials/Parts

Gasket (two required)  
 Lockwasher (eight required for each axle shaft)  
 Oil seal

### Personnel Required

One

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

## REMOVAL

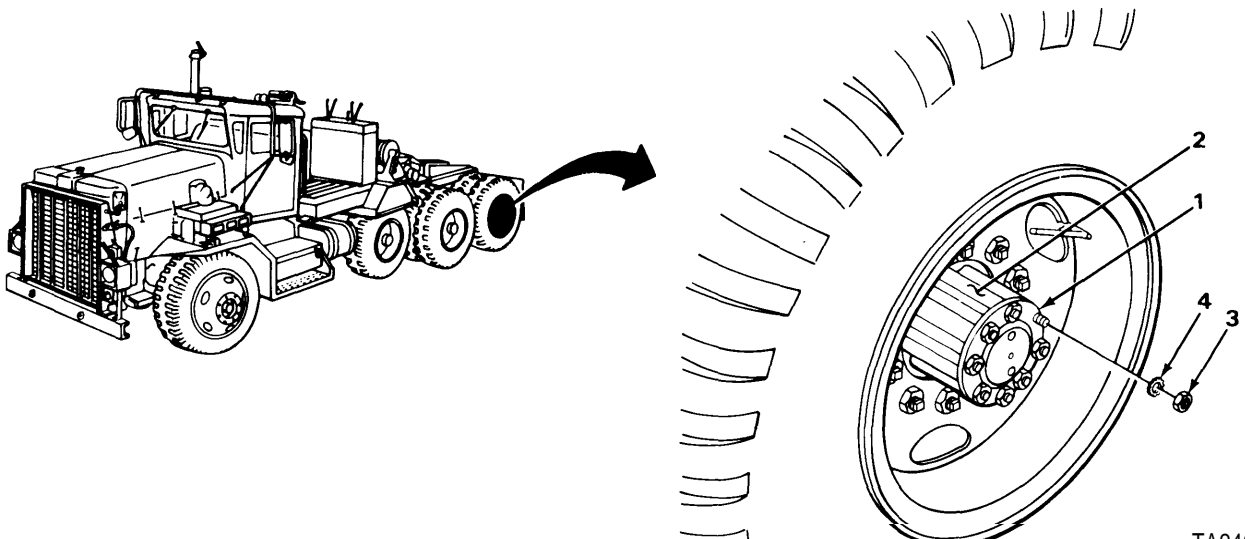
### NOTE

**This task applies to all four tandem axle shafts.**

1. Tandem axle shaft (1) to tandem axle hub (2)

Eight nuts (3) and lockwashers (4)

- a. Using socket, extension, and handle, unscrew and take off.
- b. Get rid of lockwashers (4).

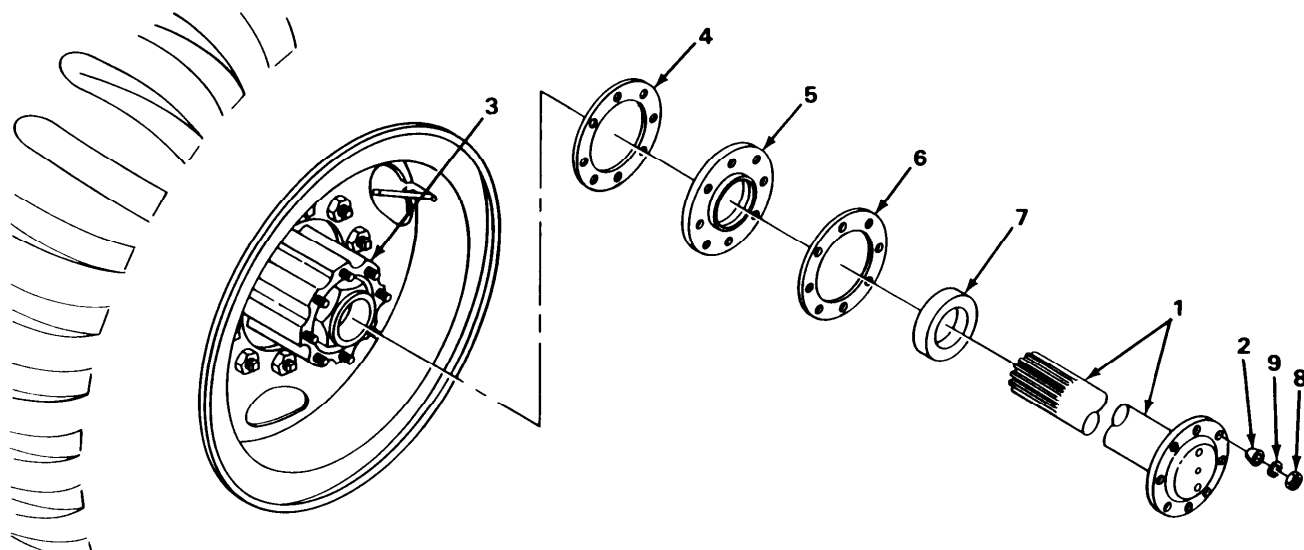


TA240396

**AXLE SHAFT - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL – CONTINUED</b>		
2. Axle shaft (1)	Eight taper dowels (2)	Using pliers, pull out. If dowels cannot be pulled out, strike end of axle shaft with hammer to help loosen dowels.
3. Tandem axle hub (3)	Axle shaft (1)	Pull out.
4.	Gasket (4), oil seal (5), gasket (6), and wiper (7)	a. Using putty knife, scrape off. b. Get rid of gaskets (4) and (6) and oil seal (5).
<b>CLEANING/INSPECTION</b>		
5.	All parts	Clean and inspect as shown in the general maintenance instructions (page 4-1).
<b>INSTALLATION</b>		
6. Tandem axle hub (3)	Wiper (7), new gasket (6), oil seal (5), and gasket (4)	Put on.
7. Tandem axle hub (3)	Axle shaft (1)	Place in position.
8. Axle shaft (1)	Eight taper dowels (2)	Push in.
9. Axle shaft (1) to tandem axle hub (3)	Eight nuts (8) and new lockwashers (9)	a. Screw on and tighten using socket, extension, and handle. b. Using socket, extension, and torque wrench, tighten to 220 and 240 ft lb (298 and 325 N•m).

**AXLE SHAFT - CONTINUED**



**TASK ENDS HERE**

**FILTER**

This task covers:

- a. Removal (page 4-606)
- b. Cleaning/Inspection (page 4-606)
- c. Installation (page 4-606)

**INITIAL SETUP**

**Tools**

Handle, ratchet, 3/6-inch drive  
 Socket, 9/16-inch, 3/6-inch drive

**Personnel Required**

One

**Materials/Parts**

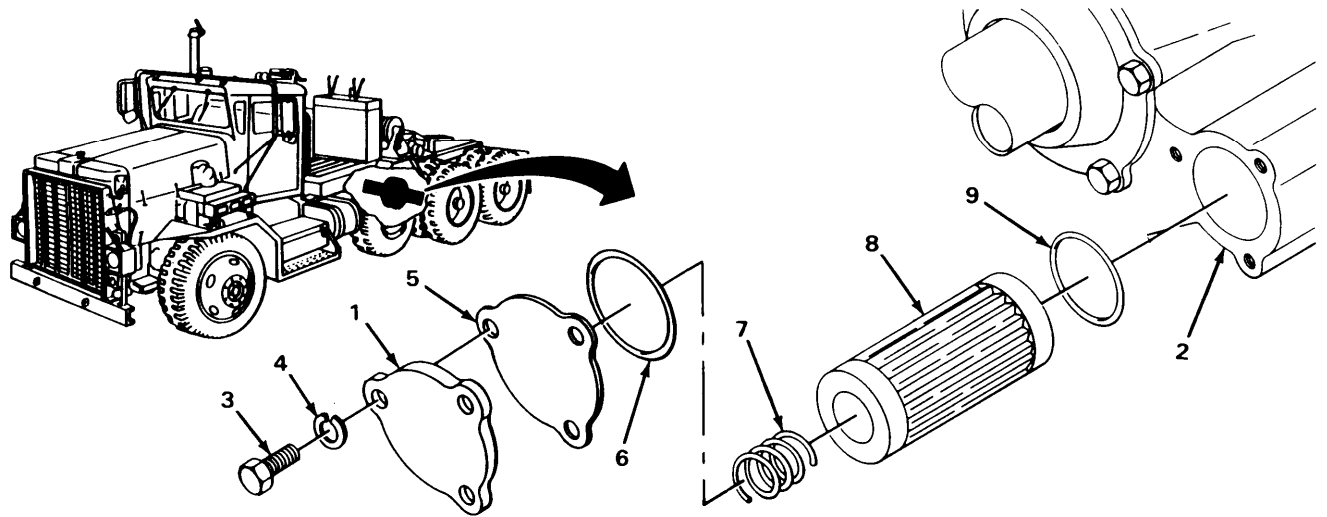
Filter element with gasket and spring  
 Lockwashers (three required)  
 Packing

**FILTER - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL</b>		
1. Filter cover (1) to forward tandem axle (2)	Three screws (3) and lockwashers (4)	a. Using socket and handle, unscrew and take out. b. Get rid of lockwashers (4).
2. Forward tandem axle (2)	Filter cover (1) gasket (5) and packing (6)	a. Take off. b. Get rid of packing (6) and gasket (5).
3.	Spring (7), filter element (8), and gasket (9)	a. Take out. b. Get rid of.
<b>CLEANING/INSPECTION</b>		
4.	All parts	Clean and inspect as shown in the general maintenance instructions (page 4-1).
<b>INSTALLATION</b>		
5. Forward tandem axle (2)	New spring (7), filter element (8), and gasket (9)	Put in.
6.	Filter cover (1), new gasket (5) and packing (6)	Put on.
7. Filter cover (1) to forward tandem axle (2)	Three screws (3) and new lockwashers (4)	Screw in and tighten using socket and handle.



**FILTER - CONTINUED**



**TASK ENDS HERE**

**BREATHER VALVE**

This task covers:

- a. Removal (page 4-808)
- b. Cleaning/Inspection (page 4-808)
- c. Installation (page 4-808)

**INITIAL SETUP**

Tools

Wrench, adjustable

Personnel Required

One

**BREATHER VALVE - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

**REMOVAL**

**NOTE**

There are two tandem axle breather valves on the truck. This task can be used to replace either breather valve.

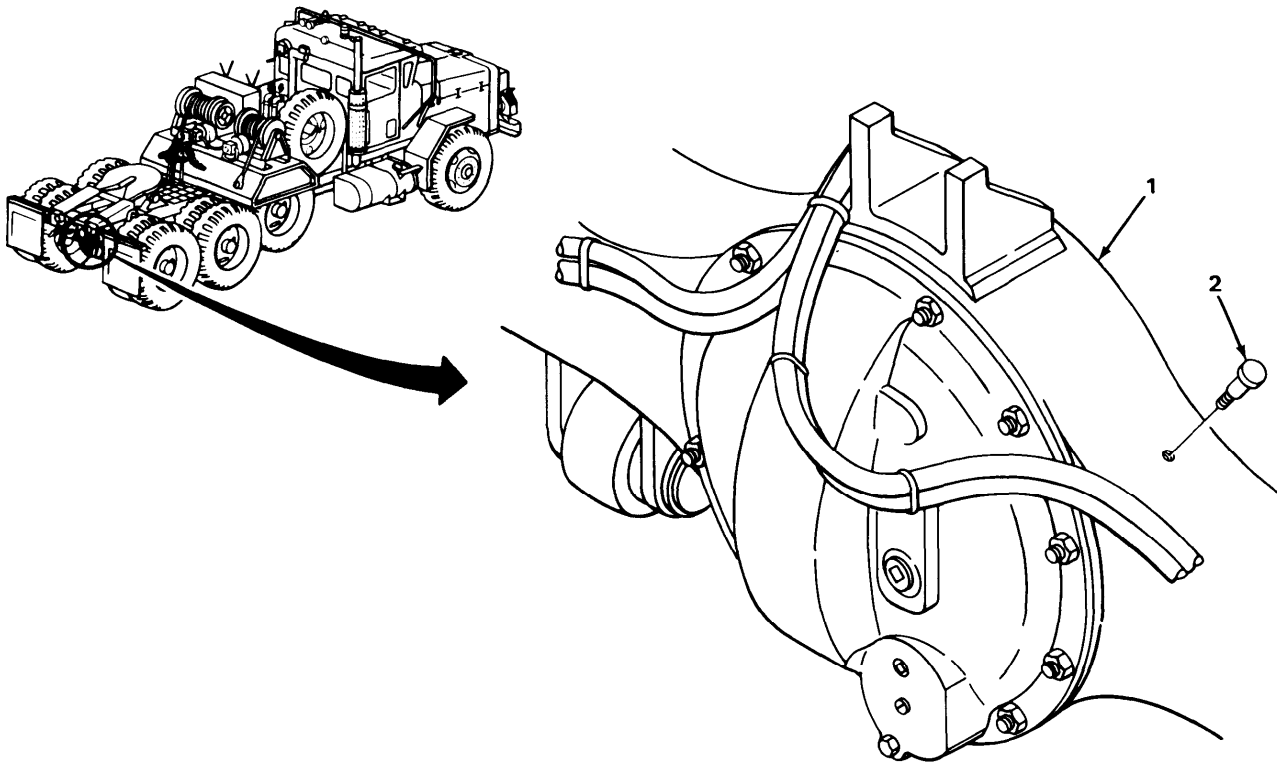
- |                              |                    |                                     |
|------------------------------|--------------------|-------------------------------------|
| 1. Rear rear tandem axle (1) | Breather valve (2) | Using wrench, unscrew and take out. |
|------------------------------|--------------------|-------------------------------------|

**CLEANING/INSPECTION**

- |    |                    |  |
|----|--------------------|--|
| 2. | Breather valve (2) | Clean and inspect as shown in the general maintenance instructions (page 4-1). |
|----|--------------------|--|

**INSTALLATION**

- |    |                    |                                    |
|----|--------------------|------------------------------------|
| 3. | Breather valve (2) | Screw in and tighten using wrench. |
|----|--------------------|------------------------------------|



**TASK ENDS HERE**

TA240399

## Section XI. BRAKE SYSTEM MAINTENANCE

	Page		Page
Accessory Air Manifold .....	4-743	Pusher Axle Airbrake Chambers .....	4-692
Accessory Pressure Protection Valve and Manifold .....	4-752	Pusher Axle Brakeshoes .....	4-616
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Primary Air Reservoir Check Valve .....	4-707	Wet Reservoir .....	4-658
PTO Control Valve .....	4-766		
Pusher Axle Actuator Assembly .....	4-619		

## FRONT AXLE BRAKESHOES

---

This task covers:

- |                                     |                              |
|-------------------------------------|------------------------------|
| a. Removal (page 4-610)             | c. Installation (page 4-611) |
| b. Cleaning/Inspection (page 4-611) | d. Adjustment (page 4-612)   |
- 

### INITIAL SETUP

**Tools**

Hammer, plastic-face  
 Pliers, brake repair  
 Pliers, slip-joint  
 Screwdriver, fiat-tip, 1/4-inch

**Personnel Required**

One

**Equipment Condition**

Front axle hub, drum, and bearing assembly removed (page 4-893).

---

LOCATION	ITEM	ACTION	REMARKS
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### W A R N I N G

**Parts of brake assembly will be coated with asbestos dust. Breathing this dust maybe hazardous to your health. Use a filter mask approved for use against asbestos dust. Never use compressed air or dry brush to clean these assemblies. Dust shall be removed using an industrial type vacuum cleaner equipped with a high efficiency filter system. Clean dirt or mud from brake assemblies with a bristle brush or cloth, and water.**

### NOTE

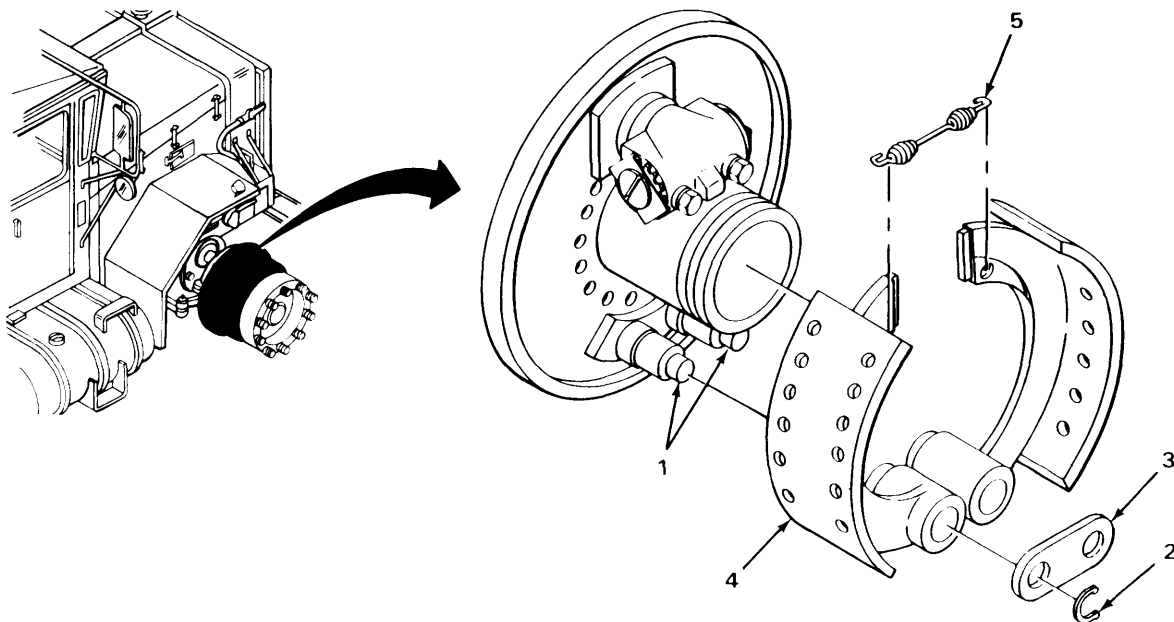
**There are two sets of front axle brakeshoes. This task can be used to replace either set of brakeshoes. Right side is shown.**

### REMOVAL

- |                                  |  |                             |
|----------------------------------|--|-----------------------------|
| 1. Two brakeshoe anchor pins (1) | Two C-washers (2) and anchor pin strap (3) | Using screwdriver, pry off. |
|----------------------------------|--|-----------------------------|

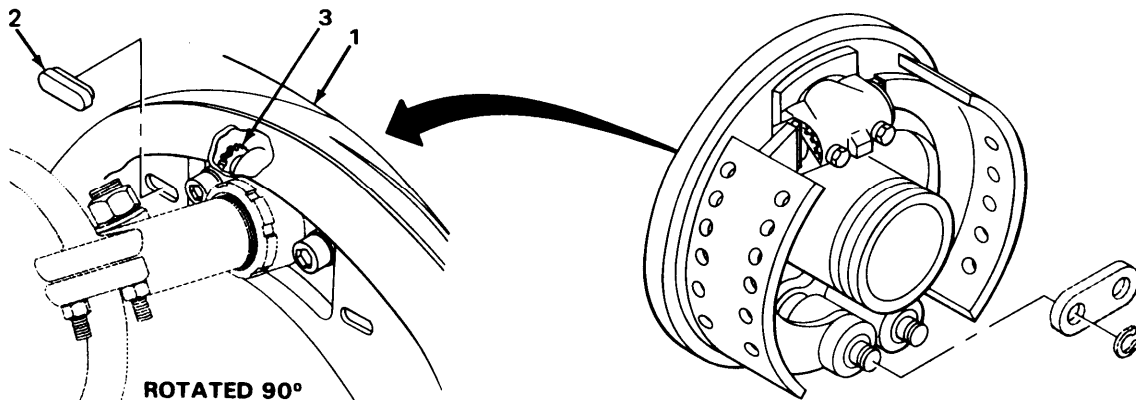
**FRONT AXLE BRAKESHOES - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
2. Two brakeshoes (4)	Brakeshoe return spring (5)	Using brake repair pliers, take off.
3. Two brakeshoe anchor pins (1)	Two brakeshoes (4)	Take off.
<b>CLEANING/INSPECTION</b>		
4.	All parts	Clean and inspect as shown in the general maintenance instructions (page 4-1).
<b>INSTALLATION</b>		
5. Two brakeshoe anchor pins (1)	Two brakeshoes (4)	Put on.
6. Two brakeshoes (4)	Brakeshoe return spring (5)	Using brake repair pliers, put on.
7. Two brakeshoe anchor pins (1)	Two C-washers (2) and anchor pin strap (3)	Using slip-joint pliers and hammer, put on.
8.	Front axle hub, drum, and bearing assembly	Install (page 4-893).



**FRONT AXLE BRAKESHOES - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
<b>ADJUSTMENT</b>			
9. Brake backing plate (1)	Two covers (2)	Using screwdriver, pry out.	
10.	Two star wheels (3)	a. Using screwdriver, turn until drag is very heavy. b. Using screwdriver, back off until drag is very light.	
11.	Two covers (2)	Push in.	



**NOTE**

FOLLOW-ON MAINTENANCE: Install tire and rim (TM 9-2320-270-10).

**TASK ENDS HERE**

**FRONT AXLE ACTUATOR ASSEMBLY**

This task covers:

- a. Removal (page 4-613)
- b. Installation (page 4-614)

**INITIAL SETUP**

**Tools**

Key, socket-head screw, 3/8 inch  
Pliers, brake repair

**Materials/Parts**

Lockwasher (two required)

**FRONT AXLE ACTUATOR ASSEMBLY - CONTINUED**

**INITIAL SETUP – CONTINUED**

Personnel Required

One

Equipment Condition

Front axle hub, drum, and bearing assembly removed (page 4-893).  
 Front axle airbrake chamber removed (page 4-686).  
 Front axle wedge assembly removed (page 4-615).

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

**WARNING**

Parts of brake assembly will be coated with asbestos dust. Breathing this dust may be hazardous to your health. Use a filter mask approved for use against asbestos dust. Never use compressed air or dry brush to clean these assemblies. Dust shall be removed using an industrial type vacuum cleaner equipped with a high efficiency filter system. Clean dirt or mud from brake assemblies with a bristle brush or cloth, and water.

**NOTE**

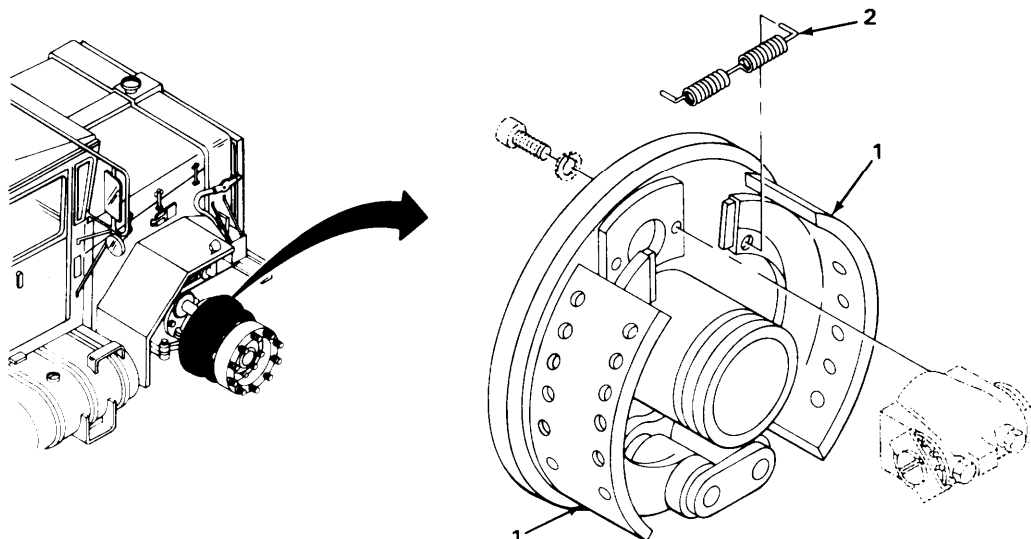
There are two front axle actuator assemblies. This task can be used to replace either actuator assembly. Right side is shown.

**REMOVAL**

1. Two brakeshoes (1)

Brakeshoe return spring (2)

Using brake repair pliers, take off.



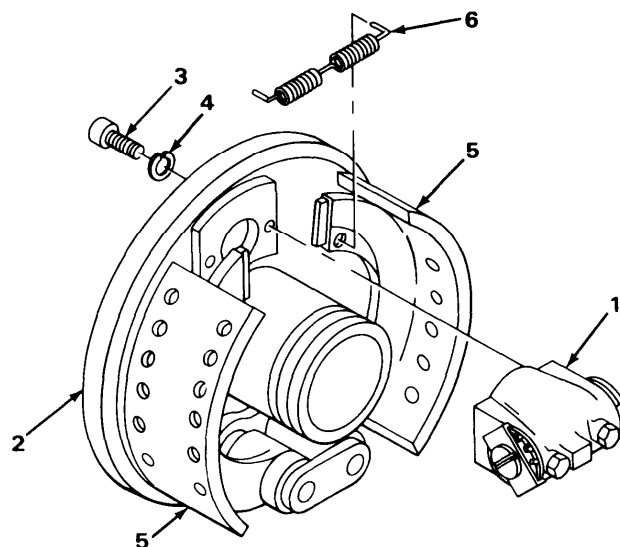
TA240402

**FRONT AXLE ACTUATOR ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
<b>REMOVAL- CONTINUED</b>			
2. Actuator assembly (1) to brake backing plate (2)	Two screws (3) and lockwashers (4)	a. Using key, unscrew and take out. b. Get rid of lockwashers (4).	
3. Brake backing plate (2)	Actuator assembly (1)	Take off.	

**INSTALLATION**

4. Brake backing plate (2)	Actuator assembly (1)	Put on.	
5. Actuator assembly (1) to brake backing plate (2)	Two screws (3) and new lockwashers (4)	Screw in and tighten using key.	
6. Two brakeshoes (5)	Brakeshoe return spring (6)	Using pliers, put on brakeshoes (5).	



**NOTE**

**FOLLOW-ON MAINTENANCE:**

1. Install front axle wedge assembly (page 4-615).
2. Install front axle airbrake chamber (page 4-686).
3. Install front axle hub, drum, and bearing assemblies (page 4-893).
4. Adjust front axle brakeshoes (page 4-610).

**TASK ENDS HERE**

TA240403



## FRONT AXLE AND PUSHER AXLE WEDGE ASSEMBLY

This task covers:

- a. Removal (page 4-615)
- b. Cleaning/Inspection (page 4-615)
- c. Installation (page 4-616)

### INITIAL SETUP

Personnel Required

One

Equipment Condition

Front axle airbrake chamber removed (page 4-686) or pusher axle airbrake chamber removed (page 4-692).

LOCATION	ITEM	ACTION	REMARKS
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### NOTE

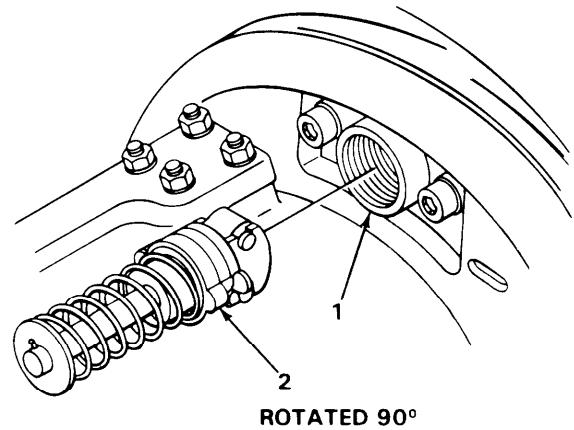
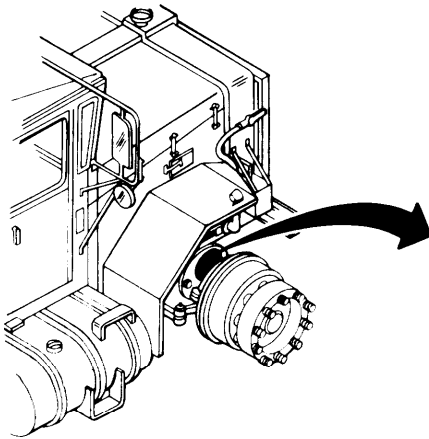
There are four axle wedge assemblies. Use this task to replace either front axle or pusher axle wedge assembly. Right front axle side is shown.

### REMOVAL

- |                                    |                               |           |
|------------------------------------|-------------------------------|-----------|
| 1. Front axle actuator housing (1) | Front axle wedge assembly (2) | Take out. |
|------------------------------------|-------------------------------|-----------|

### CLEANING/INSPECTION

- |    |           |  |
|----|-----------|--|
| 2. | All parts | Clean and inspect as shown in the general maintenance instructions (page 4-1). |
|----|-----------|--|

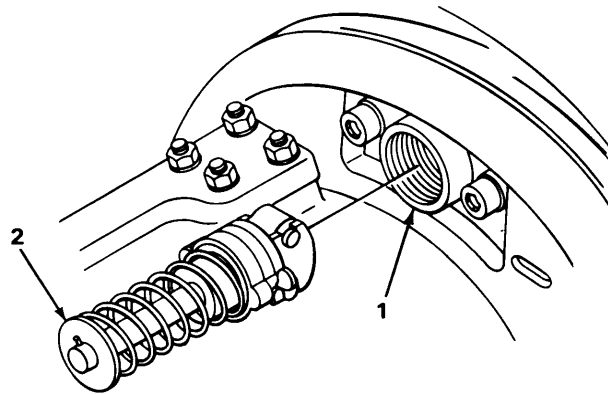


**FRONT AXLE AND PUSHER AXLE WEDGE ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

**INSTALLATION**

- |                                    |                    |   |
|------------------------------------|--------------------|---|
| 3. Front axle actuator housing (1) | Wedge assembly (2) | a. Put in.<br>b. Push on end and check for correct roller-plunger engagement. Rotate until rollers are aligned. |
|------------------------------------|--------------------|---|



**NOTE**

FOLLOW-ON MAINTENANCE: Install front axle airbrake chamber (page 4-686) or install pusher axle airbrake chamber (page 4-692).

**TASK ENDS HERE**

**PUSHER AXLE BRAKESHOES**

This task covers:

- |                                     |                              |
|-------------------------------------|------------------------------|
| a. Removal (page 4-617)             | c. Installation (page 4-618) |
| b. Cleaning/Inspection (page 4-617) | d. Adjustment (page 4-618)   |

**INITIAL SETUP**

Tools

Pliers, brake repair

Personnel Required

One

Equipment Condition

Pusher axle hub, drum, and bearing assembly removed (page 4-910).

**PUSHER AXLE BRAKESHOES - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

**WARNING**

Parts of brake assembly will be coated with asbestos dust. Breathing this dust maybe hazardous to your health. Use a filter mask approved for use against asbestos dust. Never use compressed air or dry brush to clean these assemblies. Dust shall be removed using an industrial type vacuum cleaner equipped with a high efficiency filter system. Clean dirt or mud from brake assemblies with a bristle brush or cloth, and water.

**NOTE**

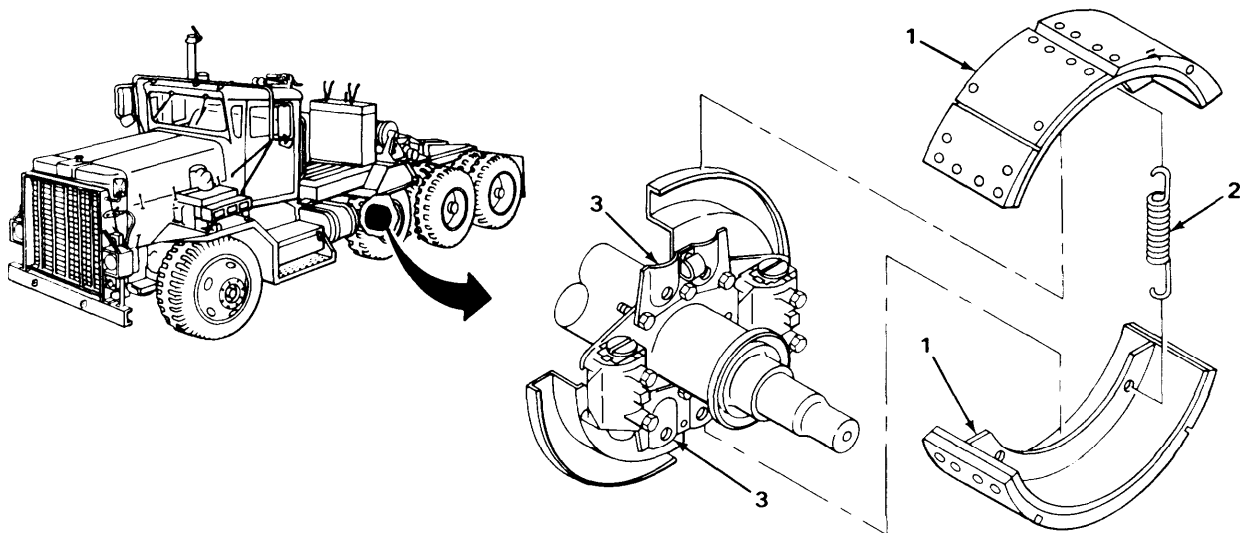
There are two sets of pusher axle brakeshoes. This task can be used to replace either set of brakeshoes. Left side is shown.

**REMOVAL**

- |                             |                                  |                                      |
|-----------------------------|----------------------------------|--------------------------------------|
| 1. Two brakeshoes (1)       | Two brakeshoe return springs (2) | Using brake repair pliers, take off. |
| 2. Two support brackets (3) | Two brakeshoes (1)               | Take off.                            |

**CLEANING/INSPECTION**

- |    |           |  |
|----|-----------|--|
| 3. | All parts | Clean and inspect as shown in the general maintenance instructions (page 4-1). |
|----|-----------|--|

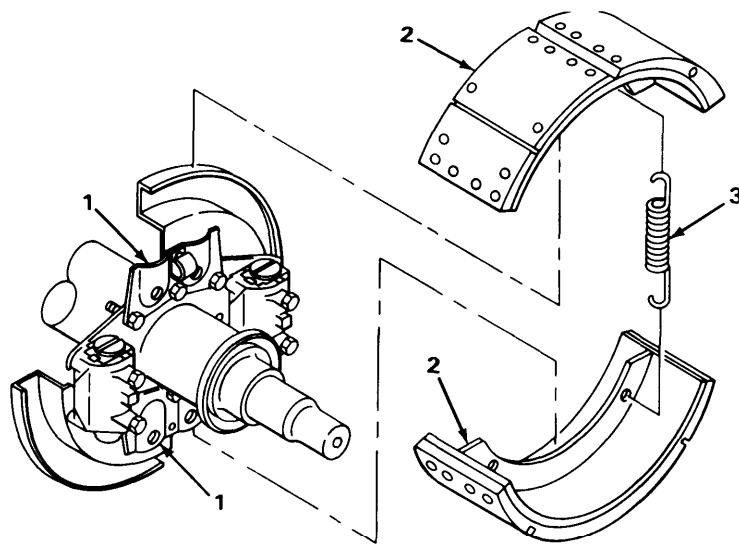


**PUSHER AXLE BRAKESHOES - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION</b>		
4. Two support brackets (1)	Two brakeshoes (2)	Place in position.
5. Two brakeshoes (2)	Two brakeshoe return springs (3)	Using brake repair pliers, put on.
6.	Pusher axle hub, drum, and bearing assembly	Install (page 4-910).

**ADJUSTMENT**

- 7. Pusher axle wheel and tire assembly
  - a. Install (TM 9-2320-270-10).
  - b. Rotate in forward direction while applying brakes 25 to 30 times.



**TASK ENDS HERE**

**PUSHER AXLE ACTUATOR ASSEMBLY**

---

This task covers:

- a. Removal (page 4-619)
  - b. installation (page 4-620)
- 

**INITIAL SETUP**

**Tools**

Handle, ratchet, 1/2-inch drive  
 Socket, deep-well, 9/16-inch  
 1/2-inch drive

**Personnel Required**

One

**Equipment Condition**

**Materials/Parts**

Lockwasher, dust cover to pusher  
 axle (two required)  
 Lockwasher, actuator to pusher  
 axle (four required)

Pusher axle hub, drum, and bearing assembly  
 removed (page 4-910).  
 Pusher axle brakeshoes removed  
 (page 4-616).  
 Pusher axle airbrake chamber removed  
 (page 4-692).  
 Pusher axle wedge assembly removed  
 (page 4-615).

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LOCATION	ITEM	ACTION	REMARKS
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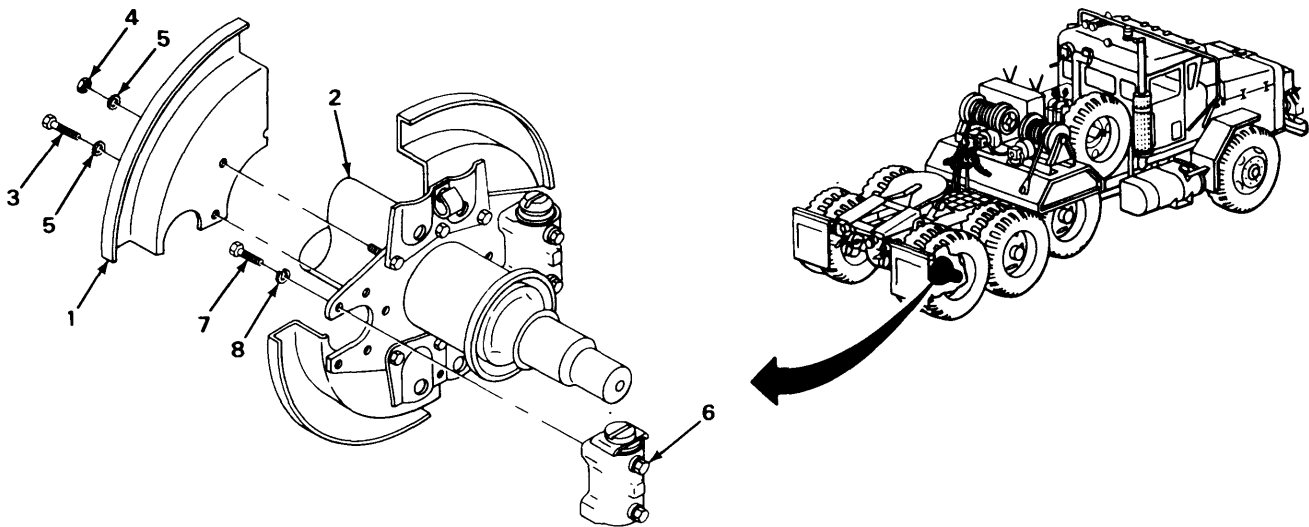
**REMOVAL**

**NOTE**

Except as noted, steps in this task apply to all four pusher axle actuator assemblies.  
 Right rear actuator is shown.

**PUSHER AXLE ACTUATOR ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL – CONTINUED</b>		
1. Dust cover (1) to pusher axle (2)	Screw (3), nut (4), and two lockwashers (5)	a. Using 9/16-inch socket and ratchet handle, unscrew and take off. b. Get rid of lockwashers (5).
2. Actuator (6) to pusher axle (2)	Four screws (7) and washers (8)	Using 9/16-inch socket and handle, unscrew and take out.
3. Pusher axle (2)	Actuator (6)	Take off.
<b>INSTALLATION</b>		
4. Pusher axle (2)	Actuator (6)	Put in place.
5. Actuator (6) to pusher axle (2)	Four screws (7) and washers (8)	Screw in and tighten using 9/16-inch socket and ratchet handle.
6. Pusher axle (2)	Dust cover (1)	Put in place.
7. Dust cover (1) to pusher axle (2)	Screw (3), nut (4), and two new lockwashers (5)	Screw on and tighten using 9/16-inch socket and ratchet handle.



**PUSHER AXLE ACTUATOR ASSEMBLY- CONTINUED**

**NOTE**

FOLLOW-ON MAINTENANCE:

1. Install pusher axle wedge assembly (page 4-615).
2. Install pusher axle airbrake chamber assembly (page 4-692).
3. Install pusher axle brakeshoes (page 4-616).
4. Install pusher axle hub, drum and bearing assembly (page 4-910).

**TASK ENDS HERE**

**REAR AXLE BRAKESHOES**

---

This task covers:

- |                                     |                              |
|-------------------------------------|------------------------------|
| a. Removal (page 4-622)             | c. Installation (page 4-622) |
| b. Cleaning/Inspection (page 4-622) | d. Adjustment (page 4-623)   |
- 

**INITIAL SETUP**

Tools

Pry bar

Personnel Required

One

Equipment Condition

Tandem hub, drum, and bearing assembly removed (page 4-925).

**REAR AXLE BRAKESHOES - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

**WARNING**

Parts of brake assembly will be coated with asbestos dust. Breathing this dust maybe hazardous to your health. Use a filter mask approved for use against asbestos dust. Never use compressed air or dry brush to clean these assemblies. Dust shall be removed using an industrial type vacuum cleaner equipped with a high efficiency filter system. Clean dirt or mud from brake assemblies with a bristle brush or cloth, and water.

**NOTE**

There are four sets of rear axle brakeshoes. This task can be used to replace either set of brakeshoes.

**REMOVAL**

1. Two brakeshoes (1)	Two brakeshoe rollers (2)	a. Using pry bar, push brakeshoes (1) away from cam (3). b. Take out.
2.	Brakeshoe return spring (4)	Take out.
3. Brakeshoe anchor pin (5)	Two brakeshoes (1) and retainer springs (6)	a. Move lower brakeshoe (1) away from cam (3). b. Take out.

**CLEANING/INSPECTION**

4.	All parts	Clean and inspect as shown in the general maintenance instructions (page 4-1).
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**INSTALLATION**

5. Brakeshoe anchor pin (5)	Two brakeshoes (1) and retainer springs (6)	Put on.
6. Two brakeshoes (1)	Brakeshoe return spring (4)	Put in.
7.	Two brakeshoe rollers (2)	a. Push brakeshoes (1) away from cam (3). b. Put on.

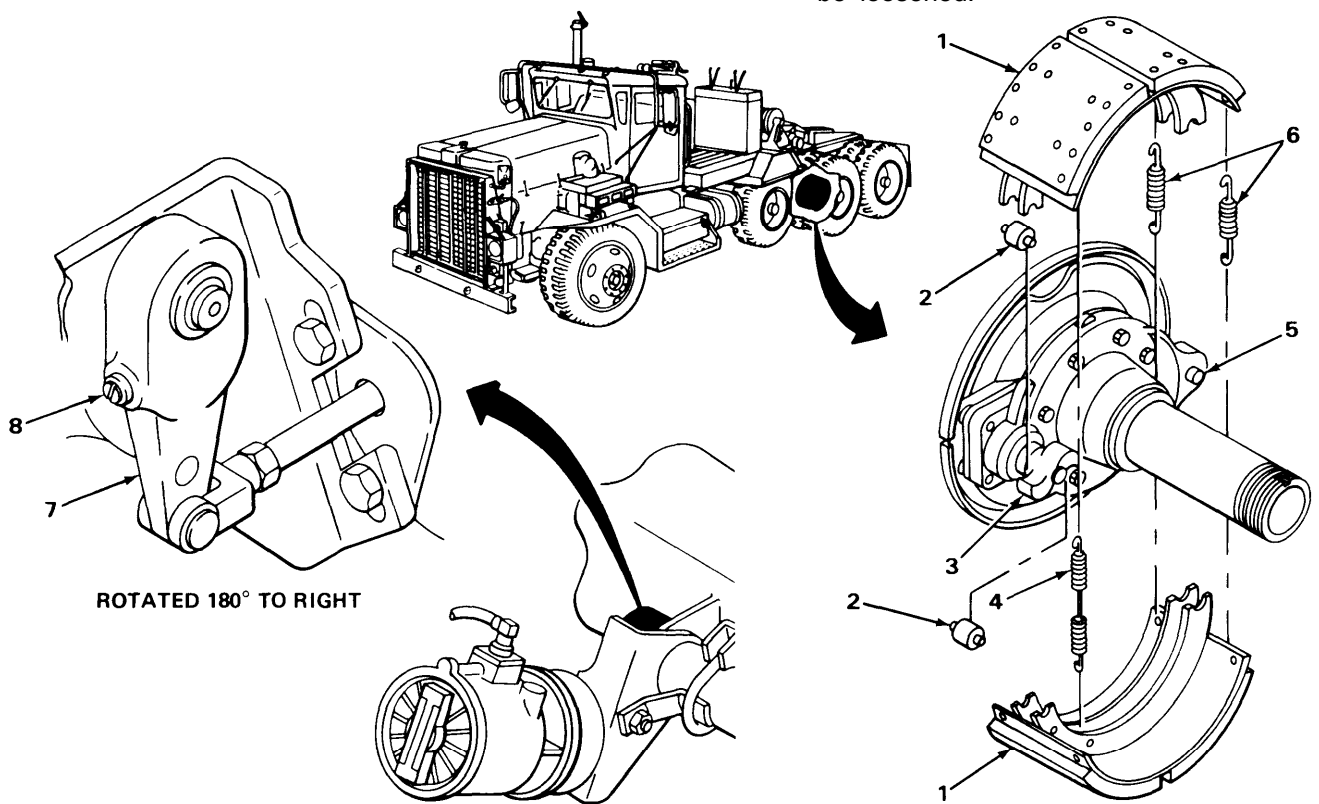


**REAR AXLE BRAKESHOES – CONTINUED**

LOCATION	ITEM	ACTION REMARKS
8.	Tandem axle hub, drum, and bearing assembly	Install (page 4-925).

**ADJUSTMENT**

- |                       |                     |   |
|-----------------------|---------------------|---|
| 9. Slack adjuster (7) | Adjusting screw (8) | <p>a. Using socket and handle, screw in until brakedrum is hard to turn.</p> <p>b. Unscrew three clicks.<br/>Tap drum with end of handle. If a ring is heard, clearance is correct. If a dull thud is heard, clearance is wrong and adjusting screw must be loosened.</p> |
|-----------------------|---------------------|---|



ROTATED 180° TO RIGHT

**NOTE**

FOLLOW-ON MAINTENANCE: Install tire and rim assembly (TM 9-2320-270-10).

**TASK ENDS HERE**

**REAR AXLE SLACK ADJUSTER ASSEMBLY**

---

This task covers:

- |  |                              |
|--|------------------------------|
| a. Removal (page 4-624)                | c. Installation (page 4-626) |
| b. Inspection/Replacement (page 4-626) | d. Adjustment (page 4-627)   |
- 

**INITIAL SETUP**

**Tools**

Hammer, machinist's ball-peen, two ounce  
 Handle, ratchet, 3/8-inch drive  
 Pliers, long-nose  
 Punch, center, 1/8-inch  
 Socket, 9/16-inch, 3/8-inch drive

**Materials/Parts**

Cotter pin, slack adjuster clevis pin  
 Grease, (LO 9-2320-270-12)  
 Tag, marking (item 18, appendix C)

**Equipment Condition**

Wheels blocked (TM 9-2320-270-10).  
 Spring brake released (TM9-2320-270-10).

---

LOCATION	ITEM	ACTION REMARKS
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---

**REMOVAL**

**NOTE**

Steps in this task are the same for all four rear brake slack adjusters. Right rear wheel is shown.

- |                                       |                     |   |
|---------------------------------------|---------------------|---|
| 1. Slack adjuster (1)                 | Adjusting screw (2) | Using socket and handle, turn adjusting screw counterclockwise until all tension is relieved. |
| 2. Clevis pin (3)                     | Cotter pin (4)      | a. Using pliers, take out.<br>b. Get rid of cotter pin (4).                                   |
| 3. Clevis (5) to slack adjuster (1)   | Clevis pin (3)      | Take out.   |
| 4. Slack adjuster (1) to camshaft (6) | Snapping (7)        | a. Using hammer and punch, tap on ends until loose.<br>b. Using screwdriver, pry off.         |

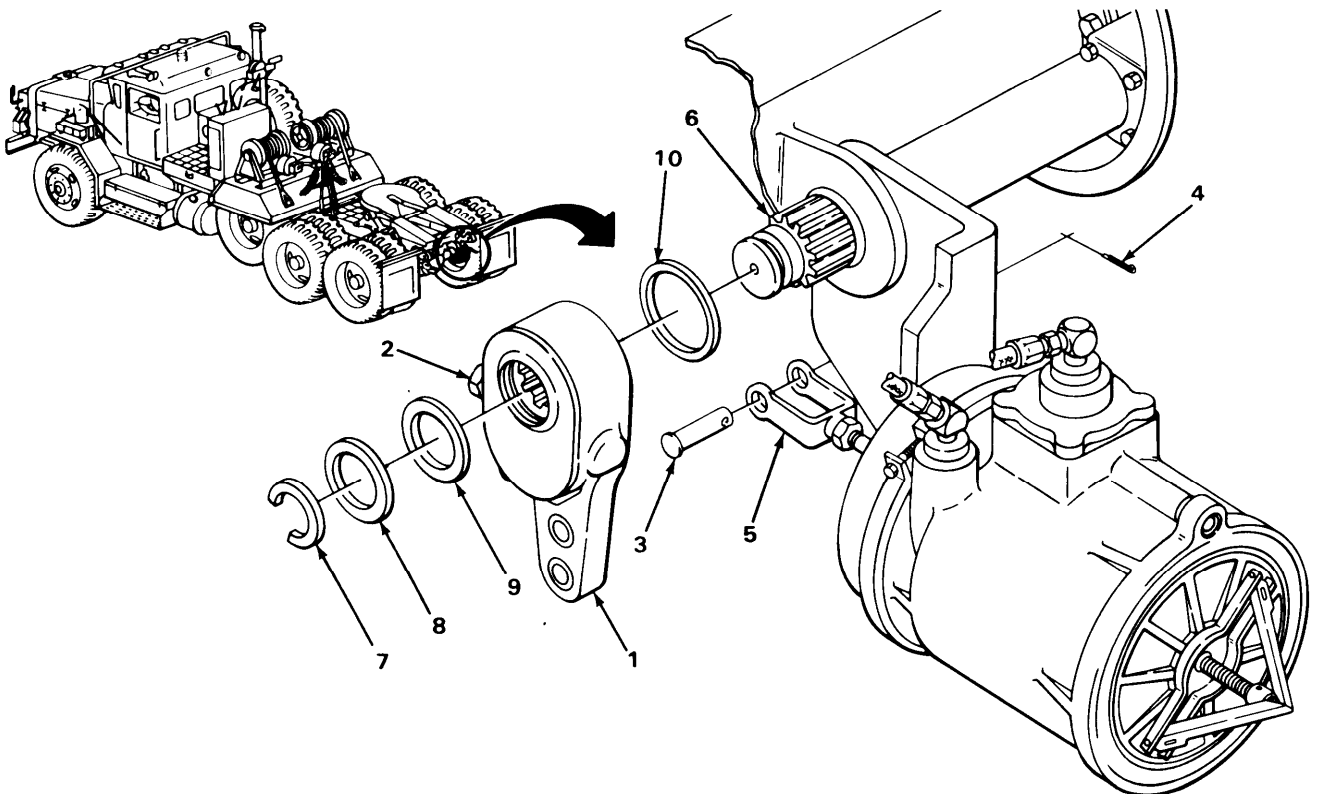
REAR AXLE SLACK ADJUSTER ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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**NOTE**

Shims may vary in number and thickness between different trucks and between different wheels of the same truck. Tag to assure proper reassembly.

- |                       |                     |   |
|-----------------------|---------------------|---|
| 5. Camshaft (6)       | Shims (8) and (9)   | Take off and tag according to general maintenance instructions (page 4-1).          |
| 6. Slack adjuster (1) | Adjusting screw (2) | Using socket and handle, turn unscrew to back slack adjuster (1) out of clevis (5). |
| 7. Camshaft (6)       | Slack adjuster (1)  | Pull off.   |
| 8.                    | Inner washer (10)   | Take off.   |



REAR AXLE SLACK ADJUSTER ASSEMBLY - CONTINUED

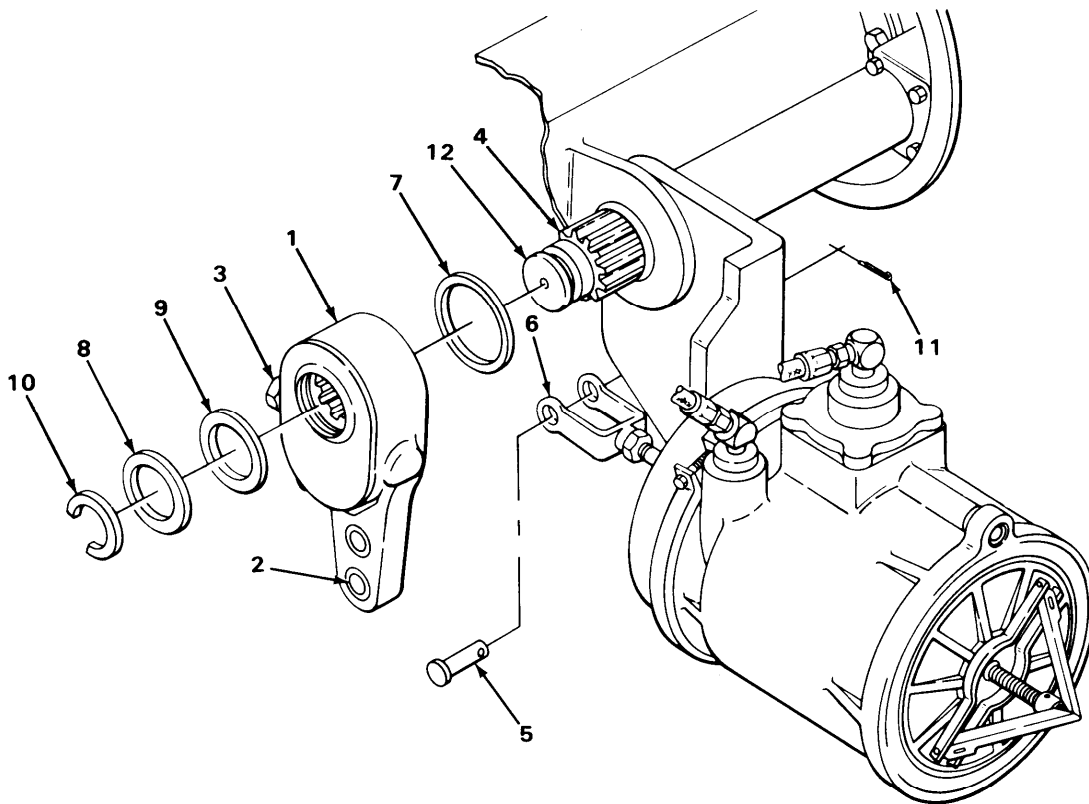
LOCATION	ITEM	ACTION REMARKS
INSPECTION/REPLACEMENT		
<b>NOTE</b>		
Replace defective parts as needed.		
9.	Slack adjuster (1)	a. Inspect for worn out clevis pin bushing (2). <b>Bushing is worn out if it is nearly worn to slack adjuster casting.</b> b. Inspect for worn or battered splines. c. Look for stripped threads on adjusting screw (3).
10.	Camshaft (4)	Inspect for worn or battered splines.
11.	Clevis pin (5)	Inspect for deep grooves worn in clevis pin (5).
12.	Clevis (6)	Inspect for holes worn oval.
INSTALLATION		
13. Camshaft (4)	Inner washer (7)	Put on.
14.	Slack adjuster (1)	Aline splines and put on.
15.	Shims (8) and (9)	Put on same thickness and order as removed.
16. Slack adjuster (1) to camshaft (4)	Snapring (10)	a. Put in groove. b. Using punch and hammer, drive in.
17. Slack adjuster (1)	Adjusting screw (3)	Using socket and handle, screw clockwise until lower hole in slack adjuster (1) aligns with holes in clevis (6).
18. Clevis (6) to slack adjuster (1)	Clevis pin (5)	a. Grease lightly. b. Put in.
19. Clevis pin (5)	New cotter pin (11)	Using pliers, put in.

REAR AXLE SLACK ADJUSTER ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

ADJUSTMENT

- |                        |                     |  |
|------------------------|---------------------|--|
| 20. Slack adjuster (1) | Adjusting screw (3) | <p>a. Using socket and handle, push down spring loaded bushing (12) and screw clockwise until tight.</p> <p>b. Unscrew adjusting screw (3) three clicks.</p> <p><b>To check for proper clearance, hit brakedrum with end of handle. If a ring is heard, clearance is correct. If a dull thud is heard, unscrew more.</b></p> |
|------------------------|---------------------|--|



**NOTE**

FOLLOW-ON MAINTENANCE: Set spring brakes (TM 9-2320-270-10).

**TASK ENDS HERE**

## REAR AXLE BRAKE SPIDER AND CAM ASSEMBLY

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This task covers:

- a. Removal (page 4-629)
  - b. Disassembly (page 4-630)
  - c. Cleaning (page 4-630)
  - d. Inspection/Replacement (page 4-630)
  - e. Assembly (page 4-632)
  - f. Installation (page 4-632)
- 

### INITIAL SETUP

#### Tools

Brass drift, 1/2-inch  
Brush, parts cleaning  
Extension, 2-inch, 1/2-inch drive  
Hammer, ball-peen, 2 lb head  
Hammer, plastic faced  
Handle, ratchet, 1/2-inch drive  
Socket, 1/2-inch, deep, 1/2-inch drive  
Socket, 3/4-inch, 1/2-inch drive  
Socket, 15/16-inch, 1/2-inch drive  
Wrench, box, 3/4-inch  
Wrench, box, 15/16-inch  
Wrench, open-end, 5/8-inch  
Wood block

#### Materials/Parts

Grease, (LO 9-2320-270-1 2)  
Lockwasher, camshaft bracket to spider (four required)  
Lockwasher, reinforcing strut to camshaft bracket  
Lockwasher, U-bolt to clamp plate (two required)

#### Materials/Parts – Continued

Rags, wiping (item 10, appendix C)  
Self-locking nut, reinforcing strut to camshaft bracket  
Self-locking nut, spider to axle (eight required)

#### Personnel Required

One

#### Equipment Condition

Wheels blocked (TM 9-2320-270-10).  
Spring brakes caged (TM9-2320-270-10).  
Tandem axle hub, drum, and bearing assembly removed (page 4-925).  
Rear axle brakeshoes removed (page 4-621).  
Rear axle airbrake and spring brake chambers removed (page 4-701).  
Rear axle slack adjuster assembly removed (page 4-624).

**REAR AXLE BRAKE SPIDER AND CAM ASSEMBLY - CONTINUED**


---

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
<b>NOTE</b>			
Steps in this task apply to all four rear axle brake spider and cam assembly. Right rear spider and cam assembly is shown.			
1. Two dust covers (1) to spider (2)	Six screws (3)		Using 1/2-inch socket, and handle, unscrew and take out.
2. Spider (2)	Two dust covers (1)		Take off.
3. Spider (2) to axle (4)	Eight screws (5) nuts (6) and 16 washers (7)	a. Using 15/16-inch box wrench, 15/16-inch socket and handle, unscrew and take out. b. Get rid of nuts (6).	
4. Axle (4)	Spider (2)	a. Using plastic faced hammer, tap to unseat. b. Take off.	

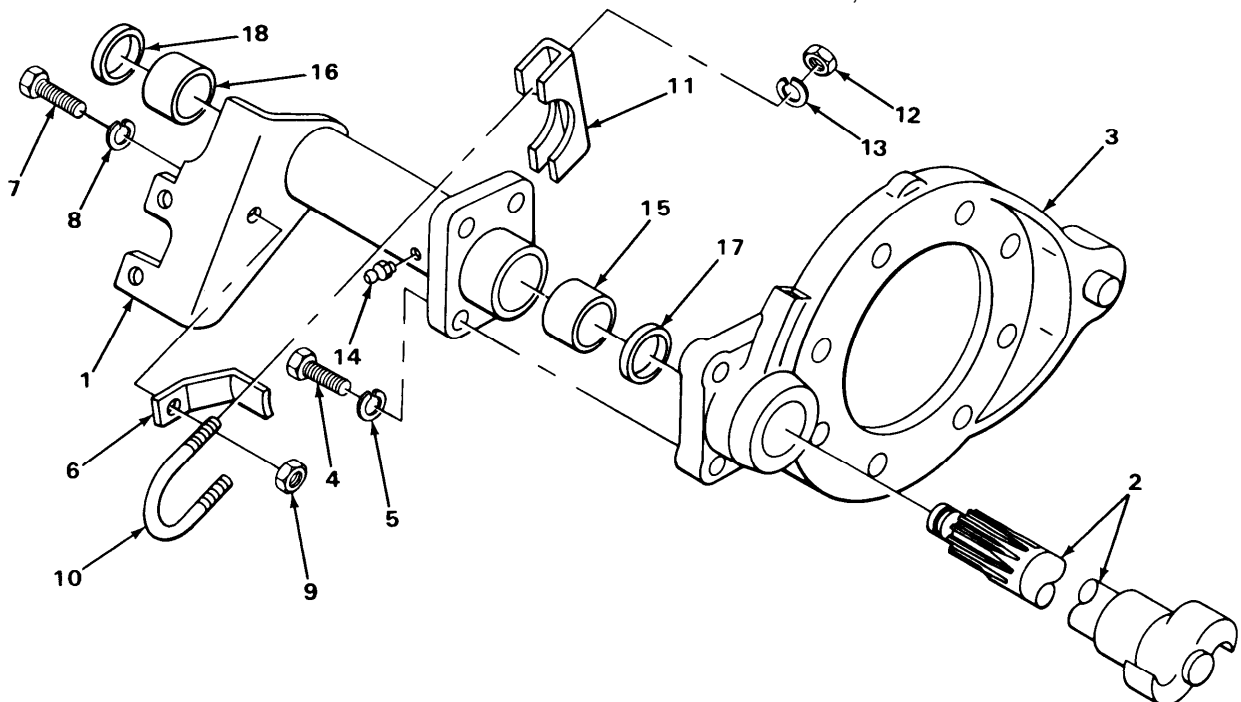
**REAR AXLE BRAKE SPIDER AND CAM ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS	
<b>DISASSEMBLY</b>			
5.	Camshaft bracket (1)	Camshaft (2)	Pull out from cam end.
6.	Camshaft bracket (1) to spider (3)	Four screws (4) and lockwashers (5)	a. Using 3/4-inch socket and handle, unscrew and take out. b. Get rid of lockwasher (5).
7.	Spider (3)	Camshaft bracket (1)	Take off.
8.	Reinforcing strut (6) to camshaft bracket (1)	Screw (7), lockwasher (8) and self-locking nut (9)	a. Using 3/4-inch box wrench, socket and handle, unscrew and take off. b. Get rid of self-locking nut (9) and lockwasher (8).
9.	U-bolt (10) to clamp plate (11)	Two nuts (12) and lockwashers (13)	a. Using 1/2-inch deep-well socket and handle, unscrew and take off. b. Get rid of lockwashers (13).
10.	U-bolt (10)	Clamp plate (11)	Take off.
11.	Camshaft bracket (1)	U-bolt (10) and reinforcing strut (6)	Take off.
12.		Grease fitting (14)	Using 5/8-inch open-end wrench, unscrew and take off.
<b>CLEANING</b>			
13.		Camshaft (2), camshaft bracket (1), grease fitting (14) and spider (3)	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>			
14.		Camshaft (2)	a. Check bearing journals for roughness. b. Inspect cam head for wear or flat spots.



REAR AXLE BRAKE SPIDER AND CAM ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
15. Camshaft bracket (1)	Camshaft (2)	a. Check for looseness between camshaft (1) and bushings. <b>There should be very little or no looseness.</b> b. Check for rough movement. c. If bushings are damaged, do steps 16 thur 19.
16.	Inner bushing (15) and outer bushing (16), inner seal (17) and outer seal (18)	a. Using drift and ball-peen hammer, drive out. b. Get rid of.
17.	New inner bushing (15) and outer bushing (16)	Using plastic faced hammer and drift, tap in.
18.	New inner seal (17)	With metal cover towards cam head and using ball-peen hammer and wood-block, drive in.
19.	New outer seal (18)	With metal cover towards inside of bracket and using ball-peen hammer and woodblock, drive in.

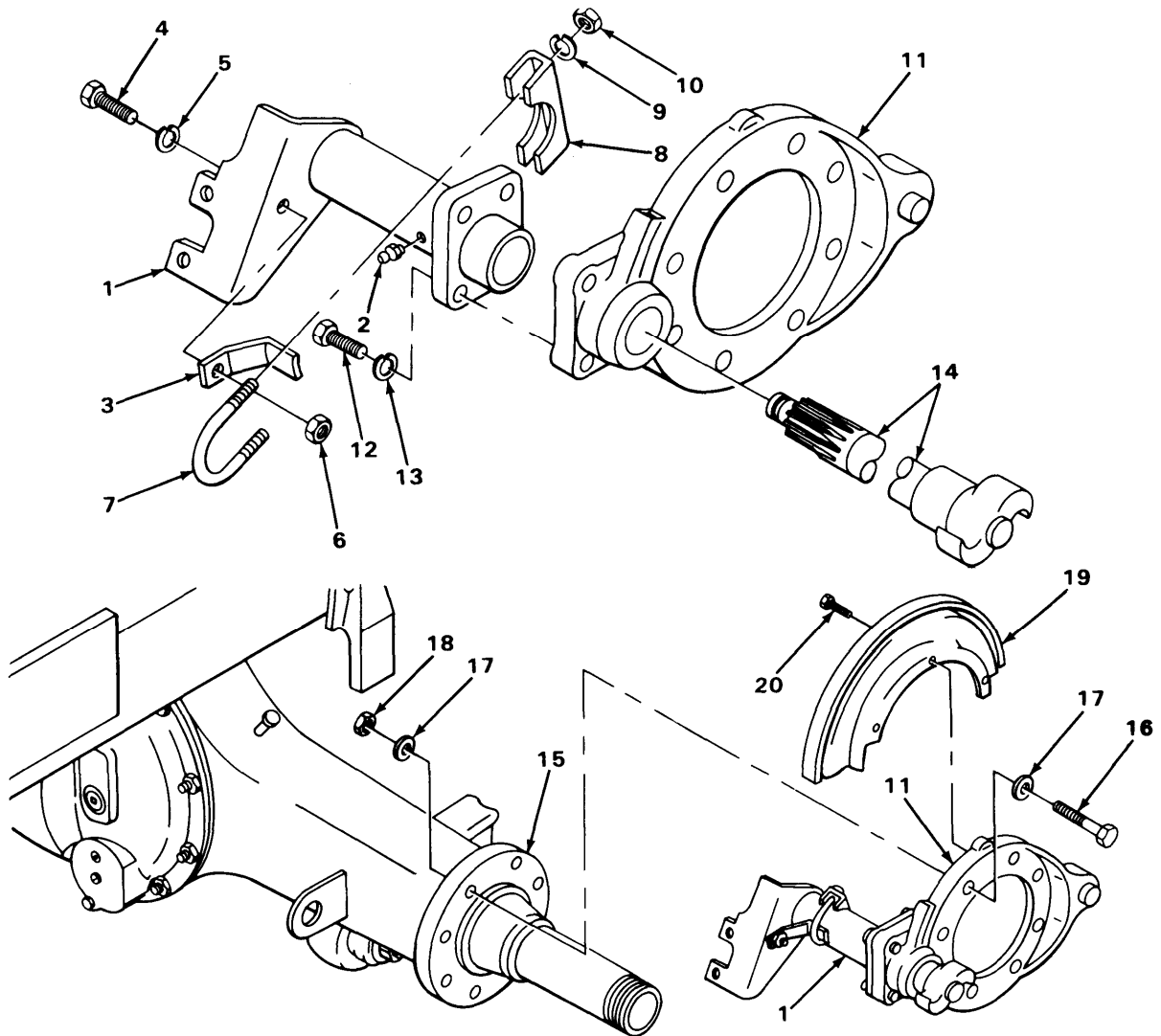


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**REAR AXLE BRAKE SPIDER AND CAM ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>ASSEMBLY</b>		
20. Camshaft bracket (1)	Grease fitting (2)	Screw in and tighten using 5/8-inch wrench.
21.	Reinforcing strut (3)	Put in place.
22. Reinforcing strut (3) to camshaft bracket (1)	Screw (4) new lock-washer (5) and new self-locking nut (6)	Screw on part way.
23.	U-bolt (7)	Push into place.
24. U-bolt (7)	Clamp plate (8)	Put on.
25. Clamp plate (8) to U-bolt (7)	Two new lockwashers (9) and nuts (10)	Screw on and tighten using 1/2-inch deep-well socket and handle.
26. Reinforcing strut (3) to camshaft bracket (1)	Screw (4) and self-locking nut (6)	Using 3/4-inch box wrench, socket, and handle, tighten.
27. Spider (11)	Camshaft bracket (1)	Put in place.
28. Camshaft bracket (1) to spider (11)	Four screws (12) and new lockwashers (13)	Screw in and tighten using 3/4-inch socket and handle.
29. Camshaft bracket (1)	Camshaft (14)	Apply grease to journals and push in place.
<b>INSTALLATION</b>		
30. Axle (15)	Spider (11)	Put in place, sliding camshaft bracket (1) on axle bracket.
31. Spider (11) to axle (15)	Eight screws (16), 16 washers (17), and nuts (18)	Screw on and tighten using 15/16-inch box wrench, 15/16-inch socket, and handle.
32. Spider (11)	Two dust covers (19)	Put in place.
33. Two dust covers (19) to spider(11)	Six screws (20)	Screw in and tighten using 1/2-inch socket and handle.
34.	Camshaft bracket (1)	Lubricate (LO 9-2320-270-1 2).

REAR AXLE BRAKE SPIDER AND CAM ASSEMBLY - CONTINUED



**NOTE**

FOLLOW-ON MAINTENANCE:

1. Install rear axle slack adjuster assembly (page 4-624).
2. Install rear axle airbrake and spring brake chamber (page 4-701).
3. Install rear axle brakeshoes (page 4-621).
4. Install tandem axle hub, drum, and bearing assembly (page 4-925).
5. Manually set spring brake (TM 9-2320-270-10).
6. Remove wood blocks (TM 9-2320-270-10).

**TASK ENDS HERE**

**NYLON TUBING**

---

This task covers:

- a. Replacement (page 4-634)
  - b. Repair at Connection (page 4-639)
  - c. Repair of In-Line Break (page 4-641)
  - d. Repair of Tube-End Section (page 4-643)
  - e. Repair of In-Line Section (page 4-647)
- 

**INITIAL SETUP**

**Tools**

- Hammer, plastic
- Handle, ratchet, 3/8-inch drive
- Pliers, diagonal cutting
- Pliers, long-nose
- Pliers, slip-joint, straight-nose
- Knife, pocket
- Socket, 1/2-inch, 3/8-inch drive
- Wrench, box, 1/2-inch
- Wrench, open-end, 9/16-inch
- Wrench, open-end, 5/8-inch

**Materials/Parts – Continued**

- Nylon airhose (as required)
- Sleeve, compression (as required)
- Union, tubing, brass compression (as required)
- Soap, liquid (item 14, appendix C)
- Tape, pressure sensitive (item 21, appendix C)
- Wrap, tie (item 24, appendix C)

**Personnel Required**

One

**Materials/Parts**

- Insert, nylon tubing reinforcing (as required)
- 

LOCATION	ITEM	ACTION	REMARKS
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**NOTE**

This procedure applies to all nylon tubing air lines. Quick release valve-to-bulkhead fitting nylon tube is shown.

**REPLACEMENT**

**WARNING**

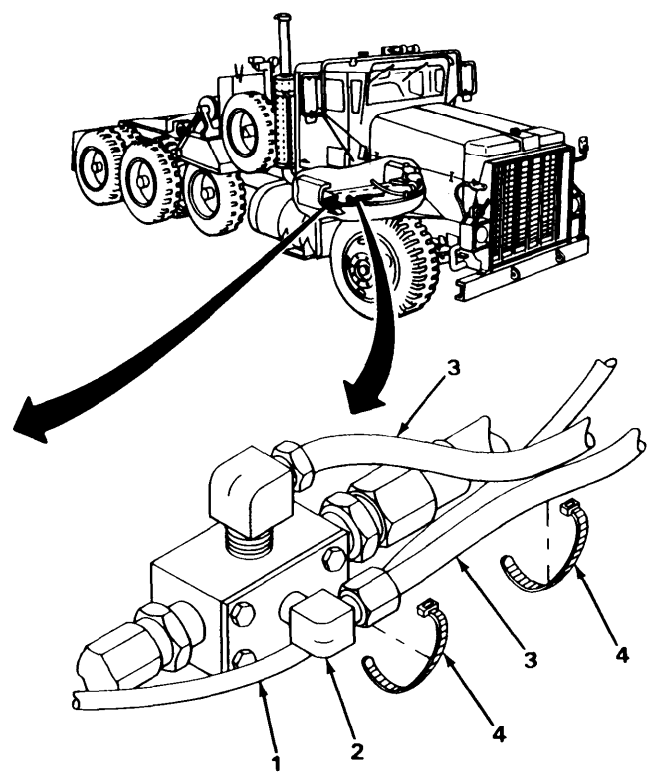
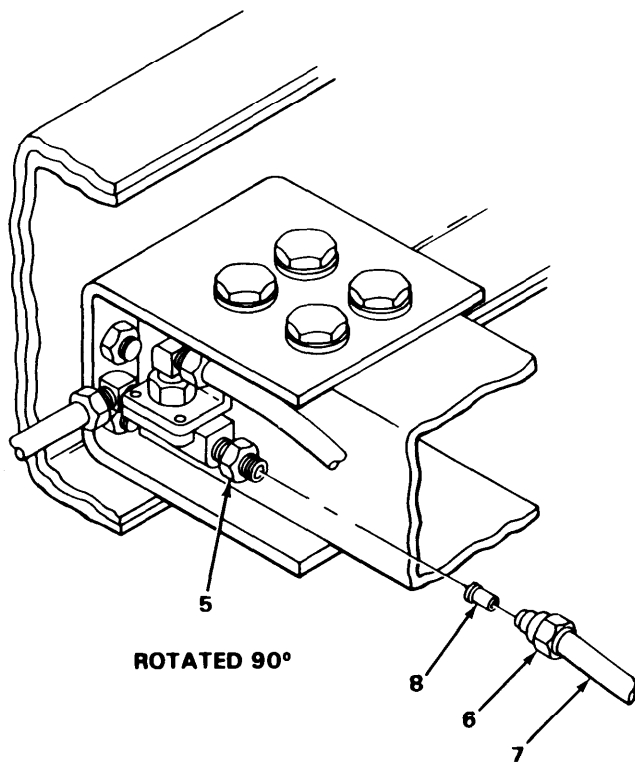
Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

Tag tubes according to general maintenance instructions (page 4-1).

**NYLON TUBING - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
1.	Air system	Drain (TM9-2320-270-10).
2. Nylon tube (1) to elbow (2) and other air lines (3)	Two tie wraps (4)	a. Using cutting pliers, cut and take off. b. Get rid of.
3. Adapter (5)	Nut (6)	Using 5/8-inch open-end wrench, unscrew and pull off.
4.	Nylon tube (7)	Pull out.
5. Adapter or nylon tube (7)	Insert (8)	Pull out.



**NYLON TUBING - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
REPLACEMENT – CONTINUED		
6. Elbow (1)	Nut (2)	Using 5/8-inch open-end wrench, unscrew and pull off.
7.	Nylon tube (3)	Pull out.
<b>NOTE</b>		
Insert may stay in nylon tube or in elbow.		
8. Elbow (1) or nylon tube (3)	Insert (4)	Pull out.
9. Two hose clips (5) to frame (6)	Two screws (7) and nuts (8)	Using 1/2-inch box wrench, socket, and handle, unscrew part way.
10.	Nylon tube (3)	Take out.
11. Nylon tube (3)	Nut (2)	a. Slide back. b. Inspect for cracks and stripped threads.
12.	Sleeve (9)	Inspect for deep grooves or cracks.
13.	Insert (4)	a. Inspect for cracks, bends, and being crushed by sleeve (9). b. Replace defective sleeve (9).
14.	Nylon tube (3)	If nut (2) or sleeve (9) is defective: a. Using pocket knife, cut off sleeve (9). b. Get rid of old sleeve (9) and cut off part of nylon tube (3). c. Replace with new sleeve (9). d. If nut (2) is damaged, slide off and replace.

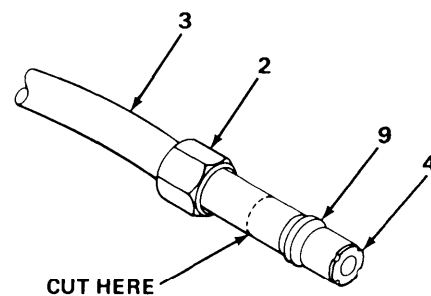
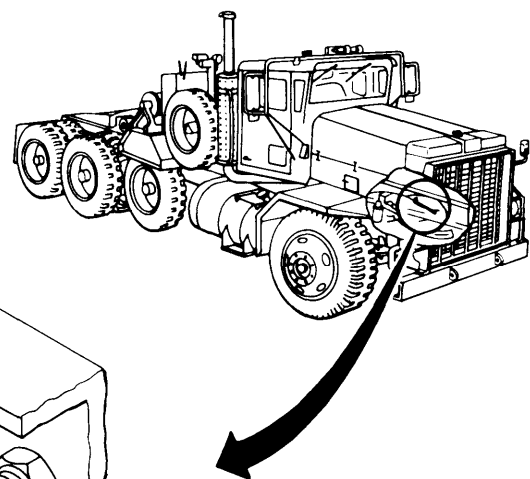
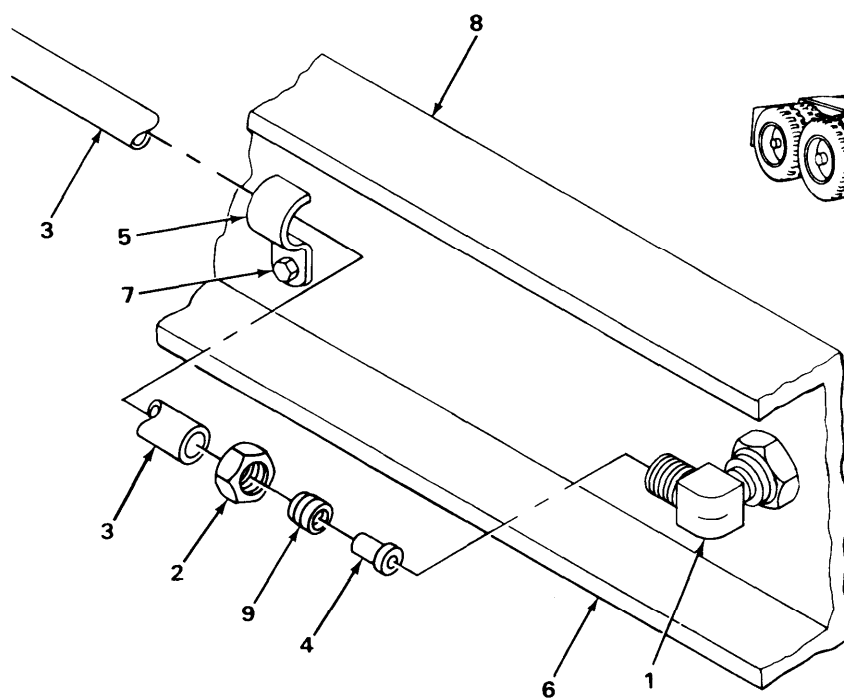
**CAUTION**

When installing nylon tubing under truck or in engine area, protect ends of tubing with tape to prevent dirt from getting inside nylon tube and contaminating air and fluid systems.

15.	Nylon tube (3)	a. Seal ends with pressure sensitive tape. b. Route into place.
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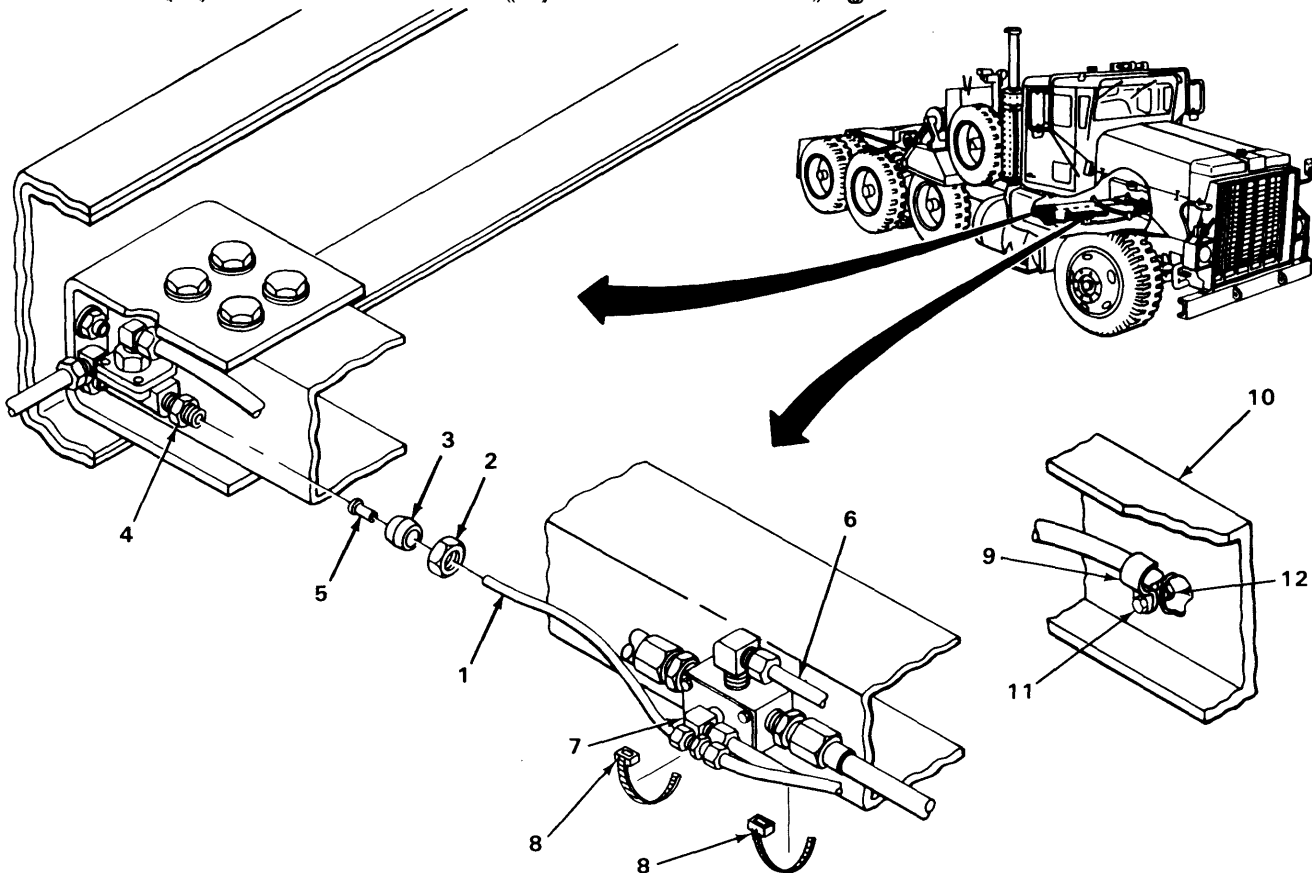
**NYLON TUBING - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
16. Two tube clips (5)	Nylon tube (3)	Put in position.
17. Nylon tube (3)	Nut (2) and sleeve (9)	a. Take off tape. b. Slide on.
18. Elbow (1)	Insert (4)	Push in using plastic hammer.
19.	Nylon tube (3)	Lube nylon tube end with soap and push until seated.
20. Nylon tube (3) to elbow (1)	Nut (2)	Screw on and tighten using 5/8-inch wrench.



**NYLON TUBING -CONTINUED**

LOCATION	ITEM	ACTION REMARKS
REPLACEMENT – CONTINUED		
21. Nylon tube (1)	Nut (2) and sleeve (3)	a. Take off tape. b. Slide on.
22. Adapter (4)	Insert (5)	Push in and using plastic hammer, seat.
23.	Nylon tube (1)	Lube end lightly with soap and push in until seated.
24. Nylon tube (1), adapter (4)	Nut (2)	Screw on and tighten using 5/8-inch wrench.
25. Nylon tube (1), nylon tube (6), and elbow (7)	Two new tie wraps (8)	Using slip-joint pliers, put on.
26. Two tube clips (9) to frame (10)	Two screws (11) and nuts (12)	Using 1/2-inch box wrench, socket, and handle, tighten.



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**NYLON TUBING - CONTINUED**


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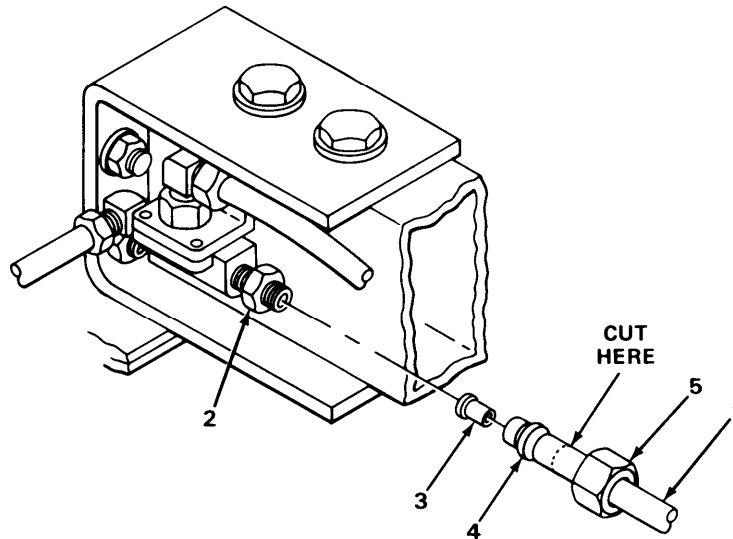
LOCATION	ITEM	ACTION REMARKS
REPAIR AT CONNECTION		
<b><u>WARNING</u></b>		
Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.		
<b>NOTE</b>		
It is not necessary to remove nylon tubing to repair it. Steps are the same for repairing all nylon tubing. However, wrench and repair part sizes will vary depending on tubing size. Air line 012 from quick release valve to left front brake chamber hose is shown.		
27. Nylon tube (1) to adapter (2)	Nut (3)	a. Using 5/8-inch open-end wrench, tighten. b. Check for leaks (page 4-1). <b>If it still leaks, continue with step 28.</b>
28.	Air system	Drain (TM 9-2320-270-10).
29.	Nut (3)	Using 5/8-inch open-end wrench, unscrew “ and pull back.
30. Adapter (2)	Nylon tube (1)	Pull out.

**NYLON TUBING - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
REPAIR AT CONNECTION – CONTINUED		
31. Nylon tube (1) or adapter (2)	Insert (3)	Using long-nose pliers pull out and inspect for cracks, dents, or being crushed by sleeve (4).
32.	Nut (5)	Inspect for cracks and stripped threads. <b>To replace, go to step 35.</b>
33.	Sleeve (4)	Inspect for cracks or deep grooves. <b>To replace, go to step 36.</b>
34.	Nylon tube (1)	a. Inspect for cracks, punctures or breaks. b. Using pocket knife, cut behind sleeve or beyond damage. c. Get rid of.
35. Nylon tube (1)	Nut (5)	If replacement is necessary, slide off.
36.	New nut (5) and new sleeve (4)	Slide on.
37. Adapter (2)	Insert (3)	Push in and using plastic hammer, seat.
36.	Nylon tube (1)	Lube end lightly with soap and push in until seated.
39. Nylon tube (1) to adapter (2)	Nut (5)	Screw on and tighten using 5/8-inch wrench.
40.	Both connections	Check for leaks (page 4-1).

**NYLON TUBING - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
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**REPAIR OF IN-LINE BREAK**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

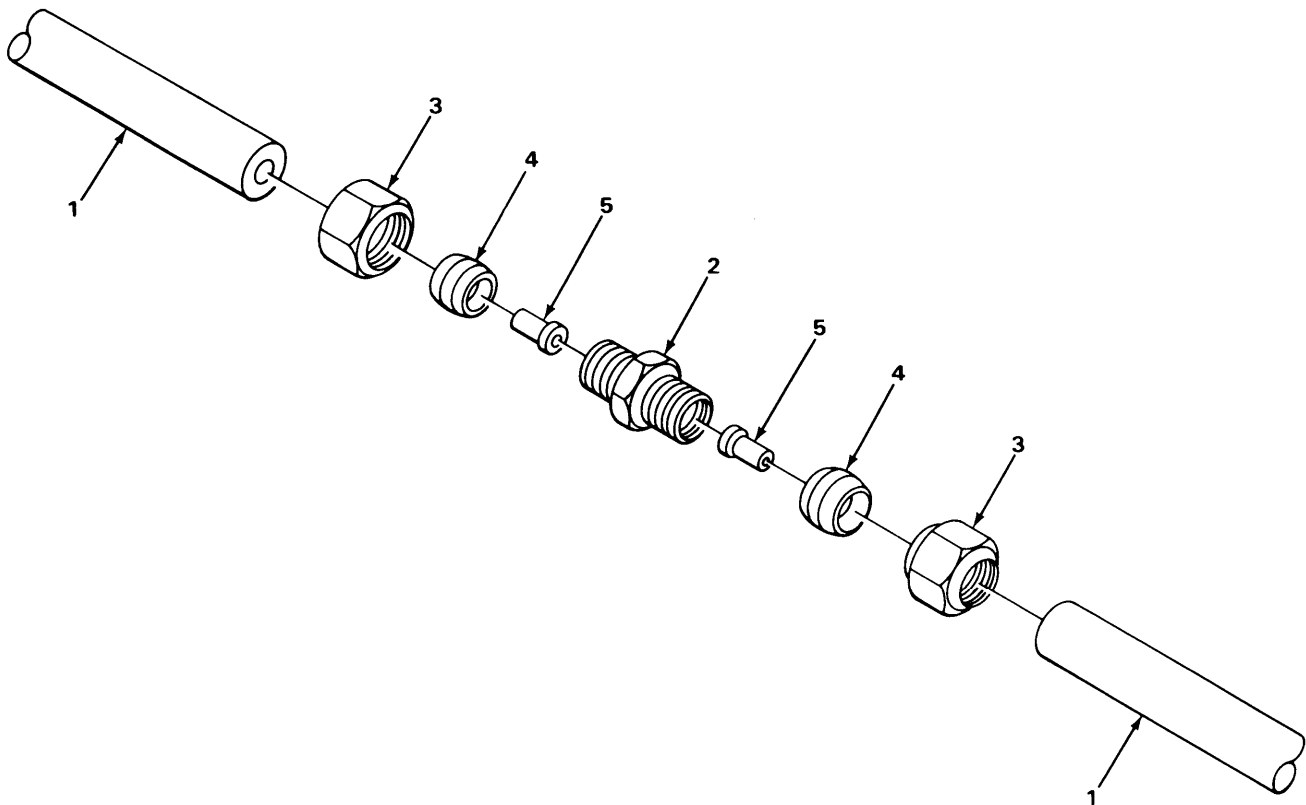
Break in nylon tubing can be repaired by installing a union, provided that very little of nylon tubing has to be cut so tubing will reach.

If nylon tubing does not reach when damage is cut away, go to steps 70 to 87.

- |     |            |                           |
|-----|------------|---------------------------|
| 41. | Air system | Drain (TM 9-2320-270-10). |
|-----|------------|---------------------------|

**NYLON TUBING - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
REPAIR OF IN-LINE BREAK – CONTINUED		
42.	Nylon tube (1)	Using pocket knife, cut nylon tube (1) square, removing damage.
43. Union (2)	Two nuts (3) and sleeves (4)	Unscrew and take off. <b>Sleeves will be inside nuts.</b>
44.	Two inserts (5)	Push in and using plastic hammer, seat.
45. Both ends of nylon tube (1)	Two nuts (3) and sleeves (4)	Slide on.
46. Union (2)	Both ends of nylon tube (1)	Lube ends lightly with soap and push in until seated.
47. Nylon tube (1) to union (2)	Two nuts (3)	Screw on and tighten using 5/8-inch and 9/16-inch wrenches.
48.	Both connections	Check for air leaks (page 4-1).



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**NYLON TUBING - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
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REPAIR OF TUBE-END SECTION

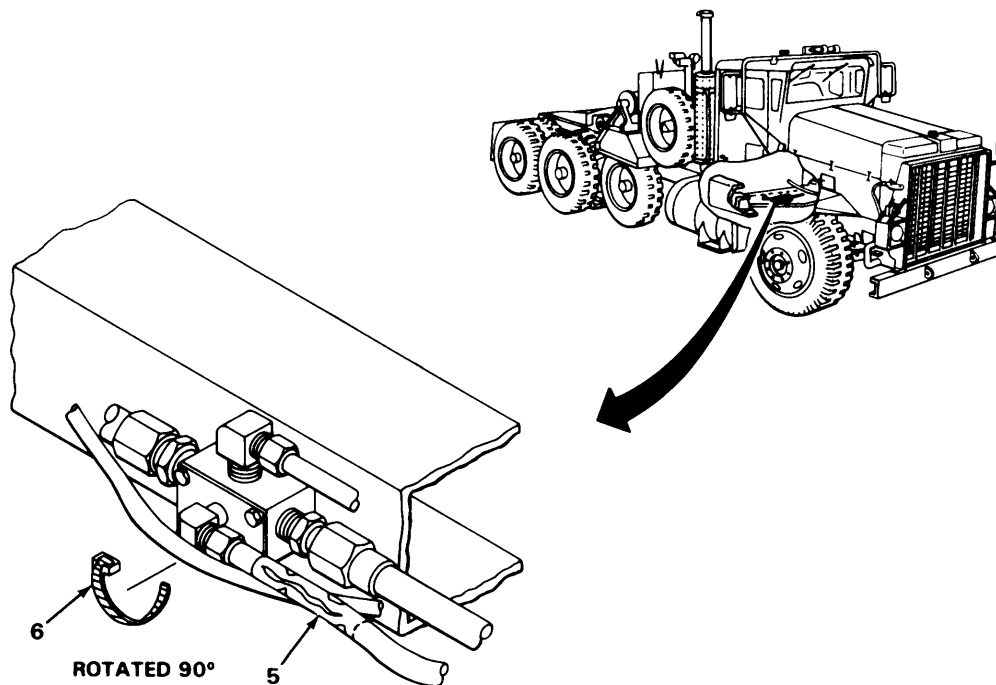
**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

If nylon tubing is damaged near one end so it will not reach fitting when damage is cut away, a replacement section can be installed.

- |     |                                 |  |
|-----|---------------------------------|--|
| 49. | Air system                      | Drain (TM9-2320-270-10),   |
| 50. | Nylon tube (5)<br>Tie wraps (6) | a. Using cutting pliers, cut and take off any ties (6) in the way.<br>b. Get rid of. |



NYLON TUBING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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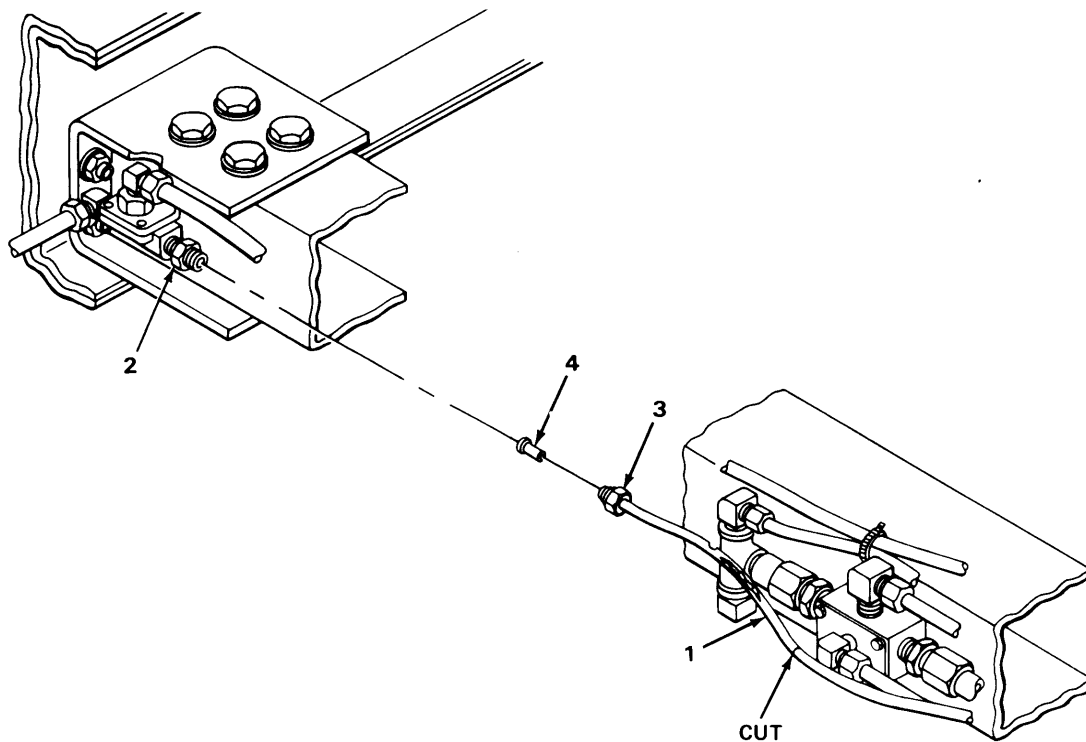
REPAIR OF TUBE-END SECTION – CONTINUED

51. Nylon tube (1) to adapter (2)	Nut (3)	Using 5/8-inch wrench, unscrew and slide back.	
52. Adapter (2)	Nylon tube (1)	Pull out.	

**NOTE**

Insert may stay in adapter or in nylon tube.

