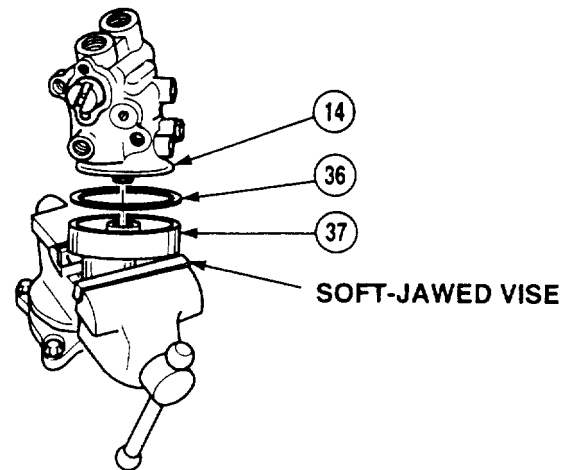


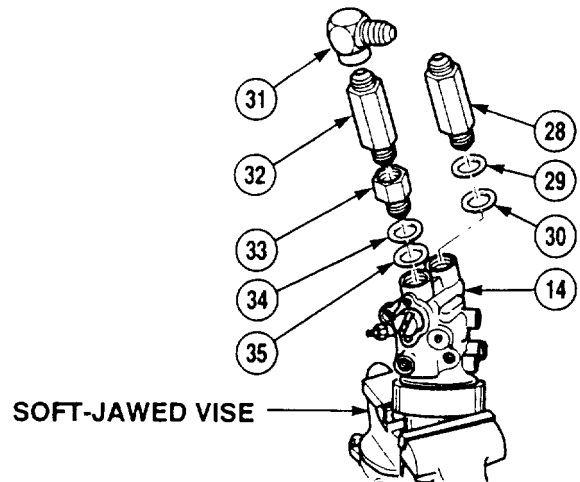
16-11. HEATER VALVE REPLACEMENT (CONT).

c. Installation.

- (1) Place oil hose adapter (37) in soft-jawed vise.
- (2) Apply lubricating oil to gasket (36).
- (3) Install gasket (36) and heater valve (14) on oil hose adapter (37).

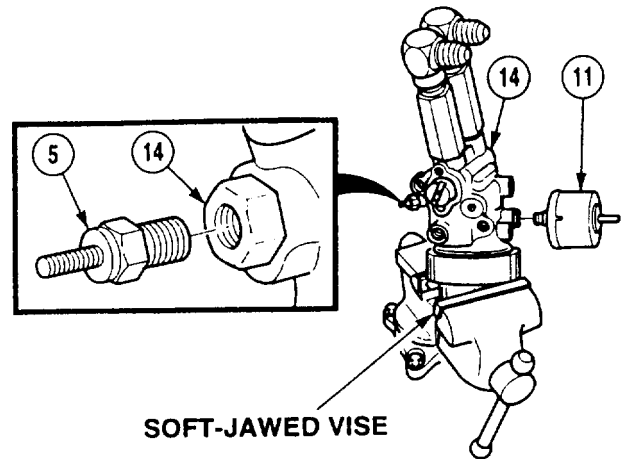


- (4) Apply lubricating oil to seal (34).
- (5) Position seal (34) and washer (35) on fitting (33).
- (6) Install fitting (33) on heater valve (14).



- (7) Apply teflon tape to threads of fitting (32).
- (8) Install fitting (32) in fitting (33).
- (9) Apply sealing compound to the pipe threads of fitting (31).
- (10) Install fitting (31) on fitting (32) as noted during removal.
- (11) Apply lubricating oil to seal (29).
- (12) Position seal (29) and washer (30) on fitting (28).
- (13) Install fitting (28) in heater valve (14).

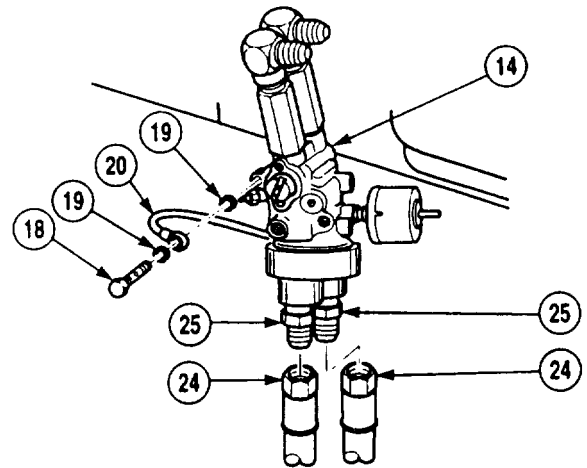
- (14) Apply teflon tape to threads of oil pressure sending unit (11) and engine oil temperature sensor (5).
- (15) Install oil pressure sending unit (11) in heater valve (14).
- (16) Install engine oil temperature sensor (5) in heater valve (14).
- (17) Remove heater valve (14) from soft-jawed vise.



NOTE

Engine remote oil filter hoses must be installed on heater valve prior to installing heater valve to allow proper tightening of engine remote oil filter hoses.

- (18) Install two engine remote oil filter hoses (24), as tagged and marked during removal, on two fittings (25).
- (19) Position fitting (20) on heater valve (14) with two seals (19) and hollow screw (18). Do not tighten.

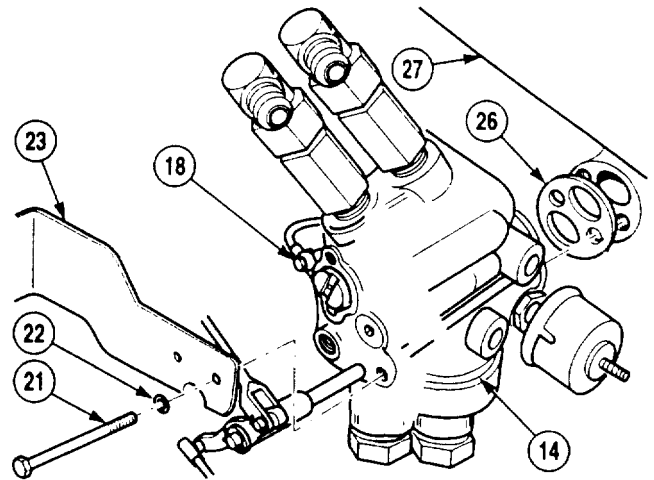


16-11. HEATER VALVE REPLACEMENT (CONT).

- (20) Install gasket (26), heater valve (14), and throttle cable bracket (23) on engine (27) with two washers (22) and screws (21).

Tighten screws to 36 lb-ft (49 N•m).

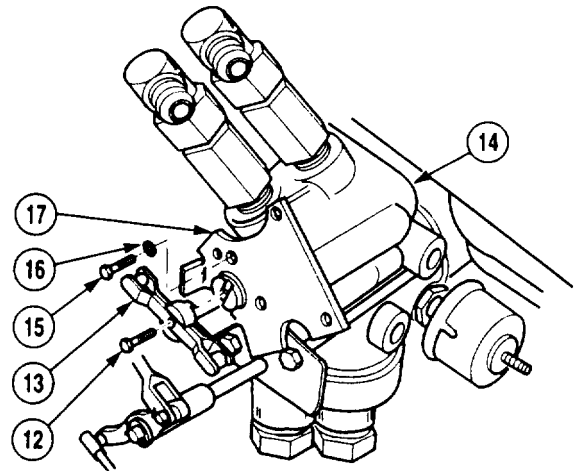
- (21) Tighten hollow screw (18).



- (22) Install bracket (17) on heater valve (14) with two washers (16) and screws (15).

Tighten to 7 lb-ft (10 N•m).

- (23) Install lever assembly (13) on heater valve (14) with screw (12). Tighten to 7 lb-ft (10 N•m).



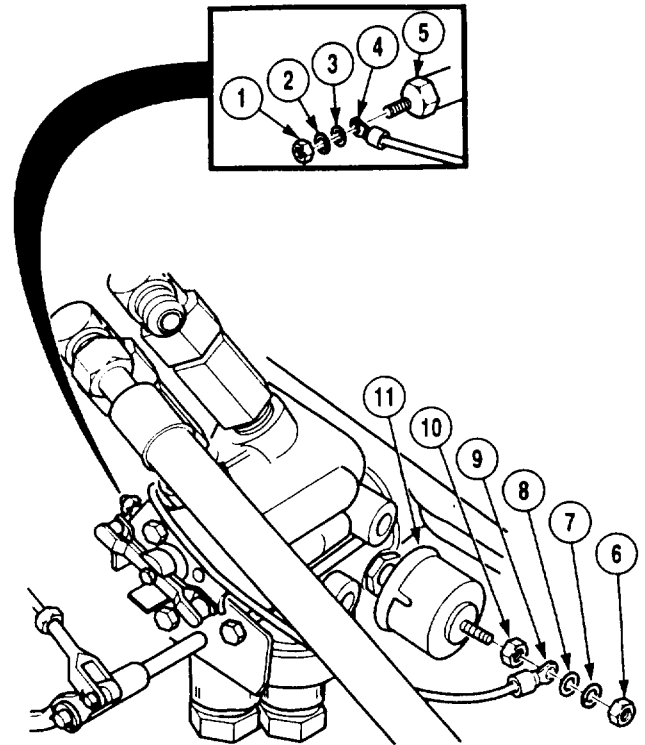
- (24) Install nut (10) on oil pressure sending unit (11)
- (25) Install wire (9), as tagged and marked during removal, on oil pressure sending unit (11) with washer (8), lock washer (7), and nut (6).
- (26) Install wire (4), as tagged and marked during removal, on engine oil temperature sensor (5) with washer (3), lock washer (2), and nut (1).

NOTE

Follow-on Maintenance:

- Install cab (Para 15-2).

END OF TASK



16-12. HEATER VENT REPLACEMENT.

This task covers:

- a. Removal
- b. Installation

INITIAL SETUP

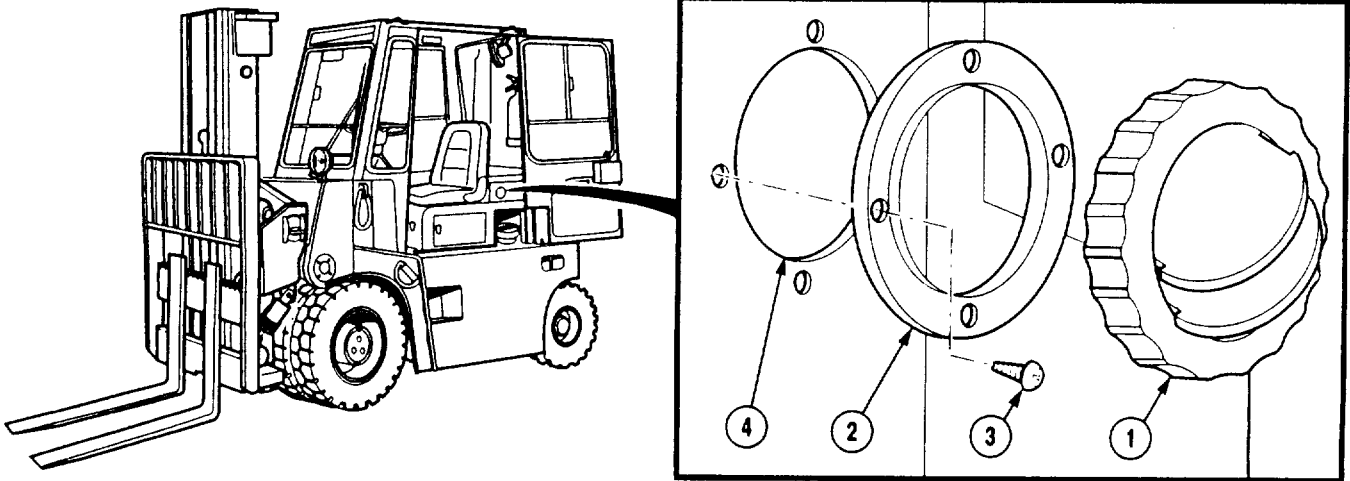
Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 1, Appendix B)

Equipment Condition

Engine OFF (TM 10-3930-669-10)
Parking brake applied (TM 10-3930-669-10)
Wheels chocked (TM 10-3930-669-10)
Cab door open (TM 10-3930-669-10)

a. Removal.



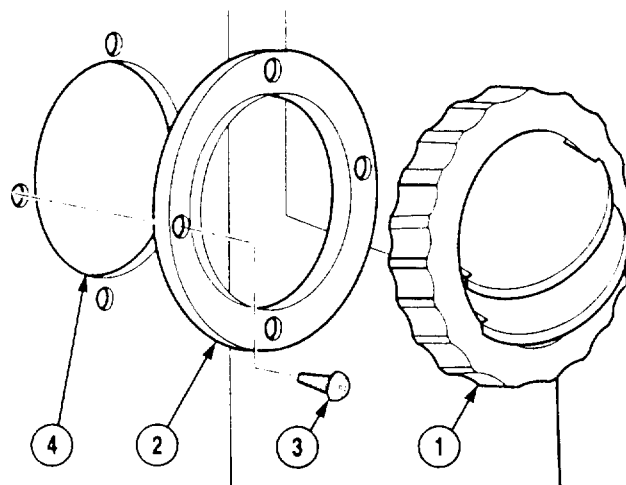
NOTE

All heater vents are removed the same way. Left rear heater vent is shown.

- (1) Pry heater vent (1) from heater vent frame (2).
- (2) Remove four screws (3) and heater vent frame (2) from cab heater housing (4).

b. Installation.

- (1) Install heater vent frame (2) on cab heater housing (4) with four screws (3).
- (2) Install heater vent (1) on heater vent frame (2).



NOTE

Follow-on Maintenance:

- Close cab door (TM 10-3930-669-10).
- Remove wheel chocks (TM 10-3930-669-10).

END OF TASK

16-13. CAB HEATER HOSE REPLACEMENT.

This task covers:

- a. Removal b. Installation

INITIAL SETUP*Tools and Special Tools*

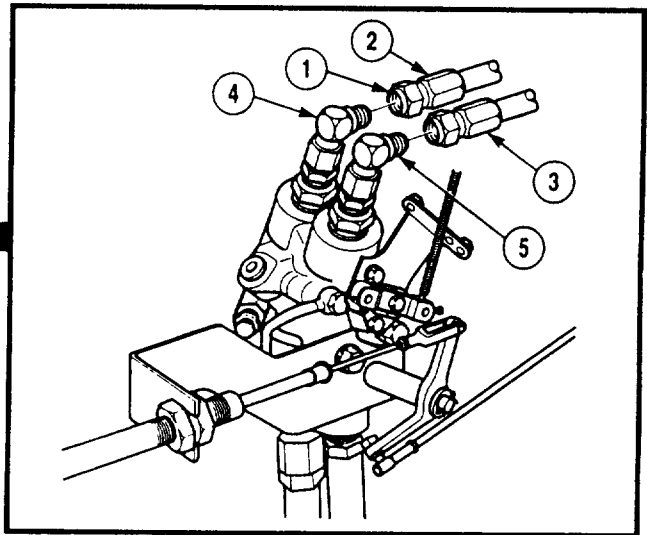
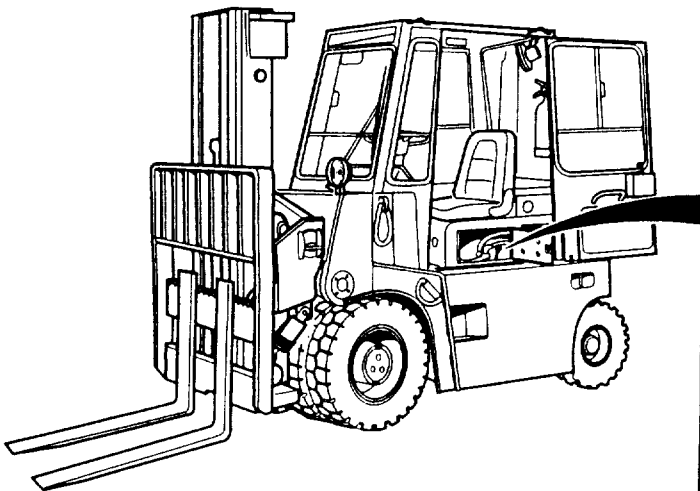
Tool Kit, General Mechanic's: Automotive (Item 1, Appendix B)

Materials/Parts

Adhesive (Item 1, Appendix C)
 Cable Ties (Item 4, Appendix C)
 Cap and Plug Set (Item 5, Appendix B)
 Solvent, Drycleaning (Item 20, Appendix C)
 Tags, Identification (Item 21, Appendix C)

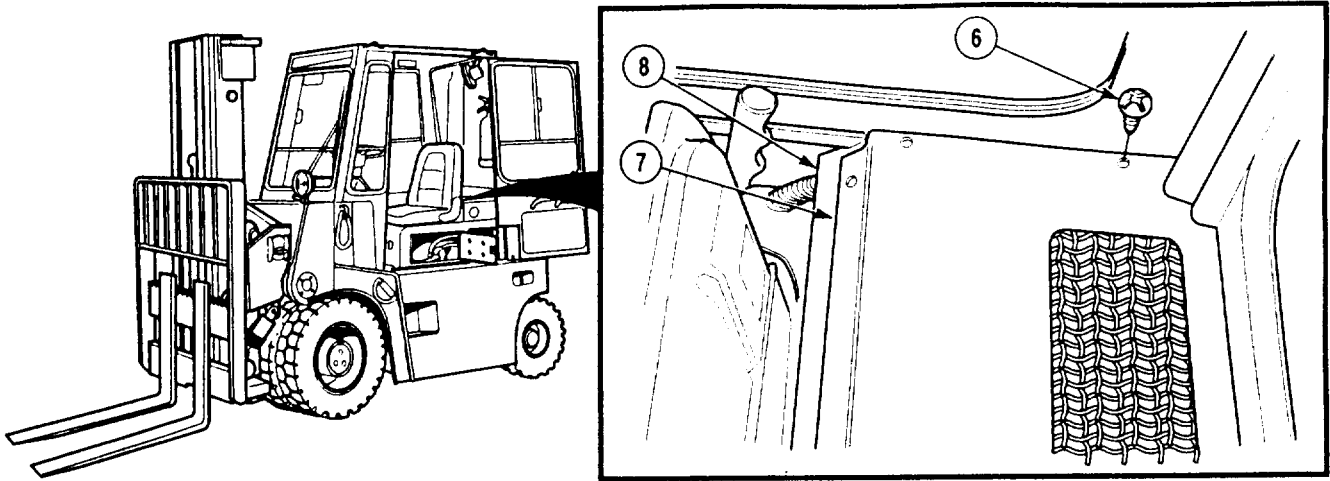
Equipment Condition

Engine OFF (TM 10-3930-669-10)
 Parking brake applied (TM 10-3930-669-10)
 Wheels chocked (TM 10-3930-669-10)
 Cab door open (TM 10-3930-669-10)
 Cab engine access panel open (TM 10-3930-669-10)
 Seat fully forward position (TM 10-3930-669-10)

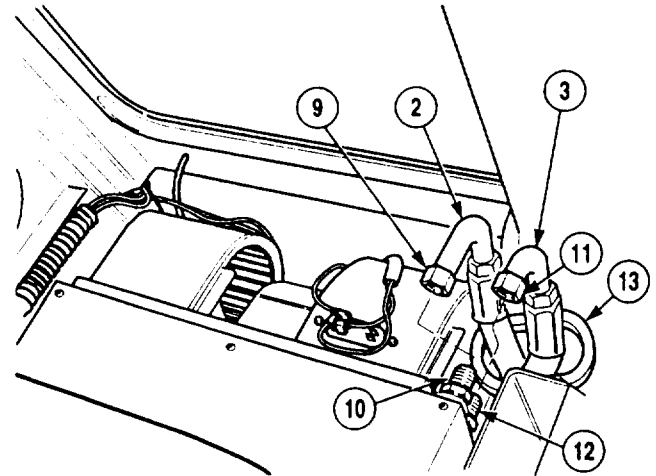
a. Removal.**NOTE**

- Tag and mark hoses prior to removal.
- Cap and plug all hoses and fittings after removal.

(1) Loosen two fittings (1) and remove two hoses (2 and 3) from fittings (4 and 5).

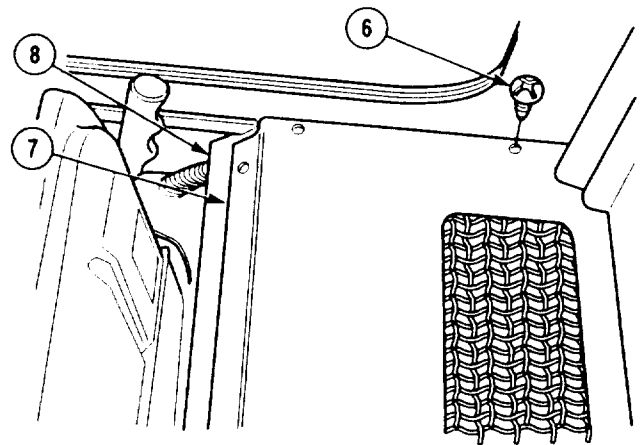


- (2) Remove seven screws (6) and cover (7) from heater housing (8).
- (3) Loosen fitting (9) and remove hose (2) from heater oil outlet (10).
- (4) Loosen fitting (11) and remove hose (3) from heater oil inlet (12).
- (5) Remove two hoses (2 and 3) and grommet (13) from cab (14).



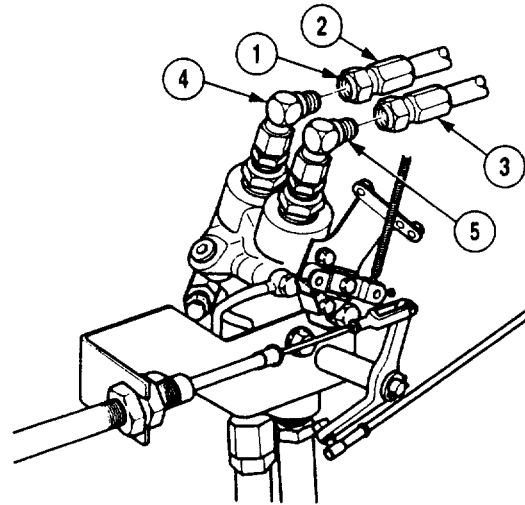
b. Installation.

- (1) Position grommet (13) and two hoses (2 and 3) in cab (14).
- (2) Install hose (3) on heater oil inlet (12) and tighten fitting (11).
- (3) Install hose (2) on heater oil outlet (10) and tighten fitting (9).
- (4) Install cover (7) on heater housing (8) with seven screws (6).



16-13. CAB HEATER HOSE REPLACEMENT (CONT).

- (5) Install two hoses (2 and 3) on fittings (4 and 5) and tighten fittings (1).



NOTE

Follow-on Maintenance:

- Close cab engine access panel (TM 10-3930-669-10).
- Close cab door (TM 10-3930-669-10).
- Remove wheel chocks (TM 10-3930-669-10).

END OF TASK

CHAPTER 17

HYDRAULIC SYSTEM MAINTENANCE

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17-3	Tilt/Lift Joystick Replacement/Repair	17-11
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17-7	Backrest Replacement	17-27
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17-1. INTRODUCTION.

This chapter contains maintenance instructions for removing, replacing, installing, and adjusting components of the hydraulic system authorized by the Maintenance Allocation Chart (MAC) at the Unit Maintenance level.

17-2. PIVOT/SHIFT JOYSTICK REPLACEMENT/REPAIR.

This task covers:

- | | | |
|----------------|------------------------|-----------------|
| a. Removal | c. Cleaning/Inspection | e. Installation |
| b. Disassembly | d. Assembly | f. Adjustment |

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's (Item 1, Appendix B)
Wrench, Torque (0-60 N•m) (Item 12, Appendix B)

Materials/Parts Continued

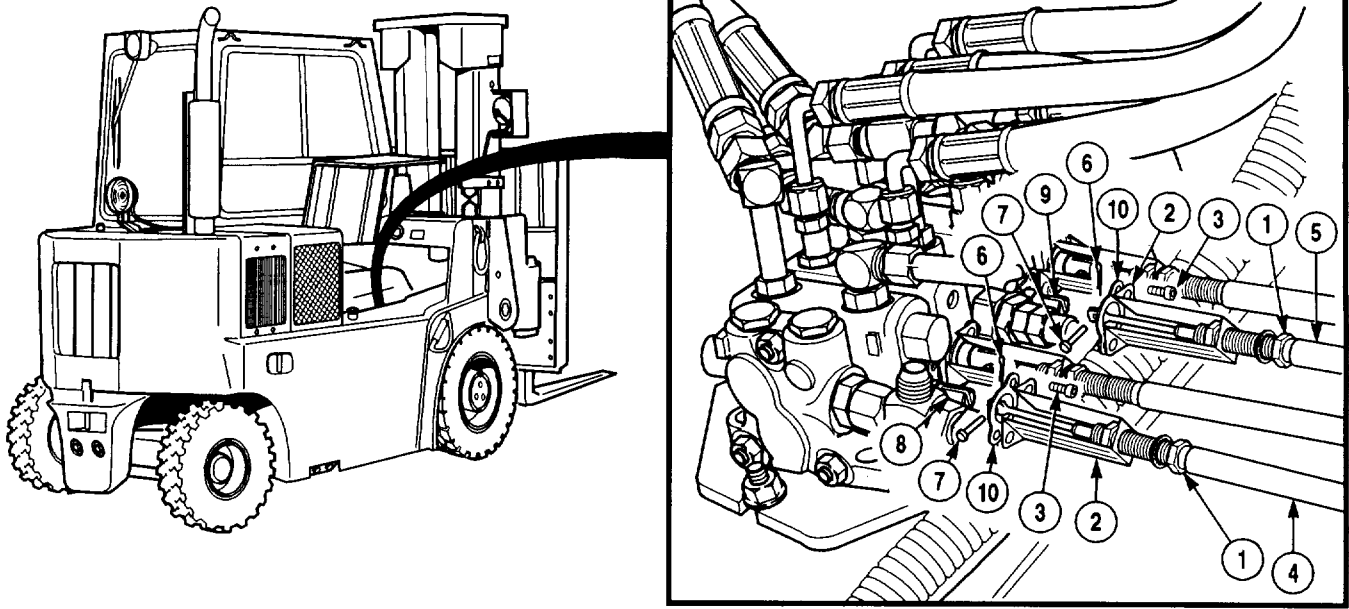
Pin, Cotter (2)
Gasket (2)

Materials/Parts

Loctite 242 (Item 22, Appendix C)
Rags, Wiping (Item 19, Appendix C)
Solvent, Dry-cleaning (Item 20, Appendix C)
Tags, Identification (Item 21, Appendix C)
Washer, Lock (4)
Washer, Lock (2)
Washer, Lock (6)

Equipment Condition

Engine OFF (TM 10-3930-669-10)
Parking brake applied (TM 10-3930-669-10)
Wheels chocked (TM 10-3930-669-10)
Batteries removed (Para 7-48)
Oil filter tray removed (Para 4-13)
Instrument panel removed (Para 7-8)
Steering hose removed from stack valve (Para 17-11).



NOTE

Tag and mark brackets prior to removal.

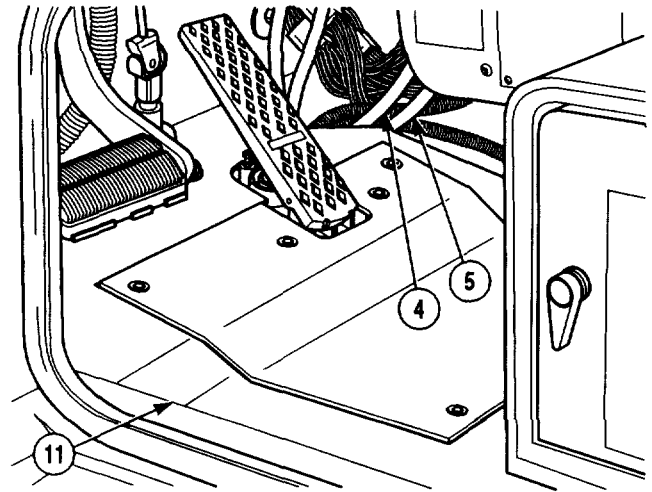
- (1) Loosen two nuts (1) on brackets (2).
- (2) Remove four screws (3) from brackets (2).
- (3) Slide brackets (2) up pivot control valve cable (4) and lift control valve cable (5).
- (4) Remove two cotter pins (6), pins (7), pivot control valve cable (4), and shift control valve cable (5) from pivot control valve (8) and shift control valve (9). Discard cotter pins.
- (5) Remove two gaskets (10) from pivot control valve (8) and shift control valve (9). Discard gaskets.

17-2. PIVOT/SHIFT JOYSTICK REPLACEMENT/REPAIR (CONT).

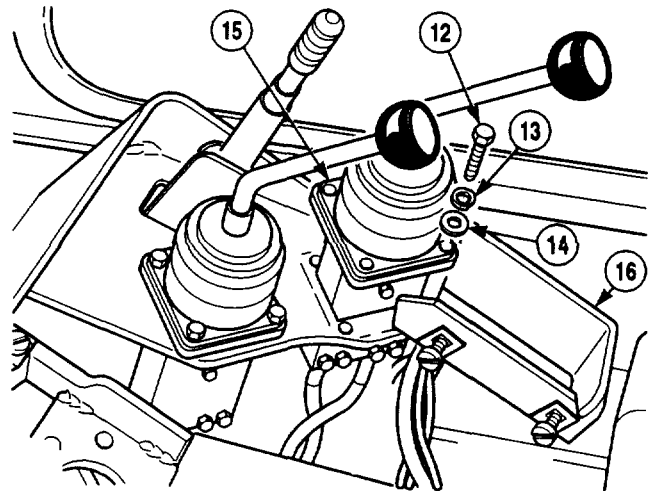
NOTE

Note routing of cables prior to removal.

- (6) Route pivot control valve cable (4) and shift control valve cable (5) through access hole in cab frame (11).



- (7) Remove four screws (12), lock washers (13), washers (14), and pivot/shift joystick (15) from dash frame (16). Discard lock washers.



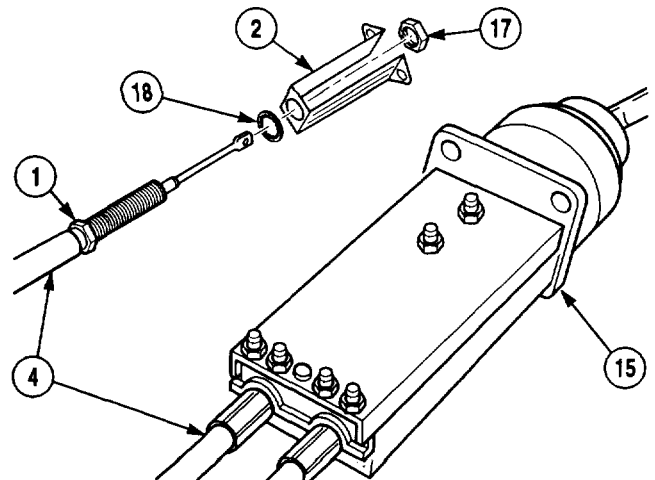
b. Disassembly.

NOTE

Pivot control cable disassembly is shown.

Shift control cable is disassembled the same way.

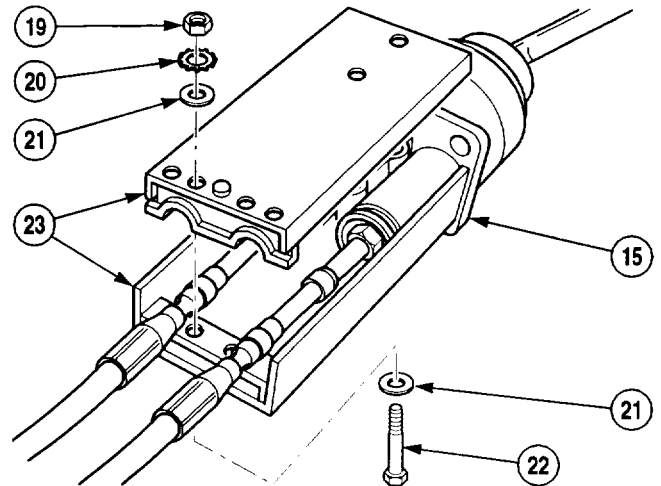
- (1) Remove nut (17) and bracket (2) from pivot control valve cable (4) of pivot/shift joystick (15).
- (2) Remove lock washer (18) and nut (1) from pivot control valve cable (4) of pivot/shift joystick (15). Discard lock washer.



NOTE

Note position of cables in housing prior to removal.

- (3) Remove six nuts (19), lock washers (20), washers (21), screws (22), washers (21) and housing (23) from pivot/shift joystick (15). Discard lock washers.



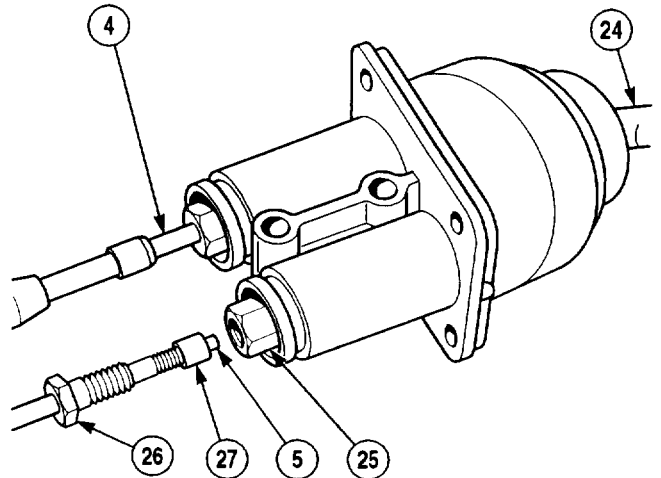
CAUTION

Hold plunger stationary when removing cable retainer or damage to pivot/shift joystick will result.

NOTE

Moving shift/pivot joystick lever will allow plungers to protrude from pivot/shift joystick.

- (4) Position pivot/shift joystick lever (24) to protrude each of two plungers (25) and remove two cable retainers (26), anchors (27), and cables (4 and 5) from plungers.



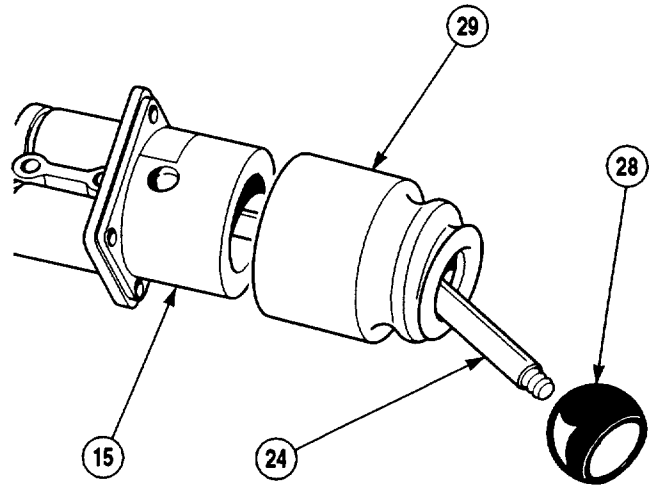
NOTE

Note position of anchors on cables prior to removal.

- (5) Remove two anchors (27) and two cable retainers (26) from cables (4 and 5).

17-2. PIVOT/SHIFT JOYSTICK REPLACEMENT/REPAIR (CONT).

- (6) Remove knob (28) from pivot/shift joystick lever (24).
- (7) Remove boot (29) from pivot/shift joystick lever (24) and pivot/shift joystick (15).

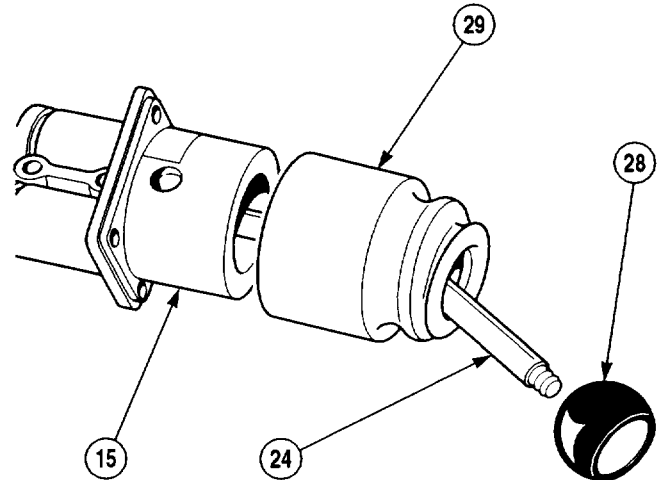
***c. Cleaning/Inspection.*****WARNING**

- Dry-cleaning solvent (P-D-680) is TOXIC and flammable. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for type I dry-cleaning solvent is 100°F (38°C) and for type II is 138°F (50°C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

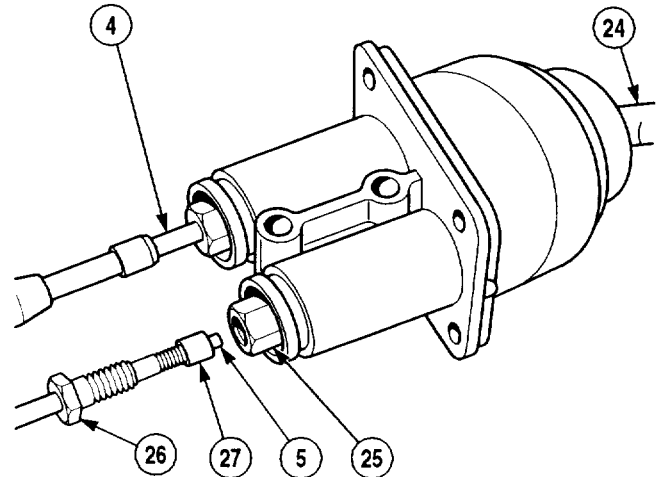
- (1) Clean all metal parts with dry-cleaning solvent and wipe dry with wiping rags.
- (2) Do not allow drycleaning solvent to come in contact with rubber boot.
- (3) Inspect all parts for breaks, cracks, burrs, and sharp edges.
- (4) Replace all damaged parts.

d. Assembly.