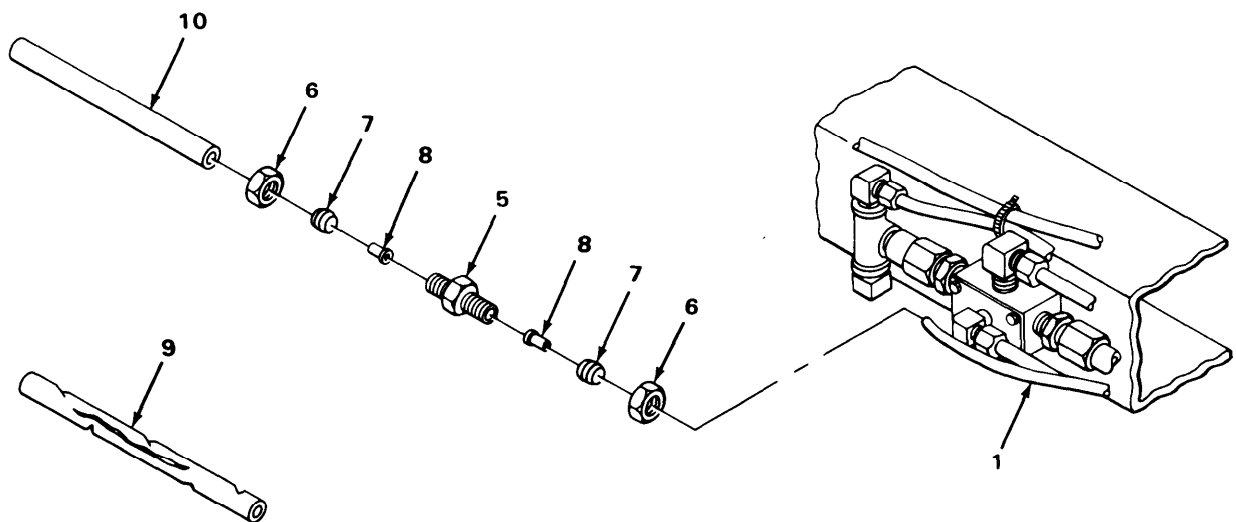
53. Fitting (2) or nylon tube (1)	Insert (4)	a. Using long-nose pliers, pull out. b. Inspect to see if it is cracked, dented, or crushed. <b>Replace damaged insert.</b>
54.	Nylon tube (1)	Using pocket knife, cut off beyond damage.
55. Nylon tube (1)	Nut (3)	a. Slide off. b. Inspect for cracks or stripped threads. <b>Replace damaged nut.</b>



TA240422

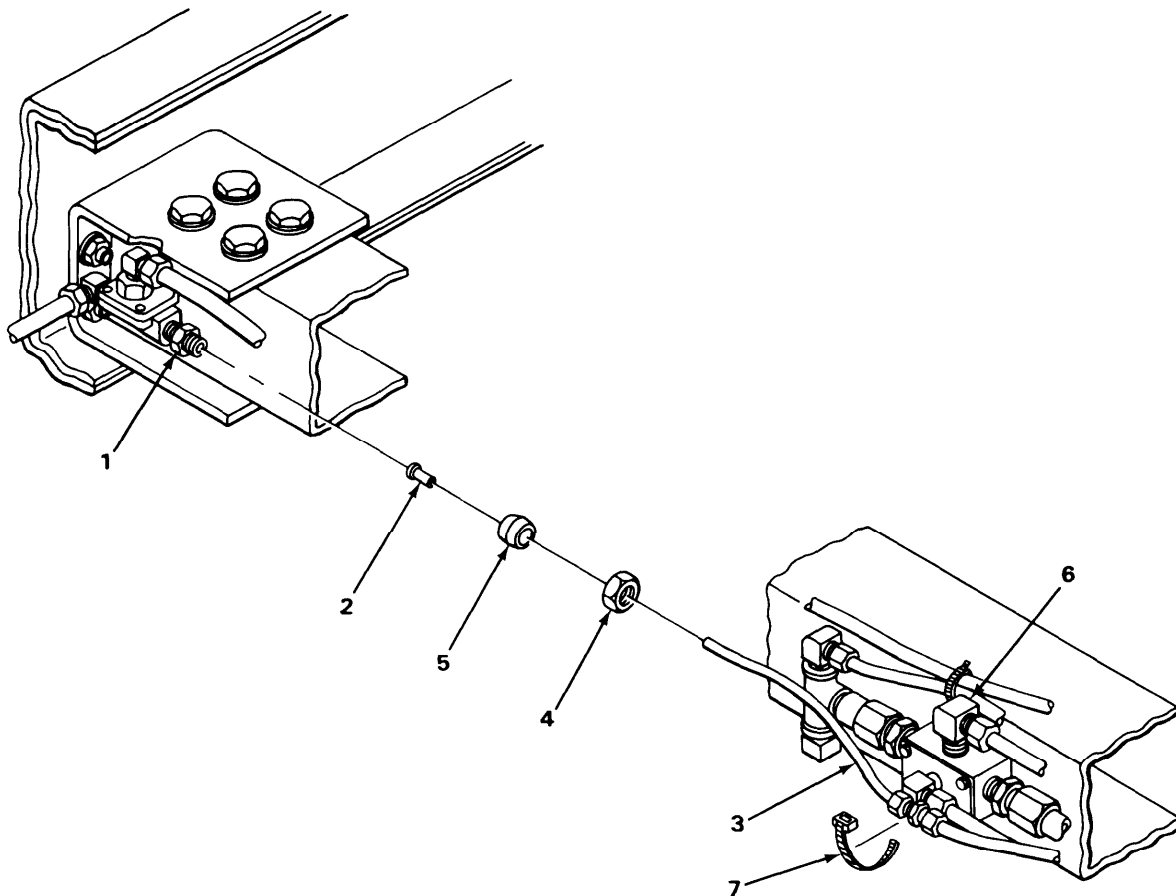
**NYLON TUBING - CONTINUED**

	LOCATION	ITEM	ACTION REMARKS
56.	Union (5)	Two nuts (6) and sleeves (7)	Unscrew and take off. <b>Sleeves will be inside nuts.</b>
57.		Two inserts (8)	Push in and using plastic hammer, seat.
56.		Replacement section (9)	Using pocket knife, cut from bulk stock shorter than cut off section by half the length of the union.
59.	Nylon tube (1)	Nut (6) and sleeve (7)	Slide on.
60.		Union (5)	Lube end lightly with soap and push on until seated.
61.	Nylon tube (1) to union (5)	Nut (6)	Screw on and tighten using 5/8-inch and 9/16-inch wrenches.
62.	Replacement section (10)	Nut (6) and sleeve (7)	Slide on.
63.	Union (5)	Replacement section (10)	Lube end lightly with soap and push in until seated.
64.	Replacement section (10) to union (5)	Nut (6)	Screw on and tighten using 5/8-inch and 9/16-inch wrenches.



NYLON TUBING - CONTINUED

LOCATION	ITEM	ACTION REMARKS
REPAIR OF TUBE-END SECTION – CONTINUED		
65. Adapter (1)	Insert (2)	Push in and using plastic hammer, seat.
66. Repair section (3)	Nut (4) and sleeve (5)	Slide on.
67. Adapter (1)	Repair section (3)	Lube end lightly with soap and push in until seated.
68. Repair section (3) to adapter (1)	Nut (2)	Screw on and tighten using 5/8-inch wrench.
69. Repair section (3) to elbow (6)	New tie wrap (7)	Using straight-nose pliers, put on.



TA240424



**NYLON TUBING - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
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REPAIR OF IN-LINE SECTION

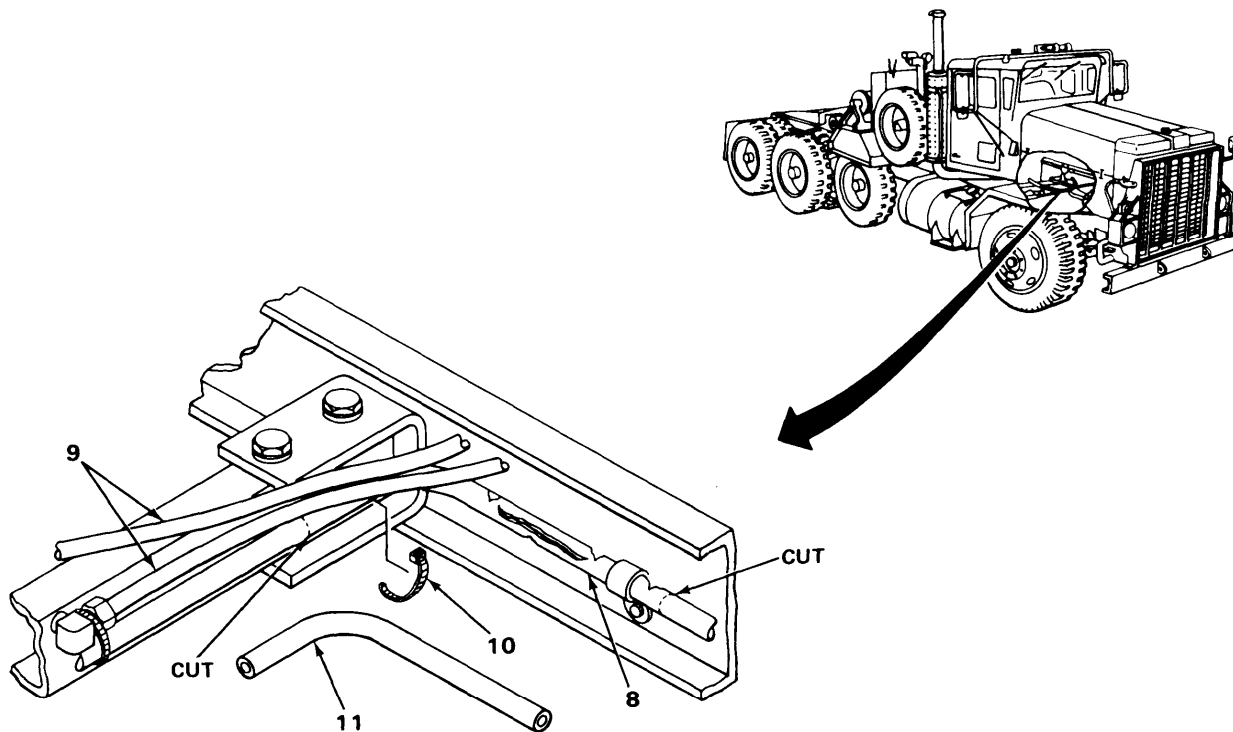
**WARNING**

Make sure all pressure is drained from air system before disconnecting air line. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

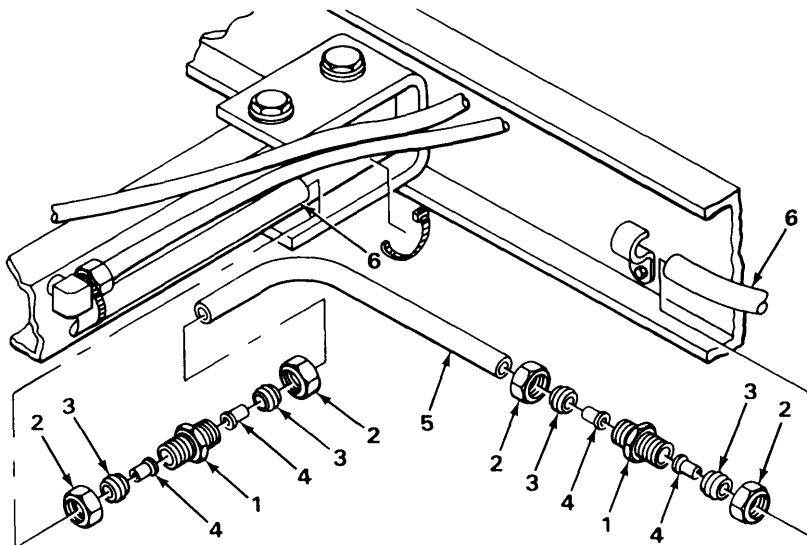
Long breaks, or a series of breaks in the tubing can be repaired by installing a repair section.

- |     |  |   |
|-----|--|---|
| 70. | Air system   | Drain (TM 9-2320-270-10).   |
| 71. | Nylon tube (8) to other nylon tubes (9)<br>Tie wrap (10) | a. Using cutting pliers, cut and take off.<br>b. Get rid of.          |
| 72. | Nylon tube (8)   | Using pocket knife, cut out damaged section.                          |
| 73. | Repair section (11)                                      | Using pocket knife, cut from bulk to same length as the damaged area. |



**NYLON TUBING - CONTINUED**

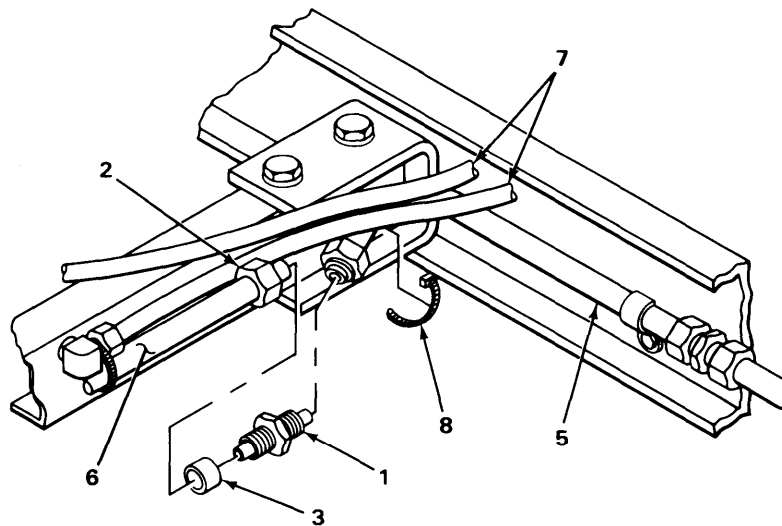
LOCATION	ITEM	ACTION REMARKS
<b>REPAIR OF IN-LINE SECTION – CONTINUED</b>		
74. Two unions (1)	Four nuts (2) and sleeves (3)	Unscrew and take off. <b>Sleeves will be inside nuts.</b>
75.	Four inserts (4)	Push in and using plastic hammer, seat.
76. Repair section (5)	Two nuts (2) and sleeves (3)	Slide on.
77.	Two unions (1)	Lube ends of repair section (5) lightly with soap and push on until seated.
78. Two unions (1) to repair section (5)	Two nuts (2)	Screw on and tighten using 5/8-inch and 9/16-inch wrenches.
79.	Repair section (5)	Tape ends and route into place.
80. Nylon tube (6)	Nut (2) and sleeve (3)	Slide on.
81. Union (1)	Nylon tube (6)	Lube lightly with soap and push in until seated.
82. Nylon tube (6) to union (1)	Nut (2)	Screw on and tighten using 5/8-inch and 9/16-inch wrenches.



TA240426

**NYLON TUBING - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
83. Nylon tube (6)	Nut (2) and sleeve (3)	Slide on.
84. Union (1)	Nylon tube (6)	Lube end lightly with soap and push in until seated.
85. Nylon tube (6) to union (1)	Nut (2)	Screw on and tighten using 5/8-inch and 9/16-inch wrenches.
86. Repair section (5) to nylon tubes (7)	New tie wrap (8)	Using slip-joint pliers, put on.
87.	All connections	Check for air leaks (page 4-1).



**TASK ENDS HERE**

TA240427

**NONMETALLIC HOSE WITH STEEL FITTINGS**

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This task covers:

Replacement (page 4-650)

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INITIAL SETUP

Tools

Handle, ratchet, 3/8-inch drive  
 Pliers, diagonal-cutting  
 Pliers, slip-joint, straight-nose  
 Socket, 3/8-inch drive, 7/16-inch  
 Wrench, box, 7/16-inch  
 Wrench, open-end, 7/8-inch  
 Wrench, open-end, 15/16-inch

Materials/Parts

Lockwashers (as required)  
 Wrap, tie (item 24, appendix C)

Personnel Required

One

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LOCATION	ITEM	ACTION	REMARKS
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REPLACEMENT

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

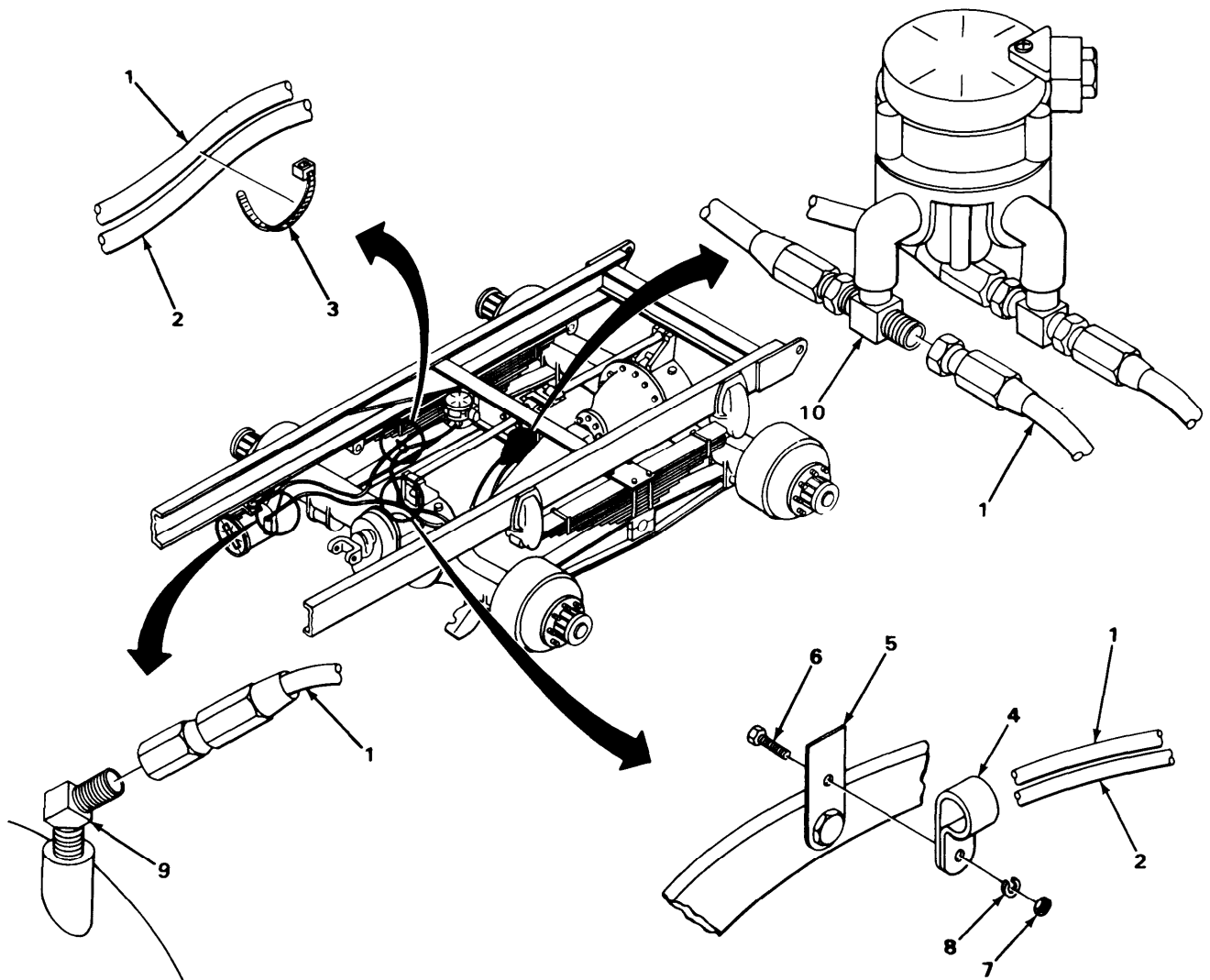
Steps in this task are typical of all air system flexible hoses. Hose diameters and fitting sizes vary. If necessary, refer to tasks for parts the hose connects to for wrench sizes. Air line 540 from service relay to right forward tandem axle, is shown.

If more than one hose is being replaced, tag according to general maintenance instructions (page 4-1).

- |    |                               |  |
|----|-------------------------------|--|
| 1. | Air system                    | Drain pressure (TM 9-2320-270-10).   |
| 2. | Hose (1) and hoses (2)        | Tie wraps (3)<br>a. Using diagonal-cutting pliers, cut and take off.<br>b. Get rid of.   |
| 3. | Loop clamp (4) to bracket (5) | Screw (6), nut (7) and lockwasher (8)<br>a. Using 7/16-inch box wrench, socket, and handle, unscrew and take off.<br>b. Get rid of lockwasher (8). |
| 4. | Hoses (1) and (2)             | Loop clamp (4)<br>Spread and take off.   |

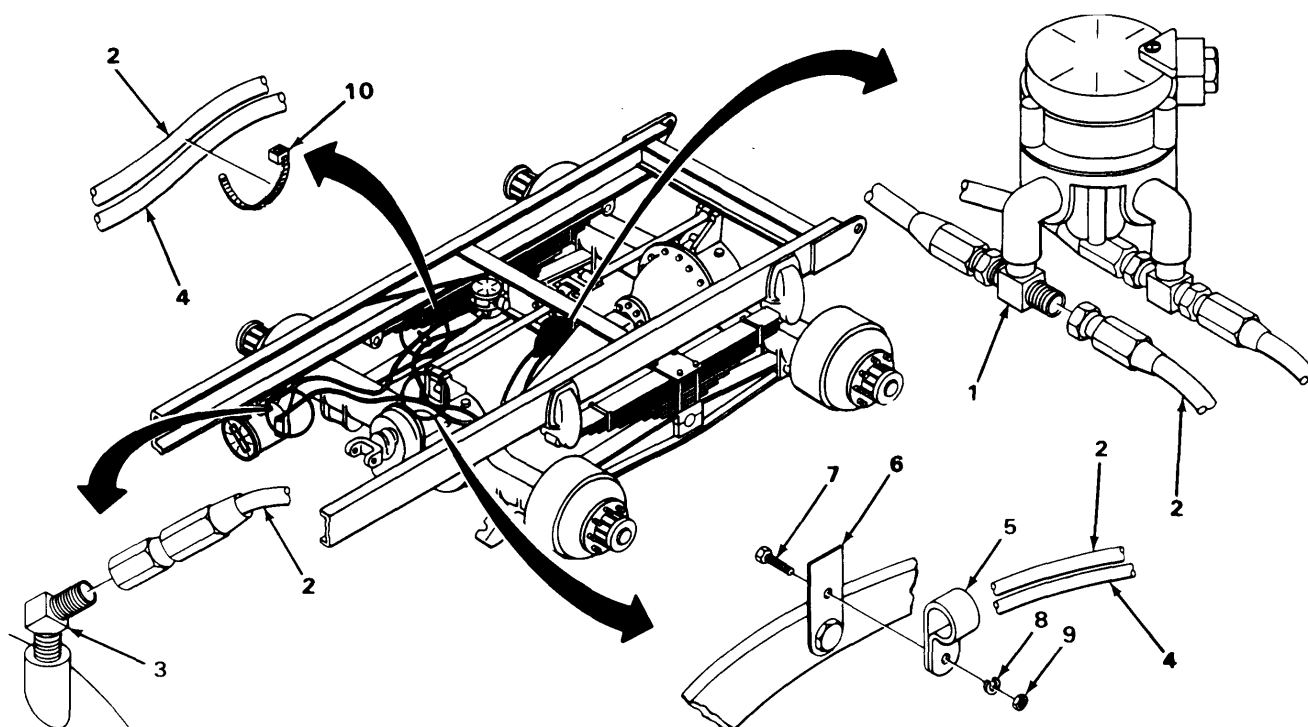
NONMETALLIC HOSE WITH STEEL FITTINGS - CONTINUED

LOCATION	ITEM	ACTION REMARKS
5. Elbow (9)	Hose (1)	Using 15/16-inch and 7/8-inch wrenches, take off.
6. Tee (10)	Hose (1)	Using 15/16-inch and 7/8-inch wrenches, take off.



NONMETALLIC HOSE WITH STEEL FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REPLACEMENT - CONTINUED			
<b>NOTE</b>			
Replacement hose will have to be made from bulk stock at direct support maintenance.			
7. Tee (1)	Hose (2)	a. Route into place. b. Screw on and tighten using 15/16-inch and 7/8-inch wrenches.	
8. Elbow (3)	Hose (2)	Screw on and tighten using 15/16-inch and 7/8-inch wrenches.	
9. Hoses (2) and (4)	Loop clamp (5)	Put on.	
10. Loop clamp (5) to bracket (6)	Screw (7), new lock-washer (8) and nut (9)	Screw on and tighten using 7/16-inch box wrench, socket, and handle.	
11. Hose (2) to hoses (4)	New tie wraps (10)	Using slip-joint pliers, put on.	



TASK ENDS HERE

TA240429

**FRONT AXLE BRAKE CHAMBER HOSE AND FITTINGS**

---

This task covers:

- a. Removal (page 4-653)
  - b. Inspection/Replacement (page 4-654)
  - c. Installation (page 4-655)
- 

**INITIAL SETUP**

**Tools**

- Brush, wire
- Hammer, plastic
- Handle, ratchet, 1/2-inch drive
- Knife, pocket
- Pliers, long-nose, round
- Pliers, slip-joint, straight-nose
- Socket, 15/16-inch, deep-well, 1/2-inch
- Wrench, open-end, 5/8-inch
- Wrench, open-end, 3/4-inch
- Wrench, open-end, 7/8-inch
- Wrench, open-end, 15/16-inch
- Wrench, open-end, 1-inch

**Materials/Parts**

- Lockwasher, nut to bulkhead fitting
- Soap, liquid (item 14, appendix C)
- Tag, marking (item 18, appendix C)
- Tape, teflon (item 22, appendix C)

**Personnel Required**

Two

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LOCATION	ITEM	ACTION	REMARKS
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**REMOVAL**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

Steps in this task apply to left and right front axle brake chamber hose and fittings. Left hose is shown.

**NOTE**

Tag lines according to general maintenance instructions (page 4-1).

- |    |            |                          |
|----|------------|--------------------------|
| 1. | Air system | Drain (TM9-2320-270-10). |
|----|------------|--------------------------|

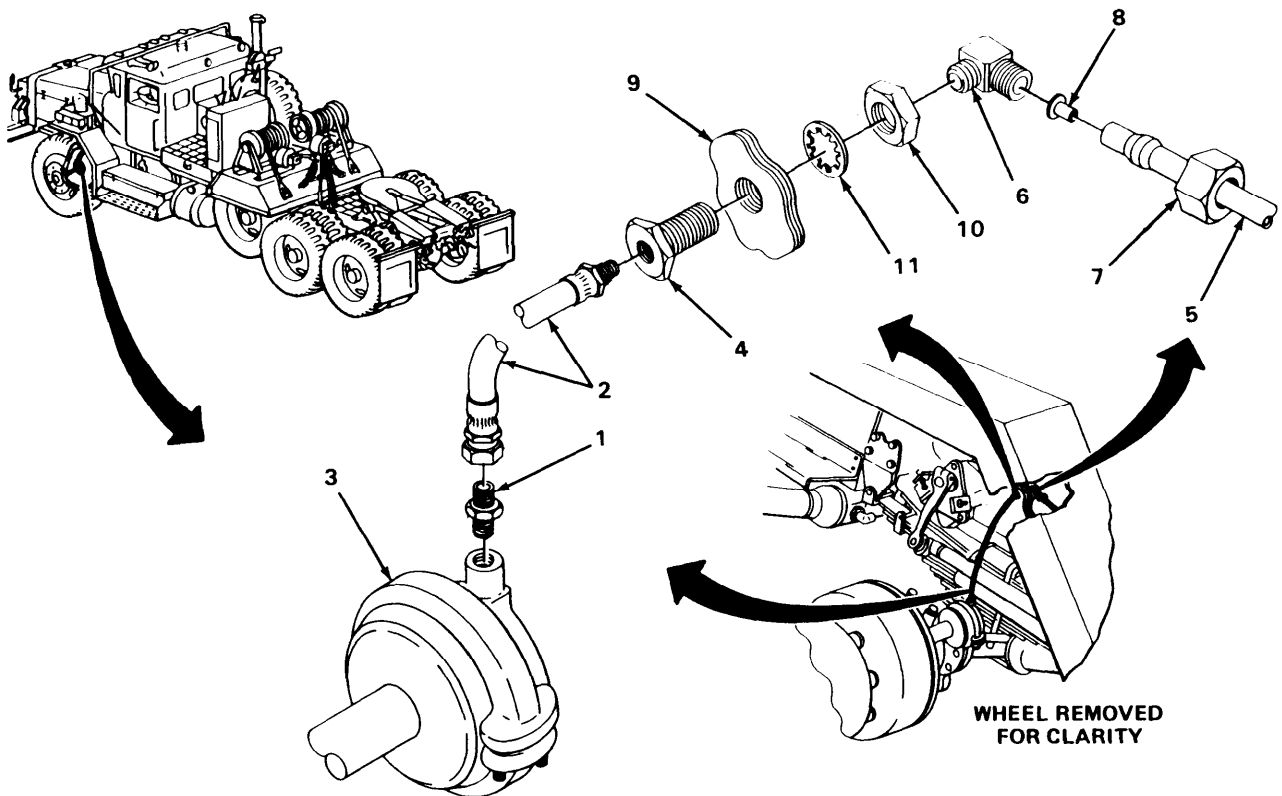
**FRONT AXLE BRAKE CHAMBER HOSE AND FITTINGS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL- CONTINUED</b>		
2. Adapter (1)	Hose (2)	Using 7/8-inch wrench, and slip-joint pliers if necessary, unscrew and take off.
3. Brake chamber (3)	Adapter (1)	Using 3/4-inch wrench, unscrew and take out.
4. Bulkhead fitting (4)	Hose (2)	Using 7/8-inch wrench, unscrew and take out.
5. Nylon tube (5) to elbow (6)	Nut (7)	Using 5/8-inch wrench, unscrew and pull back.
6. Elbow (6)	Nylon tube (5)	Pull out.
7. Nylon tube (5) or elbow (6)	Insert (8)	Using long-nose pliers, pull out.
8. Bulkhead fitting (4)	Elbow (6)	Using 5/8-inch wrench, unscrew and take out.
9. Bulkhead fitting (4) to frame (9)	Nut (10) and lockwasher(11)	a. Using 1-inch wrench and 15/16-inch socket and handle, unscrew and take off. b. Get rid of lockwasher (11).
10. Frame (9)	Bulkhead fitting (4)	Take out.
<b>INSPECTION/REPLACEMENT</b>		
11.	All threaded parts and hose (2)	Inspect according to general maintenance instructions (page 4-1).



**FRONT AXLE BRAKE CHAMBER HOSE AND FITTINGS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION</b>		
12. Frame (9)	Bulkhead fitting (4)	Put in place.
13. Bulkhead fitting (4) to frame (9)	New lockwasher(11) and nut (10)	Screw on and tighten using 1-inch wrench and 15/16-inch socket and handle.
14. Bulkhead fitting (4)	Elbow (6)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
15. Elbow (6)	Insert (8)	Push in and using plastic hammer, seat.
16.	Nylon tube (5)	Lube end lightly with soap and push in until seated.
17. Nylon tube (5) to elbow (6)	Nut (7)	Screw on and tighten using 5/8-inch wrench.



**FRONT AXLE BRAKE CHAMBER HOSE AND FITTINGS - CONTINUED**

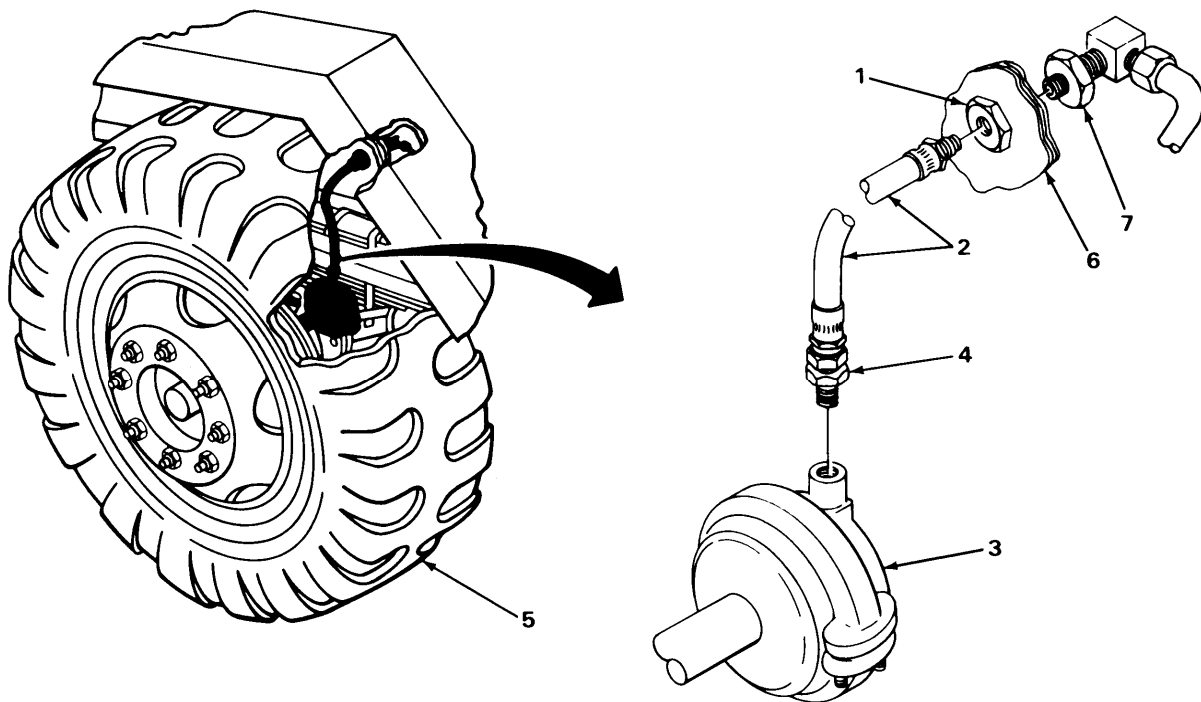
LOCATION	ITEM	ACTION REMARKS
INSTALLATION – CONTINUED		
18. Bulkhead fitting(1)	Hose (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 7/8-inch wrench.
19. Brake chamber (3)	Adapter (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/4-inch wrench.
20. Adapter (4)	Hose (2)	Screw on and tighten using 7/8-inch and 3/4-inch wrenches.
21.	Engine	a. Start (TM 9-2320-270-10). b. While watching tire (5) and hose (2), have assistant turn steering wheel all the way left to make sure hose (2) does not rub against tire (5). If hose does not rub, go to Follow-On Maintenance. c. Shut down (TM 9-2320-270-10).

**NOTE**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

22.	Air system	Drain (TM 9-2320-270-10).
23. Frame (6)	Nut (7) and bulkhead fitting (1)	a. Using 1-inch and 15/16-inch open-end wrenches, unscrew part way. b. Using 1-inch wrench, turn fitting (1) either right or left until hose (2) clears tire (5). c. Using 15/16-inch and 1-inch open-end wrenches, tighten. Do not kink nylon tubing.

FRONT AXLE BRAKE CHAMBER HOSE AND FITTINGS - CONTINUED



**NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

## WET RESERVOIR

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This task covers:

- a. Removal (page 4-659)
  - b. Disassembly (page 4-662)
  - c. Cleaning (page 4-662)
  - d. Inspection/Replacement (page 4-663)
  - e. Assembly (page 4-664)
  - f. Installation (page 4-666)
- 

### INITIAL SETUP

#### Tools

Hammer, plastic  
Handle, ratchet, 1/2-inch drive  
Knife, pocket  
Measure, tape  
Pliers, long-nose, round  
Pliers, slip-joint, straight-nose  
Screwdriver, flat-tip, 3/8-inch  
Socket, 9/16-inch, 1/2-inch drive  
Vise  
Wrench, adjustable  
Wrench, box, 9/16-inch  
Wrench, box, 1 1/16-inch  
Wrench, open-end, 9/16-inch  
Wrench, open-end, 5/8-inch  
Wrench, open-end, 11/16-inch  
Wrench, open-end, 3/4-inch  
Wrench, open-end, 15/16-inch  
Wrench, open-end, 1 1/8-inch

#### Tools – Continued

Wrench, open-end, 1 1/4-inch (two required)  
Wrench, pipe, 1/2 to 1 1/2-inch

#### Materials/Parts

Lockwasher, bracket arms to supports and reservoir (four required)  
Lockwasher, bracket arms (two required)  
Lockwasher, two loop clamps to thru-bolts (two required)  
Soap, liquid (item 14, appendix C)  
Tag, marking (item 18, appendix C)  
Tape, teflon (item 22, appendix C)

#### Personnel Required

Two

WET RESERVOIR - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

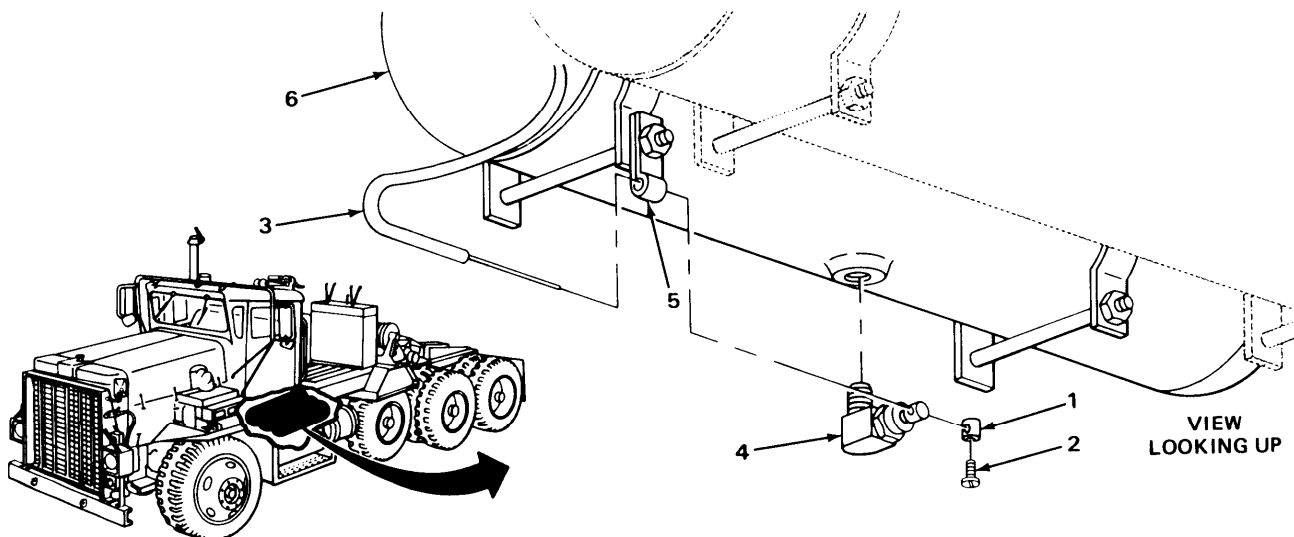
**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Air Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

Tag air lines according to general maintenance instructions (page 4-1).

- |    |   |                          |
|----|---|--------------------------|
| 1. | Air system                                  | Drain (TM9-2320-270-10). |
| 2. | stop (1)                                    | Screw (2)                |
| 3. | Drain cable (3)                             | stop (1)                 |
| 4. | Drain valve assembly (4) and loop clamp (5) | Drain cable (3)          |
| 5. | Wet reservoir (6)                           | Drain valve assembly (4) |



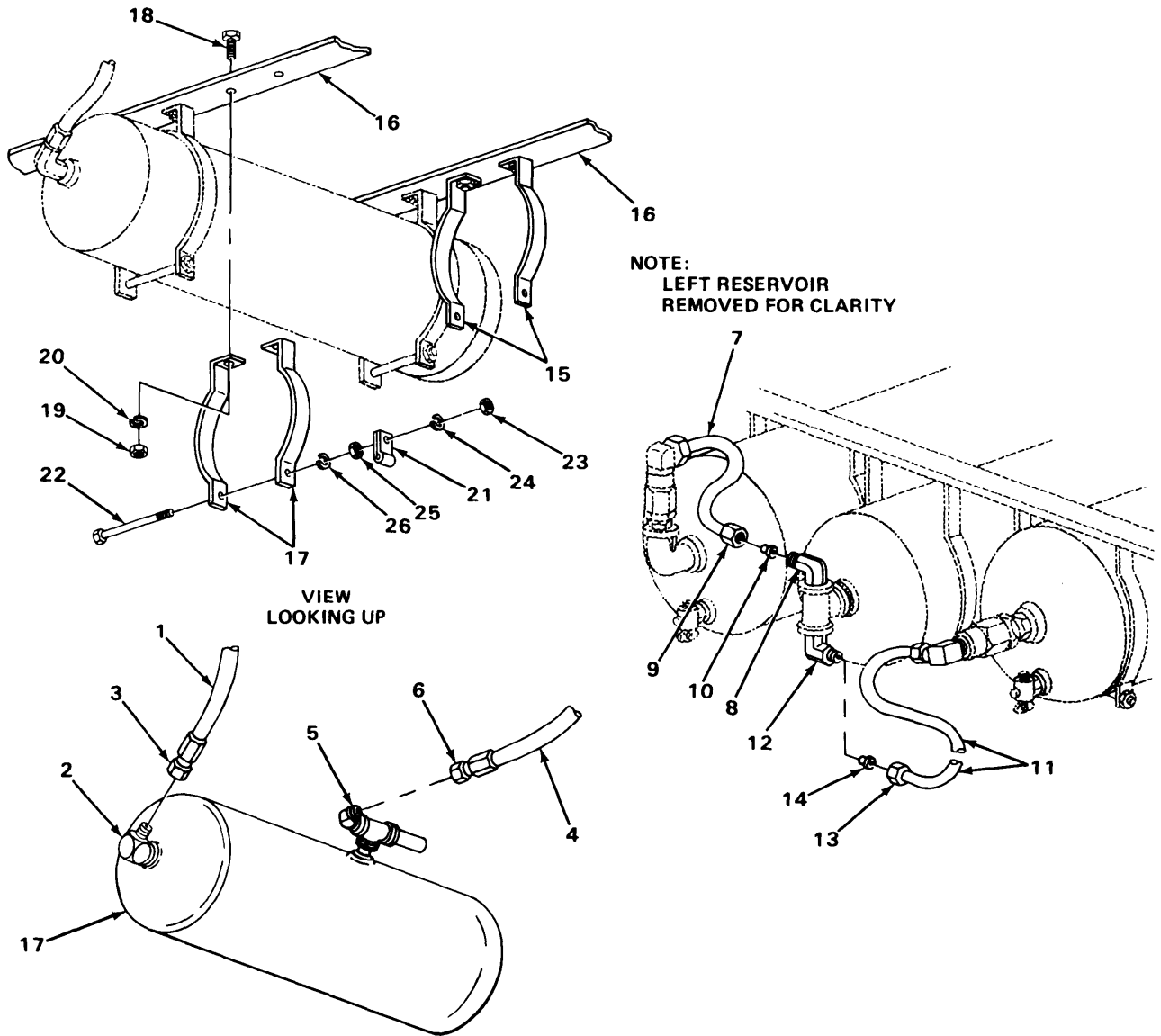
**WET RESERVOIR - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
REMOVAL – CONTINUED		
6. Airhose 002 (1) to elbow (2)	Nut (3) and air-hose 002 (1)	Using two 1 1/4-inch wrenches, unscrew and take off.
7. Airhose 159 (4) to elbow (5)	Nut (6) and air-hose 159 (4)	Using 5/8-inch wrench and 9/16-inch box wrench, unscrew and take off.
8. Air line 003 (7) to elbow (8)	Nut (9)	Using 1 1/8-inch wrench, unscrew and pull back.
9. Elbow (8)	Air line 003 (7)	Pull out.
10. Elbow (8) or air line 003(7)	Insert (10)	Using long-nose pliers, pull out.
11. Airline 613 (11) to elbow (12)	Nut (13)	Using 1 1/8-inch wrench, unscrew and pull back.
12. Elbow (12)	Airline 613 (11)	Pull out.
13. Elbow (12) or air line 613 (11)	Insert (14)	Using long-nose pliers, pull out.
14. Two bracket arms (15) to reservoir supports (16) and wet reservoir (17)	Four screws (18), nuts (19), and lockwashers (20)	a. With help from assistant and using 9/16-inch open-end wrench, socket and handle, unscrew and take out. b. Get rid of lockwashers (20).
15. Two reservoir supports (16)	Wet reservoir (17) with two bracket arms (15)	Take off.
16. Two loop clamps (21) to thru-bolts (22)	Two nuts (23) and lockwashers (24)	a. Using 9/16-inch socket and handle, unscrew and take off. b. Get rid of lockwashers (24).
17. Two thru-bolts (22)	Two loop clamps (21)	Take off.
18. Two bracket arms (15)	Two thru-bolts (22), nuts (25), and lockwashers (26)	a. Using 9/16-inch box wrench, socket, and handle, unscrew and take out. b. Get rid of lockwashers (26).

WET RESERVOIR - CONTINUED

LOCATION	ITEM	ACTION REMARKS
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19. Wet reservoir (17)	Two bracket arms (15)	Take off.
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**WET RESERVOIR - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
DISASSEMBLY		
20. Wet reservoir (1)	Tee (2)	Using pipe wrench, unscrew and take out.
21.	Elbow (3)	Using 1 1/4-inch open-end wrench, unscrew and take out.
22.	Elbow (4)	Using 1 1/16-inch open-end wrench, unscrew and take out.
23.	Tee (5)	Using pipe wrench, unscrew and take out.
<b>NOTE</b>		
Disassemble parts only if inspection shows need for replacement.		
24. Tee (5)	Elbow (6)	a. Secure tee (5) in vise. b. Using adjustable wrench, unscrew and take out.
25.	Safety valve (7)	Using 3/4-inch wrench, unscrew and take out.
26.	Adapter (8)	a. Using 1 1/16-inch wrench, unscrew and take out. b. Take tee (5) out of vise.
27. Tee (2)	Two elbows (9)	a. Secure in vise. b. Using 15/16-inch wrench, unscrew and take out.
28.	Nipple (10)	a. Using pipe wrench, unscrew and take out. b. Take tee (2) out of vise.
29. Elbow (4)	Drain valve (11)	a. Secure elbow (4) in vise. b. Using 1 1/16-inch box wrench, unscrew and take out. c. Take elbow (4) out of vise.
CLEANING		
30.	All parts	Clean according to general maintenance instructions (page 4-1).



WET RESERVOIR - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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INSPECTION/REPLACEMENT

**WARNING**

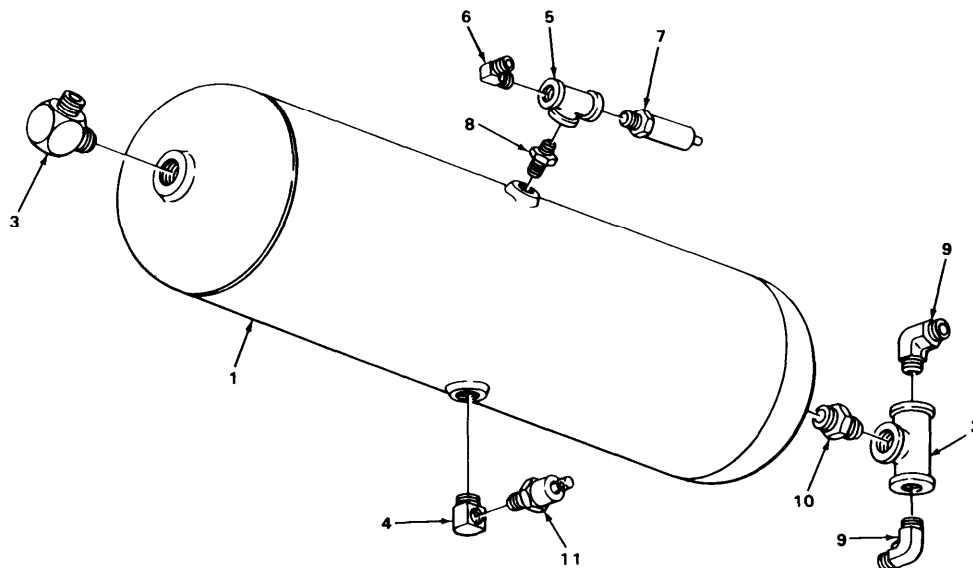
Do not attempt to repair damaged air reservoir. When pressurized, it may explode causing injuries to personnel.

**NOTE**

For more information on how to inspect parts, go to general maintenance instructions (page 4-1).

Replace defective parts as needed.

- |     |                    |  |
|-----|--------------------|--|
| 31. | Wet reservoir (1)  | Look for damage.<br><b>Light rust and small dents are the only allowable visible damage.</b> |
| 32. | All threaded parts | Look for cracks, breaks, and crossed threads.  |

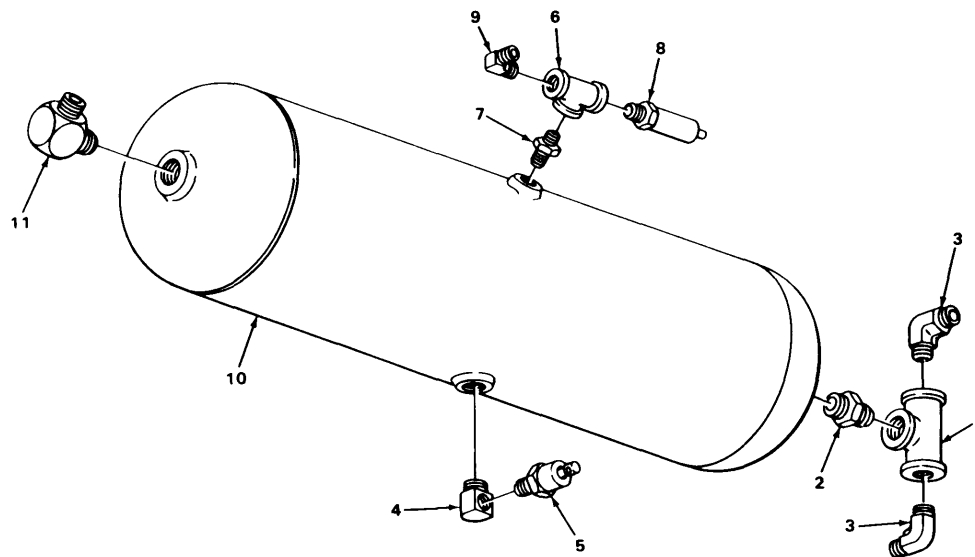


WET RESERVOIR - CONTINUED

LOCATION	ITEM	ACTION REMARKS
ASSEMBLY		
<b>NOTE</b>		
Do steps 33 thru 38 only if parts were disassembled for replacement.		
33. Tee (1)	Nipple (2)	<ul style="list-style-type: none"> <li>a. Secure tee (1) in vise.</li> <li>b. Wrap threads with teflon tape (page 4-1).</li> <li>c. Screw in.</li> </ul>
34.	Two elbows (3)	<ul style="list-style-type: none"> <li>a. Wrap threads with teflon tape (page 4-1).</li> <li>b. Screw in and tighten using 15/16-inch wrench.</li> <li>c. Take tee (1) out of vise.</li> </ul>
35. Elbow (4)	Drain valve (5)	<ul style="list-style-type: none"> <li>a. Secure elbow (4) in vise.</li> <li>b. Wrap threads with teflon tape (page 4-1).</li> <li>c. Screw in and tighten using 1 1/16-inch box wrench.</li> <li>d. Take elbow (4) out of vise.</li> </ul>
36. Tee (6)	Adapter (7)	<ul style="list-style-type: none"> <li>a. Secure tee (6) in vise.</li> <li>b. Wrap threads with teflon tape (page 4-1).</li> <li>c. Screw in and tighten using 11/16-inch wrench.</li> </ul>
37.	Safety valve (8)	<ul style="list-style-type: none"> <li>a. Wrap threads with teflon tape (page 4-1).</li> <li>b. Screw in and tighten using 3/4-inch wrench.</li> </ul>
38.	Elbow (9)	<ul style="list-style-type: none"> <li>a. Wrap threads with teflon tape (page 4-1).</li> <li>b. Screw in and tighten using adjustable wrench.</li> <li>c. Take tee (6) out of vise.</li> </ul>
39. Wet reservoir (10)	Tee (1)	<ul style="list-style-type: none"> <li>a. Wrap threads with teflon tape (page 4-1).</li> <li>b. Screw in and tighten using pipe wrench.</li> </ul>

WET RESERVOIR - CONTINUED

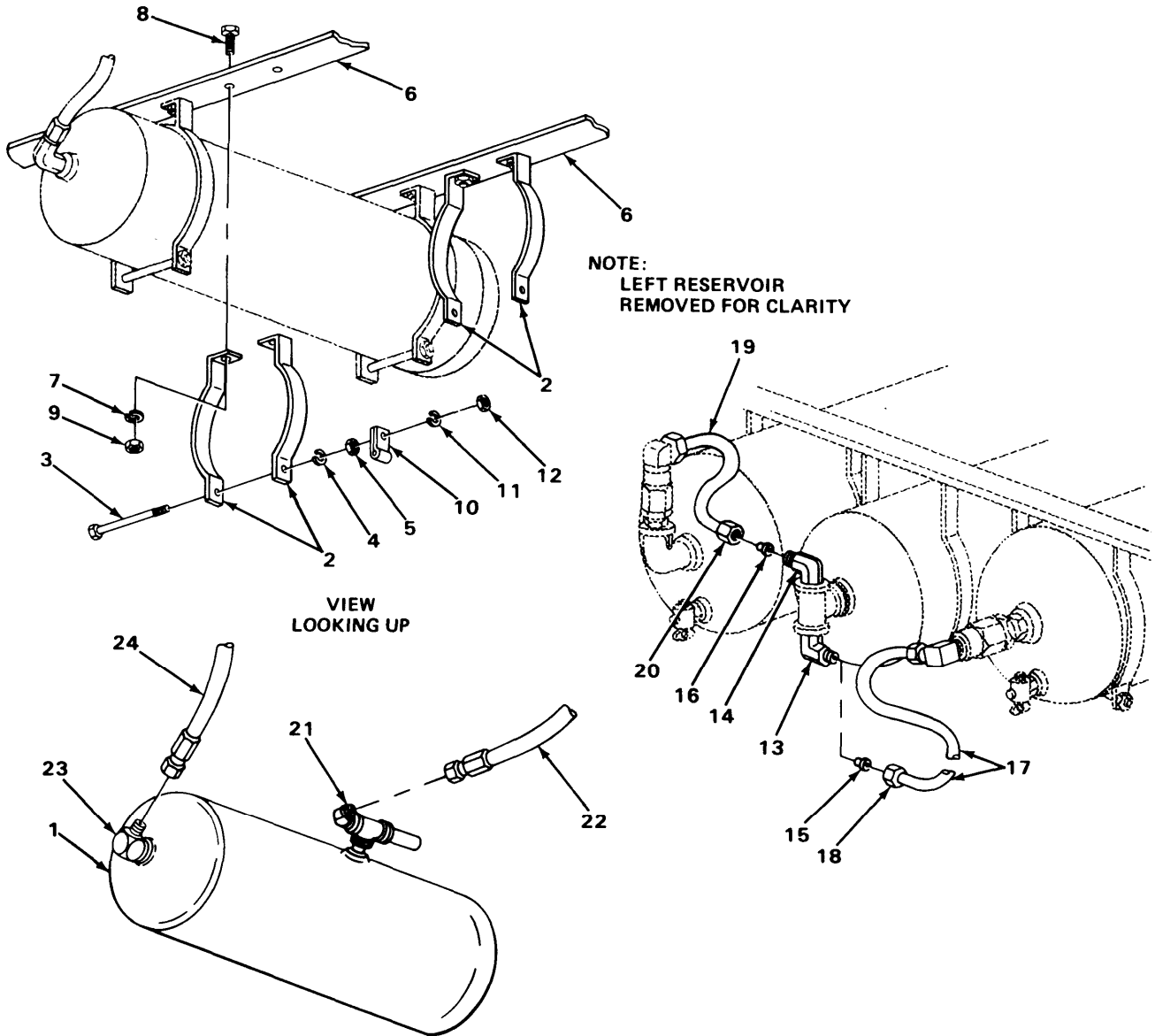
LOCATION	ITEM	ACTION REMARKS
40.	Elbow (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
41.	Elbow (11)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/4-inch wrench.
42.	Tee (6)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using pipe wrench.



**WET RESERVOIR - CONTINUED**

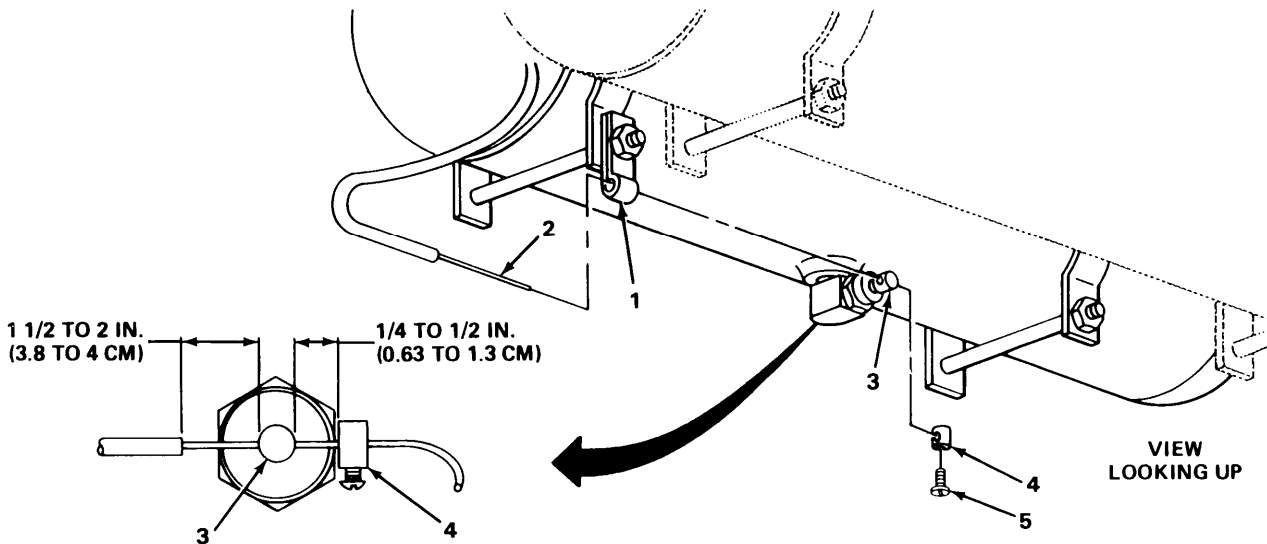
LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
43. Wet reservoir (1)	Two bracket arms (2)	Put in place.
44. Two bracket arms (2)	Two thru-bolts (3), new lockwashers (4), and nuts (5)	Screw in, but do not tighten, using 9/18-inch box wrench, socket, and handle.
45. Two reservoir supports (6)	Wet reservoir (1) with two bracket arms (2)	Put in place.
46. Two bracket arms (2) to reservoir supportS (6)	Four new lockwashers (7), screws (8), and nuts (9)	With help from assistant, screw in and tighten using 9/16-inch open-end wrench, socket and handle.
47. Two bracket arms (2)	Two thru-bolts (3) and nuts (5)	Using 9/16-inch box-end wrench, socket, and handle, tighten.
48. Two thru-bolts (3)	Two loop clamps (10)	Put on.
49. Two loop clamps (10) to thru-bolts (3)	Two new lockwasher (11) and nuts (12)	Screw on and tighten using 9/16-inch box wrench, socket, and handle.
50. Two elbows (13) and (14)	Two inserts (15) and (16)	Push in and using plastic hammer, seat.
51. Elbow (13)	Airline 613(17)	Lube end lightly with soap and push in until seated.
52. Air line 613 (17) to elbow (13)	Nut (18)	Screw on and tighten using 1 1/8-inch wrench.
53. Elbow (14)	Air line 003 (19)	Lube end lightly with soap and push in until seated.
54. Air line 003 (19) to elbow (14)	Nut (20)	Screw on and tighten using 1 1/8-inch wrench.
55. Elbow (21)	Airhose 159 (22)	Screw on and tighten using 9/16-inch and 5/8-inch wrenches.
56. Elbow (23)	Airhose 002 (24)	Screw on and tighten using two 1 1/4-inch wrenches.

WET RESERVOIR - CONTINUED



WET RESERVOIR - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION – CONTINUED			
57. Loop clamp (1)	Drain cable (2)	Thread through.	
58. Drain valve (3)	Drain cable (2)	Push through hole using tape measure, position so end is 1 1/2 to 2 inches (3.8 to 4 centimeters) from valve lever.	
59. Drain cable (2)	stop (4)	a. Put on. b. Using tape measure, position 1/4 to 1/2 inch (.63 to 1.3 centimeters) from valve lever.	
60. stop (4) to cable (2)	Screw (5)	Screw in and tighten using screwdriver and slip-joint pliers.	



**NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

**PRIMARY AIR RESERVOIR**

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This task covers:

- a. Removal (page 4-669)
  - b. Disassembly (page 4-670)
  - c. Cleaning (page 4-672)
  - d. Inspection/Replacement (page 4-672)
  - e. Assembly (page 4-674)
  - f. Installation (page 4-674)
- 

**INITIAL SETUP**

**Tools**

- Hammer, plastic
- Handle, ratchet, 1/2-inch drive
- Pliers, long-nose, round
- Socket, 9/16-inch, 1/2-inch drive
- Vise
- Wrench, open-end, 9/16-inch
- Wrench, open-end, 15/16-inch
- Wrench, open-end, 1 1/16-inch
- Wrench, open-end, 1 1/8-inch

**Materials/Parts**

- Lockwasher, bracket arms to reservoir support (two required)
- Lockwasher, bracket arms to thru-bolt (two required)
- Soap, liquid (item 14, appendix C)
- Tags, marking (item 18, appendix C)
- Tape, teflon (item 22, appendix C)

**Personnel Required**

One

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LOCATION	ITEM	ACTION	REMARKS
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**REMOVAL**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

Tag air lines according to general maintenance instructions (page 4-1).

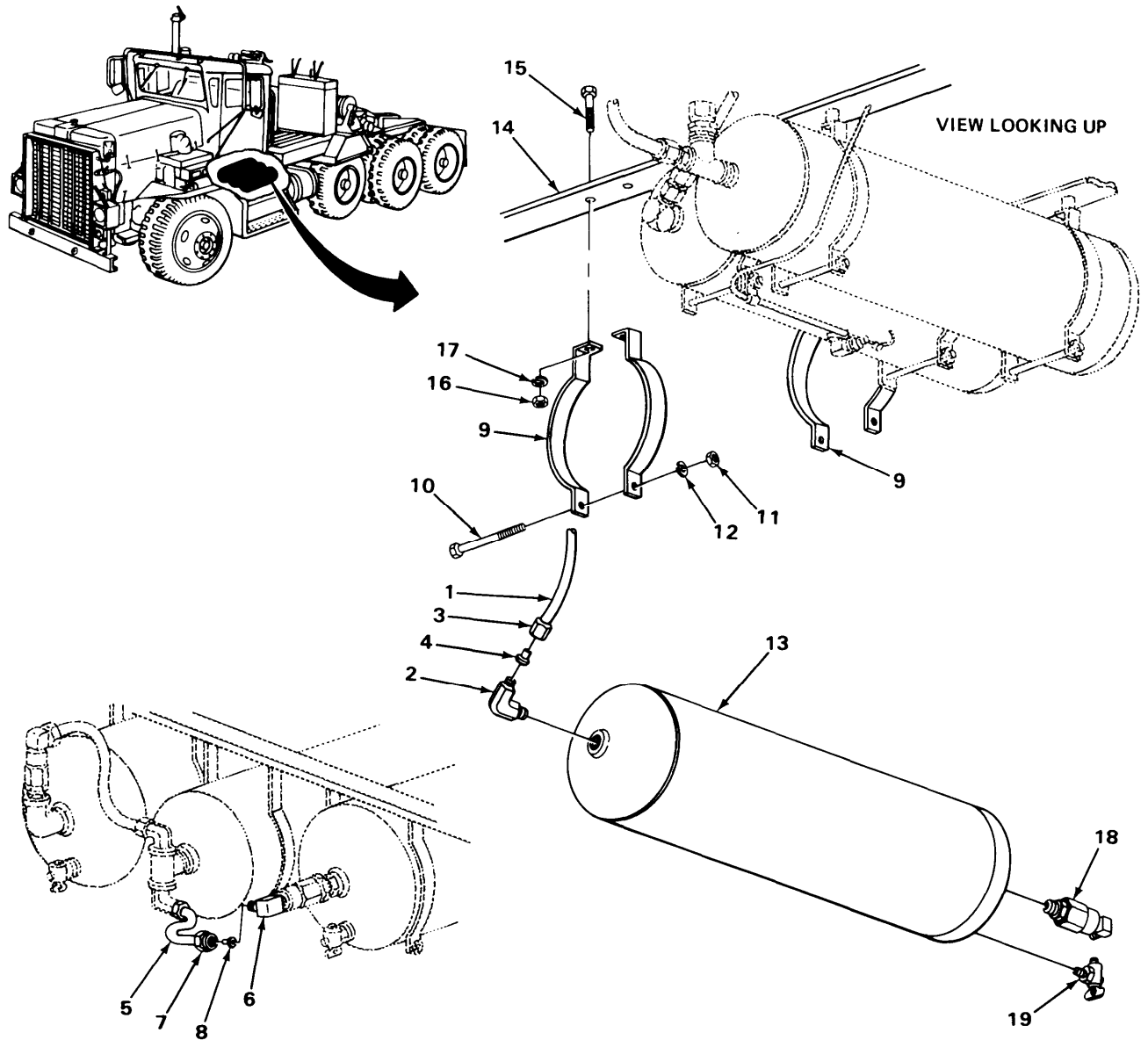
- |    |            |                           |
|----|------------|---------------------------|
| 1. | Air system | Drain (TM 9-2320-270-10). |
|----|------------|---------------------------|

**PRIMARY AIR RESERVOIR - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL – CONTINUED</b>		
2. Air line 654 (1) to elbow (2)	Nut (3)	Using 15/16-inch wrench, unscrew and pull back.
3. Elbow (2)	Air line 654 (1)	Using long-nose pliers, pull out.
4. Elbow (2) or air line 654 (1)	Insert (4)	Pull out.
5. Air line 615 (5) to elbow (6)	Nut (7)	Using 1 1/8-inch wrench, unscrew and pull back.
6. Elbow (6)	Air line 615(5)	Pull out.
7. Elbow (6) or air line 615 (5)	Insert (8)	Using long-nose pliers, pull out.
8. Two bracket arms (9)	Two thru-bolts (10), nuts (11), and lockwashers (12)	a. Using 9/16-inch wrench, socket, and handle, unscrew and take out. b. Get rid of lockwashers (12).
9.	Primary reservoir (13)	Spread bracket arms (9), slide forward and take out.
10. Two bracket arms (9) to reservoir support (14)	Two screws (15), nuts (16), lockwashers (17), and bracket arms (9)	a. Using 9/16-inch wrench, socket, and handle, unscrew and take out. b. Get rid of lockwashers (17).
<b>DISASSEMBLY</b>		
11. Primary reservoir (13)	Elbow (1)	Using 15/16-inch wrench, unscrew and take out.
12.	Check valve assembly (18)	Using 1 1/16-inch wrench, unscrew and take out.
13.	Drain valve (19)	Using 9/16-inch wrench, unscrew and take out.



PRIMARY AIR RESERVOIR - CONTINUED



**PRIMARY AIR RESERVOIR - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
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DISASSEMBLY – CONTINUED

**NOTE**

Do not disassemble parts unless inspection shows need for replacement.

14. Check valve (1)	Elbow (2)	Using 1 1/16-inch wrench, unscrew and take off.
15.	Adapter (3)	Using 1 1/16-inch wrench, unscrew and take off.

CLEANING

16.	All parts	Clean according to general maintenance instructions (page 4-1).
-----	-----------	---

inspection/REPLACEMENT

**WARNING**

Do not attempt to repair damaged air reservoir. When pressurized, it may explode causing injuries to personnel.

17.	Primary reservoir (4)	Inspect for damage. <b>Light rust and small dents are the only acceptable damage.</b>
18.	All threaded parts	Inspect according to general maintenance instructions (page 4-1).

ASSEMBLY

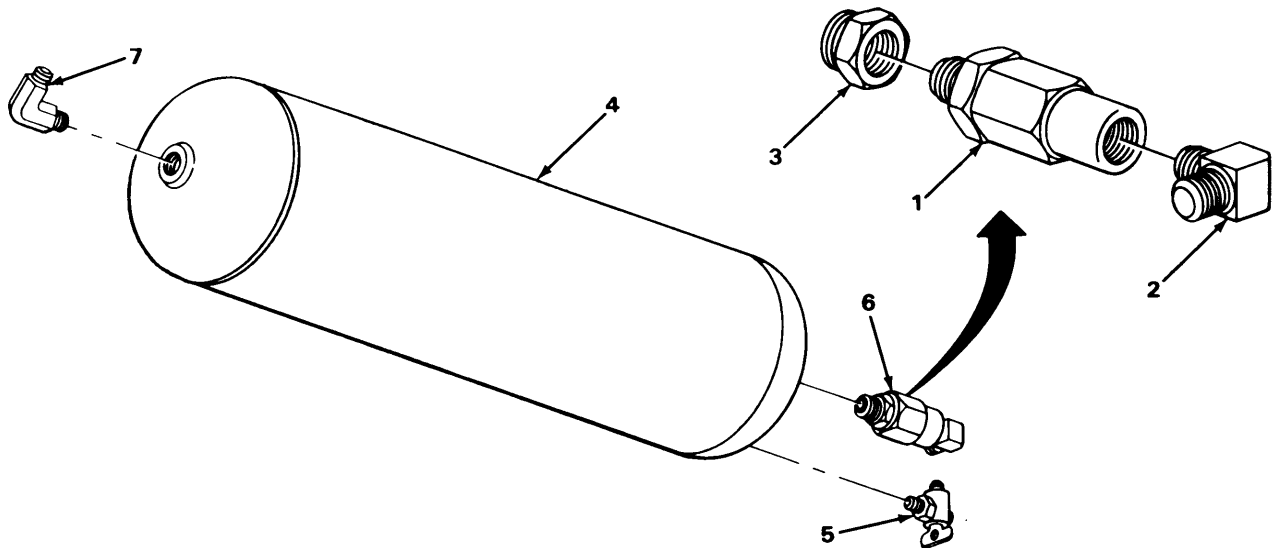
**NOTE**

Skip steps 19 and 20 if parts were not disassembled and replaced.

19. Check valve (1)	Adapter (3)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
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**PRIMARY AIR RESERVOIR - CONTINUED**

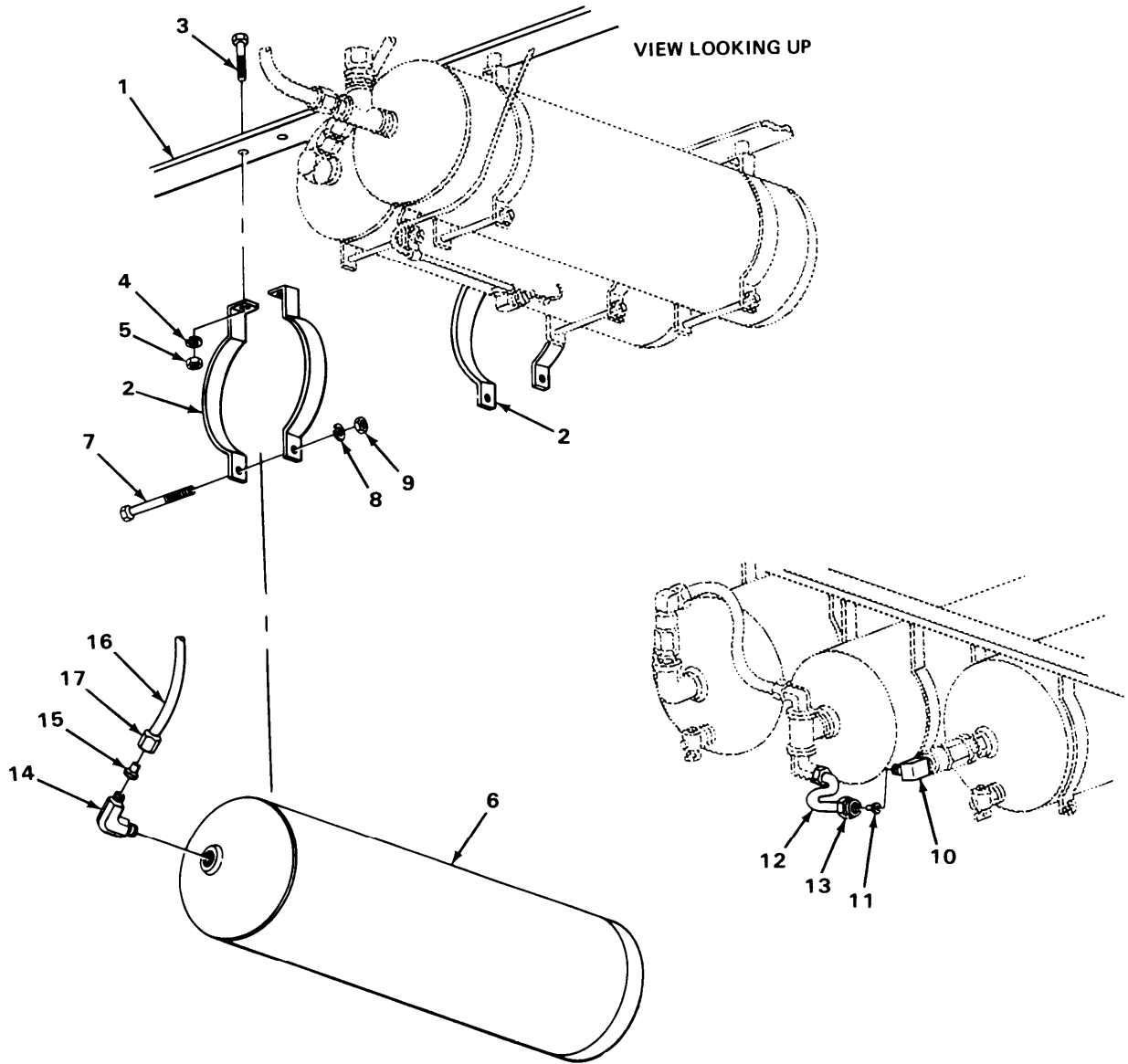
LOCATION	ITEM	ACTION REMARKS
20.	Elbow (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
21. Primary reservoir (4)	Drain valve (5)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
22.	Check valve assembly (6)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
23.	Elbow (7)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 15/16-inch wrench.



**PRIMARY AIR RESERVOIR - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
24. Reservoir support (1)	Two bracket arms (2)	Put in place.
25. Two bracket arms (2) to reservoir support (1)	Screws (3), new lockwasher (4), and nuts (5)	Screw in and tighten using 9/16-inch wrench, socket, and handle.
26. Two bracket arms (2)	Primary reservoir (6)	Push in place.
27. Primary reservoir (6)	Two bracket arms (2)	Position around reservoir (6).
28. Two bracket arms (2)	Two thru-bolts (7), new lockwashers (8), and nuts (9)	Screw in and tighten using 9/16-inch wrench, socket and handle.
29. Elbow (10)	Insert (11)	Push in and using plastic hammer, seat.
30.	Airline 615 (12)	Lube end lightly with soap and push in until seated.
31. Air line 615 (12) to elbow (10)	Nut (13)	Screw onto elbow (1) and tighten using 1 1/8-inch wrench.
32. Elbow (14)	Insert (15)	Push in and using plastic hammer, seat.
33.	Air line 654 (16)	Lube end lightly with soap and push in until seated.
34. Air line 654 (16) to elbow (14)	Nut (17)	Screw on and tighten using 15/16-inch wrench.

PRIMARY AIR RESERVOIR - CONTINUED



NOTE

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

TASK ENDS HERE

**SECONDARY AIR RESERVOIR**

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This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-676)     | d. Inspection/Replacement (page 4-681) |
| b. Disassembly (page 4-678) | e. Assembly (page 4-682)               |
| c. Cleaning (page 4-681)    | f. Installation (page 4-684)           |
- 

**INITIAL SETUP**

**Tools**

- Hammer, plastic
- Handle, ratchet, 1/2-inch drive
- Socket, 9/16-inch, 1/2-inch drive
- Pliers, long-nose, round
- Vise
- Wrench, box, 9/16-inch
- Wrench, open-end, 5/8-inch
- Wrench, open-end, 7/8-inch
- Wrench, open-end, 15/16-inch
- Wrench, open-end, 1 1/16-inch
- Wrench, open-end, 1 1/8-inch
- Wrench, open-end, 1 3/8-inch
- Wrench, pipe, 15-inch

**Materials/Parts**

- Lockwasher, air reserboir bracket thru-bolt (two required)
- Soap, liquid (item 14, appendix C)
- Tag, marking (item 18, appendix C)
- Tape, teflon (item 22, appendix C)

**Personnel Required**

One

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LOCATION	ITEM	ACTION	REMARKS
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**REMOVAL**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

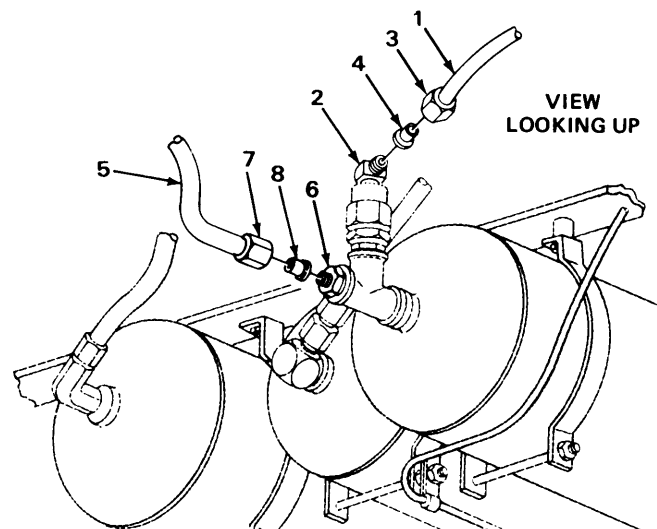
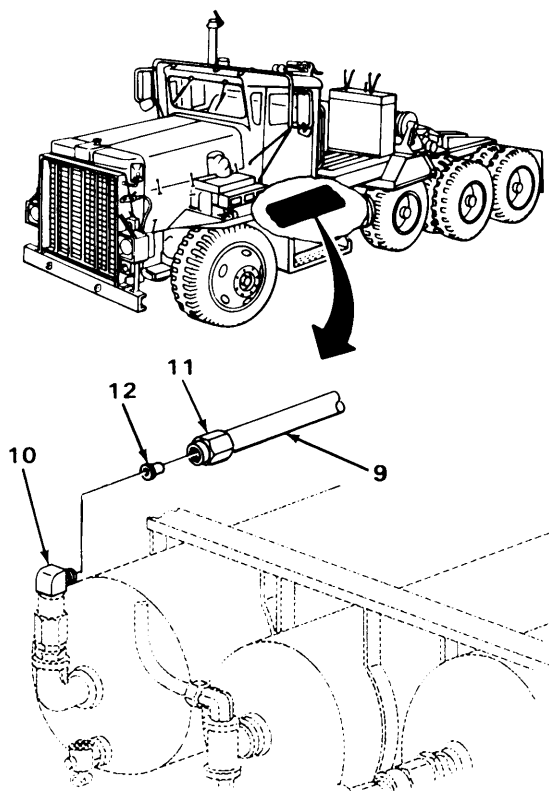
**NOTE**

Tag air lines according to general maintenance instructions (page 4-1).

- |    |                               |  |
|----|-------------------------------|--|
| 1. | Air system                    | Drain (TM 9-2320-270-10).                                |
| 2. | Air line 654 (1) to elbow (2) | Nut (3)<br>Using 5/8-inch wrench, unscrew and pull back. |
| 3. | Elbow (2)                     | Airline 654 (1)<br>Pull out.                             |

**SECONDARY AIR RESERVOIR - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
4. Elbow (2) or airline 654 (1)	Insert (4)	Using long-nose pliers, pull out.
5. Air line 614 (5) to adapter (6)	Nut (7')	Using 15/16-inch wrench, unscrew and pull back.
6. Adapter (6)	Air line 614 (5)	Pull out.
7. Adapter (6) or air line 614 (5)	Insert (8)	Using long-nose pliers, pull out.
8. Air line 003 (9) to elbow (10)	Nut (11)	Using 1 1/8-inch wrench, unscrew and pull back.
9. Elbow (10)	Air line 003 (9)	Pull out.
10. Elbow (10) or air line 003 (9)	Insert (12)	Using long-nose pliers, pull out.



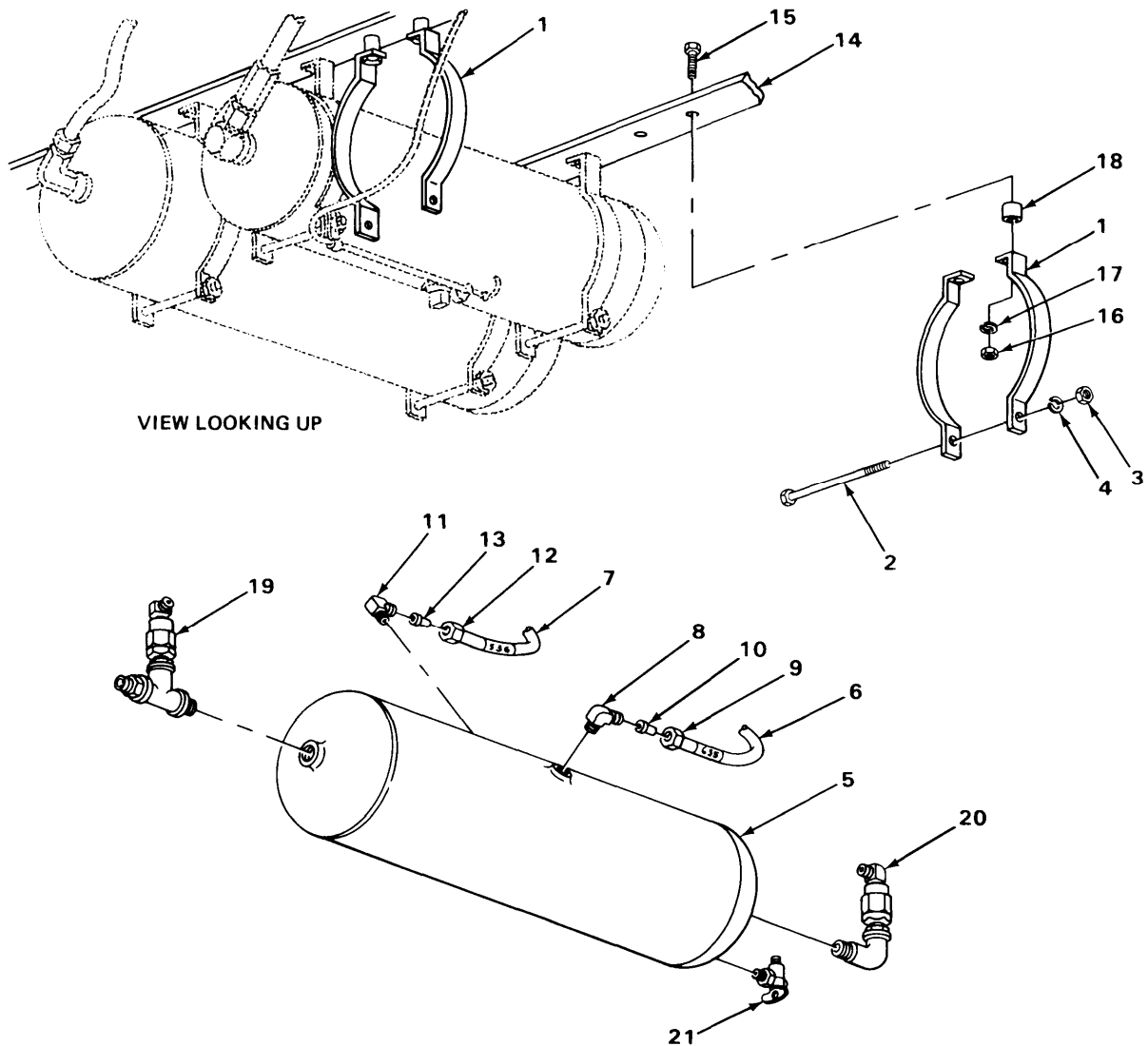
**SECONDARY AIR RESERVOIR - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
REMOVAL- CONTINUED		
11. Two bracket arms (1)	Two thru-bolts (2), nuts (3), and lockwashers (4)	a. Using 9/16-inch box wrench, socket, and handle, unscrew and take out. b. Get rid of lockwashers (4).
<b><u>CAUTION</u></b>		
When pulling down reservoir, be careful of air lines still connected on top.		
12.	Secondary reservoir (5)	Spread bracket arms (1) and pull down front end first being careful of air lines (6) and (7).
13. Air line 635 (6) to elbow (8)	Nut (9)	Using 15/16-inch wrench, unscrew and pull back.
14. Elbow (8)	Air line (6)	Pull out.
15. Elbow (8) on air line 635 (6)	Insert (10)	Using long-nose pliers, take out.
16. Air line 536(7) to elbow (11)	Nut (12)	Using 15/16-inch wrench, unscrew and pull back.
17. Elbow (11)	Air line 536 (7)	Pull out.
18. Elbow (11) on air line 536 (7)	Insert (13)	Using long-nose pliers, pull out.
19.	Secondary reservoir (5)	Take out.
20. Reservoir support (14)	Two screws (15), nuts (16), lockwashers (17), spacers (18), and bracket arms (1)	a. Using 9/16-inch box wrench, socket, and handle, unscrew and take out. b. Get rid of lockwashers (17).
DISASSEMBLY		
21. Secondary reservoir (5)	Check valve assembly (19)	Using pipe wrench, unscrew and take out.



SECONDARY AIR RESERVOIR - CONTINUED

LOCATION	ITEM	ACTION REMARKS
22.	Two elbows (8 and 11)	Using 15/16-inch wrench, unscrew and take out.
23.	Check valve assembly (20)	Using pipe wrench, unscrew and take out.
24.	Draincock (21)	Using 9/16-inch wrench, unscrew and take out.



SECONDARY AIR RESERVOIR - CONTINUED

LOCATION	ITEM	ACTION REMARKS
DISASSEMBLY – CONTINUED		
<b>NOTE</b>		
Do not disassemble parts unless inspection shows replacement is necessary.		
25. Tee (1)	Adapter (2)	a. Secure tee (1) in vise. b. Using 1 1/8-inch wrench, unscrew and take out.
26. Check valve (3)	Elbow (4)	Using 7/8-inch and 1 3/8-inch wrenches, unscrew and take out.
27. Adapter (5)	Check valve (3)	Using 1 3/8-inch and 1 1/16-inch wrenches, unscrew and take out.
28. Tee (1)	Adapter (5)	Using 1 1/16-inch wrench, unscrew and take out.
29.	Nipple (6)	a. Using pipe wrench, unscrew and take out. b. Get rid of. c. Take tee (1) out of vise.
30. Check valve (7)	Elbow (8)	a. Secure valve (7) in vise. b. Using 1 1/16-inch wrench, unscrew and take out.
31. Bushing (9)	Street elbow (10)	Using 1 1/16-inch and pipe wrenches, unscrew and take off.
32. Check valve (7)	Bushing (9)	a. Using 1 1/16-inch wrench, unscrew and take off. b. Take valve (7) out of vise.

**SECONDARY AIR RESERVOIR - CONTINUED**

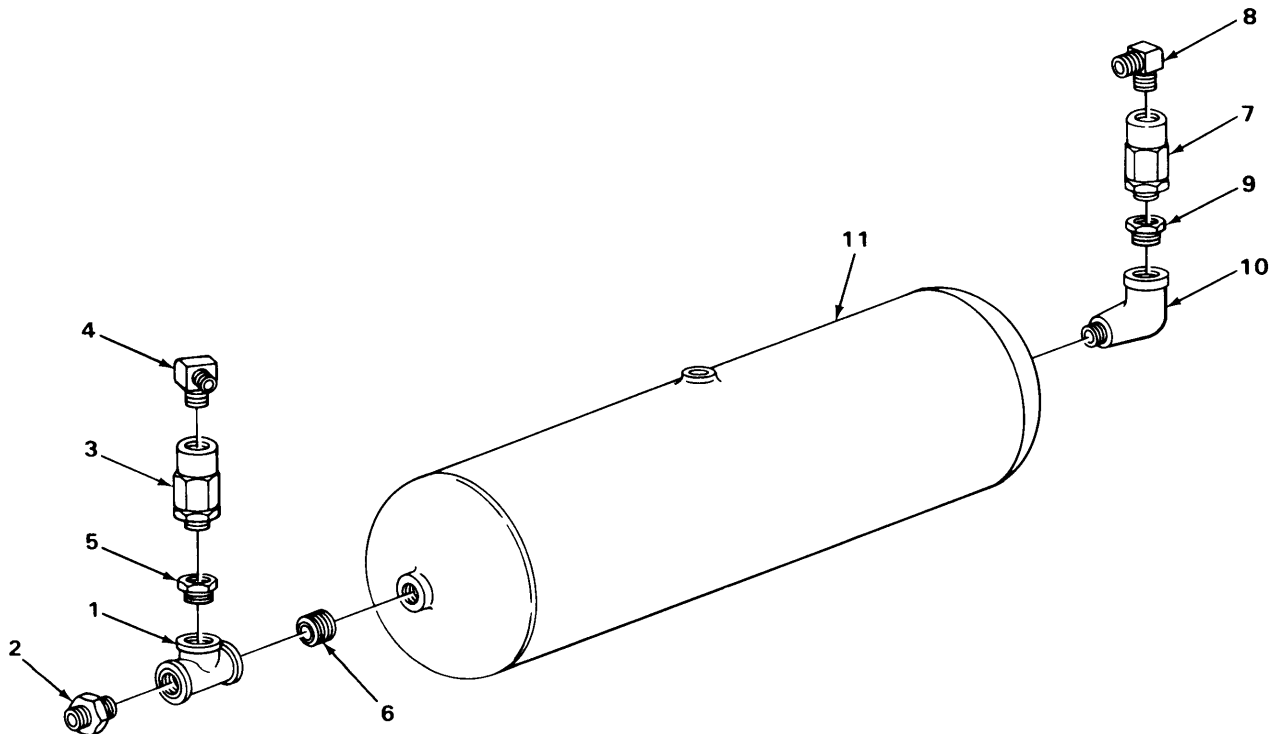
LOCATION	ITEM	ACTION REMARKS
CLEANING		
33.	All parts	Clean according to general maintenance instructions (page 4-1).

INSPECTION/REPLACEMENT

**WARNING**

Do not attempt to repair damaged air reservoir. When pressurized, it may explode causing injuries to personnel.

34.	Secondary reservoir (11)	Inspect for damage. <b>Light rust and small dents are the only allowable damage.</b>
35.	All threaded parts	Inspect according to general maintenance instructions (page 4-1).

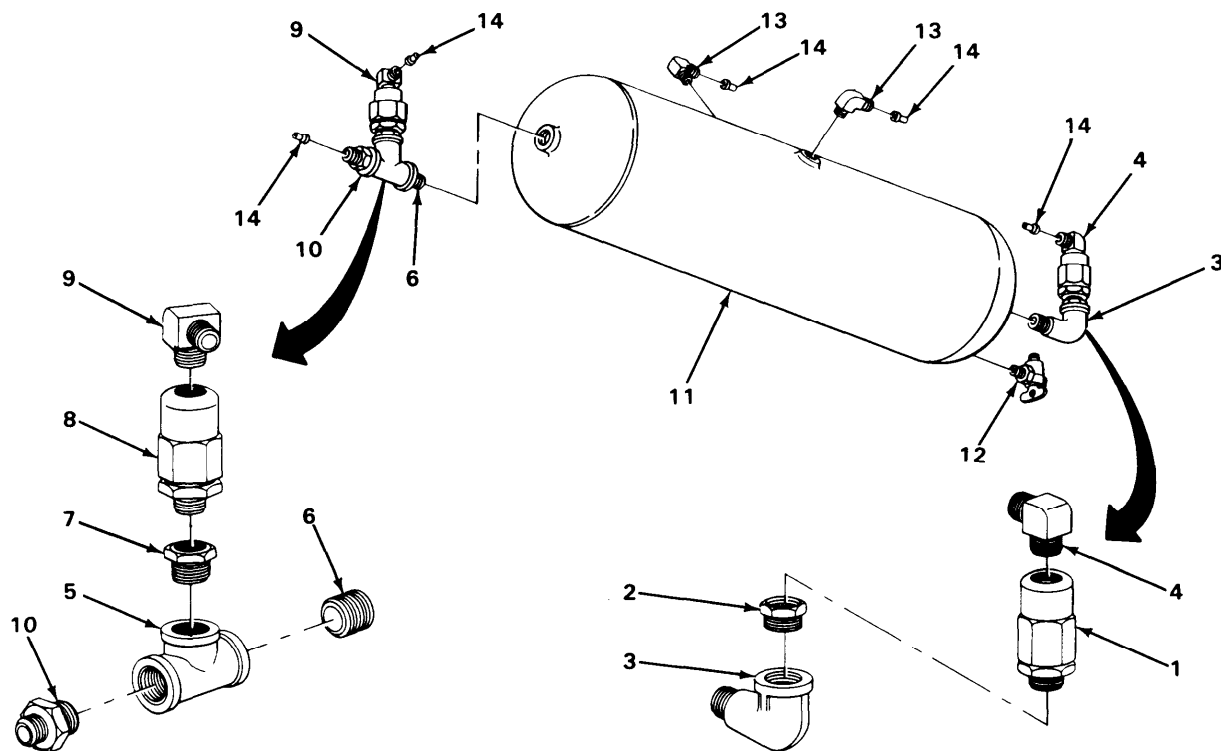


**SECONDARY AIR RESERVOIR - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
ASSEMBLY		
<b>NOTE</b>		
Skip steps 36 thru 43 if parts were not disassembled.		
36. Check valve (1)	Bushing (2)	<ul style="list-style-type: none"> <li>a. Secure check valve (1) in vise.</li> <li>b. Wrap threads with teflon tape (page 4-1).</li> <li>c. Screw on and tighten using 1 1/16-inch wrench.</li> </ul>
37. Bushing (2)	Street elbow (3)	<ul style="list-style-type: none"> <li>a. Wrap threads with teflon tape (page 4-1).</li> <li>b. Screw on and tighten using pipe wrench.</li> </ul>
36. Check valve (1)	Elbow (4)	<ul style="list-style-type: none"> <li>a. Wrap threads with teflon tape (page 4-1).</li> <li>b. Screw on and tighten using 1 1/16-inch wrench.</li> <li>c. Take check valve (1) out of vise.</li> </ul>
39. Tee (5)	New nipple (6)	<ul style="list-style-type: none"> <li>a. Secure tee (1) in vise.</li> <li>b. Wrap threads with teflon tape (page 4-1).</li> <li>c. Screw in.</li> </ul>
40.	Adapter (7)	<ul style="list-style-type: none"> <li>a. Wrap threads with teflon tape (page 4-1).</li> <li>b. Screw in and tighten using 1 1/16-inch wrench.</li> </ul>
41. Adapter (7)	Check valve (8)	<ul style="list-style-type: none"> <li>a. Wrap threads with teflon tape (page 4-1).</li> <li>b. Screw in and tighten using 1 3/8-inch wrench.</li> </ul>
42. Check valve (8)	Elbow (9)	<ul style="list-style-type: none"> <li>a. Wrap threads with teflon tape (page 4-1).</li> <li>b. Screw in and tighten using 7/8-inch wrench.</li> </ul>
43. Tee (5)	Adapter (10)	<ul style="list-style-type: none"> <li>a. Wrap threads with teflon tape (page 4-1).</li> <li>b. Screw in and tighten using 1 1/8-inch wrench.</li> <li>c. Take tee (5) out of vise.</li> </ul>

SECONDARY AIR RESERVOIR - CONTINUED

LOCATION	ITEM	ACTION REMARKS
44. Secondary reservoir (11)	Draincock (12)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
45.	Street elbow (3)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using pipe wrench.
46.	Two elbows (13)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 15/16-inch wrench.
47.	Nipple (6)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using pipe wrench.
46. Four elbows (4, 9, and 13) and adapter (10)	Five inserts (14)	Push in and using plastic hammer, seat.



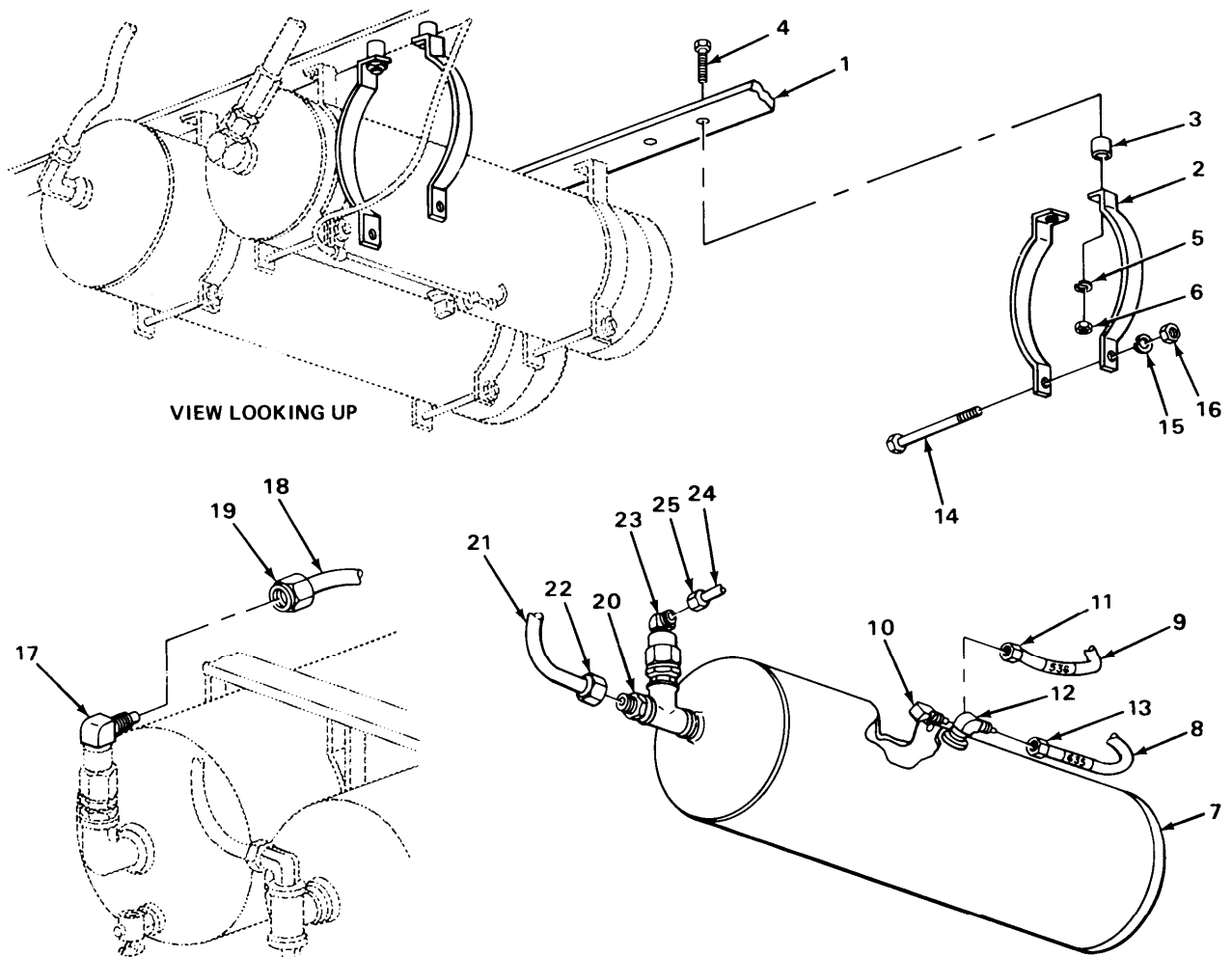
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## SECONDARY AIR RESERVOIR - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
49. Reservoir support (1)	Two bracket arms (2) and spacers (3)	Put in place.
50. Two bracket arms (2) to reservoir support (1)	Two screws (4), lockwashers (5), and nuts (6)	Screw in and tighten using 9/16-inch box wrench, socket, and handle.
51.	Secondary reservoir (7)	Place in position to connect lines (8 and 9).
52. Elbow (10)	Air line 536 (9)	Lube end lightly with soap and push in until seated.
53. Air line 536 (9) to elbow (10)	Nut (11)	Screw on and tighten using 15/16-inch wrench.
54. Elbow (12)	Air line 635 (8)	Lube end lightly with soap and push in until seated.
55. Air line 635 (8) to elbow (12)	Nut (13)	Screw on and tighten using 15/16-inch wrench.
56. Two bracket arms (2)	Secondary reservoir (7)	Push up into place.
57.	Two bracket arms (2)	Position around reservoir (7).
56.	Two thru-bolts (14), new lockwashers (15), and nuts (16)	Screw on and tighten using 9/16-inch box wrench, socket, and handle.
59. Elbow (17)	Air line 003 (18)	Lube end lightly with soap and push in until seated.
60. Air line 003 (18) to elbow (17)	Nut (19)	Screw on and tighten using 1 1/8-inch wrench.

SECONDARY AIR RESERVOIR - CONTINUED

LOCATION	ITEM	ACTION REMARKS
61. Adapter (20)	Air line 614 (21)	Lube end lightly with soap and push in until seated.
62. Air line 614 (21) to adapter (20)	Nut (22)	Screw on and tighten using 15/16-inch wrench.
63. Elbow (23)	Air line 654 (24)	Lube end lightly with soap and push in until seated.
64. Air line 654 (24) to elbow (23)	Nut (25)	Screw on and tighten using 5/8-inch wrench.



**SECONDARY AIR RESERVOIR - CONTINUED**

**NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

**FRONT AXLE AIRBRAKE CHAMBERS**

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This task covers:

- |                                     |  |
|-------------------------------------|--|
| a. Removal/Disassembly (page 4-686) | c. Inspection/Replacement (page 4-689) |
| b. Cleaning (page 4-688)            | d. Assembly/installation (page 4-689)  |
- 

**INITIAL SETUP**

**Tools**

- Chisel, cold hand, 1/2-inch
- Hammer, machinist's ball-peen, 1-pound
- Handle, ratchet, 3/8-inch drive
- Screwdriver, flat-tip, 5/8-inch
- Socket, 3/8-inch, 3/8-inch drive, 12 point
- Vise
- Wrench, box, 1/2-inch
- Wrench, box, 9/16-inch
- Wrench, box, 3/4-inch
- Wrench, open-end, 7/8-inch
- Wrench, pipe, 1/4- to 1-inch

**Materials/Parts**

- Cement, rubber (item 3, appendix C)
- Rags, wiping (item 10, appendix C)
- Sandpaper, medium grit (item 13, appendix C)
- Tape, teflon (item 22, appendix C)

**Personnel Required**

Two

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LOCATION	ITEM	ACTION	REMARKS
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**REMOVAL/DISASSEMBLY**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.



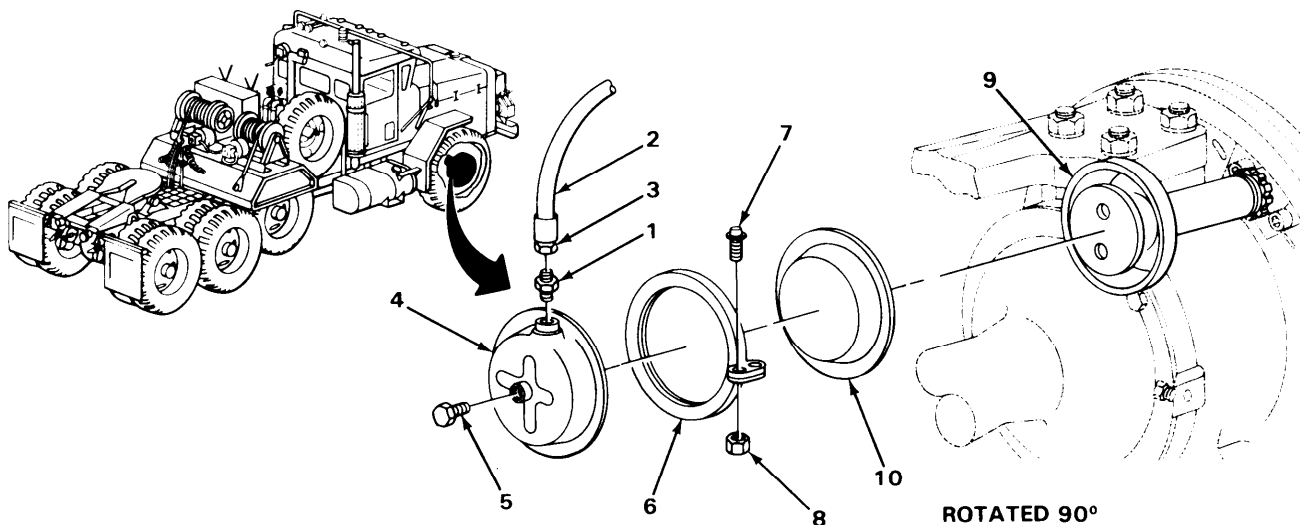
FRONT AXLE AIRBRAKE CHAMBERS - CONTINUED

LOCATION	ITEM	ACTION REMARKS
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**NOTE**

Steps in this task are the same for either right or left front axle airbrake chamber. Right chamber is shown.

- |  |  |  |
|--|--|--|
| 1.   | Air system   | Drain (TM 9-2320-270-10).  |
| 2. Adapter (1)                                     | Airhose (2)  | Using 7/8-inch open-end wrench, unscrew nut (3) and take off.                    |
| 3. Pressure housing (4)                            | Adapter (1)  | Using 3/4-inch box wrench, unscrew and take out.                                 |
| 4.   | Plug (5)   | Using 9/16-inch box wrench, unscrew and take out.                                |
| 5. Clamp ring (6)                                  | Two screws (7) and nuts (8)                              | Using 3/8-inch socket and handle, and 1/2-inch box wrench, unscrew and take out. |
| 6. Pressure housing (2) to nonpressure housing (9) | Clamp ring (6)   | Using screwdriver, spread.   |
| 7. Nonpressure housing (9)                         | Clamp ring (6), pressure housing (2), and diaphragm (10) | Take off and separate.   |



FRONT AXLE AIRBRAKE CHAMBERS - CONTINUED

LOCATION	ITEM	ACTION REMARKS
REMOVAL/DISASSEMBLY- CONTINUED		
8. Nonpressure housing (1) to actuator (2)	Spanner nut (3)	a. Using hammer and chisel, loosen. b. Unscrew away from actuator (2).
9. Actuator (2)	Nonpressure housing (1)	Unscrew and take out. <b>Loosen with pipe wrench if necessary.</b>
10. Nonpressure housing (1)	Spanner nut (3)	Unscrew and take off.
11.	Push rod (4)	Pull out.

**NOTE**

Do not remove wedge guide or boot unless inspection shows need for replacement.

12. Push rod (4)	Wedge guide (5)	a. If defective, pull off. b. Get rid of.
13. Nonpressure housing (1)	Boot (6)	a. If damaged, take off. b. Get rid of.

CLEANING

14.	All parts	Clean according to general maintenance instructions (page 4-1).
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INSPECTION/REPLACEMENT

**NOTE**

For more information on how to inspect parts, go to general maintenance instructions (page 4-1).

Replace defective parts as needed.

15.	All threaded parts	Look for stripped and damaged threads.
16.	Pressure housing (7) and nonpressure housing (1)	Look for cracks, dents, and excessive rust.
17.	Diaphragm (8)	Look for tears, brittleness, and excessive wear.

FRONT AXLE AIRBRAKE CHAMBERS - CONTINUED

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LOCATION	ITEM	ACTION	REMARKS
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ASSEMBLY/INSTALLATION

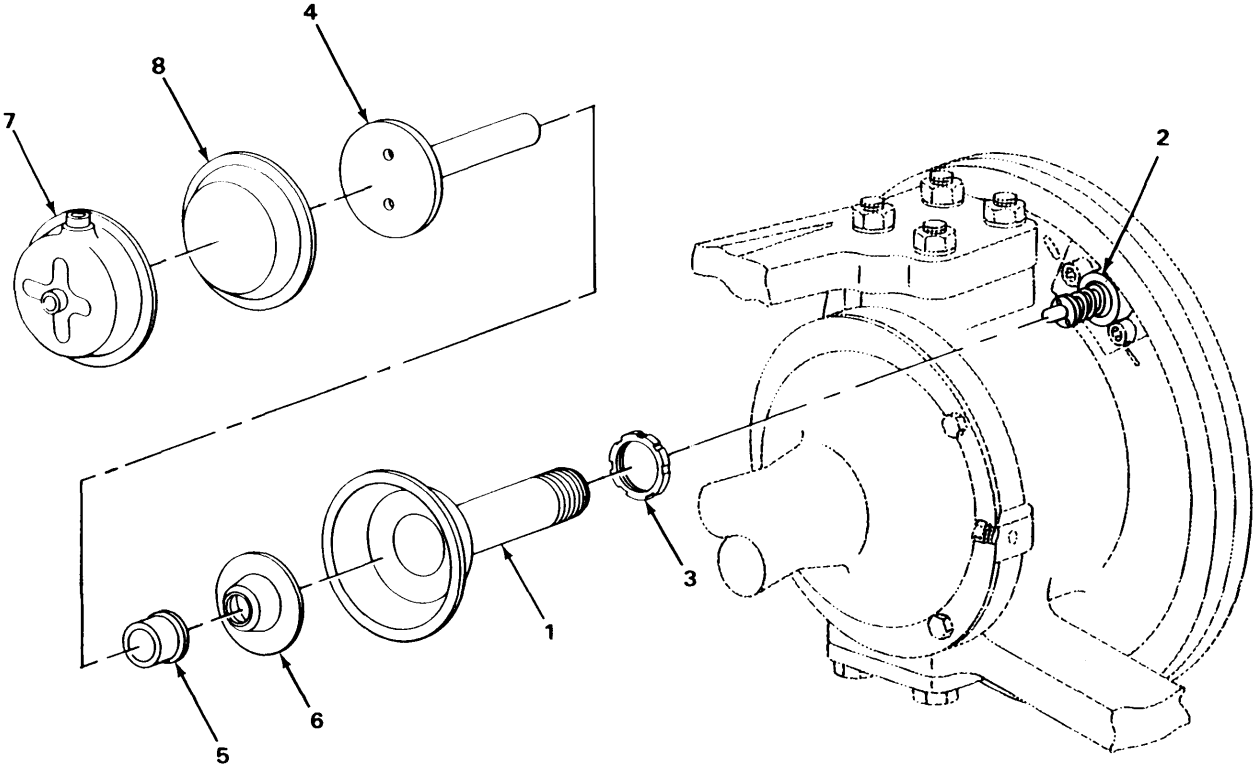
**WARNING**

Rubber cement and its fumes burn easily. Do not smoke or have open flame nearby while using. Use in well-ventilated area. Failure to observe these precautions can cause serious burns to personnel.

**NOTE**

Skip steps 18 and 19 if parts were not replaced.

- |                                    |                     |  |
|------------------------------------|---------------------|--|
| <b>18.</b> Nonpressure housing (1) | New boot (6)        | a. Apply rubber cement to housing (1).<br>b. Place boot (6) in position.<br>c. Wait a few minutes for cement to set. |
| <b>19.</b> Push rod (4)            | New wedge guide (5) | Put on.  |

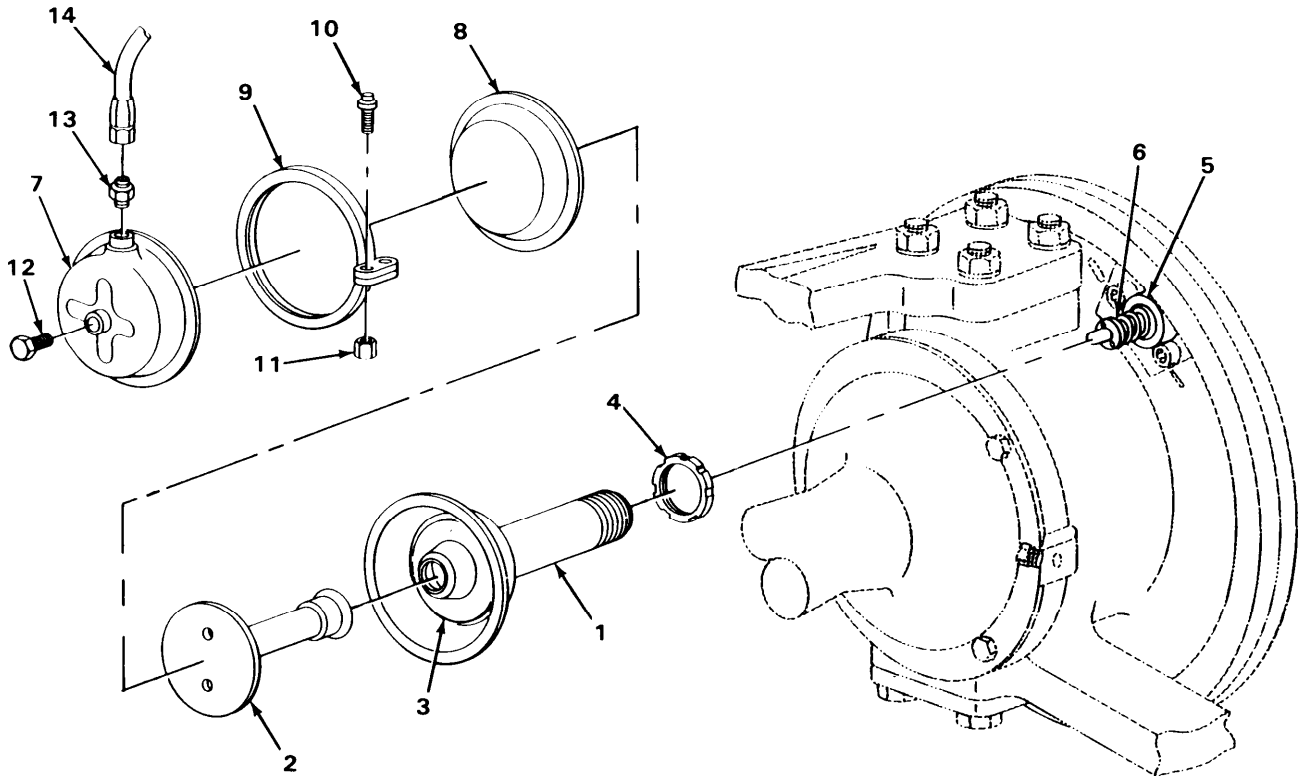


FRONT AXLE AIRBRAKE CHAMBERS - CONTINUED

LOCATION	ITEM	ACTION REMARKS
ASSEMBLY/INSTALLATION – CONTINUED		
20. Nonpressure housing (1)	Push rod (2)	Put in making sure boot (3) returns to normal shape.
21.	Spanner nut (4)	Screw onto end of threads.
22. Actuator (5)	Brake wedge assembly (6)	Line up tabs on wedge assembly (6) with slots in actuator (5) and push in until seated.
23.	Nonpressure housing (1)	a. Wrap threads with teflon tape (page 4-1). b. Using pipe wrench, screw in but do not tighten until housing (1) bottoms.
24. Pressure housing (7)	Diaphragm (8)	Put in place.
<b>NOTE</b>		
There is an inside and outside to clamp ring. Screw lug should curl over pressure chamber.		
25. Pressure housing (7) and diaphragm (8)	Clamp ring (9)	Put on.
26. Nonpressure housing (1)	Clamp ring (9), diaphragm (8), and pressure housing (7)	Put on and squeeze clamp ring (9) closed part way, making sure clamp ring (9) is around housing flanges. <b>Make sure adapter hole is facing up.</b>
27. Clamp ring (9)	Two screws (10) and nuts (11)	Screw in and alternately tighten using socket and handle and 1/2-inch box wrench.
28. Pressure housing (7)	Plug (12)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch box wrench.
29.	Adapter (13)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/4-inch box wrench.

FRONT AXLE AIRBRAKE CHAMBERS - CONTINUED

LOCATION	ITEM	ACTION REMARKS
30. Adapter (13)	Airhose (14)	Screw on and tighten using 7/8-inch open-end wrench.
31.	Engine	a. Start engine and charge air system to normal pressure (TM 9-2320-270-10). b. Shut down engine (TM 9-2320-270-10). c. Have assistant apply brakes and hold.
32.	Brake chamber and hose connections	Check for leaks (page 4-1).
33. Nonpressure housing (1) to actuator (5)	Spanner nut (4)	a. Using hammer and chisel, screw down and tighten. b. Have assistant release brakes.



**NOTE**

FOLLOW-ON MAINTENANCE: Check operation (TM 9-2320-270-10).

**TASK ENDS HERE**

**PUSHER AXLE AIRBRAKE CHAMBERS**

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This task covers:

- a. Removal/Disassembly (page 4-692)
  - b. Cleaning (page 4-696)
  - c. Inspection/Replacement (page 4-696)
  - d. Assembly/installation (page 4-697)
- 

**INITIAL SETUP**

**Tools**

- Chisel, cold hand, 1/2-inch
- Drill, electric, portable
- Drill twist, 1/8-inch
- Hammer, machinist's ball-peen, 1-pound
- Hammer, plastic
- Handle, ratchet, 3/8-inch drive
- Key, socket head screw, 1/4-inch
- Pliers, long-nose, round
- Riveter, hand
- Screwdriver, flat-tip, 5/8-inch
- Socket, 1/2-inch, 3/8-inch drive
- Wrench, box, 1/2-inch
- Wrench, open-end, 5/8-inch
- Wrench, open-end, 13/16-inch
- Wrench, open-end, 7/8-inch
- Wrench, open-end, 15/16-inch
- Wrench, pipe, 1/4- to 1-inch

**Materials/Parts**

- Soap, liquid (item 14, appendix C)
- Tape, teflon (item 22, appendix C)

**Personnel Required**

Two

**Equipment Condition**

Pusher axle wheel removed for the side being repaired (TM 9-2320-270-10).

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LOCATION	ITEM	ACTION	REMARKS
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**REMOVAL/DISASSEMBLY**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

Except as noted, the steps in this task are the same for all four pusher axle brake chambers. Right side chambers are shown.

**PUSHER AXLE AIRBRAKE CHAMBERS - CONTINUED**

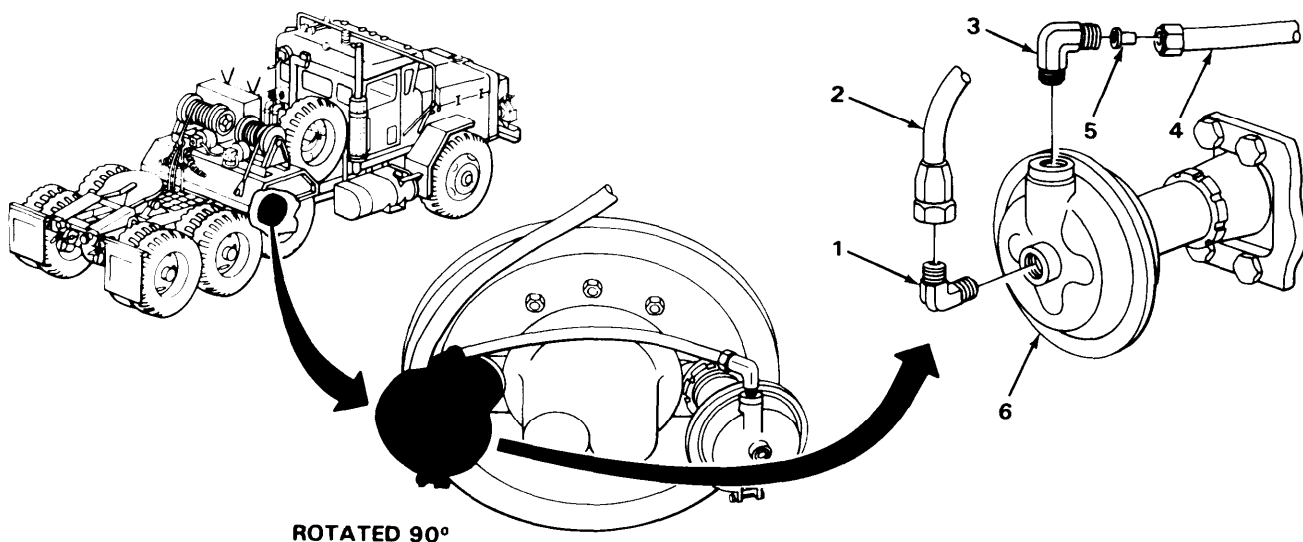
LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

- |    |            |                           |
|----|------------|---------------------------|
| 1. | Air system | Drain (TM 9-2320-270-10). |
|----|------------|---------------------------|

**NOTE**

Do steps 2 thru 5 for front chamber, and steps 6 thru 9 for rear chamber.

- |                                    |                        |   |
|------------------------------------|------------------------|---|
| 2. Elbow (1)                       | Hose (2)               | Using 15/16-inch and 7/8-inch wrenches, unscrew and take off. |
| 3. Elbow (3)                       | Crossover tube (4)     | Using 13/16-inch wrench, unscrew and take off.                |
| 4. Elbow (3) or crossover tube (4) | Insert (5)             | Using long-nose pliers, pull out.                             |
| 5. Front chamber (6)               | Two elbows (3) and (1) | Using 5/8-inch wrench, unscrew and take out.                  |



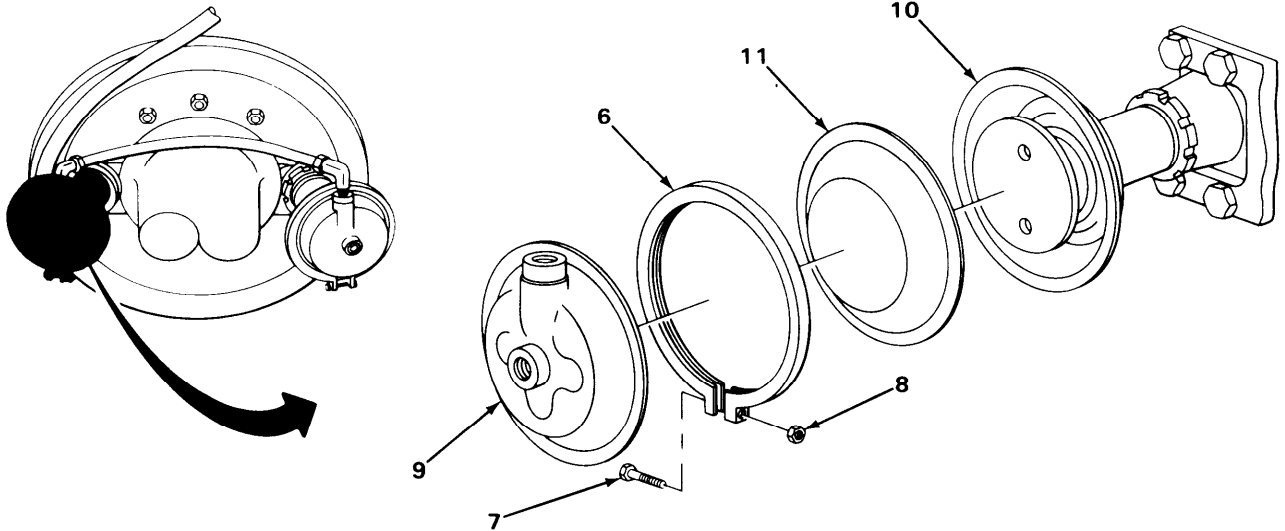
**PUSHER AXLE AIRBRAKE CHAMBERS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL/DISASSEMBLY – CONTINUED</b>		
6. Elbow (1)	Crossover tube (2)	Using 13/16-inch wrench, unscrew and take off.
7. Elbow (1) or crossover tube (2)	Insert (3)	Using long-nose pliers, pull out.
8. Chamber (4)	Elbow (1)	Using 5/8-inch wrench, unscrew and take out.
9.	Plug (5)	Using 1/4-inch key, unscrew and take out.
10. Clamp ring (6)	Screw (7) and nut (8)	Using 1/2-inch box wrench, socket, and handle, unscrew and take out.
11. Pressure housing (9) to nonpressure housing (10)	Clamp ring (6)	Using screwdriver, spread clamp ring.
12. Nonpressure housing (10)	Clamp ring (6), pressure housing (9), and diaphragm(n)	Take off.
13. Pressure housing (9)	Clamp ring (6) and diaphragm (11)	Take off.

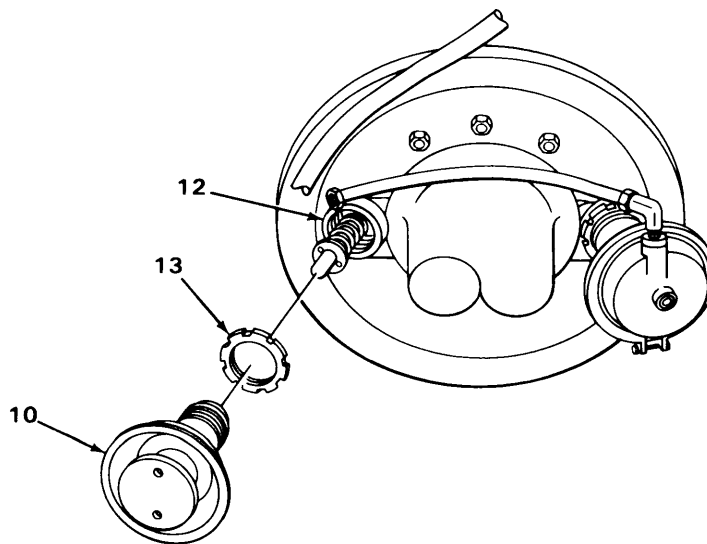


PUSHER AXLE AIRBRAKE CHAMBERS - CONTINUED

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------



- |   |                          |   |
|---|--------------------------|---|
| 14. Nonpressure housing (10) to actuator (12) | Spanner nut (13)         | a. Using hammer and chisel, loosen.<br>b. Screw out from actuator (12). |
| 15. Actuator (12)                             | Nonpressure housing (10) | Unscrew and take out.<br><b>Loosen with pipe wrench if necessary.</b>   |
| 16. Nonpressure housing (10)                  | Spanner nut (13)         | Unscrew and take off.   |



**PUSHER AXLE AIRBRAKE CHAMBERS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

REMOVAL/DISASSEMBLY – CONTINUED

- |                             |                 |  |
|-----------------------------|-----------------|--|
| 17. Nonpressure housing (1) | Push rod (2)    | Pull out.  |
| 18. Push rod (2)            | Wedge guide (3) | a. If cracked or worn, pull off.<br>b. Get rid of. |

**NOTE**

Do steps 19 and 20 only if boot is cracked or brittle.

- |                             |                                |   |
|-----------------------------|--------------------------------|---|
| 19. Boot retainer (4)       | Four rivets (5)                | a. Using 1/8-inch drill twist and drill, drill out.<br>b. Get rid of. |
| 20. Nonpressure housing (1) | Boot retainer (4) and boot (6) | a. Take out.<br>b. Get rid of boot (6).                               |

CLEANING

- |     |           |   |
|-----|-----------|---|
| 21. | All parts | Clean according to general maintenance instructions (page 4-1). |
|-----|-----------|---|

inspection/REPLACEMENT

**NOTE**

For more information on how to inspect parts, go to general maintenance instructions (page 4-1).

Replace defective parts as needed.

- |     |   |   |
|-----|---|---|
| 22. | All threaded parts  | Look for stripped and damaged parts.        |
| 23. | Pressure housing (7), nonpressure housing (1), and clamp ring (8) | Look for cracks, dents, and excessive rust. |
| 24. | Diaphragm (9)   | Look for rips, tears, and brittleness.      |

**PUSHER AXLE AIRBRAKE CHAMBERS - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

ASSEMBLY/INSTALLATION

**NOTE**

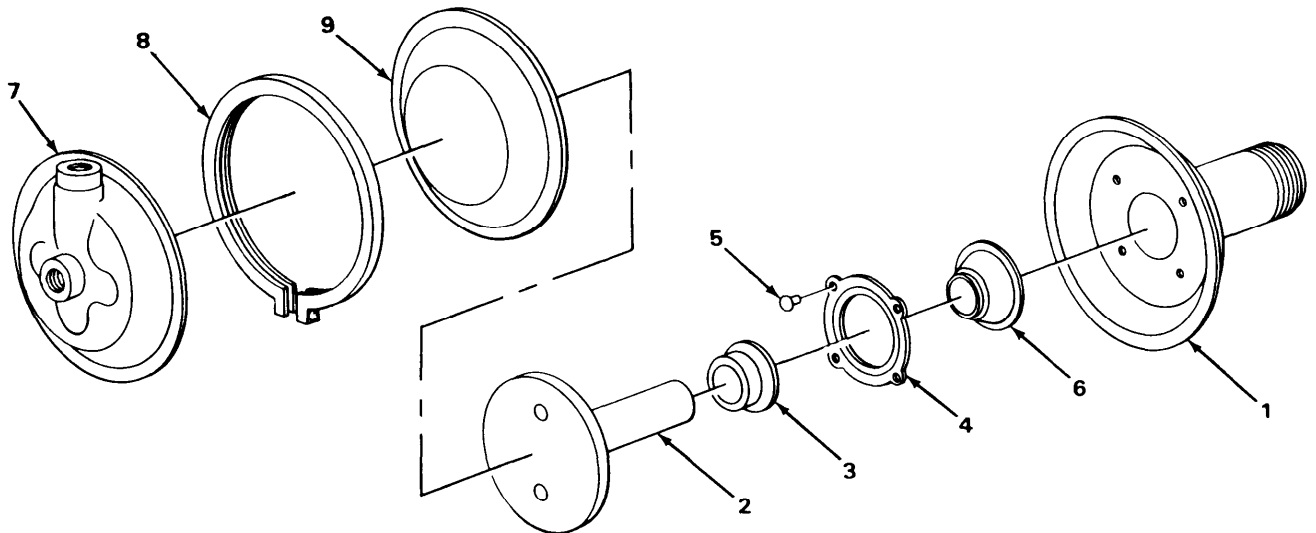
Skip steps 25 and 26 if boot was not replaced.

25. Nonpressure housing (1)	New boot (6) and boot retainer (4)	Put in place.	
-----------------------------	------------------------------------	---------------	--

**CAUTION**

Rivet boot to housing from inside housing or diaphragm will be punctured.

26. Boot (6) and retainer (4) to housing (1)	Four rivets (5)	Using hand riveter, put in.	
--	-----------------	-----------------------------	--



## PUSHER AXLE AIRBRAKE CHAMBERS - CONTINUED

	LOCATION	ITEM	ACTION REMARKS
ASSEMBLY/INSTALLATION – CONTINUED			
27.	Nonpressure housing (1)	Push rod (2)	Put in making sure boot (3) returns to normal shape.
28.		Spanner nut (4)	Screw on up to end of threads.
29.	Actuator (5)	Brake wedge assembly (6)	Line up wedge assembly tabs with actuator slots and push in until seated.
30.		Nonpressure housing (1)	a. Wrap threads with teflon tape (page 4-1). b. Screw in until housing (1) bottoms.
31.	Pressure housing (7')	Diaphragm (8)	Put in place.
32.	Pressure housing (7) and diaphragm (8)	Clamp ring (9)	Snap on.
33.	Nonpressure housing (1)	Clamp ring (9), diaphragm (8), and pressure housing (7)	Snap on and squeeze clamp ring (9) around housing flanges.
34.	Clamp ring (9)	Screw (10) and nut (11)	Screw in and tighten using 1/2-inch box wrench, socket, and handle.

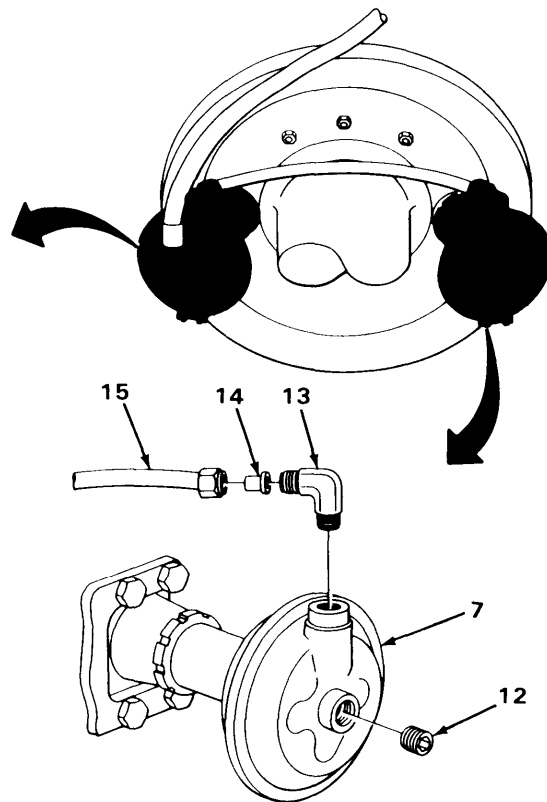
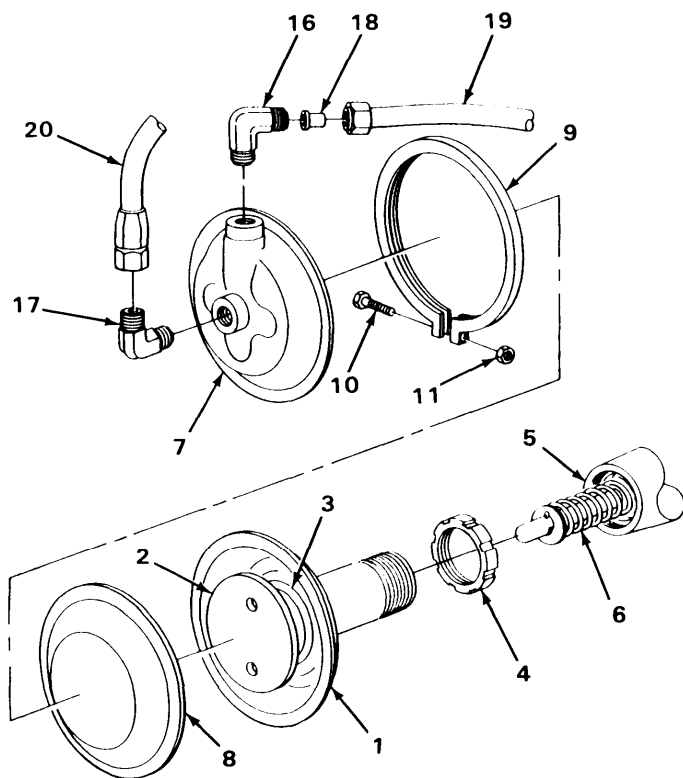
**NOTE**

Do steps 35 thru 38 for rear chamber and steps 39 thru 42 for front chamber.

35.	Pressure housing (7)	Plug (12)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1/4-inch key.
36.		Elbow (13)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
37.	Elbow (13)	Insert (14)	Push in and using plastic hammer, seat.

**PUSHER AXLE AIRBRAKE CHAMBERS - CONTINUED**

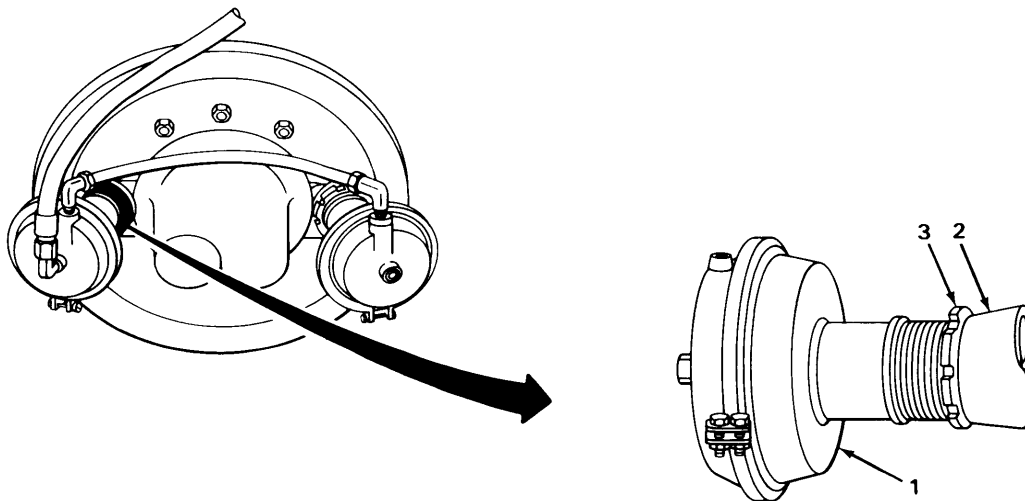
LOCATION	ITEM	ACTION REMARKS
36.	Crossover tube (15)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 13/16-inch wrench.
39. Pressure housing (7)	Two elbows (16) and (17)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
40. Elbow (6)	Insert (18)	Push into elbow and using plastic hammer, seat.
41.	Crossover tube (19)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 13/16-inch wrench.
42. Elbow (17)	Hose (20)	Screw on and tighten using 15/16-inch and 7/8-inch wrenches.



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**PUSHER AXLE AIRBRAKE CHAMBERS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>ASSEMBLY/INSTALLATION – CONTINUED</b>		
43.	Engine	a. Start engine and charge air system to normal pressure (TM 9-2320-270-10). b. Shut down engine (TM 9-2320-270-10). c. Have assistant apply brakes.
44.	Brake chamber and hose connections	Check for leaks (page 4-1).
45. Nonpressure housing (1) to actuator (2)	Spanner nut (3)	a. Screw down and tighten using hammer and chisel. b. Have assistant release brakes.



**NOTE**

FOLLOW-ON MAINTENANCE: Install wheel (TM 9-2320-270-10).

**TASK ENDS HERE**

## REAR AXLE AIRBRAKE AND SPRING BRAKE CHAMBERS

---

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-702)     | d. Inspection/Replacement (page 4-704) |
| b. Disassembly (page 4-704) | e. Assembly (page 4-704)               |
| c. Cleaning (page 4-704)    | f. Installation (page 4-705)           |
- 

### INITIAL SETUP

#### Tools

Handle, ratchet, 1/2-inch drive  
 Pliers, long-nose, round  
 Pliers, slip-joint, angle-nose  
 Rule, machinist's  
 Socket, 9/16-inch, 1/2-inch drive  
 Socket, 15/16-inch, 1/2-inch drive  
 Tape, measuring  
 Wrench, open-end, 1 1/16-inch  
 Wrench, open-end, 3/4-inch  
 Wrench, open-end, 13/16-inch  
 Wrench, open-end, 7/8-inch (two required)  
 Wrench, open-end, 15/16-inch  
 Wrench, pliers

#### Materials/Parts

Cotter pin, slack adjuster

#### Materials/Parts – Continued

Rags, wiping (item 10, appendix C)  
 Self-locking nuts, brake chamber to bracket  
 (two required)  
 Tape, teflon (item 22, appendix C)

#### Personnel Required

One

#### Equipment Condition

Wheel chocked (TM 9-2320-270-10).  
 Spring brake chamber caged for the one you are replacing (TM 9-2320-270-10).

**REAR AXLE AIRBRAKE AND SPRING BRAKE CHAMBERS - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
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**WARNING**

Tandem axle wheels must be chocked (TM 9-2320-270-10) before attempting to replace tandem axle brake chambers. Tandem axle brakes are parking brakes.

Spring brake spring must be caged (TM 9-2320-270-10) on unit which you are repairing or replacing. Spring brake spring holds enormous force and can cause serious injury.

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

Steps in this task are the same for all four tandem axle airbrake and spring brake chambers. Right rear chamber is shown.

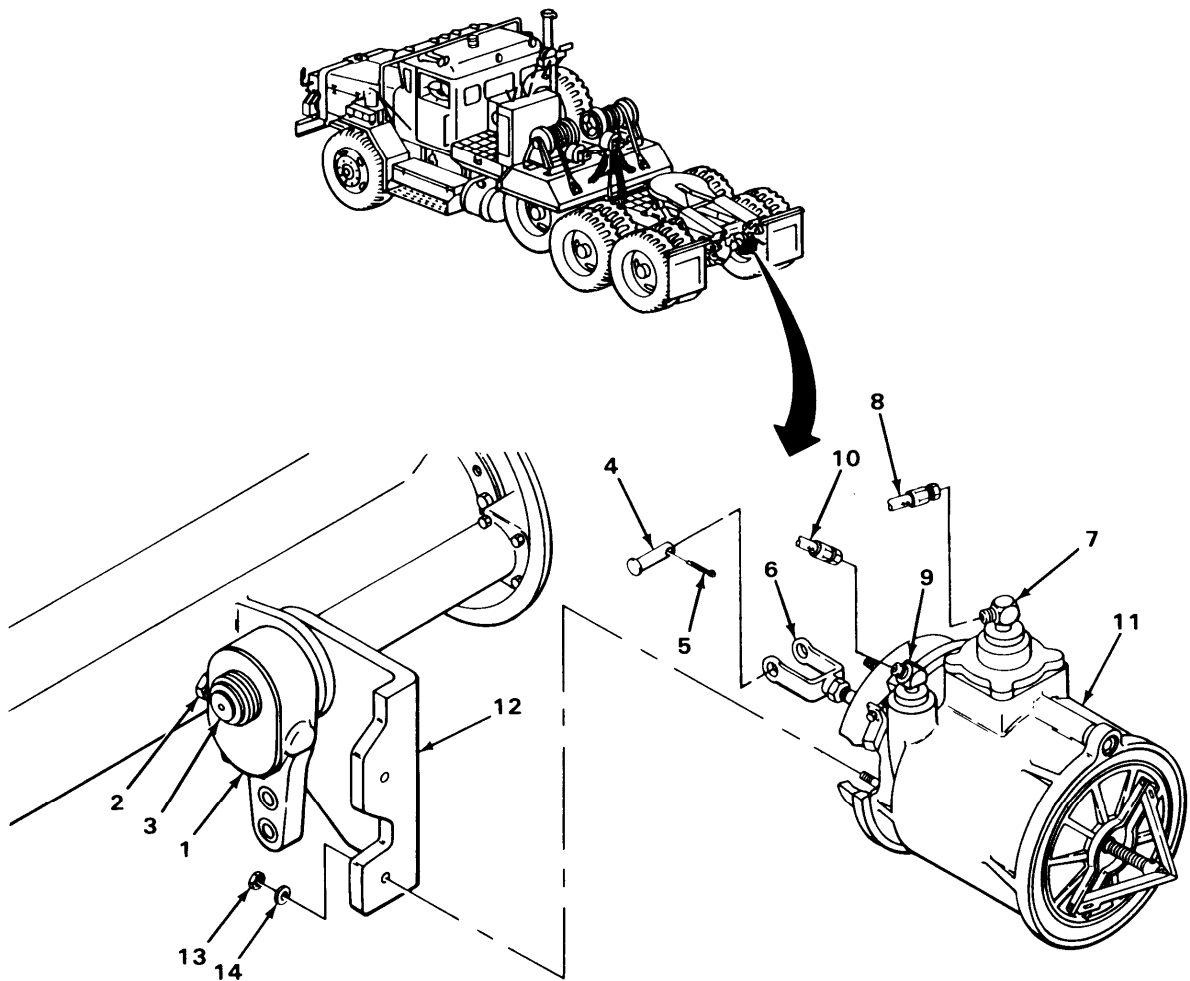
**REMOVAL**

1.	Air system	Drain (TM 9-2320-270-10).
2. Slack adjuster (1)	Adjusting screw (2)	Using 9/16-inch socket and handle, push back bushing (3), and turn screw (2) counterclockwise until all tension is released.
3. Clevis pin (4)	Cotter pin (5)	a. Using long-nose pliers, take out. b. Get rid of.
4. Clevis (6) to slack adjuster (1)	Clevis pin (4)	Take out.
5. Elbow (7)	Hose (8)	Using 1 1/16-inch and 13/16-inch wrenches, unscrew and take off.
6. Elbow (9)	Hose (10)	Using 7/8-inch and 15/16-inch wrenches, unscrew and take off.



REAR AXLE AIRBRAKE AND SPRING BRAKE CHAMBERS - CONTINUED

LOCATION	ITEM	ACTION REMARKS
7. Chamber (11) to bracket (12)	Two self-locking nuts (13) and washers (14)	a. Using 15/16-inch socket and handle, unscrew and take off. b. Get rid of self-locking nuts (13).
8. Bracket (12)	Chamber (11)	Take off.

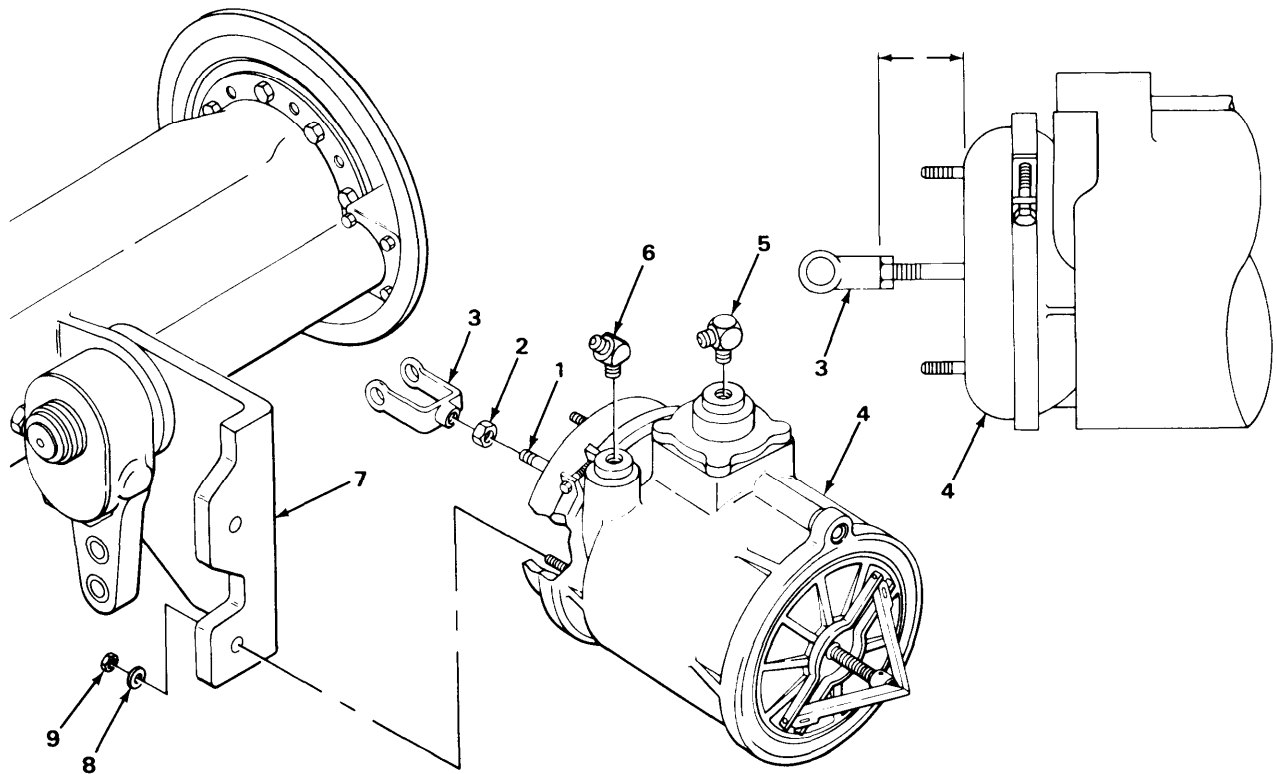


**REAR AXLE AIRBRAKE AND SPRING BRAKE CHAMBERS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
DISASSEMBLY		
9. Push rod (1)	Locknut (2)	a. Using ruler, measure distance between end of clevis and front of brake chamber and record. b. Using plier wrench and 15/16-inch open-end wrench, loosen.
10.	Clevis (3) and locknut (2)	Unscrew and take off.
11. Chamber (4)	Elbow (5)	Using 3/4-inch wrench, unscrew and take off.
12.	Elbow (6)	Using 7/8-inch wrench, unscrew and take off.
CLEANING		
13.	All parts	Clean according to general maintenance instructions (page 4-1).
inspection/REPLACEMENT		
14.	All parts	Inspect according to general maintenance instructions (page 4-1).
ASSEMBLY		
15. Chamber (4)	Elbow (6)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 7/8-inch wrench.
16.	Elbow (5)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/4-inch wrench.

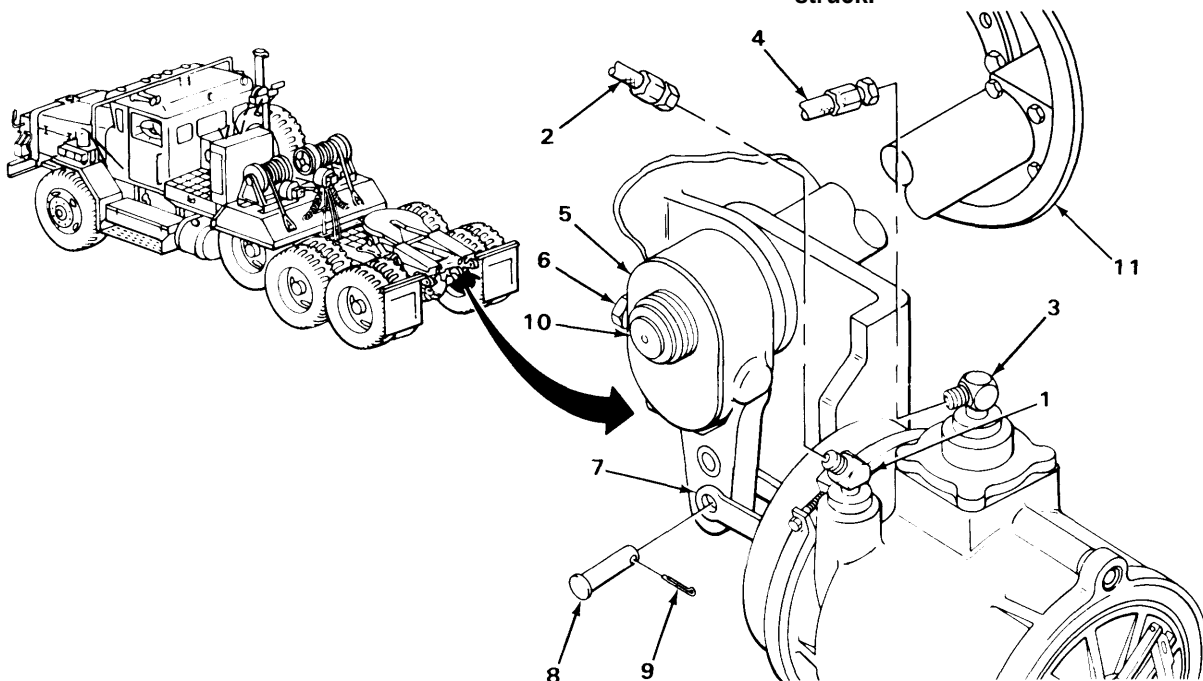
**REAR AXLE AIRBRAKE AND SPRING BRAKE CHAMBERS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
17. Push rod (1)	Locknut (2)	Screw on as far as possible.
18.	Clevis (3)	Using ruler for measurement, screw on clevis (3) to same distance as measured in step 9.
19.	Locknut (2)	Using angle-nose pliers and 15/16-inch open-end wrenches, tighten locknut (2).
<b>INSTALLATION</b>		
20. Bracket (7)	Chamber (4)	Put in place.
21. Chamber (4) to bracket (7')	Two washers (8) and new self-locking nuts (9)	Screw on and tighten using 15/16-inch socket and handle.



REAR AXLE AIRBRAKE AND SPRING BRAKE CHAMBERS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION – CONTINUED			
22. Elbow (1)	Hose (2)	Screw on and tighten using 7/8-inch and 15/16-inch wrenches.	
23. Elbow (3)	Hose (4)	Screw on and tighten using 1 1/16-inch and 13/16-inch wrenches.	
24. Slack adjuster (5)	Adjusting screw (6)	Using 9/16-inch socket and handle, adjust so holes line up.	
25. Clevis (7) to slack adjuster (5)	Clevis pin (8)	Put in.	
26. Clevis pin (8)	New cotter pin (9)	Using long-nose pliers, put in.	
27. Slack adjuster (5)	Adjusting screw (6)	a. Using 9/16-inch socket and handle, push in spring-loaded bushing (10) and turn adjusting screw counterclockwise until shoes are firm against drum (11). b. Back off adjusting screw (6) three or four clicks. c. Using back of wrench hit drum (11). <b>It should ring. If it makes a dull thud, back off adjusting screw some more until brake drum rings when struck.</b>	



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**REAR AXLE AIRBRAKE AND SPRING BRAKE CHAMBERS- CONTINUED****NOTE**

## FOLLOW-ON MAINTENANCE:

1. Uncage spring brakes (TM 9-2320-270-10).
2. Remove wheel chocks (TM 9-2320-270-10).

TASK ENDS HERE

## PRIMARY AIR RESERVOIR CHECK VALVE

This task covers:

- a. Removal (page 4-708)
- b. Installation (page 4-708)

## INITIAL SETUP

## Tools

Plastic hammer  
 Pliers, long-nose, round  
 Wrench, open-end, 1 1/16-inch  
 Wrench, open-end, 1 1/8-inch  
 Wrench, open-end, 1 3/8-inch

## Materials/Parts

Soap, liquid (item 14, appendix C)  
 Tape, teflon (item 22, appendix C)

## Personnel Required

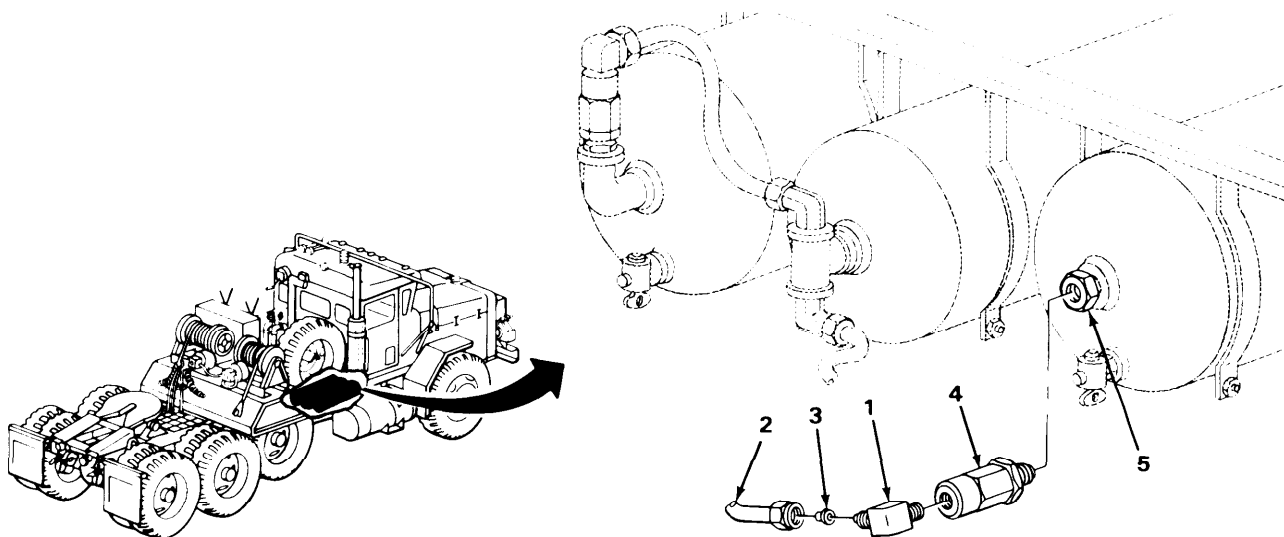
One

**PRIMARY AIR RESERVOIR CHECK VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
REMOVAL		
<b><u>WARNING</u></b>		
Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.		
1.	Air system	Drain (TM 9-2320-270-10).
2. Elbow (1)	Air line 615 (2)	Using 1 1/8-inch wrench, unscrew and pull back.
3. Elbow (1) or air line 615 (2)	Insert (3)	Using long-nose pliers, pull out.
4. Check valve (4)	Elbow (1)	Using 1 3/8-inch and 1 1/16-inch wrenches, unscrew and take out.
5. Adapter (5)	Check valve (4)	Using 1 1/16-inch and 1 3/8-inch wrenches, unscrew and take out.
CLEANING		
6.	All parts	Clean according to general maintenance instructions (page 4-1).
INSPECTION/REPLACEMENT		
7.	All parts	Inspect according to general maintenance instructions (page 4-1).
INSTALLATION		
8. Adapter (5)	Check valve (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 3/8-inch wrench.

**PRIMARY AIR RESERVOIR CHECK VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
9. Check valve (4)	Elbow (1)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
10. Elbow (1)	Insert (3)	Push in and using plastic hammer, seat.
11.	Air line (2)	a. Lube end with soap and push in until seated. b. Screw on and tighten using 1 1/8-inch wrench.



**NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

**CABLE DRAIN VALVE AND CABLE**

---

This task covers:

- a. Removal (page 4-710)
  - b. Installation (page 4-712)
- 

**INITIAL SETUP**

**Tools**

Handle, ratchet, 3/8-inch drive  
 Pliers, slip-joint, straight-nose  
 Screwdriver, flat-tip, 3/8-inch  
 Socket, 9/16-inch, 3/8-inch drive  
 Tape measure  
 Wrench, open-end, 9/16-inch  
 Wrench, open-end, 1 1/16-inch

**Materials/Parts**

Lockwasher, cable bracket to battery box  
 bracket (two required)  
 Lockwasher, cable to bracket  
 Tape, teflon (item 22, appendix C)

**Personnel Required**

One

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LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

---

**REMOVAL**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

1.	Air system	Drain (TM 9-2320-270-10).
2.	Drain cable (1) stop (2)	Using screwdriver and pliers, unscrew and take out.
3.	Drain cable (1) stop (2)	Take off.
4.	Drain valve (4) and loop clamp (5)	Pull out.
5.	Elbow (6) Drain valve (4)	Using 1 1/16-inch wrench, unscrew and take out.
6.	Drain cable (1) to bracket (7) Nut (8) and lockwasher (9)	Using 11/16-inch wrench, unscrew and slide back along cable.
7.	Bracket (7) Cable (1)	Pull out.
8.	Lockwasher (9)	Get rid of lockwasher (9).



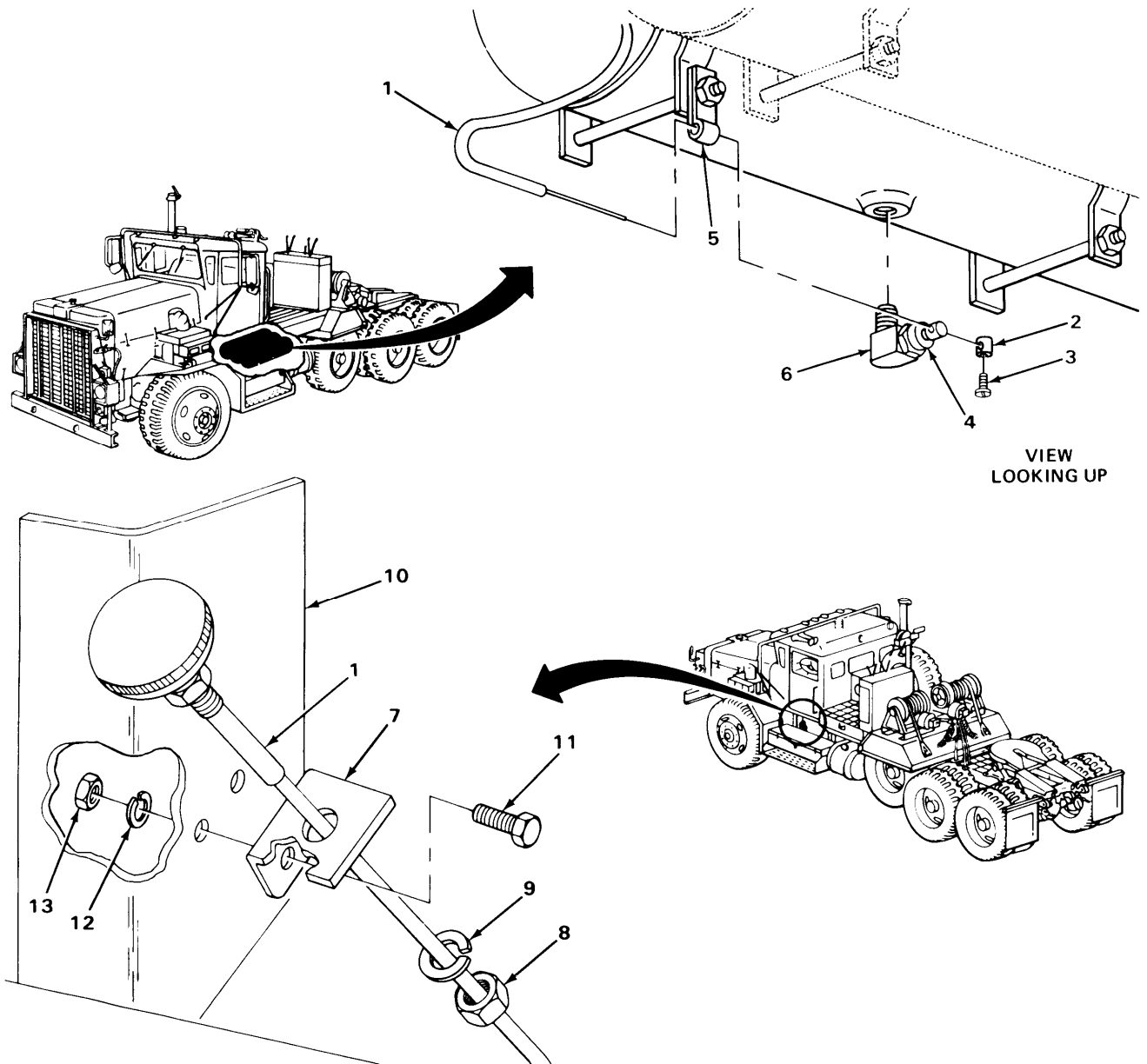
CABLE DRAIN VALVE AND CABLE- CONTINUED

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

9. Cable bracket (7)  
to center battery  
box bracket (10)

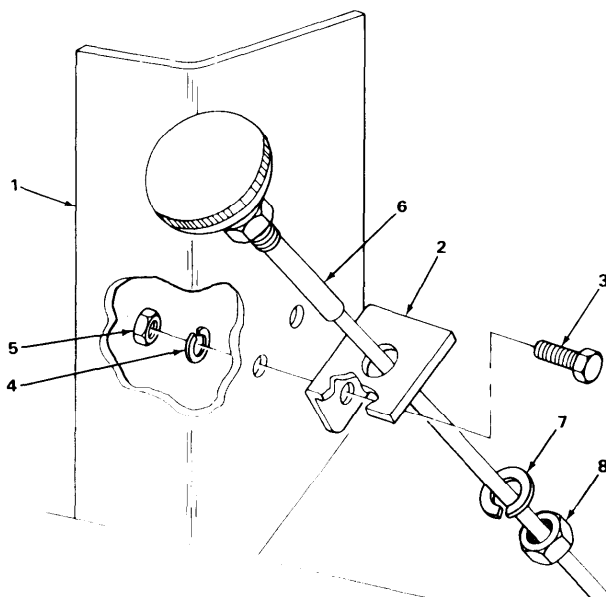
Two capscrews (11),  
lockwashers (12),  
nuts (13), and  
bracket (7)

a. Using 9/16-inch open-end wrench,  
socket, and handle, unscrew and take  
off.  
b. Get rid of lockwashers (12).



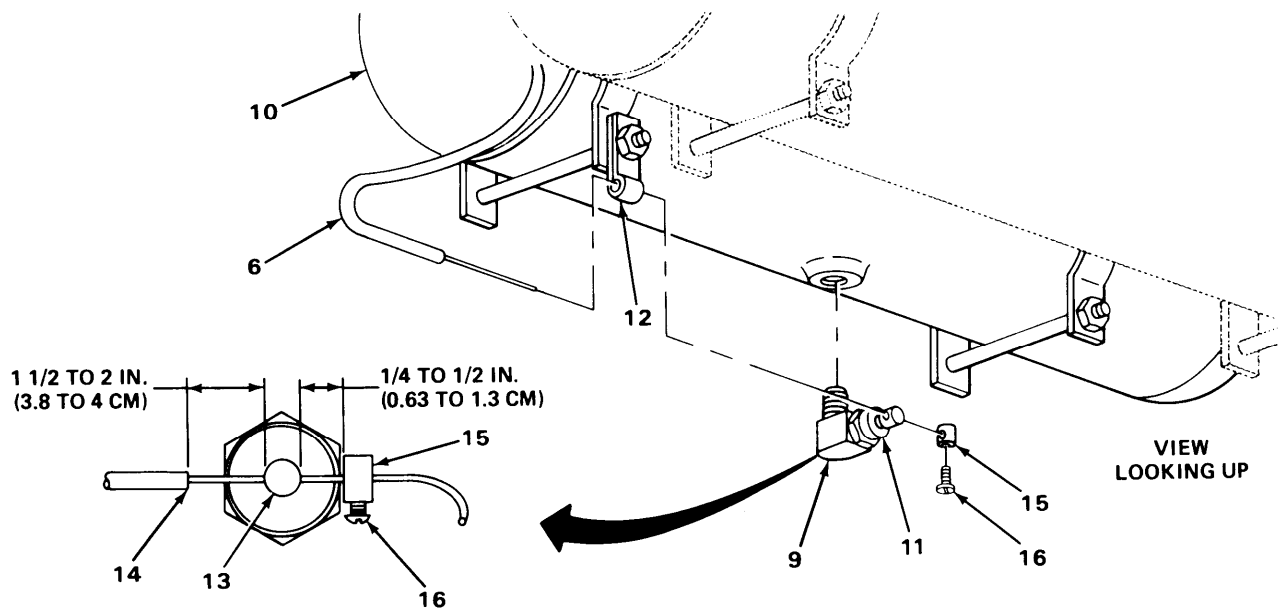
**CABLE DRAIN VALVE AND CABLE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
10. Center battery box bracket (1)	Cable bracket (2)	Put in place.
11. Cable bracket (2) to center battery box bracket (1)	Two capscrews (3), new lockwashers (4), and nuts (5)	Screw in and tighten using 9/16-inch open-end wrench, socket, and handle.
12. Cable bracket (2)	Cable (6)	Put through part way.
13. Cable (6)	New lockwasher (7) and nut (8)	Put on.
14. Cable bracket (2)	Cable (6)	Pull through.
15. Cable (6) to bracket (2)	New lockwasher (7) and nut (8)	Screw on and tighten using 1 1/16-inch open-end wrench.



**CABLE DRAIN VALVE AND CABLE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
16. Elbow (9) to wet reservoir (10)	Drain valve (11)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
17. Loop clamp (12)	Cable (6)	Push through.
18. Drain valve (11)	Cable (6)	Push through hole in valve lever (13) and, using tape measure, position so end of conduit (14) is 1 1/2 to 2 inches (3.8 to 4 centimeters) from lever (13).
19. Drain cable (6)	stop (15)	a. Put on. b. Using tape measure, position stop (15) so it is 1/4 to 1/2 inches (.63 to 1.3 centimeters) from lever (13).
20. stop (15) to cable (6)	Screw (16)	Screw in and tighten using screwdriver and pliers.



**NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

**SAFETY VALVE**

---

This task covers:

Replacement (page 4-714)

---

**INITIAL SETUP**

**Tools**

Extension, 1/2-inch drive, 3-inch  
 Handle, ratchet, 1/2-inch drive  
 Socket, deep-well, 3/4-inch,  
 1/2-inch drive

**Materials/Parts**

Safety valve  
 Tape, teflon (item 22, appendix C)

**Personnel Required**

One

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LOCATION	ITEM	ACTION	REMARKS
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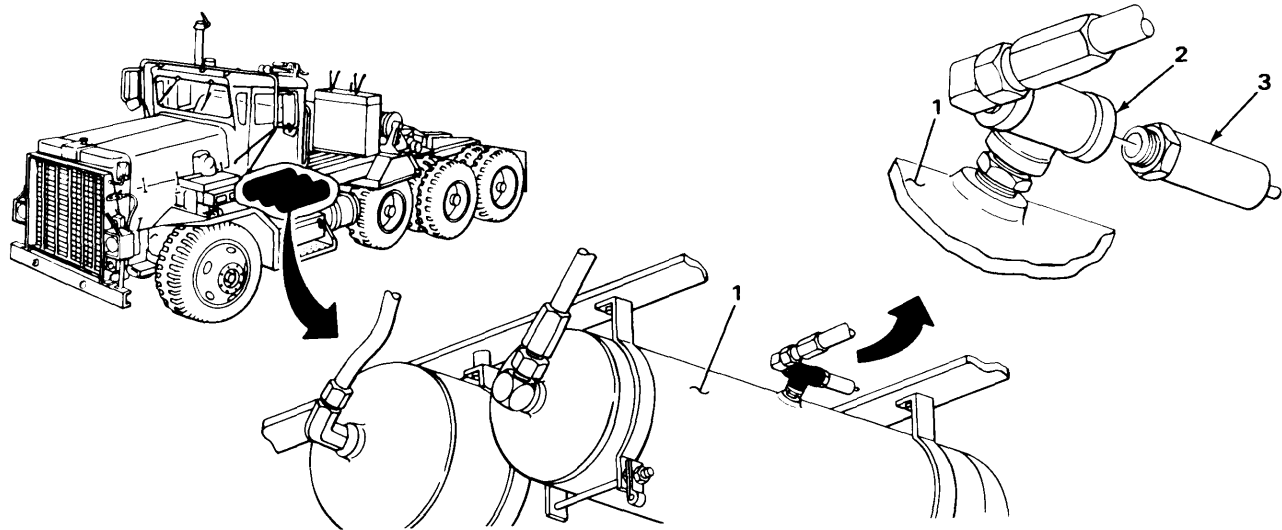
**REPLACEMENT**

**WARNING**

Make sure all pressure is drained from system before removing valve. Parts under pressure can, when removed, fly off with great force causing **injury to personnel**.

- |    |                                  |   |
|----|----------------------------------|---|
| 1. | Air system                       | Drain (TM 9-2320-270-10).   |
| 2. | Air wet reservoir<br>(1) tee (2) | a. Using socket, handle and extension,<br>unscrew and take out.<br>b. Get rid of.                                 |
| 3. | New safety valve (3)             | a. Wrap threads with teflon tape<br>(page 4-1).<br>b. Screw in and tighten using socket,<br>handle and extension. |

## SAFETY VALVE - CONTINUED



## NOTE

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

## TASK ENDS HERE

## SECONDARY AIR RESERVOIR CHECK VALVE

This task covers:

- |                          |  |
|--------------------------|--|
| a. Removal (page 4-716)  | c. Inspection/Replacement (page 4-716) |
| b. Cleaning (page 4-716) | d. Installation (page 4-716)           |

## INITIAL SETUP

## Tools

Hammer, plastic  
 Pliers, long-nose, round  
 Wrench, open-end, 1 1/16-inch  
 Wrench, open-end, 1 1/8-inch  
 Wrench, open-end, 1 3/8-inch

## Personnel Required

One

## Materials/Parts

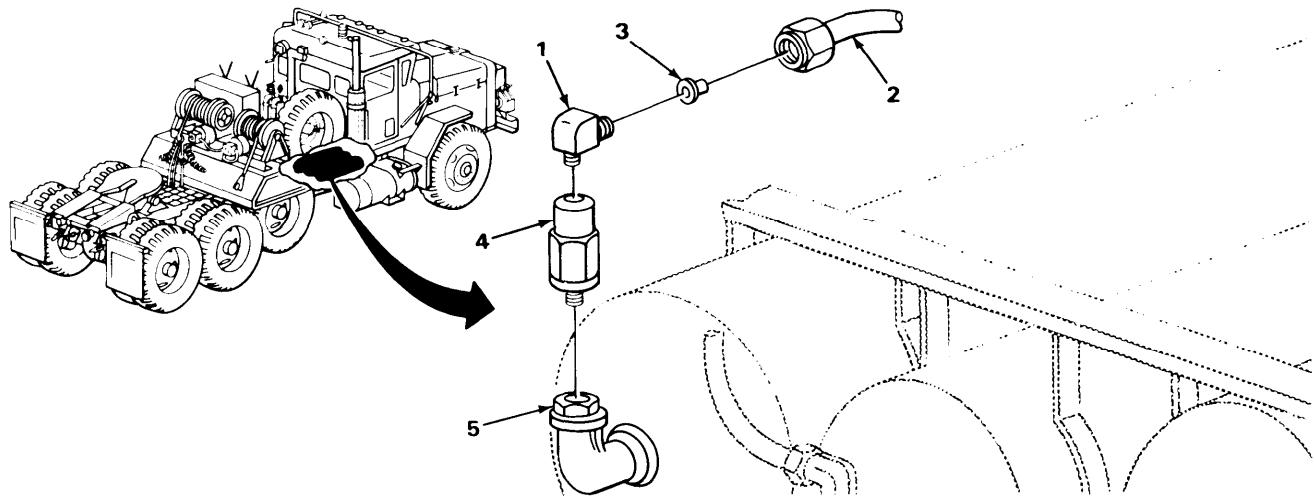
Soap, liquid (item 14, appendix C)  
 Tape, teflon (item 22, appendix C)

**SECONDARY AIR RESERVOIR CHECK VALVE- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
REMOVAL		
<b><u>WARNING</u></b>		
Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.		
1.	Air system	Drain (TM 9-2320-270-10).
2. Elbow (1)	Air line 654 (2)	Using 1 1/8-inch wrench, unscrew and pull back.
3. Elbow (1) or air line 654 (2)	Insert (3)	Using long-nose pliers, pull out.
4. Check valve (4)	Elbow (1)	Using 1 1/16-inch wrench, unscrew and take out.
5. Adapter (5)	Check valve (4)	a. Hold adapter (3) with 1 1/16-inch wrench. b. Using 1 3/8-inch wrench, unscrew and take out.
CLEANING		
6.	All parts	Clean according to general maintenance instructions (page 4-1).
INSPECTION/REPLACEMENT		
7.	All parts	Inspect according to general maintenance instructions (page 4-1).
INSTALLATION		
8. Adapter (5)	Check valve (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 3/8-inch wrench.

**SECONDARY AIR RESERVOIR CHECK VALVE- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
9. Check valve (4)	Elbow (1)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
10. Elbow (1)	Insert (3)	Push in and using plastic hammer, seat.
11.	Air line 654 (2)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 1 1/8-inch wrench.



**NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

**AIR RESERVOIR DRAIN VALVES**

---

This task covers:

- a. Clearing Clogged Valve (page 4-718)
  - b. Removal (page 4-718)
  - c. Cleaning (page 4-719)
  - d. Inspection/Replacement (page 4-719)
  - e. Installation (page 4-719)
- 

**INITIAL SETUP**

**Tools**

Wrench, open-end, 9/16-inch

**Materials/Parts**

Tape, teflon (item 11, appendix C)  
 Wire, non-electrical (item 23, appendix C)

**Personnel Required**

One

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LOCATION	ITEM	ACTION	REMARKS
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**CLEARING CLOGGED VALVE**

**WARNING**

Eye protection, heavy leather gloves, and long-sleeved shirt must be worn when clearing clogged valves. Air pressure can force water and debris out of valve, hard enough to penetrate skin.

**NOTE**

Steps in this task apply to both primary and secondary air reservoir drain valves. Primary air reservoir drain valve is shown.

- |                              |                 |  |
|------------------------------|-----------------|--|
| 1. Primary air reservoir (1) | Drain valve (2) | <ul style="list-style-type: none"> <li>a. Open so that handle is parallel to valve.</li> <li>b. Bend long piece of wire into L-shape.</li> <li>c. Face away from valve.</li> <li>d. Using wire, clear valve.</li> <li>e. Close.</li> </ul> |
|------------------------------|-----------------|--|

**REMOVAL**

**WARNING**

Make sure all pressure is drained from air system before removing valves. Parts under pressure can, when removed, fly off with great force causing injury to personnel.



**AIR RESERVOIR DRAIN VALVES - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

**NOTE**

Steps in this task apply to both primary and secondary air reservoir drain valves. Primary air reservoir drain valve is shown.

- |                              |                 |   |
|------------------------------|-----------------|---|
| 2.                           | Air system      | Drain (TM 9-2320-270-10).                     |
| 3. Primary air reservoir (1) | Drain valve (2) | Using 9/16-inch wrench, unscrew and take out. |

**CLEANING**

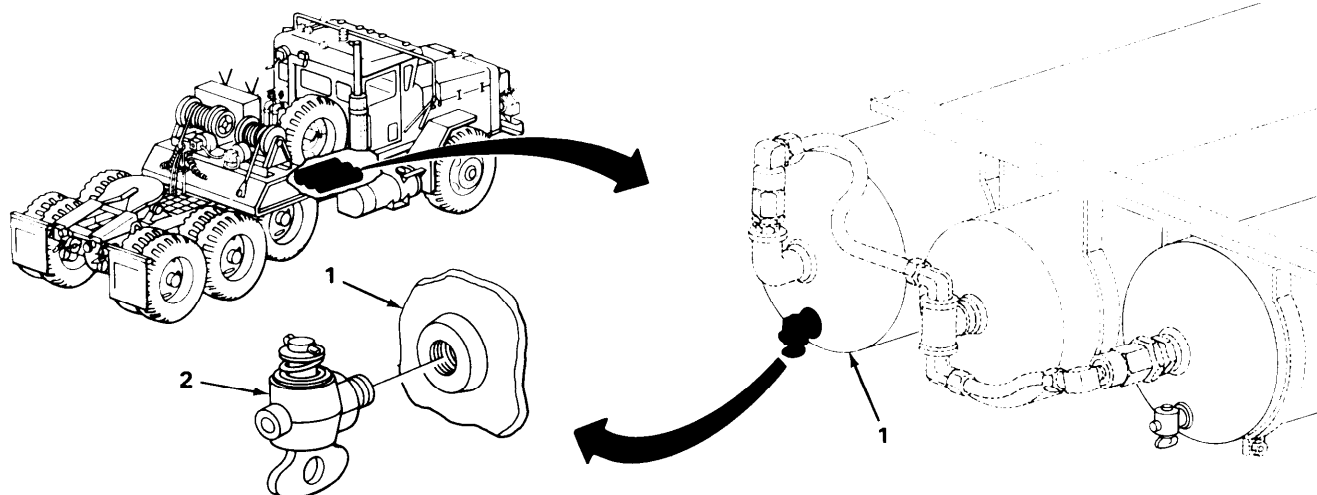
- |    |           |   |
|----|-----------|---|
| 4. | All parts | Clean according to general maintenance instructions (page 4-1). |
|----|-----------|---|

**INSPECTION/REPLACEMENT**

- |    |           |   |
|----|-----------|---|
| 5. | All parts | Inspect according to general maintenance instructions (page 4-1). |
|----|-----------|---|

**INSTALLATION**

- |                              |                 |   |
|------------------------------|-----------------|---|
| 6. Primary air reservoir (1) | Drain valve (2) | a. Wrap threads with teflon tape (page 4-1).<br>b. Screw in and tighten using 9/16-inch wrench. |
|------------------------------|-----------------|---|



**NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

**TREADLEVALVE**

---

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-720)     | d. Inspection/Replacement (page 4-726) |
| b. Disassembly (page 4-725) | e. Assembly (page 4-726)               |
| c. Cleaning (page 4-726)    | f. Installation (page 4-726)           |
- 

**INITIAL SETUP**

**Tools**

- Hammer, machinist's ball-peen, 2-ounce
- Hammer, plastic
- Handle, ratchet, 3/8-inch drive
- Pliers, long-nose, round
- Punch, drive-pin, 3/32-inch
- Socket, 1/2-inch, 3/8-inch drive
- Vise, machinist's
- Wrench, open-end, 1/2-inch
- Wrench, open-end, 9/16-inch
- Wrench, open-end, 5/8-inch
- Wrench, open-end, 1 1/16-inch
- Wrench, open-end, 3/4-inch
- Wrench, open-end, 13/16-inch
- Wrench, open-end, 7/8-inch
- Wrench, open-end, 15/16-inch

**Materials/Parts**

- Lockwasher, treadle valve to toe board  
(three required)
- Soap, liquid (item 14, appendix C)
- Tape, teflon (item 22, appendix C)

**Personnel Required**

Two

**Equipment Condition**

- Left side hood opened (TM 9-2320-270-10).
  - Left hood side panel removed  
(TM 9-2320-270-10).
  - Air cleaner hoses and restriction indicator  
removed (page 4-64).
- 

LOCATION	ITEM	ACTION REMARKS
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**REMOVAL**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

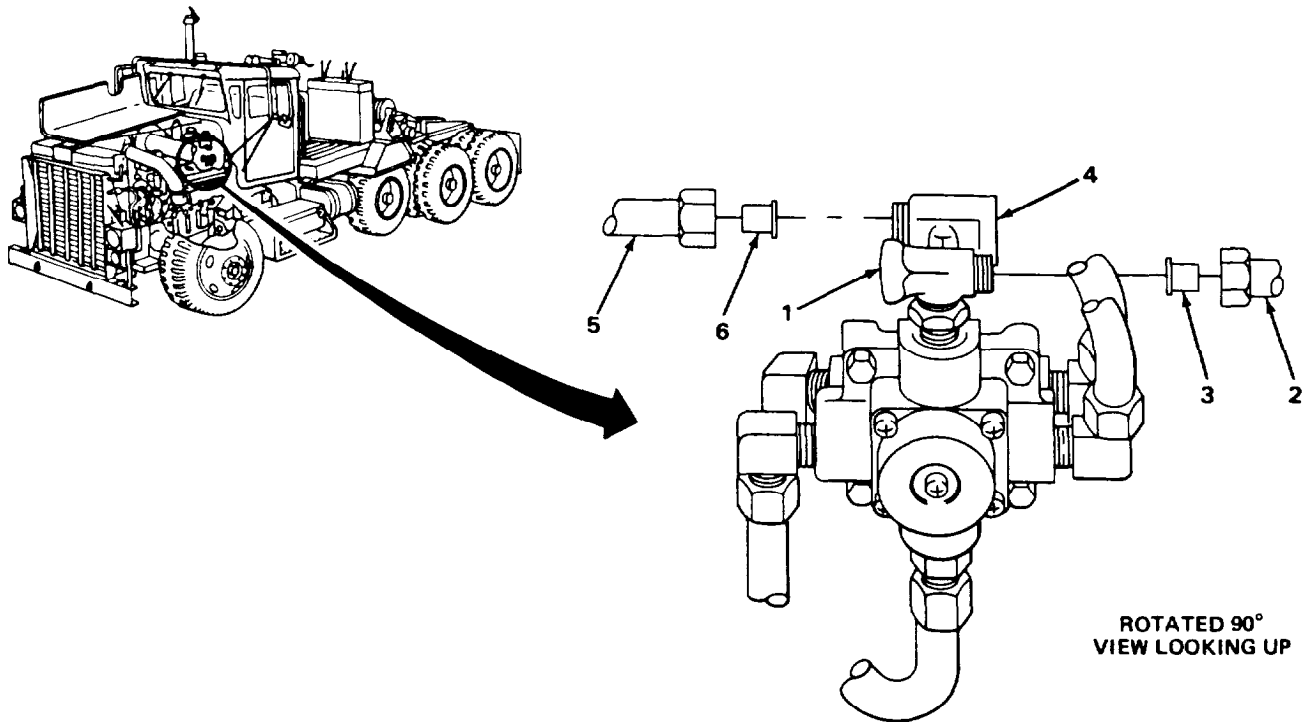
**NOTE**

Tag wires and air lines according to general maintenance instructions (page 4-1).

- |    |  |                           |
|----|--|---------------------------|
| 1. | Air system                                 | Drain (TM 9-2320-270-10). |
| 2. | Treadle valve<br>Two stoplight<br>switches | Remove (page 4-407).      |

TREADLE VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
3. Tee (1)	Air line 665 (2)	Using 5/8-inch wrench, unscrew and pull back.
4. Air line 665 (2) or tee (1)	Insert (3)	Using long-nose pliers, pull out.
5. Tee (4)	Air line 623 (5)	Using 5/8-inch wrench, unscrew and pull back.
6. Air line 623 (5) or tee (4)	Insert (6)	Using long-nose pliers, pull out.

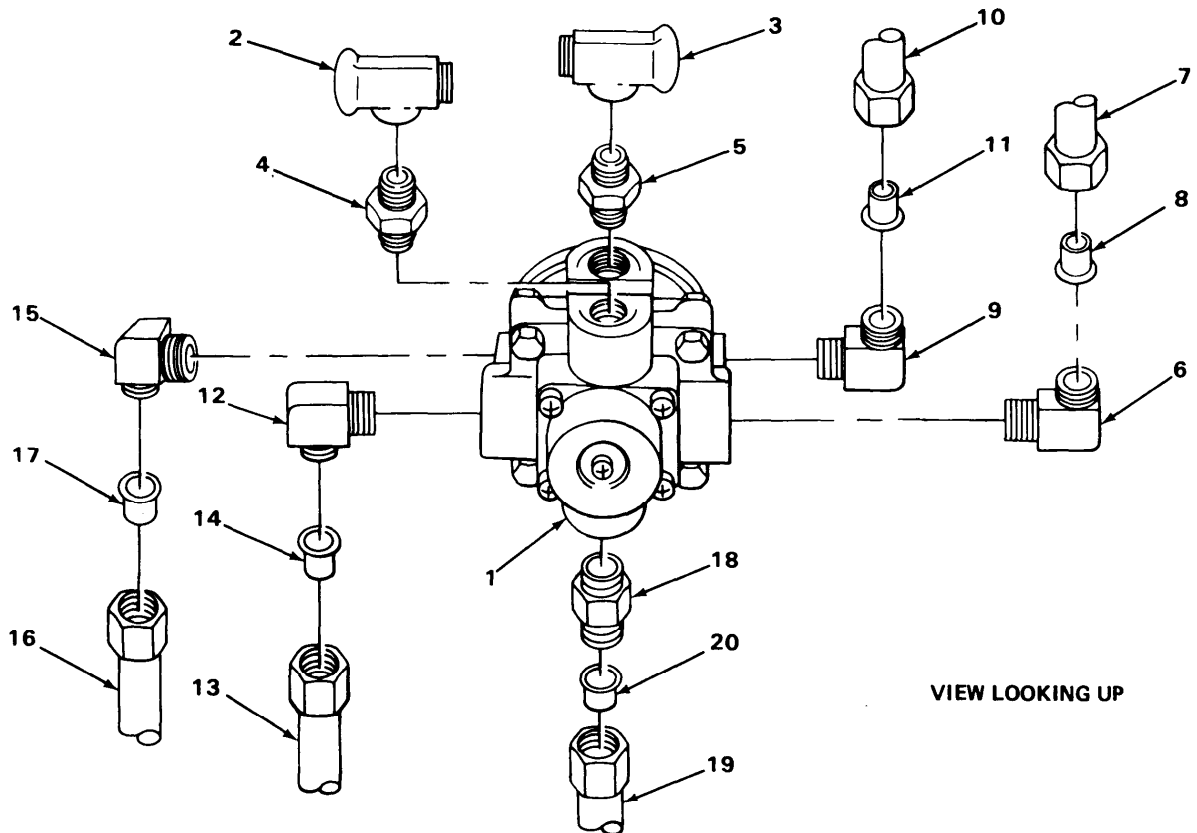


## TREADLE VALVE- CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL- CONTINUED</b>		
7. Treadle valve(1)	Two tees (2) and (3) and nipples (4) and (5)	Using 1 1/16-inch wrench, unscrew and take out.
8. Elbow(6)	Airline 006 (7)	Using 13/16-inch wrench, unscrew and pull back.
9. Air line 006 (7) or elbow (6)	Insert (8)	Using long-nose pliers, pull out.
10. Treadle valve (1)	Elbow (6)	Using 3/4-inch wrench, unscrew and take out.
11. Elbow (9)	Air line 610 (10)	Using 9/16-inch wrench, unscrew and pull back.
12. Air line 610(10) or elbow (9)	Insert (11)	Using long-nose pliers, pull out.
13. Treadle valve (1)	Elbow (9)	Using 3/4-inch wrench, unscrew and take out.
14. Elbow (12)	Air line 005 (13)	Using 15/16-inch wrench, unscrew and pull back.
15. Air line 005 (13) or elbow (12)	Insert (14)	Using long-nose pliers, pull out.
16. Treadle valve (1)	Elbow (12)	Using 7/8-inch wrench, unscrew and take out.
17. Elbow (15)	Air line 619 (16)	Using 13/16-inch wrench, unscrew and pull back.
18. Air line 619 (16) or elbow (15)	Insert (17)	Using long-nose pliers, pull out.
19. Treadle valve (1)	Elbow (15)	Using 3/4-inch wrench, unscrew and take out.

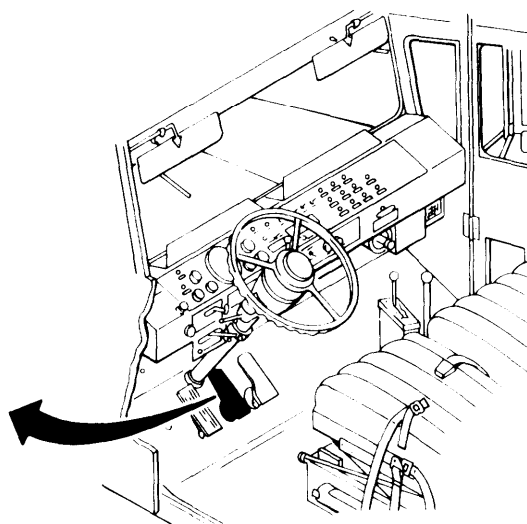
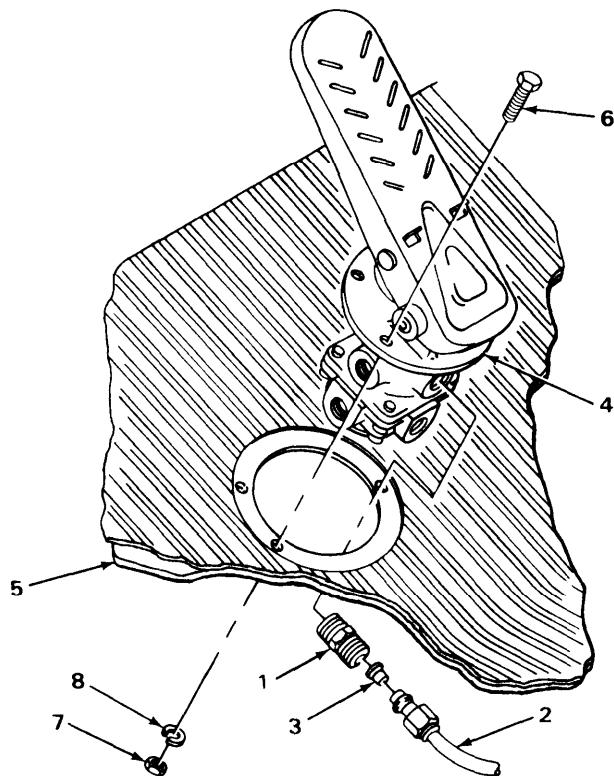
TREADLE VALVE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
20. Adapter (18)	Air line 624 (19)	Using 13/16-inch wrench, unscrew and take out.	
21. Air line 624 (19) or adapter (18)	Insert (20)	Using long-nose pliers, pull out.	
22. Treadle valve (1)	Adapter (18)	Using 1 1/16-inch wrench, unscrew and take out.	



TREADLE VALVE- CONTINUED

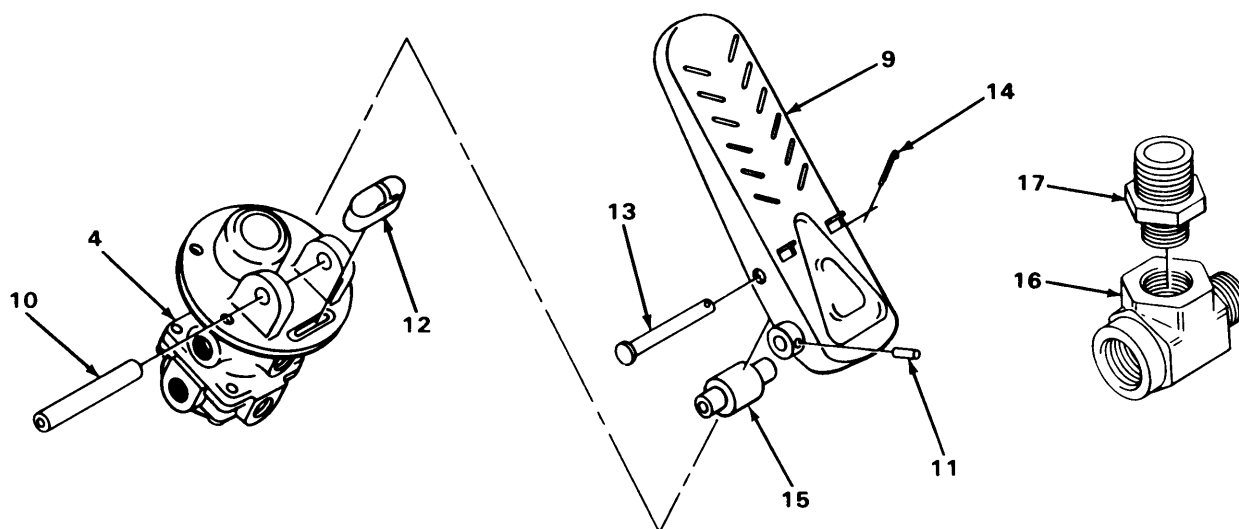
LOCATION	ITEM	ACTION	REMARKS
<b>REMOVAL- CONTINUED</b>			
23. Adapter(1)	Air line (2)	Using 13/16-inch wrench, unscrew and pull back.	
24. Air line 488 (2) or adapter (1)	Insert (3)	Using long-nose pliers, pull out.	
25. Treadle valve (4)	Adapter (1)	Using 11/16-inch wrench, unscrew and take out.	
26. Treadle valve (4) to toe board (5)	Three screws (6), nuts (7), and lockwashers (8)	a. With help of assistant and using 1/2- inch wrench, socket, and handle, unscrew and take out. b. Get rid of lockwashers (8).	
27. Toe board (5)	Treadle valve (4)	Take out.	



TA240467

## TREADLE VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>DISASSEMBLY</b>		
28. Pedal (9) to hinge pin (10)	Hollow pin (11)	Using ball-peen hammer and punch, drive out.
29. Pedal (9) to treadle valve (4)	Hinge pin (10)	Pull out.
30. Treadle valve (4)	Pedal (9)	Take off.
31.	Pedal stop (12)	Pull out.
32. Roller pin (13) to pedal (9)	Cotter pin (14)	a. Using long-nose pliers, take out. b. Get rid of.
33. Roller (15) to pedal (9)	Roller pin (13)	Take out.
34.	Roller (15)	Take out.
35. Tee (16)	Nipple (17)	a. Secure tee (16) in vise. b. Using 1 1/16-inch wrench, unscrew and take out. c. Take tee (16) out of vise.



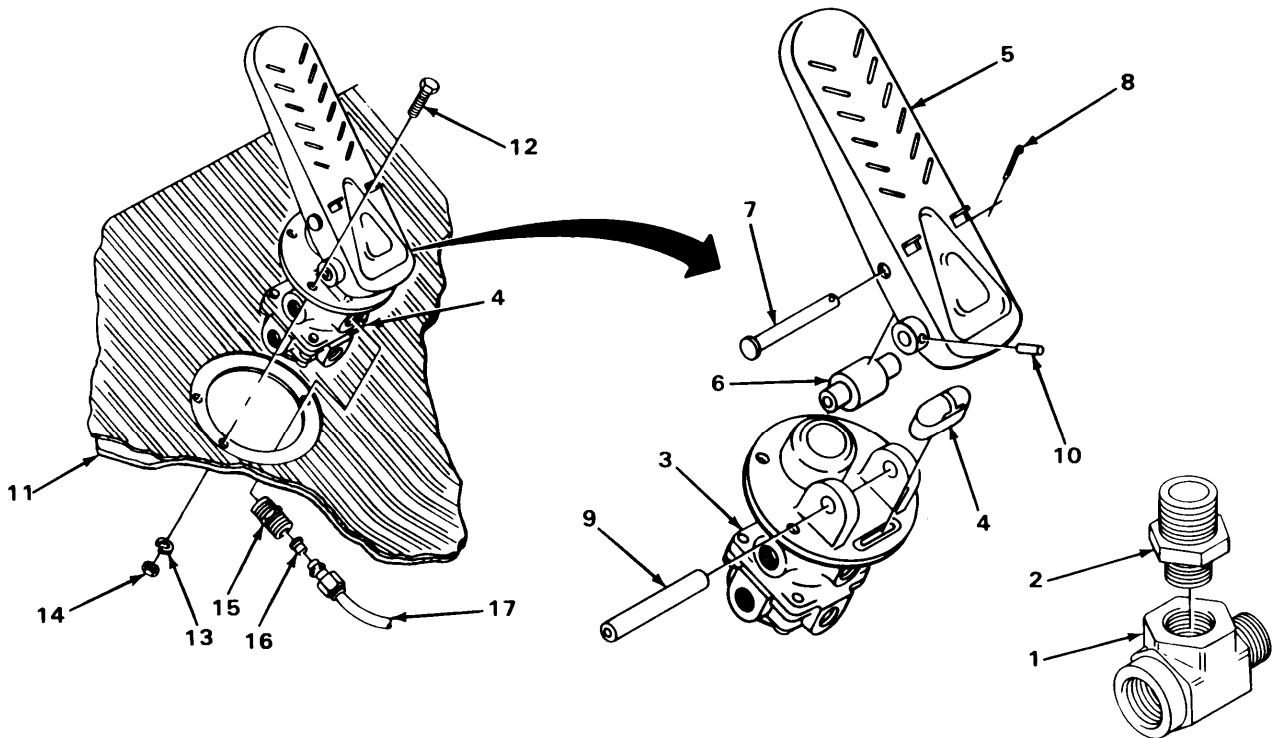
**TREADLE VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>CLEANING</b>		
36.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>		
37.	All parts	Inspect according to general maintenance instructions (page 4-1).
<b>ASSEMBLY</b>		
38. Tee (1)	Nipple (2)	a. Secure tee (1) in vise. b. Wrap threads with teflon tape (page 4-1). c. Screw in and tighten using 11/16-inch wrench. d. Take tee (1) out of vise.
39. Treadle valve (3)	Pedal stop (4)	Push in place.
40. Pedal (5)	Roller (6)	Put in place.
41. Roller (6) to pedal (5)	Roller pin (7)	Push in.
42. Roller pin (7) to pedal (5)	New cotter pin (8)	Using long-nose pliers, put in.
43. Treadle valve (3)	Pedal (5)	Put in place and hold.
44. Pedal (5) to treadle valve (3)	Hinge pin (9)	Push in and line up holes.
45. Pedal (5) to hinge pin (9)	Hollow pin (10)	Using ball-peen hammer, tap in.
<b>INSTALLATION</b>		
46. Toe board (11)	Treadle valve (3)	Put in position.
47. Treadle valve (3) to toe board(11)	Three screws (12), three new lock-washers (13), and nuts (14)	Screw in and tighten with help of assistant, using 1/2-inch wrench, socket, and handle. Notice that one screw is put in from bottom.



TREADLE VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
48. Treadle valve (3)	Adapter (15)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
49. Adapter (15)	insert (16)	Push in and using plastic hammer, seat.
50.	Air line 466(17)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 13/16-inch wrench.

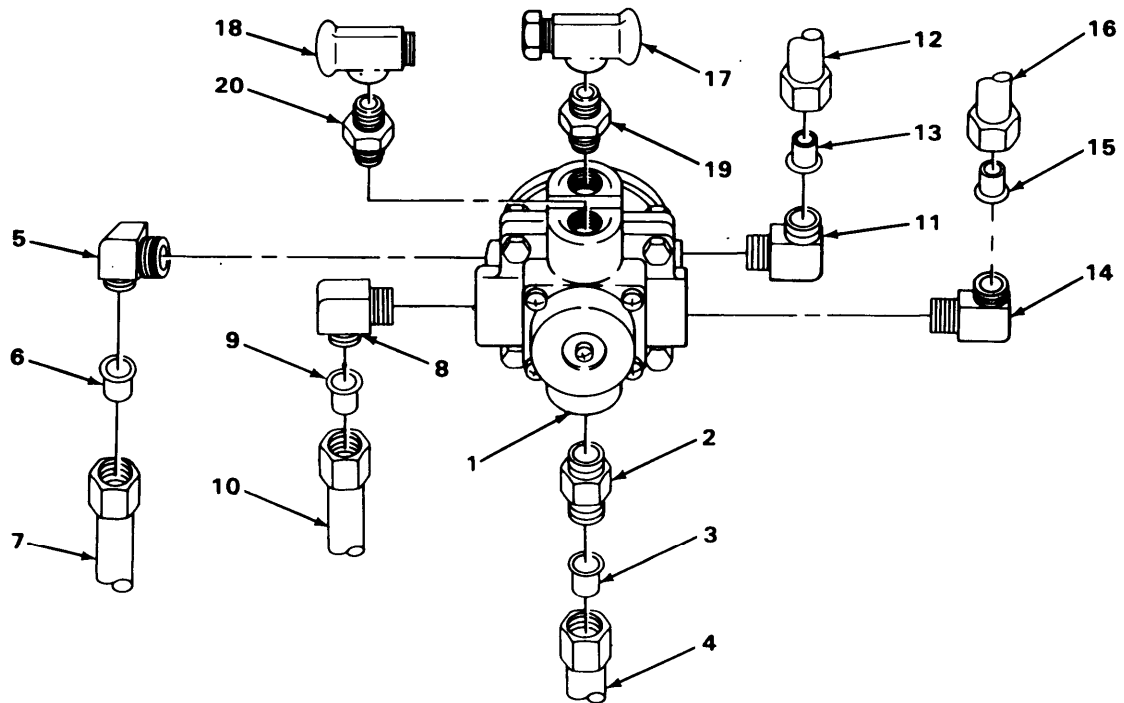


TREADLE VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION – CONTINUED</b>		
51. Treadle valve (1)	Adapter (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
52. Adapter (2)	Insert (3)	Push in and using plastic hammer, seat.
53.	Air line 624 (4)	a. Lube end with soap and push in until seated. b. Screw on and tighten using 13/16-inch wrench.
54. Treadle valve (1)	Elbow (5)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/4-inch wrench.
55. Elbow (5)	Insert (6)	Push in and using plastic hammer, seat.
56.	Airline 619(7)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 13/16-inch wrench.
57. Treadle valve (1)	Elbow (8)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 7/8-inch wrench.
58. Elbow (8)	Insert (9)	Push in and using plastic hammer, seat.
59.	Air line 005(10)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 15/16-inch wrench.
60. Treadle valve (1)	Elbow(n)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/4-inch wrench.