- (1) Install boot (29) on pivot/shift joystick lever (24) and pivot/shift joystick (15).
- (2) Install knob (28) on pivot/shift joystick lever (24).



- (3) Position two cable retainers (26) on cables (4 and 5).
- (4) Install two anchors (27) with loctite 242 on cables (4 and 5). Position anchors such that they are flush with the ends of cables.



CAUTION

Hold plunger stationary when installing cable retainer or damage to pivot/shift joystick will result.

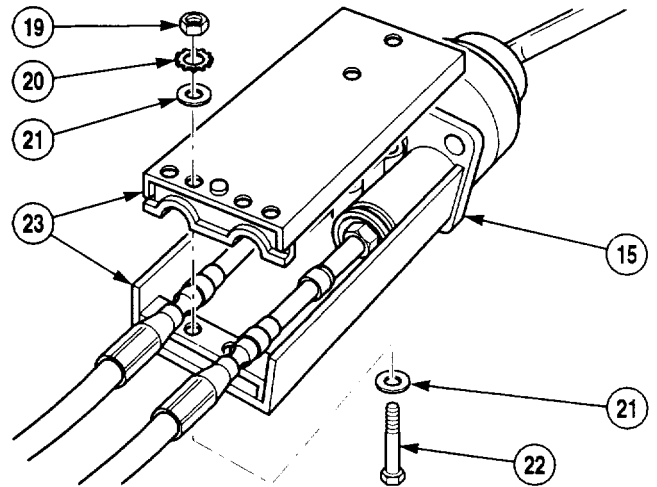
NOTE

Moving pivot/shift joystick lever will allow plungers to protrude from pivot/shift joystick.

- (5) Position pivot/shift joystick lever (24) to protrude each of two plungers (25) and install cables (4 and 5) and anchors (27) with two cable retainers (26).

17-2. PIVOT/SHIFT JOYSTICK REPLACEMENT/REPAIR (CONT).

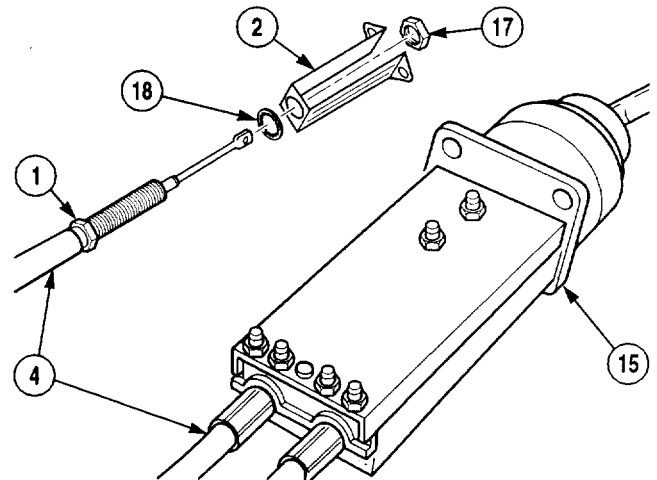
- (6) Position housing (23) on pivot/shift joystick (15) and install six screws (22), twelve washers (21), six lock washers (20), and nuts (19). Tighten nuts to 8 lb-ft (11 N•m).



NOTE

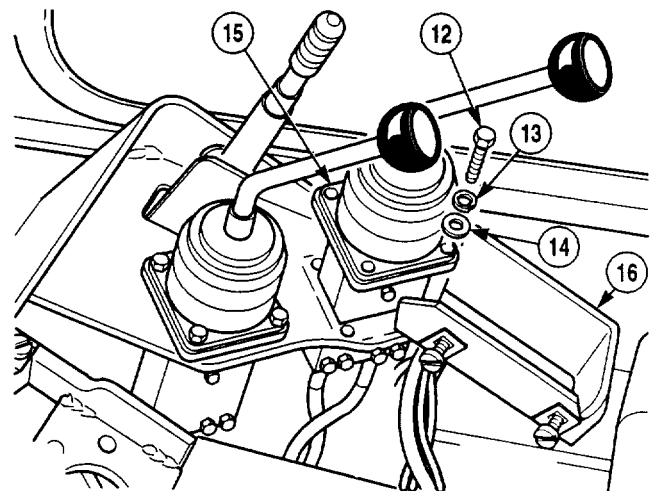
- Do not tighten nuts on cables of pivot/shift joystick until they are adjusted during installation.
- Pivot control cable assembly is shown. Shift control cable is assembled the same way.

- (7) Position two nuts (1) and lock washers (18) on pivot control valve cable (4) of pivot/shift joystick (15).
- (8) Position bracket (2) and nut (17) on pivot control valve cable (4) of pivot/shift joystick (15).

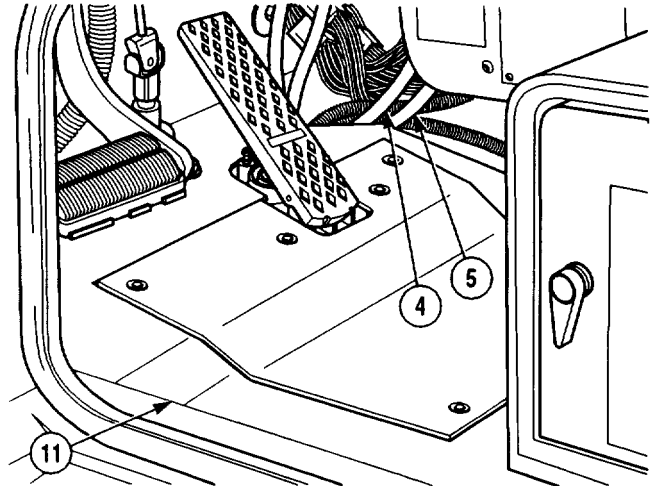


e. Installation.

- (1) Install pivot/shift joystick (15) on dash frame (16) with four washers (14), lock washers (13), and screws (12). Tighten screws to 7 lb-ft (10 N•m).



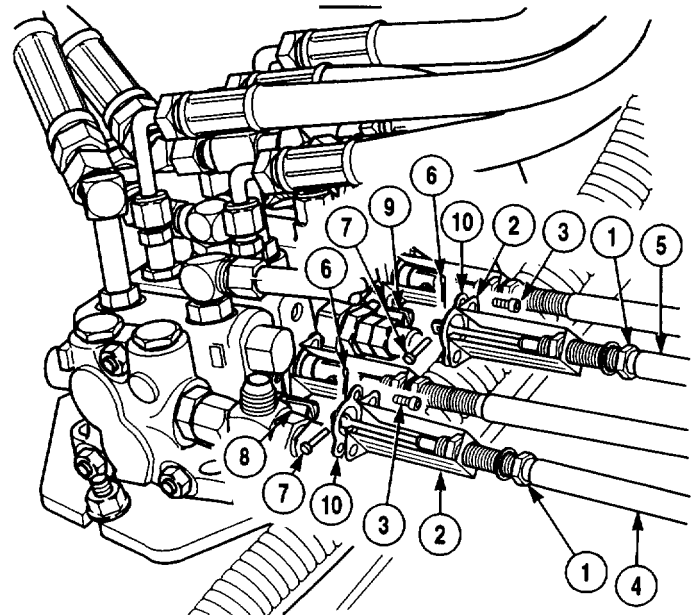
- (2) Position cables (4 and 5) through access hole in cab frame (11).



NOTE

- **Connect cables to the same valves noted prior to removal.**
- **All cables are installed and adjusted in the same fashion.**

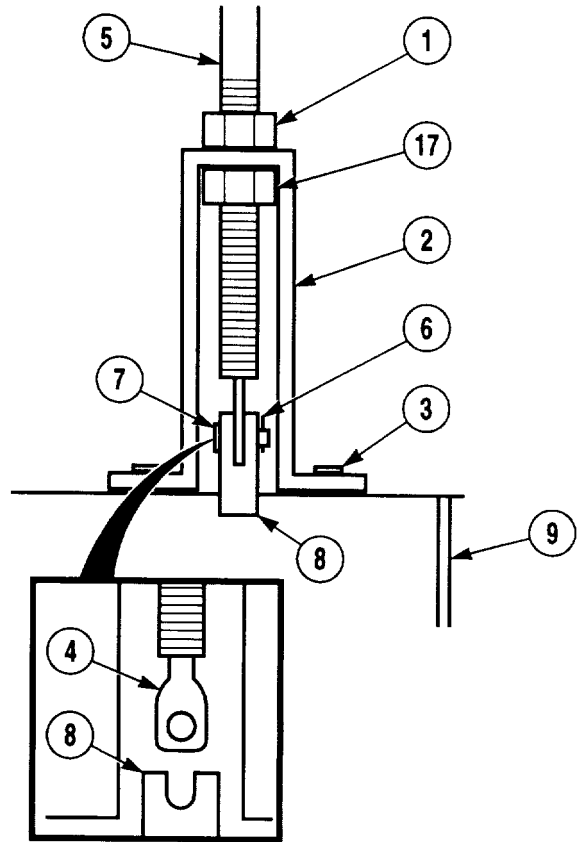
- (3) Perform adjustment procedure (Para 17-2f) prior to performance of Steps (4) through (8).
- (4) Position gasket (10) on associated control valve (9).
- (5) After performing adjustment (Para 7-2f), position cable assembly (5) over associated control valve (9).
- (6) Attach cable (5) to control valve (9) using pin (7) and cotter pin (6).
- (7) Install control cable bracket (2) on control valve (9) using two screws (3).
- (8) Repeat Steps (3) through (6) for three remaining control cables.



17-2. PIVOT/SHIFT JOYSTICK REPLACEMENT/REPAIR (CONT).**f. Adjustment.****NOTE**

Complete loosening of the outer nut will permit adjustment of the inner nut.

- (1) Loosen nuts (1 and 17). Nut (1) should be completely loosened.
- (2) Remove two screws (3).
- (3) While holding bracket (2) in position, gently turn inner nut (17) until it just contacts bracket (2) without causing valve stem (8) or cable end (4) to move. It may be necessary to slide bracket (2) toward nut (1) to gain clearance to turn nut (17).
- (4) Hand tighten outer nut (1) against bracket (2).
- (5) Remove pin (7) and cotter pin (6).
- (6) Install bracket (2) on control valve (9) using two screws (3).

**NOTE**

Final adjustment requires trial and error.

- (7) If hole in cable end (4) is aligned with hole in valve stem (8), adjustment is complete. Go to Step (9).
- (8) If hole in cable end (4) is not aligned with hole in valve stem (8), repeat Steps (1) through (8) until adjustment is complete.
- (9) Repeat process for remaining cables.

NOTE**Follow-on Maintenance:**

- Install steering hose to stack valve (Para 17-11).
- Install instrument panel (Para 7-8).
- Install oil filter tray (Para 4-13).
- Install batteries (Para 7-48).
- Remove wheel chocks (TM 10-3930-669-10).

END OF TASK

17-3. TILT/LIFT JOYSTICK REPLACEMENT/REPAIR.

This task covers:

- | | | |
|----------------|------------------------|-----------------|
| a. Removal | c. Cleaning/Inspection | e. Installation |
| b. Disassembly | d. Assembly | f. Adjustment |

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's (Item 1, Appendix B)
Wrench, Torque (0-60 N•m) (Item 12, Appendix B)

Materials/Parts Continued

Pin, Cotter (2)
Gasket (2)

Materials/Parts

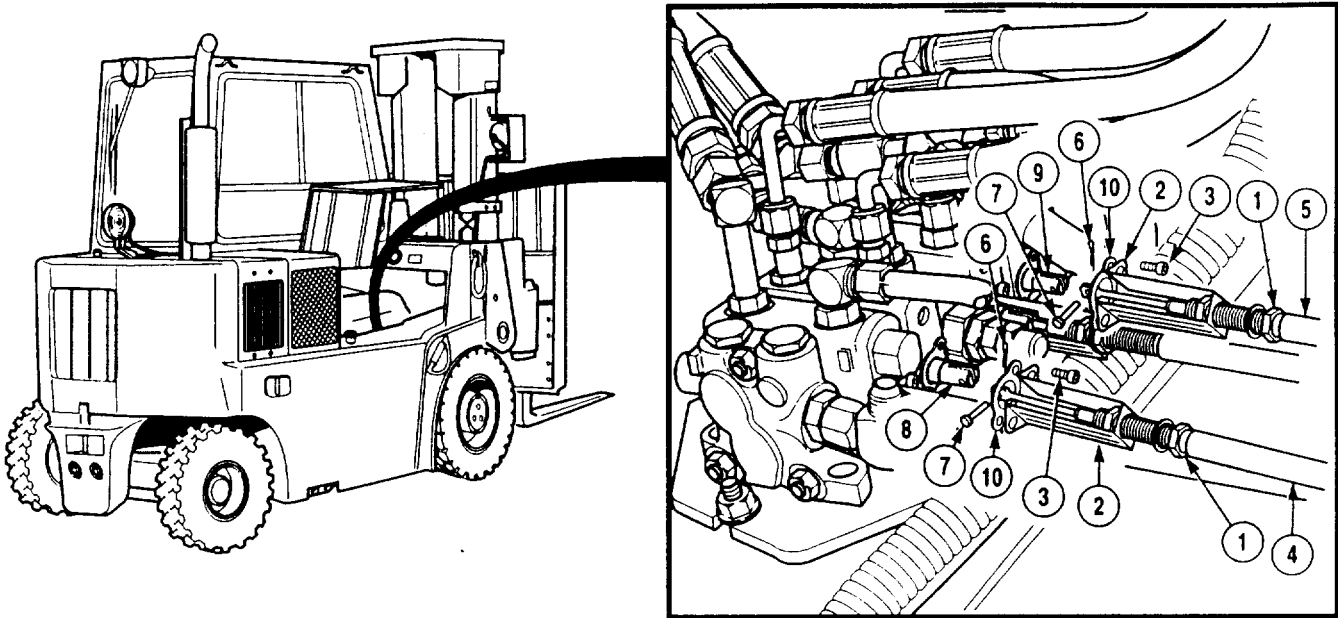
Rags, Wiping (Item 19, Appendix C)
Solvent, Drycleaning (Item 20, Appendix C)
Tags, Identification (Item 21, Appendix C)
Washer, Lock (4)
Washer, Lock (2)
Washer, Lock (6)

Equipment Condition

Engine OFF (TM 10-3930-669-10)
Parking brake applied (TM 10-3930-669-10)
Wheels chocked (TM 10-3930-669-10)
Batteries removed (Para 7-48)
Oil filter tray removed (Para 4-13)
Instrument panel removed (Para 7-8)
Steering hose removed from stack valve (Para 17-11).

17-3. TILT/LIFT JOYSTICK REPLACEMENT/REPAIR (CONT).

a. Removal.



NOTE

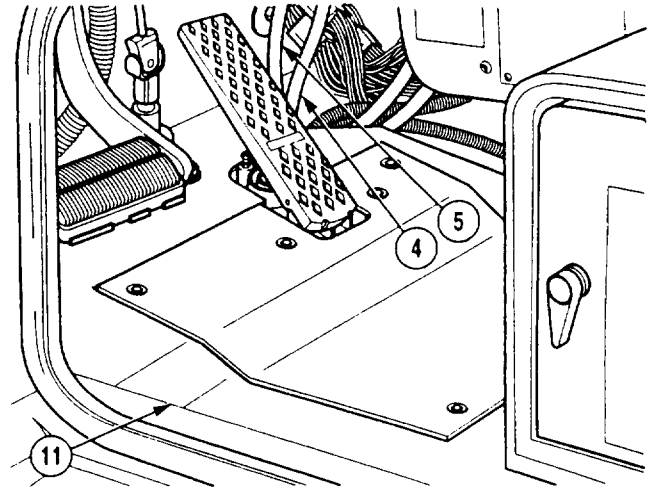
Tag and mark brackets prior to removal.

- (1) Remove two nuts (1) from brackets (2).
- (2) Remove four screws (3) from brackets (2).
- (3) Slide brackets up tilt control valve cable (4) and lift control valve cable (5).
- (4) Remove two cotter pins (6), pins (7), tilt control valve cable (4), and lift control valve cable (5) from tilt control valve (8) and lift control valve (9). Discard cotter pins.
- (5) Remove two gaskets (10) from tilt control valve (8) and lift control valve (9). Discard gaskets.

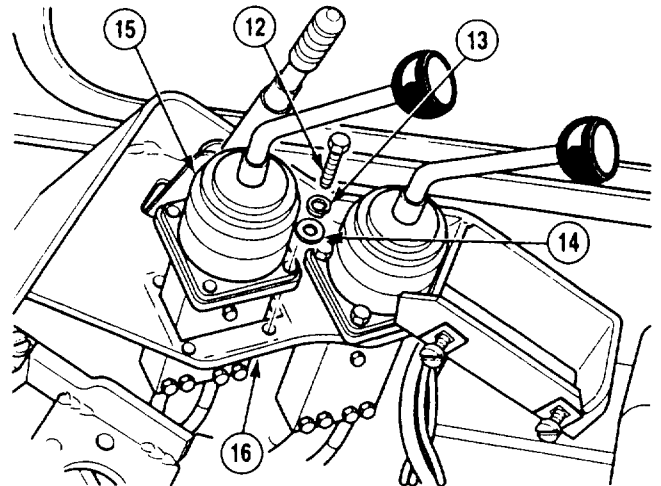
NOTE

Note routing of cables prior to removal.

- (6) Route tilt control valve cable (4) and lift control valve cable (5) through access hole in cab frame (11).



- (7) Remove four screws (12), lock washers (13), washers (14), and tilt/lift joystick (15) from dash frame (16). Discard lock washers.

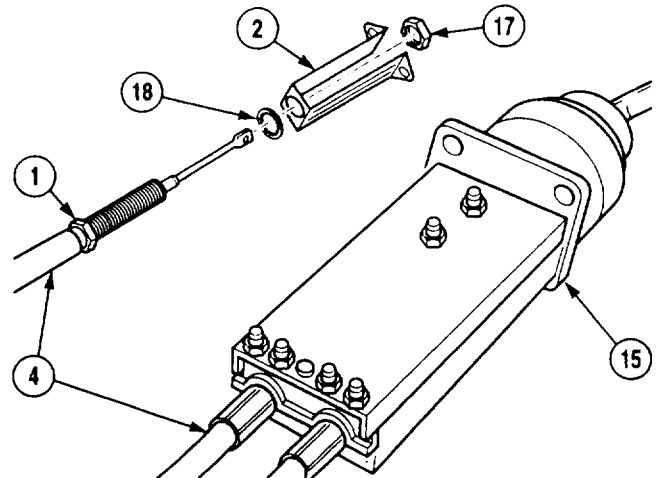


b. Disassembly.

NOTE

Tilt control valve cable disassembly is shown. Lift control valve cable is disassembled the same way.

- (1) Remove nut (17) and bracket (2) from tilt control valve cable (4) of tilt/lift joystick (15).
- (2) Remove lock washer (18) and nut (1) from tilt control valve cable (4) of tilt/lift joystick (15). Discard lock washer.

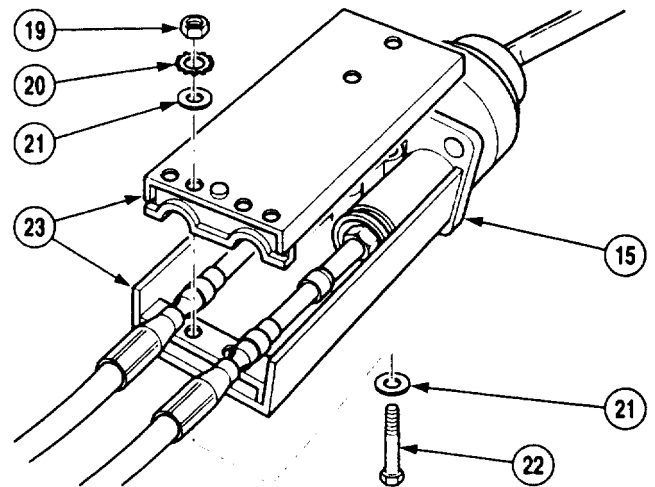


17-3. TILT/LIFT JOYSTICK REPLACEMENT/REPAIR (CONT).

NOTE

Note position of cables in housing prior to removal.

- (3) Remove six nuts (19), lock washers (20), washers (21), screws (22), washers (21), and housing (23) from tilt/lift joystick (15). Discard lock washers.



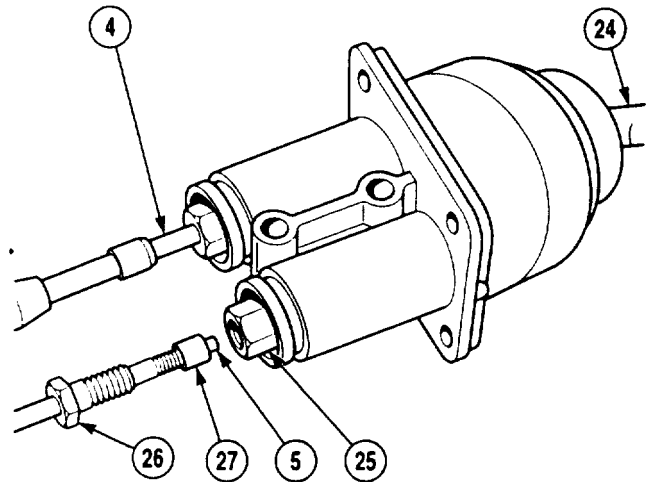
CAUTION

Hold plunger stationary when removing cable retainer or damage to tilt/lift joystick will result.

NOTE

Moving tilt/lift joystick lever will allow plungers to protrude from tilt/lift joystick.

- (4) Position tilt/lift joystick lever (24) to protrude each of two plungers (25) and remove two cable retainers (26), anchors (27), and cables (4 and 5) from plungers.

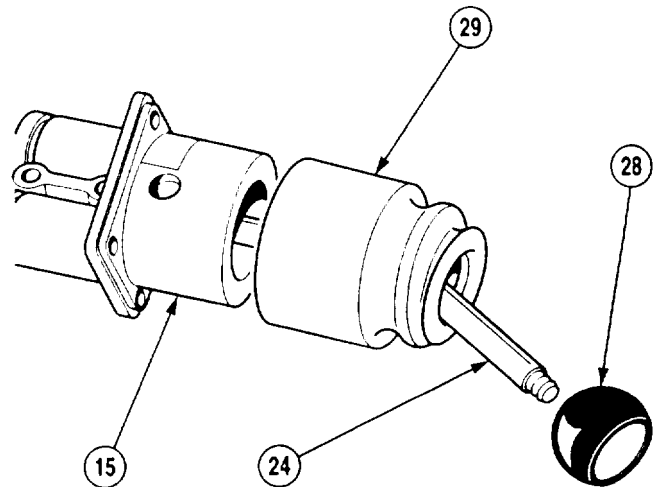


NOTE

Note position of anchors on cables prior to removal.

- (5) Remove two anchors (27) and two cable retainers (26) from cables (4 and 5).

- (6) Remove knob (28) from tilt/lift joystick lever (24).
- (7) Remove boot (29) from tilt/lift joystick lever (29) and tilt/lift joystick (15).



c. Cleaning/Inspection.

WARNING

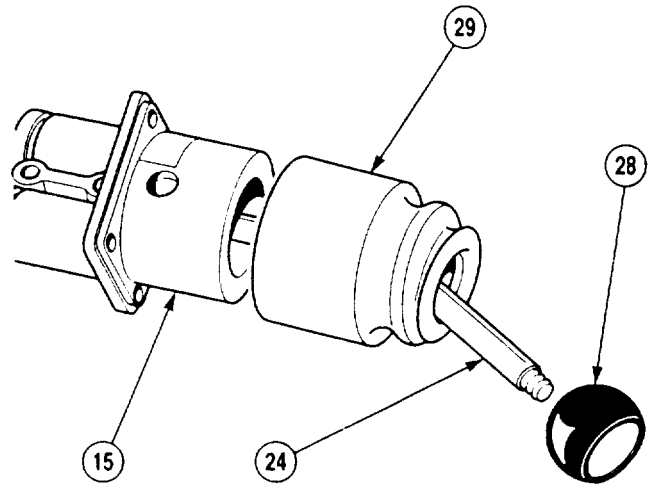
- Drycleaning solvent (P-D-680) is TOXIC and flammable. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for type I drycleaning solvent is 100°F (38°C) and for type II is 138°F (50°C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

- (1) Clean all metal parts with drycleaning solvent and wipe dry with wiping rags.
- (2) Do not allow drycleaning solvent to come in contact with rubber boot.
- (3) Inspect all parts for breaks, cracks, burrs, and sharp edges.
- (4) Replace all damaged parts.

17-3. TILT/LIFT JOYSTICK REPLACEMENT/REPAIR (CONT).

d. Assembly.

- (1) Install boot (29) on tilt/lift joystick lever (24) and tilt/lift joystick (15).
- (2) Install knob (28) on tilt/lift joystick lever (25).



- (3) Position two cable retainers (26) on cables (4 and 5).
- (4) Install two anchors (27) on cables (4 and 5).

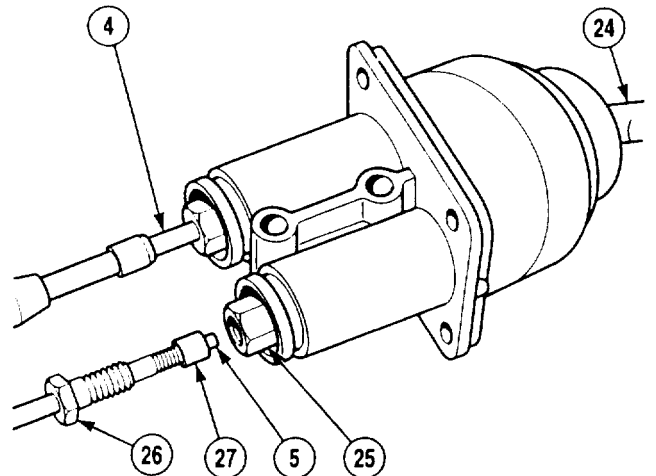
CAUTION

Hold plunger stationary when installing cable retainer or damage to tilt/lift joystick will result.

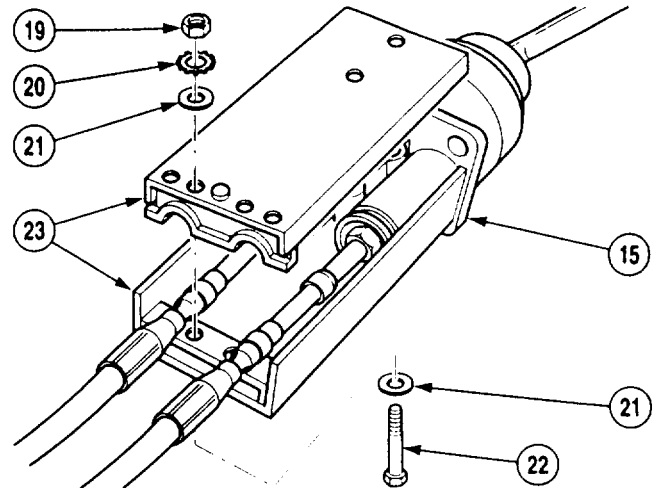
NOTE

Moving tilt/lift joystick lever will allow plungers to protrude from tilt/lift joystick.

- (5) Position tilt/lift joystick lever (24) to protrude each of two plungers (25) and install cables (4 and 5) and anchors (27) with two cable retainers (26).



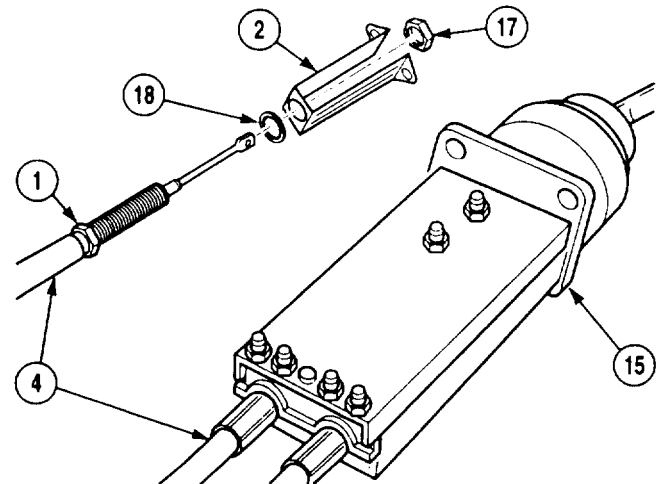
- (6) Position housing (23) on tilt/lift joystick (15) and install six screws (22), twelve washers (21), six lock washers (20), and nuts (19). Tighten nuts to 8 lb-ft (11 N•m).



NOTE

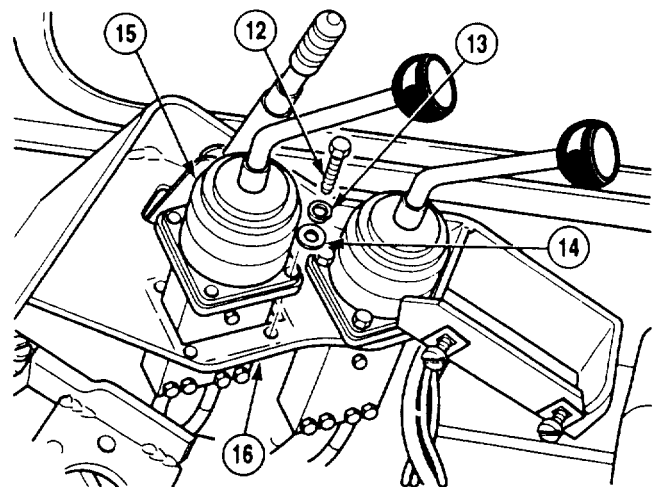
- Do not tighten nuts on cables of tilt/lift joystick until they are adjusted during installation.
- Tilt control valve cable assembly is shown. Lift Shift control valve cable is assembled the same way.

- (7) Position two nuts (1) and lock washer (18) on lift control valve cable (4) of tilt/lift joystick (15).
- (8) Position bracket (2) and nut (17) on lift control valve cable (4) of tilt/lift joystick (15).



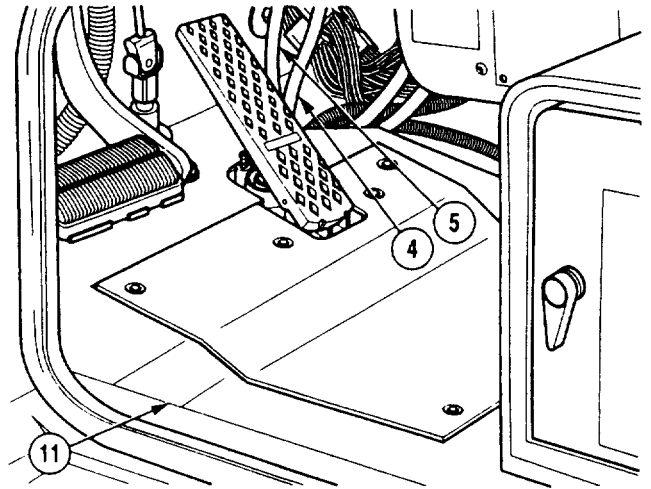
e. Installation.

- (1) Install tilt/lift joystick (15) on dash frame (16) with four washers (14), lock washers (13), and screws (12). Tighten screws to 7 lb-ft (10 N•m).

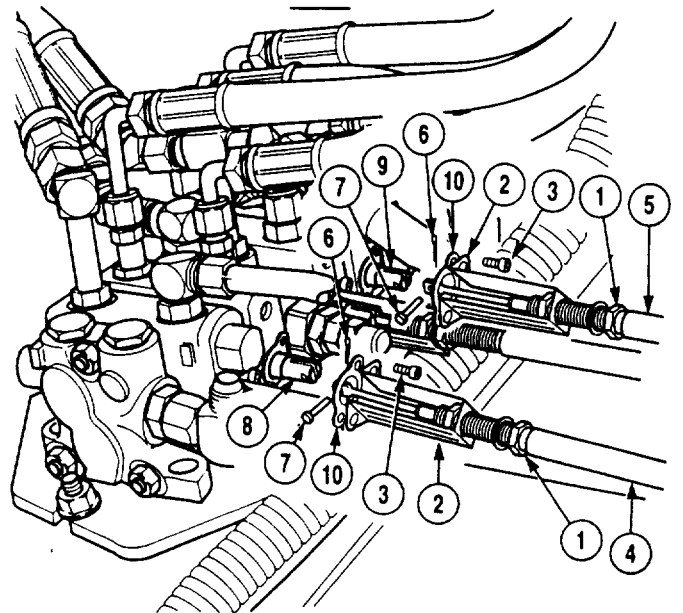


17-3. TILT/LIFT JOYSTICK REPLACEMENT/REPAIR (CONT.).

- (2) Position cables (4 and 5) through access hole in cab frame (11).



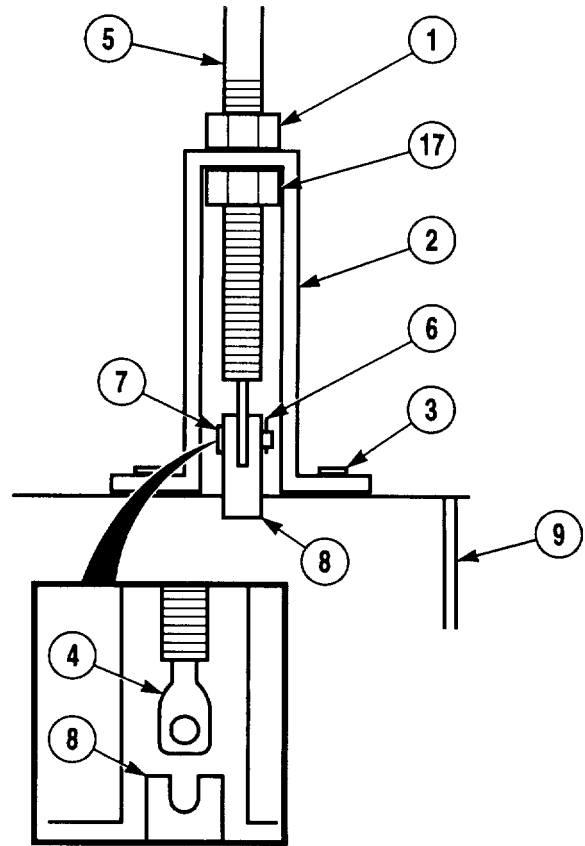
- (3) Position two gaskets (10) on tilt control valve (8) and lift control valve (9).
- (4) Install tilt control valve cable (4) and lift control valve cable (5) on tilt control valve (8) and lift control valve (9) with two pins (7) and cotter pins (6).
- (5) Install two gaskets (10) on tilt control valve (8) and lift control valve (9) with four screws (3).
- (6) Install two nuts (1) on brackets (2).
- (7) Tighten two nuts (1).



f. Adjustment.**NOTE**

Complete loosening of the outer nut will permit adjustment of the inner nut.

- (1) Loosen nuts (1 and 17). Nut (1) should be completely loosened.
- (2) Remove two screws (3).
- (3) While holding bracket (2) in position, gently turn inner nut (17) until it just contacts bracket (2) without causing valve stem (8) or cable end (4) to move. It may be necessary to slide bracket (2) toward nut (1) to gain clearance to turn nut (17).
- (4) Hand tighten outer nut (1) against bracket (2).
- (5) Remove pin (7) and cotter pin (6).
- (6) Install bracket (2) on control valve (9) using two screws (3).

**NOTE**

Final adjustment requires trial and error.

- (7) If hole in cable end (4) is aligned with hole in valve stem (8), adjustment is complete. Go to Step (9).
- (8) If hole in cable end (4) is not aligned with hole in valve stem (8), repeat Steps (1) through (8) until adjustment is complete.
- (9) Repeat process for remaining cables.

NOTE**Follow-on Maintenance:**

- Install steering hose to stack valve (Para 17-11).
- Install instrument panel (Para 7-8).
- Install oil filter tray (Para 4-13).
- Install batteries (Para 7-48).
- Remove wheel chocks (TM 10-3930-669-10).

END OF TASK

17-4. SECONDARY CYLINDER FLOW REGULATOR REPLACEMENT.