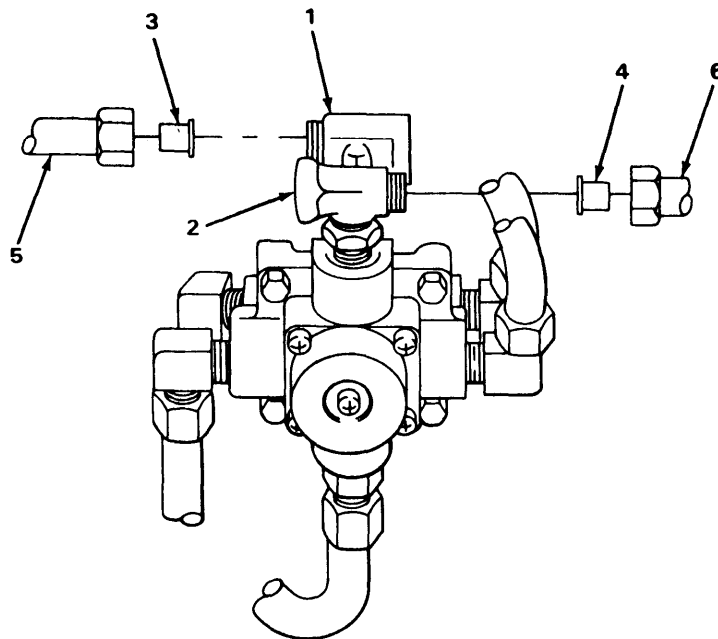
TREADLE VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
61. Air line 610(12)	Insert (13)	Push in.
62. Elbow (11)	Airline 610(12)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 9/16-inch wrench.
63. Treadle valve (1)	Elbow (14)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/4-inch wrench.
64. Elbow (14)	Insert (15)	Push in and using plastic hammer, seat.
65.	Air line 006 (16)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 13/16-inch wrench.
66. Treadle valve (1)	Two tees (17) and (18) and nipples (19) and (20)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.



TREADLE VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION - CONTINUED</b>		
67. Two tees (1) and (2)	Two inserts (3) and (4)	Push in and using plastic hammer, seat.
66. Tee (1)	Air line 623 (5)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 5/8-inch wrench.
69. Tee (2)	Air line 665 (6)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 5/8-inch wrench.
70. Treadle valve	Two stoplight switches	Install (page 4-407).



VIEW LOOKING UP

**TREADLE VALVE - CONTINUED****NOTE****FOLLOW-ON MAINTENANCE:**

1. Install air cleaner hoses and restriction indicator (page 4-64).
2. Check for leaks (page 4-1).
3. Install left hood side panel and close left side hood (TM 9-2320-270-10).

**TASK ENDS HERE****SPRING BRAKE CONTROL VALVE**

---

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-732)     | d. Inspection/Replacement (page 4-733) |
| b. Disassembly (page 4-732) | e. Assembly (page 4-734)               |
| c. Cleaning (page 4-733)    | f. Installation (page 4-734)           |
- 

**INITIAL SETUP****Tools**

Hammer, machinist's ball-peen,  
2-ounce  
Hammer, plastic  
Pliers, long-nose, round  
Pliers, slip-joint, angle-nose  
Punch, 5/32-inch drive pin  
Screwdriver, flat-tip, 3/8-inch  
Wrench, open-end, 3/8-inch  
Wrench, open-end, 9/16-inch  
Wrench, open-end, 5/8-inch

**Materials/Parts**

Soap, liquid (item 14, appendix C)  
Tape, teflon (item 22, appendix C)

**Personnel Required**

One

**Equipment Condition**

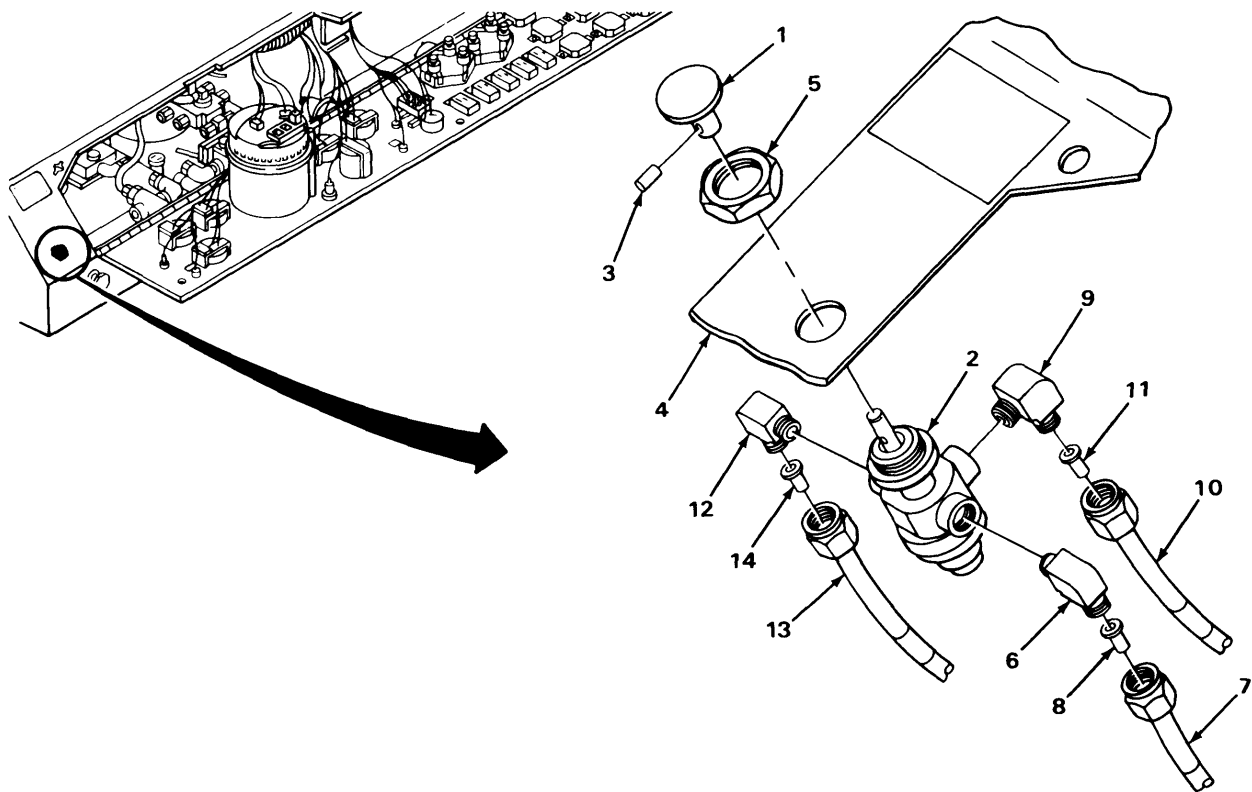
instrument panel opened (page 4-244).

## SPRING BRAKE CONTROL VALVE- CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL</b>		
1. Spring brake control valve knob (1) to spring brake control valve (2)	Hollow pin (3)	Using ball-peen hammer and punch, drive out.
2. Spring brake control valve (2)	Knob (1)	Pull off.
3. Spring brake control valve (2) to dashboard (4)	Nut (5)	Using slip-joint pliers, unscrew and take off.
4. Dashboard (4)	Spring brake control valve (2)	Push through and move to access connection.
5. Elbow (6)	Air line 662 (7)	Using 5/8-inch wrench, unscrew and pull back.
6. Air line 662 (7) or elbow (6)	Insert (8)	Using long-nose pliers, pull out.
7. Elow (9)	Air line 611 (10)	Using 5/8-inch wrench, unscrew and pull back.
8. Air line 611 (10) or elbow (9)	Insert(n)	Using long-nose pliers, pull out.
9. Elbow (12)	Air line 661 (13)	Using 9/16-inch wrench, unscrew and pull back.
10. Air line 661 (13) or elbow (12)	Insert (14)	Using long-nose pliers, pull out.
<b>DISASSEMBLY</b>		
11. Spring brake control valve (2)	Two elbows (6) and (9)	Using 9/16-inch wrench, unscrew and take out.

**SPRING BRAKE CONTROL VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
12.	Elbow (12)	Using 3/8-inch wrench, unscrew and take out.
<b>CLEANING</b>		
13.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>		
14.	All parts	Inspect according to general maintenance instructions (page 4-1).

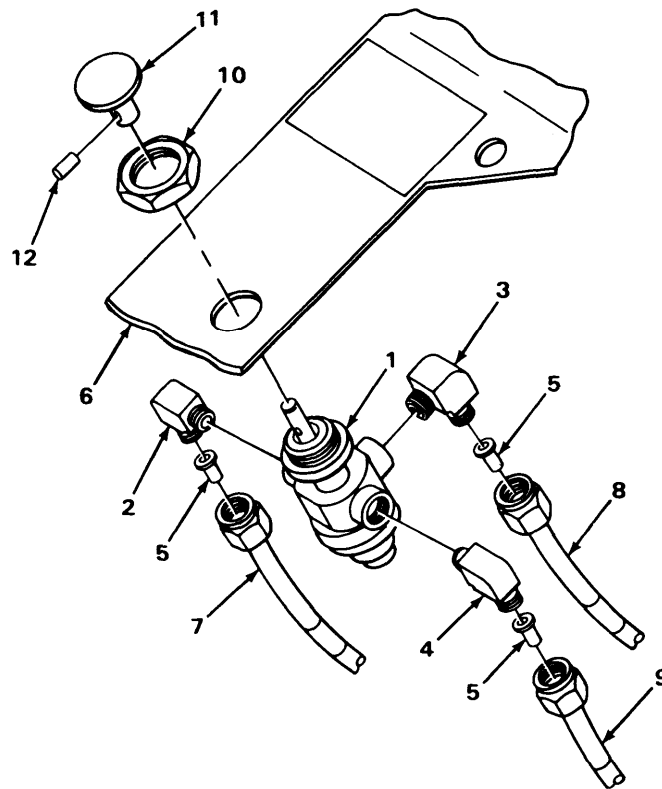


## SPRING BRAKE CONTROL VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>ASSEMBLY</b>		
15. Spring brake control valve (1)	Elbow (2)	a. Wrap pipe threads with teflon tape (page 4-1). b. Screw in and tighten using 3/8-inch wrench.
16.	Two elbows (3) and (4)	a. Wrap pipe threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
17. Three elbows (2), (3), and (4)	Three inserts (5)	Push in and using plastic hammer, seat.
<b>INSTALLATION</b>		
18. Dash board (6)	Spring brake valve (1)	Place in position.
19. Elbow (2)	Air line 661 (7)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 9/16-inch wrench.
20. Elbow (3)	Air line 611 (8)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 5/8-inch wrench.
21. Elbow (4)	Air line 662 (9)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 5/8-inch wrench.
22. Dashboard (6)	Spring brake valve (1)	Push in place.
23. Spring brake valve (1) to dashboard (6)	Nut (10)	Screw on and tighten using slip-joint pliers.
24. Spring brake valve (1)	Knob (11)	Put on and line up holes.
25. Knob (11) to spring brake valve (1)	Hollow pin (12)	Using ball-peen hammer and punch, drive in.



**SPRING BRAKE CONTROL VALVE - CONTINUED**



**NOTE**

**FOLLOW-ON MAINTENANCE:**

1. Check for leaks (page 4-1).
2. Close instrument panel (page 4-244).

**TASK ENDS HERE**

**AXLE LIFT KIT PRESSURE PROTECTION VALVE AND MANIFOLD**

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This task covers:

- a. Removal (page 4-736)
  - b. Disassembly (page 4-738)
  - c. Cleaning (page 4-739)
  - d. Inspection/Replacement (page 4-739)
  - e. Assembly (page 4-740)
  - f. Installation (page 4-740)
- 

**INITIAL SETUP**

**Tools**

- Hammer, plastic
- Handle, ratchet, 3/8-inch drive
- Pliers, diagonal-cutting
- Pliers, long-nose, round
- Pliers, slip-joint, straight-nose
- Socket, 7/16-inch, 3/8-inch drive
- Vise
- Wrench, box, 7/16-inch
- Wrench, open-end, 5/8-inch
- Wrench, open-end, 13/16-inch
- Wrench, open-end, 7/8-inch
- Wrench, open-end, 15/16-inch
- Wrench, pipe, 1/4- to 1-inch

**Materials/Parts**

- Lockwasher, air manifold to cross member (two required)
- Plugs, shipping
- Soap, liquid (item 14, appendix C)
- Tag, marking (item 18, appendix C)
- Tape, teflon (item 22, appendix C)
- Wrap, tie (item 24, appendix C)

**Personnel Required**

One

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LOCATION	ITEM	ACTION	REMARKS
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**REMOVAL**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

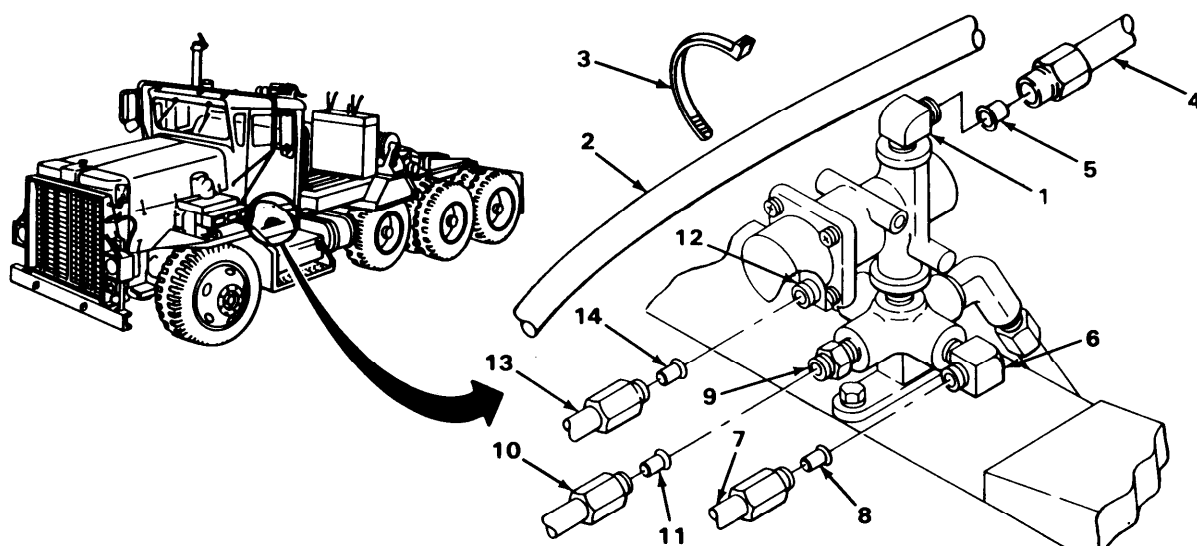
**NOTE**

Tag air lines according to general maintenance instructions (page 4-1).

- |                                  |                  |  |
|----------------------------------|------------------|--|
| 1.                               | Air system       | Drain (TM 9-2320-270-10).                                    |
| 2. Elbow (1) and air line (2)    | Tie wrap (3)     | a. Using cutting pliers, cut and take off.<br>b. Get rid of. |
| 3. Elbow (1)                     | Air line 244 (4) | Using 5/8-inch wrench, unscrew and pull back.                |
| 4. Air line 244 (4) or elbow (1) | Insert (5)       | Using long-nose pliers, pull out.                            |

**AXLE LIFT KIT PRESSURE PROTECTION VALVE AND MANIFOLD - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
5. Elbow (6)	Air line 621 (7)	Using 5/8-inch wrench, unscrew and pull back.
6. Air line 621 (7) or elbow (6)	Insert (8)	Using long-nose pliers, pull out.
7. Adapter(9)	Air line 005 (10)	Using 15/16-inch wrench, unscrew and pull back.
8. Air line 005 (10) or adapter(9)	Insert (11)	Using long-nose pliers, pull out.
9. Elbow (12)	Air line 755(13)	Using 5/8-inch wrench, unscrew and pull back.
10. Air line 755 (13) or elbow (12)	Insert (14)	Using long-nose pliers, pull out.

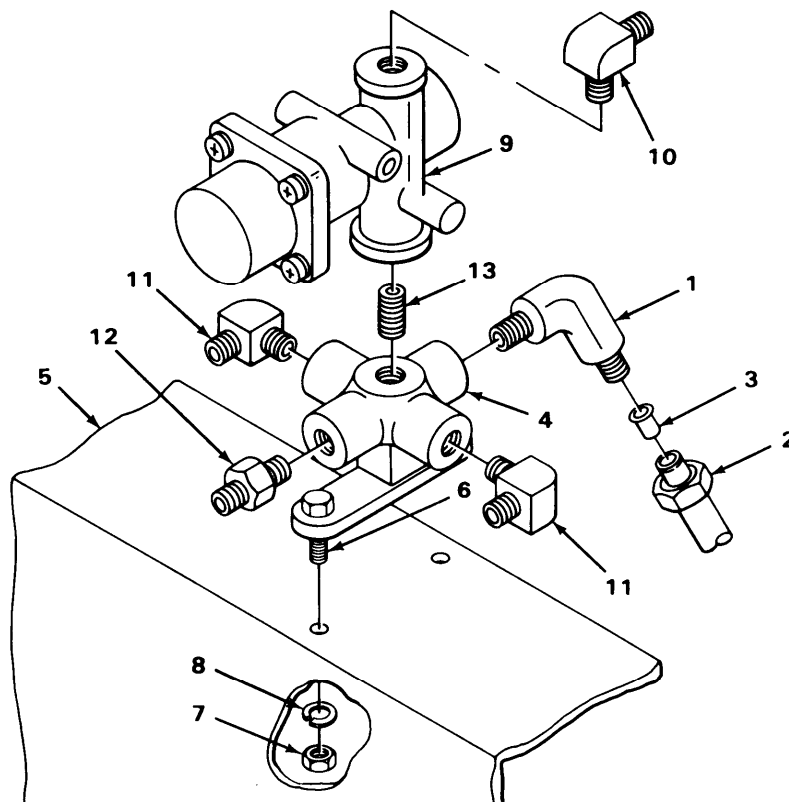


**AXLE LIFT KIT PRESSURE PROTECTION VALVE AND MANIFOLD - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL - CONTINUED</b>		
11. Elbow (1)	Air line 615 (2)	Using 15/16-inch wrench, unscrew and pull back.
12. Air line 615 (2) or elbow(1)	Insert (3)	Using long-nose pliers, pull out.
13. Air manifold (4) to cross member (5) and two screws (6)	Two nuts (7) and lockwashers (8)	a. Using 7/16-inch box wrench, socket, and handle, unscrew and take out. b. Get rid of lockwashers (8).
14. Cross member (5)	Air manifold (4) and valve (9)	Take off.
<b>DISASSEMBLY</b>		
15. Valve (9)	Elbow (10)	a. Secure valve (9) in vise. b. Using 5/8-inch wrench, unscrew and take out.
16. Air manifold (4)	Two elbows (11)	Using 5/8-inch wrench, unscrew and take out.
17.	Adapter (12)	Using 7/8-inch wrench, unscrew and take out.
18.	Elbow (1)	Using 13/16-inch wrench, unscrew and take out.
19.	Two screws (6)	Take out.
20. Valve (9)	Air manifold (4)	a. Using pipe wrench, unscrew and take out. b. Take valve (9) out of vise.
<b>NOTE</b>		
Do step 21 only if nipple is damaged and must be replaced.		
21. Valve (9) or air manifold (4)	Nipple (13)	a. Secure valve (9) or manifold (4) in vise. b. Using pipe wrench, unscrew and take out. c. Take valve (9) or manifold (4) out of vise.

**AXLE LIFT KIT PRESSURE PROTECTION VALVE AND MANIFOLD - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>CLEANING</b>		
22.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>		
23.	All parts	Inspect according to general maintenance instructions (page 4-1).



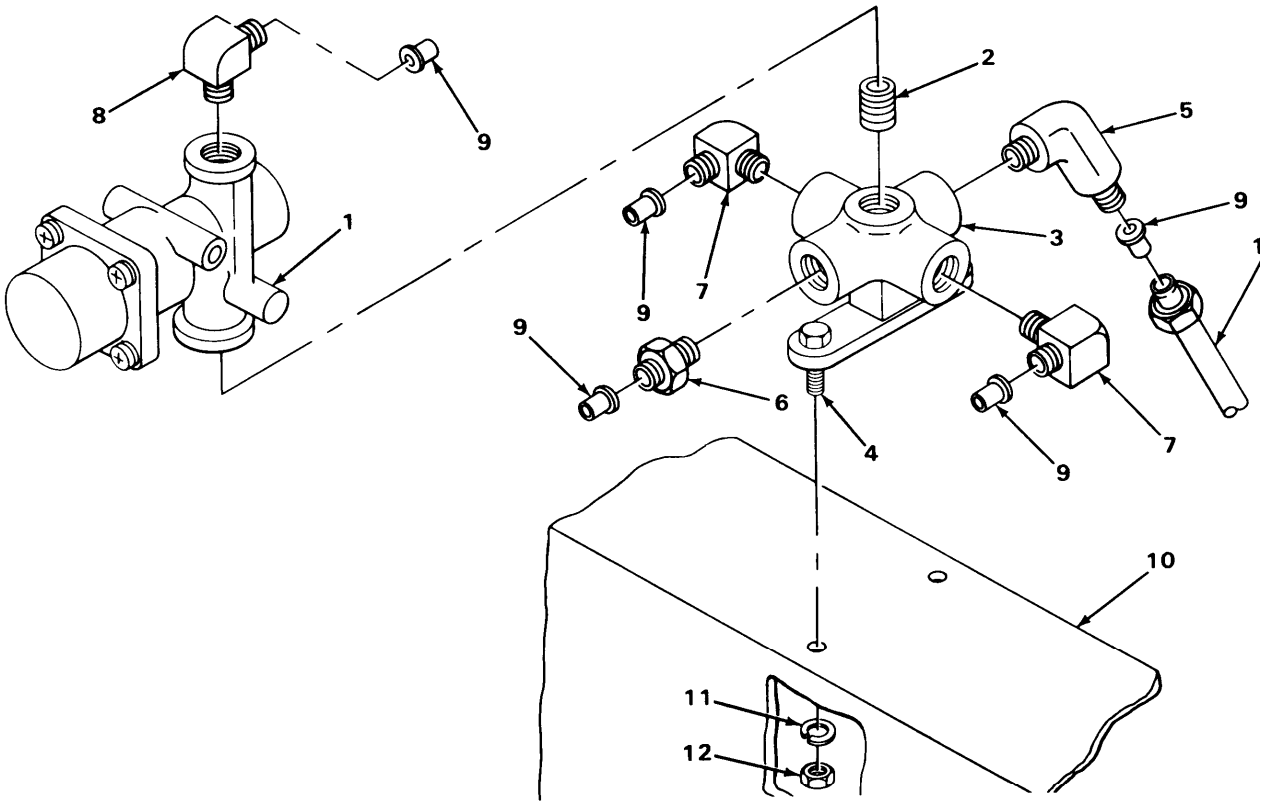
**AXLE LIFT KIT PRESSURE PROTECTION VALVE AND MANIFOLD - CONTINUED**


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LOCATION	ITEM	ACTION REMARKS
<b>ASSEMBLY</b>		
<b>NOTE</b>		
		If nipple was not removed, skip step 24.
24. Valve (1)	New nipple (2)	a. Secure valve (1) in vise. b. Wrap threads with teflon tape (page 4-1). c. Screw in.
25. Nipple (2)	Air manifold (3)	Screw on and tighten using pipe wrench.
26. Air manifold (3)	Two screws (4)	Put in position.
27.	Elbow (5)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 13/16-inch wrench.
26.	Adapter (6)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 7/8-inch wrench.
29.	Two elbows (7)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
30. Valve (1)	Elbow (8)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
31. Three elbows (5, 7, and 8) and adapter (6)	Four inserts (9)	a. Push in and using plastic hammer, seat. b. Take valve (1) out of vise.
<b>INSTALLATION</b>		
32. Cross member (10)	Air manifold (3) and valve (1)	Put in place.

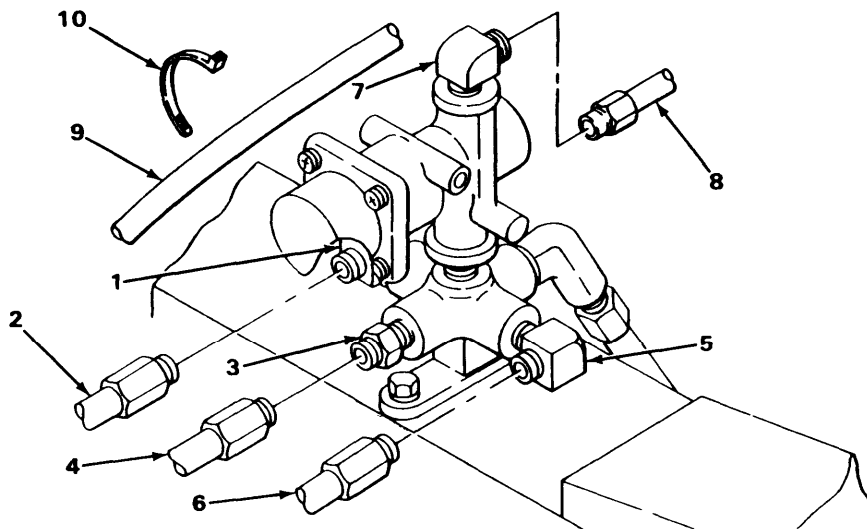
**AXLE LIFT KIT PRESSURE PROTECTION VALVE AND MANIFOLD - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
33. Air manifold (3) to cross member (10) and two screws (4)	New lockwashers(11) and nuts (12)	Screw in and tighten using 7/16-inch box wrench, socket, and handle.
34. Elbow (5)	Air line 615 (13)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 15/16-inch wrench.



**AXLE LIFT KIT PRESSURE PROTECTION VALVE AND MANIFOLD - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION – CONTINUED</b>		
35. Elbow (1)	Air line 755 (2)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 5/8-inch wrench.
38. Adapter (3)	Air line 005 (4)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 15/16-inch wrench.
37. Elbow (5)	Air line 621 (6)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 5/8-inch wrench.
38. Elbow (7)	Air line 244 (8)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 5/8-inch wrench.
39. Air line (9) and elbow (7)	New tie wraps (10)	Using slip-joint pliers, put on.



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**AXLE LIFT KIT PRESSURE PROTECTION VALVE AND MANIFOLD - CONTINUED****NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

TASK ENDS HERE

**ACCESSORY AIR MANIFOLD**

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-744)     | d. Inspection/Replacement (page 4-748) |
| b. Disassembly (page 4-747) | e. Assembly (page 4-749)               |
| c. Cleaning (page 4-748)    | f. Installation (page 4-749)           |

**INITIAL SETUP****Tools**

Hammer, plastic  
 Handle, ratchet, 3/8-inch drive  
 Pliers, long-nose, round  
 Socket, 7/16-inch, 3/8-inch drive  
 Wrench, box, 7/16-inch  
 Wrench, open-end, 1/2-inch  
 Wrench, open-end, 9/16-inch  
 Wrench, open-end, 5/8-inch

**Tools – Continued**

Wrench, open-end, 3/4-inch  
 Wrench, open-end, 13/16-inch

**Materials/Parts**

Lockwasher, air manifold to dash brace  
 (two required)  
 Soap, liquid (item 14, appendix C)  
 Tag, marking (item 18, appendix C)  
 Tape, teflon (item 22, appendix C)

**Personnel Required**

One

**Equipment condition**

Instrument panel open (page 4-244).

**ACCESSORY AIR MANIFOLD - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
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**REMOVAL****WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

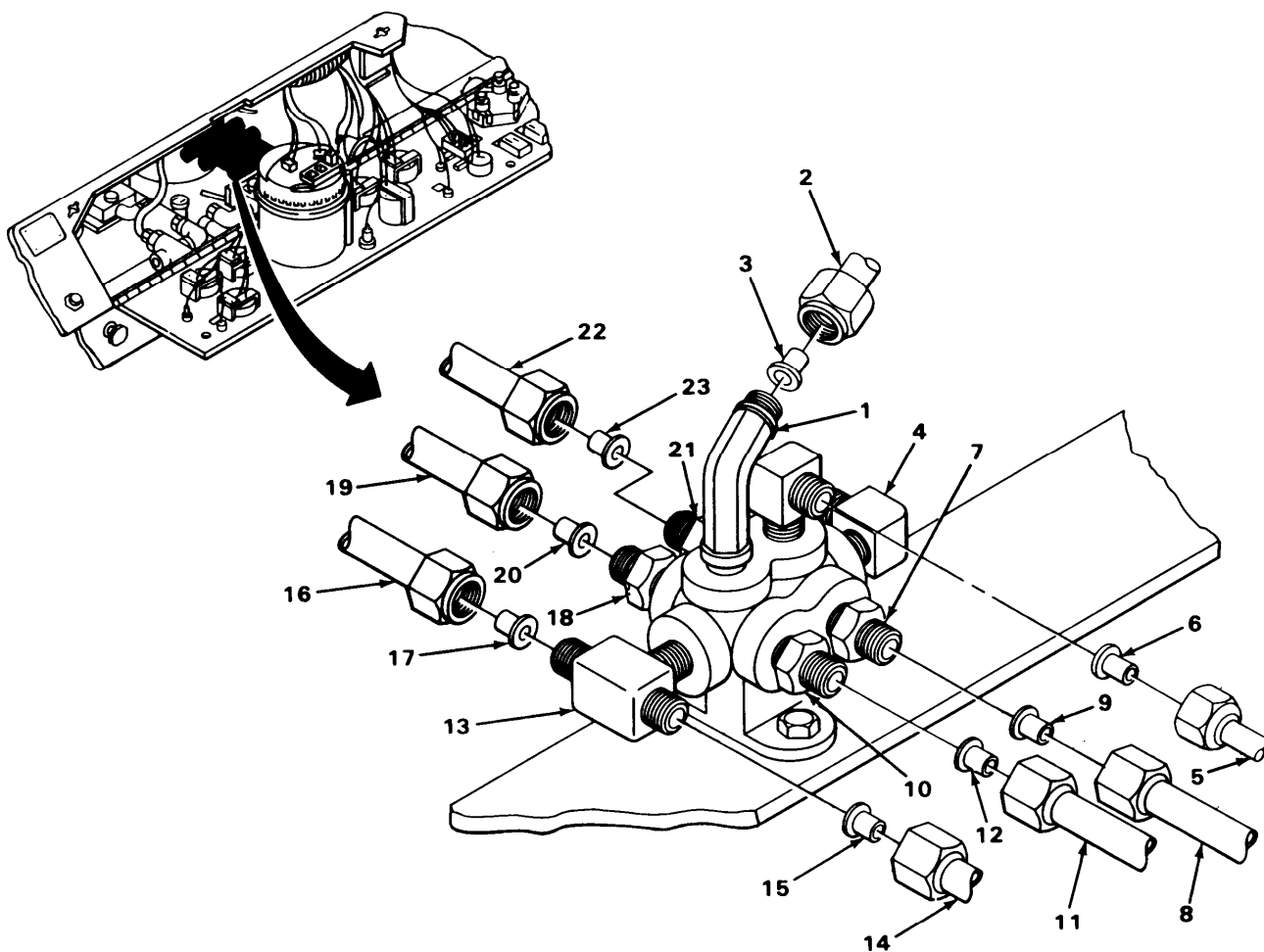
**NOTE**

Tag air lines according to general maintenance instructions (page 4-1).

1.	Air system	Drain (TM 9-2320-270-10).
2. Elbow (1)	Air line 533 (2)	Using 5/8-inch wrench, unscrew and pull out.
3. Air line 533 (2) or elbow (1)	insert (3)	Using long-nose pliers, pull out.
4. Elbow (4)	Air line (5)	Using 5/8-inch wrench, unscrew and pull out.
5. Air line 71 (5) or elbow (4)	Insert (6)	Using long-nose pliers, pull out.
6. Adapter(7)	Air line 35 (8)	Using 9/16-inch wrench, unscrew and pull out.
7. Air line 35 (8) or adapter(7)	Insert (9)	Using long-nose pliers, pull out.
8. Adapter (10)	Air line 032 (11)	Using 9/16-inch wrench, unscrew and pull out.
9. Air line 032 (11) or adapter (10)	Insert (12)	Using long-nose pliers, pull out.
10. Tee (13)	Air line 492 (14)	Using 5/8-inch wrench, unscrew and pull out.
11. Air line 492 (14) or tee(13)	Insert (15)	Using long-nose pliers, pull out.
12. Tee (13)	Air line 694 (16)	Using 5/8-inch wrench, unscrew and pull out.

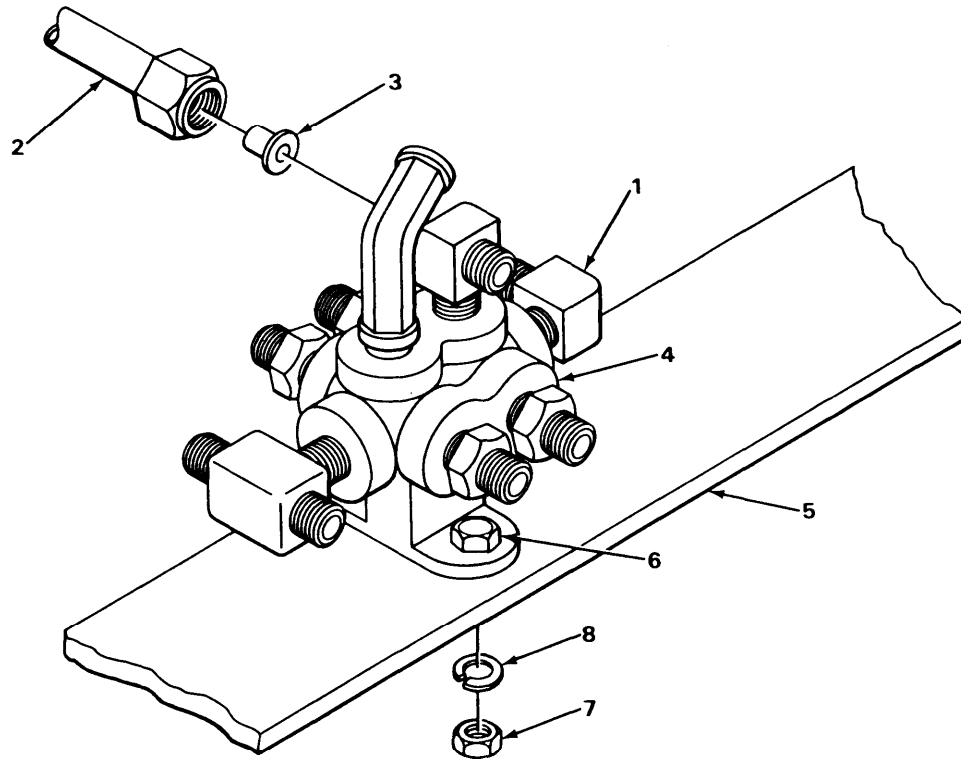
ACCESSORY AIR MANIFOLD - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
13. Air line 694 (16) or tee (13)	Insert (17)	Using long-nose pliers, pull out.	
14. Adapter (18)	Air line 074 (19)	Using 9/16-inch wrench, unscrew and pull out.	
15. Air line 074 (19) or adapter (18)	Insert (20)	Using long-nose pliers, pull out.	
16. Adapter (21)	Air line 038 (22)	Using 9/16-inch wrench, unscrew and pull out.	
17. Air line 038 (22) or adapter (21)	Insert (23)	Using long-nose pliers, pull out.	



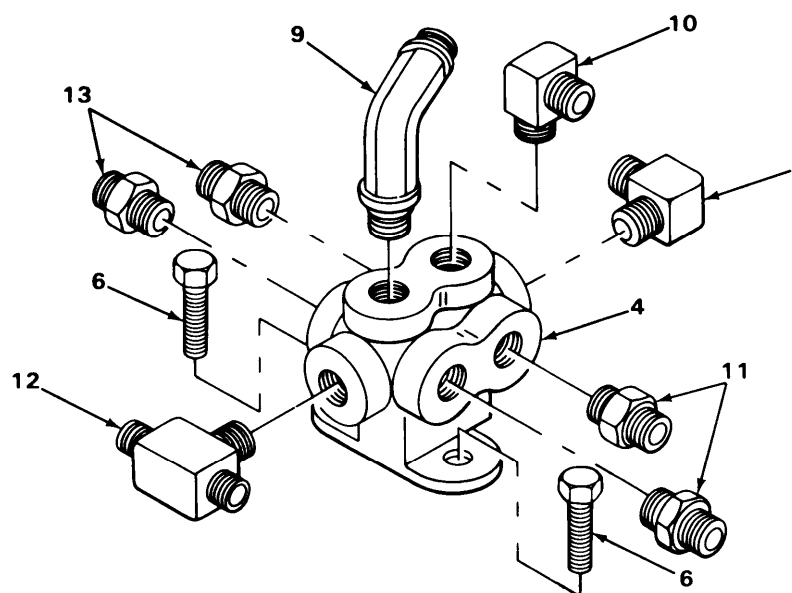
**ACCESSORY AIR MANIFOLD - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL - CONTINUED</b>		
18. Elbow (1)	Air line 073 (2)	Using 13/16-inch wrench, unscrew and pull out.
19. Air line 073 (2) or elbow (1)	Insert (3)	Using long-nose pliers, pull out.
20. Air manifold (4), dash brace (5), and two screws (6)	Two nuts (7) and lockwashers (8)	a. Using 7/16-inch box wrench, socket, and handle, unscrew and take off. b. Get rid of lockwashers (8).
21. Dash brace (5)	Air manifold (4)	Take off.



ACCESSORY AIR MANIFOLD - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>DISASSEMBLY</b>		
22. Air manifold (4)	Elbow (9)	Using 1/2-inch wrench, unscrew and take out.
23.	Elbow (10)	Using 5/8-inch wrench, unscrew and take out.
24.	Two adapters (11)	Using 9/16-inch wrench, unscrew and take out.
25.	Screw (6)	Take out.
26.	Tee (12)	Using 5/8-inch wrench, unscrew and take out.
27.	Two adapters (13)	Using 9/16-inch wrench, unscrew and take out.
20.	Screw (6)	Take out.
29.	Elbow (1)	Using 3/4-inch wrench, unscrew and take out.



**ACCESSORY AIR MANIFOLD - CONTINUED**

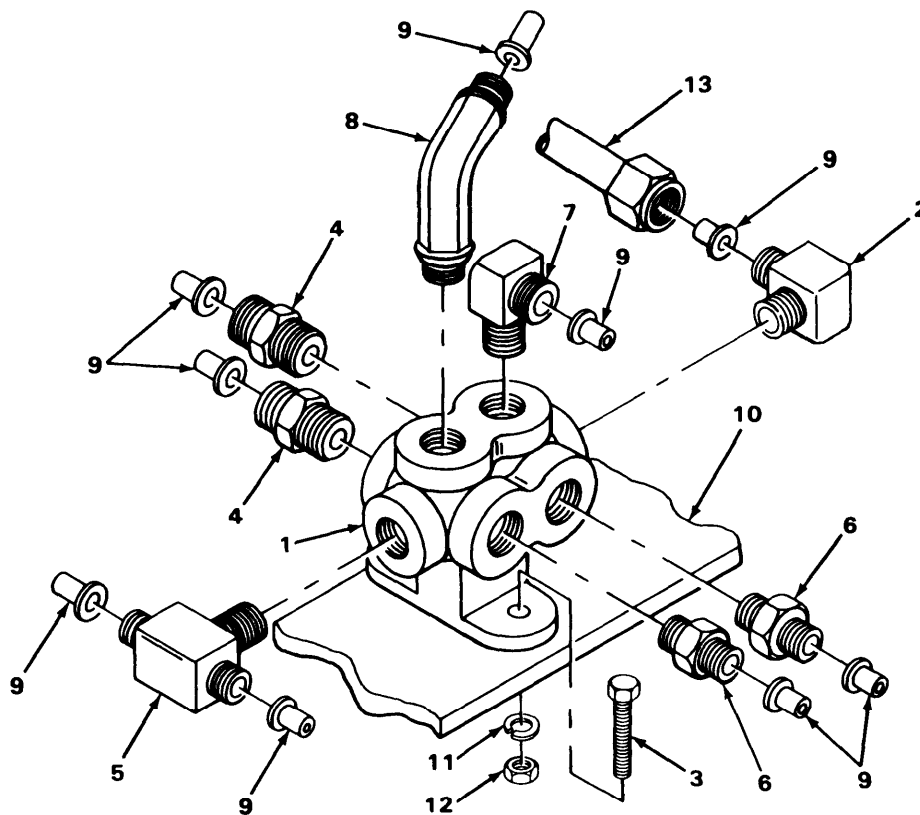
LOCATION	ITEM	ACTION REMARKS
<b>CLEANING</b>		
30.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>		
31.	All parts	Inspect according to general maintenance instructions (page 4-1).
<b>ASSEMBLY</b>		
32. Air manifold (1)	Elbow (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/4-inch wrench.
33.	Two screws (3)	Put in place.
34.	Two adapters (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
35.	Tee (5)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
36.	Two adapters (6)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
37.	Elbow (7)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
38.	Elbow (8)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1/2-inch wrench.
39. Three elbows (2, 7, and 8), four adapters (4 and 6), and tee (5)	Nine inserts (9)	Push in and using plastic hammer, seat.

ACCESSORY AIR MANIFOLD - CONTINUED

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

INSTALLATION

- |  |                                   |   |
|--|-----------------------------------|---|
| 40. Dash brace (10)  | Air manifold (1)                  | Put in place.   |
| 41. Air manifold (1) to dash brace (10) and two screws (3) | New lockwashers(11) and nuts (12) | Screw in and tighten using 7/16-inch box wrench, socket, and handle.  |
| 42. Elbow (2)  | Air line 073 (13)                 | a. Lube end lightly with soap and push in until seated.<br>b. Screw on and tighten using 13/16-inch wrench. |

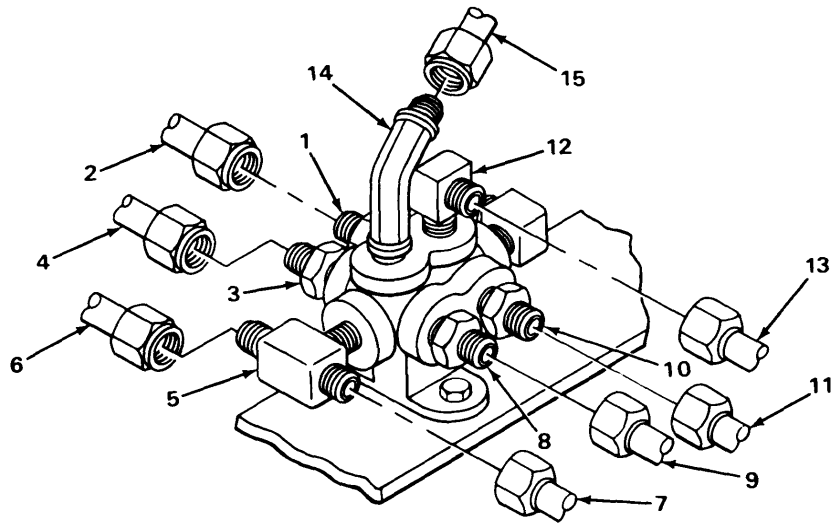


**ACCESSORY AIR MANIFOLD - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION – CONTINUED</b>		
43. Adapter (1)	Air line 038 (2)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 9/16-inch wrench.
44. Adapter (3)	Air line 074 (4)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 9/16-inch wrench.
45. Tee (5)	Air line 694 (6)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 5/8-inch wrench.
46.	Air line 492 (7)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 5/8-inch wrench.
47. Adapter (8)	Air line 032 (9)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 9/16-inch wrench.
48. Adapter (10)	Air line 035 (11)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 9/16-inch wrench.
49. Elbow (12)	Air line 71 (13)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 5/8-inch wrench.
50. Elbow (14)	Air line 533 (15)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 5/8-inch wrench.
51.	All air manifold connections	Check for leaks. See general maintenance instructions (page 4-1).



ACCESSORY AIR MANIFOLD- CONTINUED



TASK ENDS HERE

**ACCESSORY PRESSURE PROTECTION VALVE AND MANIFOLD**

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This task covers:

- a. Removal (page 4-752)
  - b. Disassembly (page 4-755)
  - c. Cleaning (page 4-756)
  - d. Inspection/Replacement (page 4-756)
  - e. Assembly (page 4-756)
  - f. Installation (page 4-758)
- 

**INITIAL SETUP**

**Tools**

- Handle, ratchet, 1/2-inch drive
- Hammer, plastic
- Pliers, long-nose, round
- Socket, deep-well, 1 1/8-inch  
1/2-inch drive
- Vise
- Wrench, box, 1 1/6-inch
- Wrench, open-end, 3/8-inch
- Wrench, open-end, 7/16-inch
- Wrench, open-end, 9/16-inch
- Wrench, open-end, 5/8-inch
- Wrench, open-end, 3/4-inch
- Wrench, open-end, 13/16-inch
- Wrench, pipe, 1/4- to 1-inch

**Materials/Parts**

- Lockwasher, air manifold to firewall
- Soap, liquid (item 14, appendix C)
- Tag, marking (item 18, appendix C)
- Tape, teflon (item 22, appendix C)

**Personnel Required**

Two

**Equipment Condition**

- Instrument panel open (pag 4-244).
  - Left side of hood open (TM 9-2320-270-10).
- 

LOCATION	ITEM	ACTION	REMARKS
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**REMOVAL**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

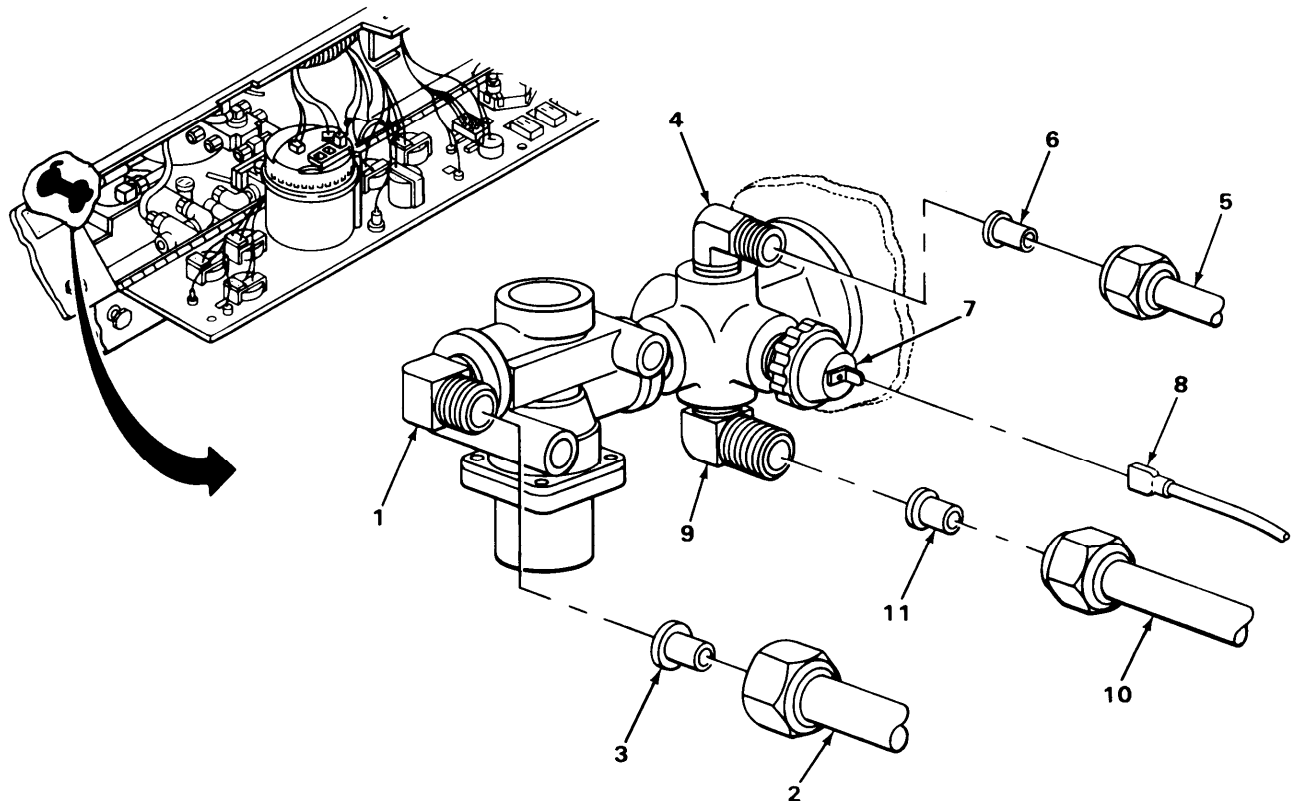
**NOTE**

Tag air lines and wires according to general maintenance instructions (page 4-1).

- |    |            |                           |
|----|------------|---------------------------|
| 1. | Air system | Drain (TM 9-2320-270-10). |
|----|------------|---------------------------|

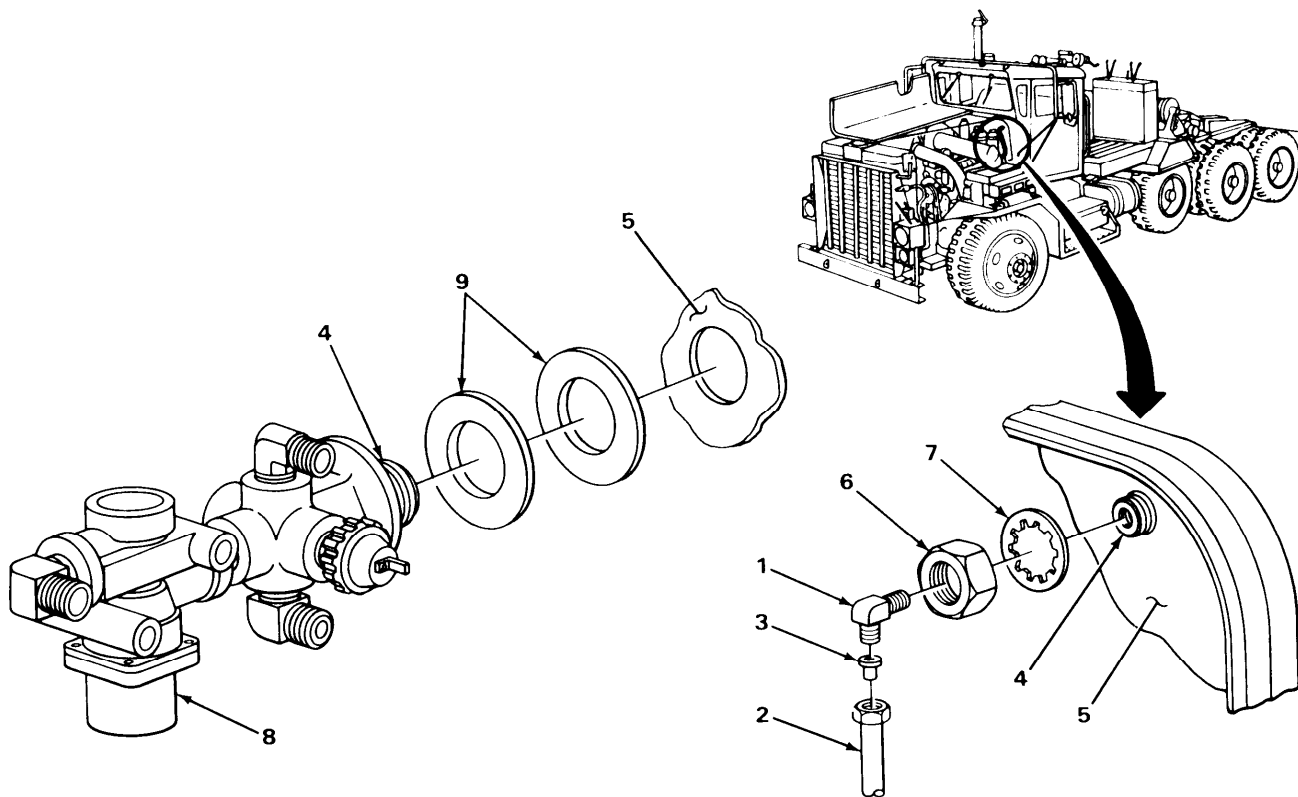
**ACCESSORY PRESSURE PROTECTION VALVE AND MANIFOLD- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
2. Elbow (1)	Air line 73(2)	Using 13/16-inch wrench, unscrew and pull out.
3. Air line 73 (2) or elbow (1)	Insert (3)	Using long-nose pliers, pull out.
4. Elbow (4)	Air line 41 (5)	Using 9/16-inch wrench, unscrew and pull out.
5. Air line 41 (5) or elbow (4)	Insert (6)	Using long-nose pliers, pull out.
6. Low pressure switch (7)	Wire 120 (8)	Unplug.
7. Elbow (9)	Air line 27 (10)	Using 5/8-inch wrench, unscrew and pull out.
8. Air line 27 (10) or elbow (9)	Insert(n)	Using long-nose pliers, pull out.



**ACCESSORY PRESSURE PROTECTION VALVE AND MANIFOLD- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
9. Elbow(1)	Air line 08 (2)	With help from assistant and using 13/16-wrench, unscrew and pull out.
10. Elbow (1)or air line 08 (2)	Insert (3)	Using long-nose pliers, pull out.
11. Manifold(4)	Elbow (1)	With help from assistant and using 3/4-wrench, unscrew and take out.
12. Manifold (4) to firewall (5)	Nut (6) and lockwasher (7)	a. With help from assistant and using 1 1/8-inch socket, handle, and 3/4-inch wrench, unscrew and take off. b. Get rid of lockwasher (7).
13. Fireball	Manifold (4), pressure protection valve (8), and two washers (9)	Take out.



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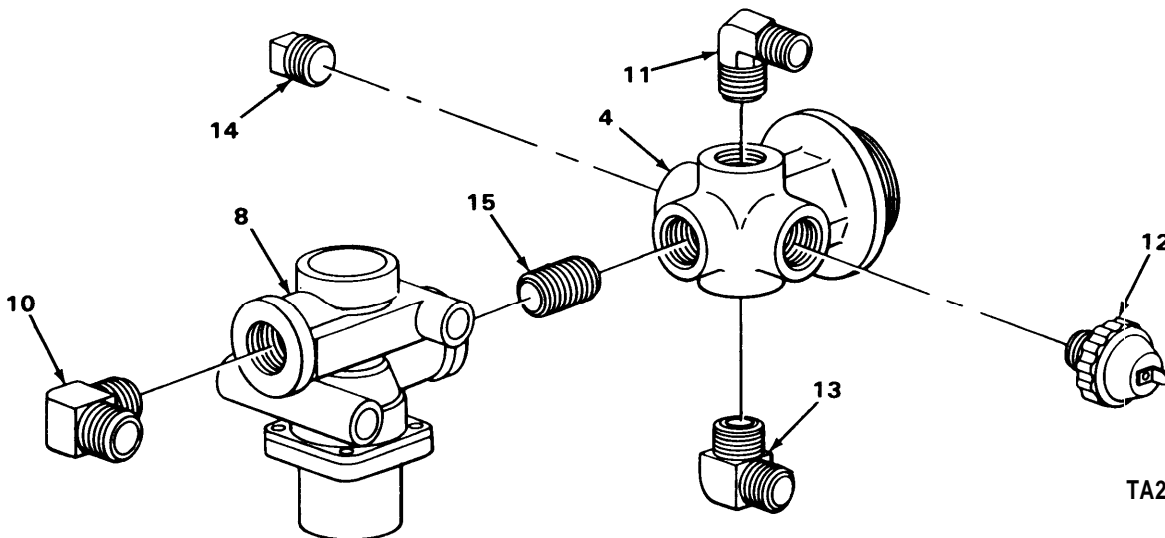
**ACCESSORY PRESSURE PROTECTION VALVE AND MANIFOLD- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>DISASSEMBLY</b>		
14. Pressure protection Valve (8)	Elbow (10)	a. Secure valve (8) in vise. b. Using 3/4-inch wrench, unscrew and take out.
15. Manifold(4)	Elbow (11)	Using 7/16-inch wrench, unscrew and take out.
16.	Low pressure switch (12)	Using 1 1/16-inch wrench, unscrew and take out.
17.	Elbow (13)	Using 5/8-inch wrench, unscrew and take out.
18.	Pipe plug (14)	Using 3/8-inch wrench, unscrew and take out.
19. Pressure protection valve (8)	Manifold (4)	a. Using 3/4-inch wrench, unscrew and take off. b. Take valve (8) out of vise.

**NOTE**

If nipple is damaged and needs to be replaced, do step 20.

20. Pressure protection valve (8) or manifold (4)	Nipple (15)	a. Secure valve (8) or manifold (4) in vise. b. Using pipe wrench, unscrew and take out. c. Take valve (8) or manifold (4) out of vise.
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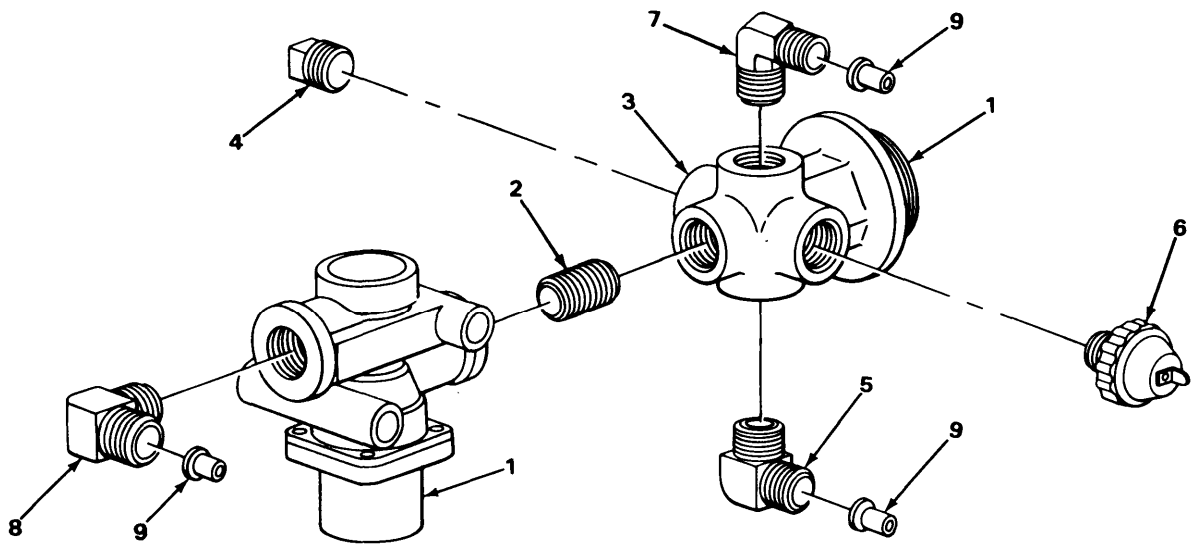
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**ACCESSORY PRESSURE PROTECTION VALVE AND MANIFOLD - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>CLEANING</b>		
21.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>inspection/REPI-ACEMENT</b>		
22.	All parts	Inspect according to general maintenance instructions (page 4-1).
<b>ASSEMBLY</b>		
<b>NOTE</b>		
If nipple was not removed, skip step 23.		
23. Pressure protection valve (1)	New nipple (2)	a. Secure valve (1) in vise. b. Wrap threads with teflon tape (page 4-1). c. Screw in.
24. Nipple (2)	Manifold (3)	Screw on and tighten using 3/4-inch wrench.
25. Manifold (3)	Pipe plug (4)	a. Wrap threads with teflon tape. (page 4-1). b. Screw in and tighten with 3/8-inch wrench.
26.	Elbow (5)	a. Wrap pipe threads with teflon tape. (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
27.	Low pressure switch (6)	a. Wrap threads with teflon tape. (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.

**ACCESSORY PRESSURE PROTECTION VALVE AND MANIFOLD - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
28.	Elbow (7)	a. Wrap pipe threads with teflon tape. (page 4-1). b. Screw in and tighten using 7/16inch wrench.
29. Pressure protection valve (1)	Elbow (8)	a. Wrap pipe threads with teflon tape. (page 4-1). b. Screw in and tighten using 3/4-inch wrench.
30. Three elbows (5, 7 and 8)	Three inserts (9)	a. Push in and using plastic hammer, seat. b. Take valve (1) out of vise.

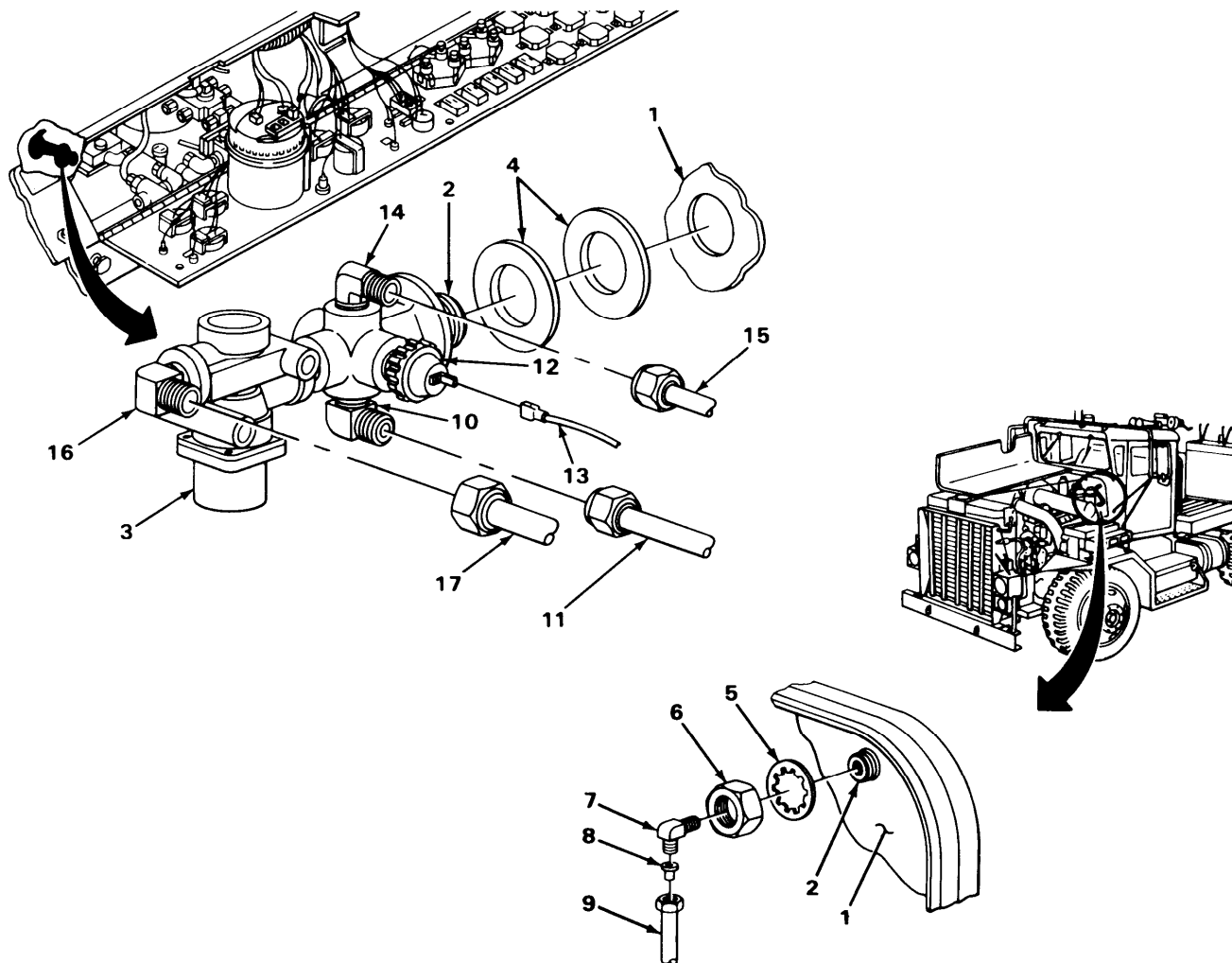


## ACCESSORY PRESSURE PROTECTION VALVE AND MANIFOLD - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION</b>		
31. Firewall (1)	Manifold (2), pressure protection valve (3), and two washers (4)	Place in position.
32. Manifold (2) to firewall (1)	New lockwasher (5) and nut (6)	With help from assistant and using 1 1/8-inch socket, handle, and 3/4- inch wrench, screw on and tighten.
33. Manifold (3)	Elbow (7)	a. Wrap threads with teflon tape. (page 4-1). b. Screw in and tighten using 3/4-inch wrench.
34. Elbow (7)	Insert (8)	Push in and using plastic hammer, seat.
35.	Air line 08 (9)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 13/16-inch wrench.
38. Elbow (10)	Air line 27 (11)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 5/8-inch wrench.
37. Low pressure switch (12)	Wire 120 (13)	Plug in.
38. Elbow (14)	Air line 41 (15)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 9/16-inch wrench.
39. Elbow (16)	Airline 73(17)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 13/16-inch wrench.
40.	All connections	Check for leaks (page 4-1).



ACCESSORY PRESSURE PROTECTION VALVE AND MANIFOLD - CONTINUED



**NOTE**

FOLLOW-ON MAINTENANCE:

1. Check operation (TM 9-2320-270-10).
2. Close left side of hood (TM 9-2320-270-10).
3. Close instrument panel (page 4-244).

**TASK ENDS HERE**

**AUXILIARY THROTTLE SHUTOFF SOLENOID VALVE**

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This task covers:

- a. Removal (page 4-760)
  - b. Disassembly (page 4-762)
  - c. Cleaning (page 4-762)
  - d. Inspection/Replacement (page 4-762)
  - e. Assembly (page 4-763)
  - f. Installation (4-764)
- 

**INITIAL SETUP**

**Tools**

- Hammer, plastic
- Handle, ratchet, 3/8-inch drive
- Pliers, diagonal-cutting
- Pliers, long-nose, round
- Pliers, slip-joint, straight-nose
- Socket, 7/16-inch, 3/8-inch drive
- Vise
- Wrench, box, 7/16-inch
- Wrench, open-end, 9/16-inch
- Wrench, open-end, 5/8-inch
- Wrench, open-end, 1 1/16-inch

**Materials/Parts – Continued**

- Lockwasher, valve to underdash bracket
- Soap, liquid (item 14, appendix C)
- Tag, marking (item 18, appendix C)
- Tape, teflon (item 22, appendix C)
- Wrap, tie (item 24, appendix C)

**Personnel Required**

One

**Equipment Condition**

Instrument panel open (page 4-244).

**Materials/Parts**

- Lockwasher, valve to underdash panel
- 

LOCATION	ITEM	ACTION	REMARKS
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**REMOVAL**

**NOTE**

It is not necessary to remove entire valve to replace coil housing. To replace coil and housing, perform steps 1 to 10 and 41 to 51.

It is not necessary to remove entire valve to service filter. To service or replace filter, perform steps 1 to 5 and 11,21 to 24,28 to 31 and 40.

Tag wires and hoses according to general maintenance instructions (page 4-1).

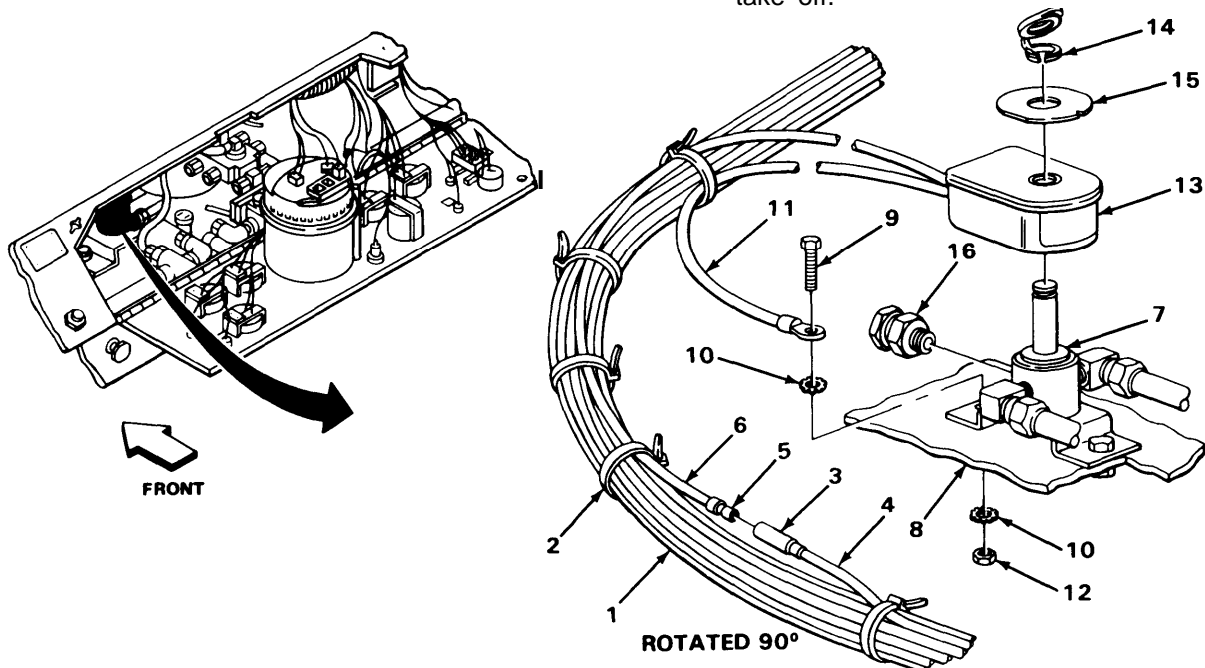
AUXILIARY THROTTLE SHUTOFF SOLENOID VALVE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

- |    |   |  |  |
|----|---|--|--|
| 1. | Air system                              | Drain (TM 9-2320-270-10).  |  |
| 2. | Wire bundle (1)                         | Four tie wraps (2)   | a. Using cutting pliers, cut and take off.<br>b. Get rid of.   |
| 3. | Bullet connector (3)<br>on wire 170 (4) | Bullet plug (5)<br>on coil lead (6)                                      | Unplug.  |
| 4. | Valve (7) to<br>panel (8)               | Screw (9), two<br>lockwashers (10),<br>ground lead (11),<br>and nut (12) | a. Using 7/16-inch box wrench, socket,<br>and handle, unscrew and take off.<br>b. Get rid of lockwashers (10). |
| 5. | Coil housing (13)<br>to valve (7)       | Plastic cap (14)   | a. Snap open.<br>b. Take off.  |
| 6. | Valve (7)                               | Data plate (15) and<br>coil housing (13)                                 | Lift off.  |
| 7. | Breather (16)                           |  | Using 1 1/16-inch wrench, unscrew and<br>take off.   |



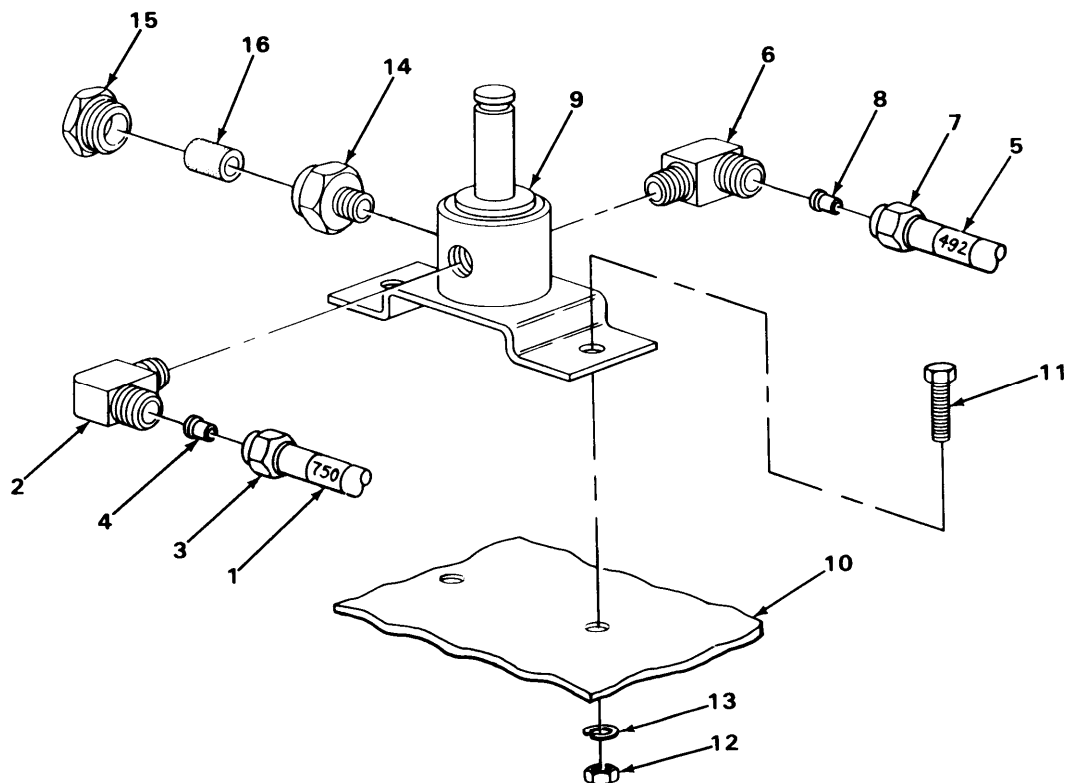
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**AUXILIARY THROTTLE SHUTOFF SOLENOID VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL - CONTINUED</b>		
8. Air line 750 (1) to elbow (2)	Nut (3)	Using 5/8-inch wrench, unscrew and pull back.
9. Elbow (2)	Air line 750 (1)	Pull out.
10. Air line 750(1) or elbow (2)	Insert (4)	Using long-nose pliers, pull out.
11. Air line 492(5) to elbow (6)	Nut (7)	Using 5/8-inch wrench, unscrew and pull back.
12. Elbow (6)	Air line 492 (5)	Pull out.
13. Air line 492 (5) or elbow (6)	Insert (8)	Using long-nose pliers, pull out.
14. Valve (9) to bracket (10)	Screw (11), nut (12), and lockwasher (13)	a. Using 7/16-inch box wrench, socket, and handle, unscrew and take out. b. Get rid of lockwasher (13).
15.	Valve (9)	Take out.
<b>DISASSEMBLY</b>		
16. Valve (9)	Two elbows (2) and (6)	Using 9/16-inch wrench unscrew and take out.
17.	B r e a t h e r	Secure in vise.
18. Breather (14)	Cap (15)	Using 1 11/16-inch wrench, unscrew and take off.
19.	Filter (16)	Take out.
20.	Breather (14)	Take out of vise.
<b>CLEANING</b>		
21.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>		
22.	All parts	Inspect according to general maintenance instructions (page 4-1).

**AUXILIARY THROTTLE SHUTOFF SOLENOID VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>ASSEMBLY</b>		
23.	Breather	Secure in vise.
24. Breather (14)	Filter (16)	Put in and seat in counterbore.
25.	Cap (15)	Screw in and tighten using 11/16-inch wrench.
26.	Breather (14)	Take out of vise.
27. Valve (9)	Two elbows (2 and 6)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
26. Two elbows (2 and 6)	Two inserts (4 and 8)	Push in and using plastic hammer, seat.

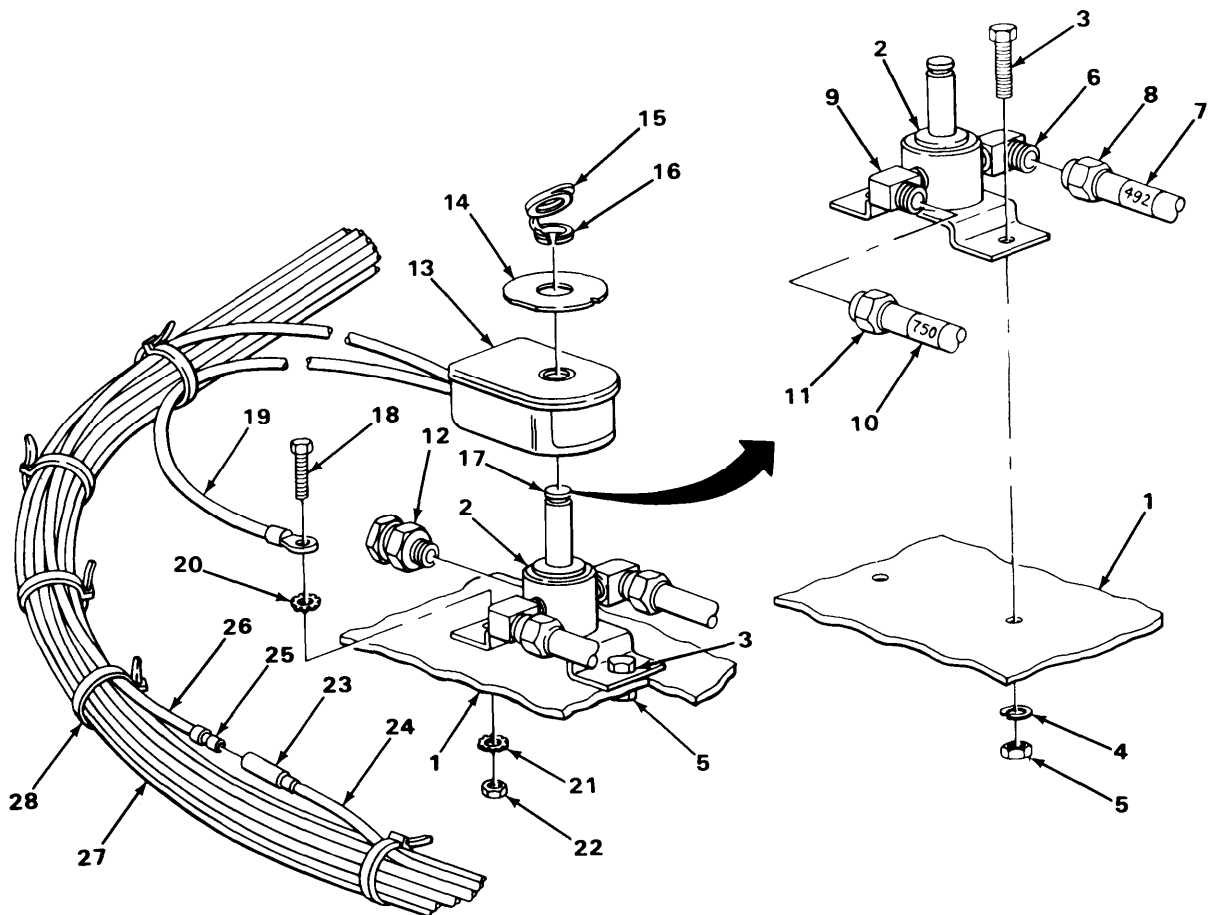


## AUXILIARY THROTTLE SHUTOFF SOLENOID VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION</b>		
29. Panel (1)	Valve (2)	Put in place.
30. Valve (2) to panel (1)	Screw (3), lockwasher (4), and nut (5)	Screw together but do not tighten.
31. Elbow (6)	Air line 492 (7)	Lube end lightly with soap and push in.
32. Air line 492 (7) to elbow (6)	Nut (8)	Screw on and tighten using 5/8-inch wrench.
33. Elbow (9)	Air line 750 (10)	Lube end lightly with soap and push in.
34. Air line 750 (10) to elbow (9)	Nut (11)	Screw on and tighten using 5/8-inch wrench.
35. Valve (2)	B r e a t h e r	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
36.	Coil housing (13) and data plate (14)	Put on.
37. Coil housing (13) to valve (2)	Plastic cap (15)	a. Snap split ring (16) into groove (17). b. Snap shut.
38. Screw (18)	Ground lead (19) and new lockwasher (20)	Put on.
39. Valve (2) to under-dash panel (1)	Screw (18), new lockwasher (21), and nut (22)	Screw in and tighten using 7/16-inch box wrench, socket, and handle.
40. Valve (13) to panel (1)	Screw (3) and nut (5)	Using 7/16-inch box wrench, socket, and handle tighten.
41. Bullet connector (23) on wire 170 (24)	Bullet plug (25) on coil lead (26)	Plug in.

**AUXILIARY THROTTLE SHUTOFF SOLENOID VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
42. Coil lead (26) and wire bundle (27)	Four new tie wraps (28)	Using slip-joint pliers, put on.
43.	All connections	Check for leaks (page 4-1).



**NOTE**

**FOLLOW-ON MAINTENANCE:**

1. Connect battery ground cables (page 4-444).
2. Check operation (TM 9-2320-270-10).
3. Close instrument panel (page 4-244).

**TASK ENDS HERE**

**PTO CONTROL VALVE**

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This task covers:

- a. Removal (page 4-766)
  - b. Disassembly (page 4-767)
  - c. Cleaning (page 4-768)
  - d. Inspection/Replacement (page 4-768)
  - e. Assembly (page 4-768)
  - f. Installation (page 4-768)
- 

**INITIAL SETUP**

**Tools**

- Hammer, plastic
- Key, socket head screw, 3/16-inch
- Pliers, long-nose, round
- Screwdriver, cross-tip, number two
- Vise
- Wrench, open-end, 9/16-inch
- Wrench, open-end, 5/8-inch
- Wrench, open-end, 7/8-inch

**Materials/Parts**

- Soap, liquid (item 14, appendix C)
- Tag, marking (item 22, appendix C)
- Tape, teflon (item 18, appendix C)

One

**Equipment Condition**

Instrument panel open (page 4-244).

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LOCATION	ITEM	ACTION	REMARKS
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**REMOVAL**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

Tag air lines according to general maintenance instructions (page 4-1).

1.	Air system	Drain (TM 9-2320-270-10).
2.	Air line 694 (1) to adapter (2)	Nut (3) Using 9/16-inch and 5/8-inch wrenches, unscrew and pull back.
3.	Adapter (2)	Air line 694 (1) Pull out.
4.	Air line 694 (1) or adapter (2)	Insert (4) Using long-nose pliers, pull out.

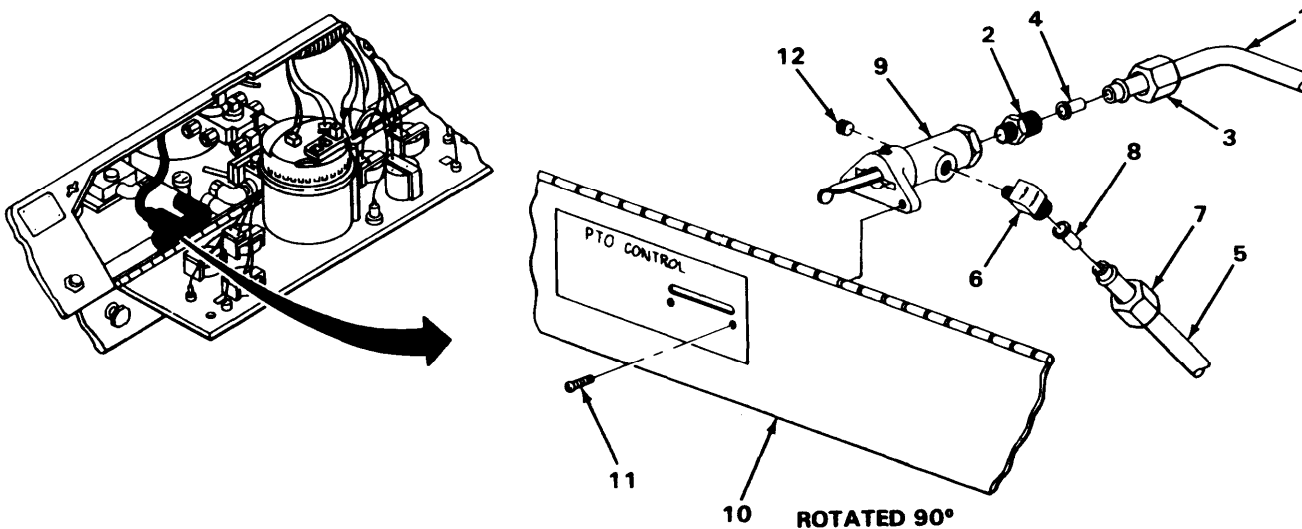


**PTO CONTROL VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
5. Air line 691 (5) to elbow (6)	Nut (7)	Using 5/8-inch wrench, unscrew and pull back.
6. Elbow (6)	Air line 691 (5)	Pull out.
7. Air line 691 (5) or elbow (6)	Insert (8)	Using long-nose pliers, pull out.
8. Control valve (9) to dashboard (10)	Two screws (11)	Using cross-tip screwdriver, unscrew and take out.
9. Dashboard (10)	Control valve (9)	Take out.

**DISASSEMBLY**

- |                       |             |   |
|-----------------------|-------------|---|
| 10. Control valve (9) | Adapter (2) | a. Secure valve (9) in vise.<br>b. Using 7/8-inch and 9/16-inch wrenches, unscrew and take out. |
| 11.                   | Elbow (6)   | Using 9/16-inch wrench, unscrew and take out.   |
| 12.                   | Plug (12)   | a. Using 3/16-inch key, unscrew and take out.<br>b. Take valve (9) out of vise.                 |

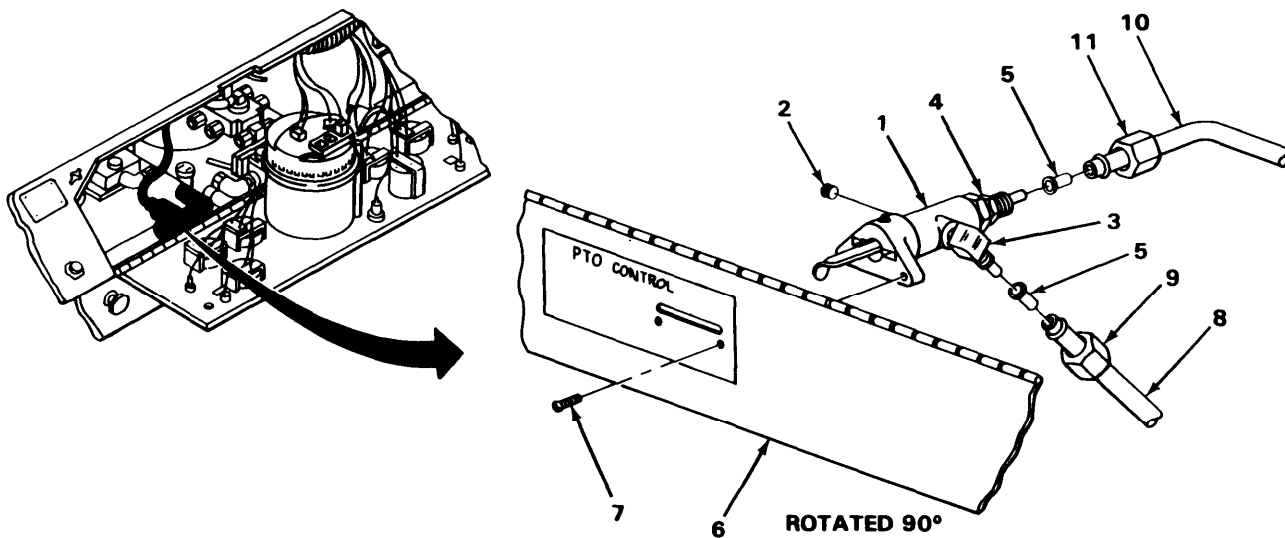


**PTO CONTROL VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>CLEANING</b>		
13.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>		
14.	All parts	Inspect according to general maintenance instructions (page 4-1).
<b>ASSEMBLY</b>		
15. Control valve (1)	Plug (2)	a. Secure valve (1) in vise. b. Wrap threads with teflon tape (page 4-1). c. Screw in and tighten using 3/16-inch key.
16.	Elbow (3)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
17.	Adapter (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
18. Elbow (3) and adapter (4)	Two inserts (5)	a. Push in and using plastic hammer, seat. b. Remove valve (1) from vise.
<b>INSTALLATION</b>		
19. Dashboard (6)	Control valve (1)	Place in position.
20. Control valve (1) to dashboard (6)	Two screws (7)	Screw in and tighten using cross-tip screwdriver.
21. Elbow (3)	Air line 691 (8)	Lube end lightly with soap and push in until seated.
22. Air line 691 (8) to elbow (3)	Nut (9)	Screw on and tighten using 5/8-inch wrench.

**PTO CONTROL VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
23. Adapter (4)	Air line 694 (10)	Lube end lightly with soap and push in until seated.
24. Air line 694 (10) to adapter (4)	Nut (11)	Screw on and tighten using 5/8-inch wrench.
25.	All connections	Check for leaks. See general maintenance instructions (page 4-1).



**NOTE**

**FOLLOW-ON MAINTENANCE:**

1. Connect battery ground cable (page 4-444).
2. Check operation (TM 9-2320-270-10).
3. Close instrument panel (page 4-244).

**TASK ENDS HERE**

**INTERAXLE DIFFERENTIAL AND TRANSFER CASE LOCKUP VALVE**

---

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-770)     | d. Inspection/Replacement (page 4-772) |
| b. Disassembly (page 4-772) | e. Assembly (page 4-773)               |
| c. . Cleaning (page 4-772)  | f. Installation (page 4-774)           |
- 

**INITIAL SETUP**

**Tools**

- Hammer, plastic
- Key, socket-head screw, 3/16-inch
- Pliers, long-nose, round
- Screwdriver, cross-tip, offset, number two
- Vise
- Wrench, open-end, 9/16-inch
- Wrench, open-end, 5/8-inch
- Wrench, pipe

**Materials/Parts**

- Soap, liquid (item 14, appendix C)
- Tag, marking (item 18, appendix C)
- Tape, teflon (item 22, appendix C)

**Personnel Required**

One

**Equipment Condition**

Instrument panel open (page 4-244).

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LOCATION	ITEM	ACTION	REMARKS
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**REMOVAL**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

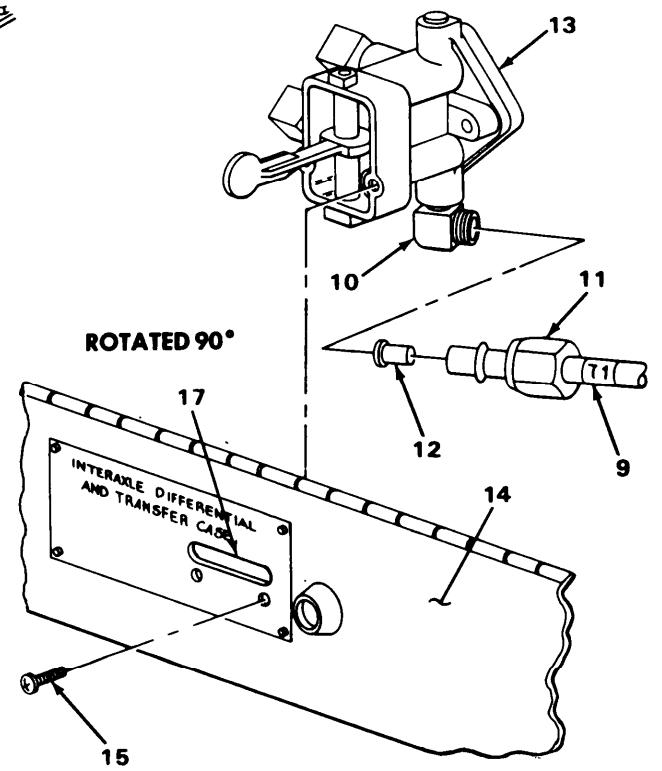
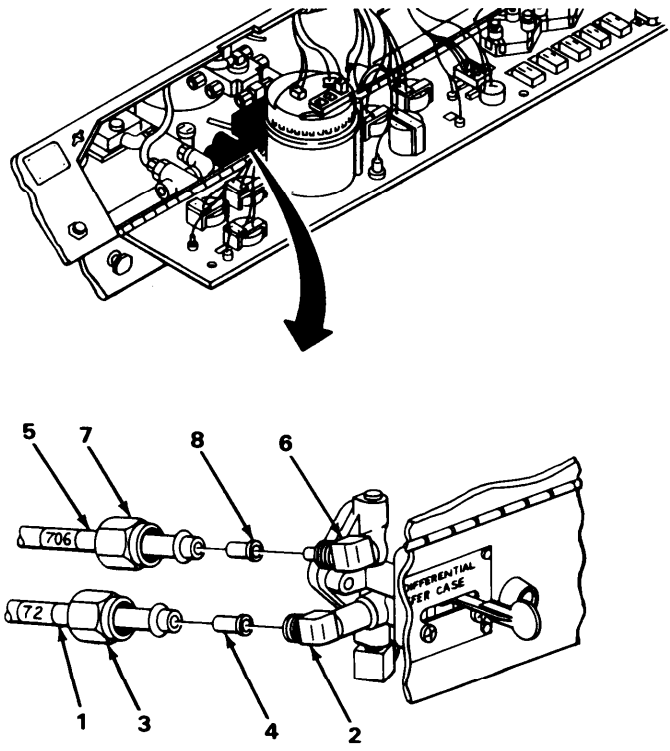
**NOTE**

Tag air lines according to general maintenance instructions (page 4-1).

- |    |                              |  |
|----|------------------------------|--|
| 1. | Air system                   | Drain (TM 9-2320-270-10).                                |
| 2. | Air line 72 (1) to elbow (2) | Nut (3)<br>Using 5/8-inch wrench, unscrew and pull back. |
| 3. | Elbow (2)                    | Air line 72(1)<br>Pull out.                              |
| 4. | Air line 72 (1) or elbow (2) | Insert (4)<br>Using long-nose pliers, pull out.          |

**INTERAXLE DIFFERENTIAL AND TRANSFER CASE LOCKUP VALVE - CONTINUED**

	LOCATION	ITEM	ACTION REMARKS
5.	Air line 706 (5) to elbow (6)	Nut (7)	Using 5/8-inch wrench, unscrew and pull back.
6.	Elbow (6)	Air line 706 (5)	Pull out.
7.	Elbow (6) or air line 706 (5)	Insert (8)	Using long-nose pliers, pull out.
8.	Air line 71 (9) to elbow (10)	Nut (11)	Using 5/8-inch wrench, unscrew and pull back.
9.	Elbow (10)	Air line 71 (9)	Pull out.
10.	Air line 71 (9) or elbow (10)	Insert (12)	Using long-nose pliers, pull out.
11.	Lockup valve (13) to dashboard (14)	Two screws (15)	Using cross-tip screwdriver, unscrew and take out.
12.	Dashboard (14)	Lockup valve (13)	Take out.

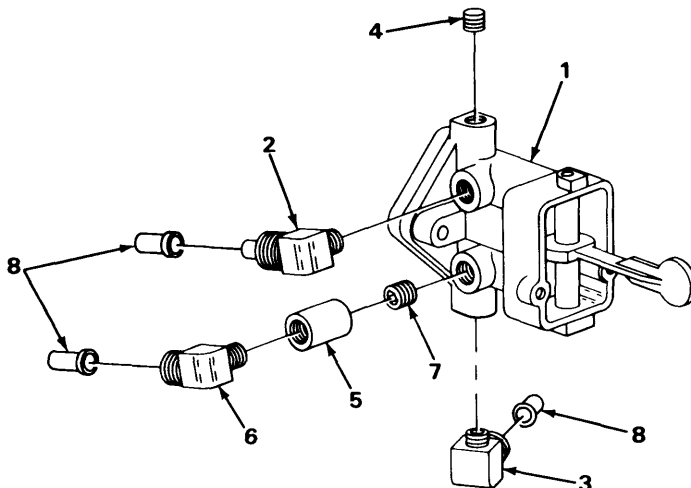


## INTERAXLE DIFFERENTIAL AND TRANSFER CASE LOCKUP VALVE- CONTINUED

LOCATION	ITEM	ACTION REMARKS
DISASSEMBLY		
13. Lockup valve (1)	Elbow (2)	a. Secure valve (1) in vise. b. Using 9/16-inch wrench, unscrew and take out.
14.	Elbow (3)	Using 9/16-inch wrench, unscrew and take out.
15.	'Plug (4)	Using 3/16-inch key, unscrew and take out.
16. Coupling (5)	Elbow (6)	Using 9/16-inch wrench and pipe wrench, unscrew and take out.
17. Lockup valve (1)	Coupling (5)	a. Using pipe wrench, unscrew and take out. b. Take valve (1) out of vise.
NOTE		
Do not remove nipple unless it is damaged.		
18. Lockup valve (1) or coupling (5)	Nipple (7)	a. Secure valve (1) or coupling (5) in vise. b. Using pipe wrench, unscrew and take out. c. Get rid of. d. Take valve (1) or coupling (5) out of vise.
CLEANING		
19.	All parts	Clean according to general maintenance instructions (page 4-1).
INSPECTION/REPLACEMENT		
20.	All parts	Inspect according to general maintenance instructions (page 4-1).

**INTERAXLE DIFFERENTIAL AND TRANSFER CASE LOCKUP VALVE- CONTINUED**

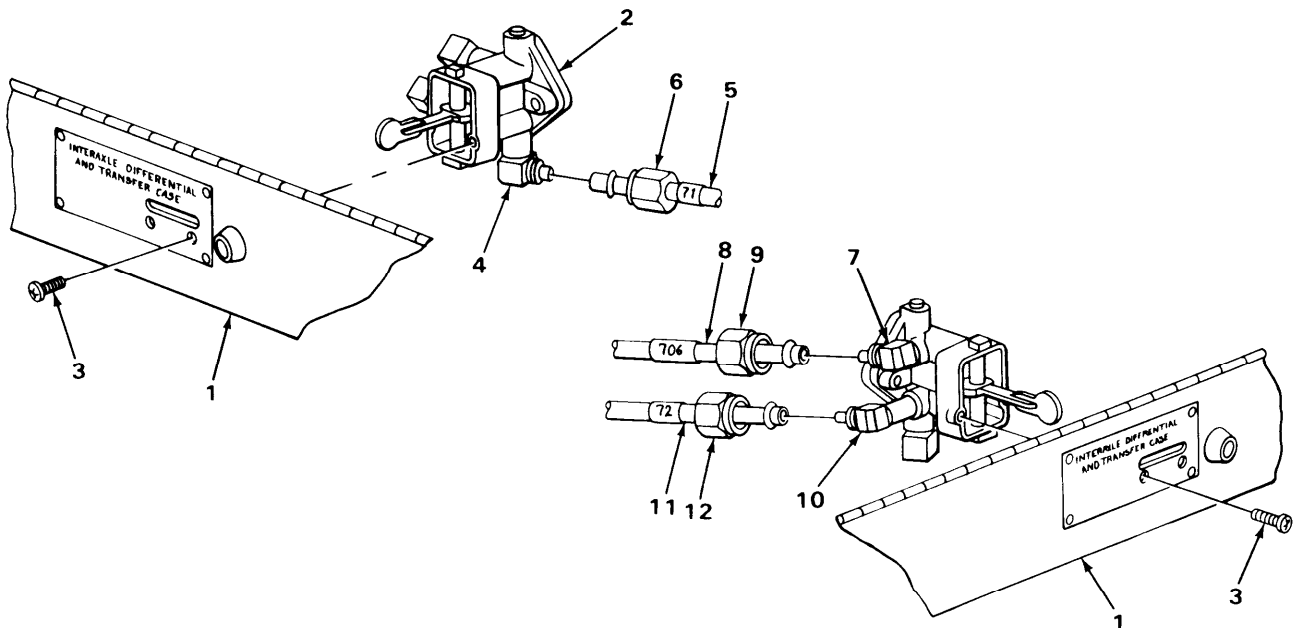
LOCATION	ITEM	ACTION REMARKS
ASSEMBLY		
<b>NOTE</b>		
If nipple was not removed, skip step 21.		
21. Lockup valve (1)	Nipple (7)	a. Secure valve (1) in vise. b. Wrap threads with teflon tape (page 4-1). c. Screw in.
22. Nipple (7)	Coupling (5)	Screw on and tighten using pipe wrench.
23. Coupling (5)	Elbow (6)	a. Wrap threads with teflon tape (page 4-1). b. Screw on and tighten using 9/16-inch wrench.
24. Lockup valve (1)	Two elbows (2) and (3)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
25.	Plug (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/16-inch key.
26. Three elbows (6, 2, and 3)	Three inserts (8)	a. Push in and using plastic hammer, seat. b. Take valve (1) out of vise.