This task covers:

- a. Removal b. Installation

INITIAL SETUP*Tools and Special Tools*

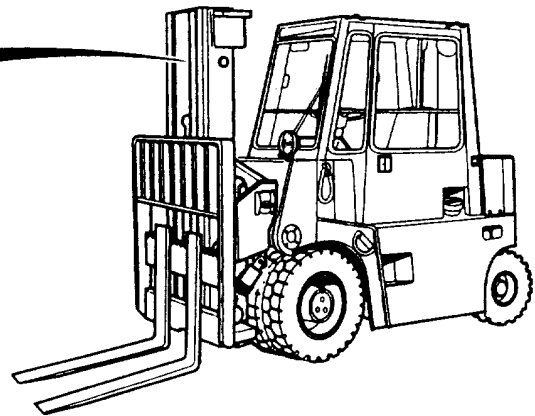
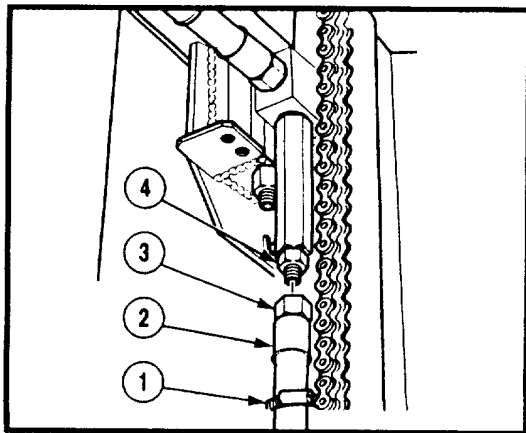
Tool Kit, General Mechanic's: Automotive (Item 1, Appendix B)

Materials /Parts

Cap and Plug Set (Item 5, Appendix C)
Rags, Wiping (Item 19, Appendix C)
Packing, Performed (2)

Equipment Condition

Engine OFF (TM 10-3930-669-10)
Parking brake applied (TM 10-3930-669-10)
Wheels chocked (TM 10-3930-669-10)
Hydraulic pressure relieved (LO 10-3930-669-12)
Batteries disconnected (Para 7-48)

a. Removal**WARNING**

- High-pressure hydraulics operate this equipment. Never disconnect any hydraulic line or fitting without first dropping pressure to zero. A high-pressure oil stream can pierce body and cause severe injury to personnel.
- Oil is slippery and can cause falls. To avoid injury, wipe up spilled oil with wiping rags.

NOTE

- With main power switch in the OFF position, operate the two hydraulic levers (TM 10-3930-669-10) several strokes to ensure release of any trapped hydraulic oil under pressure.
- Cap and plug all hoses and fittings after removal.

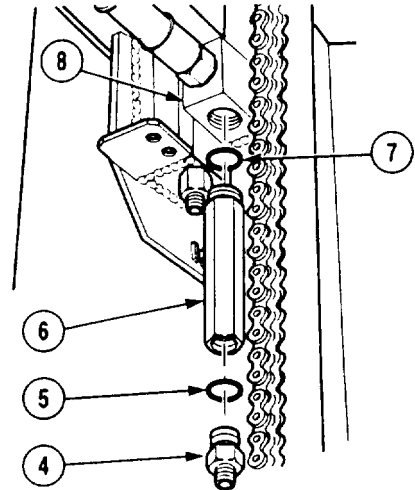
(1) Loosen clamp (1) on extension tube (2).

(2) Loosen fitting (3) and remove extension tube (2) from fitting (4).

- (3) Remove fitting (4), preformed packing (5), flow regulator (6), and preformed packing (7) from secondary cylinder (8). Discard preformed packings.

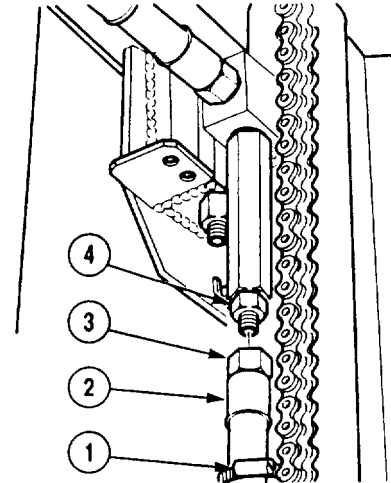
b. Installation.

- (1) Install preformed packing (7), flow regulator (6), preformed packing (5), and fitting (4) on secondary cylinder (8).



- (2) Install extension tube (2) on fitting (4) and tighten fitting (3).

- (3) Tighten clamp (1) on extension tube (2).



NOTE

Follow-on Maintenance:

- Connect batteries (Para 7-48).
- Check hydraulic fluid (LO 10-3930-669-12).
- Remove wheel chocks (TM 10-3930-669-10).

END OF TASK

17-5. HYDRAULIC AOAP VALVE REPLACEMENT.

This task covers:

- a. Removal b. Installation

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive (Item 1, Appendix B)

Equipment Condition

Engine OFF (TM 10-3930-669-10)
Parking brake applied (TM 10-3930-669-10)

Equipment Condition - Continued

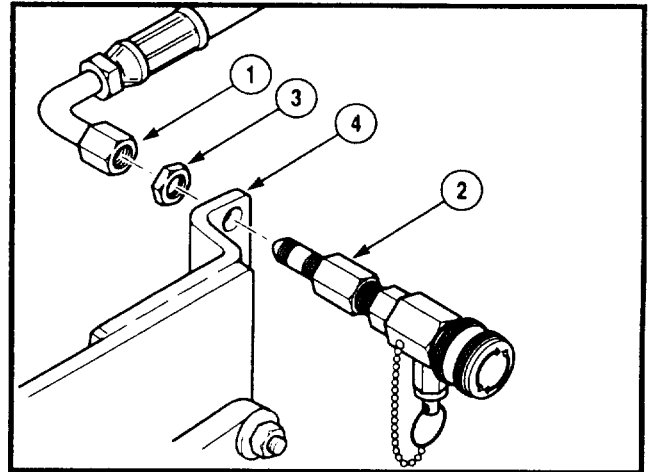
Wheels chocked (TM 10-3930-669-10)
Right-hand engine access cover opened (TM 10-3930-669-10)
Hydraulic pressure relieved (LO 10-3930-669-12)

a. Removal.

- (1) Remove oil line (1) from hydraulic AOAP valve (2).
- (2) Remove nut (3) and hydraulic AOAP valve (2) from filter tray (4).

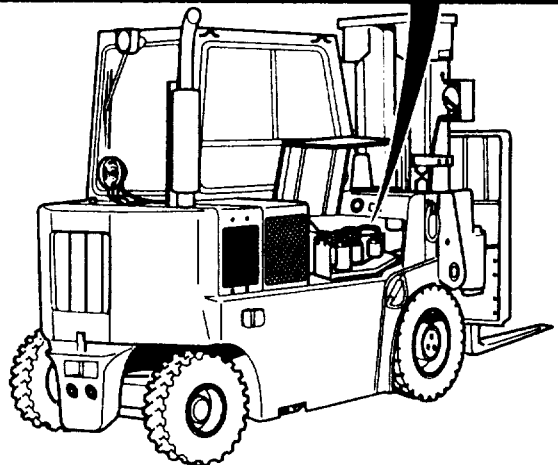
b. Installation.

- (1) Install hydraulic AOAP valve (2) in filter tray (4) with nut (3).
- (2) Install oil line (1) on hydraulic AOAP valve (2).

**NOTE****Follow-on Maintenance:**

- Close right-hand engine access cover (TM 10-3930-669-10).
- Remove wheel chocks (TM 10-3930-669-10).

END OF TASK



17-6. TILT CYLINDER REPLACEMENT/ADJUSTMENT.

This task covers:

- a. Removal b. Installation c. Adjustment

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive (Item 1, Appendix B)
 Wrench, Torque (0 to 175 lb-ft [0-237 N•m]) (Item 2, Appendix B)
 Leveling, Devices (Item 2, Appendix B)

Equipment Condition

Engine OFF (TM 10-3930-669-10)
 Parking brake applied (TM 10-3930-669-10)
 Wheels chocked (TM 10-3930-669-10)
 Mast pivoted 90° (TM 10-3930-669-10)

Materials/Parts

Cap and Plug Set (Item 5, Appendix C)
 Tags, Identification (Item 21, Appendix C)
 Packing, Preformed (2)
 Washer, Lock (2)

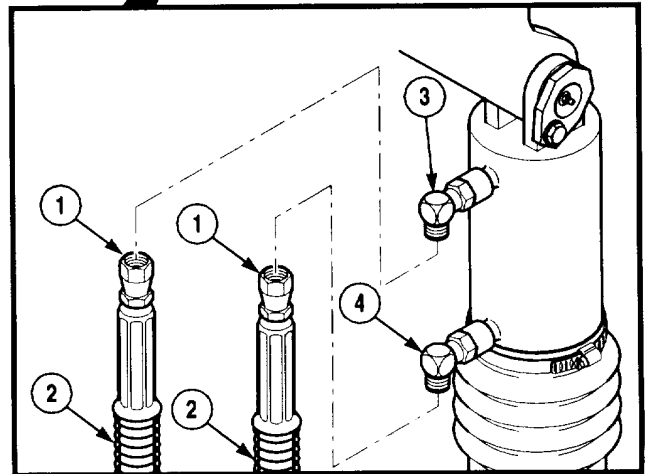
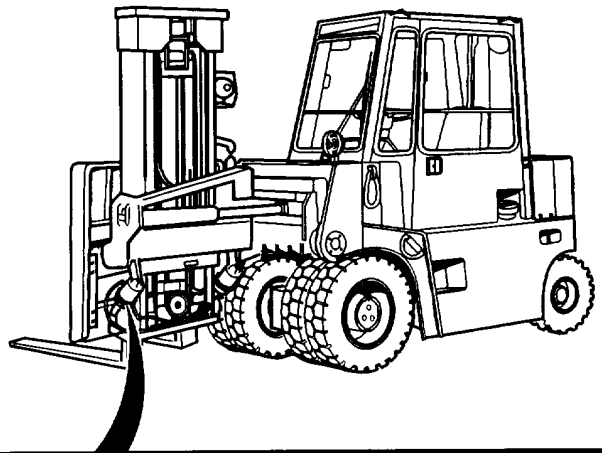
a. Removal.**WARNING**

High-pressure hydraulics operate this equipment. Never disconnect any hydraulic line or fitting without first dropping pressure to zero. A high-pressure oil stream can pierce body and cause severe injury to personnel.

NOTE

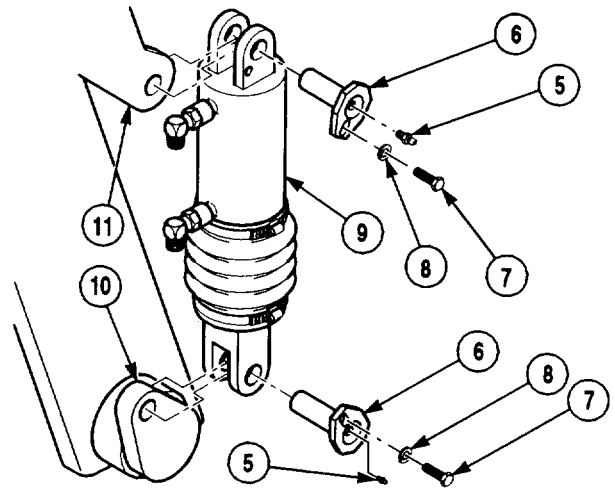
- Both tilt cylinders are removed the same way. Left side is shown.
- Cap and plug all hydraulic hoses after removal.
- Tag and mark all hoses after removal.

- (1) Loosen two fittings (1) and remove oil lines (2) from elbows (3 and 4).



17-6. TILT CYLINDER REPLACEMENT (CONT).

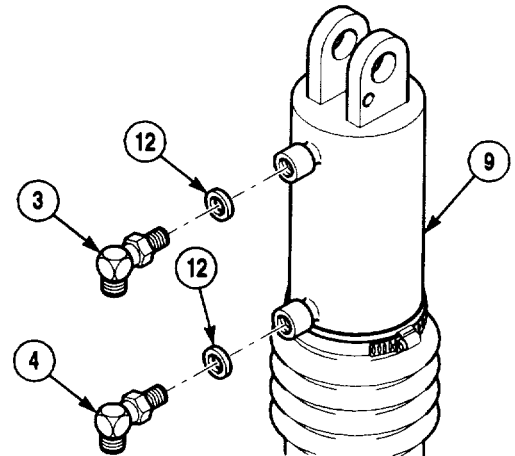
- (2) Remove two grease fittings (5) from pins (6).
- (3) Remove two screws (7), lock washers (8), pins (6), and tilt cylinder (9) from rail (10) and mast (11). Discard lock washers.



NOTE

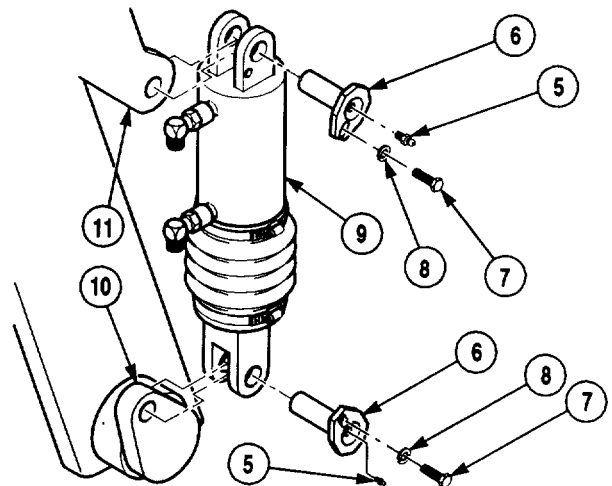
Mark direction of elbows before removal.

- (4) Remove two elbows (3 and 4) and preformed packings (12) from tilt cylinder (9). Discard preformed packings.

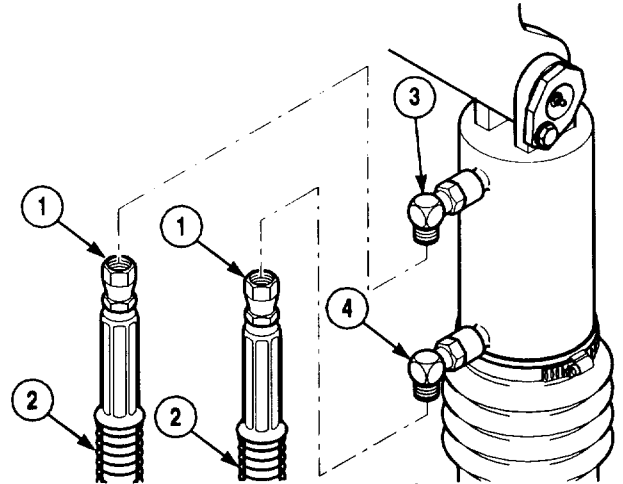


b. Installation.

- (1) Install two preformed packings (12) and elbows (3 and 4) in tilt cylinder (9).
- (2) Install tilt cylinder (9) on rail (10) and mast (11) with two pins (6), lock washers (8), and screws (7). Tighten screws to 40 lb-ft (54.2 N•m).
- (3) Install two grease fittings (5) in pins (6).



- (4) Install two oil lines (2) on elbows (3 and 4) and tighten fittings (1).



c. Adjustment.

NOTE

Ensure forklift is on level ground.

- (1) Start engine (TM 10-3930-669-10).
- (2) Close mast (11) and position mast forks 3 feet (0.91 m) above ground (TM 103930-669-10).

NOTE

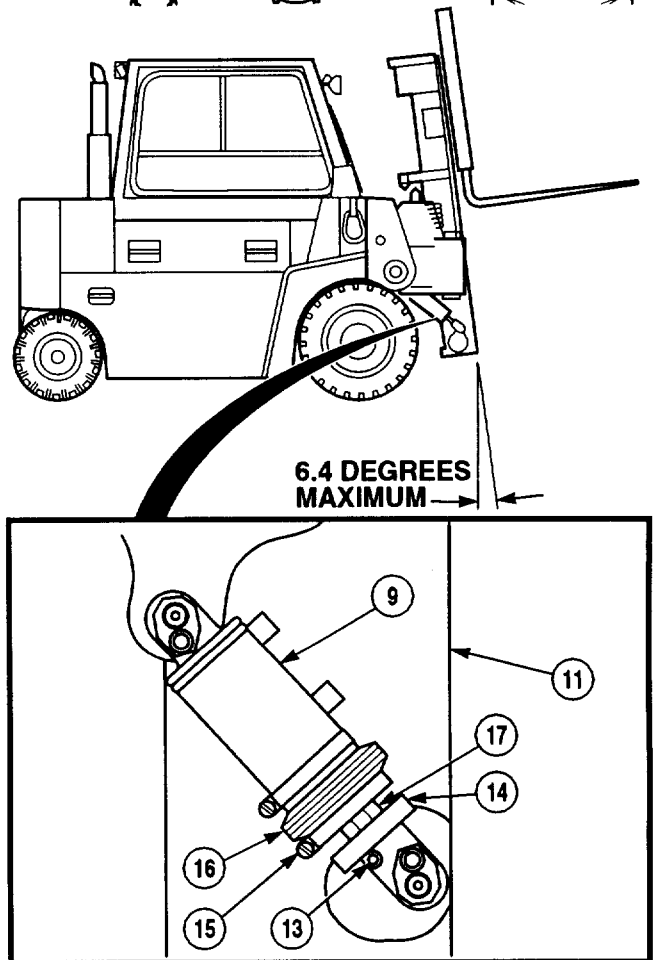
Racking is when both tilt cylinders do not reach full extension at the same time. This causes twisting of mast.

- (3) Tilt mast (11) backward to full extent (TM 10-3930-669-10) and observe tilt cylinders (9) for racking.

NOTE

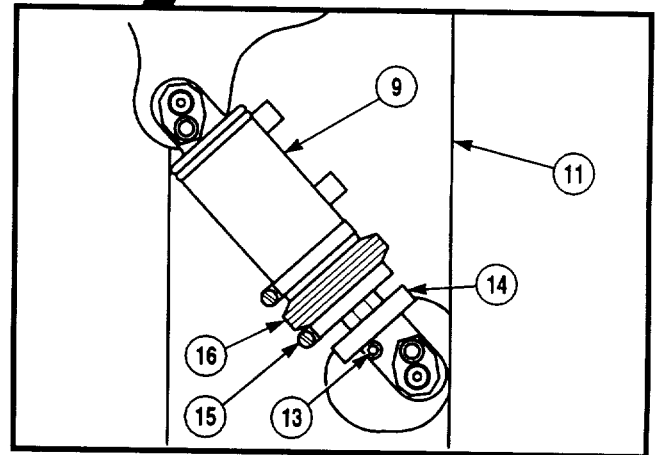
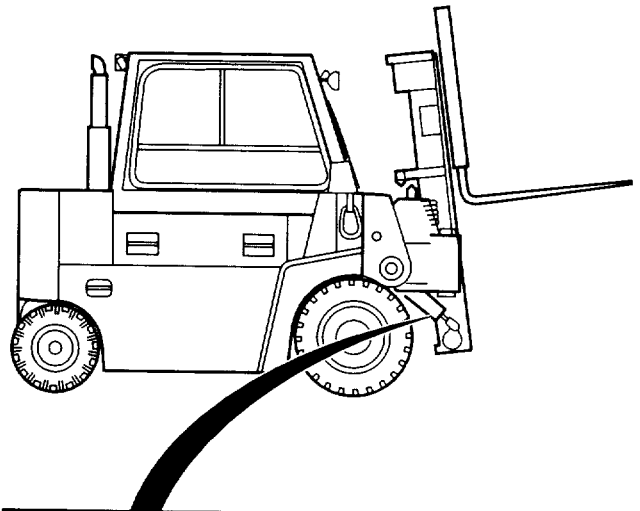
If mast is racking, go to Step (4) below. Otherwise go to Step (7).

- (4) Loosen screw (13) on lower clevis (14) on each tilt cylinder (9).
- (5) Loosen clamp (15) and pull back boot (16) on each tilt cylinder (9).
- (6) Adjust each tilt cylinder (9) at flat (17) until tilt cylinders do not cause racking.



17-6. TILT CYLINDER REPLACEMENT (CONT).

- (7) Using a leveling device on back of stationary channel, measure rear tilt. If rear tilt is greater than 6.4 degrees, shorten both tilt cylinders (9) and perform Steps (4) through (6) above. Otherwise go to Step (8) below.
- (8) Pull boot (16) over each tilt cylinder (9) and tighten clamp (15).
- (9) Tighten screw (13) on clevis (14) on each tilt cylinder (9).
- (10) Lower mast (11) so that fork tips are on the ground.

**NOTE****Follow-on Maintenance:**

- Pivot mast to front (TM 10-3930-669-10).
- Remove wheel chocks (TM 10-3930-669-10).

END OF TASK

17-7. BACKREST REPLACEMENT.

This task covers:

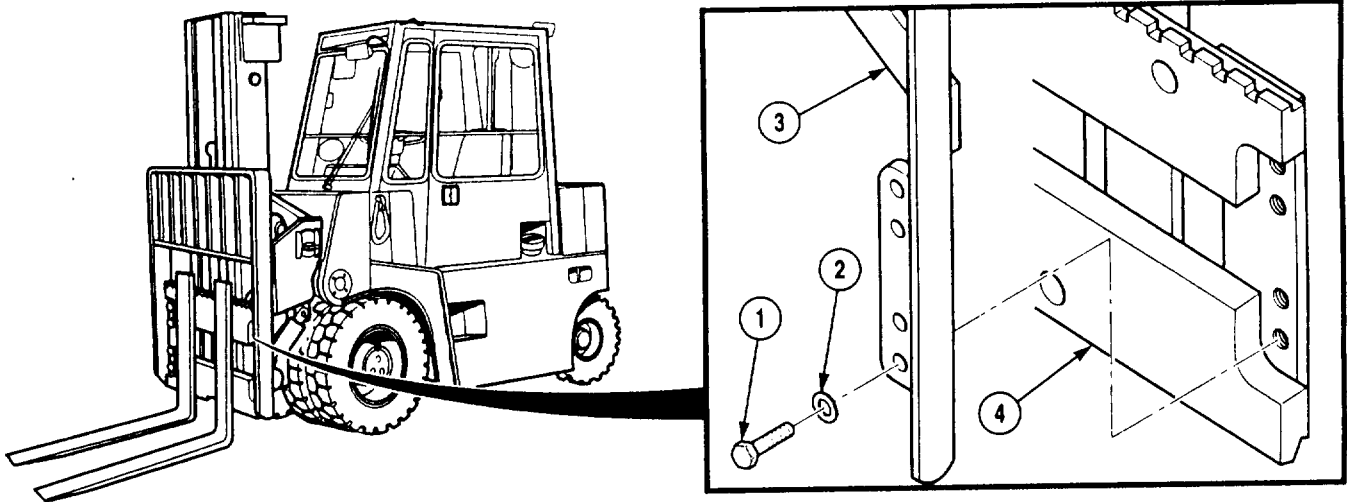
- a. Removal
- b. Installation

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive: (Item 1, Appendix B)
Wrench, Torque (0 to 600 lb-ft [0-813 N•m]) (Item 2, Appendix B)
Lifting Device (minimum capacity 50 lbs.)

Equipment Condition

Engine OFF (TM 10-3930-669-10)
Parking brake applied (TM 10-3930-669-10)
Wheels chocked (TM 10-3930-669-10)
Forks removed (TM 10-3930-669-10)

**WARNING**

Backrest weighs 100 lbs (45 kg). Attach suitable lifting device prior to removal or installation to prevent possible injury to personnel.

- a. **Removal.** Remove eight screws (1), washers (2), and backrest (3) from carriage (4).
- b. **Installation.** Install backrest (3) on carriage (4) with eight washers (2) and screws (1). Tighten screws to 180 lb-ft (244 N•m).

NOTE**Follow-on Maintenance:**

- Install forks (TM 10-3930-669-10).
- Remove wheel chocks (TM 10-3930-669-10).

END OF TASK

17-8. PIVOT CYLINDER REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Adjustment

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive (Item 1, Appendix B)

Materials/Parts

Cap and Plug Set (Item 5, Appendix C)
 Tags, Identification (Item 21, Appendix C)
 Packing, Preformed
 Packing, Preformed
 Washer, Lock (2)

Equipment Condition

Engine OFF (TM 10-3930-669-10)
 Parking brake applied (TM 10-3930-669-10)
 Wheels chocked (TM 10-3930-669-10)
 Mast pivoted 90° (TM 10-3930-669-10)

a. Removal.**WARNING**

High-pressure hydraulics operate this equipment.

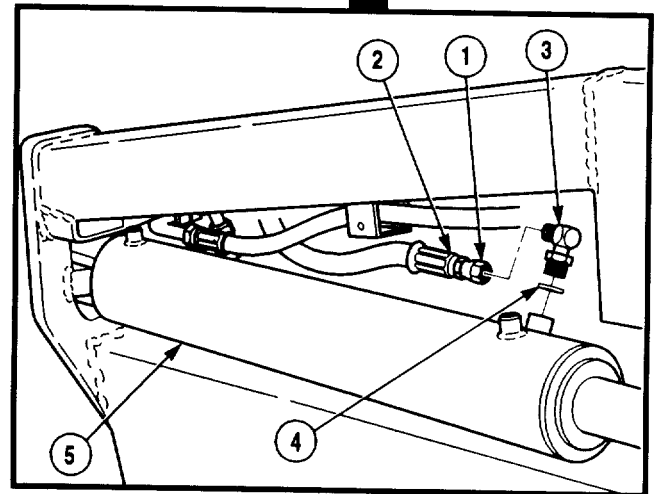
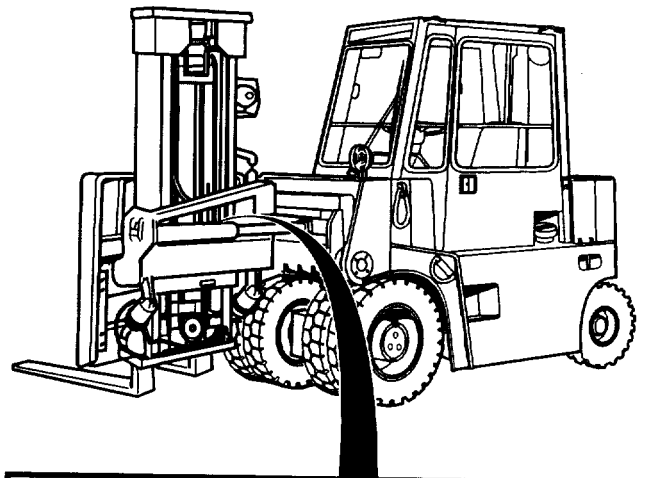
Never disconnect any hydraulic line or fitting without first dropping pressure to zero. A high-pressure oil stream can pierce body and cause severe injury to personnel.

NOTE

- Tag and mark hoses prior to removal.
- Cap and plug all hoses and fittings after removal.
- Block pivot arm prior to removal of cylinder.

(1) Loosen fitting (1) and remove hose (2) from elbow (3).

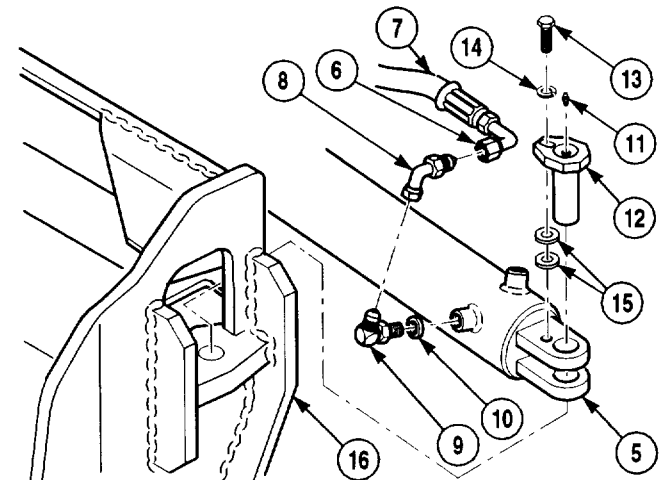
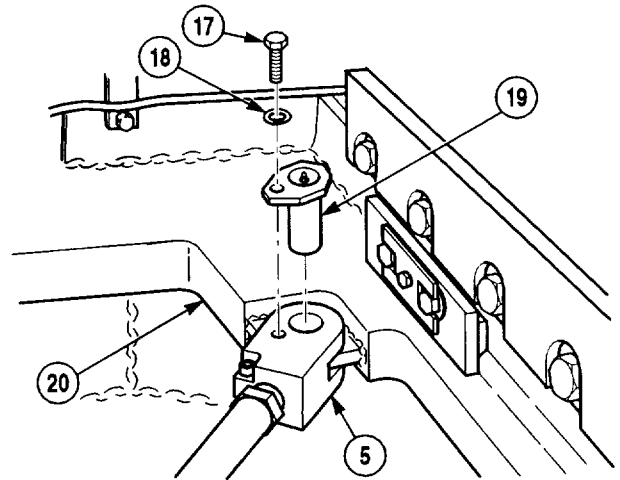
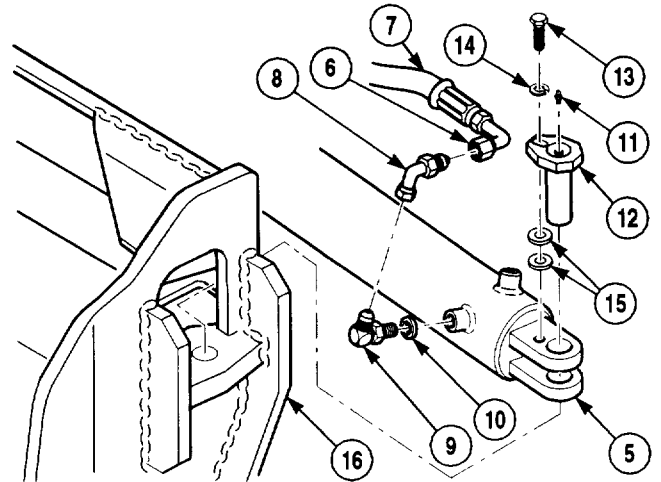
(2) Remove elbow (3) and preformed packing (4) from pivot cylinder (5). Discard preformed packing.



- (3) Loosen fitting (6) and remove hose (7) from elbow (8).
- (4) Remove elbow (8) from elbow (9).
- (5) Remove elbow (9) and preformed packing (10) from pivot cylinder (5). Discard preformed packing.
- (6) Remove grease fitting (11) from pin (12).
- (7) Remove screw (13), lock washer (14), pin (12), two washers (15), and pivot cylinder (5) from mast (16). Discard lock washer.
- (8) Remove screw (17), lock washer (18), pin (19), and pivot cylinder (5) from pivot and shift assembly (20). Discard lock washer.

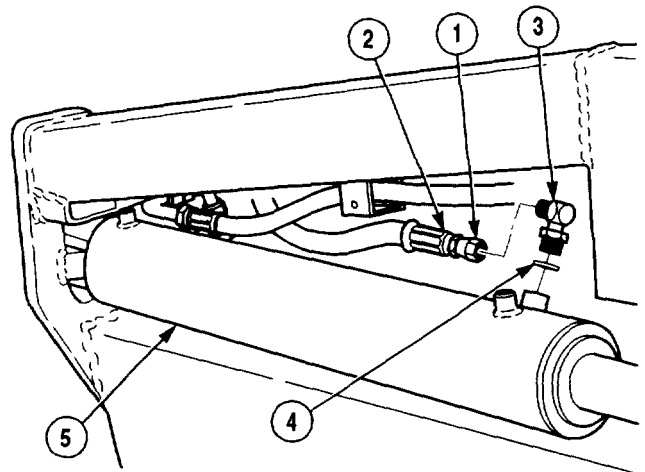
b. Installation.

- (1) Install pivot cylinder (5) on pivot and shift assembly (20) with pin (19), lock washer (18), and screw (17).
- (2) Install pivot cylinder (5) on mast (16) with two washers (15), pin (12), lock washer (14), and screw (13).
- (3) Install grease fitting (11) in pin (12).
- (4) Install elbow (9) and preformed packing (10) in pivot cylinder (5).
- (5) Install elbow (8) on elbow (9).
- (6) Install hose (7) on elbow (8) and tighten fitting (6).

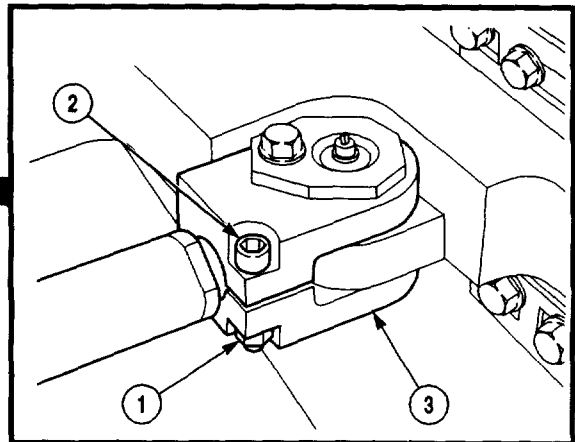
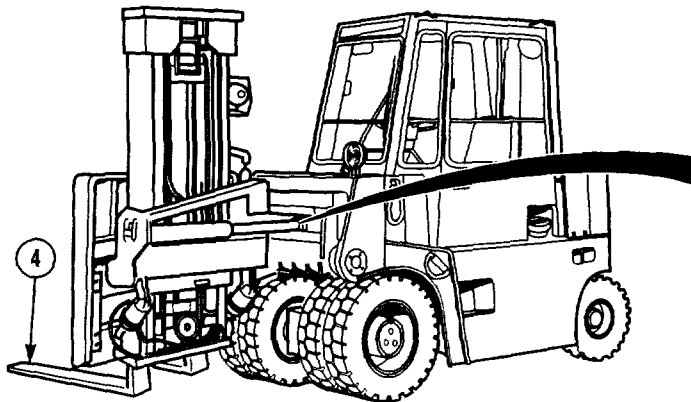


17-8. PIVOT CYLINDER REPLACEMENT (CONT).

- (7) Install elbow (3) and preformed packing (4) in pivot cylinder (5).
- (8) Install hose (2) on elbow (3) and tighten fitting (1).

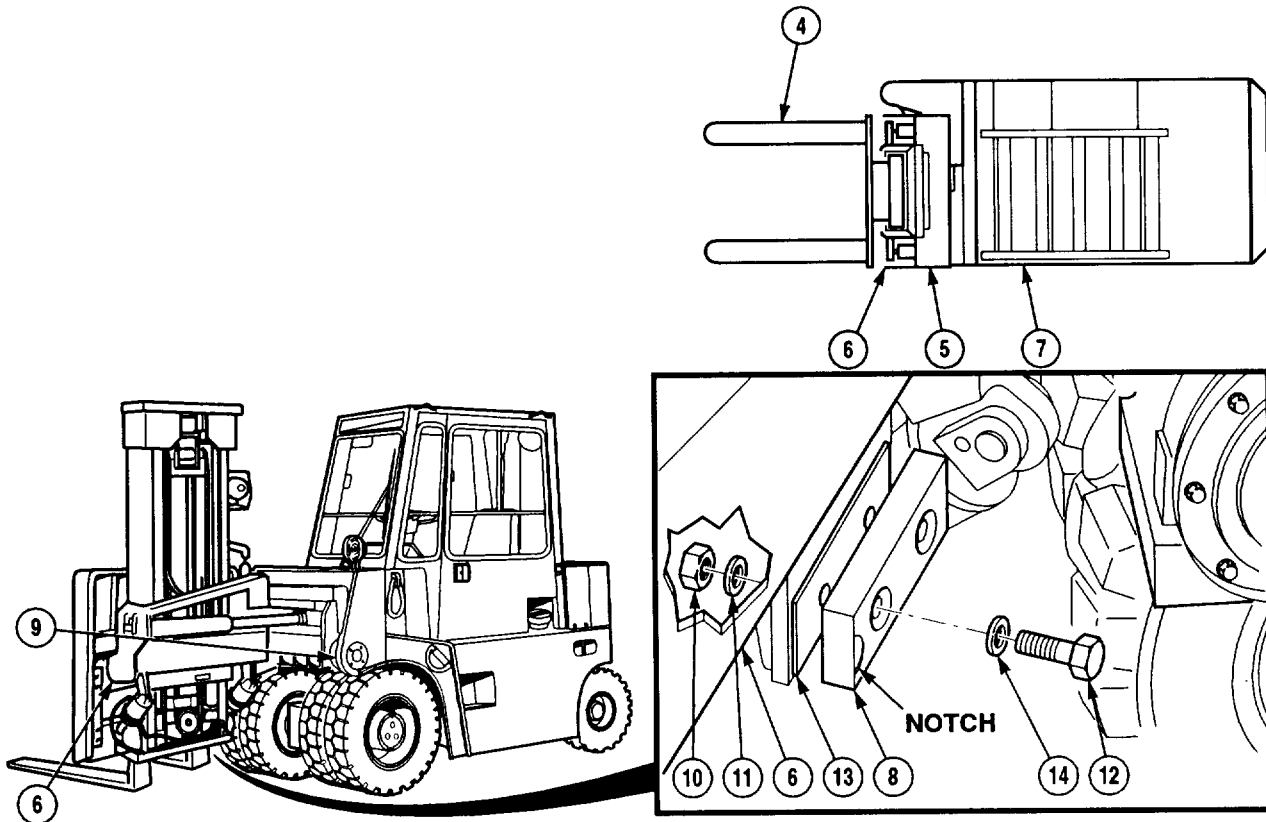


c. Adjustment.



- (1) Start engine (TM 10-3930-669-10).
- (2) Loosen nut (1) from screw (2) on pivot cylinder clevis (3).
- (3) Raise forks (4) to height of 3 in. (76.2 mm).
- (4) Tilt mast (5) to vertical position (TM 10-3930-669-10).