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**INTERAXLE DIFFERENTIAL AND TRANSFER CASE LOCKUP VALVE- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION</b>		
27. Dashboard (1)	Lockup valve (2)	Place in position.
28. Lockup valve (2) to dashboard (1)	Two screws (3)	Screw in and tighten using cross-tip screwdriver.
29. Elbow (4)	Air line 71 (5)	Lube end with soap and push in until seated.
30. Air line 71 (5) to elbow (4)	Nut (6)	Screw on and tighten using 5/8-inch wrench.
31. Elbow (7)	Air line 706 (8)	Lube end with soap and push in until seated.
32. Air line 706 (8) to elbow (7)	Nut (9)	Screw on and tighten using 5/8-inch wrench.
33. Elbow (10)	Air line 72 (11)	Lube end with soap and push in until seated.
34. Air line 72 (11) to elbow (10)	Nut (12)	Screw on and tighten using 5/8-inch wrench.
35.	All connections	Check for leaks (page 4-1).



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**INTERAXLE DIFFERENTIAL AND TRANSFER CASE LOCKUP VALVE- CONTINUED****NOTE**

## FOLLOW-ON MAINTENANCE:

1. Connect battery ground cable (page 4-444).
2. Check operation (TM 9-2320-270-10).
3. Close instrument panel (page 4-244).

TASK ENDS HERE

**AIR SUPPLY VALVE AND COUPLING**

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-776)     | d. Inspection/Replacement (page 4-777) |
| b. Disassembly (page 4-776) | e. Assembly (page 4-777)               |
| c. Cleaning (page 4-776)    | f. Installation (page 4-778)           |

**INITIAL SETUP****Tools**

Extension, 3/8-inch drive, 5-inch  
 Hammer, plastic  
 Handle, ratchet, 3/8-inch drive  
 Pliers, long-nose, round  
 Socket, 7/16-inch, 3/8-inch drive  
 Vise  
 Wrench, box, 7/16-inch  
 Wrench, box, 1 1/16-inch  
 Wrench, open-end, 3/4-inch  
 Wrench, open-end, 13/16-inch  
 Wrench, open-end, 7/8-inch

**Materials/Parts**

Lockwasher, supply valve to firewall  
 (two required)

**Materials/Parts – Continued**

Soap, liquid (item 14, appendix C)  
 Tag, marking (item 18, appendix C)  
 Tape, teflon (item 22, appendix C)

**Personnel Required**

Two

**Equipment Condition**

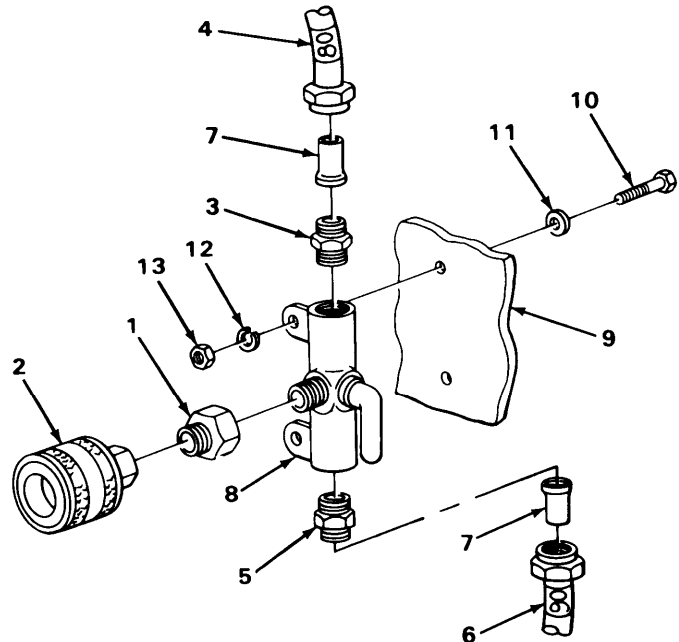
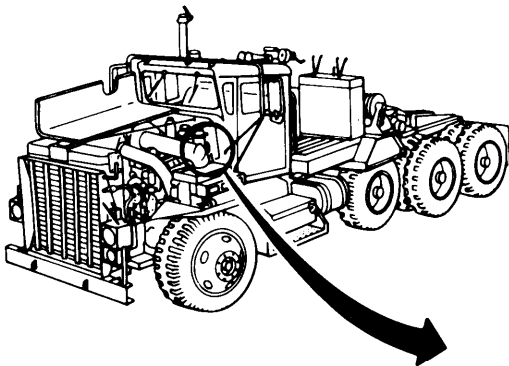
Left side of hood open (TM 9-2320-270-10).  
 Left hood side panel removed  
 (TM 9-2320-270-10).

**AIR SUPPLY VALVE AND COUPLING - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
REMOVAL		
<b><u>WARNING</u></b>		
Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.		
<b>NOTE</b>		
Tag lines according to general maintenance instructions (page 4-1).		
1.	Air system	Drain (TM 9-2320-270-10).
2. Nipple (1)	Cou pling (2)	Using 3/4-inch and 7/8-inch wrenches, unscrew and take off.
3. Adapter (3)	Air line 08 (4)	Using 13/16-inch wrench, unscrew and pull out.
4. Adapter (5)	Air line 06 (6)	Using 13/16-inch wrench, unscrew and pull out.
5. Air lines (4) and (6) or adapters (3) and (5)	Two inserts (7)	Using long-nose pliers, pull out.
6. Supply valve (8) to firewall (9)	Two screws (10), washers (11), lock-washers (12), and nuts (13)	a. With help from assistant and using 7/16-inch wrench, 7/16-inch socket, extension, and handle, unscrew and take out. b. Get rid of lockwashers (12).
7. Firewall (9)	Supply valve (8)	Take out.
DISASSEMBLY		
8. Supply valve (8)	Two adapters (3) and (5)	a. Secure valve (8) in vise. b. Using 11/16-inch box wrench, unscrew and take out.
9.	Nipple (1)	a. Using 3/4-inch wrench, unscrew and take out. b. Take valve (8) out of vise.
CLEANING		
10.	All parts	Clean according to general maintenance instructions (page 4-1).

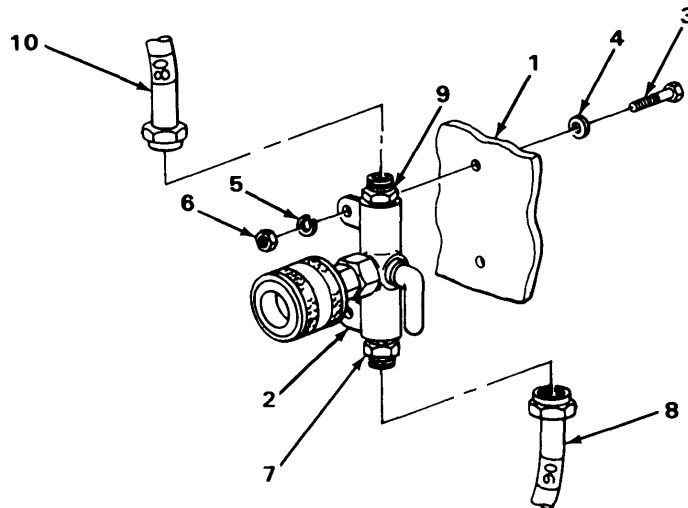
**AIR SUPPLY VALVE AND COUPLING - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
<b>INSPECTION/REPLACEMENT</b>			
11.	All parts		Inspect according to general maintenance instructions (page 4-1).
<b>ASSEMBLY</b>			
12. Supply valve (8)	Nipple (1)	a. Secure valve (8) in vise. b. Wrap inner threads with teflon tape (page 4-1). c. Screw in and tighten using 3/4-inch wrench.	
13.	Two adapters (3) and (5)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch box wrench.	
14. Nipple (1)	Coupling (2)	a. Wrap nipple threads with teflon tape (page 4-1). b. Screw on and tighten using 7/8-inch wrench.	
15. Two adapters (3) and (5)	Two inserts (7)	a. Put in and using plastic hammer, seat. b. Take valve (8) out of vise.	



**AIR SUPPLY VALVE AND COUPLING - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
16. Firewall (1)	Supply valve (2)	Put in place.
17. Supply valve (2) to firewall (1)	Two screws (3), washers (4), new lockwashers (5) and nut (6)	With help from assistant and using 7/16- inch box wrench, 7/16-inch socket, extension, and handle, screw on and tighten.
18. Adapter (7)	Air line 06 (8)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 13/16-inch wrench.
19. Adapter (9)	Air line 08(10)	a. Lube end lightly with soap and push in until seated. b. Screw on and tighten using 13/16-inch wrench.



**AIR SUPPLY VALVE AND COUPLING - CONTINUED****NOTE****FOLLOW-ON MAINTENANCE:**

1. Check for leaks (page 4-1).
2. Install hood side panel and close hood (TM 9-2320-270-10).

**TASK ENDS HERE****PUSHER AXLE RELAY VALVE**

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-780)     | d. Inspection/Replacement (page 4-782) |
| b. Disassembly (page 4-781) | e. Assembly (page 4-782)               |
| c. Cleaning (page 4-782)    | f. Installation (page 4-783)           |

**INITIAL SETUP****Tools**

Hammer, plastic  
 Handle, ratchet, 1/2-inch drive  
 Pliers, diagonal-cutting  
 Pliers, long-nose, round  
 Pliers, slip-joint, straight-nose  
 Socket, 9/16-inch, 1/2-inch drive  
 Vise  
 Wrench, box, 9/16-inch  
 Wrench, open-end, 3/8-inch  
 Wrench, open-end, 1/2-inch  
 Wrench, open-end, 5/8-inch  
 Wrench, open-end, 1 1/16-inch  
 Wrench, open-end, 13/16-inch  
 Wrench, open-end, 15/16-inch  
 Wrench, open-end, 1 1/16-inch  
 Wrench, open-end, 1 3/8-inch

**Materials/Parts**

Lockwasher, relay to frame (two required)  
 Soap, liquid (item 14, appendix C)  
 Tag, marking (item 18, appendix C)  
 Tape, teflon (item 22, appendix C)  
 Wrap, tie (item 24, appendix C)

**Personnel Required**

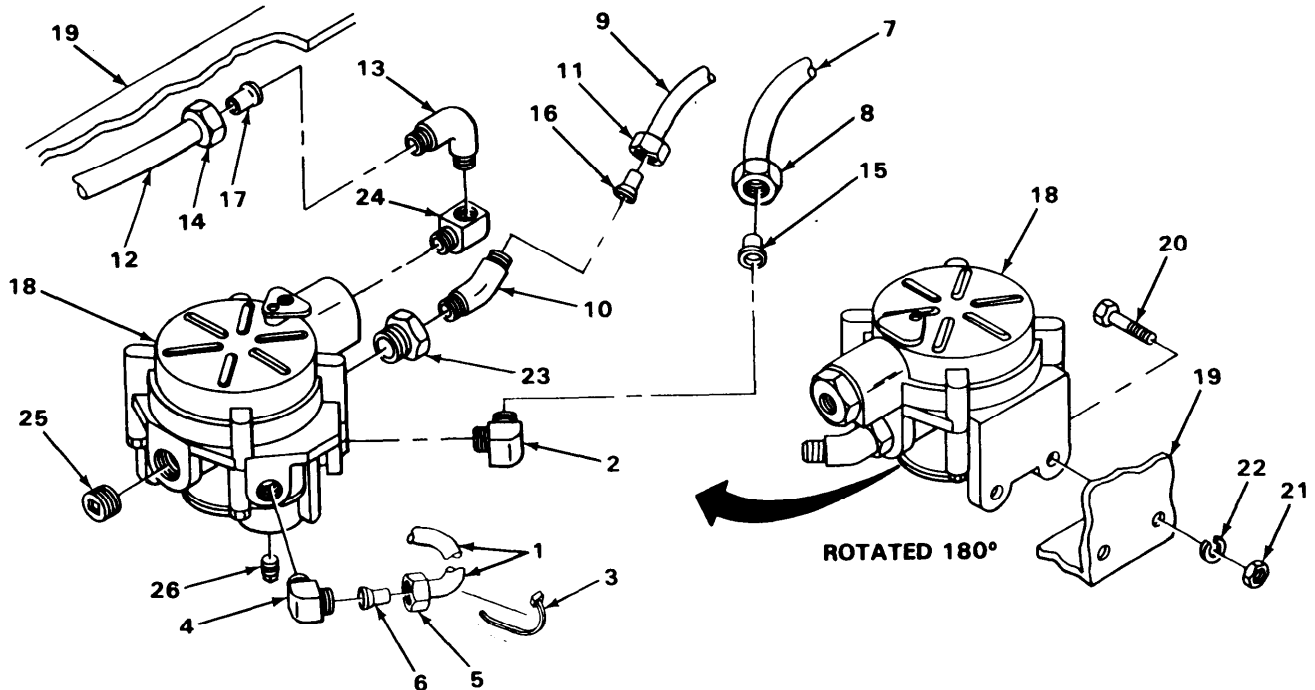
One

**PUSHER AXLE RELAY VALVE- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
REMOVAL		
<b><u>WARNING</u></b>		
Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.		
<b>NOTE</b>		
Tag air lines according to general maintenance instructions (page 4-1).		
1.	Air system	Drain (TM 9-2320-270-10).
2.	Air line 368 (1) to elbow (2)	a. Using cutting pliers, cut and take off. b. Get rid of tie (3).
3.	Air line 368 (1) to elbow (4)	Using 13/16-inch wrench, unscrew and pull back.
4.	Elbow (4)	Pull out.
5.	Air line 368 (1) or elbow (4)	Using long-nose pliers, pull out.
6.	Air line 367 (7) to elbow (2)	Using 13/16-inch wrench, unscrew and pull back.
7.	Elbow (2)	Pull out.
8.	Air line 633 (9) to elbow (10)	Using 15/16-inch wrench, unscrew and pull back.
9.	Elbow (10)	Pull out.
10.	Air line 636 (12) to elbow (13)	Using 5/8-inch wrench, unscrew and pull back.
11.	Elbow (13)	Pull out.
12.	Air lines 367 (7), 633 (9), and 636 (12) or elbows (2), (10), and (13)	Using long-nose pliers, pull out.
13.	Relay valve (18) to frame (19)	a. Using 9/16-inch box wrench, socket, and handle, unscrew and take out. b. Get rid of lockwashers (22).

**PUSHER AXLE RELAY VALVE- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
14. Frame (19)	Relay valve (18)	Take out.
<b>DISASSEMBLY</b>		
15. Relay valve (18)	Two elbows (2) and (4)	Using 15/16-inch wrench, unscrew and take out.
16. Bushing (23)	Elbow (10)	Using 13/16-inch wrench, unscrew and take out.
17. Relay valve (18)	Bushing (23)	Using 1 1/16-inch wrench, unscrew and take out.
18. Elbow (24)	Elbow (13)	Using 1/2-inch wrench, unscrew and take out.
19. Relay valve (18)	Elbow (24)	Using 1 3/8-inch and 1 1/16-inch wrenches, unscrew and take out.
20.	Plug (25)	Using 3/8-inch wrench, unscrew and take out.
21.	Plug (26)	Using 1/2-inch drive handle, unscrew and take out.



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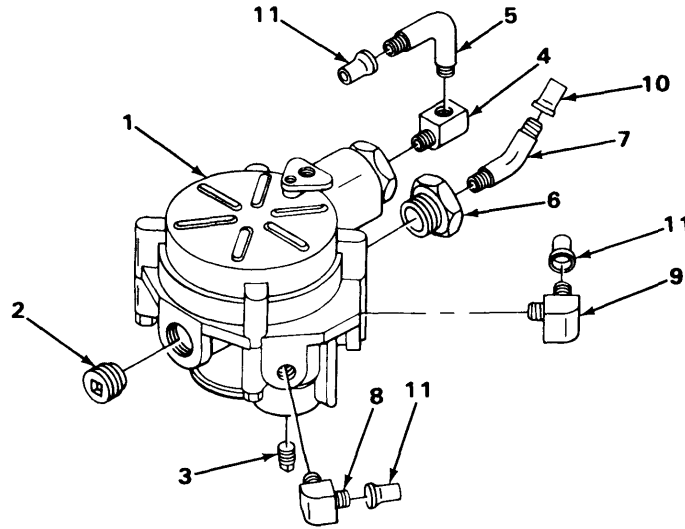
**PUSHER AXLE RELAY VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
CLEANING		
22.	All parts	Clean according to general maintenance instructions (page 4-1).
inspection/REPLACEMENT		
23.	All parts	Inspect according to general maintenance instructions (page 4-1).
ASSEMBLY		
24. Relay valve (1)	Plug (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1/2-inch drive handle.
25.	Plug (3)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/8-inch wrench.
26.	Elbow (4)	a. Wrap male threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
27. Elbow (4)	Elbow (5)	a. Wrap pipe threads with teflon tape (page 4-1). b. Screw in and tighten using 1/2-inch wrench.
28. Relay valve(l)	Bushing (6)	a. Wrap outer threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
29. Bushing (6)	Elbow (7)	a. Wrap pipe threads with teflon tape (page 4-1). b. Screw in and tighten using 13/16-inch wrench.
30. Relay valve (1)	Two elbows (8) and (9)	a. Wrap pipe threads with teflon tape (page 4-1). b. Screw in and tighten using 15/16-inch wrench.
31. Elbow (7)	Insert (10)	Push in and using plastic hammer, seat.



**PUSHER AXLE RELAY VALVE - CONTINUED**

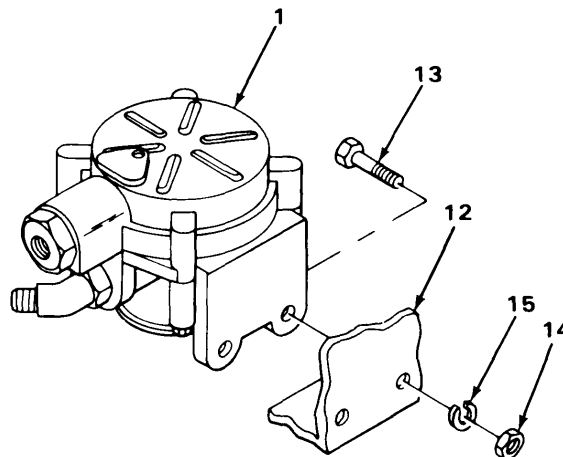
LOCATION	ITEM	ACTION REMARKS
32. Elbows (9), (8), and (5)	Three inserts (11)	Push in and using plastic hammer, seat.



TA193012

**INSTALLATION**

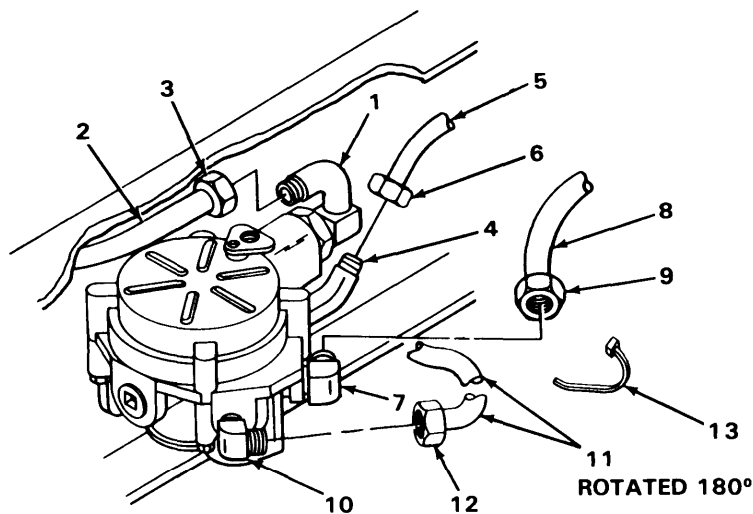
33. Frame (12)	Relay valve (1)	Place in position.
34. Relay (1) to frame (12)	Two screws (13), nuts (14), and new lockwashers (15)	Screw in and tighten using 9/16-inch box wrench, socket, and handle.



TA240499

**PUSHER AXLE RELAY VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
INSTALLATION - CONTINUED		
35. Elbow (1)	Air line 636 (2)	Lube lightly with soap and push in until seated.
36. Air line 636 (2) to elbow (1)	Nut (3)	Screw on and tighten using 5/8-inch wrench.
37. Elbow (4)	Air line 633 (5)	Lube end lightly with soap and push in until seated.
36. Air line 633 (5) to elbow (4)	Nut (6)	Screw on and tighten using 15/16-inch wrench.
39. Elbow (7)	Air line 367 (8)	Lube end lightly with soap and push in until seated.
40. Air line 367 (8) to elbow (7)	Nut (9)	Screw on and tighten using 13/16-inch wrench.
41. Elbow (10)	Air line 368 (11)	Lube end lightly with soap and push in until seated.
42. Air line 368(11) to elbow (10)	Nut (12)	Screw on and tighten using 13/16-inch wrench.
43. Air line 368 (11) and elbow (7)	New tie wrap (13)	Using pliers, put on.



**PUSHER AXLE RELAY VALVE- CONTINUED****NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE****REAR AXLE RELAY VALVE**

This task covers:

- |                             |                                       |
|-----------------------------|---------------------------------------|
| a. Removal (page 4-786)     | d. inspection/Replacment (page 4-790) |
| b. Disassembly (page 4-788) | e. Assembly (page 4-790)              |
| c. Cleaning (page 4-790)    | f. Installation (4-793)               |

**INITIAL SETUP****Tools**

Hammer, plastic  
 Handle, ratchet, 1/2-inch drive  
 Pliers, long-nose, round  
 Screwdriver, cross-tip, number two  
 Socket, 9/16-inch, 1/2-inch drive  
 Vise  
 Wrench, box, 9/16-inch  
 Wrench, open-end, 3/8-inch  
 Wrench, open-end, 9/16-inch  
 Wrench, open-end, 5/8-inch  
 Wrench, open-end, 1 1/16-inch  
 Wrench, open-end, 3/4-inch  
 Wrench, open-end, 13/16-inch  
 Wrench, open-end, 7/8-inch  
 Wrench, open-end, 15/16-inch

**Tools – Continued**

Wrench, open-end, 1-inch  
 Wrench, open-end, 1 1/16-inch  
 Wrench, open-end, 1 3/8-inch  
 Wrench, pipe, 1/4-to 1-inch

**Materials/Parts**

Lockwasher, relay bracket to frame (two  
 (required)  
 Lockwasher, relay to bracket (two required)  
 Soap, liquid (item 14, appendix C)  
 Tag, marking (item 18, appendix C)  
 Tape, teflon (item 22, appendix C)

**Personnel Required**

One

REAR AXLE RELAY VALVE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

REMOVAL

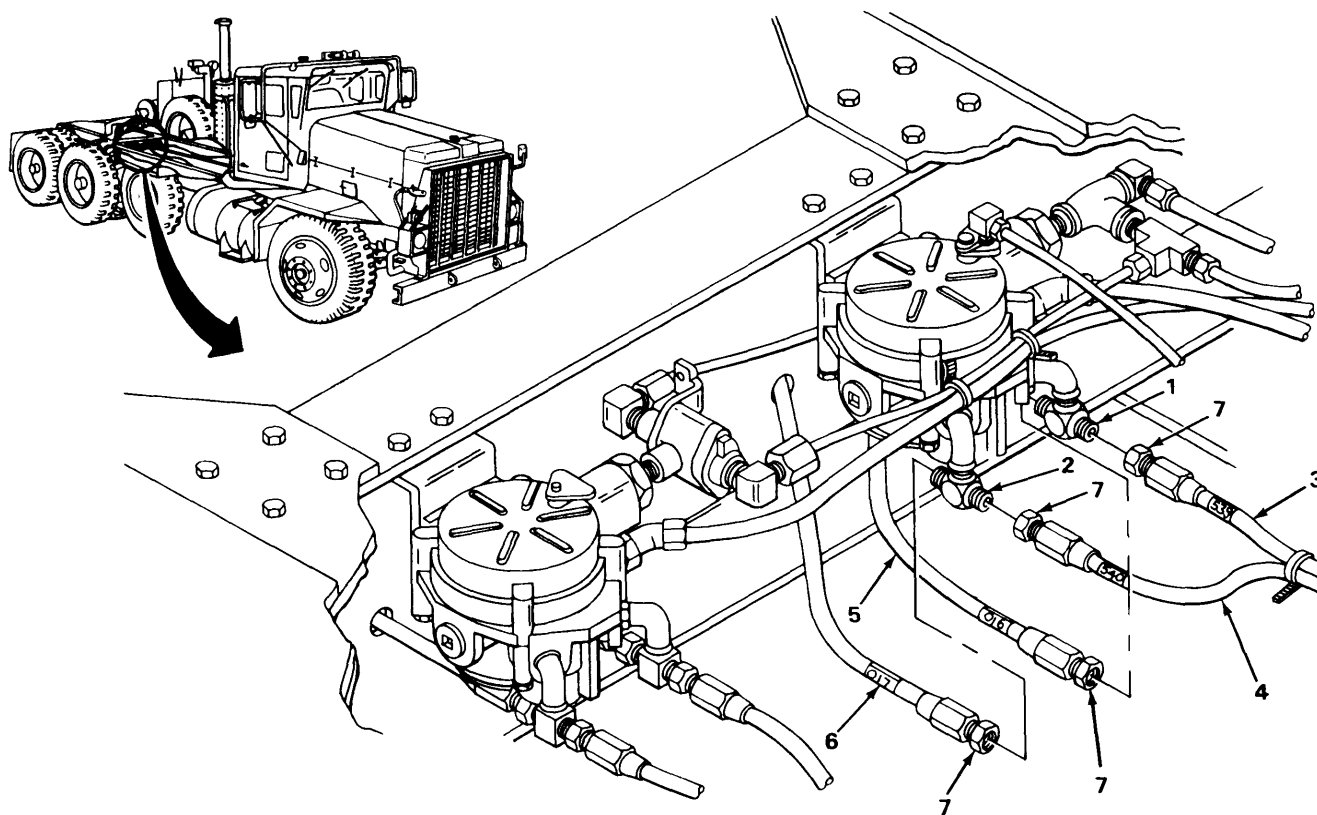
**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

Tag air lines according to general maintenance instructions (page 4-1).

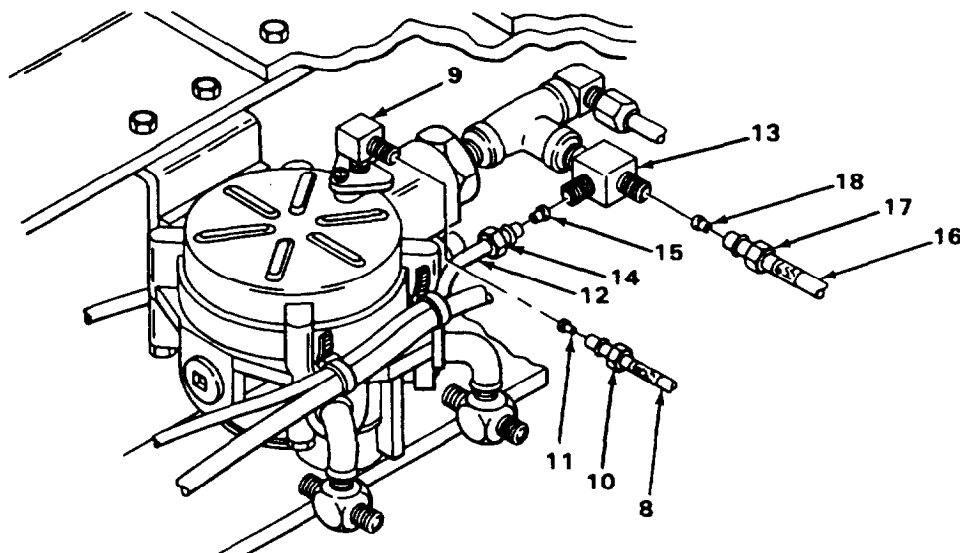
- |                         |   |   |
|-------------------------|---|---|
| 1.                      | Air system  | Drain (TM 9-2320-270-10).   |
| 2. Two tees (1) and (2) | Air hose 539 (3),<br>540 (4), 016 (5),<br>and 017 (6) | Using 15/16-inch and 7/8-inch wrenches,<br>unscrew nuts (7) and take off. |



TA240501

**REAR AXLE RELAY VALVE - CONTINUED**

	LOCATION	ITEM	ACTION REMARKS
3.	Air line 653 B (6) to elbow (9)	Nut (10)	Using 5/8-inch wrench, unscrew and pull back.
4.	Elbow (9)	Air line 653 B (8)	Pull out.
5.	Air line 653 B (6) or elbow (9)	Insert (11)	Using long-nose pliers, pull out.
6.	Air line 660 (12) to street tee (13)	Nut (14)	Using 5/8-inch wrench, unscrew and pull back.
7.	Street tee (13)	Air line 660 (12)	Pull out.
8.	Air line 660 (12) or street tee (13)	Insert (15)	Using long-nose pliers, pull out.
9.	Air line 636 (16) to street tee (13)	Nut (17)	Using 5/8-inch wrench, unscrew and pull back.
10.	Street tee (13)	Air line 636 (16)	Pull out.
11.	Air line 636 (16) or street tee (13)	Insert (16)	Using long-nose pliers, pull out.

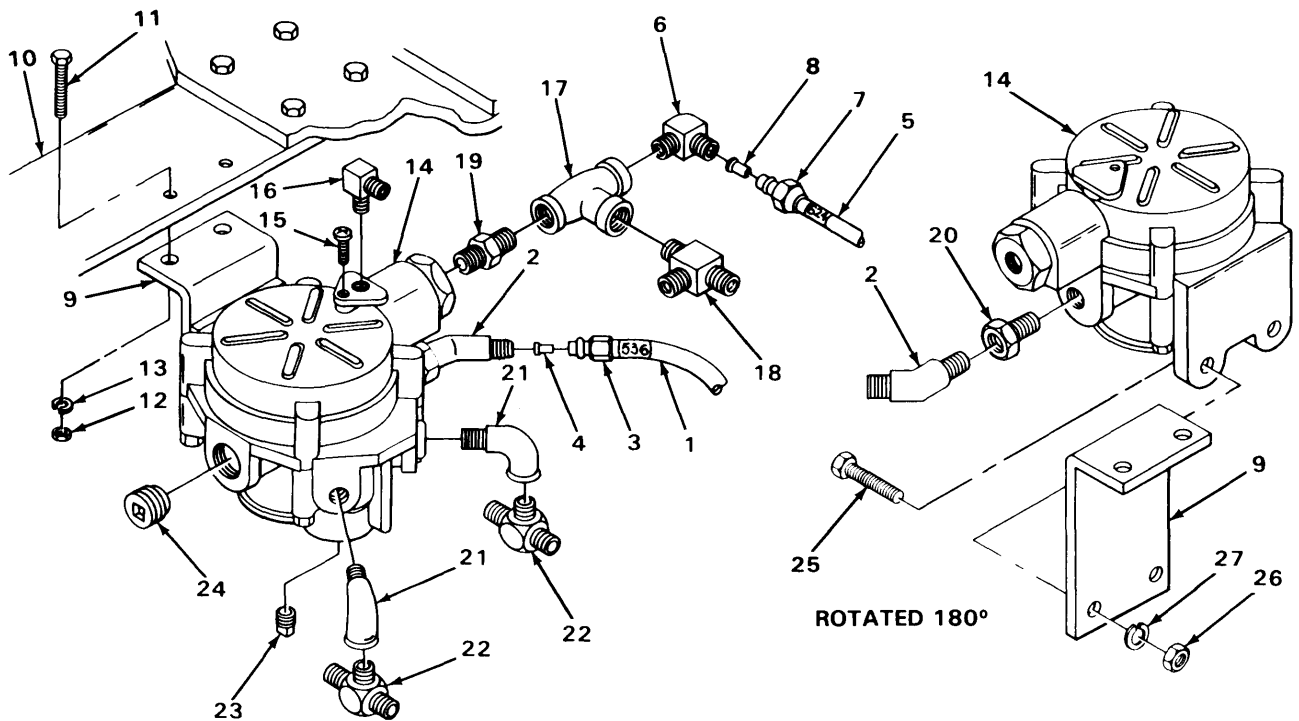


## REAR AXLE RELAY VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
REMOVAL - CONTINUED		
12. Air line 536 (1) to elbow (2)	Nut (3))	Using 15/16-inch wrench, unscrew and pull back.
13. Elbow (2)	Air line 536 (1)	Pull out.
14. Air line 536 (1) or elbow (2)	Insert (4)	Using long-nose pliers, pull out.
15. Air line 624 (5) to elbow (6)	Nut (7)	Using 13/16-inch wrench, unscrew and pull back.
16. Elbow (6)	Air line 624 (5)	Pull out.
17. Air line 624 (5) or elbow (6)	Insert (8)	Using long-nose pliers, pull out.
18. Relay bracket (9) to frame (10)	Two screws (11), nuts (12), lock- washers (13)	a. Using 9/16-inch box wrench, socket, and handle, unscrew and take out. b. Get rid of lockwashers (13).
19. Frame (10)	Relay bracket (9) and relay (14)	Take off.
DISASSEMBLY		
20.	Relay bracket (9)	Secure in vise.
21. Relay (14)	Screw (15)	Using cross-tip screwdriver, unscrew and take out.
22.	Elbow (16)	Using 9/16-inch wrench, unscrew and take out.
23. Pipe tee (17)	Elbow (6)	Using 3/4-inch wrench, unscrew and take out.
24.	Street tee (18)	Using 3/4-inch wrench, unscrew and take out.
25. Reducing nipple (19)	Pipe tee (17)	Using 1 11/16-inch and pipe wrenches, unscrew and take off.
26. Relay (14)	Reducing nipple (19)	Using 1 3/8-inch and 1 1/16-inch wrenches, unscrew and take out.

REAR AXLE RELAY VALVE- CONTINUED

LOCATION	ITEM	ACTION	REMARKS
27. Reducer	Elbow (2)	Using 1 1/16-inch and 13/16-inch wrenches, unscrew and take off.	
28. Relay (14)	Reducer (20)	Using 1 1/16-inch wrench, unscrew and take out.	
29. Two pipe elbows (21)	Two branch tees (22)	Using 1-inch wrench, unscrew and take out.	
30. Relay (14)	Two pipe elbows (21)	Using pipe wrench, unscrew and take out.	
31.	Plug (23)	Using 3/8-inch wrench, unscrew and take out.	
32.	Plug (24)	Using 1/2-inch drive handle, unscrew and take out.	
33. Relay (14) to relay bracket (9)	Two screws (25), nuts (26), lockwashers (27), and relay (14)	a. Using 9/16-inch box wrench, socket and handle, unscrew and take off. b. Get rid of lockwashers (27). c. Take bracket (9) out of vise.	



TA240503

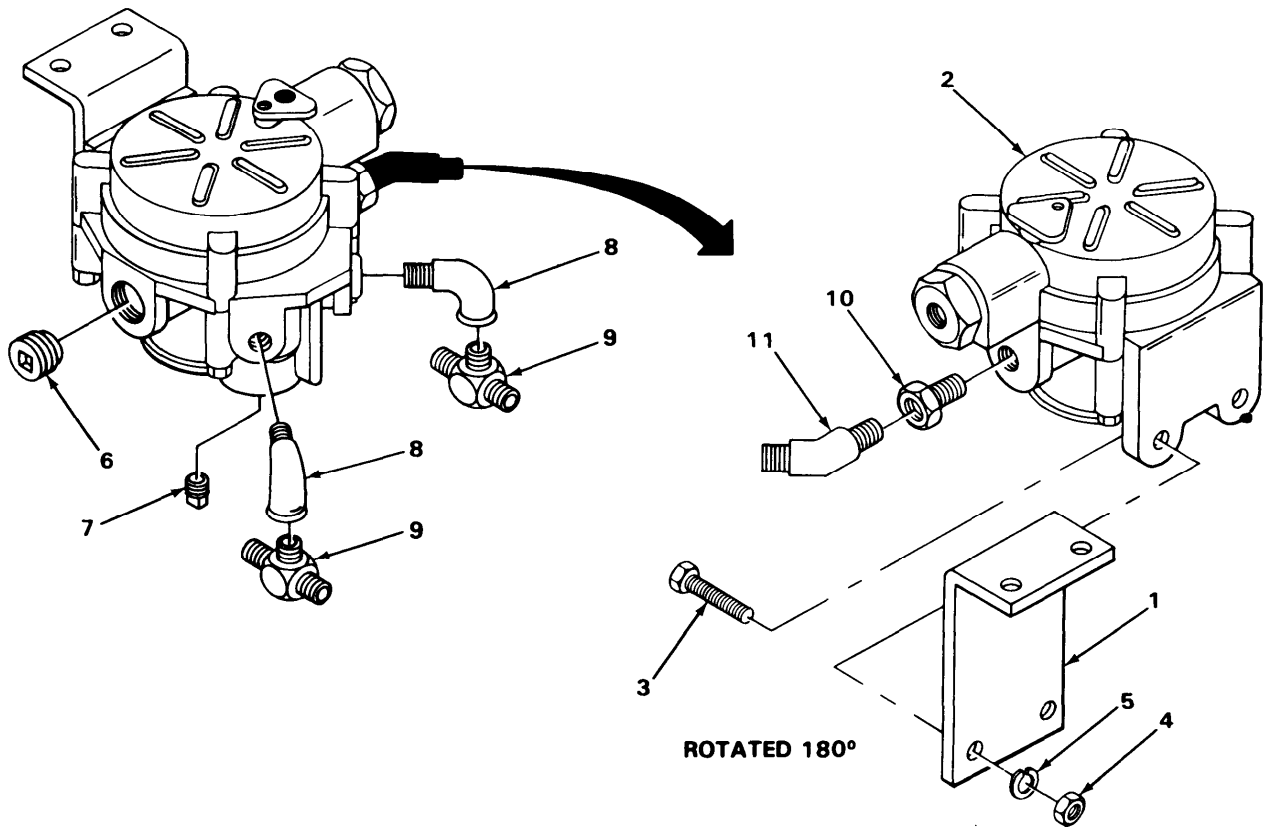
REAR AXLE RELAY VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
CLEANING		
34.	All parts	Clean according to general maintenance instructions (page 4-1).
inspection/REPLACEMENT		
35.	All parts	Inspect according to general maintenance instructions (page 4-1).
ASSEMBLY		
38.	Relay bracket (1)	Secure in vise.
37. Relay bracket (1)	Relay (2)	Place in position.
38. Relay (2) to bracket (1)	Two screws (3), nuts (4), and new lockwashers (5)	Screw in and tighten using 9/16-inch box wrench, socket and handle.
39. Relay (2)	Plug (6)	<ul style="list-style-type: none"> <li>a. Wrap threads with teflon tape (page 4-1).</li> <li>b. Screw in and tighten using 1/2-inch drive handle.</li> </ul>
40.	Plug (7)	<ul style="list-style-type: none"> <li>a. Wrap threads with teflon tape (page 4-1).</li> <li>b. Screw in and tighten using 3/8-inch wrench.</li> </ul>
41.	Two pipe elbows (8)	<ul style="list-style-type: none"> <li>a. Wrap male threads with teflon tape (page 4-1).</li> <li>b. Screw in and tighten using pipe wrench.</li> </ul>
42. Two pipe elbows (8)	Two branch tees (9)	<ul style="list-style-type: none"> <li>a. Wrap threads with teflon tape (page 4-1).</li> <li>b. Screw in and tighten using I-inch wrench.</li> </ul>



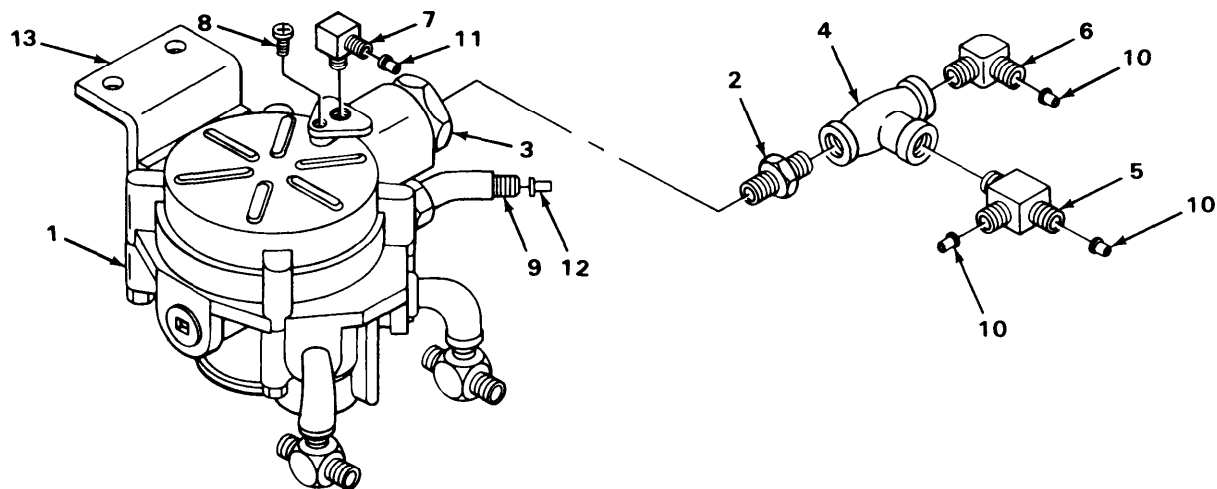
REAR AXLE RELAY VALVE- CONTINUED

LOCATION	ITEM	ACTION REMARKS
43. Relay (2)	Reducer (10)	a. Wrap male threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
44. Reducer (10)	Elbow (11)	a. Wrap pipe threads with teflon tape (page 4-1). b. Screw in and tighten using 13/16-inch wrench.



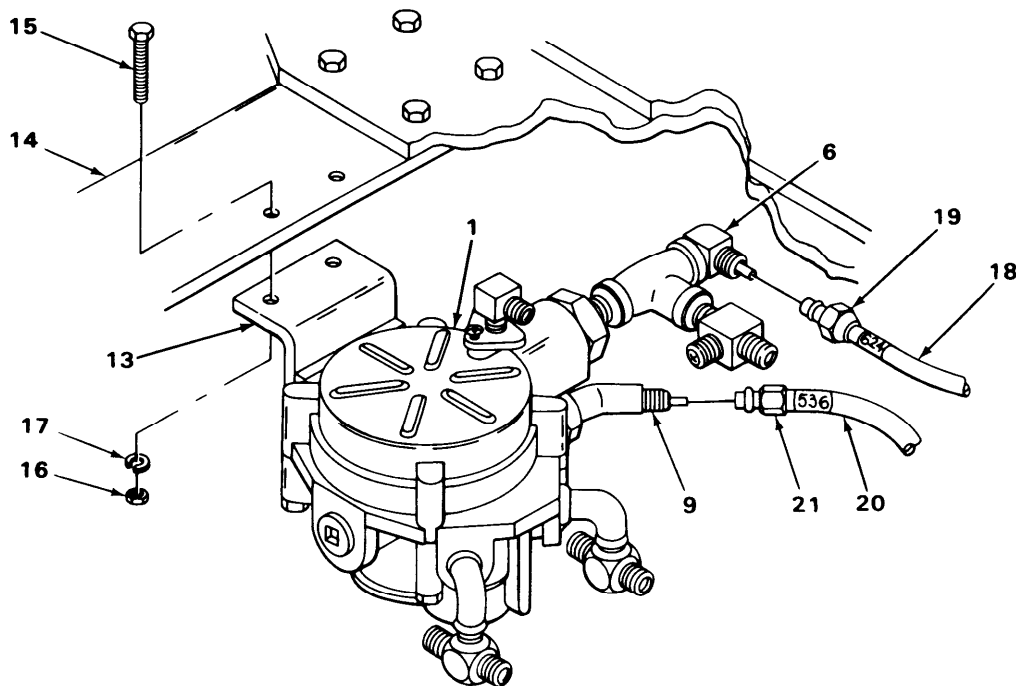
REAR AXLE RELAY VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
ASSEMBLY - CONTINUED		
45. Relay (1)	Reducing nipple (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw into capnut (3) and tighten using 1 1/16-inch wrench.
46. Reducing nipple (2)	Pipe tee (4)	Screw on and tighten using pipe wrench.
47. Pipe tee (4)	Street tee (5)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/4-inch wrench.
48.	Elbow (6)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/4-inch wrench.
49. Relay (1)	Elbow (7)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
50.	Screw (8)	Screw in and tighten using cross-tip point screwdriver.
51. Street tee (5), and three elbows (6), (7), and (9)	Four inserts (10), (11), and (12)	a. Push in and using plastic hammer, seat. b. Take bracket (13) out of vise.



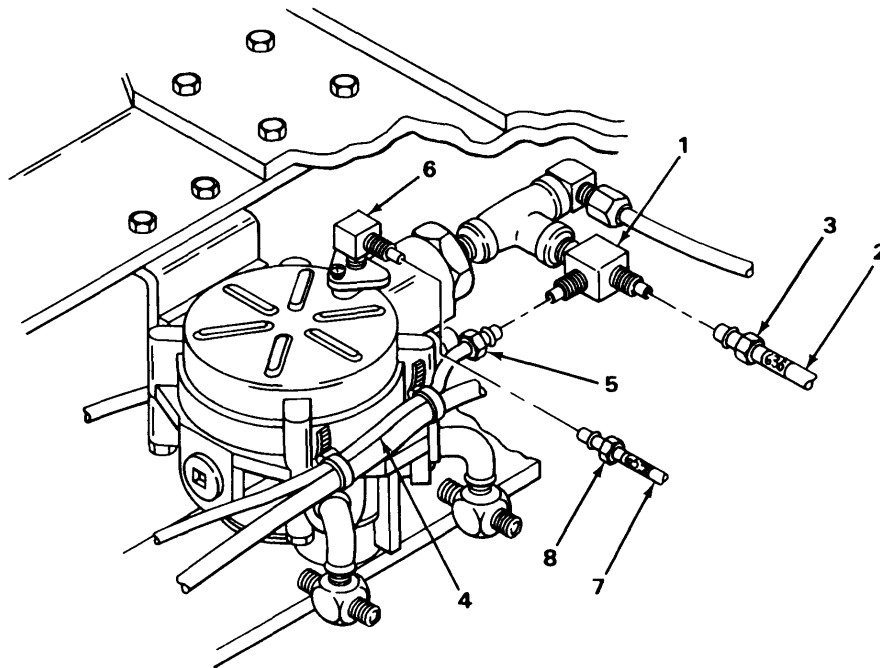
REAR AXLE RELAY VALVE- CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
52. Frame (14)	Relay (1) and relay bracket (13)	Place in position.
53. Relay bracket (13) to frame (14)	Two screws (15), nuts (16), and new lockwashers (17)	Screw in and do not tighten at this time.
54. Elbow (6)	Air line 624 (18)	Lube end with soap and push in until seated.
55. Air line 624 (18) to elbow (6)	Nut (19)	Screw on and tighten using 13/16-inch wrench.
56. Elbow (9)	Air line 536 (20)	Lube end with soap and push in until seated.
57. Air line 536 (20) to elbow (9)	Nut (21)	Screw on and tighten using 15/16-inch wrench.



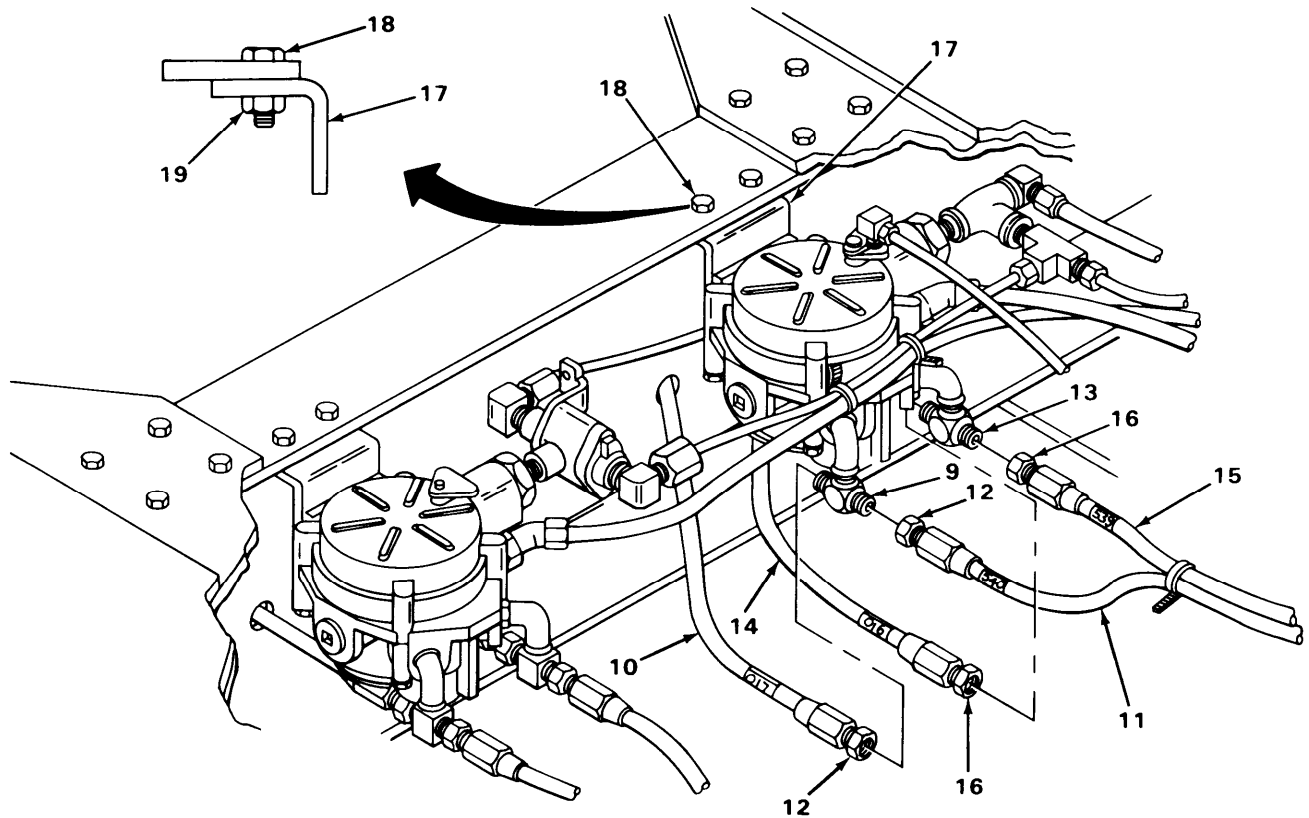
REAR AXLE RELAY VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSTALLATION – CONTINUED		
56. Street tee (1)	Air line 636 (2)	Lube end lightly with soap and push in until seated.
59. Air line 636 (2) to street tee (1)	Nut (3)	Screw on and tighten using 5/8-inch wrench.
60. Street tee (1)	Air line 660 (4)	Lube end lightly with soap and push in until seated.
61. Air line 660 (4) to street tee (1)	Nut (5)	Screw on and tighten using 5/8-inch wrench.
62. Elbow (6)	Air line 653B (7)	Lube end lightly with soap and push in until seated.
63. Air line 6536 (7) to elbow (6)	Nut (8)	Screw on and tighten using 5/8-inch wrench.



REAR AXLE RELAY VALVE- CONTINUED

LOCATION	ITEM	ACTION REMARKS
64. Tee (9)	Air hoses 017 (10) and 540 (11)	Screw on nuts (12) and tighten using 7/8-inch and 15/16-inch wrenches.
65. Tee (13)	Air hoses 016 (14) and 539 (15)	Screw on nuts (16) and tighten using 7/8-inch and 15/16-inch wrenches.
66. Relay bracket (17)	Two screws (18) and nuts (19)	Using 9/16-inch box wrench, socket, and handle, tighten.
67.	All relay air connections	Check for leaks (page 4-1).



TASK ENDS HERE

## SPRING BRAKE RELAY AND DOUBLE CHECK VALVE

---

This task covers:

- a. Removal (page 4-797)
  - b. Disassembly (page 4-800)
  - c. Cleaning (page 4-801)
  - d. Inspection/Replacement (page 4-801)
  - e. Assembly (page 4-802)
  - f. Installation (page 4-804)
- 

### INITIAL SETUP

#### Tools

Hammer, plastic  
Handle, ratchet, 1/2-inch drive  
Pliers, long-nose, round  
Socket, 9/16-inch, 1/2-inch drive  
Vise  
Wrench, box, 9/16-inch  
Wrench, open-end, 3/8-inch  
Wrench, open-end, 5/8-inch  
Wrench, open-end, 1 1/16-inch  
Wrench, open-end, 3/4-inch  
Wrench, open-end, 13/16-inch  
Wrench, open-end, 7/8-inch  
Wrench, open-end, 15/16-inch

#### Tools – Continued

Wrench, open-end, 1 1/16-inch  
Wrench, open-end, 1 3/8-inch  
Wrench, pipe

#### Materials/Parts

Lockwasher, relay bracket to frame (two required)  
Lockwasher, relay to bracket (two required)  
Soap, liquid (item 14, appendix C)  
Tag, marking (item 18, appendix C)  
Tape, teflon (item 22, appendix C)

#### Personnel Required

One

**SPRING BRAKE RELAY AND DOUBLE CHECK VALVE - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

**WARNING**

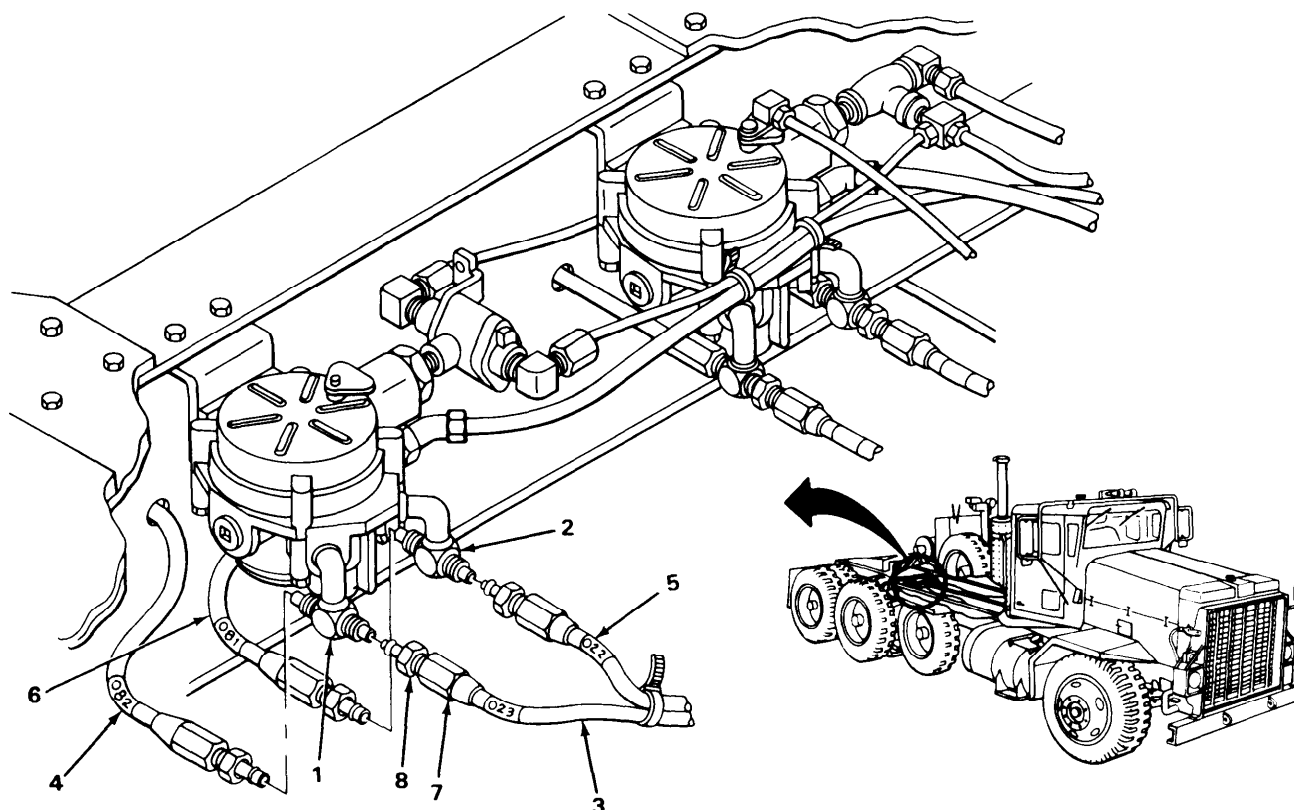
Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

It is not necessary to remove relay to replace double check valve. To replace only double check valve, perform steps 6 to 11, 14, 23 to 26, 29 to 32, 42 to 44, and 50 to 57.

Tag air hoses according to general maintenance instructions (page 4-1).

- |                                |  |  |
|--------------------------------|--|--|
| 1.                             | Air system                                       | Drain (TM 9-2320-270-10).  |
| 2. Two branch tees (1) and (2) | Air hoses 023 (3), 082 (4), 022 (5), and 081 (6) | a. Hold end fittings (7) with 13/16-inch wrench.<br>b. Using 11/16-inch wrench, unscrew nuts (8) and take off. |



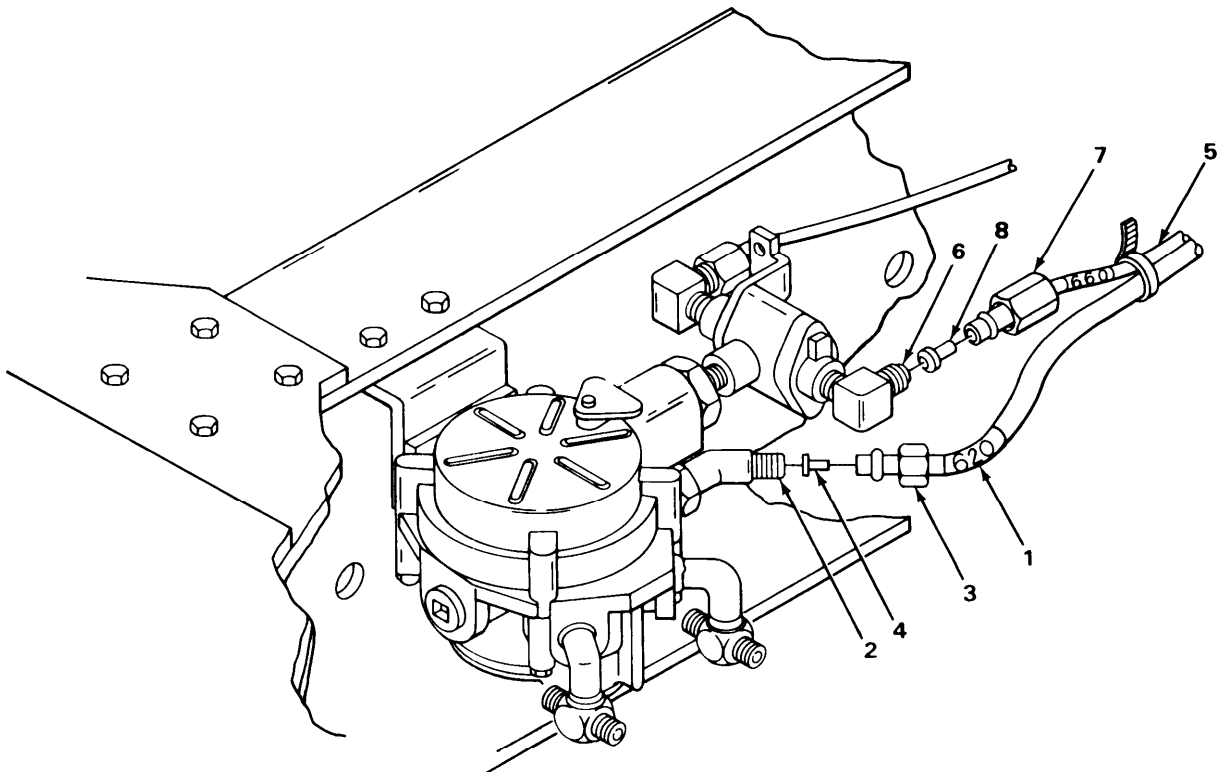
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SPRING BRAKE RELAY AND DOUBLE CHECK VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
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REMOVAL- CONTINUED

- |                                  |                  |   |
|----------------------------------|------------------|---|
| 3. Air line 620 (1) to elbow (2) | Nut (3)          | Using 15/16-inch wrench, unscrew and pull back. |
| 4. Elbow (2)                     | Air line 620 (1) | Pull out.                                       |
| 5. Air line 620 (1) or elbow (2) | Insert (4)       | Using long-nose pliers, pull out.               |
| 6. Air line 660 (5) to elbow (6) | Nut (7)          | Using 5/8-inch wrench, unscrew and pull back.   |
| 7. Elbow (6)                     | Air line 660 (5) | Pull out.                                       |
| 8. Air line 660 (5) or elbow (6) | Insert (8)       | Using long-nose pliers, pull out.               |

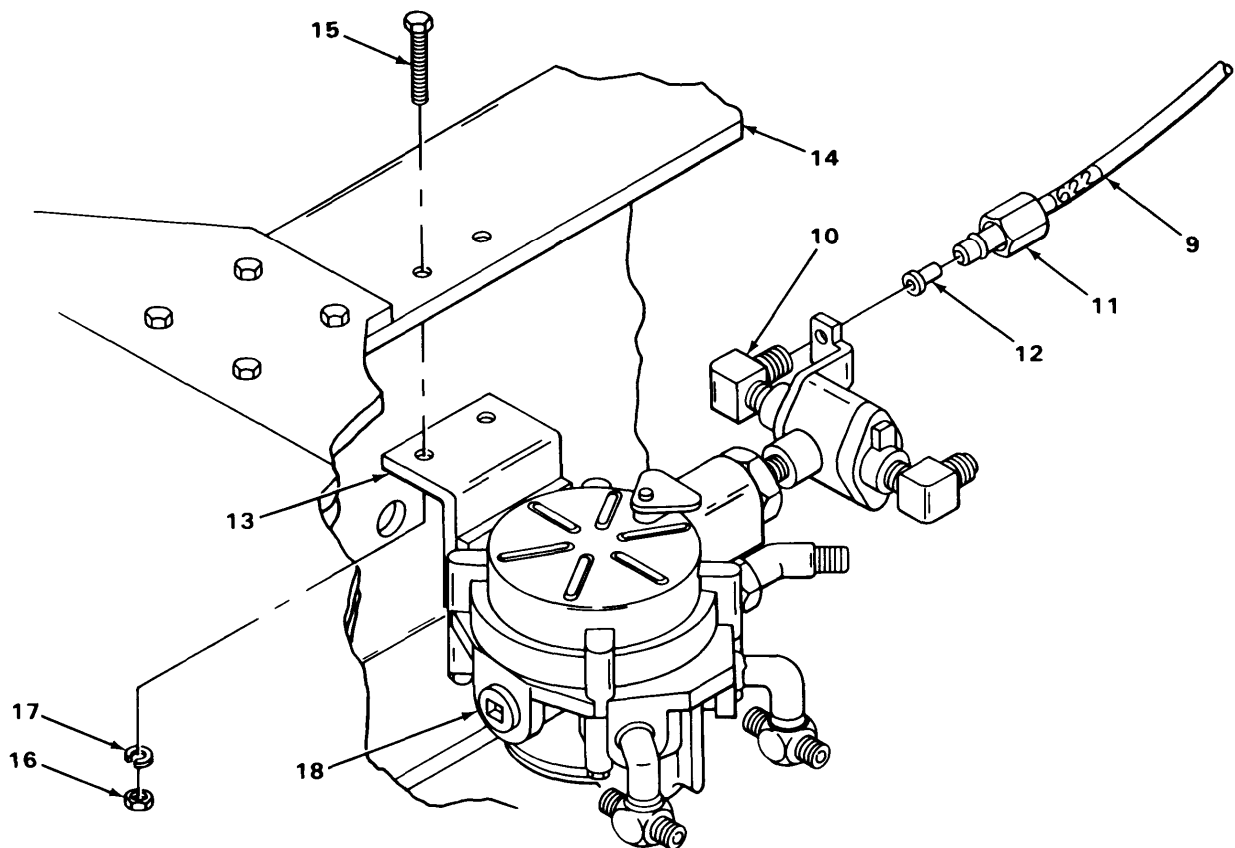


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**SPRING BRAKE RELAY AND DOUBLE CHECK VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
9. Airline 622 (9) to elbow (10)	Nut (11)	Using 5/8-inch wrench, unscrew and pull back.
10. Elbow (10)	Air line 622 (9)	Pull out.
11. Air line 622 (9) or elbow (10)	Insert (12)	Using long-nose pliers, pull out.
12. Relay bracket (13) to frame (14)	Two screws (15), nuts (16), lockwashers (17), relay (18), and bracket (13)	a. Using 9/16-inch box wrench, socket, and handle, unscrew and take out. b. Get rid of lockwashers (17).



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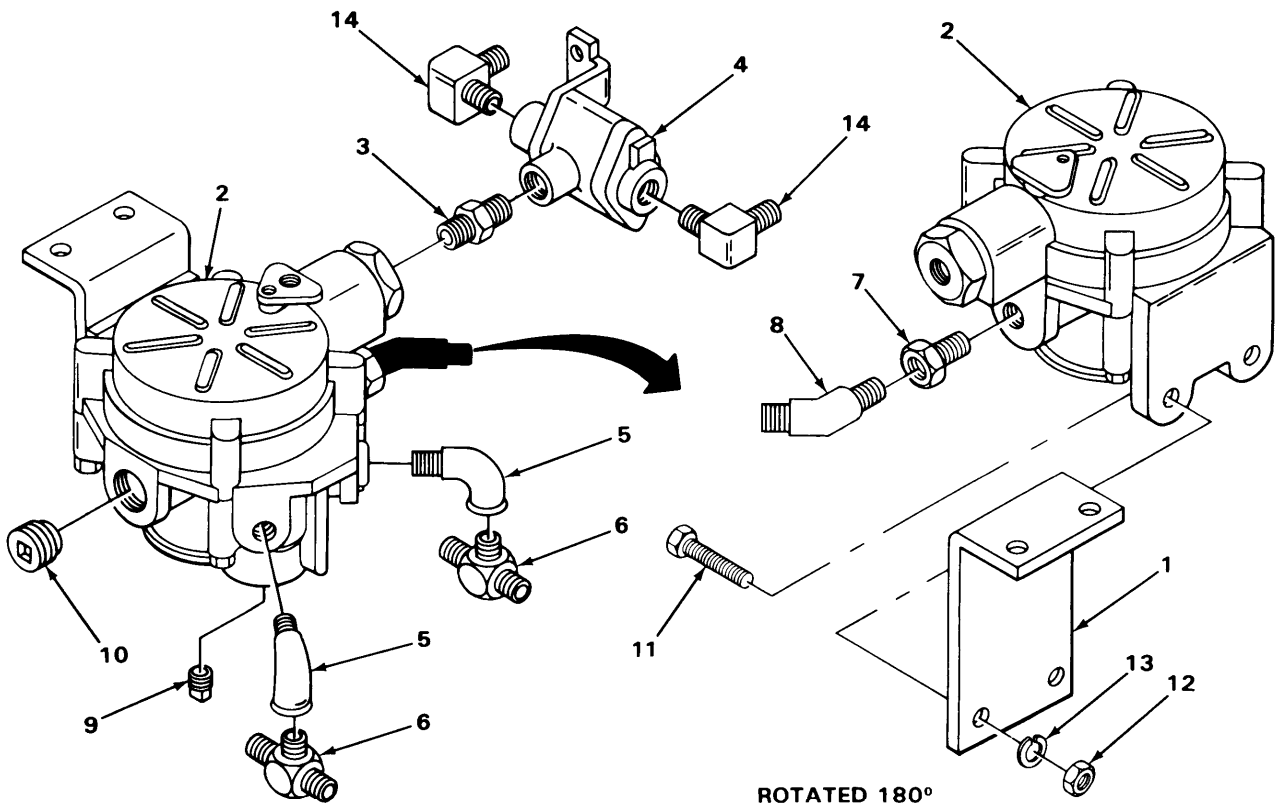
**SPRING BRAKE RELAY AND DOUBLE CHECK VALVE- CONTINUED**


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LOCATION	ITEM	ACTION REMARKS
DISASSEMBLY		
13.	Relay bracket (1)	Secure in vise.
14. Relay (2)	Reducing nipple (3) and double check valve (4)	Using 1 3/8-inch and 1 1/16-inch wrenches, unscrew and take off.
15. Two pipe elbows (5)	Two branch tees (6)	Using 7/8-inch wrench, unscrew and take out.
16. Relay (2)	Two pipe elbows (5)	Using pipe wrench, unscrew and take out.
17. Bushing (7)	Elbow (8)	Using 1 1/16-inch and 13/16-inch wrenches, unscrew and take off.
18. Relay (2)	Bushing (7)	Using 1 1/16-inch wrench, unscrew and take out.
19. Relay (2)	Plug (9)	Using 3/8-inch wrench, unscrew and take out.
20.	Plug (10)	Using 1/2-inch drive handle, unscrew and take out.
21. Relay (2) to bracket (1)	Two screws (11), nuts (12), lock- washers (13), and relay (2)	a. Using 9/16-inch box wrench, socket, and handle, unscrew and take off. b. Get rid of lockwashers (13).
22.	Relay bracket (1)	Take out of vise.
23.	Double check valve (4)	Secure in vise.
24. Double check valve (4)	Two elbows (14)	Using 3/4-inch wrench, unscrew and take out.
25.	Reducing nipple (3)	Using 11/16-inch wrench, unscrew and take out.
26.	Double check valve (4)	Take out of vise.

**SPRING BRAKE RELAY AND DOUBLE CHECK VALVE- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>CLEANING</b>		
27.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>inspection/REPLACEMENT</b>		
28.	All parts	Inspect according to general maintenance instructions (page 4-1).

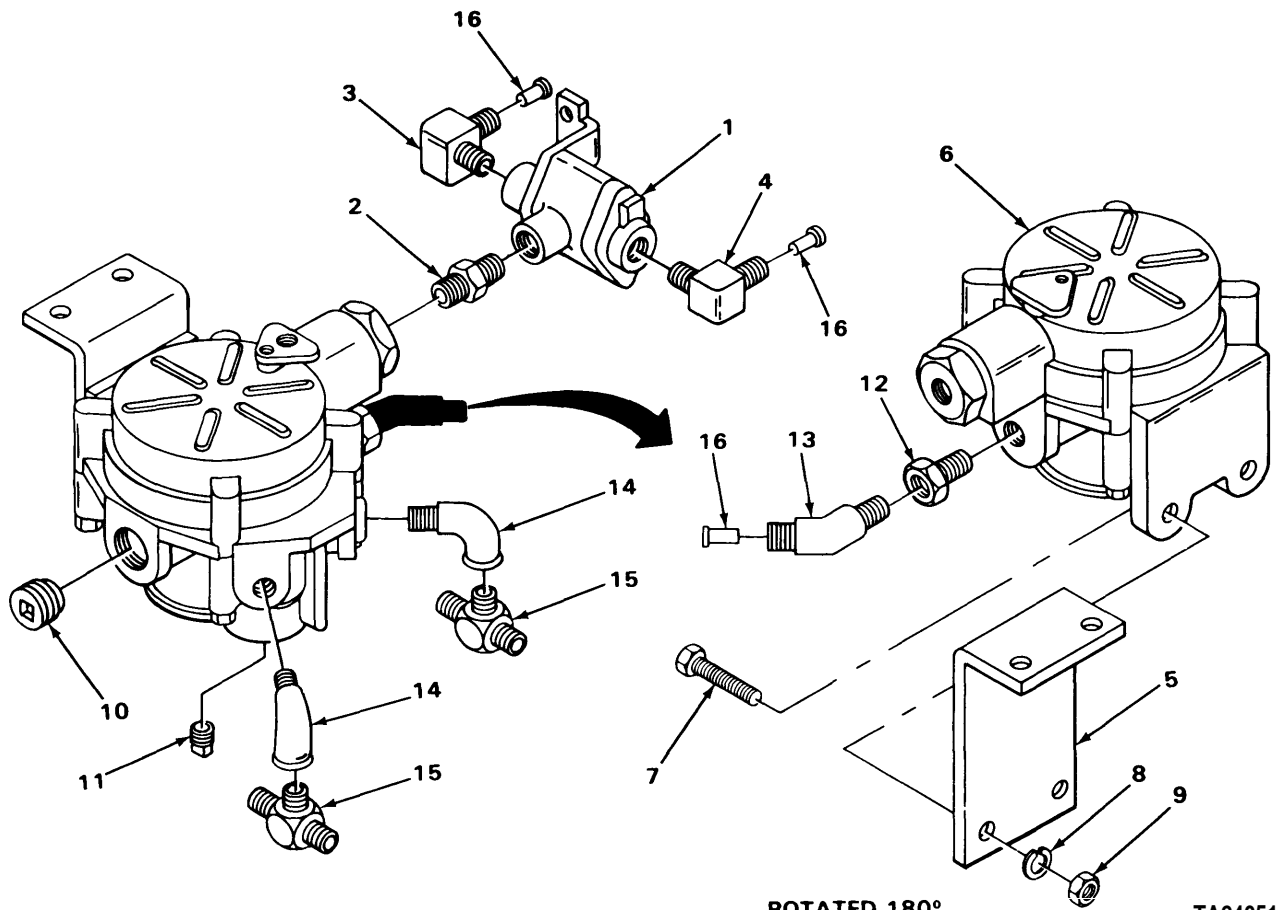


**SPRING BRAKE RELAY AND DOUBLE CHECK VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
ASSEMBLY		
29.	Double check valve (1)	Secure in vise.
30. Double check valve (1)	Reducing nipple (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
31.	Two elbows (3) and (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/4-inch wrench.
32.	Double check valve (1)	Take out of vise.
33.	Relay bracket (5)	Secure in vise.
34. Relay bracket (5)	Relay (6)	Place in position.
35. Relay (6) to relay bracket (5)	Two screws (7), new lockwashers (8), and nuts (9)	Screw in and tighten using 9/16-inch box wrench, socket, and handle.
36. Relay (6)	Plug (10)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1/2-inch drive handle.
37.	Plug (11)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/8-inch wrench.
36.	Bushing (12)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
39. Bushing (12)	Elbow (13)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 13/16-inch wrench.

**SPRING BRAKE RELAY AND DOUBLE CHECK VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
40. Relay (6)	Two pipe elbows (14)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using pipe wrench.
41. Two pipe elbows (14)	Two branch tees (15)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 7/6-inch wrench.
42. Relay (6)	Double check valve (1) and reducing nipple (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
43. Elbows (13), (3), and (4)	Three inserts (16)	Push in and using plastic hammer, seat.
44.	Relay bracket (5)	Take out of vise.



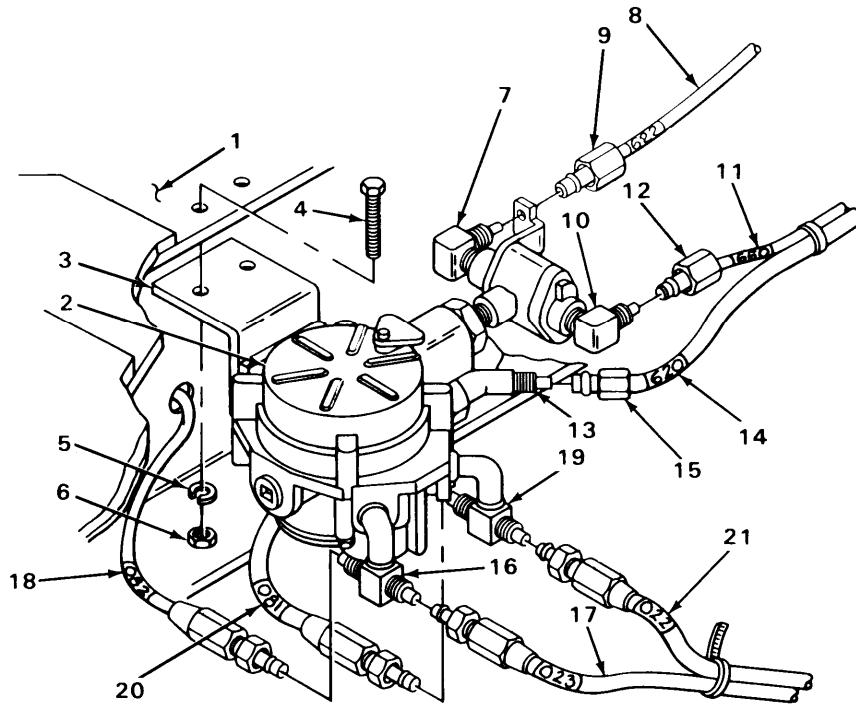
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**SPRING BRAKE RELAY AND DOUBLE CHECK VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
45. Frame (1)	Relay (2) and bracket (3)	Place in position.
46. Relay bracket (3) to frame (1)	Two screws (4), new lockwashers (5), and nuts (6)	Screw in and do not tighten at this time.
47. Elbow (7)	Air line 622 (8)	Lube end lightly with soap and push in until seated.
48. Air line 622 (8) to elbow (7)	Nut (9)	Screw on and tighten using 5/8-inch wrench.
49. Elbow (10)	Air line 660 (11)	Lube end lightly with soap and push in until seated.
50. Air line 660 (n) to elbow (10)	Nut (12)	Screw on and tighten using 5/8-inch wrench.
51. Elbow (13)	Air line 620 (14)	Lube end lightly with soap and push in until seated.
52. Air line 620 (14) to elbow (13)	Nut (15)	Screw on and tighten using 15/16-inch wrench.
53. Branch tee (16)	Air hoses 082 (17) and 023 (18)	Screw on and tighten using 11/16-inch and 13/16-inch wrenches.
54. Branch tee (19)	Air hoses 081 (20) and 022 (21)	Screw on and tighten using 11/16-inch and 13/16-inch wrenches.
55. Frame (1) and relay bracket (3)	Two screws (4), new lockwashers (5), and nuts (6)	Using 9/16-inch box-wrench, socket, and handle, tighten.

**SPRING BRAKE RELAY AND DOUBLE CHECK VALVE- CONTINUED**



**NOTE**

**FOLLOW-ON MAINTENANCE:** Check for leaks (page 4-1).

**TASK ENDS HERE**

**SPRING BRAKE VALVE**

---

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-806)     | d. Inspection/Replacement (page 4-808) |
| b. Disassembly (page 4-808) | e. Assembly (page 4-808)               |
| c. Cleaning (page 4-808)    | f. Installation (page 4-810)           |
- 

**INITIAL SETUP**

Tools	Materials/Parts
Extension, 6-inch, 1/2-inch drive	Lockwasher, spring brake valve to frame (two required)
Hammer, plastic	Soap, liquid (item 14, appendix C)
Handle, ratchet, 1/2-inch drive	Tag, marking (item 18, appendix C)
Pliers, long-nose, round	Tape, teflon (item 22, appendix C)
Socket, 1/2-inch, 1/2-inch drive	
Vise	
Wrench, box, 1/2-inch	<b>Personnel Required</b>
Wrench, open-end, 9/16-inch	One
Wrench, open-end, 5/8-inch	
Wrench, open-end, 1 1/16-inch	
Wrench, open-end, 3/4-inch	

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LOCATION	ITEM	ACTION REMARKS
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**REMOVAL**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

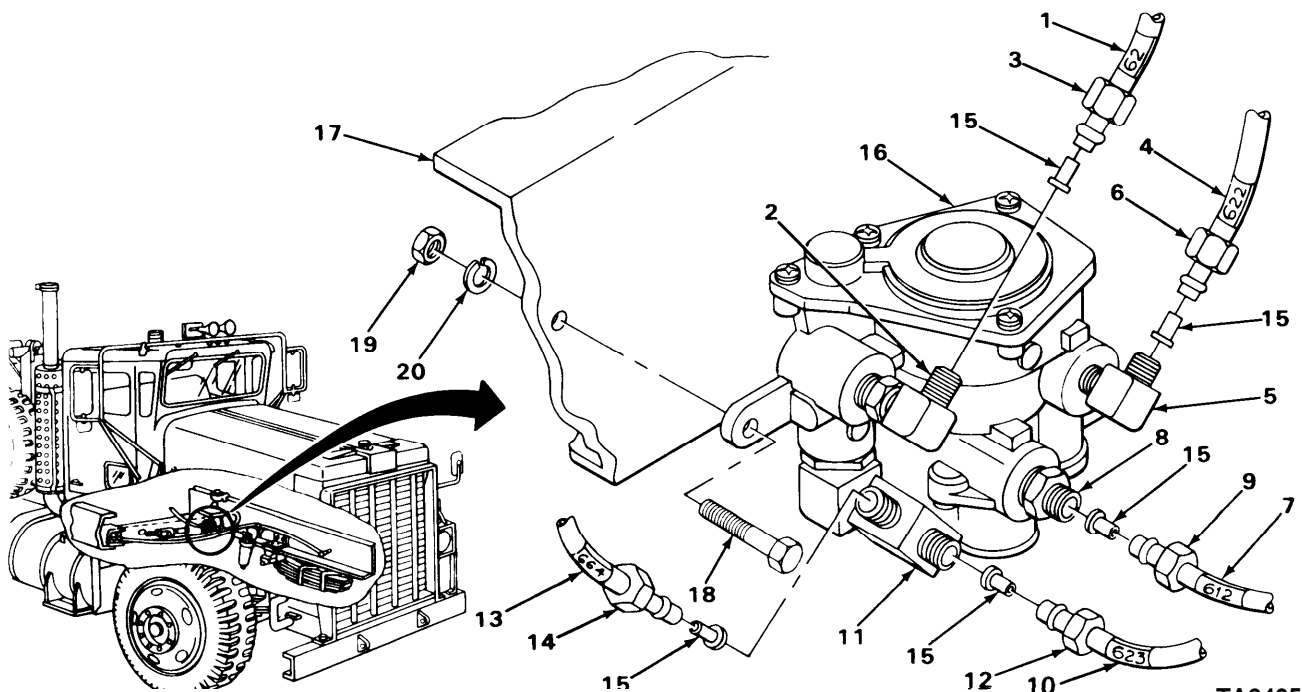
Tag air lines according to general maintenance instructions (page 4-1).

1.	Air system	Drain (TM 9-2320-270-10).
2.	Air line 621 (1) to elbow (2)	Using 5/8-inch wrench, unscrew and pull back.
3.	Elbow (2)	Pull out.
4.	Air line 622 (4) to elbow (5)	Using 5/8-inch wrench, unscrew and pull back.
5.	Elbow (5)	Pull out.



**SPRING BRAKE VALVE- CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
6.	Air line 612 (7) to adapter (8)	Nut (9)	Using 5/8-inch wrench, unscrew and pull back.
7.	Adapter (8)	Airline 612 (7)	Pull Out.
8.	Air line 623 (10) to street tee (11)	Nut (12)	Using 5/8-inch wrench, unscrew and pull back.
9.	Street tee (11)	Air line 623 (10)	Pull out.
10.	Air line 664 (13) to street tee (11)	Nut (14)	Using 5/8-inch wrench, unscrew and pull back.
11.	Street tee (11)	Air line 664 (13)	Pull out.
12.	Two elbows (2) and (5) adapter (8), and street tee (11) or five air lines (1), (4), (7), (10), and (13)	Five inserts (15)	Using long-nose pliers, pull out.
13.	Spring brake valve (16) to frame (17)	Two screws (18), nuts (19), lock-washers (20), and valve (16)	a. Using 1/2-inch box wrench, socket, extension, and handle, unscrew and take off. b. Get rid of lockwashers (20).



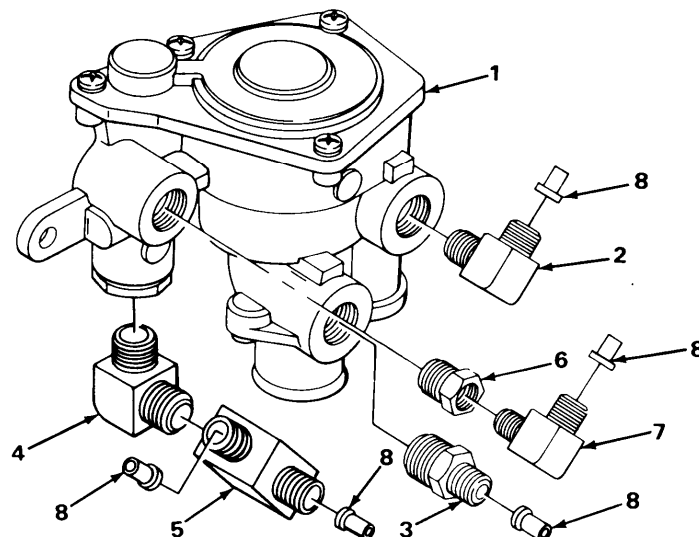
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**SPRING BRAKE VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
DISASSEMBLY		
14.	Spring brake valve (1)	Secure in vise.
15. Spring brake valve (1)	Elbow (2)	Using 5/8-inch wrench, unscrew and take out.
16.	Adapter (3)	Using 9/16-inch wrench, unscrew and take out.
17. Elbow (4)	Street tee (5)	Using 5/8-inch wrench, unscrew and take out.
18. Spring brake valve (1)	Elbow (4)	Using 11/16-inch wrench, unscrew and take out.
19. Coupling (6)	Elbow (7)	Using 3/4-inch and 5/8-inch wrenches, unscrew and take out.
20. Spring brake valve (1)	Coupling (6)	Using 3/4-inch wrench, unscrew and take off.
21.	Spring brake valve (1)	Take out of vise.
CLEANING		
22.	All parts	Clean according to general maintenance instructions (page 4-1).
INSPECTION/REPLACEMENT		
23.	All parts	Inspect according to general maintenance instructions (page 4-1).
ASSEMBLY		
24.	Spring brake valve (1)	Secure in vise.
25. Spring brake valve (1)	Coupling (6)	Screw in and tighten using 3/4-inch wrench.

**SPRING BRAKE VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
26. Coupling (6)	Elbow (7)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
27. Spring brake valve (1)	Elbow (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
28. Elbow (4)	Street tee (5)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
29. Spring brake valve (1)	Adapter (3)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
30.	Elbow (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
31. Elbows (2) and (7), street tee (5), and adapter (3)	Five inserts (8)	Push in and using plastic hammer, seat.
32.	Spring brake valve (1)	Take out of vise.

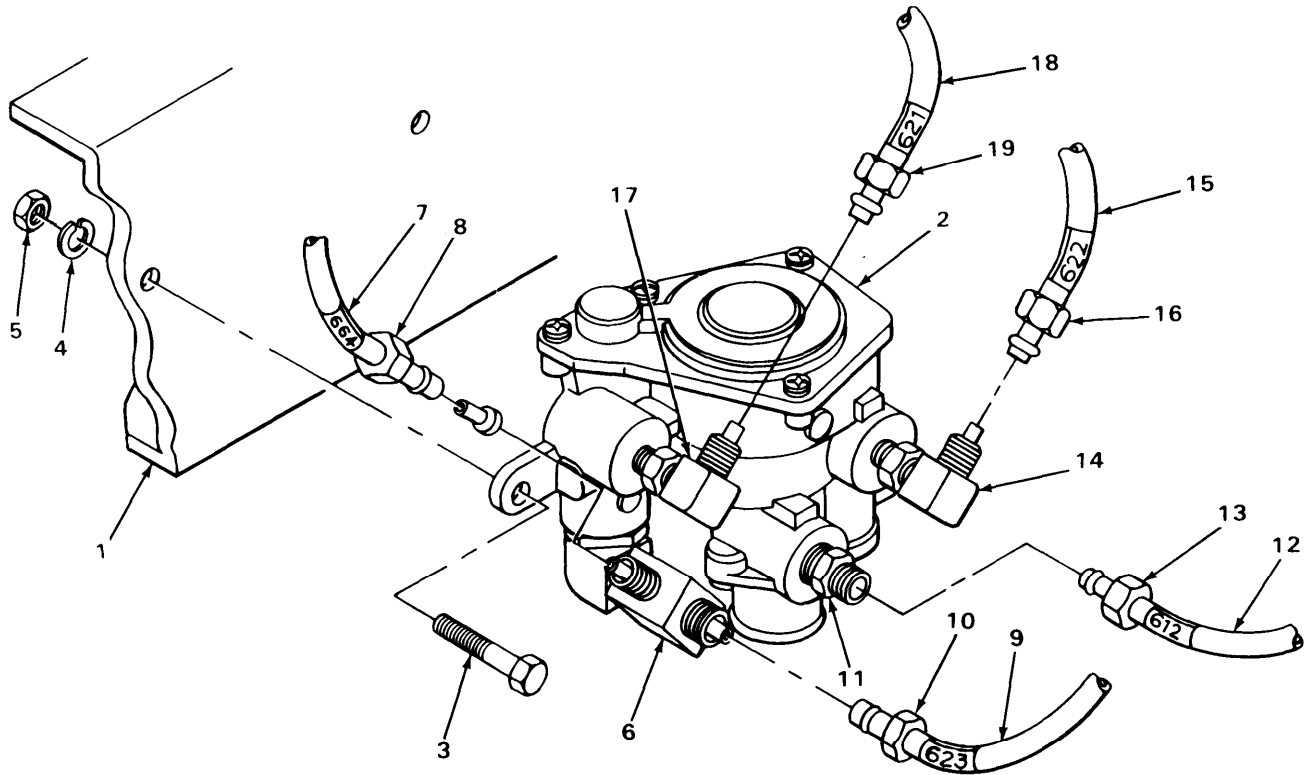


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**SPRING BRAKE VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
33. Frame (1)	Spring brake valve (2)	Put in place and hold.
34. Spring brake valve (2) to frame (1)	Two screws (3), new lockwashers (4), and nuts (5)	Screw in and tighten using 1/2-inch box wrench, socket, and handle.
35. Street tee (6)	Air line 664 (7)	Lube end lightly with soap and push in until seated.
38. Air line 664 (7) to street tee (6)	Nut (8)	Screw on and tighten using 5/8-inch wrench.
37. Street tee (6)	Air line 623 (9)	Lube end lightly with soap and push in until seated.
38. Air line 623 (9) to street tee (6)	Nut (10)	Screw on and tighten using 5/8-inch wrench.
39. Adapter (11)	Air line 612 (12)	Lube end lightly with soap and push in until seated.
40. Air line 612 (12) to adapter (11)	Nut (13)	Screw on and tighten using 5/8-inch wrench.
41. Elbow (14)	Air line 622 (15)	Lube end lightly with soap and push in until seated.
42. Air line 622 (15) to elbow (14)	Nut (16)	Screw on and tighten using 5/8-inch wrench.
43. Elbow (17)	Air line 621 (18)	Lube end lightly with soap and push in until seated.
44. Air line 621 (18) to elbow (17)	Nut (19)	Screw on and tighten using 5/8-inch wrench.

SPRING BRAKE VALVE - CONTINUED



NOTE

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

TASK ENDS HERE

**QUICK RELEASE VALVE**

---

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-812)     | d. Inspection/Replacement (page 4-814) |
| b. Disassembly (page 4-814) | e. Assembly (page 4-814)               |
| c. Cleaning (page 4-814)    | f. Installation (page 4-815)           |
- 

**INITIAL SETUP**

Tools	Materials/Parts
Extension, 6-inch, 1/2-inch drive	Lockwasher, quick release valve to frame (two required)
Hammer, plastic	Soap, liquid (item 14, appendix C)
Handle, ratchet, 3/8-inch drive	Tag, marking (item 18, appendix C)
Pliers, long-nose, round	Tape, teflon (item 22, appendix C)
Socket, 1/2-inch, 3/8-inch drive	
Vise	
Wrench, box, 1/2-inch	<b>Personnel Required</b>
Wrench, open-end, 9/16-inch	One
Wrench, open-end, 5/8-inch	
Wrench, open-end, 3/4-inch	
Wrench, open-end, 13/16-inch	

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LOCATION	ITEM	ACTION REMARKS
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**REMOVAL**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

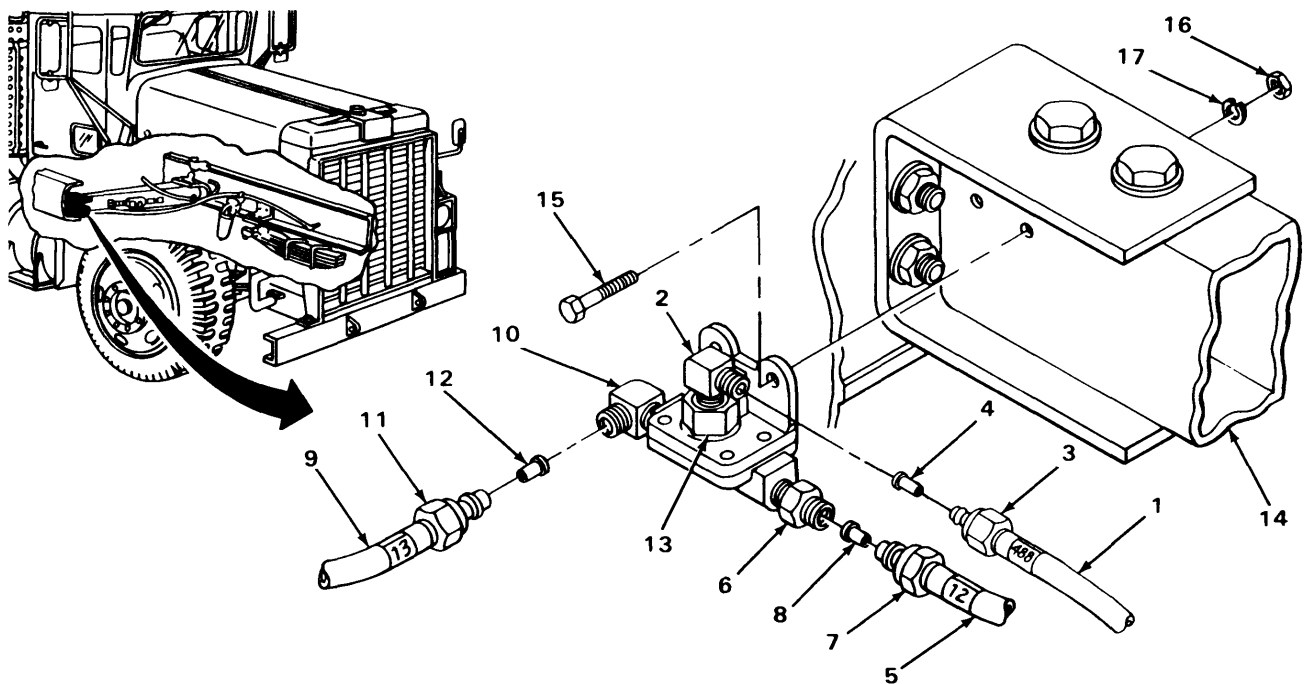
**NOTE**

Tag air lines according to general maintenance instructions (page 4-1).

1.	Air system	Drain (TM 9-2320-270-10).
2.	Air line 488 (1) to elbow (2)	Nut (3) Using 13/16-inch wrench, unscrew and pull back.
3.	Elbow (2)	Air line 488 (1) Pull out.
4.	Air line 488 (1) or elbow (2)	Insert (4) Using long-nose pliers, pull out.

**QUICK RELEASE VALVE - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
5. Air line 12 (5) to adapter (6)	Nut (7)	Using 5/8-inch wrench, unscrew and pull back.	
6. Adapter (6)	Air line 12 (5)	Pull out.	
7. Air line 12 (5) or adapter (6)	Insert (8)	Using long-nose pliers, pull out.	
8. Air line 13 (9) to elbow (10)	Nut (11)	Using 5/8-inch wrench, unscrew and pull back.	
9. Elbow (10)	Air line 13 (9)	Pull out.	
10. Air line 13 (9) or elbow (10)	Insert (12)	Using long-nose pliers, pull out.	
11. Quick release valve (13) to frame (14)	Two screws (15), nuts (16), and lock-washers (17)	a. Using 1/2-inch box wrench, socket, handle, and extension, unscrew and take off. b. Get rid of lockwashers (17).	
12. Frame (14)	Quick release valve (13)	Take off.	



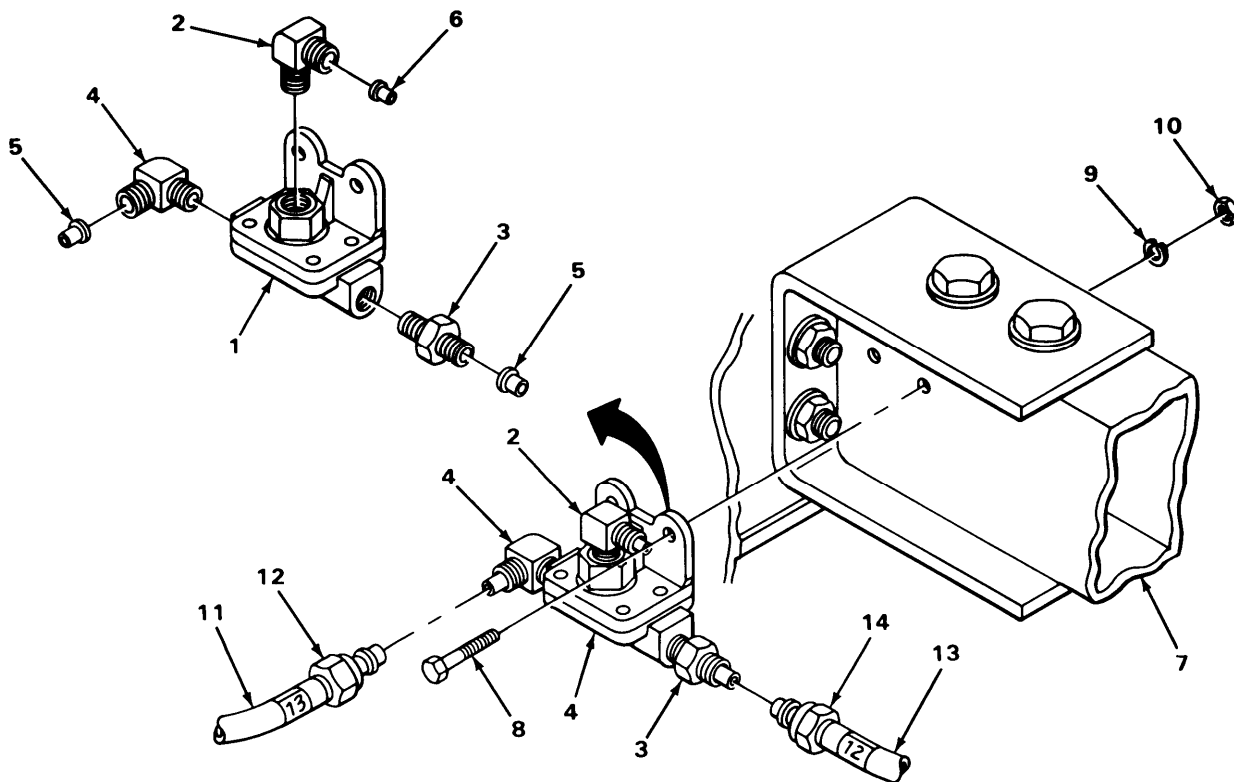
**QUICK RELEASE VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>DISASSEMBLY</b>		
13. Quick release valve (1)	Elbow (2)	a. Secure valve (1) in vise. b. Using 3/4-inch wrench, unscrew and take out.
14.	Adapter (3)	Using 9/16-inch wrench, unscrew and take out.
15.	Elbow (4)	a. Using 5/8-inch wrench, unscrew and take out. b. Take valve (1) out of vise.
<b>CLEANING</b>		
16.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>inspection/REPUCEMENT</b>		
17.	All parts	Inspect according to general maintenance instructions (page 4-1).
<b>ASSEMBLY</b>		
18. Quick release valve (1)	Elbow (4)	a. Secure valve (1) in vise. b. Wrap threads with teflon tape (page 4-1). c. Screw in and tighten using 5/8-inch wrench.
19.	Adapter (3)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
20.	Elbow (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/4-inch wrench.
21. Adapter (3) and elbow (4)	Two inserts (5)	Push in and using plastic hammer, seat.
22. Elbow (4)	Insert (6)	a. Push in and using plastic hammer, seat. b. Take valve (1) out of vise.