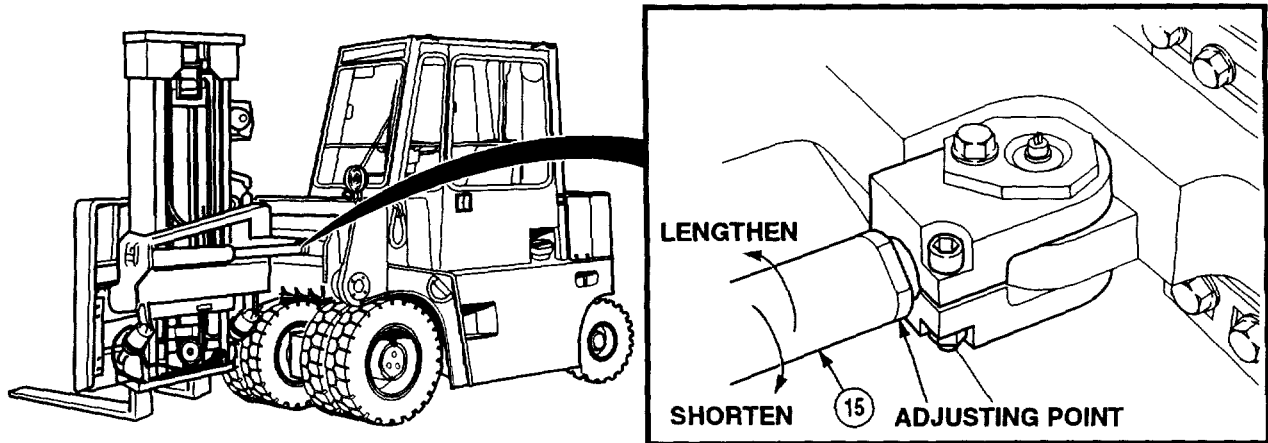
- (5) Pivot mast assembly (5) fully closed.
- (6) Shift mast assembly (5) to align left side of pivot arm (6) evenly with left side of forklift (7).



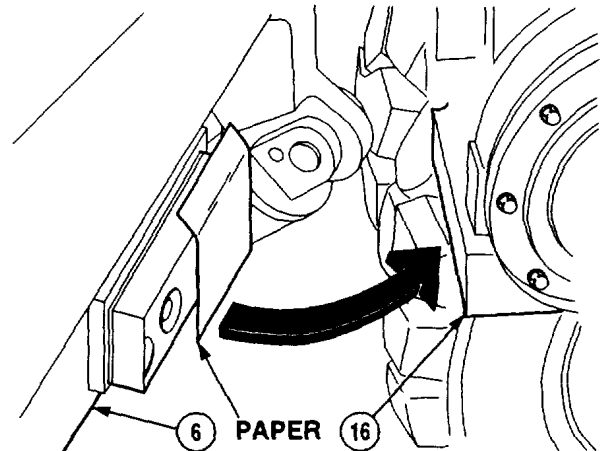
NOTE

- Pivot arm should be parallel to shift tube when pivot arm is fully closed. If pivot arm is not parallel to shift tube, or gap between pivot arm and shift housing is less than 0.25 in. (6.4 mm), add shims to stop pad.
 - If notch is worn away on either side of stop pad, proceed to Step (9).
 - Add or remove shims as required.
- (7) Inspect stop pad (8) notch for wear or damage.
 - (8) Inspect distance between pivot arm (6) and shift housing (9).
 - (9) Open pivot arm (6) to gain access to stop pad (8).
 - (10) Remove two nuts (10), washers (11), screws (12), shims (13), stop pad (8), and two washers (14) from pivot arm (6).
 - (11) Install new stop pad (8) on pivot arm (6) with two screws (12), washers (14), shims (13) as required, washers (11), and nuts (10).

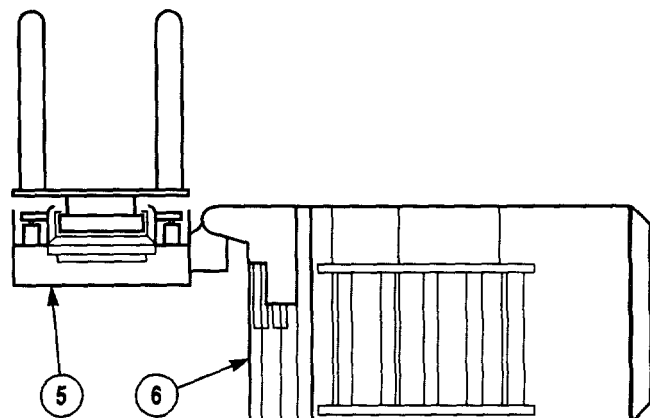
17-8. PIVOT CYLINDER REPLACEMENT (CONT).

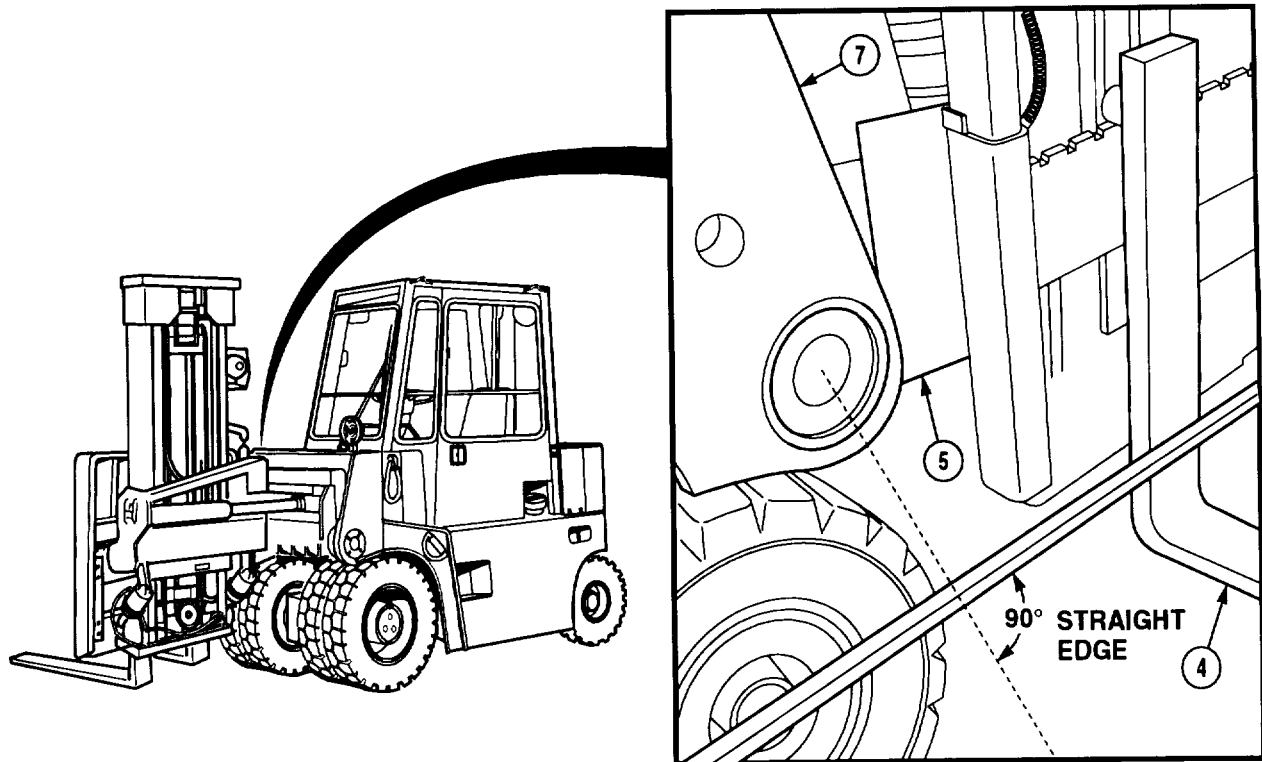


- (12) Using wrench at adjusting point, lengthen or shorten effective cylinder length by rotating rod (15).
- (13) Adjust length of rod so sheet of paper is held clamped between pivot arm (6) and crosshead (16) when closed, but can be removed with light tension.



- (14) Pivot mast assembly (5) to the right and shift fully on crosshead (6) to right.





(15) With the aid of an assistant and using a straight edge across the front vertical face of forks (4), verify that mast assembly (5) pivots more than 90 degrees, or is at least parallel to forklift (7).

NOTE

If mast assembly pivots less than 90 degrees, add additional shims to stop pad by repeating Steps (10) through (15).

If mast assembly pivots 90 degrees or more, proceed to Step (16).

(16) Remove straight edge from front vertical face of forks (4).

NOTE

Follow-on Maintenance:

- Stop engine (TM 10-3930-669-10).
- Pivot mast to front (TM 10-3930-669-10).
- Check hydraulic fluid (LO 10-3930-669-12).
- Remove wheel chocks (TM 10-3930-669-10).

END OF TASK

17-9. HYDRAULIC FILTER HEAD REPLACEMENT (CONT).

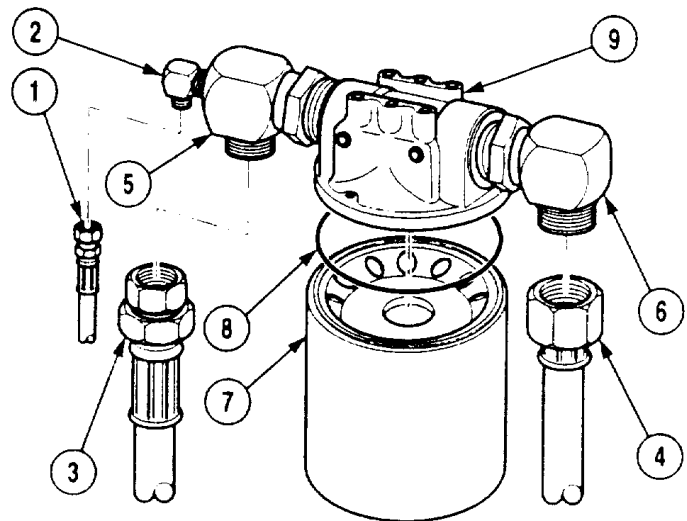
e. Installation.

- (1) Coat preformed packing (8) with hydraulic oil.
- (2) Install preformed packing (8) and filter (7) on hydraulic filter head (9).
- (3) Install oil tube (4) on elbow (6).
- (4) Install oil line (3) on elbow (5).
- (5) Install oil line (1) on elbow (2).

NOTE

Follow-on Maintenance:

- Install load rest (Para 14-2).
- Install right-hand engine access panel (TM 10-3930-669-10).
- Remove wheel chocks (TM 10-3930-669-10).



END OF TASK

17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT.

This task covers:

- a. Mast Hydraulic Hose Replacement
- b. Pivot Arm Hose and Tube Replacement
- c. Lower Mast Hose and Tube Replacement
- d. Tilt Cylinder Hose Replacement
- e. Shift Cylinder and Umbilical Hose Replacement
- f. Inner Umbilical Hose Replacement
- g. Stack Valve Low Pressure Hose and Tube Replacement
- h. Stack Valve/Priority Valve/Hydraulic Pump Hose Replacement
- i. Steer Hose and Tubes Replacement

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive
(Item 1, Appendix B)
Wrench, Torque (0 to 175 lb-ft [0-237 N•m])
(Item 2, Appendix B)
Wrench, Torque (0-60 N.m)
(Item 12, Appendix B)

Materials /Parts

Ties, Cable (Item 4, Appendix C)
Cap and Plug Set (Item 5, Appendix C)
Rags, Wiping (Item 19, Appendix C)
Solvent, Drycleaning (Item 20, Appendix C)
Tags, Identification (Item 21, Appendix C)
Packing, Preformed (2)
Packing, Preformed (2)
Packing, Preformed

Materials/Parts - Continued

Packing, Preformed (2)
Packing, Preformed
Packing, Preformed
Packing, Preformed
Packing, Preformed
Packing, Preformed
Packing, Preformed
Packing, Preformed

Equipment Condition

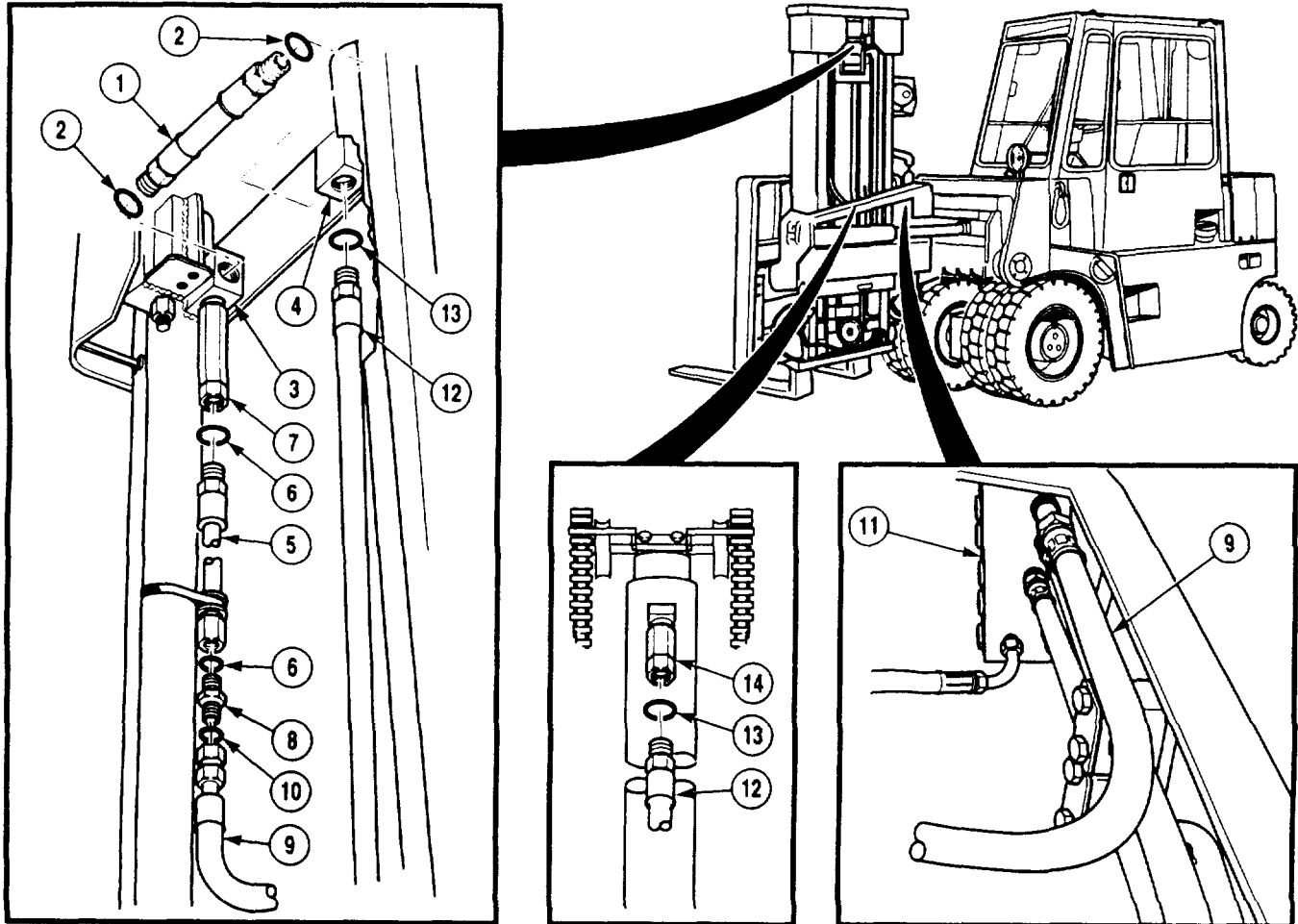
Wheels chocked (TM 10-3930-669-10)
Hydraulic reservoir drained
(LO 10-3930-669-12)
Mast pivoted 90° (TM 10-3930-669-10)

NOTE

- This procedure shows locations of hydraulic hoses on the vehicle. It will never be necessary to remove all hoses at one time.
- Hydraulic hoses have been divided into three logical groups: hoses and tubes associated with the mast/pivot and shift assembly, hoses and tubes running between the mast/pivot and shift assembly and the forklift, and hoses and tubes within the forklift itself. These groups are split in the task where the callouts go back to (1).
- Tag and mark all lines, hoses, and fittings prior to removal.
- Cap and plug all lines, hoses, and fittings as disconnected.
- Inspect all hoses, lines, and fittings for cracks, bends, nicks, dents, stripped threads, and cuts. Replace all damaged parts.
- Remove cable ties as required.

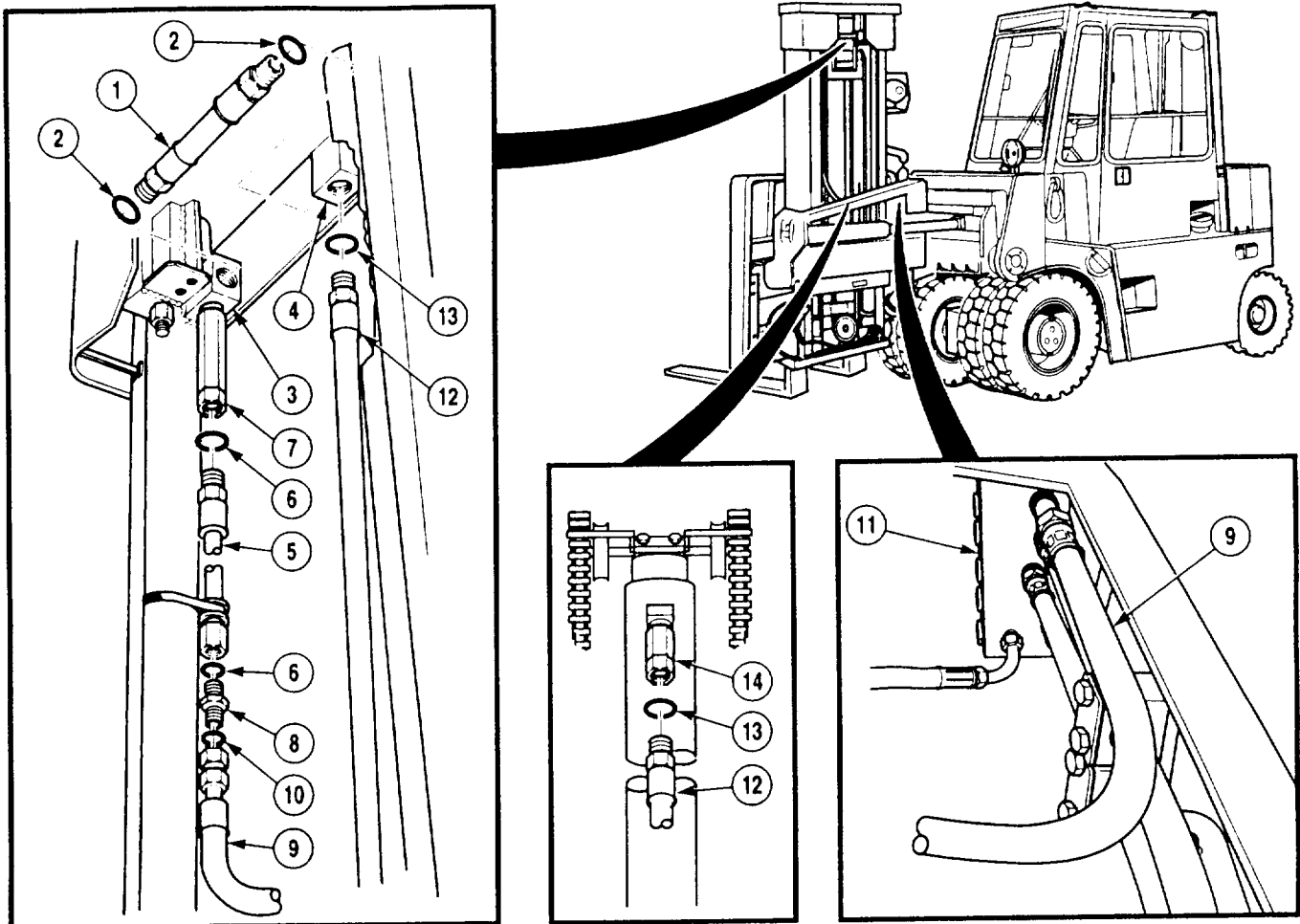
17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).

a. Mast Hydraulic Hose Replacement.



(1) Removal.

- (a) Remove hose (1) and two preformed packings (2) from secondary cylinder manifolds (3 and 4). Discard preformed packings.
- (b) Remove tube (5) and two preformed packings (6) from secondary cylinder regulator valve (7) and adapter (8). Discard preformed packings.
- (c) Remove hose (9) and preformed packing (10) from adapter (8) and manifold (11). Discard preformed packing.
- (d) Remove hose (12) and two preformed packings (13) from primary cylinder manifold adapter (14) and secondary cylinder manifold (4). Discard preformed packings.

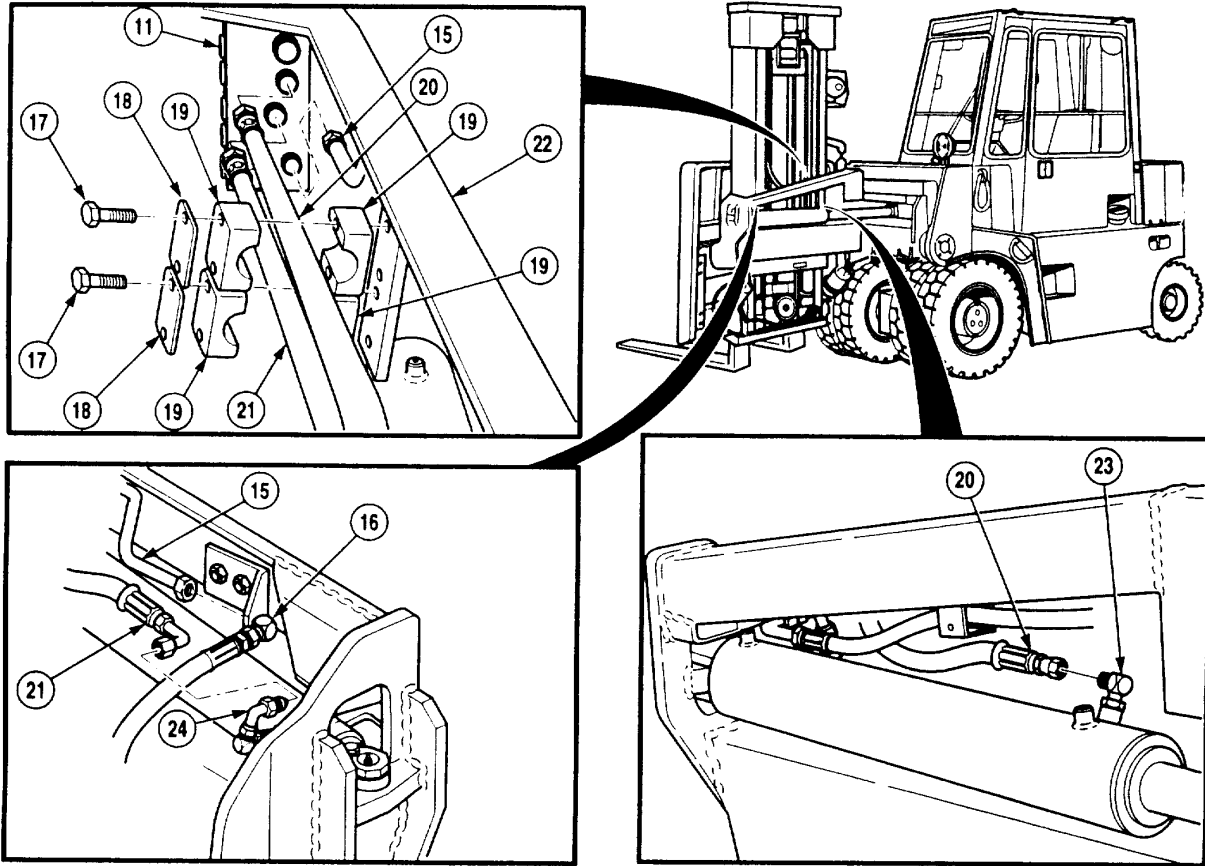


(2) Installation.

- (a) Install two preformed packings (13) and hose (12) on primary cylinder manifold adapter (14) and secondary cylinder manifold (4).
- (b) Install preformed packing (10) and hose (9) on adapter (8) and manifold (11).
- (c) Install preformed packing (6) and tube (5) on secondary cylinder regulator valve (7).
- (d) Install preformed packing (6) and adapter (8) on tube (5).
- (e) Install two preformed packings (2) and hose (1) in secondary cylinder manifolds (3 and 4).

17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).

b. Pivot Arm Hose and Tube Replacement.



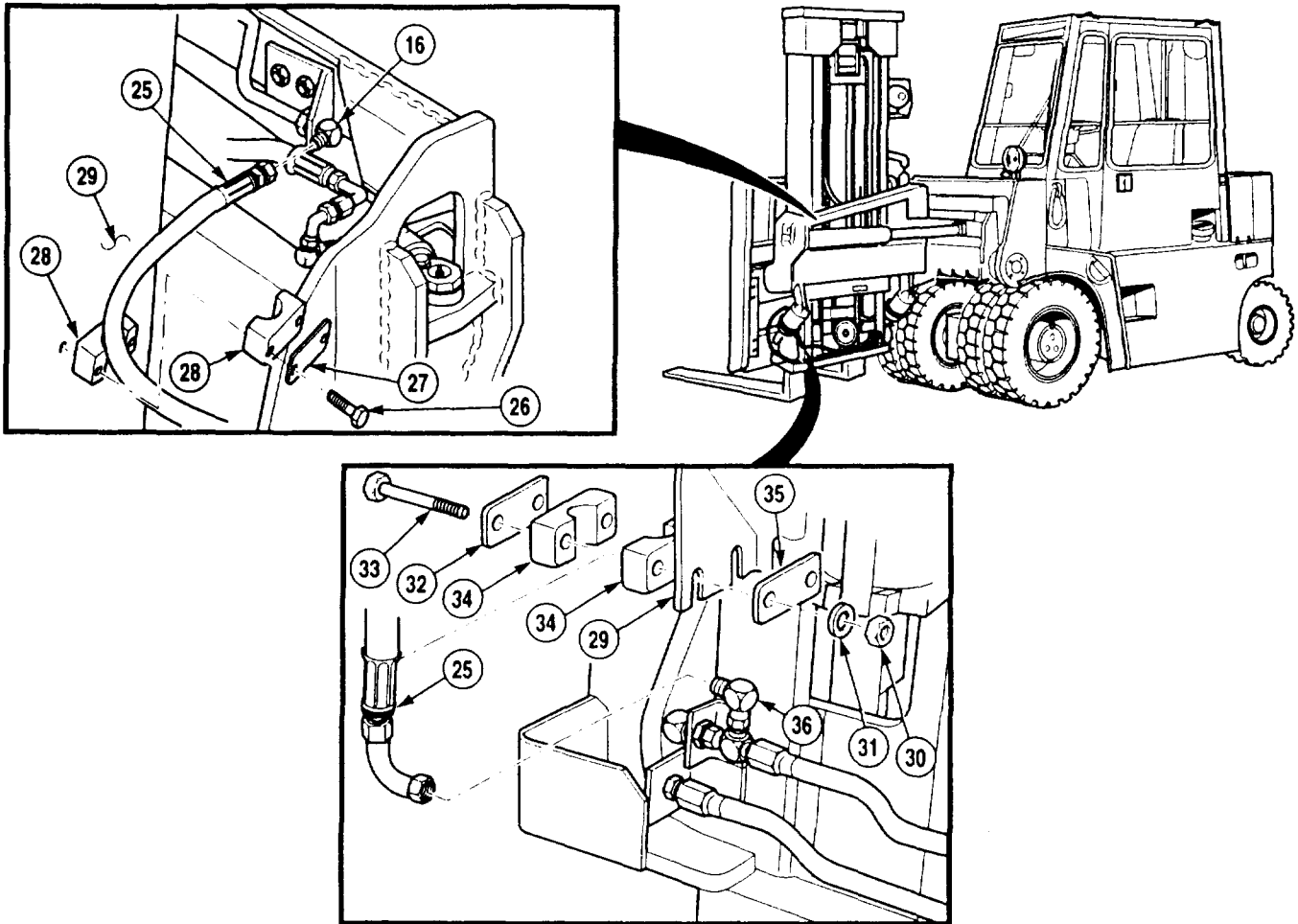
(1) Removal.

- (a) Remove tube (15) from elbow adapter (16) and manifold (11).
- (b) Remove four screws (17), two cover plates (18), two clamp halves (19), two hoses (20 and 21), and other two clamp halves (19) from pivot arm bracket (22).
- (c) Remove hose (20) from flow restrictor (23) and manifold (11).
- (d) Remove hose (21) from flow restrictor (24) and manifold (11).

(2) Installation.

- (a) Install hose (21) on manifold (11) and flow restrictor (24).
- (b) Install hose (20) on manifold (11) and flow restrictor (23).
- (c) Install two clamp halves (19), hoses (20 and 21), other two clamp halves (19), and two cover plates (16) on pivot arm bracket (22) with four screws (17).
- (d) Install tube (15) on elbow adapter (16) and manifold (11).

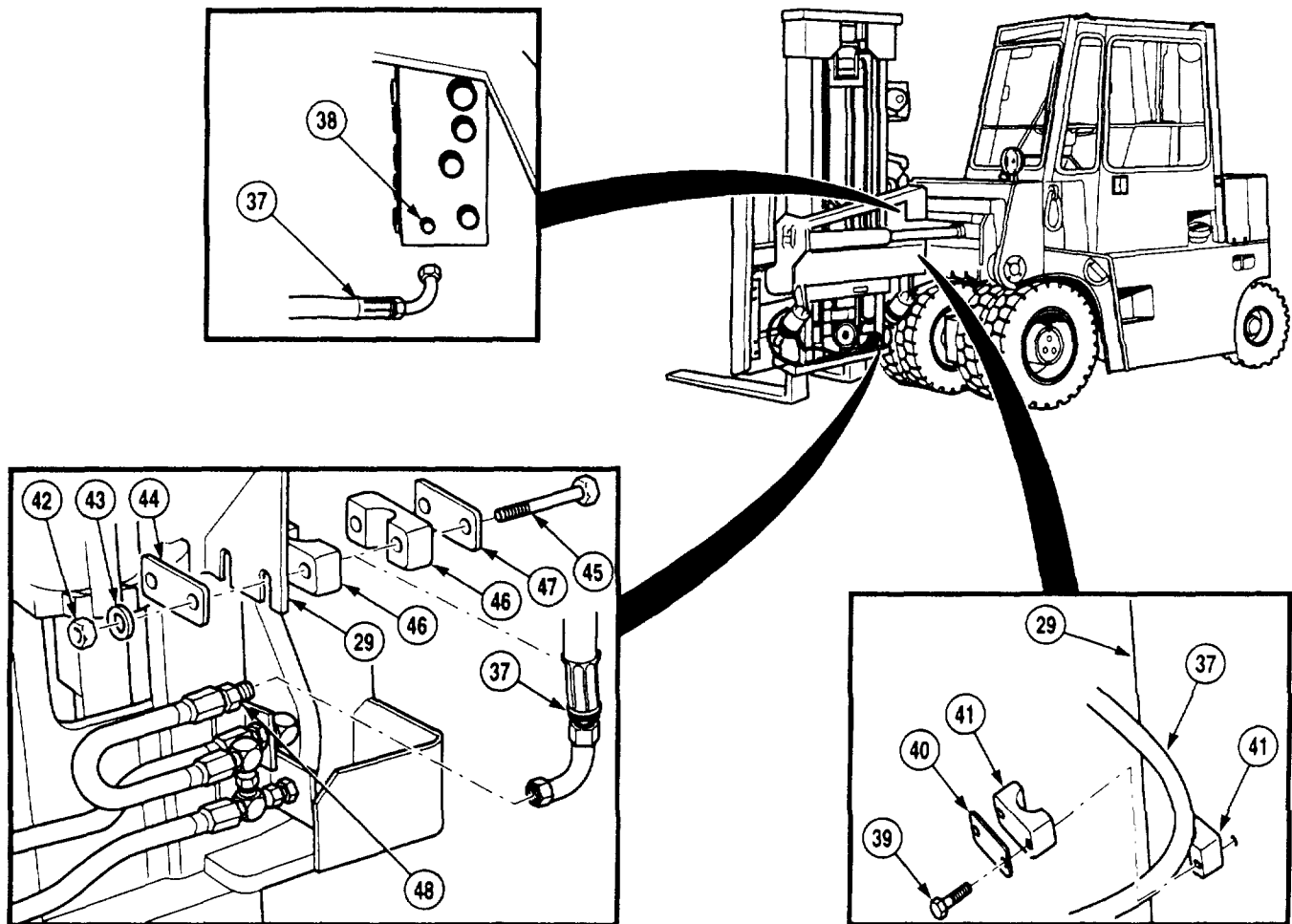
c. Lower Mast Hose and Tube Replacement.



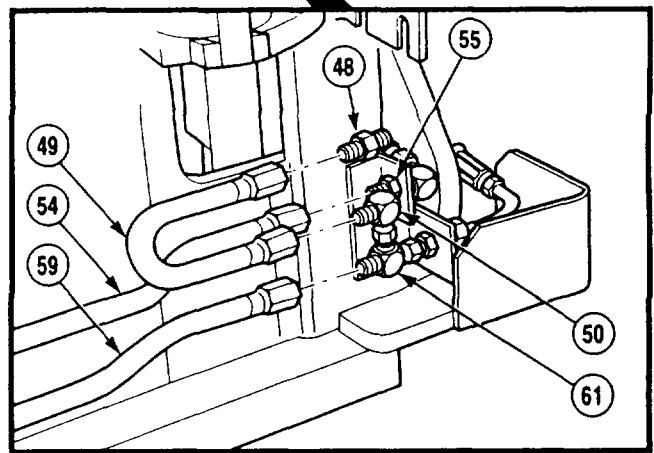
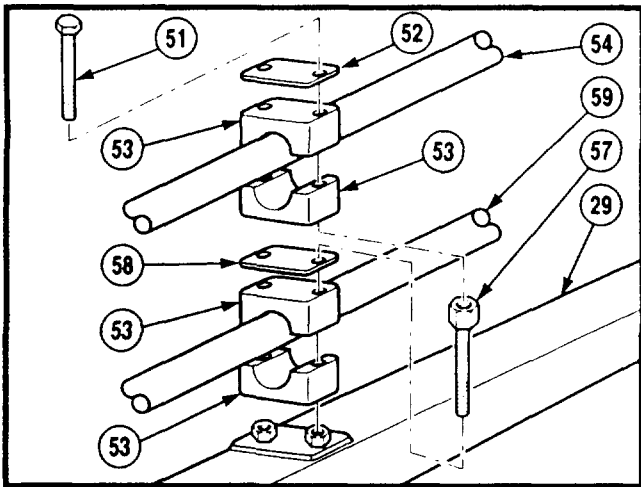
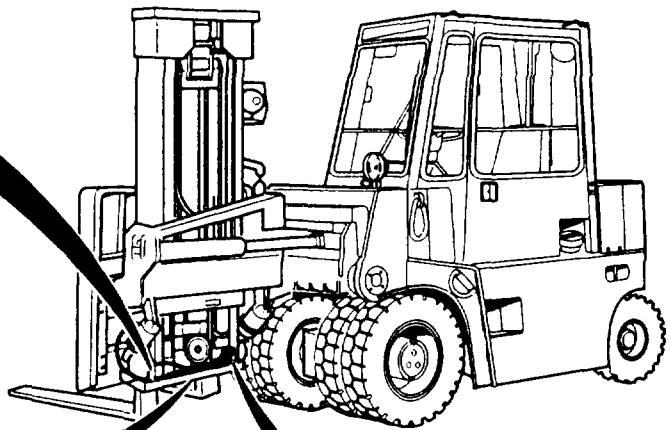
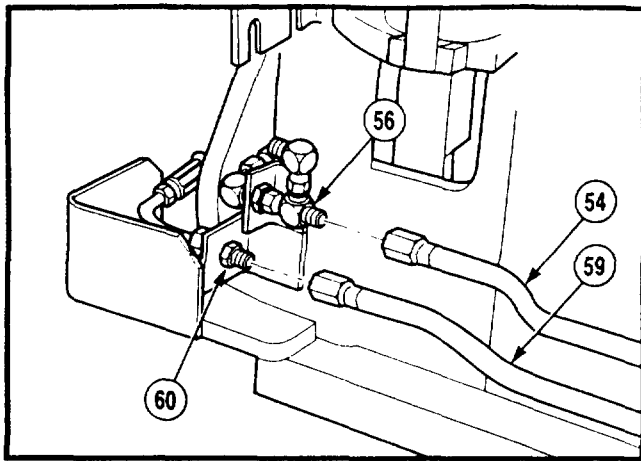
(1) Removal.

- (a) Remove hose (25) from elbow adapter (16).
- (b) Remove two screws (26), cover plate (27), clamp half (28), hose (25), and other clamp half (28) from mast (29).
- (c) Remove two nuts (30), washers (31), cover plate (32), two screws (33), clamp half (34), hose (25), other clamp half (34), and plate (35) from mast (29).
- (d) Remove hose (25) from elbow (36).

17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).