**QUICK RELEASE VALVE - CONTINUED**

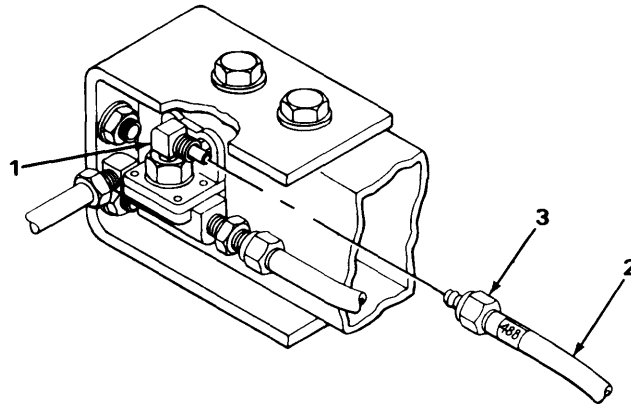
LOCATION	ITEM	ACTION	REMARKS
<b>INSTALLATION</b>			
23. Frame (7)	Quick release valve (1)	Place in position.	
24. Quick release valve (1) to frame (7)	Two screws (8), new lockwashers (9), and nuts (10)	Screw in and tighten using 1/2-inch box wrench, socket, handle, and extension.	
25. Elbow (4)	Air line 13 (11)	Lube end lightly with soap and push in until seated.	
26. Air line 13 (11) to elbow (3)	Nut (12)	Screw on and tighten using 5/8-inch wrench.	
27. Adapter (3)	Air line 12 (13)	Lube end lightly with soap and push in until seated.	
28. Air line 12 (13) to adapter (2)	Nut (14)	Screw on and tighten using 5/8-inch wrench.	



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**QUICK RELEASE VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
INSTALLATION - CONTINUED		
29. Elbow (1)	Air line 488 (2)	Lube end lightly with soap and push in until seated.
30. Air line 488 (2) to elbow (1)	Nut (3)	Screw on and tighten using 13/16-inch wrench.



**NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

## AIR DISTRIBUTION MANIFOLD

---

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-818)     | d. Inspection/Replacement (page 4-822) |
| b. Disassembly (page 4-820) | e. Assembly (page 4-822)               |
| c. Cleaning (page 4-822)    | f. Installation (page 4-824)           |
- 

### INITIAL SETUP

#### Tools

Handle, ratchet, 3/8-inch drive  
 Hammer, plastic  
 Pliers, diagonal-cutting  
 Pliers, long-nose, round  
 Pliers, slip-joint, straight-nose  
 Socket, 7/16-inch, 3/8-inch drive  
 Vise  
 Wrench, box, 7/16-inch  
 Wrench, open-end, 5/8-inch  
 Wrench, open-end, 13/16-inch  
 Wrench, open-end, 7/8-inch  
 Wrench, open-end, 15/16-inch

#### Tools – Continued

Wrench, open-end, 1 3/8-inch  
 Wrench, pipe, 1/4- to 1-inch

#### Materials/Parts

Lockwasher, manifold to frame (two required)  
 Soap, liquid (item 14, appendix C)  
 Tag, marking (item 18, appendix C)  
 Tape, teflon (item 22, appendix C)  
 Wrap, tie (item 24, appendix C)

#### Personnel Required

One

**AIR DISTRIBUTION MANIFOLD - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

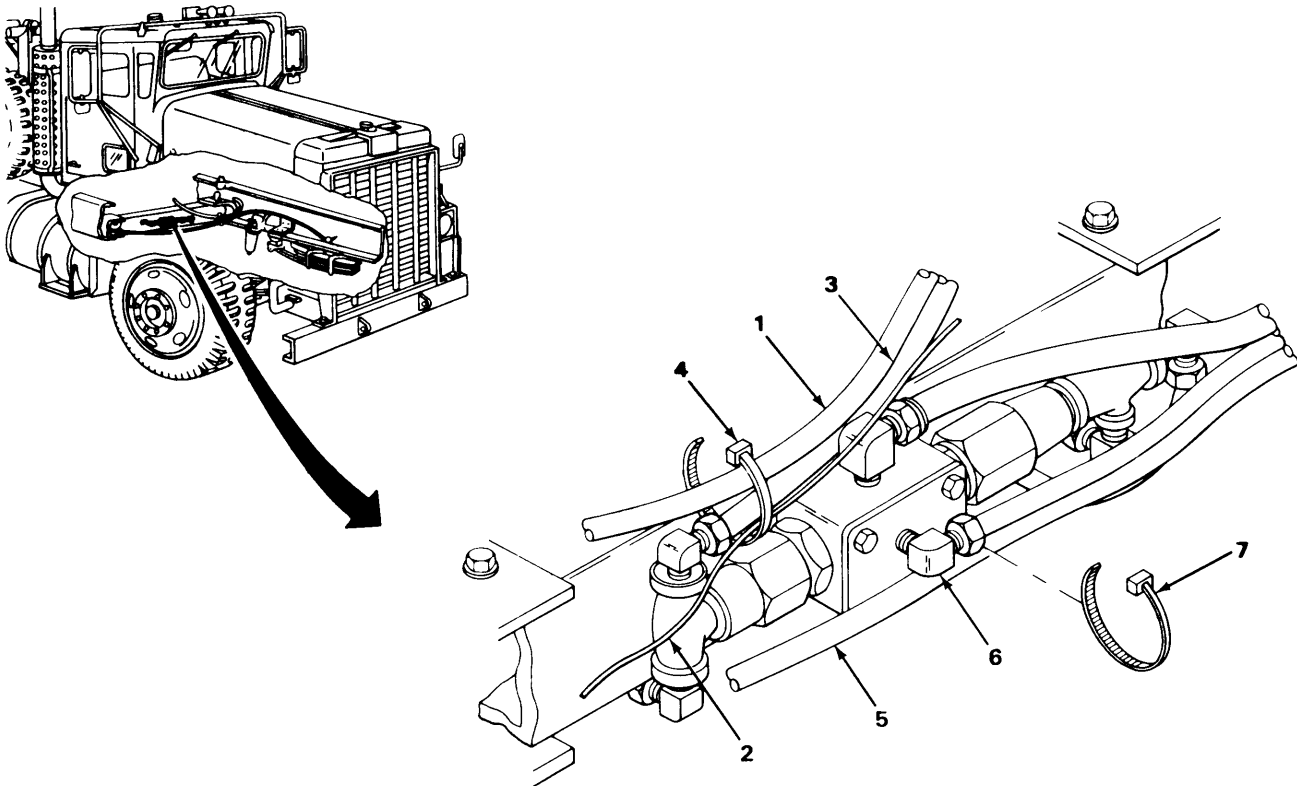
**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

Tag air lines according to general maintenance instructions (page 4-1).

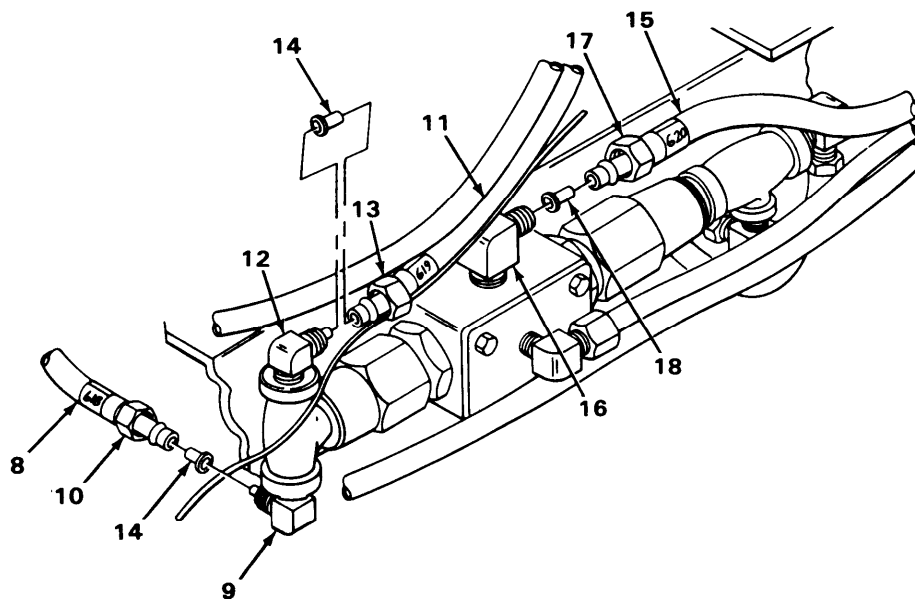
- |  |              |  |
|--|--------------|--|
| 1.   | Air system   | Drain (TM 9-2320-270-20).                                    |
| 2. Air line 488 (1) and wire (2) to air line 619 (3) | Tie wrap (4) | a. Using cutting pliers, cut and take off.<br>b. Get rid of. |
| 3. Air line 12 (5) to elbow (6)                      | Tie wrap (7) | a. Using cutting pliers, cut and take off.<br>b. Get rid of. |



TA240521

**AIR DISTRIBUTION MANIFOLD - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
4. Air line 618 (8) to elbow (9)	Nut (10)	Using 15/16-inch wrench, unscrew and pull back.
5. Elbow (9)	Air line 618 (8)	Pull out.
6. Air line 619(11) to elbow (12)	Nut (13)	Using 13/16-inch wrench, unscrew and pull back.
7. Elbow (12)	Air line 619 (11)	Pull out.
8. Air line 618(8) and 619 (11) or elbow (9) and (12)	Two inserts (14)	Using long-nose pliers, pull out.
9. Air line 620 (15) to elbow (16)	Nut (17)	Using 15/16-inch wrench, unscrew and pull back.
10. Elbow (16)	Air line 620 (15)	Pull out.
11. Airliner elbow (16)	Insert (18)	Pull out.



## AIR DISTRIBUTION MANIFOLD - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL – CONTINUED</b>		
12. Air line 611 (1) to elbow (2)	Nut (3)	Using 5/8-inch wrench, unscrew and pull back.
13. Elbow (2)	Air line 611 (1)	Pull out.
14. Air line 614 (4) to elbow (5)	Nut (6)	Using 15/16-inch wrench, unscrew and pull back.
15. Elbow (5)	Air line 614 (4)	Pull out.
16. Air line 615 (7) to elbow (8)	Nut (9)	Using 15/16-inch wrench, unscrew and pull back.
17. Elbow (8)	Airline 615(7)	Pull out.
18. Air line 611 (1), 614 (4), and 615 (7) or elbows (2), (5), and (8)	Three inserts (10)	Using long-nose pliers, pull out.
19. Manifold (11) to frame (12)	Two screws (13), nuts (14), lock-washers (15), and manifold (11)	a. Using 7/16-inch box wrench, socket, and handle, unscrew and take off. b. Get rid of lockwashers (15).
<b>DISASSEMBLY</b>		
20. Pipe tee (16)	Two elbows (17) and (18)	a. Secure manifold (11) in vise. b. Using 7/8-inch wrench, unscrew and take out.
21. Manifold (11)	Elbow (19)	Using 7/8-inch wrench, unscrew and take out.
22.	Elbow (2)	Using 5/8-inch wrench, unscrew and take out.
23.	Plug (20)	Using 3/8-inch drive handle, unscrew and take out.
24. Pipe tee (21)	Two elbows (5) and (8)	Using 7/8-inch wrench, unscrew and take out.

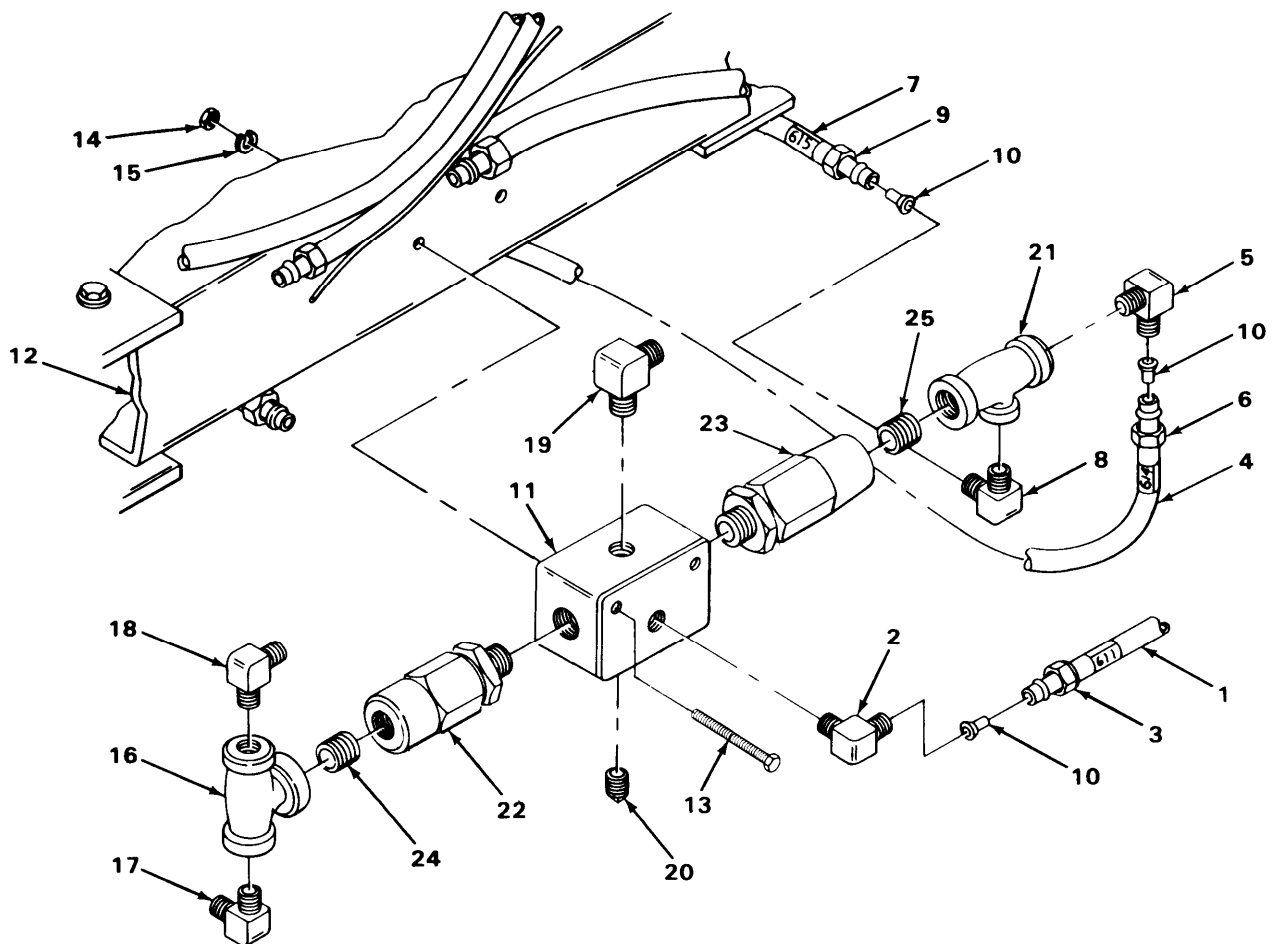
**AIR DISTRIBUTION MANIFOLD - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

**NOTE**

**Do not remove nipples unless inspection shows need for replacement.**

25. Two check valves (22) and (23)	Two pipe tees (16) and (22)	Using 1 3/8-inch wrench and pipe wrenches, unscrew and take out.
26. Two check valves (22) and (23) or two pipe tees (16) and (22)	Two nipples (24) and (25)	Using 1 3/8-inch wrench and pipe wrenches, unscrew and take out.
27. Manifold (11)	Check valves (22) and (23)	a. Using 1 3/8-inch wrench, unscrew and take out. b. Take manifold (11) out of vise.



TA240523

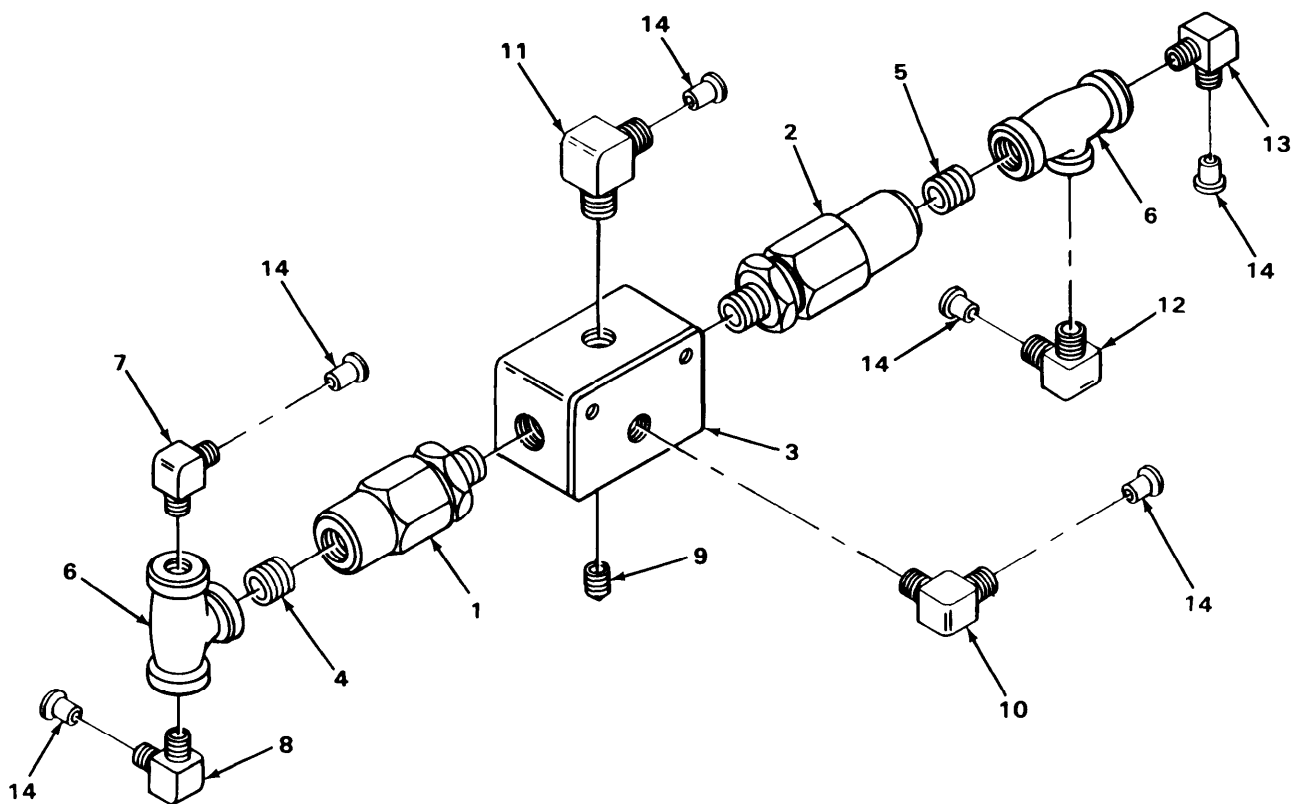
## AIR DISTRIBUTION MANIFOLD - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>CLEANING</b>		
28.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>		
29.	All parts	Inspect according to general maintenance instructions (page 4-1).
30.	Two check valves (1) and (2)	Push lightly on valve washer from side with female threads. <b>Washer should be free to push in a little and spring back.</b>
<b>ASSEMBLY</b>		
31.	Manifold (3)	Secure in vise.
32. Manifold (3)	Two check valves (1) and (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 3/8-inch wrench.
<b>NOTE</b>		
<b>Only do step 33 if nipples were removed.</b>		
33. Two check valves (1) and (2)	Two nipples (4) and (5)	a. Wrap threads with teflon tape (page 4-1). b. Screw in but do not tighten.
34. Two nipples (4) and (5)	Pipe tees (6)	Screw on and tighten using pipe wrench.
35. Pipe tee (6)	Two elbows (7) and (8)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 7/8-inch wrench.
36. Manifold (3)	Plug (9)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/8-inch drive handle.



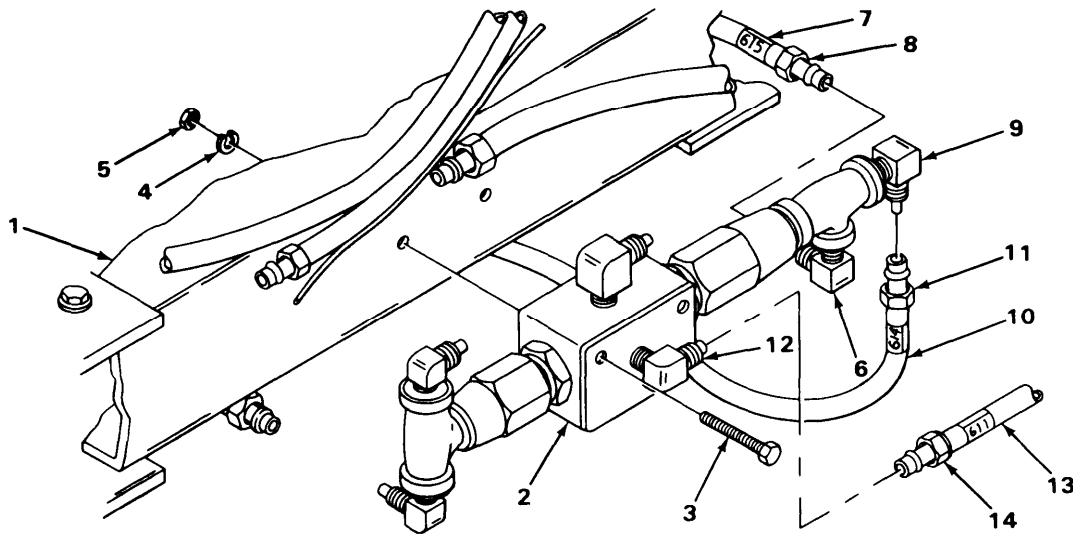
**AIR DISTRIBUTION MANIFOLD - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
37.	Elbow (10)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
38.	Elbow (11)	a. Wrap threads with teflon tape (page 4-1). b. Screw in using 7/8-inch wrench.
39. Pipe tee (6)	Two elbows (12) and (13)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 7/8-inch wrench.
40. Elbows (7), (8), (10), (11), (12), and (13)	Six inserts (14)	Push in and using plastic hammer, seat.
41.	Manifold (3)	Take out of vise.



**AIR DISTRIBUTION MANIFOLD - CONTINUED**

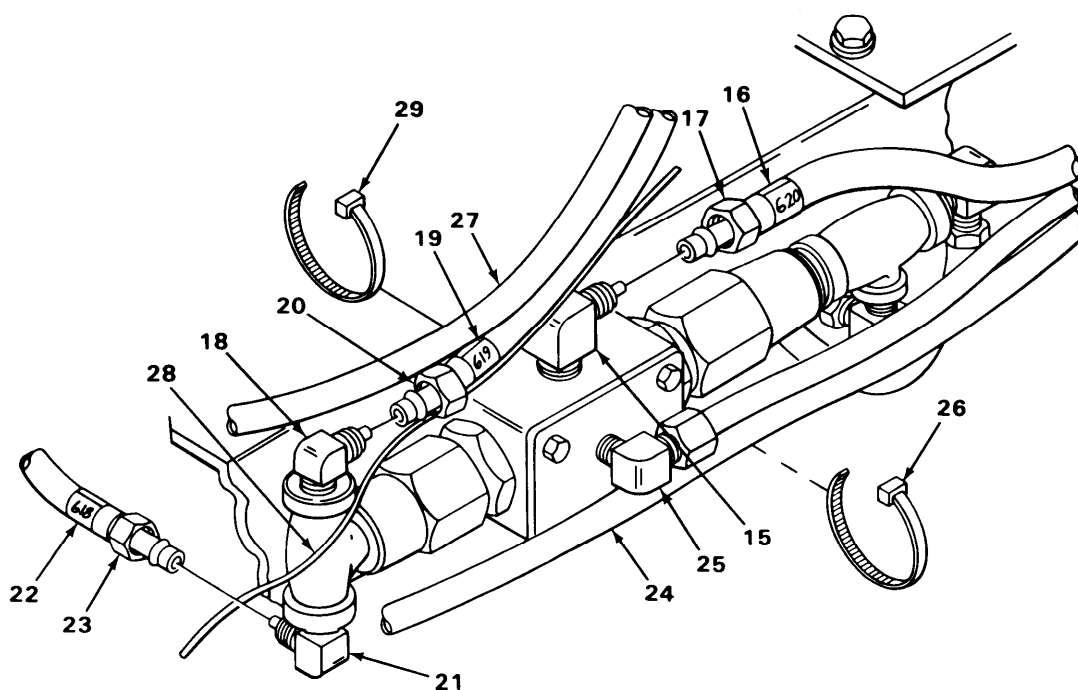
LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION</b>		
42. Frame (1)	Manifold (2)	Place in position.
43. Manifold (2) to frame (1)	Two screws (3), new lockwashers (4), and nuts (5)	Screw in and tighten using 7/16-inch box wrench, socket, and handle.
44. Elbow (6)	Air line 615 (7)	Lube end lightly with soap and push in until seated.
45. Air line 615 (7) to elbow (6)	Nut (8)	Screw on and tighten using 15/16-inch wrench.
46. Elbow (9)	Air line 614 (10)	Lube end lightly with soap and push in until seated.
47. Air line 614 (10) to elbow (9)	Nut (11)	Screw on and tighten using 15/16-inch wrench.
48. Elbow (12)	Air line 611 (13)	Push in until seated.
49. Air line 611 (13) to elbow (12)	Nut (14)	Screw on and tighten using 5/8-inch wrench.



TA240525

**AIR DISTRIBUTION MANIFOLD - CONTINUED**

	LOCATION	ITEM	ACTION REMARKS
50.	Elbow (15)	Air line 620(16)	Lube end lightly with soap and push in until seated.
51•	Air line 620(16) to elbow (15)	Nut(17)	Screw on and tighten using 15/16-inch wrench.
52.	Elbow (18)	Air line 619 (19)	Lube end lightly with soap and push in until seated.
53.	Airline 619(19) to elbow (18)	Nut (20)	Screw on and tighten using 13/16-inch wrench.
54.	Elbow (21)	Air line 618 (22)	Lube end lightly with soap and push in until seated.
55.	Air line 618 (22) to elbow (21)	Nut (23)	Screw on and tighten using 15/16-inch wrench.
56.	Air line 12 (24) to elbow (25)	New tie wrap (26)	Using slip-joint pliers, put on.
57.	Air line 488 (27) and wire (28) to air line 619(19)	New tie wrap (29)	Using slip-joint pliers, put on.



TA240526

## AIR DISTRIBUTION MANIFOLD - CONTINUED

INSTALLATION – CONTINUED

### NOTE

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

## TOWING KIT CHECK VALVE

---

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-826)     | d. Inspection/Replacement (page 4-827) |
| b. Disassembly (page 4-827) | e. Assembly (page 4-828)               |
| c. Cleaning (page 4-827)    | f. Installation (page 4-828)           |
- 

### INITIAL SETUP

**Tools**

Hammer, plastic  
 Pliers, long-nose, round  
 Vise  
 Wrench, open-end, 5/8-inch  
 Wrench, open-end, 7/8-inch  
 Wrench, open-end, 1 1/16-inch  
 Wrench, open-end, 1 3/8-inch

**Materials/Parts**

Soap, liquid (item 14, appendix C)  
 Tape, teflon (item 22, appendix C)

**Personnel Required**

One

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LOCATION	ITEM	ACTION	REMARKS
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### REMOVAL

#### WARNING

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

- |    |                                  |   |
|----|----------------------------------|---|
| 1. | Air system                       | Drain (TM 9-2320-270-20).                     |
| 2. | Air line 654 (1)<br>to elbow (2) | Using 5/8-inch wrench, unscrew and pull back. |
| 3. | Elbow (2)                        | Air line 654 (1)<br>Pull out.                 |

**TOWING KIT CHECK VALVE - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
4. Air line 654 (1) or elbow (2)	Insert (4)		Using long-nose pliers, pull out.
5. Adapter (5)	Check valve (6)		Using 1 1/16-inch and 1 3/8-inch wrenches, unscrew and take out.

**DISASSEMBLY**

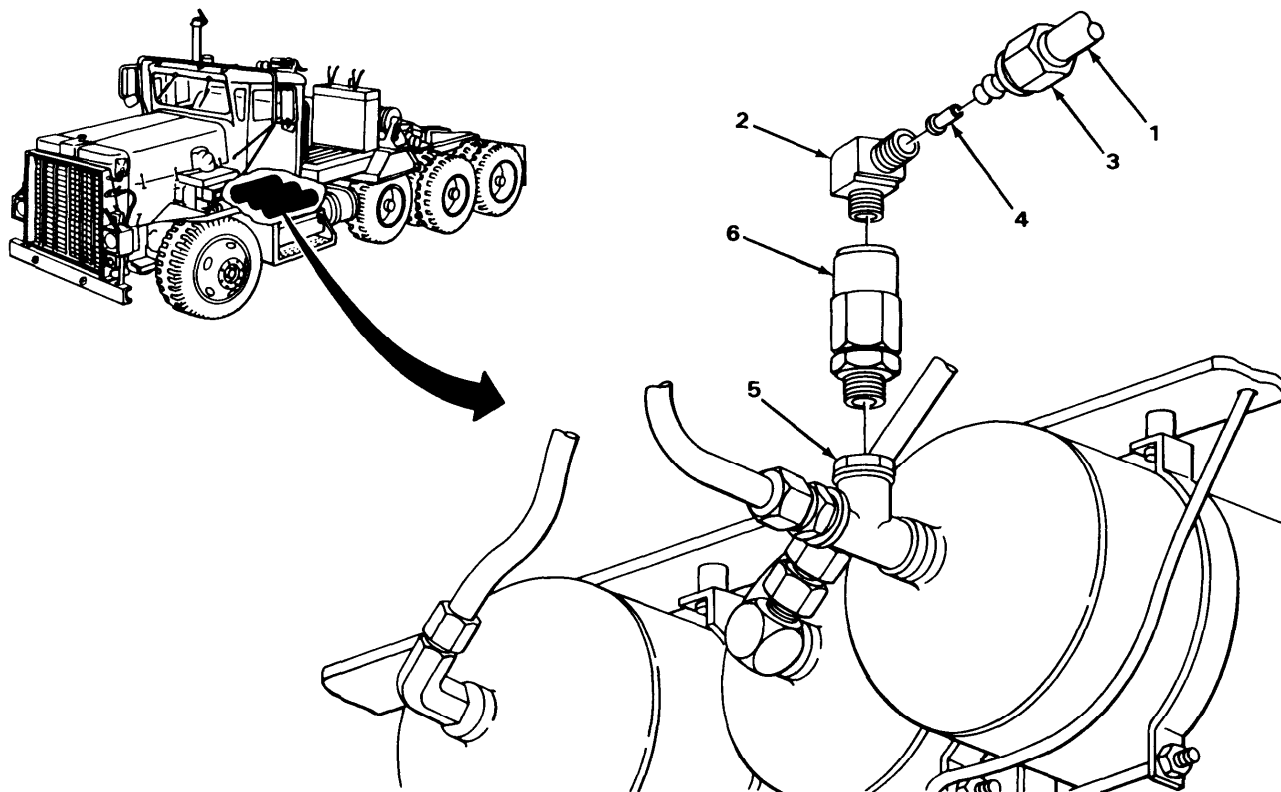
6. Check valve (6)	Elbow (2)		a. Secure valve (6) in vise. b. Using 7/8-inch wrench, unscrew and take out. c. Take valve (6) out of vise.
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**CLEANING**

7.	All parts		Clean according to general maintenance instructions (page 4-1).
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**INSPECTION/REPLACEMENT**

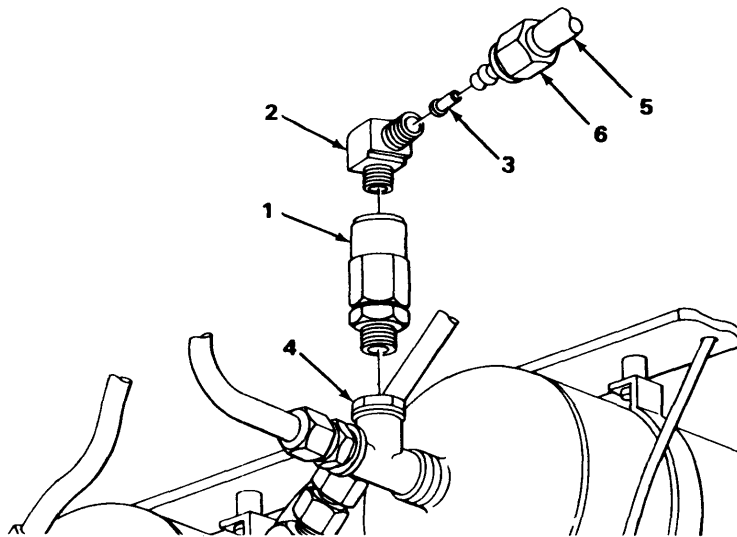
8.	All parts		Inspect according to general maintenance instructions (page 4-1).
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TA240527

**TOWING KIT CHECK VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>ASSEMBLY</b>		
9. Check valve (1)	Elbow (2)	a. Secure valve (1) in vise. b. Wrap threads with teflon tape (page 4-1). c. Screw in and tighten using 7/8-inch wrench.
10. Elbow (2)	Insert (3)	a. Push in and using plastic hammer, seat. b. Take valve (6) out of vise.
<b>INSTALLATION</b>		
11. Adapter (4)	Check valve (1)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 3/8-inch wrench.
12. Elbow (2)	Air line 654 (5)	Lube end lightly with soap and push in until seated.
13. Air line 654 (5)	Nut (6)	Screw on and tighten using 5/8-inch wrench.



**NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

TA240528

## TOWING KIT QUICK RELEASE VALVE

---

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-830)     | d. Inspection/Replacement (page 4-832) |
| b. Disassembly (page 4-830) | e. Assembly (page 4-832)               |
| c. Cleaning (page 4-832)    | f. installation (page 4-832)           |
- 

### INITIAL SETUP

#### Tools

Hammer, plastic  
 Handle, ratchet, 3/8-inch drive  
 Pliers, long-nose, round  
 Socket, 7/16-inch, 3/8-inch drive  
 Socket, 1/2-inch, 3/8-inch drive  
 Vise  
 Wrench, box, 7/16-inch  
 Wrench, box, 1/2-inch  
 Wrench, open-end, 1 1/32-inch  
 Wrench, open-end, 5/8-inch  
 Wrench, open-end, 1 1/16-inch  
 Wrench, open-end, 3/4-inch  
 Wrench, open-end, 7/8-inch

#### Materials/Parts

Lockwasher, quick release valve bracket to  
 trailer connector bracket (two required)  
 Lockwasher, quick release valve to bracket  
 (two required)  
 Lockwasher, wires to stoplight switch  
 (two required)  
 Soap, liquid (item 14, appendix C)  
 Tag, marking (item 18, appendix C)  
 Tape, teflon (item 22, appendix C)

#### Personnel Required

One

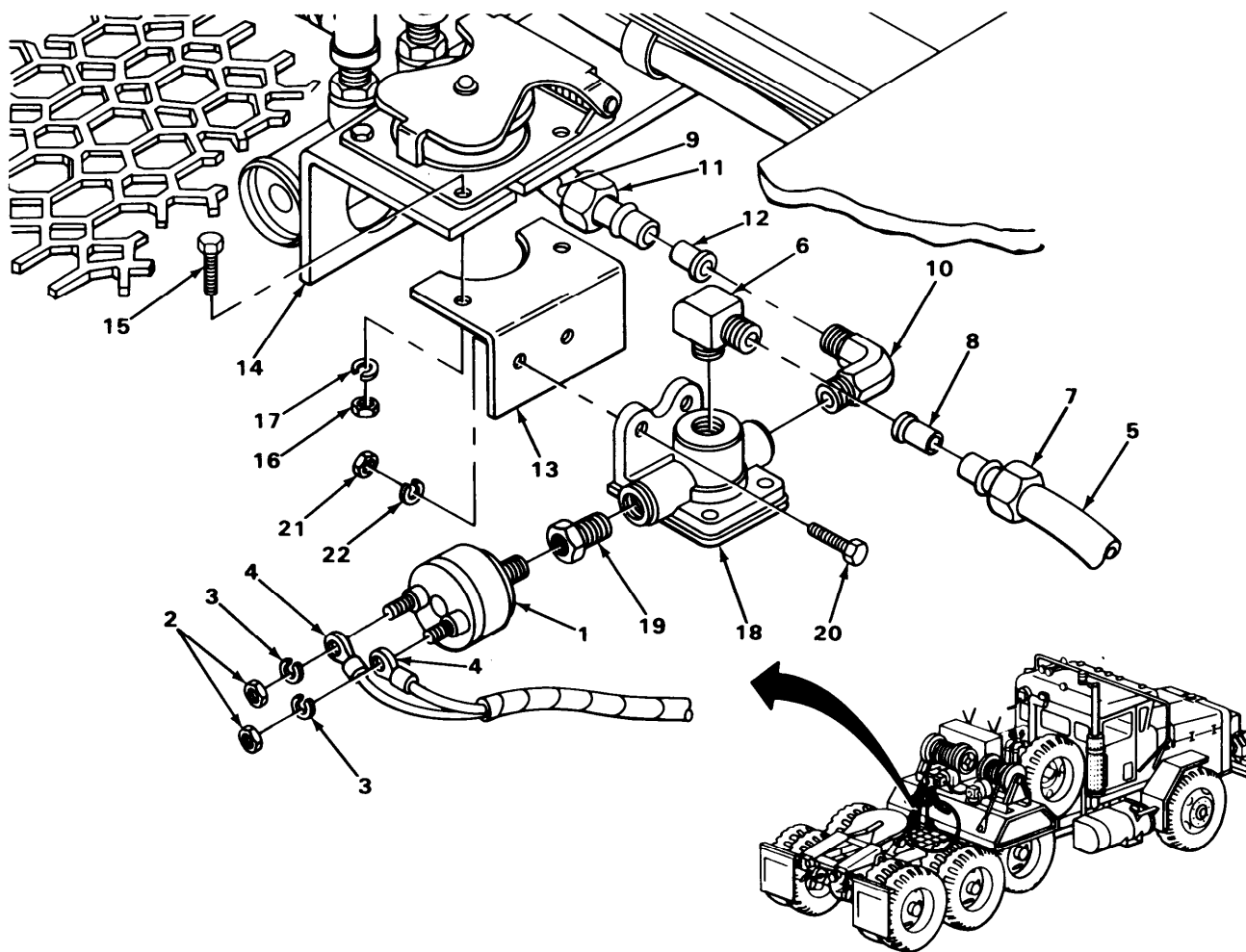
## TOWING KIT QUICK RELEASE VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL</b>		
<b><u>WARNING</u></b>		
<b>Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.</b>		
<b>NOTE</b>		
<b>Tag air lines according to general maintenance instructions (page 4-1).</b>		
1.	Air system	Drain (TM 9-2320-270-20).
2.	Stoplight switch (1)	Two nuts (2), lock-washers (3), and two wires (4) a. Using 1 1/32-inch wrench, unscrew and take off. b. Get rid of lockwashers (3).
3.	Air line 653 (5) to elbow (6)	Nut (7) Using 5/8-inch wrench, unscrew and pull back.
4.	Elbow (6)	Air line 653 (5) Pull out.
5.	Air line 653 (5) or elbow (6)	Insert (8) Using long-nose pliers, pull out.
6.	Air line 653B (9) to elbow (10)	Nut (11) Using 5/8-inch wrench, unscrew and pull out.
7.	Elbow (10)	Air line 653B (9) Pull out.
8.	Air line 653B (9) or elbow (10)	Insert (12) Using long-nose pliers, pull out.
9.	Bracket (13) to trailer connector bracket (14)	Two screws (15), nuts (16), and lockwashers (17) a. Using 7/16-inch box wrench, 7/16-inch socket, and handle, unscrew and take off. b. Get rid of lockwashers (17).
10.	Trailer connector bracket (14)	Bracket (14) and valve (18) Take off.
<b>DISASSEMBLY</b>		
11.	Bracket (14)	Secure in vise.
12.	Reducer (19)	Stoplight switch (1) Using 11/16-inch and 3/4-inch wrenches, unscrew and take out.



**TOWING KIT QUICK RELEASE VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
13. Valve (18)	Reducer (19)	Using 1 1/16-inch wrench, unscrew and take out.
14.	Elbow (6)	Using 7/8-inch wrench, unscrew and take out.
15.	Elbow (10)	Using 5/8-inch wrench, unscrew and take out.
16. Valve (18) to bracket (14)	Two screws (20), nuts (21), lock-washers (22), and valve (18)	a. Using 1/2-inch box wrench, 1/2-inch socket, and handle, unscrew and take off. b. Get rid of lockwashers (22).
17.	Bracket (14)	Take out of vise.



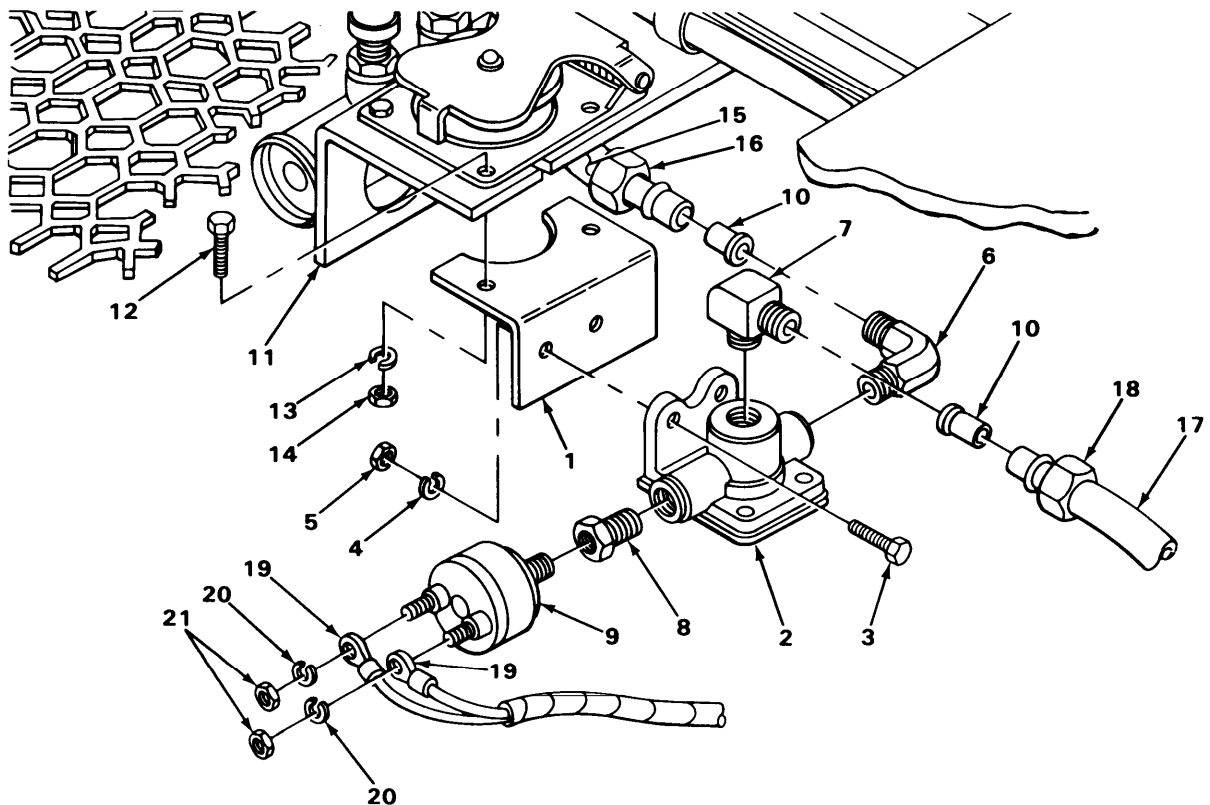
TA240529

**TOWING KIT QUICK RELEASE VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>CLEANING</b>		
18.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>		
19.	All parts	Inspect according to general maintenance instructions (page 4-1).
<b>ASSEMBLY</b>		
20. Bracket (1)	Valve (2)	a. Secure bracket (1) in vise. b. Place in position.
21. Valve (2) to bracket (1)	Two screws (3), new lockwashers (4), and nuts (5)	Screw on and tighten using 1/2-inch box wrench, 1/2-inch socket, and handle.
22. Valve (2)	Elbow (6)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
23.	Elbow (7)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 7/8-inch wrench.
24.	Reducer (8)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/16-inch wrench.
25. Reducer (8)	Stoplight switch (9)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/4-inch wrench.
26. Two elbows (6) and (7)	Two inserts (10)	a. Push in and using plastic hammer, seat. b. Take bracket (1) out of vise.
<b>INSTALLATION</b>		
27. Trailer connector bracket (11)	Valve (2) and bracket (1)	Place in position.

**TOWING KIT QUICK RELEASE VALVE - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
28. Bracket (1) to trailer connector bracket (11)	Two screws (12), new lockwashers (13), and nuts (14)	Screw on and tighten using 7/16-inch box wrench, 7/16-inch socket, and handle.
29. Elbow (6)	Air line 653B (15)	Lube end with soap and push in until seated.
30. Air line 653B (15) to elbow (6)	Nut (16)	Screw on and tighten using 5/8-inch wrench.
31. Elbow (7)	Air line 653 (17)	Lube end lightly with soap and push in until seated.
32. Air line 653 (17) to elbow (7)	Nut (18)	Screw on and tighten using 5/8-inch wrench.
33. Stoplight switch (9)	Two wires (19)	Put on.
34. Two wires (19) and to stoplight switch (9)	Two new lockwashers (20) and nuts (21)	Screw on and tighten using 1 1/32-inch wrench.



TA240530

**TOWING KIT QUICK RELEASE VALVE - CONTINUED**

INSTALLATION – CONTINUED

**NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

**GLADHAND SEAL**

---

This task covers:

- a. Removal (page 4-834)
  - b. Installation (page 4-835)
- 

**INITIAL SETUP**

Tools	Personnel Required
-------	--------------------

Screwdriver, flat-tip, 3/16-inch	One
----------------------------------	-----

Materials/Parts

Seal, gladhand  
 Soap, liquid (item 14, appendix C)

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LOCATION	ITEM	ACTION REMARKS
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**REMOVAL**

**WARNING**

**Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.**

**NOTE**

**Except as noted, the steps in this task are the same for all four tow kit gladhand seals and both trailer gladhand seals. Left front towing kit gladhand is shown.**

- |    |            |                           |
|----|------------|---------------------------|
| 1. | Air system | Drain (TM 9-2320-270-10). |
|----|------------|---------------------------|

**NOTE**

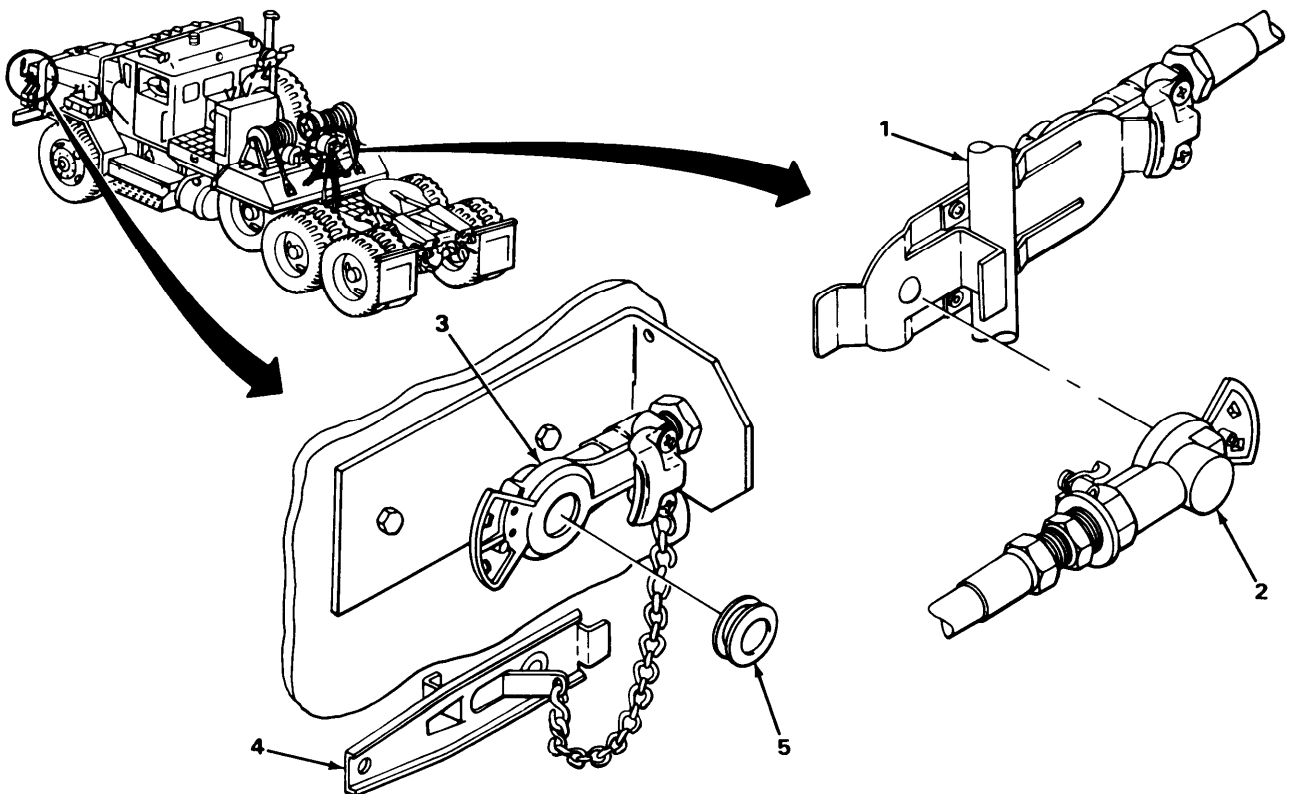
**For tow kit gladhand, do steps 2 and 6 and for trailer gladhand, do steps 3 and 7. Do steps 4 and 5 for both.**

GLADHAND SEAL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
2. Hose support (1)	Gladhand (2)	Push up and take off.	
3. Gladhand (3)	Dummy coupling (4)	Push up and take off.	<b>For rear tow kit coupling, push left.</b>
4. Gladhand (2) or (3)	Seal (5)	a. Using screwdriver, collapse seal and pry out. b. Get rid of.	

INSTALLATION

- |                     |                    |   |
|---------------------|--------------------|---|
| 5.                  | New seal (5)       | a. Push in.<br>b. Pry into place using screwdriver.<br><b>If necessary, lube lightly with soap.</b> |
| 6. Gladhand (3)     | Dummy coupling (4) | Hook on and push down to lock.<br><b>Push right on rear gladhand.</b>                               |
| 7. Hose support (1) | Gladhand (2)       | Hook on and push down to lock.  |



TASK ENDS HERE

## DUMMY COUPLINGS AND CHAINS

---

This task covers:

- a. Removal (page 4-836)
  - b. Installation (page 4-837)
- 

### INITIAL SETUP

Tools	Personnel Required
Pliers, long-nose, round Pliers, slip-joint, angle-nose	One

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LOCATION	ITEM	ACTION REMARKS
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### REMOVAL

**WARNING**

**Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.**

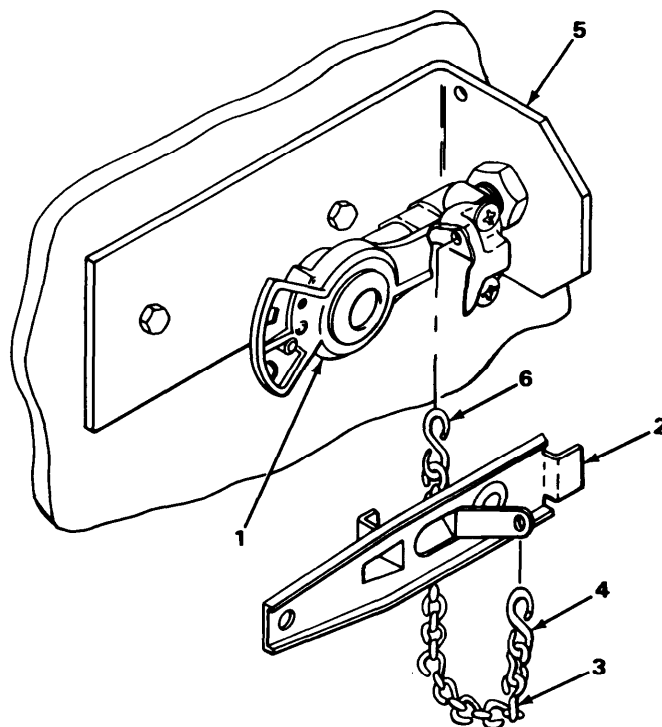
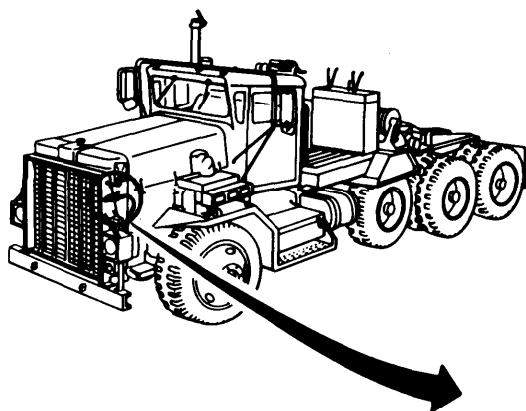
**NOTE**

**Steps in this task are same for all four towing kit dummy couplings. Left front coupling is shown.**

1.	Air system	Drain (TM 9-2320-270-10).
2.	Gladhand (1)	Dummy coupling (2) Push up and take off.
3.	Dummy coupling (2) to chain (3)	S-hook (4) Using long-nose and slip-joint pliers, spread open outer end.
4.	S-hook (4)	Dummy coupling (2) Take off.
5.	Chain (3)	S-hook (4) a. Using long-nose and slip-joint pliers, spread open inner end. b. Take off.
6.	Chain (3) to bracket (5)	S-hook (6) Using long-nose and slip-joint pliers, spread open inner end.
7.	Bracket (5)	Chain (3) Take off.
8.	Chain (3)	S-hook (6) a. Using long-nose and slip-joint pliers, spread open outer end. b. Take off.

**DUMMY COUPLINGS AND CHAINS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION</b>		
9. Chain (3)	Two S-hooks (4) and (6)	a. Hook onto ends. b. Using slip-joint pliers, squeeze ends closed. Leave ends of S-hooks and away from chain open.
10. Bracket (5)	S-hook (6)	a. Hook on. b. Using slip-joint pliers, squeeze closed.
11. S-hook (4)	Dummy coupling (2)	a. Hook on. b. Using slip-joint pliers, squeeze closed.
12. Gladhand (1)	Dummy coupling (2)	a. Hook on. b. Push down and lock.



**TASK ENDS HERE**

## TOWING KIT GLADHANDS

---

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-838)     | d. Inspection/Replacement (page 4-840) |
| b. Disassembly (page 4-840) | e. Assembly (page 4-840)               |
| c. Cleaning (page 4-840)    | f. Installation (page 4-840)           |
- 

### INITIAL SETUP

**Tools**

- Hammer, plastic
- Handle, ratchet, 3/8-inch drive
- Pliers, long-nose, round
- Pliers, slip-joint, angle-nose
- Socket, 1/2-inch, 3/8-inch drive
- Vise
- Wrench, box, 1/2-inch
- Wrench, open-end, 5/8-inch
- Wrench, open-end, 1/2-inch
- Wrench, open-end, 1 1/4-inch
- Wrench, open-end, 1 1/2-inch

**Materials/Parts**

- Lockwasher, anchor stud to gladhand bracket
- Lockwasher, gladhand bracket to grille guard or rear frame crossmember (two required)
- Soap, liquid (item 14, appendix C)
- Tape, teflon (item 22, appendix C)

**Personnel Required**

One

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LOCATION	ITEM	ACTION	REMARKS
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### REMOVAL

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

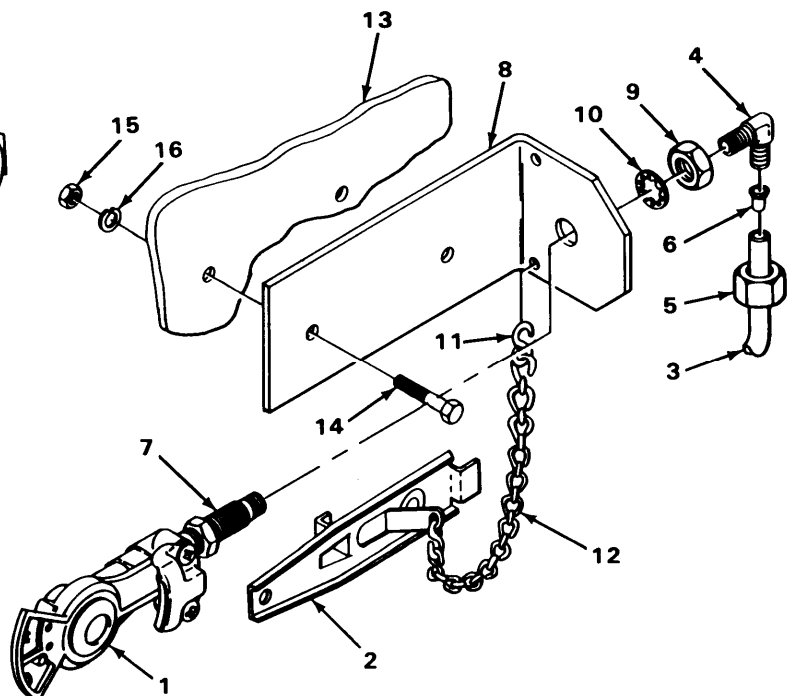
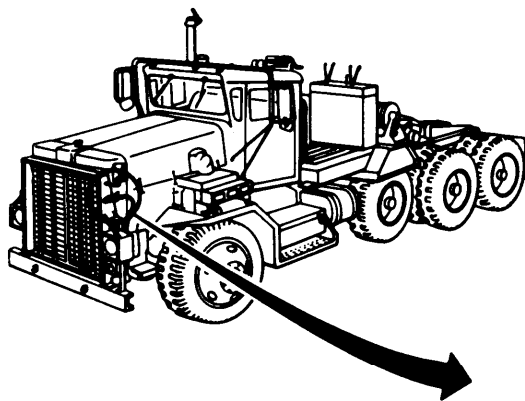
Except as noted, the steps in this task are the same for all four towing kit gladhands. The left front (service) gladhand is used as the example.

- |    |                           |  |
|----|---------------------------|--|
| 1. | Air system                | Drain (TM 9-2320-270-10).                              |
| 2. | Gladhand (1)              | Push up and take off.<br>On rear couplings push right. |
| 3. | Air line (3) to elbow (4) | Using 5/8-inch wrench, unscrew and pull back.          |
| 4. | Elbow (4)                 | Pull out.  |



**TOWING KIT GLADHANDS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
5. Air line (3) or elbow (4)	Insert (6)	Using long-nose pliers, pull out.
6. Anchor stud (7)	Elbow (4)	Using 1/2-inch open-end wrench, unscrew and take out.
7. Anchor stud (7) to bracket (8)	Nut (9) and lockwasher (10)	a. Using 1 1/4-inch and 1 1/2-inch wrenches, unscrew and take off. b. Get rid of lockwasher (10).
8. Bracket (8)	Anchor stud (7) and gladhand (1)	Take out.
9.	S-hook (11)	Using long-nose and slip-joint pliers, open.
10.	S-hook (11), chain (12), and dummy coupling (2)	Take off.
11. Bracket (8) to grille guard (13)	Two screws (14), nuts (15), lock- washers (16), and bracket (8)	a. Using 1/2-inch box wrench, socket, and handle, unscrew and take off. b. Get rid of lockwashers (16).



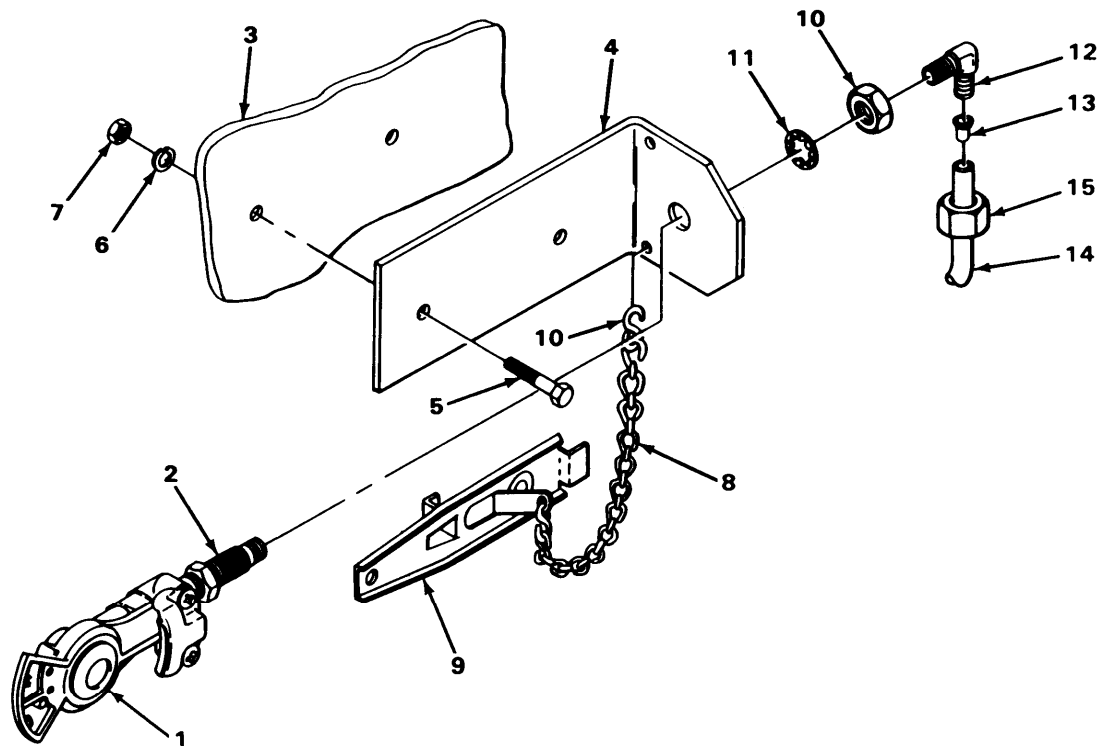
TA240533

**TOWING KIT GLADHANDS - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>DISASSEMBLY</b>		
12. Gladhand (1)	Anchor stud (2)	a. Secure gladhand (1) in vise across flats. b. Using 1 1/4-inch wrench, unscrew and take out. c. Take gladhand (1) out of vise.
<b>CLEANING</b>		
13.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>		
14.	All parts	Inspect according to general maintenance instructions (page 4-1).
<b>ASSEMBLY</b>		
15. Gladhand (1)	Anchor stud (2)	a. Secure gladhand (1) in vise across flats. b. Wrap threads with teflon tape (page 4-1). c. Screw in and tighten using 1 1/4-inch wrench. d. Take gladhand (1) out of vise.
<b>INSTALLATION</b>		
16. Grille guard (3)	Bracket (4)	Put in place and hold.
17. Bracket (4) to grille guard (3)	Two screws (5), new lockwashers (6), and nuts (7)	Screw on and tighten using 1/2-inch box wrench, socket, and handle.
18. Bracket (4)	Chain (8) and dummy coupling (9)	a. Hook S-hook (10) on. b. Using slip-joint pliers, close.
19. Bracket (4)	Anchor stud (2) and gladhand (1)	Put in place and hold.
20. Anchor stud (2) to bracket (4)	Nut (10) and new lockwasher(11)	Screw on and tighten using 1 1/4-inch and 1 1/2-inch wrenches.

TOWING KIT GLADHANDS - CONTINUED

LOCATION	ITEM	ACTION REMARKS
21. Anchor stud (2)	Elbow (12)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1/2-inch open-end wrench.
22. Elbow (12)	Insert (13)	Push in and using plastic hammer, seat.
23.	Air line (14)	Lube end lightly with soap and push in until seated.
24. Air line (14) to elbow (12)	Nut (15)	Screw on and tighten using 5/8-inch wrench.
25. Gladhand (1)	Dummy coupling (9)	Hook on and push down to lock.



**NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

TA240534

**AIR COMPRESSOR**

---

This task covers:

- a. Removal (page 4-842)
  - b. Disassembly (page 4-844)
  - c. Cleaning (page 4-846)
  - d. Inspection/Replacement (page 4-846)
  - e. Assembly (page 4-846)
  - f. Installation (page 4-847)
- 

**INITIAL SETUP**

**Tools**

- Extension, 5-inch, 1/2-inch drive
- Hammer, plastic
- Handle ratchet, 1/2-inch drive
- Pliers, long-nose, round
- Puller, jaw type
- Socket, 3/4-inch, 1/2-inch drive
- Socket, 1 1/8-inch, 1/2-inch drive
- Wrench, box, 3/4-inch
- Wrench, open-end, 7/16-inch
- Wrench, open-end, 9/16-inch
- Wrench, open-end, 5/8-inch
- Wrench, open-end, 7/8-inch
- Wrench, open-end, 15/16-inch
- Wrench, open-end, 1 1/4-inch
- Wrench, open-end, 1 1/8-inch
- Wrench, torque, 1/2-inch drive

**Materials/Parts**

- Cement, gasket (item 2, appendix C)
- Gasket, air compressor to engine

**Materials/Parts – Continued**

- Plugs, plastic shipping
- Rags, wiping (item 10, appendix C)
- Screw, cap, hexagon head, 1/2 – 13 inch by 3 3/8 to 4 inches long
- Soap, liquid (item 14, appendix C)
- Solvent, cleaning (item 16, appendix C)
- Tape, teflon (item 22, appendix C)

**Personnel Required**

One

**Equipment Condition**

- Right side of hood open and hood side removed (TM 9-2320-270-10).
  - Cooling system drained (TM 9-2320-270-10).
  - Transmission depstick removed (page 4-542).
  - Air compressor governor removed (page 4-851).
  - Engine right breather hose removed (page 4-18).
  - Alternator drive belts removed (page 4-223).
- 

LOCATION	ITEM	ACTION	REMARKS
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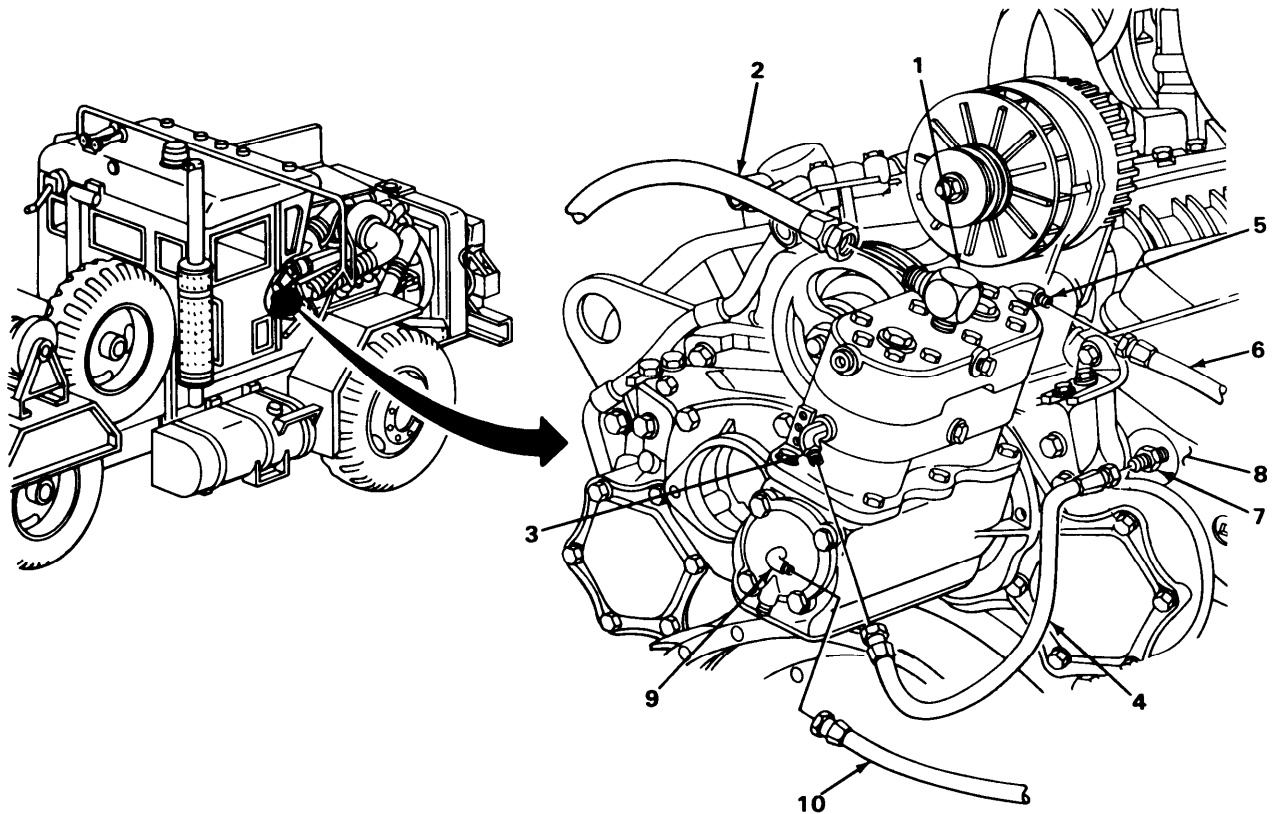
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**REMOVAL**

- |              |              |  |   |
|--------------|--------------|--|---|
| 1. Elbow (1) | Air hose (2) |  | Using 1 1/8-inch and 1 1/4-inch wrenches, unscrew and take off. |
|--------------|--------------|--|---|

**AIR COMPRESSOR - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
2. Elbow (3)	Water outlet hose (4)	Using 15/16-inch and 7/8-inch wrenches, unscrew and take off.
3. Elbow (5)	Water inlet hose (6)	Using 15/16-inch and 7/8-inch wrenches, unscrew and take off.
4. Adapter (7) on engine (8)	Water outlet hose (4)	Using 15/16-inch and 7/8-inch wrenches, unscrew and take out.
5. Elbow (9)	Oil hose (10)	Using 5/8-inch and 9/16-inch wrenches, unscrew and take off.



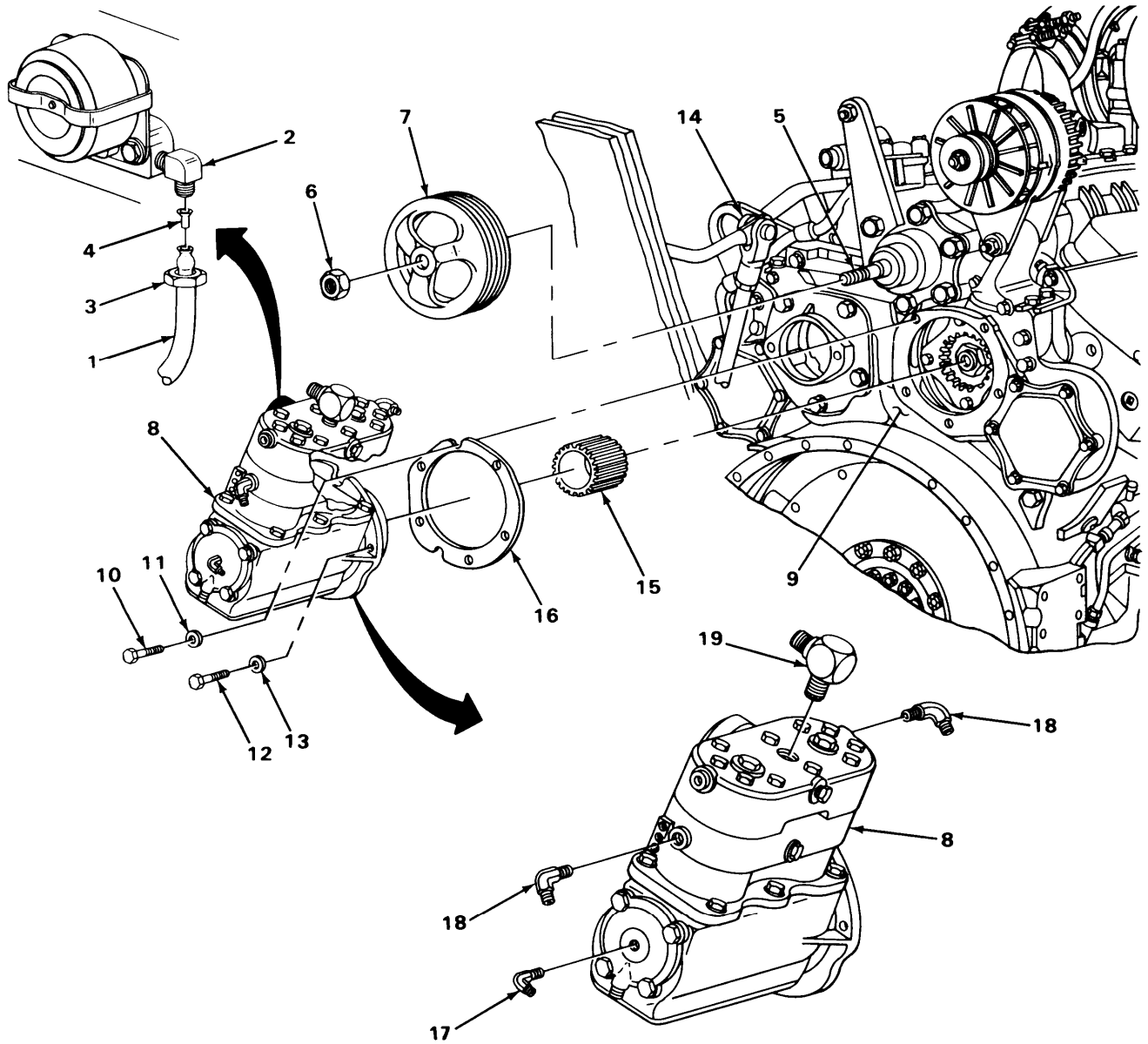
## AIR COMPRESSOR - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL - CONTINUED</b>		
6. Alcohol line (1) to elbow (2)	Nut (3)	Using 9/16-inch wrench, unscrew and pull back.
7. Elbow (2)	Alcohol line (1)	Pull out.
8. Alcohol line (1) or elbow (2)	insert (4)	Using long nose pliers, pull out.
9. Shaft (5)	Nut (6)	Using 1 1/8-inch socket and handle, unscrew and take off.
10.	Drive pulley (7)	Using puller, pull off.
11. Compressor (8) to engine (9)	Screw (10) and washer (11)	Using 3/4-inch box wrench, unscrew and pull out as far as possible.
12.	Three screws (12) and washers (13)	Using 3/4-inch socket, handle, and extension, unscrew and take out.
13. Engine (9)	Compressor (8)	a. Pull out slightly. b. Take out screw (10). c. Turn toward center of truck to clear retarder control rod (14) and lift out.
14. Compressor (8) or engine (9)	Drive coupling (15)	Take out.
15.	Gasket (16)	Take out.
<b>DISASSEMBLY</b>		
16. Compressor (8)	Air compressor air strainer assembly	Remove (page 4-855).
17.	Elbow (17)	Using 7/16-inch wrench, unscrew and take out.
18.	Two elbows (18)	Using 5/8-inch wrench, unscrew and take out.

AIR COMPRESSOR - CONTINUED

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

- |     |                     |  |
|-----|---------------------|--|
| 19. | Air hose elbow (19) | Using 1 1/8-inch wrench, unscrew and take out. |
|-----|---------------------|--|



**AIR COMPRESSOR - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
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**CLEANING**

**WARNING**

**Drycleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat. The flashpoint is 100°F to 138°F (38° to 59°C). If you become dizzy while using cleaning solvent, get fresh air immediately and get medical aid. If contact with eyes is made, wash your eyes with water and get medical aid immediately.**

20.	Compressor (1)	a. Plug all water, air, and oil holes. b. Using clean rags dampened with dry-cleaning solvent, wipe clean. c. Wipe dry with clean, dry rags. d. Remove plugs.
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**CLEANING**

21.	All other parts	Clean according to general maintenance instructions (page 4-1).
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**INSPECTION/REPLACEMENT**

22.	All parts	Inspect according to general maintenance instructions (page 4-1).
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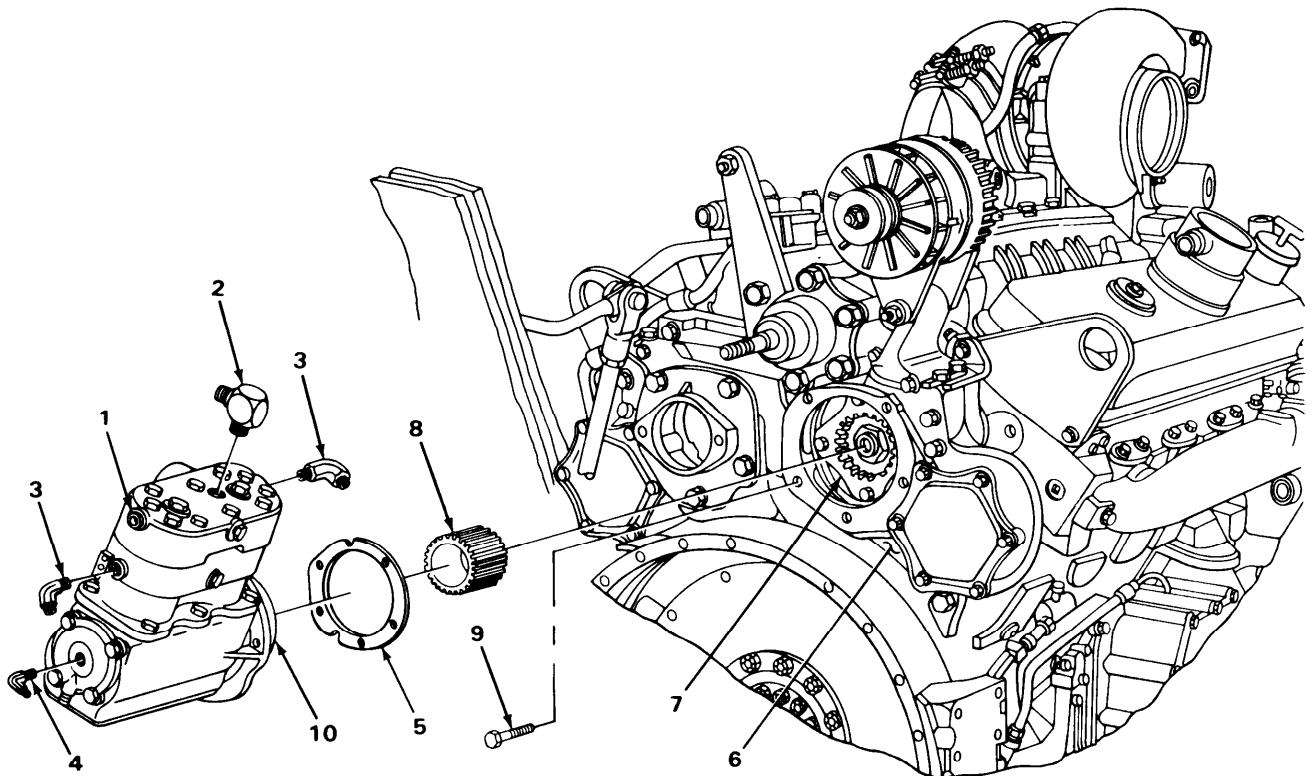
**ASSEMBLY**

23. Compressor (1)	Elbow (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 1 1/8-inch wrench.
24.	Two elbows (3)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
25.	Elbow (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 7/16-inch wrench.
26.	Air compressor air strainer assembly	Install (page 4-855).



**AIR COMPRESSOR - CONTINUED**

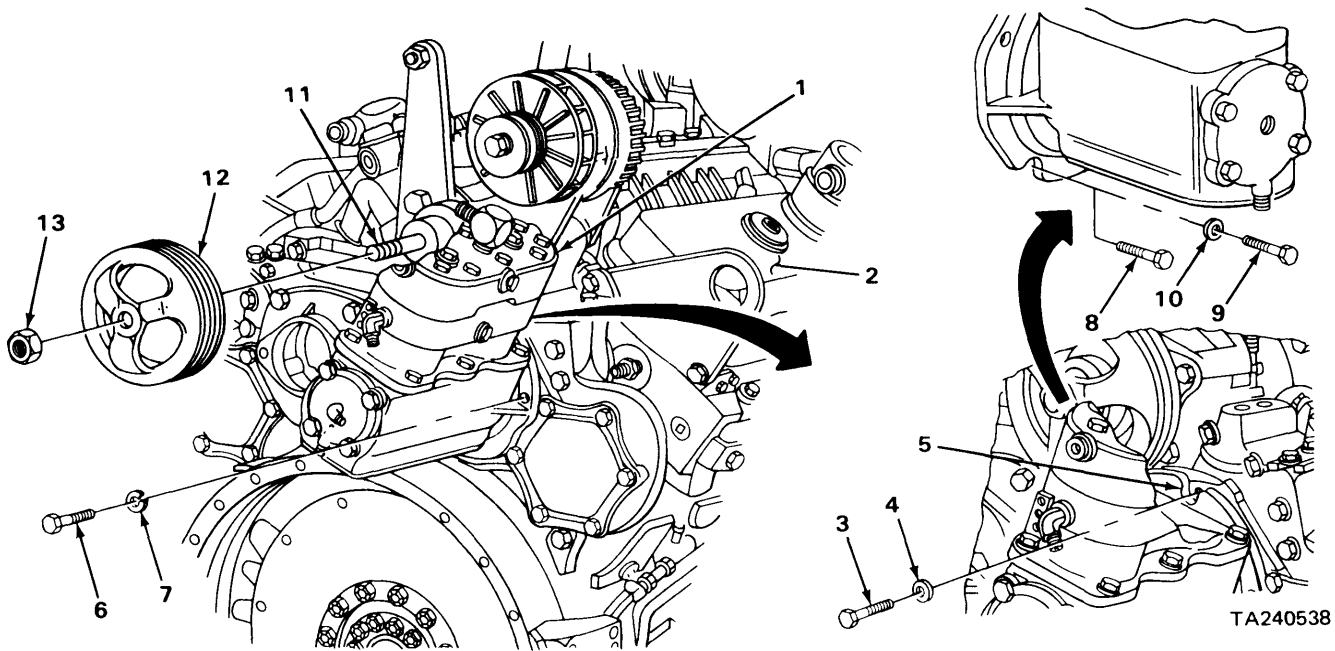
LOCATION	ITEM	ACTION REMARKS
27.	New gasket (5)	Apply gasket cement and put on.
<b>INSTALLATION</b>		
28. Engine (6) to drive plate (7)	Drive coupling (8)	Line up teeth and slide in.
29. Engine (6)	Long screw (9)	Screw into lower left mounting hole.
30. Long screw (9)	Compressor (1)	a. Put in position. b. Pull up until coupling (8) and drive hub (10) line up.
31. Compressor (1) to coupling (8)	Drive hub (10)	Push compressor (1) toward engine (6) and rotate hub (10) until teeth aline and hub (10) slips over coupling (8).



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**AIR COMPRESSOR - CONTINUED**

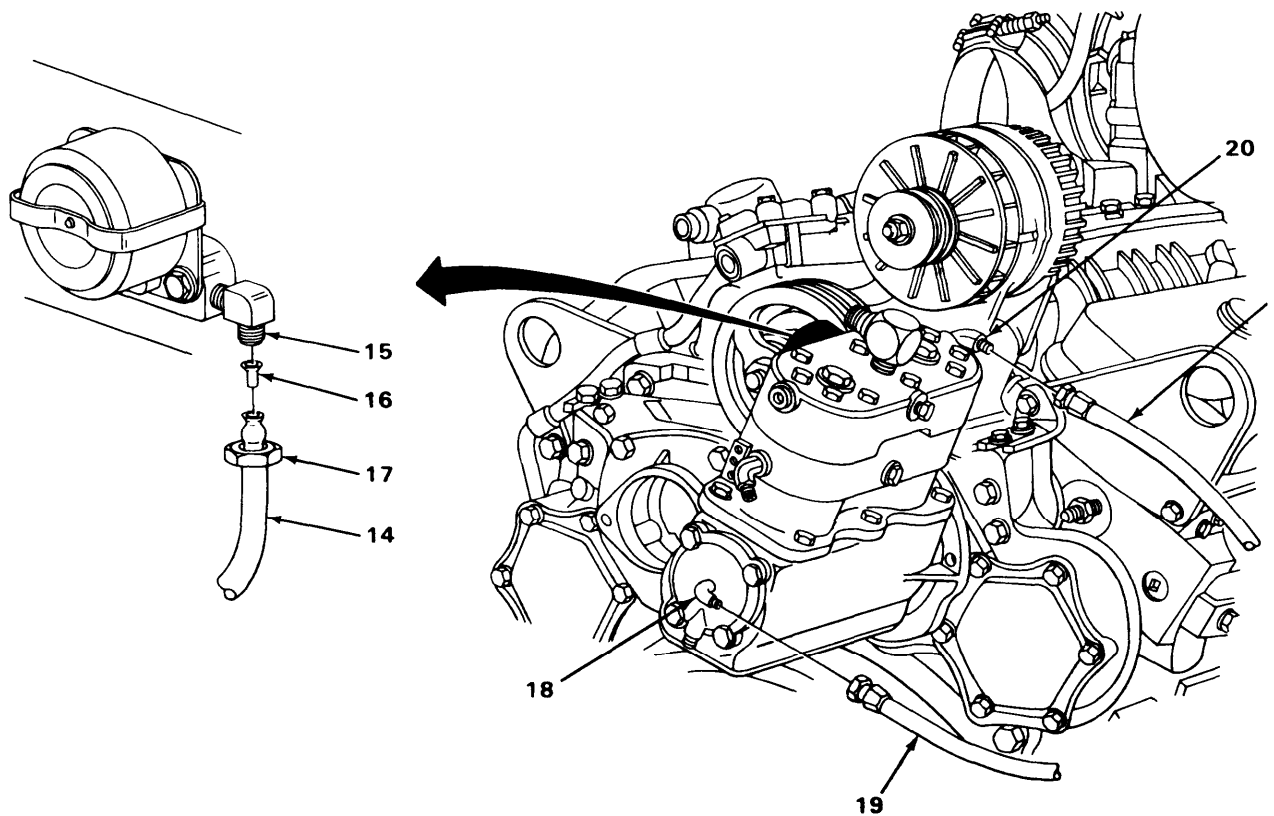
LOCATION	ITEM	ACTION	REMARKS
<b>INSTALLATION – CONTINUED</b>			
32. Compressor (1) to engine (2)	Screw (3) and washer (4)	Screw in to slotted hole (5) part way.	
33. Engine (2)	Compressor (1)	Push firmly into place.	
34. Compressor (1) to engine (2)	Two screws (6) and lockwashers (7)	Screw in but do not tighten using 3/4- inch socket and handle.	
35.	Screw (3)	Screw in but do not tighten using 3/4- inch box wrench.	
36.	Long screw (8)	Unscrew and take out.	
37.	Screw (9) and washer (10)	Screw in but do not tighten using 3/4- inch box wrench.	
38.	Three screws (6) and (9)	Using 3/4-inch socket, extension, and torque wrench, tighten to 75 foot pounds (101.7 N•m).	
39.	Screw (3)	Using 3/4-inch wrench, tighten.	
40. Shaft (11)	Drive pulley (12) and nut (13)	a. Using plastic-face hammer, tap pulley (12) in place. b. Screw on nut (13) and tighten using 1 1/8-inch socket and handle.	



TA240538

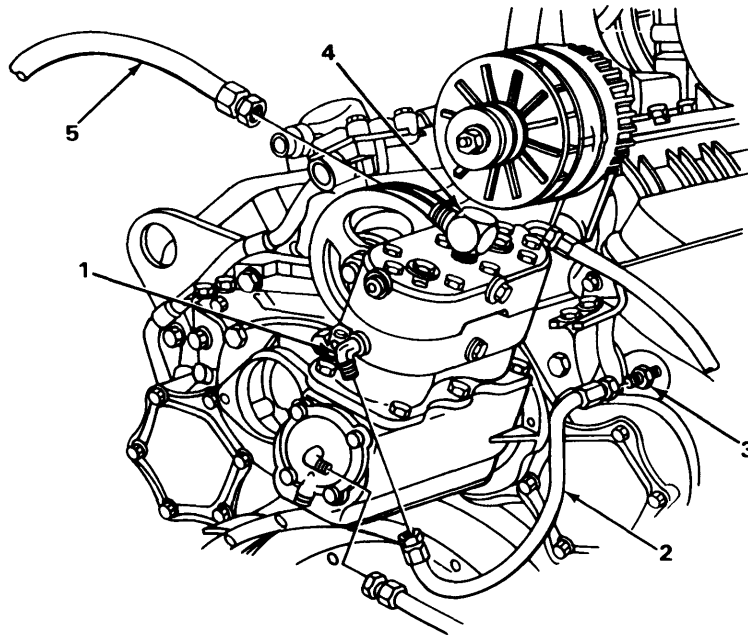
**AIR COMPRESSOR - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
41. Alcohol line (14) to elbow (15)	Insert (16)	Push in and using plastic hammer, seat.
42.	Alcohol line (14)	Lube end lightly with soap and push in until seated.
43. Alcohol line (14) to elbow (15)	Nut (17)	Screw on and tighten using 9/16-inch wrench.
44. Elbow (18)	Oil hose (19)	Screw on and tighten using 5/8-inch and 9/16-inch wrenches.
45. Elbow (20)	Water inlet hose (21)	Screw on and tighten using 15/16-inch and 7/8-inch wrenches.



**AIR COMPRESSOR - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION - CONTINUED			
46. Elbow (1)	Water outlet hose (2)	Screw on and tighten using 15/16-inch and 7/8-inch wrenches.	
47. Adapter (3)	Water outlet hose (2)	Screw on and tighten using 15/16-inch and 7/8-inch wrenches.	
46. Elbow (4)	Air hose (5)	Screw on and tighten using 1 1/8-inch 1 1/4-inch wrenches.	



**NOTE**

FOLLOW-ON MAINTENANCE:

1. Check for leaks (page 4-1).
2. Install air compressor governor (page 4-851).
3. Install transmission dipstick (page 4-542).
4. Install engine right breather hose (page 4-18).
5. Install alternator drive belts (page 4-223).
6. Fill cooling system (TM 9-2320-270-10).
7. Close right side of hood and install right hood side panel (TM 9-2320-270-10).

**TASK ENDS HERE**

TA240540

## AIR COMPRESSOR GOVERNOR

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This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-852)     | d. Inspection/Replacement (page 4-853) |
| b. Disassembly (page 4-853) | e. Assembly (page 4-853)               |
| c. Cleaning (page 4-853)    | f. Installation (page 4-854)           |
- 

### INITIAL SETUP

#### Tools

Key, socket head screw, 3/16-inch  
 Wrench, box, 1/2-inch  
 Wrench, open-end, 7/16-inch  
 Wrench, open-end, 9/16-inch  
 Wrench, open-end, 5/8-inch

#### Materials/Parts

Gasket, governor to compressor  
 (two required)

#### Materials/Parts – Continued

Tape, teflon (item 22, appendix C)

#### Personnel Required

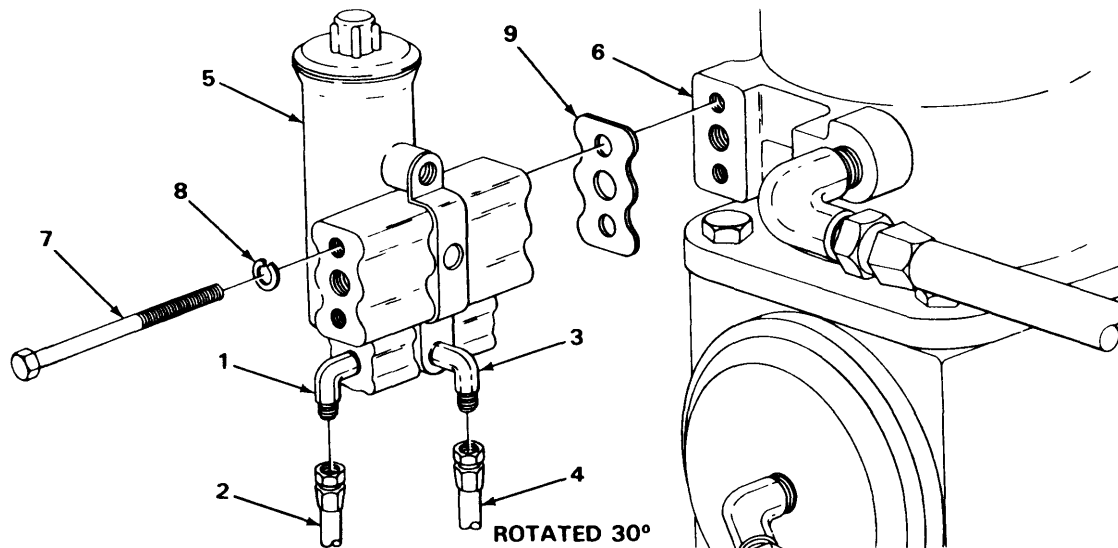
One

#### Equipment Condition

Right side of hood open and right hood side panel removed (TM 9-2320-270-10).

**AIR COMPRESSOR GOVERNOR - CONTINUED**

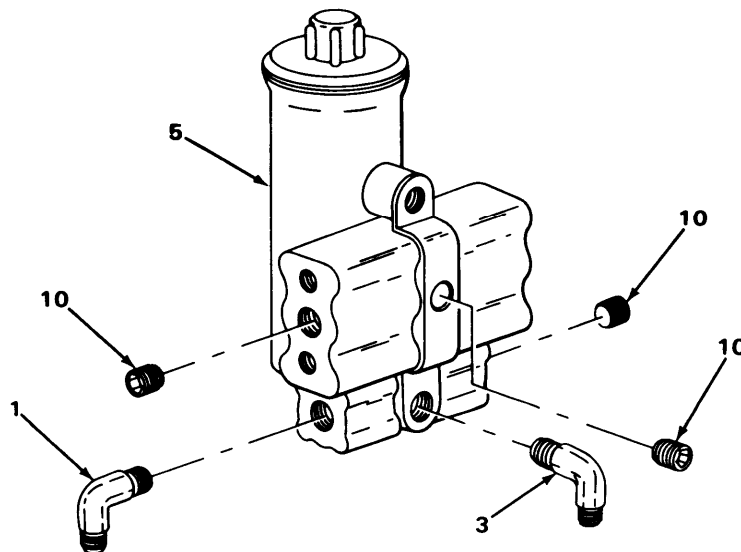
LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL</b>		
<b><u>WARNING</u></b>		
<b>Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.</b>		
1.	Air system	Drain (TM 9-2320-270-10).
2. Elbow (1)	Air hose 159 (2)	Using 5/8-inch and 9/16-inch wrenches, unscrew and take off.
3. Elbow (3)	Fan clutch air hose 758 (4)	Using 5/8-inch and 9/16-inch wrenches, unscrew and take off.
4. Governor (5) to compressor (6)	Two screws (7) and lockwashers (8)	a. Using 1/2-inch wrench, unscrew and take out. b. Get rid of lockwashers (8).
5. Compressor(6)	Governor (5)	Take off.
6. Compressor (6) or governor (5)	Gasket (9)	a. Take off. b. Get rid of.



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**AIR COMPRESSOR GOVERNOR - CONTINUED**

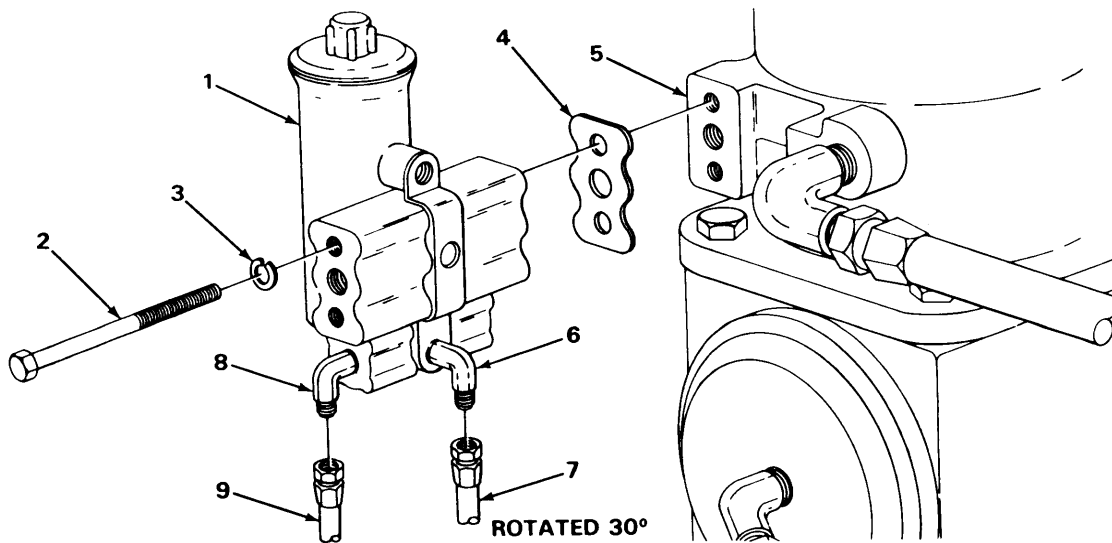
LOCATION	ITEM	ACTION REMARKS
<b>DISASSEMBLY</b>		
7. Governor (5)	Two elbows (1) and (3)	Using 7/16-inch wrench, unscrew and take out.
8.	Three plugs (10)	Using 3/16-inch socket head screw key, unscrew and take out.
<b>CLEANING</b>		
9.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>		
10.	All parts	Inspect according to general maintenance instructions (page 4-1).
<b>ASSEMBLY</b>		
11. Governor (5)	Three plugs (10)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/16-inch socket head screw key.
12.	Two elbows (1) and (3)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 7/16-inch wrench.



TA240542

**AIR COMPRESSOR GOVERNOR - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
<b>INSTALLATION</b>			
13. Governor (1)	Two screws (2) and new lockwashers (3)	Put through.	
14.	New gasket (4)	Put on.	
15. Compressor (5)	Governor (1)	Place in position.	
16. Governor (1) to compressor (5)	Two screws (2) and lockwashers (3)	Screw in and tighten using 1/2-inch wrench.	
17. Elbow (6)	Fan clutch hose 758 (7)	Screw on and tighten using 5/8-inch and 9/16-inch wrenches.	
18. Elbow (8)	Air hose 159 (9)	Screw on and tighten using 5/8-inch and wrenches.	



**NOTE**

**FOLLOW-ON MAINTENANCE:**

1. Check operation (TM 9-2320-270-10).
2. Install right hood side panel and close right side of hood (TM 9-2320-270-10).

**TASK ENDS HERE**



## AIR COMPRESSOR AIR STRAINER ASSEMBLY

---

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-856)     | d. installation/Replacement (page 4-856) |
| b. Disassembly (page 4-856) | e. Assembly (page 4-856)                 |
| c. Cleaning (page 4-856)    | f. Installation (page 4-857)             |
- 

### INITIAL SETUP

#### Tools

Hammer, plastic  
 Pliers, long-nose round  
 Vise  
 Wrench, box, 1/2-inch  
 Wrench, open-end, 1/2-inch  
 Wrench, open-end, 9/16-inch

#### Materials/Parts

Gasket, adapter to compressor  
 Gasket, air strainer base to adapter  
 Lockwasher, air strainer base and  
 adapter to compressor

#### Materials/Parts – Continued

Soap, liquid (item 14, appendix C)  
 Tape, teflon (item 22, appendix C)

#### Personnel Required

One

#### Equipment Condition

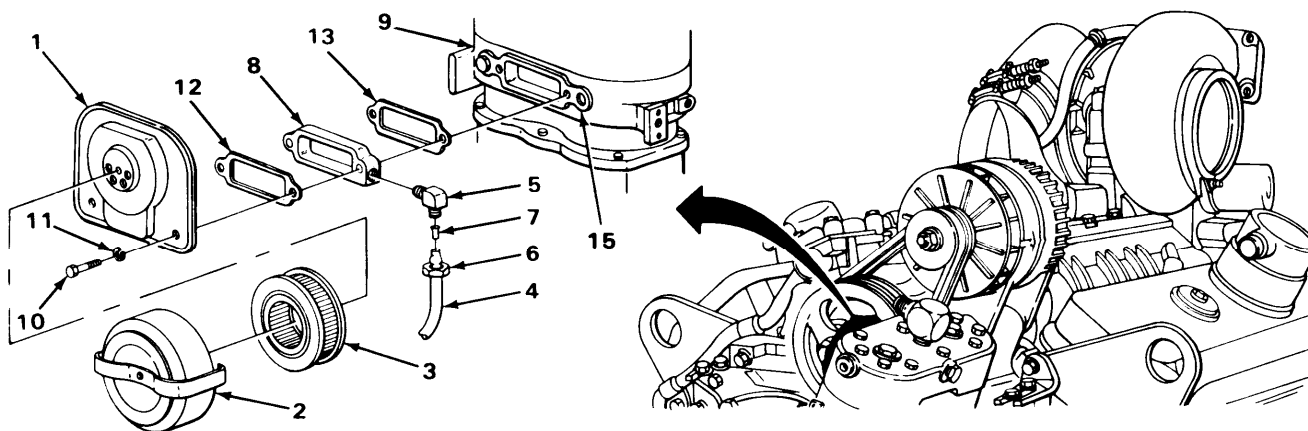
Right side of hood open and right hood side  
 panel removed (TM 9-2320-270-10).