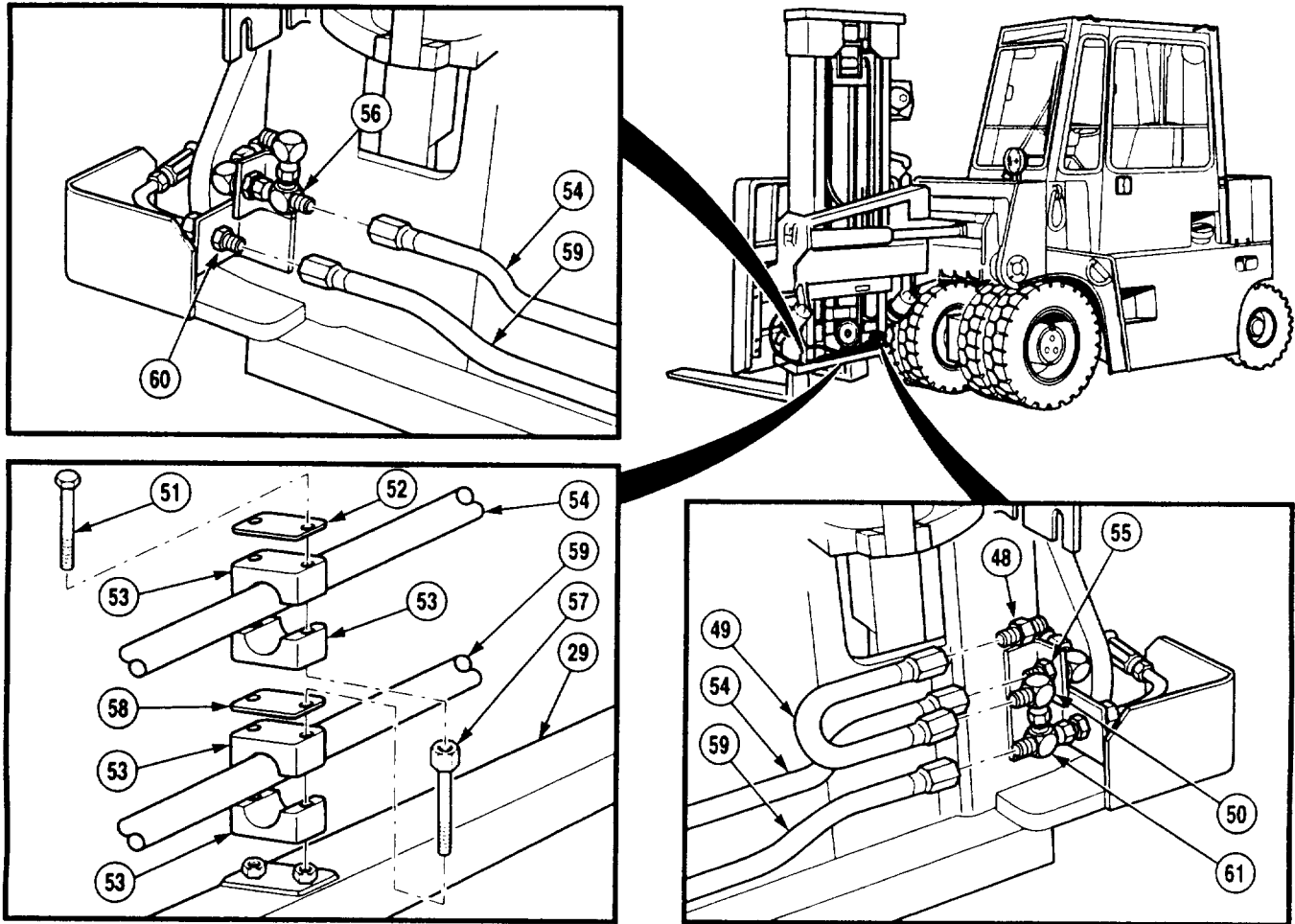


- (e) Remove hose (37) from 90° adapter (38).
- (f) Remove two screws (39), cover plate (40), clamp half (41), hose (37), and other clamp half (41) from mast (29).
- (g) Remove two nuts (42), washers (43), cover plate (44), two screws (45), clamp half (46), hose (37), other clamp half (46), and plate (47) from mast (29).
- (h) Remove hose (37) from adapter (48).



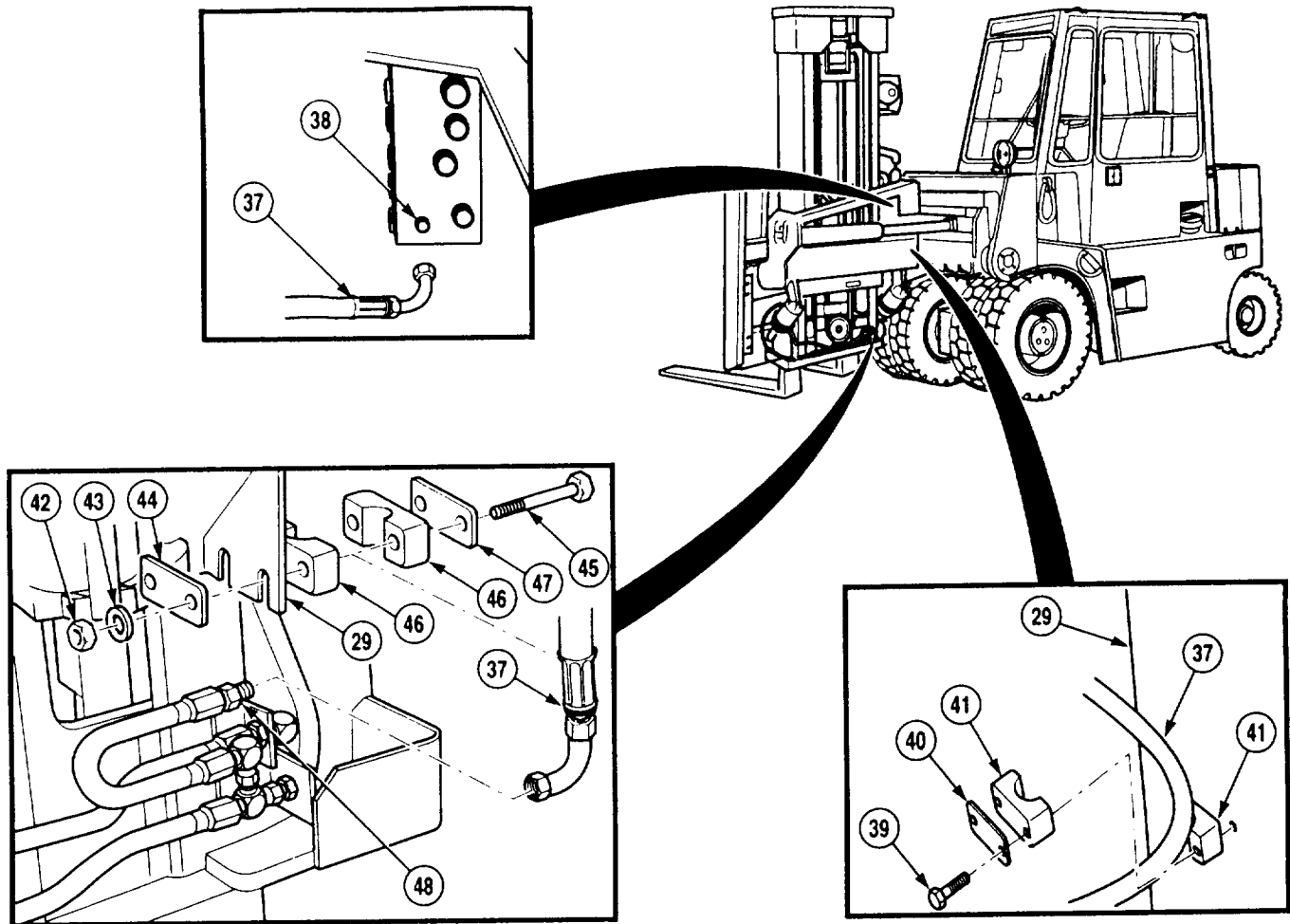
- (i) Remove tube (49) from adapter (48) and elbow (50).
- (j) Remove two screws (51), cover plate (52), and clamp half (53).
- (k) Remove tube (54) from 90° adapter (55) and fitting (56).
- (l) Remove second clamp half (53), two stack bolts (57), safety plate (58), and third clamp half (53).
- (m) Remove tube (59) from fitting (60) and 90° adapter (61).
- (n) Remove fourth clamp half (53) from mast (29).

17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).



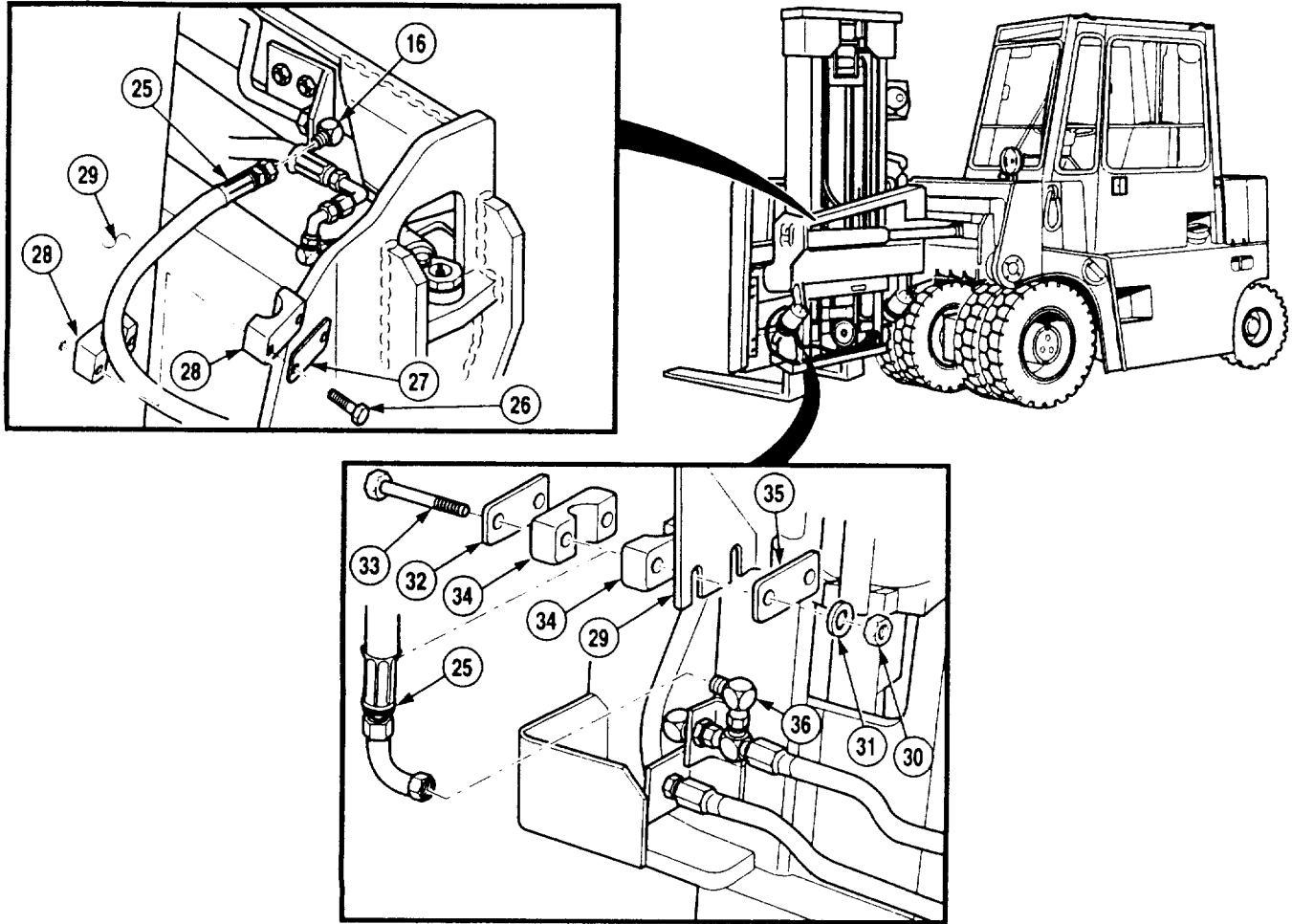
(2) Installation.

- (a) Install fourth clamp half(53) on mast (29).
- (b) Install tube (59) on fitting (60) and 90° adapter (61).
- (c) Install second and third clamp halves (53) and safety plate (58) with two stack bolts (57).
- (d) Install tube (54) on 90° adapter (55) and fitting (56).
- (e) Install clamp half (53) and cover plate (52) with two screws (51).
- (f) Install tube (49) on adapter (48) and elbow (50).



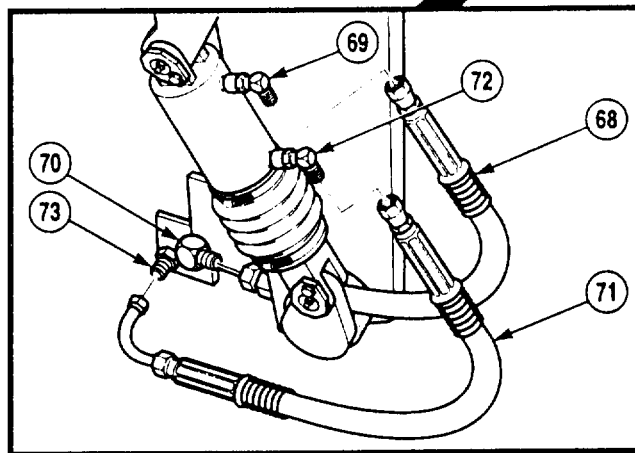
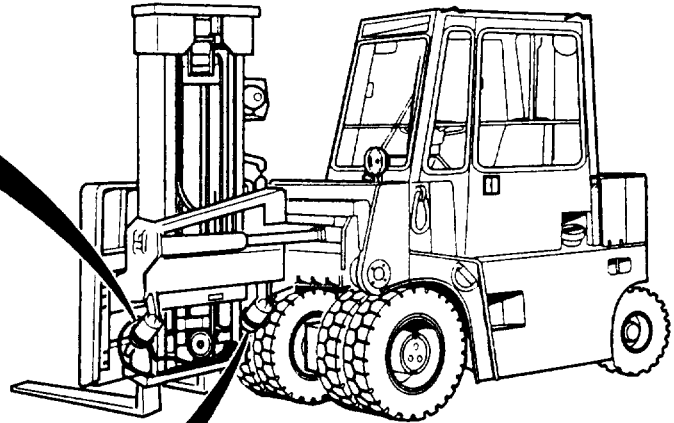
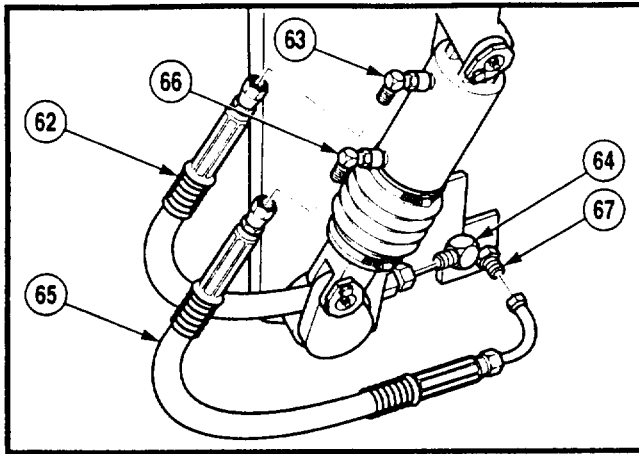
- (g) Install hose (37) on adapter (38).
- (h) Install plate (47), clamp half (46), hose (37), other clamp half (46), cover plate (44) on mast (29) with two screws (46), washers (43), and nuts (42).
- (i) Install clamp half (41), hose (37), other clamp half (41), and cover plate (40) on mast (29) with two screws (39).
- (j) Install hose (37) on 90° adapter (38).

17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).



- (k) Install hose (25) on elbow (36).
- (l) Install plate (35), clamp half (34), hose (25), other clamp half (34), cover plate (32) on mast (29) with two screws (33), washers (31), and nuts (30).
- (m) Install clamp half (28), hose (25), other clamp half (28), and cover plate (27) on mast (29) with two screws (26).
- (n) Install hose (25) on elbow adapter (16).

d. Tilt Cylinder Hose Replacement.



(1) Removal.

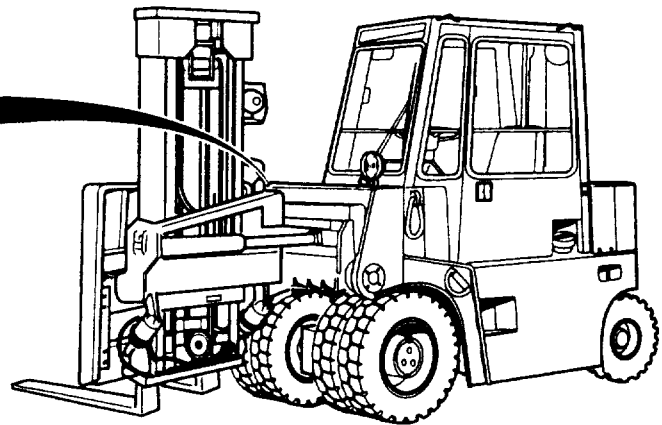
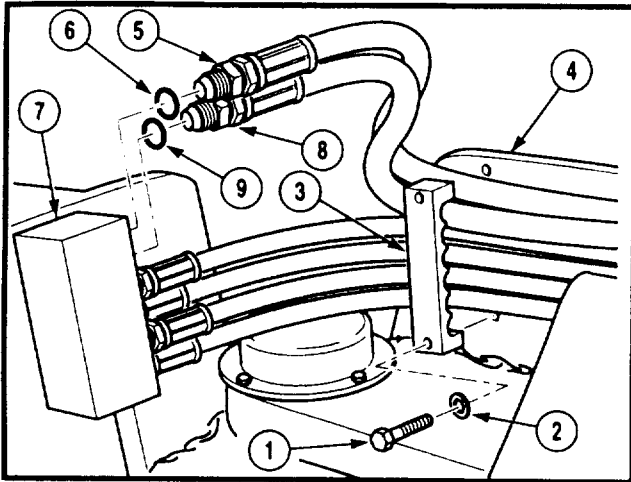
- (a) Remove hose (62) from two elbows (63 and 64).
- (b) Remove hose (65) from elbow (66) and fitting (67).
- (c) Remove hose (68) from two elbows (69 and 70).
- (d) Remove hose (71) from elbow (72) and fitting (73).

(2) Installation.

- (a) Install hose (71) on elbow (72) and fitting (73).
- (b) Install hose (68) on two elbows (69 and 70).
- (c) Install hose (65) on elbow (66) and fitting (67).
- (d) Install hose (62) on two elbows (63 and 64).

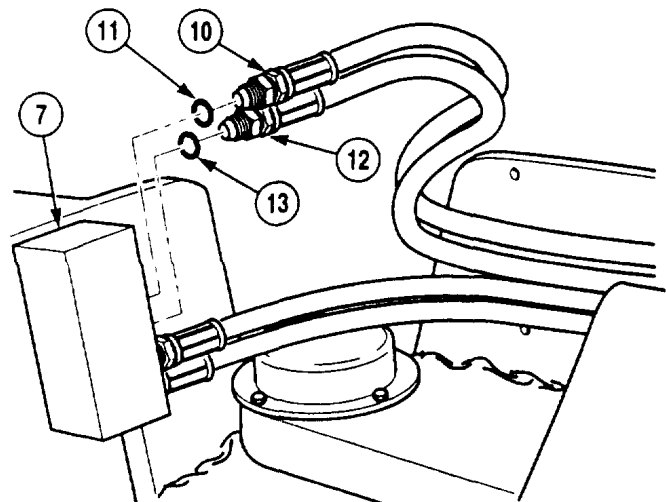
17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).

e. Shift Cylinder and Umbilical Hose Replacement.

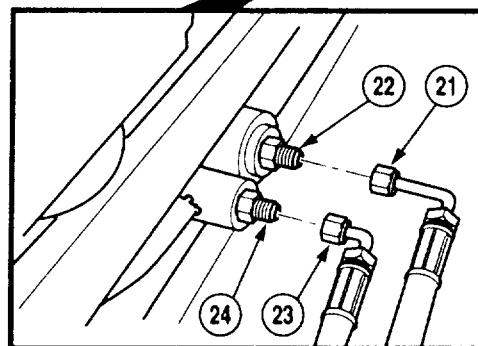
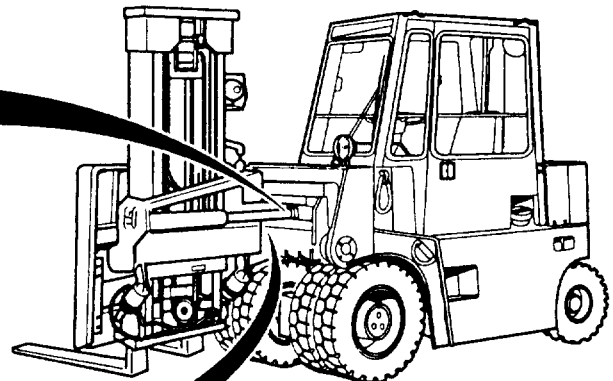
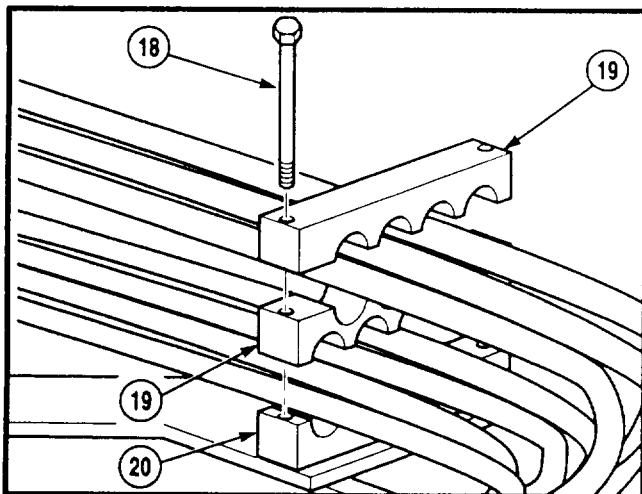
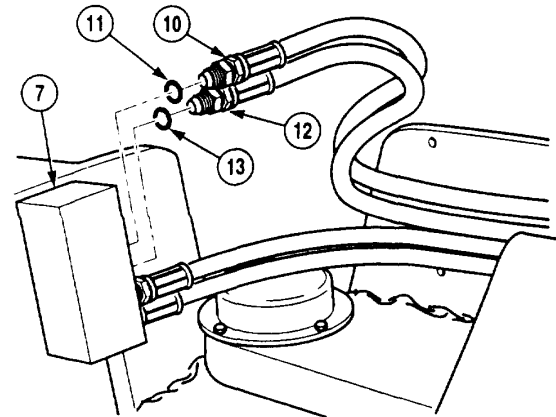


(1) Removal.

- (a) Sideshift mast assembly 90° (TM 10-3930-669-10).
- (b) Remove two screws (1), washers (2), and clamp (3) from pivot and shift assembly (4).
- (c) Remove hose (5) and preformed packing (6) from manifold (7). Discard preformed packing.
- (d) Remove hose (8) and preformed packing (9) from manifold (7). Discard preformed packing.
- (e) Remove hose (10) and preformed packing (11) from manifold (7). Discard preformed packing.
- (f) Remove hose (12) and preformed packing (13) from manifold (7). Discard preformed packing.



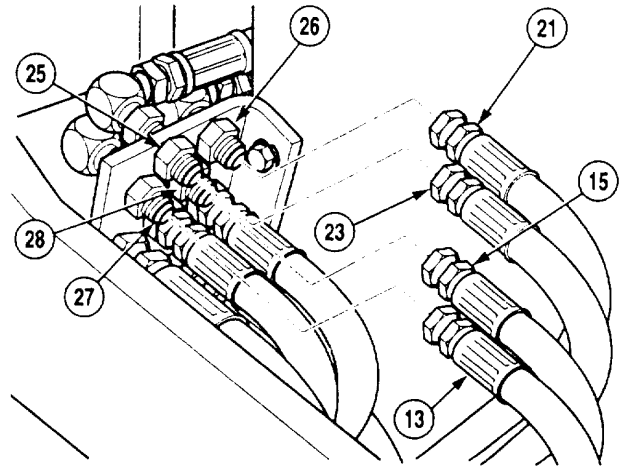
- (g) Remove hose (14) and preformed packing (15) from manifold (7). Discard preformed packing.
- (h) Remove hose (16) and preformed packing (17) from manifold (7). Discard preformed packing.



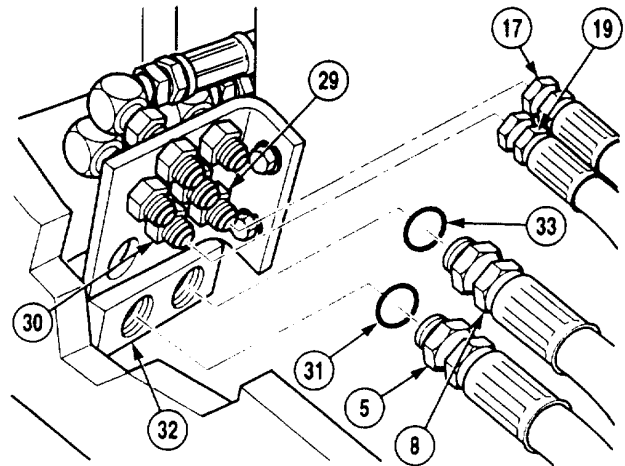
- (i) Remove two screws (18) and clamp halves (19) from shift assembly (20).
- (j) Remove hose (21) from fitting (22).
- (k) Remove hose (23) from fitting (24).

17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).

- (l) Remove hose (23) from fitting (25).
- (m) Remove hose (21) from fitting (26).
- (n) Remove hose (13) from fitting (27).
- (o) Remove hose (15) from fitting (28).



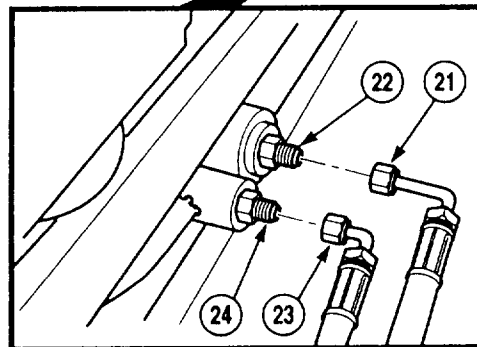
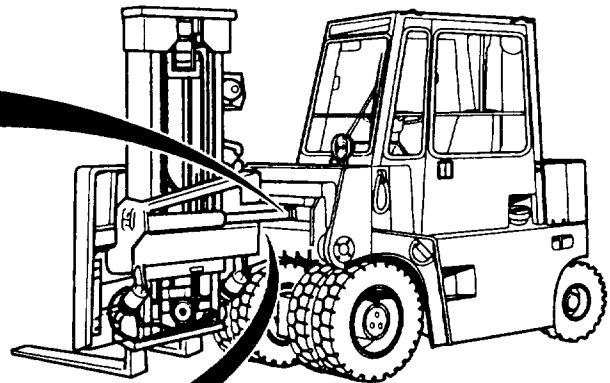
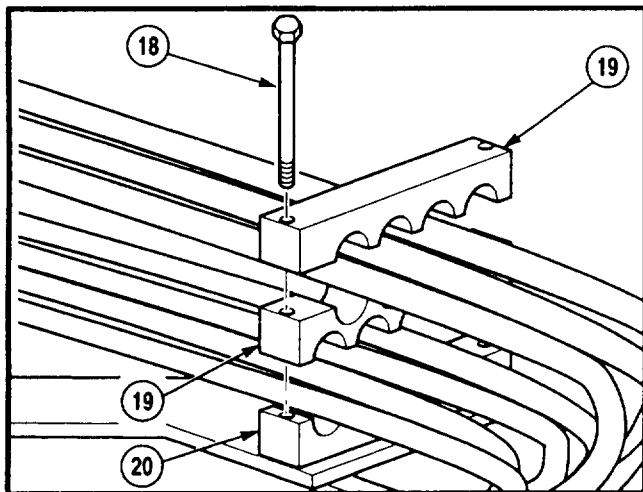
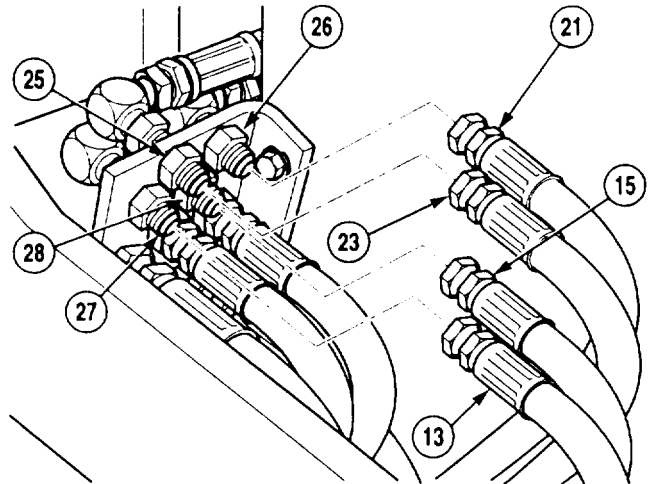
- (p) Remove hose (17) from fitting (29).
- (q) Remove hose (19) from fitting (30).
- (r) Remove hose (5) and preformed packing (31) from manifold (32). Discard preformed packing.
- (s) Remove hose (8) and preformed packing (33) from manifold (32). Discard preformed packing.



(2) Installation.

- (a) Install preformed packing (33) and hose (11) on manifold (32).
- (b) Install preformed packing (31) and hose (8) on manifold (32).
- (c) Install hose (19) on fitting (30).
- (d) Install hose (17) on fitting (29).

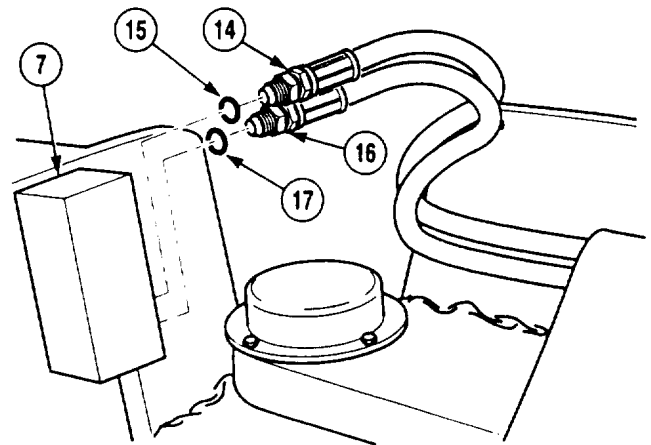
- (e) Install hose (15) on fitting (28).
- (f) Install hose (13) on fitting (27).
- (g) Install hose (21) on fitting (26).
- (h) Install hose (23) on fitting (25).



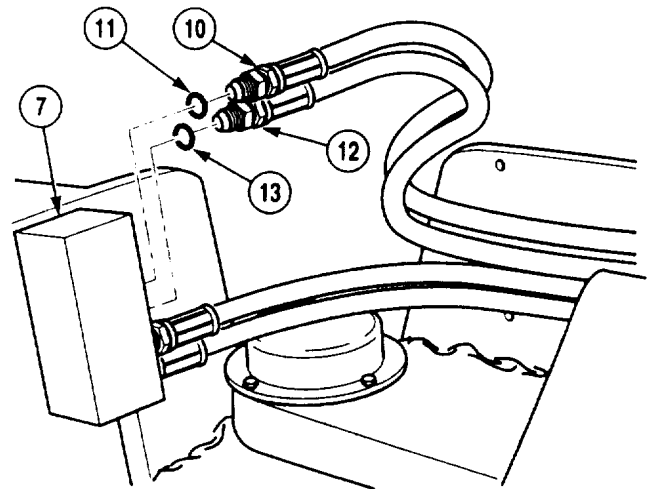
- (i) Install hose (23) on fitting (24).
- (j) Install hose (21) on fitting (22).
- (k) Install two clamp halves (19) and screws (18) on shift assembly (20).

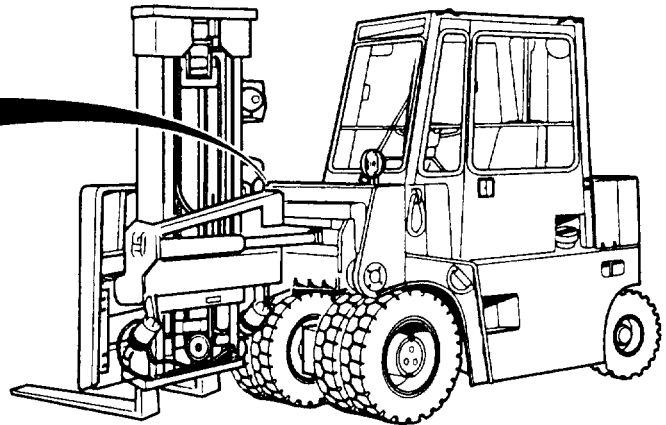
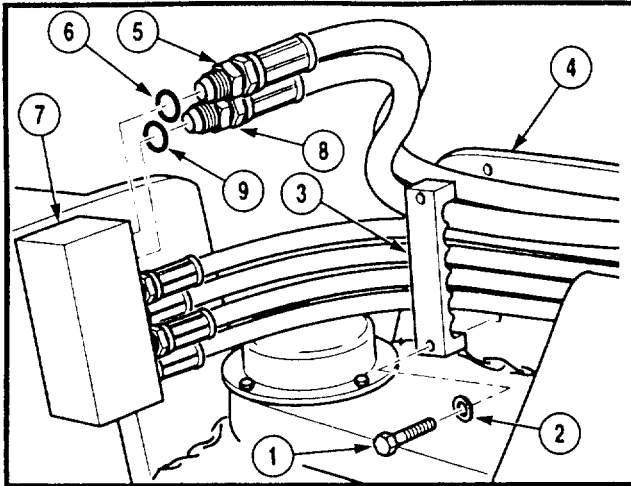
17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).

- (l) Install preformed packing (17) and hose (16) on manifold (7).
- (m) Install preformed packing (15) and hose (14) on manifold (7).



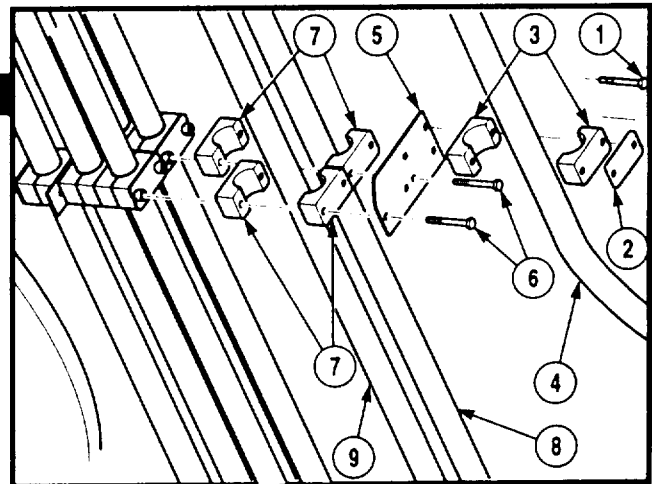
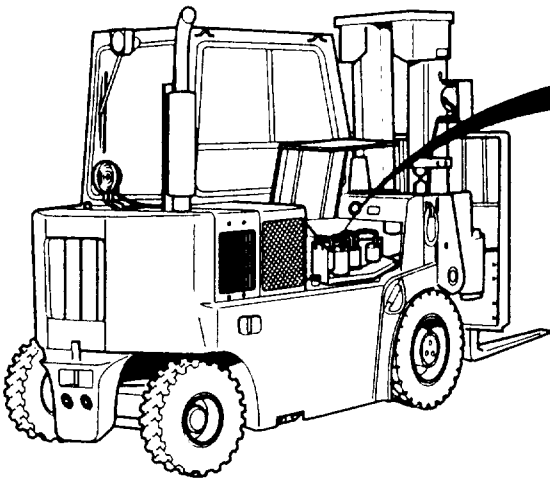
- (n) Install preformed packing (13) and hose (14) on manifold (7).
- (o) Install preformed packing (11) and hose (10) on manifold (7).





- (p) Install preformed packing (9) and hose (8) on manifold (7).
- (q) Install preformed packing (6) and hose (5) on manifold (7).
- (r) Install clamp (3) on pivot and shift assembly (4) with two washers (2) and screws (1).
- (s) Install pivot and shift assembly on forklift (Para x-xx).

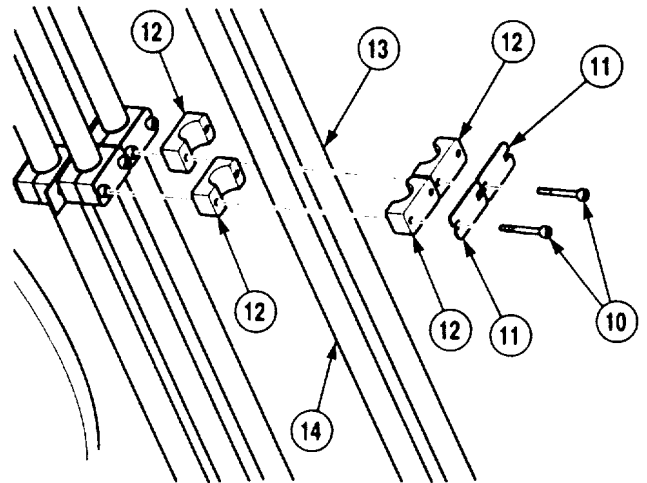
f. Inner Umbilical Hose Replacement.



- (1) Removal.
- (a) Remove two screws (1), cover plate (2), clamp half (3), hose (4), and other clamp half (3) from bracket (5).
- (b) Remove four screws (6), bracket (5), two clamp halves (7), hoses (8 and 9), and other two clamp halves (7).

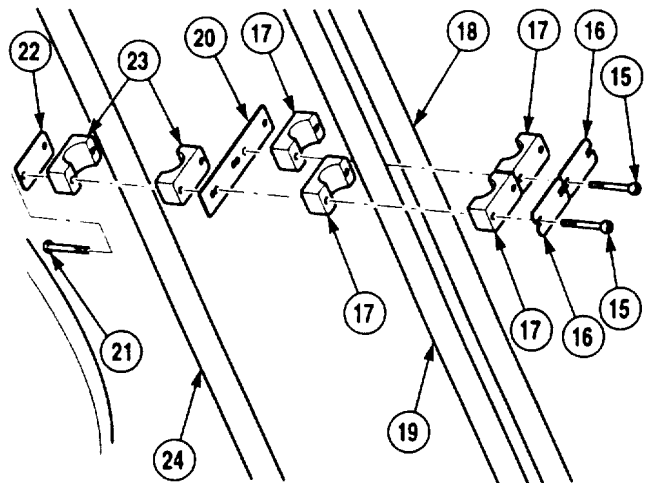
17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).

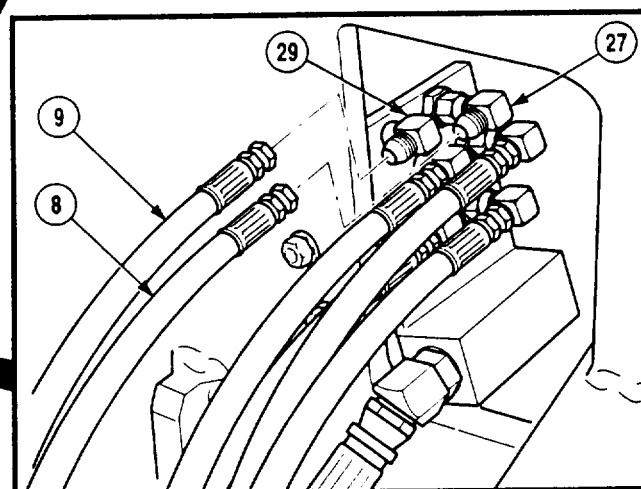
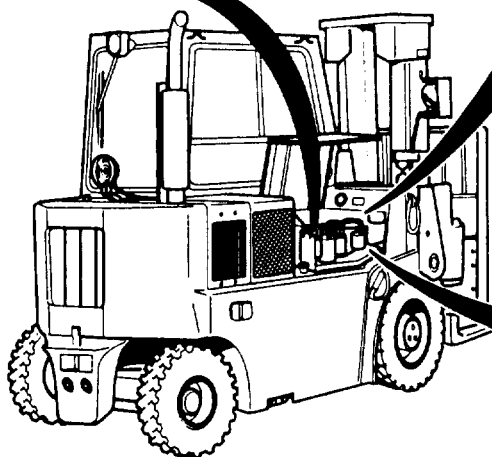
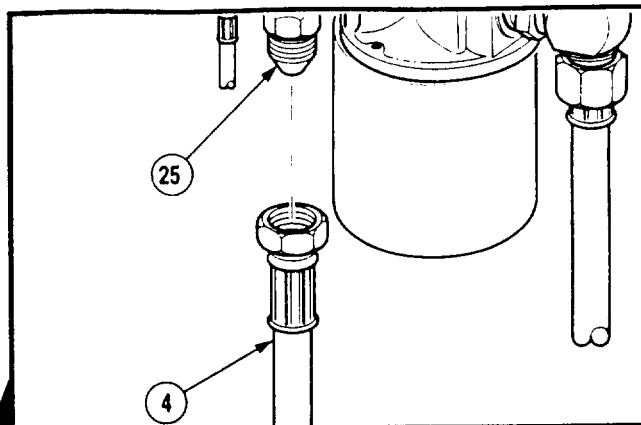
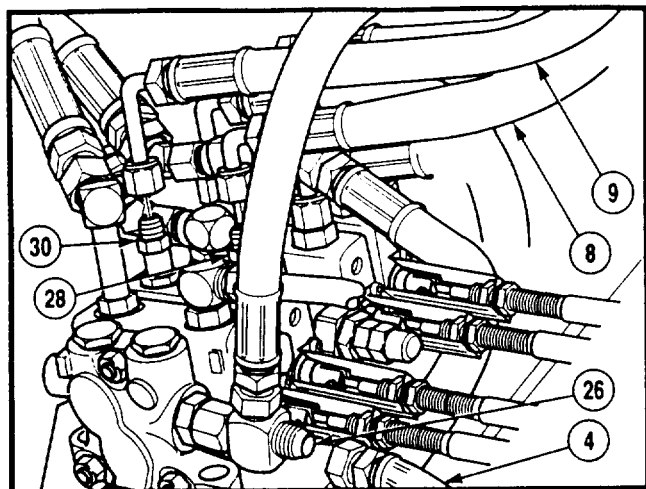
- (c) Remove four stack bolts (10), two safety plates (11), clamp halves (12), hoses (13 and 14), and other two clamp halves (12).



- (d) Remove four stack bolts (15), two safety plates (16), clamp halves (17), hoses (18 and 19), and other two clamp halves (17) from bracket (20).

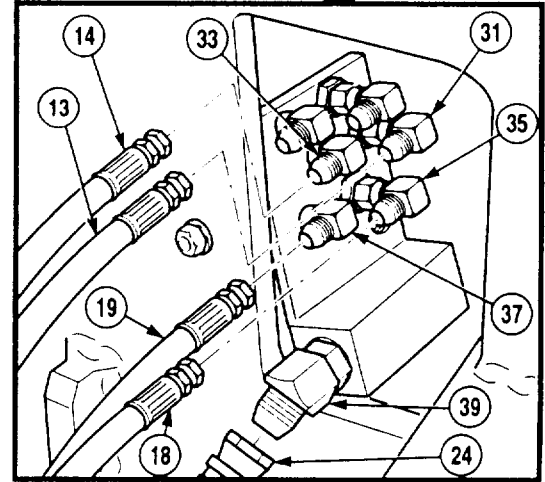
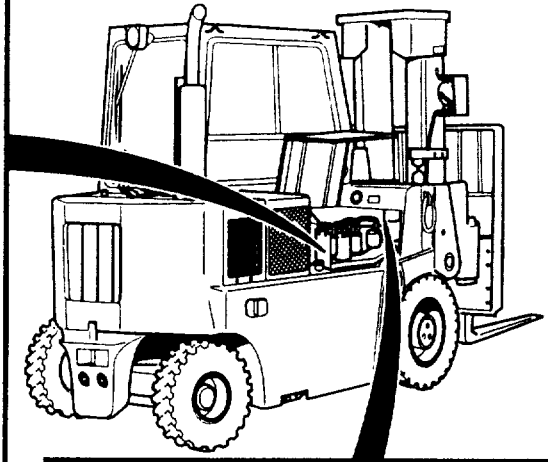
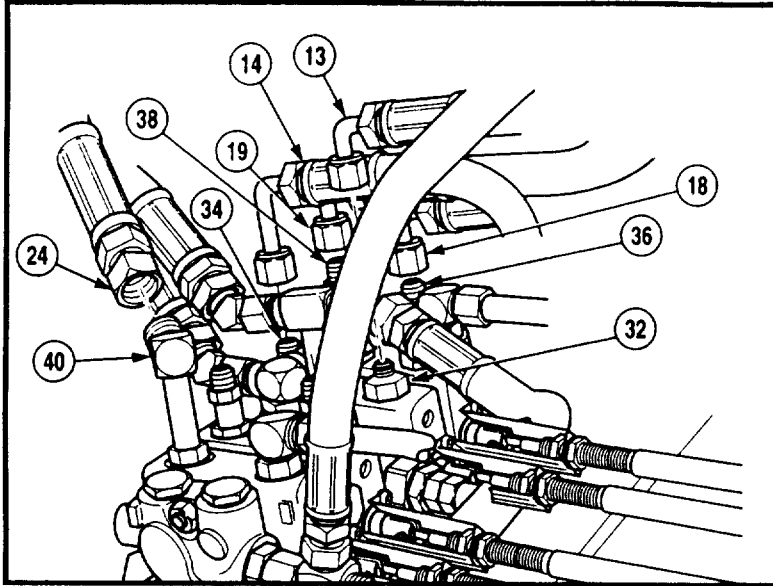
- (e) Remove two screws (21), cover plate (22), clamp half (23), hose (24), and other clamp half (23).





- (f) Remove hose (4) from elbow (25) and 90° tee (26).
- (g) Remove hose (8) from elbow (27) and fitting (28).
- (h) Remove hose (9) from fitting (29) and fitting (30).

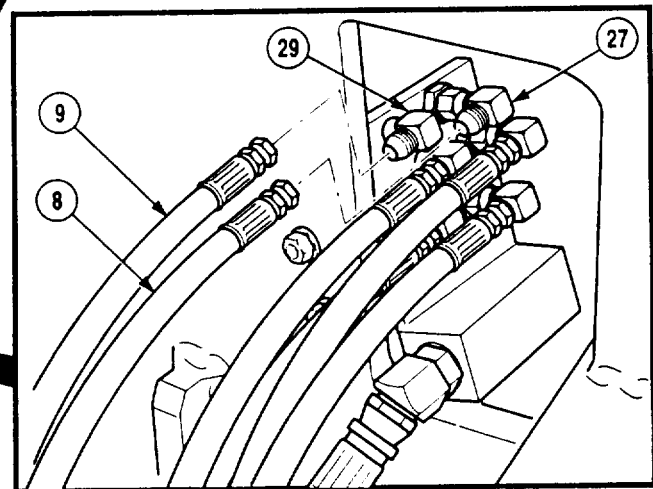
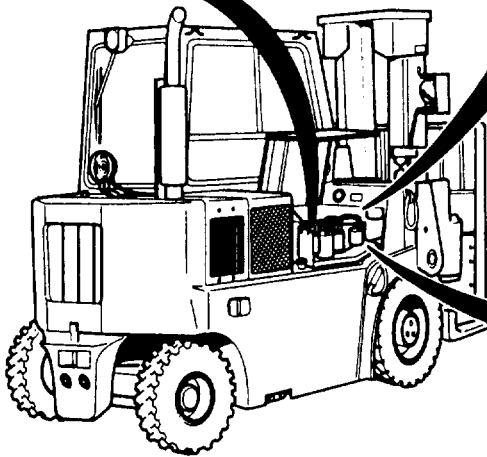
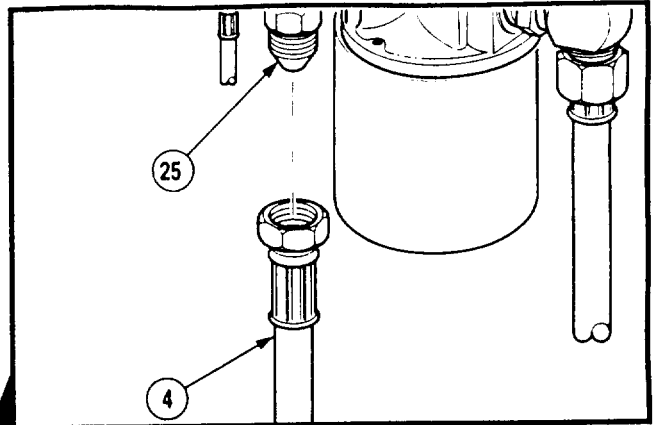
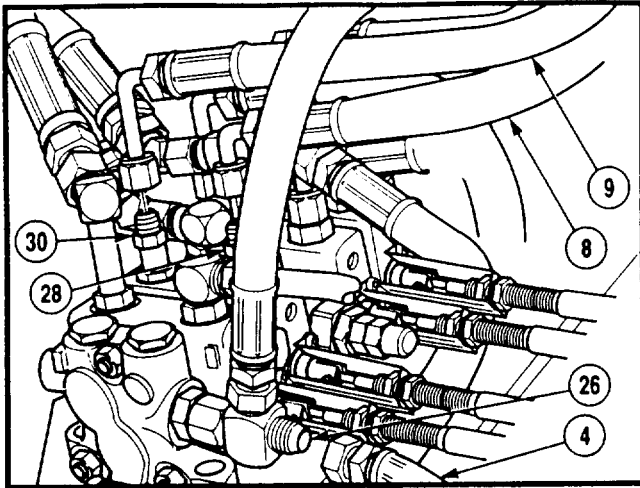
17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).



- (i) Remove hose (13) from elbow (31) and fitting (32).
- (j) Remove hose (14) from elbow (33) and fitting (34).
- (k) Remove hose (18) from elbow (35) and fitting (36).
- (l) Remove hose (19) from elbow (37) and fitting (38).
- (m) Remove hose (24) from two 45' elbows (39 and 40).

(2) Installation.

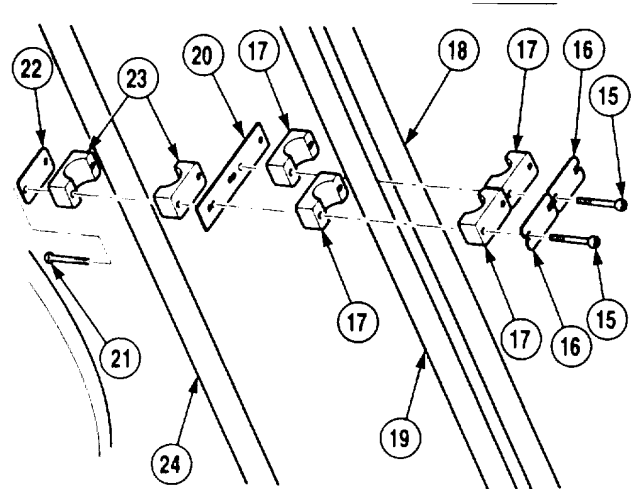
- (a) Install hose (24) on two 45' elbows (39 and 40).
- (b) Install hose (19) on elbow (37) and fitting (38).
- (c) Install hose (18) on elbow (35) and fitting (36).
- (d) Install hose (14) on elbow (33) and fitting (34).
- (e) Install hose (13) on elbow (31) and fitting (32).



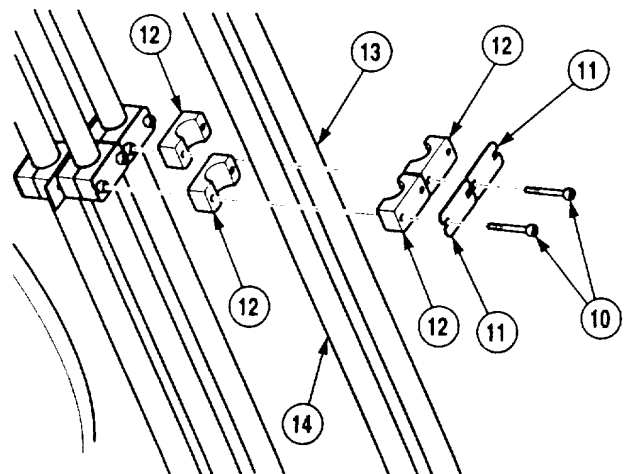
- (f) Install hose (9) on fitting (29) and fitting (30).
- (g) Install hose (8) on elbow (27) and fitting (28).
- (h) Install hose (4) on elbow (25) and 90° tee (26).

17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).

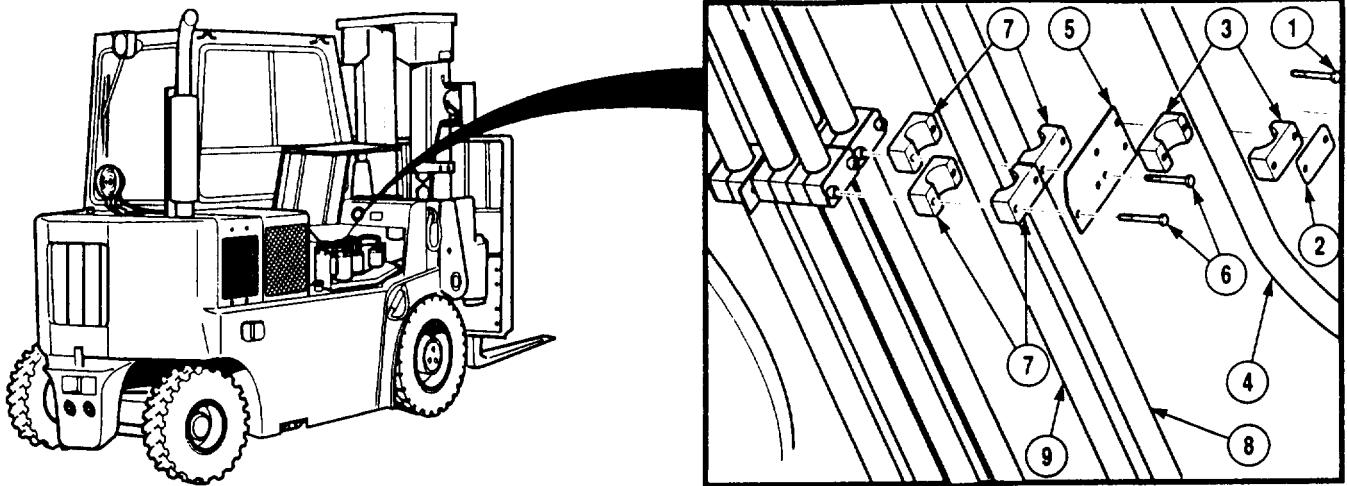
- (i) Install clamp half (23), hose (24), other clamp half(23), and cover plate (22) with two screws (21).



- (j) Install two clamp halves (17), hoses (18 and 19), other two clamp halves (17), and two safety plates (16) and four stack bolts (15) on bracket (20).



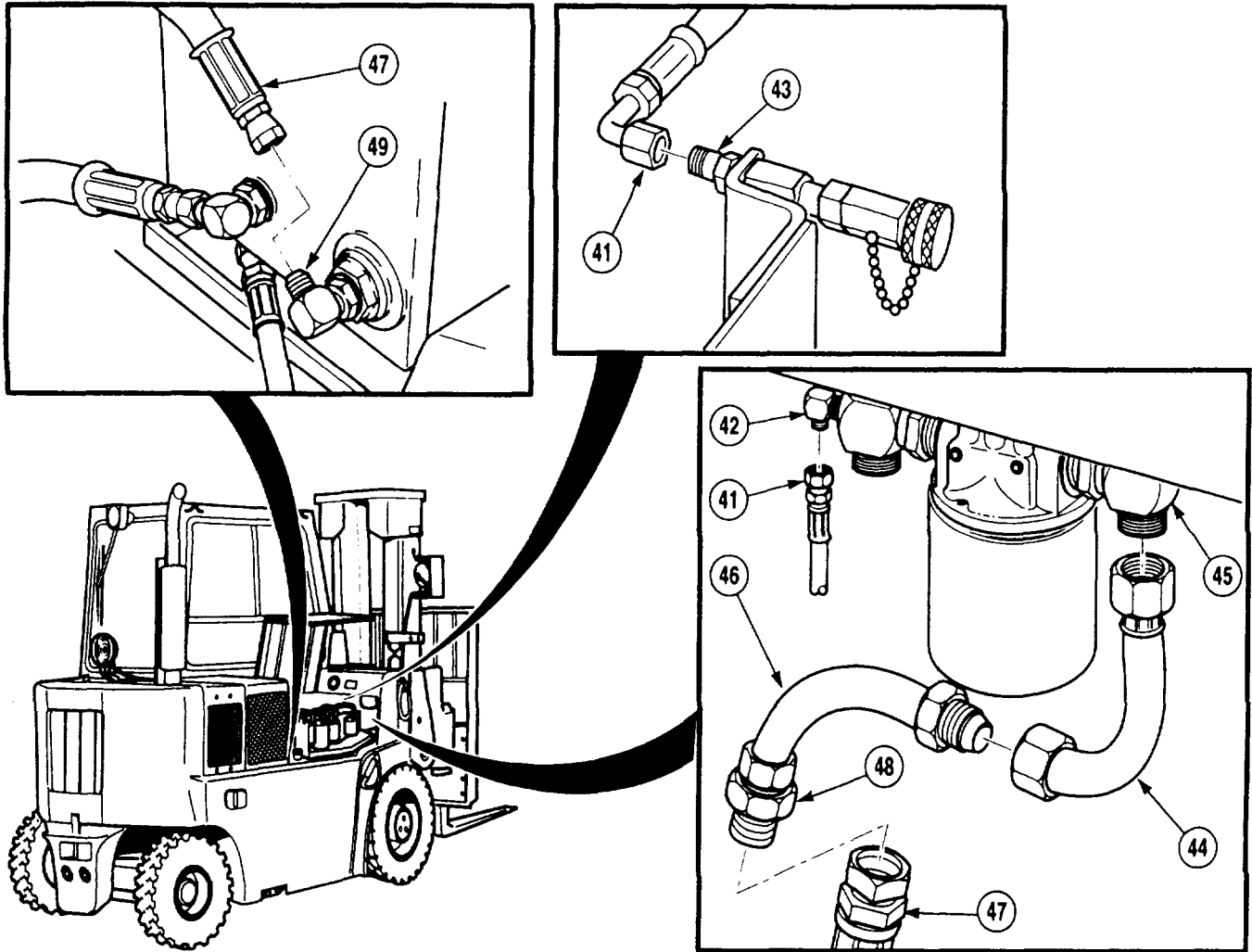
- (k) Install two clamp halves (12), hoses (13 and 14), other two clamp halves (12), and two safety plates (11) with four stack bolts (10).



- (l) Install two clamp halves (7), hoses (8 and 9), other two clamp halves (7), and bracket (5) with four screws (6).
- (m) Install clamp half (3), hose (4), other clamp half (3), and cover plate (2) on bracket (5) with two screws (1).

17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).

g. Stack Valve Low Pressure Hose and Tube Replacement.



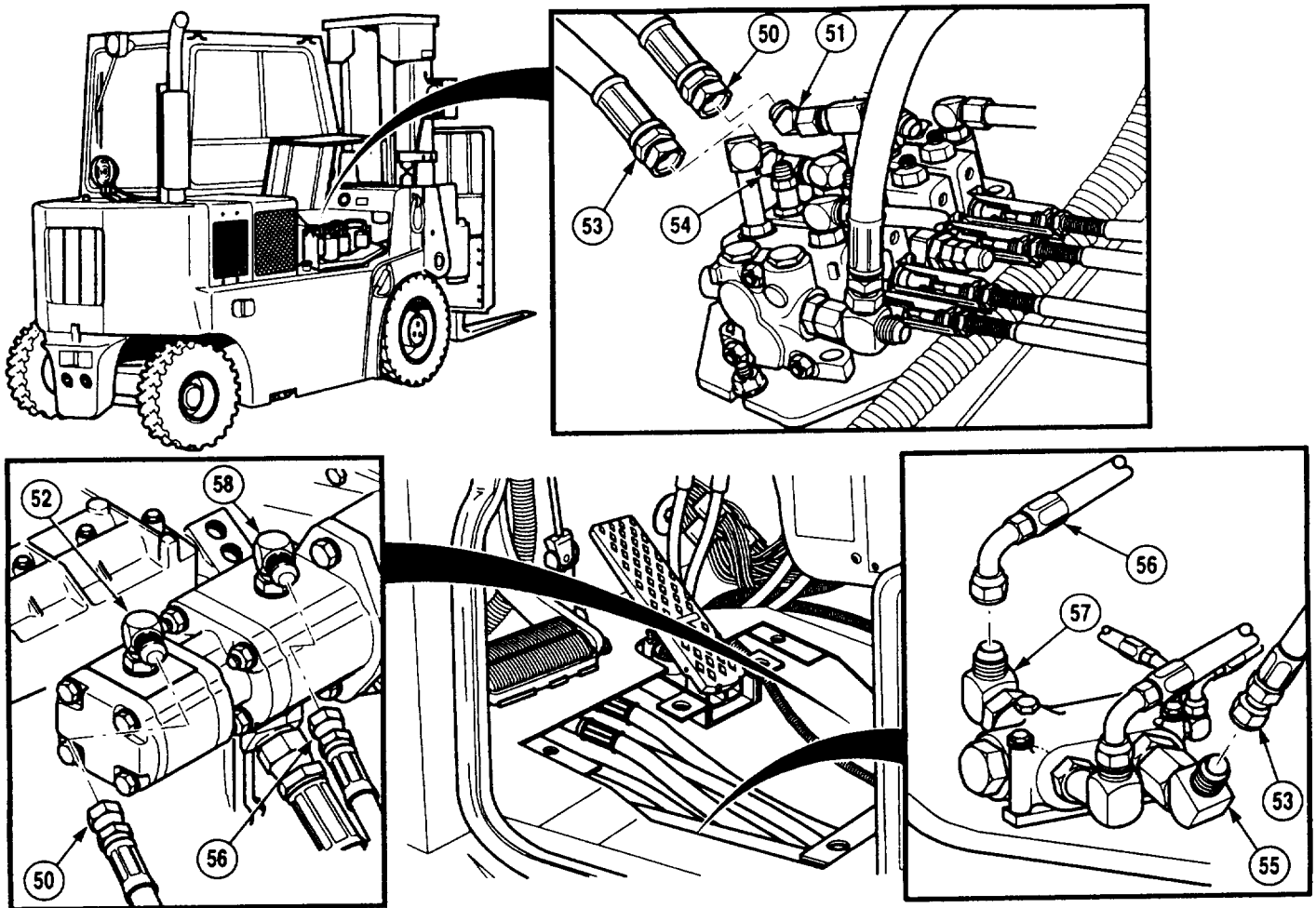
(1) Removal.

- (a) Remove hose (41) from elbow (42) and valve (43).
- (b) Remove tube (44) from elbow (45) and 90° adapter tube (46).
- (c) Remove hose (47) from adapter (48) and elbow (49).

(2) Installation.

- (a) Install hose (47) on adapter (48) and elbow (49).
- (b) Install tube (44) on elbow (45) and 90° adapter tube (46).
- (c) Install hose (41) on valve (43) and elbow (42).

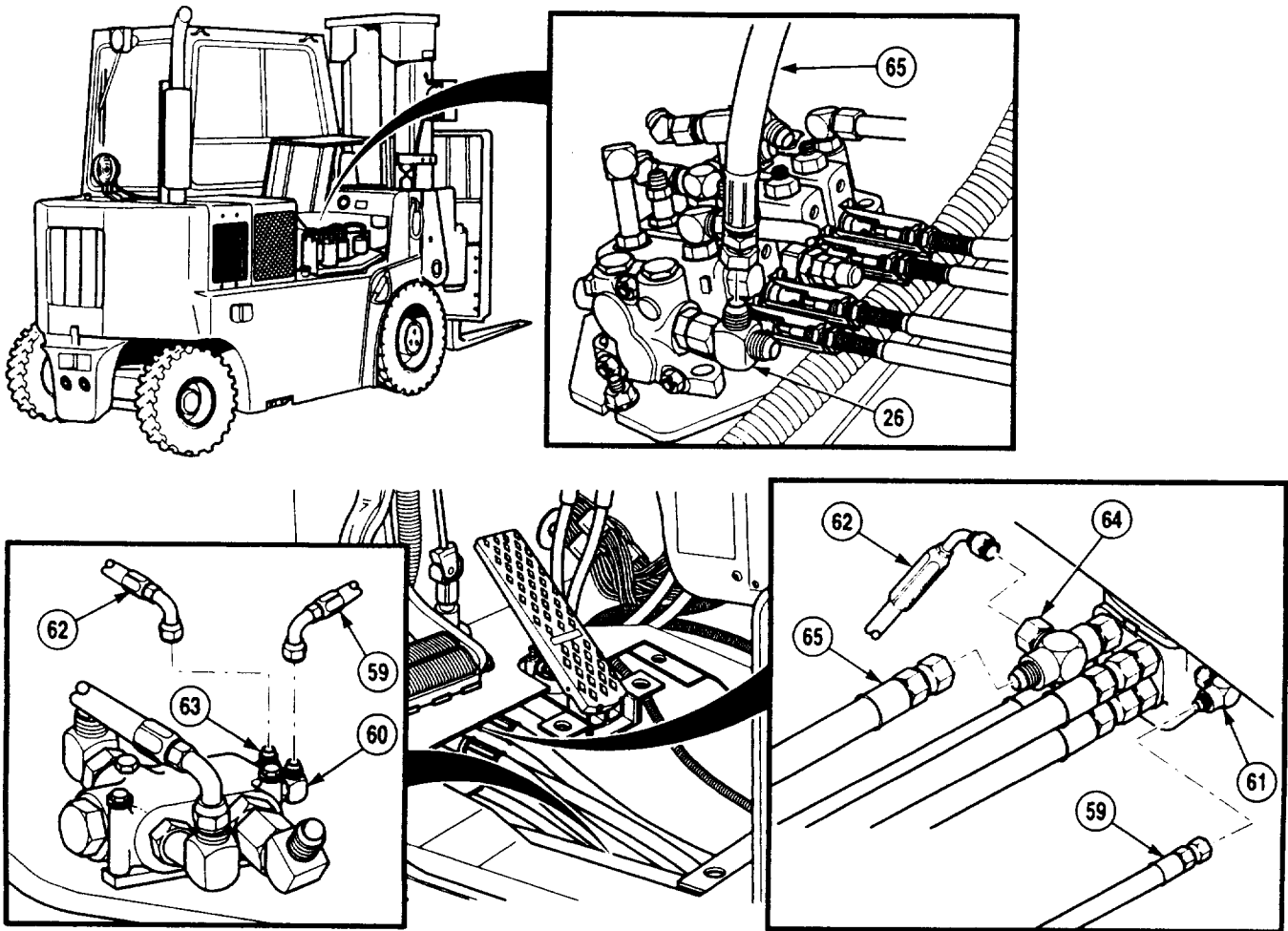
h. Stack Valve/Priority Valve/Hydraulic Pump Hose Replacement.



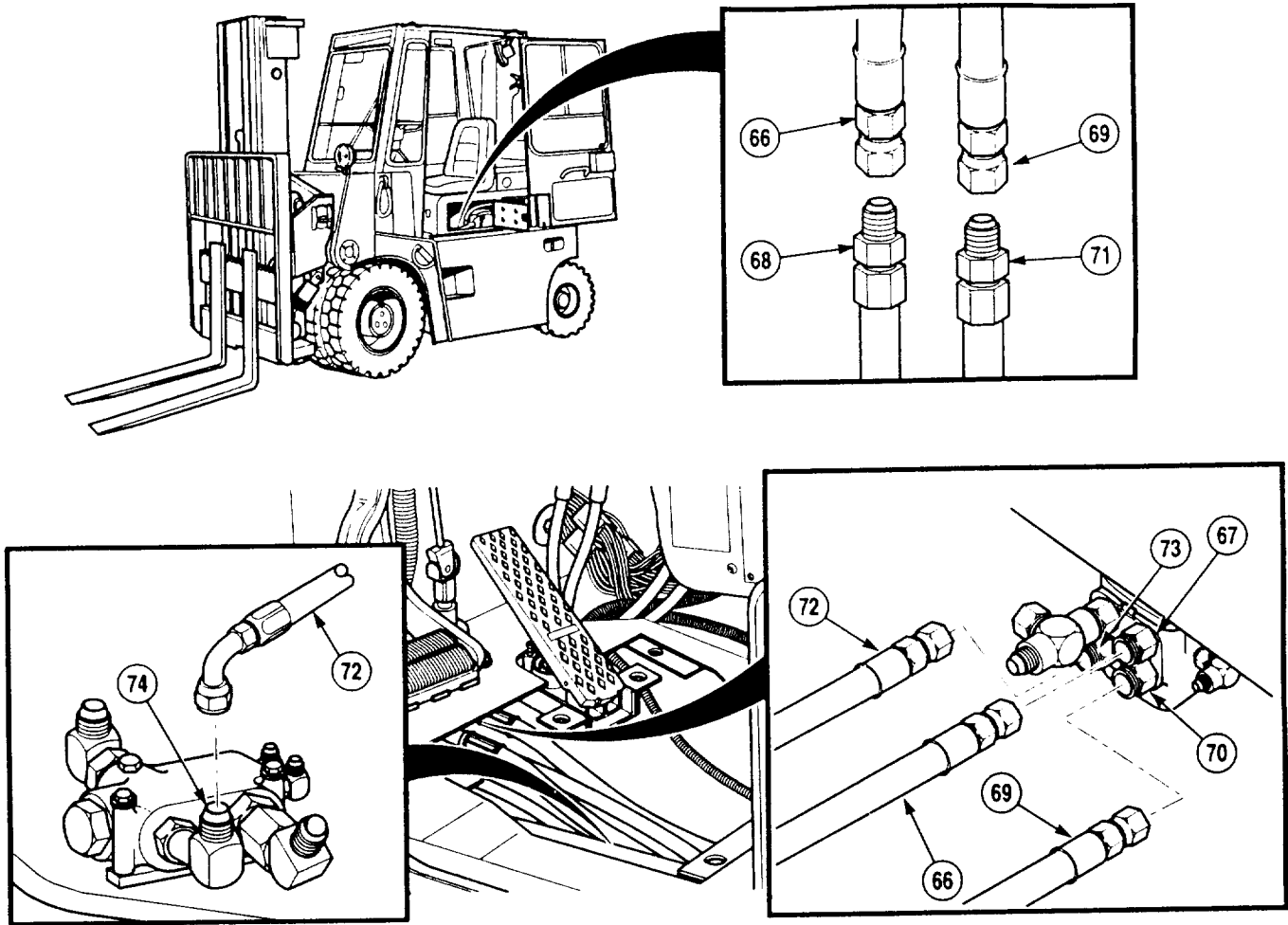
(1) Removal.

- (a) Remove hose (50) from 45° elbow (51) and elbow (52).
- (b) Remove hose (53) from two 45° elbows (54 and 55).
- (c) Remove hose (56) from two elbows (57 and 58).

17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).

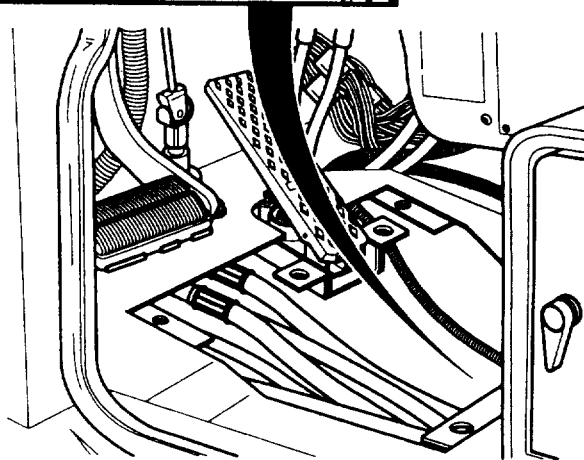
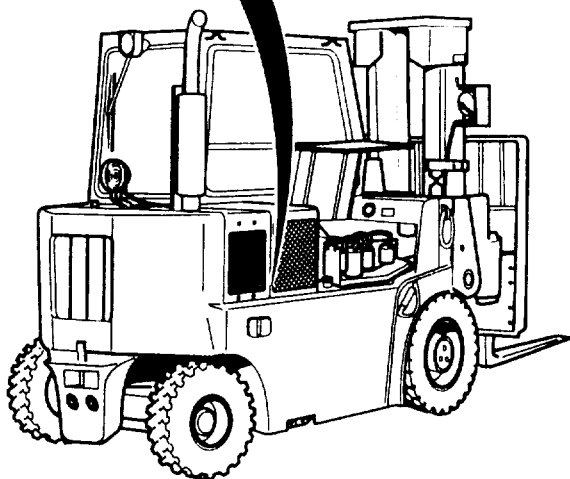
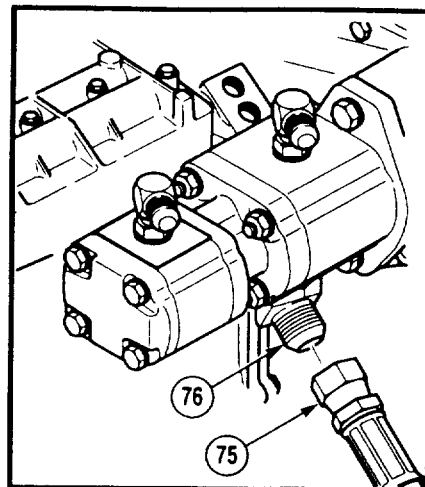
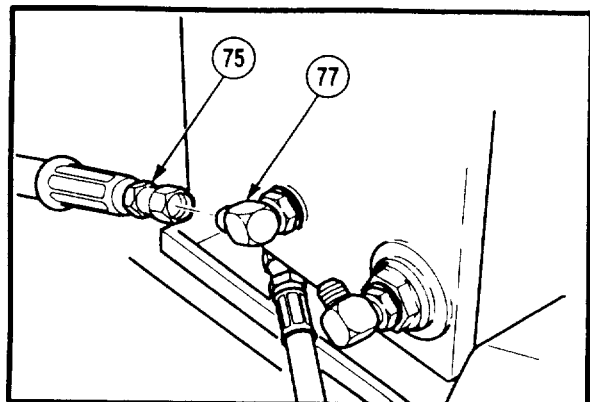


- (d) Remove hose (59) from two elbows (60 and 61).
- (e) Remove hose (62) from elbow (63) and 90° adapter (64).
- (f) Remove hose (65) from 90° adapter (64) and fitting (26).



- (g) Remove hose (66) from fitting (67) and adapter (68).
- (h) Remove hose (69) from fitting (70) and adapter (71).
- (i) Remove hose (72) from fitting (73) and elbow (74).