**AIR COMPRESSOR AIR STRAINER ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL</b>		
1. Air strainer base (1)	Cap (2) and element (3)	Pull back spring tabs and take off.
2. Alcohol line (4) to elbow (5)	Nut (6)	Using 9/16-inch wrench, unscrew and pull back.
3. Elbow (5)	Alcohol line (4)	Pull out.
4. Alcohol line (4) or elbow (5)	Insert (7)	Using long-nose pliers, pull out.
5. Adapter (8) and base (1) to compressor (9)	Two screws (10) and lockwashers(11)	a. Using 1/2-inch box wrench, unscrew and take out. b. Get rid of lockwashers (11).
6. Compressor(9)	Base (1), gasket (12), adapter (8), and gasket (13)	Take off.
<b>DISASSEMBLY</b>		
7. Adapter(8)	Elbow (5)	a. Secure adapter (9) in vise. b. Using 1/2-inch open-end wrench, unscrew and take out. c. Take adapter (9) out of vise.
<b>CLEANING</b>		
8.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>		
9.	All parts	Inspect according to general maintenance instructions (page 4-1).
<b>ASSEMBLY</b>		
10. Adapter (8)	Elbow (5)	a. Secure adapter (8) in vise. b. Wrap threads with teflon tape (page 4-1). c. Screw in and tighten using 1/2-inch open-end wrench.

**AIR COMPRESSOR AIR STRAINER ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
11. Elbow (5)	Insert (3)	a. Push in and using plastic hammer, seat. b. Take adapter (8) out of vise.
<b>INSTALLATION</b>		
12. Two screws (10)	Two new lockwashers (11), base (1), gasket (12), adapter (8), and gasket (13)	Put on.
13. Compressor (9)	Two screws (10)	Screw in and tighten using 1/2-inch box wrench.
14. Elbow (5)	Alcohol line (4)	Lube end lightly with soap and push in until seated.
15. Alcohol line (4) to elbow (5)	Nut (6)	Screw on and tighten using 9/16-inch wrench.
16. Cap (2)	Element (3)	Put in and seat inside centering depression.
17. Base (1)	Cap (2) and element (3)	Put on.



## AIR COMPRESSOR AIR STRAINER ASSEMBLY - CONTINUED

### INSTALLATION – CONTINUED

#### NOTE

FOLLOW-ON MAINTENANCE:

1. Check operation (TM 9-2320-270-10).
2. Install right hood side panel and close right side of hood (TM 9-2320-270-10).

### TASK ENDS HERE

### ALCOHOL EVAPORATOR

---

This task covers:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>a. Removal (page 4-858)</li> <li>b. Disassembly (page 4-860)</li> <li>c. Cleaning (page 4-860)</li> </ul> | <ul style="list-style-type: none"> <li>d. Inspection/Replacement (page 4-860)</li> <li>e. Assembly (page 4-860)</li> <li>f. installation (page 4-862)</li> </ul> |
|--|--|
- 

### INITIAL SETUP

#### Tools

Extension, 5-inch, 3/8-inch drive  
 Hammer, plastic-face  
 Handle, ratchet, 3/8-inch drive  
 Pliers, long-nose, round  
 Socket, 7/16-inch, 3/8-inch drive  
 Wrench, box, 7/16-inch  
 Wrench, open-end, 9/16-inch (two required)

#### Materials/Parts

Gasket, cap

#### Materials/Parts – Continued

Lockwasher, alcohol evaporator to firewall (two required)  
 Soap, liquid (item 14, appendix C)

#### Personnel Required

Two

#### Equipment Condition

Right side of hood open and right hood side panel removed (TM 9-2320-270-10).

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LOCATION	ITEM	ACTION	REMARKS
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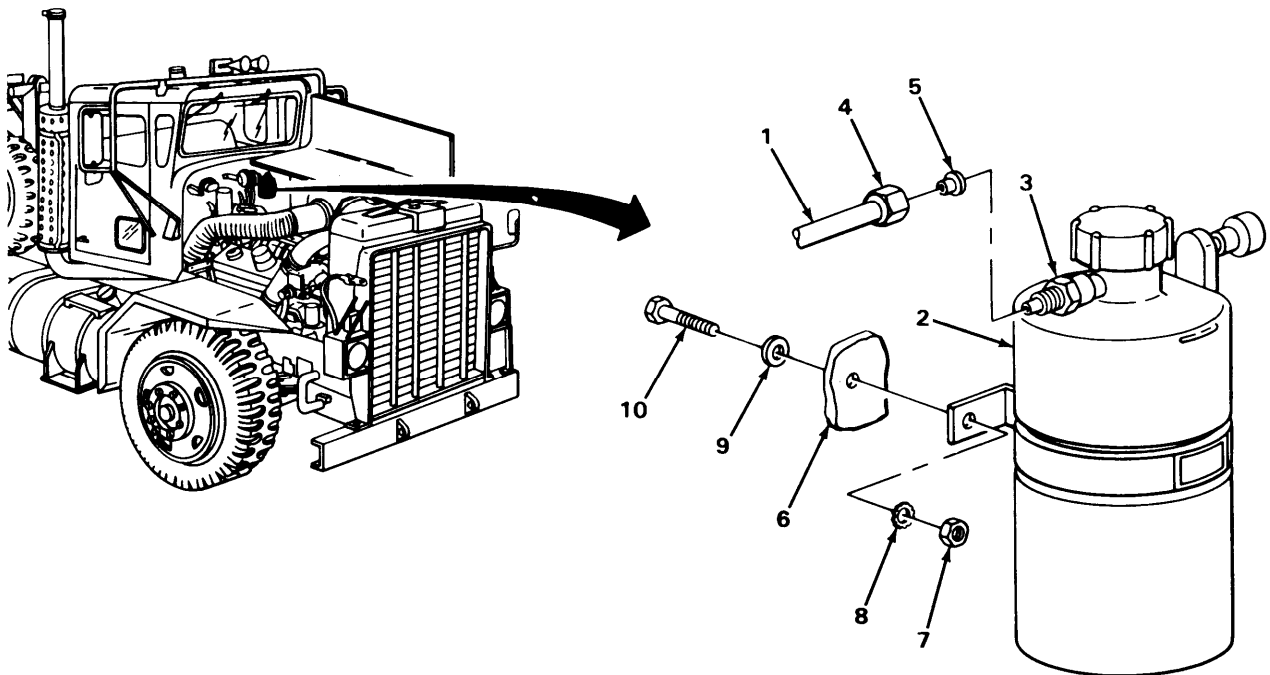
### REMOVAL

#### WARNING

**Methyl alcohol/methanol is toxic and burns easily. Fumes are explosive. Do not smoke or allow open flame nearby when using methyl alcohol/methanol. Do not drink methyl alcohol/methanol, it is extremely poisonous. If methyl alcohol/methanol is swallowed, get medical aid immediately.**

**ALCOHOL EVAPORATOR -CONTINUED**

LOCATION	ITEM	ACTION REMARKS
1. Alcohol line (1) to alcohol evaporator (2)	Nut (3)	Using two 9/16-inch wrenches, unscrew and pull back.
2. Adapter (4)	Alcohol line (1)	Pull out.
3. Alcohol line (1) or adapter (4)	Insert (5)	Using long-nose pliers, pull out.
4. Alcohol evaporator (2) to firewall (6)	Two nuts (7), lock- washers (8), washers (9), and screws (10)	a. With help from assistant and using 7/16-inch wrench, socket, extension, and handle, unscrew and take out. b. Get rid of lockwashers (8).
5.	Alcohol evaporator (2)	Take out.

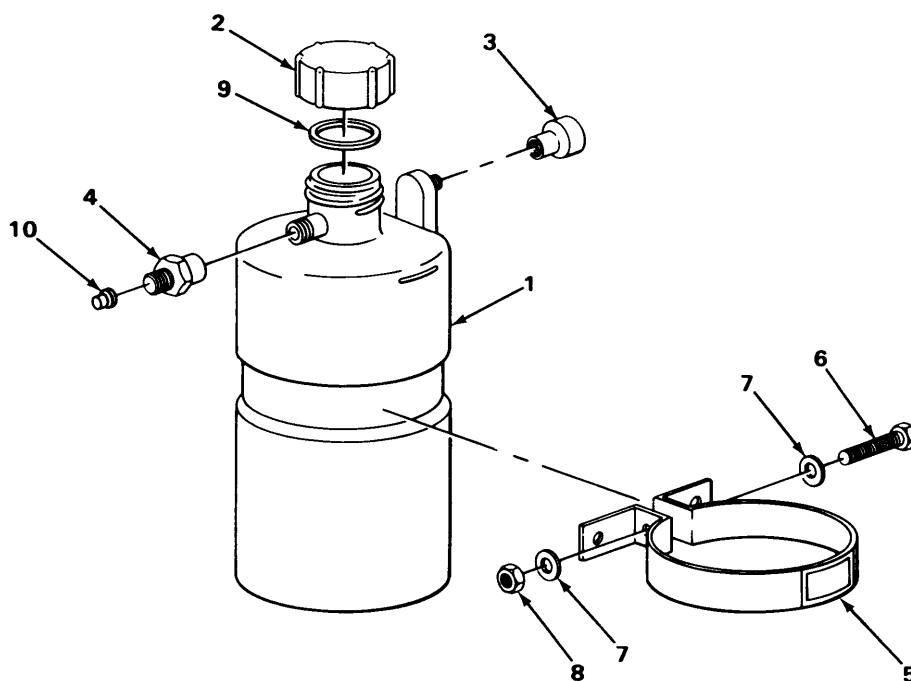


**ALCOHOL EVAPORATOR - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>DISASSEMBLY</b>		
<b><u>WARNING</u></b>		
<p><b>Methyl alcohol/methanol is toxic and burns easily. Fumes are explosive. Do not smoke or allow open flame nearby when using methyl alcohol/methanol. Do not drink methyl alcohol/methanol, it is extremely poisonous. If methyl alcohol/methanol is swallowed, get medical aid immediately.</b></p>		
6. Alcohol evaporator (1)	Cap (2)	a. Unscrew and take off. b. Get rid of fluid (page 4-1).
7.	Filter (3)	Unscrew and take off.
8.	Adapter (4)	Using 9/16-inch wrench, unscrew and take off.
9. Bracket (5)	Screw (6), two washers (7), and nut (8)	Using 7/16-inch wrench, socket, extension, and handle, unscrew and take out.
10. Alcohol evaporator (1)	Bracket (5)	Spread and take off.
11. Cap (2)	Gasket (9)	a. Take out. b. Get rid of.
<b>CLEANING</b>		
12.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>		
13.	All parts	Inspect according to general maintenance instructions (page 4-1).
<b>ASSEMBLY</b>		
14. Alcohol evaporator (1)	Bracket (5)	Place in position.
15. Bracket (5)	Screw (6), two washers (7), and nut (8)	Screw in and tighten using 7/16-inch wrench, socket, extension, and handle.

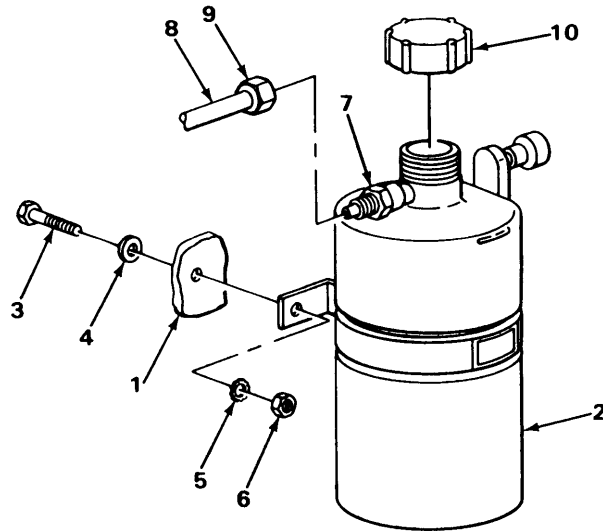
## ALCOHOL EVAPORATOR - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
16. Cap (2)	New gasket (9)	Put in.	
<b><u>CAUTION</u></b>			
<b>Do not overtighten adapter. You will strip plastic threads on evaporator.</b>			
17. Alcohol evaporator (1)	Adapter (4)	Screw on and tighten using 9/16-inch wrench.	
18. Adapter (4)	Insert (10)	Push in and using plastic hammer, seat.	
19. Alcohol evaporator (1)	Filter (3)	Screw on.	



**ALCOHOL EVAPORATOR - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION</b>		
20. Firewall (1)	Alcohol evaporator (2)	Place in position.
21. Alcohol evaporator (2) to firewall (1)	Two screws (3), washers (4), new lockwashers (5), and nuts (6)	With help from assistant, screw on and tighten using 7/16-inch wrench, socket, extension, and handle.
22. Adapter (7)	Alcohol line (8)	Lube end lightly with soap and push in until seated.
23. Alcohol line (8) to adapter (7)	Nut (9)	Screw onto adapter (7) and tighten using one 9/16-inch wrench to hold adapter and other 9/16-inch wrench to tighten nut.
24. Alcohol evaporator (2)	Cap (10)	Screw on and tighten.



**NOTE**

**FOLLOW-ON MAINTENANCE:**

1. Fill alcohol evaporator (TM 9-2320-270-10).
2. Install right hood side panel and close right side of hood (TM 9-2320-270-10).

**TASK ENDS HERE**

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## TRAILER BRAKE CONTROL VALVE

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This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-863)     | d. Inspection/Replacement (page 4-865) |
| b. Disassembly (page 4-865) | e. Assembly (page 4-866)               |
| c. Cleaning (page 4-865)    | f. Installation (page 4-866)           |
- 

### INITIAL SETUP

**Tools**

Hammer, machinist's ball-peen  
 Hammer, plastic  
 Pliers, long-nose, round  
 Punch, 5/32-inch  
 Wrench, adjustable, 0-to 3 5/8-inch  
 Wrench, open-end, 3/8-inch  
 Wrench, open-end, 9/16-inch  
 Wrench, open-end, 5/8-inch

**Materials/Parts**

Soap, liquid (item 14, appendix C)  
 Tag, marking (item 18, appendix C)  
 Tape, teflon (item 22, appendix C)

**Personnel Required**

**Equipment Condition**

Instrument panel open (page 4-244).

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LOCATION	ITEM	ACTION	REMARKS
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### REMOVAL

**WARNING**

**Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.**

- |    |            |                           |
|----|------------|---------------------------|
| 1. | Air system | Drain (TM 9-2320-270-10). |
|----|------------|---------------------------|

**TRAILER BRAKE CONTROL VALVE – CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL – CONTINUED</b>		
2. Knob (1) to trailer valve (2)	Pin (3)	Using punch and ball-peen hammer, drive out pin (3).
3. Trailer valve (2)	Knob (1)	Take off.
4. Trailer valve (2) to dashboard (4)	Nut (5)	Using adjustable wrench, unscrew and take off.
5.	Trailer brake valve (2)	Pull back enough to get access to connections.
6. Air line 661 (6) to elbow (7)	Nut (8)	Using 9/16-inch wrench, unscrew.

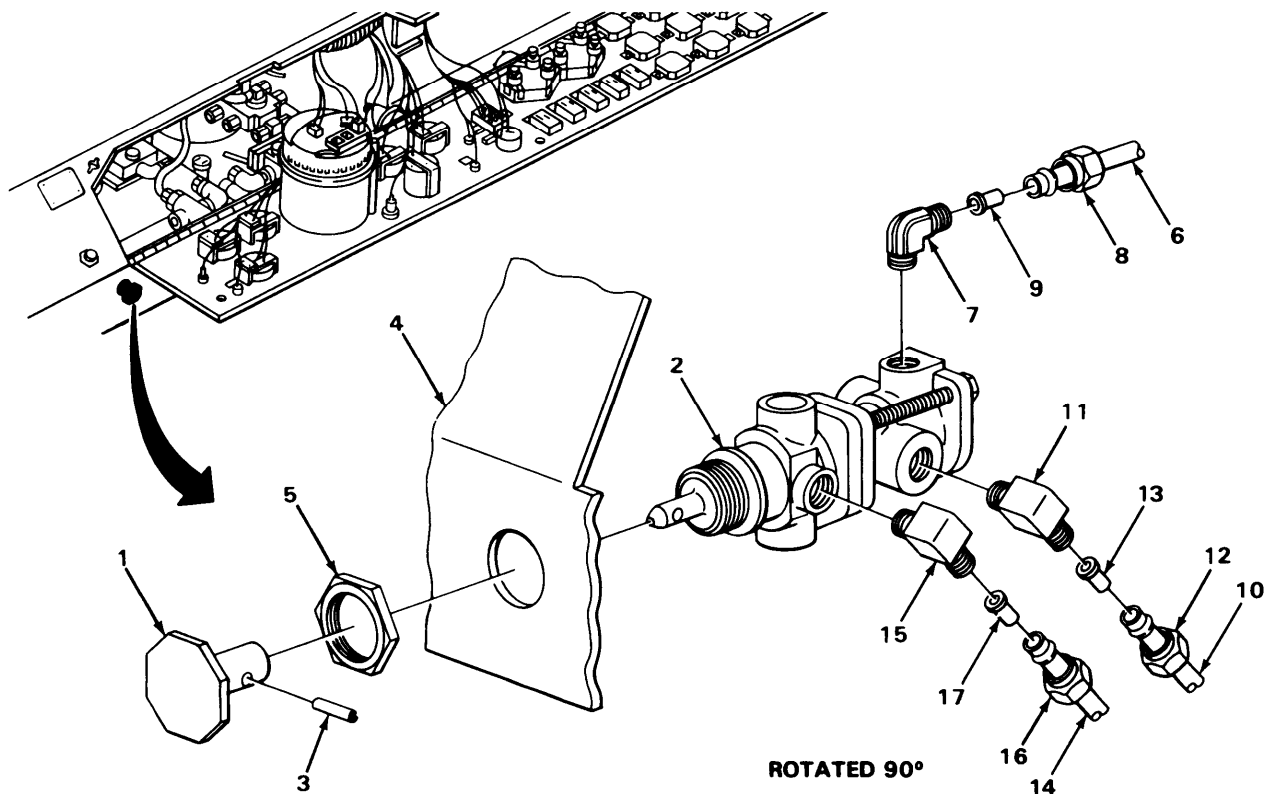
**NOTE**

**Tag lines according to general maintenance instructions (page 4-1).**

7. Elbow (7)	Air line 661 (6)	Pull out.
8. Air line 681 (6) or elbow (7)	Insert (9)	Using long-nose pliers, pull out.
9. Air line 662 (10) to elbow (11)	Nut (12)	Using 5/8-inch wrench, unscrew and pull back.
10. Elbow (11)	Air line 662 (10)	Pull out.
11. Air line 662 (10) or elbow (11)	Insert (13)	Using long-nose pliers, pull out.
12. Air line 57 (14) to elbow (15)	Nut (16)	Using 5/8-inch wrench, unscrew and pull back.
13. Elbow (15)	Airline 57(14)	Pull out.
14. Air line 57 (14) or elbow (15)	Insert (17)	Using long-nose pliers, pull out.
15.	Trailer brake valve (2)	Take out.

## TRAILER CONTROL VALVE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
<b>DISASSEMBLY</b>		
16. Trailer brake valve (1)	Elbow (15)	Using 9/16-inch wrench, unscrew and take off.
17.	Elbow (11)	Using 5/8-inch wrench, unscrew and take off.
18.	Elbow (7)	Using 3/8-inch wrench, unscrew and take off.
<b>CLEANING</b>		
19.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>		
20.	All parts	Inspect according to general maintenance instructions (page 4-1).

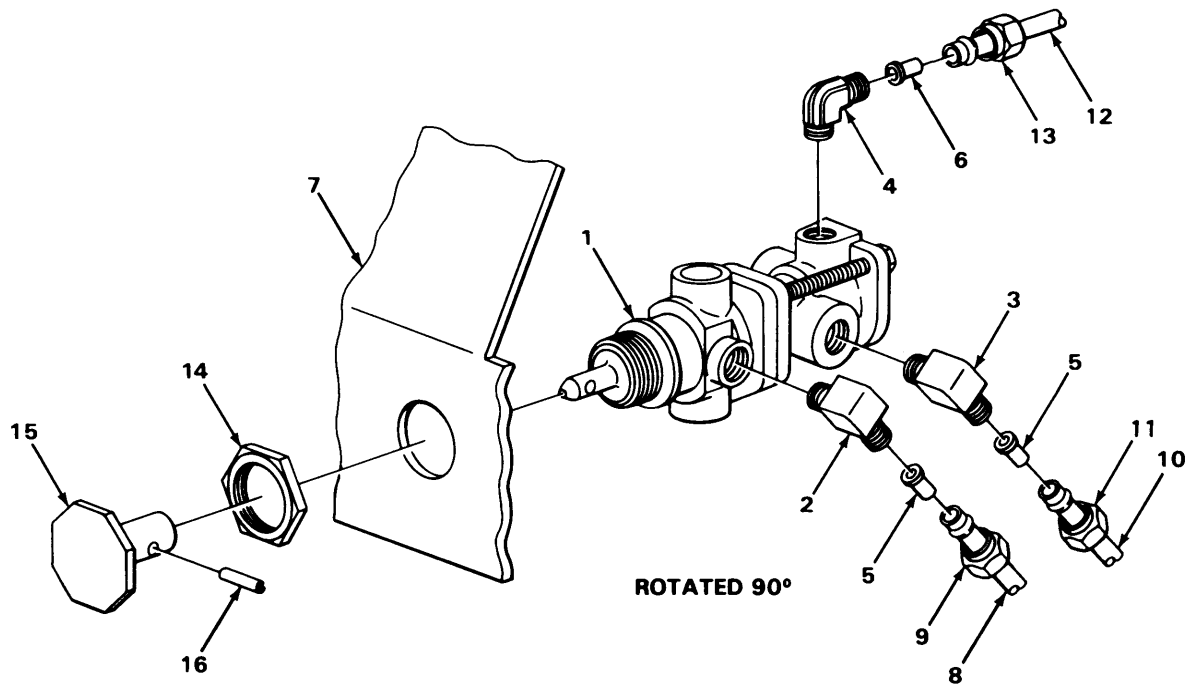


**TRAILER BRAKE CONTROL VALVE- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>ASSEMBLY</b>		
21. Trailer brake valve (1)	Elbow (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
22.	Elbow (3)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
23.	Elbow (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/8-inch wrench.
24. Elbows (2), (3), and (4)	Three inserts (5) and (6)	Push in and using plastic hammer, seat.
<b>INSTALLATION</b>		
25. Dashboard (7)	Trailer brake valve (1)	Place in position.
26. Elbow (2)	Air line 57 (8)	Lube end lightly with soap and push in until seated.
27. Air line 57 (8) to elbow (2)	Nut (9)	Screw on and tighten using 5/8-inch wrench.
28. Elbow (3)	Airline 662(10)	Lube end lightly with soap and push in until seated.
29. Air line 662 (10) to elbow (3)	Nut (11)	Screw on and tighten using 5/8-inch wrench.
30. Elbow (4)	Air line 661 (12)	Lube end lightly with soap and push in until seated.
31. Air line 661 (12) to elbow (4)	Nut (13)	Screw on and tighten using 9/16-inch wrench.
32. Dashboard (7)	Trailer brake valve (1)	Push into place.

**TRAILER BRAKE CONTROL VALVE- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
33. Trailer brake valve (1) to dashboard (7)	Nut (14)	Screw on and tighten, using adjustable wrench.
34. Trailer brake valve (1)	Knob (15)	Put on and lineup holes.
35. Knob (15) to trailer brake valve (1)	Pin (16)	Using punch and ball-peen hammer, drive in.
36.	Trailer brake valve connections	Check for leaks (page 4-1).



**TASK ENDS HERE**

**TRAILER BRAKE HAND CONTROL VALVE**

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This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-868)     | d. Inspection/Replacement (page 4-870) |
| b. Disassembly (page 4-869) | e. Assembly (page 4-870)               |
| c. Cleaning (page 4-870)    | f. Installation (page 4-870)           |
- 

**INITIAL SETUP**

<p>Tools</p> <p>Extension, 5-inch, 3/8-inch drive          Hammer, plastic          Handle, ratchet, 3/8-inch drive          Pliers, long-nose, round          Socket, 12-point, 3/8-inch, 3/8-inch drive          Wrench, open-end, 5/8-inch          Wrench, open-end, 9/16-inch</p>	<p>Materials/Parts</p> <p>Lockwasher, clamp screw (two required)          Soap, liquid (item 14, appendix C)          Tag, marking (item 18, appendix C)          Tape, teflon (item 22, appendix C)</p> <p>Personnel Required</p> <p>One</p>
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LOCATION	ITEM	ACTION	REMARKS
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**REMOVAL**

**WARNING**

**Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.**

**NOTE**

**Tag air lines according to general maintenance instructions (page 4-1).**

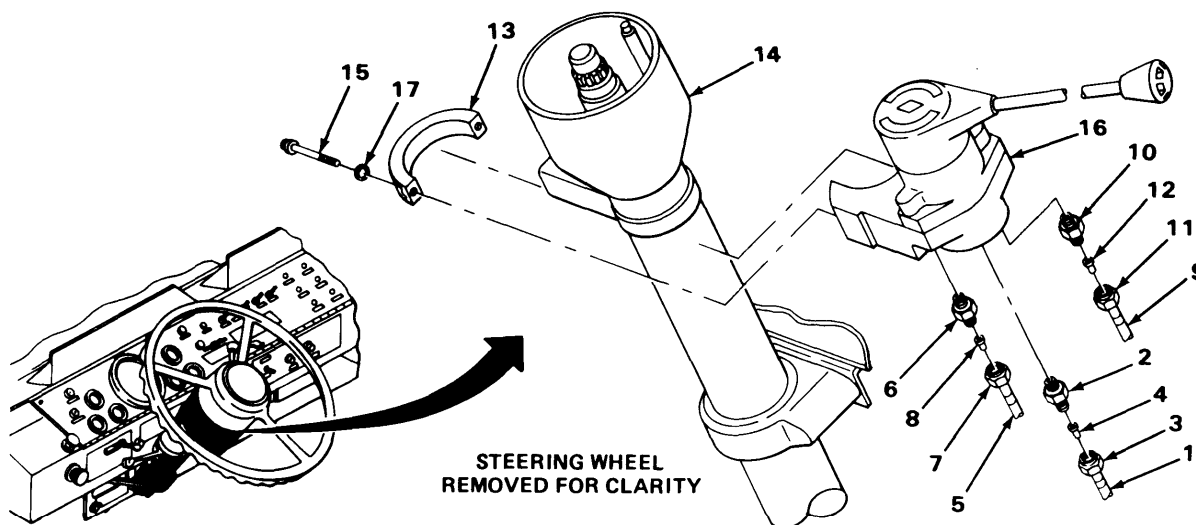
- |   |   |   |
|---|---|---|
| <p>1.</p> <p>2. Air line 027 (1)<br/>to adapter (2)</p> <p>3. Adapter (2)</p> <p>4. Air line 027 (1)<br/>or adapter (2)</p> <p>5. Air line 663 (5)<br/>to adapter (6)</p> <p>6. Adapter (6)</p> | <p>Air system</p> <p>Nut (3)</p> <p>Air line 027 (1)</p> <p>Insert (4)</p> <p>Nut (7)</p> <p>Air line 663 (5)</p> | <p>Drain (TM 9-2320-270-10).</p> <p>Using 5/8-inch wrench, unscrew and pull back.</p> <p>Pull out.</p> <p>Using long-nose pliers, pull out.</p> <p>Using 5/8-inch wrench, unscrew and pull back.</p> <p>Pull out.</p> |
|---|---|---|

**TRAILER BRAKE HAND CONTROL VALVE - CONTINUED**

	LOCATION	ITEM	ACTION REMARKS
7.	Air line 663 (5) or adapter (6)	Insert (8)	Using long-nose pliers, pull out.
8.	Air line 028 (9) to adapter (10)	Nut (11)	Using 5/8-inch wrench, unscrew and pull back.
9.	A d a p t e r	Air line 028 (9)	Pull out.
10.	Air line 028 (9) or adapter (10)	Insert (12)	Using long-nose pliers, pull out.
11.	Clamp (13) to steering column (14)	Two screws (15)	Using 3/8-inch socket, extension, and handle, unscrew.
12.	Trailer brake hand control valve (16) to steering column (14)	Clamp (13) and two screws (15)	Take off.
13.	Steering column (14)	Hand control valve (16)	Take off.
14.	Clamp (13)	Two screws (15) and lockwashers (17)	a. Take out. b. Get rid of lockwashers (17).

**DISASSEMBLY**

15.	Hand control valve (16)	Three adapters (2), (6), and (10)	Using 9/16-inch wrench, unscrew and take out.
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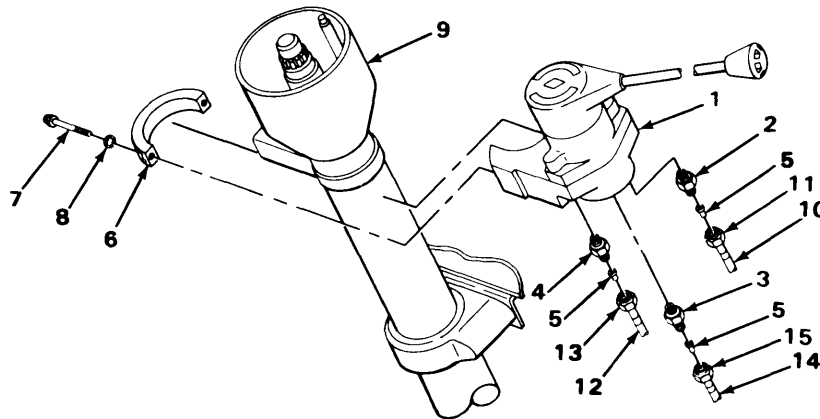
## TRAILER BRAKE HAND CONTROL VALVE- CONTINUED

LOCATION	ITEM	ACTION REMARKS
CLEANING		
16.	All parts	Clean according to general maintenance instructions (page 4-1).
INSPECTION/REPLACEMENT		
17.	All parts	Inspect according to general maintenance instructions (page 4-1).
ASSEMBLY		
18. Control valve (1)	Three adapters (2), (3), and (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 9/16-inch wrench.
19. Three adapters (2), (3), and (4)	Three inserts (5)	Push in and using plastic hammer, seat.
INSTALLATION		
20. Clamp (6)	Two screws (7) and new lockwashers (8)	Put in.
21. Steering column (9)	Control valve (1)	Place in position.
22. Control valve (1) to steering column (9)	Clamp (6)	Place in position.
23. Clamp (6) to control valve (1)	Two screws (7)	Screw in and tighten using 3/8-inch socket, extension, and handle.
24. Adapter (2)	Air line 028 (10)	Lube end lightly with soap and push in until seated.
25. Air line 028 (10) to adapter (2)	Nut (11)	Screw on and tighten using 5/8-inch wrench.
26. Adapter (4)	Air line 663 (12)	Lube end lightly with soap and push in until seated.
27. Air line 663 (12) to adapter (4)	Nut (13)	Screw on and tighten using 5/8-inch wrench.



**TRAILER BRAKE HAND CONTROL VALVE- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
28. Adapter (3)	Air line 027 (14)	Lube end lightly with soap and push in until seated.
29. Air line 027 (14) to adapter (3)	Nut (15)	Screw on and tighten using 5/8-inch wrench.



**NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

**TRAILER CONNECTING HOSE AND GLADHAND**

This task covers:

- a. Removal (page 4-872)
- b. Cleaning (page 4-872)
- c. Inspection/Replacement (page 4-872)
- d. Installation (page 4-873)

**INITIAL SETUP**

**Tools**

- Pliers, slip-joint, angle-nose
- Pliers, slip-joint, straight-nose
- Wrench, adjustable
- Wrench, open-end, 7/8-inch (two required)
- Wrench, open-end, 1 1/16-inch

**Materials/Parts**

- Tape, teflon (item 22, appendix C)

**Personnel Required**

One

**TRAILER CONNECTING HOSE AND GLADHAND - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
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REMOVAL

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

**NOTE**

Steps in this task are the same for both service (blue) and emergency (red) hoses. Service hose is shown.

1.	Air system	Drain (TM 9-2320-270-10).
2. Dummy coupling (1) on hose support (2)	Gladhand (3)	Push up and take off.
3. Adapter (4)	Gladhand (3)	Using 7/8-inch and adjustable wrenches, unscrew and take off.
4. Connecting hose (5)	Adapter (4)	Using two 7/8-inch wrenches, unscrew and take out.
5. Adapter (6)	Connecting hose (5)	Using 1 1/16-inch and 7/8-inch wrenches, unscrew and take off.
6. Hose support (2)	Ring (7)	Using angle-nose and straight-nose pliers, open.
7. Ring (7)	Connecting hose (5)	Take out.

CLEANING

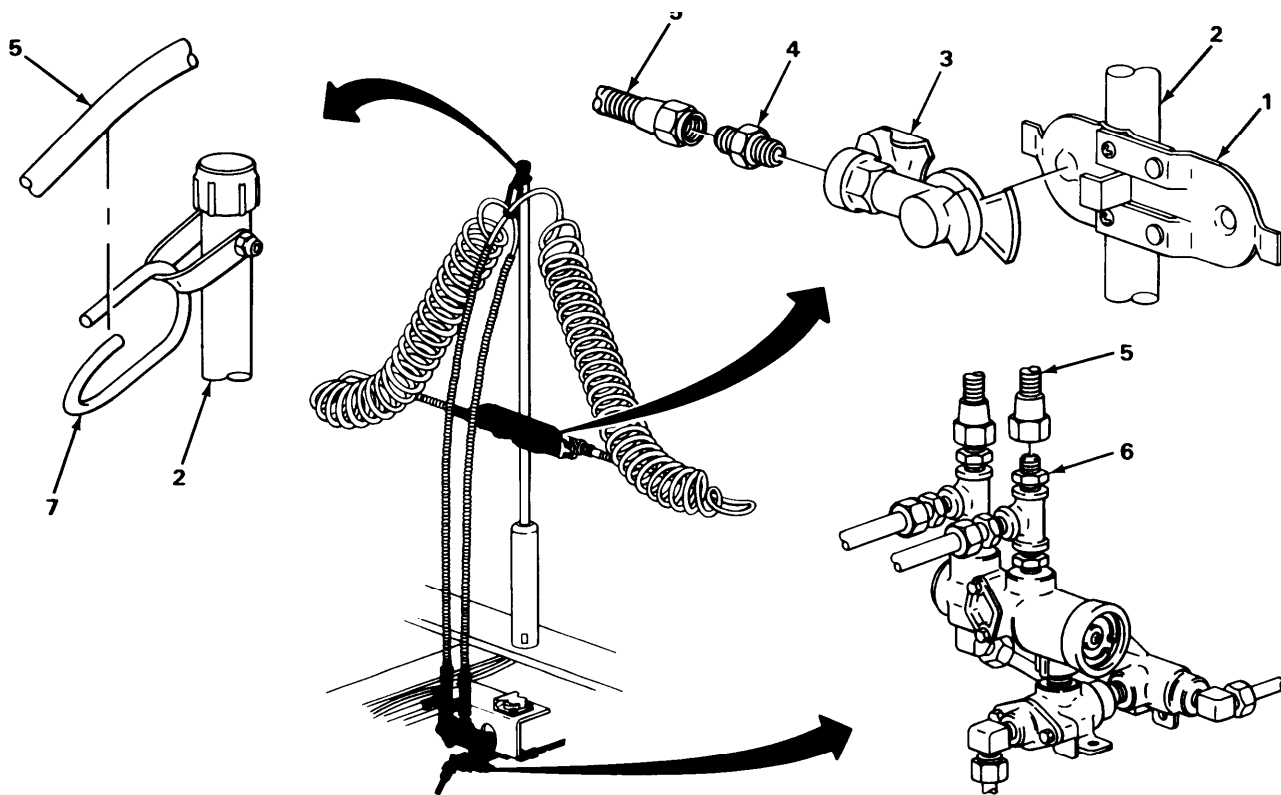
8.	All parts	Clean according to general maintenance instructions (page 4-1).
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INSPECTION/REPLACEMENT

9.	All parts	Inspect according to general maintenance instructions (page 4-1).
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**TRAILER CONNETING HOSE AND GLADHAND - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
10.	Adapter (6)	Wrap threads with teflon tape (page 4-1).
11. Adapter (6)	Connecting hose (5)	Screw on and tighten using 7/8-inch wrench.
12. Ring (7)	Hose (5)	Put in.
13. Hose support (2)	Ring (7)	Using angle-nose and straight-nose pliers, close.
14. Connecting hose (5)	Adapter (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using two 7/8-inch wrenches.
15. Adapter (4)	Gladhand (3)	Screw on and tighten using adjustable and 7/8-inch wrenches.



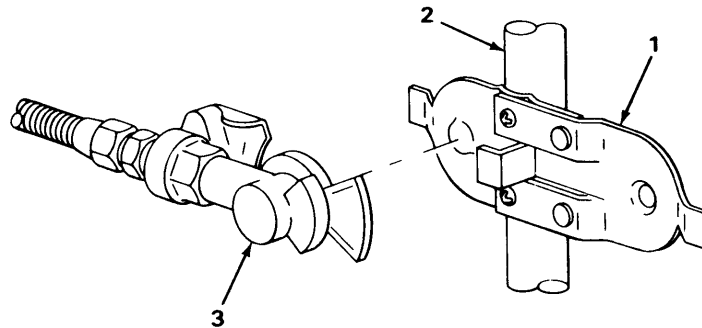
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**TRAILER CONNECTING HOSE AND GLADHAND - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

INSTALLATION – CONTINUED

- |   |              |                                     |  |
|---|--------------|-------------------------------------|--|
| 16. Dummy coupling (1)<br>on hose support (2) | Gladhand (3) | Hook on and push down until locked. |  |
|---|--------------|-------------------------------------|--|



**NOTE**

FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

**HOSE SUPPORT**

This task covers:

- |                             |                              |
|-----------------------------|------------------------------|
| a. Removal (page 4-875)     | c. Assembly (page 4-876)     |
| b. Disassembly (page 4-876) | d. Installation (page 4-876) |

**INITIAL SETUP**

**Tools**

Handle, ratchet, 3/8-inch drive  
 Pliers, slip-joint, angle-nose  
 Pliers, slip-joint, straight-nose  
 Screwdriver, cross-tip, number one  
 Socket, 3/8-inch, 3/8-inch drive  
 Wrench, box, 1 1/16-inch

**Materials/Parts**

Lockwasher, hose support to winch  
 and tire carrier  
 Self-locking nut, dummy coupling to hose  
 support (two required)  
 Self-locking nut, hose ring loop to hose  
 support

**Personnel Required**

One

TA240553

**HOSE SUPPORT - CONTINUED**

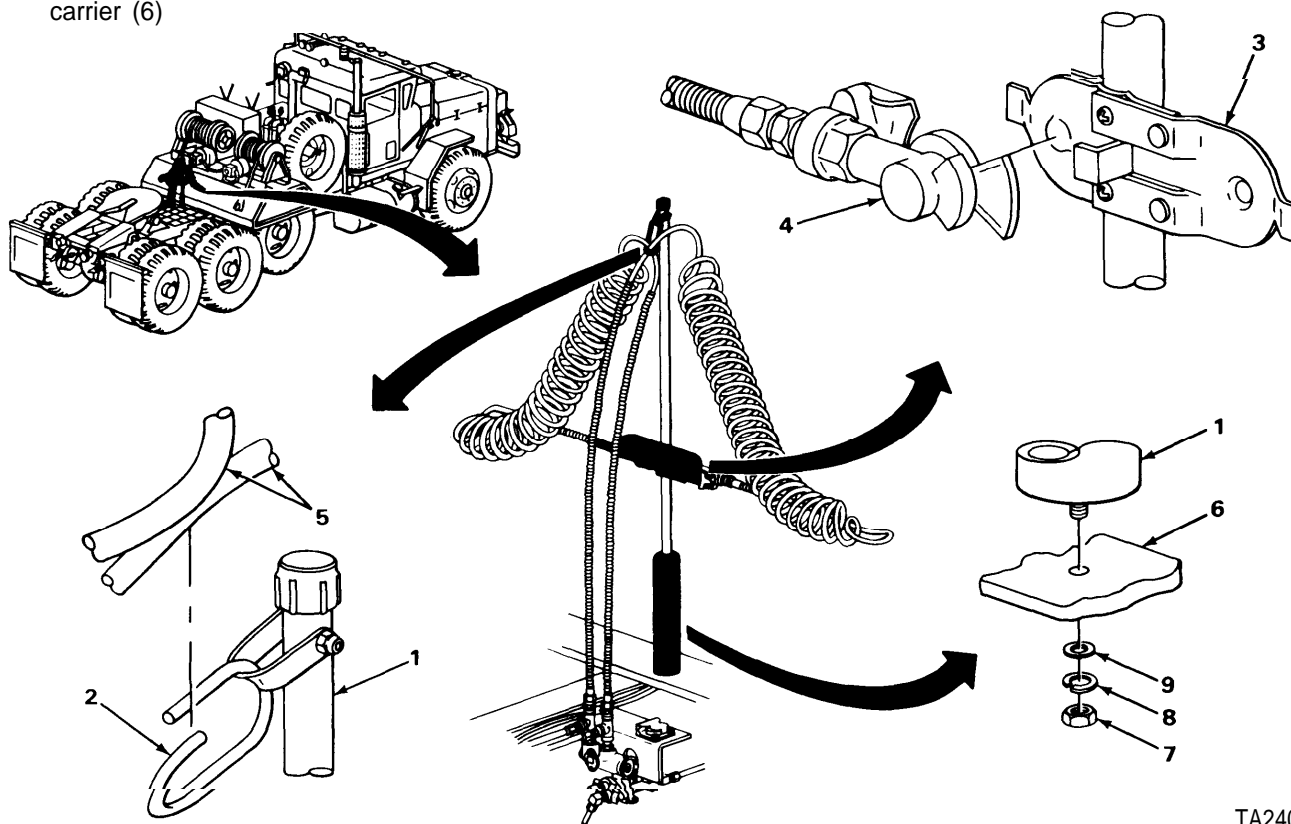
LOCATION	ITEM	ACTION REMARKS
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REMOVAL

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

- |    |  |  |
|----|--|--|
| 1. | Air system   | Drain (TM 9-2320-270-10).  |
| 2. | Hose support (1)<br>Hose ring (2)  | Using straight-nose and angle-nose slip-joint pliers, open.                            |
| 3. | Dummy coupling (3)<br>Two gladhands (4)  | Pull up and take off.  |
| 4. | Hose ring (2)<br>Two hoses (5)   | Take out.  |
| 5. | Hose support (1)<br>to winch and tire carrier (6)<br>Nut (7), lockwasher (8), and washer (9) | a. Using 11/16-inch box wrench, unscrew and take off.<br>b. Get rid of lockwasher (8). |
| 6. | Winch and tire carrier (6)<br>Hose support (1)   | Take off.  |



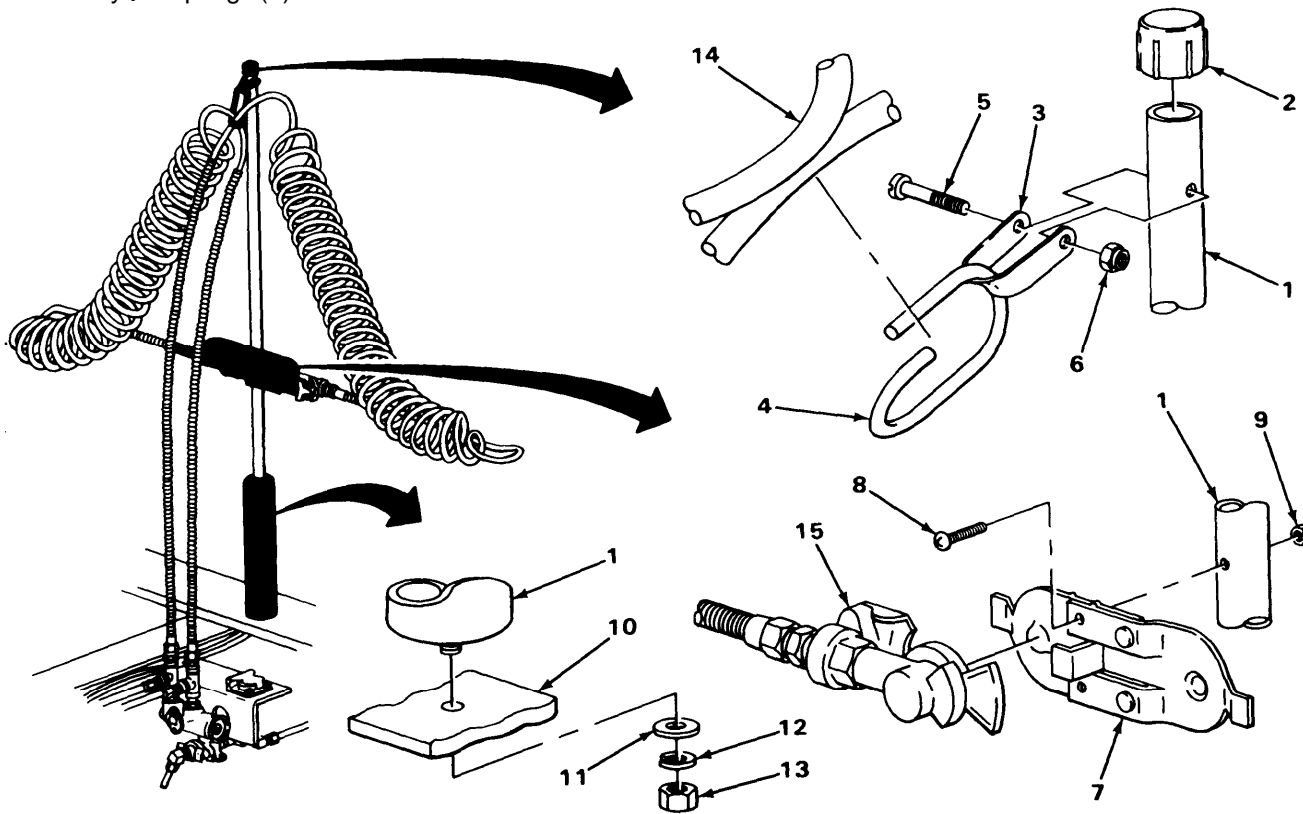
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## HOSE SUPPORT - CONTINUED

LOCATION	ITEM	ACTION REMARKS
DISASSEMBLY		
7. Hose support (1)	Plastic cap (2)	Pull off.
8. Loop (3)	Hose ring (4)	Take off.
9. Loop (3) to hose support (1)	Screw (5) and self-locking nut (6)	a. Using screwdriver, 3/8-inch socket, and handle, unscrew and take out. b. Get rid of self-locking nut (6).
10. Hose support (1)	Loop (3)	Take off.
11. Dummy coupling (7) to hose support (1)	Two screws (8), self-locking nuts (9), and dummy coupling (7)	a. Using screwdriver, 3/8-inch socket, and handle, unscrew and take off. b. Get rid of self-locking nuts (9).
ASSEMBLY		
12. Hose support (1)	Dummy coupling (7)	Place in position.
13. Dummy coupling (7) to hose support (1)	Two screws (8) and new self-locking nut (9)	Screw on and tighten using screwdriver, 3/8-inch socket, and handle.
14. Hose support (1)	Loop (3)	Put in place.
15. Loop (3) to hose support (1)	Screw (5) and new self-locking nut (6)	Screw in and tighten using screwdriver, 3/8-inch socket, and handle.
16. Loop (3)	Hose ring (4)	Put on.
17. Hose support (1)	Plastic cap (2)	Push on.
INSTALLATION		
18. Winch and tire carrier (10)	Hose support (1)	Put in place.
19. Hose support (1) to winch and tire carrier (10)	Washer (11), new lockwasher (12), and nut (13)	Screw on and tighten using 1 1/16-inch box wrench.
20. Hose ring (4)	Two hoses (14)	Put through.

**HOSE SUPPORT - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
21. Hose support (1)	Hose ring (4)	Using straight-nose and angle-nose slip-joint pliers, close.
22. Dummy coupling (7)	Two gladhands (15)	Hook on and push down until locked.



**TASK ENDS HERE**

**TRACTOR PROTECTION VALVE ASSEMBLY**

---

This task covers:

- a. Removal (page 4-878)
  - b. Disassembly (page 4-882)
  - c. Cleaning (page 4-883)
  - d. Inspection/Replacement (page 4-883)
  - e. Assembly (page 4-884)
  - f. Installation (page 4-886)
- 

**INITIAL SETUP**

**Tools**

- Hammer, plastic
- Handle, ratchet, 3/8-inch drive
- Pliers, long-nose, round
- Socket, 1/2-inch, 3/8-inch drive
- Vise, machinist's
- Wrench, box, 1/2-inch
- Wrench, open-end, 5/8-inch
- Wrench, open-end, 1 1/16-inch
- Wrench, open-end, 3/4-inch
- Wrench, open-end, 7/8-inch
- Wrench, pipe, 1/2- to 1 1/2-inch

**Materials/Parts**

- Lockwasher, tractor protection valve to bracket (two required)

**Materials/Parts – Continued**

- Soap, liquid (item 14, appendix C)
- Tag, marking (item 18, appendix C)
- Tape, teflon (item 22, appendix C)

**Personnel Required**

One

**Equipment Condition**

Trailer connecting hoses removed (page 4-871).

---

LOCATION	ITEM	ACTION	REMARKS
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**REMOVAL**

**WARNING**

Make sure all pressure is drained from air system before disconnecting air lines. Parts under pressure can, when removed, fly off with great force causing injury to personnel.

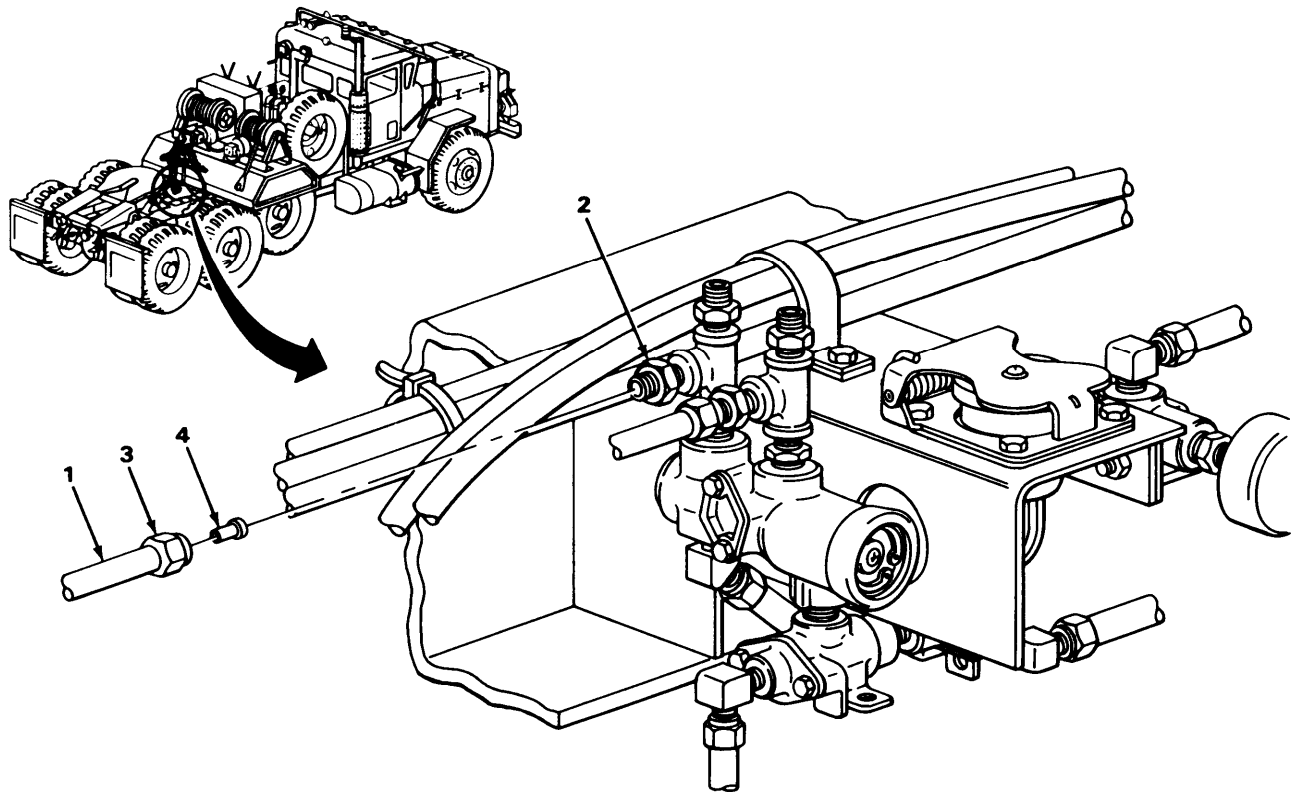
**NOTE**

Tag air lines according to general maintenance instructions (page 41).



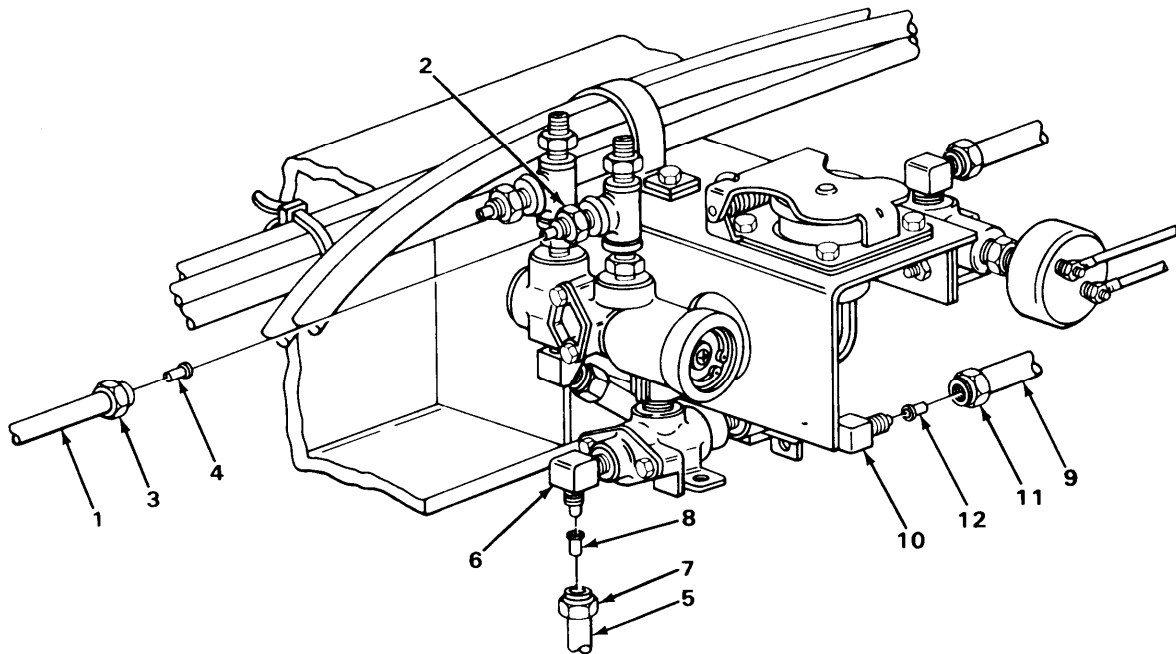
TRACTOR PROTECTION VALVE ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
1.	Air system	Drain (TM 9-2320-270-10).
2. Air line 654A (1) to adapter (2)	Nut (3)	Using 5/8-inch wrench, unscrew and pull back.
3. Adapter (2)	Air line 654A (1)	Pull out.
4. Air line 654A (1) or adapter (2)	Insert (4)	Using long-nose pliers, pull out.



TRACTOR PROTECTION VALVE ASSEMBLY - CONTINUED

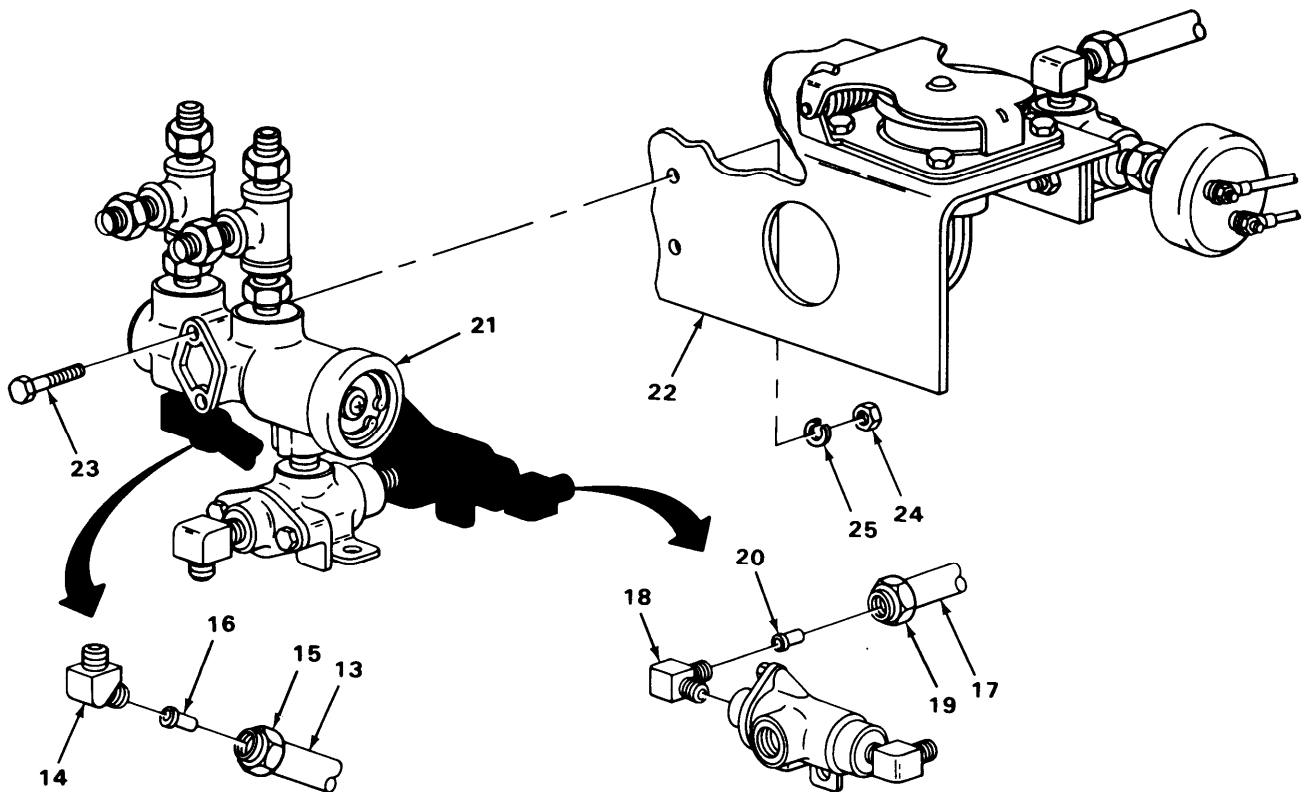
LOCATION	ITEM	ACTION	REMARKS
REMOVAL – CONTINUED			
5. Airline 653A (1) to adapter (2)	Nut (3)	Using 5/8-inch wrench, unscrew and pull back.	
6. Adapter (2)	Air line 653A (1)	Pull out.	
7. Air line 653A (1) or adapter (2)	Insert (4)	Using long-nose pliers, pull out.	
8. Air line 663 (5) to elbow (6)	Nut (7)	Using 5/8-inch wrench, unscrew and pull back.	
9. Elbow (6)	Air line 663 (5)	Pull out.	
10. Air line 663 (5) or elbow (6)	Insert (8)	Using long-nose pliers, pull out.	
11. Air line 665(9) to elbow (10)	Nut (11)	Using 5/8-inch wrench, unscrew and pull back.	
12. Elbow (10)	Air line 665 (9)	Pull out.	
13. Air line 665(9) or elbow (10)	Insert (12)	Using long-nose pliers, pull out.	



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TRACTOR PROTECTION VALVE ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
14. Air line 664 (13) to elbow (14)	Nut (15)	Using 5/8-inch wrench, unscrew and pull back.
15. Elbow (14)	Air line 664 (13)	Pull out.
16. Air line 664 (13) or elbow (14)	Insert (16)	Using long-nose pliers, pull out.
17. Air line 662 (17) to elbow (18)	Nut (19)	Using 5/8-inch wrench, unscrew and pull back.
18. Elbow (18)	Air line 662 (17)	Pull out.
19. Air line 662 (17) or elbow (18)	Insert (20)	Using long-nose pliers, pull out.
20. Tractor protection valve (21) to bracket (22)	Two screws (23), nuts (24), lock-washers (25), and tractor protection valve (21)	a. Using 1/2-inch box wrench, socket, and handle, unscrew and take off. b. Get rid of lockwashers (25).



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**TRACTOR PROTECTION VALVE ASSEMBLY- CONTINUED**

LOCATION	ITEM	ACTION REMARKS	
DISASSEMBLY			
21.	Tractor protection valve (1)	Secure in vise.	
22.	Two tees (2)	Two reducers (3)	Using 1 1/16-inch wrench, unscrew and take out.
23.		Two adapters (4)	Using 1 1/16-inch wrench, unscrew and take out.
24.	Two reducers (5)	Two tees (2)	Hold reducers with 7/8-inch wrench and using pipe wrench, unscrew and take off.
25.	Tractor protection valve (1)	Two reducers (5)	Using 7/8-inch wrench, unscrew and take out.
26.		45 degree elbow (6)	Using 5/8-inch wrench, unscrew and take out.
27.	Double check valve (7)	Elbow (8)	Using 3/4-inch wrench, unscrew and take out.
28.	Double check valve (9)	Two elbows (10)	Using 3/4-inch wrench, unscrew and take out.

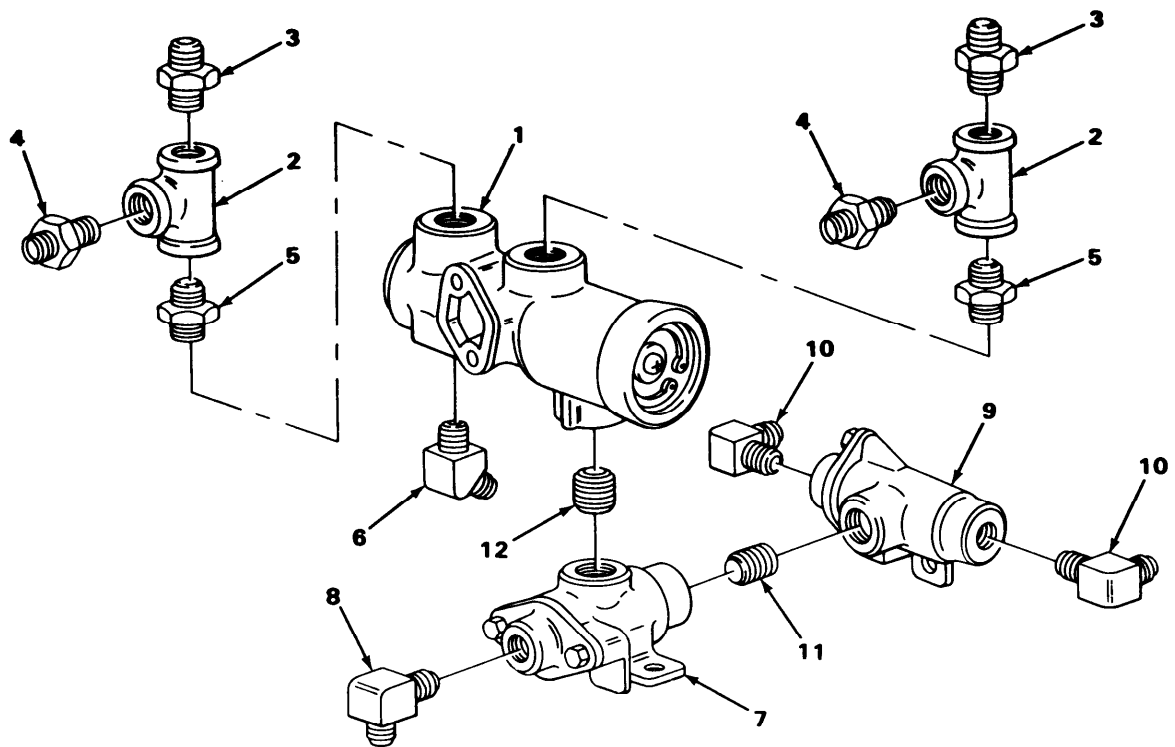
**NOTE**

Nipples may come out with part you are removing or stay in other part. Do not remove nipple unless inspection shows need for replacement.

29.	Double check valve (7)	Double check valve (9)	Using pipe wrench, unscrew and take off.
30.	Tractor protection valve (1)	Double check valve (7)	Using pipe wrench, unscrew and take off.
31.	Double check valve (7) or (9)	Nipple(n)	a. Using pipe wrench, unscrew and take out. b. Get rid of.
32.	Double check valve (7) or tractor protection valve (1)	Nipple (12)	a. Using pipe wrench, unscrew and take out. b. Get rid of.

TRACTOR PROTECTION VALVE ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
33.	Tractor protection valve (1)	Take out of vise.
CLEANING		
34.	All parts	Clean according to general maintenance instructions (page 4-1).
INSPECTION/REPLACEMENT		
35.	All parts	Inspect according to general maintenance instructions (page 4-1).

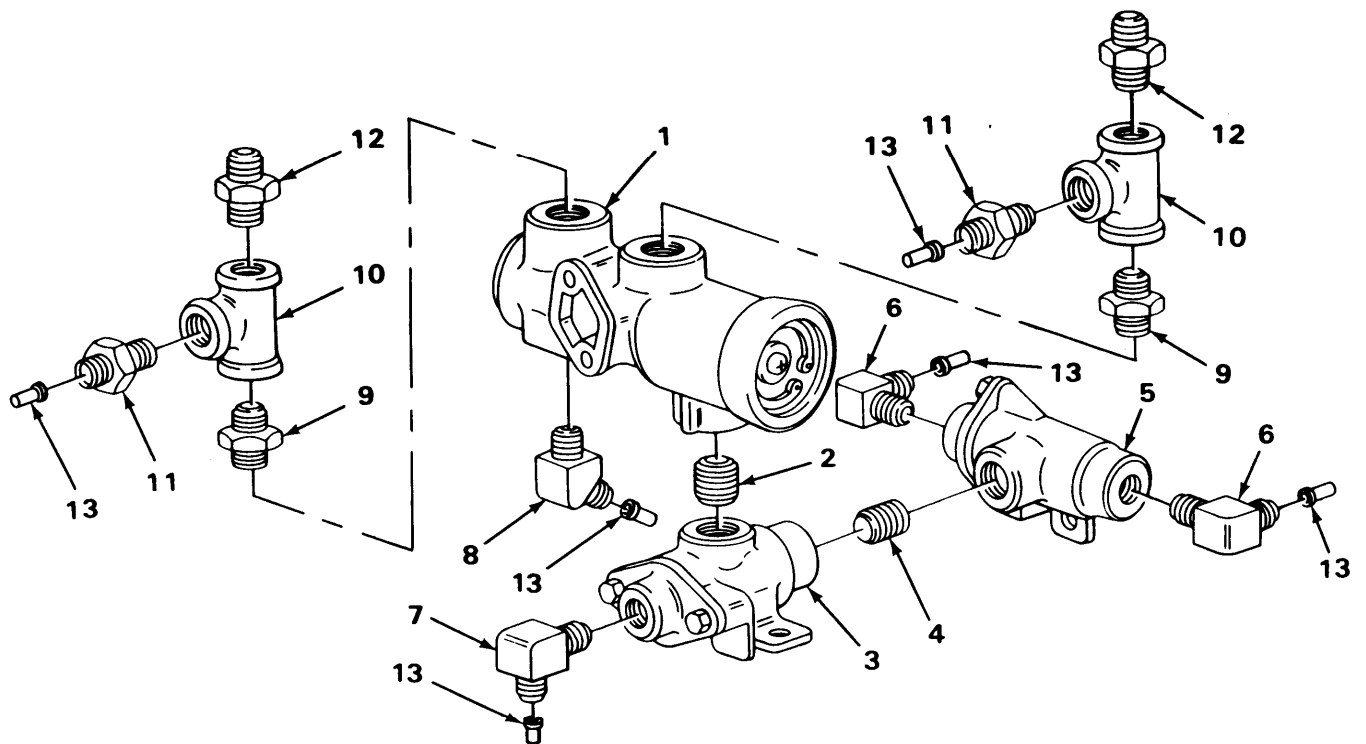


TRACTOR PROTECTION VALVE ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
ASSEMBLY		
36.	Tractor protection valve (1)	Secure in vise.
37. Tractor protection valve (1)	Nipple (2)	a. Wrap threads with teflon tape (page 4-1). b. Screw in but do not tighten.
36. Nipple (2)	Double check valve (3)	Screw on and tighten using pipe wrench.
39. Double check valve (3)	Nipple (4)	a. Wrap threads with teflon tape (page 4-1). b. Screw in but do not tighten.
40. Nipple (4)	Double check valve (5)	Screw on and tighten using pipe wrench.
41. Double check valve (5)	Two elbows (6)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/4-inch wrench.
42. Double check valve (3)	Elbow (7)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 3/4-inch wrench.
43. Tractor protection valve (1)	45 degree elbow (8)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 5/8-inch wrench.
44.	Two reducers (9)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 7/8-inch wrench.
45. Two reducers (9)	Two tees (10)	Screw on and tighten using pipe wrench.
46. Two tees (10)	Two adapters (11)	a. Wrap threads with teflon tape (page 4-1). b. Screw in and tighten using 11/16-inch wrench.

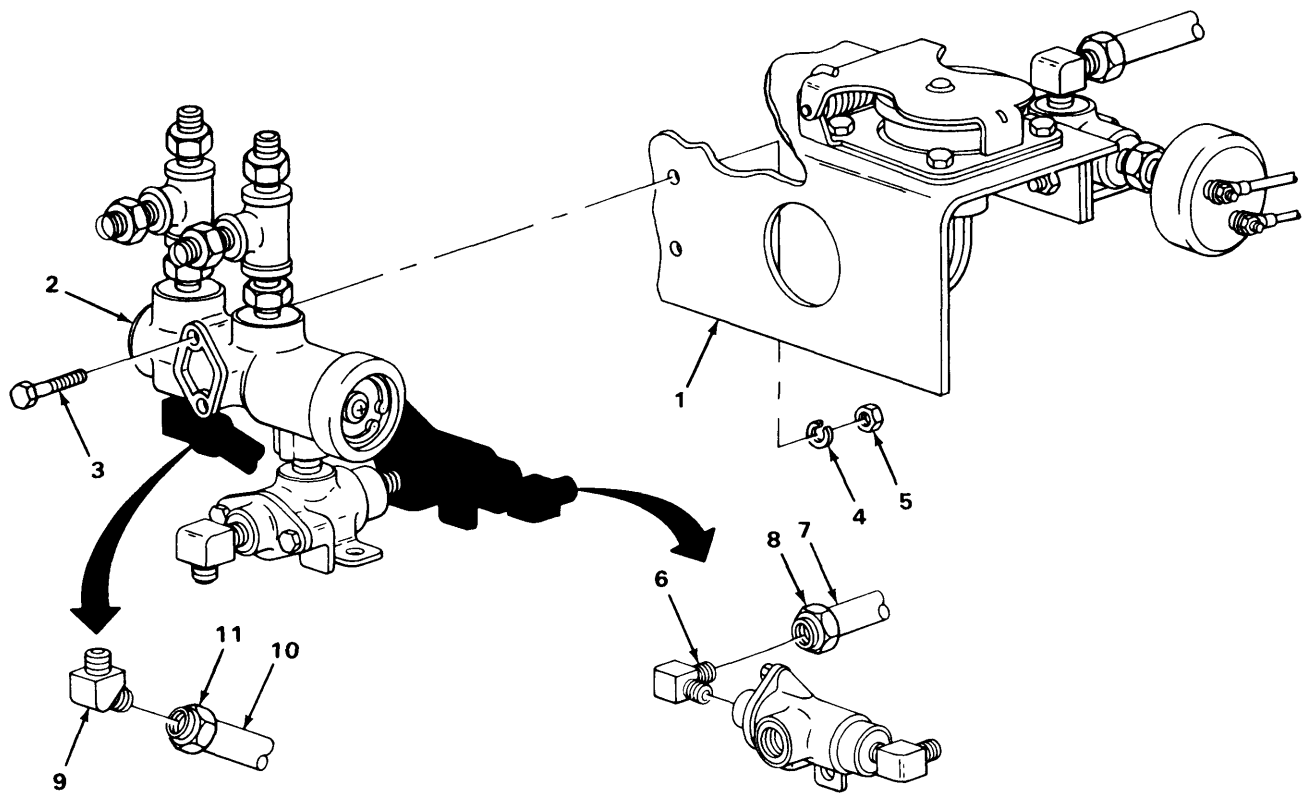
TRACTOR PROTECTION VALVE ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
47.	Two reducers (12)	a. Wrap lower threads with teflon tape (page 4-1). b. Screw in and tighten using 11/16-inch wrench.
48. Elbows (6), (8), and (7) and adapters (11)	Six inserts (13)	Push in and using plastic hammer, seat.
49.	Tractor protection valve (1)	Take out of vise.



TRACTOR PROTECTION VALVE ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
50. Bracket (1)	Tractor protection valve (2)	Place in position.
51. Tractor protection valve (2) to bracket (1)	Two screws (3), new lockwashers (4), and nuts (5)	Screw in and tighten using 1/2-inch box wrench, socket, and handle.
52. Elbow (6)	Air line 662 (7)	Lube end lightly with soap and push in until seated.
53. Air line 662 (7) to elbow (6)	Nut (8)	Screw on and tighten using 5/8-inch wrench.
54. Elbow (9)	Air line 664 (10)	Lube end lightly with soap and push in until seated.
55. Air line 664 (10) to elbow (9)	Nut (11)	Screw on and tighten using 5/8-inch wrench.

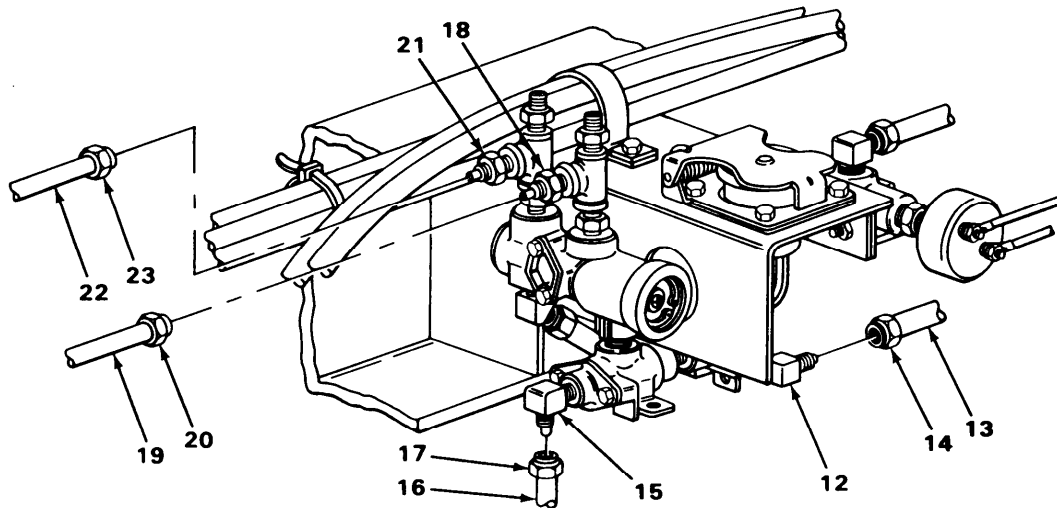


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**TRACTOR PROTECTION VALVE ASSEMBLY- CONTINUED**

	LOCATION	ITEM	ACTION REMARKS
56.	Elbow (12)	Air line 665 (13)	Lube end lightly with soap and push in until seated.
57.	Air line 665 (13) to elbow (12)	Nut (14)	Screw on and tighten using 5/8-inch wrench.
58.	Elbow (15)	Air line 663 (16)	Lube end lightly with soap and push in until seated.
59.	Air line 663 (16) to elbow (15)	Nut (17)	Screw on and tighten using 5/8-inch wrench.
60.	Adapter (18)	Air line 653A (19)	Lube end lightly with soap and push in until seated.
61.	Air line 653A (19) to adapter (18)	Nut (20)	Screw on and tighten using 5/8-inch wrench.
62.	Adapter (21)	Air line 654A (22)	Lube end lightly with soap and push in until seated.
63.	Air line 654A (22) to adapter (21)	Nut (23)	Screw on tighten using 5/8-inch wrench.



**NOTE**

FOLLOW-ON MAINTENANCE: Install trailer connecting hoses (page 4-871).

**TASK ENDS HERE**

**TRACTOR PROTECTION VALVE BRACKET**

---

This task covers:

- a. Removal (page 4-888)
  - b. Cleaning (page 4-890)
  - c. Inspection/Replacement (page 4-890)
  - d. Installation (page 4-890)
- 

**INITIAL SETUP**

**Tools**

- Extension, 3-inch, 3/8-inch drive
- Handle, ratchet, 3/8-inch drive
- Socket, 7/16-inch, 3/8-inch drive
- Socket, 1/2-inch, 3/8-inch drive
- Socket, 3/4-inch, 3/8-inch drive
- Wrench, box, 7/16-inch
- Wrench, box, 1/2-inch
- Wrench, box, 3/4-inch

**Materials/Parts – Continued**

- Lockwasher, intervehicular wiring harness receptacle and cover to tractor protection valve bracket (four required)
- Lockwasher, tractor protection valve bracket to frame (two required)
- Lockwasher, tractor protection valve to tractor protection valve bracket (two required)

**Materials/Parts**

- Lockwasher, loop clamp and ground wires to tractor protection valve bracket (two required)

**Personnel Required**

One

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LOCATION	ITEM	ACTION REMARKS
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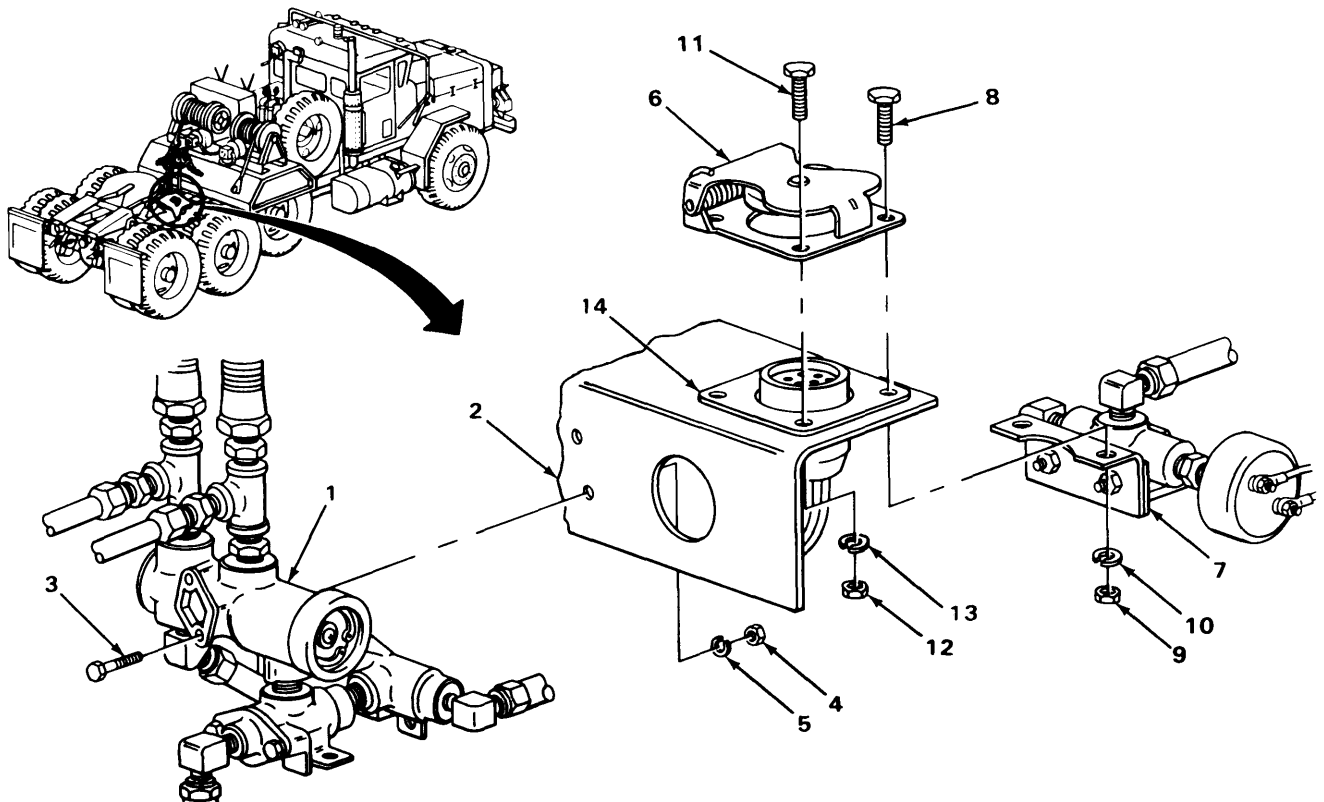
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**REMOVAL**

- |  |   |  |
|--|---|--|
| <p>1. Tractor protection valve (1) to bracket (2)</p>  | <p>Two screws (3), nuts (4), and lockwashers (5)</p>  | <p>a. Using 1/2-inch wrench, 1/2-inch socket, and handle, unscrew and take out.<br/>b. Get rid of lockwashers (5).</p>                   |
| <p>2. Intervehicular wiring harness cover (6) and quick release valve bracket (7) to bracket (2)</p> | <p>Two screws (8), nuts (9), and lockwashers (10)</p> | <p>a. Using 7/16-inch box wrench, 7/16-inch socket, extension, and handle, unscrew and take out.<br/>b. Get rid of lockwashers (10).</p> |

**TRACTOR PROTECTION VALVE BRACKET - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
3. Receptacle cover (6) to bracket (2)	Two screws (11), nuts (12), and lockwashers (13)	a. Using 7/16-inch box wrench, 7/16-inch socket, extension, and handle, unscrew and take off. b. Get rid of lockwashers (13).
4. Receptacle (14)	Receptacle cover (6)	Take off.

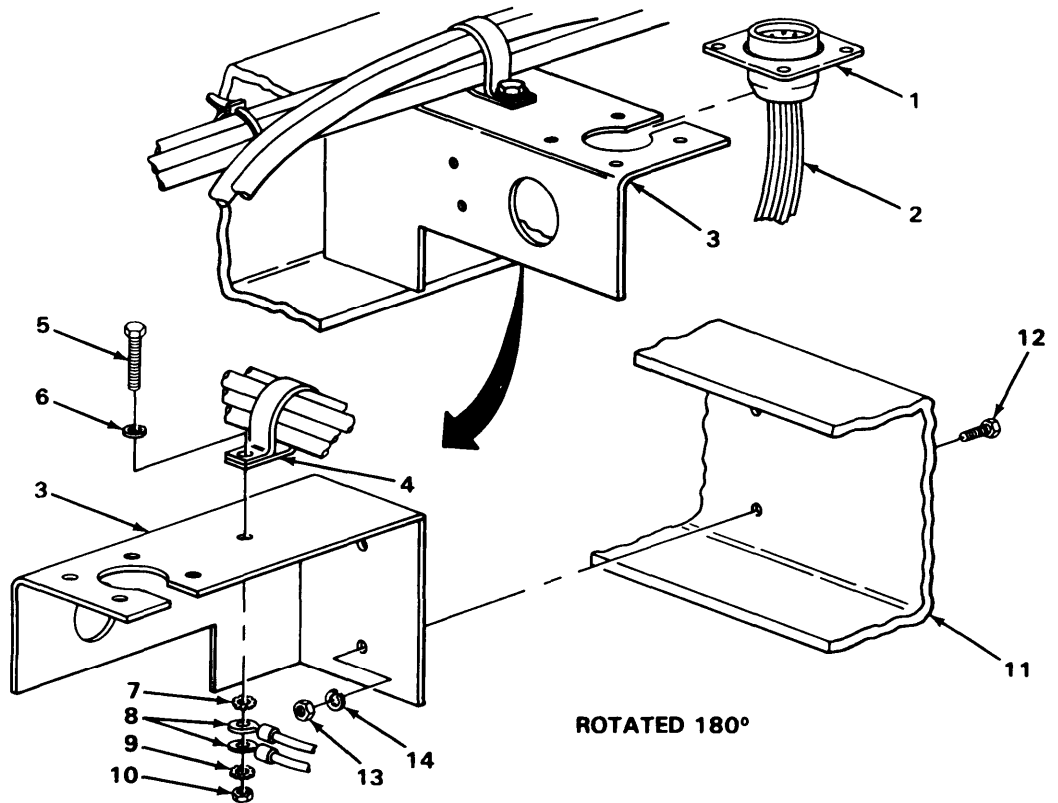


**TRACTOR PROTECTION VALVE BRACKET - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>REMOVAL- CONTINUED</b>		
5.	Receptacle (1) and harness (2)	Lift up until receptacle is out of bracket (3) and take off bracket sliding harness (2) through notch.
6. Loop clamp (4) to bracket (3)	Screw (5), washer (6), lockwasher (7), two ground wires (8), lockwasher (9), and nut (10)	a. Using 7/16-inch box wrench, 7/16-inch socket, extension and handle, unscrew and take out. b. Get rid of lockwashers (7) and (9).
7. Bracket (3) to frame (11)	Two screws (12), nuts (13), lockwashers (14), and bracket (3)	a. Using 3/4-inch box wrench, 3/4-inch socket, extension, and handle, unscrew and take out. b. Get rid of lockwashers (14).
<b>CLEANING</b>		
8.	All parts	Clean according to general maintenance instructions (page 4-1).
<b>INSPECTION/REPLACEMENT</b>		
9.	All parts	Inspect according to general maintenance instructions (page 4-1).
<b>INSTALLATION</b>		
10. Frame (11)	Bracket (3)	Place in position.
11. Bracket (3) to frame (11)	Two screws (12), nuts (13), and new lockwashers (14)	Screw on and tighten using 3/4-inch box wrench, 3/4-inch socket, extension, and handle.
12. Bracket (3)	Loop clamp (4)	Put in place.

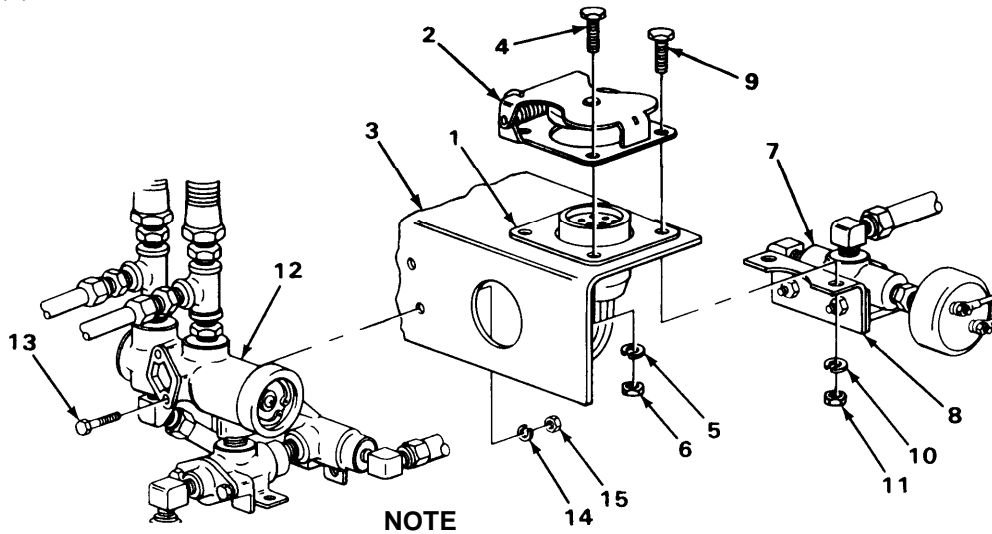
TRACTOR PROTECTION VALVE BRACKET - CONTINUED

LOCATION	ITEM	ACTION REMARKS
13. Loop clamp (4) to bracket (3)	Screw (5), washer (6), new lockwasher (7), two ground wires (8), new lockwasher (9), and nut (10)	Screw in and tighten using 7/16-inch box wrench, 7/16-inch socket, extension, and handle.
14. Bracket (3)	Receptacle (1) and harness (2)	Slip harness through notch and put into place.



**TRACTOR PROTECTION VALVE BRACKET - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION – CONTINUED</b>		
15. Receptacle (1)	Receptacle cover (2)	Put in place.
16. Receptacle cover (2) to bracket (3)	Two screws (4), new lockwashers (5), and nuts (6)	Screw in but do not tighten.
17. Bracket (3)	Quick release valve (7) and bracket (8)	Put in.
18. Quick release valve bracket (8) to bracket (3)	Two screws (9), new lockwashers (10), and nuts (11)	Screw in but do not tighten.
19. Receptacle cover (1) to bracket (3)	Four screws (4) and (9), lockwashers (5) and (10), and nuts (6) and (11)	Using 7/16-inch box wrench, 7/18-inch socket, extension, and handle, alternately tighten.
20. Bracket (3)	Tractor protection valve (12)	Put in place and hold.
21. Tractor protection valve (12) to bracket (3)	Two screws (13), new lockwashers (14), and nuts (15)	Screw in and tighten using 1/2-inch box wrench, 1/2-inch socket, and handle.



FOLLOW-ON MAINTENANCE: Check for leaks (page 4-1).

**TASK ENDS HERE**

TA240565

**Section XII. WHEELS, HUBS, AND BRAKEDRUMS MAINTENANCE**

	Page		Page
Front Axle Hub, Drum, and Bearing Assembly .....	4-893	Tandem Axle Hub, Drum, and Bearing Assembly .....	4-925
Pusher Axle Hub, Drum, and Bearing Assembly .....	4-910	Tires and Wheels .....	4-936

**FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY**

---

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-894)     | d. Inspection/Replacement (page 4-900) |
| b. Disassembly (page 4-897) | e. Assembly (page 4-904)               |
| c. Cleaning (page 4-898)    | f. Installation (page 4-906)           |
- 

**INITIAL SETUP**

**Tools**

Adapter, grease gun coupling, rigid  
 Bar, pry, 36-inch  
 Brakeshoe adjusting tool  
 Brush, parts cleaning  
 Capscrews, 1/2-13 inch, 4-inch (two required)  
 Drift, brass, 3/4-inch  
 Extension, 5-inch, 1/2-inch drive  
 Hammer, plastic  
 Hammer, machinist's ball-peen  
 Handle, hinged, 1/2-inch drive  
 Handle, ratchet, 3/8-inch drive  
 Handle, ratchet, 1/2-inch drive  
 Lubricant packer, bearing  
 Puller, mechanical slide hammer (two required)  
 Socket, deep-well, 15/16-inch, 1/2-inch drive  
 Socket, 3/4-inch, 1/2-inch drive  
 Socket, 9/16-inch, 3/8-inch  
 Trestle, motor vehicle maintenance 10-ton (two required)  
 Truck, lift, wheel  
 Woodblock, 4 inch by 4 inch by 12 inch (two required)  
 Woodboards, 4 inch by 4 inch by 48 inch (two required)

**Tools – Continued**

Wrench, front bearing nut  
 Wrench, torque, 1/2-inch drive  
 Wrench, wheel bearing  
 Wrench, wheel nut

**Special Tools**

Wrench, front bearing nut

**Materials/Parts**

Grease, front wheel bearing (LO 9-2320-270-12)  
 Lockwasher, brakedrum to hub (10 required)  
 Lockwasher, hubcap puller holes (two required)  
 Lockwasher, hubcap to hub (10 required)  
 Lockwasher, locknut to axle skein  
 Oil, gear lubricant (LO 9-2320-270-12)  
 Rags, wiping (item 10, appendix C)  
 Seal, oil, hub  
 Solvent, cleaning (item 16, appendix C)

**Personnel Required**

Two

**Equipment Condition**

Front wheels removed (TM 9-2320-270-10).

**FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED**

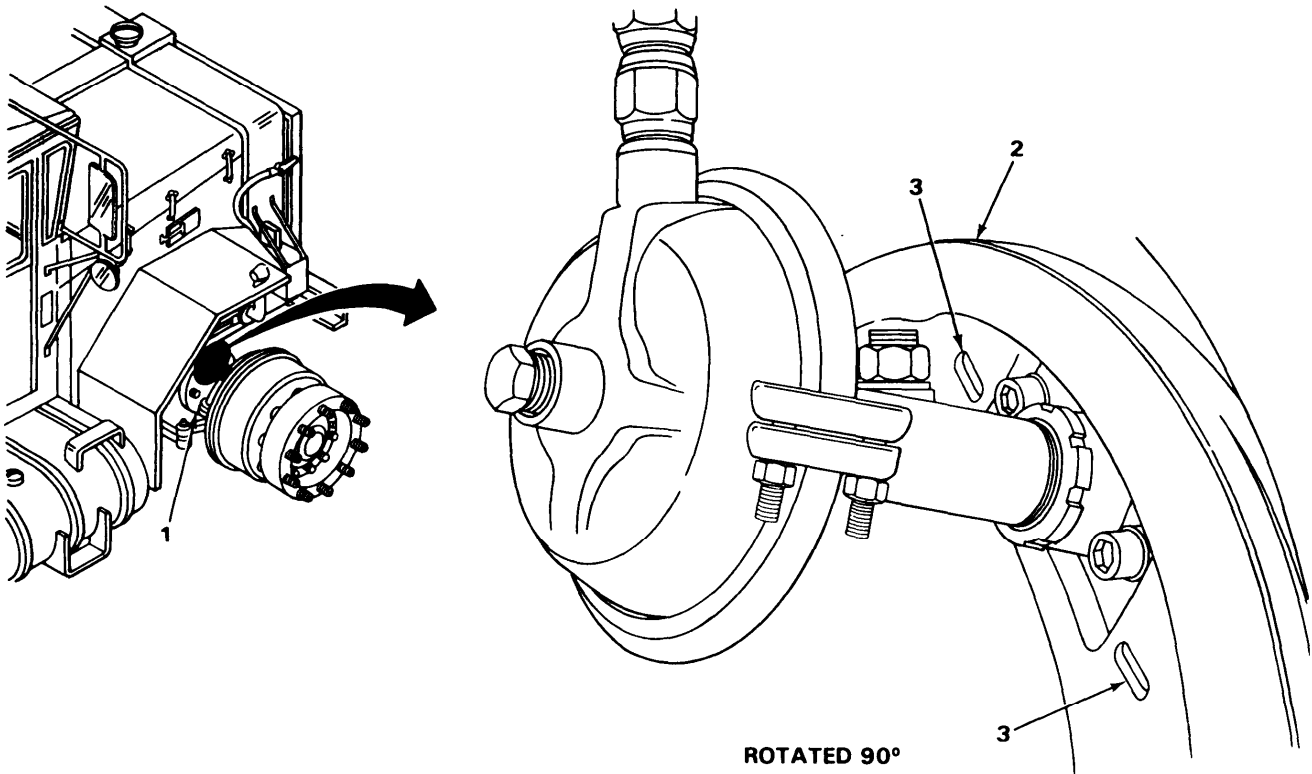
LOCATION	ITEM	ACTION REMARKS
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REMOVAL

**NOTE**

Except as noted, steps in this task are the same for either right or left front hub, brakedrum, and bearing assemblies. Right front hub, brakedrum, and bearing assembly is shown.

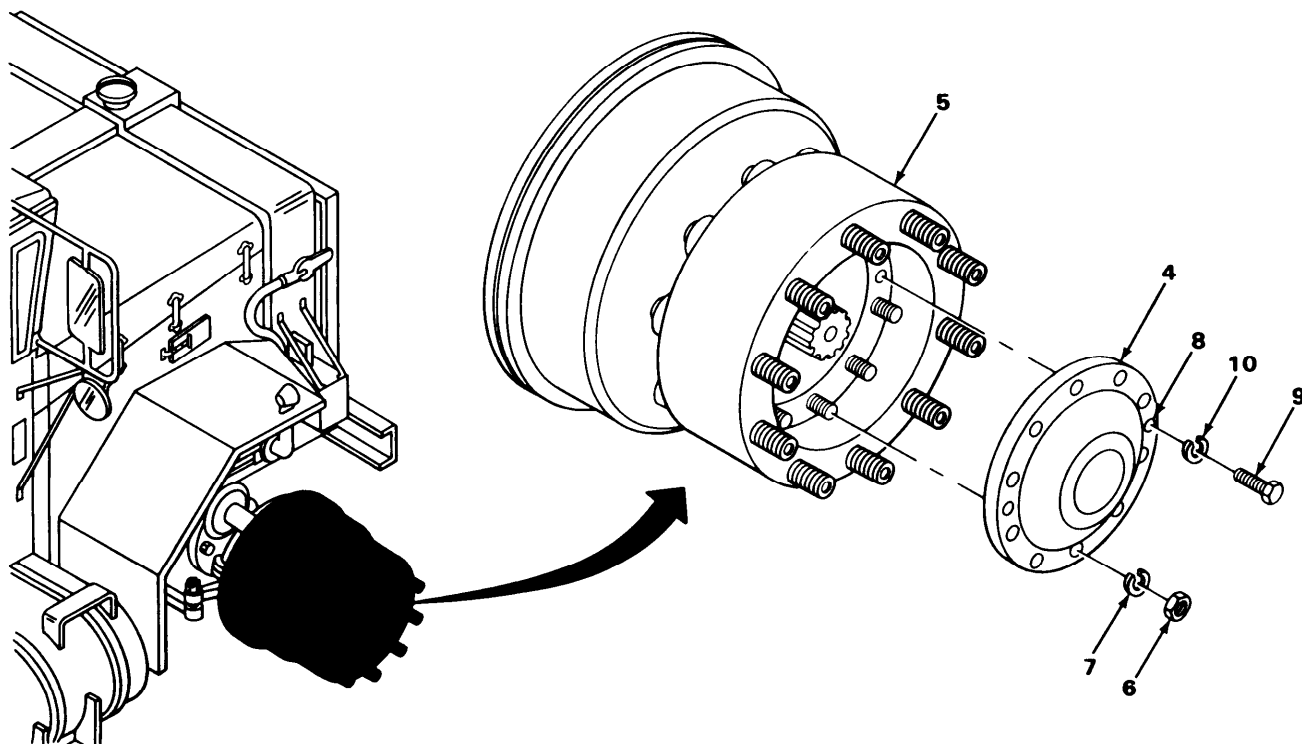
- |   |                         |   |
|---|-------------------------|---|
| 1.  | Front axle (1)          | Place two trestles underneath.                                  |
| 2. Front axle (1) brake backing plate (2) | Two adjusting slots (3) | Using brake adjusting tool, back off brakes as far as possible. |





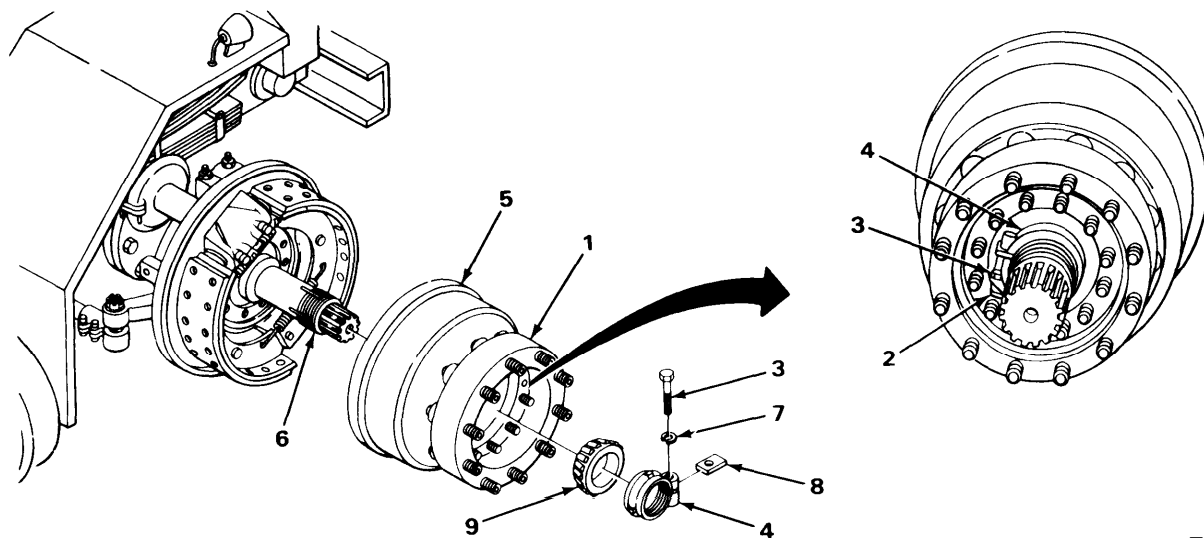
FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY- CONTINUED

LOCATION	ITEM	ACTION REMARKS
3. Hubcap (4) to hub (5)	Ten nuts (6) and lockwashers (7)	a. Using 15/16-inch socket, extension, and 1/2-inch drive hinged handle, un- screw and take off. b. Get rid of lockwashers (7).
4. Two hubcap puller holes (8)	Two capscrews (9) and lockwashers (10)	a. Using 3/4-inch socket, extension, and 1/2-inch drive handle, unscrew and take out. b. Get rid of lockwasher (10).
5.	Two long capscrews	Screw into hubcap puller holes (8) and alternately tighten until hubcap (4) is pulled loose from hub (5).
6. Hub (5)	Hubcap (4)	Pull off.
7. Hubcap puller holes (8)	Two long capscrews	Unscrew and take out.



**FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED**

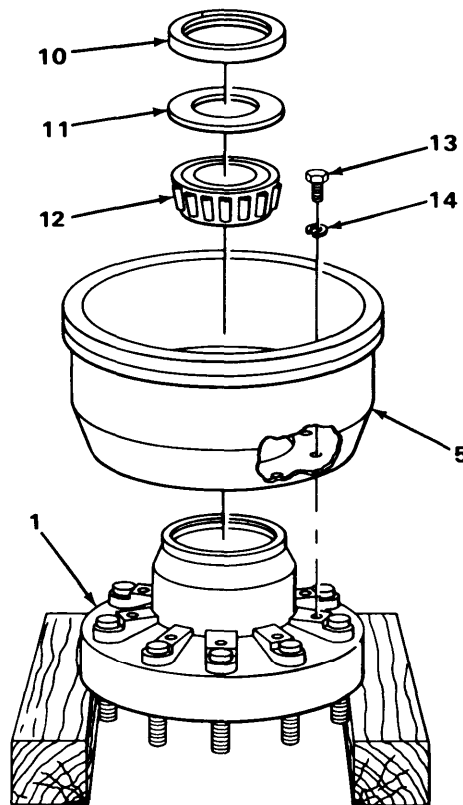
LOCATION	ITEM	ACTION	REMARKS
REMOVAL – CONTINUED			
8.	Hub (1)	Turn hub (1) so notch (2) is by capscrew (3) on locknut (4).	
<b><u>WARNING</u></b>			
Some parts are heavy. Be careful when handling them. Lifting equipment is needed when parts weigh over 50 pounds (23 kg) for a single person lift, over 100 pounds (45 kg) for a two person lift, and over 150 pounds (68 kg) for a three or more person lift. Do not try to handle heavy parts without lifting equipment. Keep clear of heavy parts supported only by lifting equipment. Failure to observe this precaution could cause serious injury or death of personnel.			
9.	Hub (1) and brakedrum (5)	Using boards and lift truck, support.	
10.	Locknut (4) to axle skein (6)	Capscrew (3) and lockwasher (7)	a. Using 9/16-inch socket and 3/8-inch drive handle, unscrew and take out. b. Get rid of lockwasher (7).
11.	Lock plate (8)	Take out.	
12.	Axle skein (6)	Locknut (4)	Using front bearing nut wrench and wheel nut wrench handle, unscrew and take off.
13.	Hub (1)	Bearing cone (9)	Take out.
14.	Axle skein (6)	Hub (1) and drum (5)	a. Using boards and lift truck, take off. b. With assistant, take off lift truck.



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**FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
DISASSEMBLY		
15.	Hub (1) and brakedrum (5)	Support on boards as shown.
16. Hub (1)	Oil seal (10)	a. Using puller, pull out. b. Get rid of.
17.	Spacer (11) and inner bearing cone (12)	Take out.
18. Brakedrum (5) to hub (1)	Ten capscrews (13) and lockwashers (14)	a. Have assistant hold drum, with pry bar. b. Using 3/4-inch socket, 1/2-inch drive hinged handle, and extension, unscrew and take out. c. Get rid of lockwashers (14).
19. Hub (1)	Brakedrum (5)	Take off.



**FRONT AXLE HUB, DRUM, AND BEARINGS ASSEMBLY - CONTINUED**

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LOCATION	ITEM	ACTION	REMARKS
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CLEANING

**NOTE**

All lubricant must be removed from bearings. Repeat step 20 as many times as necessary to thoroughly clean bearings.

20.	Inner bearing cone (1) and outer bearing cone (2)	Clean (TM 9-214).	
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**WARNING**

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat. The flashpoint is 100°F to 138°F (38° to 59°C). If you become dizzy while using cleaning solvent, get fresh air immediately and get medical aid. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

21.	Hub cap (3), lock plate (4), locknut (5), capscrew (6), and spacer (7)	Clean using solvent, cleaning brush, and rags.	
22.	Hub (8)	Clean using solvent, cleaning brush, and rags.	

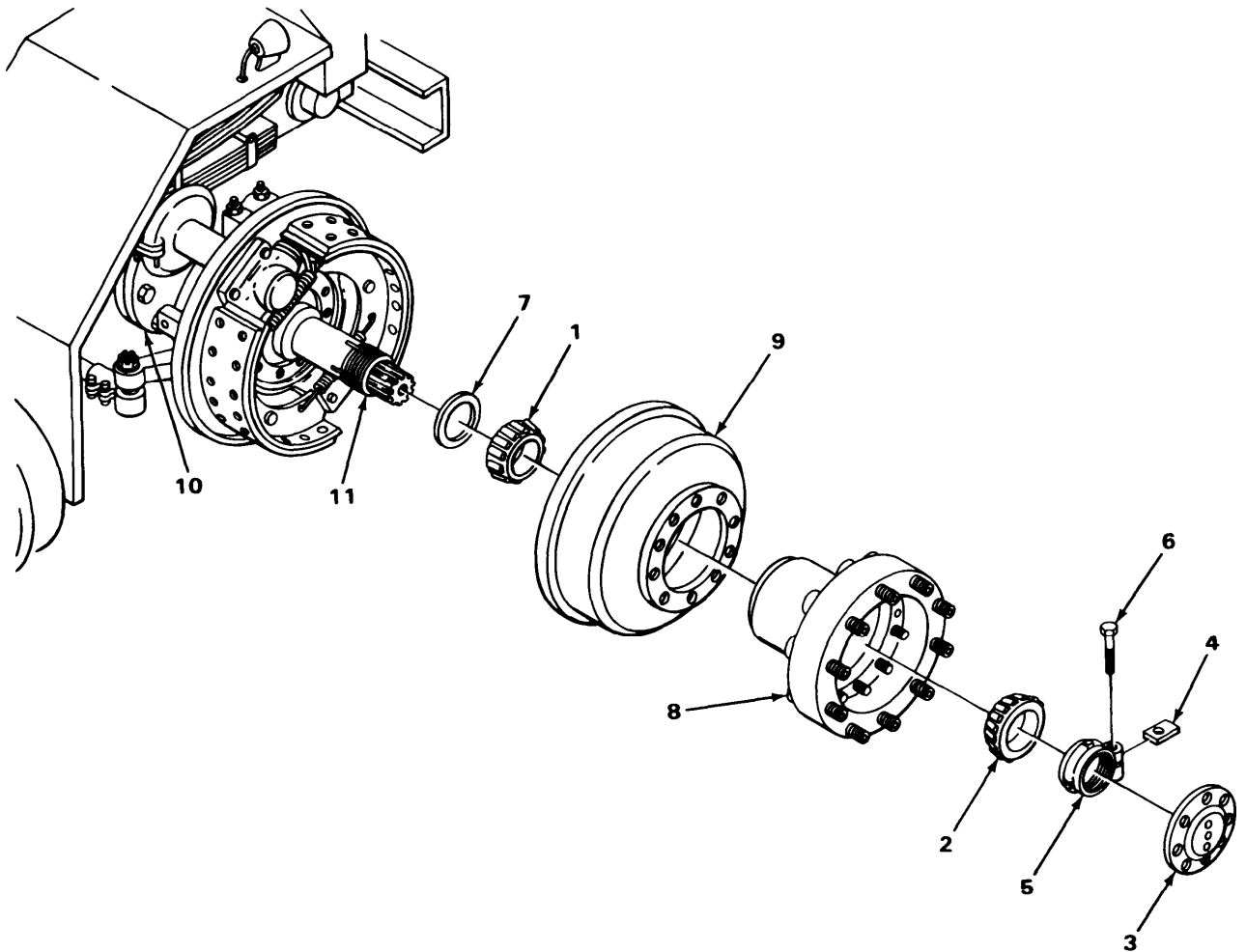
FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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**WARNING**

Make sure no grease remains on brakedrum and that no grease contacts brake linings. If linings become contaminated with grease, brakes on that wheel will fail and could cause serious accident. Contaminated linings cannot be cleaned and must be replaced.

- |               |                 |   |
|---------------|-----------------|---|
| 23.           | Brakedrum (9)   | Clean using solvent, cleaning brush, and rags.            |
| 24. Axle (10) | Axle skein (11) | Using solvent sparingly, cleaning brush, and rags, clean. |



TA240570

FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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INSPECTION/REPLACEMENT

**WARNING**

Some parts are heavy. Be careful when handling them. Lifting equipment is needed when parts weigh over 50 pounds (23 kg) for a single person lift, over 100 pounds (45 kg) for a two person lift, and over 150 pounds (68 kg) for a three or more person lift. Do not try to handle heavy parts without lifting equipment. Keep clear of heavy parts supported only by lifting equipment. Failure to observe this precaution could cause serious injury or death of personnel.

**NOTE**

For more information on how to inspect parts, go to the general maintenance instructions (page 4-1). Replace defective parts as needed.

25.	Inner bearing cone (1) and outer bearing cone (2)	Inspect (TM 9-214).	
26.	Hub (3)	<ul style="list-style-type: none"> <li>a. Inspect for cracks across hub face, radiating from bolt holes, or near bearing cups.</li> <li>b. Check for signs of damage or wear on hub face.</li> <li>c. Inspect for stripped, bent, or broken hubcap studs. <b>Replace any damaged hubcap stud.</b></li> <li>d. Inspect for stripped, bent, or broken wheel studs. <b>Replace any damaged studs, steps 27 to 30.</b></li> <li>e. Inspect for scored or pitted wheel bearing cups and discoloration. <b>Replace damaged wheel bearing cup, step 29. If hub, hubcap studs, wheel studs, and bearing cups are not damaged, continue at step 33.</b></li> </ul>	

**WARNING**

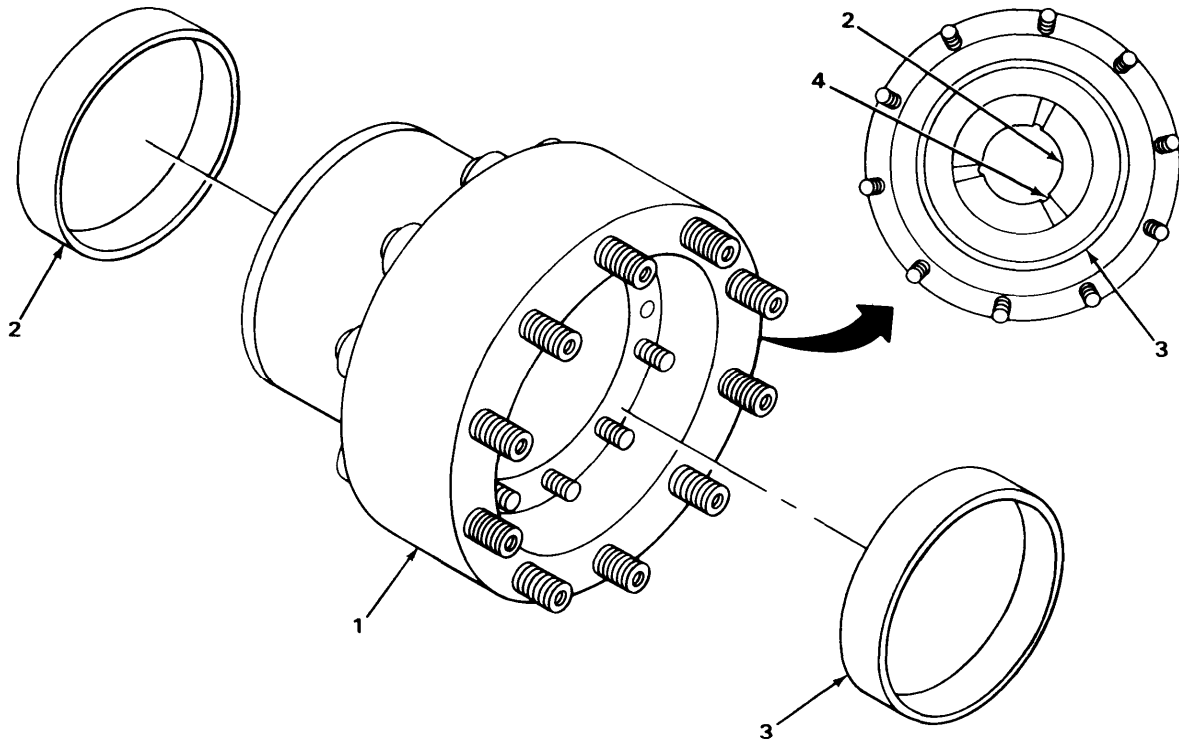
Some parts are heavy. Be careful when handling them. Lifting equipment is needed when parts weigh over 50 pounds (23 kg) for a single person lift, over 100 pounds (45 kg) for a two person lift, and over 150 pounds (68 kg) for a three or more person lift. Do not try to handle heavy parts without lifting equipment. Keep clear of heavy parts supported only by lifting equipment. Failure to observe this precaution could cause serious injury or death of personnel.

## FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
27.	Hub (3)	Support on boards as shown.
28. Hub (3)	Damaged wheel stud (4)	a. Soak with penetrating oil. b. Using drift and ball-peen hammer, drive out. c. Tilt hub to finish taking out. <b>Turn to clear boards and take out any other damaged studs.</b>
29.	Hub (3)	Turn over and support as shown.
30.	New wheel stud (4)	Drive in using ball-peen hammer. <b>Flat on stud head must be against machined block.</b>

FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY- CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSPECTION/REPLACEMENT – CONTINUED		
31. Hub (1)	Inner (2) or outer (3) wheel bearing cup	<p>a. Note three reliefs (4) bored into hub (1).</p> <p>b. Hook puller on cup (2) or (3) at reliefs (4).</p> <p>c. Using puller, pull out.</p> <p>d. Position new cup (2) or (3) square and level.</p> <p>e. Lay woodblock across bearing cup (2) or (3).</p> <p>f. Using ball-peen hammer and woodblock, press in new cup (2) or (3).  <b>Turn woodblock one-third turn after every one or two hammer taps to prevent cocking.</b></p> <p>g. Using drift and ball-peen hammer, tapping on alternate side of cup (2) or (3) to prevent cocking, finish seating.</p>

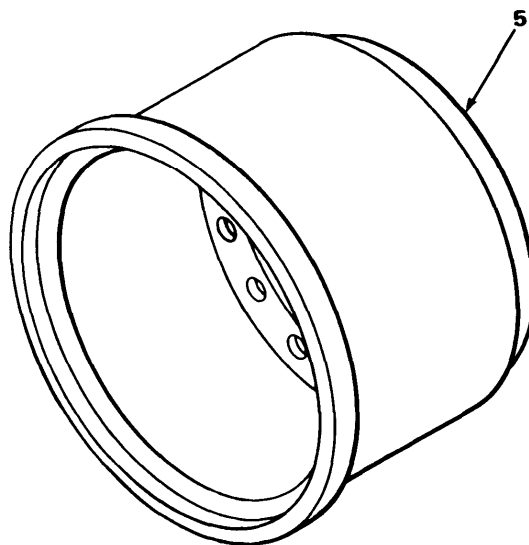


TA240572



FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
32.	Brakedrum (5)	a. Inspect braking surface for cracking, scoring, out of round, and bell mouth. <b>If cracked, replace drum. If scored, out of round, or bell mouthed, notify direct support maintenance.</b> b. Inspect front of drum (5) for radial cracks from bolt holes and bolt holes worn oval.



FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY- CONTINUED

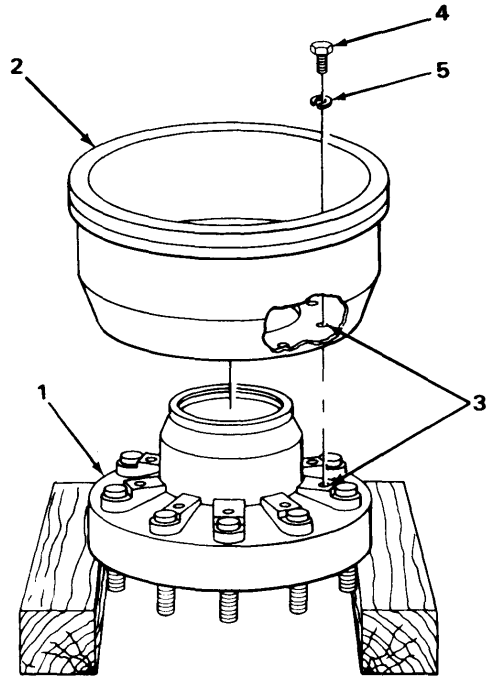
LOCATION	ITEM	ACTION REMARKS
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ASSEMBLY

**WARNING**

Some parts are heavy. Be careful when handling them. Lifting equipment is needed when parts weigh over 50 pounds (23 kg) for a single person lift, over 100 pounds (45 kg) for a two person lift, and over 150 pounds (68 kg) for a three or more person lift. Do not try to handle heavy parts without lifting equipment. Keep clear of heavy parts supported only by lifting equipment. Failure to observe this precaution could cause serious injury or death of personnel.

- |     |  |  |
|-----|--|--|
| 33. | Hub (1)  | Support hub on woodboards as shown.  |
| 34. | Hub (1)<br>Brakedrum (2)   | Put in place on hub (1) and align bolt holes (3).  |
| 35. | Brakedrum (2)<br>to hub (1)<br><br>Ten capscrews (4)<br>and new lock-<br>washers (5) | <ul style="list-style-type: none"> <li>a. Screw in alternately using 3/4-inch socket, 1/2-inch drive extension, and handle.</li> <li>b. Have assistant hold brakedrum (2) and hub (1) so they don't twist off boards during tightening. It maybe necessary to use pry bar.</li> <li>c. Alternately tighten to 180 foot pounds (244 N.m) using 3/4-inch socket, 1/2-inch drive extension, and torque wrench.</li> </ul> |



TA240574

FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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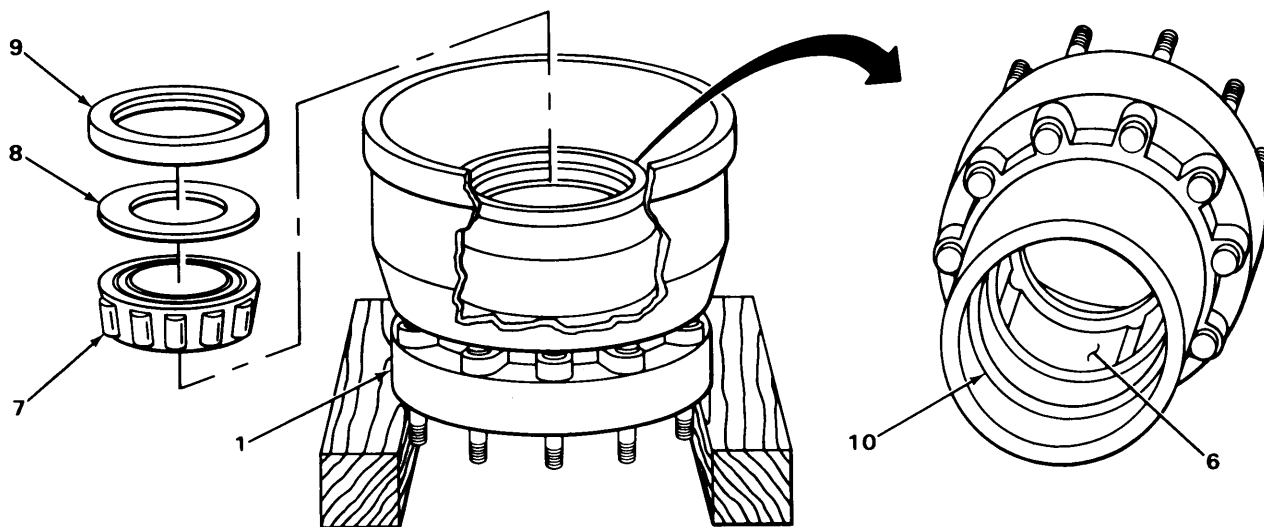
**WARNING**

Make sure no grease remains on brakedrum and that no grease contacts brake linings. If linings become contaminated with grease, brakes on that wheel will fail and could cause serious accident. Contaminated linings cannot be cleaned and must be replaced.

**CAUTION**

Wheel bearings and hubs are to be cleaned and bearings repacked with grease whenever hub and drum assembly is removed. Dirt and rust will cause bearing failure.

- |             |  |  |
|-------------|--|--|
| 36. Hub (1) | Inner wall (6)   | Apply grease leaving just enough room for axle skein to pass through.  |
| 37.         | Inner bearing cone (7), spacer (8), and new oil seal (9) | Pack with grease using lubricant packer, grease gun, and coupling.   |
| 38. Hub (1) | Inner bearing cone (7), spacer (8), and new oil seal (9) | <p>a. Place in position.<br/>                     b. Lay woodblock across seal (9).<br/>                     c. Using hammer and woodblock, press new seal (9) into place.</p> <p><b>Turn woodblock one-third turn after every one or two hammer taps to prevent cocking. Drive seal only until it is level.</b></p> |

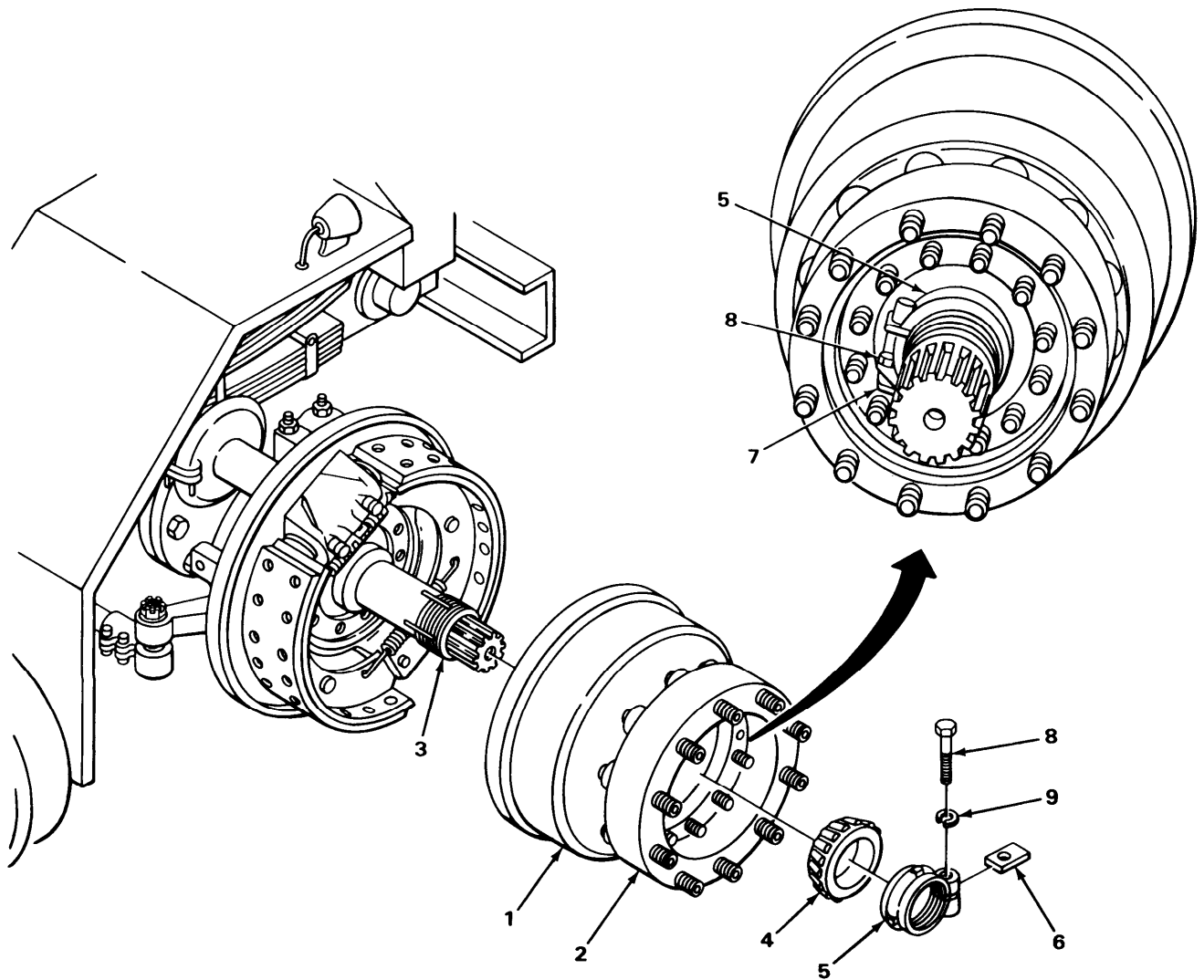


FRONT AXLE, HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
<b><u>WARNING</u></b>		
<p>Some parts are heavy. Be careful when handling them. Lifting equipment is needed when parts weigh over 50 pounds (23 kg) for a single person lift, over 100 pounds (45 kg) for a two person lift, and over 150 pounds (68 kg) for a three or more person lift. Do not try to handle heavy parts without lifting equipment. Keep clear of heavy parts supported only by lifting equipment. Failure to observe this precaution could cause serious injury or death of personnel.</p>		
39.	Brakedrum (1) and hub (2)	<ul style="list-style-type: none"> <li>a. Take off of boards.</li> <li>b. Set boards crossways on wheel lift truck.</li> <li>c. Set drum (1) and hub (2) on boards.</li> <li>d. Raise lift truck so hub (2) and drum (1) can be put in position.</li> </ul>
40. Axle skein (3)	Brakedrum (1) and hub (2)	Using lift truck, place in position.
41.	Outer bearing cone (4)	Using lubricating gun, coupling, lubricant packer, and grease, pack bearing cone.
42. Hub (2)	Bearing cone (4)	Put in.
43. Axle skein (3)	Locknut (5) and hub (2)	<ul style="list-style-type: none"> <li>a. Screw onto axle skein (3) until hub (2) is free to turn.</li> <li>b. Lower lift truck.</li> <li>c. Start hub (2) rotating.</li> <li>d. Using wheel nut wrench and handle, tighten until hub (2) can no longer rotate.</li> <li>e. Using wheel nut wrench and handle, back off locknut until slot lines up with nearest groove in axle skein (3).</li> <li>f. Rotate hub (2) to check for any looseness or binding of bearings.</li> </ul> <p style="text-align: center;"><b>If there is any looseness or binding, repeat steps above.</b></p>
44. Locknut (5) to axle skein (3)	Lock plate (6)	Put into slot in locknut (5) engaging groove in axle skein (3).

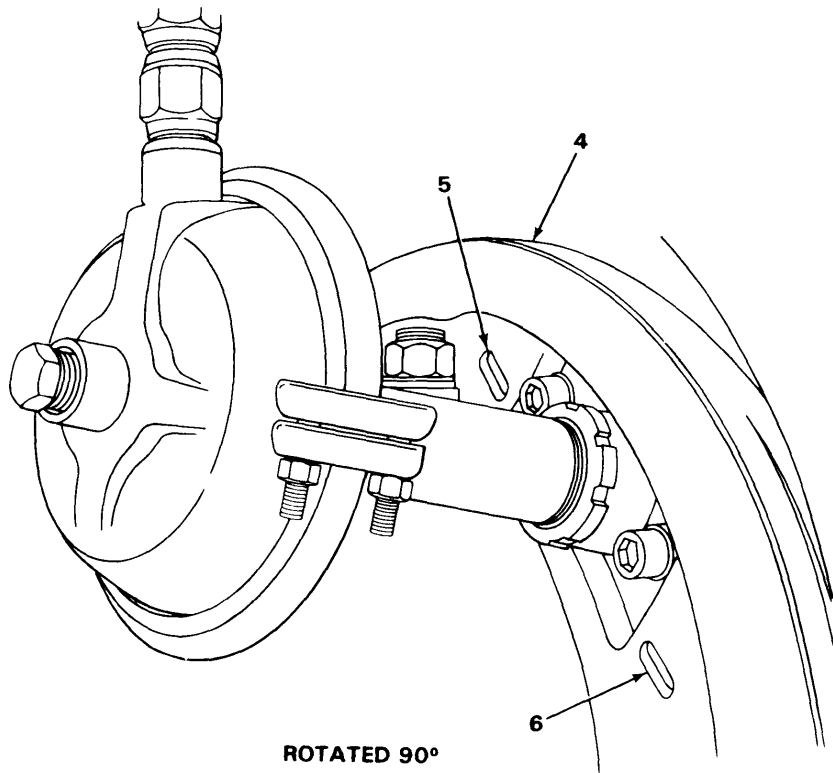
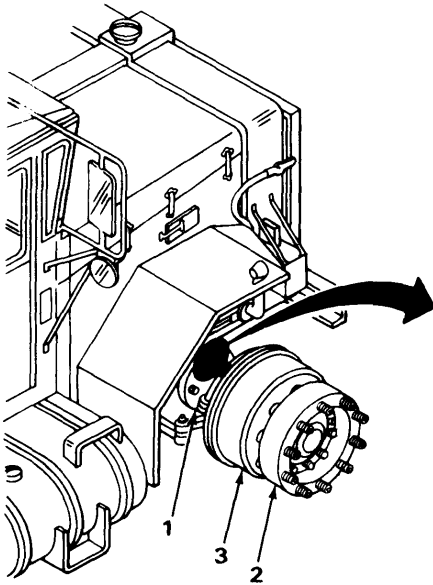
FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
45.	Hub (2)	Turn so notch (7) is by hole for lock screw (8) in locknut (5).
46. Lock plate (6) to locknut (5)	Lock screw (8) and new lockwasher (9)	Screw in and tighten using 9/16-inch socket and 3/8-inch drive handle.



FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION – CONTINUED			
47. Front axle (1)	Hub (2) and brakedrum (3)	Rotate.	
48. Brake backing plate (4)	Front adjusting slot (5)	Using brake adjusting tool, adjust forward brake shoe out until brakedrum (3) can no longer turn, then back off just enough so brakedrum (3) can turn.	
49.	Rear adjusting slot (6)	Using brake adjusting tool, adjust rear brake shoe out until brakedrum (3) can no longer turn, then back off just enough so brakedrum (3) can turn.	

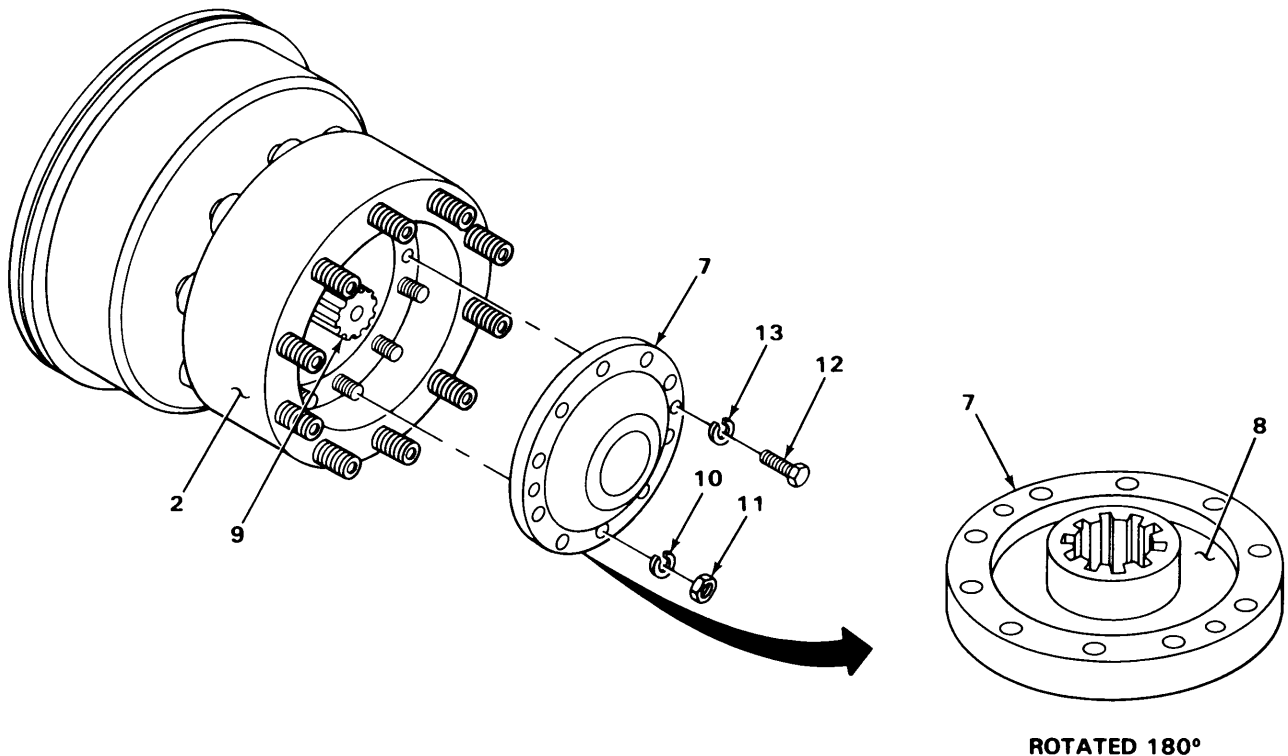


50. Hubcap (7)	Groove (8)	Pack groove (8) inside hubcap with grease about 1/2-inch (1.5 cm) thick.
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TA240577

**FRONT AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
51. Hub (2) to axle shaft (9)	Hubcap (7)	a. Put in place. b. Using plastic hammer, drive on,
52. Hubcap (7) to hub (2)	Ten new lockwashers (10) and nuts (11)	Screw on and alternately tighten using 15/16-inch socket, extension, and handle.
53. Hubcap (7)	Two capscrews (12) and new lockwashers (13)	a. Screw in and tighten using 15/16-inch socket, 1/2-inch drive extension, and handle. b. Remove trestles.



**NOTE**

FOLLOW-ON MAINTENANCE: Install front wheels (TM 9-2320-270-10).

**TASK ENDS HERE**

## PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY

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This task covers:

- a. Removal (page 4-911)
  - b. Disassembly (page 4-914)
  - c. Cleaning (page 4-914)
  - d. Inspection/Replacement (page 4-916)
  - e. Assembly (page 4-920)
  - f. Installation (page 4-921)
- 

### INITIAL SETUP

#### Tools

Brake adjusting tool  
Brush, parts cleaning  
Brush, wire  
Chisel, cold-hand, 3/8-inch  
Drift, brass, 3/4-inch  
Extension, 3-inch, 1/2-inch drive  
Hammer, machinist's ball-peen  
Hammer, plastic  
Handle, ratchet, 1/2-inch drive  
Handle, ratchet, 3/4-inch drive  
Key, socket head screw, 5/16-inch  
Knife, putty  
Pan, drain  
Puller, mechanical slide hammer  
Socket, 1/2-inch, 1/2-inch drive  
Socket, 9/16-inch, 1/2-inch drive  
Socket, 4 1/4-inch, 3/4-inch drive  
Trestle, automotive maintenance,  
10-ton (two required)  
Truck, lift, wheel

#### Tools – Continued

Woodblock, 4 inch by 4 inch by 12 inch  
Woodboards, 4 inch by 4 inch by 48 inch  
Wrench, pliers  
Wrench, torque, 1/2-inch drive  
Wrench, torque, 3/4-inch drive  
Wrench, wheel bearing nut

#### Materials/Parts

Gasket, hubcap  
Lockwasher, dust cover to axle (six required)  
Lockwasher, hubcap to hub (six required)  
Lockwasher, spindle  
Oil, gear lubricant (LO 9-2320-270-12)  
Rags, wiping (item 10, appendix C)  
Seal, oil, hub  
Solvent, cleaning (item 16, appendix C)

#### Personnel Required

Two

#### Equipment Condition

Pusher axle wheel removed  
(TM 9-2320-270-10).



**PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED**

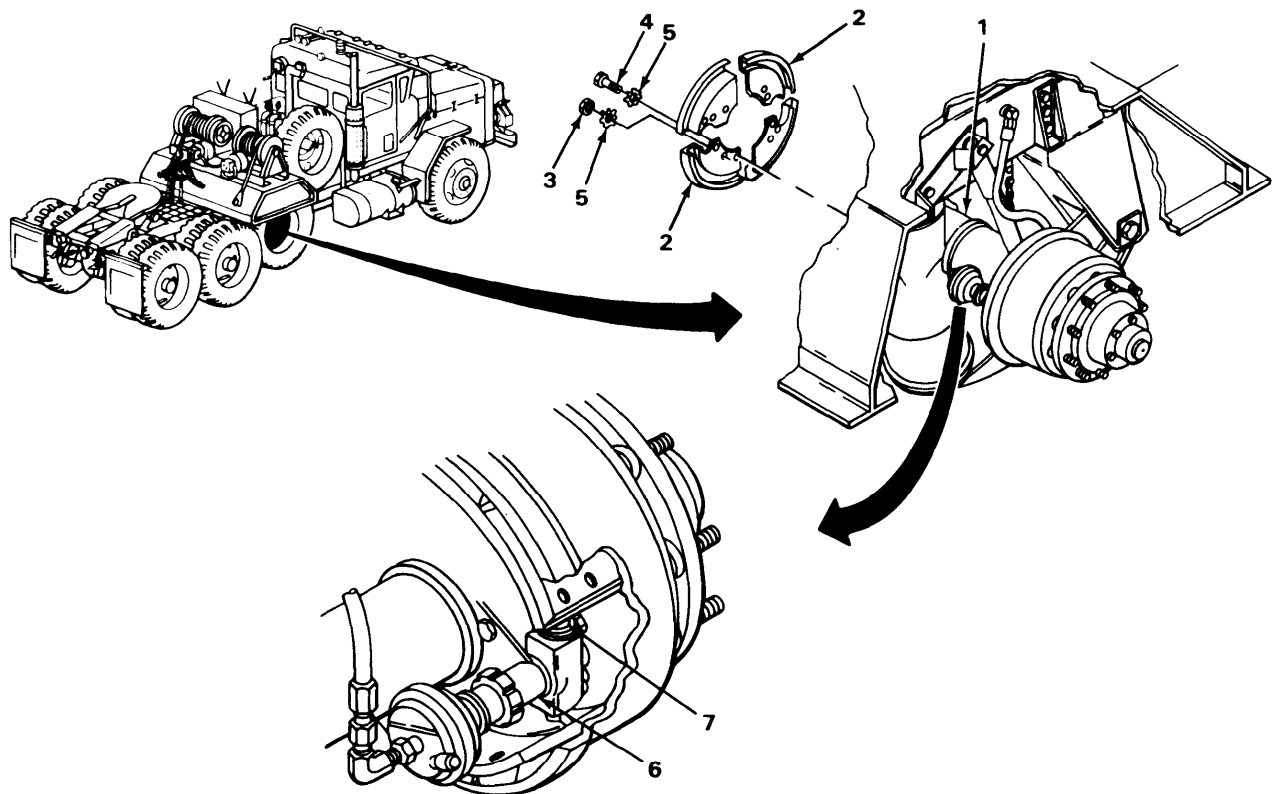
LOCATION	ITEM	ACTION REMARKS
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REMOVAL

**NOTE**

Except as noted, this task is the same for either right or left pusher axle hub, drum, and bearing assembly. Right pusher axle hub, drum, and bearing is shown.

- |   |   |  |
|---|---|--|
| 1.  | Pusher axle (1)   | Place two trestles underneath.   |
| 2. Two dust covers (2) to pusher axle (1) | Four nuts (3), two capscrews (4), and six lockwashers (5) | a. Using 9/16-inch socket, 1/2-inch drive handle, and extension, unscrew and take off.<br>b. Get rid of lockwashers (5). |
| 3. Pusher axle (1)                        | Two dust covers (2)                                       | Take off.  |
| 4. Two brake plunger assemblies (6)       | Two brake adjusting screws (7)                            | Using brake adjusting tool, back off as far as possible.   |



**PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
REMOVAL – CONTINUED		
5. Pusher axle (1)	Hub (2)	a. Rotate so drainplug (3) on hubcap (4) faces down. b. Place drain pan underneath.
6. Hubcap (4)	Drainplug (3)	a. Using 5/16-inch socket head screw key, unscrew and take out. b. Allow lubricant to drain. c. Get rid of lubricant (page 4-1).
7.	Filler plug (5)	Pull out.
8. Hubcap (4) to hub (2)	Six capscrews (6) and lockwashers (7)	a. Using 1/2-inch socket, extension, and handle, unscrew and take out. b. Get rid of lockwashers (7).
9. Hub (2)	Hubcap (4)	Take off. <b>It may be necessary to use plastic hammer to break loose.</b>
10. Hub (2) or hubcap (4)	Gasket (8)	a. Take off. b. Get rid.
11.	Hub (2) and brakedrum (9)	Using lift truck and boards, support.
12. Spindle (10)	Locknut (11)	Using wheel bearing nut wrench and handle, unscrew and take out.
13.	Lockwasher (12)	a. Take off, b. Get rid of.
14.	Adjusting nut (13)	Using wheel bearing nut wrench and handle, unscrew and take off.
15.	Outer bearing cone (14)	Take out.

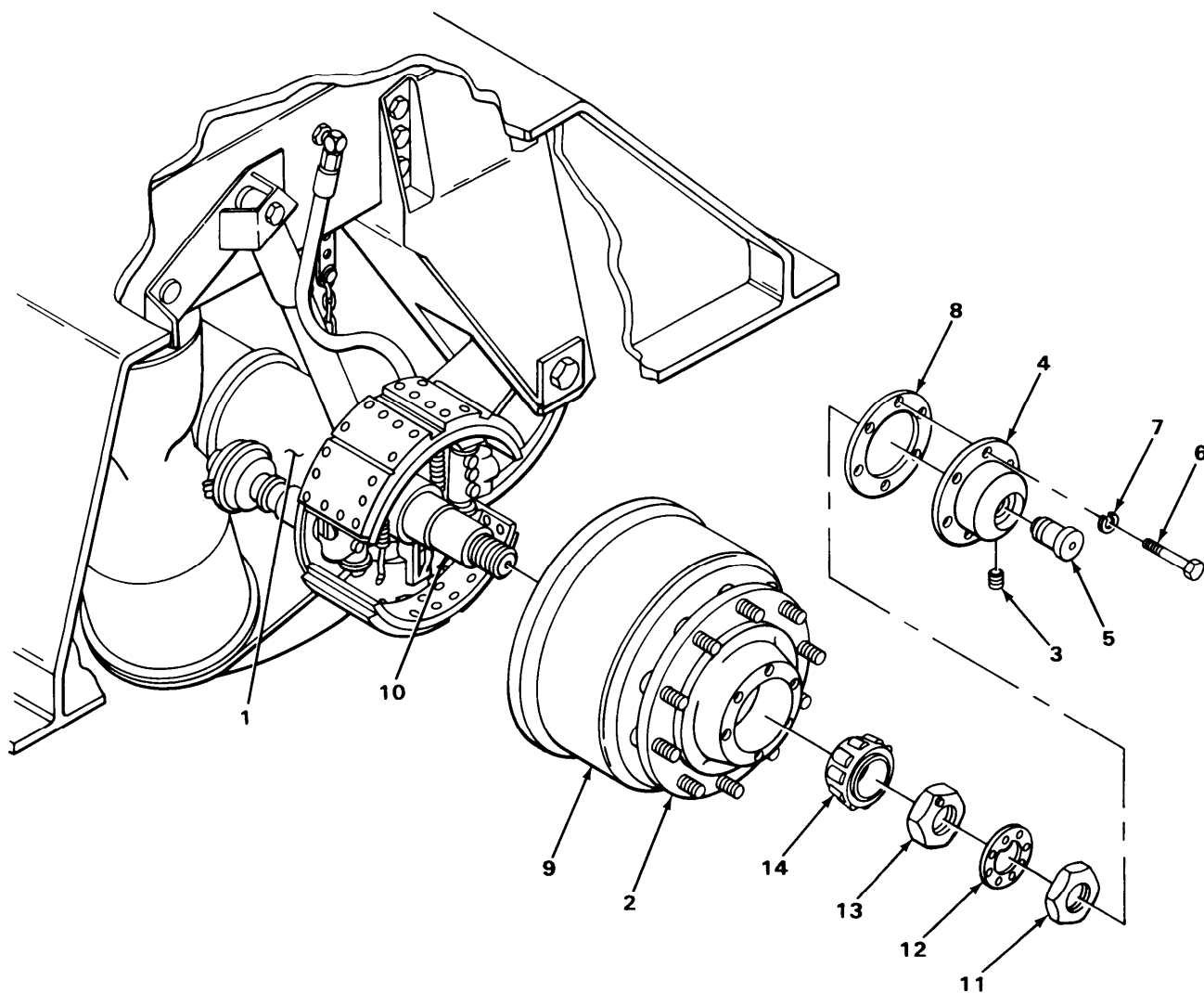
**PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
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**WARNING**

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- |              |                         |   |
|--------------|-------------------------|---|
| 16. Axle (1) | Hub (2) and<br>drum (9) | a. Using lift truck, take off and lower.<br>b. Take hub (2) and drum (9) off of lift truck. |
|--------------|-------------------------|---|



**PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY- CONTINUED**

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LOCATION	ITEM	ACTION REMARKS
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DISASSEMBLY

**WARNING**

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- |             |                              |  |
|-------------|------------------------------|--|
| 17.         | Hub (1) and<br>brakedrum (2) | Support on boards as shown.                  |
| 18. Hub (1) | Oil seal (3)                 | a. Using puller, pull out.<br>b. Get rid of. |
| 19.         | Inner bearing<br>cone (4)    | Take out.                                    |

CLEANING

- |     |                          |                   |
|-----|--------------------------|-------------------|
| 20. | Two bearing<br>cones (4) | Clean (TM 9-214). |
|-----|--------------------------|-------------------|

**WARNING**

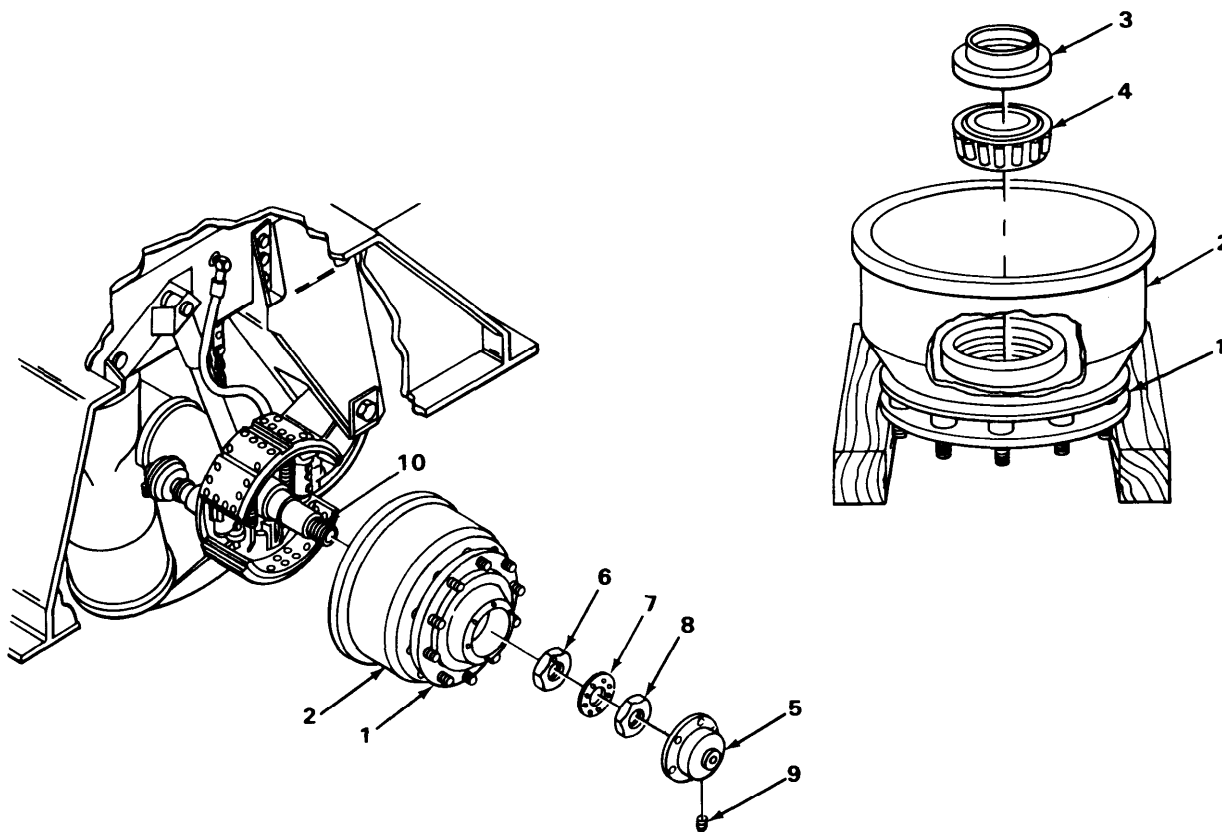
Drycleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat. The flashpoint is 100°F to 138°F (38° to 59°C). If you become dizzy while using cleaning solvent, get fresh air immediately and get medical aid. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

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Make sure no grease remains on brakedrum and that no grease contacts brake linings. If linings become contaminated with grease, brakes on that wheel will fail and could cause serious accident. Contaminated linings cannot be cleaned and must be replaced.

**PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
21.	Brakedrum (2) and hub (1)	a. Clean using solvent, parts cleaning brush, and clean rags. b. Using putty knife, solvent, wire brush and rags, clean off all gasket material.
22.	Hubcap (5)	a. Clean using solvent, parts cleaning brush and clean rags. b. Using putty knife, solvent, wire brush, and rags, clean off all gasket material.
23.	Adjusting nut (6), lockwasher (7), locknut (8) and drain plug (9)	Clean using solvent, parts cleaning brush, and rags.
24.	Spindle (10)	Using solvent sparingly cleaning brush, and rags, clean spindle.



**PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
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INSPECTION/REPLACEMENT

**NOTE**

For more information on how to inspect parts, go to the general maintenance instructions (page 4-1).

Replace defective parts as needed.

25.	Inner bearing cone (1)	Inspect (TM 9-214).
26.	Hub (2)	a. Inspect for cracks across hub face, radiating from stud holes, or near bearing cups (3) and (4). b. Check for damage or wear on hub face. c. Inspect for stripped, bent, or broken wheel studs (5). <b>Replace any damaged wheel stud, steps 29 thur 35.</b> d. Inspect for scored or pitted wheel bearing cups (3) and (4) and discoloration. <b>If hub, wheel studs, and bearing cups are not damaged, go to step 36.</b>

**WARNING**

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**NOTE**

Except as noted, same steps are used to replace inner and outer bearing cups. Inner bearing cup is shown.

27.	Hub (2)	Inner bearing cup (3) a. Using puller, pull out. b. Position new cup (3) square and level. c. Lay woodblock across cup (3).
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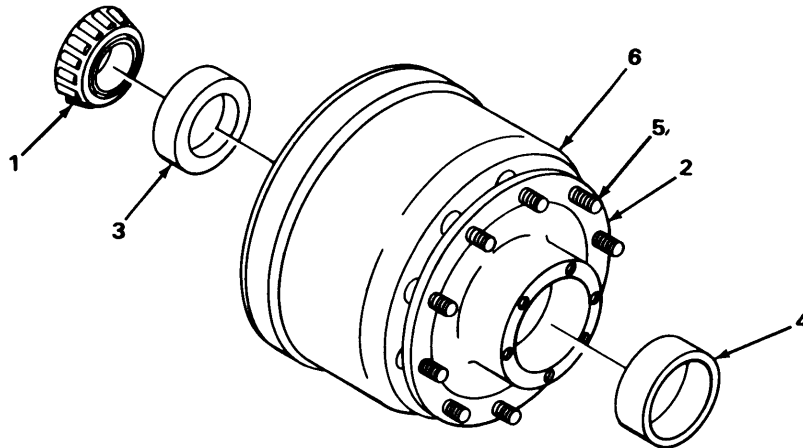
PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
27. Continued		d. Using ball-peen hammer and wood-block, press into place. <b>Turn block one-third turn after one or two hammer taps to prevent cocking.</b> e. On inner cup (3), using brass drift and ball-peen hammer, tapping on alternate sides to prevent cocking, finish seating.

**NOTE**

Pusher axle drum cannot be refinished. If damaged, replace.

28.	Brakedrum (6)	Inspect braking surface for cracks, severe searing, out of round and bell mouth. <b>If brakedrum is not damaged, go to step 36.</b>
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**PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY- CONTINUED**

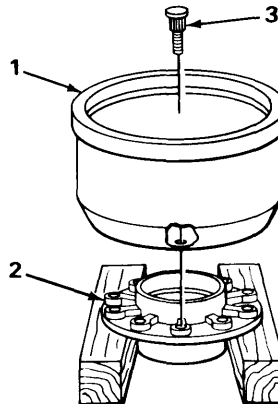
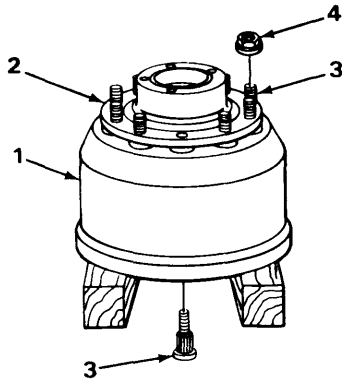
LOCATION	ITEM	ACTION REMARKS
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INSPECTION/REPLACEMENT – CONTINUED

**WARNING**

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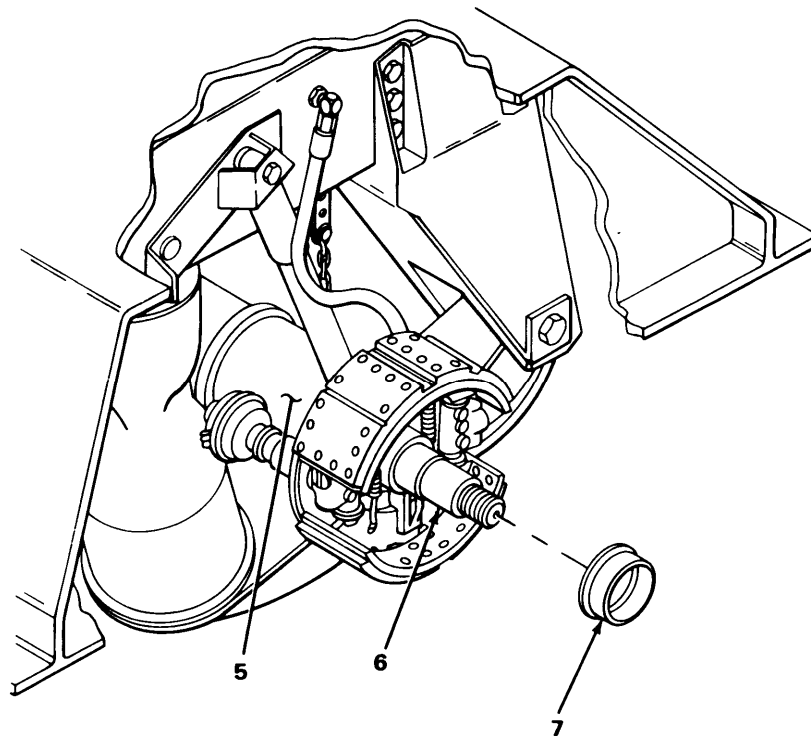
29.	Brakedrum (1) and hub (2)	Support with boards as shown.
30.	Ten wheel studs (3)	Ten wheel nuts (4) a. Screw on until top is even with top of stud (3). b. Using ball-peen hammer, drive down studs (4). c. Unscrew and take off nuts (4).
31.	Brakedrum (1) to hub (2)	Ten wheel studs (3) a. Using ball-peen hammer and brass drift, drive out. b. Get rid of.
32.	Brakedrum (1)	Hub (2) Take off.
33.	Hub (2)	Using boards, support hub as shown.
34.	Brakedrum (1)	Place in position.
35.	Brakedrum (1) to hub (2)	Ten wheel studs (3) Using ball-peen hammer, drive in.





PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
36. Axle (5)	Spindle (6)	Inspect for wear marks, scaring, and deep scratches.
37. Spindle (6)	Oil seal wiper (7)	Inspect for deep grooves. <b>If wiper shows only light wear, go to step 40.</b>
38.	Oil seal wiper (7')	a. Using chisel and ball-peen hammer, drive off by tapping from behind on alternate sides. b. Get rid of.
39.	New oil seal wiper (7)	a. Put on as square as possible. b. Using brass drift and ball-peen hammer, drive on by tapping on alternate sides.



**PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION	REMARKS
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ASSEMBLY

**WARNING**

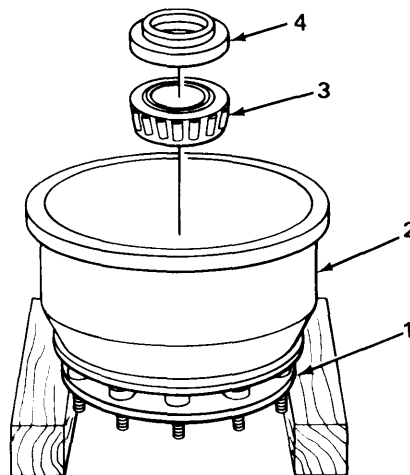
Some parts are heavy. Be careful when handling them. Lifting equipment is needed when parts weigh over 50 pounds (23 kg) for a single person lift, over 100 pounds (45 kg) for a two person lift, and over 150 pounds (68 kg) for a three or more person lift. Do not try to handle heavy parts without lifting equipment. Keep clear of heavy parts supported only by lifting equipment. Failure to observe this precaution could cause serious injury or death of personnel.

- |     |                      |                          |
|-----|----------------------|--------------------------|
| 40. | Hub (1) and drum (2) | Rest on boards as shown. |
|-----|----------------------|--------------------------|

**WARNING**

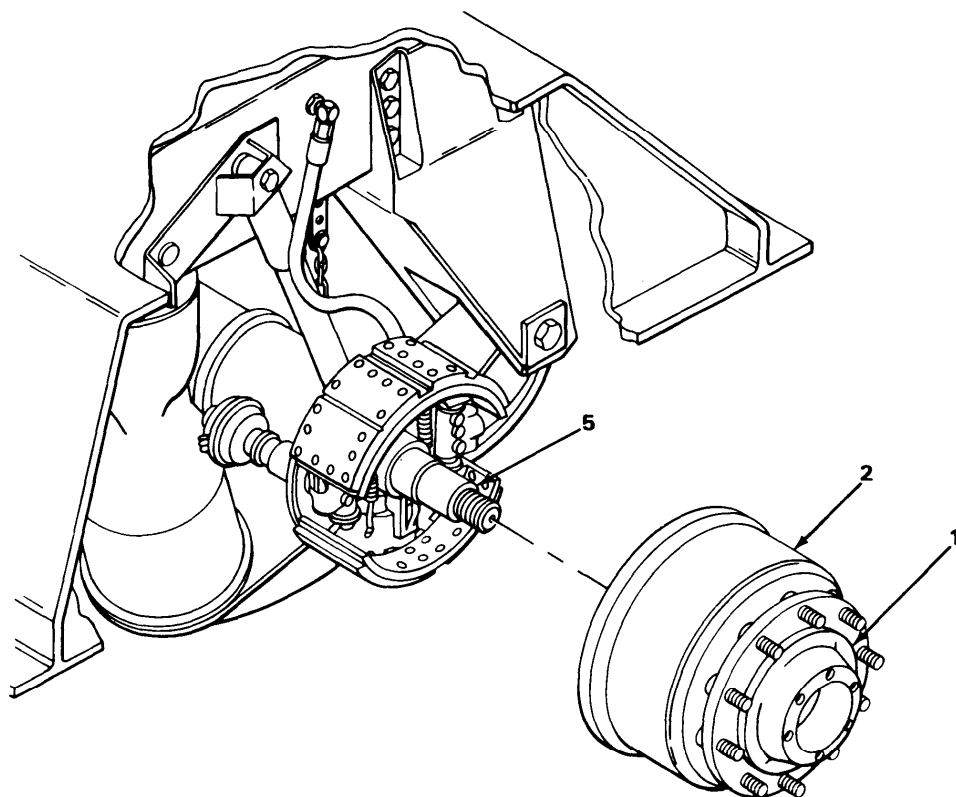
Make sure no grease remains on brakedrum and that no grease contacts brake linings. If linings become contaminated with grease, brakes on that wheel will fail and could cause serious accident. Contaminated linings cannot be cleaned and must be replaced.

- |            |                        |  |
|------------|------------------------|--|
| 41. Hub(1) | Inner bearing cone (3) | <ul style="list-style-type: none"> <li>a. Apply gear lubricant oil.</li> <li>b. Put in place.</li> </ul>   |
| 42.        | New oil seal (4)       | <ul style="list-style-type: none"> <li>a. Position square and level in hub (1).</li> <li>b. Using ball-peen hammer and woodblock, press in until level.<br/><b>Turn woodblock one-third turn after every one or two hammer taps to prevent cocking.</b></li> <li>c. Using brass drift and ball-peen hammer, finish seating.</li> </ul> |



**PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
<b><u>WARNING</u></b>		
<p>Some parts are heavy. Be careful when handling them. Lifting equipment is needed when parts weigh over 50 pounds (23 kg) for a single person lift, over 100 pounds (45 kg) for a two person lift, and over 150 pounds (68 kg) for a three or more person lift. Do not try to handle heavy parts without lifting equipment. Keep clear of heavy parts supported only by lifting equipment. Failure to observe this precaution could cause serious injury or death of personnel.</p>		
43.	Brakedrum (2) and hub (1)	With help from assistant, place on boards and lift truck.
44. Spindle (5)	Brakedrum (2) and hub (1)	Using lift truck, place in position.

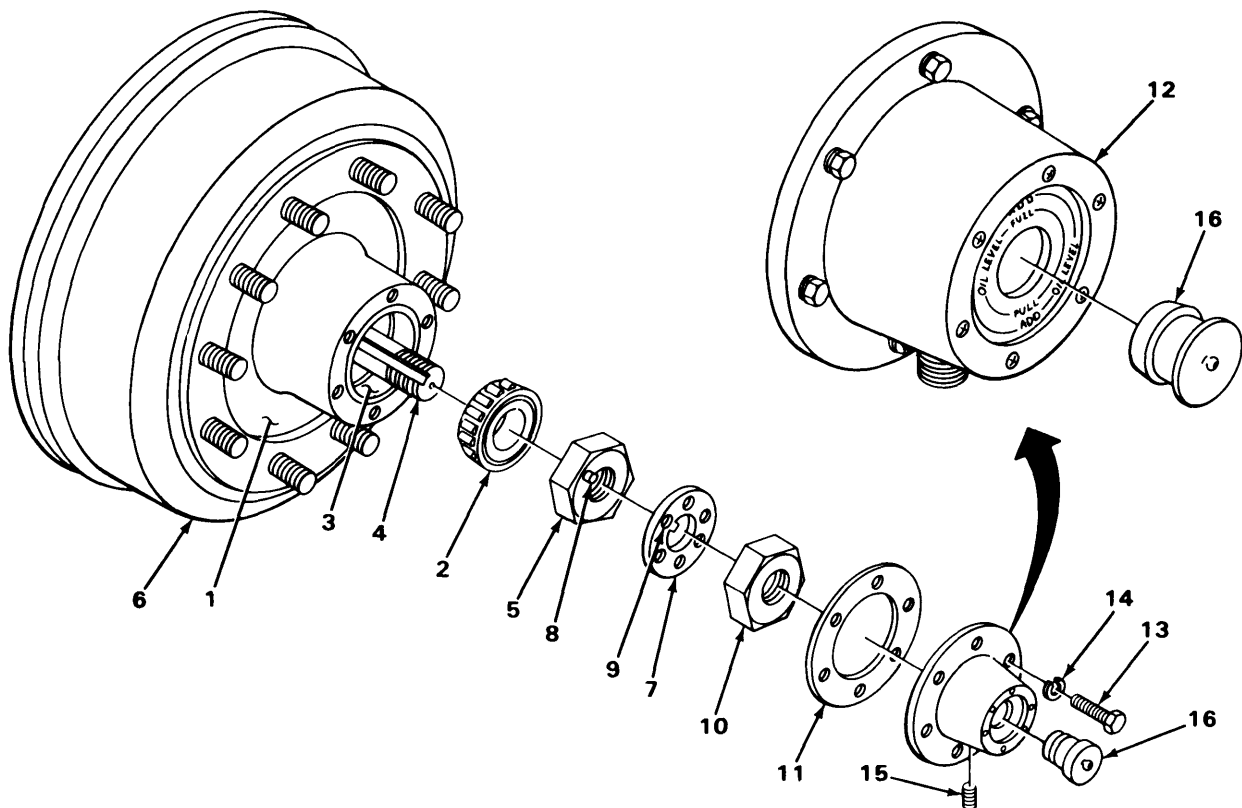


## PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSTALLATION - CONTINUED		
<b><u>WARNING</u></b>		
Make sure no grease remains on brakedrum and that no grease contacts brake linings. If linings become contaminated with grease, brakes on that wheel will fail and could cause serious accident. Contaminated linings cannot be cleaned and must be replaced.		
45. Hub (1)	Outer bearing cone (2)	a. Wipe bearing cone (2) and bearing cup (3) with gear lubricant oil. b. Put in.
46. Spindle (4)	Adjusting nut (5)	a. Screw onto spindle until hub (1) can turn. b. Lower lift truck.
47.	Hub (1) and drum (6)	Rotate.
48.	Adjusting nut (5)	a. Using 3/4-inch drive torque wrench and 4 1/4-inch socket, tighten to 50 foot pounds (67.8 N·m). b. Using 4 1/4-inch socket and 3/4-inch drive handle, back off nut just enough to eliminate binding.
49. Spindle (4)	New lockwasher (7)	Put on making sure pin (8) on adjusting nut (5) goes through one of the holes (9) in the lockwasher (7). <b>If it does not, use 4 1/4-inch socket and 3/4-inch drive handle to tighten adjusting nut (5) just enough to get pin (8) in hole (9).</b>
50.	Locknut (10)	a. Screw on using 4 1/4-inch socket and 3/4-inch drive handle. b. Using 3/4-inch torque wrench and 4 1/4-inch socket, tighten to 250 to 400 foot pounds (339 to 542 N·m).

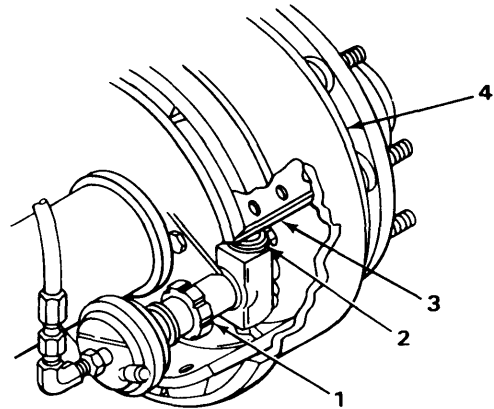
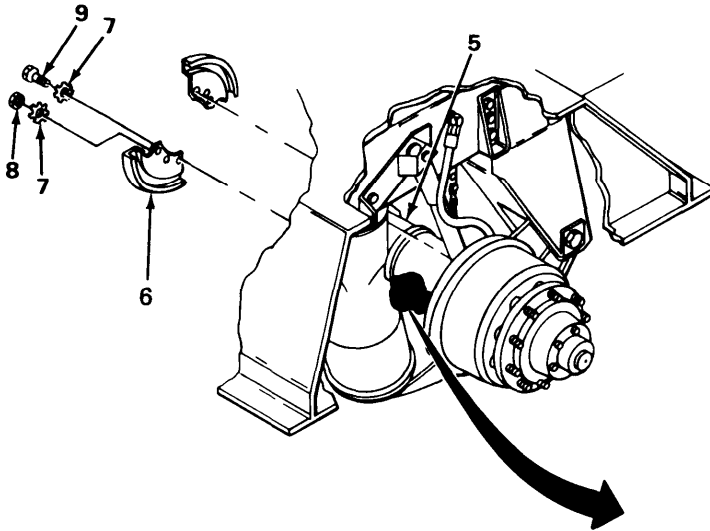
**PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
51. Hub (1)	New gasket (11) and hubcap (12)	Place in position.
52. Hubcap (12) to hub (1)	Six screws (13) and new lockwashers (14)	a. Screw in snugly using 1/2-inch socket, 1/2-inch drive handle, and extension. b. Using 1/2-inch socket, 1/2-inch drive torque wrench, and extension, alter- nately tighten to 15 to 20 foot pounds (20.3 to 27.6 N·m).
53. Hubcap (12)	Drain plug (15)	Screw in and tighten using 5/16-inch socket head screw key.
54.	Hub (1)	Lubricate (LO 9-2320-270-12).
55.	Filler plug (16)	Push in.



**PUSHER AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
<b>INSTALLATION - CONTINUED</b>		
<b>56.</b> Two brake plunger assemblies (1)	Two brake adjusting screws (2)	a. Using brake adjusting tool, pry counterclockwise until brake shoes (3) are tight against brakedrum (4). b. Using brake adjusting tool, pry clockwise on adjusting screws (2) to back off brake just enough so brakedrum (4) is free to turn.
<b>57.</b> Pusher axle (5)	Two dust covers (6)	Put in place.
<b>58.</b> Two dust covers (6) to pusher axle (5)	Six new lockwashers (7), four nuts (8), and two capscrews (9)	a. Screw on and tighten using 9/16-inch socket and 1/2-inch drive handle. b. Remove trestles.



**NOTE**

FOLLOW-ON MAINTENANCE: Install pusher axle wheels (TM 9-2320-270-10).

**TASK ENDS HERE**

TA240588

## TANDEM AXLE HUB, DRUM, AND BEARING ASSEMBLY

---

This task covers:

- |                             |  |
|-----------------------------|--|
| a. Removal (page 4-926)     | d. Inspection/Replacement (page 4-929) |
| b. Disassembly (page 4-928) | e. Assembly (page 4-932)               |
| c. Cleaning (page 4-928)    | f. Installation (page 4-933)           |
- 

### INITIAL SETUP

#### Tools

Adapter, grease gun coupling, rigid  
 Brush, parts cleaning  
 Chisel, 1/4-inch  
 Drift, brass, 3/4-inch  
 Extension, 6-inch, 1/2-inch drive  
 Hammer, machinist's ball-peen  
 Hammer, 10-pound, cross-peen  
 Handle, ratchet, 1/2-inch drive  
 Handle, wheel nut wrench  
 Lubricant packer, bearing  
 Lubricating gun, hand  
 Pliers, slip-joint  
 Puller, mechanical, slide hammer  
 Socket, 1/2-inch, 1/2-inch drive  
 Socket, 9/16-inch, 1/2-inch drive  
 Trestle, motor vehicle maintenance,  
 10 ton (two required)  
 Truck, lift, wheel  
 Woodblock, 4 inch by 4 inch by  
 12 inch

#### Tools – Continued

Woodboards, 4 inch by 4 inch by 48 inch  
 (two required)  
 Wrench, axle nut

#### Materials/Parts

Grease, tandem axle wheel bearing  
 (LO 9-2320-270-12)  
 Lockwasher, spindle  
 Rags, wiping (item 10, appendix C)  
 Seal, oil, hub  
 Solvent, cleaning (item 16, appendix C)

#### Personnel Required

Two

#### Equipment Condition

Axle shaft removed (page 4-603)  
 Spring brake caged (TM 9-2320-270-10)  
 Wheels removed (TM 9-2320-270-10).

TANDEM AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

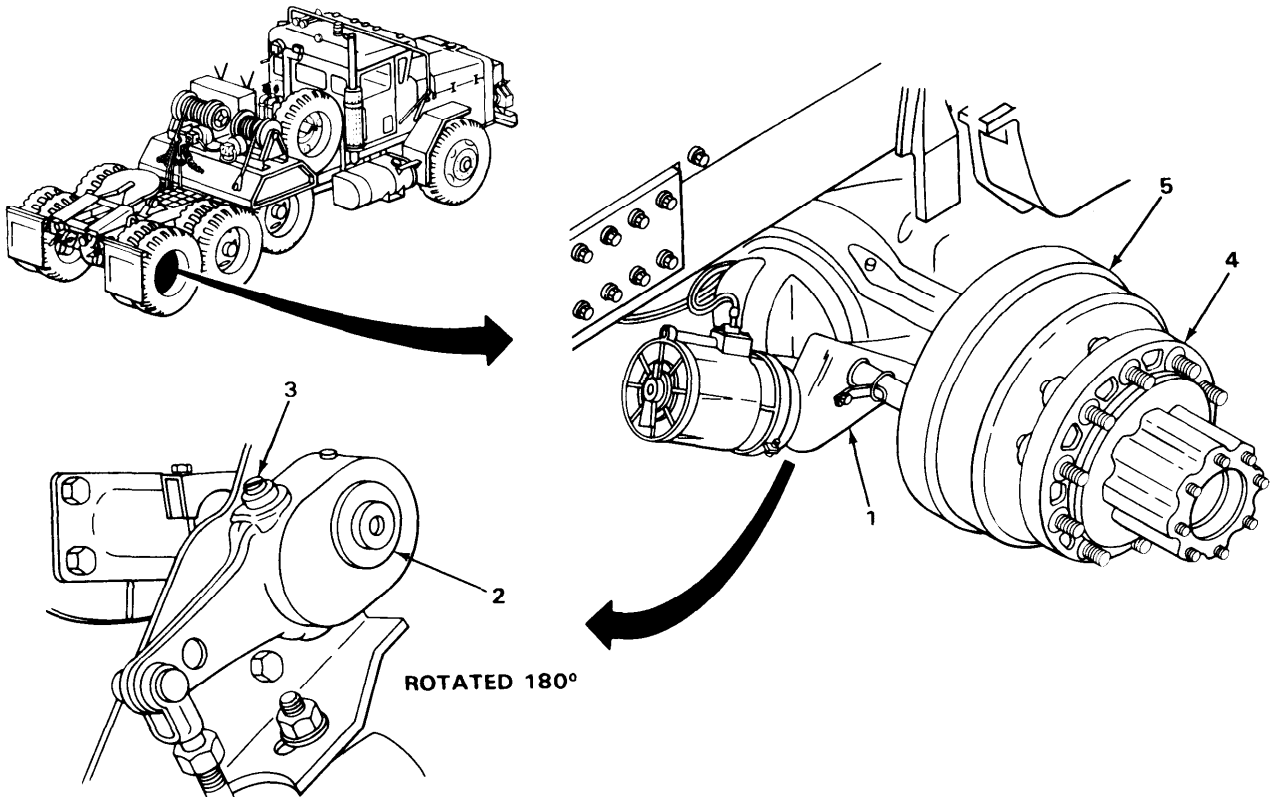
LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

**NOTE**

Except as noted, steps in this task are the same for all four tandem axle hub, drum, and bearing assemblies. Right rear assembly is shown.

- |    |   |  |
|----|---|--|
| 1. | Axle assembly (1)                                 | Place two trestles underneath.   |
| 2. | Slack adjuster (2)<br>Adjusting screw (3)         | Using 9/16-inch socket and handle, turn counterclockwise as far as it will go to back off brake. |
| 3. | Axle assembly (1)<br>Brakedrum (4)<br>and hub (5) | Using boards and wheel lift truck, support.  |



TA240589



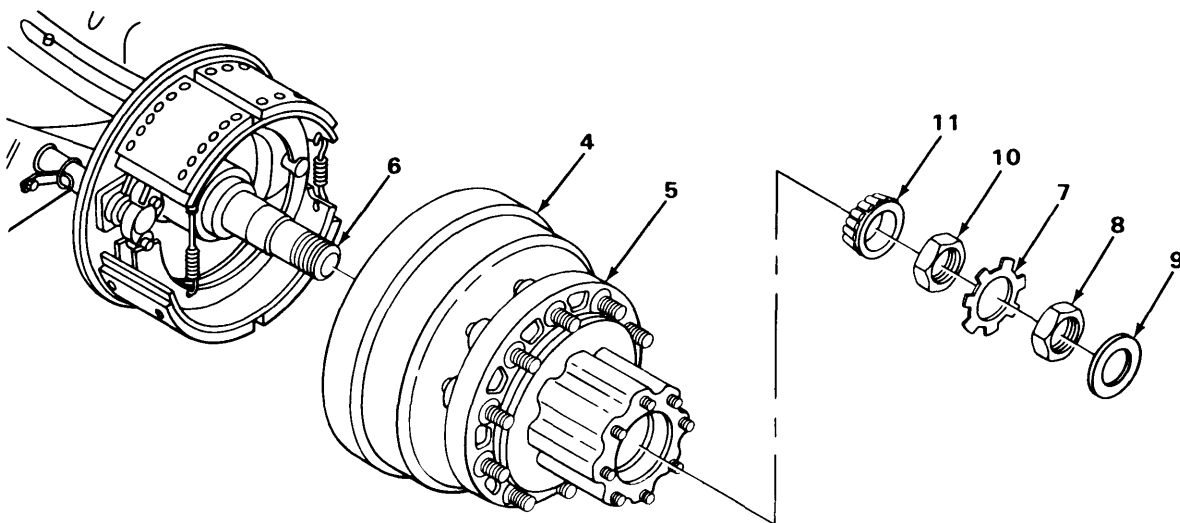
**TANDEM AXLE HUB, DRUM, AND BEARINGS ASSEMBLY- CONTINUED**

LOCATION	ITEM	ACTION REMARKS
4. Spindle (6)	Lockwasher (7)	Using ball-peen hammer and chisel, flatten tabs.
5.	Locknut (8) and seal (9)	Using axle nut wrench and wheel nut wrench handle, unscrew and take off.
6.	Lockwasher (7)	a. Take off. b. Get rid of.
7.	Adjusting nut (10)	Using axle nut wrench and wheel nut wrench handle, unscrew and take off.
8.	Outer bearing cone (11)	Take out.

**WARNING**

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- |    |                           |   |
|----|---------------------------|---|
| 9. | Brakedrum (4) and hub (5) | a. Using wheel lift truck, take off and lower.<br>b. Take off lift truck. |
|----|---------------------------|---|



**TANDEM AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS	
<b>DISASSEMBLY</b>			
10.	Brakedrum (1) and hub (2)	Using boards, support as shown.	
11.	Slinger (3) to brakedrum (1)	Five screws (4) and washers (5)	Using 1/2-inch socket, extension, and handle, unscrew and take out.
12.	Hub (2)	Oil seal (6)	a. Using puller, pull out. b. Get rid of.
13.	Inner wheel bearing cone (7)		Take out.
<b>CLEANING</b>			
14.	Inner bearing cone (7) and outer bearing cone (8)		Clean (TM 9-214).

**W A R N I N G**

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat. The flashpoint is 100°F to 138°F (38° to 59°C). If you become dizzy while using cleaning solvent, get fresh air immediately and get medical aid. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

15.	Axle shaft (9), locknut (10), and adjusting nut (11)		Using solvent, cleaning brush, and rags, clean.
16.	Hub (2)		Using solvent, cleaning brush, and rags, clean.

**W A R N I N G**

Make sure no grease remains on brakedrum and that no grease contacts brake linings. If linings become contaminated with grease, brakes on that wheel will fail and could cause serious accident. Contaminated linings cannot be cleaned and must be replaced.

17.	Brakedrum (1)		Using solvent, cleaning brush, and rags, clean.
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TANDEM AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
18. Axle (12)	Spindle (13)	Using solvent sparingly, cleaning brush, and rags, clean.	

inspection/REPLACEMENT

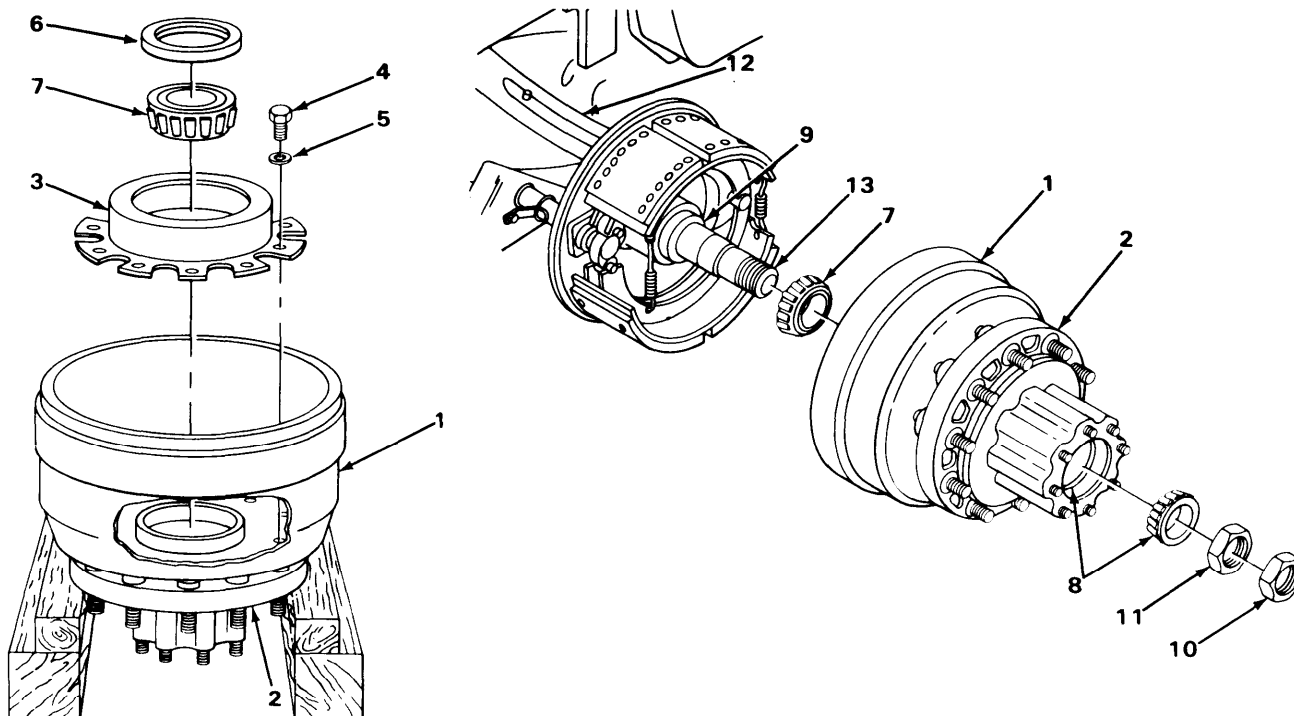
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**NOTE**

For more information on how to inspect parts, go to the general maintenance instructions (page 4-1). Replace defective parts as needed.

19. Inner bearing cone (7) and outer bearing cone (8)      Inspect (TM 9-214).



TANDEM AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSPECTION/REPLACEMENT – CONTINUED		
20.	Hub (1)	<ul style="list-style-type: none"> <li>a. Inspect for cracks across hub face radiating from bolt holes, or near bearing cups (2) and (3).</li> <li>b. Check for signs of damage or wear on hub face.</li> <li>c. Inspect for stripped, bent, or broken hub cap studs (4). <b>Replace any damaged hub cup stud.</b></li> <li>d. Inspect for stripped, bent, or broken wheel studs (5). <b>Replace any damaged studs, steps 24 to 26 and 30.</b></li> <li>e. Inspect for scored or pitted wheel bearing cups (2) and (3) and discoloration. <b>Replace damaged wheel bearing cup, step 21. If hub, hub cap studs, wheel studs, and bearing cups are not damaged, continue with step 29.</b></li> </ul>

**WARNING**

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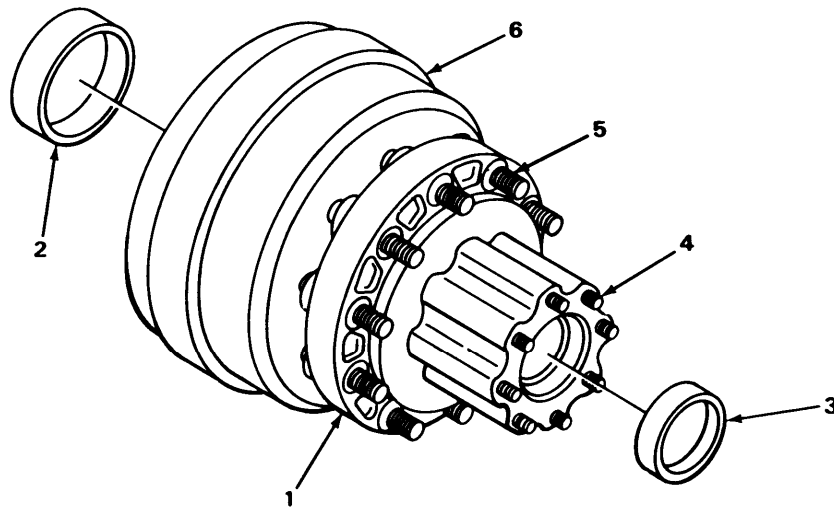
**NOTE**

Except as noted, steps are the same for replacing either inner or outer bearing cups. Inner bearing cup is shown.

21. Hub (1)	Inner bearing cup (2)	<ul style="list-style-type: none"> <li>a. Note three reliefs.</li> <li>b. Using puller, pull out.</li> <li>c. Position new cup (2) square and level.</li> <li>d. Using ball-peen hammer and wood-block, tap in place. <b>Turn woodblock one-third turn after every one or two hammer taps to prevent cocking.</b></li> <li>e. On inner bearing cup (2), using brass drift and ball-peen hammer, tapping on alternate sides of the cup to prevent cocking, finish seating.</li> </ul>
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TANDEM AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION REMARKS
22.	Brakedrum (6)	a. Inspect braking surface for cracks, scoring, out of round, and bell mouth. b. Inspect front for radial cracks from bolt holes worn oval, and other cracks. If damaged, replace steps 23 to 28. If brakedrum and hub are not damaged, continue at step 29.



**TANDEM AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED**

LOCATION	ITEM	ACTION REMARKS
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INSPECTION/REPLACEMENT – CONTINUED

**WARNING**

Some parts are heavy. Be careful when handling them. Lifting equipment is needed when parts weigh over 50 pounds (23 kg) for a single person lift, over 100 pounds (45 kg) for a two person lift, and over 150 pounds (68 kg) for a three or more person lift. Do not try to handle heavy parts without lifting equipment. Keep clear of heavy parts supported only by lifting equipment. Failure to observe this precaution could cause serious injury or death of personnel.

23.	Hub (1) and brakedrum (2)	With help from assistant, turn over and support on boards as shown.
24. Wheel studs (3)	Inner wheel nut (4)	Screw on part way leaving about 1/2-inch (1.5 cm) between hub (1) and nut (4).
25. Hub (1) to brakedrum (2)	Ten wheel studs (5)	a. Using cross-peen hammer, drive studs down until nuts (4) hit hub (1). b. Unscrew and take off nuts (4). c. Using ball-peen hammer and brass drift, drive out completely.
26. Brakedrum (2)	Hub (1)	With help from assistant, take off and turn over and support on boards and blocks as shown.
27. Hub (1)	Brakedrum (2)	Place in position.

**CAUTION**

Hub and drum must be supported as shown to prevent damage to axle flange studs and wheel studs.

28. Brakedrum (2) to hub (1)	Ten wheel studs (5)	Using cross-peen hammer, drive in.
---------------------------------	---------------------	------------------------------------

ASSEMBLY

**WARNING**

Make sure no grease remains on brakedrum and that no grease contacts brake linings. If linings become contaminated with grease, brakes on that wheel will fail and could cause serious accident. Contaminated linings cannot be cleaned and must be replaced.

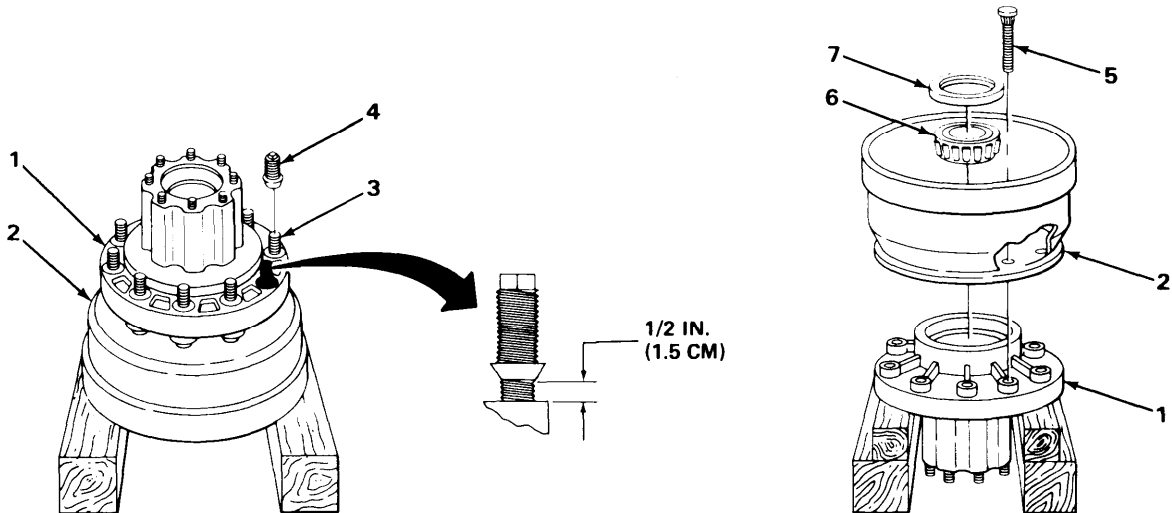
TANDEM AXLE HUB, DRUM, AND BEARING ASSEMBLY - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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**CAUTION**

Wheel bearings and hubs are to be cleaned and bearings repacked with grease whenever hub and drum assembly is removed. Dirt and rust will cause bearing failure.

- |             |                        |   |
|-------------|------------------------|---|
| 29. Hub (1) | Inner bearing cone (6) | <ul style="list-style-type: none"> <li>a. Line hub inner wall with grease.</li> <li>b. Using lubricating gun, coupling, bearing packer, and lubricant, pack.</li> <li>c. Put in.</li> </ul>   |
| 30.         | New oil seal (7)       | <ul style="list-style-type: none"> <li>a. Place in position.</li> <li>b. Using ball-peen hammer and wood-block, press in place.</li> </ul> <p><b>Turn woodblock one-third turn after every one or two hammer taps to prevent cocking. Drive in only until level with hub.</b></p> |



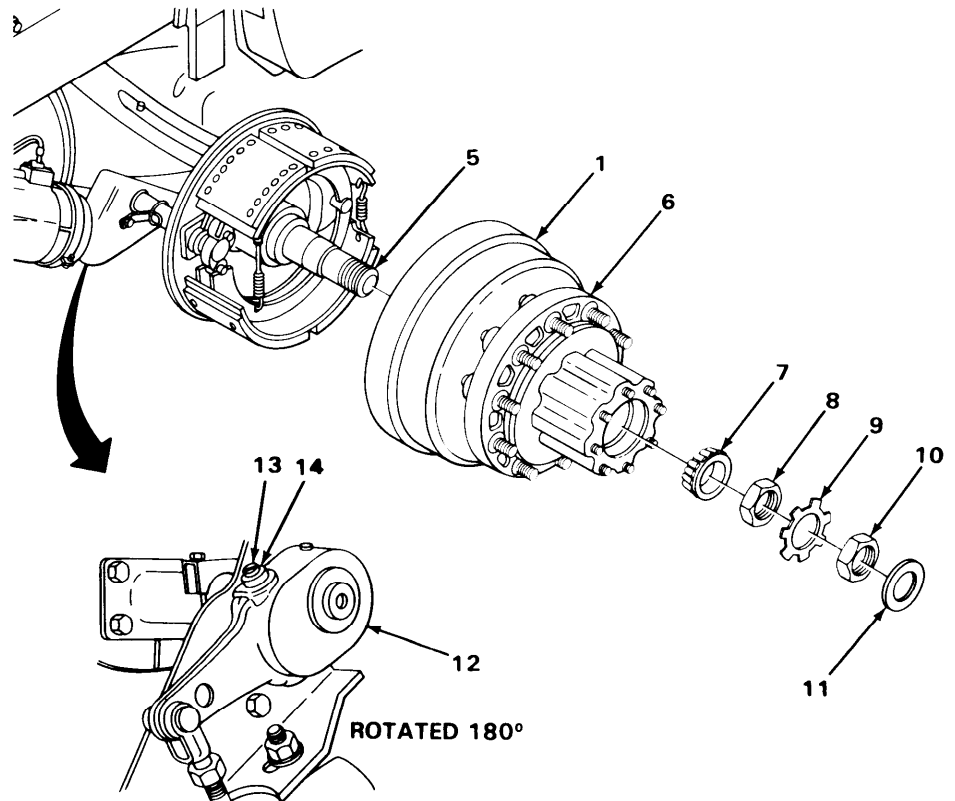
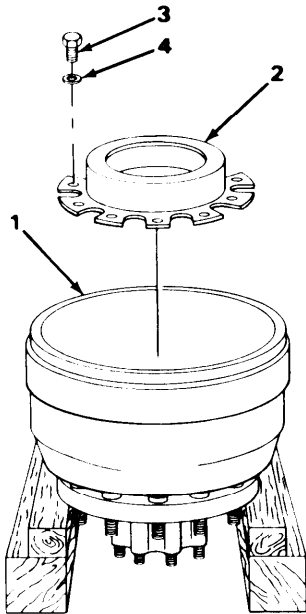
## TANDEM AXLE HUB, DRUM, AND BEARING ASSEMBLY- CONTINUED

LOCATION	ITEM	ACTION REMARKS
ASSEMBLY – CONTINUED		
31. Brakedrum (1)	Slinger (2)	Put in place.
32. Slinger (2) to brakedrum (1)	Five screws (3) and washers (4)	Screw in and tighten using 1/2-inch socket, extension, and handle.
INSTALLATION		
<b><u>WARNING</u></b>		
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33. Spindle (5)	Brakedrum (1) and hub (6)	With help from assistant and using boards and lift truck, slide into place.
34. Hub (6)	Outer bearing cone (7)	a. Using lubricating gun, coupling, bearing packer, and lubricant, pack. b. Put in.
35. Spindle (5)	Adjusting nut (8)	Screw on until hub (6) turns freely.
36.	Hub (6)	Lower lift truck and start rotating hub (6).
37.	Adjusting nut (8)	a. Using axle nut wrench and wheel nut wrench handle, tighten until hub (6) starts to bind. b. Back off enough to let hub (6) rotate freely. c. Rotate hub (6) to check that it is not binding or loose.
38.	New lockwasher (9)	Put on.
39.	Locknut (10)	Screw on and tighten using axle nut wrench and wheel nut wrench handle.



TANDEM AXLE HUB, DRUM, AND BEARING ASSEMBLY- CONTINUED

LOCATION	ITEM	ACTION REMARKS
40.	Hub (6)	Rotate to make sure it is not binding. <b>If it is binding, take off locknut and lockwasher and repeat steps 38 to 40.</b>
41. Spindle (5)	Lockwasher (9)	Using slip-joint pliers, bend down.
42.	New seal (11)	Using ball-peen hammer and woodblock, tap in.
43. Slack adjuster (12)	Adjusting screw (13)	a. Using 9/16-inch socket, push down spring loaded bushing (14) and screw in until tight. b. Turn counterclockwise two or three clicks. c. Hit brakedrum (1) with end of handle to check for proper clearance. Drum (1) should ring. <b>If it does not ring, back off adjusting screw move and check again.</b> d. Remove trestles.



**TANDEM AXLE HUB, DRUM, AND BEARING ASSEMBLY- CONTINUED**

INSTALLATION – CONTINUED

**NOTE**

FOLLOW-ON MAINTENANCE:

1. install axle shaft (page 4-603).
2. Uncage spring brakes (TM 9-2320-270-10).
3. Install wheels (TM 9-2320-270-10).

**TASK ENDS HERE**

**TIRES AND WHEELS**

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This task covers:

Maintenance (page 4-936)

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MAINTENANCE

**WARNING**

Do not mix lockrings and side rings between pusher axle wheels and other wheels on truck. These parts look the same but are not interchangeable. Mixing parts will result in either lockring and side ring blowing off with explosive force during inflation, or their coming off while truck is traveling, causing injury or death.

**NOTE**

For tire and wheel maintenance refer to TM 9-2610-200-24, Organizational, Direct Support, and General Support Maintenance Care, Maintenance and Repair of Pneumatic Tires and Inner Tubes.

To remove and install wheels from truck, refer to TM 9-2320-270-10.

**TASK ENDS HERE**

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By Order of the Secretary of the Army:

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PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
4-718			

IN THIS SPACE TELL WHAT IS WRONG

AND WHAT SHOULD BE DONE ABOUT IT:

Step 4 lists two seals to be removed from thermostat housing cover. There are also two ferrules which must be removed at the same time. Also, art on this page does not show ferrules exploded from housing.

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**THE METRIC SYSTEM AND EQUIVALENTS**

**LINEAR MEASURE**

1 Centimeter=10 Millimeters=0.01 Meters=0.3937 Inches  
 1 Meter=100 Centimeters=1000 Millimeters=39.37 Inches  
 1 Kilometer=1000 Meters=0.621 Miles

**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

**WEIGHTS**

1 Gram=0.001 Kilograms=1000 Milligrams=0.035 Ounces  
 1 Kilogram=1000 Grams=2.2 Lb  
 1 Metric Ton=1000 Kilograms=1 Megagram=1.1 Short Tons

**CUBIC MEASURE**

1 Cu Centimeter=1000 Cu Millimeters=0.06 Cu Inches  
 1 Cu Meter=1,000,000 Cu Centimeters=35.31 Cu Feet

**LIQUID MEASURE**

1 Milliliter=0.001 Liters=0.0338 Fluid Ounces  
 1 Liter=1000 Milliliters=33.82 Fluid Ounces

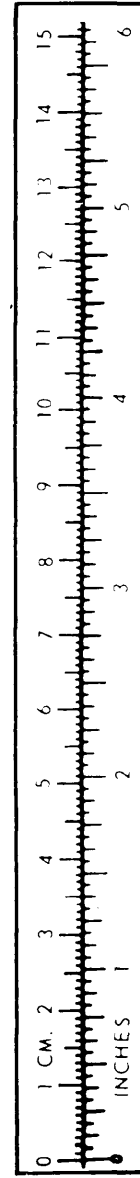
**TEMPERATURE**

$5/9 (°F - 32) = °C$   
 212° Fahrenheit is equivalent to 100° Celsius  
 90° Fahrenheit is equivalent to 32.2° Celsius  
 32° Fahrenheit is equivalent to 0° Celsius  
 $9/5 C° + 32 = F°$

**APPROXIMATE CONVERSION FACTORS**

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
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	5.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per hour	Kilometers per Hour	1.609

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
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	0.385
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



(FOR REFERENCE ONLY)

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