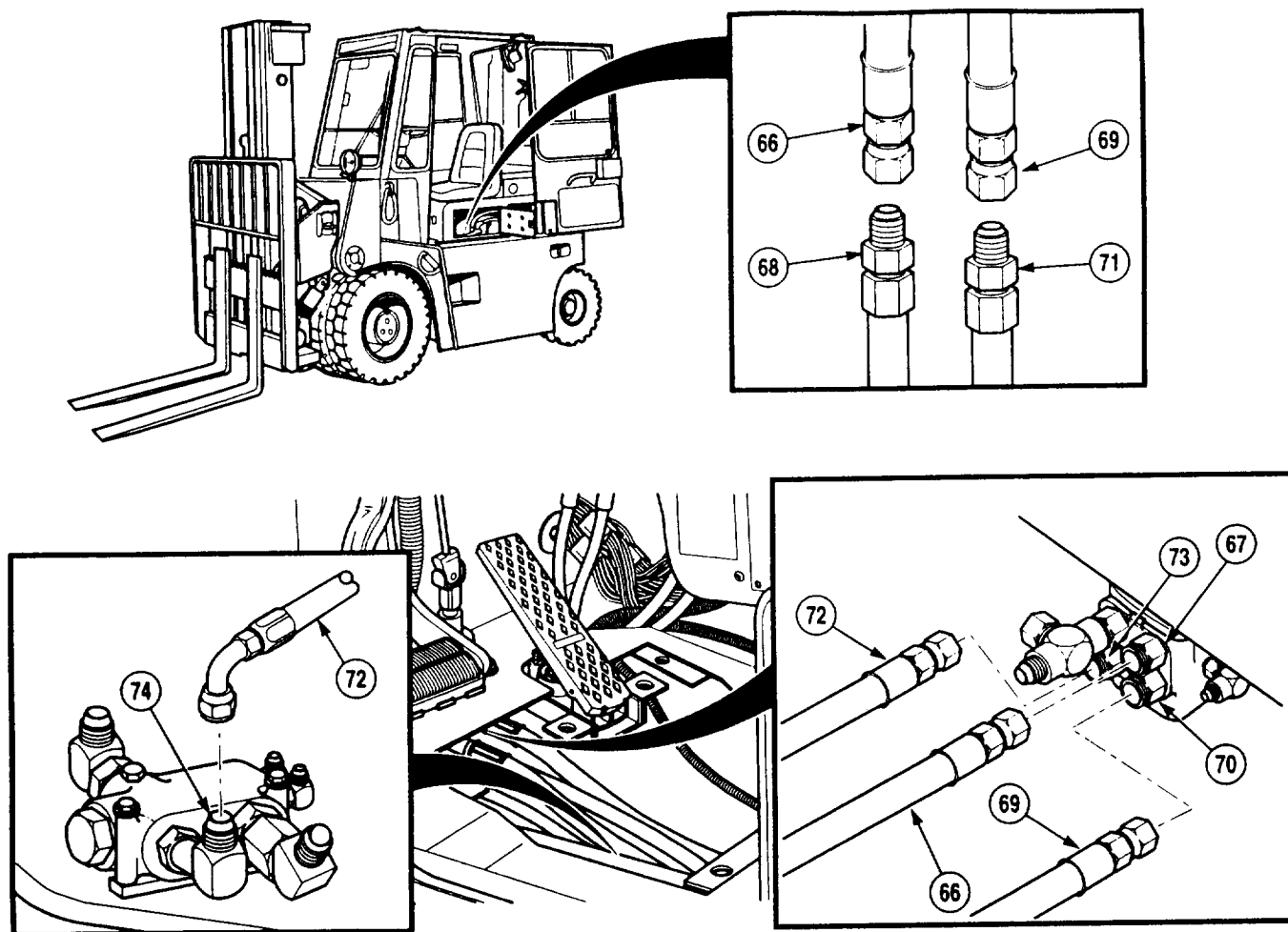
17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).



- (j) Remove hose (75) from 45° elbow (76) and elbow (77).

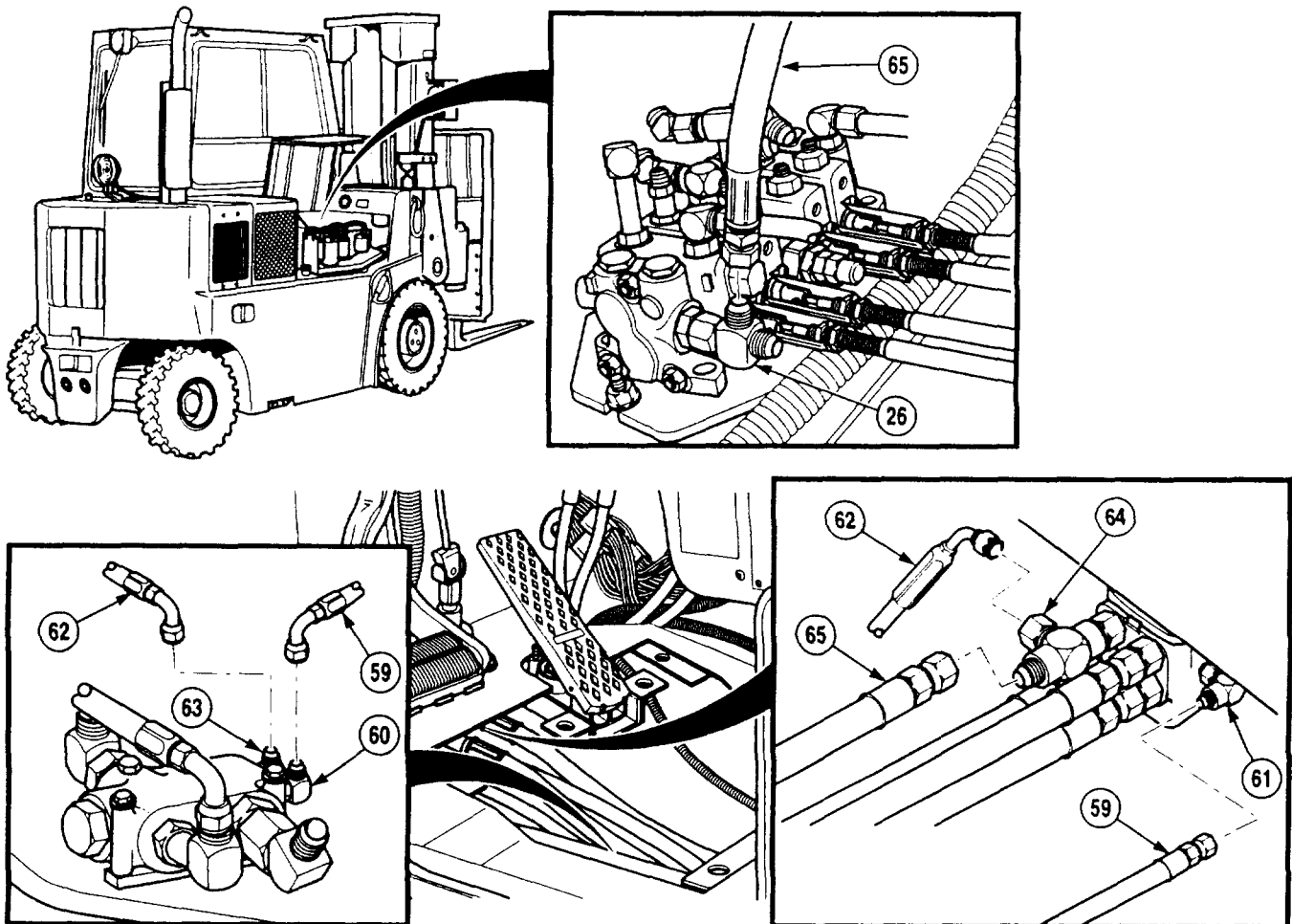
(2) Installation.

- (a) Install hose (75) on 45° elbow (76) and elbow (77).

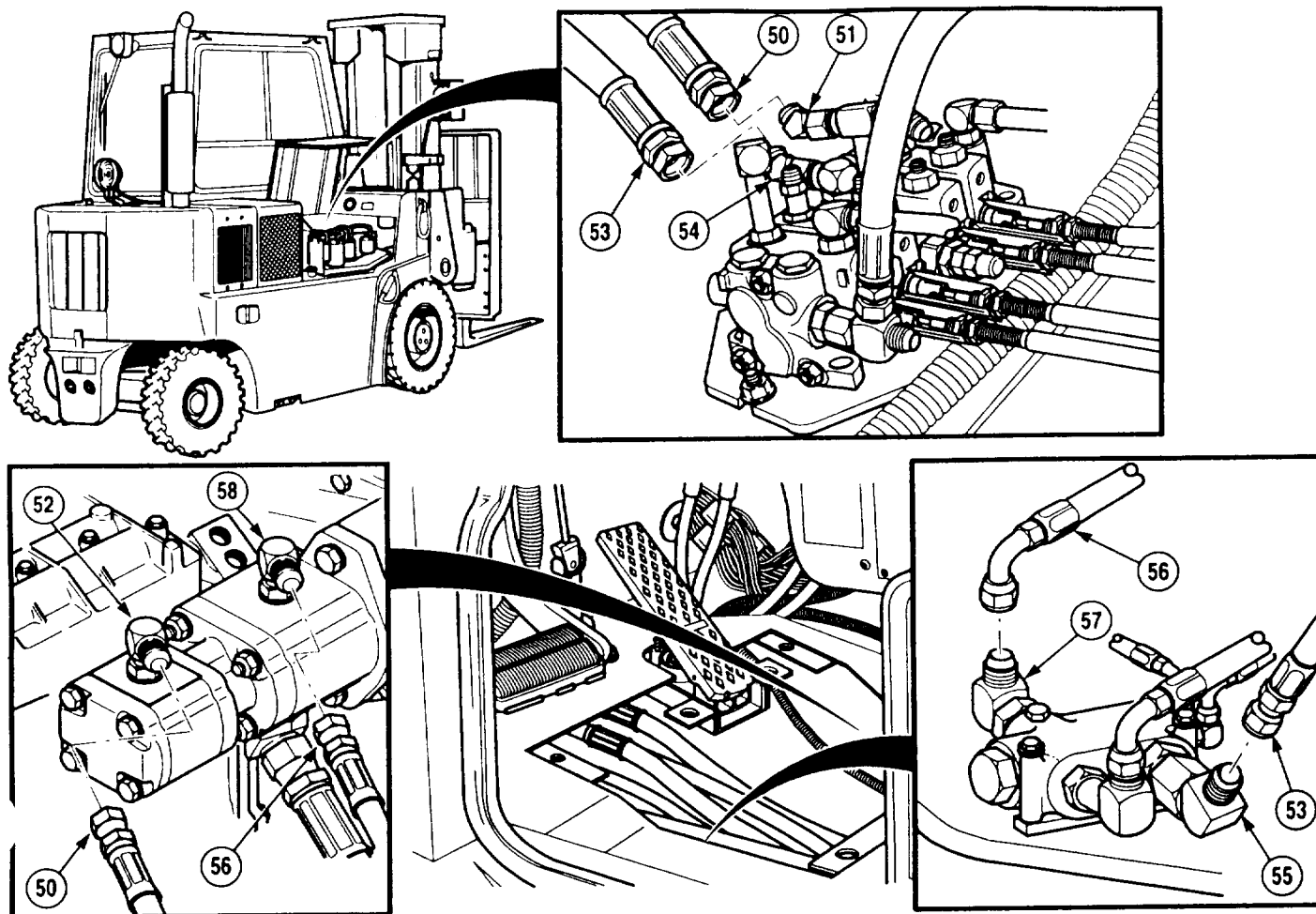


- (b) Install hose (72) on fitting (73) and elbow (74).
- (c) Install hose (69) on fitting (70) and adapter (71).
- (d) Install hose (66) on fitting (67) and adapter (68).

17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).



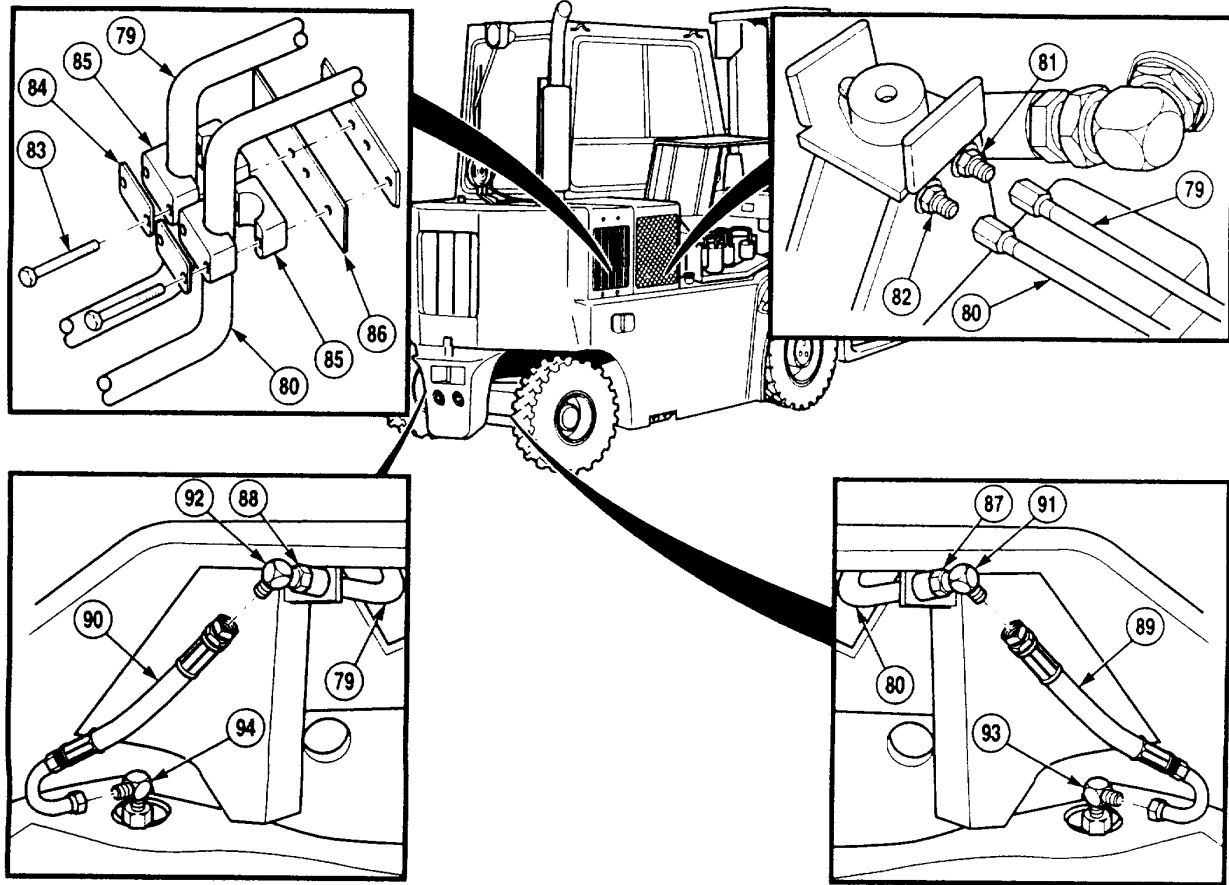
- (e) Install hose (65) on 90° adapter (64) and fitting (26).
- (f) Install hose (62) on elbow (63) and 90° adapter (64).
- (g) Install hose (59) on two elbows (60 and 61).



- (h) Install hose (56) on two elbows (57 and 58).
- (i) Install hose (53) on two 45° elbows (54 and 55).
- (j) Install hose (50) on 45° elbow (51) and elbow (52).

17-10. MAIN HYDRAULIC SYSTEM HOSE AND TUBE REPLACEMENT (CONT).

i. Steer Hose and Tubes Replacement.



(1) Removal.

- (a) Remove two tubes (79 and 80) from adapters (81 and 82).
- (b) Remove four screws (83), two cover plates (84), clamp halves (85), tubes (79 and 80), other clamp halves (85), and plate (86).
- (c) Remove two tubes (79 and 80) from fittings (87 and 88).
- (d) Remove two hoses (89 and 90) from elbows (91 and 92) and elbows (93 and 94).

(2) Installation.

- (a) Install two hoses (89 and 90) on elbows (91 and 92) and elbows (93 and 94).
- (b) Install two tubes (79 and 80) on fittings (87 and 88).
- (c) Install plate (86), two clamp halves (85), tubes (79 and 80), other clamp halves (85), and cover plates (84) with four screws (83).
- (d) Install two tubes (79 and 80) on adapters (81 and 82).

NOTE

Follow-on Maintenance:

- Pivot mast to front (TM 10-3930-669-10).
- Fill hydraulic reservoir (LO 12-3930-669-12).
- Remove wheel chocks (TM 10-3930-669-10).

END OF TASK

17-11. PRIORITY VALVE REPLACEMENT.

This task covers:

- a. Removal b. Cleaning/Inspection c. Installation

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 1, Appendix B)
Wrench, Torque (0 to 170 lb-ft [0-68 N•m])
(Item 2, Appendix B)

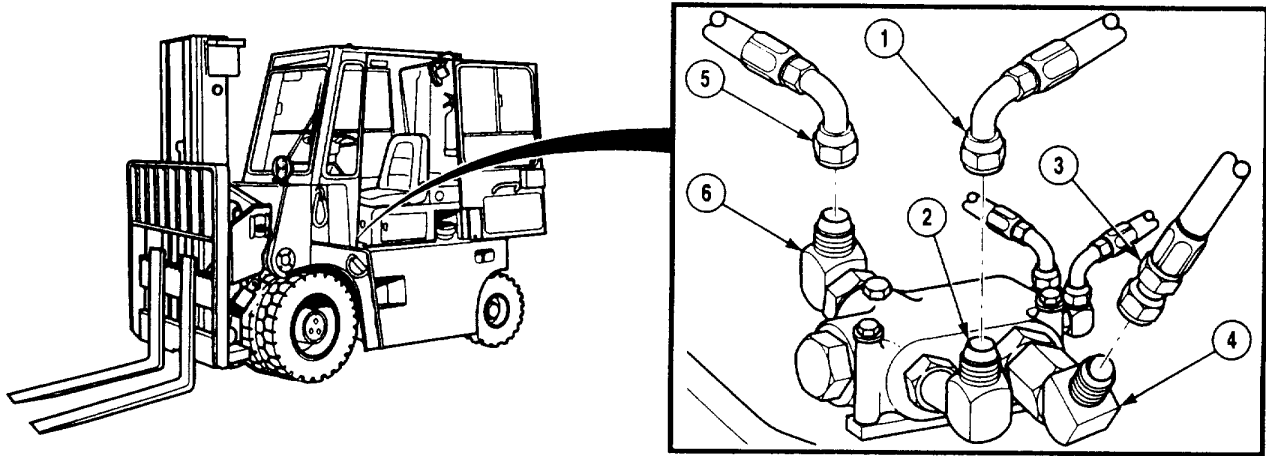
Materials /Parts

Rags, Wiping (Item 19, Appendix C)
Tags, Identification (Item 21, Appendix C)

Equipment Condition

Engine OFF (TM 10-3930-669-10)
Parking brake applied (TM 10-3930-669-10)

a. Removal.



WARNING

- Do not run engine while disconnecting hydraulic lines. Before attempting to remove hydraulic lines, with engine off, shift joysticks to all mode directions to relief pressure from the hydraulic system. Injury or Death to personnel could result.
- Hydraulic oil is flammable. Ensure engine is cool to prevent fire. Injury or death to personnel could result.
- Oil is slippery and can cause falls. To avoid injury, wipe up spilled oil with wiping rags.

NOTE

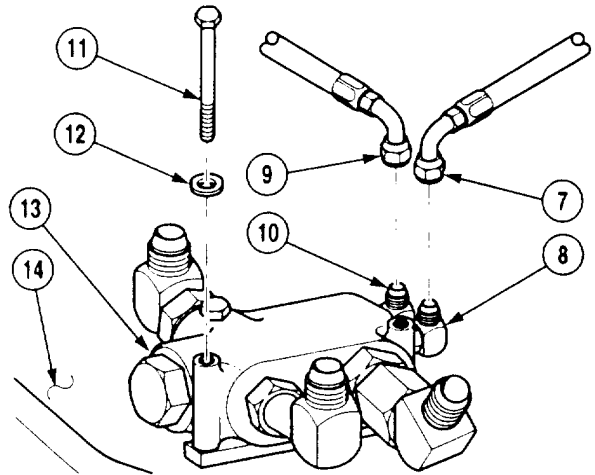
- Inspect all hoses, lines, and fittings for cracks, bends, nicks, dents, stripped threads, and cuts. Replace all damaged parts.
- Tag and mark each hose prior to removal.
- Steering valve and hoses can be moved for easier access.

- (1) Remove hose (1) from elbow (2).
- (2) Remove hose (3) from 45° elbow (4).
- (3) Remove hose (5) from elbow (6).

- (4) Remove hose (7) from elbow (8).
- (5) Remove hose (9) from elbow (10).
- (6) Remove two screws (11), washers (12), and priority valve (13) from bulkhead (14).

WARNING

- Hydraulic oil is flammable. Ensure engine is cool to prevent fire. Injury or death to personnel could result.
- Oil is slippery and can cause falls. To avoid injury, wipe up spilled oil with wiping rags.



NOTE

- Inspect all hoses, lines, and fittings for cracks, bends, nicks, dents, stripped threads, and cuts. Replace all damaged parts.
- Tag and mark each hose prior to removal.
- Record position of elbows prior to removal to ensure correct placement during installation.

b. Cleaning/Inspection.

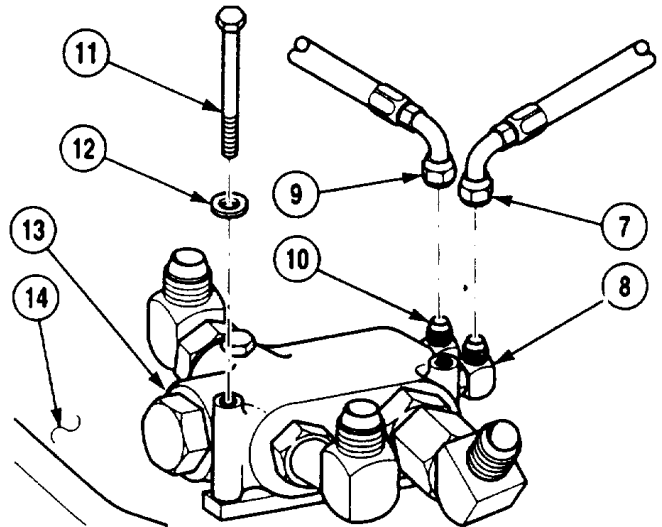
WARNING

- Drycleaning solvent (P-D-680) is TOXIC and flammable. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and cloths; and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for type I drycleaning solvent is 100°F (38°C) and for type II is 138°F (50°C). Failure to do so may result in injury or death to personnel.
 - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or cloths; flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- (1) Clean all metal parts with drycleaning solvent.
 - (2) Inspect all parts for breaks, cracks, burrs, and sharp edges.
 - (3) Replace all damaged parts.

17-11. PRIORITY VALVE REPLACEMENT (CONT).

c. Installation.

- (1) Install priority valve (13) on bulkhead with two washers (12) and screws (11). Tighten screws to 19 ft-lb (25.76 N•m).
- (2) Install hose (9) on elbow (10).
- (3) Install hose (7) on elbow (8).



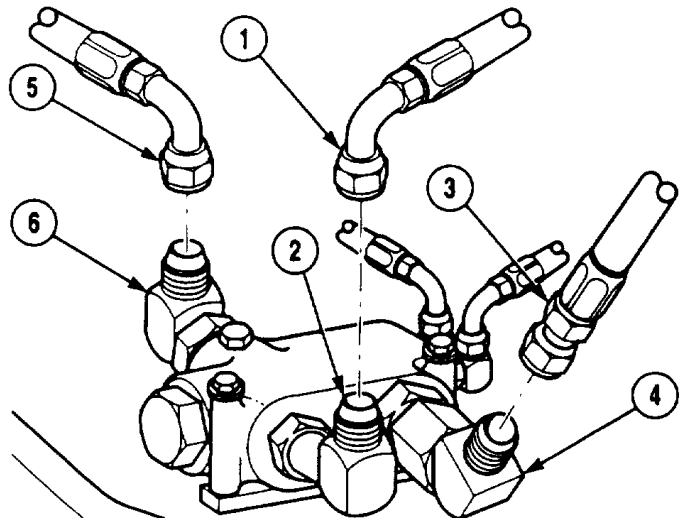
- (4) Install hose (5) on elbow (6).
- (5) Install hose (3) on 45° elbow (4).
- (6) Install hose (1) on elbow (2).

NOTE

Follow-on Maintenance:

- Check hydraulic fluid (LO 10-3930-669-12).

END OF TASK



APPENDIX A**REFERENCES****A-1. SCOPE.**

Indexes should be consulted frequently for latest changes or revisions given in this appendix and for new publications relating to material covered in this publication.

Military Publication Indexes.

Consolidated of Army Publications and Forms DA PAM 310-1

A-2. FORMS.

Refer to DA PAM 738-750, of the Army Maintenance Management System (TAMMS), for instructions on the use of maintenance forms pertaining to the forklift.

A-3. FIELD MANUALS.

The following publications contain information pertinent to the forklift material.

Camouflage	FM 5-20
Basic Cold Weather Manual	FM 31-70
Manual for Wheel Vehicle Driver.....	FM 21-305
Army Motor Transport Units and Operations	FM 55-30
Northern Operations.....	FM 31-71
Operation and Maintenance of Ordnance Material in Cold Weather 0°F to -65°F	FM 9-207
Nuclear, Biological, and Chemical Defense	FM 21-40
Nuclear, Biological, and Chemical (NBC) Reconnaissance and Decontamination Operations (How to Fight)	FM 3-87 (HTF)

A-4. TECHNICAL MANUALS.

Administrative Storage of Equipment	TM 740-90-1
Chemical, Biological, and Radiological (CBR) Decontamination.....	TM 3-220
Inspection, Care, and Maintenance of Anti-friction Bearings	TM 9-214

A-4. TECHNICAL MANUALS (CONT).

Painting Instructions.....	TM 43-0139
Materials Used for Cleaning, Preserving, Abranding, and Cementing	
Ordnance Material and Related Materials Including Chemicals.....	TM 9-247
Operator's Manual for Welding Theory and Application.....	TM 9-237
Procedures for Destruction of Tank Automotive to Prevent	
Enemy Use (U.S. Army Tank-Automotive Command)	TM 750-244-6
Maintenance and Repair for Lead-Acid Storage Batteries.....	TM 9-6140-200-14
General Shop Practice Requirements for Repair, Maintenance, and	
Test of Electronic Equipment.....	TM 43-0158

A-5. WARRANTY.

The 6K Fork Lift is not covered by the standard government warranty provisions associated with some TACOM managed Equipment.

However, Drexel Industries, Inc. ("Drexel") will provide the using Army unit the standard warranty available to their commercial customers.

It is highly recommended that prior to any work being initiated or repair parts requested, Drexel be notified of such actions to ensure that no work and/or repairs are requested that are not covered under warranty.

Any cost associated with work and/or repairs accomplished by Drexel that is not covered under warranty, shall be the sole responsibility of the using Army unit.

This warranty is to be exercised between the using Army unit and Drexel.

Warranty registration of the ARMY equipment with Drexel is NOT required and it is NOT necessary to notify the Tank automotive and Armament Command (TACOM) regarding warranty claim submission.

The local Warranty Control Office/Officer (WARCO) should pursue warranty coverage by administering the guidelines prescribed within the Drexel Commercial Warranty.

For information regarding this warranty, please contact:

Drexel Industries, Inc.
331 Maple Avenue
P.O. Box 248
Horsham, PA 19044

Phone (215) 672-2200
Fax (215) 773-6765

DREXEL

DREXEL INDUSTRIES, INC.

LIMITED WARRANTY

Drexel Industries, Inc. ("Drexel") warrants to the original purchaser that all equipment sold by Drexel will be free of defects in material or workmanship upon delivery and will remain so, under normal and proper use and maintenance, throughout the warranty period.

This warranty commences on the day of delivery of the equipment to the original purchaser and will remain in effect for a period of ninety (90) days or five hundred (500) hours of operation (whichever occurs first). During this period, Drexel will repair or replace, at its discretion, any items determined by Drexel to be defective. Normal maintenance items including, but not limited to, fuses, filters, belts, tuneup parts, grease oil and minor adjustments are not covered.

There shall be extended, parts only, coverage for twelve (12) months from date of delivery or two thousand (2,000) hours of operation (whichever occurs first) on engines (excluding fuel system and electrical parts), transmission, drive motors, pump motors, power steering motors, drive axles (excluding brake assemblies), pumps, valves, contractors (excluding tips) and solid state drive control components.

There shall be extended, parts only, coverage for thirty six (36) months, from date of delivery, or five thousand (5,000) hours (whichever occurs first), for Drexel SwingMast® models, on the pivot/side shift assembly (excluding hydraulic cylinders and hoses, electric wiring and wear pads).

Drexel's warranty does not apply to batteries, chargers, tires, or other accessories or attachments, not manufactured by Drexel, which may be delivered with or installed on Drexel trucks and which are warranted by their respective manufacturers. Damage or defects resulting from misuse, abuse, negligence, accident or any action not originating in the manufacture of the equipment is not covered. Hauling charges and freight charges on parts are not covered.

The warranty set forth herein is complete, exclusive, and in lieu of all other warranties, expressed or implied, by operation of law or otherwise, including, without limitation, any warranty of merchant ability or fitness for a particular purpose. The right to repair, replace or provide replacement parts is the sole and exclusive remedy for each breach of this warranty, and Drexel shall not be liable for any damages, whether direct, consequential, or otherwise, resulting from any such breach.

A-6. MISCELLANEOUS PUBLICATIONS.

Description, Use, Bonding, and Properties of Adhesives

TB ORD1032

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance categories.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance categories.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS.

Maintenance functions will be limited to and defined as follows:

a. *Inspect.* To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. *Test.* To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. *Service.* Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

d. *Adjust.* To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. *Aline.* To adjust specified variable elements of an item to bring about optimum or desired performance.

f. *Calibrate.* To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. *Remove/Install.* To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

B-2. MAINTENANCE FUNCTIONS (CONT).

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and is shown as the 3d position code of the SMR code.

i. Repair. The application of maintenance services 1, including fault location/troubleshooting 2, removal/installation, and disassembly/assembly 3 procedures, and maintenance actions 4 to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army Equipment/Components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

a. Column 1, Group Number. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, sub-assemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Function. Column 3 lists the functions to be performed on the item listed in Column 2. (For detailed explanation of these functions, see paragraph B-2.)

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumns(s), the category of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time figures will be shown for each category. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance categories are as follows:

¹ Services inspect, test, service, adjust, align, calibrate, and/or replace

² Fault locate/troubleshooting The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).

³ Disassemble/assemble encompasses the step-by-step taking apart (or breakdown) of a spare/functional group coded item to the level of its least componentry identified a. maintenance significant (i.e. assigned an SMR code) for the category of maintenance under consideration

⁴ Actions welding, grinding, riveting, straightening, facing, remachine, and/or resurfacing.

C.....	Operator or crew
O.....	Unit Maintenance
F.....	Direct Support Maintenance
H.....	General Support Maintenance
D.....	Depot Maintenance

e. Column 5, Tools and Equipment. Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. Column 6, Remarks. This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in Section IV.

B-4. EXPLANATION OF COLUMNS IN TOOLS AND TEST EQUIPMENT REQUIREMENTS, SECTION III.

a. Column 1, Reference Code. The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. Column 2, Maintenance Category. The lowest category of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National Stock Number. The national stock number of the tool or test equipment.

e. Column 5, Tool Number. The manufacturer's part number.

B-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION IV.

a. Column 1, Reference Code. The code recorded in column 6, Section II.

b. Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
01	ENGINE								
0100	Engine Assembly:								
	Engine Assembly	Inspect Service Replace Repair Overhaul	0.5	1.0	15.0	35.0 35.0		1,2 1,2,11 1,5 4,5,11,22, 4,5,11,22,	
	Engine Mounts	Replace			1.0			1,5	
0101	Crankcase, Block, Cylinder Head:								
	Crankcase Assembly(Block)	Replace Repair				4.0 4.0		1,5,22,32,33 1,5,22,32,33	
	Cylinder	Replace			3.0			1,20	
	Cylinder Head Assembly	Replace Repair			3.0	16.0		1,5,21,22 1,5,23,24,25, 26,27,28,29	
0102	Crankshaft:								
	Crankshaft, Main and Piston Rod Bearings	Replace Repair				21.0 10.0		1,5 1,5	
	Oil Seals	Replace			1.0			1,5	
	Crankshaft Pulley	Replace			4.0			1,5,13	
	Crankshaft Gear	Replace			6.0			1,5	
	Vibration Damper	Replace			4.0			1	

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
0103	Flywheel Assembly	Replace			2.0			1,5,13	
		Repair			2.0			1,5	
	Flywheel Housing	Replace			2.5			1	
0104	Pistons, Connecting Rods:								
	Piston and Connecting Rod	Replace Repair				10.0 5.0		1,5,22, 1,5,22	
0105	Valves, Camshafts and Timing System:								
	Front Cover	Replace			4.5			1,2,13	
	Rocker Covers	Replace		1.0				1	
	Valve	Replace Repair			3.0	16.0		1,5,21,22 1,5,23,24,25 26,27,28,29	
	Camshaft Assembly	Replace Repair				16.0 3.0		1,5,32 1,5,32	
	Tappets	Replace			5.0			1	
	Idle Gear	Replace Repair			8.0 1.0			1 1,5	
	Rocker Arm	Adjust Replace Repair		2.0 4.0				1,12,13 1 1,5	
	Pushrod	Replace			2.5			1,5	

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
0106	Engine Lubrication System:								
	Adapter Assembly, Oil Filter	Replace		1.0				1,2	
	Filter, Oil	Replace		0.5				1,11	
	Oil Cooler Assembly, Engine	Replace		2.0				1	
	Oil Breather	Replace		0.5				1	
	Valve, AOAP	Replace		0.5				1	
	Oil Pump	Replace			5.0			1,5	
	Oil Pan	Replace			4.0			1,5	
03	FUEL SYSTEM								
0301	Carburetor, Fuel Injector:								
	Fuel Injector	Replace		1.0				1,2,	
	Fuel Injector Lines, Pipe, and Fittings	Inspect Replace	0.5		1.0			1	
0302	Fuel Pumps:								
	Fuel Injection Pump	Adjust Replace Repair	1.0		2.0 2.0			1,5,30 1,5,31 1,5,31	J,K
	Fuel Pump Timing Gear	Replace Repair			3.0 1.0			1,5,31 1,5,31	
	Fuel Supply Pump	Replace		1.0				1,2	
	Air Cleaner Assembly:	Inspect Replace Repair	0.2 1.0	1.0				1 1	
	Element	Replace	0.5						
0304									

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
0305	Intake Manifold	Inspect Replace		0.5	2.0			1	
0306	Tank	Inspect Replace Repair	0.2		3.0	2.0		1 1,5	I
	Fuel Filler, Tube	Replace		0.5				1	
	Tanks, Lines, Fittings:								
	Fuel Lines and Fittings (each)	Inspect Replace	0.2	0.5				1,6	
0308	Engine Speed Governor and Controls:								
	Governor	Adjust		1.0				1,14	
0309	Fuel Filters:								
	Fuel Filter	Inspect Service Replace	0.2	0.5 0.5				1	
	Fuel/Water Separator	Inspect Service Replace Repair		0.2 0.2	2.0	3.0		1 1	
0312	Accelerator, Throttle or Controls:								
	Throttle Pedal Assembly	Adjust Replace		0.5 0.5				1 1,12	
	Throttle Cable	Replace		0.5				1	
	Oil Filter Tray	Replace		0.5				1	

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
04	EXHAUST SYSTEM								
0401	Exhaust Manifold	Inspect Replace		0.5	2.0			1	
	Muffler and Pipes	Inspect Replace	0.1	2.0				1	
05	COOLING SYSTEM								
0502	Cowling, Deflectors, Air Ducts, Shrouds, etc.:								
	Air Ducts and End Plates	Inspect Replace	0.5		2.0			1	
	Ventilation Panel	Replace		1.0				1	
0505	Fan Assembly:								
	Blower Fan	Adjustment Replace Repair		0.5 2.0	2.0			1 1 1,5	
	Blower Belt	Inspect Replace	0.2	0.5				1	
	V-Belt Tensioning	Inspect Replace	0.2	0.5				1,12	
06	ELECTRICAL SYSTEM								
0601	Generator, Alternator:								
	Alternator Assembly	Replace Repair		1.0	3.0			1,2 1,5,6	
	Alternator Belt	Inspect Adjust Replace		0.2 0.5 0.5				1 1	
0602	Generator Regulator (Voltage):								
	Voltage Regulator	Replace		0.5				1	

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
0603	Starting Motor:								
	Starter Motor	Replace Repair		1.0	2.0			1,2 1,5,6	
0605	Ignition Components:								
	Glow Plugs	Replace		2.0				1,2	
0606	Engine Solenoid	Replace		1.0				1	
0607	Instrument Panel:								
	Instrument Panel	Replace			2.0			1,2	B A
	Gage Wire Harness	Repair		1.0				1,2	
	Instrument Panel	Replace		1.0				1	
	Gages	Replace		1.0				1	
	Lamp, Gauges	Replace		0.5				1	
	Switches	Replace		0.5				1	
	Broken Belt Warning Switch	Replace		0.5				1	
0608	Miscellaneous Items:								
	Transmission Shift Selector	Replace		1.0				1	
	Transmission Inching Valve	Replace		0.5				1	
0609	Lights:								
	Light, Tail	Inspect Replace	0.2	0.5				1	
	Work Lamps Front/Rear	Replace		0.5				1	
	Light, Interior	Replace		0.5				1	
	Fuses, Relays, Diodes, and Buss Bar	Replace		0.1				1,2	

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
0609	Fuse Panel	Replace		1.0				1,2	
	Shunt Assembly	Replace		1.0				1	
0610	Sending Units and Warning Switches:								
	Fuel Level Sensor	Replace		1.0				1	
	Engine Fuel Shutoff Solenoid	Replace		1.0				1,12	
	Drive Axle Cooling Fans	Replace		1.0				1,2	
	Engine Cooling Fan Belt Sensor	Replace		0.5				1,2	
	Engine Oil Temperature Sensor	Replace		1.0				1	
	Engine Oil Pressure Sensor	Replace		1.0				1	
	Transmission Oil Temperature Sensor	Replace		1.0				1	
	Sending Units (each)	Replace		0.5				1	
0611	Horn, Siren:								
	Electric Horn	Replace		0.5				1,2	
	Horn Button	Replace		0.5				1,2	
0612	Batteries, Storage								
	Battery	Service Replace		1.0 0.5				1	
	Battery Box	Replace		0.5				1	
	Cables	Inspect Service Replace	0.2	0.5 0.5				1,2 1,2	

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
0613	Hull or Chassis Wiring Harness:								
	Engine Wiring Harness	Replace Repair		1.0	2.0 1.0			1,5 1,2	B A
	Cab Wiring Harness	Replace Repair		1.0	3.0 1.0			1,5 1,2	B A
	Hull Wiring Harness	Replace Repair		1.0	3.0 1.0			1,5 1,2	B A
07	TRANSMISSION								
0710	Transmission Assy:								
	Transmission Oil Filter	Replace		0.5				1,2,11	
	Torque Converter and Drive Plate	Replace Repair			12.5 2.0	16.0		1,5 1,5	
	Transmission Lines and Fittings	Replace			1.0			1	
	Transmission Assembly	Replace Repair Overhaul			8.0	24.0 26.0		1,5 1,5 1,5	
0714	Servo Unit:								
	Control Valve Assembly	Replace Repair			3.0	4.0		1,5 1,5	
0721	Coolers, Pumps, Motors:								
	Transmission Oil Cooler	Replace		2.0				1,2,11,12	

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
08	TRANSFER AND FINAL DRIVE ASSEMBLIES								
0801	Drive Axle Pump	Replace		2.0				1	
0802	Drive Axle Oil Cooler	Replace Repair		1.5	1.5			1 1	
09	PROPELLER, SHAFTS, UNIVERSAL JOINTS								
0900	Driveshafts:								
	Driveshafts and Universal Joints	Inspect Replace Repair		0.5 2.0 3.0				1,12 1,12	
10	FRONT AXLE								
1000	Drive Axle Assembly:								
	Drive Axle	Inspect Replace Repair		0.5	3.0	3.0		1,5 1,5	
	Drive Axle Housing	Replace				3.0		1,5	
1002	Differential:								
	Differential	Replace Repair				1.0 2.0		1,5,34,35,36 1,5,34,35,36	
1003	Planetary or Final Drive:								
	Planetary Hubs	Repair				2.0		1,3,5	
11	REAR AXLES								
1100	Steering Axle	Replace Repair			2.0 8.0			1,5 1,5	I
1104	Steering Mechanism	Replace Repair		2.0 2.0				1,2 1,2,12	
	Steering Cylinder Assembly	Replace Repair			3.0 5.0			1 1,5	

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
12	BRAKES								
1201	Parking Brake Linkage	Adjust Replace		1.0 1.0				1 1,2	
	Parking Brake Caliper	Replace Repair		1.0 1.0				1 1	
1202	Service Brakes:								
	Brakes	Inspect		0.5					
	Brake Assemblies	Replace			5.0			1,5	
1204	Hydraulic Brake System:								
	Master Cylinder	Replace		2.0				1,2	
	Brake Lines and Fittings	Replace		2.0				1,2	
1206	Mechanical Brake System:								
	Brake Pedal and Linkages	Replace		2.0				1,2	
13	WHEELS AND TRACKS								
1311	Wheel Assembly:								
	Wheel Assembly	Inspect Replace	0.2	1.0				1,2	
	Wheel Hub Assembly (Steering Axle)	Replace Repair		1.0	2.0			1,2,12 1,5	
14	STEERING								
1401	Mechanical Steering Gear Assembly:								
	Steering Column	Replace		1.0				1,2,12	

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
1410	Hydraulic Pumps:								
	Hydraulic Pump, Steering	Replace Repair		2.0	3.0			1 1,5	
1411	Hoses, Lines, and Fittings:								
	Hydraulic Lines and Fittings	Replace		1.0	1.0			1,2,5	C
1412	Tanks, Reservoirs:								
	Hydraulic Reservoir Assembly	Replace Repair			3.0 1.0			1,5 1	I
	Hydraulic Filter	Replace		0.5				2	
15	FRAME, TOWING ATTACHMENTS, AND DRAWBAR SYSTEMS								
1501	Frame Assembly:								
	Frame Assembly	Inspect Repair		0.5	2.0			1,5	H
1502	Counterweight	Replace Repair			1.0 1.0			1,5,16 1,5	
18	BODY, CAB, AND HULL								
1801	Body and Cab Assemblies:								
	Cab Assembly	Replace Repair			4.0 2.0	2.0		1,2 1	
	Overhead Guard	Inspect Replace	0.2	1.0				1	
	Loadrest	Replace		0.5				1	

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
1802	Fenders, Running Boards with Mounting and Attaching Parts, Windshield:								
	Windshield Glass	Inspect Replace	0.2		2.0			1,9	
1806	Upholstery Seats and Carpets:								
	Seat Assembly	Replace Repair		0.5 0.5				1 1	
22	BODY, CHASSIS, AND HULL ACCESSORY ITEMS								
2202	Accessory Items:								
	Windshield Wipers	Replace Repair		1.0 0.5				1,12 1,12	
	Fan	Replace		0.5				1	
	Oil to Air Heater	Replace Repair		2.0 3.0				1 1	
	Heater Valve	Replace		2.0				1,2,12	
2210	Data Plates and Instruction Holders:								
	Data Plate (each)	Replace		0.5				1	
24	HYDRAULIC AND FLUID SYSTEMS								
2401	Hydraulic Pump:								
	Main Hydraulic Pump Assembly	Replace Repair			2.0 2.5			1,5 1,5	

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
2402	Hydraulic Control Valve:								
	Stack Valve Assembly	Adjust Replace Repair			1.0 2.0 3.0			1 1,5 1,5	
	Priority Valve	Replace Repair		1.5	2.0			1,2 1,5	
2403	Hydraulic Control Levers and Linkage:								
	Hydraulic Control Levers and Linkage	Adjust Replace Repair			0.5 2.0 2.0			1 1,12 1,12	
2404	Hydraulic Tilt Cylinder and Tilt Crank:								
	Tilt Cylinders	Replace Repair Adjust		1.0 0.5	2.0			1,2 1,5 1	
2405	Hydraulic Mast Column:								
	Carriage Assembly	Adjust Replace		1.0	1.0			1 1	
	Backrest Assembly	Replace		1.0				1,2	
	Forks	Adjust Replace	0.5	0.5					
	Pivot and Shift Assembly	Replace Repair			5.0	16.0		1,5 1,5,17,18,19	E,F E,F,G
	Side Shift Rod Scraper	Replace		1.0				1	
	Chain Assembly, Side Shift	Adjust Replace		1.0	2.0			1 1,5	
	Hydraulic Side-Shift Cylinder	Replace Repair			2.0 2.0			1,5 1,5	
	Hydraulic Pivot Cylinder	Replace Repair		3.0	4.0			1 1,5	

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
2405	Primary and Secondary Cylinder	Replace Repair			1.0 1.0			1 1,5	C
	Mast Assembly	Replace Repair			5.0 8.0			1,5 1,5	
	Mast Chains	Adjust Replace		1.0 1.0				1 1	
2406	Strainers, Filters, Lines and Fittings, etc.:								
	Hose Assembly, High Pressure	Inspect Replace		0.5 1.0				1,2,12	
	Hydraulic Filter and Head	Inspect Replace Repair		0.5 1.0 1.0				1 1	
2408	Liquid Tanks or Reservoirs:								
	Hydraulic Reservoir	Service Replace		1.0	2.0			1,5	
47	GAGE (NON-ELECTRICAL)								
4702	Restrictor Indicator Assembly	Replace		1.0				1	
91	CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL (CBR) EQUIPMENT								
9120	Decontamination Equipment:								D
	Decontamination Kit	Inspect Install Replace	0.2	0.5 0.5				1 1	

Section III. TOOLS AND TEST EQUIPMENT REQUIREMENTS

Tool or Test Equipment. Ref Code.	Maintenance Category	NOMENCLATURE	National/NATO Stock Number	Tool Number
1	O,F,H	TOOL KIT, General Mechanic's: Automotive	5180-00-177-7033	SC5180-90-CL-N26
2	O,F,H	SHOP EQUIPMENT, Automotive Maint and Repair: Common No. 1	4910-00-754-0654	SC4910-95-CL-A74
3	O,F,H	SHOP EQUIPMENT, Automotive Maintenance and Repair: Supp. 1	4910-00-754-0653	SC4910-95-CL-A73
4	F,H	SHOP EQUIPMENT, Automotive Maintenance and Repair: Supp. 1	4910-00-754-0706	SC4910-95-A62
5	F	SHOP EQUIPMENT, Automotive Maintenance and Repair: Field Maintenance, Basic	4910-00-754-0705	SC4910-95-CL-A31
6	F,H	SHOP EQUIPMENT, Fuel and Electrical System, Engine: Field Maintenance, Basic	4910-00-754-7791	SC4910-95-CL-A66
7	F	SHOP EQUIPMENT, Fuel and Electrical System, Engine: Field Maintenance, Basic	4910-00-754-0714	SC4910-95-CL-A01
8	F	SHOP EQUIPMENT, Machine Shop	3470-00-754-0708	SC3470-95-CL-A02
9	F	Tool Kit, Glass Cutting: Vehicle	4940-00-357-7737	SC 4910-95 CL-18
10	F	Shop Welding Set	3433-00-357-6311	SC3433-90-CL-N01
11	O,F,H	Pan, drain, 12 qt.	4910-00-287-2944	
12	O,F,H	Wrench, Torque, 0-60 N(m	5120-01-112-9531	
13	O,F,H	Retainer, Crankshaft Pulley		030 1107
14	O,F,H	System Test Equipment/ Internal Combustion Engine- Reprogrammable (STE/ICE-R)	4910-01-222-6589	12259266
15	O	Square, Combination	5210-00-078-8949	

Tool or Test Equipment. Ref Code.	Maintenance Category	NOMENCLATURE	National/NATO Stock Number	Tool Number
16	F,H	Hoist, Ring		1411224
17	F,H	Jack, Kit 30 Ton	5120-00-188-1790	
18	F,H	Bearing, Installer		1400154
19	F,H	Wrench, Spanner	5120-01-095-7451	12268039
20	H	Compressor, Piston Ring	5120-01-247-6128	003-0430
21	H	Spring, Compressor	5120-01-253-3905	125300
22	O,F,H	Gage, Tightening	5120-10-212-9224	0031102
23	F,H	Compressor, Valve Spring	5120-01-208-7036	J-33345
24	F,H	Mandrel, Exhaust	3460-01-203-7946	003-0441
25	F,H	Mandrel, Intake	3460-01-203-7947	003-0620
26	H	Cutter, Valve Seat	5120-01-280-2284	003-0784
27	H	Reamer, Hand	5110-01-203-7945	003-0452
28	H	Reamer, Hand	5110-01-204-5070	003-0652
29	H	Punch, Valve Guide	5120-01-202-5073	003-0453
30	F,H	Hand Pump, High Pressure	4320-01-263-9680	003-0714
31	F,H	Puller, Gear		003-0762
32	H	Insertter and Remover	5120-01-280-0077	003-0433
33	H	Installing Tool	5120-01-189-5221	003-0789
34	H	Spanner, Wrench		003-1078
35	H	Wrench, Pinion		1401499
36	H	Wrench, Socket	5120-01-248-1797	003-1043
37	H	Nut	5310-00-761-6869	

Section IV. REMARKS

Reference Code	Remarks
A	In the "O" category repair is limited to splicing of wires, taping of the harness or wires, and the replacement of wire ends.
B	At the "F" level the entire wire harness is replaced.
C	High pressure hoses are non-repairable.
D	Repair of the M-13 decontamination unit is covered in TM 3-4230-214-12&P.
E	Ensure pivot arm is blocked in outward position.
F	Refer to Appendix C for fabricated items.
G	End cap on side shift rod must be welded by certified welder.
H	Check for serviceability.
I	Limited welding.
J	Function performed by Specialized Repair Activity (SRA).
K	Repair by piece parts only.

APPENDIX C

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS

Section I. INTRODUCTION

C-1. SCOPE.

This appendix lists expendable/durable supplies and materials you will need to operate and maintain the Pumping Assembly. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

C-2. EXPLANATION OF COLUMNS.

a. Column (1) -- Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, item 5., Appendix E").

b. Column (2) -- Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew
O - Organizational Maintenance
F - Direct Support Maintenance
H - General Support Maintenance

c. Column (3) - National Stock Number. This is the National Stock Number assigned to the item; use it to request or requisition the item.

d. Column (4) - Description. Indicates the Federal item name, and, if required, a description to identify the item. The last line for each item indicates the part number followed by Commercial And Government Entity (CAGE) Code in parentheses.

e. Column (5) - Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by two-character alphabetical abbreviations (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
1	O,F,H	8040-00-843-0802	Adhesive, Sealant, Silicone, RTV, General Purpose,	OZ
2	O,F,H	8030-00-009-5023	Sealant, Teflon Thread	RO
3	O	8950-01-144-4822	Baking Soda	BX
4	O,F,H	5975-01-273-8133	Cable Ties 12 inches long, 100 per package	
5	O,F,H	5340-00-450-5718	Cap and Plug Set	ST
6	O,F,H	5330-01-083-0081	Cloth, Lint -Free	
7	O	8030-00-062-6950	Compound, Corrosion Preventive	
8	O,F,H	9150-01-102-9455	Fluid, Brake, (BFS) Silicone	GL
9	O,F,H	9410-00-286-5294	Fuel, Oil, Diesel, Bulk	GL
10	O,F,H	7930-00-177-5217	Detergent, General Purpose	
11	C,O	9150-01-035-5390 9150-01-035-5391	Gear Oil, Lubricating, GO 75 (MIL-L-2105) 1-qt can 5-gal can	QT GL
12	C,O	9150-01-035-5392 9150-01-035-5393 9150-01-035-5394	Gear Oil, Lubricating, GO 80/90 (MIL-L-2105) 1-qt can 5-gal can 55-gal drum	QT GL GL
13	C,H	9150-00-190-0904 9150-00-190-0905 9150-00-190-0907	Grease, Automotive and Artillery, MIL-L-10924 1 lb can 5 lb can 35 lb can	LB LB LB
14	C	9150-00-754-2595	Grease, Ball and Roller Bearing, MIL-G-18709	LB
15	C	9150-00-189-6727	Lubricating Oil, Internal Combustion Engine, Tactical Service, MIL-L-2104C (OE/HDO 10)	GL
16	C	9150-00-186-6681	Lubricating Oil, Internal Combustion Engine, Tactical Service, MIL-L-2104C (OE/HDO 30)	GL

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
17	O,F,H	9150-00-402-4478 9150-00-402-2372 9150-00-491-7197	Oil, Lubricating, OEA, MIL-L-46167 (81349)	1 QT 5 GL 55 GL
18	O	9150-00-153-0207	Oil, Preservation, Grade 30, Type II, MIL-L-21260	QT
19	O,F,H	7920-00-306-1711	Rags, wiping (58536) A-A-531 50 Pound Bale	LB
20	O,F,H	6850-00-274-5241	Solvent, Drycleaning, P-D-680, Type II	GL
21	O,F,H	8135-00-178-9200	Tags, Identification (MIL-S-2910) 1,000 count	CT
22	F,H	8030-01-104-5392 8030-01-025-1692	Loctite #242 (80244) MIL-S-461463A Type 2 Grade N 10 milliliter bottle 250 milliliter bottle	BT BT
23	F,H	8030-01-158-6070	Loctite #271 (80244) MIL-S-461463 Type I Grade L	BT
24	F	8040-01-010-8753	Compound, Sealing RTV-732 Clear (77247)	TU
25	O,F	9150-01-177-3988	Oil, Transmission (MIL-2104)	QT
26	O,F	7519-00-663-3732	Tape, Packaging, Waterproof	RL
27	O,F,H	9505-00-293-4208	Wire, Safety	LB
28	H	8010-00-652-3626	Magnaflux, Penetrate	OZ

Section III. REMARKS

Reference Code	Remarks
A	In the "O" category repair is limited to splicing of wires, taping of the harness or wires, and the replacement of wire ends.
B	At the "F" level the entire wire harness is replaced.
C	High pressure hoses are non-repairable.
D	Repair of the M-13 decontamination unit is covered in TM 3-4230-214-12&P.
E	Ensure pivot arm is blocked in outward position.

APPENDIX D

ILLUSTRATED LIST OF MANUFACTURED ITEMS

Section I. INTRODUCTION

D-1. SCOPE.

This appendix includes complete instructions for manufacturing or fabricating authorized items locally. All bulk materials needed to manufacture an item are listed by part number or specification number in a tubular list with an illustration as needed.

Section II. MANUFACTURED ITEMS

D-2. FUEL HOSE FABRICATION.

The following hoses are cut from bulk hose using a fine-toothed hacksaw or suitable cutting device. Locations and installation instructions for fuel hoses are found in Chapter 4. (Table D-)1 list the fuel hoses.

Table D-1. Fuel System Hoses

Hose Assembly Part Number	Bulk Hose Part Number	Cutoff Length	
		Inches	cm
1407851	1402849	71	180
1407852	1402849	88	224
1407853	1402849	78	198
5182-01	1402849	18	46
1407850	1402849	44	112

D-3. AIR INTAKE HOSE FABRICATION.

There are two hoses in the intake system that require fabrication. Both hoses can be cut from bulk stock using fine toothed hacksaw or suitable cutting device. Refer to Chapter 4 for locations and installation instructions. (Table D-2) list the heater hoses.

Table D-2. Air Intake Hoses

Hose Assembly Part Number	Bulk Hose Part Number	Cutoff Length	
		Inches	cm
51598-2	1402107	11	28
1402708	1402107	5	13

D-4. WINDOW SEAL FABRICATION.

Fabricate window seal insulation from bulk insulation material (Table D-6). Use a suitable cutting tool to cut window seal insulation to required size.

Table D-3. Seal, Window

Hose Assembly Part Number	Bulk Hose Part Number	Cutoff Length	
		Inches	cm
1404630	WE016		
1404631	WE018		
1404632	1205R046		

APPENDIX E
TORQUE LIMITS

Section I. INTRODUCTION

E-1. SCOPE.

This appendix lists torque specifications and torquing instructions for specific engine nuts and screws.

E-2. GENERAL.

Preloading and angle torques are applied.

Section II. TORQUE SPECIFICATIONS

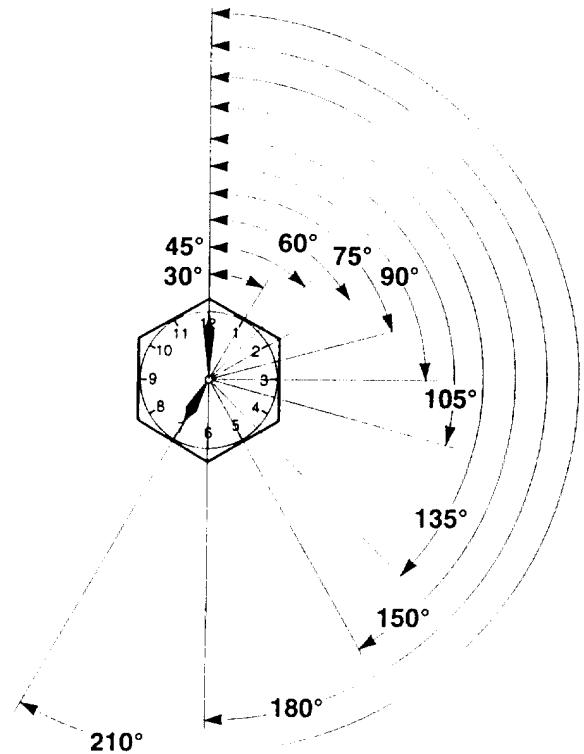
E-3. TORQUE SPECIFICATIONS.

The application, preloading, and torque angles in degrees are listed in Table E-1.

E-4. TORQUE INSTRUCTIONS.

Preloading is applied with a torque wrench that is calibrated in foot pounds (lb-ft) or newton meters (N•m). Preloading is applied before angle torques. All angle torques listed in Table E-1 are accomplished by turning the screw/nut a specific number of degrees from a zero reference point as shown. The tightening angle is obtained by turning the handle of the wrench being used to the desired angle selected from a clock face you mentally superimpose over the screw head. Torquing of two or more screws securing one assembly should be accomplished in an alternating fashion to ensure assembly seating and equal load distribution. For example, if angle torque specified is 30° initial then 30° final, proceed as follows:

- a. Coat screw and surface under screw head with engine oil, MIL-L-2104.
- b. Set screws squarely to ensure assembly seating.
- c. Apply specified preload with torque wrench.
- d. Using angle torque meter and socket wrench, apply 30° initial torque to screw 1.
- e. Apply 30° initial torque to screw 2.
- f. Apply 30° final torque to screw 1.
- g. Apply 30° final torque to screw 2.

**Table E-1. Torque Specifications**

Application	Preloading		Angle in Degrees or Torque Values				Total		
	lb-ft	N•m	Stage 1	Stage 2	Stage 3	Stage 4	Degree	lb-ft	N•m
Cylinder head	29.5	40	45°	45°	45°	30	165°	-	-
Cylinder head screw plug	-	-	-	-	-	-	-	59-66	80-90
Rocker arm bracket nut	-	-	-	-	-	-	-	21	28
Rocker chamber cover screw	-	-	-	-	-	-	-	7 (+4; 2)	10 (+5; 3)

Table E-1. Torque Specifications - CONT.

Application	Preloading		Angle in Degrees or Torque Values				Total		
	lb-ft	N•m	Stage 1	Stage 2	Stage 3	Stage 4	Degree	lb-ft	N•m
Connecting rod	22	30	60°	30°	-	-	90°	-	-
Bearing cap	22	30	60°	45°	-	-	105°	-	-
Idler gear	22	30	60°	-	-	-	60°	-	-
Flywheel screws	22	30	30°	30°	-	-	60°	-	-
Balance weight	22	30	30°	30°	-	-	60°	-	-
Flywheel nuts	37	50	90°	90°	-	-	180°	-	-
Injection nozzle	-	-	-	-	-	-	-	18.5-22	25-30
Fuel injection pump drive nut	-	-	-	-	-	-	-	44-52	60-70
Fuel injector cap nut	-	-	-	-	-	-	-	44-59	60-80
V-belt pulley	37	50	210°	-	-	-	210°	-	-
Cooling blower	22	30	90°	-	-	-	90°	-	-
Filter carrier	18.5	25	30°	60°	60°	-	150°	-	-
Oil pump retaining screw	-	-	-	-	-	-	-	26	35
Oil connecting pipe (+20) union screw	80	-	-	-	-	-	-	59 (+15)	80
Alternator	22	30	180°	-	-	-	180°	-	-
Idler pulley	22	30	45°	-	-	-	45°	-	-
Engine suspension	22	30	45°	60°	-	-	105°	-	-
Pump stud nuts 3/8-16	-	-	-	-	-	-	-	17-19	23-26
Pump stud nuts 1/2-13	-	-	-	-	-	-	-	40-42	54-57
Discharge and suction valve fasteners	-	-	-	-	-	-	-	44-48	60-65
Impeller bearing cap screws	-	-	-	-	-	-	-	21	28
Impeller shaft bushing - set screw	-	-	-	-	-	-	-	12	16
Intermediate bracket seal plate nuts	-	-	-	-	-	-	-	21	28
Exhaust pipe locking nuts	15	20	26 lb-ft (35 N•m)	37 lb-ft (50 N•m)	-	-	-	37	50

E-5. U.S. STANDARD TORQUE VALUES.

Table E-2. U.S. Standard Torque Values

	Minimum Breakaway Torque Value S.A.E. Grade 2		Minimum Breakaway Torque Value S.A.E. Grade 5		Minimum Breakaway Torque Value S.A.E. Grade 8	
Thread Size	U.S.	Metric	U.S.	Metric	U.S.	Metric
1/4-20	5 lb-ft	7 N·m	8 lb-ft	11 N·m	12 lb-ft	16 N·m
1/4-28	6 lb-ft	8 N·m	10 lb-ft	14 N·m	14 lb-ft	19 N·m
5/16-18	11 lb-ft	15 N·m	17 lb-ft	23 N·m	24 lb-ft	33 N·m
5/16-24	13 lb-ft	18 N·m	19 lb-ft	26 N·m	27 lb-ft	37 N·m
3/8-16	20 lb-ft	27 N·m	30 lb-ft	41 N·m	45 lb-ft	61 N·m
3/8-24	22 lb-ft	30 N·m	35 lb-ft	47 N·m	50 lb-ft	68 N·m
7/16-14	30 lb-ft	41 N·m	50 lb-ft	68 N·m	70 lb-ft	95 N·m
7/16-20	35 lb-ft	47 N·m	55 lb-ft	75 N·m	80 lb-ft	108 N·m
1/2-13	50 lb-ft	68 N·m	75 lb-ft	102 N·m	105 lb-ft	142 N·m
1/2-20	55 lb-ft	75 N·m	85 lb-ft	115 N·m	120 lb-ft	163 N·m
9/16-12	70 lb-ft	95 N·m	110 lb-ft	149 N·m	155 lb-ft	210 N·m
9/16-18	80 lb-ft	108 N·m	120 lb-ft	163 N·m	170 lb-ft	230 N·m
5/8-11	100 lb-ft	136 N·m	150 lb-ft	203 N·m	210 lb-ft	285 N·m
5/8-17	110 lb-ft	149 N·m	170 lb-ft	230 N·m	240 lb-ft	325 N·m
3/4-10	170 lb-ft	230 N·m	270 lb-ft	366 N·m	375 lb-ft	508 N·m
3/4-16	190 lb-ft	258 N·m	300 lb-ft	407 N·m	420 lb-ft	569 N·m
7/8-9	165 lb-ft	224 N·m	430 lb-ft	583 N·m	610 lb-ft	827 N·m
7/8-14	180 lb-ft	244 N·m	475 lb-ft	644 N·m	670 lb-ft	908 N·m
1-8	250 lb-ft	339 N·m	645 lb-ft	875 N·m	910 lb-ft	1,234 N·m
1-12	270 lb-ft	366 N·m	705 lb-ft	956 N·m	1,000 lb-ft	1,356 N·m
1-14	280 lb-ft	380 N·m	720 lb-ft	976 N·m	1,015 lb-ft	1,376 N·m

E-6. METRIC TORQUE VALUES.

Table E-3. Metric Torque Values

Thread Size	Minimum Breakaway Torque Value S.A.E. Grade 2		Minimum Breakaway Torque Value S.A.E. Grade 5		Minimum Breakaway Torque Value S.A.E. Grade 8	
	U.S.	Metric	U.S.	Metric	U.S.	Metric
4 mm	3 lb-ft	4 N·m	4 lb-ft	5 N·m	5 lb-ft	7 N·m
5 mm	5 lb-ft	7 N·m	7 lb-ft	9 N·m	9 lb-ft	12 N·m
6 mm	9 lb-ft	12 N·m	13 lb-ft	18 N·m	15 lb-ft	20 N·m
7 mm	15 lb-ft	20 N·m	21 lb-ft	28 N·m	25 lb-ft	34 N·m
8 mm	22 lb-ft	30 N·m	31 lb-ft	42 N·m	37 lb-ft	50 N·m
9 mm	28 lb-ft	38 N·m	40 lb-ft	54 N·m	47 lb-ft	64 N·m
10 mm	39 lb-ft	53 N·m	55 lb-ft	75 N·m	66 lb-ft	89 N·m
12 mm	66 lb-ft	89 N·m	93 lb-ft	126 N·m	111 lb-ft	150 N·m
14 mm	100 lb-ft	136 N·m	140 lb-ft	190 N·m	169 lb-ft	229 N·m
16 mm	152 lb-ft	206 N·m	214 lb-ft	290 N·m	256 lb-ft	347 N·m
18 mm	190 lb-ft	258 N·m	268 lb-ft	363 N·m	321 lb-ft	435 N·m
20 mm	265 lb-ft	359 N·m	372 lb-ft	504 N·m	447 lb-ft	606 N·m
22 mm	321 lb-ft	435 N·m	451 lb-ft	611 N·m	542 lb-ft	735 N·m
24 mm	412 lb-ft	559 N·m	578 lb-ft	784 N·m	695 lb-ft	942 N·m

APPENDIX F

SCHEMATICS

Section I. INTRODUCTION

F-1. SCOPE.

This appendix provides 6K Fork Lift wiring and hydraulic diagrams. The diagrams are divided into the following two areas:

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Figure FO-2

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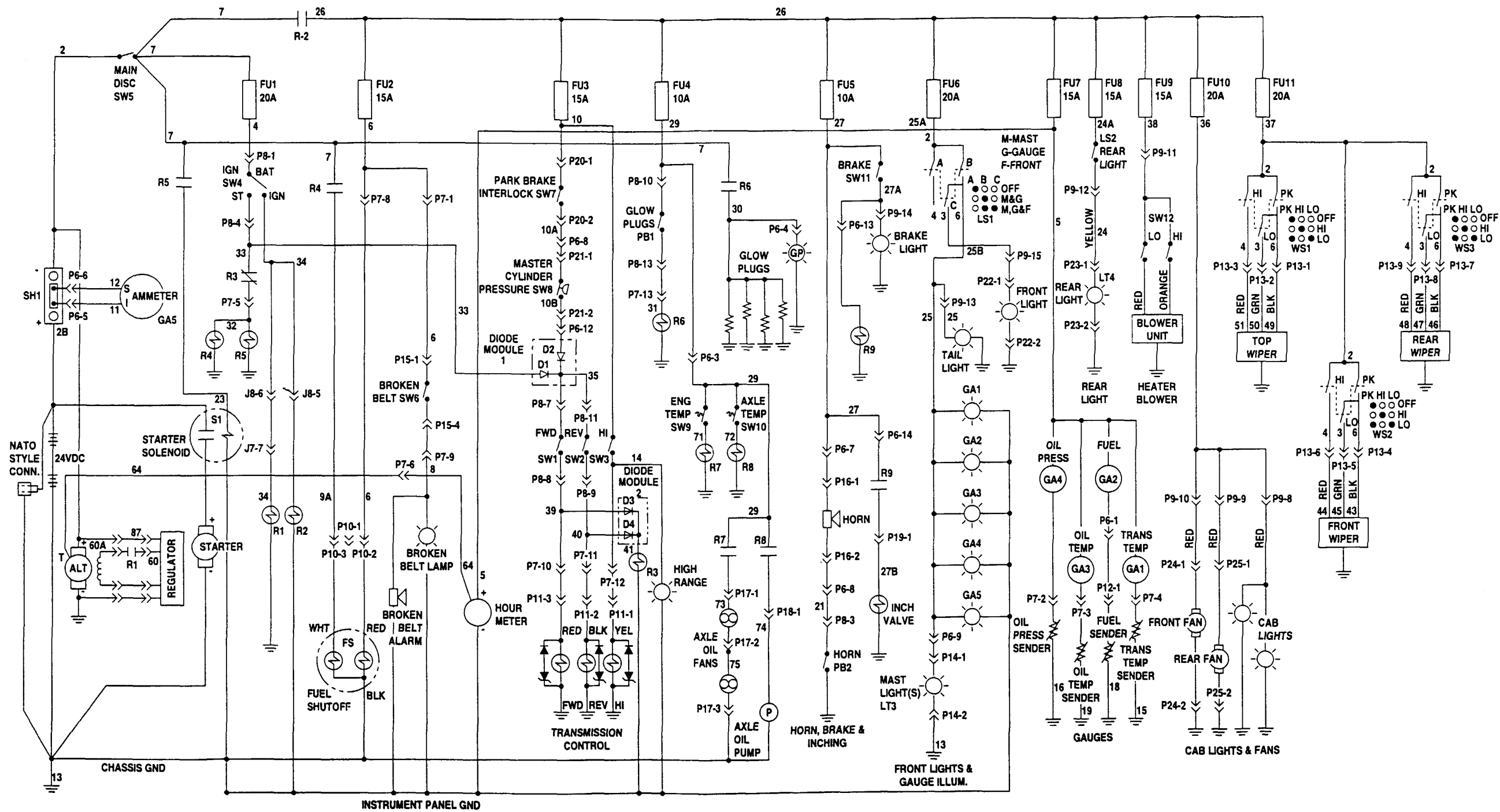


Figure FO-1. Wiring Harness.

FP-3 / (FP-4 blank)

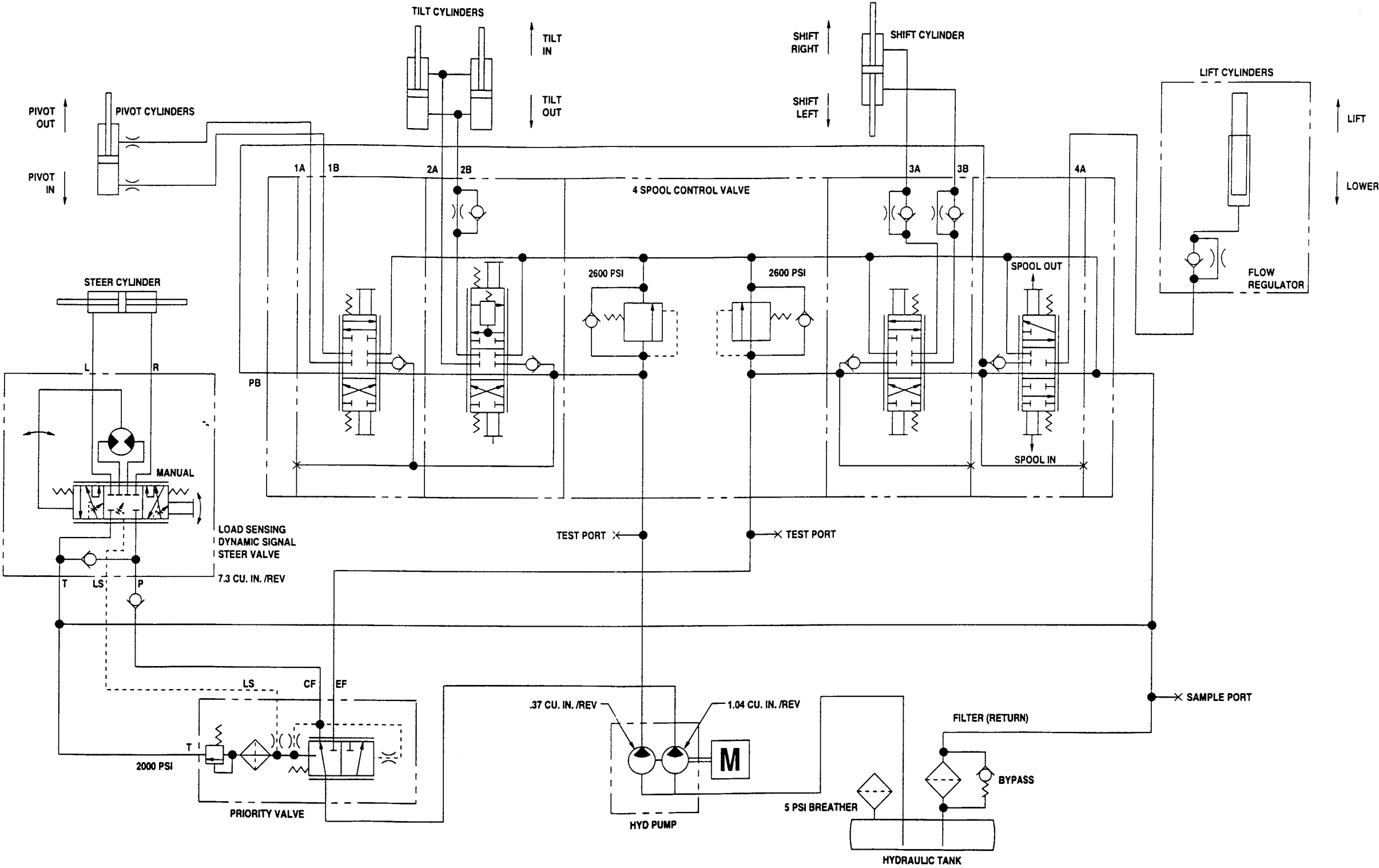


Figure FO-2. Hydraulic System.

FP-5/(FP-6 blank)

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 Lb
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
 1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
 1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

TEMPERATURE

$5/9 (^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
 212° Fahrenheit is equivalent to 100° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 32° Fahrenheit is equivalent to 0° Celsius
 $9/5 \text{ C}^{\circ} + 32 = \text{F}^{\circ}$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds/Sq Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Sq Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Sq 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
Metrication	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Sq Inch	0.145
Km per Liter	Miles per Gallon	2.354
Km per Hour	Miles per Hour	0.621



